SECTION R

THE BODY

Section R.1

REPAIR PROCEDURE

Body jack

The specially designed body jack, obtainable under Part No. 18G308B, is an 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.).

When using the jack care must be taken to use it in the correct positions to rectify the fault or misalignment. Reference should be made to pages R.17 and R.18 for details of the necessary alignment checks.

With the addition of a suitable oxy-acetylene outfit (Section R.3) any type of mono-construction repair can be effected. The initial outlay need only be small, and, considering the wide range of operations covered, there should be no hesitation in deciding that the kit must figure as part of the equipment of your repair shop.

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 the use of the body jack.

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.

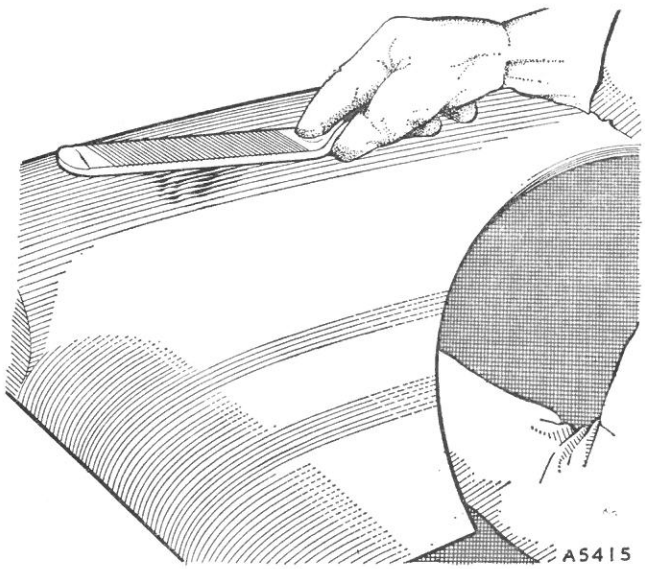


Fig. R.1

Removing a dent by tapping with a spoon; a dolly is held below the dent

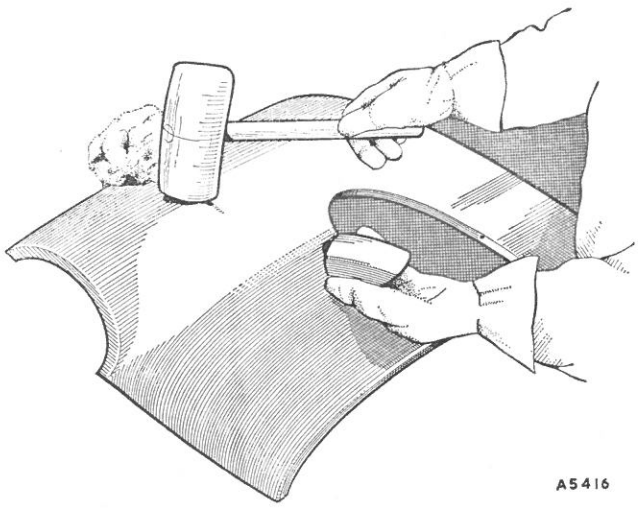


Fig. R.2

A dolly block and mallet

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.1).

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 $\frac{1}{2}$ in. (13 mm.) in diameter, 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 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. 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.

Alternative 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

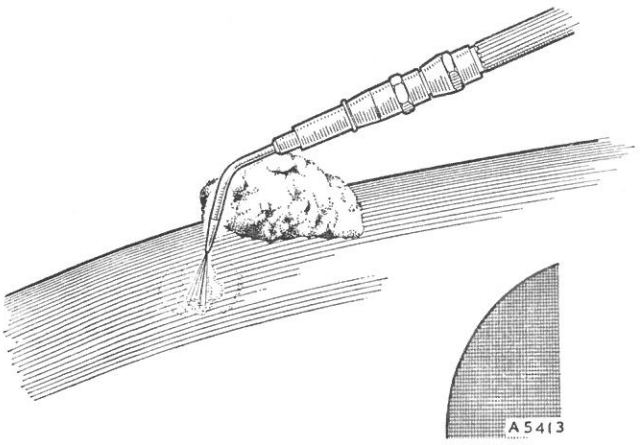


Fig. R.3
Heating the damaged area before tapping with a mallet

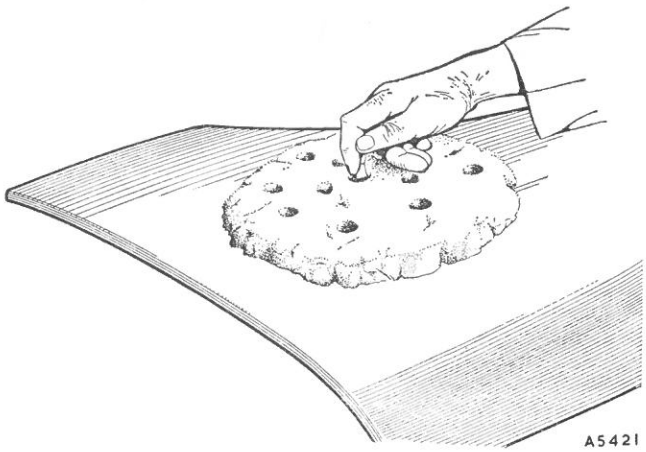


Fig. R.5
***Piercing** holes in the wet asbestos prior to heating*

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 plumber's 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.

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.5. 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 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.6).

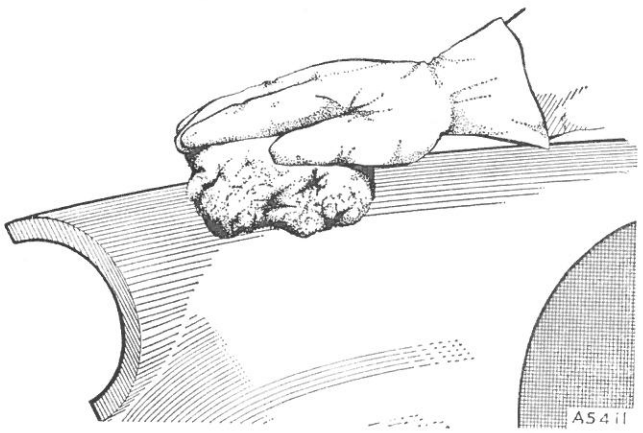


Fig. R.4
Cooling the damaged area with wet asbestos

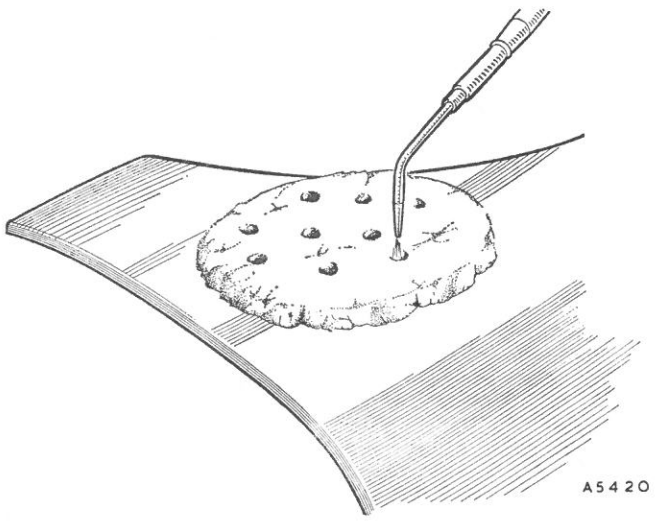


Fig. R.6
Heating a stretched panel through holes in the asbestos

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

Patching

It is frequently more economical to patch an extensively damaged panel than to renew the entire assembly. 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.7).

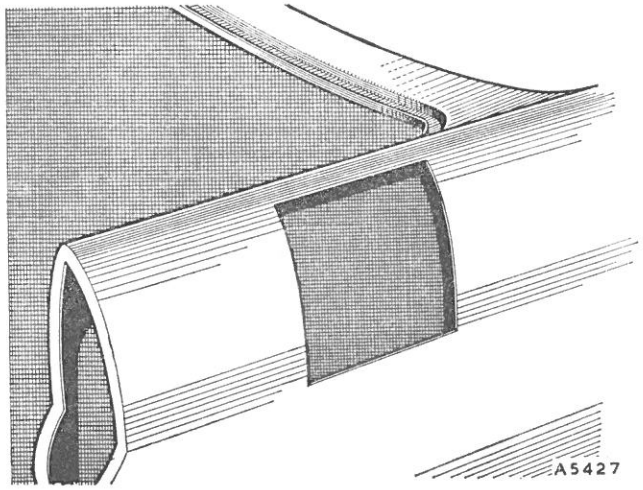


Fig. R.7

A damaged panel with piece removed for patching

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.

The patch is now fastened at intervals of 2 to 3 in. (15 to 76 mm.) to the panel by means of gas-weld tacks (Fig. R.8). 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.9). 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

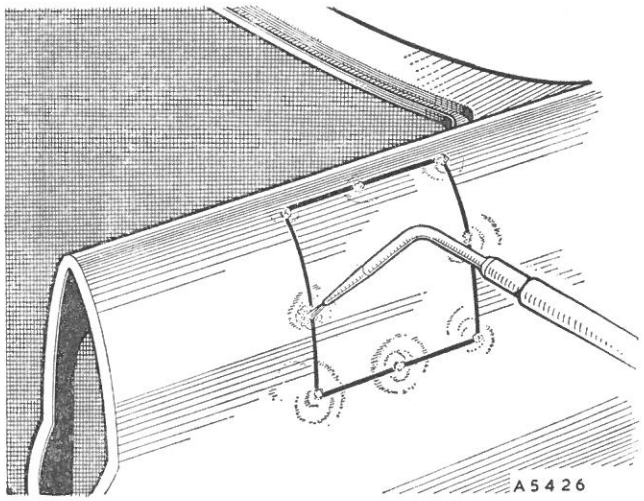


Fig. R.8

The formed patch held in position by gas-weld tacks

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 on pages R.8 and R.9.

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.

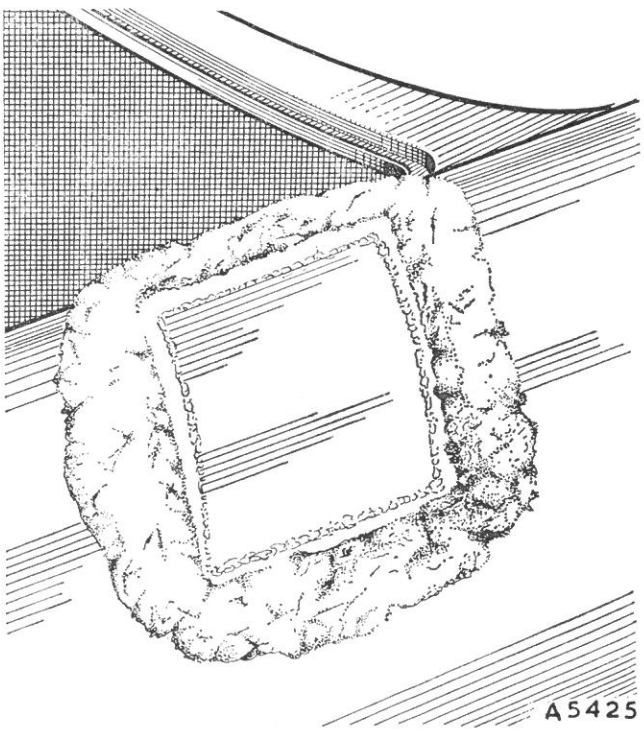


Fig. R.9

Surround the joint with wet asbestos to prevent buckling during welding

The patch is placed over the selected depression and is raised by hammering with the ball-peen 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.

Repair of beadings 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 or dolly block, as explained on page R.2, 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 BMC Service division.

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.2

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. (4.76 mm.) 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 located by the discolouration 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 re-weld 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 (see Section R.4).

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.

Section R.3

WELDING TECHNIQUE

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

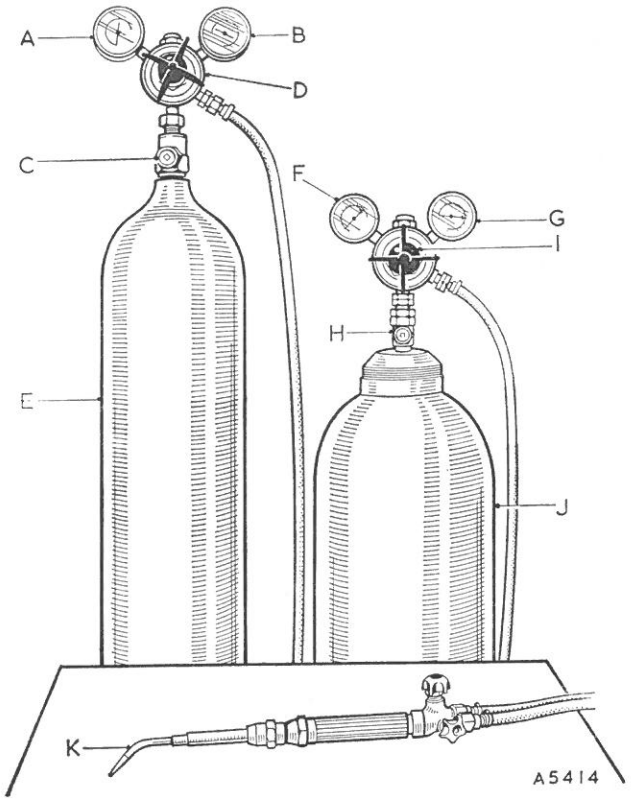


*Fig. R.*10

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.

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 or grease.
(3) Open the valve on the oxygen cylinder momentarily in order to dislodge dirt or obstruction in the cylinder valve, then close.
(4) Screw the oxygen regulator (painted BLACK) 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) 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 gastight.
(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 or 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) Fit the appropriate nozzle to the blowpipe. (See the table on page R.7.)
(10) Open the cylinder valves very slowly by means of the cylinder key. Do not open suddenly, or there

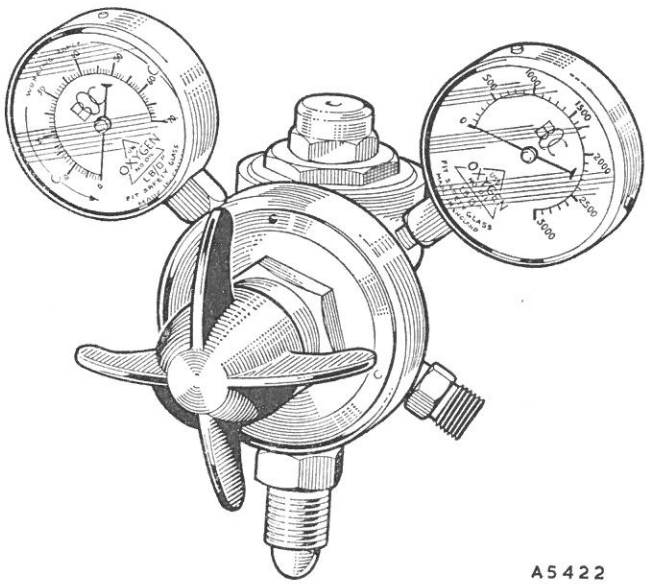


*Fig. R.*11

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

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. (approx.)*		*lb./sq. in.*	*kg./cm.²*	*cu. ft./hr.*	*m.³/hr.*
$\frac{1}{32}$	·8	1	2	·14	1	·028
$\frac{3}{64}$	1·2	2	2	·14	2	·056
$\frac{1}{16}$	1·6	3	2	·14	3	·084
$\frac{3}{32}$	2·4	5	2	·14	5	·140
$\frac{1}{8}$	3·2	7	2	·14	7	·196
$\frac{5}{32}$	4·0	10	3	·21	10	·283
$\frac{3}{16}$	4·8	13	3	·21	13	·367
$\frac{1}{4}$	6·4	18	3	·21	18	·504
$\frac{5}{16}$	8·0	25	4	·28	25	·700

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.)

(12) Open the acetylene control valve on the blowpipe, wait a few seconds until 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.1.

(13) Reduce or increase the acetylene supply by the blowpipe valve until the flame just ceases to smoke.

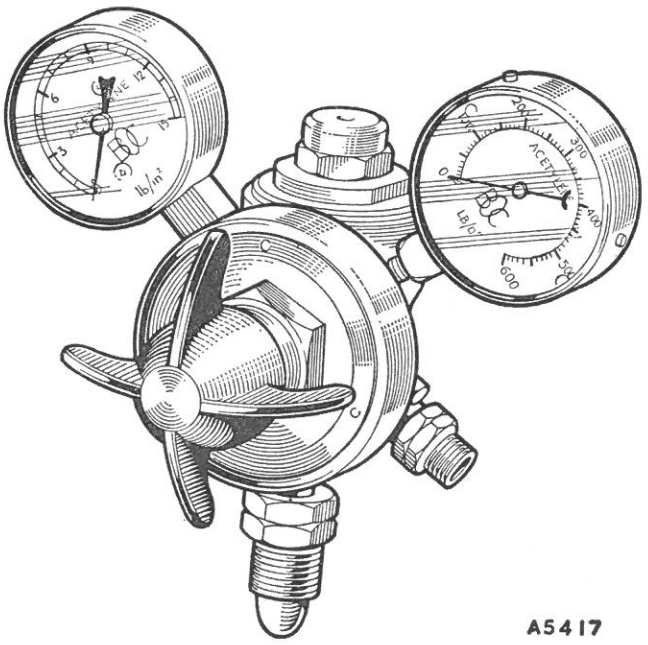


Fig. R.12

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

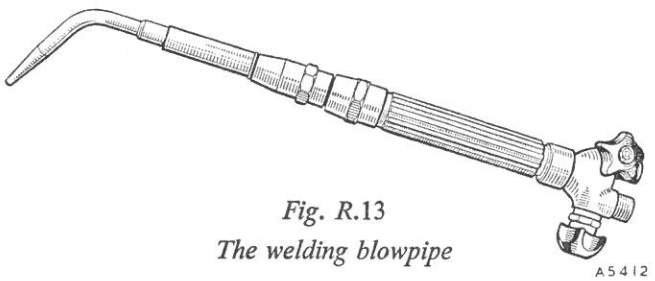


Fig. R.13

The welding blowpipe

(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 downhand butt-welds 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. (1·59 mm.) 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

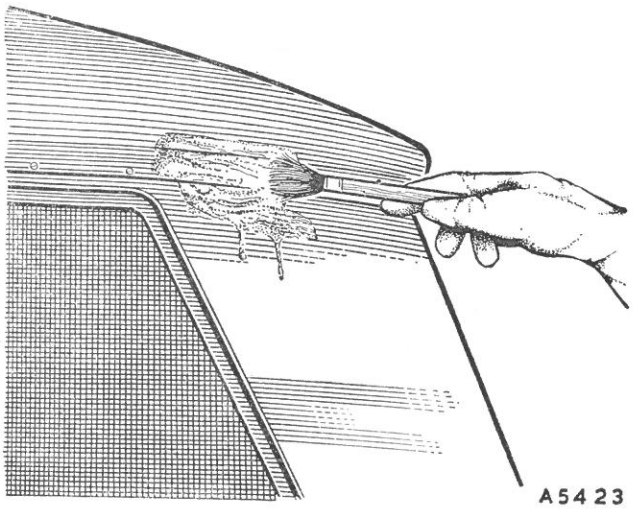


Fig. R.14
Painting the hollow area with flux

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.4

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.

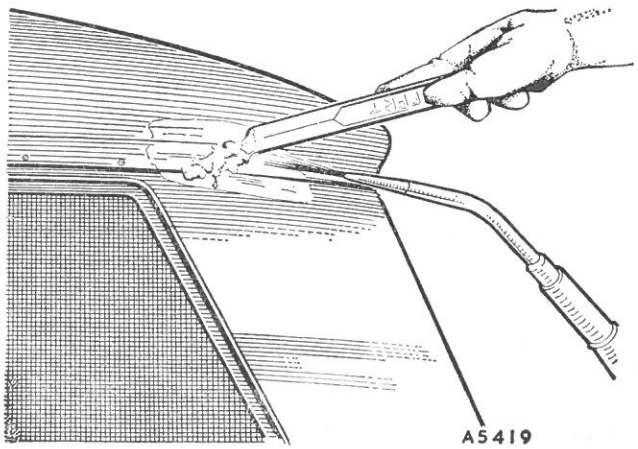


Fig. R.15
Applying the solder

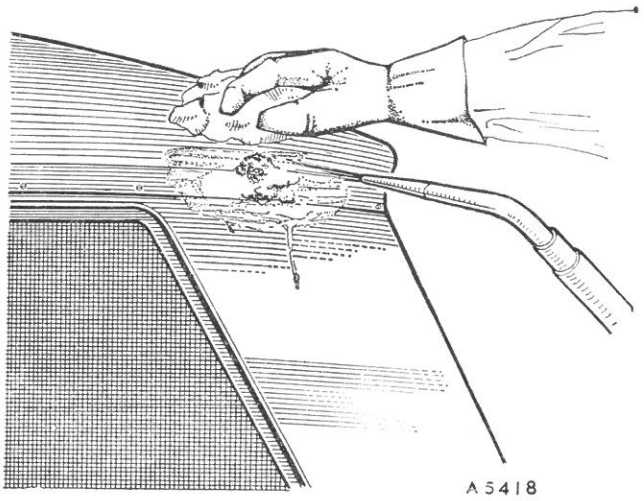


Fig. R.16
Tinning by heating the flux-painted area

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 steel 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.

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.

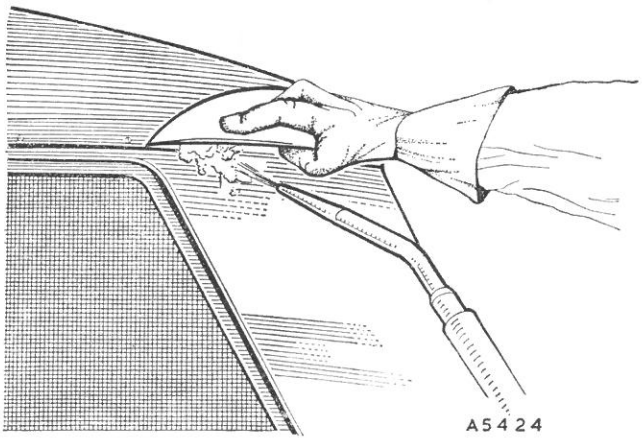


Fig. R.17
Spreading the solder

The surface of the metal is heated gently with a blow-lamp or gas-torch, and soldering flux applied with a brush (see Fig. R.14).

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.16). 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.15) and maintained by careful use of the torch in the plastic condition whilst it is moulded to the desired contour with a hardwood paddle coated with palm oil (Fig. R.17). 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.5

WINDSHIELD GLASS

Removing

Lift the windshield wiper arms clear of the glass.

Prise up the end of the locking filler and carefully pull it from the channel in the surround rubber.

Press the glass from inside the car, commencing at a corner, and ease the surround rubber from the metal edge of the body aperture.

Refitting

If the glass has been broken, remove any pieces which remain in the channel. Examine the rubber, and use new rubber should there be any signs of damage or deterioration.

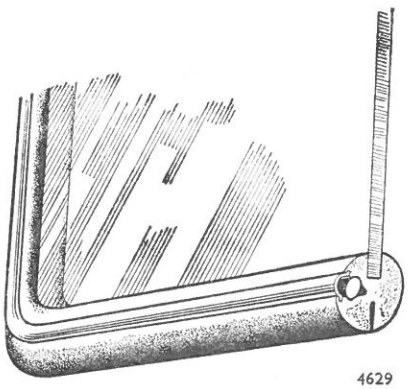


Fig. R.18

The section shows the outside finisher strip positioned in the seal and the seal pressed onto the glass

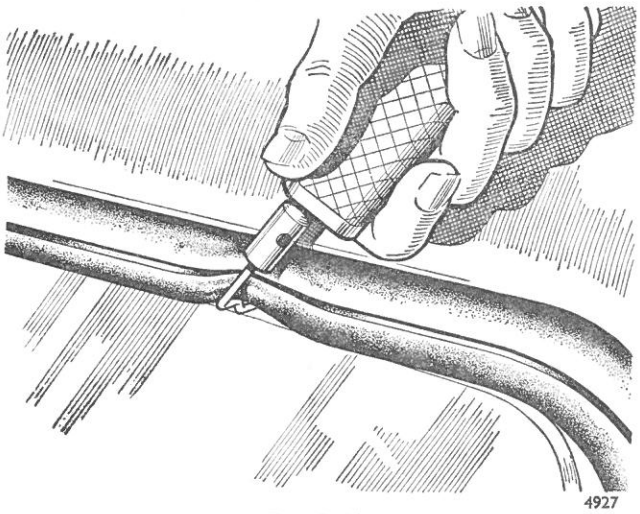


Fig. R.19

Use Service tool 18G468 to ease the channel lip over the windshield glass

Fit the surround rubber to the body aperture and lubricate the 'glass' channel with a soap and water solution. Place the windshield glass into the lower channel of the rubber surround and commence at the corner to lift the lip of the rubber over the glass, using Service tool 18G468. Use the short peg on the handle of the installation tool for this purpose.

Apply soap-and-water solution to the locking filler strip channel to assist in fitting the strip.

Using Service tool 18G468 with adaptor 18G468A, thread the end of the filler strip through the eye of the adaptor and under the roller. Lay the filler strip in position over the groove in the surround rubber. Insert the eye of the tool in the filler strip groove, hold the filler strip in position and commence to push the tool along the groove, rolling the strip into position. A slight side to side action will assist when rounding the corners.

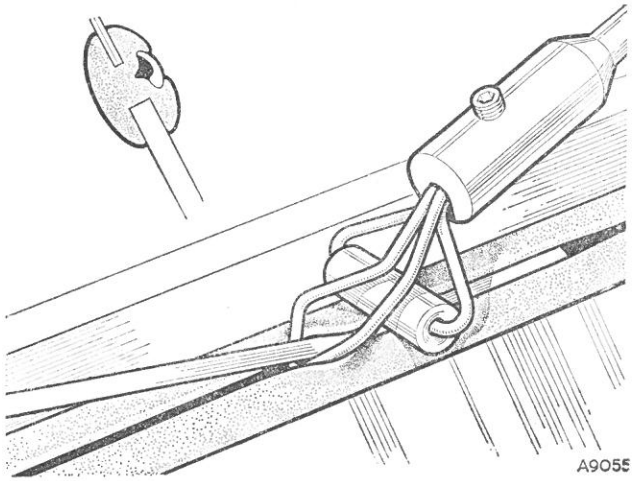


Fig. R.20

The use of the glazing tool and eye to thread the locking filler strip into the rubber channel

After completing the circuit, cut off any surplus strip to make a neat butt joint at the centre line of the windshield. Ensure that the filler strip is fitted with its thicker section facing towards the glass of the windshield (see inset, Fig. R.20).

NOTE.—In the event of a windshield breakage, minute particles of glass fall into the windshield demister ducts and tubes. When the blower motor is switched on these particles are discharged into the driver's or passenger's face. The demister ducts and tubing must be disconnected from the heater box and blown out before the new windshield glass is fitted.

Section R.6

BACK-LIGHT GLASS

To remove and refit the back-light glass follow the instructions given in Section R.5.

Section R.7

DOOR GLASSES

To remove the sliding door glasses withdraw the self-tapping screws securing the bottom channel to the top of the door panel. With the screws removed both the sliding glasses and the channel can be lifted away.

Section R.8

REAR QUARTER-LIGHT

Removing

Unscrew the two Phillips screws retaining the quarter-light catch to the body and swing the quarter-light open to expose the hinge. Ease back the rubber seal on the body, remove the Phillips screws securing the hinge to the body, and detach the window assembly. The quarter-light frame is secured to the hinge at top and bottom by Phillips screws. When these are removed the frame can be eased away from the glass.

To reassemble and refit the quarter-light reverse the removal procedure.

Section R.9

DOOR LOCKS

Removing

Withdraw the three screws securing the lock to the inner door panel and the retaining screw from the end of the locking handle spindle.

In order to remove the outer door handle release the inner operating handle by slackening the screw clamping the inner handle to the spindle. Both the outer handle and the escutcheon can then be withdrawn.

Refitting

When refitting make certain that the inner operating handle is fitted correctly to ensure lock operation from inside the car when the handle is pushed downwards Tighten up the inner handle clamping screw.

Striker plate

Adjustment of the striker plate position is usually only necessary when the striker itself has been replaced. Do not interfere with its setting otherwise. Repositioning is carried out by a process of trial and error, proved by checking the closing action of the door and its position when closed.

Section R.10

LUGGAGE COMPARTMENT LOCK

Removing

Unscrew the four hexagon set screws retaining the catch to the luggage compartment lid and detach the catch. Unscrew the large hexagon nut retaining the locking handle to the lid from the underside of the lid and detach the handle.

Replacement

Replacement is a reversal of the removing procedure.

Section R.11

BUMPERS

Removing

The front bumpers are retained by five nuts and spring washers to the front of the body. Remove the five nuts from the underside and detach the bumper from the body.

To remove the rear bumper, remove the number-plate lamps (see Section N.14) and from underneath remove the six nuts and washers retaining the bumper to the body.

Replacement

Replacement is a reversal of the removing procedure.

Section R.12

BODYWORK AND UPHOLSTERY

Coachwork, wings, and windshield

Regular attention and care to the body finish are 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 bodywork is recommended. Large deposits of mud must be softened with water before using a 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. When 'touching-in' light scratches and abrasions with paint ensure that all traces of wax polish are removed from the affected area beforehand.

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 wax-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.

Should the windshield become contaminated with silicone-based polish, due to the indiscriminate use of a polish-impregnated duster or traces of polish being washed down from the roof of the car, remove the contamination by the use of a mild domestic abrasive or by washing with a strong solution of detergent and hot water. If the latter method is used ensure that no solution is allowed to get onto the paintwork.

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 bright. Never use an abrasive.

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

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

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

Interior

Clean the carpets in the car, preferably before washing the outside, by using a stiff brush or a vacuum cleaner. The leather or leathercloth cushions and door trim may be cleaned periodically by wiping over with a damp cloth. Dust and dirt, if allowed to accumulate too long, will eventually work into the pores of the leather, giving it a soiled appearance that is not easily remedied. A little neutral soap may be used, but no detergents, caustic soaps, fuel, or spirits of any kind must be used.

A razor-blade should be used to remove the transfers from the window glass.

Section R.13

HEATER

Operation

The heater is controlled by a rheostat switch located on the right-hand side of the control panel. The first few degrees of movement in a clockwise direction will bring the air-circulating fan into operation at its maximum speed; further movement in this direction will gradually reduce the speed of the fan to regulate the heating of the car interior.

A tap on the rear of the engine is intended to be closed in hot weather or when heating is not required. The fan can then be used to circulate air in the interior of the car, although it is primarily intended for the circulation of warmed air.

A hand-operated shutter is fitted on the heater unit box to deflect the hot air to the windshield for demisting under severe conditions.

When the shutter on the heater box is pushed fully downwards, the maximum amount of hot air will be deflected onto the windshield, when the shutter is pulled upwards fully, the maximum flow of hot air will be available for interior heating.

Removing

Disconnect the battery. Drain the water from the cooling system. Disconnect the snap connector on the lead from the heater motor located beneath the parcel shelf and disconnect the lead from the Lucar connector at the back of the heater switch. Slacken the clips securing the demister tubes and the inlet and outlet hoses to the matrix. Take the necessary precautions to prevent any coolant remaining in the heater matrix and the hoses from dripping or splashing the floor covering and upholstery before pulling the hoses from their connectors on the heater.

The inlet and outlet water hoses can be withdrawn from the car when the clips are slackened and removed.

To remove the heater box, remove the glovebox lids and frames, remove the rear trimming to the gloveboxes (Section N.9) and lift up the trimming on the bottom of the glovebox at its inner edge to expose the heater box fixing screws. Slacken and remove the four hexagon screws, one at each rear corner, one at each front edge, and detach the heater box unit.

Refitting

Refit the heater and connect up the inlet and outlet water hoses, and the demister tubes.

Reconnect the leads to the heater motor. Make certain that both the drain taps are turned off, open up the heater tap on the rear of the engine, and refill the cooling system. Reconnect the battery and run the engine at a fast tick-over and switch on the heater. If the water return hose does not warm up in a few minutes there may be an air lock in the system. To clear the air lock switch off the engine and disconnect the return hose at its connection to the radiator bottom hose. Extend the return hose with a length of hose long enough to enable the coolant to be returned via the radiator filler aperture, and plug the return connection on the radiator bottom hose. Start the engine and note the water flow into the radiator aperture. When the flow becomes smooth and bubble-free switch off the engine and remake the connection to the radiator bottom hose and tighten up as quickly as possible.

Section R.14

HEATER MOTOR

Removing

Elf

Open the glovebox lids, detach the press fastener retaining the glovebox linings to the instrument panel brackets, and fold back the lining. The two forward fixing screws for the heater box mounting are then accessible from behind the instrument panel.

Hornet

From inside the car, detach the instrument surround by removing the four Phillips screws visible on the front face of the surround and detaching the instrument panel switch wires after the surround has been lifted away from the panel. The two forward fixing screws for the heater box mounting are then accessible from behind the instrument panel.

Elf and Hornet

Remove the mounting screws and unscrew the four self-tapping screws (two each side) retaining the front cover plate to the heater unit.

Detach the two shutter springs from the side of the heater shutter. Disconnect the heater motor wires, one at the snap connector, and the other at the Lucar connector on the rear of the heater switch. Withdraw the cover-plate complete with heater motor and fan.

Remove the Allen screw retaining the fan to the motor spindle and detach the fan. Unscrew the motor retaining nut and detach the motor from the cover-plate.

Refitting

Refitting is a reversal of the removing procedure.

Section R.15

INSTRUMENT PANEL

Removal

Hornet

Unscrew and remove the four Phillips screws visible on the front face of the instrument panel shroud, withdraw the shroud, and disconnect the wires to the panel lights switch. Disconnect the pipe union from the rear of the oil gauge and disconnect the wires from the back of the temperature gauge.

Remove the four countersunk Phillips screws on the front face of the instrument panel and withdraw the panel complete with oil gauge and temperature gauge.

Release the two knurled nuts retaining each gauge and withdraw the gauges.

Refitting is a reversal of the removal procedure. Ensure when the shroud is being refitted that the panel lights switch is positioned to ensure that the switch terminals do not come into contact with the oil gauge pipe, thus causing a short-circuit in the electrical system.

Elf

To remove, disconnect the battery, open the glovebox lids, and from inside each glovebox remove the three nuts, shakeproof washers, and plain washers retaining the glovebox lid and frame to its brackets. Two nuts are located at the top and bottom corners of the inner end, and one at the centre of the outer edge. Withdraw the glovebox lid and frame assemblies.

Remove the screw retaining the speedometer housing to either side of the instrument panel brackets.

Unscrew and remove the two screws retaining the instrument panel to each support bracket. Pull the panel rearwards and disconnect the wires and bulb holders from the rear of the instruments and panel light switch.

Disconnect the oil gauge pipe and withdraw the panel complete with gauges.

Reassembly is a reversal of the removing procedure.

Section R.16

SPEEDOMETER REMOVAL

Removing

Hornet

Remove the instrument panel (Section R.15) and unscrew the two screws retaining the instrument panel brackets and speedometer to the speedometer cowling, taking care to retain the distance pieces between the brackets and the cowling. From under the bonnet unscrew the knurled nut retaining the speedometer cable to the instrument and detach the cable. Pull out the four bulb holders from the speedometer and disconnect the cable to the fuel gauge.

Withdraw the speedometer complete with fuel gauge into the engine compartment.

Elf

Remove the fascia and instrument panel (Section R.15). Remove the carburetter air cleaner. Push the speedometer forward until the knurled retaining nut for the speedometer drive cable is accessible from inside the engine compartment. Release the nut and withdraw the speedometer from inside the car.

To refit, reverse the removal procedure.

Section R.17

OIL AND TEMPERATURE GAUGES

Removing

Hornet

To remove the oil or temperature gauge remove the instrument surround (Section R.14).

Elf

To remove the oil or temperature gauge pull back the glovebox trimming at its inner face by means of the press-button fastener at the top corner.

Each gauge is held in position by two milled nuts and a retaining bracket. From behind the instrument panel unscrew the milled nuts, remove the earth wire from under one nut, and detach the retaining bracket from the two studs. Pull out the bulb holder from the back of the instrument. In the case of the oil gauge, the pipe union must be released and the wires must be disconnected from the rear of the temperature gauge.

Withdraw the gauge from the instrument panel.

Replacing

Replacement is a reversal of the removal procedure. The earth wire must be refitted under one of the milled nuts of each gauge.

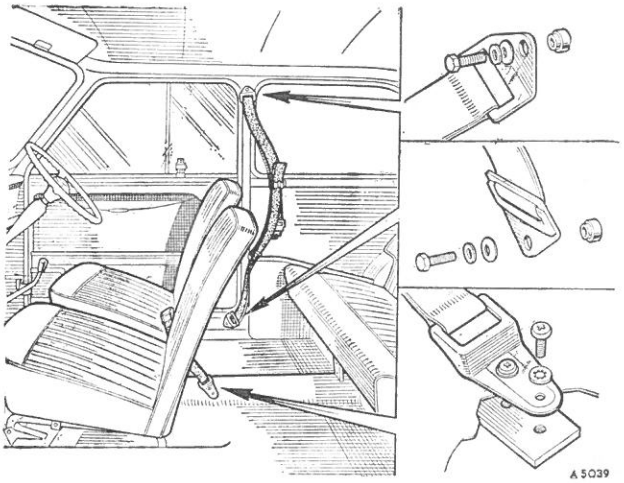


Fig. R.21

Showing the assembly of the seat belt and fittings

Section R.18

ROOF LINER

Removing

Mark the position of the rear edge of the front liner on the side rail to act as a datum for refitting. Remove the liner by gripping the outer edges of the liner and pulling rearwards, at the same time exerting a gentle inwards pressure.

Mark the position of the forward edge of the rear liner, and remove by pulling it forwards, using a gentle inwards pressure at the same time.

When removing the roof liner it will first be necessary to remove the roof lamp (see Section N.15).

Refitting

To refit, reverse the above procedure, fitting the rear liner first and ensuring that it is pushed fully home to its original position.

When refitting the roof liner thread the roof lamp wires through the front liner and check that the three retaining hooks on the forward edge of the rear liner engage in the three sockets formed in the rear rail of the front liner before pushing the liner fully home.

Refit the roof lamp.

Section R.19

SEAT BELT FITTING

Attachment points for seat belts are incorporated in the body design and are located on the centre door pillars, the rear of the door sills, and the sides of the central floor tunnel, and are sealed with rubber plugs.

Remove the plug from the tapped attachment point at the top of the door pillar, and assemble the screw, plain washer, anti-rattle washer, and distance piece to the upper bracket of the long belt as shown in the top inset, Fig. R.21. Fit the assembly to the attachment point and tighten the screw fully.

Assemble the screw, plain washer, anti-rattle washer, and distance piece to the lower bracket, remove the rubber plug from the sill attachment point, fit the bracket assembly, and tighten the screw fully.

In both the above cases the angle of the belt bracket must face away from the body, and the large diameter of the distance piece must face against the body.

Remove the two plugs from the side of the floor tunnel farthest from the seat for which the belts are being fitted. Cut two holes in the carpet and felt, or rubber, to correspond with the holes in the tunnel.

Fit the tapping plate from the under side of the tunnel, place the bracket of the short belt on top of the carpet, insert the two screws complete with locking washers through the belt bracket into the tapping plate, and tighten fully.

The short belt must cross the tunnel to reach the seat for which it was intended to be used.

NOTE.—The wiring harness runs along the under side of the floor tunnel on the right-hand side adjacent to the tapping plate, and care must be taken to avoid any damage to the wiring.

Mark a vertical line on the waist-rail at a distance of 6¼ in. (158·75 mm.) from the front face of the door pillar, and, using the stowage clip as a template, mark off and drill two holes ·120 in. (3·048 mm.) diameter on this line. Screw the clip to the waist-rail with the two self-tapping screws provided, ensuring that the open end of the clip faces forward (see Fig. R.21).

Section R.20

BODY ALIGNMENT

To check the body alignment of a car which has been damaged when the correct jig is not available a system of diagonal and measurement checks from points projected from the underframe onto a level floor is used (see pages R.17 and R.18).

To ensure that the alignment check is carried out accurately the vehicle must be raised so that it is parallel with the floor both from side to side and from front to

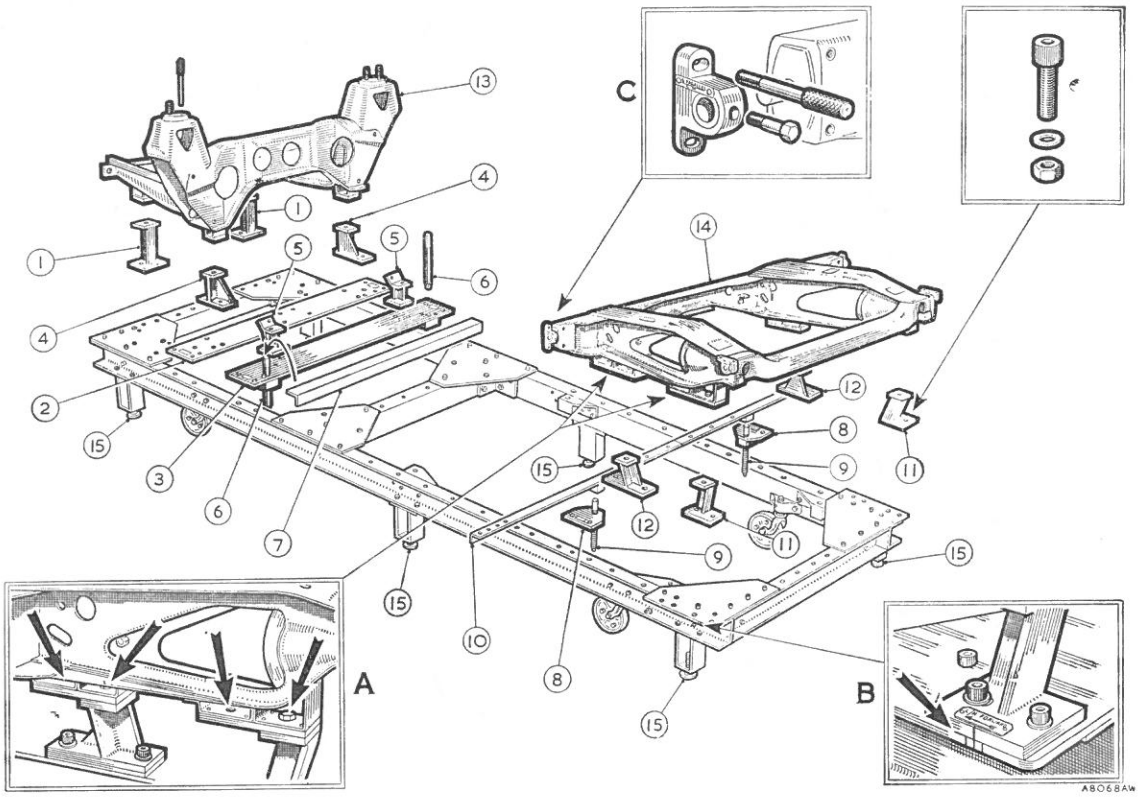


Fig. R.22
The assembly of the jig components

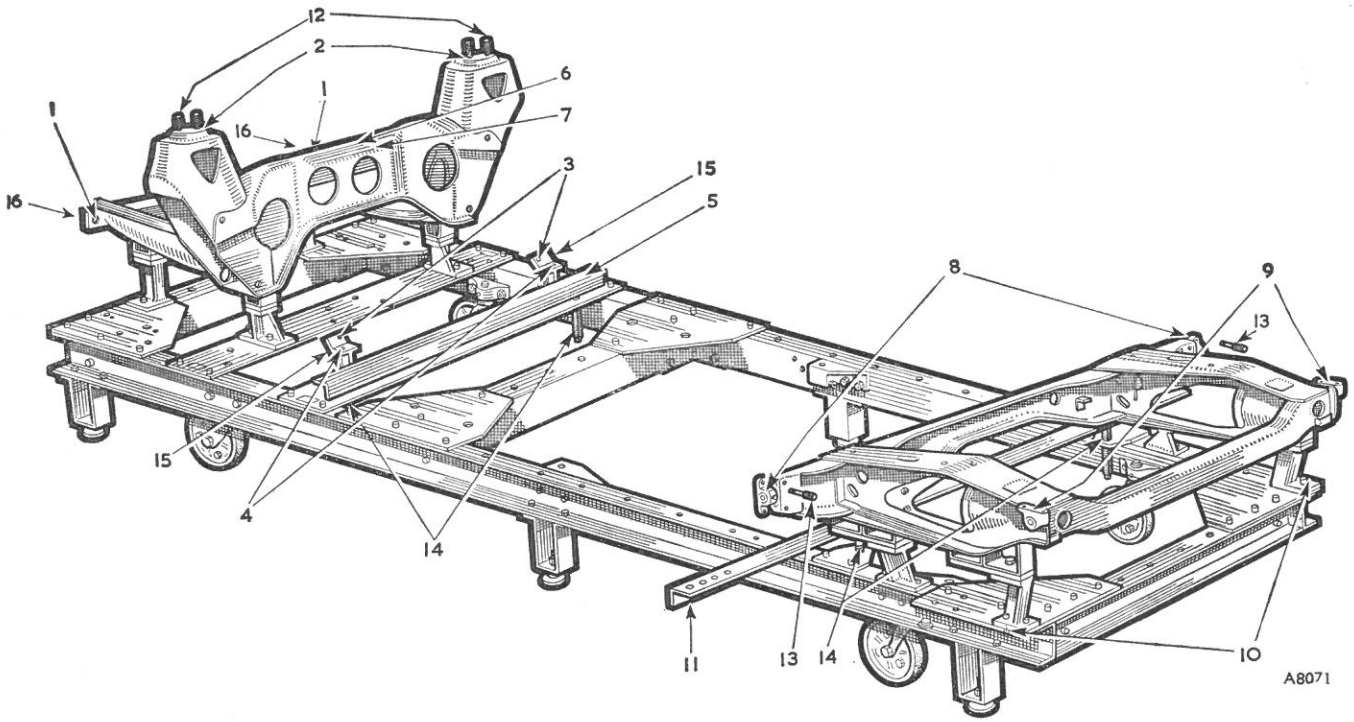


Fig. R.23
The jig checking points

rear. Use the comparative measurements given on page R.18 to do this. Lift the vehicle to a convenient working height and adjust the front or rear of the vehicle until the points given on page R.18 for the front and rear on both sides of the car are in the correct vertical position relative to each other; for example, if the rear points (O) are 36 in. (91·4 cm.) from the floor, as the rear points are $1\frac{37}{64}$ in. (36·12 mm.) higher in relation to the front points (A), the front points must be set at a height of $34\frac{37}{64}$ in. (87·828 cm.) above the floor.

At the same time, it will be helpful to check the **relative** heights of all the intermediate points given on page R.18 so that any distortion of the car in the vertical plane will be ascertained.

Chalk over the area of the floor directly below the points shown on page R.17. Using a plumb-line, project the points from the car onto the floor, marking the positions with a pencilled cross. The centre between each pair of points can be established by means of a large pair of compasses and the central points marked on the floor. In addition, diagonals can be determined between any two pair of points and the points of intersection marked on the floor. At this stage a length of thin cord covered with chalk can be held by two operators in such a position that it passes through as many of the central points and intersections marked as possible. While the cord is held taut a third operator raises the centre of it and then allows it to spring back smartly to the floor. If the resulting white line passes through all the points the body alignment is satisfactory. Any points through which the white line does not pass will be in a position where the underframe is out of alignment.

Considerable deviations in the transverse and longitudinal measurements given on page R.18 confirm body misalignment. It should be understood that allowance must be made for normal manufacturing tolerances and that a reasonable departure from nominal dimensions can be permitted without detriment to road performance.

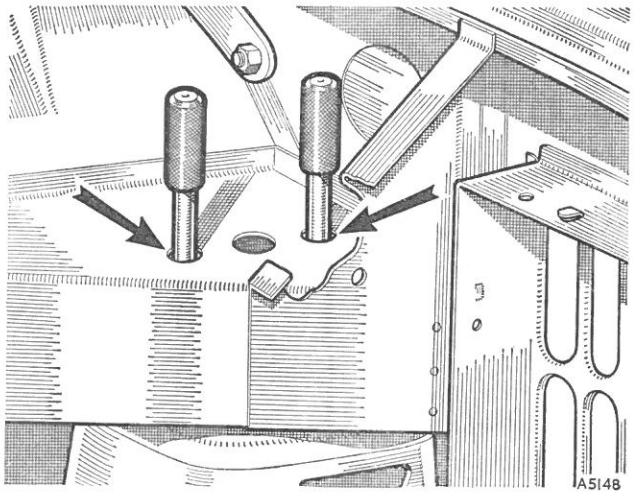


Fig. R.24

Showing an equal clearance around the checking pins with the body correctly aligned

Section R.21

CHECKING BODY ALIGNMENT

The equipment required for checking the body alignment consists of the basic body checking jig Service tool 18G 560, and adaptor set 18G 560 E used in conjunction with basic adaptor set 18G 560 A.

This equipment is intended to be used solely as a checking fixture, and under no circumstances must any welding or repair work be carried out on the body while it is still in position on the jig.

Assembling the jig

Where item numbers are quoted in the following, refer to Fig. R.22.

Remove the two inner socket screws from each corner plate on the front cross-member of the basic jig. Attach the two tall support pedestals (1) from adaptor set 18G 560 E to the cross-member at these points. Each pedestal is clearly labelled to show its correct location directionally. Fit the plate marked 'Forward 1' (2) from the basic adaptor set 18G 560 A and the plate marked 'Forward 2' (3) from the adaptor set 18G 560 E to the basic jig at the points indicated on the inside of the left-hand side-member.

Attach the shorter pair of support pedestals (4) from adaptor set 18G 560 E to the rear of the front checking frame (13). Mount the frame with the rear pedestals on plate 1 (2) and attach the frame to the front pedestals and the rear pedestals to the plate.

Fit the two checking adaptors (5) and the two jacking screws (6) from 18G 560 E to plate 2. Place the short jacking bar (7) from adaptor set 18G 560 in position on the jacking screws.

Attach the two jacking screw brackets (8) from 18G 560 E to the side-member of the basic jig at the position marked 'OX' on the top of the left-hand side-member and at the corresponding position on the right-hand side-member.

Screw in the two longer jacking screws (9) from adaptor set 18G 560 A. Assemble the long jacking bar (10) from 18G 560 A and place in position on the screws.

Fit the two support pedestals (11) from 18G 560 E to the rear corner of the jig corner plates.

Attach the other pair of pedestals (12) from 18G 560 E to the front of the rear checking frame (14) and mount the checking frame on the rear pedestals and the side-members of the basic jig. Do not tighten completely the pedestal to jig fixing bolts.

NOTE.—The rear checking frame has two alternative pairs of holes each side for attachment to the pedestals. Use the rear pair (see inset [A]).

When the assembly of the jig and adaptor sets is complete, adjust the basic jig by means of its six adjustable feet (15) (one at each corner, one on each side) until the weight is taken from the castors and the jig is level. Levelling indicators are provided, one on each side-member and one on the front cross-member.

If a fixed-position hoist is to be used to lift the body

onto the jig, the jig must be levelled up in a central position under the hoist with the body already raised.

Checking alignment

All item numbers quoted in the following description refer to Fig. R.23.

Remove the four pins with knurled heads (12) from the top checking faces (2) of the front checking frame.

Move the rear checking frame to its most rearward position by means of the slotted holes in the base of the pedestal supports.

Lower the body squarely over the checking frames until it rests on the jacking bars.

At no time must the weight of the body be taken by the checking frames.

Lower the jacking bars equally, keeping the body square with the jig, until the body is lightly in contact with the top faces (2) of the front checking frame.

Insert the four pins (12) through the holes in the body and into the holes in the top faces of the front checking frame. Check the relation of the holes in the body to the plain shank of the checking pins. The ideal position is when each of the holes in the body is concentric with the shank of its checking pin (see Fig. R.24). Adjust the body on the jig until this position, or the nearest possible approach to it, has been attained.

Line up the top holes in the front checking brackets (8) of the rear checking frame with the corresponding holes in the body. Insert one of the threaded checking pins (13) in each side to check this alignment.

Move the rear checking frame forward until a parallel clearance of $\frac{1}{8}$ in. (3·18 mm.) is obtained between the forward faces of the front checking brackets (8) and the body (a drill shank is a convenient gauge to use when checking these clearances).

Tighten down the pedestal fixing bolts, and check the relative positions of the lines scribed on the outer edge of each rear pedestal and the lines scribed on either outer edge of the jig rear corner plates (10). The ideal position is when the lines on the pedestals coincide with the central lines on the corner plates (see inset [B], Fig. R.22). The lines scribed either side of each central line show the maximum permissible limits of adjustment, and the correct clearance between the checking bracket and the body must be obtained with the adjustment set within these limits.

Should the body be damaged in such a way that it is impossible to lower the body on the checking jig with all of the checking brackets on the rear checking frame in position, it is possible to detach either bracket by removing the hexagon-headed dowel bolt passing through the bracket, which can then be pulled off its mounting point.

After the correct location of the body on the jig has been established at the top checking faces on the front frame (2), and at the top holes of the front checking brackets (8) on the rear frame, the remaining alignment points and clearances can be checked.

The two checking holes (1) on the front member of the front checking frame, the four holes on the checking adaptors (3 and 4), and the eight holes in the front and rear checking brackets (8 and 9) on the rear checking frame should all line up by sight with their corresponding holes in the body.

A parallel clearance of $\frac{1}{4}$ in. (6·35 mm.) must exist between the checking faces (16) on the front member of the front checking frame and the body and between both faces of each checking adaptor (15) and the under side of the body floor.

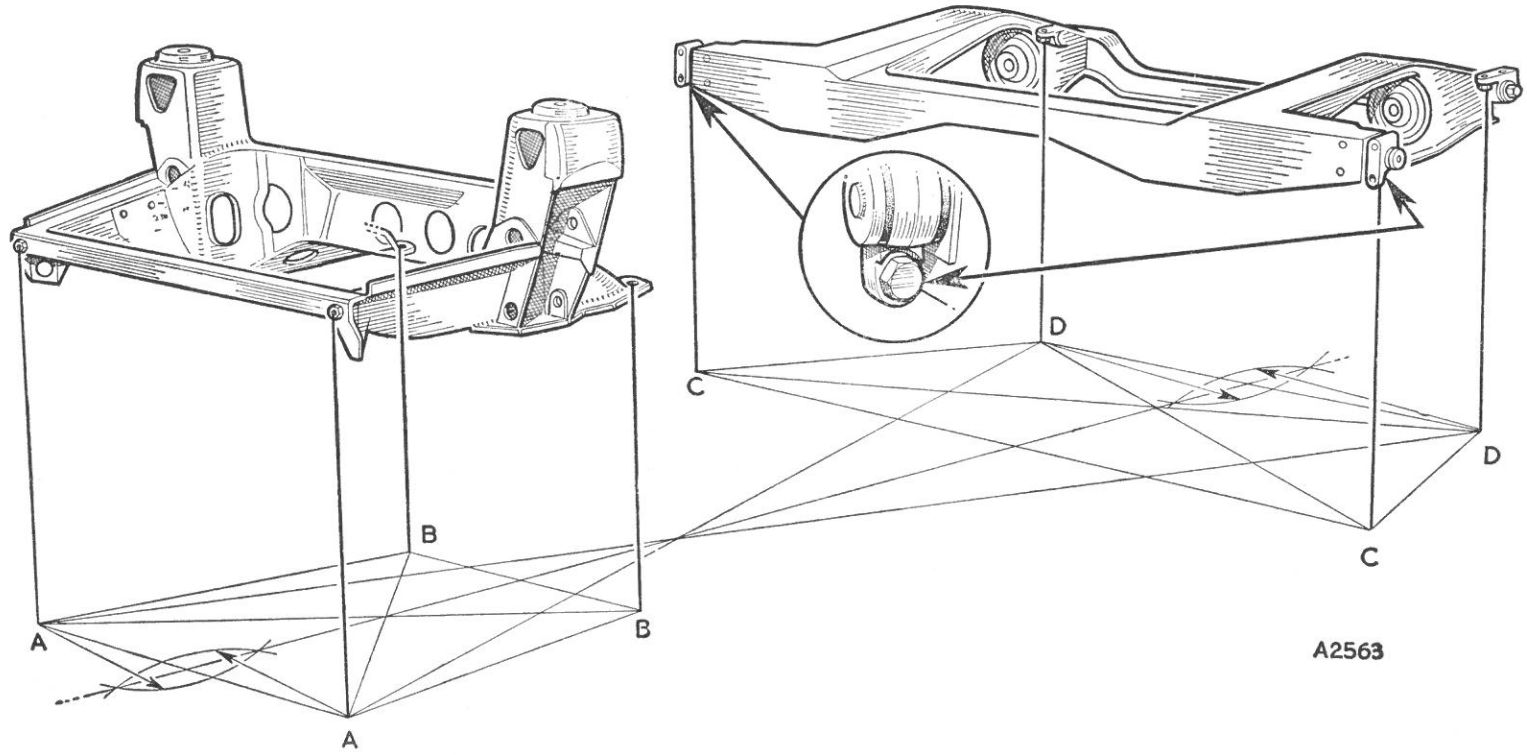
Examine the clearance between the body and the front checking frame at all points, including around the sides of the frame towers. If there is a foul at any point, the body must be dressed back until a clearance is obtained.

The face of the cross-member at the rear of the front frame must have a clearance to the body on its top vertical face (6) of $\frac{1}{8}$ in. (3·18 mm.) and $\frac{1}{16}$ in. (1·599 mm.) clearance at the inclined face (7). Should these clearances not be present, the body must be dressed back until the requisite clearance is obtained.

A parallel clearance of $\frac{1}{8}$ in. (3·18 mm.) must exist between the body and the checking faces of the four checking brackets (8 and 9) on the rear checking frame.

(For illustrated alignment checks see pages R.17 and R.18)

HORIZONTAL ALIGNMENT CHECK



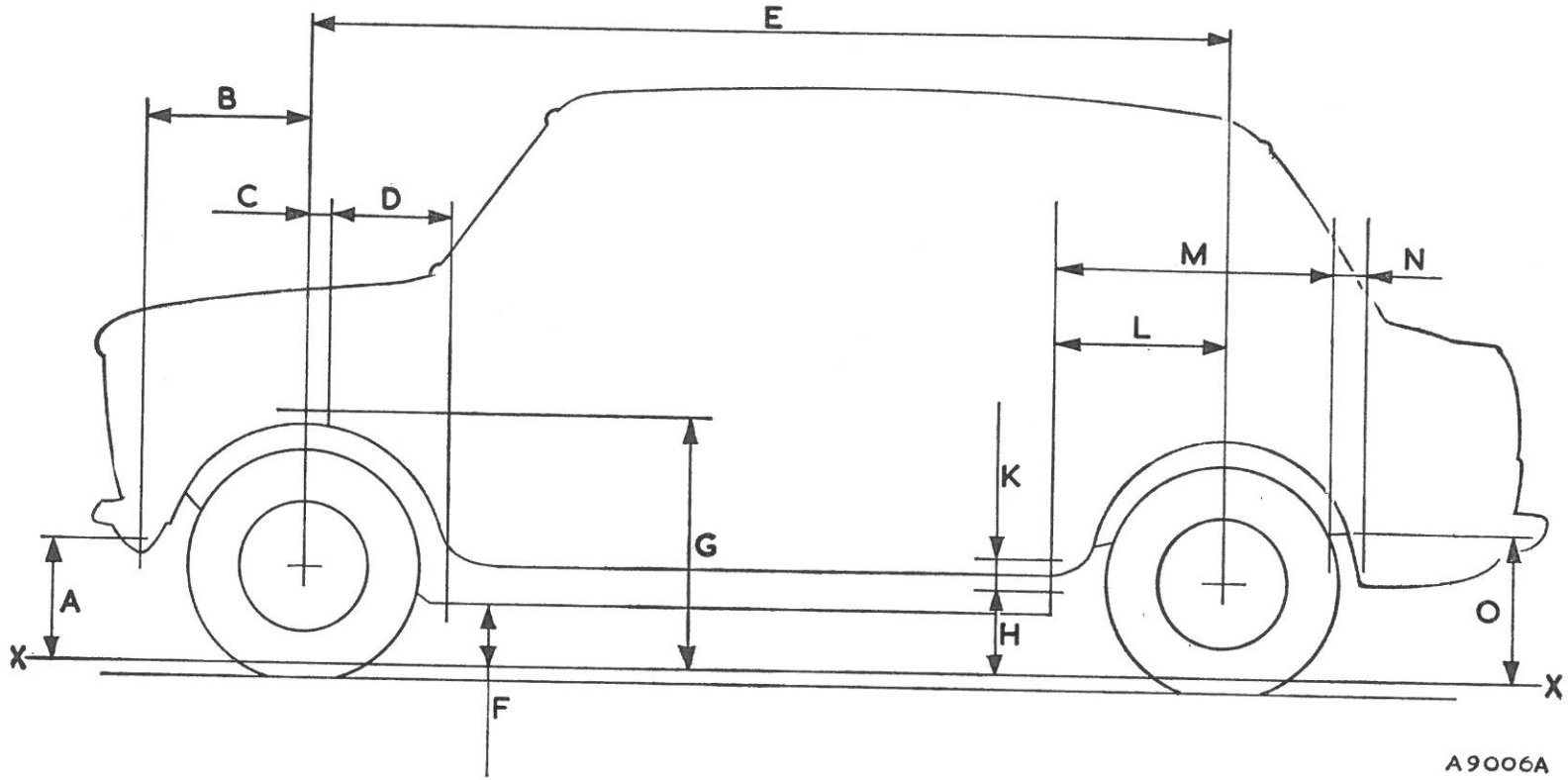
TRANSVERSE DIMENSIONS

AA	BB	CC	DD
Width between centres of the front sub-frame front mounting set screws 26 in. (660·4 mm.)	Width between centres of the front sub-frame rear mounting set screws 16¼ in. (412·75 mm.)	Width between centres of the rear sub-frame front mounting block lower set screws 50½ in. (1282·7 mm.)	Width between centres of the rear sub-frame rear mounting block set screws 38½ in. (977·9 mm.)

A preliminary check of the alignment can best be carried out by the system of diagonals and measurement checks from points projected onto a level floor by means of a plumb-bob.

A centre-line can then be established by means of a large pair of compasses and any deviation from correct alignment will be evident by failure of the diagonals to intersect on the centre-line or by considerable deviations in the measurements.

VERTICAL ALIGNMENT CHECK



Code Letter	*Dimension*	*Location*
A	10 13/16 in. (274·64 mm.)	Front sub-frame mounting (front)
B	16 11/16 in. (423·86 mm.)	Front sub-frame mounting (front) to wheel centre
C	1 25/32 in. (45·24 mm.)	Wheel centre to tower mounting
D	10 7/32 in. (259·56 mm.)	Front sub-frame mounting (tower) to front sub-frame mounting (extreme rear)
E	80 5/32 in. (2036·37 mm.)	Wheelbase
F	5 27/32 in. (148·43 mm.)	Body sill to datum line
G	20 37/64 in. (523·08 mm.)	Tower mounting (sub-frame) to datum line

Code Letter	*Dimension*	*Location*
H	8 3/4 in. (212·72 mm.)	Lower rear sub-frame mounting (front) to datum line
K	2 1/4 in. (57·15 mm.)	Mounting hole centres—rear sub-frame mounting (front)
L	14 29/64 in. (367·11 mm.)	Rear sub-frame mounting (front)—body face to wheel centre
M	23 37/64 in. (599·28 mm.)	Rear sub-frame mounting (front)—body face to rear sub-frame mounting (rear) forward fixing hole
N	2 1/4 in. (57·15 mm.)	Rear sub-frame mounting (rear) fixing hole centres
O	12 15/64 in. (310·75 mm.)	Rear sub-frame mounting (rear)—body face to datum line

KEY TO THE SUB-FRAME ASSEMBLIES

No.	*Description*
1.	Sub-frame assembly—front.
2.	Bolt—sub-frame to body.
3.	Washer for bolt.
4.	Washer for nut.
5.	Nut for bolt.
6.	Packing—sub-frame to body.
7.	Screw—sub-frame to body.
8.	Washer for screw.
9.	Screw—tower to bulkhead.
10.	Washer for screw.
11.	Pad—pressure—towers to bulkhead.
12.	Sub-frame—rear.
13.	Bracket—outer radius arm.
14.	Screw—bracket to frame.
15.	Washer for screw.
16.	Pin—front support.
17.	Nut for support pin.
18.	Washer for nut.
19.	Nut—rear support pin.
20.	Washer for nut.
21.	Mounting—support pin.
22.	Bush for support pin.
23.	Screw for support pin.
24.	Screw for support pin.
25.	Washer for screw.

Section R.22

PAINT REFINISHING INSTRUCTIONS

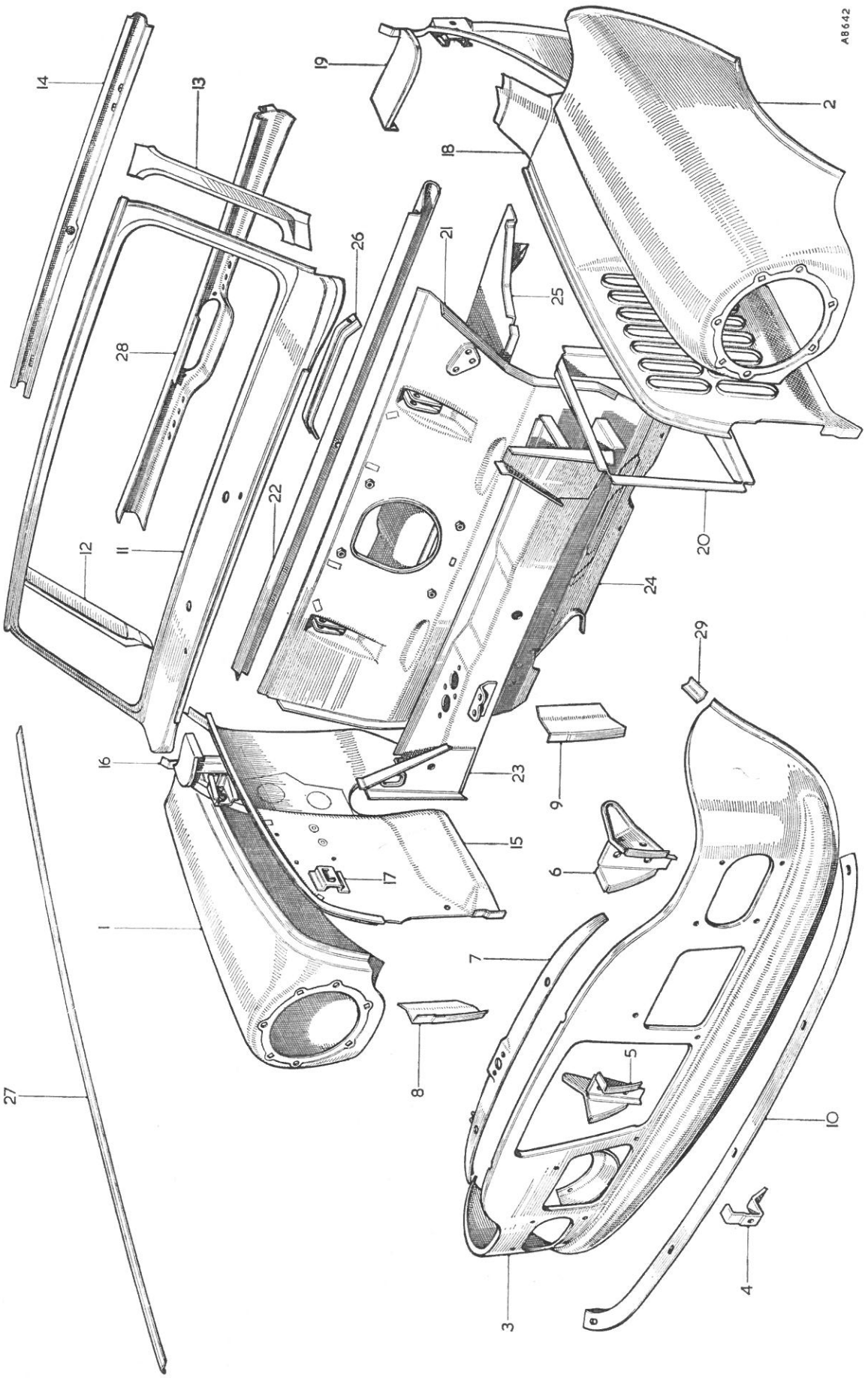
Operation	*Material*	*Thinning*	*Drying times*	*Application*	*Instructions*
Stripping original paint	Water-soluble paint remover, e.g. Sunbeam Anti-corrosives 'Stripolene 799'	—	—	Brush	Remove the original finish with a scraper after allowing paint-strip 10 minutes to react (repeat if necessary). Wash 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 of 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 clear 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.

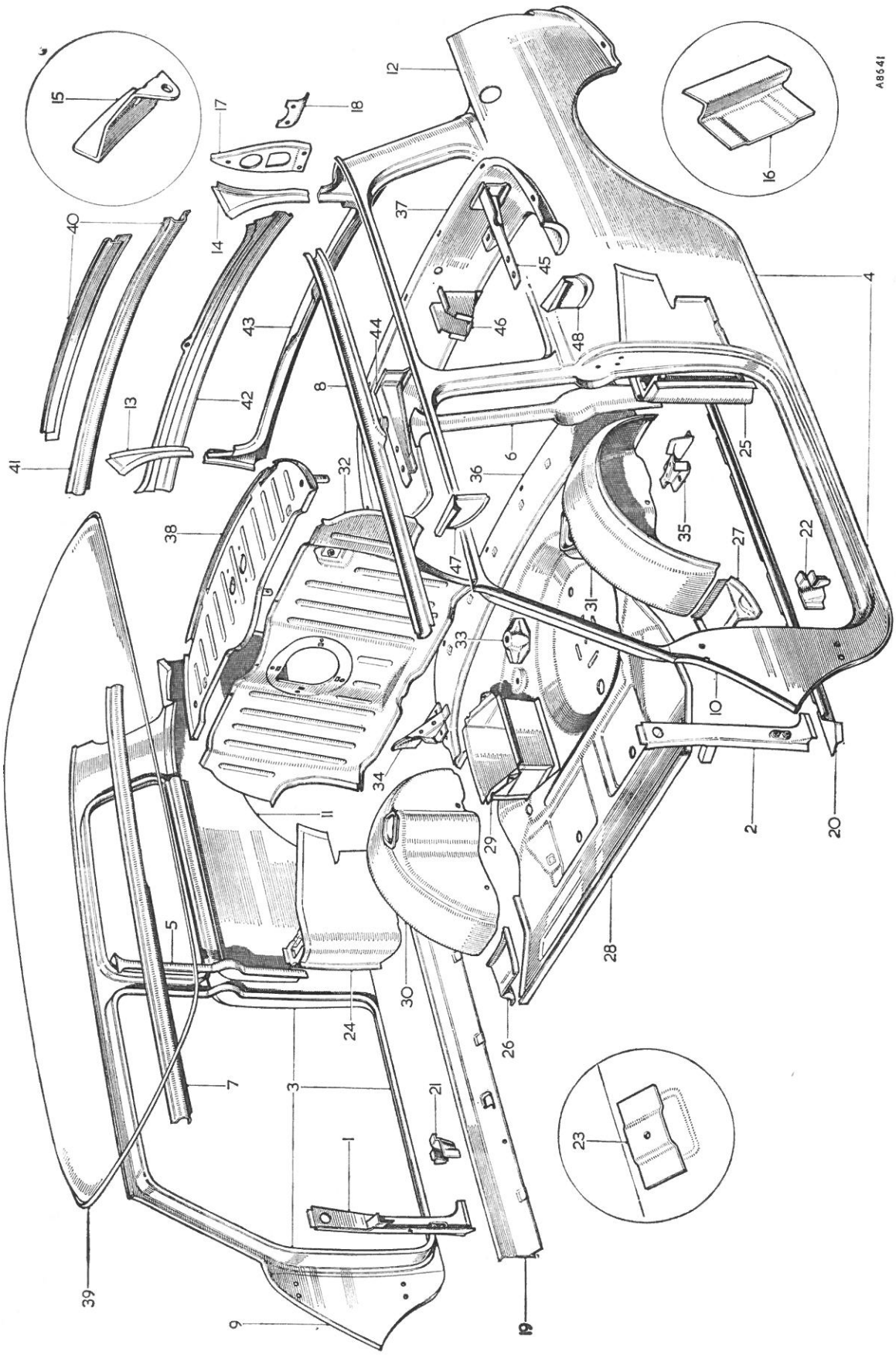
THE FRONT BODY PANEL COMPONENTS



KEY TO THE FRONT BODY PANEL COMPONENTS

No.	*Description*
1.	R.H. front wing assembly.
2.	L.H. front wing assembly.
3.	Grille panel assembly.
4.	Number-plate securing bracket.
5.	R.H. front attachment bracket.
6.	L.H. front attachment bracket.
7.	Grille panel stiffener.
8.	R.H. flitch plate extension.
9.	L.H. flitch plate extension.
10.	Body lower finisher securing angle.
11.	Windshield panel assembly.
12.	R.H. front pillar boxing plate.
13.	L.H. front pillar boxing plate.
14.	Front cant rail assembly.
15.	R.H. flitch plate assembly.
16.	R.H. front lower closing panel.
17.	Bonnet prop rod bracket.
18.	L.H. flitch plate assembly.
19.	L.H. front lower closing panel.
20.	L.H. radiator cowling flitch plate.
21.	Dash panel assembly.
22.	Fascia panel assembly.
23.	Dash panel cross-member assembly.
24.	Toeboard panel assembly.
25.	Front parcel shelf panel assembly.
26.	Front parcel tray carpet retainer.
27.	R.H. shedder—drip moulding.
28.	L.H. shedder—drip moulding.
29.	Front wing stiffening angle.

THE BODY PANEL COMPONENTS



Refitting

(3) Fit a new glazing channel into the door frame and refit the rubber securing strip.

(4) The remainder is a reversal of the removal procedure as detailed in Section R.23 items (7) to (11).

Section R.25

DOOR LOCKS
(Mk. III Models)

Removal

(1) Remove the interior door handle, window regulator handle, door pocket and the trim panel. Pull back the adhesive sealing strip adjacent to the lock.

(2) Remove the screws securing the door lock and the lock remote control assembly (see Fig. R.28).

(3) Disconnect the locking link from the operating rod by sliding the spring clip (2) upwards (see Fig. R.29).

(4) Ease the lock and remote control outwards, and turn the assembly sideways and withdraw the lock from the door panel (see Fig. R.28).

(5) Remove the circlip securing the remote control to the lock assembly and remove both units from the door frame.

Refitting

(6) Reverse the removal procedure with particular attention to the following instructions.

(7) Ensure that the spring clip is repositioned to secure the lock operating rod with the locking link of the exterior push-button handle.

(8) Refit or fit new adhesive sealing patches to the door panel. Check door lock operation before refitting the trim panel.

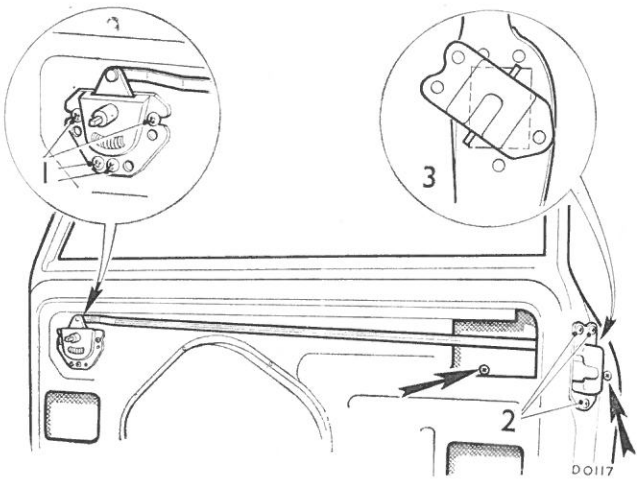


Fig. R.28

Removing the door lock, with the exterior handle securing screws (arrowed)

1. Remote control screws.
2. Door lock screws.
3. Position of lock to withdraw.

Section R.26

EXTERIOR DOOR HANDLES
(Mk. III Models)

Description

The push-button handles have a collapsible plastic cartridge inside the button. When the door is locked, the button cannot be pressed in and any attempt to force the door open by striking the push-button will collapse the cartridge and prevent the lock mechanism operating. The cartridge will function satisfactorily under severe working conditions and will withstand the additional release pressure required to free a frozen button in the 'unlocked' position.

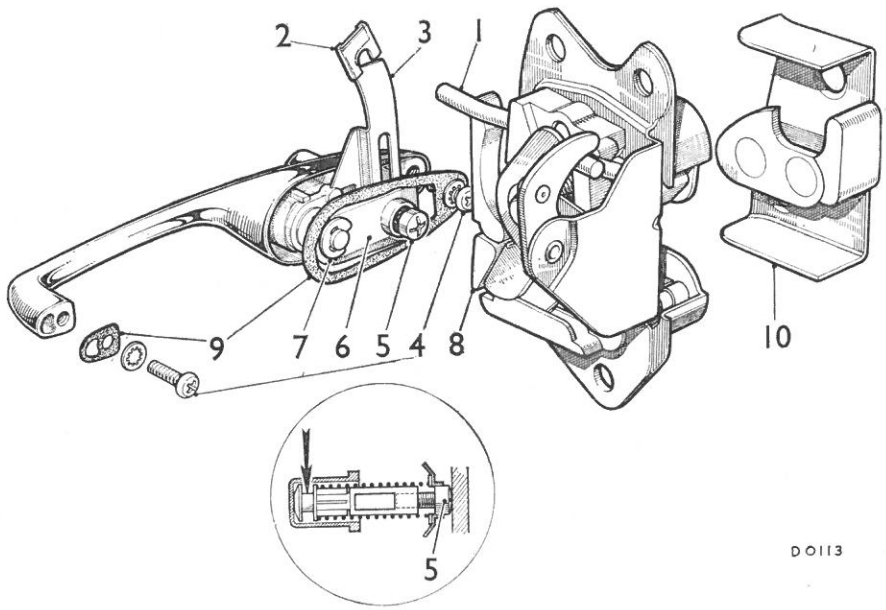


Fig. R.29

The door lock and exterior handle components with (inset) the push-button assembly. An arrow indicates the collapsible cartridge

1. Lock operating rod.
2. Spring retaining clip.
3. Locking link.
4. Handle securing screws.
5. Contactor screw.
6. Bridge plate.
7. Circlip (bridge plate).
8. Door lock contactor.
9. Exterior handle seating washers.
10. Striker plate.

Removal

(1) Carry out the operations detailed in Section R.25, items (1) to (4).

(2) Ensure that the window is in the fully closed position.

(3) Remove the securing screws (Fig. R.28), and manœuvre the handle from the door.

Push-button cartridge replacement

(4) Remove the bridge plate circlip (7) Fig. R.29 and carefully file the top off the projection and extract the bridge plate.

(5) Detach the push-button from the handle, unscrew and retain the contactor screw (5) Fig. R.29, and take off the push-button return spring with its seating washer.

(6) Remove the broken pieces of plastic from the button.

(7) Insert a new cartridge in the button and press it firmly into position. Refit the contactor screw so that when the handle is reassembled and refitted to the door a clearance of $\frac{1}{32}$ to $\frac{1}{16}$ in. (·8 to 1·5 mm.) is maintained between the screw head and the lock contactor mechanism.

NOTE.—To assist push-button adjustment it is recommended that the projection is riveted over again before refitting the handle to the door.

Refitting

(8) Reverse the removal procedure with particular attention to the following instructions.

(9) Ensure that the two seating washers are fitted between the exterior handle and the door panel, and that the spring clip is repositioned to secure the lock operating rod with the locking link of the handle.

(10) Check door lock operation and fit a new adhesive sealing patch before refitting the trim panel.

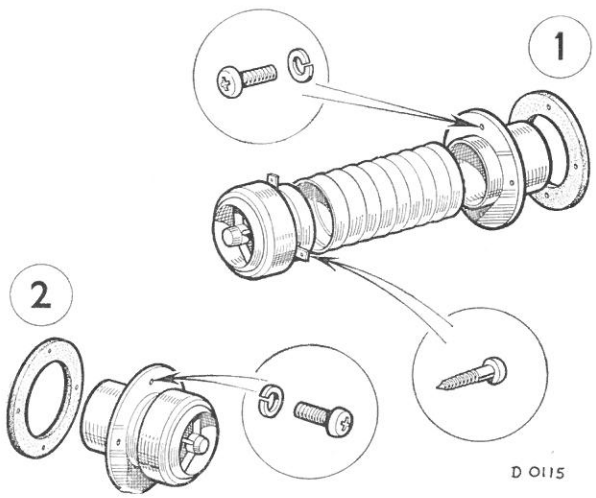


Fig. R.30

Fresh-air ventilation inlet fixings

1. Elf Mk. III. 2. Hornet Mk. III.

Section R.27

DOOR CHECK ASSEMBLY (Mk. III Models)

Removal

(1) Follow the instructions given in Section R.28, items (1) to (4) 'Hornet' or item (5) 'Elf'.

(2) Remove the clevis pin securing the door check rod to the door bracket and withdraw the assembly into the car interior.

Refitting

(3) Reverse the removal procedure.

Section R.28

FRESH-AIR VENTILATION (Fascia Inlets—Mk. III Models)

Removal

Hornet

(1) Remove the fascia instrument nacelle.

(2) Remove the fascia ashtray and bend up the retaining tab.

(3) Release the portion of the door seal covering the fascia trim liner and carefully lift this portion of the liner which is fixed by adhesive solution to the body. Ease the trim liner from under the top fascia rail and towards the centre of the dash and withdraw it.

(4) From under the wing, release the clip securing the intake hose to the inlet, remove the inlet securing screws and the assembly complete with its rubber seal.

Elf

(5) Bend back the portion of the glovebox liner adjacent to the fresh-air inlet. Remove the two wing nuts adjacent to the instrument panel and the one situated near the inlet. Withdraw the glovebox panel assembly complete with the inlet and hose.

(6) Remove the securing screws and the inlet assembly from behind the fascia board.

Refitting

Hornet

(7) Refit the inlet assembly and sealing rubber with the small bracket on the inlet assembly positioned at the bottom and tighten the securing screws.

(8) Ensure that the inlet hose is correctly positioned on the inlet and tighten the securing clip.

(9) Refit the other components in the reverse order of the removal procedure.

Elf

(10) Reverse the removal procedure, items (5) and (6), with particular attention to the following:

(11) Ensure that the short connecting hose is correctly located on the intake connection when refitting the fascia board and re-position the dash liner after tightening the wing nuts.

Section R.29

HEATER ASSEMBLY

(Fresh-air Type)

Removal

(1) Disconnect the battery and drain the cooling system.
(2) Remove the front floor covering to avoid damage by coolant when removing the heater pipes.
(3) Disconnect the two electrical snap connectors below the parcel shelf and the blower switch connection from the ignition switch.
(4) Remove the demister tube covers, pull off the demister tubes and release the fresh-air intake hose.
(5) Release the heater water hose clips and pull the hoses from the heater unit.
●(6) Slacken the nut securing the rear of the unit to the bracket, and remove the two screws beneath the parcel shelf securing the front of the heater (Fig. R.31). Lift the unit from the slotted rear bracket, hold the fingers over the matrix pipes and lift the unit out of the car. Drain the coolant from the unit.●

Heater matrix replacement

(7) Slacken the screws securing the control panel, remove the end cover screws and lift off the cover complete with the blower motor.
(8) Lift out the heater matrix and fit the replacement unit.
(9) Reverse the procedure given in item (7).

Heater motor replacement

(10) Carry out operations (1) to (7).
(11) Drill out the three Pop rivets securing the motor unit to the end cover and remove the motor.

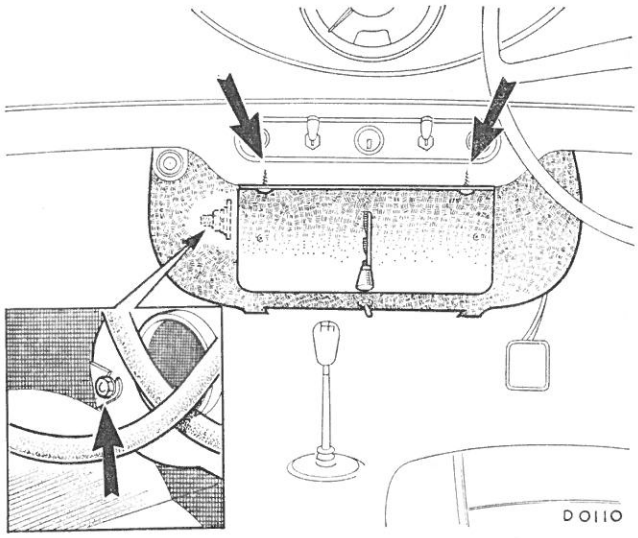


Fig. R.31

The fresh-air heater assembly securing points (arrowed)

(12) Locate the replacement motor in the end cover with the wiring positioned to the top of the heater box when reassembled, and Pop rivet in position.
(13) Refitting the end cover is a reversal of the removal procedure. Ensure that the flap valve is located on the end cover pivot and operates correctly before refitting the heater to the car.

Blower switch replacement

(14) Remove the heater control panel and the switch securing nut. Pull the flap valve outwards, withdraw the switch and pull off the wiring connections.
(15) Fitting a replacement switch is a reversal of item (14).

Refitting

(16) Reverse the removal procedure and refill the radiator with coolant. Start and warm up the engine, check for leaks and correct operation of the heater assembly. Top up the coolant in the radiator to the correct level.

●●

RECOMMENDED LUBRICANTS

	A			B	C
Component	Engine/Transmission Unit, Oilcan, and Carburetter(s)			Grease Points	Upper Cylinder Lubrication
Climatic conditions	**All temperatures above —12° C. (10° F.)**	**Temperatures —18° to +7° C. (0° to 20° F.)**	**All temperatures below —18° C. (0° F.)**	**All conditions**	**All conditions**
BP	BP Super Visco-Static 20W/50	BP Super Visco-Static 10W/40	BP Super Visco-Static 5W/20	BP Energrease L. 2	BP Upper Cylinder Lubricant
CASTROL	Castrol XL (20W/50) or Castrol GTX	Castrolite or Castrol Super 10W/40	Castrol CR 5W/20	Castrolease LM	Castrollo
DUCKHAM'S	Duckham's Q. 20–50	Duckham's Q. 5500	Duckham's Q. 5–30	Duckham's L.B. 10 Grease	Duckham's Adcoid Liquid
ESSO	Esso Extra Motor Oil 20W/50	Esso Extra Motor Oil 10W/30	Esso Extra Motor Oil 5W/20	Esso Multi-purpose Grease H	Esso Upper Cylinder Lubricant
FILTRATE	Filtrate 20W/50	Filtrate 10W/30	Filtrate 5W/20	Filtrate Super Lithium Grease	Filtrate Petroyle
MOBIL	Mobiloil Special 20W/50	Mobiloil Super 10W/40	Mobiloil 5W/20	Mobilgrease MP	Mobil Upperlube
SHELL	Shell Super Motor Oil 100 (20W/50)	Shell Super Motor Oil 101 10W/30	Shell Winter Special Motor Oil or Shell Super Motor Oil 5W/30	Shell Retinax A	Shell Upper Cylinder Lubricant
STERNOL	Sternol W.W. Multigrade 20W/50	Sternol W.W. Multigrade 10W/40	Sternol W.W. Multigrade 5W/20	Ambroline L.H.T.	Sternol Magikoyl

In no circumstances must any additive be introduced into the lubricants recommended for the automatic transmission