

M 10 406

Mark	Dimensions in mm	
	Diesel-Petrol-4 cylinder	6 cylinders
A	4429	
B	974	
C	875	
D	2580	
E	1705	
F	1494*	1517*
G	1795	
H	1805	
I	1505*	1508*

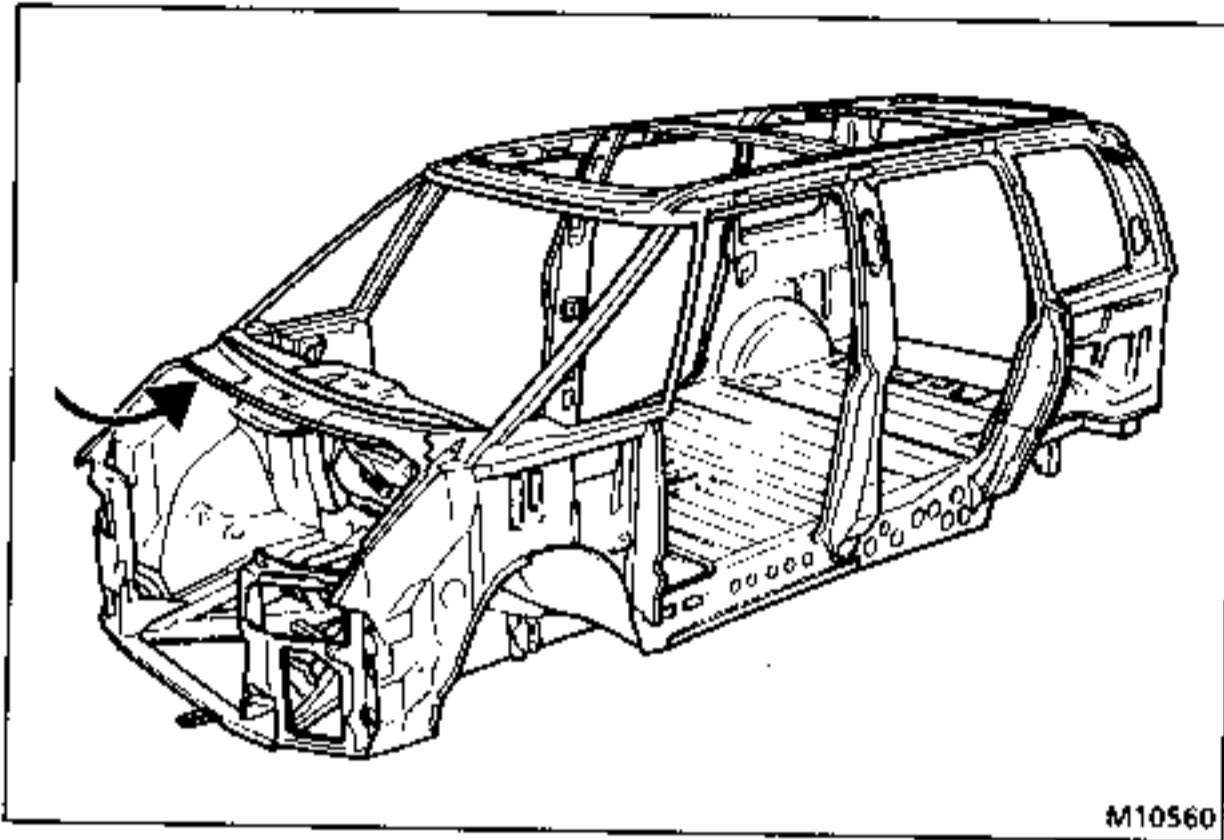
* Depending on version

IDENTIFYING THE CHASSIS

The chassis number:

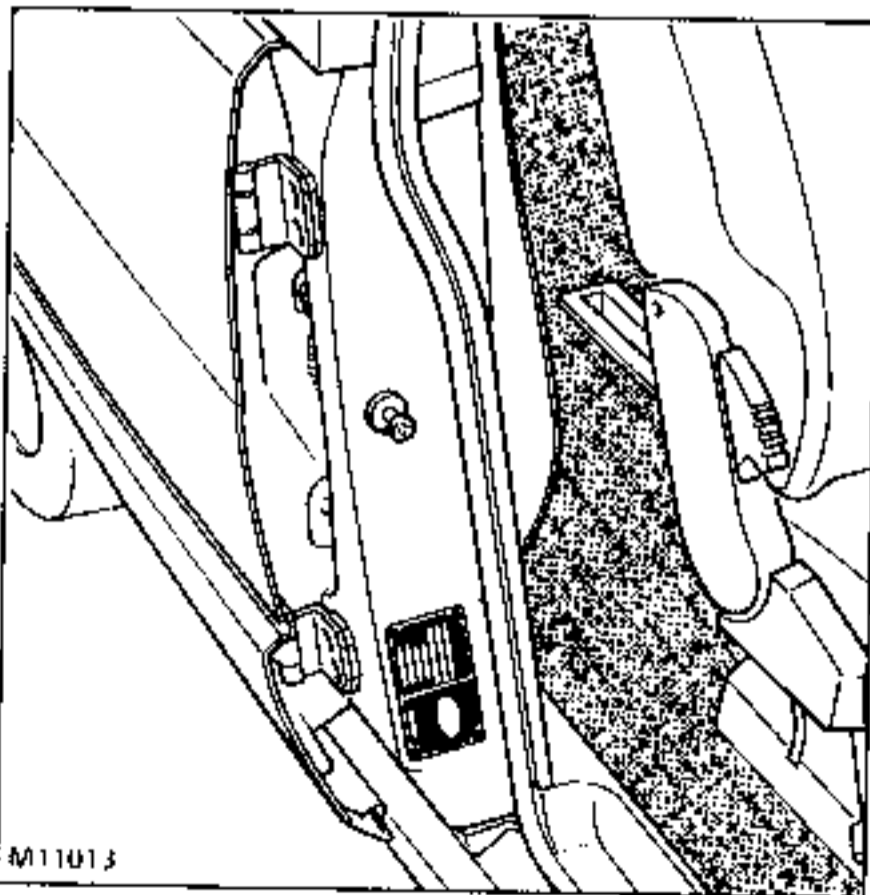
- manufacturers' worldwide code;
- vehicle Minis type;

is cold-stamped on the righthand side of the edge of the engine compartment panel (raise the snapon seal on the scuttle grille slightly).



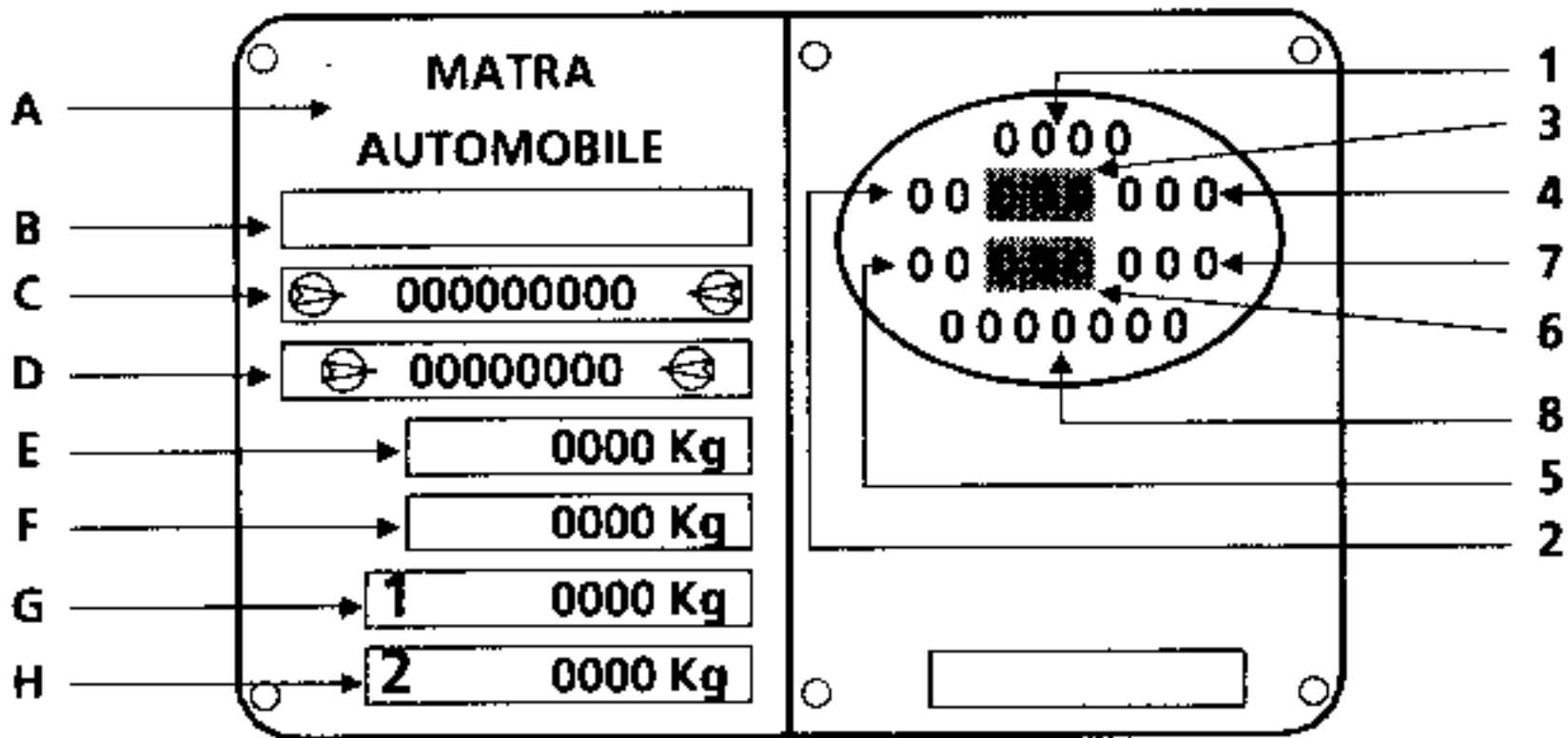
M10560

VEHICLE IDENTIFICATION



M11013

The vehicle is identified by two plates both mounted on the same backing which is located on the righthand centre pillar.



LEGAL INFORMATION

- At A: the manufacturers' name
- At B: the EHC reception number
- At C: the vehicle Mines type preceded by the manufacturers' worldwide identity code (VFS corresponds to MATRA AUTOMOBILE)
- At D: the chassis number
- At E: the gross vehicle weight
- At F: the gross train weight
- At G: the maximum permissible front axle loading
- At H: the maximum permissible rear axle loading.

MANUFACTURING FACTORY INFORMATION

- At 1: the vehicle type
- At 2: the first figure indicates the gearbox or large options (2: 5 speed gearbox - 7: 5 speed gearbox + 4x4) the second figure indicates the equipment level (2: E1 or AS - 3: E2 - 5: E3)
- At 3: the technical equipment number
- At 4: additional equipment fitted in the factory as an option
- At 5: the trim code
- At 6: the paint code
- At 7: the equipment level
- At 8: a letter designating the factory of manufacture (I = Romorantin, K - Dieppe) followed by the fabrication number.

Note: in certain export markets, some of these items may not be shown, the plate described above is the most comprehensive version.

ALLOCATION OF THE TECHNICAL EQUIPMENT NUMBERS (3)

Good Roads

Special Equipment

Steering

lefthand drive

righthand drive

lefthand drive

righthand drive

10X to 49X series

70X to 89X series

50X to 69X series

90X to 99X series

(X corresponds to an additional definition)

ESSENTIAL SPECIAL TOOLING	
Cha. 280-02	Trolley jack pad
Cha. 408-02	Trolley jack adapter socket

It is forbidden to lift the vehicle by taking the load under the front suspension arms. Depending on the trolley jack type, use one of the sockets Cha.408-02 to fit pads Cha.280-02.

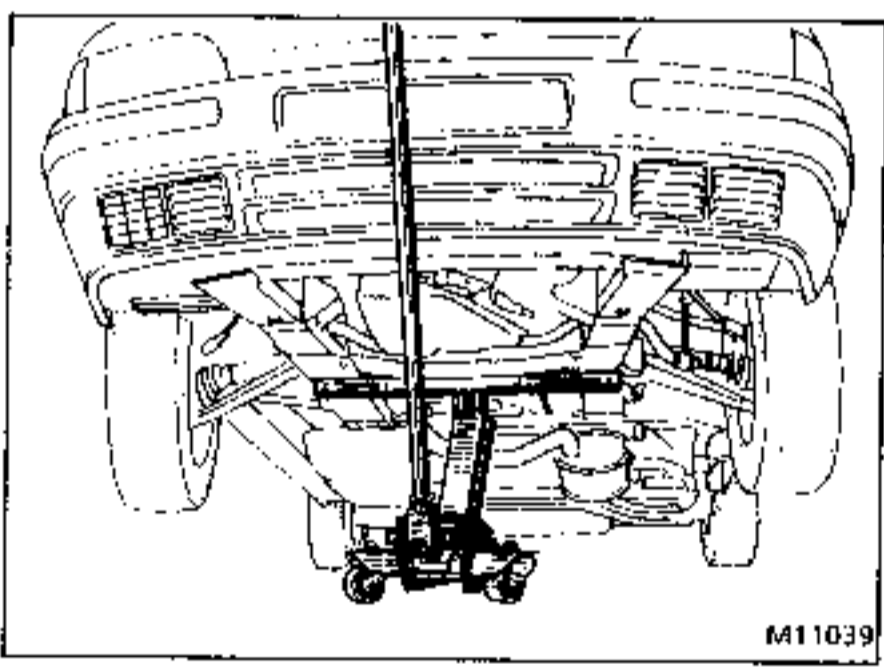
LIFTING WITH A TROLLEY JACK FROM THE FRONT

Apply the handbrake or place chocks under the rear wheels

Use pad Cha.280-02.

Take the load behind the front cross member.

Ensure that the pad is not in contact with the gearbox or the exhaust downpipe.



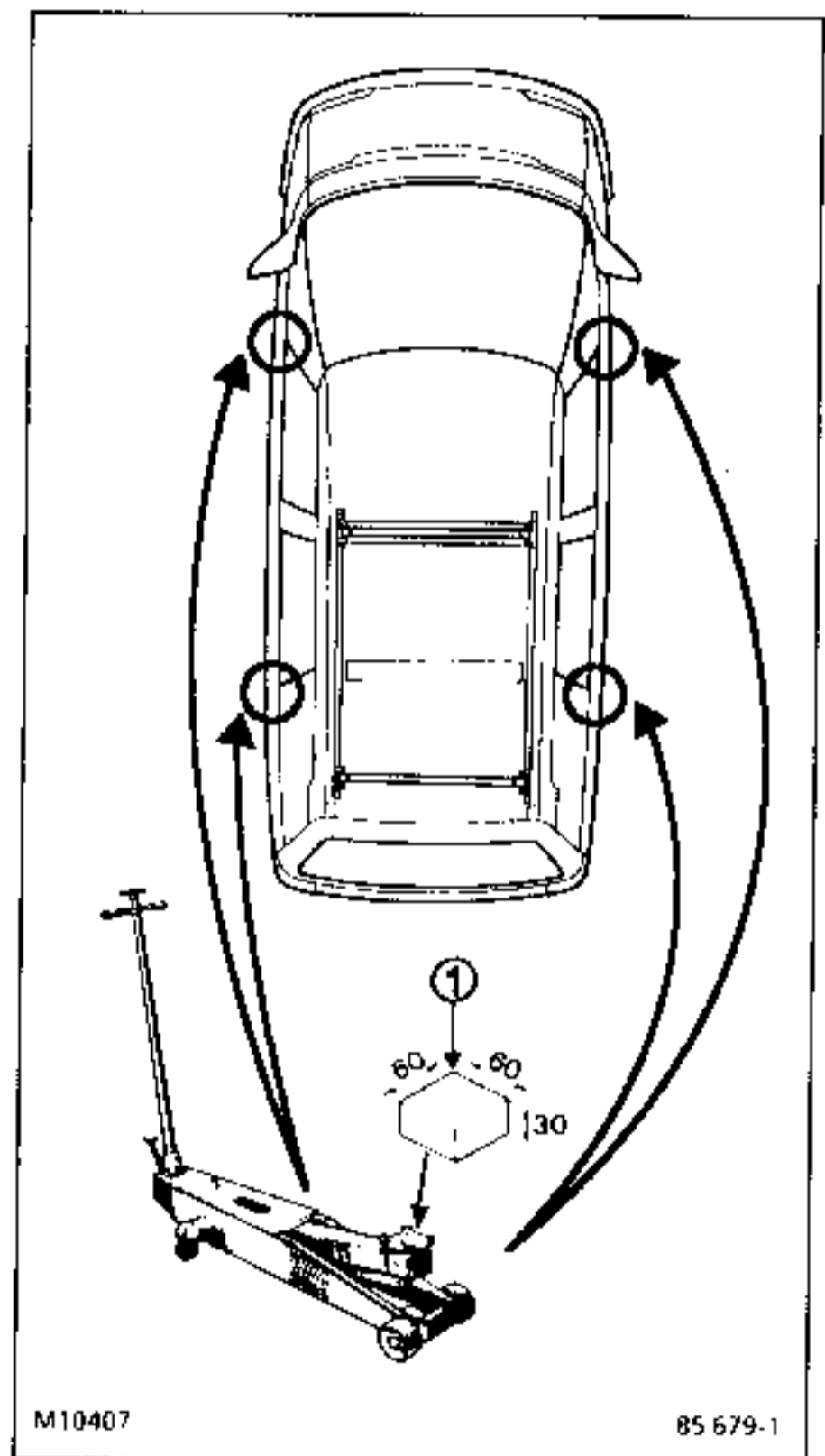
M11039

TROLLEY JACK FROM THE REAR

It is FORBIDDEN to lift the rear of the vehicle by taking the load under the centre section of the rear axle assembly. Lift each wheel separately, taking the load at the vehicle jacking points.

ESSENTIAL PRECAUTIONS

In order not to damage the jack mountings (if panels are twisted it would be impossible to use the jack afterwards), it is essential to place a chock (1) between the jack head and bearing face of the side member as shown in the diagram opposite.



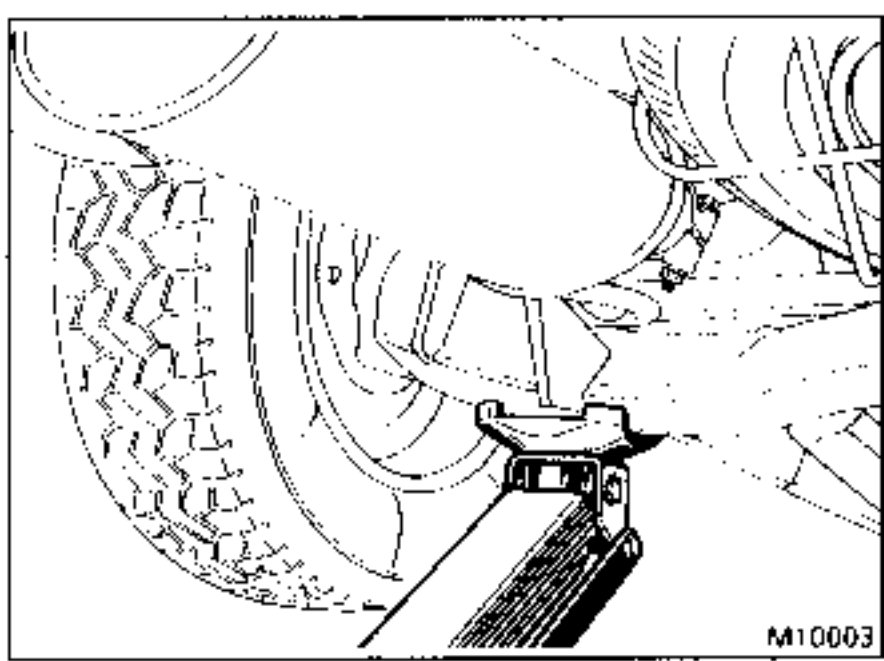
M10407

85 679-1

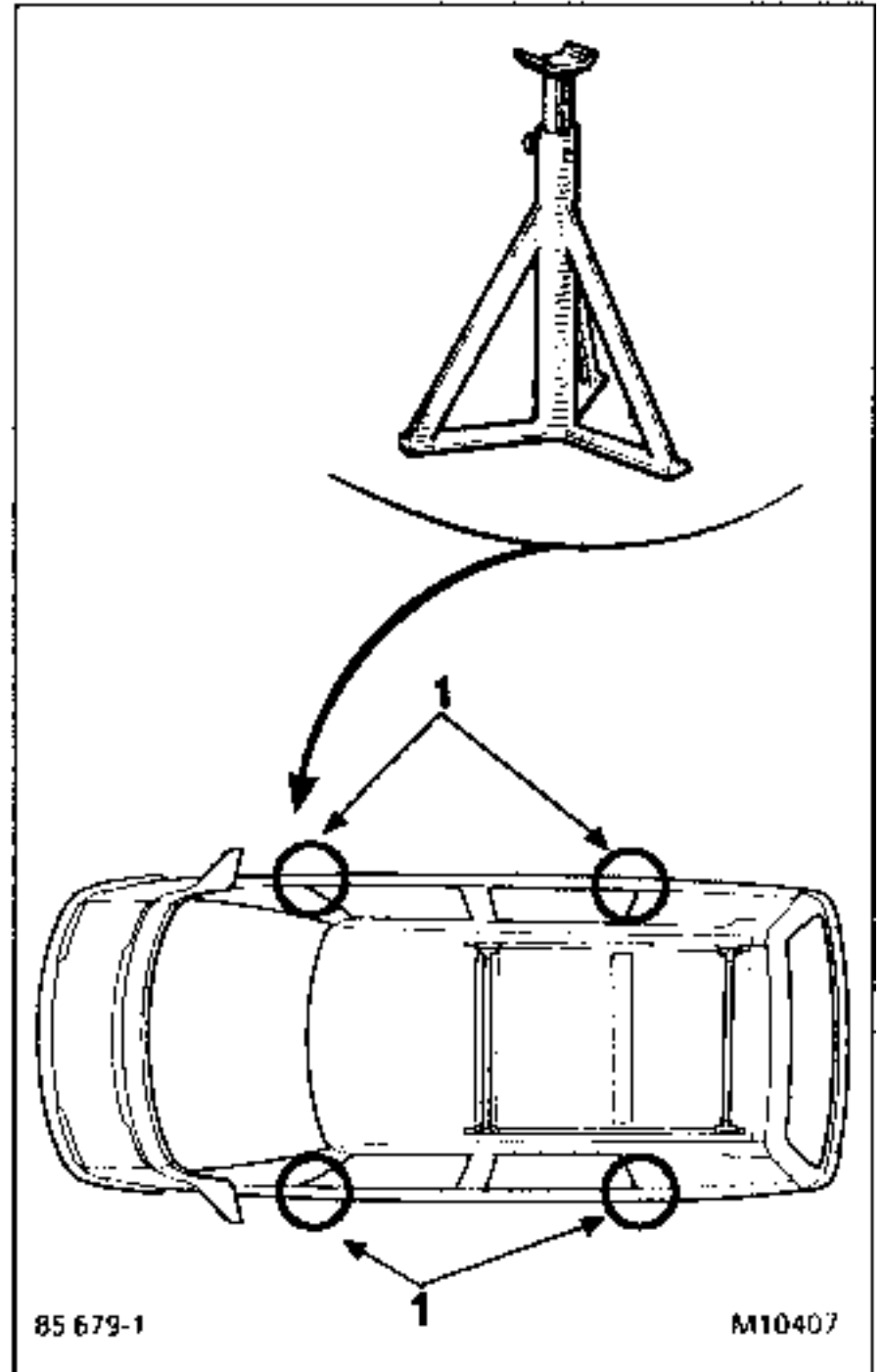
AXLE STANDS

When axle stands are used, they must be placed under the jacking points (1) provided for the jacking up of the vehicle with its own jack.

Rear axle stands are placed in position by lifting the vehicle under the rear axle, at the shock absorber mounting points.



ATTENTION: NEVER TAKE THE WEIGHT UNDER THE SIDE VALANCE; IT IS MADE FROM POLYESTER RESIN WHICH MIGHT BREAK.

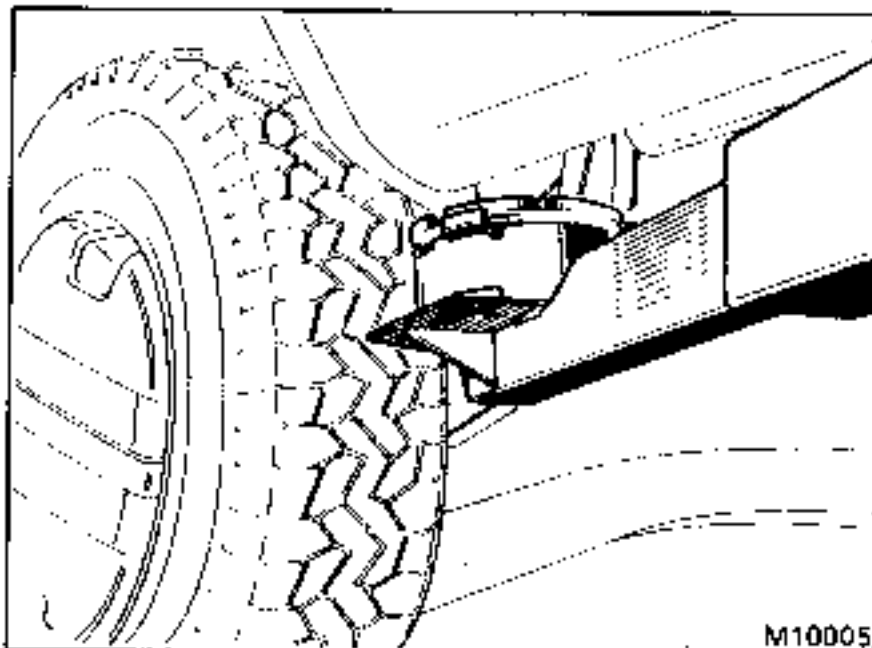
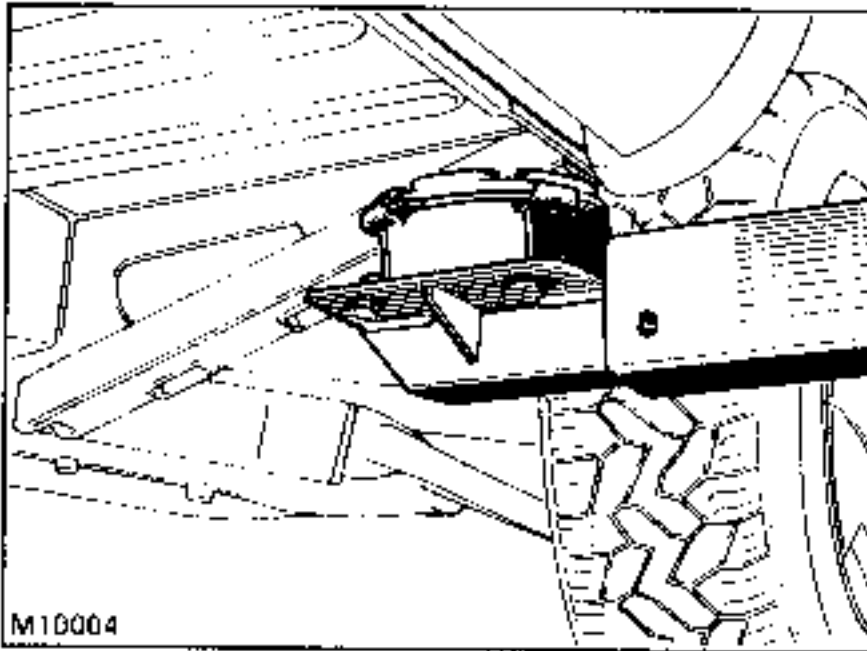


2-POST LIFTS

Place the lifting pads under the vehicle jacking points taking care not to twist the side part of the points. If these points are damaged it will be impossible to fit the jack.

USE THE CHOCKS DESCRIBED ON THE PREVIOUS PAGE FOR THIS PURPOSE.

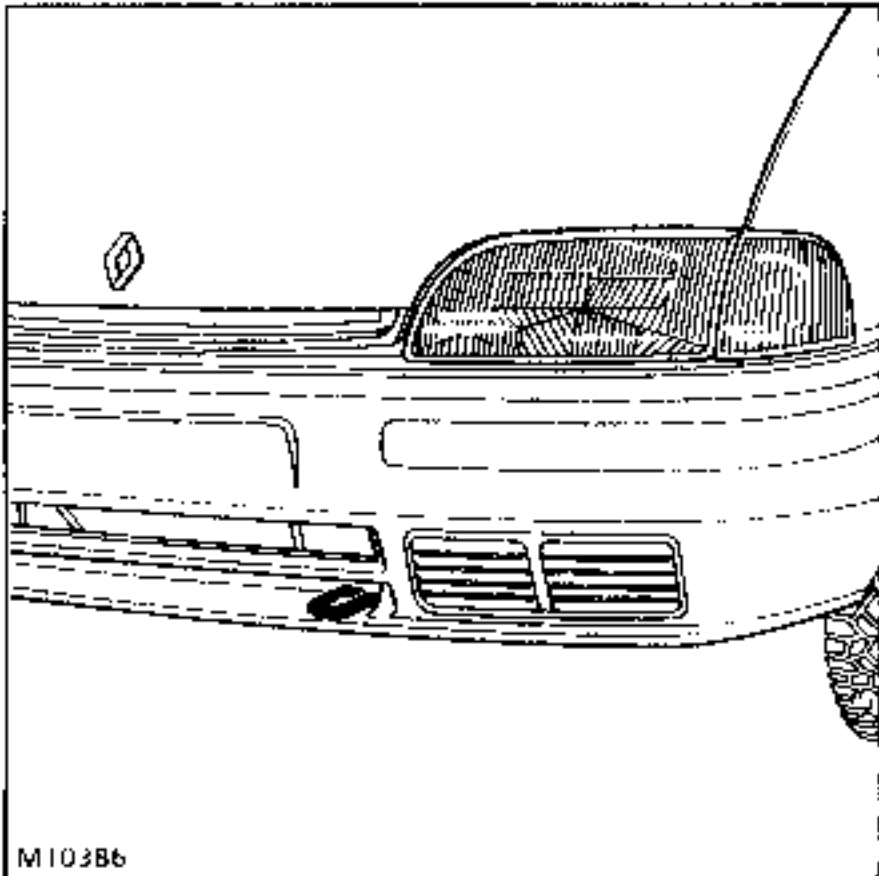
FOR YOUR SAFETY and to ensure that the vehicle is supported correctly on the pads, it is forbidden to remove components which would cause a shift in weight when using a 2-post lift.



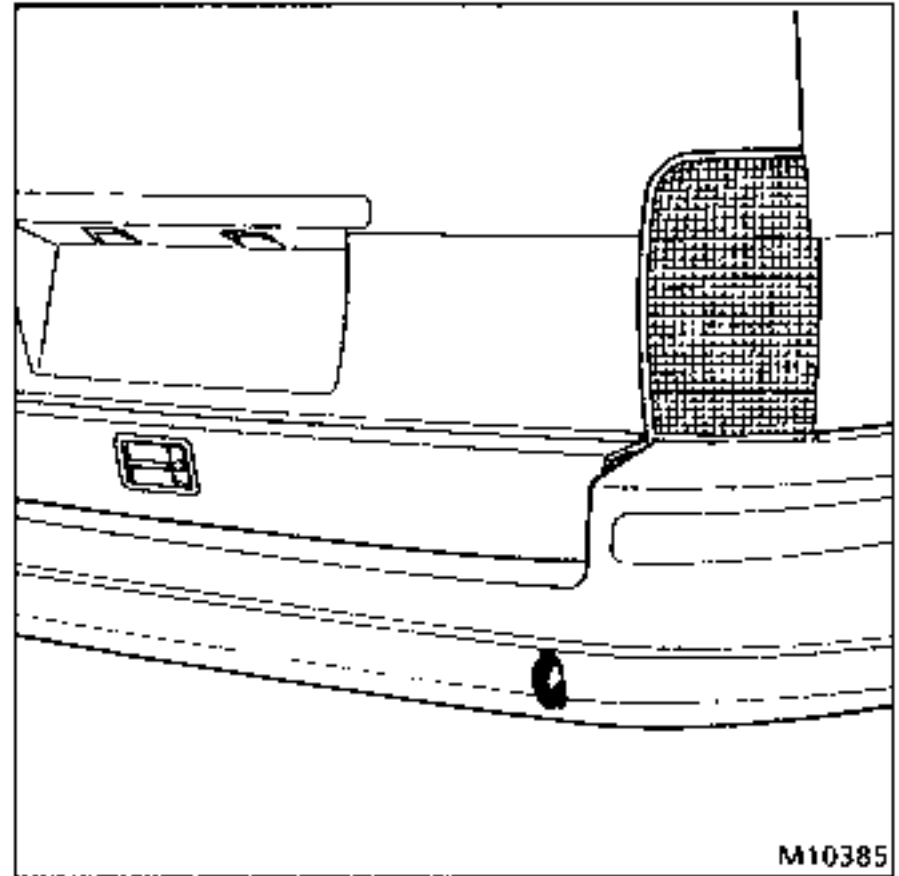
It is FORBIDDEN to jack up the vehicle taking the load under the rear axle centre sections.

The towing hooks which are to be used only for towing the vehicle on the road must under no circumstances be used for pulling the vehicle out of a ditch or any other similar emergency operation. Neither must they be used to lift the vehicle either directly or indirectly.

FRONT



REAR



INTEGRAL 4 X 4 TRANSMISSION

The design of the vehicle (four wheels permanently driven with no possibility of uncoupling them), does not permit a great difference in speed between the front and rear wheels: THERE IS A RISK OF DESTROYING THE VISCO COUPLING.

It is for this reason that A BROKEN-DOWN VEHICLE MUST BE RECOVERED IN THE FOLLOWING WAY:

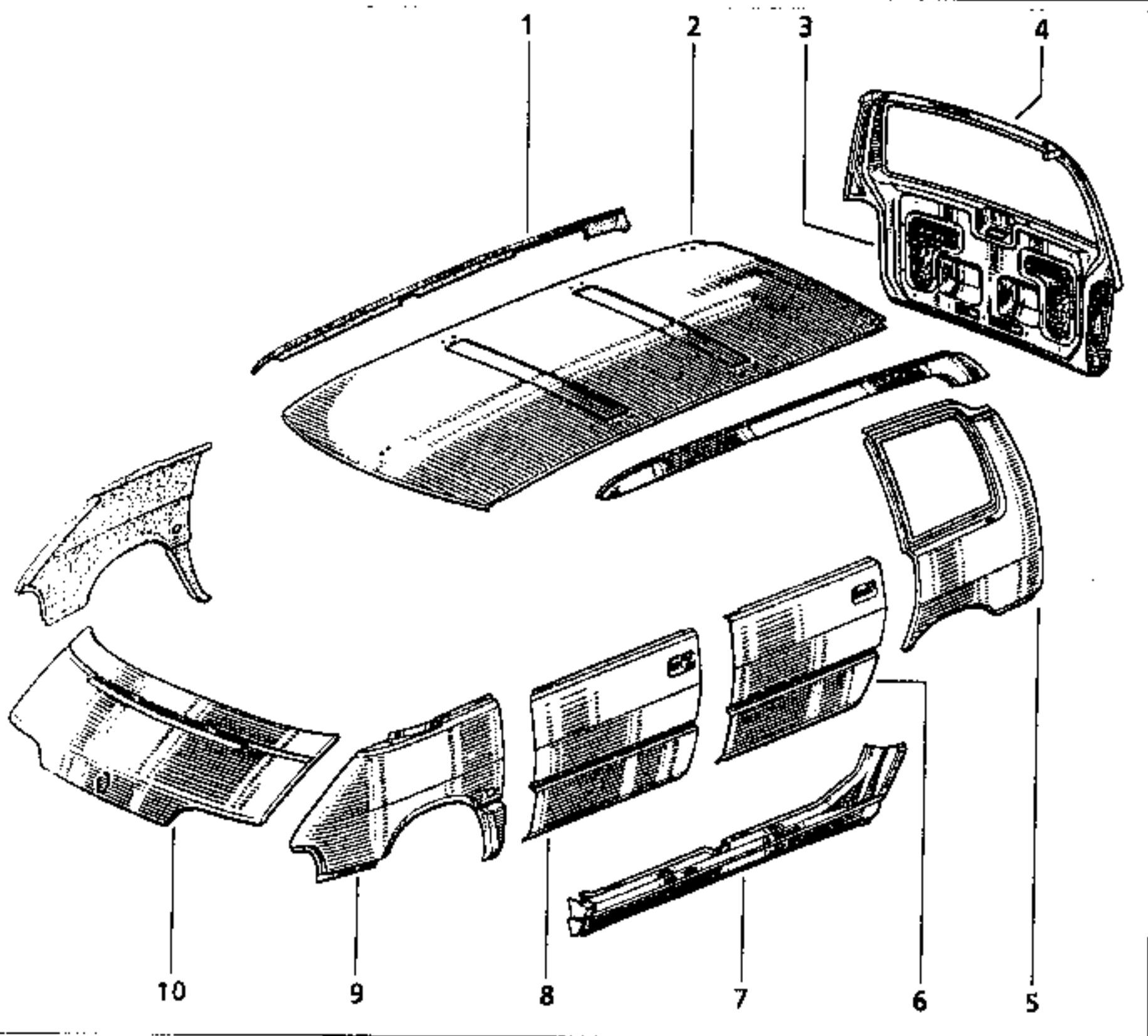
- ON A PLATFORM (vehicle immobilised on its four wheels)
- BY TOWING ON ITS FOUR WHEELS (if this operation is permitted by current legislation in the country in question).

IT IS FORBIDDEN TO TOW THE VEHICLE:

- with the rear axle raised
- with the front axle raised.

ATTENTION

If, for exceptional reasons, it is necessary to tow the vehicle with the front wheels raised, the prop shaft would have to be removed (see section 29).



PLASTIC STRUCTURE

PARTS BONDED TO CHASSIS

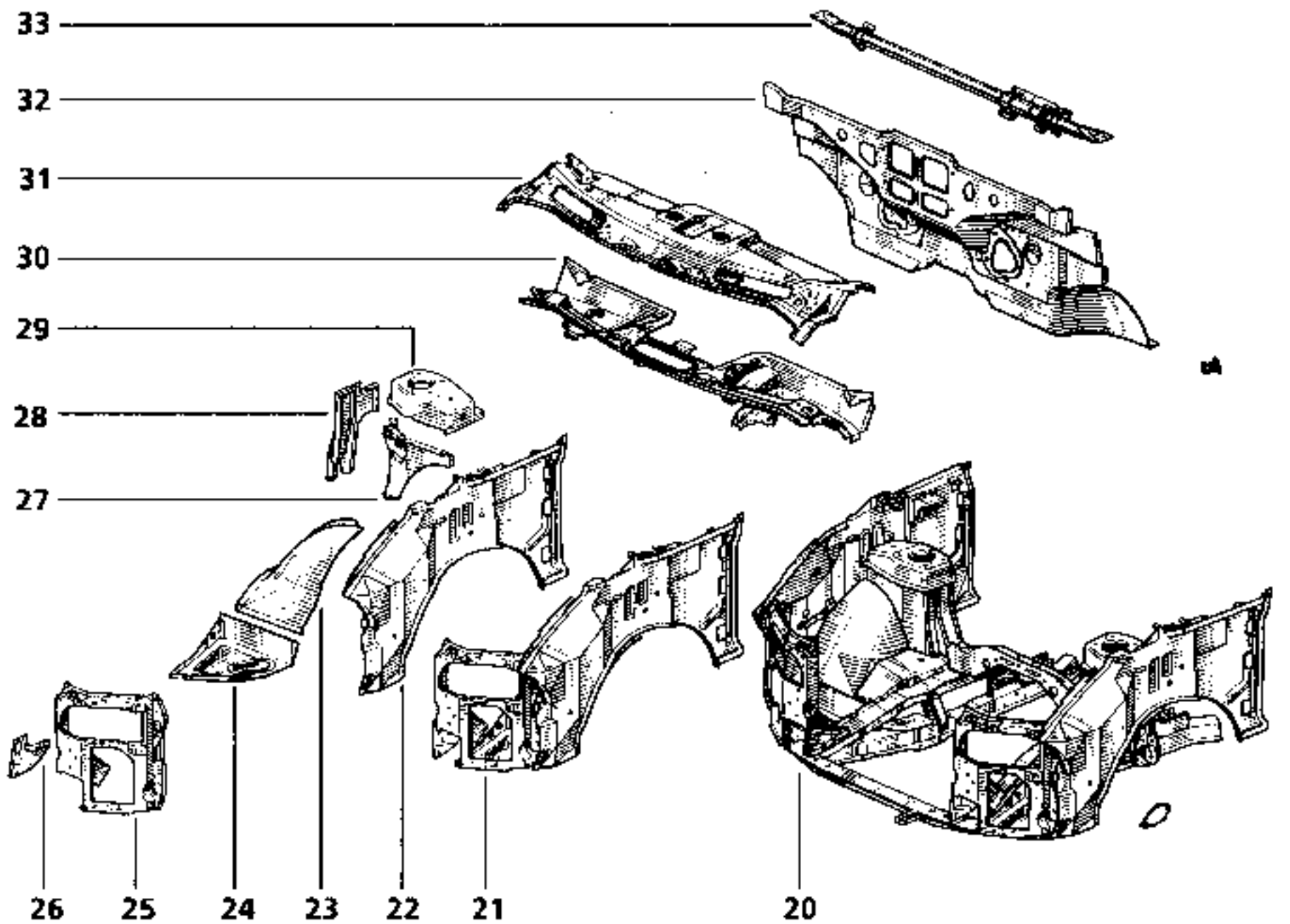
- 1 Body top
- 2 Roof
- 5 Rear wing
- 9 Front wing
- 7 Sill

DETACHABLE PARTS

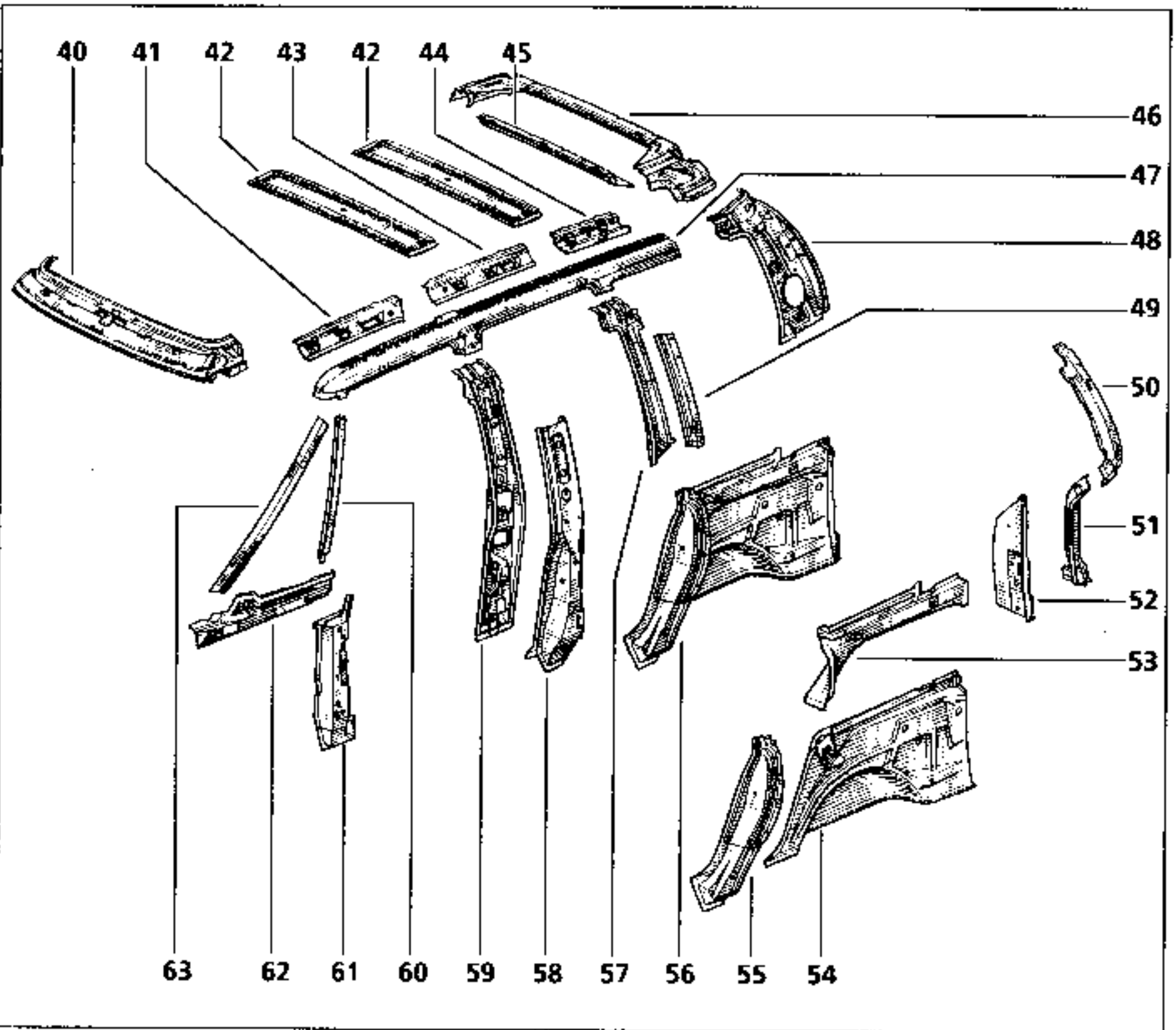
- 3 Tailgate lining
- 4 Tailgate outer panel
- 6 Rear door panel
- 8 Front door panel
- 10 Bonnet

These parts are made from a composite material based on polyester resin:

- pre-impregnated type (SMC) : parts 1, 4, 5, 6, 7, 8, 9, 10
- injected resin type : parts 2, 3



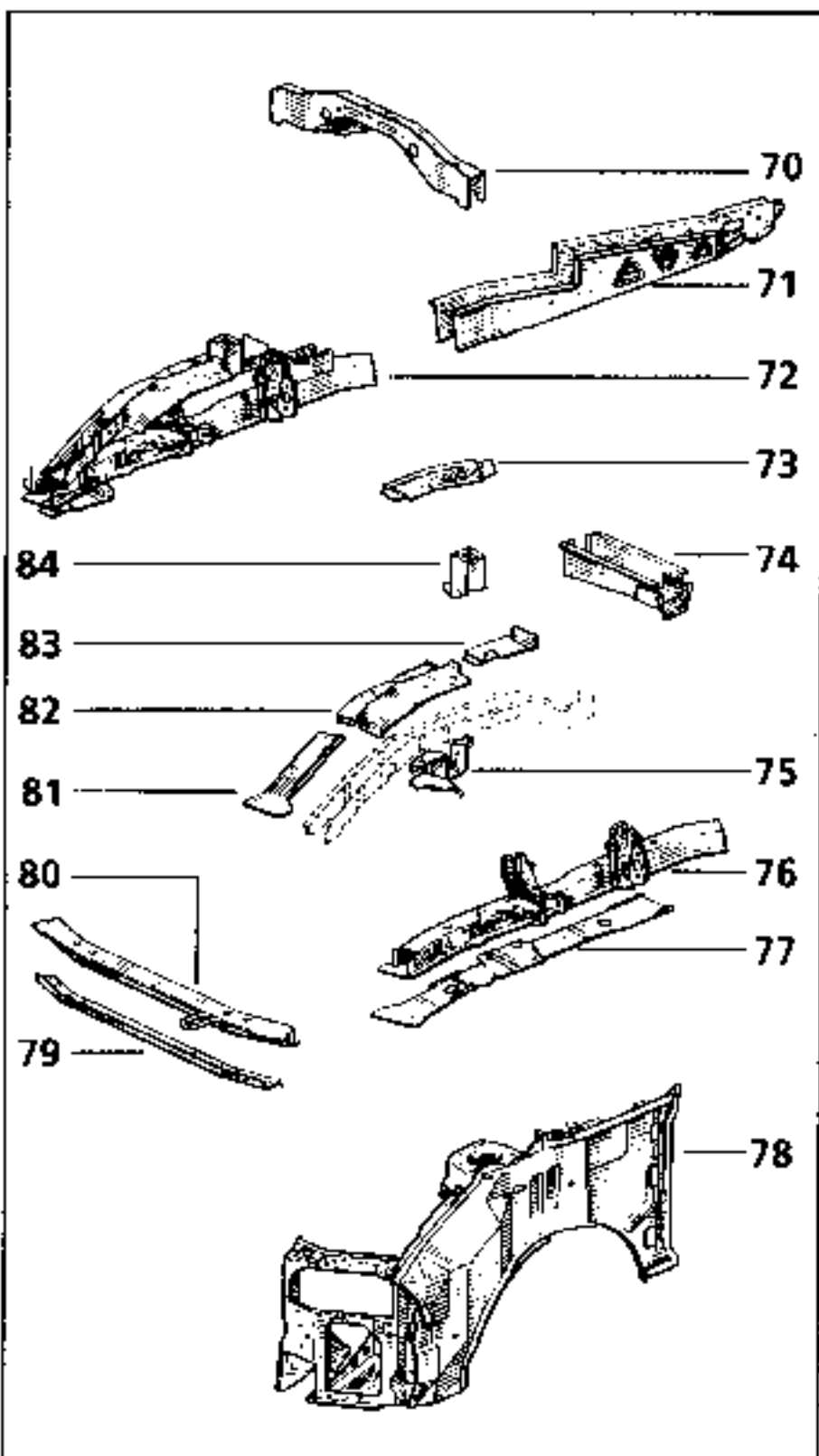
- 20 Front unit
- 21 Simplified cowl panel
- 22 Inner wing flange panel
- 23 Front wheel arch
- 24 Battery tray
- 25 Headlight carrier panel
- 26 Headlight carrier panel inner strengthener
- 27 Rear wheelarch
- 28 Shock absorber turret
- 29 Shock absorber cup
- 30 Air conditioning panel
- 31 Engine compartment upper panel
- 32 Bulk head
- 33 Cross member between front pillars



CENTRE AND REAR PARTS OF
UPPER STRUCTURE

- 40 Windscreen aperture - upper cross member lining assembly
- 41 Stretcher front lining
- 42 Centre upper cross members
- 43 Stretcher centre lining
- 44 Stretcher rear lining
- 45 Rear cross member lining
- 46 Rear upper cross member
- 47 Upper stretcher
- 48 Rear quarter panel lining
- 49 Rear quarter panel front pillar

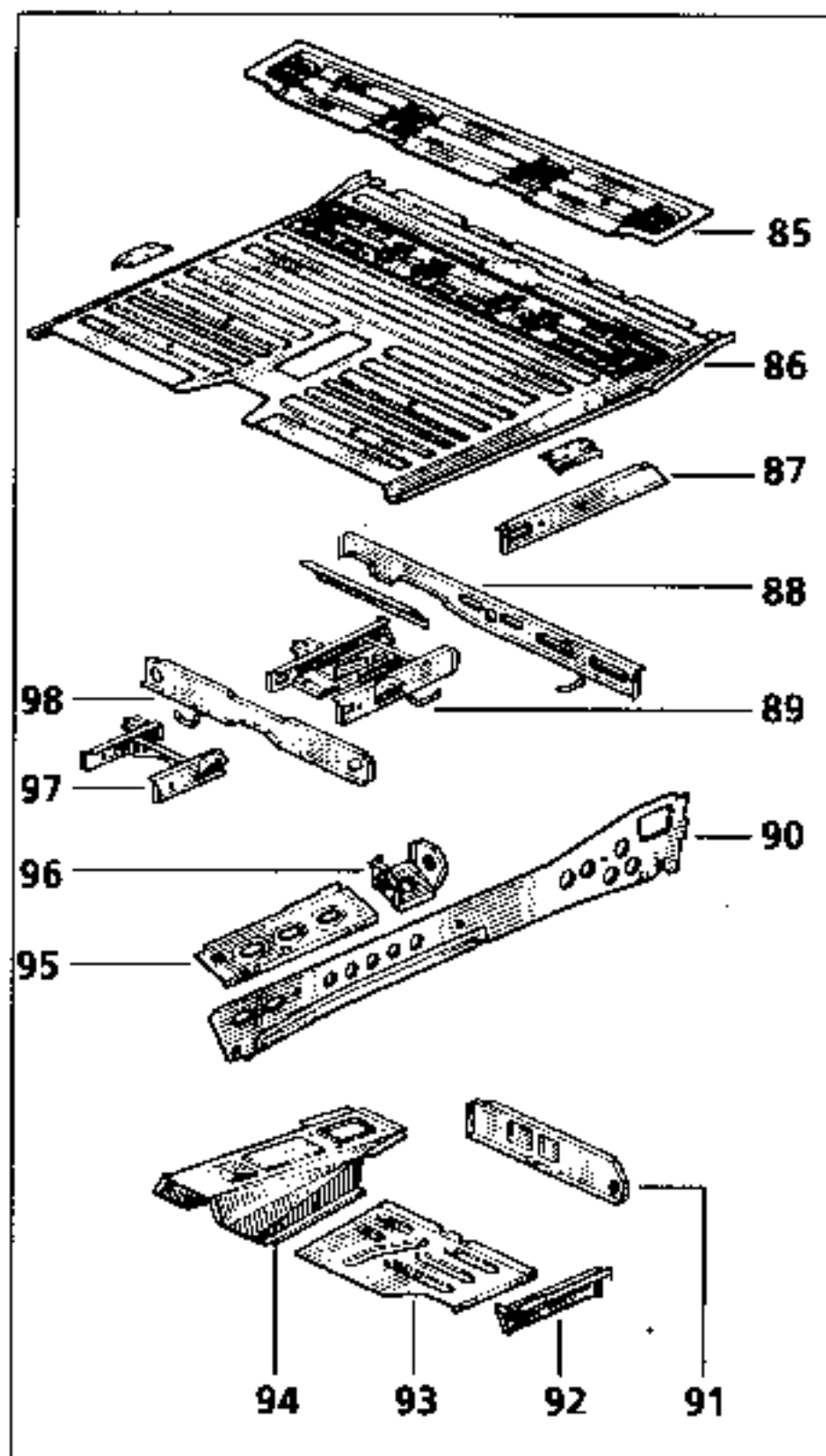
- 50 Rear upper rain channel
- 51 Rear lower rain channel
- 52 Rear rain channel lower lining
- 53 Rear quarter panel lower stretcher
- 54 Stripped wheelarch
- 55 Rear pillar
- 56 Rear wheelarch assembly
- 57 Rear quarter panel front pillar lining
- 58 Centre pillar
- 59 Centre pillar lining
- 60 Quarter light pillar
- 61 Front pillar
- 62 Quarter light stretcher
- 63 Windscreen column upright



LOWER STRUCTURE

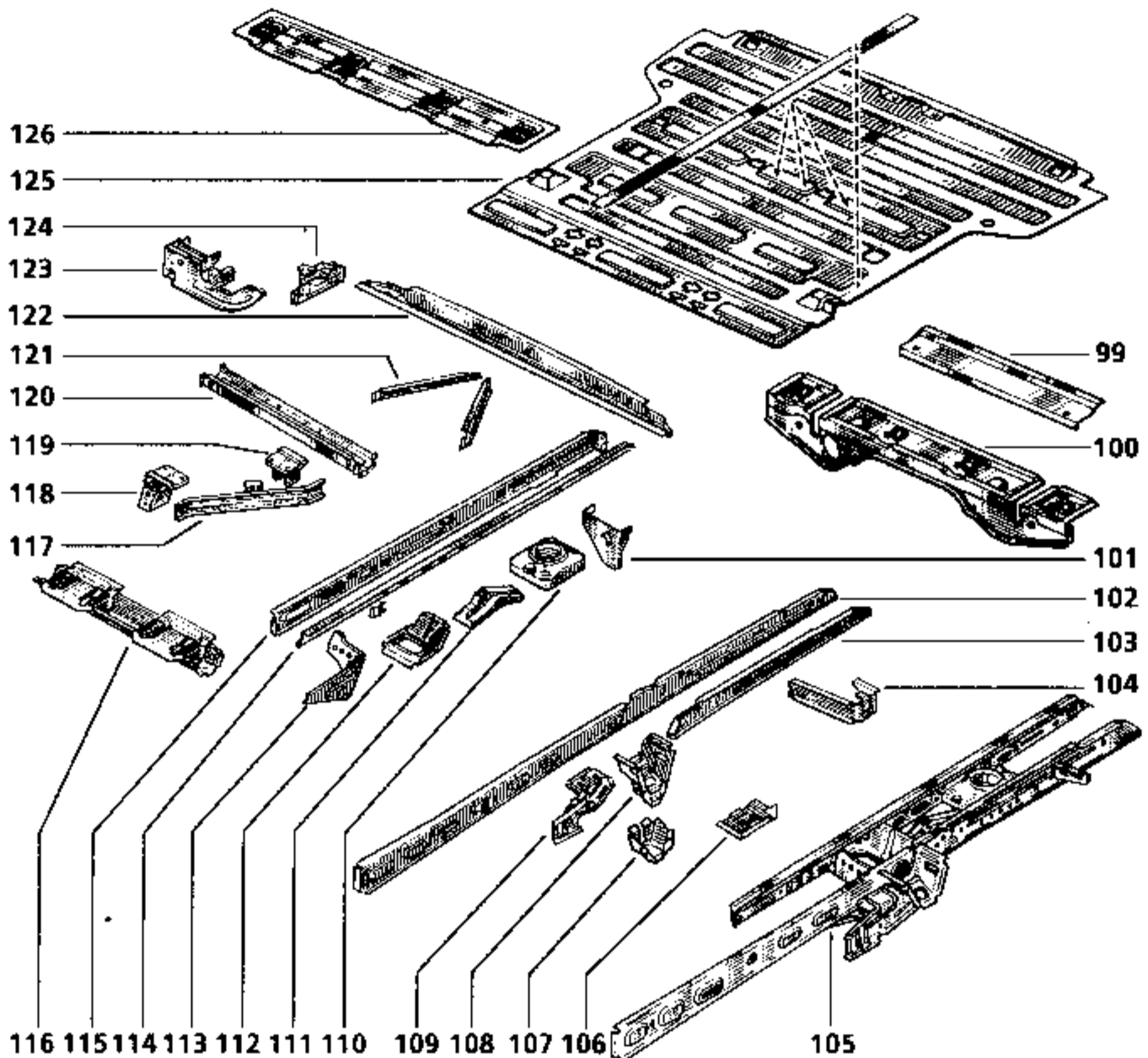
FRONT SECTION

- 70 Steering cross member
- 71 Front side member extension
- 72 Complete front side member
- 73 Side member extension closure panel
- 74 Front pillar side cross member
- 75 Caster tie rod clevis
- 76 Lower side member
- 77 Lower side member lining
- 78 Front half unit
- 79 Harness protection panel
- 80 Front lower cross member
- 81 Upper side member front lining
- 82 Upper side member centre lining
- 83 Upper side member rear lining
- 84
- 85 Steering cross member end piece



CENTRE SECTION

- 85 Seat strengthener cross member with anchorage
- 86 Centre pillar
- 87 Centre side member
- 88 Centre pillar centre cross member
- 89 Handbrake strengthener assembly
- 90 Valance
- 91 Floor panel front half cross member
- 92 Floor panel extension
- 93 Front half floor panel
- 94 Tunnel assembly
- 95 Valance closure panel
- 96 Centre pillar spacer
- 97 Tunnel passage assembly
- 98 Cross member between side member extension

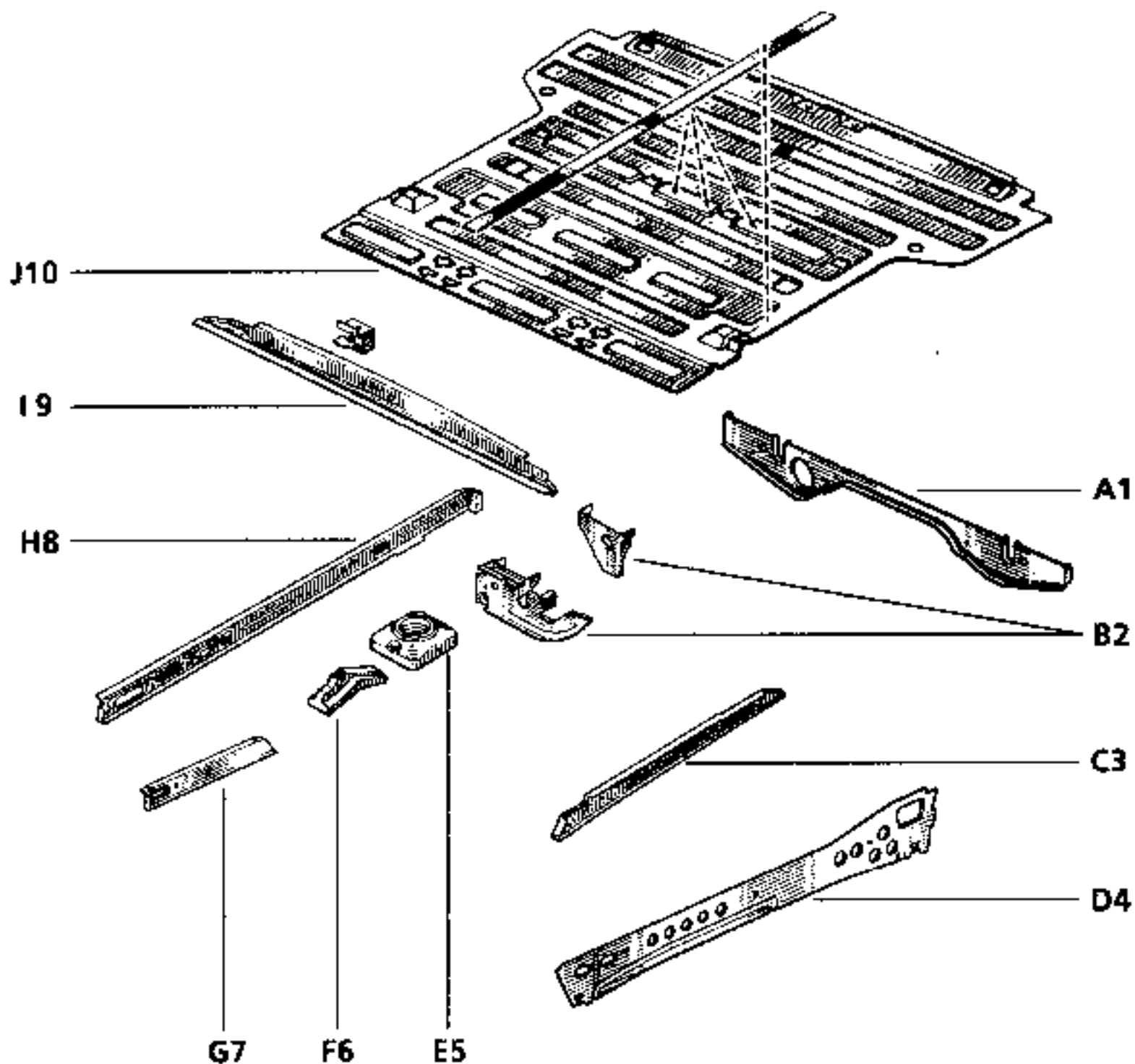


REAR SECTION OF LOWER STRUCTURE

- 99 Cross member centre strengthener between cups
- 100 Cross member between spring cup with seat anchorage
- 101 4 x 4 guide bar mounting
- 102 Outer side member
- 103 Outer side member lining
- 104 Bumper side mounting
- 105 Rear side member assembly
- 106 Seat side strengthener
- 107 Jack mounting
- 108 Rear pillar spacer
- 109 Rear arm outer backplate
- 110 Spring cup
- 111 Shock absorber anchorage clevis

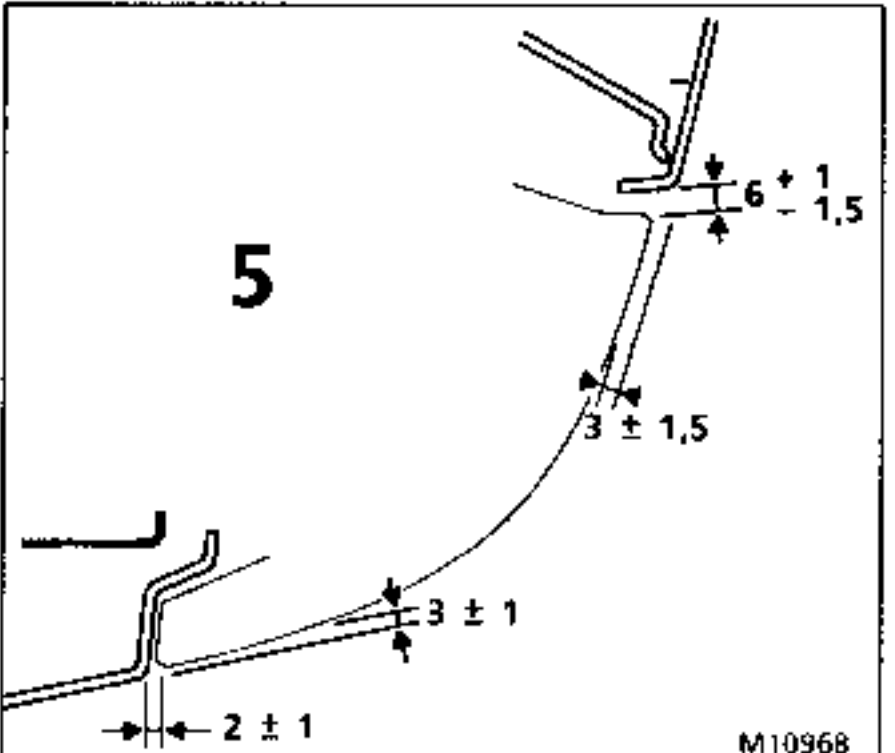
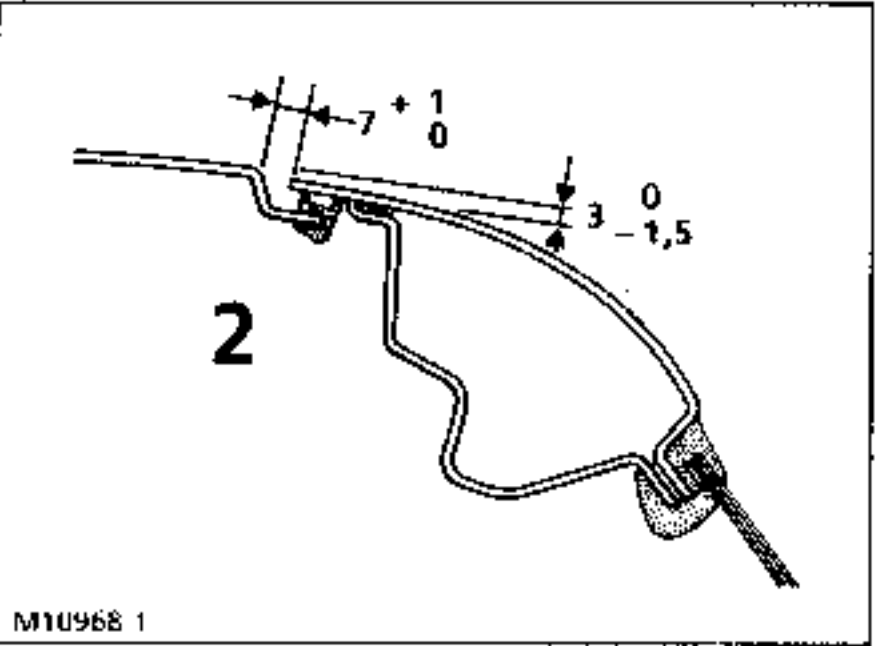
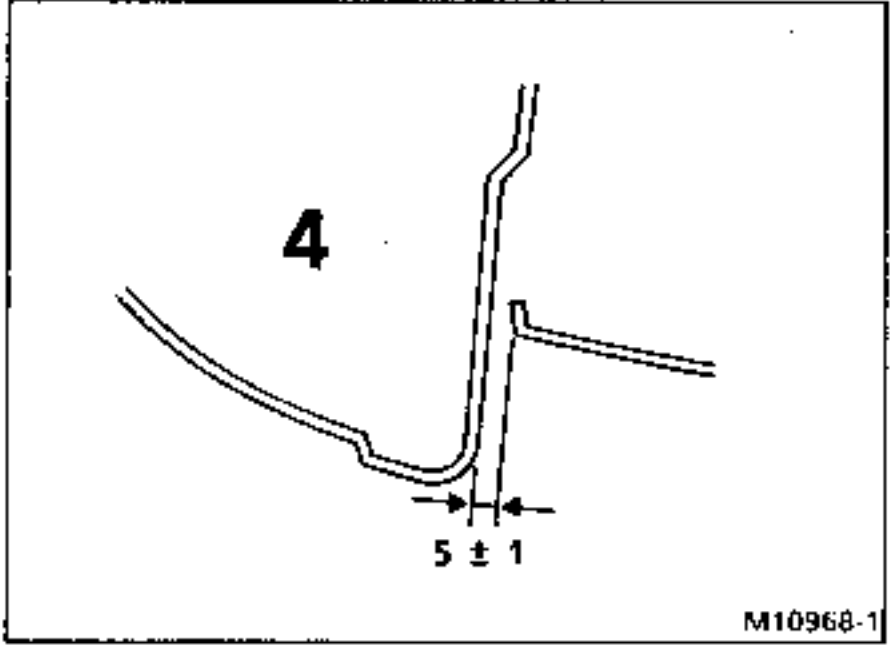
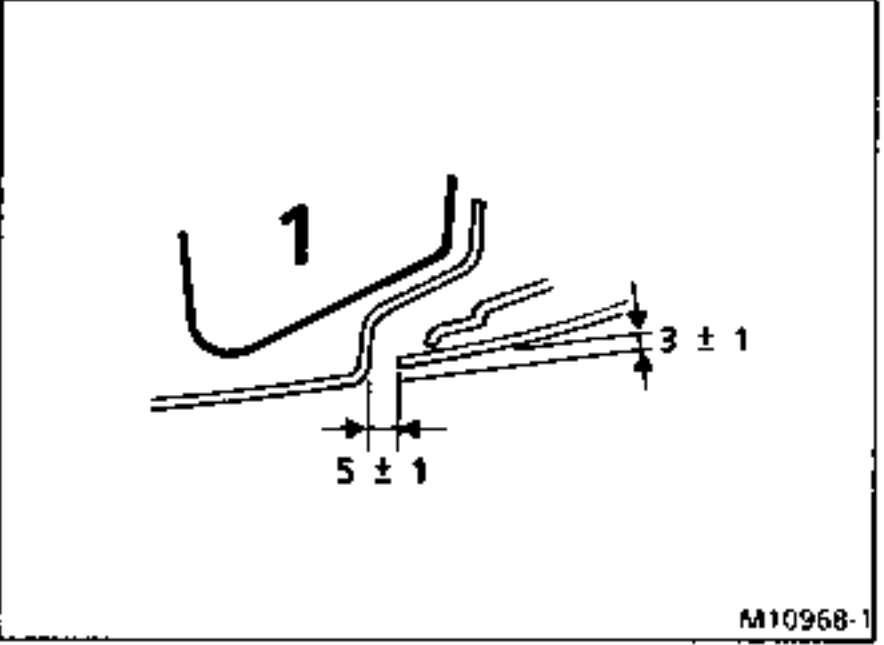
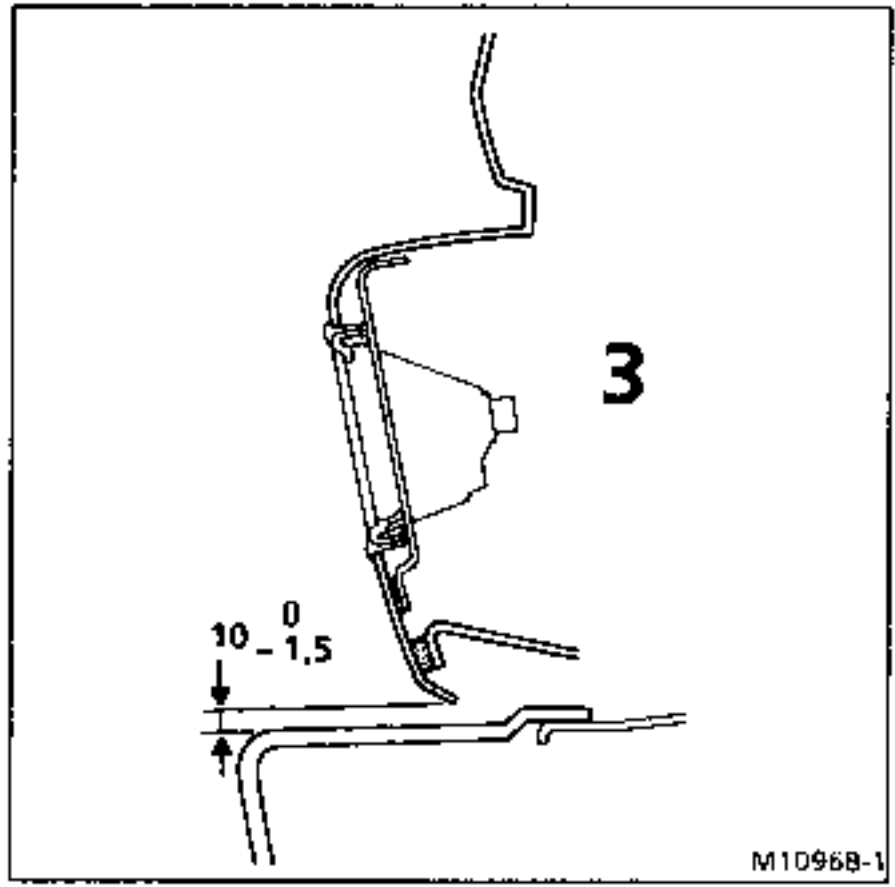
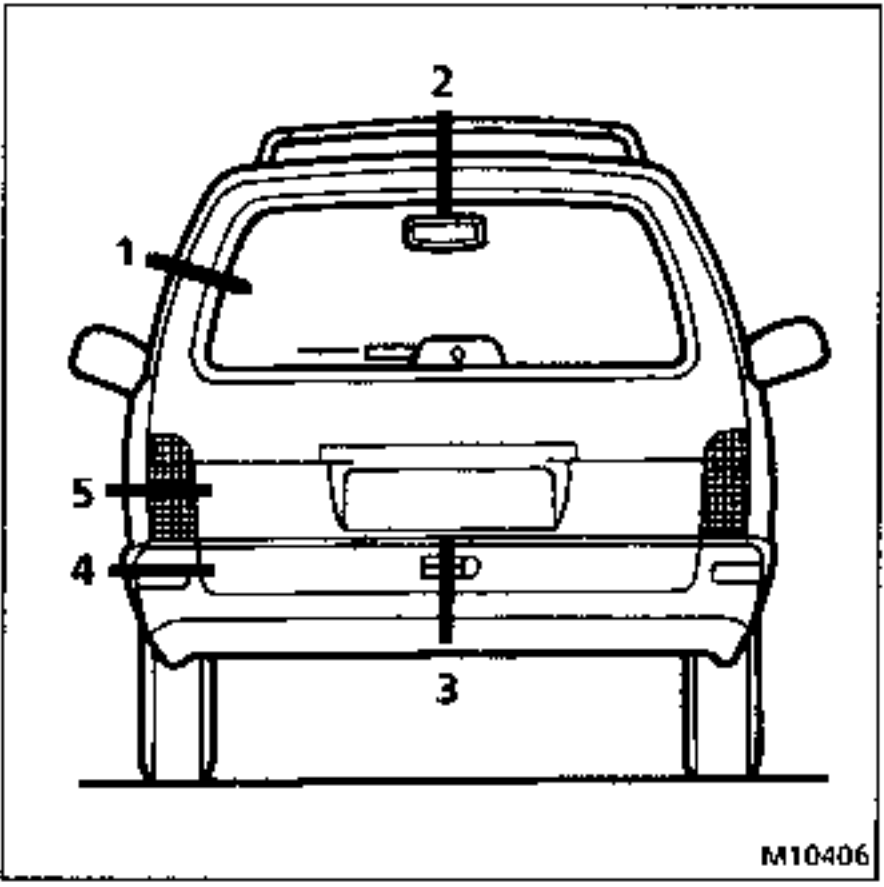
- 112 Rear pillar side cross member
- 113 Rear arm inner mounting
- 114 Inner side member lining
- 115 Inner side member
- 116 Centre cross member with lining
- 117* Connection arm
- 118* Front mounting clevis
- 119* Rear mounting clevis
- 120* Rear cross member
- 121 Towing strengthener
- 122 Rear cross member
- 123 4 x 2 guide bar mounting
- 124 Towing plate
- 125 Rear floor panel
- 126 Seat centre strengthener with anchorage

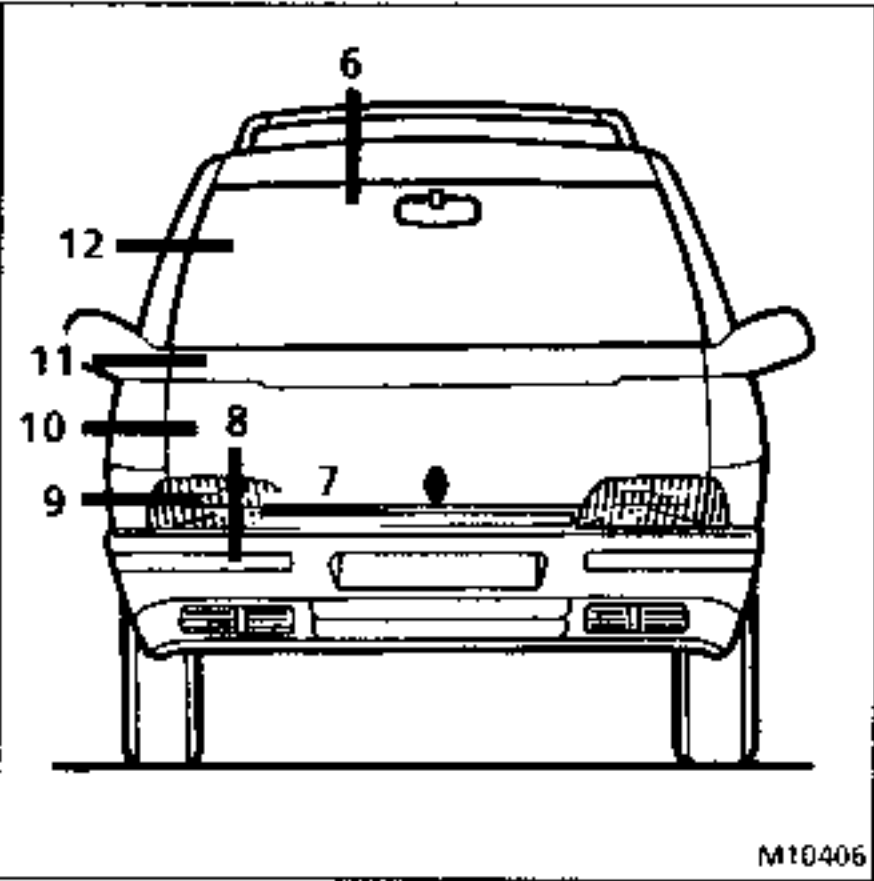
* Parts for securing rear axle on 4 x 4 vehicles



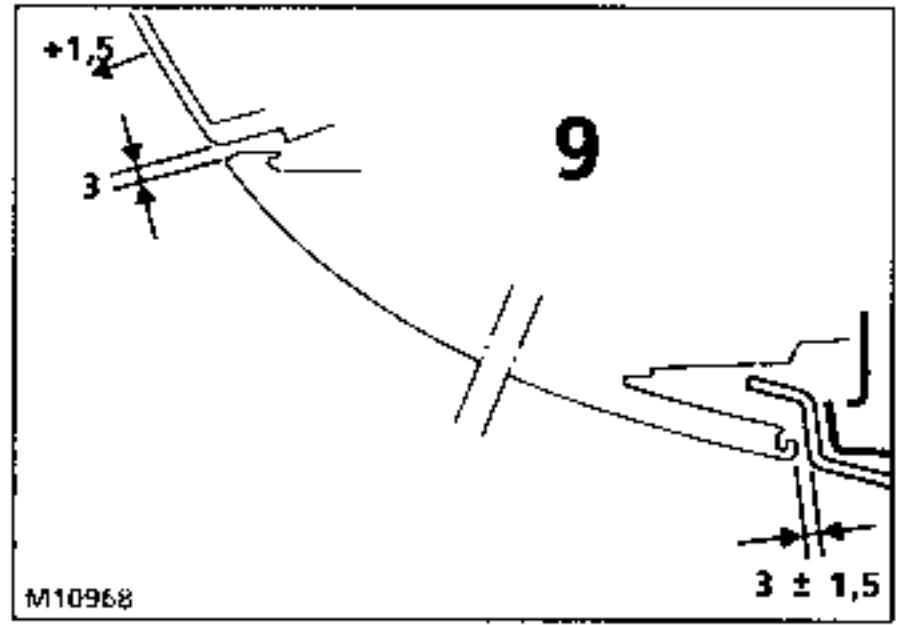
PARTS WITH HIGH LIMIT OF ELASTICITY

- A1 Cross member between spring cups
- B2 Guide bar mountings 4 x 2 and 4 x 4
- C3 Rear outer side member strengthener
- D4 Valance panel
- E5 Spring cup
- F6 Shock absorber anchorage clevis
- G7 Centre side member
- H8 Rear inner side member
- I9 Rear cross member
- J10 Rear floor panel

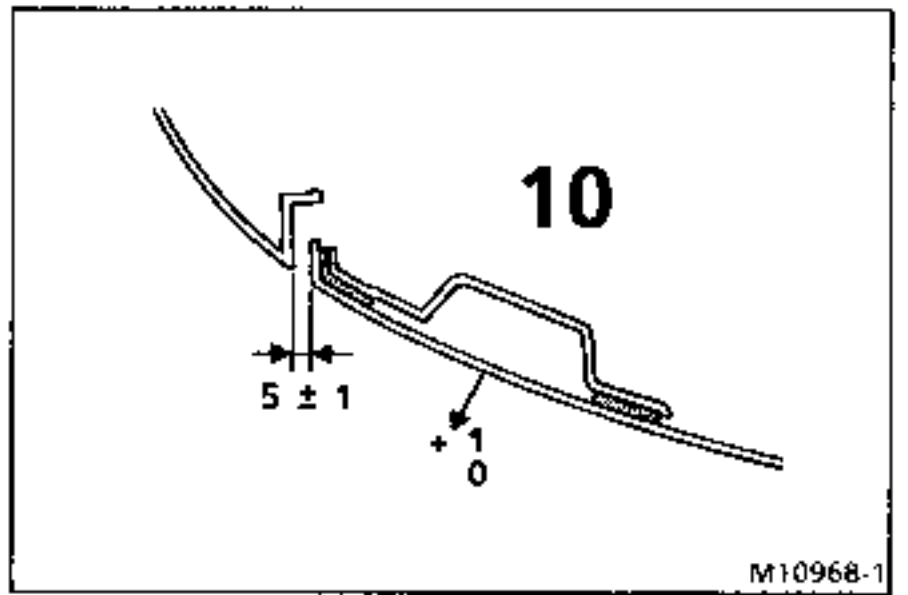




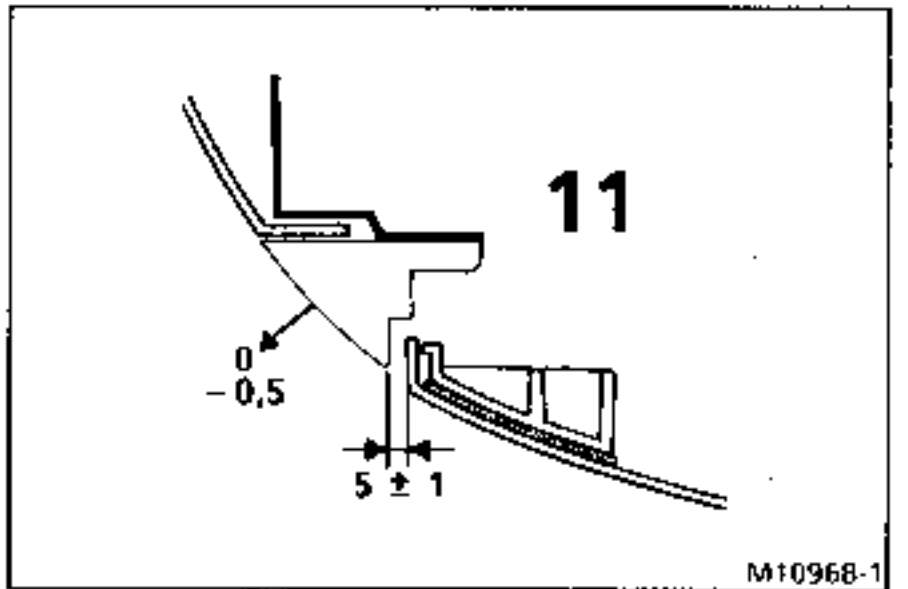
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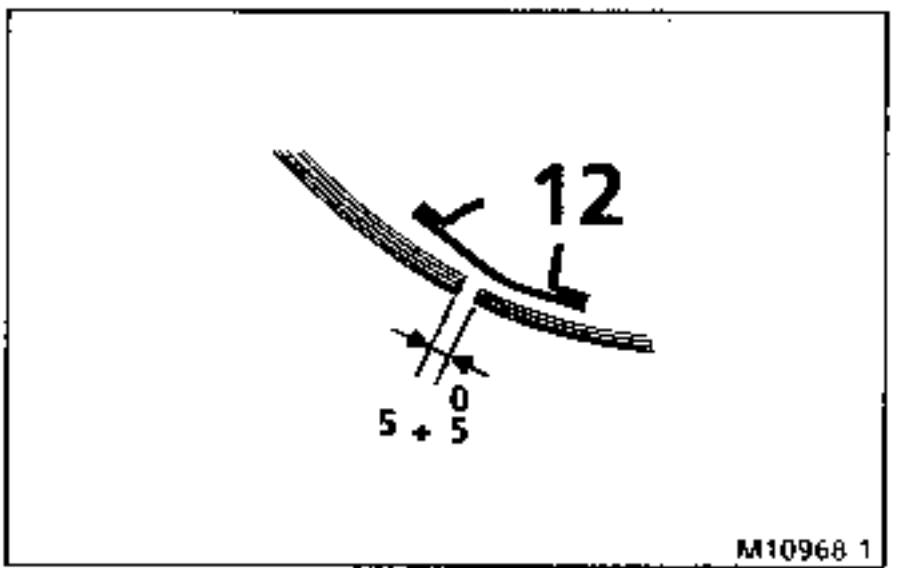
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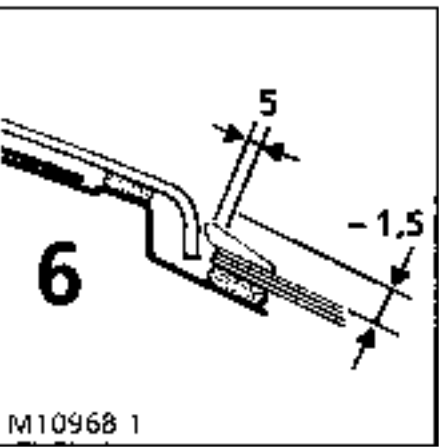
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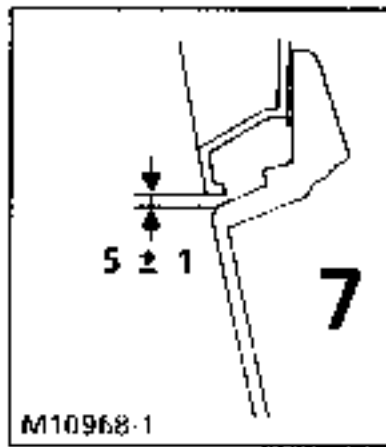
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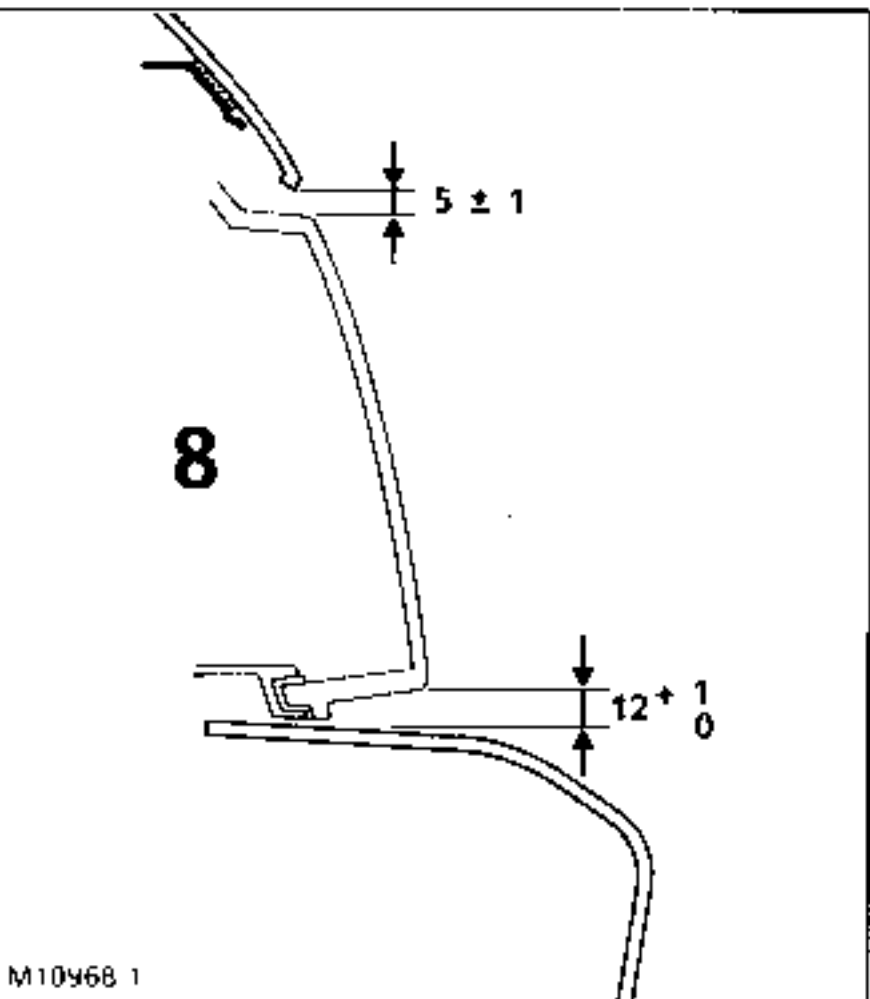
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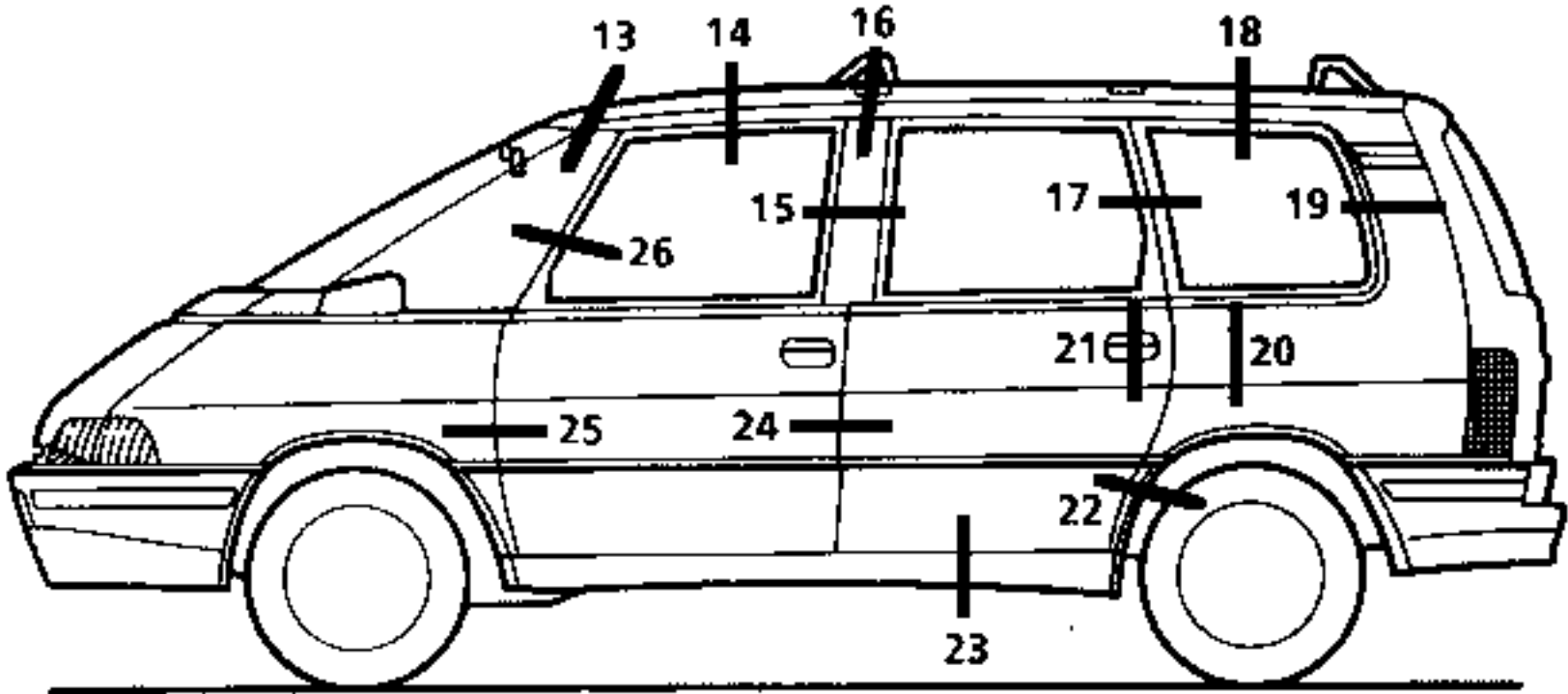
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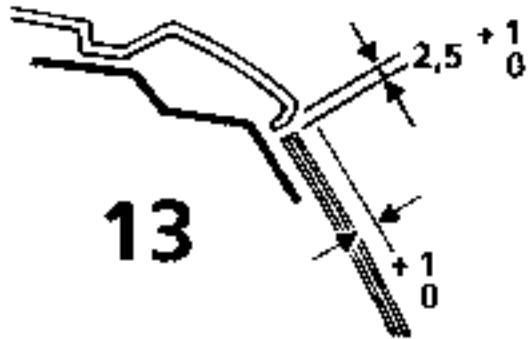
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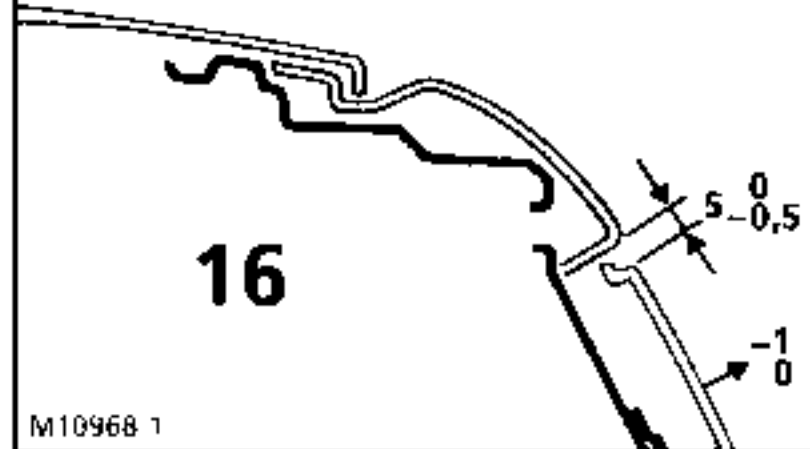


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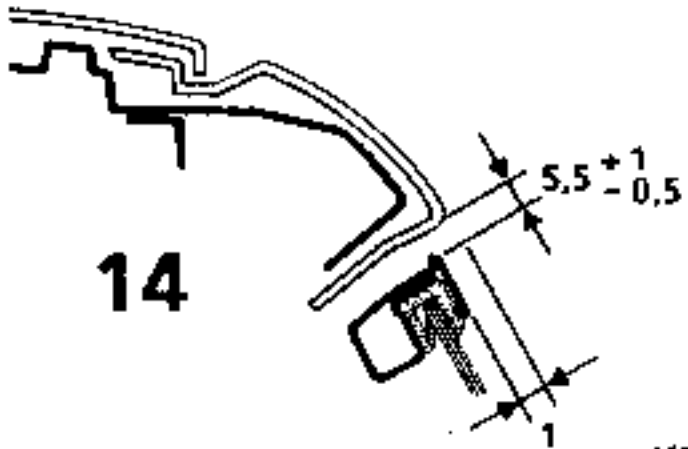
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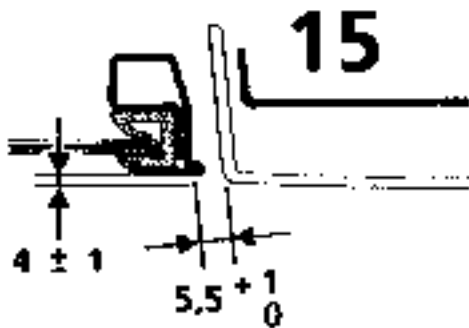
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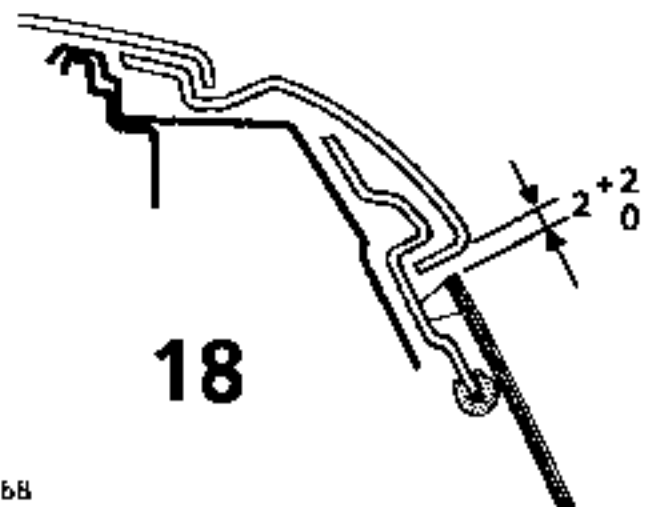
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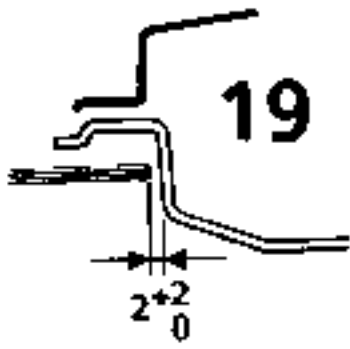
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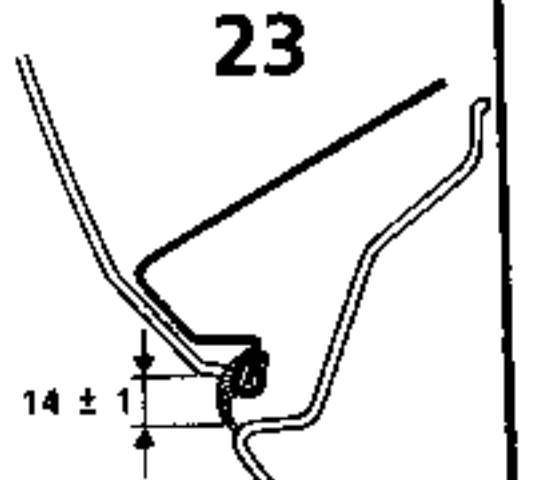


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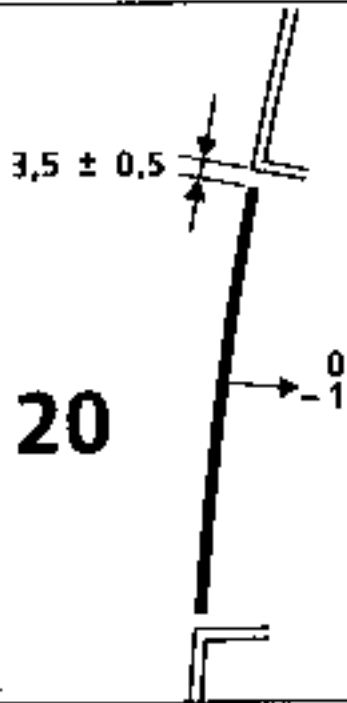
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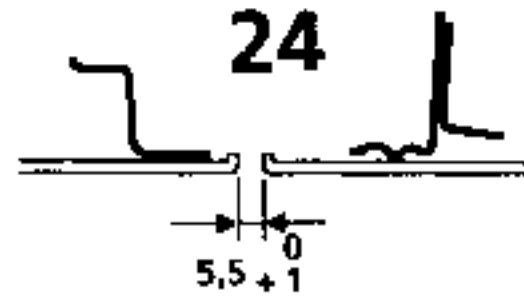
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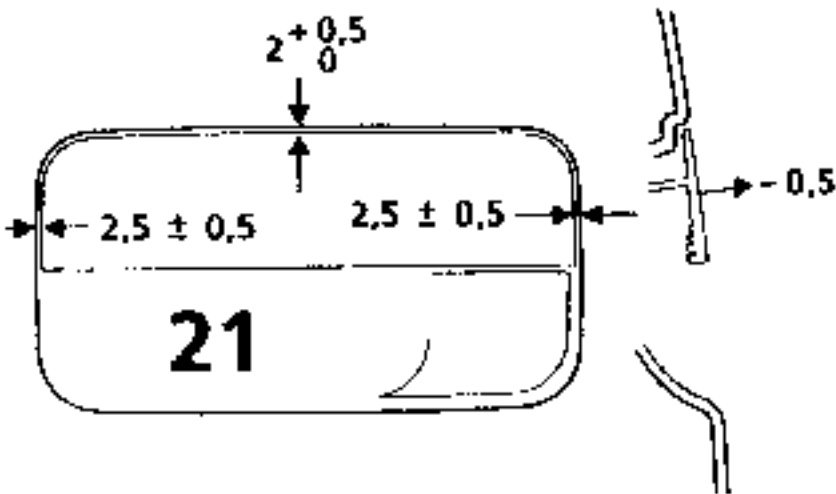
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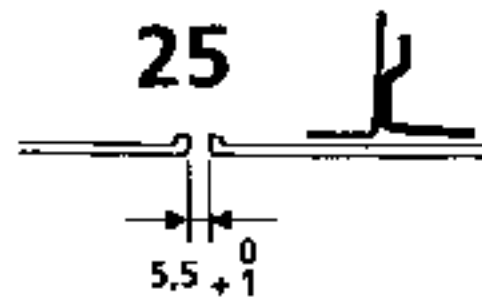
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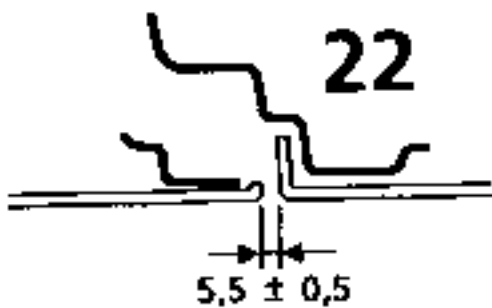
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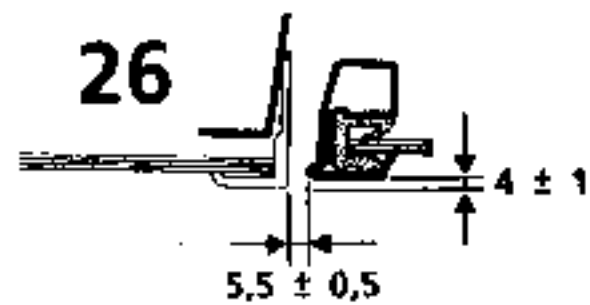
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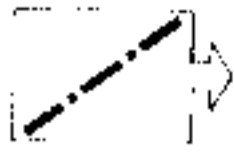
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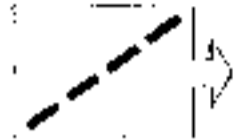
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LOCATION OF OPERATION	TYPE OF TOOL AND ORDER OF OPERATIONS
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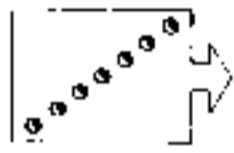
CUTTING OUT - UNPICKING



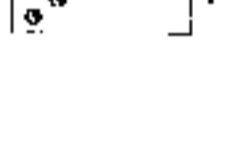
saw or saw




chisel



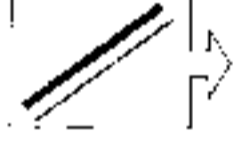
grind back unpick clean




grind unpick clean



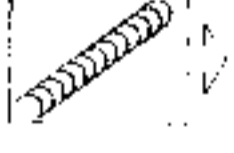
grind back



grind unpick clean

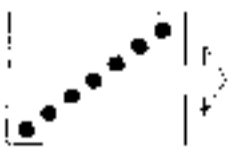
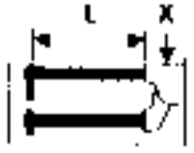


grind



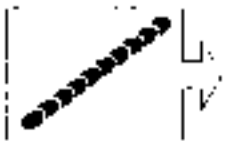
remove solder grind

WELDING

x	L (mm)
1-2	100
3-4	100
5	250
6	350
8	330

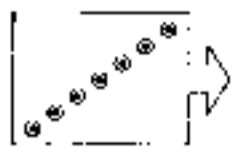
electric spot welds



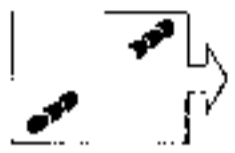
stitch welding grind body solder

LOCATION OF OPERATION	TYPE OF TOOL AND ORDER OF OPERATIONS
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WELDING (continued)




plug weld



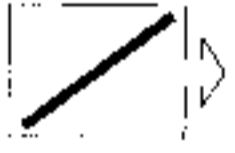
anchorage bead

STRAIGHTENING




nail puller

PROTECTING CRIMPED AREAS

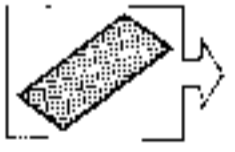


bead of mastic from cartridge



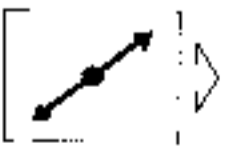
mastic bead and sprayed-on mastic

ANTI-GRAVEL PROTECTION



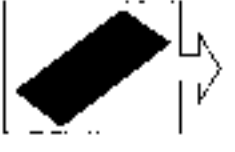
sprayed-on mastic

HOLLOW SECTION PROTECTION



inject with angled nozzle

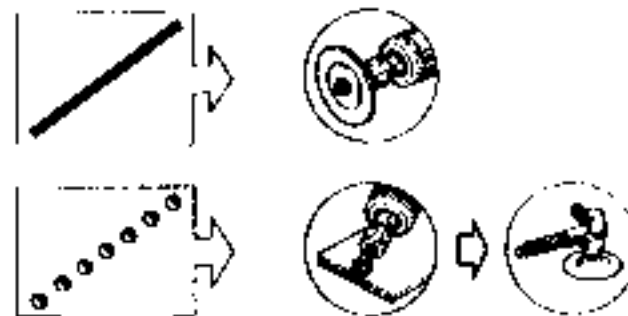
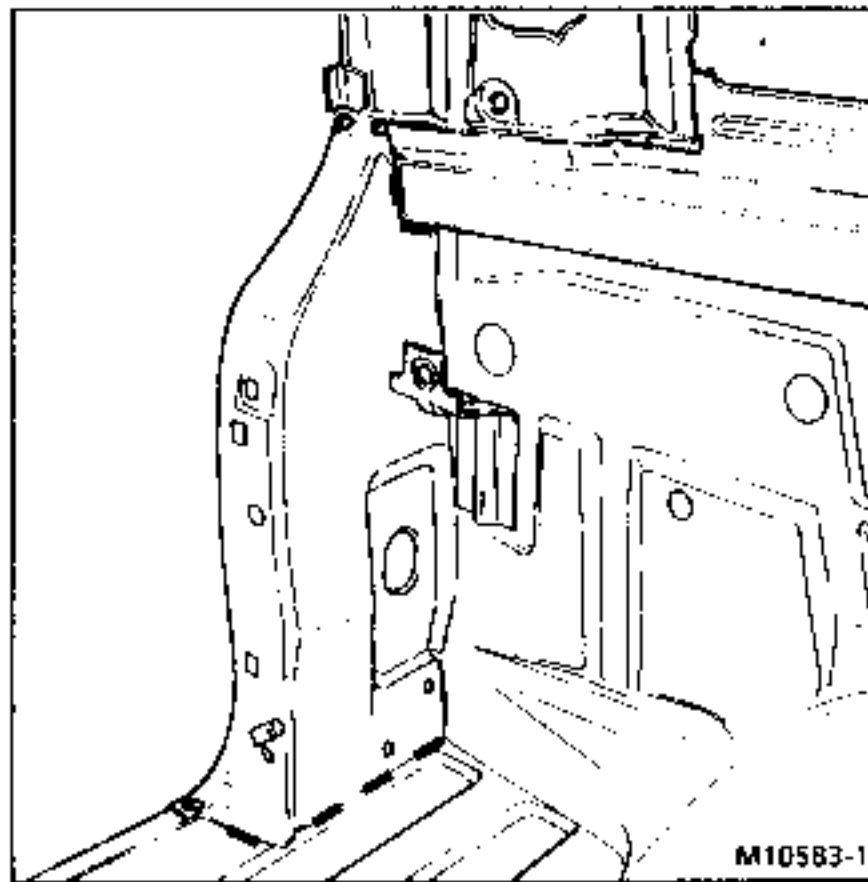
PAINTING STYLISED AREAS



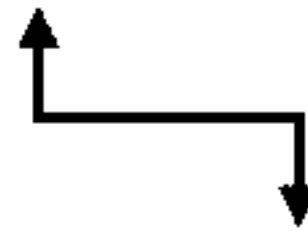
aerosol spray

EXAMPLE OF APPLICATION

CUTTING OUT - UNPICKING



Operation Symbol

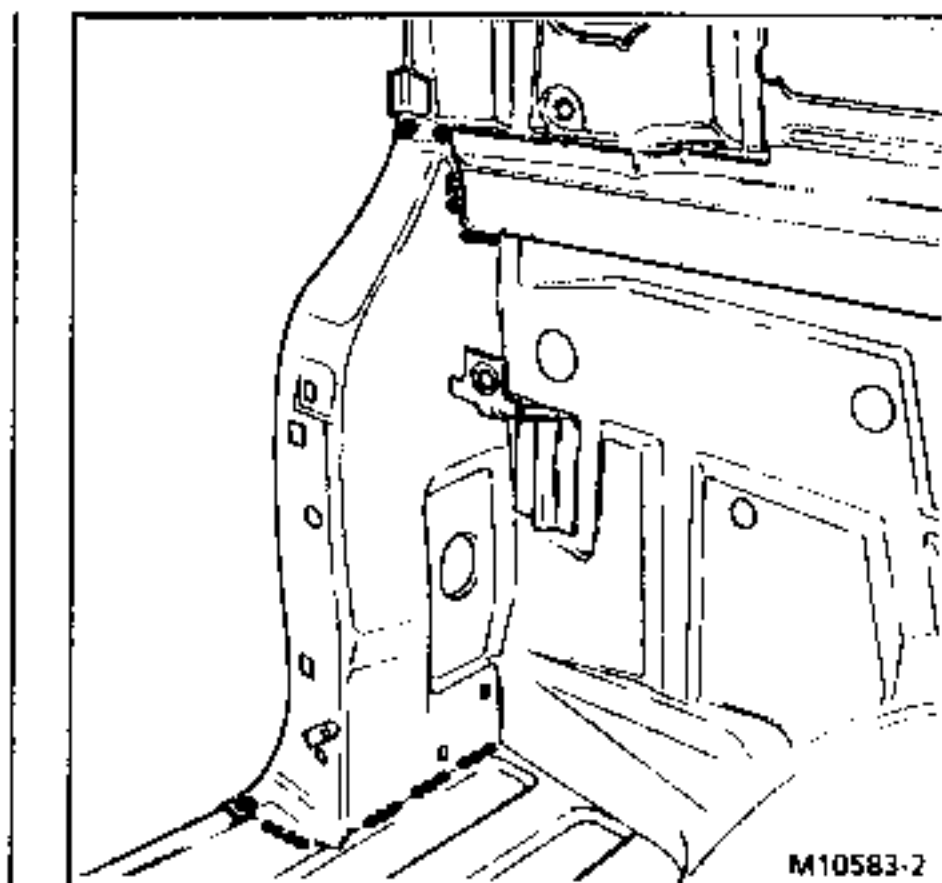
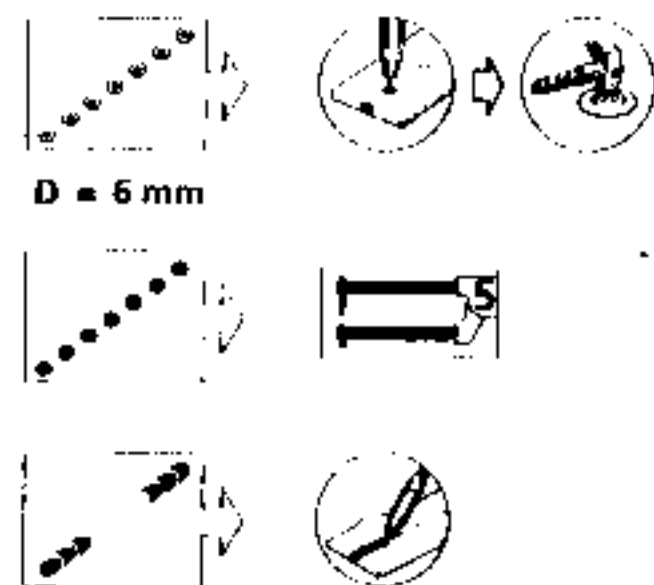


Tool Symbols

This determines the type of operation and the exact point at which it is to be applied.

These show the type of tools and the logical sequence in which they are to be used at the various points concerned.

Note: the operations involved in unpicking the strip of steel remaining in place and grinding back the traces of spot weld remaining on the support panels can only be carried out after the part to be replaced has been entirely removed.



Operation Symbol


This determines the type of operation and the exact point at which it is to be applied.

Tool Symbols

These show the type of tools and the logical sequence in which they are to be used at the various points concerned



SAFETY SYMBOL.

Those operations covered by current safety regulations are identified by the symbol . They are to be carried out with particular care, by the repairer, when carrying out work on the vehicle.

We should like, in particular, to draw your attention to areas of welding on vital components.

These areas are classified as "safety" welds following impact tests carried out on vehicles and endurance tests carried out on bodywork.

It is therefore very important that they should be carefully applied under repair conditions to return the components to their original strength and thus ensure that the repair is of the necessary quality to ensure complete safety.

We should like to remind you that the welds round seat belt anchor points are also classified as safety welds.

SPECIAL INSTRUCTIONS FOR WELDING GALVANISED PANELS

All replacement parts for the steel structure of the ESPACE are supplied galvanised. Any welding operations required during repair are to be carried out in a well ventilated area, using, preferably, spot welding equipment or the protective gas envelope welding process (MIG-MAG).

Generally speaking, the stripping back of the areas to be welded is not recommended as this could compromise the original anti-corrosion protection qualities of the vehicle. After welding, it is advisable to brush over the weld bead while it is still hot using a metal brush so as to regalvanise the bead and the zinc at the edge.

1 - SPOT WELDING

It is essential to carry out tests on galvanised steel test pieces to determine the current strength and pressure required to obtain a good quality weld (too low a current or too low a pressure will result in a dry weld).

NOTE: For full instructions on adjusting the equipment consult the bodywork manual, "Checking and adjustment dimensions" or the relevant paragraph in the "welding equipment" section.

2 - WELDING UNDER A PROTECTIVE GAS ENVELOPE

- Use steel wire 0.6 or 0.8 mm in diameter (eg. METALLIT, Fil Mag Zinc Rouille Extrem or METAFLEX; an ATAL gas envelope.
- Set the distance between the end of the nozzle and the end of the contact tube at approximately 10 mm.
- The equipment is to be adjusted on ordinary sheet steel of the same thickness as the panelling to be welded.
- Under all circumstances, before starting welding apply an anti-splatter product to the area on either side of the weld and inside the nozzle of the equipment to keep the panelling clean.

. BUTT WELDING

Leave a gap between the panels equal to half their thickness.
Apply the weld by the "stitch" method.

. LAP JOINTS

Strip back the edges of the panels to be welded.
Apply the weld by the "stitch" method.

. PLUG WELD

Drill the upper of the two panels to a diameter of 4 to 5 mm (allow for this when adjusting the equipment).

Ensure that the panels are correctly positioned (even the smallest gap can cause perforation and poor quality weld).

If necessary, apply two plugs, one on top of the other.

We strongly advise against using the OXYACETYLENE (gas torch) process.

Those parts which will be visible (centre door pillar for example) can be finished with SOFT SOLDER without any particular problem, using a hot air gun.

In some special cases of sealing indicated below, brazed joints can be made for sealing purposes with cupro-aluminium wire and INARC Argon or brazed joints may be made using low melting point rods (for example CASTOLIN XUPER 18XFC or METALLIT CA20F).

Only apply these brazed joints to the windscreen aperture where they are provided in series:

- righthand and lefthand joins of quarter light lower stretcher in the front section with the engine compartment upper panel;
- righthand and lefthand joins between windscreen cross member and front section of upper stretchers.

IMPORTANT: in all cases after completing the weld, the repaired areas must be protected according to the sequences described in this manual, that is to say:

- passivation - galvanising and zinc paint;
- mastic application, sealing with smoothed or sprayed-on beads;
- normal paint;
- injected hollow section protection.

STRIPPING

All parts removed must be placed on a trolley provided for this purpose.

The details for removing the trim elements are given in the section relating to each element.

CUTTING OUT - UNPICKING

Remove the damaged part, following the instructions given with the diagrams for each operation (if necessary consult the section on using the symbols at the beginning of this chapter).

Grind back any pieces of spot weld remaining on the vehicle panels.

Special points concerning the replacement of part panels with overlapping cuts:

Cut out the new part approximately 50 mm larger than the part removed from the vehicle.

Position the new part on the vehicle such that it covers the damaged area then secure it using vice clamps.

Saw through both panel thicknesses so as to make it easier to align the cuts, then remove the new part.

PREPARATION BEFORE WELDING

Grind with a disc or flat any bumps or grains of zinc so as to ensure that the areas to be welded are flat (both on the vehicle and new parts), but do not destroy the entire zinc coat.

Prepare the parts to be plug welded. For this purpose, drill the first panel to diameter D indicated under each welding diagram.

Fit the new part on the vehicle then secure it using vice clamps.

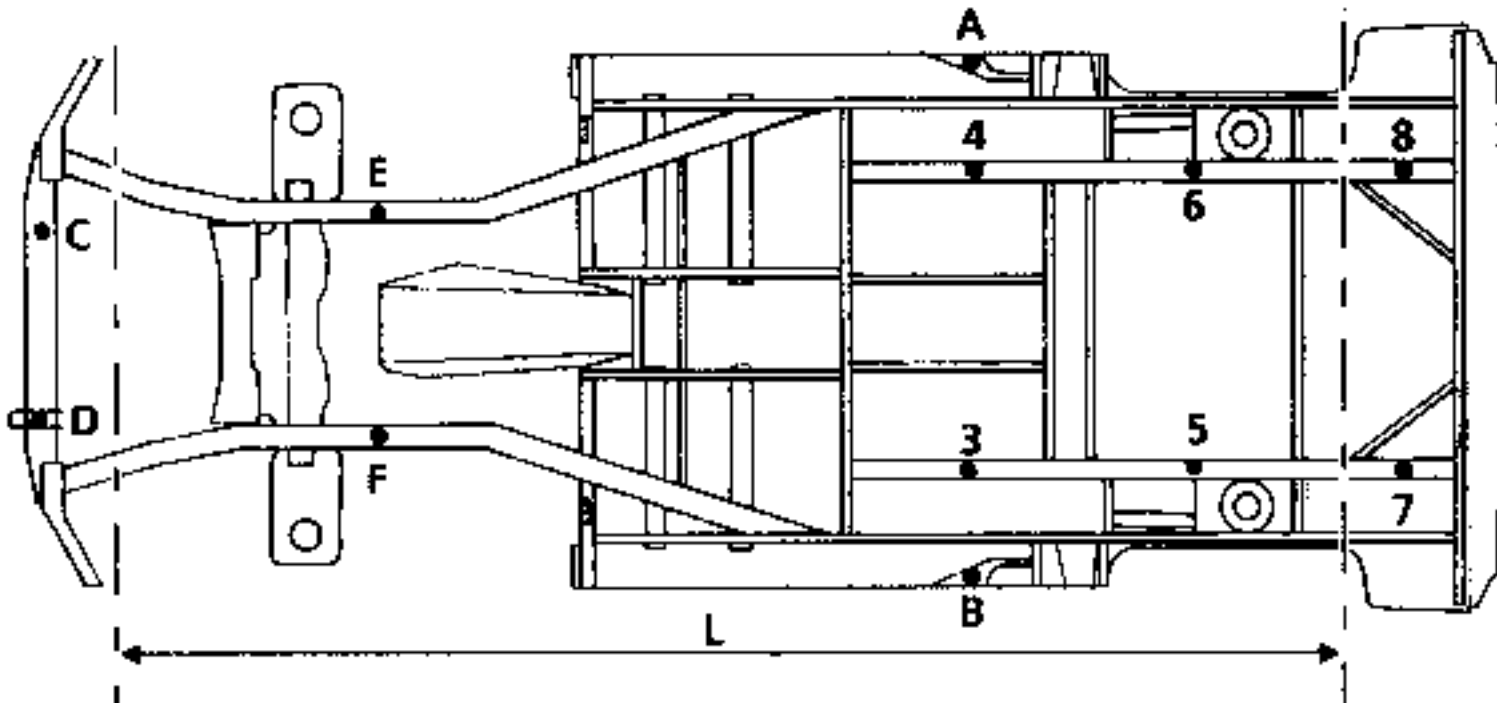
WELDING

Apply as necessary:

- tack welds along the butt weld lines;
- electric spot welds;
- stitch welds under protective gas envelope;
- plug welds under a protective gas envelope.

Apply soft solder to the butt welded sections after grinding down the weld bead.

CHECKING THE PILOT GUIDE POINTS LAID DOWN BY THE DESIGN OFFICE FOR THE CONSTRUCTION OF THE BODY SHELL



M10597

If there is any distortion in area (L) the repairs must be carried out on the jig bench.

NOTE: A damage diagnosis method is described in this manual under the section: DETERMINING THE EXTENT OF BODY DAMAGE.

STRAIGHTENING - REBUILDING - CHECKING ON THE JIG BENCH

For reasons of SAFETY and to obtain a better QUALITY of repair, it is FORBIDDEN:

- To replace a side member, half unit or complete unit without using the jig bench.
By using the jig bench we ensure that the vehicle is rebuilt to the original manufacturing dimensions and that the front and rear axle assemblies are correctly positioned.
- To carry out pulling operations on a vehicle mounted on the jig bench brackets without first anchoring the vehicle to the jig bench by at least two clamps on the body sill. These clamps are to be as near as possible to the area to be pulled to avoid applying jacking loads to the jig bench brackets as these could distort them.

It is also very important, when bodywork has suffered damage that involves replacing a welded component, to jack out, before removing it, the component to be replaced to return the bodywork as near as possible to its original shape and thus free the adjacent components from the stresses caused by the damage (see MR501, F001).

REPLACING WELDED COMPONENTS

The operations involved in replacing welded components and the lines along which they are to be cut are defined on the basis of the capacity of each of the component production lines and the following criteria:

IN THE CASE OF THE EXTERNAL BODY PANELS:

To avoid extensive distortion when butt welds are made.

To permit planishing tools and anti-corrosion protection equipment to be passed through.

IN THE CASE OF THE SUB-FRAME COMPONENTS AND THE OUTER PANEL LININGS:

Following an impact, the cutting lines shown reduce the risk of distortion to the passenger compartment and the side members at points past the mechanical unit securing points (a risk which is made even greater by the heated areas round the welds that set up stress raisers).

For reasons of safety, it is FORBIDDEN:

- . To cut, and butt weld, or to heat in order to straighten:
 - the side members on the sections between the mechanical unit securing points and the passenger compartment. (only the extreme ends of the side members, in front of this point, can be replaced by butt welding).
 - the door pillars at the seat belt anchor points,
- . To cut and butt weld on the same line any bodywork component and its inner lining or stiffener.

Offset the two cut lines by a few centimetres to separate the soft areas caused by the welding.

Soft solder may be applied to improve appearance.

- . To braze the side members or any other structural component part of the vehicle (only the outer panels can be brazed at the points stipulated in the methods described in this section).

If it is impossible to weld such components together by spot welding, we recommend using welding under a protective gas envelope (MIG OR MAG) either in the form of plug welds or stitch welds (see the welding section in the bodywork handbook).

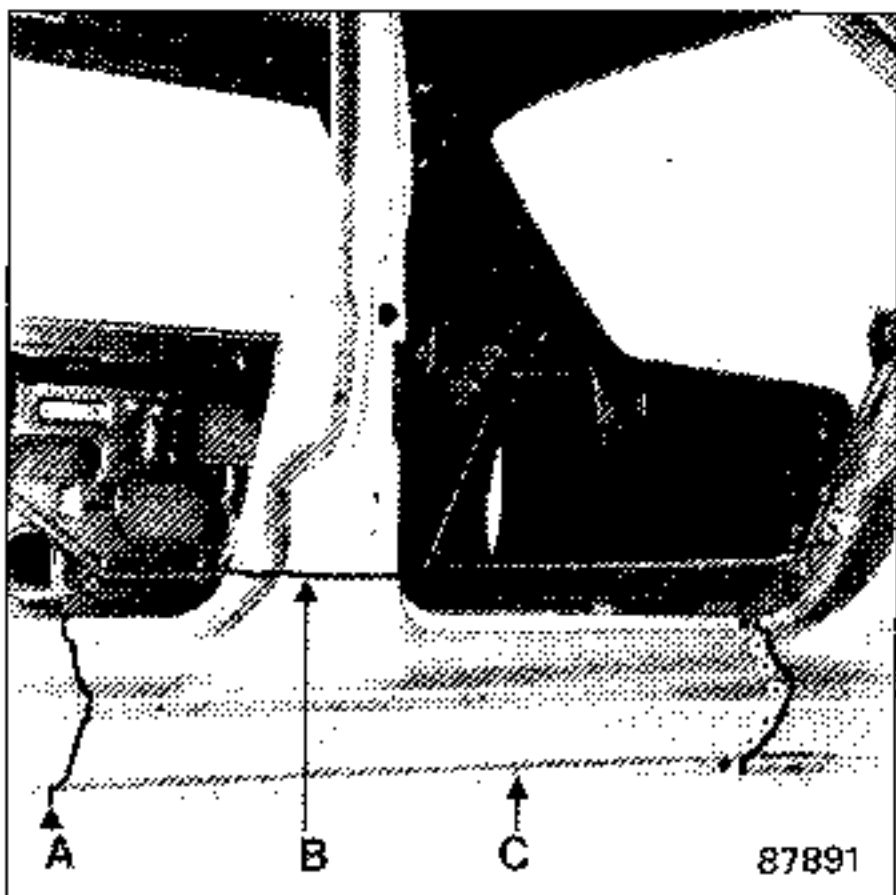
THE PROTECTION OF REPAIRED AREAS

It is very important to avoid any future problems following the repair or replacement of a body component, to reapply, effectively, the internal and external protection so as to obtain characteristics identical to those on the original body shell and thus ensure that the repair is of good quality.

Depending on the case, two different types of protection are to be applied:

Butt welds (A) or (B)

- . before welding: strip back the internal and external areas to be welded, to the bare metal;
- . after welding: in accessible box sections and outer sections, after brushing the repair with a nylon brush, protect the welded area by applying a coat of DRA passivating agent with a paintbrush. After drying, paint or spray on 2 successive coats of zinc paint. On the visible sections (engine compartment), apply the same protection as above plus a coat of aluminium paint. Under the body, apply the same protection and spray on a coat of anti-gravel mastic.
- . after painting: in box sections that are inaccessible, apply the hollow section injected protection sequence.



General repair instructions (C)

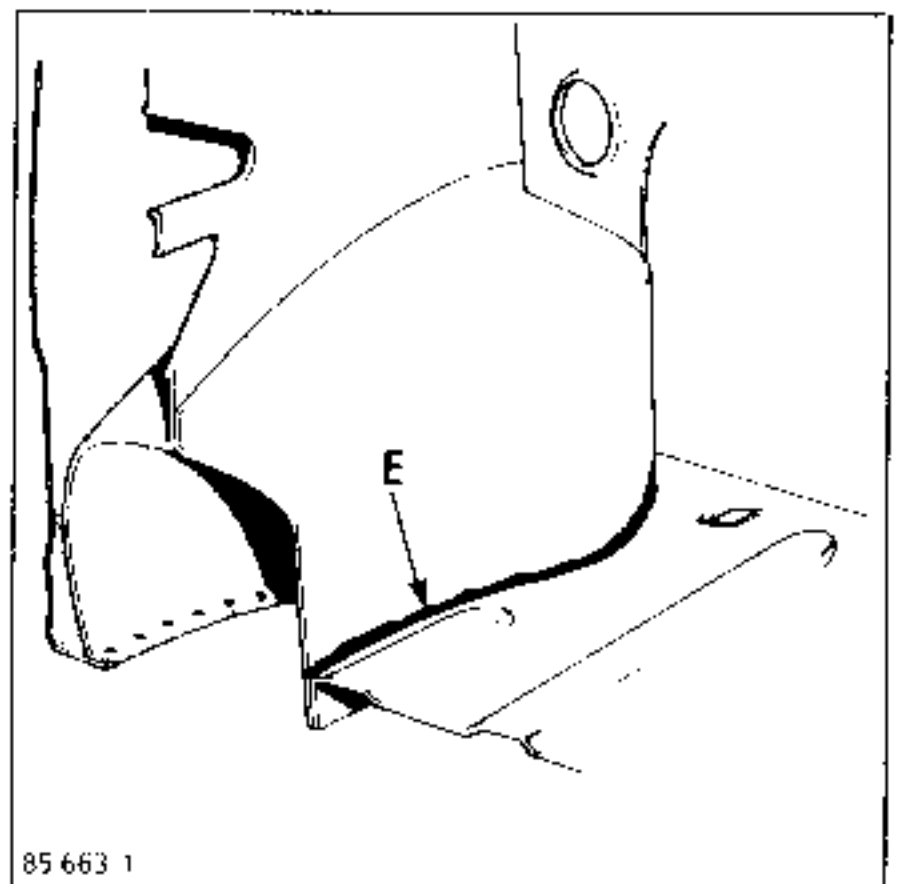
- . before welding: gently flat the outer and inner faces of the areas to be welded, to obtain good contact on welding.
- . after welding: apply the passivating agent DRA followed by two sprayed coats of zinc rich paint. Spray a strip of anti-gravel mastic over the joint between the parts.

Door panels

To bond the panel to the door structure, use a one-component adhesive SIKA after degreasing and an adherence primer to the panel and protecting the door body against corrosion (see section entitled side collision: doors).

Protection by the application of sprayed anti-gravel mastic (E)

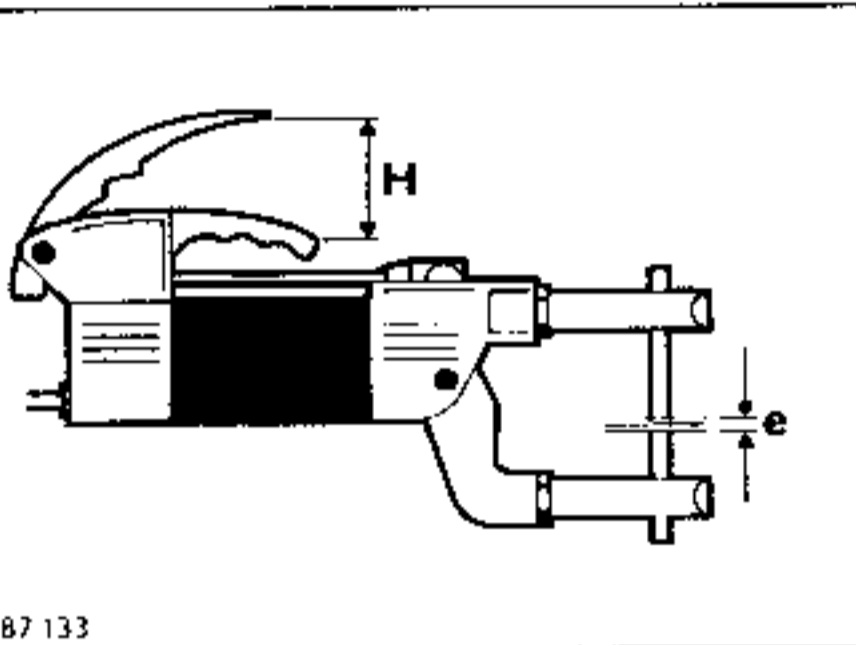
This two-component product must be used on all sections protected originally as well as on all repaired areas under the body so as to ensure that the repairs are of high quality. The panel joint areas are to be sealed after welding with a bead (E) then mastic is sprayed onto them (very carefully for the joins in the passenger compartment).



All adjustments must be performed by testing panel samples identical to those to be welded according to the smallest thickness.

ELECTRIC SPOT WELDING

Adjusting the pressure (dimension H)



Dimension (H) is regulated by having a thickness (e) equal to the actual thickness to be welded between the electrodes. The value of this dimension (H) is selected taking account of the thickness of the thinnest panel in the stack to be welded.

The thickness of panel (e) for the adjustment of (H) may be obtained using a set of feeler gauges (for example Facom 804).

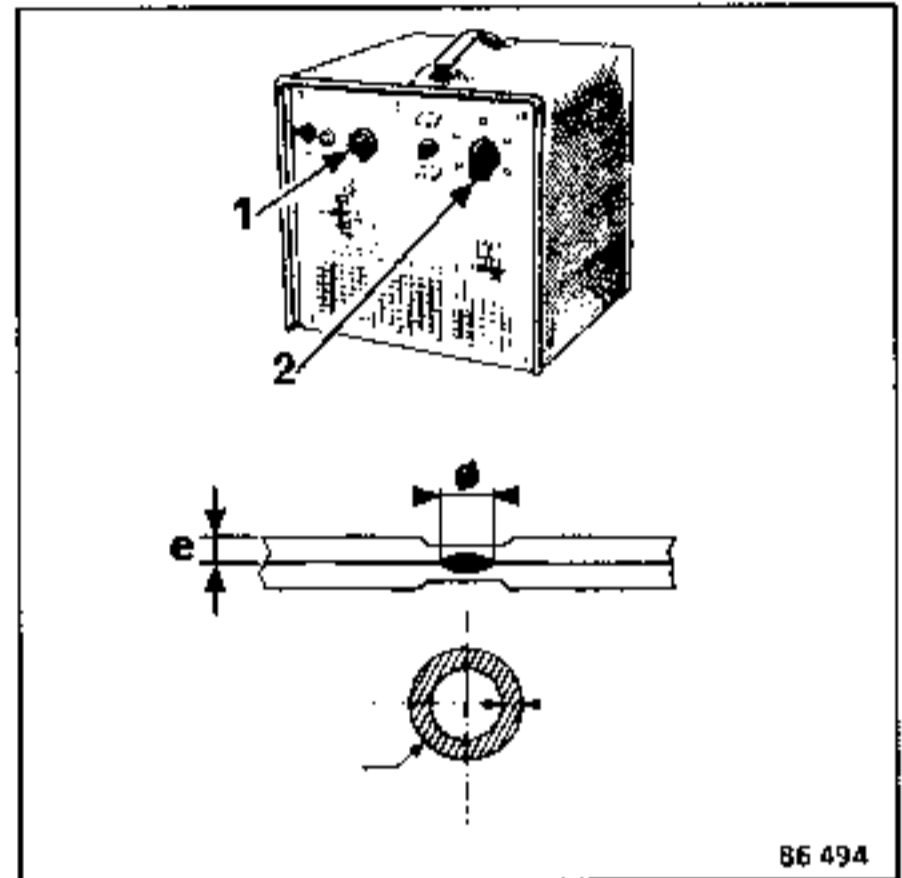
Adjusting the welding time and intensity

This adjustment depends on the electrical supply of your workshop. It must be adjusted by testing panel samples identical to those on the vehicle.

Turn the welding time knob (1) to the first graduation. Gradually increase current intensity by turning knob (2) until the core of the spot weld blows and then move back by one graduation.

Then increase the welding time (knob 1) to obtain the correct core diameter as shown in this chart.

in mm	RNUR 01 50 903 Standard						
e	0,6	0,7	0,8	1	1,1	1,3	1,5
H	4,5	5	5	5,5	5,5	6	6,5



NOTE: on this vehicle some of the parts are made from special high tensile steel. The spot weld adjustment required for welding these steels is different from that for normal steel:

- intensity I -20%
- welding time T +25%
- pressure H -10%

The values of H stated allow for these special characteristics.

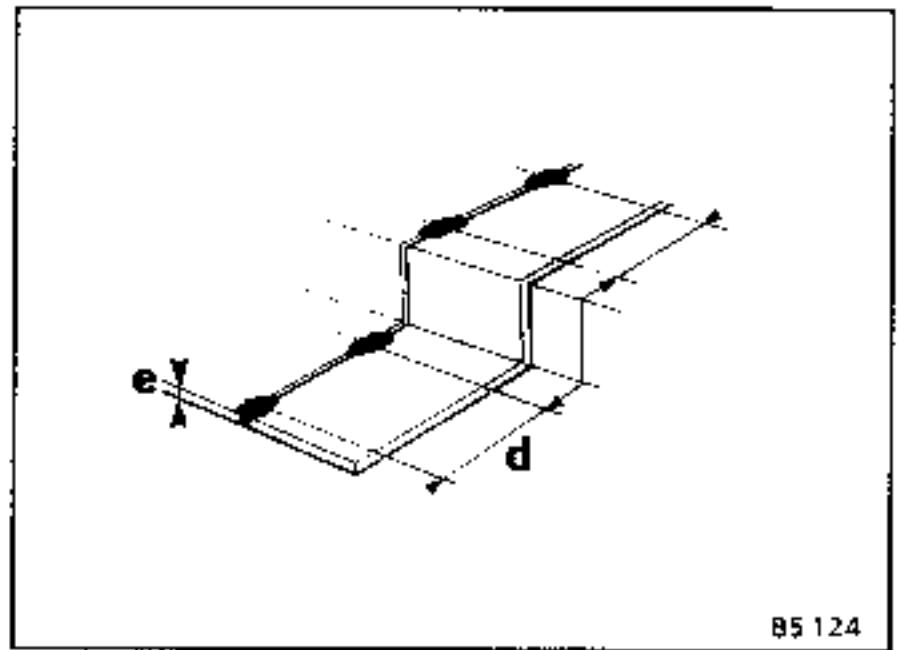
WELDING UNDER A MAG GAS PROTECTIVE ENVELOPE

Continuous fillets

Set the current strength knob to a figure estimated to suit the thickness of the panelling.

By carrying out a series of tests, determine the wire throughput required to obtain a uniform fillet.

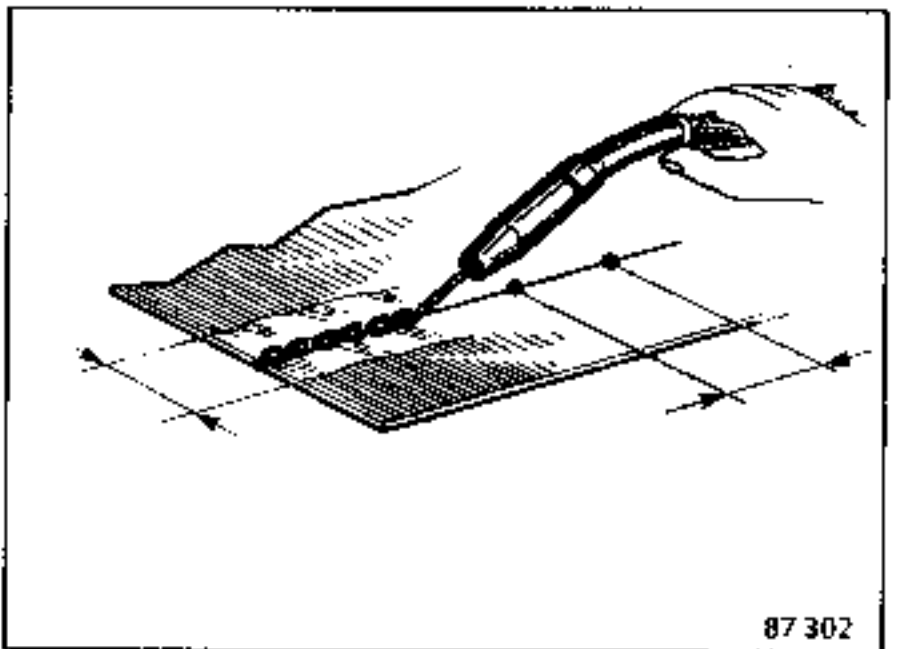
Turn the panelling over to ensure that the penetration is correct. If it is not, adjust the current strength and redetermine the corresponding wire throughput.



85 124

Welding:

Apply a series of stitches, overlapping one another. Leave 4 to 5 seconds between the application of each stitch to limit the extent of the blued area

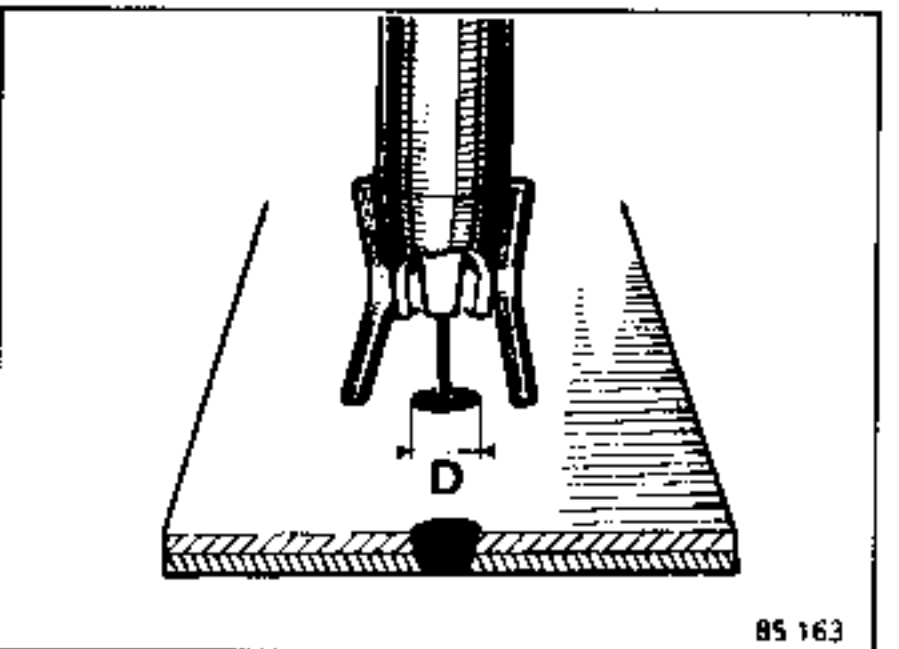


87 302

to 10 mm.

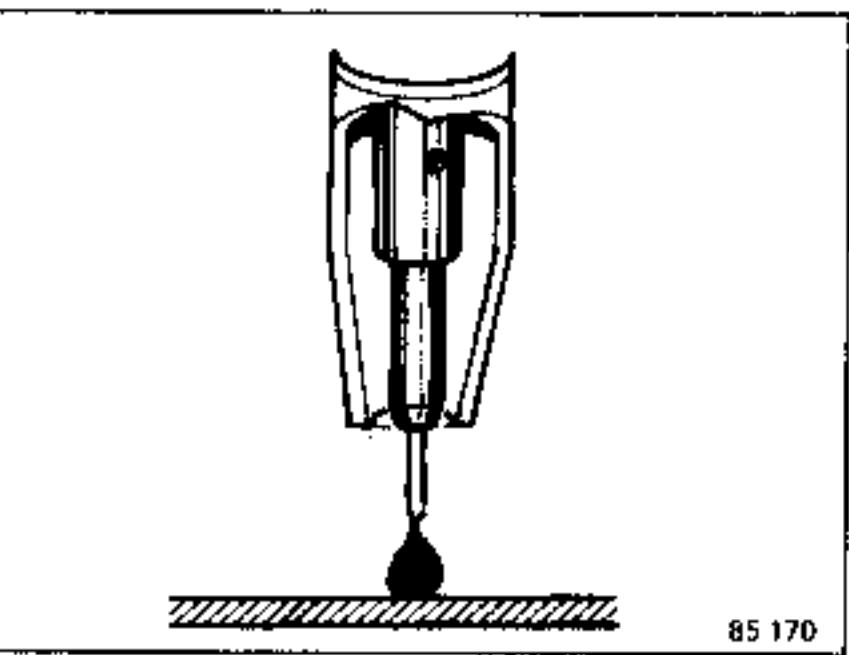
Special instructions for plug welds

The weld is carried out by drilling the upper of the two panels and then plugging the hole with the weld. Tests are



85 163

to be carried out to obtain a flat weld.



85 170

Spot welding

Adjust the equipment by the same method as for continuous fillets then increase the current strength by one position to facilitate the striking of the arc.

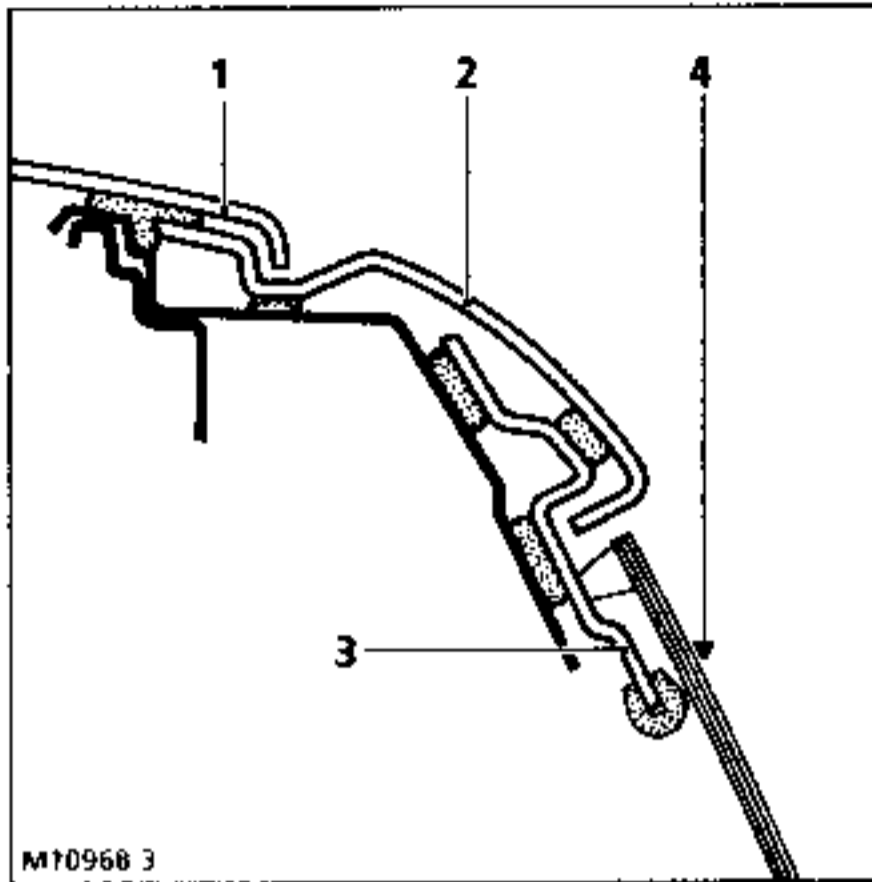
Special instructions for butt stitch welds:

Adjusting the positions of the panels:

Distance between tacks $d \approx 30 e$

The distance between the panels is to be the same as their thickness (e).

A better control on the positions of the panels can be maintained by avoiding making tacks on the edges or at the bottom of bent angles.



The polyester trim elements are assembled on the galvanised structure by bonding with polyurethane adhesive.

The various elements (except for the sills) are arranged such that they overlap in the manner of tiles, ie:

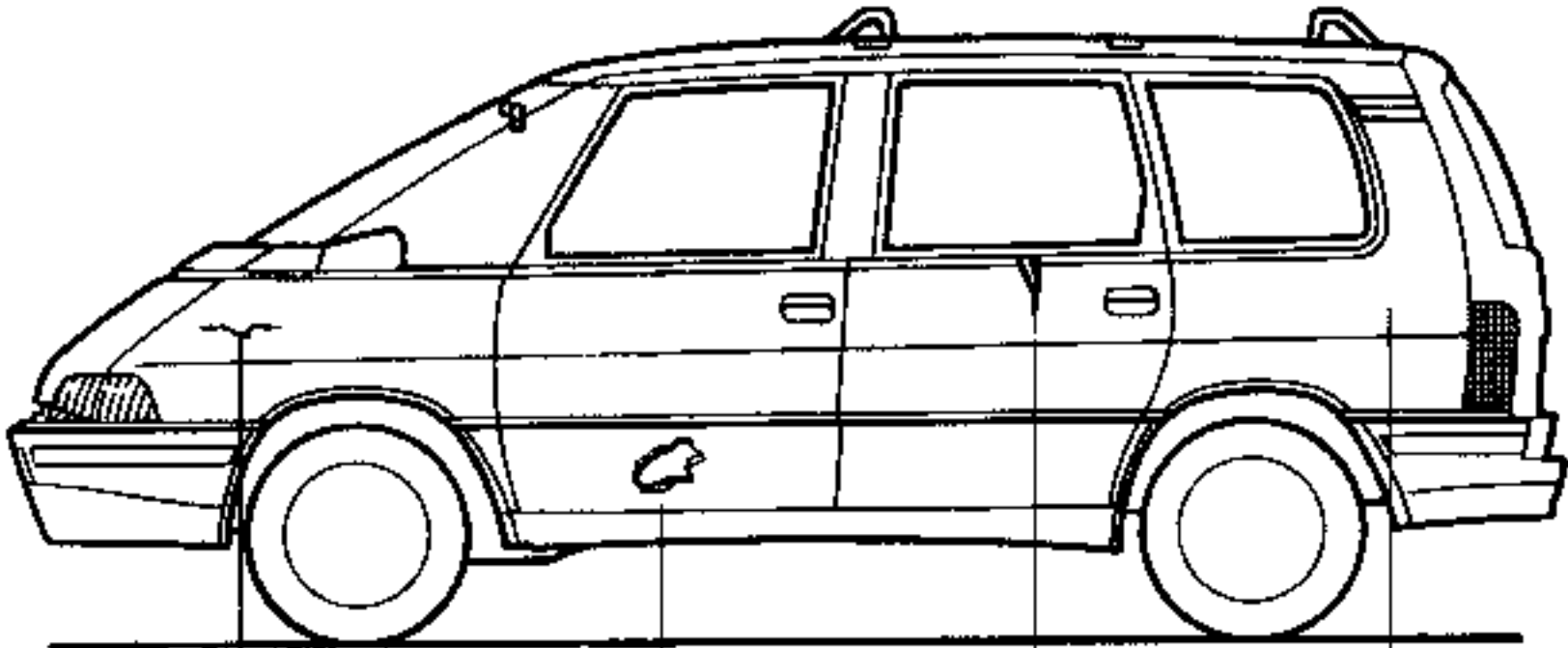
- the roof (1) covering the body top sections (2);
- the body top sections covering the rear wings (3).

The windows are bonded:

- the windscreen and front side windows are bonded to the galvanised structure;
- the rear side windows (4) are bonded to the rear wings.

NOTE: the rear screen is fitted into the tailgate.

TYPE OF REPAIR



M10406

FISSURES AND
SCRATCHES IN PLASTIC
REPAIR SEQUENCE
NO. 1

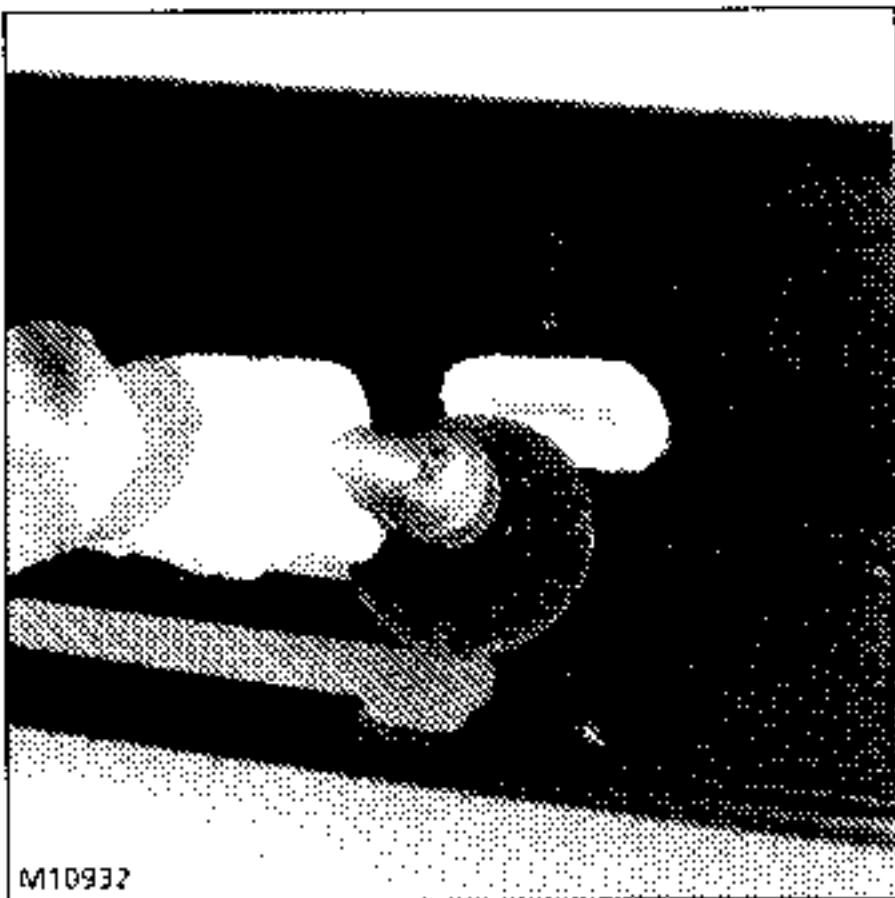
HOLE'S
REPAIR SEQUENCE
NO. 2

FRACTURES
REPAIR SEQUENCE
NO. 3

REPLACING A
COMPONENT
REPAIR SEQUENCE
NO. 4

TOOLING - INDIVIDUAL PROTECTION
HYGIENE

PREPARING THE COMPONENT



- adhesive tape and masking paper
- grinder with P80 disc
- rubber flattening block
- flattening paper (P120)
- clean cloth.

CUTTING OUT THE COMPONENT



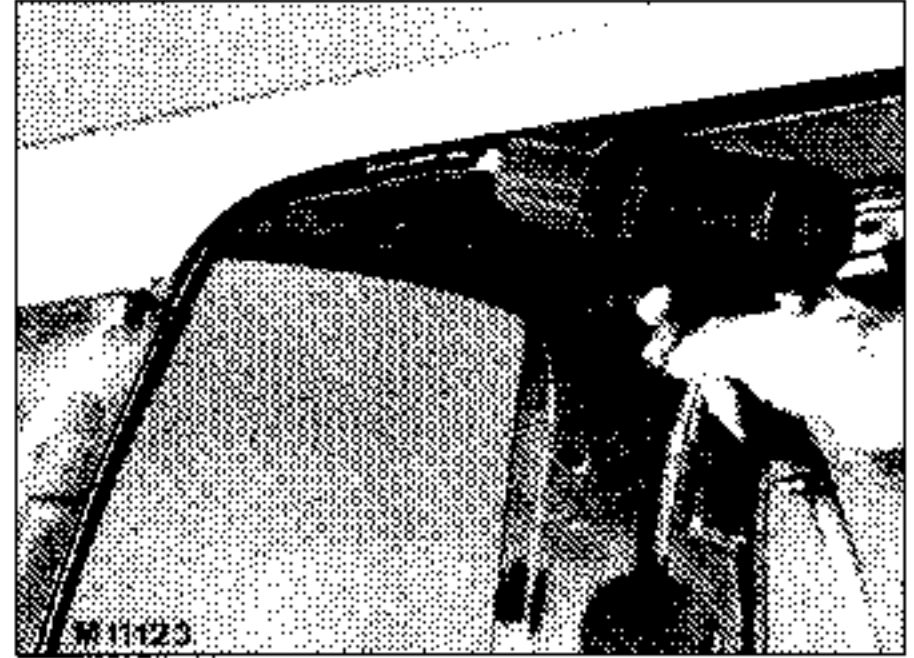
- Saw: AIR OUTIL SA86# pneumatic type
or electric oscillating saw of
the DESSOUTER CC1 type
or metal saw
- *(fitted with a diamond powder blade)
- grinder (P80)
- grinder equipped with a 10 mm
diameter cutter (for rear wing).

UNSTICKING THE COMPONENT



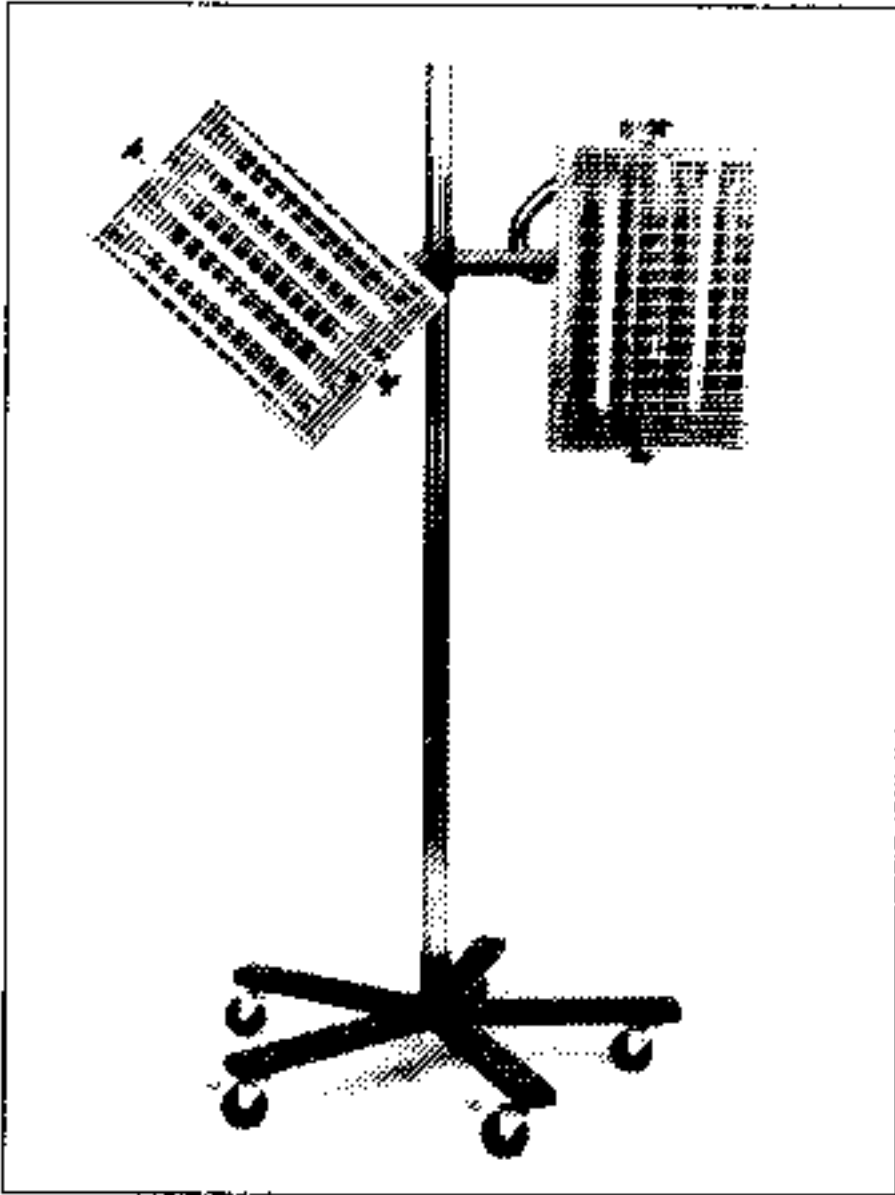
- FEIN ASTIXE 636-5 electric blade
- hot air torch
 - . CEPAC JUMBOTHERM
 - . STEINEL HL 2000 P
 - . LEISTER 2A
- knife, sharpened spatula
- tool for removing windscreens with piano wire

FITTING A COMPONENT



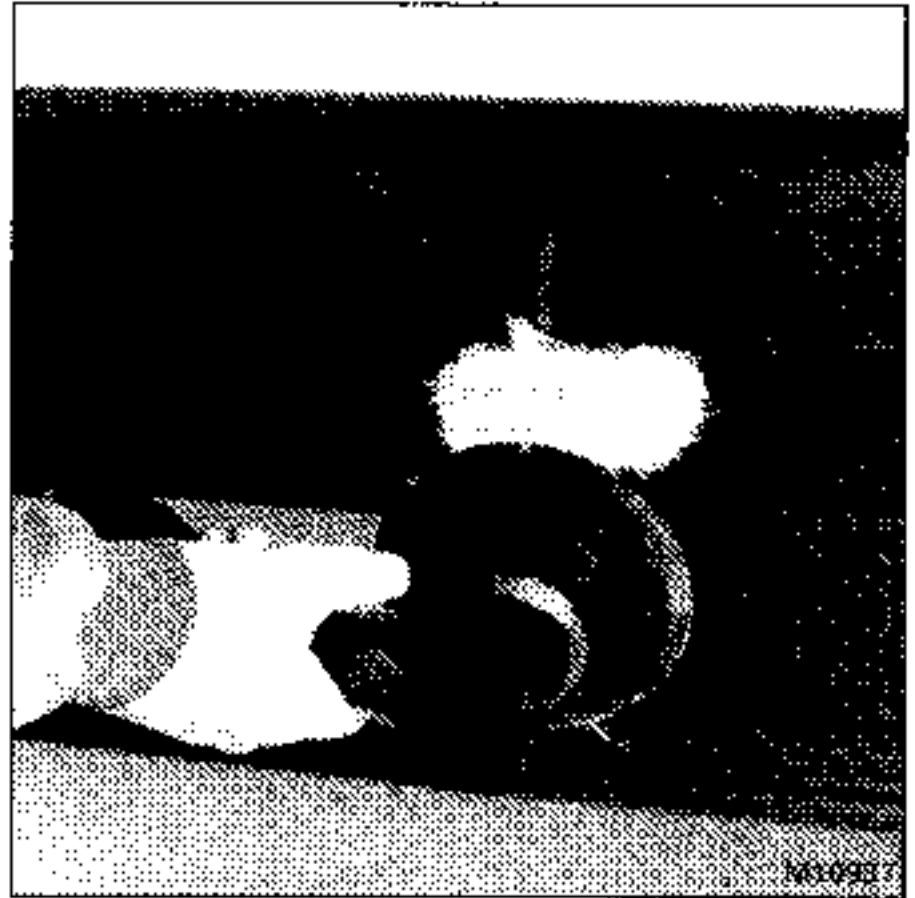
- CMBI PAC 60S extrusion spray gun
- centring tools
- drill
- rivet gun

PREPARING THE RESIN AND MASTIC



- scissors (for cutting mat)
- paintbrush
- coating spatulas and blocks
- infra-red lamp

FINISHING



- MULLER 3232 902 orbital sander with extraction equipment

Flattening block with P180 to P600 finishing paper.

HYGIENE - INDIVIDUAL PROTECTION



BORDE PROTECTION 42040 anti-static
overalls

- paper masks
- rubber gloves
- goggles
- a personal extractor nozzle placed
near the work area

APPROVED PRODUCTS

Components produced from pre impregnated resin (SMC) must be repaired or rebonded using the following products:

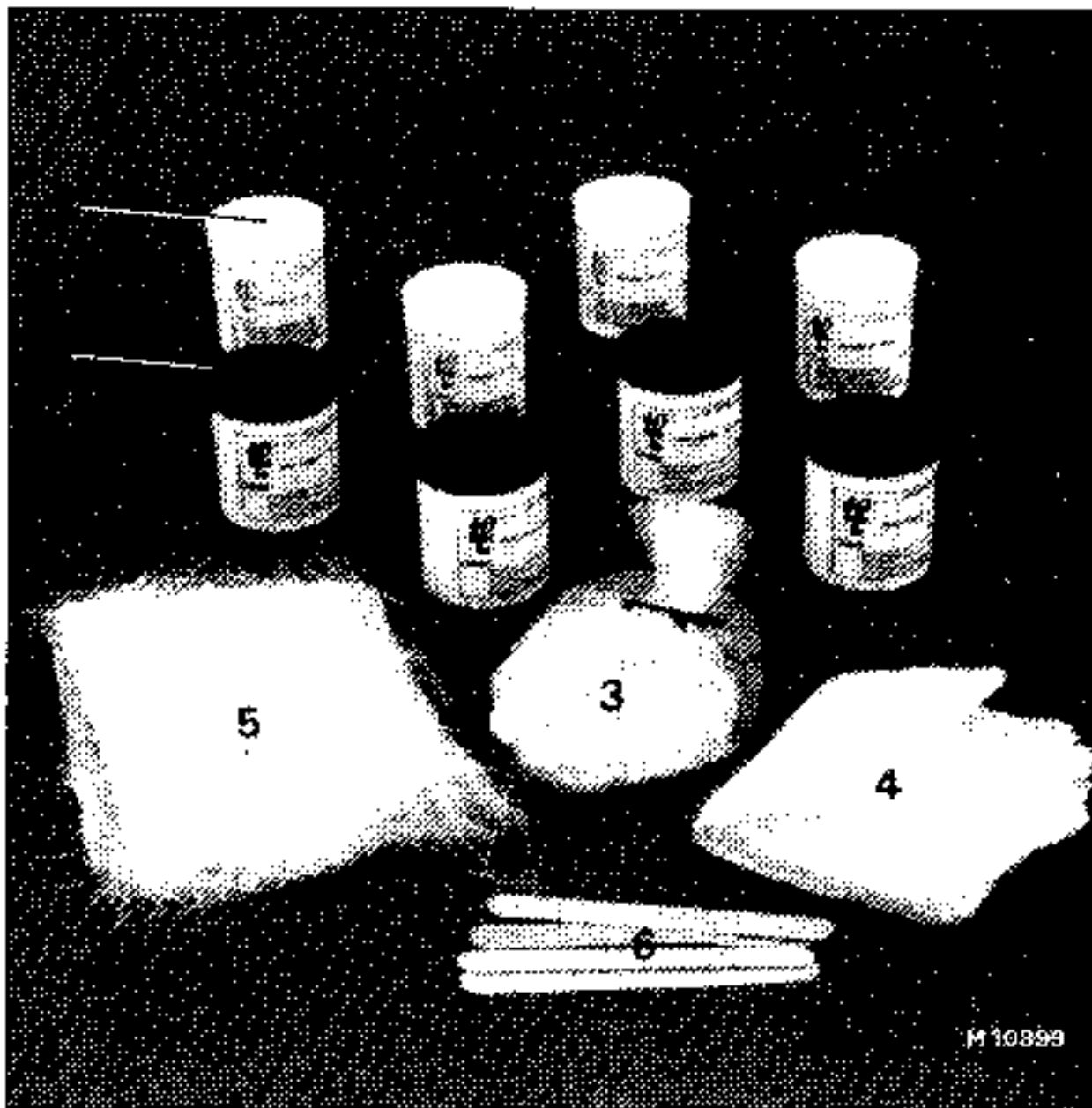
These products have been specially developed and tested to ensure correct adhesion on the backing and to guarantee that the original appearance is retained over time.

Any repairs performed using products not approved will be the entire responsibility of the repairer, as the manufacturers will deny all responsibility regarding the reliability and quality of the repair.

EPOXY RESIN

DESCRIPTION OF KIT

One container (0.75 l) part no. 60 25 070 997



- 1 4 pots of 34 g (34 cc) GI 200 hardener with red lid
- 2 4 pots of 166 g (154 cc) GI 200 resin with white lid
- 3 1 200 g sachet of short glass fibres (4 to 5 mm long)
- 4 0.11 m x 2 m - 0.22 m² Verane cloth
- 5 0.4 m x 1.2 m 0.48 m² glass fibre (mat)
- 6 4 wooden spatulas for mixing and applying the resin

This product must be used on pre-impregnated SMC backings and only for fissures, cracks and small fractures.

If any of these components have suffered more extensive damage **THEY MUST** be replaced.

Characteristics:

appearance of resin: cloudy gel
appearance of hardener: amber liquid

Useful life of mixture: (200 g) at 20°C: approximately 15 to 20 minutes.

Duration of hardener on repair: between 1 and 3 hours (depending on acceleration by heating).

Operating temperature: + 15°C to 30°C.

Storage: (original closed packing) 1 year at 15/30°C.

Heat resistance: 100°C (130°C with 40% glass fibre)

SOME BASIC NOTES ON THE USE OF RESINS

TEMPERATURE:

Do not use at temperatures below 15°C: the hardening reaction will not be triggered and the high level of viscosity will not enable a uniform mixture of the components to be achieved and the bubbles of air formed during this operation to be eliminated rapidly.

If the ambient temperature is lower than 15°C, the products and area to be repaired must be heated beforehand (20°C to 25°C).

Above 30°C the reaction will be very rapid hence the need to operate very carefully.

The longer and more vigorous the mixing time (mixture heats internally), the quicker the reaction will be.

ACCELERATING THE HARDENING TIME

The use of a source of heat (oven, infra-red lamps) is advisable for epoxy resins (thorough hardening eliminating the risks of shrinkage after painting) following these instructions:

- . wait 15 minutes before increasing the temperature of the repair (to avoid excessive shrinkage which could lead to fractures);
- . keep the infra-red lamps at least 0.7 m away from the repair;
- . do not exceed a temperature of 60°C in the vicinity of the repair (the polyester will deform);
- . avoid using hot air torches (the temperature cannot be controlled and is not uniform: hot spots → tension in the resin).

VOLUME

Use the correct proportions of each component:

- excess of resin → will not harden
- excess of hardener → reaction too rapid, resin brittle.

The larger the volume of mixture (mass effect), the quicker the reaction will be.

REPAIRING:

Thixotropy (product's capacity not to run) is improved by adding short fibres when making vertical repairs (maximum 50% of short fibres).

PRECAUTIONS FOR USE

As the careless use of synthetic resins and their hardeners may give rise to skin irritations or general poisoning, the following precautions must be taken in order to eliminate these risks:

- . ventilation of work areas and stations, work areas must be extremely clean;
- . frequent change of working clothing, protection of exposed parts of the body using barrier cream - frequent washing of hands, forearms and face.

If these products accidentally come into contact with these areas, wash with soap and water and rinse with copious amounts of water. If the products are splashed into the eyes, rinse with water and consult a doctor.

USING THE RESIN

The kit is supplied ready measured: 1 pot of resin per 1 pot of hardener (red lid).

Pots which are not used may be stored and reused at a later date.

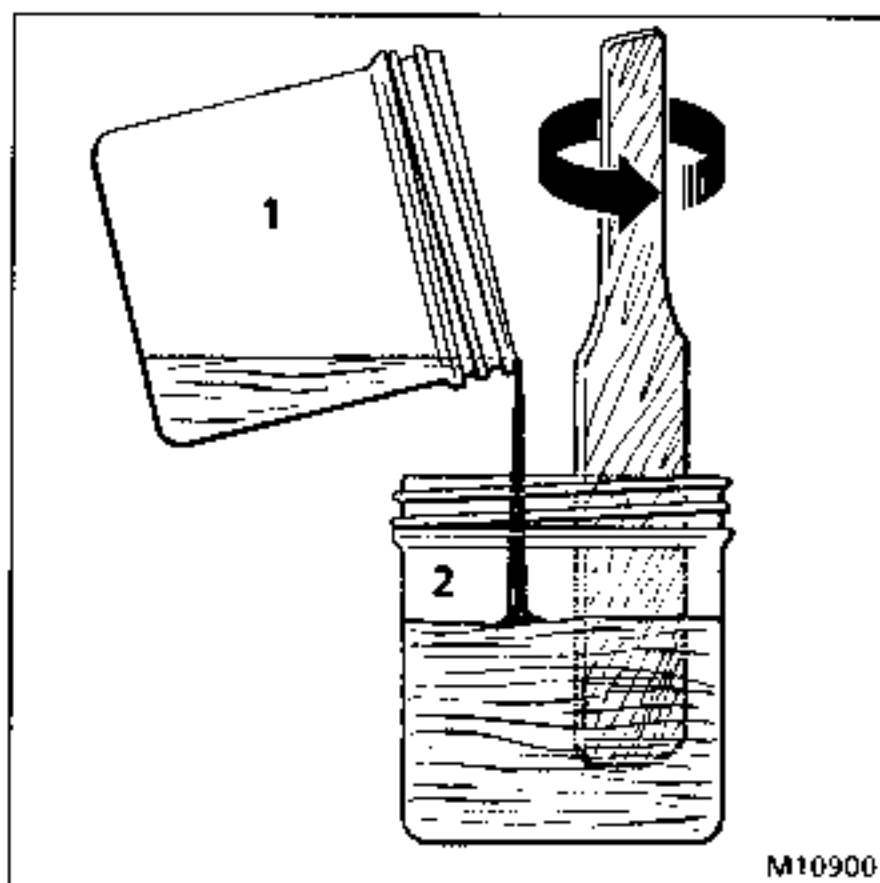
OPERATING METHOD

Open one pot of resin (2) and one pot of hardener (1) (red lid).

Pour the hardener (1) into the pot of resin (2) (scrape the bottom and walls of the pot using a wooden spatula).

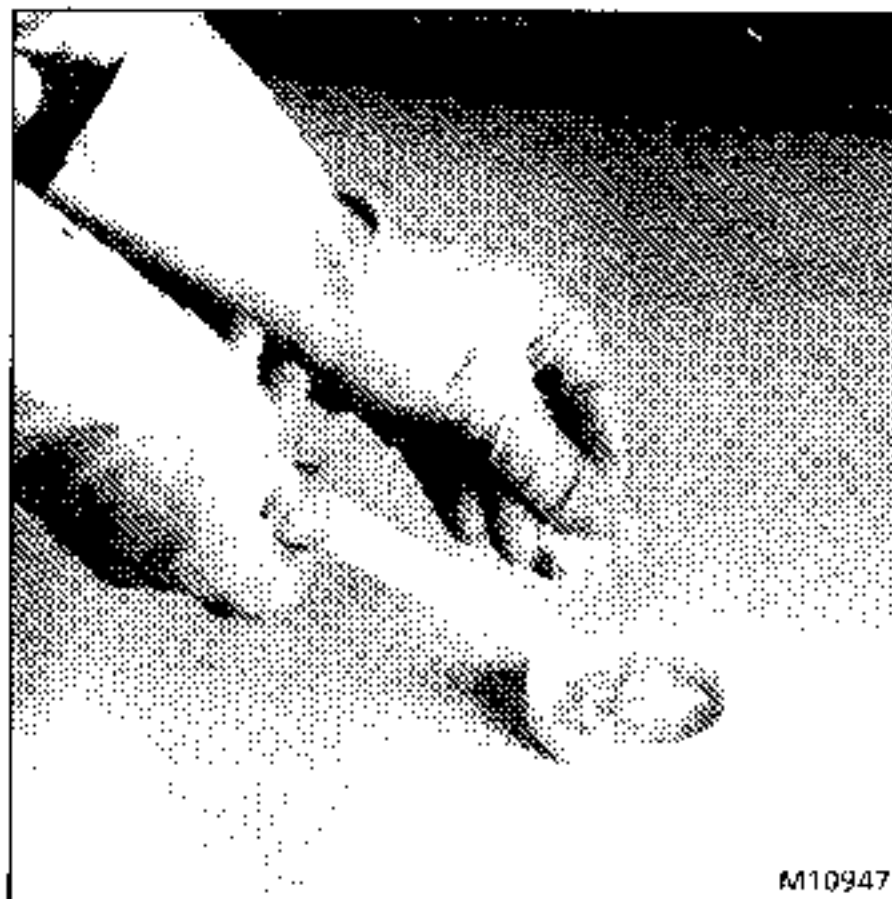
Thoroughly mix the two components using a wooden spatula.

- 1 Hardener
- 2 Resin



M10900

CHARGING THE RESIN



M10947

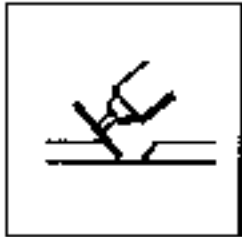
Pour some of the mixture (as required) into the empty hardener pot.

Use one pot (mixture without filler) to impregnate the repaired areas and the mat or woven mat.

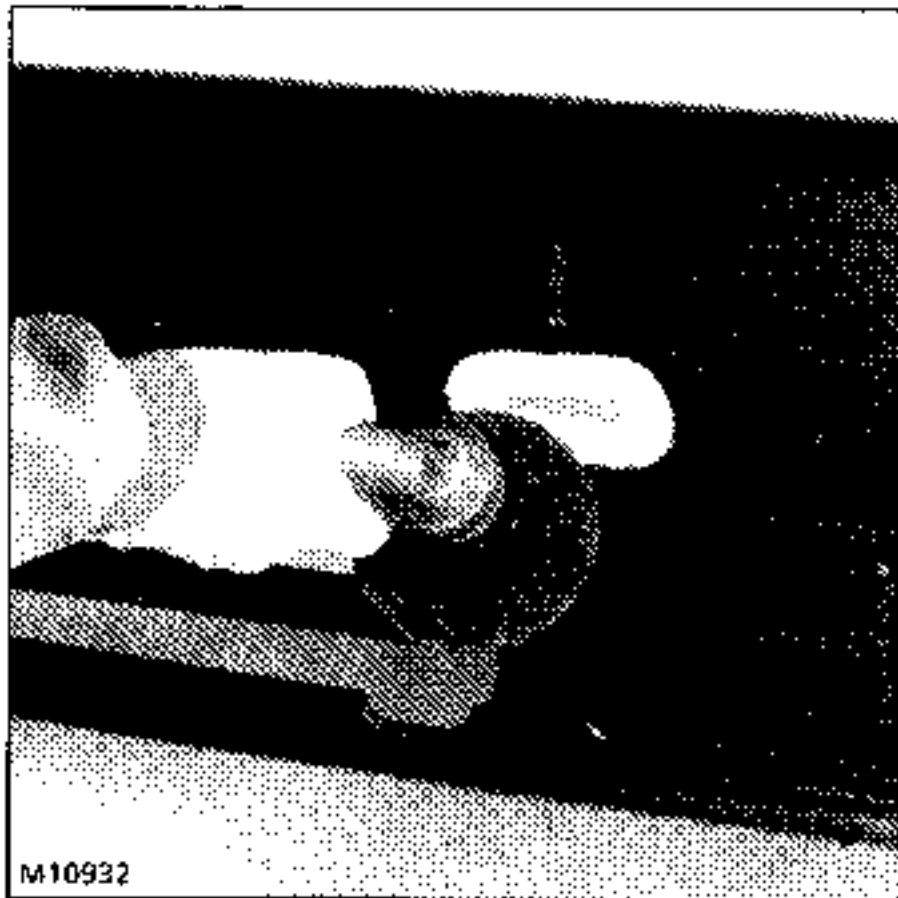
Mix the other pot with short fibres (for bonding backing pieces, filling chamfers); the wooden spatula may be used to coat the zones to be repaired.

ATTENTION: hardening time in pot at 20°C: 15 to 20 minutes.

GENERAL METHOD



GRINDING WITH A DISC -
BEVELLING



M10932

P80 Disc

Open the fractures and holes.
Bevel the periphery.



ROUGHENING - WIPING DOWN



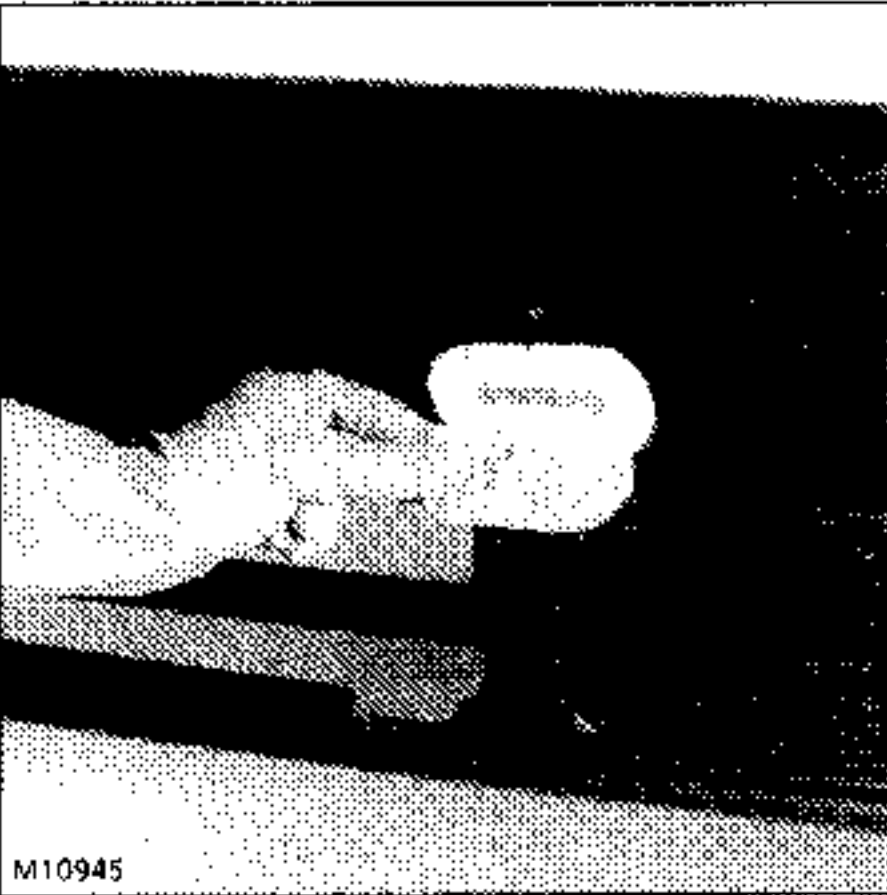
M10941

Roughen manually (P120) the ground areas to remove any pieces remaining from lifting from the mould which will appear on the surface when a mechanical grinder is used.

Wipe down using a clean, dry cloth.



PREPARING THE MAT



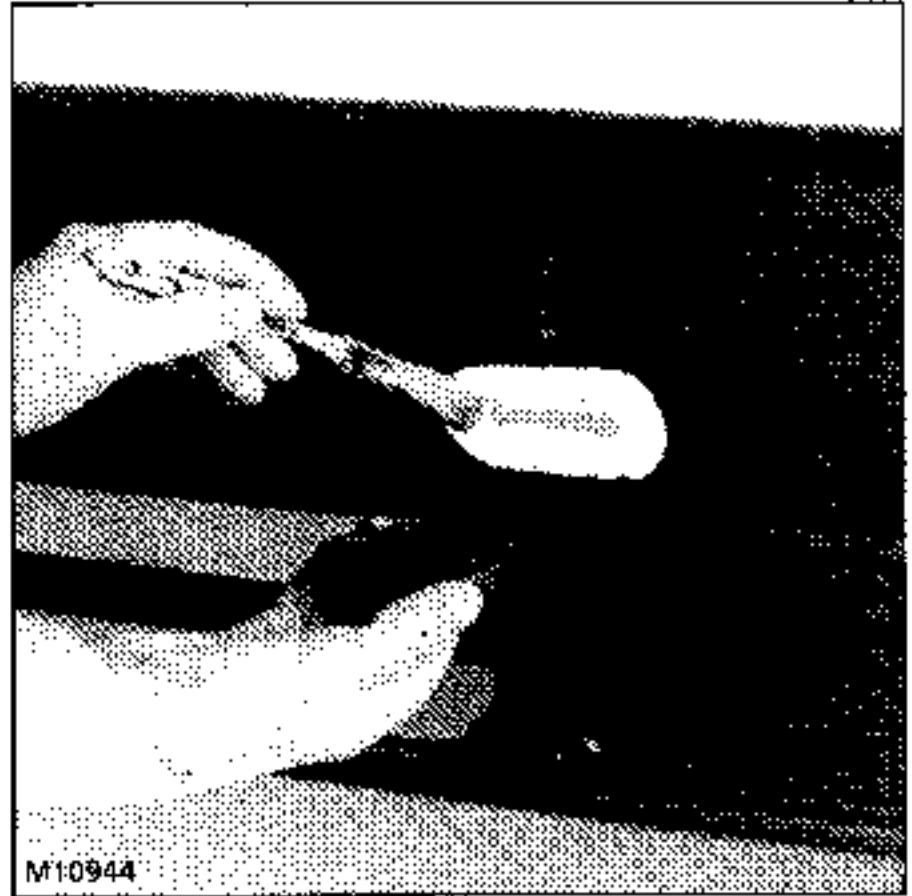
M10945

Cut out a piece of mat corresponding to the size of the repair.



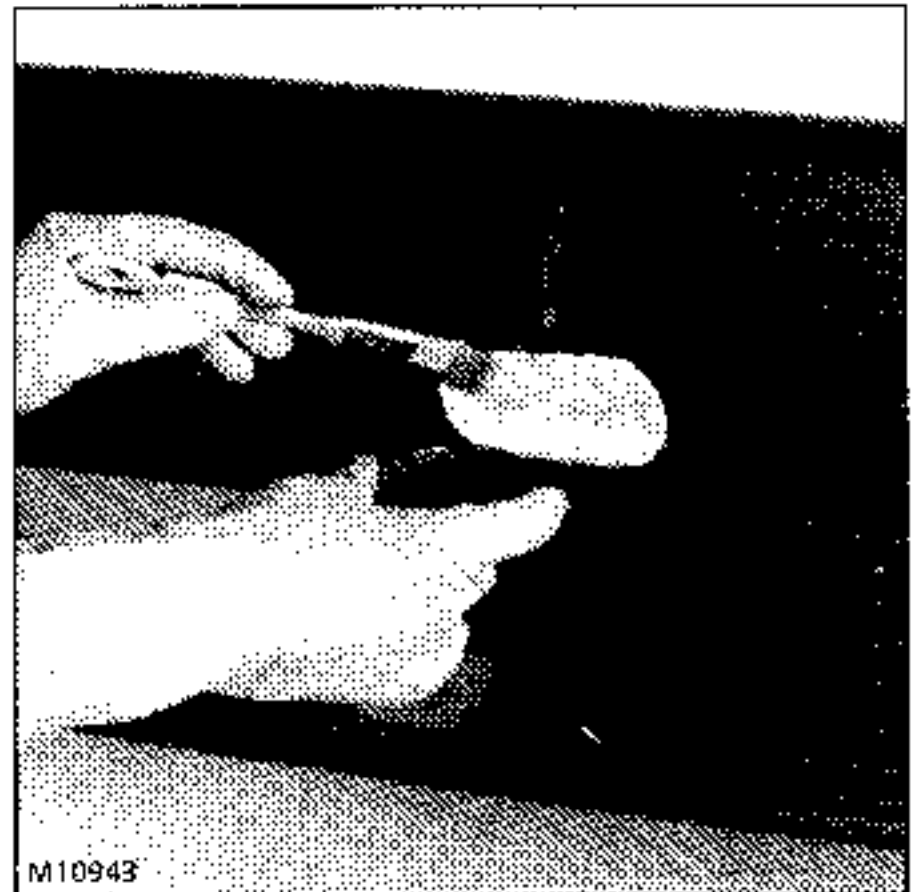
RESIN

Prepare the resin (see previous chapter)



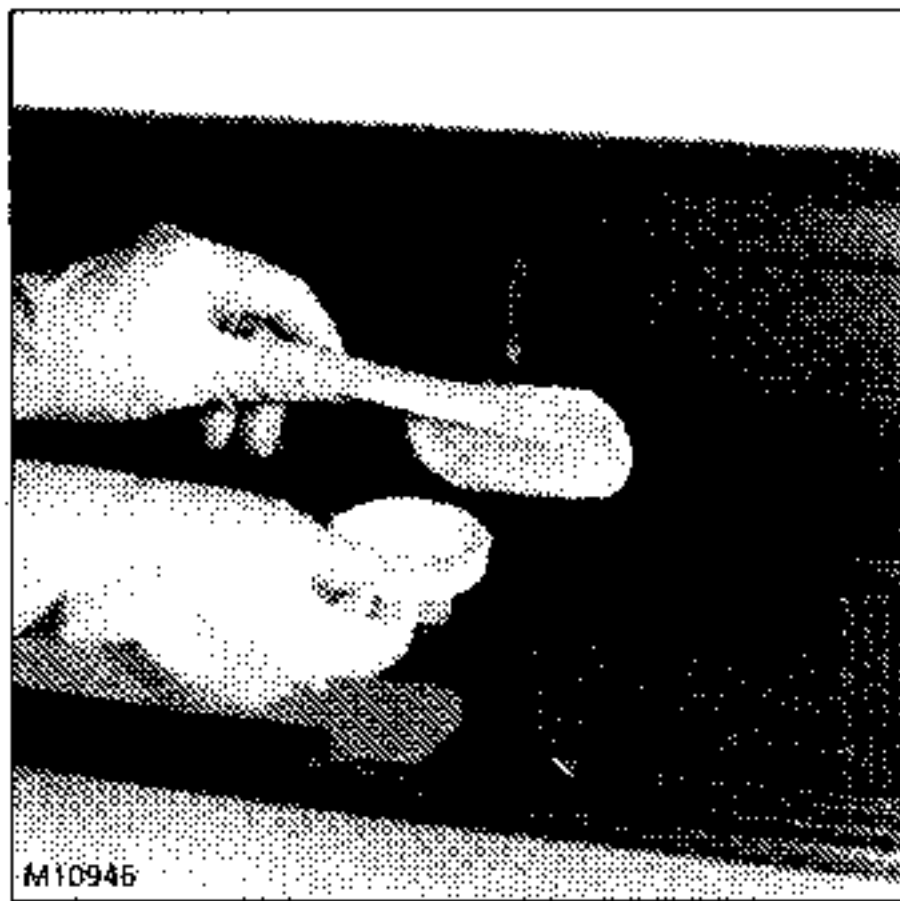
M10944

Using a clean paintbrush, coat the resin without fibres over the area to be repaired.



M10943

Place the previously cut out piece of mat and impregnate it with resin using a paintbrush and removing all air bubbles (for holes and fractures).



Using resin charged with short fibres, fill the chamber and eliminate all air bubbles.



HARDENING

Leave to harden for 15 minutes at ambient temperature before heating the repair with infra-red lamps:

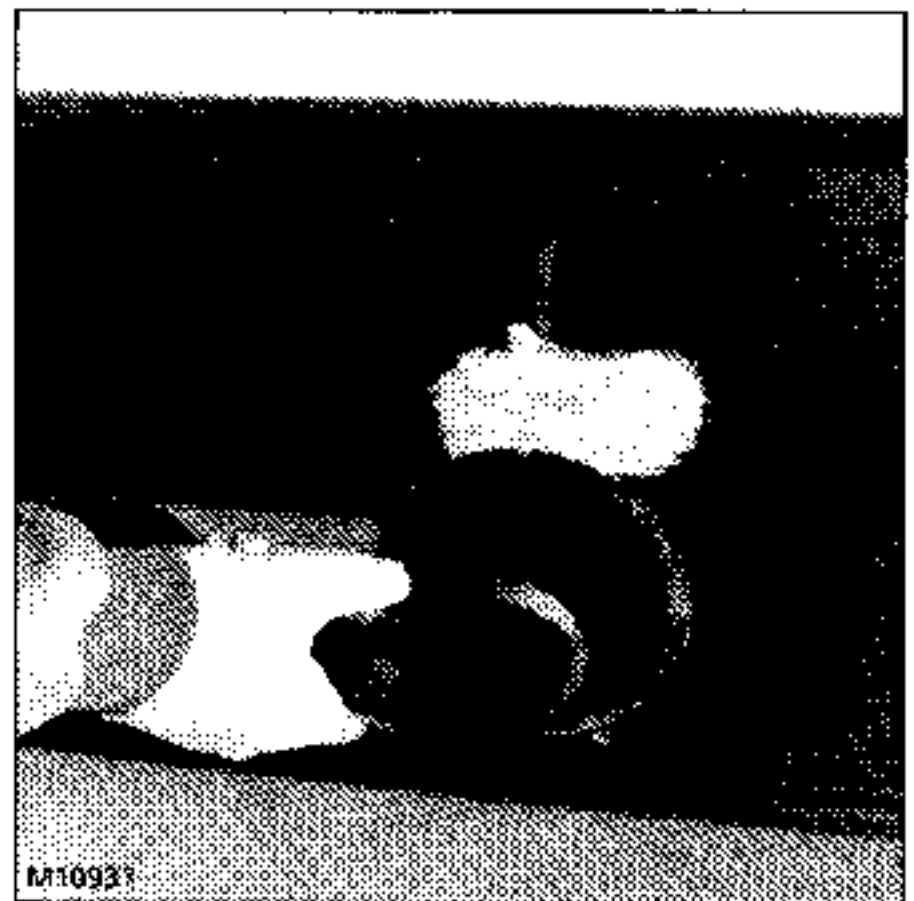
MAXIMUM TEMPERATURE ON REPAIR
60°C

MINIMUM DISTANCE FROM LAMP
0.70 m



FINISHING

Flat the surplus resin (P120).

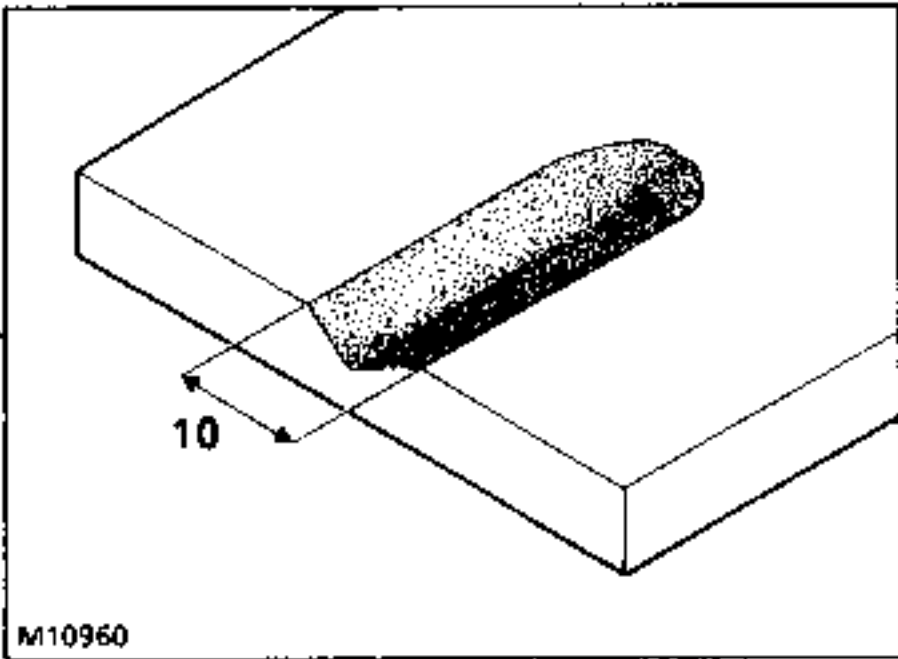
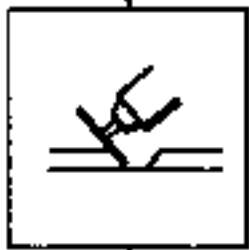
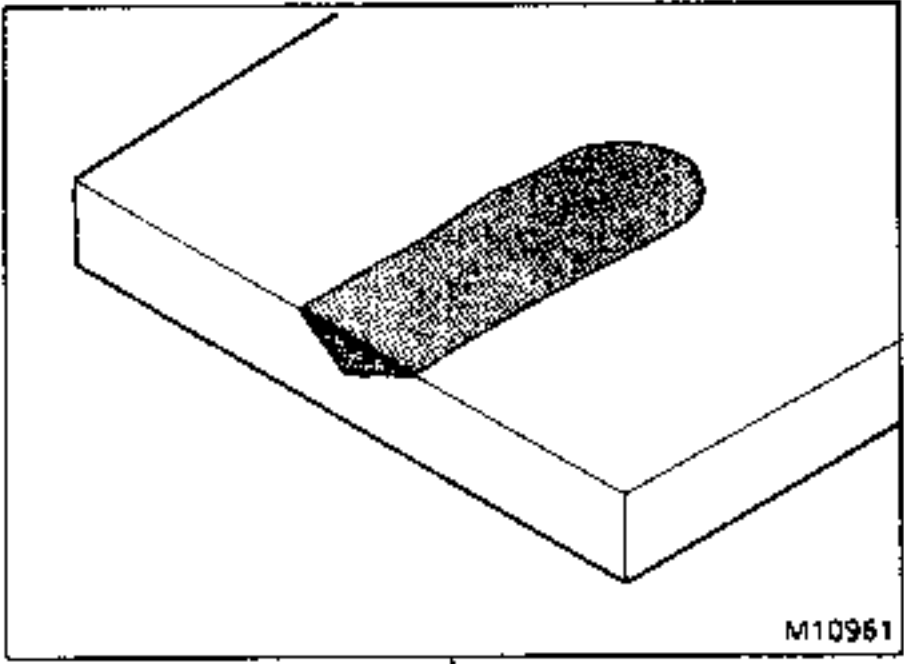
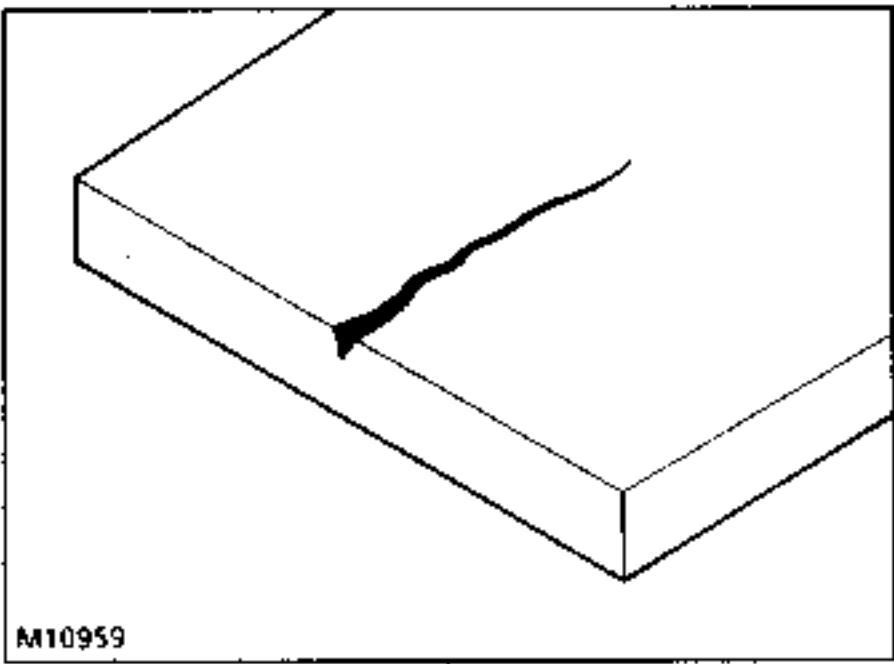


Using polyester mastic, coat the repaired area, in particular the small holes in the resin.

Semi-finish by dry flatting (P280).

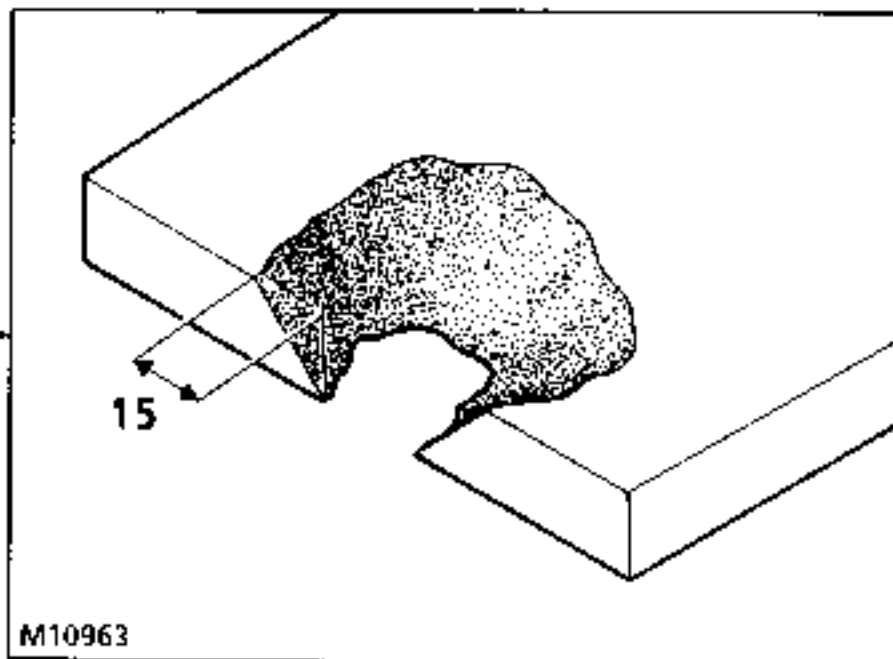
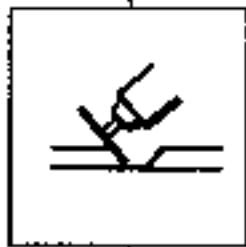
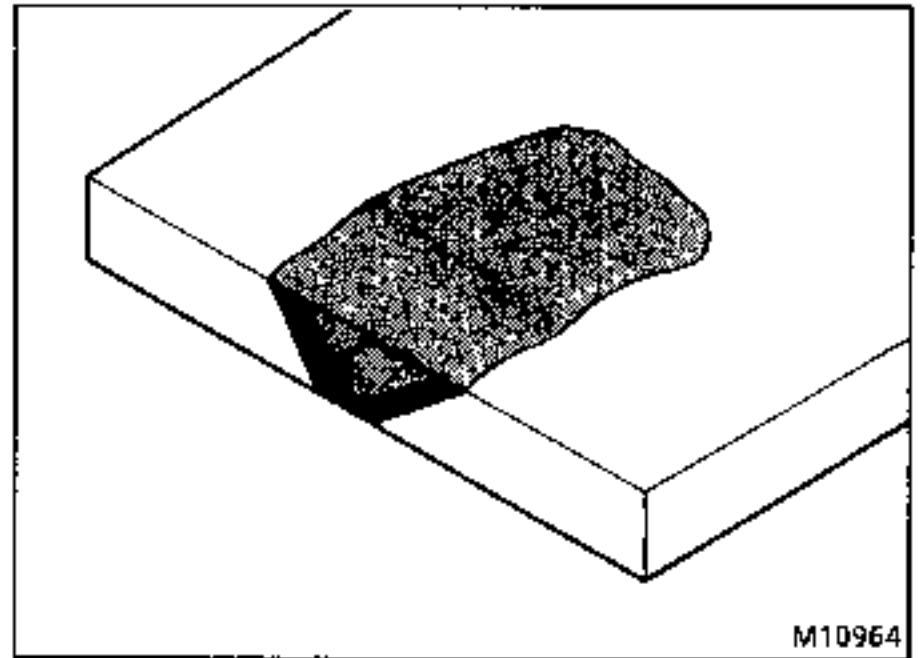
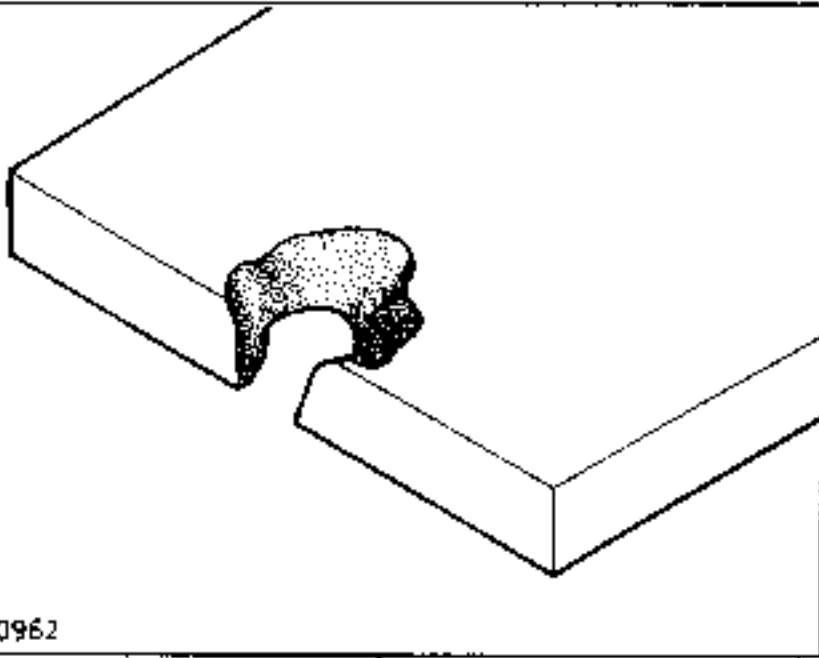
SEQUENCE NO 1 - FISSURES AND SCRATCHES IN PLASTIC

Definition: small cracks which do not go right through the laminate



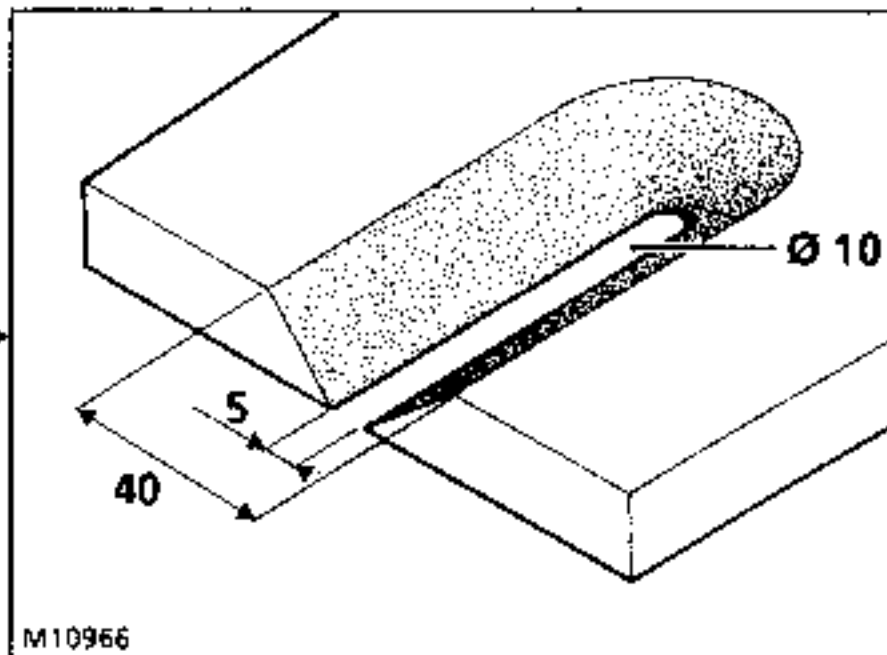
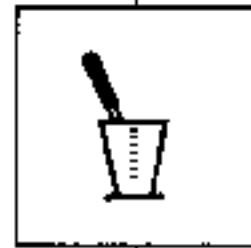
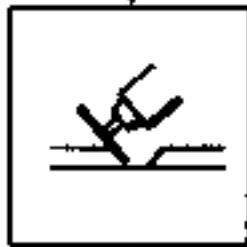
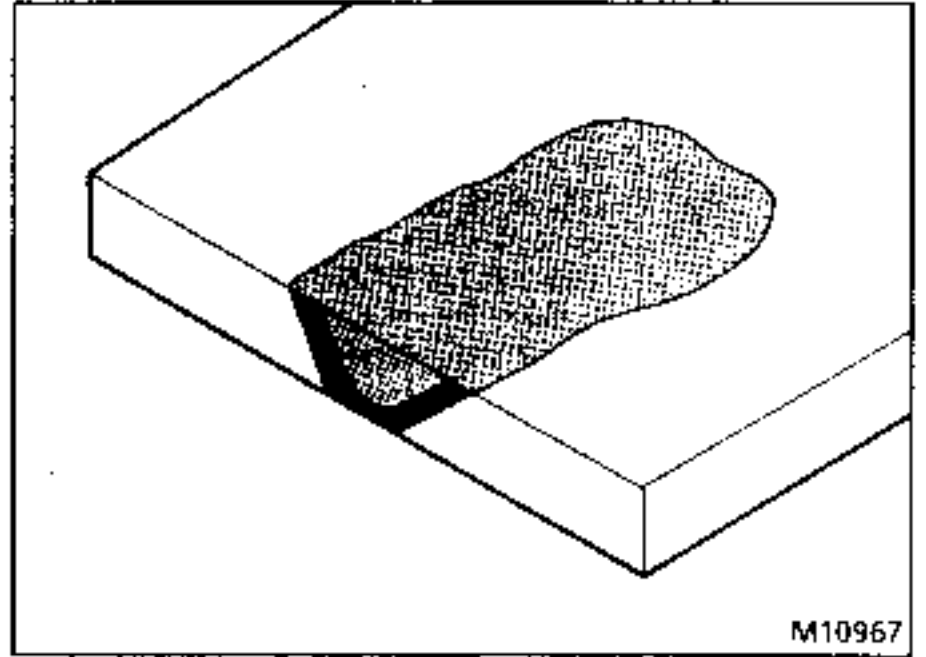
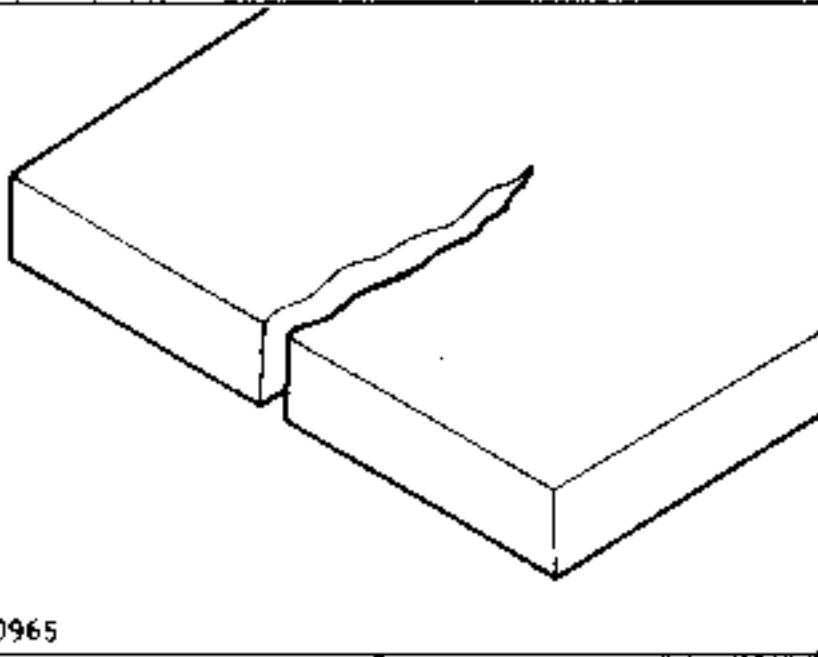
SEQUENCE NO 2 - HOLES

Definition: holes right through the panel less than 50 mm in diameter



SEQUENCE NO 3 - FRACTURES

Definition: a single break less than 50 mm long (the laminate being broken right through)

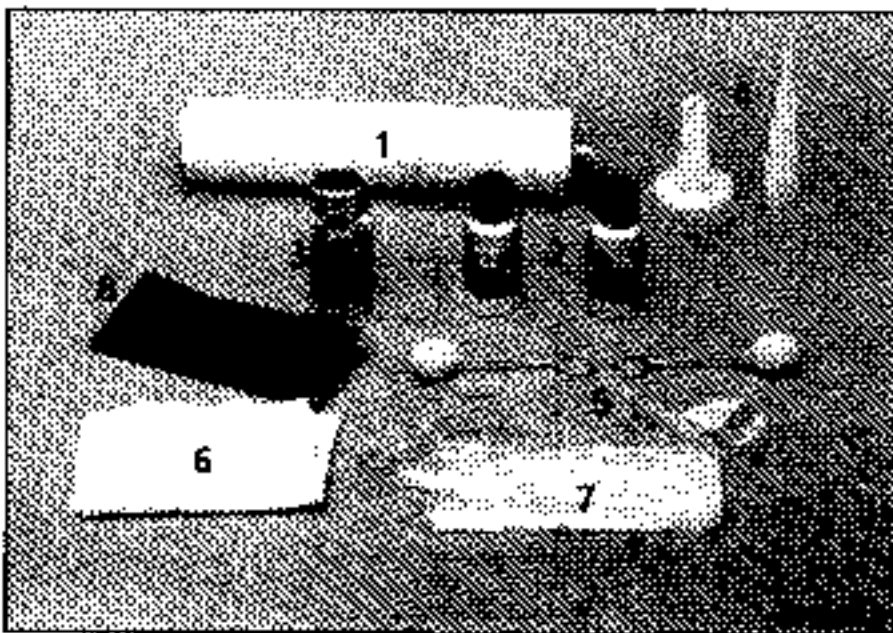


SEQUENCE NO 4 - REPLACING A COMPONENT

Replacing	Section
FRONT WING	42
DOOR EXTERNAL PANELS	47
SILL	43
BODY TOP	45
REAR WING	44
ROOF	45

BONDING THE ELEMENTS

Approved products

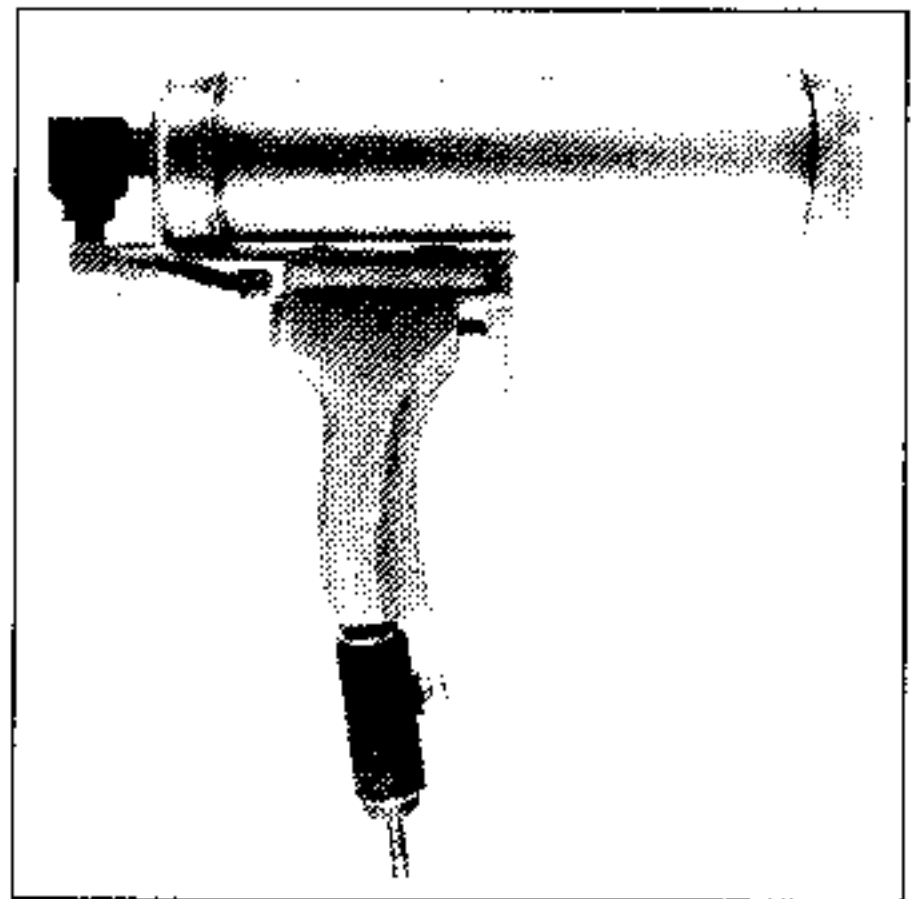


Kit part no. 60 25 170 306 comprises:

- 1 310 ml adhesive cartridge
- 2 adhesion primer
- 3 degreasing fluid (colourless)
- 4 two nozzles of which one is cut to the dimensions of the bead to be extruded
- 5 primer applicators
- 6 degreasing cloth
- 7 pair of gloves (must be worn)
- 8 flatting paper (roughening the SMC)
- 9 instructions for use

Storage: in original packaging 9 months at 10-25°C. The products must be kept away from frost.

SPRAY GUN TO BE USED



Pneumatic extrusion spray gun for 310 ml cartridge.

RECOMMENDATION

The following products must be used in a well-ventilated location:

- degreasing fluid;
- adhesion primer;
- adhesive.

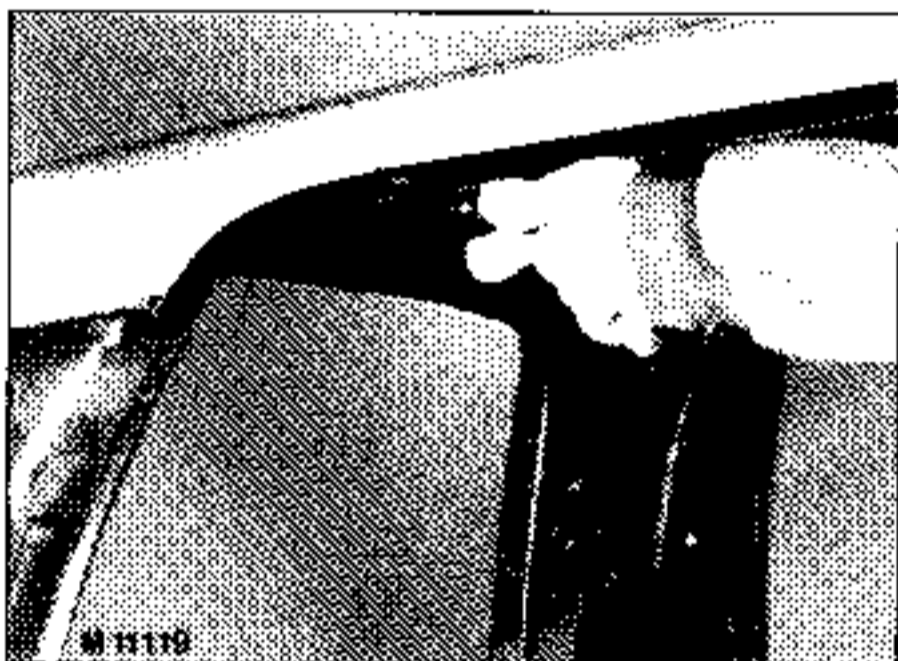
The wearing of gloves (supplied in the kit) is **COMPULSORY** during these operations.

PREPARING THE BACKING

STRUCTURE

On new parts: galvanised chassis
- cataphorised doors

On original parts:

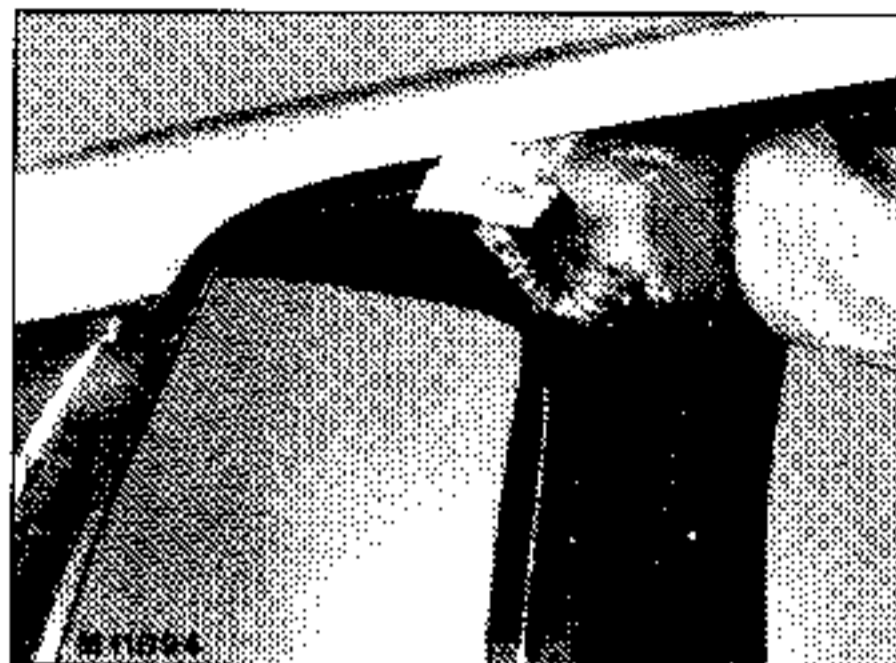


Using a sharpened spatula, level the original bead leaving a thickness of 1 to 2 mm of adhesive on the parts.

APPLY THE APPROPRIATE TREATMENT TO THESE PARTS ACCORDING TO THE FOLLOWING RECOMMENDATIONS:

DEGREASING

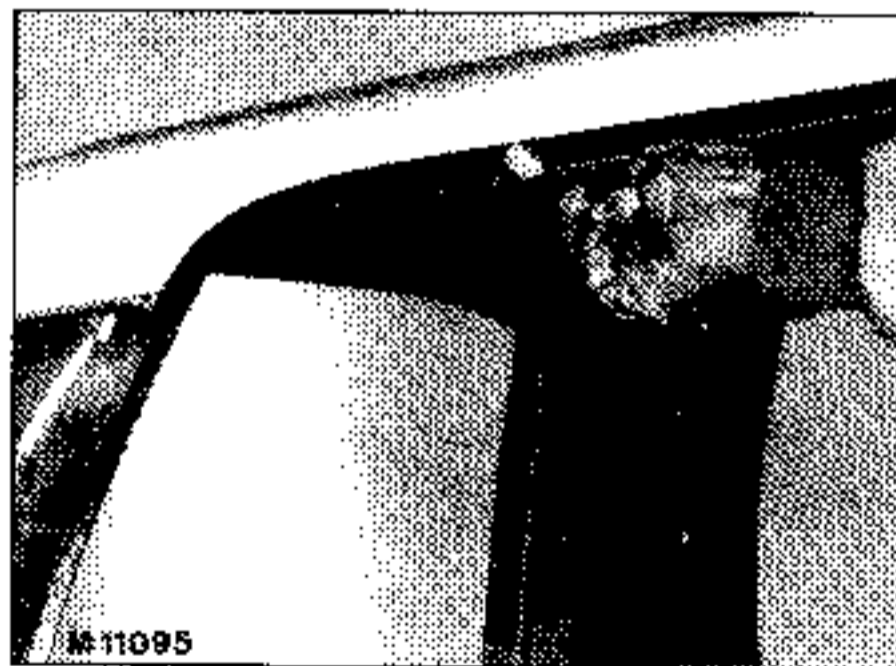
Dedust using a clean dry cloth.



Apply colourless degreasing fluid (3) using the special cloth (6).

Allow the degreasing fluid to evaporate (5 minutes at 20°C) before applying the adhesion primer.

APPLYING THE ADHESION PRIMER (bluish colour)



Apply a thin, even layer of primer (2) using the 30 mm wide applicator (5).

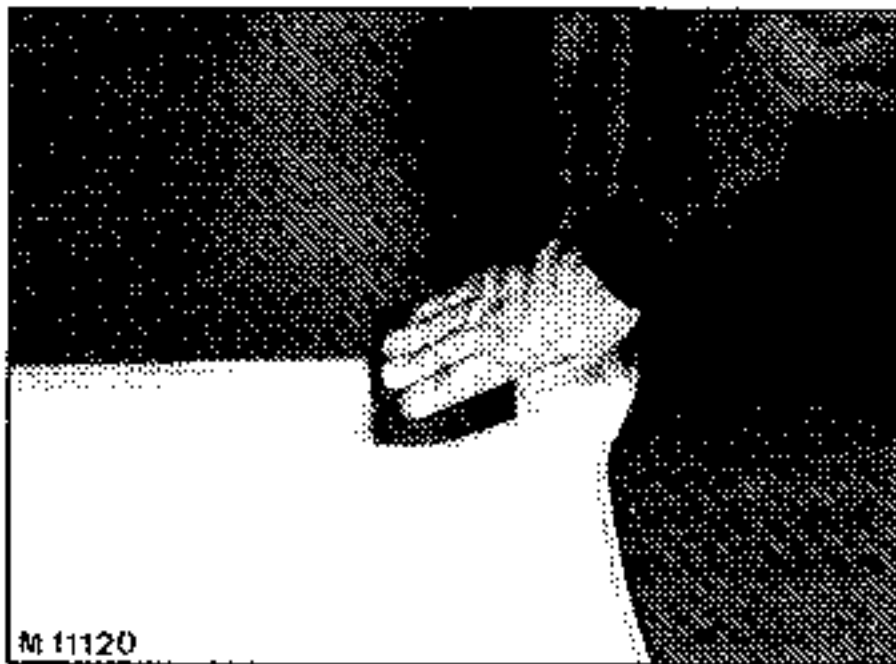
Leave to dry for 20 minutes at 20°C.

DO NOT TOUCH THESE AREAS ANY MORE: PARTS MUST BE BONDED WITHIN THE 30 MINUTES FOLLOWING DRYING.

ATTENTION: the areas where the galvanised or cataphorised panels have been scratched must be completely covered with primer to avoid any corrosion.

NEW TRIM COMPONENTS

ROUGHENING



Using flattening paper (8), roughen the bonding area over width of 50 mm (see the relevant section for the details).

DEGREASING

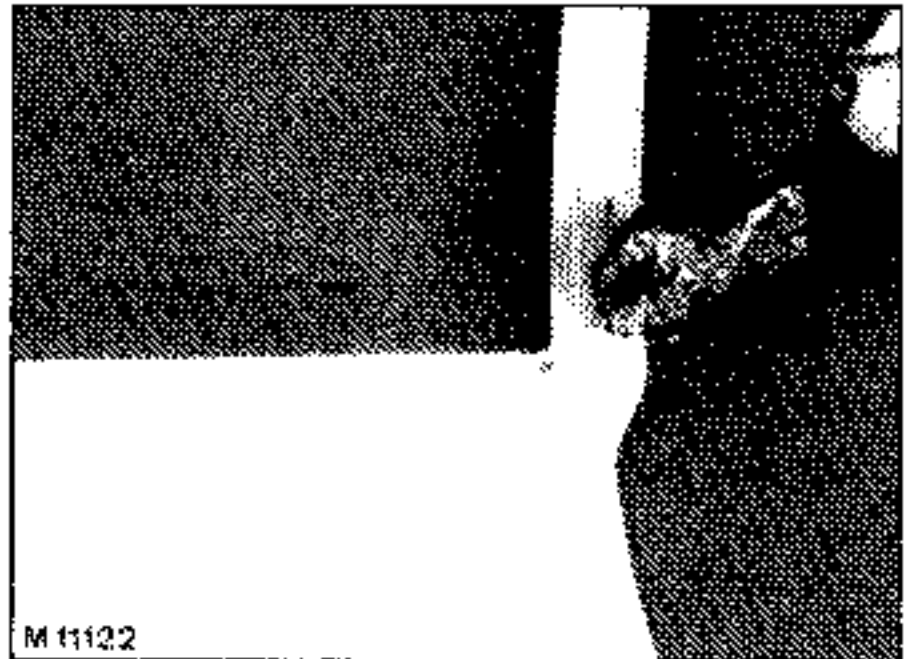
Dedust using a clean and dry cloth.



Apply the colourless degreasing fluid (3) using special cloth (6) over a width of 50 mm.

Allow the degreasing fluid to evaporate (5 minutes at 20°C) before applying adhesion primer.

APPLYING THE ADHESION PRIMER (bluish colour)



Apply a thin even layer of primer (2) using the 50 mm wide applicator (5).

Leave to dry for 20 minutes at 20°C.

DO NOT TOUCH THESE AREAS ANY MORE.

APPLYING THE ADHESIVE

CHARACTERISTICS

ONE COMPONENT HARDENER AT AIR HUMIDITY

Colour: black

Skin formation time: 30 minutes at 23°C

Hardening: 4 to 5 mm per 24 hours at 23°C

Application temperature: between 5°C and 30°C

Reuse: may be reused for touching up individual areas in the moments following application.

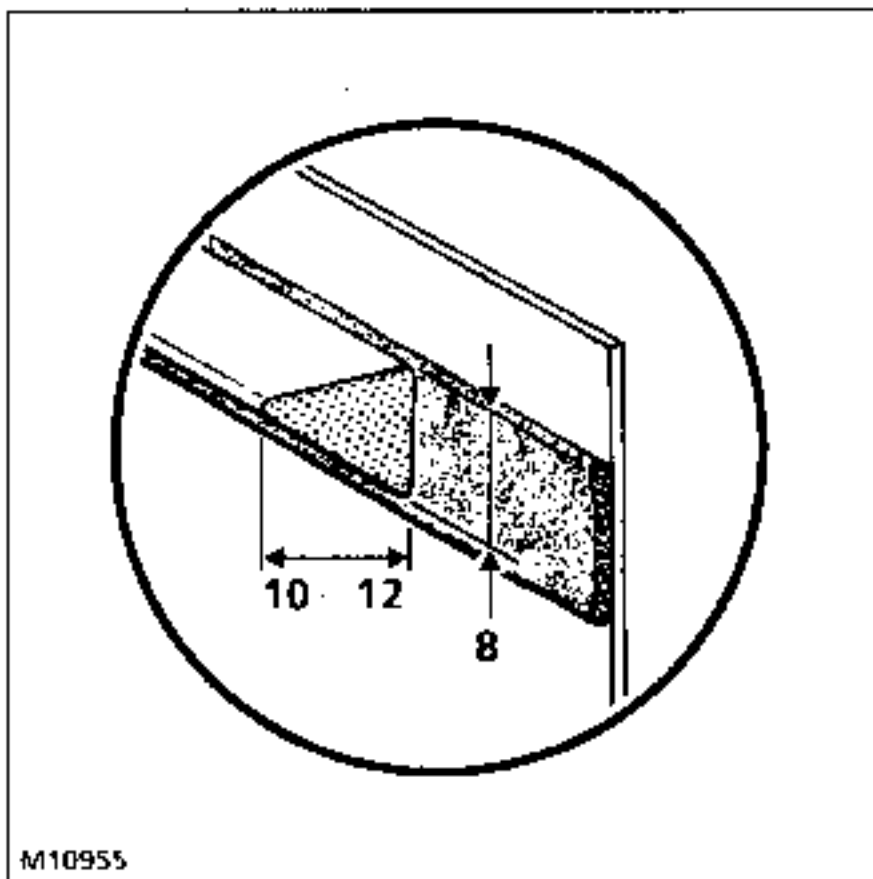
PREPARING THE CARTRIDGE

Remove the base of the cartridge.

Pierce the inner capsule.

Screw on the cut-out nozzle (4).

Place the cartridge (1) in the spray gun.



THE NEW COMPONENT MUST BE FITTED WITHIN THE 10 MINUTES FOLLOWING THIS OPERATION.

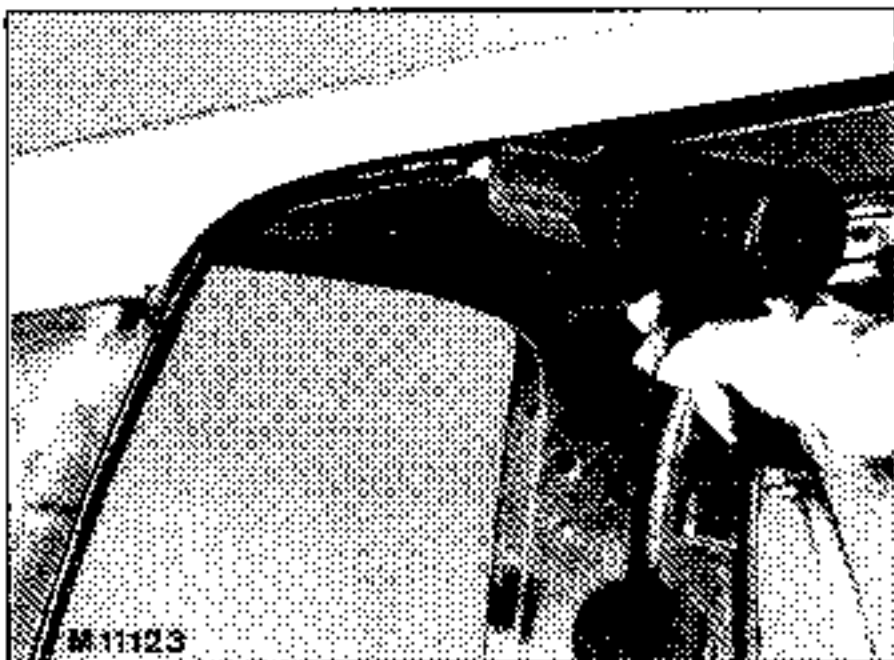
After fitting, any areas required to be sealed and finished can be touched up using the adhesive remaining in the cartridge and using the second nozzle (4).

At 20°C the tools used to hold the new component in place may be removed after 30 minutes.

CLEANING

Before drying: using degreasing fluid.

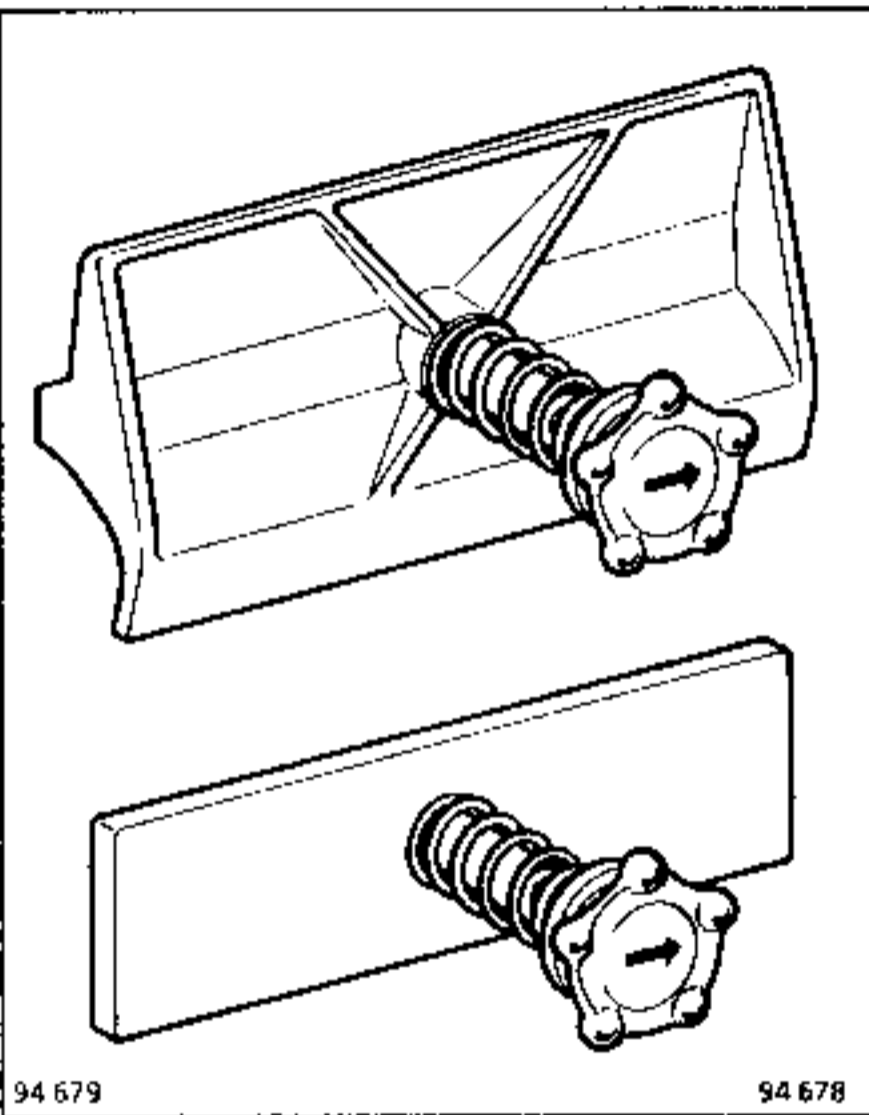
After drying: the adhesive will not stick to any parts to which primer has not been applied.



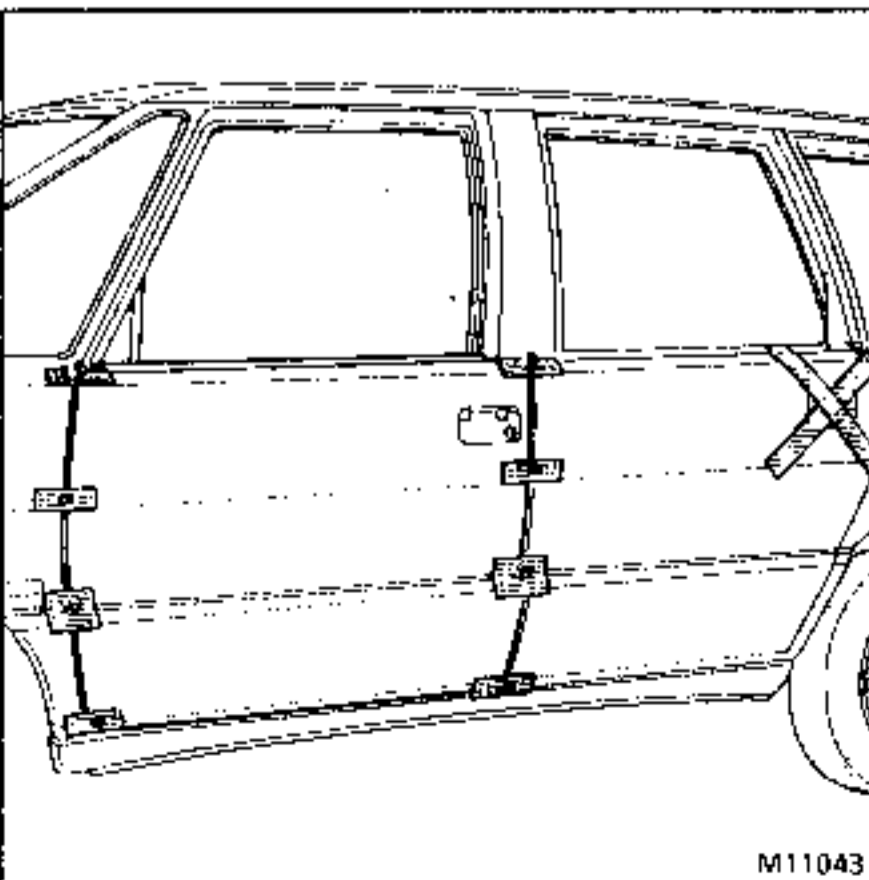
Extrude a uniform bead in the centre of the bonding area on the structure.

CENTRING AND ALIGNING THE COMPONENTS

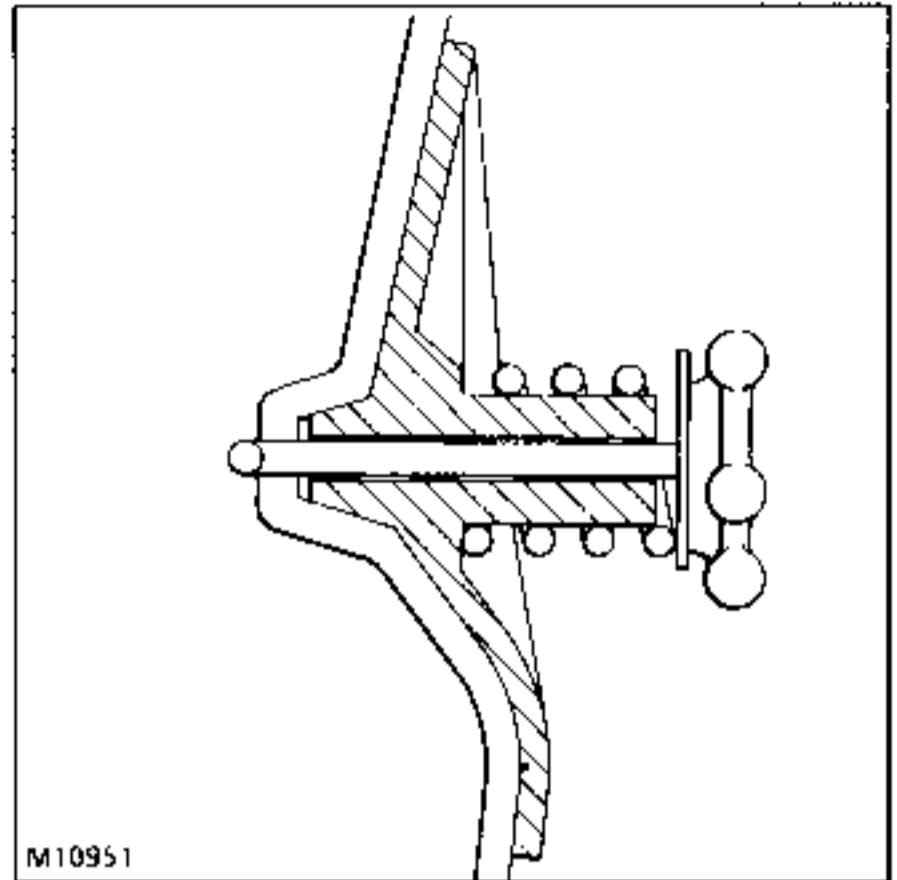
The side components (front wing - front and rear door external panels - rear wing) are centred and aligned with respect to each other; using tools available in the form of a kit reference Car.1219.



The kit comprises:
- 6 flat plates
- 2 profiled plates

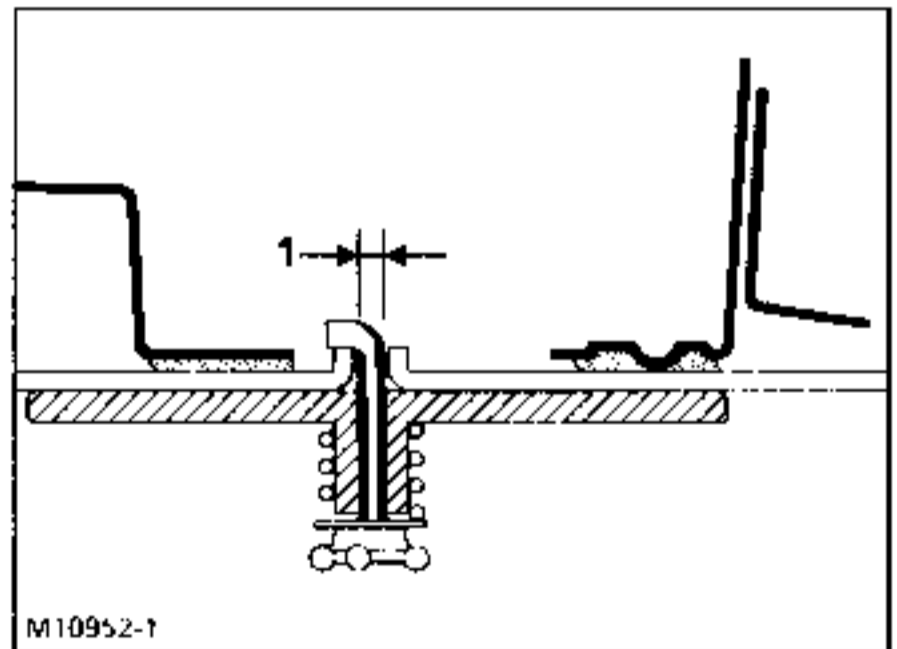


Function



Vertical adjustment

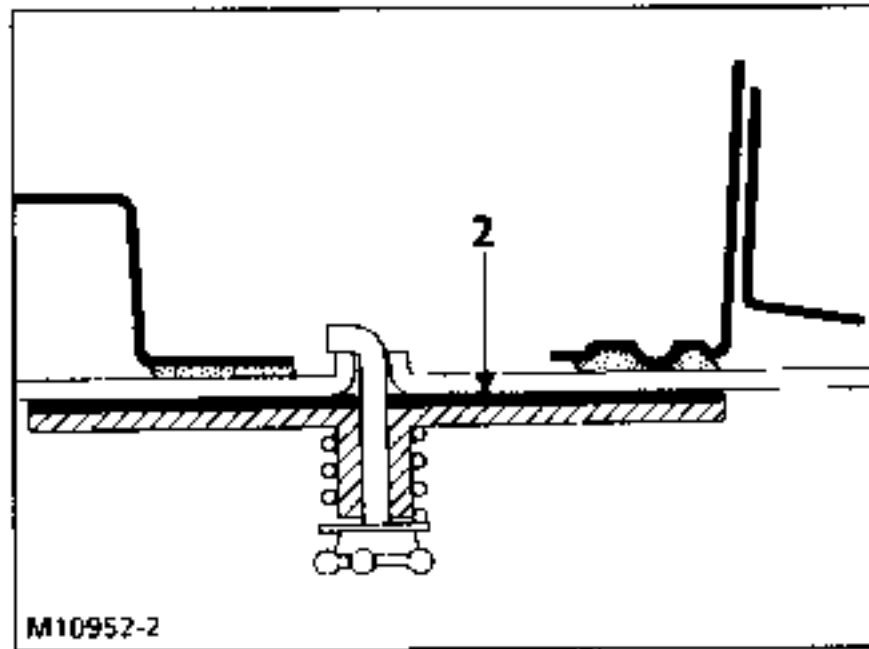
by means of the shape of the profiled plate fitting in the recess between the parts.



Clearance: 5.5 mm

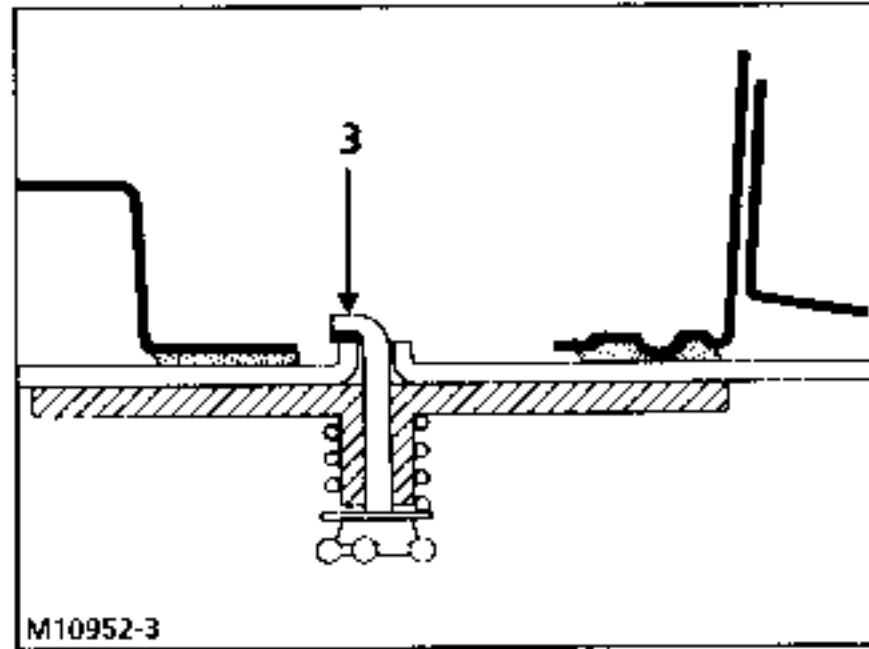
obtained by the diameter of locking pin (1) with the components in contact with one another.

Alignment



obtained by the flat of plates (2).

Fitting - Locking



Each component is locked in place on the side of the component which is not replaced (3) (except when replacing a rear door panel with a rear wing).

Leave the adhesive to harden for 30 minutes before removing the tools.

ATTENTION

**DO NOT OPEN THE DOOR OR DOORS WHEN THE TOOLS ARE FITTED ON THEM:
THERE IS A RISK OF DAMAGING THE PANEL OR THE TOOLS**

OPERATION	PRODUCT	REFERENCE/ PART NO	WHERE TO ORDER
MIG WELDING GAL- VANISED PANELS (ATAL gaz)	MIG ZINC ROUILLE EXTREME Welding wire 0.6 mm diameter 0.8 mm diameter	189 050 189 049	Contact your local After Sales Head Office (NPDC)
SEALING AND SOUND- PROOFING HOLLOW SECTIONS	See Espace Paint Manual		
BONDING STRATIFIED RESIN COMPONENTS (SMC) ON CHASSIS OR DOOR STRUCTURE	Polyurethane bonding kit	60 25 170 306	Contact your local After Sales Head Office (NPDC)
REPAIRING STRATI- FIED RESIN COMPONENTS (SMC) fissures, holes, cracks	Epoxy resin repair kit	60 25 070 997	Contact your local After Sales Head Office (NPDC)
FINISHING REPAIRS ON PRE-IMPREGNATED RESIN COMPONENTS (SMC)	POLYESTER MASTIC - normal - extra fine	77 01 395 513 77 01 421 255	
BONDING WINDOWS	ADHESIVE MASTIC - conventional kit* - single cartridge* - 450 ml kit . - 220 ml kit .	77 01 202 273 77 01 202 234 77 01 422 389 77 01 422 390	with pneumatic spray gun Requires the use of special electric spray gun Approval No. 617000 MR 500**

* One-component kit

. Two-component kit

COLLISION DIAGNOSTS

Before undertaking any repairs to the bodywork of the vehicle even if it appears only slightly damaged, a series of checks must be carried out:

. VISUAL INSPECTION

This inspection consists of examining the vehicle in the vicinity of the mounting points of the mechanical units and in the areas which may crumple or be vulnerable so as to detect whether any stress marks are present:

. CHECKING WITH A TRAMMEL GAUGE

The visual inspection may be followed by a check using a trammel gauge which will enable certain deformations to be measured by comparing both sides of the vehicle (please consult the relevant section described below for further details).

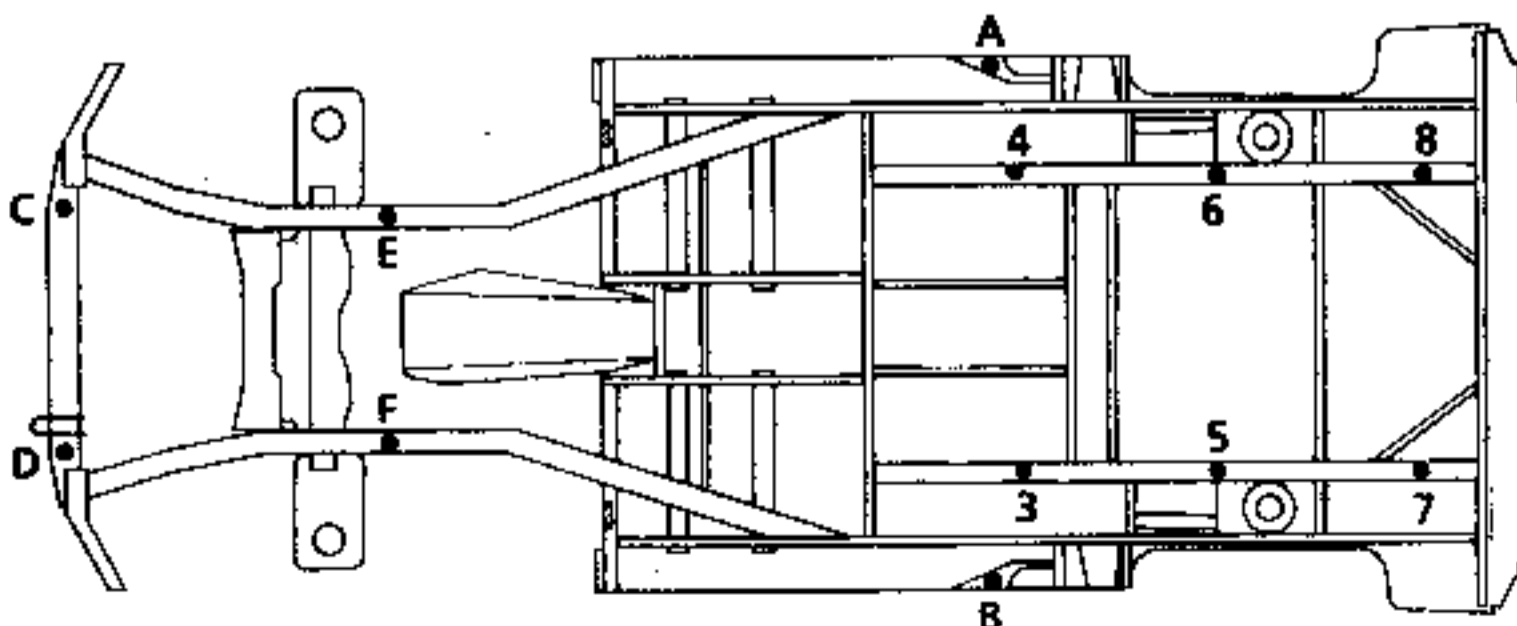
. CHECKING THE AXLE GEOMETRIES

This is the only inspection which enables it to be determined whether or not the impact to which the vehicle has been subjected has affected its road holding.

Important: in extreme cases, the inspection of the axle components which might also have undergone deformation should not be neglected.

As a general principle no welded body shell constituent component should be replaced without first checking that the subframe has not been affected by the impact.

PILOT GUIDE POINTS

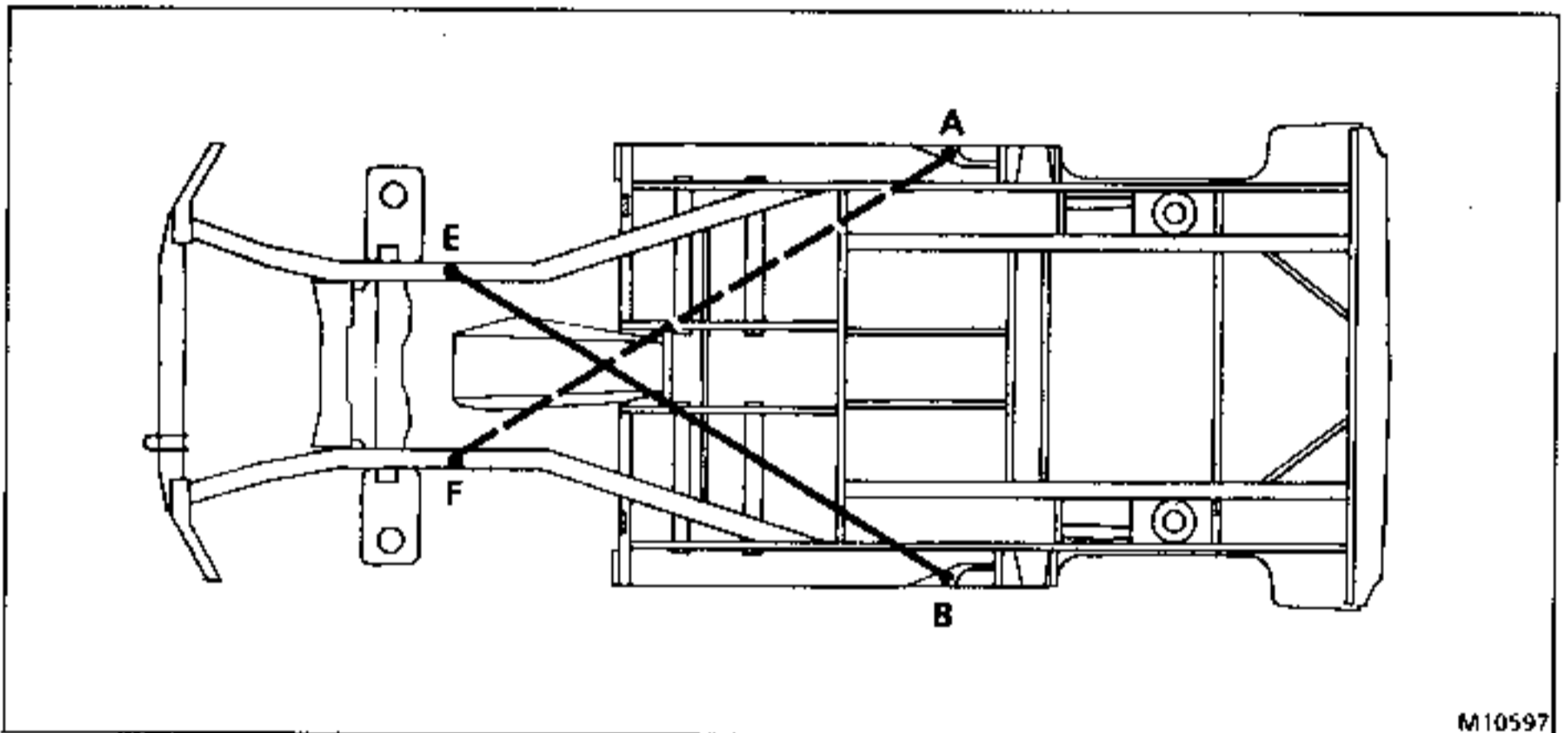


CHECKING WITH THE TRAMMEL GAUGE:

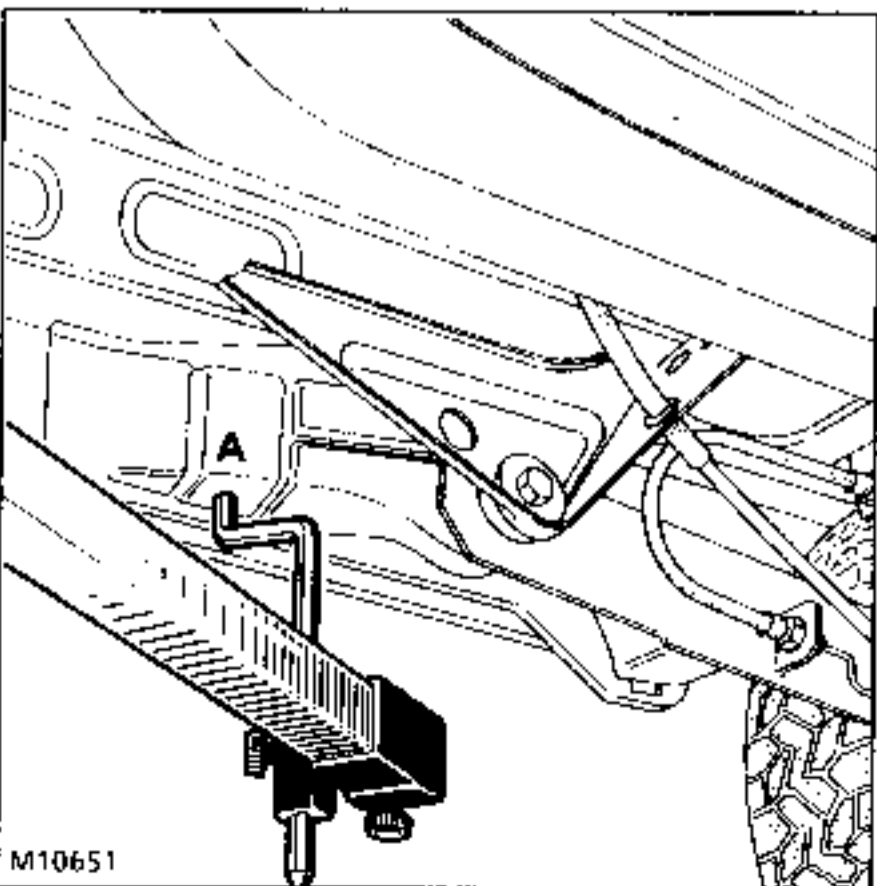
CHECKING THE POSITION OF THE FRONT SIDE MEMBERS AND FRONT CROSS MEMBER

Check the position of the pilot holes (E and F) under the front side members. Compare the diagonals and lengths $BF = AF$ and $BF = AE$.

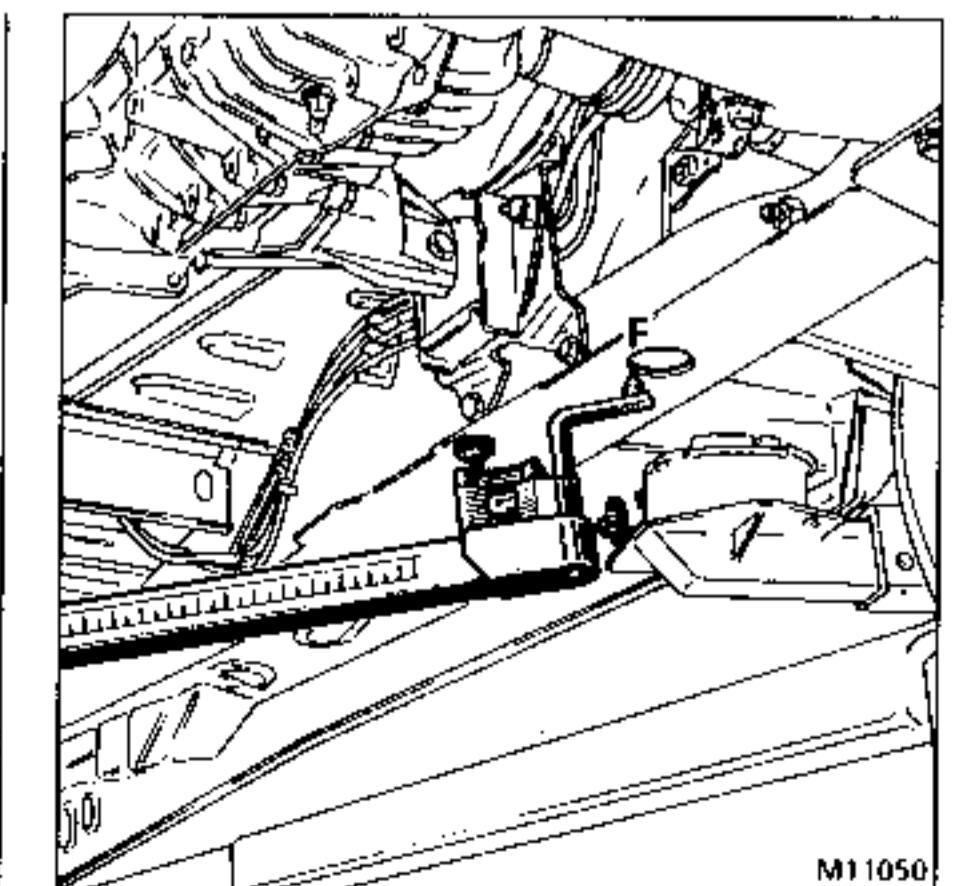
- If a difference is noted during this check, the vehicle will have to be placed on the jig bench. MOUNTING THE VEHICLE ON THE JIG BENCH FOLLOWING A FRONT END IMPACT DOES NOT INVOLVE MOVING THE MECHANICAL UNITS FROM THE REAR END. Supports specially designed for this purpose are to be placed under the corresponding points (see the section entitled "Using the jig bench brackets")
- If no differences in those dimensions are noted, check the front axle geometry. If any of the geometry angles is defective, a full check must be carried out with a view to carrying out the repair on the jig bench.



M10597



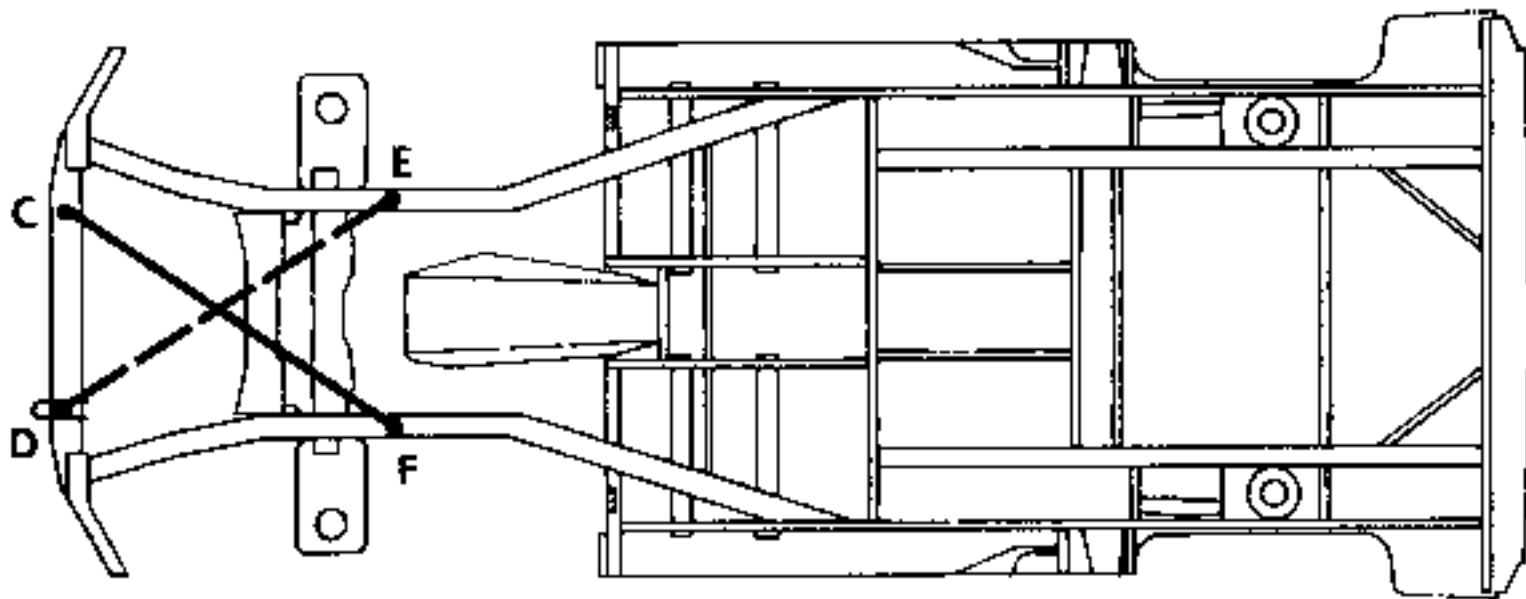
M10651



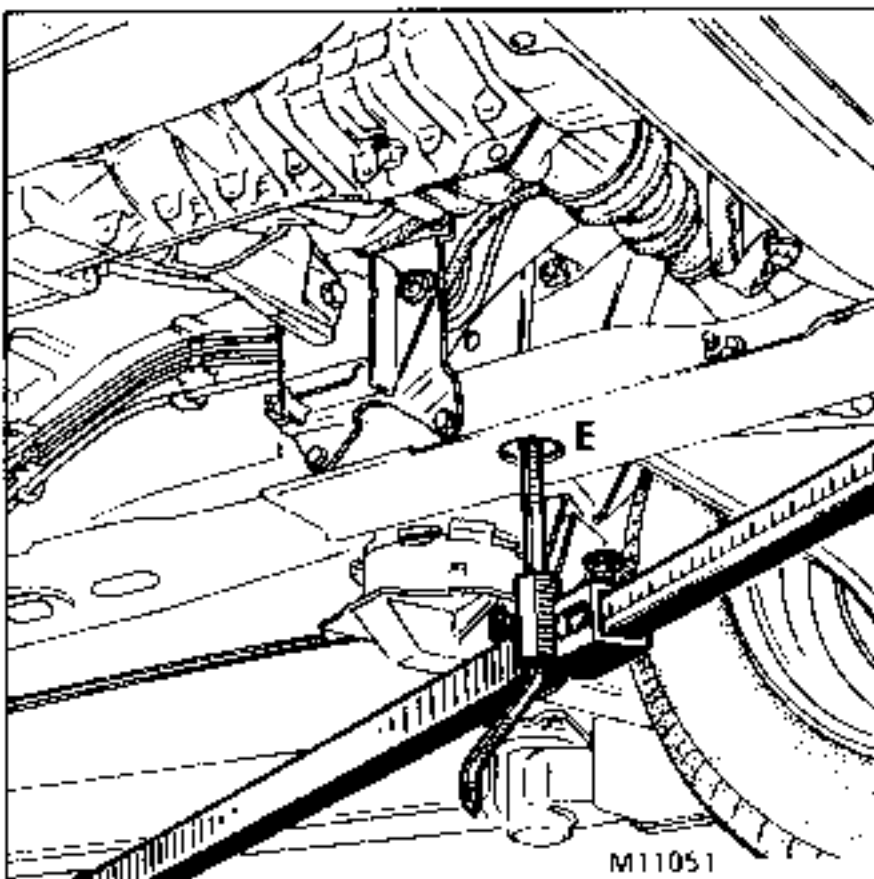
M11050

Checking the front cross member (C and D).
Compare the diagonals and lengths $CF = ED$ and $FD = EC$.

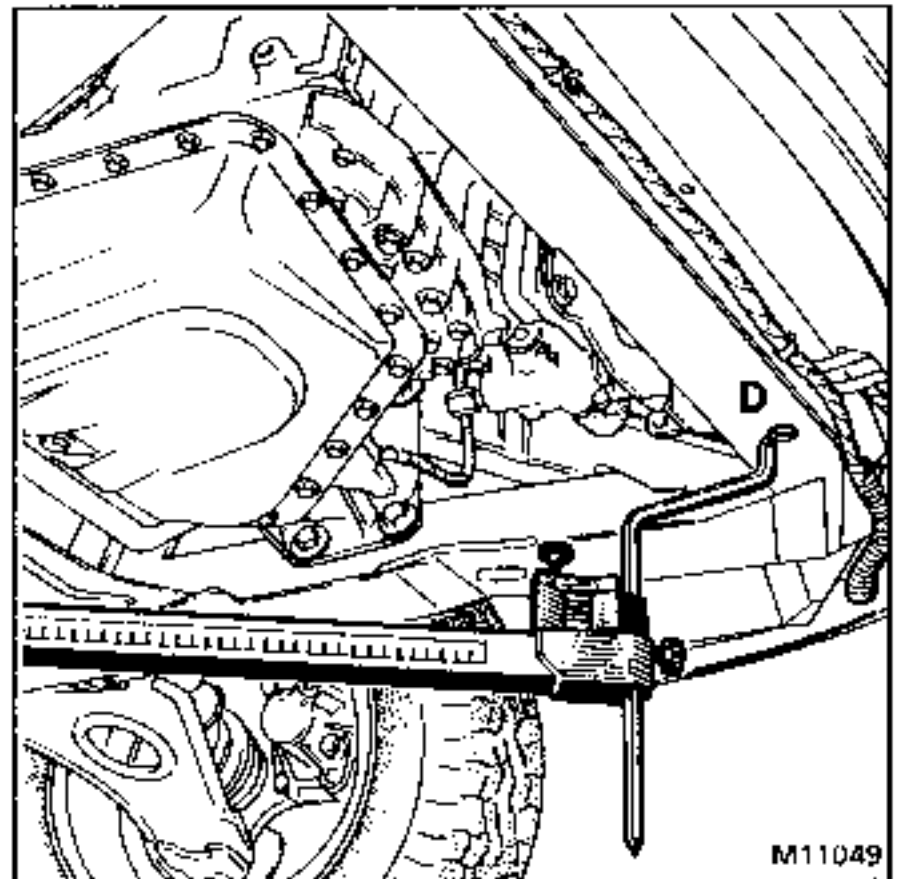
- If a difference is noted during this check but there are no folds in the metal past the point at which the front axle assembly is secured, the front ends of the side members can be partially replaced (it is preferable to perform this operation on the jig bench).
- If no difference is noted, it means that the subframe has not been affected by the impact.



M10597



M11051



M11049

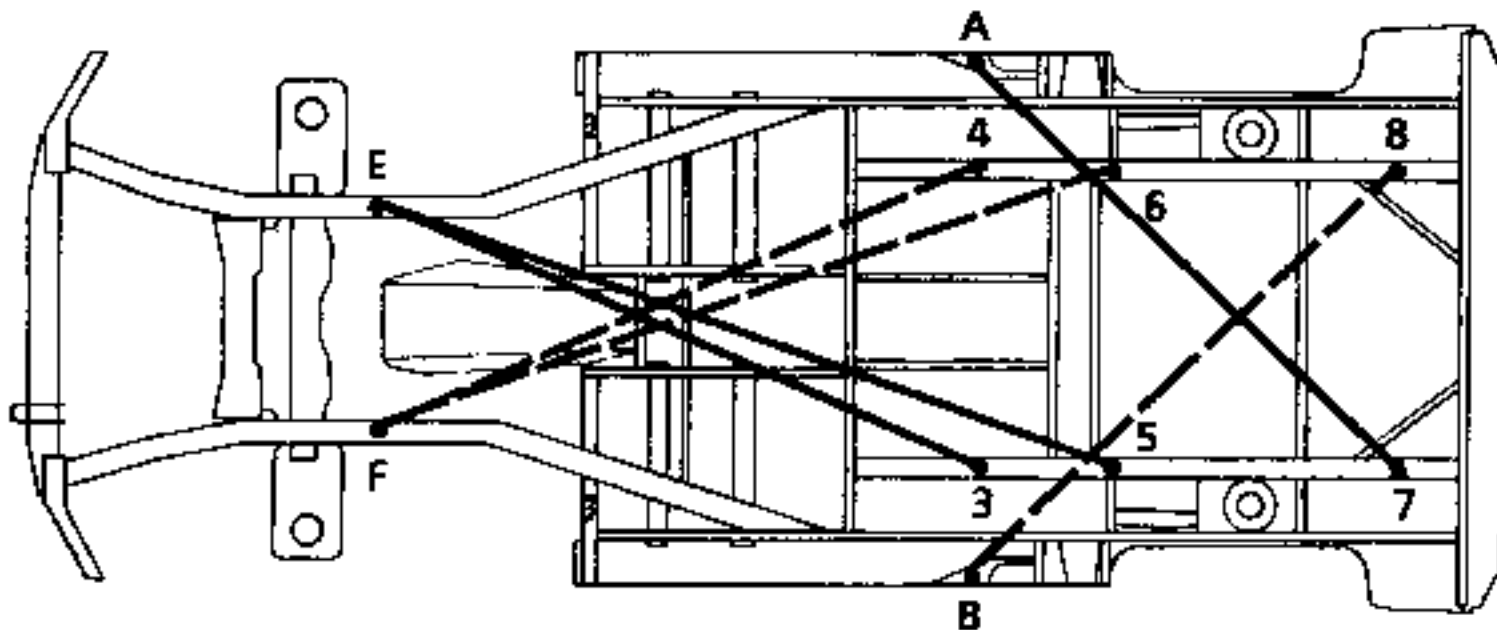
CHECKING THE POSITION OF THE REAR AXLE

Compare the diagonals and length dimensions: $F4 = E3$ and $F3 = E4$

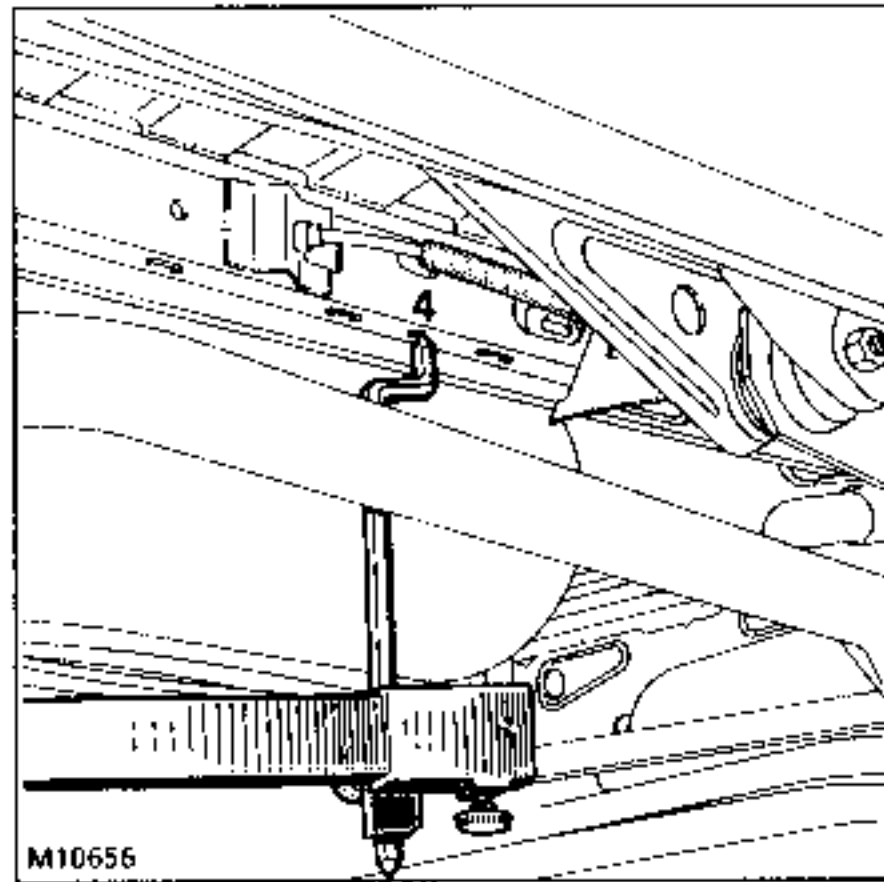
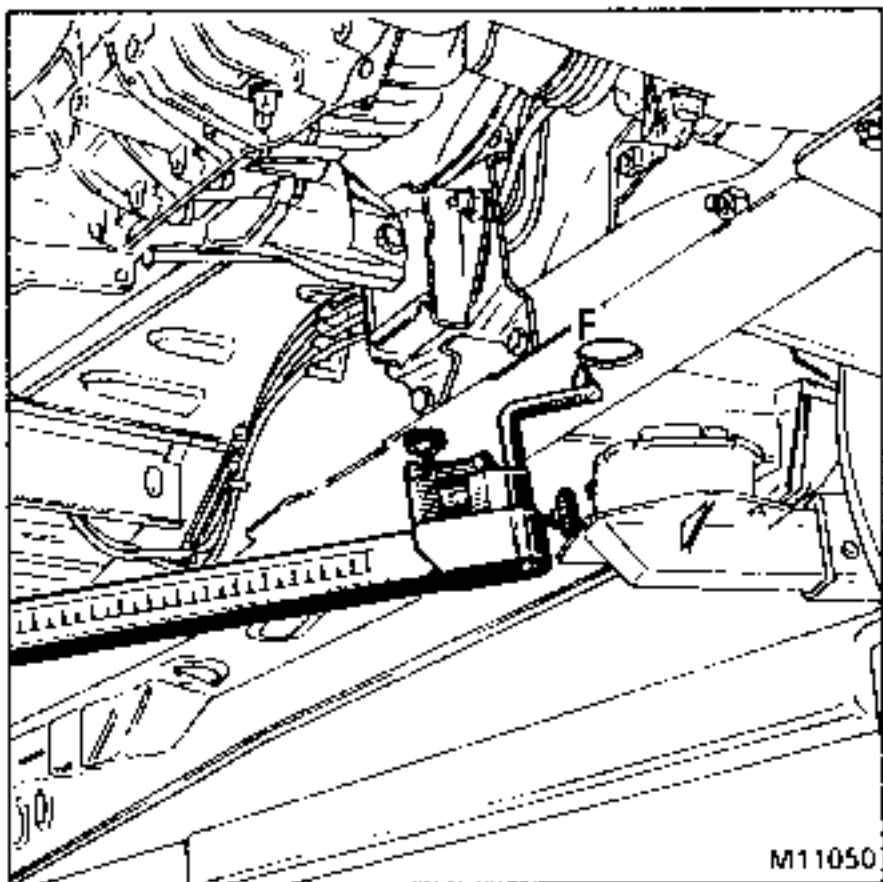
- If a difference is noted during this check, the vehicle will have to be mounted on the jig bench. It may be necessary to replace the complete side member. MOUNTING THE VEHICLE ON THE JIG BENCH FOLLOWING A REAR END IMPACT DOES NOT NECESSITATE REMOVING THE FRONT MECHANICAL UNITS. Supports specially designed for this purpose are to be placed under the corresponding points (see the section on using the jig bench brackets).
- If no difference is noted, continue by checking the diagonals and length dimensions: $F6 = E5$ and $F5 = E6$.

Any difference in length is an indication that the shock absorber anchorage and spring cup are deformed:

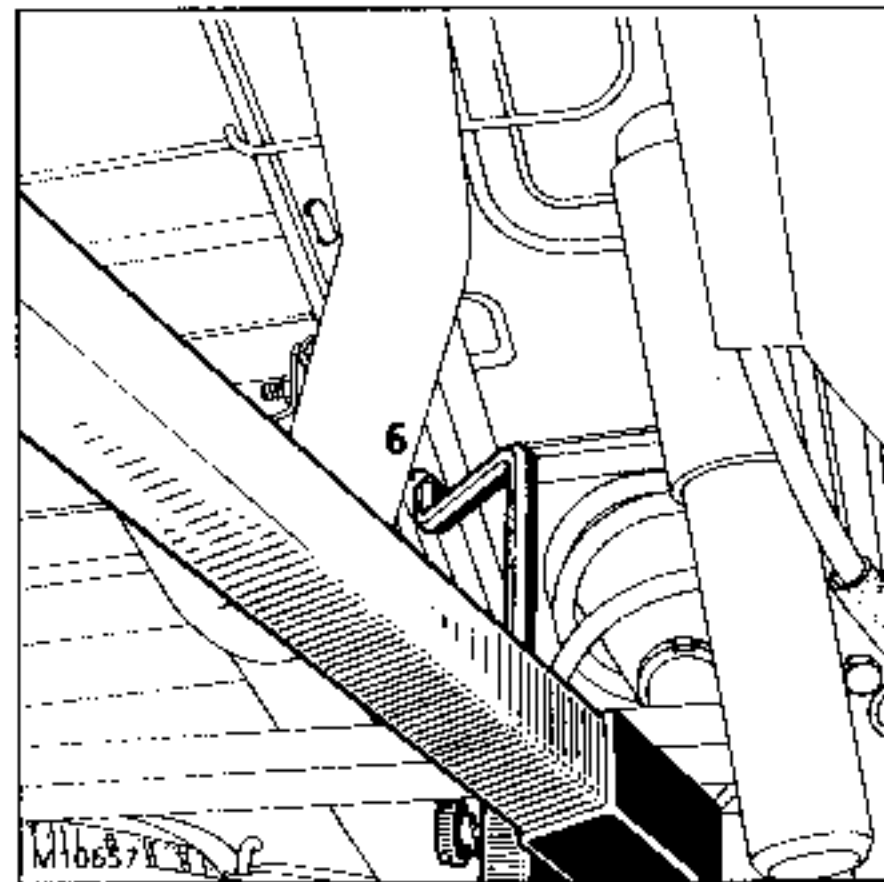
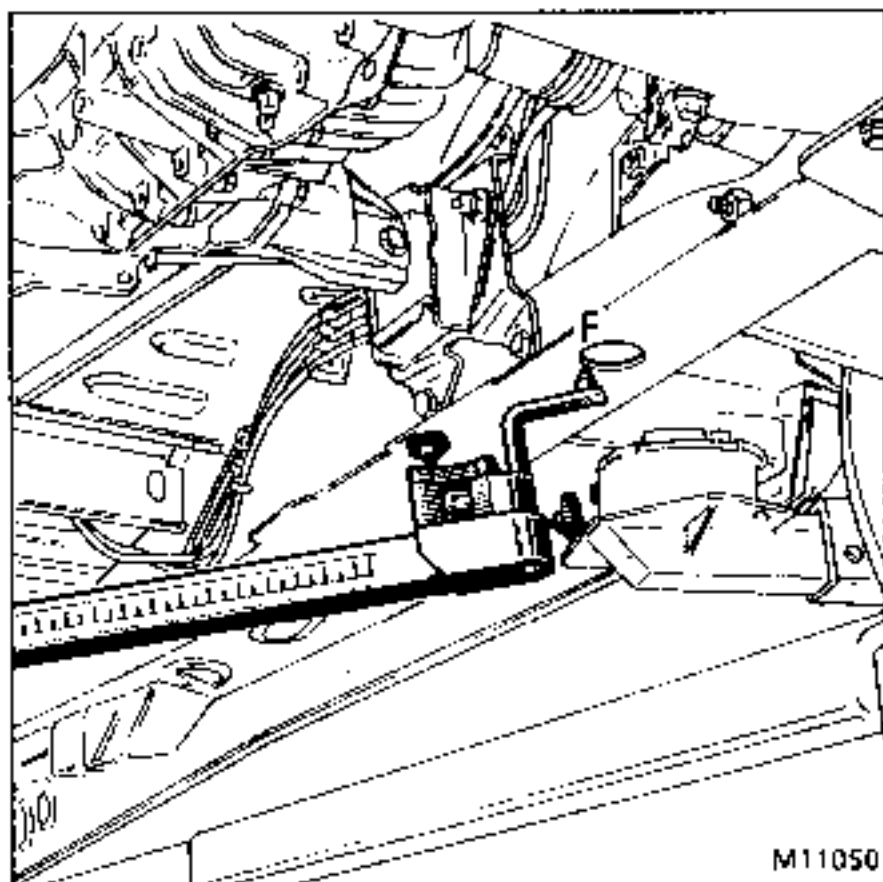
- check the condition of the suspension arms;
- check the axle geometries;
- CARRY OUT THE REPAIR OPERATIONS ON THE JIG BENCH.



CHECKING THE DIAGONALS: F4 = E3

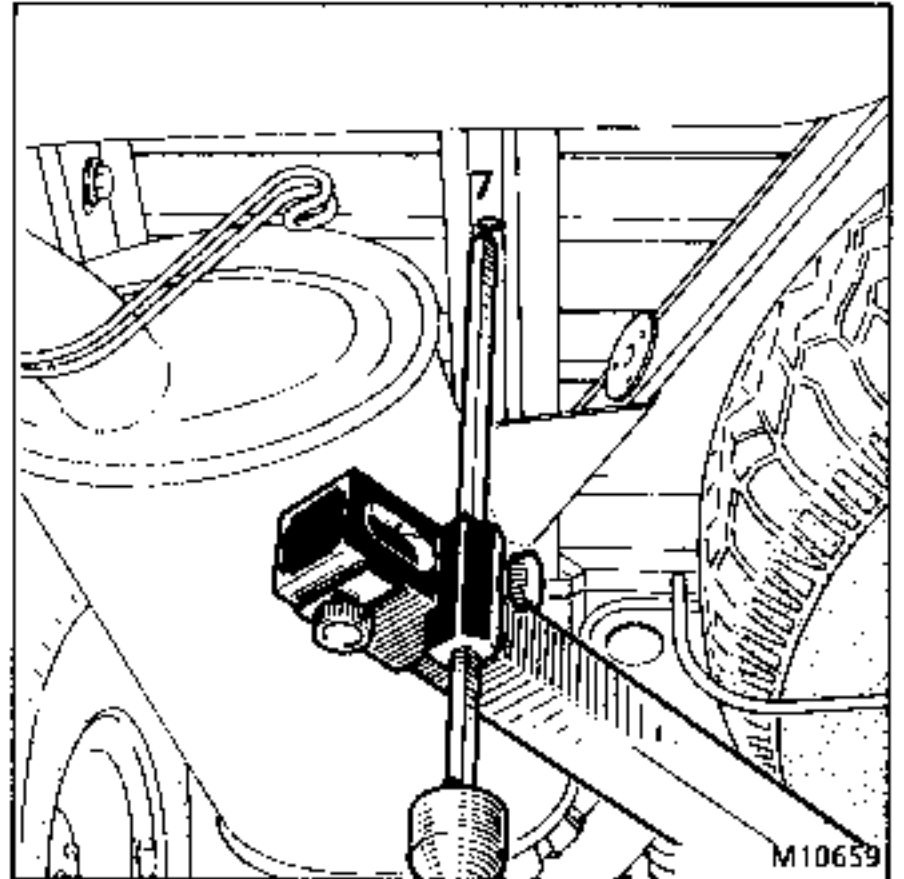
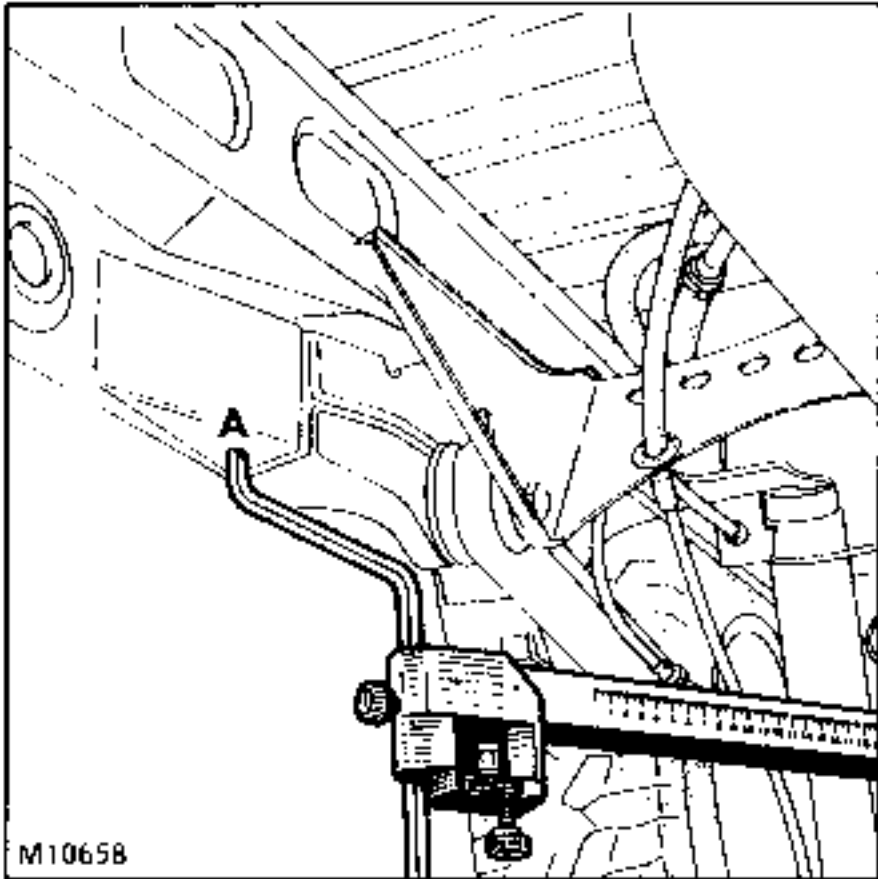


CHECKING THE DIAGONALS: F6 = E5



CHECKING THE DIAGONALS A7 = B8

The rear side member ends are checked by comparing diagonals A7 - B8.

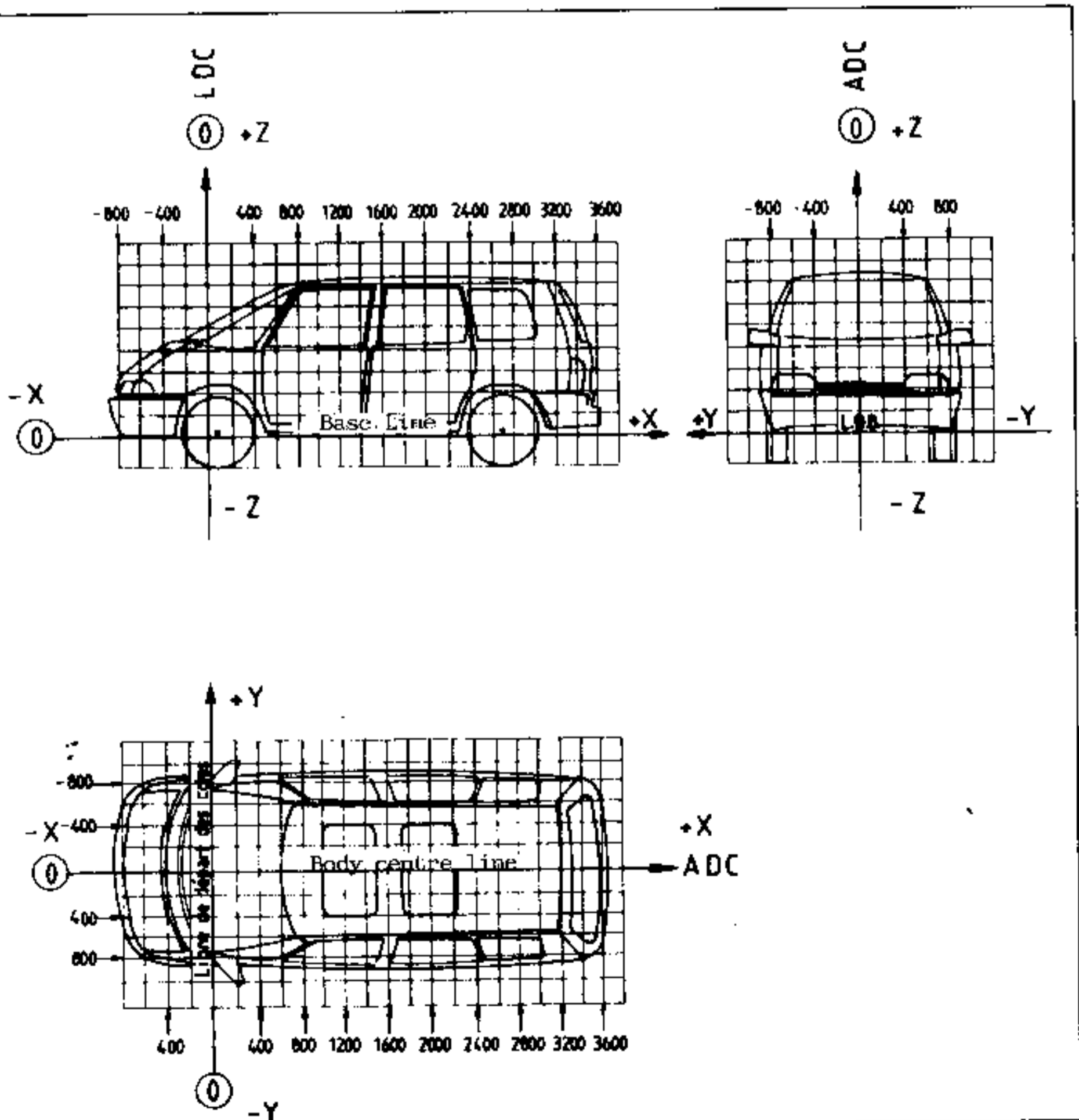


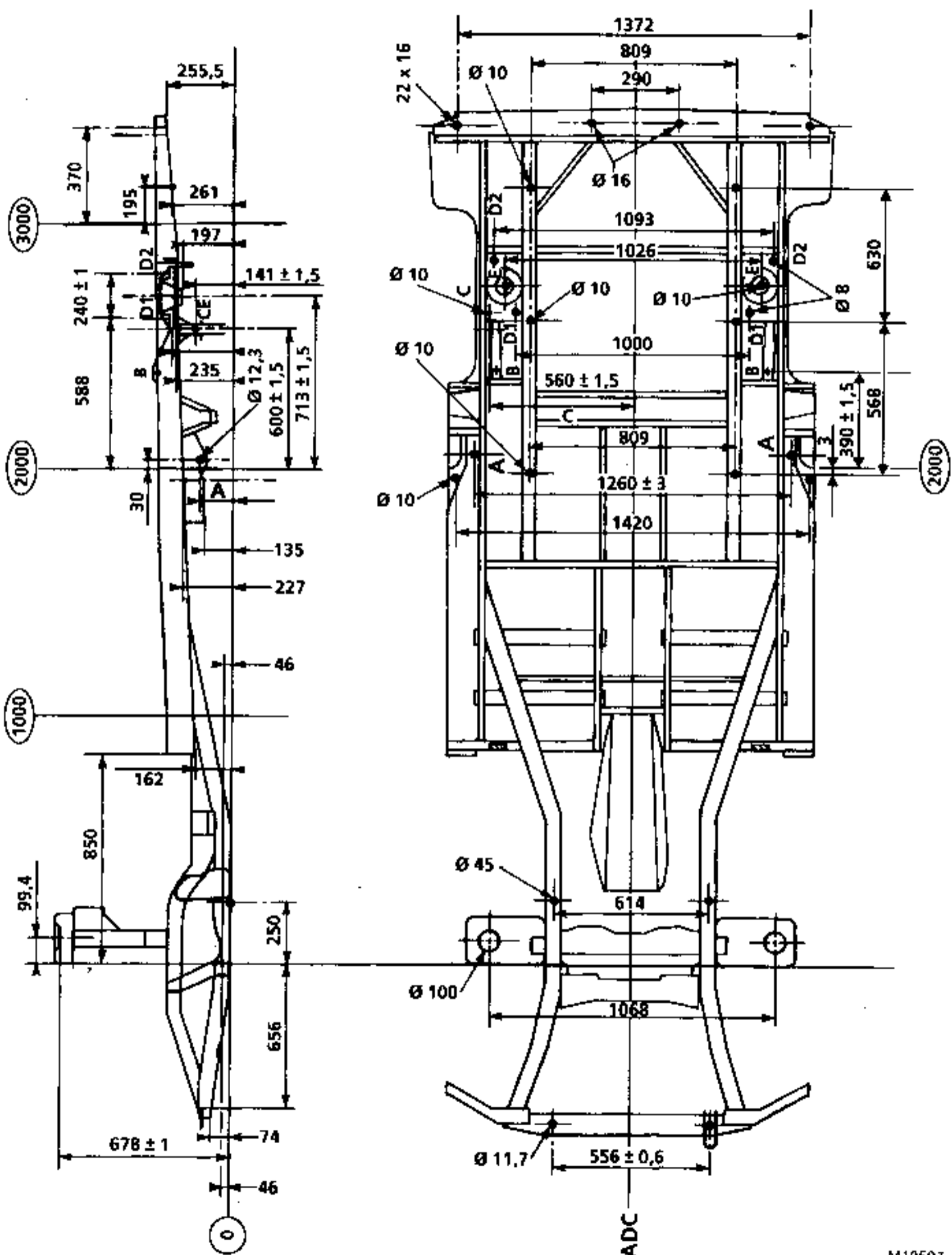
REMINDER OF THE GEOMETRY

The intersection of the three planes X-Y-Z determines the point of origin 0 vehicle as well as the three reference lines.

- 1 Initial dimension line: L-D-C (position of bracket at X, given in relation to this line)
- 2 Body centre line : A-D-C (position of bracket at Y, given in relation to this line)
- 3 Base line. : L-D-B (position of bracket at Z, given in relation to this line)

The body repair brackets and their positions on the jig bench are designed according to these three lines.





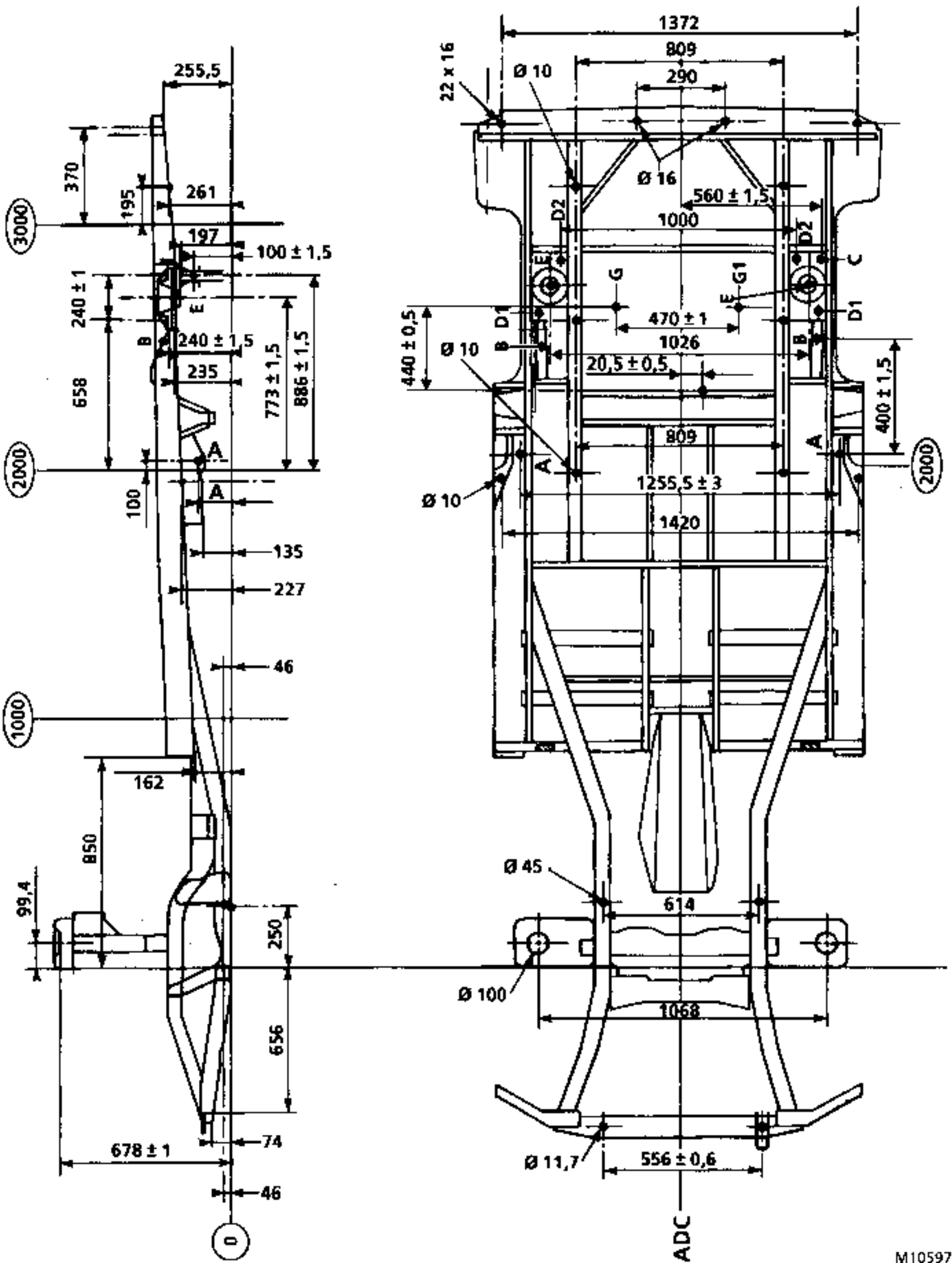


TABLE SHOWING THE DIMENSIONS FOR THE REAR SECTION

1- 4 x 2 VEHICLES

POINTS	DESCRIPTION	DIMENSIONS		
		X	Y	Z
A	Suspension bar pin	2030	1260 ± 3	136 ± 1,5
B	Shock absorber pin	2390 ± 1,5	1110 ± 3	293 ± 1,5
C	"Panhard" bar pin	2600 ± 1,5	D + 560 ± 1,5	141 ± 1,5
D1	Rear suspension cup centring front point	2588	1000 ± 1	248 ± 1,5
D2	Rear suspension cup centring rear point	2828	1093 ± 1	248 ± 1,5
E	Impact stop	2713 ± 1,5	1026 ± 3	197

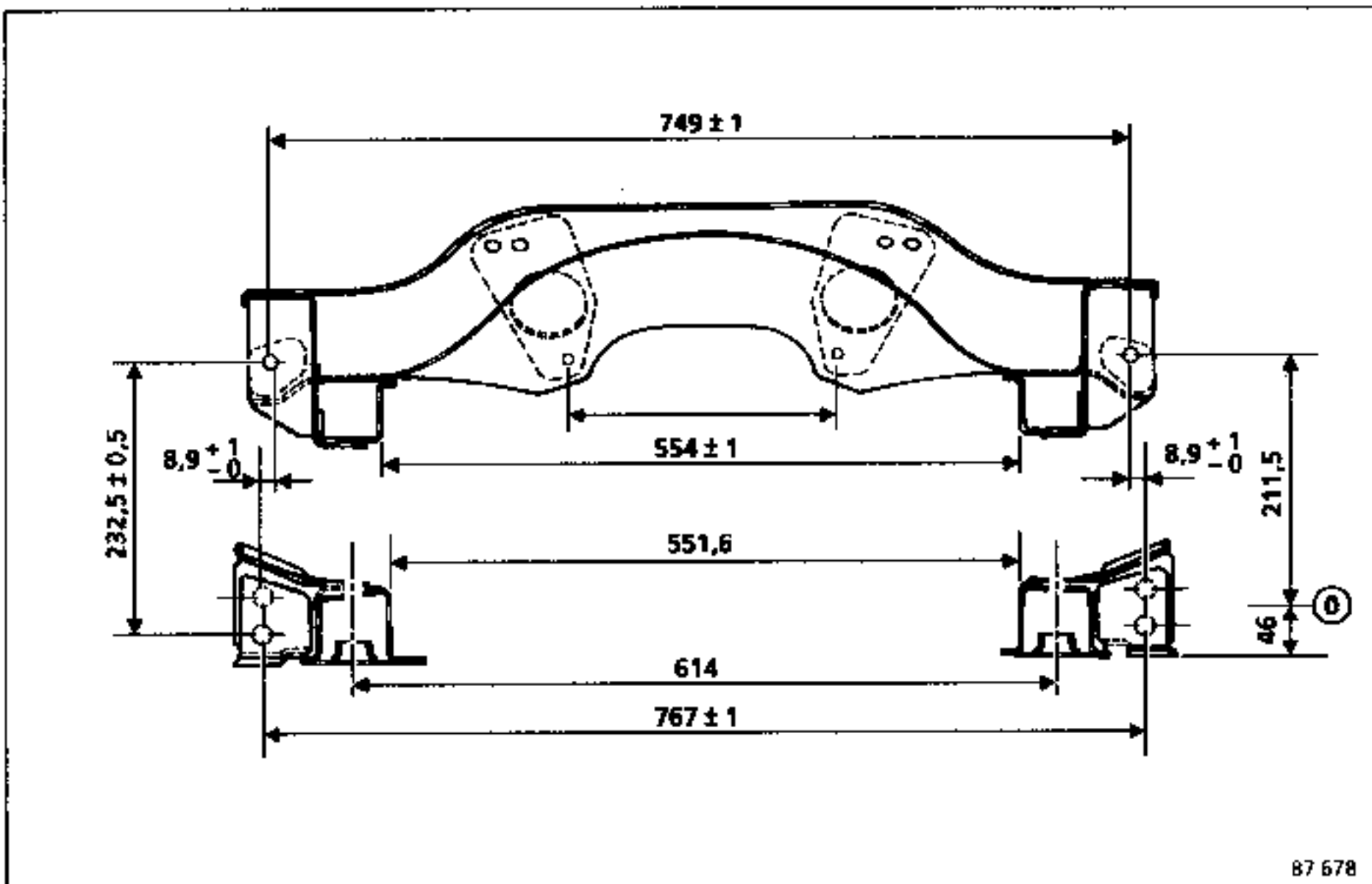
2- 4 x 4 VEHICLES

POINTS	DESCRIPTION	DIMENSIONS		
		X	Y	Z
A	Suspension bar pin	2100	1255,5 ± 3	124 ± 1,5
B	Shock absorber pin	2500 ± 1,5	1110 ± 3	263 ± 1,5
C	"Panhard" bar pin	2886 ± 1,5	G - 560 ± 1,5	100 ± 1,5
D1	Rear suspension cup centring front point	2658	1093 ± 1	240 ± 1,5
D2	Rear suspension cup centring rear point	2898	1000 ± 1	240 ± 1,5
E	Impact stop	2773 ± 1,5	1026 ± 3	197
F	3 point front clevis - rear axle	2281,5	G - 20,5 ± 0,5	231 ± 1
G and G1	3 point rear clevis - rear axle	2721,5	G - 235 ± 0,5 D + 235 ± 0,5	228 ± 1

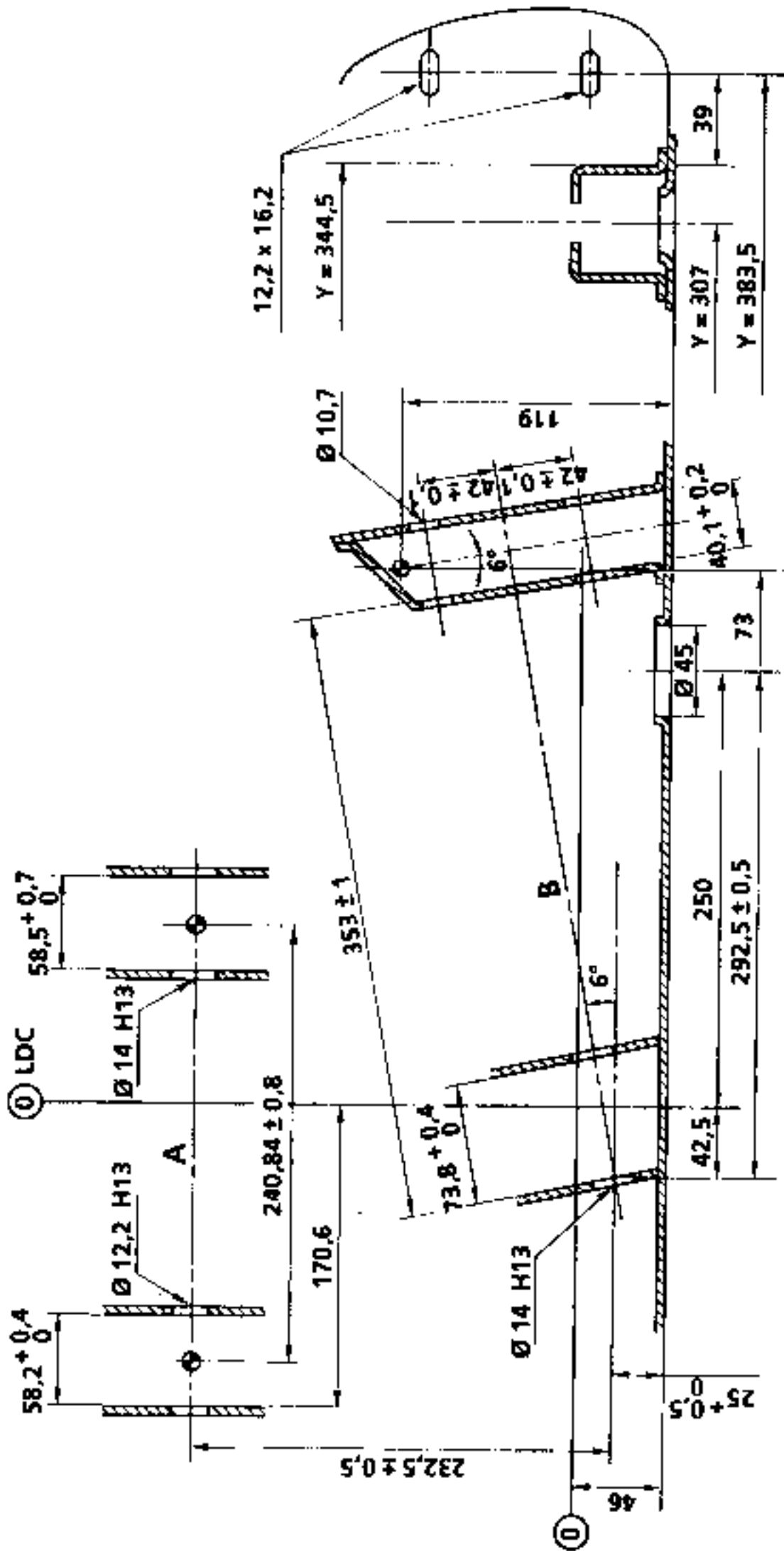
The geometry of the floor section framing must be checked with the trammel gauge Car.759-02 followed if applicable by a check of the front and rear axle geometries.

The aim of these checks is to determine, without removing any mechanical components, the extent of the distortion that the floor section may have suffered in particular at the mechanical unit securing points.

SUBFRAME DIMENSIONS: STEERING AND FRONT AXLE



87 678



A Upper arm and caster tie rod centre line
B Lower arm centre line

NOTE: for . the description of the various jig benches
 . the identification of the various holes
 . the conversion of old type jig benches to the modular system
 . the anchorage and jacking components
 . strengthening of the jig bench;
please consult MR.501 Bodywork section, sections F001 and F002.

IMPORTANT: before any operations on a jig bench, it is essential to untwist it at the exact point where the vehicle is going to be checked.

As the ground in the workshop is never completely flat, it may occur that one of the wheels of the jig bench is slightly overhanging and this may be sufficient to twist the bench which may deform under the weight of the cross members and vehicle inspite of its sturdy appearance.

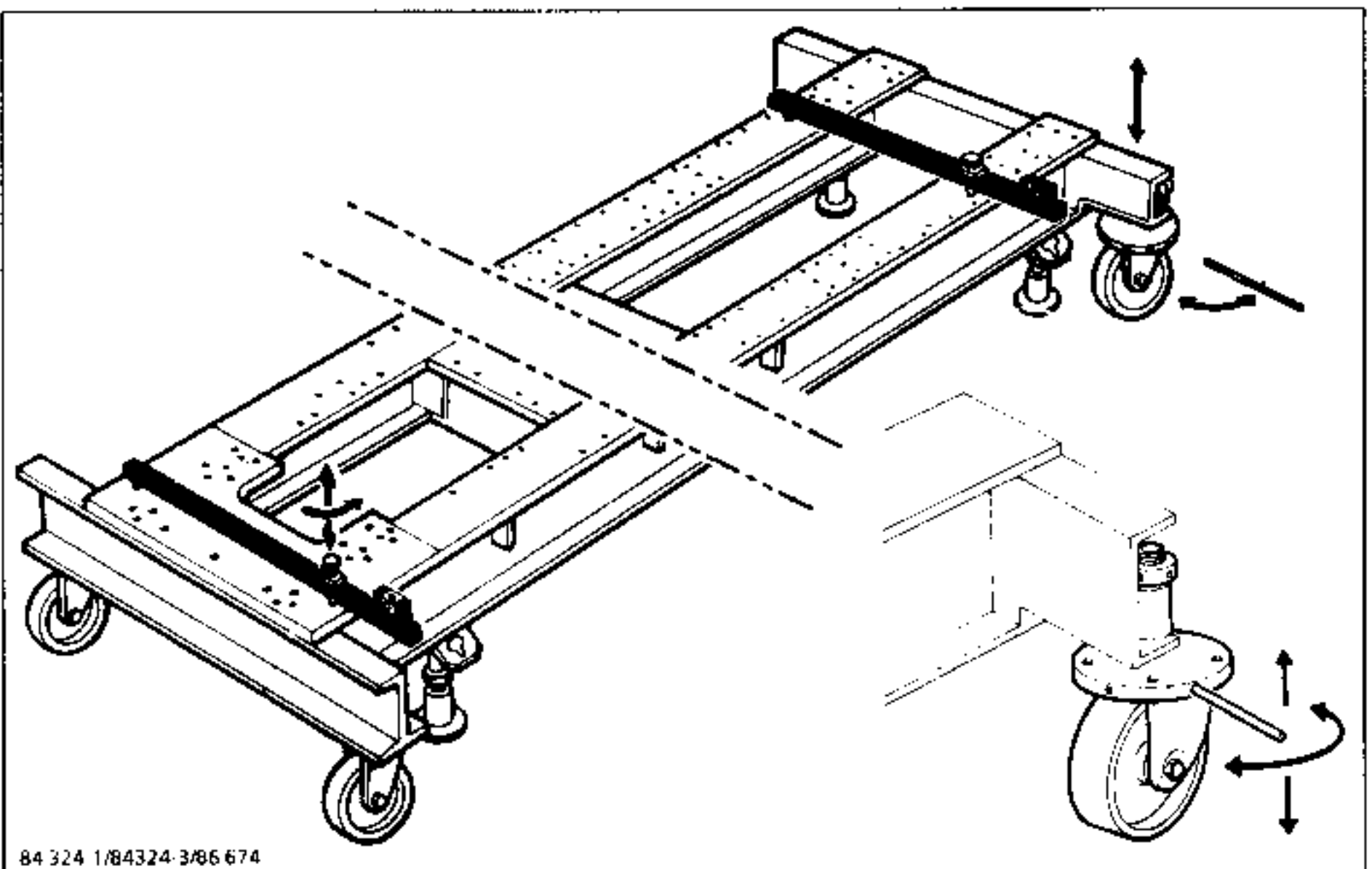
NOTE: on the recent jig benches of the CELETTE MT10 and SEFAC type, the untwisting operation is no longer necessary.

1. RAPID UNTWISTING METHOD

Using a jack placed at the centre of the end beam of the bench, raise the bench until the two wheels lift off the ground slightly. The bench will then be supported at three points (two wheels of the bench + one jack bearing point) which will enable the bench framing to be automatically untwisted.

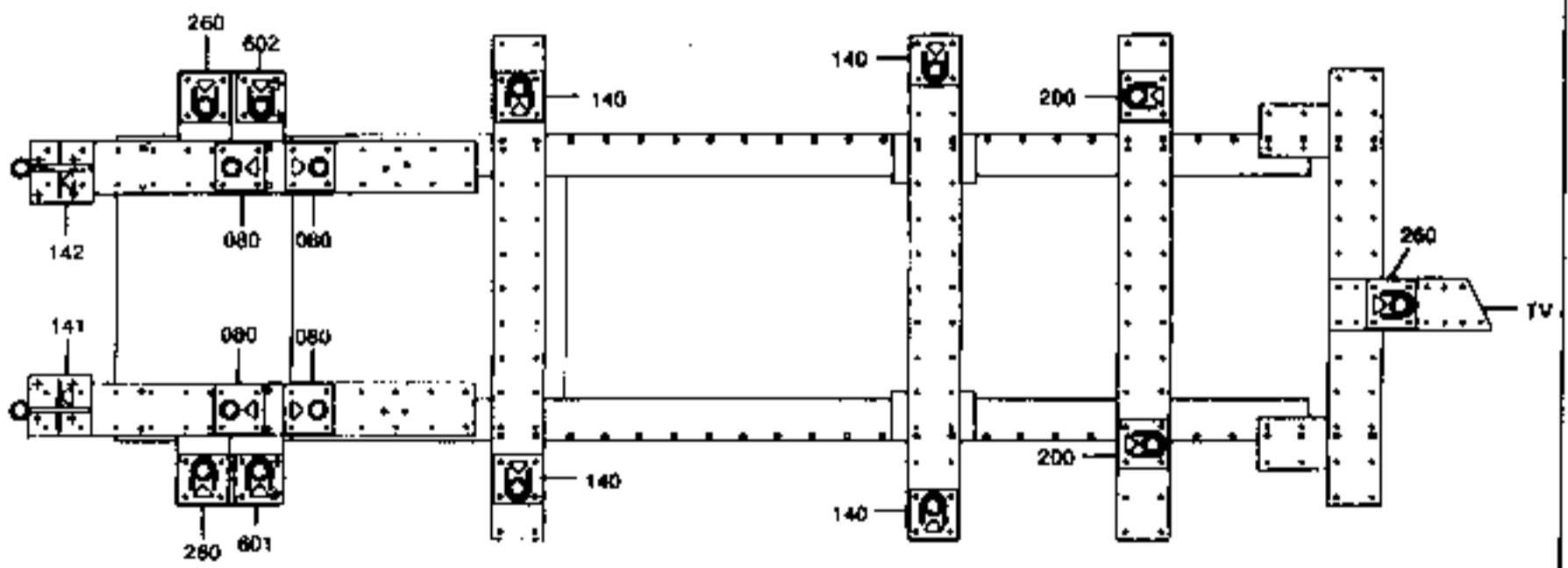
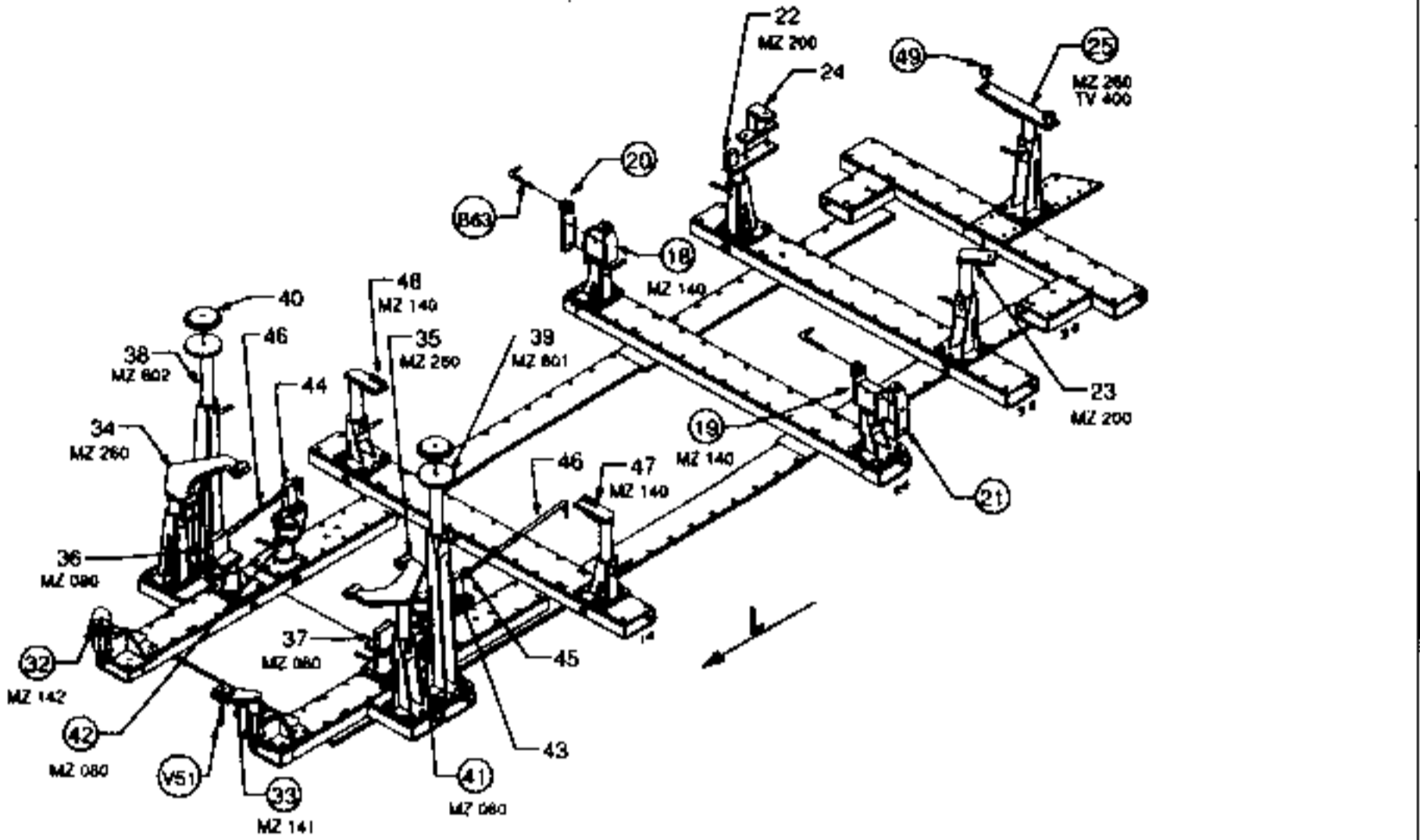
It is preferable to raise the bench on the side opposite the impact so as not to obstruct the operator.

2. CONVENTIONAL METHOD (see diagram below)

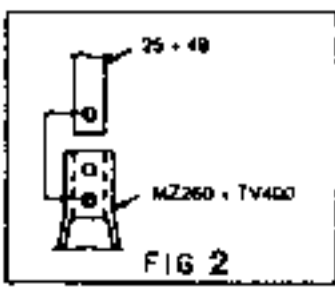
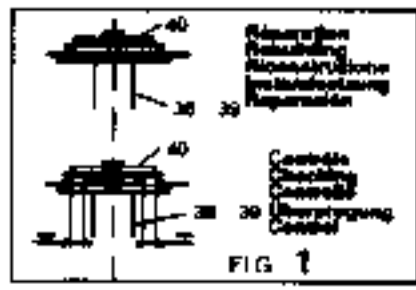


FITTING THE CELESTE BRACKETS

Reference: 539 307

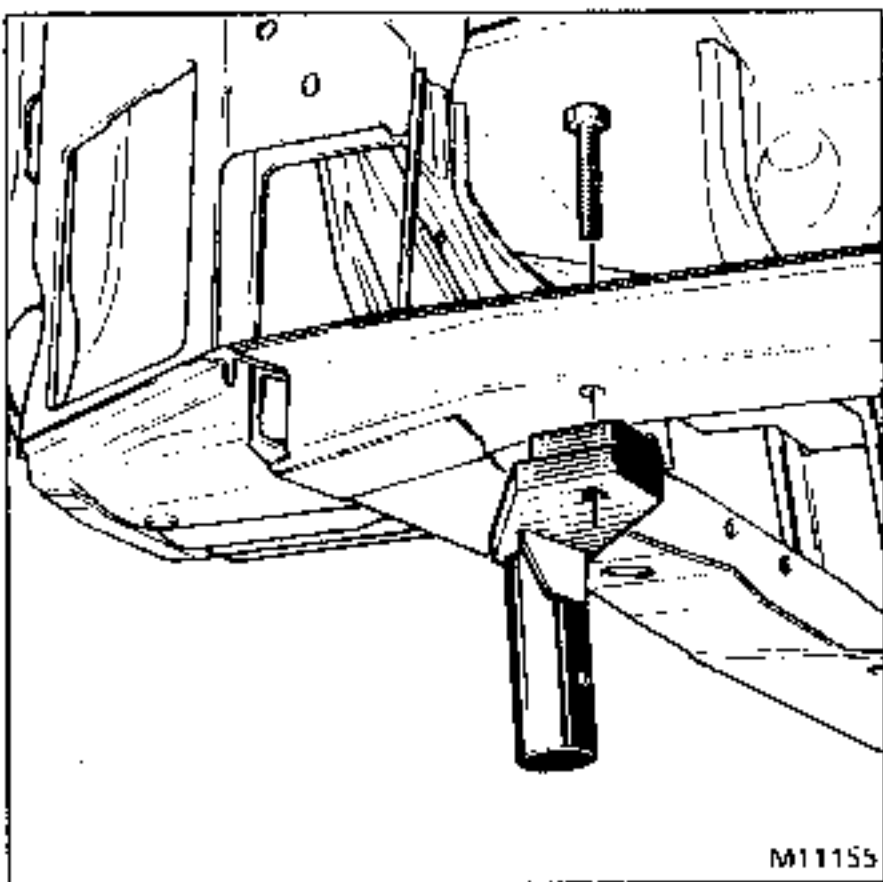


- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36



REFERENCE POINTS ON VEHICLES

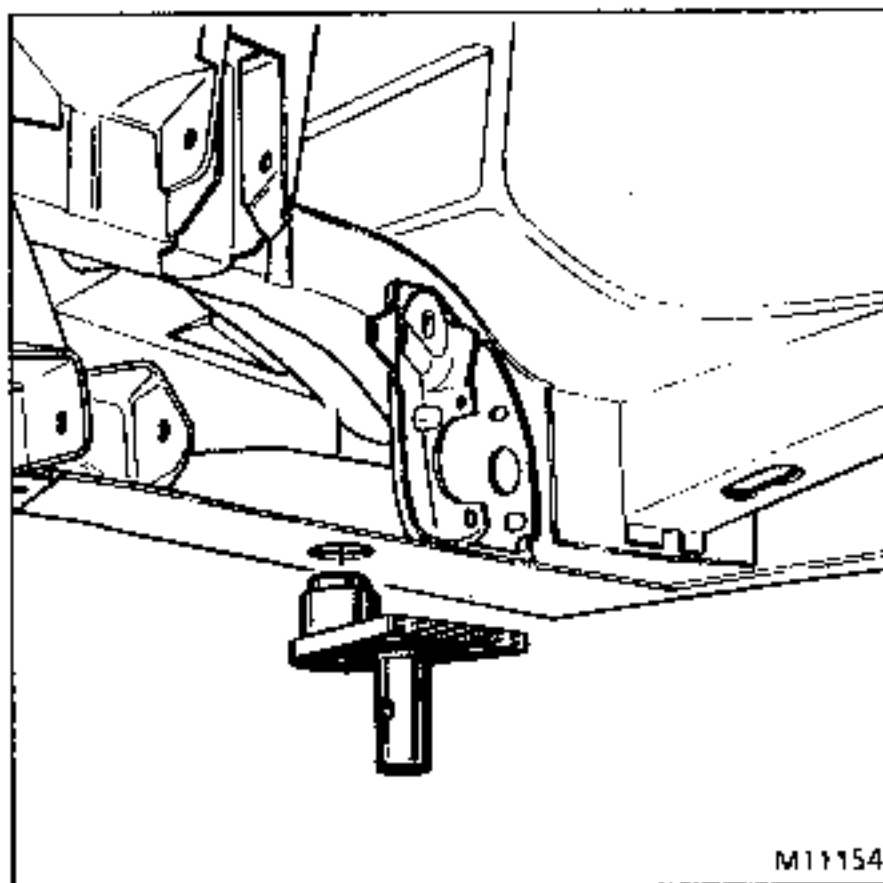
1 - FRONT END LOWER CROSS MEMBER



Used only when rebuilding the front, it enables the front end cross member to be positioned.

NOTE: these holes are to be used as a reference for the front end checking jig.

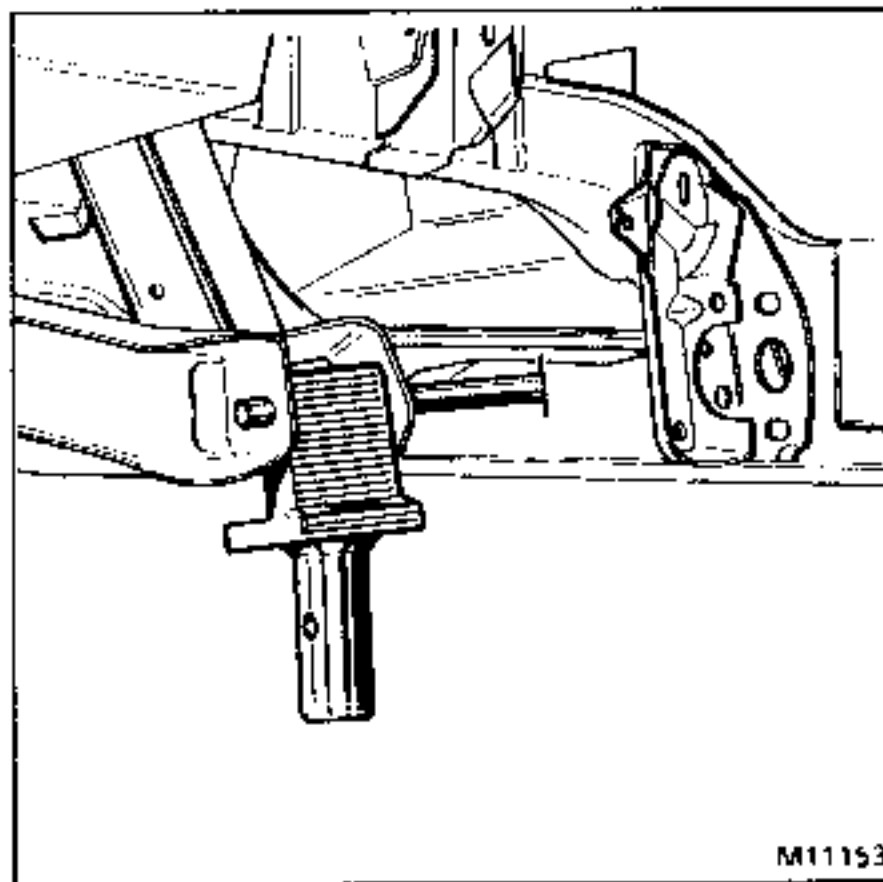
2 - CENTRING GUIDE UNDER FRONT SIDE MEMBER



This is one of the main reference guides for levelling the vehicle on the jig bench. Its use is of a priority in all cases of repair.

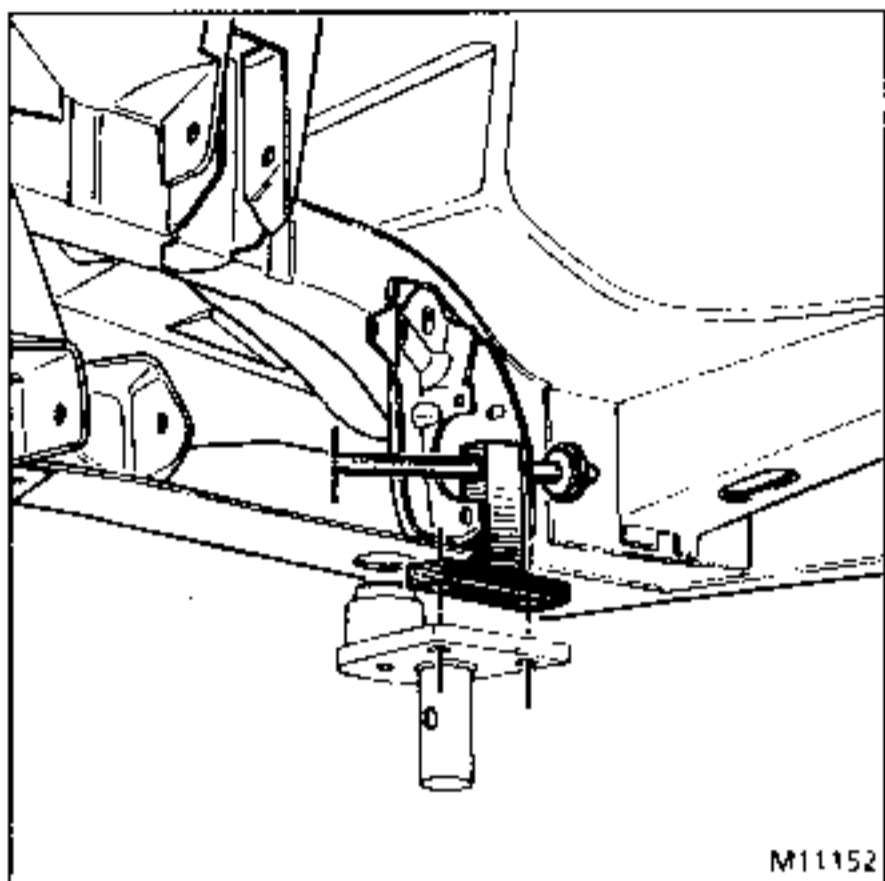
SPECIAL CASES: when replacing a front unit or side member, the bearing points under the front floor panel must be used (see the bracket taking the weight under the front floor panel).

3 - FRONT AXLE LOWER ARM FRONT MOUNTING



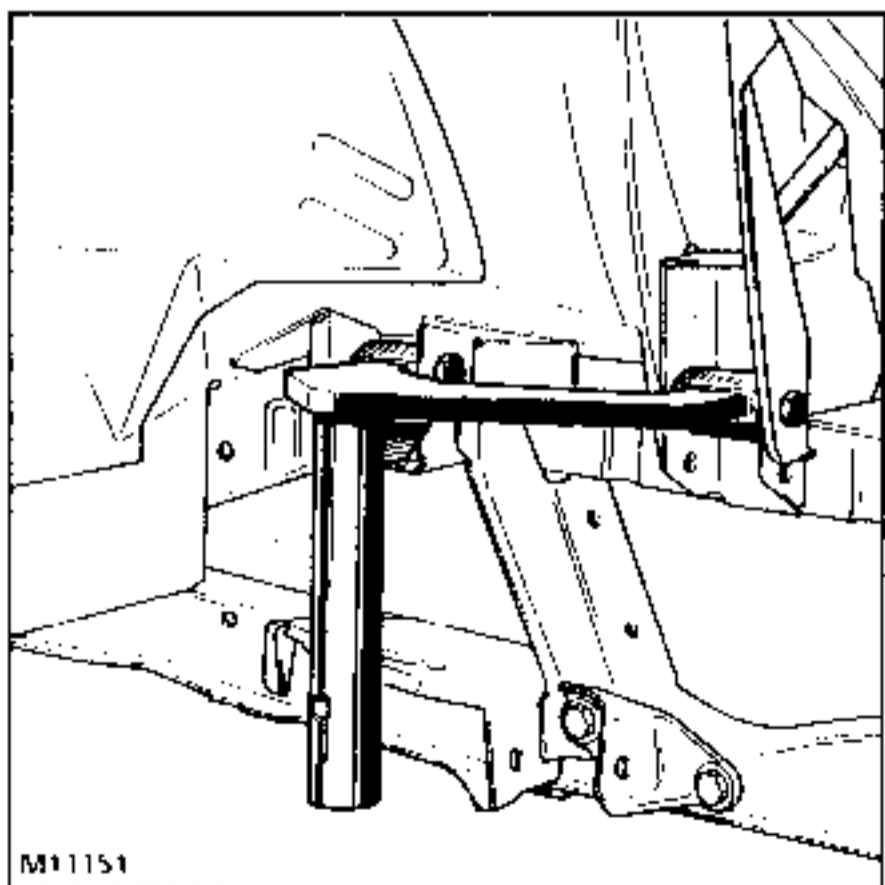
Used when rebuilding the front of the vehicle, it enables the front lower side member to be positioned and is used in addition to the rear mounting bracket mentioned below.

4 - FRONT AXLE LOWER ARM REAR MOUNTING



Used when rebuilding the front of the vehicle, it enables the front lower side member to be positioned and is used in addition to the preceding bracket. It must be secured on centring guide no. 2 by two 12 mm diameter bolts.

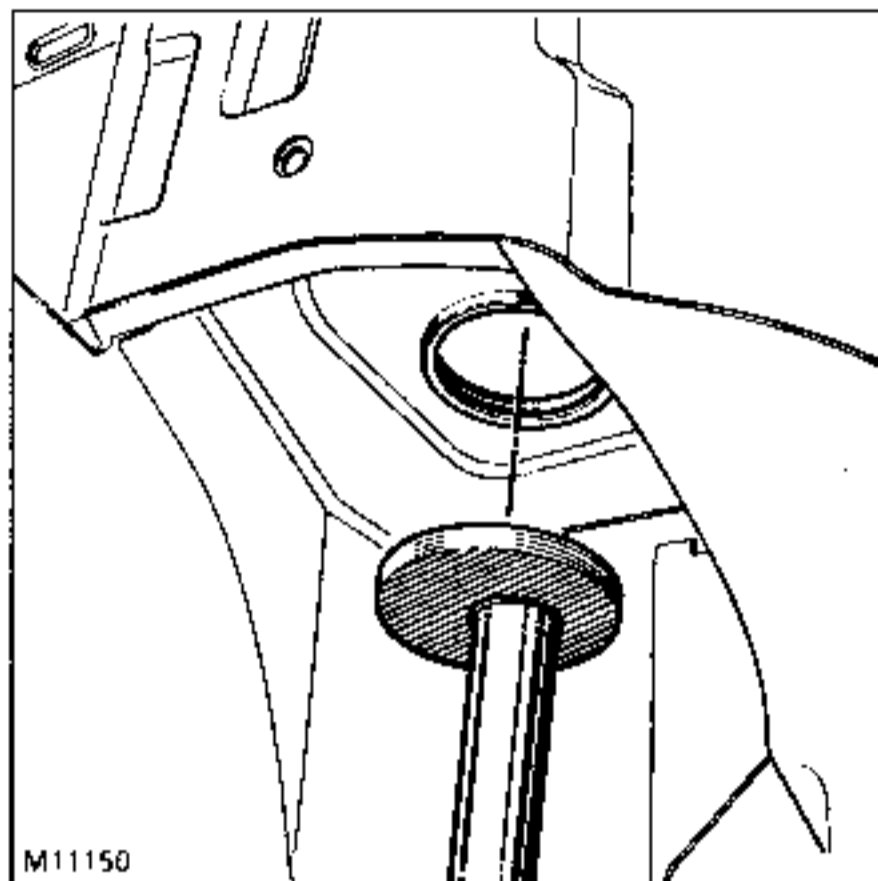
5 - FRONT AXLE UPPER WISHBONE MOUNTINGS



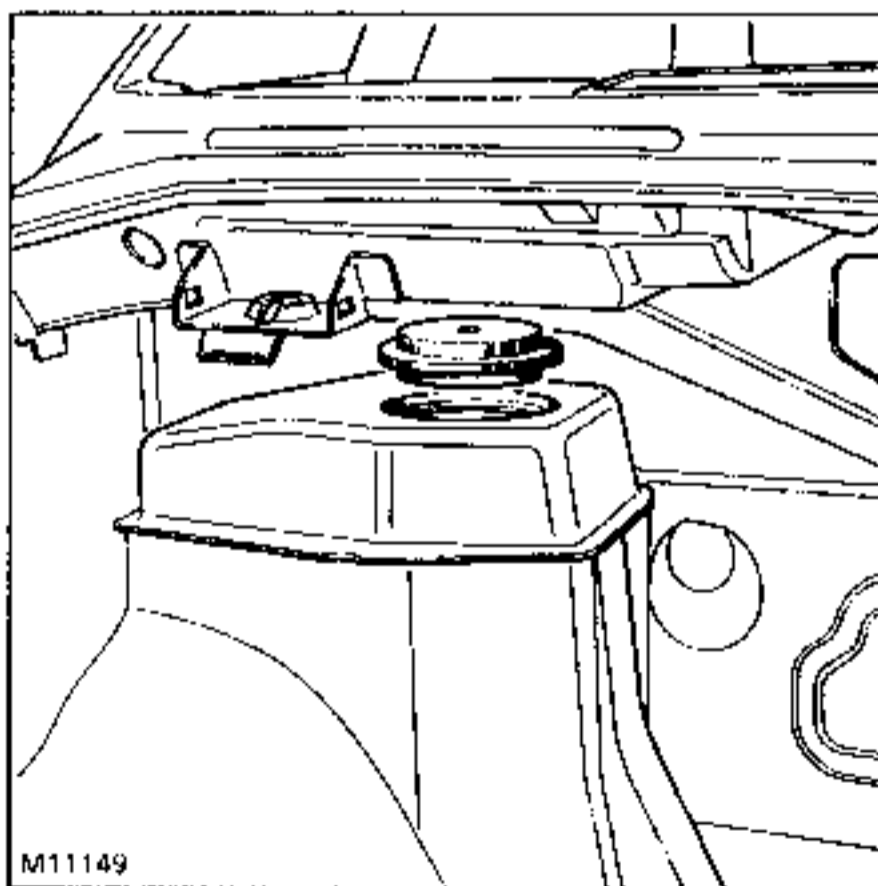
Used when rebuilding the front of the vehicle, it enables the front upper side member to be positioned.

6 - FRONT SHOCK ABSORBER UPPER MOUNTING

A - Bearing cup

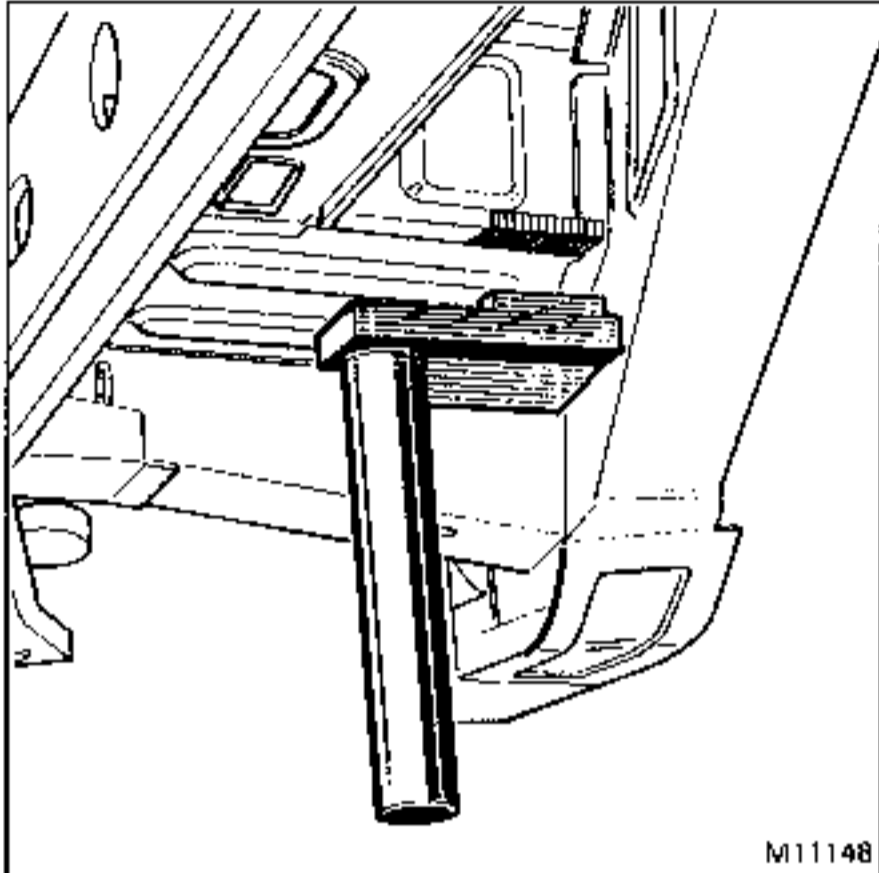


B - Centring washer



Used when rebuilding the front of the vehicle, it enables the shock absorber turret and cowl side panel to be positioned.

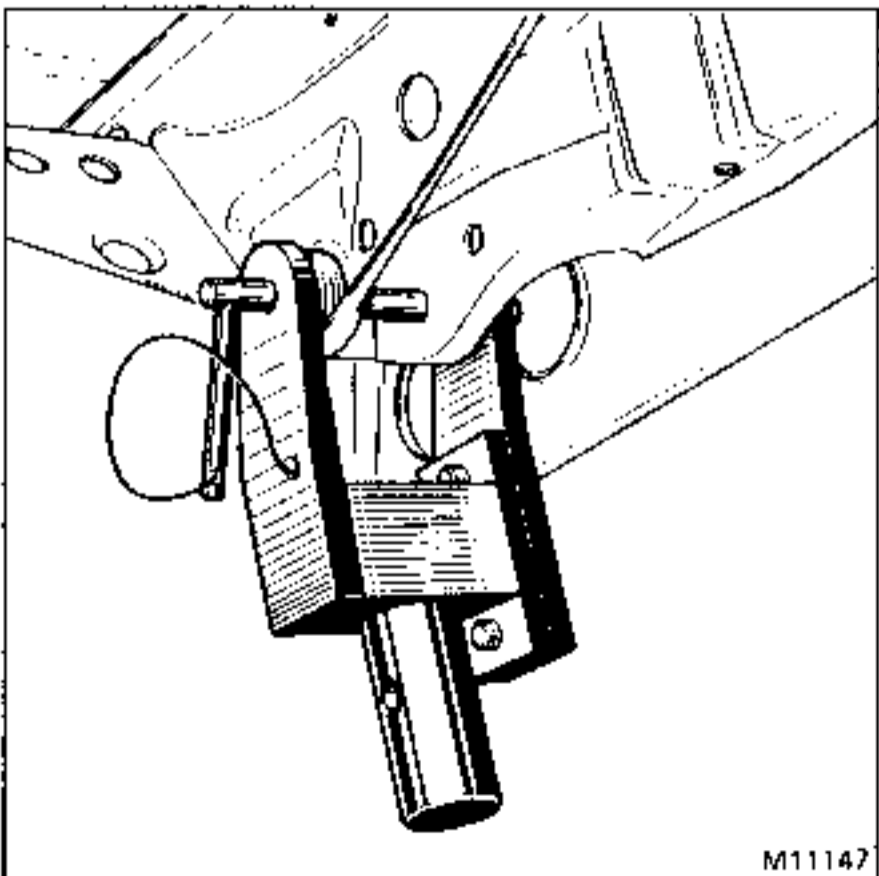
7 - BEARING POINT UNDER FRONT FLOOR PANEL



Used when rebuilding the front of the vehicle when replacing a front unit or side member, it enables the vehicle to be supported at the front, centring and alignment being ensured to a great extent by the rear axle and rear end cross member mounting brackets (see below).

NOTE: There is no point in fitting these brackets when centring guides no. 2 are already fitted.

8 - REAR AXLE TIE ROD MOUNTING



This is one of the main reference points for levelling the vehicle on the jig bench. Its use is of a priority in all cases of repair.

A - Rear mechanical units in situ

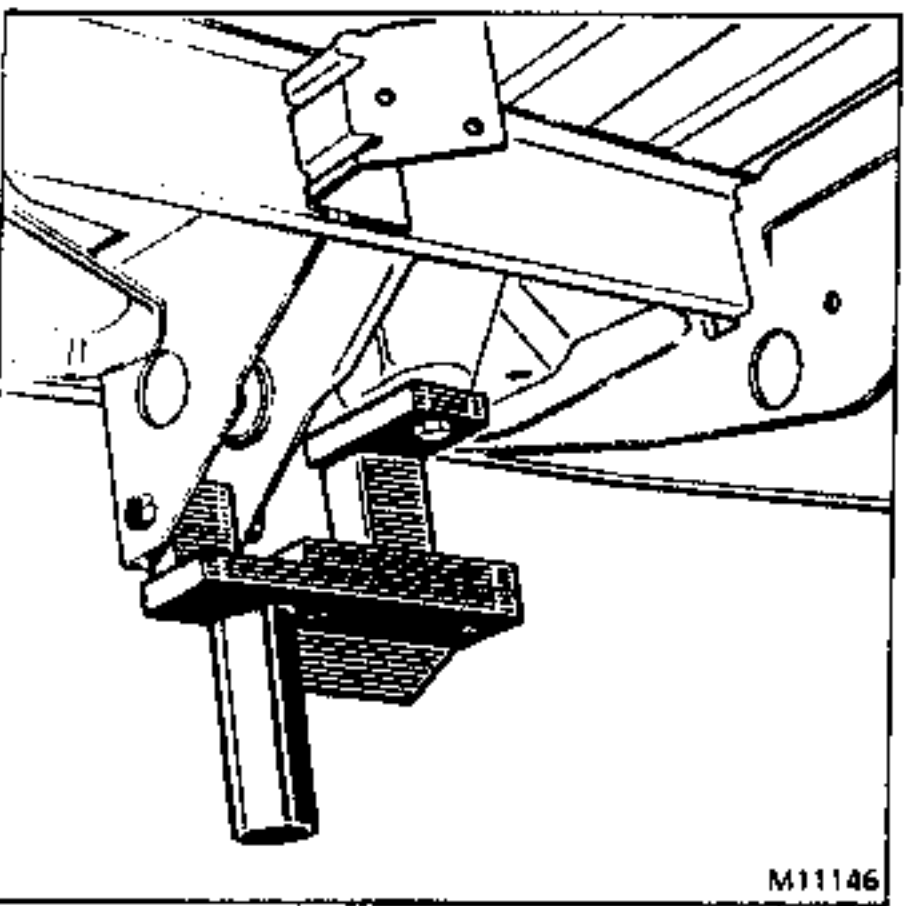
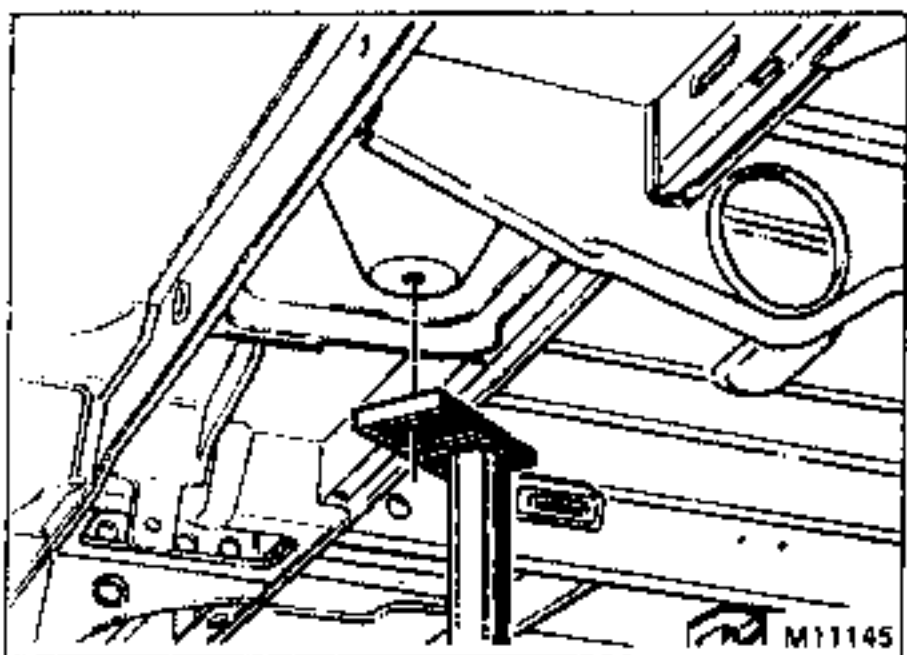
For two-wheel drive vehicles, the bracket is positioned so that it overlaps the tie rod mounting shaft.

For 4 x 4 vehicles, as the tie rod mounting is not used, the bracket is to be positioned as in the case when the mechanical units are removed, as indicated below.

B - Rear mechanical units removed

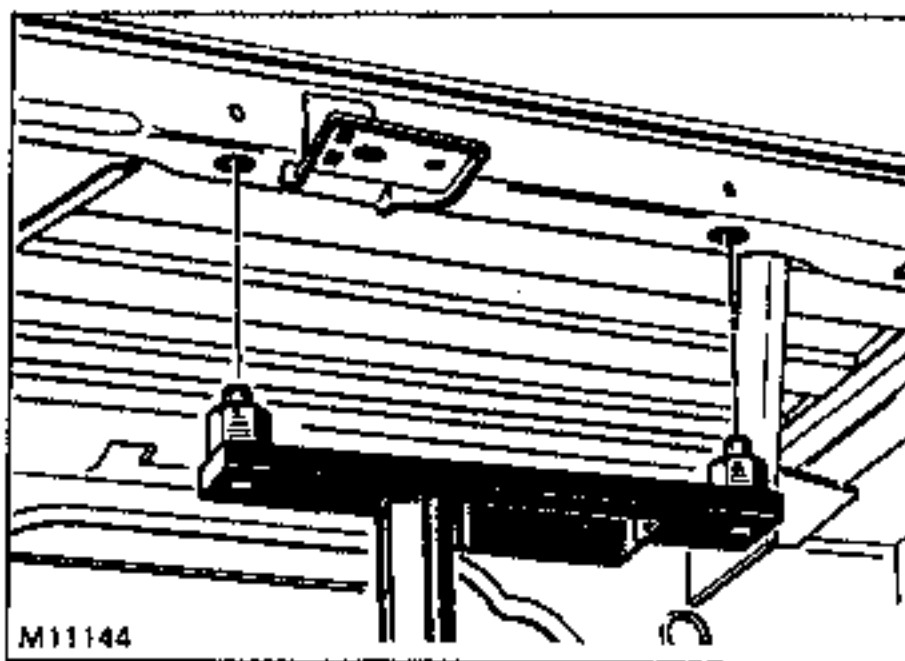
The bracket is secured either using the roll pin supplied or by placing the tie rod mounting shaft in the position indicated in the case when the mechanical units are in situ.

9 - IMPACT STOP AND "PANHARD" BAR MOUNTING



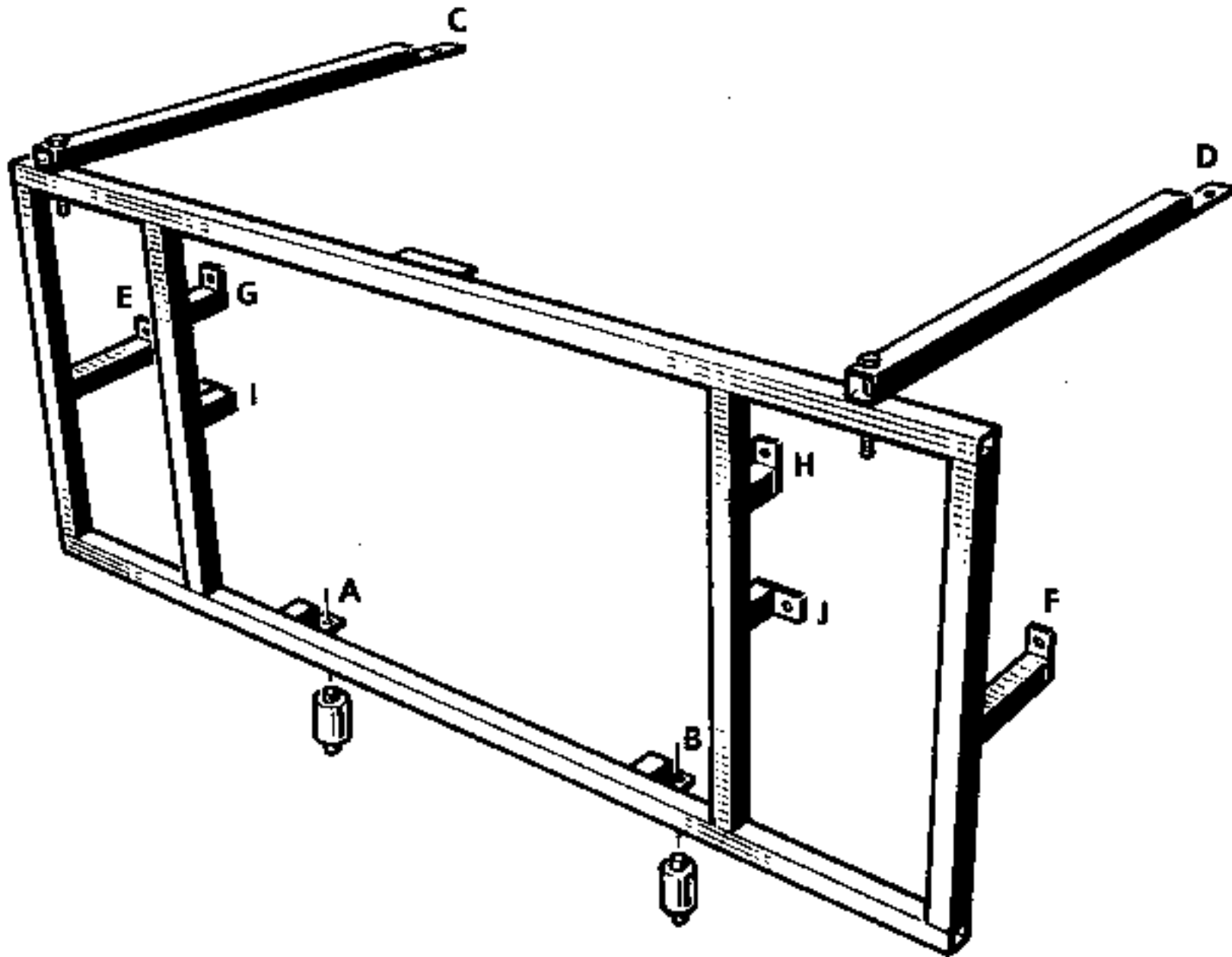
Used when rebuilding the rear of the vehicle during the replacement of a side member or rear floor panel unit, it enables the replaced parts to be aligned.

10 - REAR END CROSS MEMBER



Used principally when rebuilding the rear of the vehicle to position the end cross member or floor panel end section, it may also be used as an additional means for aligning the vehicle when rebuilding the front during the replacement of a unit.

Car. 1220 - Part No. 00 00 122 000



94 719

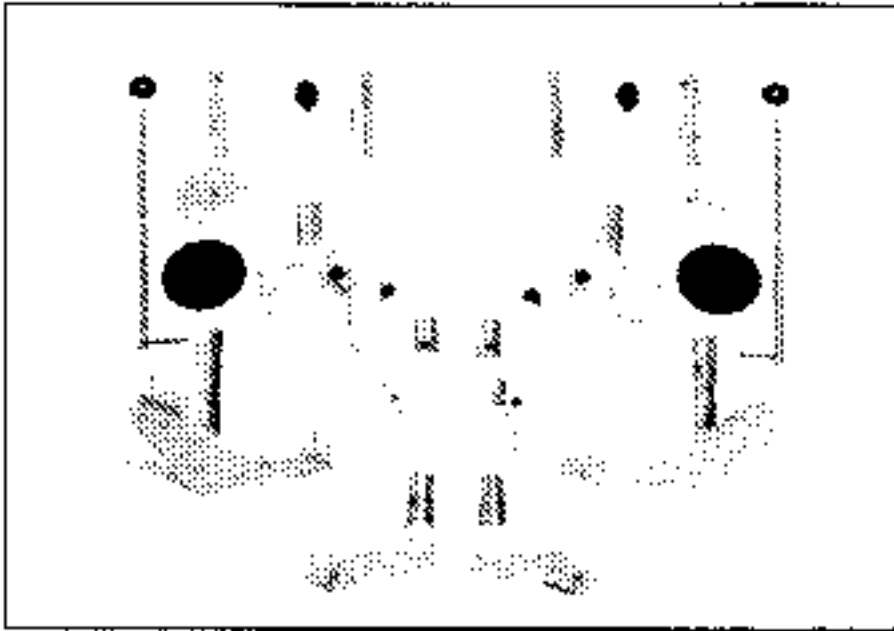
Points (A), (B), (C) and (D) are reference points for positioning the checking jig on the vehicle. Before placing the jig in position, it is essential to check that these points have not been affected by the impact.

NOTE: points (A) and (B) are the same as those checked on the jig bench.

The other points (E), (F), (G), (H), (I) and (J) are used to position the headlight carrier panels and wheelarch panels on the vehicle.

ILLUSTRATIONS

DESCRIPTION

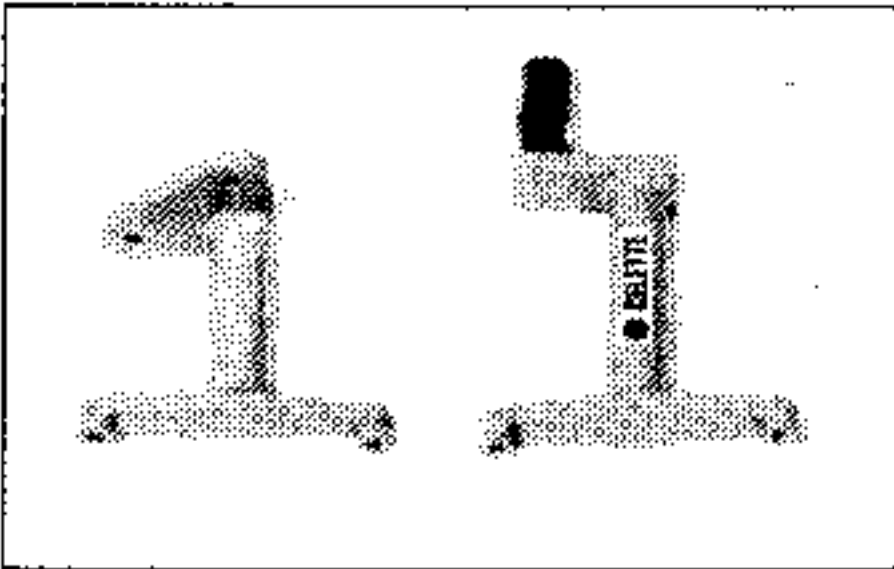


Special heads for CELETTE MZ system jig bench.

Contact your local After Sales Head Office to order.

Set of 12 heads
addition to assembly MZ 539 300
(Espace phase I and phase II)
or
addition to compact assembly 407 300
(Car.1024)

Supplier's Ref: **539 307**

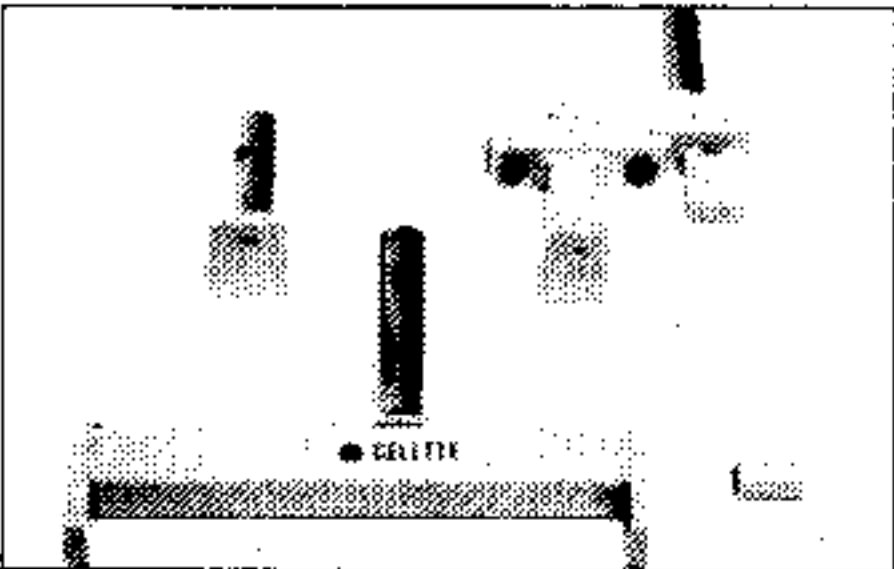


Set of 2 heads for suspension with self-levelling device.

Supplier's Ref: **539 308**


(as a reminder:
complete assembly **539 310**

= 539 307 + 539 308



OPTION: Set of 3 heads as an addition for 4 x4 vehicles

Supplier's Ref: **539 309**

Illustration	Methods Reference	Part No.	Description
	Car.1220	00 00 113 000	Front end checking jig

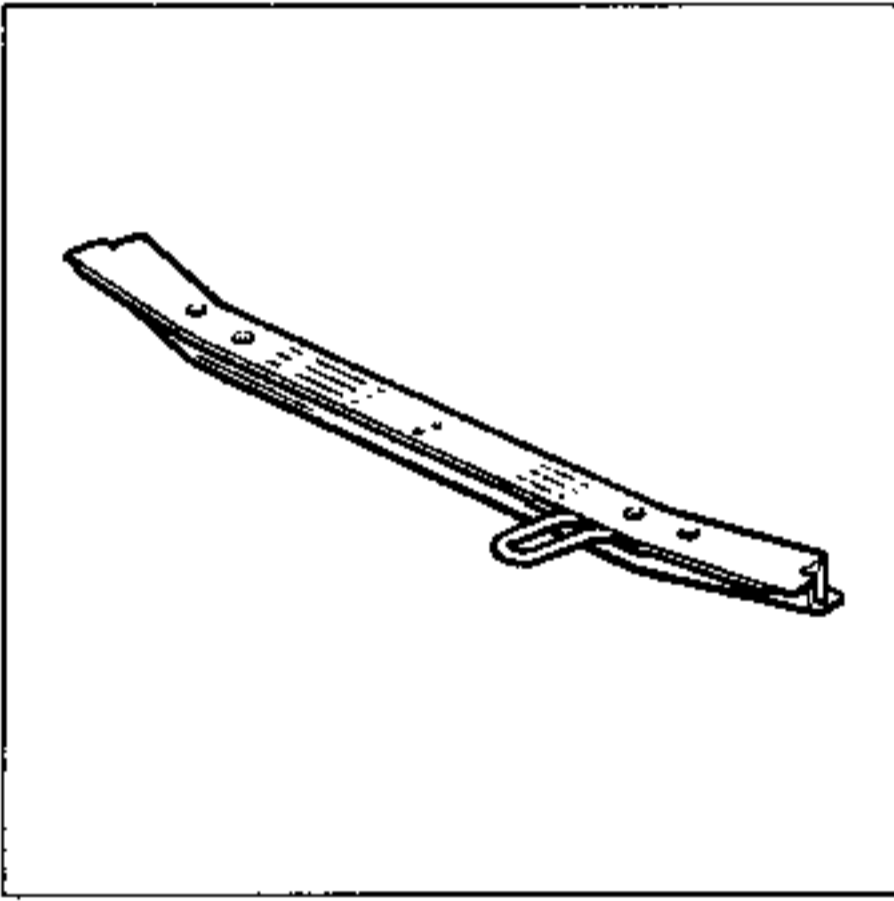
REPLACING

This operation is to be carried out on the jig bench. Please consult sub-section 40 for the positioning of the components.

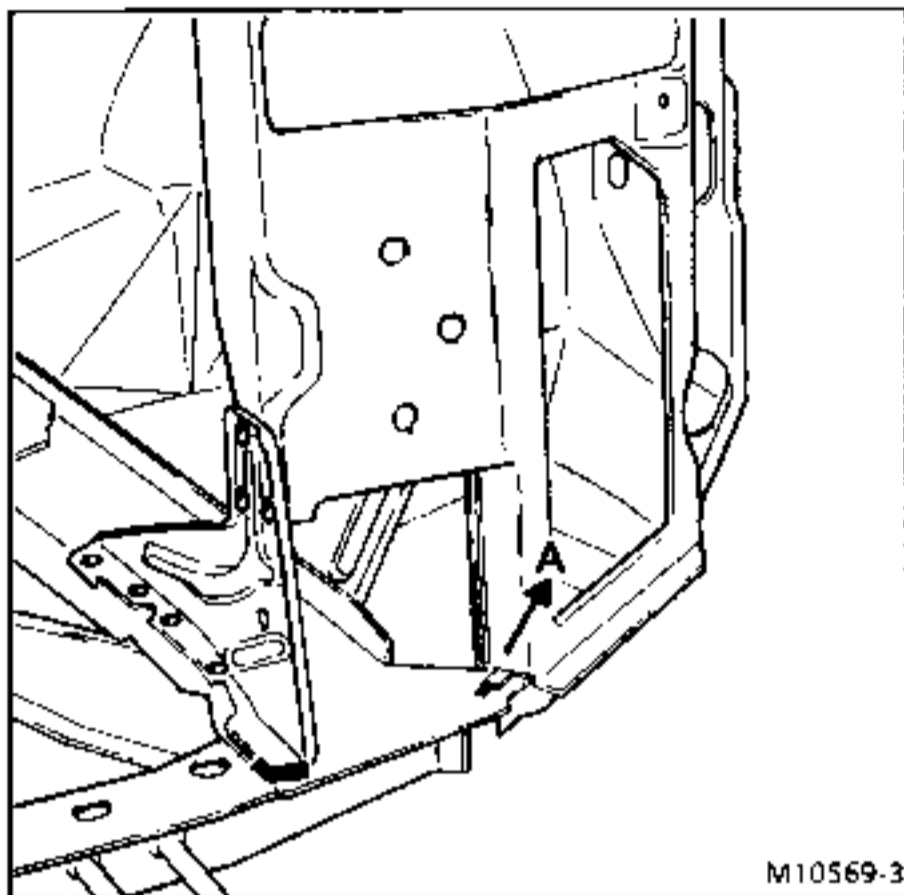
PROTECTION

Protect the surrounding areas to avoid damage to them when grinding and welding.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



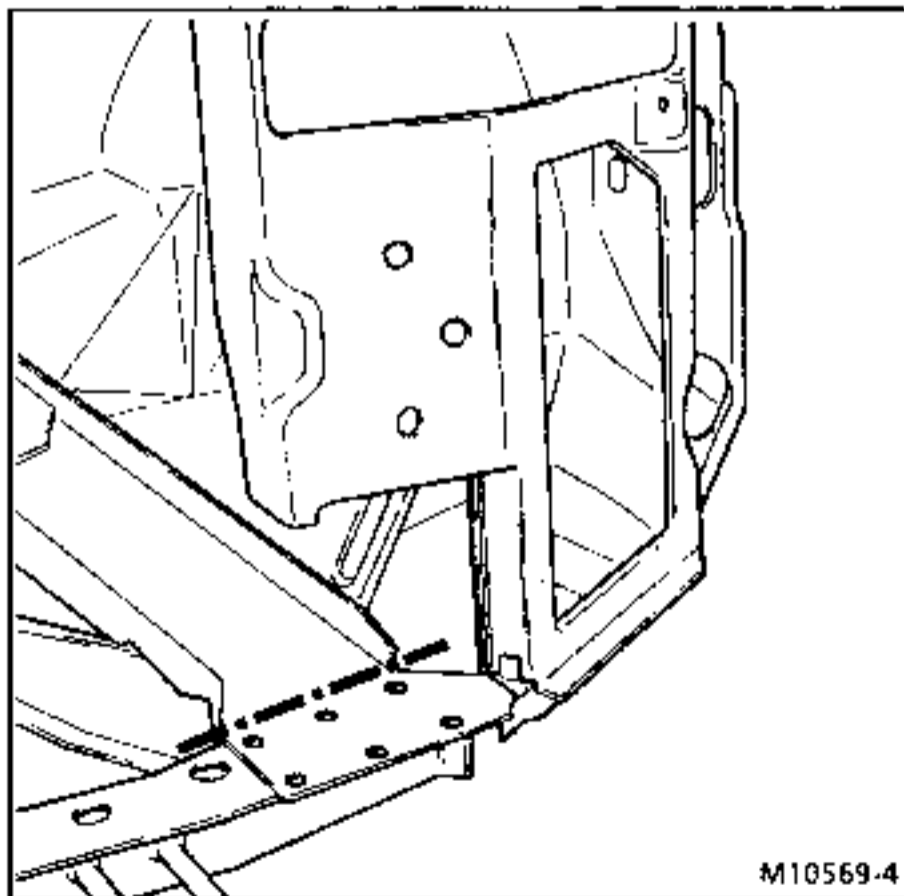
CUTTING OUT - UNPICKING



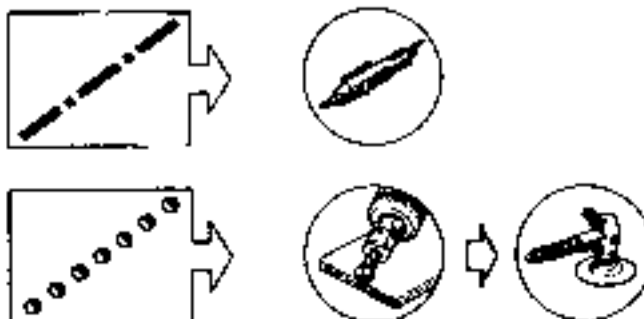
M10569-3

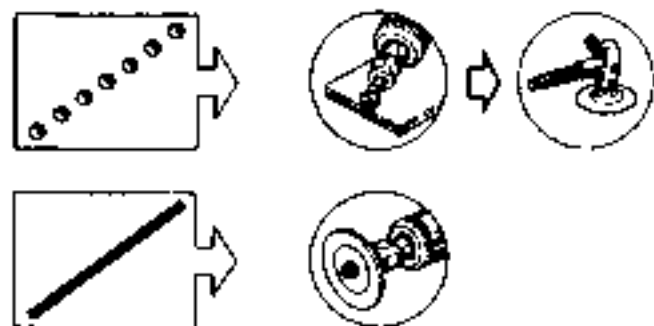
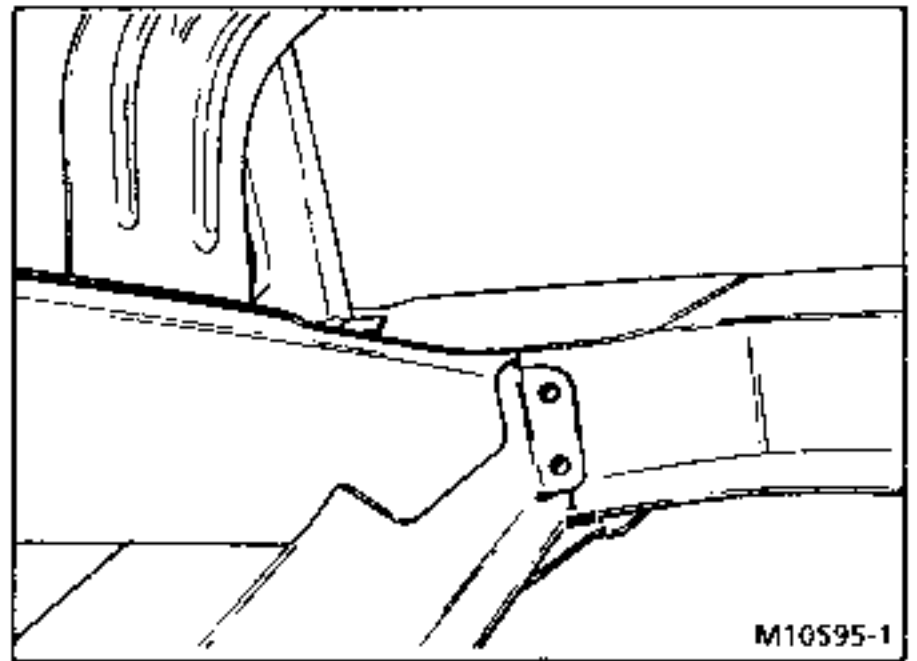
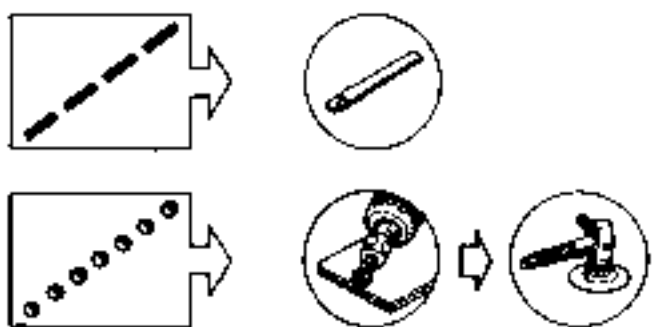
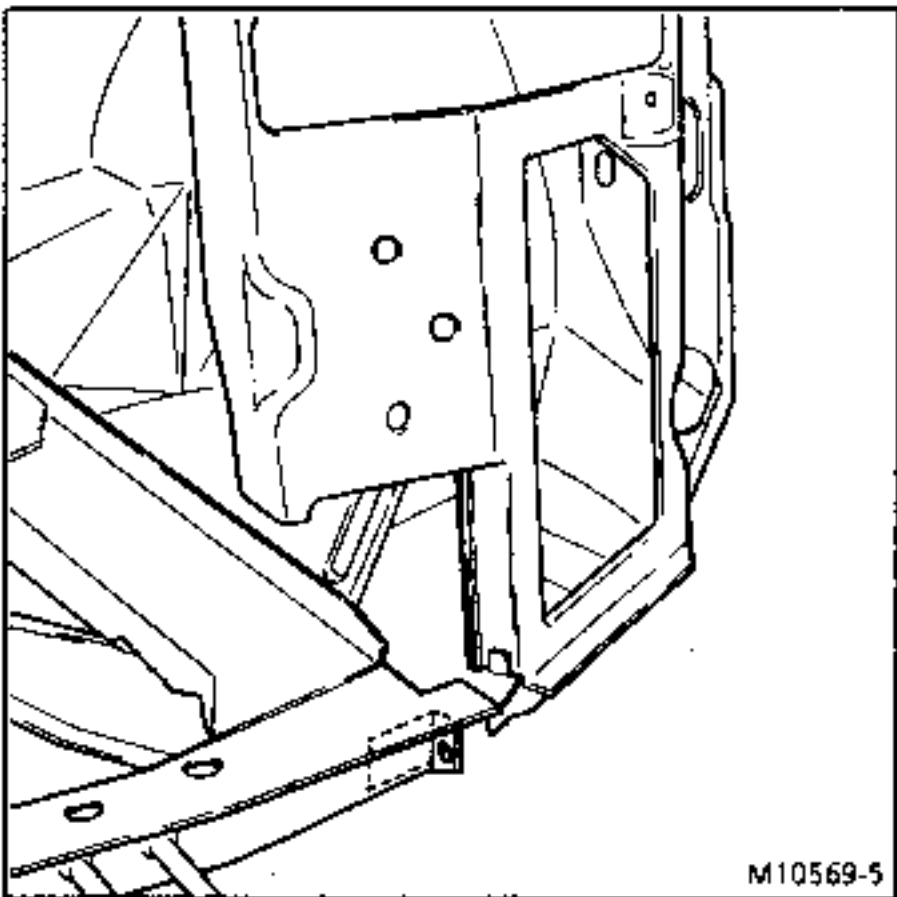
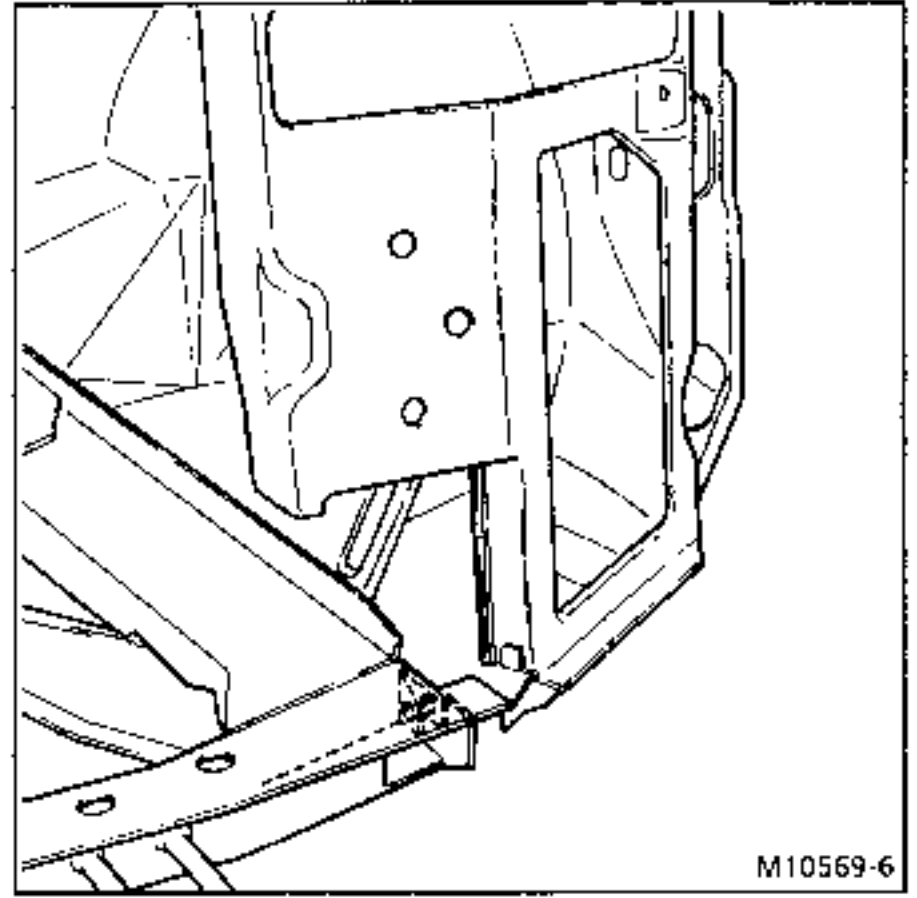
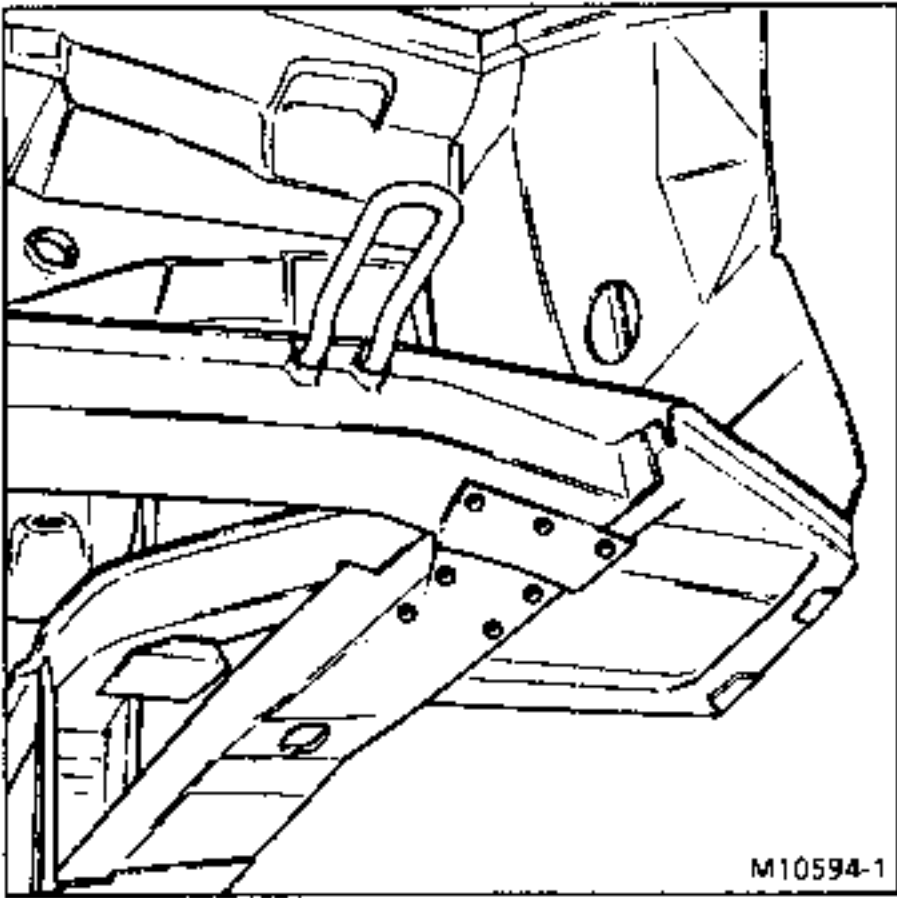


After unpicking, fold over lug (A) to free the side member closure panel.

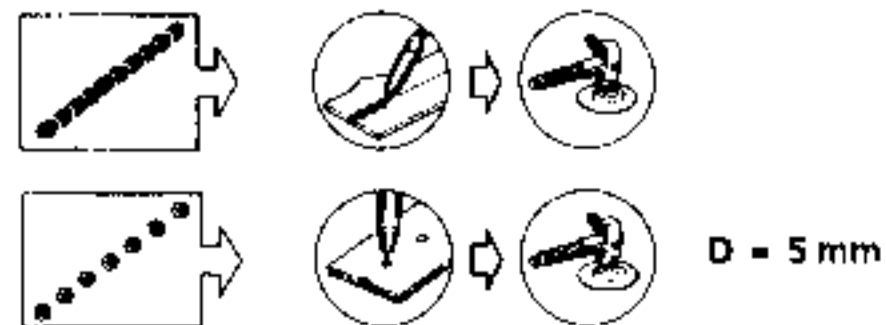
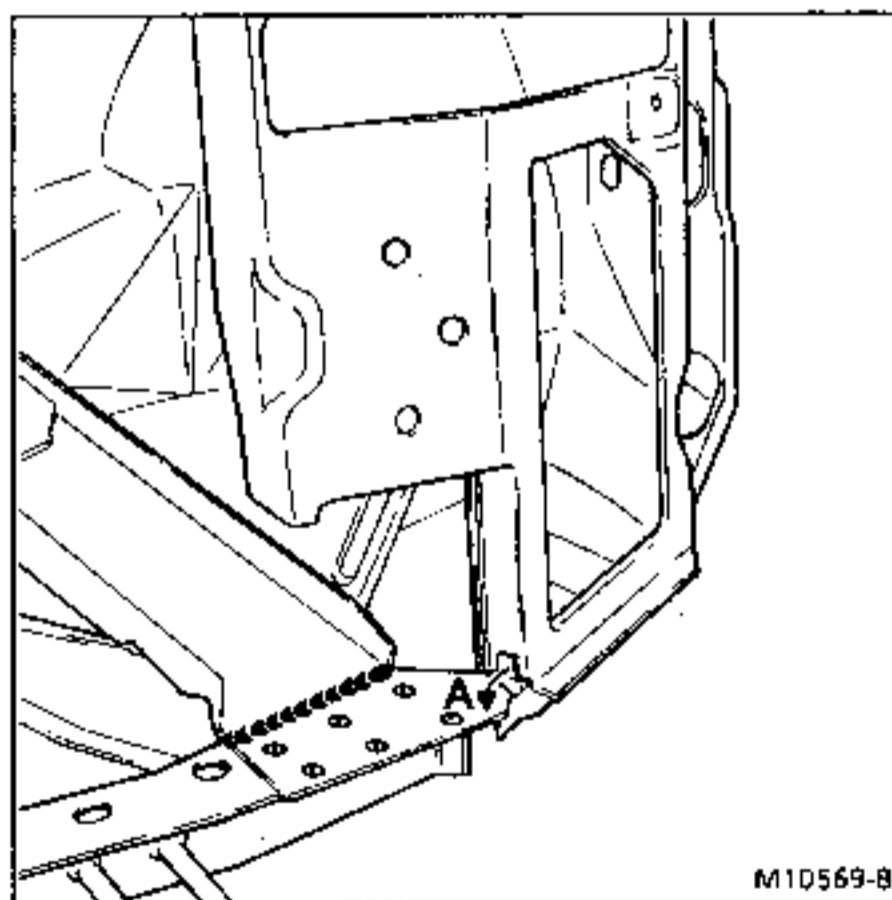
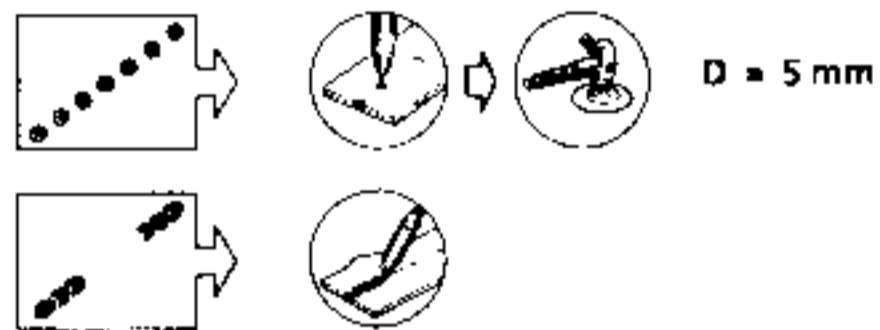
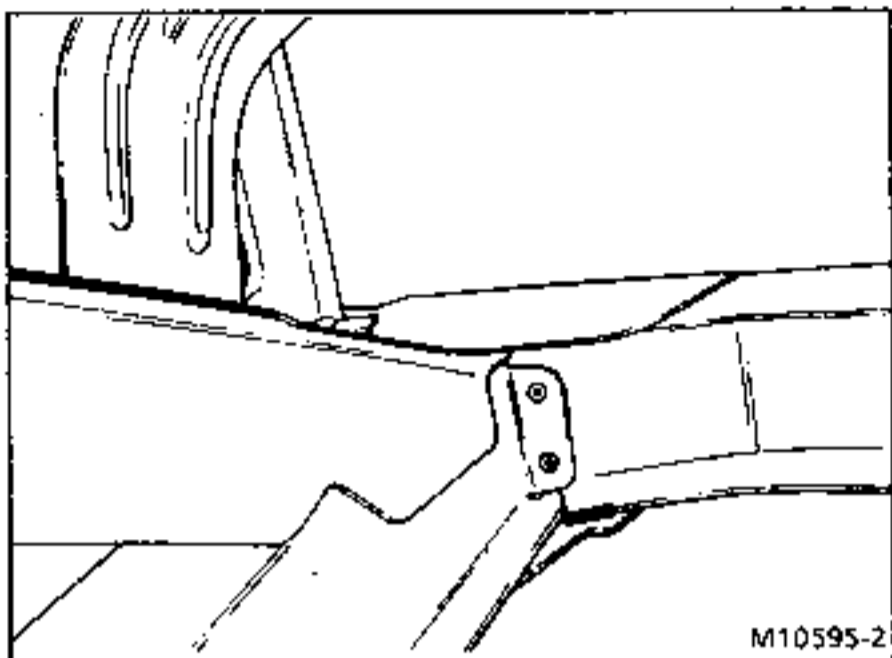


M10569-4

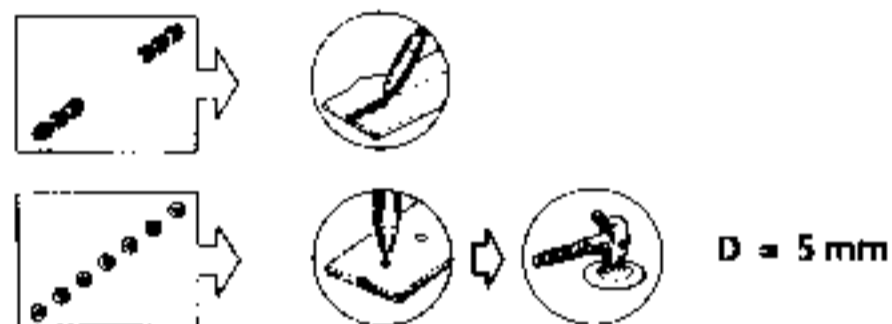
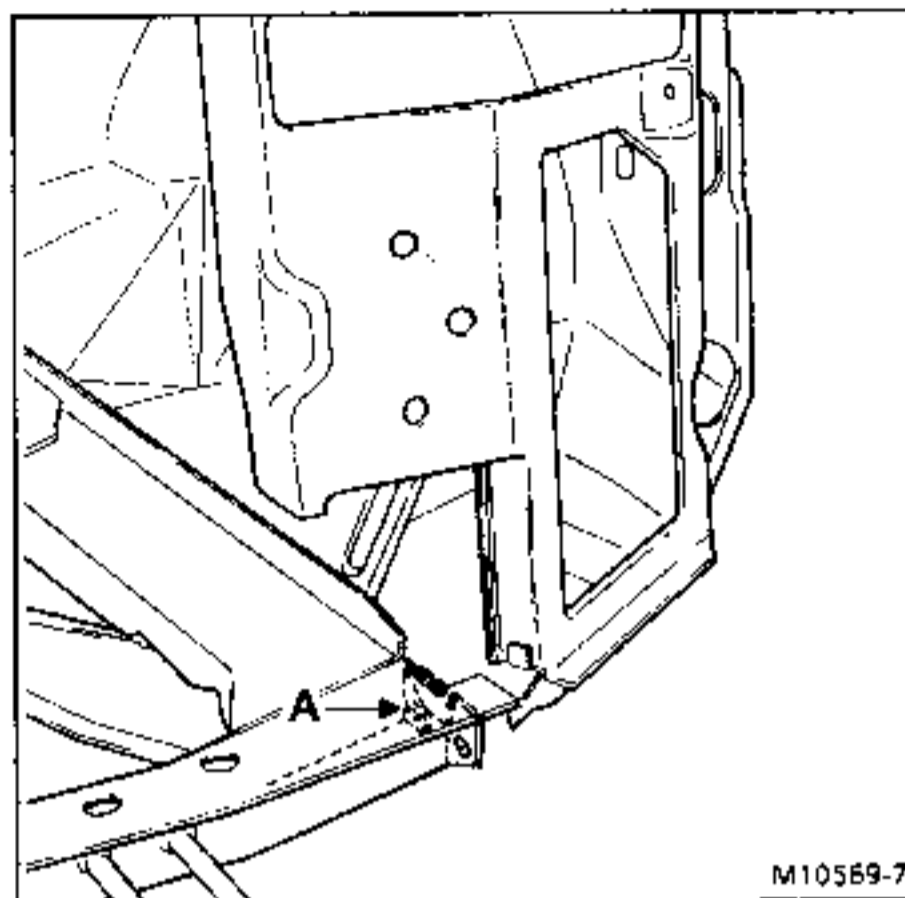




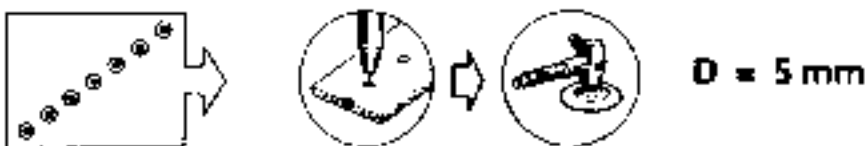
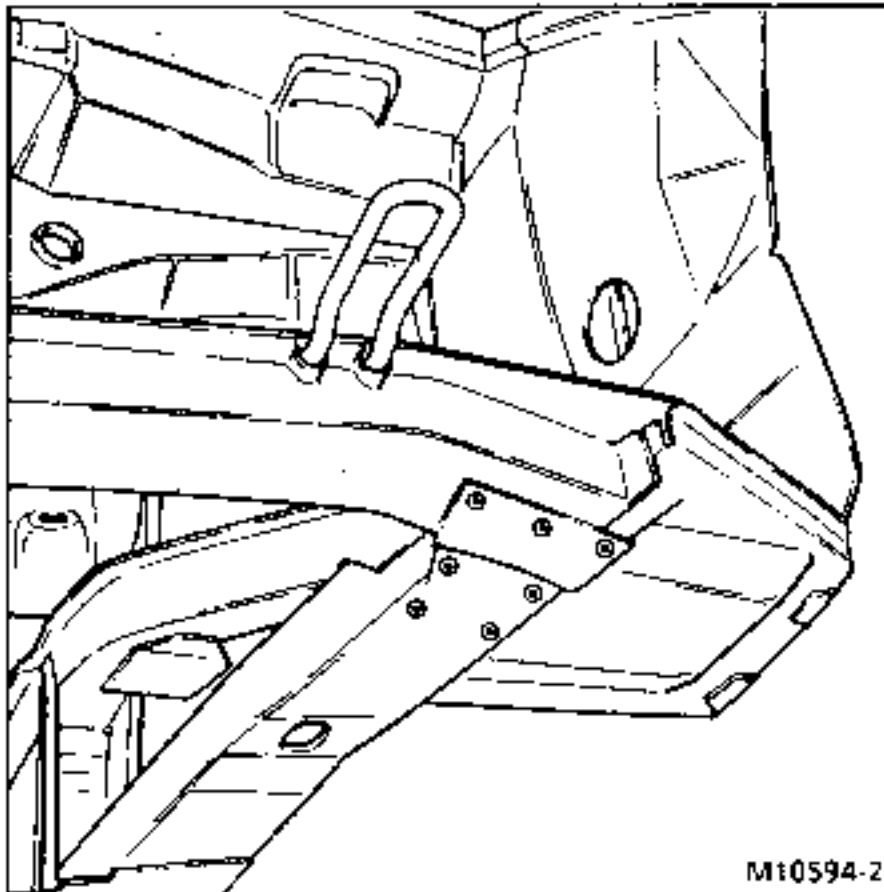
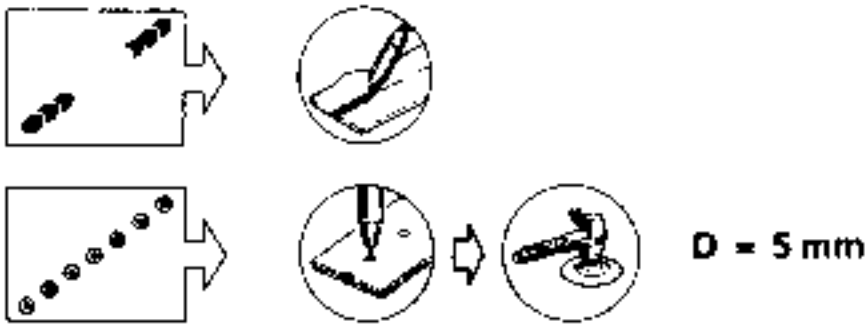
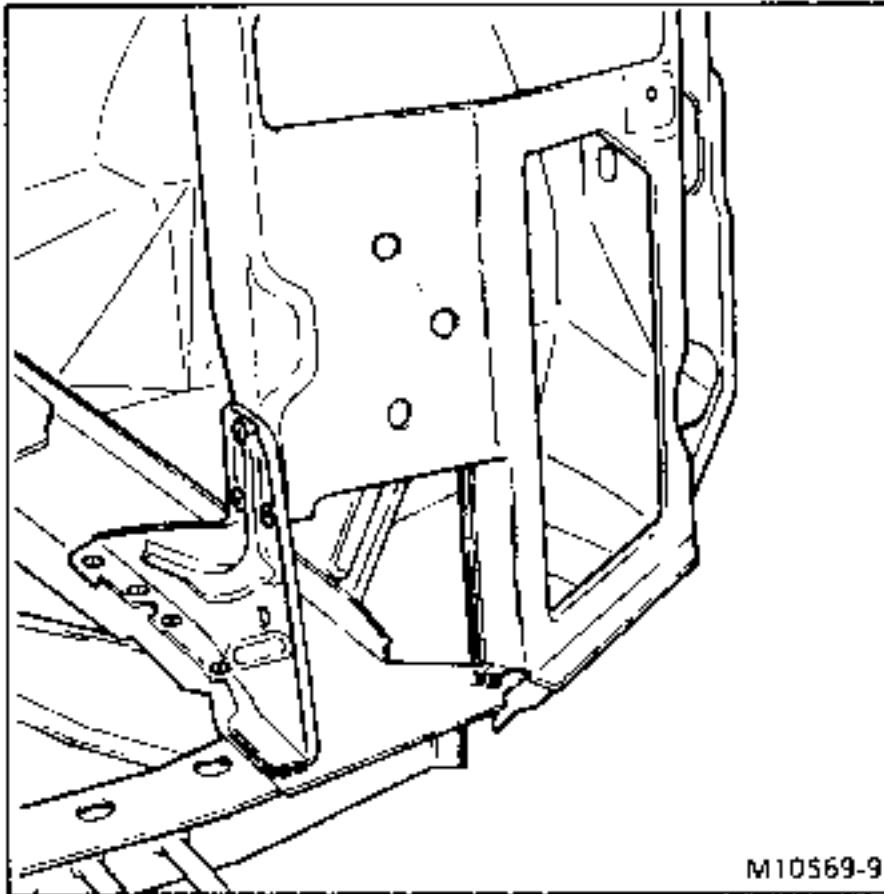
SOUDURE



Fold down lug (A).

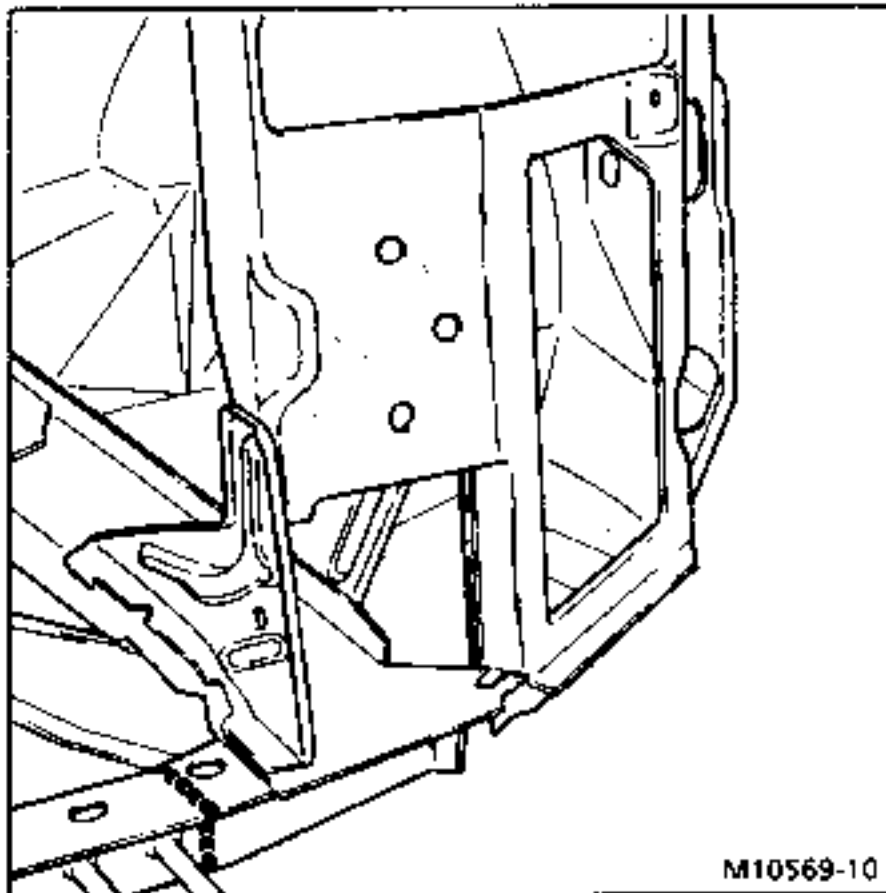
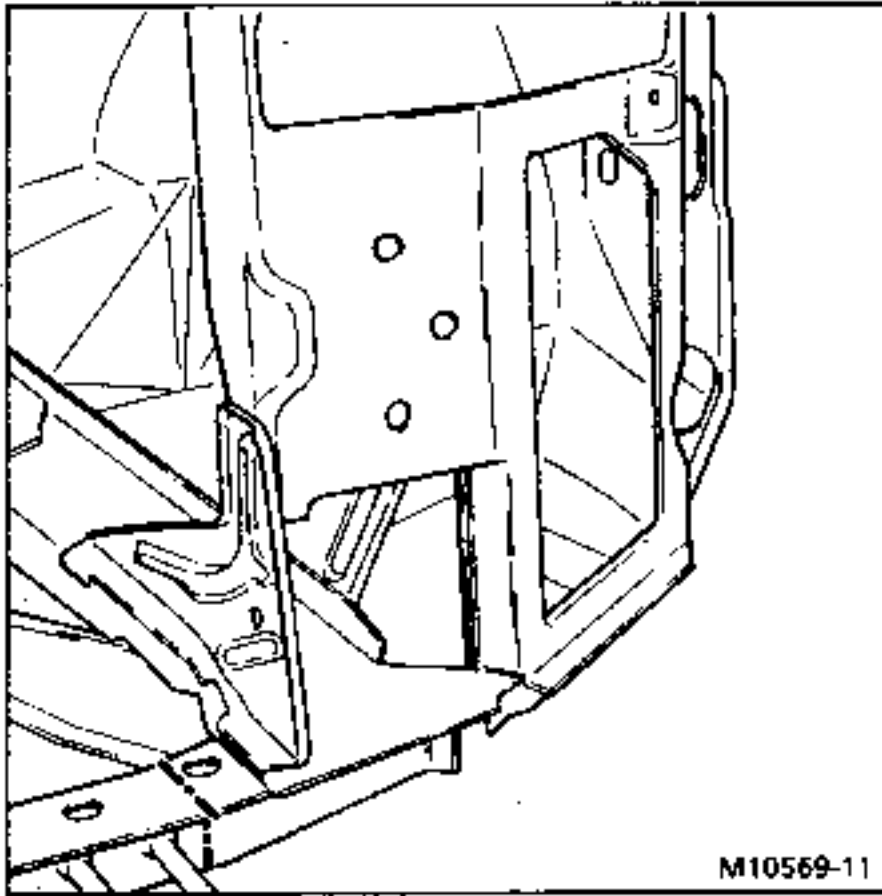


Plug welding (A) is to be performed from the exterior of the lower side member.



After welding, apply the sequence for protecting galvanised panels (see Espace Paint Manual).

This operation is a variant of the preceding one. The following only deals with the special points.



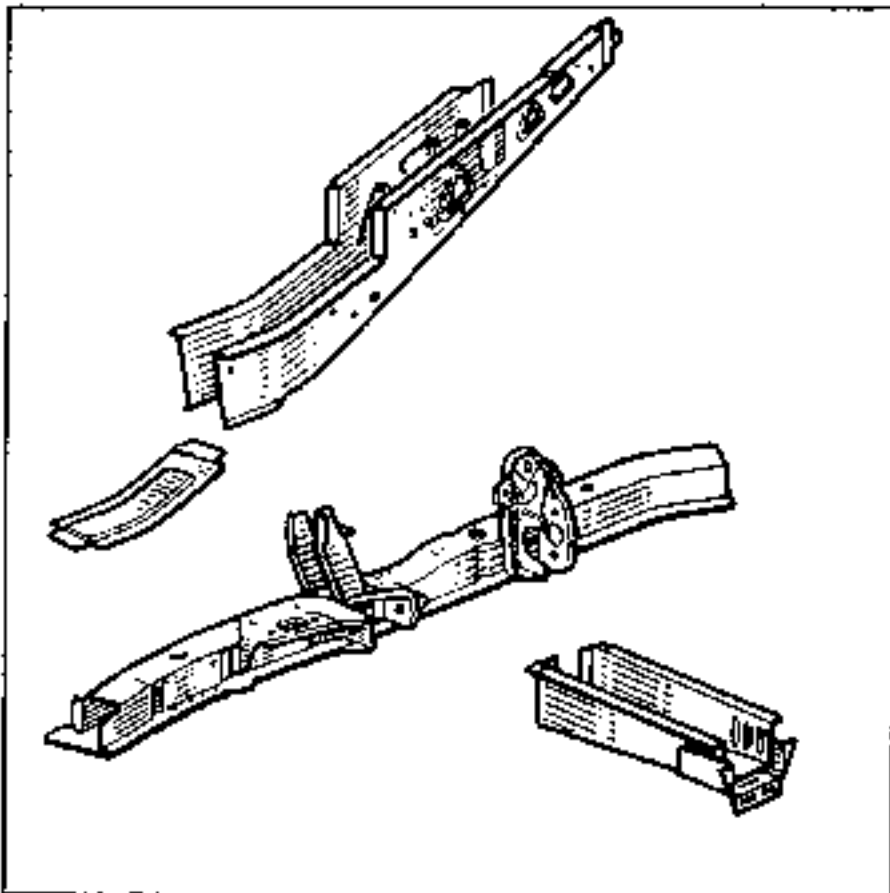
REPLACING

This operation is to be carried out on the jig bench. Please consult section 40 for positioning the components.

PROTECTION

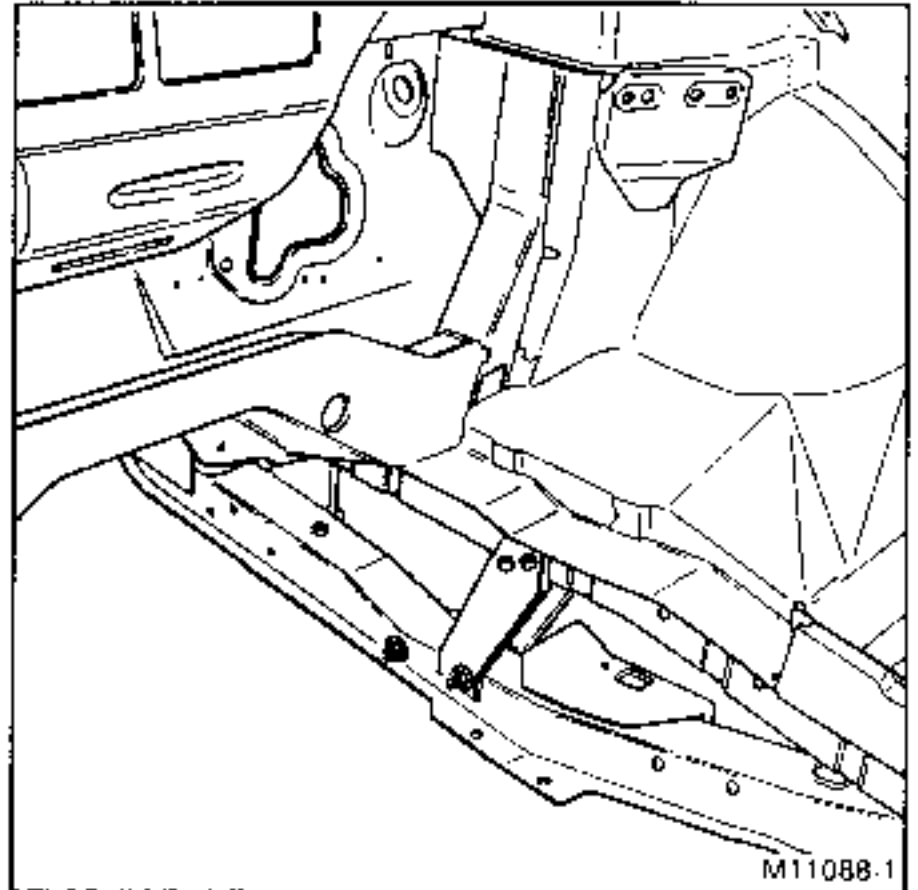
Protect the surrounding areas to avoid damage to them when grinding and welding.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT

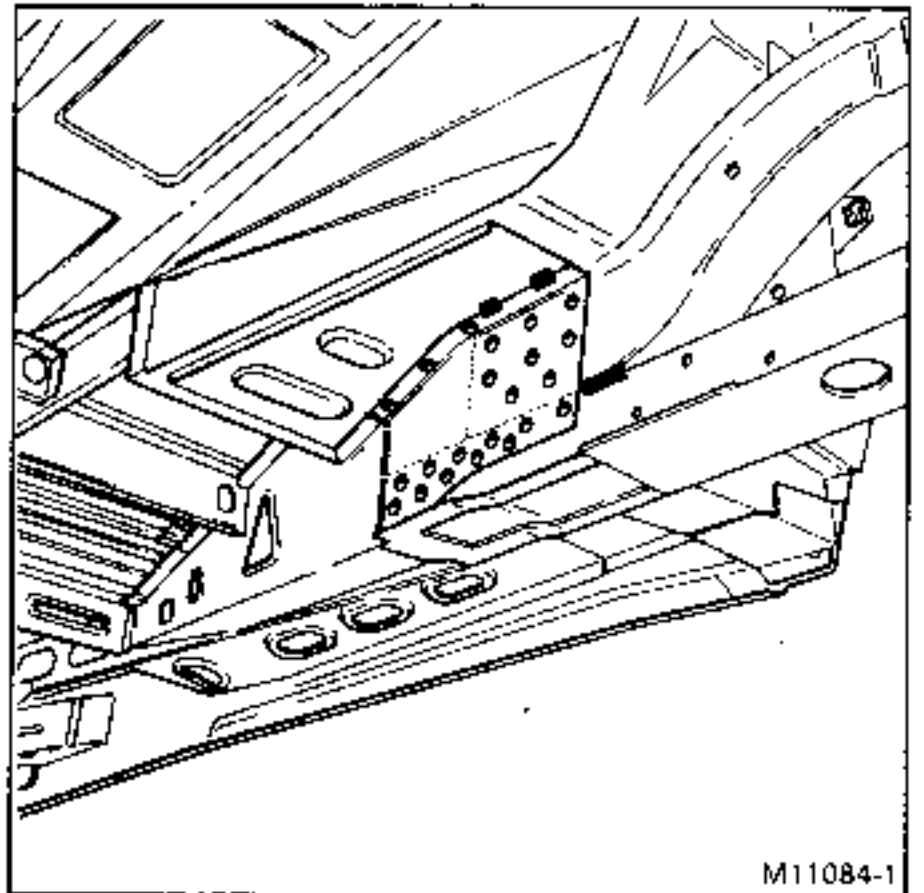


CUTTING OUT - UNPICKING

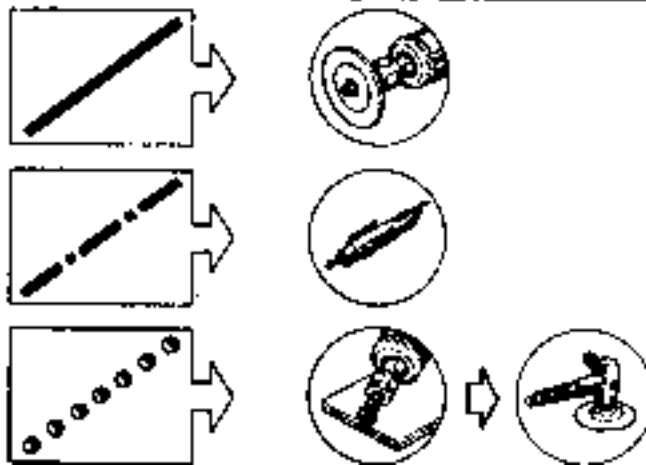
Please consult section 41 for alignment with the front cross member.

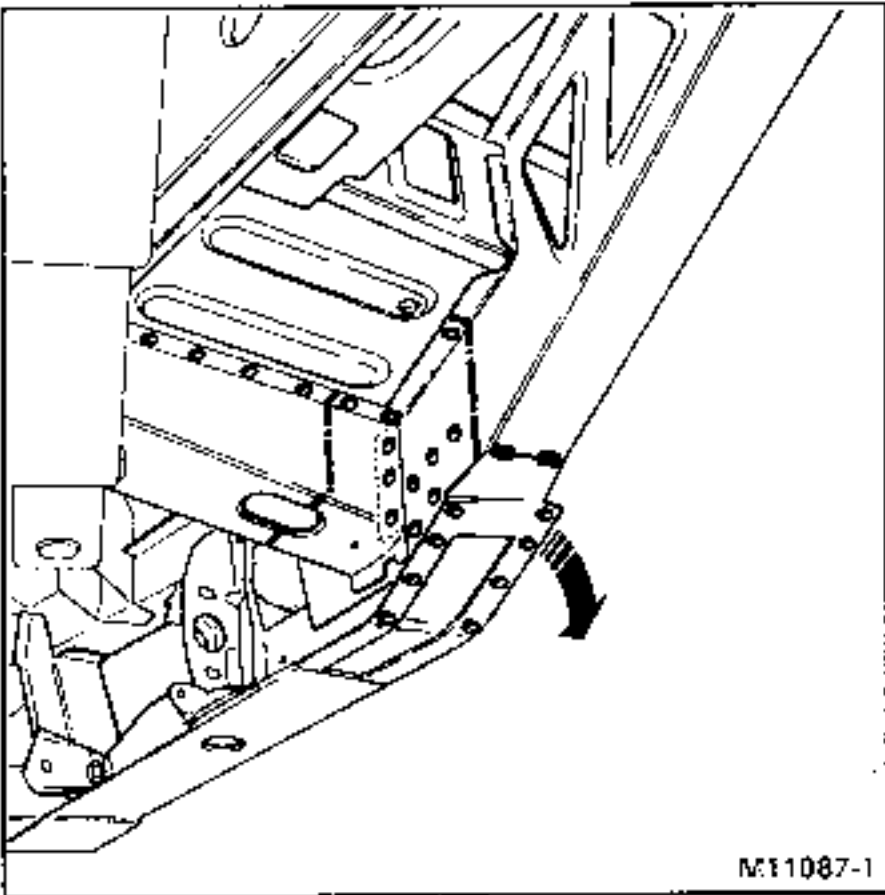


M11088-1

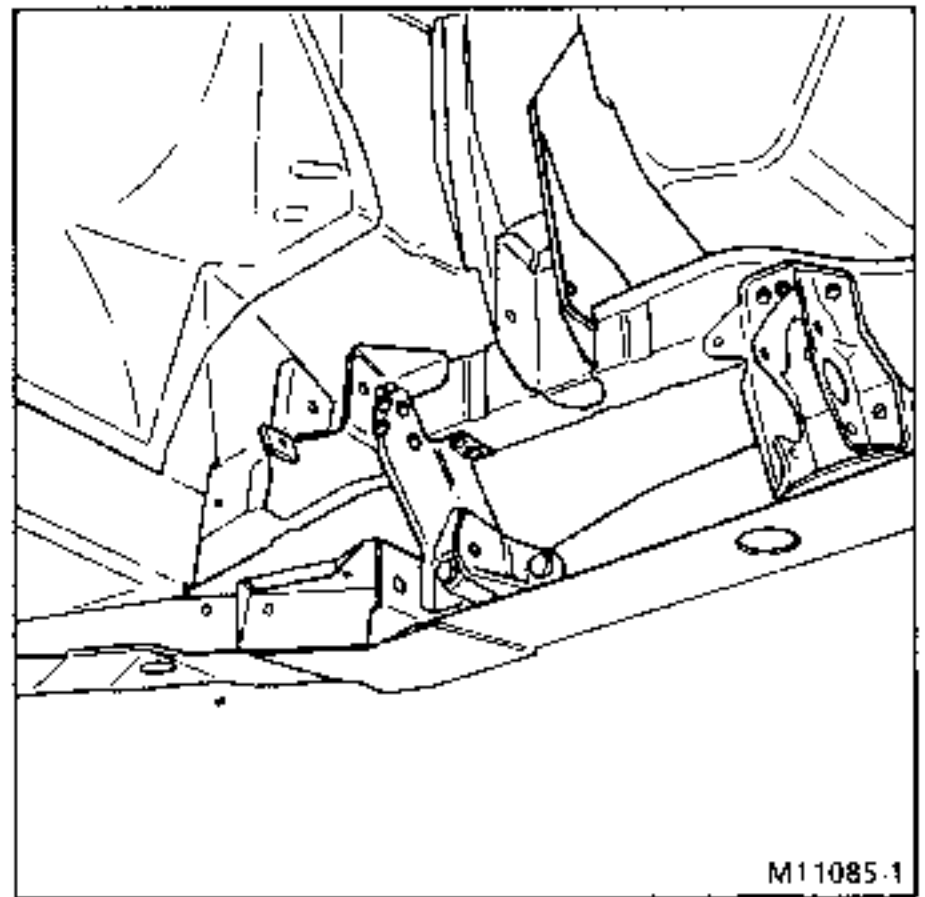
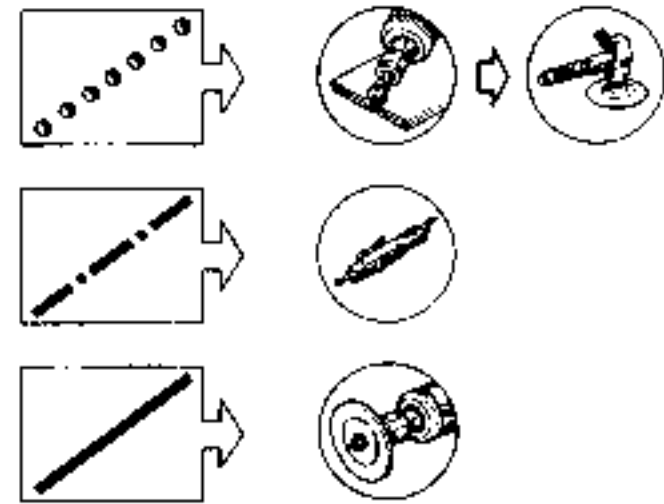
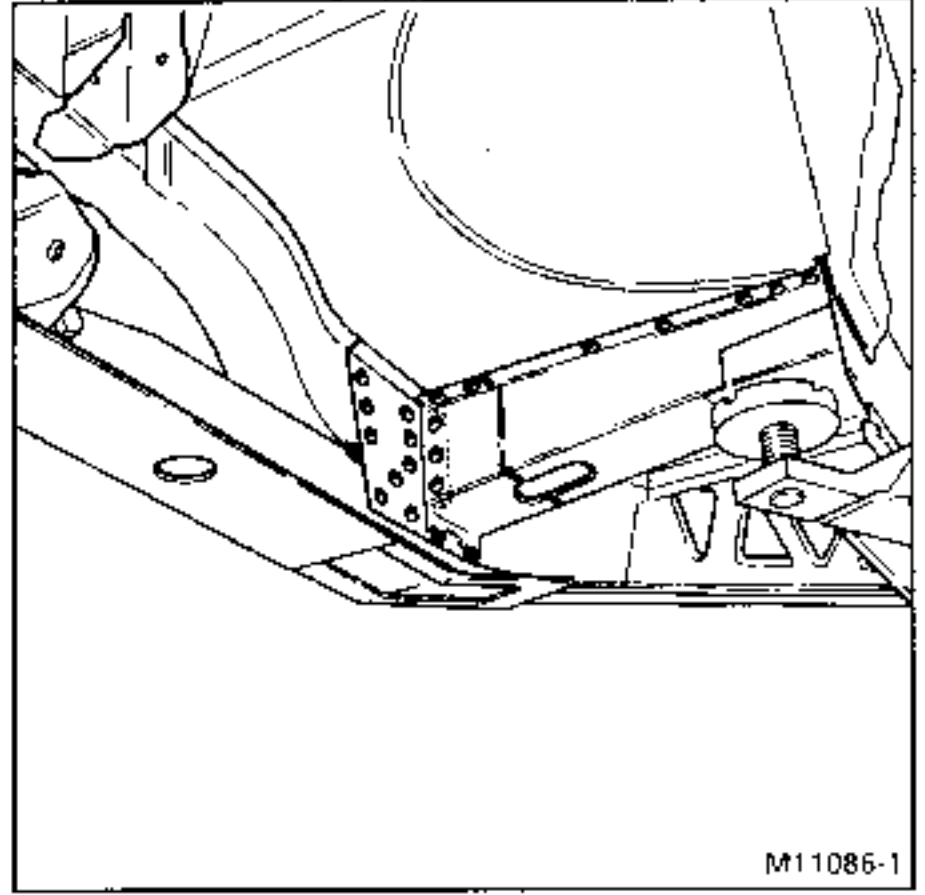
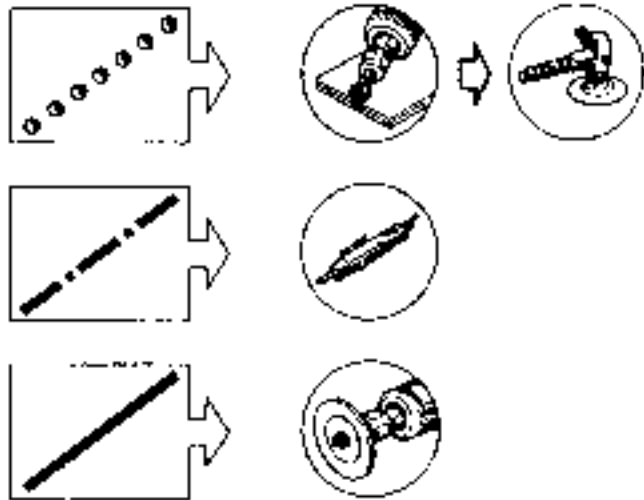


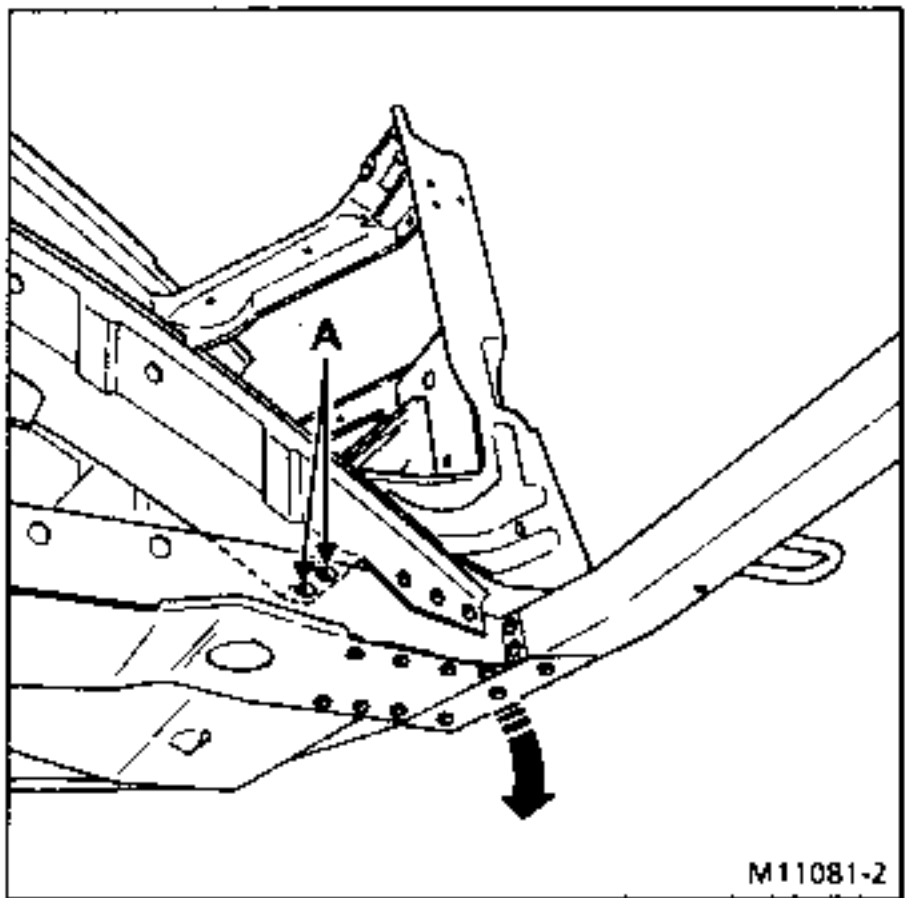
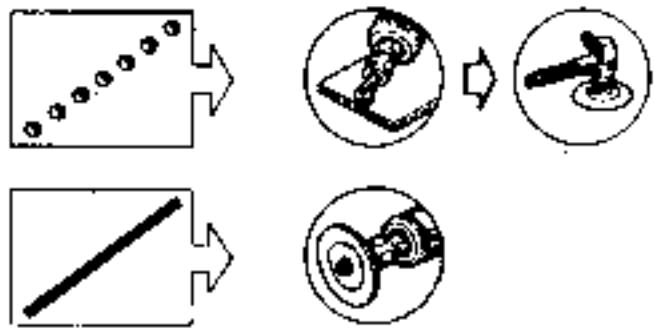
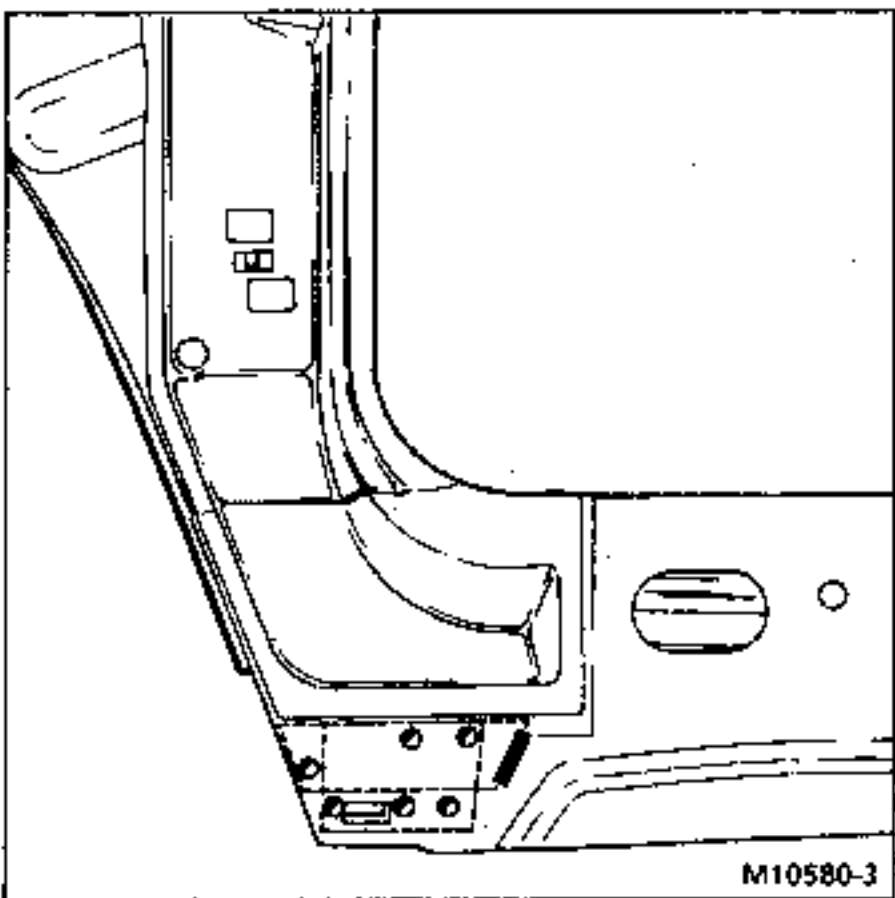
M11084-1



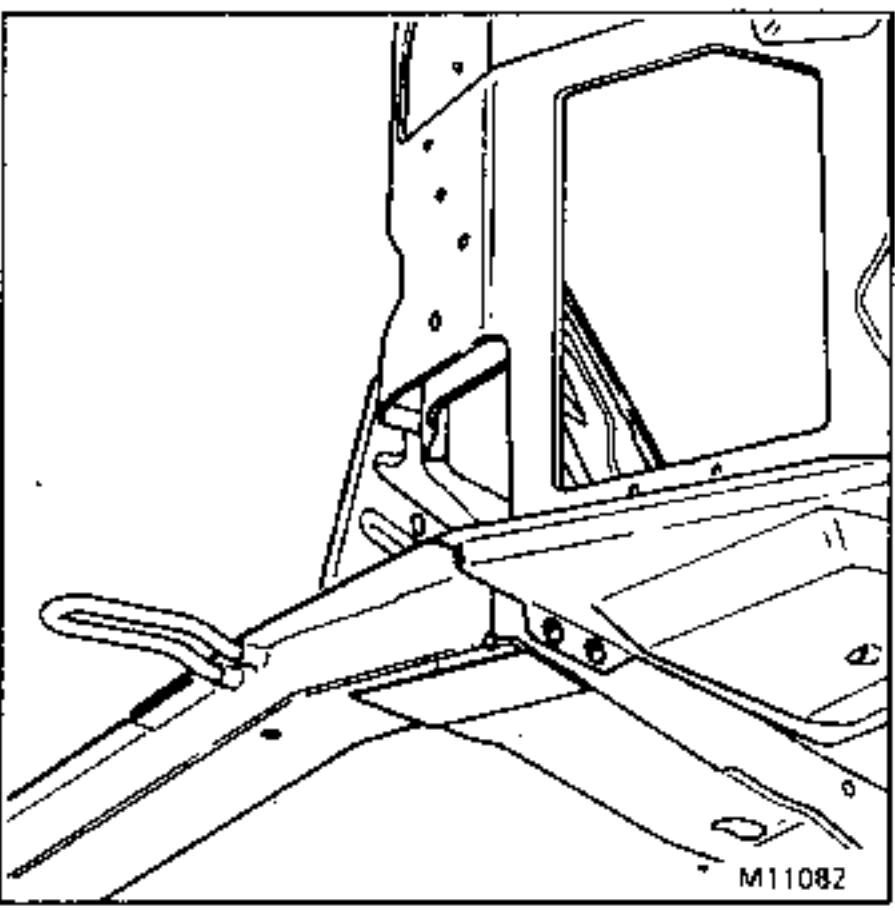


Remove part of the extension closure panel in order to reach the two points where the lower and upper side members are assembled.





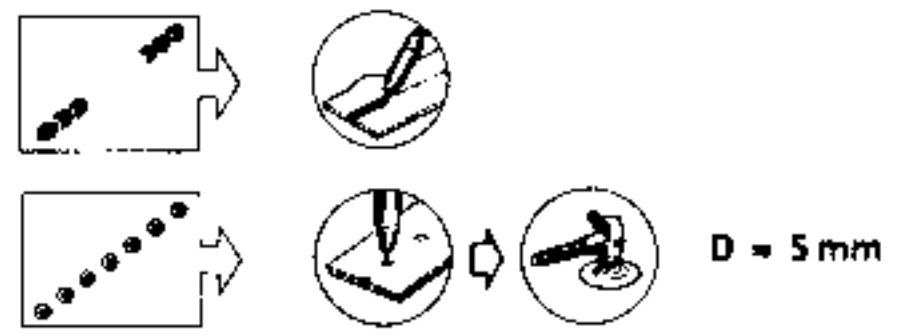
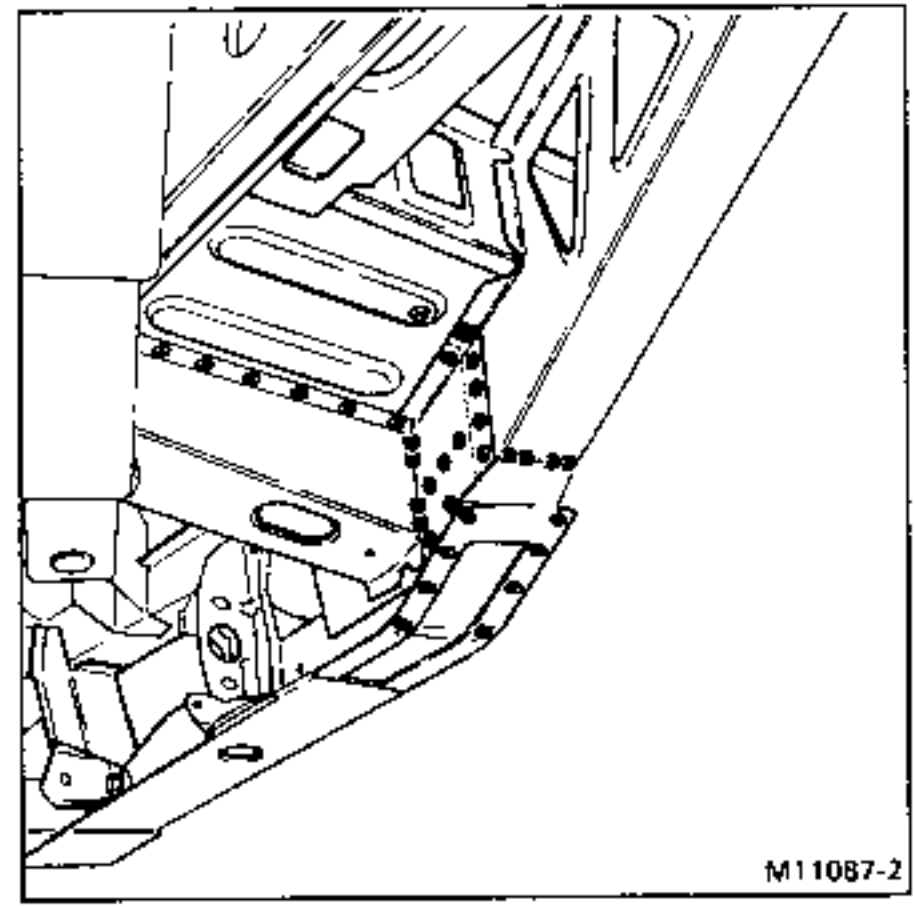
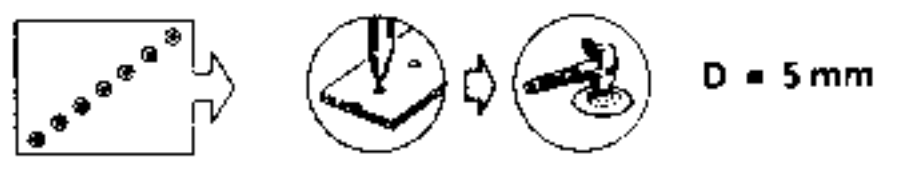
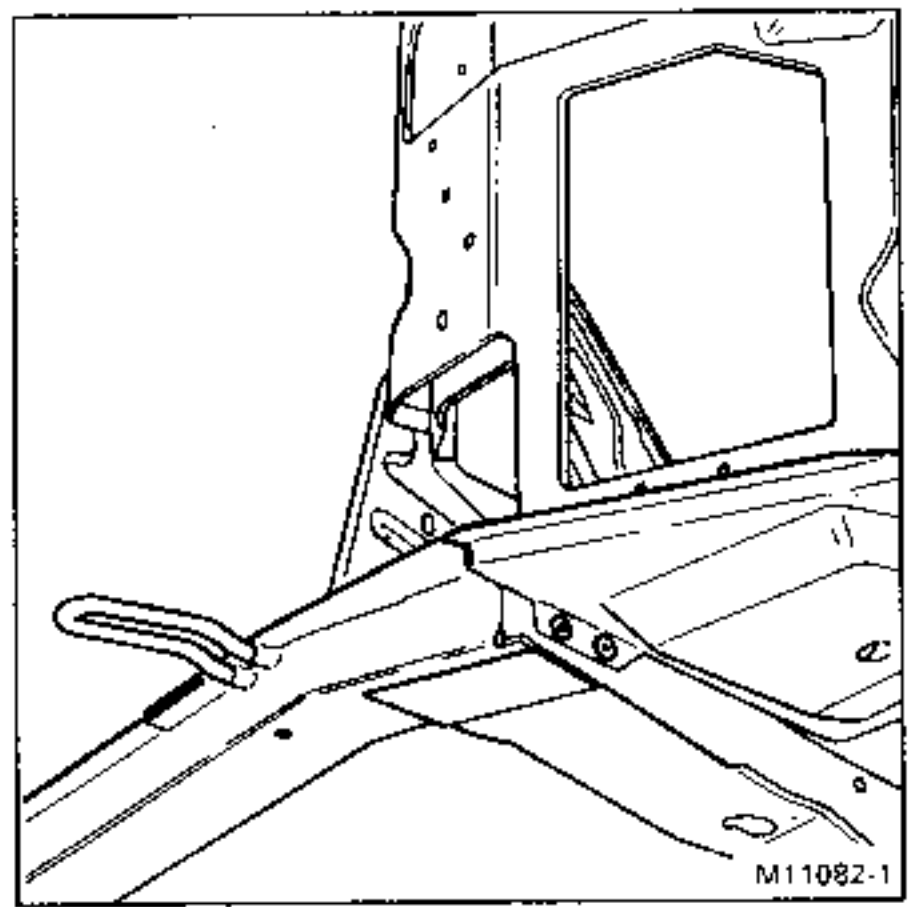
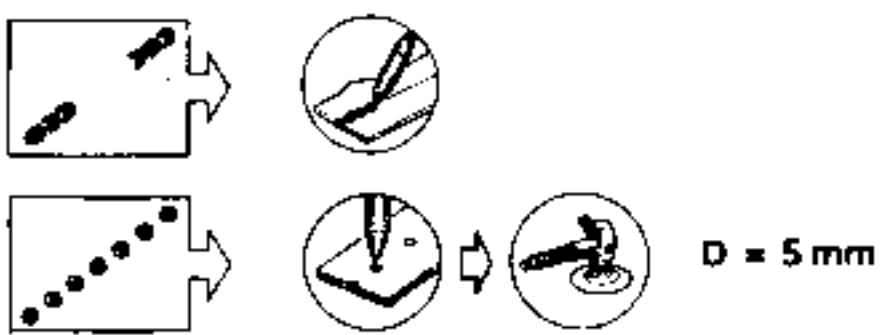
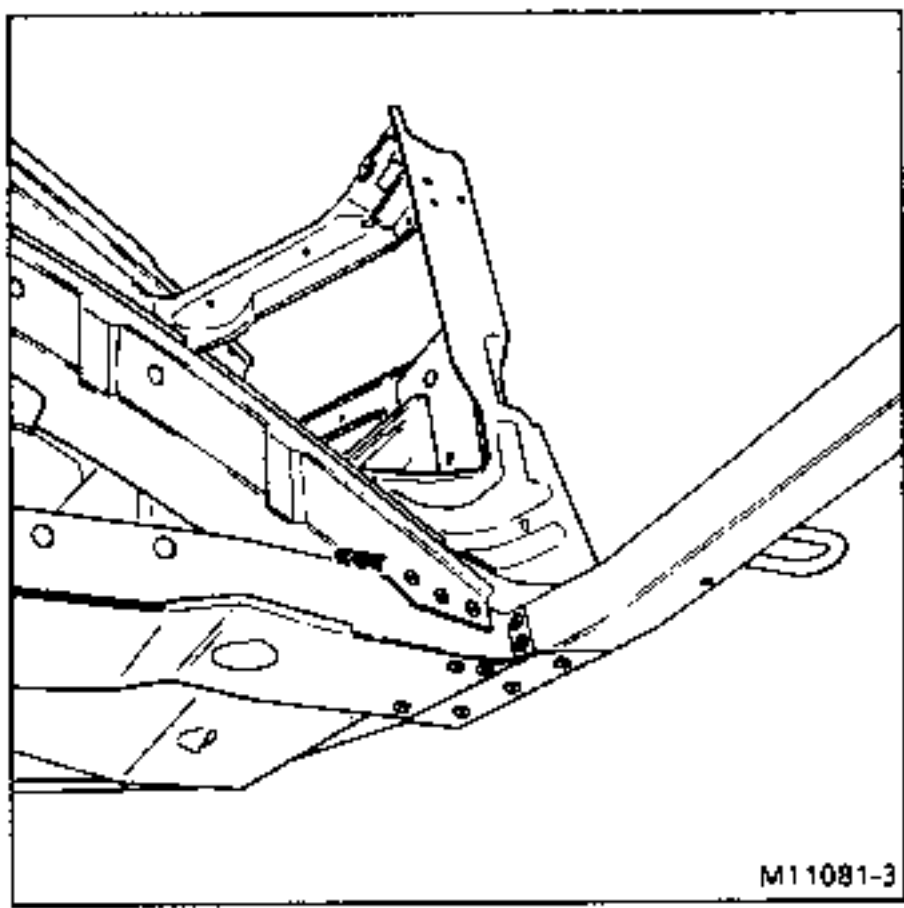
Points (A) are to be separated when the lining is partially removed from the front cross member.



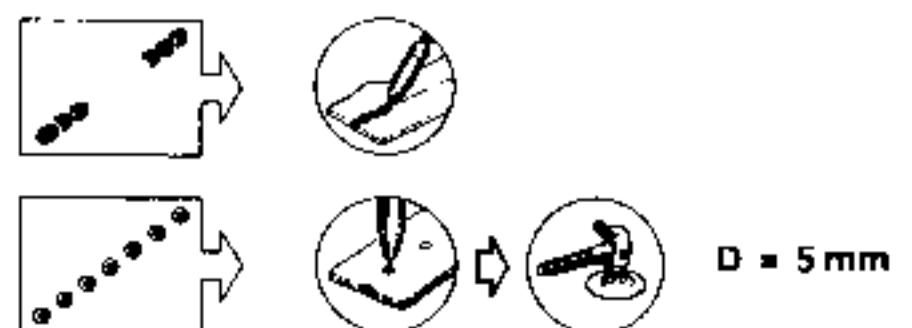
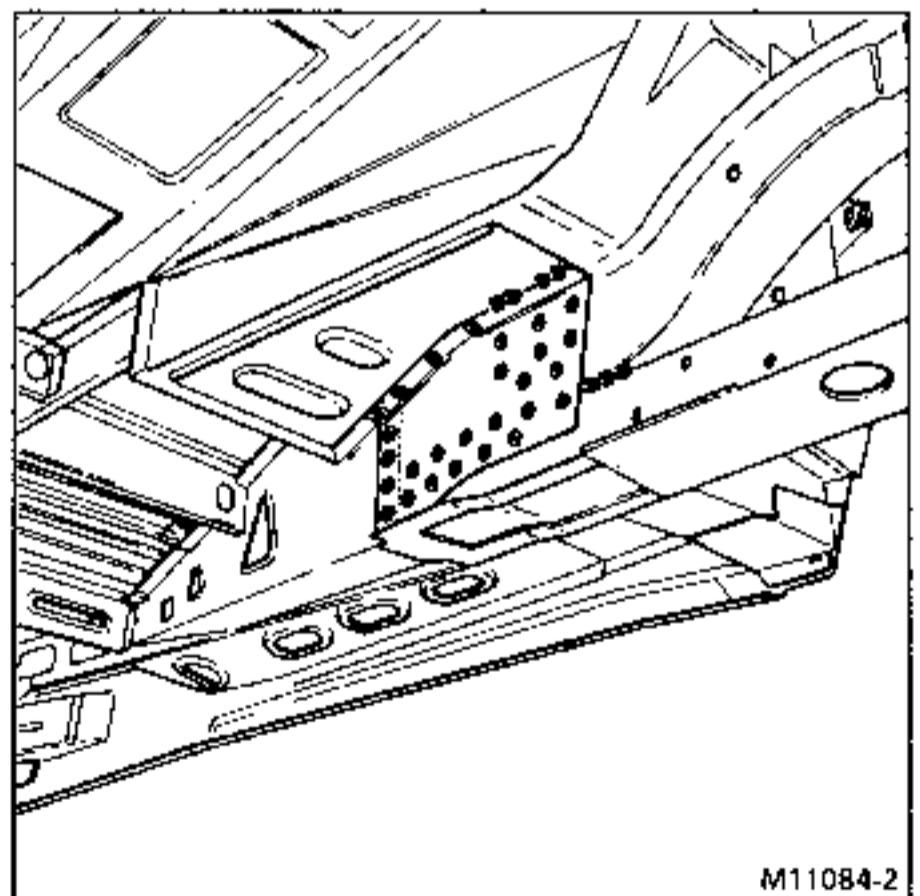
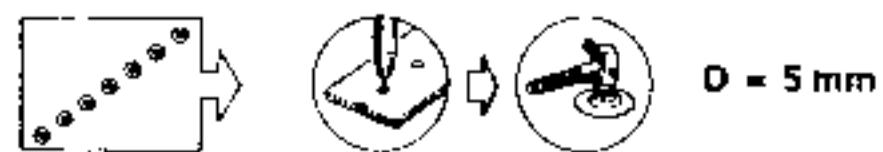
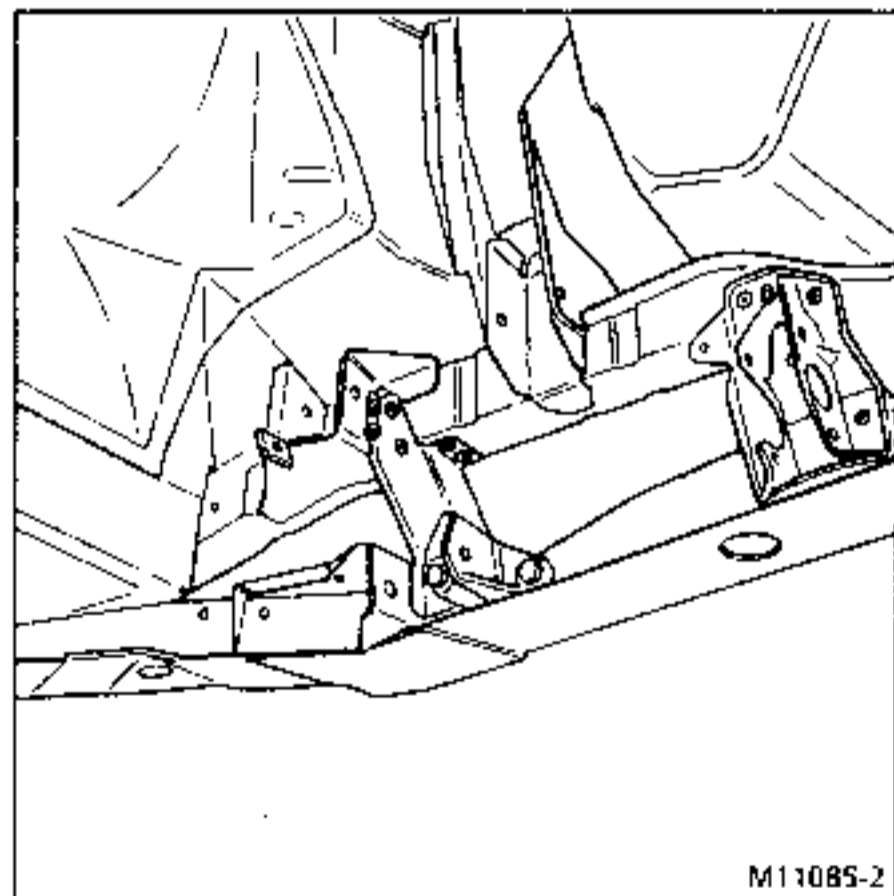
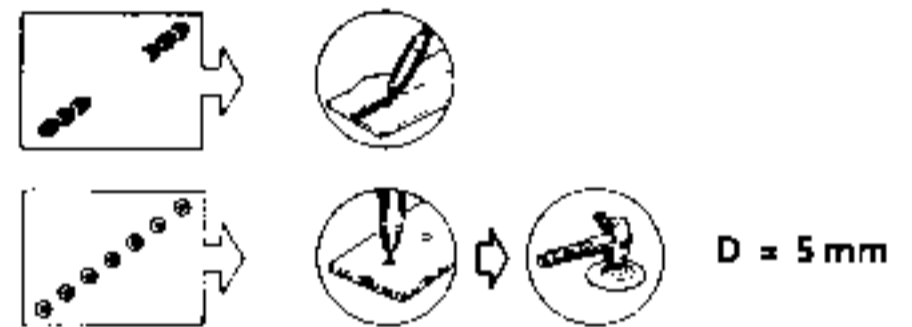
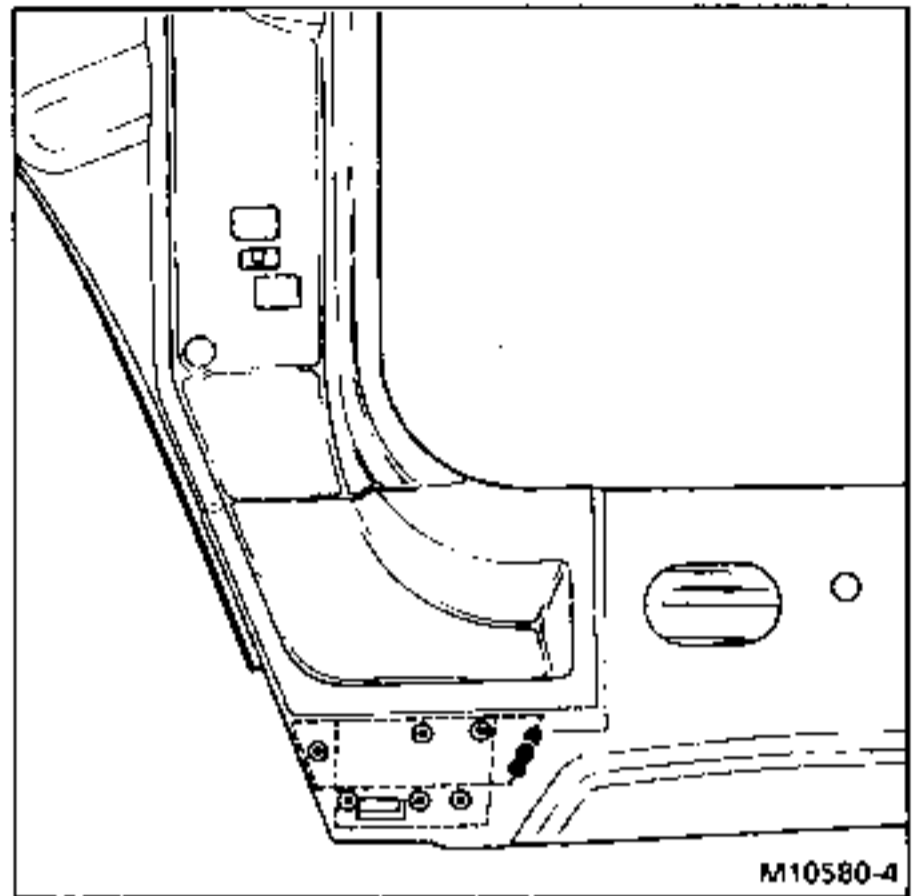
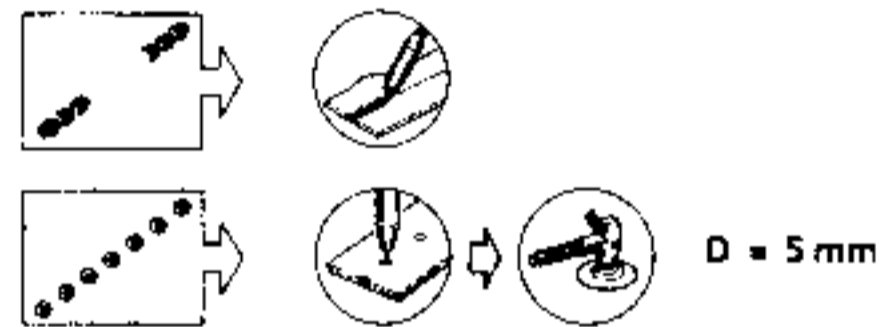
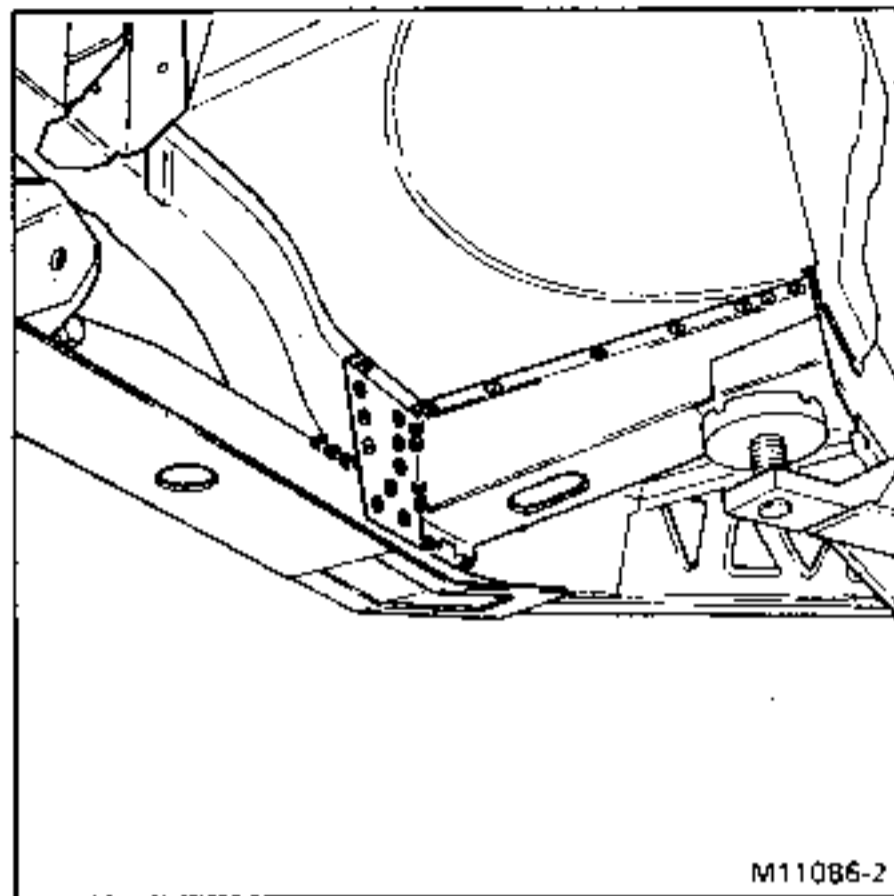
PREPARING THE NEW PART

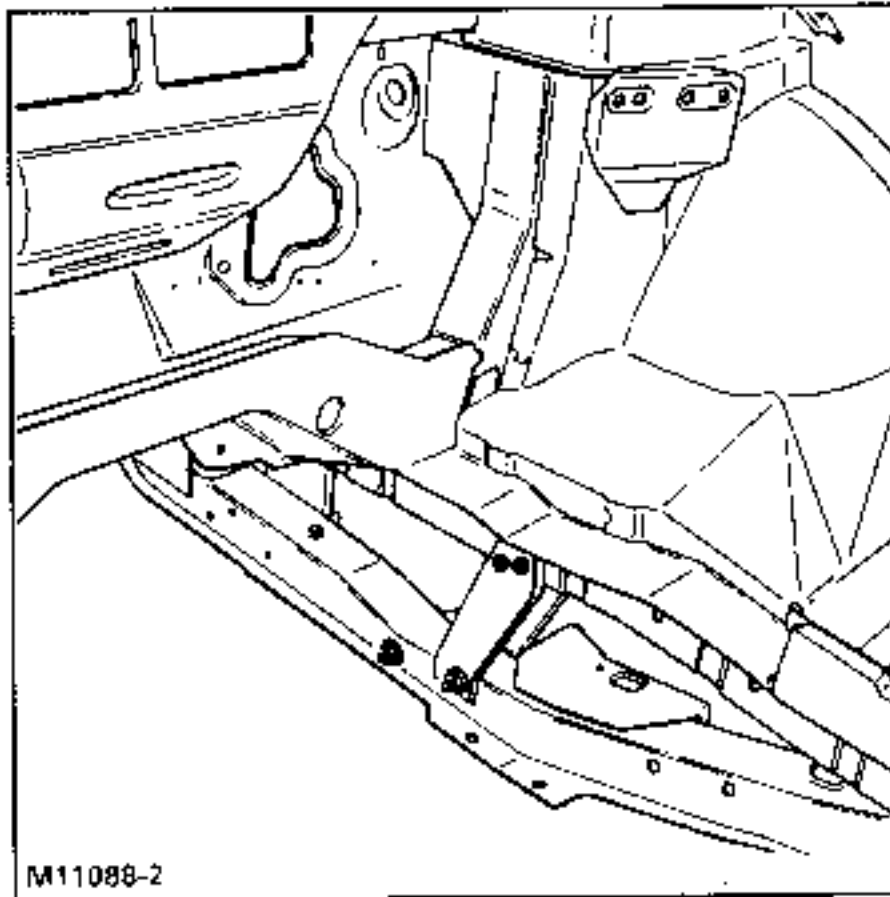
On parts to be welded, grind any thick spots of zinc so as to obtain good alignment when welding.

WELDING



From the new extension piece, cut out two pieces 30 mm larger than those cut out from the vehicle.





PROTECTION AFTER WELDING

- see Espace Paintwork Manual

Apply the passivation and zinc paint treatment to the welded areas.

Apply anti-gravel mastic using sprayed-on or smoothed-down beads.

Apply the product for protecting the hollow sections after painting.

REPLACING

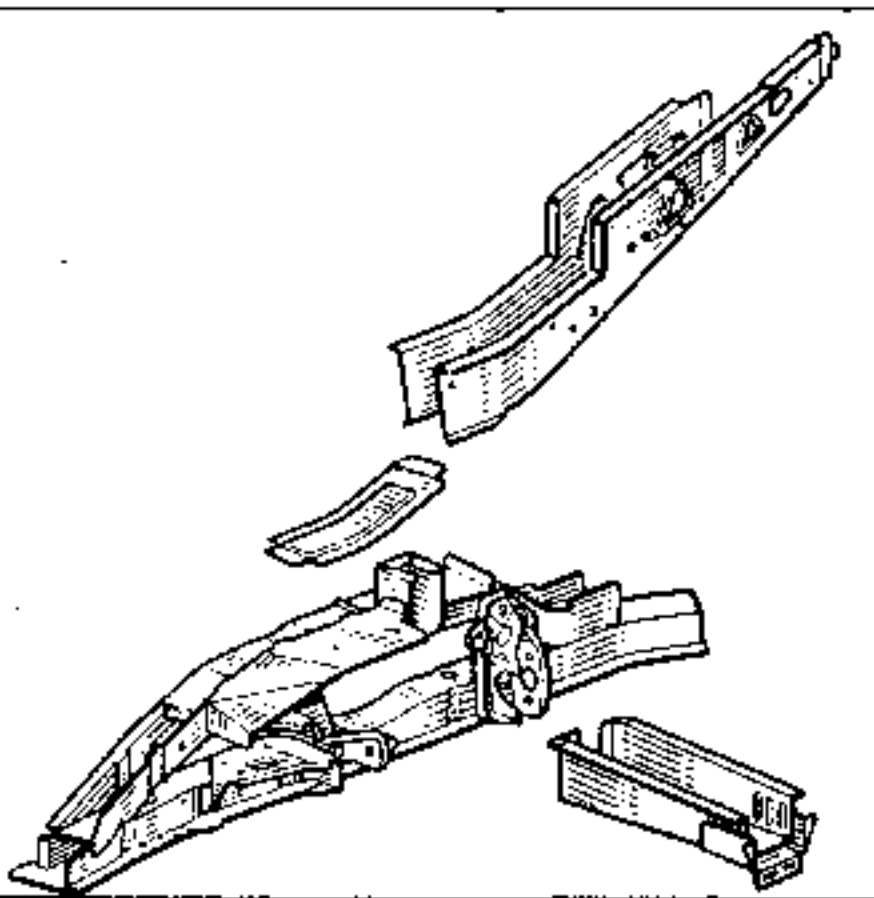
This operation is to be performed on the jig bench. Please consult section 40 for positioning the elements.

In most cases this operation involves the replacement of the steering cross member (see the section on replacing the steering cross member).

PROTECTION

Protect the surrounding areas to avoid damage to them when grinding and welding.

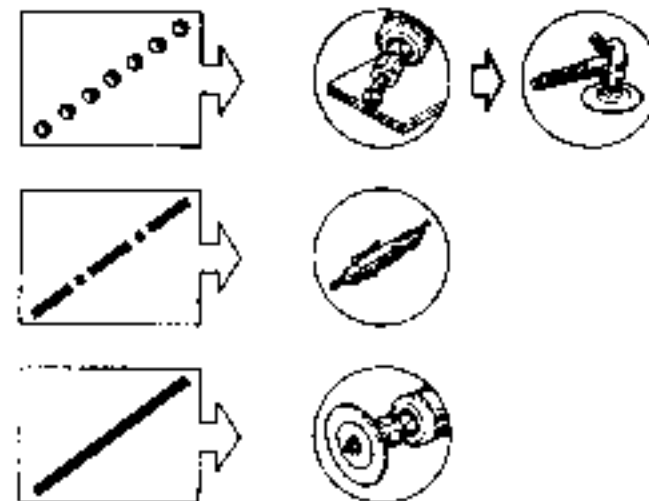
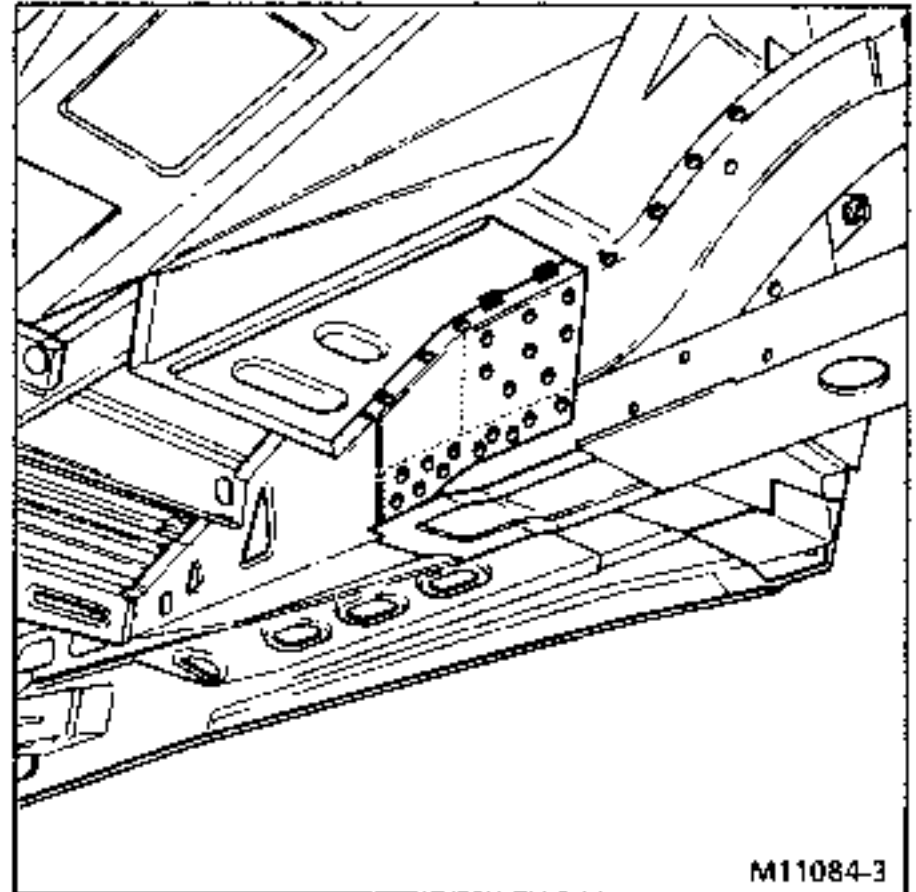
COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT

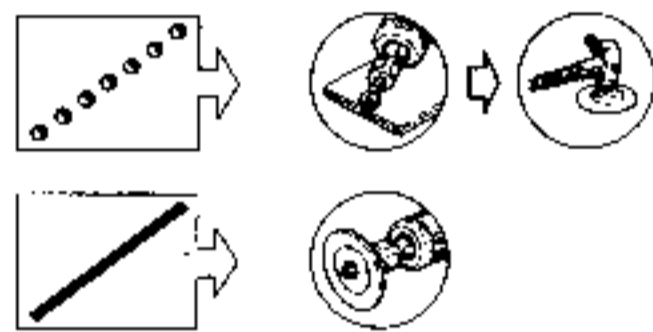
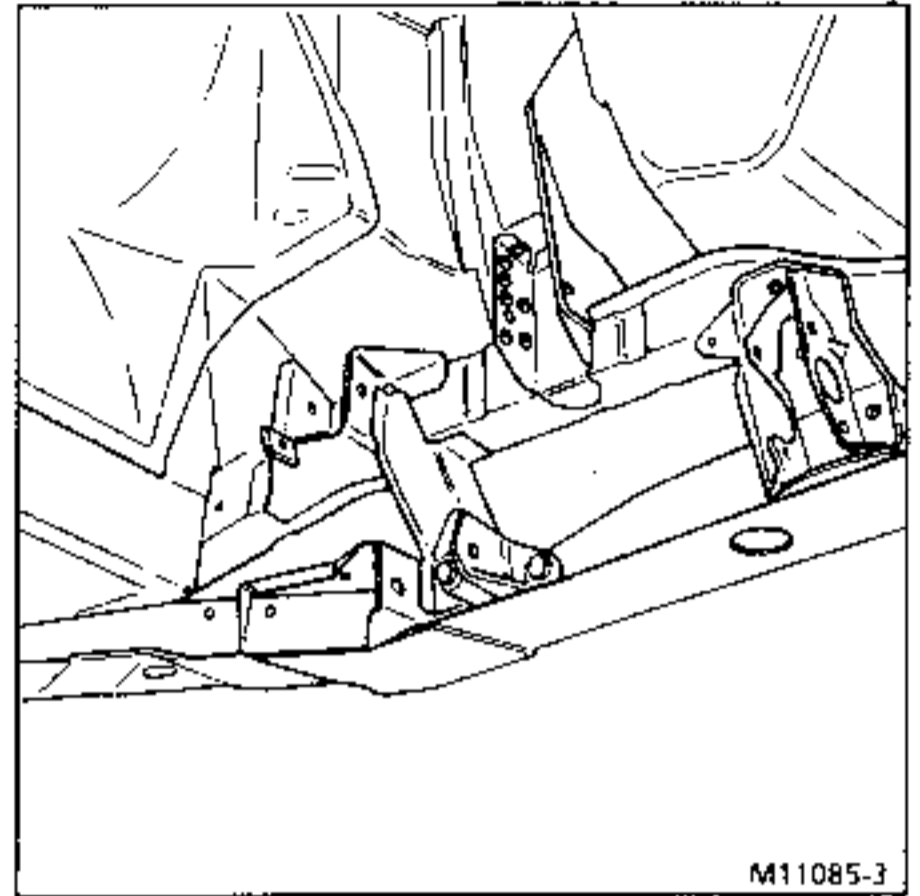
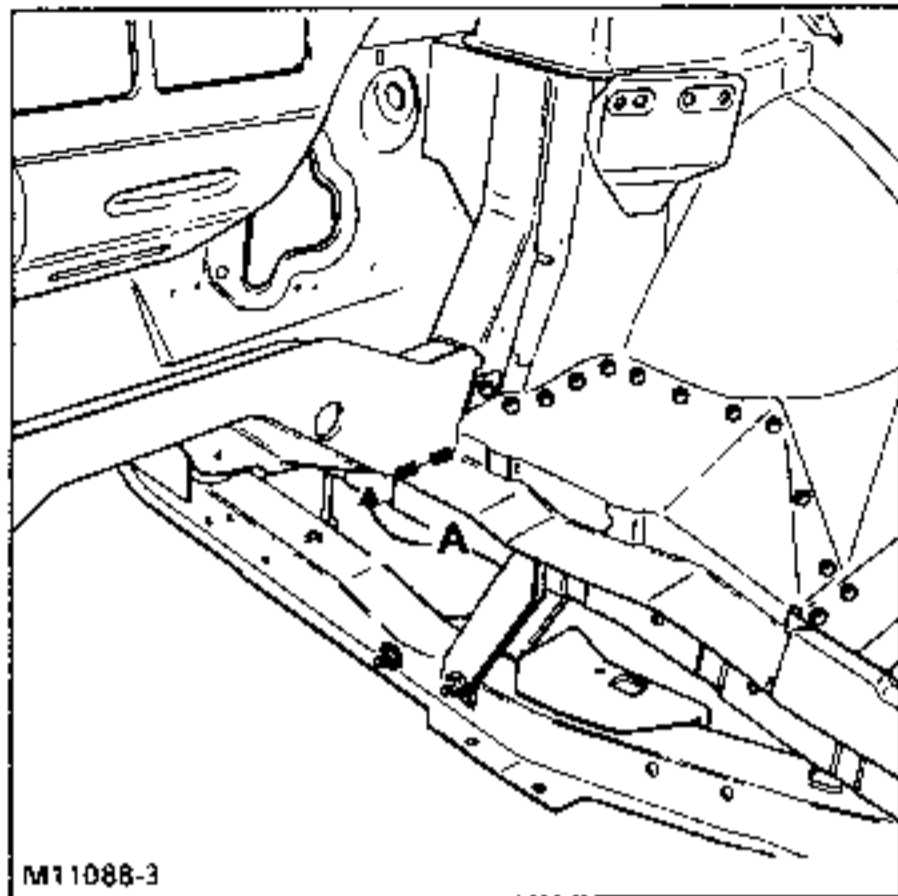


CUTTING OUT - UNPICKING

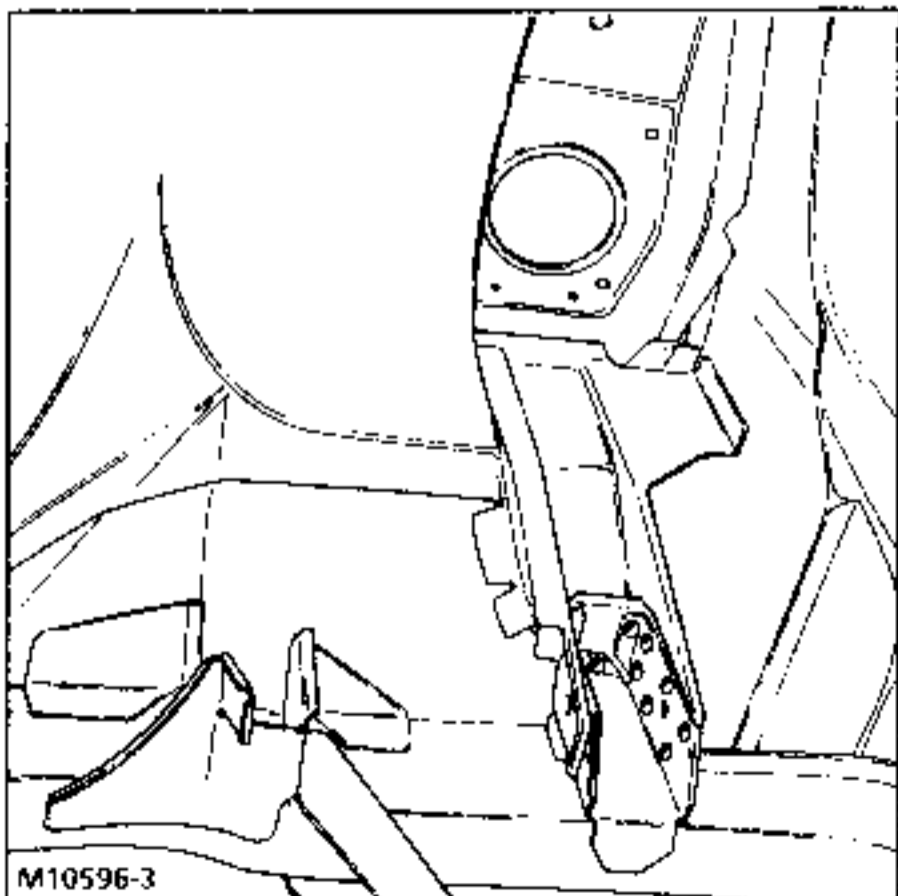
Please see the front cross member section of Chapter 41 for alignment with the front cross member.

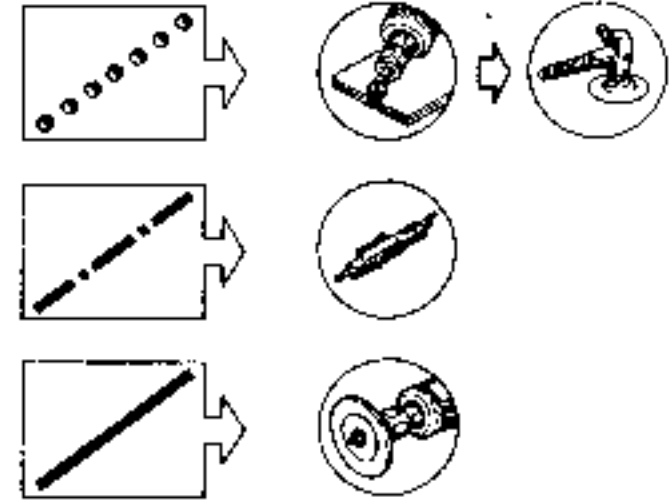
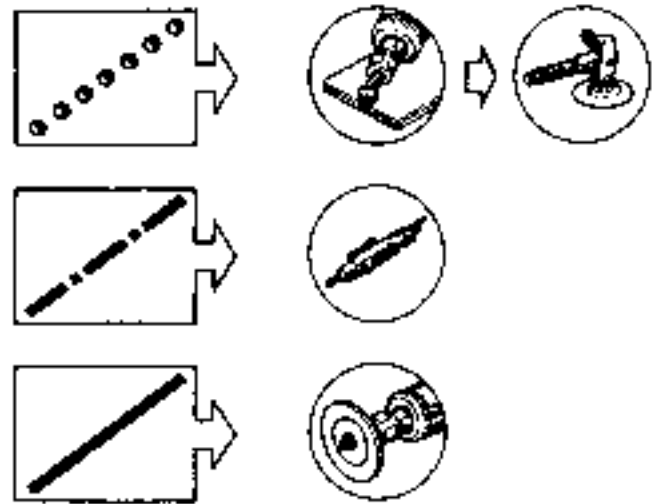
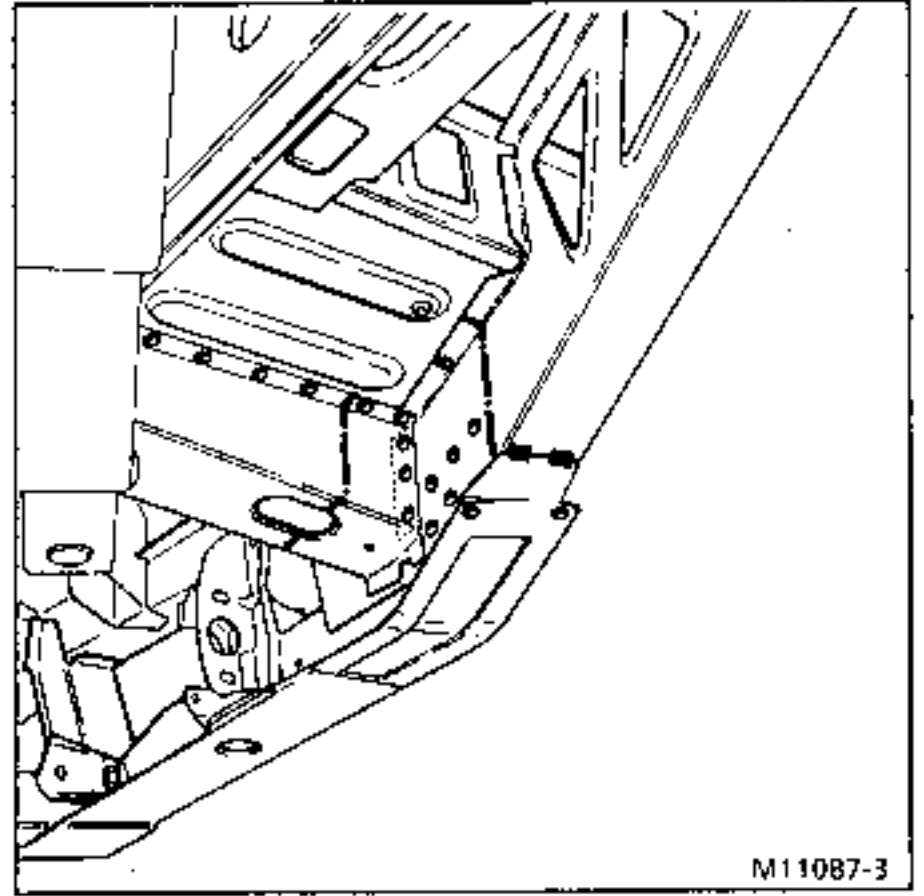
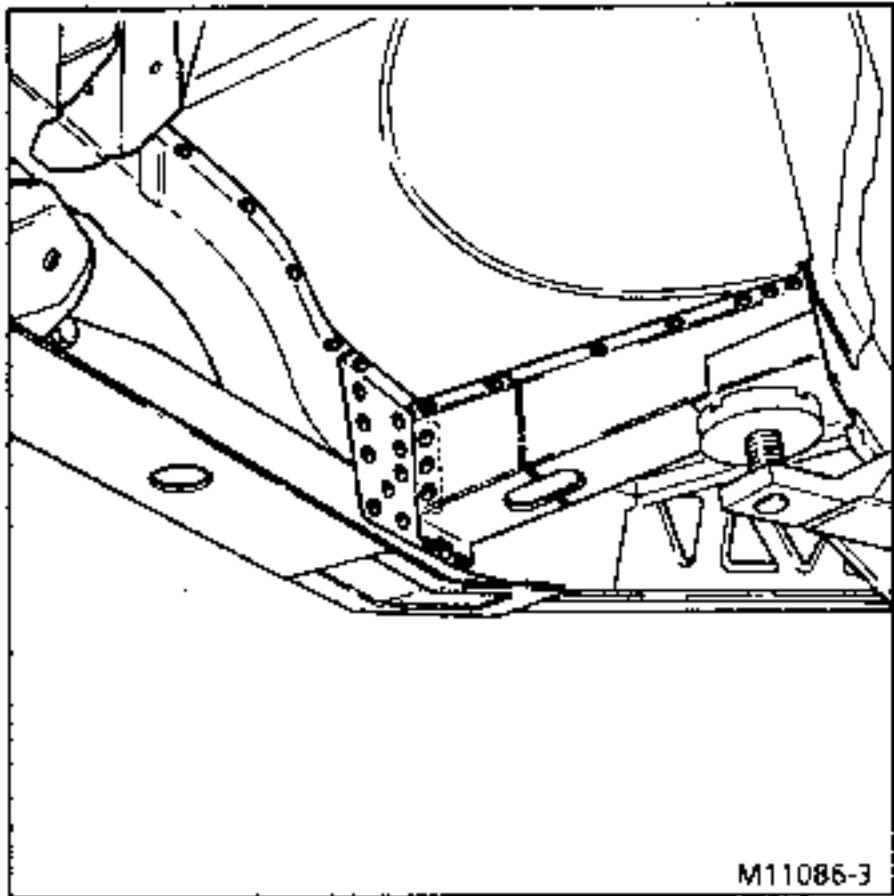
Please see the cowl side section of section 42 for alignment with the battery tray and headlight carrier panel.

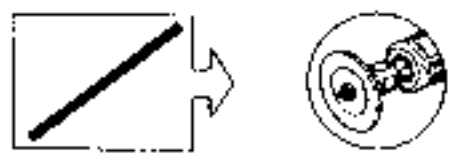
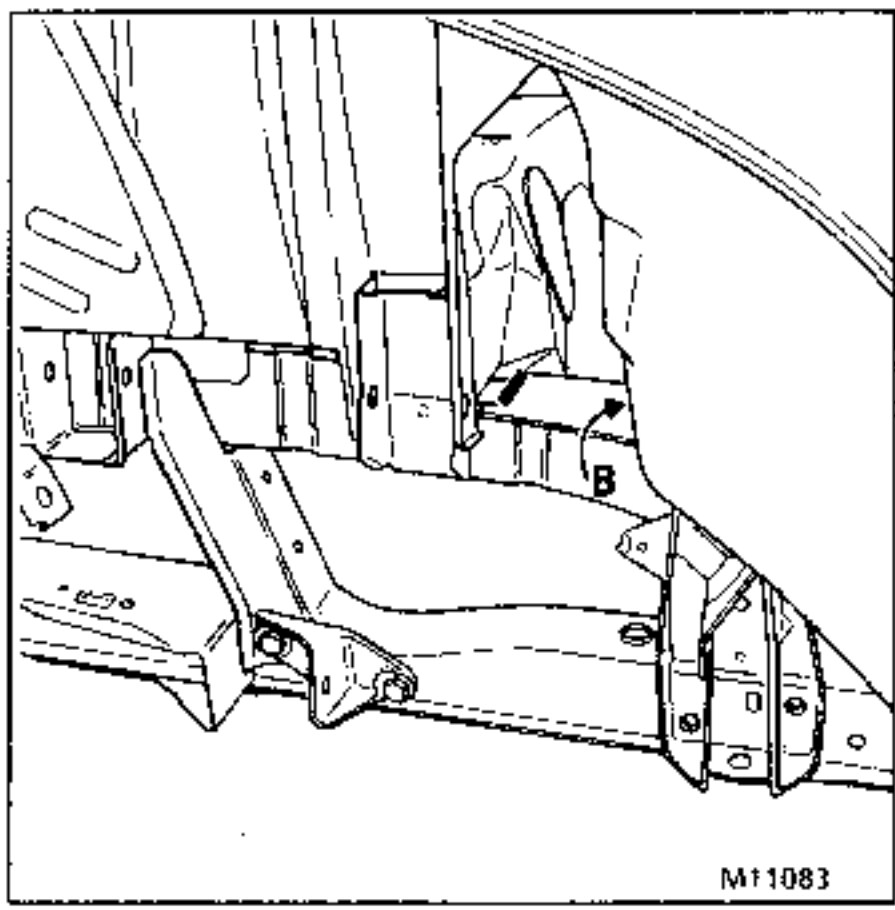
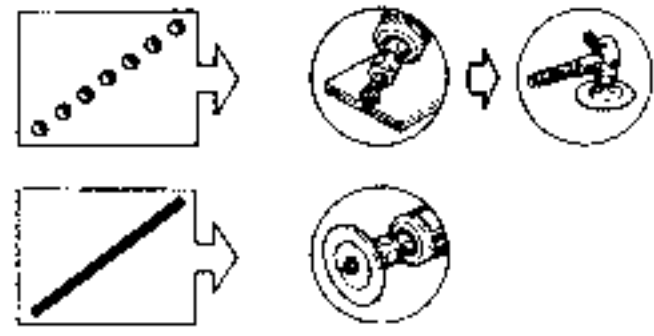
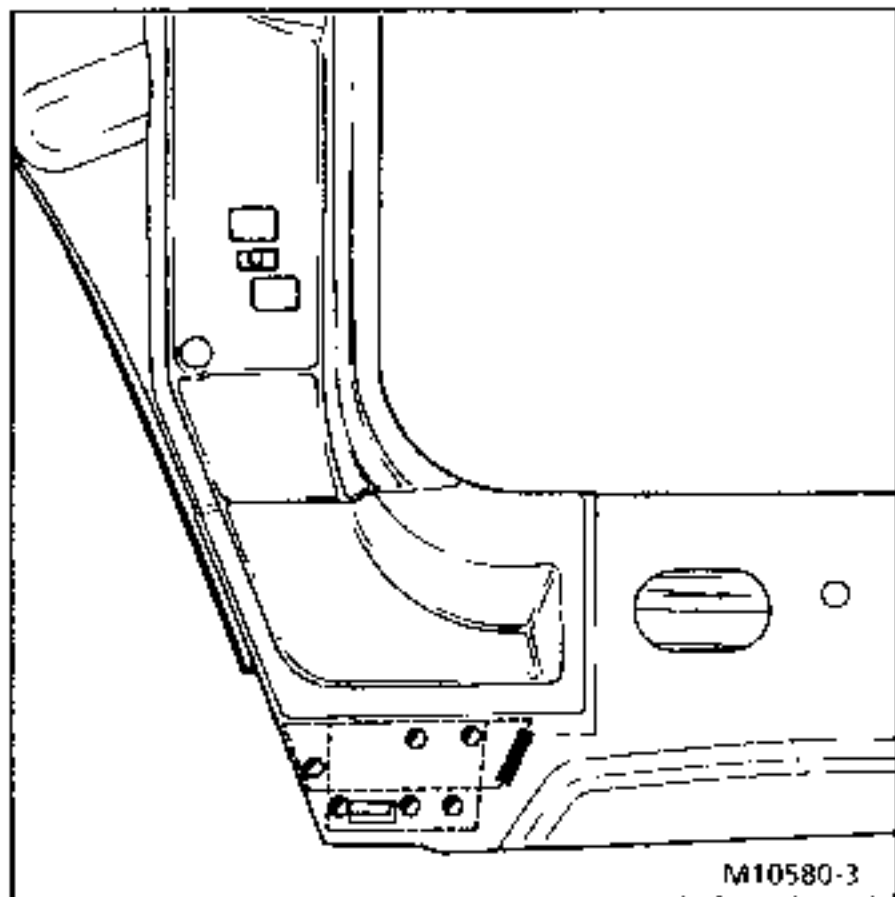




Grind anchorage bead (A) under the steering cross member.







Grind back the two points securing the side member rear lining to the bulk head at (B).

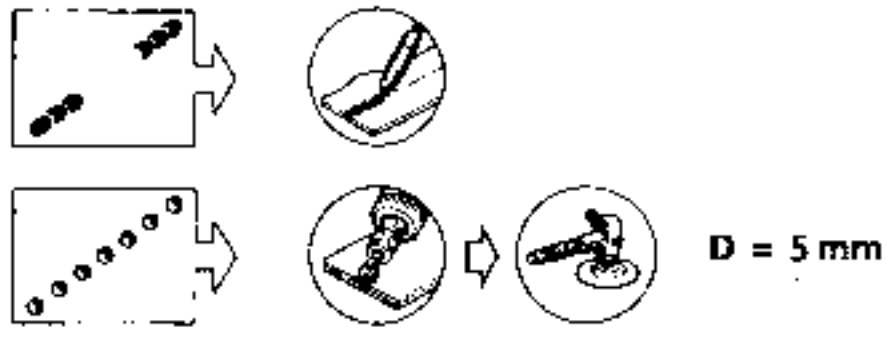
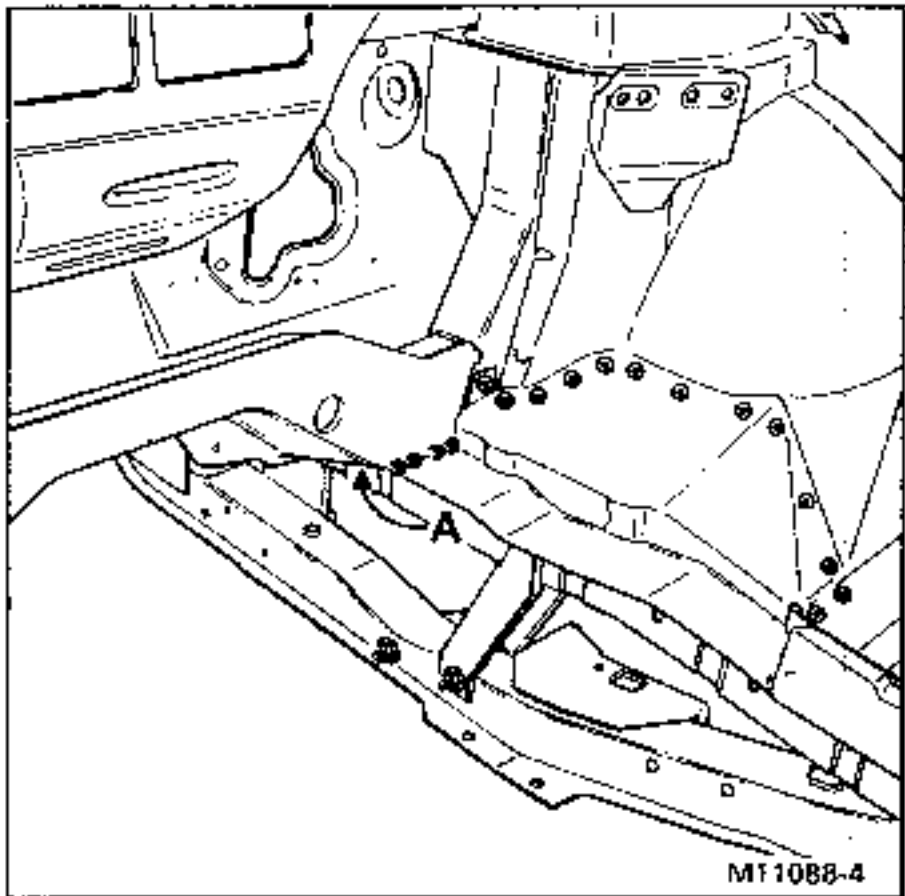
PREPARING THE NEW PART

On the parts to be welded, grind down any thick patches of zinc so as to align the parts correctly during welding.

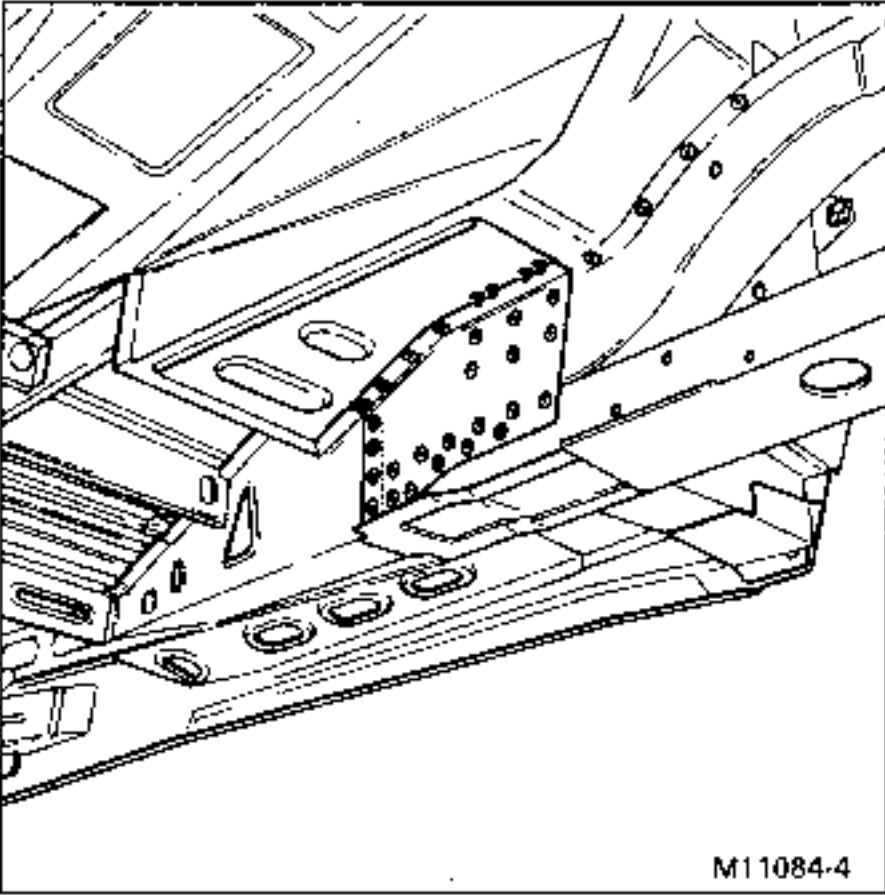
Firstly fit in place the complete side member then the steering cross member if it has to be replaced.

WELDING

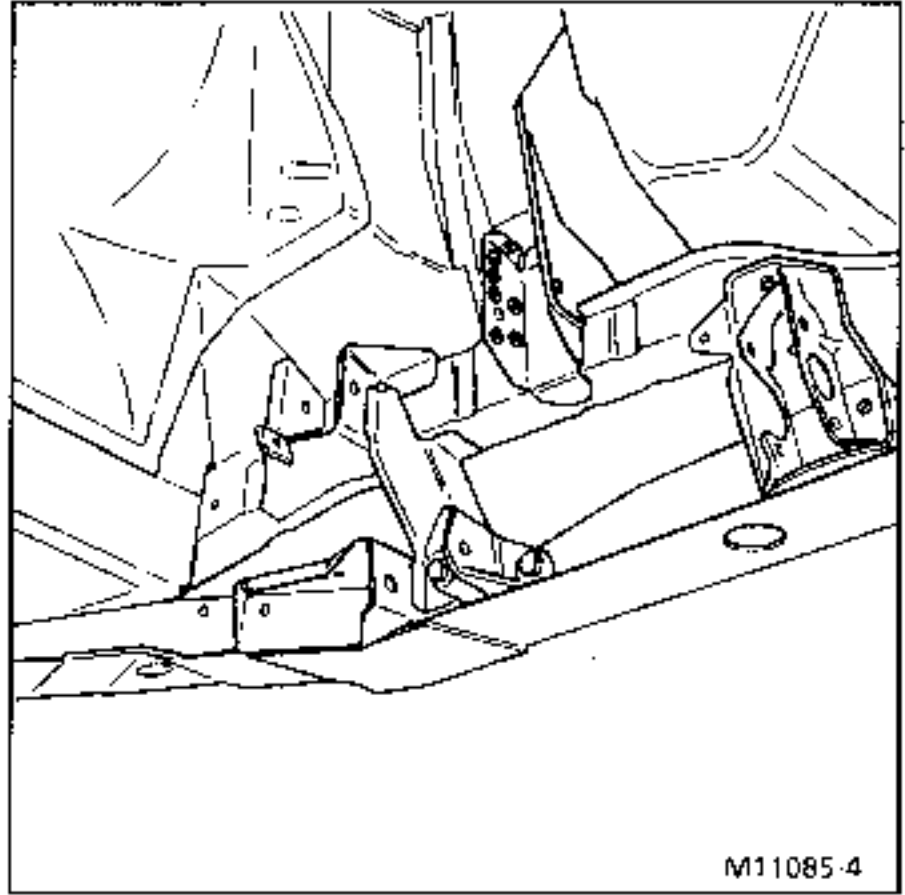
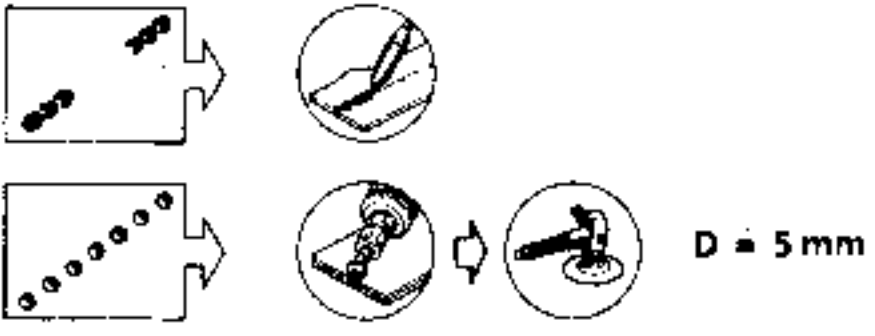
As during cutting out and unpicking, please consult the relevant section of sections 41 and 42 for welding.



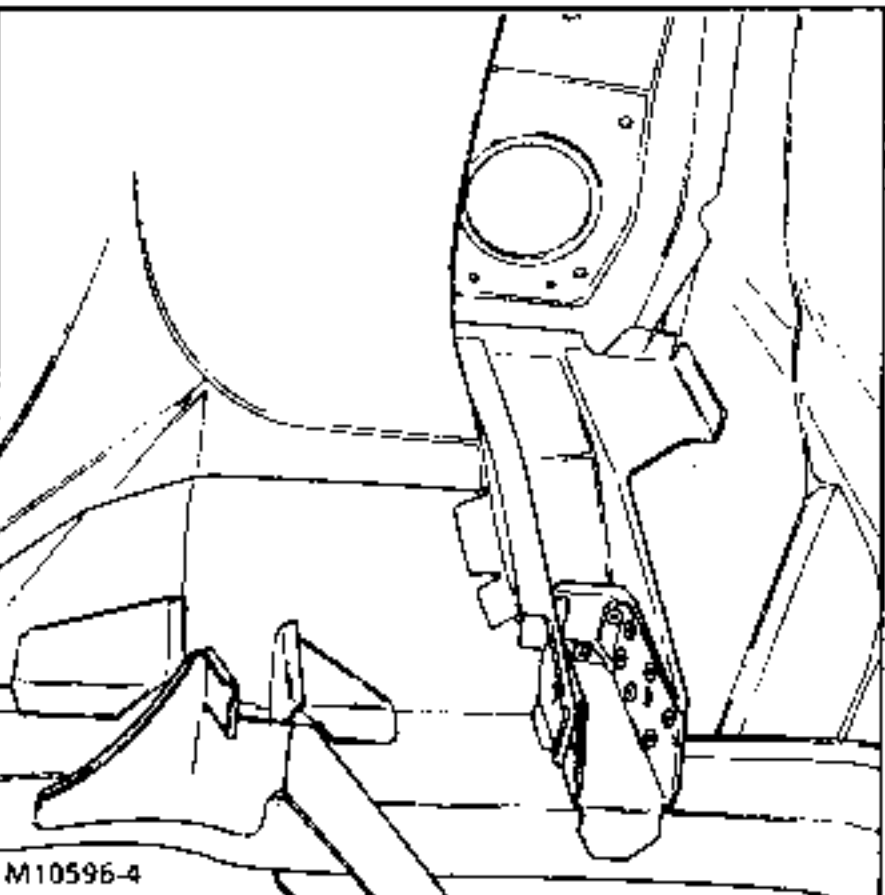
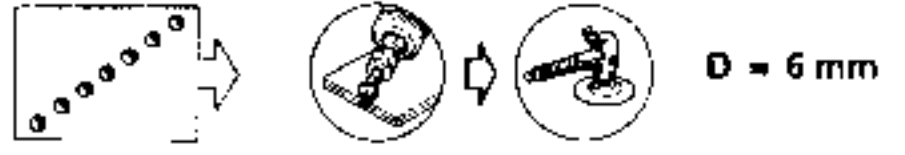
Apply a 25 mm anchorage bead under the steering cross member at (A).



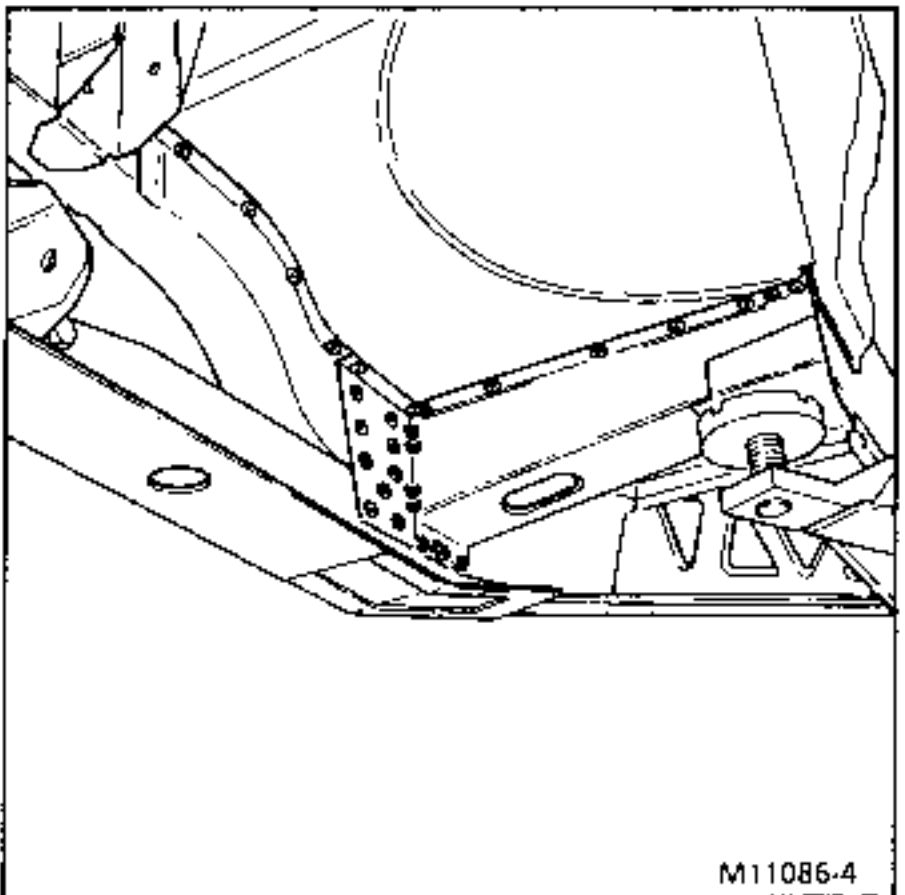
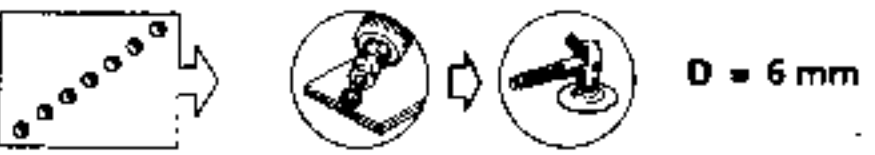
M11084-4



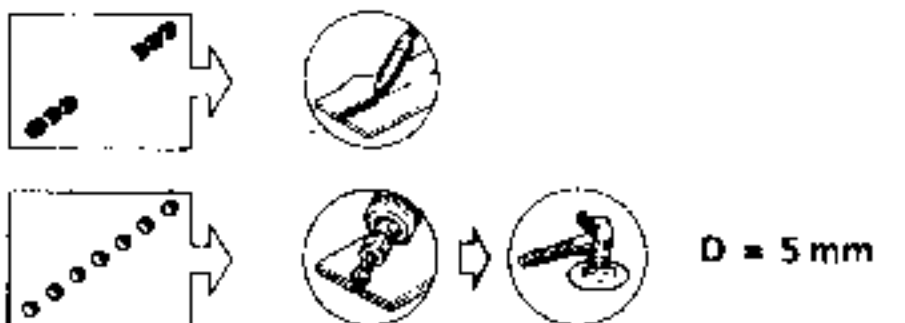
M11085-4

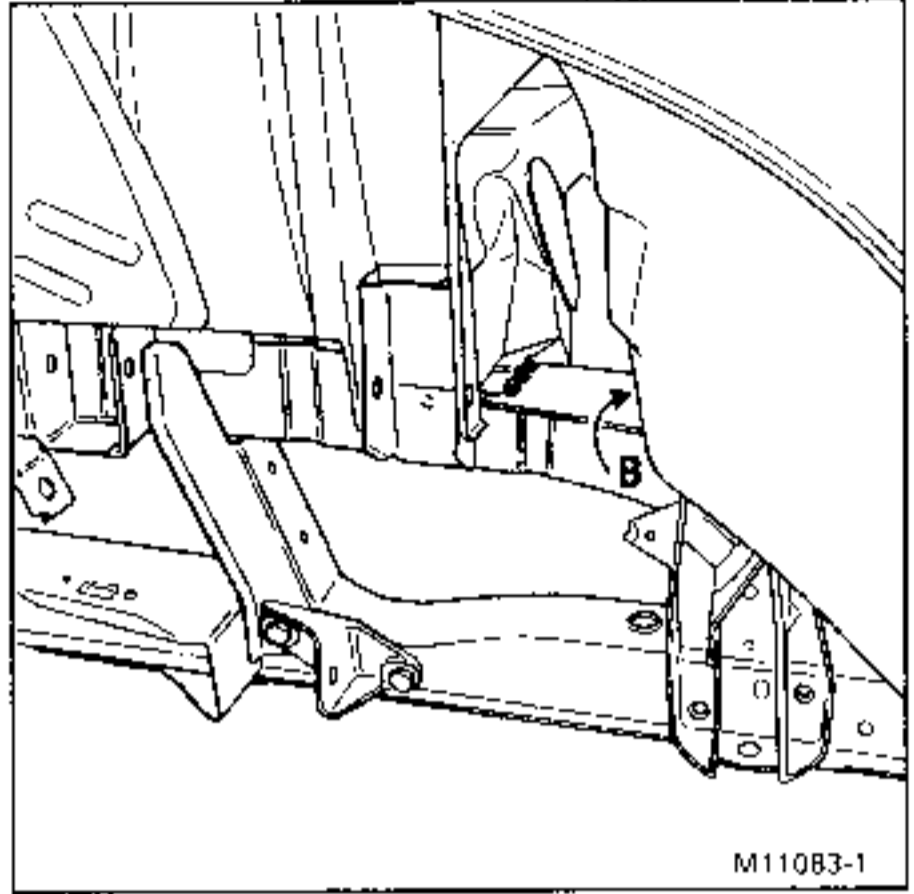
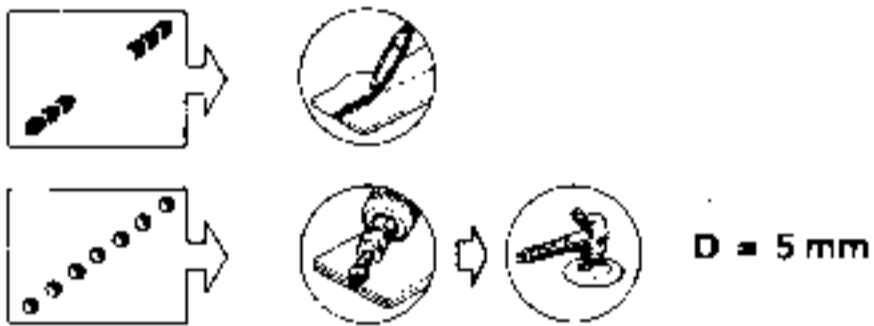
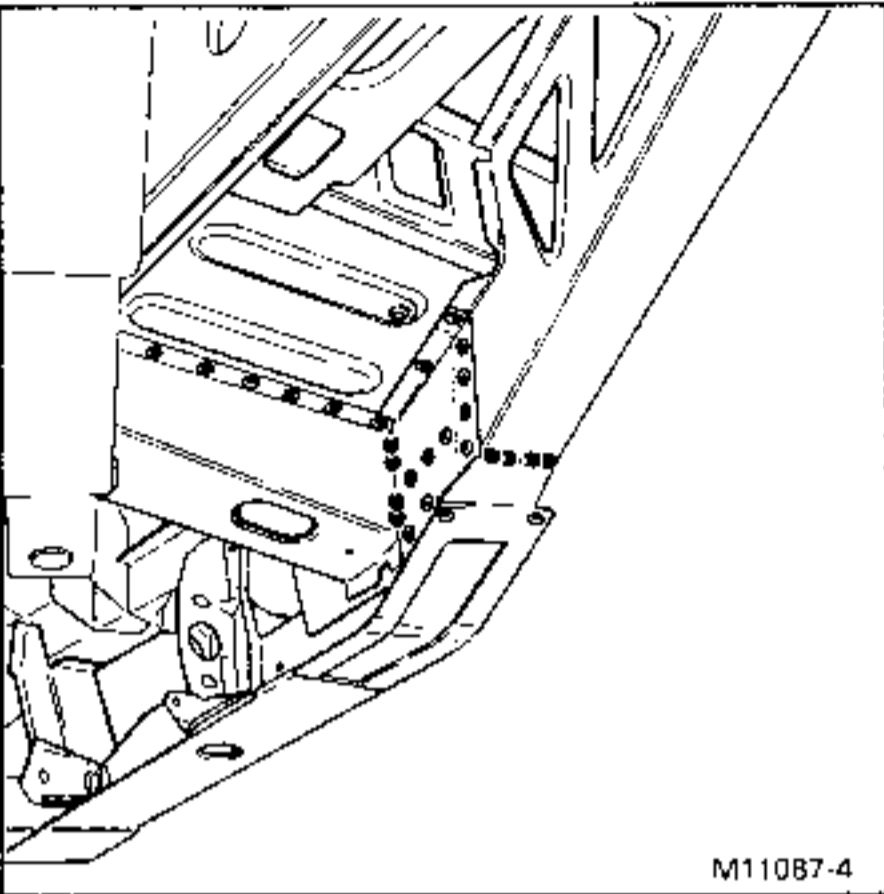


M10596-4



M11086-4

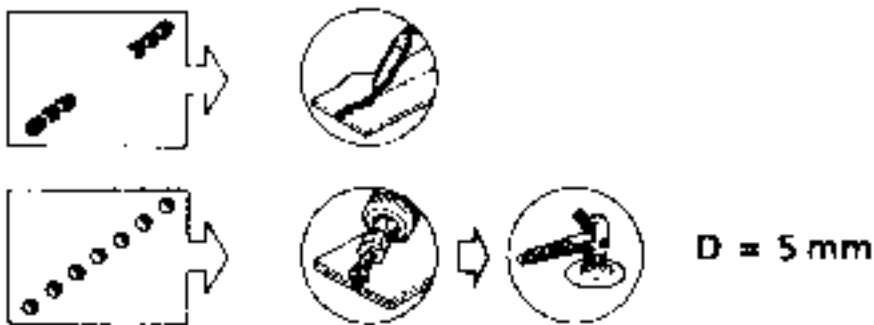
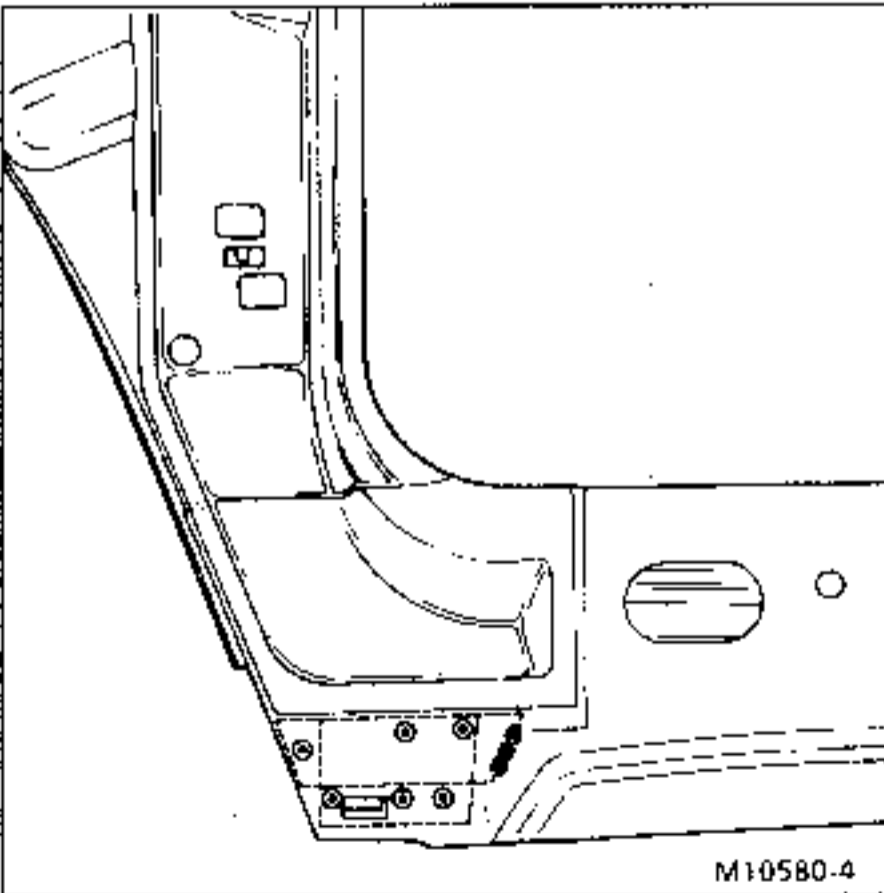




Plug weld the side member rear lining to the bulk head at (B).

PROTECTION AFTER WELDING

Identical to the previous section for the lower side member.



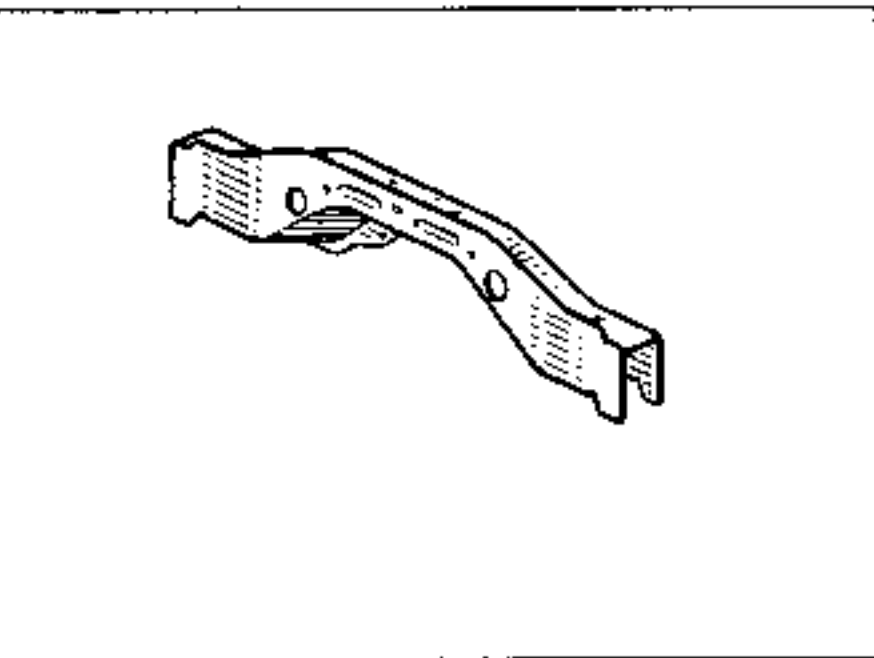
REPLACING

This operation is to be performed on the jig bench. Please consult section 40 for positioning the components.

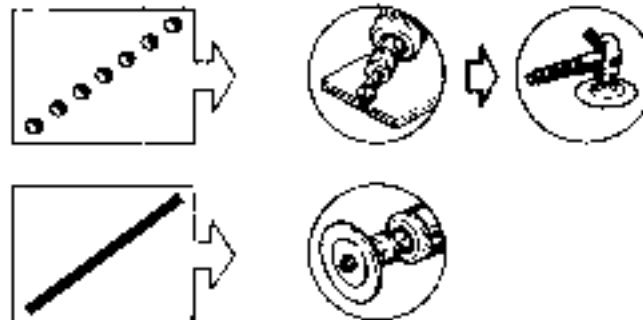
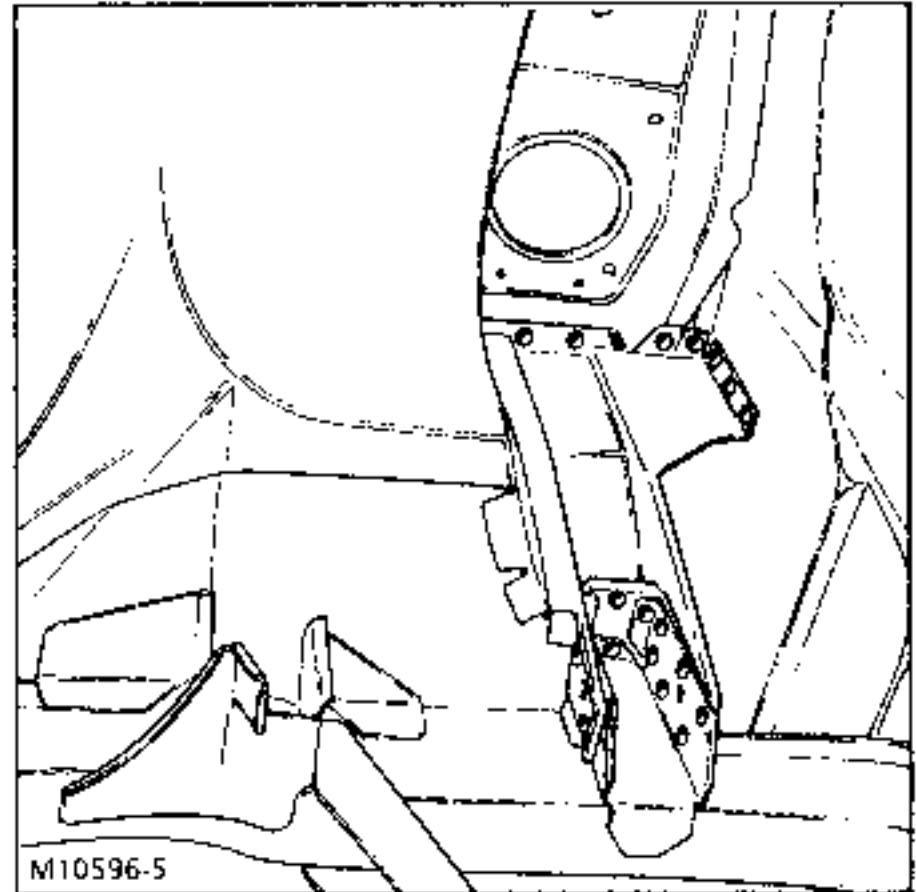
PROTECTION

Protect the surrounding areas to avoid damage to them when grinding and welding.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT

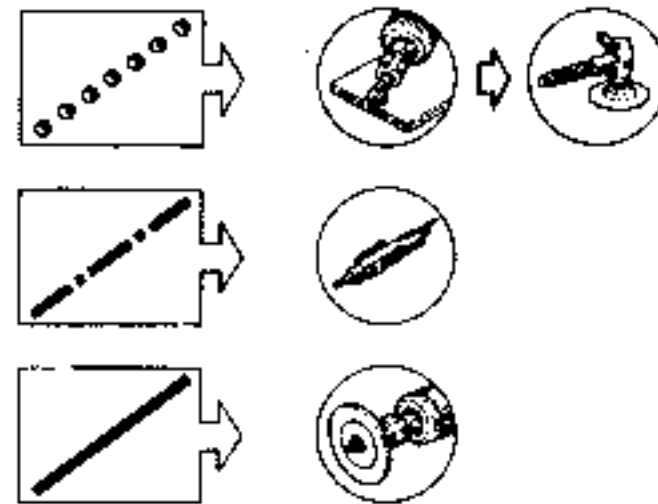
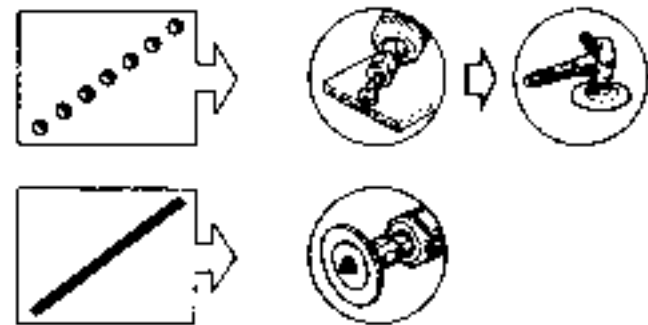
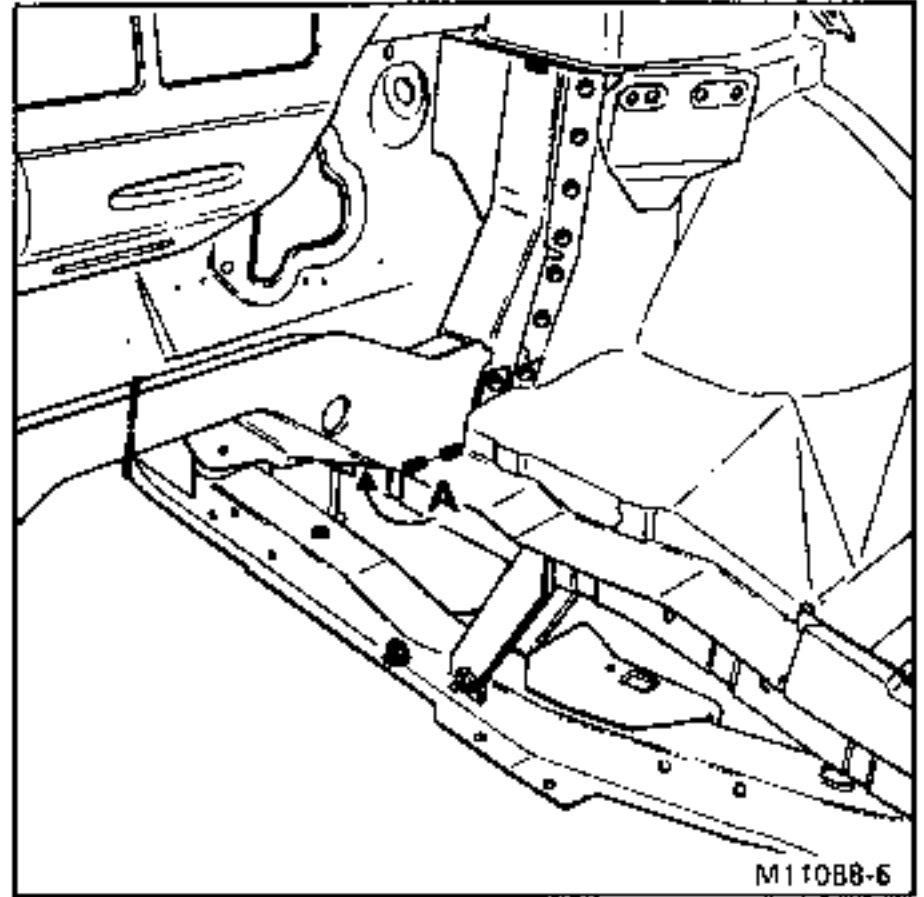
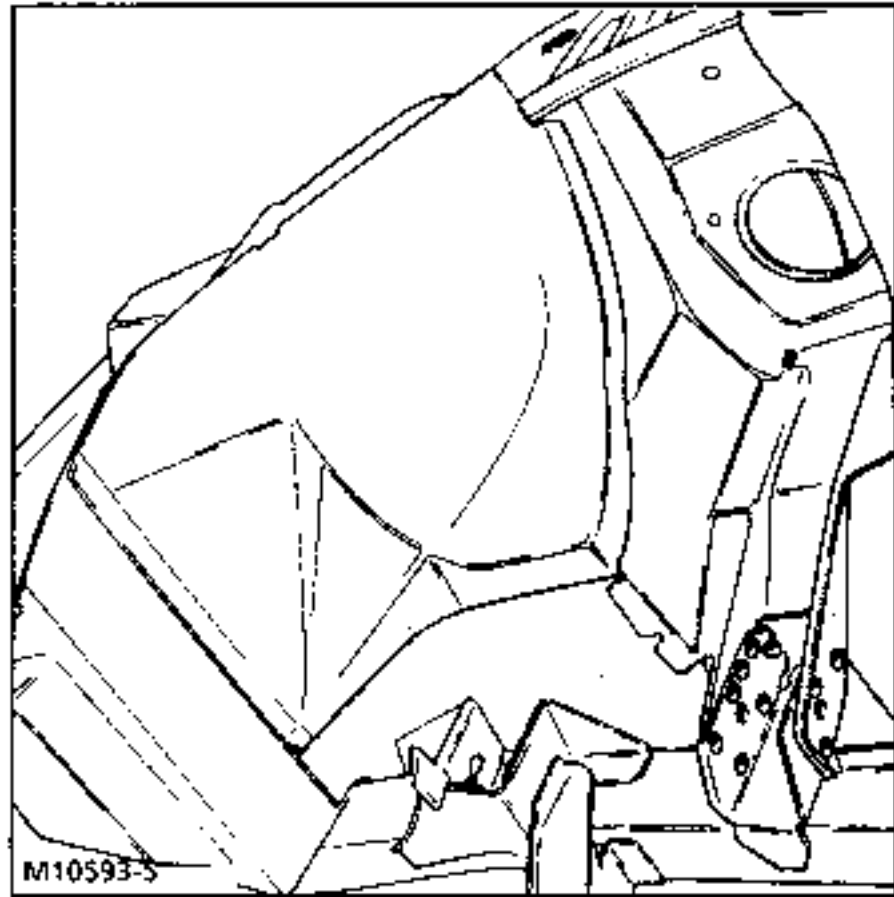


CUTTING OUT - UNPICKING

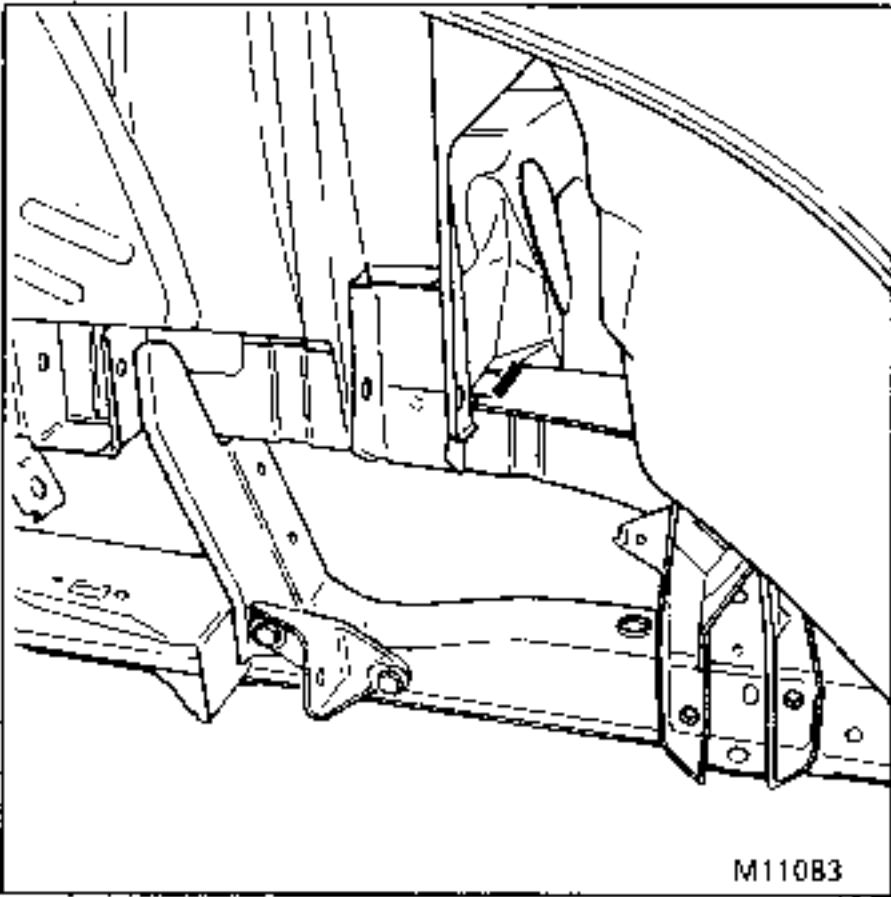


For replacing the steering cross member alone, only the shock absorber turrets are removed in order to be able to unpick the cross member.

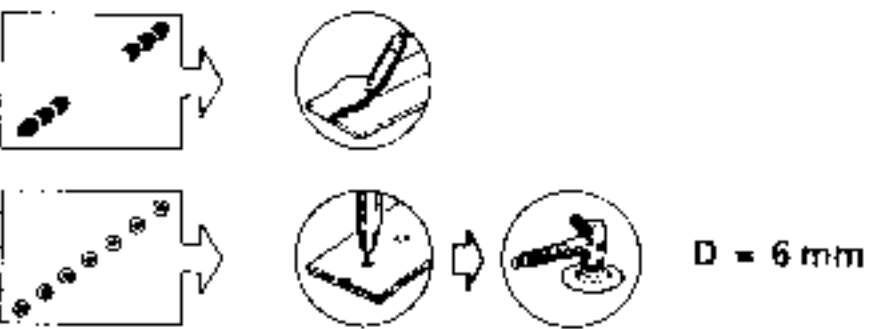
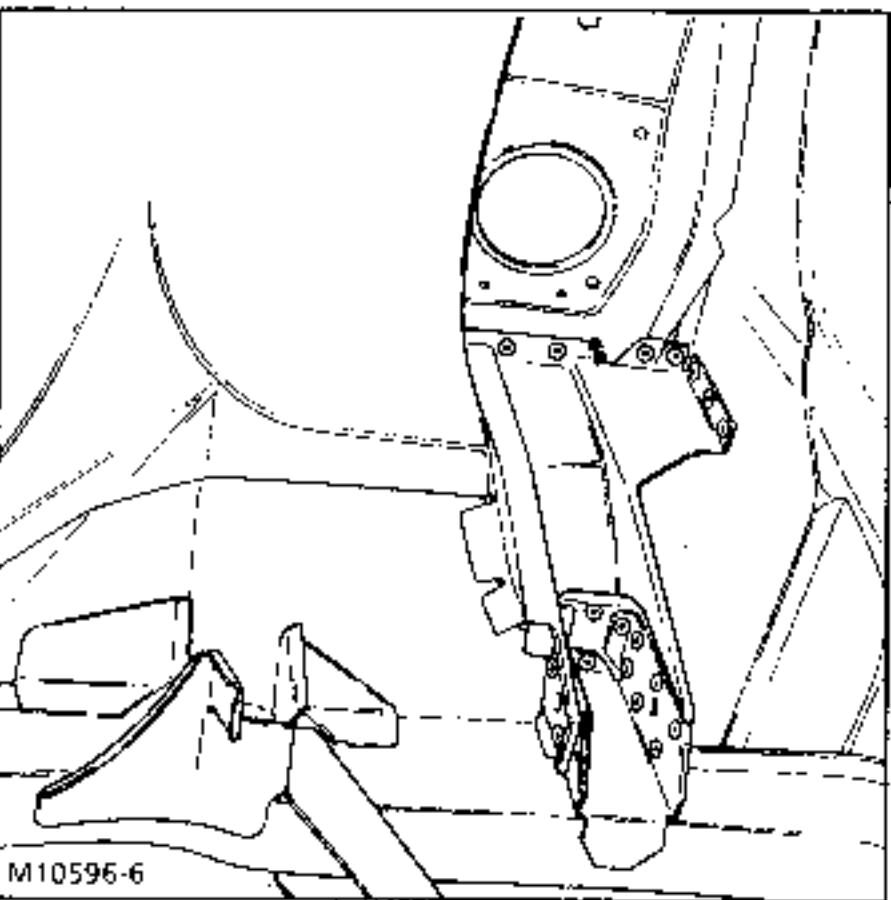
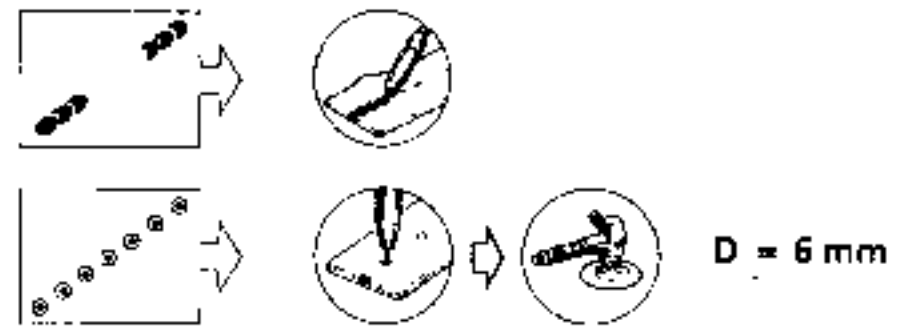
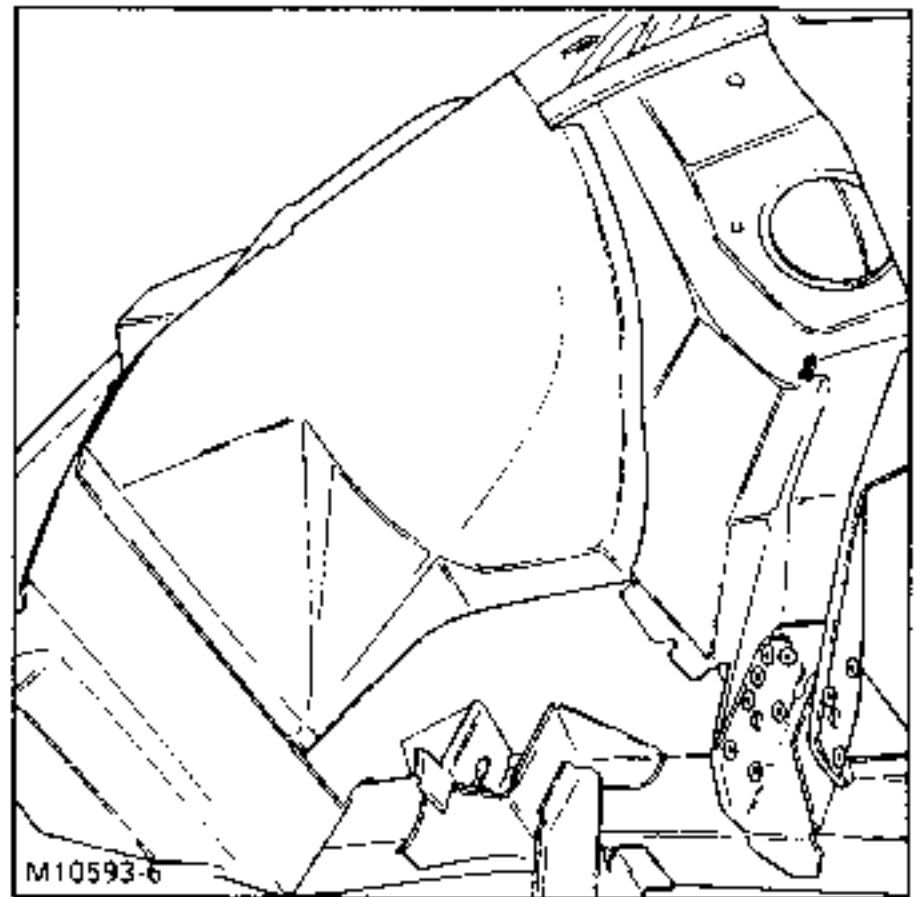
Recover the turrets as these will be used on refitting.

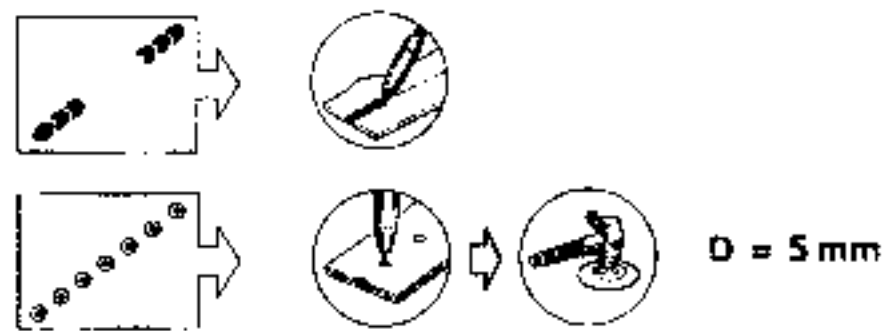
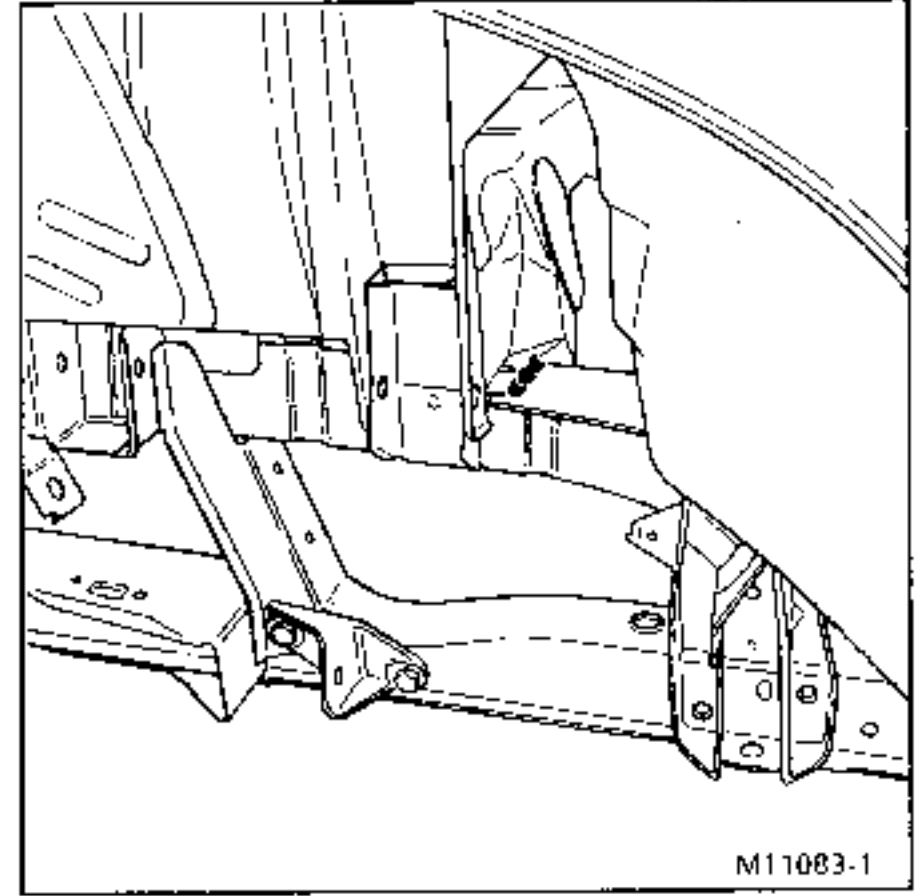
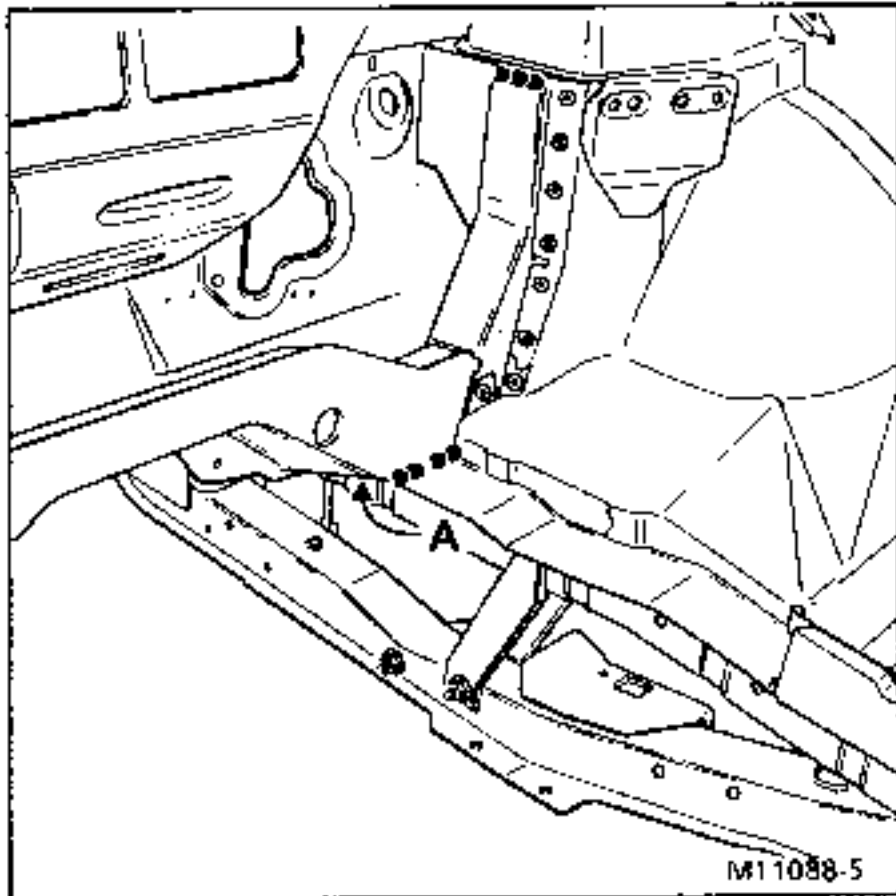


Grind the joint bead on the upper side member at (A).



SOUDURE





Apply a 30 mm anchorage bead between the cross member and side member at (A).



PROTECTION AFTER WELDING

(See Espace Paintwork Manual)

Apply the passivation - zinc paint treatment to the welded areas.

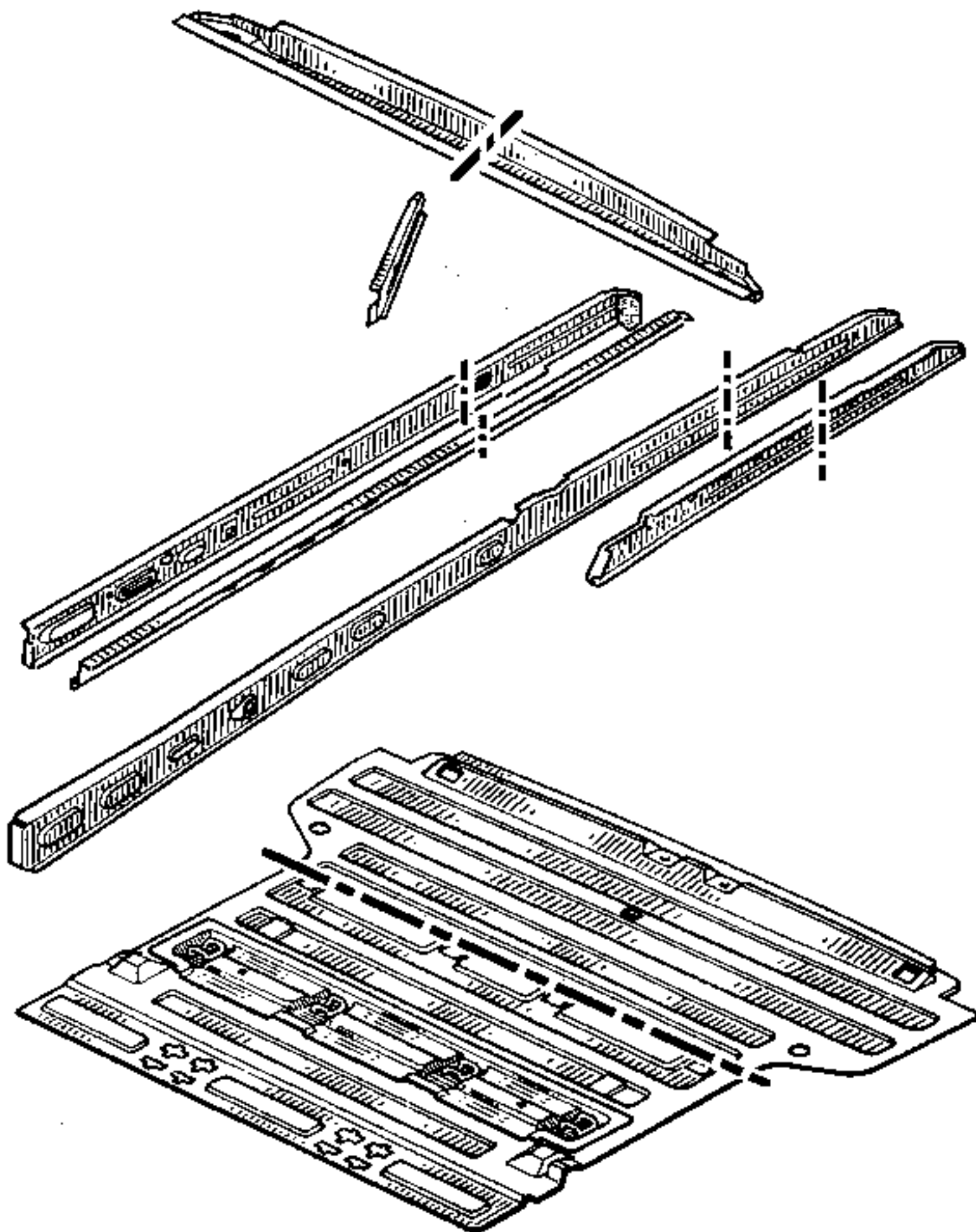
Apply anti-gravel mastic using sprayed-on or smoothed-down beads.

Apply the product for protecting hollow sections after painting.

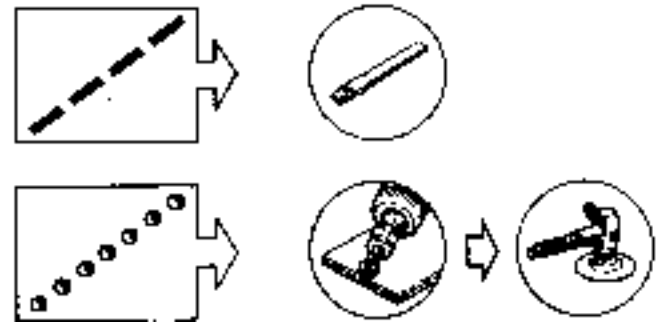
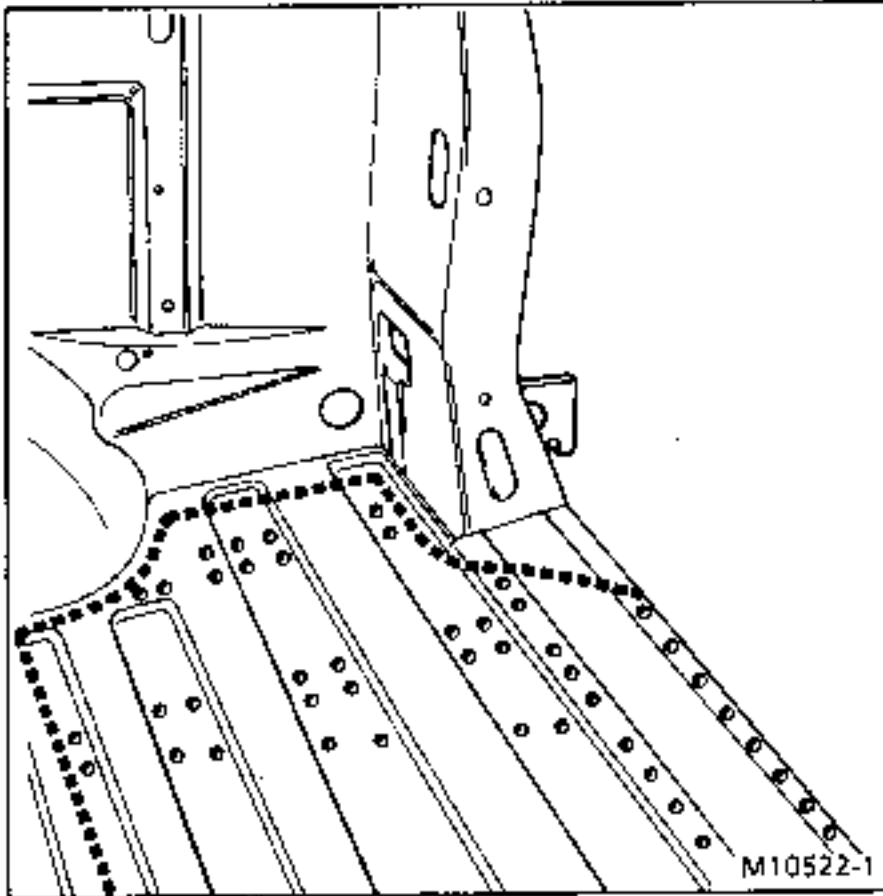
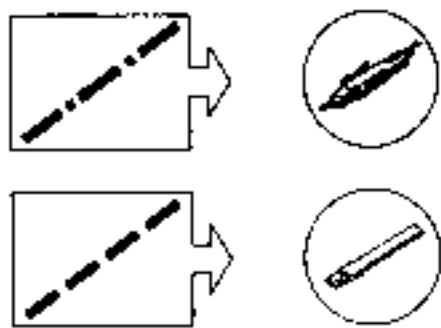
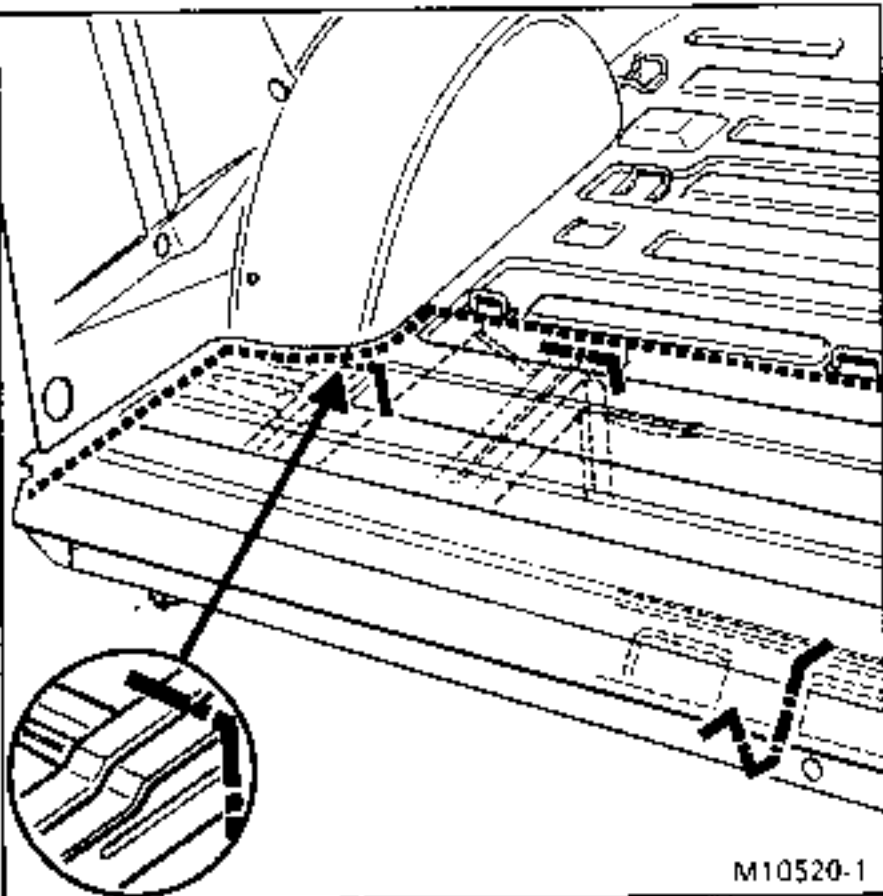
REPLACEMENT

This operation is to be performed on the jig bench. Please consult section 40 for positioning the components.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



CUTTING OUT - UNPICKING



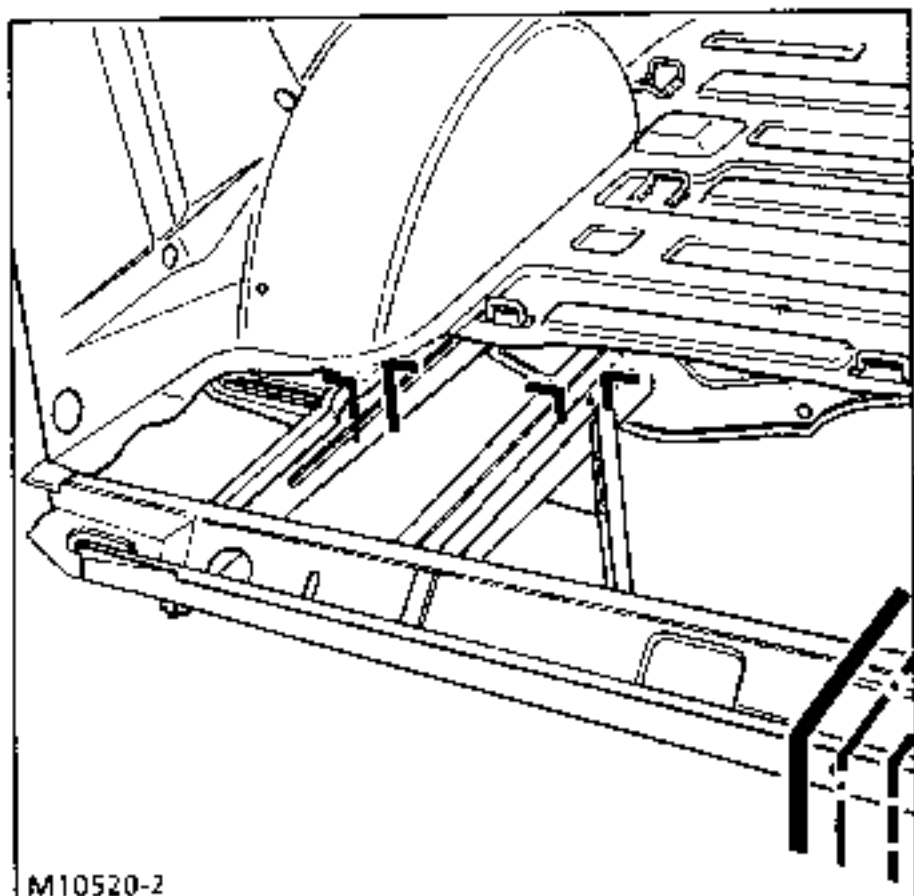
Depending on the extent of the impact, the complete or part pillar has to be removed for this operation.

PREPARATION OF THE NEW PARTS

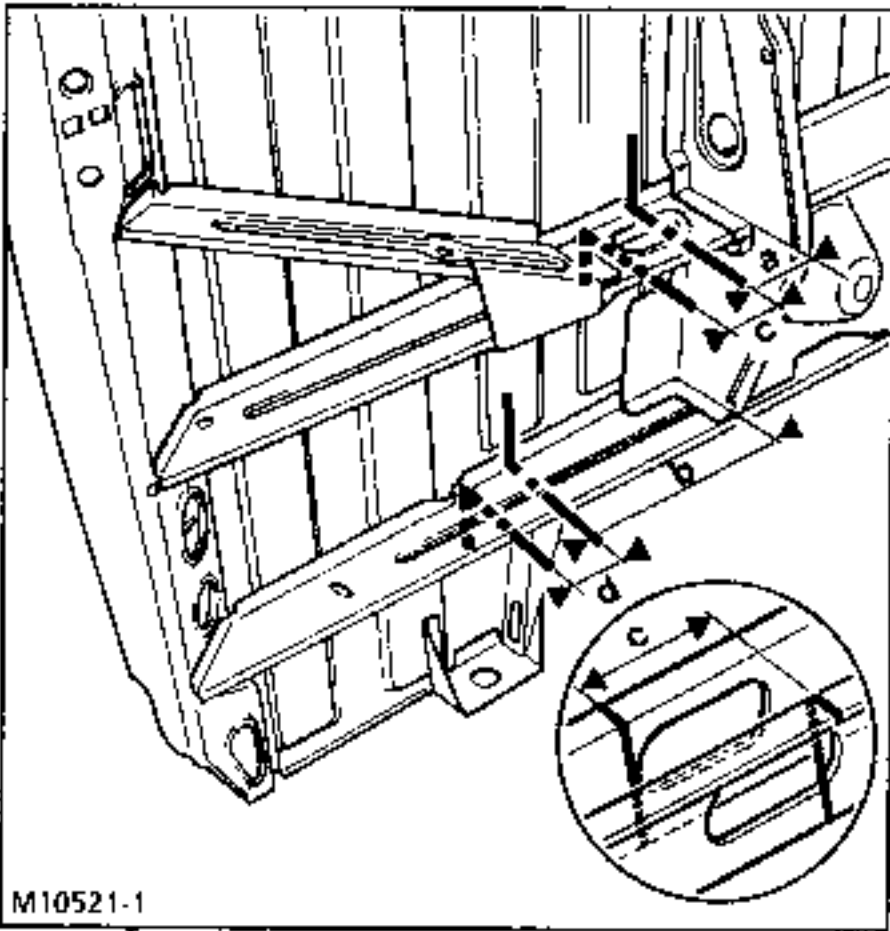
On the new part, make a cut approximately 20 mm above the cut made on the vehicle.

Position the new part on the vehicle so that it overlaps and secure it using vice clamps.

Saw through both panel thicknesses simultaneously to align the cuts correctly.



PREPARATION BEFORE WELDING



M10521-1

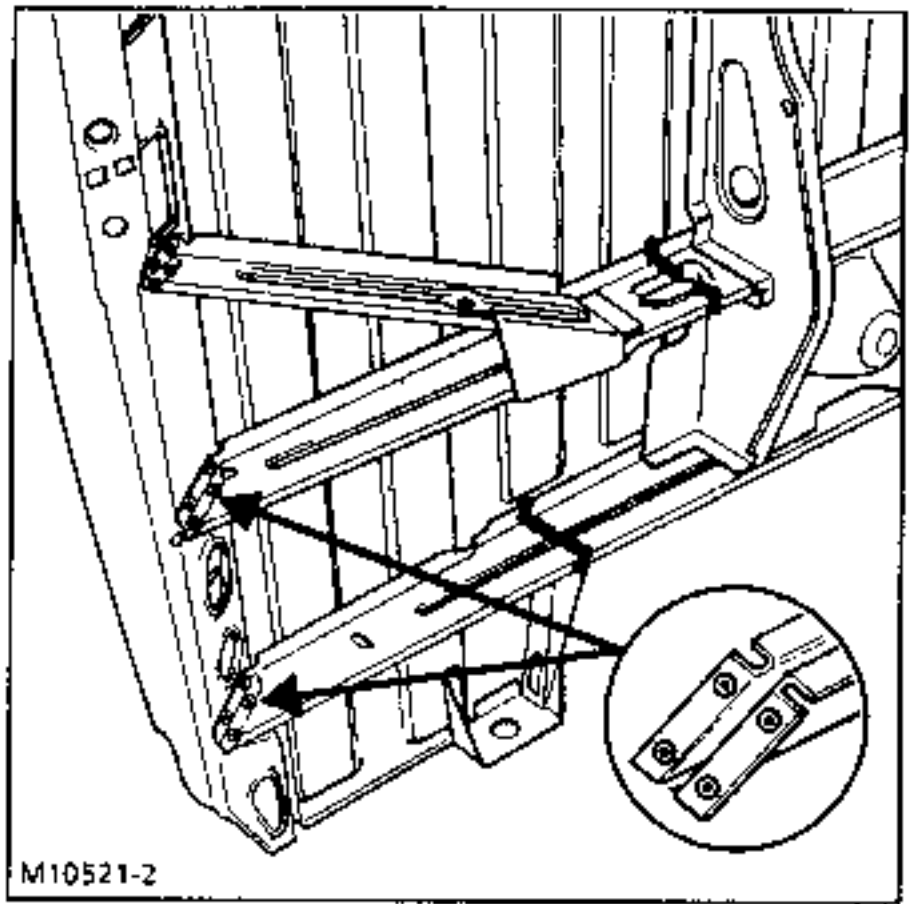


- a = 50 mm
- b = 190 mm
- c = 20 mm
- d = 20 mm

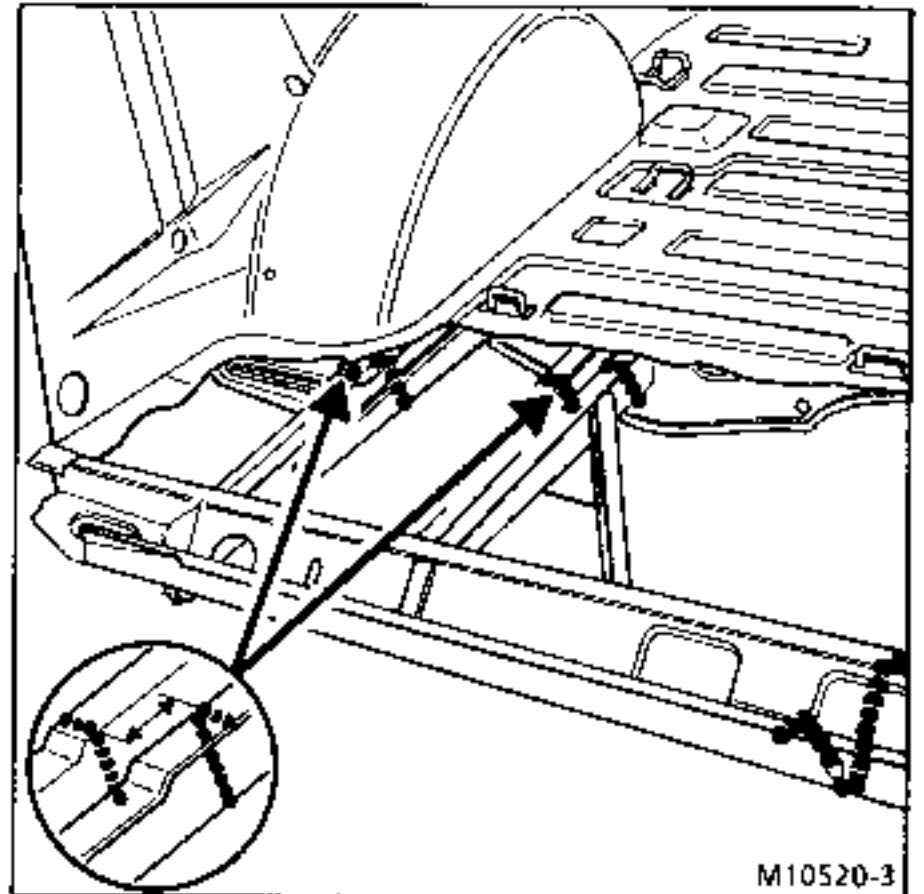
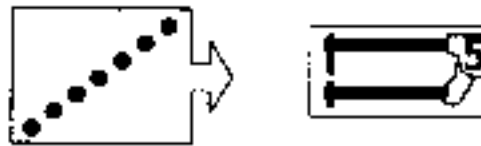
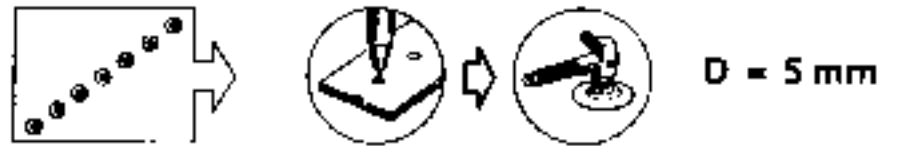
On the two side members cut according to the dimensions indicated above and leaving a gap of 20 mm between the side members and linings.

Fit the new parts and secure them using vice clamps.

WELDING

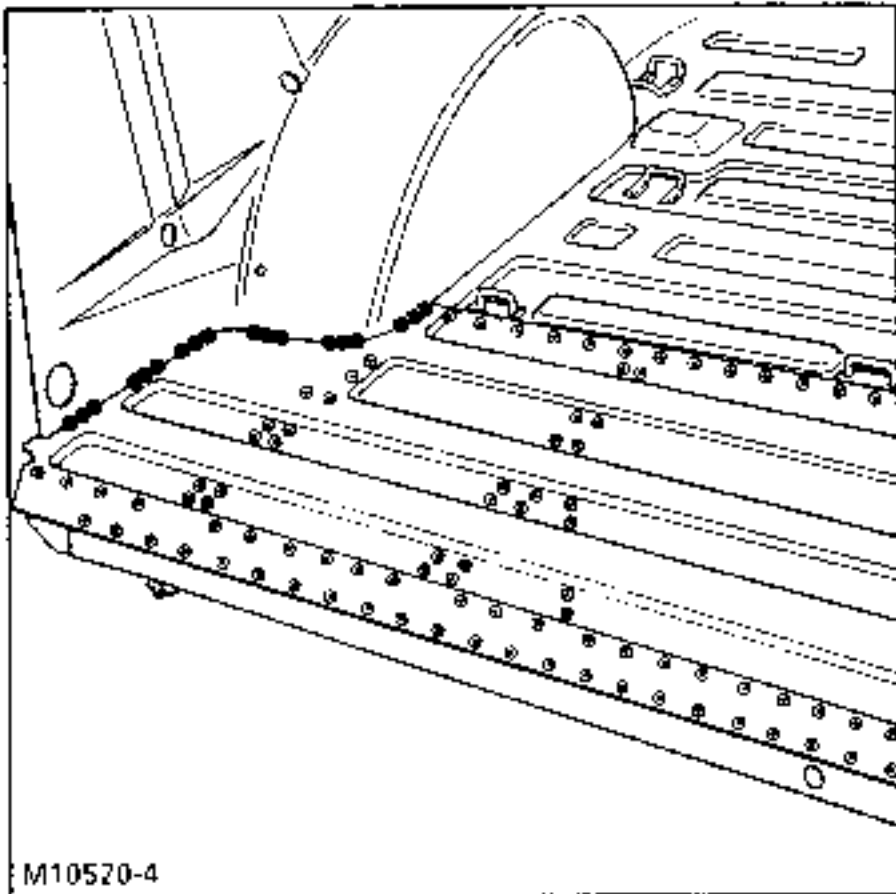


M10521-2



M10520-3





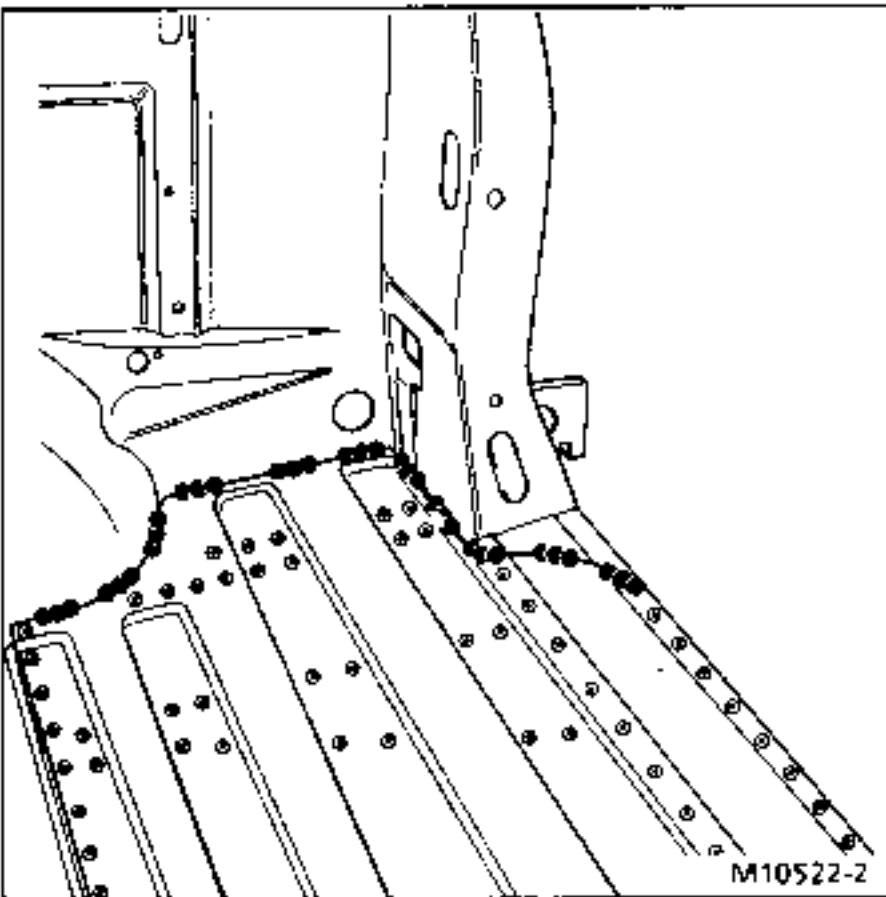
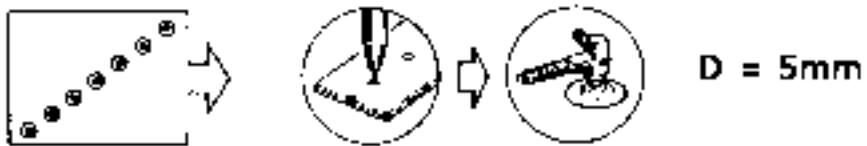
PREPARATION AFTER WELDING

(See Espace Paintwork Manual)

Apply the passivation - zinc paint treatment to the welded areas.

Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

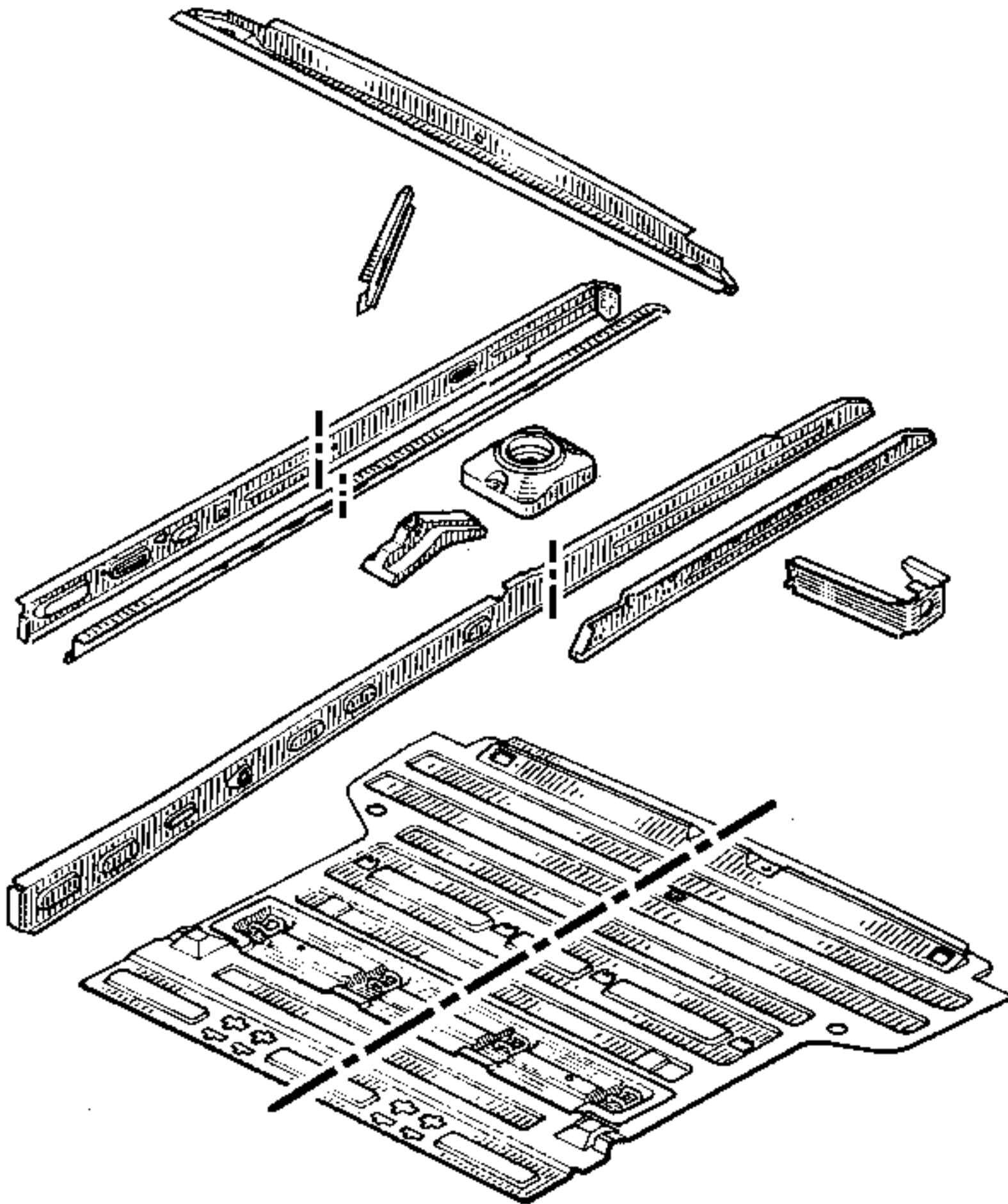
Apply the product for protecting hollow sections after painting.



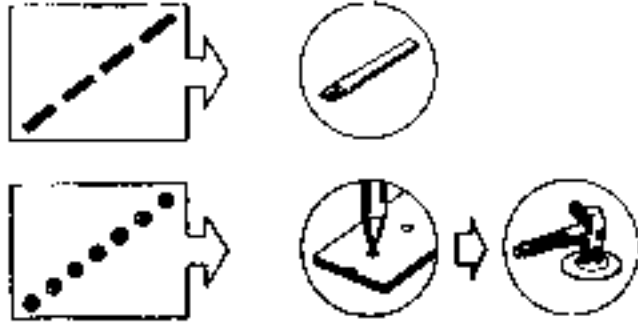
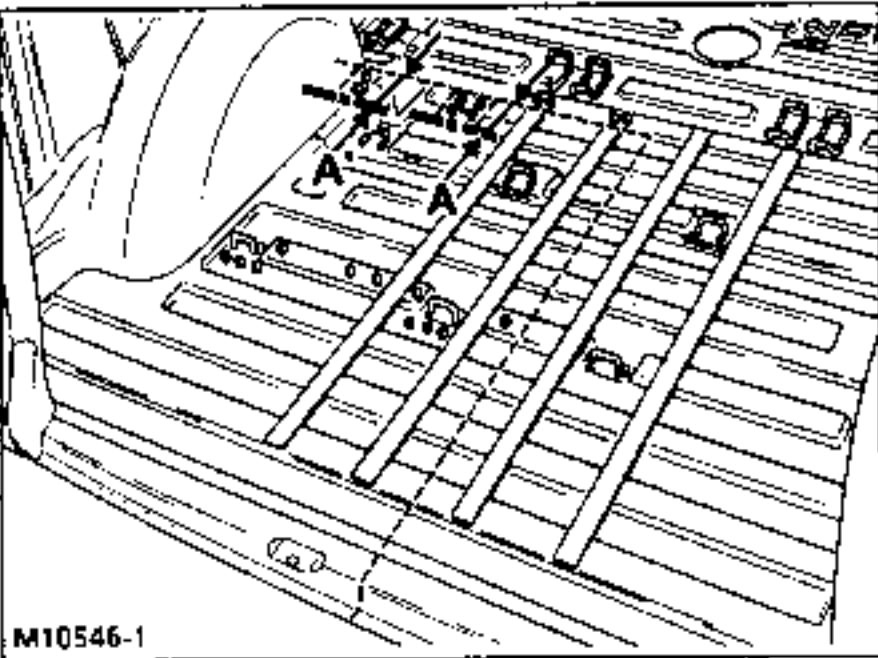
REPLACING

This operation is to be performed on the jig bench. Please consult section 40 for positioning the components.

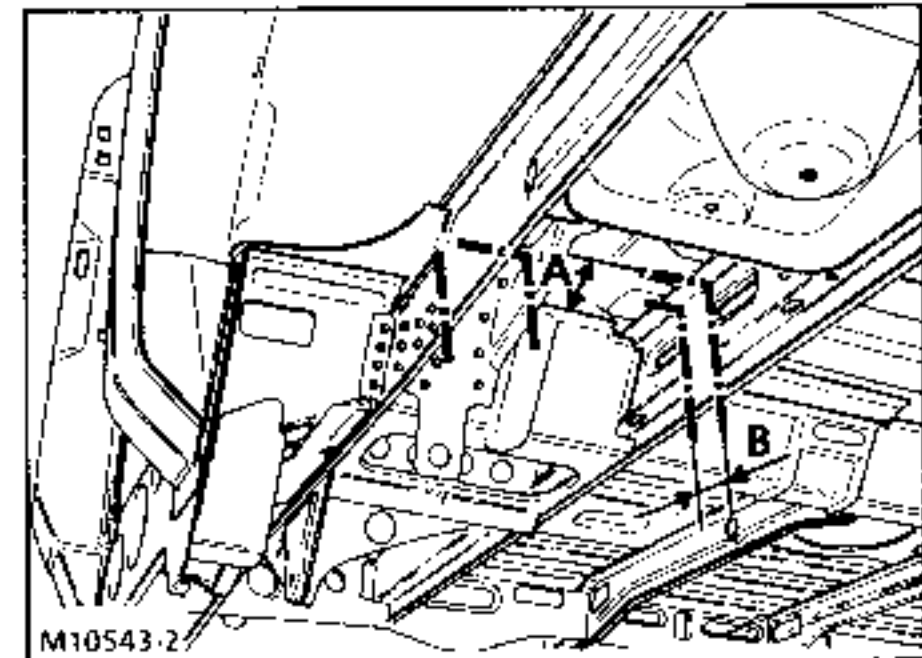
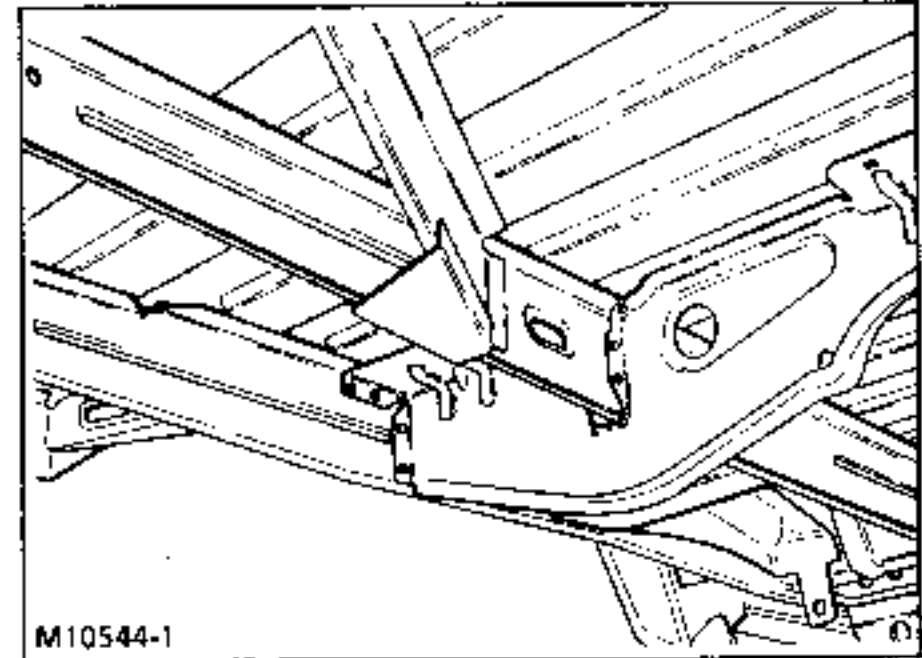
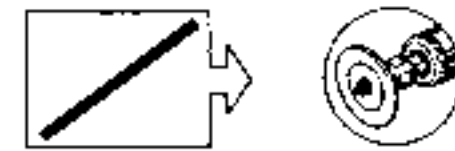
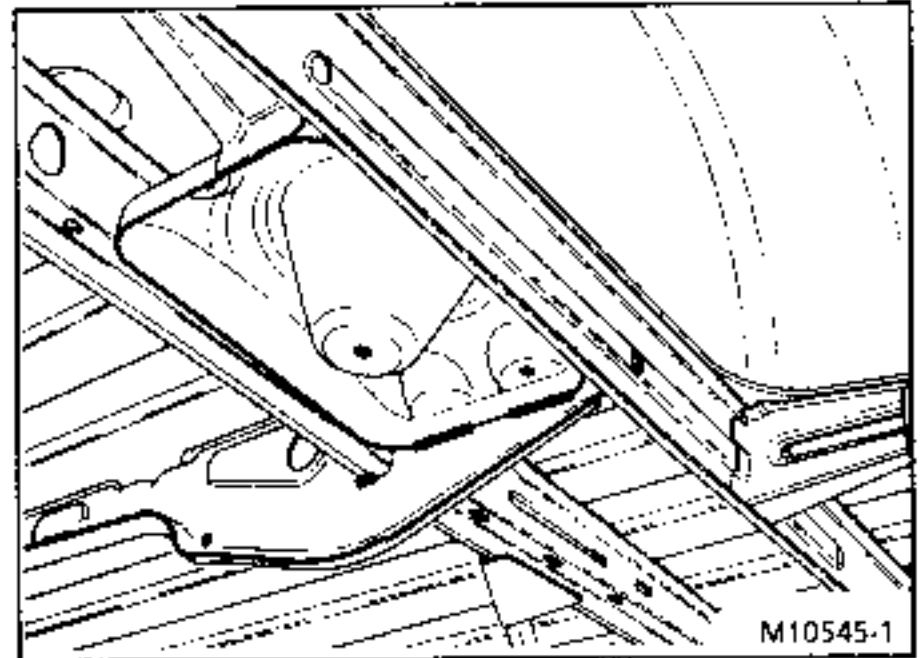
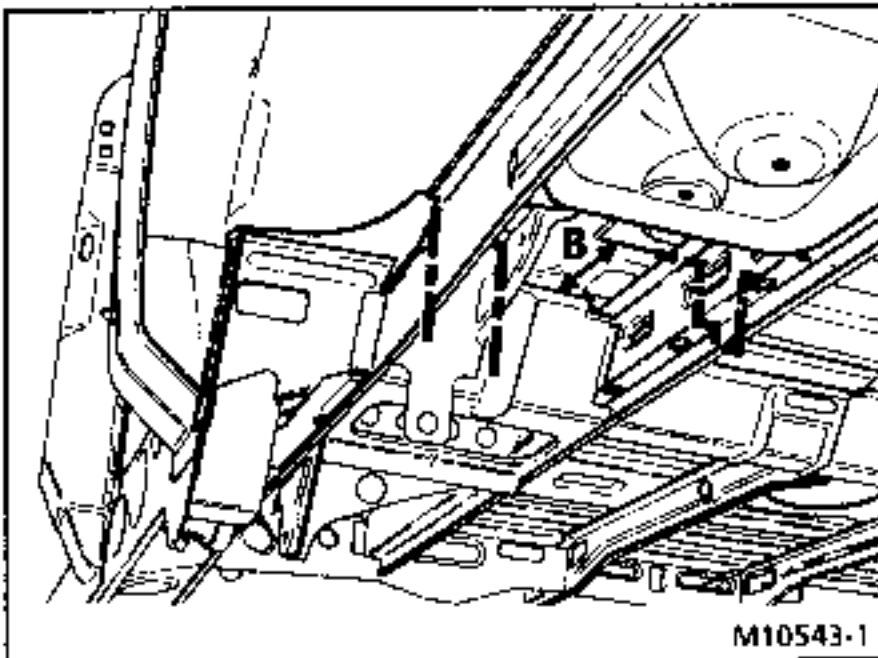
COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



CUTTING OUT - UNPICKING



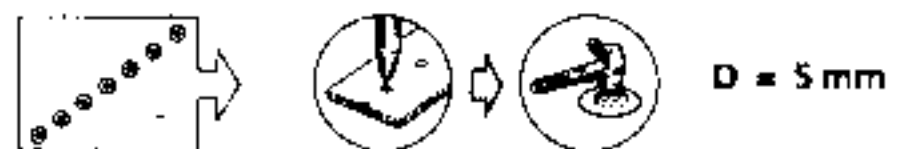
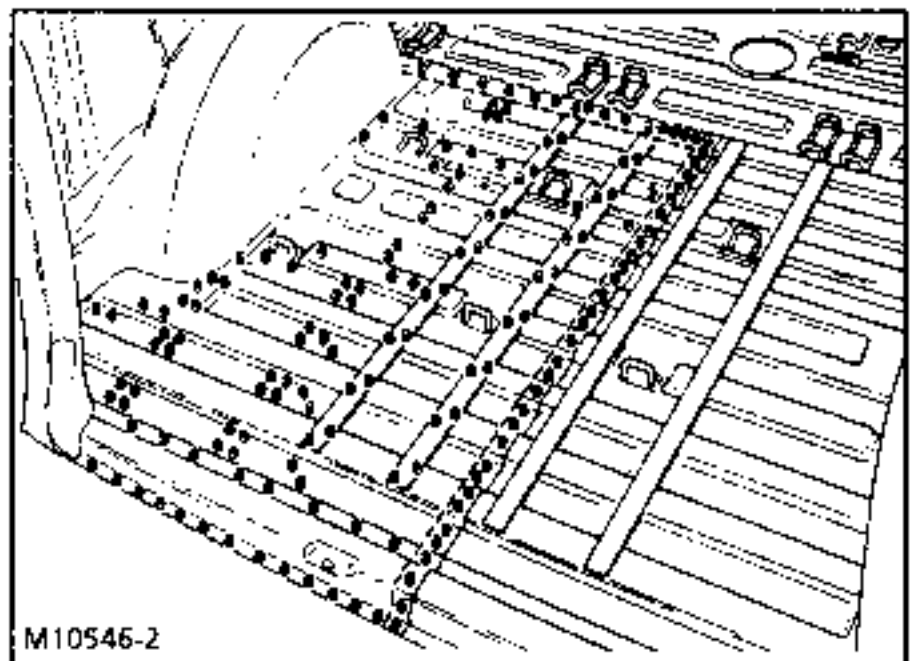
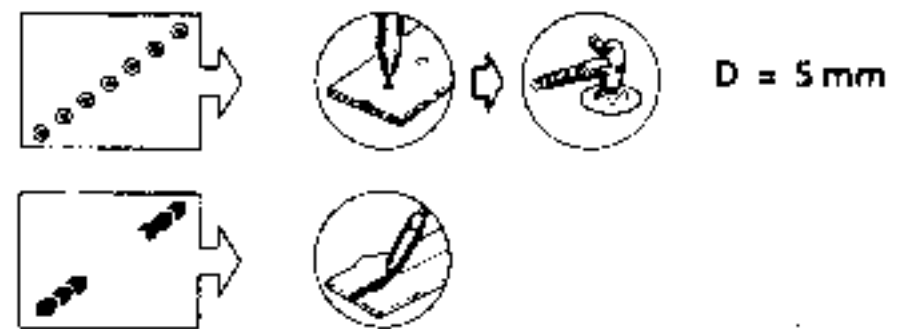
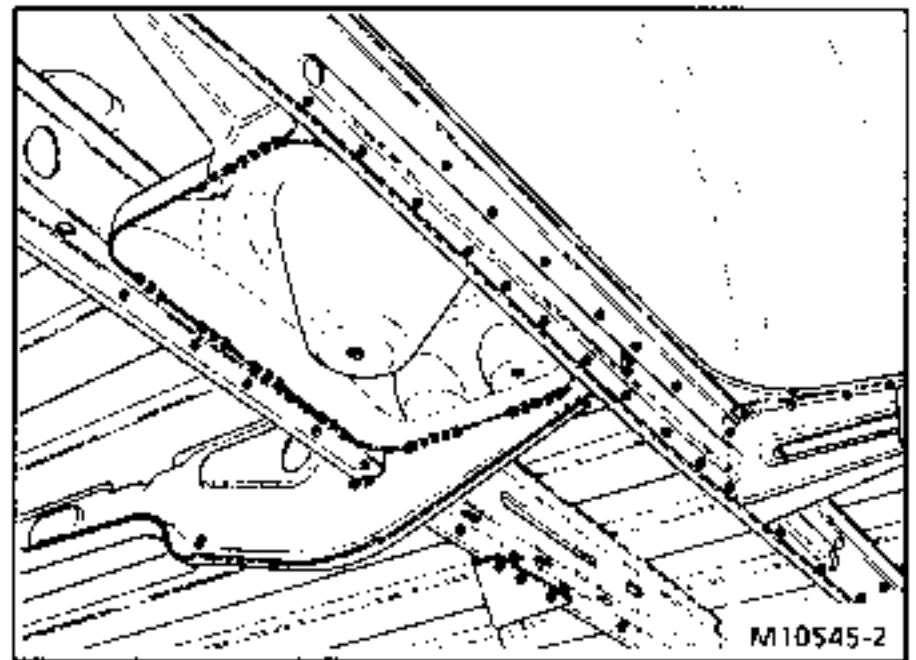
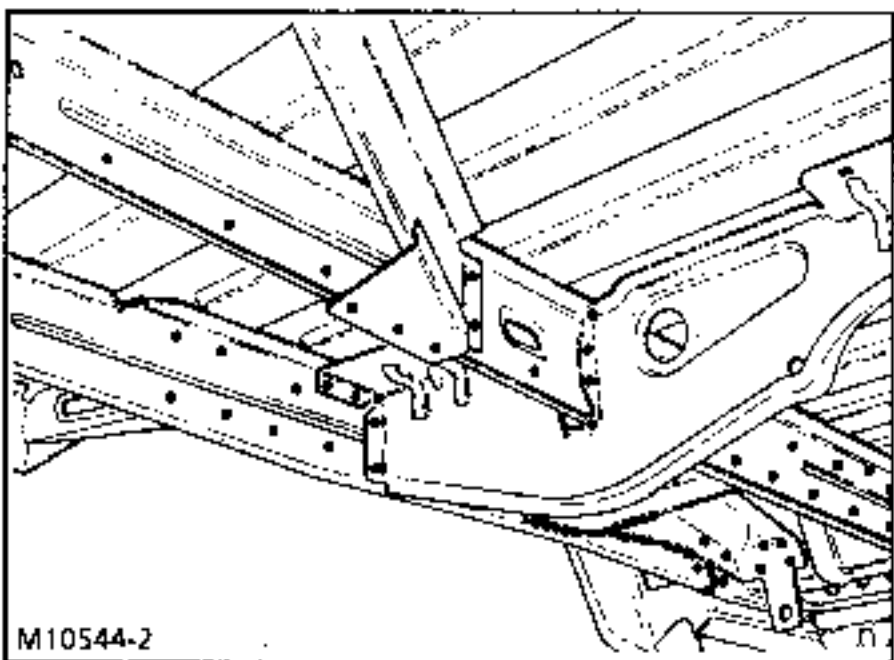
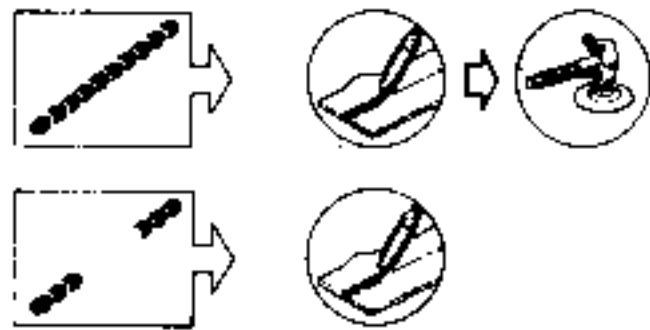
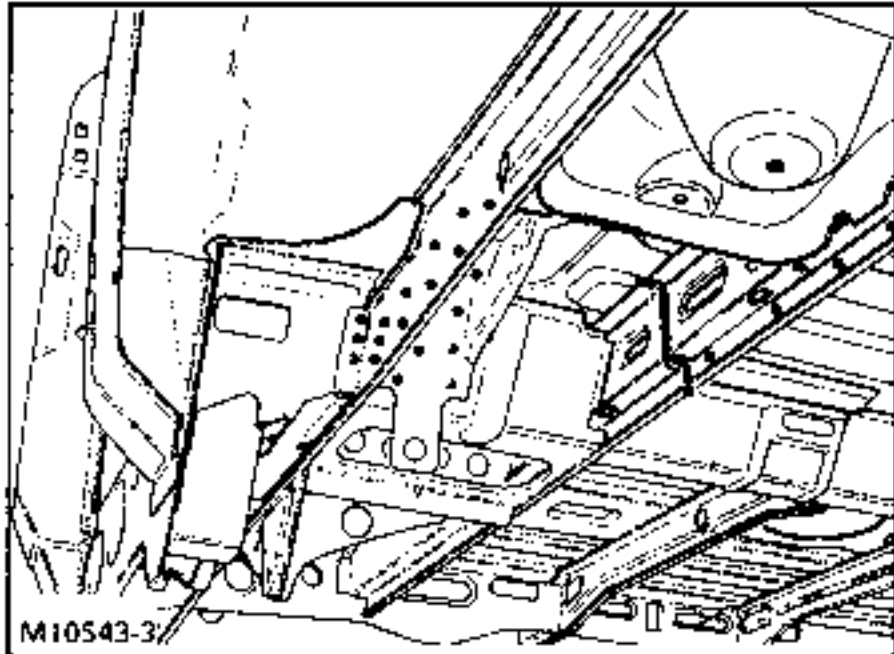
A - A' = 135 mm



PREPARATION BEFORE WELDING

After cutting the parts required for repairs from the new parts, fit them in place to align the cuts.

WELDING 



Please consult the relevant sections for refitting the cross member and replacing the tailgate pillar and wheelarch if necessary.

PROTECTION AFTER WELDING

(See Espace Paintwork Manual)

Apply the passivation - zinc paint treatment to the welded areas.

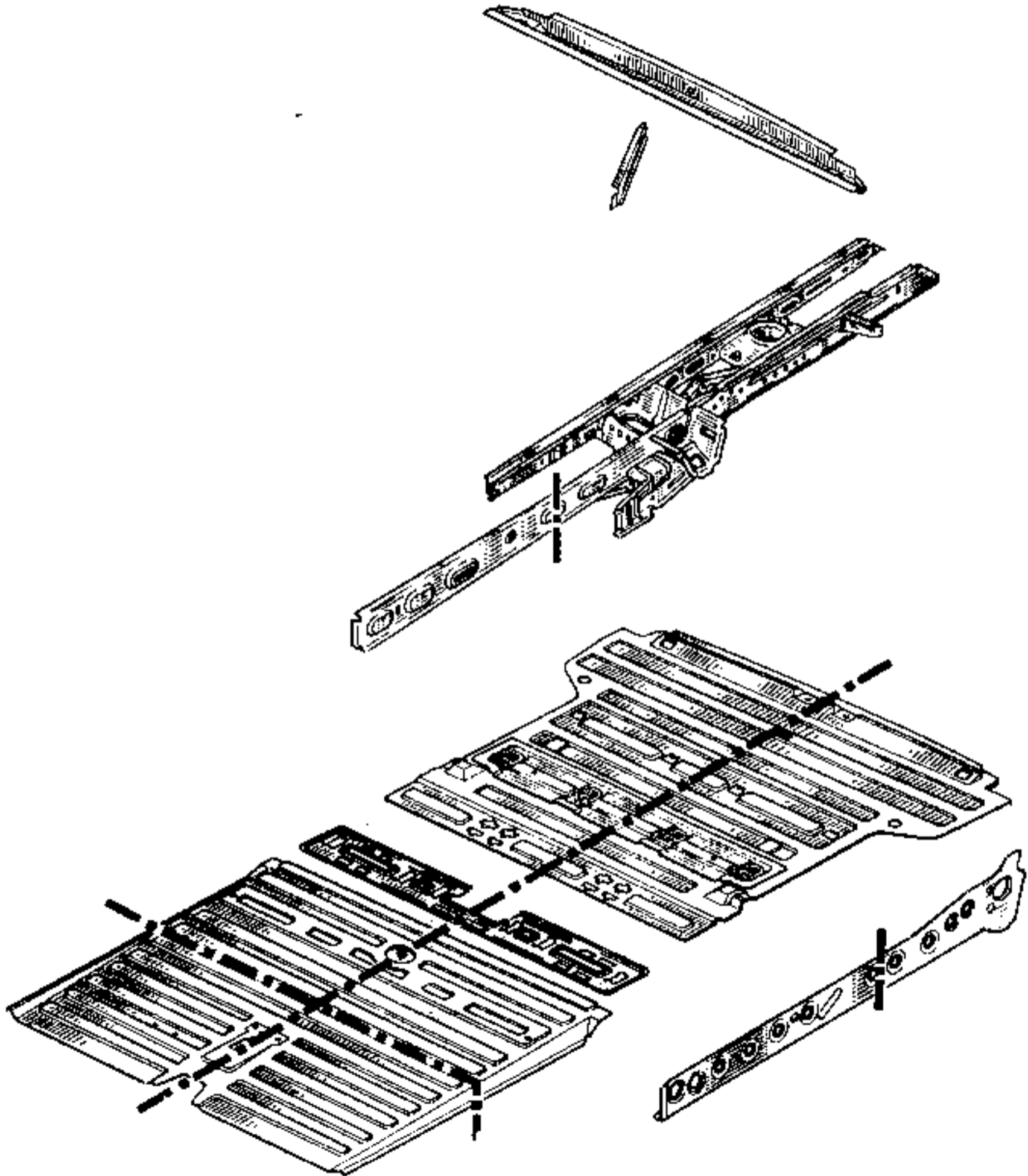
Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

Apply the product for protecting hollow sections after painting.

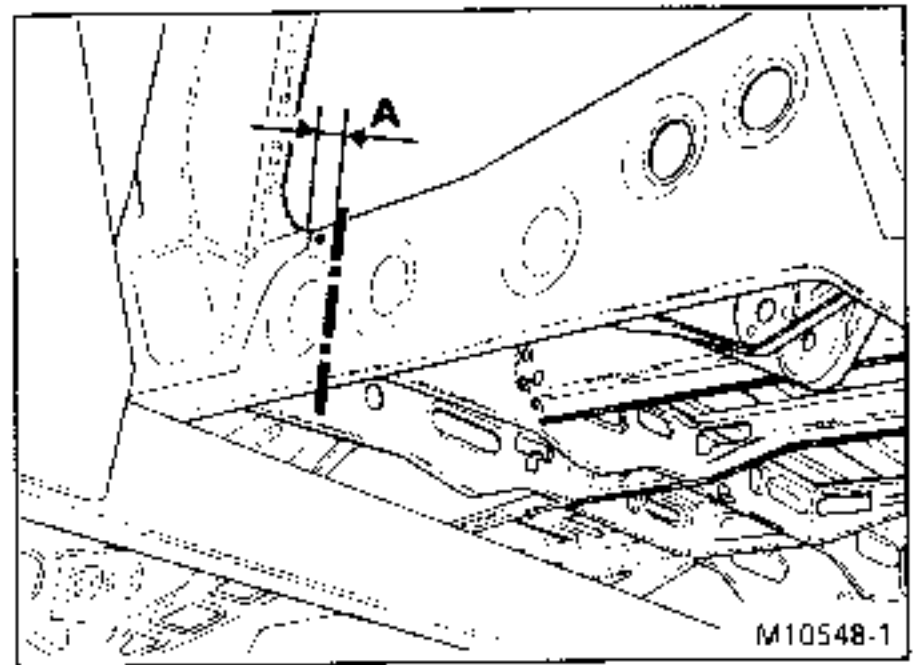
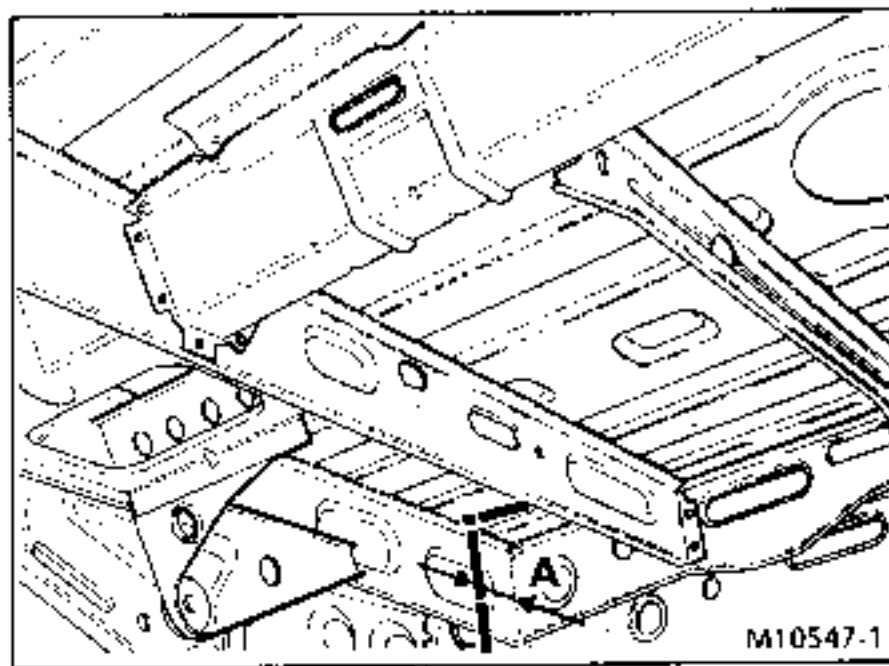
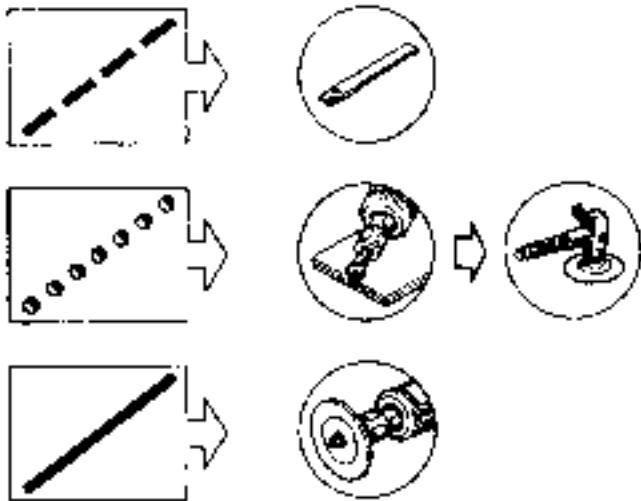
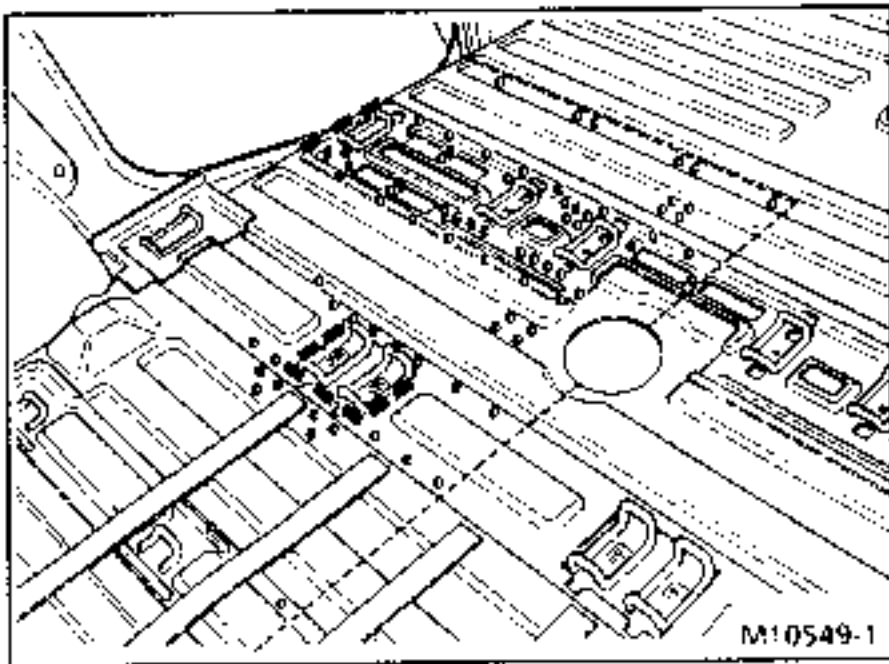
REPLACING

This operation is to be performed on the jig bench. Please consult section 40 for positioning the components.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT




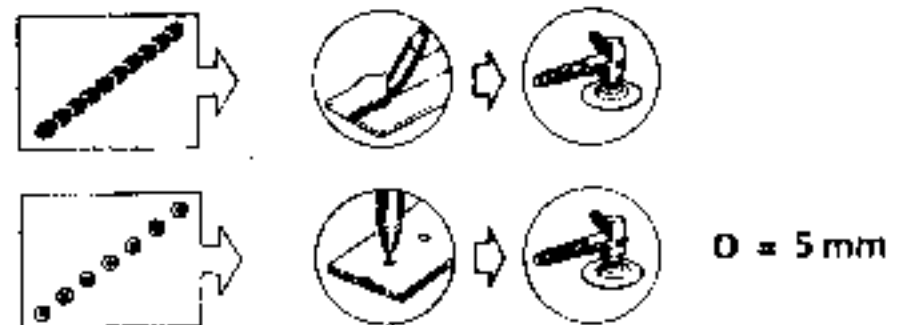
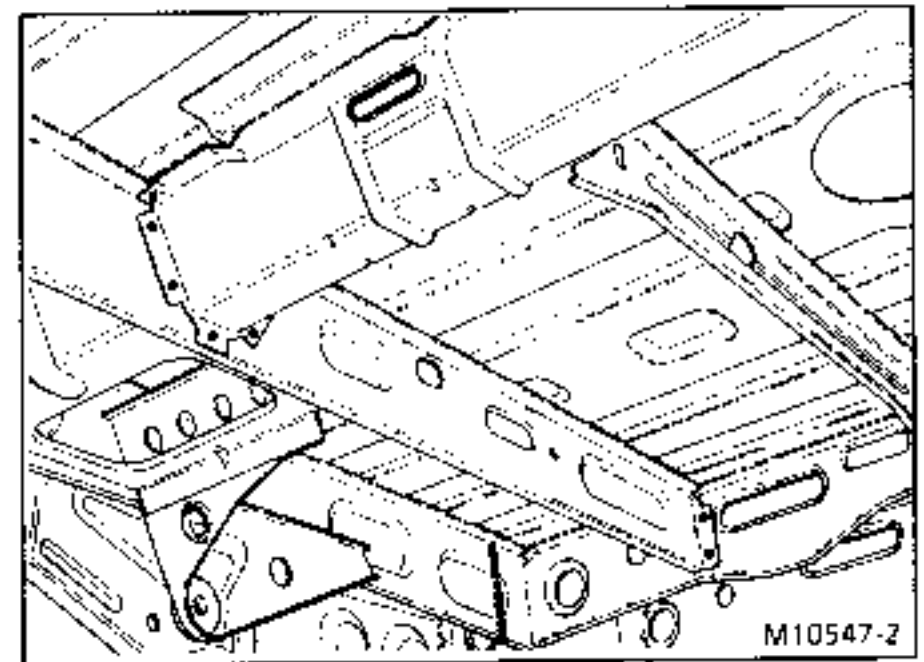
CUTTING OUT - UNPICKING

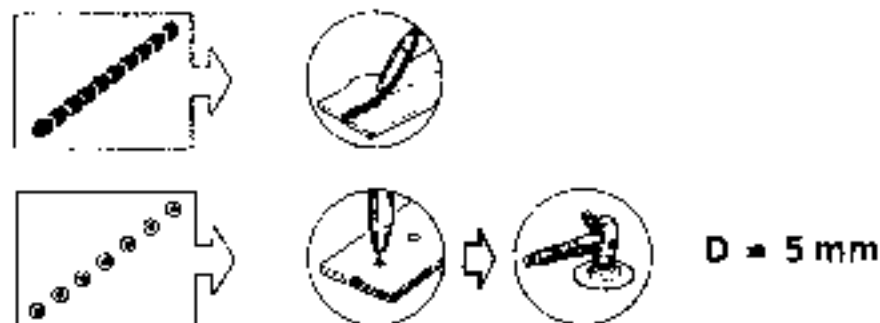
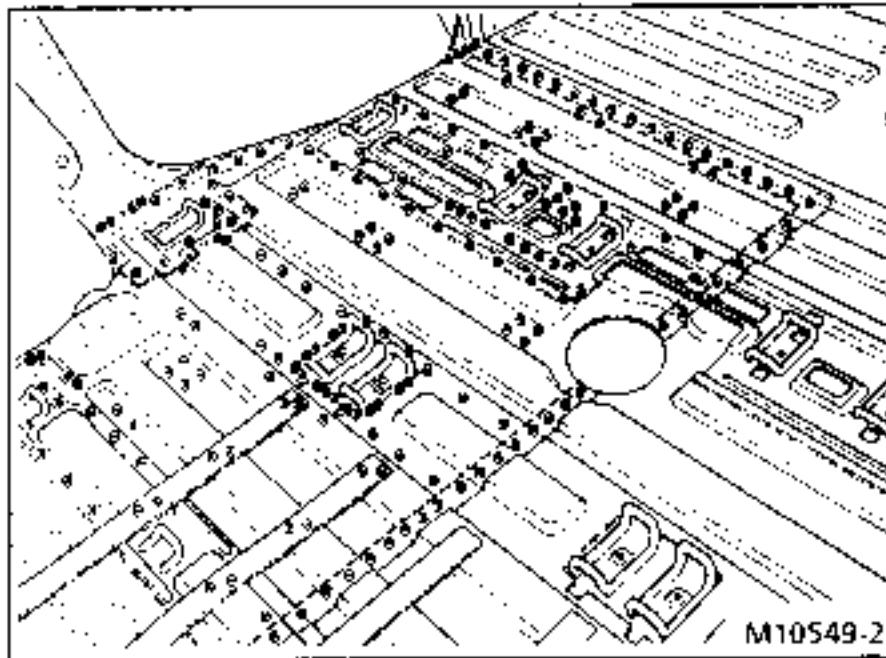
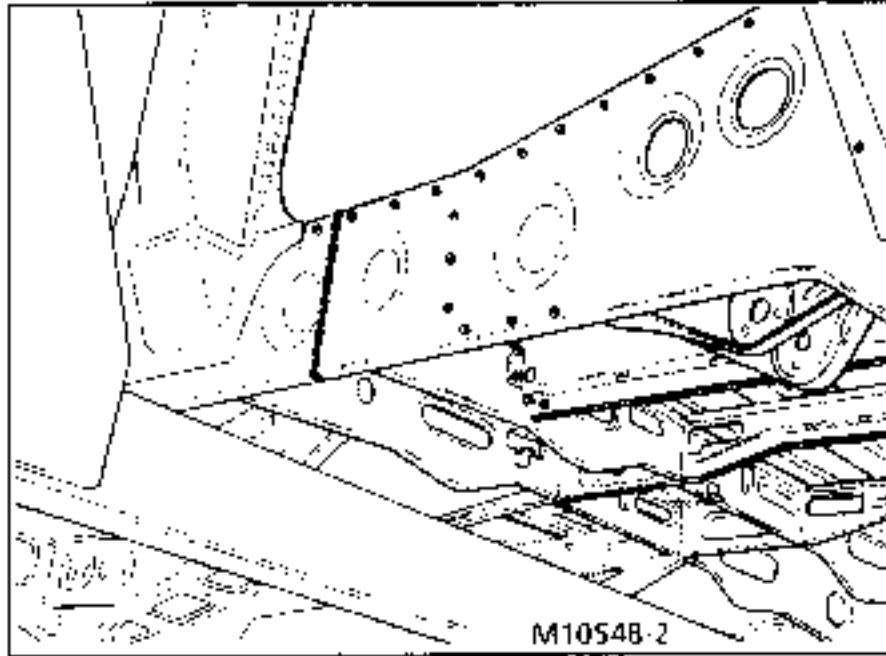


PREPARATION BEFORE WELDING

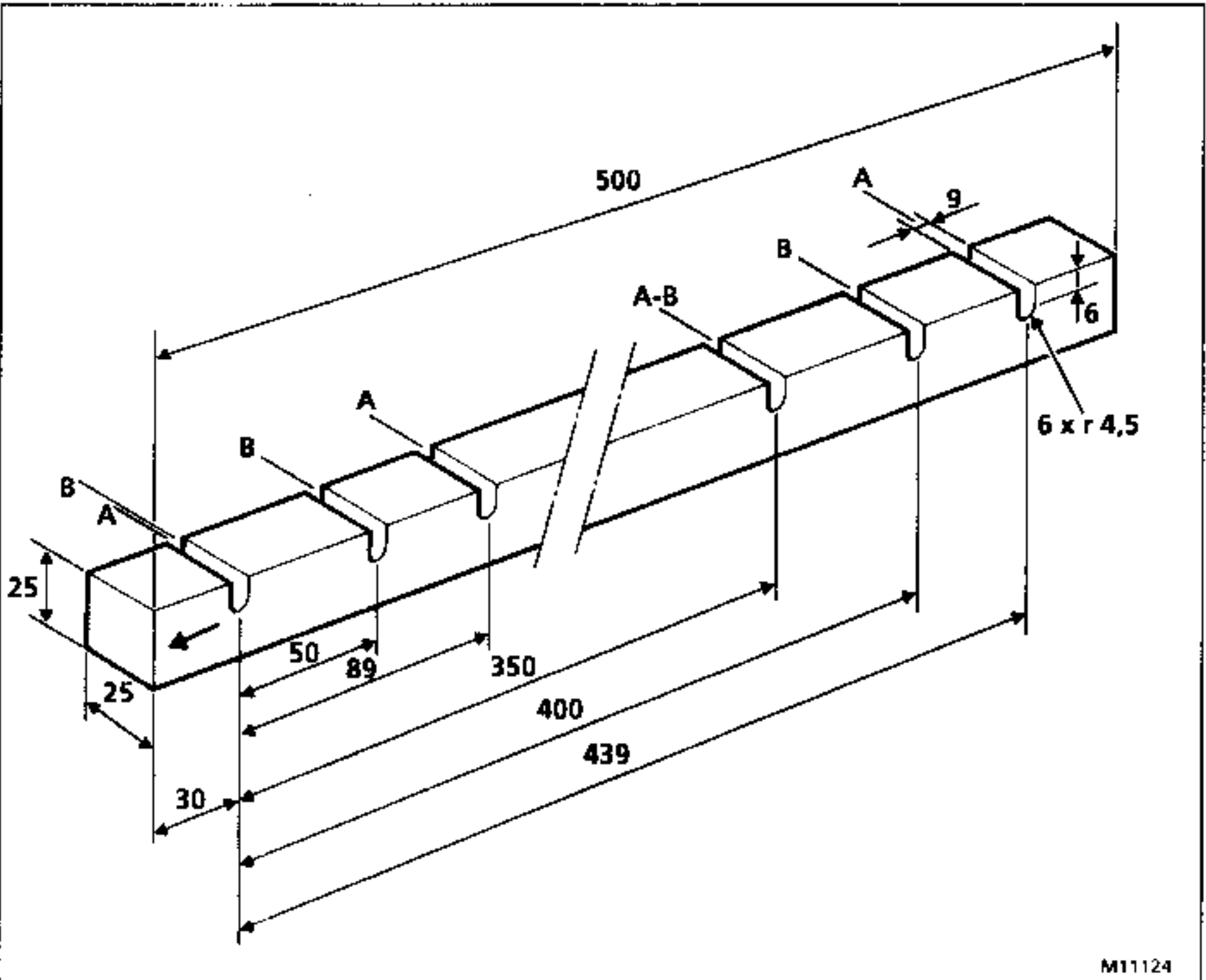
After taking the parts required for the repair from the new parts, fit them in place to align the cuts.

WELDING 





IMPORTANT: When positioning the anchorages for the seats in the 2nd and 3rd rows, a positioning jig must be used in order to ensure that the seats are correctly locked. This jig is to be made up as shown in the diagram on the next page.



- A 2nd row anchorage
- B 3rd row anchorage

To be made up from a 25 x 25 x 500 profiled section.

PROTECTION AFTER WELDING

(See Espace Paintwork Manual)

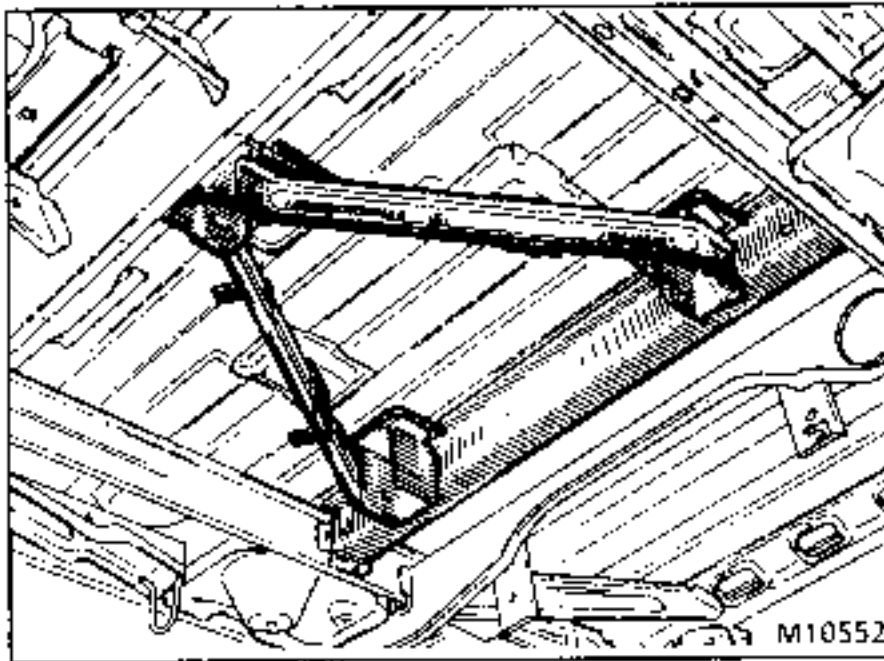
Apply the passivation - zinc paint treatment to the welded areas.

Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

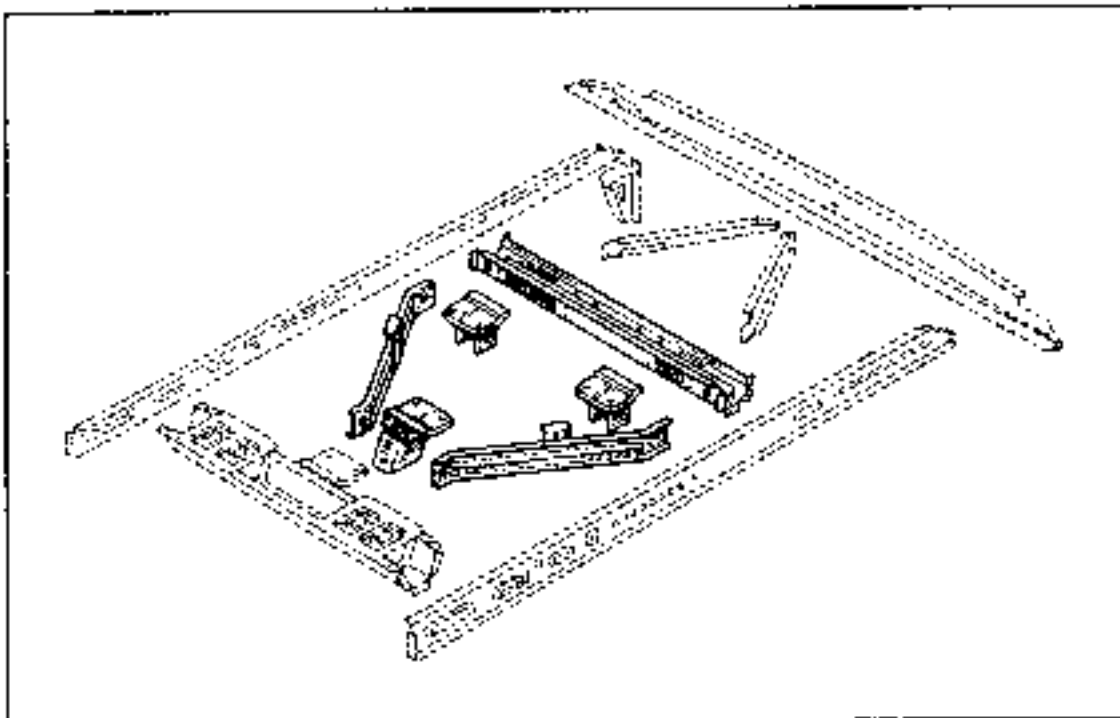
Apply the product for protecting hollow sections after painting.

REPLACING

This operation is to be performed on the jig bench. Please consult section 40 for positioning the components.

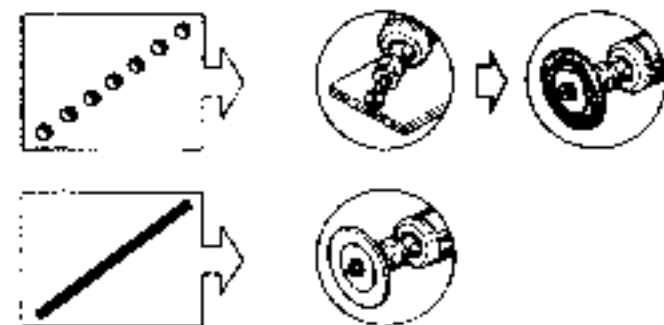
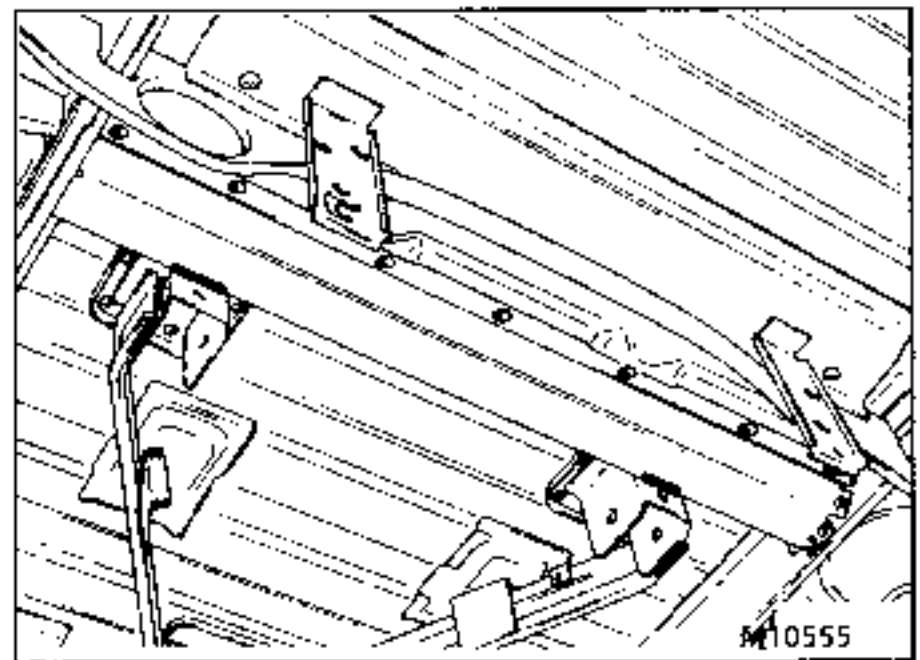
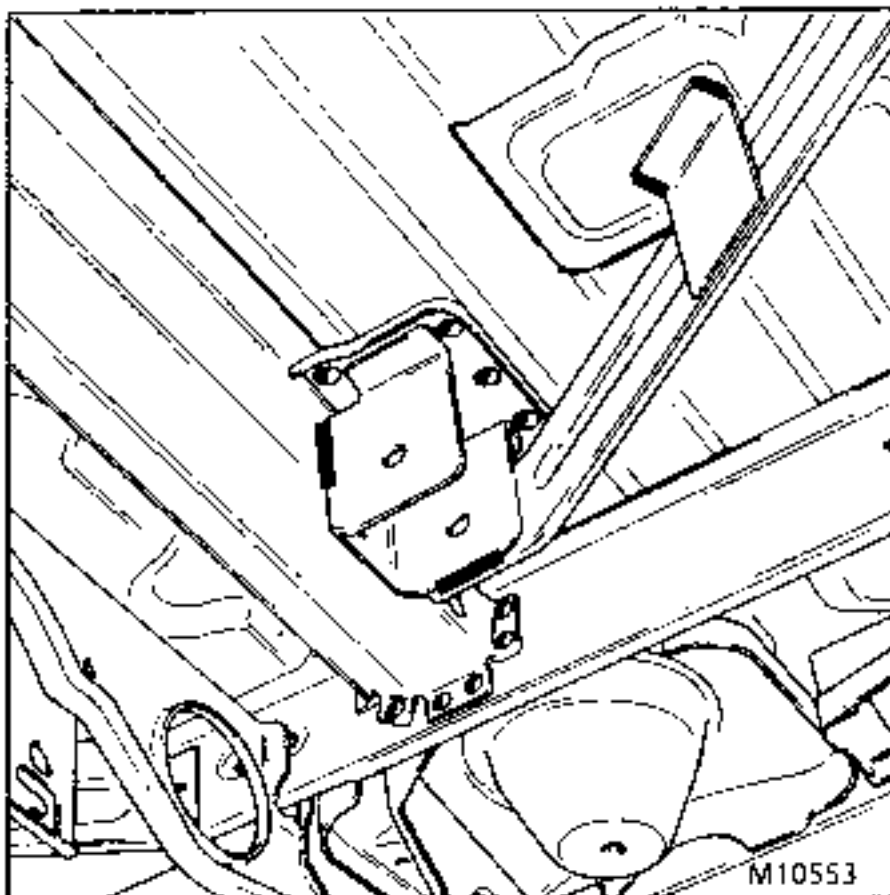
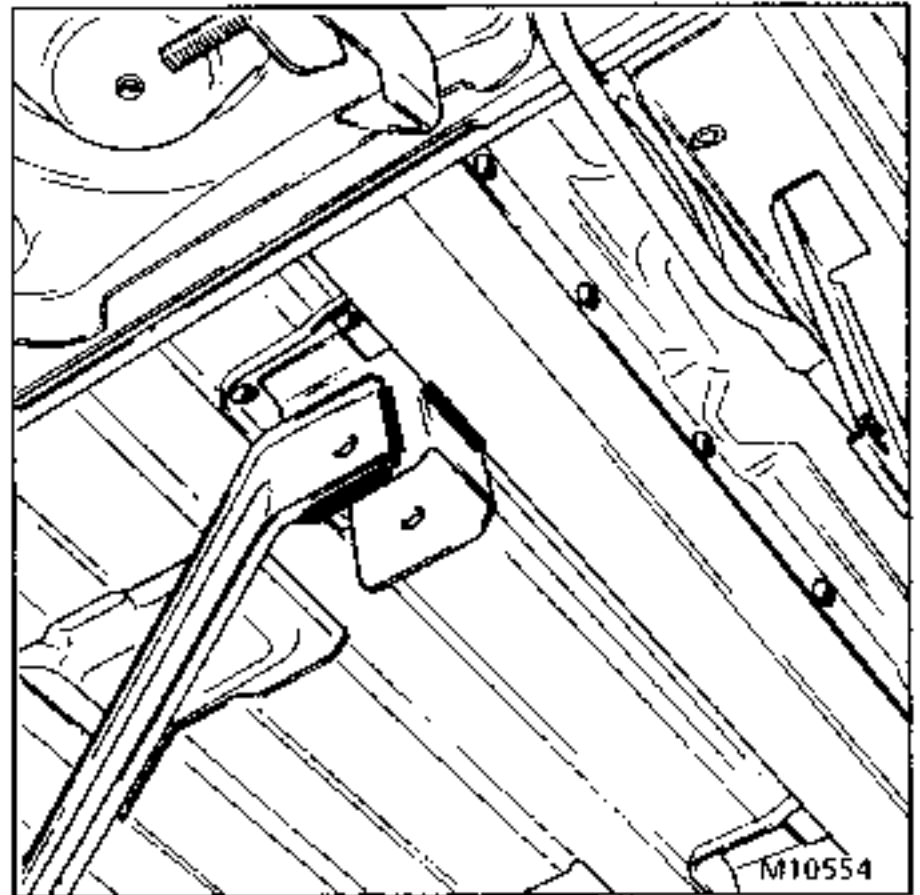
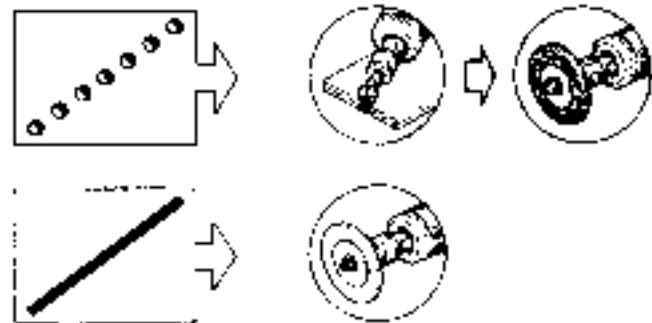
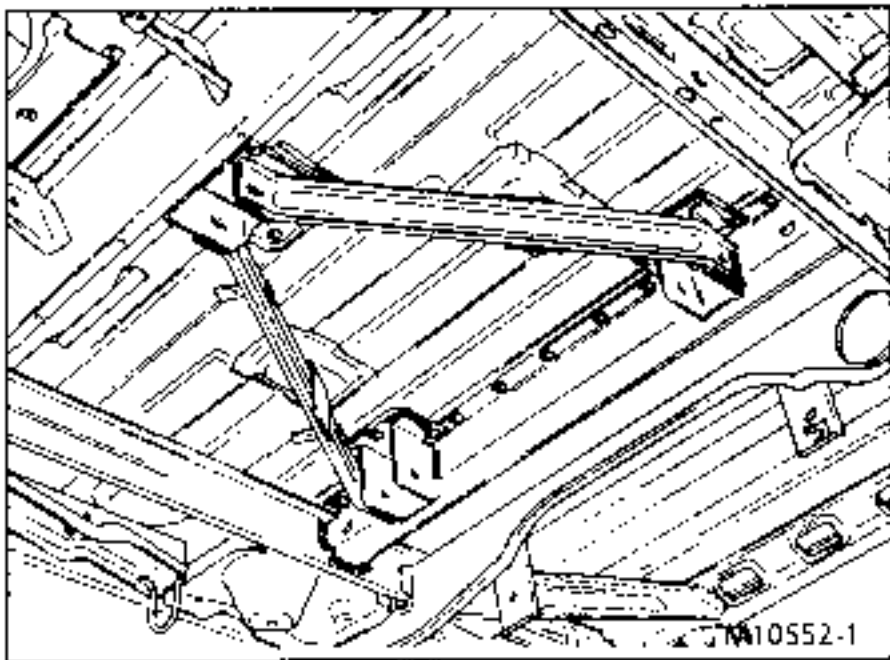


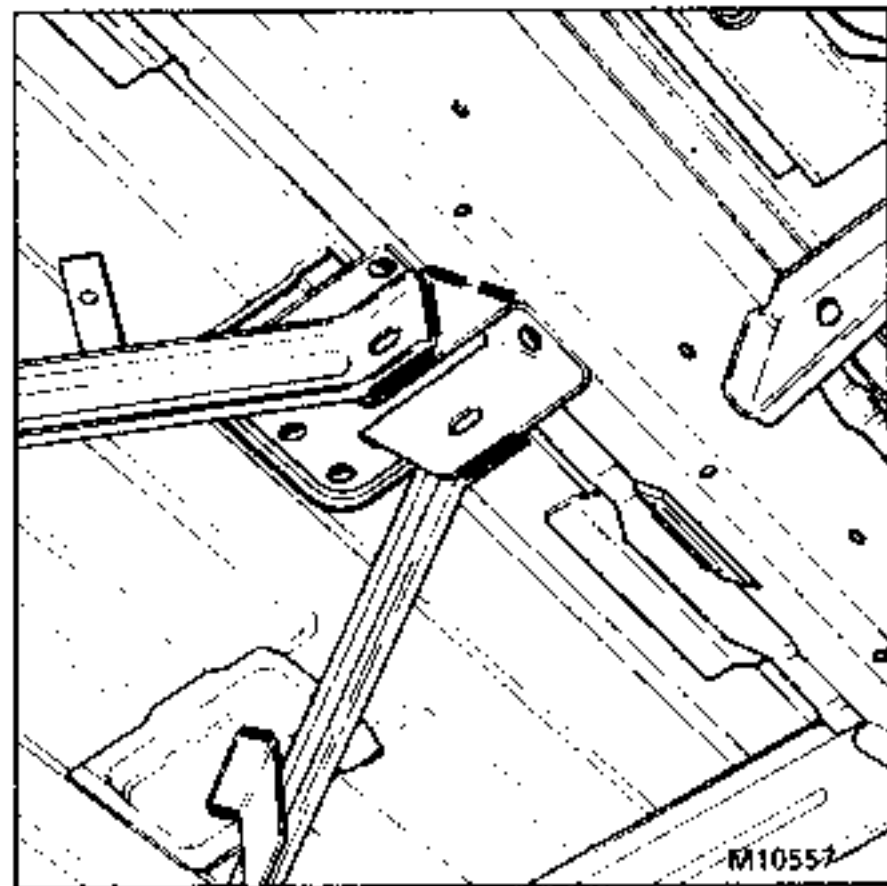
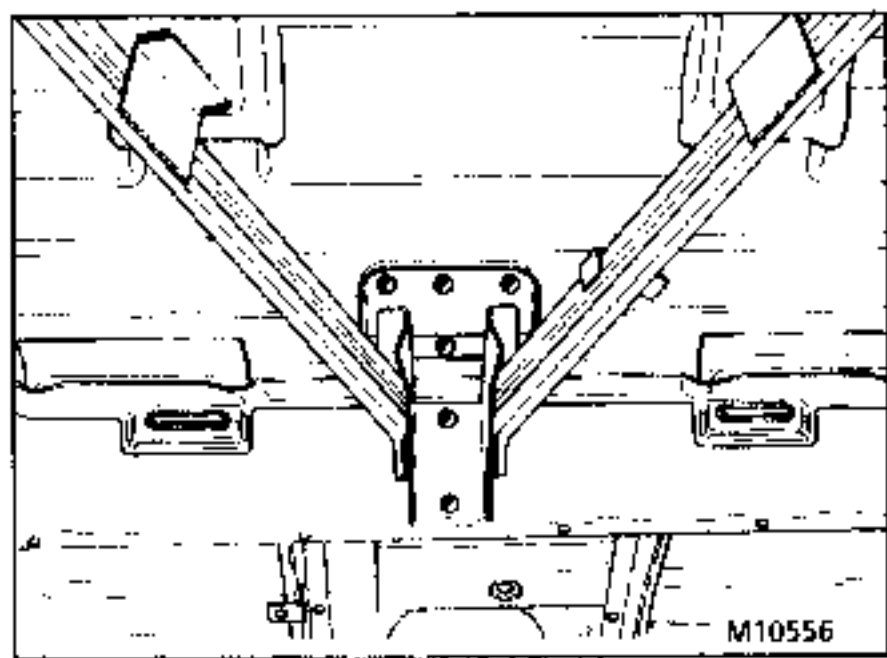
View of the axle mounting assembly.

**COMPOSITION OF THE PARTS AS SUPPLIED
BY THE PARTS DEPARTMENT**

Assembly of parts constituting the mounting for the rear axle on the structure.

CUTTING OUT - UNPICKING



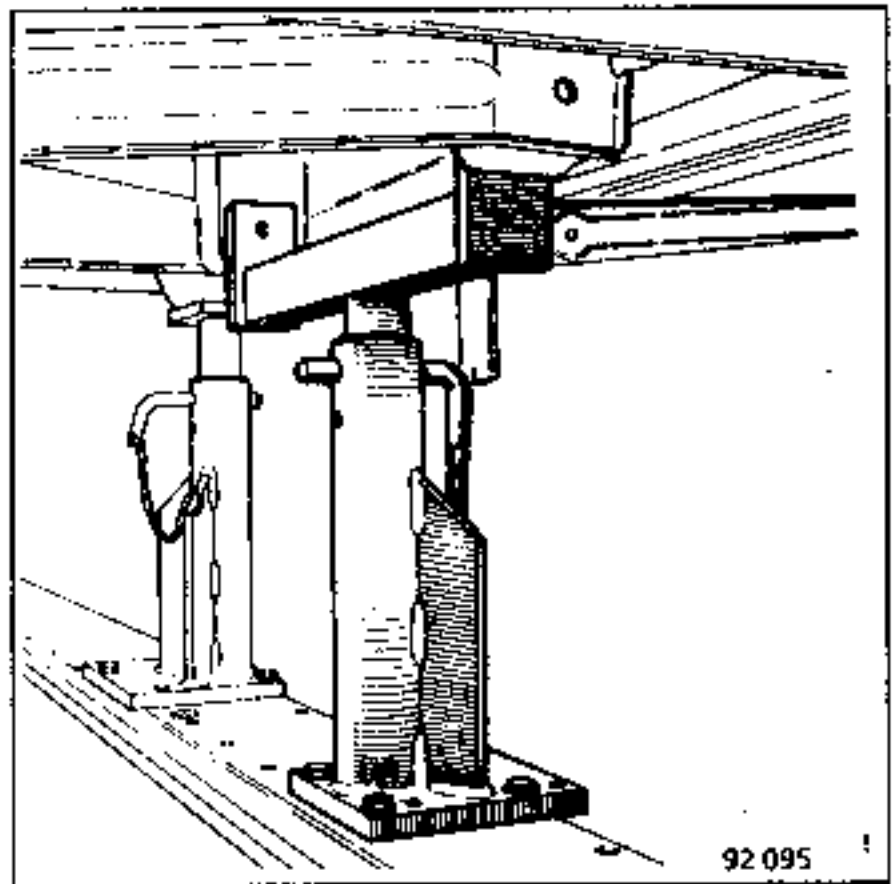


Remove the damaged part following the instructions in the above diagrams (see section on key to symbols).

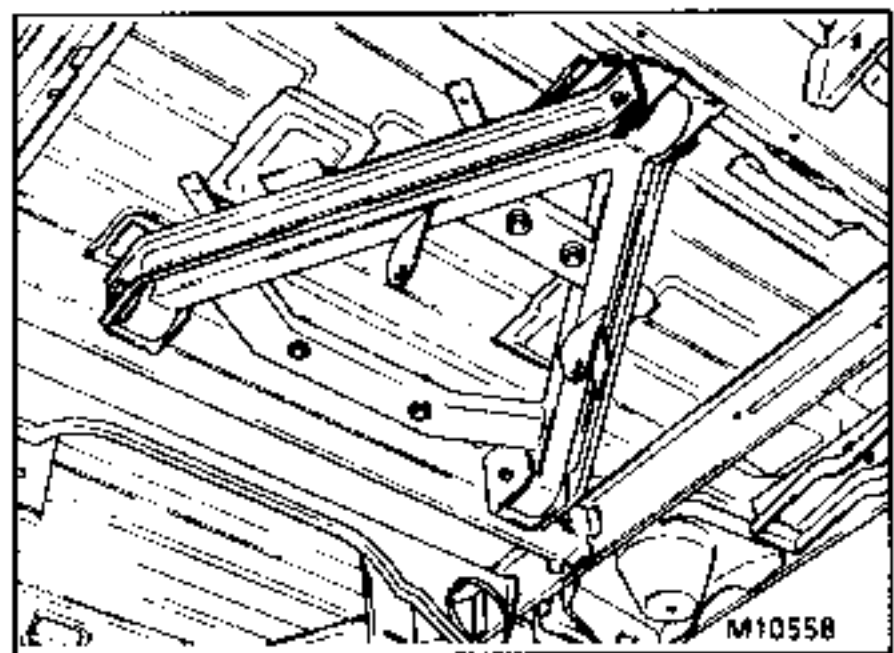
Grind back any pieces of spot weld remaining on the backing panels after unpicking.

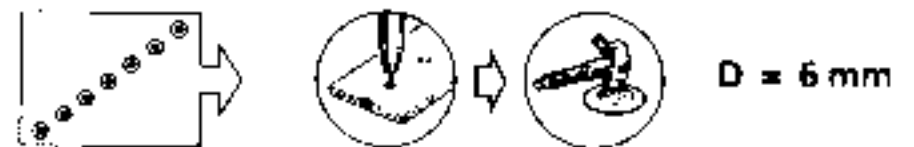
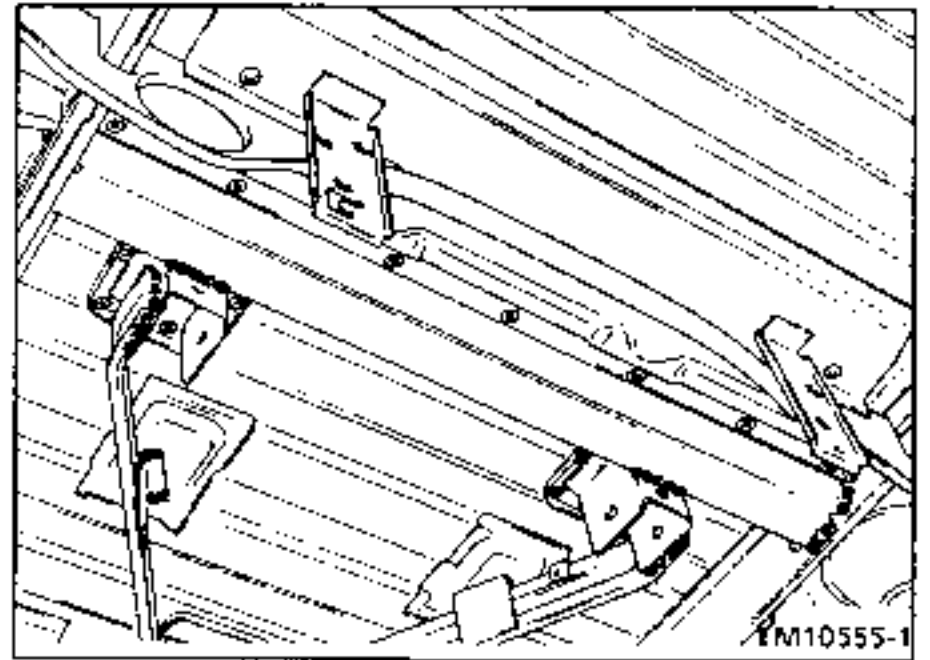
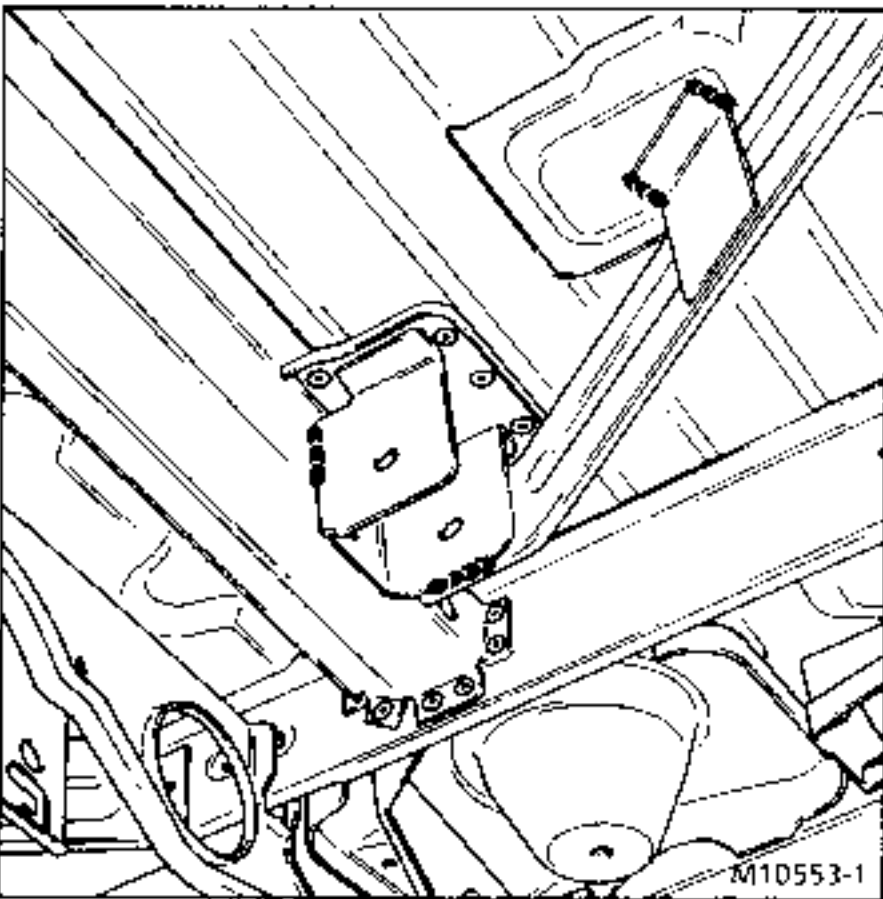
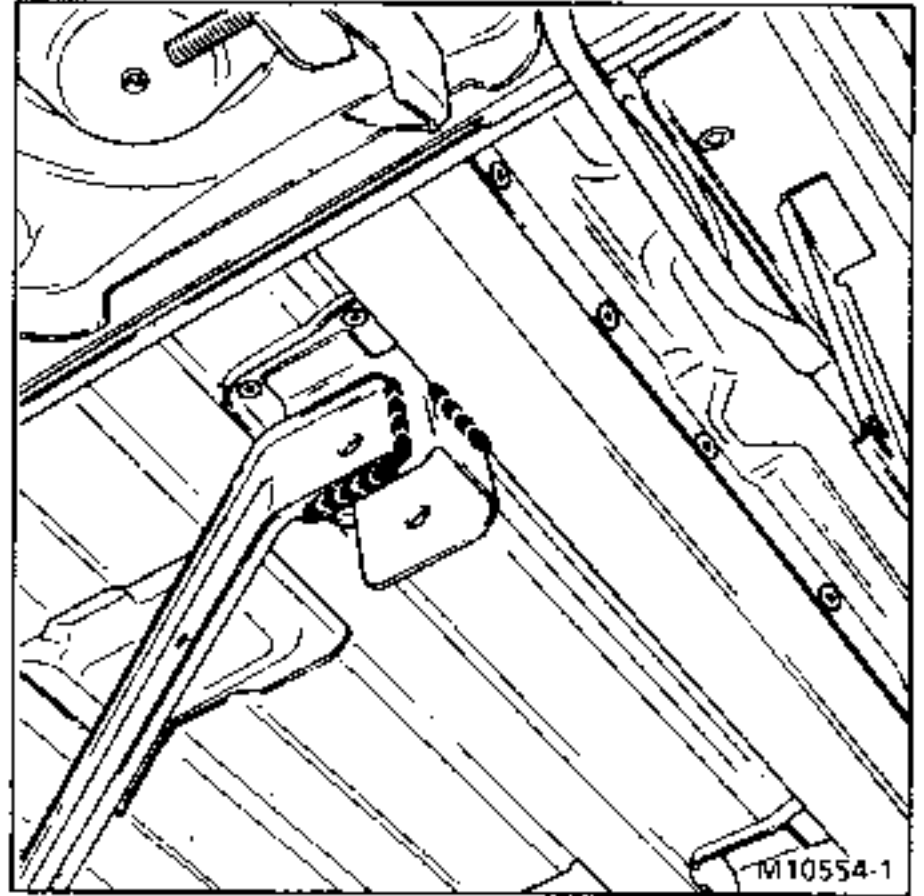
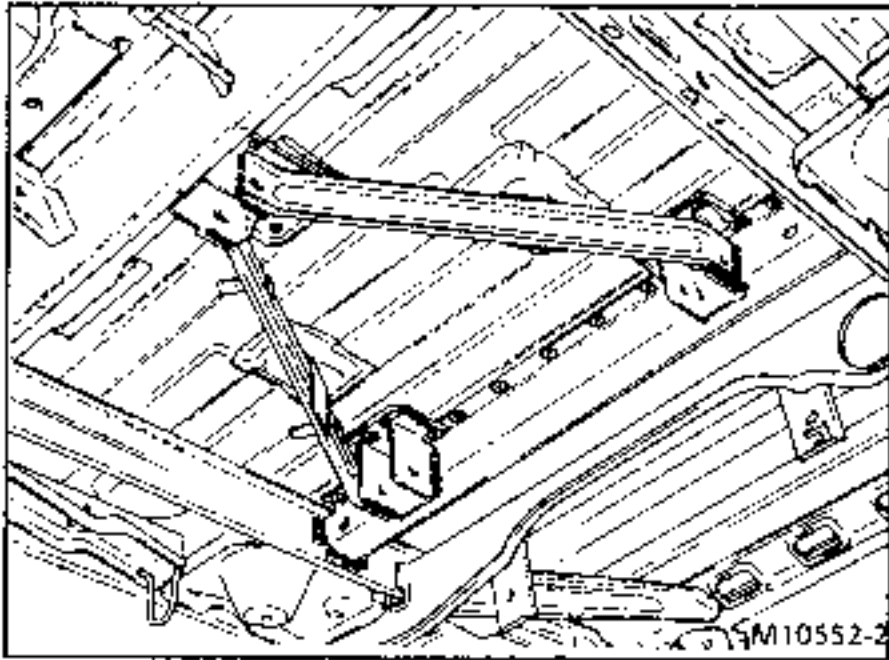
PREPARATION BEFORE WELDING

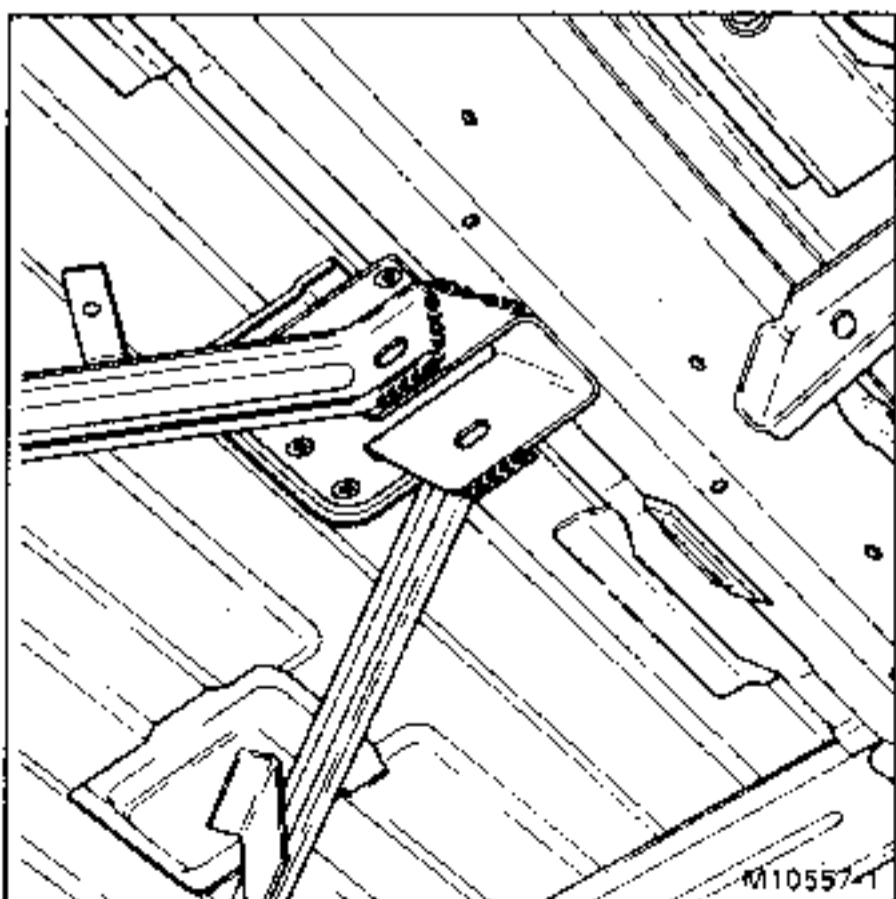
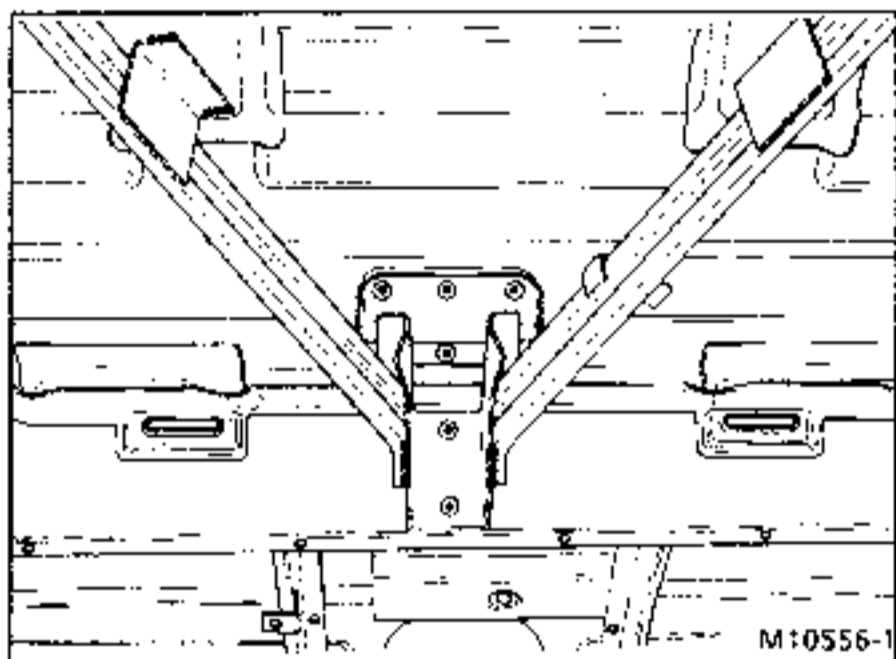
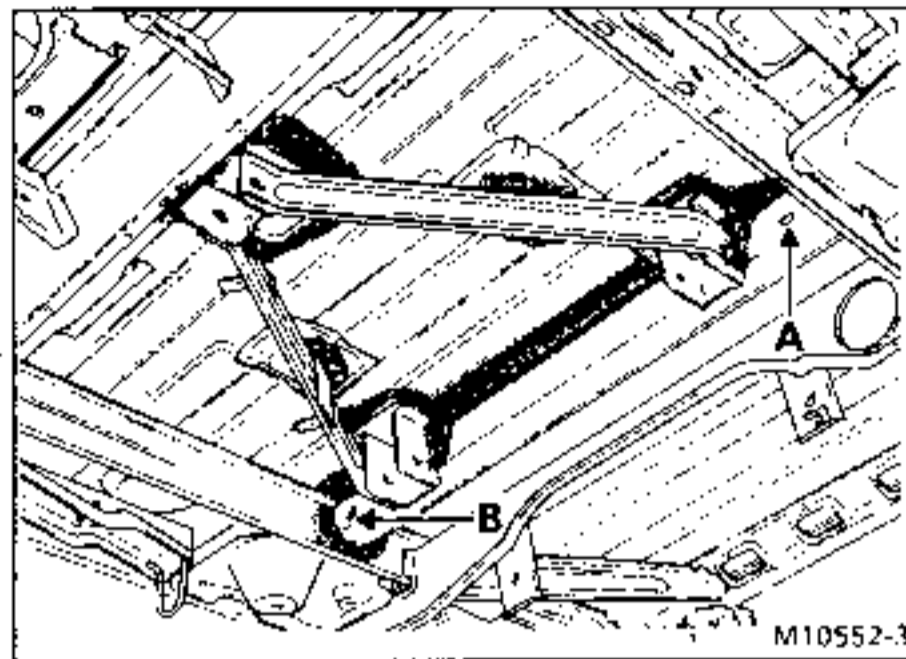
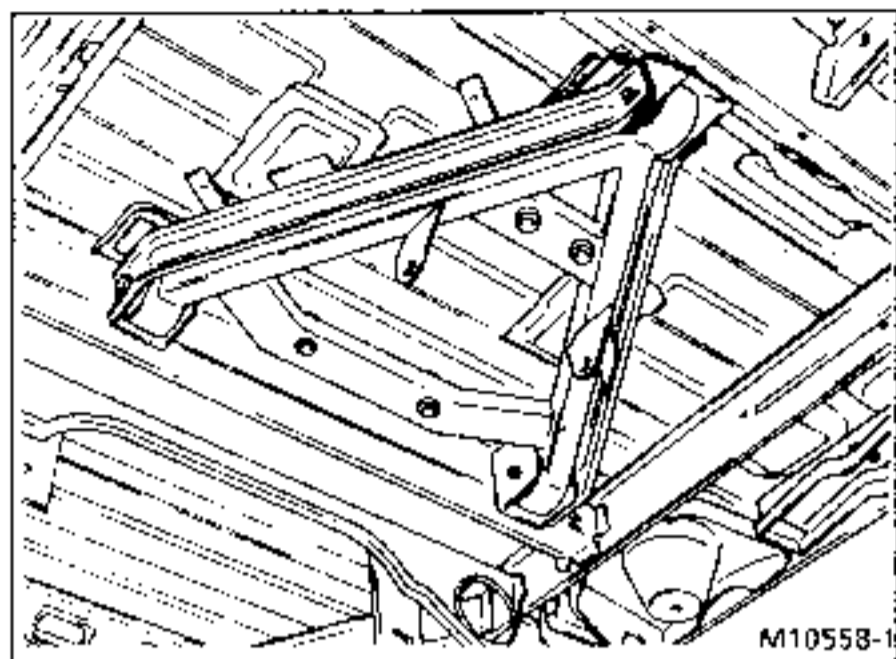
Fit the cross member in place with the axle rear clevises.



Fit in place the front clevis by assembling the axle mounting on the rear clevises.







PROTECTION AFTER WELDING

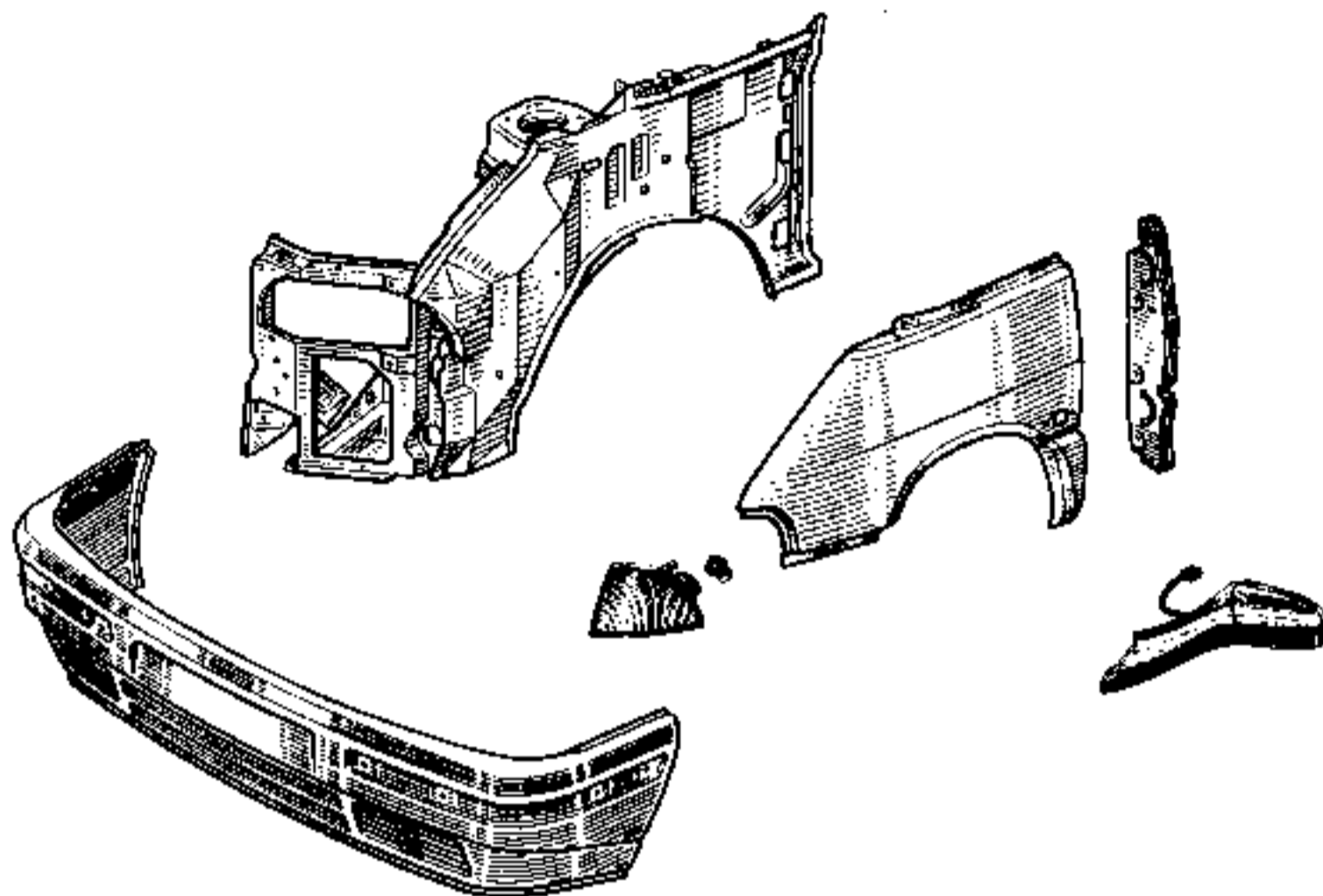
(See Espace Paintwork Manual)

Apply the passivation and zinc paint treatment to the welded areas.

Make the repairs leak-tight by spraying on anti-gravel mastic, and with sprayed-on beads where the cuts and panels join.

Apply hollow section protection at (A) and (B).





REPAIRING

- | | | |
|-------------|---------------------------|---------------------------------|
| - Fissures | See repair sequence no. 1 | General Section 40 - Page 40-40 |
| - Holes | See repair sequence no. 2 | General Section 40 - Page 40-41 |
| - Fractures | See repair sequence no. 3 | General Section 40 - Page 40-42 |

REPLACING

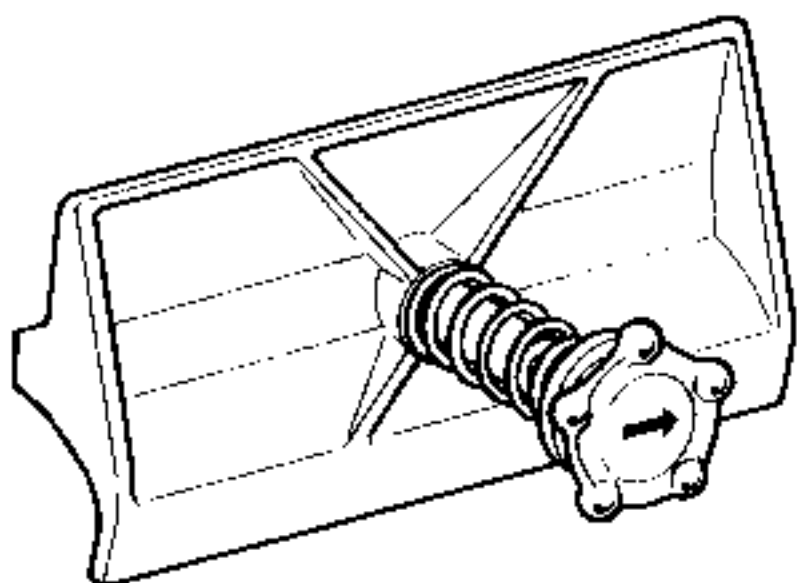
THIS OPERATION DOES NOT REQUIRE THE REMOVAL OF THE FRONT QUARTER LIGHT

Parts to be replaced systematically:

- quarter light mouldings;
- pop rivets.

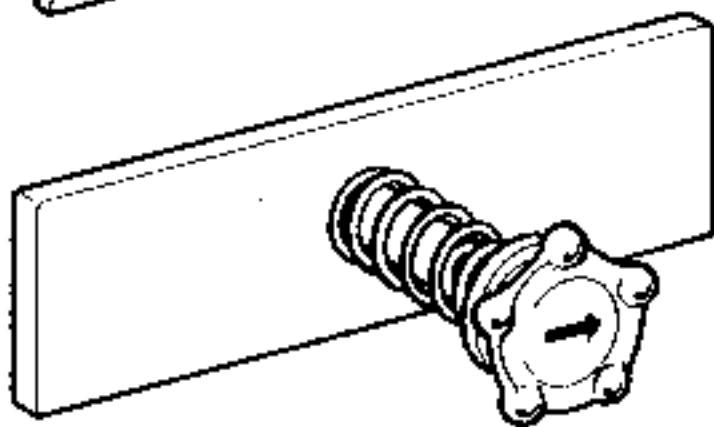
Tooling required:

- drill with 5 mm diameter drill bit;
- saw (with diamond powder disc or blade);
- piano wire with removal tools;
- hot air torch;
- sharpened spatula;
- riveter;
- adhesive extrusion spray gun;
- centring tooling set Reference Car.1219
- 2 5 mm shims (20 x 20 mm)



946/8

946/9

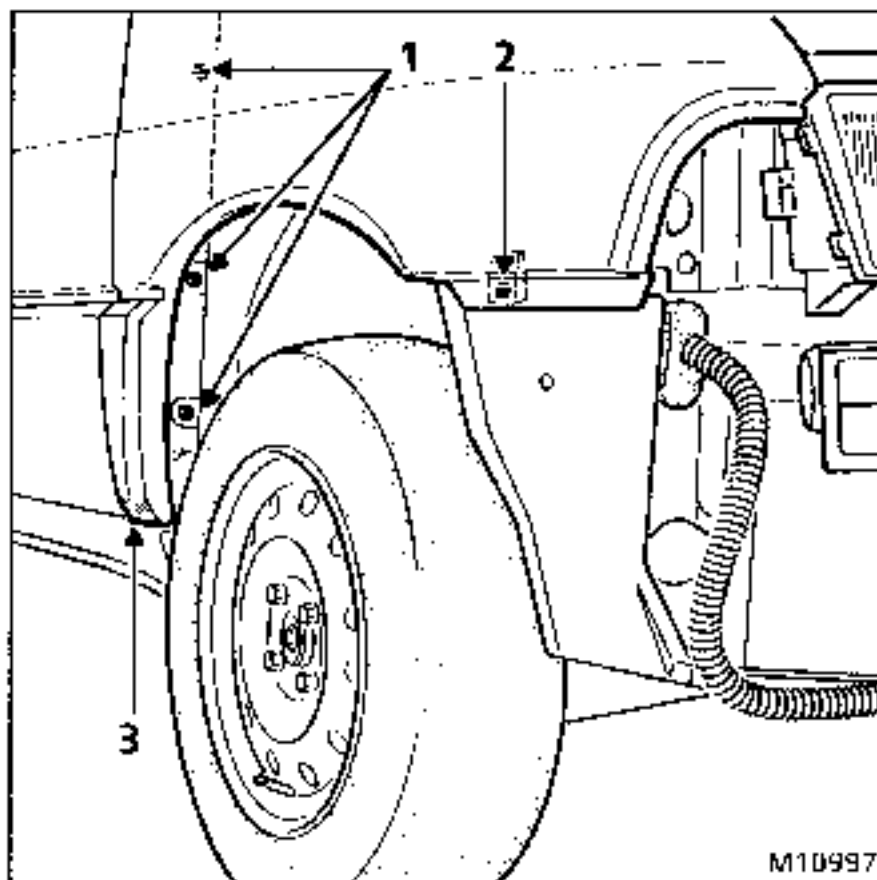


Products required:
Bonding kit part no. 60 25 170 306

REMOVAL

Remove:

- the shield;
- the side light on impact side;
- the wing repeater light (depending on version);
- the rear view mirror;
- the quarter light moulding;
- the mudguard.



M10997

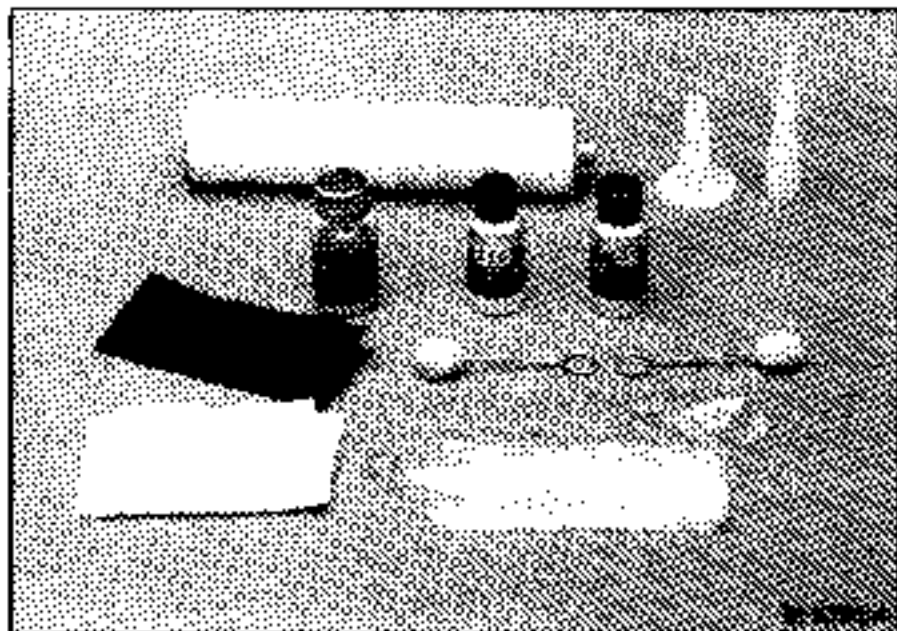
On the chassis trace the upper limit of the wing level with the rear view mirror and the lower limit in the vicinity of rivet (2).

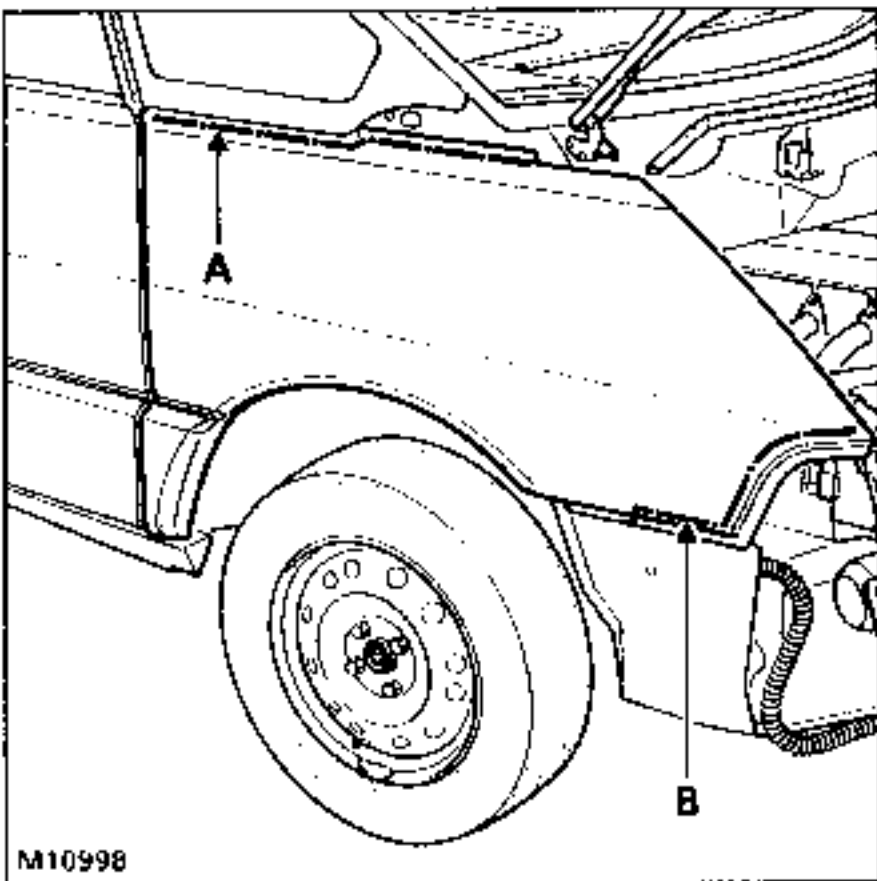
Drill the three rivets (1) securing the wing tensioner to the chassis after tracing its position on the chassis.

Drill rivet (2) securing the wing to the cowl side and recover the shim.

Using a sharpened spatula, and with the door open, cut out the adhesive head (3) between the wing and sill.

Personal protection:
Goggles, gloves, masks and personal extractor nozzle.

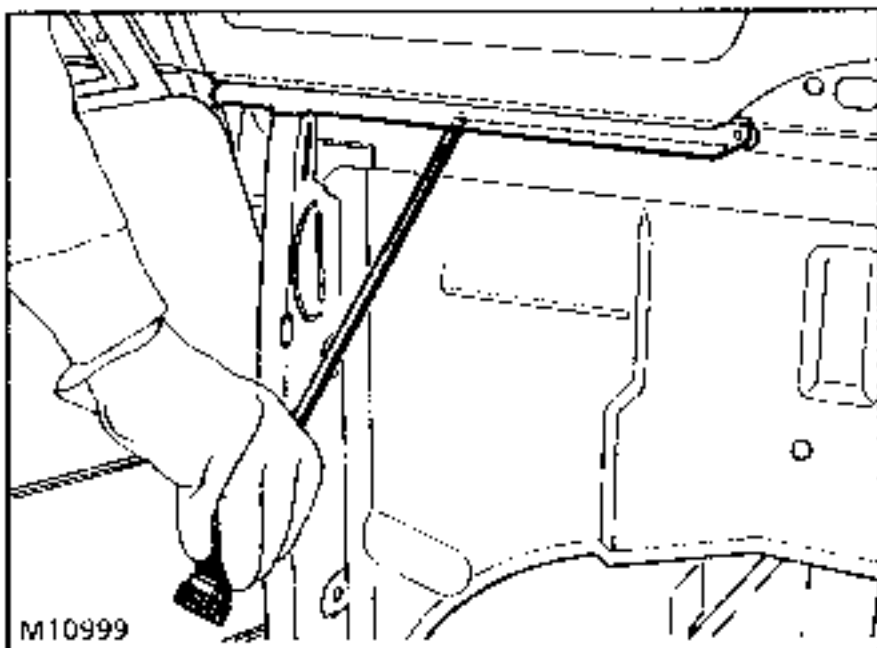




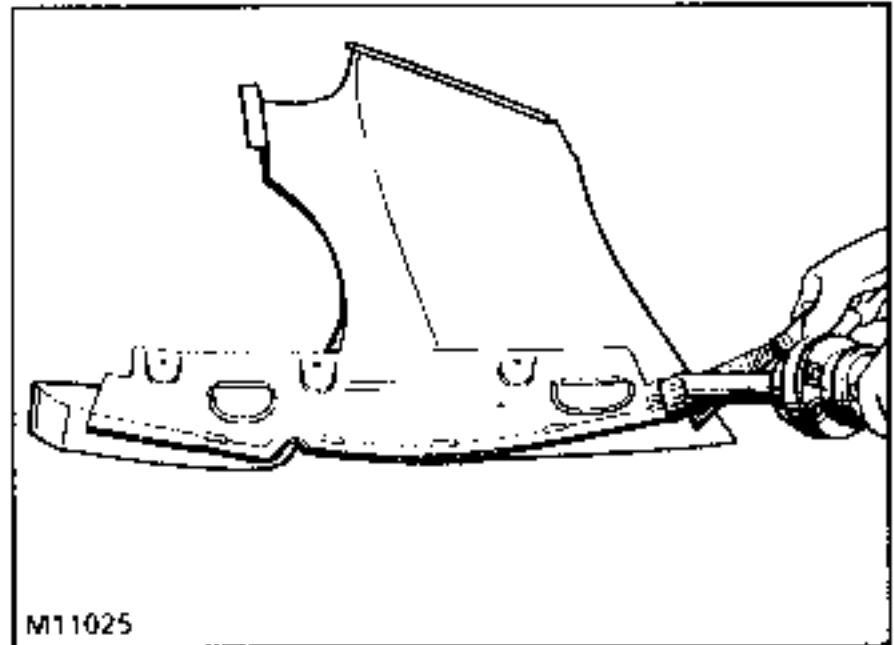
Using a circular saw cut the wing:
 - at (A) under the deflector;
 - at (B) in the vicinity of the front light.

Remove the centre section of the wing with the wing tensioner.

Using the sharpened spatula, remove the front tip of the wing remaining on the cowl side.



Using a piece of piano wire, cut the part of the wing remaining under the quarter light window.



Using a hot air torch, heat the tensioner; use the sharpened spatula for leverage when cutting the adhesive and remove the tensioner.

Using a sharpened spatula, level the adhesive seal remaining on the chassis and tensioner, leaving a layer 1 to 2 mm thick.

Rivet the tensioner to the chassis fitting it according to the lines traced before removal.

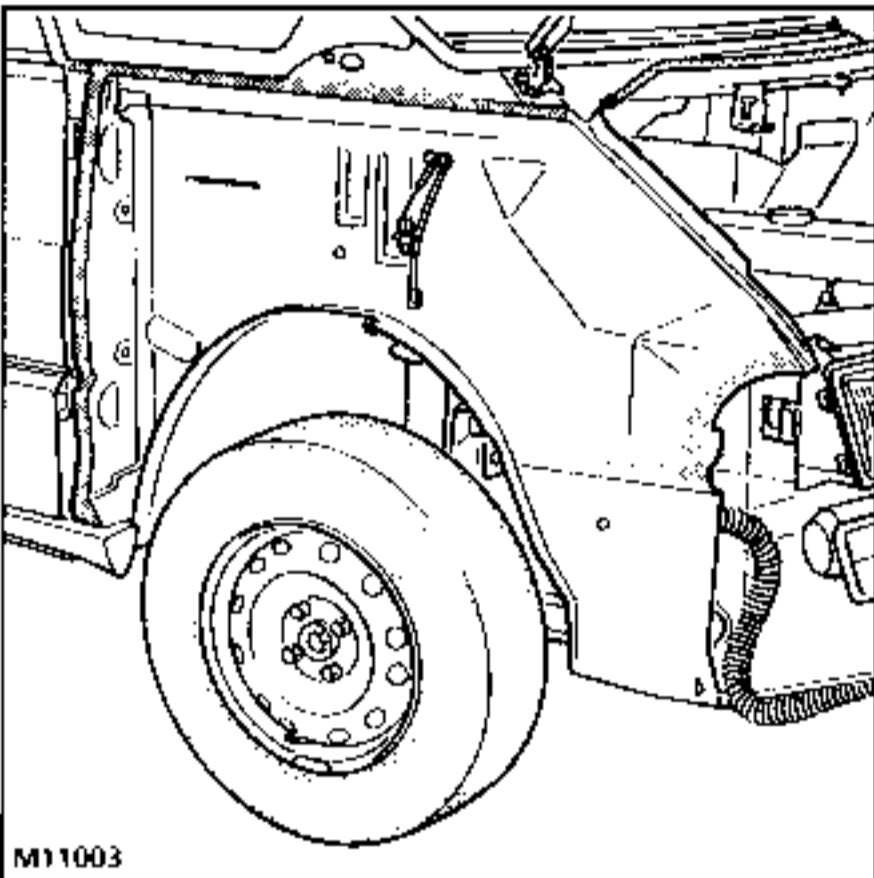
Wipe the areas to be bonded on the structure with a dry cloth.

As a preliminary: the bonnet must be correctly adjusted in relation to the opposite wing (clearance, alignment) before the new wing is fitted.

SEE SECTION 40 FOR PRECISE DETAILS ON THE USE OF PRODUCTS

FITTING THE NEW ELEMENT

Preparing the chassis



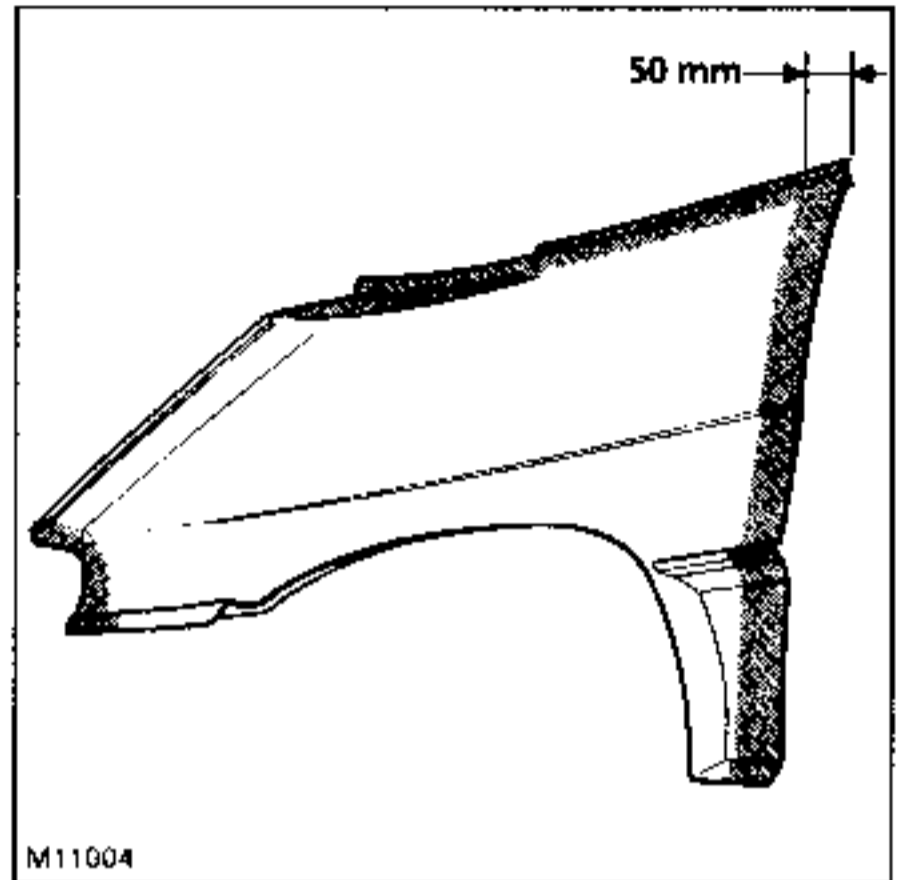
First degrease then coat the area to be bonded:

- bead remaining on the chassis;
- stripped or damaged galvanised areas with the primer supplied in the kit.

NOTE: a new element is bonded to the chassis after the areas to be bonded have been degreased and coated with a primer.

IMPORTANT; any part of the chassis which has been scratched must be coated with primer.

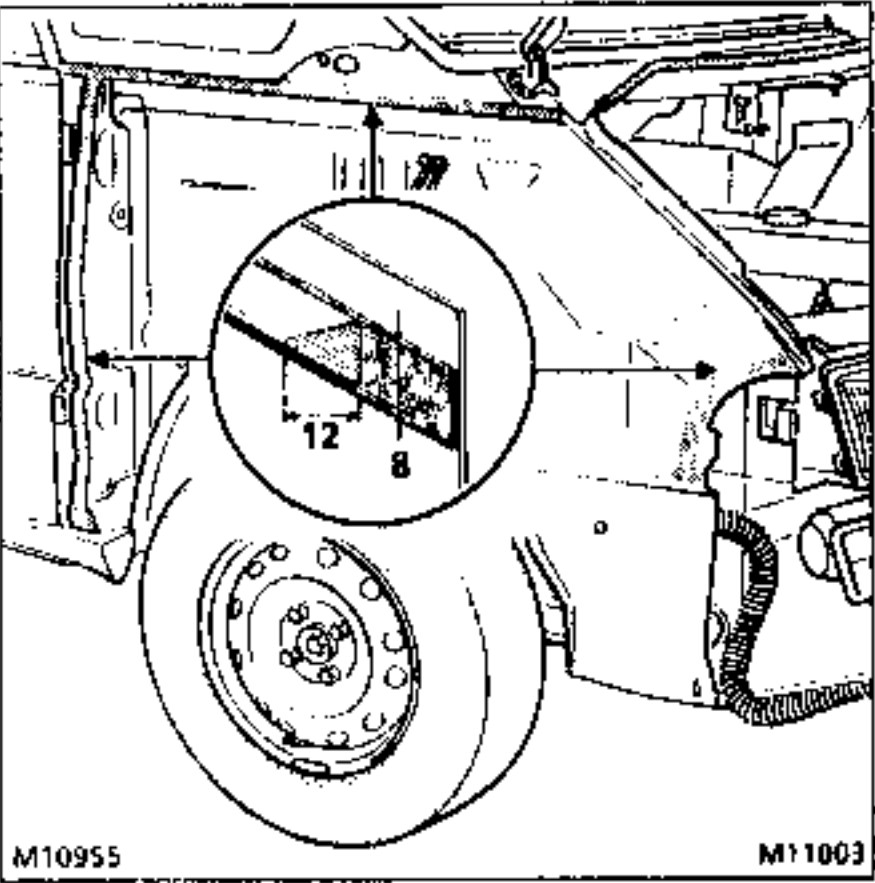
Preparing the new wing



Roughen the area to be bonded with P150 paper.

Degrease the area to be bonded using the degreasing fluid supplied in the kit.

Coat the area to be bonded with the primer supplied in the kit.



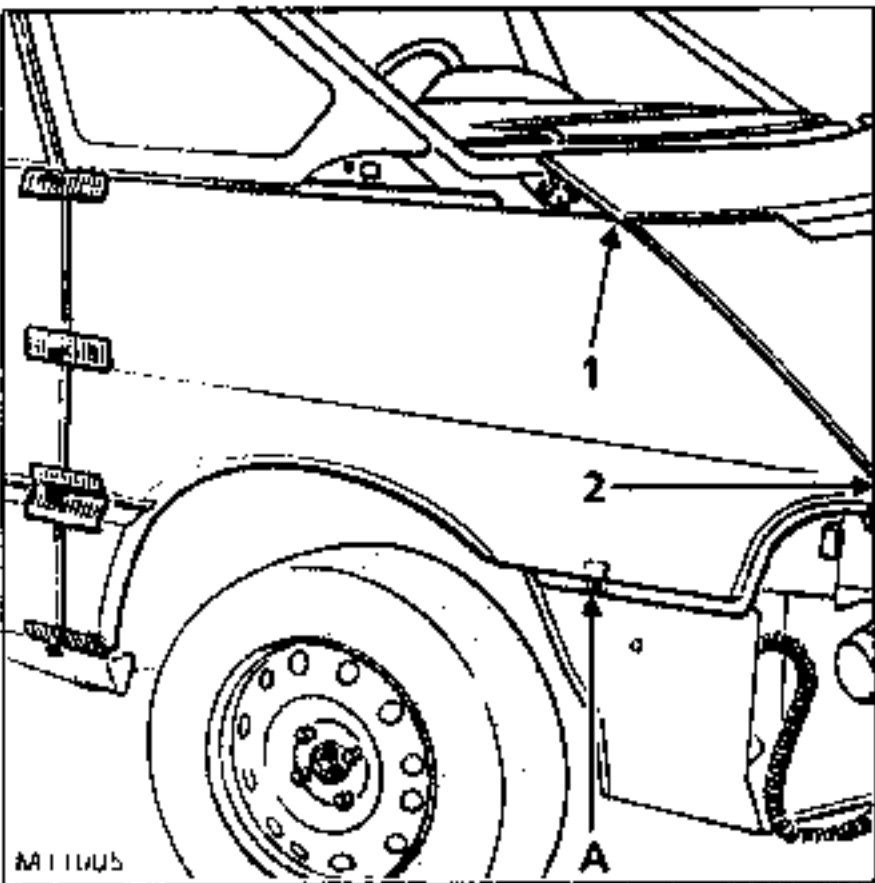
Applying the bead

Extrude a uniform bead over the chassis (see diagram).

THE WING MUST BE BONDED DURING THE FOLLOWING 10 MINUTES.

Fitting the wing

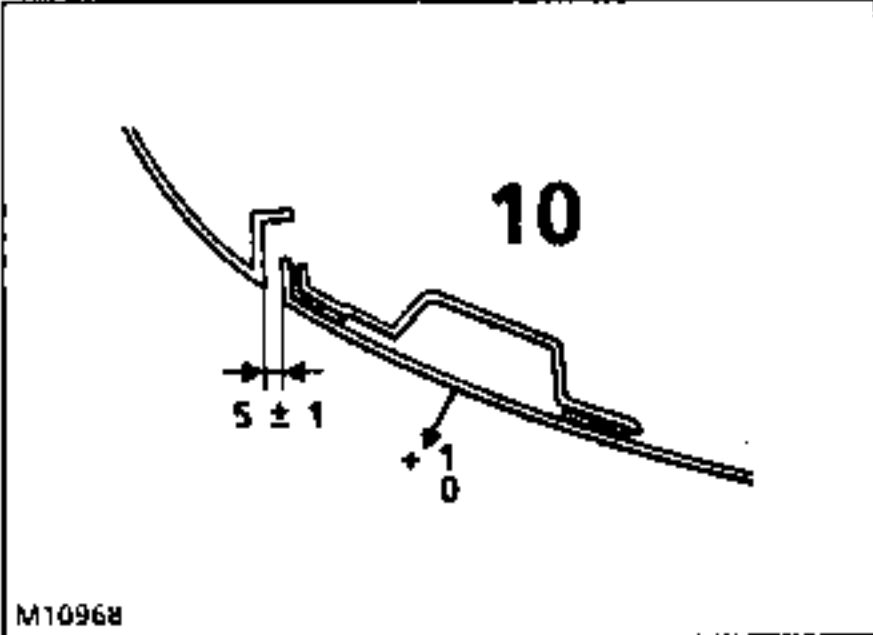
Tilt the wing so as to slide it under the quarter light then gently fold it over the chassis positioning it according to the lines traced before removal in relation to the rear view mirror and rivet.



Fit in place the three centring tools on the front door ensuring that the parts have the correct clearances and alignment and are flush.

DO NOT OPEN THE FRONT DOOR BEFORE REMOVING THE TOOLING.

Fit the shim in place under the wing and rivet it at (A) taking great care to avoid the wiring harness which passes in front of this hole in the engine compartment.



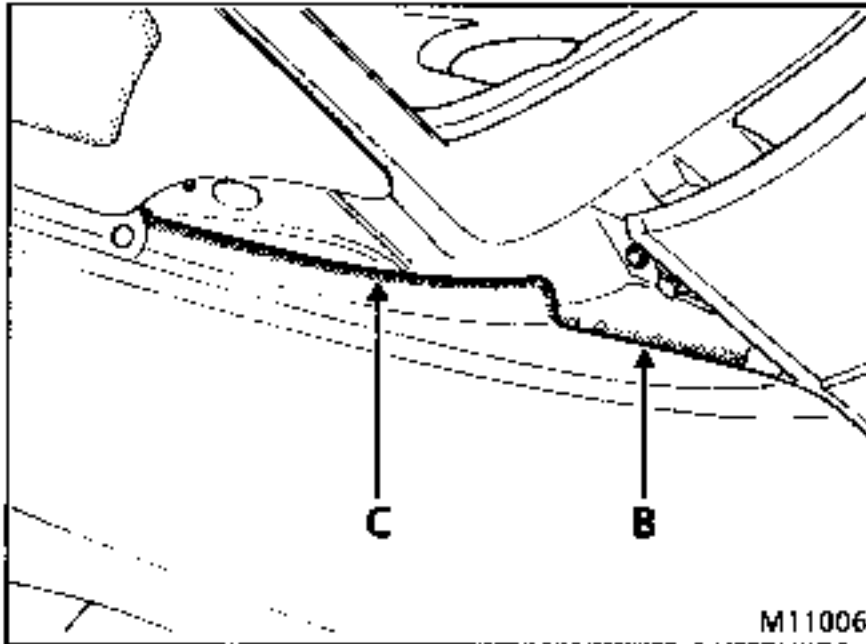
Fit the rear view mirror in place to check that the wing is in the correct position and check the wing clearance and flush fitting in relation to the bonnet by fitting the two 5 mm shims;

- one at (1) between the rear view mirror, bonnet and upper part of the wing;
- one at (2) between the wing and bonnet at the tip.

Hold the wing in place using adhesive stuck to the bonnet (for 2 hours).

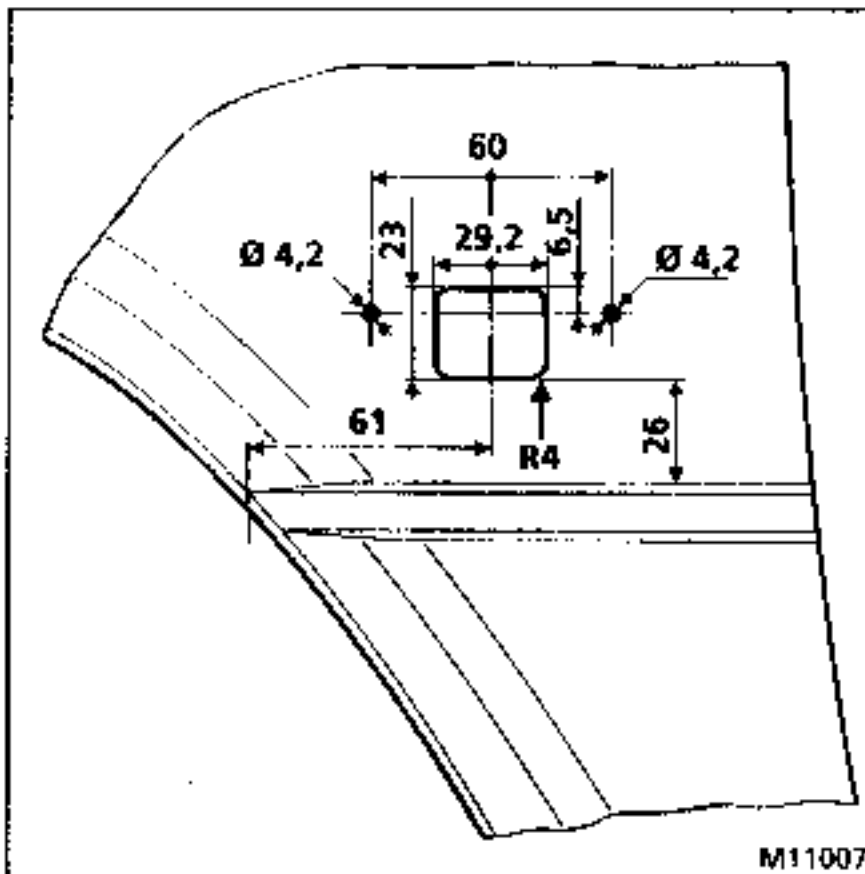
Leave to harden for 30 minutes, remove the rear view mirror and centring tools

If necessary adjust the height of the bonnet.



Using adhesive, finish join (B) between the wing and chassis.

Using an air spray gun and soapy water, check for leaks in area (C) and if necessary touch up with adhesive.



Cut out the aperture for the wing repeater light depending on version.

NOTE: the shield, sidelight, wing repeater light, rear view mirror and quarter light moulding are refitted AFTER PAINTING.

REMOVAL

Open the bonnet.

Disconnect the two windscreen washer hoses.

Remove the two blade carriers, unscrewing the nuts.

Unscrew the four screws holding the scuttle grille at the base of the windscreen.

Remove the two rear view mirrors (see sub-section 56).

Fit protection to the lower part of the windscreen bordering the scuttle grille to avoid scratching it during the following operation.

Using a sharpened spatula, cut out the sealing adhesive bonding the grille to the windscreen.

Remove the scuttle grille by disconnecting the windscreen washer hoses from the three-way feed union.

REFITTING

Before refitting the scuttle grille, replace the sealing adhesive. For this purpose, the area where it is fitted must be cleaned and degreased and then SIKA No. 6025 07 12 07 primer applied. Leave to dry for ten minutes and fit the double-sided tape without raising the protective covering on the face bearing on the windscreen.

Repeat this operation on the windscreen, degrease and apply glass primer. The parts may then be refitted by proceeding in the reverse order to removal.

REPLACING

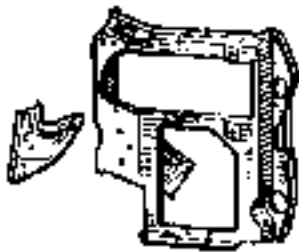
front end checking jig Car.1220 is required for this operation.

Please consult the relevant sections for the removal of adjacent components affected by this operation.

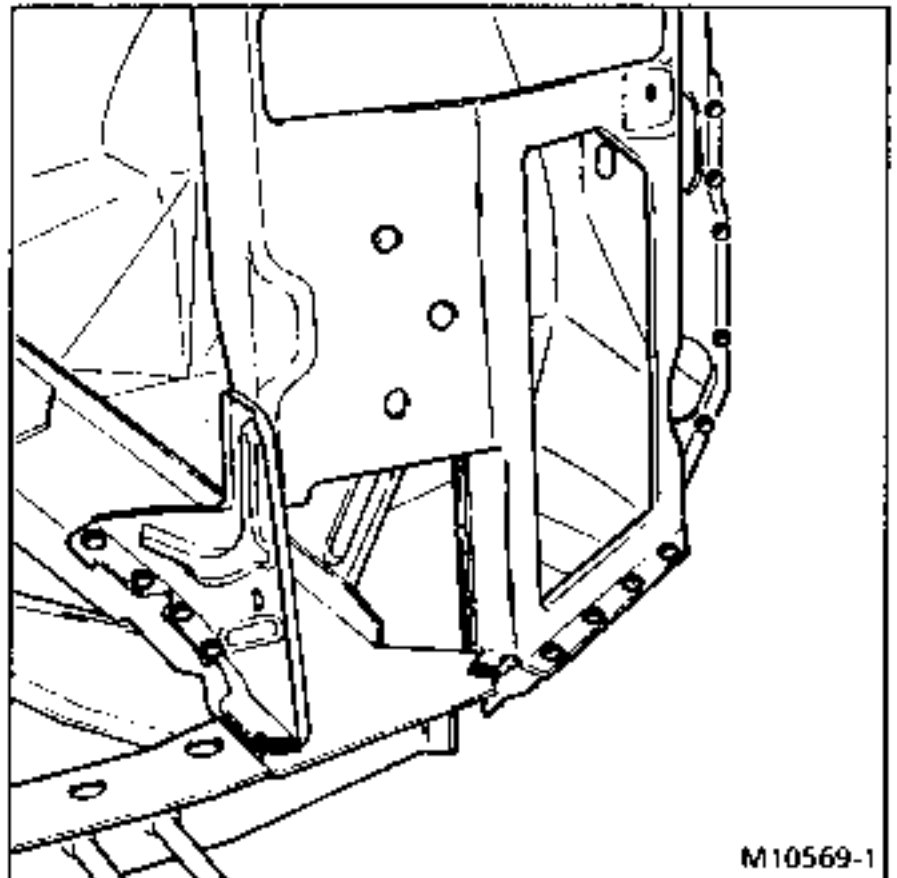
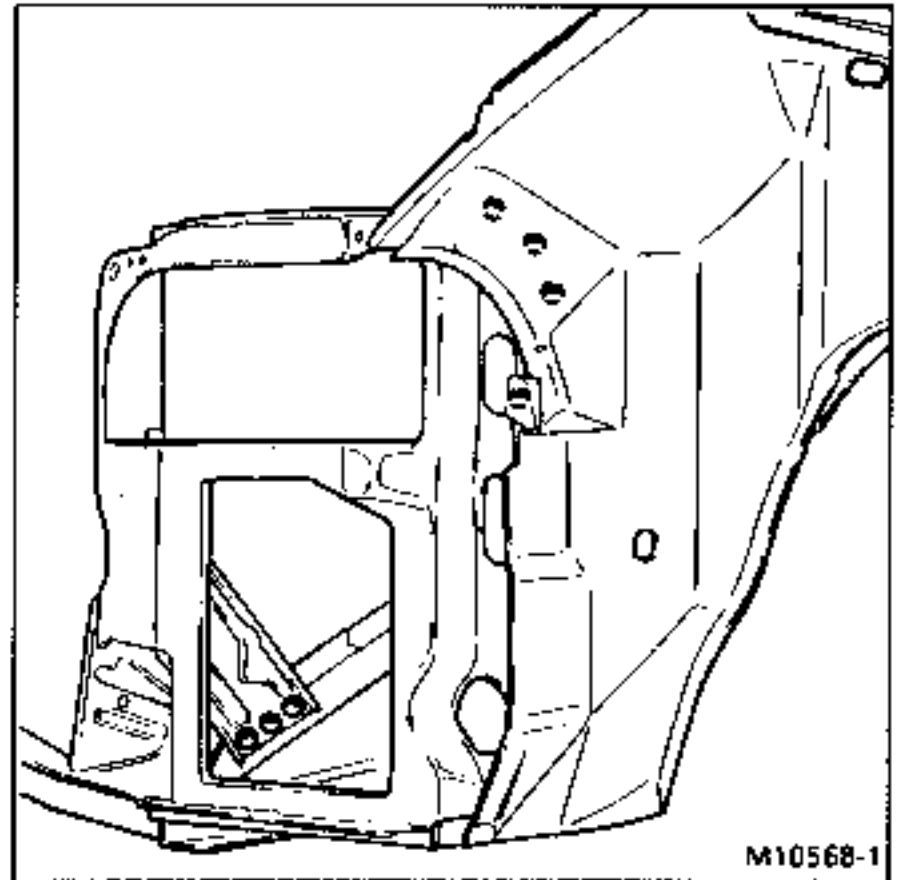
PROTECTION

Do not begin repair work before protecting the surrounding areas to avoid damage which may arise from grinding and welding.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



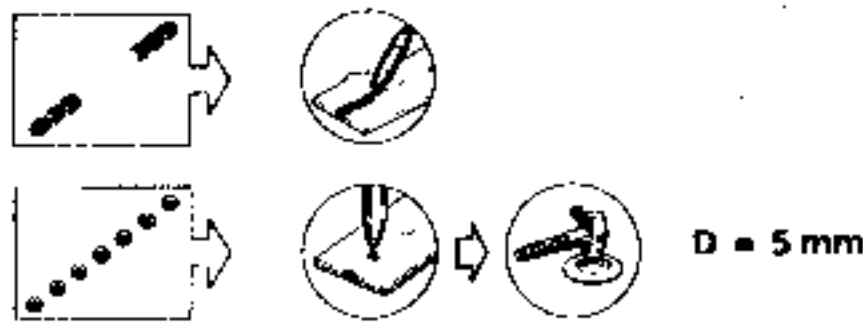
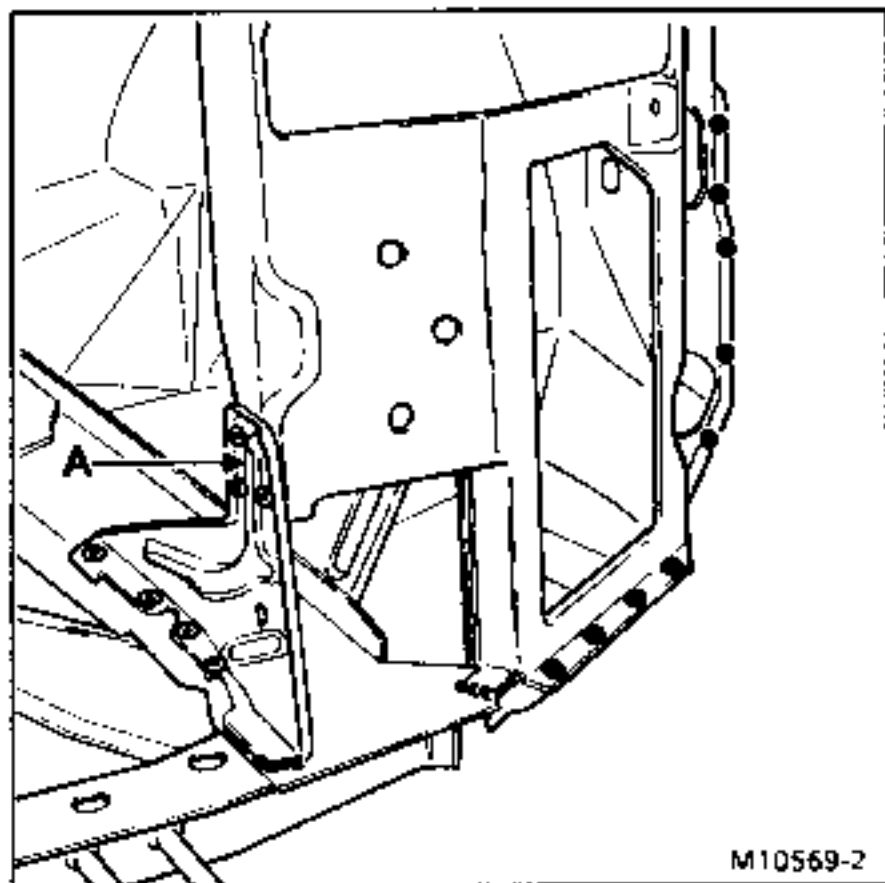
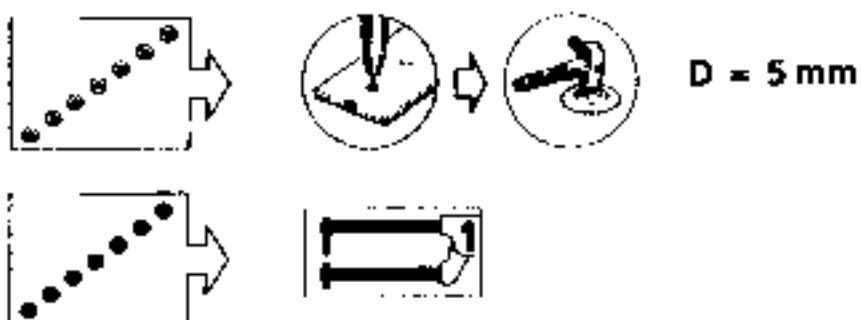
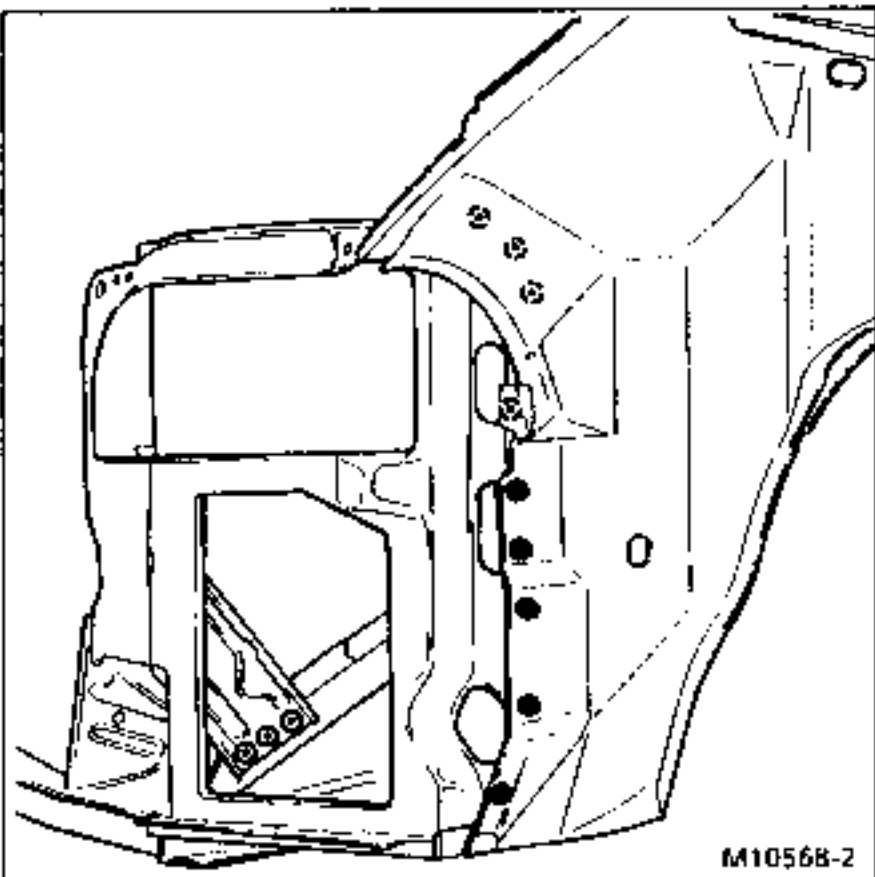
CUTTING OUT - UNPICKING



PREPARING THE NEW PART

On the zones to be welded, grind back any excess thickness of zinc so as to obtain perfect joining on welding. Fit the new part if necessary then secure it using vice clamps.

WELDING



The welding of the inner strengthener to the headlight carrier panel at (A) is performed last in order to obtain perfect alignment.

PROTECTION AFTER WELDING

(See Espace Painting MR.601)

Apply the passivation and zinc paint to welded areas.

Apply black epoxy paint to the battery tray.

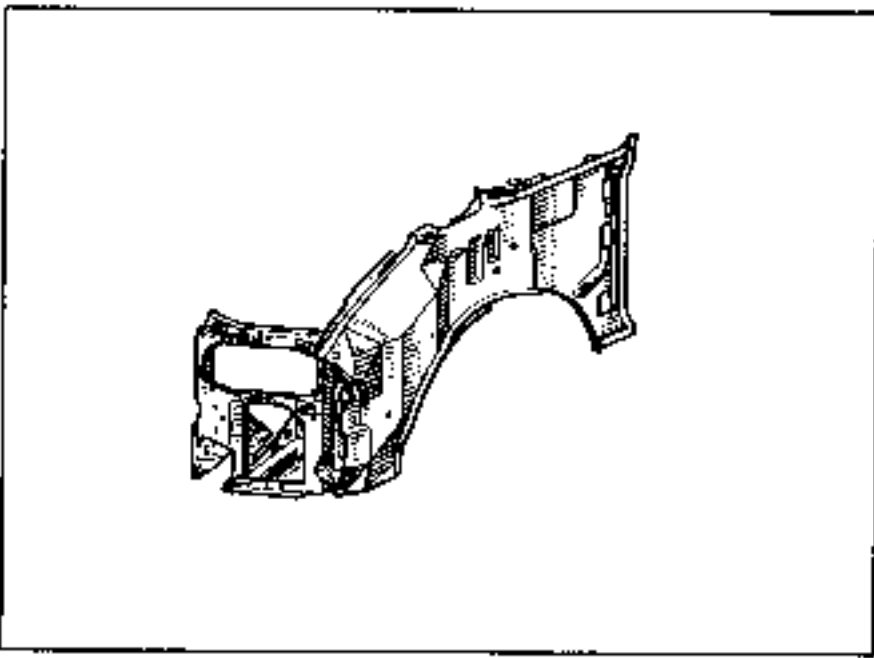
REPLACING

Use front end checking jig Car.1220.

PROTECTION

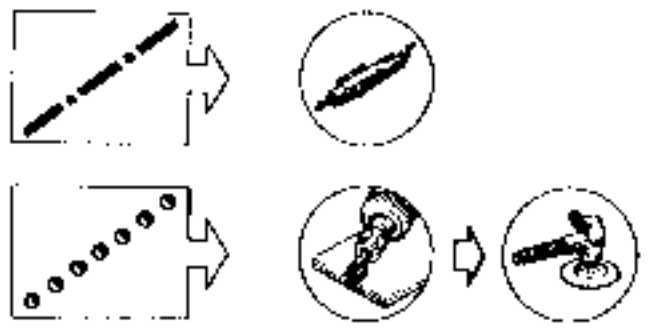
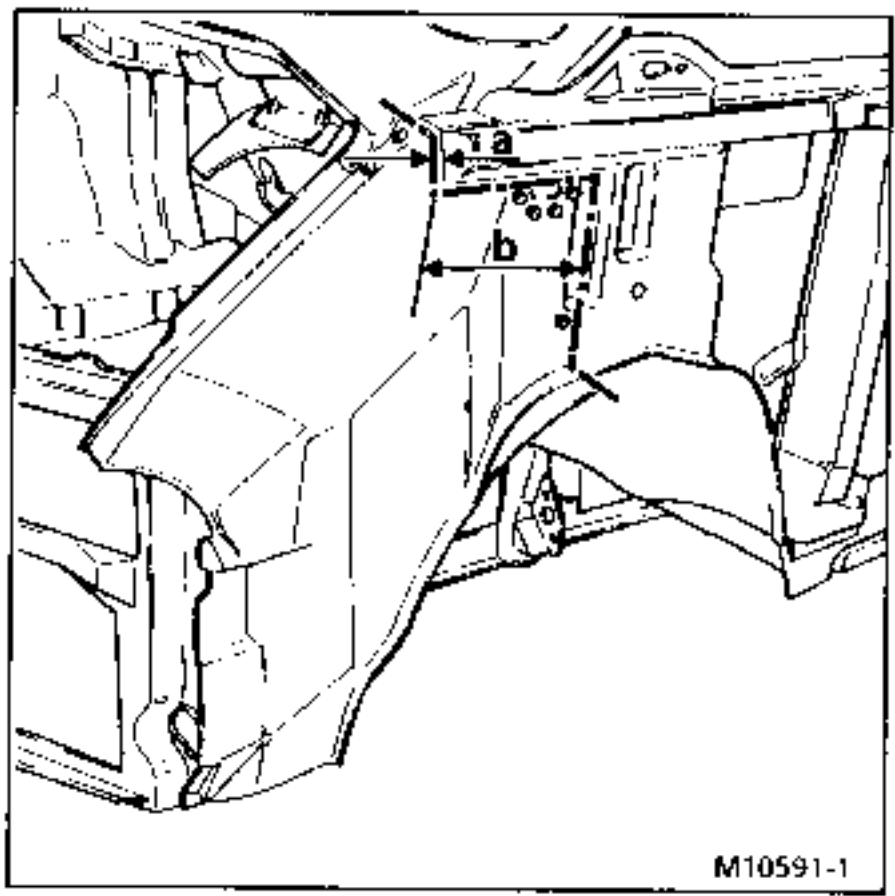
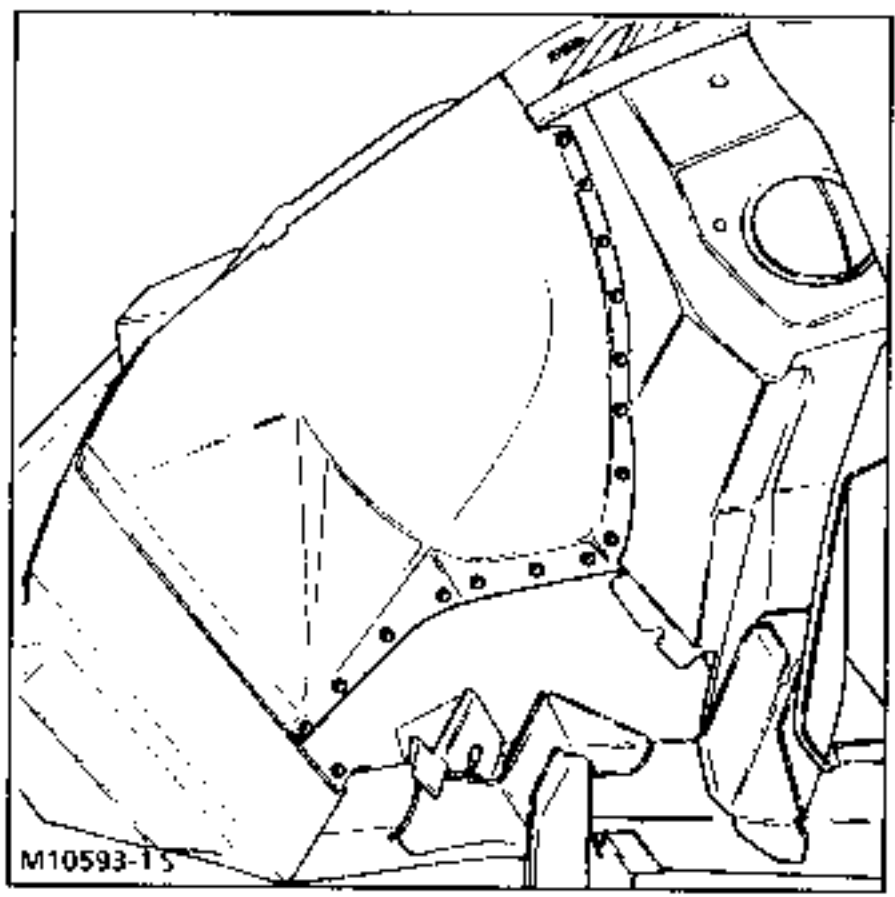
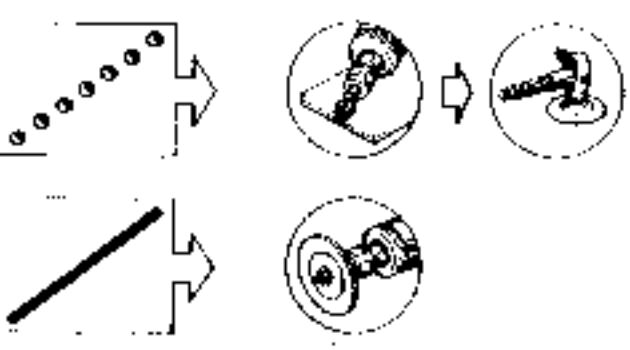
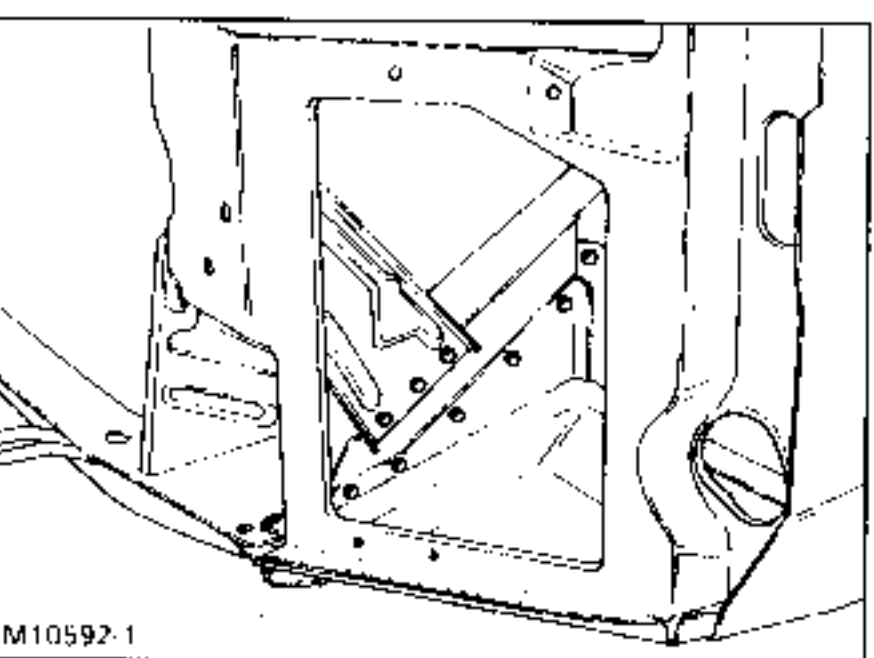
Protect the surrounding areas to avoid damage to them during grinding and welding.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



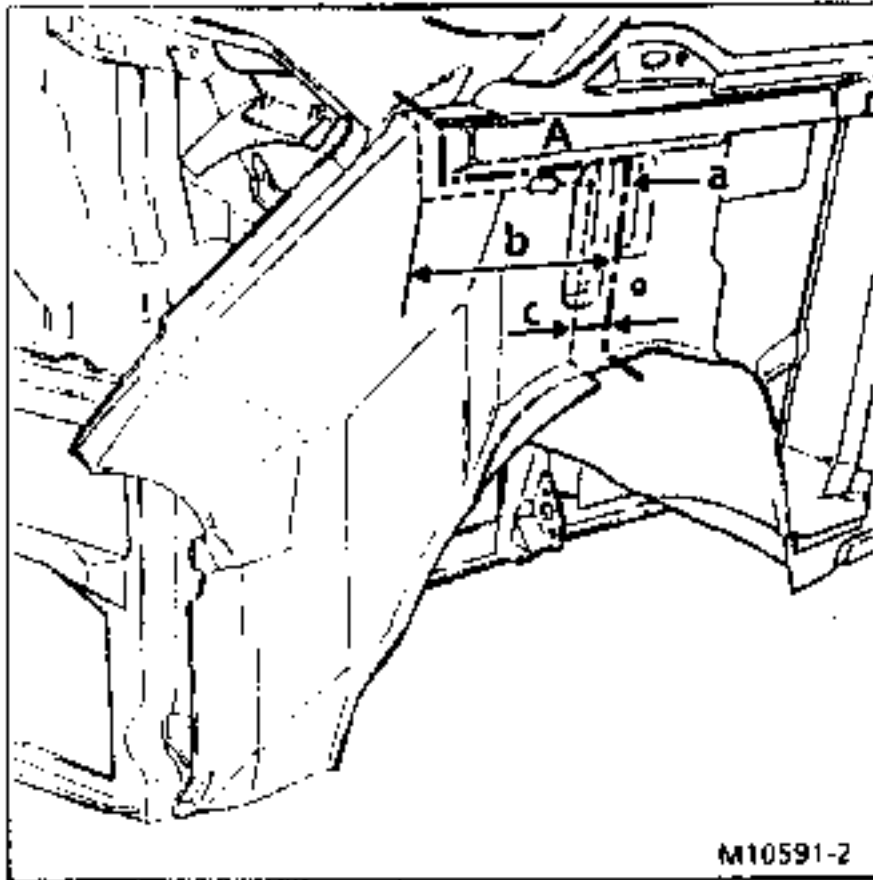
CUTTING OUT - UNPICKING

Please consult the headlight carrier panel section 42 for joining the headlight carrier panel inner strengthener.



- a = 15 mm
- b = 250 mm; above this dimension please see cowl side with shock absorber turret.

PREPARING THE NEW PART

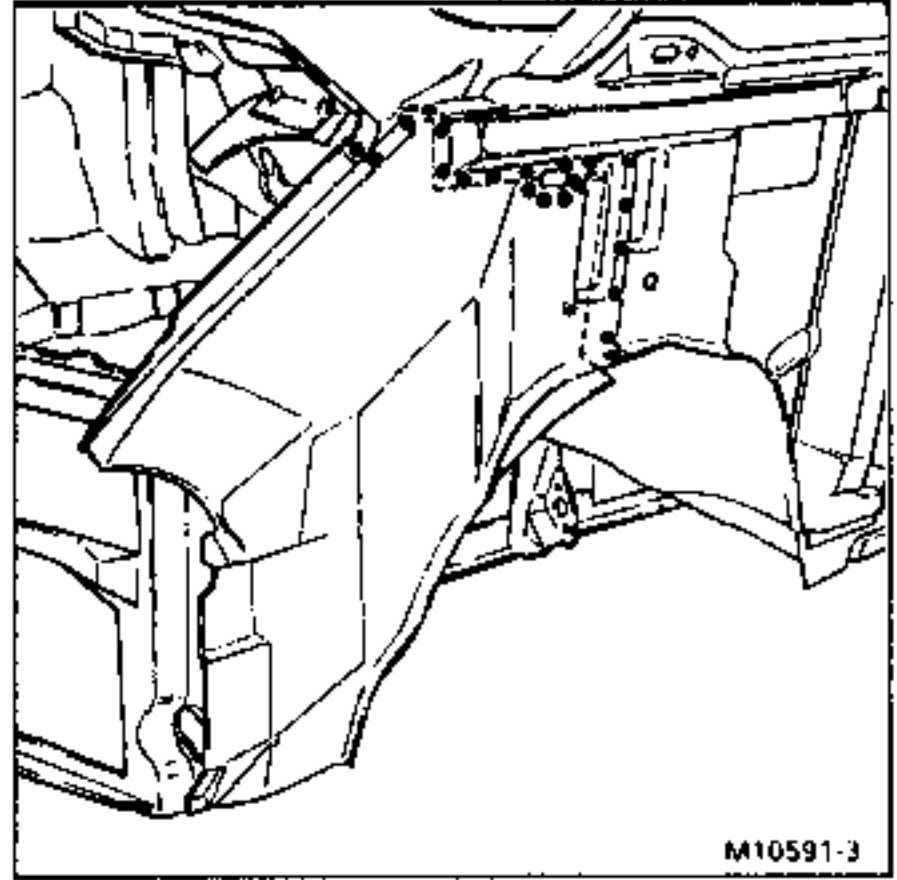


M10591-2

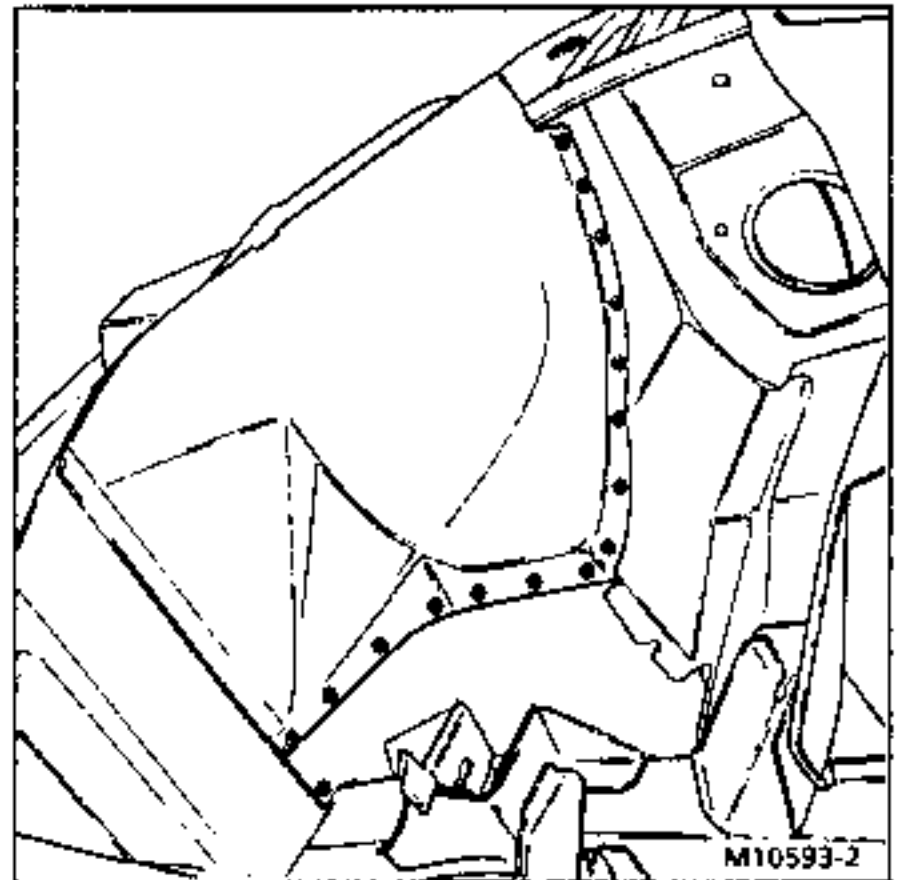
In all cases, the new part is to be cut out along broken line (a) so that it can be fitted edge-to-edge with quarter light cross member (A); cut (b) cannot be made more than 270 mm from the dotted line representing the cut made on removal. This is in order to obtain a minimum overlap (c) of 20 mm.

Ensure that the panels are joined correctly in relation to one another for welding.

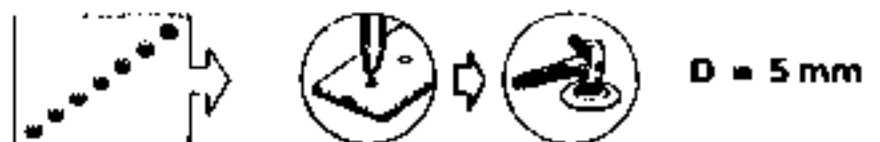
WELDING

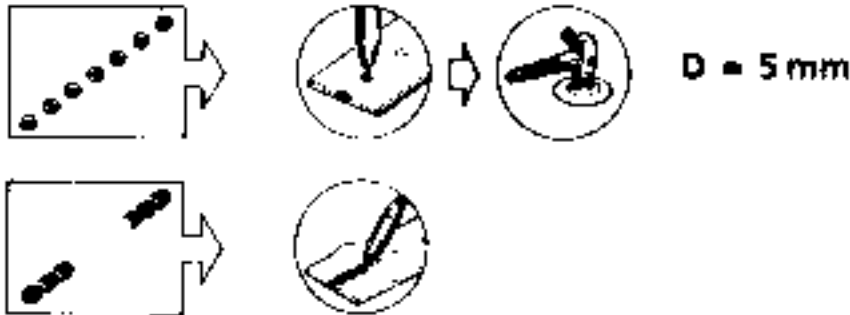
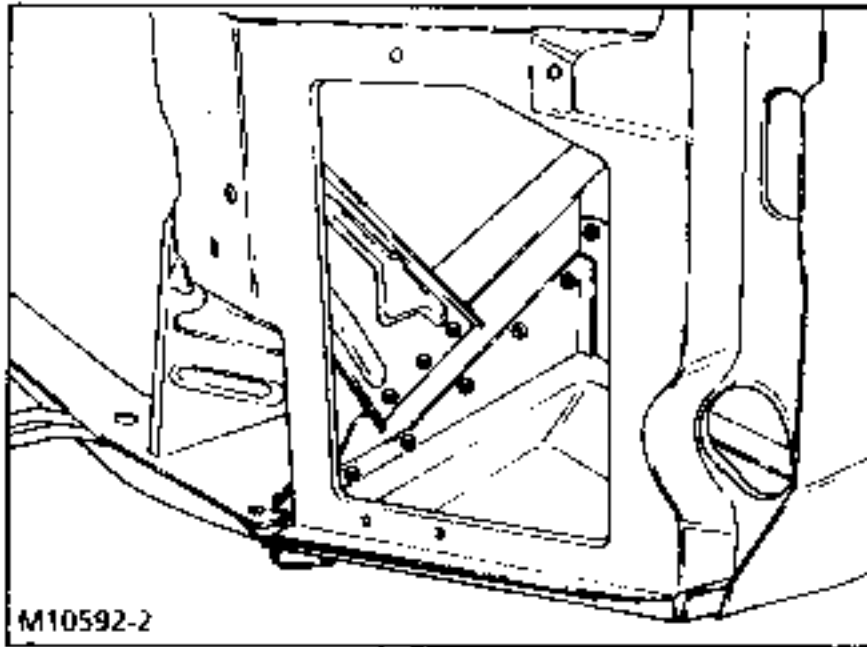


M10591-3



M10593-2





PROTECTION AFTER WELDING

(See Espace Paintwork Manual MR.601)

Apply the passivation and zinc paint treatment to the welded areas.

Apply sprayed-on beads at the join of the cuts made in the engine compartment and on the inner wing flange panel outer section.

Apply black epoxy paint to the battery tray.

Apply the hollow section protection.

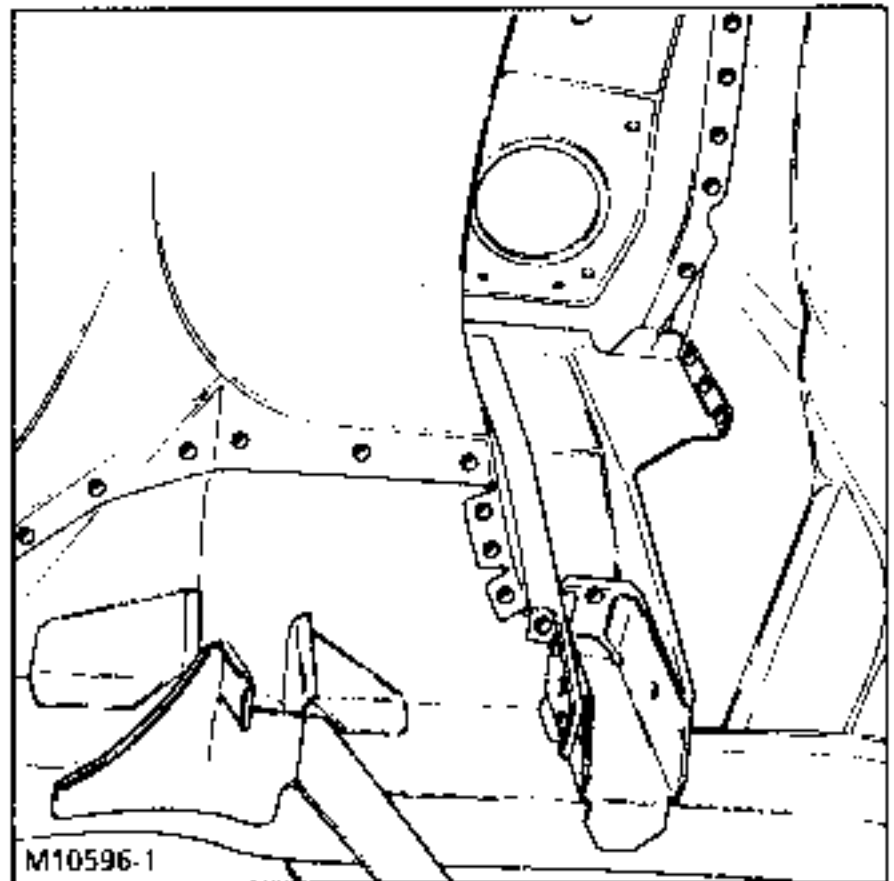
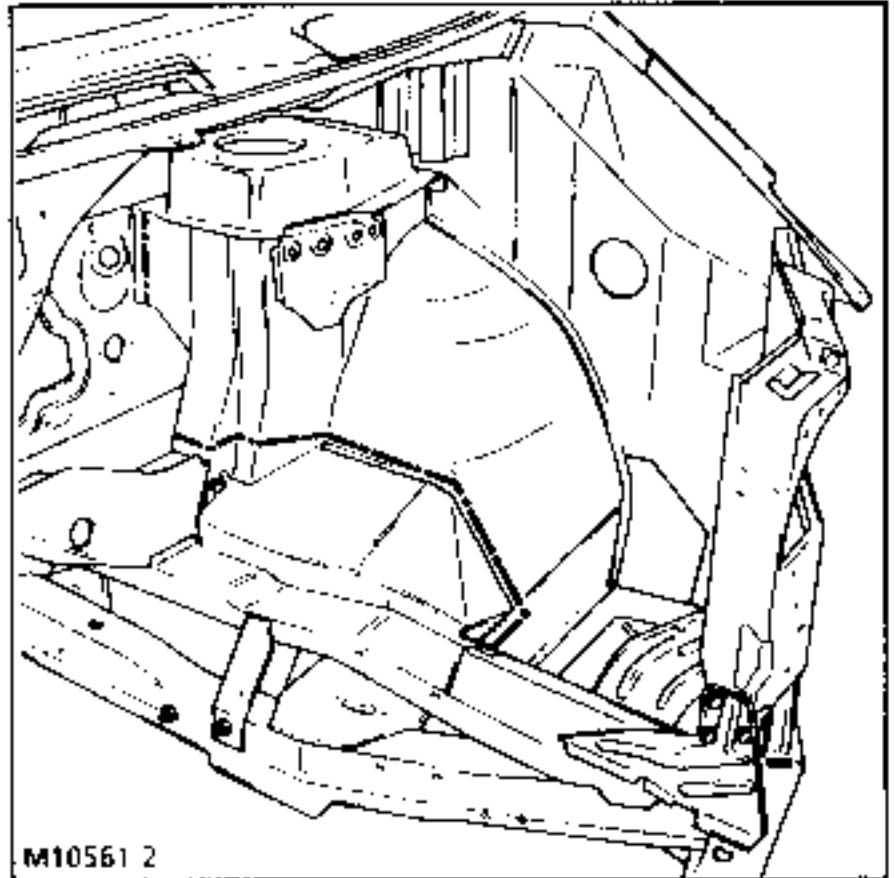
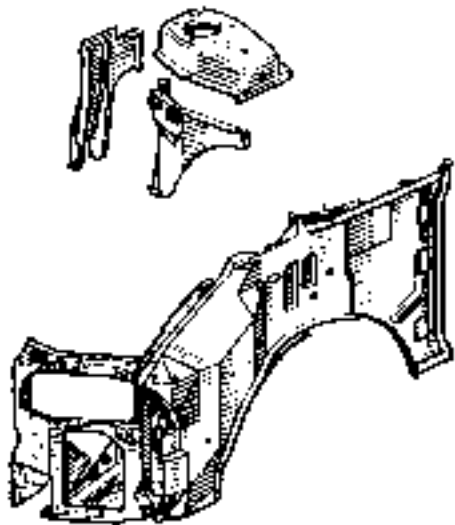
REPLACING

This operation is to be carried out on the jig bench. Please consult section 40 for positioning the components.

PROTECTION

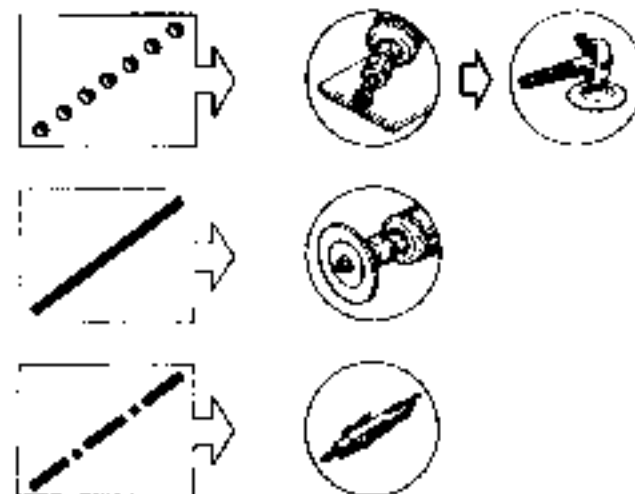
Protect the surrounding areas to prevent damage to them during grinding and welding.

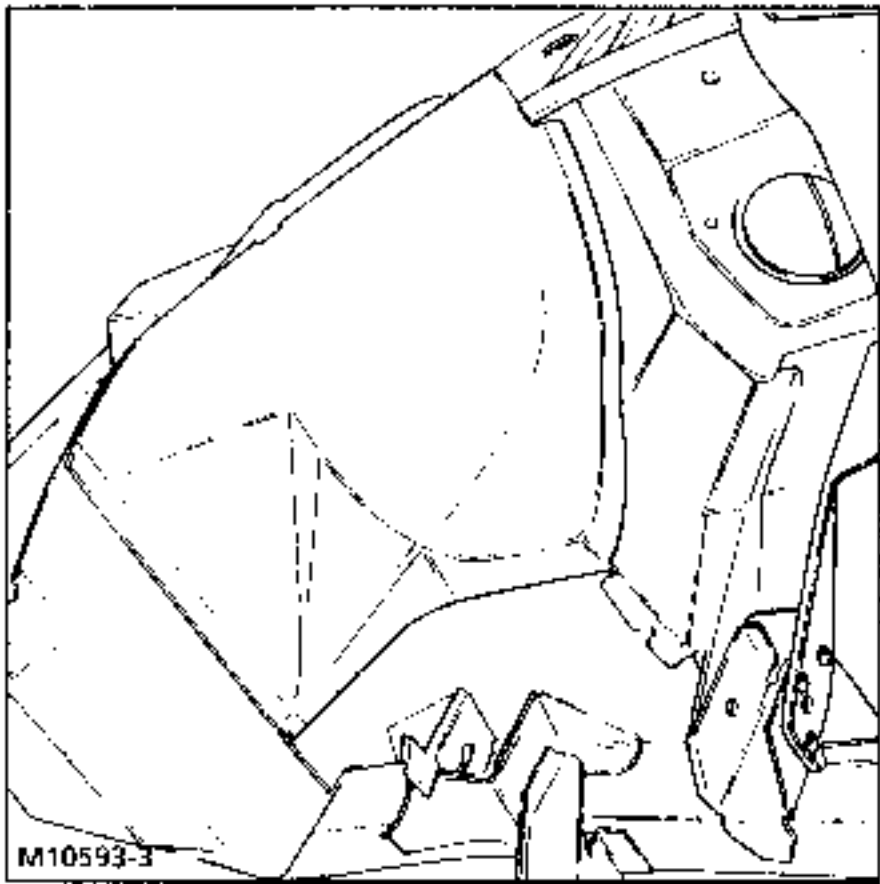
COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



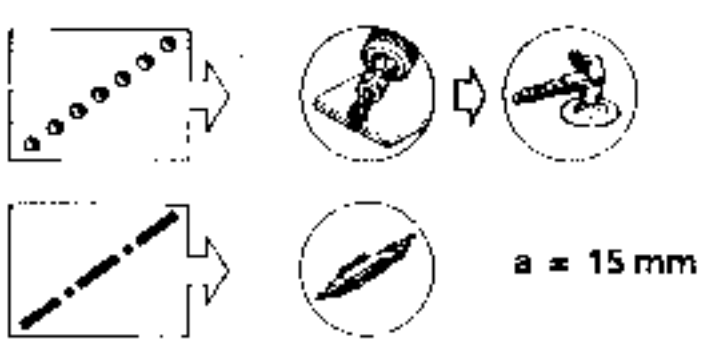
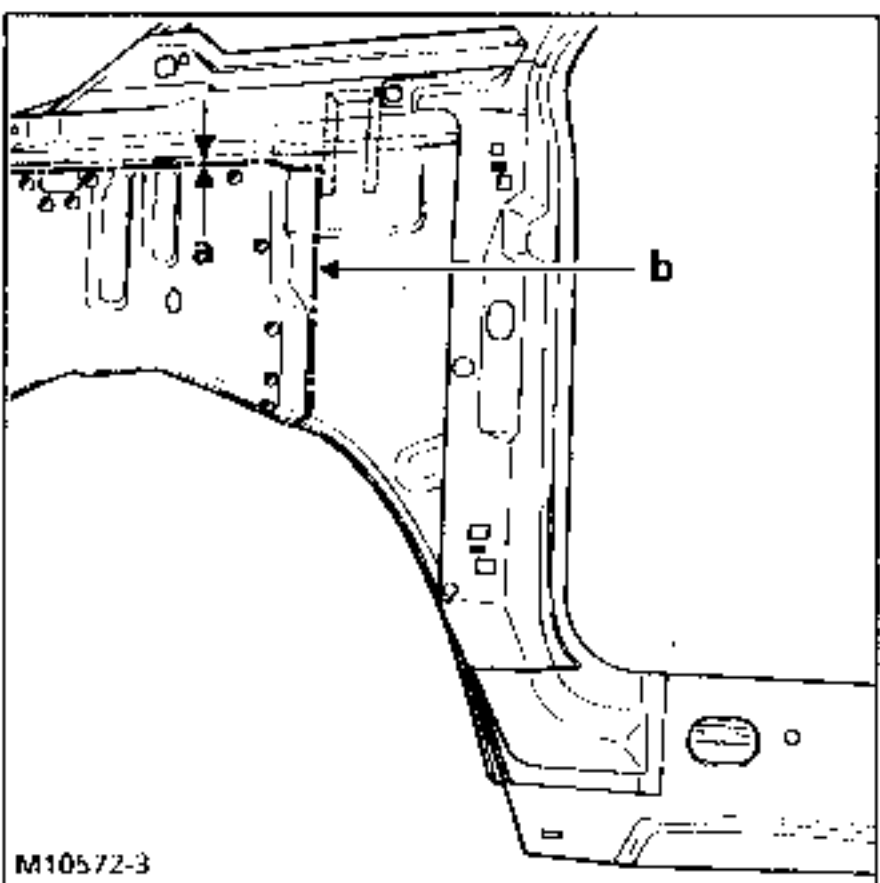
CUTTING OUT - UNPICKING

Please consult the preceding sections for aligning the headlight carrier panel, battery mounting panel on the front wheelarch and front section of the inner wing flange panel on the side members.

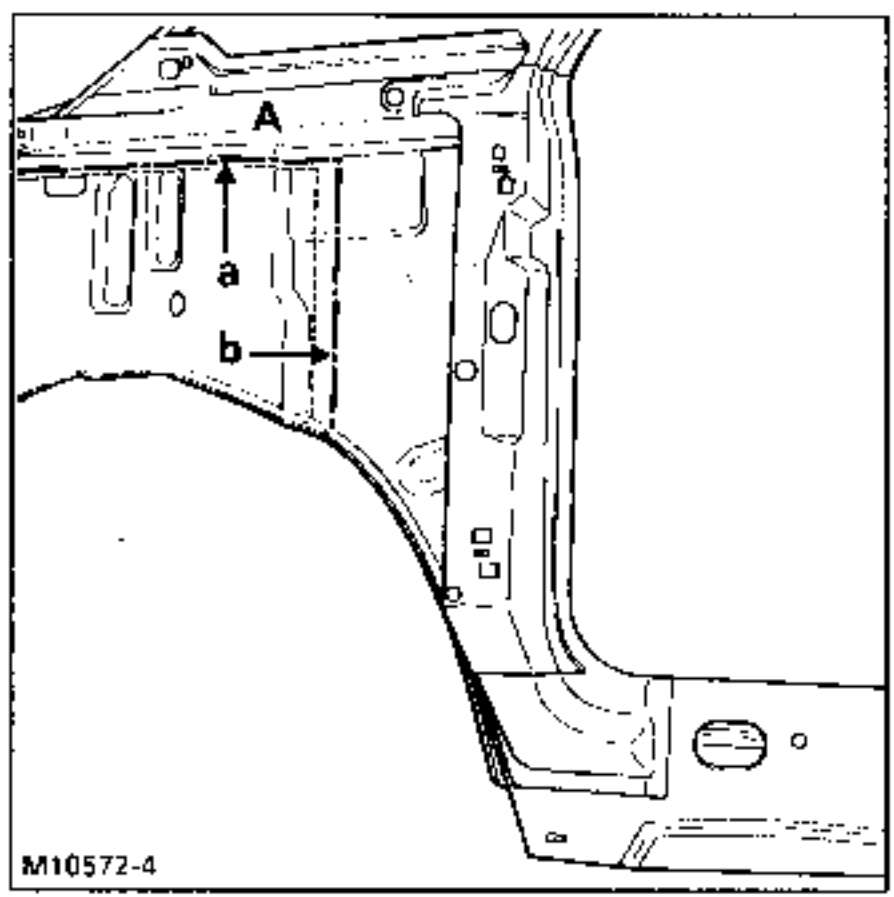




Cut (b) is to be made parallel with the front face of the cross member securing mounting between the pillars in the passenger compartment.

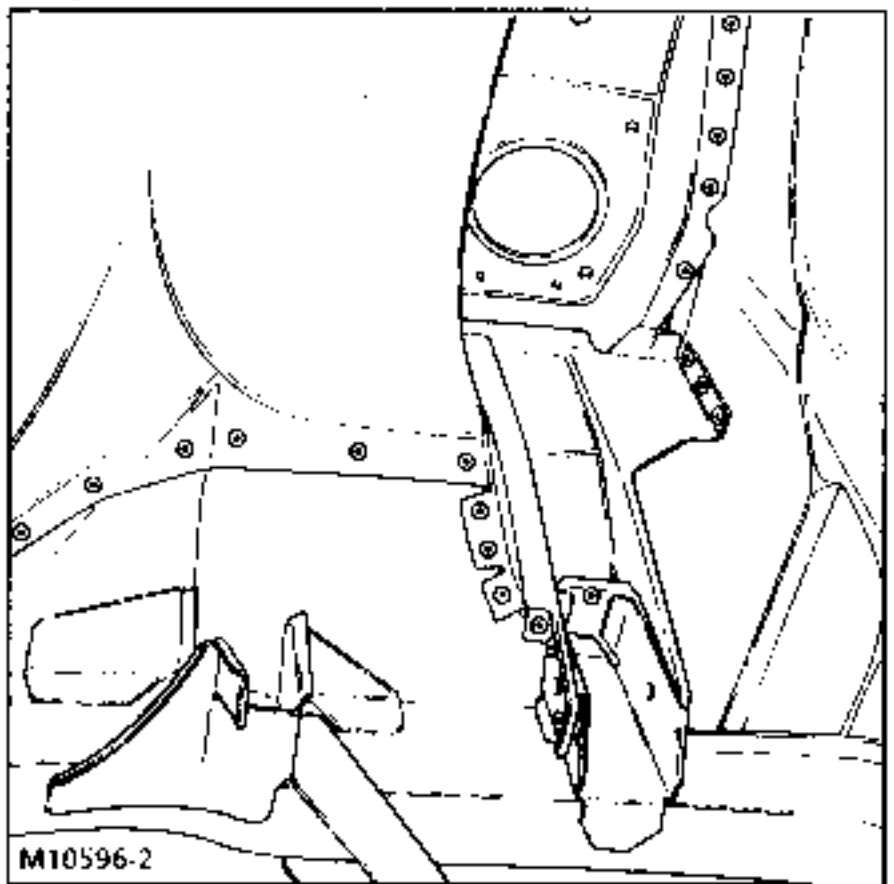


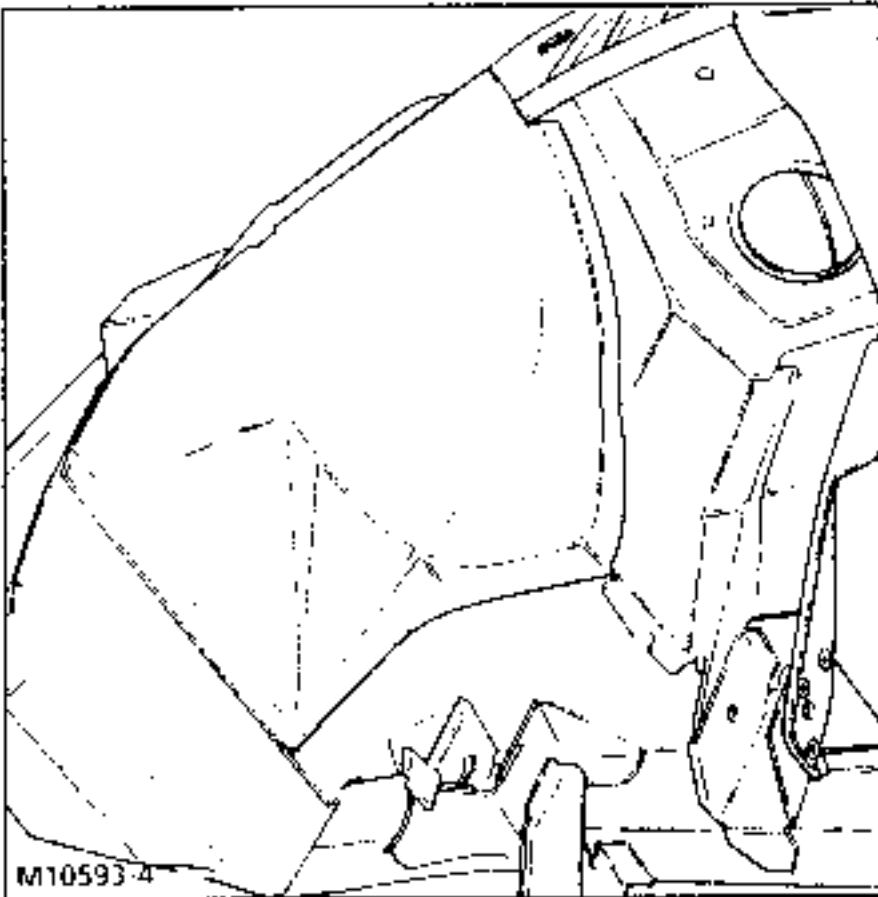
PREPARING THE NEW PART



The new part is to be cut out at (a) so that it is butt-jointed with the cross member under quarter light (A).
Cut (b) is to be made 20 mm larger than the initial cut so that it overlaps.

WELDING

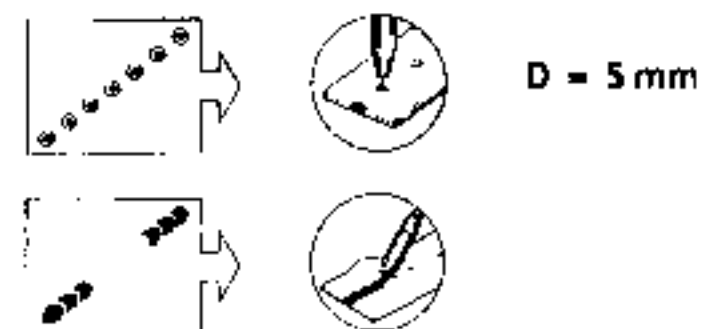
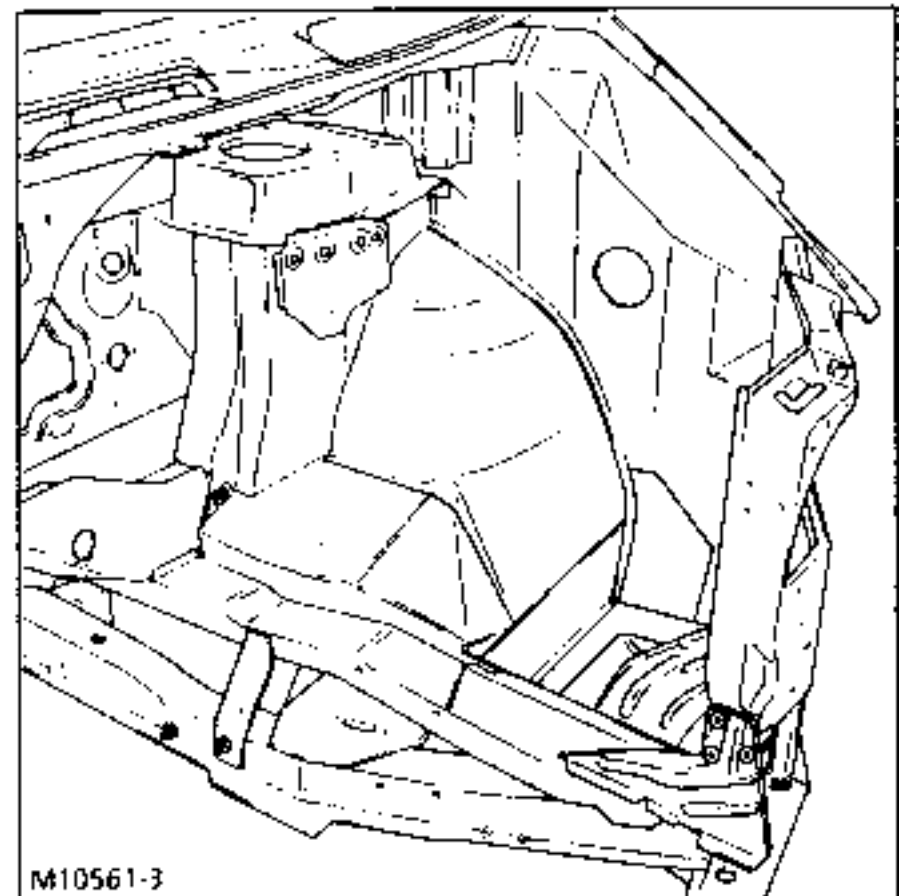
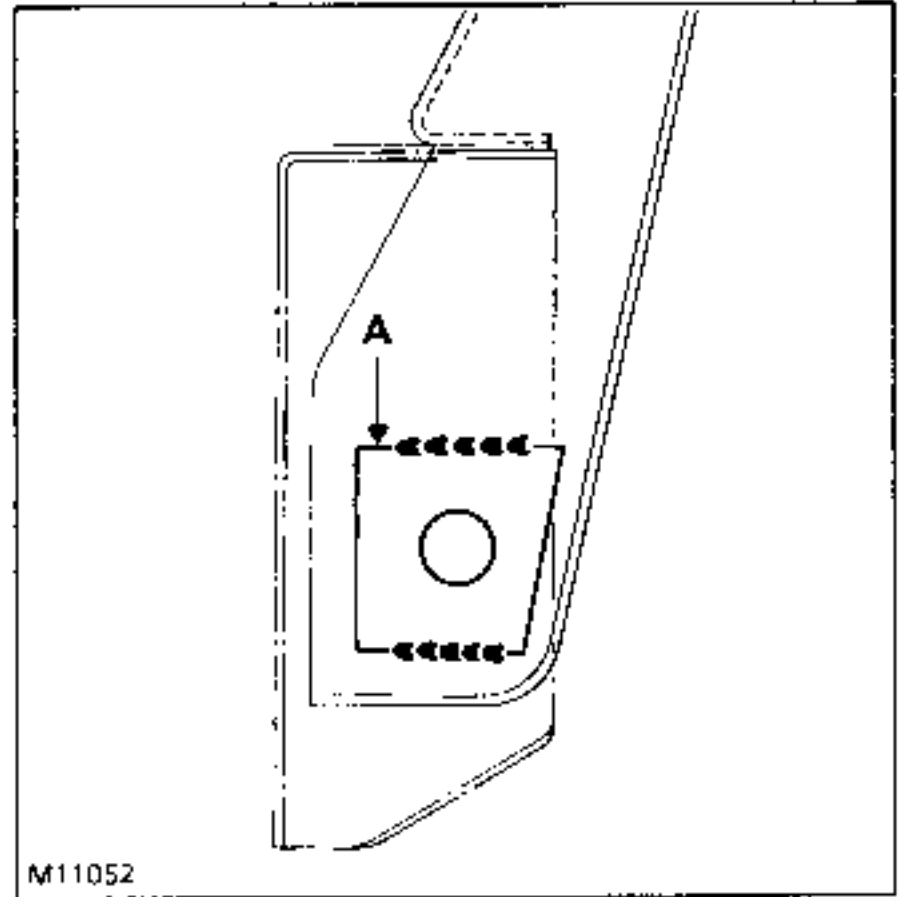


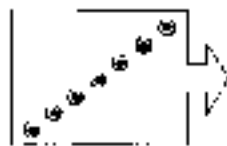
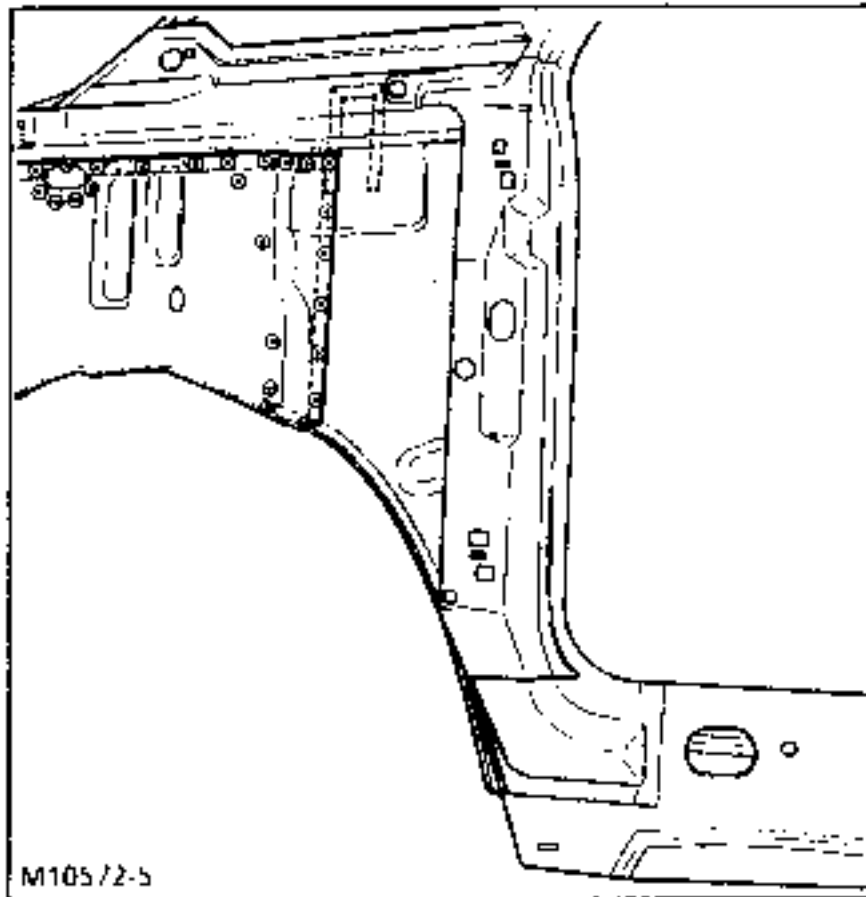


The service part contains holes for the bolt mounting the upper suspension arm in the shock absorber turret which are drilled to 17 mm diameter to enable the assembly to be positioned with the steering cross member.

The two plates (A) supplied with the new part are to be fitted in place on the outer faces of the shock absorber turret when the turret is broached on the jig bench.

Secure them with two 20 mm anchorage beads.





D = 5 mm

PROTECTION AFTER WELDING

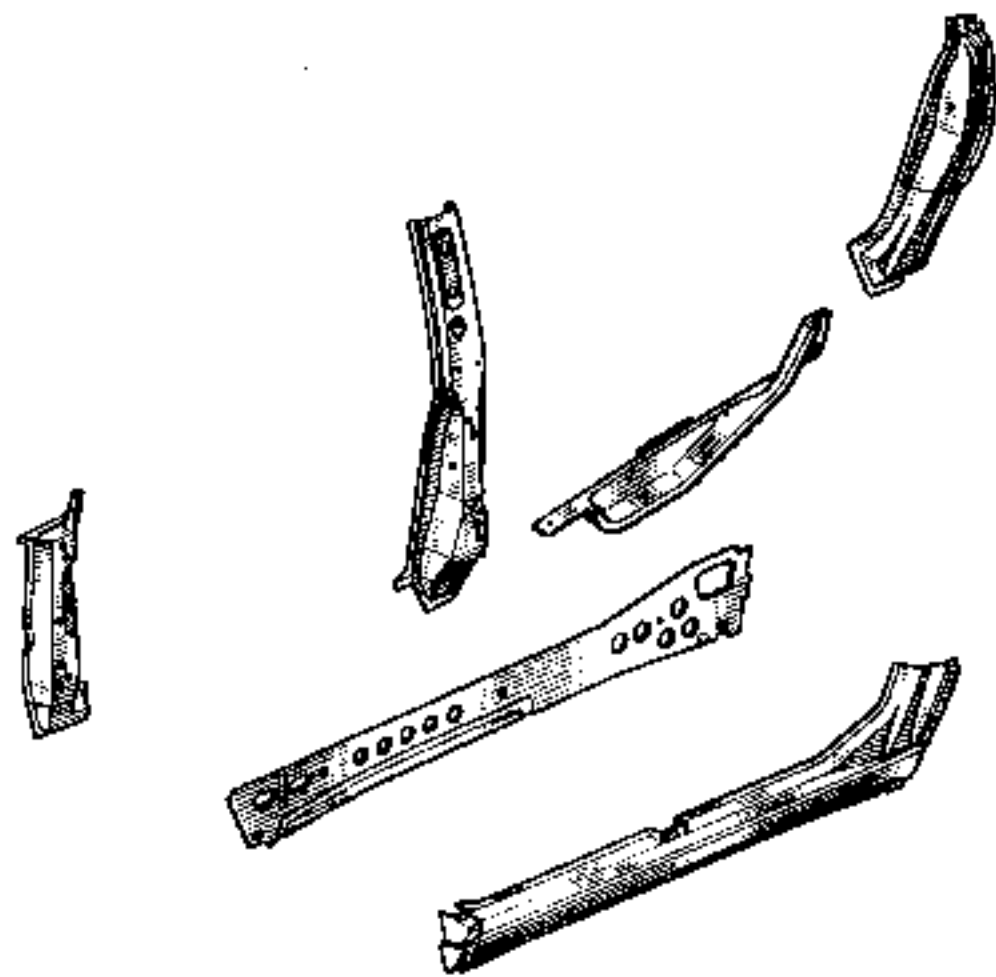
(See Espace Paintwork Manual MR.601)

Apply the passivation and zinc paint treatment to the welded areas.

Apply sprayed-on beads at the join of the cuts made in the engine compartment and on the inner wing flange panel outer section.

Apply black epoxy paint to the battery tray.

Apply the hollow section protection.



REPAIRING

- | | | |
|-------------|---------------------------|---------------------------------|
| - Fissures | See repair sequence no. 1 | General Section 40 - Page 40-40 |
| - Holes | See repair sequence no. 2 | General Section 40 - Page 40-41 |
| - Fractures | See repair sequence no. 3 | General Section 40 - Page 40-42 |

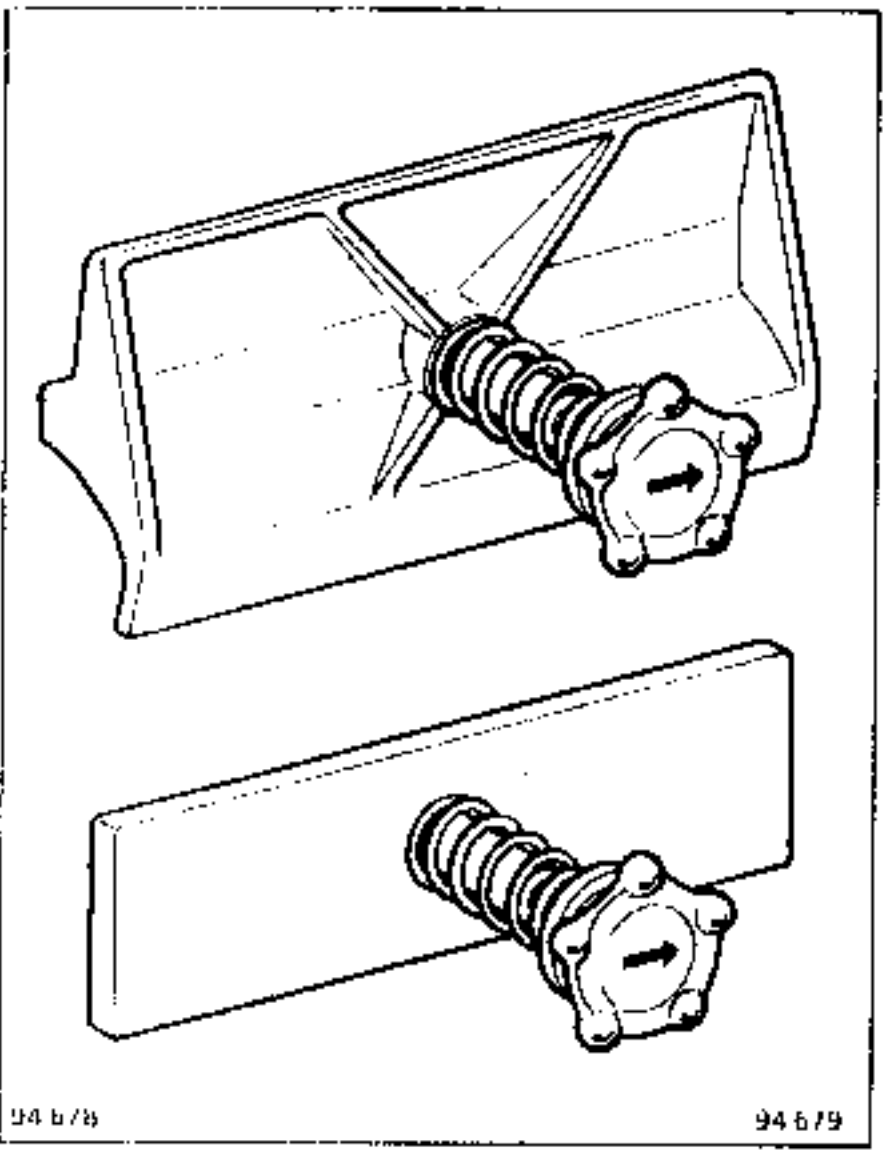
REPLACING

Parts to be replaced systematically:

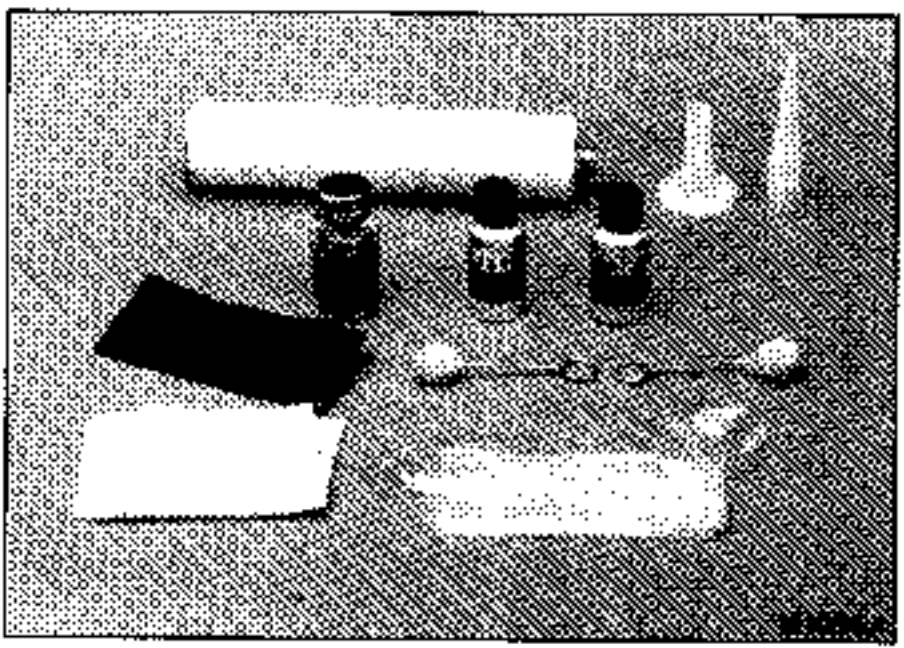
- 4.8 mm diameter pop rivets (8).

Tooling required:

- drill with 5 mm diameter drill bit;
- saw (with diamond powder blade or disc);
- sharpened spatula;
- vibrating tool for removing windows (25 mm blade and cleaning blade); the use of this tool is recommended for facilitating the removal operation;
- riveter;
- adhesive extrusion spray gun;
- centring tooling kit reference Car.1219.



Product required:
Bonding kit Part No. 60 25 170 306



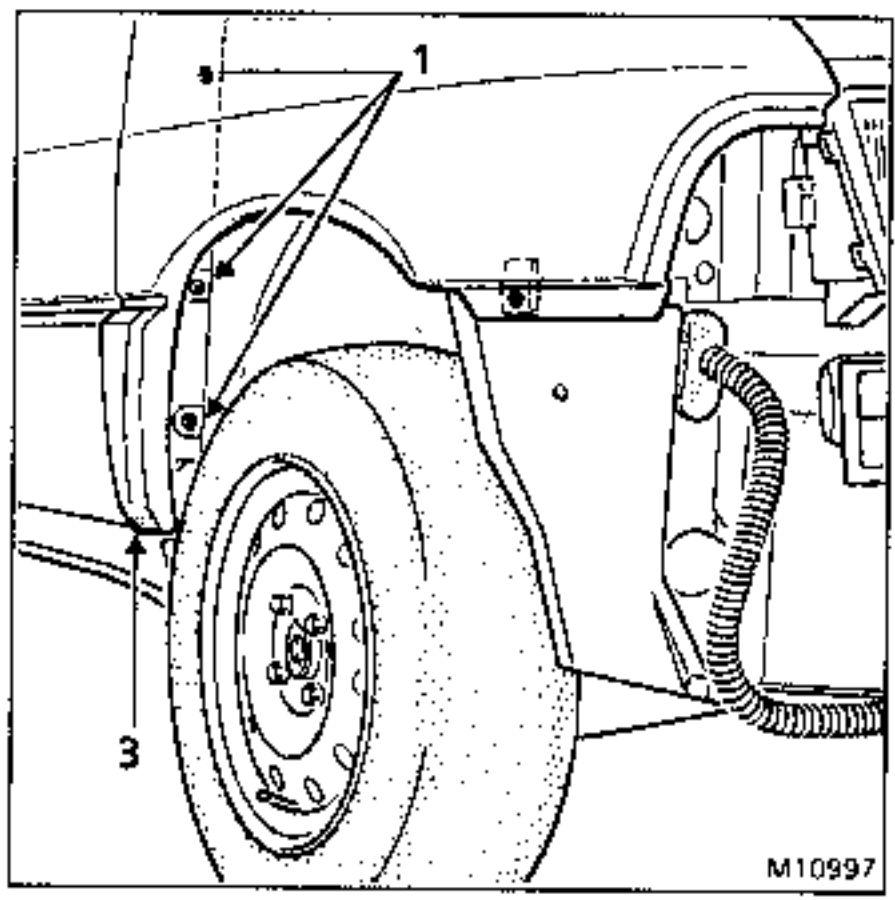
Personal protection:
Goggles, gloves, mask and personal
extractor nozzle.

REMOVAL

THIS OPERATION IS MADE EASIER IF THE VEHICLE IS PLACED ON AN HYDRAULIC LIFT.

THE DOORS DO NOT HAVE TO BE REMOVED.

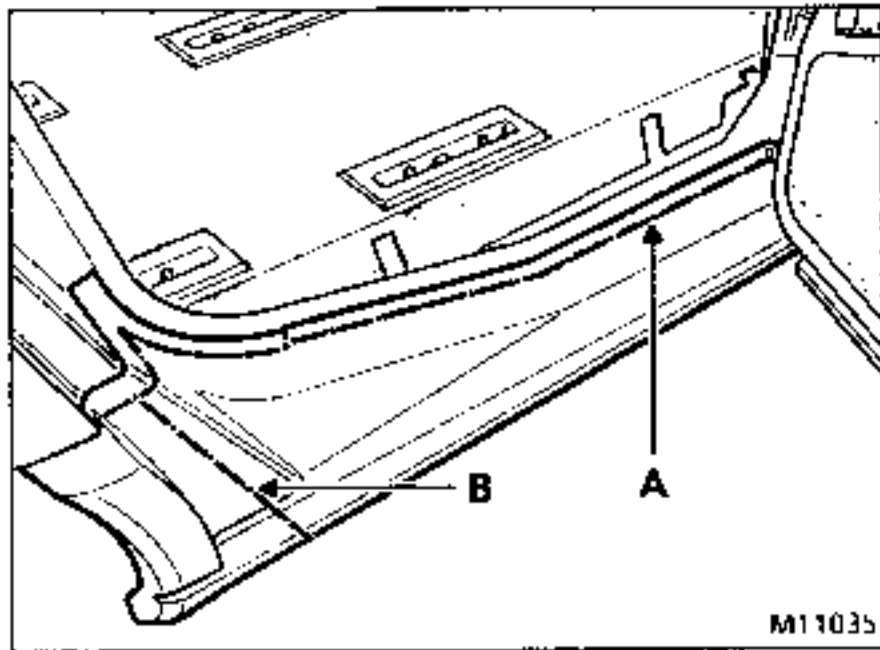
- Remove:
- the sill protection parts;
 - part of the door seals;
 - the front mudguard (5 rivets).



Drill the three rivets (1) securing the wing tensioner to the chassis.

Using a sharpened spatula or piece of piano wire, cut the adhesive head (3) between the sill and bottom of the front wing.

On the chassis trace the line marking the limit of the sill (to be used on refitting).



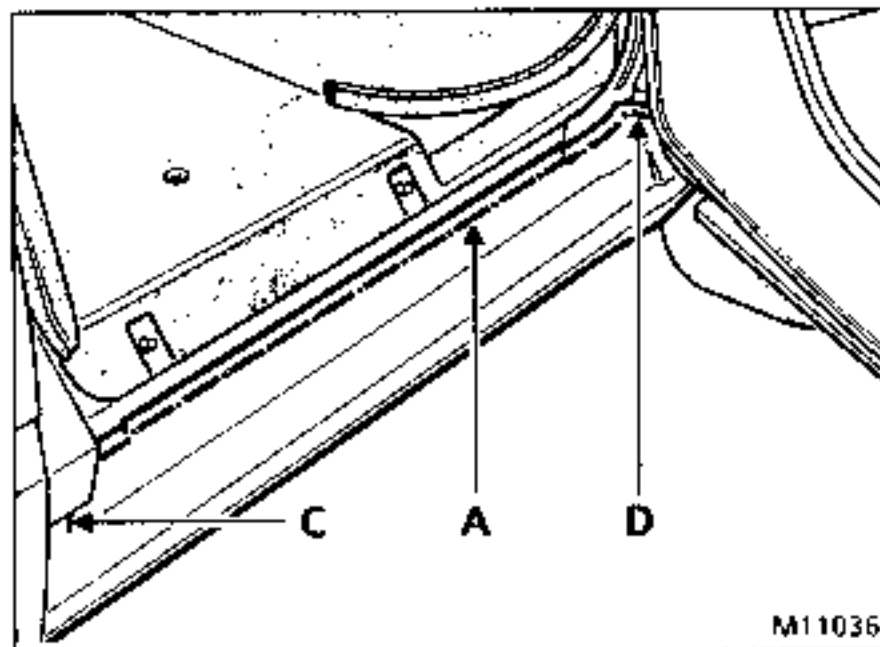
Remove the centre section of the sill.

Areas (B), (C) and (D) are to be removed using a saw and sharpened spatula.

For area (D), the wing must be moved aside in order to reach the sill.

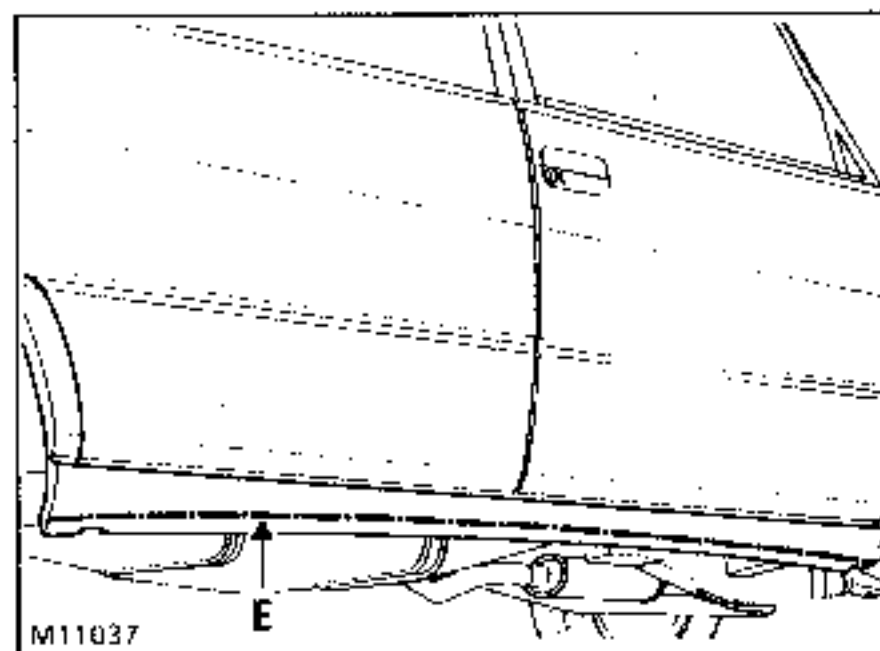
Using a sharpened spatula or the vibrating tool, grind back the head of adhesive remaining on the chassis and front wing, leaving 1 to 2 mm thickness.

Wipe the areas to be bonded on the structure with a dry cloth.



Using a vibrating tool, cut the head of adhesive between the chassis and sill (A).

Using a saw, cut out areas (B), (C), (D) and (E).

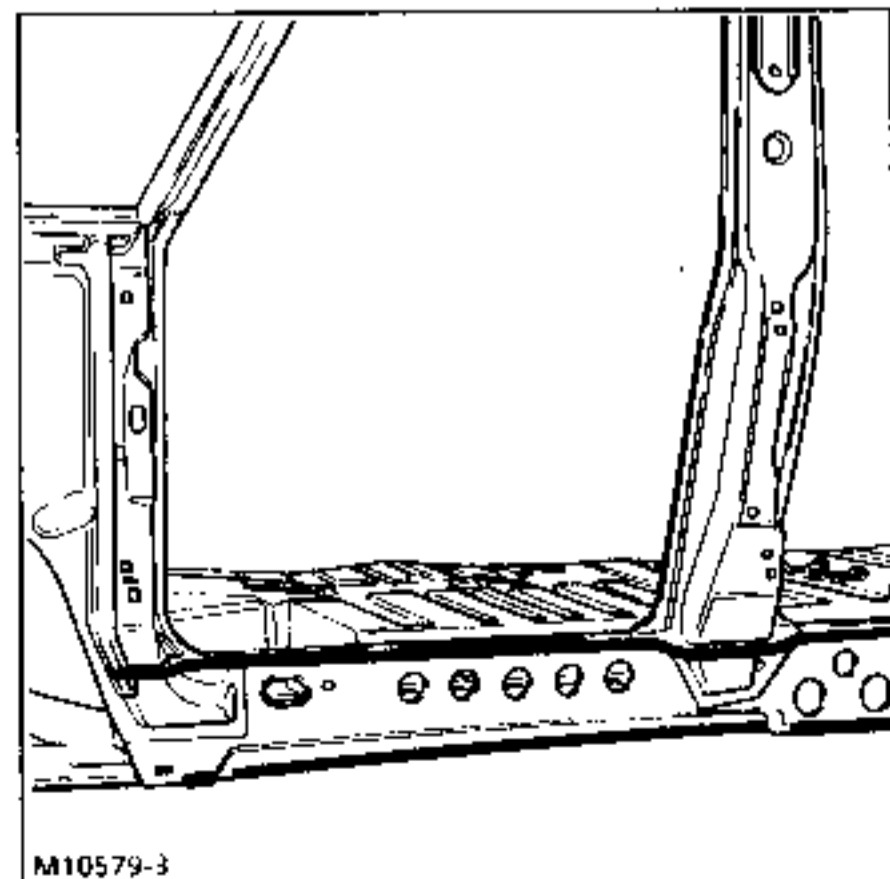
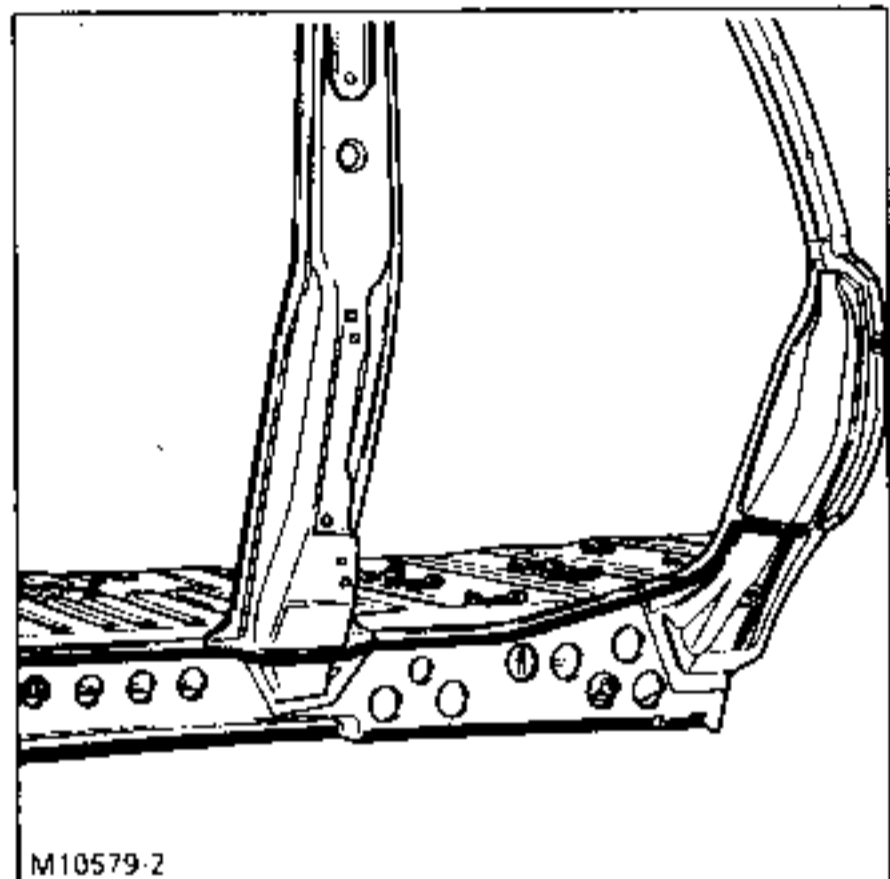


Preliminary step: the rear wing and doors must be correctly adjusted before the sill is bonded in place.

PLEASE SEE SECTION 40 FOR PRECISE INSTRUCTIONS ON USING THE PRODUCTS

FITTING THE NEW COMPONENT

Preparing the chassis



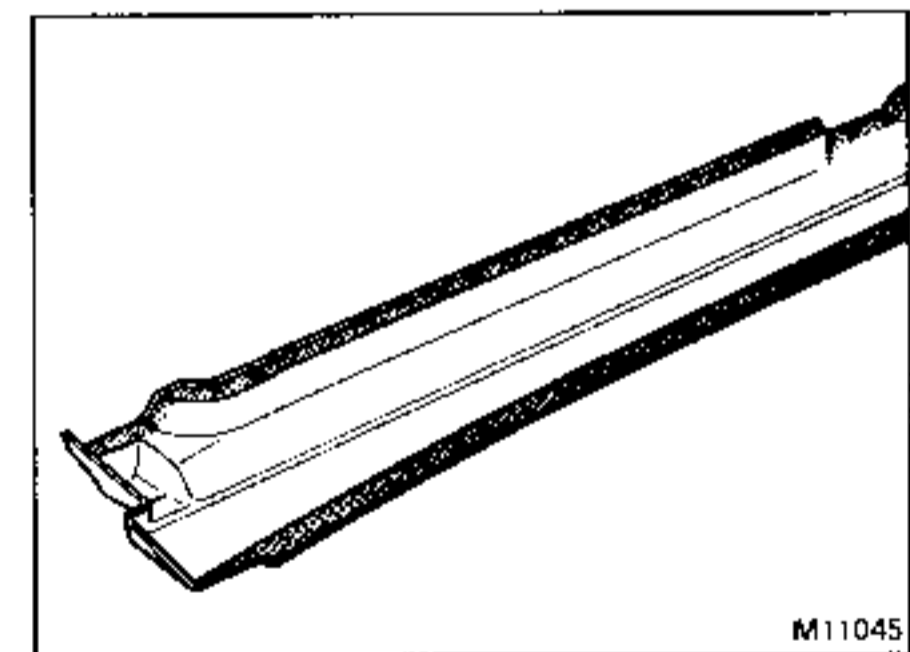
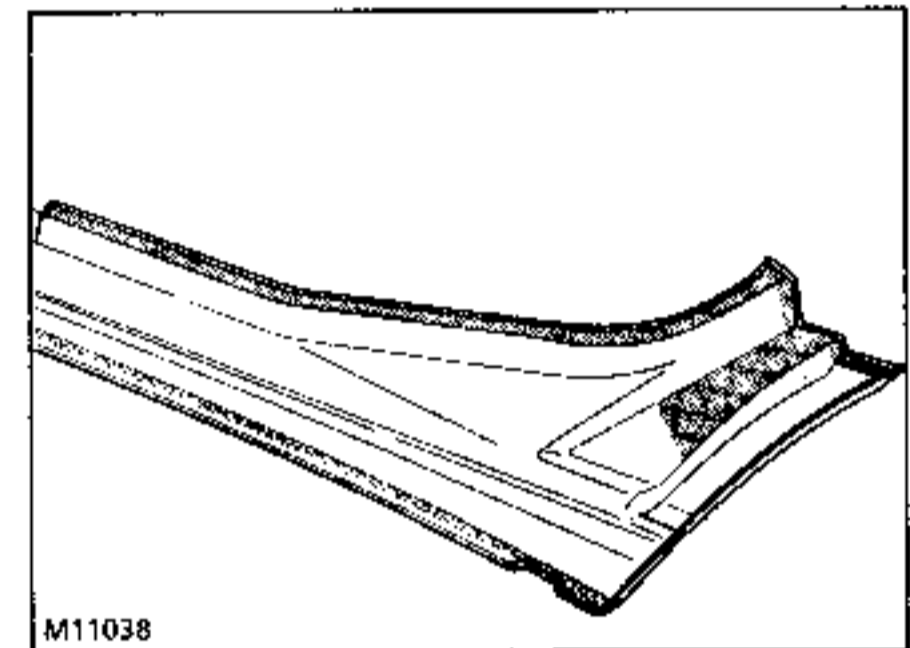
Coat the area to be bonded after degreasing it:

- bead remaining on the chassis;
- stripped or damaged galvanised areas; with the primer supplied in the kit.

NOTE: a new component is bonded to the chassis after the area to be bonded has been degreased and coated with primer.

IMPORTANT: any area of the chassis which is scratched must be covered with primer.

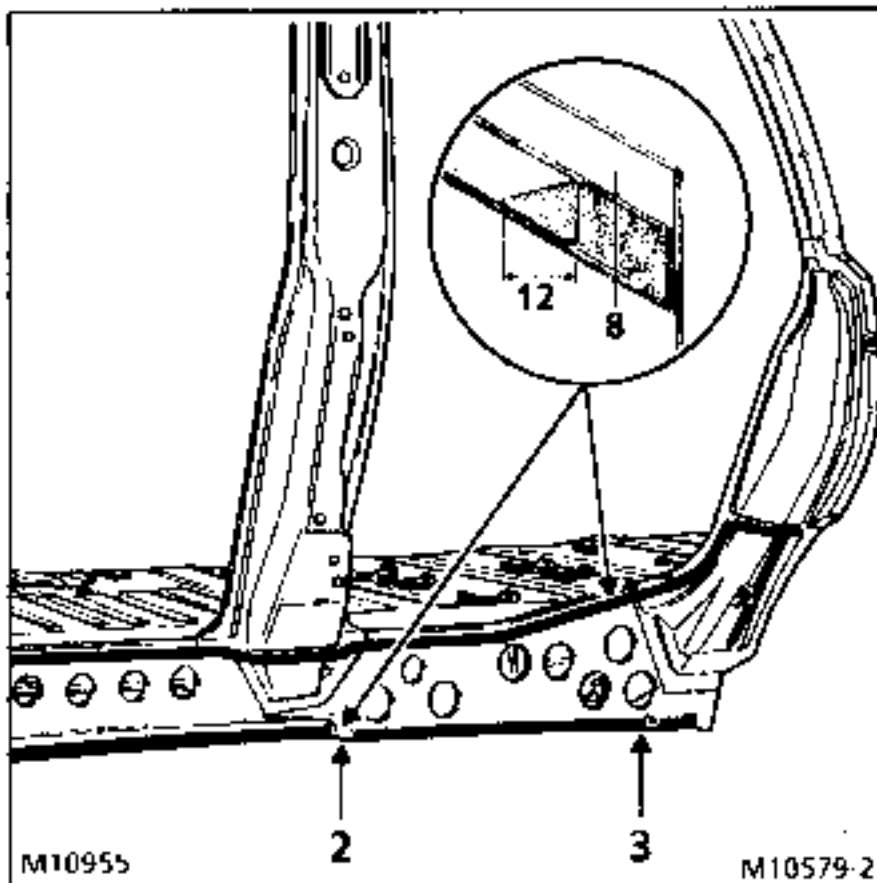
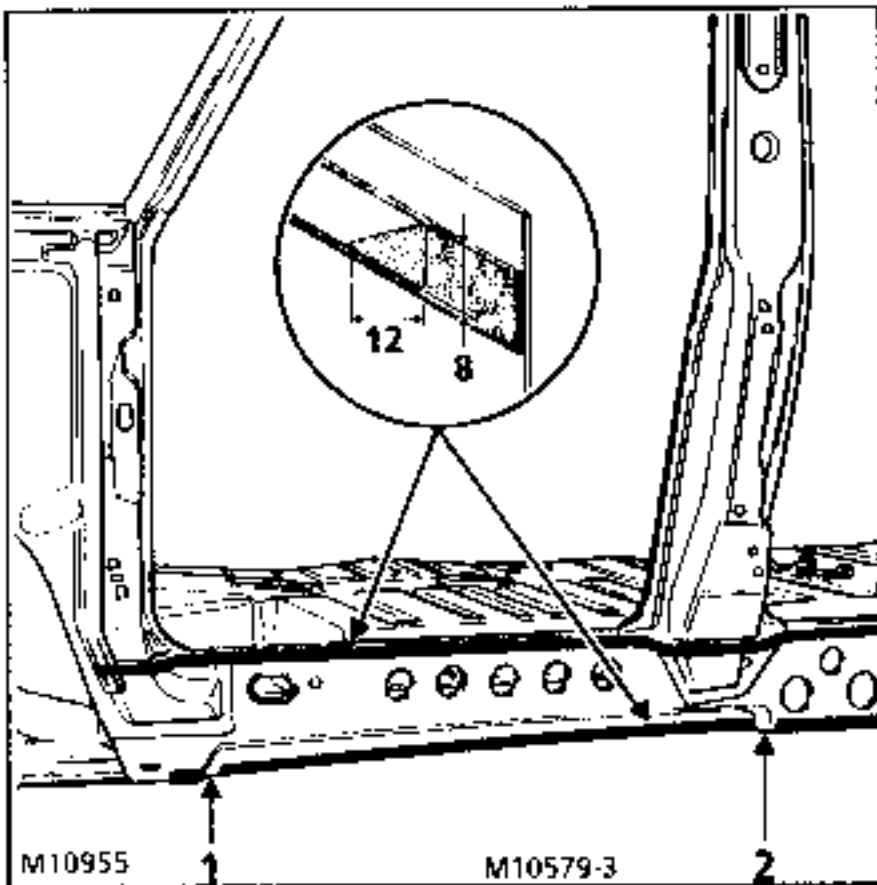
Preparing the new sill



Roughen the area to be bonded with P180 paper.

Degrease and coat with primer the area to be bonded behind the sill.

Applying the bead



Extrude a uniform bead over the chassis (as shown in the diagram).

THE SILL MUST BE BONDED DURING THE FOLLOWING 10 MINUTES.

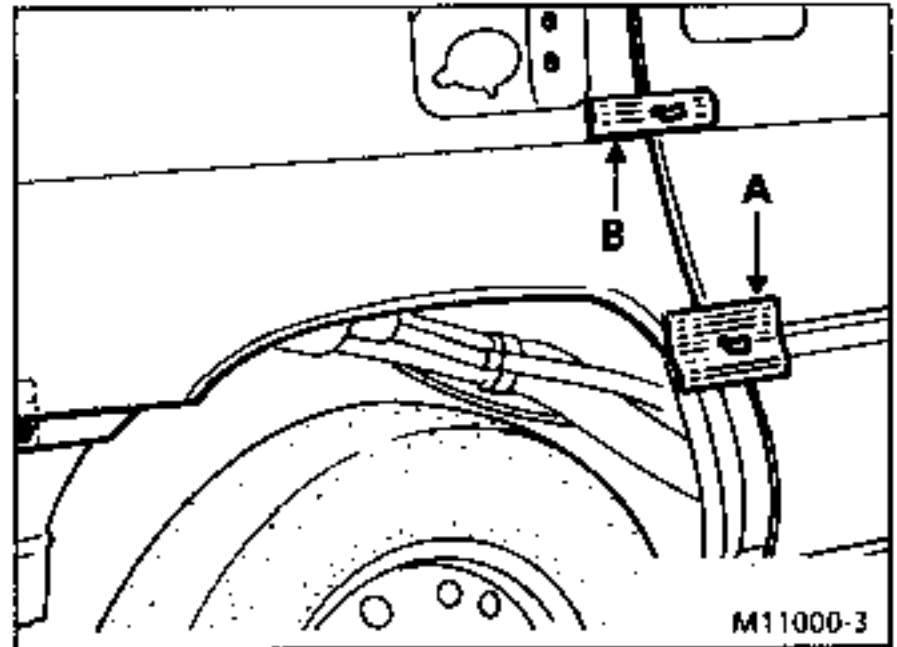
ATTENTION: do not extrude adhesive into areas (1), (2) and (3) which are provided for the drainage of water.

Fitting the sill (doors open)

Move aside the front wing to enable the sill to be passed through.

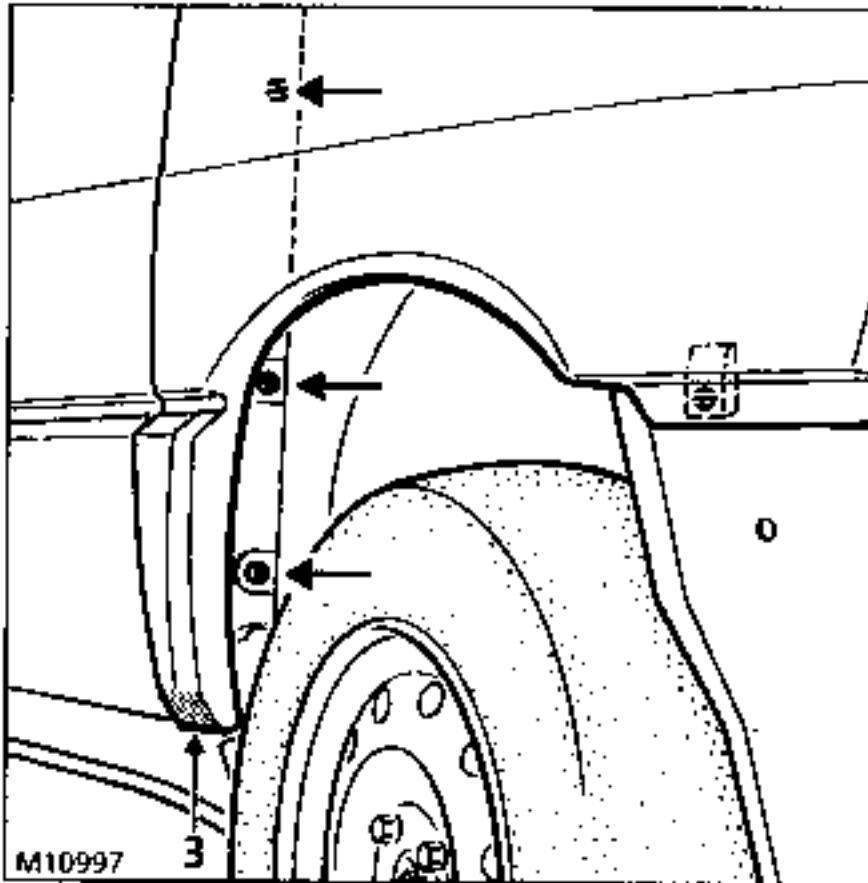
Apply the sill to the chassis aligning:

- the upper edge with the line traced initially;
- the rear section on the rear wing.

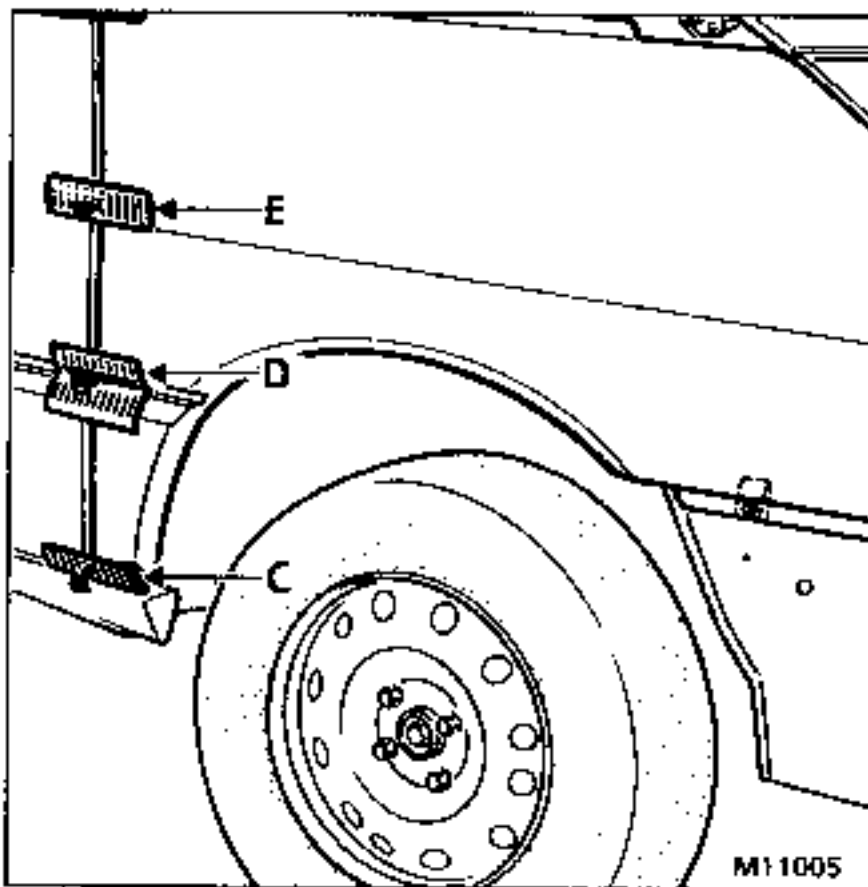


Close the doors and check the clearances and alignment of the rear wing and doors in relation to the sill.

Adjust if necessary by fitting centring tools (A) and (B).



Extrude a bead of adhesive between the front wing and sill at (3) and fit the wing. Rivet the wing tensioner after aligning the wing with the door using centring tools (C), (D), and (E).



Wait 30 minutes before touching.

The following parts are refitted after painting:

- the front mudguard;
- the door seals;
- the sill protection parts.

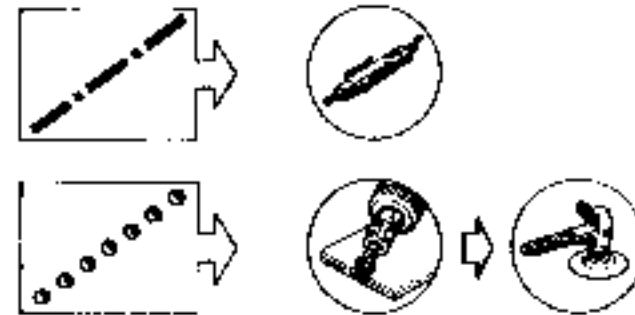
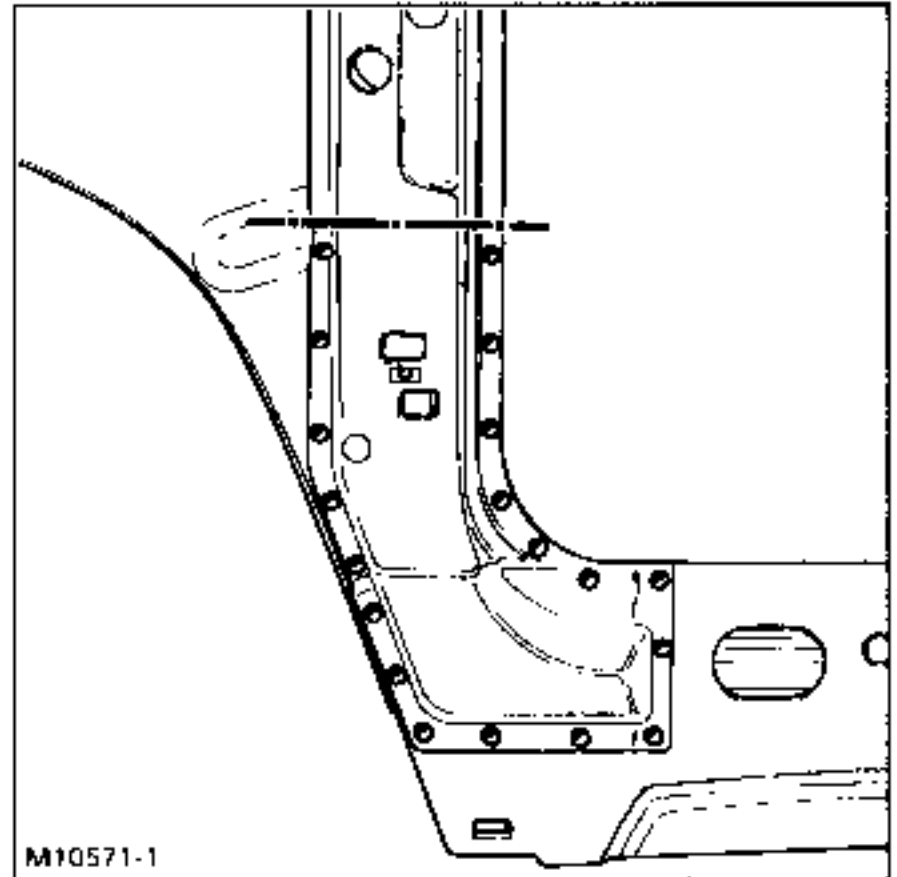
REPLACING

This operation requires the adjacent components to be removed. Please consult the relevant sections.

PROTECTION

Protect the inside of the vehicle using a cover resistant to splashes from grinding and welding.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



CUTTING OUT - UNPICKING

Remove the damaged part following the instructions in the diagrams (see key to the symbols).

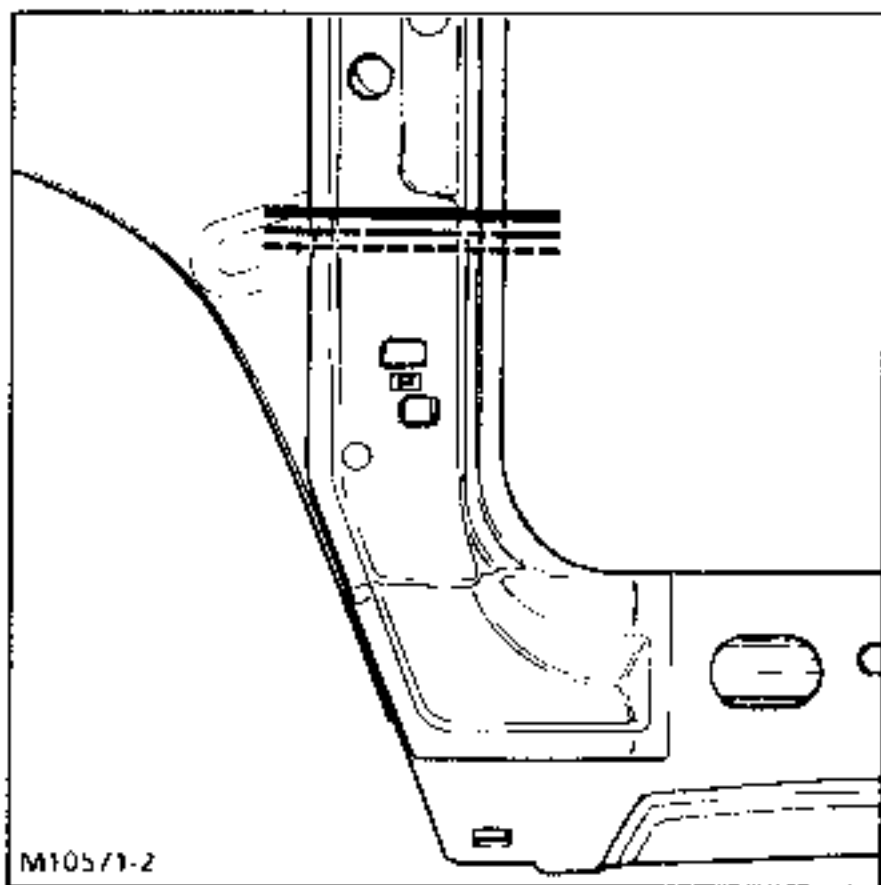
Grind back any remaining parts of unpicked spot welds and excess zinc remaining on the backing panels.

PREPARING THE NEW PART

On the new part cut out a part approximately 50 mm larger than the part cut out from the vehicle.

Position the new part on the vehicle so that it overlaps and secure it using vice clamps.

Saw simultaneously through both panel thicknesses so as to align the cuts correctly.

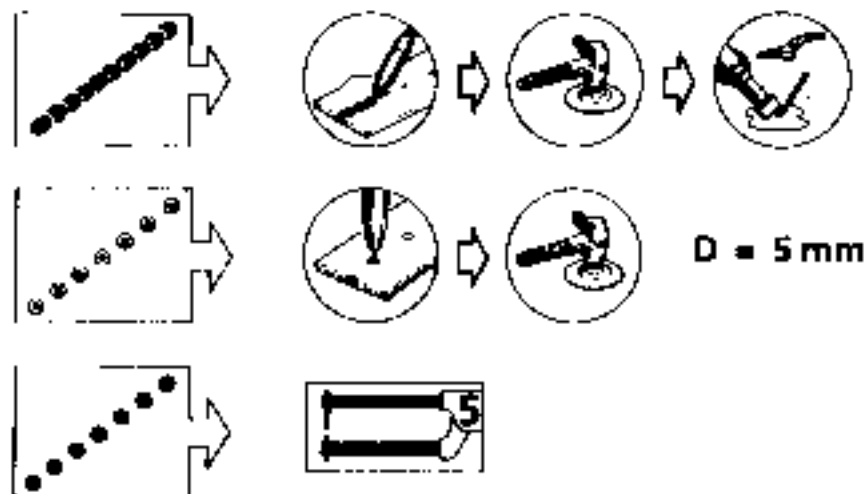
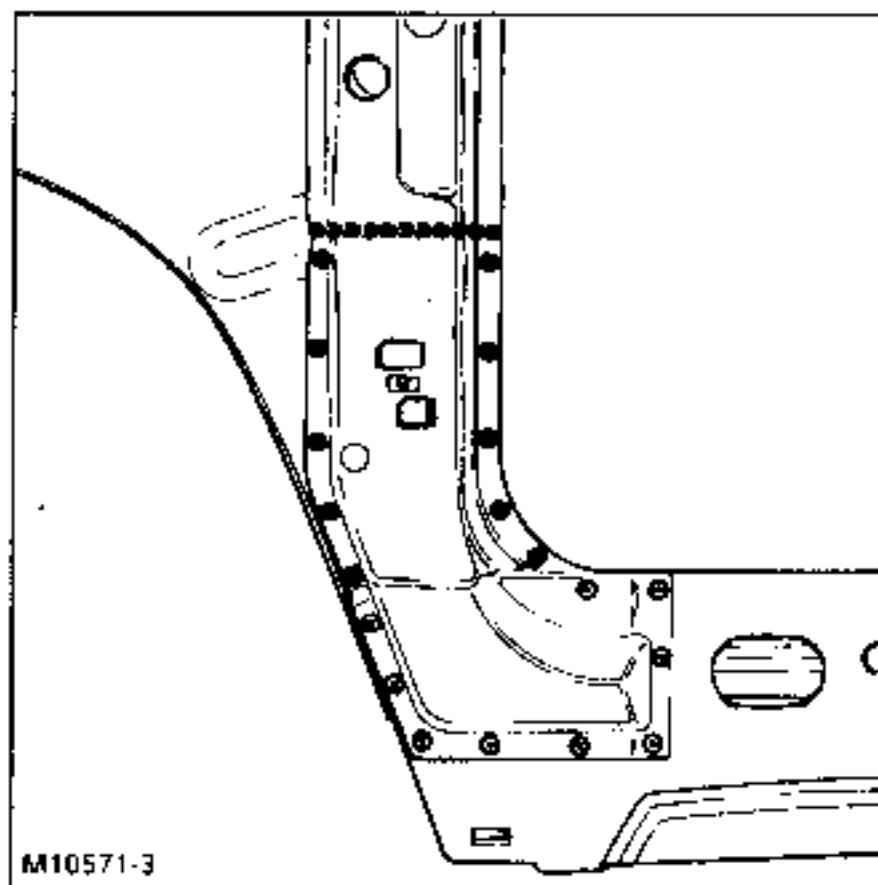


WELDING

If necessary adjust the new part then secure it in place using vice clamps.

Apply:

- the tack welds to the butt weld lines;
- the electric spot welds;
- the stitch welds with a protective gas envelope;
- soft solder to the butt welded parts after grinding back the weld bead;
- the protection after welding.



(See Espace Paintwork Manual MR.601)

Apply the passivation - zinc paint treatment for the welded areas.

Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

Apply the hollow section protection after painting.

REPLACING

The adjacent components must be removed for this operation (please consult the relevant sections).

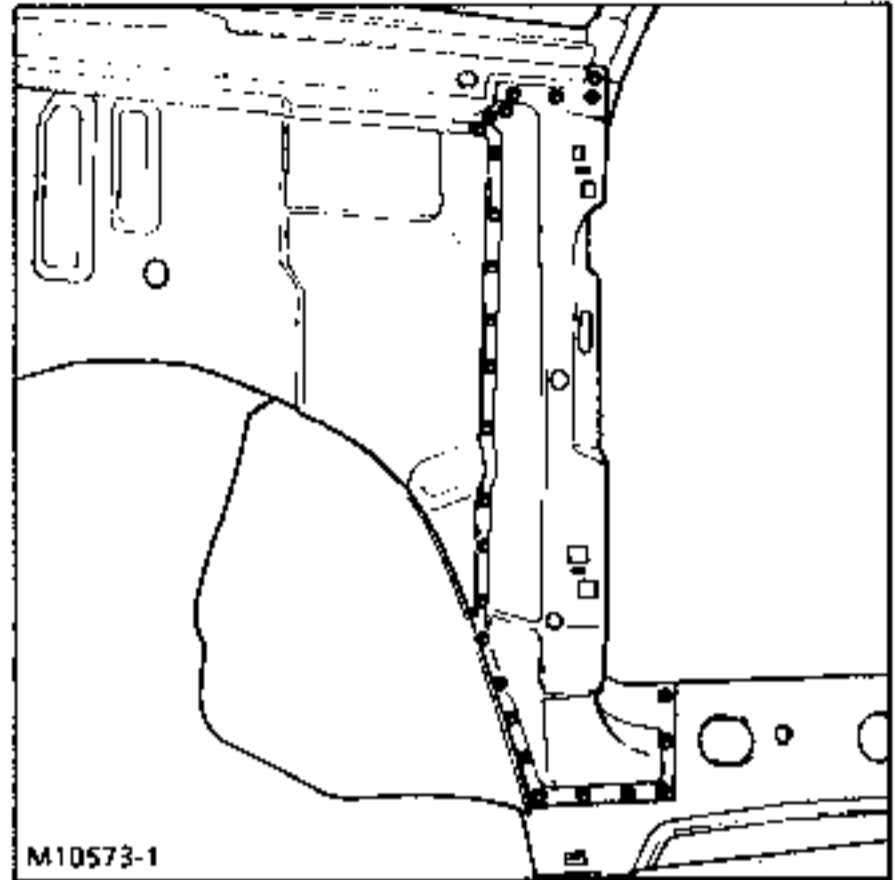
PROTECTION

This is essential and identical to the operation for replacing the lower section of the front pillar.

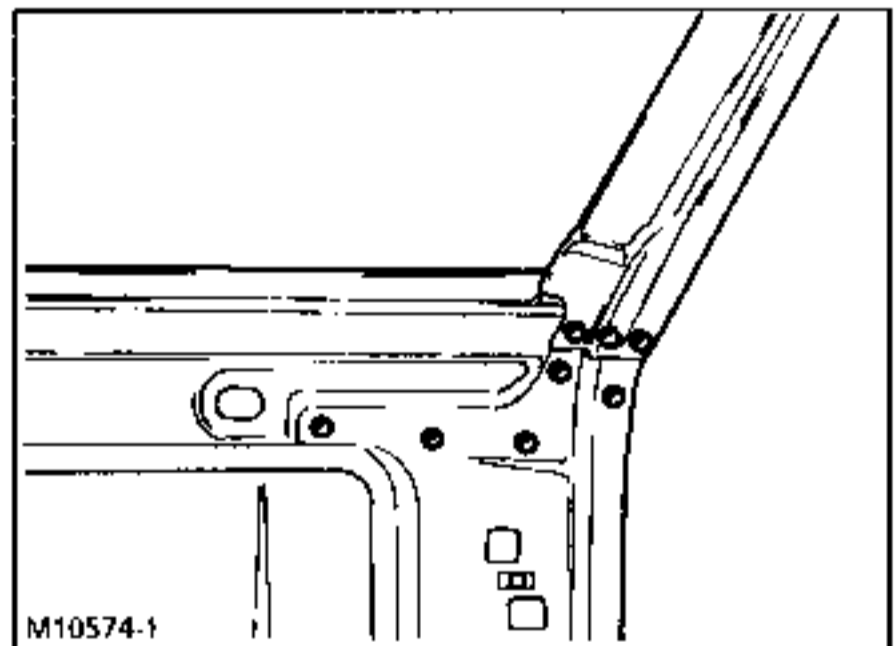
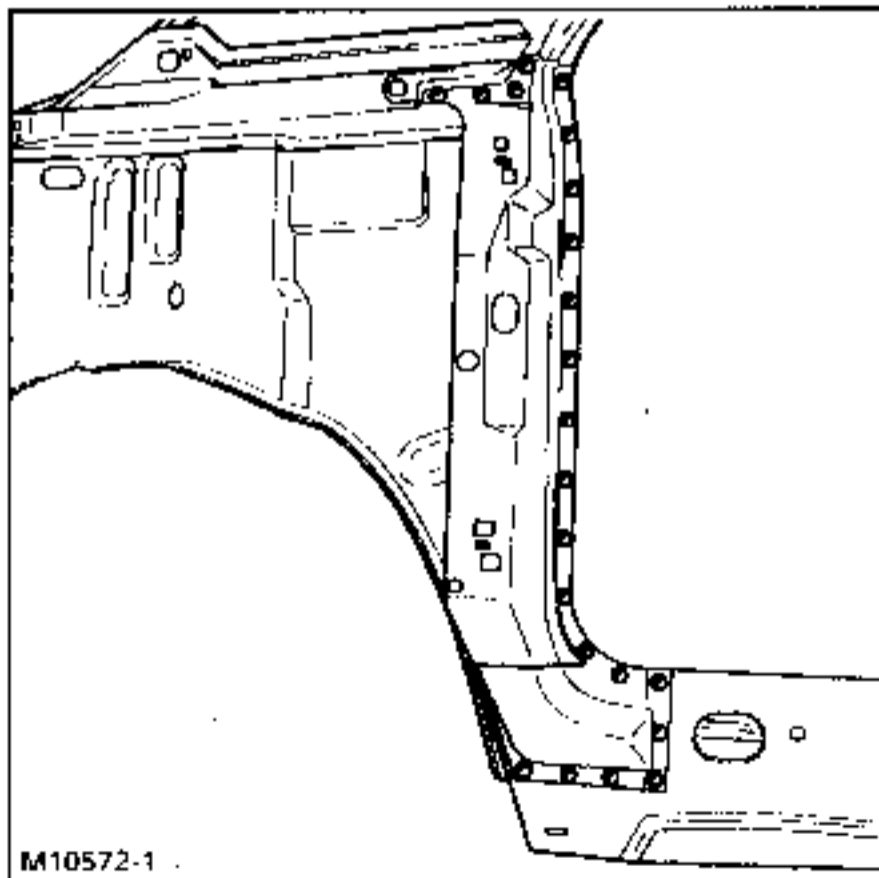
COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT

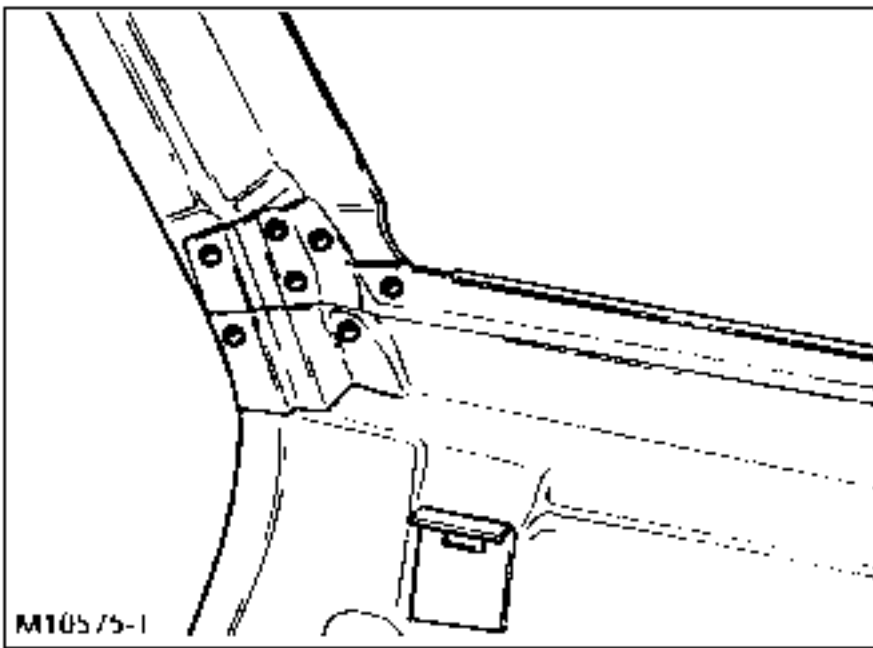


Grind back any parts of unpicked spot weld and excess zinc remaining on the backing panels.



CUTTING OUT - UNPICKING

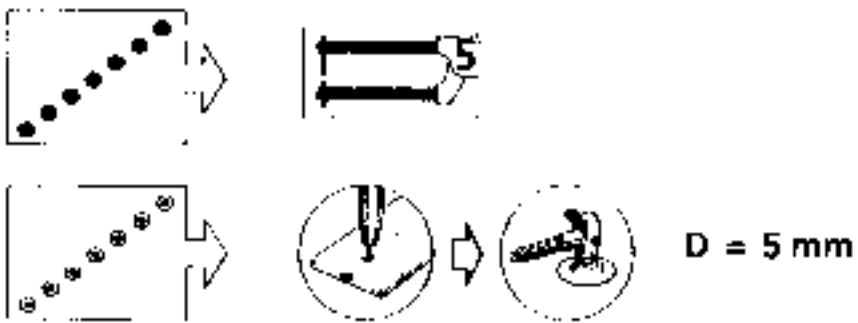
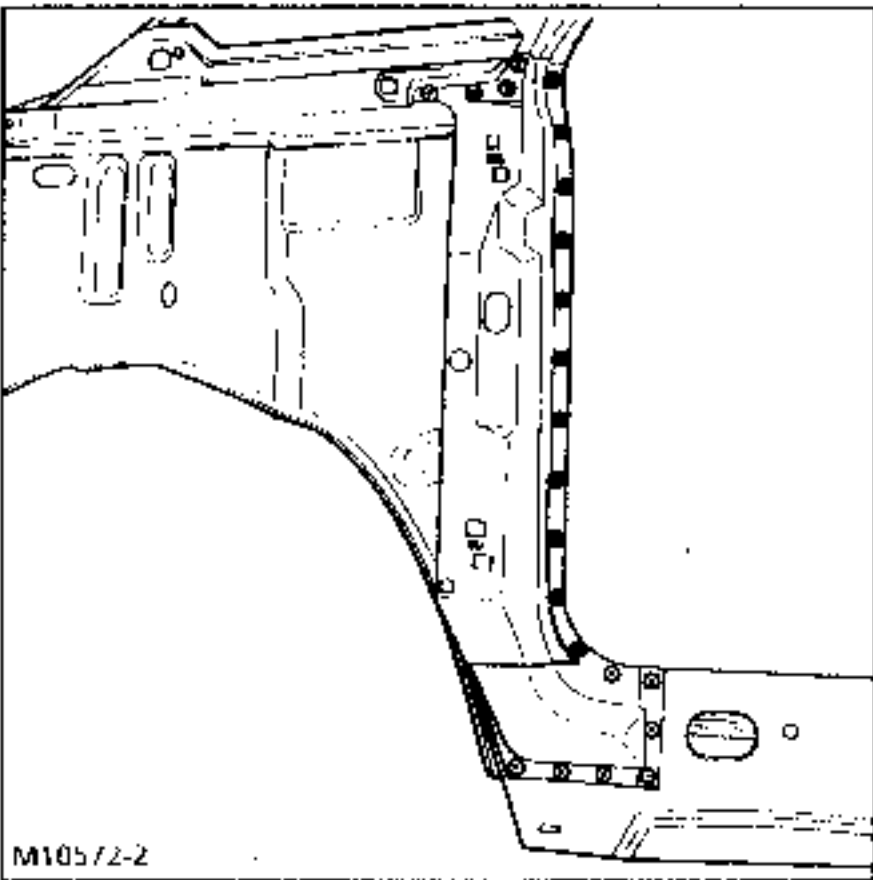




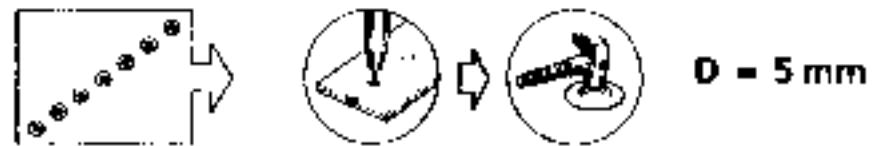
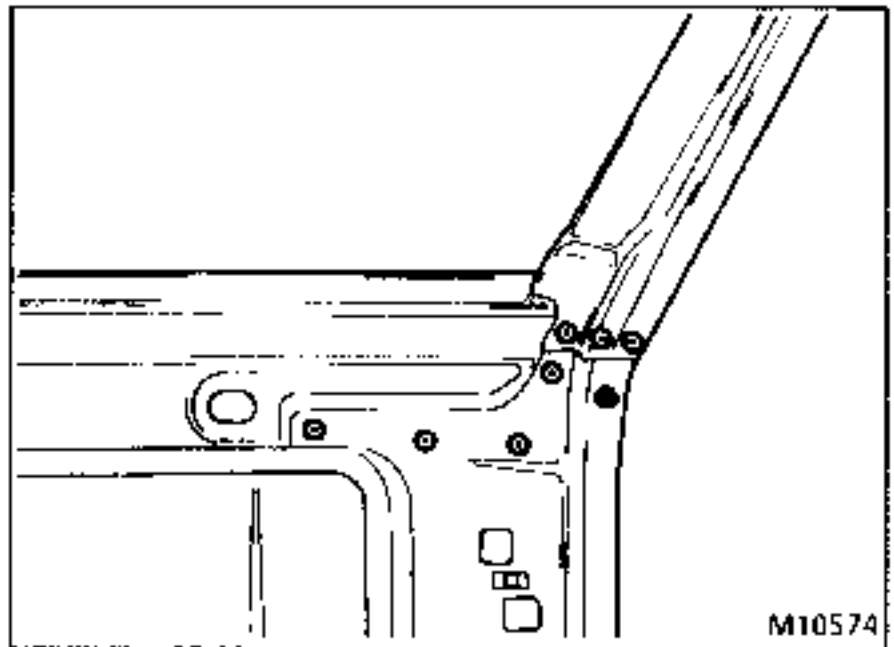
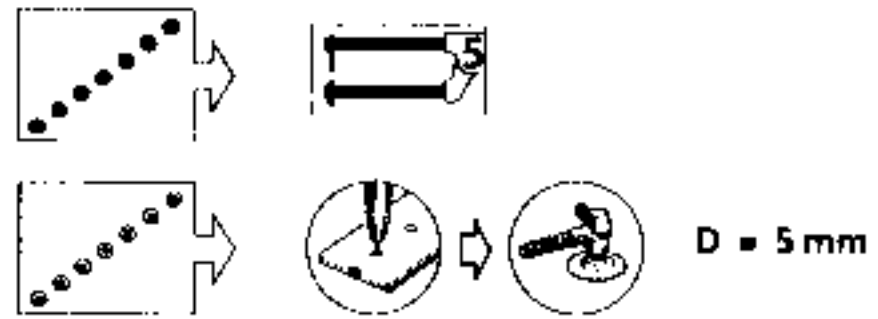
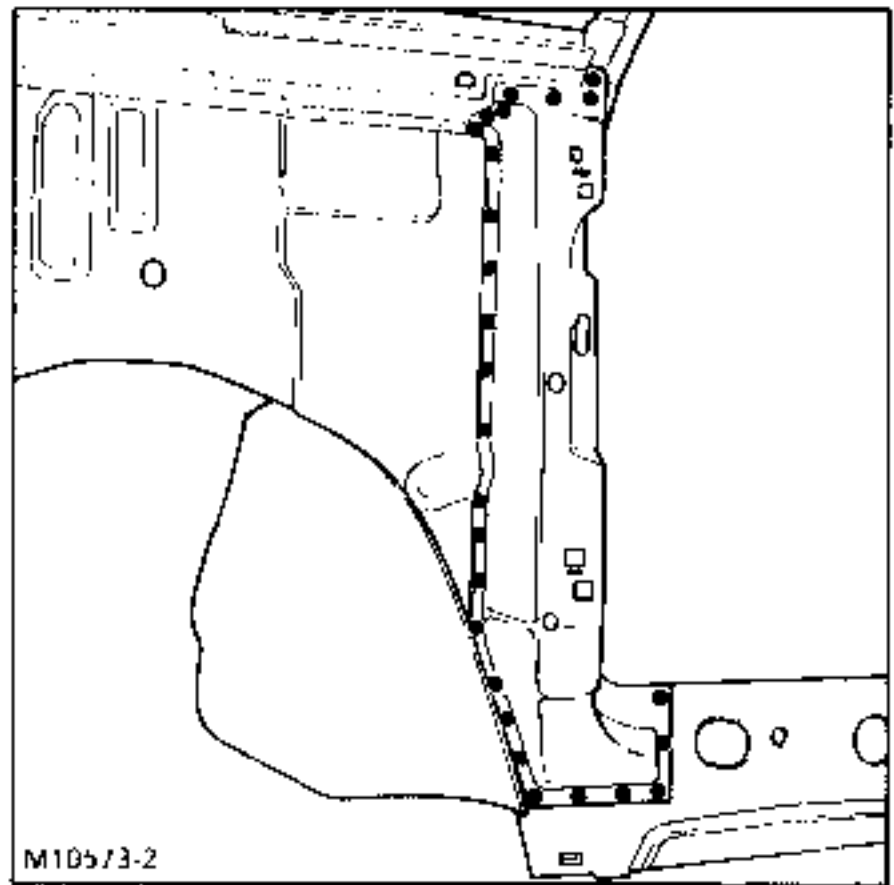
PREPARING THE NEW PART

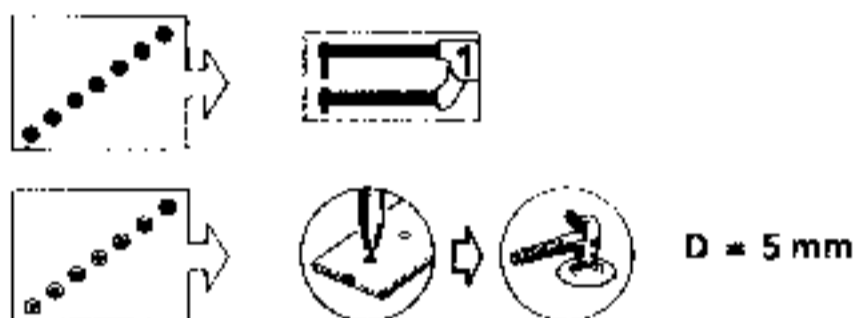
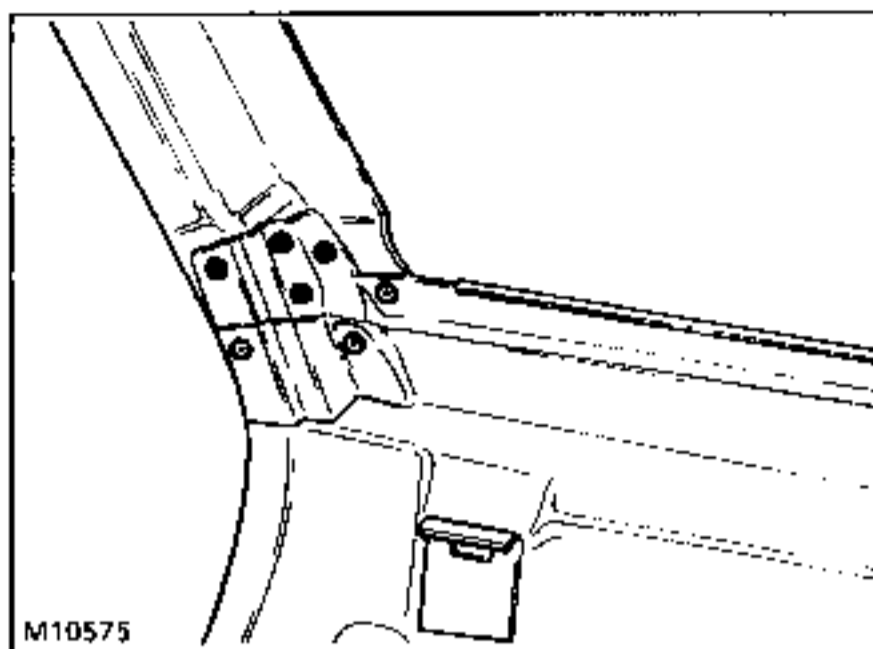
On the parts to be welded, grind any excess zinc so as to obtain good alignment during welding.

WELDING



Adjust the new part then secure it using vice clamps.






(See Espace Paintwork Manual MR.601)

Apply the passivation - zinc paint treatment for the welded areas.

Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

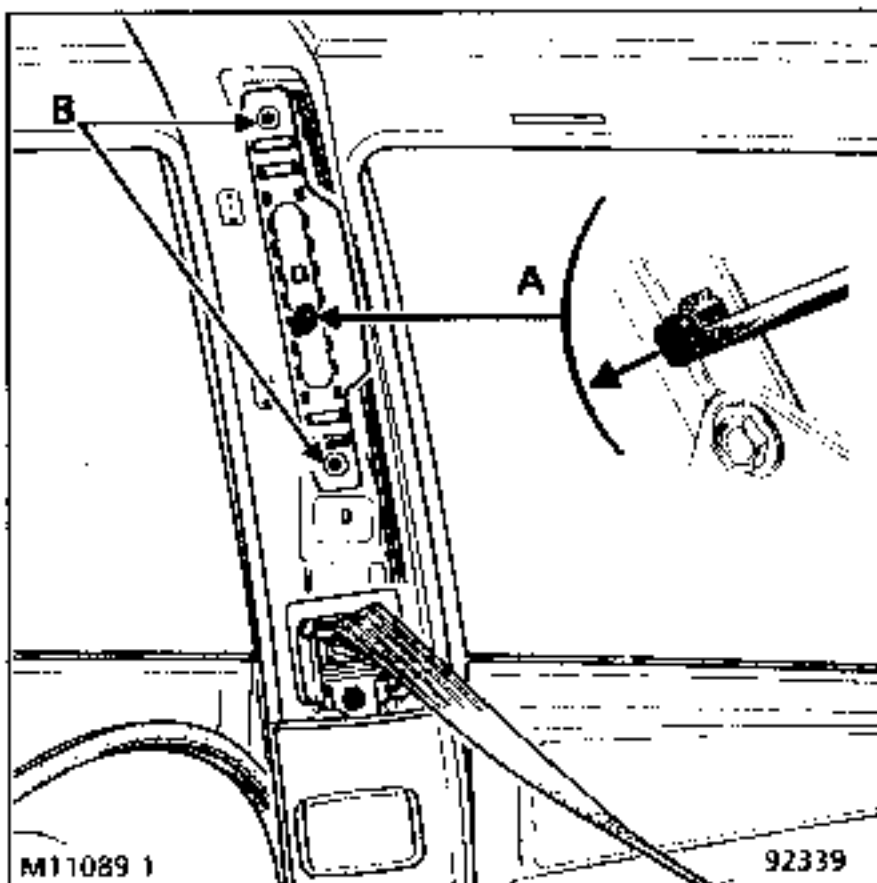
Apply the hollow section protection after painting.

TIGHTENING TORQUES (in daNm)		
Safety belt bolts	3 to 4	

REPLACING

REMOVAL

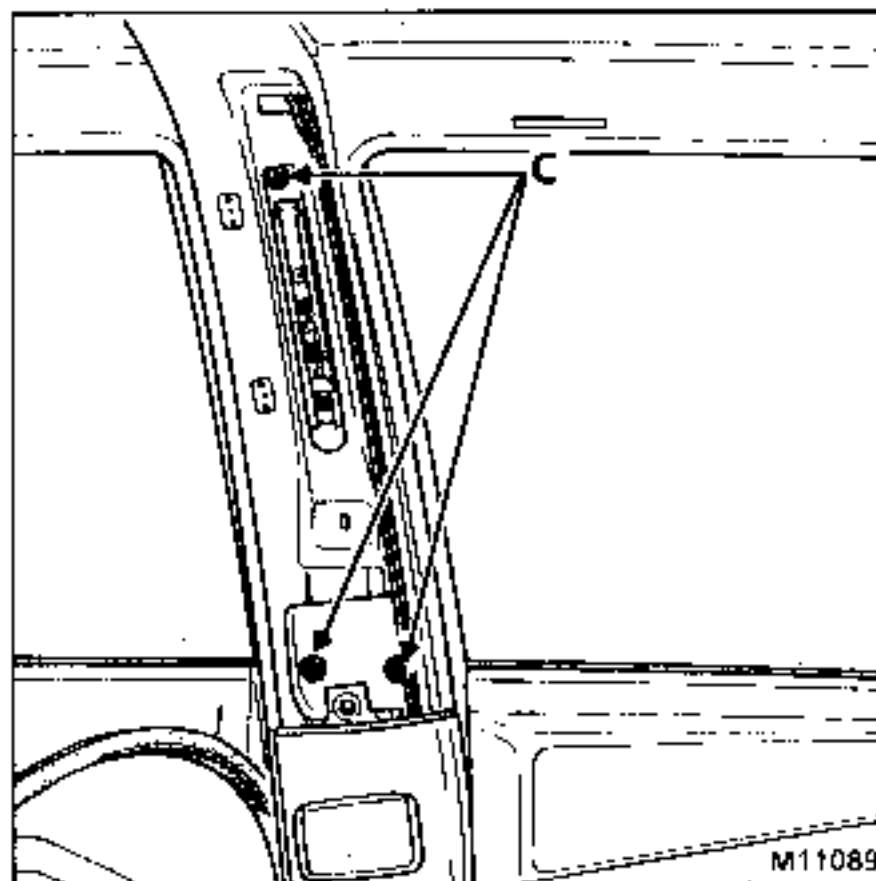
Unscrew the seat belt upper mounting.
Unclip the two grab handle mouldings, remove the handle and its base.
Remove locally the door snapper seals from the top of the centre pillar.
Unstick the centre pillar trim.



Unclip vertical adjusting control knob (A).

Unscrew the two bolts (B) from the adjusting system.

Unscrew the three bolts (C) from the centre pillar moulding.



REFITTING

Coat the three bolts (C) with a sealing product.

Perform the above operations in the reverse order to removal.

Torque tighten the seat belt upper mounting as specified.

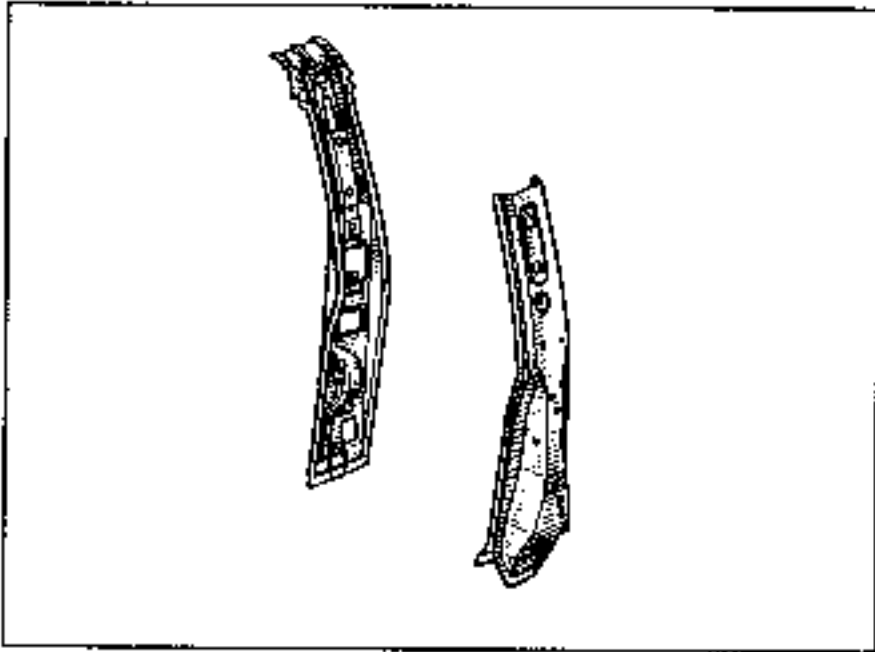
REPLACING

This operation requires the adjacent components to be removed. Please consult the relevant sections.

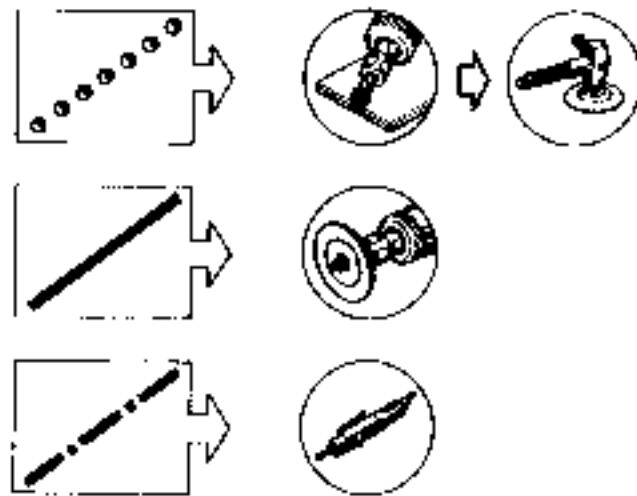
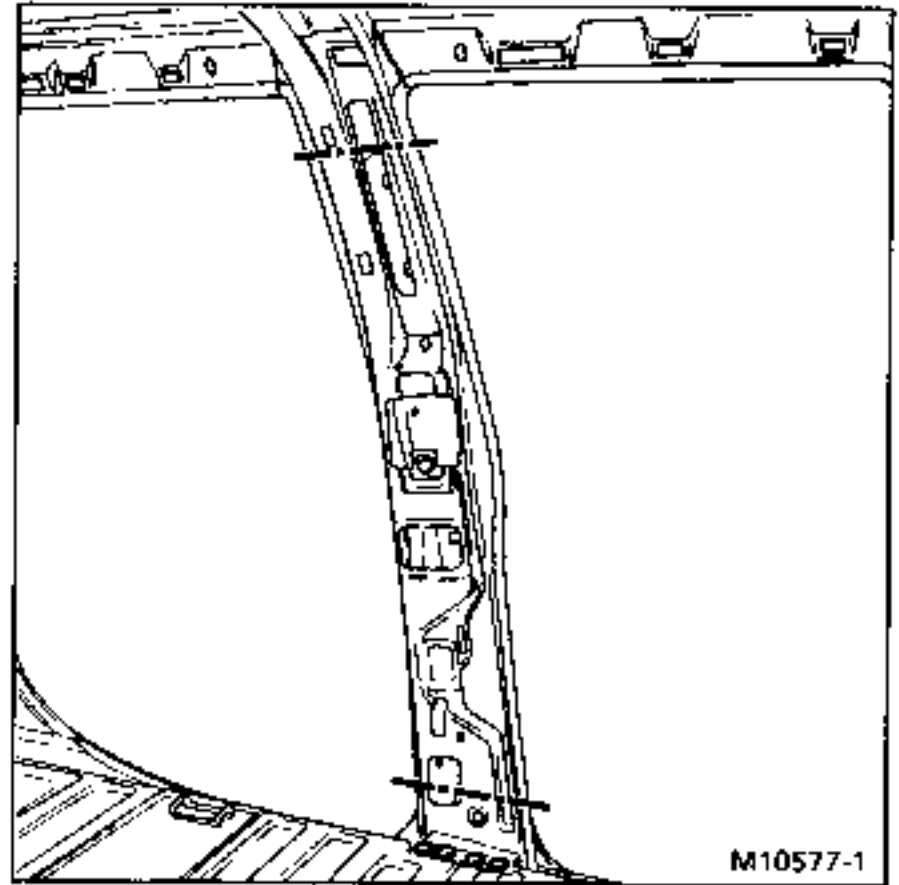
PROTECTION

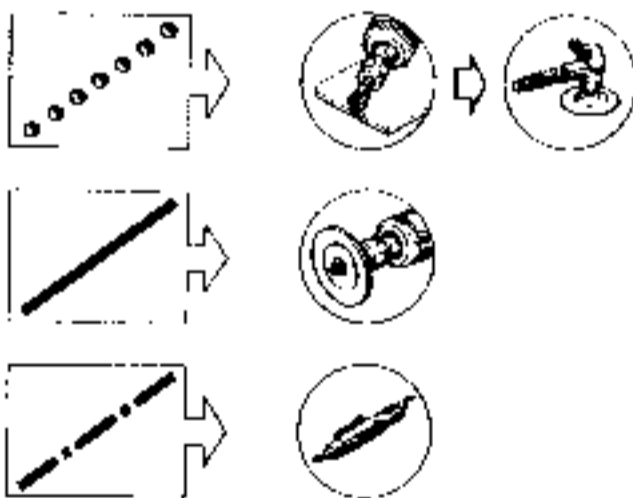
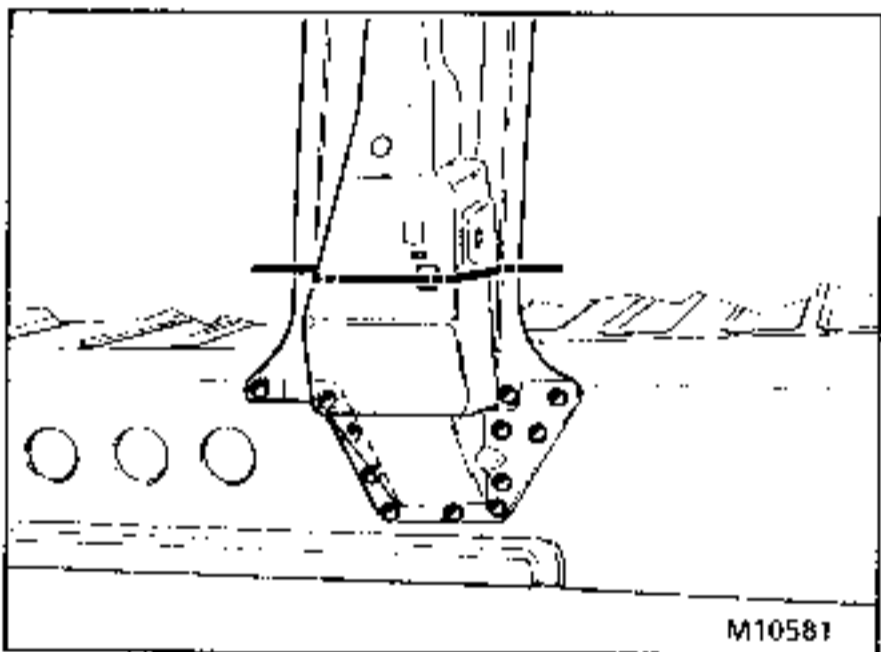
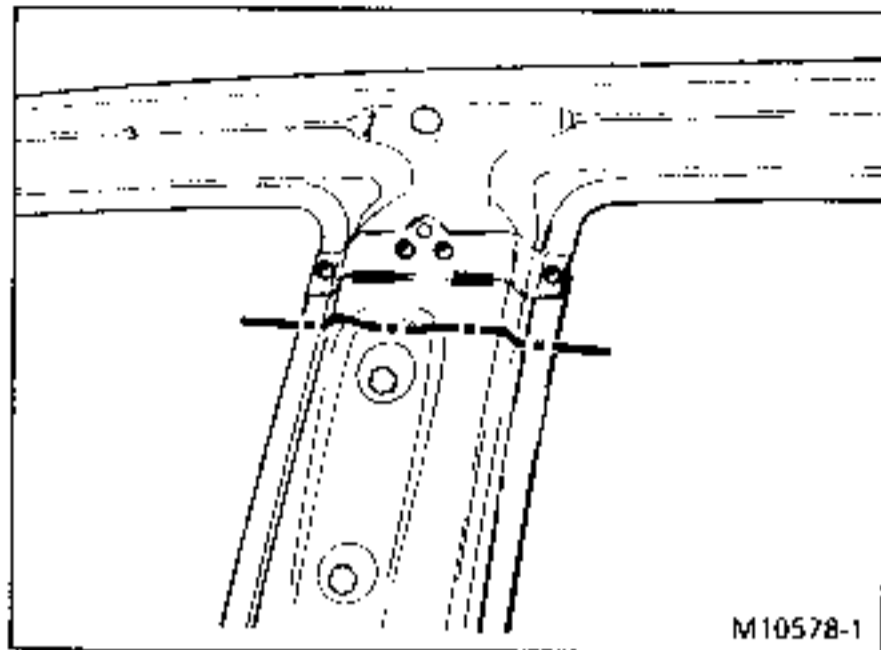
This is essential, as for any repairs affecting the inside of the vehicle.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



CUTTING OUT - UNPICKING





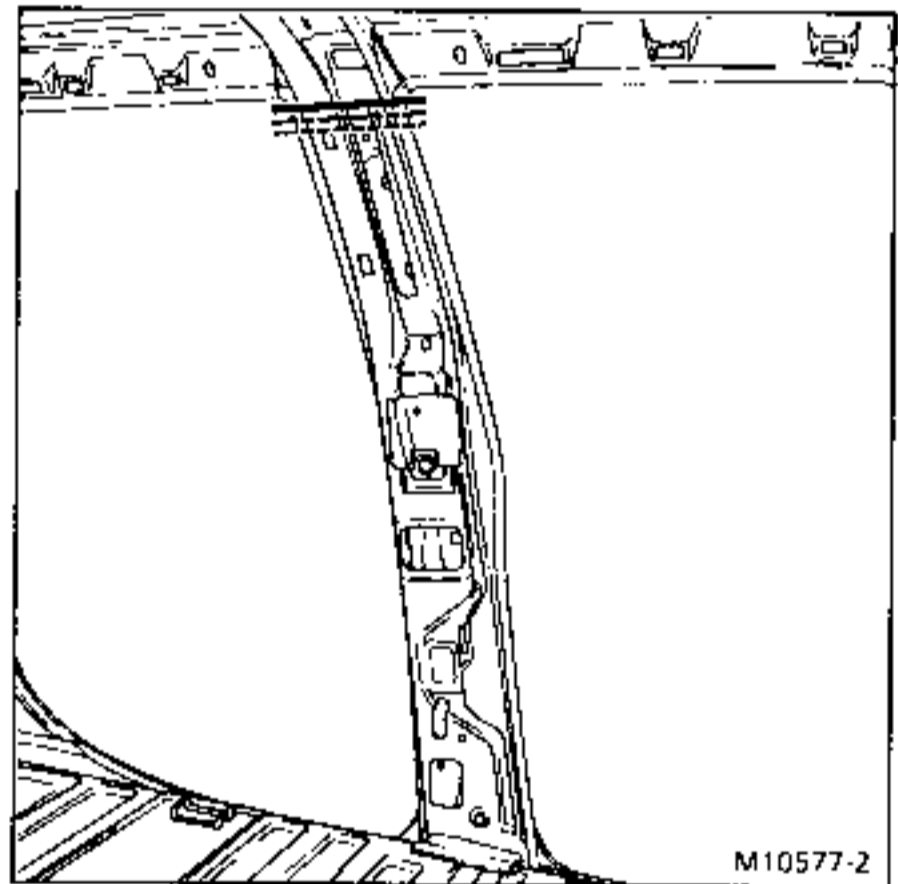
PREPARING THE NEW PART

On the parts to be welded, grind down any excess zinc so as to obtain good alignment.

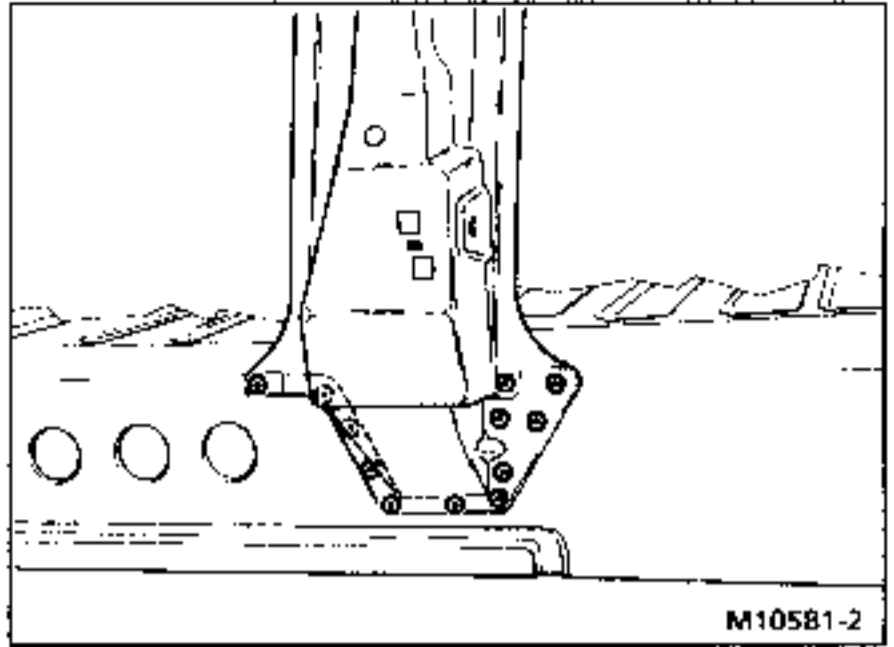
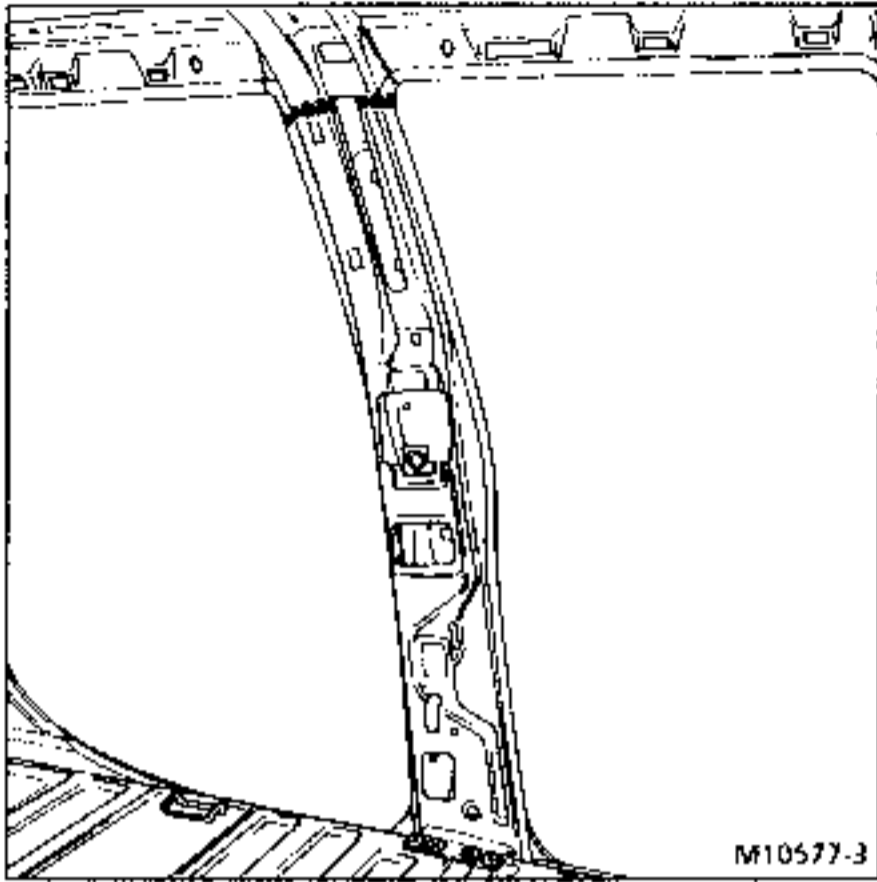
On the lining, make a cut approximately 50 mm longer than the part cut out on the vehicle.

Position the new part so that it overlaps using vice clamps then saw simultaneously through both panel thicknesses so as to align the cuts correctly.

Adjust the part and secure it in place using vice clamps.



WELDING

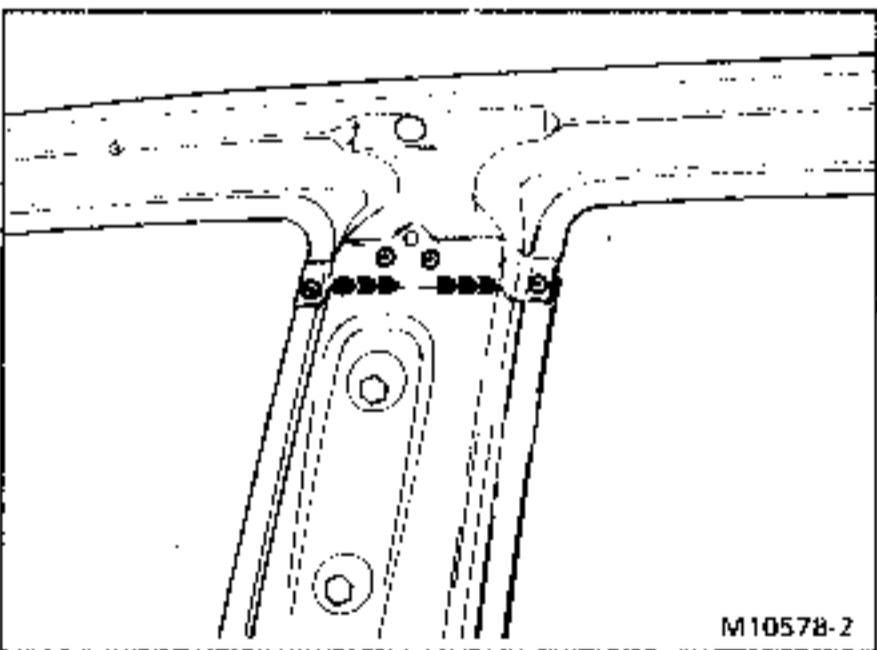
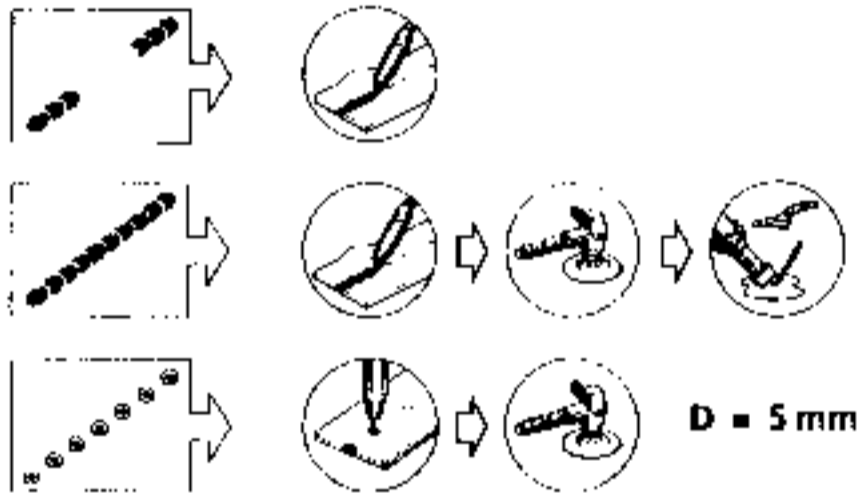


(See Espace Paintwork Manual MR.601)

Apply the passivation - zinc paint treatment for the welded areas.

Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

Apply the hollow section protection after painting.



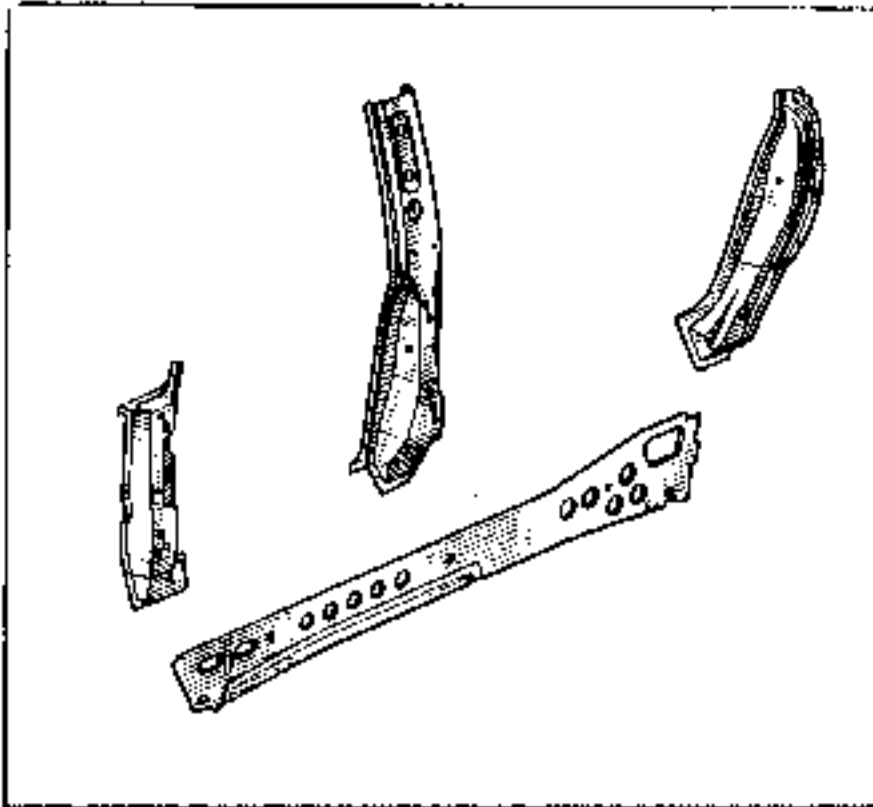
REPLACING

This operation requires some of the parts adjacent to the impact to be removed. Please consult the relevant sections.

PROTECTION

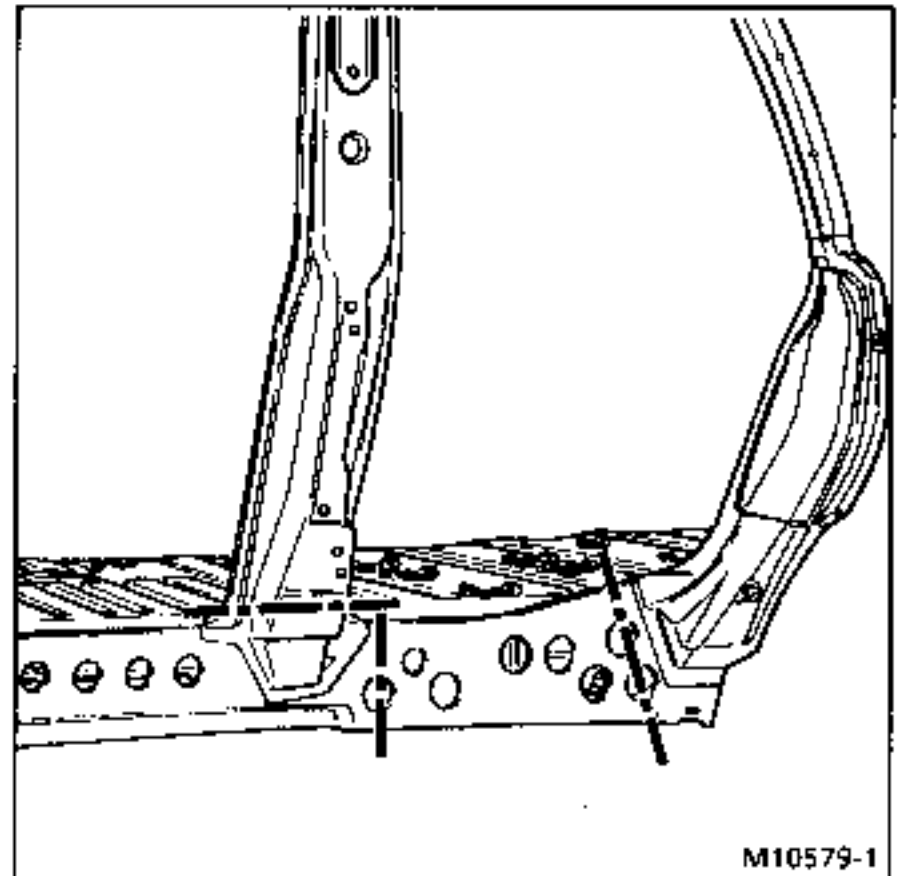
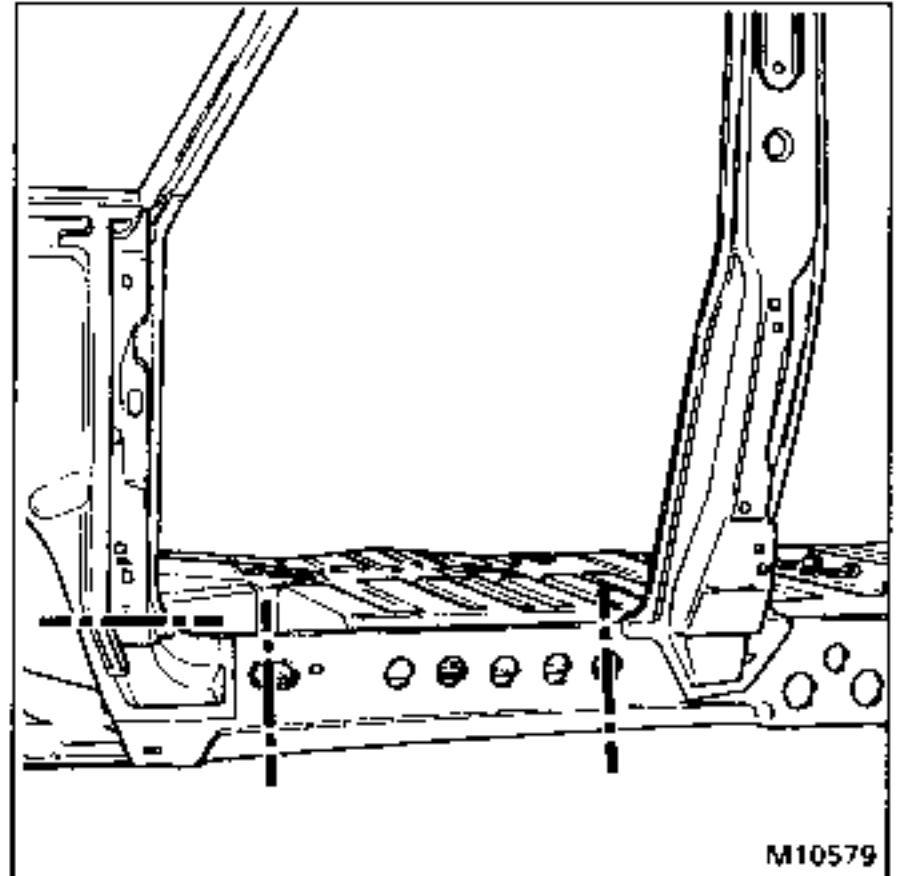
It is still essential to apply protection before beginning the cutting out and welding operations.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



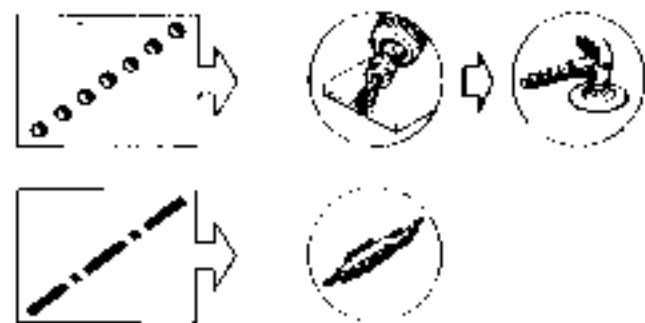
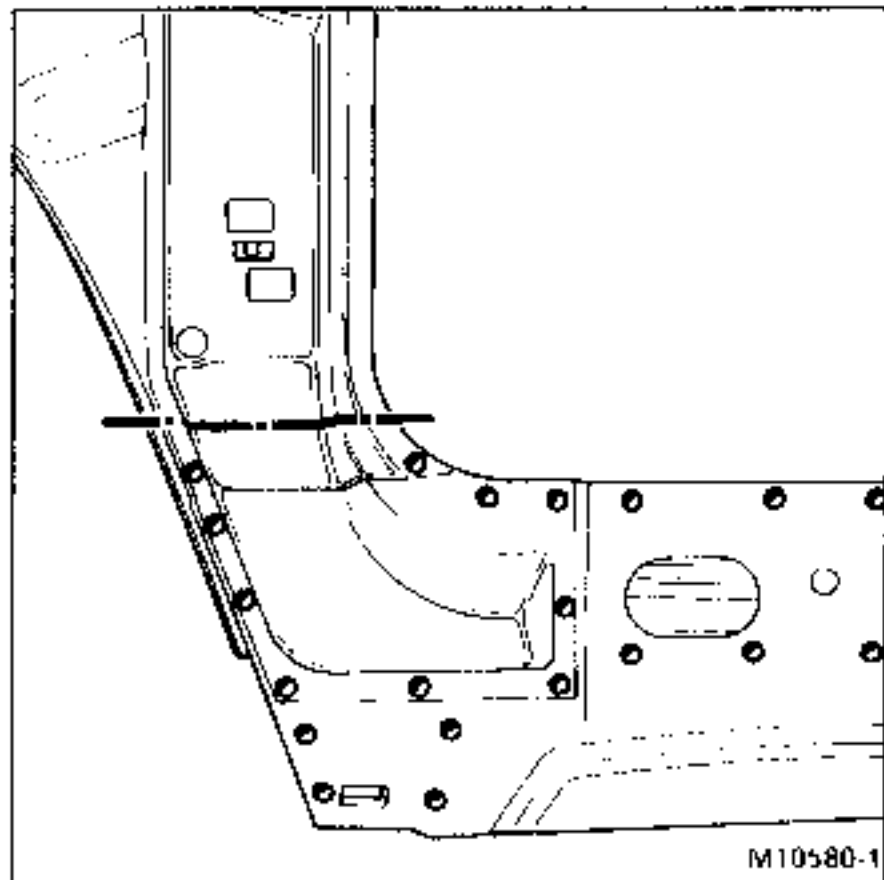
REPLACEMENT ADVICE

Several repair variations are possible depending on the area of deformation.

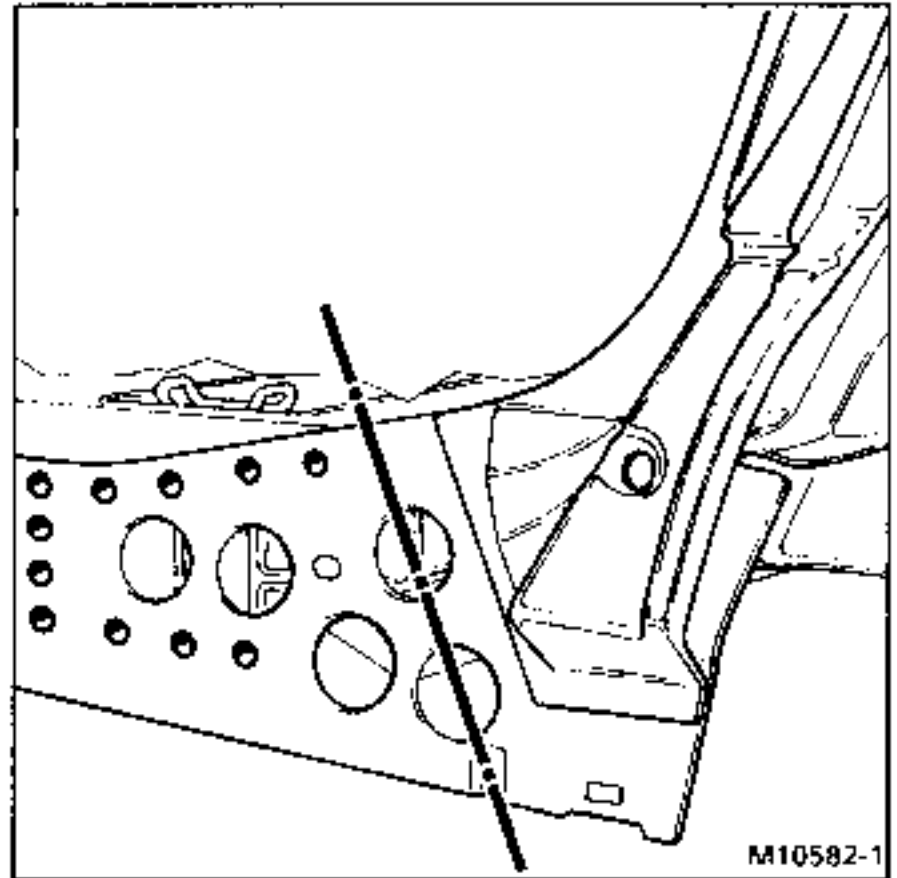
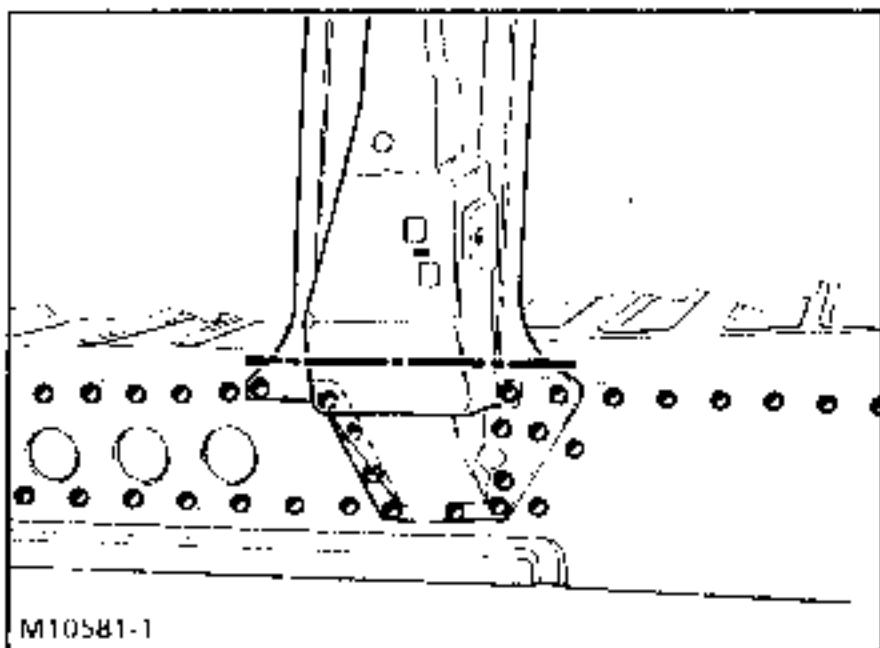


All these cuts must be made by overlapping the new part. The parts are to be MIG butt welded using stitch welds and solder then applied to the appropriate places to improve appearance.

CUTTING OUT - UNPICKING



Grind back any remaining pieces of unpicked spot weld and excess zinc on the backing panels.



PREPARING THE NEW PART

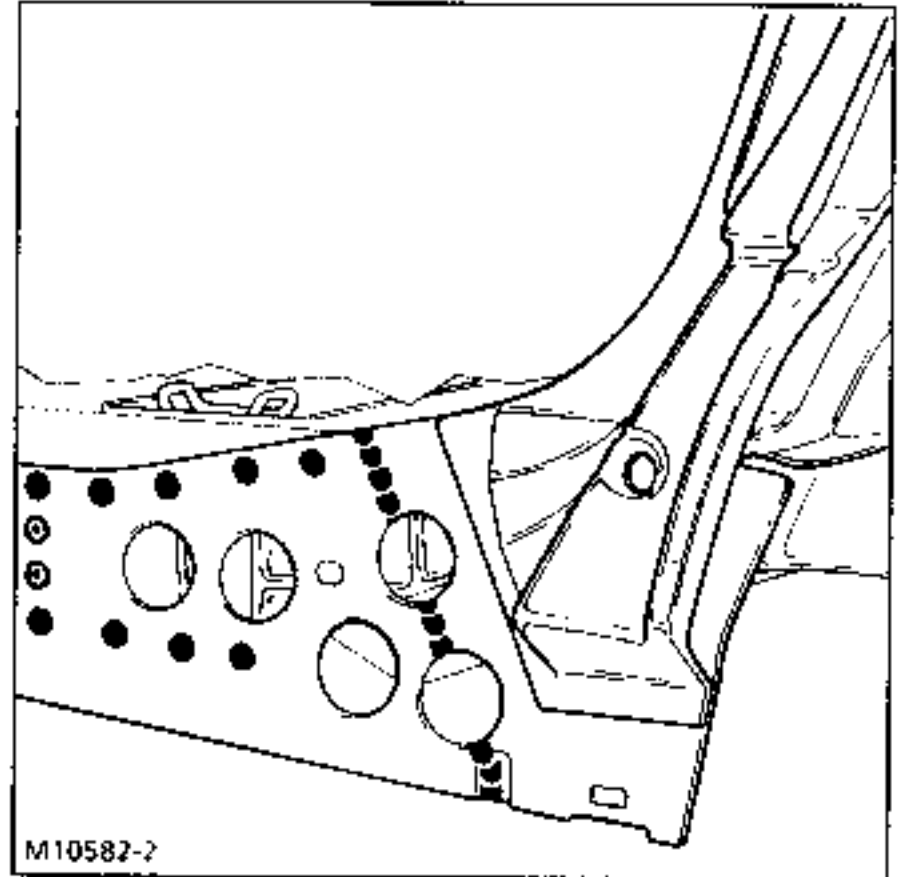
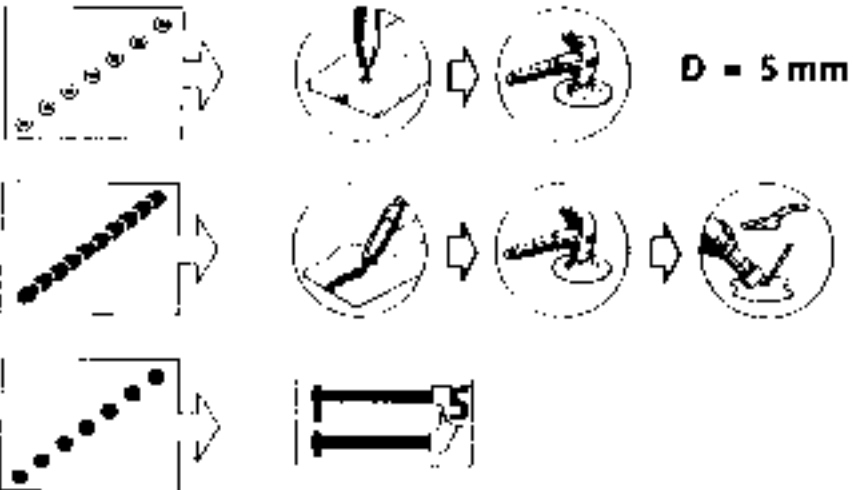
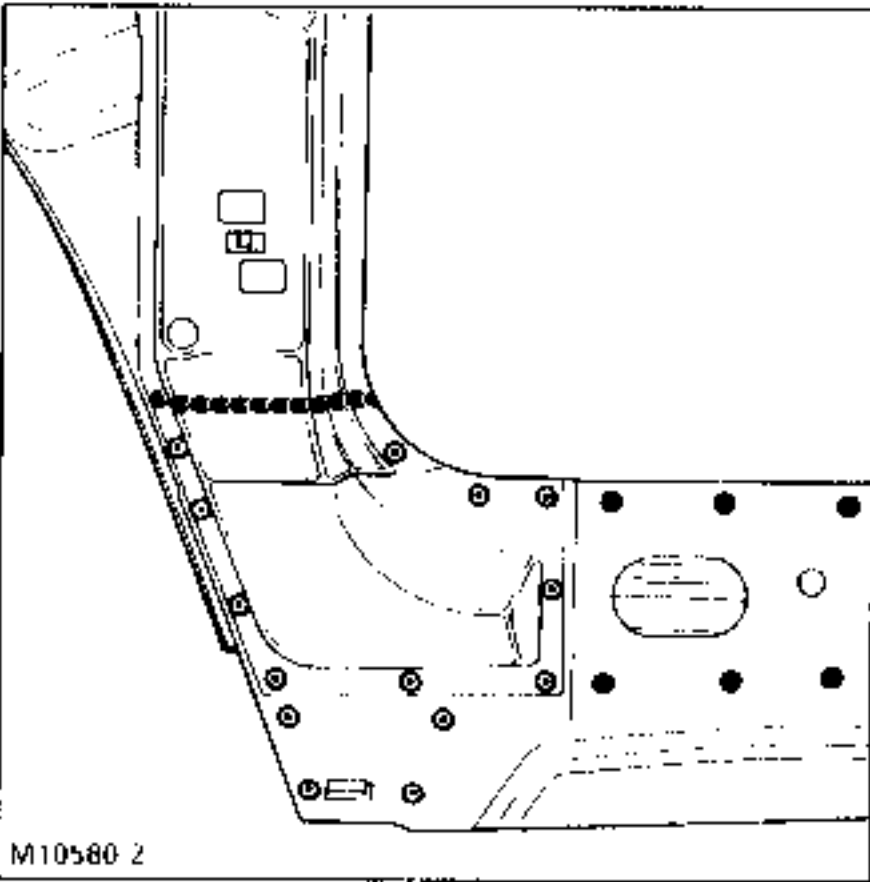
On the parts, make cuts approximately 50 mm longer than the part cut out on the vehicle.

On the parts to be welded, grind back any excess zinc to obtain good alignment.

Position the new parts so that they overlap and hold with vice clamps then saw simultaneously through both thicknesses.

Adjust the parts and secure them using vice clamps.

WELDING



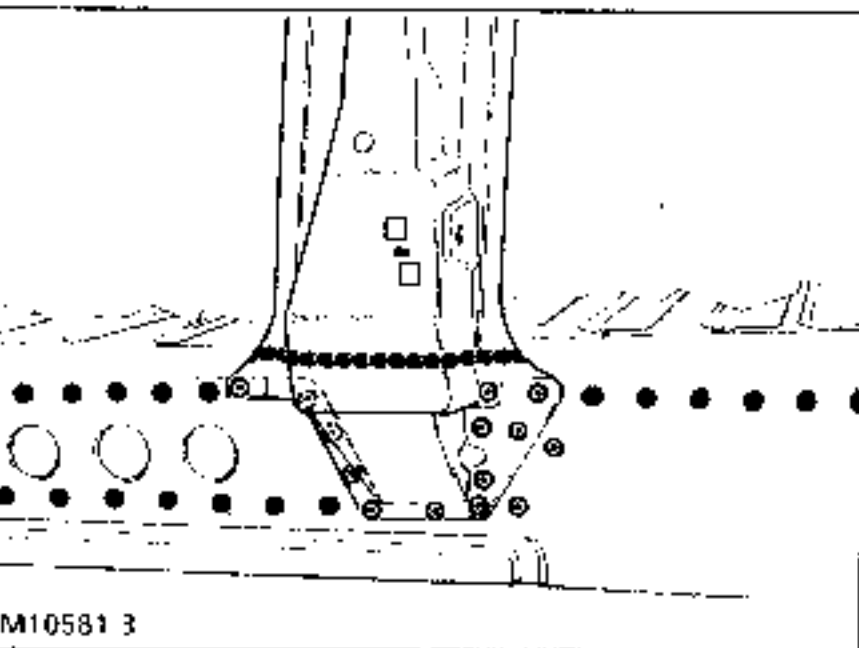
Apply protection after welding

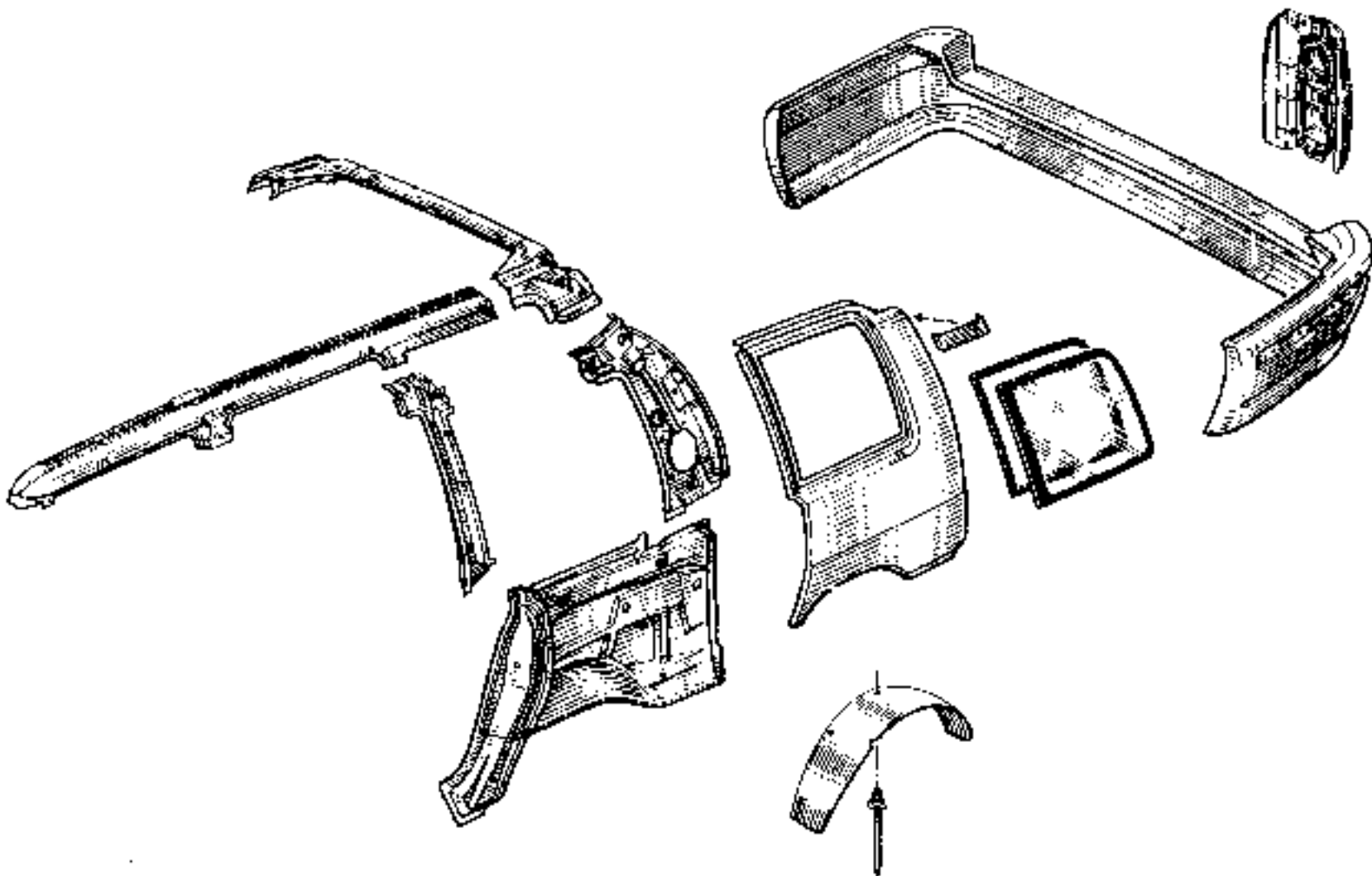
(See Espace Paintwork Manual MR.601)

Apply the passivation - zinc paint treatment for the welded areas.

Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

Apply the hollow section protection after painting.





REPAIRING

- | | | |
|-------------|---------------------------|---------------------------------|
| - Fissures | See repair sequence no. 1 | General Section 40 - Page 40-40 |
| - Holes | See repair sequence no. 2 | General Section 40 - Page 40-41 |
| - Fractures | See repair sequence no. 3 | General Section 40 - Page 40-42 |

REPLACEMENT

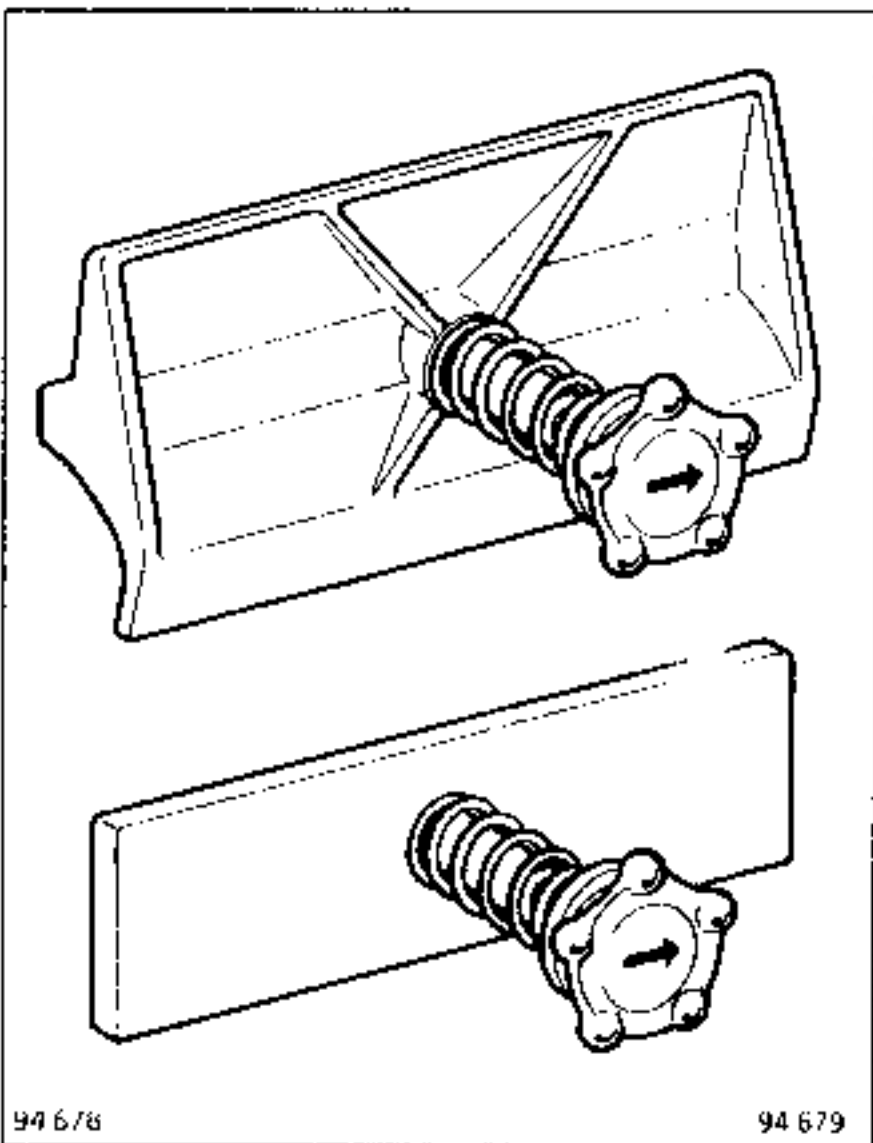
THIS OPERATION REQUIRES THE REAR QUARTER WINDOW TO BE REMOVED

Parts to be replaced systematically:

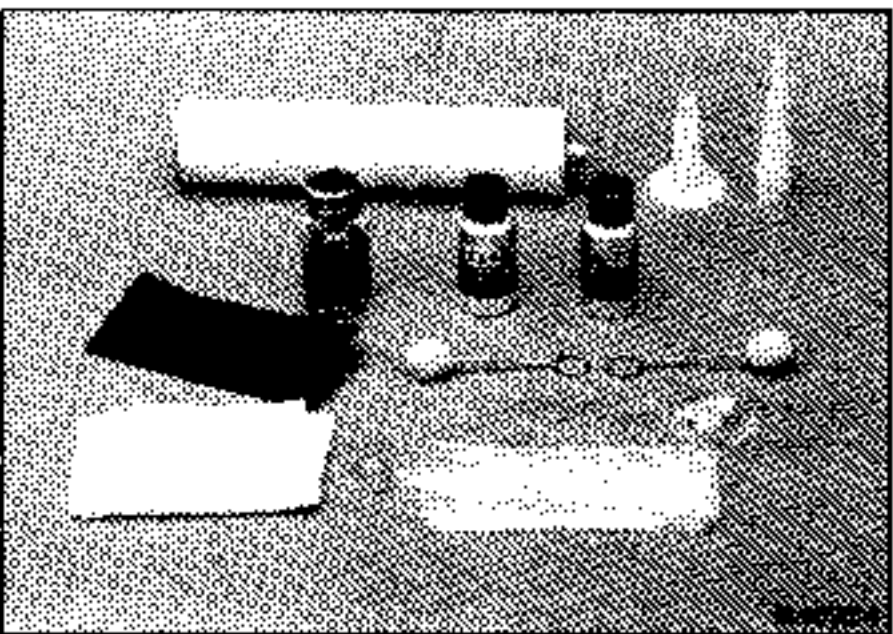
- the quarter panel front moulding;
- pop rivets;
- quarter panel window seal (opening window).

Tooling required:

- drill with 5 mm diameter drill bit;
- saw (with diamond powder blade or disc);
- sharpened spatula;
- grinding disc (P80);
- grinder equipped with 10 mm diameter cutter;
- riveter;
- adhesive extrusion spray gun;
- centring tooling kit reference Car.1219.



Products required:
Bonding kit. Part No. 60 25 170 306



Thick adhesive (of the immatriculation or guideline type).
Epoxy resin repair kit
Part No. 60 25 070 997
Polyester mastic
Part No. 77 01 395 513.

Personal protection:
Goggles, gloves, mask and personal extractor nozzle.

REMOVAL

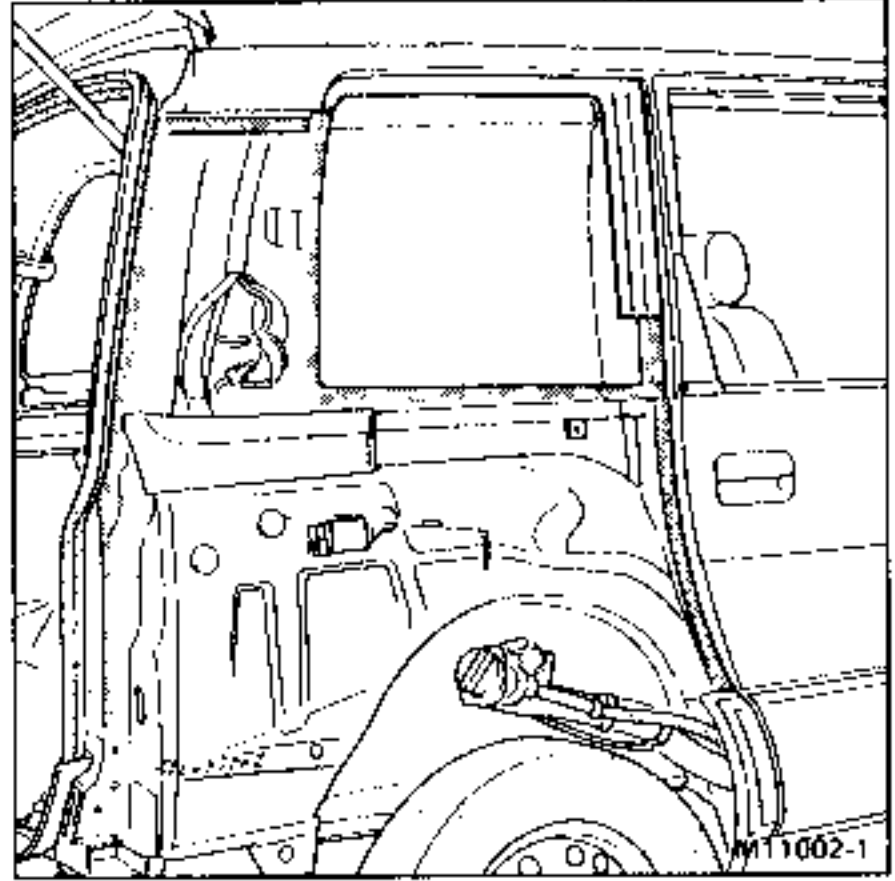
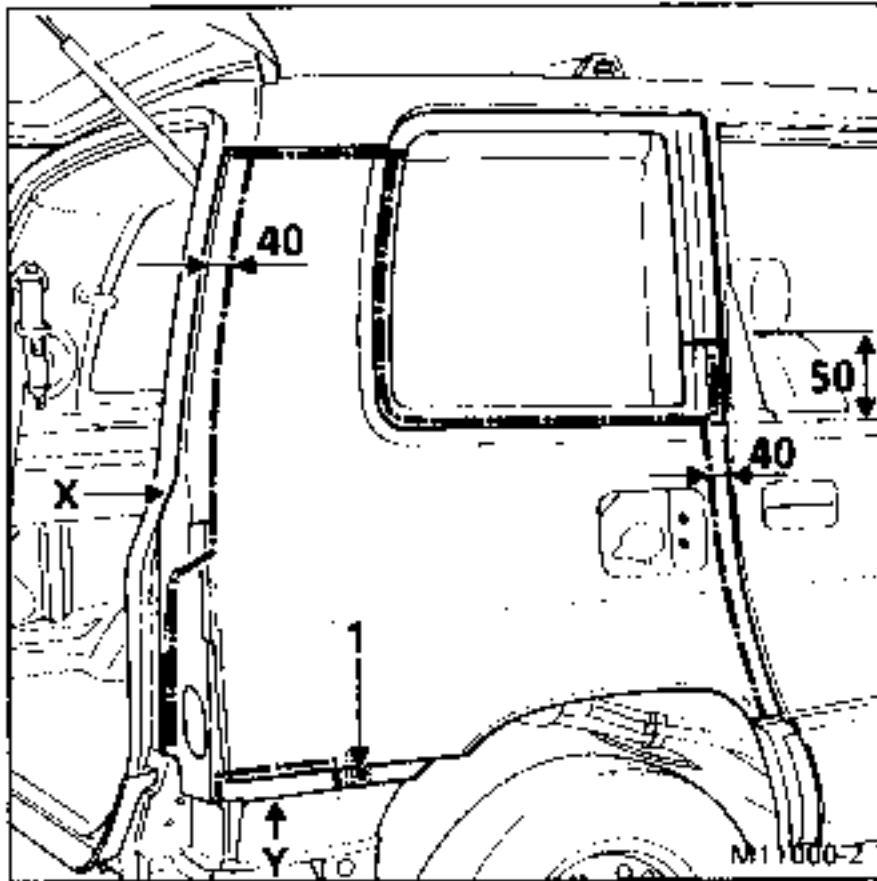
- Remove:
- the rear light;
 - the shield;
 - the luggage compartment light switch (on righthand side);
 - the mudguard (5 rivets);
 - the fuel filler flap, lock, cap and fuel filler pipe (on righthand side);
 - the quarter panel moulding;
 - the rear quarter panel;
 - the trim finishing seal around the quarter panel;
 - the wheelarch trim;
 - part of the tailgate and door seals;
 - the seal from the opening rear quarter window (bonded to the wing).

Unstick the wing trim from around the rear quarter window.

Unstick (double-sided tape) the wing upper moulding without destroying it. (mark its position on the stretcher before removal).

- Protect the following against dust:
- the fuel filler pipe;
 - the inner trims.

Protect the stretcher with wide adhesive tape from the back to the centre of the rear door against any possible grinding accidents.



On the chassis trace the position of the wing at (X) and (Y).

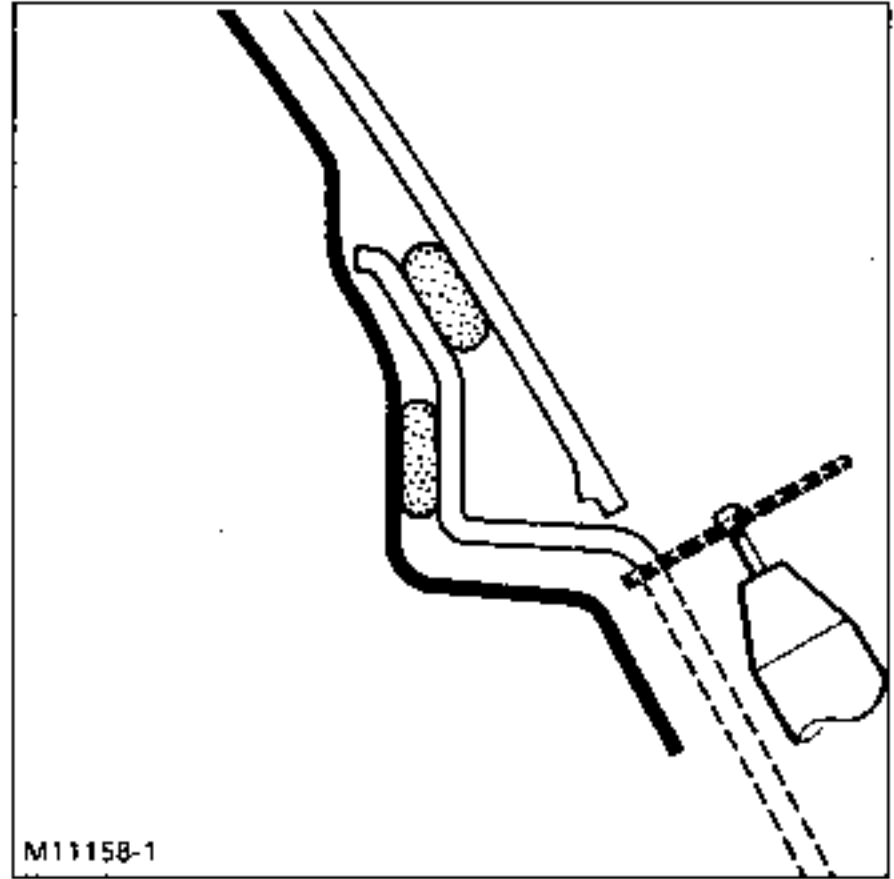
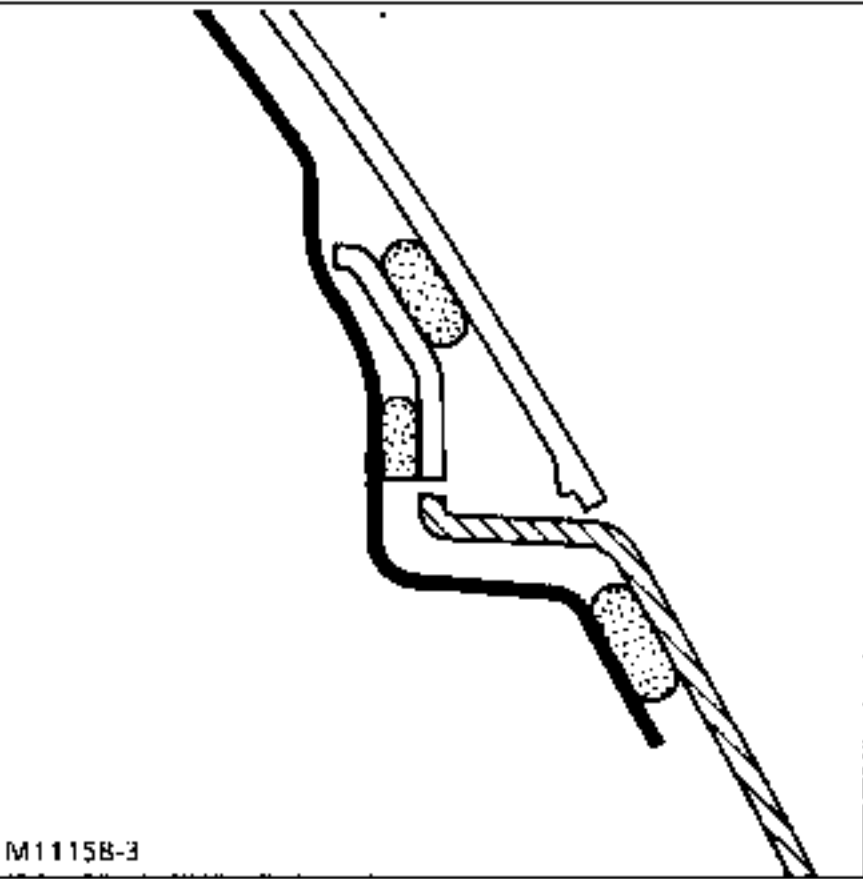
Drill rivet (1) and recover the shim.

Using a circular saw, cut the wing as shown in the drawing.

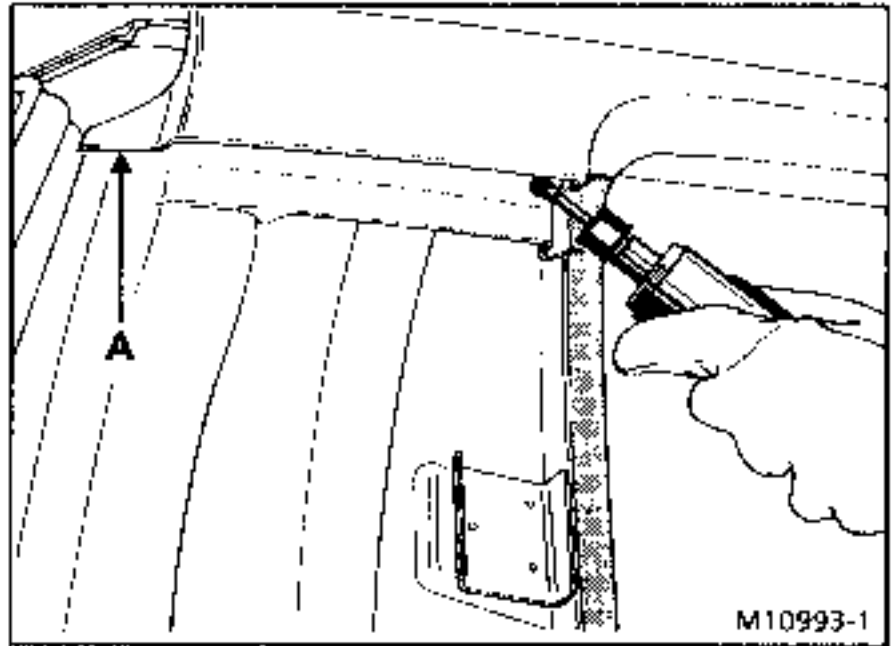
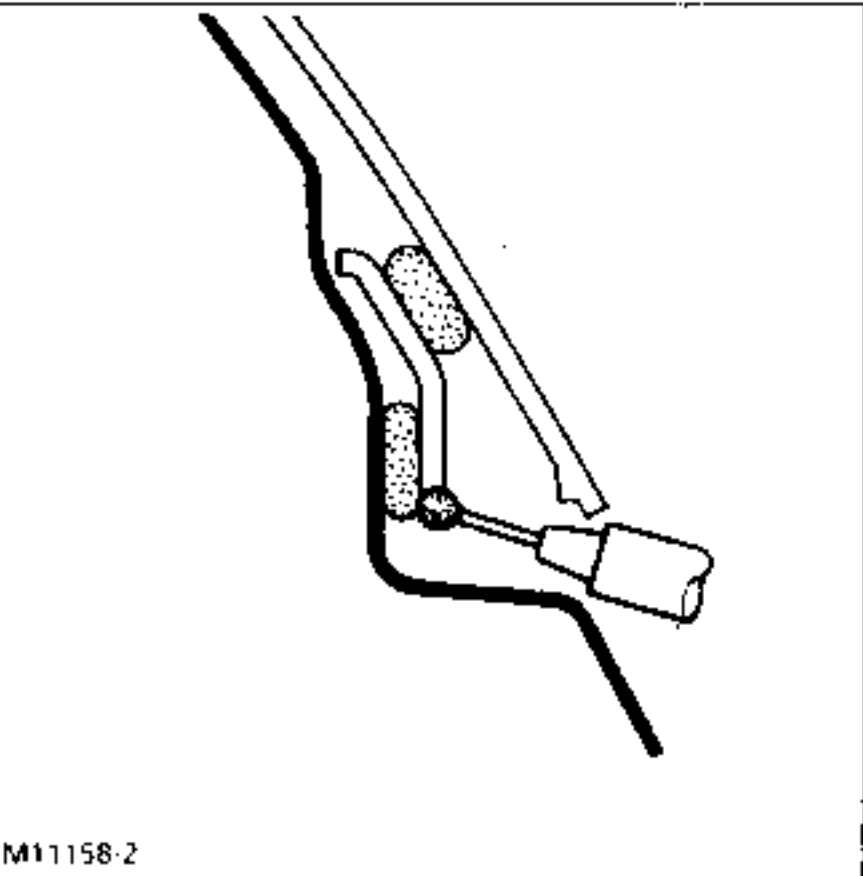
Remove the centre part of the wing and recover the riveted lugs securing the rear light and the fuel filler flap mounting strengthener (on righthand side).

Using a sharpened spatula, remove the pieces of wing remaining on the chassis except at the top section.

TOP SECTION



Using a saw, cut out the rear section of the wing under the stretcher.



Using a grinder fitted with a 10 mm diameter cutter, grind the wing under the stretcher.

In section (A), the operation is performed using a 5 mm diameter long drill bit.

Using a sharpened spatula, level the adhesive seal remaining on the chassis, leaving a thickness of 1 to 2 mm.

Wipe down the areas of the structure to be bonded with a dry cloth.

FITTING THE NEW COMPONENT

Preliminary step

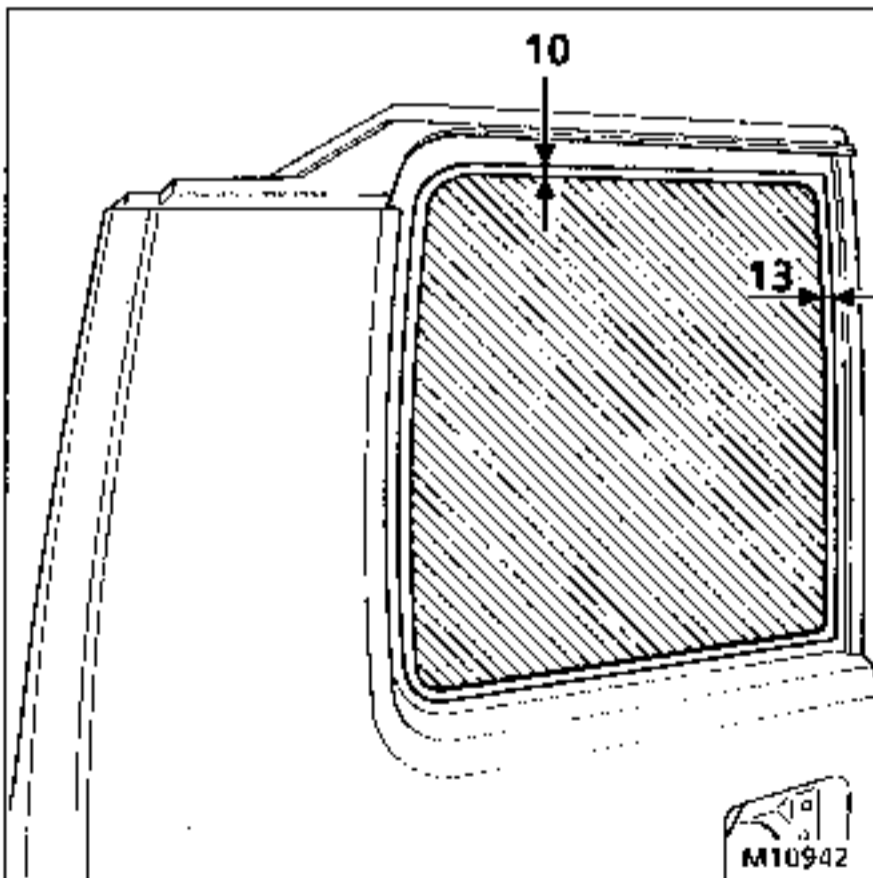
The tailgate must be correctly adjusted in relation to the opposite wing and the roof (clearance, flush fitting) before the new wing is fitted.

PLEASE SEE SECTION 40 FOR THE PRECISE INSTRUCTIONS ON USING THE PRODUCTS

Cutting the new wing

The new wing is supplied without the rear quarter window cut out. This part is to be cut out using the template supplied with the wing.

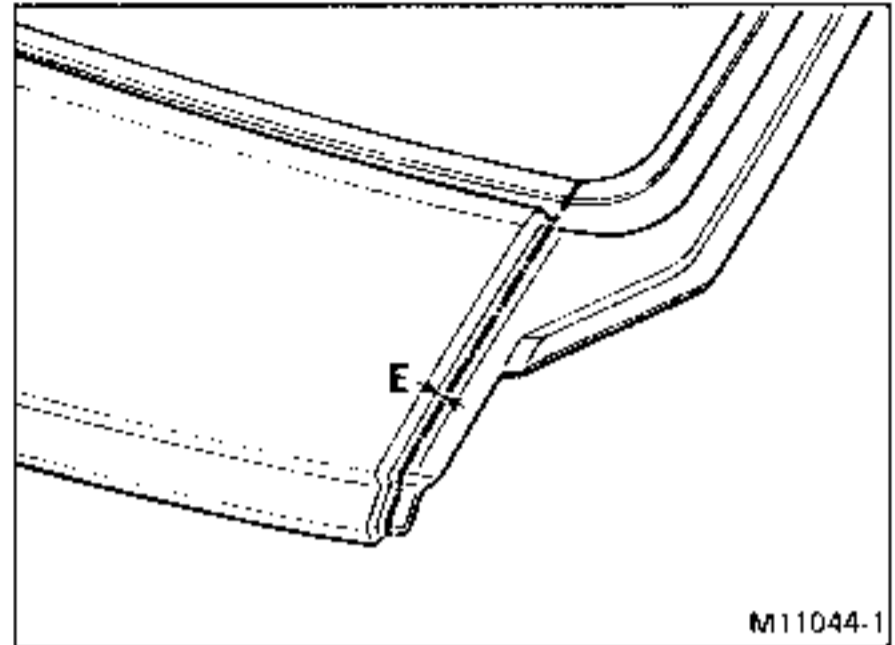
Cutting out the quarter panel frame



Using adhesive tape, fit the template as shown in the drawing:

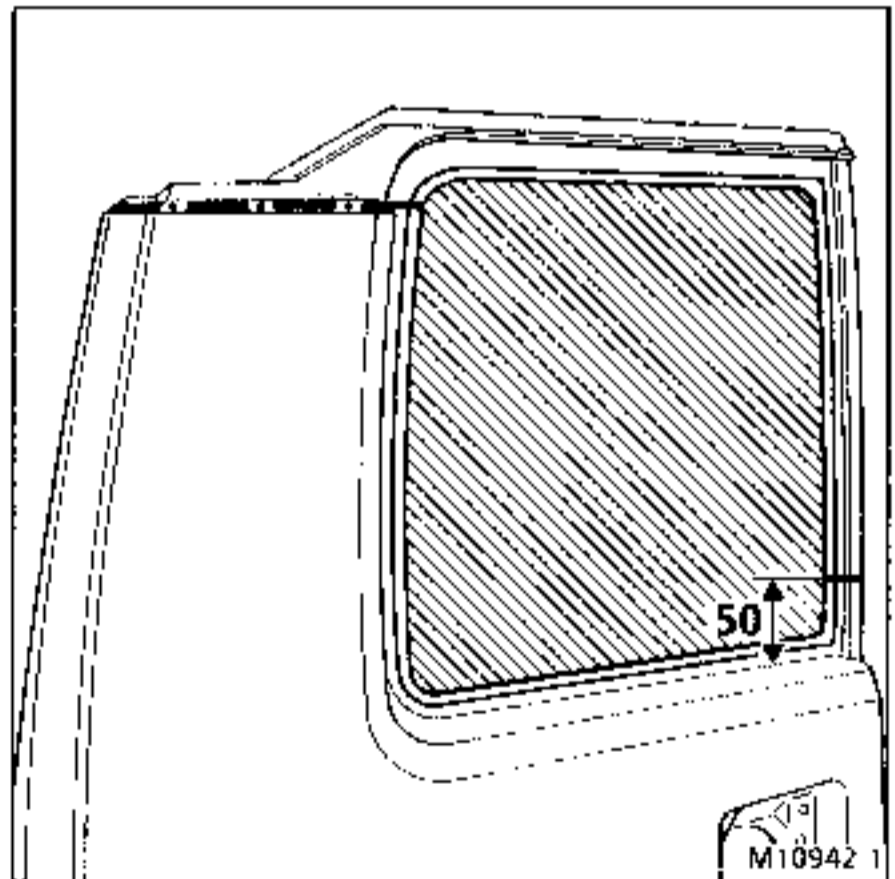
- trace the line;
- remove the template and cut out the part using a circular saw;
- file the lower sections.

Preliminary cut



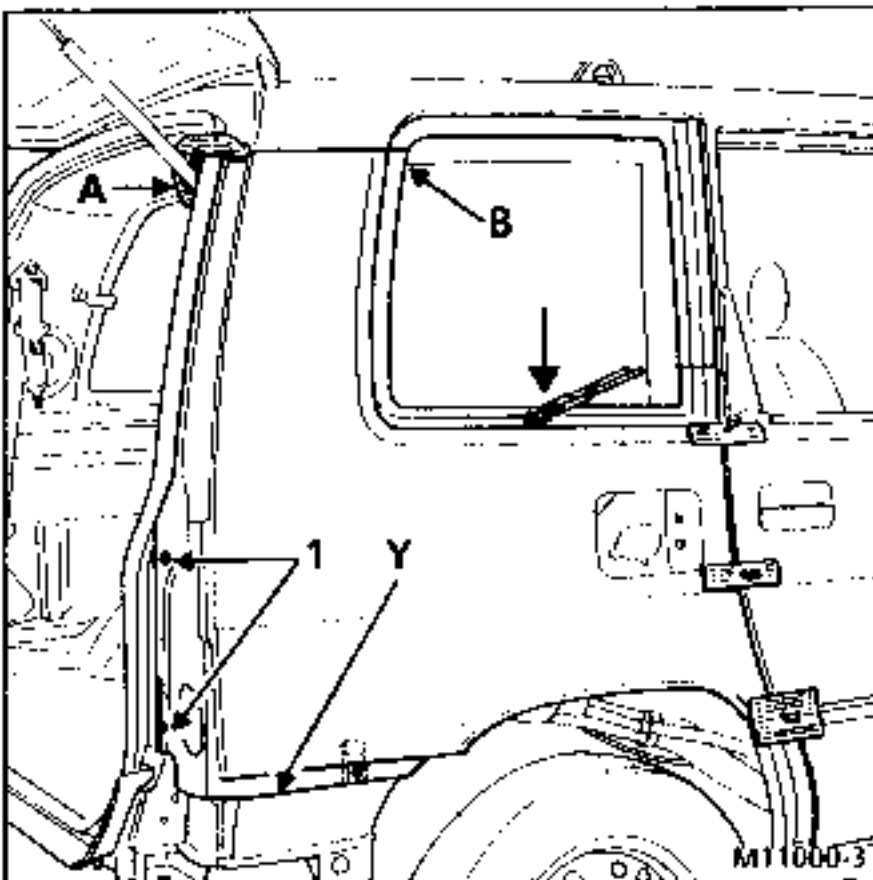
$E = 3$ to 4 mm

The upper part of the wing is to be cut out as shown in the drawing.



The quarter panel front pillar is to be cut as shown in the drawing.

Adjusting the wing

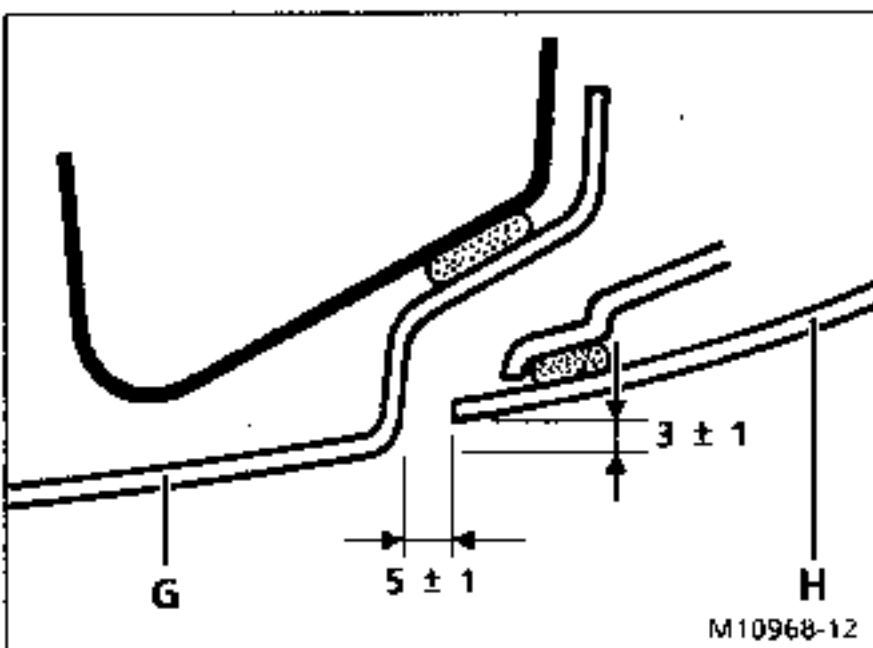


Offer up the wing, sliding it under the body top; adjust it vertically and if necessary adjust the top of the wing itself and the front pillar joint by grinding.

Fit in place the centring tooling on the rear door ensuring that the clearance, flush fitting and alignment are correct.

Lock the rear door.

Close the tailgate.



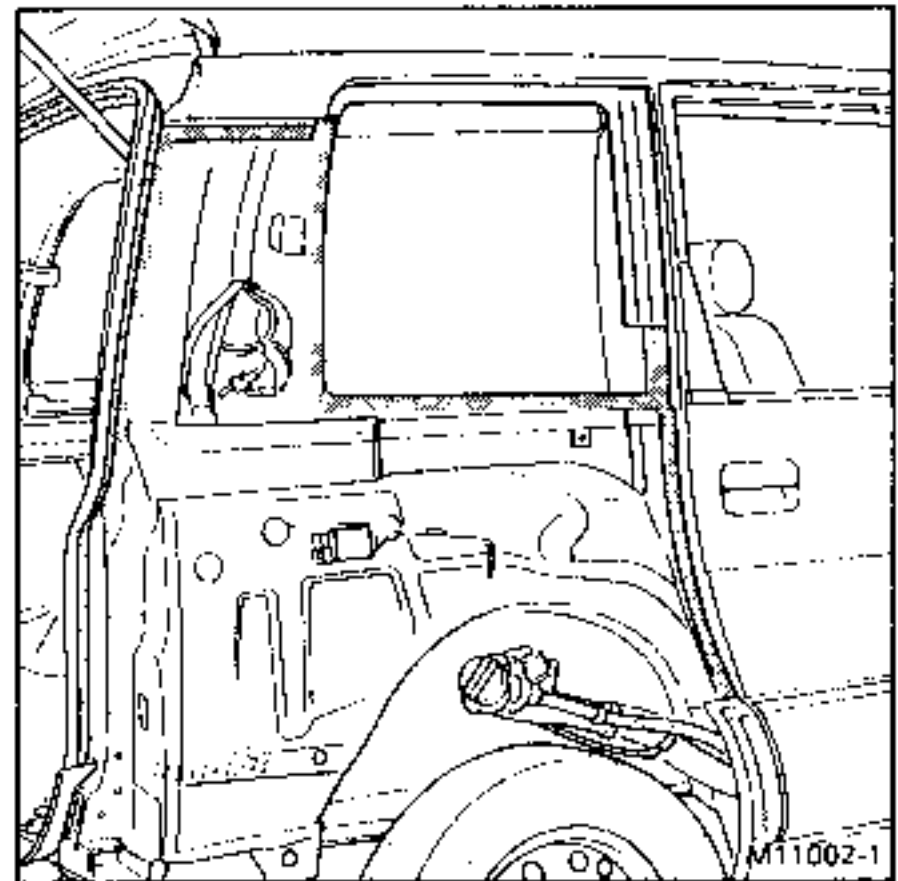
Adjust the projection of wing (G) in relation to tailgate (H) and secure the wing at (1) using sheet metal screws.

Open the tailgate.

Adjust the alignment of the stretcher and wing at (A) and (B).

Hold the wing at (A) and (B) with clamps, the tips of which are to be protected with pieces of SMC taken from the cut-out section of the rear quarter panel.

Remove the wing once it has been adjusted in this way.



Preparing the chassis

Coat the area to be bonded after degreasing:

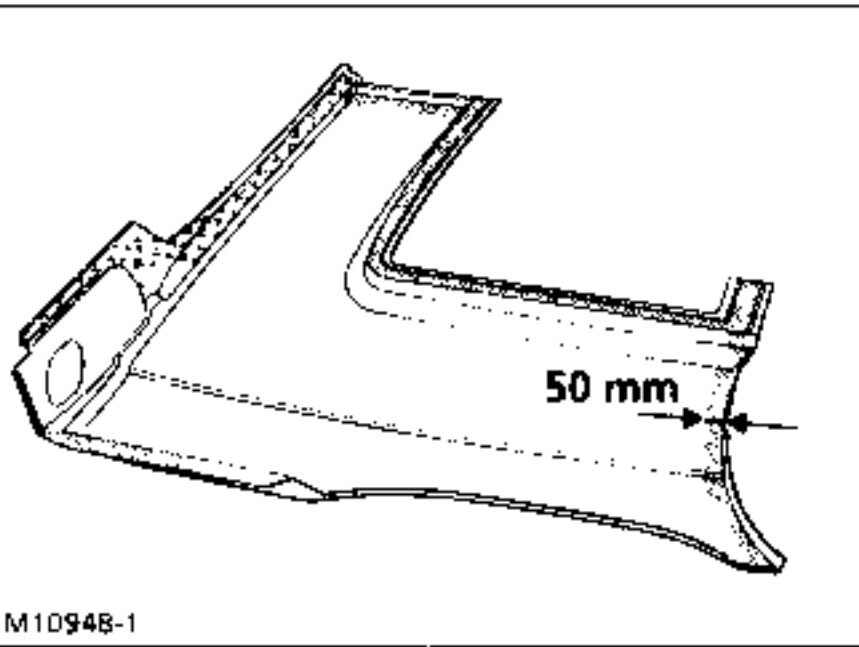
- the bead remaining on the chassis;
- the stripped or damaged galvanised areas;

with the primer supplied in the kit.

NOTE: a new part is bonded to the chassis after the areas to be bonded have been degreased and coated with primer.

IMPORTANT: any scratched galvanised area must be covered with primer.

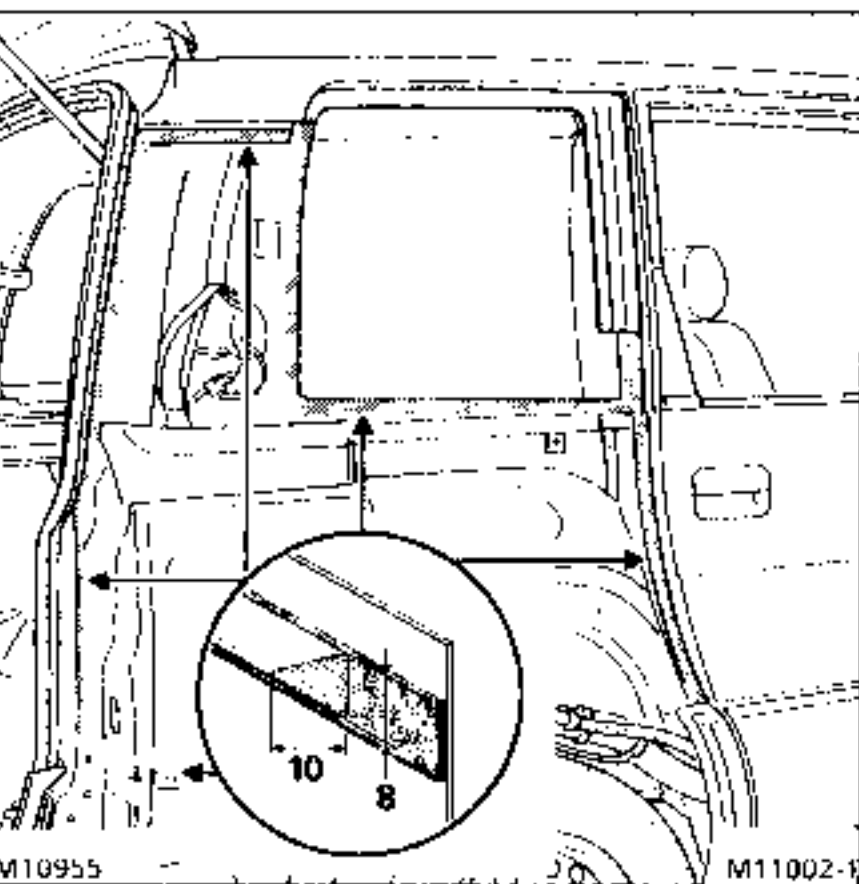
Preparing the new wing



Roughen the area to be bonded with P180 paper.

Degrease and coat with primer the area to be bonded behind the wing.

Applying the bead



Extrude a uniform bead over the chassis (as shown in the diagram).

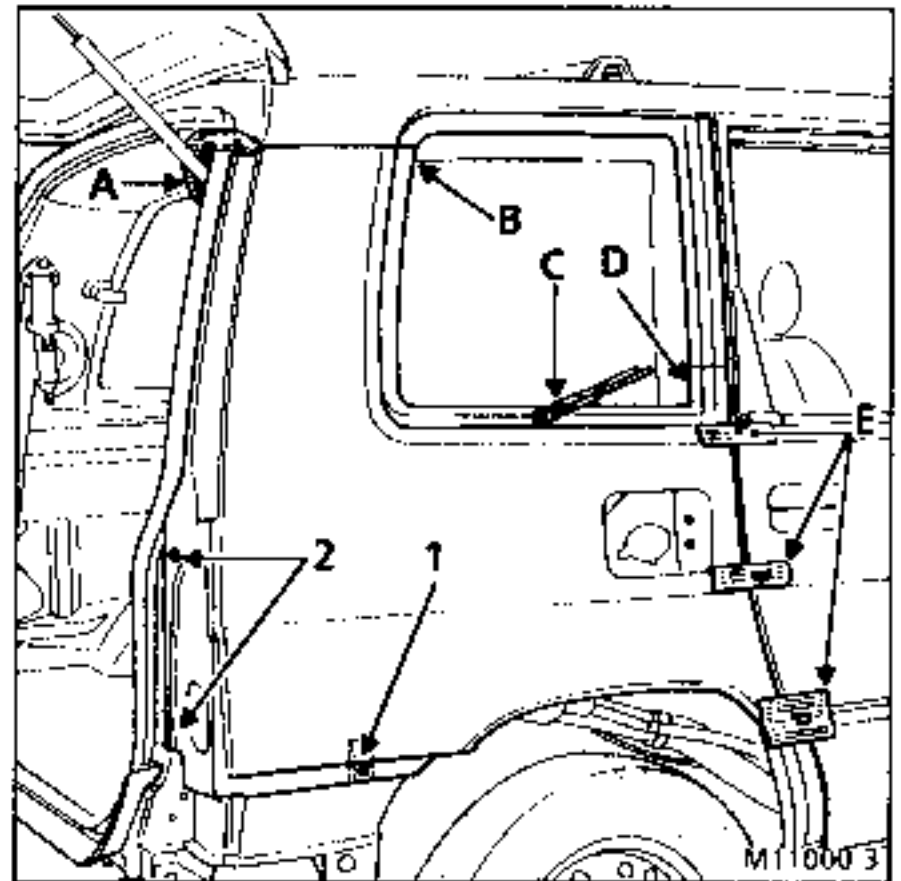
THE WING MUST BE BONDED DURING THE 10 MINUTES FOLLOWING THIS OPERATION

Fitting the wing (tailgate and door open)

Tilt the wing so that it can be slid under the stretcher then fold it back slowly over the chassis.

Close the door and fit in place the centring tools ensuring that the clearance, flush fitting and alignment are correct.

DO NOT OPEN THE DOOR BEFORE THE TOOLING HAS BEEN REMOVED.



Fit in place the shim under the wing and rivet it at (1).

Align the wing with the previously traced lines and secure it with the two sheet metal screws (2).

Align the wing with the stretcher; fit in place the clamps at (A) and (B) and at (C) and (D).

Leave to harden for 30 minutes.

Remove centring tooling (E).

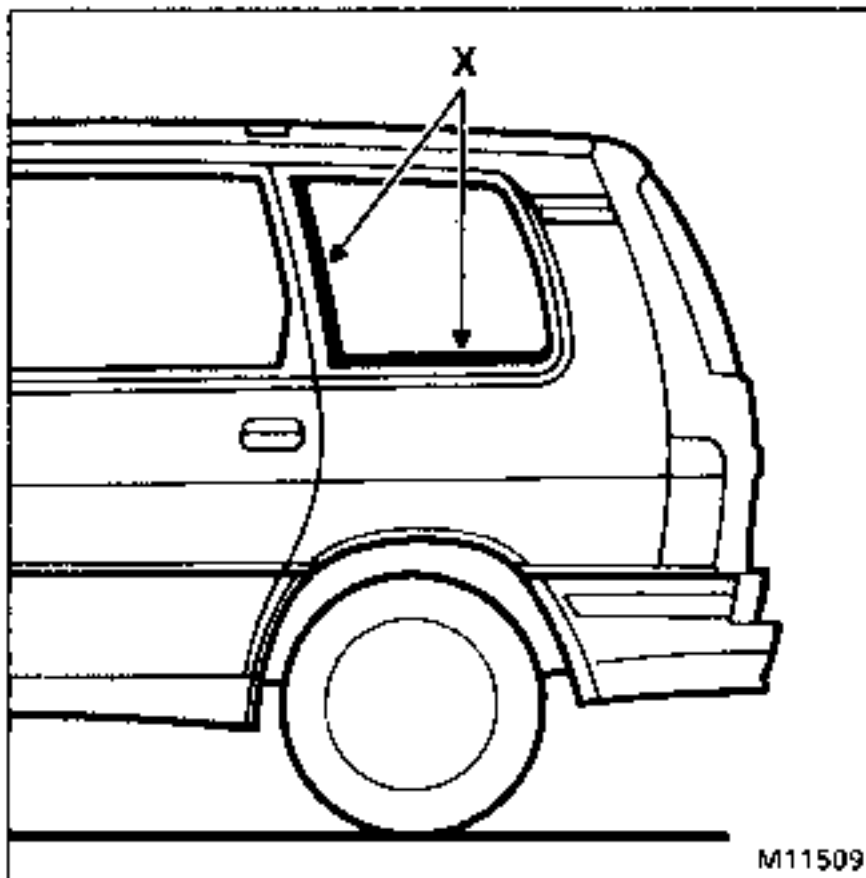
NOTE: the sheet metal screws remain on the vehicle.

AREAS B AND D

The two parts are to be joined end-to-end using epoxy resin according to plastic repair sequence no. 3 (fractures); it is compulsory to add matting.

The finish is achieved with polyester mastic.

ATTENTION: The bonding area of the seal for the rear quarter panel must be free of defects (holes) and flat to ensure that it fits correctly with the seal on the



window.

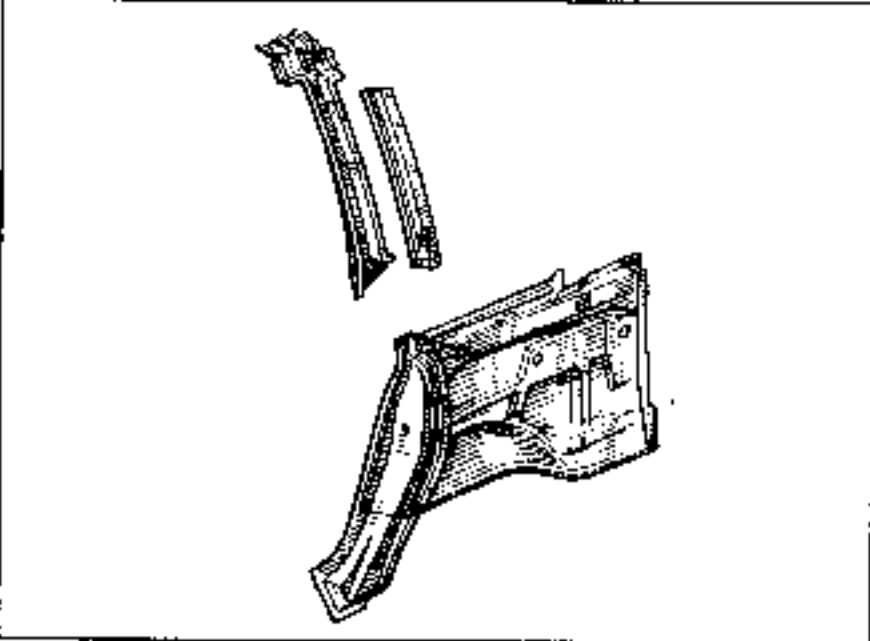
Using an air gun and soapy water, check for leaks in area (X) and if necessary touch up any parts with adhesive.

NOTE: the shield, light, seals, wing upper moulding, rear quarter panel window, fuel filler pipe (on righthand side) and tailgate switch (on righthand side) are refitted after painting.

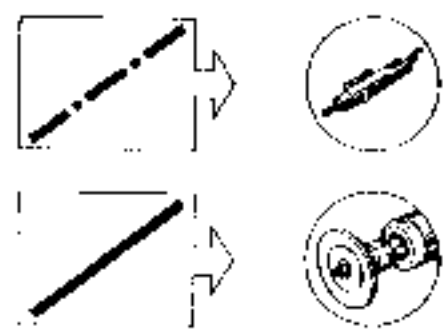
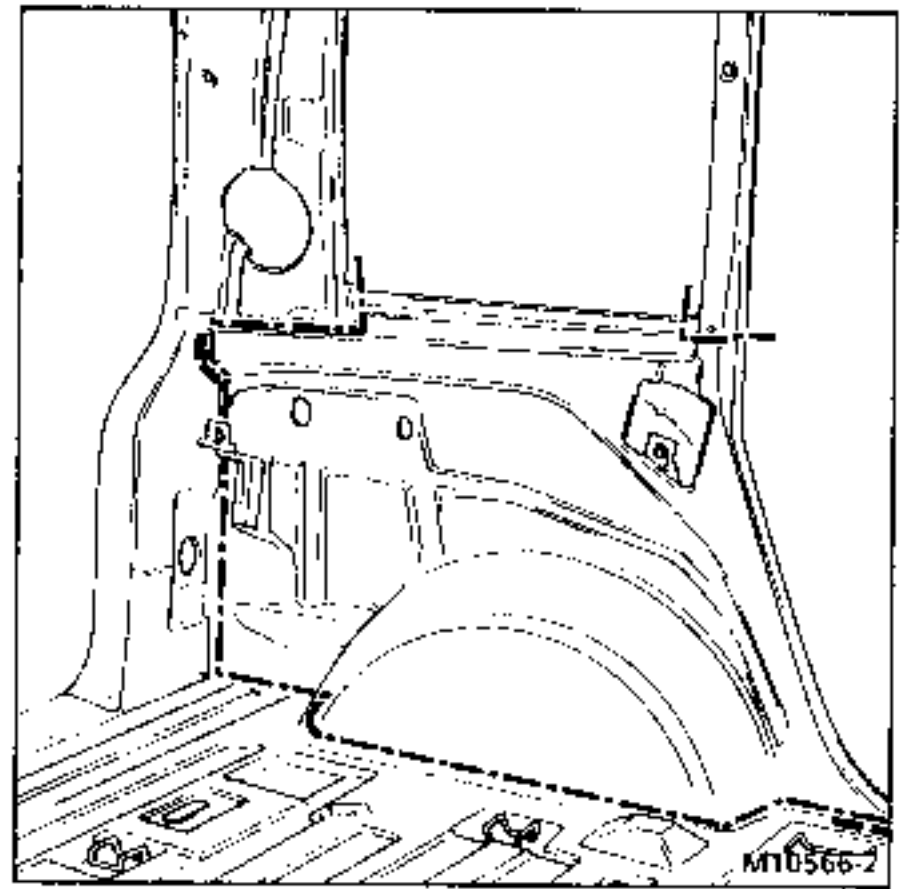
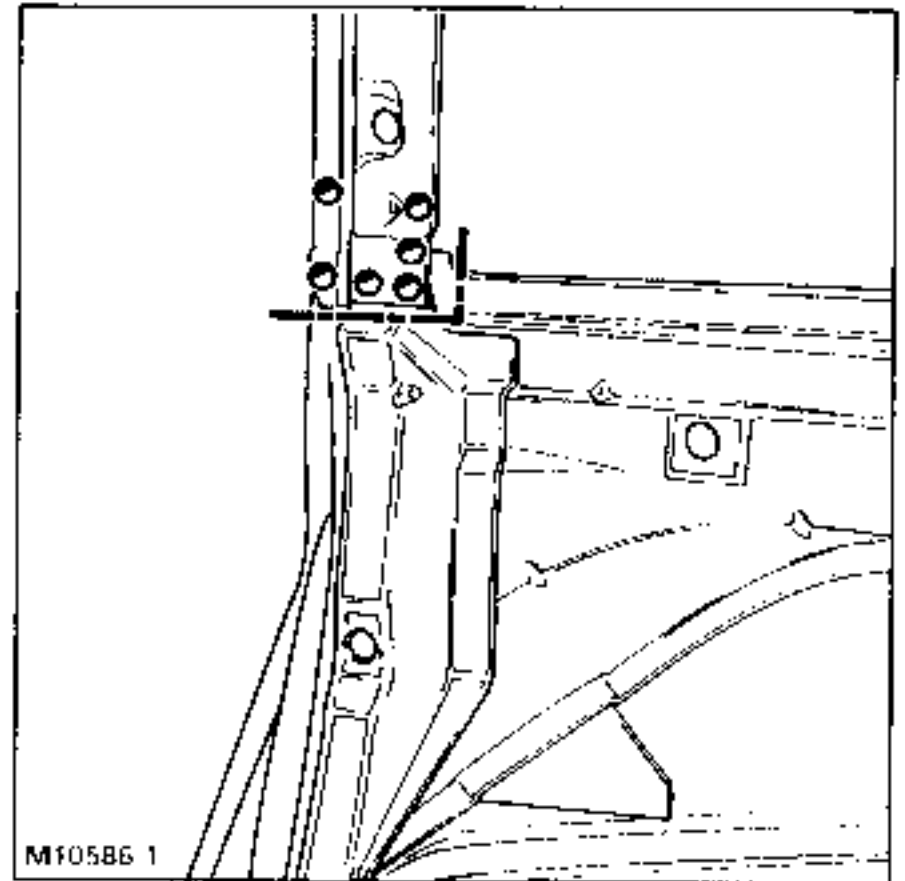
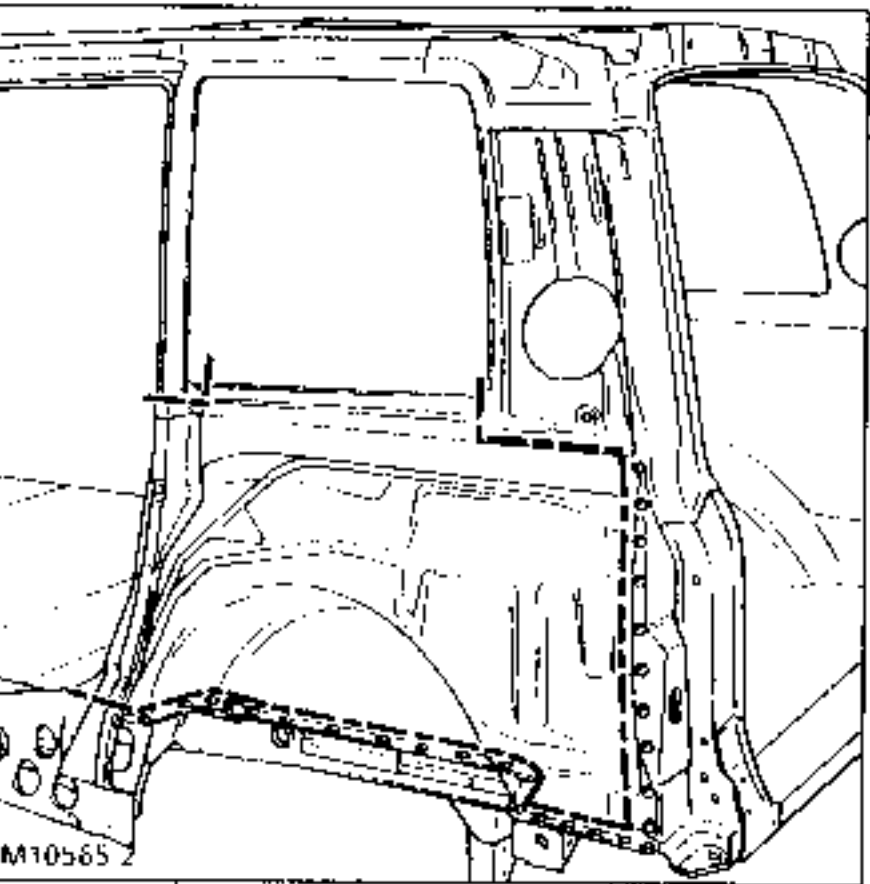
PROTECTION

After removing the components necessary for performing the repair, protect the inside of the vehicle from splashing during grinding and welding.

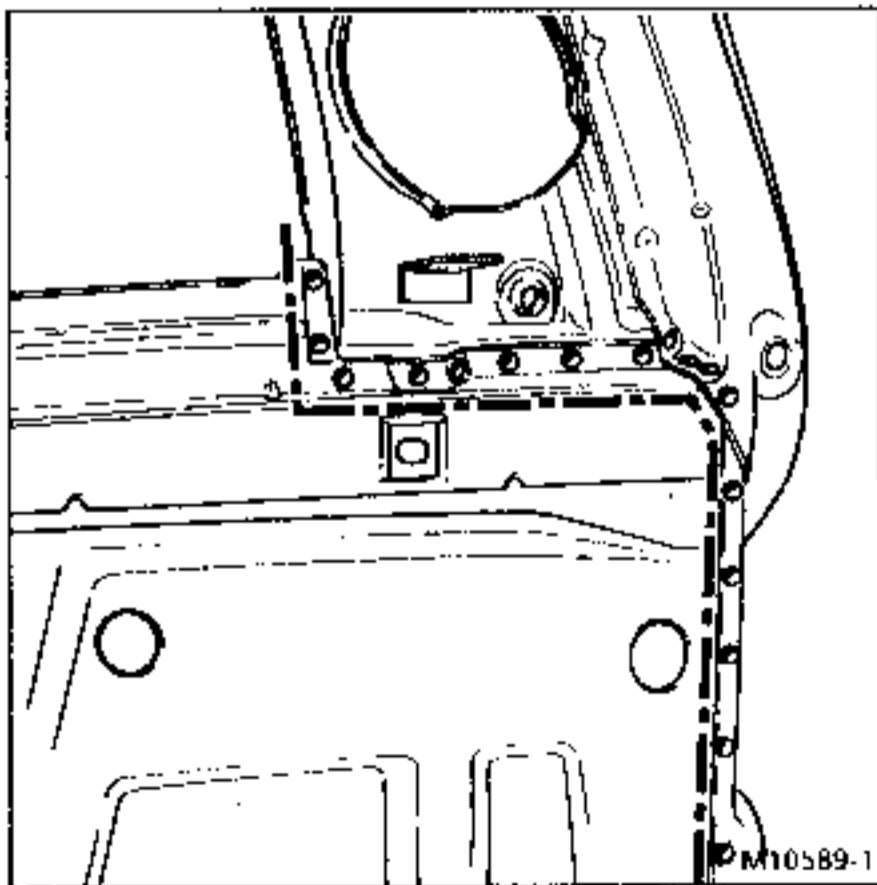
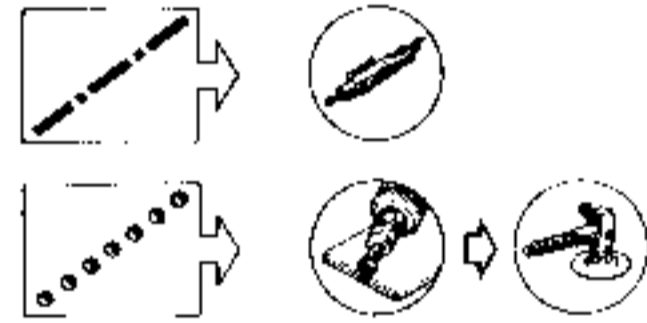
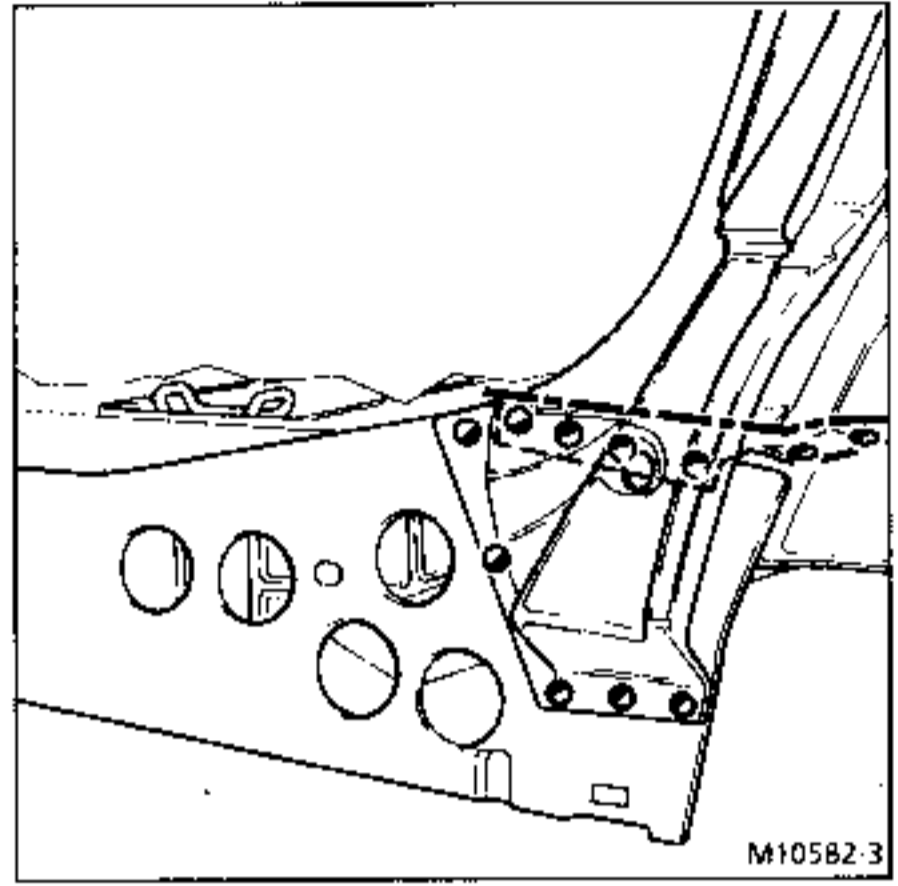
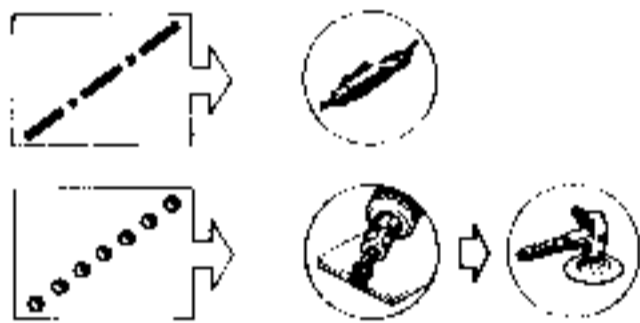
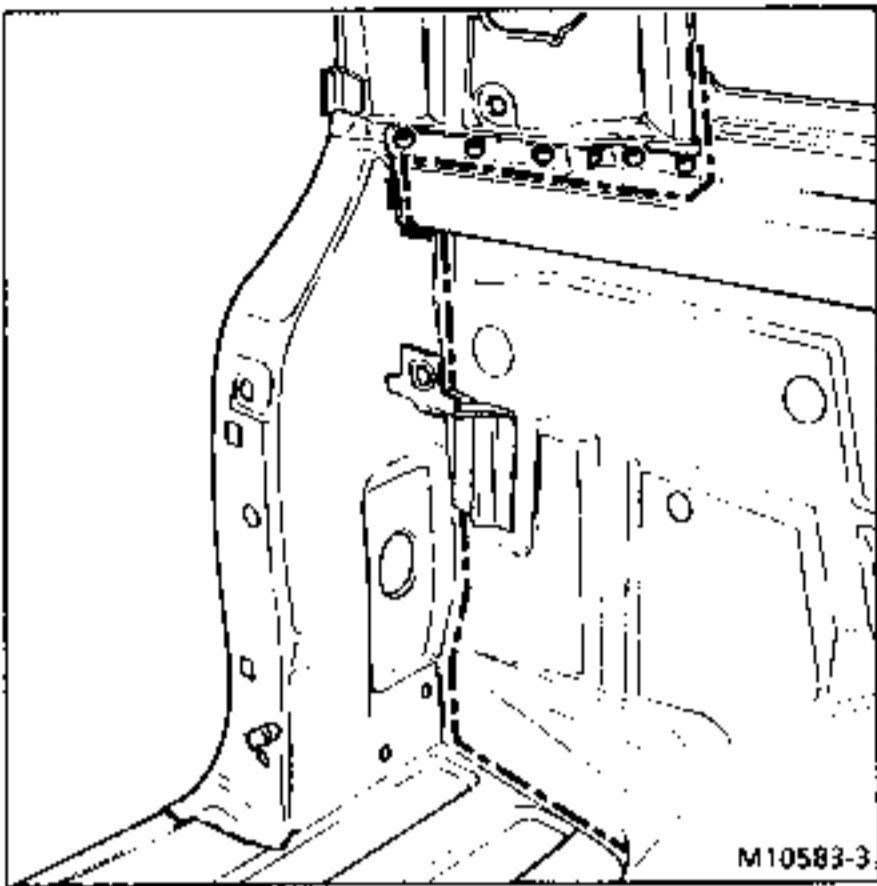
COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT

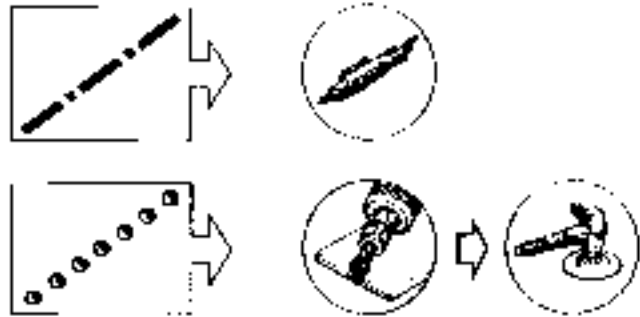
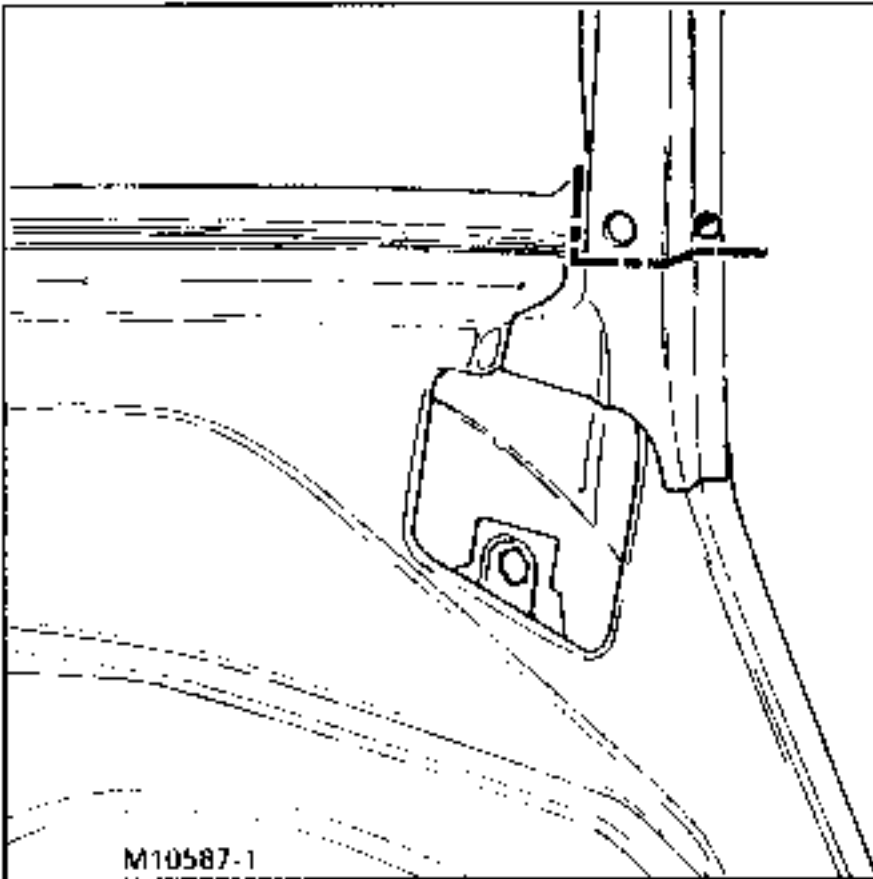


CUTTING OUT - UNPICKING



Unpick any parts of metal remaining after cutting out from the support units.





Grind back any remaining spots of unpicked weld and excess zinc remaining on the backing panels.

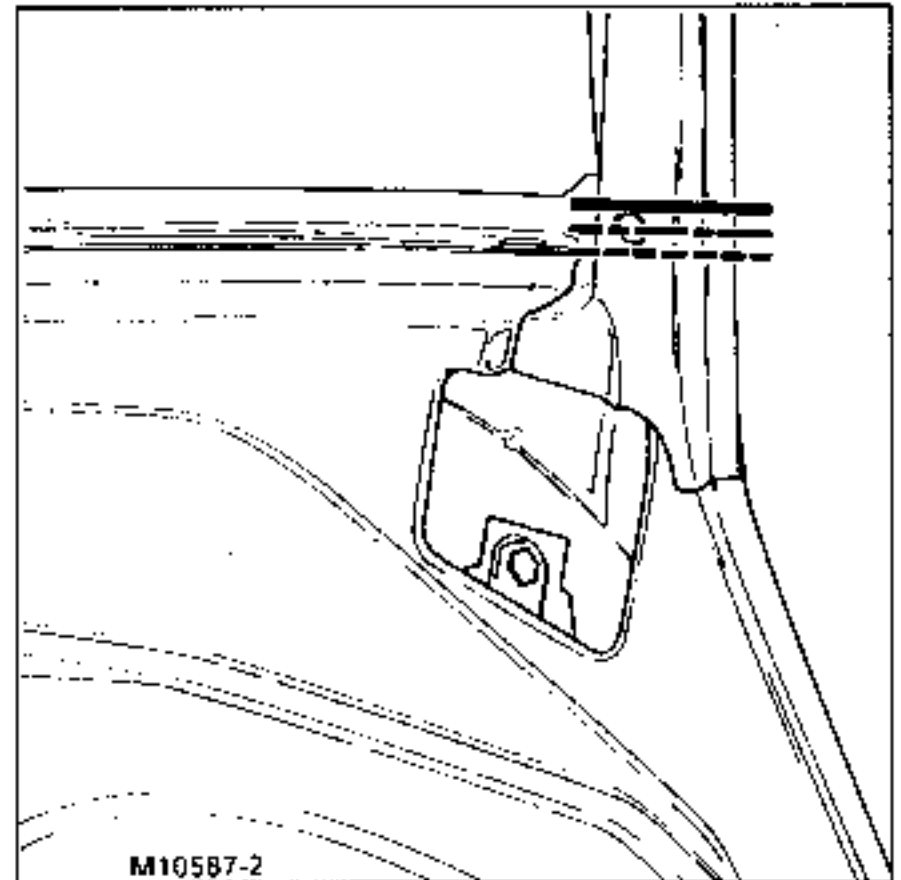
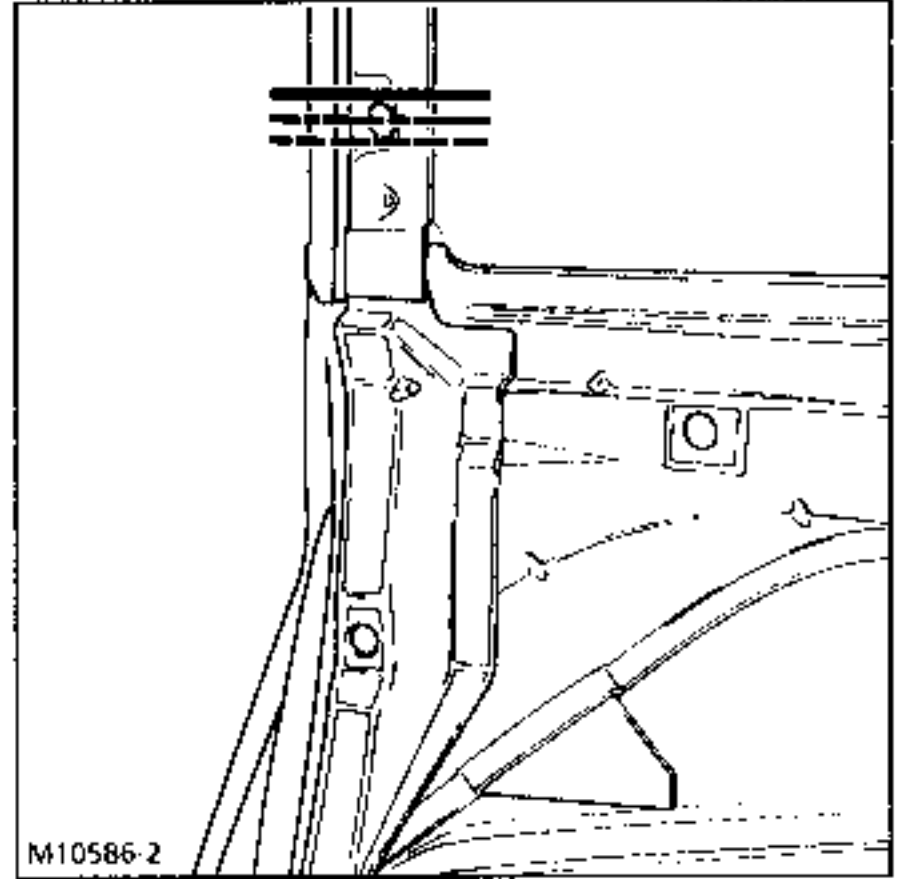
PREPARING THE NEW PART

On the new part cut out a piece approximately 50 mm longer than that cut out on the vehicle.

Position the new part so that it overlaps and secure it using vice clamps.

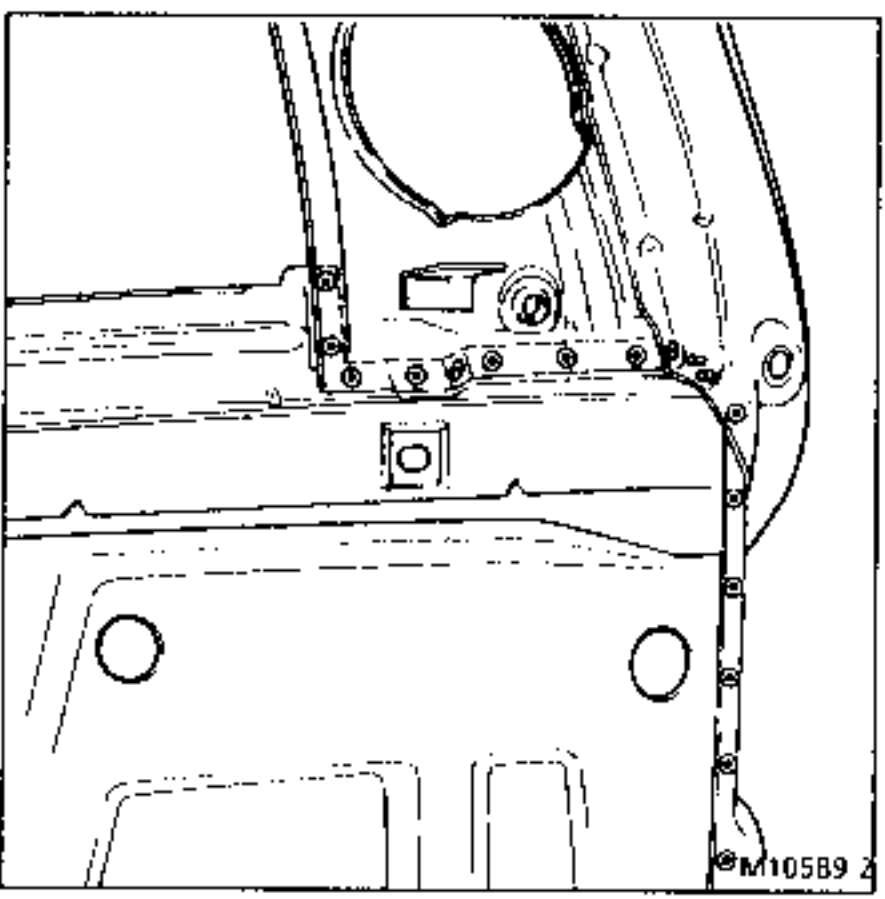
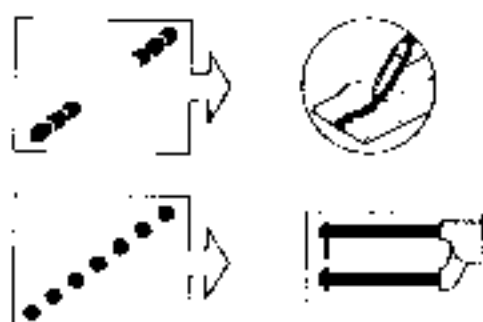
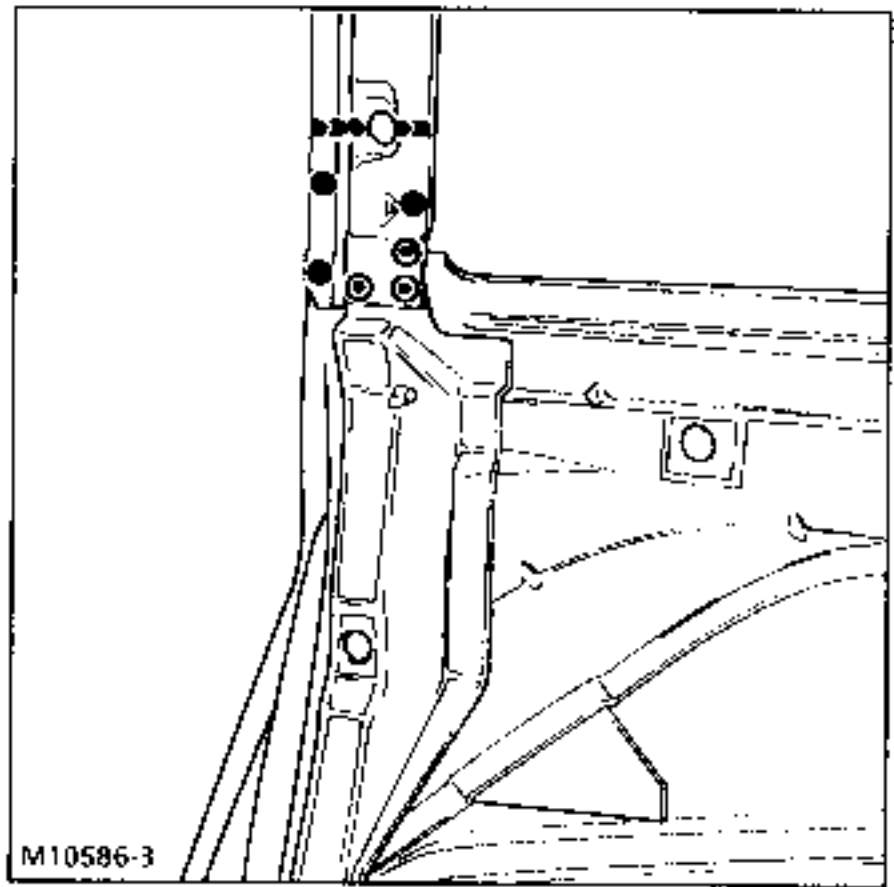
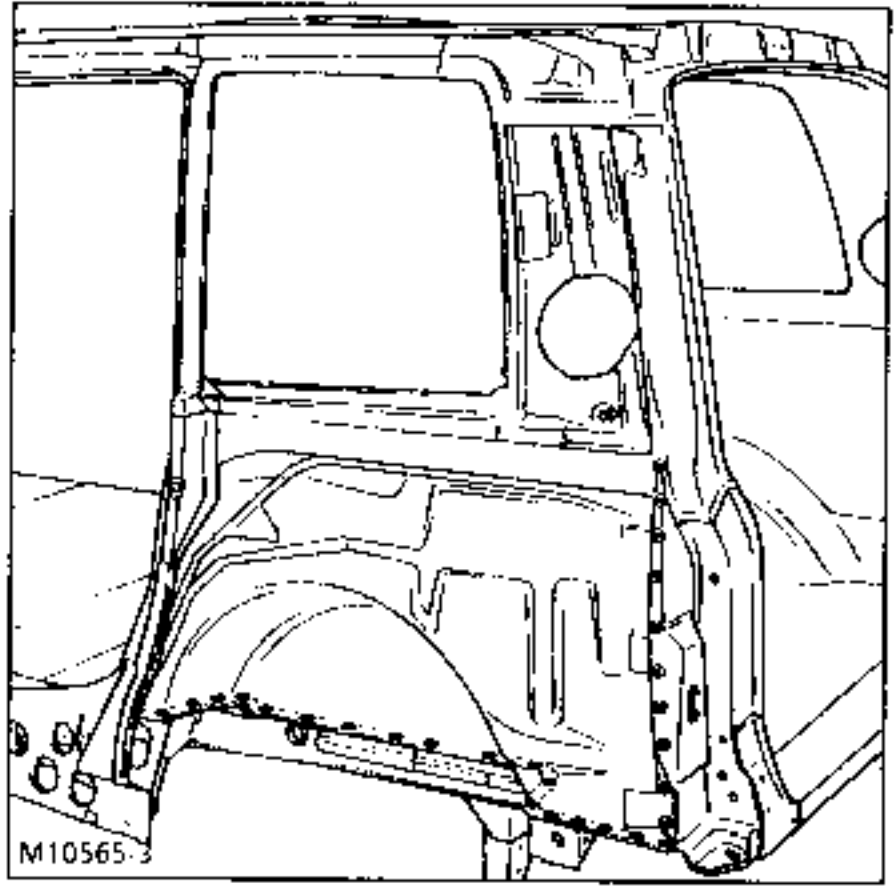
Simultaneously saw through both panel thicknesses so as to align the cuts correctly.

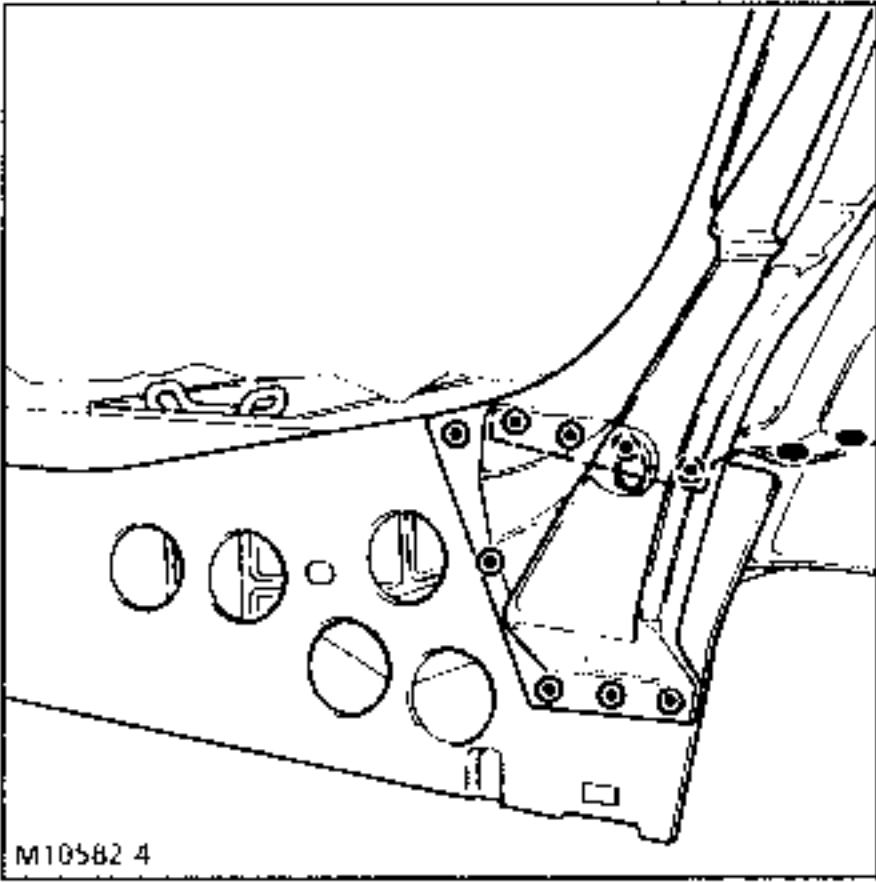
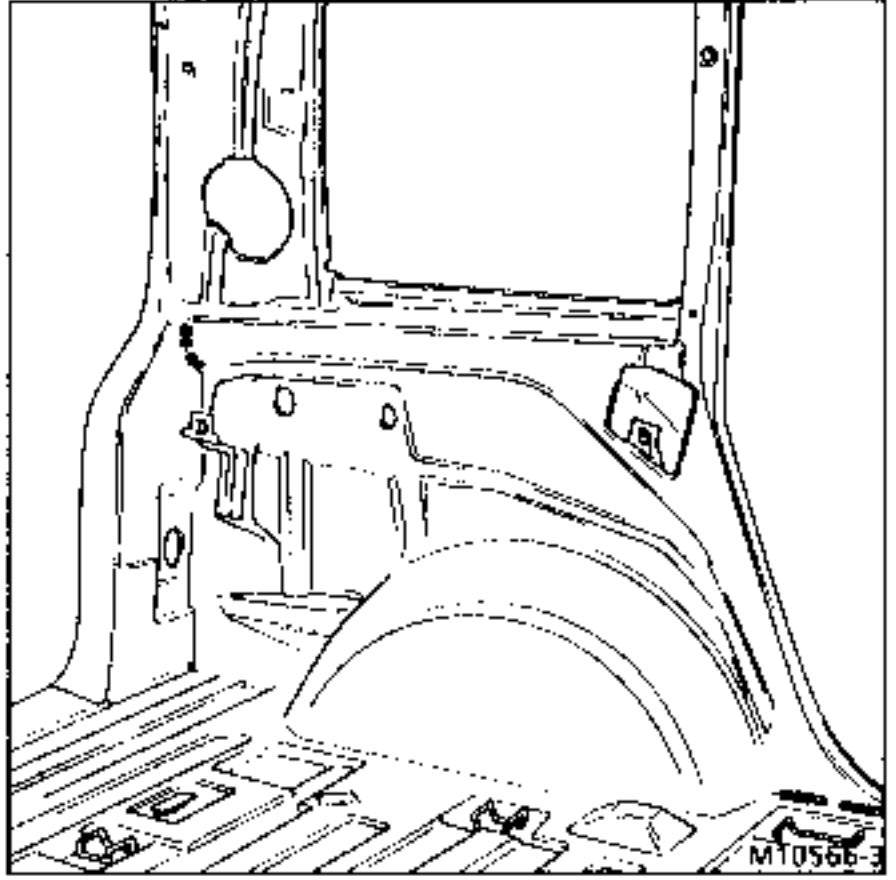
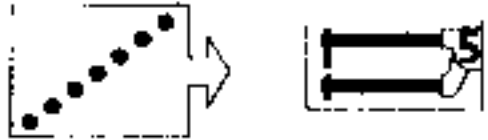
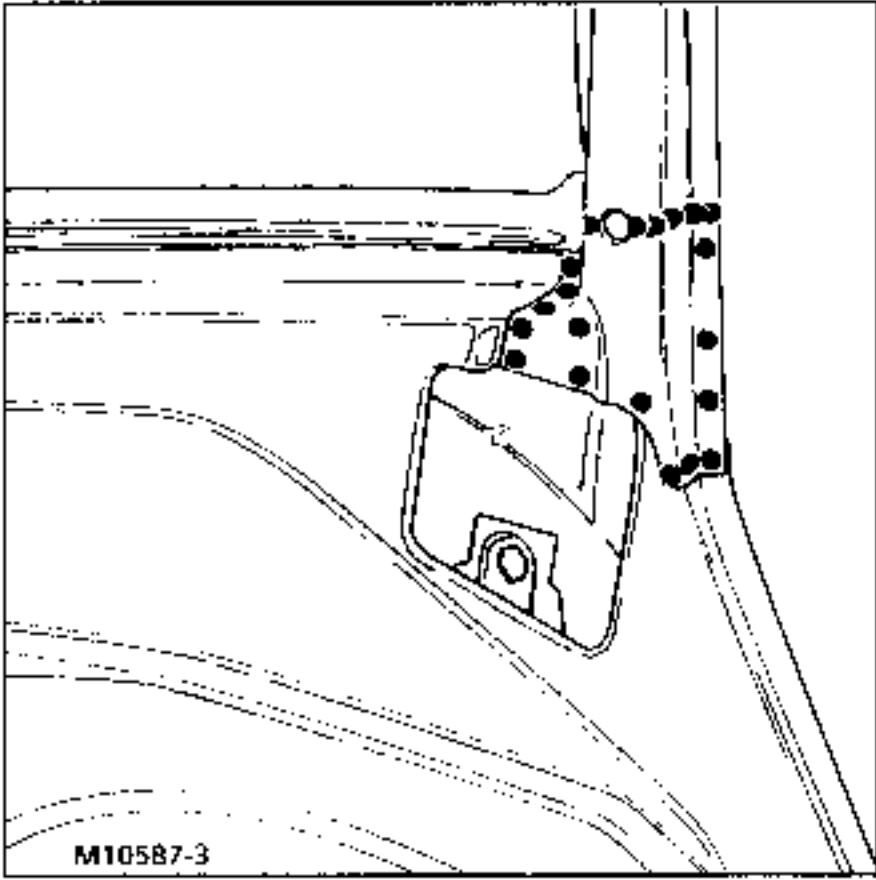
Grind back any excess zinc on the faces to be welded.



WELDING

IMPORTANT: fitting the wheelarch: as the zinc coating assembles the two rear pillars between which the rear quarter panel rear mounting is to be fitted, the assembly must be modified by welding the rear quarter upright on the outer face of the pillars (see diagram below).





PROTECTION AFTER WELDING

(See Espace Paintwork Manual MR.601)

Apply the passivation - zinc paint treatment for the welded areas.

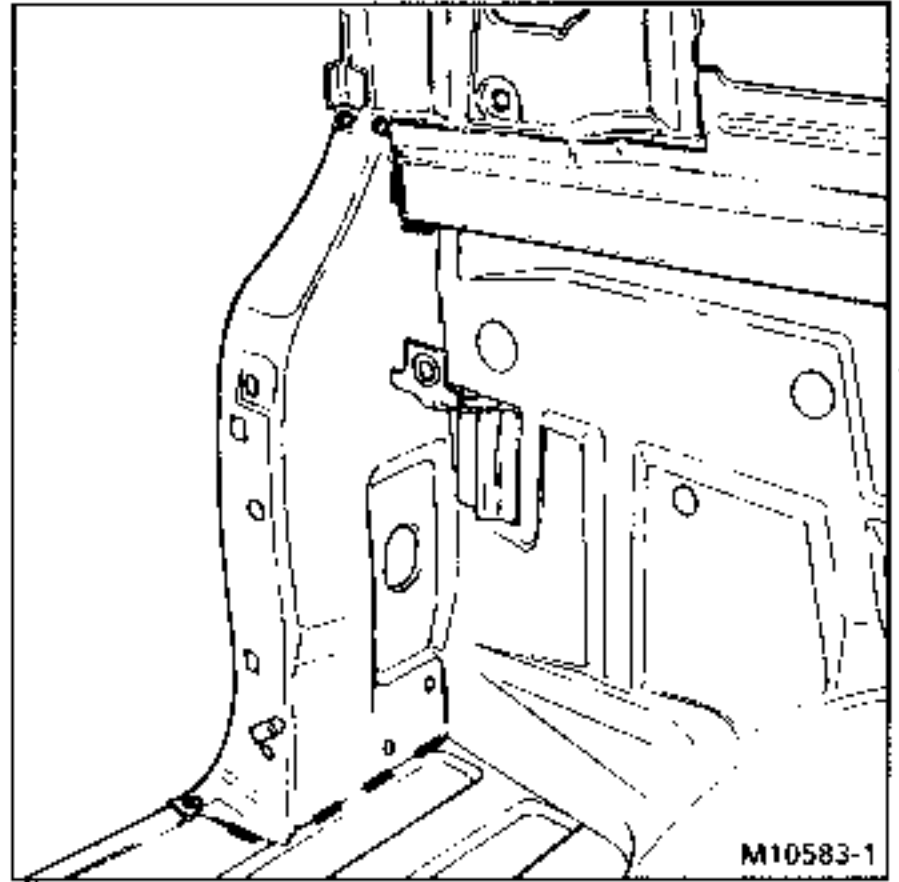
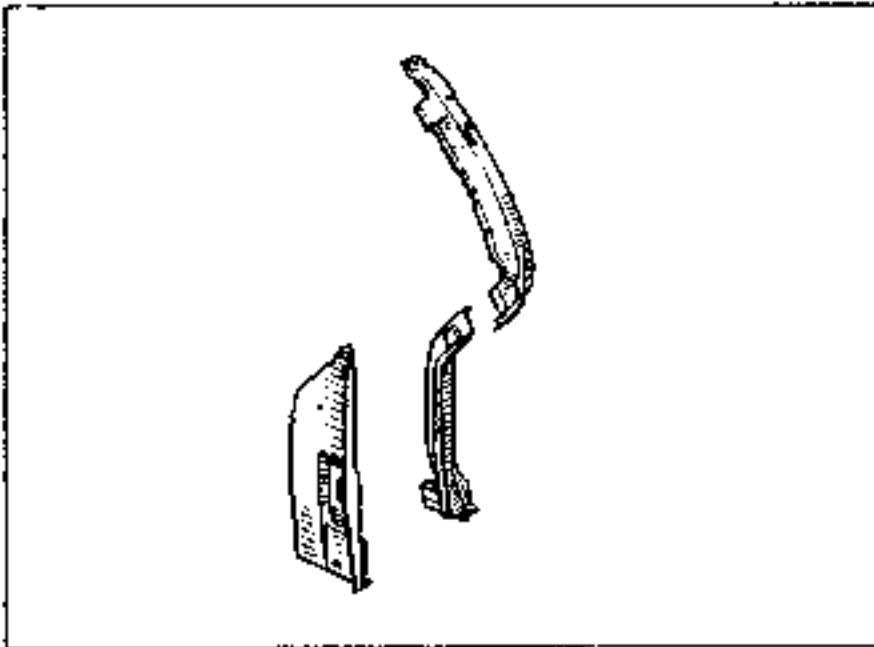
Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

Apply the hollow section protection after painting.

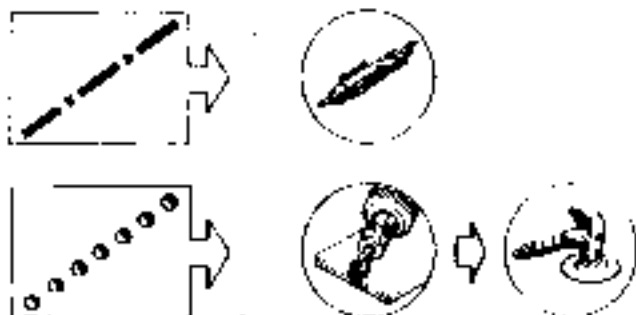
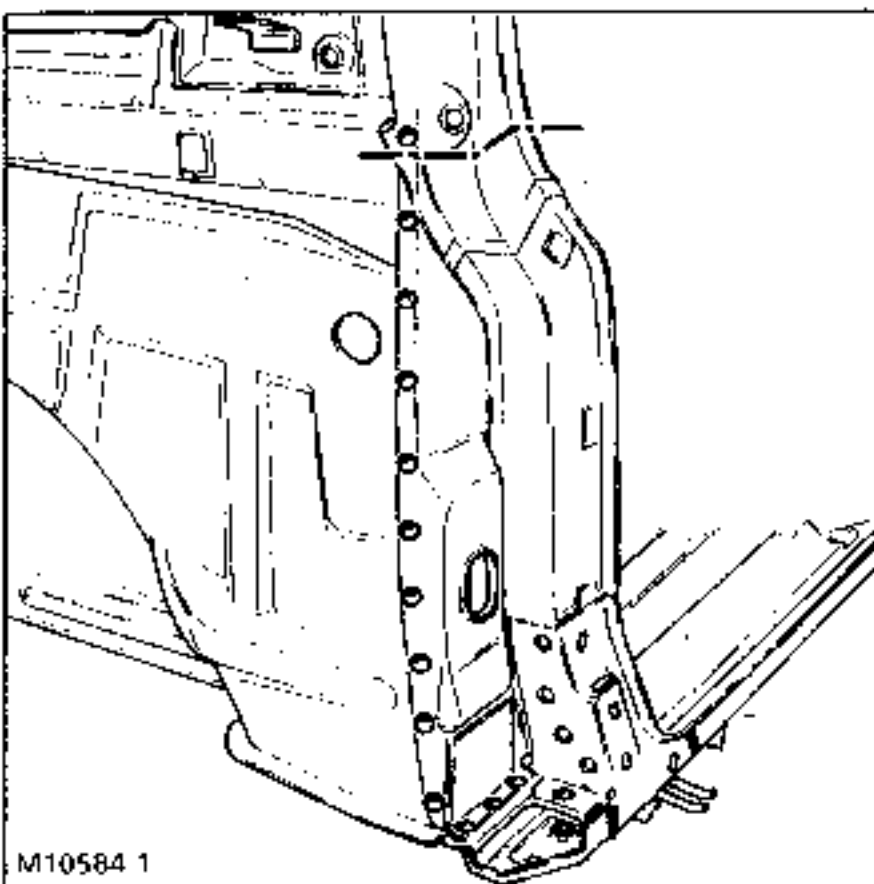
PROTECTION

Remember to protect the inside of the vehicle from any splashes during grinding and welding.

COMPOSITION OF THE PARTS AS SUPPLIED BY THE PARTS DEPARTMENT



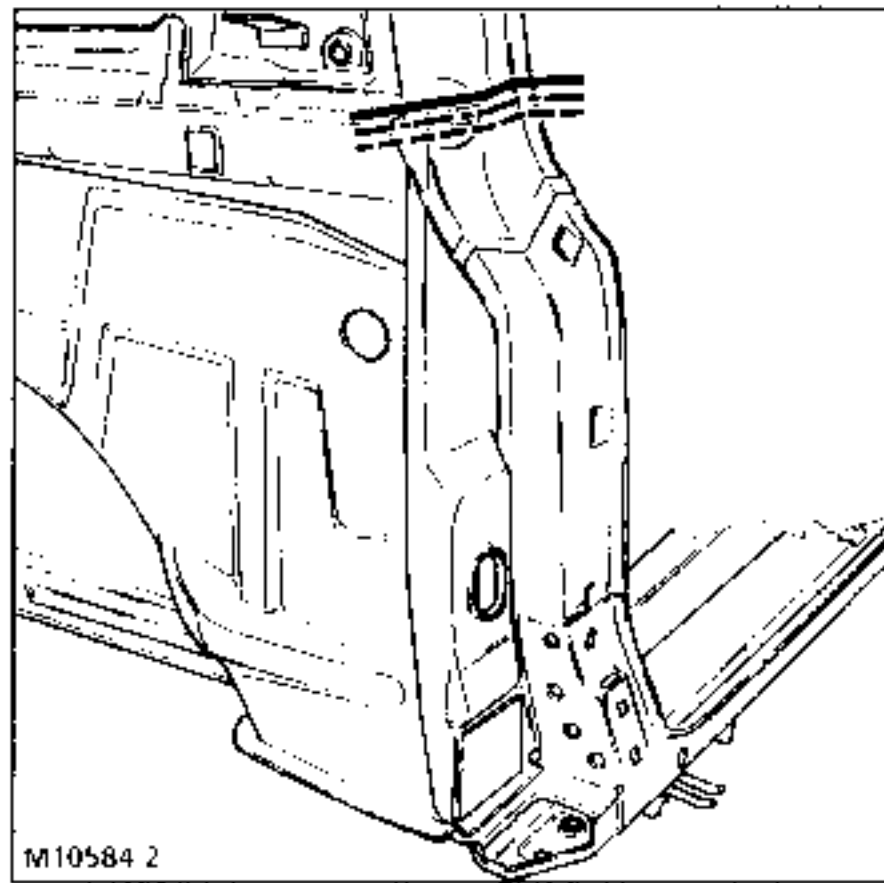
CUTTING OUT - UNPICKING



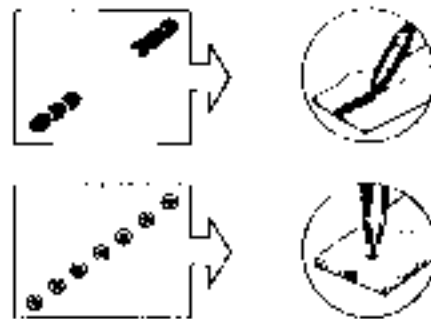
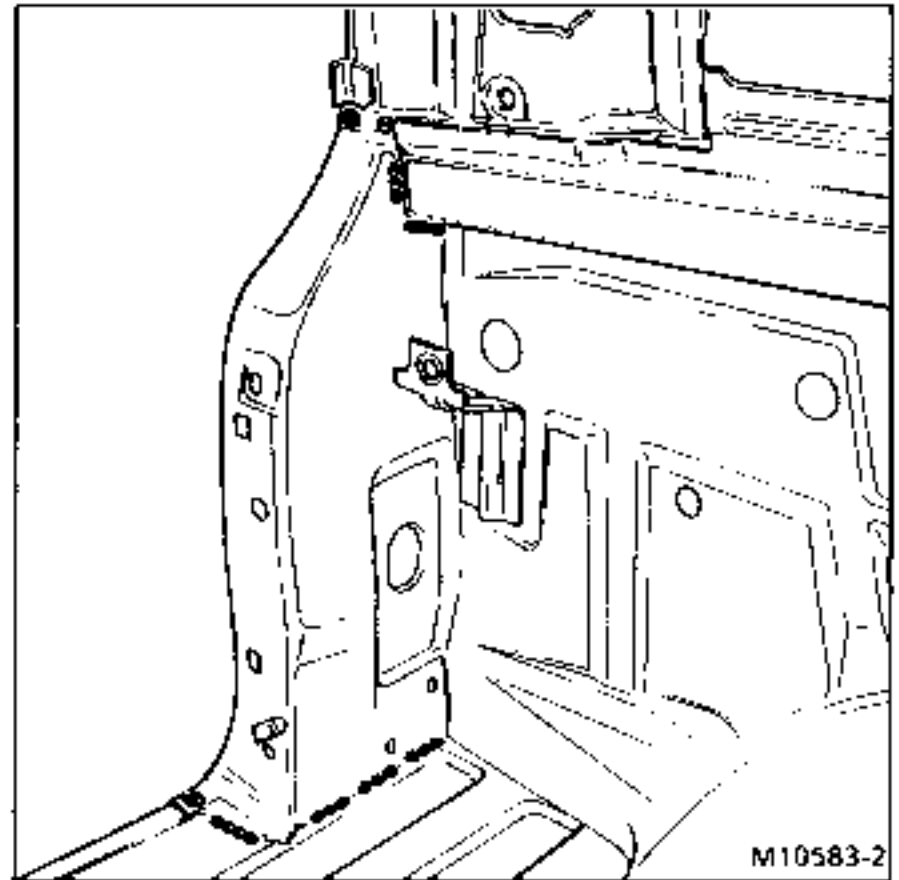
Grind back any pieces of unpicked spot weld and excess zinc remaining on the backing panels.

PREPARING THE NEW PART

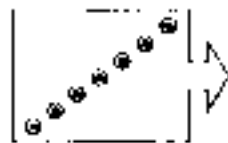
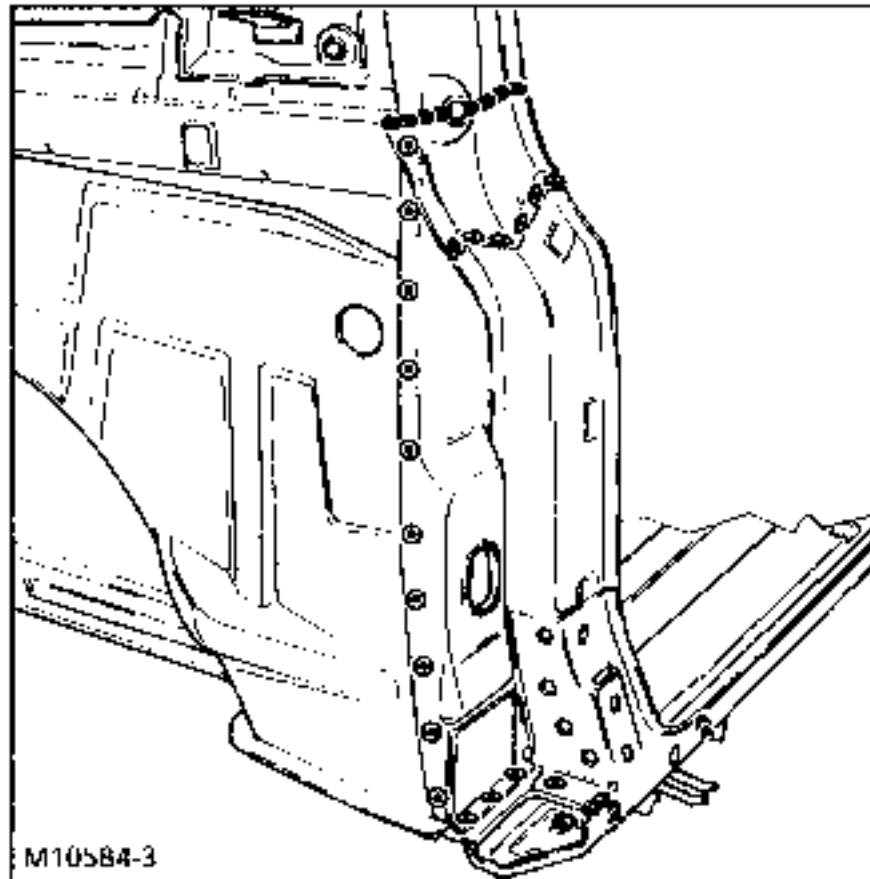
Grind back any excess zinc on the faces to be welded. Position the parts and secure them with vice clamps then make the cuts overlapping the parts.



WELDING



D = 5 mm



D = 5 mm



PROTECTION AFTER WELDING

(See Espace Paintwork Manual MR.601)

Apply the passivation - zinc paint treatment for the welded areas.

Apply anti-gravel mastic and sprayed-on and smoothed-down beads.

Apply the hollow section protection after painting.

REPAIRING

Only fissures, holes and small fractures less than 50 mm in size are to be plugged according to the plastic repair sequences described in section 40.

REPLACING

Parts to be replaced systematically

The complete replacement of the body top requires the roof to be replaced.

Partial replacement may be performed according to the sequence described below and only requires the following parts to be replaced:

- the quarter light upper moulding;
- the finishing moulding between the body top and rear wing.

Tooling required

- saw (with diamond powder disc and blade);
- sharpened spatula;
- adhesive extrusion spray gun;
- two bonding kits Part No. 60 25 170 306

This method can be broken down into three stages.

PRELIMINARY STEPS

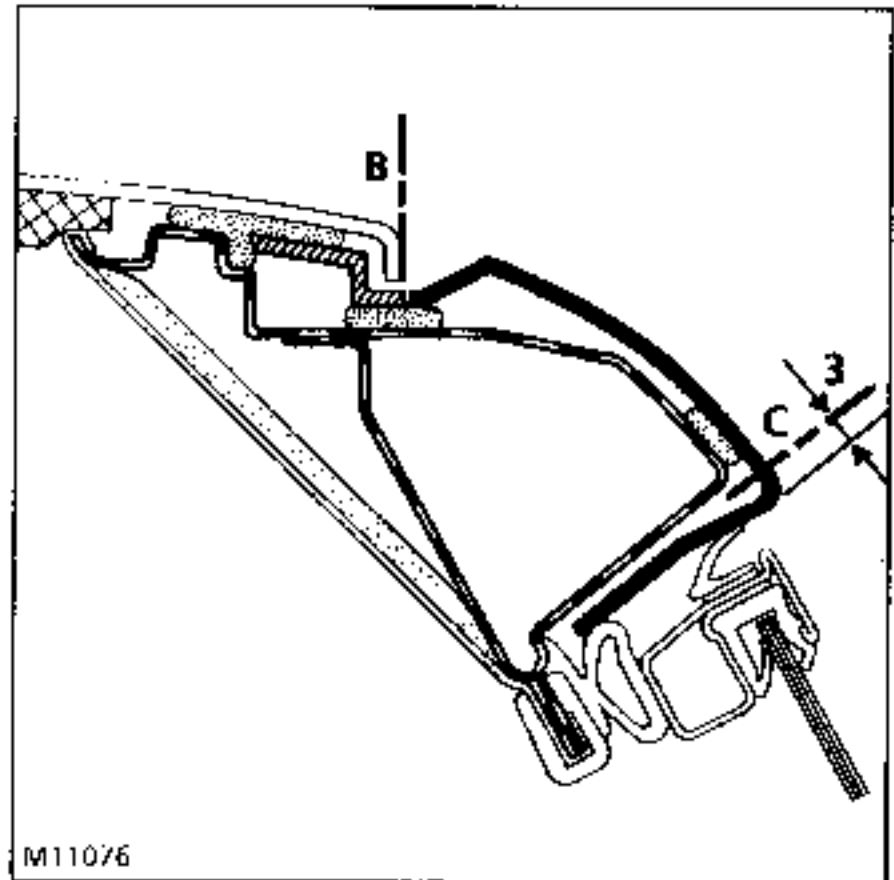
Mark the position of the body top in relation to the roof by measuring dimension (A) at the front, at the rear and at the centre pillar.

Protect the edge of the roof over the entire length of the vehicle with adhesive tape.

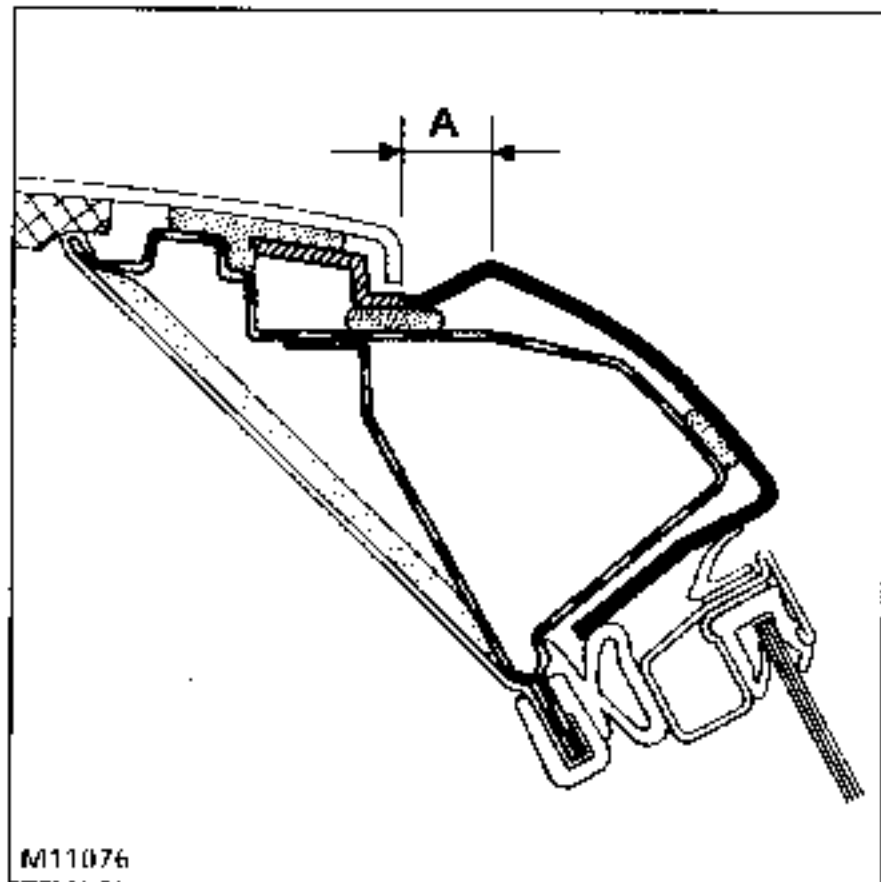
Unstick the finishing moulding between the body top and rear wing with a sharp spatula.

REMOVAL.

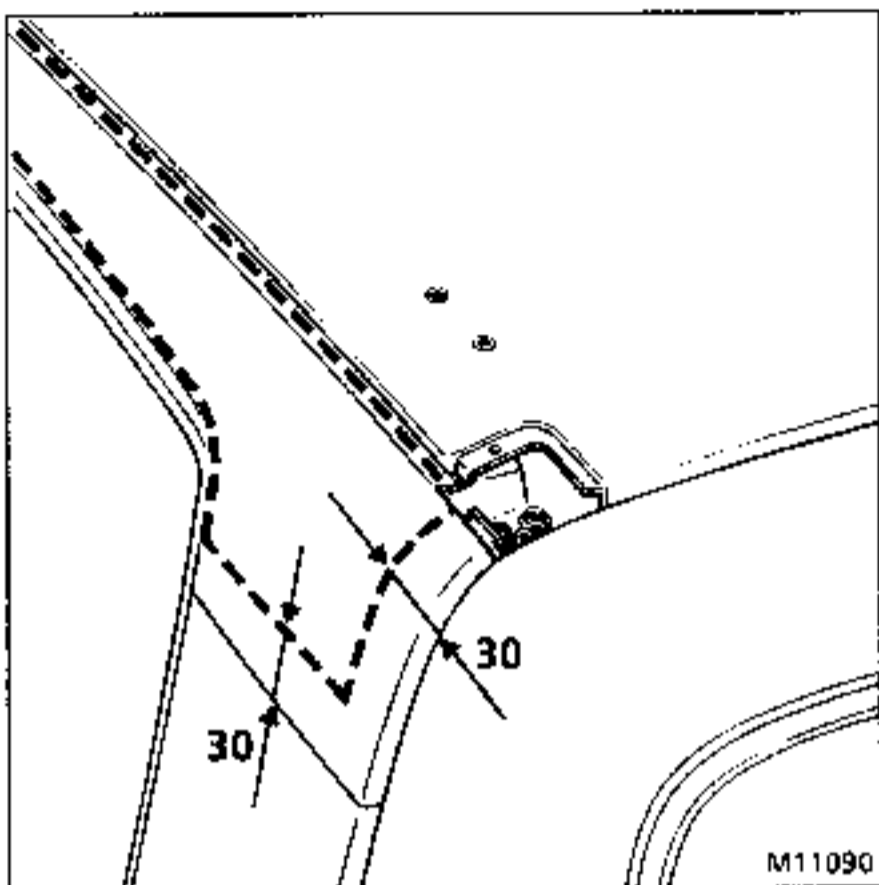
Using a circular saw, cut out the body top over the entire length of the vehicle making a tangent with the roof



at (B) and 3 mm away from the edge at (C).

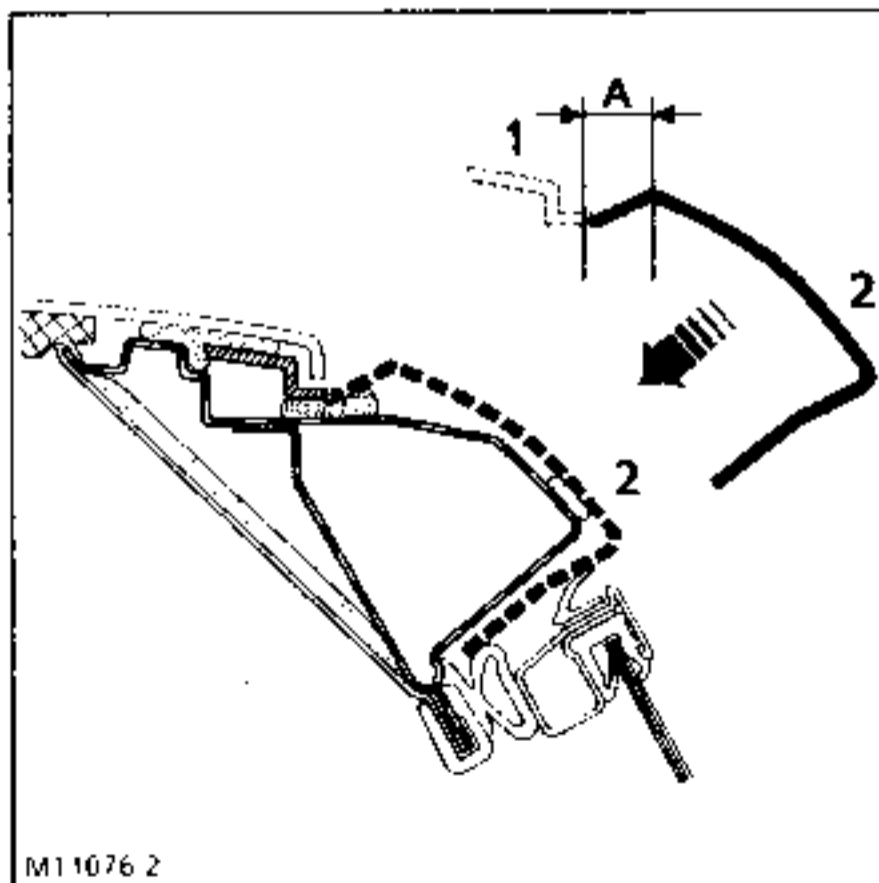


Cut the rear section 30 mm away from the edge.



Finish the unsticking operation by cutting the adhesive beads using a sharpened spatula.

Grind back the excess of adhesive remaining on the metal structure leaving in place a key layer for the new bead.



FITTING

Preparing the new body top

Cut section (1) following dimension (A) measured before the old part was removed.

Adjust part (2) on the vehicle.

Roughen the bonding zone:

- dedust;
- degrease (*);
- coat with primer (*).

Preparing the metal structure

Degrease the old bonding area.

Apply metal primer over this whole area.

Leave to dry for about 10 minutes.

Bonding the body top

Using a spray gun suited to the type of adhesive, extrude an 8 mm diameter bead over the old traces on the body.

Fit and adjust the body top in relation to the rear wing using the finishing moulding and bring the cut into contact with the base of the rain channel.

Strap up the body top at the front and the rear.

Remove the excess of adhesive from the rain channel.

(*). Please consult the adhesive supplier's technical sheet.

REPAIRING

The roof is made from RTM injected resin which can be easily repaired using the Epoxy kit Part No. 60 25 070 997.

In this case, and for this part only, large scale repairs are possible without affecting the appearance after painting.

REPLACING

Parts to be replaced systematically

- the three carpet panels bonded to the roof;
- the tailgate upper snappen seal.

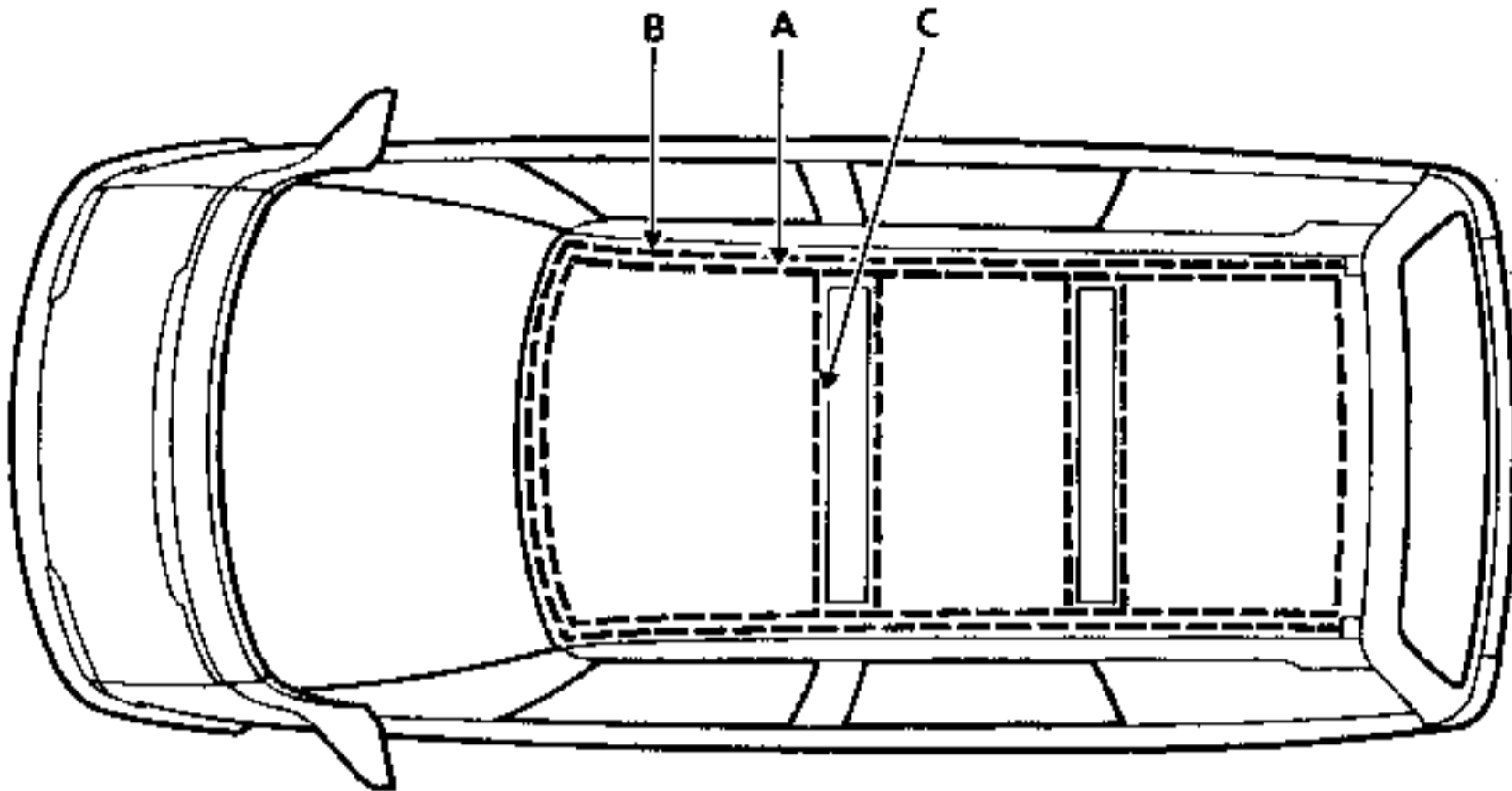
Tooling required

- saw (with diamond powder blade or disc);
- sharpened spatula;
- adhesive extrusion spray gun;
- two bonding kits Part No. 60 25 170 306.

REMOVAL

Remove:

- the windscreen moulding;
- the radio aerial;
- the sunroofs;
- the tailgate hinge mouldings;
- the tailgate by unscrewing the two hinge articulation pins;
- the three carpet panels bonded to the roof;
- part of the headlining by separating the fabric trim over all the inner edges of the carpet panels without damaging the fitted cardboard.

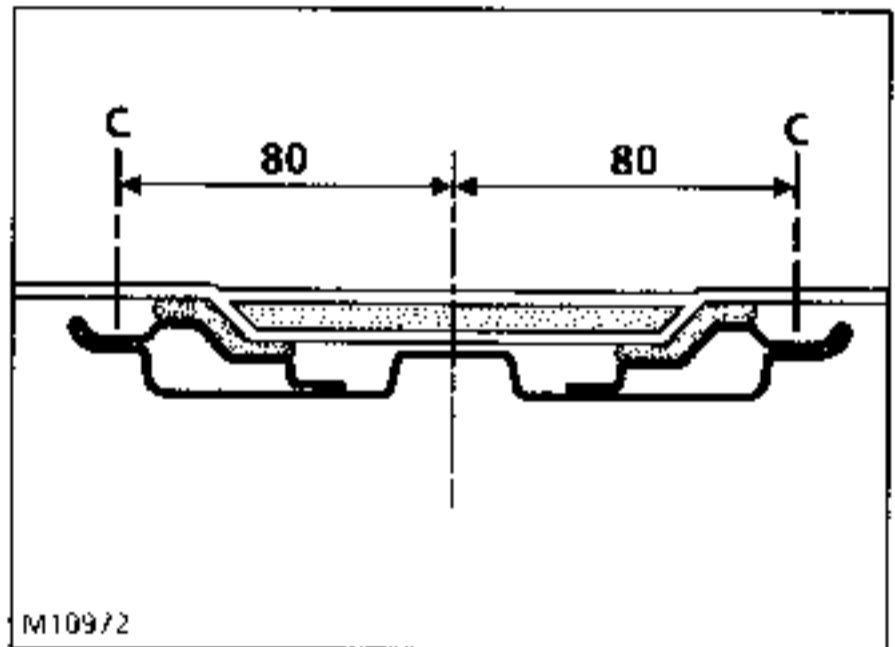


M10407-1

Cutting the roof

Using a sensitive saw, cut:

- the roof over its entire periphery (A), 50 mm away from the edge and 80 mm away at the rear at the tailgate end;
- the folded edge (B) 5 mm away from the edge.



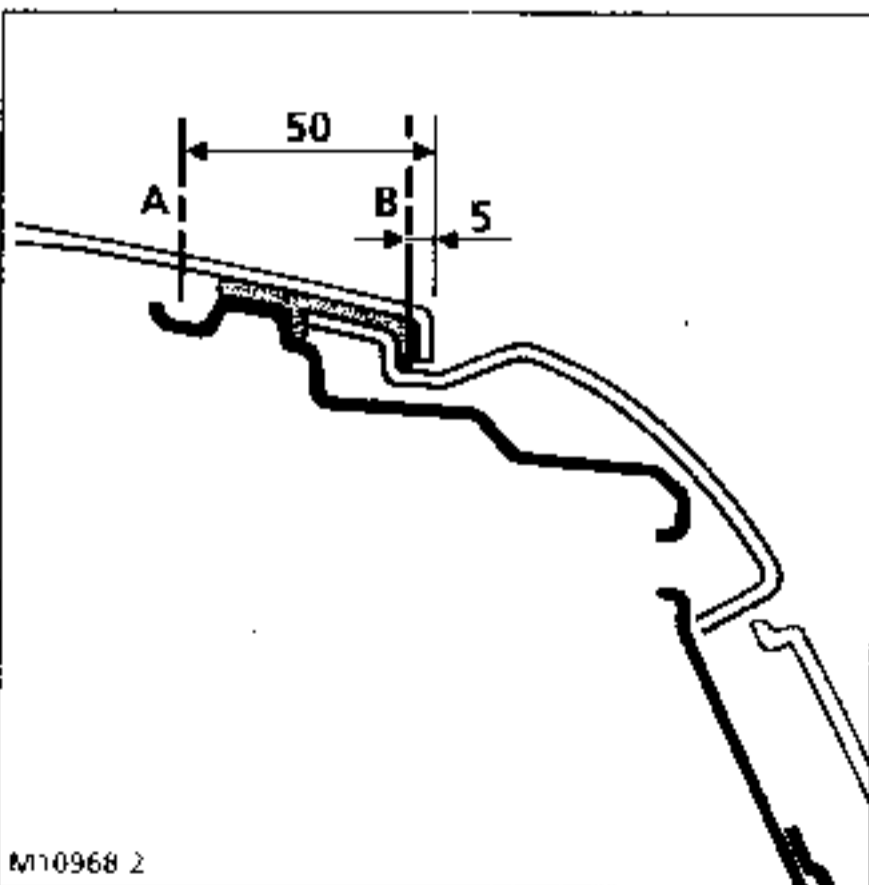
M10972

Cut transversely 80 mm either side of the cross member centre line.

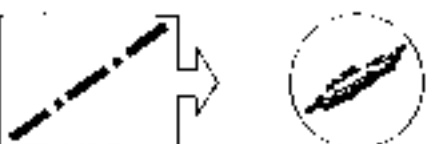
Remove the three central sections.

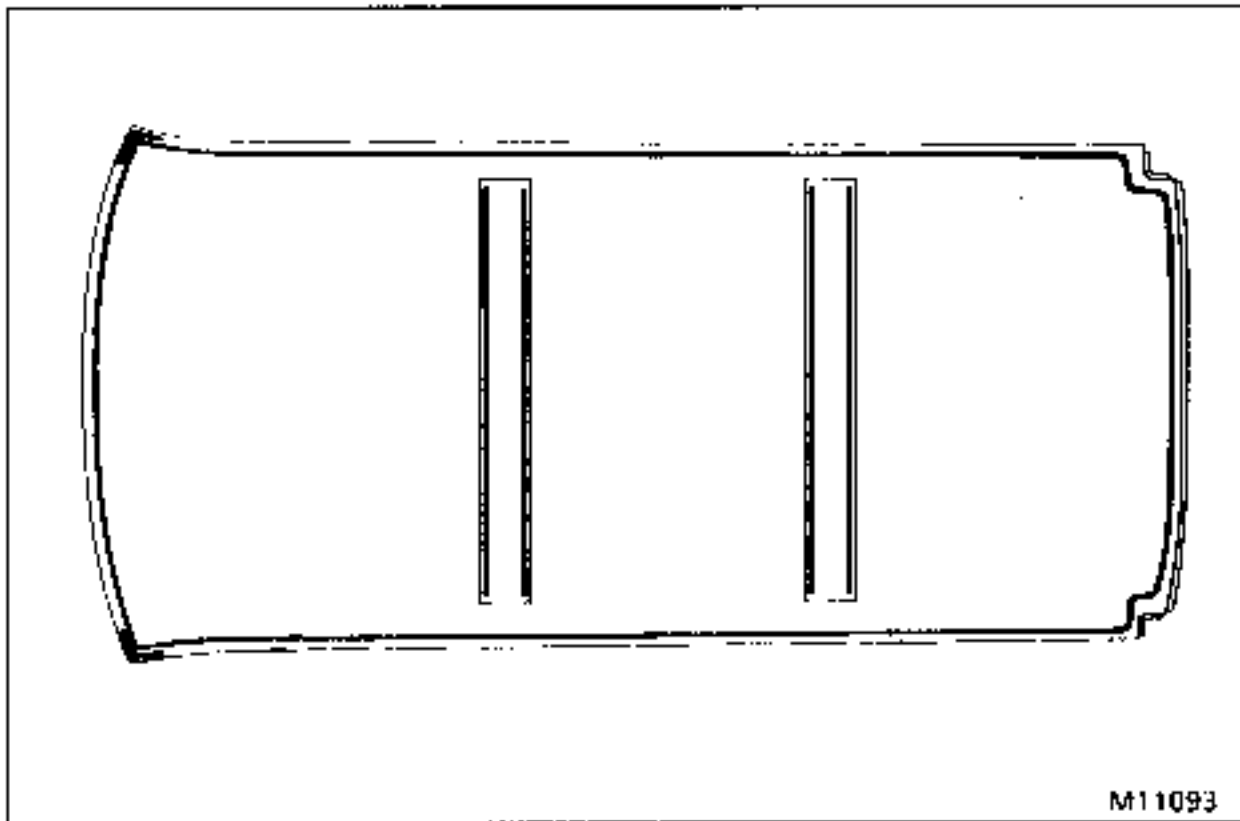
Cut the beads using a spatula with a sharp edge.

Clean the areas to be bonded but do not remove the entire bead bonded to the galvanised panel.



M10968 2





FITTING

Offer up the roof to the vehicle.
Centre it in relation to the two stretchers.

Adjust it in relation to the stretchers, windscreen and rear wings.
Mark this position using strips of adhesive tape.

Preparing and bonding

Structure

Degrease the old bonding area.
Coat with primer.
Leave to dry for 10 minutes.

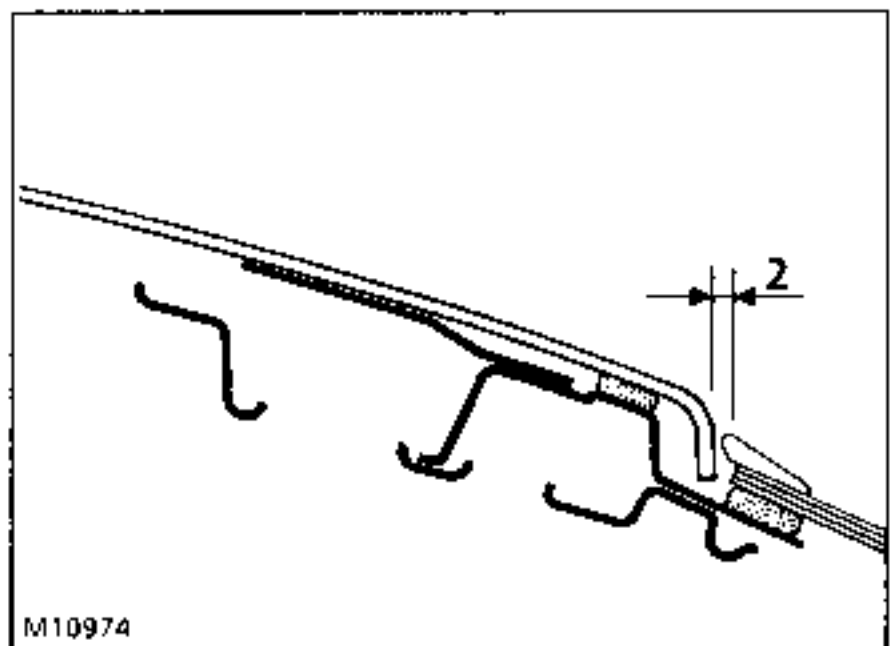
Roof

Degrease the area to be bonded.
Coat with primer.
Leave to dry for 10 minutes.
Extrude 10-12 mm diameter beads over the roof as shown in the figure above.

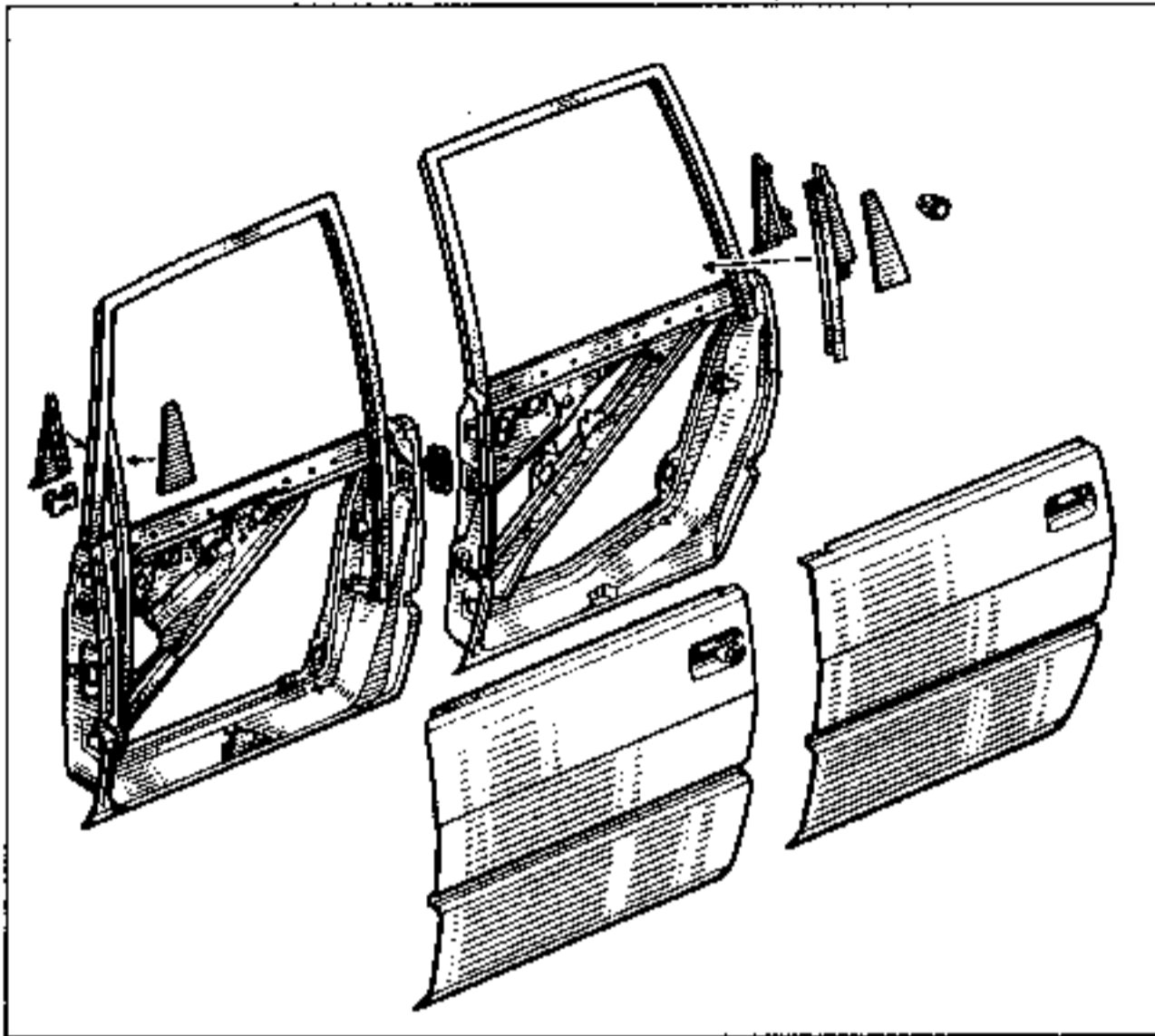
Fit the roof on the vehicle, positioning it in relation to the pieces of adhesive tape during the 10 minutes following extrusion.

Strap up the assembly, adjusting the central depression in relation to the tailgate and windscreen.

IMPORTANT! check that the roof is leak-tight before fitting the trim.



NOTE: if the vehicle was equipped with a car phone, fit the anti-interference grille and the aerial base plate fitted in service.



REPAIRING

The door panels are made from SMC (pre-impregnated resin).

Only fissures, holes and small fractures less than 50 mm in size can be plugged according to the plastic repair sequences described in section 40.

Prepare and apply paint finish according to the sequences in the Espace Paintwork Manual MR.601.

REPLACING

This operation can be performed without removing the metal door leaf.

Tooling required

- sharpened spatula;
- adhesive extrusion spray gun;
- set of pads and blocks for centring bodywork panels;
- clamps.

Products required

1 bonding kit Part no. 60 25 170 306.

REMOVAL

Door inner trim

Remove:

- the window winder handle;
- the two screws from the base of the glove box;
- the two screws concealed under the puller handle moulding;
- the window triangular moulding.

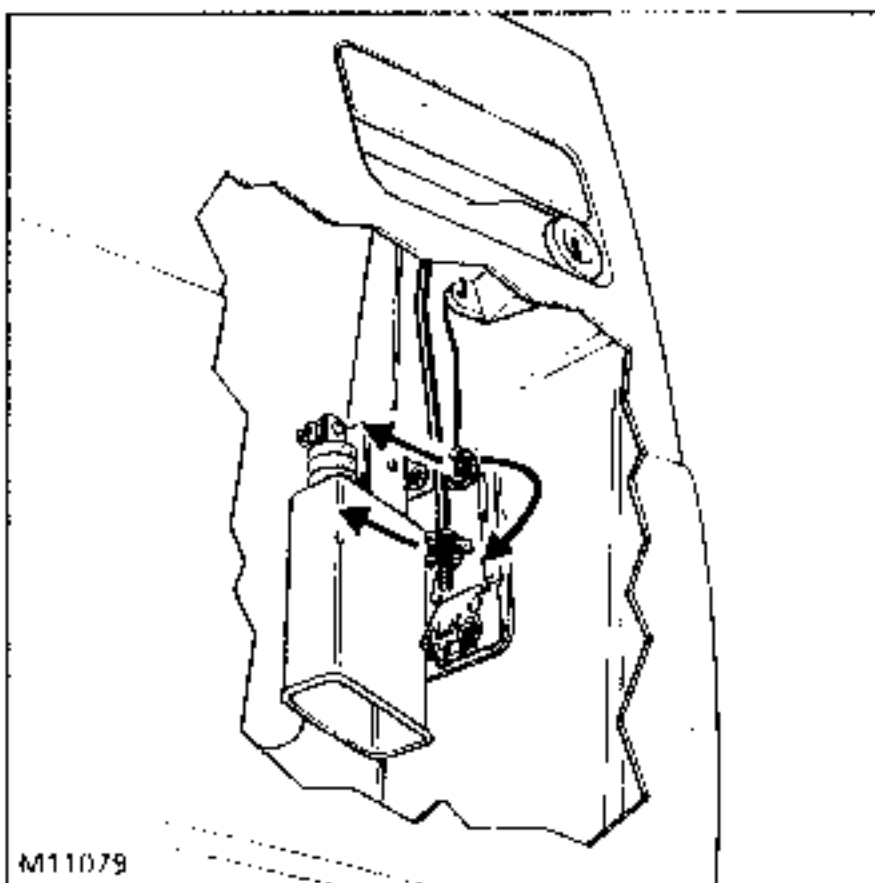
Separate the trim at the top.

Disconnect the opening rod from the control handle.

Disconnect the wiring harness.

Panel

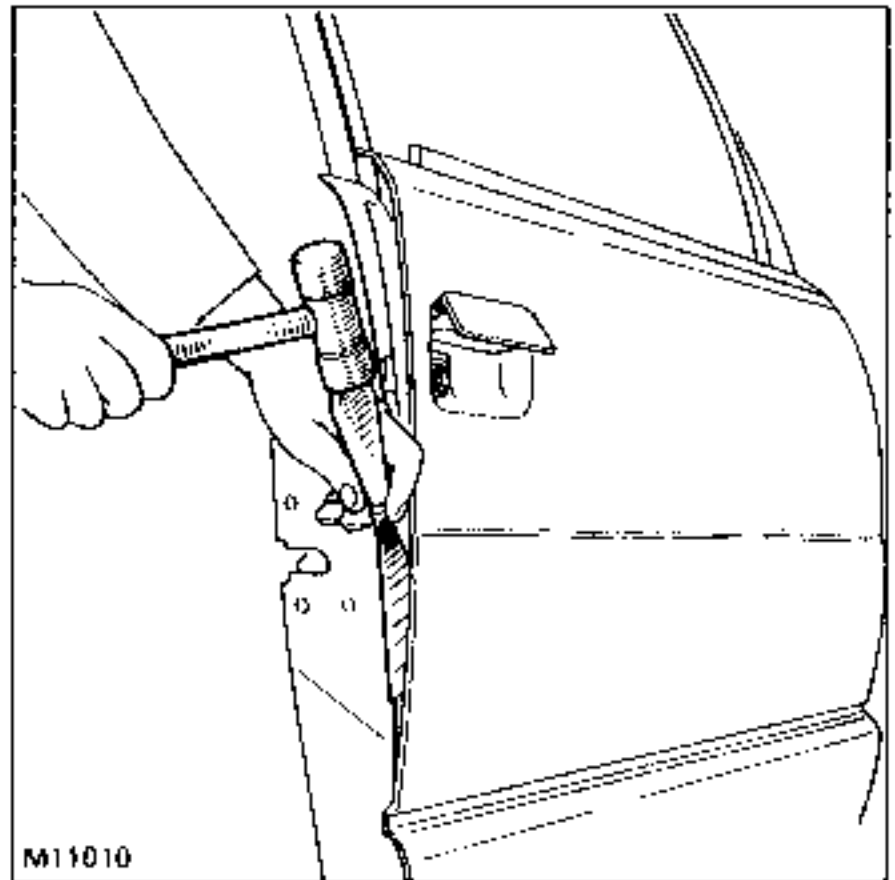
Protect the rear part of the front wing with adhesive tape.



Disconnect the lock barrel lever and plate control lever on the lock.

Remove the primary seal from the bottom of the door.

Unclip the triangular moulding from the corner of the window.



Using a spatula with a sharpened edge, cut the bead of adhesive on the panel: start at the lock end then continue along the lower part, avoiding the window winder housing part and completing the operation by going up at the hinge ends.

Remove the panel.

Remove the opening plate and window rubbing strip.

Grind back the excess of adhesive remaining on the metal structure, leaving in place a key layer for the new bead.

Straighten the areas to be bonded on the door.

Offer up the new panel to check that there is not too much adhesive.

FITTING

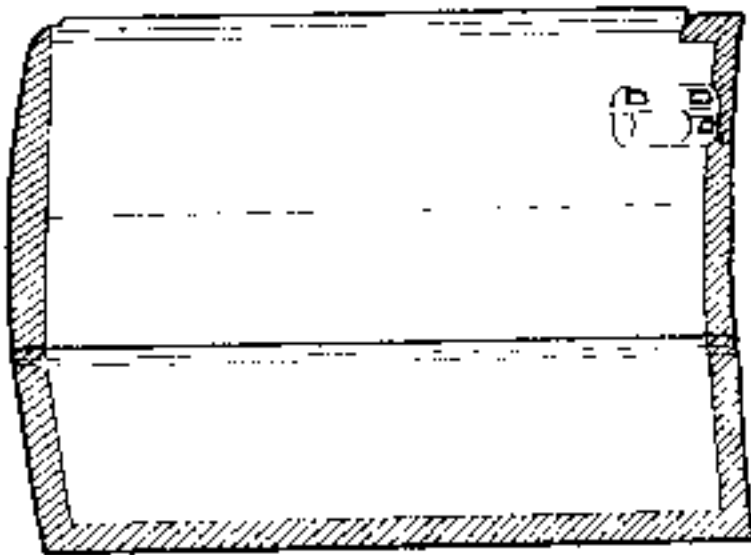
Preparing the components

Door:

- degrease the area to be bonded;
- apply metal primer over the entire area;
- leave to dry for about 10 minutes.

Door panel:

- roughen the area to be bonded over a width of 50 mm;
- dedust;
- degrease (*);
- coat with primer (*).

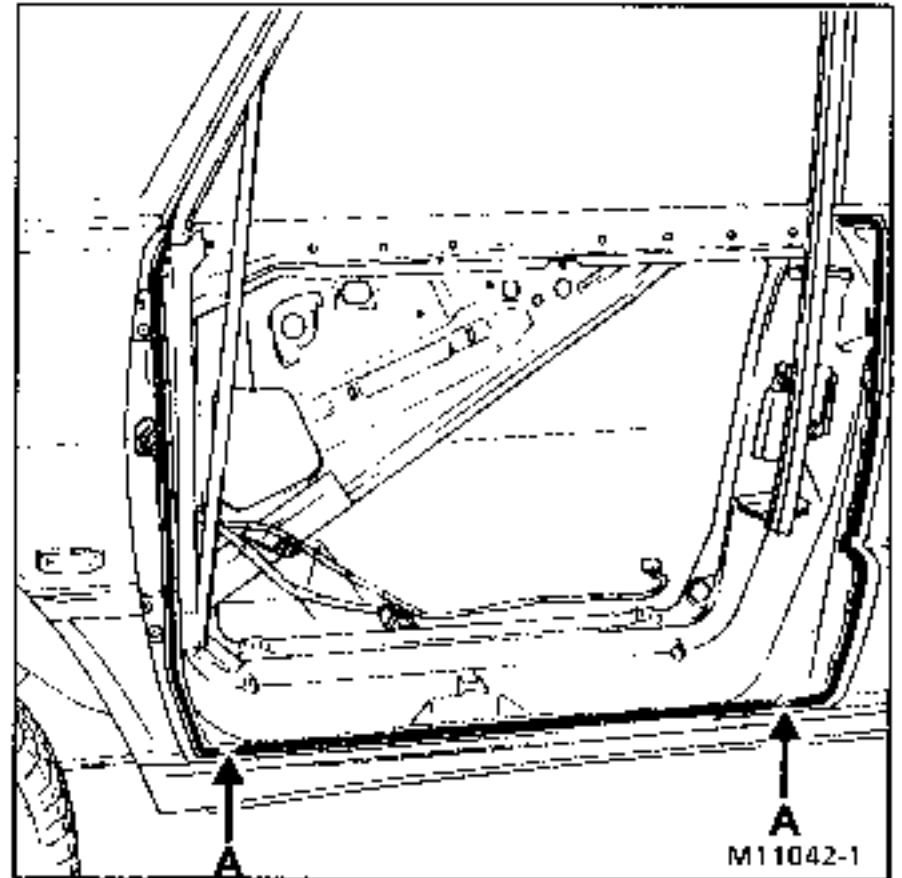


M11011

Bonding the door panel

Use an approved PU adhesive to bond the door panel(*). See section 40.

(* Please consult the adhesive supplier's technical sheet.



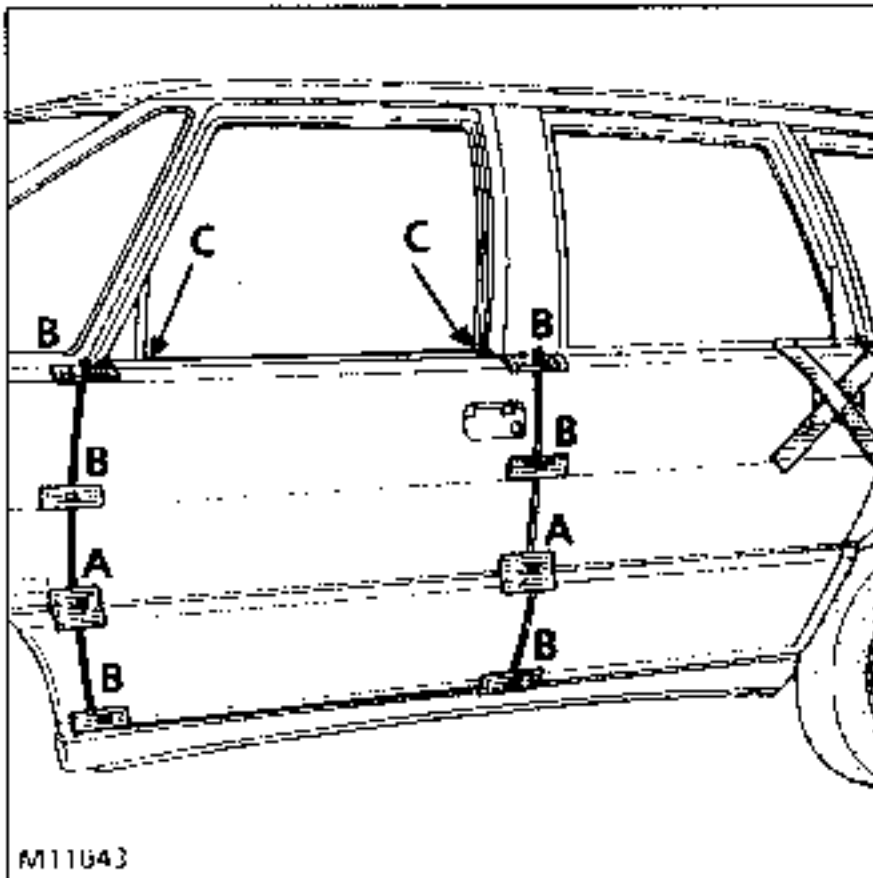
Using a spray gun suited to the type of adhesive used (*), extrude an 8 mm diameter bead of adhesive which is broken off opposite the two lower drainage points (A).

Positioning the door panel

Lock the opening mechanism of the adjacent door to prevent it opening accidentally and damaging the panels locked in place with the tools.

Fit a 2 mm shim at points (C) to fit the outer rubbing strip.

NOTE: in order to position a door panel or rear wing, the plates and catches are to be locked on the rear door panel as the thickness of the wing does not enable them to be attached.



Apply the panel to the structure but do not press it.

On the adjacent elements at (A) lock the centring locks to adjust the panel height, flush fitting and clearance in relation to these parts.

On the adjacent elements at (B), lock the pads to adjust the flush fitting and clearance of the panel in relation to these parts.

Remove the tools after 1½ hours polymerisation (*).

See MR.601 for preparing and paintwork.

Refit the equipment.

Only cut off the excess of adhesive which has run over the bonding seal before painting.

(* Please consult the adhesive supplier's technical sheet.

ATTENTION FRONT DOOR:

Before touching the female hinges secured on the front pillar, it should be remembered that it is difficult to adjust them. Thus, when the front wing and complete door are in place:

- if the door does not have to be replaced, do not adjust the hinges;
- if the door is to be changed, reassemble and adjust it in accordance with the following sequence.

REMOVING THE FRONT DOOR

Tooling required

- FENWICK impact pin extractor.

Remove the door internal trim.

Disconnect the connectors.

Take out the wiring harness, releasing the rubber protector.

Remove the bolt securing the door check strap to the pillar.

Remove the plastic plugs protecting the hinge pins.

Remove the pins from the lower hinge using an impact extractor.

Remove the pins from the upper hinge and remove the door.

FITTING THE DOOR

If a front door is being completely replaced, the metal structure and SMC panel are supplied separately in order that the hinges can be mounted, adjusted and tightened on the front pillar.

Prepare the door structure

Fit:

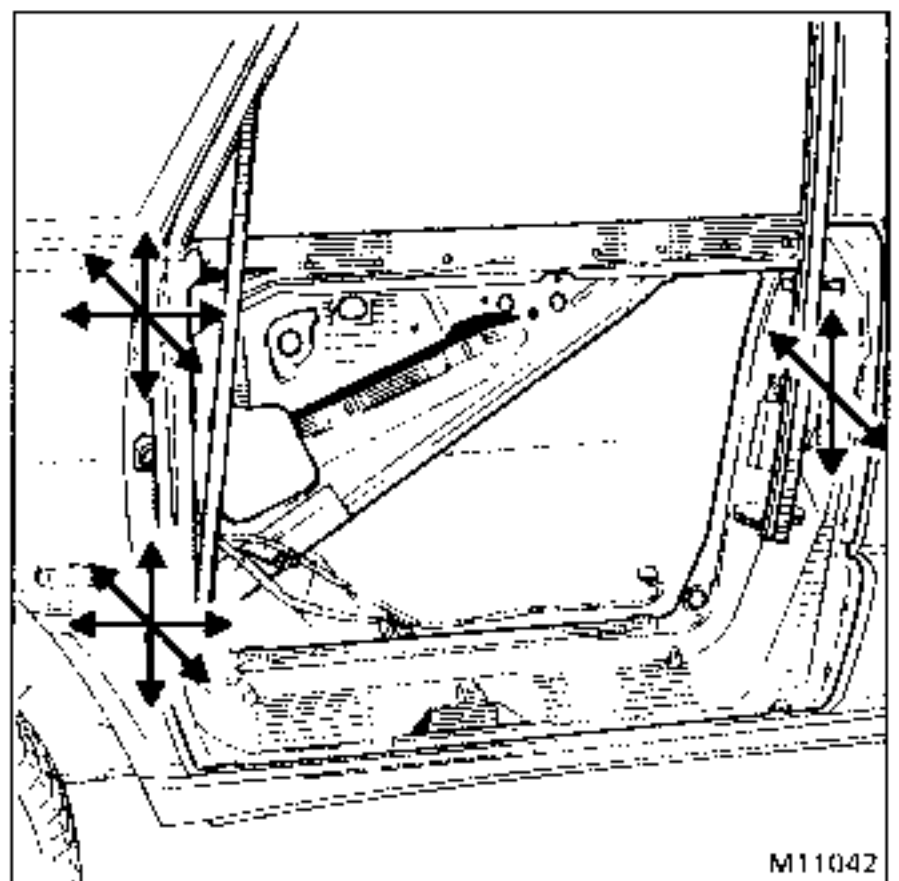
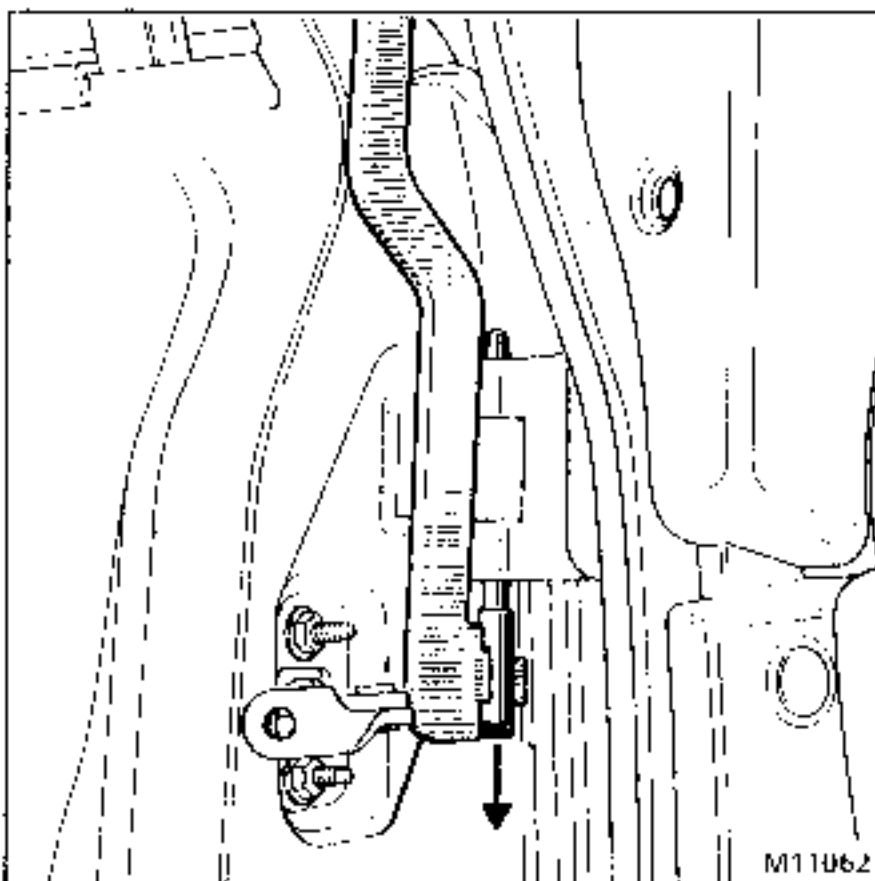
- the glass sliding felt;
- the glass;
- the windscreen winder mechanism;
- the lock.

Replace the spring pins by two dummy pins or 5.1 mm diameter drill bits.

Fit the structure on the vehicle and insert the original shims between the hinges and front pillar.

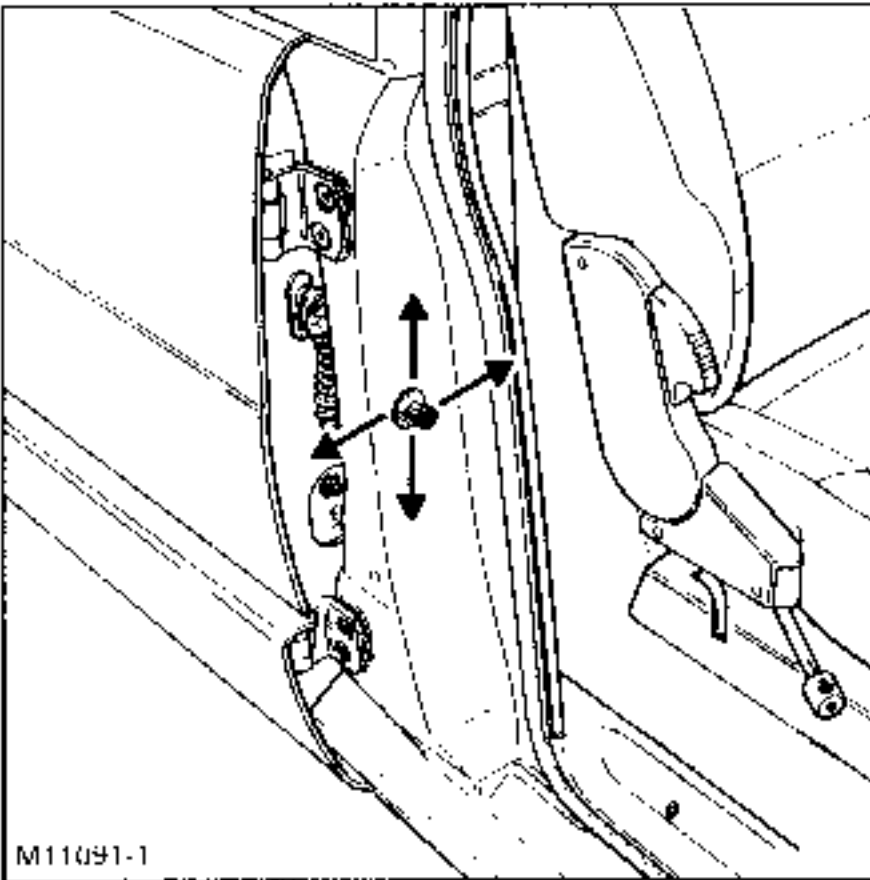
Failing this, fit two shims under each hinge.

Close the structure (lock engaged on second notch).



Adjust the structure, with the snapper seal in place and ensure that the clearance is constant over the entire edge of the window frame by altering the hinges and the closure lock bolt.

Offer up the SMC panel blank.



Torque tighten the hinge screws to 3.8 ± 0.2 daN.

Mount the door check strap on the body and tighten it on the front pillar.

Check that the closure system operates correctly.

Stick the panel to the body following the fitting sequence described on page 47-3.

ADJUSTING A COMPLETE FRONT DOOR

Although it is difficult and delicate, when reassembling a door fitted with dummy pins or 8.1 mm diameter drill bits, it is possible to reach the hinge mounting bolts by removing the plastic guard from the front wheelarch.

Open the two wing tensioner inlets.

Pretighten the four bolts using a FACOM 68B ratchet ring spanner fitted with a TORX EX240 end piece.

Adjust the door in stages.

Once it has been adjusted:

- remove the dummy pins and door;
- torque tighten the bolts to 3.8 daNm.

Finish the reassembly sequence.

REMOVING THE REAR DOOR

Remove the internal trim from the door: disconnect the connectors.

Take out the wiring harness, releasing the rubber protection.

Remove the door check strap mounting bolt from the centre pillar.

Slacken the hinge mounting TORX type bolts and remove the door.

FITTING THE REAR DOOR

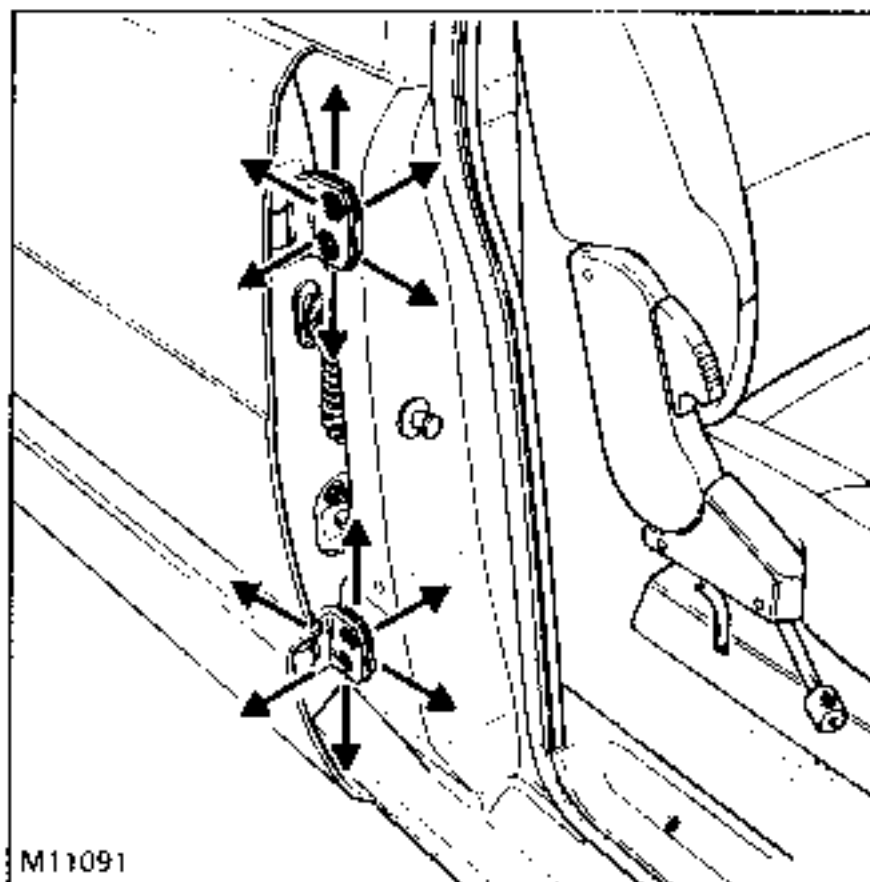
The new door is supplied with separate metal structure and panel.

Refit the door following the sequence for the front door.

ADJUSTING A COMPLETE REAR DOOR

This adjustment is facilitated if the hinge mounting bolts on the rear pillar are made accessible.

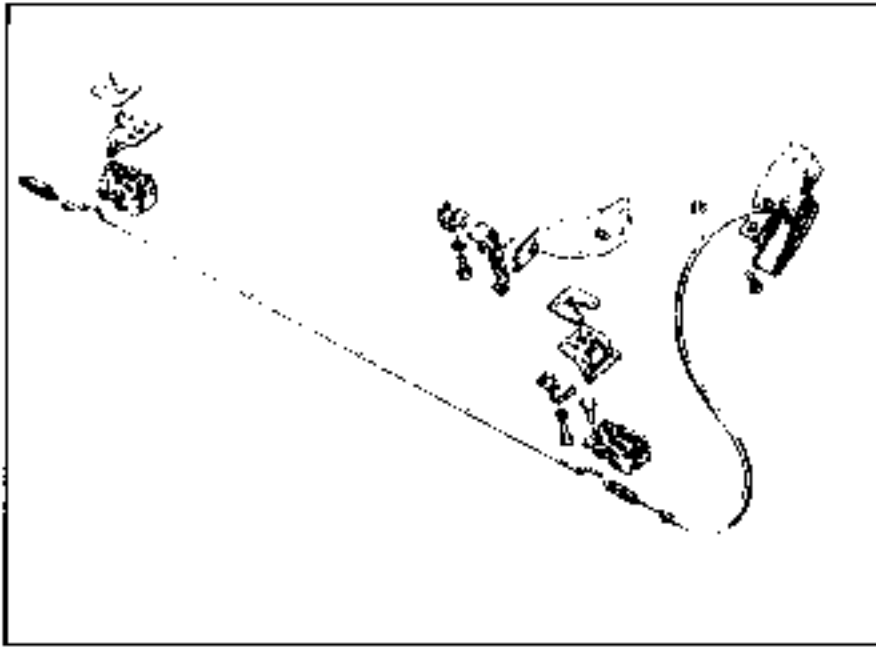
Adjust the hinge mountings and lock bolt to adjust the height and flush fitting.



NOTE: the door must be taken off its hinges in order to paint the interior areas of the door, hence the need to use dummy pins.

The roll pins are fitted definitively between the stages when the interior sections are painted and the outside of the door is painted.

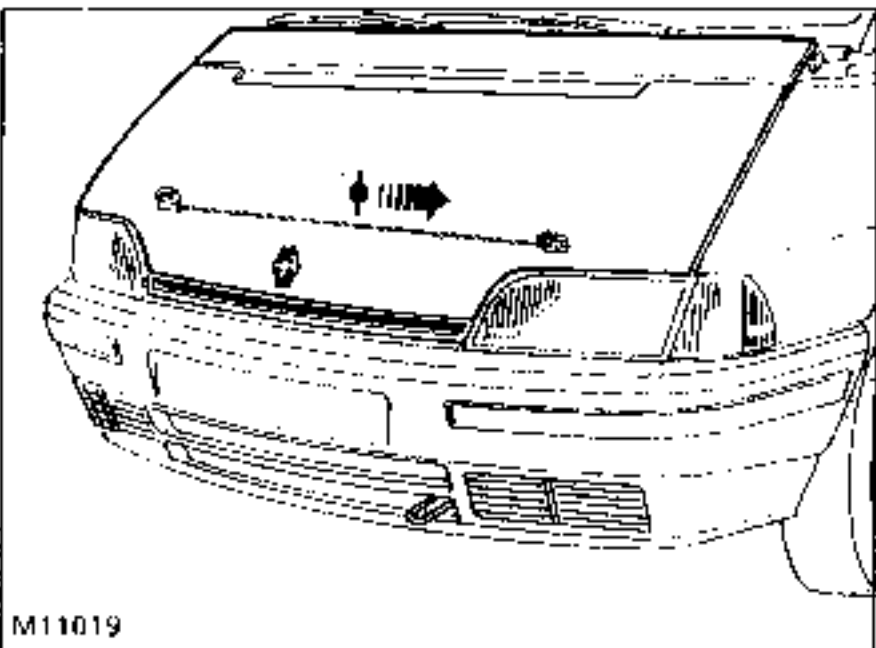
OPENING



Emergency method for opening the bonnet if the control should break.

Place the vehicle on a lift or use a mechanic's trolley.

Pass your arm between the radiator and front of the engine.



Pull the lock synchronisation rod towards the lefthand side. The bonnet should open.

REMOVAL

Without changing the hinges

Open the bonnet, place the bonnet stay or two locking clips on the hinges.

Protect the wings and rear view mirrors.

Remove the four bolts securing the bonnet on the hinges.

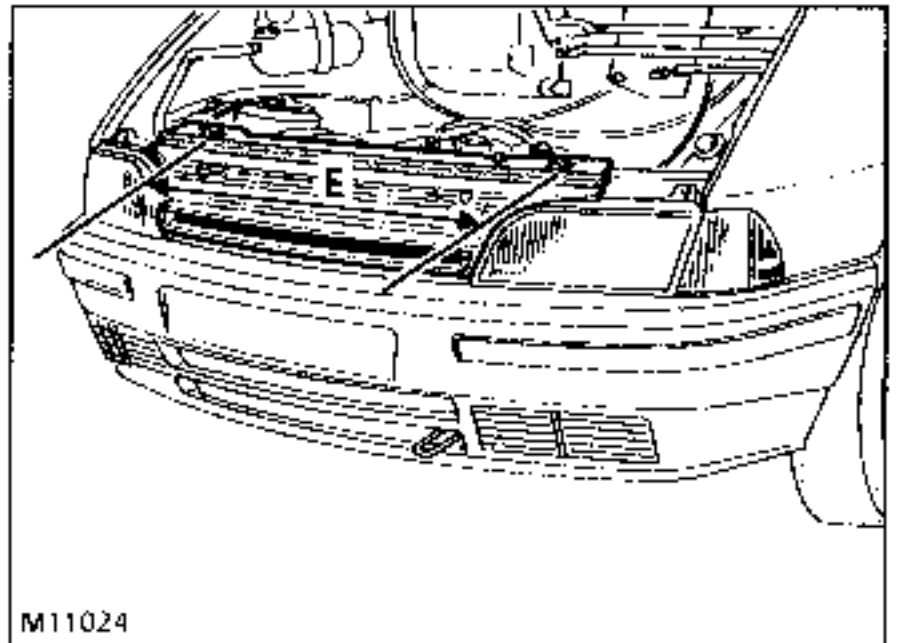
Strip the following:

- safety catch;
- closure lock bolts.

FITTING

Paintwork preparation (see Espace Paintwork Manual MR.601).

Check that the insert threads are clean (no adhesive present).



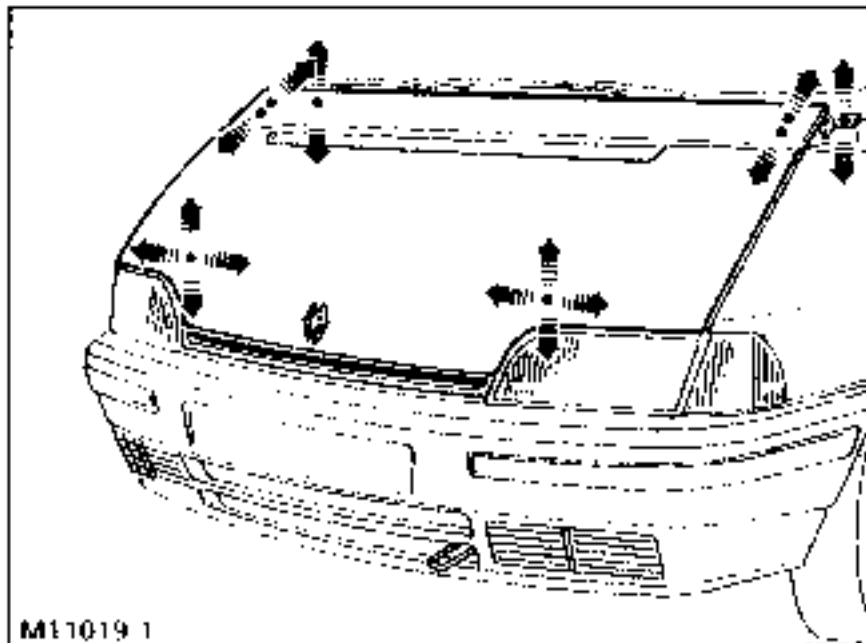
Check the distance (E) between the lock axes.

Secure the fittings to the new bonnet.

Fit the lock bolts with the old shims and preset distance (E) centred in relation to the width of the bonnet.

Secure the bonnet on the hinges and run-up the four bolts.

Close the bonnet and check that the two locks are correctly locked.



M11019 1

ADJUSTMENTS

- 1) Adjust the height of the lock bolts by fitting or removing shims such that distance (E) remains the same.
- 2) Adjust the depth by turning the four bolts securing the bonnet on its hinges in order to ensure the continuity of the bonnet and wing lines with respect to the headlights.
- 3) If necessary finish adjusting the upper part vertically by turning the bolt securing the hinge laterally on the body in order to obtain a projection of 1 mm in relation to the wings.
- 4) Centre the bonnet between the wings by moving the lock bolts to obtain clearances which are equal on both sides of the bonnet (retaining distance (E)).

REMOVAL WITH REPLACEMENT OF HINGES

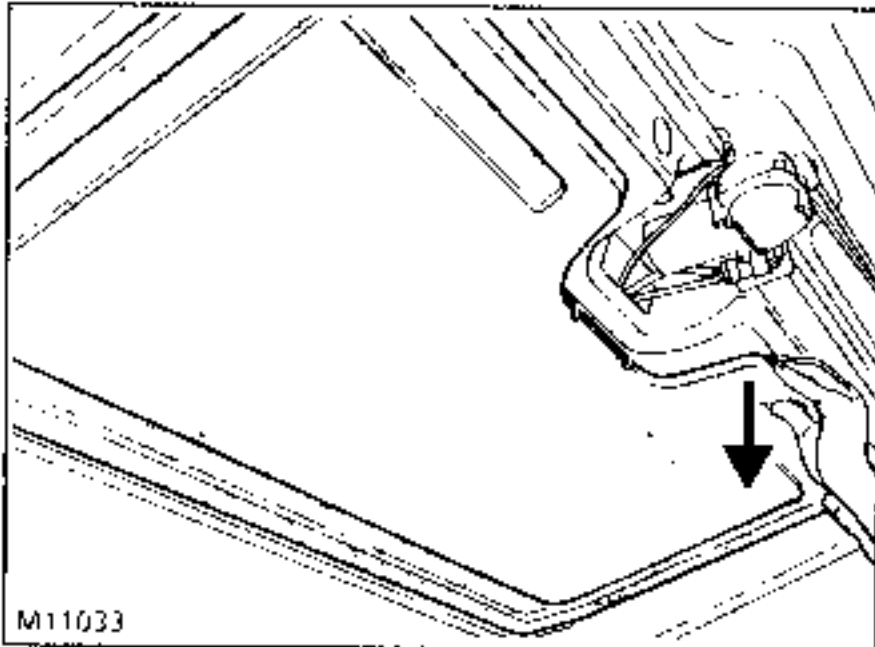
Remove:

- the rear view mirrors;
- the windscreen wiper blades;
- the scuttle grille;
- the hinge mounting bolts.

REMOVAL

Open the tailgate.

Remove the screen wiper casing mounting and pull it upwards.



Unpick the trim securing points one by one.

Disconnect all the electrical leads and the screen washer hose.

Unfasten the wiring harness.

Identify the type of connection on the connectors and remove the number plate lighting connector.

Secure a length of wire:

- (2.50 m) at the end of the wiring harness;
- (1.50 m) at the end of the screen washer hose.

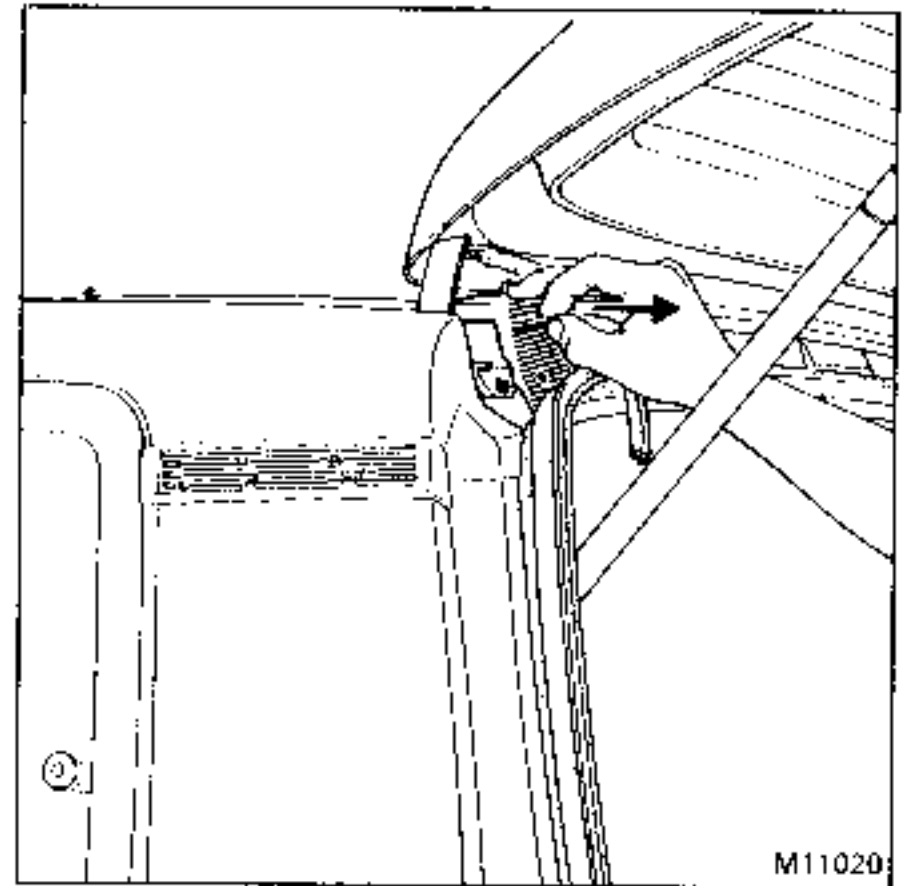
Release the two rubber sheathings from the connection between the tailgate and the vehicle.

Pull all the harnesses and the hose and leave the metal wires in the tailgate.

NOTE: the metal wires can be used on refitting.

Fit the tailgate in the open position;

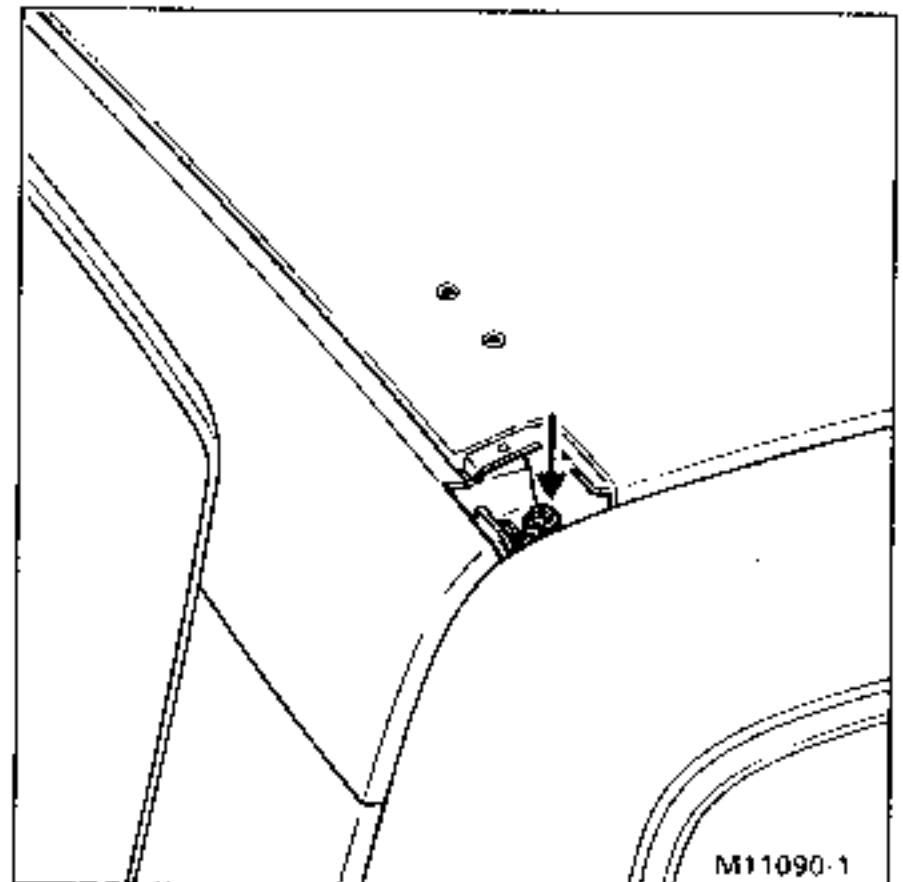
Remove the primary seal fitted on the roof and the hinge mouldings.



Unscrew the hinge moulding mounting.

Pull the moulding towards the rear.

Unfasten and remove the hydraulic compensators.

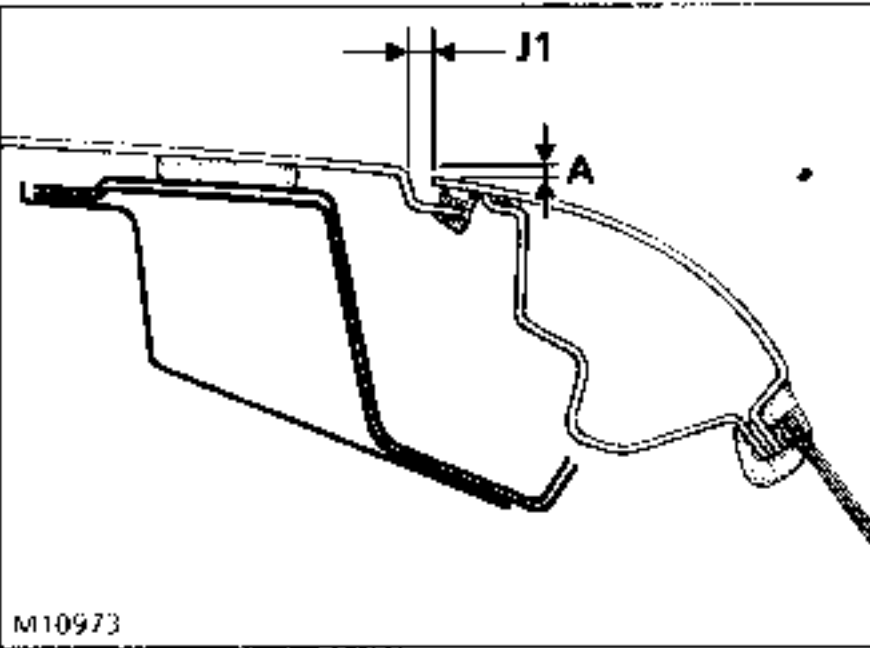


Close the tailgate again.

Remove the two bolts securing each hinge.

Recover the shims.

FITTING - ADJUSTMENTS



M10973

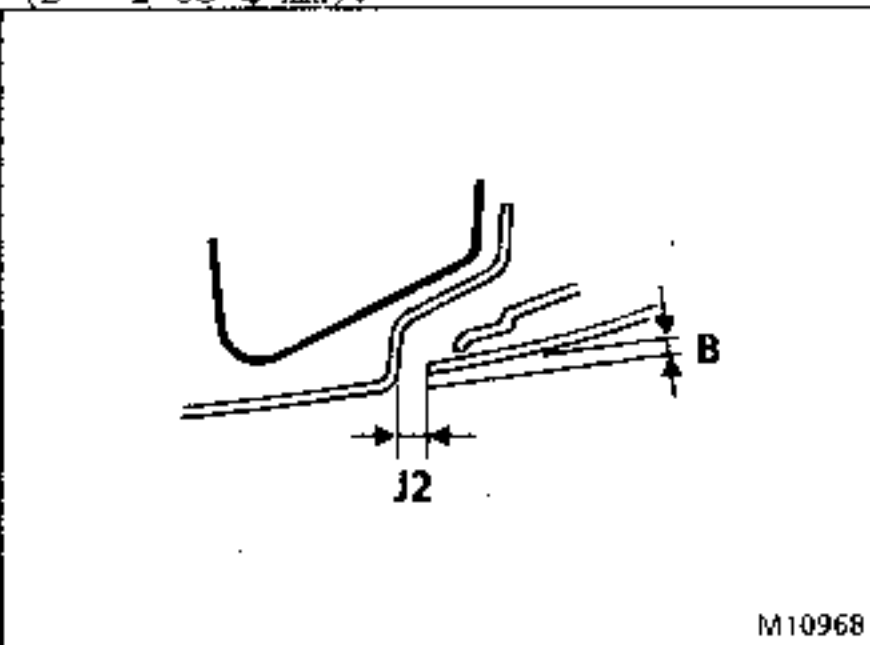
Please see Espace Paintwork Manual MR.601 for paintwork preparation.

Preadjust the tailgate by fitting two shims under each hinge, torque tighten the mounting bolts and close the tailgate.

Check that the projection between the tailgate and roof $A = 1.5$ to 3 mm.

Adjust this distance by adding or removing shims (each shim is 1, 2 or 4 mm thick).

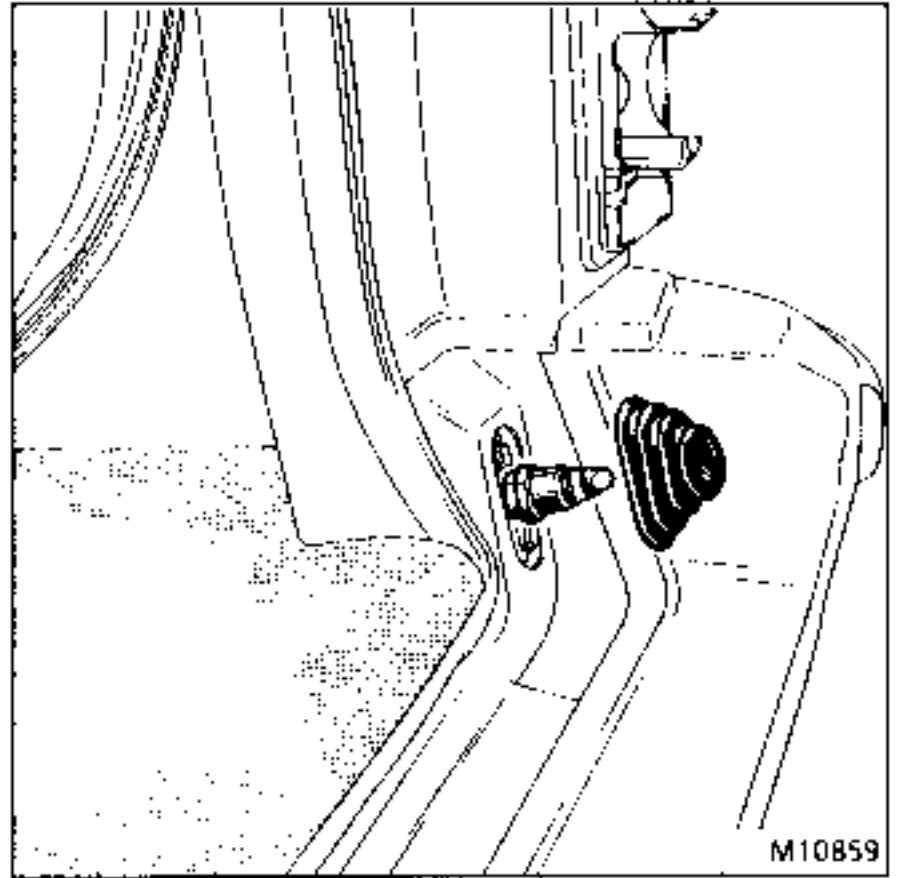
At the same time alter the projection at the side in relation to the wings ($B = 2$ to 4 mm).



M10968

Adjust the clearance between the roof and the tailgate ($J1 = 7$ to 8 mm).

Torque tighten the hinge bolts to 2.4 daNm.



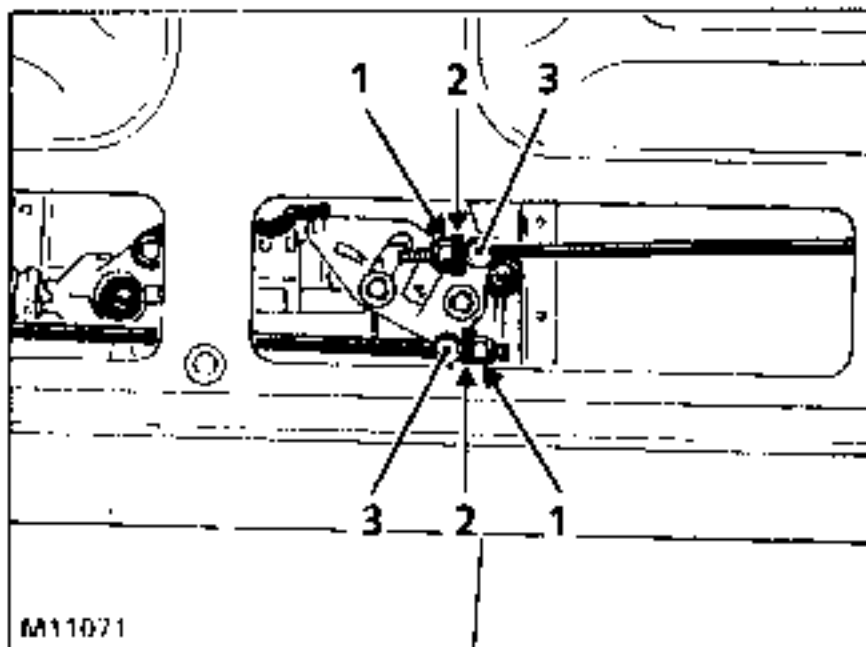
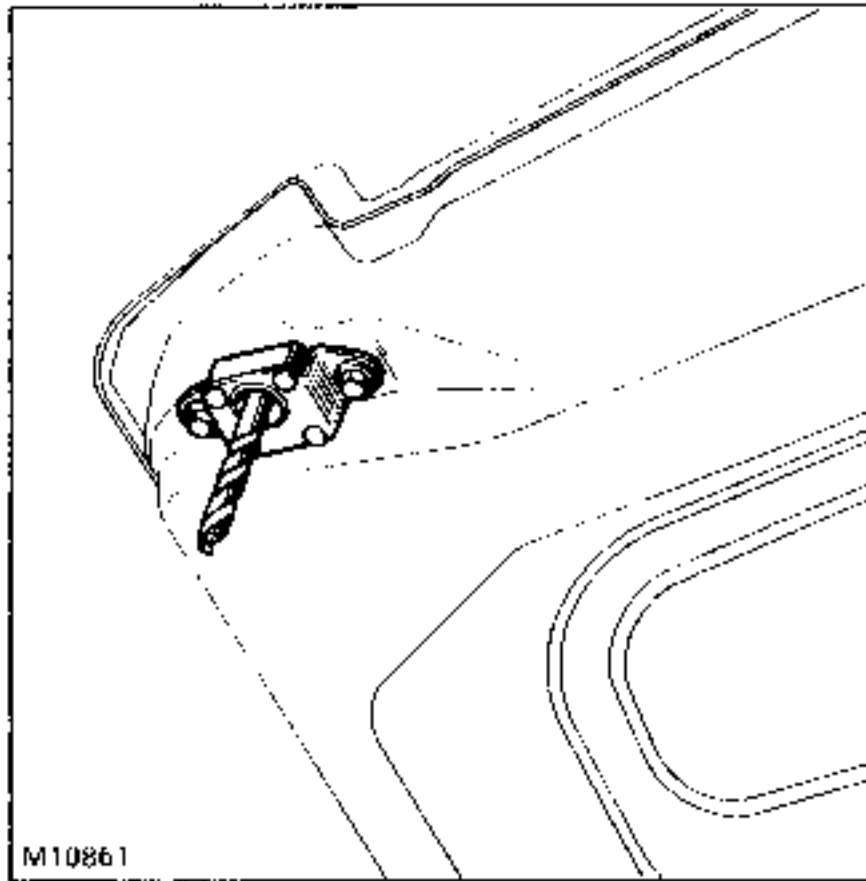
M10859

Adjust the clearance between the wings and the tailgate ($J2 = 5 + 1$ mm) by tightening or unscrewing the locking fingers.

A lock nut is used to lock the fingers when the correct adjustment has been made.

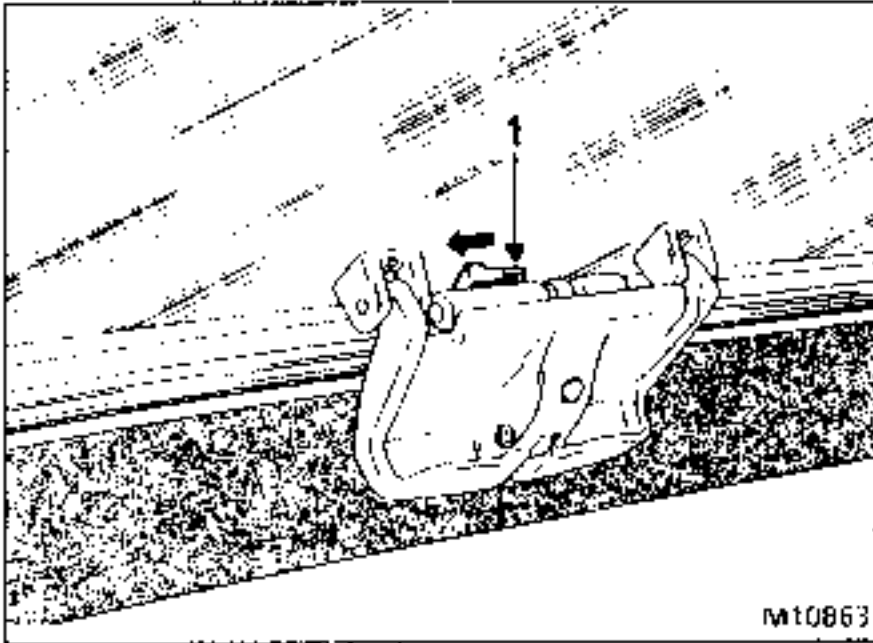
ADJUSTING THE LOCKS

The synchronisation of the handle travel and opening is adjusted by moving the adjustable rods.



REMOVAL

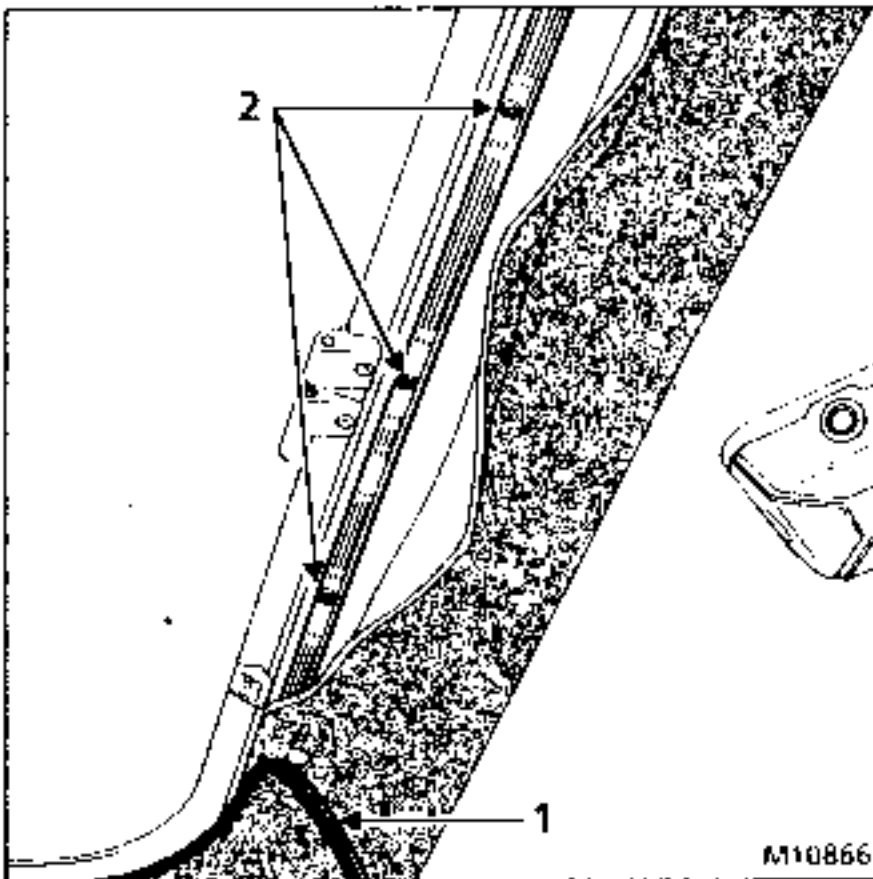
With the sunroof in the open position, move knob (1) towards the righthand side; raise the glass and release the two hinge lugs.



Removing the frame

If it is to be reused, it is useless and dangerous to remove the sunroof seal.

Remove the glass.



Remove the inner trim strip (1).
Remove the trim from the seal groove.

Using a drill fitted with a 5 mm diameter bit, remove the heads from the 16 rivets (2) securing the counter-frame to the frame.

Remove the counter-frame and frame.

Remove any rivet chips and the heads from the stems remaining on the frame.

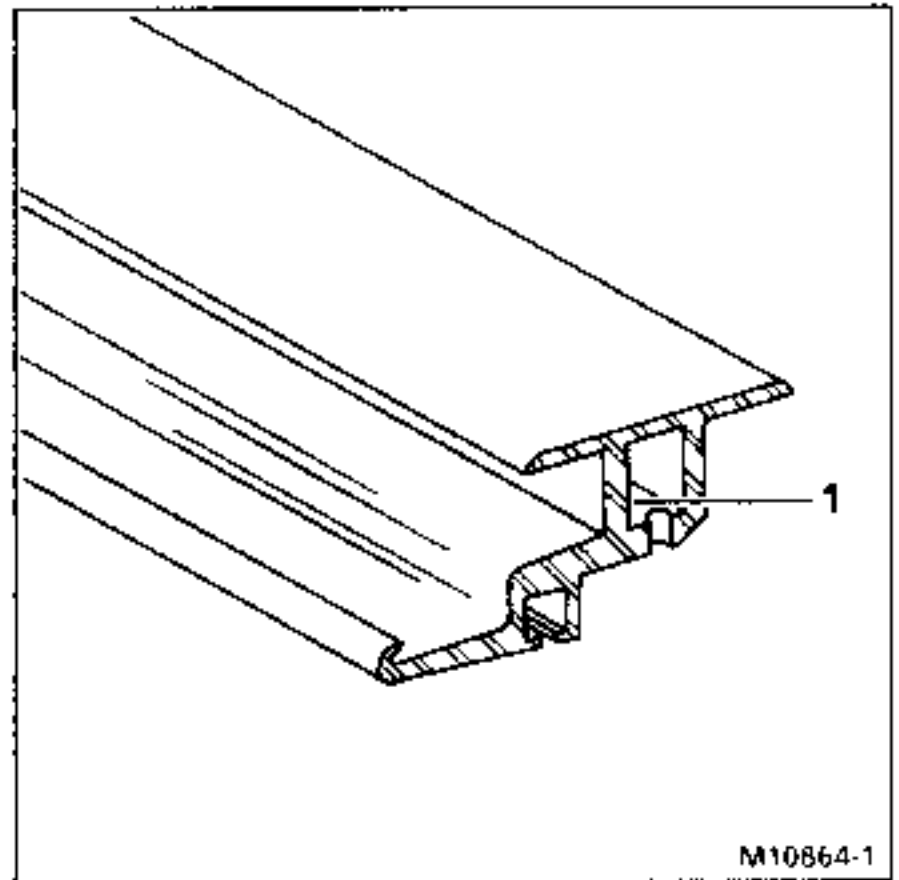
REFITTING

Refitting the reused frame

Removing the rivets from the frame:

- using a rivet stem, knock the heads on the stems remaining in the centre of the rivets into the frame.

If some pieces cannot be removed (and will cause noise), they must be immobilised by applying trim adhesive to the rivet holes (1).

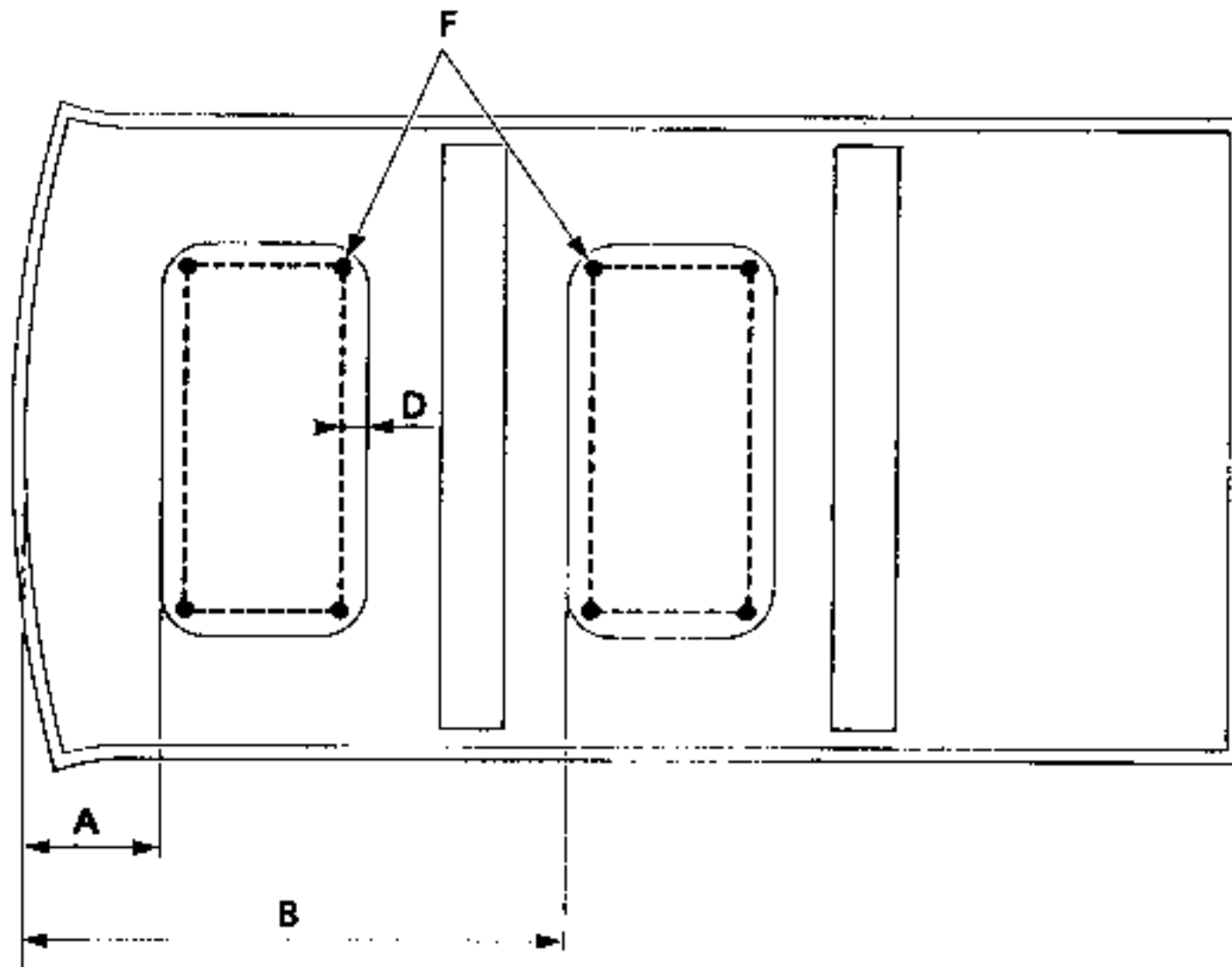


Check that the frame seal on the roof is in good condition.

Fit the frame to the vehicle and rivet the counter-frame.

Refit the glass and check for leaks.

Fit the trim in place in the groove and refit the trim strip.



M10086

CUTTING OUT THE ROOF

- A = 280 mm
- B = 1110 mm
- D = 40 mm
- F = Ø6 mm

These dimensions are taken from the front edge of the roof at the aerial base to the front edge of the cut-out which is to accommodate the sunroof.

CUTTING OUT

When cutting a plastic roof, certain precautions have to be taken in order to avoid damaging the headlining.

Fit the cutting template in place on the roof according to the dimensions indicated.

In the four corners drill a 6 mm diameter hole 40 mm away from the edge of the cut-out.

On the inside, using a marker, connect the four holes to each other on the headlining.

Cut out this rectangle with a cutter.

Around this cut-out section, unstick the trim over a width of approximately 60 mm and keep it folded over using pieces of self-adhesive tape so as not to damage it when cutting the roof.

Fit the sunroof(s) using the kit supplied.

Stick the trim back in place.

Fit the trim strips.