

Section S7

POWER OPERATED HOOD SYSTEM (Convertible Cars)

Introduction

The hood on the Rolls-Royce Silver Shadow and Bentley T series Convertible with coachwork by H. J. Mulliner, Pard Ward Limited, is power operated; electro-hydraulic equipment is provided to enable the hood to be raised and lowered.

The source of the power is an electric motor connected to the car battery and driving a hydraulic pump operating through solenoid valves. This equipment together with the hydraulic fluid reservoir, is situated behind a trim panel between the rear spring housings in the forward section of the luggage compartment (*see Fig. S70*).

The hood folding mechanism itself is operated by hydraulic rams in each rear quarter; the rams are connected to the folding framework of the hood behind the rear quarter windows (*see Fig. S76*).

Information concerning the Everflex hood and head lining is given in Section S10 - Miscellaneous Trim.

Information concerning the electrical part of the system is given in Chapter M - Electrical System.

GENERAL

Controls

A switch to operate the hood is situated on the facia panel of cars prior to Car Serial Number 6001, and on the centre console panel of cars after Car Serial Number 6000. The power operated hood system is wired through the handbrake warning lamp and will only operate when the handbrake is applied; therefore it is necessary to switch on the ignition and apply the handbrake before the switch will raise or lower the hood. The hood can be operated whether the engine is running or stationary.

For additional information on the electrical part of the system refer to Chapter M - Electrical System.

To lower the hood

1. Ensure that the handbrake is applied and 'Neutral' is selected then switch on the ignition.
2. Release the two safety catches securing the hood to the top rail of the windscreen (*see Fig. S68*).
3. Press the rear part of the hood operating switch (lower part on facia mounted switches) until the hood is fully lowered; release the switch.

A cover is provided to fit over the hood well to protect the retracted hood. The cover is secured over the well by press studs and when not required it is stored in a bag in the luggage compartment.

To raise the hood

1. Remove the hood cover (if fitted).
2. Ensure that the handbrake is applied and 'Neutral' is selected then switch on the ignition.
3. Press the front part of the hood operating switch (upper part on facia mounted switches) until the hood is fully raised; release the switch.
4. Fasten the two safety catches to secure the hood to the top rail of the windscreen.

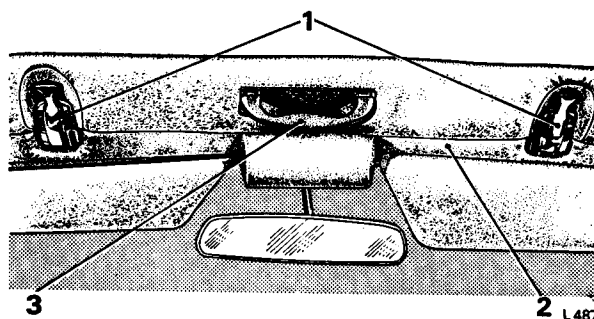
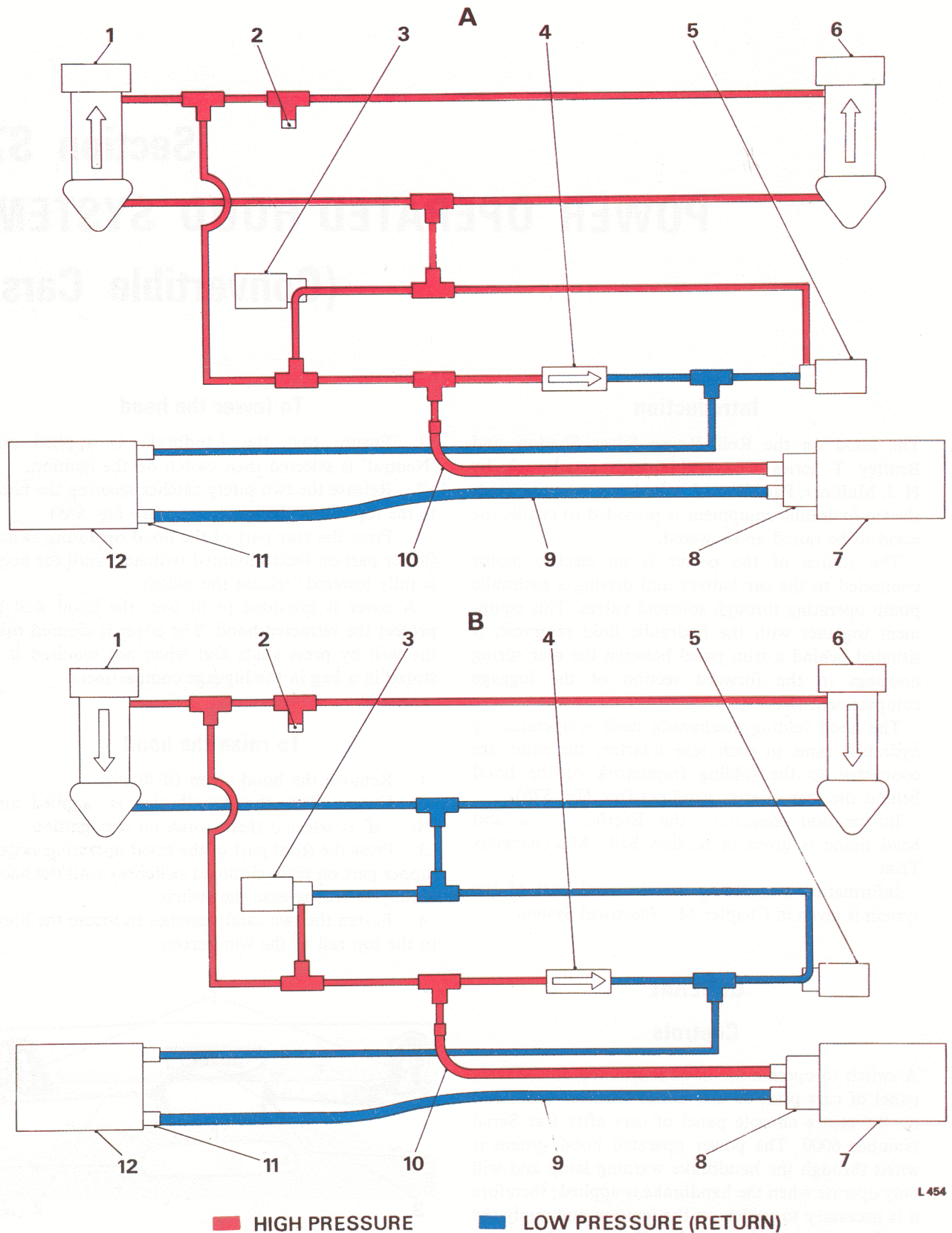


FIG. S68 POSITION OF THE HOOD SAFETY CATCHES

- 1 Hood safety catches
- 2 Top rail of windscreen
- 3 Hood handle

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FIG. S69 DIAGRAM OF THE HYDRAULIC CIRCUIT – RAISING AND LOWERING

- | | | | |
|-------------------|-----------------------|-------------------------|-----------------------------|
| A Raising | 1 Left-hand ram | 5 'Down' solenoid valve | 9 Nylon tube |
| | 2 Test connection | 6 Right-hand ram | 10 Flexible hose |
| B Lowering | 3 'Up' solenoid valve | 7 Pump motor | 11 Filter/outlet connection |
| | 4 Relief valve | 8 Pump | 12 Fluid reservoir |

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Emergency operation of the hood

Should the power operated hood become inoperative it may be raised or lowered manually by exerting steady pressure on both sides of the hood side frames, at the forward end. Resistance will be felt as the fluid is forced out of the rams.

Power operation

The electric motor of the power operated hood system runs off the car battery through a solenoid operated switch mounted adjacent to the motor (see Fig. S71). The power operated hood system will not operate if the battery voltage falls below 9 volts, therefore it is essential that the battery is maintained in a fully charged condition.

When the hood operating switch is pressed, the electric motor drives the pump through a small tongue and slot coupling. The pump supplies hydraulic fluid to the system and two solenoid valves direct the flow of fluid to the rams according to the direction of travel required. Both valves are identical and are open in the 'rest' or de-energised position. Figure S69 illustrates the position of both valves in the hydraulic circuit.

An eye bolt in the upper end of each ram piston is coupled to the folding framework of the hood. To extend (raise the hood) high pressure fluid is supplied to both sides of the ram piston. To retract (lower the hood) high pressure fluid is supplied to the annulus side only, the lower connection being open to the reservoir.

Lowering the hood (see Fig. S69). When the switch is pressed to lower the hood, the pump supplies fluid to the system at approximately 1 000 lb/sq. in. (70,31 kg/sq. cm.) and the 'Up' solenoid valve is energised to close that side of the system. Pressure is thus applied to the upper side of the ram pistons which are pressed back into their cylinders thereby retracting the hood and exhausting the fluid from the lower end of the rams through the 'Down' (de-energised) solenoid valve into the reservoir.

Raising the hood (see Fig. S69). When the switch is pressed to raise the hood, the pump supplies fluid to the system at approximately 1 500 lb/sq. in. (105,46 kg/sq. cm.) and the 'Down' solenoid valve is energised to close the return to the reservoir.

Fluid is supplied to both sides of the ram pistons but, as the pressure is applied over a greater area on the lower surface of each piston, the pistons are pressed upwards, thus raising the hood.

Hydraulic system

The hydraulic circuit is self-bleeding and does not require any venting operation. Each time the hood mechanism is operated the hydraulic fluid passes under pressure around the system and any air entering the system is returned to the reservoir where it escapes through the vent hole in the filler cap.

The reservoir is filled initially with a high grade mineral oil. Filling or topping-up the reservoir must be carried out with the hood fully lowered and an approved fluid (see Chapter D, Section D4, *Approved Lubricants*) must be used. **Under no circumstances must a castor oil base fluid (i.e. brake fluid, etc.) be used or added to the system.**

When disconnecting any hydraulic connection, immediately blank off the open ports to prevent loss of fluid and ingress of dirt.

The hydraulic system has proved to be very reliable in service and failure of the hood to raise or lower is rarely caused by a fault in the hydraulic system. A more likely cause of such a failure is that the mechanical linkage of the hood folding framework has become strained or that one of the pivot points is stiff due to lack of lubrication. Therefore, before attempting any service work on the hydraulic equipment, the mechanical links in the folding frame of the hood must first be checked and any fault corrected.

The following is a brief description of each unit in the hydraulic system.

Fluid reservoir

Fluid is drawn out of the reservoir through a gauze filter in the outlet connection and returned via the $\frac{1}{4}$ in. (6,35 mm.) outer diameter metal pipe.

The recommended fluid level is to the 'Full' mark on the dipstick attached to the filler cap. It is important that filling or topping-up the reservoir is only carried out with the hood fully retracted (open).

The pump and motor unit

The 12 volt electric motor is directly coupled through a small tongue and slot coupling to the pump.

The pump comprises three radial plungers, each being spring-loaded and reciprocating in its own liner. The plungers are operated by a central camshaft through a concentric bearing ring (see Fig. S72).

Fluid entering the liner is forced past a spring-loaded disc valve into a common annulus in the end housing and out into the hydraulic circuit. The disc valves are the non-return type and prevent fluid flowing back through the pump.

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Solenoid valves

(see Fig. S69)

Two identical solenoid valves are fitted and are open in the 'rest', or de-energised, position. By energising (closing) the appropriate valve, fluid is directed to the rams so that they extend or retract as required.

A coil is fitted to one end of the valve body (*see Fig. S73*). When the coil is energised, it attracts the armature and valve assembly towards a pole piece in the end of the valve body, against the resistance of the spring. The cone of the valve is then in contact with the valve seat and prevents fluid flowing through the valve.

When the coil is de-energised, by releasing the hood operating switch, the spring in the armature returns it to its normal open position.

Hydraulic rams

(see Fig. S69)

Two identical rams are fitted and they operate on the differential double-acting principal.

To extend the rams, fluid is supplied to both sides of the piston and as the piston base area is greater than the annulus area the ram will extend.

To retract the rams, fluid is delivered to the annulus area only the base connection being open to the reservoir.

Relief valve

(see Fig. S69)

The function of the line relief valve is to control the maximum pressure allowable in the hydraulic system. The valve opens at 2 000 lb/sq. in. (140,62 kg/sq. cm.).

Excessive pressure in the system will cause the cone valve to move off its seating in the valve body against the resistance of the spring, and allow fluid to exhaust to the reservoir.

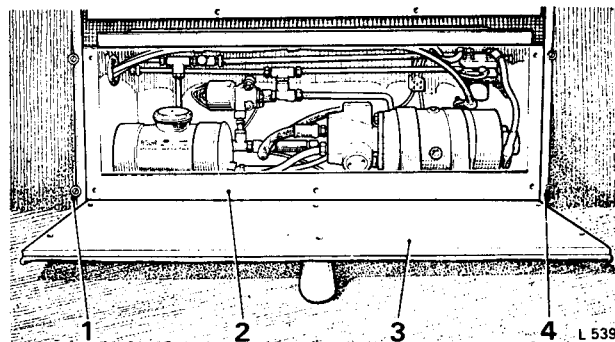


FIG. S70 ACCESS TO THE POWER PACK UNIT

- 1 Screw securing left-hand panel (4 off)
- 2 Power pack assembly
- 3 Centre access panel (shown removed)
- 4 Screw securing right-hand panel (4 off)

Hood folding mechanism

A system of links moving in prescribed arcs, enables the whole of the roof framework to fold down into the rear quarter.

The complicated part of the movement to arrange is the raising of the front part of the hood and the 'breaking' of the pivot joint in the side cantrail over the door windows when the system is operated to lower the hood. This movement is governed by a control link in the quarter behind the trim panel, operating through leverage on a triangle of links in the first cantrail joint. If any of these components become damaged or strained resulting in mis-alignment, the hood will not move properly and will possibly 'jam' preventing the hood from opening or closing.

Alternatively, the pivot points in any part of the folding mechanism may become dry through lack of lubrication creating undue pressure in the hydraulic system and causing the relief valve to open. Refer to Hood folding mechanism - Fault diagnosis, on Page S78 and also the Fault Diagnosis chart at the end of this Section for possible causes of trouble and the action to be taken.

SERVICING

Hydraulic components

Faulty units in the hydraulic system should be replaced on a service exchange basis and not dismantled for repair. However, in the event of urgent attention being required further information in addition to the removal and fitting procedure is given.

Hood mechanism

If the mechanical linkage in the hood folding mechanism becomes damaged or strained out of alignment it may be possible to rectify by following the instructions on Page S78 under Hood folding mechanism - Fault diagnosis. In certain cases, however, it may be necessary to replace the whole mechanical framework of the hood. This involves removing not only the head lining and the Everflex hood but also the 'wiggling' (i.e. the hair padding between the head lining and the hood). Fitting the 'wiggling' to retain the smooth contour of the hood is a highly specialised operation and this should be borne in mind if replacing the whole framework of the hood is contemplated.

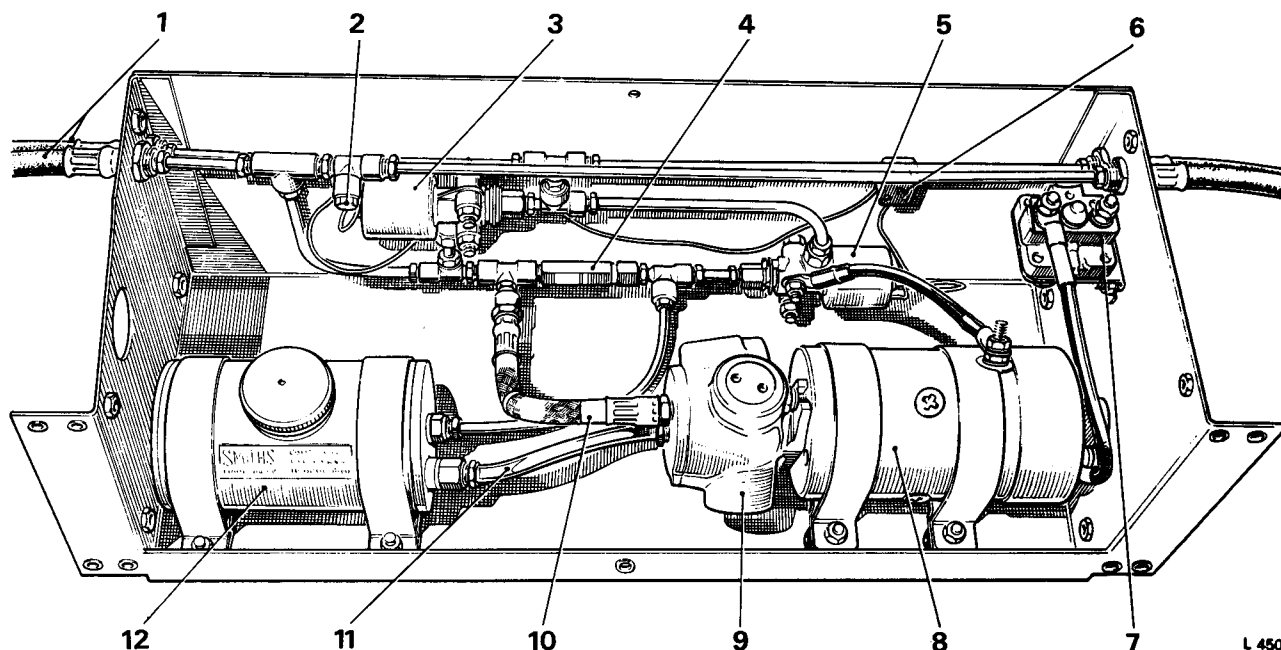


FIG. S71 COMPONENTS IN THE POWER PACK UNIT

- | | | |
|--------------------------|-----------------------------|--------------------|
| 1 Hoses to left-hand ram | 5 'Down' solenoid valve | 9 Hydraulic pump |
| 2 Test connection | 6 Electrical junction block | 10 Flexible hose |
| 3 'Up' solenoid valve | 7 Motor solenoid switch | 11 Nylon tube |
| 4 Relief valve | 8 Pump motor | 12 Fluid reservoir |

Fluid reservoir—To remove

1. Lower the hood as described on Page S69.
2. Remove the carpet from the luggage compartment floor.
3. Remove the six screws securing the centre trim panel in the forward section of the luggage compartment (see Fig. S70).
4. Disconnect the flexible pipe at the 'Tee' junction (see Fig. S71) and place the free end of the pipe in a suitable container. Blank off the open end of the 'Tee' connection.
5. Operate the hood switch to pump all the fluid out of the reservoir.
6. Disconnect the battery leads.
7. Remove the screws securing the two side panels in the forward section of the luggage compartment.
8. Remove the four 2 B.A. setscrews on each side of the power pack box which secure the box to the car body.
9. Carefully draw the power pack assembly into the luggage compartment.
10. Disconnect the fluid supply and return pipes from the reservoir. Blank off the open ends of the hydraulic pipes to prevent ingress of dirt.
11. Remove the four nuts and bolts securing the fluid reservoir retaining straps to the power pack box; remove the reservoir and retaining straps.

Fluid reservoir—To fit

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

1. After fitting the battery leads fill the reservoir with fresh approved fluid.
2. Operate the hood switch intermittently for about ten seconds to purge all air from the system, then operate the switch normally several times to ensure that the hood opens and closes correctly and that fluid does not leak from the pipe connections.
3. Finally, check the level of fluid in the reservoir and top-up to the 'FULL' mark on the dipstick if necessary.

Fluid filter—To remove

1. Remove the centre trim panel in the front of the luggage compartment and drain the fluid from the reservoir (see *Fluid Reservoir - To remove, Operations 1 to 5 inclusive*).
2. Disconnect the nylon outlet tube from the hexagonal outlet connection on the reservoir (see Fig. S71).
3. Unscrew the hexagon outlet connection from the reservoir and remove together with the integral filter tube.

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Fluid filter—To fit

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

1. Before fitting the power pack access panel connect the battery leads and carry out the reservoir filling procedure described under Fluid reservoir – To fit, Operations 1 to 3 inclusive.

Hydraulic pump

The hydraulic pump should normally be changed for a service exchange unit, but in case urgent attention is required further details are given as follows.

The pump does not require regular attention as all moving parts are continually immersed in hydraulic fluid. Except through oil seal failure trouble should not be experienced with the camshaft other than normal operational wear. If, however, a seizure does occur at the camshaft, the camshaft and bearing ring must be renewed as a set.

Unless trouble with the camshaft is definitely suspected attempts to dismantle the pump should not be made.

If a pump is dismantled, great care must be taken to maintain absolute cleanliness of all components and to avoid damage to the camshaft oil seal. Leakage from the camshaft oil seal will necessitate renewal of the pump.

All dismantled metal parts must be cleaned with thinners or a similar fluid and all interior components must be smeared with clean approved fluid before assembly.

When removing a pump plunger, always retain each plunger with its respective liner (see Fig. S72). Never fit a new plunger in an old liner or vice versa. When necessary renew them as a set together with a new disc valve.

If after prolonged use a disc valve becomes 'dished' or embedded with particles of swarf, etc., it must be renewed.

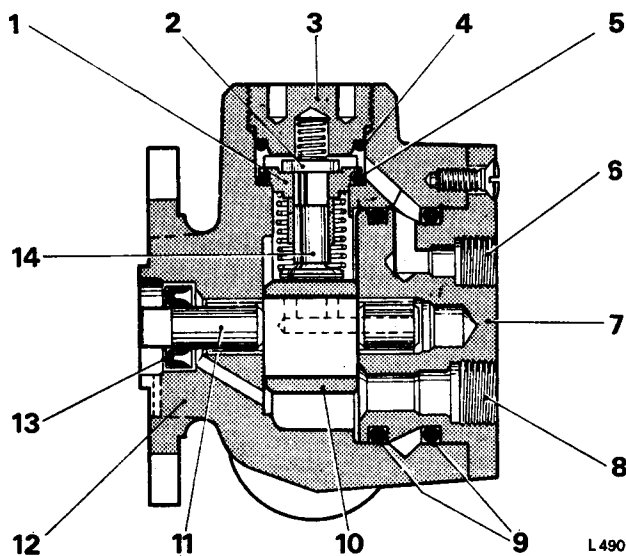


FIG. S72 SECTIONAL VIEW OF THE PUMP

- 1 Liner
- 2 Disc valve
- 3 Cylinder plug
- 4 'O' ring—plug
- 5 'O' ring—liner
- 6 High pressure fluid outlet
- 7 End cover assembly
- 8 Fluid inlet from reservoir
- 9 'O' rings—end cover
- 10 Bearing ring
- 11 Camshaft
- 12 Pump body
- 13 Shaft oil seal
- 14 Plunger

Hydraulic pump—Fault diagnosis

- A. Failure of the pump to hold pressure could be due to one or more of the following causes.
 - (i) **Leakage at the disc valves.**
Remove the cylinder plugs and examine the valves and seals for dishing or wear; renew the valve if necessary.
 - (ii) **Leakage at the 'O' rings.**
Remove the 'O' rings and examine for damage; renew 'O' rings if necessary.
 - (iii) **Leak under liners.**
Remove the liner and examine the sealing faces between the liner and pump body for wear. Fit a new liner if necessary or renew the pump.
- B. An external leakage of fluid could be due to either of the following causes.
 - (i) **Leakage from the 'O' rings.**
If leakage is from a cylinder plug, remove the plug; renew the 'O' ring and also the plug if necessary.
If the leakage is from the end housing, remove the housing and renew the 'O' rings.
 - (ii) **Leakage from the camshaft oil seal.**
A leakage past the camshaft oil seal will necessitate renewal of the pump.
- C. Failure of the pump to deliver maximum pressure although operating at maximum speed could be due to one or more of the following causes.
 - (i) **One or more of the plungers being seized in the liner bore.**
 - (ii) **A broken plunger return spring.**

(iii) **Leakage at one or more of the disc valves.**

In the case of (i), (ii) or (iii), remove the cylinder plugs and renew components as necessary.

(iv) **Seizure of the cam bearing.**

If the cam bearing is found to be seized remove the camshaft and renew the camshaft and bearing ring as a set.

D. If the pump overheats or becomes noisy the cause may be due to either of the following causes.

In either case the pump must first be removed from the motor.

(i) **A worn or damaged tongue and slot coupling.**

If the coupling is found to be worn or damaged, renew the coupling. Also check the mating tongue and slot on the pump motor and the pump for wear or damage; renew either or both units if necessary.

(ii) **Seizure of the drive shaft.**

The drive shaft should rotate freely when the drive end is turned with the aid of pliers, if the pump shaft will not rotate freely (with the aid of pliers), dismantle the pump and examine the journal bearing bushes; renew the pump body or end housing, if the bushes are damaged or severely worn. Also, examine the cam ring (*see Fig. S72, item 10*) and renew if scored or worn.

E. A continuous delivery of foamy fluid indicates that air is being drawn into the pump body. Check all inlet pipe connections for tightness and if the fault persists, examine the pump shaft oil seal for leakage. If the seal is leaking, fit a new pump.

Hydraulic pump—To remove

1. Disconnect the battery leads.
2. Remove the six screws securing the centre trim panel in the forward section of the luggage compartment (*see Fig. S70*); remove the panel.
3. Disconnect the nylon tube and flexible hose from the pump (*see Fig. S71*) and blank off the open ends to prevent loss of fluid and ingress of dirt.
4. Remove the two setscrews securing the pump to the electric motor; remove the pump, retaining the coupling. Note the relative position of the pump to the motor to ensure correct assembly.

If difficulty is experienced in gaining access to the lower pump setscrew, remove the four nuts securing the pump motor retaining straps (*see Fig. S71*), disconnect the electrical cables from the motor and remove the pump and motor together. Note the position of the cables to ensure correct assembly.

To fit hydraulic pump to motor

1. Fit the coupling into the drive end of the motor armature shaft.
2. Pack the coupling with grease.
3. Locate the spigot of the pump in to the motor end plate.
4. Position the pump on the motor and rotate the pump until the slots in the flange are in line with the tapped holes of the motor end plate.
5. Carefully remove the pump from the motor without rotating the armature shaft.
6. Screw one setscrew complete with a plain and a spring washer two or three threads into the motor end plate.
7. Locate the flange of the pump under the plain washer.
8. Fit the remaining setscrew complete with a spring and plain washer.
9. Carefully tighten each setscrew in turn ensuring that the pump spigot is located in the motor.

Hydraulic pump—To fit

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

1. Before fitting the power pack access panel, top-up the fluid reservoir with approved fluid and test the system as described on Page S73 (*see Fluid reservoir—To fit, Operations 1 to 3 inclusive*).

Solenoid valve—Fault diagnosis

- A. Complete failure of the valve to operate may be due to an electrical fault. The wiring, switches and solenoid coils should therefore be checked for continuity (*see Chapter M—Electrical System*).
- B. If a mechanical fault is suspected check that the solenoid valve is being energised, movement inside the valve can be felt when the hood switch is operated.

Note The lead to the pump motor must be disconnected while this test is being carried out.
- C. Failure of the valve to release (open) could be due to the bobbin being jammed (*see Fig. S73*). Dismantle the valve and examine; check that the armature release spring is free.
- D. Failure of the valve to hold pressure may be due to a damaged valve or valve seat (*see Fig. S73*). To remedy this, remove the valve and inspect the valve seat for score marks; renew one or both components if necessary.
- E. Leakage of fluid past the coil casing or the valve seat adjuster could be due to damaged 'O' rings. Dismantle the valve and fit new 'O' rings.

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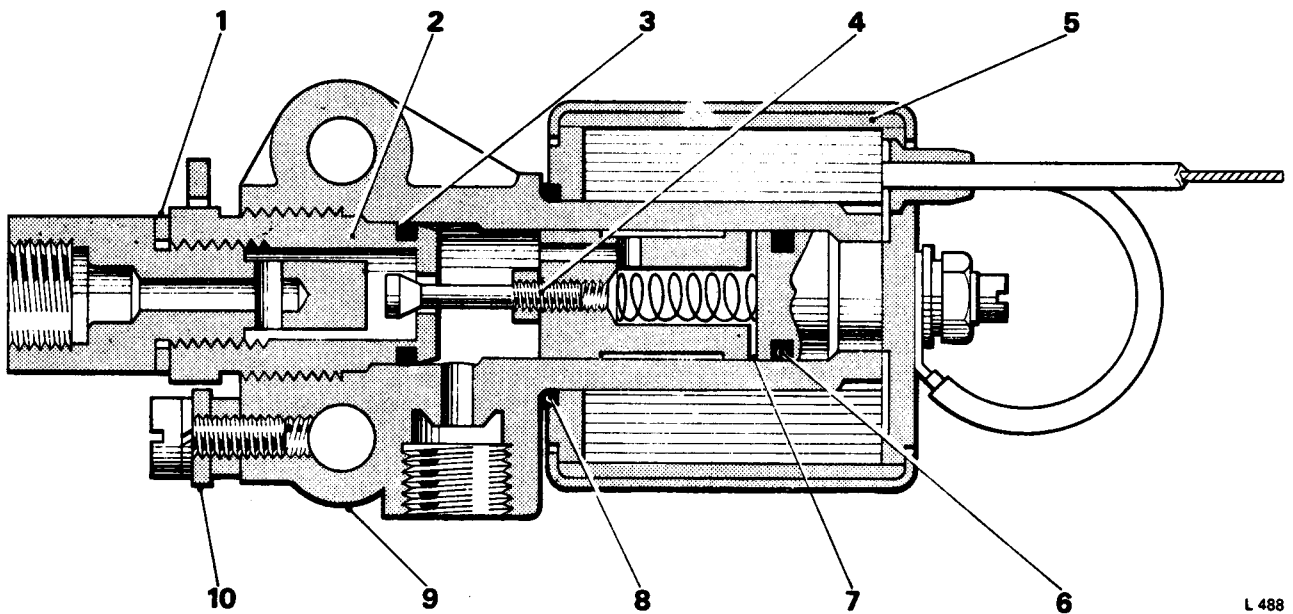


FIG. S73 SECTIONAL VIEW OF A SOLENOID VALVE

- | | | |
|-----------------------|-----------------------|------------------------|
| 1 Sealing washer | 4 Valve | 8 'O' ring—coil |
| 2 Valve seat adjuster | 5 Coil assembly | 9 Valve body |
| 3 'O' ring—adjuster | 6 'O' ring—pole piece | 10 Lock plate—adjuster |
| | 7 Air gap | |

Solenoid valve—To remove

The removal procedure is identical for both valves.

1. Disconnect the battery leads.
2. Remove the six screws securing the centre trim panel in the luggage compartment (see Fig. S70); remove the panel.
3. Disconnect the appropriate electrical lead from the junction block (see Fig. S71).
4. Disconnect the two hydraulic pipes from the solenoid valve and blank off the open ends of the pipes.
5. Remove the two nuts and washers securing the valve to the bolts in the power pack casing, remove the valve.

Note On early cars it will be necessary to draw the power pack assembly into the luggage compartment (see *Fluid reservoir - To remove, Operations 7 to 10 inclusive*) as the valve securing bolts on these cars are not fitted with lock-nuts as they are on later cars.

Solenoid valve—To fit

To fit the solenoid valve, reverse the procedure given for removal noting the following.

1. Before fitting the centre trim panel, carry out the

filling and topping-up procedure described on Page S73 (see *Fluid reservoir - To fit, Operations 1 to 3 inclusive*).

Relief valve—To remove

1. Disconnect the battery leads.
2. Remove the centre trim panel in the luggage compartment.
3. Disconnect the hydraulic pipe from each end of the valve and blank off the open ends of the pipes.
4. Remove the relief valve.

Relief valve—To dismantle
(see Fig. S74)

Because the valve is not externally adjustable, it is not advisable to dismantle this unit unless a hand pump and pressure gauge is available. If the necessary equipment is available proceed as follows.

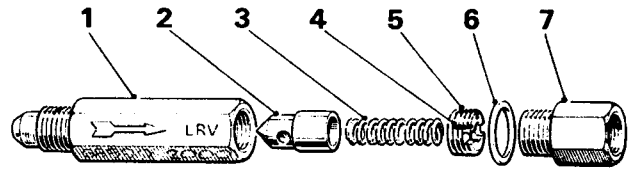
1. Unscrew the hexagon adaptor from the valve body.
2. Using a suitable screwdriver remove the threaded internal adjuster from inside the relief valve body; remove the pressure spring and cone-seated valve.

Note Nylon strips, inset into the threads of the adjuster, provide a self-locking effect.

Relief valve—To assemble and set

Clean all parts with thinners or a similar fluid prior to assembly then proceed as follows.

1. Ensure that the valve and seat are clean and undamaged; renew parts as necessary.
2. Fit the valve, spring and adjuster into the valve body, ensuring that the spring is located correctly in the valve and the adjuster.
3. Using a screwdriver, screw the adjuster in as far as possible then unscrew for 3 or 4 turns.
4. Connect a hand pump and gauge to the cone-shaped end of the valve body, holding the open end of the valve over the supply tank.
5. Apply pressure and screw the threaded adjuster in or out until a pressure of 2 000 lb/sq. in. (140,62 kg/sq. cm.) is required to open the valve.
6. Remove the hand pump and fit the hexagon adaptor to the valve body using a new sealing washer.



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FIG. S74 EXPLODED VIEW OF THE RELIEF VALVE

- 1 Valve body
- 2 Cone valve
- 3 Spring
- 4 Adjusting piece
- 5 Nylon locking strip
- 6 Washer
- 7 Adaptor

ing the rear seat cushion, seat backrest and the main quarter trim panel. If a ram is faulty a replacement unit should be fitted, but if a ram is dismantled, extreme care must be taken to prevent damage occurring to the hard chrome finish on the ram piston.

Relief valve—To fit

To fit the relief valve, reverse the procedure given for removal noting the following.

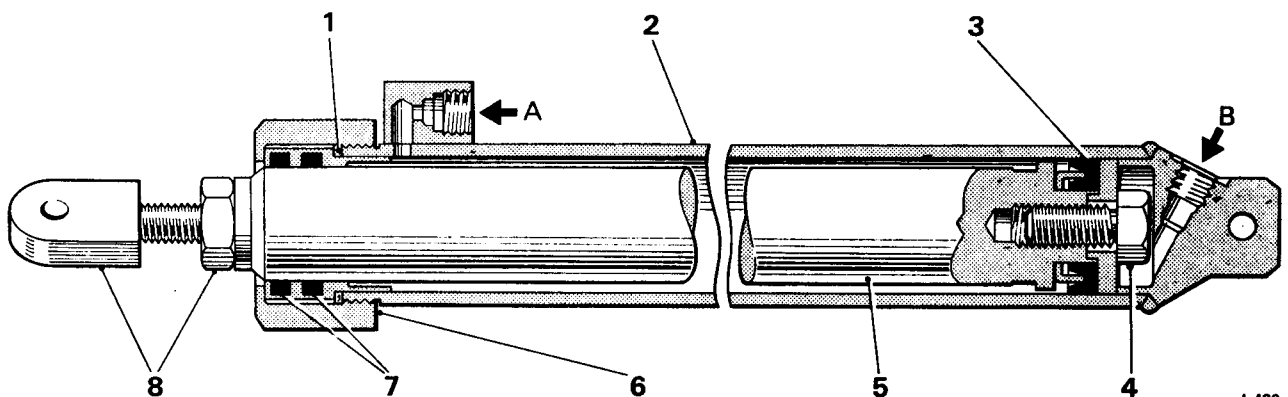
1. Before fitting the centre trim panel, top-up the fluid reservoir and test the hydraulic system as described on Page S73 (see *Fluid reservoir—To fit, Operations 1 to 3 inclusive*).

Hydraulic rams

The two hydraulic rams are situated one in each quarter and are connected to the power pack assembly by flexible hoses. Access to a ram is gained by remov-

Hydraulic ram—Fault diagnosis

- A. Failure of a ram to retract may be due to a faulty oil seal. Dismantle the ram and fit a new seal.
- B. Leakage of fluid past the threads of the bearing retainer (see Fig. S75) would be due to a faulty sealing washer. Remove the bearing retainer and fit a new sealing washer.
- C. Leakage of fluid past the piston and bearing would be due to a faulty 'O' ring. Dismantle the ram sufficiently to gain access to the 'O' rings and renew the 'O' rings.



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FIG. S75 SECTIONAL VIEW OF A HYDRAULIC RAM

- | | | |
|--|--|--------------------------------|
| A Fluid connection to annulus side of ram | 1 Sealing washer—bearing retainer | 5 Piston |
| B Fluid connection to base of piston | 2 Ram body | 6 Bearing retainer |
| | 3 Piston seal | 7 'O' rings—piston |
| | 4 Gland support screw | 8 Eye bolt and lock-nut |

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Hydraulic ram—To remove

The removal procedure for each ram is identical.

1. Lower the hood as described on Page S69.
2. Disconnect the battery leads.
3. Remove the rear seat cushion and backrest (see Section S2, *Rear seat - To remove*).
4. Remove the rear quarter trim panel (see Section S5, *Quarter window - To remove, Operations 4 to 9 inclusive*).
5. Disconnect the two flexible hoses from the ram and blank off the open ends of the hoses.
6. Remove the split pin from the nut and remove the nut and bolt securing the ram eye bolt to the head links of the folding mechanism.
7. Remove the bolt and nut securing the ram to the car body; remove the ram.

Hydraulic ram—To fit

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

1. Before fitting the quarter panel and the power unit access panel, top-up the fluid reservoir with approved fluid and test the system as described on Page S73 (see *Fluid reservoir - To fit, Operations 1 to 3 inclusive*).
2. If the hood ram has been renewed and the hood will not raise fully when the system is operated, proceed as follows.

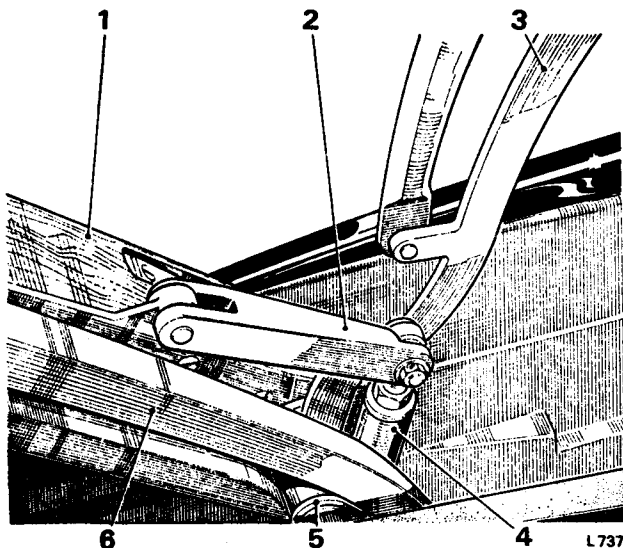


FIG. S76 HOOD LINKAGE TO RAM

- 1 Hood pillar
- 2 Link—ram to main headplate
- 3 Rear cross-member
- 4 Ram
- 5 Main mounting bracket
- 6 Main link—bracket to cantrail

Remove the bolt securing the ram eye bolt to the head link. Secure the hood to the windscreen upper rail with the safety catches. Slacken the bolt and nut securing the ram to the body; do not remove the bolt. Slacken the ram eye bolt lock-nut (see Fig. S76) and adjust the length of the eye bolt until the bolt securing the eye bolt to the head link can be fitted; fit and tighten the bolt. Tighten the eye bolt lock-nut and the bolt securing the ram to the car body.

Hood folding mechanism—Fault diagnosis

The main reasons for the folding framework not operating correctly are damage, mis-alignment of the linkage and lack of lubrication at the pivot points.

A. Typical evidence of slight mis-alignment is when the front of the roof will lift approximately 4 to 6 inches (10 to 15 cm.) but the side cantrail joints will not 'break' and the system then stalls with the hydraulic pump exhausting through the relief valve.

B. If the hood motor is heard to be operating when the switch is pressed but the hood will not move, or will only move a few inches, then the linkage should be checked as follows before investigating a possible hydraulic fault.

- (i) Move the hood manually to the half-way position by exerting a steady pressure on the hood side frames at the forward end.
- (ii) Pull back the hood and headlining and visually check the front part of the mechanical linkage for a broken pivot bolt or a broken or strained link.
- (iii) Remove the wood finishers from the quarter pillars and pull back the head lining in the quarters. Visually check the rear part of the mechanical linkage for a broken bolt or a broken or strained link.
- (iv) Lubricate all pivot points with oil or light grease, ensuring that this does not get onto the hood or head lining.
- (v) If a pivot bolt or link is found to be broken it must be renewed.
- (vi) The alignment of the various components of the folding mechanism has to be extremely accurate if the hood is to operate correctly. It is possible for damage to occur to the folding mechanism, putting it out of alignment, if a heavy weight is placed on the hood when in either the raised or lowered position (i.e. someone standing or sitting on the hood). If damage has occurred, putting the pivot points out of alignment, it will be extremely difficult to reset the links and visually re-align them to restore them to their correct dimensions. In the event of not being able to obtain the correct alignment the whole side assembly of the hood, on one or both sides as necessary, will have to be replaced as follows.

Hood folding mechanism side assembly**—To remove***(see Fig. S76)*

The removal procedure is the same for both side assemblies; if one side only is damaged it will only be necessary to remove that side.

1. Remove the hood outer covering (*refer to Section S10 – Miscellaneous Trim*).
2. Remove the rear seat cushion and back rest (*refer to Section S2*).
3. Remove the quarter panel and the wooden finishers from around the rear quarter window.
4. Remove the wood finisher from the hood pillar and detach the head lining from the pillar.
5. Detach the head lining from the hood peak rail sufficiently to gain access to the screws securing the peak rail to the cantrail; remove these screws and detach the cantrail from the hood peak rail.
6. Disconnect the hood cross-members from the cantrail.
7. Remove the bolt securing the hood rear cross-member to the main head plate on the main mounting bracket (*see Fig. S76*).
8. Remove the split pin from the nut and remove the nut and bolt securing the link to the ram eye bolt (*see Fig. S76*).
9. Remove the bolts securing the main hood mechanism mounting brackets to the quarter panels (*see Fig. S76*); remove the side assembly.

Hood folding mechanism side assembly**—To fit**

To fit the new side assembly reverse the procedure given for removal noting the following points.

1. Lubricate the pivot points after assembly.
2. The damaged hood mechanism which has been replaced because it is out of alignment can be returned to the factory for repair and re-use as a service replacement unit.

MAINTENANCE**Hydraulic system**

Periodically, remove and clean the filter in the fluid reservoir outlet connection (*see Fluid filter – To remove, on Page S73*).

Every 24 000 miles (40 000 km.) or 2 years whichever is the earlier, fully lower the hood then check the level of fluid in the reservoir. Top-up if necessary to the 'FULL' mark on the dipstick with an approved fluid (*see Chapter D, Section D4, Approved Lubricants*).

Under no circumstances must a castor oil based fluid (i.e. brake fluid, etc.) be used in the hydraulic system.

Folding hood mechanism

Regularly, clean all accessible head pivot points and lubricate with oil or light grease with the head partly open. Care must be taken to ensure that the head fitting is left free from excess grease or oil to prevent staining the head lining.

FAULT DIAGNOSIS-GENERAL

SYMPTOM	POSSIBLE CAUSE	ACTION
1. Electro-hydraulic equipment not functioning when the hood switch is operated	<ol style="list-style-type: none"> 1. (a) The battery voltage has fallen below 9 volts (b) The solenoid switch for the pump motor is faulty (c) Faulty hood operating switch (d) Faulty fuse (e) Faulty electric motor (f) Break in electrical wiring (g) Incorrectly tightened or dirty electrical connections 	<ol style="list-style-type: none"> 1. (a) Recharge the battery (<i>see Chapter M – Electrical System</i>) (b) Check the solenoid windings and switch contacts for continuity (<i>see Chapter M – Electrical System</i>) (c) Check the switch contact for continuity (<i>see Chapter M – Electrical System</i>) (d) Renew fuse if faulty (<i>see Chapter M – Electrical System</i>) (e) Check and repair or renew motor if necessary (<i>see Chapter M – Electrical System</i>) (f) Check wiring for continuity and rectify as necessary (<i>see Chapter M – Electrical System</i>) (g) Check connections, clean and tighten as necessary (<i>see Chapter M – Electrical System</i>)

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SYMPTOM	POSSIBLE CAUSE	ACTION
<p>2. The power unit is working correctly but the hood will not open or close</p>	<p>2. (a) Broken pivot pin or link in the hood folding mechanism, pivot points binding or seized due to mis-alignment or lack of lubrication</p> <p>(b) Both solenoid valves are not operating</p> <p>(c) Lack of hydraulic fluid</p>	<p>2. (a) Check the mechanism and rectify as necessary (<i>see Hood folding mechanism - Fault diagnosis, on Page S78</i>)</p> <p>(b) Check the wiring, switch and solenoid coil for continuity (<i>see Chapter M - Electrical System</i>) If correct, check solenoid valves for mechanical fault (<i>refer to Solenoid valve - Fault diagnosis, on Page S75</i>)</p> <p>(c) Check the level of fluid in the reservoir and top-up if necessary (<i>see Fluid reservoir - To fit, on Page S73</i>) If topping-up is required check also for fluid leaks in system and rectify as necessary</p>
<p>3. The hood will not open although the pump is working</p>	<p>3. (a) Fault in the hood folding mechanism (<i>see 2(a)</i>)</p> <p>(b) The 'UP' solenoid valve is not closing</p> <p>(c) The piston gland seal in a hood ram is leaking</p> <p>(d) Lack of hydraulic fluid</p>	<p>3. (a) Same actions as noted under 2(a)</p> <p>(b) Check the wiring, switch contacts and solenoid valve coil for continuity and repair or renew components as necessary (<i>see Chapter M - Electrical System</i>) If a mechanical fault is suspected, check that the solenoid valve is being energised (<i>see Solenoid valve - Fault diagnosis, on Page S75</i>) If the valve is faulty, renew or repair</p> <p>(c) Renew ram or fit new seal (<i>see Hydraulic ram - Fault diagnosis, on Page S77</i>)</p> <p>(d) Same action as noted for 2(c)</p>
<p>4. The hood will not close although the pump is working</p>	<p>4. (a) Fault in the hood folding mechanism (<i>see 2(a)</i>)</p> <p>(b) The 'DOWN' solenoid valve is not closing</p> <p>(c) The piston gland seal in a hood ram is leaking</p> <p>(d) Lack of hydraulic fluid</p>	<p>4. (a) Same action as noted for 2(a)</p> <p>(b) See action noted under 3 (b) for the 'UP' solenoid valve and repeat for the 'DOWN' valve</p> <p>(c) Same action as noted for 3(c)</p> <p>(d) Same action as noted for 2(c)</p>
<p>5. The hood opens and closes very slowly</p>	<p>5. (a) Fault in the hood folding mechanism (<i>see 2(a)</i>)</p> <p>(b) Faulty pump</p> <p>(c) The relief valve is leaking</p> <p>(d) The filter in the fluid reservoir outlet connection requires cleaning</p>	<p>5. (a) Same action as noted for 2(a)</p> <p>(b) Renew or repair pump (<i>see Hydraulic pump - Fault diagnosis, on Page S74</i>)</p> <p>(c) Remove and dismantle the relief valve as described on Page S76. Check that the cone valve and valve seat are clean and free from damage. Renew or repair valve if faulty Check that the valve blows off at the correct pressure and reset if necessary (<i>see Relief valve - To assemble and set, on Page S77</i>)</p> <p>(d) Remove and clean the filter (<i>see Fluid filter - To remove, on Page S73</i>)</p>