Chapter S

Body

Section

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Chapter S

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Special precautions

Introduction

Chapter S contains references to various types of cleaners, primers, adhesives, paints, etc. When these materials are used correctly, they are perfectly safe and **do not** constitute a health hazard. However, the following precautionary measures should be taken to eliminate the possible dangers associated with their use.

Cleaners, Primers and Adhesives

Genklene
Bostik Cleaner 6001
Bostik Primer 9252
Bostik Adhesive 1261
Boscoprene Adhesive 2402 (Parts 1 and 2)
Dunlop Adhesive S1240
Dunlop Adhesive L107
Dunlop Adhesive S1558 (replaces Dunlop Adhesive 1127)

With the exception of Genklene, the cleaners, primer and adhesives are all classified as **highly inflammable.** When using any of the cleaners, primer and adhesives listed above the following precautions must be taken.

1. Always replace the lids on any material containers when not in use.
2. Always store all inflammable materials in lockable metal cupboards.
3. The cleaners and adhesives must not be used in a confined or badly ventilated area.
4. The use of a suitable barrier cream and/or the use of protective gloves is recommended.
5. Use a suitable antiseptic cleaner to remove any adhesive from the skin. **Do not use cleaning solvents.**

Boscoprene Adhesive 2402 (Parts 1 and 2)

1. When using Boscoprene Adhesive 2402 Parts 1 and 2 ensure that the uncured adhesive is not contaminated with water.
2. Part 2 of Boscoprene Adhesive 2402 contains the chemical isocyanate. When using this adhesive, the following precautionary and preventive measures listed in Operations 3 to 10 inclusive should be adopted.
3. Always ensure that good washing facilities are available.
4. Always wash hands thoroughly then apply a suitable barrier cream before commencing work. Rubber gloves may also be worn but care must be taken to ensure that they are clean.
5. Ensure that a suitable antiseptic cleansing cream is available for removing spilt isocyanate, etc., from the skin. **Do not use cleaning solvents.**

If contact with the skin has occured, clean the affected area with cleansing cream immediately, then wash thoroughly with soap and water. If prolonged contact has occured, treat the affected area with diluted ammonia in the following proportions

Water	90)	
Liquid Detergent	2)	Parts by volume
Concentrated Ammonia SG 0.880	8)	

then rinse thoroughly with water.

6. If the isocyanate is accidently splashed into the eye, **immediately** wash the eye thoroughly with water, apply a drop of olive oil then, **seek medical aid.**
7. If the isocyanate is spilt onto clothing, treat with liquid decontaminant i.e. diluted ammonia (see Operation 5).
8. Any spilt isocyanate should be **immediately** wiped away and the affected area treated with liquid decontaminant.
9. To dispose of any small quantities of waste isocyanate, slowly add them to at least twenty times their volume of liquid decontaminant in an open container stirring slowly. Allow the mixture to stand for two hours after which it can be safely washed down the drain with large quantities of water.
10. If any Boscoprene Adhesive 2402, Part 2 (isocyanate) is in the vicinity of a fire the following precautions must be taken.

a. If possible, move the containers to a safe area.
b. If it is not possible to move the containers, the possibility of injurious vapour must be anticipated and the area evacuated immediately.
c. Breathing apparatus resistant to isocyanate fumes must be used by anyone remaining in the affected area.
d. **All fire brigade personnel must be informed of the chemical hazard.**
e. Small fires are best extinguished with dry chemical or carbon dioxide extinguishers. **Do not use water extinguishers,** as further heat is generated by the reaction of water with the isocyanate chemical (Part 2 of Boscoprene Adhesive 2402).

Paints, Solvents, Thinners, etc.

The following precautions should be taken to reduce fire risks from solvent fumes, static electricity and spontaneous combustion where paints, solvents and thinners are used or stored.

Solvent fumes

1. Display **'No Smoking'** and **'No Naked Flames'** signs and ensure that blow lamps and welding equipment are not used in the vicinity of the painting area.
2. Solvents and fumes can spread out over large areas and ignite, therefore, **wipe up spilled thinners immediately and dispose of the cloth.**
3. Always provide a good ventilation system to remove fumes.

Special precautions 2

4. Replace all caps and covers on containers.
5. All solvent containers and electrical equipment should be properly earthed. **Do not use temporary electrical installations.**

Static electricity

1. When pouring thinners and solvents, connect the containers with electrically conductive wire and earth them.
2. If possible, earth all equipment in the paint shop.
3. Do not splash the thinners when pouring. **Always pour the thinners down the side of the container.** Thinners that is allowed to free fall through the air can generate static electricity.
4. Do not use plastic containers for storage.

Spontaneous combustion

1. Some materials such as oils and certain paints, which have been wiped up with cloth and cotton waste, oxidise so rapidly that sufficient heat is generated to cause ignition. Therefore, immediately after wiping up any spillage, remove the cloth/cotton waste from the paint shop area.

Basic rules in the paint shop

Three basic rules apply to safety in the paint shop, they are.

1. **Keep the paint areas clean and tidy.**
2. **Ensure proper ventilation.**
3. **Look after all equipment, especially the electrical equipment.**

Section S1

Doors
Contents

Section S1

Doors

Introduction

The doors of all cars are constructed from aluminium magnesium alloy.

Front doors

Door - To remove

Silver Shadow II, Bentley T2 and Silver Wraith II

1. Disconnect the battery.
2. Fold back the floor carpet and remove the carpet stud securing the side scuttle trim pad to the floor. Ease the pad away from the scuttle wall and remove the securing pins.
3. Disconnect the door loom plug(s) and socket(s).
4. Support the door, then remove the four setscrews securing each door hinge to the body. An Allen key and extension bar are required to remove the forward socket headed bolt from the upper hinge.
5. Remove the door complete with its hinges, carefully withdrawing the door loom(s) through the aperture in the door pillar.

Corniche

1. Disconnect the battery.
2. Remove the two screws securing the side scuttle trim pad to the scuttle wall. Ease the pad away from the scuttle wall and withdraw.
3. Repeat Operations 3, 4 and 5 from Door - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.

Camargue

1. Disconnect the battery.
2. Remove the four screws securing the side scuttle trim pad to the scuttle wall. Ease the pad away from the scuttle wall and withdraw.
3. Disconnect the door loom plug(s) and socket(s) (see Fig. S1).
4. Using a small screwdriver or metal rod of approximately 1,60 mm. (0.062 in.) diameter disengage the spring clip securing each cable connector then, withdraw the cable and connector (see Fig. S2).

   Note the position of each cable as it is removed to ensure correct location during assembly. If in doubt refer to Chapter M.
5. Remove the four Pozidriv screws securing the door loom guide channel to the door hinge pillar.
6. Support the door, then remove the four setscrews securing each door hinge to the car body. An Allen key and extension bar are required to remove the socket headed setscrews securing the lower hinge; these are located through an aperture in the side scuttle wall.
7. Remove the door complete with its hinges, carefully withdrawing the door loom(s) through the aperture in the door pillar.

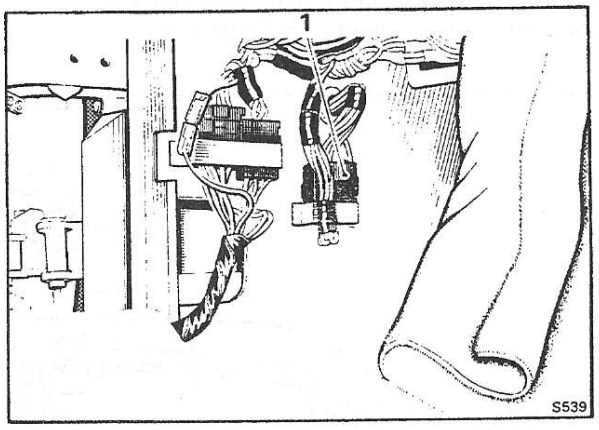


Fig. S1 Position of door loom plug and socket (Camargue)
1 Door loom plug and socket

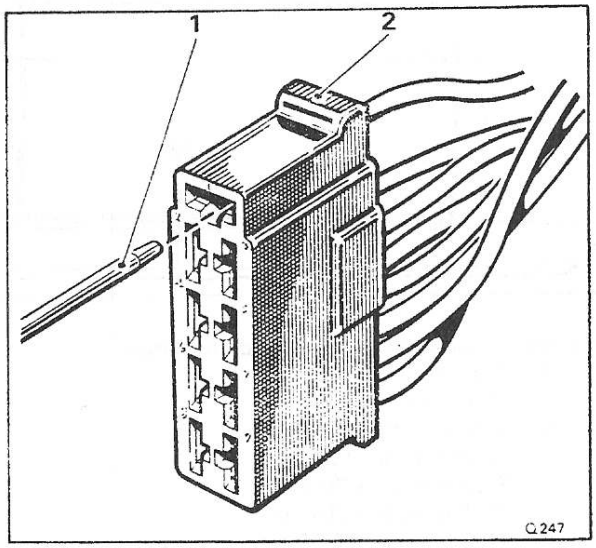


Fig. S2 Positioning the cable release tool into a loom plug (Camargue)
1 Cable connector release tool
2 Loom connector plug

Door - To fit
All cars
To fit the door reverse the procedure given for removal noting the following points.
1. The position of the door(s) in the body aperture(s) should be set as shown in either Figure S3, S4 or S5.

To obtain this position, the door should be moved on its hinges whilst the hinge securing screws are slightly more than finger tight.

When the door is correctly positioned, torque tighten the hinge securing screws (see Chapter P).

Note
If the door is only partly assembled when carrying out this operation, the remaining parts of the door assembly should be weighed and the corresponding weight added to the bottom of the door. This allows for the possibility of the door dropping slightly when parts are added after the door has been set.

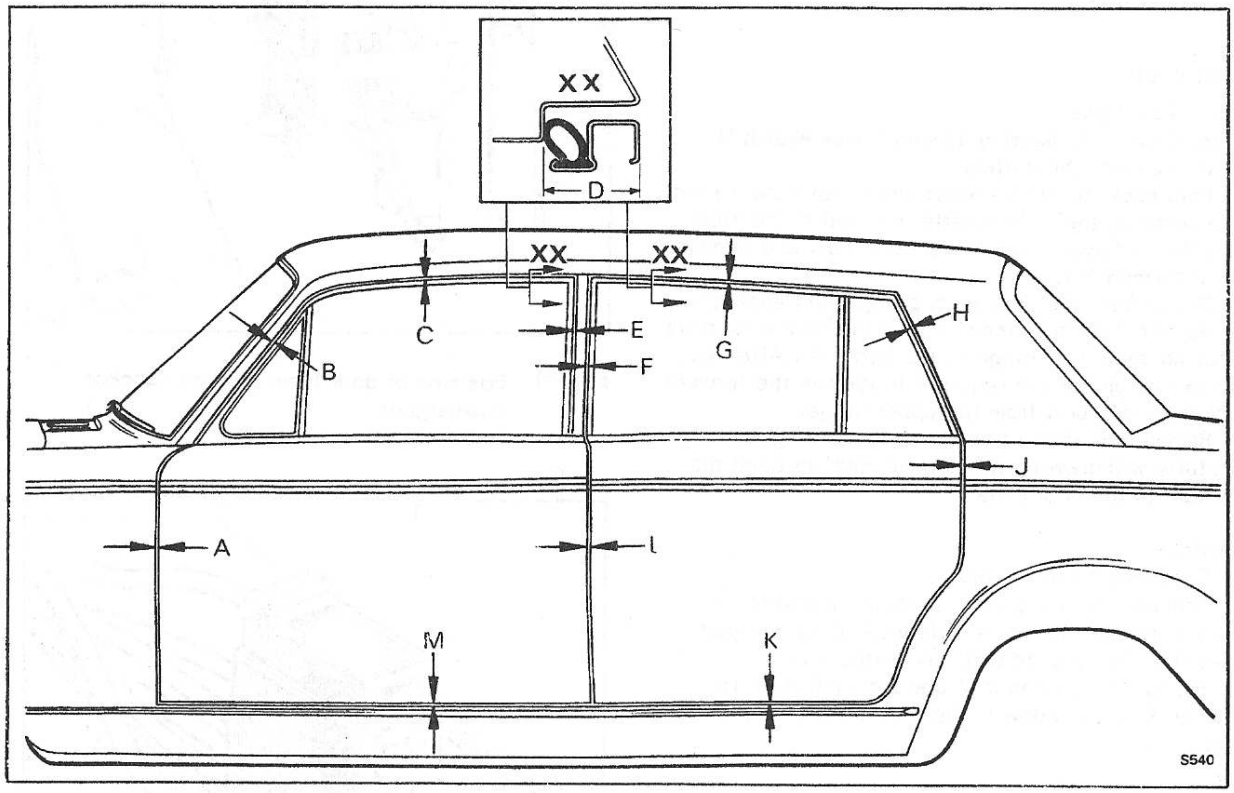


Fig. S3 Position of doors in body aperture

A	4,76 mm. to 2,38 mm. (0.187 in. to 0.093 in.)
B	4,76 mm. to 1,59 mm. (0.187 in. to 0.062 in.)
C	6,35 mm. to 4,76 mm. (0.250 in. to 0.187 in.)
D	30,16 mm. to 26,99 mm. (1.187 in. to 1.093 in.) - measured 7,62 cm. (3.0 in.) from each end of the frame
*E	6,35 mm. to 5,56 mm. (0.250 in. to 0.218 in.)
F	6,35 mm. to 4,76 mm. (0.250 in. to 0.187 in.)
G	6,35 mm. to 4,76 mm. (0.250 in. to 0.187 in.)
*H	6,35 mm. to 5,56 mm. (0.250 in. to 0.218 in.)
J	3,18 mm. to 1,59 mm. (0.125 in. to 0.062 in.)
K	6,35 mm. to 3,18 mm. (0.250 in. to 0.125 in.)
L	5,56 mm. to 3,97 mm. (0.218 in. to 0.156 in.) - between front and rear door.
M	6,35 mm. to 3,18 mm. (0.250 in. to 0.125 in.)

Note
All gaps to be parallel to within 0,79 mm. (0.031 in.). The doors must be flush with the body to within 0,79 mm. (0.031 in.) in or out.

*The clearances given at these points are critical in order to avoid seal fouls. When setting these clearances, prior to fitting the door seal, set to the first dimension given as these clearances tend to reduce slightly after the seal and door trim are fitted.

The inset shows the dimension from the seal face on the body to the outer face of the window frame.

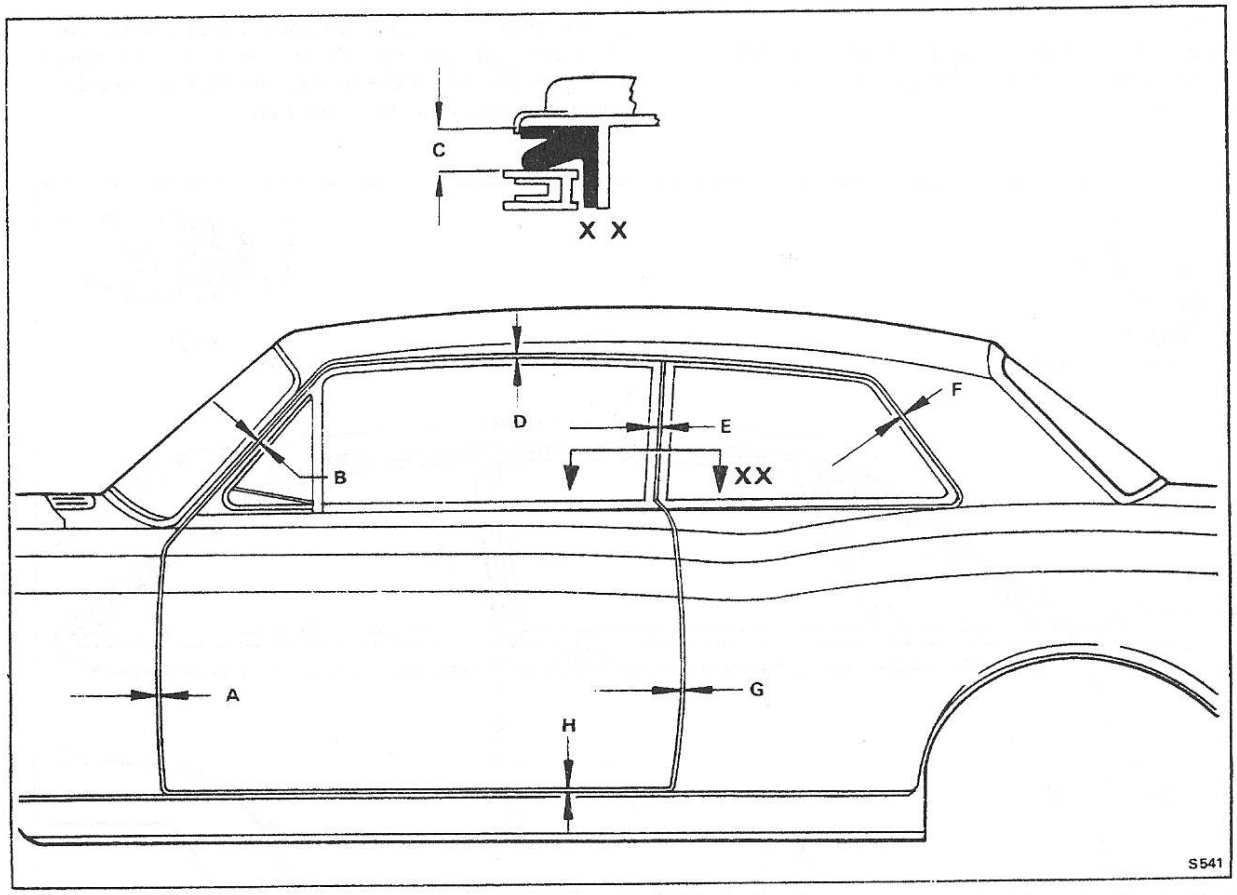


Fig. S4 Position of door in body aperature (Corniche)

A	2,38 mm. (0.093 in.)	E	2,38 mm. (0.093 in.)
B	4,76 mm. (0.187 in.)	F	1,59 mm. (0.062 in.)
C	11,11 mm. (0.437 in.) - seal gap.	G	2,38 mm. (0.093 in.)
D	2,38 mm. (0.093 in.)	H	2,38 mm. (0.093 in.)

2. Using the minimum amount of shims, adjust the door striker plate ensuring that the door does not raise when closed. Also, ensure that the rear edge of the door is level with the rear door on four-door cars or level with the car body on two-door cars.

When adjusted satisfactorily torque tighten the securing screws (see Chapter P).

3. Check the position of the window frame and adjust if necessary (see Window frame - To fit).

Door trim - To remove

Silver Shadow II, Bentley T2 and Silver Wraith II

1. Disconnect the battery.

2. Remove the arm rest.

3. Remove the arm rest slide. Retain the slide, screws and spacers to ensure correct assembly.

4. Remove the escutcheon covers from the window lift switch(es) and the window lift master switch on left-hand drive cars using a tool similar to the one shown in Figure S6. Insert the feet of the tool behind the cover and remove with a firm pull.

When removing a cover from a multiple switch control, insert the feet of the tool under each end of the cover alternately.

5. Using a small bladed tool remove the escutcheon covers from the interior door handle and the centralised door locking switch.

6. Remove the escutcheons from around the window lift switch(es), centralised door locking switch, master switch (if fitted) and interior door handle.

7. Remove the trim pad. A wedge shaped tool cut with a notch in the centre to accommodate the neck of the securing clips will assist in removal.

8. Remove the pocket. Retain the screws and large spacer to ensure correct assembly.

9. Remove the trim covered grab handle.

10. Remove the black waterproof dust cover.

11. Slacken the lock-nut on the lock control button adjuster (see Fig. S9, item 3) and unscrew the button and rod. Unscrew the lock-nut from the rod and remove the button.

12. Remove the wooden waist rail finisher and release the exterior mirror control knob by removing the small screws at the rear of the finisher.

Corniche

1. Repeat Operations 1, 2 and 3 from Door trim - To remove Silver Shadow II, Bentley T2 and Silver Wraith II.

2. Remove the escutcheon covers from the window lift switch(es) using a tool similar to the one shown in Figure S6. Insert the feet of the tool behind the cover and remove with a firm pull.

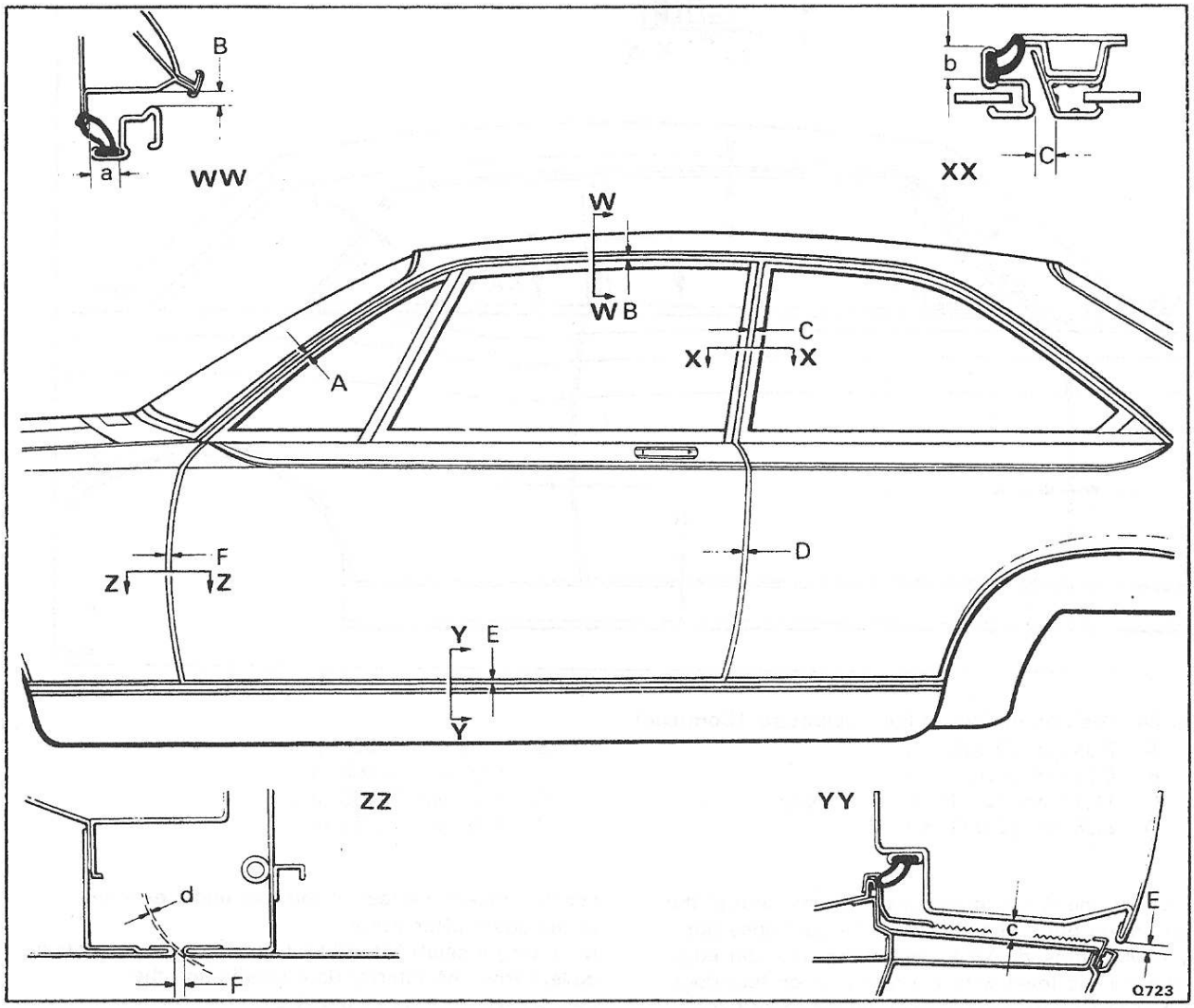


Fig. S5 Position of door in body aperture (Camargue)

- **A** 4,50 mm. to 6,50 mm. (0.177 in. to 0.259 in.)
- **B** 4,50 mm. to 6,50 mm. (0.177 in. to 0.259 in.)
- **C** 9,0 mm. to 10,0 mm. (0.354 in. to 0.394 in.) at outer edges of window frames.
- **D** 2,25 mm. to 4,25 mm (0.089 in. to 0.167 in.)
- **E** 3,0 mm. to 4,50 mm. (0.118 in. to 0.177 in.) - between bottom edge of door and body sill moulding strip
- **F** 3,25 mm. (0.127 in.)
- **a** 15,0 mm. to 17,0 mm. (0.590 in. to 0.670 in.) - seal gap, body to window frame.
- **b** 15,0 mm. to 17,0 mm. (0.590 in. to 0.670 in.) - seal gap, body to window frame.
- **c** 11,50 mm. to 13,0 mm. (0.453 in. to 0.511 in.) - between door lower panel and step plate.
- **d** 1,50 mm. to 2,50 mm. (0.060 in. to 0.098 in.) - swing clearance.

Note

All gaps to be parallel to within 0,79 mm. (0.031 in.). Door to be flush with the body to within 0,79 mm. (0.031 in.) in or out.

Inset illustrations WW, XX, YY and ZZ show the window frame to body seal gap dimension and details of door to body clearances.

When removing a cover from a multiple switch control, insert the feet of the tool under each end of the cover alternately.

3. Remove the escutcheon from around the window lift switch(es).
4. Remove the trim pad by releasing the retaining screws at the bottom edge of the door and bowing the pad slightly inwards to facilitate removal from the chrome channels.
5. Using a small bladed tool remove the escutcheon covers from the interior door handle and the centralised door locking switch.
6. Remove the escutcheons from around the centralised door locking switch and the interior door handle.
7. Remove the escutcheon fastening the seat switch to the small trim pad. Care must be taken during this operation to avoid damaging the chrome escutcheon or the leatherwork.
8. Remove the small trim pad.
9. Remove the screws securing the door step illumination lamp (Convertible cars only). Remove the lens and chrome surround. Detach the electrical leads and remove the lamp. Note the position and colour of the leads to ensure correct assembly.
10. Remove the loudspeaker trim panel.
11. Remove the wooden waist rail finisher and release the exterior mirror control knob by removing the small screws at the rear of the finisher.

Camargue

1. Disconnect the battery.
2. Remove the small trim panel from each side of the pocket on the door. A tool with a notch cut in the centre to accommodate the neck of the securing clips will assist in removal.
3. Remove the lower trim panel, bowing it inwards slightly to facilitate removal from the chrome channels.
4. Remove the screws securing the door step illumination lamp situated in the arm rest/door pull. Remove the lens and chrome surround. Detach the electrical leads and remove the lamp. Note the position and colour of the leads to ensure correct assembly.
5. Remove the black waterproof dust cover sufficiently to gain access to the apertures in the inner panel.
6. Remove the nut, bolt and washer securing the rear handle mounting bracket to the door.
7. Remove the nuts and washers securing the arm rest/door pull. Withdraw the arm rest/door pull to gain access to the link connecting the interior handle mechanism to the lock mechanism. Slacken the lock-nut on the link rod clamping bolt, disconnect the link and remove the arm rest/door pull (see Fig. S8).
8. Using a small bladed tool remove the escutcheon covers from the window lift switch(es) and the centralised door locking switch.
9. Remove the escutcheons from around the window lift switch(es) and the centralised door locking switch.
10. Remove the screws and washers securing the upper trim panel, easing the panel from behind the wooden waist rail finisher and bowing it inwards slightly to facilitate removal from the chrome channels.
11. Remove the black waterproof dust cover.
12. Remove the wooden waist rail finisher by releasing the retaining screws and, the nuts and washers securing the upper arm rest handle and the rear of the finisher.

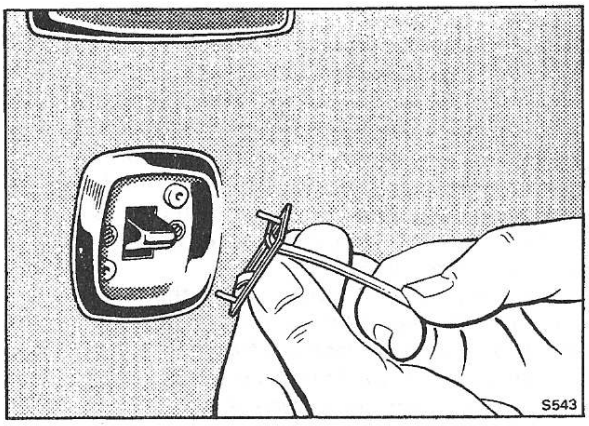


Fig. S6 Removing the escutcheon cover from an electric window lift switch

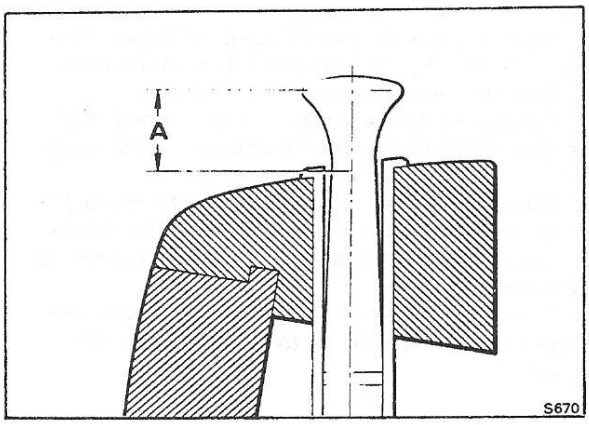


Fig. S7 Lock control button setting
A 12,7 mm. (0.50 in.)

Door trim - To fit

All cars

To fit the door trim, reverse the procedure given for removal noting the following points.

1. Before fitting the trim pad(s) ensure that any loose debris is removed from the bottom of the door.
2. After fitting the waist rail finisher ensure that the adjustable door mirror can be operated satisfactorily by the control lever.

3. On Silver Shadow II, Bentley T2 and Silver Wraith II cars ensure that the following method of fitting the lock control button is used.

Insert the lock control rod through the bush in the waist rail finisher, thread the lock-nut onto the control rod then screw the rod into the upper solenoid rod. Adjust the lock-nut until the height of the lock control button when depressed is 12,70mm. (0.50in.) from the finisher to the head of the button (see Fig. S7).

4. On Camargue cars, when fitting the arm rest/door pull to the door, follow the procedure described in Interior door handle - To fit.

5. Check that all switches and interior door handle(s) are functioning correctly.

Door hinges - To remove

Silver Shadow II, Bentley T2, Silver Wraith II and Corniche

1. Remove the trim pad (see Door trim - To remove, Operations 2 to 7 inclusive).
2. Remove the side scuttle panel and door (see Door - To remove, Operations 2 to 5 inclusive).
3. Detach the hinge seals from the door.
4. Detach the black waterproof dust cover from the door sufficiently to gain access to the hinge securing screws.
5. Mark the outline of the hinges onto the door inner panel to assist alignment during assembly.
6. Release the hinge securing screws and remove the hinges.

Note the number of shims fitted between the hinge faces and the door, to facilitate correct assembly.

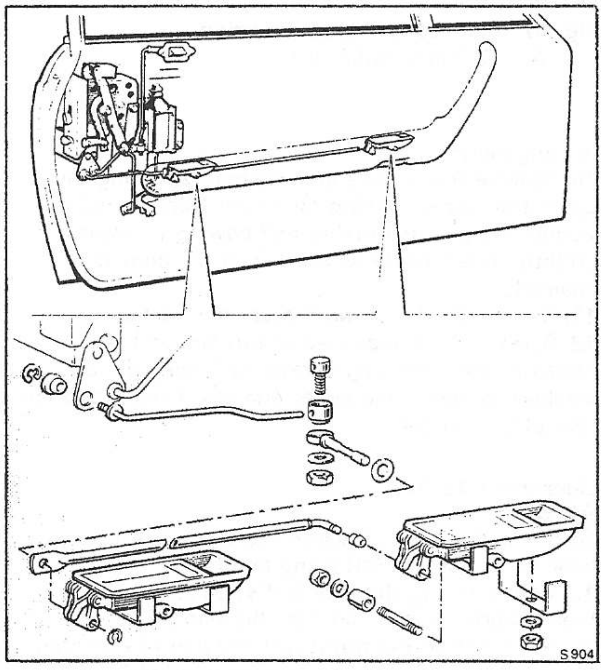


Fig. S8 Interior door handles (Camargue)

Camargue

1. Remove the door trim panels (see Door trim - To remove, Operations 2 to 11 inclusive).
2. Remove the side scuttle panel and door (see Door - To remove, Operations 2 to 7 inclusive).
3. Remove the spring clip from the pivot pin securing the detent lever (upper hinge) and check arm (lower hinge) to the front leaf of each respective hinge; remove both pivot pins.
4. Detach the detent plate from the upper hinge front leaf and remove the plate from the check mechanism.
5. Mark the outline of the hinges onto the door inner panel to assist alignment during assembly.
6. Release the hinge securing screws and remove the hinges. Note the spacer fitted to each of the upper hinge securing screws; these spacers are located between the check mechanism and the hinge leaf. To facilitate correct assembly, note the number of shims fitted between the hinge faces and the door.

Door hinges - To fit

All cars

To fit the hinges reverse the procedure given for removal noting the following points.

1. On Silver Shadow II, Bentley T2 and Silver Wraith II cars fit the hinge seal by pressing it into position with the fasteners.

On Corniche cars attach the seals into position on the door with Bostik Adhesive 1261.

On Camargue cars position the seals on the hinges and secure with Bostik Adhesive 1261.

2. Lubricate all pivots and moving parts, except the cam profiles of the upper hinge check mechanism, with EP 140 SC light mineral oil.
3. Before fitting the door trim panel(s), check the position of the door in the body aperture (see Door - To fit); adjust if necessary.
4. When the door is positioned satisfactorily torque tighten the hinge securing screws (see Chapter P).

Interior door handles - To remove (see Fig. S8)

Camargue

1. Disconnect the battery
2. Remove the arm rest/door pull (see Door trim - To remove).
3. Remove the setscrew securing the mounting bracket to the rear handle; remove the bracket and collect the distance piece.
4. Disconnect the handle connecting rod from the front handle by pulling the angled end of the rod out of the handle.
5. Remove the nuts, washers and 'U' shaped clamps securing the rear handle to the arm rest then, remove the handle complete with the connecting rod.
6. To detach the connecting rod from the rear handle remove the circlip retaining the link pin to the handle. Withdraw the link pin and retain the waved washer fitted between the connecting rod and the collar of the link pin.
7. Remove the stud from the front door handle then remove the nuts, washers and 'U' shaped clamps

securing the handle to the arm rest. Remove the front handle.

Note that it is necessary to remove the stud from the handle to allow the handle to be removed and fitted into the arm rest.

Interior door handles - To fit (see Fig. S8)
Camargue
1. Prior to fitting, check that both handles will pivot freely in their surrounds.
2. Fit the connecting rod to the rear handle with the link pin and secure with the circlip. Ensure that the waved washer is fitted between the rod and the link pin collar.
3. Remove the stud from the front handle then fit both handles to the arm rest. Secure the handles in position with the clamps, nuts and washers.

Fit the stud to the front handle.

4. Check that the handles are operating correctly. If adjustment is required to the length of the rod, slacken the lock-nut at the front end of the rod and screw the angled end in or out as required. Tighten the lock-nut.
5. Fit the bracket and distance piece to the rear handle; secure with the setscrew and washer.
6. Locate the distance piece on the front stud of the arm rest/door pull assembly, then fit to the door. Ensure that any spacing washers are fitted to the other three studs but do not tighten the securing nuts at this stage.
7. Slide the link rod from the door lock lever into the clamping bolt and sleeve on the link pin, then torque tighten the clamping bolt lock-nut (see Chapter P).
8. Hold the arm rest/door pull assembly in position and check the release operation of both handles. If necessary, slacken the clamp bolt lock-nut and adjust the position of the link rod in the clamping sleeve until the handle operation is satisfactory, then torque tighten the lock-nut to the figure specified in Chapter P.
9. Tighten the nuts securing the arm rest/door pull to the door and secure the rear mounting bracket.
10. Fit the lower door panels by reversing the procedure given for their removal (see Door trim - To fit).

Electric window lift mechanism - To remove Silver Shadow II, Bentley T2 and Silver Wraith II (see Fig. S9)
1. Remove the door trim pad and waist rail finisher assembly (see Door trim - To remove).
2. Lower the window glass until the setscrew securing the glass to the window lift mechanism (see Fig. S9, item 6) is visible through the inner panel aperture.
3. Disconnect the battery.
4. Remove one of the screws securing the chain channel steady strap to the upper part of the window lift channel.
5. Disconnect the electrical leads to the window lift motor at the Lucar connections noting the colour code of the leads to ensure correct assembly.
6. Remove the setscrew securing the window support bracket to the chain channel noting the number and position of any spacing washers to ensure correct assembly.

Whilst carrying out this operation the window glass should be supported then, upon detachment from the lift mechanism, moved to the fully closed position. The glass should then be secured in this position with masking tape.

7. Remove the two rubber grommets from the holes in the bottom face of the door.
8. Remove the setscrews securing the window lift mechanism to the base of the door. To facilitate assembly, note the number and position of any spacing washers.
9. Remove the window lift mechanism by manoeuvring it through the aperture in the bottom of the door inner panel.
10. For information on the servicing and dismantling of the electric window lift assembly refer to Chapter M.

Corniche and Camargue (see Figs. S10 and S11)
1. Repeat Operations 1, 2 and 3 from Electric window lift mechanism - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Remove the two bolts and washers securing the chain channel upper bracket to the door. Retain any distance pieces and note their position to ensure correct alignment of the window mechanism upon assembly.
3. Disconnect the electrical leads to the window lift motor at the Lucar connections noting the colour code of the leads to ensure correct assembly.
4. Remove the two bolts, nuts and washers securing the arm and back-plate assembly to the window pick-up plate. Detach the arm of the back-plate from the roller of the chain channel slider bracket and remove the arm and back-plate assembly.

Whilst carrying out this operation the window glass should be supported then, upon detachment from the lift mechanism, moved to the fully closed position. The glass should then be secured in this position with masking tape.

Note
If the same window lift mechanism being removed is to be refitted, to assist alignment, scribe correlation marks on the pick-up plate and back-plate prior to slackening the securing bolts.

5. Repeat Operations 7 to 10 inclusive from Electric window lift mechanism - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.

Electric window lift mechanism - To fit
To fit the window lift mechanism reverse the procedure given for removal noting the following points.
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Lubricate the mounting bolts and nuts with

Retinax 'A' grease or its equivalent during assembly. Ensure that the lubricant does not come into contact with the window glass or channel seals.

2. Do not tighten the two setscrews securing the window lift mechanism to the base of the door until the following operations have been carried out.

3. Fasten the rubber steady strap around the chain channel.

4. Fit the setscrew securing the window support bracket to the chain channel. Ensure that the space

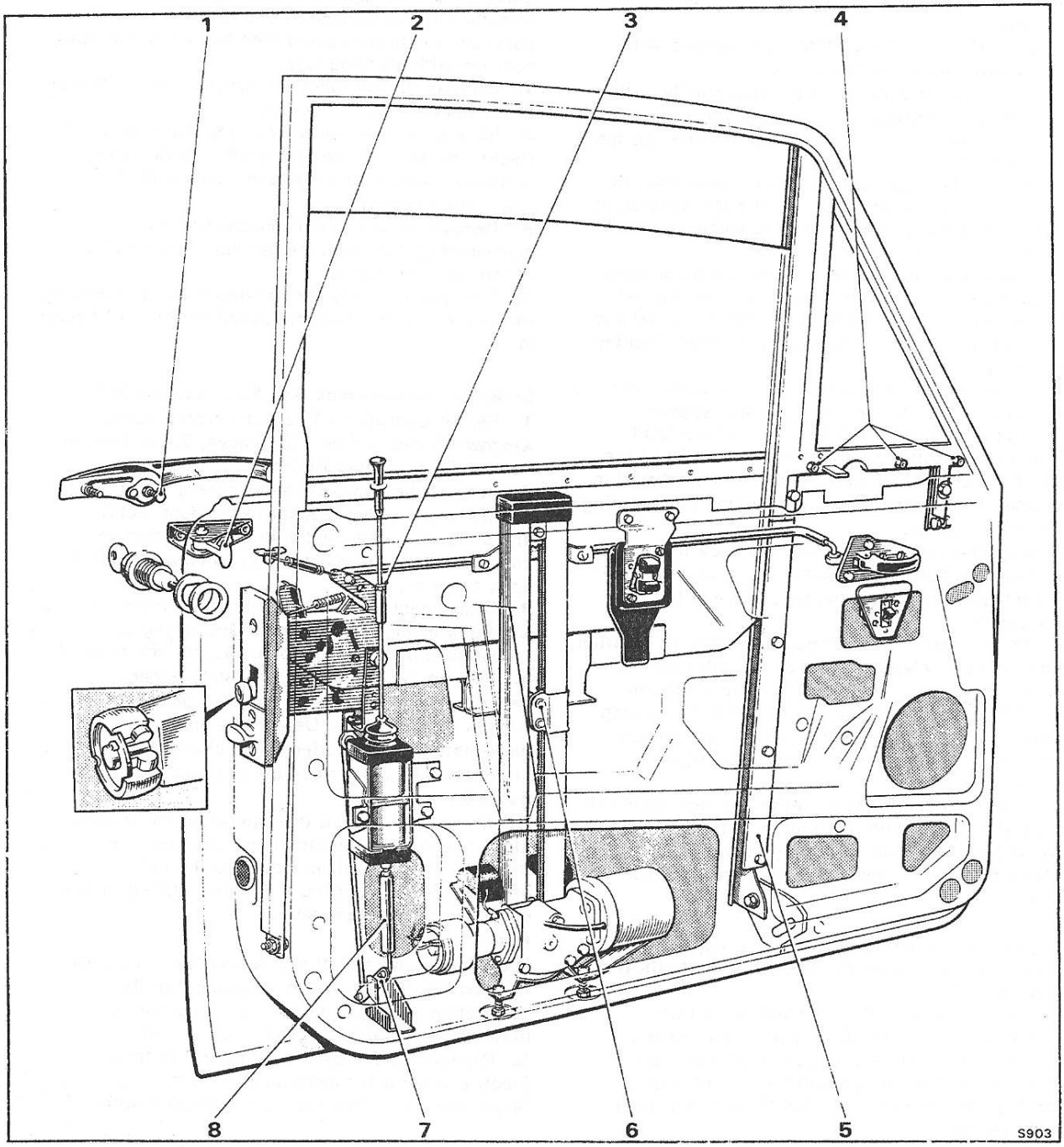


Fig. S9 Construction of a front door

1 Push button adjustment screw
2 Actuator lever assembly
3 Lock-nut, lock control button adjustment
4 Lower quarter window seal support plate screws
5 Closing plate - window frame channel
6 Setscrew - window support bracket to chain channel slider
7 Pivot lever assembly
8 Solenoid spring link

between the window support plate and the lift pick-up plate is taken up by the correct amount of washers.
5. Energise the window lift mechanism. If the window glass moves smoothly up and down its channel tighten the setscrews.

If the window glass produces a slight scraping noise when energised adjust the bottom of the window lift mechanism by moving it in or out as required, tightening the setscrews each time until the glass runs smoothly in its channel.

Corniche and Camargue
1. Lubricate the mounting bolts and nuts with Retinax 'A' grease or its equivalent during assembly. Ensure that the lubricant does not come into contact with the window glass or channel seals.
2. Do not tighten the two setscrews securing the window lift mechanism to the base of the door until the following operations have been carried out.
3. Fit the two bolts, washers and spacers to the upper mounting points.
4. If a new window or window lift mechanism has been fitted it may be necessary to reset the window on its pick-up plate.

Adjust the window by means of the elongated holes of the pick-up plate so that when it reaches its maximum upward travel the top edge of the glass is evenly located against the top face of the window channel seal.
5. On Camargue cars if a new window or window lift mechanism has been fitted it will be necessary to reset the window as follows.

Set the rollers in the guide channel (see Fig. S11,item 5) so that the upper roller is in contact with the forward side of the channel and the lower roller is in contact with the rear face of the channel. This ensures that the forward end of the glass will not drop.
6. Energise the window lift mechanism. If the window glass moves smoothly up and down its channel tighten the setscrews.

If the window glass produces a slight scraping noise when energised adjust the bottom of the window lift mechanism by moving it in or out as required, tightening the setscrews each time until the glass runs smoothly in its channel.

Window counter balance mechanism - To remove (see Fig. S11)
Camargue
1. Ensure that the window is fully raised, then disconnect the battery.
2. Remove the door trim panels and waist rail finisher (see Door trim - To remove).
3. Remove the two bolts and washers securing the chain channel upper bracket to the door. Retain any distance pieces and note their position to ensure correct alignment of the window mechanism upon assembly.
4. Remove the screws securing the waist rail closing panel to the door inner panel.
5. Detach the two counter balance extension springs from the hooks on the window pick-up plate extension beam. Remove the closing panel, complete with the reel mechanism. During removal, detach the link rod from the switch lever.
6. Remove the two nuts and washers securing the counter balance reel mounting bracket assembly to the closing panel; remove the assembly from the panel.
7. To remove the reels from the mounting bracket, first remove the circlip on the end of each reel spindle then slide the reel off the spindle.

Window counter balance mechanism - To fit
Camargue
To fit the counter balance mechanism reverse the procedure given for removal noting the following points.
1. Before fitting the reels to the mounting bracket apply Retinax 'A' grease or its equivalent to the reel spindles.
2. Seal the waist rail closing panel to the door with Prestik sealing strip.

Electrically operated window glass - To remove
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Remove the door trim pad and waist rail finisher (see Door trim - To remove).
2. Lower the window glass until the setscrew securing the glass to the window lift mechanism (see Fig. S9, item 6) is visible through the inner panel aperture.
3. Disconnect the battery.
4. Remove the electric window lift assembly (see Electric window lift mechanism - To remove).
5. Remove the waist rail closing panel.
6. Remove the closing plate from the front channel of the window frame (see Fig. S9, item 5).
7. Slide the window glass down through the frame until it is free of the channel then up through the space between the window frame and the inboard side of the door.

Corniche Saloon
1. Remove the door trim pad and waist rail finisher (see Door trim - To remove).
2. Remove the screws from across the top of the door waist rail panel. To obtain access to the screws lower the window glass to its extremity.
3. Energise the window glass until the setscrew securing the glass to the window lift mechanism (see Fig. S10, item 5) is visible through the inner panel aperture.
4. Remove the setscrew securing the window support bracket to the chain channel noting the number and position of any spacing washers to ensure correct assembly.

Whilst carrying out this operation the window glass should be supported then, upon detachment from the lift mechanism, moved to the fully closed position. The glass should then be secured in this position with masking tape.

5. Remove the screws located under the quarter window.
6. Remove the two screws on the leading face of the frame.
7. Remove the two nuts securing the bottom of each window frame leg (see Fig. S10).
8. Remove the complete window glass and frame.
9. Slide the glass out of the frame.

Corniche Convertible

1. Remove the door trim pad and waist rail finisher (see Door trim - To remove).
2. Detach the upper end of the sealing felt from the front window channel. Remove the screw from inside the top of the channel securing the stop plate; remove the stop plate from the channel.
3. Disconnect the tension strap of the spring balance unit from the runner plate in the rear window channel.
4. Scribe correlation marks around the washers which fit under the heads of the setscrews securing the window frame slide bracket to the runner plate in the rear window channel; remove the setscrews.
5. Energise the window glass until the setscrew securing the glass to the window lift mechanism (see Fig. S10, item 5) is visible through the inner panel aperture.
6. Support the window frame. Remove the setscrew securing the window support bracket to the chain channel noting the number and position of any

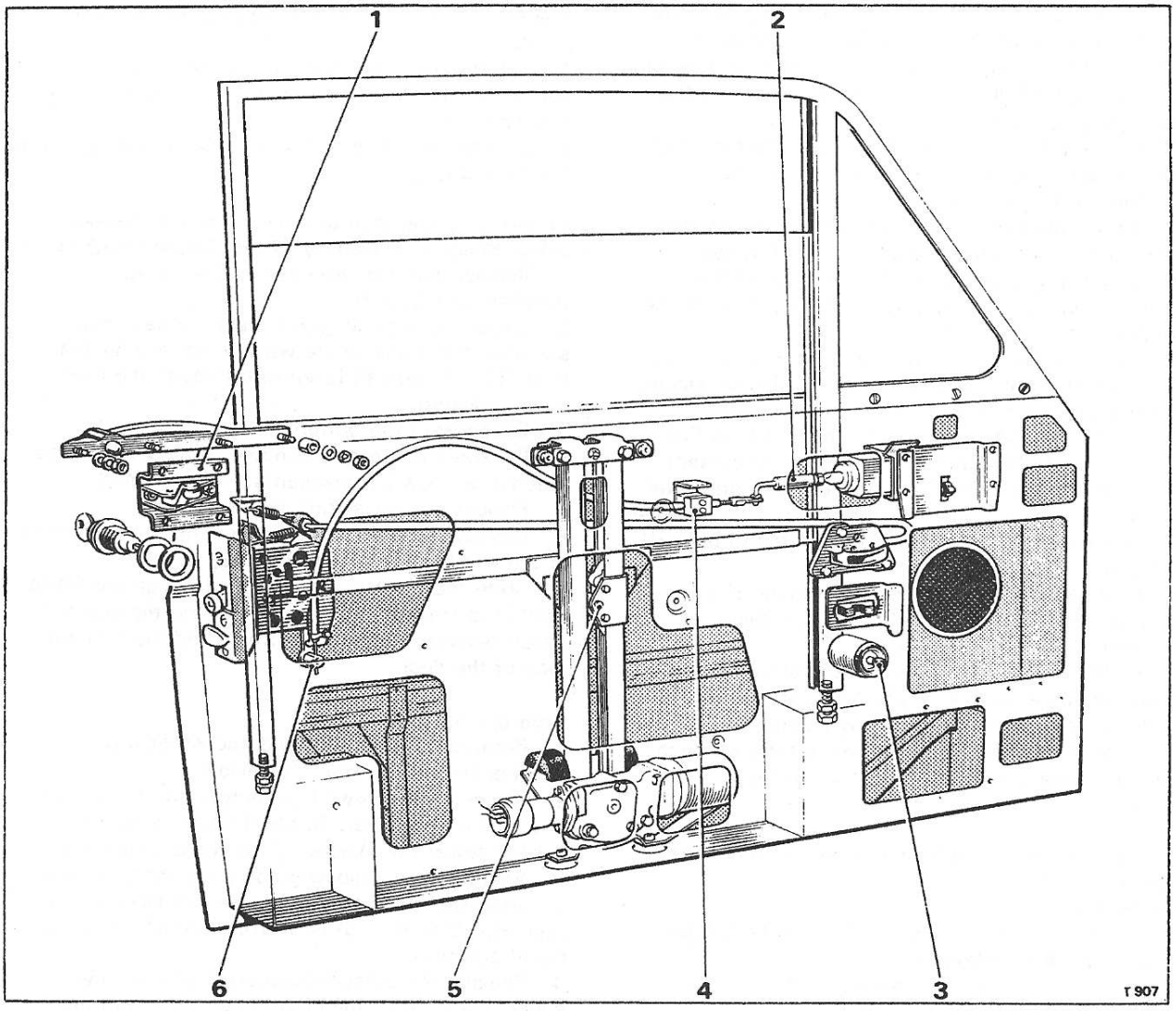


Fig. S10 Construction of a door (Corniche)

1 Actuator lever assembly
2 Solenoid spring link
3 Electrically operated seat switch control
4 Cable securing block
5 Setscrew - window support bracket to chain channel slider
6 Pivot bolt - retaining the cable to the lock lever

spacing washers to ensure correct assembly.
7. Slide the glass and glass frame upwards out of the channels.

Camargue
1. Repeat Operations 1, 2 and 3 from Electrically operated window glass - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Ensure that the window glass is secured in the raised position then remove the window counter balance mechanism (see Window counter balance mechanism - To remove).
3. Scribe correlation marks around the washers which fit under the heads of the two setscrews securing the window guide roller carrier plate to the extension bracket on the window pick-up plate. Remove the two setscrews then remove the carrier plate and rollers by sliding the rollers out of their channel.
4. Remove the screws securing the waist rail closing panel. Withdraw the panel sufficiently to enable the lock link rod to be pulled out of the nylon bush in the manual locking switch lever, then remove the closing panel.
5. Remove the tape securing the window glass in the raised position. Slide the glass down through the frame, lowering the front end and rotating the glass through 90° , before lifting it through the space between the window frame and the door inner panel.
6. To remove the rollers from the guide plate, first remove the circlip securing each roller then slide the rollers off the pins.

Electrically operated window glass - To fit
All cars
To fit the window glass reverse the procedure given for removal noting the following points.
1. Before fitting the window glass ensure that any dirt, fragments of glass, etc. are removed from the door.
2. Ensure that the window and channel seals are in good condition.
3. On Corniche Saloon cars, as the window frame and glass are removed together, it will be necessary to reset the frame position (see Window frame - To remove).
4. Either plain or tinted (Sundym) glass may be fitted therefore before fitting a new window glass it should be compared with the original glass, or alternatively with the glass in the other doors, to ensure that it is of the correct type.
5. On Camargue cars note the following.
a. Lubricate the guide plate roller spindles with Retinax 'A' grease or its equivalent during assembly.
b. Align all correlation marks made during removal If a new window glass has been fitted it may be necessary to reset the window (see Electric window lift mechanism - To fit).
c. Adjust the guide roller plate so that the upper roller is in contact with the front guide and the lower roller is in contact with the rear guide.

Window frame - To remove
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Disconnect the battery.
2. Remove the door trim and waist rail finisher (see Door trim - To remove).
3. Remove the window glass (see Electrically operated window glass - To remove).
4. Remove the door to body seal (see Door to body seal - To remove).
5. Using a 4,76mm. (0.157in.) diameter drill, remove the pop rivets securing the window frame reveal strip plate to the door. Remove the reveal strip plate.
6. Remove the setscrews securing the window frame to the door. Remove the frame.

Corniche Saloon
1. Refer to Electrically operated window glass - To remove, as the window glass and frame are removed as a unit.

Corniche Convertible
1. Refer to Electrically operated window glass - To remove, as the glass and glass frame are removed as a unit.
2. Remove the door trim and waist rail finisher (see Door trim - To remove).
3. Remove the combined front channel/quarter window frame by releasing the two screws in the leading edge of the frame, the screws under the quarter window and the nut securing the foot of the channel to the door.
4. Remove the rear window frame channel by releasing the two screws from the bracket on the upper end of the channel and the nut securing the lower end.

Camargue
1. Repeat Operations 1 to 4 inclusive from Window frame - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Remove the setscrews securing the lower closing plate of the fixed quarter light to the door.
3. Remove the screws securing the frame cross rail/seal carrier to the door.
4. Scribe correlation marks around the washers of the setscrews securing the vertical members of the window frame to the door then remove the setscrews; note the number and position of any spacing washers to assist alignment during assembly.
5. Remove the window frame from the door.

Window frame - To fit
To fit the window frame reverse the procedure given for removal noting the following points.
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Before fitting the window frame to the door check the position of the door in the body aperture and adjust if necessary (see Door - To fit, Operation 2).
2. Check the condition of the glass seals in the

reveal strip plate and the window channels; fit new seals if necessary.
3. Ensure that the fixed quarter window is correctly fitted into the frame prior to fitting the frame into the door.
4. If the original window frame is being fitted, ensure that any spacing washers are in position and that any correlation marks are aligned correctly.
5. Fit the window frame to the door and finger tighten the securing bolts and nuts; do not fit the pop rivets to the reveal strip plate at this stage.
6. Close the door, then adjust the position of the frame until the frame to body clearances correspond with the measurements shown in Figure S3.
7. Tighten the frame securing bolts.
8. Secure the reveal strip plate with pop rivets.

Corniche
1. Repeat Operations 1 to 4 inclusive from Window frame - To fit, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. On Saloon cars acquire three wooden blocks measuring 11,11 mm. (0.437 in.) square and 5,08 cm. (2.0 in.) long. Temporarily attach the blocks to the seal face of the frame. The blocks should be equally spaced, one on each side member and one on the upper crossmember.
3. Fit the window frame to the door and finger tighten the securing bolts and nuts.
4. Close the door, then adjust the position of the frame until the frame to body clearances correspond with the measurements shown in Figure S4.

On Saloon cars ensure that the wooden blocks contact the seal face on the body.

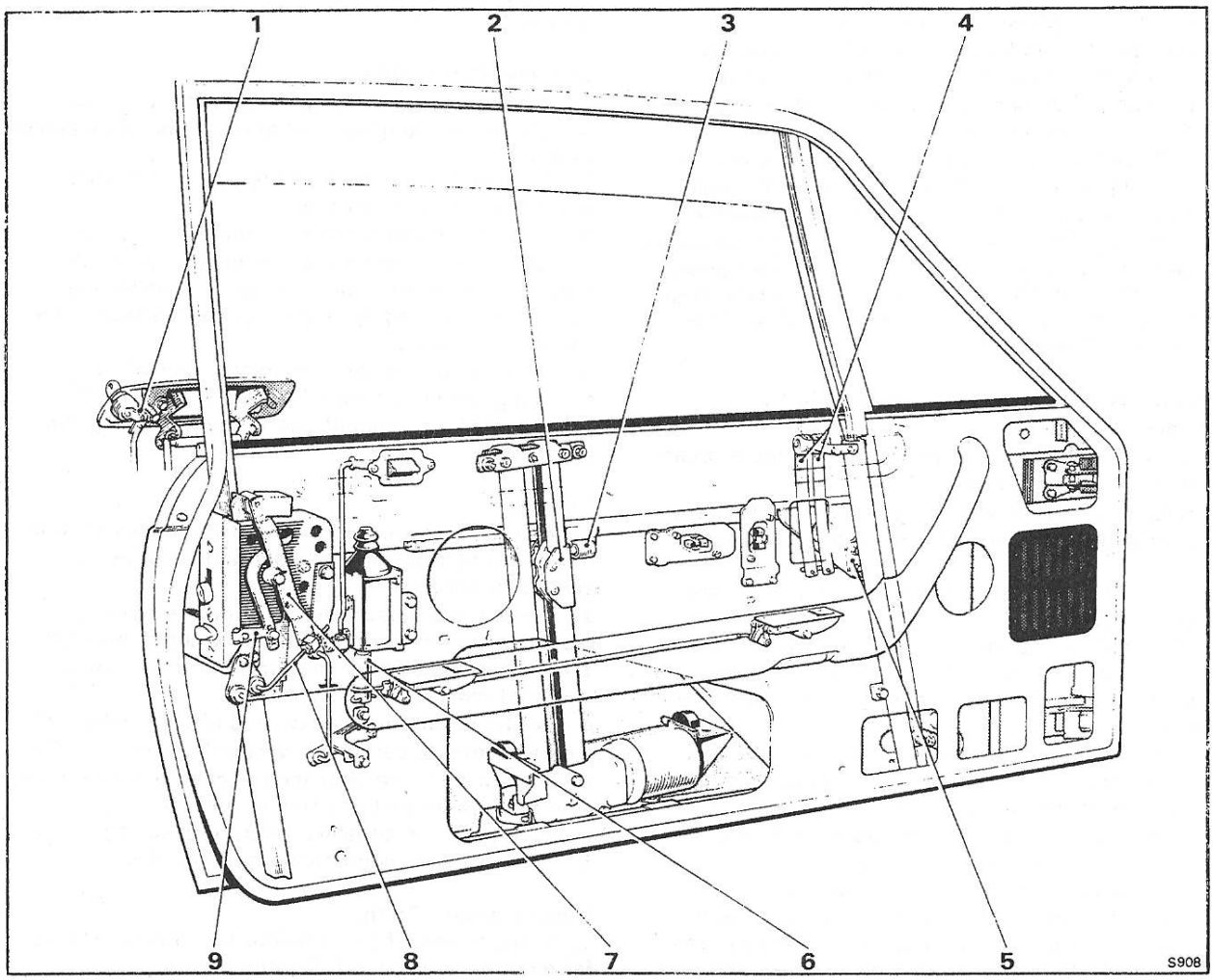


Fig. S11 Construction of a door (Camargue)
1 Cranked lever - private lock
2 Chain channel slider
3 Arm and back plate assembly
4 Counter balance extension springs
5 Guide roller plate
6 Solenoid spring link
7 Lock balance lever
8 Link rod - balance lever to lower cross-shaft lever
9 Upper cross-shaft lever

On Convertible cars align the window glass with the rear quarter window glass.

5. Tighten the frame securing bolts and remove the wooden blocks from the frame.

Camargue

1. Repeat Operations 1 to 4 inclusive from Window frame - To fit, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Fit the window frame to the door and finger tighten the securing bolts and nuts.
3. Close the door, then adjust the position of the frame until the frame to body clearances correspond with the measurements shown in Figure S5.
4. Tighten the frame securing bolts.

Fixed quarter window glass - To remove
Silver Shadow II, Bentley T2, Silver Wraith II and Camargue

1. Remove the window frame (see Window frame - To remove).
2. Remove the 2BA nuts, washers and countersunk headed screws securing the support plate. Remove the plate and lower seal from under the quarter window.
3. Withdraw the quarter window from the frame.
4. Remove the two remaining sections of the seal.

Corniche

1. Remove the window frame (see Window frame - To remove).
2. Remove the seal from the front window channel sufficiently to gain access to the screws located in the channel then, remove the screws.
3. Remove the countersunk headed screws from the leading face of the quarter window frame.
4. By applying pressure to the exterior edges of the quarter window, remove the window together with its glazing surround.

During this operation support the window on the inboard side.

Fixed quarter window glass - To fit

To fit a quarter window glass reverse the procedure given for removal noting the following points.

Silver Shadow II, Bentley T2 and Silver Wraith II

1. Prior to fitting the seals, ensure that the channels are clean and free from obstructions.
2. If new quarter window seals are to be fitted ensure that the side of the seal having the four protrusions moulded into it faces inboard.

Corniche

1. Before fitting the quarter window glass and seals ensure that the recess of the frame is clean, then fit to the channel with Goldsize Adhesive.

Camargue

1. Repeat Operations 1 and 2 from Fixed quarter window glass - To fit, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Seal the joint in the quarter window frame to the electrically operated window frame with Glasticon Sealer 265.
3. Fit the quarter window glass, complete with the lower channel and seal, into the window frame.

If a new quarter window is being fitted, remove the lower channel from the old glass and fit the new glass and seal to the channel with Goldsize Adhesive prior to fitting the quarter glass into the frame.

Door lock and linkage - To remove
Silver Shadow II, Bentley T2 and Silver Wraith II (see Fig. S9)

1. Disconnect the battery.
2. Remove the door trim and waist rail finisher (see Door trim - To remove).
3. Disconnect the remote control rod connecting the interior door handle to the lock.
4. Remove the control rod situated between the pivot lever assembly and the lock.
5. Detach the return spring from the lock remote control lever.
6. Remove the setscrew securing the lock to the door panel. Retain any spacing washers situated between the outer face of the lock and the door panel.
7. Straighten the legs of the split pin retaining the roller to the lock bolt, rotate the roller until the slot in the outer lip of the roller is aligned with the head of the split pin. Remove the roller and washer from the lock bolt.
8. Support the lock. Remove the countersunk headed screws and cup washers securing the lock to the rear edge of the door, disengage the spade end of the private lock from the back of the door lock and remove the door lock.
9. Press the pivot lever assembly towards the rear edge of the door until the lever boss abuts the rear nylon bush. Remove the bush at the forward end of the lever spindle. Push the free end of the spindle into the hole vacated by the bush until the other end of the spindle is also free from its bush; remove the pivot lever assembly (see Fig. S12).
10. Remove the interior door handle. Detach the open end of the polythene bag from the door and disconnect the remote control rod.

Corniche (see Fig. S10)

1. Repeat Operations 1, 2 and 3 from Door lock and linkage - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Detach the return spring from the lock remote control lever.
3. Remove the nut and bolt securing the centralised door locking cable to the lock.
4. Slacken the nut securing the centralised door locking cable to the pivot bolt in the lock lever and withdraw the cable.
5. Repeat Operations 6, 7, 8 and 10 from Door lock and linkage - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.

Camargue (see Fig. S11)

1. Repeat Operations 1 and 2 from Door lock and linkage - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Disconnect the link rods from the locking lever of the door lock.
3. Remove the link rod connecting the door lock balance lever to the lower cross-shaft lever. Disconnect both the lower end of the rod and the swivel link pin end out of the nylon bushes (see Fig. S11, item 8).
4. Detach the return spring from the lock balance lever and remove the spring together with the connecting link.
5. Remove the nut and washer securing the upper cross-shaft lever (see Fig. S11, item 9) to the angled lever on the door lock; disconnect the levers.
6. Remove the bolt and nut securing the lever to the upper cross-shaft; remove the lever.
7. Remove the two setscrews securing the cross-shaft bracket to the lock.
8. Straighten the legs of the split pin retaining the roller to the lock bolt, rotate the roller until the slot in the outer lip of the roller is aligned with the head of the split pin. Remove the roller and washer from the lock bolt.
9. Support the lock. Remove the countersunk headed screws securing the lock to the rear edge of the door; remove the lock.

Door lock mechanism - To check

All cars

1. Check the condition of the lock bolt roller. If necessary, straighten the legs of the split pin retaining the roller to the lock bolt, rotate the roller until the slot in the outer lip of the roller is aligned with the head of the split pin. Remove the roller and washer from the lock bolt.

Note

Always use a new split pin when fitting the lock bolt roller.

2. Check that the roller rotates freely on the lock bolt and does not bind on the head of the split pin.
3. Remove the lock from the door (see Door lock and linkage - To remove).

Check that the contact lever spring of the door lock mechanism fully returns the lever from the full on to the full off position.

Ensure that the rivets in the lock are secure.

4. Check that the exterior door handle operates by fully raising the lock bolt, moving the lock control button (Silver Shadow II, Bentley T2 and Silver Wraith II) or manual lock control lever (Camargue) up (unlock position) and then operate the door handle. Check that the bolt moves down (see Fig. S16).

If the lock is removed from the door, the lock control lever should be moved down and the contactor lever pressed to carry out this check.

5. Fully raise the lock bolt; move the lock control button (Silver Shadow II, Bentley T2 and Silver Wraith II) or manual lock control lever (Camargue) down (lock position) then operate the door handle. Check that the bolt does not move down.

If the lock is removed from the door, the lock control lever should be moved up and the lock contactor lever pressed to carry out this check.

6. Check the operation of the interior door handle(s) following the some procedure as described in Operations 4 and 5 (see Fig. S13).

On Camargue cars check each interior handle in turn.

7. Check the operation of the self-cancelling mechanism by moving the lock control button or manual lock control lever to the lock position (down),

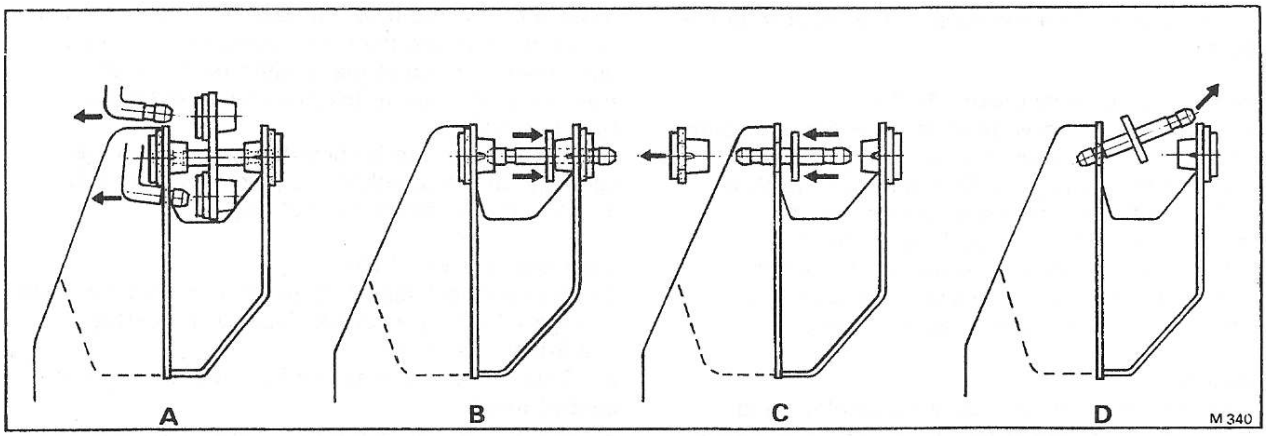


Fig. S12 Removing a pivot lever assembly (Silver Shadow II, Bentley T2 and Silver Wraith II)

A Control rods disconnected from pivot lever
B Pivot lever spindle pressed into rear bush until lever abuts rear bush
C Front bush removed from door bracket and pivot lever spindle pressed out of rear bush into hole vacated by front bush
D Pivot lever assembly tilted for removal from door bracket.

then fully raise the lock bolt. The lock control button or manual lock control lever should move to the unlocked position.

8. Check the keyless locking mechanism by moving the lock control button or manual lock control lever to the lock position (down), operate the exterior door handle and hold, then, raise the lock bolt. The lock control button or manual lock control lever should stay down.

If the lock is removed from the door, the lock control lever should be raised and the lock contactor lever pressed to carry out this check.

9. Check the operation of the key locking mechanism as follows.

Fit the door key into the lock, turn the key alternately in opposite directions; check that the lock control button or manual lock control lever moves to the locked and unlocked positions in sequence with the key movement.

If the door lock is removed, the operating cam should be turned instead of the key and the lock operating lever checked to ensure that it moves up and down in sequence with the cam movement.

10. Raise the lock bolt to the half-way position, then repeat Operations 4 to 9 inclusive.

Door lock and linkage - To fit

To fit the door lock and linkage reverse the procedure given for removal noting the following points.

Silver Shadow II, Bentley T2 and Silver Wraith II

1. During assembly lubricate the following points with Rocol MTS 1000 grease.

The spade end of the private door locks.

The pivot points and contact faces of the exterior door handle and contactor lever assembly. Also the pivot points on all lock linkages.

2. Adjust the position of the interior door handle remote control linkage as follows.

Fit the door lock and control rods noting that there are two bushes fitted into the interior door handle mounting bracket (see Fig. S13); fit the remote control rod to the rearmost bush.

Take up the free play in the handle-to-lock linkage by adjusting the position of the interior door handle on its elongated holes. Adjust the handle until the lock bolt is triggered off from its fully raised position at approximately 3,17 mm. (0.125 in.) before the contactor lever reaches the end of its travel.

This travel can be checked by looking through the door panel aperture and checking the movement of the lock remote control lever. This lever is controlled by, and travels exactly the same distance as, the contactor lever (see Fig. S13, inset). This represents approximately 2° of handle travel.

At the point when the lock bolt is triggered off, it should be possible to move the lock bolt up and down by hand without any sign of interference. If interference is felt, difficulty will be experienced opening and closing the door.

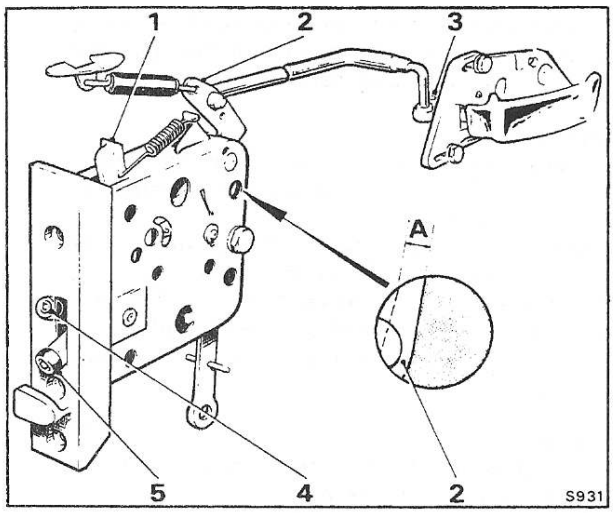


Fig. S13 Interior door handle adjustment (Silver Shadow II, Bentley T2 and Silver Wraith II)

A 3,17 mm. (0.125 in.)
1 Lock contactor lever
2 Lock remote control lever
3 Forward bush - remote control rod
4 Lock bolt (raised position)
5 Lock bolt (lowered position)

Dotted line in inset indicates position of lock remote control lever when door handle has reached full extent of travel

Note

If all the free play in the handle-to-lock linkage cannot be taken up by adjusting the position of the interior door handle on its elongated holes, fit the remote control rod to the forward bush in the interior handle bracket.

3. If it is required to fit a new polythene bag around the interior door handle mechanism cut off a corner of the bag, as small as possible, and push the remote control rod through the hole so that the interior handle end of the rod is inside the bag.

Using the rubber sleeve, secure the bag to the rod positioning the sleeve up to the 90° bend in the rod, leaving approximately 25,40 mm. (1.9 in.) of the rod inside the bag.

Fit the remote control rod to the lock.

Pull the open end of the bag through the door handle aperture in the inner panel. Using Dunlop Adhesive S81, secure the open end of the bag around the lip of the aperture with approximately 9,53 mm. (0.375 in.) overlap.

Fit the interior door handle to the remote control rod.

Secure the handle to the door, trapping the open end of the polythene bag between the handle and the door.

Adjust the handle and remote control linkage as described in Operation 2. Check that the handle operates without unduly straining the polythene bag.

4. Check that the door can be locked from inside and outside the car and that when locked both the interior and exterior door handles are inoperative.

Corniche
1. Repeat Operations 1, 2 and 3 from Door lock and linkage - To fit, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Check that the door can be locked from inside and outside the car and that when locked the exterior door handle is inoperative; note that the interior door handle should be operative at all times irrespective of whether the door is locked or not.

Camargue
1. During assembly lubricate the following points with Rocol MTS 1000 grease.
The spade end of the private door locks.
The pivot points and contact faces of the exterior door handle, and contactor lever assembly. Also the pivot points on all lock linkages.
2. Before fitting the cross-shaft links to the lock adjust the lower link on the door lock as follows.
3. Slacken the setscrews securing the relay pivot bracket to the door.
4. Position the door locking lever in the fully raised (unlocked) position.
5. Fit the link rod between the door locking lever and the relay pivot lever.
6. Tighten the setscrews securing the relay pivot bracket to the door.
7. Fit the cross-shaft links to the lock and adjust for correct operation as follows.
8. Slacken the bolts and nuts on the upper and lower cross-shafts levers.
9. With the cranked lever of the private lock in the unlocked position and the link pin central in the slot of the angled door lock lever, tighten the bolt and nut on the upper cross-shaft lever.
10. Slacken the lock-nuts on the link rod and swivel block assembly connecting the lower cross-shaft link to the lock balance lever. Adjust the rod to deflect the upper lock lever by a minimum of 1,59 mm. (0.062 in.) to spring tension all the lock links. Tighten the lock-nuts.
11. Tighten the bolt and nut on the lower cross-shaft lever.
12. Check that the doors can be locked and unlocked using the manual lever on the waist rail and also the door key.
When a door is locked, the interior and exterior handles should not operate the door lock.

Centralised door locking solenoid and linkage - To remove
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Disconnect the battery.
2. Remove the door trim (see Door trim - To remove).
3. Disconnect the electrical leads to the solenoid at the Lucar connections; note the colour code of the leads to ensure correct assembly.
4. Disconnect the spring link rod from the pivot lever.
5. Remove the screws securing the solenoid to the door panel. Remove the solenoid and spring link assembly.
6. To remove the pivot lever assembly and lock control rod from the base of the door press the pivot lever towards the rear edge of the door until the lever boss abuts the rear nylon bush. Remove the bush at the forward end of the lever spindle. Push the free end of the spindle into the hole vacated by the bush until the other end of the spindle is also free from its bush; remove the pivot lever assembly (see Fig. S12).

Corniche
1. Repeat Operations 1, 2 and 3 from Centralised door locking solenoid and linkage - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Disconnect the spring link rod from the cable connector.
3. Remove the screws securing the solenoid to the door panel.
4. To remove the cable and conduit, release the screws securing the block to the door at the forward end of the cable. Remove the block together with the cable and conduit.

Camargue
1. Repeat Operations 1 to 5 inclusive from Centralised door locking solenoid and linkage - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. To remove the pivot lever and relay/bracket assembly, detach the control rod connecting the pivot lever to the lock. Release the setscrews and washers securing the relay/bracket to the door then remove the relay/bracket and pivot lever assembly.
3. To remove the manual locking lever proceed as follows.
Remove the wooden waist rail finisher (see Door trim - To remove).
Disconnect the window lift chain channel by removing the nuts, bolts and washers. Retain any distance pieces fitted between the chain channel and the door noting their position to ensure correct assembly.
Disconnect the lock control rod from the lock by pulling the swivel block attached to the lower end of the rod out of the bush.
Remove the closing panel together with the manual control lever from the top of the door.
To remove the control lever from the panel, detach the control rod from the bush in the lever, then remove the screws securing the lever to the panel.

Centralised door locking solenoid and linkage - To fit
To fit the solenoid and linkage reverse the procedure given for removal noting the following points.

Silver Shadow II, Bentley T2 and Silver Wraith II

1. During assembly lubricate the lock control rod pivots with Rocol MTS 1000 grease.
2. After fitting the solenoid and spring link assembly ensure that the door lock is in the locked position and the solenoid in the down position. Adjust the spring link length until the lower rod aligns with the fastex bush in the lever assembly. Tighten the lock-nut on the spring link and connect the rod into the bush.
3. Check that the forces required to lock and unlock the door are the same. If they are not, the spring link is not correctly adjusted and should therefore be re-adjusted and checked again.
4. Check that the doors can be locked and unlocked by operating either centralised door locking switch. When locked both the interior and exterior door handles should be inoperative.

Corniche

1. During assembly lubricate the solenoid-to-lock operating cable with Rocol MTS 1000 grease.
2. After fitting the solenoid and spring link assembly slacken the lock-nut on the spring link to move the lower link of the door lock down to the unlocked position. Move the solenoid link to the open position (i.e. towards the rear of the car). Secure the cable to the lower link of the door lock with the lock-nut. Also, tighten the spring link lock-nut.
3. Check that the forces required to lock and unlock the door are the same. If they are not, the spring link is not correctly adjusted and should therefore be re-adjusted and checked again.
4. Check that the doors can be locked and unlocked by operating either centralised door locking switch. When locked, the exterior door handle should be inoperative. It should be noted that the interior door handle should be operative at all times irrespective of whether the door is locked or unlocked.

Camargue

1. During assembly lubricate the lock control lever pivots with Rocol MTS 1000 grease.
2. Prior to fitting the solenoid to the door, set the solenoid spring link to the 11.68cm. (4.60in.) dimension shown in Figure S14.
3. Prior to fitting the door trim panels, check and adjust the linkage as described previously (see Door lock and linkage - To fit).
4. Check that the doors can be locked and unlocked by operating either centralised door locking lever. When locked both the interior and exterior door handles should be inoperative.

Exterior door handle and Actuator lever assembly - To remove

Silver Shadow II, Bentley T2 and Silver Wraith II

1. Remove the door lock (see Door lock and linkage - To remove).
2. Release the Allen screw and domed nut securing the door handle; remove the handle.
3. Release the two bolts, situated beneath the door handle, securing the lock actuator lever assembly to the door; withdraw the lever through the inner door panel.

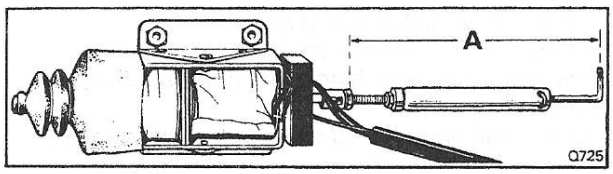


Fig. S14 Centralised door locking solenoid spring link setting (Camargue)
A 11,68cm. (4.60in.)

Corniche

1. Remove the door lock (see Door lock and linkage - To remove).
2. Release the 2BA bolts securing the lock actuator lever assembly to the door; withdraw the lever through the inner door panel.
3. Release the three 2BA bolts and one 4BA bolt securing the door handle. Note the position of the respective distance pieces and washers to ensure correct assembly. Remove the handle.

Camargue

1. Remove the door trim panels and waist rail finisher (see Door trim - To remove).
2. Remove the bolts, nut and washers securing the window lift channel to the top of the door; note the position of any spacing washers to ensure correct assembly.
3. Remove the screws securing the closing panel to the door top then remove the panel.
4. Remove the circlip securing the control link to the private lock lever; remove the link from the lock.
5. Remove the control rod connecting the exterior handle to the cross-shaft lever as follows.

Pull the swivel block attached to the lower end of the control rod from the bush in the cross-shaft lever then, manoeuvre the rod until the cranked upper end is free of the handle.

6. Remove the two nuts and washers securing the exterior handle assembly to the door; remove the handle.

Exterior door handle and Actuator lever assembly - To fit

To fit the exterior door handle and actuator lever assembly reverse the procedure given for removal, noting the following points.

Silver Shadow II, Bentley T2 and Silver Wraith II

1. Apply Bostik cement 1311 or its equivalent to the mating face of the handle to seal it to the moulding. Also apply the Bostik to the moulding to seal it to the door (see Fig. S15). Ensure that the sealant is kept away from the push button stem.
2. The handle push button adjusting screw

should be set so that a clearance of 0,79 mm. (0.031 in.) exists between the head of the screw and the contactor lever before the push button is pressed.

3. Check that when the button is pressed, the lock bolt is triggered off from its fully raised position whilst the outer face of the button is still 1,58 mm. (0.062in.) or more from the handle surround (see Fig. S16).

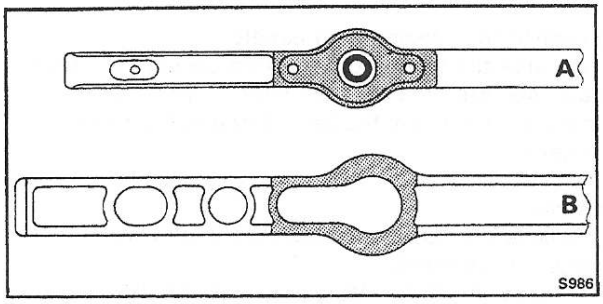


Fig. S15 Location of sealant on exterior door handle and moulding (Silver Shadow II, Bentley T2 and Silver Wraith II)

A Inboard face of door handle
B Inboard face of moulding

Note
Sealant indicated by shaded areas.

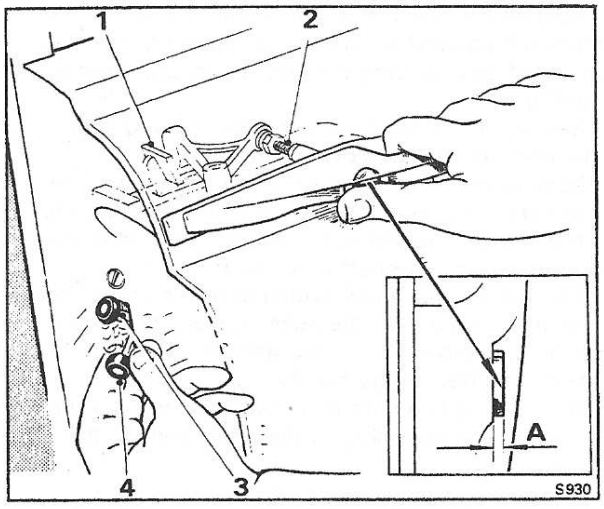


Fig. S16 Exterior door handle adjustment (Silver Shadow II, Bentley T2 and Silver Wraith II)

A 1,59 mm. (0.062 in.) between end of push button and handle surround.
1 Lock contactor lever
2 Push button adjustment screw
3 Lock bolt (position before being 'triggered off' i.e. fully raised)
4 Lock bolt (position after being 'triggered off' i.e. fully down)

Move the lock bolt up and down by hand; check that there is no interference from the lock mechanism. If the lock bolt will not operate without interference, difficulty will be experienced opening and closing the car door.

4. Check that the exterior door handle operates by fully raising the lock bolt, moving the lock control button up (unlock position) and then operate the door handle. Check that the bolt moves down (see Fig. S16).

If the lock is removed from the door, the lock control lever should be moved down and the contactor lever pressed to carry out this check.

Corniche

1. Apply Glasticon sealer to the mating face of the handle.
2. Set the exterior door handle push button. The button should be adjusted so that there is approximately 0,79 mm. (0.031 in.) free movement before the head of the actuator makes contact with the push button. If there is no free movement, the handle should be removed from the door and the required amount ground off the plunger.

Camargue

1. Ensure that the gasket between the handle surround and the door is in good condition; fit a new gasket if necessary.
2. Apply Rocol MTS 1000 grease to the handle pivots and stud threads before fitting the handle to the door.
3. Check that the exterior door handle operates by fully raising the lock bolt, moving the manual lock control lever up (unlock position) and then operate the door handle. Check that the bolt moves down.

Private lock - To remove
Silver Shadow II, Bentley T2, Silver Wraith II and Corniche

1. Remove the door lock (see Door lock and linkage - To remove).
2. Remove the nut securing the private lock to the door; remove the lock together with the weather shield and the collar fitted between the nut and the door.

Camargue

1. Remove the exterior handle and surround from the door (see Exterior door handle and Actuator lever assembly - To remove).
2. Remove the 4BA screw securing the private lock to the handle surround.
3. Remove the private lock, together with the weather shield and spring, from the handle surround.

Private lock - To fit

To fit the private lock reverse the procedure given for removal noting the following points.

Silver Shadow II, Bentley T2, Silver Wraith II and Corniche

1. During assembly, lubricate the private lock

weather shield with Duckhams Keenomax C3 grease or its equivalent.
2. When fitting the private door locks, ensure that the key slot is vertical before finally tightening the lock to the door. Rotating the lock unit after it has been tightened will result in binding when the key is operated.
3. Check the operation of the key locking mechanism as follows.

Fit the door key into the lock, turn the key alternately in opposite directions; check that the lock control button moves to the locked and unlocked positions in sequence with the key movement.

Camargue
1. During assembly, lubricate the private lock weather shield with Duckhams Keenomax C3 grease or its equivalent.

Lubricate the spring and the link rod pivot pins with Rocol MTS 1000 grease.
2. Ensure that the private lock is located centrally in the handle surround before tightening the 4BA locking screw.
3. Check the operation of the key locking mechanism as follows.

Fit the door key into the lock, turn the key alternately in opposite directions; check that the manual lock control lever moves to the locked and unlocked positions in sequence with the key movement.

Front door seals

Door to body seal - To remove
Silver Shadow II, Bentley T2, Silver Wraith II and Camargue
1. Carefully insert a screwdriver under the lip of the seal where the window frame leaves the door and lift the seal from the channel. Avoid damaging the seal channel or paintwork.
2. Remove the seal from the channel.

Corniche
1. Using a scraper or similar tool, carefully remove the seal from around the channel of the door aperture.

On Convertible cars it is necessary to remove the wood finisher under the rear quarter window to enable the rear section of the seal to be removed.
2. Remove the screw securing the upper end of the small seal fitted to the front door pillar. Remove the seal.

Door to body seal - To fit
Silver Shadow II, Bentley T2, Silver Wraith II and Camargue
1. Ensure that the seal channel is clean and free from obstructions.
2. Fit the door seal at the points A, B, C and D shown in Figure S17.

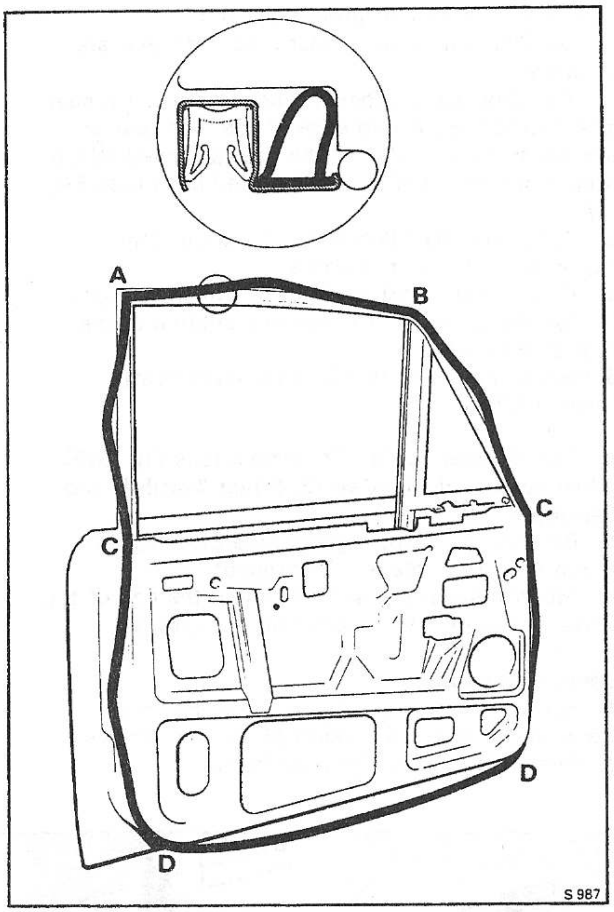


Fig. S17 Fitting the door seal (Silver Shadow II, Bentley T2 and Silver Wraith II)

3. Manoeuvre the seal evenly into the channel as follows.

Locate the seal to the inner part of the door channel, above the points C-C in Figure S17 then, press in the outer edge a short length at a time.

Secondly, locate the seal in the outer part of the door channel, below the points C-C then, press in the inner edge a short length at a time.

A wood or plastic wedge shaped tool with smooth edges will assist during this operation.

Note
When fitting, do not lubricate the seals.

Ensure that the seals are fitted to the correct side i.e. a left-hand seal is fitted to a left-hand door.

On Camargue cars the seals can be fitted to either door.

Corniche
1. Check the seal channel retaining screws for tightness; tighten or replace screws as necessary.
2. Cut the sealing strip to the required lengths noting the following.

On Saloon cars, five pieces of seal are required. Refer to Figure S18 which shows the position and

type of seal abutment joints required.

On Convertible cars, four pieces of seal are required.

The door, when closed, presses against a seal attached to the forward edge of the rear quarter window frame and also to the seal attached to the wood finisher of the power operated hood (see Fig. S18).

3. Apply Dunlop Adhesive 1127 to the seal channels in the door aperture.
4. Fit the seal sections into the channel; apply Dunlop Adhesive 1127 where one section of the seal abuts another.
5. Remove any surplus adhesive using Bostik Cleaner 6001.

Window channel seals - To remove (see Fig. S19)
Silver Shadow II, Bentley T2, Silver Wraith II and Camargue

1. Remove the window glass (see Electrically operated window glass - To remove).
2. Insert a small screwdriver under the end of the seals and remove the seals from the channel.

Corniche Saloon

1. Remove the window glass and frame (see Electrically operated window glass - To remove).
2. Remove the glass from the frame.
3. Insert a small screwdriver under the end of the seals and remove the seals from the channel.

Corniche Convertible

1. Remove the window glass and glass frame (see Electrically operated window glass - To remove).
2. Insert a small screwdriver under the end of the seals and remove the seals from the channel.

Window channel seal - To fit
All cars

To fit the window channel seal reverse the procedure given for removal, noting the following points.

1. Ensure that the seal channel is clean and free from obstructions.
2. Fit the seal into the channel ensuring that the edge of the seal which has the four protrusions moulded into it is positioned inboard.
3. On Corniche cars ensure that the widest section of the seal is positioned inboard.
4. Fit the glass into the frame checking that the glass moves smoothly up and down the new seal.

Fixed quarter window seals (see Fig. S19)

To remove and fit the fixed quarter window seals refer to Fixed quarter window glass - To remove and fit.

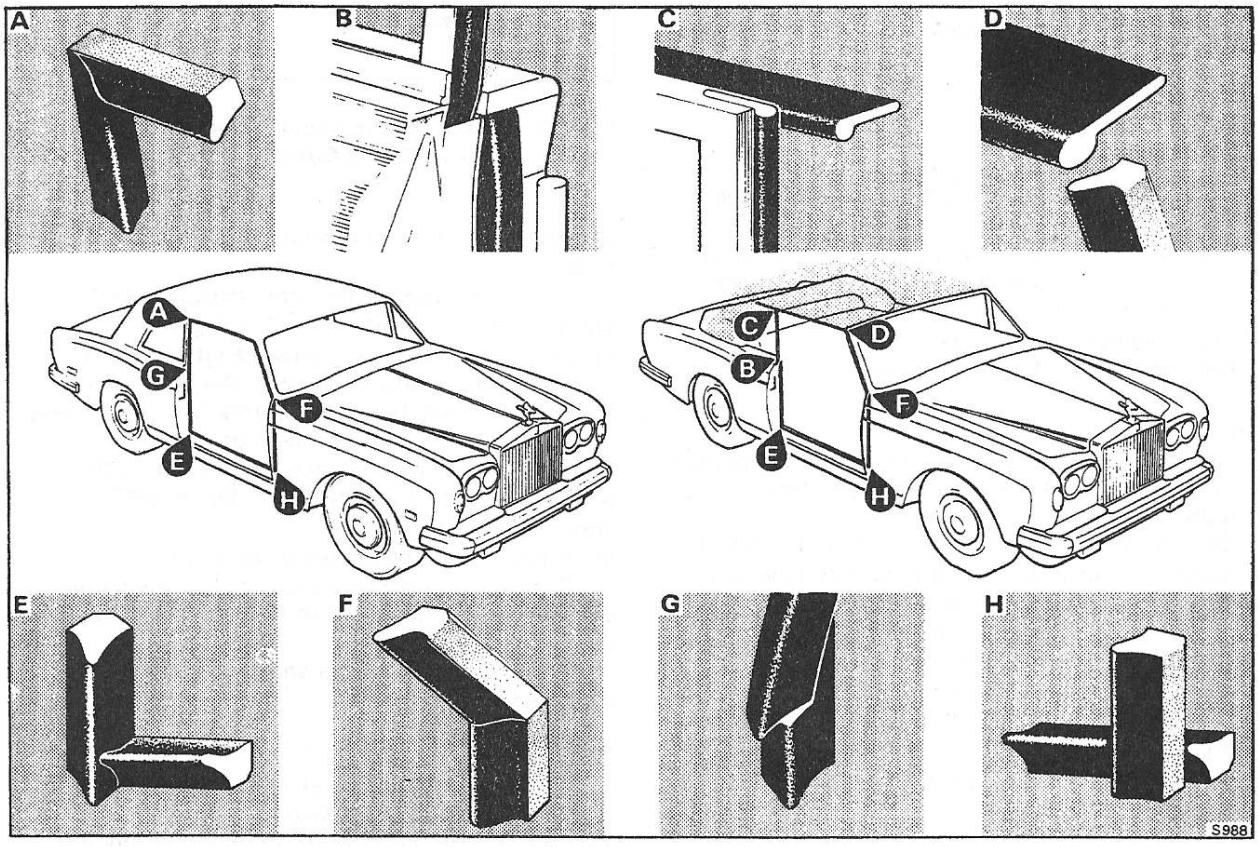


Fig. S18 Fitting the door aperture seal (Corniche Saloon and Convertible)

Door waist rail finisher seals - To remove (see Fig. S19)
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Remove the waist rail finisher assembly (see Door trim - To remove).
2. Remove the sealing felts from the upper and lower outer edge of the finisher (see Fig. S19, items 4 and 5).

With the aid of a small screwdriver and pincers, remove the tacks and staples respectively.

Corniche
1. Remove the waist rail finisher assembly (see Door trim - To remove).
2. Remove the sealing felt from the finisher with a sharp scraper or knife, take care to avoid damage to the wood finisher.

Camargue
1. Remove the waist rail finisher assembly (see Door trim - To remove).
2. Remove the seal from the channel on the finisher with the aid of a small screwdriver; take care to avoid damaging the finisher assembly.

Door waist rail finisher seals - To fit
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Fit the upper sealing felt into position with 0.625in. long tacks.
2. Fit the lower sealing felt into position with a line of staples.
3. Replace the waist rail finisher assembly (see Door trim - To fit).

Corniche
1. Clean any old adhesive from the outer edge of the waist rail finisher with Bostik Cleaner 6001, allow approximately 1 hour for the cleaner to dry.
2. Apply Bostik Adhesive 1261 to the sealing felt and finisher.
3. Allow between 10 and 30 minutes for the adhesive to become 'tacky' then bring the two surfaces together by applying hand pressure.
4. Replace the waist rail finisher assembly (see Door trim - To fit).

Camargue
1. Ensure that the seal retaining channel is clean and free from obstructions and that the channel is fastened securely to the waist rail finisher by the retaining screws.
2. Fit the seal into the retaining channel.
3. Replace the waist rail finisher assembly (see Door trim - To fit).

Door frame reveal strip seal - To remove (see Fig.S19)
Silver Shadow II, Bentley T2, Silver Wraith II and Corniche
1. Remove the door trim and waist rail assembly (see Door trim - To remove).

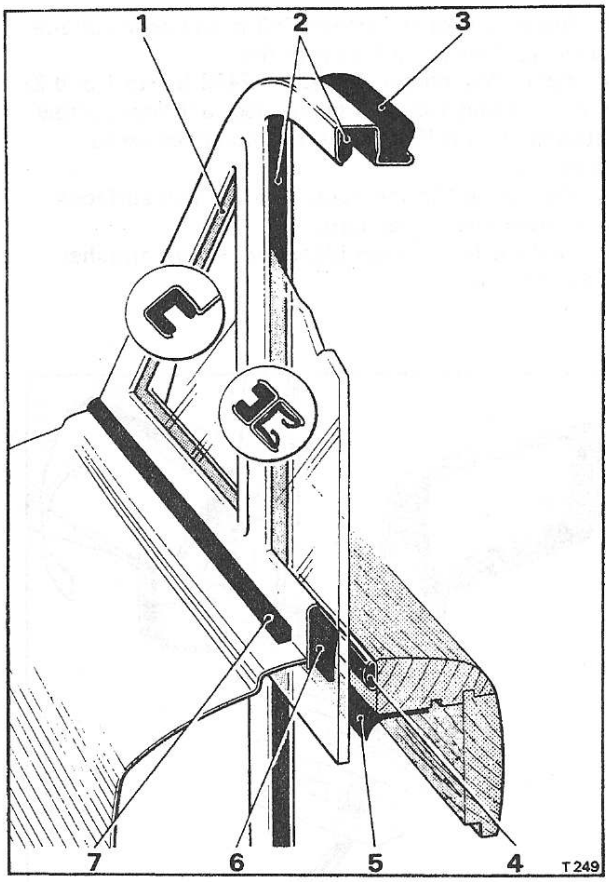


Fig. S19 Door seals
1 Fixed quarter window seal - front section
2 Window channel seal
3 Door to body seal
4 Waist rail finisher seal - upper
5 Waist rail finisher seal - lower
6 Door frame reveal strip seal
7 Seal - frame to door

2. Remove the electrically operated window glass (see Electrically operated window glass - To remove).
3. Using a sharp scraper or knife, remove the seal from the frame; ensure that the window frame is not damaged.

Camargue
1. Remove the door trim and waist rail assembly (see Door trim - To remove).
2. Remove the electrically operated window glass and the fixed quarter window glass.
3. Insert a small screwdriver under one end of the seal and remove the seal from the channel.

Door frame reveal strip seal - To fit
Silver Shadow II, Bentley T2, Silver Wraith II and Corniche
1. Clean the bonding surfaces of the sealing felt and door using Bostik Cleaner 6001; allow approximately 1 hour for the cleaner to dry.

2. Apply Boscolite Primer 9252 to the door surface; allow approximately 1 hour to dry.
3. Apply Boscoprene Adhesive 2402 (parts 1 and 2) to the bonding surfaces of the door and seal; allow between 10 and 15 minutes for the adhesive to partly dry.
4. Fit the seal to the door; join the two surfaces by applying hand pressure.
5. Replace the window glass, waist rail finisher and door trim.

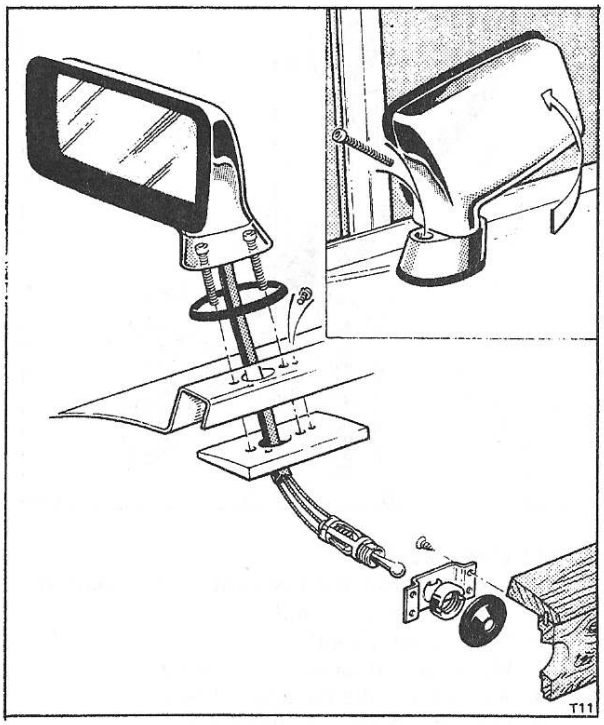


Fig. S20 Exterior door mirror (Silver Shadow II, Bentley T2, Silver Wraith II and Corniche)

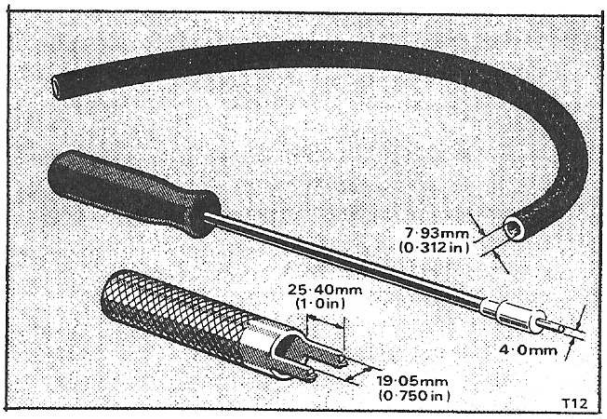


Fig. S21 Exterior door mirror tools (Silver Shadow II, Bentley T2, Silver Wraith II and Corniche)

Camargue
1. Ensure that the seal channels are clean and free from obstructions.
2. Fit the seals into the channels. Fit the seal that abuts the electrically operated window glass so that the shoulder of the seal is uppermost and the lip of the seal is pointing downwards. Fit the seal that abuts the quarter window so that the double lip of the seal is uppermost.
3. Fit the fixed quarter window and the electrically operated window.

Seal - Frame to door - To remove (see Fig. S19)
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Remove the door trim and waist rail assembly (see Door trim - To remove).
2. Remove the window glass (see Electrically operated window glass - To remove).
3. Remove the door frame (see Window frame - To remove).
4. Using a sharp scraper or knife remove the seal from the frame; ensure that the door paintwork is not damaged.

Seal - Frame to door - To fit
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Clean the bonding surfaces of the rubber seal and door using Bostik Cleaner 6001; allow approximately 1 hour for the cleaner to dry.
2. Repeat Operations 2, 3 and 4 from Door frame reveal strip seal - To fit.
3. Replace the window frame, window glass, waist rail finisher and door trim.

Door hinge seals - To remove
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Remove the door trim (see Door trim - To remove).
2. Remove the fasteners retaining the hinge seals to the door.
3. Remove the setscrews from the door hinges; withdraw the door.
4. Withdraw the seals from the hinges.

Corniche
1. Remove the door trim (see Door trim - To remove).
2. Remove the setscrews from the door hinges; withdraw the door.
3. Using a sharp scraper or knife carefully remove the seals from the door.

Camargue
1. Remove the spring clips from the check strap pivot pins.
2. Remove the pivot pins and disconnect the check arms from the hinges.
3. Remove the seals by pulling them over the pivot pin bosses.

Door hinge seals - To fit
All cars
To fit the hinge seals reverse the procedure given for removal noting the following points

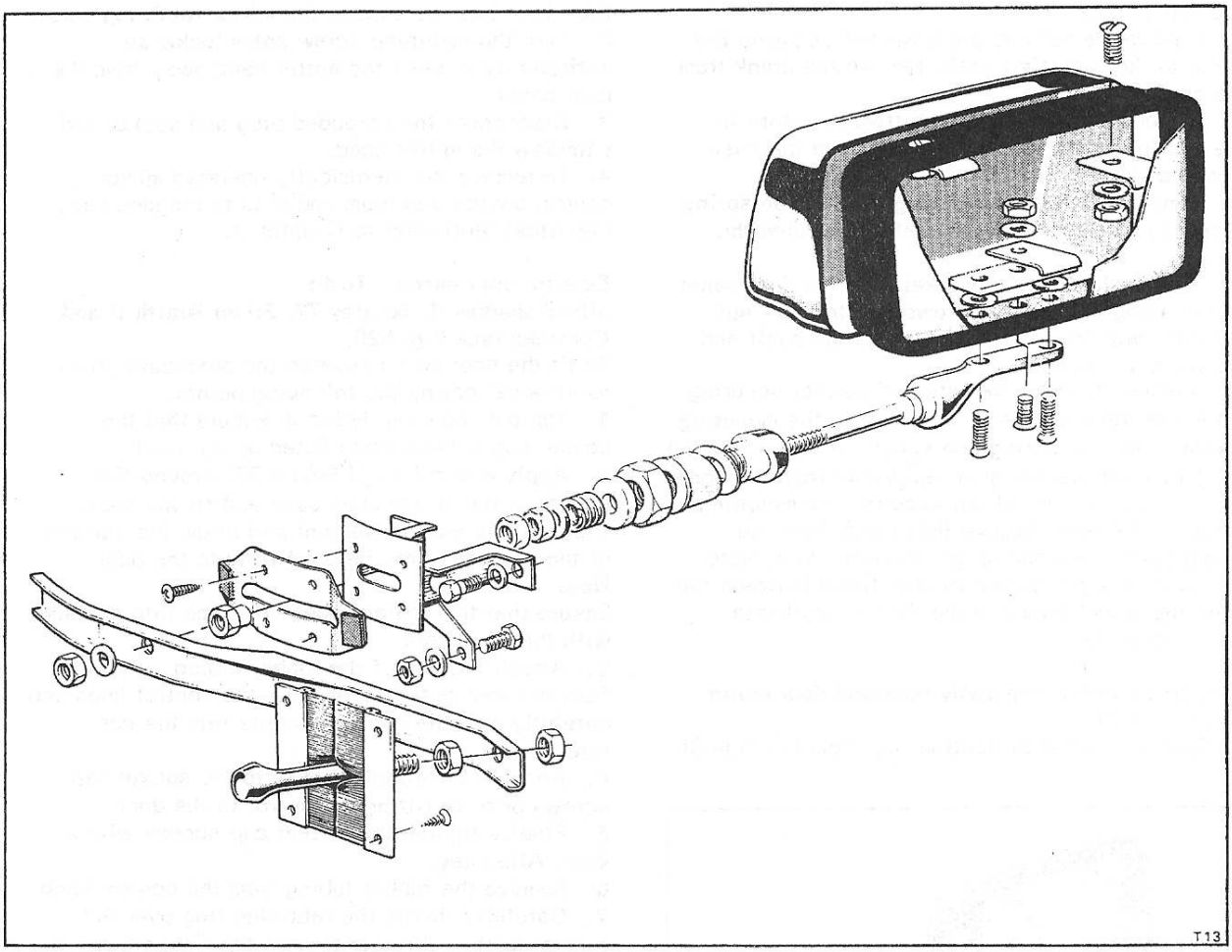


Fig. S22 Exterior door mirror - Camargue (Manually operated)

1. On Corniche and Camargue cars clean the seal seating areas with Bostik Cleaner 6001, allow approximately 1 hour for the cleaner to dry.
2. On Corniche cars attach the seals into position on the door with Bostik Adhesive 1261.

On Camargue cars position the seals on the hinges and secure with Bostik Adhesive 1261.

Exterior door mirror - To remove (see Fig. S20)
Silver Shadow II, Bentley T2, Silver Wraith II and Corniche

1. Remove the rubber bush from around the mirror control knob.
2. Using a socket shaped tool (see Fig. S21) remove the control knob retaining ring by inserting the tool over the control knob and releasing the ring. Carefully manoeuvre the ring through the waist rail finisher.
3. Fit the flexible rubber tubing (see Fig. S21) tightly over the control knob.
4. Turn the mirror head 90° in clockwise and anti-clockwise directions; in each case a 4mm. socket cap screw is visible.
5. Use a right-angled 4mm. Allen key to initially break the seal of the socket cap screws then, using a flexible tool (see Fig. S21), unscrew the socket cap screws.
6. Remove the mirror by threading the cable and the control knob with the rubber tubing attached through the door panels.
7. Remove the tubing from the control knob, leaving the tubing in the door to facilitate assembly.

Camargue
Cars fitted with manually operated door mirror (see Fig. S22)

1. Remove the door trim panels and waist rail finisher (see Door trim - To remove).
2. Remove the two screws securing the mirror head and fairing assembly to the mirror stem; remove the mirror head assembly from the stem.
3. Remove the lock-nut securing the mirror control knob to the operating crank; remove the knob from the crank.
4. Detach the polythene sealing bag from the inner door panel, withdraw the bag from the

operating crank.
5. Remove the nut and plain washer securing the crank to the operating shaft; remove the crank from the shaft.
6. Withdraw the stepped bush from the slots in the friction spring and bracket. Remove the bush from the shaft.
7. Remove the screws securing the friction spring assembly to the friction bracket and remove the spring.
8. Remove the friction bracket from the door panel by releasing the two setscrews and the 2BA nut and bolt; withdraw the bracket from the shaft and remove from the door.
9. Remove the two lock-nuts and washer securing the mirror stem and shaft assembly to the mounting spigot, slide the spring and spherical spacer off the shaft then remove the shaft assembly from the door.
10. Remove the special nut securing the mounting spigot to the door, remove the spacer from the spigot and remove the spigot from the door. Note the fibre paint protection washer fitted between the mounting spigot face and the door to facilitate correct assembly.

Cars fitted with electrically operated door mirror (see Fig. S23)
1. Ease the rubber protection flap from the side of the mirror base to expose the mirror retaining screw.
2. Turn the retaining screw anti-clockwise sufficiently to ease the mirror head away from the door panel.
3. Disconnect the shrouded plug and socket and withdraw the mirror head.
4. To remove the electrically operated mirror control switch and loom and also to diagnose any electrical fault refer to Chapter M.

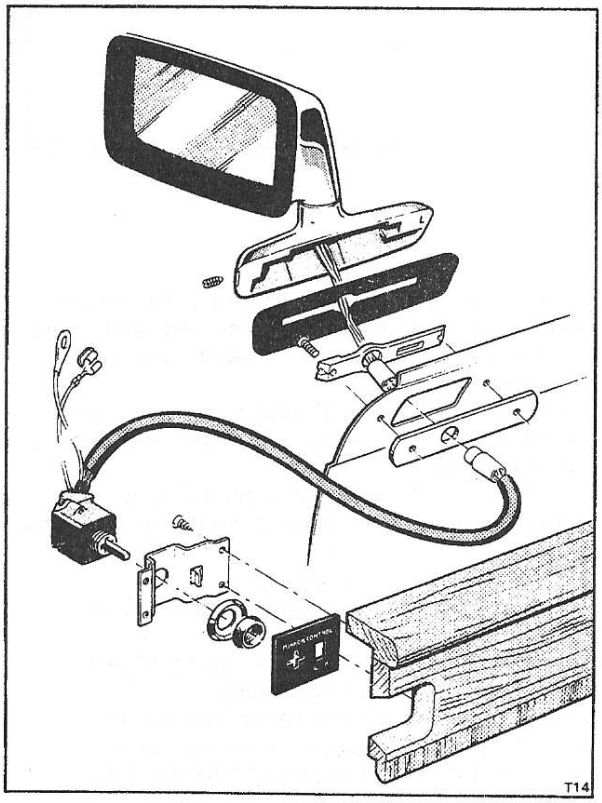


Fig. S23 Exterior door mirror - Camargue (Electrically operated)

Exterior door mirror - To fit
Silver Shadow II, Bentley T2, Silver Wraith II and Corniche (see Fig. S20)
To fit the door mirror reverse the procedure given for removal noting the following points.
1. Tap out the 4mm. holes to ensure that the socket cap screws when fitted do not bind.
2. Apply a thin line of Bostik 771 around the groove in the mirror stem base and fit the seal. Wipe off any excess sealant and allow the surface of the sealant to dry before fitting to the door.
Note
Ensure that the sealant does not come into contact with the paintwork.
3. Attach the end of the rubber tubing, protuding from the door outer panel, over the control knob and carefully pull the knob and cable into the car interior.
4. Apply 242 Nutlock Loctite to the socket cap screws prior to fitting the mirror to the door.
5. Finally tighten the socket cap screws with a 4mm. Allen key.
6. Remove the rubber tubing from the control knob.
7. Carefully thread the retaining ring over the control knob and finger tighten the ring; tighten the ring fully using the socket tool (see Fig. S21).

Camargue
Cars fitted with manually operated door mirror (see Fig. S22)
1. Locate the paint protection washer to the mounting spigot, fit the spigot to the door outer panel and secure with the spacer and special nut.
2. Apply Rocol Anti-scuffing paste to the spherical section of the actuator shaft then locate the mirror stem and shaft assembly into the mounting spigot.
3. Apply Rocol Anti-scuffing paste to the concave face of the spherical washer, then fit the spacer, spring, plain washer and the two lock-nuts to the shaft; ensure that the spherical face of the spacer is located to the spherical seating on the shaft.
4. Ensure that the mirror mounting face on the outboard end of the shaft is in its uppermost position.then, tighten the lock-nuts until the dimension between the spherical washer and the plain washer (i.e. the compressed length of the spring) is approximately 11,8 mm. (0.468 in.); lock the two nuts in this position.
5. Fit the friction unit bracket over the shaft and secure it to the door.
6. Fit the stepped bush onto the shaft. Ensure that

the reduced diameter of the bush is located through the slots in the friction spring and bracket.
7. Fit the crank onto the shaft and align with the friction spring.

Secure the crank to the shaft with the nut and plain washer; torque tighten the nut (see Chapter P).
8. Cut a corner off the polythene sealing bag then thread the bag over the crank. Secure the corner of the bag to the shaft with plastic insulating tape. Draw the ends of the bag through the door inner panel and secure with Dunlop Adhesive S81.
9. Ensure that approximately 9,53 mm. (0.375 in.) length of thread is protruding through the nut on the control knob, then secure the knob to the crank with the lock-nut.
10. Operate the knob and check the mirror shaft for maximum movement. The friction between the crank and the friction spring should be such that a force of 2,72 kg. (6lb.) applied at the knob is required to move it vertically.
11. Ensure that the tabs on the upper inside face of the mirror fairing are located correctly into the holes in the mirror bezel. Fit the mirror and fairing assembly to the stem and secure in position.
12. Fit the door waist rail finisher and door trim (see Door trim - To fit).

Cars fitted with electrically operated door mirror (see Fig. S23)
1. To fit the mirror mounting plates proceed as follows.

Insert the inner mounting plate through the access hole in the outer door panel, align the holes and hold in position.

Fit the external mounting plate, align the holes with the inner plate and secure with two 4 mm. socket cap setscrews.
2. Clip the seal to the mirror base.
3. Connect the shrouded plug and socket.
4. Place the mirror base over the external mounting plate ensuring that the seal sits evenly around the mirror base.
5. Tighten the mirror retaining screw, then cover it with the rubber protection flap.

Rear doors

To remove and fit the rear door components follow a procedure similar to the one described for the front doors noting any variations of procedure described under the following headings.

Door - To remove
1. Disconnect the battery (see Door trim - To remove).
2. Remove the door trim pad.
3. Peel back the black waterproof dust cover.

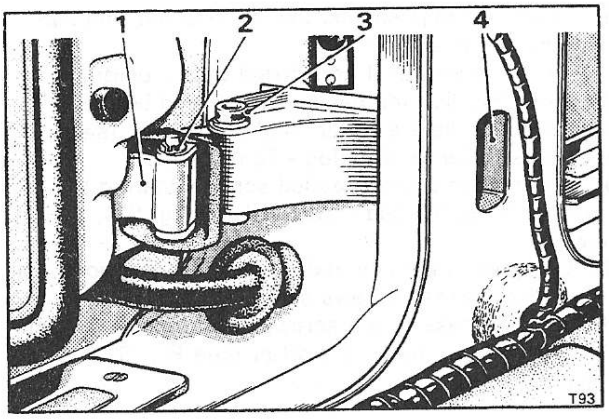


Fig. S24 Lower door hinge
1 Check strap
2 Spring clip
3 Socket headed cap screw
4 Access to hinge securing screws

4. Disconnect the various electrical connections to enable the loom to be withdrawn when removing the door.
5. Remove the spring clip securing the check strap pin to the door linkage (see Fig. S24, item 2).
6. Tap the pin downwards until it clears the hinge.
7. Push the check strap inside the door to gain access to the hinge retaining bolts.
8. Support the door then remove the four setscrews securing each hinge to the door; note the position of the check springs on the lower hinge setscrews to ensure correct assembly. Retain any packing pieces which may be fitted between the door and hinge to ensure correct assembly.
9. Remove the door, carefully withdrawing the door loom.

Door - To fit
To fit the door reverse the procedure given for removal noting the following points.
1. The position of the door in the body aperture is shown in Figure S3.
2. When setting the striker plate ensure that the rear edge of the door is level with the car body.
3. Apply Retinax 'A' grease or its equivalent to the check springs on the lower door hinge.
4. Ensure that the rubber seals are fitted to the hinges before securing the hinges to the door.

Door hinges - To remove from body centre pillar
1. Remove the door (see Door - To remove).
2. Remove the chromed sill finishers from the front and rear door apertures.
3. Fold back the carpet and foam underlay to gain access to the loom protection panel. Release the self-tapping screws and remove the panel.
4. Remove the front seat belt anchorage bolt from the body centre pillar; retain the distance piece and washers.

5. Using a wedge shaped tool remove the trim pad from the centre pillar.

On Silver Wraith II cars fitted with a centre division, the division has to be removed before access to the centre pillar trim is attained, (see Section S11 Centre division - To remove).

6. Remove the socket headed screw securing the lower hinge to the body bracket (see Fig. S24, item 3).

7. Using an Allen key and extension bar remove the two socket headed screws securing each hinge to the body. Access to the screws is attainable through the recesses in the centre pillar (see Fig. S24, item 4).

Door hinge - To fit to body centre pillar

To fit the rear door hinges reverse the procedure given for removal noting the following point.

1. Secure the upper hinge seal to the door by following the procedure described in Door frame reveal strip seal - To fit, Silver Shadow II, Bentley T2, Silver Wraith II and Corniche items 1 to 4 inclusive.

Door trim - To remove

1. Slacken the two setscrews securing the arm rest to the door sufficient to slide the arm rest upwards until free of the setscrews. Remove the arm rest and then the setscrews; retain the washers and distance pieces.

Access to the setscrews is gained through the bottom of the arm rest.

2. Remove the escutcheon covers and the escutcheons from around the window switch and interior door handle (see Door trim - To remove, Front door section).

3. Ease the trim pad from the door sufficient to disconnect the electrical leads of the step lamp and cigar lighter. Note the respective colours of the leads to ensure correct assembly.

4. Remove the remaining trim in a similar manner to that described in Door trim - To remove, Front door section.

Door trim - To fit

To fit the door trim reverse the procedure given for removal noting the following points.

1. Before fitting the trim pad ensure that any loose debris is removed from the bottom of the door.

2. Ensure that the following method of fitting the lock control button is used.

Insert the lock control rod through the bush in the waist rail finisher, thread the lock-nut onto the control rod then screw the rod into the upper solenoid rod. Adjust the lock-nut until the height of the lock control button when depressed is 12,70mm. (0.50in.) from the finisher to the head of the button (see Fig. S7).

3. Check that all switches and interior door handles are functioning correctly.

Electric window lift mechanism
Electrically operated window glass
Window frame

To remove and fit the above components follow a similar procedure to the ones described in the front door section on Silver Shadow II, Bentley T2 and Silver Wraith II cars. Note that reference should also be made to Door trim - To remove and fit and Door lock and linkage - To remove and fit, both in the rear door section.

Fixed quarter window glass - To remove

1. Remove the window frame.

2. Remove the support plate and lower seal from under the quarter window.

3. Withdraw the quarter window glass from the frame.

4. Remove the three remaining sections of the seal from the frame.

Fixed quarter window glass - To fit

To fit the fixed quarter window reverse the procedure given for removal noting the following points.

1. Prior to fitting the seals, ensure that the channels are clean and free from obstructions.

2. Fit the front, rear and top seals into the frame. Ensure that the seals are fitted with the edge of each seal having the four protrusions moulded into it is positioned inboard

Door lock and linkage - To remove (see Fig. S25)

1. Disconnect the battery.

2. Remove the door trim and waist rail finisher (see Door trim - To remove).

3. Repeat Operations 3 to 7 inclusive from Door lock and linkage - To remove in the front door section.

4. Support the lock. Remove the countersunk headed screws and cup washers securing the lock to the rear edge of the door; remove the lock.

5. Using a similar procedure to that shown in Figure S12, press the pivot lever assembly towards the inner door panel until the outer end of the lever spindle is free from its nylon bush; remove the bush. Push the free end of the lever spindle into the hole vacated by the bush until the other end of the spindle is also free from its bush; remove the pivot lever assembly.

6. Remove the interior door handle and disconnect the remote control rod.

Door lock mechanism - To check

1. Follow the same procedure as that described in Door lock mechanism - To check, Operations 1 to 7 inclusive in the front door section.

2. Raise the lock bolt to the half-way position, then repeat Operations 4 to 7 inclusive from Door lock mechanism - To check, in the front door section.

Door lock and linkage - To fit

To fit the door lock and linkage reverse the procedure given for removal noting the following points.

1. During assembly lubricate the pivot points and contact faces of the exterior door handle, the contactor lever assembly and all lock linkage pivot pins with Rocol MTS 1000 grease.
2. Repeat Operation 2 from Door lock and linkage - To fit, in the front door section.

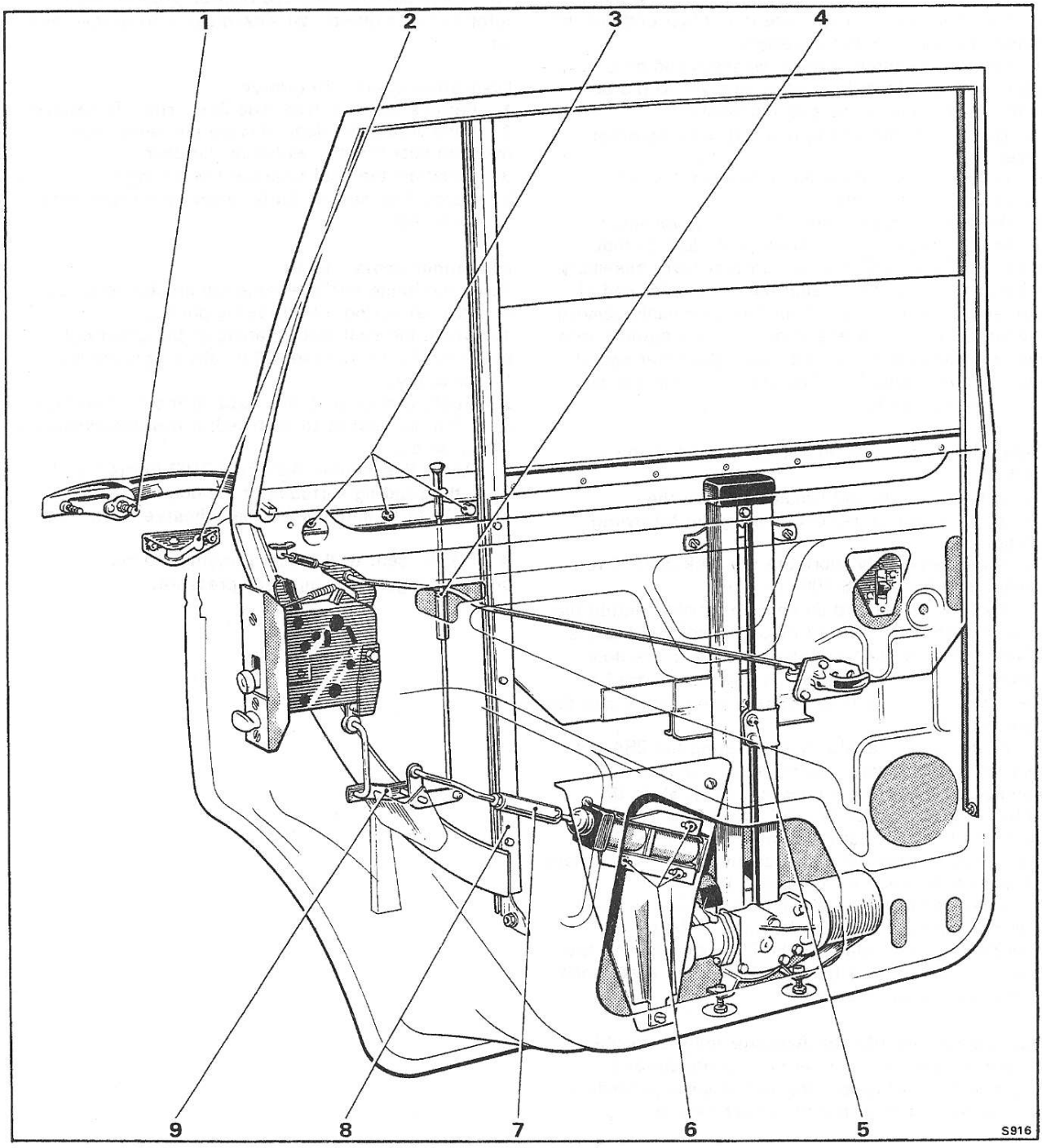


Fig. S25 Construction of a rear door

1 Push button adjustment screw
2 Actuator lever assembly
3 Lower quarter window seal support plate screws
4 Lock-nut, lock control button adjustment
5 Setscrew - window support bracket to chain channel slider
6 Solenoid adjusting screws
7 Solenoid spring link
8 Closing plate - window frame channel
9 Pivot lever assembly

Centralised door locking solenoid and linkage - To remove

1. Disconnect the battery.
2. Remove the door trim (see Door trim - To remove).
3. Disconnect the electrical leads to the solenoid at the Lucar connections; note the colour code of the leads to ensure correct assembly.
4. Remove the three screws, washers and nuts securing the solenoid mounting bracket to the door; note the position of the spacing washer.
5. Disconnect the spring link rod from the pivot lever.
6. Remove the solenoid and mounting bracket assembly from the door.
7. Remove the control rods from the pivot lever assembly then, using a similar procedure to that shown in Figure S12, press the pivot lever assembly towards the inner door panel until the outer end of the lever spindle is free from its nylon bush; remove the bush. Push the free end of the lever spindle into the hole vacated by the bush until the other end of the spindle is also free from its bush; remove the pivot lever assembly.

Centralised door locking solenoid and linkage - To fit

To fit the solenoid and linkage reverse the procedure given for removal noting the following points.

1. During assembly lubricate the lock control rod pivots with Rocol MTS 1000 grease.
2. Fit the bracket and solenoid assembly inside the door, connect the spring link of the solenoid to the pivot lever then, secure the assembly to the door panel; ensure that the spacing washer is fitted to the upper forward screw, between the bracket and the door inner panel.
3. Adjust the solenoid by slackening the 2BA nut and bolt and the two setscrews securing the solenoid to the bracket (see Fig. S25). Slide the solenoid along the slots until the spring link is balanced (i.e. until any free play is removed, but tension is not applied to the spring link). Adjustment should **not** be made at the spring link.
4. Check that the force required to raise or lower the lock control button is the same in both directions; if not, slacken the 2BA bolt and the two setscrews and adjust the solenoid in the slots until this condition is obtained.

Exterior door handle and Actuator lever assembly

To remove and fit the exterior door handle and actuator lever assembly follow the same procedure as that described in the front door section.

Rear door seals

Door to body seal
Window channel seal
Door waist rail finisher seal
Door frame reveal strip seal
Seal - Frame to door

To remove and fit the above components follow the same procedure as that described for the same components in the front door section.

Fixed quarter window seals

To remove and fit the fixed quarter window seals refer to Fixed quarter window glass - To remove and fit.

Door hinge seals - To remove

1. Remove the door trim (see Door trim - To remove).
2. From within the door, remove the setscrews from the door hinges; withdraw the door.
3. Withdraw the seal from the lower hinge.
4. Using a scraper or knife remove the upper seal from the door.

Door hinge seals - To fit

To fit the hinge seals reverse the procedure given for removal noting the following points.

1. Clean the seal mating areas of the upper door seal with Bostik Cleaner 6001; allow approximately 1 hour to dry.
2. Apply Boscolite Primer 9252 to the door surface to which the seal is to be fitted; allow approximately 1 hour to dry.
3. Apply Boscoprene Adhesive 2402 (parts 1 and 2) to the bonding surfaces of the door and seal; allow 10 to 15 minutes for the adhesive to partly dry.
4. Fit the seal to the door bringing the two surfaces together using hand pressure.

Section S2

Bonnet

Bonnet - To remove

1. Raise the bonnet.
2. Disconnect the battery.
3. Disconnect the bonnet lamp leads at the connections adjacent to the right-hand bonnet hinge. Note the colour and position of the leads to ensure correct assembly.
4. Release the clips securing the bonnet lamp loom to the right-hand hinge assembly.
5. Remove the bolt securing the bonding strip to the front end of the bonnet.
6. Scribe correlation marks around the washers of the setscrews securing the bonnet to the hinges.
7. With the help of an assistant remove the four setscrews and washers securing the bonnet to each hinge; remove the bonnet.

Bonnet - To fit

To fit the bonnet, reverse the procedure given for removal noting the following points.

1. Before tightening the bonnet securing screws, align the correlation marks made during removal.
2. After fitting the bonnet, check the bonnet to body clearances (see Fig. S26). If necessary, slacken the securing bolts and move the bonnet until the correct clearances are obtained, then tighten the bolts.
3. Check that the bonnet can be opened and closed without difficulty. If necessary, adjust the position of the bonnet catch plates as follows.

Slacken the setscrews securing the two catch plates to the bonnet until they are just finger tight. Adjust the position of each plate until the bonnet can be opened and closed without difficulty, then fully tighten the securing screws.

4. On cars destined for U.S.A. and Canada, ensure that the protrusions on the bonnet retention brackets align with their respective holes in the brackets situated on the rear wall of the engine compartment.

Bonnet hinges - To remove

1. Remove the bonnet.
2. Remove the radiator matrix (see Chapter L, Engine cooling system).
3. Using a hooked piece of strong wire, remove the large coil spring from each hinge.
4. Disconnect the bonnet lamp switch electrical leads, situated adjacent to the right-hand hinge. Note the position and colour of the leads to ensure correct assembly.
5. Remove the setscrews and washers securing each hinge to the front wall of the engine compartment; remove the hinges.

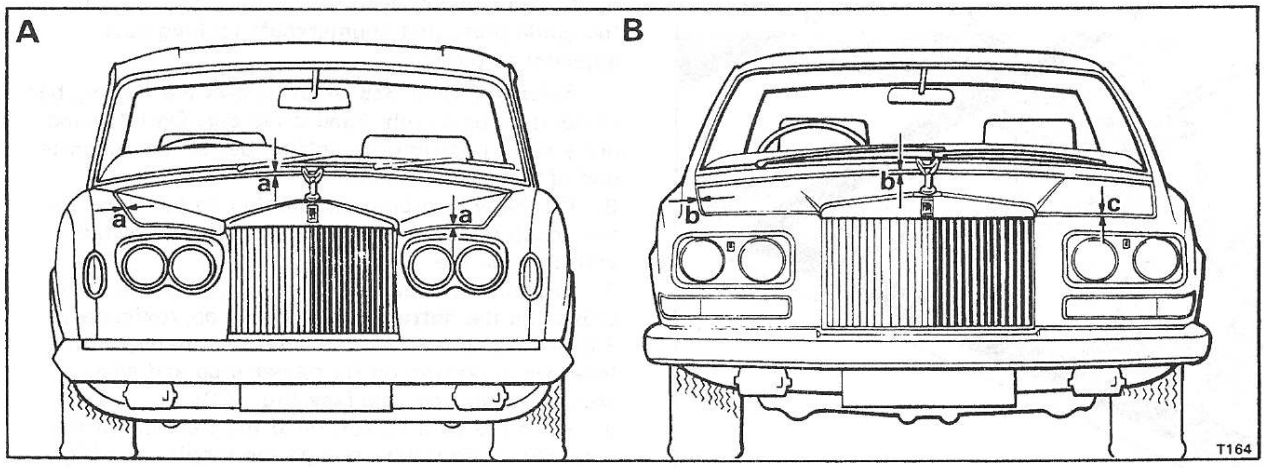


Fig. S26 Bonnet clearances

A Silver Shadow II, Bentley T2, Silver Wraith II, and Corniche

a 3,57 mm. (0.140in.) Silver Shadow II, Bentley T2 and Silver Wraith II
2,38 mm. (0.093in.) Corniche

B Camargue

b 4,25 mm. to 4,75 mm. (0.167 in. to 0.188 in.)

c 3,25 mm. to 3,75 mm. (0.127 in. to 0.147 in.)

Bonnet hinges - To fit

To fit the hinges reverse the procedure given for removal noting the following point.

1. Before fully tightening the setscrews securing the bonnet to the hinges ensure that the bonnet to body clearances are satisfactory (see Fig. S26). Also ensure that the bonnet will open and close satisfactorily (see Bonnet - To fit).

Bonnet catch mechanism - To remove

1. Scribe the profile of the bonnet catch mounting brackets onto their adjacent guide plates (see the broken line between items 2 and 3 in Fig. S27).
2. Remove the toggle spring from each end of the countershaft.
3. Remove the setscrews and washers securing the guide plates to the mounting brackets.
4. Remove the guide plates from the countershaft.

Note

Unless it is necessary to remove the countershaft completely from the car it is recommended that it is left attached to the operating wire and secured to one side.

If the countershaft is disconnected from the wire a new wire will be required. Also, when fitting the operating mechanism, if the bonnet is closed prior to the wire being connected it may be difficult to open the bonnet.

If it is required to disconnect the wire from the countershaft proceed as follows.

Bonnet catch operating wire - To remove

1. Using pliers, straighten the end of the wire protruding from the nipple on the countershaft lever.
2. Slacken the socket headed grub screw located in the nipple and withdraw the wire from the nipple.

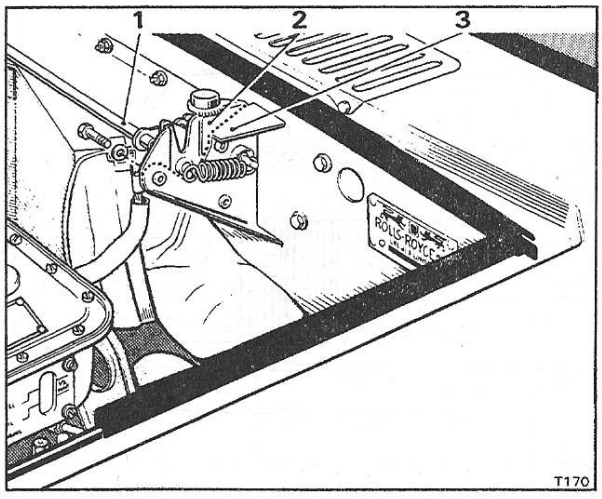


Fig. S27 Bonnet catch mechanism

1 Countershaft
2 Guide plate
3 Mounting bracket

Remove the nipple and washer from the countershaft lever.

3. On Silver Shadow II, Bentley T2, Silver Wraith II and Corniche cars remove the lower trim surrounding the bonnet release handle, parking brake, etc. (see Section S10 - Interior trim).

On Camargue cars remove the driver's side knee trim panel and the small trim panel from around the parking brake lever (see Section S10 - Interior trim).

4. Remove the bonnet wire from the operating lever by 'springing' the looped end of the wire over the collar of the retaining boss, then withdraw the wire from the outer sheath cable.
5. On Silver Shadow II, Bentley T2, Silver Wraith II and Corniche cars if difficulty is experienced in withdrawing the straightened end of the wire through the outer sheath cable, remove the nut and bolt securing the cable to the instrument board support bracket and withdraw the wire, cable and cable clip.

On Camargue cars if it is necessary to remove the outer sheath cable remove the nut and bolt securing the cable to the bulkhead bracket in the rear of the engine compartment, then withdraw the cable from the bulkhead.

Bonnet catch operating wire - To fit

1. Ensure that the bonnet catch operating lever situated below the facia pivots freely. Also ensure that it returns to its stop by means of the return spring.
2. Fit the outer sheath cable (if removed). Lightly smear the wire with Rocol MTS 1000 grease or its equivalent then thread the new wire through the outer cable.
3. Fit the looped end of the wire onto the operating lever retaining boss.
4. Move the countershaft to the bonnet locked position.
5. Position a 6,35 mm. (0.250 in.) diameter bar in the guide plate and countershaft locking cam adjacent to the wire.

Refer to Figure S28 which shows the setting bar in position on a right-hand drive car. On left-hand drive cars, position the setting bar at the opposite end of the countershaft.

6. Fit the wire nipple and washer to the lever on the countershaft then thread the free end of the wire through the nipple.
7. Tighten the nipple so that, with the cam fully closed on the setting bar, there is approximately 3,2 mm. (0.125 in.) of free movement between the lever when resting on its rubber stop and when it starts to open the cam (see Fig. S28).
8. When the wire is set, bend the free end of the wire which protrudes through the nipple (see Fig. S28).
9. Remove the setting bar and operate the bonnet release lever. Check that the countershaft moves to the unlocked position assisted by the toggle springs, and that the operating lever returns to its stop when released.

10. Close the bonnet and check that the operating cams on the countershaft are fully engaging the bonnet catch plates. If necessary reset the catch plates.

Bonnet catch mechanism - To fit
To fit the bonnet catch mechanism reverse the procedure given for removal noting the following points.
1. If the operating wire is disconnected from the countershaft, **do not** attempt to close the bonnet until the wire has been fitted and set (see Bonnet catch operating wire - To fit).
Failure to observe this procedure could result in the bonnet becoming locked.
2. Ensure that when the bonnet is closed, the pegs on the bonnet catch plates locate correctly in the rubber bushes fitted to the countershaft guide plates.
3. If necessary, reposition the bonnet catch plates so that the bonnet will open and close without difficulty (see Bonnet - To fit, Operation 3).

Bonnet seals - To remove
1. Remove the seals from the rear and rear sides of the flange surrounding the engine compartment. If a knife or similar tool is used, care must be taken to avoid damaging the paintwork.
2. Remove the small seals from the front and sides of the bonnet flange.

Bonnet seals - To fit
1. Clean the seating area of the rear flange with Bostik Cleaner 6001; allow approximately 1 hour to dry.
2. Apply Dunlop Adhesive S1127 to the seal and bonnet flanges, allow the adhesive to become 'tacky' before bringing the two surfaces together using maximum hand pressure.
3. Press the small seals into position around the front and sides of the bonnet flange.

Bonnet pads - To remove
1. Remove the bonnet pads by carefully levering the drive fastening clips from around the circumference of each pad.
On Silver Shadow II, Bentley T2, Silver Wraith II and Corniche cars destined for Australia, Canada, Japan and U.S.A. remove the bonnet pad protection plate situated in the rear centre pad. The plate is secured by two domed nuts.

Bonnet pads - To fit
To fit the bonnet pads reverse the procedure given for removal.

Bonnet moulding - To remove
Silver Shadow II, Bentley T2, Silver Wraith II and Corniche
1. Remove the 4BA nut retaining the front end of the bonnet moulding.
2. Carefully lever the moulding away from the bonnet by releasing each of the five retaining clips situated along the length of the moulding.
3. Remove the moulding, lifting the 4BA retaining bolt at the front end clear of the bonnet.

Note
On cars destined for Australia, Canada, Japan and U.S.A. two 4BA nuts and bolts retain the moulding, together with the five clips.

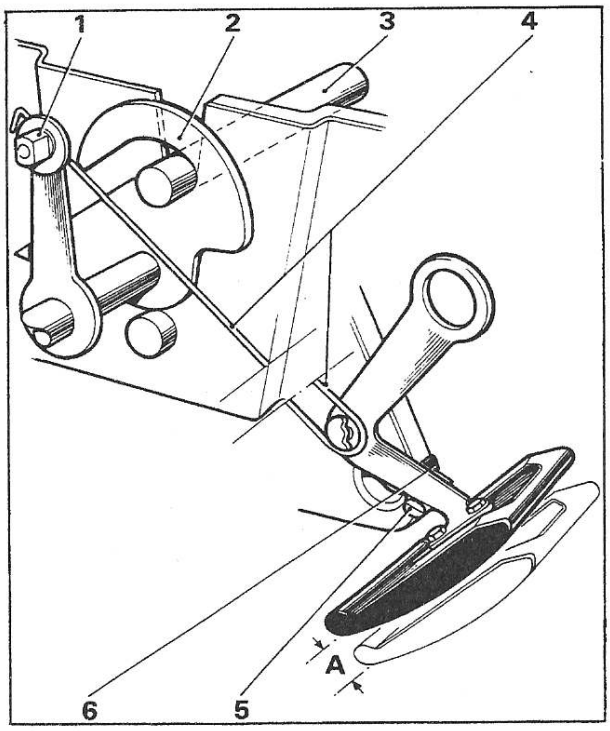


Fig. S28 Setting the bonnet catch operating mechanism
A 3,20 mm. (0.125 in.) free movement.
1 Wire nipple
2 Locking cam
3 Setting bar
4 Operating wire
5 Stop on operating lever
6 Rubber stop on pivot bracket

Bonnet moulding - To fit
To fit the bonnet moulding reverse the procedure given for removal noting the following point.
Silver Shadow II, Bentley T2, Silver Wraith II and Corniche
1. Space out the retaining clips along the length of the moulding, locate the 4BA bolt(s) into its access hole, then press each retaining clip in turn into position before fitting the retaining nuts.

Section S3

Luggage compartment lid
Contents

November 1978
T.S.D. 420f

Section S3

Luggage compartment lid

Luggage compartment lid - To remove
Silver Shadow II, Bentley T2 and Silver Wraith II

1. Disconnect the battery.
2. Remove the two screws securing the luggage compartment lamp surround; remove the surround together with the lamp lens.
3. Remove the four screws securing the bulb holder, withdraw the holder sufficiently to disconnect the electrical leads. Remove the holder and retain the leads in position.
4. Remove the two screws retaining the access cover over the actuating mechanism and solenoids; remove the cover.
5. Disconnect the electrical leads from the solenoids at the junction block.
6. On cars destined for U.S.A. and Canada, carefully separate the carpet trim from the luggage compartment lid sufficiently to gain access to the snap connectors of the rear number plate lamp leads; disconnect the connectors.
7. Separate the carpet trim from the lid, midway along the left-hand side edge, to gain access to the self-tapping screw securing the black earth wires to the lid; remove the earth wires.
8. Tie a piece of string or wire approximately 1,5 metres (5.0 ft.) long to the disconnected leads. Withdraw the electrical loom from the lid until only the string or wire remains in the lid then remove the leads.

   The string or wire should be left in the lid to facilitate the refitting of the loom.
9. Scribe correlation marks around the washers of the six setscrews securing the lid to the two hinges; remove the setscrews.

   Two assistants will be required to support the lid as the setscrews are removed.
10. Remove the luggage compartment lid.

    To facilitate assembly, note the number of shims fitted between each hinge and the luggage compartment lid.

Corniche

1. Disconnect the battery.
2. Remove the trim covering the hinges and luggage compartment lamp by releasing the screws adjacent to the hinges.
3. Disconnect the snap connectors attaching the luggage compartment lid loom to the body loom.
4. Remove the hinge trim covers by releasing the self-tapping screws securing the covers to the inside front face of the luggage compartment lid.
5. Repeat Operations 9 and 10 from Luggage compartment lid - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.

Camargue

1. Disconnect the battery.
2. Remove the six self-tapping screws securing the lock trim cover; remove the cover.
3. Remove the self-tapping screws securing the carpet trim to the lid; remove the trim.
4. Remove the two Pozidriv screws securing each of the two rear number plate lamps to the lid.

   Withdraw the lamps sufficiently to gain access to the electrical leads, disconnect the leads at the Lucar connections and remove the lamps.

   Note the colour code of the leads to ensure correct assembly.
5. Disconnect the electrical leads to the luggage compartment lock solenoids at the junction block.
6. Repeat Operations 8, 9 and 10 from Luggage compartment lid - To remove, Silver Shadow II, Bentley T2 and Silver Wraith II.

Luggage compartment lid - To fit
All cars

To fit the luggage compartment lid reverse the procedure given for removal noting the following points.

1. Before tightening the setscrews securing the lid to the hinges, align the correlation marks made during removal.
2. Prior to fitting the hinge trim covers or carpet trim, check the lid to body clearances as shown in Figures S29, S30 and S31. If necessary, slacken the six setscrews and move the lid until the clearances are correct then tighten the setscrews.
3. Check that the lid can be opened and closed without difficulty (see Luggage compartment lid lock mechanism, handle and solenoids - To fit, Operation 7).
4. When fitted correctly, the contour of the lid should match perfectly with the contour of the body.

Luggage compartment lid hinges - To remove
Silver Shadow II, Bentley T2, Silver Wraith II and Camargue

1. Remove the luggage compartment lid.
2. Remove the carpet trim from around the hinges and torsion rods by releasing the press studs.

   On Silver Wraith II cars fitted with a centre division remove the self-tapping screws securing the trim panel in the forward section of the luggage compartment; remove the panel.

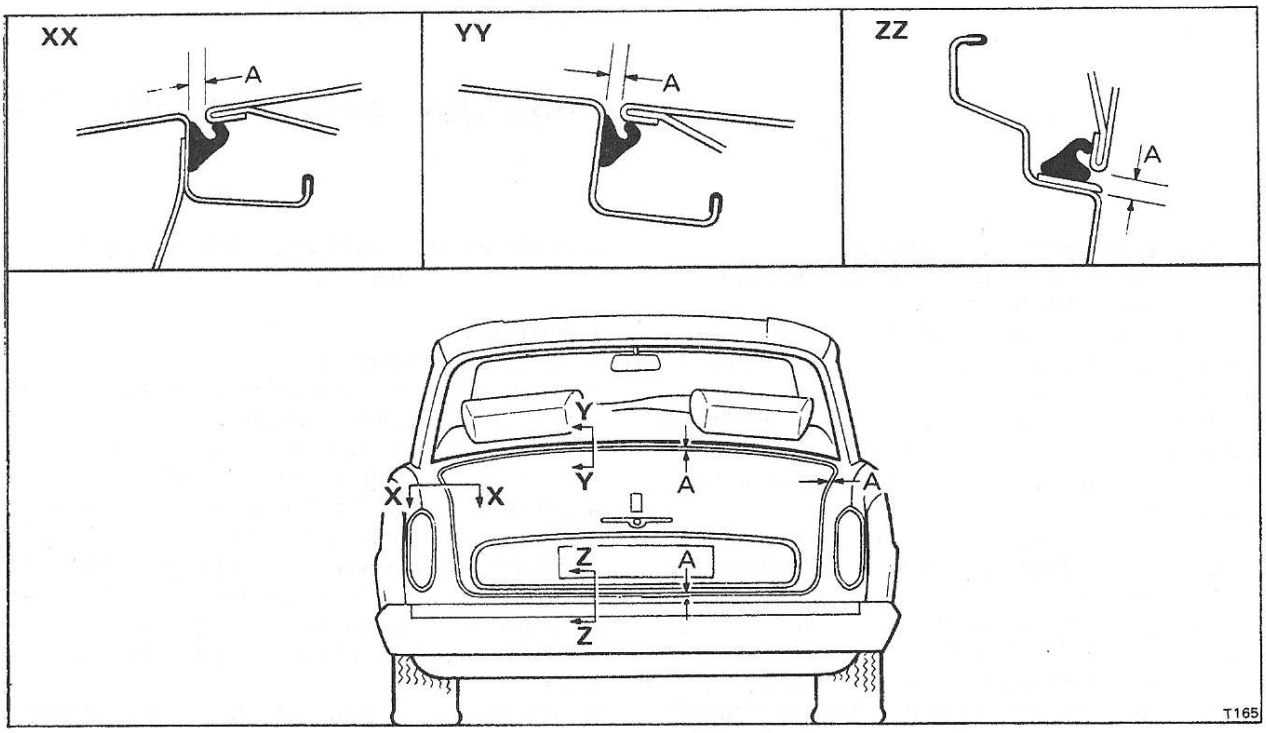


Fig. S29 Luggage compartment lid clearances (Silver Shadow II, Bentley T2 and Silver Wraith II)
A 6,35 mm. (0.250 in.)

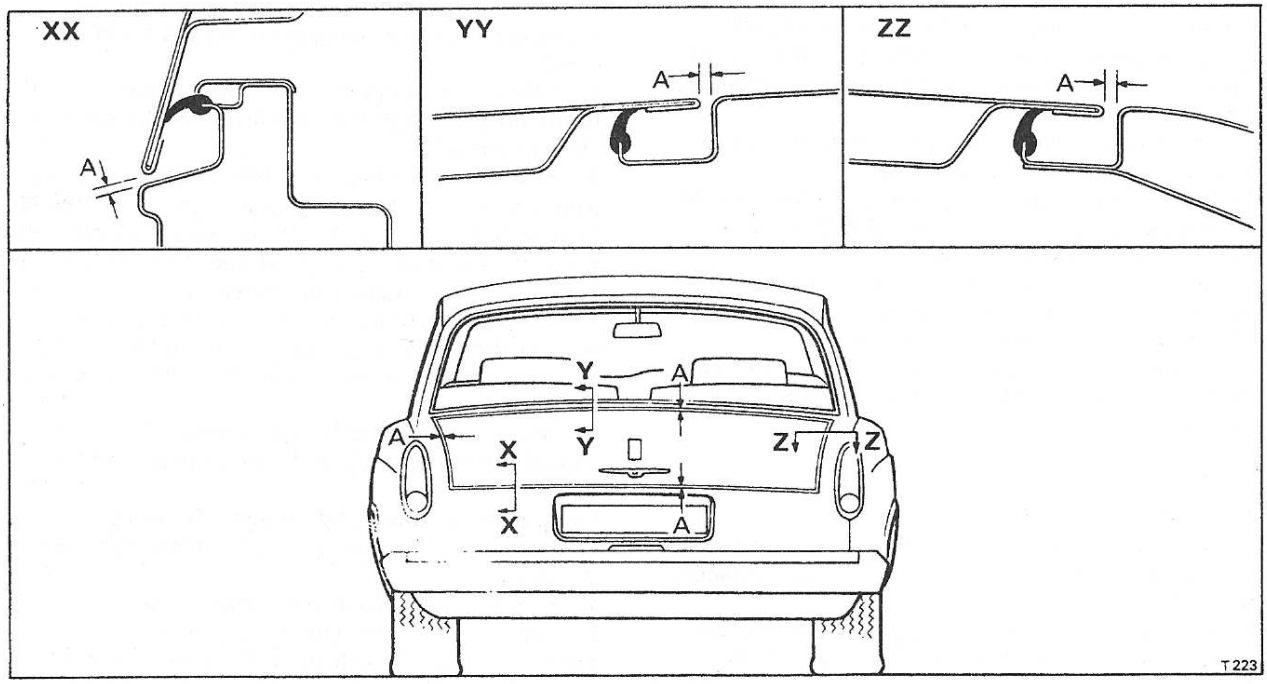


Fig. S30 Luggage compartment lid clearances (Corniche)
A 2,38 mm. (0.093 in.)

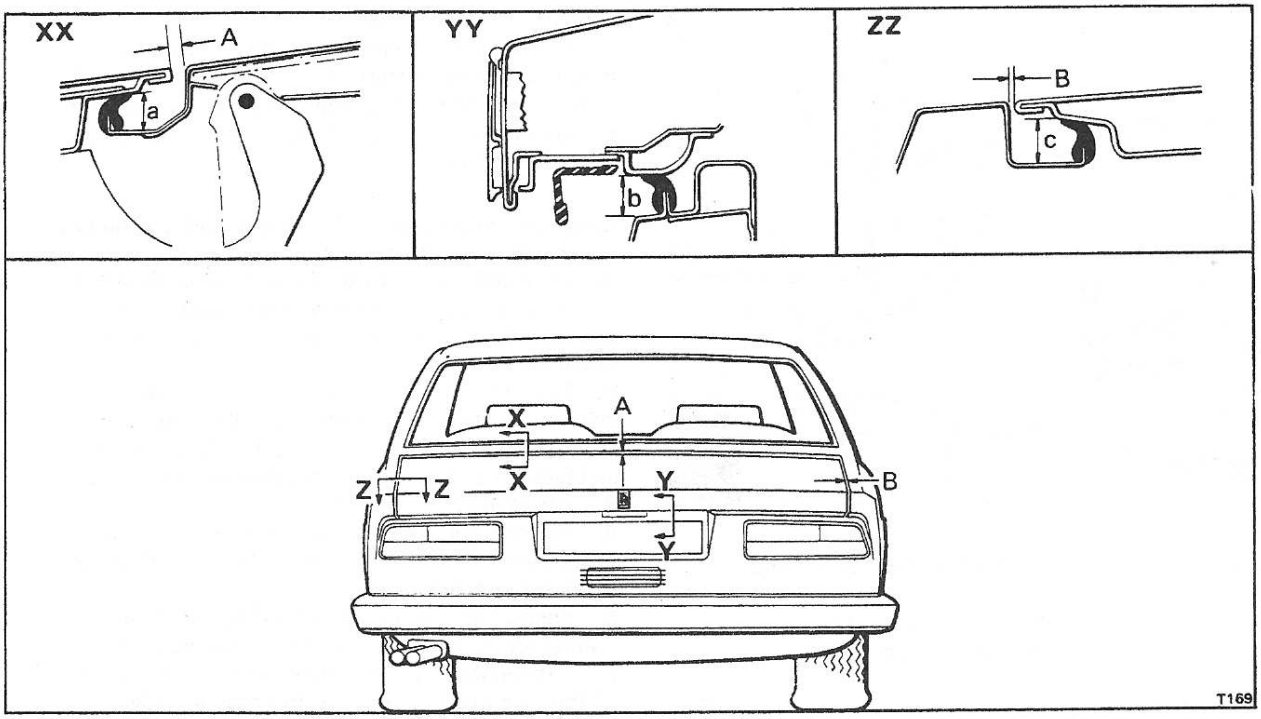


Fig. S31 Luggage compartment lid clearances (Camargue)

A 4,60 mm. to 5,40 mm. (0.181 in. to 0.212 in.)
B 3,20 mm. to 4,0 mm. (0.125 in. to 0.157 in.)
a 18,60 mm. to 19,40 mm. (0.732 in. to 0.763 in.)
b 19,0 mm. to 19,80 mm. (0.748 in. to 0.779 in.)
c 18,60 mm. to 19,40 mm. (0.732 in. to 0.763 in.)

On cars destined for U.S.A. and Canada, remove the trim panel covering the lid hinges and the fuel tank by releasing the screws situated across the centre and bottom of the panel. Also, remove the trim panel crossmember by removing the screws shown in Figure S32, item 2.

3. Remove the screws securing the clips for the lid electrical loom to the left-hand hinge.
4. Disconnect the leads to the luggage compartment lamp switch at the snap connectors; the switch is secured to the right-hand hinge.
5. Remove the hinges and torsion rods by releasing the four setscrews securing each hinge to the car body.

Corniche

1. Remove the luggage compartment lid.
2. Remove the screws securing the cover of the luggage compartment lamp; remove the cover. Remove the screws securing the lamp unit, disconnect the leads and remove the lamp.
3. On Saloon cars remove the trim panel covering the hinges by releasing the four screws adjacent to each hinge.

On Convertible cars remove the three trim panels covering the hinges by releasing the screws.

4. On cars destined for U.S.A. and Canada, remove the trim panel covering the lid hinges and the fuel tank by releasing the screws across the centre and bottom of the panel.
5. On Convertible cars remove the six 2BA bolts securing the two inner triangular shaped hinge brackets to the body. Disconnect the electrical loom running through the two brackets at the terminal block then, withdraw the loom from the brackets.
6. Repeat Operations 3, 4 and 5 from Luggage compartment lid hinges - To remove, Silver Shadow II, Bentley T2, Silver Wraith II and Camargue.

Luggage compartment lid hinges - To fit

All cars

To fit the hinges reverse the procedure given for removal noting the following points.

1. Before tightening the setscrews securing the lid to the hinges, the lid must be set in relation to the body (see Figs. S29, S30 and S31).
2. Before fitting the hinge trim covers, check that the hinge torsion rod adjusting screws are set

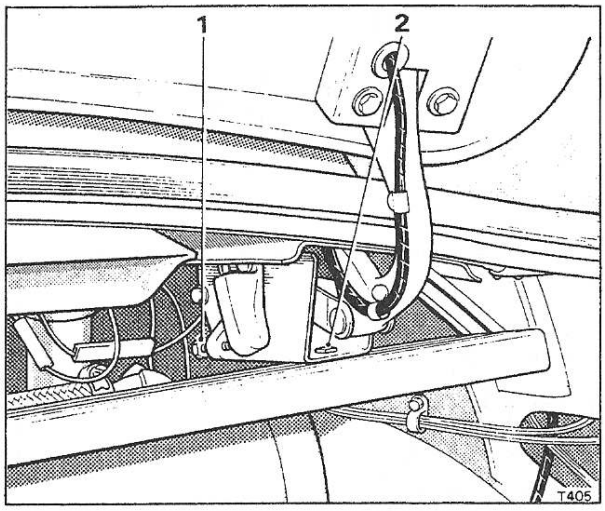


Fig. S32 Luggage compartment lid hinges and torsion bars
1 Adjuster - hinge torsion rods
2 Crossmember retaining bolt

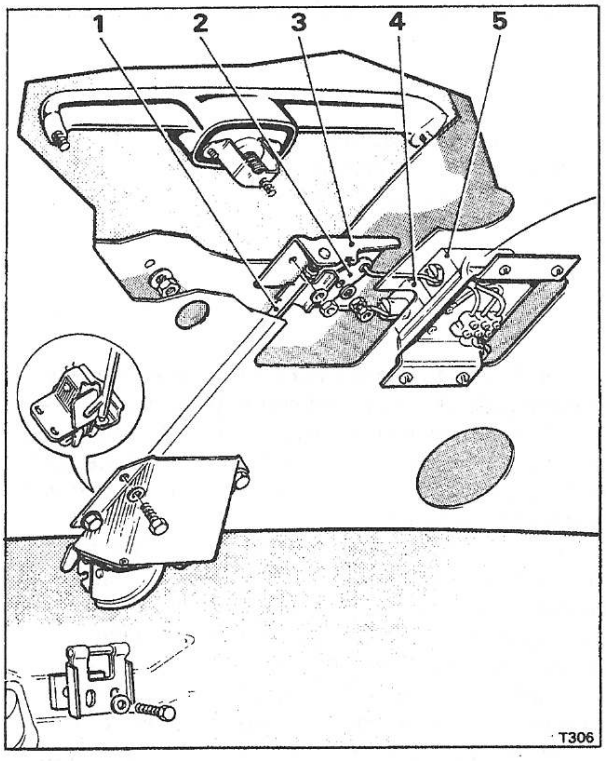


Fig. S33 Luggage compartment lid handle, lock mechanism and solenoids (Silver Shadow II, Bentley T2 and Silver Wraith II)
1 Remote control rod
2 Contactor lever
3 Mounting plate
4 Locking solenoid
5 Unlocking solenoid

correctly (see Fig. S32).

The screws should be adjusted so that an initial downward effort of approximately 9kg. (20 lb.) is required, at the luggage compartment lid handle, to move the lid from the fully open to the fully closed position.

Luggage compartment lid lock mechanism, handle and solenoids - To remove
Silver Shadow II, Bentley T2 and Silver Wraith II

1. Remove the four self-tapping screws securing the cover plate around the lock mechanism; remove the cover plate.
2. Ease the carpet trim away from the lock mechanism and remove the four 2BA setscrews securing the mechanism to the lid. Remove the mechanism and withdraw the remote control rod.
3. Disconnect the battery.
4. Release the two screws securing the cover plate over the solenoids and actuating mechanism; remove the cover plate.
5. Remove the solenoid operating rods from the connector by pulling them from their bushes.
6. Disconnect the electrical leads to the solenoids at the terminal block; note the colour code of the leads to ensure correct assembly.
7. Remove the solenoids and mounting plate by releasing the four screws securing the plate to the lid.
8. Remove the contactor lever (see Fig. S33) by releasing the two lock-nuts.
9. Remove the two nuts and washers securing the mounting plate of the actuating mechanism to the lid; remove the mounting plate.
10. Remove the nuts and washers securing the exterior handle to the lid (see Fig. S33); remove the handle.

Corniche
Prior to car serial number 32948 (except those cars destined for West Germany from car serial number 31119 up to and including 32947)

1. Remove the hinge trim covers. Release the screws securing the covers to the lid.
2. Remove the luggage compartment lid trim. Release the screws situated around the perimeter of the lid.
3. Remove the lock mechanism, finishers and packing pieces by releasing the four screws securing them to the lid.
4. Remove the chrome finisher surrounding the lock mechanism aperture by releasing the four screws securing the finisher to the lid.
5. Disconnect the battery.
6. Remove the contactor lever (see Fig. S34). Release the nut and washers at the end of the lock spindle and disengage the pivot lever pin from the contactor lever.
7. Remove the lid handle and actuating mechanism. Release the two nuts and washers securing the ends of the handle to the lid (see Fig. S34).

8. Disconnect the electrical leads of the solenoid loom at the terminal block on the mounting plate. Note the colour code of the leads to ensure correct assembly.
9. Remove the solenoids and mounting bracket assembly. Release the four bolts, plain and shake-proof washers securing the assembly to the lid.

From car serial number 32948 (including those cars destined for West Germany from car serial number 31119 up to and including 32947)
1. Repeat Operations 1 to 5 inclusive from cars prior to car serial number 32948.
2. Remove the contactor lever (see Fig. S35). Release the nut and washers at the end of the lock spindle and disengage the pivot pin from the contactor lever.
3. Remove the lid handle and actuating mechanism. Release the two nuts and washers securing the ends of the handle. Also, remove the nuts and washers securing the handle actuating mechanism guide bracket and clamping plate to the lid (see Fig. S35).
4. Disconnect the electrical leads of the solenoid loom at the terminal block on the mounting plate. Note the colour code of the leads to ensure correct assembly.
5. Remove the solenoids and mounting bracket assembly. Release the four bolts, plain washers and shakeproof washers securing the solenoid assembly to the lid. Retain the two 2BA packing washers situated between the mounting bracket and the lid (see Fig. S35).

Camargue
1. Remove the trim cover from around the lock mechanism by releasing the six self-tapping screws and cap washers.
2. Remove the four setscrews and washers securing the lock mechanism to the mounting bracket; remove the lock mechanism.
3. Disconnect the battery.
4. Remove the screws and washers securing the lock mounting bracket to the lid; remove the mounting bracket.
5. Disconnect the electrical leads to the solenoids at their Lucar connections; note the colour code of the leads to ensure correct assembly.
6. Detach the solenoids from the lid by releasing the two 4BA screws and washers retaining each solenoid. Remove the solenoids and connecting link assembly from the lid, detaching the connecting link from the pin of the operating lever during removal.
7. Loosen the four 2BA screws securing the exterior handle and remove the two lower screws and washers. Release the two handle return springs and remove the exterior handle from the lid.

Note that the two upper screws and washers cannot be removed from the lid lock control bracket until the actuating mechanism assembly has been removed.

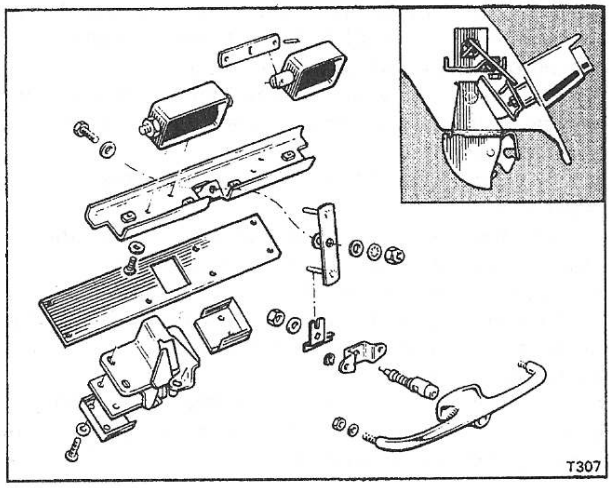


Fig. S34 Luggage compartment lid handle, lock mechanism and solenoids (Corniche) Prior to car serial number 32948 (except those cars destined for West Germany from car serial number 31119 up to and including 32947)

8. Remove the two 2BA screws and washers securing the mounting plate of the actuating mechanism assembly to the lid; remove the actuating mechanism.
9. Remove the two exterior handle upper retaining screws and washers from the lid lock control brackets (see Operation 7).

Luggage compartment lid lock mechanism, handle and solenoids - To fit (see Fig. S33).
To fit the lock mechanism, handle and solenoids reverse the procedure given for removal noting the following points.
Silver Shadow II, Bentley T2 and Silver Wraith II
1. Fit the rubber sealing ring to the handle, temporarily locating it in position with Glasticon Sealer (see Fig. S37).
2. Fit the actuating mechanism mounting plate, remote control rod and the lock mechanism as follows.

Fit the mounting plate. Slacken the remote control rod adjuster thereby reducing the length of the rod. Fit the rod and the lock mechanism to the lid ensuring that each end of the rod locates correctly in the special bearings. Unscrew the rod adjuster until any end-float is removed then tighten the adjuster lock-nut.
3. Check that the contactor lever moves freely and, when moved manually through the lock and unlock positions the solenoid plungers operate satisfactorily.
4. Press the handle push button. The push button should be set so that the contactor lever is free to rotate when there is approximately 2,0 mm. (0.080 in.) of travel remaining at the button.

If there is insufficient free travel, the arm of the

actuating mechanism mounting plate should be bent inboard until the travel is correct; only a small amount of bending should be necessary.

5. Check that the wheel on the lock mechanism can be rotated freely when the handle push button is fully depressed.

6. Using the key, check that the lock operates satisfactorily.

Turn the key to the locked position. Press the handle push button and check that the lock mechanism is not operated.

Turn the key to the unlocked position. Press the handle push button and check that the lock mechanism is operated.

7. Check that the lid can be opened and closed without difficulty and that all free movement is removed from the lid when closed.

If necessary, adjust the position of the lock catch plate at the rear of the luggage compartment until the above conditions are complied with.

Corniche (see Fig. S34)

Prior to car serial number 32948 (except those cars destined for West Germany from car serial number 31119 up to and including 32947)

1. Fit the contactor lever ensuring it is positioned correctly. Fit the plain and shakeproof washers then apply Loctite Screwlock 222 to the 3BA nut before securing the lever into position.

2. Check that the contactor lever moves freely and that, when moved manually through the lock and unlock positions the solenoid plungers operate satisfactorily.

3. Press the handle push button. The push button should be set so that the contactor lever is free to rotate when there is approximately 2,0 mm.

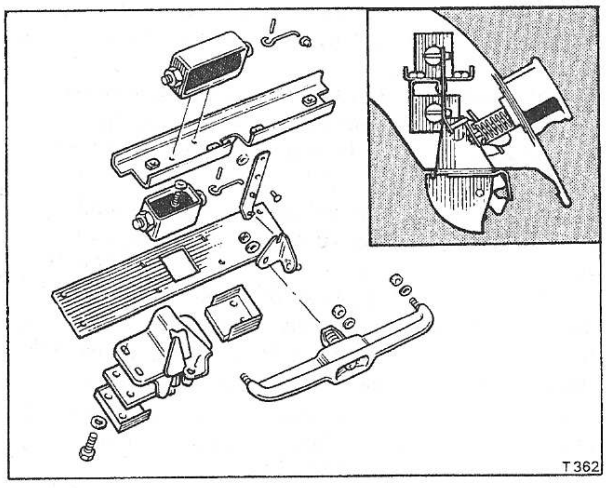


Fig. S35 Luggage compartment lid handle, lock mechanism and solenoids (Corniche) From car serial number 32948 (including those cars destined for West Germany from car serial number 31119 up to and including 32947)

(0.080 in.) of travel remaining at the button.

If there is insufficient free travel, the contactor legs should be reset until the travel is correct; only a small amount of bending should be necessary.

4. Repeat Operations 5,6 and 7 from Luggage compartment lid lock mechanism, handle and solenoids - To fit, Silver Shadow II, Bentley T2 and Silver Wraith II.

Corniche (see Fig. S35)

From car serial number 32948 (including those cars destined for West Germany from car serial number 31119 up to and including 32947

1. Ensure that the pivot lever operates freely on its rivet.

2. When fitting the solenoid and mounting bracket assembly into the lid proceed as follows.

Fit the pivot lever pin into the contactor lever slot. The pin must protrude beyond the back face of the contactor lever by a minimum of 1,59 mm. (0.062 in.).

Fit the two front mounting bolts, plain and shakeproof washers loosely, to hold the assembly in position. Slide two 2BA washers, one to each rear hole, between the reinforcing member in the lid and the bracket assembly to function as packing pieces. Fit the two rear mounting bolts with plain and shakeproof washers. Tighten the four mounting bolts securely.

3. Fit the contactor lever in its correct position. Fit the plain and shakeproof washers then apply Loctite Screwlock 222 to the 3BA nut before securing the lever into position.

Check the clearance between the underside of the contactor lever and the adjacent spring retainer face. The clearance should not exceed 1,59 mm. (0.062 in.). If the clearance exceeds this figure correct it by increasing the length of the lock spindle flats, cutting away the surplus spindle length and extending the 3BA thread.

4. Check that the contactor lever moves freely and that, when moved manually through the lock and unlock positions the solenoid plungers operate satisfactorily.

5. Fit the rubber sealing ring and fibre washers to the handle, temporarily locating them in position with Glasticon Sealer.

6. Remove the nuts securing the spring retainer. Pass the clamping plate over the contactor lever and the spring retainer.

7. Fit the handle and lock assembly. Guide the clamping plate through the luggage compartment lid aperture ensuring that it is the correct way round.

8. Secure the clamping plate in its studs using shakeproof washers and nuts. Fit plain and shakeproof washers to each stud at the outer ends of the handle and secure with nuts.

9. Press the handle push button. The push button should be set so that the contactor lever is free to rotate when there is approximately 2,0 mm. (0.080 in.) of travel remaining at the button.

If there is insufficient free travel, the contactor legs should be reset until the travel is correct; only a small amount of bending should be necessary.

10. Repeat Operations 5, 6 and 7 from Luggage compartment lid lock mechanism, handle and solenoids - To fit, Silver Shadow II, Bentley T2 and Silver Wraith II.

Camargue (see Fig. S36)

1. Fit the private lock.
2. Ensure that the two handle upper retaining screws and washers are fitted loosely into position before fitting the actuating mechanism.
3. Locate the actuating mechanism assembly into the private lock. Position the mounting plate of the assembly at its lowest point and secure with the 2BA setscrews and washers.
4. When locating the solenoids and connecting link into the lid, ensure that the pin of the operating lever enters the slot in the connecting link.

Note that the two screws which secure the 'unlock' solenoid are slightly longer than those which secure the 'lock' solenoid.

5. Check that the solenoids and lock operate satisfactorily, using the centralised locking switch and a key respectively.

Solenoids and operating rods - To dismantle
Silver Shadow II, Bentley T2 and Silver Wraith II

1. Remove the earth wire and terminal block from the solenoids mounting plate.
2. Remove the solenoids and operating rods by releasing the four screws and washers securing the solenoids to the mounting plate.
3. Using a parallel punch, remove the 3,18 mm. (0.125 in.) diameter roll pins securing the operating rods to the solenoid plungers.

Solenoids and operating rods - To assemble (see Fig. S33)
Silver Shadow II, Bentley T2 and Silver Wraith II

To assemble the solenoids and operating rods reverse the procedure given for dismantling noting the following points.

1. Always fit a new roll pin when securing a solenoid plunger to an operating rod.
2. Always ensure that washers are fitted under the heads of the screws securing the solenoids to the mounting bracket.

Solenoids and connecting link - To dismantle
Corniche
Prior to car serial number 32948 (except those cars destined for West Germany from car serial number 31119 up to and including 32947)

1. Remove the earth wire and terminal block from the solenoid mounting plate.
2. Remove the pivot lever assembly. Release the nut, bolt, plain washers and shakeproof washers from the central pivot point, withdrawing the pivot lever from the solenoid connecting link.

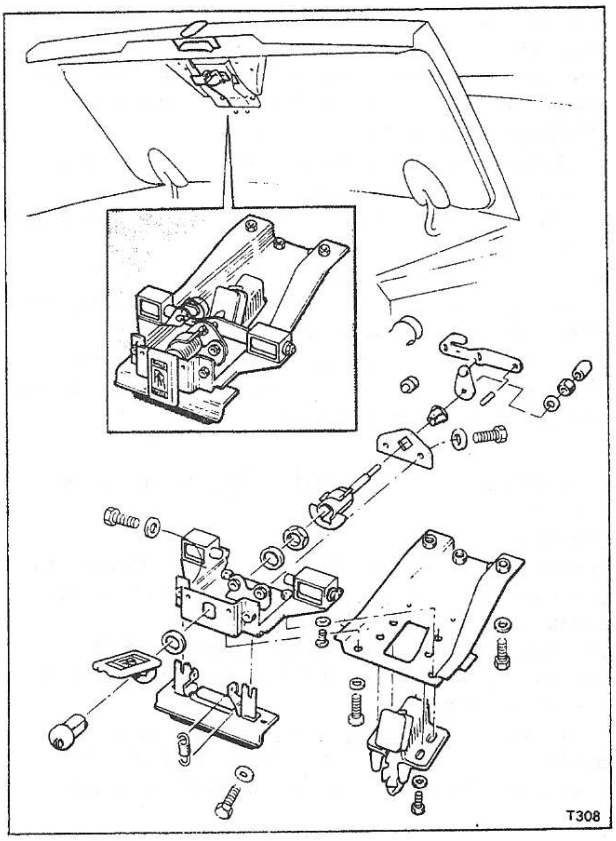


Fig. S36 Luggage compartment lid handle, lock mechanism and solenoids (Camargue)

3. Remove the solenoids and connecting link by releasing the four screws and washers securing the solenoids to the mounting plate.
4. Using a parallel punch, remove the 3,18 mm. (0.125 in.) diameter roll pins securing the connecting link to the solenoid plungers.

Solenoids and connecting link - To assemble (see Fig. S34)
Corniche
Prior to car serial number 32948 (except those cars destined for West Germany from car serial number 31119 up to and including 32947)

To assemble the solenoids and connecting link reverse the procedure given for dismantling noting the following points.

1. Always fit a new roll pin when securing a solenoid plunger to the connecting link.
2. When fitting the pivot lever assembly ensure that the end of the lever having the small pin secured to it is placed in the centre hole of the connecting link.
3. Always ensure that washers are fitted under the heads of the screws securing the solenoids to the mounting bracket.

Solenoids and operating rods - To dismantle
Corniche
From car serial number 32948 (including those cars destined for West Germany from car serial number 31119 up to and including 32947)
1. Remove the earth wire and terminal block from the solenoid mounting plate.
2. Remove the operating rods from the bushes in the pivot lever.
3. Remove the solenoids and operating rods by releasing the four screws and washers securing the solenoids to the mounting plate.
4. Using a parallel punch, remove the 3,18 mm. (0.125 in.) diameter roll pins securing the operating rods to the solenoid plungers.

Solenoids and operating rods - To assemble (see Fig. S35)
Corniche
From car serial number 32948 (including those cars destined for West Germany from car serial number 31119 up to and including 32947)
To assemble the solenoids and operating rods reverse the procedure given for dismantling noting the following points.
1. When fitting a new pivot lever assembly, secure the lever with a rivet and washer (see Fig. S35). Ensure that the pivot lever operates freely on its pivot.
2. Always fit a new roll pin when securing a solenoid plunger to an operating rod.
3. Always ensure that washers are fitted under the heads of the screws securing the solenoids to the mounting bracket.
4. When fitting a new solenoid, operating rod and mounting plate assembly, lightly secure the assembly in a vice and set the pivot lever perpendicular to the mounting bracket.

From this setting push each solenoid plunger in turn, into the solenoid frame until they abut their stops. Each plunger before it meets its stop should move the pivot lever a total of 12,70 mm. (0.50 in.) precisely when measured at the rear end of the pivot lever pin.

If this condition is not achieved elongate the solenoid mounting holes in the appropriate sideways direction to effect a correction.

Note
Do not elongate the holes in a front or rearwards direction as this will create side loading between the solenoid plunger and its frame.

Solenoids and connecting link - To dismantle
Camargue
1. Release the legs of the tension spring from the guide bracket then remove the guide bracket.
2. Remove the tension spring and roller from the connecting link.
3. Using a parallel punch, remove the 3,18 mm. (0.125 in.) diameter roll pins securing the connecting link to the solenoid plungers.

Solenoids and connecting link - To assemble (see Fig. S36)
Camargue
To assemble the solenoids and connecting link reverse the procedure given for removal noting the following points.
1. Always fit a new roll pin when securing a solenoid plunger to the connecting link.
2. Ensure that the 'lock' solenoid is connected to the slotted hole in the connecting link.

Actuating mechanism and mounting plate - To dismantle
Camargue
1. Remove the end cap from the push rod.
2. Remove the 2BA nut and washer securing the operating lever to the push rod; remove the lever from the rod.
3. Remove the push rod from the mounting plate by pulling the rod from the nylon bush.

Actuating mechanism and mounting plate - To assemble (see Fig. S36)
Camargue
To assemble the actuating mechanism and mounting plate reverse the procedure given for removal noting the following points.
1. During assembly, lubricate all metal to metal pivots with Rocol MTS 1000 grease or its equivalent.
2. Check the condition of the nylon bush in the mounting plate; fit a new bush if necessary.
3. Bond the cap to the push rod with Araldite Adhesive.

Private lock mechanism - To dismantle (see Fig. S37)
Silver Shadow II, Bentley T2 and Silver Wraith II. Also Corniche cars from car serial number 32948 (including those cars destined for West Germany from car serial number 31119 up to and including 32947)
1. Remove the contactor lever (see Figs. S33 and S35).
2. Remove the exterior handle and handle mechanism.
3. Remove the guide plate by releasing the two circlips retaining it in position.
4. Remove the spring and the nylon sleeve from the lock spindle.
5. Withdraw the lock, nylon retaining plate and spacers from the handle.
6. Remove the rear section of the private lock by releasing the two retaining screws (see Fig. S37).
7. Remove the nylon retaining plate and spacers.
8. Remove the rubber sealing ring.

Corniche (see Fig. S34)
Prior to car serial number 32948 (except those cars destined for West Germany from car serial number 31119 up to and including 32947)
1. Repeat Operations 1 to 4 inclusive from Private

lock mechanism - To dismantle, Silver Shadow II, Bentley T2 and Silver Wraith II.
2. Withdraw the lock from the handle.
3. Remove the rear section of the lock cylinder by releasing the two retaining screws (see Fig. S34).

Camargue (see Fig. S36)
1. Remove the exterior handle and actuating mechanism (see Luggage compartment lid lock mechanism, handle and solenoids - To remove).
2. Remove the large nut securing the private lock to the lid then remove the adjusting washer.
3. Remove the private lock complete with the paint protection washer and the hinged lock cover.

Private lock mechanism - To assemble (see Fig. S37) Silver Shadow II, Bentley T2, Silver Wraith II and all Corniche cars
To assemble the private lock mechanism reverse the procedure given for removal.

Camargue
1. Before fitting the lock, lubricate the pivots of the hinged cover with Rocol MTS 1000 grease or its equivalent.
2. Ensure that the paint protection washer is fitted between the hinged cover and the lid.
3. Check that the threads of the private lock do not protrude through the nut when the nut is fully tightened, as the nut acts as a control stop.
If necessary fit additional adjusting washers under the nut to obtain this position.

Luggage compartment lid seals - To remove Silver Shadow II, Bentley T2 and Silver Wraith II
1. Using a sharp knife or similar tool carefully remove the seal from the body.
2. Remove the small sealing strip from the inner rim of the lid aperture (see Fig. S38, item 3).

Corniche
1. Remove the chromed strip from the rear face of the luggage compartment.
2. Using a sharp knife or similar tool carefully remove the seal from the body.

Camargue
1. Using a sharp knife or similar tool carefully remove the seal from the body.

Luggage compartment lid seals - To fit Silver Shadow II, Bentley T2 and Silver Wraith II
1. Clean the bonding surfaces of the seal and the lid aperture flange with Bostik Cleaner 6001; allow approximately one hour to dry.
2. Apply Boscolite Primer 9252 to the bonding area on the flange; allow approximately one hour to dry.
3. Apply Boscoprene Adhesive 2402 (parts 1 and 2) to the bonding surfaces of the seal and flange. Also, apply the adhesive to the two small rubber strips which fit into the radiused bottom corners of the seal

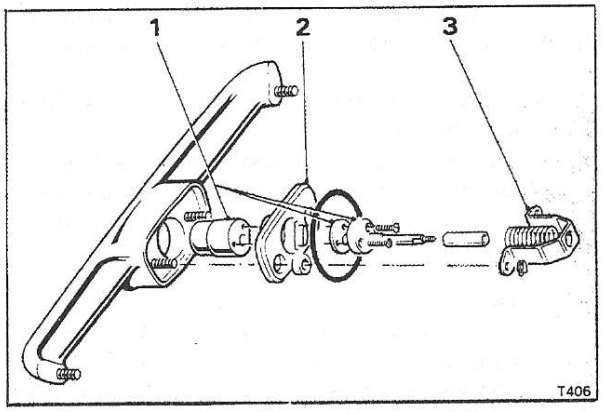


Fig. S37 Private lock mechanism
1 Private lock
2 Retaining plate
3 Guide plate

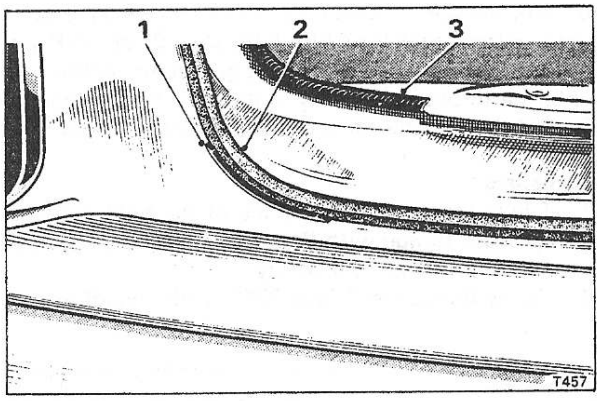


Fig. S38 Luggage compartment lid seals (Silver Shadow II, Bentley T2 and Silver Wraith II)
1 Rubber strip
2 Luggage compartment lid seal
3 Sealing strip - inner rim

channel (see Fig. S38, item 1). Allow between 10 and 15 minutes for the adhesive to partly dry.
Care should be taken to keep the primer and adhesive away from the finished paintwork.
4. Fit the two rubber strips to the lower corners of the seal channel.
5. Fit the lid seal to the aperture flange. Starting at the central point of the bottom flange, press the seal into position ensuring that the seal is not stretched. Also, ensure that the seal is level with the start of the radius on the body (see Fig. S29, inset).

When the circuit of the aperture flange is complete, abut the two ends of the seal at the centre of the bottom flange using Boscoprene Adhesive 2402.

6. The luggage compartment lid should remain open for a minimum period of 12 hours after fitting a new seal.
7. When the seal adhesive is dry, close the lid and water test for leaks.
8. If necessary, reset the position of the luggage compartment lock catch plate (see Luggage compartment lid lock mechanism, handle and solenoids - To fit, Operation 7).

Corniche

1. Clean the seal channel using Bostik Cleaner 6001; allow approximately 1 hour to dry.
2. Apply Bostik Adhesive 1261 to the seal channel.
3. Fit the three sections of the seal into position ensuring that the mitred bottom corners of the seal match perfectly.
4. Apply Romac Rubber Solution 61-805 or its equivalent to the mating faces of the mitred joints. Allow the solution to become 'tacky' then press the faces firmly together.
5. Fix the small rubber strip to the underside of each mitred joint (see Fig. S39, item 2) using Romac Rubber Solution 61-805 or its equivalent. Allow the solution to become 'tacky' and press firmly together.
6. Fit the chrome strip to the rear edge of the seal.

Camargue

1. Clean the bonding surfaces of the seal and the lid aperture flange with Bostik Cleaner 6001; allow approximately one hour to dry.
2. Apply Boscolite Primer 9252 to the bonding area on the flange; allow approximately one hour to dry.
3. Apply Boscoprene Adhesive 2402 (parts 1 and 2) to the bonding surfaces of the seal and flange. Allow between 10 and 15 minutes for the adhesive to partly dry.

Care should be taken to keep the primer and adhesive away from the finished paintwork.

4. Fit the lid seal to the aperture flange. Starting at the central point of the bottom flange, press the seal into position ensuring that the seal is not stretched.

When the circuit of the aperture flange is complete, abut the two ends of the seal at the centre of the bottom flange using Boscoprene Adhesive 2402.

5. Repeat Operations 6, 7 and 8 from Luggage compartment lid seals - To fit, Silver Shadow II, Bentley T2 and Silver Wraith II.

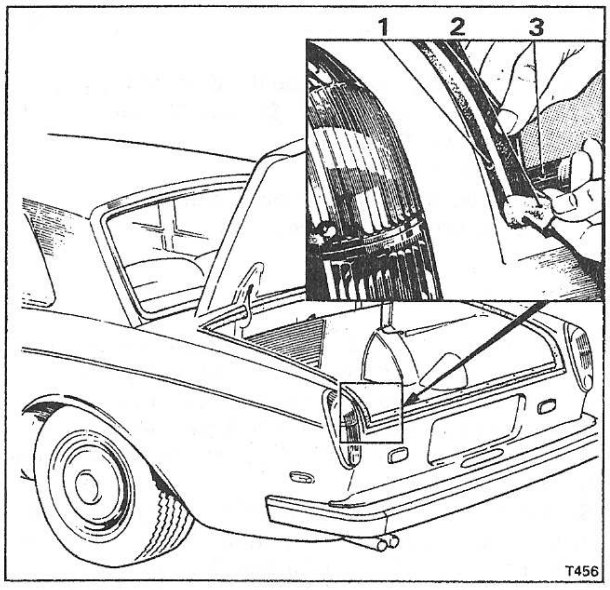


Fig. S39 Luggage compartment lid seal (Corniche)
1 Luggage compartment lid seal
2 Rubber gusset fitted to rear mitred joint of seal
3 Chrome plate

Section S4

Paint
Contents

Paint

Introduction

This section has been prepared to assist refinishing personnel during the rectification and repainting of Rolls-Royce and Bentley motor cars.

Care of paint finishes

To obtain a deeper lustre and a smoother surface in the paint finish of cars the use of modified acrylic nitro-cellulose and full thermoplastic acrylic type paints is recommended.

Modified cellulose and full thermoplastic finishes are extremely resistant to all normal forms of atmospheric attack, provided that the simple maintenance procedures are followed.

Note

Car finishes are not chemically resistant. Severe localised contamination with acid or alkaline solution can cause pitting or discolouration if left in contact with the paint for any length of time.

Maintenance of paintwork

For the correct maintenance of paintwork the following procedures are recommended.

1. Always wash paintwork with clean, preferably running cold water.
2. Do not use excessive pressure from the hose, but thoroughly wet the car all over before commencing cleaning.
3. Start at the top of the car and work down using clean sponges and fresh water as much as possible. Frequent washing is the best safeguard against unseen contaminants.

Note

If washing with cold water is not effective, warm water with a small amount of detergent will help to remove the gummy deposits exuded by some trees in the summer months.

4. Remove the water with a chamois leather. When leathering off the car the leather should be frequently washed in clean cold water and the surface water wrung out before continuing to use.
5. Sponge and leather all window frames and door edges.
6. Clean the windscreen, rear window and door windows inside and out. Lower the electrically operated windows to clean the portion normally covered by the window channels.
7. Remove any road tar from the car by gently rubbing with a soft cloth, moistened with turpentine substitute.
8. **Under no circumstances should any attempt be made to remove dirt, mud or dust when dry or with a dry cloth.** This practice can produce serious scratching of the surface finish, which will probably require professional repairs.
9. **The use of automatic car washes is not recommended,** as the detergents used and the nylon brush washing action, may stain or seriously scratch the paintwork or damage the windows or radiator shell.
10. At least every three months, after normal cleaning with cold water the paintwork should be restored by application of a suitable cleaner/polish system. In certain climatic conditions where longer periods of sunshine prevail, more frequent cleaning/polishing may well be necessary, dependent upon the colour of the car.
11. **Do not polish the car in a dusty or gritty atmosphere or in direct sunlight.**
12. When polishing **do not** apply a wax polish on top of previous wax layers and traffic film, as a build-up of wax can induce its own type of rain spotting or discolouration defects. A good quality friction emulsion cleaner/polish should be applied in accordance with the manufacturer's recommendation. Slight discolouration on the polishing cloth when carrying out this procedure will be evident but is of no cause for concern.
13. When the cleaner has been applied and removed, a good quality siliconised wax polish should then be applied to provide a weatherproof lustre.

Note

If regular maintenance polishing as described in Operations 10 to 13 inclusive is not carried out, the original gloss will be obscured and rain spotting may reach objectional proportions. Paintwork should therefore be cleaned and polished as soon as the gloss begins to fade, not when it has already become dull.

Properties and uses of paint

General information

There are two distinct stages in the repair of paint or in the complete refinish of a car, they are as follows.

The first stage consists of the preperation of the metal or old paint surface and the application of any undercoating system to give a smooth level surface to accept the final finishing coats. The correct choice of undercoats and correct application are essential, as mistakes made at this stage cannot be seen until the colour coats are applied and will then be extremely expensive to rectify.

The final stage consists of the application of a sufficient number of colour coats to give the required film build for durability. This also obliterates the undercoat on the repaired areas and matches the original finish for colour and general appearance.

Paint is a product which, by its very composition, is vulnerable to misuse. Once a container is opened

numerous problems can arise. For example, it has been found when investigating colour problems in service, that often the material has not been sufficiently stirred and with the increasing use of metallics, the necessity to completely and thoroughly stir the paint before use cannot be over emphasised. Also, few paints used in the refinishing trade are supplied ready for use, therefore the addition of thinners is necessary. Rolls-Royce Motors Limited and the paint manufacturers indicate clearly in their literature the correct thinner to use, the approximate thinning proportions and the recommended application viscosity. **It cannot be too strongly emphasised that these recommended procedures must be adhered to.**

A paint can generally be described as a mixture of fluids and solids of different types. They are as follows.

1. Fluids – solvent, binder, plasticiser and additives.
2. Solids – pigments and fillers.

The term 'paint' can be used to identify any liquid material that when applied to a surface will dry to give a hard continuous film. Film forming or drying takes place in solvent based paints (the ones used by Rolls-Royce Motors Limited) solely by evaporation of the solvents and there is no chemical change involved. Paints which fall into this category are.

1. Cellulose and acrylic based colour paints.
2. Cellulose or acrylic based primers/surfacers.
3. Primer fillers and cellulose or acrylic based stoppers.

Fig. S40 Spray application of etching primer onto bare metal and polyester stopper

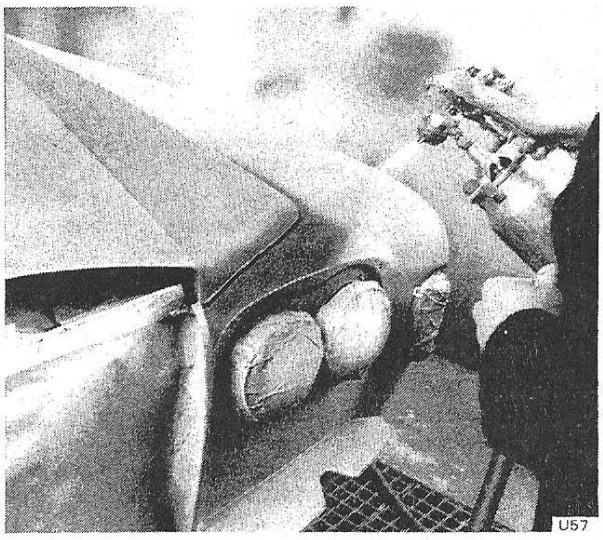


Fig. S41 Spray application using primer surfacer

Undercoats

Undercoat is a general description broadly used to identify coatings which can provide a base for the final colour coats. Primers, fillers, surfacers or stoppers all belong to this group.

Primers

Primers are formulated to give good adhesion between the substrate and the final paint system.

As their main purpose is to establish a secure base for any subsequent painting operations, primers are most effective when applied in relatively thin films. They are not designed to fill scratches and should not be flatted, a very light de-nib is all that is required.

Etching primers are a special type of primer formulated to provide a metal etch particularly on light alloy or zinc surfaces. They contain an acid activator which has to be mixed with the primer base approximately twenty minutes before use. After mixing, etching primers have only a useful life of approximately six hours.

Etching primers contain special pigments which help to prevent corrosion should the paint film become damaged.

Etching primers should be applied to all bare metal areas on steel, aluminium or zinc (see Fig. S40).

Primer surfacers

Primer surfacers are formulated to contain a larger amount of pigment than primers and consequently they are capable of filling minor scratches or imperfections. As well as better filling properties primer surfacers also have to promote good adhesion between the primer and subsequent coats of applied paint; they are, after drying, generally sanded to eliminate surface imperfections and to ensure that a uniform gloss is achieved after applying the colour coats (see Fig. S41).

Nitrocellulose based primer surfacers and fillers are recommended for use in refinishing. They are universal products and can be used in virtually any paint rectification system. Their particular attributes are quick drying to the flatting stage and a dry over-spray which will not adhere to and spoil adjoining work. **Do not attempt to fill all metal imperfections in the shortest time as these**

products should not be used in one heavy application at a high viscosity. This would result in slow drying, difficult flatting, sinkage of top coats and in many cases sand scratch swelling when the colour coats are applied. **The correct way which also saves time is to thin correctly and to build up in several thin coats.**

The correct way to use primer surfacers can be summarised as follows.

1. Stir thoroughly to ensure that any pigment settlement is fully dispersed.
2. Use the manufacturer's recommended thinner.
3. Thin to the recommended viscosity and check with a viscosity cup (see Fig. S47).
4. Apply a minimum of two even coats, allowing an adequate drying time between coats.
5. Avoid applying primer surfacer in a dusty atmosphere as this can lead to pin holing.
6. Ensure that the primer surfacer is properly dry before starting flatting operations.

Stoppers

A stopper is a heavily pigmented material with a paste like consistency. It is used to fill deep scratches, etc. and is usually applied with a knife or spreader. To apply the stopper correctly is a skilled operation. The surface of the stopper should be smooth and free from knife marks with no pin holes. The stopper should be applied in the following manner.

1. Using a knife or spreader at an angle of approximately 60° to the painted surface, apply firm even pressure. If the spreader is held at a more acute angle the stopper will tend to roll over the spreader and force air bubbles into the film.
2. **Stopper must never be applied in one thick coat.** The stopper will dry on the surface and remain soft underneath with subsequent sinkage of the colour coats. A high proportion of refinishing paint failures can be attributed to attempts to reduce processing times by applying stopper in thick layers.

The surface should be built-up with several thin layers and the operator should ensure that each layer is completely hard before proceeding with the next.

3. Stoppers should not be used as a substitute for work on metal which normally requires a hammer or file.

Polyester stoppers (see Fig. S42)

Polyester stoppers are two pack materials which dry by chemical reaction. Although thicker films may be applied which harden more quickly, it is still better to build up the thickness in more than one operation. Due to the consistency of these products the mixing of the two components before use will introduce air bubbles. If very thick layers are applied, it is not possible to press out the stopper and pin holes result. After the first layers of stopper have been flatted, a thin layer should then be applied to seal off any exposed pin holes.

Note

Two pack polyester stoppers must never be sandwiched between coats of colour as there is a considerable risk of blistering or cracking of the feather edge.

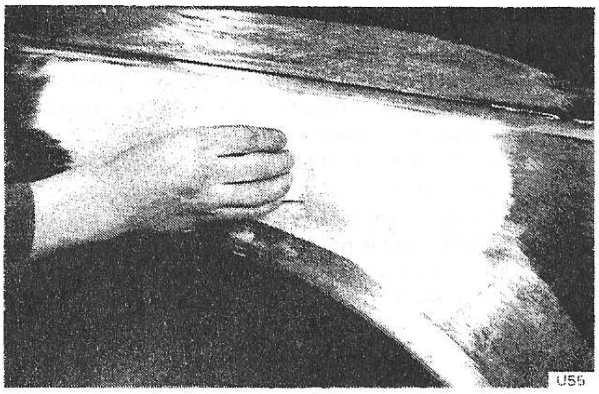


Fig. S42 Hand application of polyester stopper to bare metal

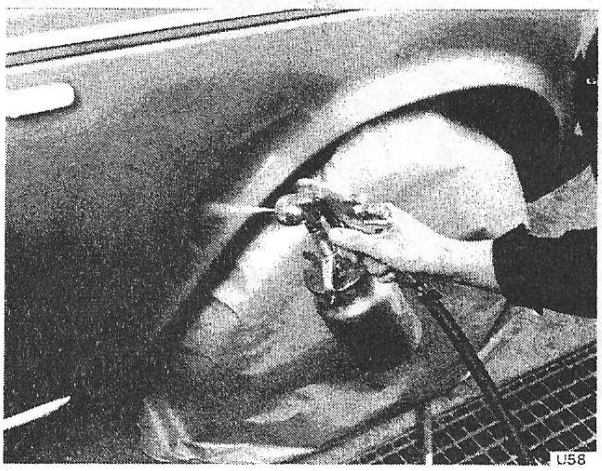


Fig. S43 Localized spray application of colour onto primer surfacer exposed during the flatting operation — 'spotting-in'

Fig. S44 Checking the masking

Colour coats

General preparation before paint

1. Before the paint is prepared the vehicle should be thoroughly inspected to ensure that the preparation is to the recommended standard.
2. Ensure that all bare metal and stopper areas have been spotted in with colour and that there are no damaged or unflatted areas (see Fig. S43).
3. Check that there is no detached or broken masking and that there is no loosely adherent overspray on the paper (see Fig. S44).

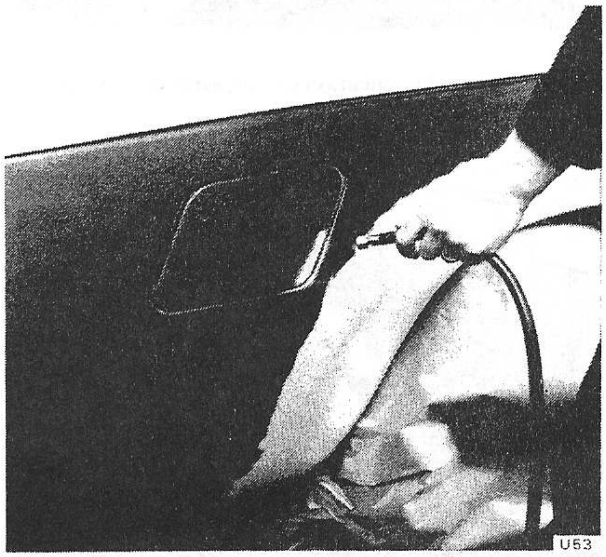


Fig. S45 Blowing out crevices etc., with clean dry compressed air before cleaning and painting

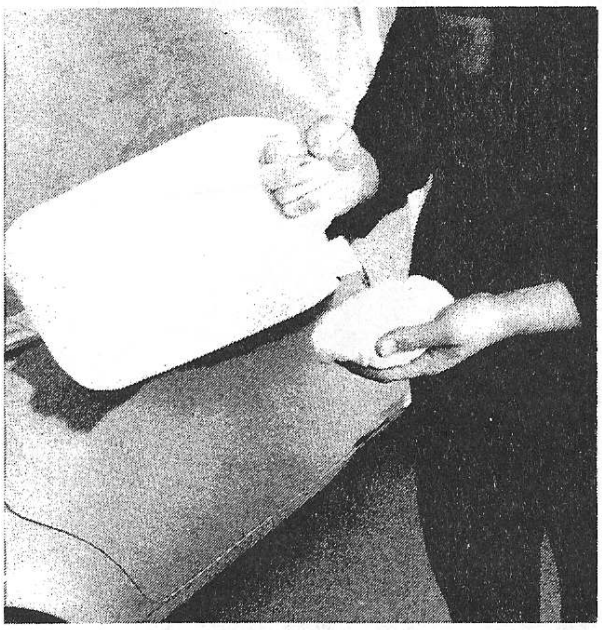


Fig. S46 Degreasing the car using a clean lint free cloth

4. All seams, crevices, channels, etc. should be blown out with clean dry compressed air applied at low pressure (see Fig. S45).
5. The area to be painted should be thoroughly washed with clean water and **immediately dried by hand using clean dry cloths. Do not** blow dry using compressed air as this method will leave concentrations of water soluble salts which will produce blistering in service.
6. The whole area should be degreased using a proprietary degreasing solvent. This will remove all traces of remaining grease, hand marks or other oil contaminants (see Fig. S46).

General preparation of finishing paints

Before preparing the finishing colour to be applied, check on the actual colour of the vehicle. This is achieved by examining the paint and trim identification label located on the underside of the bonnet lid in the front left-hand corner.

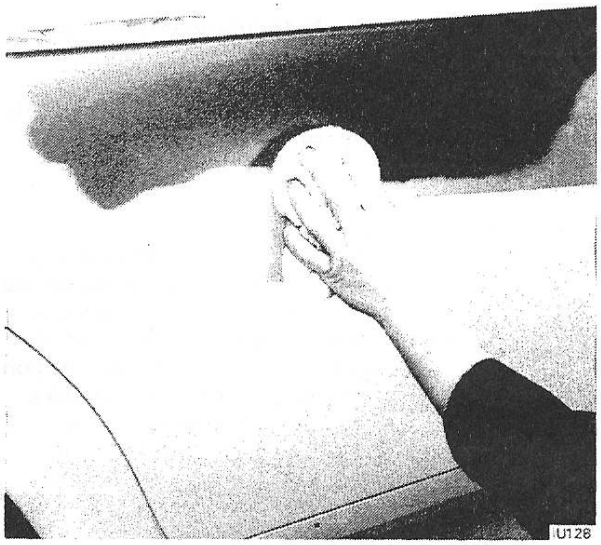
One of the greatest problems is colour matching, but the use of improved materials for the factory finishing of cars has greatly minimised the colour change problems on weathering during service.

When respraying a part of the car, check the colour of the refinishing material against the car. To do this, an area of paintwork on the car which is not to be resprayed, should be thoroughly cleaned. Use a light abrasive to remove all traffic film so that the true colour can be established.

To minimise colour differences Rolls-Royce Motors Limited supply only the original colour materials for use in service.

When preparing colour for refinishing the following guidelines should be followed.

1. Stir the paint thoroughly. This applies to all paints, it is particularly important when using metallic paint.



2. Before any thinners are added, ensure that the paint is at the recommended paint shop temperature of at least 18°C. (65°F.) see Figure S47.
3. Check that the correct thinner is being used. Note Rolls-Royce Motors Limited and the paint manufacturers recommendations.

The correctly formulated thinner will produce optimum results. The solvent which is already being used in the manufacture of the paint is taken into account. Therefore the mixture of solvents in the thinners will produce the correct dissolving power and an evaporation rate which will allow the quickest drying time consistent with good flow and gloss. **Cheap thinners do not have these properties.**

4. Thin with the correct proportion of thinners and then carry out a viscosity check as follows (see Fig. S47). This involves timing the flow of liquid through an orifice until the first break-point in the thread of liquid occurs.

a. Ensure that the cup and particularly the orifice, is clean, then carry out the preparation of the paint sample and all the following operations without delay.
b. Adjust the temperature of the paint sample, the flow cup and receiver to approximately 20°C. (68°F.).
c. With the orifice closed by the finger, fill the cup with the freshly stirred bubble-free paint sample until it just begins to overflow into the gallery. Pour slowly to avoid the formation of air bubbles. If bubbles are present, allow them to rise and then remove them from the surface. Check that the temperature of the paint sample in the cup is approximately 20°C. (68°F.).
d. Ensure that the level of the paint sample coincides with that of the top of the cup. This can conveniently be done by drawing the glass plate or straightedge across the rim of the cup and sliding it away horizontally.
e. Time the flow as described in Operation f. Verify immediately before and after each determination that the temperature of the paint sample is approximately 20°C. (68°F.).
f. Place a suitable receiver under the flow cup, remove the finger from the orifice and simultaneously start the stopwatch, stopping it when the stream of the paint sample first breaks (see Fig. S47).
g. Repeat the determination at least once. If a large variation is found, the cleanliness of the orifice should be checked and the determination repeated with a fresh paint sample.
h. If an excessive variation in flow time is still obtained, it is likely to be due to anomalous flow properties (thixotropy, etc).

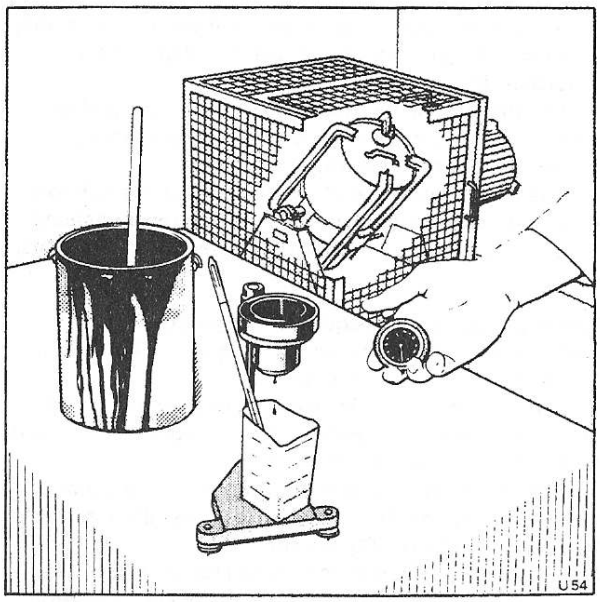


Fig. S47 Making a viscosity check

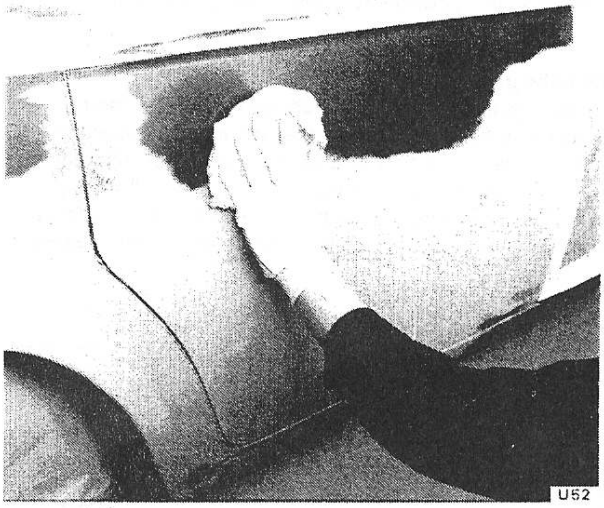


Fig. S48 Tak-rag the surface before spraying colour coat

Note
It is important that viscosity checks are made. Variations in viscosity will affect film thickness, drying time, flow characteristics and general appearance. It is particularly important when applying metallic finishes to use the correct recommended viscosity.

5. After preparing the colour to the recommended guidelines proceed as follows.

'Tak-rag' the surface before the colour coat is sprayed. Because the surface will have already been degreased, it is important to avoid touching the metal with bare hands. Operators are recommended to wear clean cotton gloves (see Fig. S48).

6. For all information on spraying refer to 'Spraying techniques, application faults and remedies' (see Page S4-11).

Colour finishes — Material types
Nitro cellulose or Modified nitro cellulose lacquers
When using nitro cellulose or modified nitro cellulose lacquers the following points should be noted.
1. The lacquers are blends of nitro cellulose and synthetic resins.
2. They provide rapid drying, a reasonable gloss from the spray gun and good colour stability characteristics.

3. If necessary, polishing can be undertaken after drying to improve the gloss and to remove any slight imperfections in the paint film.
4. The thinner used in the lacquers are strong and may cause old paint films to craze or wrinkle, therefore care must be taken when repairing an older car
5. The final appearance of the car when using cellulose lacquers is dependent upon following the recommended procedures and using the specified materials and thinners.

Thermoplastic acrylic lacquers (FTA paints)

When using thermoplastic acrylic lacquers (FTA paints) the following points should be noted.

1. Thermoplastic acrylic lacquers are generally based upon a fully synthetic resin system – methyl methacrylate (perspex) and a plasticising agent.
2. The characteristics of thermoplastic acrylic paints are very similar to cellulose lacquers. They give rapid drying and can be readily polished.
3. When using acrylic paints during repair, **it is important to use the correct primer surfacers/sealers otherwise cracking or crazing can occur.**
4. In temperate climates little difference exists in gloss and colour retention between modern cellulose and acrylic finishes.

In sub-tropical climates the thermoplastic acrylic lacquers have considerably better gloss retention.

Metallic paints

To obtain a satisfactory match to the original metal finish, it is helpful to know that the composition of metallic paint consists of clear lacquer, colouring pigment and aluminium flakes.

The aluminium flakes play a decisive role, not only do they provide the metallic appearance but the degree of sinkage of the flakes within the wet film after application will affect the colour. The degree of sinkage depends on many factors such as viscosity, thickness or wetness of coat applied, air pressures and drying time, or rate of evaporation of solvent from the paint film. For example.

1. If sprayed as a very heavy wet coat, the aluminium will settle deeper within the film and the colouring pigment will remain on the surface producing a darker shade or a mottling effect.
2. If sprayed as too dry a coat, the reverse effect takes place giving too light a colour and usually a lower gloss.

Different applications can alter the finished colour and appearance, it is therefore important that the number of variables is kept to a minimum. For this reason **it is imperative that the recommended thinning and viscosity information is adhered to.**

There is no single reason for the various faults of incorrect shade, streakiness or mottle effect. Each and every fault can be attributed to any one or a combination of reasons.

Many of the problems associated with metallic paints can be avoided by reference to Figure S49.

Thinners

1. **Use only the high quality thinners that are recommended for use with each paint.**

Cheap thinners often contain solvents which do little but reduce the paint to a viscosity suitable for spraying. Gloss and flow characteristics can be severely impeded with the result that the work may have to be repeated.

2. Every thinner recommended for a particular type of paint should be a blend of solvents carefully formulated to take into account the solvents already used in the manufacture of the paint. Also, the overall evaporation rate which will allow the fastest drying time consistent with good flow characteristics.

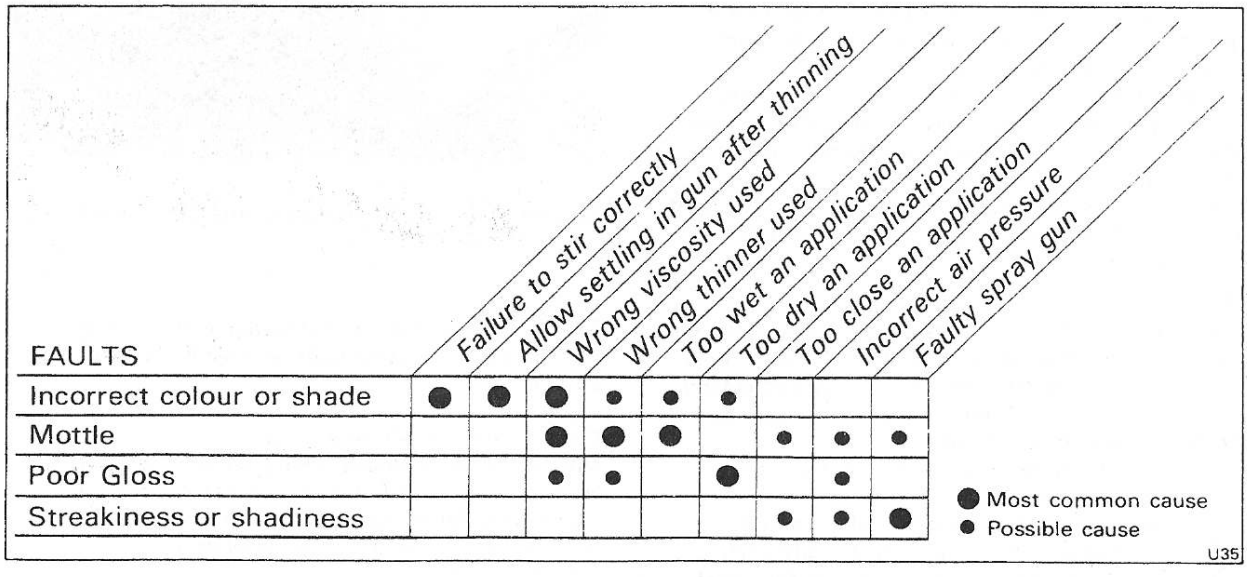


Fig. S49 Metallic paints – common application faults

Surface preparation

General information

Correct surface preparation is the solution to successful paint rectification and respraying. Any work undertaken can only be as good as the efficiency of this preparation.

Prior to any painting being undertaken, the whole of the car should be washed with water to remove road dirt. This will enable areas that require painting to be examined properly.

Deterioration of paint films usually takes place more rapidly on horizontal surfaces. An examination of the roof, bonnet and luggage compartment lid will often be a good guide to the overall condition of the paintwork, look carefully for any kind of film breakdown. Failure to recognise paint faults at this stage will almost inevitably lead to a failure of the final paint finish both in terms of clearance and durability.

Having removed any damaged paint film, thoroughly clean and degrease all surfaces to be painted, both bare metal and existing paint film (see Fig. S46). **The importance of this operation cannot be over-emphasised.** If it is not carried out efficiently, it will almost invariably lead to an early breakdown of the finished paintwork.

To ensure adhesion and good durability, the surface must be thoroughly degreased to remove all traces of dirt, traffic film, wax, grease and oil. The correct method of achieving this is to use a proprietary degreasing fluid. **Petrol should not be used** as many modern motor fuels contain additives which can produce contamination.

Apply the cleaning solvent liberally using clean cloths (see Fig. S46). **Do not** pour on solvents and leave them to dry. All areas must be wiped dry with clean cloths.

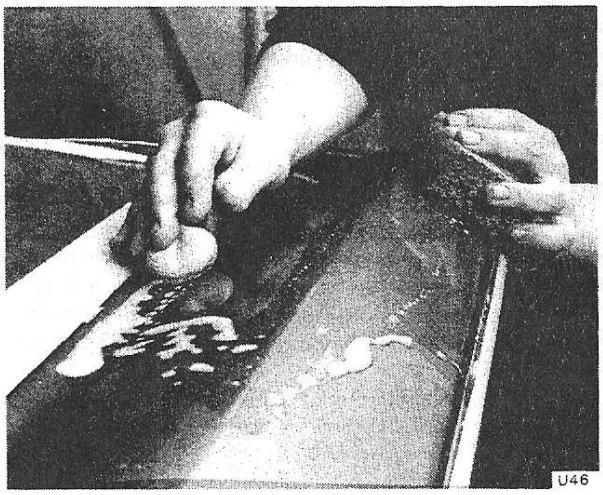


Fig. S50 Hand flatting a curved area using a soft pad

Flatting

The purpose of flatting is to obtain a level surface and to provide the 'key' which is essential for good intercoat adhesion.

Care must be taken when carrying out this very important operation. Failure to flat adequately can create intercoat adhesion problems. Excessive flatting with coarse paper will produce deep scratches which will become apparent when the finishing coat is applied.

Flatting can be carried out by hand or by a machine sander and either wet or dry.

When flatting the following points should be noted.

1. Hand flatting should always be used on areas with curves or complex contours. Use a soft cloth pad inside wet or dry abrasive paper (see Fig. S50).
2. Short parallel strokes should be used with the hand positioned so that the fingers are at an angle to the direction of the stroke; this will prevent furrows being formed by the fingers.
3. A light medium pressure is all that is required, a heavy pressure will produce clogging of the paper and excessively deep scratches. A way of eliminating these scratches is to use progressively finer grades of paper as the paint system is built up.
4. On flat areas the use of a rubber, felt or cork block behind the paper will eliminate the effects of finger furrowing (see Figs. S51 and S52).

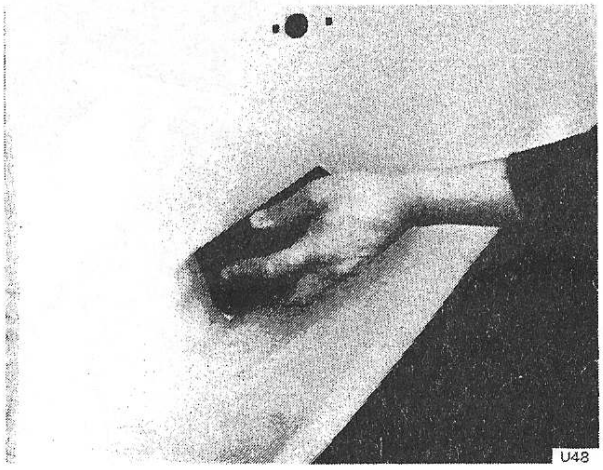


Fig. S51 Using a hard rubber block to flat large areas of minimal contour

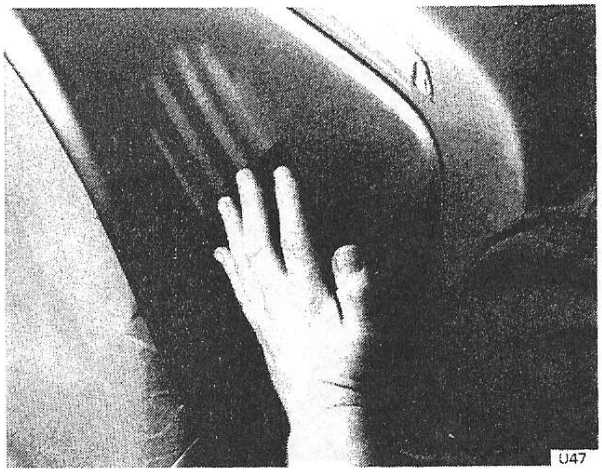


Fig. S52 Finger furrowing — an incorrect method of flatting

Note
During the flatting operations some bare metal areas are usually exposed, either due to the removal of a localised defect or because of a thin paint film. These areas must be feather edged (see Fig. S53). To do this, the paint edges surrounding the bare metal area should be flatted well back into the surrounding paint. They should taper gradually from the metal so that the finger tips can feel no break or ridge between the metal and the surrounding paintwork.

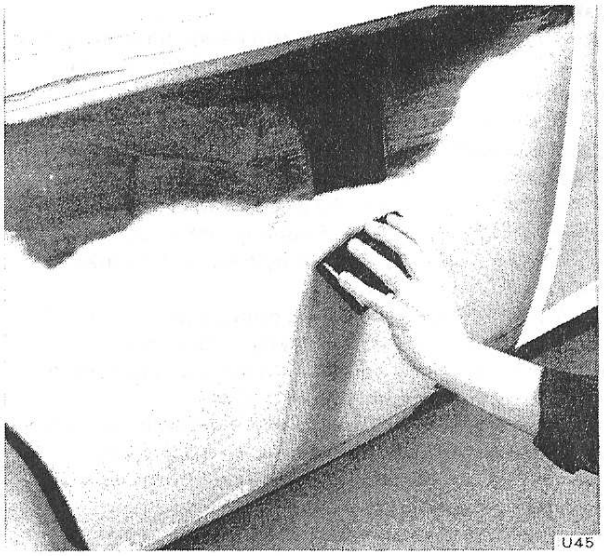


Fig. S53 A method of checking the feather edge after flatting

5. When using wet or dry abrasive paper, it is important that plenty of clean water is used, this ensures that the paper cuts freely and eliminates dust.
6. Flatting water, should never be allowed to evaporate naturally as residues could remain. These would eventually cause blistering.
7. On completion of the flatting of each panel, the areas should be thoroughly hosed off with clean water, then dried immediately with clean cloths.

Note
Lubricated abrasive papers are available for dry flatting and as the lubricant is usually a stearate, cleaning of the flatted surface is even more essential. Any residue of lubricant left on the surface could lead to poor adhesion.

Metal pretreatment
1. Ensure that all bare metal areas are thoroughly degreased and completely free of rust. If rust is present it should be removed using a proprietory phosphoric acid metal cleaner.
2. Apply a thin coat of acid etch primer to all bare metal surfaces (see Fig. S40). Care should be taken to avoid applying this material in too great a quantity to the surrounding paintwork.

Masking
Careful masking can mean the difference between a reasonable paint finish and a first class finish (see Fig. S54).

Only the best quality materials, both paper and tape should be used. The paper should have a good wet strength and have no loose fibres. **Do not** use newspaper, it does not possess the correct properties. Also, printing inks are soluble in some of the solvents in paint and therefore can cause staining.

Tapes of various widths should be kept in stock, using the narrower tapes on difficult curved areas as it is easier to manipulate (see Fig. S55).

Fig. S54 Typical masking preparation before paint

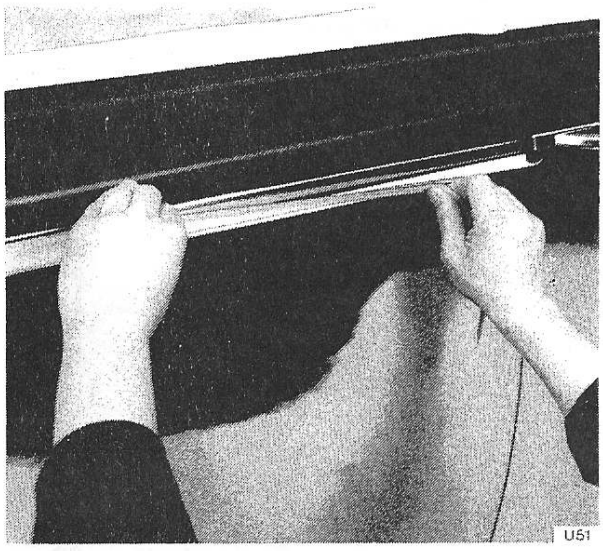


Fig. S55 A method of detail masking to minimise tape edges

Spraying techniques, application faults and remedies

General spraying techniques

Spray painting is a craft, as is any other method of painting. With the correct knowledge and use of spray gun techniques a surface can be given a first class coating in the minimum amount of time. It also greatly reduces paint wastage and creates less fatigue for the operator.

Many jobs have been spoiled because of the operator not understanding the correct technique or by disregard of its value. It cannot be too strongly emphasised that a little time spent in study and practice will be amply repaid by the greatly improved quality of finishes obtained along with the saving of time and material.

Spraying techniques vary considerably from person to person, however the following points are of particular importance.

1. The paint can be applied in single or double coats.
2. Single coats give a rapid solvent release with fast through drying.
3. Double coats give good flow, gloss build-up and freedom from dry spray.
4. Whatever type of coat is applied, adequate time must be given between coats for solvent to evaporate. Inadequate 'flash-off' times will result in an excessive amount of solvent remaining in the film. This will produce slow hardening through the film. Also, it may affect the durability of the paint system should the vehicles be put into humid conditions too quickly.
5. Recommended 'flash-off' times apply to average working conditions. If conditions are cold and/or damp the 'flash-off' may need to be increased. Conversely in hot dry conditions a shorter 'flash-off' time may be adequate.

It is also important to allow adequate 'flash-off' time if force drying, using either infra-red lamps or a low stoving oven. If heat is applied too soon, excess solvent in the paint film may boil resulting in solvent popping and pin holes.

Planning

Plan the spraying sequence carefully before starting work. Ensure that continuity is achieved to maintain a wet edge and eliminate dry overlap joints. It is advisable to spray door edges, luggage compartment channels, bonnet edges, etc., first as this has the effect of laying down any dust which could blow out and spoil the final finish.

Spray painting equipment

To understand spray painting, the following basic items that make up the spray equipment must be examined.

1. Air compressor. Initially, compressed air is required. This is obtained from an air-compressing plant which may be powered by an electric motor, a petrol (see Fig. S56) or diesel engine.
2. Air transformer. It is necessary to 'condition' the compressed air for use with a spray gun or allied equipment. This conditioning means filtering the air to remove dirt, oil and moisture, together with reducing the air pressure to that required for spray operation. This is generally done by a filter and regulator or a combination of the two called an air transformer (see Fig. S57). On portable air-compressing plants the transformer is usually fitted to the plant.

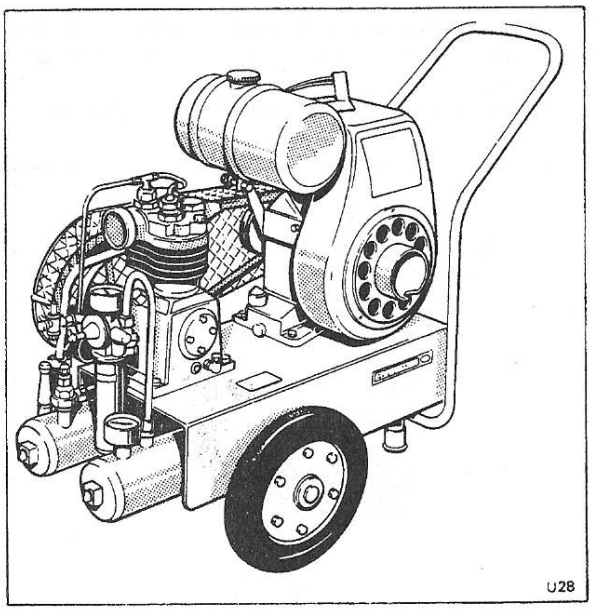


Fig. S56 Petrol driven portable air compressing plant for one operator

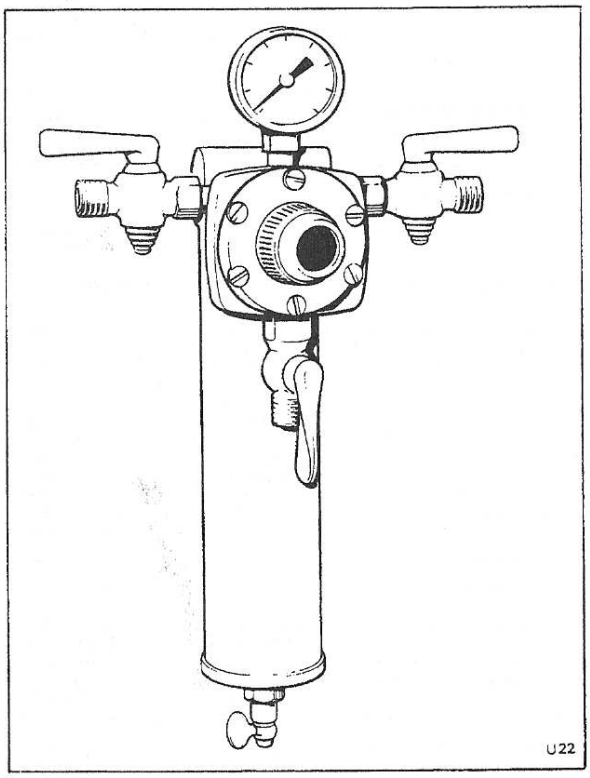


Fig. S57 A typical air transformer

3. Air hose. Clean, dry compressed air regulated to the required pressure is conveyed to the spray gun through the air hose.
4. Paint container. The paint may be in a container attached to the spray gun, or it may be contained in a separate pressure feed tank and forced by air pressure through a length of fluid hose to the spray gun.
5. Spray gun. The spray gun, although at the end, is really the heart of the system. It is the tool with which the paint is applied to a surface.

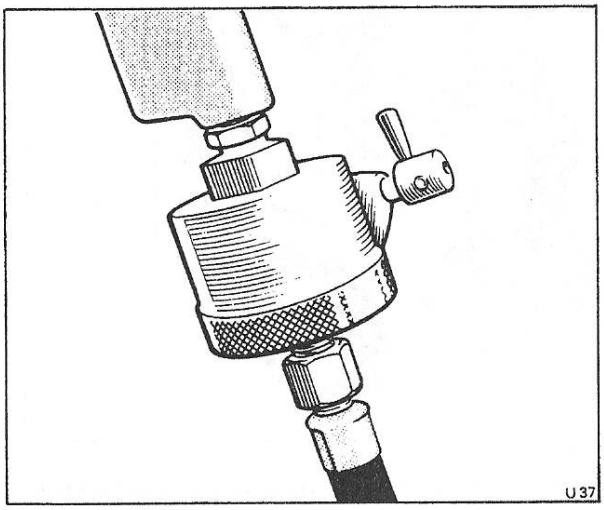


Fig. S58 A small lightweight filter

Air compressor

The compressor takes the air in at atmospheric pressure, compresses it and stores it in an air receiver at a higher pressure.

It is strongly recommended, that the use of a compressor made by a reputable firm expressly for the purpose of spray painting should be used otherwise problems can occur. The compressor must be capable of maintaining a steady pressure for long periods, all day if necessary, without developing heat and delivering hot compressed air. It is a fact that the action of compressing air generates heat in itself, but in a properly designed air compressor this generated heat is dissipated and the compressed air delivered at normal atmospheric temperature.

An air receiver is used to store the air for a cooling off period, and its capacity should be in proportion to the size of the compressor. In cooling the air the receiver permits the moisture and all vapour entrained in the

Size of air hose inside diameter	Air pressure drop at spray gun					
	1,52m. (5.0ft) length	3,04m. (10.0ft.) length	4,57m.(15.0ft.) length	6,09m. (20.0ft.) length	7,62m. (25.0ft) length	15,24m. (50.0ft) length
6,35 mm. (0.250 in.)						
at 2,81 kgf/sq.cm. (40 lbf/sq.in.)	0,42 kgf/sq.cm. (6.0 lbf/sq.in.)	0,56 kgf/sq.cm. (8.0 lbf/sq.in.)	0,66 kgf/sq.cm. (9.5 lbf/sq.in.)	0,77 kgf/sq.cm. (11.0 lbf/sq.in.)	0,89 kgf/sq.cm. (12.75 lbf/sq.in.)	1,68 kgf/sq.cm. (24.0 lbf/sq.in.)
at 3,51 kgf/sq.cm. (50 lbf/sq.in.)	0,52 kgf/sq.cm. (7.50 lbf/sq.in.)	0,70 kgf/sq.cm. (10.0 lbf/sq.in.)	0,84 kgf/sq.cm. (12.0 lbf/sq.in.)	0,98 kgf/sq.cm. (14.0 lbf/sq.in.)	1,12 kgf/sq.cm. (16.0 lbf/sq.in.)	1,96 kgf/sq.cm. (28.0 lbf/sq.in.)
at 4,21 kgf/sq.cm. (60 lbf/sq.in.)	0,63 kgf/sq.cm. (9.0 lbf/sq.in.)	0,87 kgf/sq.cm. (12.5 lbf/sq.in.)	1,01 kgf/sq.cm. (14.5 lbf/sq.in.)	1,17 kgf/sq.cm. (16.75 lbf/sq.in.)	1,33 kgf/sq.cm. (19.0 lbf/sq.in.)	2,17 kgf/sq.cm. (31.0 lbf/sq.in.)
at 4,92 kgf/sq.cm. (70 lbf/sq.in.)	0,75 kgf/sq.cm. (10.75 lbf/sq.in.)	1,01 kgf/sq.cm. (14.5 lbf/sq.in.)	1,19 kgf/sq.cm. (17.0 lbf/sq.in.)	1,37 kgf/sq.cm. (19.5 lbf/sq.in.)	1,58 kgf/sq.cm. (22.5 lbf/sq.in.)	2,39 kgf/sq.cm. (34.0 lbf/sq.in.)
at 5,62 kgf/sq.cm. (80 lbf/sq.in.)	0,86 kgf/sq.cm. (12.25 lbf/sq.in.)	1,16 kgf/sq.cm. (16.5 lbf/sq.in.)	1,37 kgf/sq.cm. (19.5 lbf/sq.in.)	1,58 kgf/sq.cm. (22.5 lbf/sq.in.)	1,79 kgf/sq.cm. (25.5 lbf/sq.in.)	2,60 kgf/sq.cm. (37.0 lbf/sq.in.)
at 6,32 kgf/sq.cm. (90 lbf/sq.in.)	0,98 kgf/sq.cm. (14.0 lbf/sq.in.)	1,31 kgf/sq.cm. (18.75 lbf/sq.in.)	1,54 kgf/sq.cm. (22.0 lbf/sq.in.)	1,77 kgf/sq.cm. (25.25 lbf/sq.in.)	2,03 kgf/sq.cm. 29.0 lbf/sq.in.)	2,77 kgf/sq.cm. (39.5 lbf/sq.in.)
7,93 mm. (0.312 in.)						
at 2,81 kgf/sq.cm. (40 lbf/sq.in.)	0,15 kgf/sq.cm. (2.25 lbf/sq.in.)	0,19 kgf/sq.cm. (2.75 lbf/sq.in.)	0,22 kgf/sq.cm. (3.25 lbf/sq.in.)	0,24 kgf/sq.cm. (3.5 lbf/sq.in.)	0,28 kgf/sq.cm. (4.0 lbf/sq.in.)	0,59 kgf/sq.cm. (8.5 lbf/sq.in.)
at 3,51 kgf/sq.cm. (50 lbf/sq.in.)	0,21 kgf/sq.cm. (3.0 lbf/sq.in.)	0,24 kgf/sq.cm. (3.5 lbf/sq.in.)	0,28 kgf/sq.cm. (4.0 lbf/sq.in.)	0,31 kgf/sq.cm. (4.5 lbf/sq.in.)	0,35 kgf/sq.cm. (5.0 lbf/sq.in.)	0,70 kgf/sq.cm. (10.0 lbf/sq.in.)
at 4,21 kgf/sq.cm. (60 lbf/sq.in.)	0,26 kgf/sq.cm. (3.75 lbf/sq.in.)	0,31 kgf/sq.cm. (4.5 lbf/sq.in.)	0,35 kgf/sq.cm. 5.0 lbf/sq.in.)	0,38 kgf/sq.cm. (5.5 lbf/sq.in.)	0,42 kgf/sq.cm. (6.0 lbf/sq.in.)	0,80 kgf/sq.cm. (11.5 lbf/sq.in.)
at 4,92 kgf/sq.cm. (70 lbf/sq.in.)	0,31 kgf/sq.cm. (4.5 lbf/sq.in.)	0,36 kgf/sq.cm. (5.25 lbf/sq.in.)	0,42 kgf/sq.cm. (6.0 lbf/sq.in.)	0,47 kgf/sq.cm. (6.75 lbf/sq.in.)	0,50 kgf/sq.cm. (7.25 lbf/sq.in.)	0,91 kgf/sq.cm. (13.0 lbf/sq.in.)
at 5,62 kgf/sq.cm. (80 lbf/sq.in.)	0.38 kgf/sq.cm. (5.5 lbf/sq.in.)	0,43 kgf/sq.cm. (6.25 lbf/sq.in.)	0,49 kgf/sq.cm. (7.0 lbf/sq.in.)	0,56 kgf/sq.cm. (8.0 lbf/sq.in.)	0,61 kgf/sq.cm. (8.75 lbf/sq.in.)	1,01 kgf/sq.cm. (14.5 lbf/sq.in.)
at 6,32 kgf/sq.cm. (90 lbf/sq.in.)	0,45 kgf/sq.cm. (6.5 lbf/sq.in.)	0,52 kgf/sq.cm. (7.5 lbf/sq.in.)	0,59 kgf/sq.cm. (8.5 lbf/sq.in.)	0,66 kgf/sq.cm. (9.5 lbf/sq.in.)	0,73 kgf/sq.cm. (10.5 lbf/sq.in.)	1.12 kgf/sq.cm. (16.0 lbf/sq.in.) U34

Fig. S59 Table of air pressure drop

compressed air to condense; in this condition they can be easily separated from the air. The air receiver also completely blankets out pulsations from the compressor so that compressed air is drawn from the receiver at a steady, even pressure.

A compressor delivering approximately 0,14 cu.m. to 0,19 cu.m. (5 cu.ft. to 7 cu.ft.) per minute is recommended as the minimum requirement for one operator. This provides a maximum output pressure of 5,62 kgf/sq.cm. (80 lbf/sq. in.).

It should be noted that some manufacturers quote the volume of displacement of their compressors. On no account should this figure be confused with the volume of air delivered, as in all cases the latter figure is lower than the former. For example, a compressor quoted as having a displacement of 0,25 cu.m. (8.95 cu.ft.) of air per minute delivers only 0,19 cu.m. (6.98 cu.ft.) of air per minute. The air pressure required to give an effective finish with a spray gun varies with the painting material used, and to a certain extent on the type of spray gun. Air pressure is very widely understood and appreciated. However air volume which is equally important, is very often completely overlooked until the lack of it is betrayed by falling air pressure whilst spraying.

Where it is necessary to operate two or three guns simultaneously from one air compressor, larger plants are necessary and these can be powered by either electric, petrol or diesel motors.

Another very important point is that compressed air for the spray gun must be absolutely clean and free from moisture, dirt and oil, any of which would ruin a sprayed surface. A standard air compressing plant for spray painting work is normally fitted with an air intake filter to prevent dust entering the compressor. Also, a compressed air filter is usually incorporated in an air transformer.

Air transformer (see Fig. S57)

An air transformer consists of two units, a condenser or filter for removing oil and moisture from the air and a pressure regulator. The condenser allows the air to expand into a chamber, thus cooling the air. It then removes the moisture and oil by means of an easily removable filter. A cock is fitted to draw off the accumulated impurities at suitable intervals. The regulator is actually a reducing valve which regulates the air pressure from the compressor to that required for spraying. A transformer should be fitted with a gauge giving an accurate reading of the pressure of air which has passed through the regulating valve.

In circumstances where exceptionally humid air is compressed and moisture tends to settle in the air hose between the spray gun and the transformer, a small lightweight filter (i.e. Dryit) can be fitted directly on to the handle of the gun as a final safeguard against water settling on the work (see Fig. S58).

Air hose

Compressed air is fed to the spray gun by the air compressor, through a suitable length of pressure-resisting air hose. The internal diameter and length of the air hose used has a marked effect on the efficient performance of the spray gun and the quality of the coating it produces.

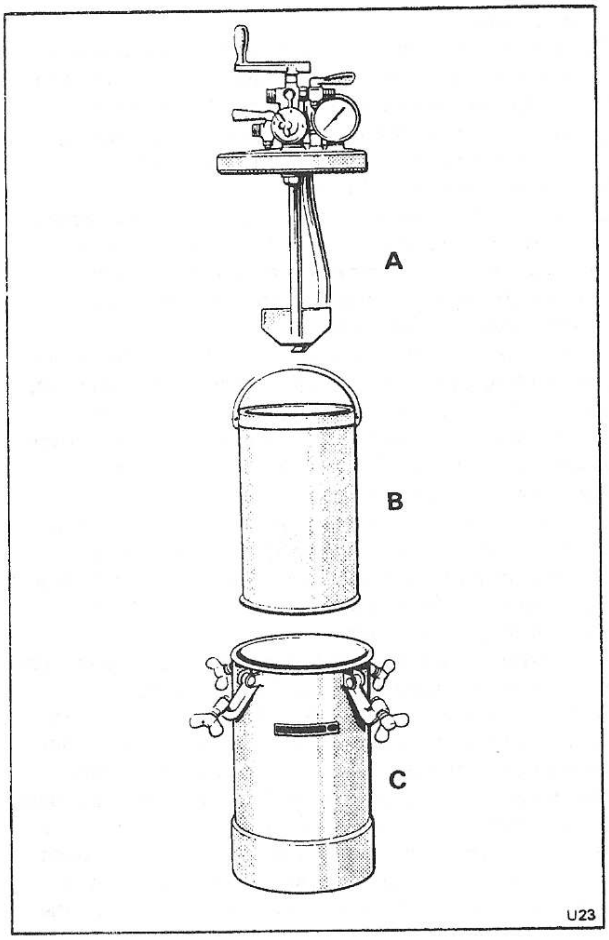


Fig. S60 Pressure feed paint tank

- **A** Hand agitator
- **B** Insert container
- **C** Tank

Correct hose sizes for compressed air are essential.

Too often a spray gun is blamed for functioning improperly, or a material is considered of inferior quality, when the real cause of the trouble is an inadequate supply of compressed air at the gun. Frequently operators believe they are using an extremely high air pressure, but investigation reveals that, due to a small hose size or extra long length, pressure is inadequate for proper atomization.

The interior wall of air hose is smooth, even so it creates a certain resistance to the flow of air, particularly when a long length is used.

Air hose is available in a range of bore sizes and Figure S59 shows the approximate pressure drop from various lengths of 6,35 mm. (0.250 in.) and 7,93 mm. (0.312 in.) air hose when used with a spray gun consuming approximately 0,33 cu.m. (12 cu. ft.) of air per minute at 4,21 kgf/sq.cm. (60 lbf/sq.in.) pressure. Air hose with 6,35 mm. (0.250 in.) bore should never be used in lengths exceeding 3,65 m. (12 ft.) and is intended only for medium and light duty spray guns.

Paint container

There are three methods of paint feed in general use.

1. **Suction feed,** where a paint container is attached to the gun below the level of the nozzle. The paint is syphoned from the cup by the compressed air passing through the spray gun. The capacities are usually 0,56 litres (1pt.) or 1,13 litres (2 pt.).
2. **Gravity Feed,** where the paint container is attached to the top of the spray gun. The paint flows into the nozzle by the force of gravity. The gun operates at a lower air pressure than the suction feed type and will handle heavier bodied materials.
3. **Pressure feed.** In this system the paint container is a pressure feed tank (see Fig. S60), separate from the gun, and may have a capacity of between 9,09 litres and 181,83 litres (2 gal. and 40 gal.). Certain containers have a larger capacity. The paint is conveyed to the gun through a length of flexible fluid hose.

The principle of pressure feed is the application of low air pressure on the material in the tank so that it is forced through fluid hose to the spray gun. Air pressure is controlled by an air regulator on the lid. Also, a pressure gauge is provided.

Pressure feed tanks are, in many cases, provided with a light insert container (see Fig. S60). This greatly facilitates cleaning and change of material; some tanks can be mounted on a castor base, making removal from place to place an easy matter. The tanks are strongly constructed to avoid any risk of distortion under pressure and are usually galvanised inside and outside. The lid is secured by clamps and is fitted with a gasket to prevent air leakage. There is a safety valve, an air release valve and at least one air and one fluid draw-off cock. On the larger size tanks there are two or three extra air and fluid cocks, so that the tank can be used by more than one operator. Provision is made for a hand operated agitator to keep the material properly mixed (see Fig. S60), and for large capacity tanks it is advisable to have an agitator driven by a compressed air motor (see Fig. S61).

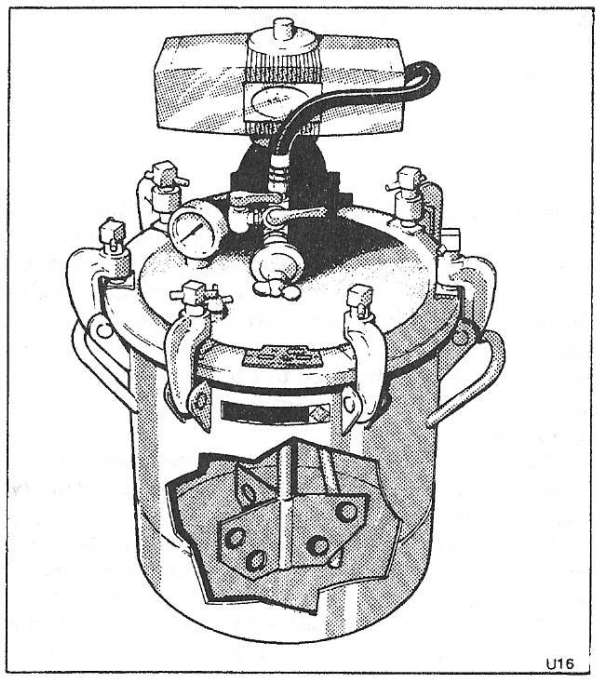


Fig. S61 **Pressure feed paint tank with an air motor driven agitator**

The air motor ensures that the paint is kept at a constant consistency, even during periods when the gun is not used. It consumes less than 0,028 cu.m. (1 cu.ft.) of air per minute, but where a number of them are likely to be used, provision must be made for them by selecting a compressor which will supply more than the maximum volume of air required by the spray guns.

Pressure feed cups of 1,13 litres (2 pt.) capacity are also available which attach to the gun itself for spraying comparatively small volumes of heavy material.

In all cases where large quantities of the same material have to be applied, the use of a pressure feed tank is strongly recommended for the following reasons.

a. A very large amount of work can be carried out before refilling is necessary.
b. The spray gun may be turned to any angle to coat the work effectively.
c. The material is supplied to the gun in greater volume than by any other method, particularly if heavy paints are used.
d. Less air pressure is required to obtain the correct speed of operation.
e. Paint wastage and losses by evaporation are eliminated.

Remote cup

Remote cup equipment combines all the advantages of standard pressure feed equipment. In addition, it has the advantage of being portable similar to the smaller paint containers attached directly to the gun. The kit (see Fig. S62, item F), consists of a 2,27 litres (4pt.) pressure feed cup fitted with sensitive controls to balance air and fluid flow. It is connected to the gun by 1,22m. (4.0ft.) lengths of air and fluid hose; therefore the gun can always be held at the correct angle to any surface for uniform coverage and reduced overspray. It has a convenient carrying handle and is ideal for work that requires up to half a gallon of paint.

Paint pumps

For large volume work fluid pumps driven by compressed air are available. These pumps supply paint to the spray guns directly from the manufacturer's container. The maximum flow of paint ranges from approximately 9,09 litres to 25,0 litres (2.0 gal. to 5.5 gal.) per minute.

Fluid hose

The best quality fluid hose should always be used. It is essential that the hose lining is solvent resisting and will withstand any softening effect from water, oil, turpentine, cellulose, synthetics and other painting materials. Do not use cheap hose, after a while the lining will disintegrate and fragments will spoil the finish and choke the spray gun.

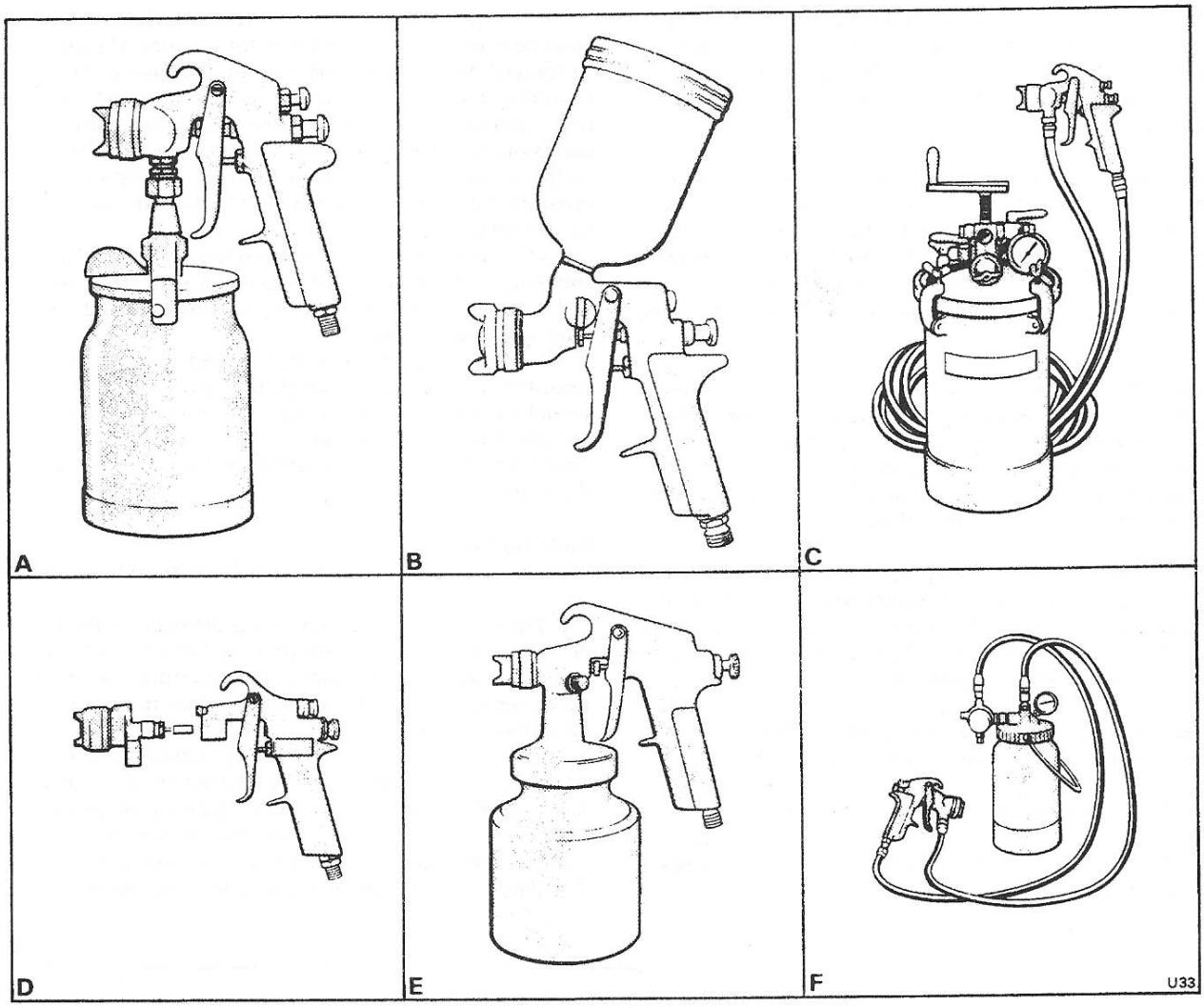


Fig. S62 Types of spray guns

- **A** Suction feed spray gun
- **B** Gravity feed spray gun
- **C** Spray gun with 9,09 litre (2 gal.) pressure feed tank
- **D** Spray gun with detachable spray head
- **E** Low air consumption gun
- **F** Remote cup outfit

Fluid hose of 9,52 mm. (0.375 in.) diameter, is recommended for paints of normal viscosity, but a 12,7 mm. (0.50 in.) diameter is necessary for heavier bodied mixtures and where longer lengths than 6,09m. (20ft.) are used.

Spray guns

The spray gun is the heart of the system and, as the success of spray painting depends to a very large extent on the efficiency of the gun, great care should be taken in selecting it. There are several types of guns available expressly designed to suit the type of work required. The most suitable gun for the operator is one used in high production manufacturing (see Figs. S63 and S64). It has the capacity for the work and its design is such that it will keep fully operational throughout the period of the working day. This type of gun is mainly used with pressure paint feed (see Fig. S62, item C). It can also be used with a suction feed cup for smaller jobs, provided the correct fluid tip and air cap are fitted to suit that method of paint feed (see Fig. S62, item A).

Gravity feed spray guns are also very popular for painting smaller areas because of the ease with which they can be refilled and cleaned. They cannot be used for spraying upwards on car roofs, etc. (see Fig. S62, item B).

If the volume of work justifies separate spray guns for each particular kind of job they should be obtained. The guns should be kept clean and in good working order, ready for use as the occasion arises instead of trying to make one gun serve all purposes. Time will be saved, as any change over from one kind of application to another can be achieved much more quickly.

A spray gun can be obtained, which has a spray head barrel complete with fluid inlet nipple, air cap, fluid tip

and fluid needle that can be removed as a unit from the body of the gun. This spray gun has certain advantages for the operator who uses more different materials and changes of colour than any other tradesman (see Fig. S62, item D).

An internal mix spray gun (see Fig. S62, item E) mixes air and paint inside the air cap and is used with small air compressors which deliver a restricted volume of air at a comparatively low pressure of between 1,75 kgf /sq.cm. and 2,10 kgf /sq.cm. (25 lbf /sq.in. and 30 lbf /sq.in.). It is not advisable to use this spray gun for very quick drying materials.

Bleeder-type spray guns are designed for use with compressors of limited capacity and pressure, that have no unloader or pressure controlling device. The gun has no air valve and compressed air passes through it continuously, preventing any pressure build-up. In this type of gun the trigger controls only the flow of paint.

Volume spray guns use a very high volume of air, blown at very high speed through the gun, with no appreciable air pressure. This type of gun is suitable only for materials that flow easily, as the atomization is not as fine as that obtained with higher air pressure.

Principal parts of the spray gun (see Fig. S64)
The most important features of a spray gun are the following.

The fluid tip which meters out the paint.

The fluid needle which controls the flow of paint.

The air cap which atomizes the paint and forms the spray pattern.

It is important to remember that the different parts must be mated correctiy together for the type of paint to be sprayed, the surface to be covered, the amount of compressed air available and the permissible speed. Very thin materials call for one combination. Viscous tacky paints require another and very heavy coarse and fibrous materials yet another. Thus the proper combination is essential if the best and most efficient performance is to be achieved.

The remainder of the spray gun consists of the body and handle, the trigger which actuates the fluid needle and the air valve, the spreader adjustment valve and the fluid adjustment screw.

The air valve, controlled by the trigger, starts and stops the flow of compressed air through the gun. The spreader adjustment valve controls the width of the spray pattern. The fluid adjustment screw sets a pre-determined maximum flow of paint by restricting the travel of the fluid needle.

Fluid tip (see Fig. S64)
When the gun is operated the paint flows from the fluid tip.

The rate of flow depends on the diameter of the hole or nozzle of the fluid tip, the pressure behind the paint and the viscosity of the paint itself. In selecting the fluid tip consideration should therefore be given to several important factors.

1. Heavy, coarse or fibrous materials require large nozzle sizes to permit passage of the material and prevent clogging.
2. It is recommended that viscous materials requiring high atomizing pressures are used through the small nozzle sizes which assure more complete atomization.
3. Very thin materials that 'sag' readily should be

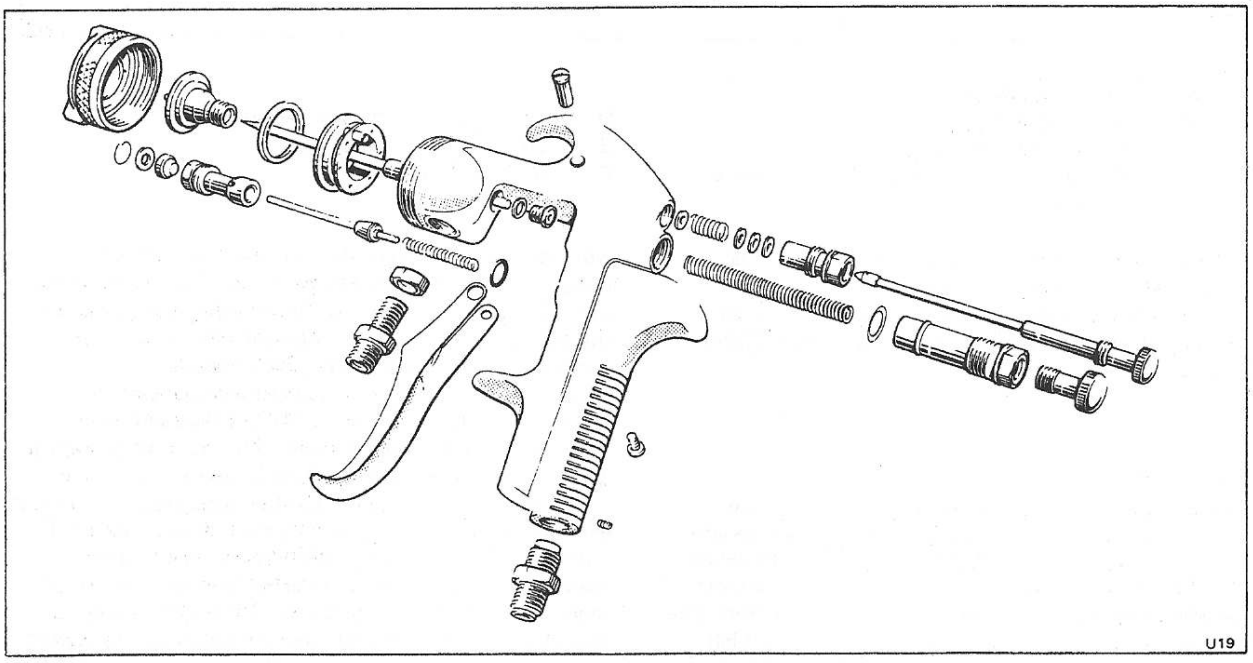


Fig. S63 A typical standard high speed spray gun (PA–JGA–502–1/P–JGA–502–1)

applied at low atomizing pressures with small nozzle sizes to prevent excessive material application.
4. Abrasive or corrosive materials must be handled with tips made of wear-resistant or non-corrosive metals.
5. The type of material feed to be used is important. The nozzle size sometimes recommended for pressure feed will not be satisfactory for suction feed although the converse does not apply.

Spray gun technique
Each kind of paint or finishing material has a different 'feel' or viscosity, some flow out easier than others, while some are very viscous or sluggish in their movement.

A good spray gun can quite easily produce a perfectly good finish with any of the wide variety of paints available, provided that.
1. The correct spray gun adjustments are made to suit the material.
2. That the paint itself is of reasonably good quality.

Cheap paints would not produce a good coating under any circumstances.

Spray gun adjustments
The all important spray gun adjustments are.
1. The volume flow of paint from the nozzle to suit the size of the area to be covered and the speed of operation required.
2. The correct proportioning of atomizing air pressure to the flow of material.
3. The proper spray width adjustment.

All these adjustments are inter-dependent, as they vary according to the viscosity of the paint, the volume and pressure of compressed air available and the sizes of areas to be covered.

Provided the spray gun is fitted with the correct size fluid tip to suit the type of material, adjustments to obtain the best results are made as follows.

Volume flow adjustment
The only mechanical adjustment possible with a gravity or suction feed spray gun is made by means of the fluid needle adjusting screw (see Fig. S64). Screwing this control inwards restricts the flow of material to the nozzle; screwing it outwards has the reverse effect. This adjustment should only be used when it is necessary to reduce the flow of paint temporarily. Turning in the adjusting screw increases the compression of the needle spring and makes the trigger harder to pull back. When a reduced flow of paint is required for a lengthy period this can easily be obtained by fitting a fluid tip with a slightly smaller size nozzle.

The flow of paint from a pressure feed tank to the spray gun is very accurately controlled by the air pressure regulator on the tank lid. The higher the air pressure in the tank the faster the flow of material; naturally a heavy paint requires greater air pressure than a lighter one. It should also be noted that the higher the gun is used above floor level the greater is the pressure needed to force the paint up to it.

Where long lengths of fluid hose are employed, a certain amount of friction resistance to the fluid flow has to be overcome by pressure adjustment.

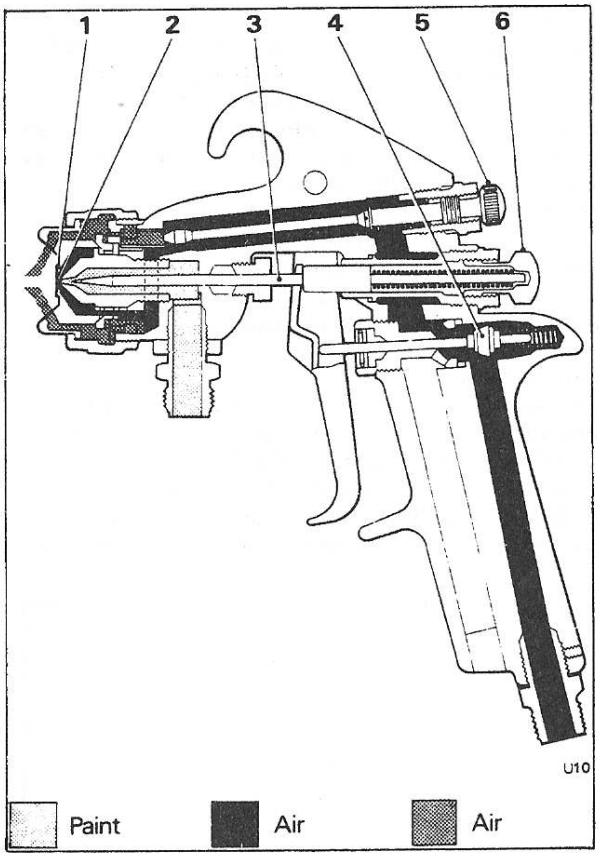


Fig. S64 Principal parts of a spray gun
1 Air cap
2 Fluid tip
3 Fluid needle
4 Air valve
5 Spreader control valve
6 Fluid needle adjusting screw

To obtain the correct adjustment of fluid pressure for any particular paint in the tank proceed as follows.
1. Hold the spray gun at normal working level and cut off the atomizing air supply from the gun by means of a cock stop on the tank.
2. Pull back the trigger to its fullest extent and gradually screw down the fluid regulating valve on the tank until the paint flows in a steady stream from the nozzle falling in an arc approximately 15,2 cm. (6.0 in.) from the gun.

Adjustment of the pressure from a fluid pump is controlled by raising or lowering the pressure of the air which drives the pump. If the paint is drawn from a circulating fluid line a fluid pressure control valve can be fitted into the line at the spraying point.

Atomizing air pressure adjustment
Having adjusted the paint flow for pressure feed spraying it is then necessary to determine the correct atomizing air pressure so that it will break up the paint stream finely and evenly.

The atomizing air pressure is adjusted by means of a regulator on the air transformer. This is usually fitted to

the air receiver outlet on a portable air compressing plant. In some cases it is attached to the pressure feed tank starting with the air pressure regulator set at 3,51 kgf/sq.cm. (50 lbf/sq.in.) as shown on the controlled pressure gauge of the transformer. A series of trial panels should be sprayed, raising or lowering the air pressure by 0,35 kgf/sq.cm. (5 lbf/sq.in.) each time until the best results are obtained.

Too small an atomizing air pressure will produce a coarse grain effect. Too high a pressure will thin out the centre of the spray pattern and also cause wastage of paint in the form of fog and overspray.

Spreader adjustment

The spreader adjustment provides a means of changing the spray pattern from a round spray to fan sprays of various widths (see Fig. S65, items A and B).

Screwing the spreader adjustment valve fully in produces the round spray and as the control is unscrewed so the fan spray pattern develops and becomes wider. Spreader adjustment must balance the volume of fluid flow; if the spreader adjustment valve is open too wide it will split the spray pattern (see Fig. S65, item C).

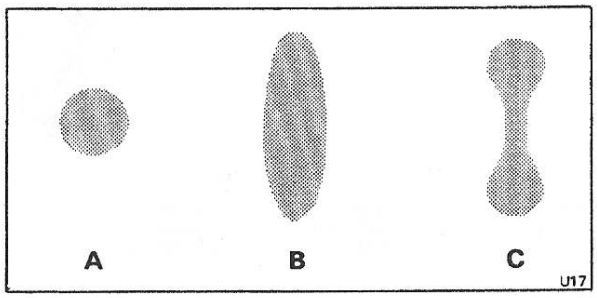


Fig. S65 Spray patterns
A Round spray pattern
B Fan spray pattern
C Split spray pattern

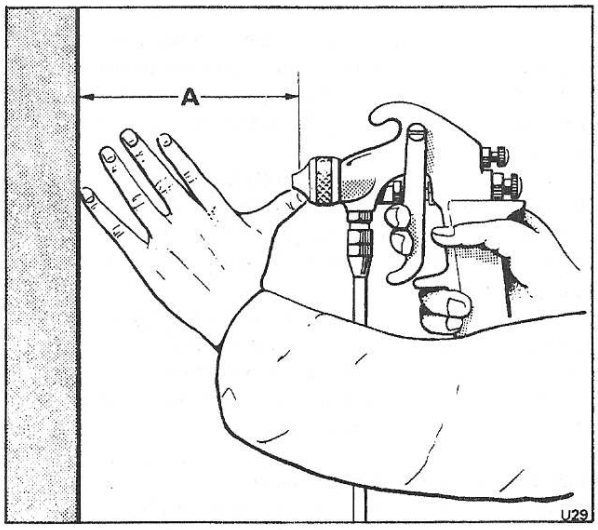


Fig. S66 Quick guide to spraying distance
A 15,24 cm. to 20,32 cm. (6.0 in. to 8.0 in.)

Basic rules of spraying

The following are basic rules to be learned, assuming that the operator has the correct gun for the job, has mixed and strained his paint correctly and has adjusted the fluid and atomizing air pressures to suit the material and speed of operation required.

1. The spray gun should be held at right-angles to the surface to be sprayed. The distance between the surface and the face of the air cap should be between 15,24 cm. and 20,32 cm. (6.0 in. and 8.0 in.), or a hand span as a quick check (see Fig. S66).
2. Each stroke should be made with a free arm motion across the face of the surface with the wrist flexible so that the gun is kept at right-angles to the surface and at the correct distance from it.

The speed of each successive stroke must be constant so as to maintain a uniform thickness of coating. In order to prevent the build-up of paint on the surface at the beginning and end of each stroke, the movement of the gun should be started before the trigger is pulled. Similarly, the trigger should be released before the gun movement ceases at the end of the stroke. The spray gun trigger should always be handled smoothly and not pulled or released abruptly.

3. The edges of a spray pattern taper off slightly and to obtain even coverage of a surface it is essential to overlap the previous stroke by approximately 50%. It is recommended that the gun is aimed at the extreme edge of the previous stroke to ensure the required overlap.

Common faults

One of the faults that arises from using the incorrect spray technique is the waste of paint. For instance one method sometimes used is to pull the trigger and wave the gun over the surface until it is all one colour and then release the trigger. The result is a tremendous amount of spray fog which makes the operator almost the same colour as the panel he is spraying and the coating is very uneven. It may have developed runs and sags in places and, of course, very much more paint than necessary has been used.

These faults can easily be overcome by avoiding the errors in spray technique described as follows.

1. **Arcing the spray gun (see Fig. S67).** This is brought about by keeping the wrist rigid so that the gun is not pointing directly at the surface throughout the stroke. The result is an uneven coating and excessive overspray at each end of the stroke caused by the paint being deflected from the surface into the air. When the gun is arced through 45° from the centre, approximately 65% of the paint is lost, most of it creating spray fog.
2. **Tilting the spray gun (see Fig. S68).** If the gun is tilted during a stroke the spray pattern will be uneven and a certain amount of spray fog will form. The gun should always be held at right-angles to the surface.
3. **Holding the spray gun at the incorrect distance from the surface (see Fig. S69).** When the gun is held too close to the surface the paint is concentrated into a smaller area.

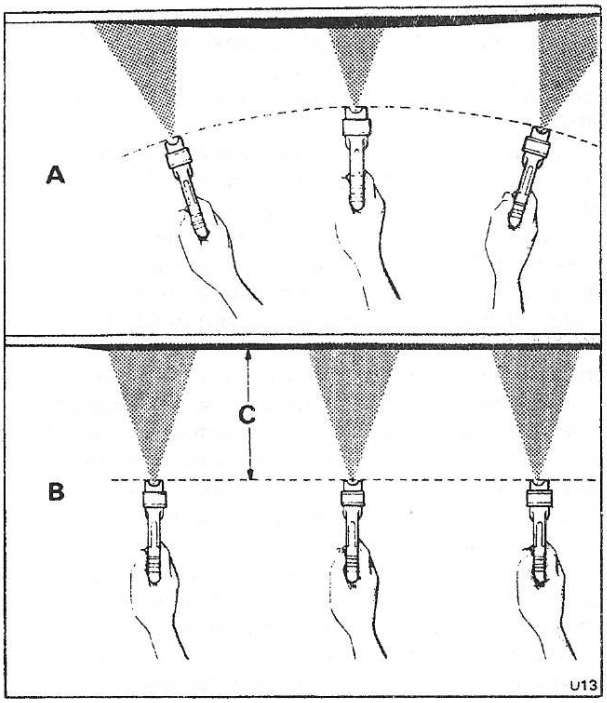


Fig. S67 **Arcing the spray gun**
A Incorrect method
B Correct method
C 15,24 cm. to 20, 32 cm. (6.0 in. to 8.0 in.)

Unless the speed of the stroke is increased considerably the surface will be overloaded, probably causing runs and sags.

Where the gun is held too far from the surface more solvent is evaporated from the atomized paint, resulting in a coarse, dry coating that has an 'orange peel' finish. This is caused by lack of flow on the surface due to loss of solvent. For the same reason the coating loses some of its power of adhesion. When the atomized paint has an unnecessary distance to travel there is a certain amount of 'fall out' before it reaches the surface, thus causing a waste of paint and spray fog.

4. **Failure to trigger the gun correctly.** Continuously holding the trigger back while spraying a surface causes a heavy build-up of paint at the end of each stroke. This waste paint, leads to runs and sags. It also gives a very patchy finish.

Holding the trigger open in this manner also causes unnecessary fatigue, because the hand is constantly pulling against the compressed needle spring. The momentary relaxation of muscle tension during correct triggering action is much less tiring.

It should be noted that when regulating the fluid pressure the needle adjusting screw of the gun should be set fully open. This ensures the minimum compression of the needle spring for the fingers to pull against.

5. **Varying the speed of the stroke.** The speed of a stroke is closely co-related to the volume of paint flow. The fluid pressure should therefore be set compatible with the operator's natural speed of movement.

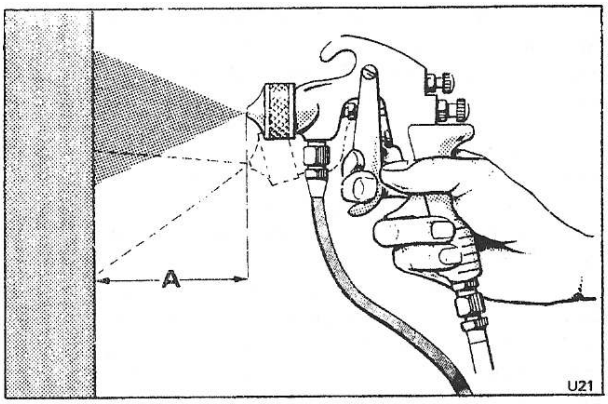


Fig. S68 **Tilting the spray gun**
A 15,24 cm. to 20,32 cm. (6.0 in. to 8.0 in.)

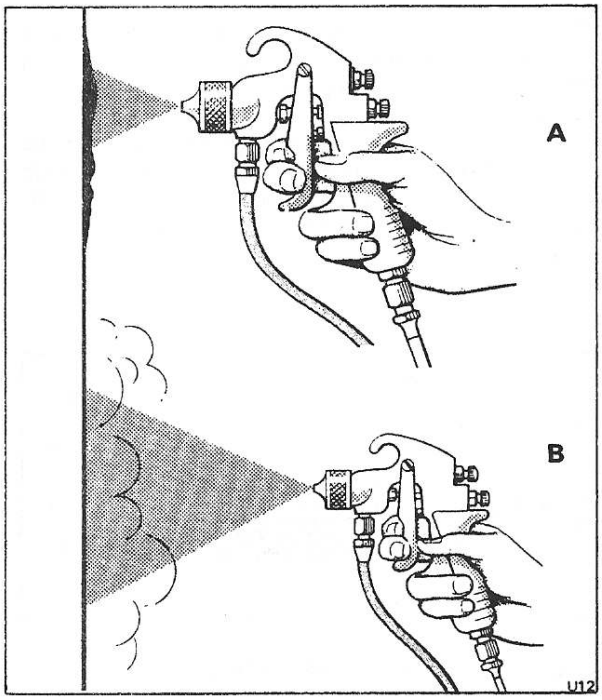


Fig. S69 **Effects of incorrect spraying distances**
A Gun held too close – surface overloaded
B Gun held too far away – poor finish, waste of paint and spray fog

Moving the gun too fast over the surface will give a poor coating. Too slow a stroke will overload the surface, making the finish 'liney'.

6. **Incorrect overlapping.** If strokes are too far apart and do not overlap by approximately 50% a streaky, patchy finish will result. Too great an overlap uses extra paint and can easily overload the surface.

7. **Quick pattern changer (see Fig. S70).** This fits on the spray gun in place of the fluid needle adjusting screw. It enables the operator to produce two fan pattern sizes whenever they are required. When fitted, a light pull on

the spray gun trigger gives a narrow pattern for spraying edges and other small areas. Full movement of the trigger produces the conventional pattern for spraying larger surfaces.

Motion study

Once having mastered the spray technique it is necessary to learn the basic principles of motion study in order to obtain maximum efficiency in spraying with the minimum of fatigue.

It is not sufficient just to spray correctly, the operator should be able to decide the quickest way to complete a job so that the minimum number of gun strokes necessary to cover the surface adequately are used; at the same time avoiding paint wastage and reducing the moving of equipment to a minimum.

The following notes will assist the operator in acquiring practical knowledge on the art of motion study.

1. **Long work.** A long panel should be sprayed in separate sections between 45,72 cm. and 91,44 cm. (18.0 in. and 36.0 in.) long (see Fig. S71), triggering the gun in the usual manner at the ends of each stroke. Each section should overlap the previous section by approximately 10,16 cm. (4.0 in.).

When a long panel is comparatively narrow it can be sprayed with vertical strokes. This is sometimes the best system since stroke end laps are avoided. However most operators have a better control of the gun when using the more natural horizontal stroke.

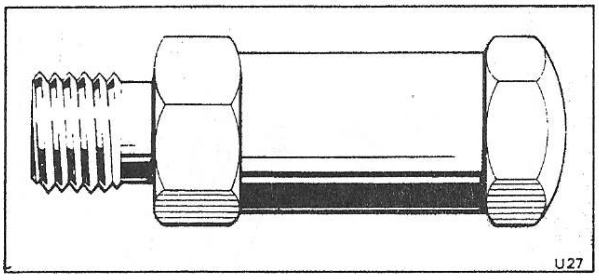


Fig. S70 Quick spray pattern changer

Never over-reach in spraying, always confine the stroke to a comfortable length, approximately 0,91 m. (3.0 ft.). Over-reaching inevitably means that the gun is angled, thus causing spray fog due to the paint being deflected from the surface.

It is advisable to practice spraying with either hand, as this will allow a larger area to be covered from one position and help to reduce fatigue.

2. **Outside corner spraying.** When spraying an outside corner the gun should be held directly facing the corner edge so that the adjoining surfaces are sprayed simultaneously (see Fig. S72). The spray pattern should be across the corner edge, i.e. the pattern must be horizontal for a vertical corner and vertical for a horizontal corner.

3. **Inside corner spraying.** There are two methods of spraying an inside corner. The spray gun can be pointed directly into the corner and the two adjacent surfaces sprayed together (see Fig. S73). The coating will not be uniform, but the technique is fast and satisfactory for most work.

When an even coating is required each face of the corner should be sprayed separately. After making the vertical stroke, short horizontal strokes should be used to coat the area adjacent to the corner. This avoids overspraying or double coating when the flat face of the panel is being sprayed.

4. **Slender open work.** Grilles and similar work should be sprayed so that the majority of paint covers the largest area at each stroke of the gun. Wire or other intricate work should be sprayed at an acute angle (see Fig. S74). It is recommended that a shield is used behind the wire, so that paint deflected from the shield will help to coat the back of the work.

When spraying slender panels, the rule is to make the spray pattern fit the job. A small horizontal pattern or a large vertical one will give complete coverage, with a minimum of overspray. However, it is a mistake to use too narrow a spray pattern on this kind of work as more strokes would be necessary, with probably too much overlapping.

Cleaning

Cleaning spray painting equipment is essential. Provided

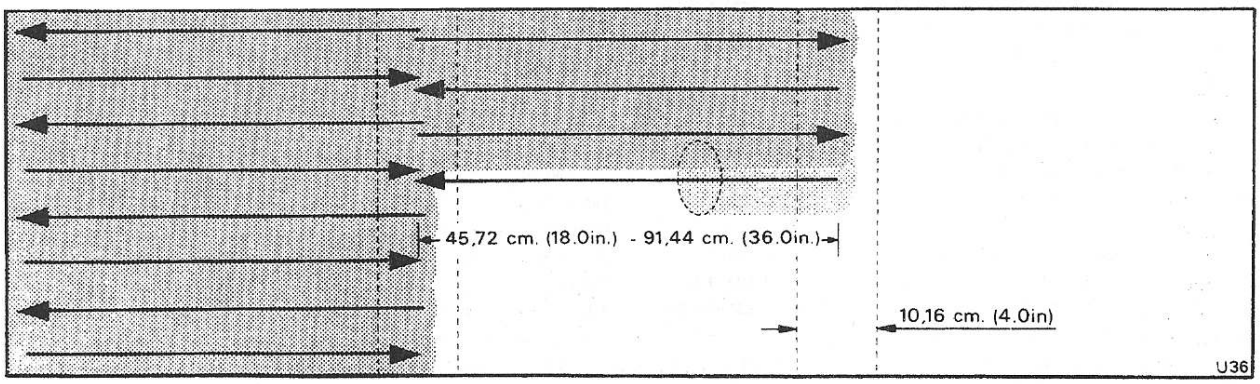


Fig. S71 Manageable distances when spraying long panels

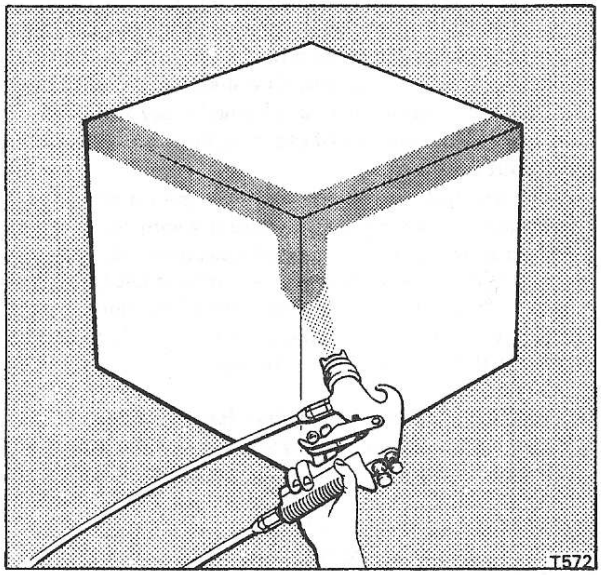


Fig. S72 Outside corner spraying

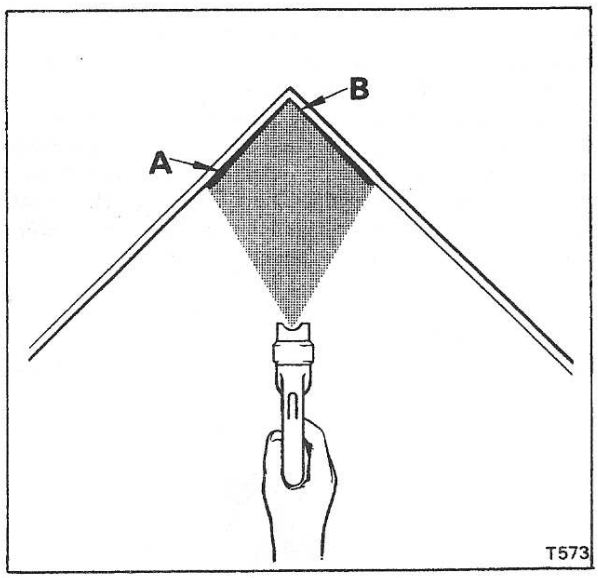


Fig. S73 Inside corner spraying
A Heavy
B Thin

it is done systematically and thoroughly, it will pay dividends in better spraying and trouble free spray gun performance. The habit should be developed of cleaning equipment promptly after spraying to avoid the possibility of having to remove hardened paint, particularly from the fluid tip and passages of the spray gun.

The cleaning fluid used must be suitable for the kind of paint that has been sprayed.

Note

A caustic solution must never be used for cleaning a spray gun or any other parts of the equipment, it will inevitably attack the metal of which they are constructed. Also, the spray gun must not be immersed in cleaning fluid, as this will destroy the lubricant in the fluid needle and air valve packings.

Cleaning the spray gun

1. **Suction feed gun.** After spraying and whilst the gun is still connected to the compressed air supply, loosen the cup. With the fluid tube still within the cup, hold a piece of cloth lightly over the centre hole of the air cap (see Fig. S75). Pull the trigger, the cloth pad will then turn back the compressed air through the fluid tube into the cup.

Empty the cup, allowing it a few moments to drain. Partially fill it with a suitable cleaning fluid and re-attach the cup to the gun. Spray the fluid through the gun in the normal way, but occasionally hold the cloth over the cap as before so that the cleaning fluid is surged backwards and forwards through the fluid passages, cleaning them thoroughly (see Fig. S75).

Remove the air cap from the gun and, having soaked it in cleaning fluid, rub it with a stiff brush. If any of the holes in the cap are blocked, probe them with a match stick, tooth pick or other soft implement (see Fig. S76). Do not attempt to clean these holes with a metal tool as irreparable damage to the cap could occur. The easiest way to dry the cap and the gun after cleaning is to hold it in a stream of compressed air.

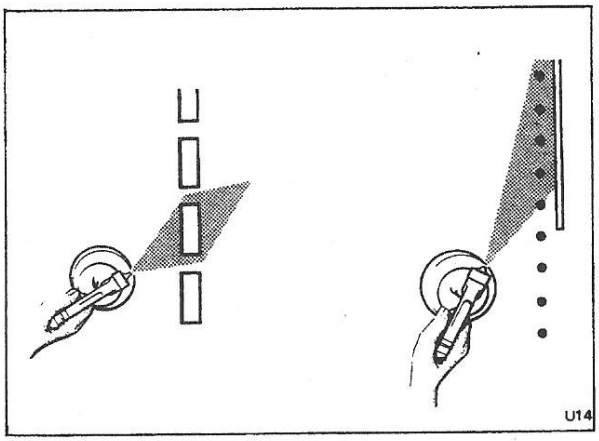


Fig. S74 Slender open work spraying

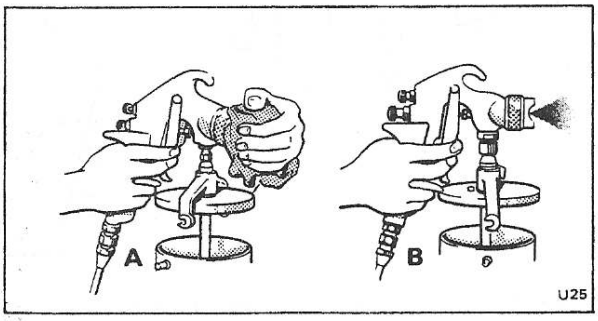


Fig. S75 Cleaning a suction feed spray gun
A turning the compressed air through the fluid tube into the cup
B Spraying cleaning fluid through the gun

Whilst the air cap is disconnected from the gun, ensure that the outside of the fluid tip is free of paint. Also, take careful precautions to ensure that the tip is not damaged while it is unprotected.

When the spray gun is re-assembled wipe it clean with a cloth soaked in cleaning fluid, also clean the inside and outside of the fluid cap. Always apply a drop of oil to the parts needing lubrication (see Fig. S77). Note that the fluid needle spring is lubricated with petroleum jelly or grease and this part will require only occasional attention.

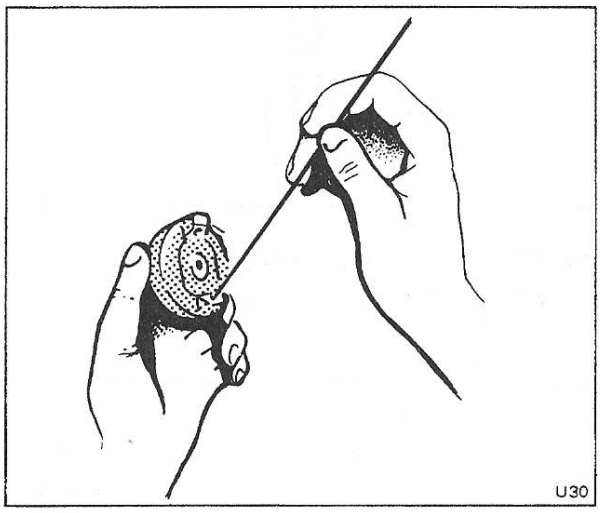


Fig. S76 Clearing holes in air cap

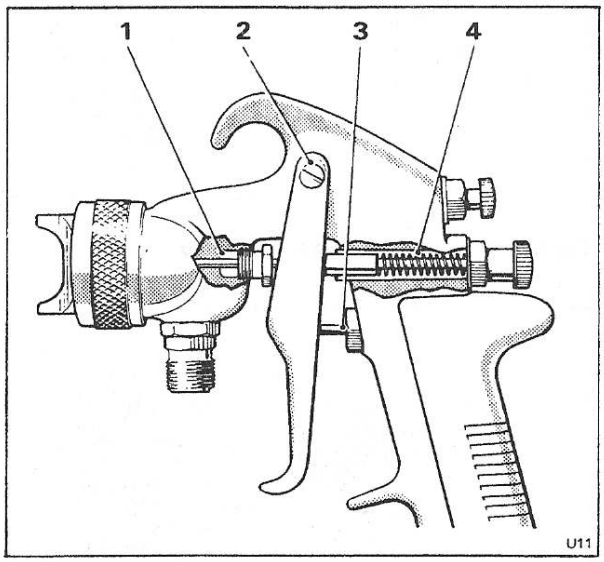


Fig. S77 Parts of a spray gun requiring lubrication
1 Fluid needle packing
2 Trigger fulcrum screw
3 Air valve stem and packing
4 Fluid needle spring

2. **Gravity feed gun.** The gravity feed gun should be cleaned in the same manner as the suction feed gun. Note that the lid is detachable and not the cup. When blowing back with a gravity feed gun take special care to ensure that the open top of the cup is turned away from the face as a certain amount of cleaning fluid is liable to be blown out of the cup.
3. **Gravity and suction feed cups.** In the lid of both gravity and suction feed cups there is a vent hole to allow air to enter the cup. This air replaces paint that is drawn out and it is essential that this vent hole is kept open as otherwise the paint will not flow out of the gun correctly. There is also a lid gasket which must be carefully cleaned to ensure that it functions correctly.

Cleaning the pressure feed system (see Fig. S78)

1. Clean the pressure feed system by turning off the cock supplying compressed air to the pressure feed tank and open the relief valve on the tank lid. This will release the air pressure within the tank.
2. Unscrew the clamps that hold the tank lid down.
3. Lift the tank lid and replace it slightly out of position so that atmospheric air is free to enter or leave the tank.

Turn the air cock on again and force the paint in the fluid hose back into the tank by holding a cloth over the spray gun air-cap (see Fig. S78).

4. Drain the paint from the fluid tank and replace it with cleaning fluid. Operate the gun ensuring that the fluid is sprayed and blown back until the hose and fluid passages are clean. Detach the hose from the gun and tank; allow both ends of the hose to drain into a receptacle.

Clean and lubricate the gun (see Cleaning the spray gun) and also clean the tank inside and out including the lid gasket. The air pressure regulating valve on the tank should be unscrewed until it feels free thus relieving the tension on the valve spring.

When the pressure feed equipment is to be used again, within a few hours, it is not necessary to clean it. Ensure that the parts are left connected, with the fluid hose full of material. Also ensure that the lid of the pressure feed tank is tightly secured.

Hose and equipment cleaner

A special 9,09 litres (2 gal.) tank which will contain cleaning solvent provides a quick, simple means of cleaning hoses and equipment. It operates by compressed air and provides a finely atomized blast of solvent which travels through the passages of guns, tanks, hoses, etc. Air and fluid valves permit a mixture variation of air and solvent. Also, the valves allow either air or solvent to be used separately.

Cleaning other equipment

Equipment other than the spray gun and tank should always be kept scrupulously clean to ensure their constant efficiency.

1. To ensure that any dust or loose material is removed, the air hose should always be blown out with compressed air before it is attached to the gun. Keep the outside of the fluid hose free from accumulation of material. The life of the hose depends upon the care given to it.

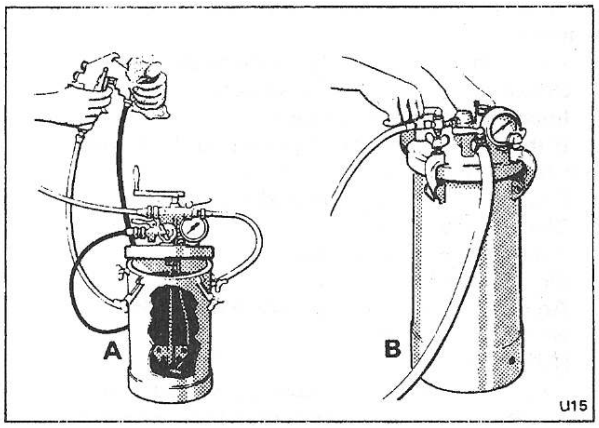


Fig. S78 Cleaning the pressure feed system

A Forcing paint in the fluid hose back into the tank

B A 9,09 litre (2 gal.) tank for holding cleaning solvent to clean all hose and equipment

2. Ensure that hose connections are clean and not damaged; if they cannot seat correctly leakages will occur at the connection, causing waste of air or paint.
3. The oil level in the air compressor sump should be inspected regularly and, if necessary, topped-up with the oil recommended by the manufacturer. The oil in the sump should be renewed periodically; the interval dependent upon the amount of time the compressor has been used.
4. Another feature of the air compressor is the air inlet which usually contains a filter. This filter must be kept scrupulously clean and the filtering medium within it replaced when it becomes laden with dirt.
5. The air receiver is fitted with a drain cock which should be opened at least once a day, with the compressor running, to blow out accumulated water and oil.
6. When an air transformer is fitted to the air compressor the drain cock on the transformer must be opened at least once a day. If not, the transformer must be opened at least once a day. If these operations are not carried out, the transformer will become water-logged and moisture will enter the air hose.

Remedies for spraying problems

Even with excellent spraying equipment, problems will at some time arise. If these problems are allowed to develop they can spoil a paint finish. Usually these problems can be quickly rectified if the operator knows where to look for the source.

The following list and Figures S79 to S82 inclusive, indicate the causes of problems most commonly encountered in spraying.

1. If there is an excessive mist or spray fog it is caused by:
a. Too thin a paint.
b. Over-atomization, due to using too high an atomizing air pressure for the volume of paint flowing.
c. Improper use of the gun, such as making incorrect strokes or holding the gun too far from the surface.
2. Runs or sags on a sprayed surface are caused by:
a. Sags are the result of applying too much paint to the surface, possibly by moving the gun too slowly. Runs are caused by using too thin a paint.
b. If the gun is titled at an angle to the surface, excessive paint is applied where the pattern is closest to the surface, causing a build-up of paint and sagging.
3. An 'orange-peel' defect such as that sometimes obtained with cellulose and synthetic materials is caused by:
a. Using unsuitable thinners.
b. Either too high or too low an atomizing air pressure.

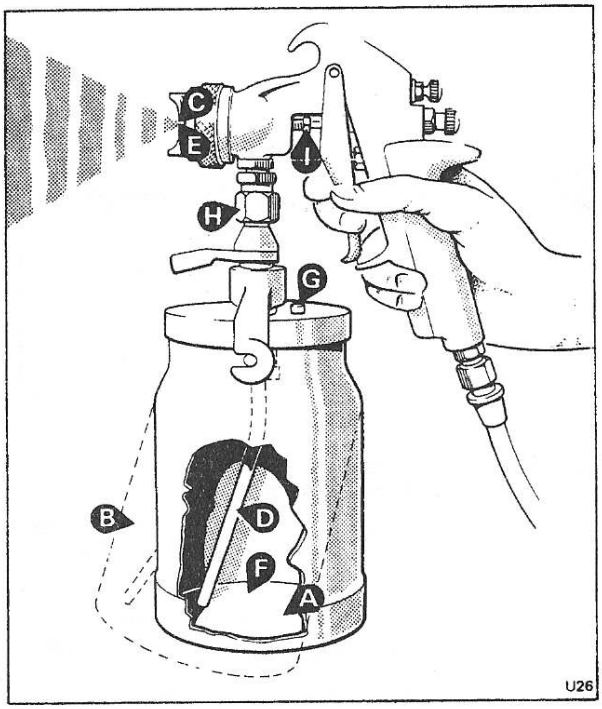


Fig. S79 Diagnosing the problems of a spray gun giving a fluttering or jerky spray

A Insufficient paint in the cup or pressure feed tank causing the end of the fluid tube to be uncovered

B When a suction feed gun is used, the cup is tilted at an excessive angle so that the fluid tube does not come into contact with the paint

C An obstruction in the fluid passage-way which must be removed

D Fluid tube loose, cracked or resting on the bottom of the paint container

E A loose fluid tip on the spray gun

F Too heavy a material for suction feed

G A blocked air vent in the cup lid

H A loose nut coupling the suction feed cup or fluid hose to the spray gun or pressure feed tank

I A loose fluid needle packing nut or dry packing

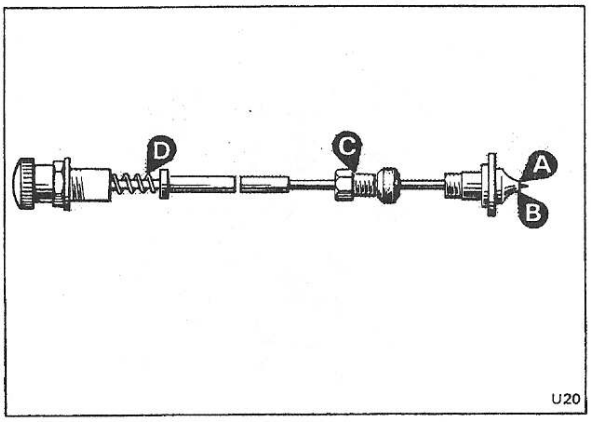


Fig. S80 Diagnosing the problem of paint leakage from the front of the spray gun

Paint leakage from the front of the spray gun is caused by the fluid needle not seating properly due to:

A Worn or damaged fluid tip or needle
B Lumps of dried paint or dirt lodged in the fluid tip
C Fluid needle packing nut screwed up too tightly
D Broken fluid needle spring

Note
Paint leakage from the fluid needle packing nut is caused by a loose packing nut or a worn or dry fluid needle packing. The packing can be lubricated with a small quantity of light oil, however, fitting new packing is strongly advised.

Finger tighten the packing nut to prevent leakage; ensure that the nut does not bind on the needle.

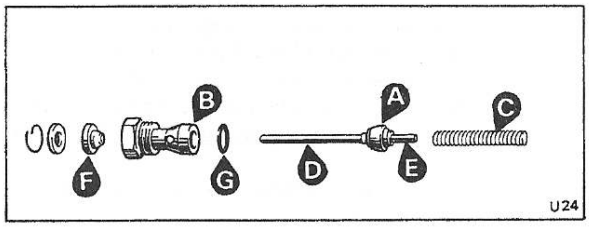


Fig. S81 Diagnosing the problem of compressed air leakage from the front of the spray gun.

Compressed air leakage from the front of the gun is caused by:

A Dirt on the air valve or air valve seating
B Worn or damaged air valve or air valve seating
C Broken air valve spring
D Stocking valve stem due to lack of lubrication
E Bent valve stem
F Lack of lubrication on air valve packing
G Air valve gasket damaged

c. Holding the gun either too far away or too close to the surface.
d. The paint not thoroughly mixed or agitated.
e. Draught blowing onto the surface.
f. Improperly prepared surface.
4. If the air compressor pumps oil into the air line, it is for the following reasons.
a. Strainer on air intake blocked with dirt.
b. Blocked intake valve.
c. Too much oil in crankcase.
d. Worn piston rings.
5. An over-heated air compressor is caused by:
a. No oil in crankcase.
b. Oil too heavy.
c. Valves sticking, dirty or covered with carbon.
d. Insufficient air circulating around an air-cooled compressor due to the compressor being placed too close to a wall or in a confined space.
e. Cylinder block and head coated with a thick deposit of paint or dirt.
f. Air inlet strainer blocked.

Safety in the finishing shop

Safety is often an aspect in the refinishing trade that is sadly neglected. Fire in connection with paint and solvents develops quickly and can rapidly become out of control.

Fires in painting areas generally have three principal causes.

1. Solvents and fumes spread out over large areas and ignite.
2. Fumes in empty or nearly empty containers ignite and explode.
3. Spontaneous combustion.

Preventive measures
Solvent fumes

1. Display **'No Smoking'** and **'No Naked Flames'** signs and ensure that blow lamps and welding equipment are not used in the vicinity of the painting area.
2. Wipe up spilled thinners immediately; dispose of cloth.
3. Provide a good ventilation system to remove fumes.
4. Replace all caps and covers on containers.
5. All solvent containers and electrical equipment should be properly earthed. **Do not use temporary electrical installations.**

Static electricity

1. When pouring thinners and solvents, connect the containers with electrically conductive wire and earth them.
2. If possible earth all equipment in the paint shop.
3. Do not splash when pouring. Pour the thinner down the side of the container; free falling through the air can generate static electricity.
4. Do not use plastic containers for storage.

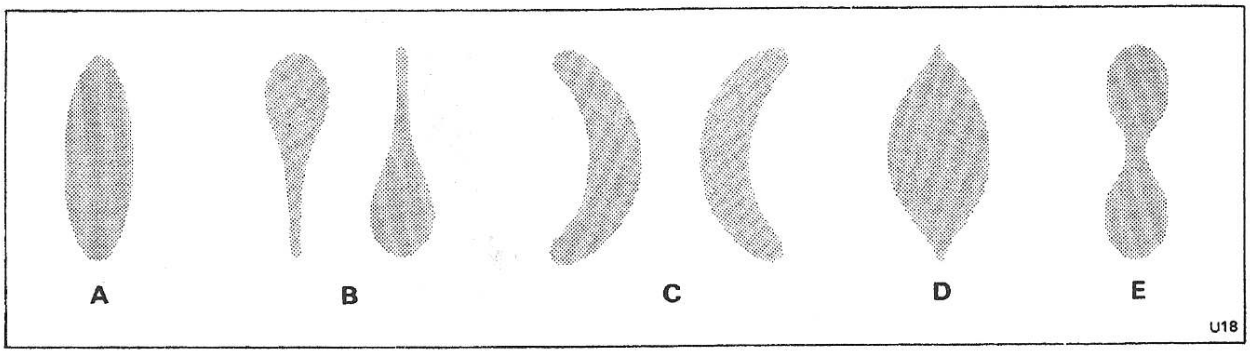


Fig. S82 Spray patterns

A Normal spray pattern

Defective spray patterns can develop from the following:

B Top or bottom heavy pattern caused by:
1. Horn holes in air cap partially blocked
2. Obstruction on top or bottom of fluid tip
3. Dirt on air cap seat or fluid tip seat

C Heavy right or left side pattern caused by:
1. **Right or left side horn hole in air cap** partially blocked
2. Dirt on right or left side of fluid tip

D Heavy centre pattern caused by:
1. Too low a setting of the spreader adjustment valve on the gun
2. Atomizing air pressure is too low or the paint is too thick
3. With pressure feed, the fluid pressure is too high or the flow of paint exceeds the normal capacity of the air cap
4. The incorrect size fluid tip for the paint being sprayed

E Split spray pattern caused by:
1. Atomizing air and fluid flow not being correctly balanced

Remedies for defective spray patterns are as follows:

B Top or bottom heavy pattern
or
C Heavy right or left side pattern

Determine if the obstruction is in the air cap by spraying a test pattern. Then rotate the air cap half a turn and spray a further test. If the defect is inverted the obstruction is in the air cap which should be cleaned as previously described.

If the defect has not changed its position the obstruction is on the fluid tip. When cleaning the fluid tip, check for fine burr on the tip which can be removed with 600 wet or dry sandpaper.

D Heavy centre pattern
or
E Split spray pattern

Check if the adjustments are unbalanced. If necessary, adjust the atomizing air pressure, fluid pressure, and spray width control setting until the correct pattern is obtained.

Spontaneous combustion

1. Some materials such as oils and certain paints, which have been wiped up with cloth and cotton waste, oxidise so rapidly that sufficient heat is generated to cause ignition.

In all, three basic rules apply to safety in the paint shop, they are.

1. **Keep the paint areas clean and tidy.**
2. **Ensure proper ventilation.**
3. **Look after all equipment, especially the electrical equipment.**