to see that the handbrake fulcrum pivot is functioning and an inspection of all suspension attachment points for tightness and ease of operation. Should the rare event occur that the vacuum reservoir be suspected of leakage a check should be made that the take off points themselves are not at fault before resorting to pressure testing the unit.

A. 3 - ACCIDENT DAMAGE

Economics, available repair facilities and delivery circumstances provide the criteria for assessment of a chassis repair or replacement.

It follows from this that when parts are subjected to an ABNORMAL load the possibility of failure is increased and indeed incipient failure may be initiated. Incipient failure is the more dangerous form, as, having no visible effect, the part may be assumed to be in good condition and then fail in ensuing normal service.

Consequently, whenever a car suspension or steering is damaged, consideration should be given to secondary or shock damage.

For example, in the case of the front suspension, both steering mechanism and chassis mountings should be carefully examined for both misalignment and micro-cracks. Even when no damage is apparent to the mounting pins, if the wishbones have been damaged it is strongly advised that a new chassis be fitted. Should the mounting pins be damaged or bent, (however slightly) A NEW CHASSIS MUST BE FITTED. These principles must always apply where driver safety is the prime consideration.

Inspection should be made of engine and gearbox mounting points where a vehicle has been involved in impact. As the unit may have travelled forward, distortion could have occured; check for broken welds, etc.

Reference should be made to the critical dimensions shown on the general arrangement drawing (fig.1) for a complete damage assessment where any impact has occured. Diagonal checks from four points will show any mis-alignment.

Where broadside impacts or fire have created severe distortion conditions a replacement unit is essential.

Patching as a repair expedient is not recommended, whilst stretching can only be achieved with heat on the buckled surface of larger sections.

A. 4 - CHASSIS UNIT - REPLACEMENT

In the event of a complete chassis 'write-off', it will be necessary to fit the replacement unit to a body shell. It may be found that the body shell mounting points may not exactly match the mounting holes on the new chassis flanges.

This condition is due to slight contraction of the body materials during its manufacturing and curing processes. Whilst every effort is made to keep the centre dimensions of all the bobbins within reasonable limits, it is recommended that the chassis be 'offered up' to the body before any assembly is undertaken. A visual check should be made for any holes that may not align with their respective mounting points in the body shell. These may be elongated just sufficiently to receive the mounting bolts. Drill and tap chassis (with body temporarily in position) to accept the mounting setscrews at:

a. Front suspension uprights.
b. Rear body cross-brace.
c. Intersection of top flanges of front side member.

It is suggested that prior to assembling the body unit to the chassis the fittings of certain components at this juncture will facilitate assembly; these are listed below:-

(All Torque loadings are given in 'TECHNICAL DATA').

1. Remove masking tape from studs, nuts, holes etc.
2a. Locate and secure handbrake swivel tree to chassis, with spacer towards front end, and longest rod to left hand side.
b. Assemble fixings to outboard end of rods.
3a. Locate fuel pipe grommets in chassis backbone section and pass fuel pipe through grommets from front end.
b. Locate and secure nut, ferrule, and banjo connection to rear end of fuel pipe.
c. Leaving sufficient pipe at the rear, to reach the end of the chassis, tape pipe to rear cross member, and inside of chassis at the front.
d. Clip fuel pipe to chassis backbone and "spread" clips to secure.
4a. Tap out handbrake locating bracket at front end.
b. Pass cable through bracket and chassis backbone holes.
c. Lubricate thread in bracket and wind adjuster into bracket approximately half-way. DO NOT SECURE.
d. Locate rear end of cable in clevis and secure with circlips.
5a. Apply adhesive (Dunlop 'S 919') to chassis, felt and 'Frustacone' foam grommets.
b. Cut out area of felt around seat belt mounting holes.
6. Locate and secure 'Frustacones' to chassis.
7. Locate and secure 'Lotacones' to chassis. Secure bolts with Loctite 'AV'.
8a. Position felt on saddle, press evenly to ensure good adhesion.
b. Position 'Frustacone' foam grommets on chassis and check for secure adhesion.

9. Assemble front and rear brake hoses to mounting brackets and secure. (NOTE: The rear hoses are fitted to UNDERSIDE of mounting brackets).

10a. Slide grommet over brake pipe ('T' piece to pressure switch).

b. Bend pipe, pass through hole in chassis and locate in 'T' piece.

c. Locate and secure 'T' piece and grommet to chassis.

d. Bend pipe in pressure switch and locate and secure pressure switch to chassis.

e. Locate pipe in pressure switch and locate and secure pressure switch to chassis.

f. Tighten pipe nuts to tee-piece and pressure switch, and clip pipe to chassis. TORQUE LOAD PIPE NUTS.

11a. Bend pipes from pressure switch to front hoses, locate pipes and secure in clips.

b. Tighten pipes to pressure switch and hoses. TORQUE LOAD PIPE NUTS. TORQUE LOAD HOSE NUTS.

12a. Bend pipes from 'T' piece to rear hoses. Locate pipes and secure. TORQUE LOAD PIPE NUTS. TORQUE LOAD HOSE NUTS.

13a. Position differential unit on chassis.

b. Locate two special washers between differential unit and 'Frustacones', at each side.

c. Assemble bolts (bolt head to underside of chassis) with 3 special washers next to bolthead, to differential unit and loosely secure, using Loctite (AV).

14a. Loctate torque rods (NOTE: LH & RH rods are different) to chassis.

b. Assemble mounting bush to torque rod. Pass rod through differential lug, add other bush, concave washer and nut.

c. Torque load rod in differential housing.

d. Tighten torque rods to chassis.

15. Tighten differential unit mounting bolts to 'Frustacones'.

16. Assemble special washers and differential unit mounting fixings to 'Frustacones', DO NOT SECURE.

17. Locate rear lower wishbones and secure (NOTE: All bolt heads face away from wishbone, i.e. bolt heads towards each other.

18a. Locate and secure gearbox mounting plate to chassis.

b. Assemble fixings for gearbox to plate. DO NOT SECURE.

19. Locate and secure front cross brace to chassis, using Loctite ('AV') on bolts.

20 Locate front upper and lower wishbones. Assemble nuts but do not secure completely.

21a. Remove locknut, nut, two washers and rubber bush from top of front damper unit.

b. Locate damper end in front upright and re-assemble nuts, washers and bush.

c. Locate damper to front lower wishbones, assemble bolts. (Bolt head towards front).

22a. Locate anti-roll bar to bushes in chassis (When vertical, recessed part of securing face towards rear of car).

b. Tighten bar to bushes (bolt heads outside of chassis).

23a. Locate front hub (GREEN - RH, RED - LH) to front lower wishbones. DO NOT SECURE.

b. Locate front upper wishbones to upper ball joint assembly on front hub. NB. All bolt heads towards front. Secure all wishbones to front hub bolts.

24. Tighten front damper nuts and locknuts to chassis.

25a. Assemble bolts to outer ends of front wishbones but DO NOT SECURE. NB. All boltheads towards front.

b. Wire top and bottom wishbones pairs together, to prevent excess movement.

26a. Locate rubber mountings to steering unit.

b. Locate steering assembly to support plate.

c. Pack assembly with shims as denoted by figures on mounting plate (i.e. 140 denotes that 3 off. 040 in (1.016 mm.) and 1 off .020 in. (.508 mm.) shims are required. NB. Figures may differ from each side necessitating different thickness shim packs.

d. Locate clamps to rubber mountings and secure assembly to chassis (one washer only per nut).

e. Remove rack adjuster plug, locate earthing strap, refit and secure plug.

f. Remove one rack clamp nut, and check chassis is clean and free from paint and dirt. Locate earthing strap to chassis, refit and secure nut.

27a. Remove nuts from track rod ends.

b. Locate rod ends in front hub assembly.

28. Locate and secure front brake hoses in tabs on caliper units.

29a. Locate brake pipe, hose to front caliper. NB. TORQUE LOAD PIPE NUTS, TORQUE LOAD HOSE NUTS.

b. Tighten all fixings on front suspension except nuts securing wishbones and roll bar, these to be tightened when car is on wheels in normal road condition.

30a. Locate bolts in Rotoflex couplings.

b. Position rear suspension assemblies (Green RH - Red LH) and bolt Rotoflex couplings to differential unit drive shafts. DO NOT SECURE.

31a. Locate rear suspension assemblies to rear lower wishbones and shim as required.

b. Assemble bolts but do not fully secure.

NB. If shims cannot be fitted, assemble two 7/16 in. (11.11 mm.) washers to each bolthead. Remove clamps from Rotoflex couplings.

32a. Retract rear damper rod.

b. Locate rubber dust cover over rod and position correctly.

33a. Using spring compressor, compress springs and strap up over coils.

b. Position springs over damper rods and locate with end caps.

34a. Locate rear damper rods in 'Lotocones' and fit castellated nuts.

b. Tighten damper rod nuts, align and fit split pins.

35. Tighten bolts, rear hub to wishbone.

36. Tighten Rotoflex coupling nuts and all suspension nuts.

37. Remove spring clamps and check that springs are correctly located in end caps.

38a. Bend brake pipes (rear hose - caliper).

b. Position rear brake dirt shields (upper) to rear suspension legs, ensuring each bracket is as close as possible to the spring abutments. Secure with clip.

c. Locate hose in shield slots behind suspension leg and secure.

39. Locate brake pipes and secure to hose and caliper.

NB. TORQUE LOAD PIPE NUTS, TORQUE LOAD HOSE NUTS.

40a. Locate and secure top shield to upper shield.

b. Locate 'P' clips to rear lower wishbones.

c. Position lower shield assembly to lower wishbones.

d. Fit setscrews and tighten lower shield assembly to lower wishbones.

e. Check that $\frac{1}{4}$ in. (6.35 mm) clearance exists between upper and lower shield assemblies.

41. Remove differential unit filler/level plug and fill with oil (see Section 'O').

42. Locate and secure handbrake operating rods to rear calipers, ensuring that spacers are correctly located.

43. Tape up all loose wires, pipes, etc., to prevent excess movement.

44. Assemble chassis to body.

ADDITIONAL INFORMATION

A.5 - FRONT SUSPENSION LOWER FULCRUM PIN

Further to the information given under the heading 'Accident Damage' (Section 'A.3'), new lower fulcrum pins may be fitted, PROVIDED that no excessive damage to the wishbones has occurred. Whatever repair is carried out, the responsibility MUST always be with the repairer.

To Replace Front Suspension Lower Fulcrum Pin

1. Remove the front suspension as required (see Section 'C').
2. Remove the damaged pin by cutting through the supporting cupwashers. Grind the remaining parts of the cupwashers flat with the chassis.
3. After the cupwashers have been ground flush with the chassis, during which operation, the minimum amount only should be removed, the end of the fulcrum pin should be drilled and tapped 3/8 in. UNC to accept the threaded pilot of the tool. Use the short ended thread on the pilot to screw into the fulcrum pin.
4. After inserting the threaded pilot into the fulcrum pin, the body of the tool is placed over the pilot, followed by the feed nut which in its turn, is screwed down until the cutting edges of the tool just engage the surface to be cut. As each turn is made to the body of the tool, so the feed nut is screwed down a little until the cut is made. A ratchet handle is also available which facilitates the use of the tool.
5. The tool, known as:-

   'Cooke's Improved Hole Cutter'($\frac{3}{4}$in. o/d conduit)

   and

   'Cooke's Ratchet Handle'

   is available from Buck & Hickman Ltd., 2 Whitechapel Road, London E.1, England.
6. Following the dimensions given in Fig. 2 and ensuring that the cupwasher (Part No. 026 A 0219) is vertical to the pin, weld one cupwasher in position on the new fulcrum pin (Part No. 026 A 0218), using ONLY a 'CO_2 Inert Gas' or 'Arc' welding process. The welding MUST be a CONTINUOUS WELD around the pin and to a high standard. The correct welding rod for the materials used MUST always be chosen. Remove all 'slag' after welding.

Materials used are:	Chassis	'EN.2' mild steel
	Fulcrum pin	'EN.16T' steel
	Cupwasher	'EN.2' mild steel

7. Ensure that there is no combustible material (i.e., petrol or paint) in the vicinity of the pin location in the chassis. Remember that the cross-member is also the vacuum tank and petrol vapour could be present within it.

8. Insert the pin into its location in the chassis and place remaining cupwasher in position. Ensure that the pin is parallel to the chassis and to the existing pin (see dimensions in illustration on page 'A.2'). Using the same welding procedure given above, weld the cupwasher to the pin and chassis.

9. After repair, the chassis cross-member must be vacuum tested.

10. Rebuild front suspension (see Section 'C').

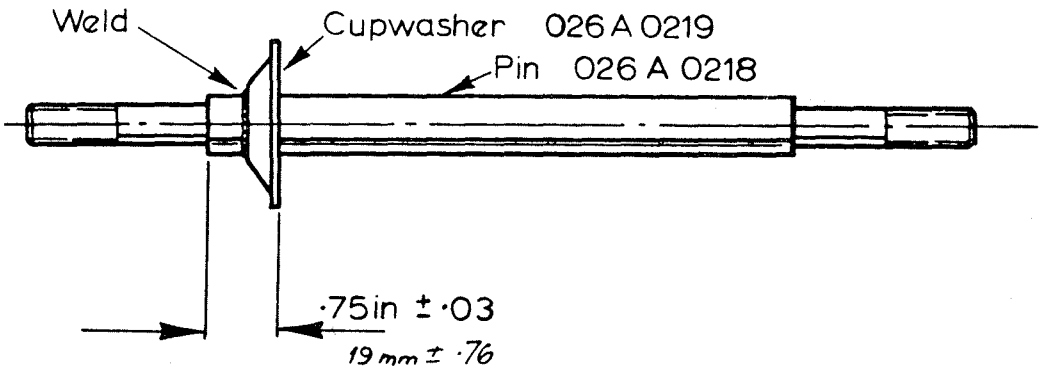

Fig.2. WELDING CUP WASHER TO PIN

SECTION B.

BODY

ILLUSTRATIONS

B.1. - GENERAL DESCRIPTION.

The basis of the vehicle comprises a one piece moulded glass fibre reinforced plastic (G.F.R.P.) body shell which straddles a steel backbone chassis and is attached to it at the points illustrated.

Whilst the chassis carries all the major structural loads, the body is used to carry or transfer the remainder and when the body and chassis are correctly mounted, each contributes to the strength and torsional stiffness of the other.

Construction of the body is generally in laminated 2.4 oz. (68.54 grms) chopped strand mat. A high quality Polyester is used for the layup of all components giving a panel thickness of approx: .125 in. (3.17 mm) In the more highly stressed areas e.g. areas around side frames, metal inserts - especially major structural attachment points, seat mountings, floor areas and wheel arch lips - the thickness is increased up to .25 in. (6.35 mm). For replacement laminates or repairs any high quality commercial grade polyester can be used although it should be a type having a reasonably high heat distortion point (see Service Parts List.)

The body shell is laminated basically as an upper and lower moulding with an additional front undertray chin piece which has the headlamp up-and-down stop bobbins incorporated in it and also the extreme front chassis mounting points.

The nature of the design of all body panel joints is such that there are no critical or highly stressed bonds or joints in the body shell itself and the major problem in creating all wheelarch and bulkhead joints revolves around the need to obtain a perfectly waterproof or gasproof joint as the case may be.

B.2. - MANUFACTURING PROCESS.

General.

Construction of the body shell is achieved by the use of two main moulds. The upper mould which contains the basic shape and the lower which contains the undertray and wheel arches, etc. These two moulds are brought together in the process of the construction of the body unit forming in effect a one piece moulding by lamination at the seams.

The bonding or jointing of all panels and sections is in all cases provided by an adhesive or glueing action, and for this reason the efficiency of the bond is dependent on the following factors.

Surface Preparation.

Polyester laminates (notably the "rough side") cure with a "greasy" surface usually caused by air inhibition of the resin. This is best removed by light sanding of the greatest possible area and thereafter swabbing off the dust with acetone. It is of no advantage to rough up with a toothed tool, leaving the surface covered with fibre stubs as these will have no tensile strength at all and combined with loose dust can actually act as a barrier between the bonding resin

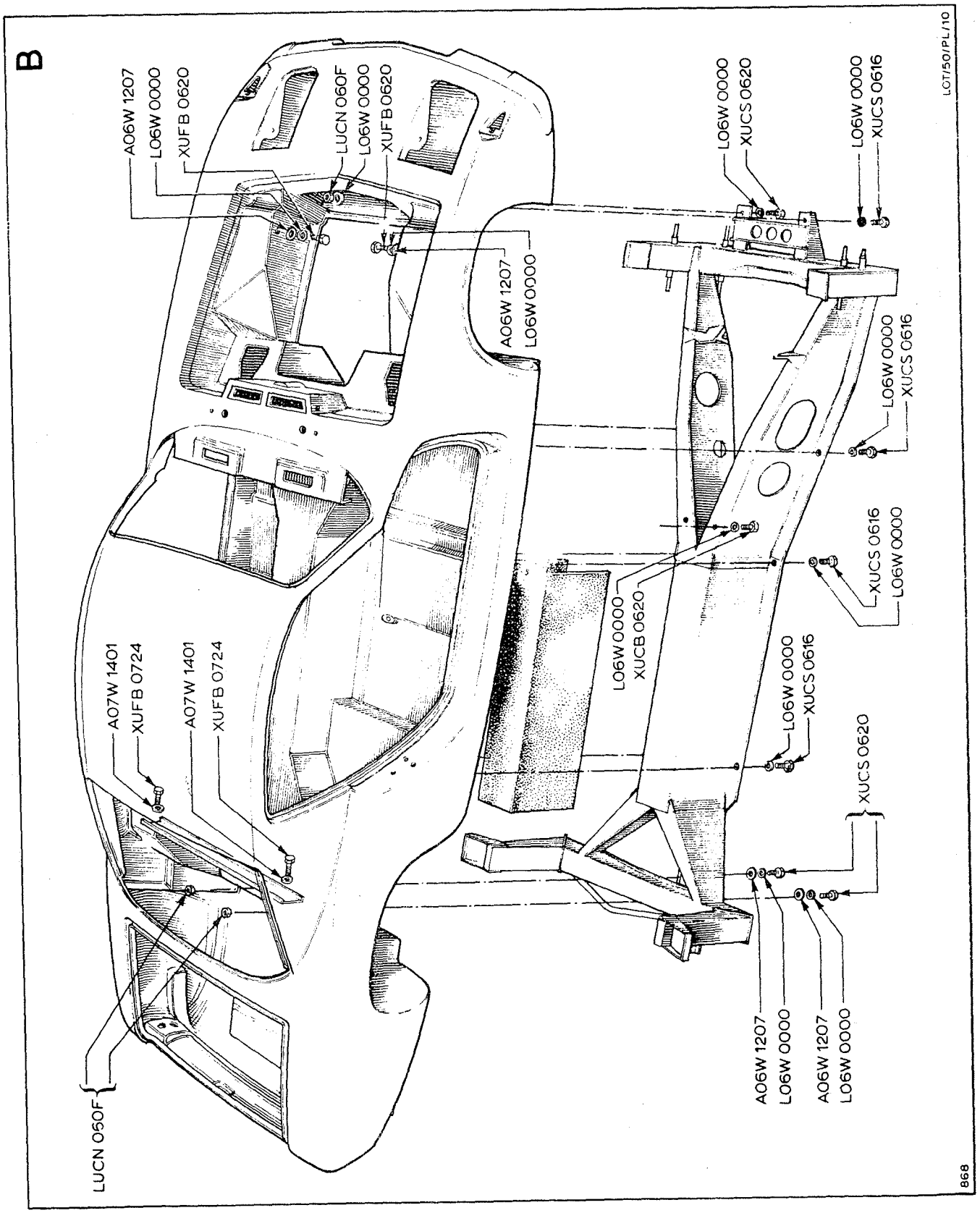

Fig.1 BODY TO CHASSIS ATTACHMENT POINTS

and the laminate.

When bonding to a moulded surface great care must be taken to remove all parting agents, e.g. wax of P.V.A. (Poly-vinyl-alcohol).

Bonding Mix.

Care has to be taken to see that the percentages of curing agents or hardeners are very carefully calculated. If this is not done the bonding material may remain elastic or become too brittle, resulting in an inferior bond.

Stressed Bonds.

Stressed bonds are invariably in the form of taped joints where one of the intersecting panels is turned forming a reinforcement and successive layers of chopped strand mat are laminated into the angle where the two panels meet. It therefore follows that these require more critical attention.

Wet Bonded Joints.

This system is employed on doors, boot lid and plenum chamber, the two or more joints being lightly clamped together while laminates are still wet. Excessive clamping pressure should be avoided, otherwise external surface distortion may occur.

B. 3 - ACCIDENT REPAIRS.

Assessing Accident Damage.

All damage must be classed as structural. However, inside this broad classification the damaged area can be further defined as either:

(a) High stressed, (b) Moderate stressed, or (c) Low stressed,

and on that definition depends the original construction and therefore the repair method to be employed.

As a general rule there should be a bond wherever two panels touch, or wherever they close on important points. It is usually possible to check these bonds both visually and physically for fractures or breaks. Ascertain the cause of damage and the direction of impact and examine all panels or bonds which may have been effected. A front end impact for example may easily cause the bonds at the bulkhead to split without the defect being normally visible and so on.

If necessary the metal on other components should be removed to facilitate examination as to the extent of damage sustained.

Before the assessment can be completed it is essential to decide on the repair method to be followed, the sizes of replacement panels to be ordered, etc. as the detailed instructions should be carefully followed

The extent of the damage (and size of replacement panels) should take into account surface crazing.

Fire damage is the most difficult to assess but generally only the obviously burnt or charred sections will need to be replaced or reinforced.

The pedal mounting areas are heavily loaded and since failure of these in

service could be fatal, they should be carefully examined if they have been close to the fire source.

Basic Bonds and Joints.

a. The old laminates should be tapered off for 3 to 4 in. (7.6 to 10.2 cm) on either side of the fracture line, a reinforcing layup comprising alternative layers of chopped strand mat and fine woven cloth is applied on both sides of the panel providing a symmetrical repair of great strength.
In most cases it is advisable to make the reinforcing layup on the reverse side of the panel considerably stronger than that on the outside.

b. When it is difficult to taper both sides of the laminate an almost equally effective joint can be obtained in which the reinforcing layer is done on the reverse side of the panel.

c. In this method the reinforcing layer is added on the reverse side, but with no tapering of the old panels and with the crack of the old panel merely filled in. If this latter method is used it is advisable to laminate a box or channel section over the joint at suitable intervals.

Headlamp Bowls and Surrounds.

Where severe damage to the headlamp bowl and surround has occured it is generally found more economical to fit a replacement bowl and section. It is essential for the correct operation of the headlamp assembly that the replacement section is correctly positioned, the bowl being attached to the pivot bobbins of the new section and tested for clearance in the up-and-down position before being bonded to the car.

The bowl should be fixed in the most convenient position by taping in place before laminating in the new section. Accessibility is restricted in this area and it may be found more advantageous to work through the actual lamp unit hole.

Alternatively where a less serious impact has occurred and the lamp surround can be satisfactorily repaired without resorting to a replacement section it is recommended that a small jig be made to embrace both pivot mounting bolts of the bowl width. These can be screwed into the body bobbins serving to correctly locate them whilst providing sufficient access to bond them in and perform the desired repair.

Side Members.

Where the body has suffered a broadside impact, in all probability the metal side members will have been damaged, therefore they should be removed and replaced with new parts. As the side members are of a triangular section, we do not recommend straightening.

The side members are removed in the following manner:-

1. Remove the road wheels on the side which is damaged (see Section "G").
2. From interior of car, release the trim in the sill area and remove the setscrews

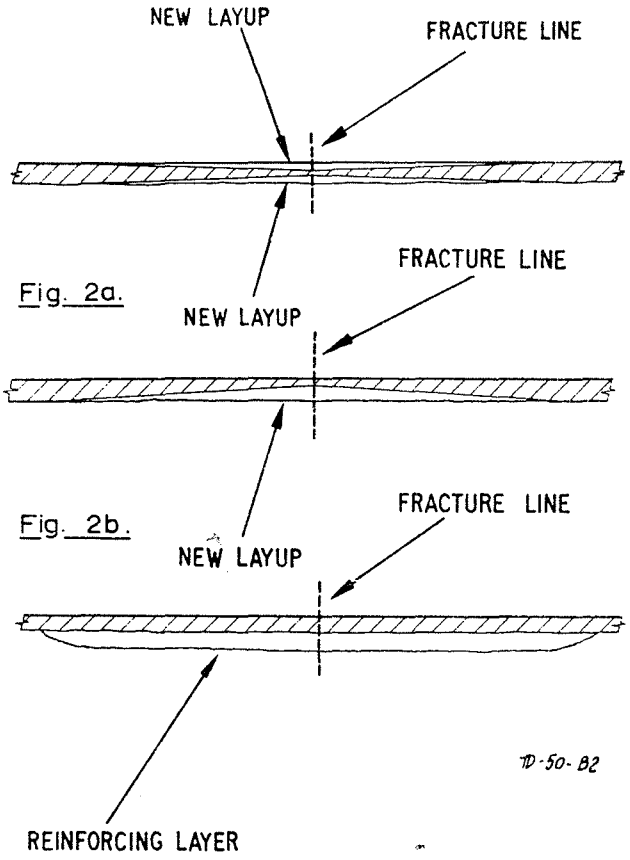

Fig. 2.c.

BASIC BONDS & JOINTS

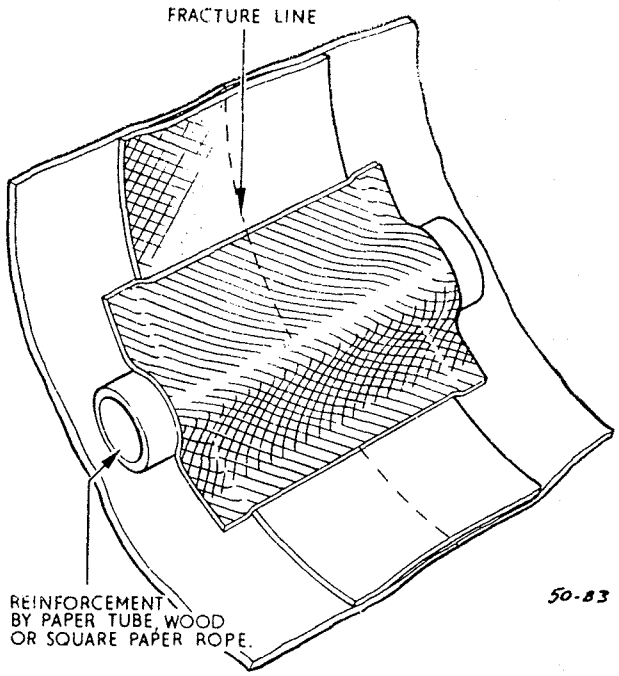

Fig.3. BOX SECTION OVER FRACTURE

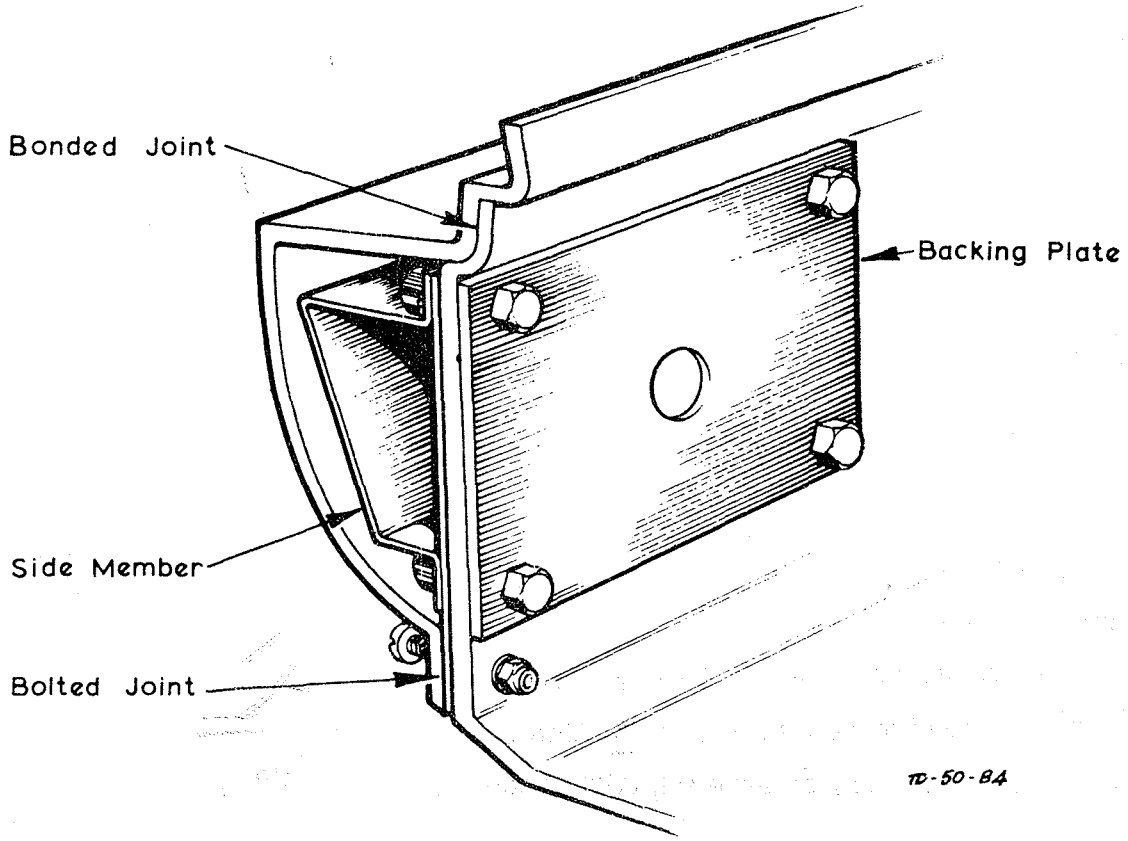

Fig. 4. SECTION THROUGH BODY SILL

securing the three backing plates and the side member, noting that the lower seat belt mounting bolts also pass through the middle backing plate.

3. From lower edge of the body sill, remove setscrews, washers and nyloc nuts.
4. From forward face of rear wheelarch and rear face of front wheelarch, remove dust shield concealing end of side member.
5. From below the sill, gently ease the free end away from the undertray and pull the side member from its location.

Replacing the side member is a reversal of the removal procedure. After refitting the wheelarch dust shield, a liberal application of underseal should be applied.

Repair Materials.

A full list of approved body process repair materials are contained in the Service Parts List (Part No.50T 325B.)

B.4. - SUPERFICIAL DEFECT REPAIRS.

Pin Holes or Air Voids.

These are unfortunately quite inseparable from the hand layup system but since all body components are "heated" to the maximum known service temperature of 180°F. (82°C.) in order to show up any voids before painting they should never in theory give any difficulty. If they do then the only solution is to dig them out and fill the holes with a polyester stopper or filler. The two commonly used methods of filling these small holes are, (a) drilling or routing out so as to leave a larger hole with near vertical walls, or (b) where the hole is enlarged by gouging or "picking out".

A common problem of repaired pin holes is the sinking of the paint surface some time after the repair has been completed. This may result from the use of a cellulose paint stopper which has a higher rate of shrinkage or in the case of a polyester stopper is usually caused by painting too soon after effecting the repair, before the filler is properly cured. The filled areas should on no account be rubbed down until the filler has fully cured, or sinking will obviously result.

Surface Crazing.

There are various causes of surface crazing, but practically all are caused by sharp impacts or accidental damage. During an accident some panels may flex sufficiently to cause the surface to craze without causing immediate apparent damage to the paint surface. The underside of wing areas are undersealed to give more panel resilience, and should be re-undersealed if new wing sections have been fitted.

The crazing may not work its way through the paint surface for some weeks so that it is necessary when assessing accident damage to carefully examine all panels, particularly near cracks or split bonds and in cases of doubt it may be

possible to promote the appearance of the crazing by applying gentle heat.

Crazing itself generally stops at the first layer of glass fibre and is consequently not in itself structurally serious, but the extensive crazing near damaged areas should be taken as an indication of over stressing and the panel should be reinforced or replaced. It is not possible to remedy crazing by simply re-surfacing with a further layer of resin.

Wrinkling or Distortion.

This phenomenon is usually caused by exposure to severe heat. This can cause the resin to soften slightly and in doing so give way to any inbuilt or associated stresses. In all such cases technical advice should be sought from Lotus Cars (Service) Ltd.

Split Bonds.

Small splits of bonds such as those around the door can occur, being caused mainly by excessive flexing of the panels or by vibration and they should be arrested before they can extend and become serious. The split should be peeled open slightly further, the inside flange surfaces should be roughened up with a hacksaw blade and the appropriate type of bonding resin should be inserted before clamping up. Clamping pressure should always be applied evenly, using a small slip of wood or metal if dimpling of the panel surface is to be avoided. Where possible, all splits should be laminated from the inside.

Replacement Sections.

Where the repair of a damaged vehicle calls for replacement sections or panels it is recommended that these be obtained direct from Lotus Cars (Service) Ltd.

Standard sectional repair moulds cater for the repair of damage in any area of the body unit. These are so designed that they can be used individually or connected together for the manufacture of the required section of the body. These are also used for locating new sections correctly relative to the existing panels. These moulds are deliberately left unframed so as to accomodate slight discrepancies and have been made on a standard painted body shell to allow for average paint thickness.

Repair sections available with their appropriate part numbers are shown in Figs. 5 and 6 .

Due to the material used in construction of the body unit, cases of severe damage can often be economically repaired, i.e. where damage has been severe enough to destroy virtually the whole front end of the vehicle, as far as the bulkhead for instance, it is possible to graft on a new complete section.

Before cutting away the damaged parts or ordering replacement sections, the proposed method of repair, positioning of joint lines, overlaps etc. should be

ascertained (Section 'B.3').

Determine a method for the correct positioning of replacement sections and before cutting away damaged parts check on any prominent features from which measurements can be made and scribe these clearly on to the panels which are to be left intact.

Use masking tape or chalk to define the lines on which it is proposed to cut the panels and study these lines thoroughly to see that (a) any damaged or slightly damaged panel which would be useful in the aligning of another major panel will not be removed or, (b) on single skinned areas in particular the proposed outline traverses longitudinal, lateral and horizontal definition points to assist easy lining up of the new panel in all three places.

When repairs have been carried out in the vicinity of the front wheelarches, ensure the tyres do not foul the front lower flange when the wheels are on full lock.

Underseal the wheelarch area to a depth of .125 in. (3 mm) using "3M" material, or its equivalent in consistency, to prevent gel-coat crazing caused by small stones etc., thrown up by the wheels.

Positioning Replacement Panels.

(a) Line up flat surface (e.g. undertray or floor area) using long wooden beams bolted to undamaged area.

(b) Line up main contours (e.g. wing sections) using splints and bolt into position with flat or curved steel straps.

Metal Inserts.

The only metal inserts used are bobbins.

Bobbins.

Considerable use is made of die-cast metal inserts, which are oval in configuation and commonly known as 'bobbins'.

These are designed to carry high loads in most directions and also offer the advantage of being accurately located in the mountings.

Two basic forms are employed as follows:-

Large (structural) bobbins - with $\frac{3}{8}$ in. or 7/16 in. holes (plain or threaded).

Small (semi-structural) bobbins - with $\frac{1}{4}$ in. or 5/16 in. holes (plain or threaded).

The following advice is given on dealing with bobbin failures.

Bobbins Pulling Out.

This could be caused by overloading e.g. accident damage. Where the bobbin and its surrounding area is accessible from the rough side of the laminates either naturally or by cutting non-weakening access holes, the remedy is to improvise a local mould in wood or glass fibre of the body surrounding the

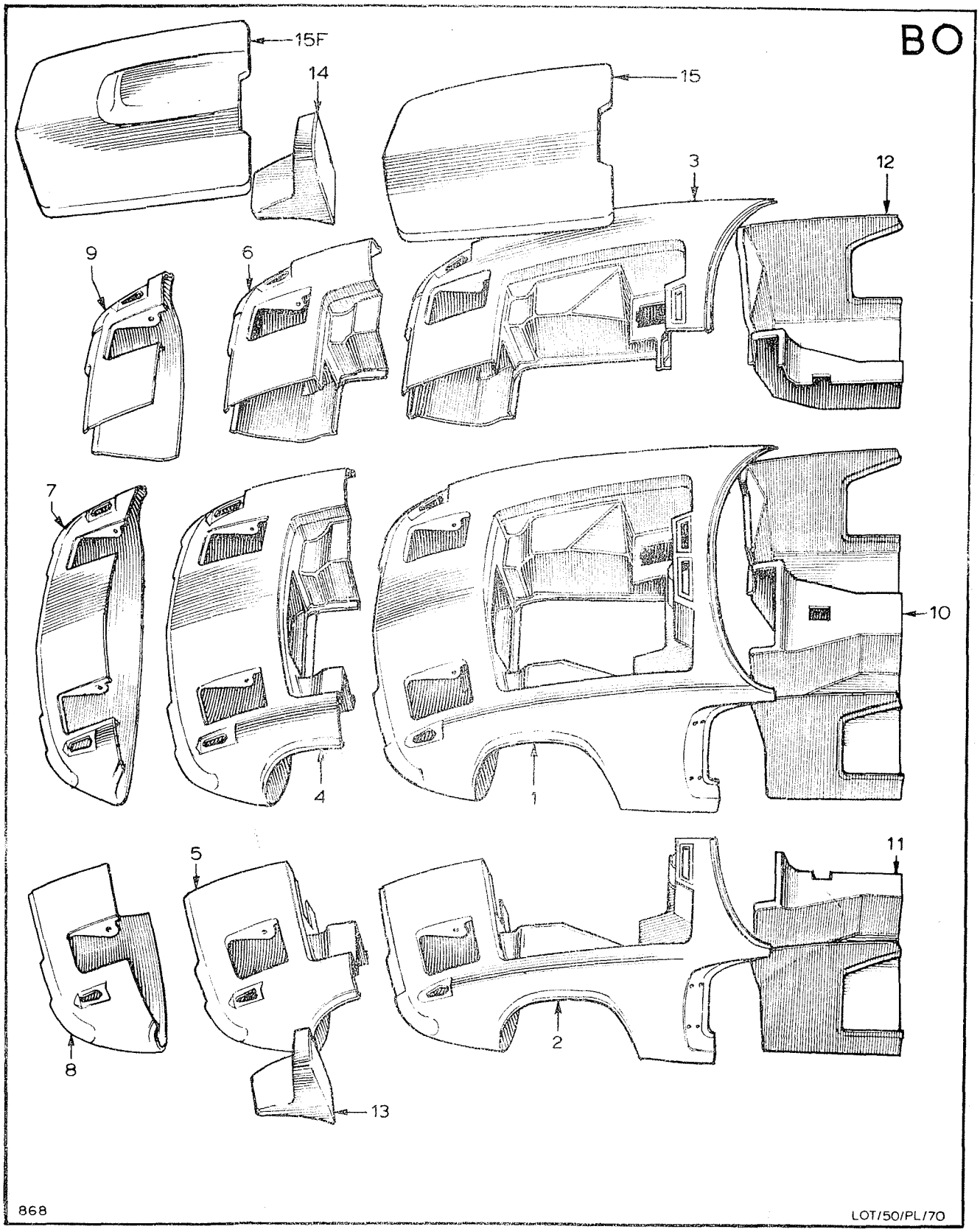

Fig.5 BODY REPAIR SECTIONS - FRONT

Key to Fig. 5. REPLACEMENT SECTIONS - FRONT.

Item.	Part No.	Description.
1.	50 B 6089	Full front.
2.	50 B 6090	Half full front, LH.
3.	50 B 6091	Half full front, RH.
4.	50 B 6114	Mid nose.
5.	50 B 6115	Half mid nose, LH.
6.	50 B 6116	Half mid nose, RH.
7.	50 B 6092	Short nose.
8.	50 B 6093	Half short nose, LH.
9.	50 B 5094	Half short nose, RH.
10.	50 B 6117	Front floor.
11.	50 B 6118	Half front floor, LH.
12.	50 B 6119	Half front floor, RH.
13.	50 B 119	Headlamp Bowl, LH.
14.	50 B 120	Headlamp Bowl, RH.
15.	50 B 030	Bonnet.

Key to Fig. 6. REPLACEMENT SECTIONS - REAR.

Item.	Part No.	Description.	
1.	50 B 6095	Full rear.	
2.	50 B 6096	Half full rear, LH.	
3.	50 B 6097	Half full rear, RH.	
4.	50 B 6098	Short rear.	
5.	50 B 6099	Half short rear, LH.	
6.	50 B 6100	Half short rear, RH.	Up to 50/0856 USA and 50/0928 other territories.
7.	50 B 6120	Centre piece.	
8.	50 B 6101	Roof piece.	
9.	50 B 755	Door shell, LH.	
10.	50 B 756	Door shell, RH.	
11.	50 B 040	Boot lid.	
1F.	A50 B 6095	Full rear.	
2F.	A50 B 6096	Half full rear, LH.	
3F.	A50 B 6097	Half full rear, RH.	
4F.	A50 B 6098	Short rear.	
5F.	A50 B 6099	Half short rear, LH.	
6F.	A50 B 6100	Half short rear, RH.	From 50/0857 USA and 50/0929 other territories.
7F.	A50 B 6120	Centre piece.	
8	50 B 6101	Roof piece.	
9F.	A50 B 755	Door shell, LH.	
10F.	A50 B 756	Door shell, RH.	
11F.	A50 B 040	Boot lid.	
Not shown.	50 B 001	Complete bodyshell.	Up to 50/0856 USA and 50/0928 other territories.
	A50 B 001	Complete bodyshell.	From 50/0857 USA and 50/0928 other territories.

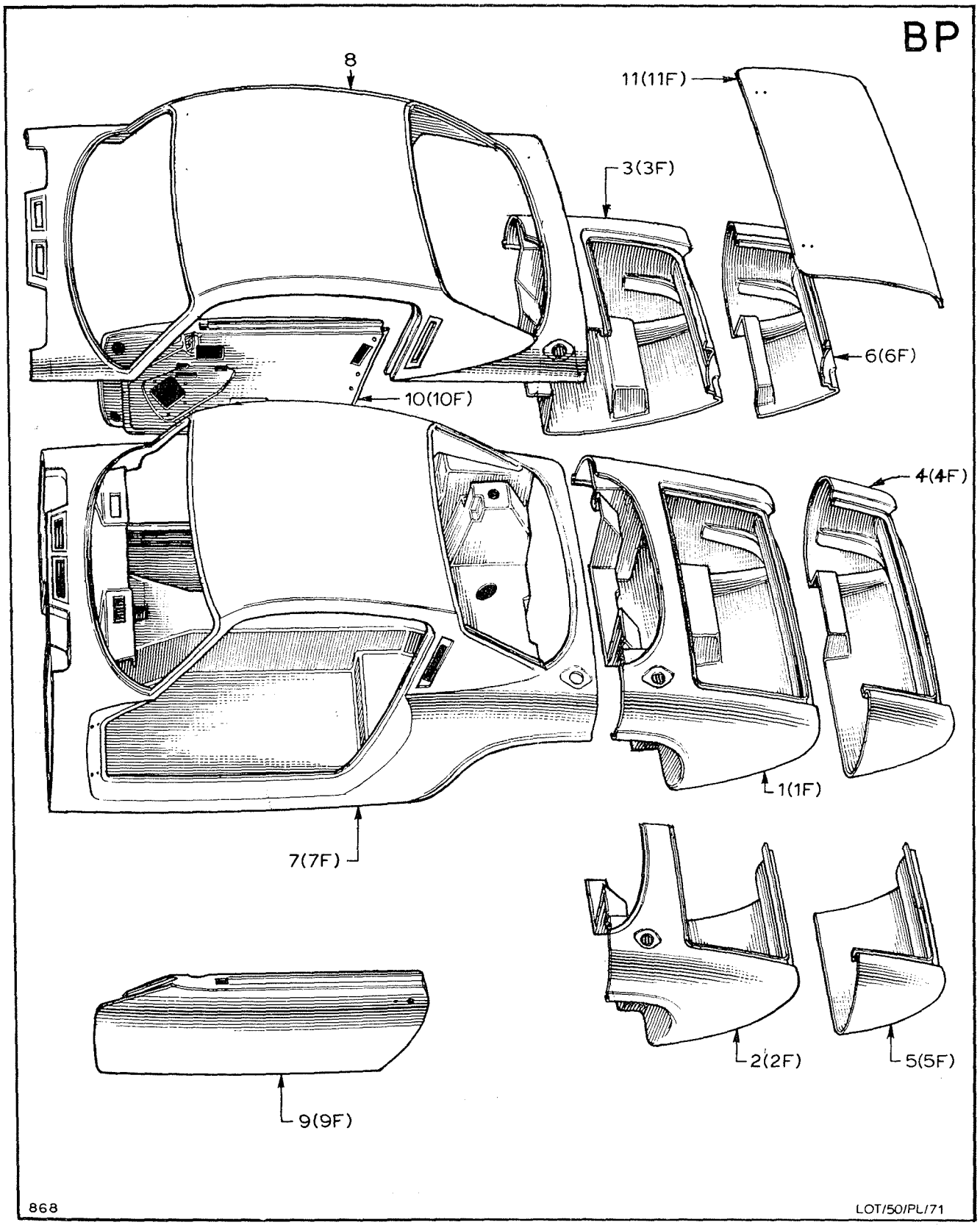

Fig.6 BODY REPAIR SECTIONS - REAR

finished side of the bobbin.

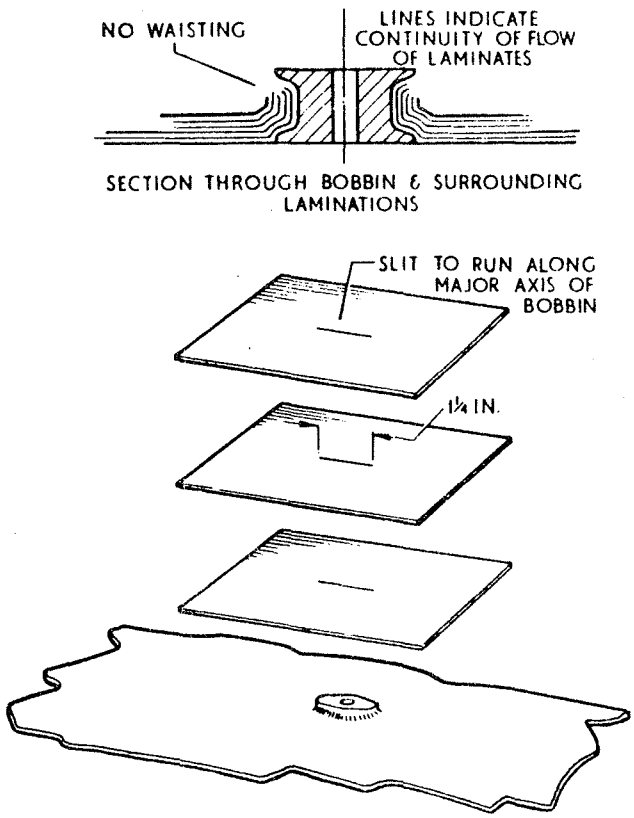

Fig. 7 METHOD OF BONDING IN BOBBINS.

Difficulty may be experienced in temporary re-locating the bobbin and its surrounding laminate in its original position. A local mould of the smooth side of the surrounding area (for example 6 in. (15 cm) beyond in all directions) should eliminate this trouble. Re-registering can be achieved by drilling holes through mould and body and through the bobbin before removing the repair mould.

Additional 4.00 in. (10.2 cm) square patches to make up to:- $\frac{1}{4}$ in. and 5/16 in. bobbins: the equivalent of 5 x $1\frac{1}{2}$ oz. layers.

$\frac{3}{8}$ in. and 7/16 in. bobbins: the equivalent of 7 x $1\frac{1}{2}$ oz. layers.

NOTE:- Number of patches to be determined from the above.

The bobbin can then be directly laminated on the old mounting by using the techniques described and overlapping the new laminate on to the old by several inches (centimetres) whenever possible.

The larger bobbins are used only where the loadings are known to be high, e.g. body mountings, seat attachments, etc., Smaller bobbins are used as a locatory point or a blind attachment point.

Typical instances such as non-structural applications are headlamp pivots. In these cases loose bobbins can be repaired by more localised and less exacting

means, e.g. forcing in a dough mixture around and behind the bobbin; winding tape around it, etc.

Stripped Threads.

Whilst their oval section will prevent these bobbins from turning in normal use they may loosen if too much tightening pressure is applied, or when an attempt is made to tap them out to a large diameter. If a thread is damaged or stripped an attempt should be made to drill the thread clear and use a bolt and lock nut or drill oversize and fit helicoil insert.

When fitting an initial check should be made with each bolt before tightening. Only U.N.C. bobbins are employed and particular care should be paid to fit only U.N.C. bolts to them. Where the bolts are particularly tight this may be due to resin within the threaded portion of the bobbin which can be remedied by tapping out.

Only the correct length of the bolt should be used, i.e. those whose thread engages with the full depth of the bobbin. No attempt should be made to pull items up under heavy load with a small engagement of thread. To avoid tightening up onto the plain shank of the bolt it is recommended that only setscrews be used, i.e. those threaded all the way up to the head.

Laminating in a New Bobbin.

Firstly the laminates from the basic mounting surface must overlap and interleave with the laminates around the bobbins. Secondly the laminate must be well built up under the bobbin to prevent the bobbin from pulling out in a downward direction. This surrounding laminate should in itself comprise a tight ring around the bobbin to prevent it from bursting out under diagonal loads but if in doubt one or two layers of tape or cloth should be wound round the waist of the bobbin. Finally plasticine or similar plugs should be used during laminating to keep the resin out of the bobbin threads.

When properly laid the visible rough side wall will be nearly vertical in line with the bobbin top profile. In effect a strong reinforcing ring of laminate surrounds the bobbin and this ring must be properly connected to the basic laminate.

Layup around Bobbins.

(a) It is important that build-up around bobbins is as previously described as bobbins by nature of their application are subjected to high loads, and will break out of the surrounding fibre glass if not bonded in correctly.

(b) Bobbins must be bolted to mould after "mould release agent" has been applied and prior to Gel-coat application. Care must be taken to ensure that it sits well down on to the mould, and that the bobbin is positioned correctly in accordance with the specification concerned. DO NOT apply Gel-coat to the bobbin surfaces or sides.

It is essential to keep the Gel-coat to a minimum thickness to prevent "crazing"

and desirable that the general layup thickness tapers gradually away from the bobbins.

Remember that tensile applications are the most demanding and require continuity of layup, that the above instructions be strictly adhered to, that the safety of the vehicle may be dependent upon the correctness of the application of these operations.

Body Mounting Points.

When mounting body to chassis unit, a clearance between the rearmost mounting brackets and body behind the differential unit may be observed. Should this condition occur it is essential not to tighten the body down onto the brackets as consequential stressing of the body shell rearwards of the door apertures may open the door apertures and result in jamming and misfitting of the door. Spacing washers of 16 swg must be inserted, packing out until tightening can be effected without straining.

B.5. - BODY CARE.

When washing the body, use plenty of cold water; never attempt to remove dust or mud from the paintwork when dry, as this will damage the high gloss finish.

Special preparations are marketed for adding to the washing water; the use of these mild "detergents", as directed by the manufacturers will expedite washing. Only use preparations of a reputable manufacture. When dust and mud have been removed with sponge and water, finally dry with a chamois leather.

If the car is kept clean by frequent washing, it will be found that polishing is almost unnecessary. If a polish is used, do not allow it to contaminate the windscreen.

During the months of winter, many countries use salt to assist in the clearance of ice and snow. Thoroughly wash the coachwork, the underside of the body and wings, and the chassis, either weekly or more frequently, depending on local conditions, to remove any salt deposit and prevent its corrosive action. The fibreglass coachwork will not of course be affected by any corrosive action but the metal parts attached could be.

Bright Metal.

The attractive appearance of bright metal can be preserved if it is cleaned regularly. Each week wash with a soap and water solution, rinse thoroughly with clean water and dry off. Staining or tarnish can be removed with a good quality chromium cleaner.

Windscreen Cleaning.

The windscreen wipers are hinged so that they may be lifted clear of the glass, when cleaning the windscreen. Never push the blades across the windscreen as this will damage the mechanism.