SECTION R

THE BODY

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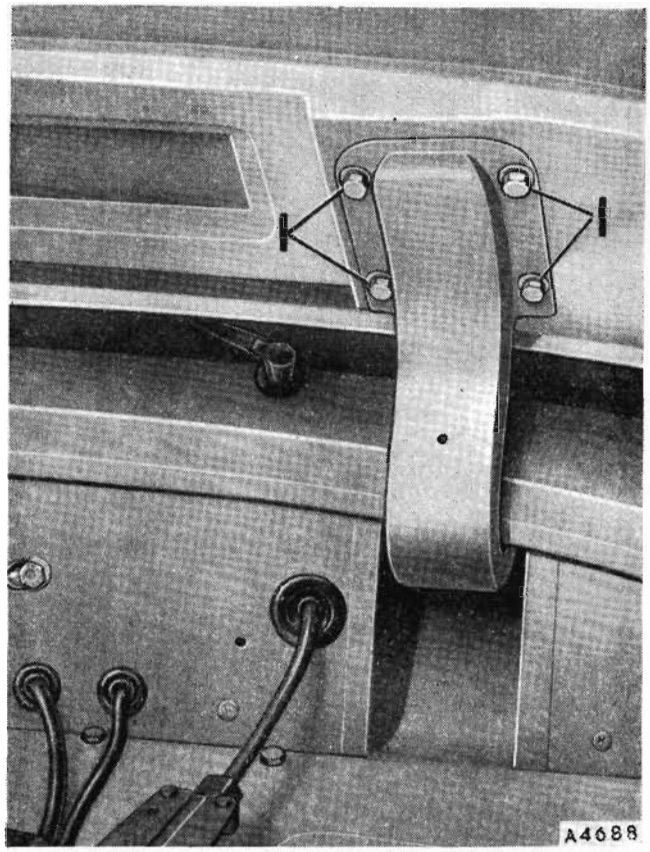


Fig. R.1
The bonnet to hinge securing set screws are shown at (1)

Section R.1

BODYWORK

Coachwork, wings, and windshield

Regular attention and care to the body finish is necessary if the new appearance of the car exterior is to be maintained against the effect of air pollution, rain, and mud.

Frequent washing of the bodywork, using a soft sponge with plenty of water containing a mild detergent, is recommended. Large deposits of mud must be softened with water before using the sponge. When clean, dry the surface of the car with a damp chamois-leather. Any damaged parts should immediately be covered with paint and a complete repair effected as soon as possible. Before 'touching in' light scratches and abrasions with paint ensure that all traces of wax polish are removed from the affected area.

Methylated spirits (denatured alcohol) should be used to remove spots of grease or tar from the bodywork, windshield, and bright parts of the car.

The application of a good-quality liquid polish is recommended to give added lustre to the paintwork. Do not allow silicone- or waxed-based polishes to come into contact with the windshield; they have been known to have a detrimental effect on the wiper blades and are difficult to remove.

Bright trim

Metal polish must not be used to clean chromium, plastic, stainless steel, or anodized aluminium bright parts. Wash them frequently with soap and water, and when the dirt has been removed polish the surface with a clean, dry cloth or chamois-leather until they are bright. Never use an abrasive.

A slight tarnish may be found on stainless steel that has not been washed regularly, and this can be removed with impregnated wadding such as is used for silverware.

Surface deposits on chromium parts can be removed with a chromium cleaner.

An occasional application of wax polish or light mineral oil to the metal trim will help to preserve the finish, particularly in the winter when salt has been used on the roads. These protectives should not be applied to plastic finishes.

Cleaning the hood

To clean the hood it is only necessary to use soap and water, with a soft brush to remove any ingrained dirt. Frequent washing with soap and water considerably improves the appearance and wearing qualities of the hood, and it should be washed at least as often as the rest of the car.

Do not use caustic soaps, detergents, or spirit cleaners to clean the hood or the hood back-light.

Section R.2

BONNET

Removing

Remove the set screws securing each hinge to the under side of the bonnet and lift the bonnet complete with the bonnet prop clear of the vehicle.

To assist when refitting, as the fit of the bonnet will be disturbed during removal, it is advisable to mark the position of the hinges on their mounting brackets on the bonnet; this is best carried out by outlining the profile of the hinge levers where they contact the mounting brackets on the bonnet.

Refitting

Reverse the removal procedure.

Section R.3

RADIATOR GRILLE

Removing

The top bolts and nuts securing the radiator grille to the front body section are easily accessible when the bonnet is raised or removed. Working beneath the car, remove the lower grille securing bolts and lift the grille assembly away from the vehicle.

Refitting

Refitting is a reversal of the removal procedure.

Section R.4

BUMPERS

Front

Removing

The front bumper, when fitted, can be lifted away from the vehicle after the securing nuts and washers have been removed.

Refitting

Reverse the removal procedure.

Rear

Removing

Remove the rear bumper bracket securing set screws and remove the bumper, together with its brackets.

Refitting

Reverse the removal procedure.

Section R.5

WINDSHIELD AND SIDESCREENS

Windshield

Removing

Remove the Phillips screws securing the windshield to the side pillars and slide the windshield out of the pillars. The pillars themselves are attached to the scuttle by one Phillips screw and one bolt, the nut of which is accessible when the door is open.

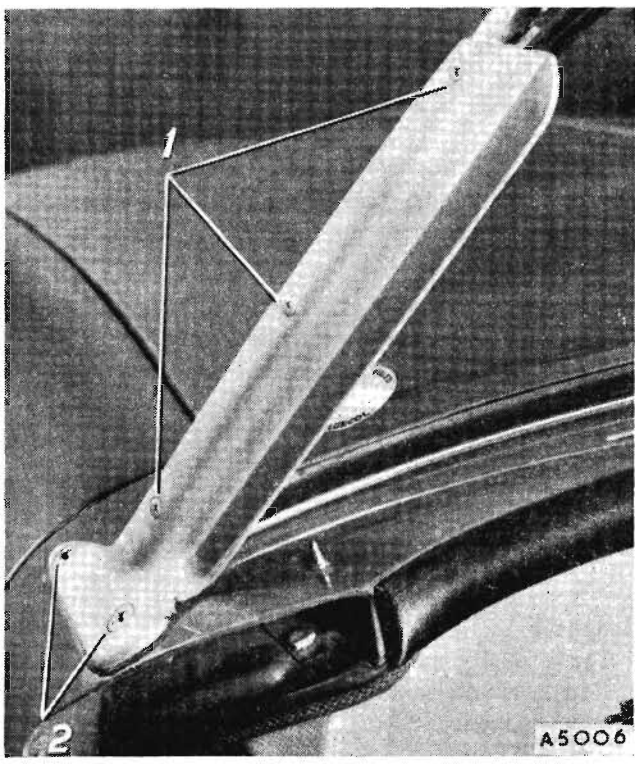


Fig. R.2

Windshield pillar and fascia

1. Pillar to body screws. 2. Windshield to pillar screws.

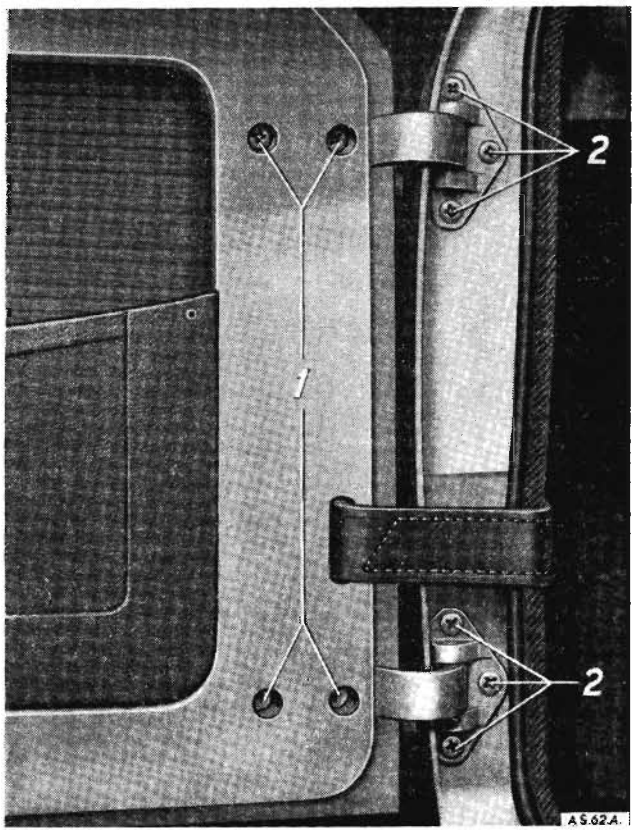


Fig. R.3

Hinge screws

1. Door to hinge screws. 2. Hinge to pillar screws.

Refitting

Reverse the removal procedure.

Sidescreens

Each sidescreen has two clamping brackets at its base which are held by two large-headed set screws at the door top moulding.

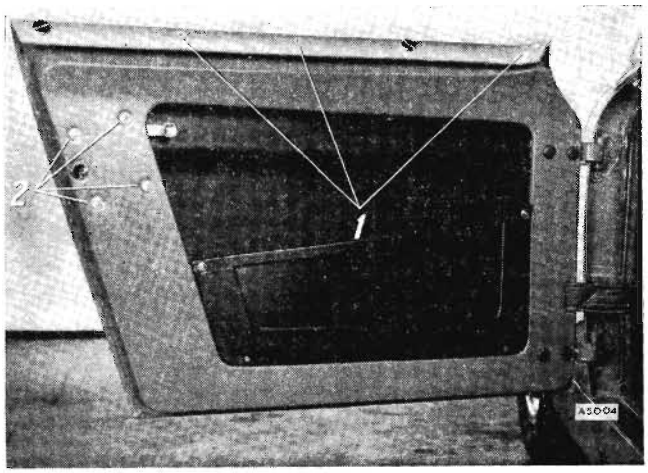


Fig. R.4

The sidescreen, top moulding, and door lock fixings



Fig. R.5
Seat frame securing points

Section R.6

DOORS

Door and hinges

Removing

Both the upper and lower hinge of each door is secured to the door pillar by three Phillips screws. At the door frame each hinge is secured by two Phillips screws.

There is a check strap fitted to each door which must be released when removing a door from the body. This can be done by withdrawing the two set screws from the coupling bracket on the inside of the door pillar. With the door wide open, the hinges can readily be uncoupled from the door pillar and the door and hinges removed.

Refitting

When refitting, reverse the removal procedure.

Door catch and operating handle

Removing

The catch and operating handle complete may be withdrawn by removing the securing set screws positioned inside the door.

Refitting

Reverse the removal procedure.

Section R.7

FASCIA PANEL AND COCKPIT MOULDINGS

Fascia panel

Removing

Remove the steering-wheel as described in Section J. Remove the securing nuts and bolts along the top edge of the fascia.

Remove the Phillips screws securing the fascia at the bottom edge together with the set screws behind the steering-column surround.

Remove the speedometer and tachometer drives at their instrument unions and disconnect the oil pressure pipe from behind the combined oil pressure and water temperature gauge. It is advisable to withdraw the water thermal element from its connection with the radiator.

Release the starter and choke cables. The fascia can then be brought forward into the cockpit, giving access to the rear of each instrument.

Refitting

Reverse the removal procedure.

Cockpit moulding

Removing

The front and rear cockpit mouldings can readily be lifted away from the vehicle after removing the Phillips securing screws.

The door top mouldings are secured in a similar manner.

Refitting

Refitting in each case is a reversal of the removal procedure.

Section R.8

SEATS

Passenger's seat

Removing

Lift out the seat cushion and remove the seat frame securing nuts.

Seat adjustment can be made by releasing the seat frame bracket securing set screws.

Refitting

Refitting is a reversal of the removal procedure.

Driver's seat

Removing

Lift out the seat cushion and remove the frame to runner securing nuts. Remove the bolts and nuts securing the runners to the body floor and lift out the runners.

Refitting

Reverse the removal procedure, ensuring that the seat runner packing pieces are fitted correctly.

An adjustable seat is provided for the driver; it can be moved forwards or rearwards by pushing the lever beneath the seat towards the runner and then moving the seat to the required position and releasing the lever.

Section R.9

REPAIR PROCEDURE

Body jack

The specially designed body jack, obtainable under 18G308B, is an absolutely essential item when rectifying any misalignment of the body construction. The jack is provided with a ratchet turnscrew, and the pitch of the centre spindle thread is such that considerable force (either pulling or pushing) can be exerted. The extension pieces are made from solid-drawn steel tubes and their lengths are such that the effective length of

the jack can be made to vary between 21 and 94 in. (533 and 2388 mm.).

Considerable thought has been given to their construction and design, and careful study of the equipment will be amply repaid.

The body jack is supplied by B.M.C. Service Ltd. A metal box in which the jack and its components can be neatly stored is supplied with the jack.

With the addition of a suitable oxy-acetylene outfit any type of mono-construction repair can be effected.

Rectification of buckled panels or underframe

Experience will prove that parts of the body which at first sight would be considered beyond repair can be rectified easily by straightening.

It is of paramount importance to return the damaged portion of the body to its original position before deciding whether replacement panels are necessary or not.

With the use of the special jack this method enables a buckled or damaged structure to be returned to its original relative position without straining the surrounding metal, which would be the inevitable result if the damaged portion were pounded by means of a hammer. At this stage a decision can be reached as to whether any damaged panel is to be repaired or renewed.

Spoon for removal of small dents

To remove small dents a spoon which is made from a coarse-cut file, specially shaped and having the teeth intact, is used in conjunction with a suitably shaped dolly block (Fig. R.7).

The use of a hammer to remove small dents is to be deprecated, as hammer-blows tend to stretch the surrounding metal, giving rise to further complications. It is for this reason that the spoon is recommended, as by its use a depression can be raised to its original level without stretching.

On panel work such as doors, or where inside reinforcements prevent the use of a dolly block, a hole can be punched or drilled through the inside panel and a suitable drift pin, about ½ in. (13 mm.) in diameter,

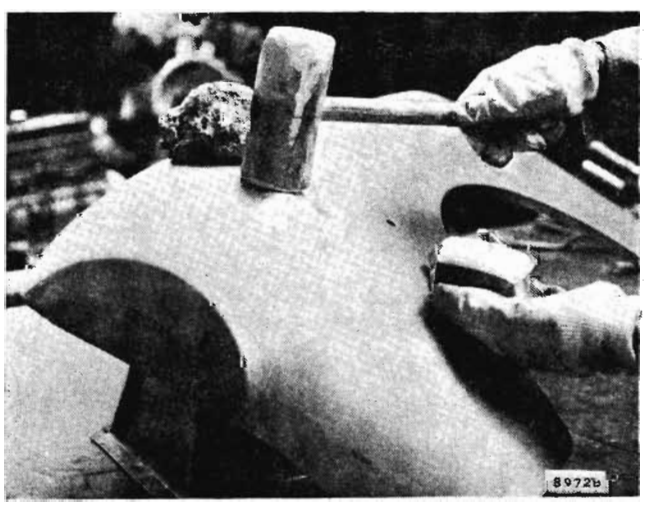


Fig. R.6
A dolly block and mallet

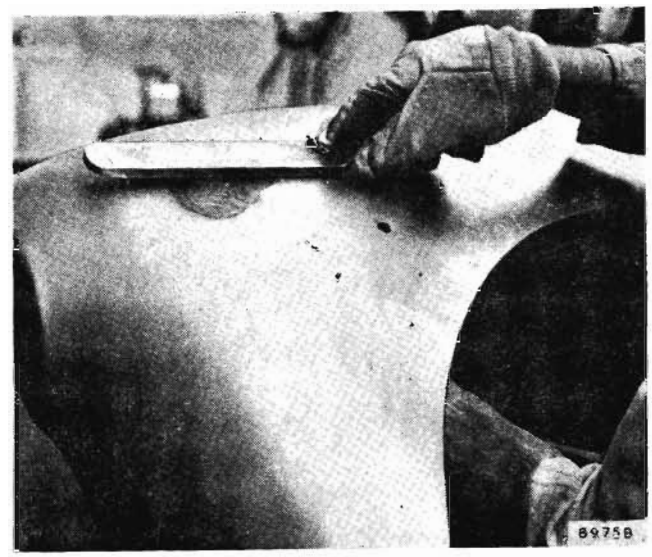


Fig. R.7
Removing a dent by tapping with a spoon; a dolly is held below the dent

used in conjunction with the spoon in place of the dolly block.

Sharper dents or a dent or collection of dents covering a large area will require the use of a heat, a dolly, and a spoon in the following manner.

With the welding torch heat a small area at the outside of the collection of dents, then, holding the dolly below, hammer the raised portion with a wooden mallet (Fig. R.6). When the metal cools remove the dolly and place a large handful of wet asbestos over the heated area to prevent the heat spreading. Continue to heat and tap, working from the outside of the damaged area, until something like the original contour and level is attained.

Lightly file the surface to show up the high-spots and remove these with the dolly and spoon without further heating.

Take care when using the file not to thin the metal more than is necessary to show up the high-spots.

Alternate checking by filing and raising with the dolly block and spoon will eventually produce a flat and clean surface without weakening the metal unduly, provided excessive filing is avoided. Care should be exercised to reduce filing to a minimum as otherwise the thickness of the panel will be seriously reduced.

On completion, the surface may be tinned and any small indentations filled with plumbers' solder.

Preservation of paintwork

A special spoon, having the teeth removed and its surface planished and polished, is required to enable small dents to be removed without damage to paintwork. Where it is possible to preserve paintwork when rectifying comparatively large dents a sandbag should be placed against the painted surface of the panel and the dent removed from the under side by the use of a wooden mallet. A suitable sandbag for this operation may be made from a leather oval bag 8 in. (203 mm.) long, 6 in. (152 mm.) wide, and 4 in. (102 mm.) thick which is packed tightly with sand.

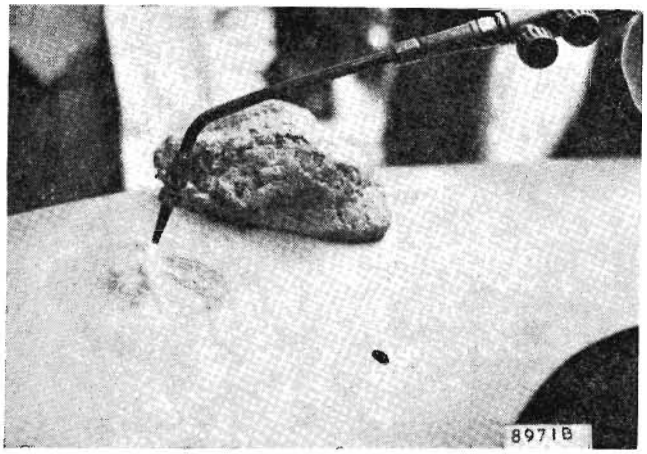


Fig. R.8

Application of heat prior to tapping with a mallet; a dolly is held below the dent while tapping

Stretched panels

Stretched panels which are liable to cause drumming can be rectified by local shrinking. A liberal heap of wet asbestos is placed over the stretched panel at the point of greatest resiliency, and a hole just large enough to apply the flame of the oxy-acetylene torch is made with a finger through the centre of the asbestos. The portion of the panel which is visible is heated to a cherry-red colour and is afterwards cooled off by the wet asbestos which surrounds it. For large panels it may be necessary to repeat this operation several times at different locations over the area.

Where a panel is stretched over a fairly extensive area and produces what is known as an 'oilcan' effect the following shrinking method should be used to restore the original contour.

Mix a quantity of wet asbestos sufficient to cover the damaged area with a thickness as shown in Fig. R.10. Press the asbestos down firmly to ensure that no air is trapped below, as it is important to confine the applied heat to the points of application.

With a finger pierce a series of holes in the asbestos extending to the surface of the metal. Direct the flame

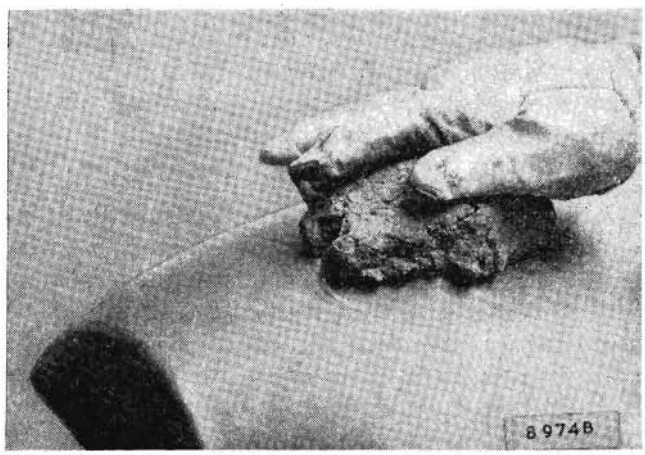


Fig. R.9

Cooling the damaged area with wet asbestos

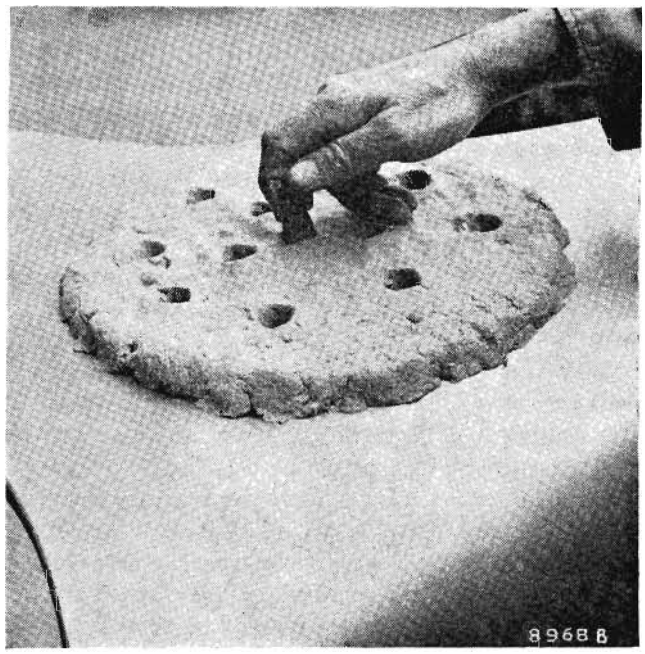


Fig. R.10

Piercing a series of holes in wet asbestos prior to the application of heat

of the welding torch to one of the holes near the perimeter of the asbestos and heat the metal to cherry red, remove the torch, and immediately press the surrounding asbestos into the hole (Fig. R.11).

Carry out the same procedure with the remaining holes, working around the asbestos and inwards towards the centre. When the asbestos is removed the surface is cleaned up in the usual manner.

Patching

An extensively damaged panel can frequently be repaired quite satisfactorily and more economically by patching rather than by renewing the entire assembly.

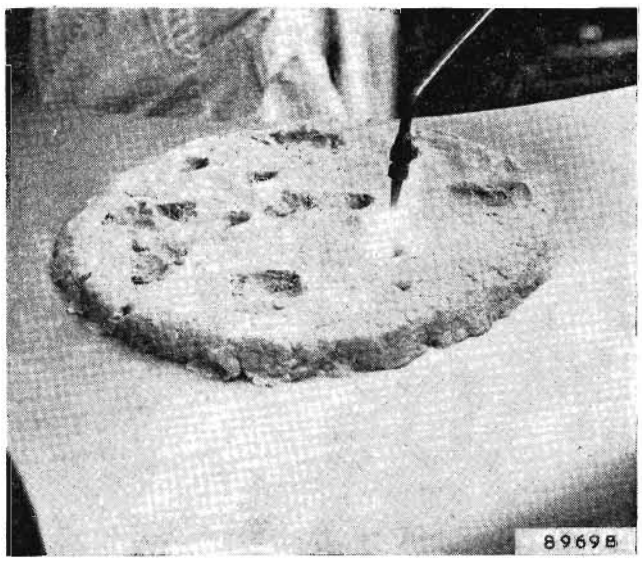


Fig. R.11

Heating the stretched panel through holes in the asbestos

This type of repair does not in the least weaken the surrounding structure, as a patch which is correctly gas-welded in position is equal in strength to the original structure. A patch can be introduced so efficiently that it is impossible to trace its presence.

The damaged portion of the panel should be cut out with a cold chisel or, if possible, by means of a hacksaw. The edges of the opening should then be filed until an even contour is obtained (Fig. R.12).

The patch to be fitted should preferably be cut from sheet metal of similar gauge and specification to that being repaired. First, it is rough-shaped to the contour of the panel, after which it is fitted to the opening to allow a clearance on all sides equal to the gauge of the metal.

In all probability, particularly during welding operations, difficulty will be experienced in holding the patch in place. This can be overcome satisfactorily by welding one or two short pieces of welding wire to act as convenient handles.

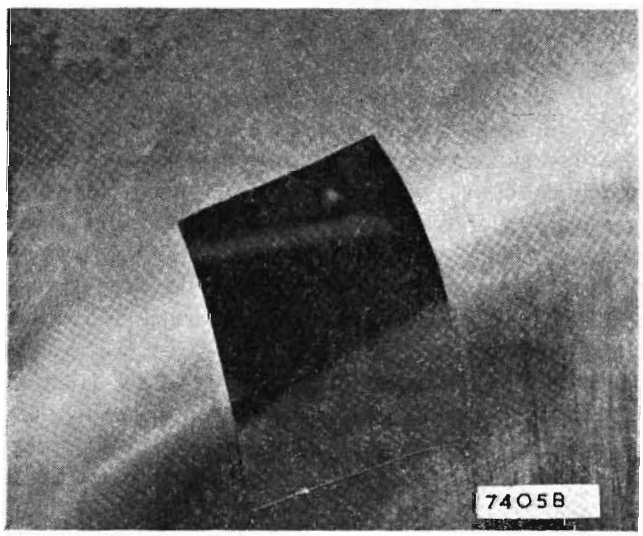


Fig. R.12
A damaged piece removed for patching

The patch is now fastened at intervals of 2 to 3 in. (51 to 76 mm.) to the panel by means of gas-weld tacks (Fig. R.13). During the tacking operation it should be reshaped to the panel to ensure that the contour is correct.

To prevent expansion and possible buckling of the surrounding panel during the welding operation a liberal quantity of wet asbestos must be placed on the panel round the patch, approximately $\frac{1}{4}$ in. (6 mm.) away from the joint (Fig. R.14). The joint is now gas-welded between the tacks, whilst precautions are taken to keep the patch to the correct contour by using a suitable dolly block and bumping hammer. On completion, any excrescences in the welding are removed by filing, and after straightening with the dolly block and bumping hammer, the patching is finally finished by tinning and solder-filling as described in Section R.12.

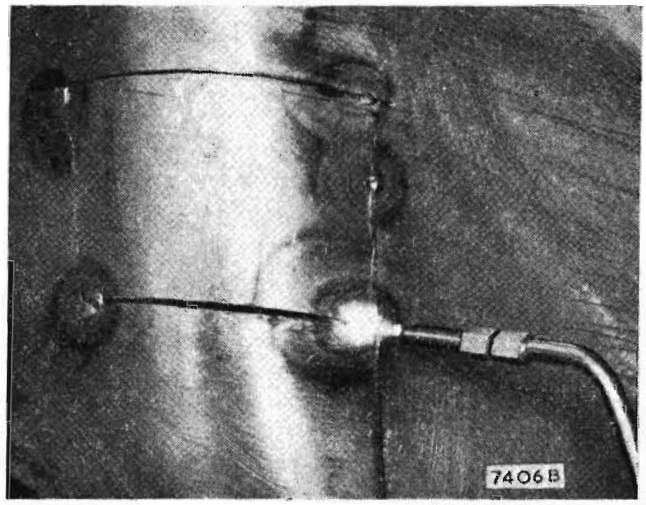


Fig. R.13
After the patch is formed it is held in position by gas-weld tacks

Patch-forming

Where it is necessary to 'form' a patch from the flat sheet to any particular contour a wooden or lead raising block is generally employed. The raising block should have several elliptical depressions of varying depths and diameters.

The patch is placed over the selected depression and is raised by hammering with the ball-pane end of a hammer, starting from the outer edges and gradually working towards the centre. A mistake frequently made is to strike too hard whilst raising the centre, with the result that the curve is of greater depth than that required.



Fig. R.14
To prevent buckling of the surrounding metal during welding surround the joint with wet asbestos

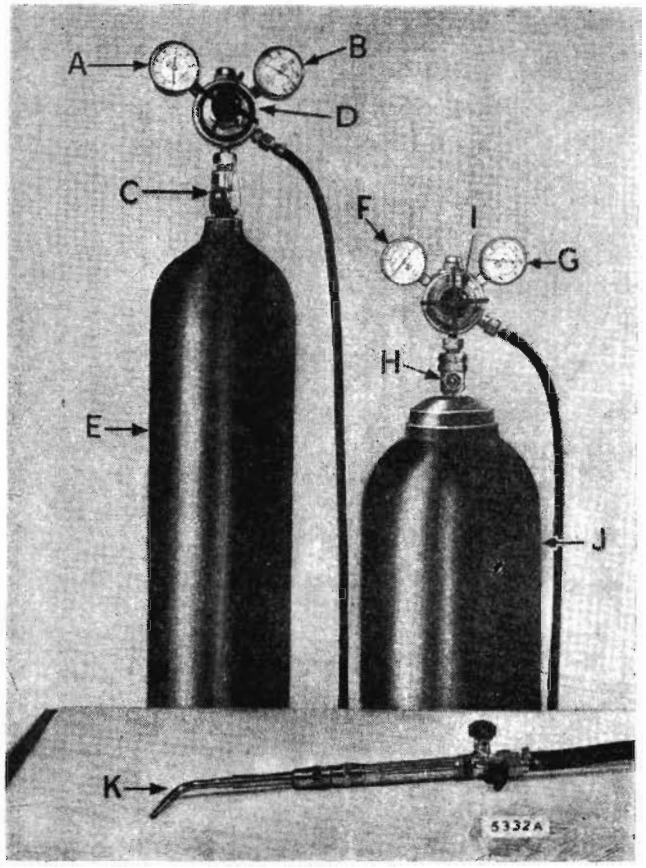


Fig. R.15

High-pressure oxy-acetylene welding outfit

A. Outlet pressure gauge (O).
B. Cylinder contents gauge (O).
C. Valve.
D. Pressure regulating screw.
E. Oxygen cylinder (BLACK).
F. Outlet pressure gauge (A).
G. Cylinder contents gauge (A).
H. Valve.
I. Pressure regulating screw.
J. Acetylene cylinder (MAROON).
K. Blowpipe interchangeable nozzles.

Repair of beading and mouldings

Where difficulty is experienced in straightening or renewing a beading, moulding, or corner the original contour may be obtained by careful tinning and filling with plumber's solder. The finished work will be equal in appearance and equal in strength, whilst the substitution of soldering for straightening, or renewing, will save the necessity for removing inside trimmings, etc.

Filing

It should be clearly understood that in every case filing must be reduced to a minimum owing to the thinness of the material. Wrinkles or ridges should be removed by the spoon and dolly block, and finished finally by tinning and solder-filling.

Replacing panels

In cases of extreme damage it will be found more economical to remove the damaged portions and replace them with new panels, which are obtainable from B.M.C. Service Ltd. The panels and assemblies which are available and the part numbers are given in the current Service Parts List.

The illustrations show clearly the location and types of joints used in the construction of the body, and, following the instructions already given and the instructions to follow on welding, any portion of the body can be removed, either by a hacksaw or cold chisel, and a suitable replacement fitted in position.

Owing to the fact that damage is usually localized, it will only infrequently be found necessary to remove a complete panel or unit. In the great majority of cases the damaged portion can be removed and a corresponding part cut from a replacement unit and located in position by gas-welding.

Section R.10

WELDING METHODS

Spot-welds

This form of welding is used extensively throughout the assembly of the mono-construction body.

The units to be joined are pressed together between two copper electrodes through which an electric current of low voltage and high amperage is passed. The resistance of the steel to the electric current raises the metal to welding temperature and the pressure between the electrodes produces complete fusion. The resulting joint is as strong as the surrounding structure, and a correctly made spot-weld will not break or become loose by vibration.

Spot-welds cannot be broken satisfactorily by inserting a cold chisel or lever between the two panels. Each weld must be carefully drilled in the centre, using a drill approximately $\frac{3}{16}$ in. in diameter. There is no necessity to drill through both panels as it is sufficient if the point of the drill merely penetrates the second panel. The weld is finally broken by inserting a thin, sharp, cold chisel between the joint and tapping it lightly with a hammer.

On panels where the spot-welds are covered by paint it is necessary to use a suitable paint remover to clean the paint from the joints. The spot-welds will easily be

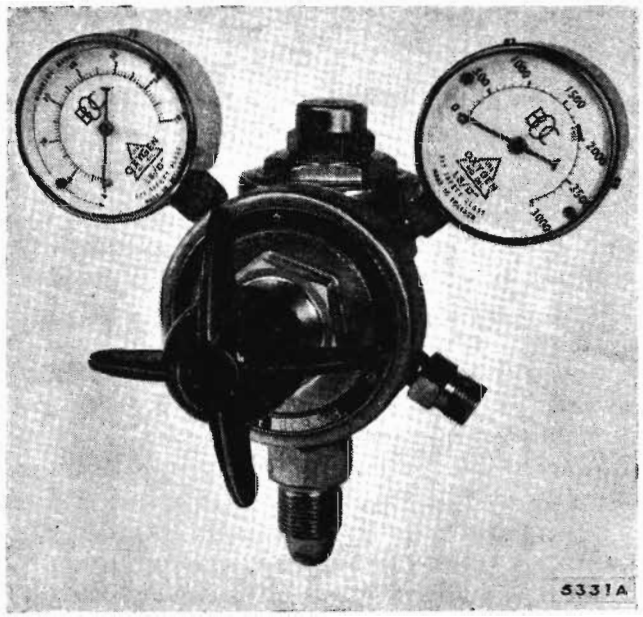


Fig. R.16

Type B.O.R.12A two-stage oxygen regulator

located by the discoloration of the metal. Reference to the body build-up illustrations will facilitate tracing the various joints.

Gas-welds

A gas-weld may be broken either by cutting with a hacksaw or, alternatively, with a sharp cold chisel. Place a suitable support at the back of the panel to act as an anvil whenever possible.

Lap-welds

Most lap-welds used in the mono-construction body are hidden from view by solder-filling. Reference should be made to the illustrations showing the build-up of the body in order to obtain the location of the various lap joints. This will enable the operator to direct the flame of the oxy-acetylene blowpipe onto the joint so that the solder filling can be melted and removed by the use of a duster. A lap-weld is broken by drilling out the spot-welds as previously explained.

Butt-welds

A butt-weld can be broken by the use of a hammer and chisel, the blows being directed against the panel which is to be renewed. If this method does not quickly break the weld heat applied from the oxy-acetylene torch will soften the fused edges, thus assisting the operation. Alternatively, the joint may be cut by a hacksaw.

Remaking welds

The special section of this Manual devoted to welding should be studied carefully before any attempt is made to reweld a joint on the body by an operator who has not had the necessary experience in this class of work.

When a joint is remade it is necessary, prior to painting, to clean the surface of the weld. During this operation, as previously mentioned, care should be taken to see that the structure is not unnecessarily weakened by excessive grinding or filing. It is preferable to hammer the joint so that it lies slightly lower than the surrounding metal and to flow solder into the depression. No amount of filing on the surface of the solder can reduce the strength of the joint below.

When placing a new panel in position it should be joined where possible by gas-welding through the holes drilled in breaking the original spot-welds. During the welding operations a liberal heap of wet asbestos should be placed over the surrounding panels to prevent buckling and distortion due to heat



Fig. R.17

Type B.A.R.9 two-stage acetylene regulator

Section R.11

WELDING TECHNIQUE

The following applies to equipment supplied by the British Oxygen Co. Ltd., although it also applies, in the main, to other similar equipment.

WELDING

HIGH-PRESSURE BLOWPIPES

Nozzle Sizes, Working Pressures, and Gas Consumptions for Various Metal Thicknesses

M.S. plate thickness		*Nozzle size*	*Regulator pressures, oxygen and acetylene Saffire equipment*		*Approximate consumption of each gas*	
in.	*mm.*		*lb./sq. in.*	*kg./cm.²*	*cu. ft./hr.*	*m.³/hr.*
1/32	·79	1	2	·141	1	·028
3/64	1·19	2	2	·141	2	·056
1/16	1·58	3	2	·141	3	·084
3/32	2·38	5	2	·141	5	·140
1/8	3·17	7	2	·141	7	·196
5/32	3·96	10	3	·211	10	·283
3/16	4·76	13	3	·211	13	·367
1/4	6·35	18	3	·211	18	·504
5/16	7·93	25	4	·281	25	·700

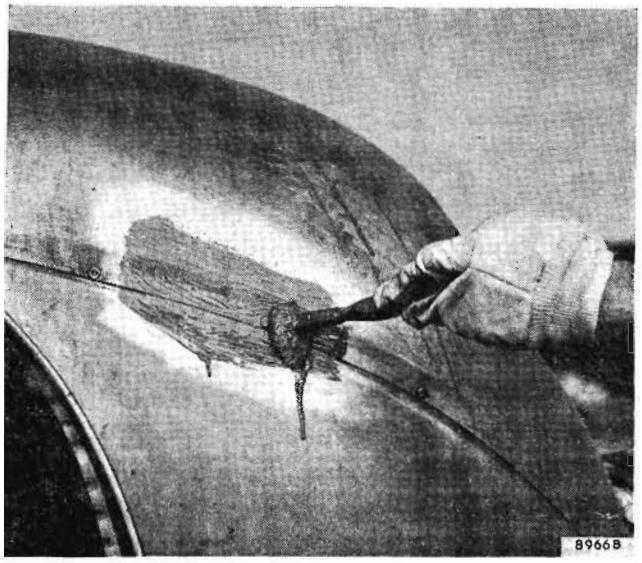


Fig. R.18
Painting the hollow area with flux

Welding equipment

High-pressure oxy-acetylene welding equipment using dissolved acetylene is recommended. This consists of:

(1) Supply of acetylene in cylinders.
(2) Supply of oxygen in cylinders.
(3) Blowpipe with necessary nozzles.
(4) Acetylene pressure regulator.
(5) Oxygen pressure regulator.
(6) Two lengths of rubber-canvas hose.
(7) Set of spanners and spindle key.
(8) Welding goggles and spark lighter.
(9) Welding rods.
(10) Welding fluxes.
(11) Trolley for accommodating complete equipment and cylinders.

Assembly

(1) Stand both cylinders vertically on the ground or on a trolley. Oxygen cylinders are painted BLACK. Acetylene cylinders are painted MAROON. **Never** attempt to interfere with the colour of cylinders or to repaint them.
(2) See that jointing surfaces in cylinder valves and regulators are free from oil and grease.
(3) Open the valve on the oxygen cylinder momentarily in order to dislodge dirt or other obstruction in the cylinder valve, then close.
(4) Screw the oxygen regulator (painted BLACK) (Fig. R.16) into the oxygen cylinder valve. The oxygen cylinder valve outlet and oxygen regulator connection have **right-hand** screw threads.
(5) Screw the acetylene regulator (painted MAROON) (Fig. R.17) into the acetylene cylinder valve. The acetylene cylinder valve outlet and acetylene regulator connection have **left-hand** screw threads.
(6) Tighten the regulator in the cylinder valve. Do not use excessive force, but make certain that the joints are gas-tight.
(7) Connect the hose (acetylene RED, oxygen BLACK) to the screwed outlets of the regulators by means of the screwed connections secured in the ends of the hose. Blow the hose through before attaching to the regulator or blowpipe in order to remove dust and dirt and to remove chalk when the hose is new.
(8) Connect the other end of the hose, that fitted with a hose protector, to the blowpipe—the acetylene hose to the connection marked 'A', the oxygen to the connection marked 'O'. Keep the blowpipe control valves closed. (A high- or low-pressure blowpipe can be used with the dissolved acetylene. If a low-pressure blowpipe is used the acetylene pressure should never exceed 2 lb./sq. in. [·14 kg./cm.^{2}].)
(9) Fix the appropriate nozzle to the blowpipe. (See the table, page R.9.)
(10) Open the cylinder valves very slowly by means of the cylinder key. Do not open suddenly, or there may be serious damage to the regulator and the possibility of an accident. Open the cylinder valve spindle one turn only.
(11) Set the regulators at the correct working pressures. (See the table, page R.9.)
(12) Open the acetylene control valve on the blowpipe, wait a few seconds until the air is blown out and pure acetylene is coming from the blowpipe nozzle, then light, preferably by means of a spark lighter, type S.L.I.
(13) Reduce or increase the acetylene supply by the blowpipe valve until the flame just ceases to smoke.
(14) Turn on the oxygen by the blowpipe control valve until the white inner cone in the flame is sharply defined, with the merest trace of an acetylene haze.

The blowpipe is now adjusted for welding steel, and work may be commenced.

The size of nozzle given for a particular thickness of steel is for general guidance only and will vary according to the skill of the welder, mass of metal, etc. The capacity of each nozzle overlaps the capacities of those next in size to it. The values given are for down-hand butt-welds

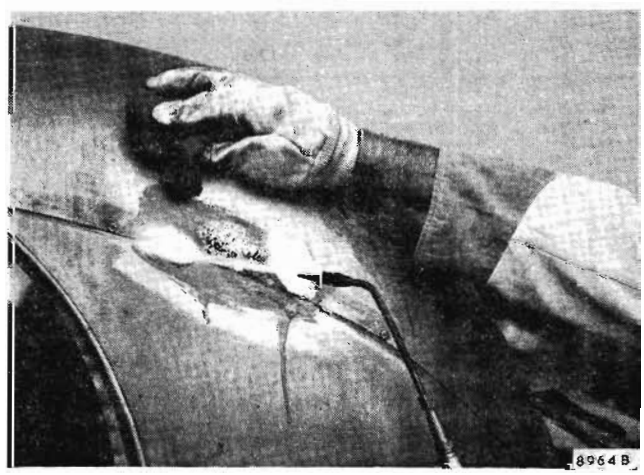


Fig. R.19
Tinning by heating the flux-painted area

in mild steel. For other techniques nozzle size and pressure may have to be varied slightly, e.g. for copper select a larger nozzle, for aluminium a smaller nozzle.

On thin-gauge steel up to and including $\frac{1}{16}$ in. thickness tacks should be slightly closer together—say, 1 to $1\frac{1}{2}$ in. (25 to 38 mm.) apart—to keep the edges in alignment and minimize distortion.

For the same reason patches should, wherever possible, be oval or circular. Before welding, these should be slightly 'dished' below the level of the surface to be patched, since welding—even by the correct 'sequence'—will cause them to expand and rise.

Do not light the blowpipe until everything else has been prepared for welding in accordance with the instructions given above. On completion of the job proceed as follows:

(1) Turn off the **acetylene** first by the blowpipe control valve, and then the oxygen.
(2) Close the cylinder valves.
(3) Open the blowpipe valves one at a time to release the pressure in the hose—open the oxygen valve and shut it; open the acetylene valve and shut it.
(4) Unscrew the pressure regulating screws on the oxygen and acetylene regulators.
(5) In the case of **backfire** turn off the **oxygen** first.

Section R.12

TORCH-SOLDERING

Torch-soldering is the method employed to obtain the desired contour of a panel without weakening the structure and with the minimum amount of straightening, filing, and polishing.

The solder used is an alloy of lead and tin. Lead melts at a temperature of 621° F. (327° C.) and tin at 450° F. (232° C.). Alloys of the two metals change from a solid to a liquid state over this range of temperature within which they are in a plastic condition. The alloys used for torch-soldering are known as tinman's solder (which contains 60 per cent. lead and 40 per cent. tin) and plumber's solder (which contains 70 per cent. lead and 30 per cent. tin). Tinman's solder, as a result of its higher tin content, alloys more readily with the surface of the sheet metal and is applied as a 'base' to which the plumber's solder adheres firmly. Plumber's solder remains plastic over a wide range of temperature (from 509 to 358° F. [265 to 181° C.]), and within this range can be moulded to any desired shape. For this reason it is used to obtain the required contours.

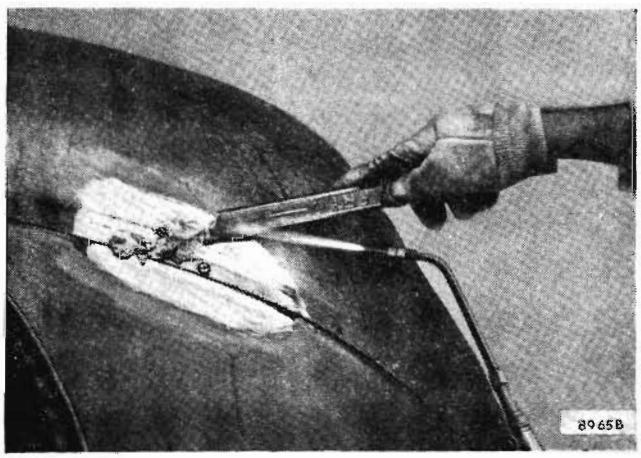


Fig. R.20
Applying the solder

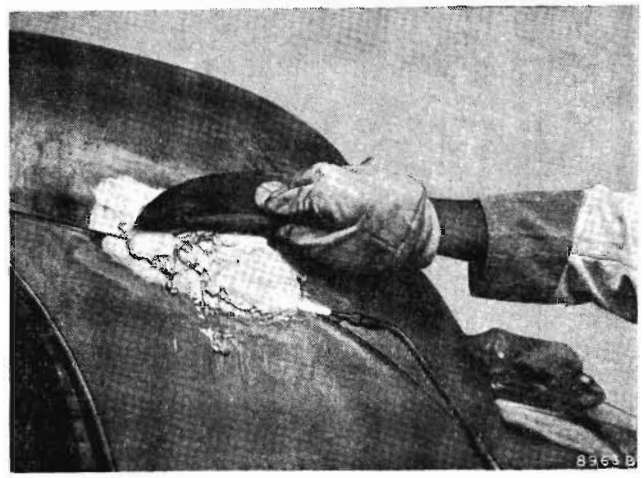


Fig. R.21
Spreading the solder

Where it is desired to build up a contour with solder the surface of the steel must first of all be cleaned thoroughly. Rust, scale, welding oxide, or any other impurity must be removed by means of a wire brush, file, and emery-cloth. A polishing-wheel, if available, is useful for this operation.

The surface of the metal is heated gently with a blowlamp or gas-torch, and soldering flux applied with a brush. (See Fig. R.18.)

The flux will melt and act upon the heated surface so that when tinman's solder is applied and rubbed with a wad of hemp the metal will become evenly coated with a thin layer of solder, or 'tinned' (Fig. R.19). The secret of successful torch-soldering lies in the thoroughness with which the tinning operation is carried out as it is the foundation on which the plumber's solder is to be built up.

A second application of flux should be made and gently heated by means of the torch. When wiped by the wad of hemp the entire surface of the metal should have a spotlessly clean and bright appearance.

Plumber's solder is now melted onto the surface (Fig. R.20) and maintained by careful use of the torch in a plastic condition whilst it is moulded to the desired contour with a hardwood paddle coated with palm oil (Fig. R.21). During the moulding operation frequent immersion of the paddle in palm oil assists in the manipulation of the solder. If palm oil is not available boiled linseed, lard, or machine oil will be found satisfactory.

The final contour is obtained by filing or, if available, by the use of a polishing-wheel. If the work is carefully carried out it should be impossible to trace the presence of the filling.

Section R.13

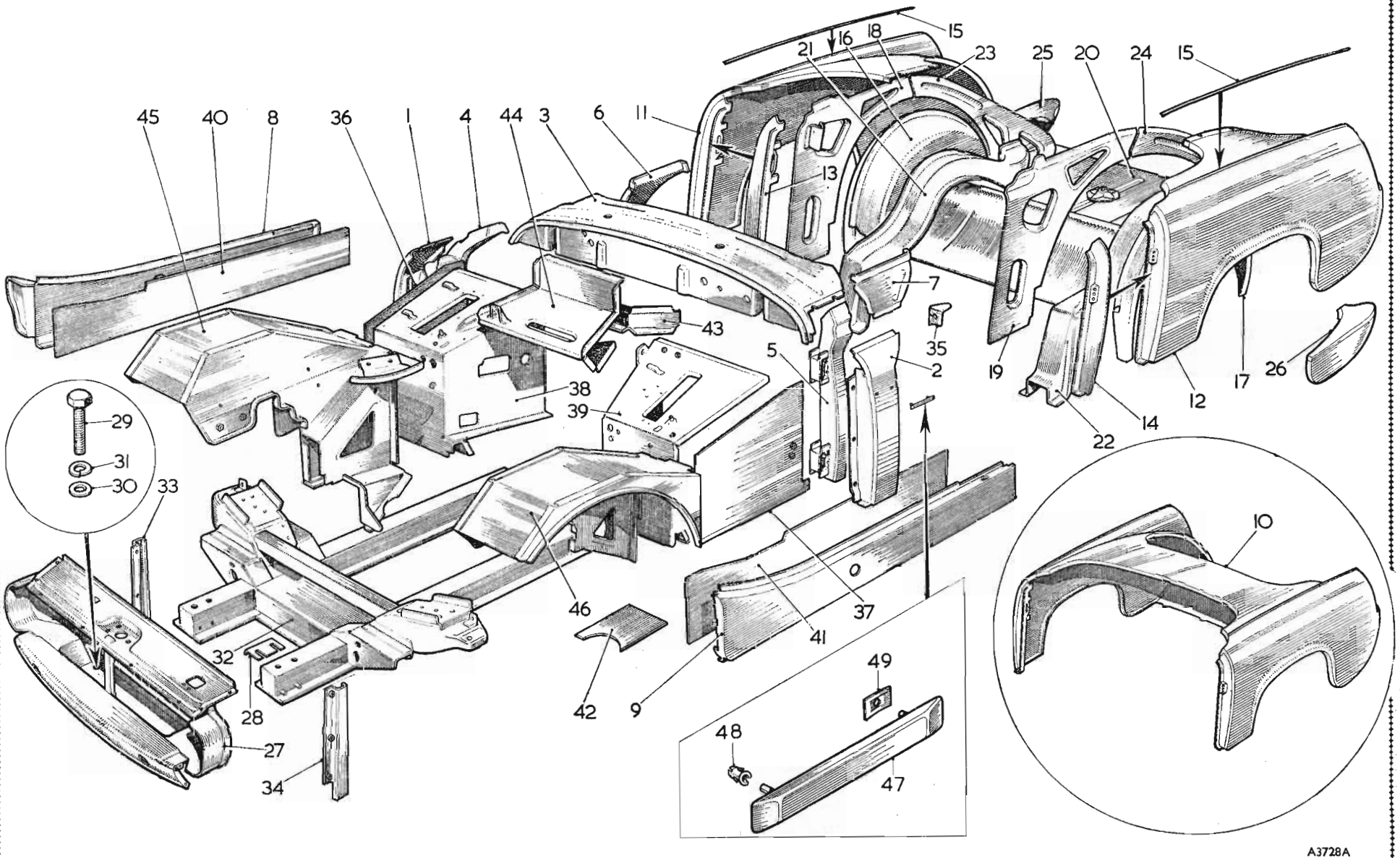
PAINT REFINISHING INSTRUCTIONS

Operation	*Material*	*Thinning*	*Drying times*	*Application*	*Instructions*
Stripping original paint	Water-soluble paint remover, e.g. Sunbeam Anti-corrosives 'Stripolene 799'	—	—	Brush	Remove the original finish with a scraper after allowing paint-strip 10 minutes to react (repeat if necessary). Wash off thoroughly with cold water, rubbing with wire wool. Dry. Blow out crevices with compressed air. Strip a small area at a time to enable correct neutralizing of the stripper
Metal abrading	Emery-cloth, e.g. Howarth Blue Twill, grade 1½ M	—	—	Hand or disc	Paper thoroughly to ensure satisfactory key. Wipe with cleaner solvent or white spirits
Acid etching	Apply Deoxidine 125 (I.C.I.)	1 part Deoxidine, 1 part water	—	Brush	Apply solution generously and rub in with wire wool. Do not allow Deoxidine solution to dry off before the wash-off operation. Allow approximately five minutes to complete reaction. Wash thoroughly with cold water to remove all traces of Deoxidine solution, followed by a hot rinse. Thoroughly dry surfaces with a clean cloth and blow out crevices with compressed air
Priming	Synthetic primer G.I.P. No. S3178	6 to 1 with Z1048	½-hour to 4 hours	Spray	Apply one thin coat of synthetic primer (recommended for superior adhesion) or one thin coat of cellulose primer (recommended for good adhesion). The use of a primer coat enhances adhesion and gives the system a much greater safety factor
	or Grey cellulose primer G.I.P. C3971 MOD	50/50 with 2045M	¼-hour	Spray	
Applying stopper	Stopper Grey G.I.P. 824D or Stopper Brown G.I.P. 1543	—	6–8 hours, or overnight if possible	Glazing knife	Apply stopper in thin layers, allowing 15–20 minutes' drying between applications. Heavy layers result in insufficient drying, with subsequent risk of cracking
Filling	Primer Filler Grey G.I.P. C3663M	50/50 with 2045M	3–4 hours	Spray	Apply two or three full coats, allowing 15–25 minutes' drying time between coats

Wet-sanding	Abrasive paper 280 grade	—	—	—	Rub down wet until smooth; a guide coat (a weak contrasting colour) may be used to ensure that the whole surface is rubbed level. Wash off thoroughly with water, sponge all sludge, wash off, dry with clean sponge. Dry off. Minimum of paint should be removed consistent with a satisfactory surface. Film thickness after rubbing should be ·0025 in. (·06 mm.) min.
Applying sealer or undercoat	Sealer Grey or Sealer White or Red undercoat (see B.M.C. Paint Scheme schedule)	50/50 with 2045M	15–20 minutes	Spray	Apply one coat, flash off
Dry-sanding or de-nibbing as required	320 grade paper	—	—	—	De-nib or dry-sand with 320 paper. Clean with white spirit. The grade of paper quoted is from the 3M Company (Minnesota Mining and Mfg. Co. Ltd.); the grade of paper may vary according to manufacture
Applying colour coats	B.M.C. body finishes (see B.M.C. Paint Scheme schedule)	50/50 with 2045M	5–10 minutes' flash between coats. Overnight dry	Spray	Apply two double coats with a 5–10-minute flash between coats. Overnight dry
Flatting colour coat	320 or 400 paper (dependent on conditions)	—	—	Hand	Flat with 320 or 400 paper, dependent on conditions
Applying final colour coat	B.M.C. body finishes (see B.M.C. Paint Scheme schedule)	50/50 with 2045M	Overnight dry	Spray	Spray final double colour coat
Polishing	Cut and polish (see B.M.C. Paint Scheme schedule)	—	—	Hand or machine	The colour coat must be thoroughly dry before polishing. After cutting, burnish to a high gloss with a clean mop, and finally clean with a liquid polish, e.g. Apollo liquid polish

NOTE.—(1) For faster drying of undercoats or local repairs G.I.P. thinners 1523 may be used.
(2) Under extreme circumstances of heat and/or humidity retarder G.I.P. Z1694 can be used added to the 2045M thinners.

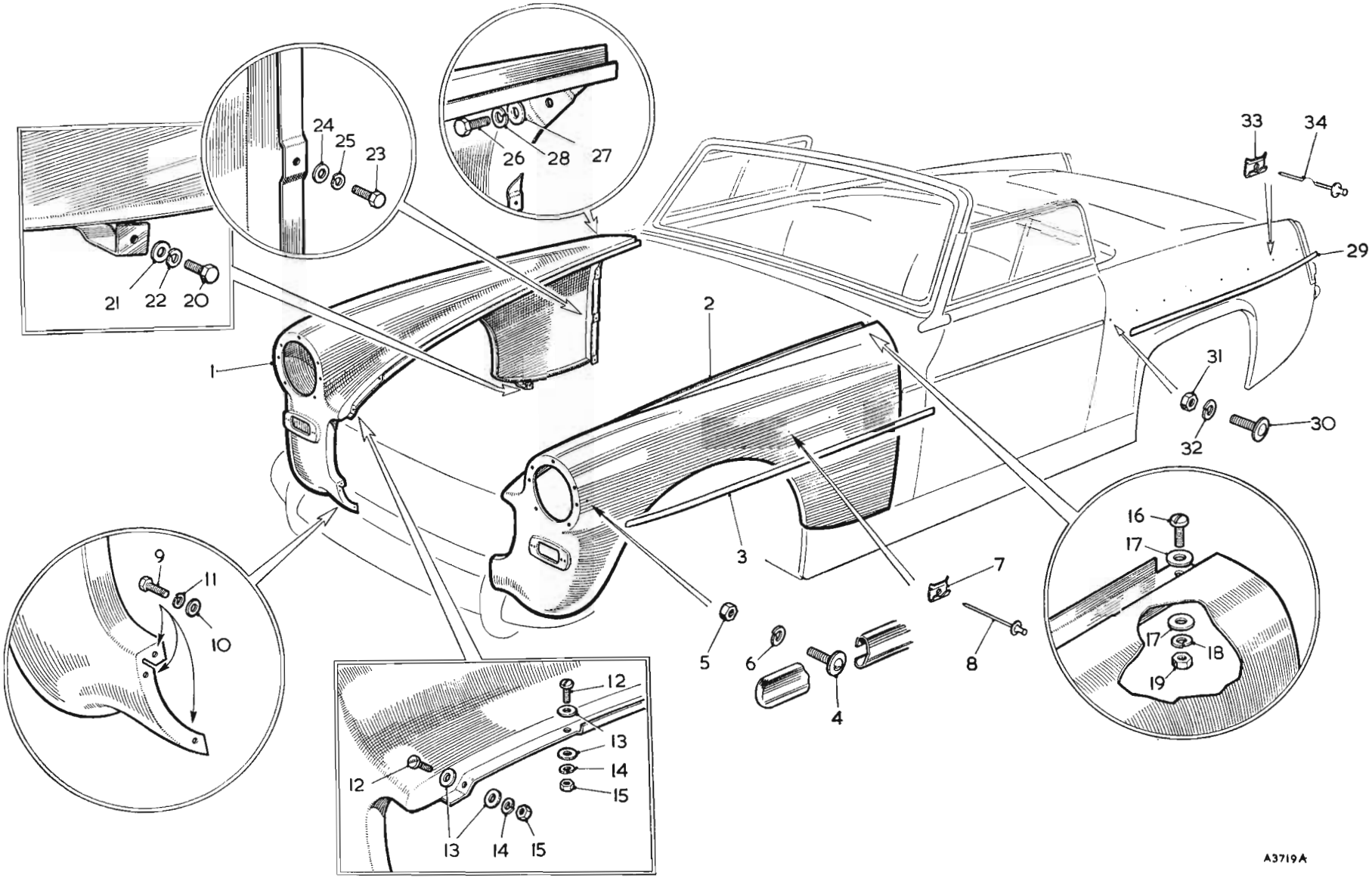
THE BODY SHELL COMPONENTS



KEY TO THE BODY SHELL COMPONENTS

No.	*Description*
1.	Shroud side panel assembly—R.H.
2.	Shroud side panel assembly—L.H.
3.	Shroud and dash top panel assembly.
4.	'A' post assembly—R.H.
5.	'A' post assembly—L.H.
6.	'A' post to scuttle extension—R.H.
7.	'A' post to scuttle extension—L.H.
8.	Outer sill panel—R.H.
9.	Outer sill panel—L.H.
10.	Rear panel assembly.
11.	Rear wing assembly—R.H.
12.	Rear wing assembly—L.H.
13.	'B' post assembly—R.H.
14.	'B' post assembly—L.H.
15.	Rear wing to panel moulding.
16.	Rear wheel arch panel assembly—R.H.
17.	Rear wheel arch panel assembly—L.H.
18.	Reinforcement assembly—R.H.
19.	Reinforcement assembly—L.H.
20.	Luggage floor panel assembly.
21.	Wheel arch to luggage floor reinforcement member—R.H.
22.	Wheel arch to luggage floor reinforcement member—L.H.
23.	Wheel arch to luggage floor gusset—R.H.
24.	Wheel arch to luggage floor gusset—L.H.
25.	Luggage floor rear extension—R.H.
26.	Luggage floor rear extension—L.H.
27.	Front end assembly.
28.	Front end to underframe shim.
29.	Front end to underframe screw.
30.	Plain washer.
31.	Spring washer.
32.	Front suspension and main beam assembly.
33.	Radiator mounting bracket assembly—R.H.
34.	Radiator mounting bracket assembly—L.H.
35.	Hand brake abutment bracket.
36.	Foot-well outer panel assembly—R.H.
37.	Foot-well outer panel assembly—L.H.
38.	Foot-well front and inner side panel assembly —R.H.
39.	Foot-well front and inner side panel assembly —L.H.
40.	Sill side plate—R.H.
41.	Sill side plate—L.H.
42.	Splash plate—L.H.
43.	Heater support platform.
44.	Heater platform assembly.
45.	Front wheel arch assembly—R.H.
46.	Front wheel arch assembly—L.H.
47.	Shroud moulding.
48.	Speed clip.
49.	Push-on fix.

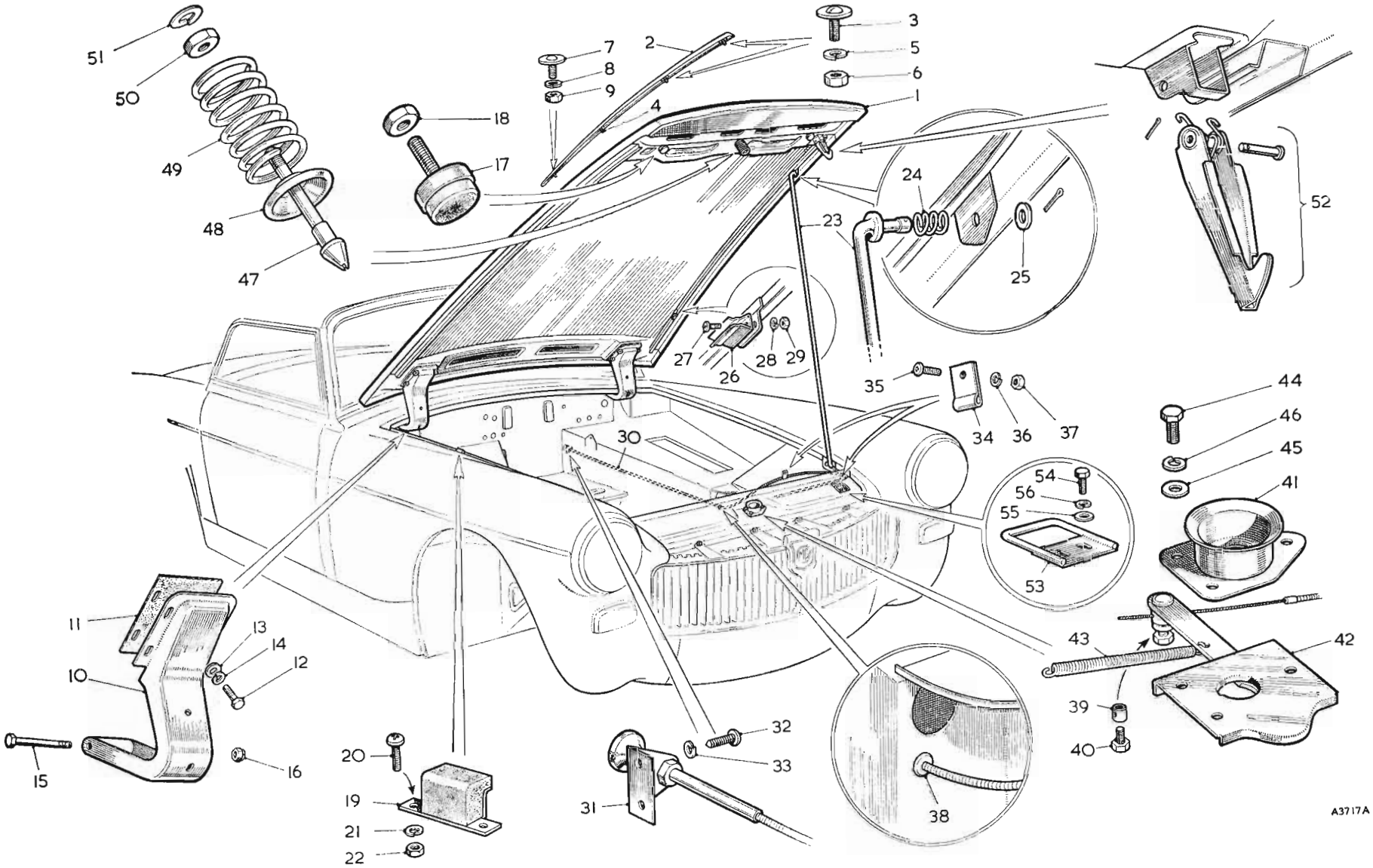
THE WING COMPONENTS



KEY TO THE WING COMPONENTS

No.	*Description*
1.	Wing assembly—R.H.
2.	Wing assembly—L.H.
3.	Front wing moulding.
4.	Moulding stud plate.
5.	Nut.
6.	Spring washer.
7.	Moulding clip.
8.	Fixing clip rivet.
9.	Screw.
10.	Washer.
11.	Spring washer.
12.	Screw.
13.	Washer.
14.	Spring washer.
15.	Nut.
16.	Screw.
17.	Washer.
18.	Spring washer.
19.	Nut.
20.	Screw.
21.	Washer.
22.	Spring washer.
23.	Screw.
24.	Washer.
25.	Spring washer.
26.	Screw.
27.	Washer.
28.	Spring washer.
29.	Rear wing moulding.
30.	Moulding stud plate.
31.	Nut.
32.	Spring washer.
33.	Moulding clip.
34.	Fixing clip rivet.

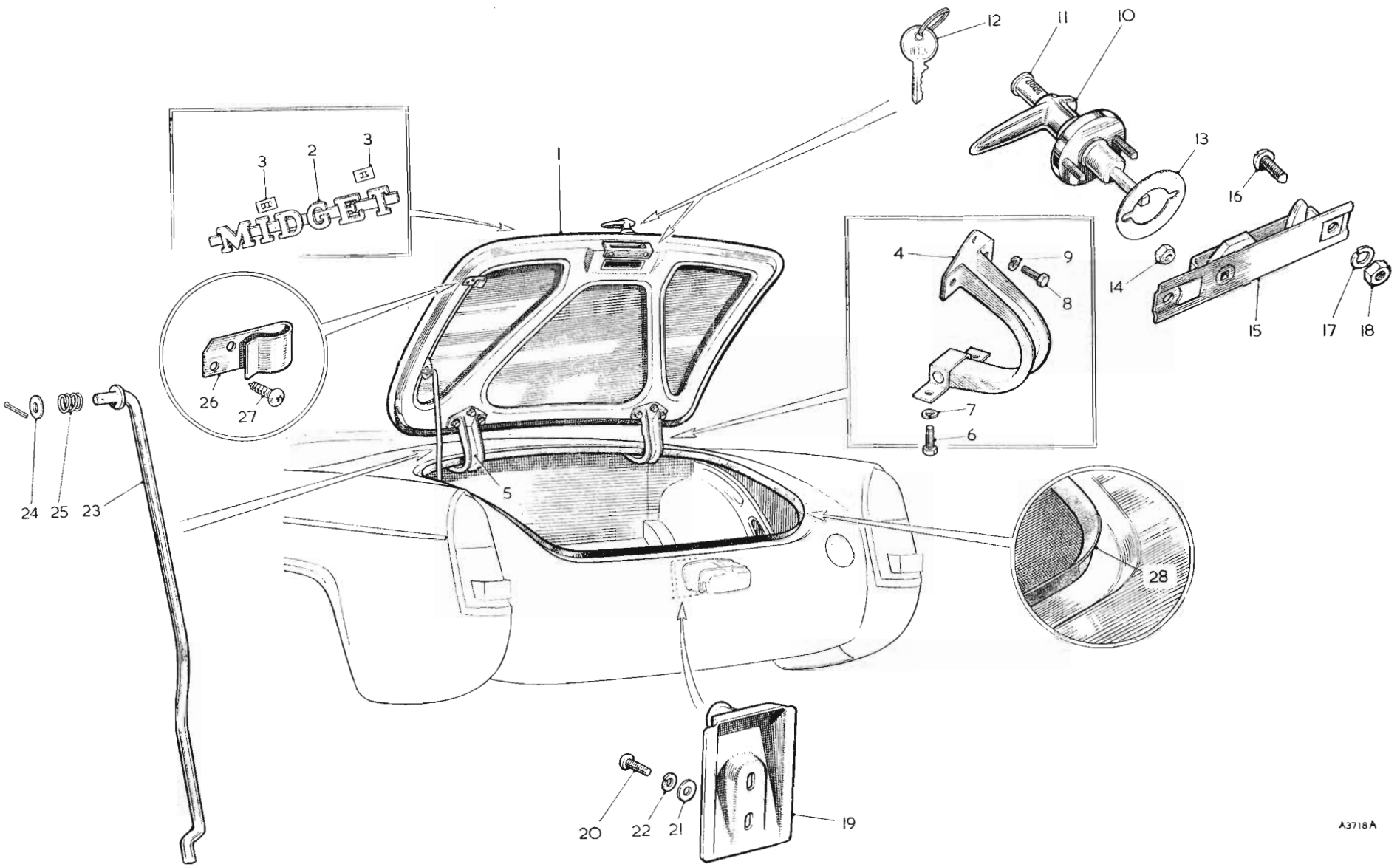
THE BONNET ASSEMBLY COMPONENTS



KEY TO THE BONNET ASSEMBLY COMPONENTS

No.	*Description*
1.	Bonnet top assembly.
2.	Centre moulding.
3.	Front moulding plate stud.
4.	Centre moulding plate stud.
5.	Spring washer.
6.	Nut.
7.	Rear moulding plate stud.
8.	Spring washer.
9.	Nut.
10.	Hinge.
11.	Hinge packing.
12.	Bonnet to hinge screw.
13.	Plain washer.
14.	Spring washer.
15.	Bulkhead to hinge bolt.
16.	Nut.
17.	Bonnet buffer.
18.	Buffer to bonnet locknut.
19.	Side buffer.
20.	Drain channel screw.
21.	Spring washer.
22.	Nut.
23.	Prop rod.
24.	Prop rod spring.
25.	Washer.
26.	Prop rod clip.
27.	Clip screw.
28.	Spring washer.
29.	Nut.
30.	Bonnet release cable.
31.	Bracket.
32.	Screw.
33.	Spring washer.
34.	Cable clip.
35.	Clip screw.
36.	Spring washer.
37.	Nut.
38.	Cable grommet.
39.	Cable clamp.
40.	Clamp screw.
41.	Lock locating cup.
42.	Catch plate.
43.	Catch plate spring.
44.	Cup to locking platform screw.
45.	Washer.
46.	Spring washer.
47.	Bonnet lock pin.
48.	Bonnet lock thimble.
49.	Bonnet lock spring.
50.	Pin to bonnet locknut.
51.	Spring washer.
52.	Safety catch assembly.
53.	Safety catch bracket.
54.	Bracket fixing screw.
55.	Washer.
56.	Spring washer.

THE BOOT LID COMPONENTS



KEY TO THE BOOT LID COMPONENTS

No.	*Description*
1.	Boot lid assembly.
2.	'Midget' motif.
3.	Push-on fix.
4.	Boot lid hinge—R.H.
5.	Boot lid hinge—L.H.
6.	Hinge screw.
7.	Spring washer.
8.	Hinge to boot lid screw.
9.	Spring washer.
10.	Locking handle assembly.
11.	Barrel lock.
12.	Key.
13.	Handle seating washer.
14.	Handle to boot lid nut.
15.	Lock assembly.
16.	Screw.
17.	Spring washer.
18.	Nut.
19.	Striker plate.
20.	Screw.
21.	Plain washer.
22.	Spring washer.
23.	Prop rod.
24.	Plain washer.
25.	Spring.
26.	Prop rod clip.
27.	Screw.
28.	Boot lid sealing rubber.

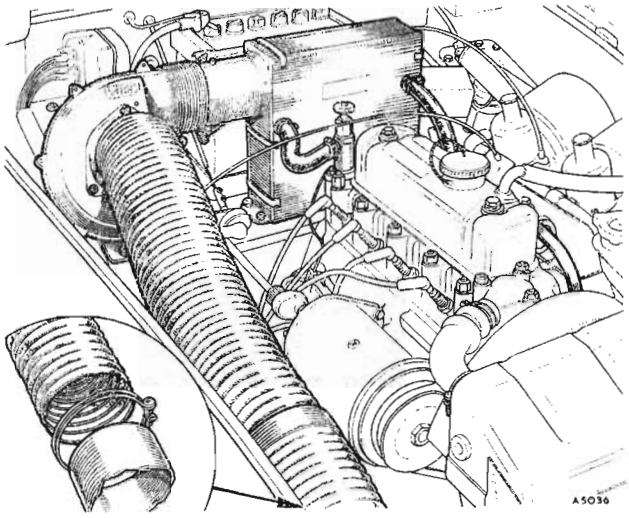


Fig. R.22

Showing the correct location of the heater and inset is the heater blower induction pipe connection at the radiator wing valance

Section R.14

HEATER UNIT

Description

The heating and demisting system is designed to provide heated fresh air to the car interior at floor level and to the windshield for demisting and defrosting.

A valve controlling the flow of hot water through the heater unit is fitted at the rear of the cylinder head. The valve is opened by turning in an anti-clockwise direction when heating is required or shut off by turning clockwise when the system is to be used for cool air ventilation.

Air is drawn into the system through a forward-facing intake, and the ram effect caused by the car's motion will provide a sufficient quantity of air for the heater's requirements at speeds above 25 m.p.h. (40 km.p.h.). A blower motor is provided for use at lower speeds or when a greater quantity of air is required. The blower is switched on by **turning** the control on the fascia (marked 'H') in a clockwise direction.

A shut-off valve is incorporated in the air intake to prevent fumes entering the car in traffic and is operated by **pulling out** the control marked 'H'. The blower motor must be switched off before the valve is closed and cannot be switched on again until the valve is returned to the open position.

Two doors located forward at either side of the engine scuttle control distribution of air between screen and car interior. For heating, open the doors. For defrosting (i.e. boosting flow of hot air to shield), close the doors.

Fitting

Drain the cooling system (see Section C) and disconnect the battery.

Remove the blanking plate from the battery shelf. Place the heater seal in position over the aperture and fit the heater unit. Secure the blower unit to the right-hand bulkhead and fit the earth tag below to any fixing screw. Connect the blower to the heater with the air hose and secure the intake plate and tube to the radiator wing valance support bracket. Connect the intake tube to the blower and fasten the hose to the inner wheel arch, using the air hose securing clip.

Remove the blanking grommets from either side of the engine scuttle and fit the elbow assemblies. Fit the demisting nozzles and connect the elbows to the demisting nozzles with two lengths of air hose.

When fitting the heater control connections a hole will be found in the fascia panel to the right-hand side of the direction indicator switch; cut a corresponding hole in the rexine covering and assemble the push-and-turn switch through the hole.

Push the control cable and one lead through the blind grommet provided in the bulkhead on the right-hand side behind the battery. Connect the other lead to the green lead with the brown tracer issuing from the harness below the fascia. Fit the trunnion to the forked lever below the heater intake tube, pull the control knob out to its fullest extent, and rotate the forked lever towards the rear of the car. Press the lever firmly in position, pass the cable inner wire through the trunnion, and tighten the trunnion screw and the cable clamp on the outer casing. Connect the snap connector from the blower to the push-and-turn switch lead, using the connector tube provided. Before fitting the water connections remove the blanking plate from the rear of the cylinder head and fit the water control valve adaptor. Screw the water control valve into the adaptor and ensure that, when tight, it faces the right-hand side of the car. Connect the water control valve to the heater lower radiator pipe with the moulded hose and secure with hose clips. Bore a hole in the engine-to-radiator return hose with a hose cutter and fit the universal hose connector. Secure the copper heater return pipe to the manifold studs, using the existing fittings. Connect the upper heater radiator pipe to the copper tube with rubber hose, and connect the copper pipe to the universal hose connector with a short length of rubber

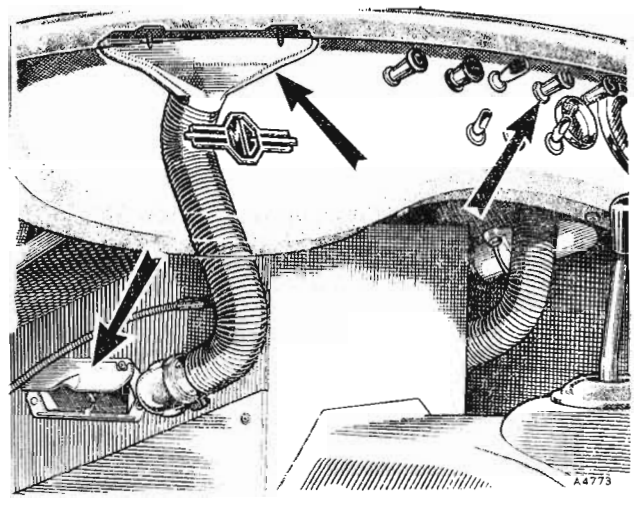


Fig R.23

The heater blower control on the fascia, the interior heating control doors and the demisting duct

hose. Secure all connections with hose clips and fasten a caution label in a prominent position to one of the water hoses.

Reconnect the battery and refill the cooling system, run the engine at a fast tick-over, and switch on the heater.

NOTE.—If the water return hose does not warm up in a few minutes an air lock may be present in the system, and to clear it the procedure is as follows.

Switch off the engine, remove the hose from the universal connector, and extend by temporary hose so that the water will flow back into the radiator via the filler cap; temporarily plug the lower union.

Start the engine and note the water flow into the radiator; when this is smooth and bubble-free, remake the hose-to-union connections and tighten as quickly as possible.

When draining the cooling system the heater may not be completely emptied: therefore, in cold weather it is recommended that only anti-freeze of the ethylene glycol type incorporating the correct type of corrosion inhibitor is suitable, and owners are recommended to use Bluecol, Shell, or Esso Anti-freeze. We also approve the use of any anti-freeze which conforms to Specification B.S.3151 or B.S.3152.

Removing

Removing is a reversal of the fitting procedure.

Section R.15

BODY ALIGNMENT CHECKING JIG

Before checking the body alignment it is most important that the body is raised to a workable height on a level plane. This is done to facilitate body jig checking with the aid of a straight-edge, or with a stout cord stretched from one point to another to obtain measurements between jig components. These measurements should then be checked against the correct dimensions provided in Fig. R.24.

This tool is intended to be used solely as a checking fixture and not as a welding jig. No welding whatsoever is to be undertaken with the body jig in position.

The left-hand inset in Fig. R.24 shows the front section of the jig mounted in position, while the right-hand inset shows the correct method of fitting the rear section to the rear spring mountings.

NOTE.—All jig sections are marked FORWARD to enable easy and correct positioning.

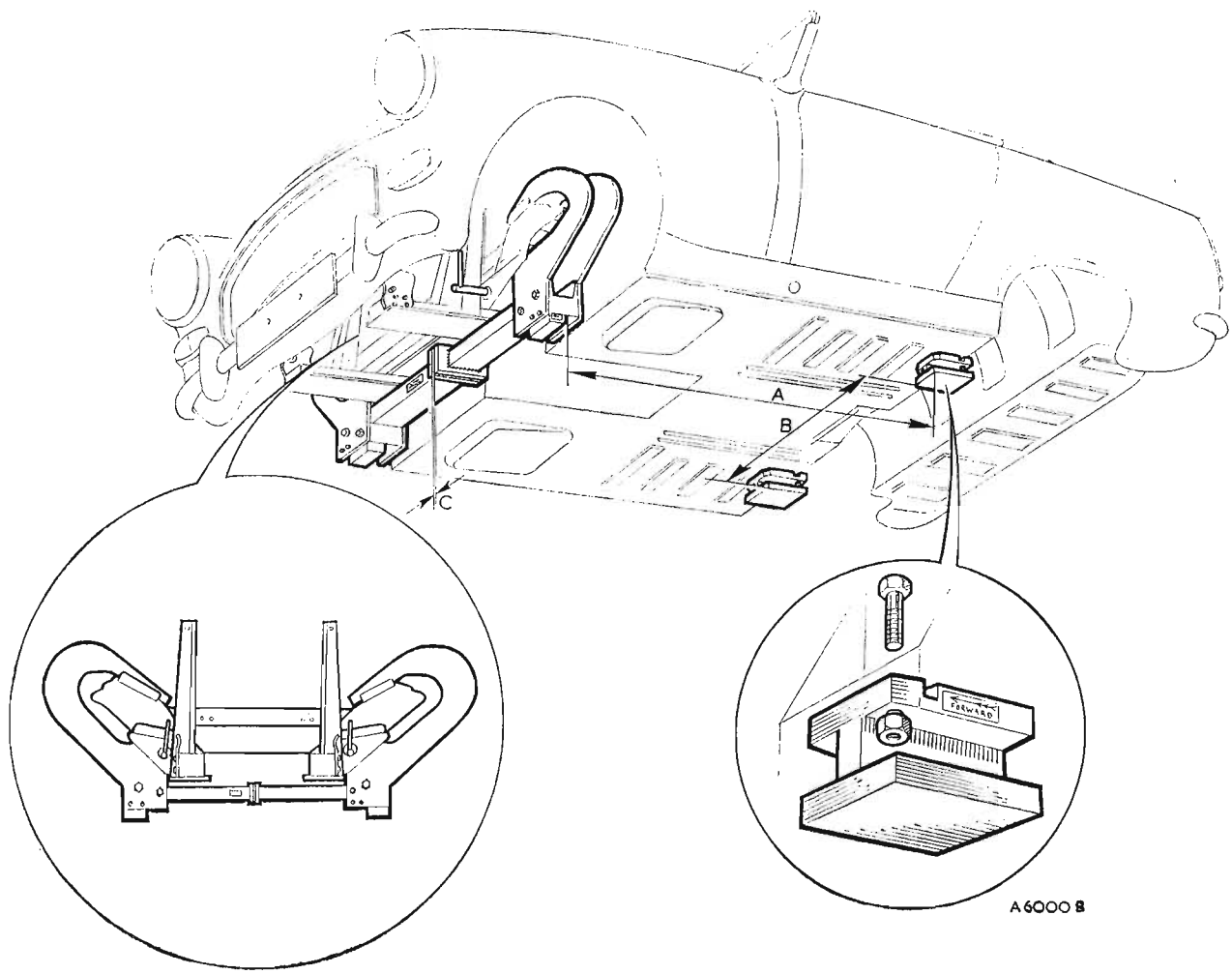


Fig. R.24

A. 63·250 in. (1606·55 mm.). B. 31·75 in. (808·45 mm.). C. ·250 ± ·0625 in. (6·34 ± 1·59 mm.).