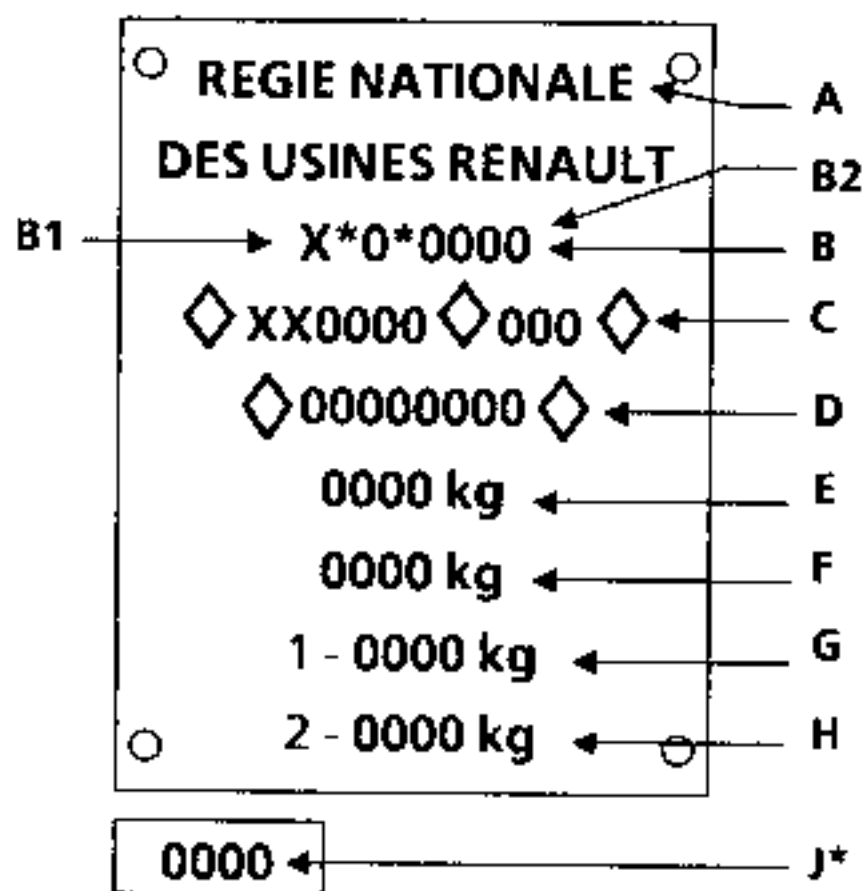


92 306

By means of one or two plates: a rectangular plate and an oval plate to the right of the headlight carrier panel.



Rectangular plate*

This contains:

At A : The manufacturer's name.

At B : The EEC reception number, including:

at B1 : the distinctive country number for EEC reception;

at B2 : the reception number linked to the vehicle Mines type.

At C : The vehicle Mines type (France) preceded by the manufacturer's worldwide identification code (e.g. VF1 = Renault France).

At D : The chassis number.

At E : The maximum permitted vehicle weight (GVW)

At F : The maximum permitted total train weight (GTW).

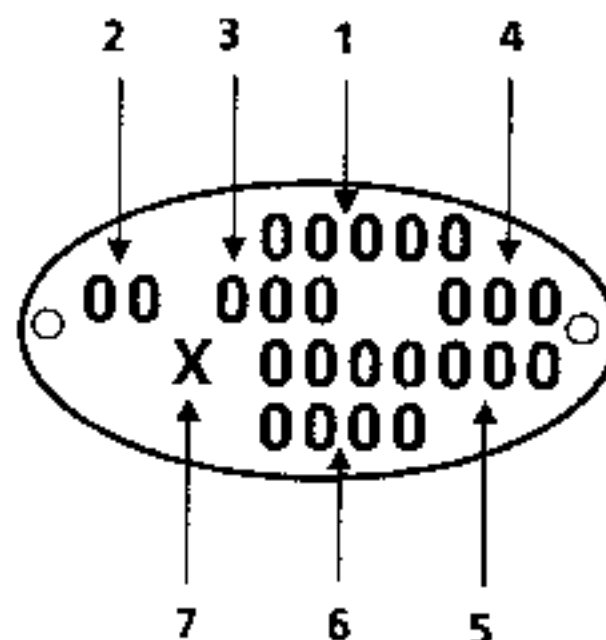
At G : The maximum permitted front axle weight.

At H : The maximum permitted rear axle weight.

At J* : The current model year or the paint identification.

* NOTE:

Depending on the country of export, some of this information may not be included. The plate described above has the most detailed information.



OVAL PLATE

This includes:

At 1 : The vehicle type.

At 2 : Special features of the vehicle*.

At 3 : Basic equipment*.

At 4 : Optional equipment.

At 5 : Fabrication number.

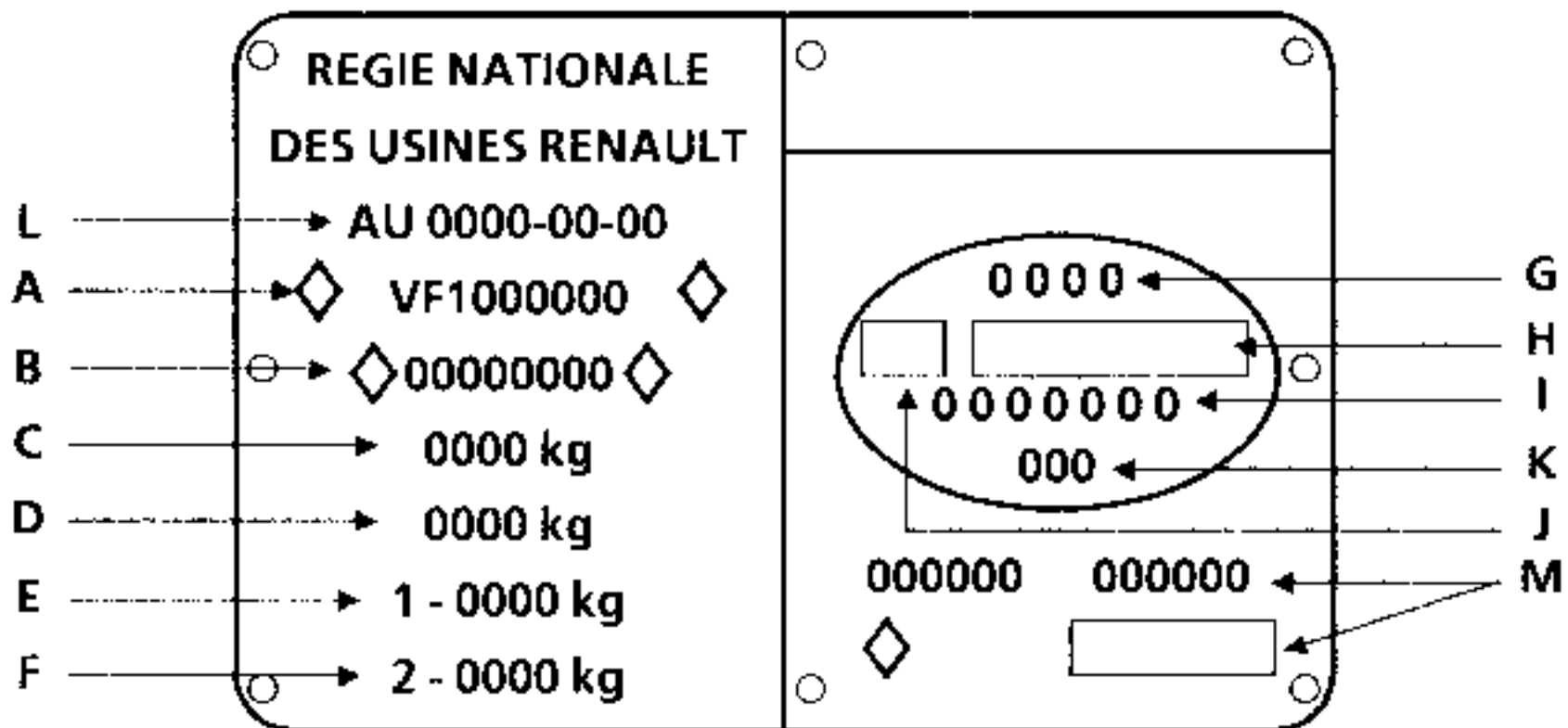
At 6 : The model year* or paint identification*.

At 7 : Vehicle factory symbol.

- A Portugal
- B Batilly
- C Creil
- D Douai
- E Spain
- F Flins
- G Grand Couronne
- G Yugoslavia
- H Haren
- J Billancourt
- K Dieppe
- Q A.M.C.
- S Sandouville
- T Matra
- U Maubeuge
- W Ireland
- X Heuliez

* DEPENDING ON COUNTRY OR VERSION.

Single plate*



This includes:

- At A** : Vehicle Mines type (VF1 = Renault France).
- At B** : The chassis number
- At C** : The maximum permitted vehicle weight (GVW).
- At D** : The maximum permitted total train weight (GTW).
- At E** : The maximum permitted front axle weight
- At F** : The maximum permitted rear axle weight.
- At G** : The vehicle type.
- At H** : The equipment and optional equipment number
- At I** : The fabrication number.
- At J** : Special features of the vehicle.
- At K** : The original paint reference*.
- At L** : The EEC reception number.
- At M** : Additional marking.

* Depending on the country of export, some information may not be included.

Application of technical equipment numbers

	Normal roads		Poor roads		Special equipment	
Up to JUNE 1989	Left-hand drive 100 series	Right-hand drive 600 series	Left-hand drive 200 series	Right-hand drive 700 series	Left-hand drive 200 series	Right-hand drive 700 series
	Normal roads				Motorway	
Since JUNE 1989*	Left-hand drive 10-49 series	Right-hand drive 70- 89 series	--		Left-hand drive 50- 69 series	Right-hand drive 90- 99 series

* The 3rd character corresponds to an extra quality.

TROLLEY JACK/STANDS

ESSENTIAL SPECIAL TOOLING	
Cha. 280-02	Trolley jack block
Cha. 408-01	Trolley adaptor socket
or	
Cha. 408-02	

If a trolley jack is used, suitable stands must also be used.

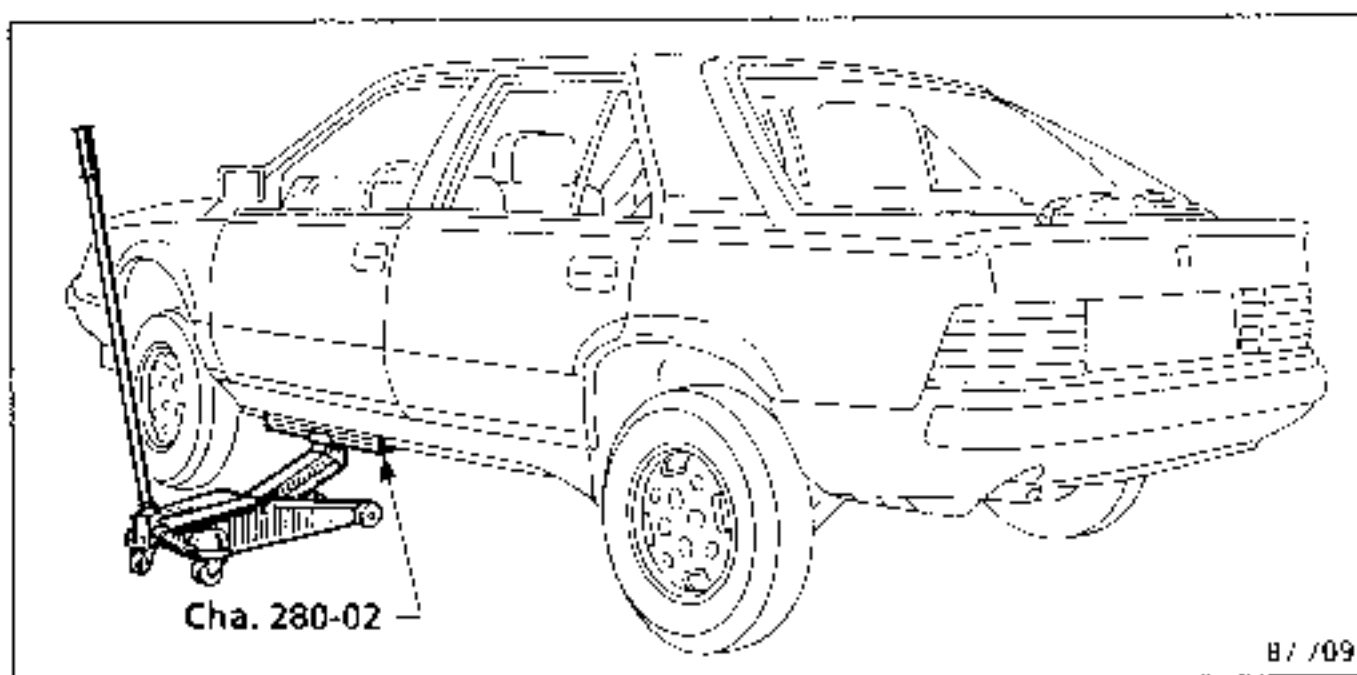
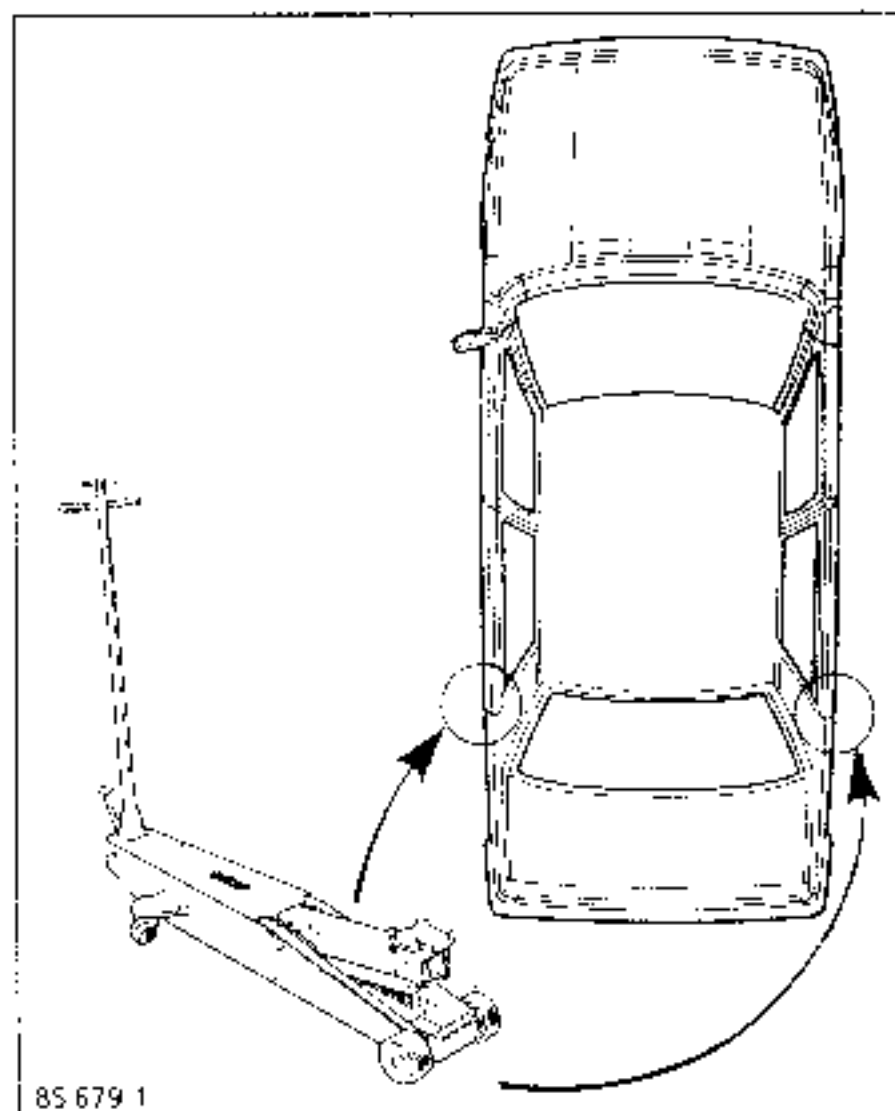
The vehicle must not be lifted with its weight taken by the front or rear suspension arms or under the front cross member between side members.

Depending on the type of trolley jack, use sleeve Cha. 408-01 to position block Cha. 280-02.

Use the built-in jacking points under the vehicle to raise the front or the rear.

TROLLEY JACK AT THE SIDE

- Use block Cha. 280-02.
- Take the load under the front cradle level with the front door.
- Correctly position the body flange in the slot in the block.



TROLLEY JACK AT THE FRONT

The front of the vehicle may be lifted, taking the weight using Cha. 280-02, just behind the cross member between side members.

Make sure that the block is not resting on the exhaust.

STANDS

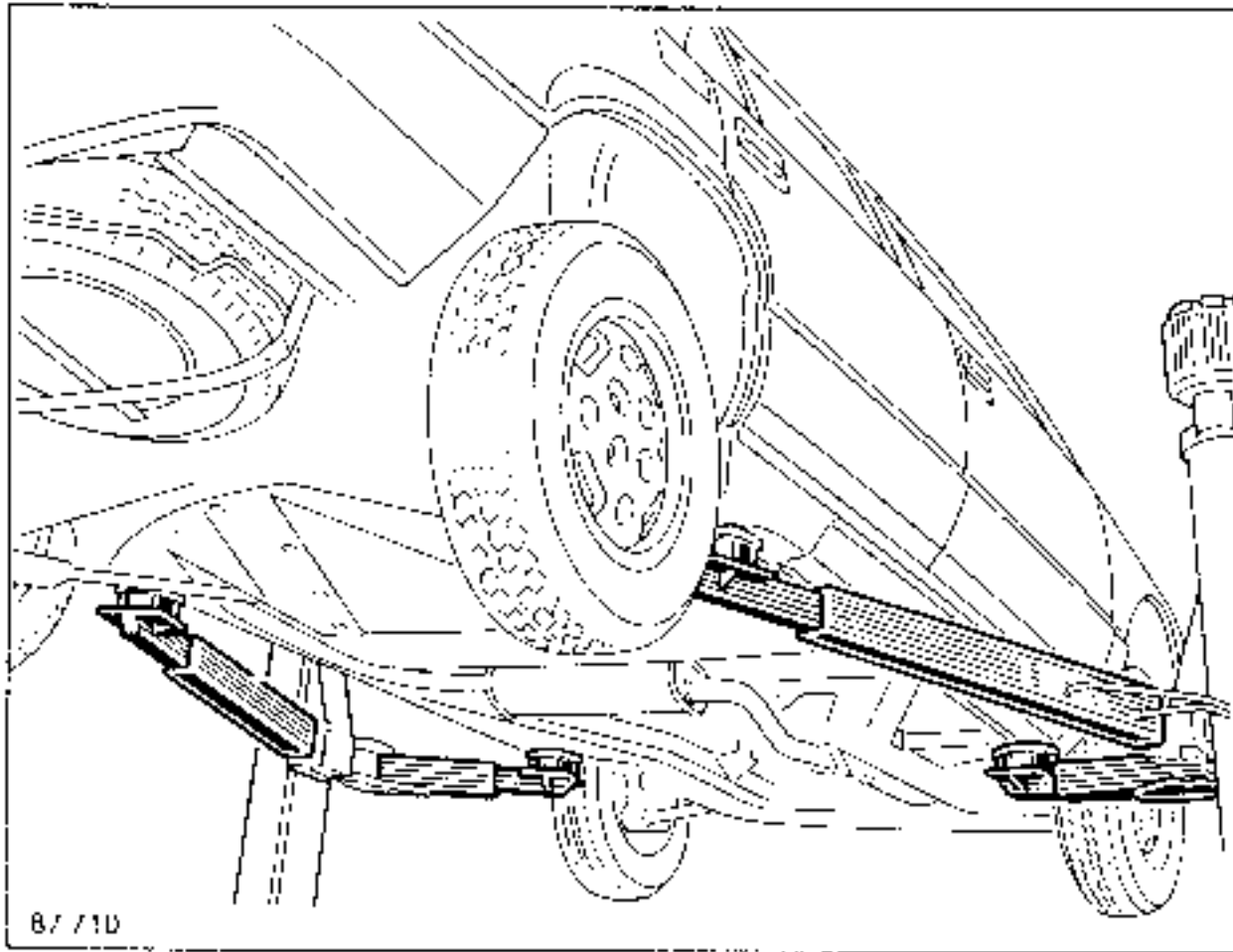
To place the vehicle on stands, these must be placed under the stiffened sections provided for raising the vehicle using the car jack.

Lift the vehicle at each side to position the stands at the rear.

SWING ARM LIFT

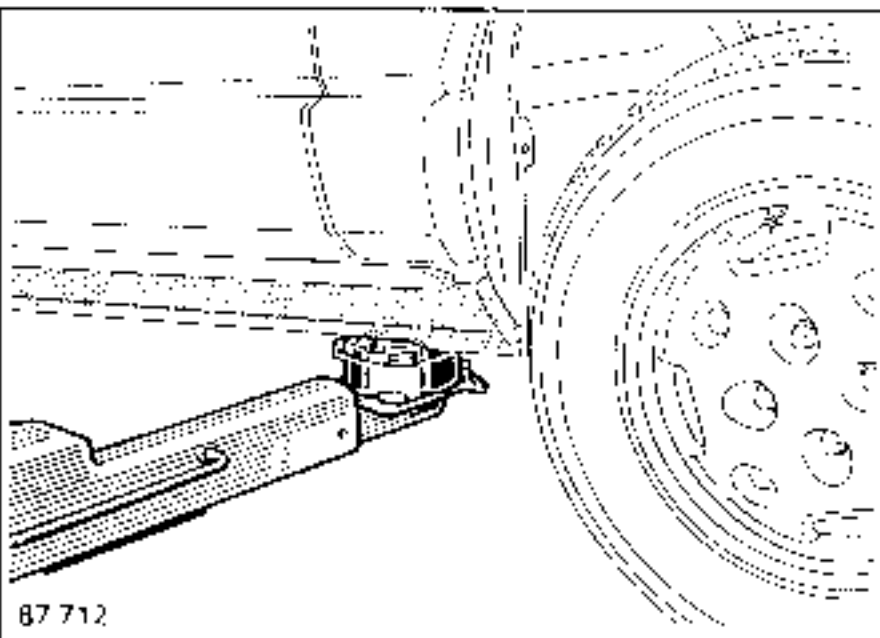
FOR YOUR SAFETY

Units **MUST NOT** be dismantled when a 2-post lift is in use which takes the weight under the body, because of the alteration in balance and to make sure that the vehicle jacking points remain firmly on the lift pads

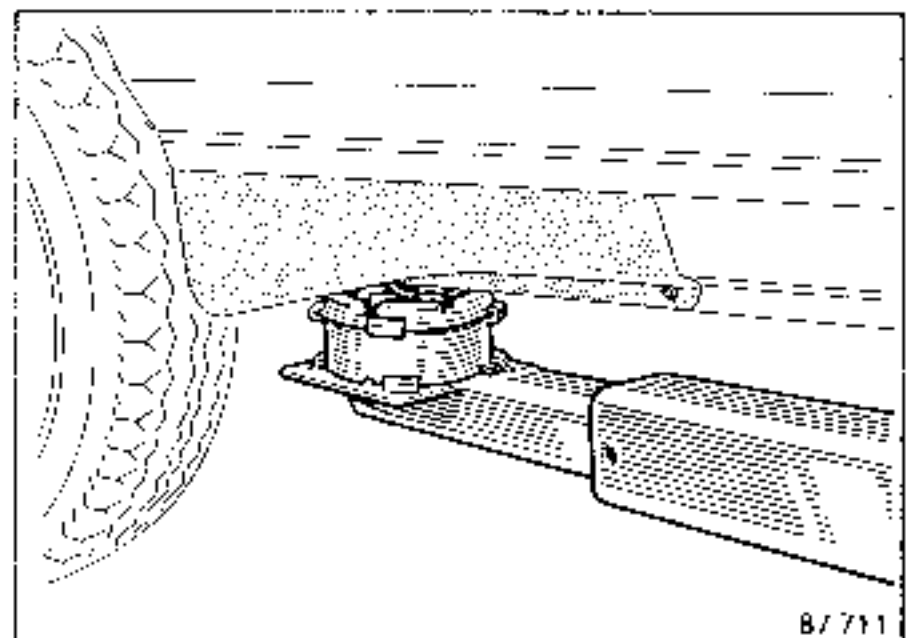


Position the lifting pads under the body sill flange in line with the car jack supports

FRONT



REAR

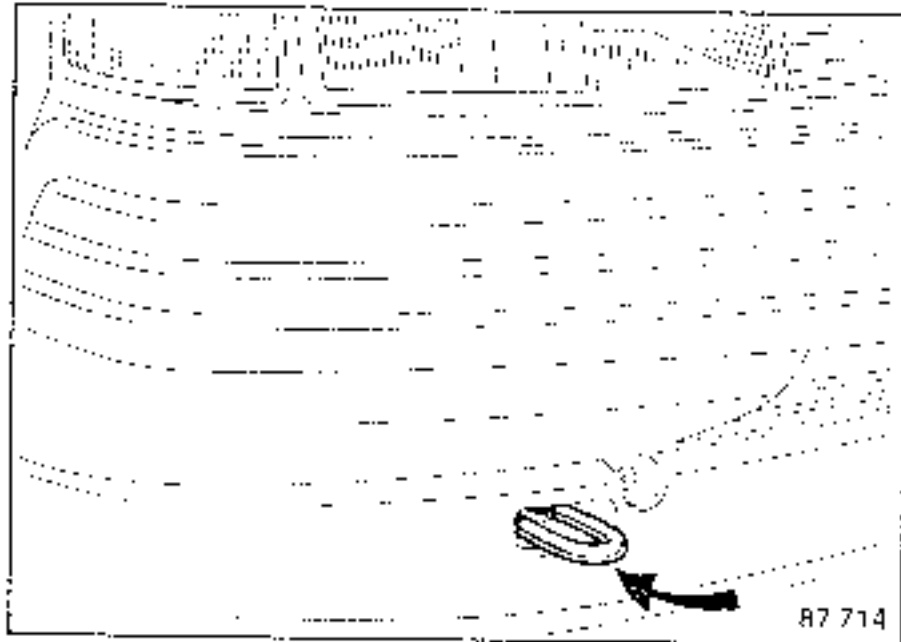


ALL TYPES

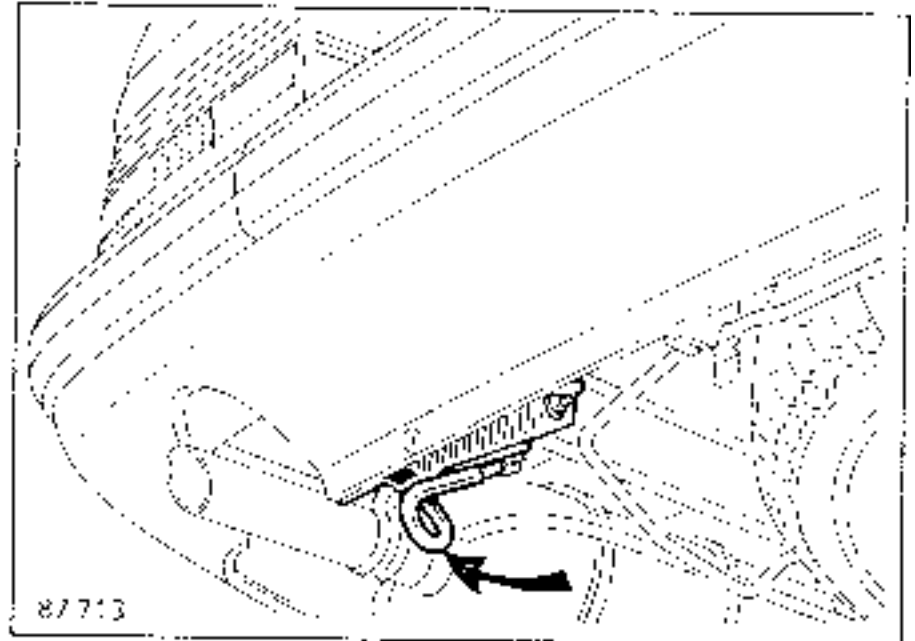
NEVER USE THE DRIVESHAFTS AS ATTACHMENT POINTS

The towing hooks are to be used only for road towing and must never be used for pulling the vehicle out of a ditch or similar breakdown operations or for directly or indirectly lifting the vehicle.

FRONT



REAR



TOWING

Automatic transmission

DRIVING

Since the automatic transmission is lubricated under pressure, lubrication is only guaranteed when the engine is running.

Consequently, the following instructions must be observed to avoid causing serious damage:

- never drive with the ignition switched off (for example, downhill); we cannot overemphasise how dangerous this practice is;
- never push the vehicle (for example, to reach a petrol station) without following the instructions contained in the section on "Towing".

Moreover, the wheels are only driven when the engine is running. It is therefore impossible to start the engine of a vehicle with automatic transmission by pushing the vehicle.

Similarly, the wheels must not be dynamically balanced while fitted to the vehicle.

TOWING

The front of the car must be raised; however, if this is impossible, towing can exceptionally take place with the wheels on the ground, under the following conditions:

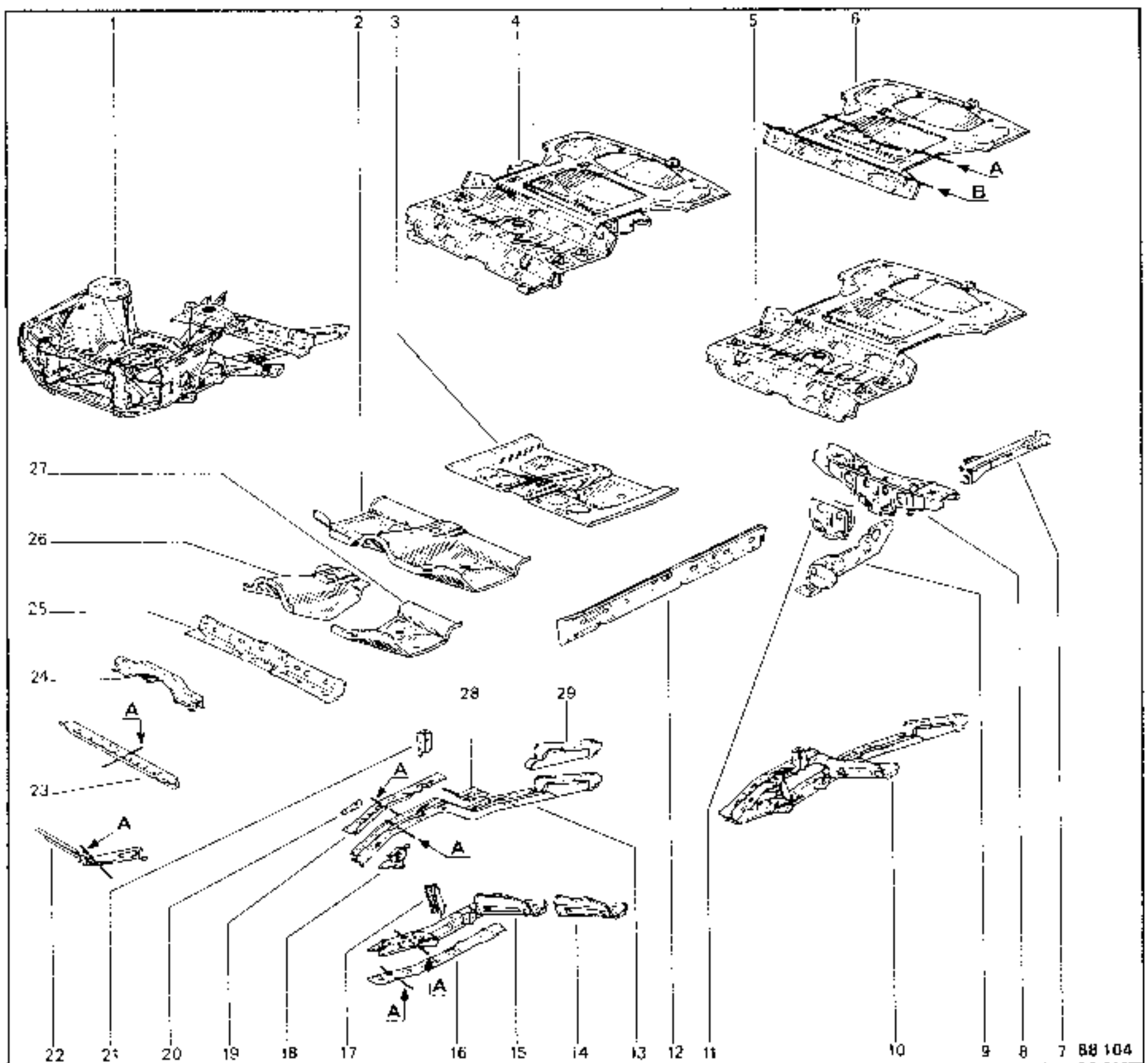
MJ automatic transmissions

1. Add two extra litres of oil (ELF Renaultmatic D2 or Mobil ATF 220).
2. Do not tow the vehicle at speeds over 18 mph (30 km/h) or over a distance of more than 30 miles (50 km) (lever in N position).

Do not forget to take out the excess oil afterwards.

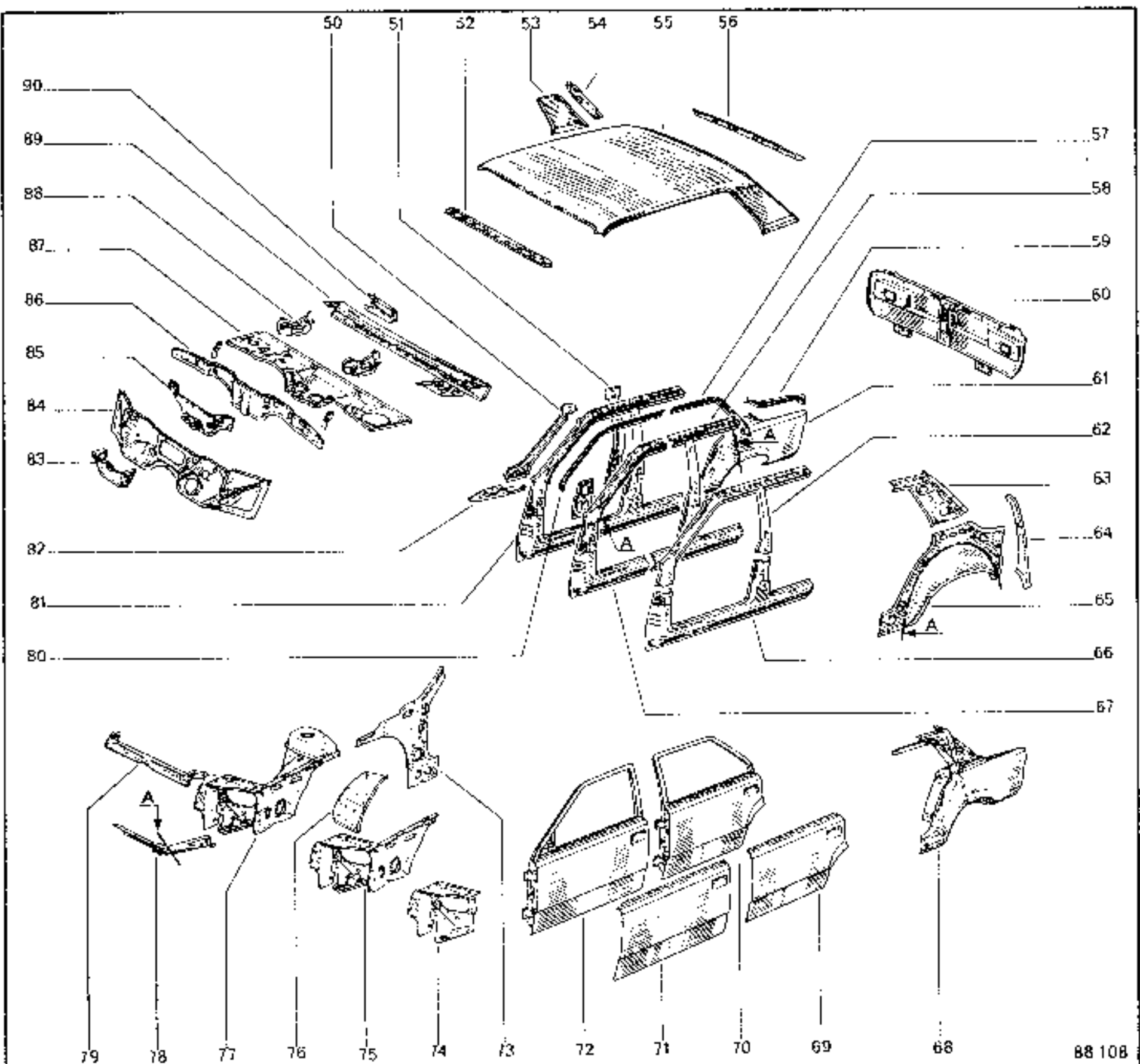
AR4 automatic transmissions

Do not tow the vehicle at speeds over 25 mph (40 km/h) or over a distance of more than 16 miles (25 km).



LOWER STRUCTURE

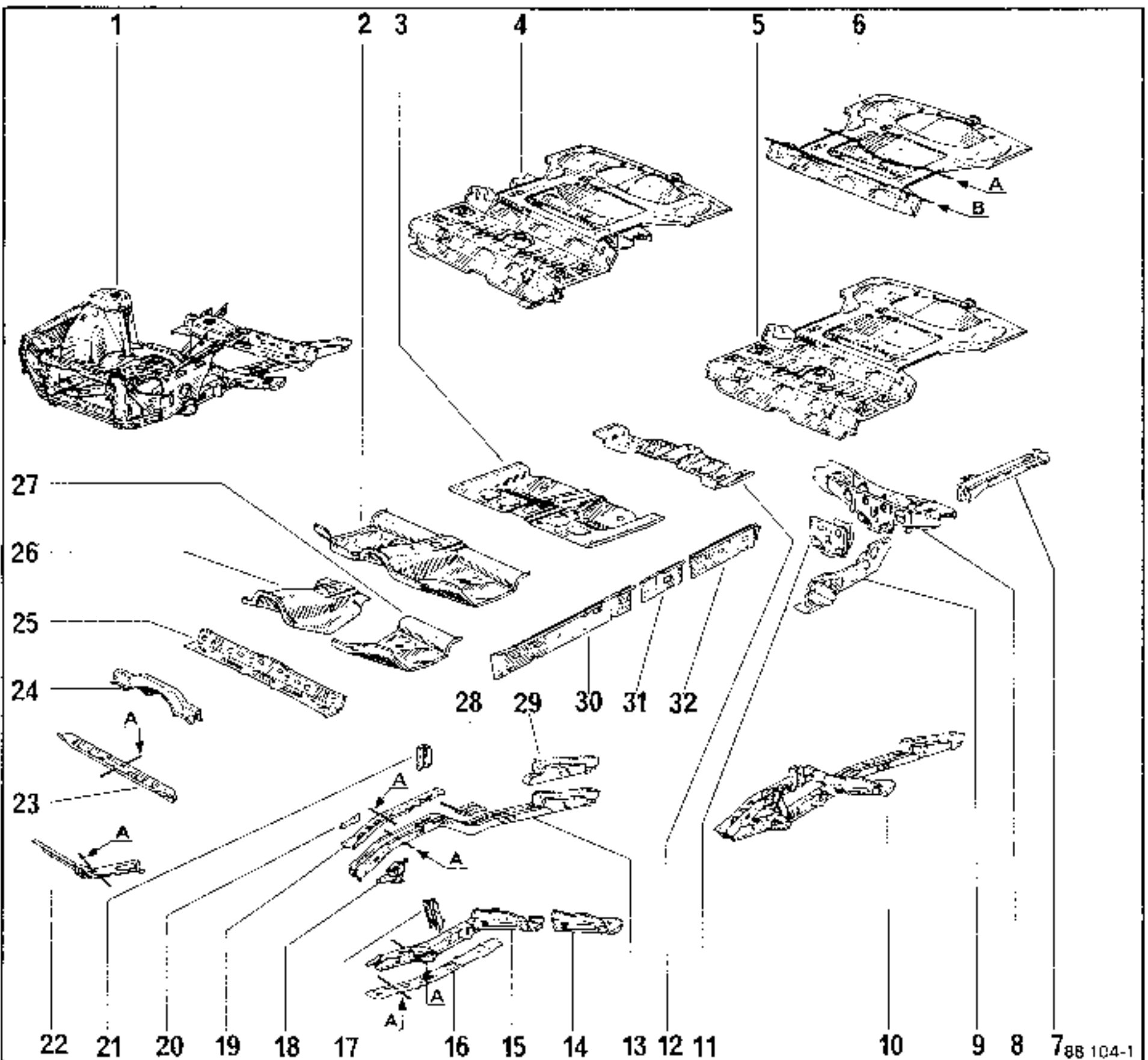
- | | | | |
|------|---|------|---|
| 1 | Front unit | 16 | Lower front side member closure panel |
| 2 | Front floor panel | 16 A | Side member closure panel at cross section A |
| 3 | Central floor panel | 17 | Front side member strut |
| 4 | Rear floor panel assembly | 18 | Caster tie-rod gusset |
| 5 | Bare rear floor panel | 19 | Upper front side member closure panel |
| 6 | Partial rear panel | 19 A | Side member closure panel at cross section A |
| 6 A | Partial rear floor panel at cross section A | 20 | Angle bracket |
| 6 B | Partial rear floor panel at cross section B | 21 | Upper front arm gusset |
| 7 | Rear side member | 22 | Front cross member closure and extension panel |
| 8 | Rear cross member | 22 A | Cross member closure and extension panel at cross section A |
| 9 | Rear cross member stiffener | 23 | Front cross member |
| 10 | Complete front side member | 23 A | Front cross member at cross section A |
| 11 | Centre section of rear cross member | 24 | Steering cross member |
| 12 | Inner sill panel | 25 | Centre cross member |
| 13 | Upper front side member | 26 | Front floor panel tunnel |
| 13 A | Upper side member at cross section A | 27 | Front side floor panel |
| 14 | Side cross member | 28 | Side member closure panel under floor panel |
| 15 | Lower front side member | 29 | Front side member rear gusset |
| 15 A | Lower side member at cross section A | | |



UPPER STRUCTURE

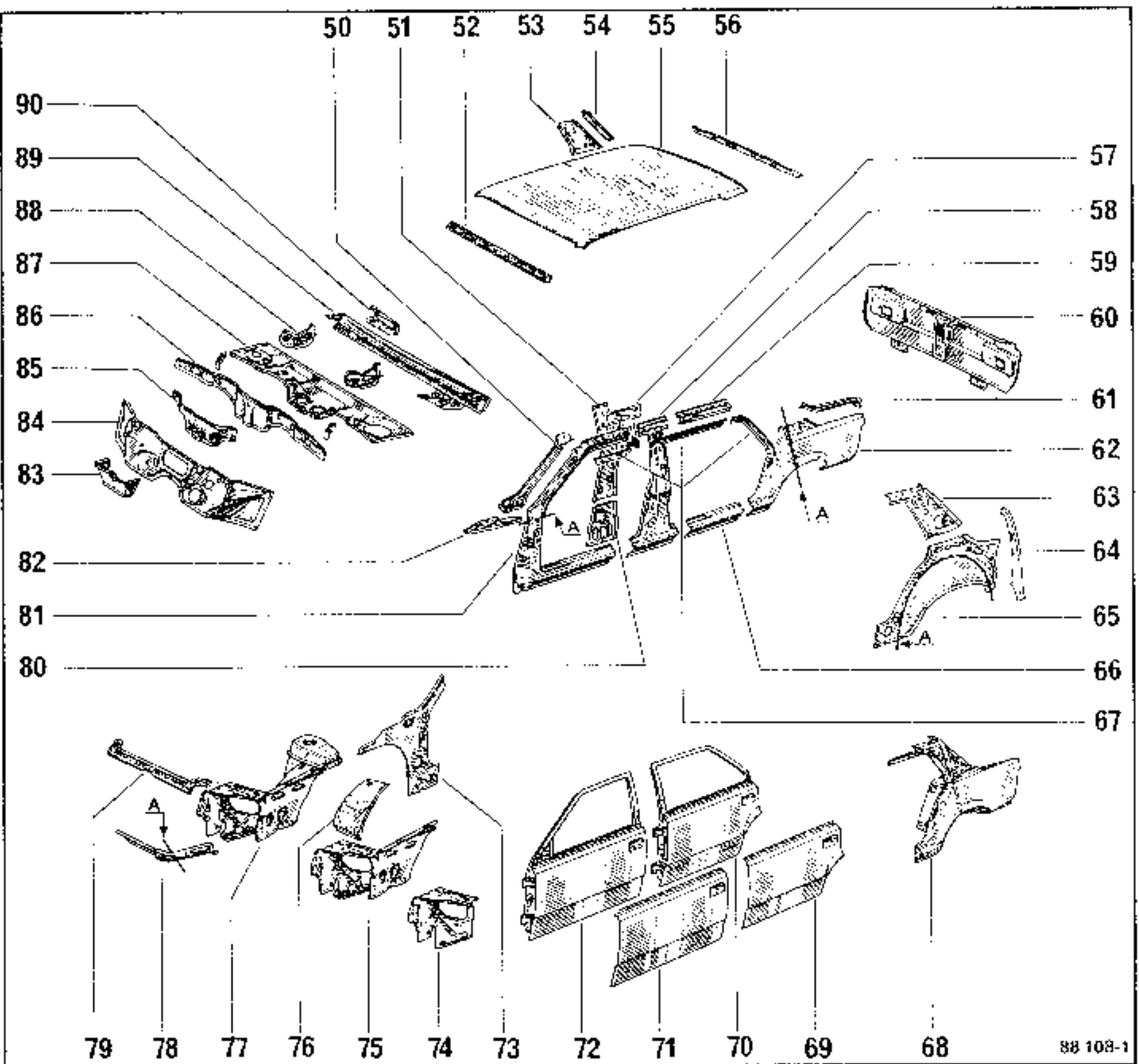
- | | | | |
|------|-------------------------------------|------|---|
| 50 | Windscreen frame strut | 70 | Rear door |
| 51 | Centre pillar lining | 71 | Front door panel |
| 52 | Front roof panel cross member | 72 | Front door |
| 53 | Rear quarter panel | 73 | Front pillar lining |
| 54 | Rear quarter rain channel | 74 | Headlight support panel |
| 55 | Roof panel | 75 | Simplified cowl side |
| 56 | Roof panel rear cross member | 76 | Front wheel arch |
| 57 | Rear stretcher closure panel | 77 | Cowl side |
| 58 | Centre pillar | 78 | Cross member closure and extension panel |
| 59 | Wing panel rain channel | 78 A | Cross member closure and extension panel at cross section A |
| 60 | Rear end panel | 79 | Front upper cross member |
| 61 | Rear wing panel | 80 | Front stretcher closure panel |
| 61 A | Rear wing panel at cross section A | 81 | Body side |
| 62 | Body top | 82 | Front pillar bottom flange |
| 63 | Rear quarter panel lining | 83 | Heating channel |
| 64 | Rear quarter panel reinforcement | 84 | Scuttle |
| 65 | Outer wheel arch | 85 | Bulkhead centre section |
| 65 A | Outer wheel arch at cross section A | 86 | Heating bulkhead |
| 66 | Sill | 87 | Heating cross member |
| 67 | Front pillar | 88 | Bulkhead stiffener |
| 67 A | Front pillar at cross section A | 89 | Windscreen frame lower cross member |
| 68 | Rear half unit | 90 | Frame cross member reinforcement |
| 69 | Rear door panel | | |

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LOWER STRUCTURE

- | | | | |
|------|--|------|---|
| 1 | Front unit | 17 | Front side member strut |
| 2 | Front floor panel | 18 | Caster tie-rod gusset |
| 3 | Centre floor panel | 19 | Front upper side member closure panel |
| 4 | Rear floor panel assembly | 19 A | Side member closure panel at cross section A |
| 5 | Bare rear floor panel | 20 | Angle bracket |
| 6 | Partial rear floor panel | 21 | Front upper arm gusset |
| 6 A | Partial rear floor panel at cross section A | 22 | Front cross member closure and extension panel |
| 6 B | Partial rear floor panel at cross section B | 22 A | Cross member closure and extension panel at cross section A |
| 7 | Rear side member | 23 | Front cross member |
| 8 | Rear cross member | 23 A | Front cross member at cross section A |
| 9 | Rear cross member stiffener | 24 | Steering cross member |
| 10 | Front complete side member | 25 | Centre cross member |
| 11 | Rear cross member centre section | 26 | Front floor panel tunnel |
| 12 | Floor panel extension panel | 27 | Front side floor panel |
| 13 | Front upper side member | 28 | Side member closure panel under floor panel |
| 13 A | Upper side member at cross section A | 29 | Front side member rear gusset |
| 14 | Side cross member | 30 | Inner sill panel front section |
| 15 | Front lower side member | 31 | Inner sill panel centre section |
| 15 A | Lower side member at cross section A | 32 | Inner sill panel rear section |
| 16 | Front lower side member closure panel | | |
| 16 A | Side member closure panel at cross section A | | |



UPPER STRUCTURE

- | | | | |
|------|--|------|---|
| 50 | Windscreen frame strut | 71 | Front door panel |
| 51 | Centre pillar lining | 72 | Front door |
| 52 | Roof panel front cross member | 73 | Front pillar lining |
| 53 | Rear quarter panel | 74 | Headlight support panel |
| 54 | Rear quarter panel rain channel | 75 | Simplified cowl |
| 55 | Roof panel | 76 | Front wheel arch |
| 56 | Roof panel rear cross member | 77 | Cowl |
| 57 | Upper pillar reinforcement | 78 | Cross member closure and extension panel |
| 58 | Centre pillar | 78 A | Cross member closure and extension at cross section A |
| 59 | Body top extension panel | 79 | Front upper cross member |
| 60 | Rear end panel | 80 | Pillar lower reinforcement |
| 61 | Wing panel rain channel | 81 | Front pillar |
| 62 | Rear wing panel | 81 A | Front pillar at cross section A |
| 62 A | Rear wing panel at cross section A | 82 | Front pillar bottom flange |
| 63 | Quarter panel lining | 83 | Heating channel |
| 64 | Quarter panel reinforcement | 84 | Scuttle |
| 65 | Outer wheel arch | 85 | Scuttle centre section |
| 65 A | Outer wheel arch at cross section A | 86 | Heating bulkhead |
| 66 | Sill extension panel | 87 | Heating side member |
| 67 | Stretcher closure panel(rear front centre) | 88 | Bulkhead stiffener |
| 68 | Rear half-unit | 89 | Windscreen frame lower cross member |
| 69 | Rear door panel | 90 | Frame cross member reinforcement |
| 70 | Rear door | | |

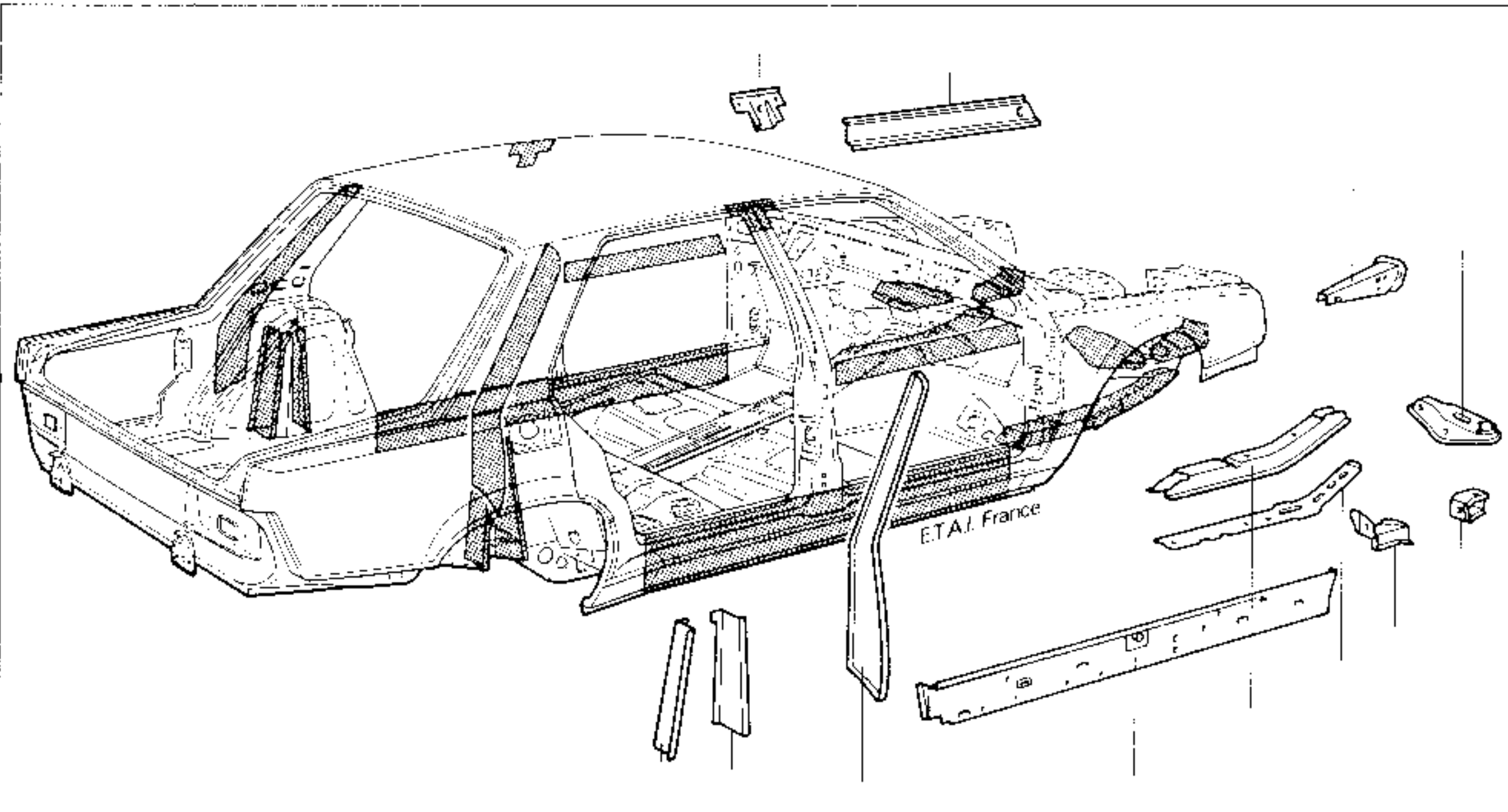
88 108-1

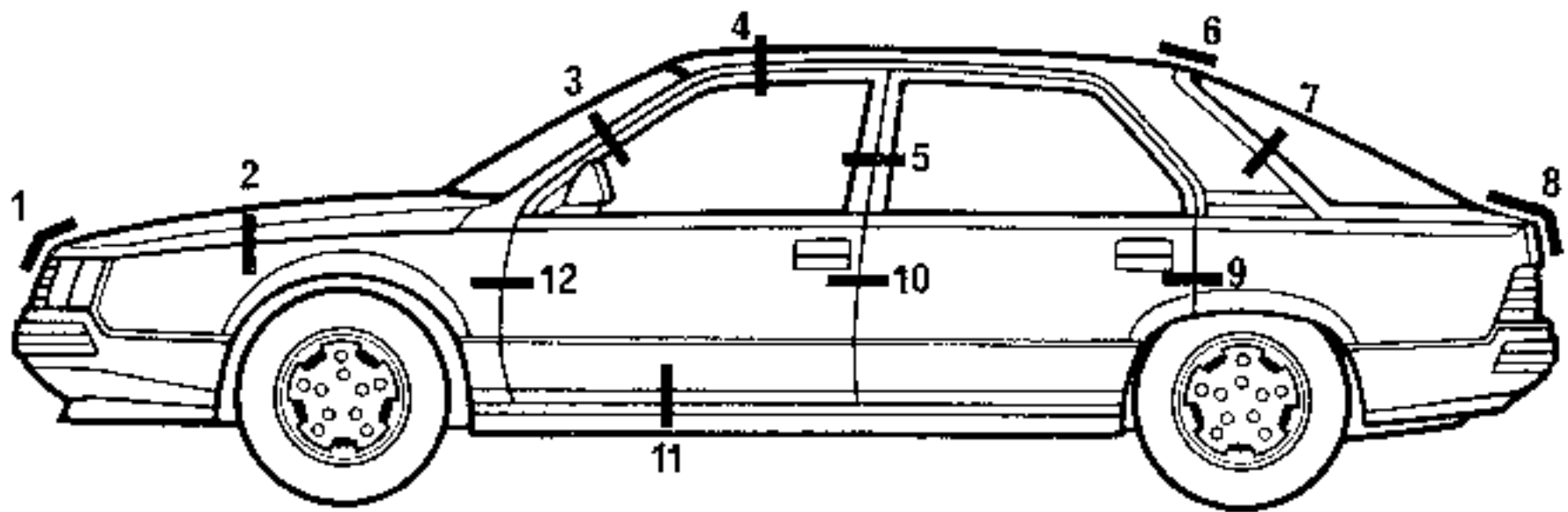
DESCRIPTION OF HIGH TENSILE STEEL PARTS

- 1 - Centre pillar upper reinforcement
- 2 - Door panel reinforcement
- 3 - Canister reinforcement
- 4 - Upper arm

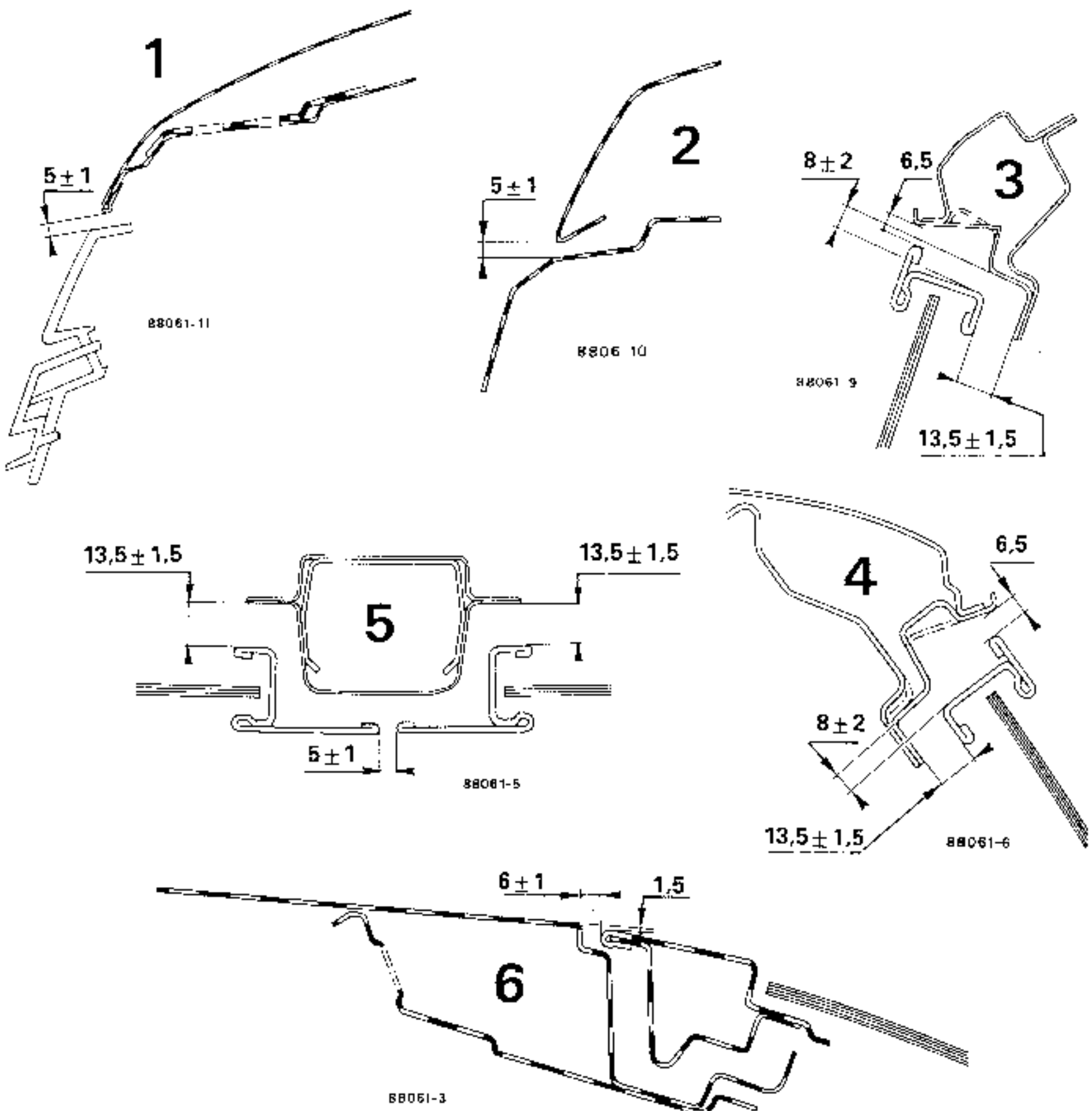
- 5 - Lower arm gusset
- 6 - Lower arm gusset
- 7 - Side member closure panel
- 8 - Lower side member

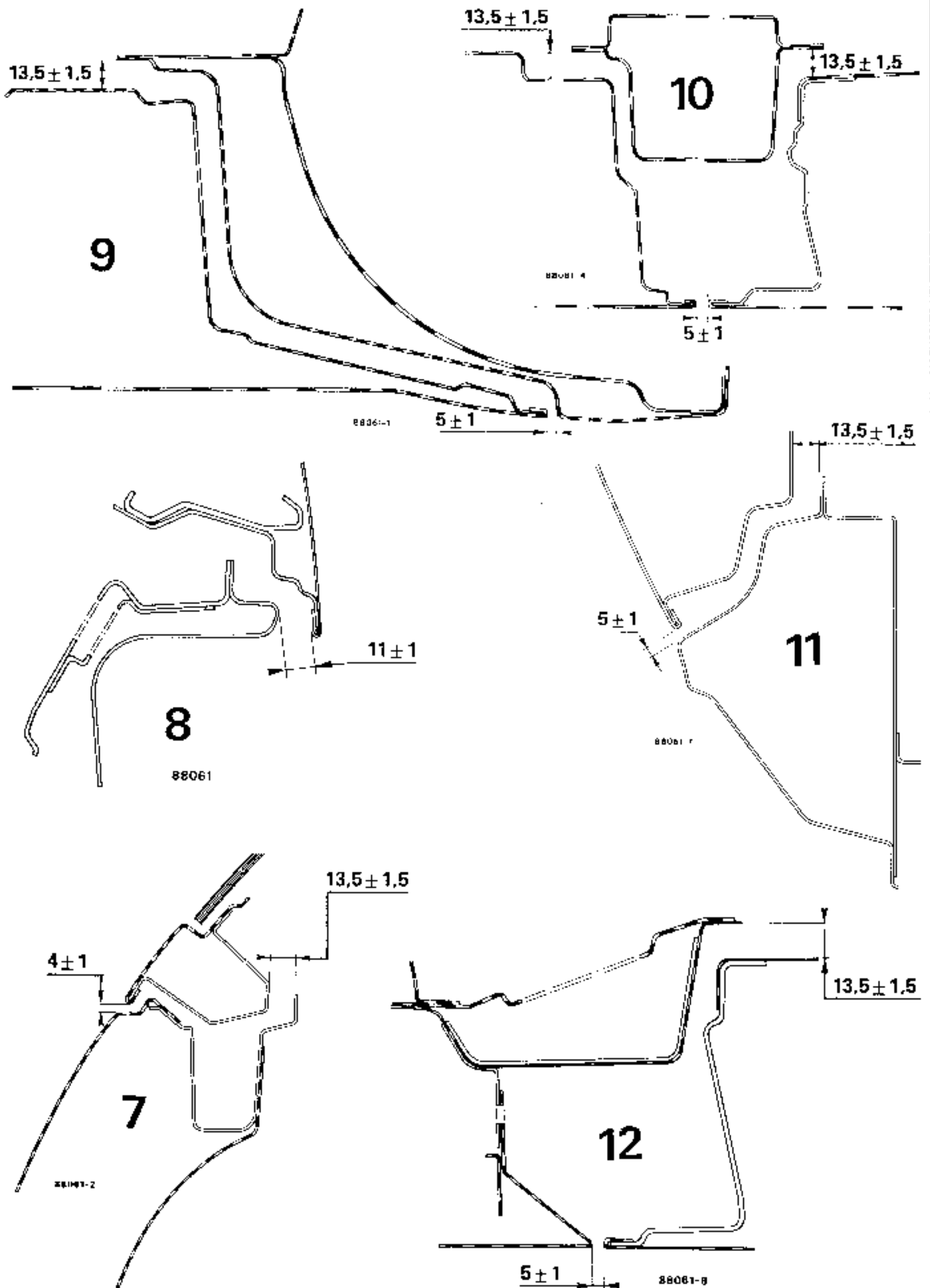
- 9 - Inner sill panel
- 10 - Rear quarter reinforcement
- 11 - Shock absorber turret reinforcement
- 12 - Shock absorber turret reinforcement

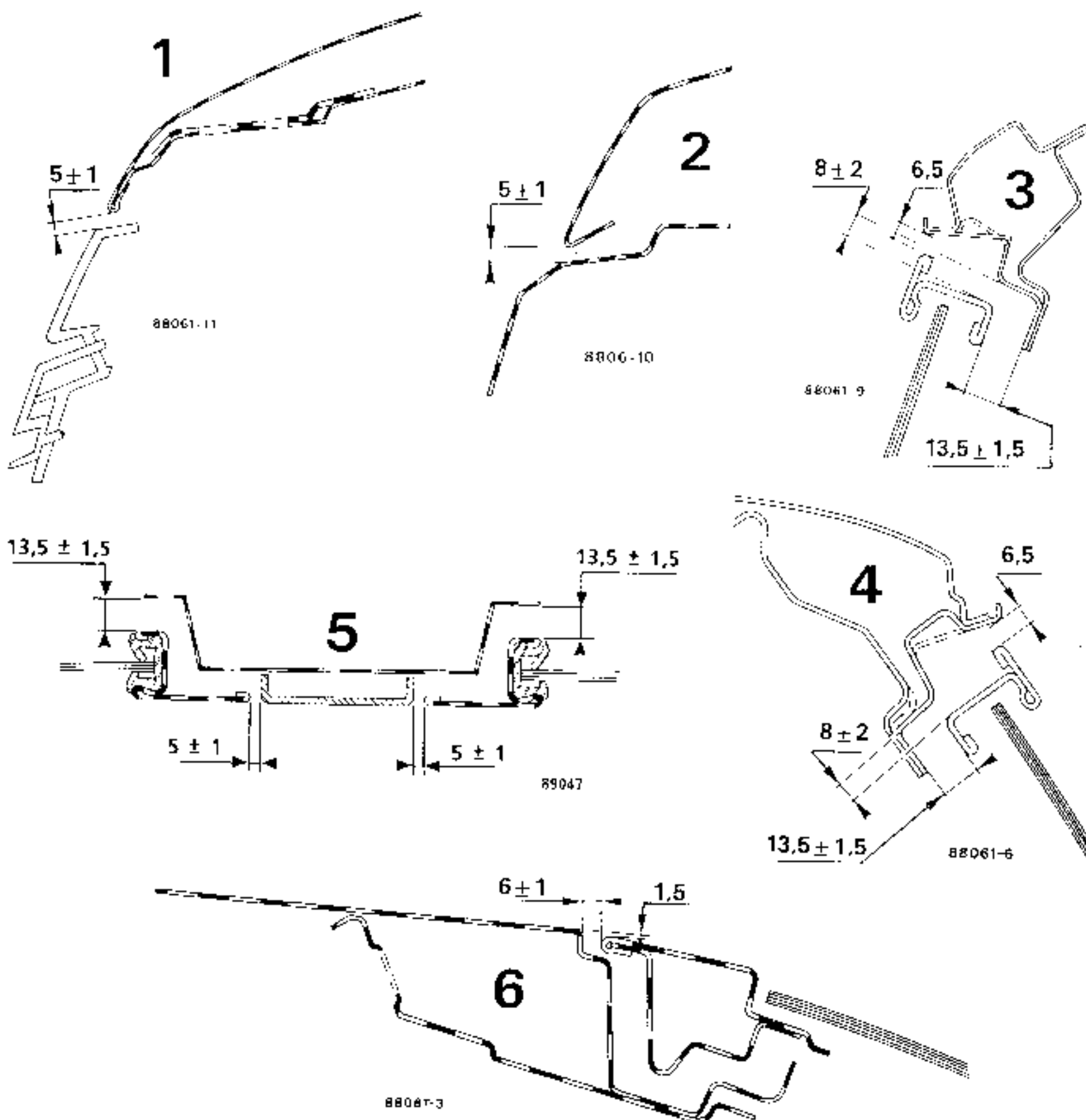
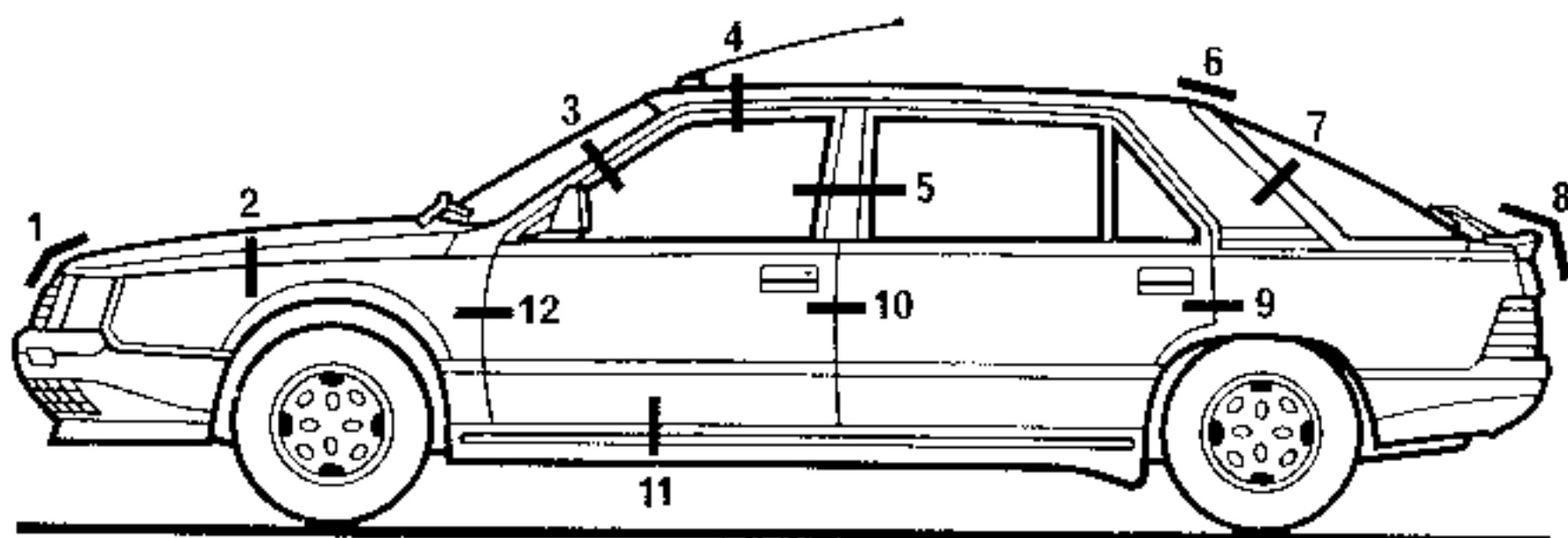


















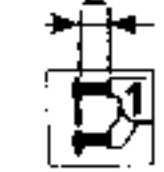







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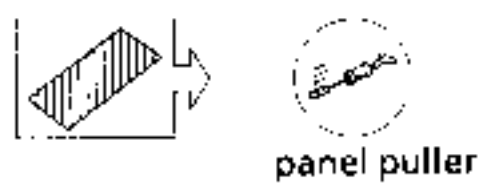
	Chiselling		MAG seam stitch welding. Note: for good welding quality, you are advised to use a gas comprising argon + 15% CO ₂ which is considered an active gas (MAG). (locally termed MIG)
	Grind back fillets or spot welds. Straight grinding wheel with bakelite disc, Ø 75 mm, thickness 1.8 to 3.2 mm.		
	Grind back spot welds. Straight grinding wheel, 20,000 rpm, with spherical disc, Ø 10 or 16 mm.		Plug welding. Under MAG protective gas. (locally termed MIG)
	Grind back spot welds. Spot removing bit. Rotation speed 800 to 1000 rpm		Inject into hollow sections. Pressurised spray gun with flexible nozzle and various endpieces.
	Unpicking		Safety symbol. Indicates that the welding operation underway involves one or more vehicle vital safety elements.
	Clean the surfaces to be welded. Fibre disc Ø 100 mm.		
	Sawing Pneumatic hacksaw.		Body solder Hot air welding torch Min. nozzle output temperature 600 °. Lead + 33% tin stick + tallow. Note: the body solder largely makes up for the risks of heat distortion cause by welding.
	Cut out the part by grinding back the flange or level off the remaining parts of the spot welds. Angle grinder with a rubber pad and a fibre disc, Ø 120 to 180 mm, grain size P36.		Application of weldable sealer. This mastic is conductive. When slotted in between two panels to be spot welded, it prevents the spot welds corroding.
	Unsoldering		Application of aluminium-based paint. This must be applied to the joint faces of each part to be plug welded. This paint is conductive and resists high temperatures. It provides anti-corrosion protection around the spot welds.
	Dimensions and types of electrodes to use for the operation: L = 100		
	L = 100		
	L = 100 + flat		
	L = 250		
	L = 350 + ball joint		
	L = 330		Apply a bead of extruded mastic. • From a manual or pneumatic cartridge gun • single or dual-component mastic for crimped or butt joints.
			Spray on the mastic • gun under pressure • dual-component anti-gravel, anti-corrosion mastic

LOCATION OF OPERATIONS TYPES OF TOOLING AND SEQUENCE OF OPERATIONS

WELDING (continued)



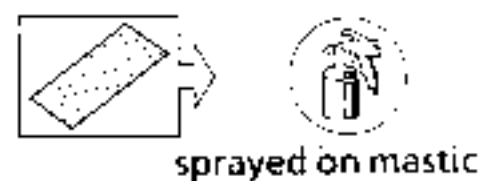
STRAIGHTENING



PROTECTION OF CRIMPED SECTIONS



ANTI-GRAVEL PROTECTION



PROTECTION OF HOLLOW SECTIONS

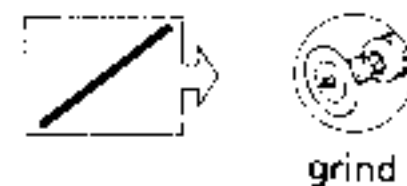
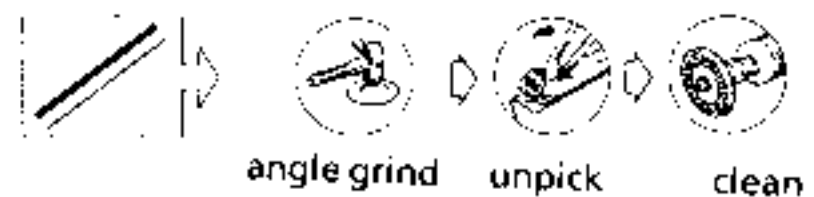
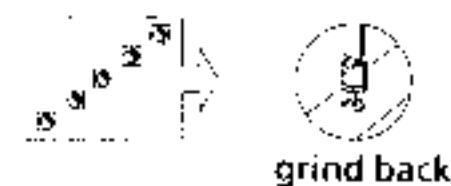
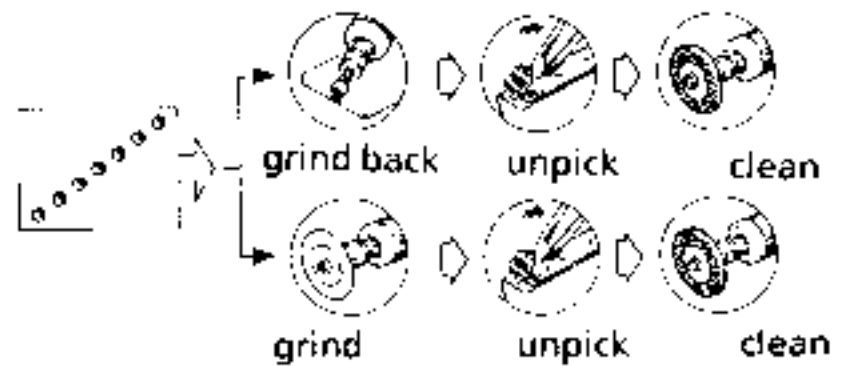
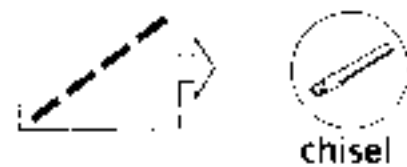


PAINTING STYLISED ZONES

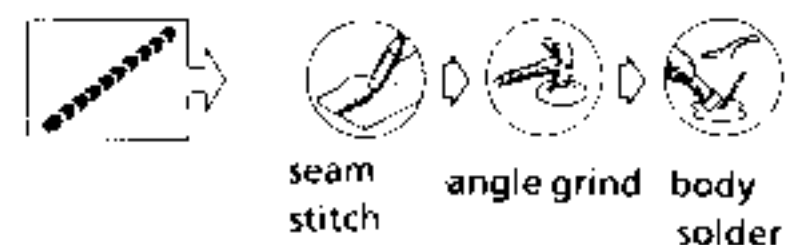
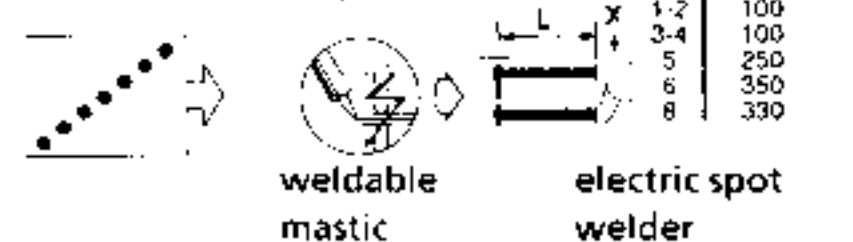


LOCATION OF OPERATIONS TYPES OF TOOLING AND SEQUENCE OF OPERATIONS

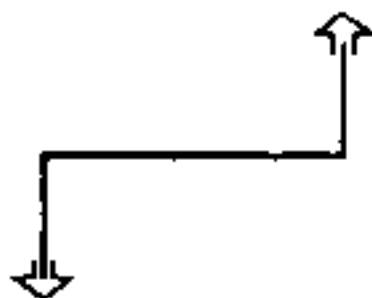
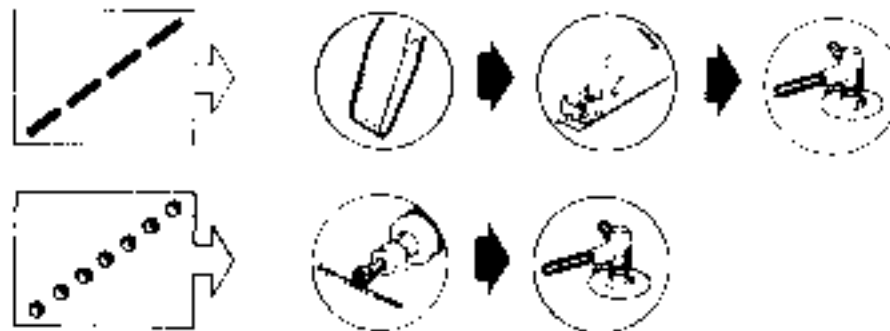
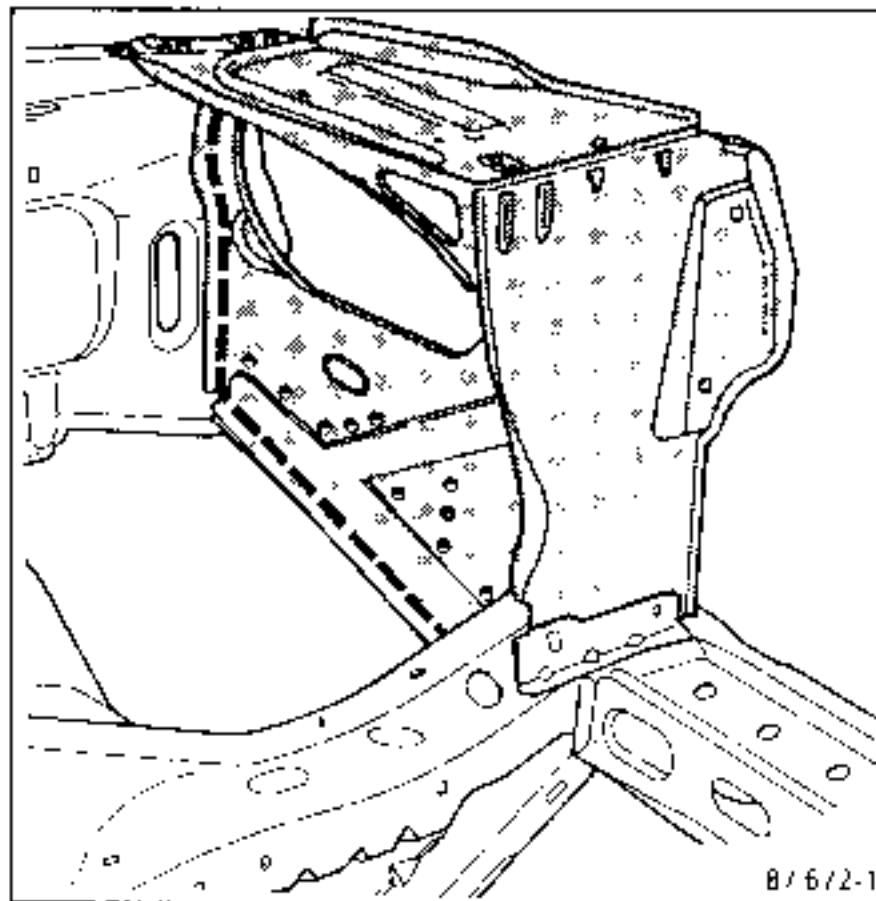
CUTTING - UNPICKING



WELDING

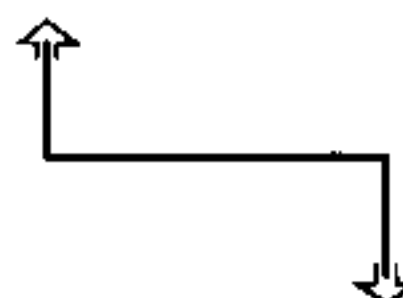


CUTTING - UNPICKING



Operation symbols

This defines the types of operation and the exact locations where they must be performed

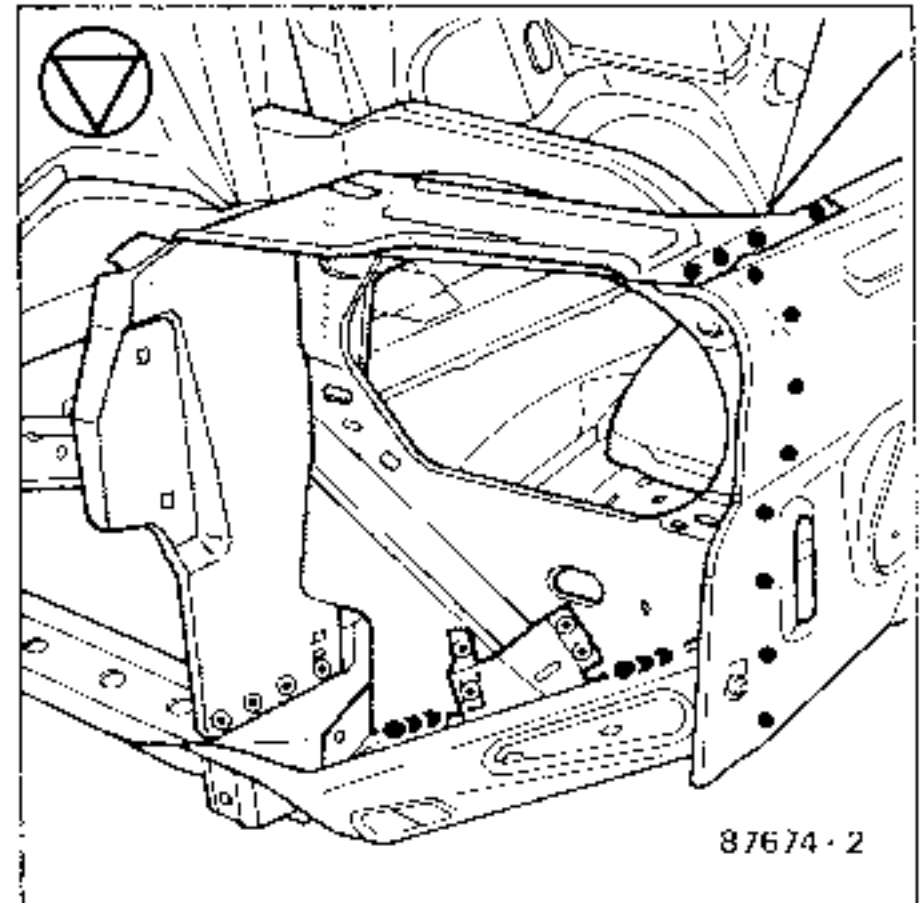
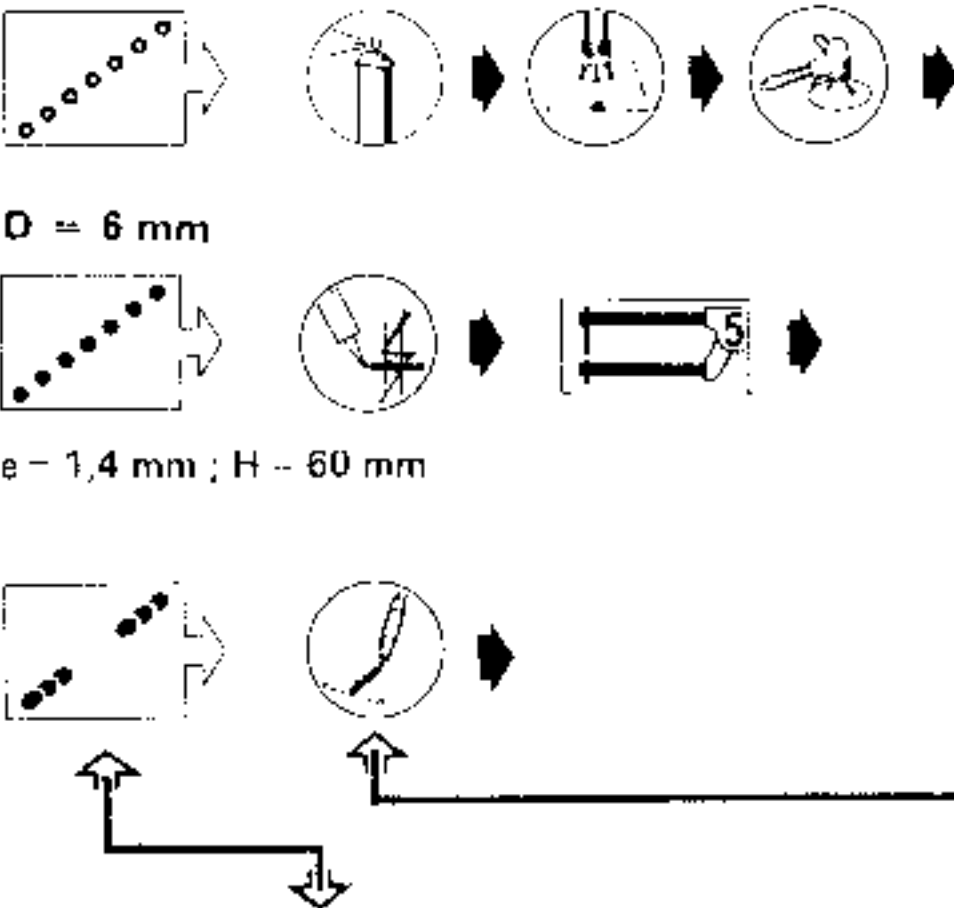


Tooling symbols

This defines the types of tooling and the logical sequence of their use at the locations concerned.

Note: the operation to unpick the steel strip and to grind the spot weld traces remaining on the support panels can only be performed after completely removing the part to be replaced.

WELDING



Operation symbols

This defines the types of operation and the exact locations where they must be performed.

Tooling symbols

This defines the types of tooling and the logical sequence of their use at the locations concerned

Note: the spot weld protective operations (electroplastic mastic and aluminium paint) must be carried out before fitting the new part.



SAFETY SYMBOL

The recommendations complying with current legislation concerning safety regulations carry the symbol and require special attention from the repairer during work on the vehicle.

We would draw your particular attention to safety welding points.

In fact, these points are designated as "safety" following the vehicle crash tests and the bodywork reliability tests.

It is therefore very important to repair them correctly to achieve the same resistances as the original parts. This will ensure the quality and safety of the repair.

We would remind you that all safety belt reinforcement welds are also designated as safety welds

CHECKING THE POSITION OF THE FRONT SIDE MEMBERS

1 - Check the position of the jiggling points (1 and 2) located under the front side members.

- Compare diagonals:

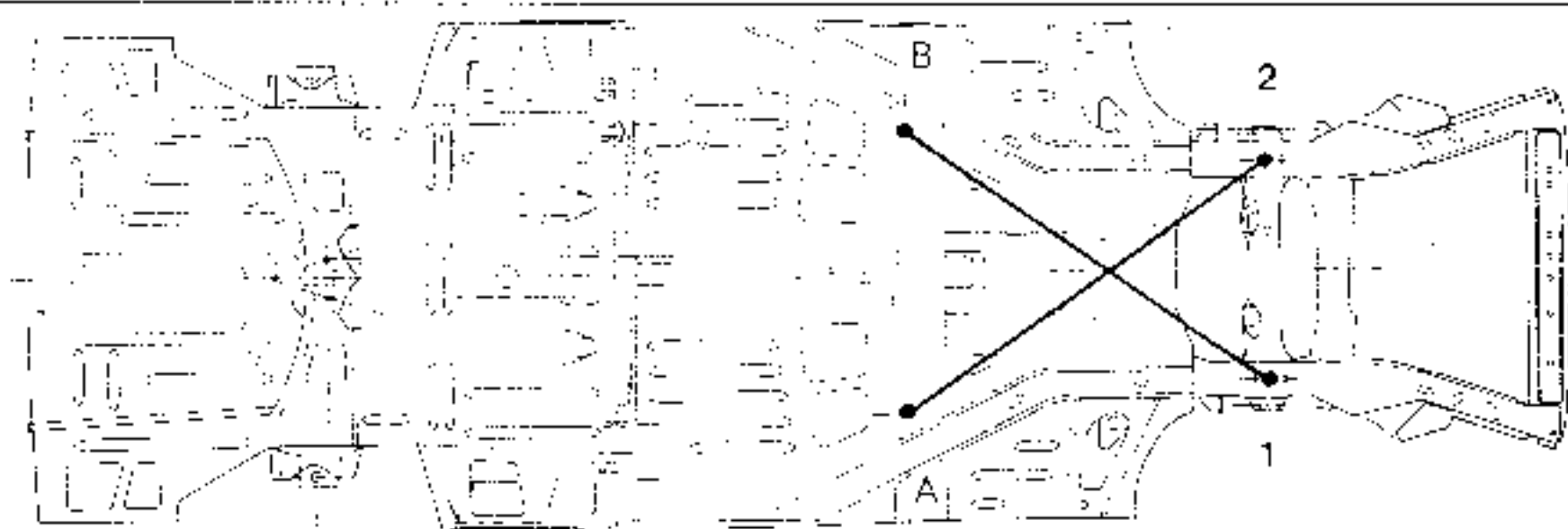
$$B1 = A2$$

- If you notice a difference in length during checking, the vehicle should be placed on the bench.

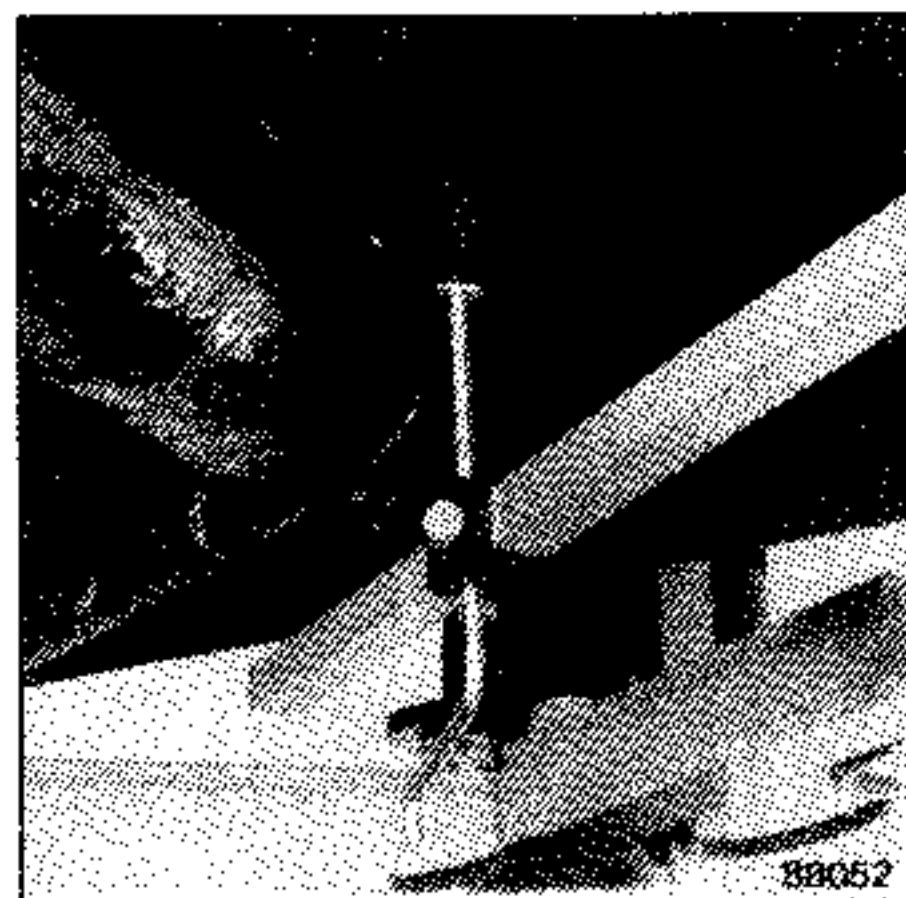
POST-IMPACT TRANSFER TO THE BENCH DOES NOT INVOLVE REMOVING THE REAR MECHANICS.

Special supports should be fitted at the relevant points (see chapter on the use of gauges).

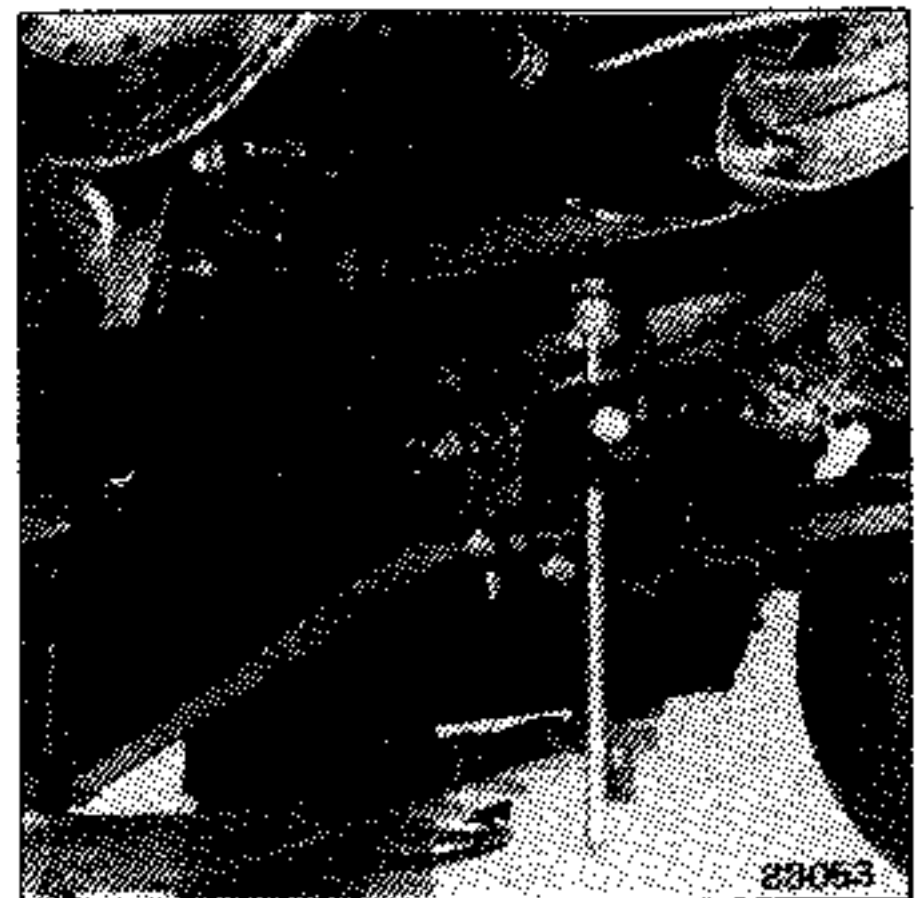
- If you notice no difference in length, continue with checking the front axle geometry. If this shows any abnormality, it should also be checked before planning any repairs on the bench.



77 420-3



88052



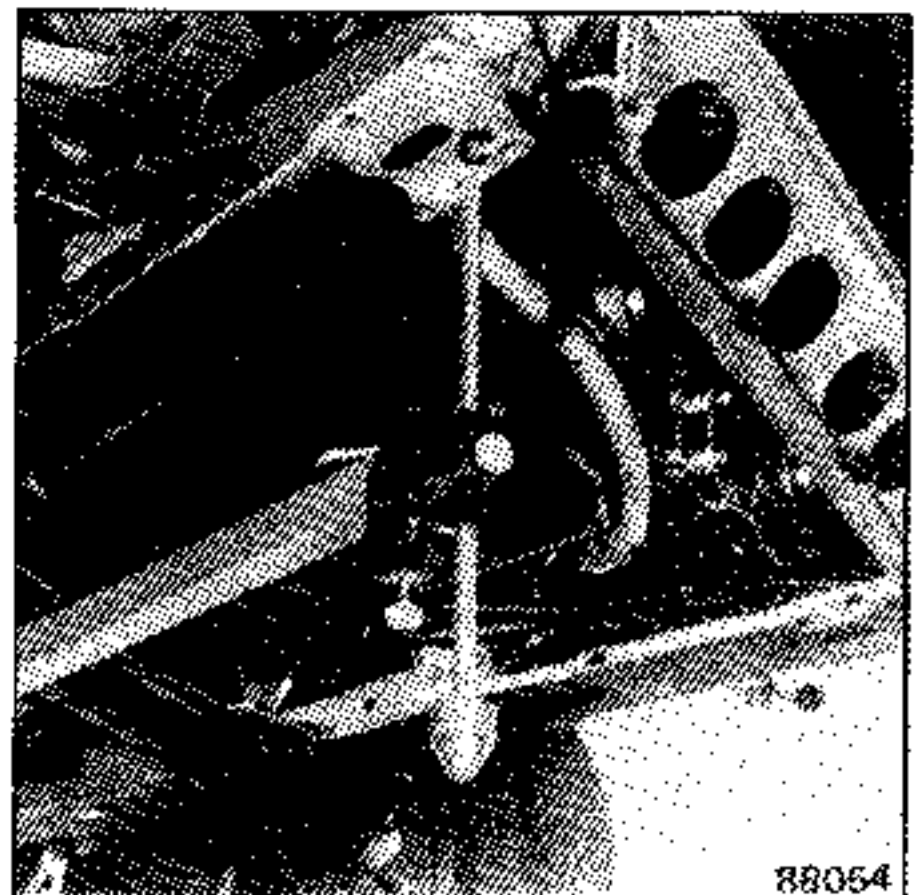
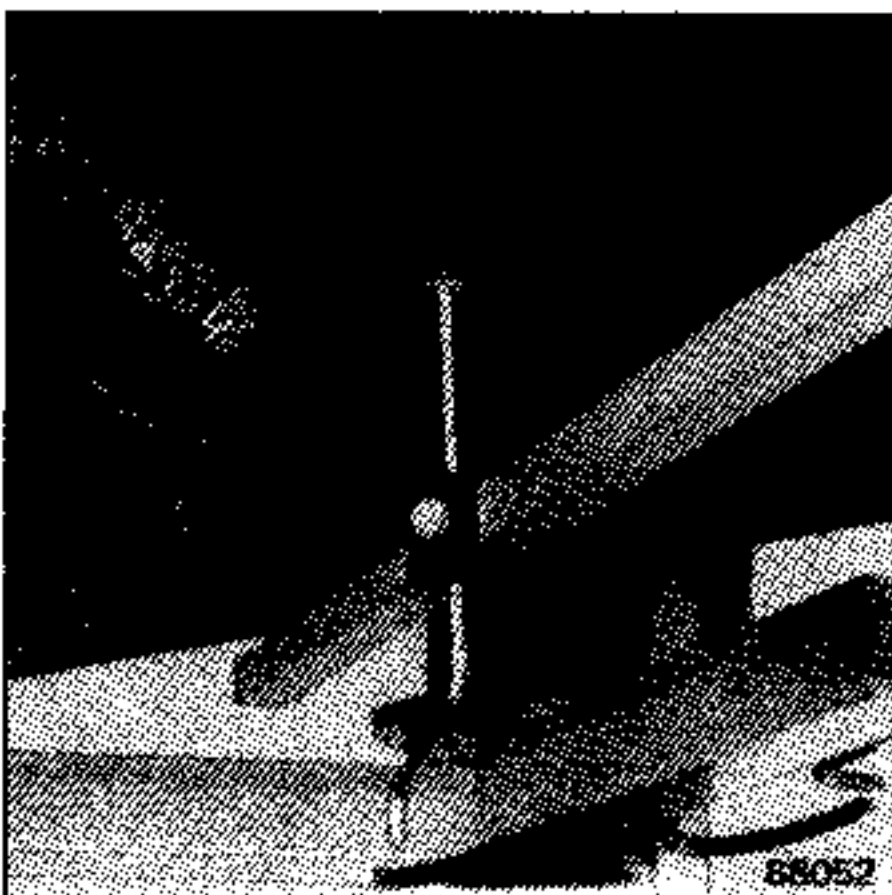
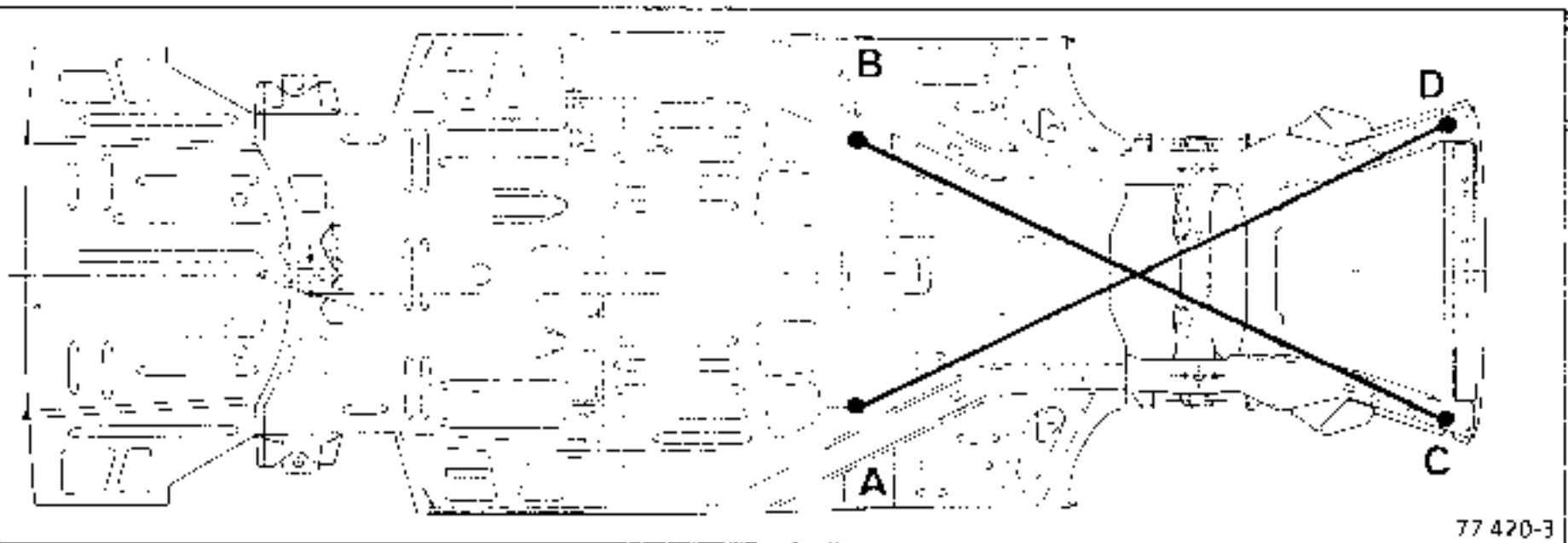
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2 - Check the front end of the side members (C and D):

- Compare diagonals:

$$AD = BC$$

- If you notice a difference in length during checking and the distortion has not exceeded the front mounting zone of the front axle, you can partially replace the front end of the side rails (this operation should preferably be carried out on the repair bench).
- If you do not notice a difference, this means that the substructure has not been affected by the impact and the repair can therefore be performed using the front end jig.



CHECKING THE POSITION OF THE REAR AXLE

Compare diagonals: $A4 = B3$

(points 3 and 4: side arm mountings).

- If you notice a difference in length during checking, the vehicle should be placed on the bench.

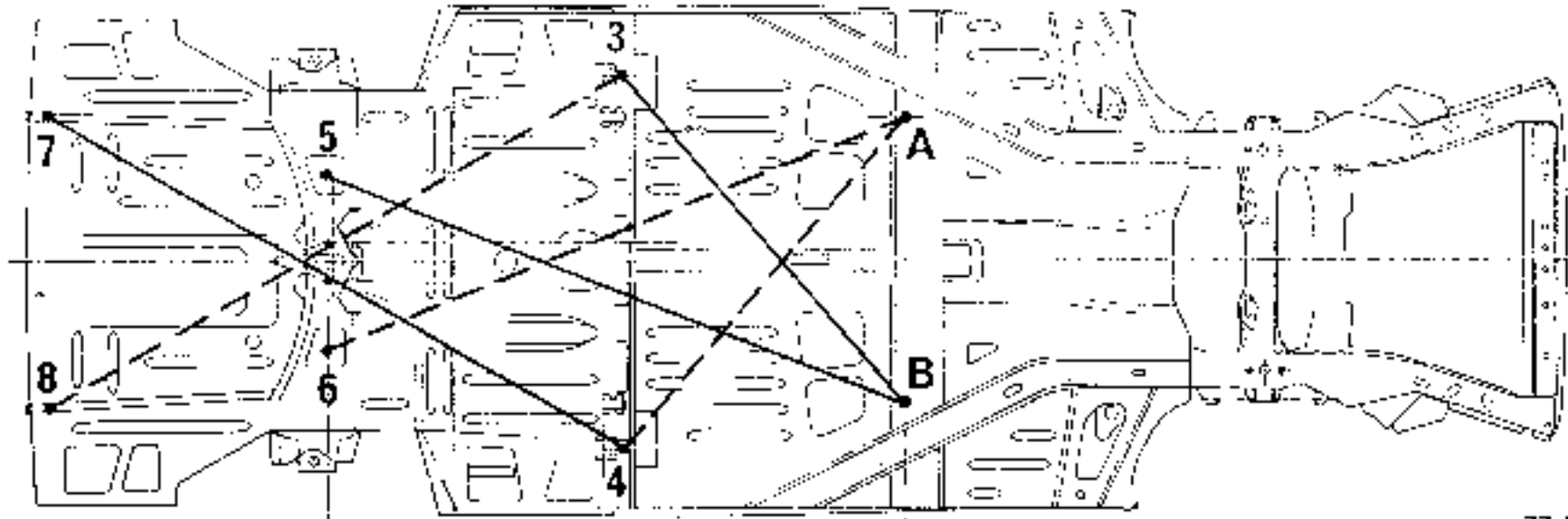
THE TRANSFER OF THE VEHICLE TO THE BENCH FOLLOWING A REAR COLLISION DOES NOT INVOLVE REMOVING THE FRONT MECHANICS.

Special support brackets should be fitted at the relevant points (see chapter on the use of brackets).

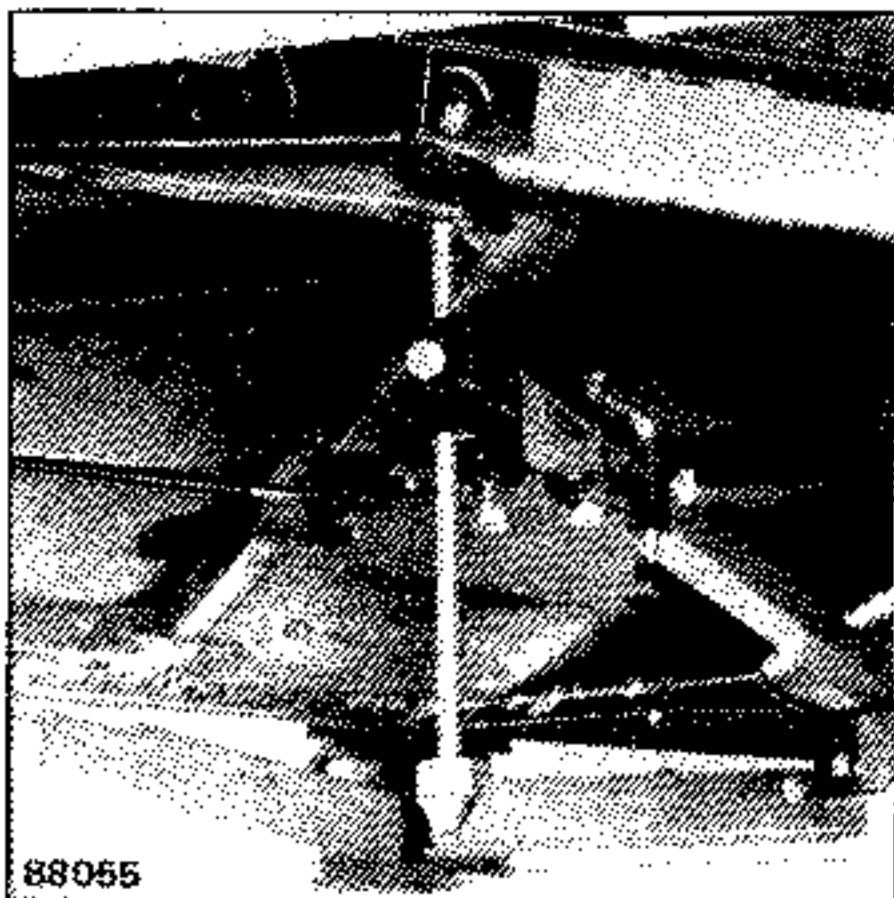
- If you do not notice a difference in length, continue with checking the diagonals: $A6 = B5$.

A difference in length means that the rear cross member is damaged.

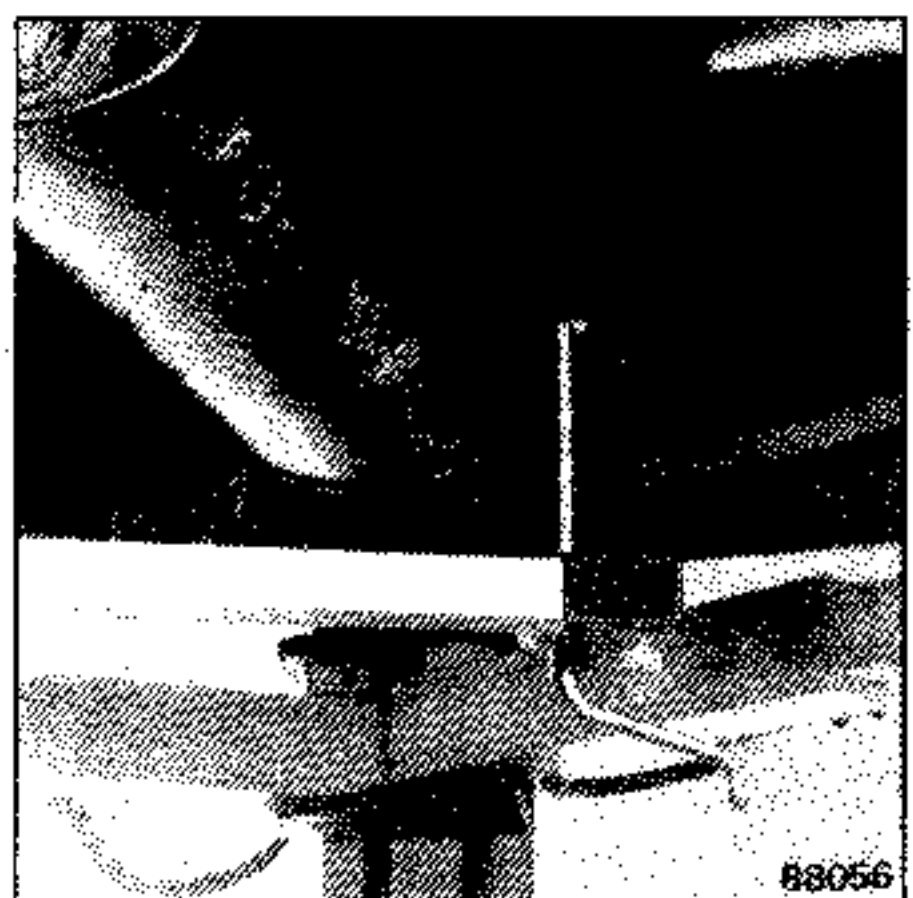
- Check the condition of the side arms and the bearing arms.
- Check the axle geometry.
- CARRY OUT THE REPAIR ON THE REPAIR BENCH.



77 420-3

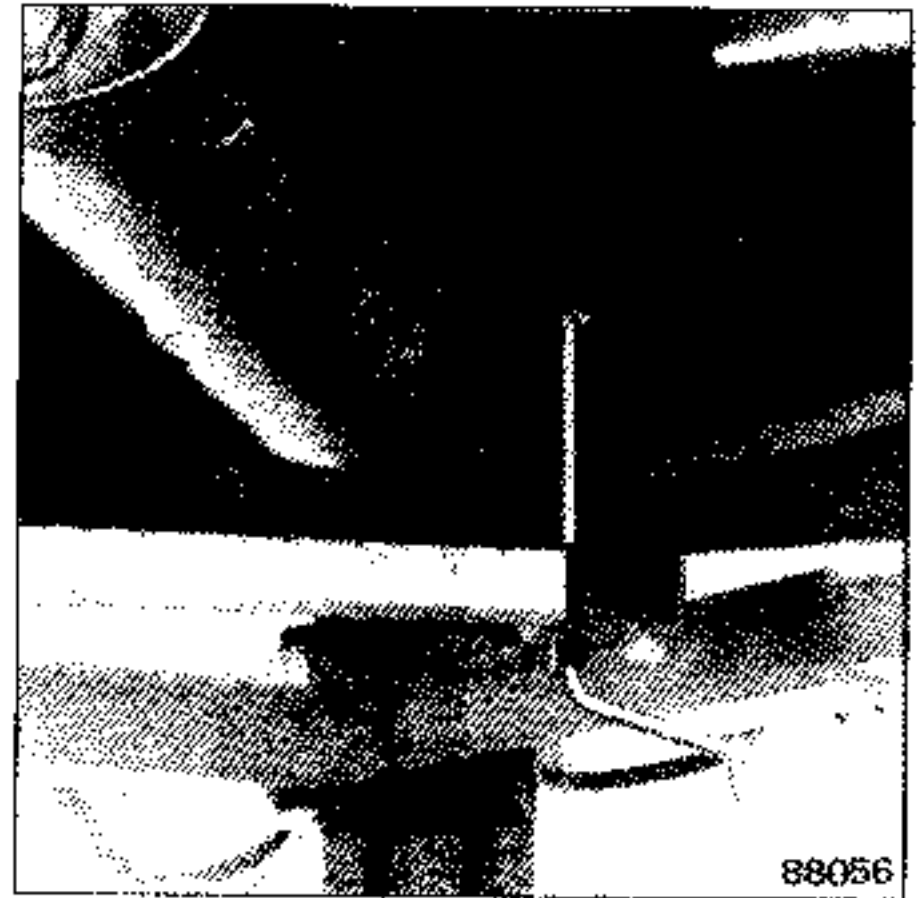
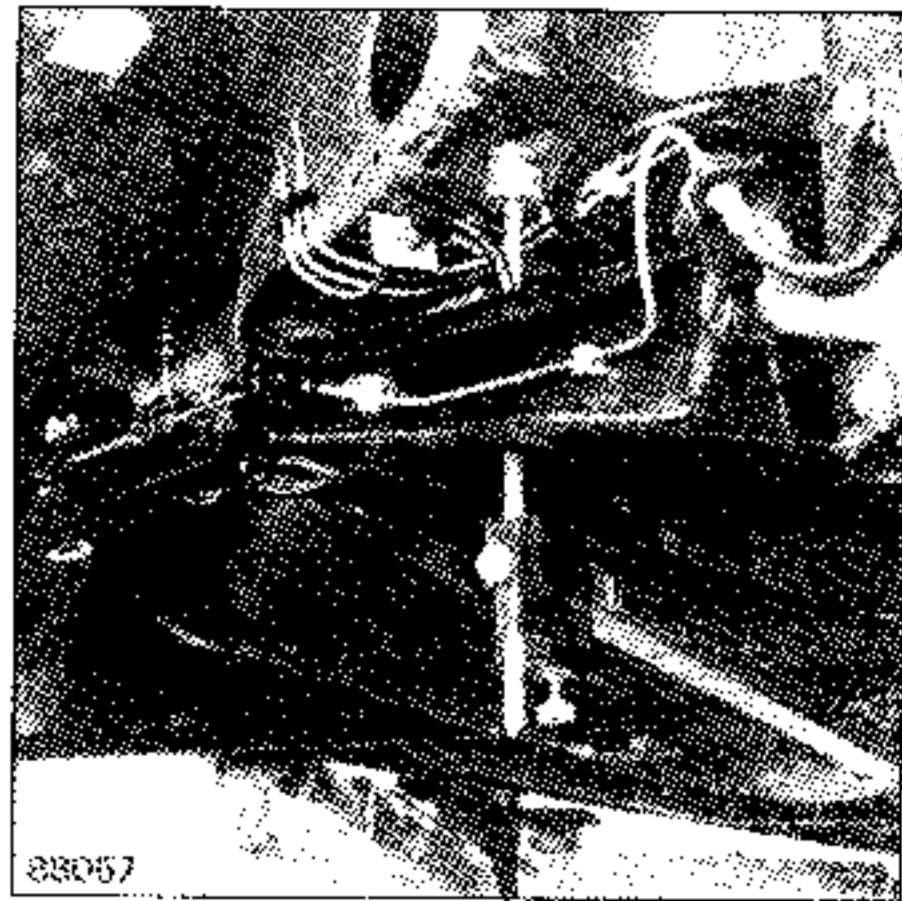


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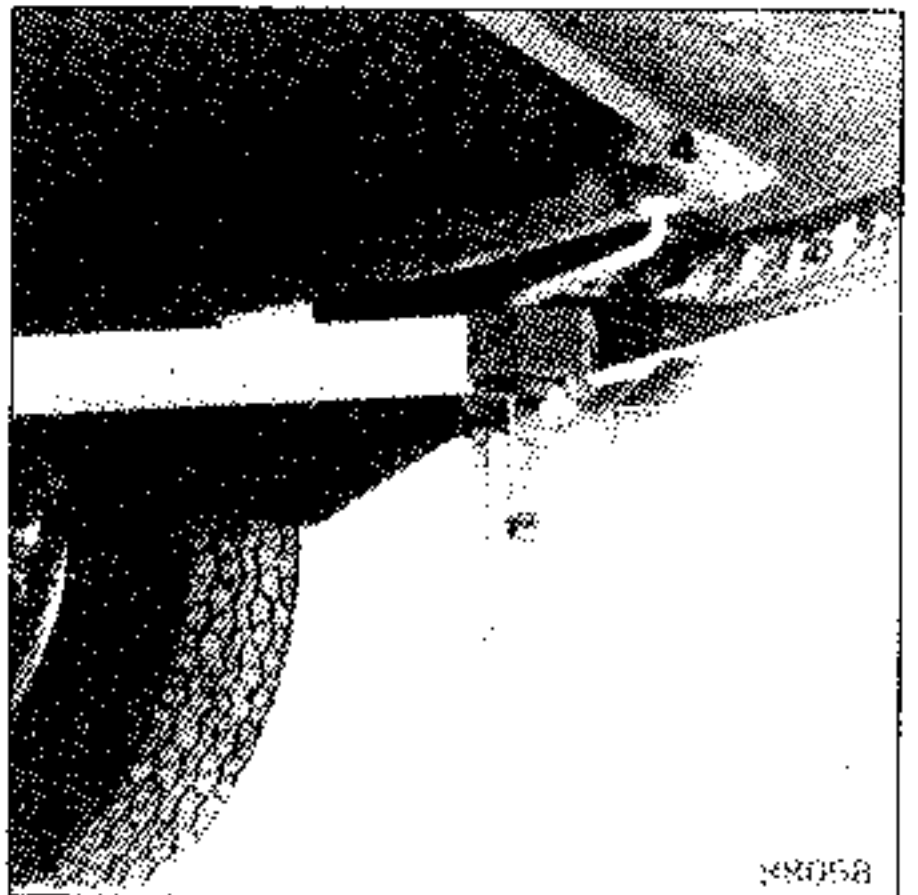
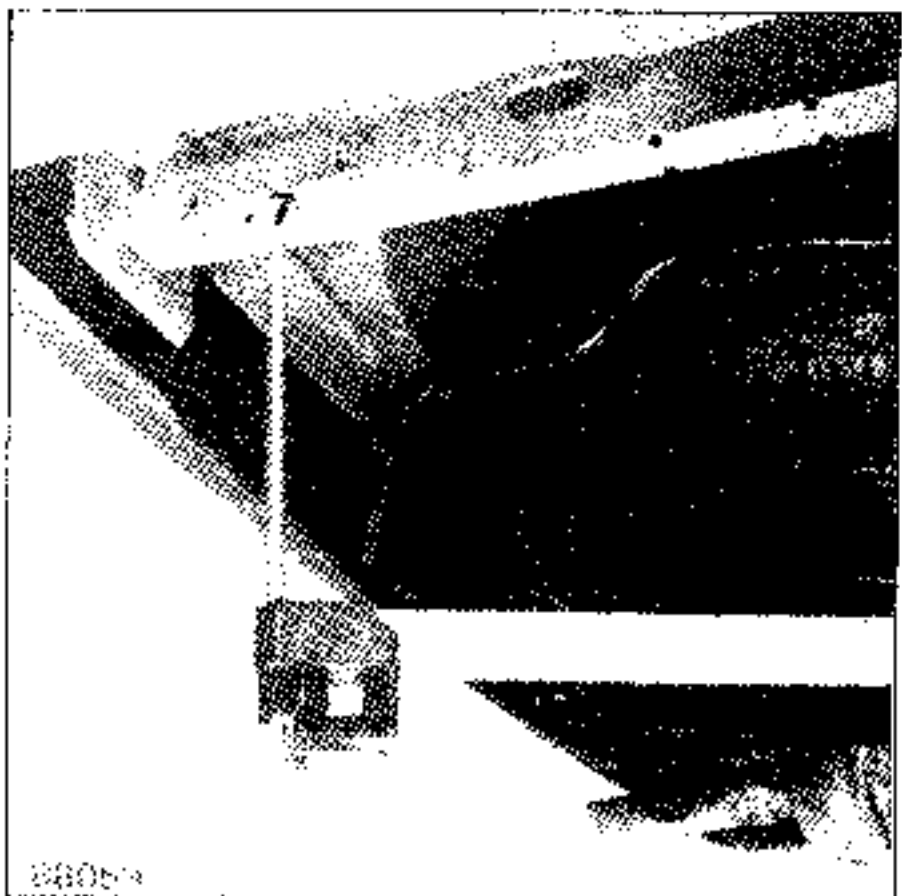
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CHECKING THE DIAGONALS $A4 = B3$.



CHECKING DIAGONALS A6 = B5

The ends of the rear side members are checked by comparing diagonals 4-7 = 3-8.

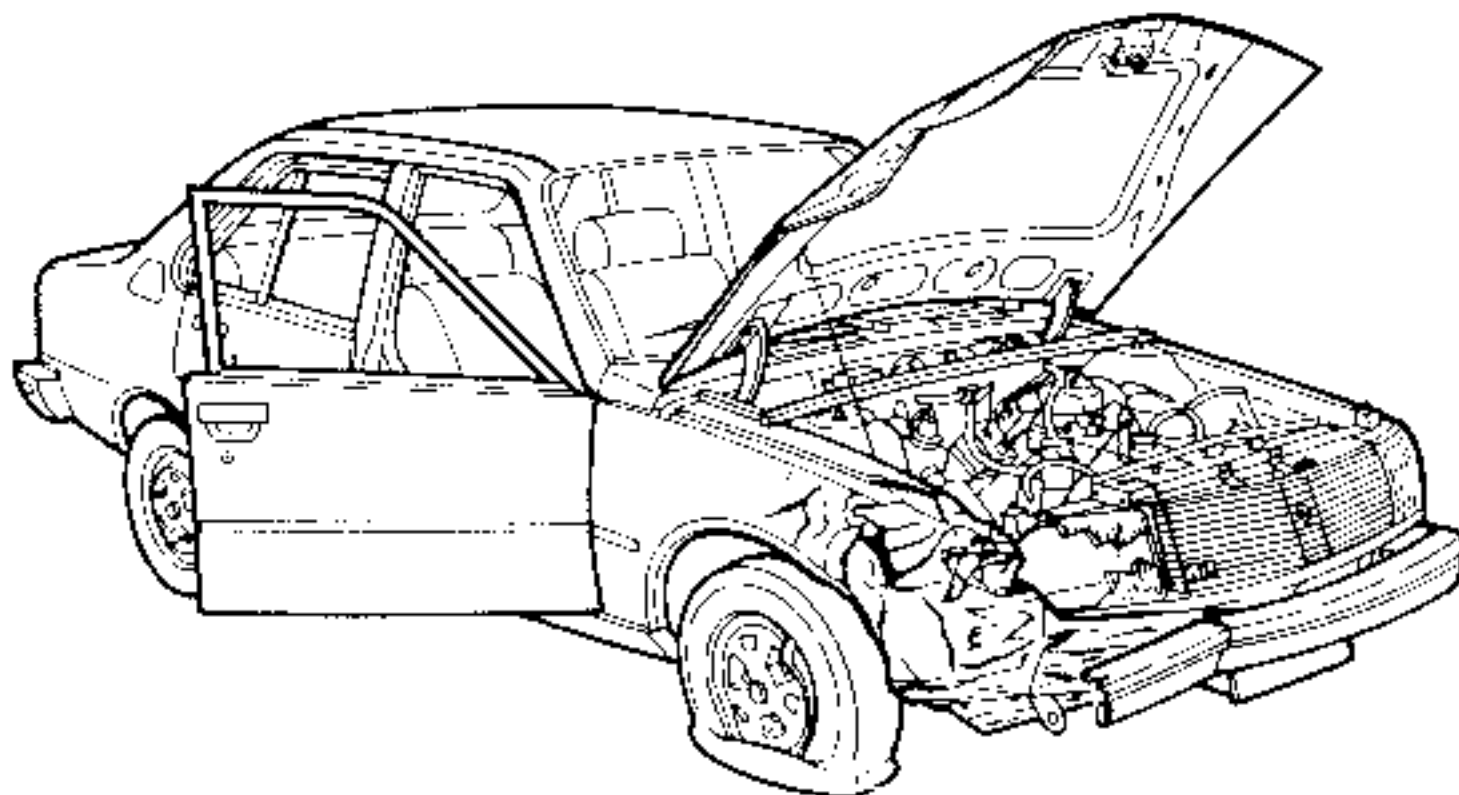


CHECKING DIAGONALS 4-7 = 3-8

Before starting work on the vehicle, even if it only appears to be slightly damaged, a series of checks must be carried out:

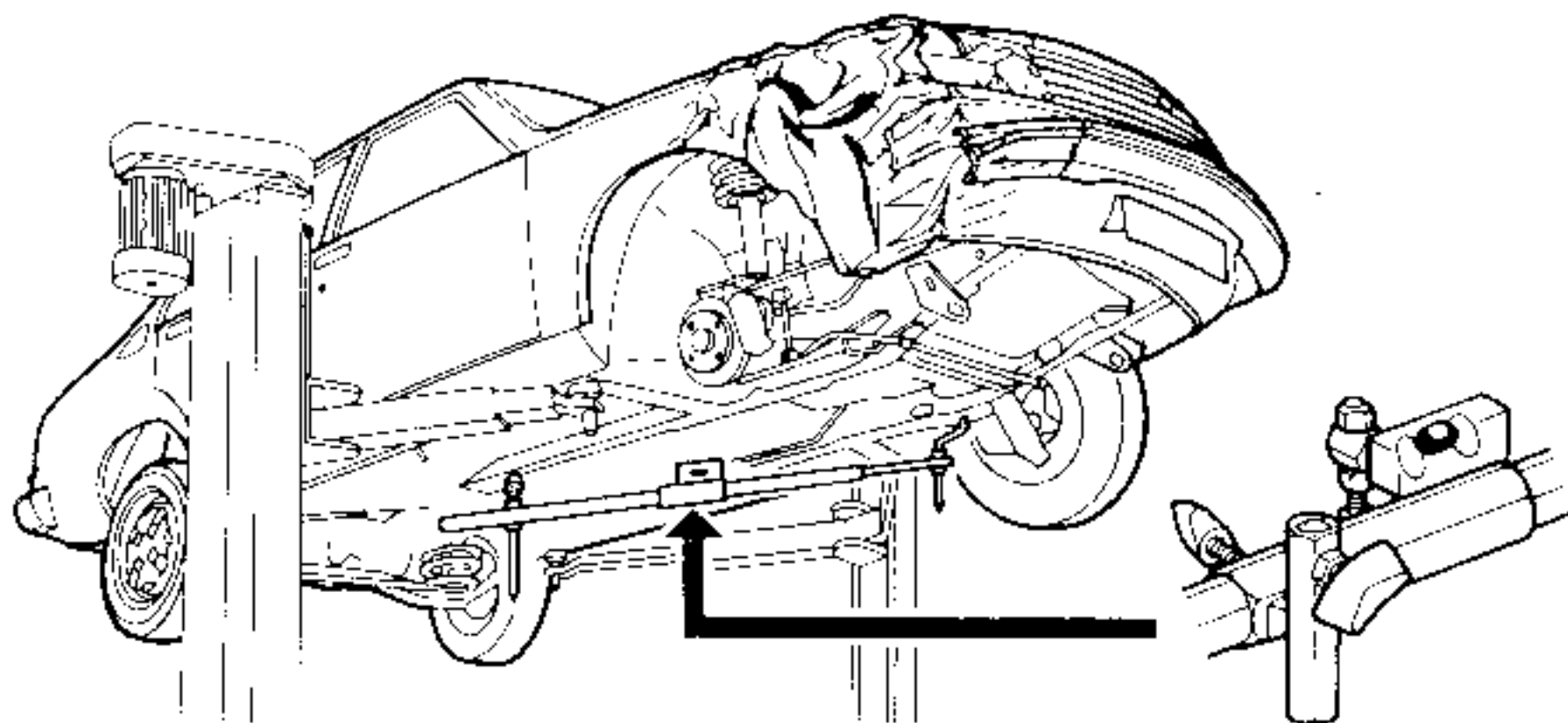
- **VISUAL CHECK**

This check involves examining the vehicle around the mechanical mountings and in the crumple or vulnerable zones, to check for the presence of any deformation folds.



- **TRAMMEL GAUGE CHECK**

The visual check can be supplemented by a trammel gauge check which enables any deformation to be measured by symmetrical comparison (for further details, see the relevant paragraph below).



- **CHECKING THE AXLE GEOMETRY WHEN DRIVING THE VEHICLE**

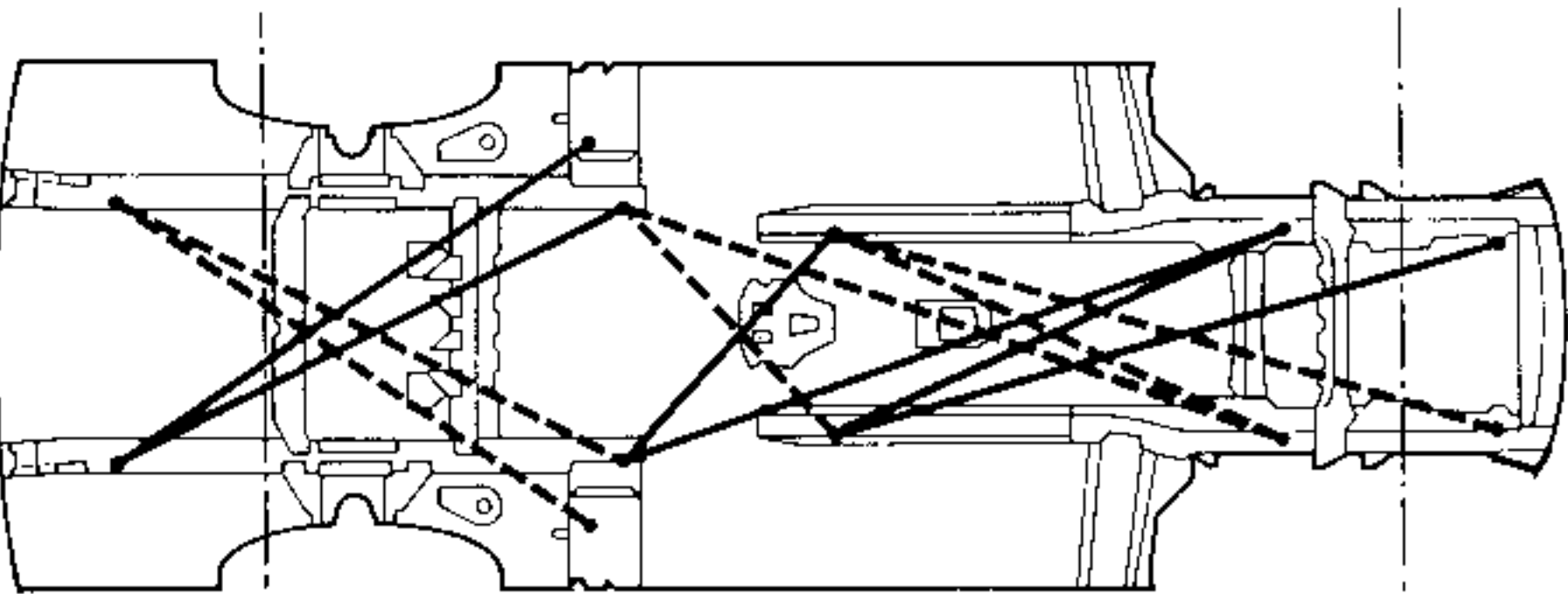
This is the only check for determining whether the vehicle impact has affected the road holding of the vehicle or not.

Important: in extreme cases, do not forget to check the axle elements which may also have suffered damage

In principle, none of the welded elements of the body should be replaced, without making sure that the floor frame has not been affected by the impact.

There are several classical methods for carrying out a preliminary check of a damaged vehicle if the visual check leaves doubt as to the scope of the damage and the repair to be carried out.

CHECKING THE JIGGING POINTS, DEFINED BY THE DESIGN OFFICE FOR THE MANUFACTURE OF THE BODY SHELL.



ANY DAMAGE TO THIS ZONE REQUIRES REPAIR ON THE BENCH

NOTE:

A method of fault-finding is described in this manual, chapter: **BODYWORK FAULT-FINDING**.

A - STRAIGHTENING - REPAIR - CHECKING ON JIG REPAIR BED

For **SAFETY** reasons and to provide better repair **QUALITY**; it is **FORBIDDEN**:

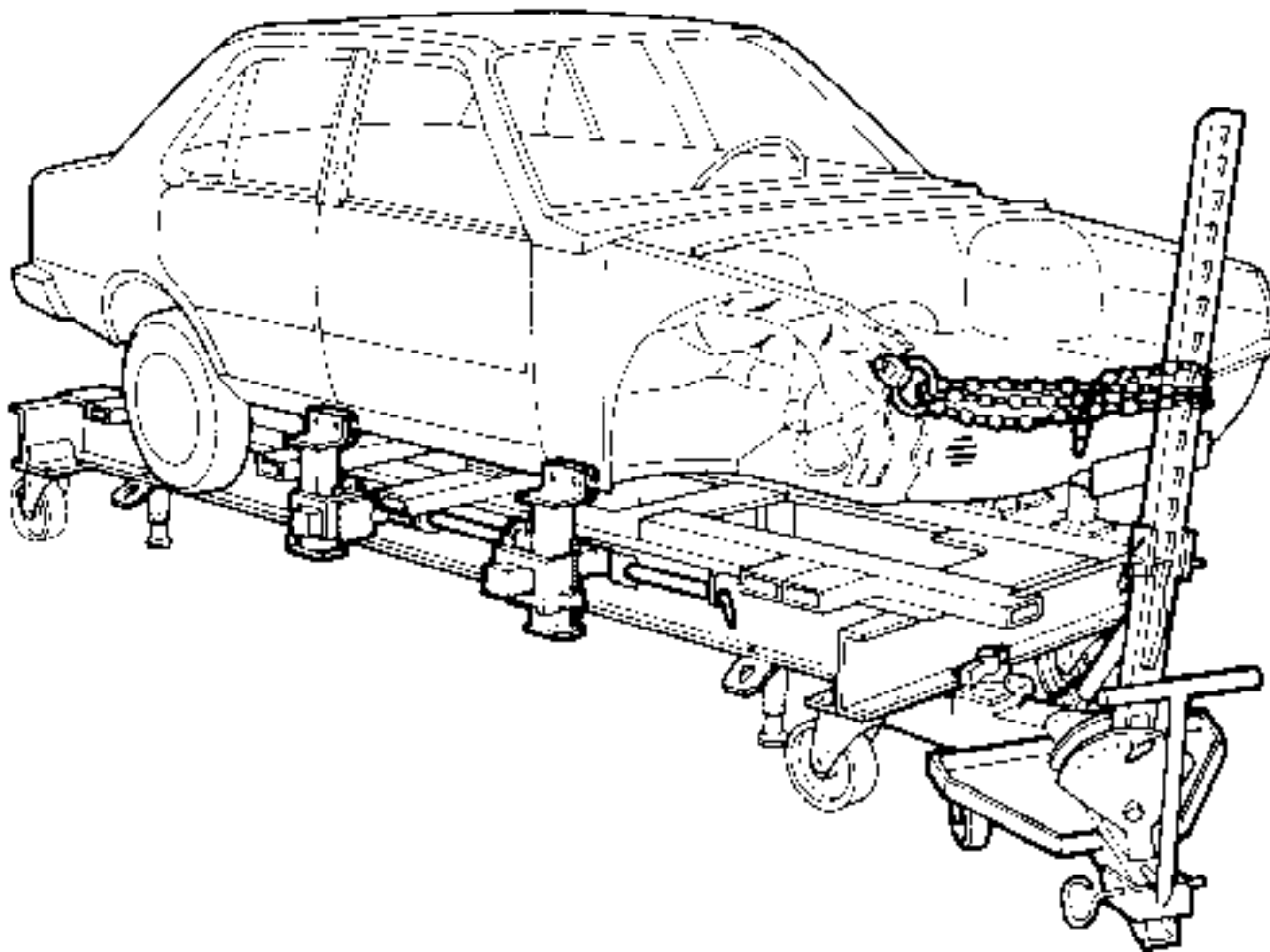
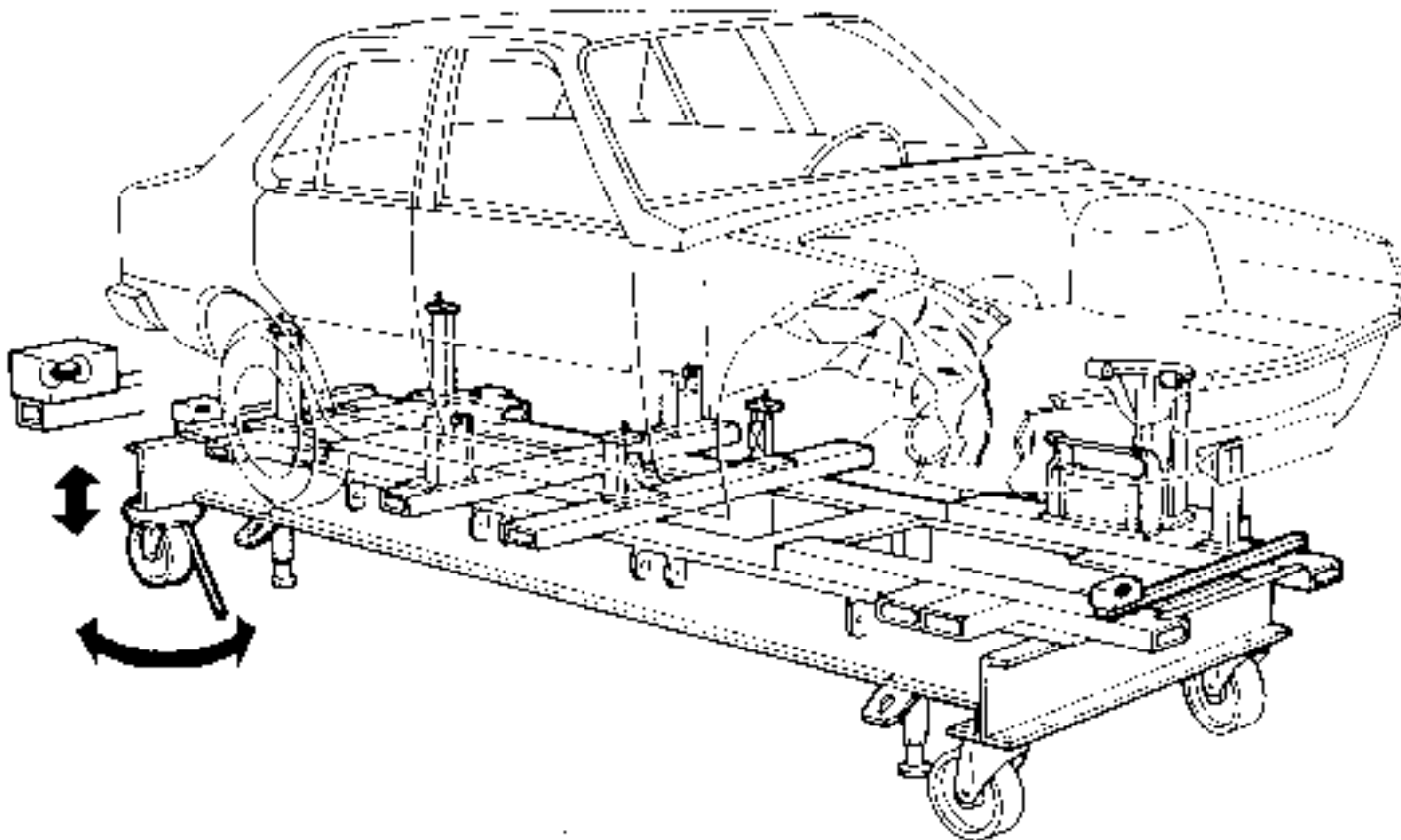
- to replace a side member, half-unit or unit without using a jig repair bed;

The use of a bench guarantees vehicle repair to the original fabrication dimensions and provides correct positioning of the front and rear axle elements.

- to replace part of the steering cross member.

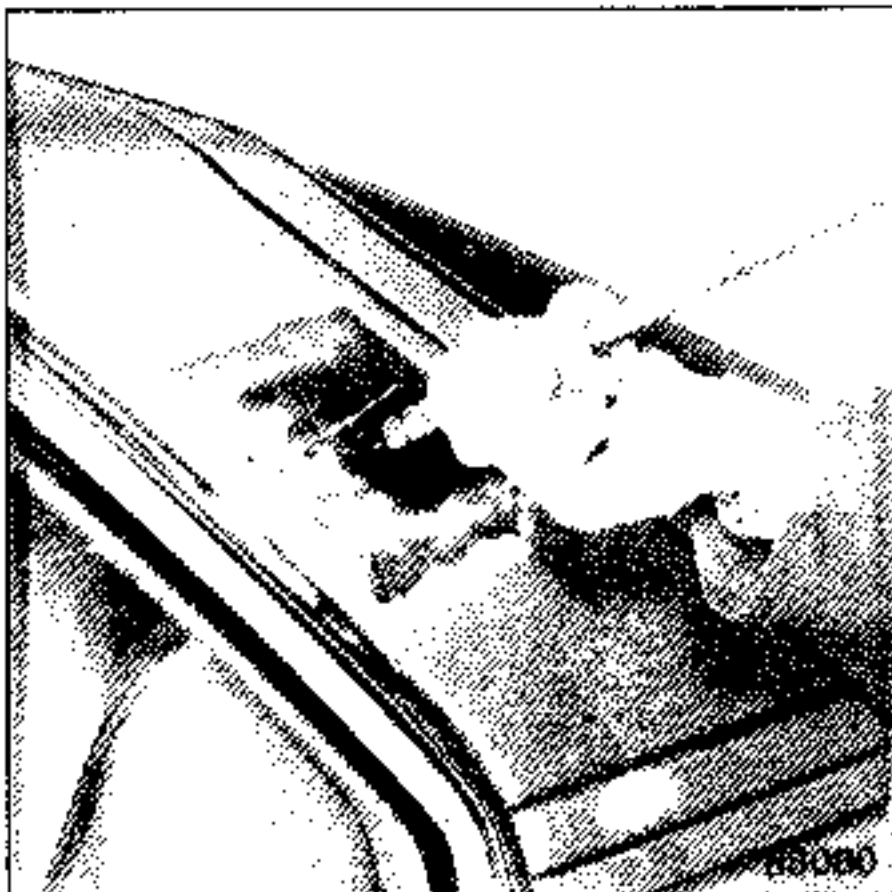
It is FORBIDDEN:

- to apply traction to a vehicle positioned on brackets, without previously having anchored the vehicle on the bench chassis, using at least two sill clamps. These clamps will be located as close as possible to the zone under traction so as not to transmit the jacking loads to the brackets, which could distort them.
- It is also very important, before dismantling any bodywork which has suffered damage and requires a replacement welded part, to pull out the element to be replaced in order to return the bodywork as accurately as possible to its original shape and to free the adjacent parts from the stresses caused by the deformation (see MR 501, F 001).



STRAIGHTENING A BOX COMPONENT WITH INERTIA EQUIPMENT

When a bodywork element is slightly damaged and does not require replacement (even partial replacement), it can be repaired without having to strip or clean its internal surface, using a piece of equipment for straightening sheet metal by inertia, known as a "panel puller".



Shear off the rivets flush with the panel using cutting pliers.

Smooth off the remaining pieces of rivet.

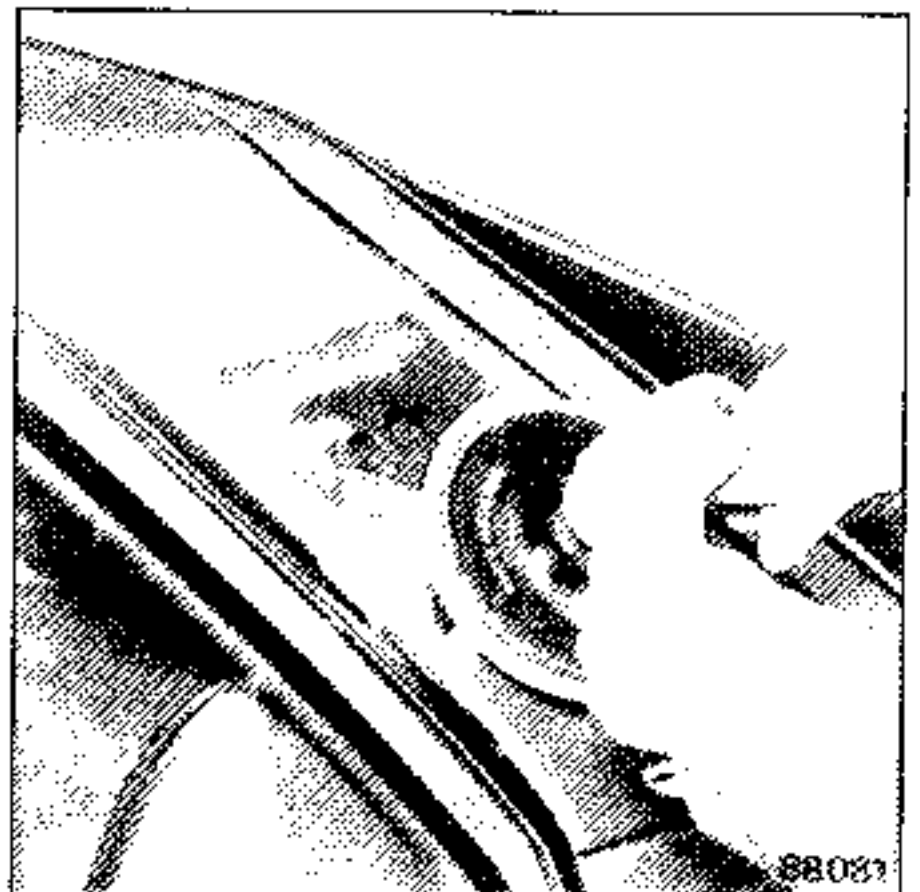
Apply body solder using a welding torch fitted with a 300 jet or using hot air equipment (650 °).

NOTE:

Welding the rivets to the box component exposes part of its interior surface. Therefore it is essential, after exterior painting, to inject some hollow section wax anti-corrosion product (see chapter on paintwork).

STRAIGHTENING METHOD

- Bare the sheet metal of the damaged section.
- Weld the rivets provided with the equipment (copper-plated steel)
- Using the inertia equipment, grasp each rivet and gradually restore the damaged part as closely as possible to its original shape.



B - REPLACING WELDED ELEMENTS

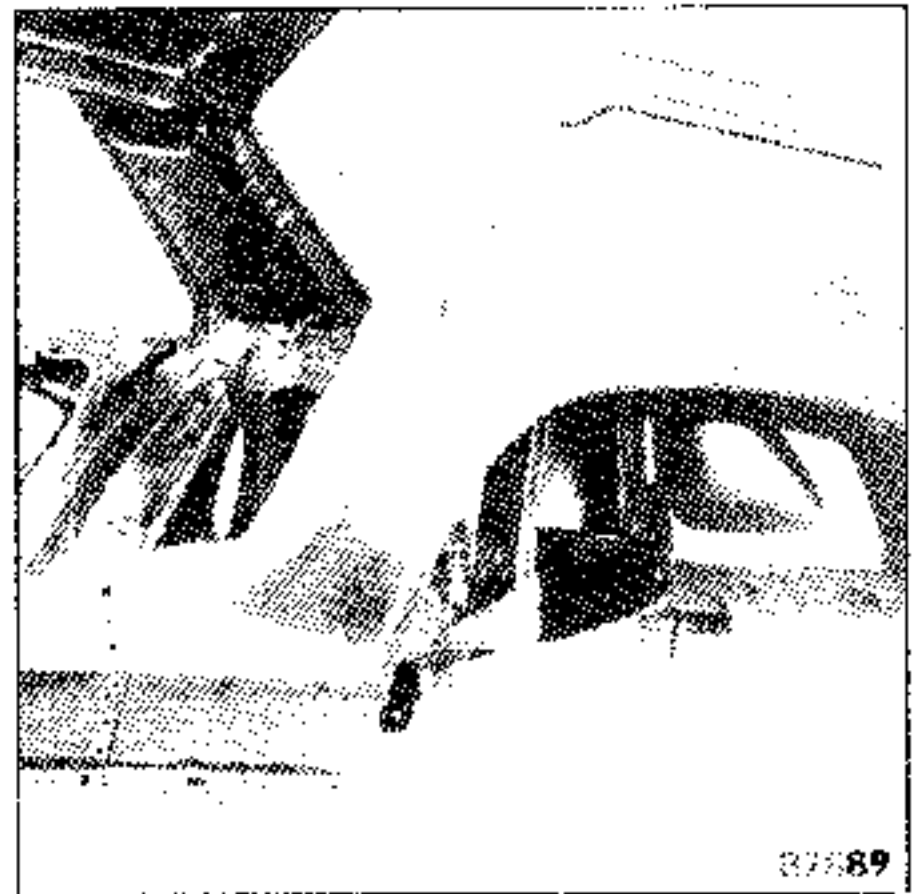
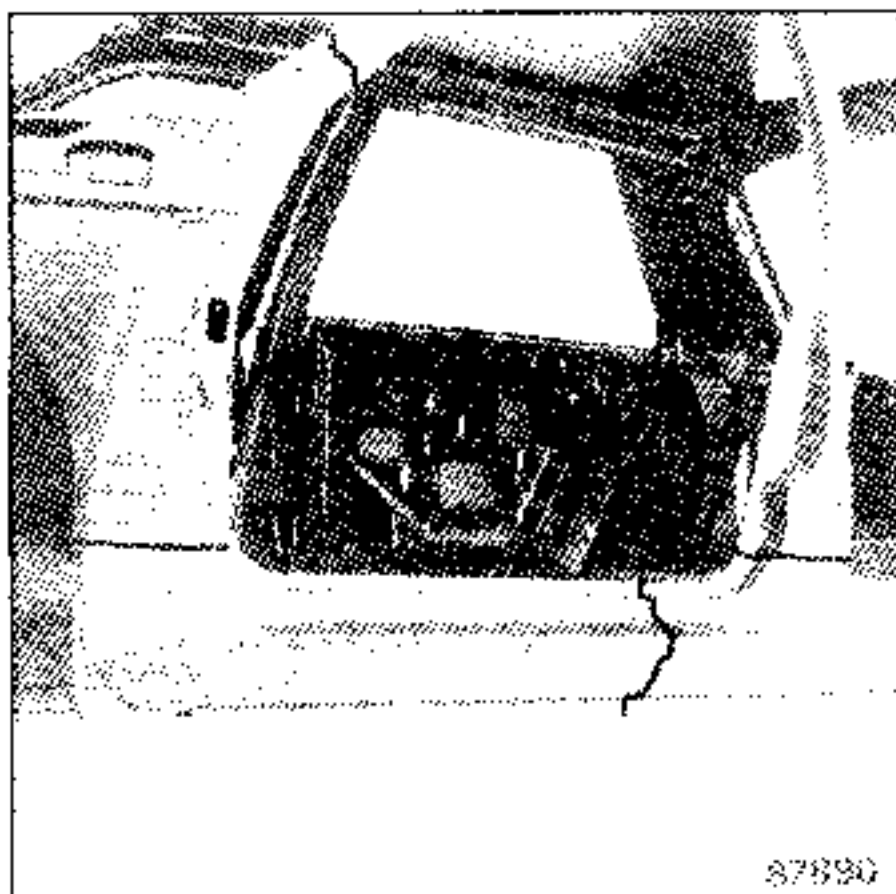
Operations for replacing welded elements and the position of their cutting lines are determined in accordance with assembly line production of parts and the following criteria:

FOR EXTERIOR BODYWORK PANELS:

- Avoid substantial deformation during butt welding
- Allow planishing tools and anti-corrosion protection material to pass through.

FOR COMPONENTS OF THE FLOOR FRAME AND EXTERIOR PANEL LININGS:

- Where impact has occurred, the choice of cutting lines enables the risk of distortion of the passenger compartment and the side members beyond the mechanical fixing points to be reduced (a risk that is increased by the weld heat zones forming areas of potential distortion)



C - PROTECTION OF REPAIRED SECTIONS

To avoid any future problems, it is very important to recreate good interior and exterior protection after repairing or replacing a bodywork element so as to achieve properties identical to those of the original parts and guarantee the quality of the repair.

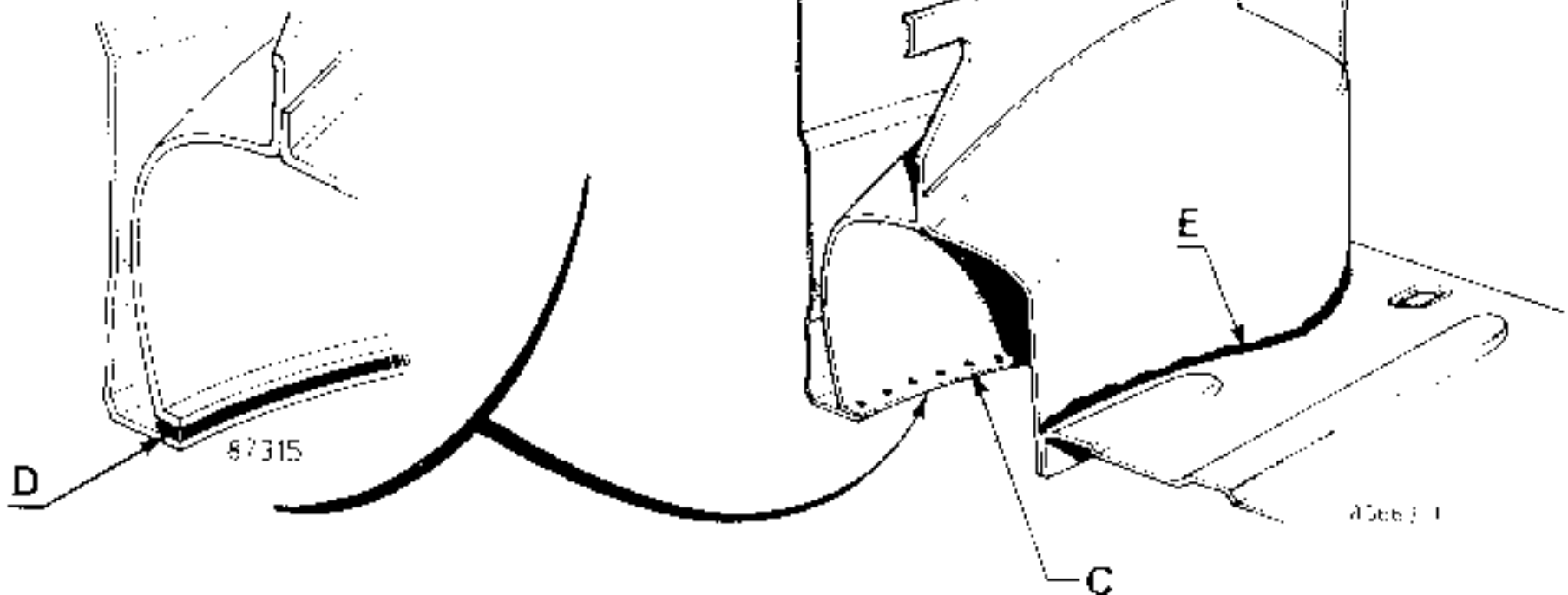
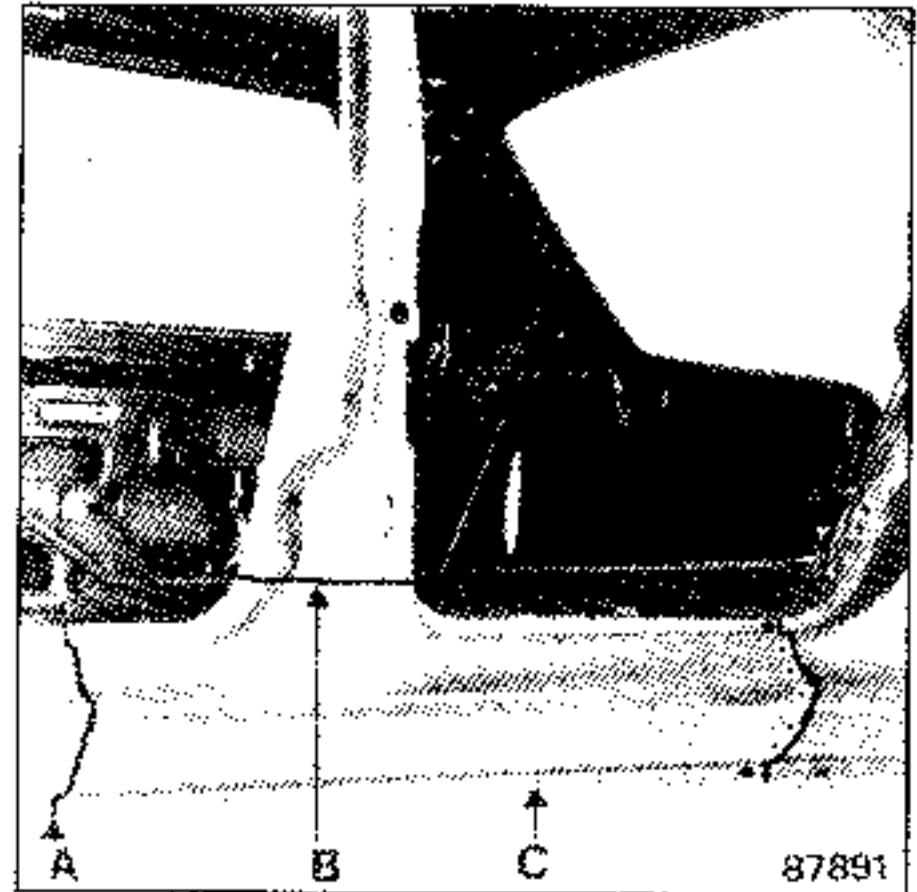
Depending on circumstances, various types of protection can be used:

1 - Butt welding (A) or (B)

- **Before welding:** bare the interior and exterior parts of the zone to be welded.
- **After welding:** in the case of accessible box sections, protect the welded zone by painting on a primer coat of chrome phosphate with a paint brush, followed by a chrome phosphate undercoat and then paint.
- **After painting:** in the case of inaccessible box sections, inject the hollow section with hollow section wax.

2 - Electrical spot welding (C)

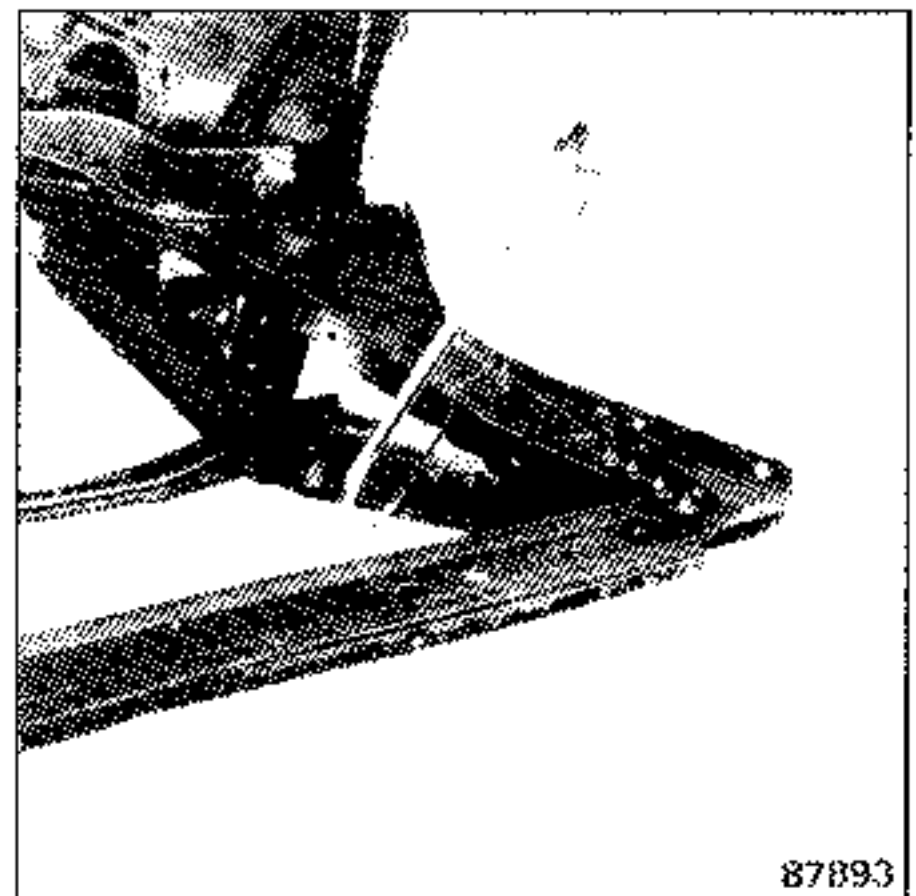
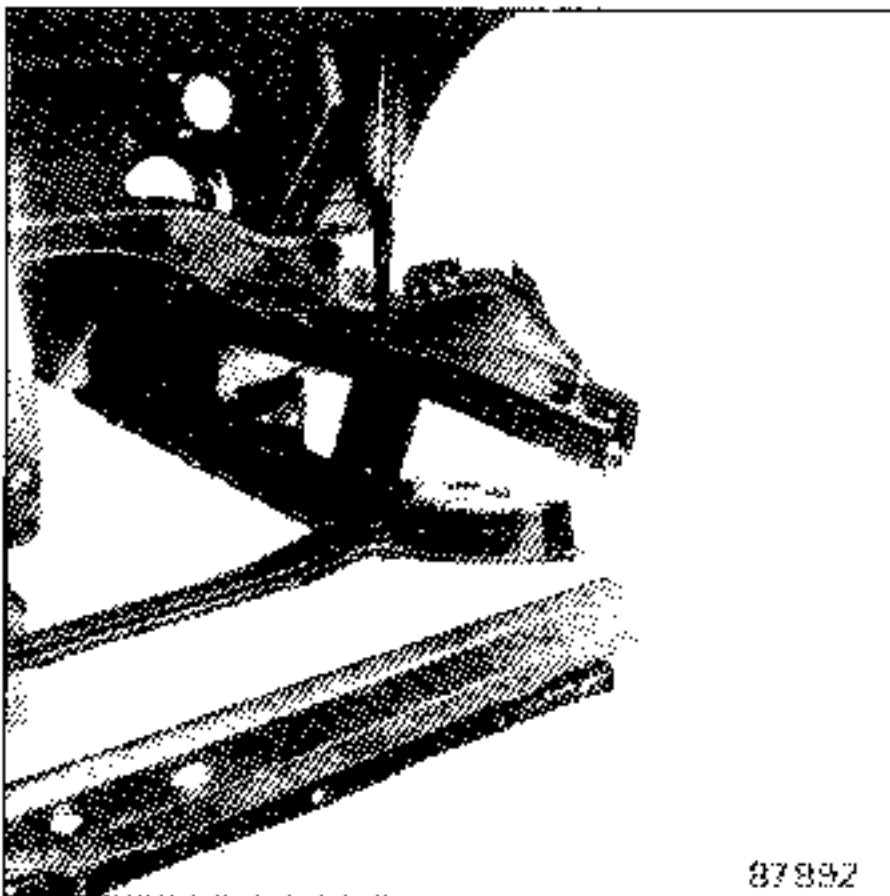
- **Before welding:** apply an electroplastic mastic bead (D) between the parts over the entire joint;
- **After welding:** on the parts that have been laid bare; apply chrome phosphate primer, then apply a bead of paintable mastic at the joint between the parts (E) or spray on a bead of anti-gravel mastic.



For safety reasons, it is **FORBIDDEN**:

- To cut and butt weld or to heat in order to straighten:
 - side members in the sections located **between** the mechanical mounting points and the passenger compartment (only the ends of the side members, located in front of these points, can be replaced by butt welding),
 - the body shell pillars at the safety belt anchoring points.
- To cut and butt weld along the same line any element of bodywork and its lining.

Separate the two cutting lines by a few centimetres so as to spread the fusion zones created by welding.

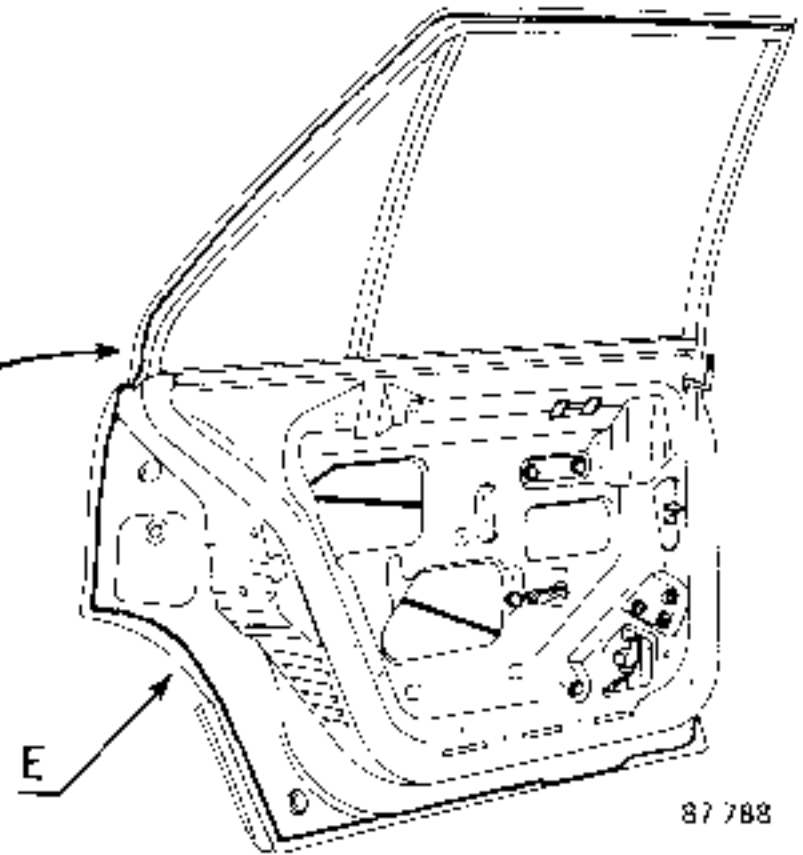


- To braze the side members or any other component of the vehicle structure (only exterior panels may be brazed at the locations described in the methods given in this chapter).

When it is impossible to assemble using resistance spotwelds, the use of MIG or MAG equipment is recommended, either by plug welding or by chain welding (see chapter on Welding in the Bodywork book).

3 - Crimped sections and joints

- Protect the crimped section with an extruded anti-gravel mastic bead (E) or a strip of sprayed mastic (see chapter on Paintwork).
- Protect the joints with a strip of sprayed anti-gravel mastic.



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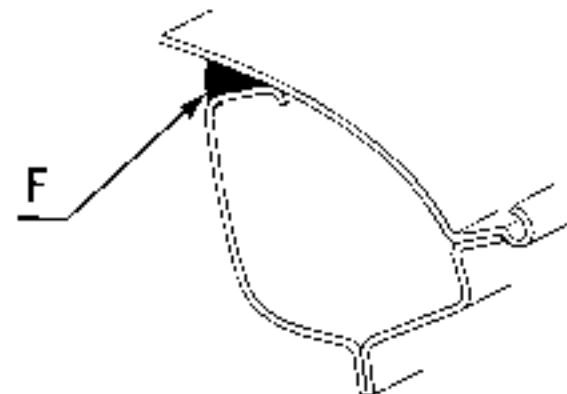
4 - Bonded panels (F)

- Only use structural mastic (bonding mastic type 514).
- This enables a stiffener to be fitted to an exterior panel without spoiling its appearance.

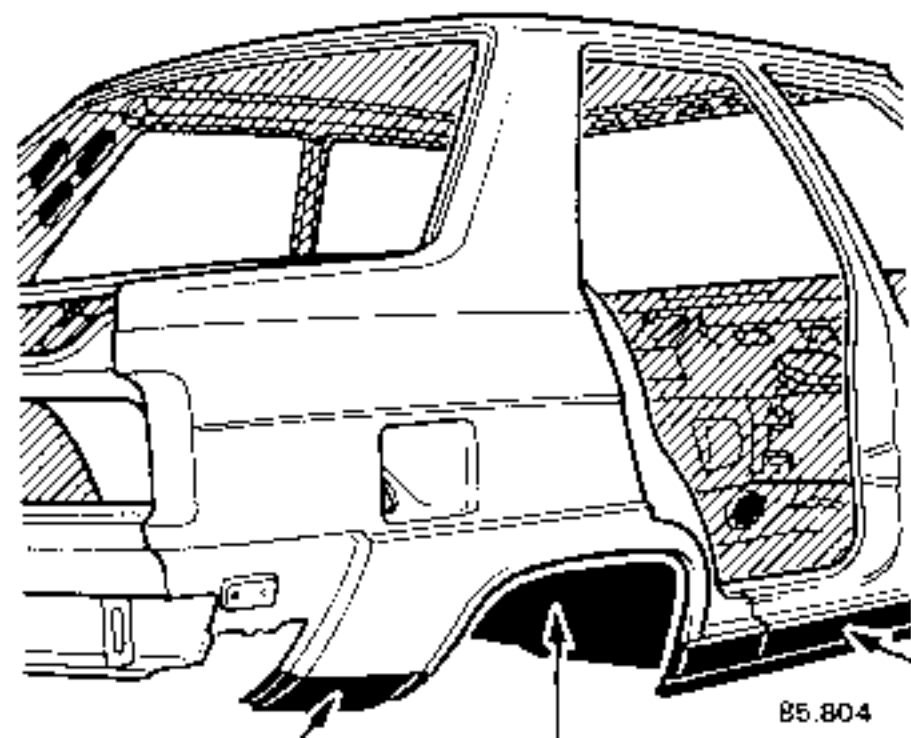
Examples: roof panel cross members, bonnet reinforcements, door panel on frame (before crimping).

5 - Protection using sprayed on anti-gravel mastic

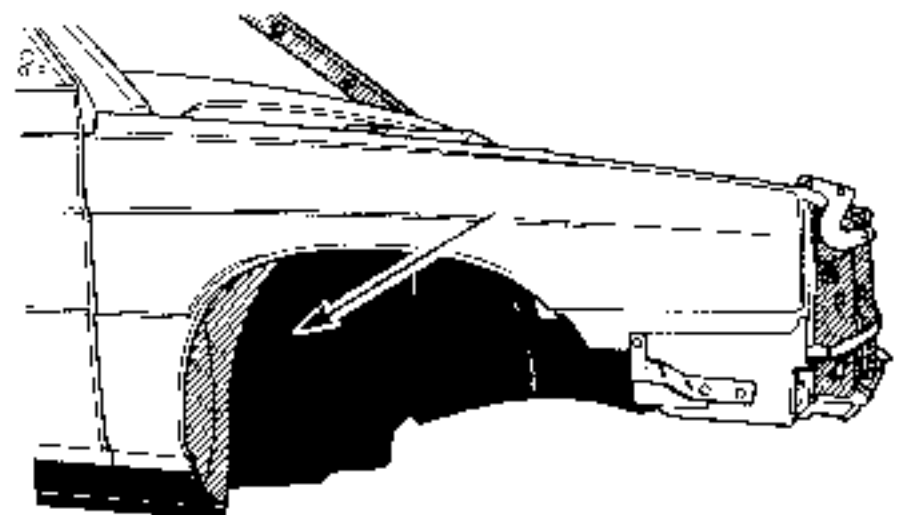
This dual-component product (see chapter on Paintwork) must be used for all parts which were originally protected: rear end panel, radiator grille, sill, interior of front wings, front and rear wheel arches, front and rear exterior bottom wings, so as to guarantee the quality of the repair.



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85.804



85.803

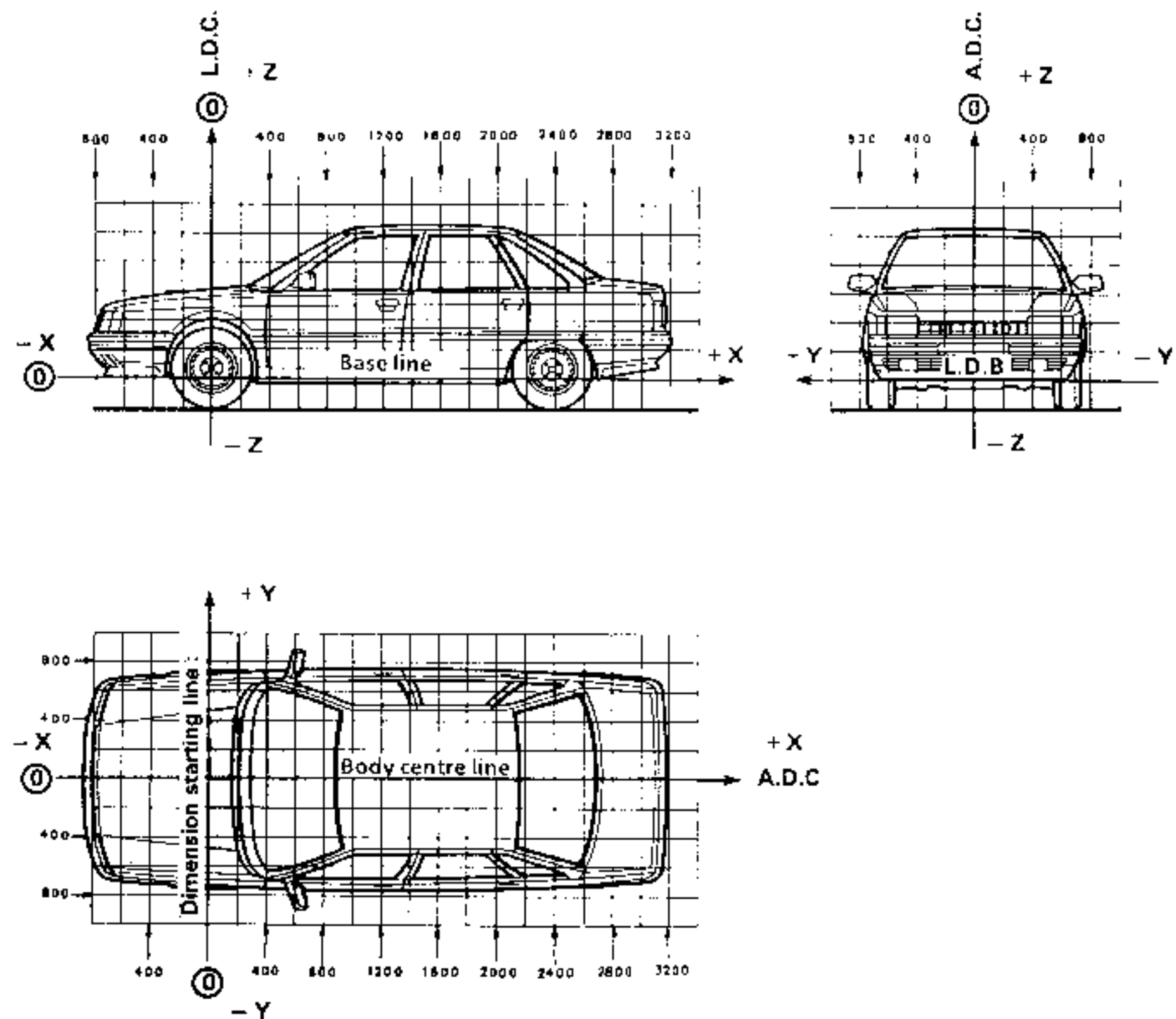
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REMINDER OF GEOMETRY

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

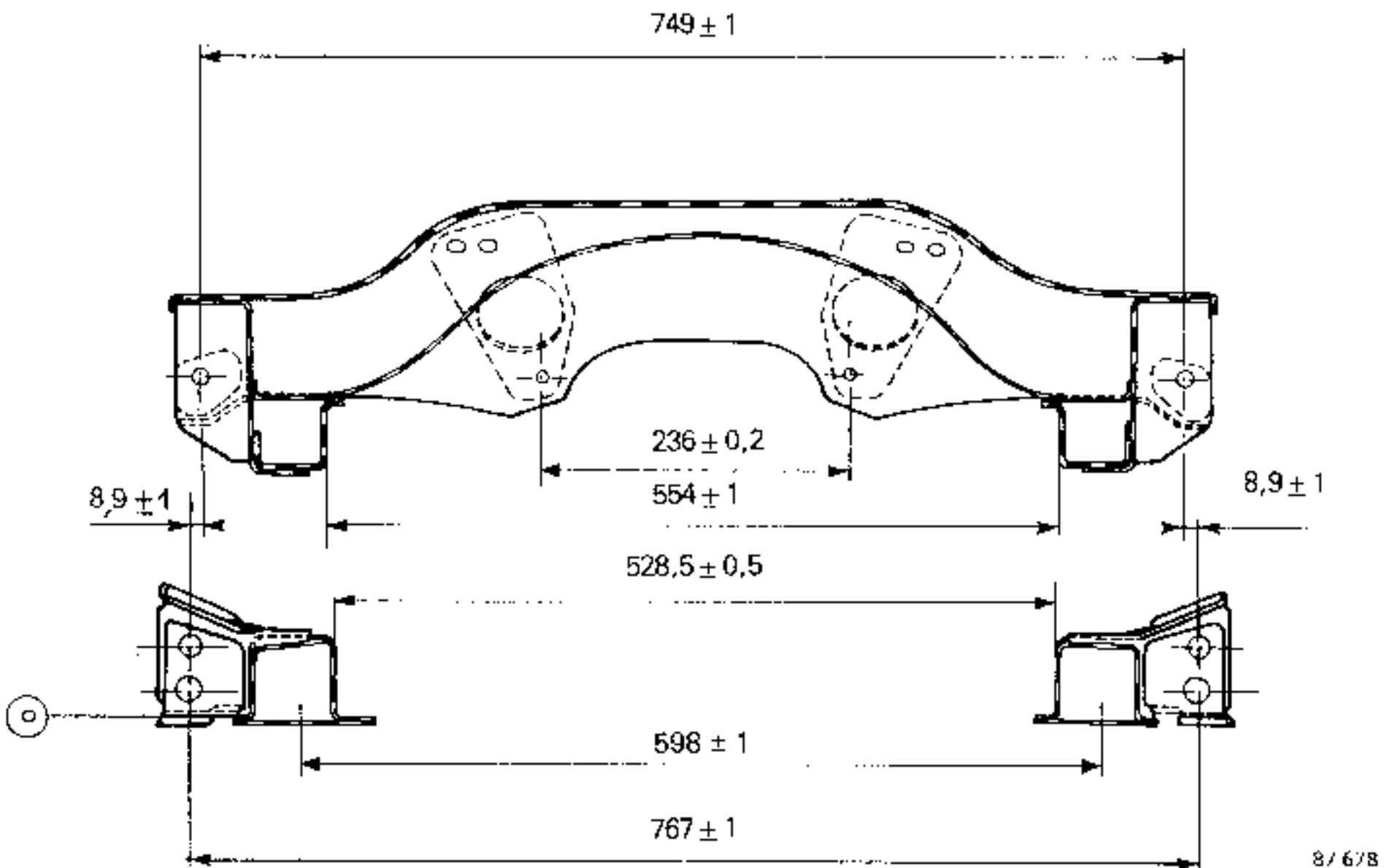
- 1 Dimension starting line: L - D - C (bracket position on X line, given with respect to this line).
- 2 Body centre line: A - D - C (bracket position on Y line, given with respect to this line).
- 3 Base line: L - D - B (bracket position on Z line, given with respect to this line).

The body repair brackets and their positions on the repair bench have been calculated according to these three lines.



The geometry of the floor frame must be checked using the trammel gauge Car. 759-02, possibly followed by a check of the front and rear axle geometry.

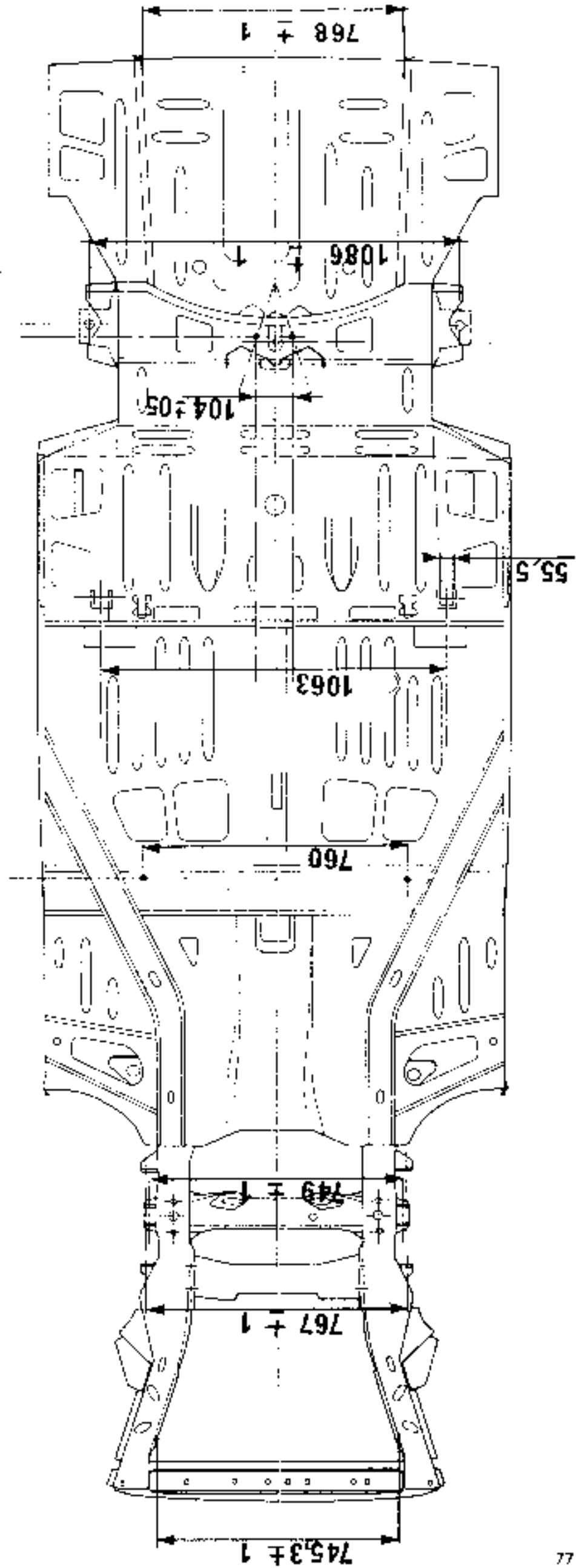
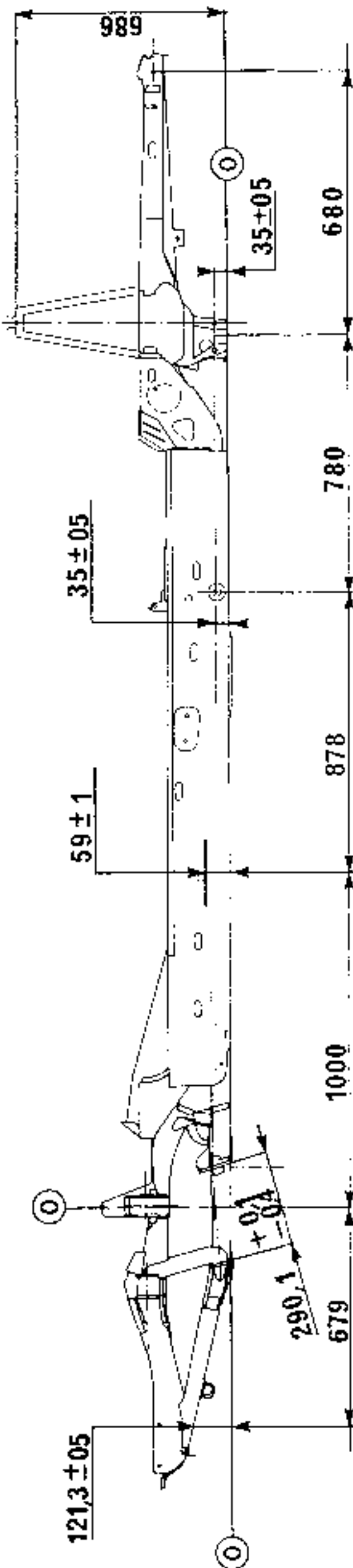
The purpose of this is to determine, without dismantling the mechanical units, the extent of the distortion suffered by the floor frame and especially the mounting points of the mechanical units.

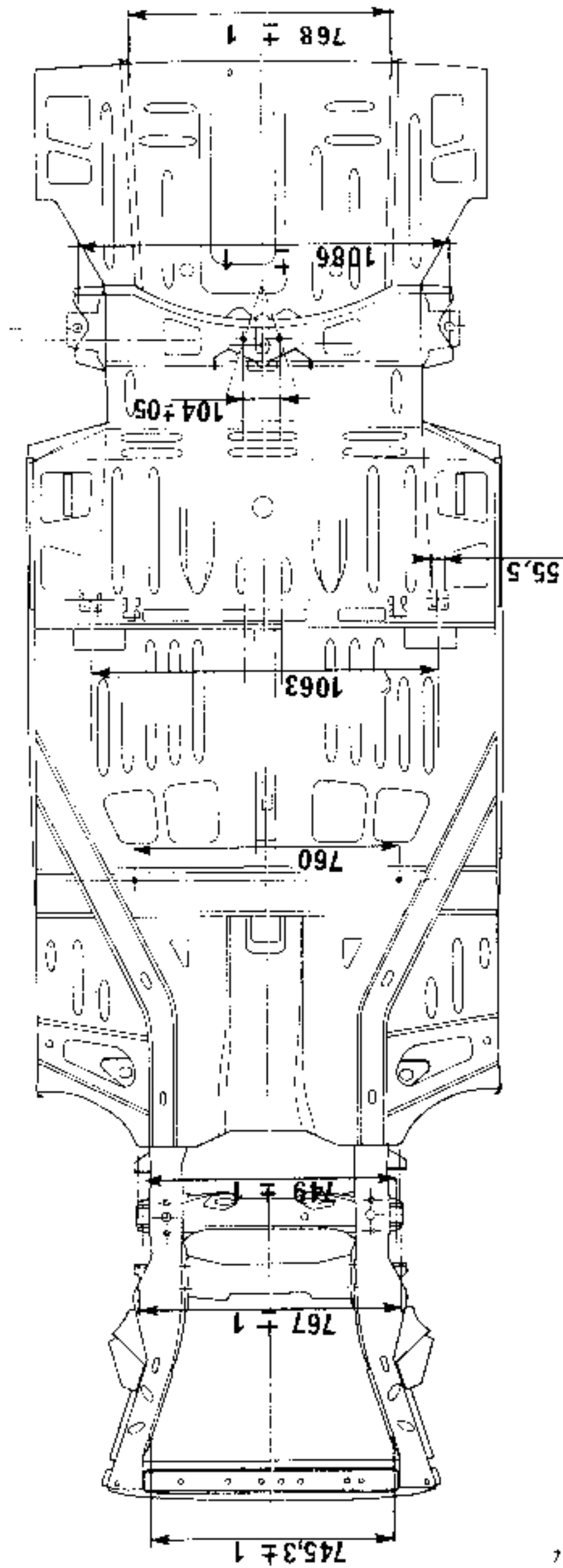
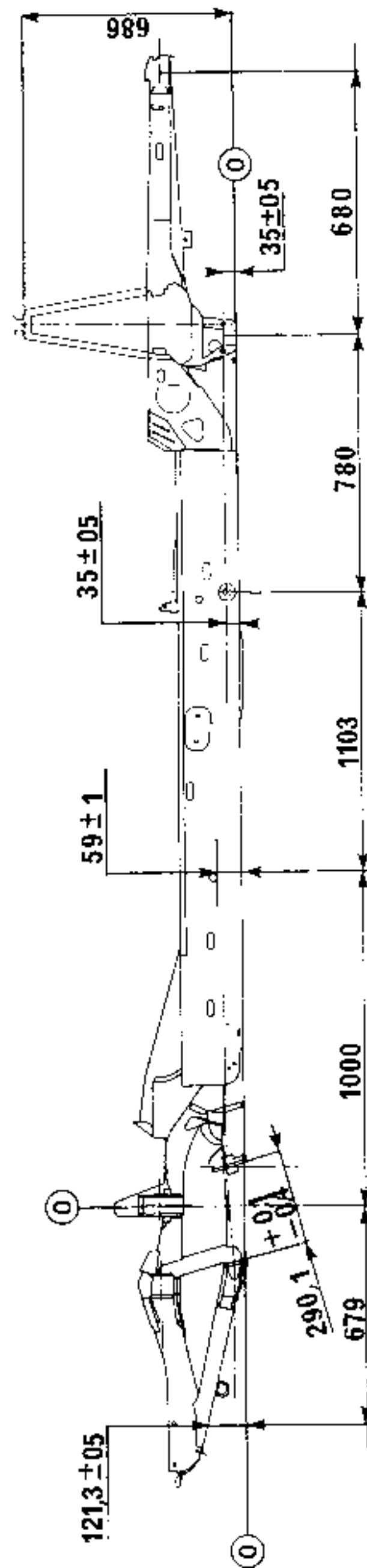


Floor frame dimensions: steering and front axle

NOTE:

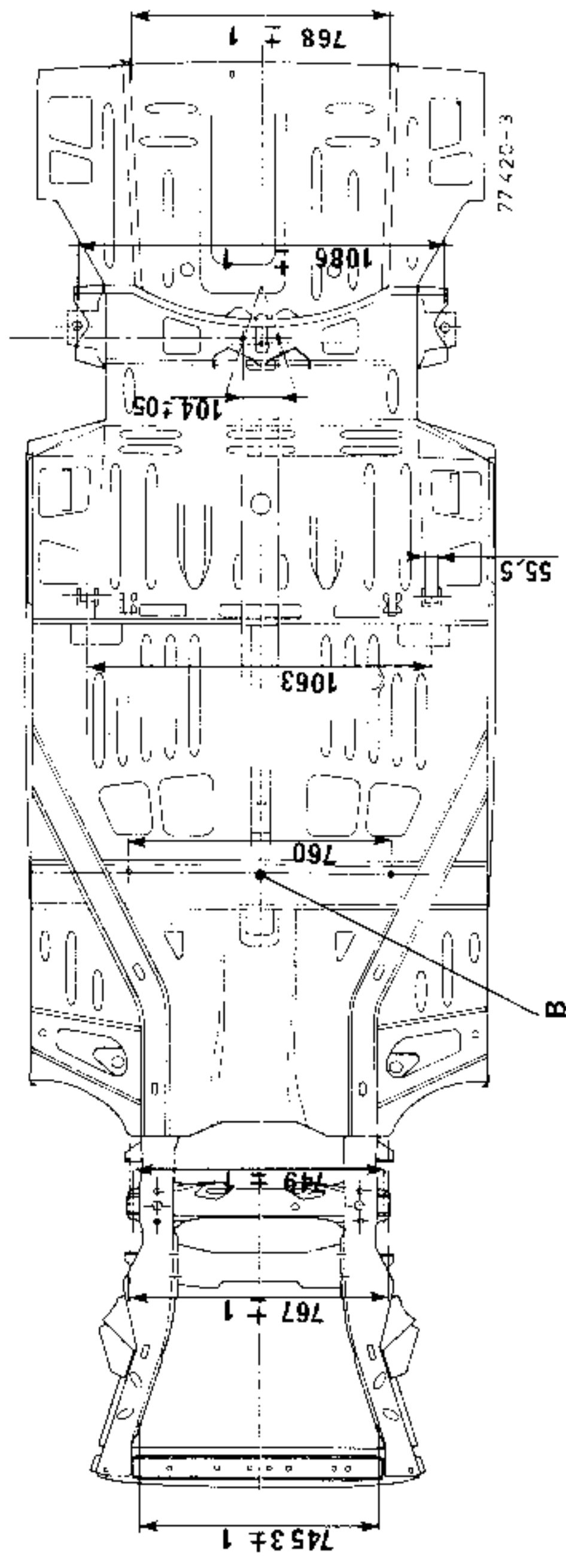
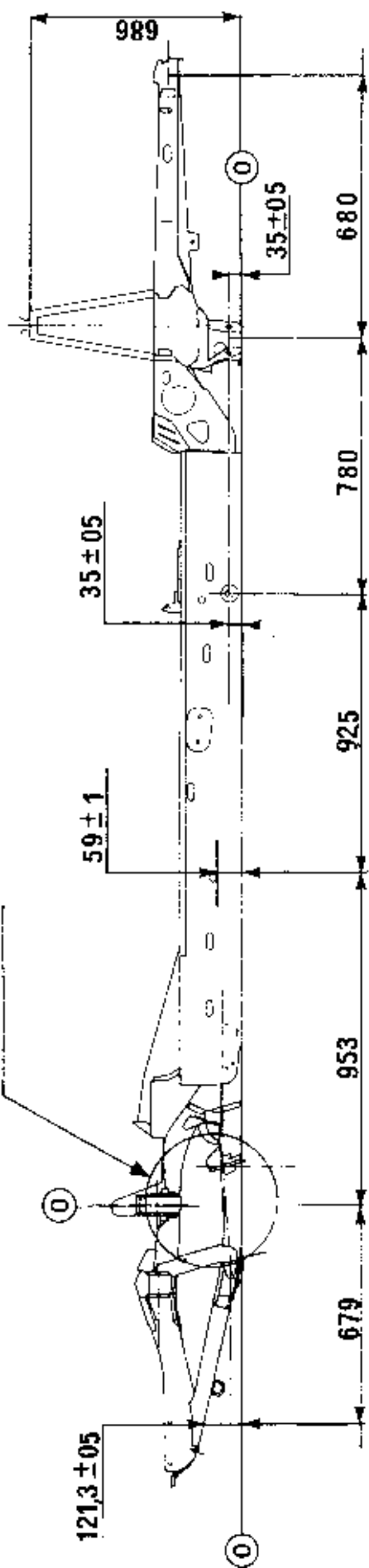
The steering cross member can be checked or refitted using jig part no. 466 900 from CELETTE (see NT 100).



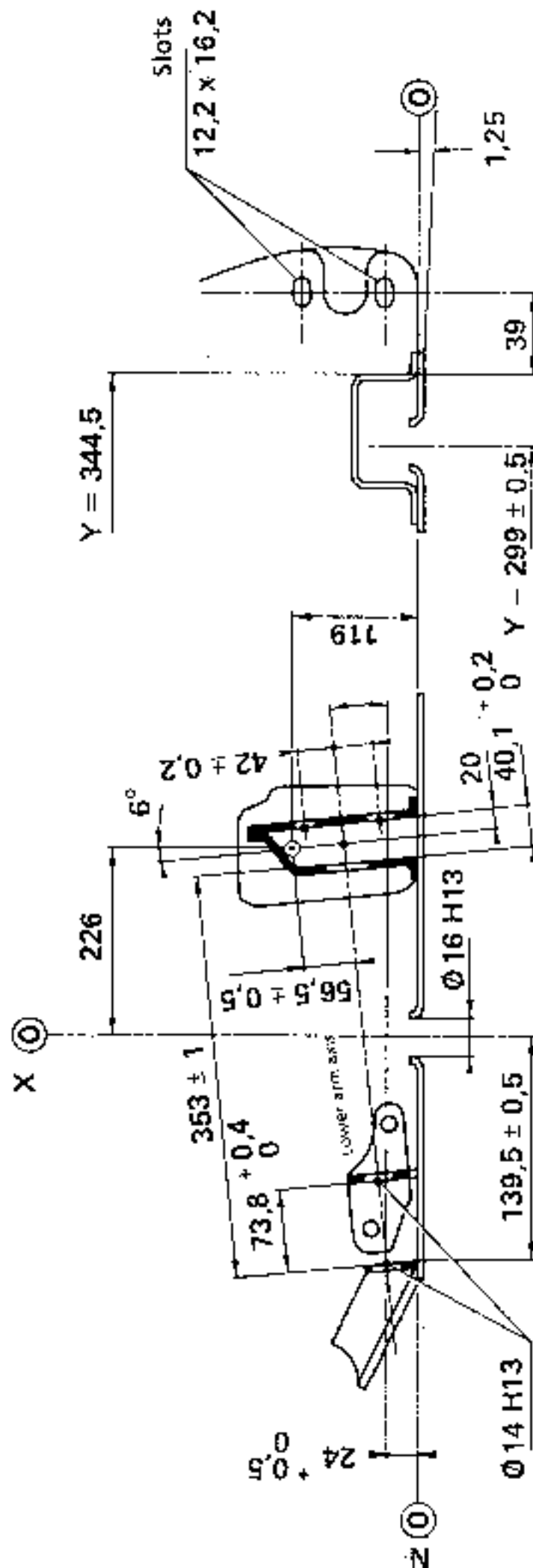


Detail A

see lower side
member dimension



Detail A



92346

B 29 phase II - Dimensions of front axle, lower cross member

NOTE: for

- the description of the repair benches;
- the identification of the various drilling points;
- the conversion of older benches to the modular system;
- the anchorage and jacking devices;
- how to adjust the bench before use;

see M.R. 501, bodywork chapter, section F001.

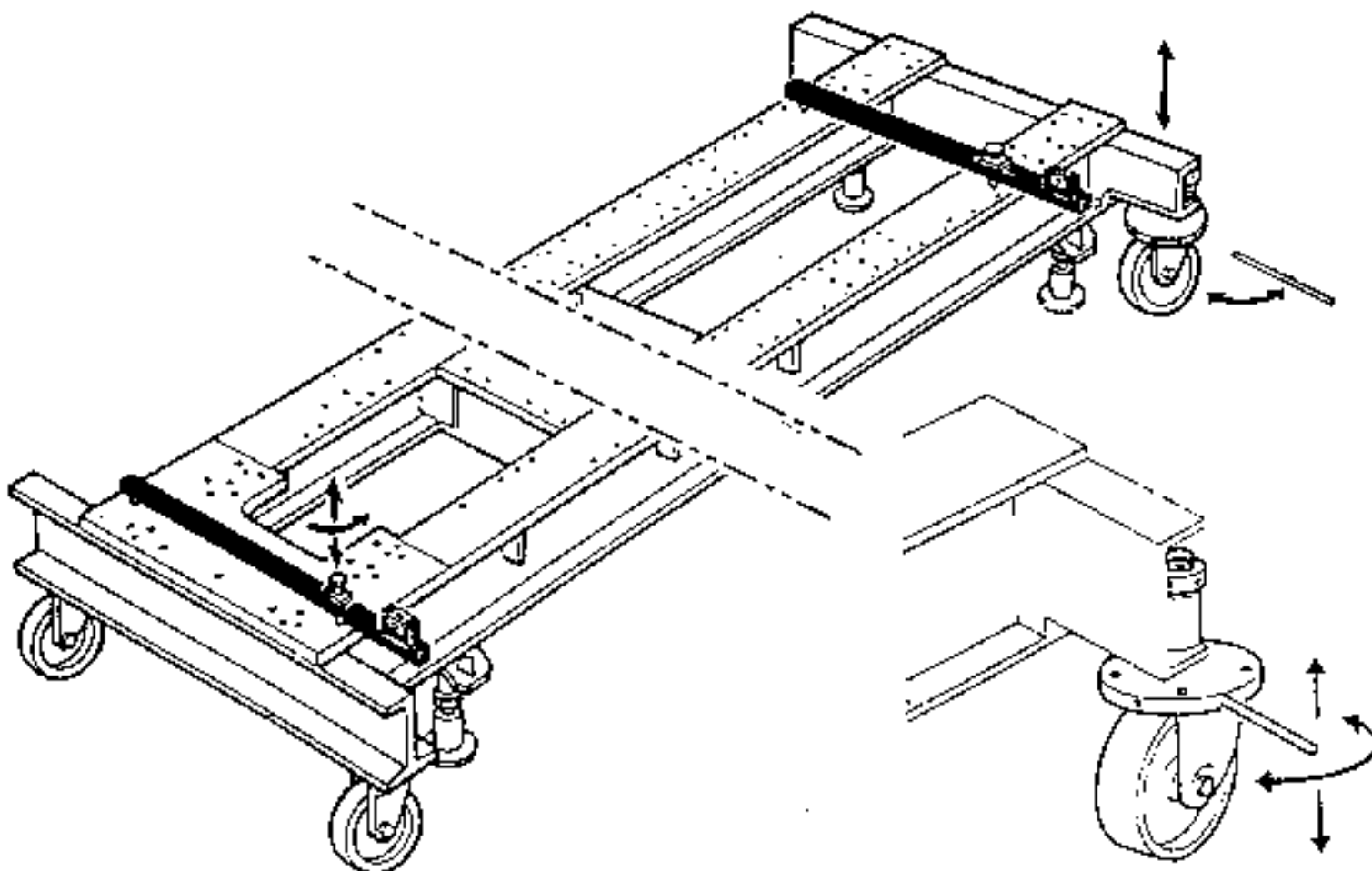
IMPORTANT :

Before performing any operation on the repair bench, it is essential to square up the bench at the exact point where you are going to check the vehicle.

Since the ground in your work area is never perfectly flat, one of the wheels of the bench may be slightly out of true, which could be sufficient to twist the bench, despite its sturdy appearance. This may lead to deformation of the bench under the weight of the cross members and the vehicle.

NOTE:

The squaring-up operation is no longer necessary for recently built benches, type CELETTE MT10 and SEFAC.



In order to make repair easier, we have provided brackets which enable the vehicle to be placed on the repair bench without removing the FRONT or REAR mechanical units, depending on the nature of the work.

These brackets are provided to cap the heads of bolts or nuts for the FRONT and REAR mechanical mounting points when the mechanical elements are left in place, as well as indicating the location of characteristic points defining the original geometry when the mechanical elements have been removed.

Although provided for the RENAULT 25, brackets Car. 1013 have also been designed for repairing RENAULT 20 and 30 vehicles.

They can be used:

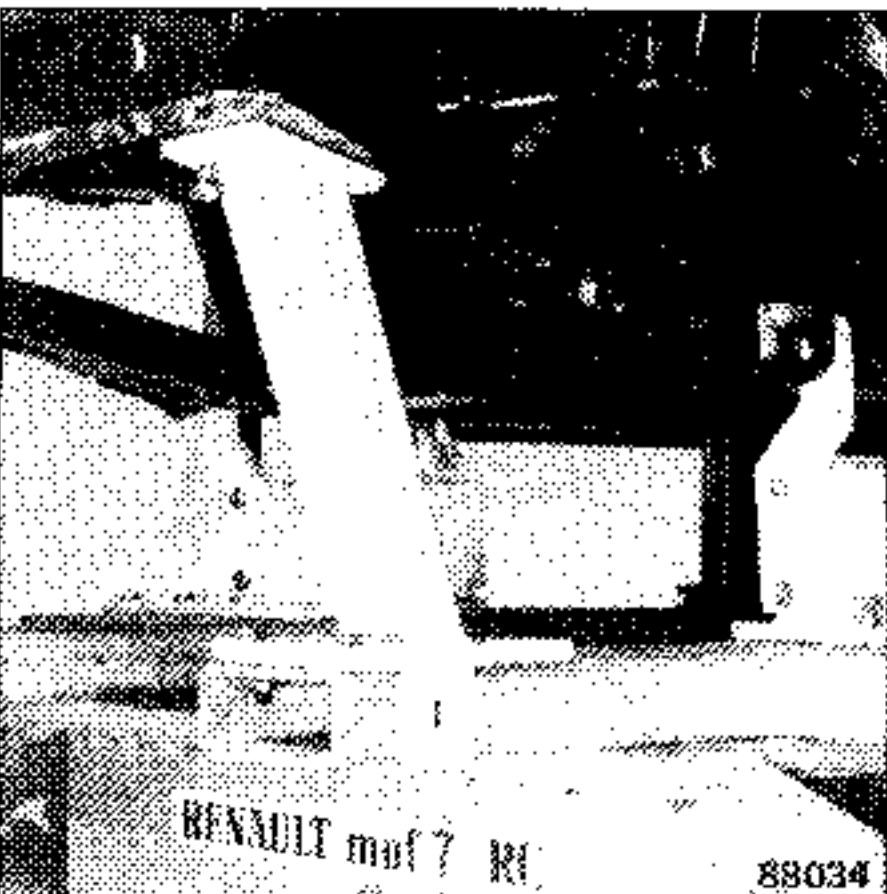
- 1 - On CELETTE or RENAULT-CELETTE MUF. 6 R. C. and MUF 7 R.C. fitted with CELETTE modular cross members.
- 2 - On BLACKHAWK benches with modular drilling points fitted with BLACKHAWK modular cross members.

RENAULT 25 PHASE II

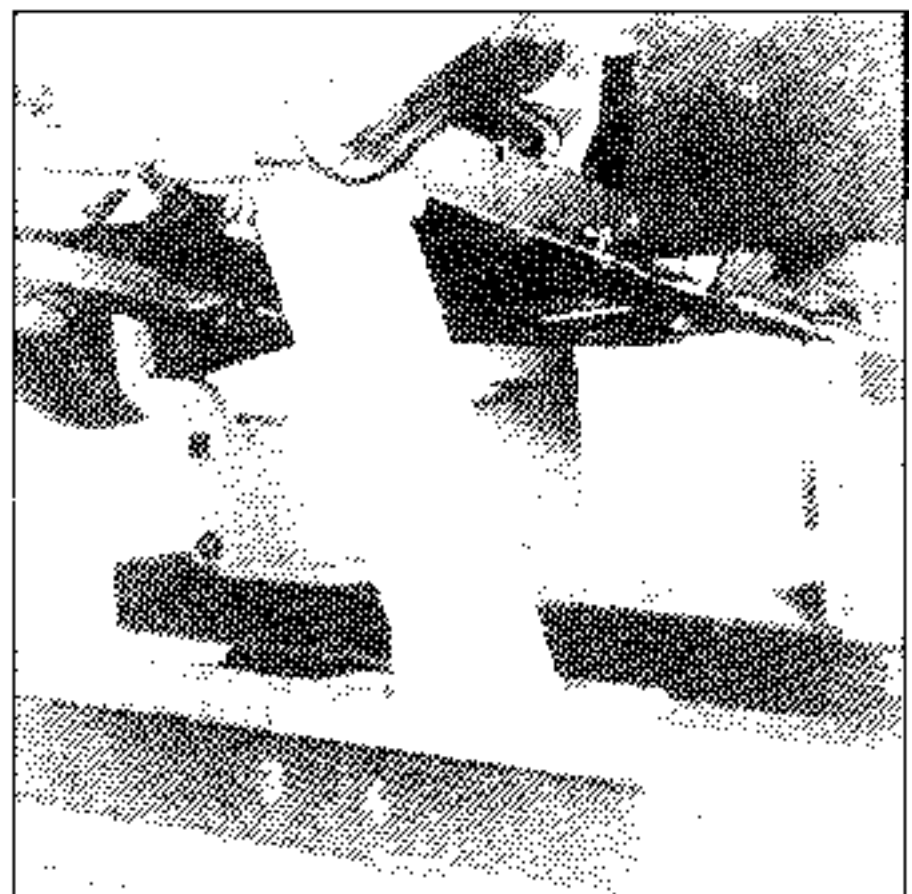
BRACKET N° 1

- Used mainly with mechanical units removed.

This bracket is used for determining the height and gap location of the front side member ends. To use it in cases of rear impact, the front scuttle will have to be removed.



- In the CELETTE modular system, this support bracket is fitted to the end of the front cross members on space n°. 1.

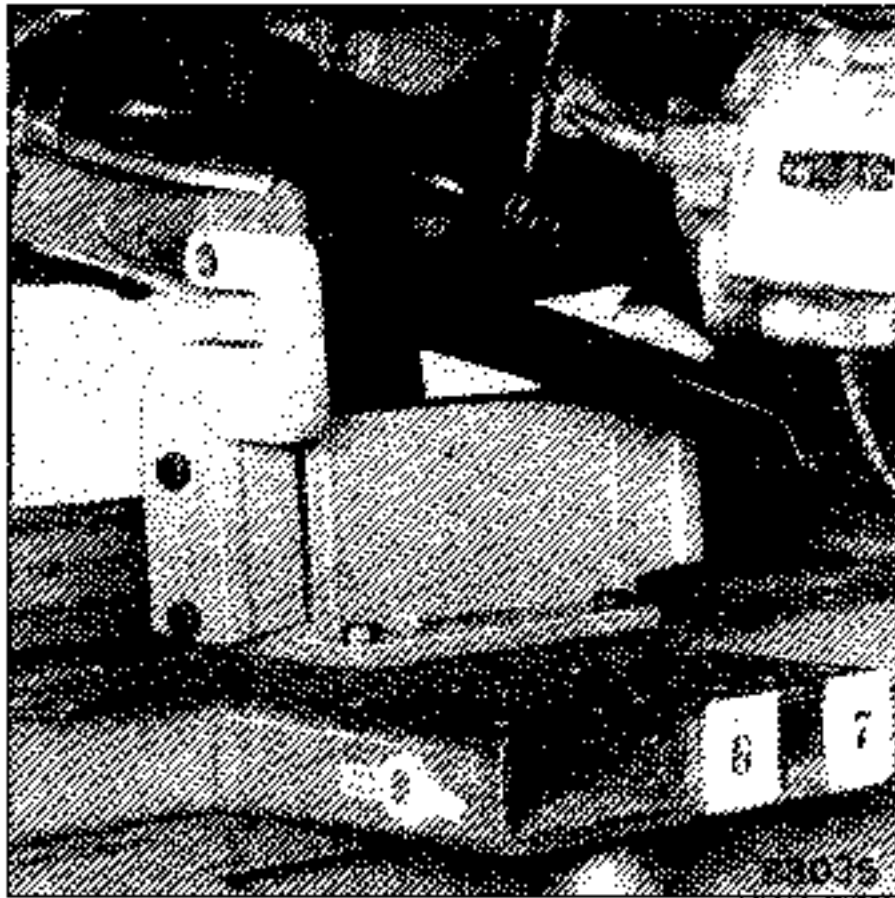


- In the BLACKHAWK modular system, this support bracket is fitted to holes 3 and 4 of the front cross member, positioned on holes 1A and 2A of the BLACKHAWK modular drilling system.

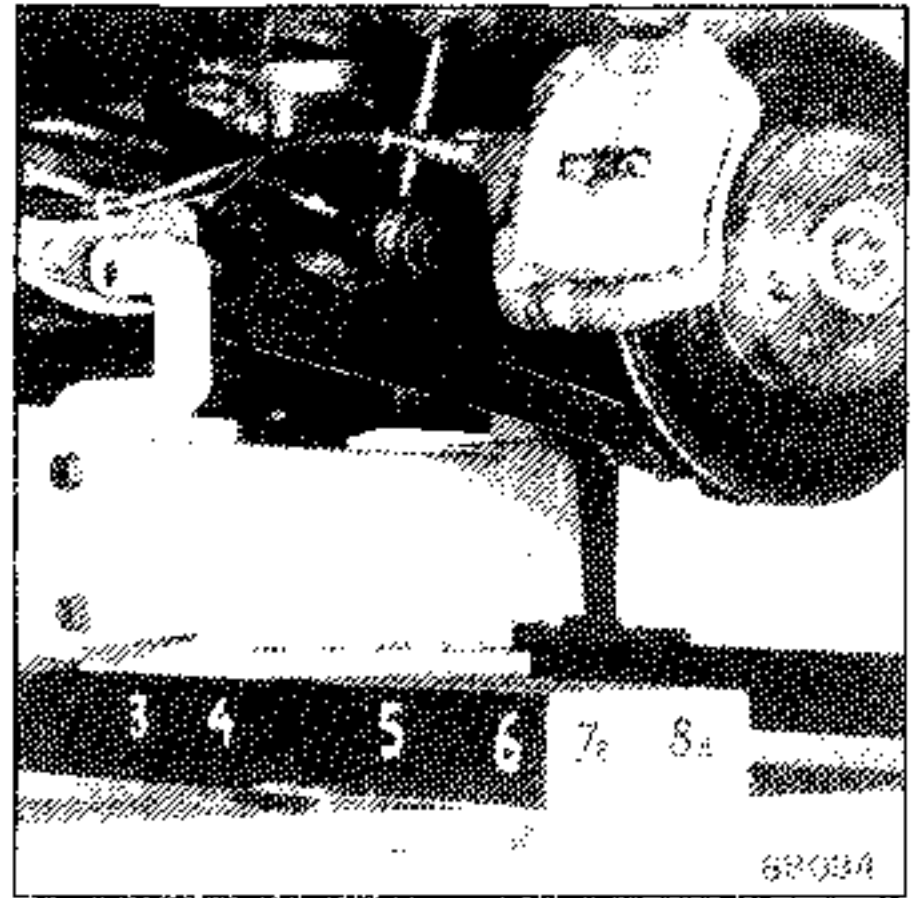
BRACKET N° 2

- Used with or without removing the mechanical units
- Without removing front mechanical units.

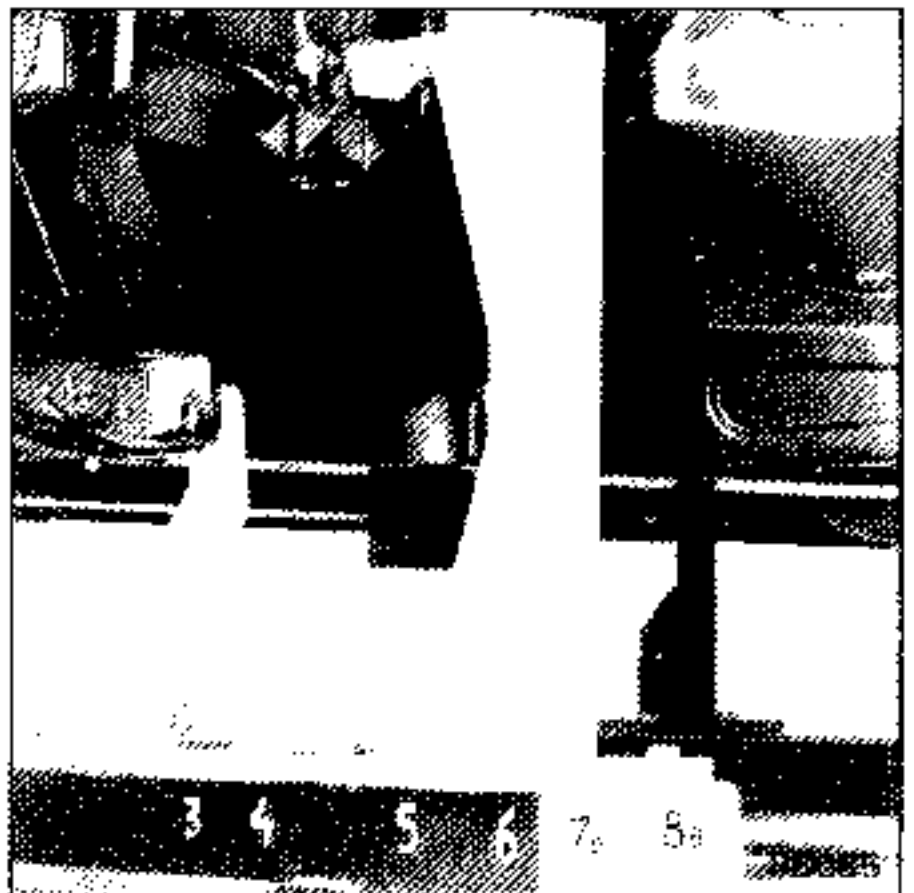
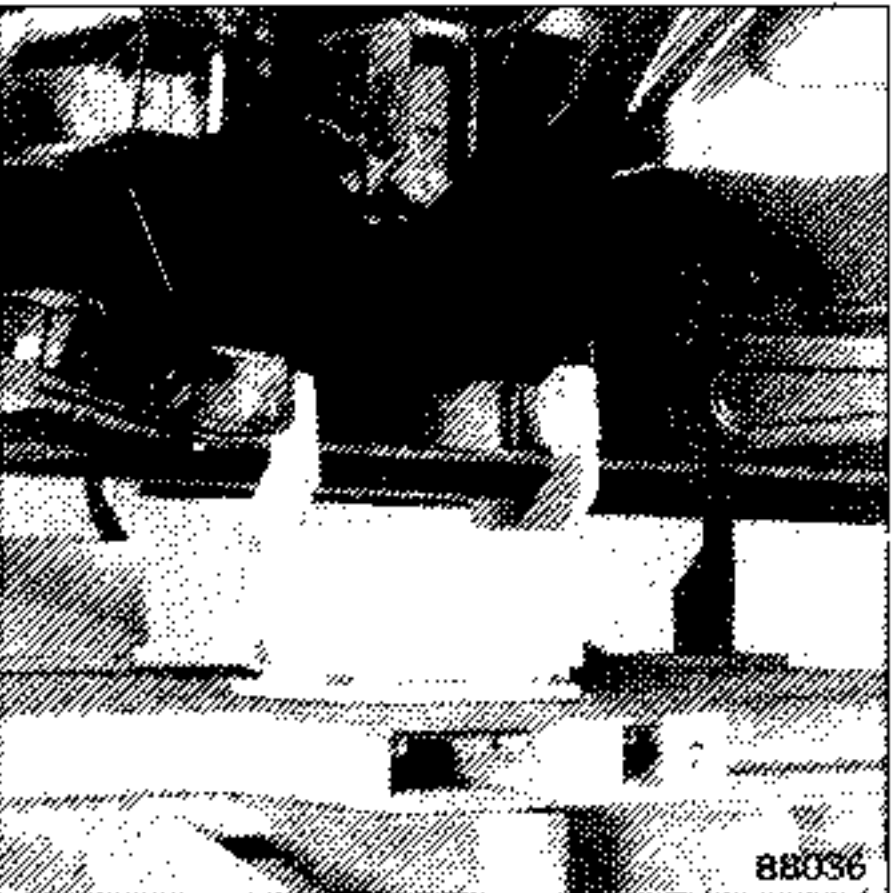
It enables the vehicle to be placed on the repair bench after a rear impact, without removing the front axle. The support bracket is fitted directly to the vehicle, with removable flanges F capping the nuts of the lower suspension arm shaft. A dowel directly attached to the modular cross member enables correct location of the vehicle.



- In the CELETTE modular system, fixed by 4 bolts to the front cross member flanges, on spaces 6 and 7.



- In the BLACKHAWK modular system, fixed to holes 3 and 4 of the cross member, placed on the modular holes, n°s. 7B and 8B.



- Front mechanical units removed, enables the position of the lower suspension arm shaft holes to be checked.

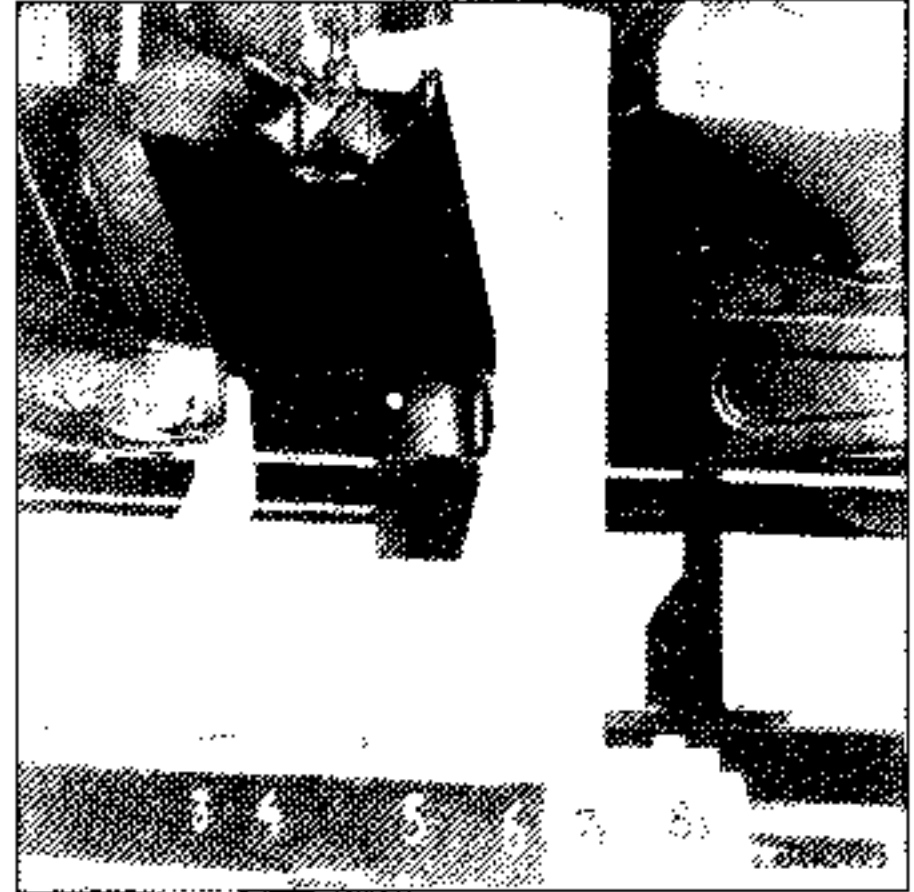
BRACKET N° 3

- Only used with the mechanical units removed.

Used to check the height and gap position of the front axle upper suspension arm shaft.



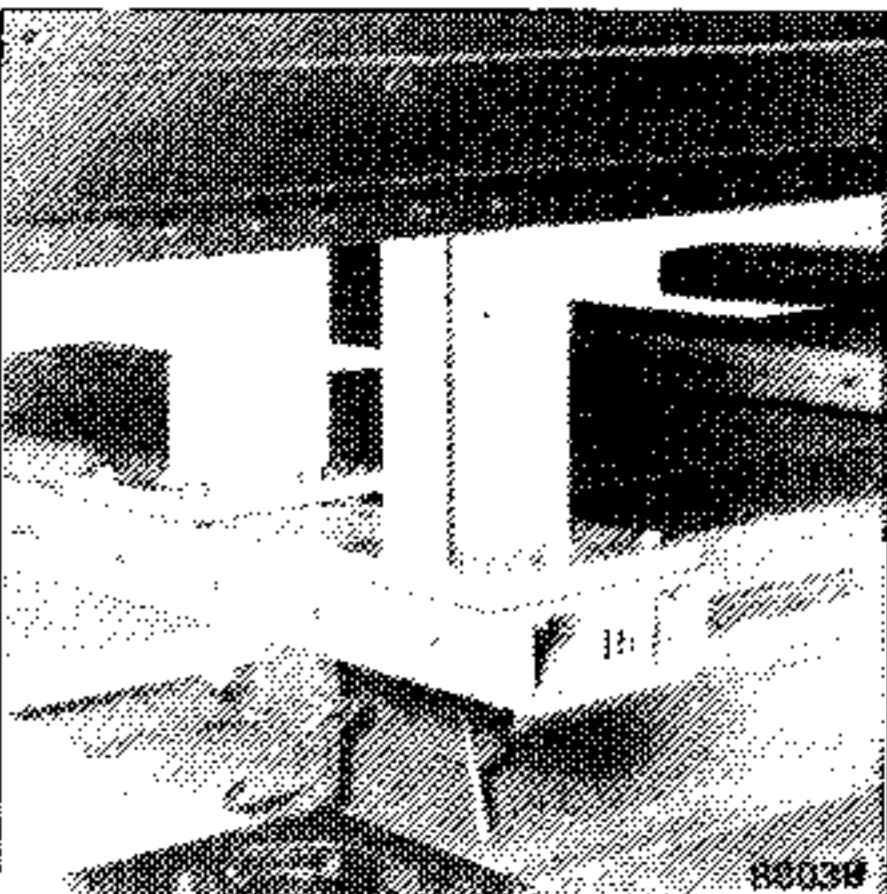
- In the CELETTE modular system, fixed by 4 bolts to the front cross member flanges on space 6.



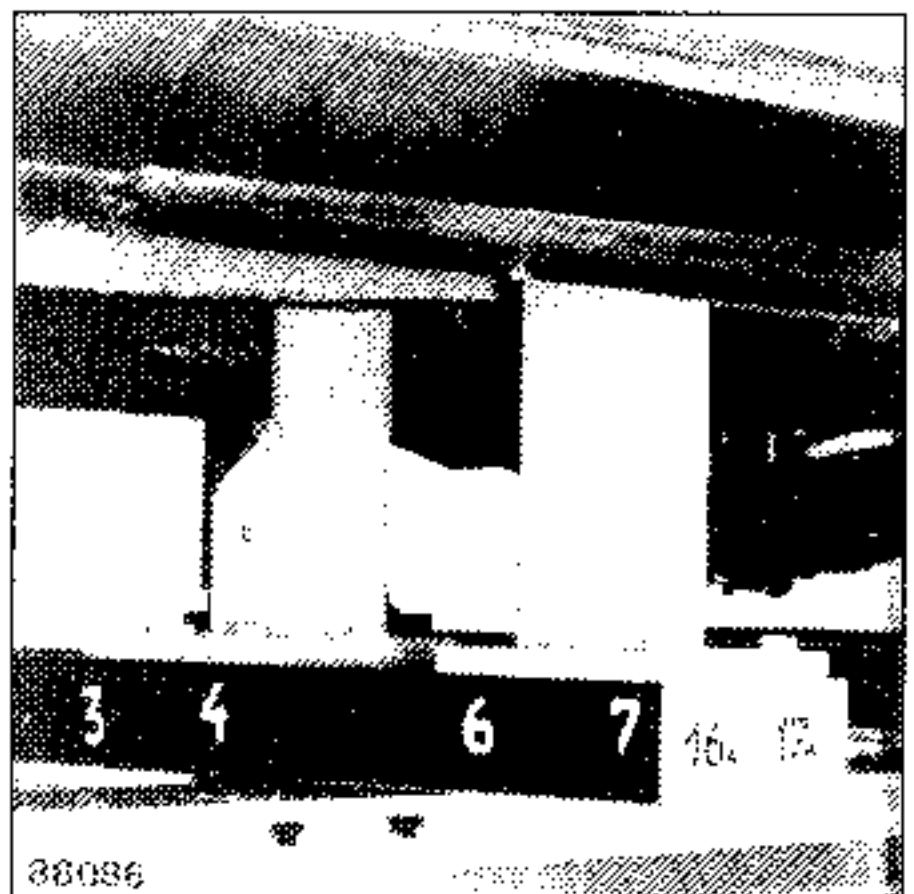
- In the BLACKHAWK modular system, fixed to holes 5 and 6 of the front cross member, placed on modular holes, n°s. 7B and 8B.

BRACKET N° 4

- Used with and without removing mechanical units
Acts as a support for the centre cross member.



- In the CELETTE modular system, fixed to space n° 7 of the cross member, placed on space n° 16 of the bench.

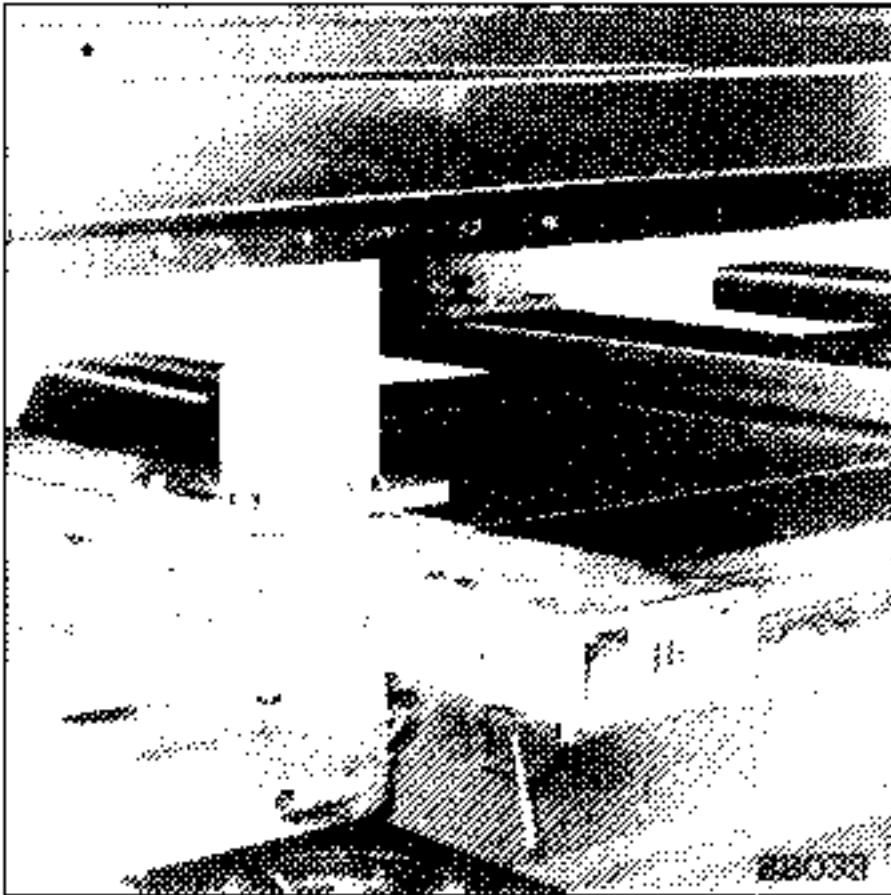


- In the BLACKHAWK modular system, fixed to holes 6 and 7 of the cross member, placed on modular holes, n°s 16A and 17A.

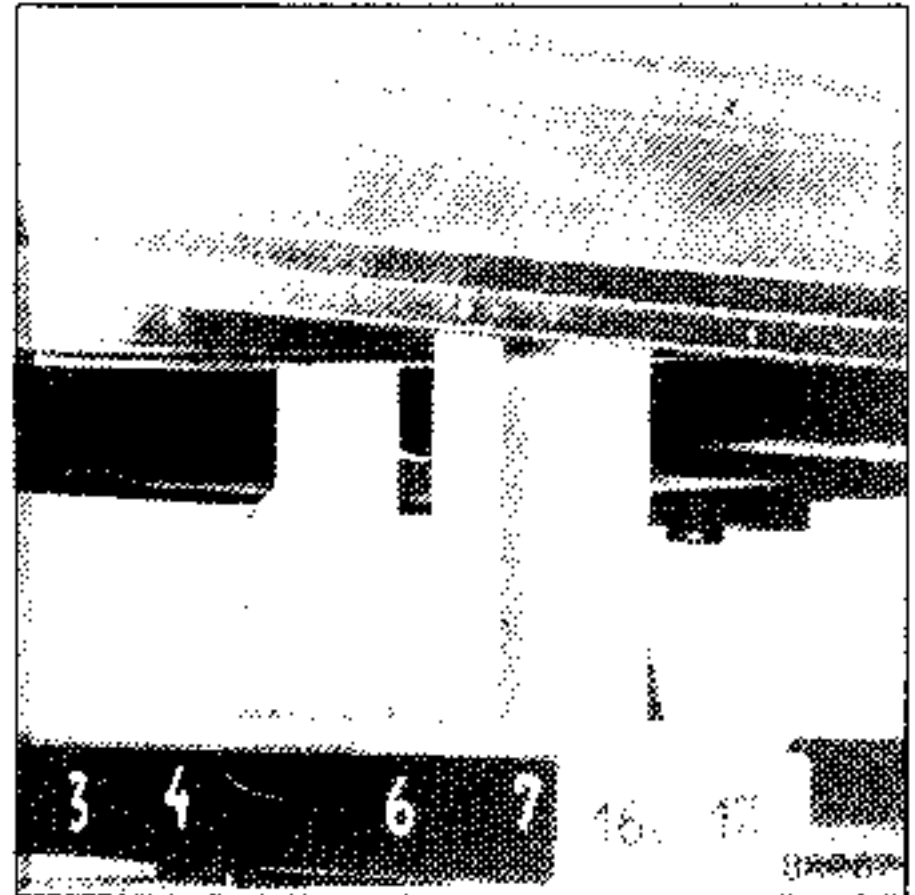
BRACKET N° 5

- Used with and without removing mechanical units.

The two stands, fitted with studs corresponding to the holes in the centre cross member, are used to locate the floor frame correctly



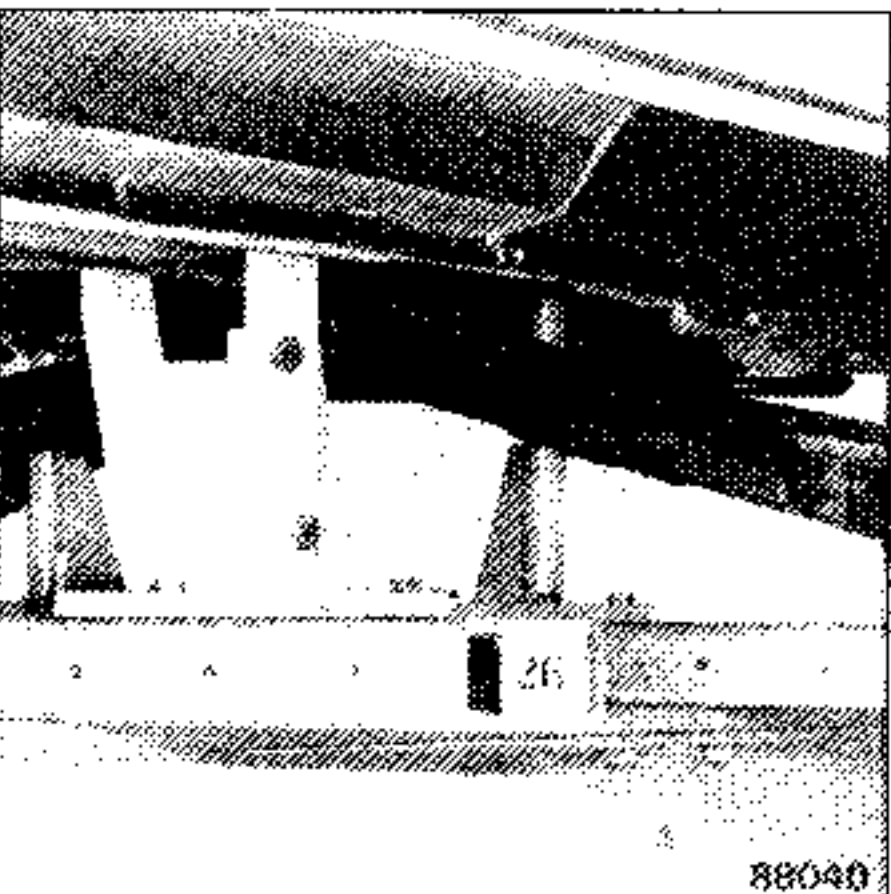
- In the CELETTE modular system, fixed to space n° 4 of the cross member, placed on space n° 16 of the bench.



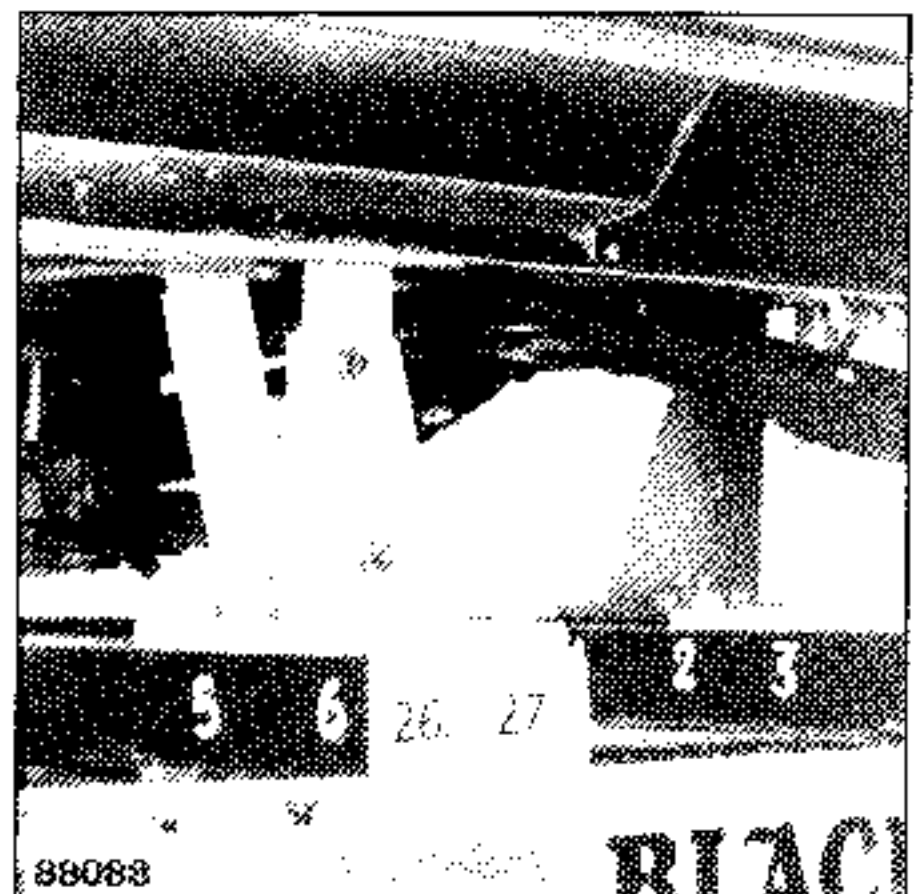
- In the BLACKHAWK modular system, fixed to holes 3 and 4 of the cross member, placed on holes 16A and 17A of the repair bench.

BRACKET N° 6

- Can be used with and without removing mechanical units.
Fitted directly to the vehicle; the two flanges capping the side arm pivot bolts.



- In the CELETTE modular system, fixed to space n° 6 of the cross member, placed on space n° 26 of the bench,

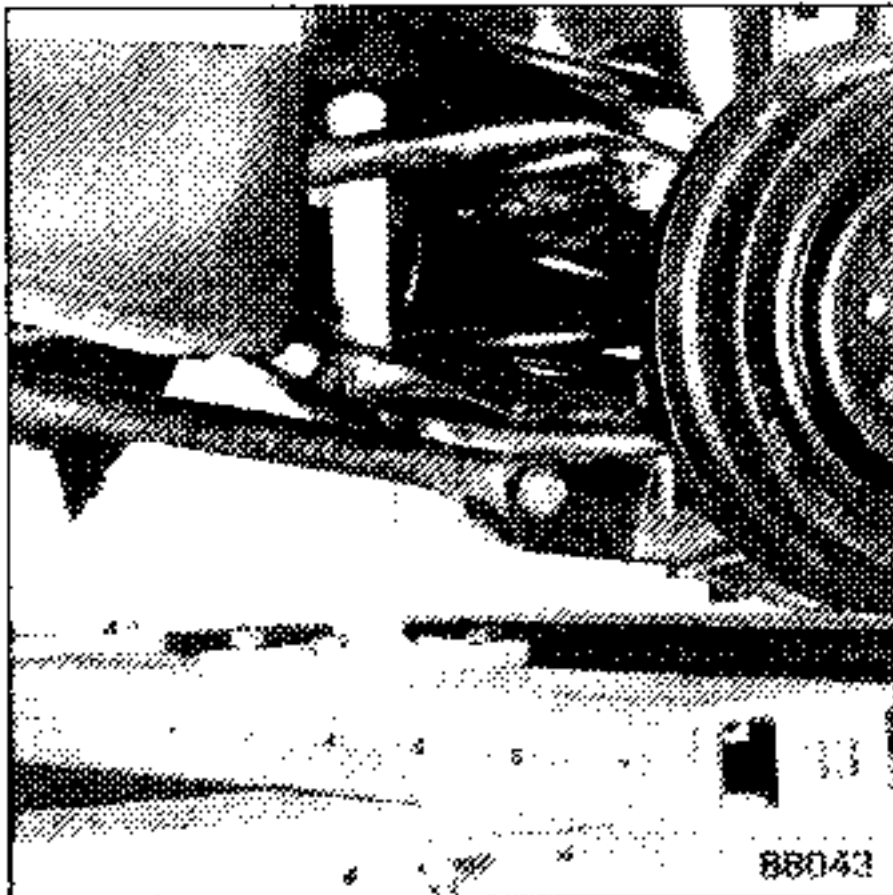


- In the BLACKHAWK modular system, fixed to holes 5 and 6 of the cross member, placed on modular holes 26A and 27A of the repair bench.

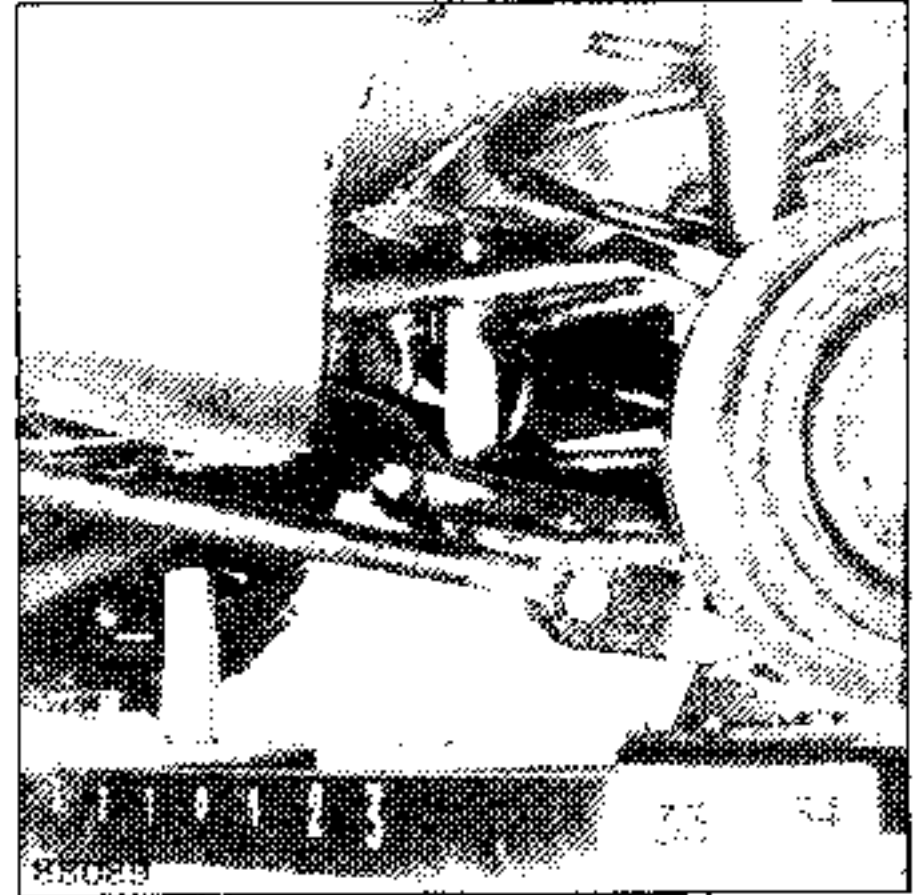
BRACKET N° 7

- Used with and without removing mechanical units.

Fit the \varnothing 19 mm locating dowels on the bracket pillars.
Enables the rear cross member to be positioned correctly



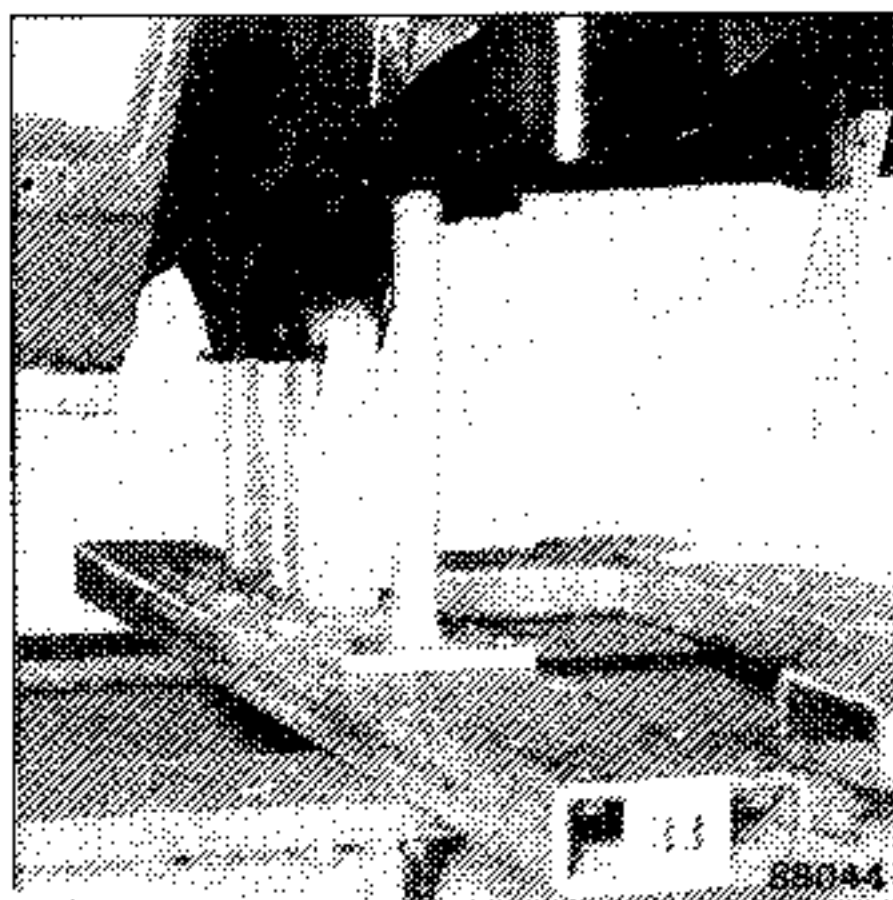
- In the CELETTE system, fixed to space n° 3 of the cross member, placed on space n° 33 of the repair bench.



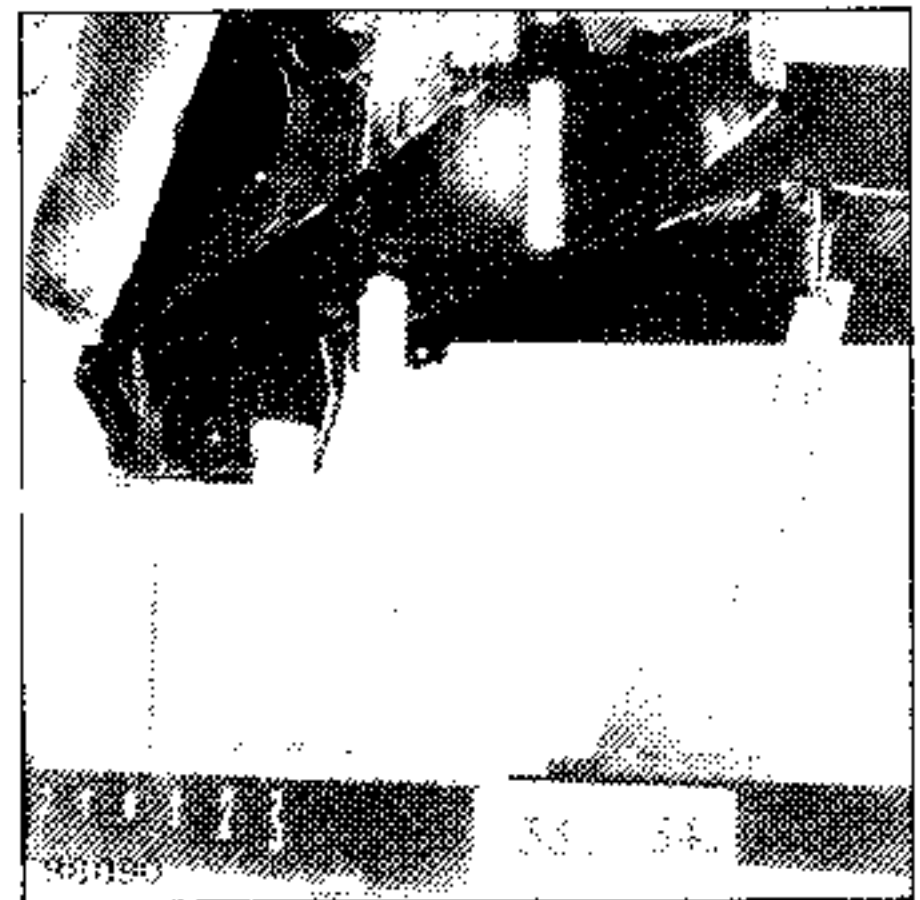
- In the BLACKHAWK modular system, fixed to holes 2 and 3 of the cross member, placed on holes 33A and 34A of the repair bench.

BRACKET N° 8

- Used only with the mechanical unit removed.
Enables the rear load-bearing arms to be checked for height and pivot angle.



- In the CELETTE modular system, fixed on space n° 1 of the cross member, placed on space n° 33 of the repair bench.

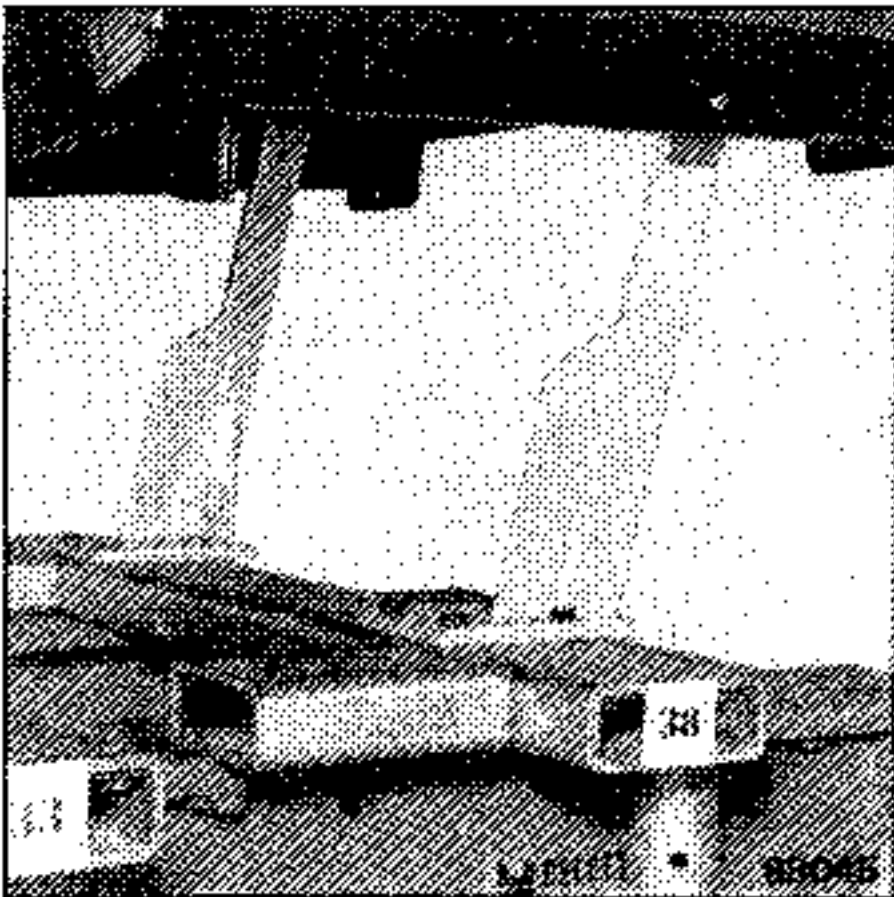


- In the BLACKHAWK modular system, fixed to holes 01 and 01 of the cross member, placed on holes 33A and 34A of the repair bench.

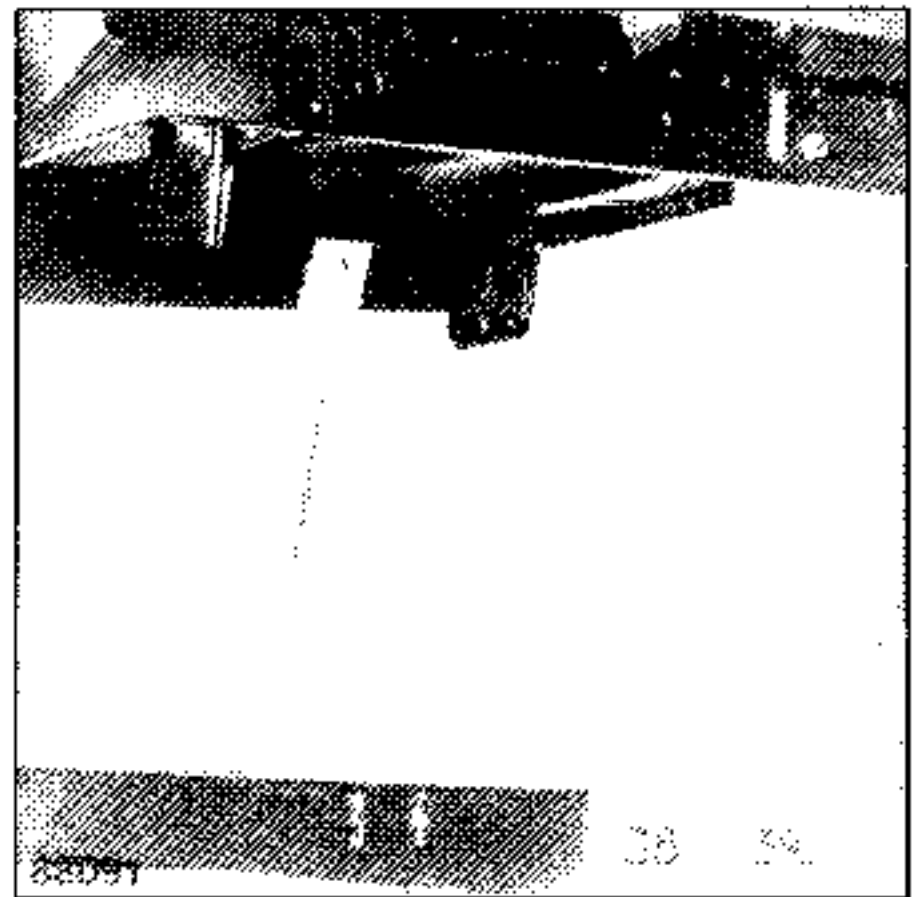
BRACKET N° 9

- Used with and without removing mechanical unit.

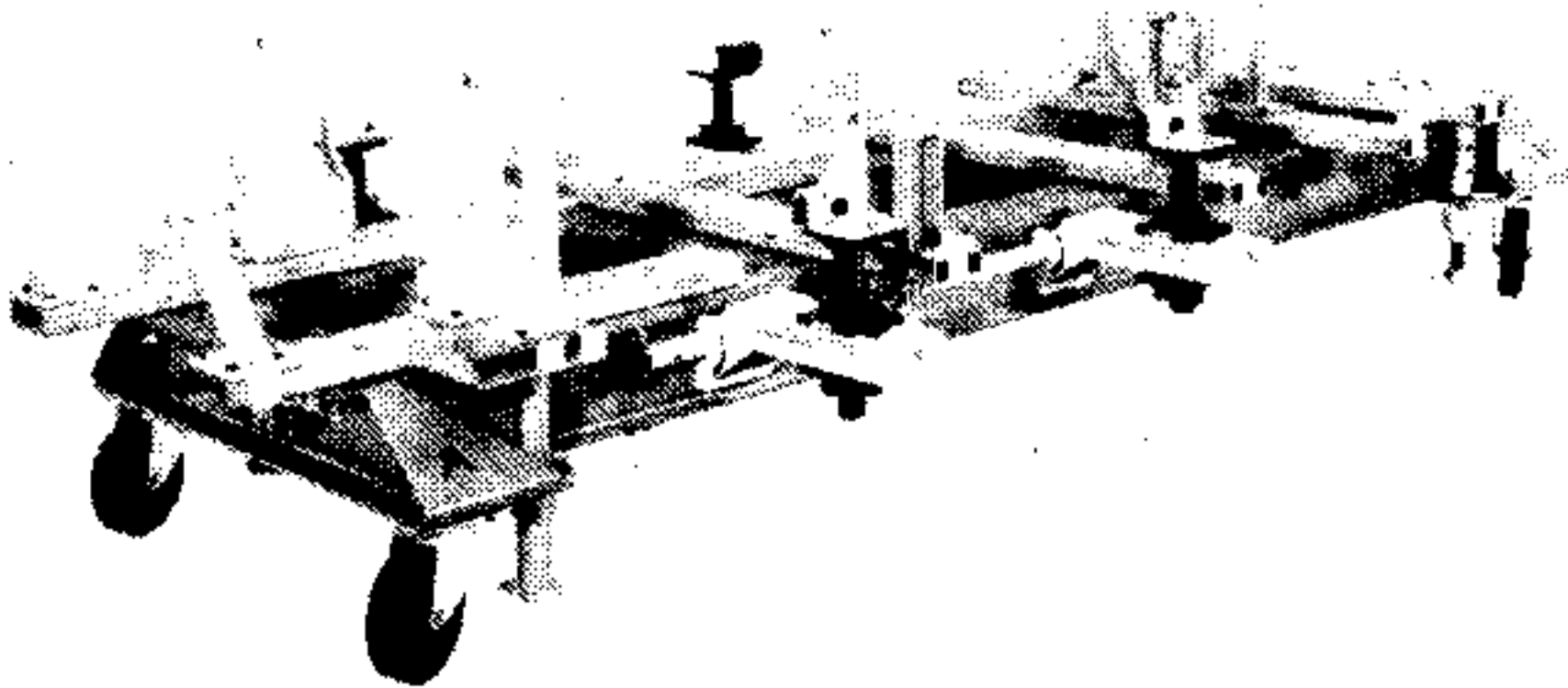
Enables the height of and distance between the two rear bottom flanges to be checked.
Used for fitting these elements if there has been a rear collision.



- In the CELETTE modular system, fixed to space n° 4 of the rear cross member, placed on space n° 38 of the repair bench.



- In the BLACKHAWK modular system, fixed to holes 3 and 4 of the cross member, placed on holes 38A and 39A of the repair bench.



88033

Checking brackets Car. 1013 are designed to be used with the modular system; they are fitted to the RENAULT-CELETTE MUR 6 R.C. or MUR 7 R.C. repair bed, fitted with CELETTE modular cross members.

They can also be fitted on BLACKHAWK modular repair benches and cross members.

Since the centre floor frame of the Renault 25 Limousine model is 225 mm longer, when repairing this type of vehicle on a repair bench, proceed as follows, depending on the zone to be repaired.

FRONT IMPACT

- ① Use all the front brackets, n°s 1, 2, 3, 4 and 5 in the same positions as for the conventional Renault 25.
- ② Fit bracket n° 6; modular cross member in position 28 instead of 26 (see USE OF BRACKETS).
- ③ Lock the vehicle on the anchor clamps.

REAR IMPACT

- ① Use all the rear brackets, n°s 6, 7, 8 and 9 in the same positions as for the conventional Renault 25.
- ② Fit bracket n°4; modular cross member in position 14 instead of 16.
- ③ Fit the front side member jiggling and support bracket to the modular cross member, space n°4 (see USE OF BRACKETS).
- ④ Lock the vehicle on the anchor clamps.

With the aim of making repair easier, we have designed brackets which enable the vehicle to be placed on the repair bench without removing FRONT or REAR mechanical units, depending on the work to be carried out.

These brackets are designed to cap the heads of bolts or nuts for the FRONT and REAR mechanical unit mounting points when these units are left in place. They also indicate the correct location of the jiggging points, when the mechanical units have been removed.

BACKGROUND

Originally designed and developed by the Repair Methods service, Car. 1013 brackets are currently made and marketed by;

- FACOM - CELETTE under part no.: **397 300**
- BLACKHAWK under part no.: **REN 91 230 MMS**

They can be used for repairing RENAULT 25 vehicles:

- 1 - On CELETTE or RENAULT - CELETTE MUR 6 R.C. and MUR 7 R.C. repair benches fitted with CELETTE modular cross members.
- 2 - On BLACKHAWK repair benches with modular drilling system fitted with BLACKHAWK modular cross members

NOTE:

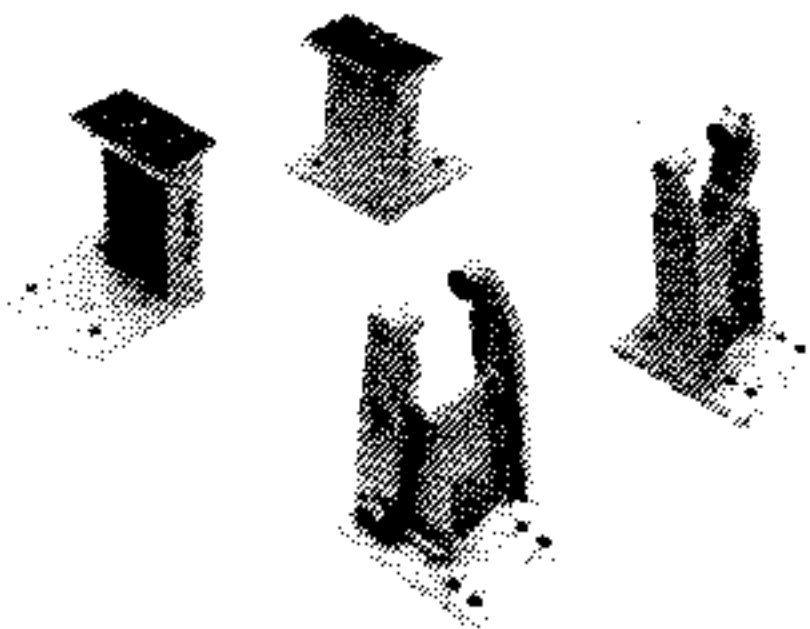
The addition of: FACOM - CELETTE part no.: **379 309**
or BLACKHAWK part no.: **REN 91 231 MMS**
also enables repairs to be performed on RENAULT 20 and 30 models.

TO REPAIR THE RENAULT 25 LIMOUSINE, IT WILL BE NECESSARY TO MAKE THE FOLLOWING ADJUSTMENTS, DEPENDING ON YOUR EQUIPMENT.

R 25 LIMOUSINE ADAPTOR KIT

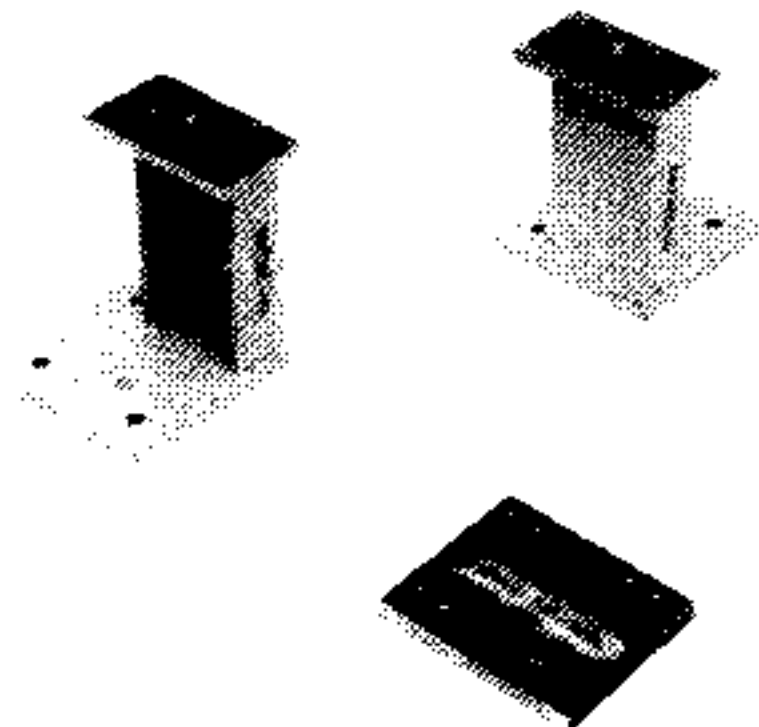
OR

CONVERSION AND ADAPTOR KIT



89 207

CELETTE Part no. **397 307**
BLACKHAWK Part no. **REN. 91 230 A**



89 708

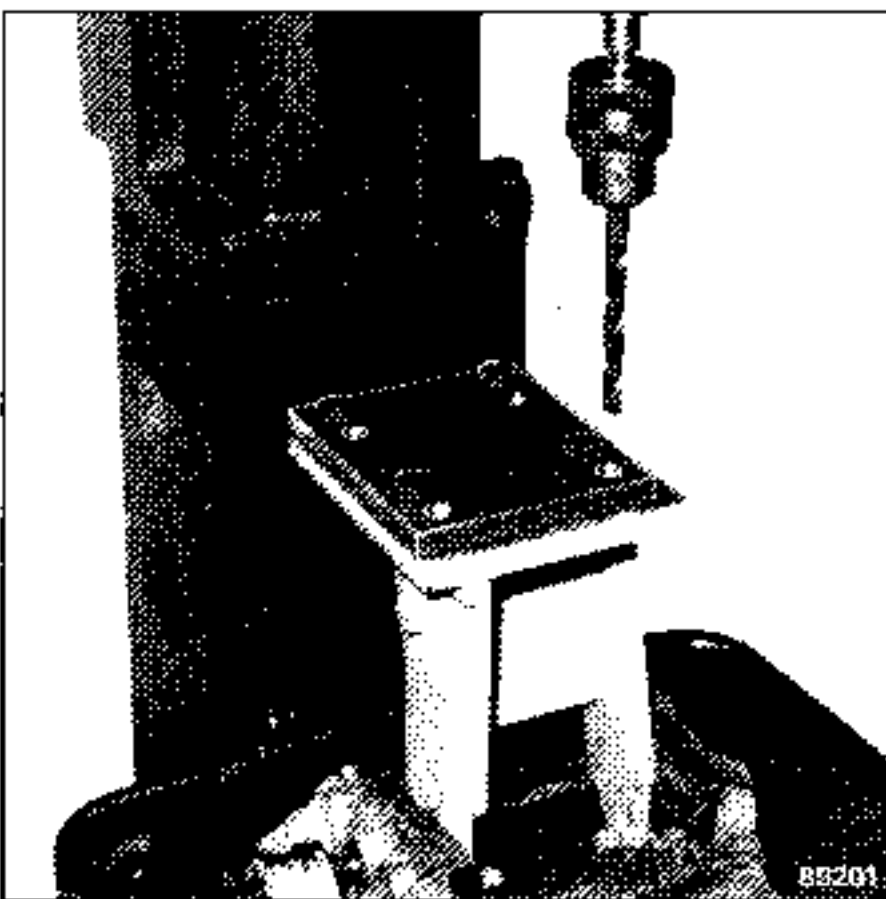
CELETTE Part no. **397 308**
BLACKHAWK Part no. **REN. 91 230 B**

FRONT IMPACT

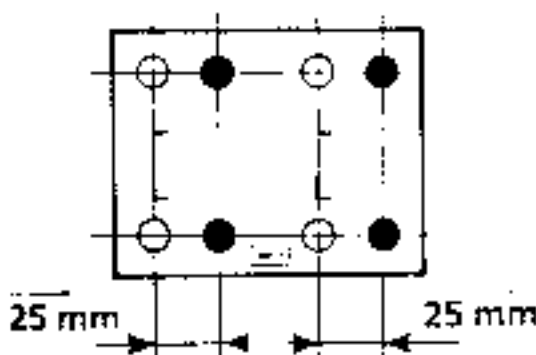
- Use all the front brackets, n°s 1, 2, 3, 4 and 5 in the same positions as for a conventional RENAULT 25 (see M.R. 250).
- Fit bracket n° 6 from the adaptor kit or the converted n° 6 bracket. This bracket is used to locate and position the rear of the vehicle.

A - CONVERTING BRACKET N° 6

- Use the drilling jig provided with the adaptor kit.
- Fit this jig to the base of your n° 6 bracket and lock it using $\varnothing 12$ mm bolts.
- Countersink the four holes at $\varnothing 12$ H 8.

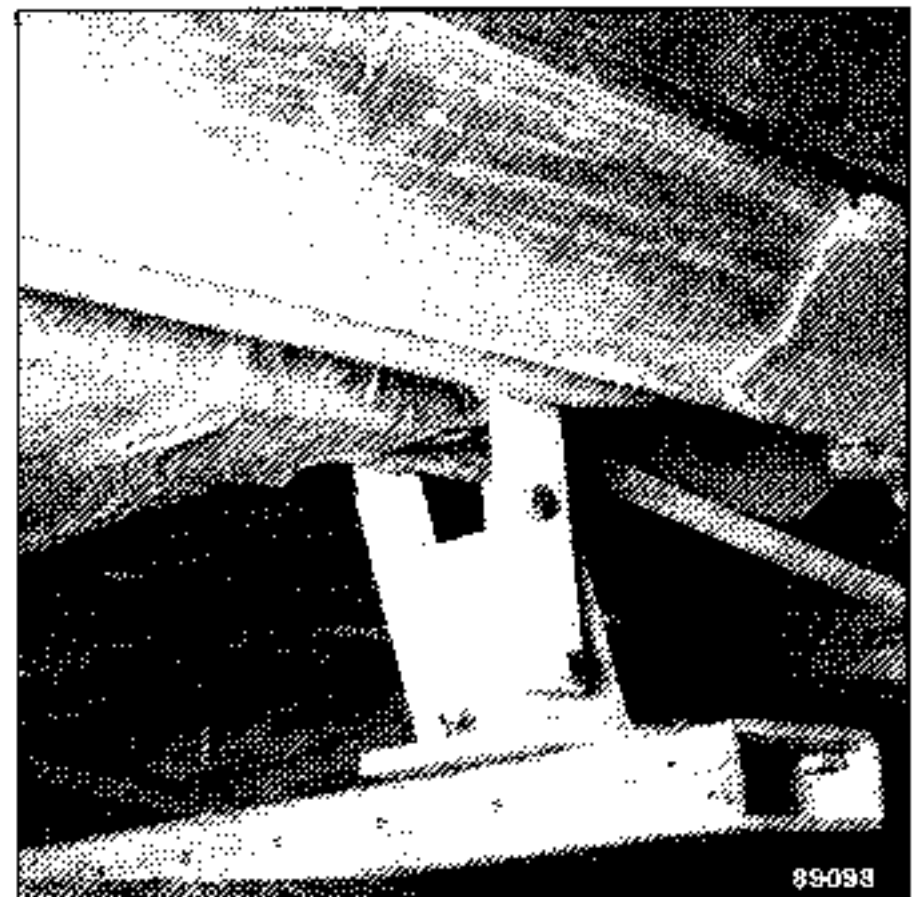


- On the bracket mark these four holes with the letter L = Limousine.



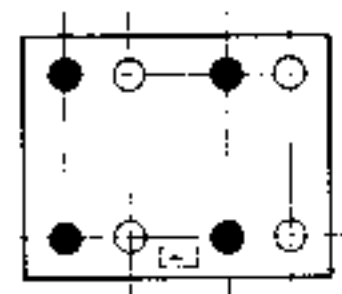
B - USING BRACKET N° 6

- Used with and without removing the mechanical unit.
Fitted directly to the vehicle, the two flanges capping the lateral arm pivot bolts
- In the CELETTE modular system, fixed to space n° 6 of the cross member, placed on space n° 28 on the repair bench.
- In the BLACKHAWK modular system, fixed on holes 5 and 6 of the cross member placed on modular holes 28A and 29A of the repair bench

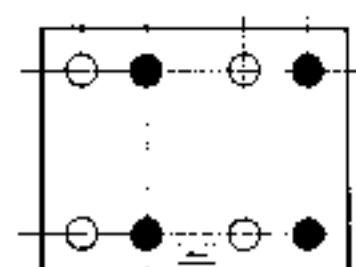


NOTE:

- For the RENAULT 25 LIMOUSINE (FRONT IMPACT), use the four front modular holes located on the base of the bracket.

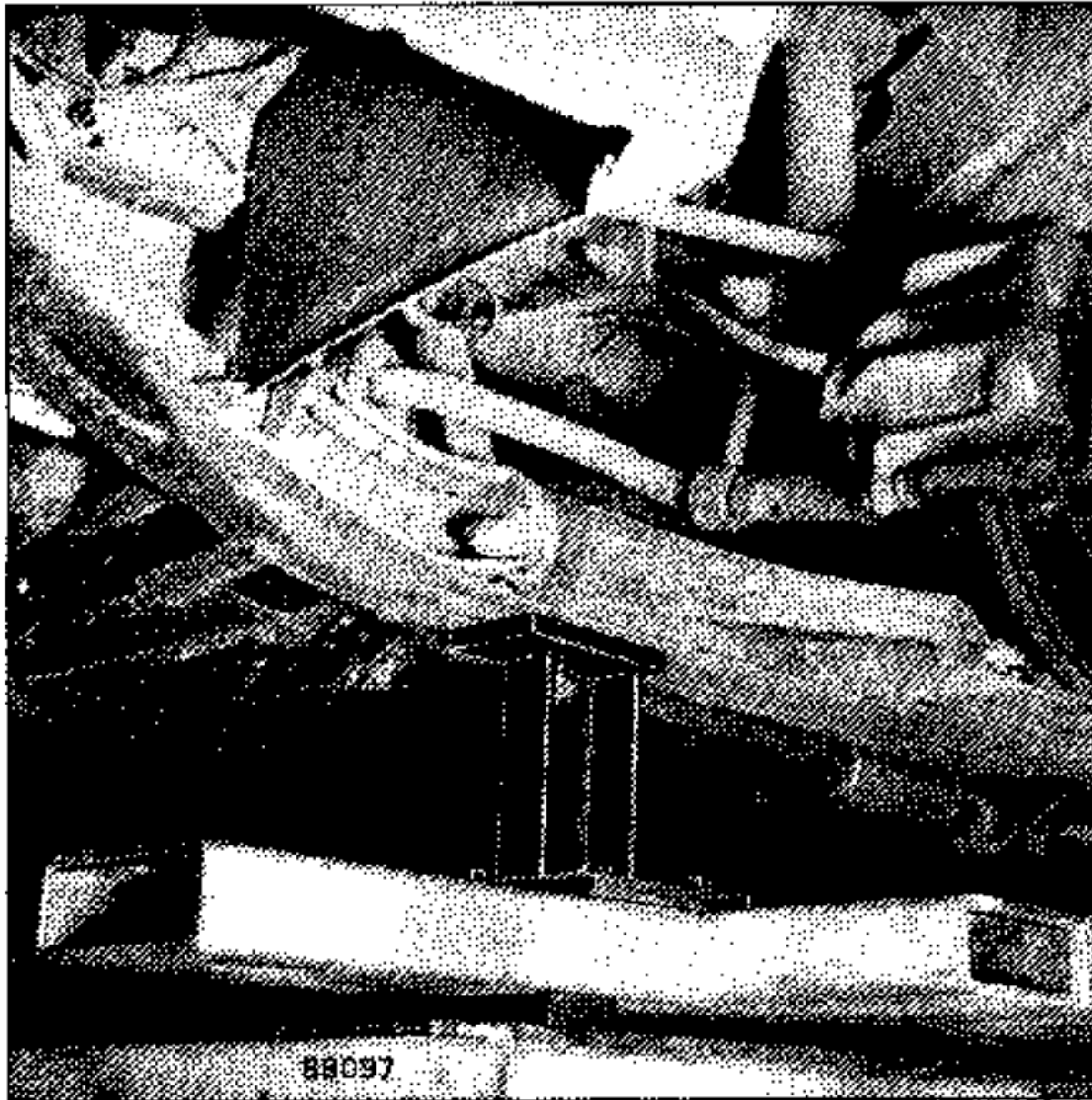


- For the RENAULT 25 LIMOUSINE (REAR IMPACT), use the four modular holes located on the base of the bracket.



REAR IMPACT

- Use all the rear brackets, n°s 6, 7, 8 and 9 in the same positions as for the conventional RENAULT 25 (see M.R. 250).
- Fit the centre cross member n° 4 support bracket. The modular cross member will be placed on space 14 in the CELETTE system or on modular holes 14A - 15A in the BLACKHAWK system.
- Fit the front side member jiggling and support bracket from the adaptor kit.



In the CELETTE system, this bracket is fixed to space n° 4 of the front modular cross member.

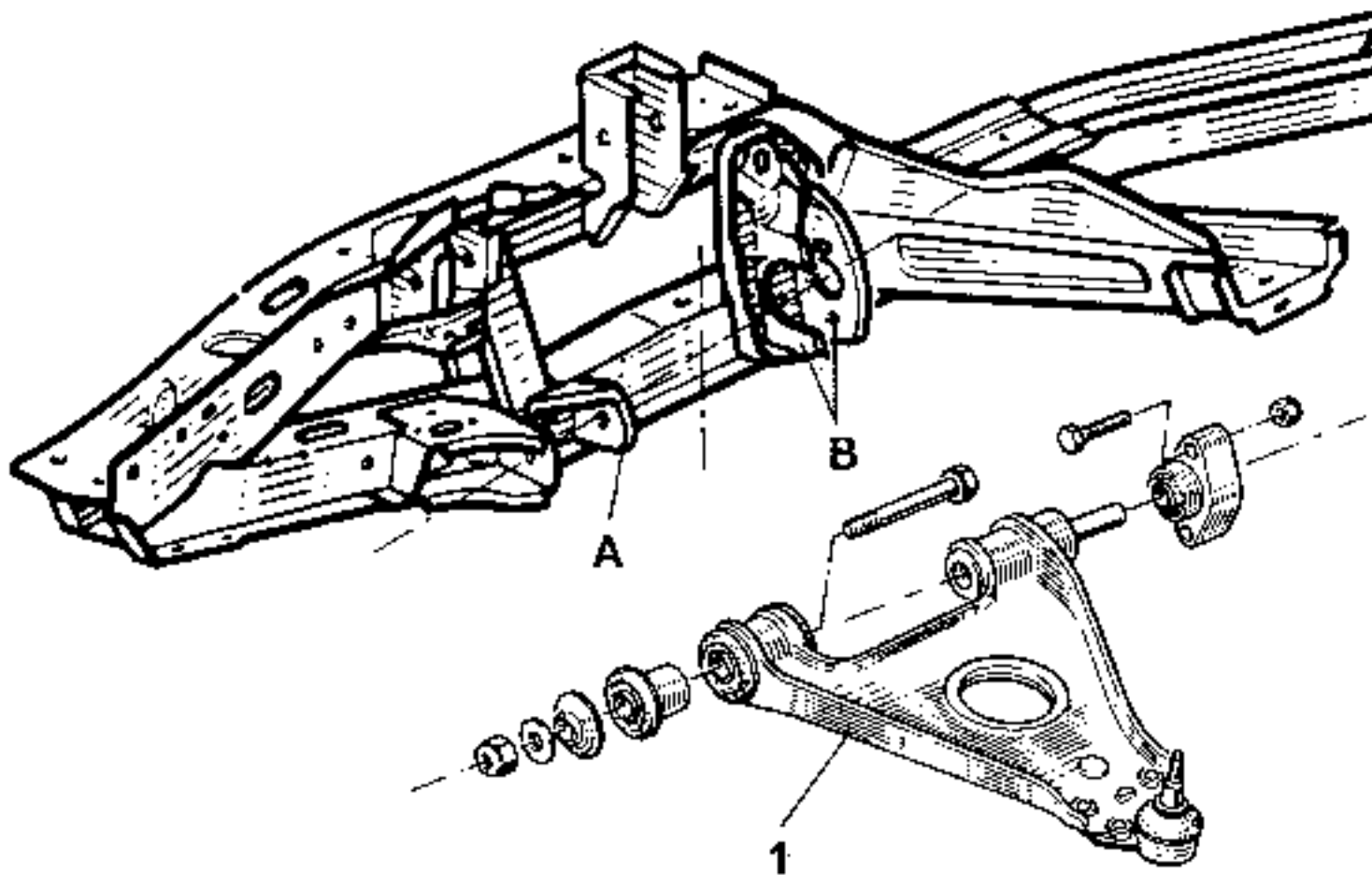
In the BLACKHAWK system, this bracket is fixed to holes 3 and 4 of the cross member placed at 4A - 5A.

NOTE:

The Phase II Renault 25 is characterised by its new front axle lower arm (1) which has led to a modification of the front side member at the level of the pivot bearings A and B.

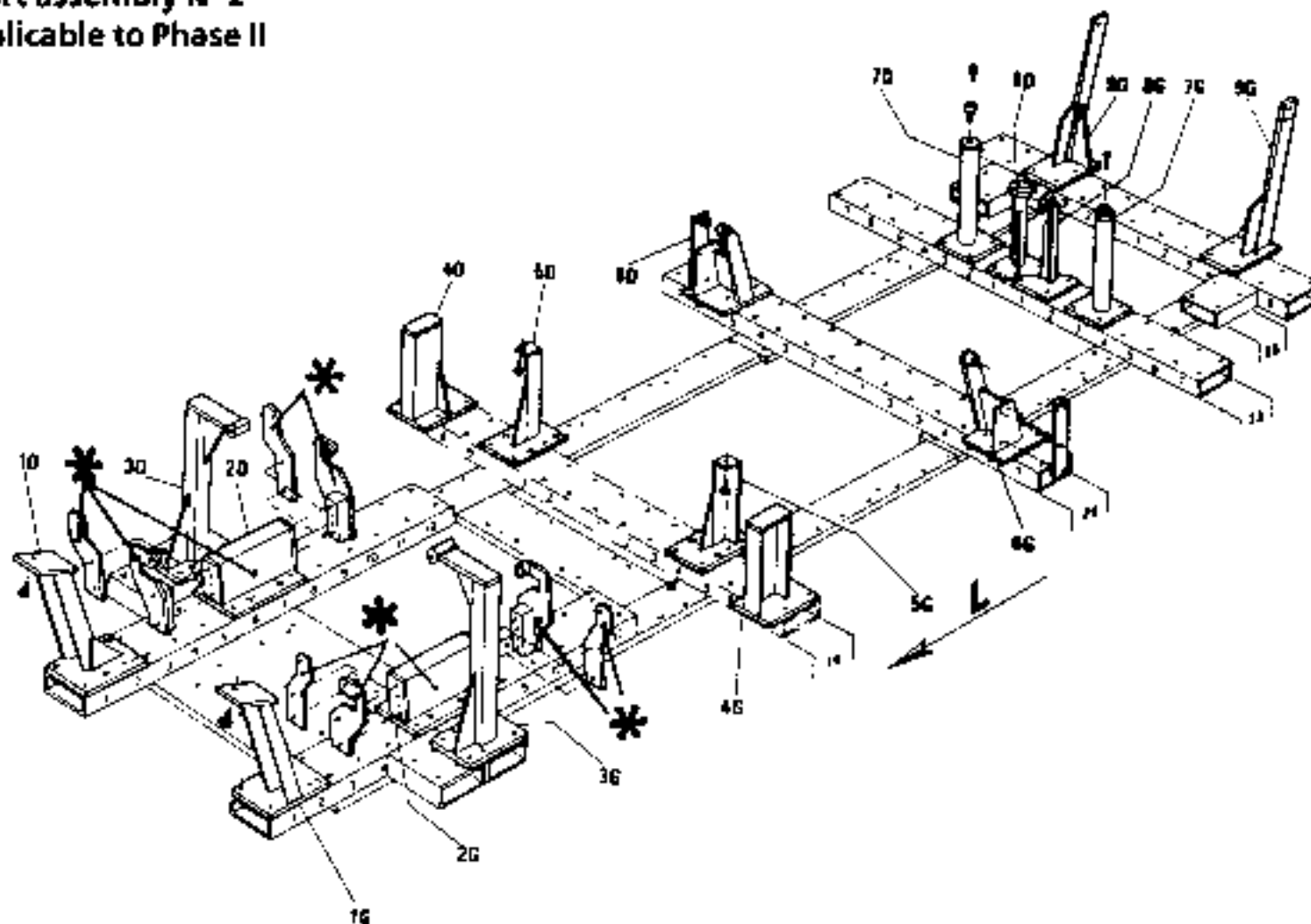
These modifications have encouraged us to produce 2 additional support brackets for the original set of brackets Car. 1013:

- 1 front side member jig support bracket: to support and locate the vehicle after a rear collision.
- 1 front lower arm positioning support bracket: for repair after a front collision.



USE OF BRACKETS

* Support assembly N° 2
not applicable to Phase II



Car. 1013

The set of original brackets, Car. 1013, marketed by CELETTE under part no. 397 310 or BLACKHAWK under part no. REN 91 230 MMS, can be used for repairing Phase II Renault 25 vehicles, apart from the front axle lower arm bracket (n° 2). To repair a vehicle fitted with a new front axle lower arm it will be necessary to use the two support brackets G and D, which are additional to the original set.

This assembly comprises:

- 2 universal modular bases;
- 2 lower side member positioning and jig heads (these heads are used without dismantling the front mechanical unit if there has been a rear collision).
- 2 front axle lower arm pivot bearing shaft positioning and jig heads (these heads are used with the front mechanical unit removed if there has been a front collision).

● In CELETTE equipment:

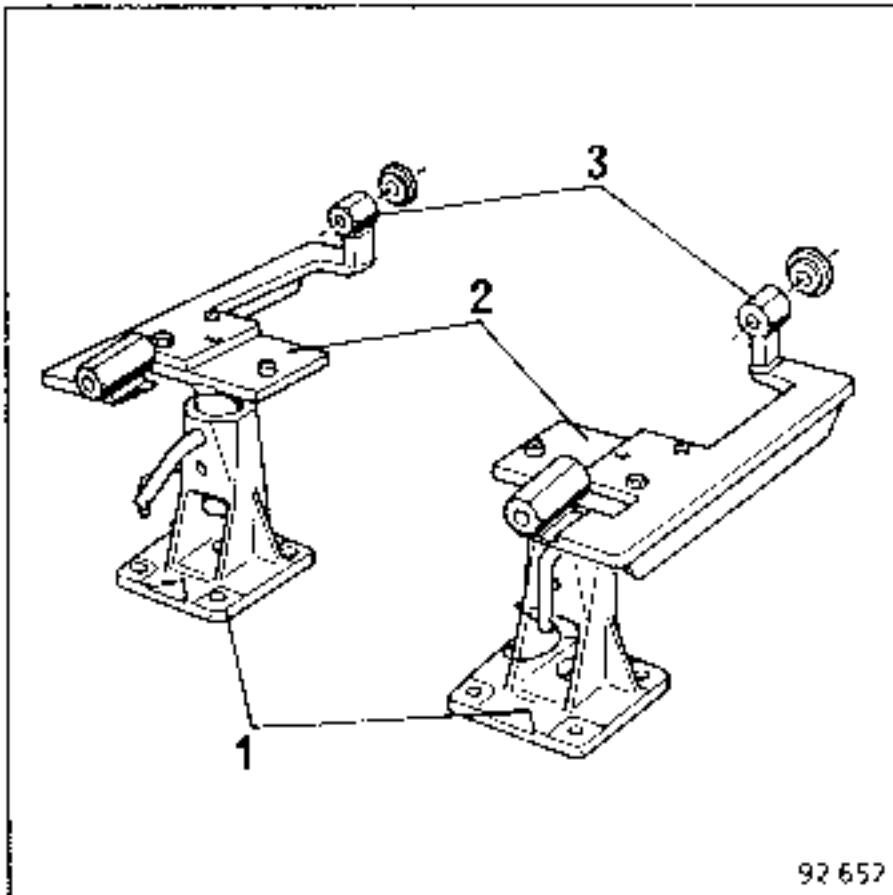
The set of four heads is marked with part no. 397 305. Its use requires fitting two bases MZ 140 to the repair bench.

● In BLACKHAWK equipment:

The set of four heads and two bases is marked with part no. REN 87 122.

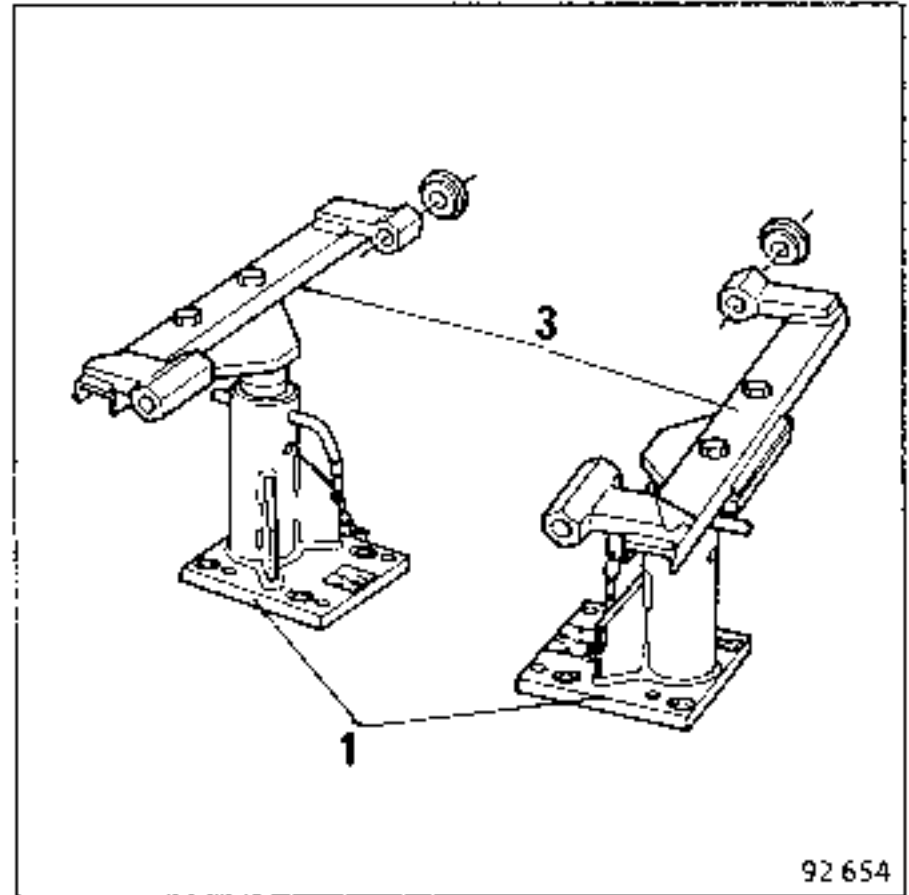
USE OF BRACKETS FOR NEW FRONT AXLE

397 305 CELETTE Assembly



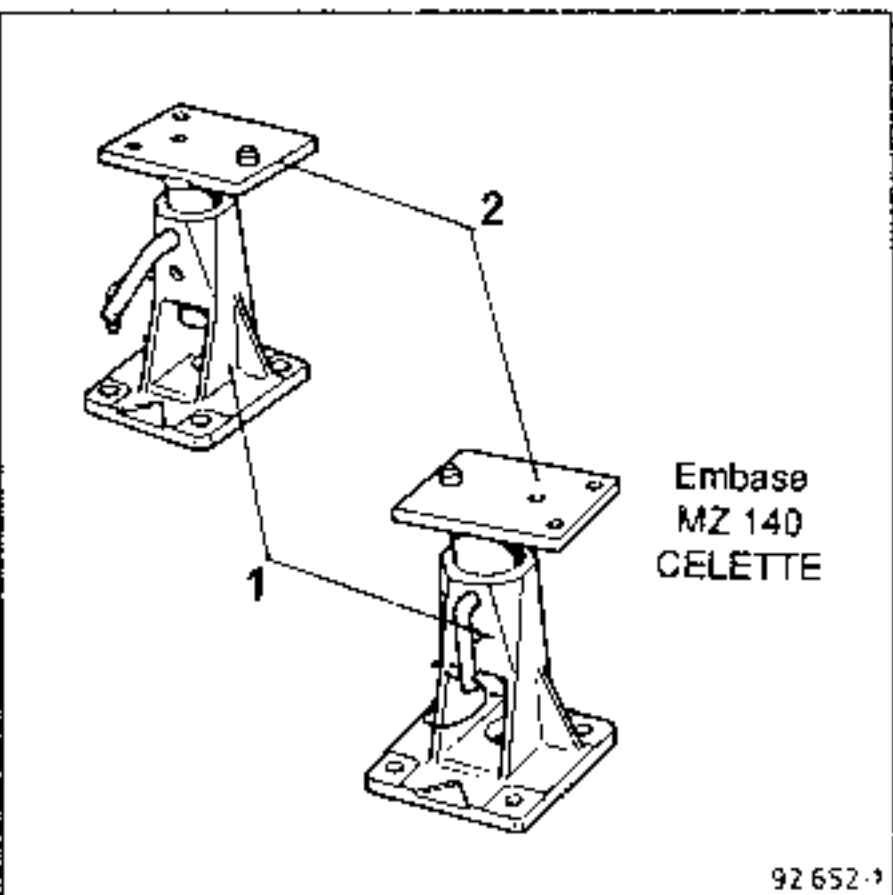
92 652

REN 87 122 BLACKHAWK Assembly



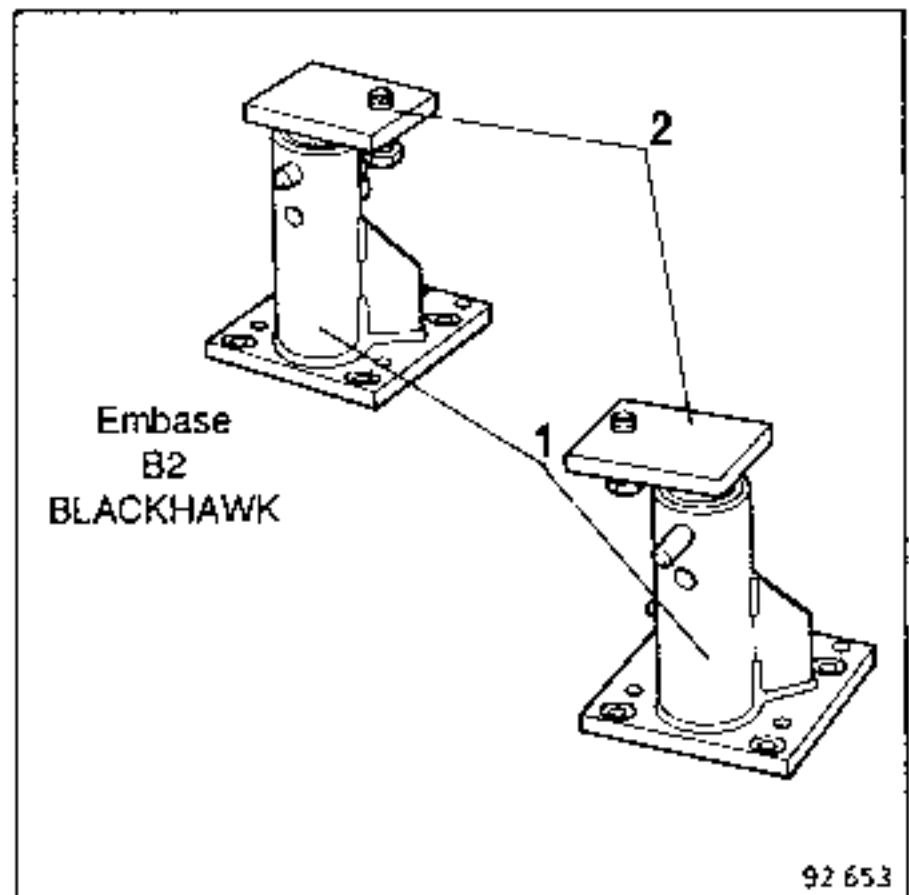
92 654

- a - Front axle lower side member jig, universal modular base ① + specific head ②**
 - Used with mechanical unit in place or removed.
 - Enables front location of the vehicle after rear impact.
- b - Front axle lower arm, universal modular base ① + head ③**
 - Used only with mechanical unit removed after front impact.
 - Enables checking and alignment of front axle lower arm pivot arm positions.



Embase
MZ 140
CELETTE

92 652-1

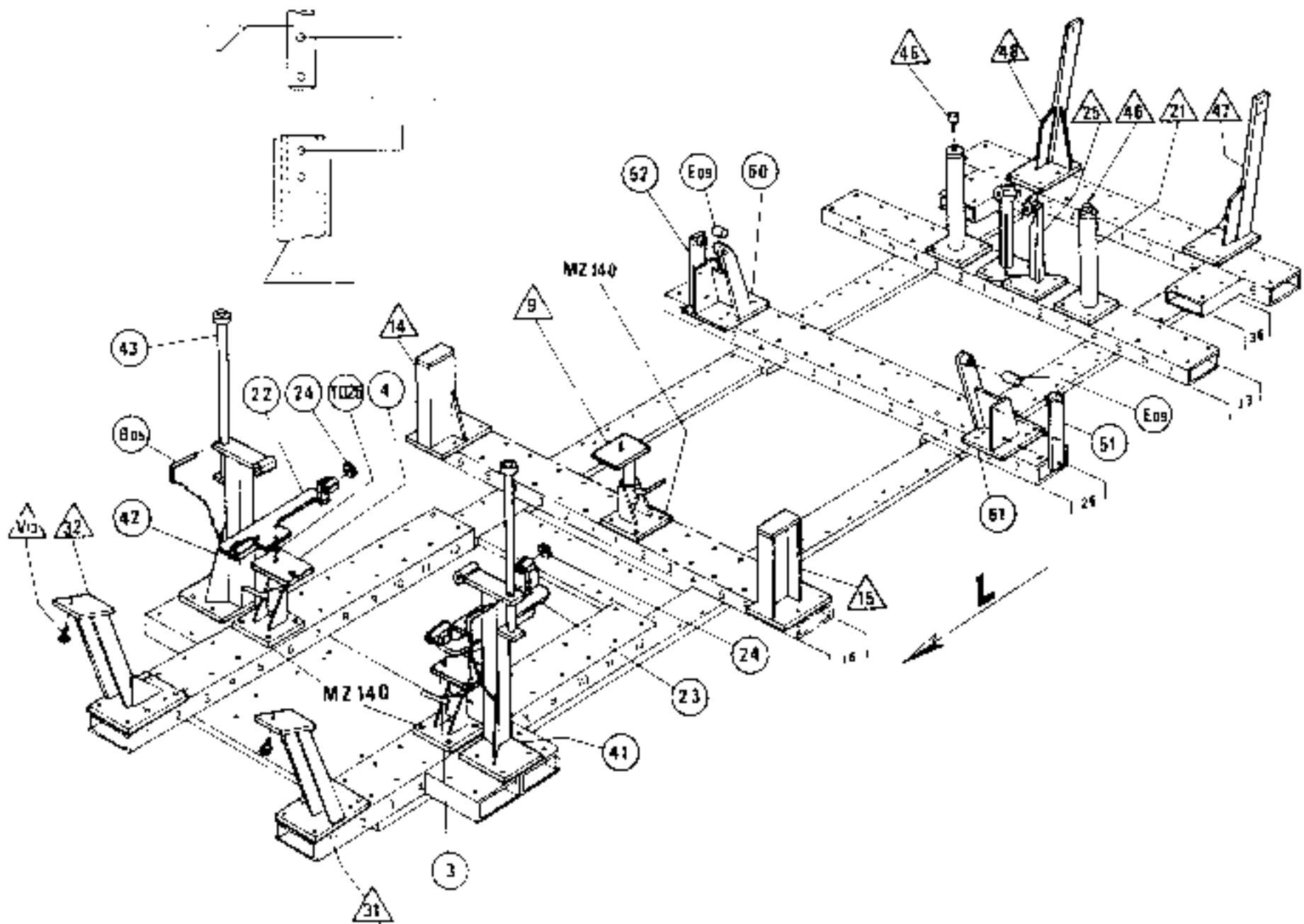


Embase
B2
BLACKHAWK

92 653

NOTE: The position of the brackets and direction of the bases are given on the technical sheet provided with the bracket set.

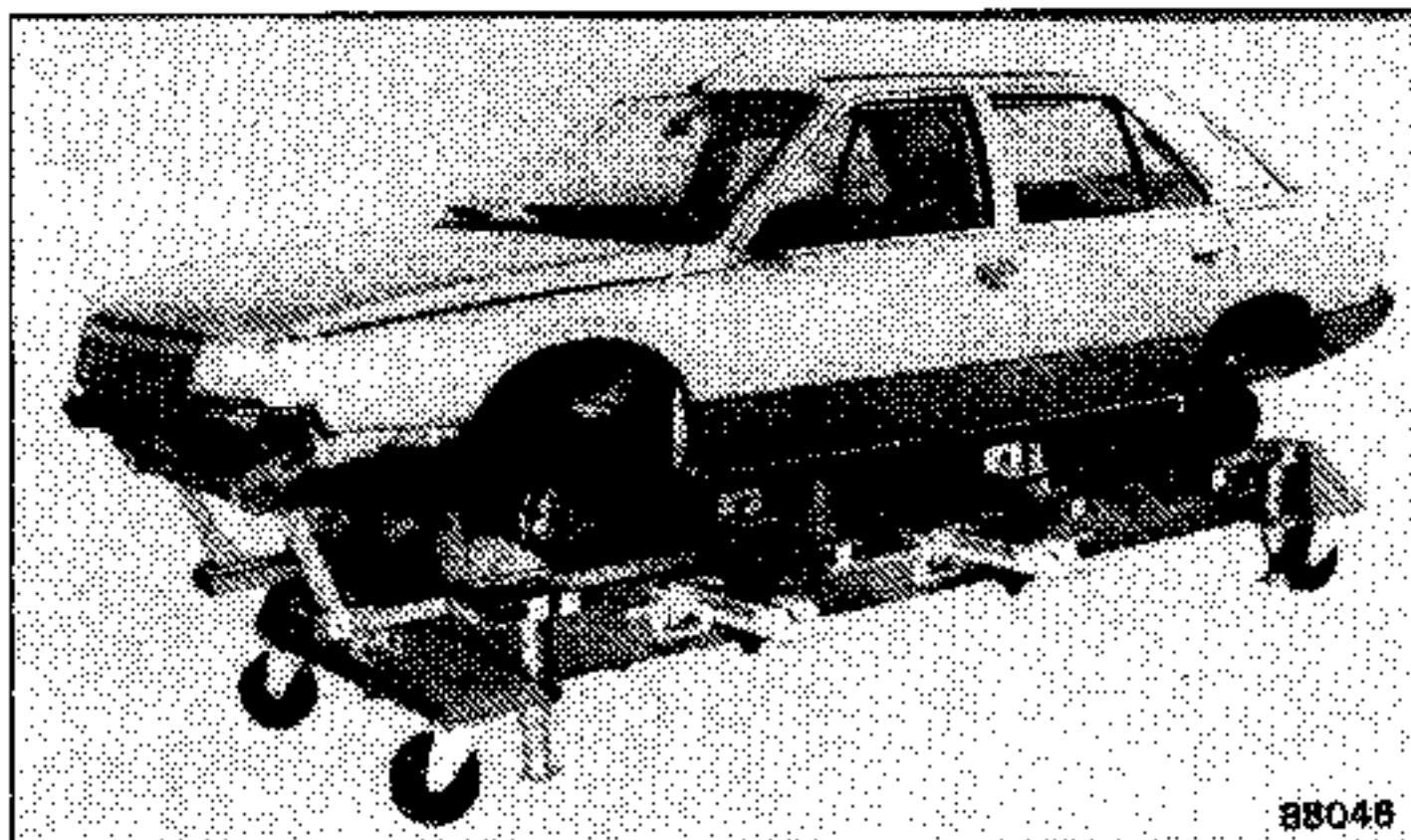
You have one of the assemblies below	You should make the following adaptations	Observations
Renault Car. 1013 Celette manufacture or Celette part no. 397 310	Celette : 397 305 - Heads G and D Jig - Heads G and D Lower arm	Fitting requires the use of two MZ 140 bases
Renault Car. 1013 Blackhawk manufacture or Blackhawk part no. REN 91 230	Blackhawk : 87 122 - Heads G and D Jig - Heads G and D Lower arm 2 B2 universal bases	
Celette MZ 466 300	Celette : 466 308 - Heads G and D Lower arm	
Blackhawk MS 87 120	Blackhawk : 87 121 - Heads G and D Lower arm - Heads G and D Jig	



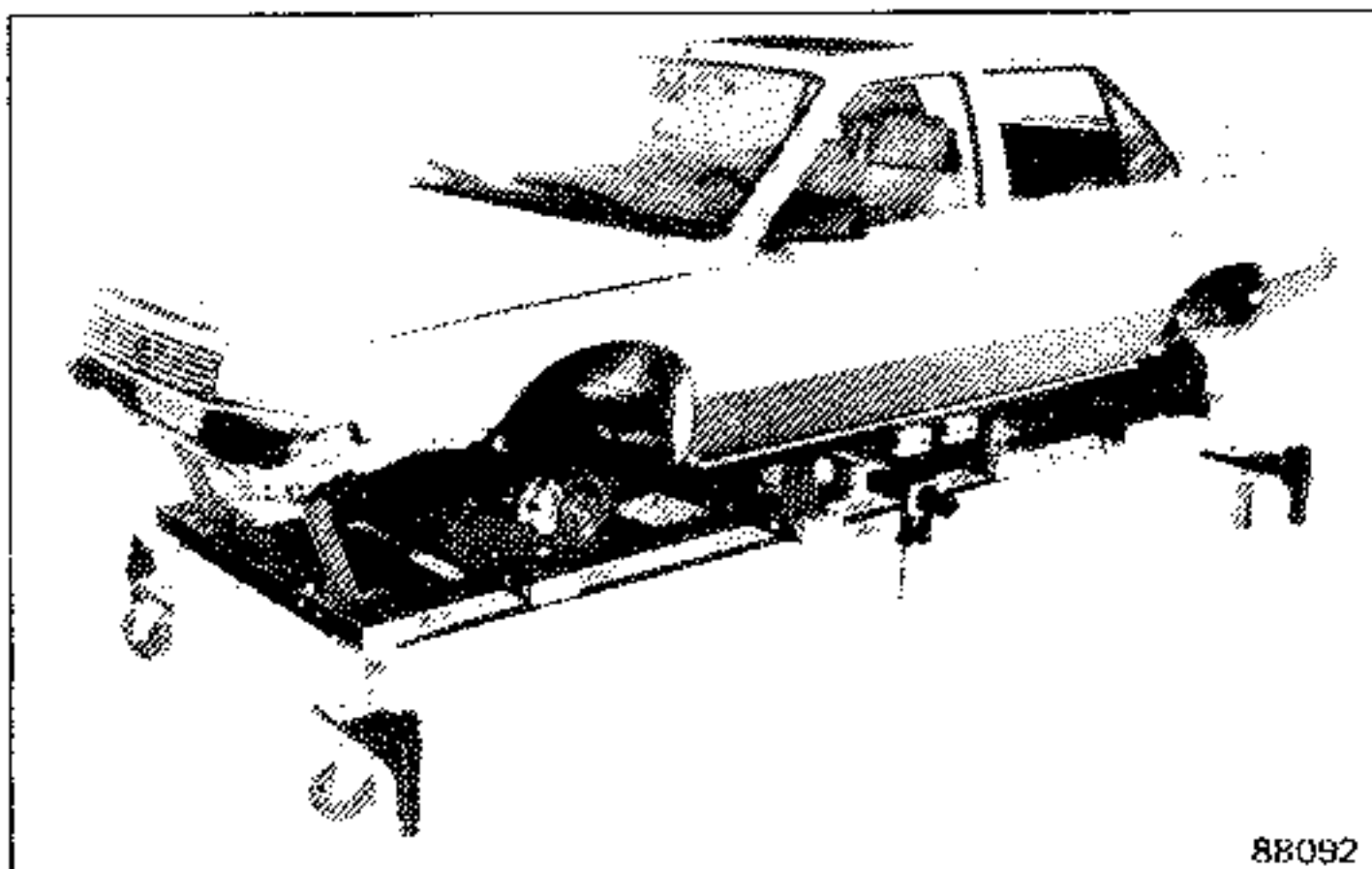
REMINDER:

When transferring to the repair bench a damaged vehicle requiring straightening using an angle bracket or a vector jacking system, it is essential to fix the bodywork to the bench frame so as not to distort the brackets when traction is applied.

- This fixing is provided by at least two anchor clamps.
- These clamps must be placed as close as possible to the damaged zone
- They must be adjustable in three dimensions (height, length, width).



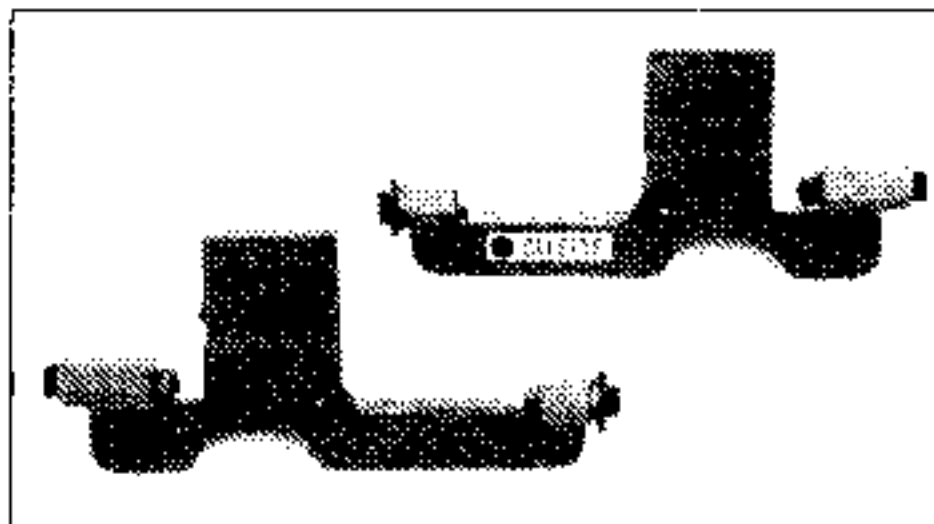
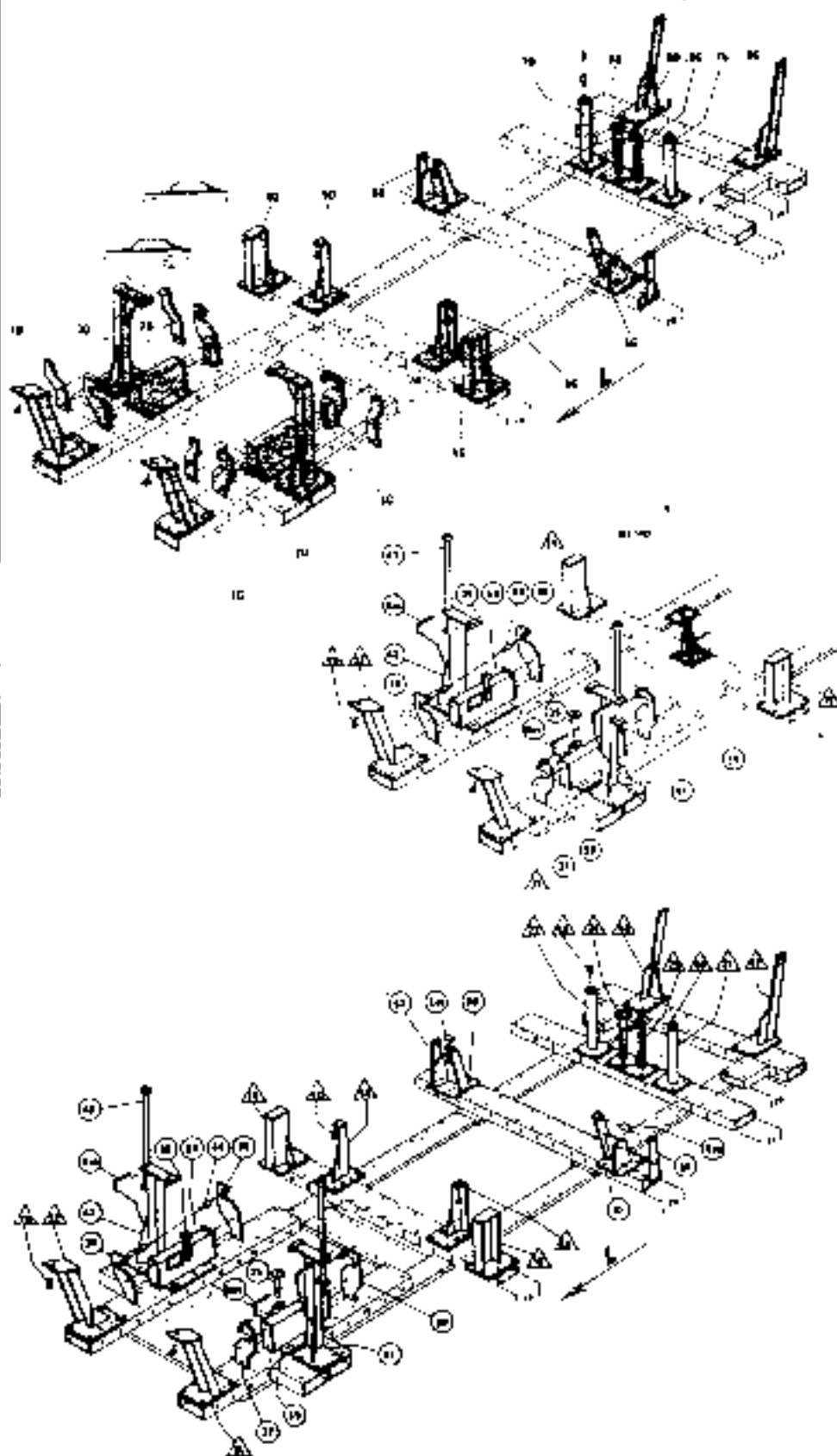
- If the pulling equipment is not integral with the repair bench, the bench should be clamped to the ground, resting on the jacks or the feet provided for this purpose so as not to transfer the jacking force to the wheels.



COMPACT MODULAR SYSTEM



ILLUSTRATIONS



PART NUMBERS

RENAULT ASSEMBLY

SET OF SUPPORT BRACKETS

R. 25 PHASE 1

Part no. : Car 1013

ADDITIONAL Centre jig

1 HEAD +
1 BASE MZ 140

Part no. : 397 306

CELETTE ASSEMBLY

SET OF SUPPORT BRACKETS

R 25 PHASE 1

Part no. : 397 300

Part no. : 397 310

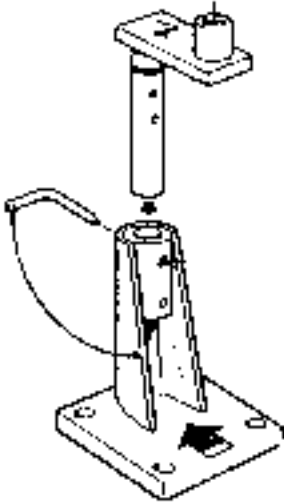
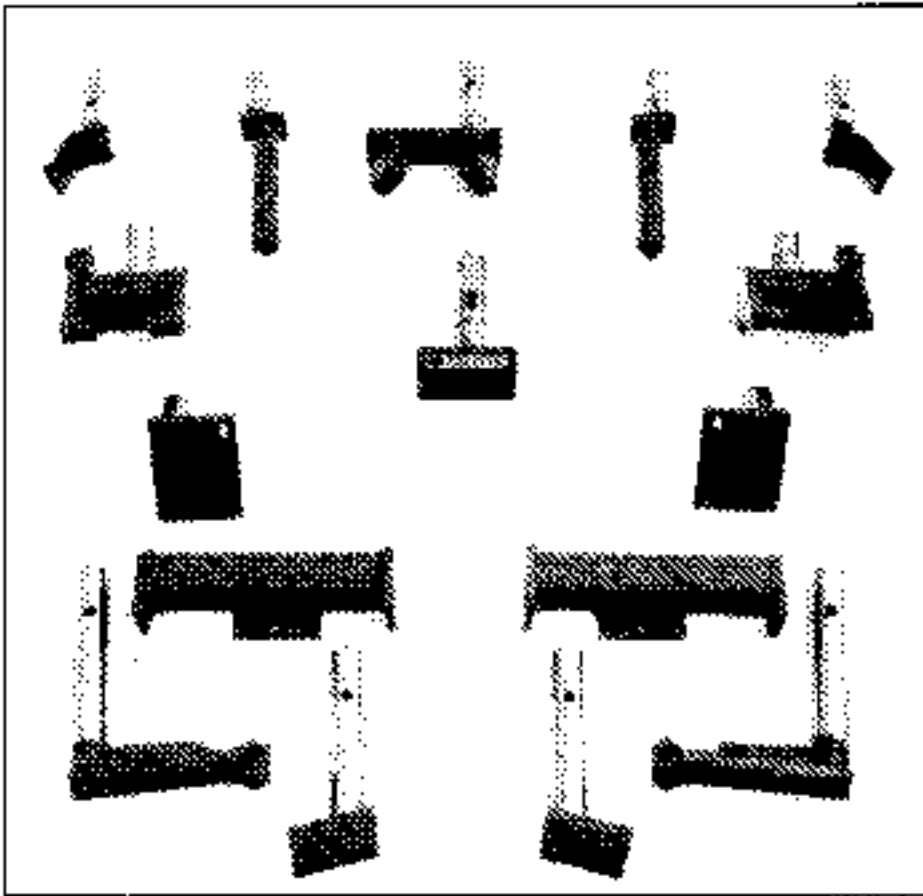
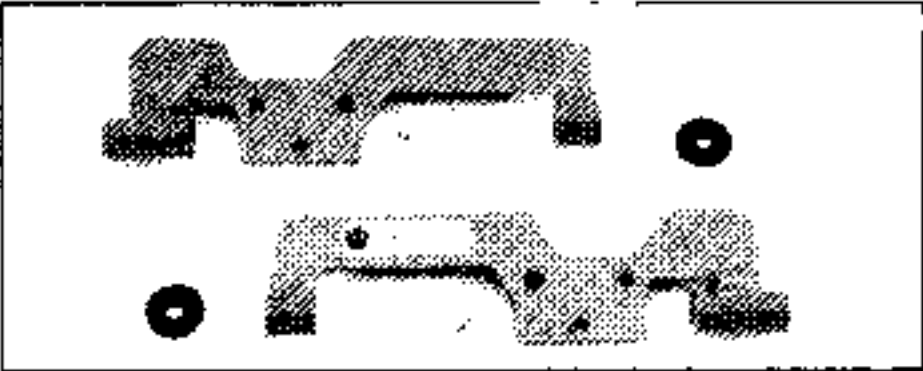
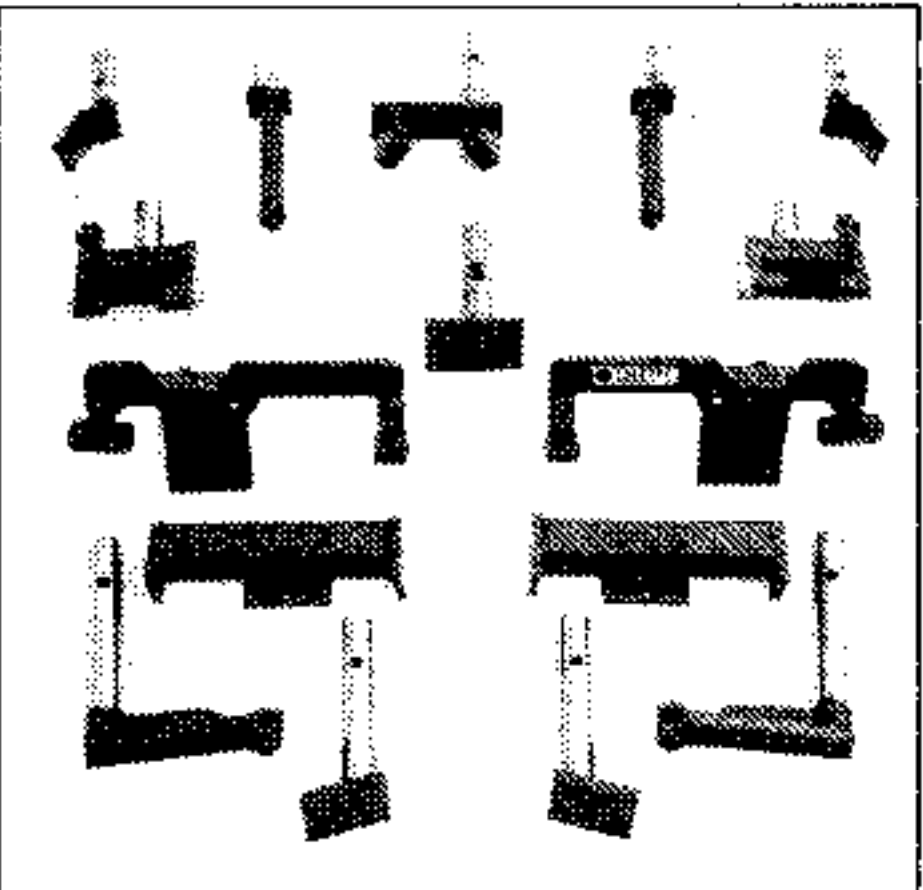
(berline + limousine)


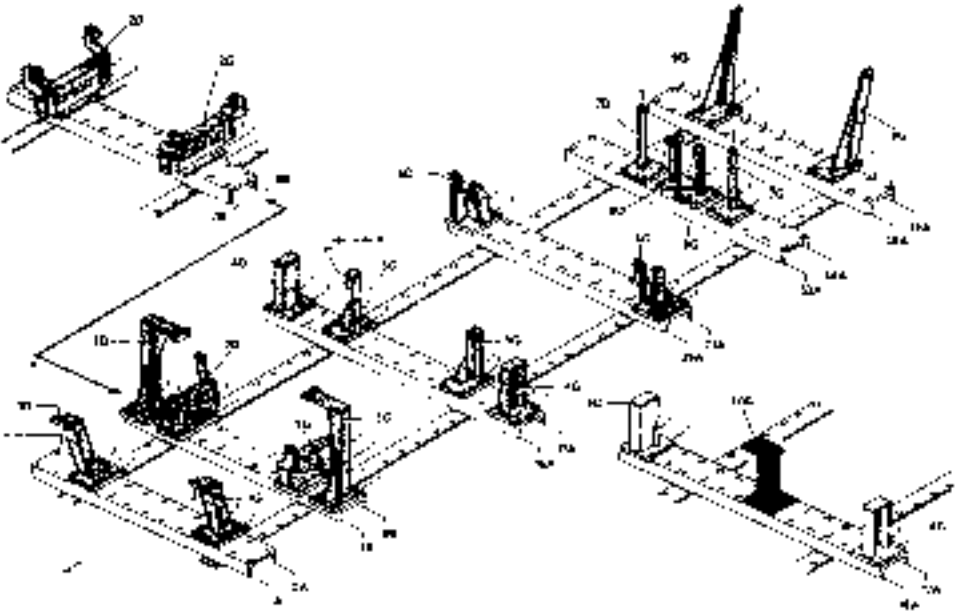

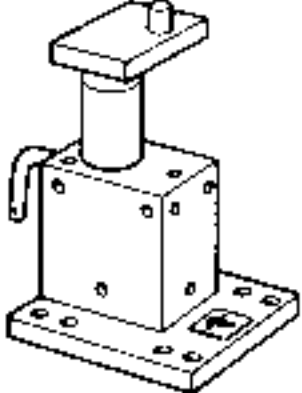
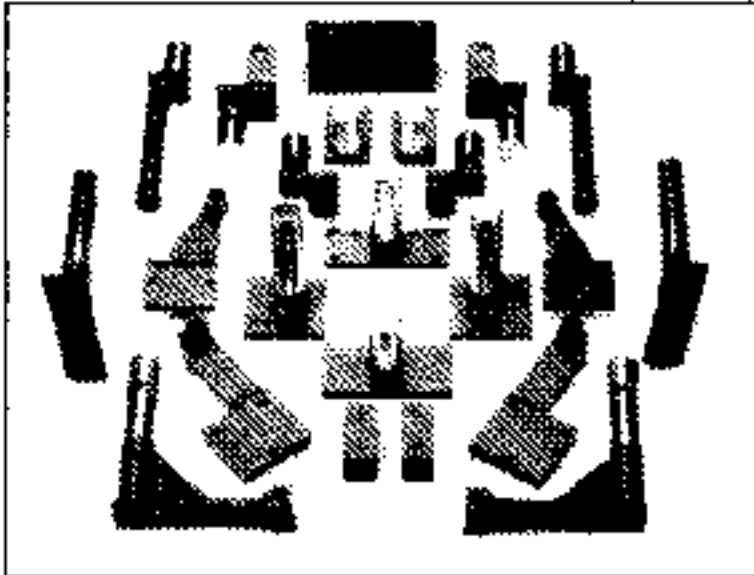
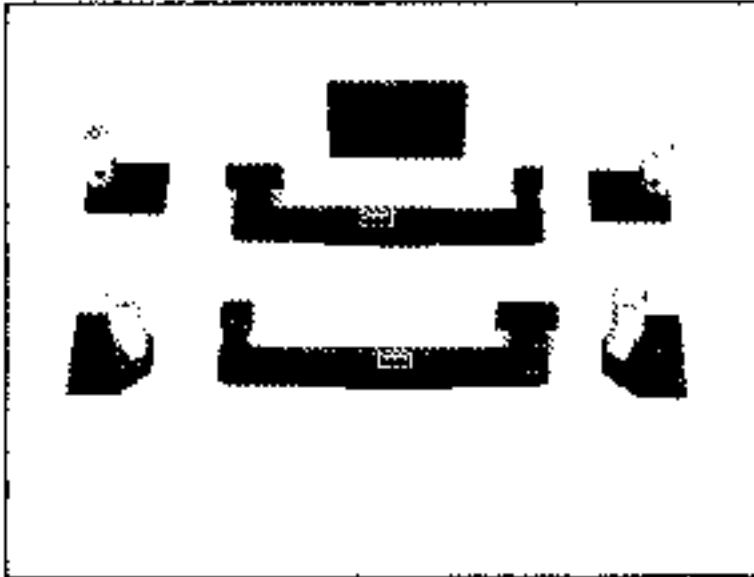
R.25 PHASE 2

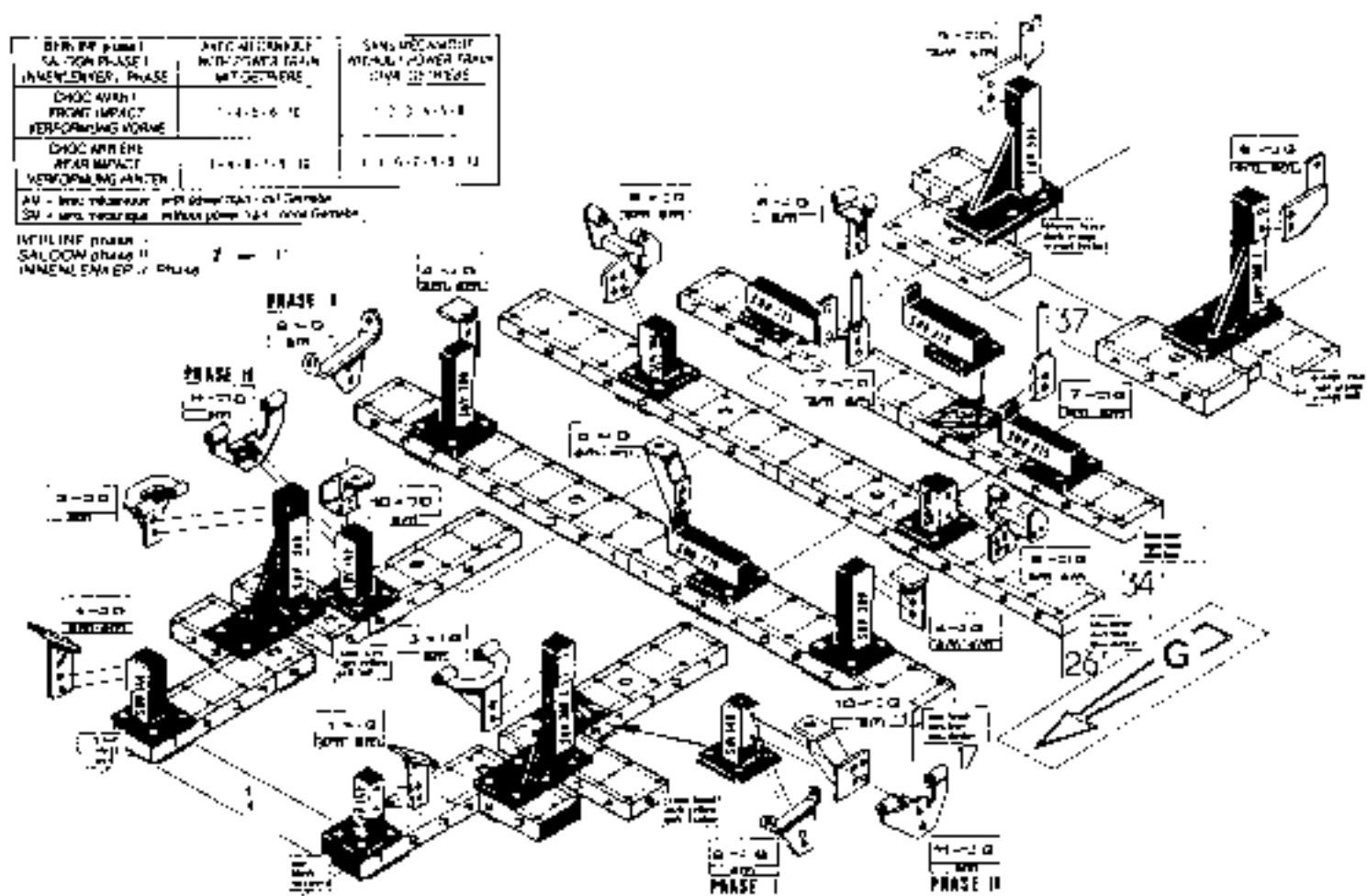
M.Z. ADDITIONAL
* SET OF 4 HEADS

Part no. : 397 305

* fitting these heads requires the use of 2 MZ 140 bases

	ILLUSTRATIONS	PART NUMBERS
<p>SET OF HEADS</p> <p>On universal modular bases</p> <p>M.Z.</p> 		<p>R. 25 PHASE 1</p> <p>SET OF 14 HEADS</p> <p>Part no. : 466 300</p>
		<p>R.25 PHASE 2</p> <p>FRONT AXLE ADDITION</p> <p>SET OF 2 HEADS</p> <p>Part no. : 466 308</p>
		<p>R.25 PHASES 1-2</p> <p>SET OF 16 HEADS</p> <p>Part no. : 466 310</p>

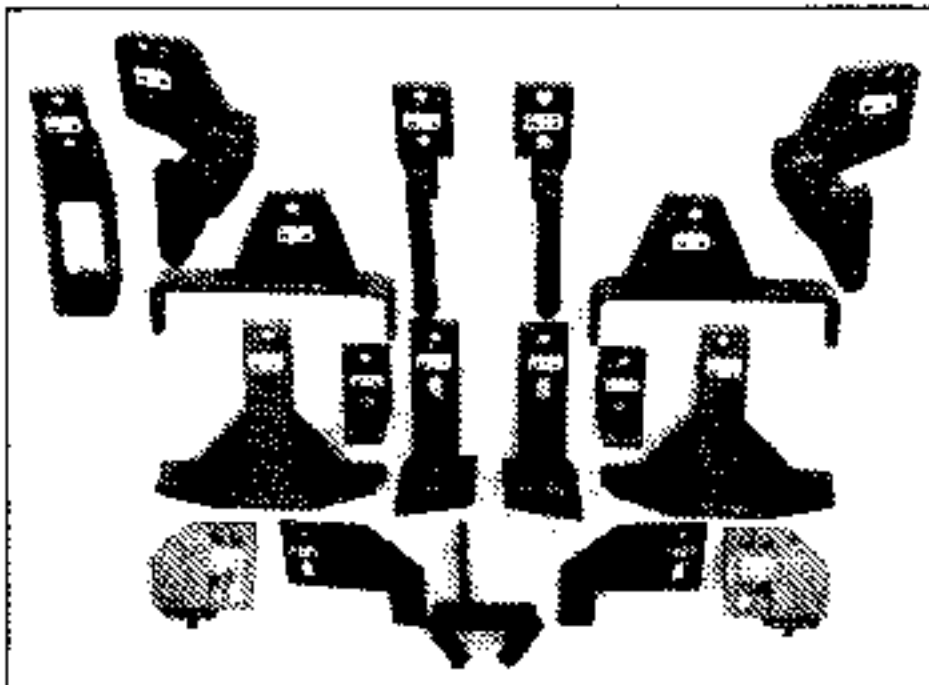
	ILLUSTRATIONS	PART NUMBERS
<p>COMPACT MODULAR SYSTEM</p> 	 	<p>RENAULT 25 PHASE 1</p> <p>Set of support brackets</p> <p>Part no. Renault Car. 1013 BLACKHAWK Manufacture</p> <p>Part no. : REN 91 230</p> <p>Centre jig addition</p> <p>Part no. : REN 91 263</p> <p>PHASE 2 addition</p> <p>2 B2 Bases 2 jig heads 2 front axle heads 2 support brackets 2 dowels 2 bolts 16 x 40 x 14.5 2 bolts 12 x 40 4 bolts 14 x 100 + nut</p> <p>Part no. : REN 87 122</p>
<p>SET OF HEADS on universal modular bases</p> <p>M.S.</p>  <p>93756</p>	 	<p>RENAULT 25 PHASE 1</p> <p>SET OF 20 HEADS</p> <p>Part no. : REN 87 120</p> <p>PHASE 2 addition</p> <p>SET OF 4 HEADS</p> <p>2 jig heads 2 front axle heads 2 support brackets 2 dowels 2 bolts 16 x 40 x 14.5 4 bolts 12 x 40 4 bolts 14 x 100 + nut</p> <p>Part no. : REN 87 121</p> <p>Complete assembly Part no: REN 87 123 (87 120 + 87 121)</p>



ILLUSTRATIONS

PART NUMBERS

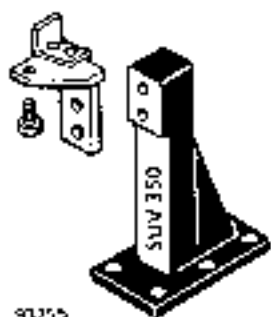
SET OF HEADS

on universal
modular bases

RENAULT 25 PHASE 1

SET OF 18 HEADS

Part no. : SEF 2062



93755

R. 25 PHASE 2

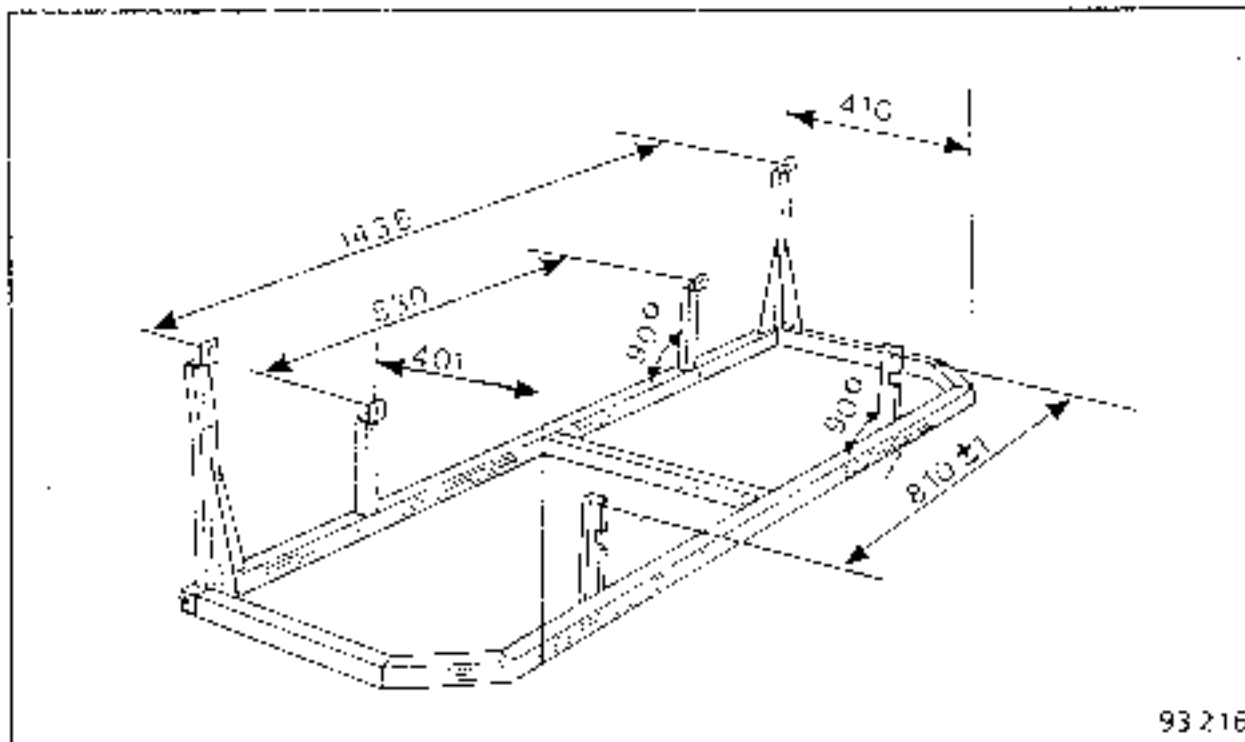
ADDITION

SET OF 2 HEADS

Part no. : SEF 2063



FRONT END JIG FOR PHASE I AND II VEHICLES Car. 1015-01



Part no. MPR 00001015 01

1 - EVOLUTION

Following the evolution of the Renault 25 front end, we have developed a new jig enabling one or two headlight support panels to be replaced.

2 - USE

Enables one or two headlight support panels to be replaced without having to fit and adjust the bonnet and the front wings. The jig enables repair operations to phase I and II Renault 25 vehicles.

3 - ADVANTAGE

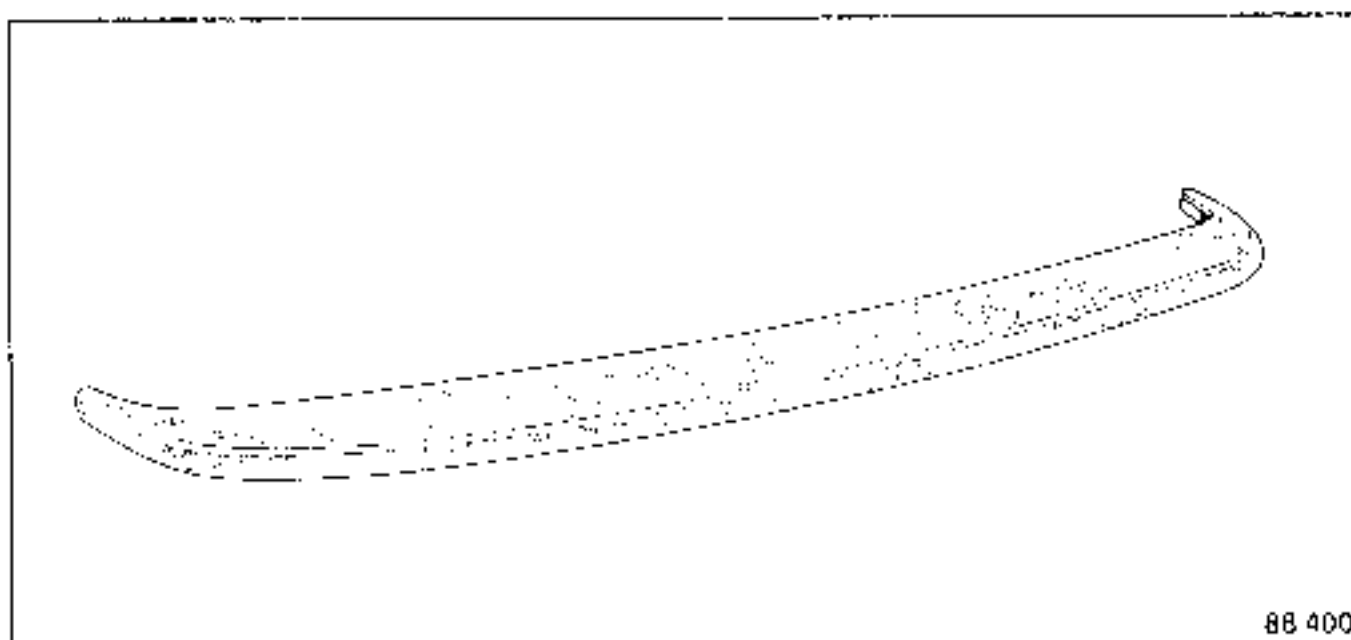
Saves time compared to trial fitting bonnet and front wings.

4 - CHECKING

A sticker giving the front end jig dimensions, which allows you to check its geometry in the event of doubt.

SPECIAL TOOLING

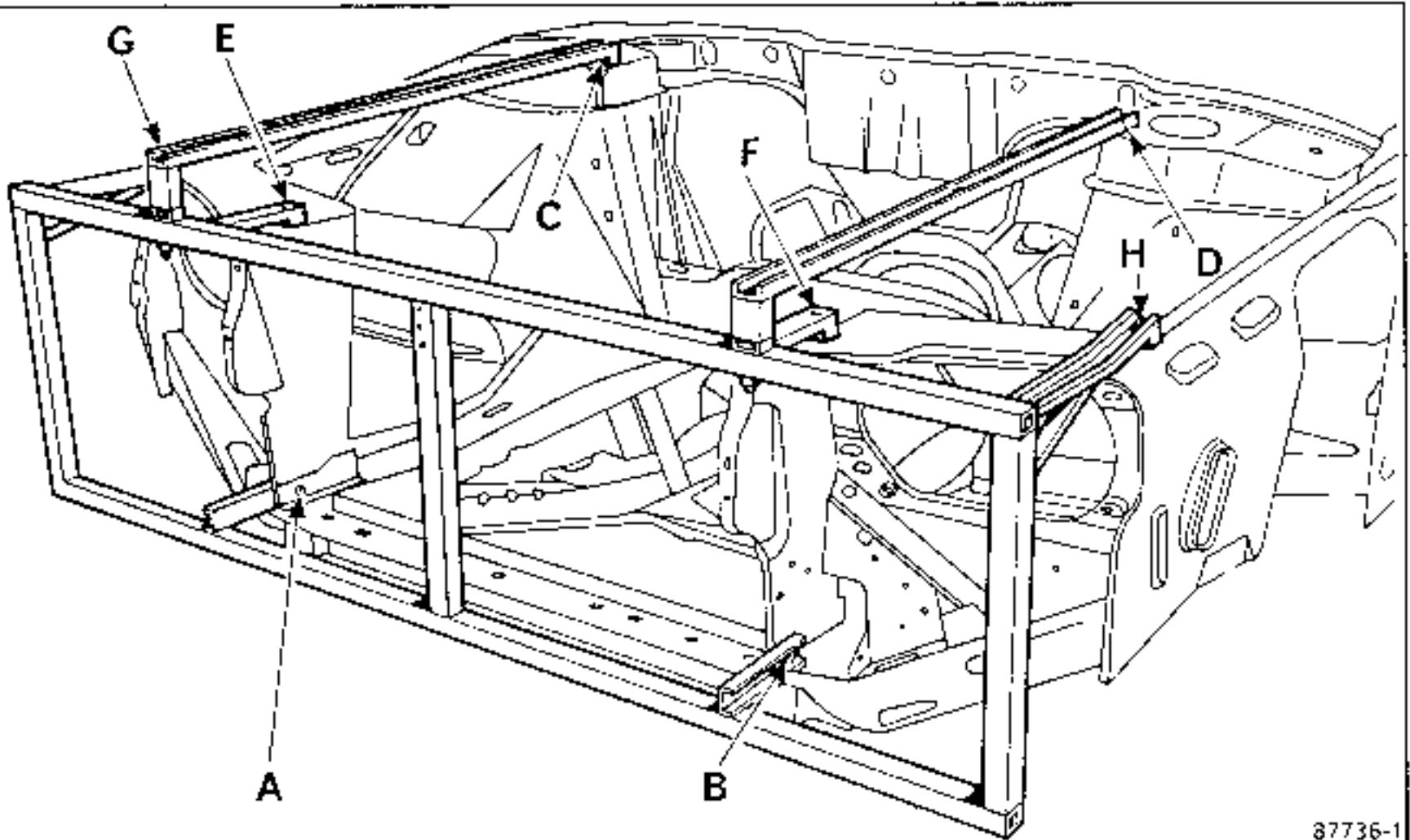
Dashboard protector Car. 1029 part no.: MPR 00 00 102 900.



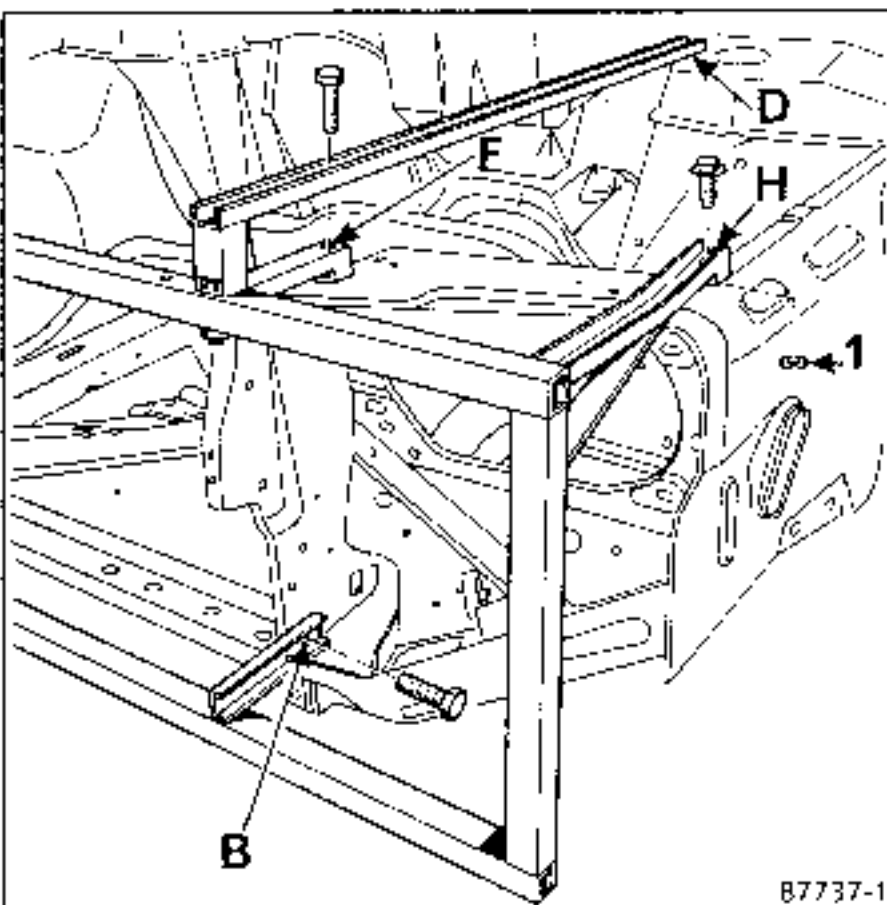
- Fit the front cowl parts then the front end jig. Car. 1015-01.

NOTE:

If one of points (A) or (B) cannot be used as a reference point for positioning the jig (which is the case for this operation), this function is fulfilled by the mounting points (E-G) or (F-H) depending on the side concerned.



87736-1



87737-1

Points (E-F-G-H) are mounting and fitting points for the elements to be replaced.

When the front wing is dismantled, the spacer washers (1) must be refitted on points (G-H). These washers are originally fitted under the wings.

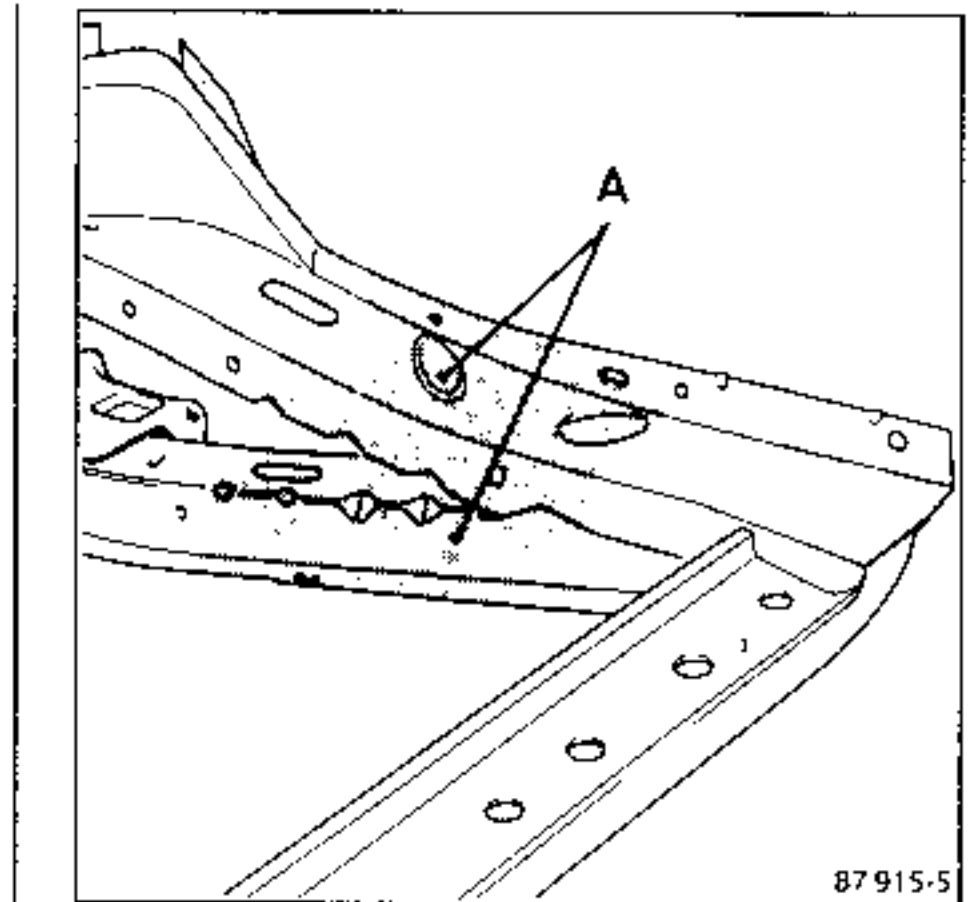
THIS OPERATION IS ADDITIONAL TO REPLACING A HEADLIGHT SUPPORT PANEL

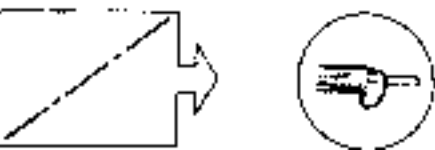
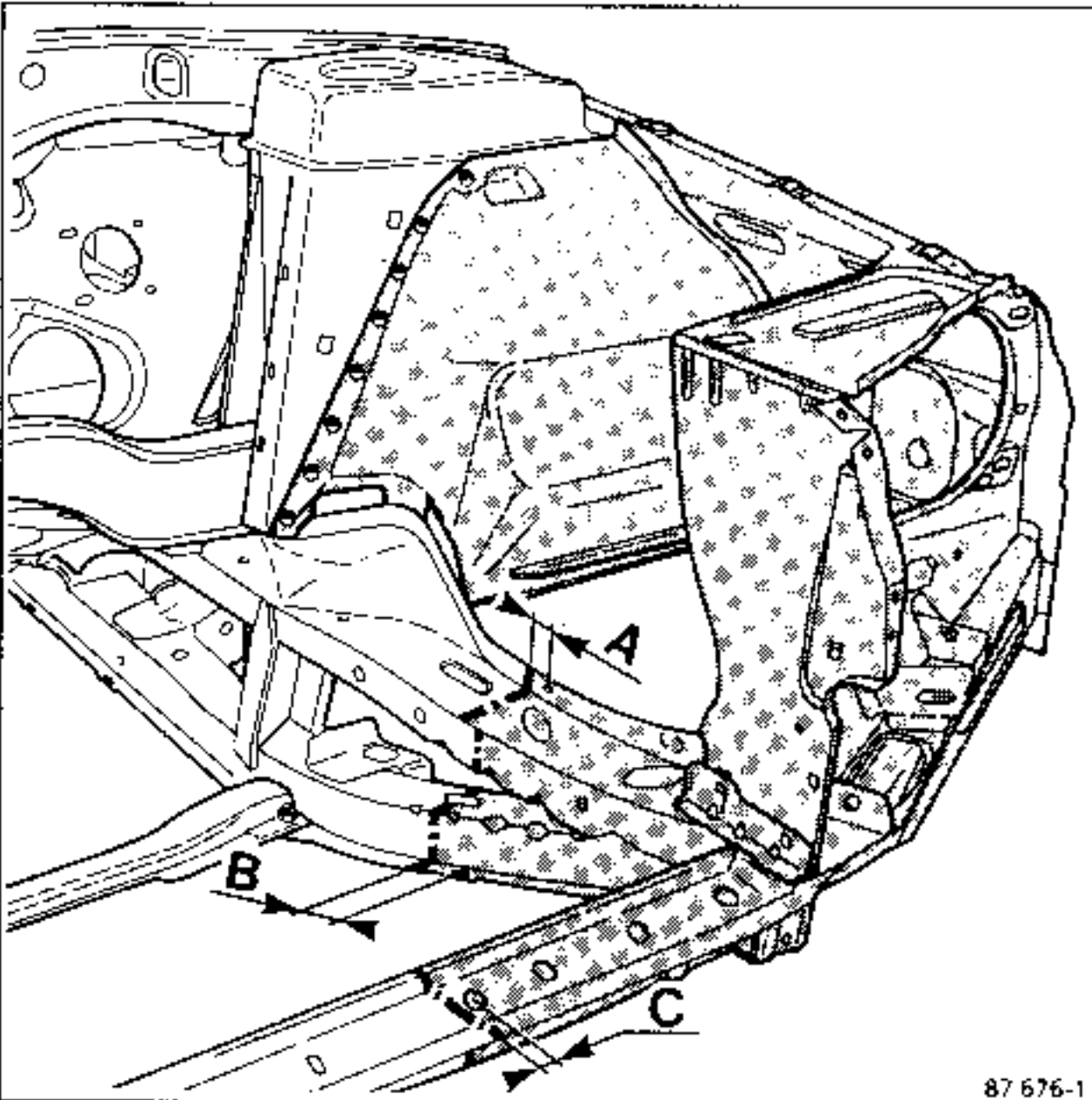
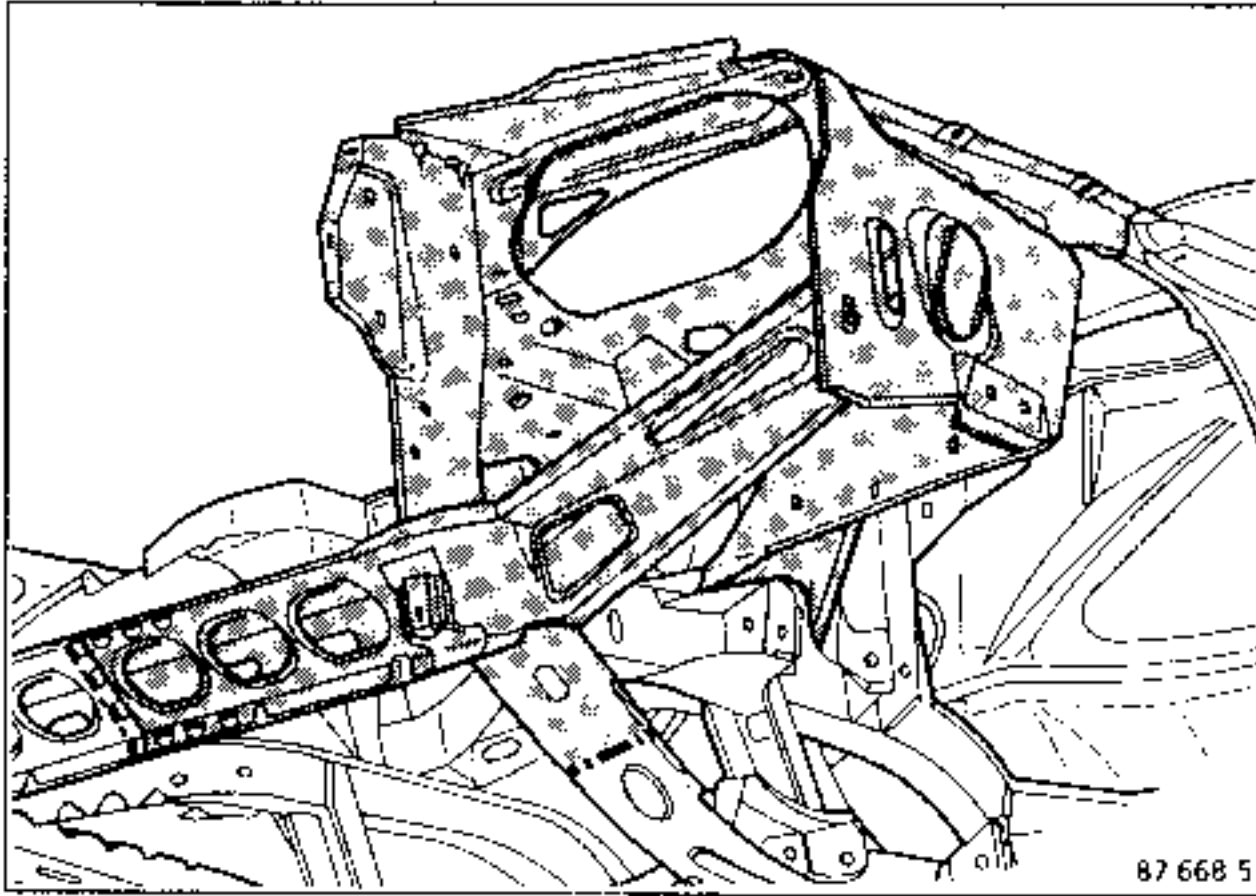
DIAGNOSIS

The front ends of the side members are made with deformation crumple zones (zones A on the diagram).

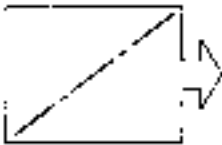
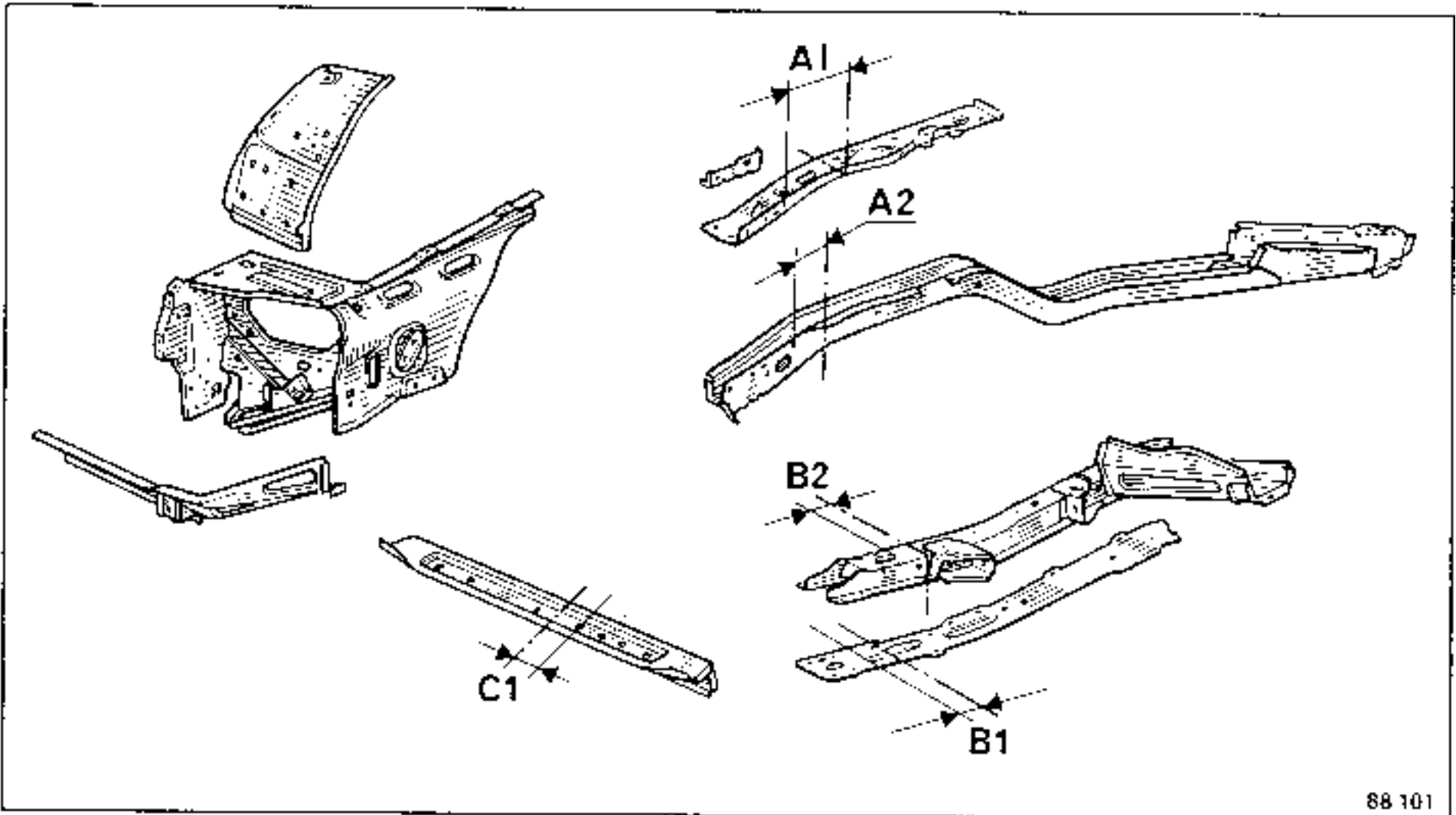
Depending on the scale of the impact, if the damage does not extend beyond the crumple zones, it is possible to replace part of the side member. For this operation, there are several cutting lines.

In the operation described below, the location of these cutting lines represents the limit for partial replacement of the side member, beyond which it must be replaced completely on the repair bench.





A = 12 mm
B = 50 mm
C = 20 mm

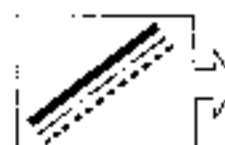
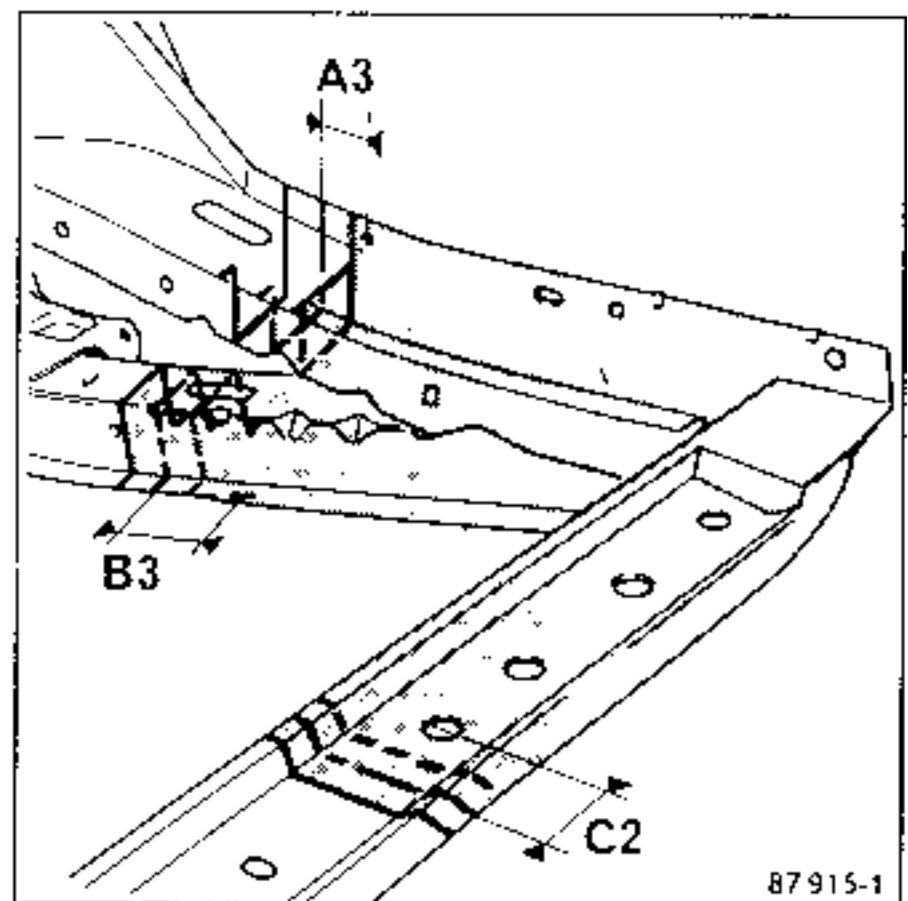


A1 = 150 mm ; A2 = 50 mm ; C1 = 60 mm
B1 = 20 mm ; B2 = 30 mm

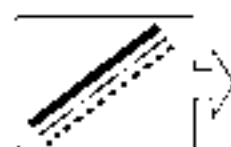
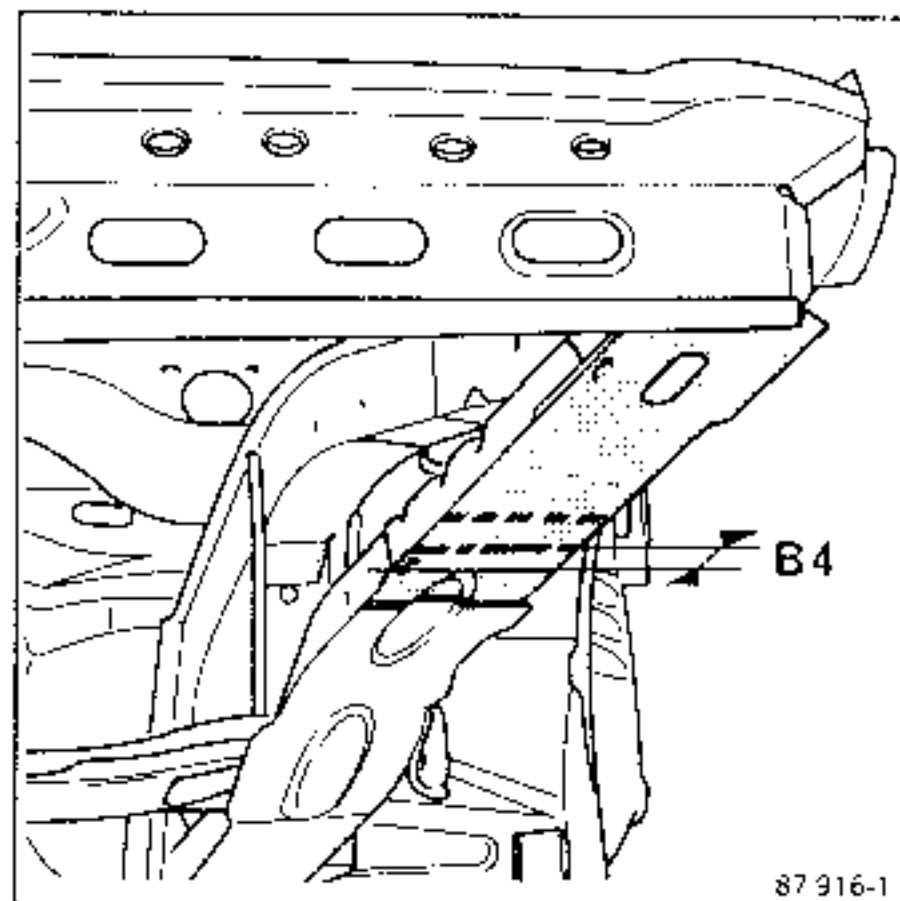
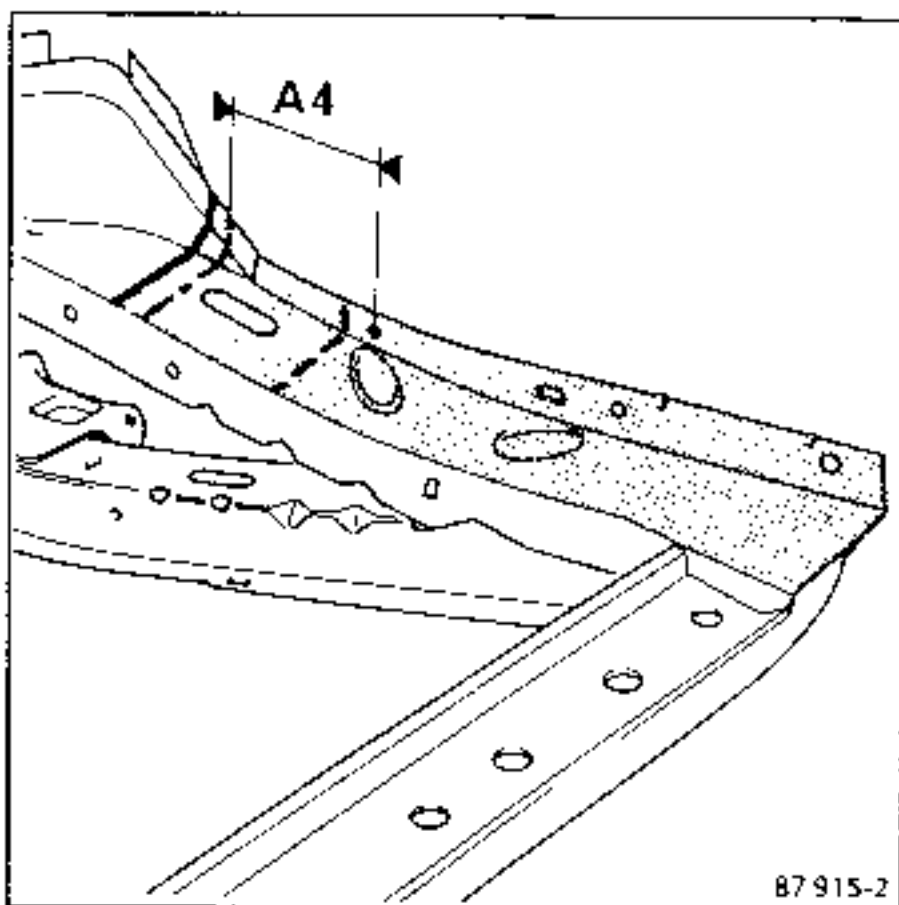
- Cut from the new parts, larger sections than those removed from the vehicle (see distances above).
- Overlap the new part on the vehicle, then attach it using a vice clamp.
- Simultaneously saw the two panel thicknesses so as to make it easier to adjust the cuts.

a - Side members and cross panel

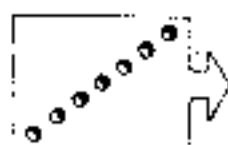
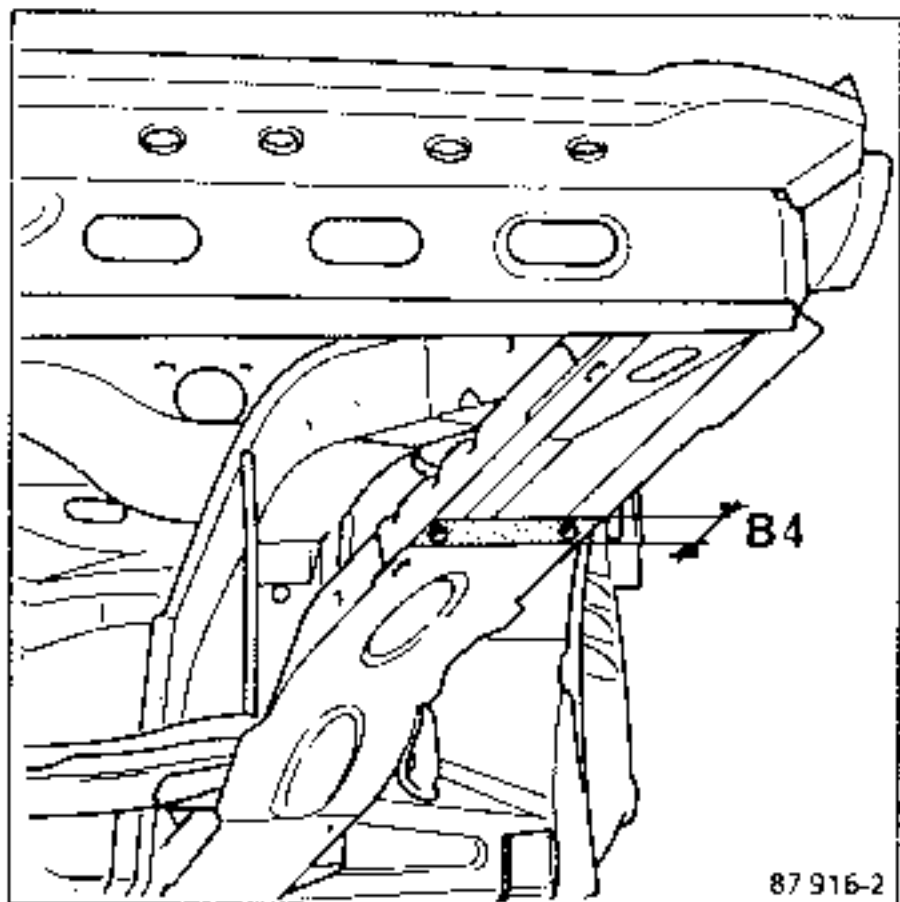
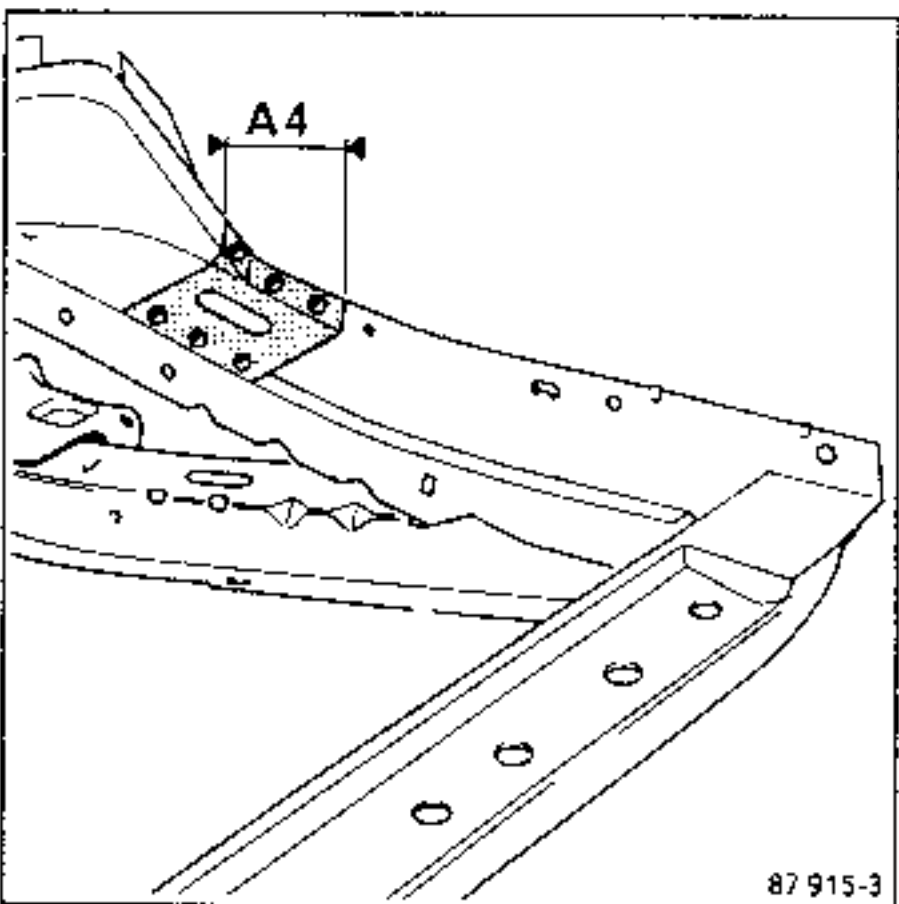
A3 = 30 mm
B3 = 60 mm
C3 = 40 mm



b - Side member closure panels



A4 = 120 mm
B4 = 20 mm

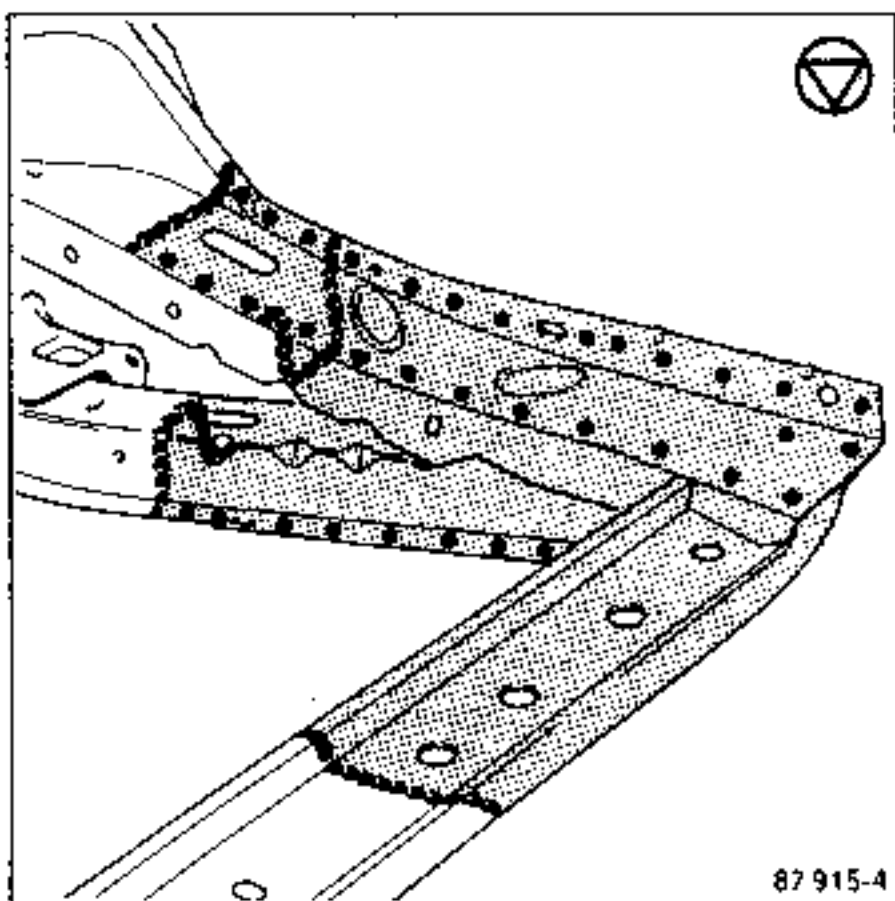


- Remove the two side member closure panels and unpick the remaining parts.

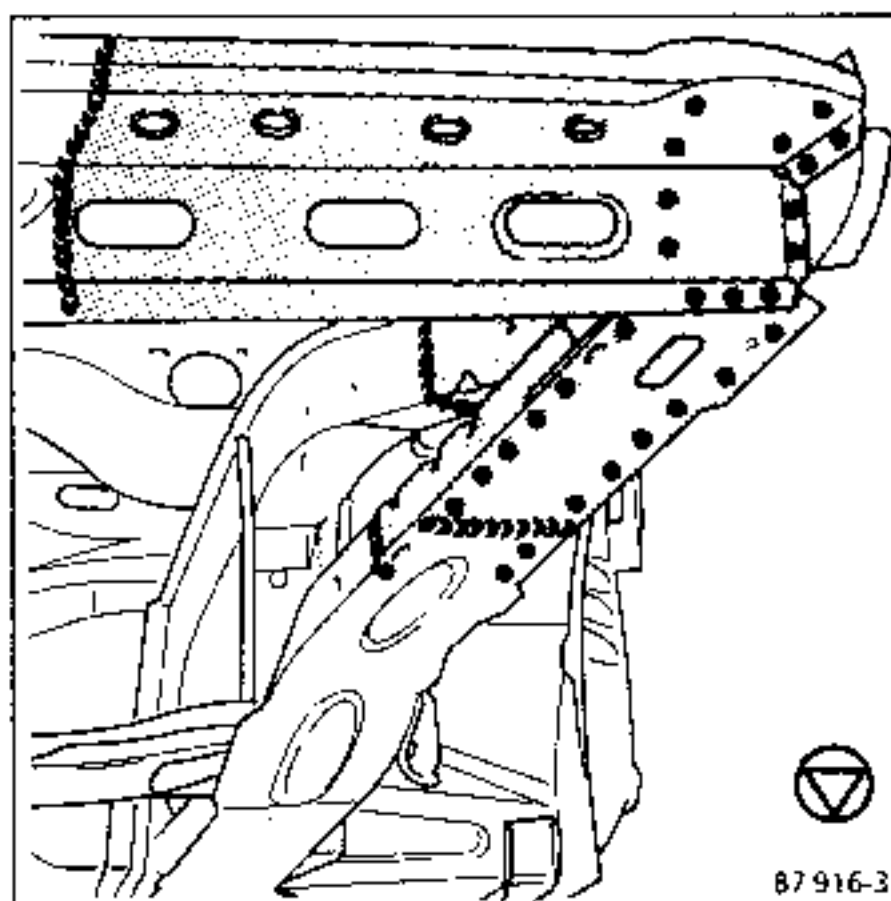
PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with an electroplastic mastic bead (see "List of Symbols" at the beginning of this chapter).
- Coat the parts to be plug welded with zinc paint.
- Adjust the new part then secure it using a vice clamp.

WELDING



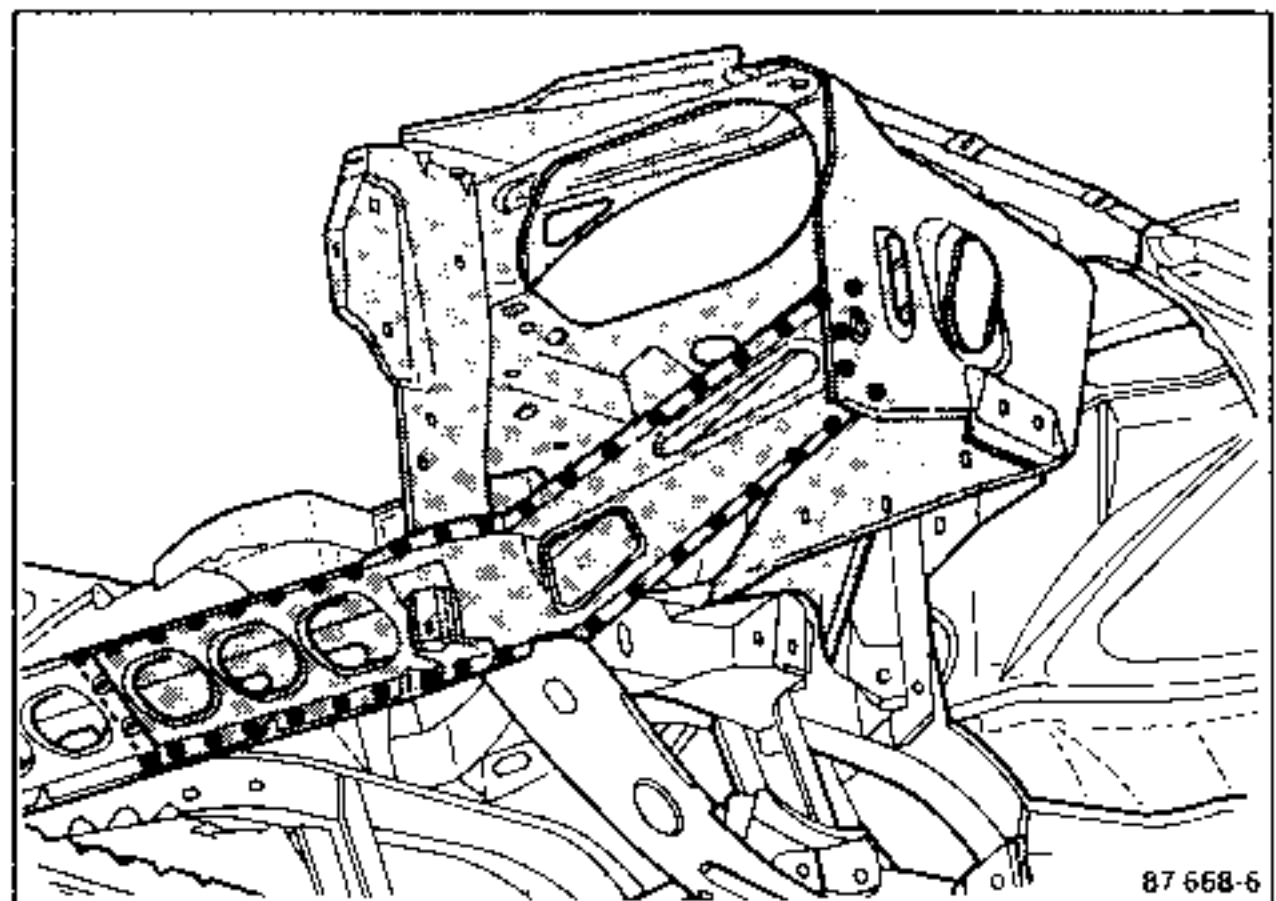
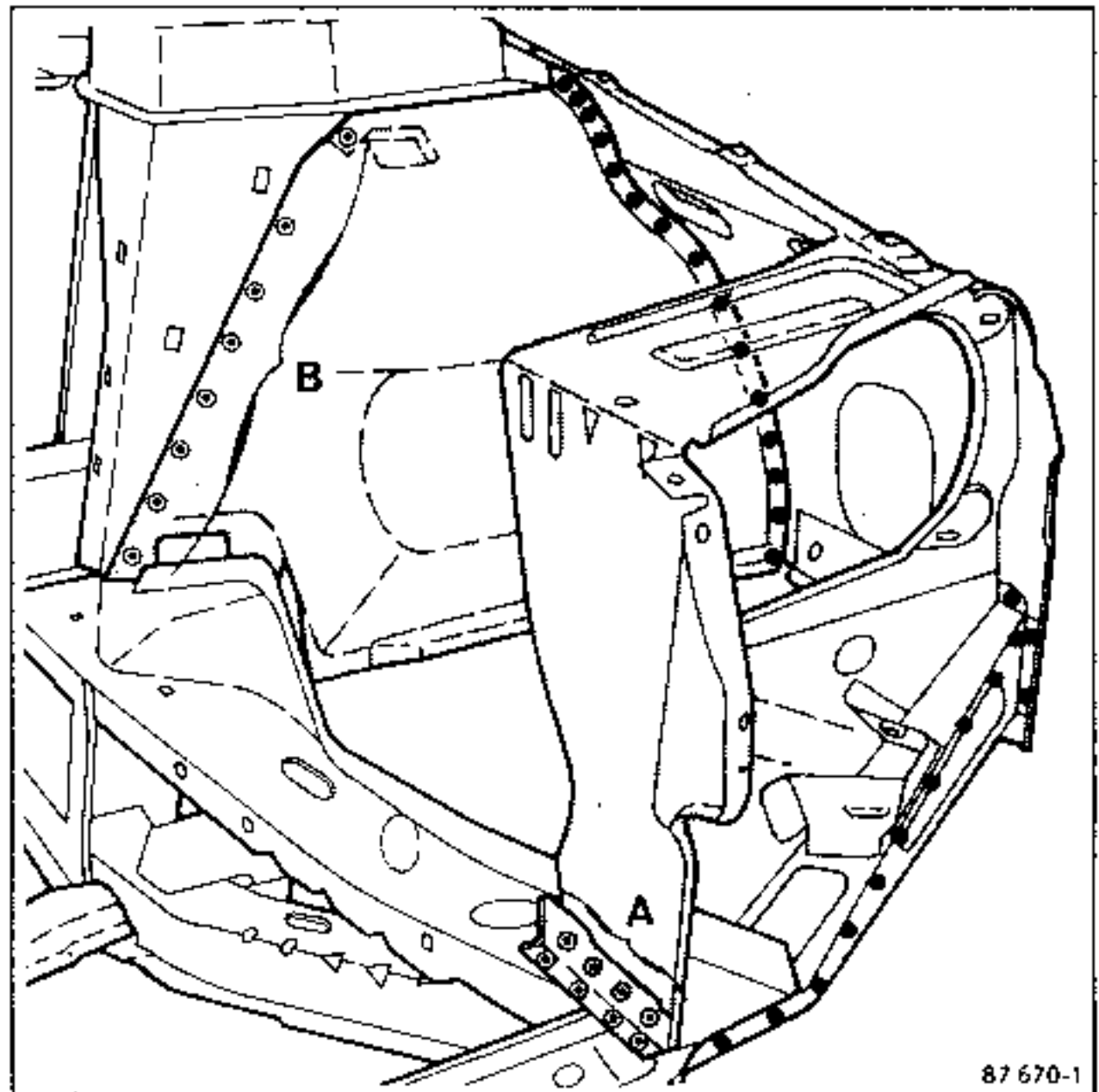
$e = 3 \text{ mm}$; $H = 75 \text{ mm}$



- Stitch weld on the butt welding lines.
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas.



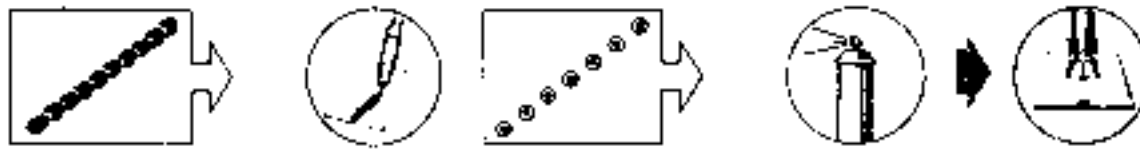
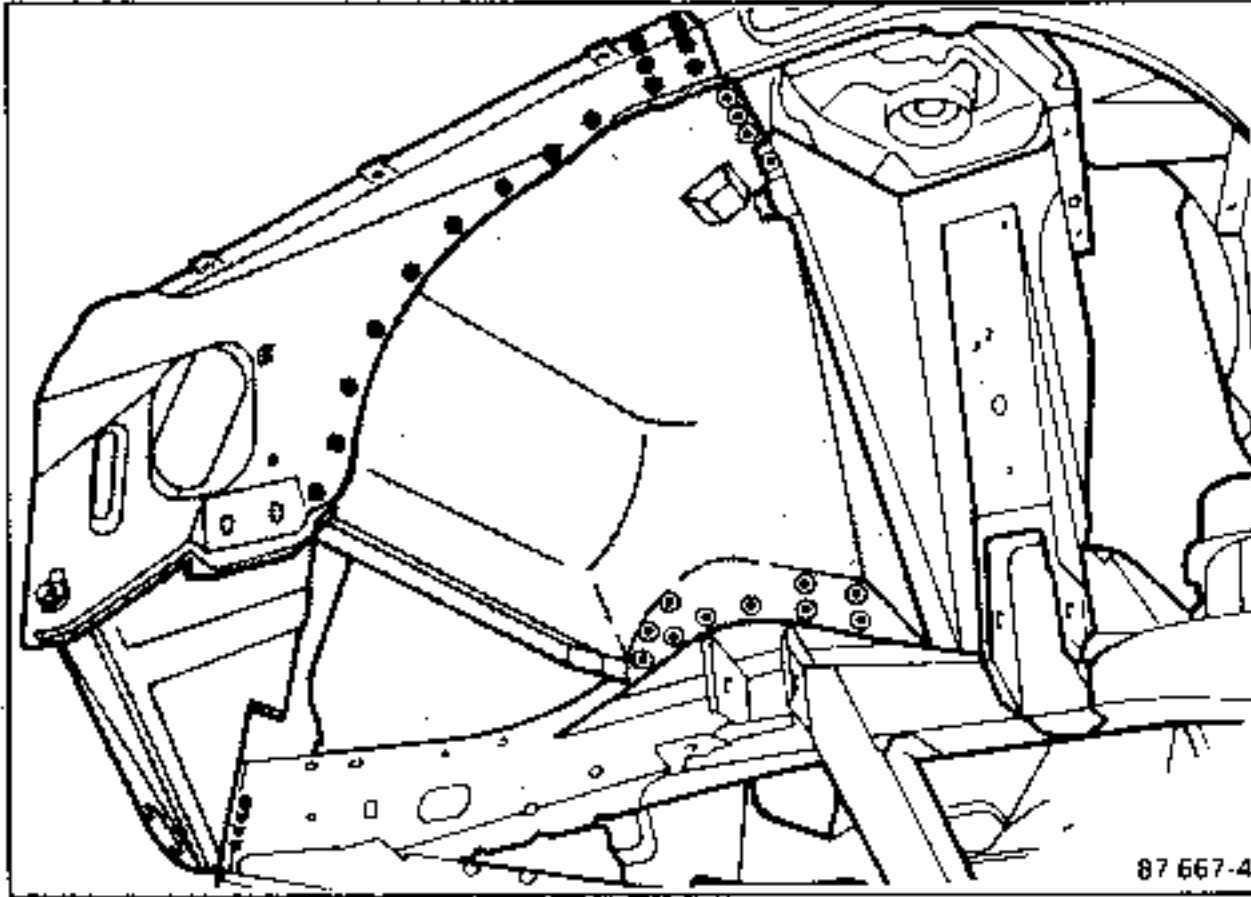
A : D = 6,5 mm
B : D = 5 mm



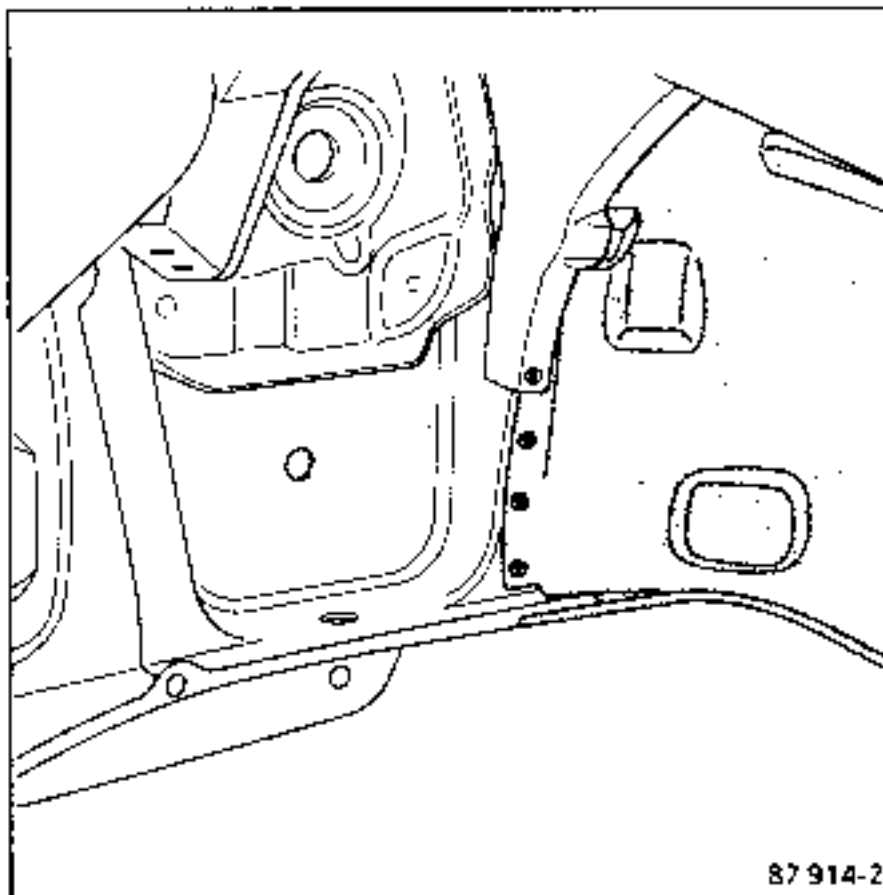
e = 1,4 mm ; H = 55 mm



D = 5 mm



D = 5,5 mm



D = 6,5 mm

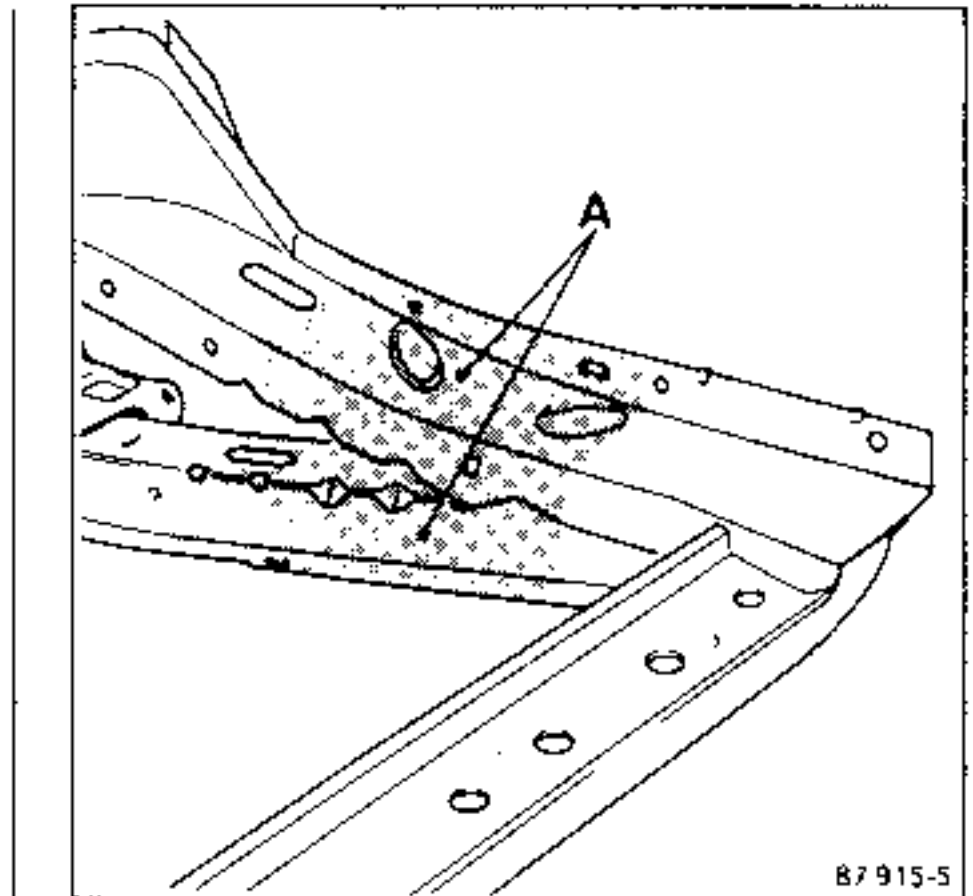
THIS OPERATION IS IN ADDITION TO THE ABOVE

DIAGNOSIS

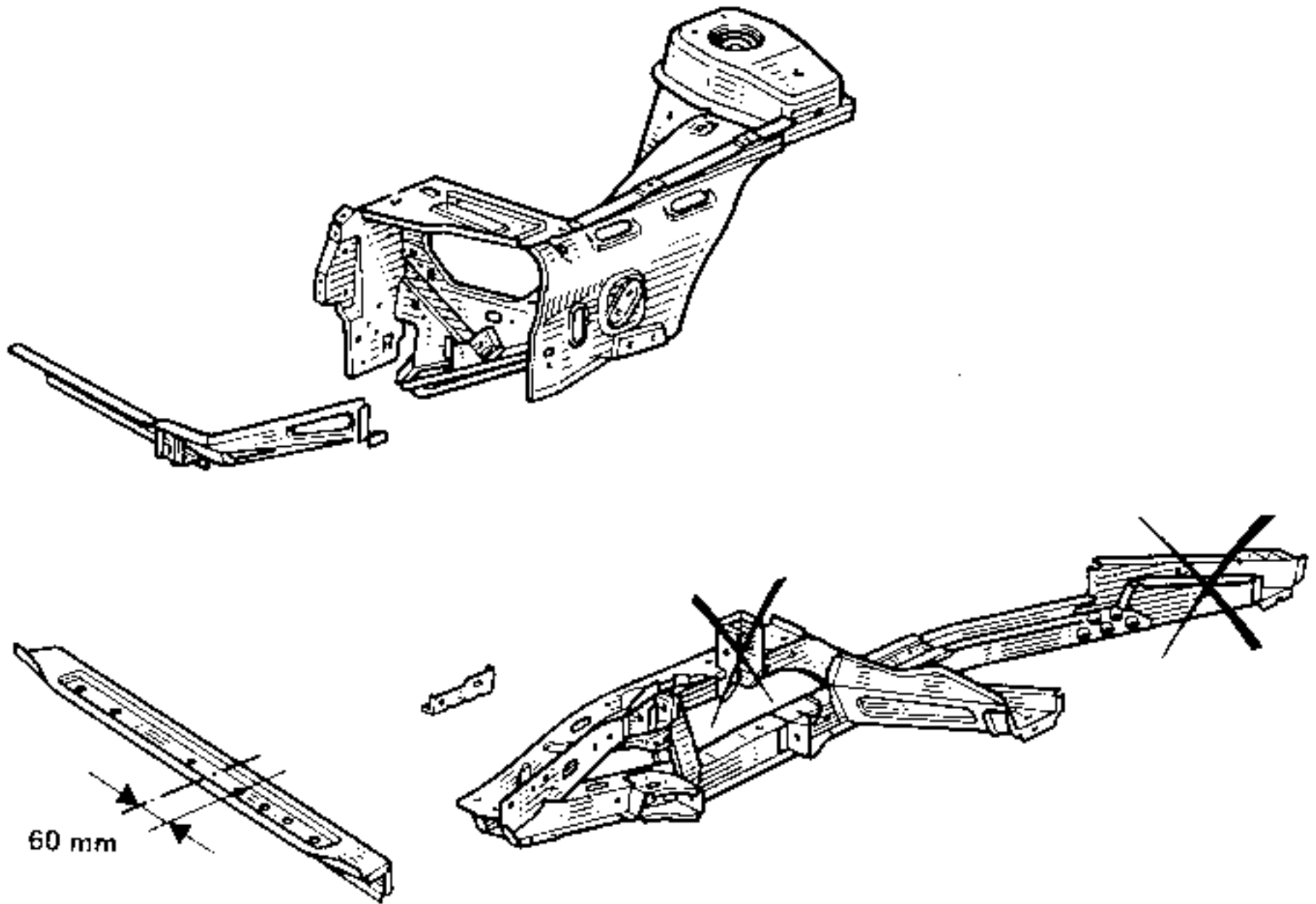
The front ends of the side members are made with deformation crumple zones (zones A on the diagram).

Depending on the scale of the impact, if the damage does not extend beyond the crumple zones, it is possible to replace part of the side member. Beyond this limit, it must be completely replaced as described below.

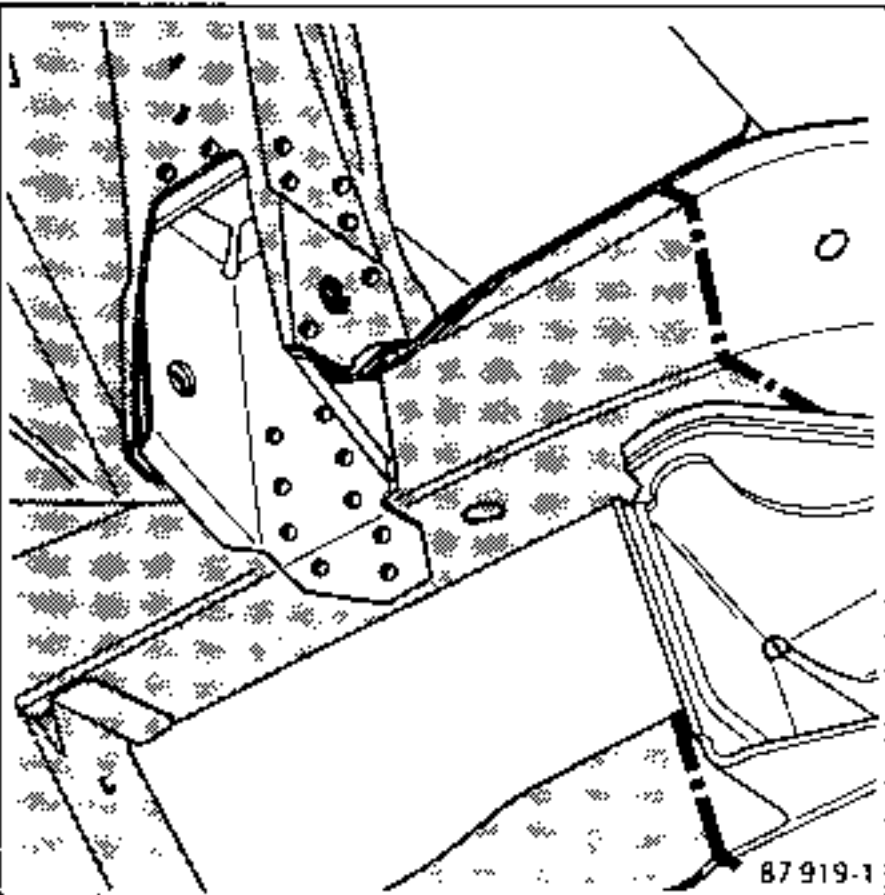
This operation is to be performed on the repair bench.



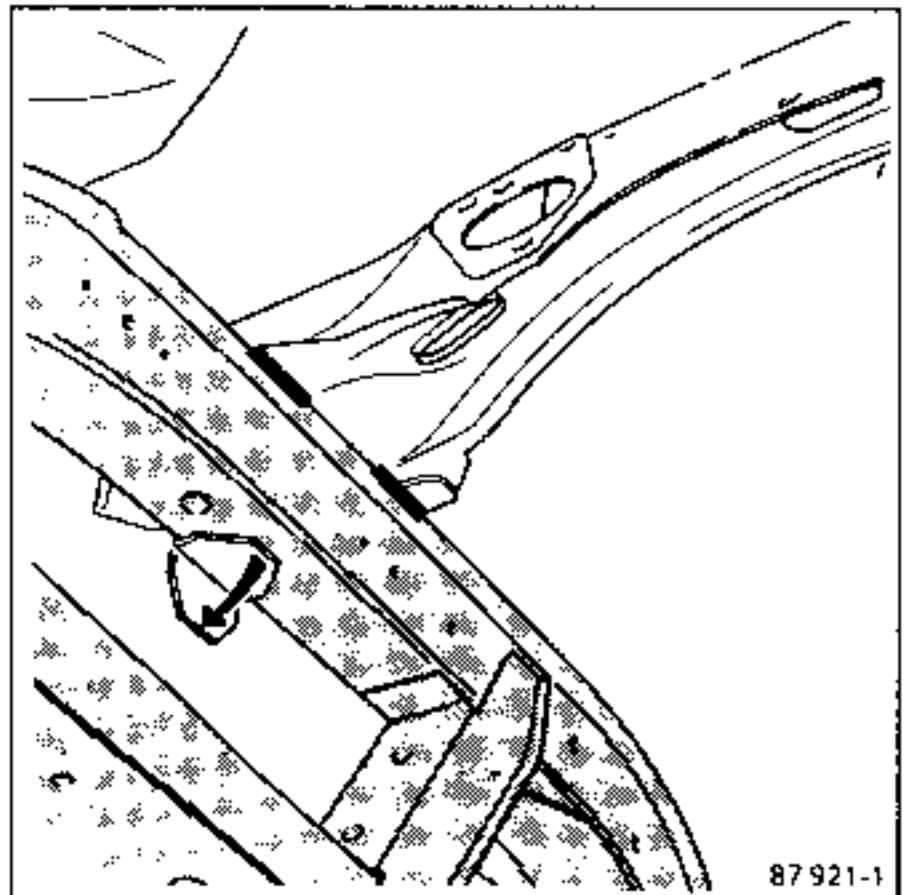
87 915-5



88 127

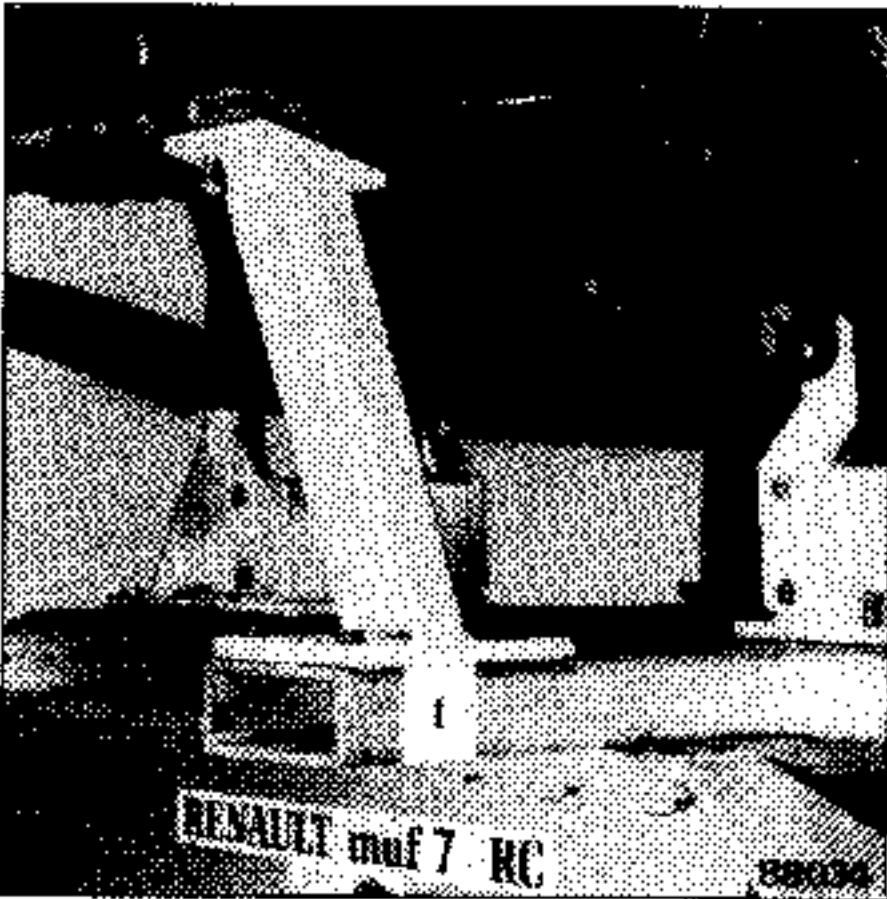


87 919-1



87 921-1





- Fit the extreme front bracket.



- Fit the front axle bracket with the mechanical unit dismantled.

PREPARATION BEFORE WELDING

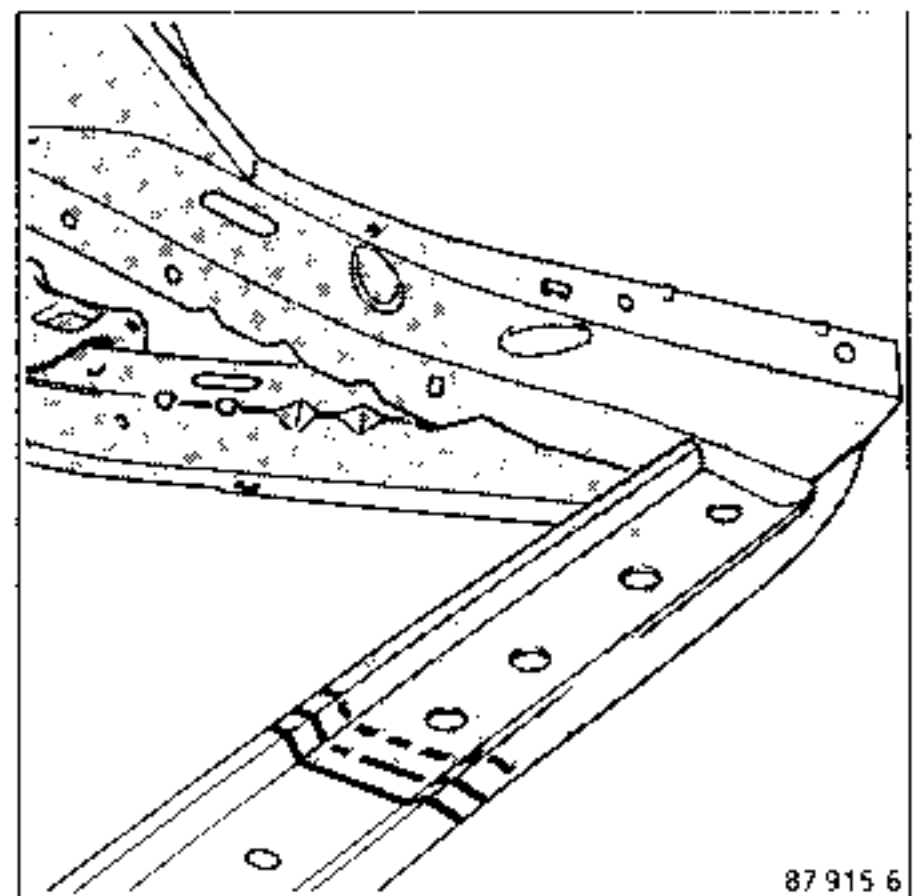
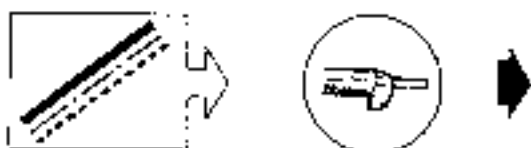
- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on the new parts).
- Coat with an electroplastic mastic bead the parts to be spot welded (see "List of Symbols" at the beginning of this chapter).

NOTE:

The various parts are assembled in two stages:

- 1 - Fitting and welding of side member and part front cross member
- 2 - Fitting and welding of complete cowl.

- Fit the side member and attach it to the bench brackets.
- Take a piece from the new part approximately 50 mm larger than that cut from the vehicle.

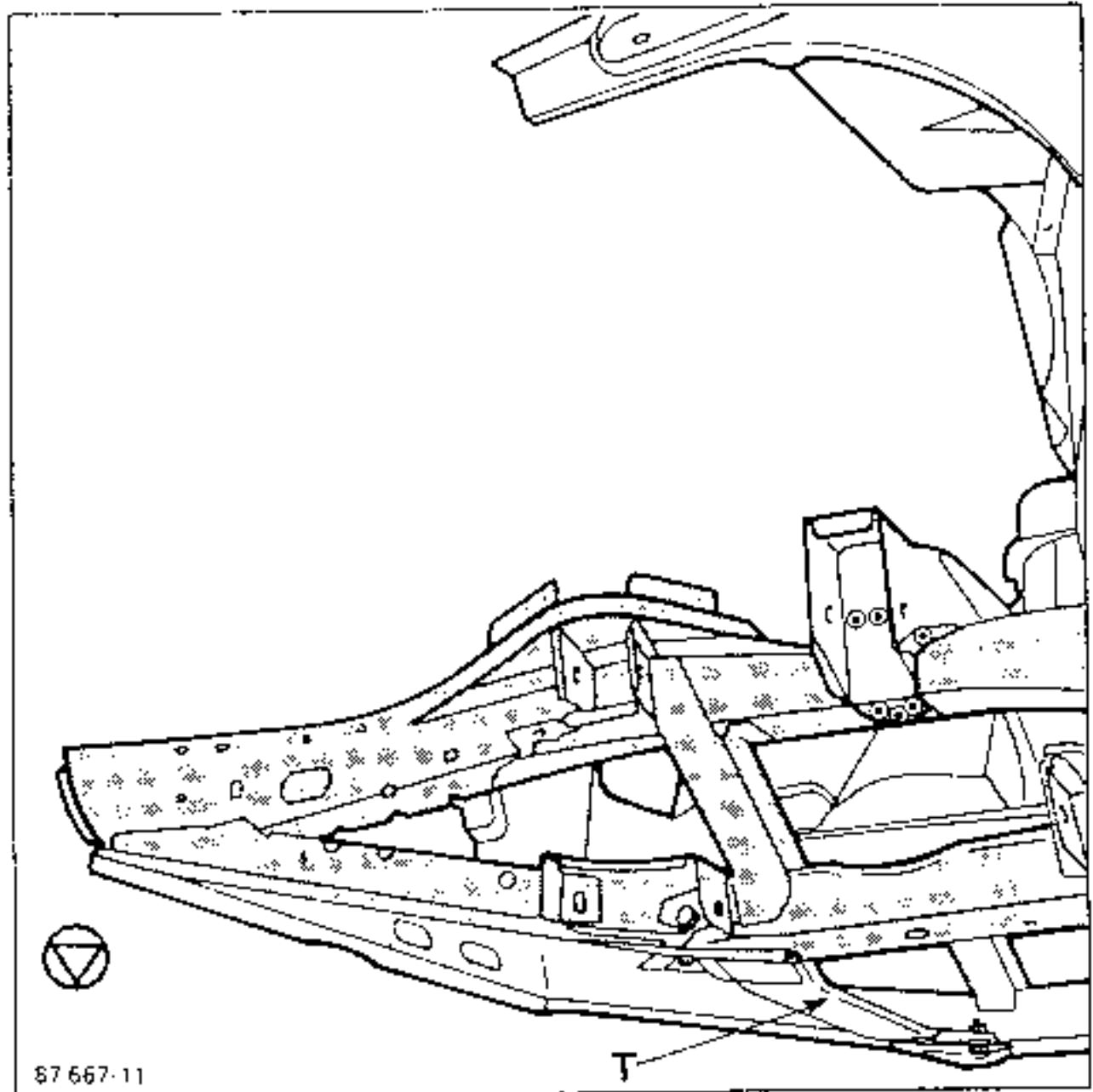


- Fit the bolted cross member (T).

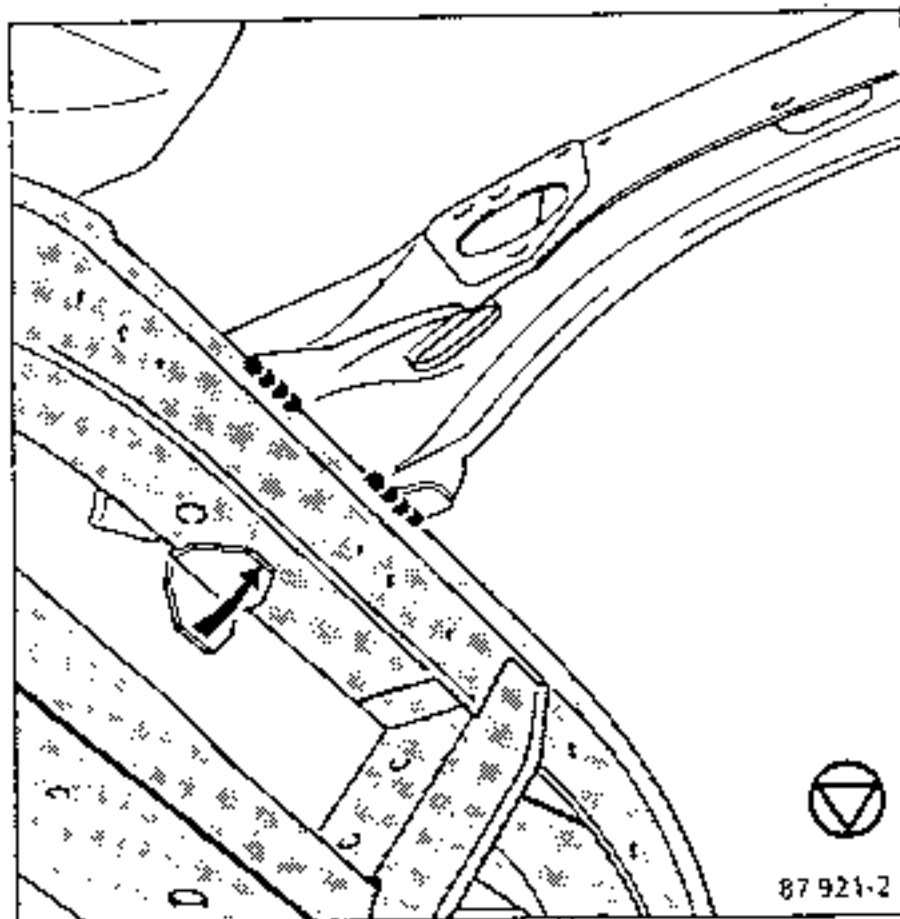
WELDING



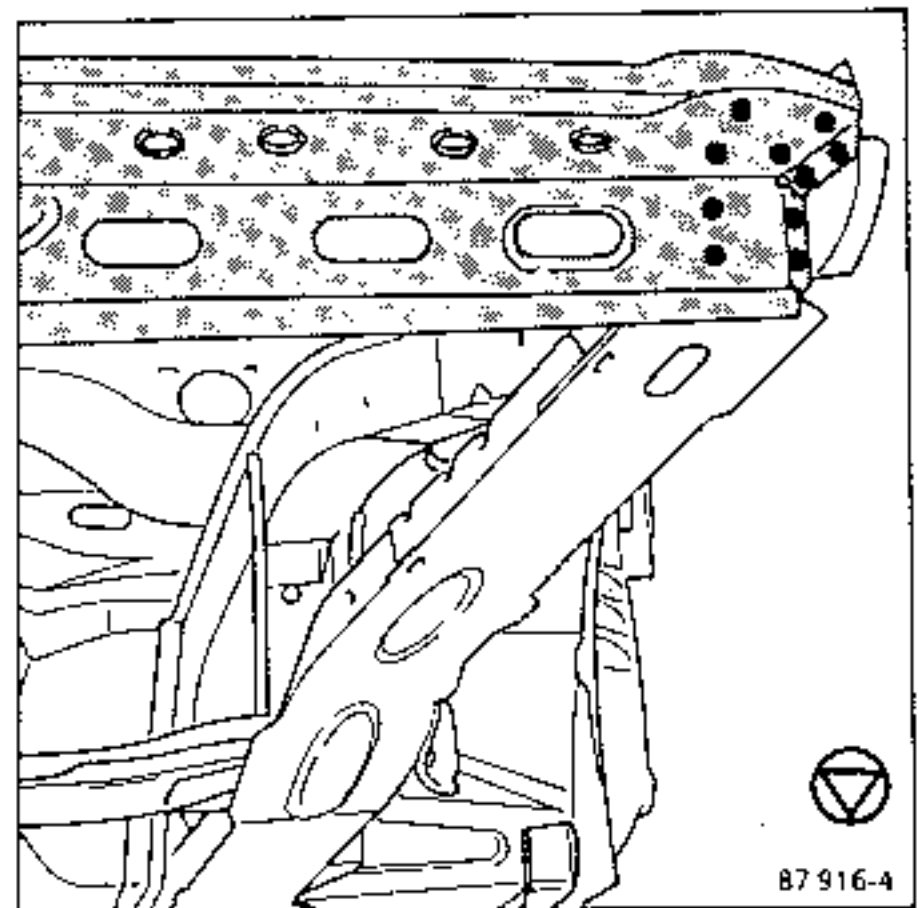
$D = 6,5 \text{ mm}$



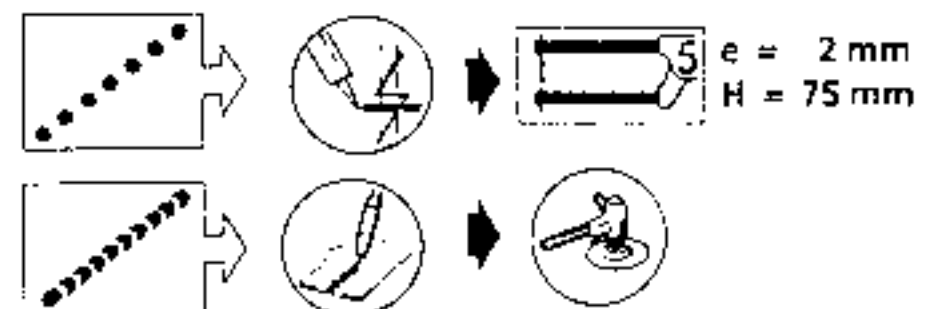
87 667-11

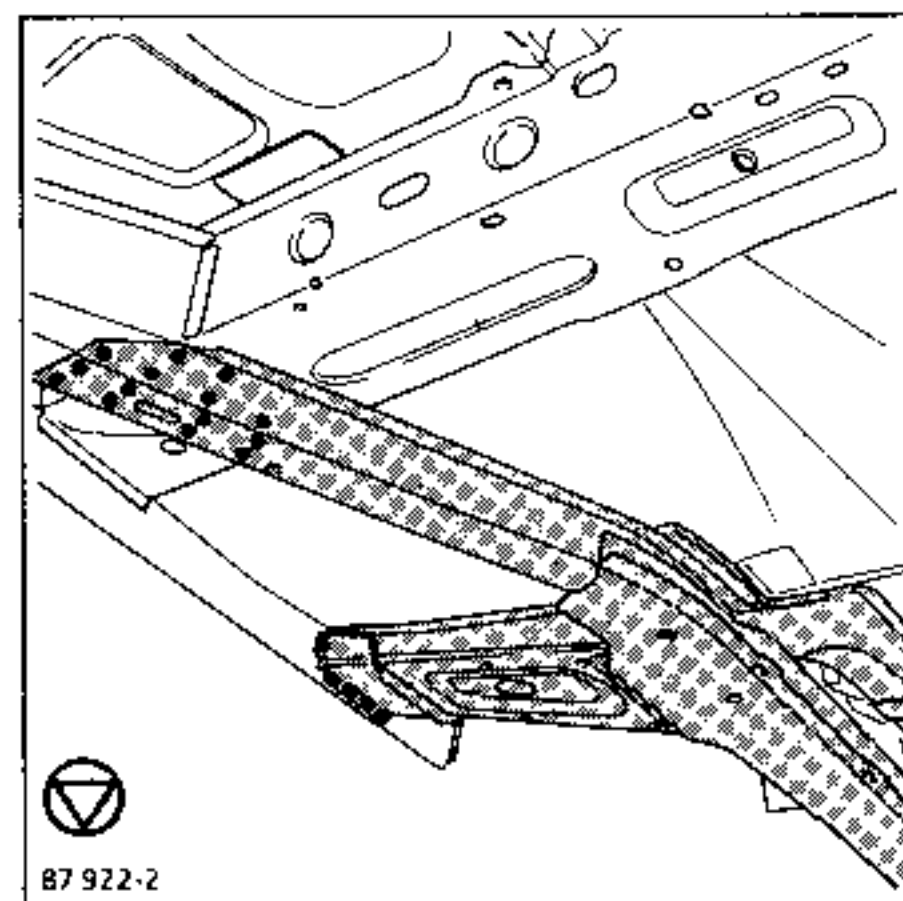
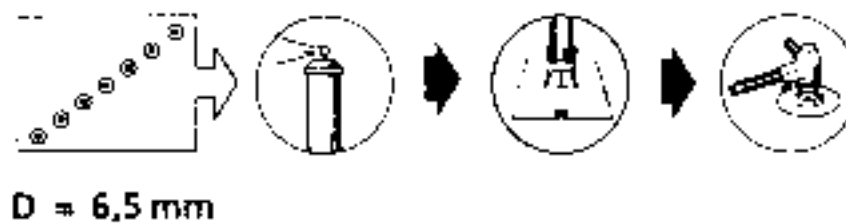
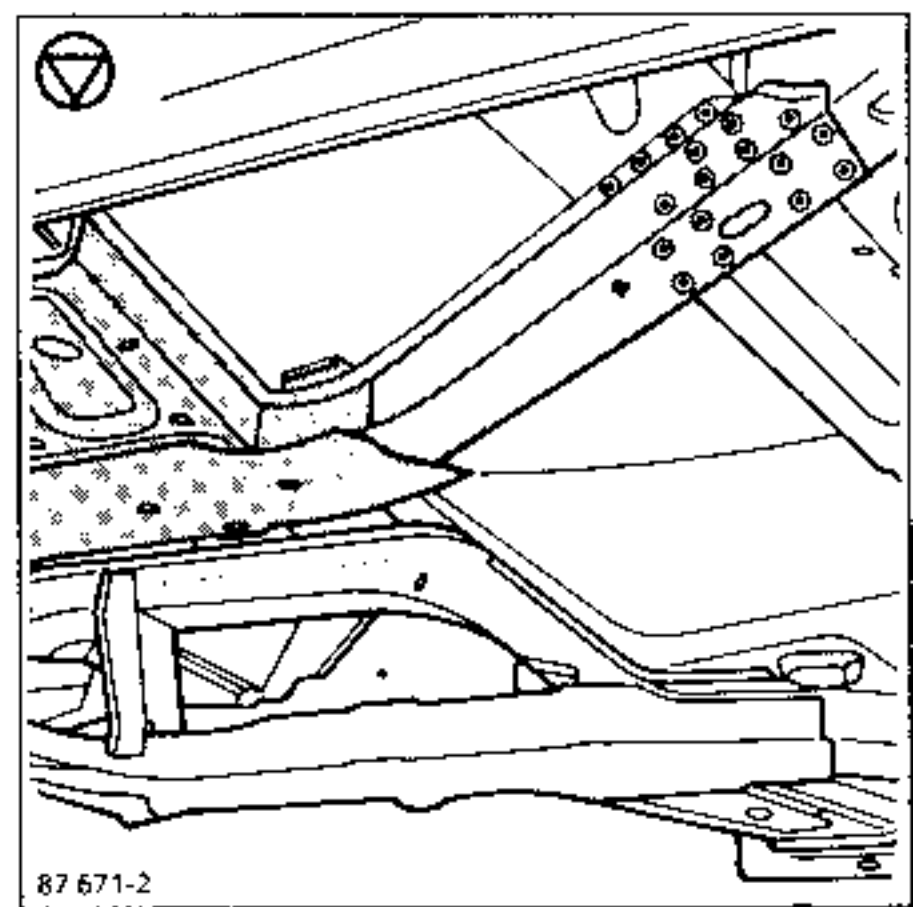
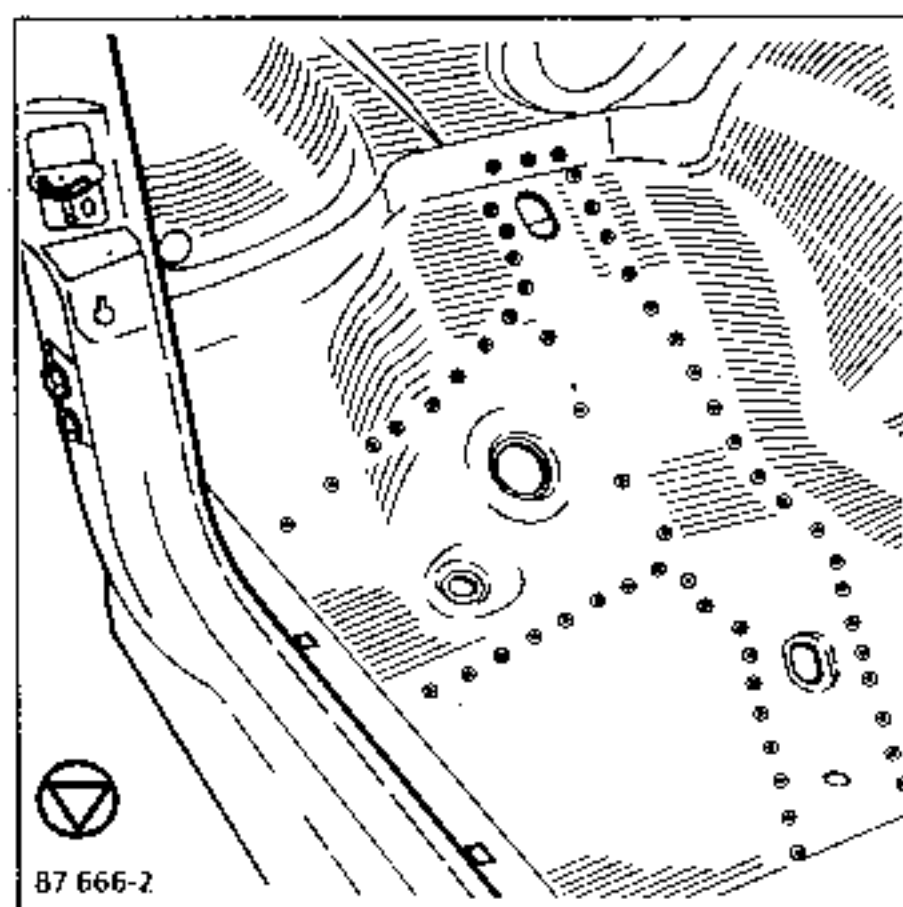


87 921-2

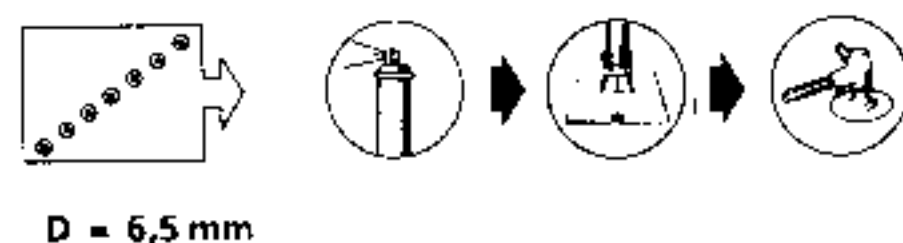


87 916-4

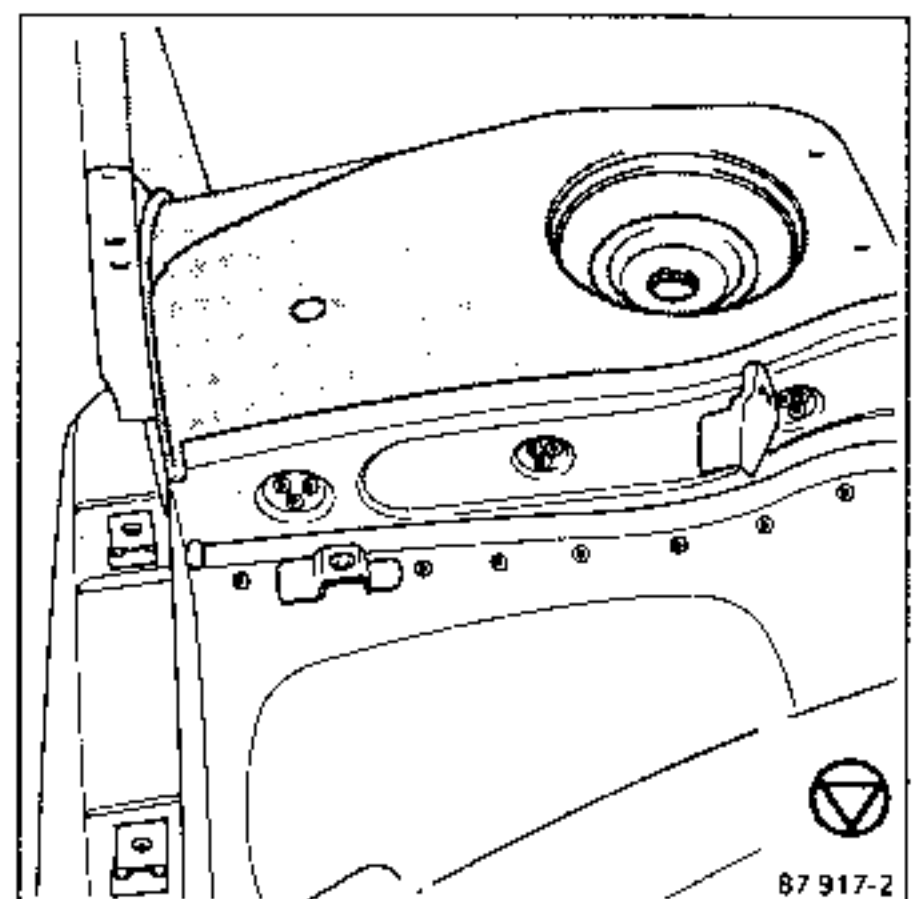
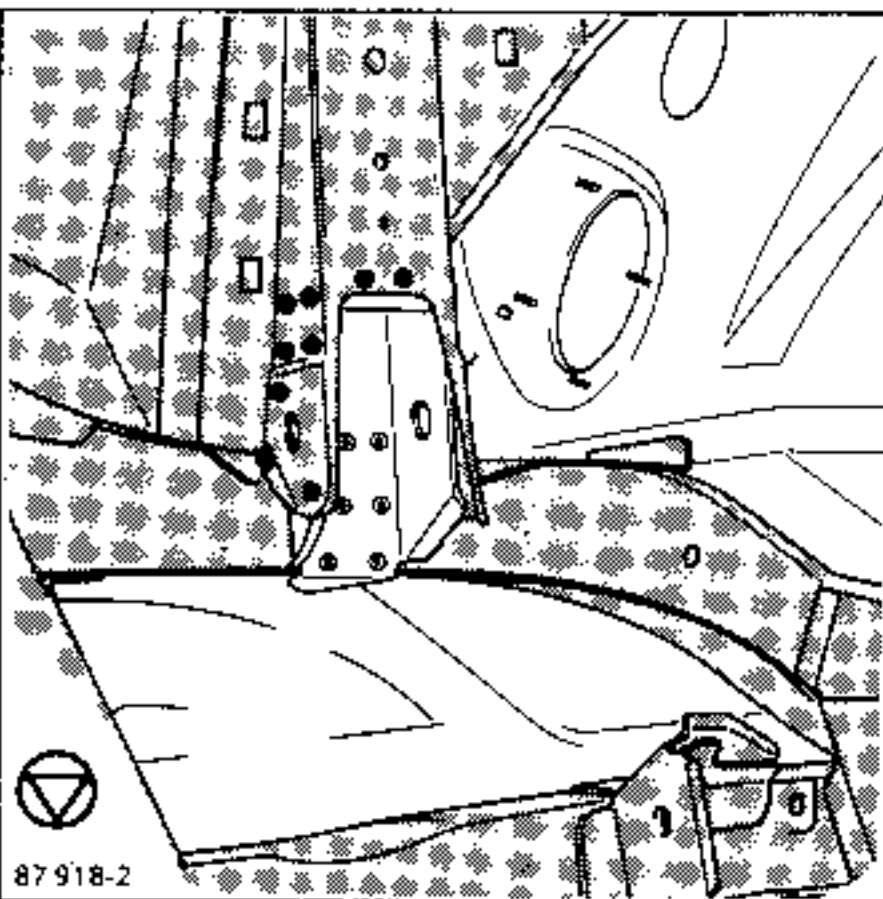
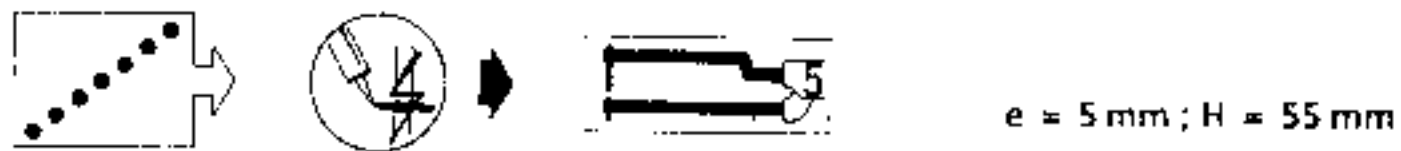
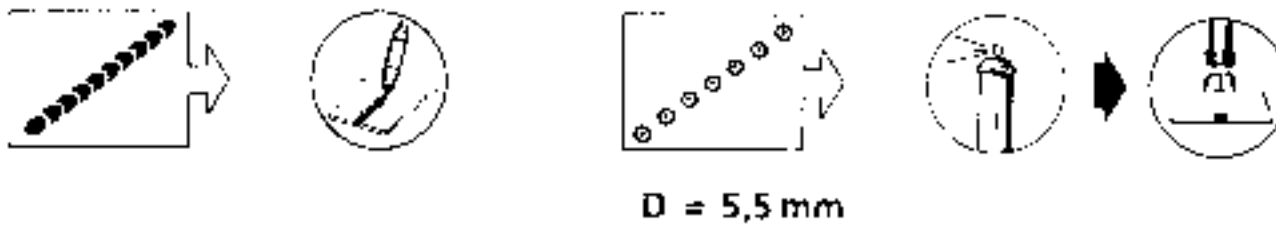
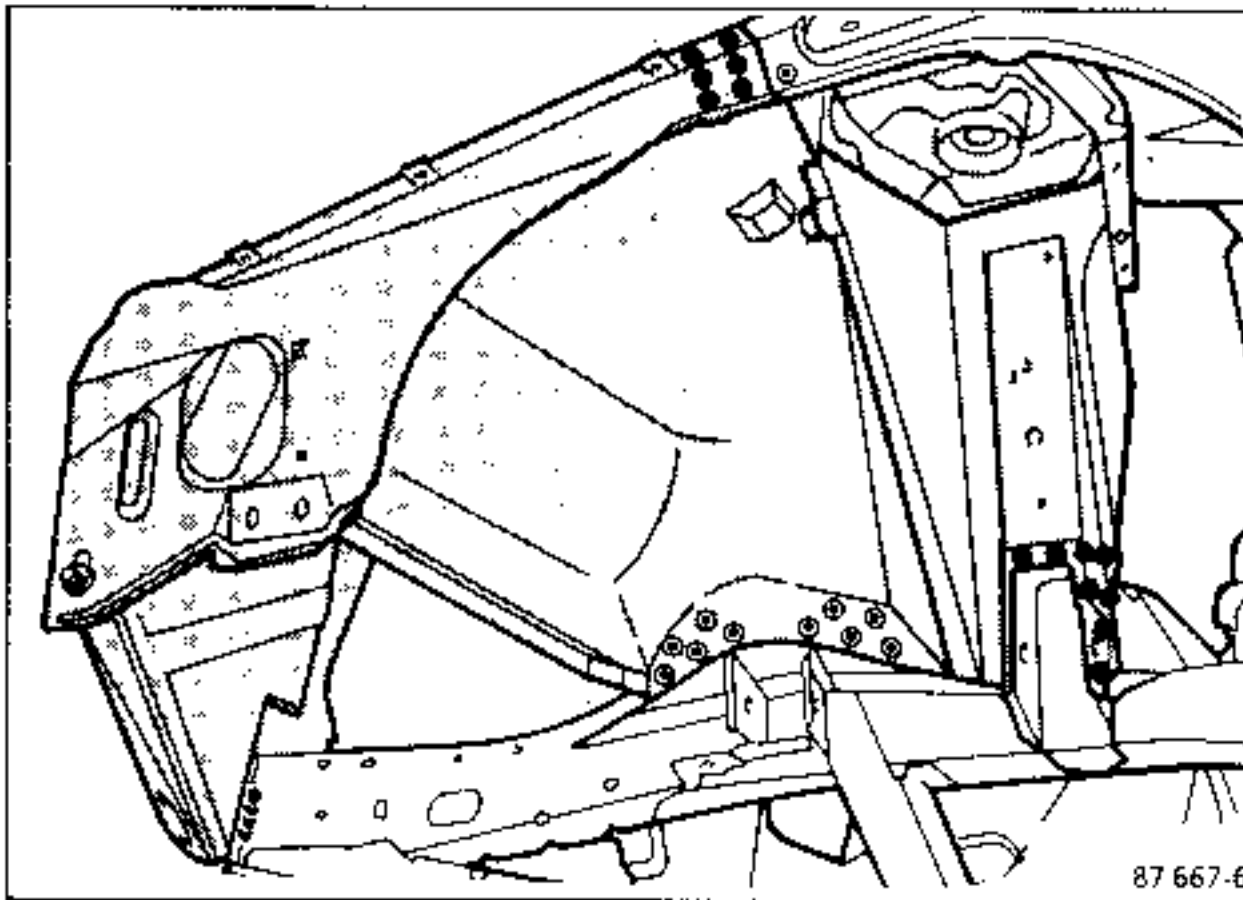


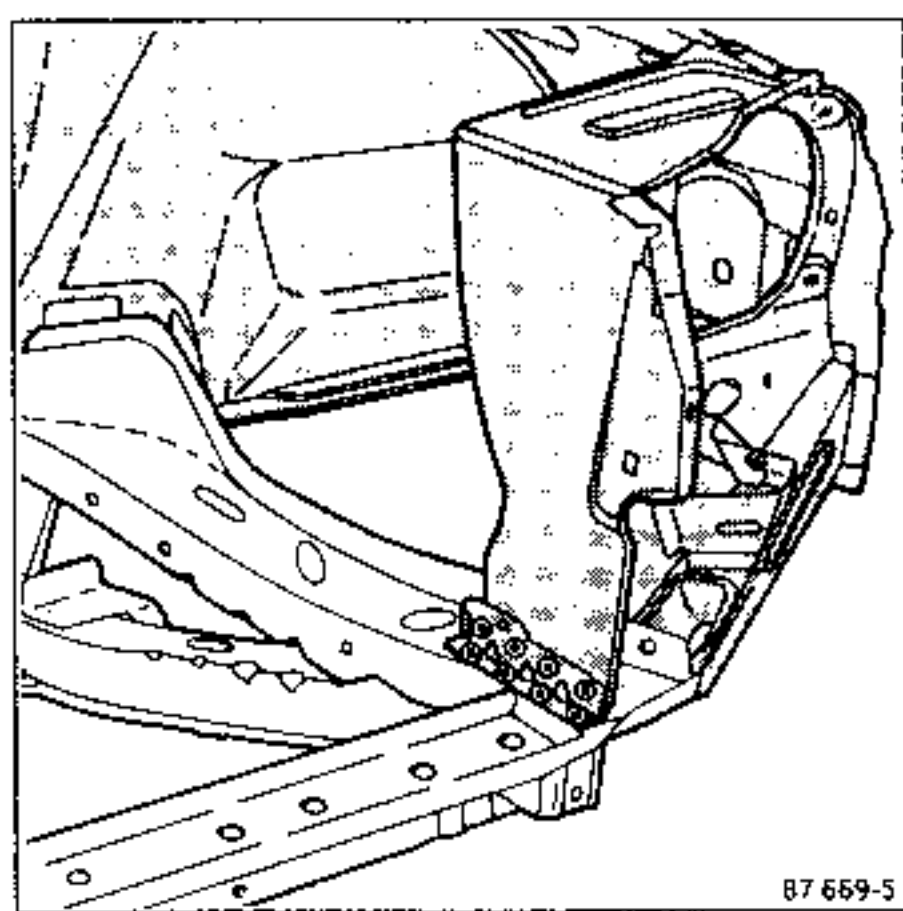


- Stitch weld along the butt welding lines.
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas. (This operation can also be carried out using a gun with a 75 to 100 nozzle.)
- Plug weld under protective gas. To do this, drill the first panel to diameter D, shown under the drawings.

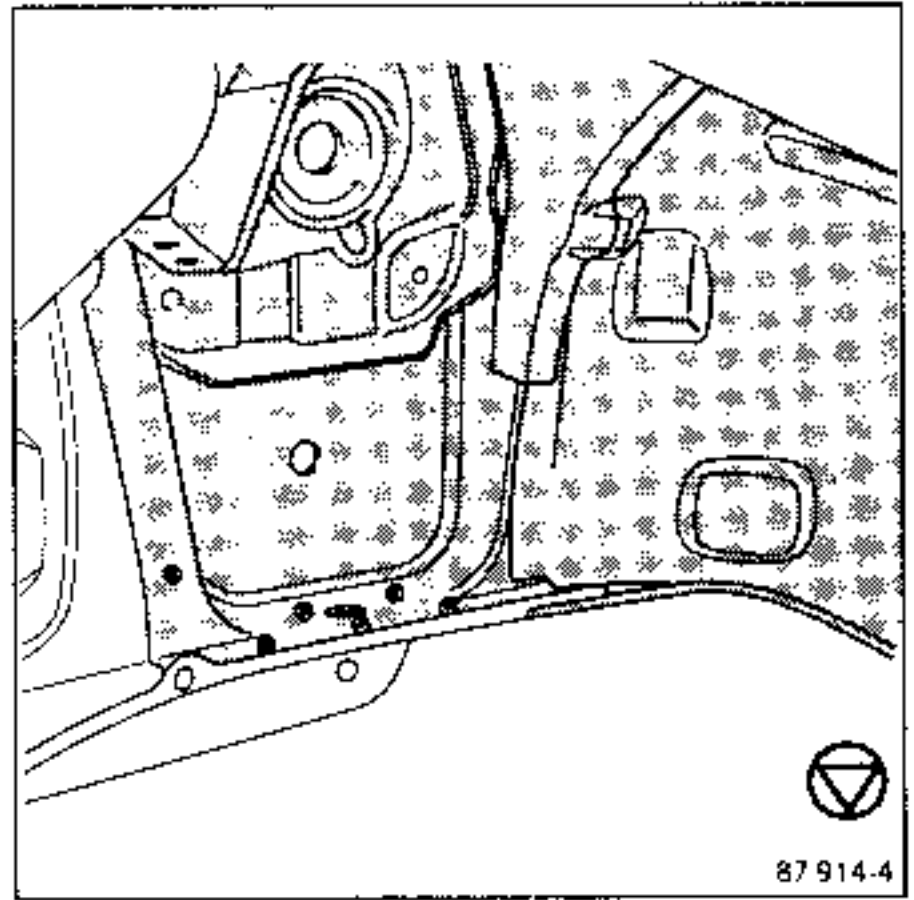


WELDING

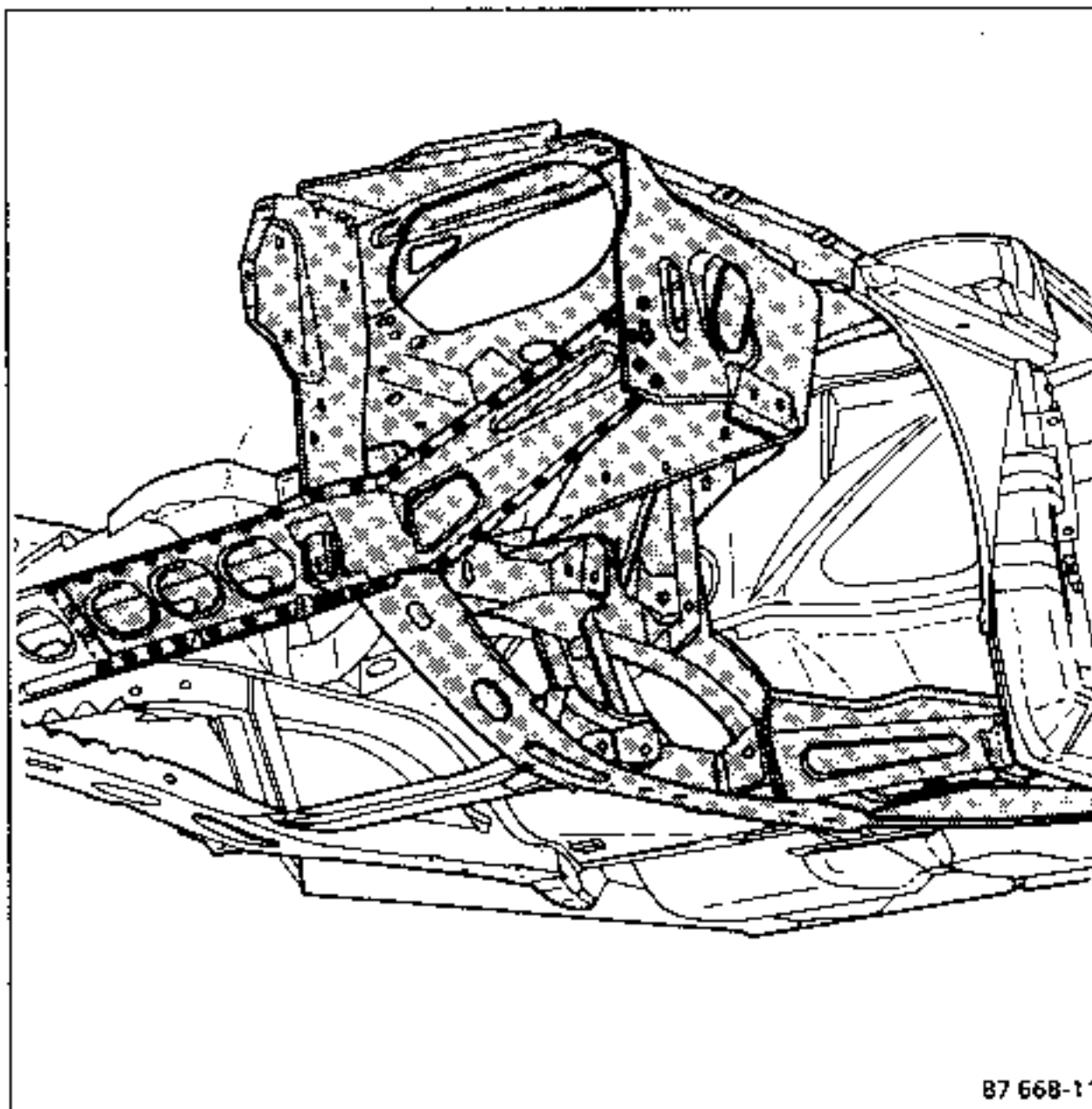
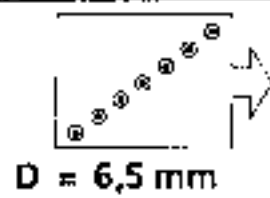




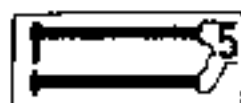
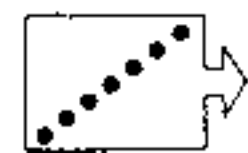
87 659-5



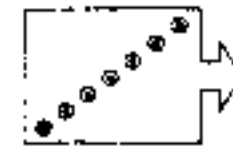
87 914-4



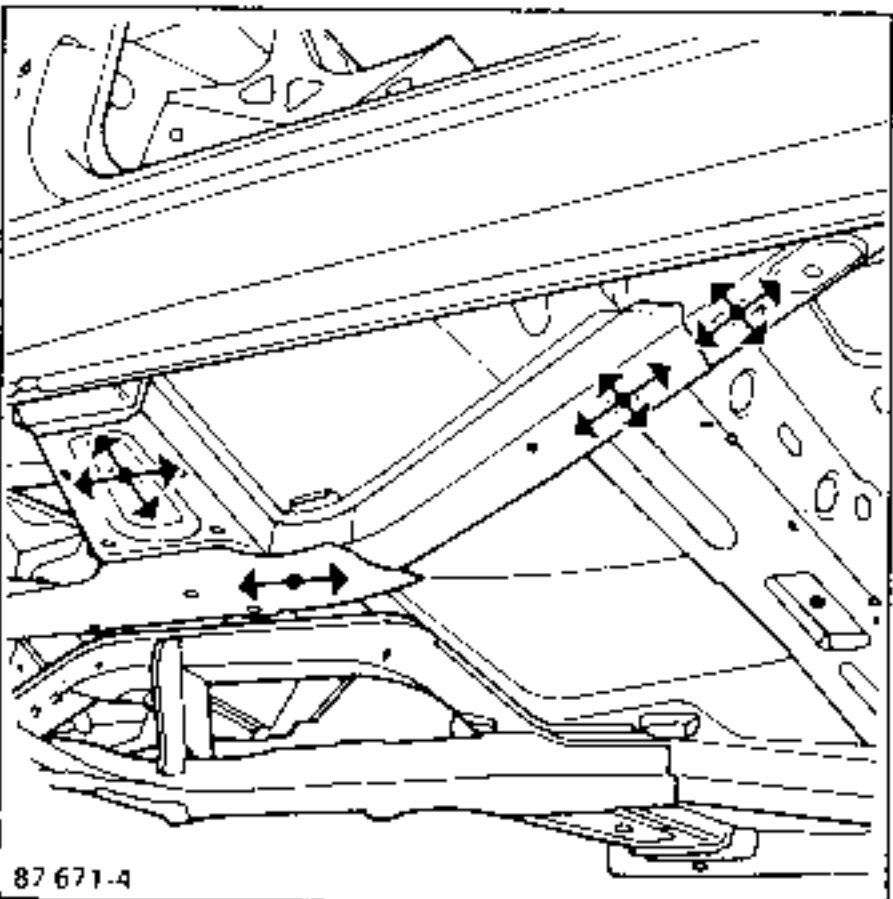
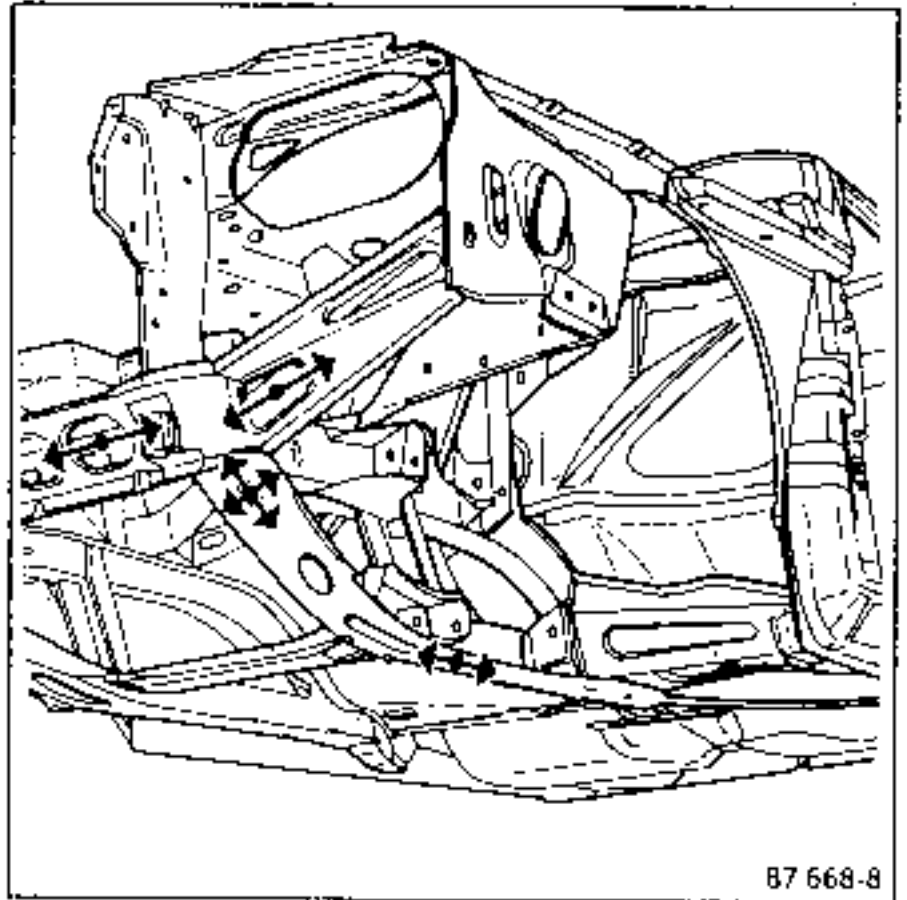
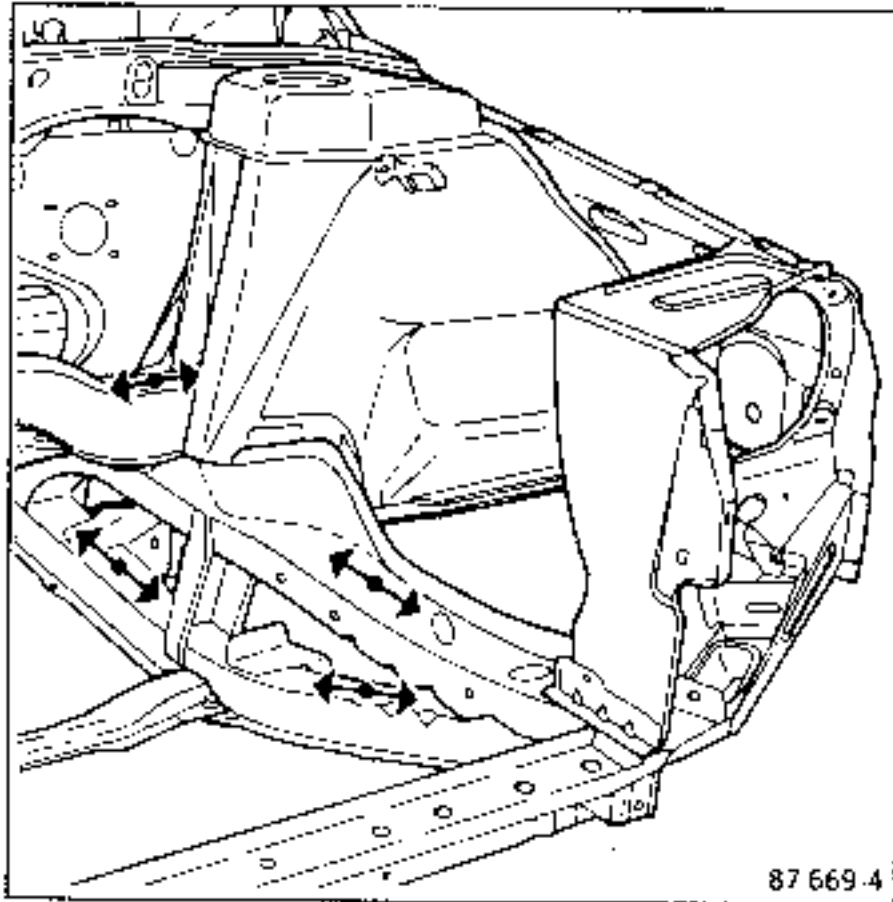
87 668-11



■ 1,4 mm
■ 55 mm



After painting, treat with hollow section wax.



This operation is identical to the previous one, as far as the cowl and side member are concerned.

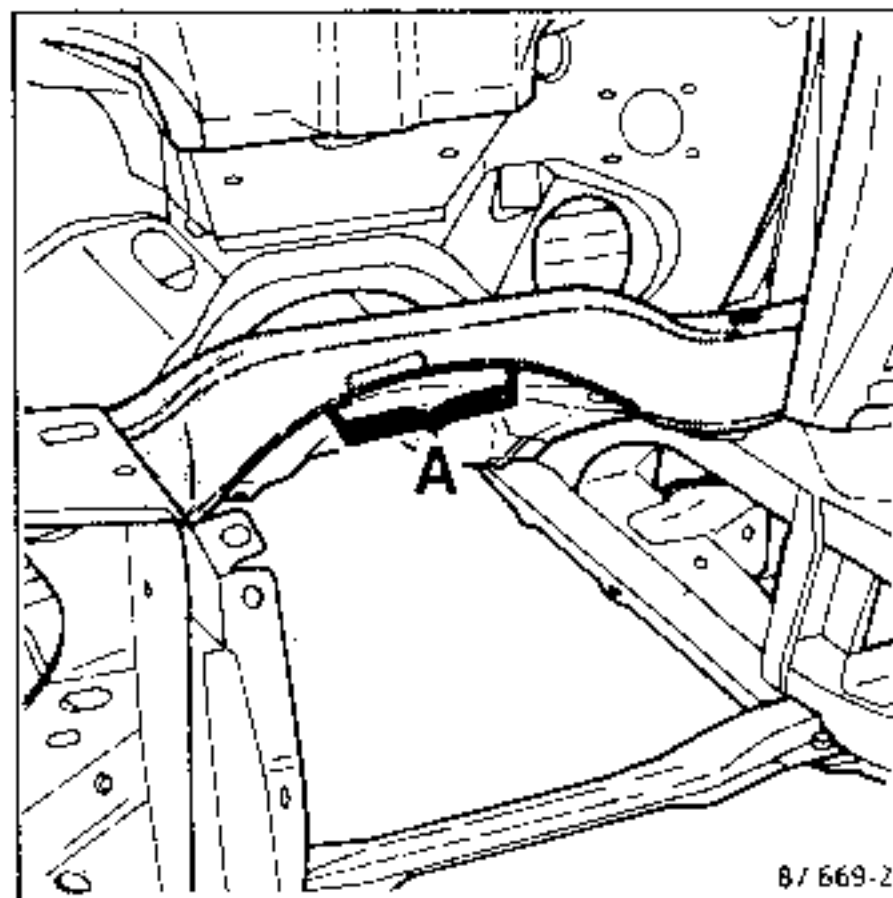
Below you will find the special features of replacing the front cross member and the steering cross member.

DIAGNOSIS

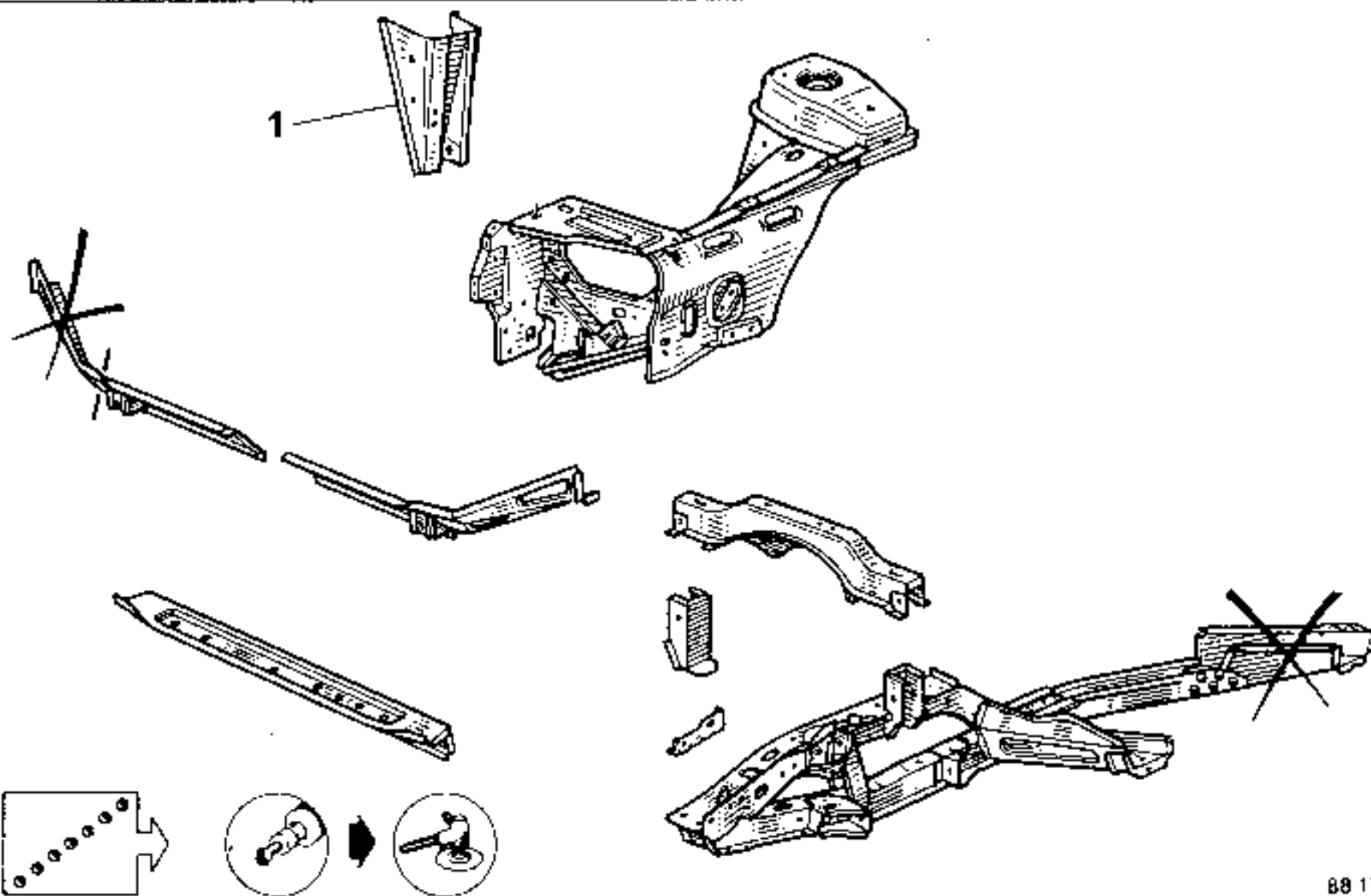
The centre part of the steering cross member may have been damaged.

This damage is only visually noticeable by checking zone A shown on the diagram opposite.

Replacing the steering cross member involves replacing the shock absorber cup washer riser (part (1)) of the side opposite the impact.



87 669-2



88 131

PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all zones to be welded (on the vehicle and on the new parts).
- Coat with electroplastic mastic bead the parts to be spot welded (see "List of Symbols" at the beginning of this chapter).
- Coat the parts to be plug welded with zinc paint.

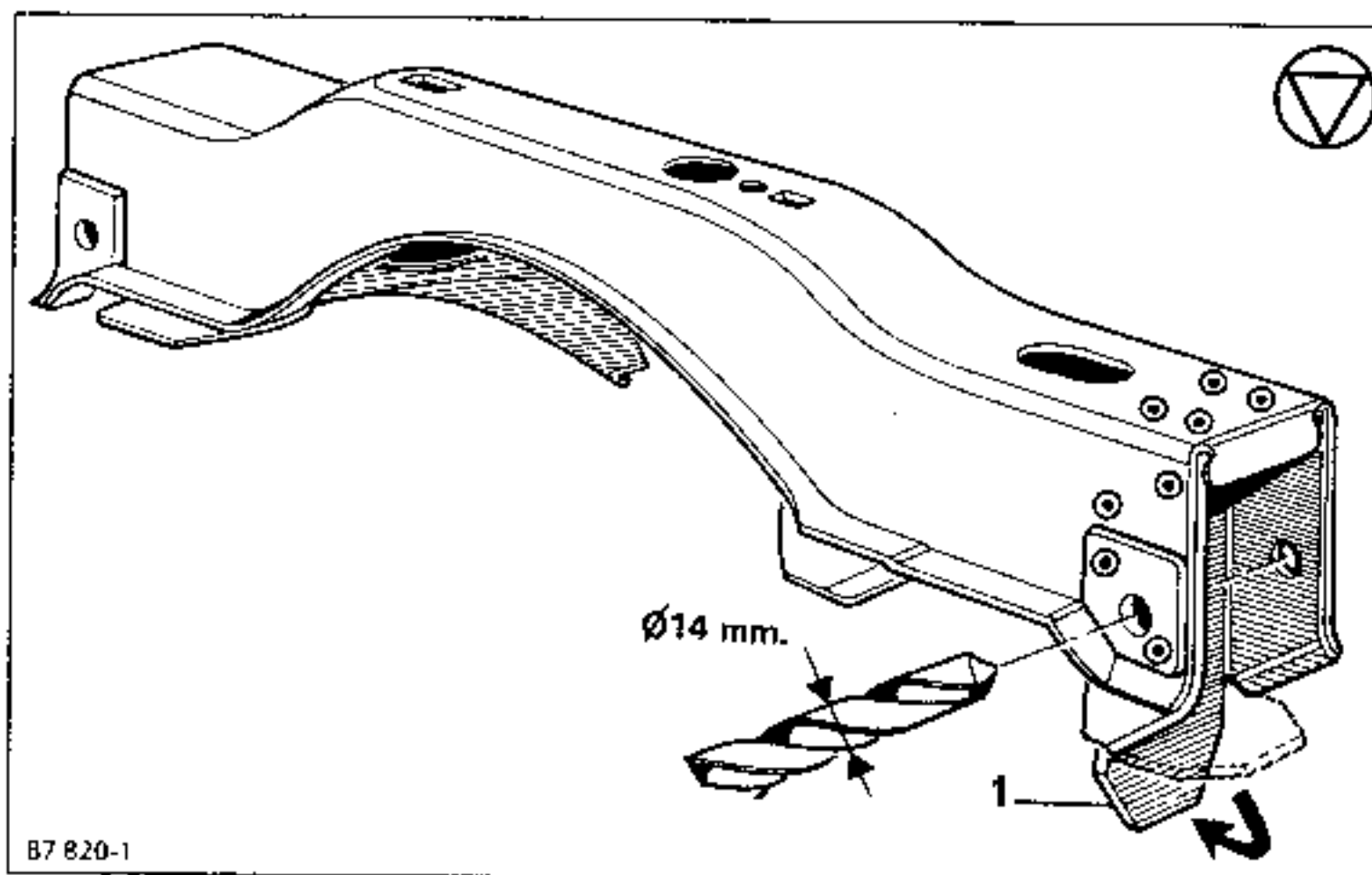
NOTE:

The various parts are assembled in two stages;

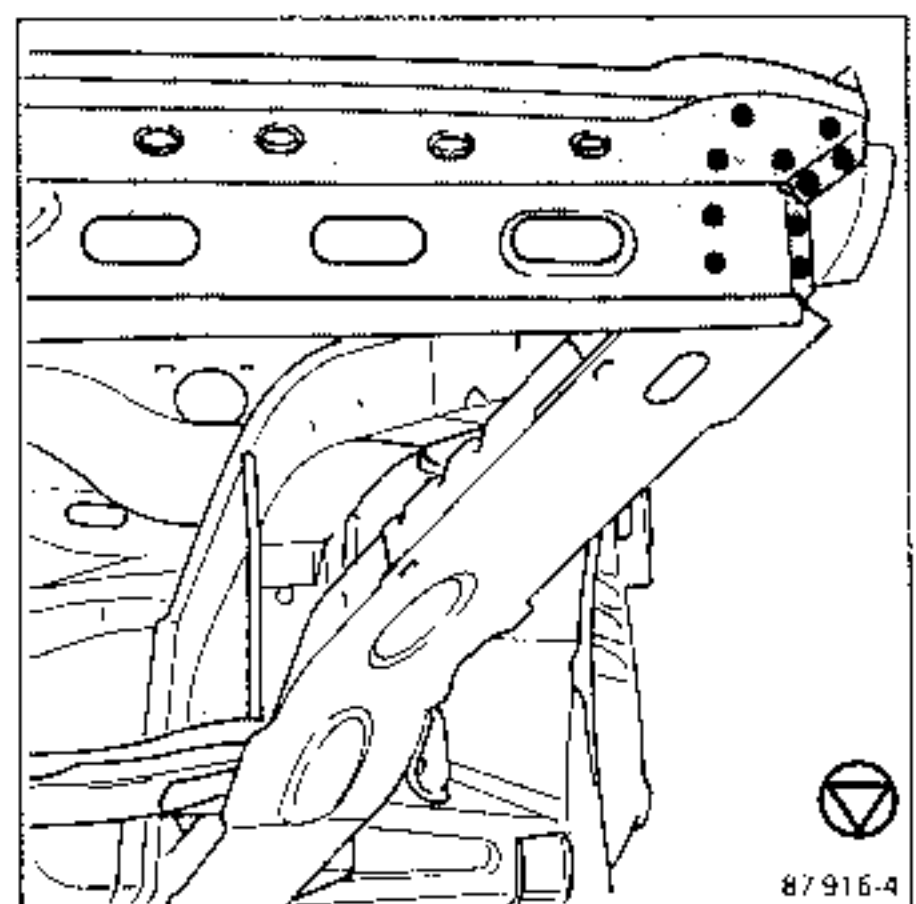
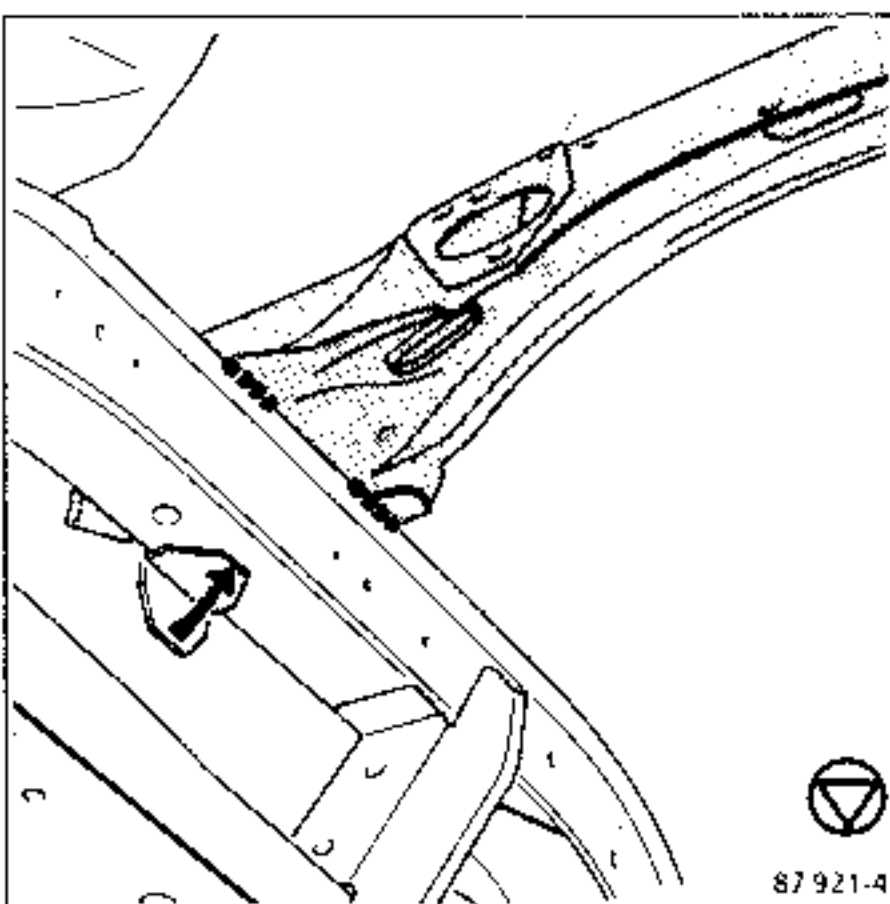
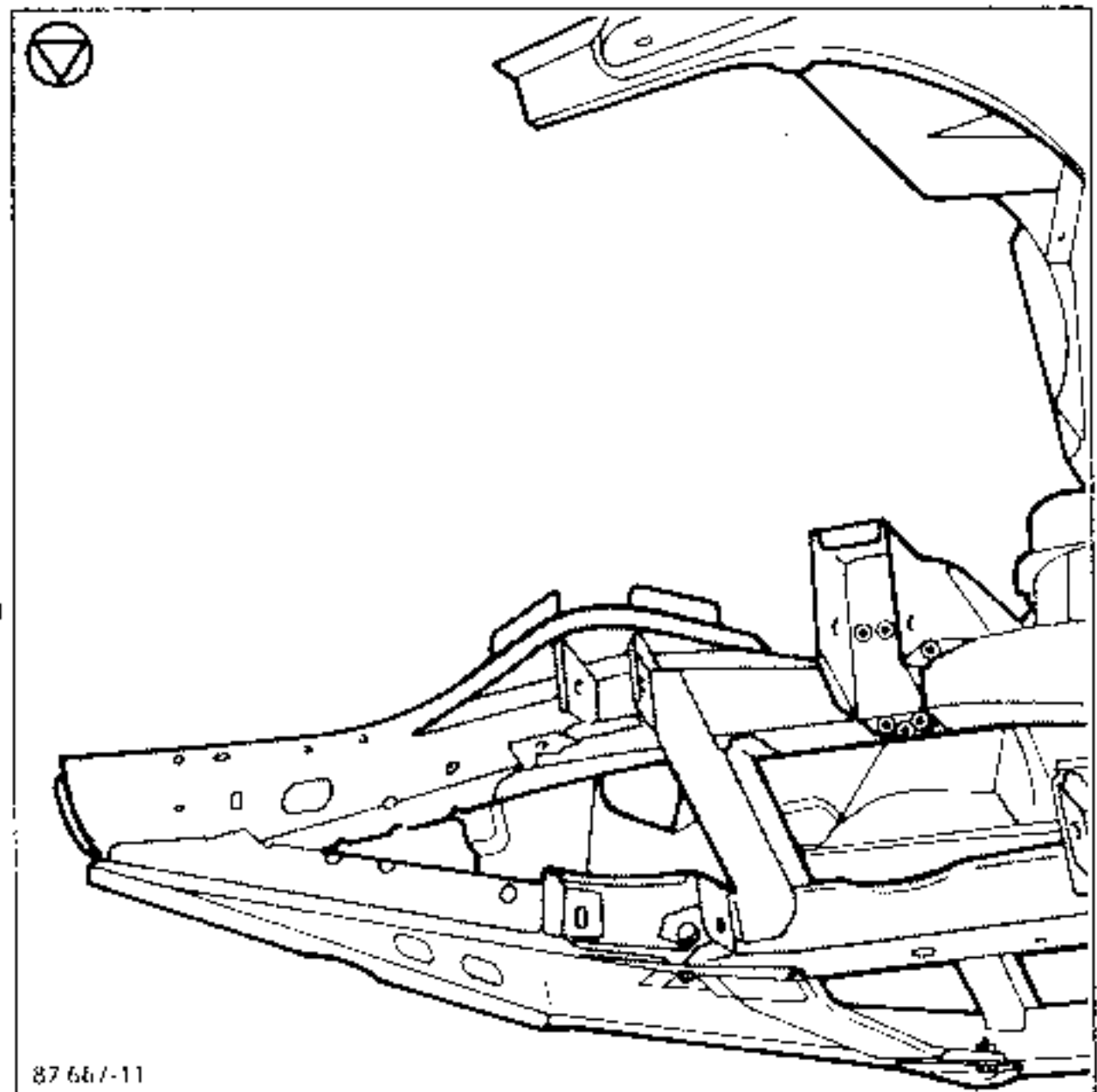
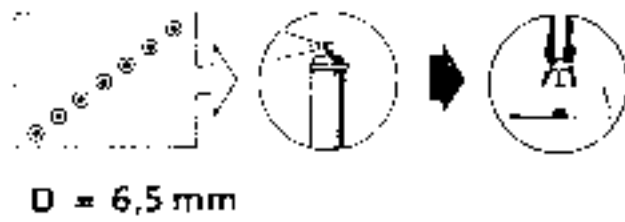
- 1 - Fitting and welding of the side member and the front and steering cross members.
- 2 - Fitting and welding of the complete cowl.

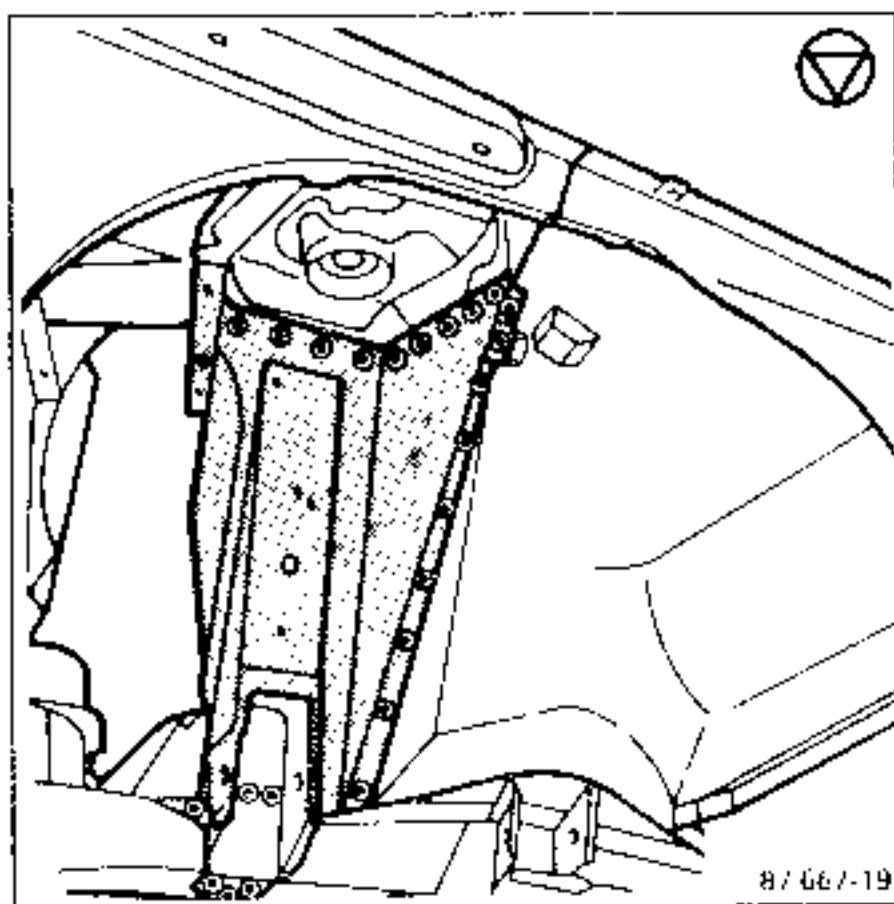
WELDING

- Fit the upper front axle gusset opposite the impact in the steering cross member and make the welds.
- Countersink the gusset at $\varnothing 14$ mm.
- Straighten the lug (1) and fit the assembly on the side members.

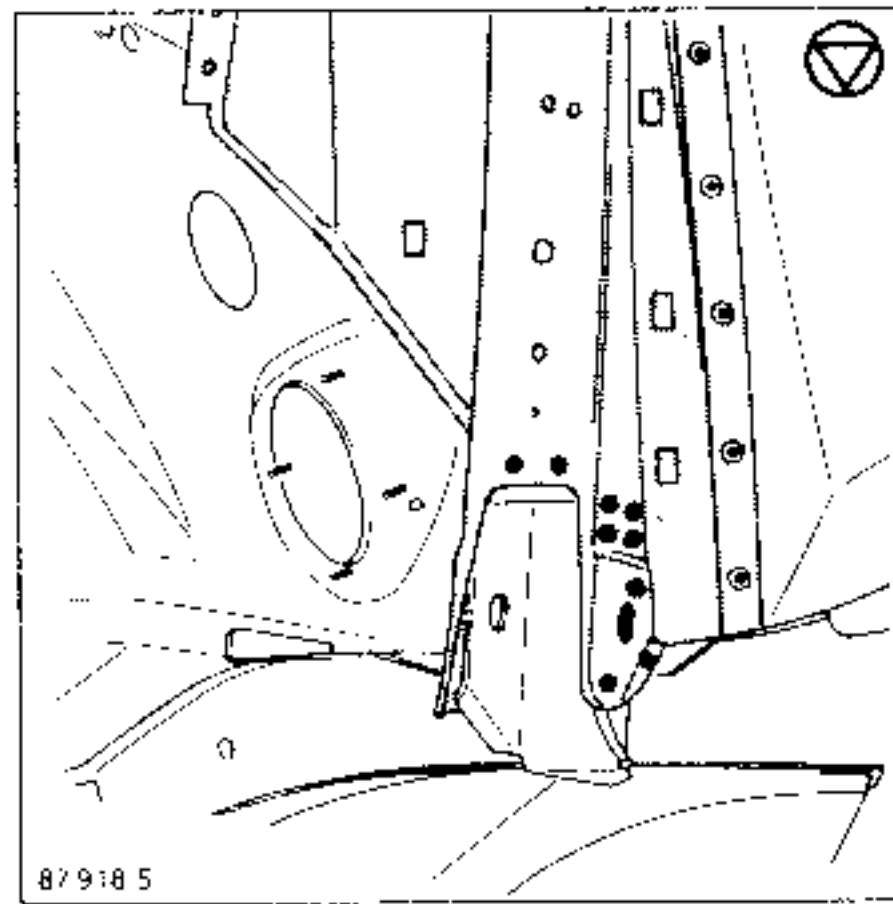


- 1 - Fit the side member and secure it to the bench brackets.
- Fit the bolted cross member (T) and the steering cross member.

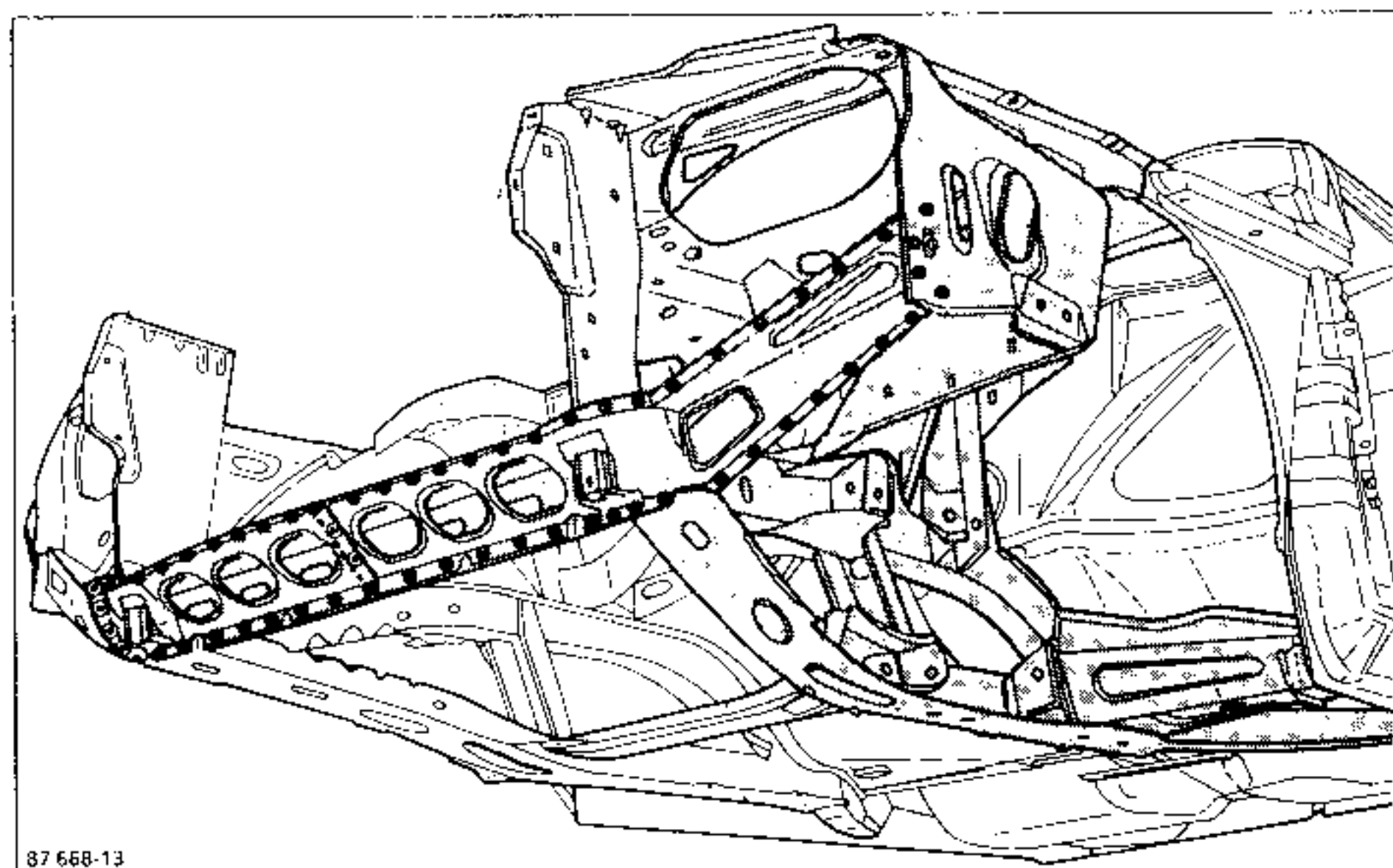




$\varnothing = 5 \text{ mm}$



$e = 5 \text{ mm}$; $H = 55 \text{ mm}$

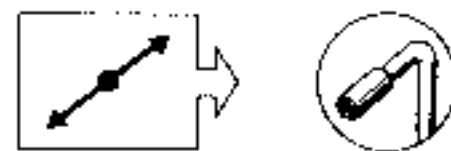
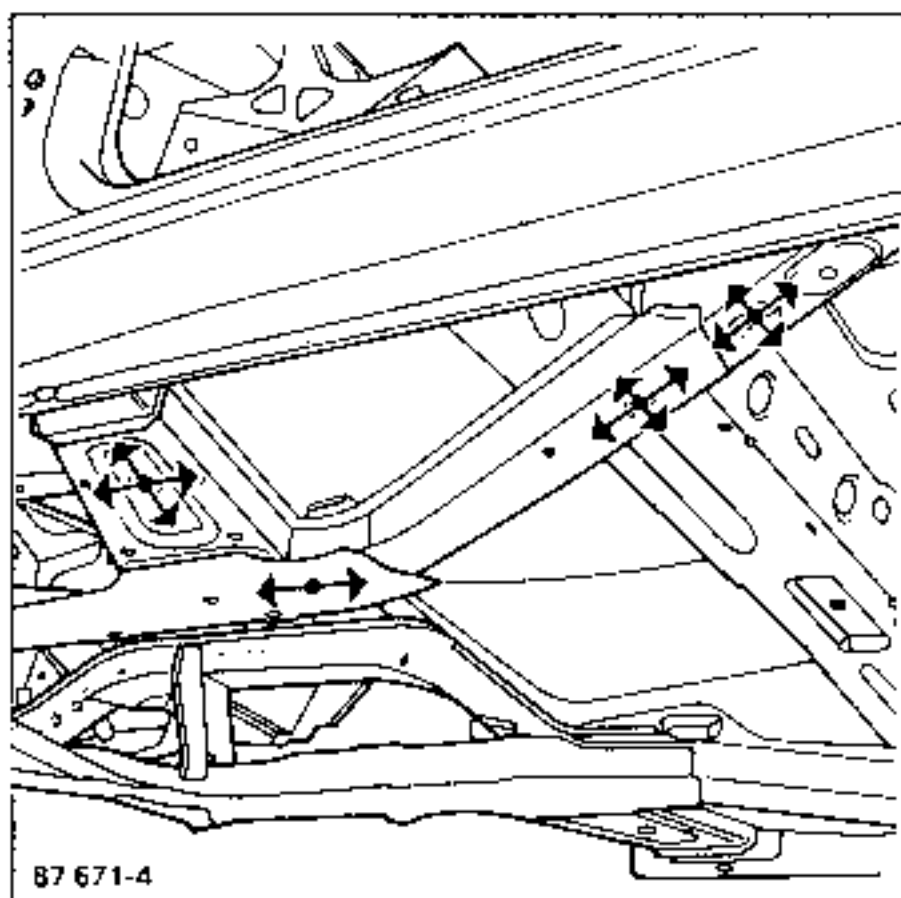
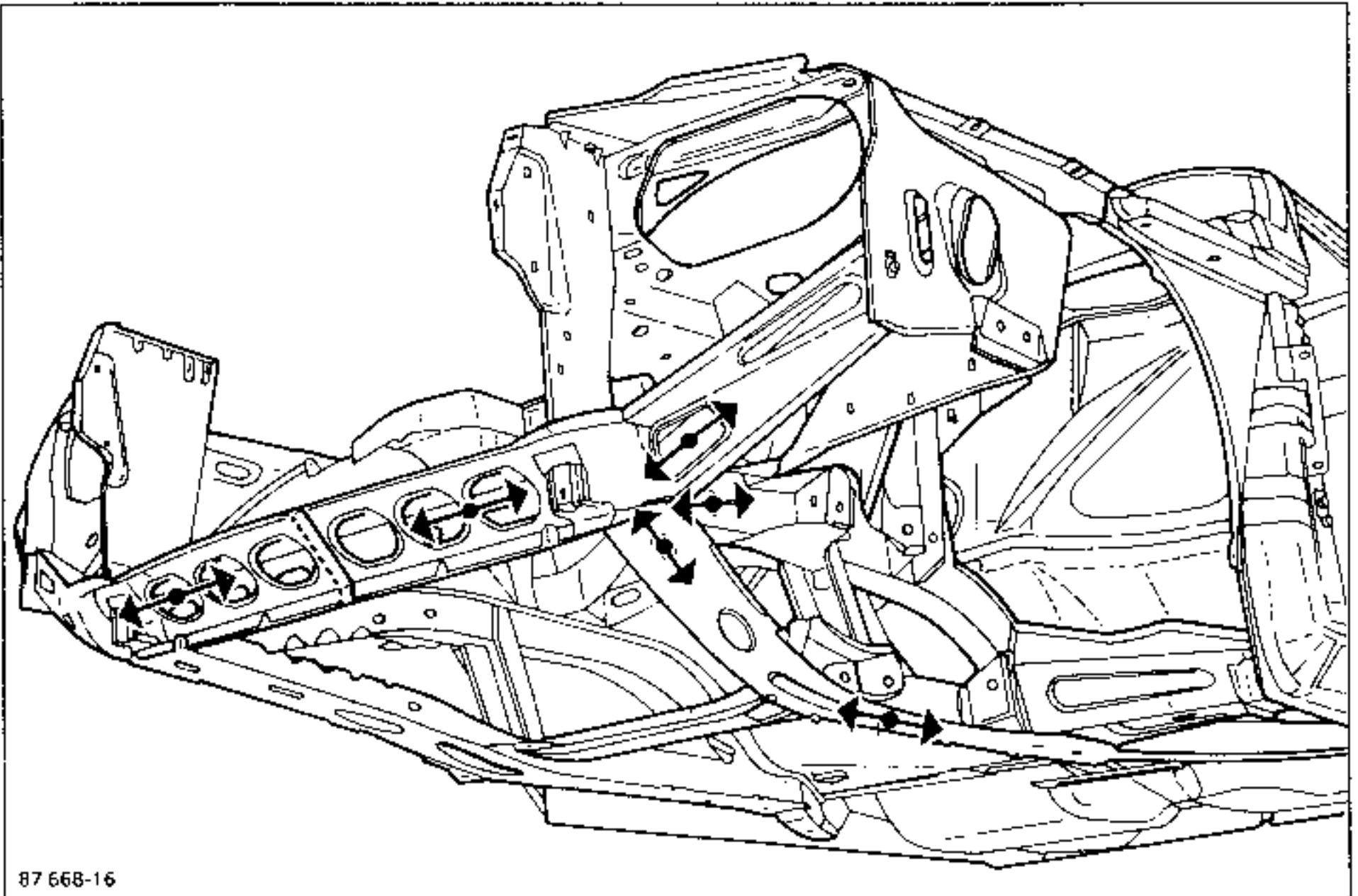


$e = 1,4 \text{ mm}$
 $H = 55 \text{ mm}$



$\varnothing = 5 \text{ mm}$

After painting, treat with hollow section wax.



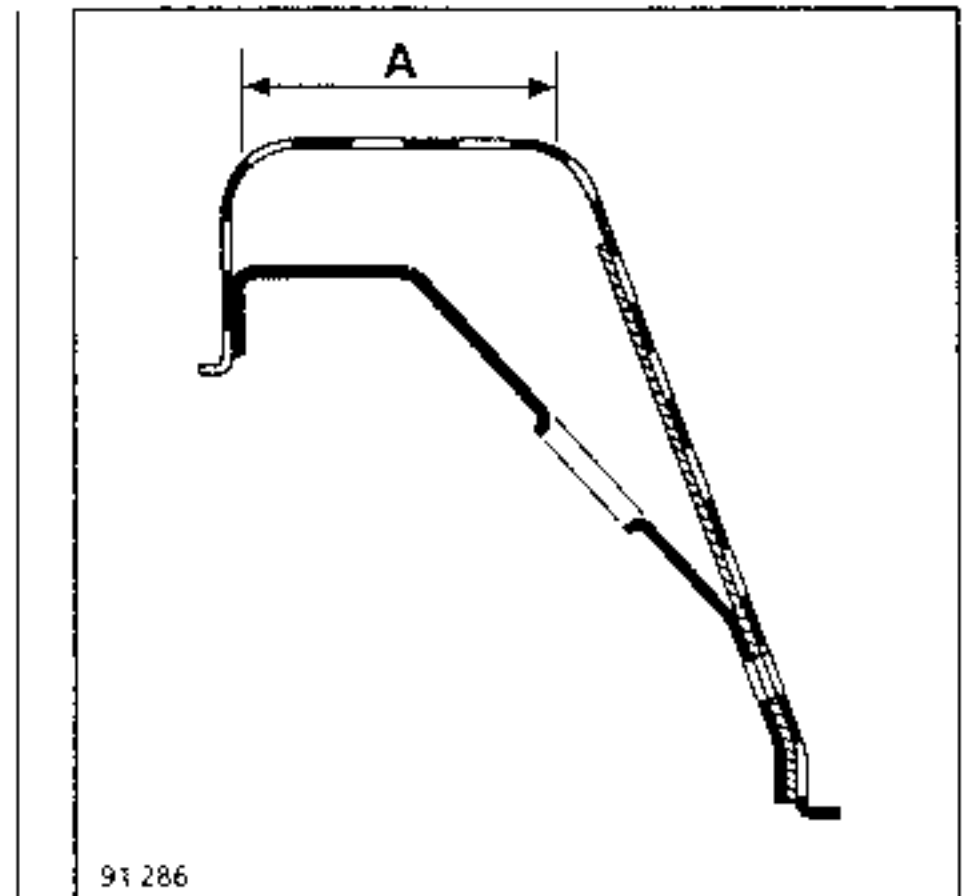
As a result of fitting new steering, vehicles have been fitted with two different steering cross members, which can be identified by their thickness (distance A).

Old cross member:

A = 45 mm

New cross member:

A = 70 mm



The MPR only supplies bodywork parts (complete body, front unit and cross member alone) corresponding to the new steering.

As a result, when replacing one of the parts concerned on a vehicle made before the modification, it will also be necessary to order the following parts as extra:

VEHICLES WITH MECHANICAL STEERING

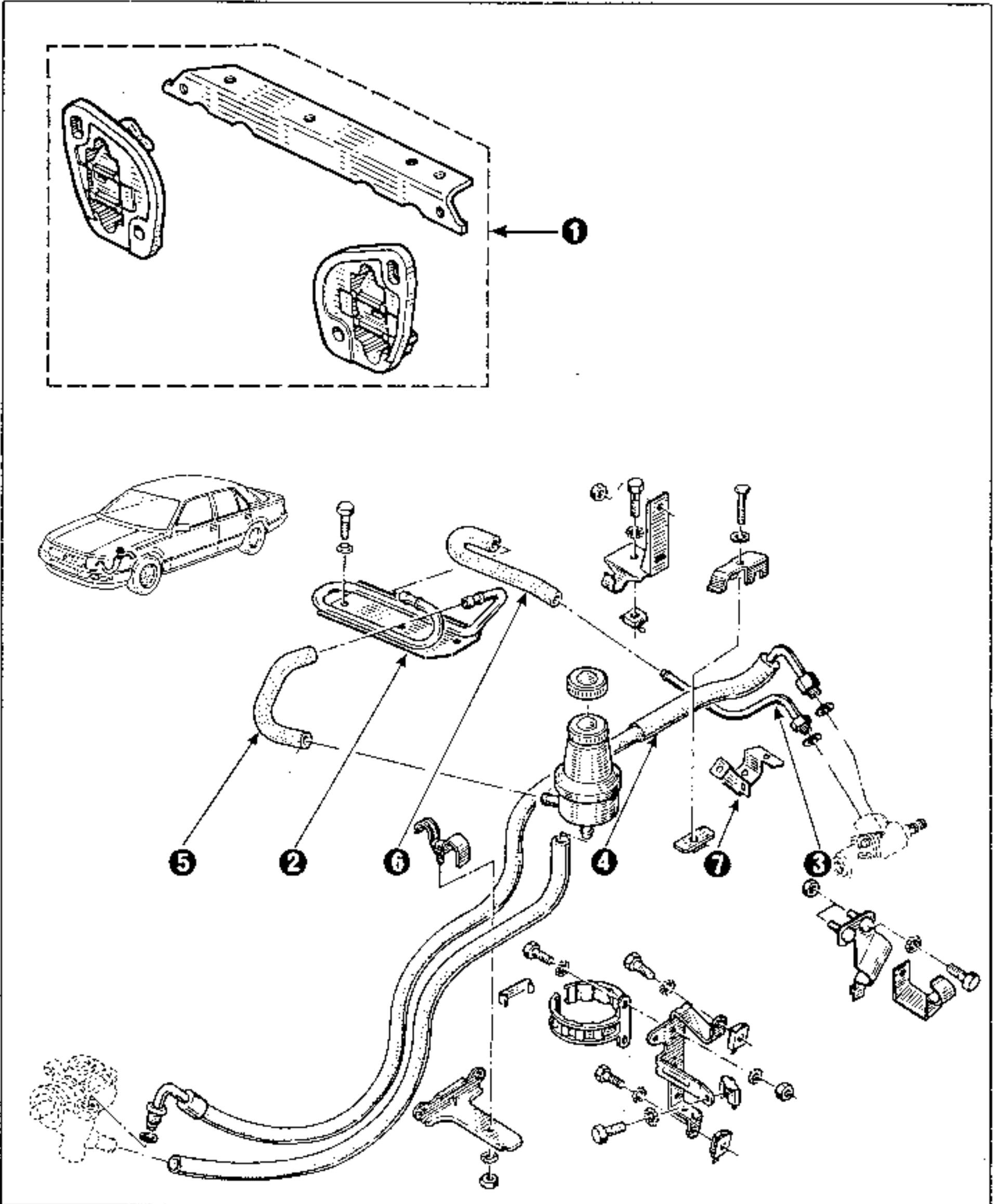
- | | |
|---|---------------|
| ① Set of rack and pinion support brackets | 77 01 464 235 |
|---|---------------|

VEHICLES WITH POWER-ASSISTED STEERING

- | | |
|---|--|
| ① Set of rack and pinion support brackets | 77 01 464 237 |
| ② Oil circuit cooler | 77 00 776 930 |
| ③ Rigid return pipe between cooler and valve | LH drive: 77 00 776 929, RH drive: 77 00 756 808 |
| ④ High-pressure pipe between pump and valve | LH drive: 77 00 776 835, RH drive: 77 00 771 709 |
| ⑤ Flexible pipe between cooler and reservoir | 77 00 776 827 |
| ⑥ Flexible pipe between rigid pipe and cooler | 77 00 776 830 |
| ⑦ Piping retaining lug | 77 00 776 987 |

NOTE:

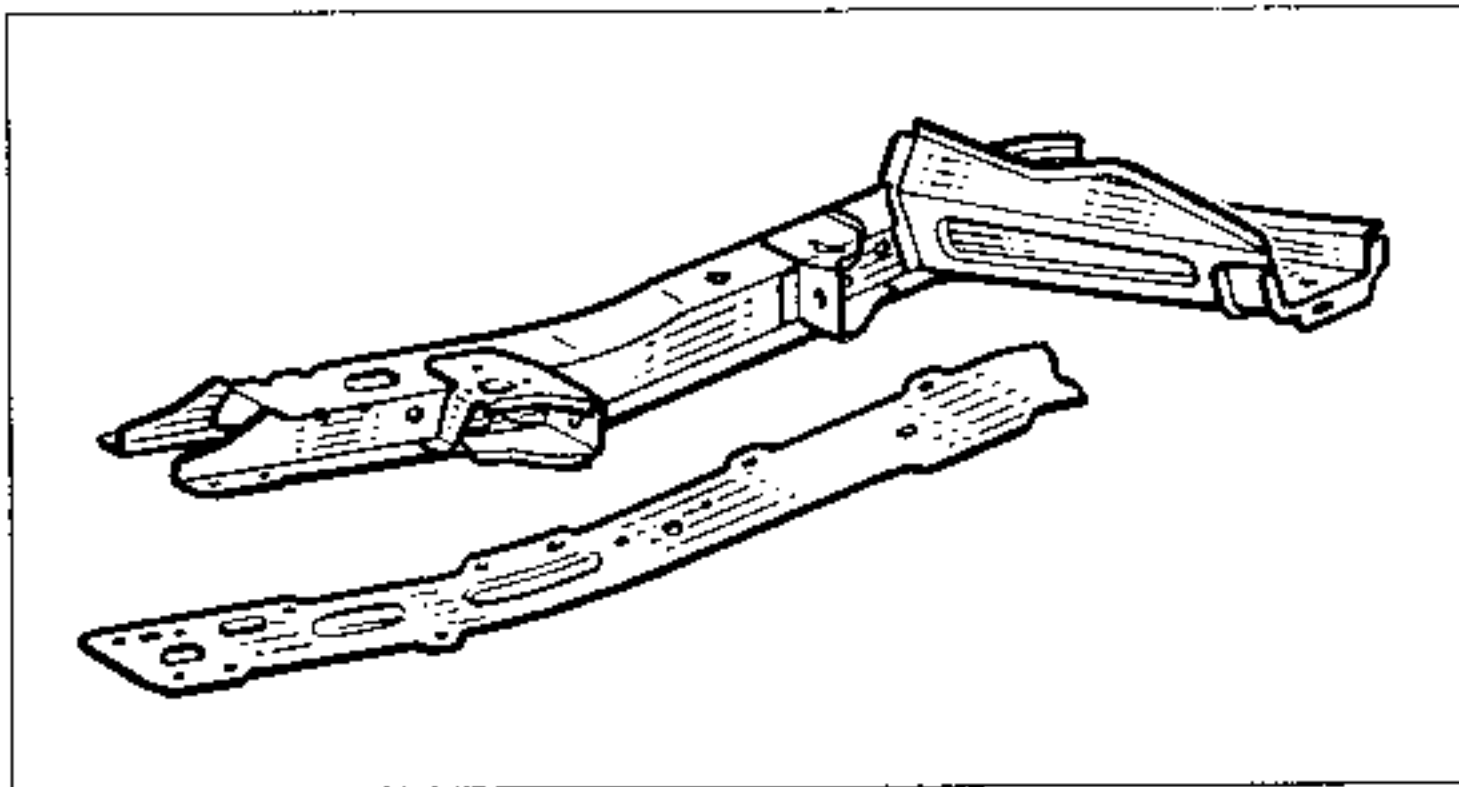
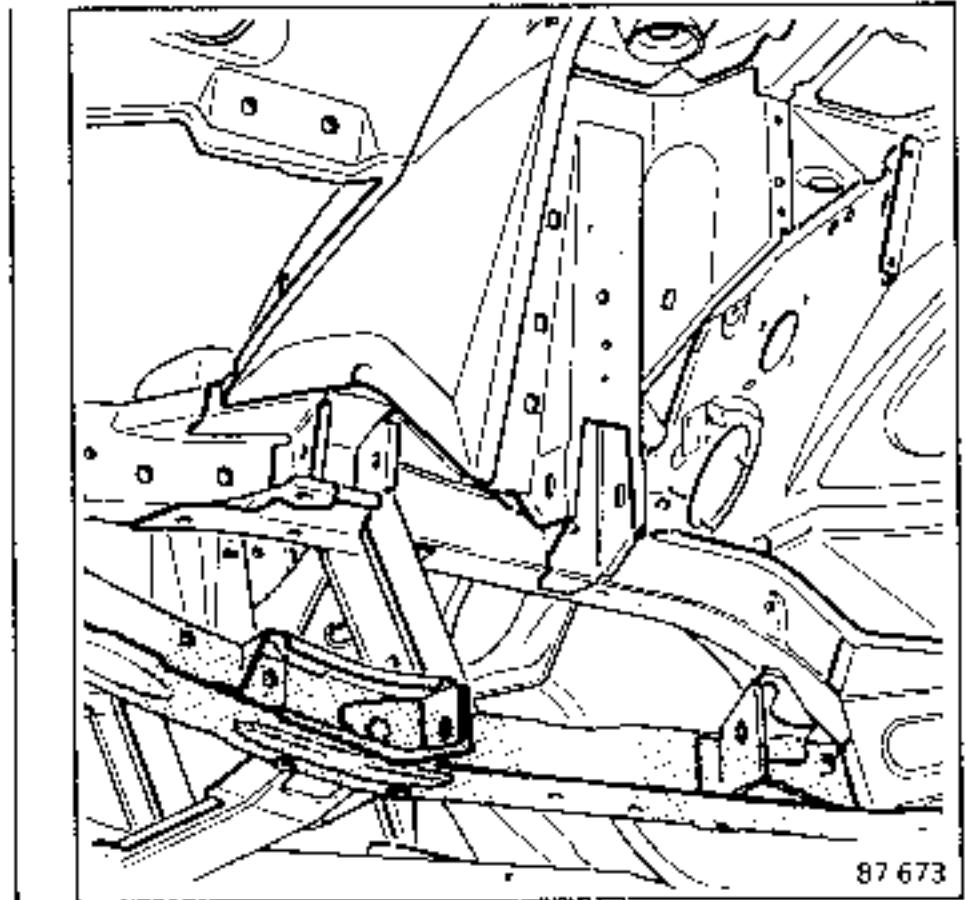
When replacing the body of any vehicle, order a tailgate striker shock absorption buffer at the same time, part no.: 77 00 774 899.



DIAGNOSIS

Under certain conditions, the lower side member may be damaged without the upper side member being affected. This slight difference can only be identified using equipment for checking the front axle geometry.

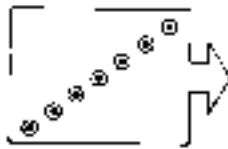
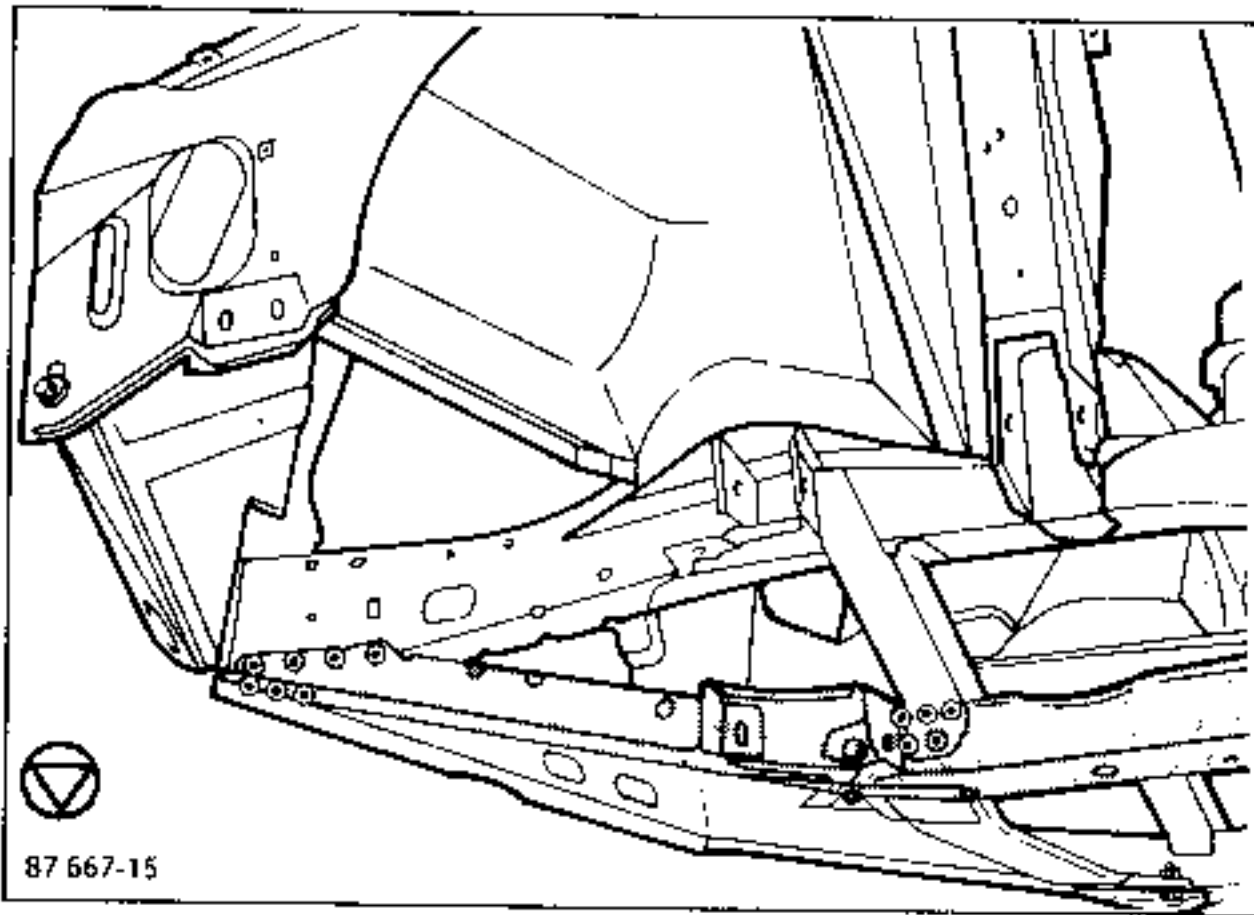
Generally speaking, these circumstances arise after impact on the wheel or to the half-axle. (See the fold zones on the diagram opposite.)



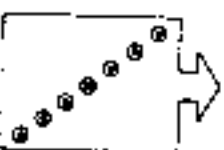
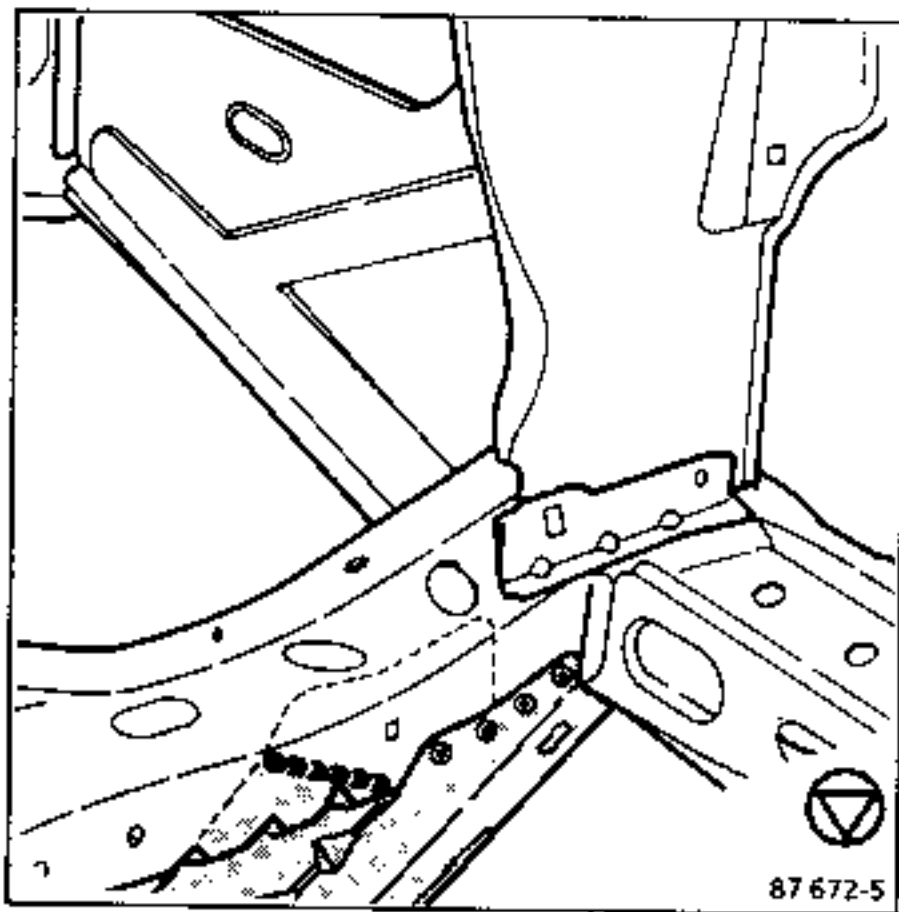
PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on the new parts).
- Coat the parts to be plug welded with zinc paint.
- Adjust the new part then secure it using a vice clamp.

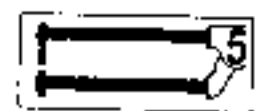
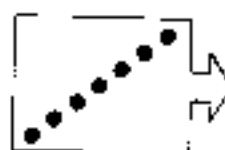
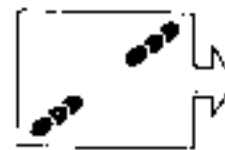
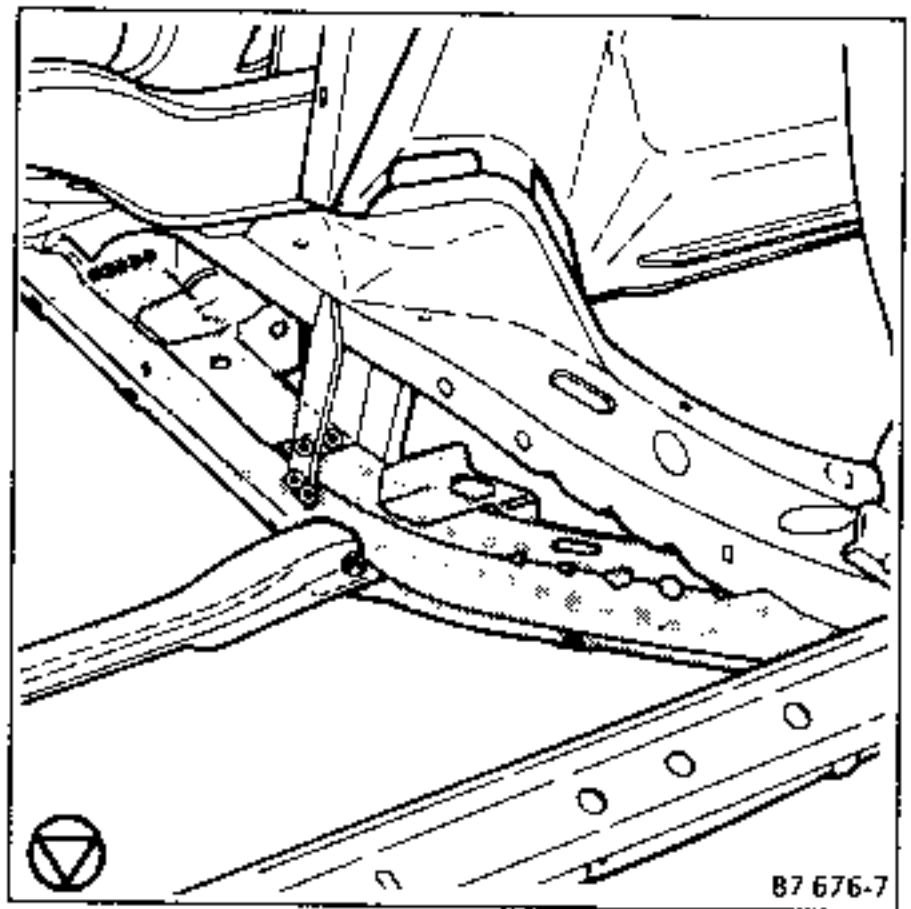
WELDING



D = 6,5 mm

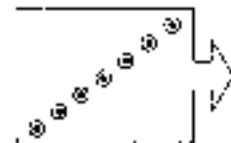
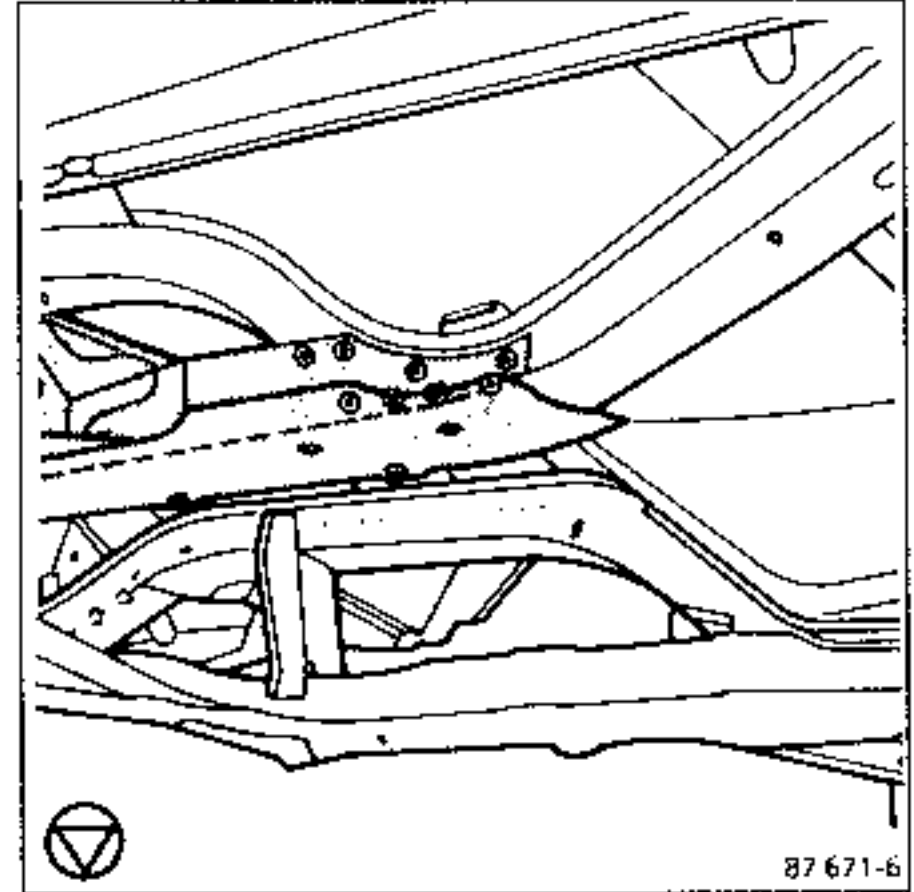
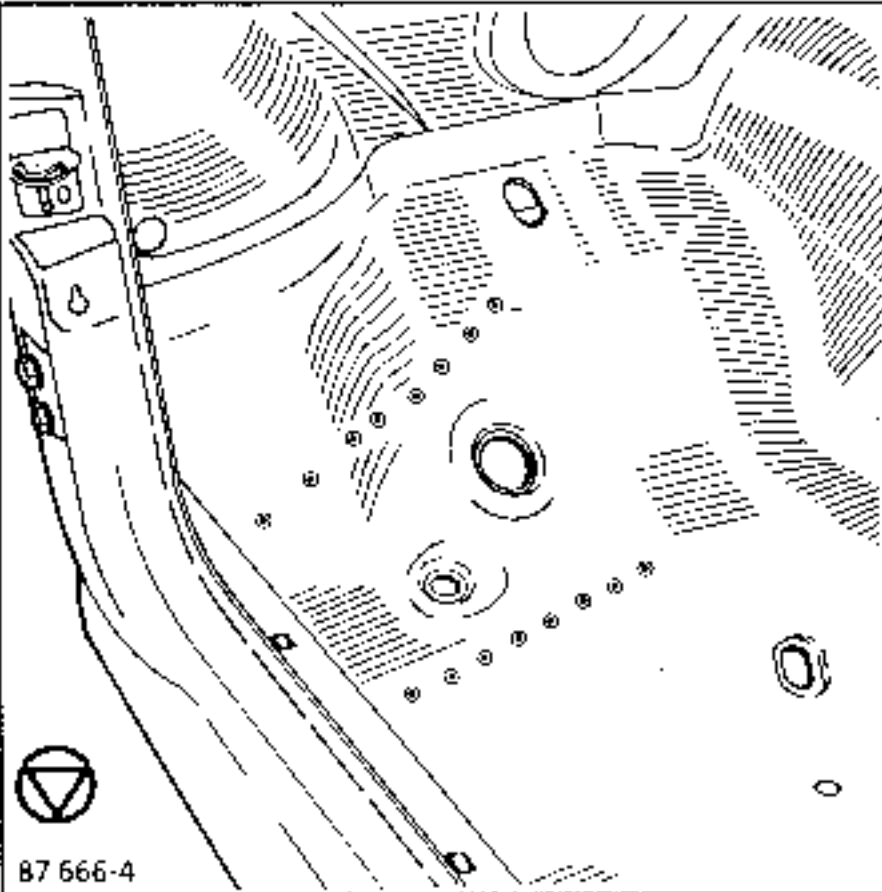


D = 6,5 mm

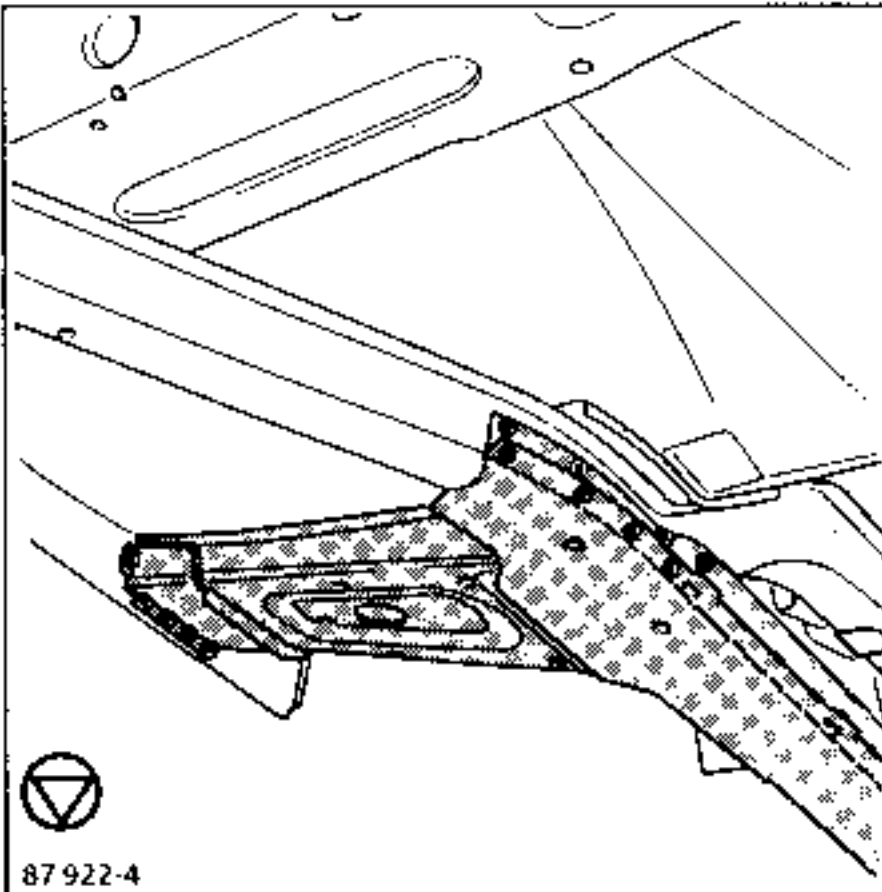


e = 2,5 mm

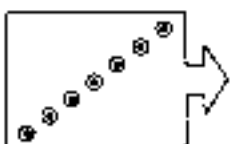
H = 75 mm



D = 6,5 mm

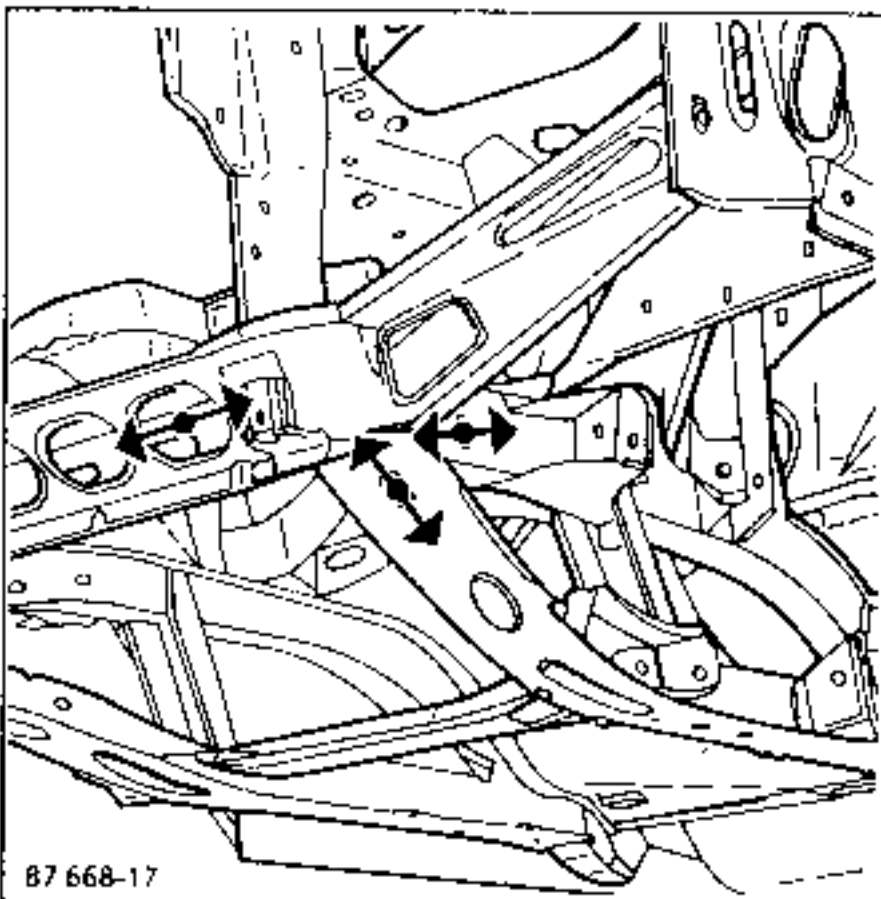
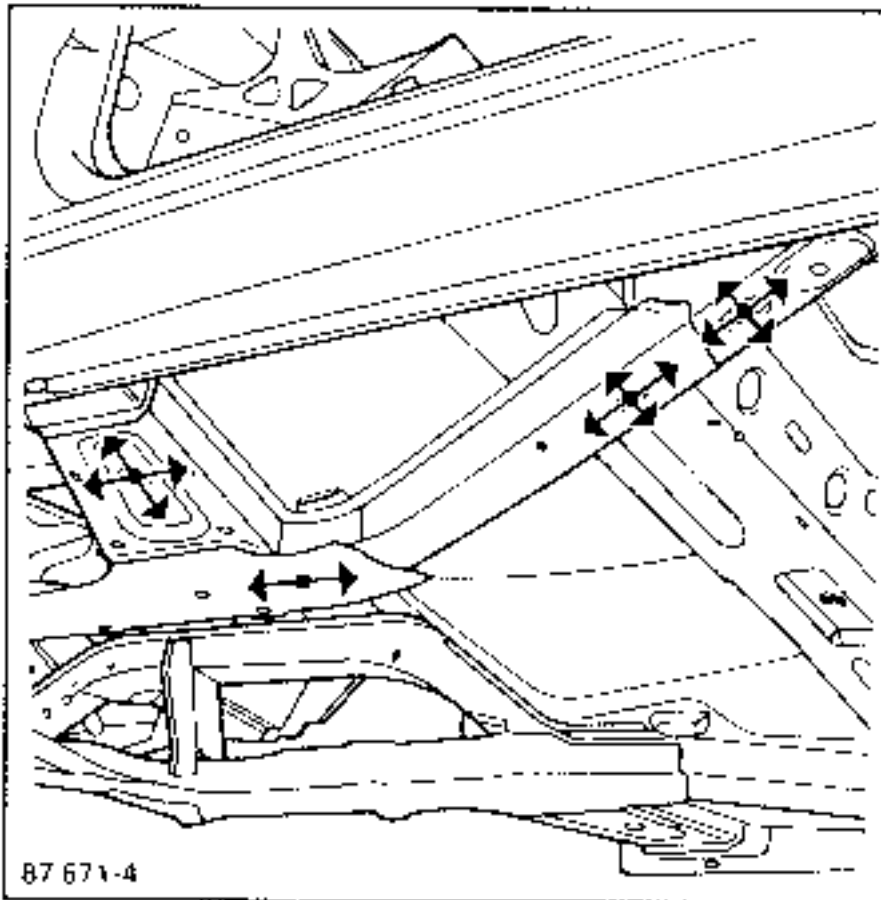


- Stitch weld along the butt welding lines.
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas. (This operation can also be carried out using a gun with a 75 to 100 nozzle.)
- Plug weld under protective gas. To do this, drill the first panel to diameter D, shown under the drawings.

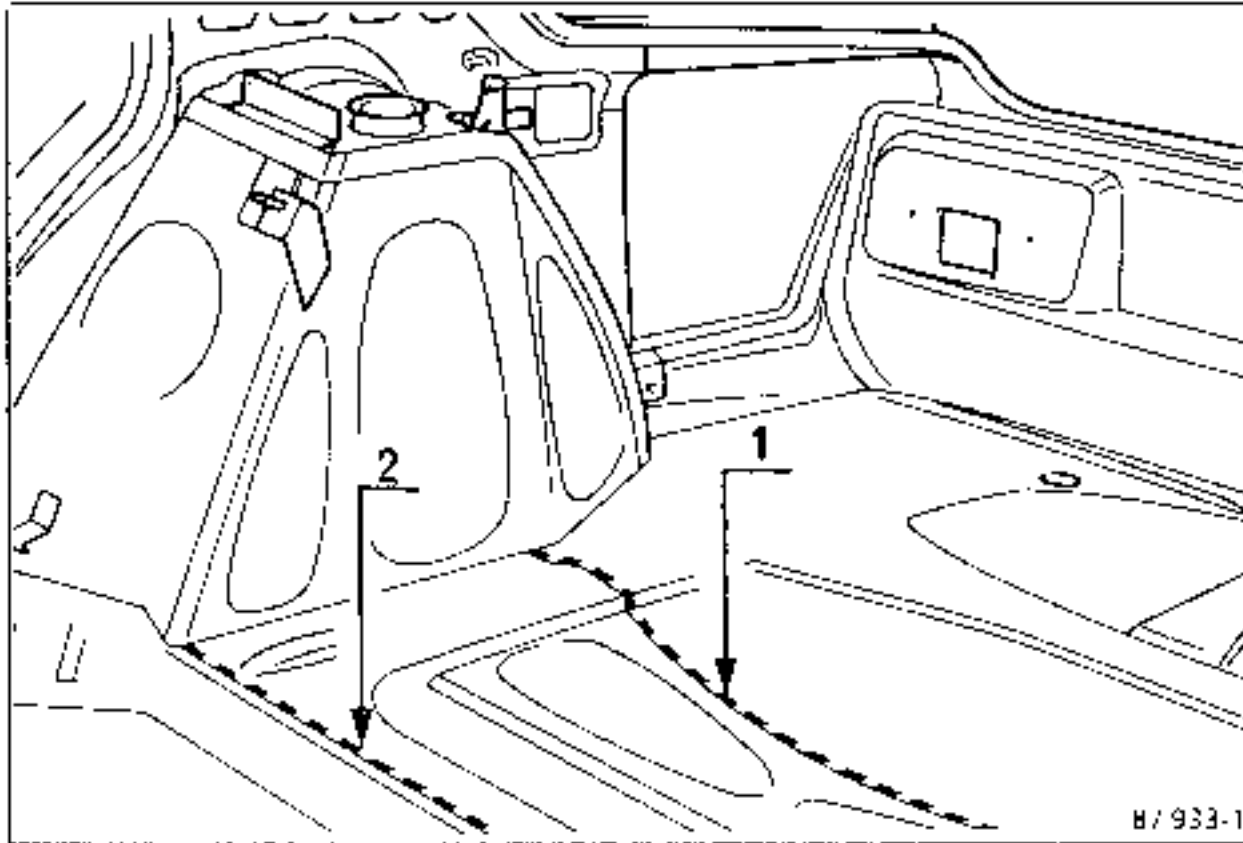


D = 6,5 mm

- After painting, treat with hollow section wax.



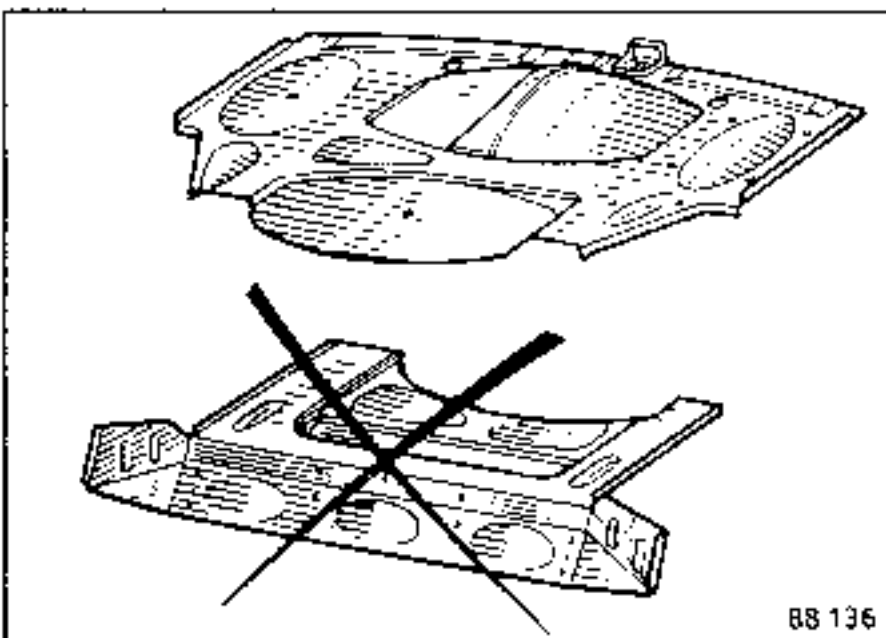
THIS OPERATION IS IN ADDITION TO REPLACING THE REAR PANEL



Depending on the impact, several floor panel replacement solutions are possible:

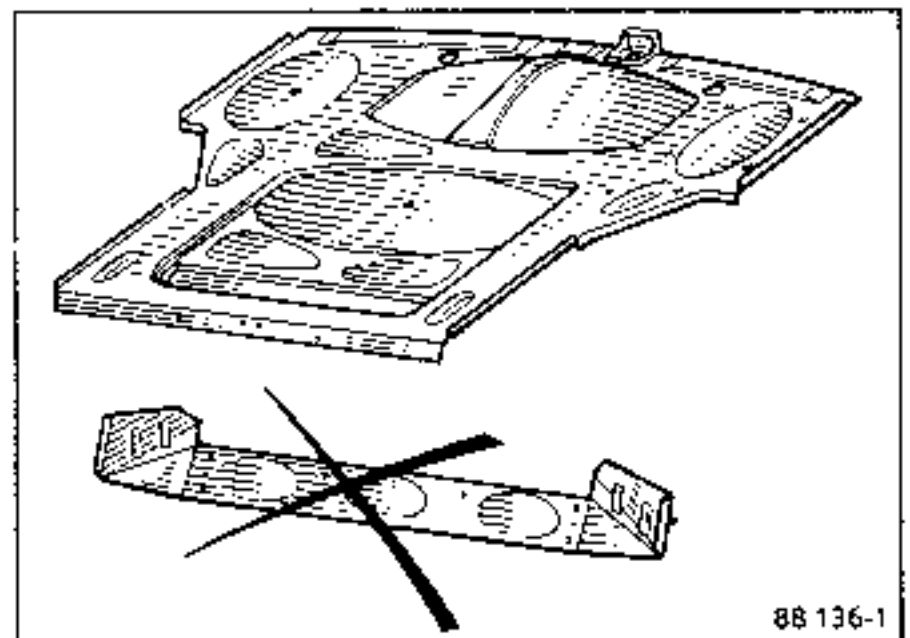
Type 1

- 1 - Partial replacement behind the rear axle cross member; the chiselling should be flush with the cross member.



Type 2

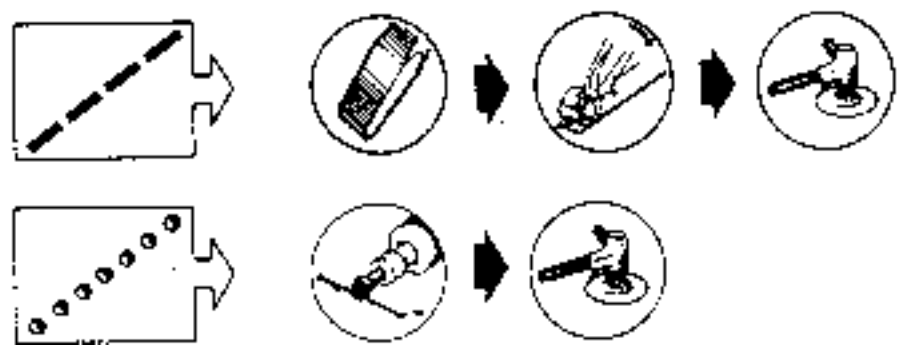
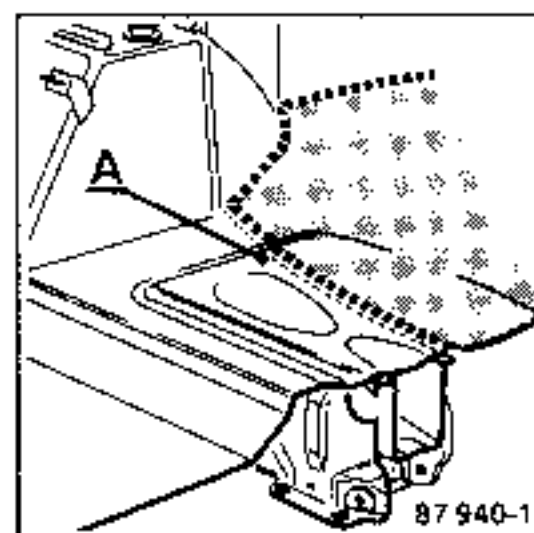
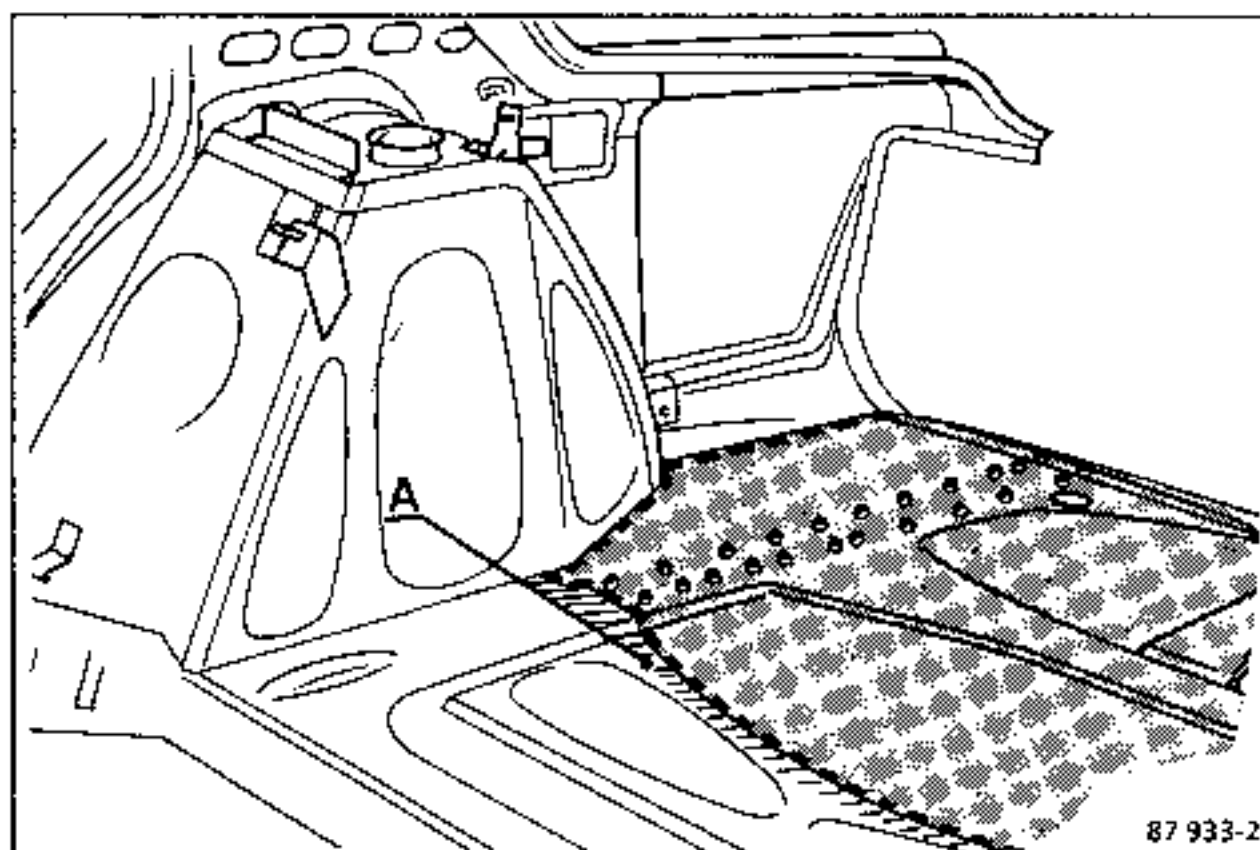
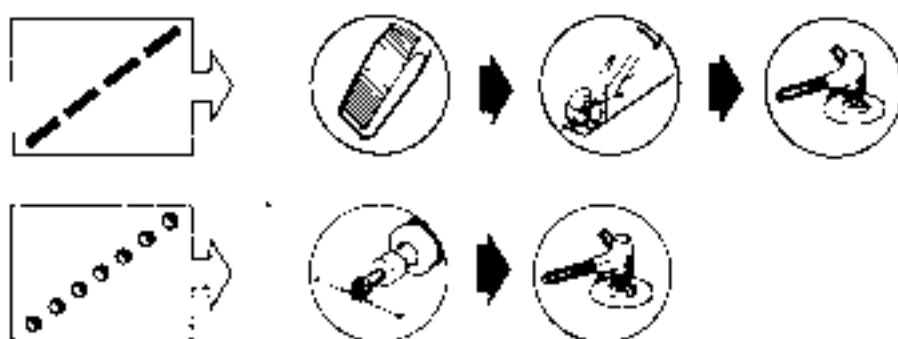
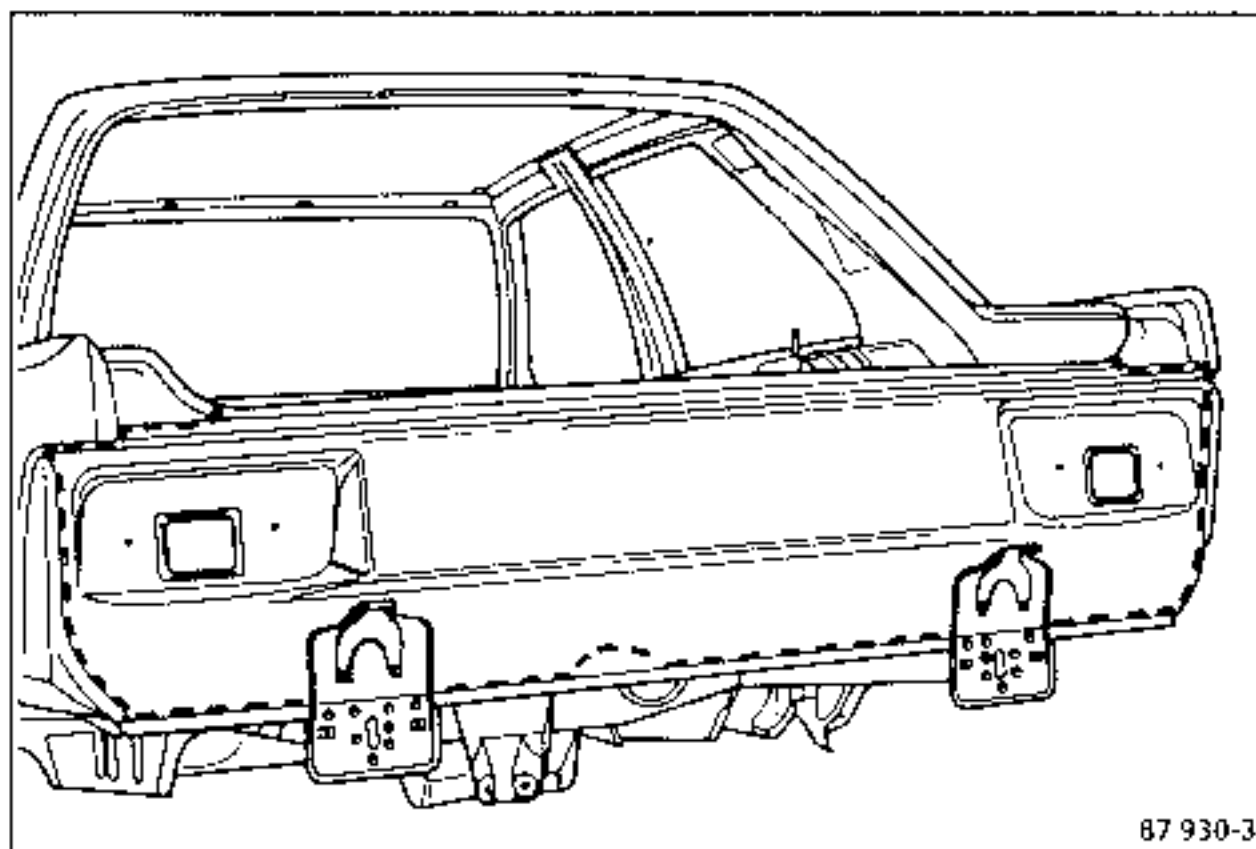
- 2 - Partial replacement in front of the rear axle cross member; the chiselling is carried out from above the rounded part (A).



PREPARATION OF THE MPR FLOOR PANEL

- Depending on the circumstances, take from the new part a section larger by 20 mm than that cut from the vehicle.
- Tool: fine-toothed pneumatic hacksaw, 80 mm long blade.

CUTTING - UNPICKING - TYPE 1



NOTE:

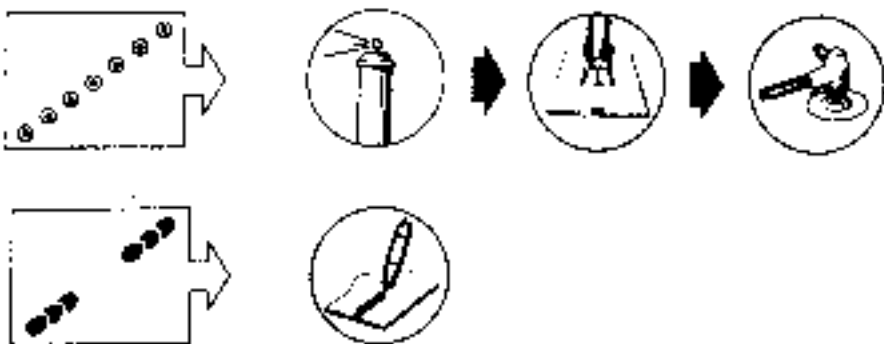
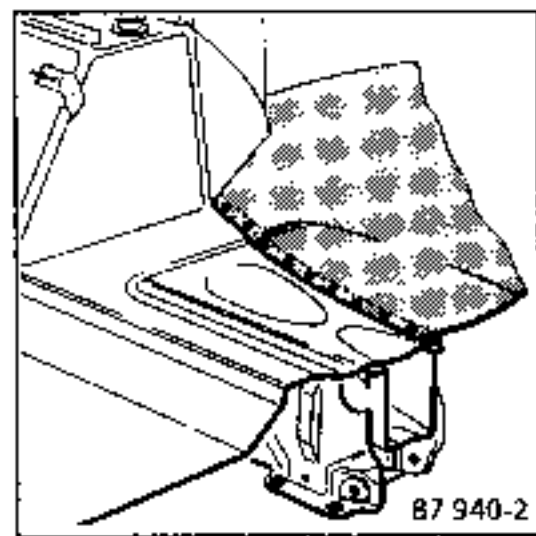
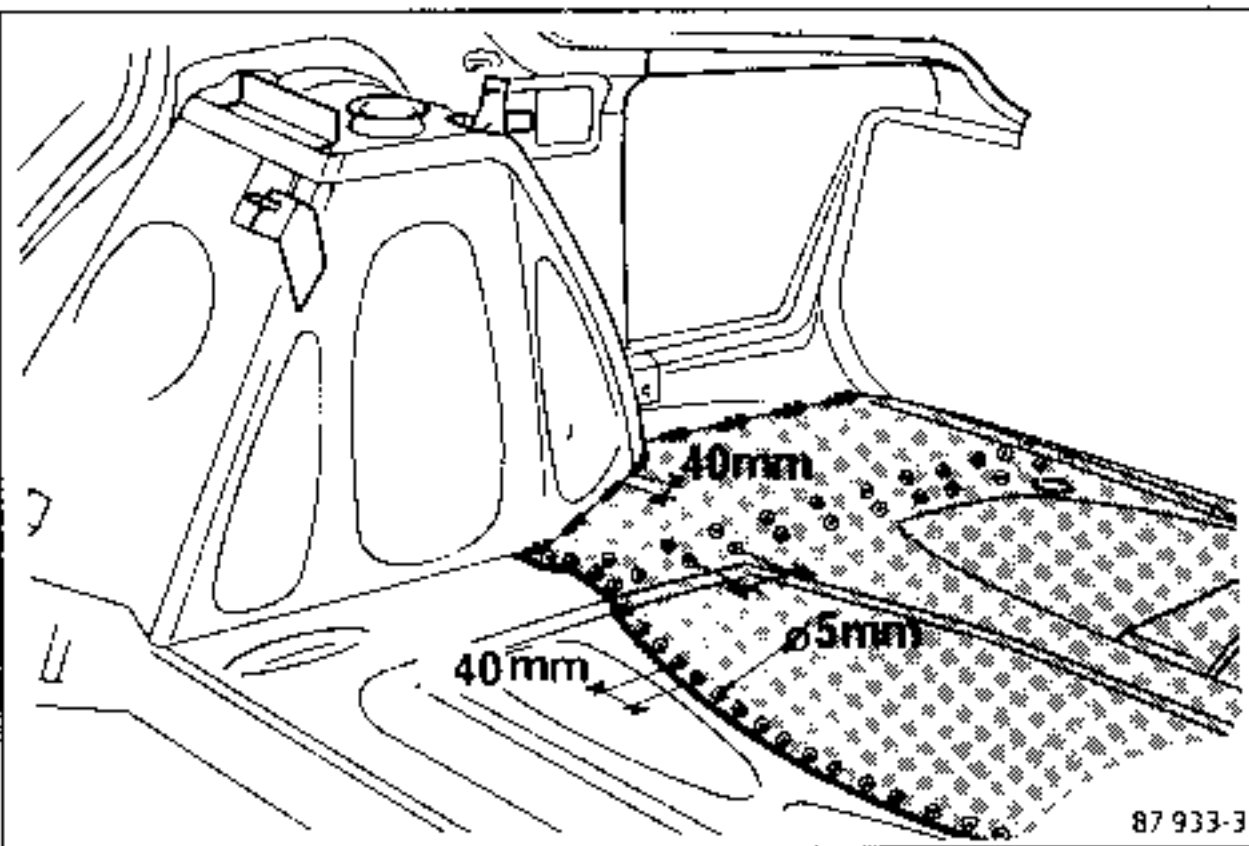
Do not unpick part (A).

PREPARATION BEFORE WELDING

- Grind down the unpicked weld spots remaining on the support panels.
- Bare the interior and exterior surfaces of all the zones to be welded on the parts and on the vehicle.
- Coat with an electroplastic mastic bead the parts to be spot welded (see "List of Symbols" at the beginning of this chapter).
- Coat the parts to be plug welded with zinc paint.

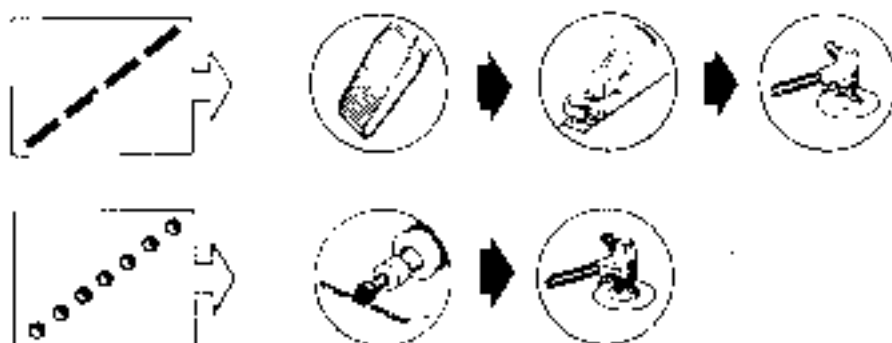
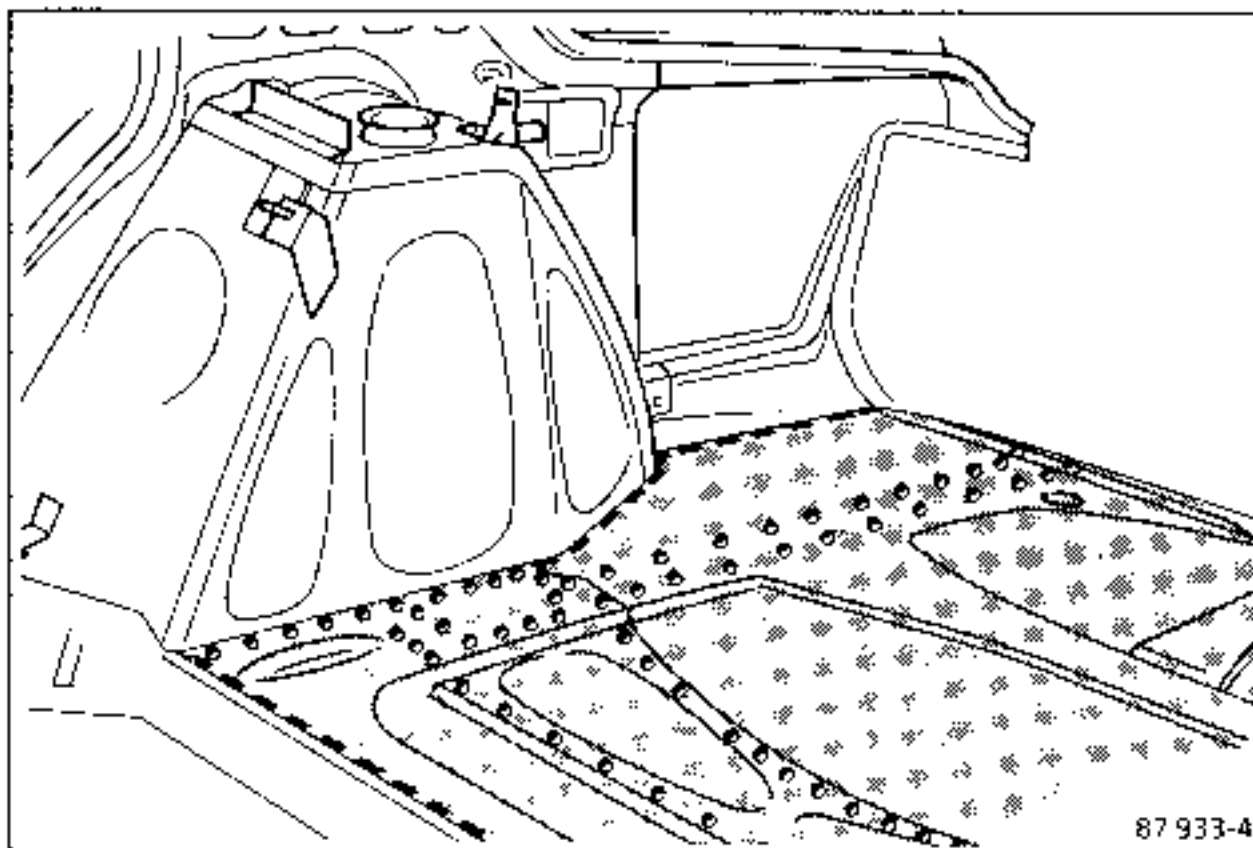
WELDING

- Plug weld under protective gas. In order to do this, drill the first panel at $\varnothing = 5 \text{ mm}$.



- Stitch weld under protective gas.
- Weld the rear panel as described in Chapter 44.

CUTTING - UNPICKING - TYPE 2



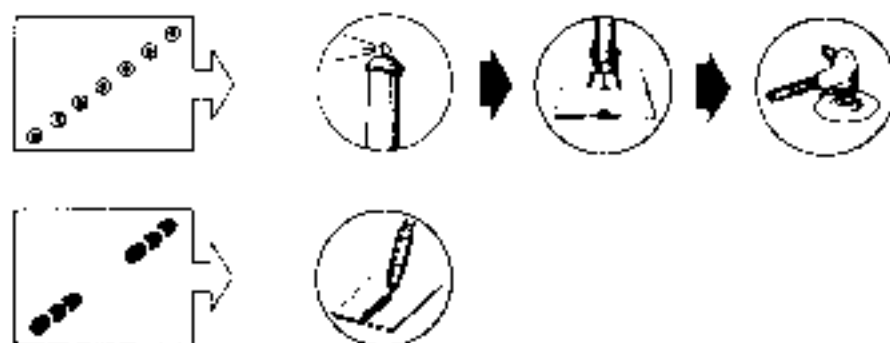
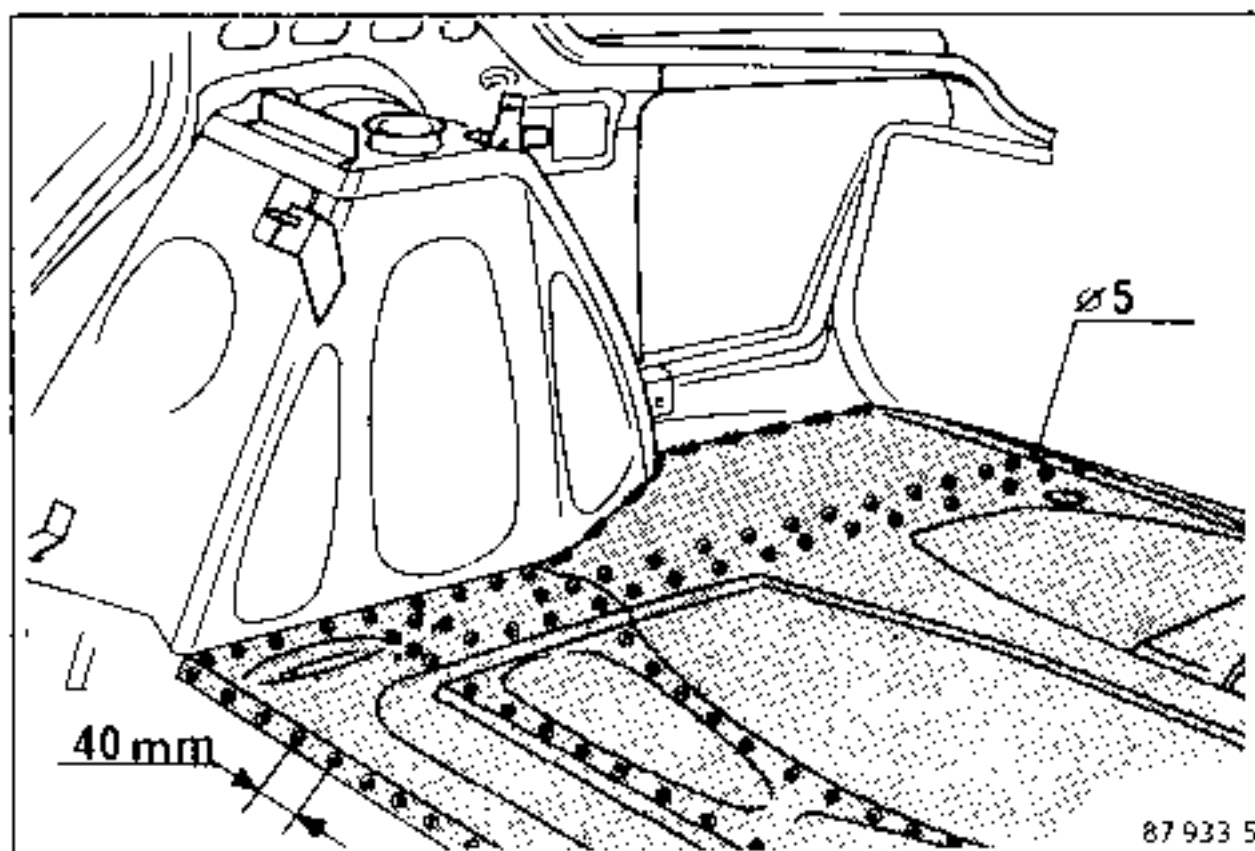
NOTE:

Cutting and unpicking the rear panel is identical to Type 1.

PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all zones to be welded.
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part then secure using a vice clamp.

WELDING



NOTE:

Refitting the rear panel is identical to replacing Type 1.

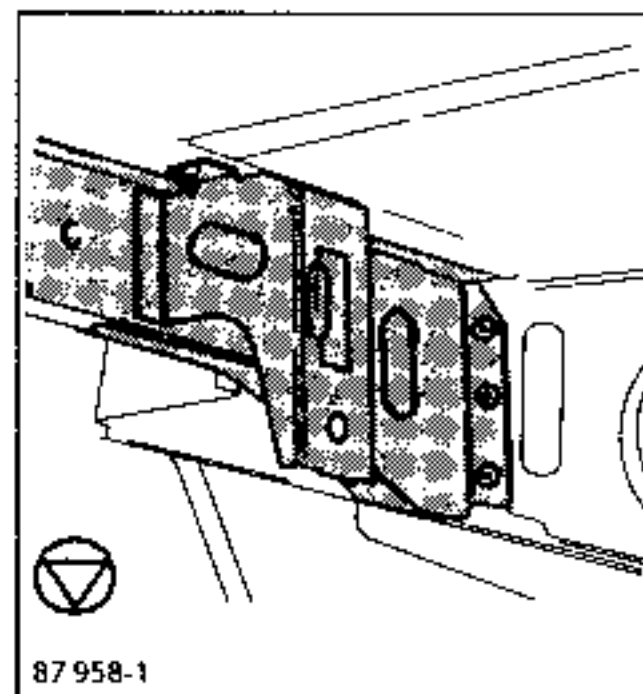
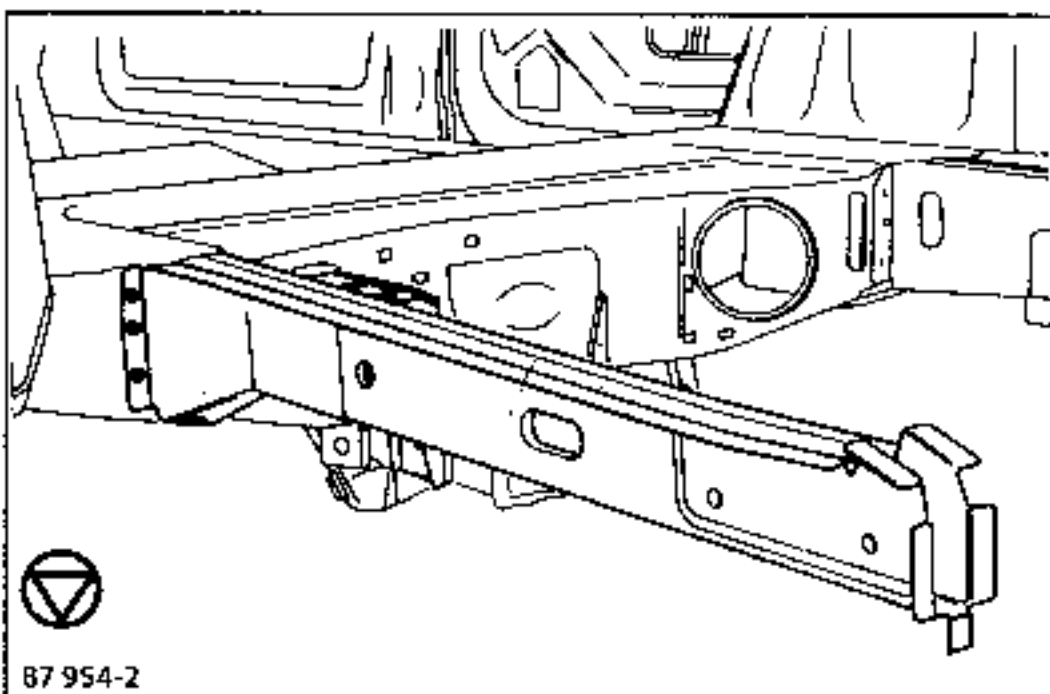
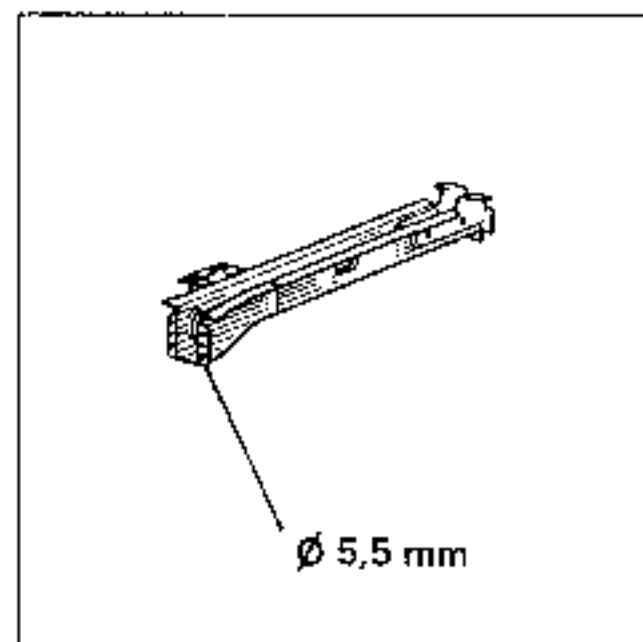
- Plug weld under protective gas. In order to do this, drill the first panel at $D = 5 \text{ mm}$.

**THIS OPERATION IS IN ADDITION TO REPLACING
THE REAR FLOOR PANEL - TYPE 2**

PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be plug welded with zinc paint.

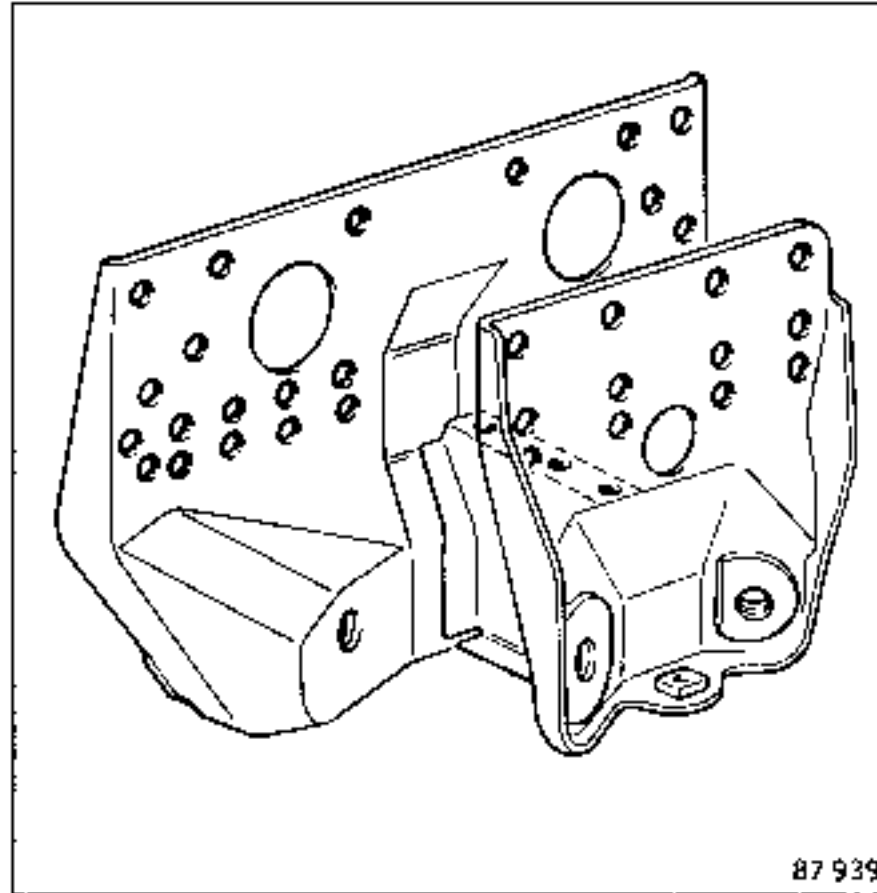
- Drill 6 Ø 5.5 mm holes on the two flanged edges of the new side member. This part is to be plug welded to the axle cross member.



After painting and before retrimming, inject hollow section wax in the side member.

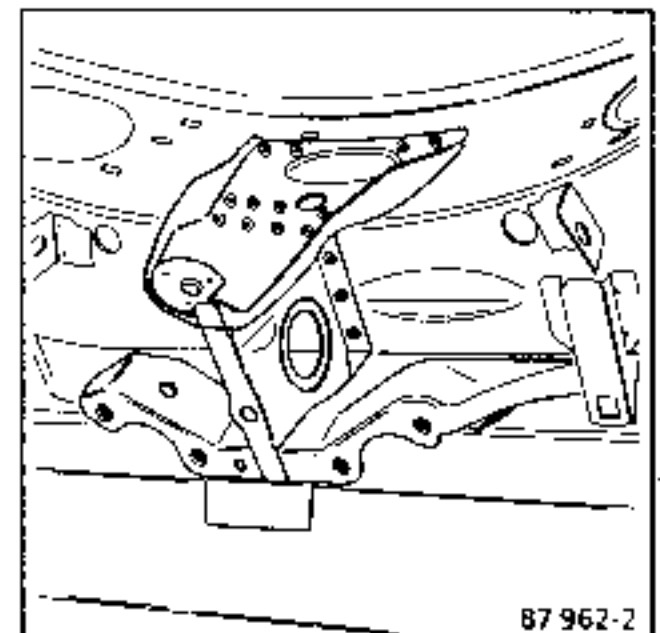
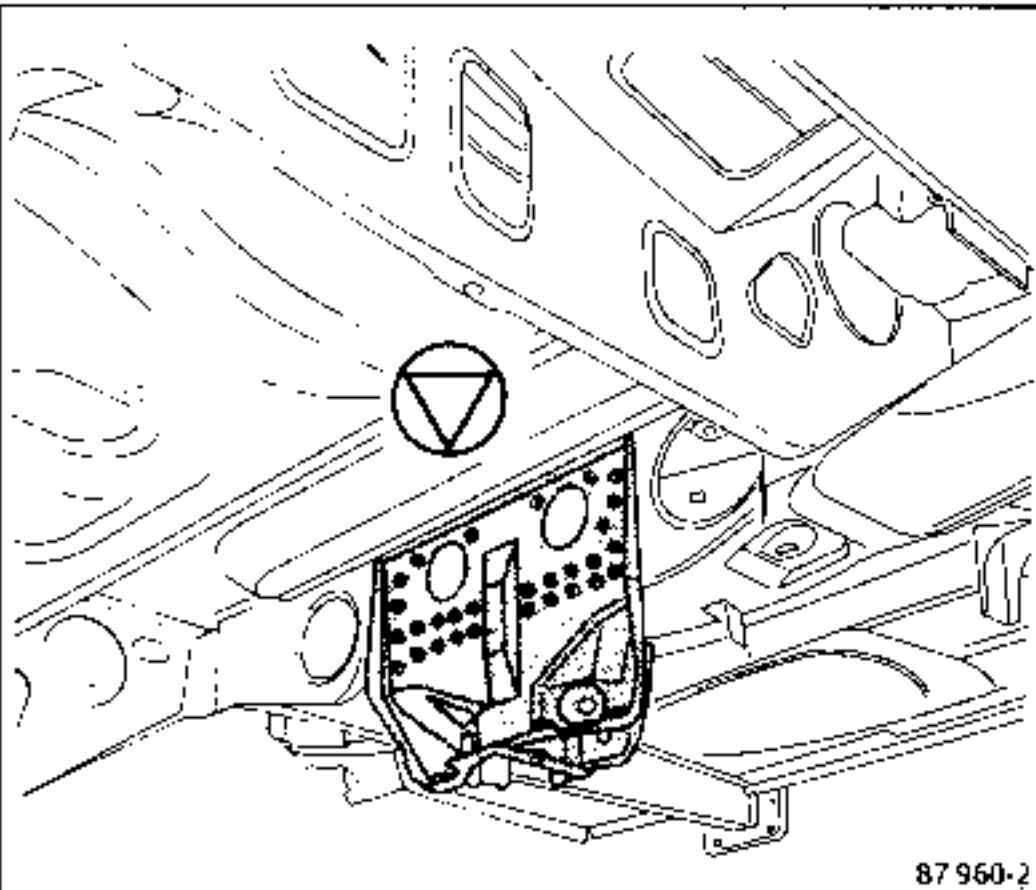
PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded.
- Coat with zinc paint the parts to be plug welded.

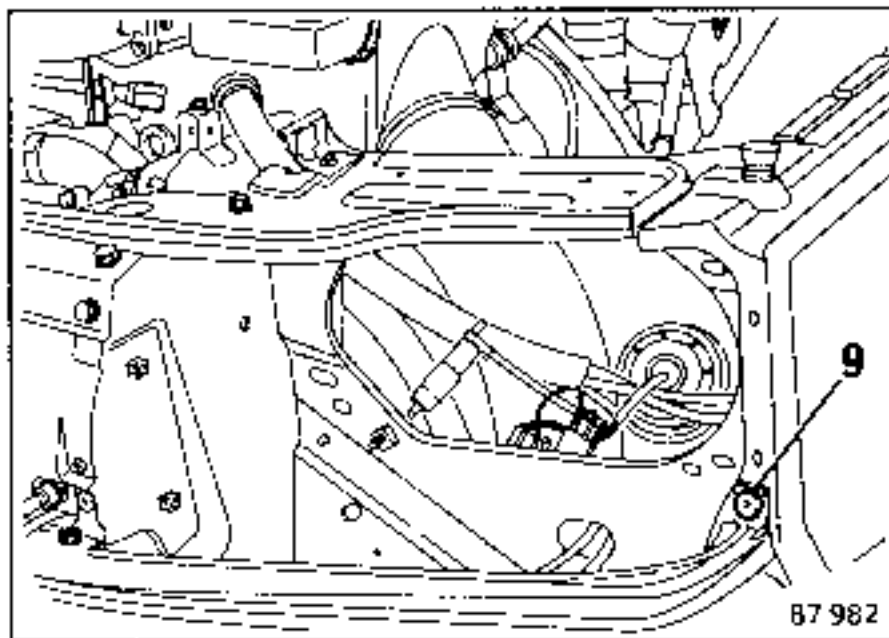
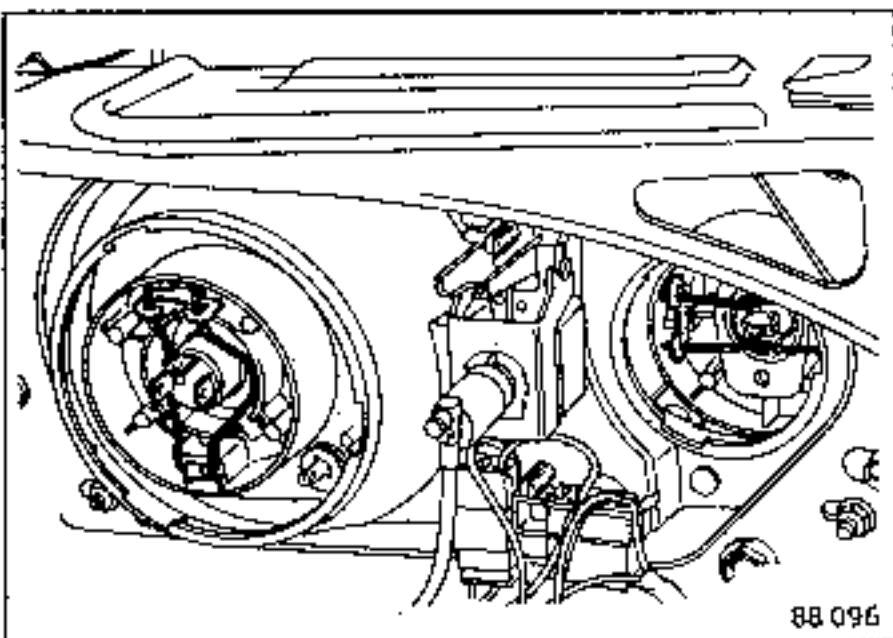


Drill 45 Ø 6 mm holes in the new part.

WELDING



INJECT HOLLOW SECTION WAX IN THE SIDE MEMBER AFTER PAINTING



REMOVING: Phase I vehicles

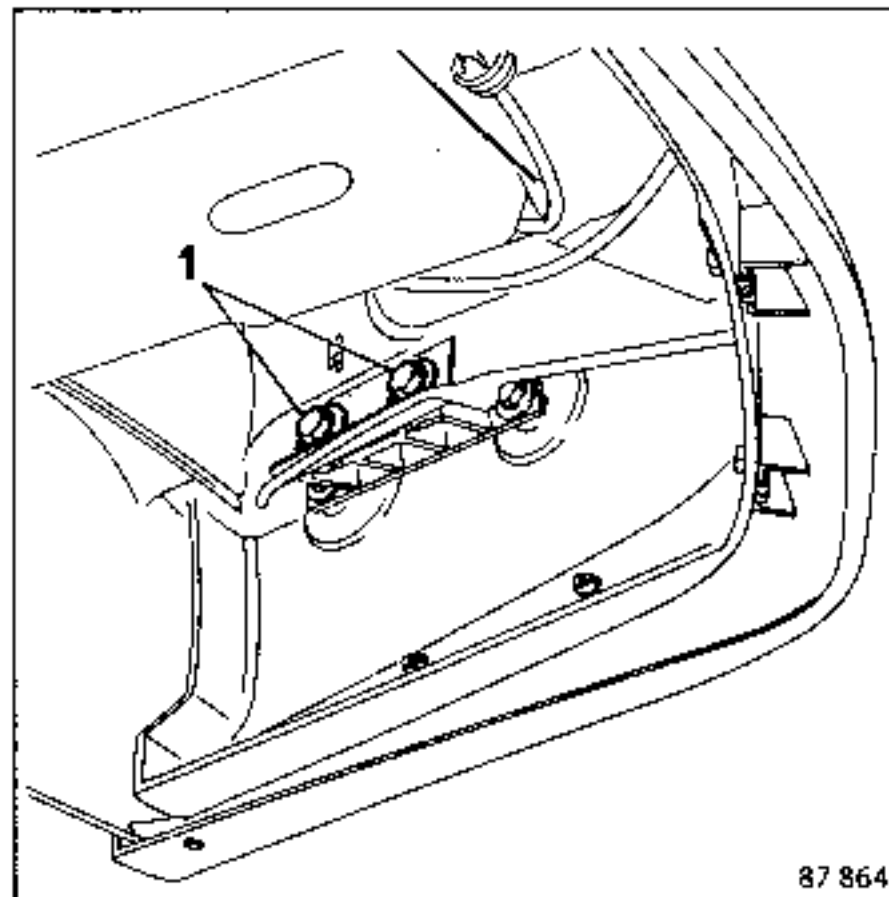
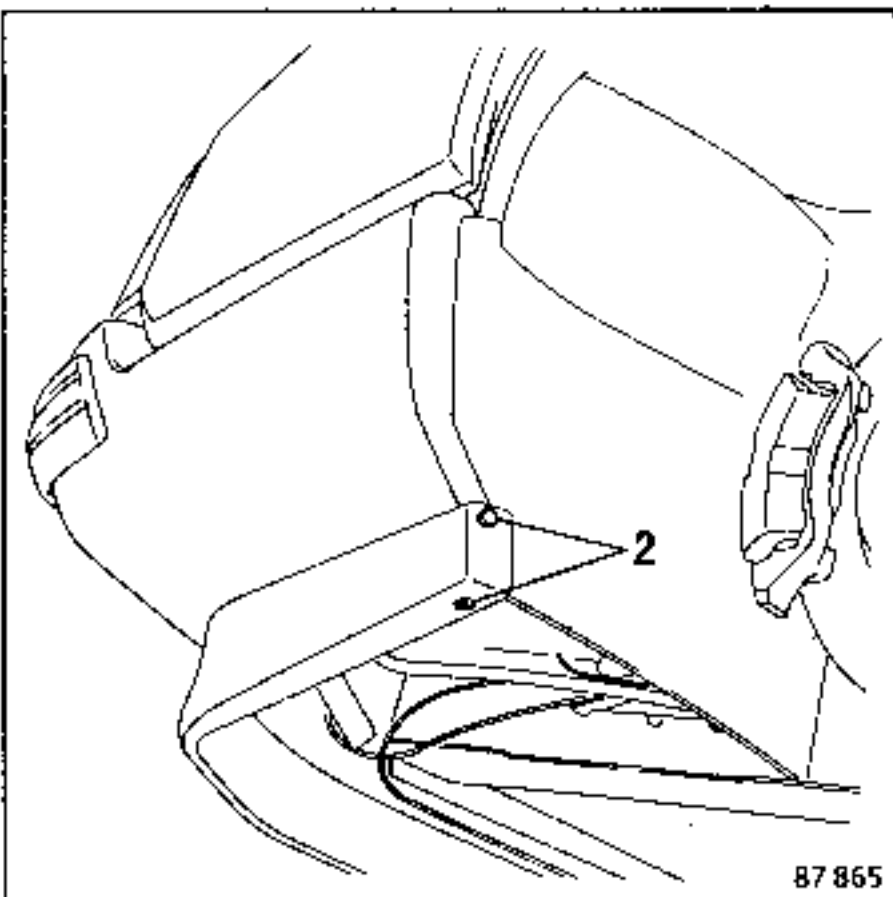
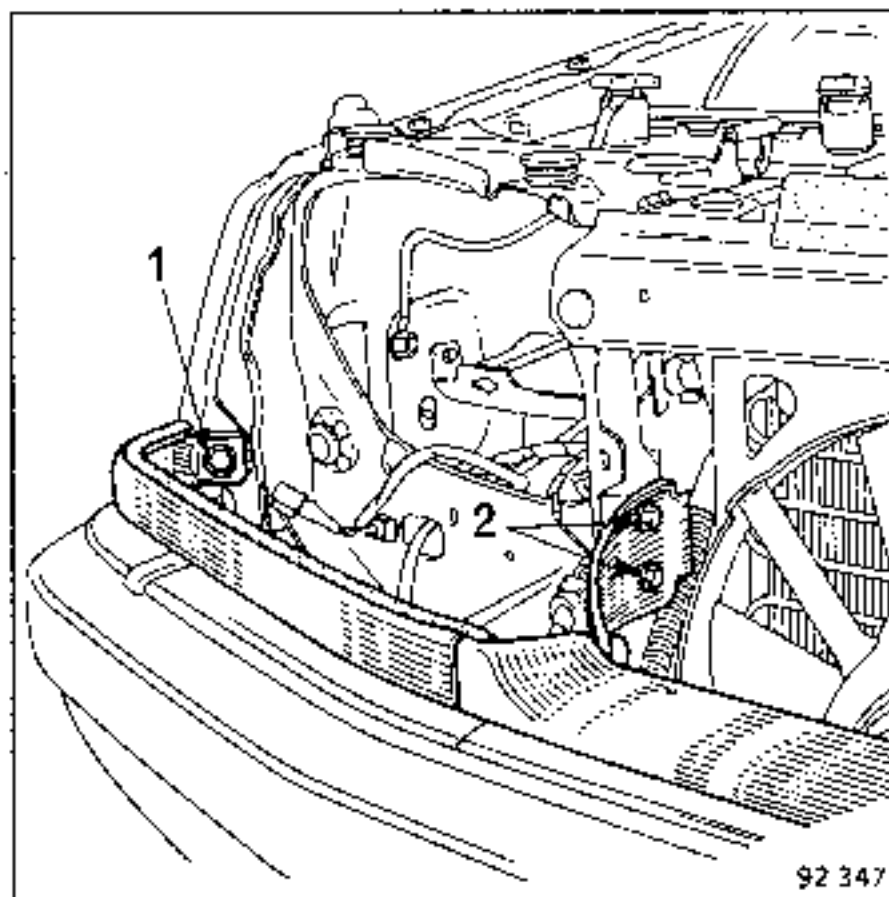
- Removing the front wing involves removing the headlight (on models fitted with twin headlights) or the direction indicator light (on models fitted with single headlights).
- Remove the rivet (9) securing the front finisher trim.

REMOVING: Phase II vehicles

Removing the front wing involves removing:

- the radiator grille;
- the light unit to gain access to the radiator grille mounting on the wing.

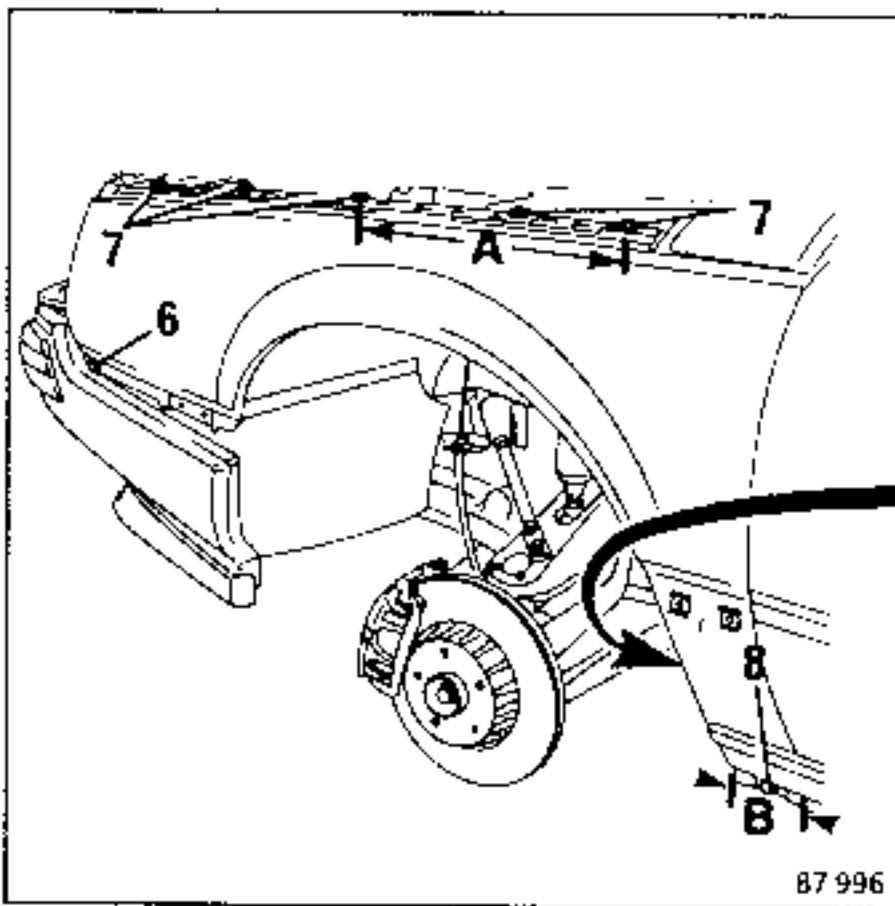
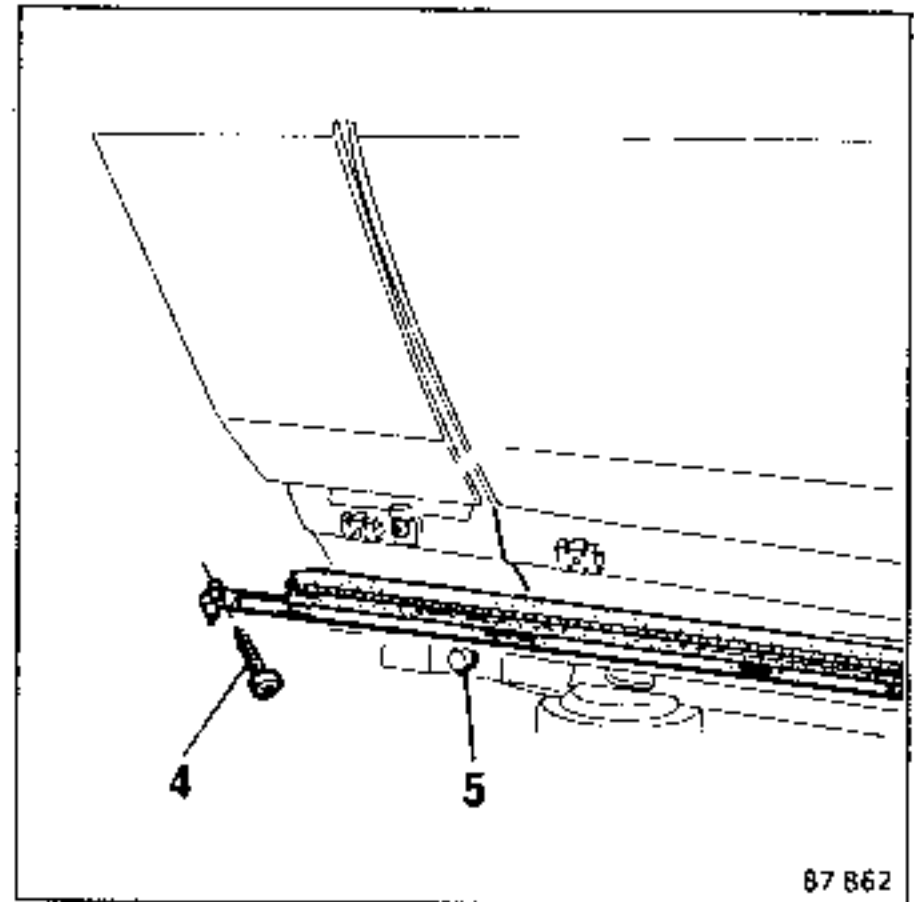
Then remove the bolt (1), securing the radiator grille to the front wing.



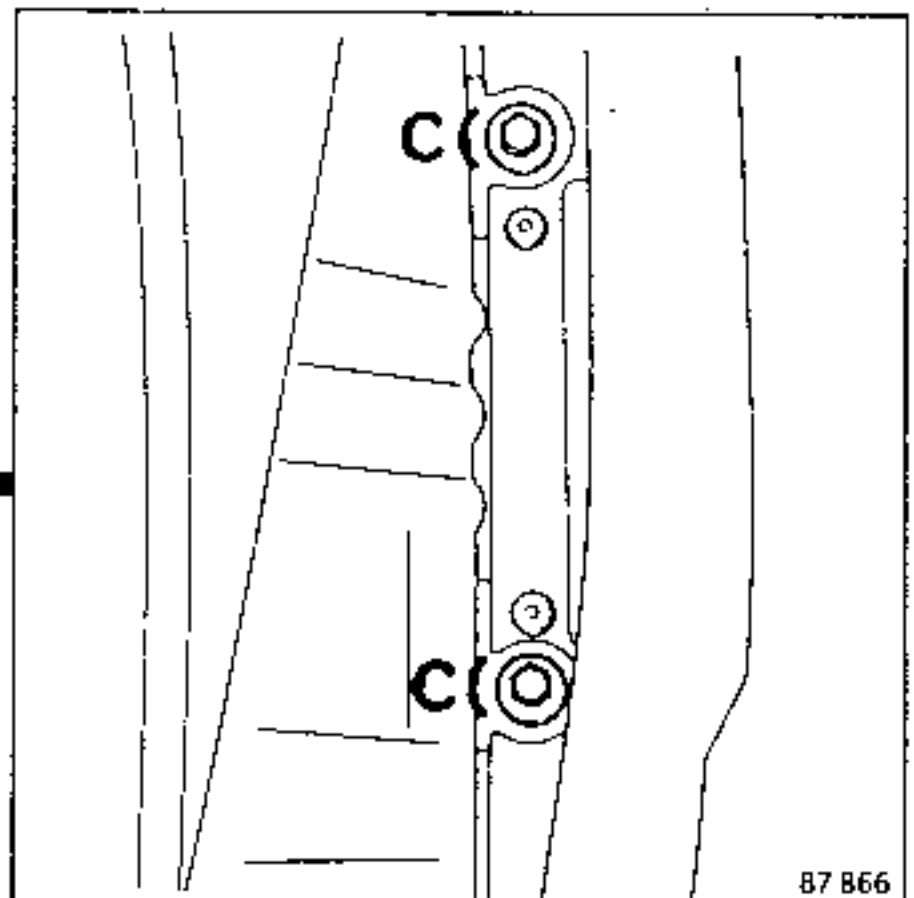
- Partially remove the shield mountings.
- Remove the upper (1) and lower (2) side mountings on the right or the left.

Using a screwdriver, unclip the end of the sill moulding and remove the bolt (4) securing the moulding to the wing.

Remove the sill bolt (5).



- Lower the shield to gain access to bolt (6).
- Remove this bolt and the 5 bolts (7).



- Remove the wheel arch protector and, from inside the wing, remove the two fixing bolts from the front pillar.

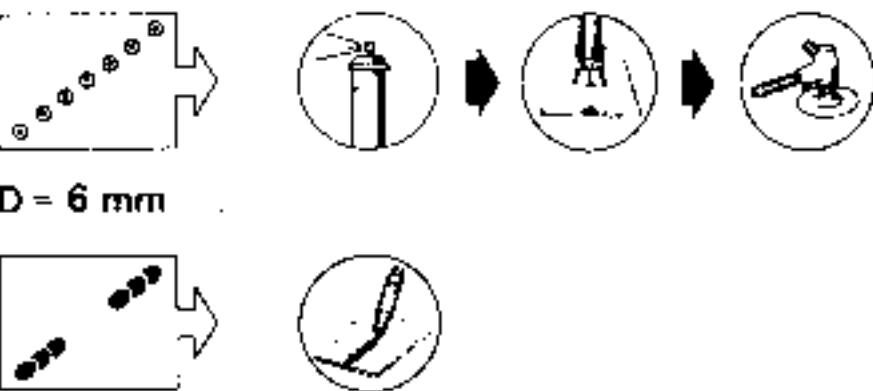
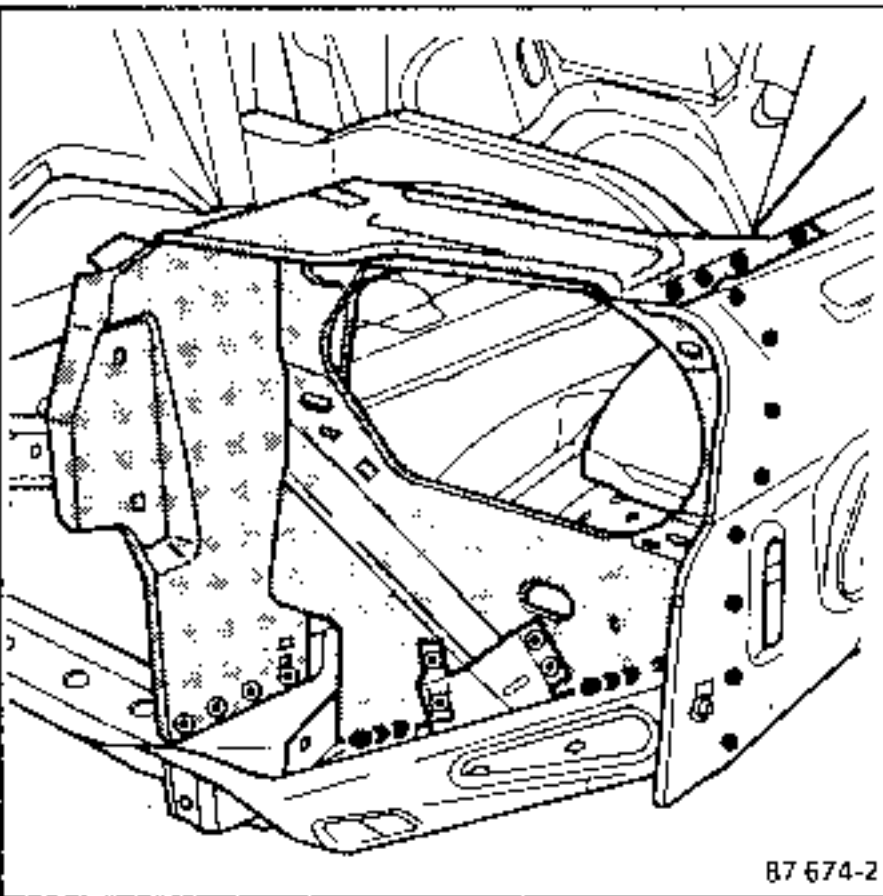
NOTE:

Parts (A), (B) and (C) are coated with sealing mastic. To remove the wing it will be necessary to heat these parts from inside the wing to soften the mastic, using a hot air blower or a welding torch. Adjust to produce excess acetylene, taking care not to burn the paint.

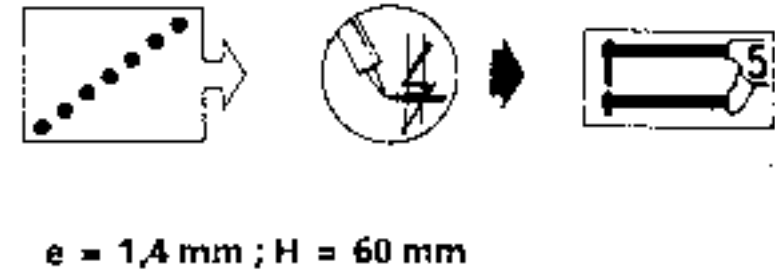
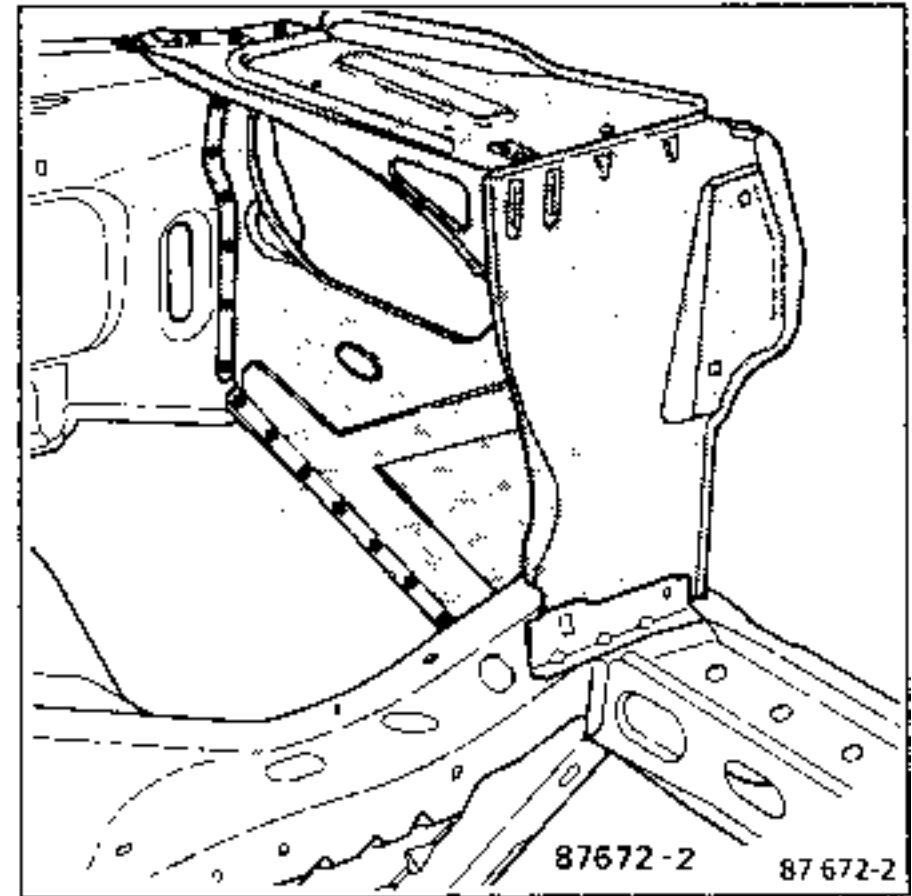
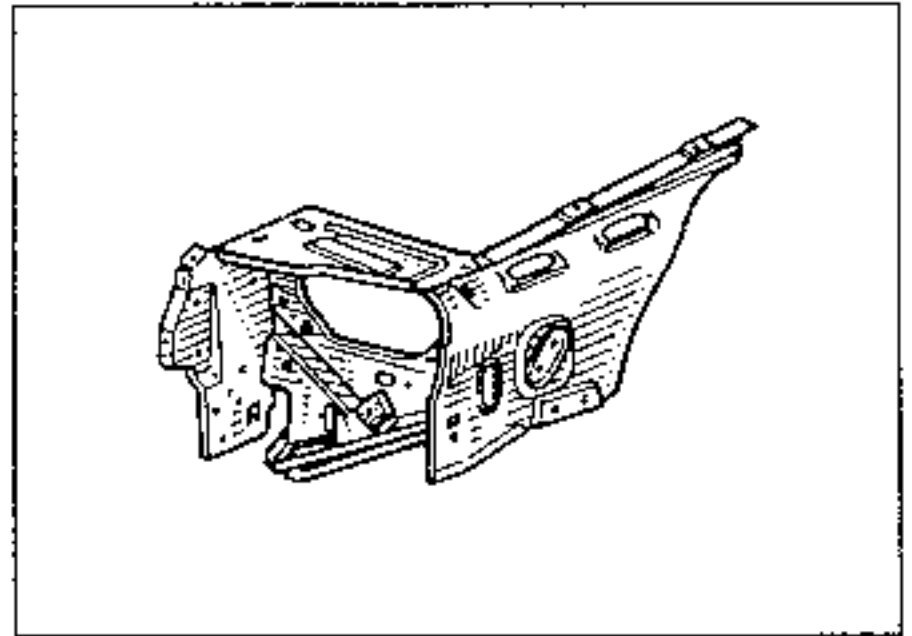
PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all zones to be welded (on both the vehicle and the new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat the parts to be plug welded with aluminium paint.
- Adjust the new part, then secure it using a vice clamp.

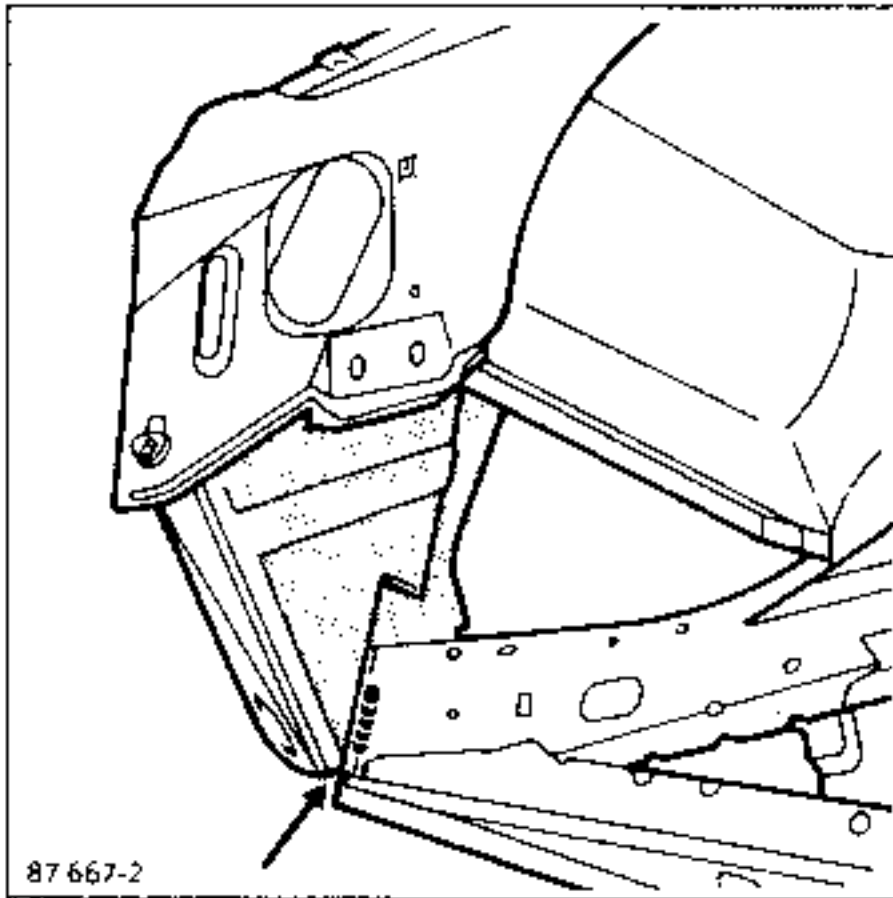
WELDING



MPR PART



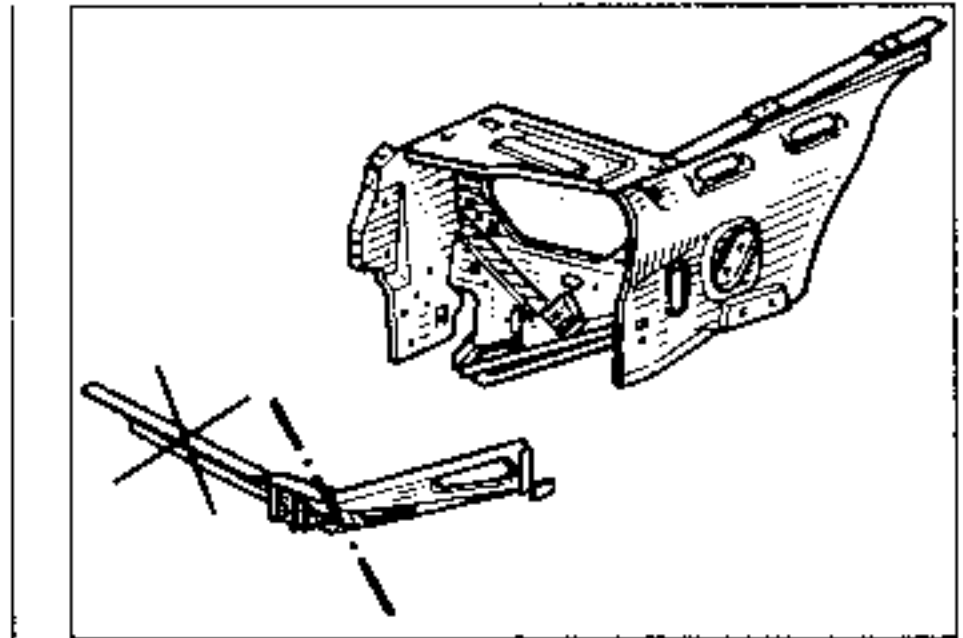
WELDING (continued)



- Plug weld under protective gas. To do this, drill the first sheet to the diameter **D** given under the drawings.
- Electric spot weld. The corresponding values of **(e)** and **(H)** are given under each drawing.
- Seam stitch weld under protective gas.



PREPARATION BEFORE WELDING

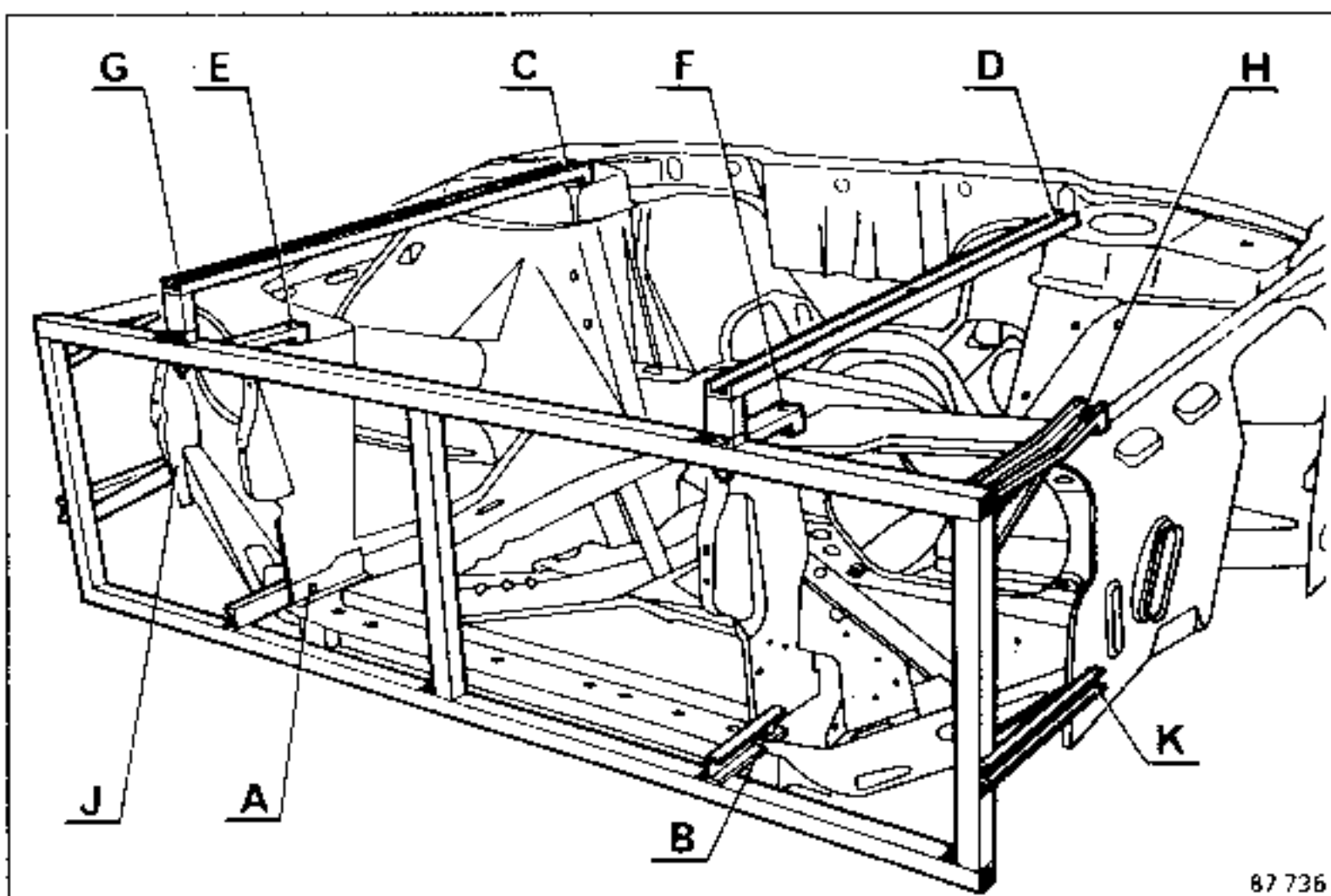


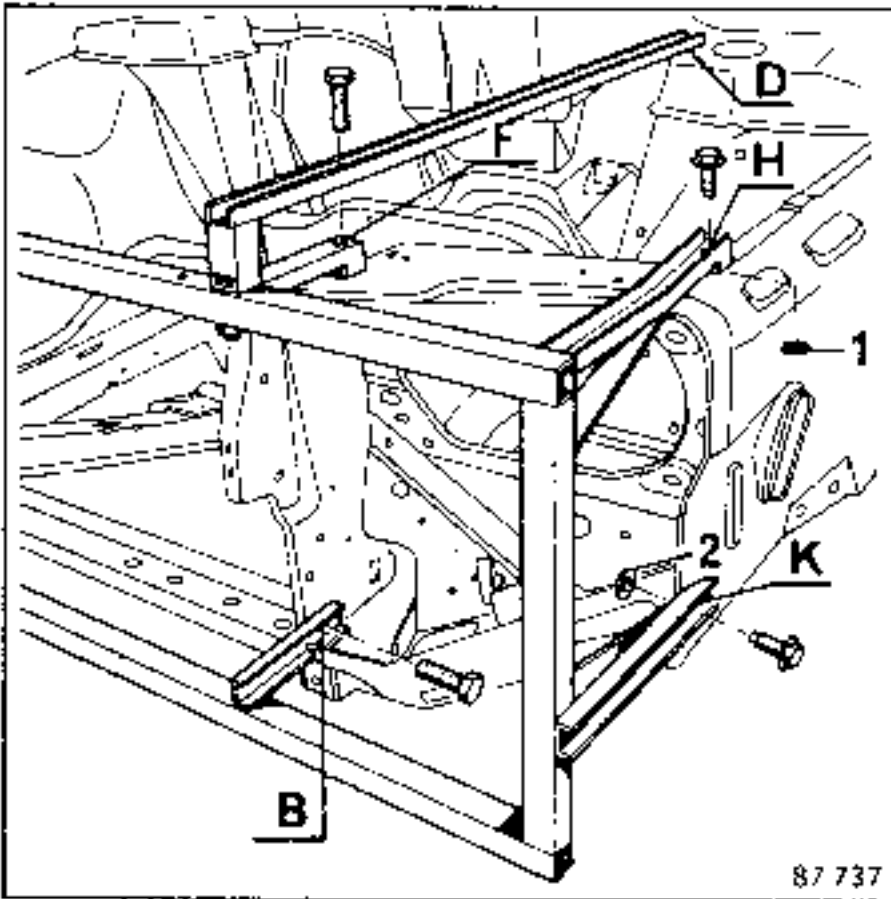
- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a fillet of electroplastic mastic (see key to symbols at beginning of chapter).
- Coat with aluminium paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.

Fitting the front end jig

A, B, C and D are the reference points for fitting the jig to the vehicle.

Before fitting, make sure during trammel gauge checking that these four points are correct.

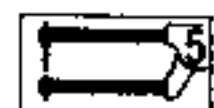
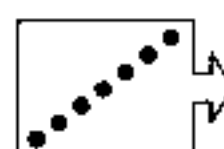
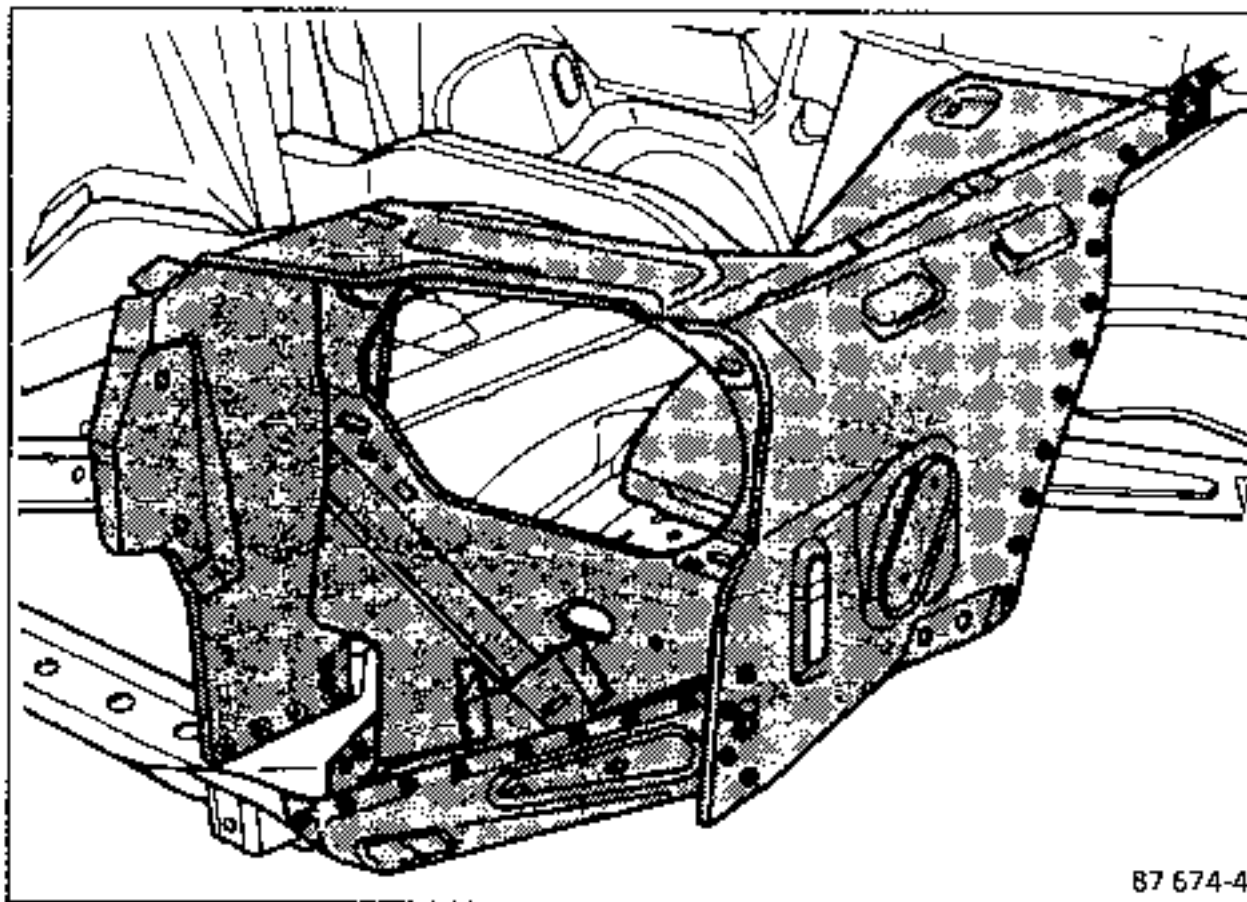




E, F, G, H, J and K are the fixing and fitting points for the parts to be replaced.

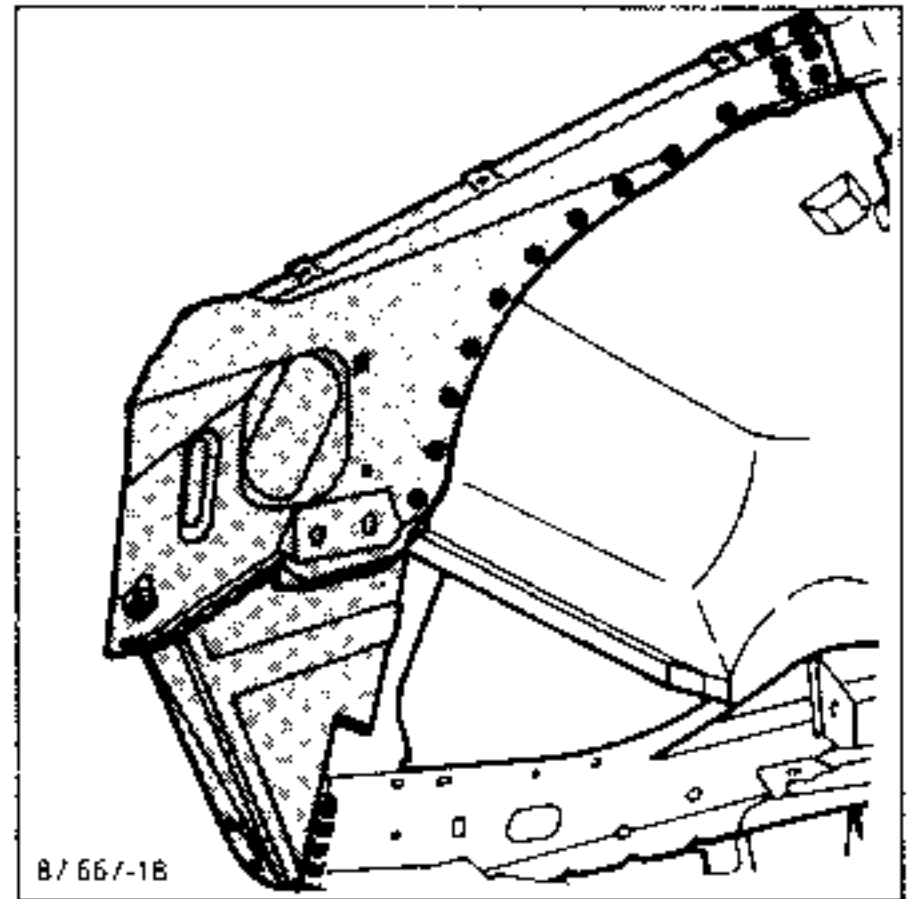
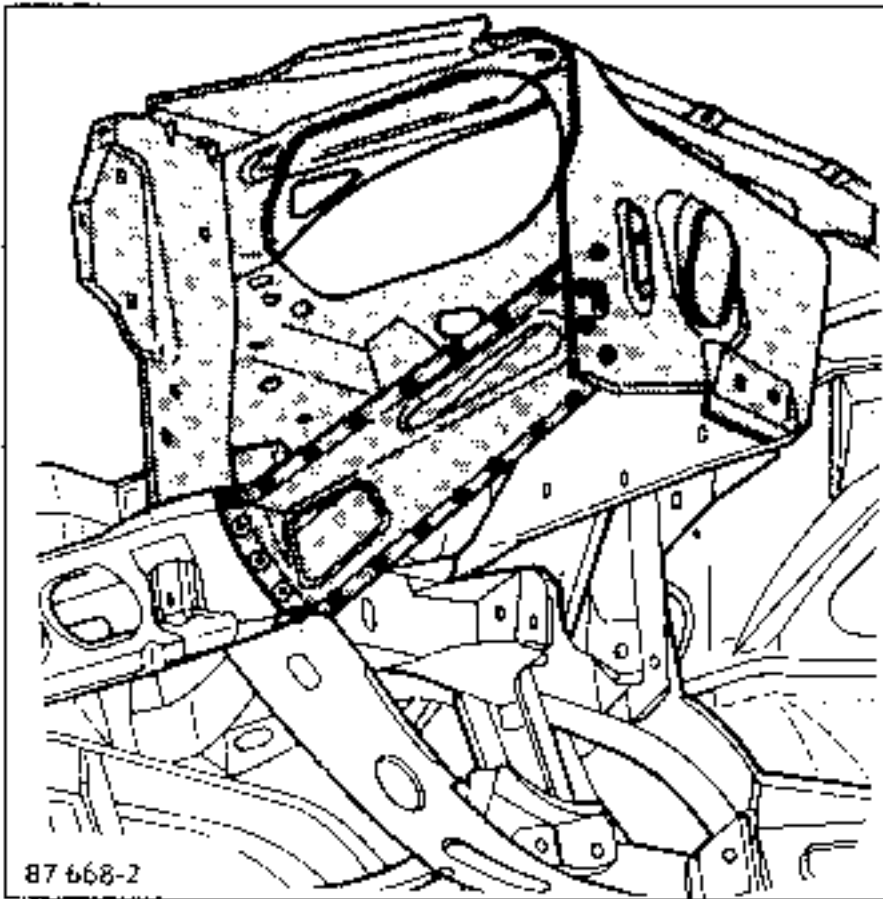
When the front wing is removed, the spacer washers (1) and (2), originally fitted under the wings, must be refitted to points G, H, J and K.

WELDING



$D = 6 \text{ mm}$

$e = 1,4 \text{ mm}$; $H = 55 \text{ mm}$



$D = 5 \text{ mm}$

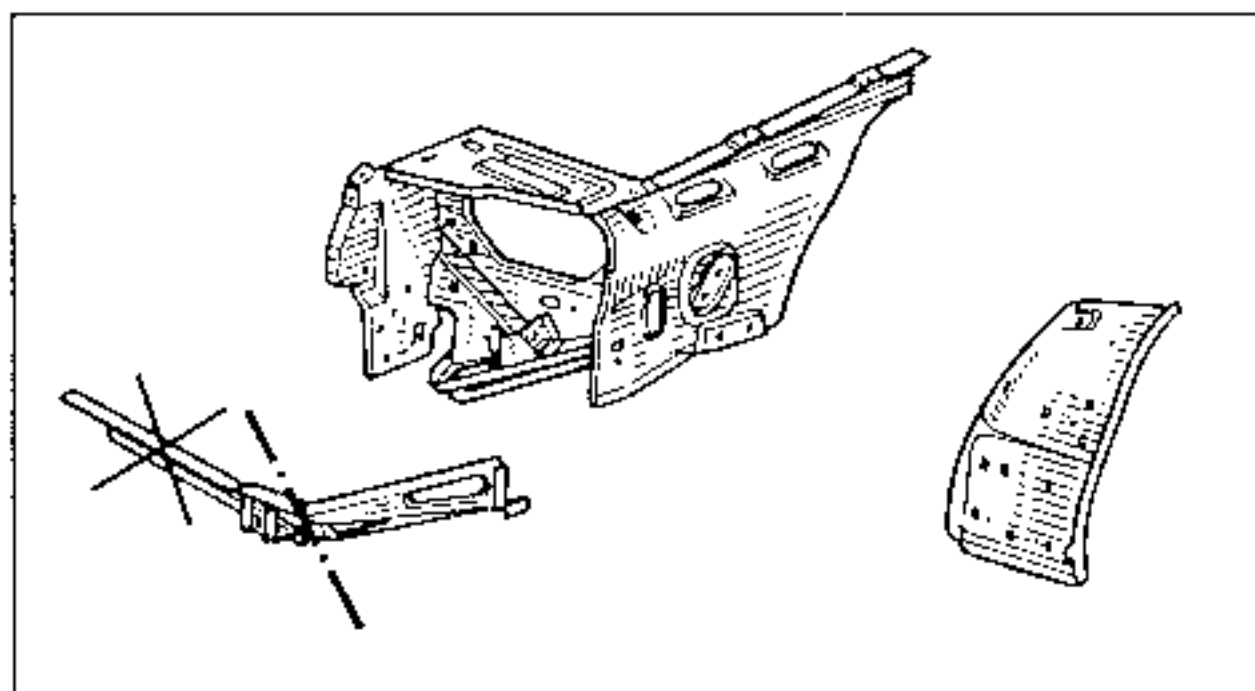
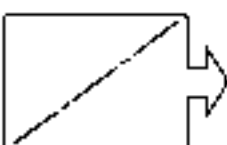


$e = 1,4 \text{ mm} ; H = 55 \text{ mm}$

- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas.
- Plug weld under protective gas. To do this, drill the first panel to diameter D given under the drawings.

THIS OPERATION IS IN ADDITION TO THE PREVIOUS OPERATION

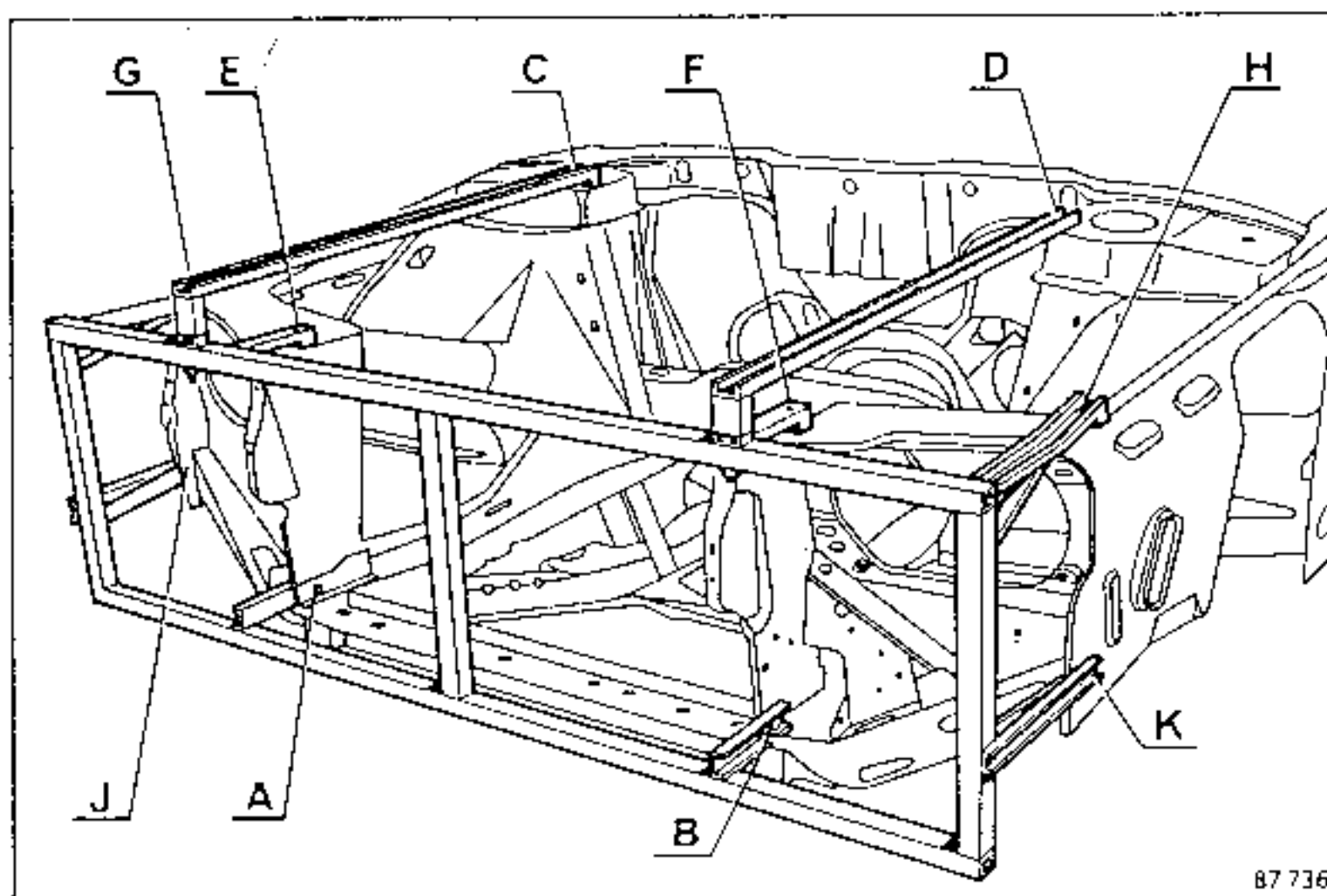
PREPARATION BEFORE WELDING

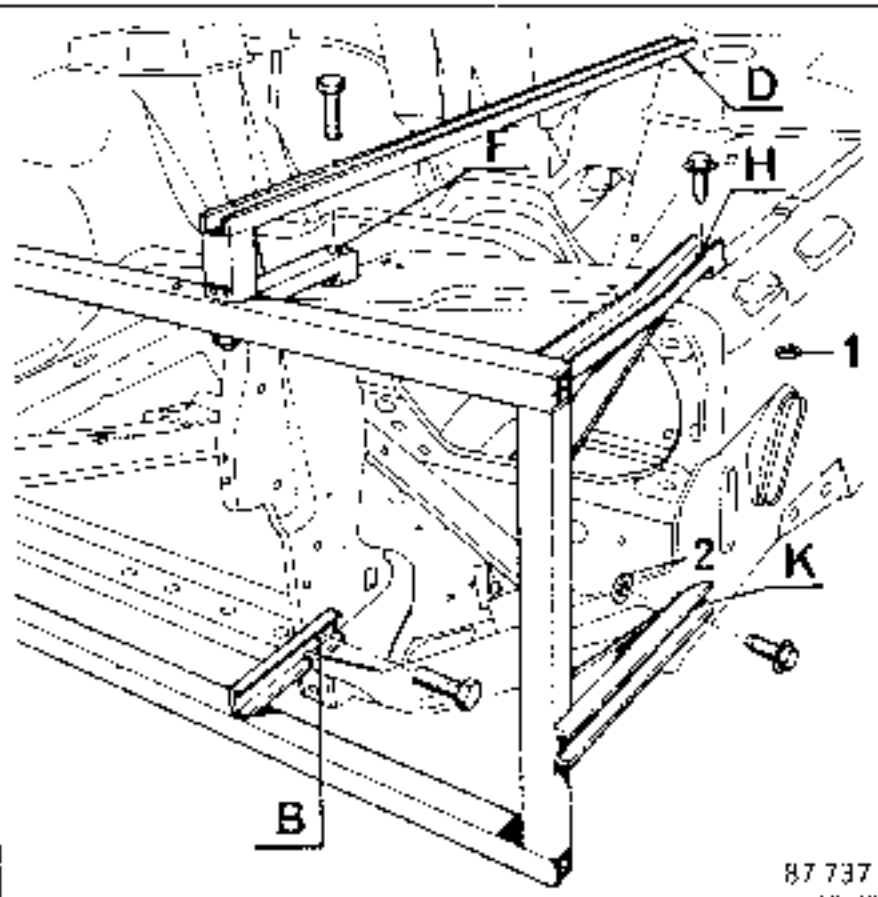


- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on the new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see key to symbols at beginning of chapter).
- Coat the parts to be plug welded with aluminium paint
- Adjust the new part, then secure it using a vice clamp.

Fitting the front end jig

A, B, C and D are the reference points for fitting the jig to the vehicle. Before fitting, make sure during trammel gauge checking that these four points are correct.

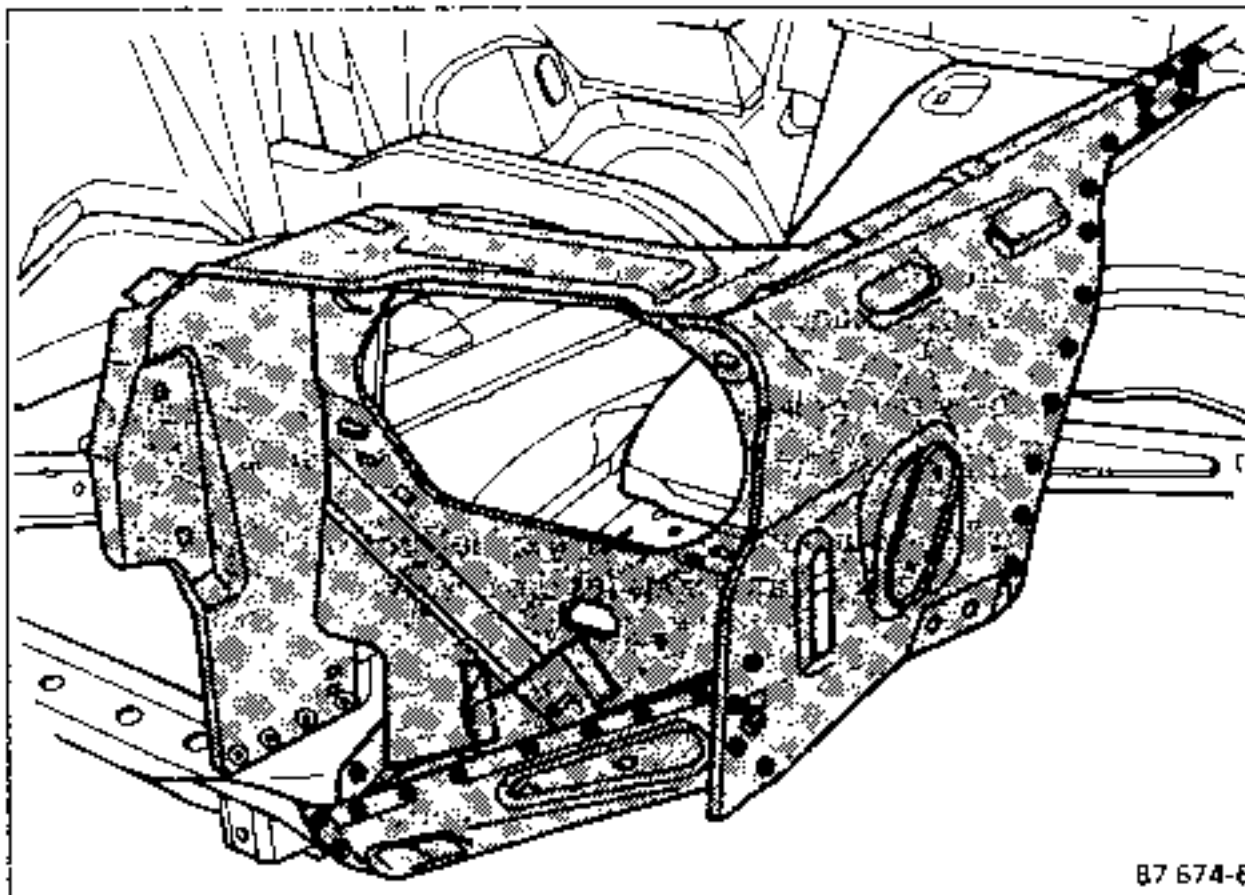




E, F, G, H, J and K are the fixing and fitting points for the parts to be replaced.

When the front wing is removed, the spacer washers (1) and (2), originally fitted under the wings, must be refitted to points G, H, J and K.

WELDING

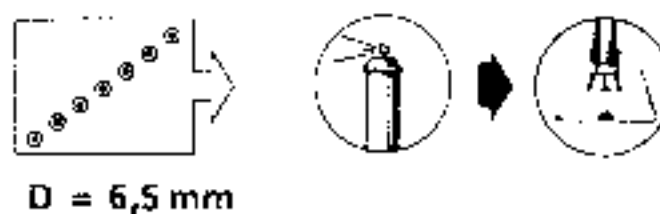
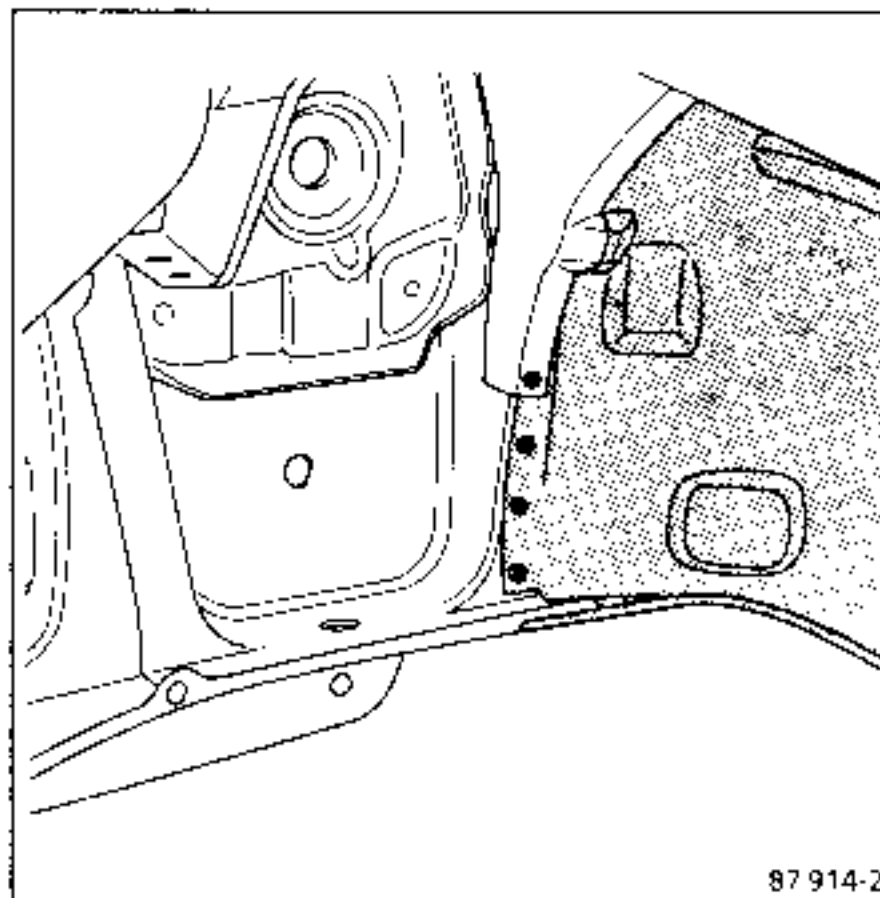
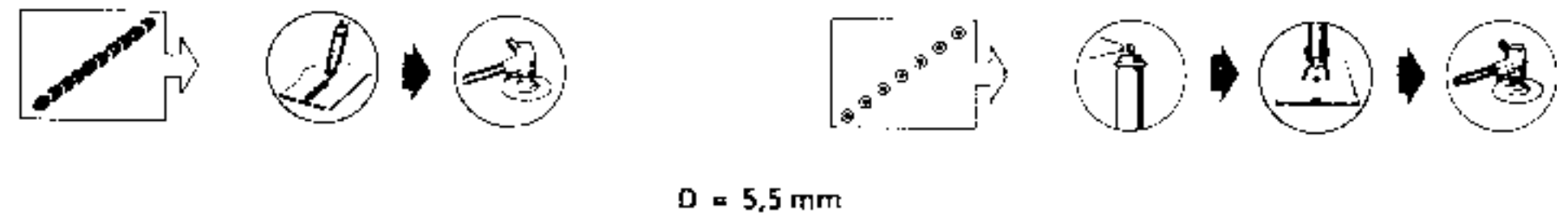
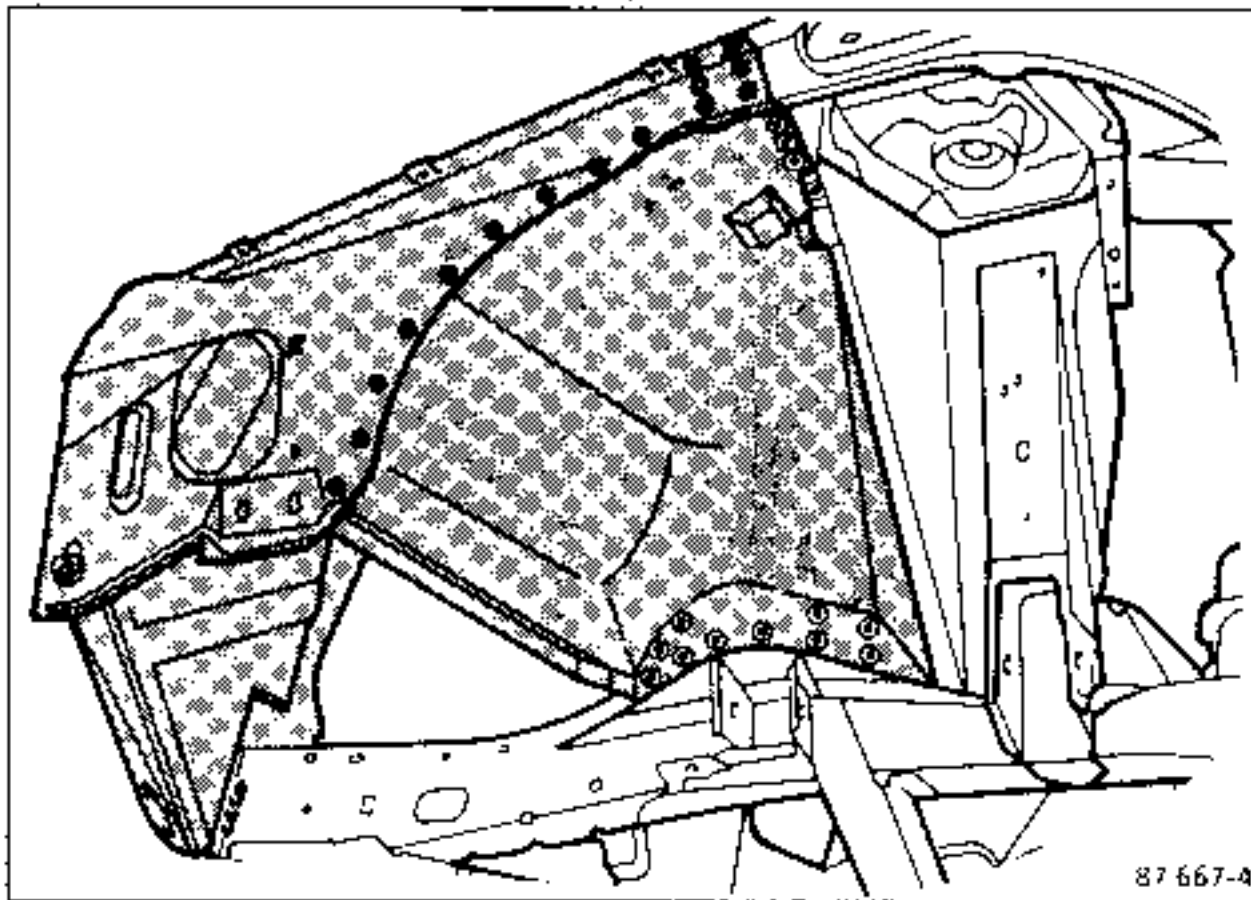


D = 6 mm

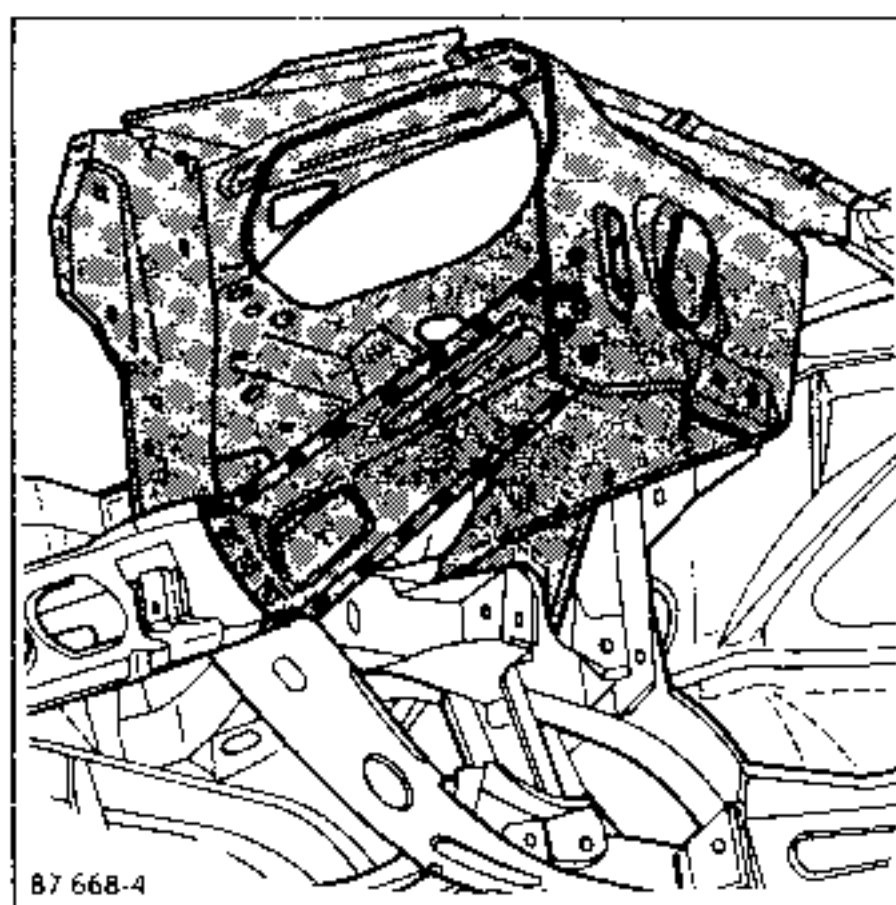
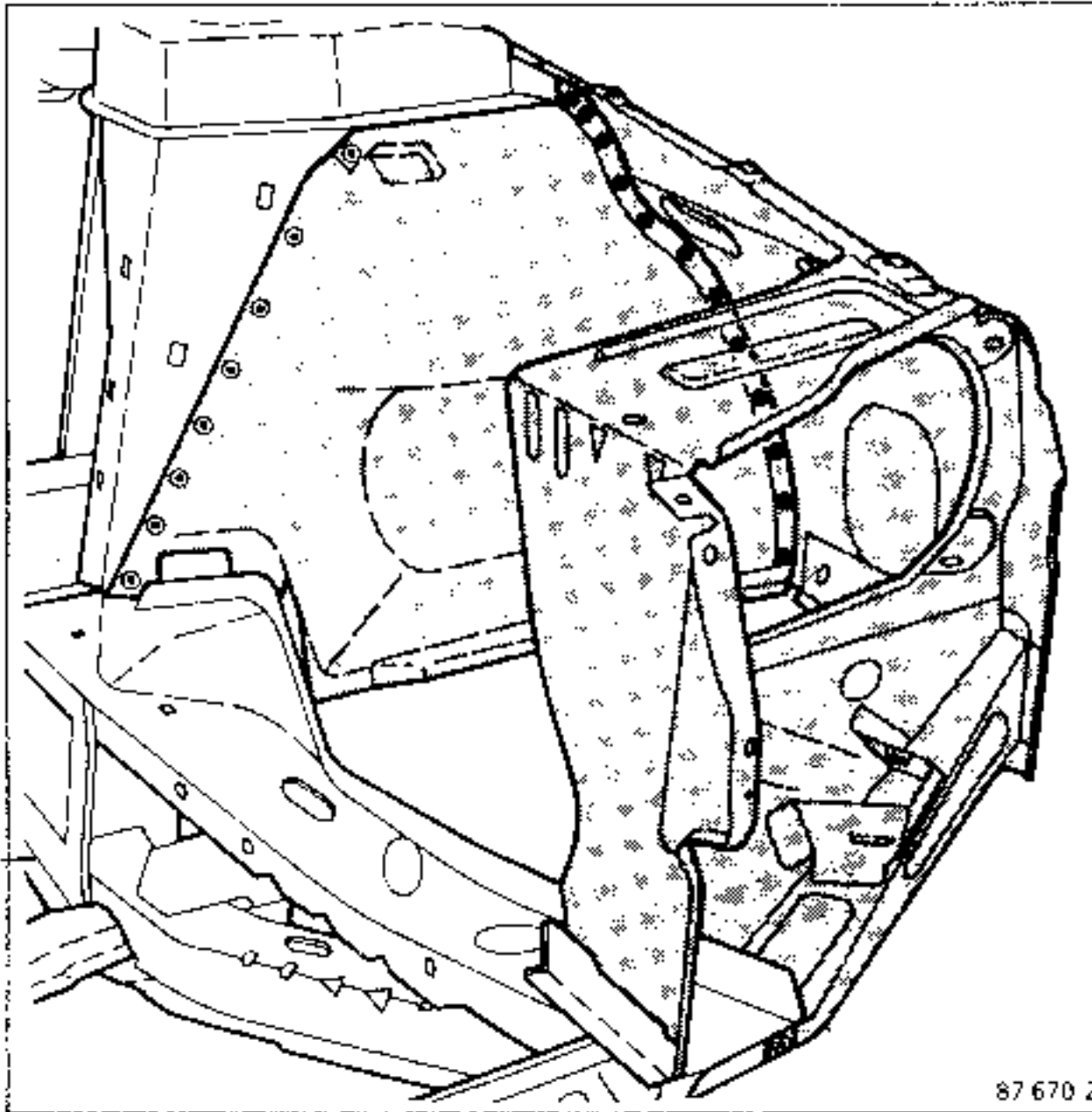


e = 1,4 mm ; H = 55 mm

WELDING

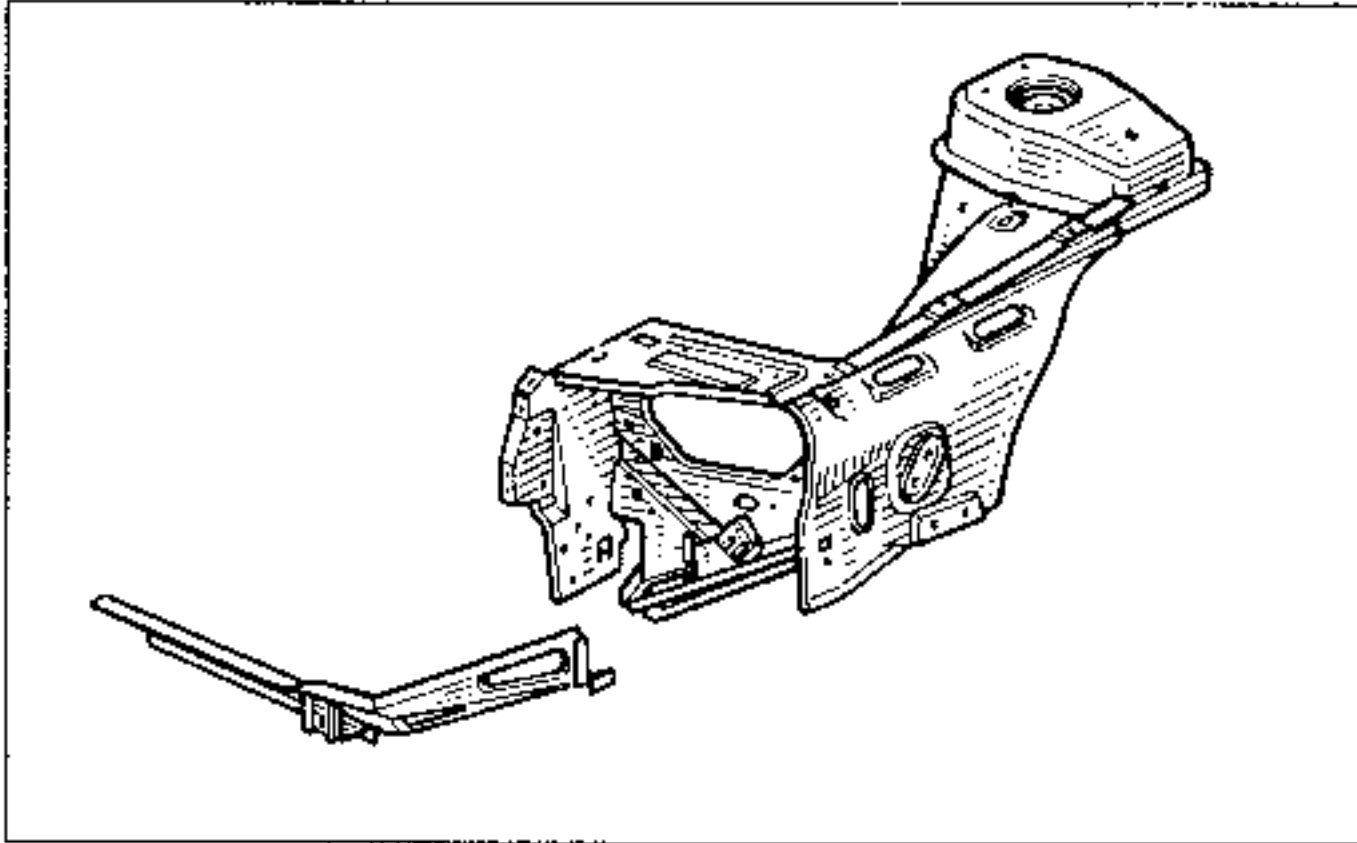


WELDING



- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas.
- Plug weld under protective gas. To do this, drill the first panel to diameter D given under the drawings.

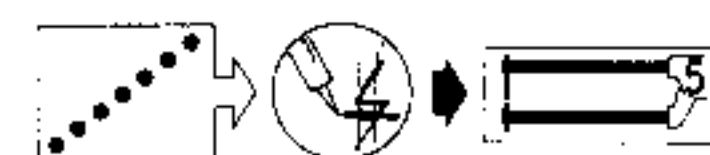
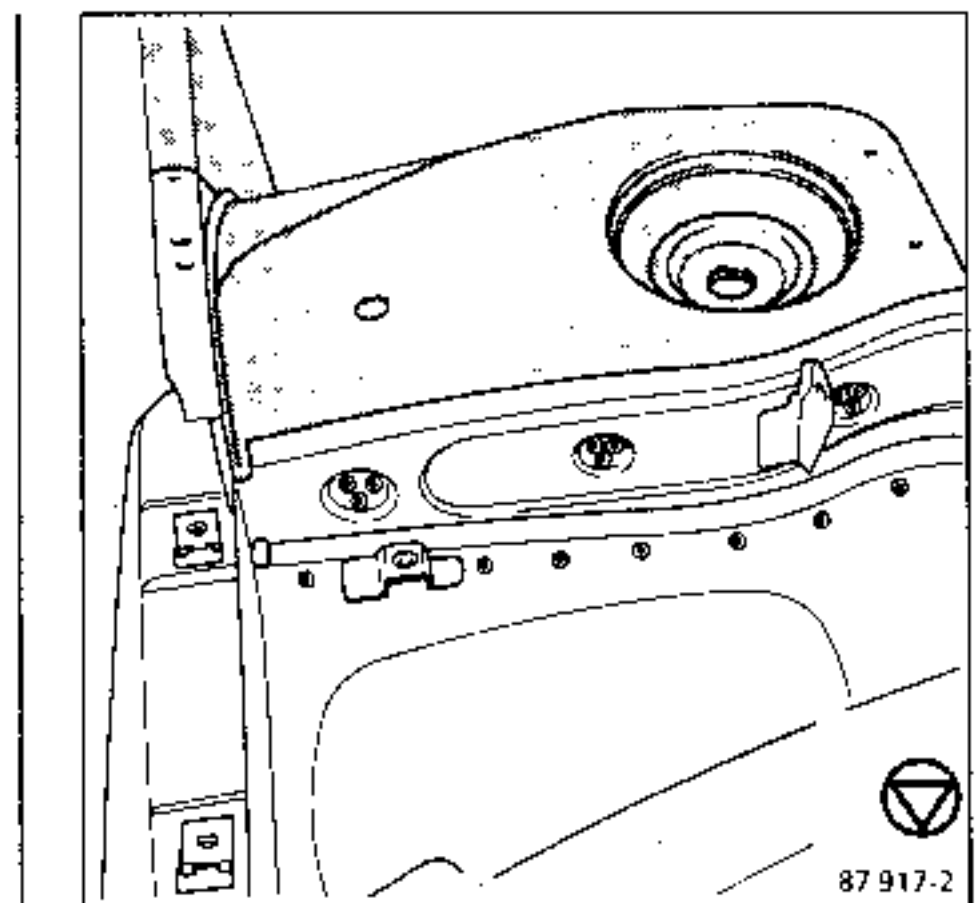
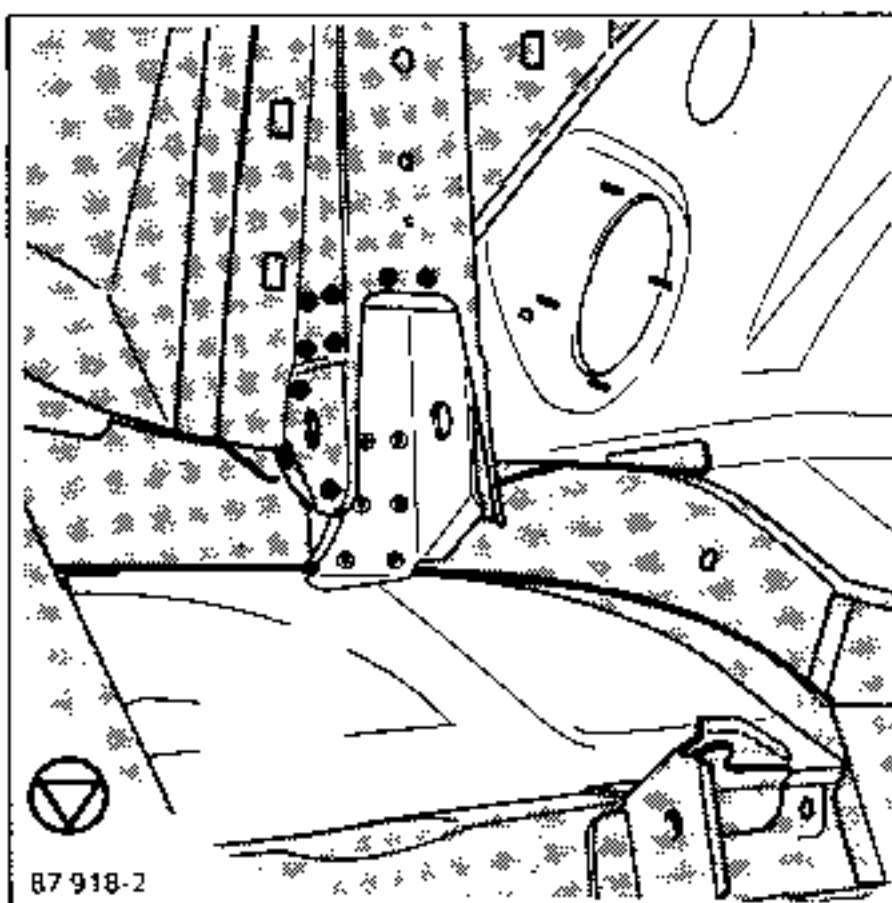
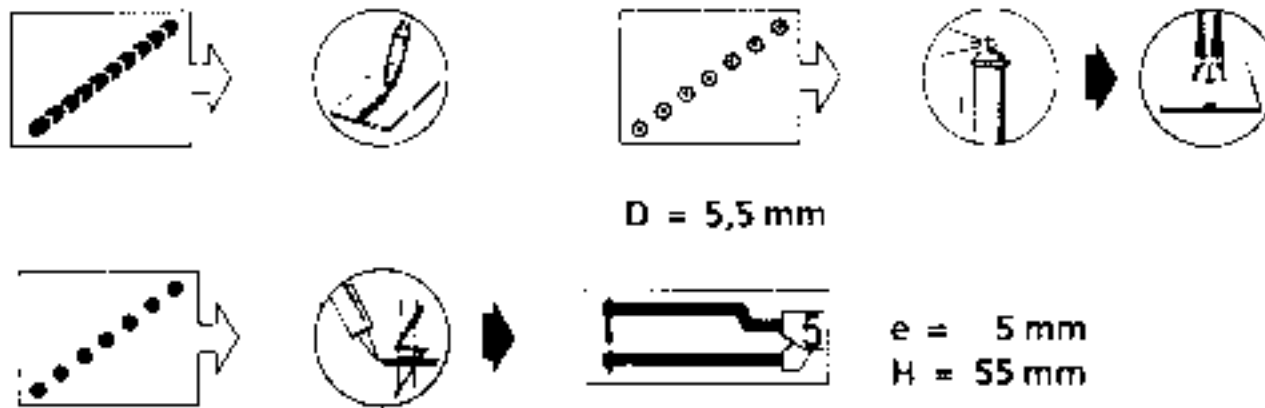
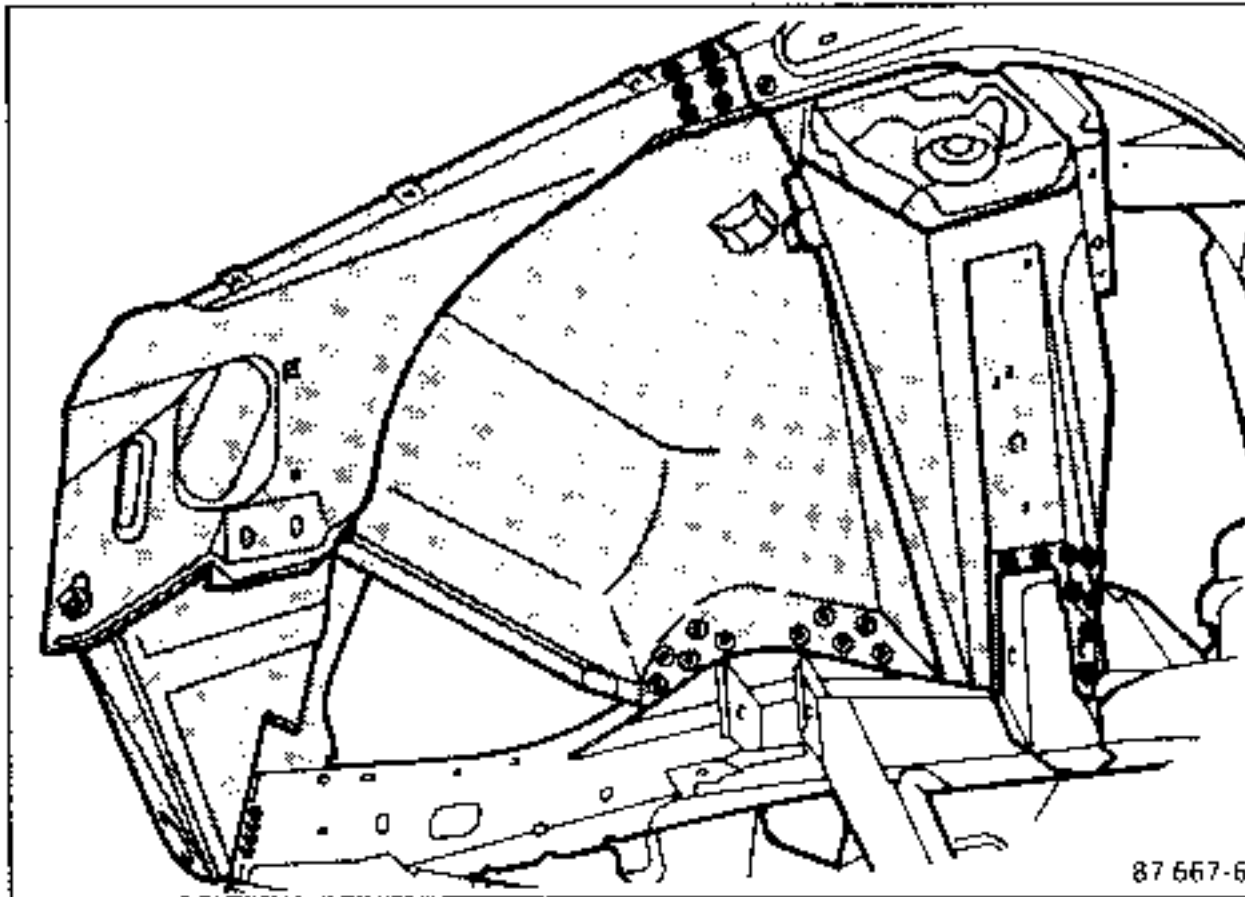




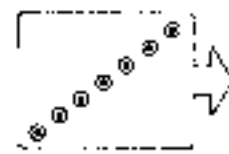
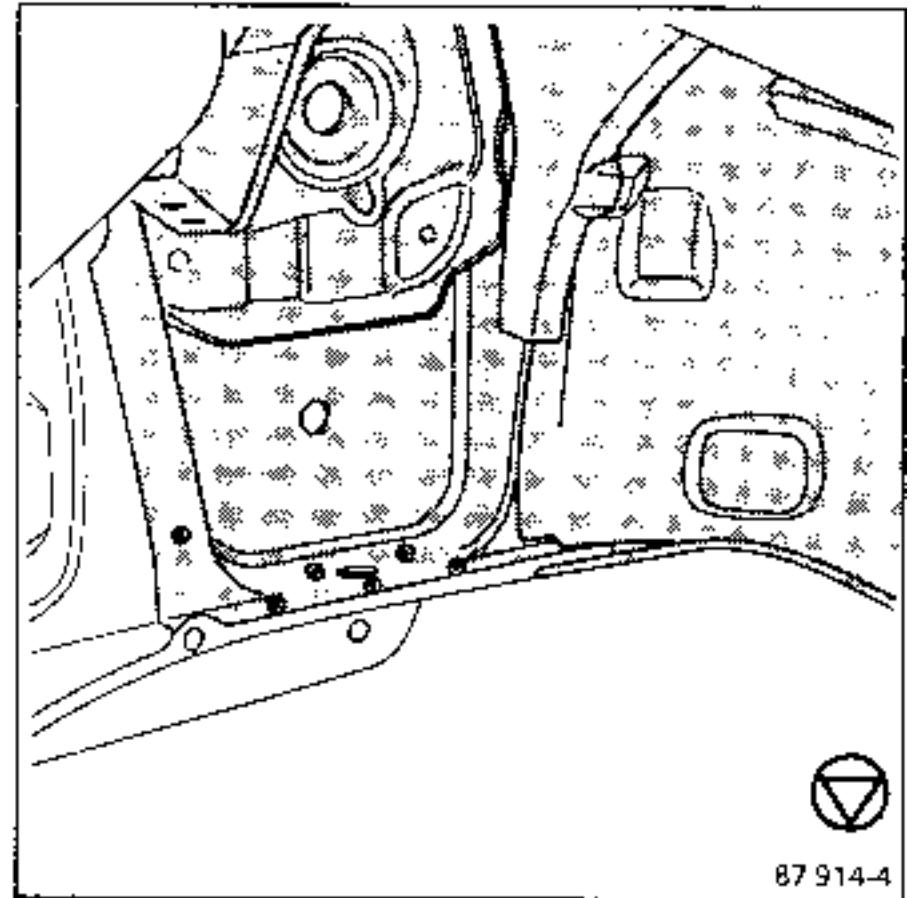
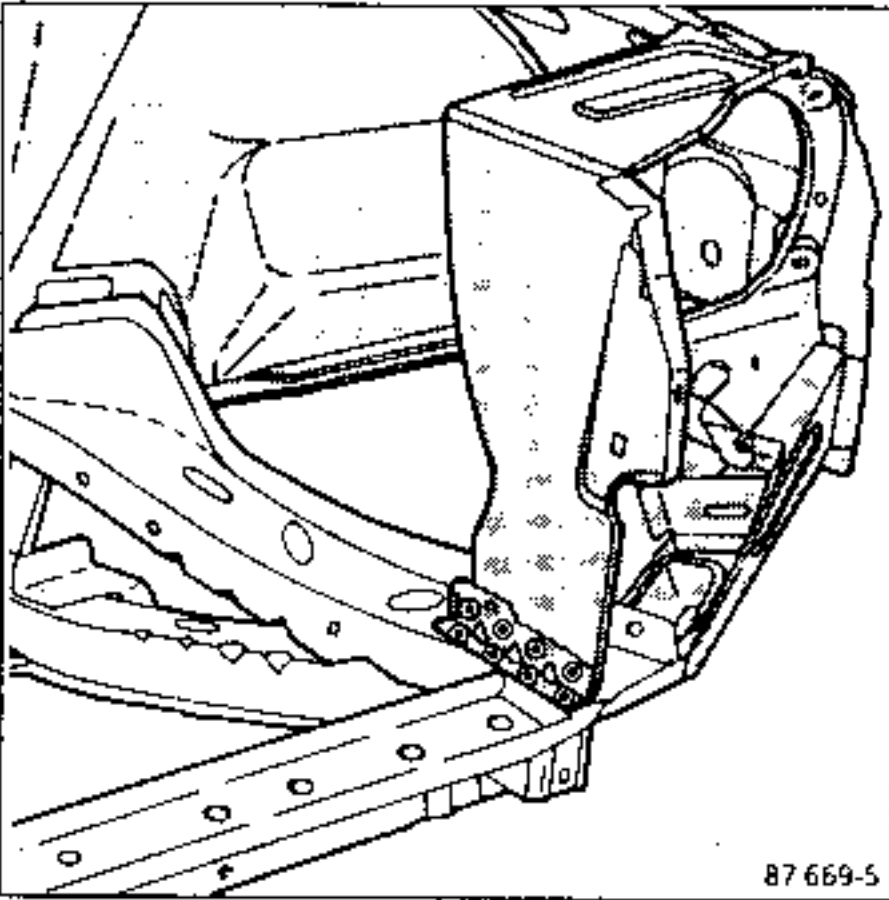
THIS OPERATION IS CARRIED OUT ON A JIG REPAIR BENCH

PREPARATION BEFORE WELDING

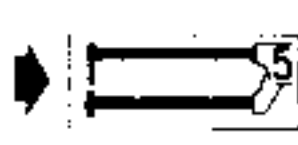
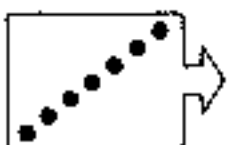
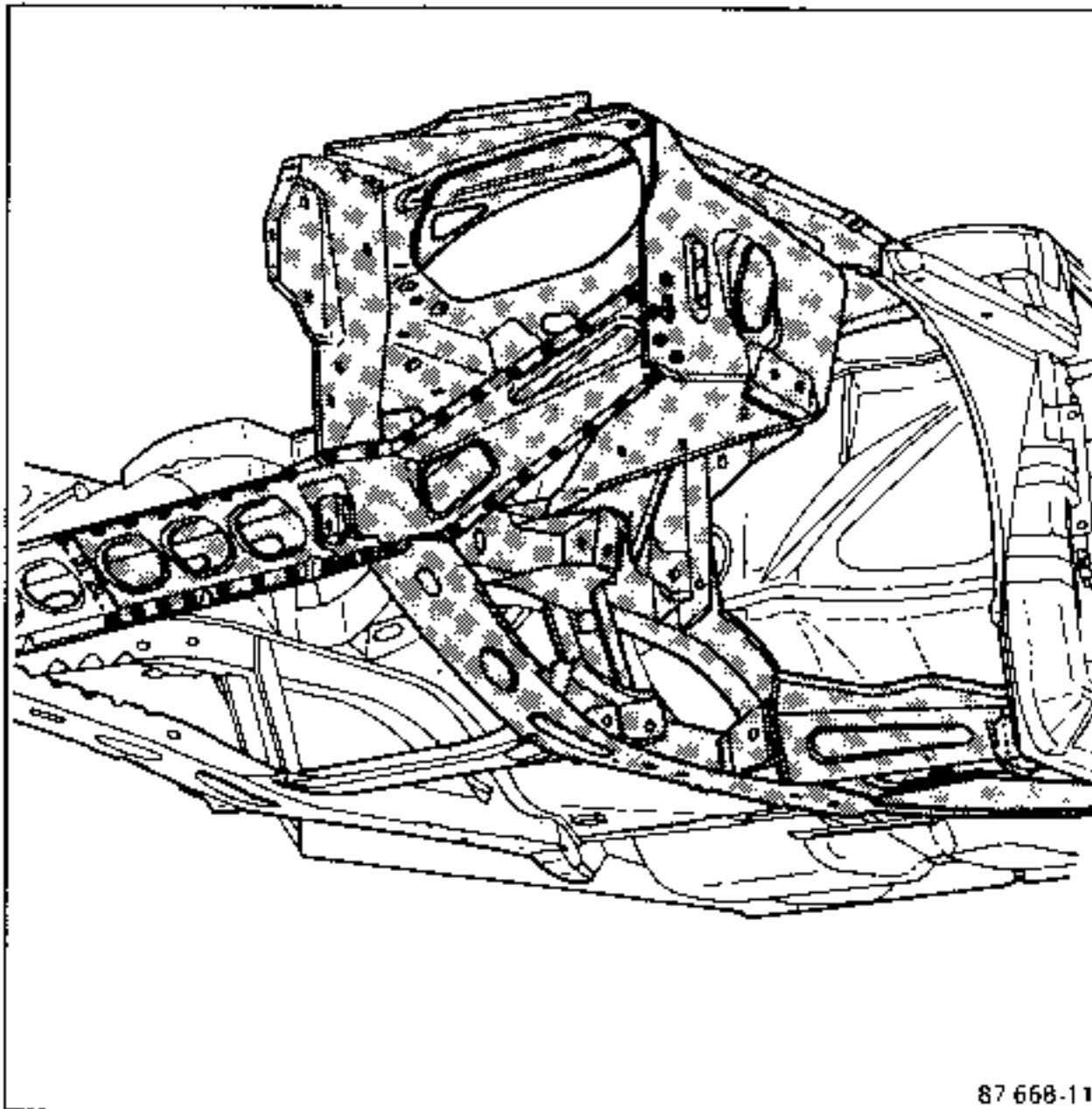
- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on the new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat the parts to be plug welded with aluminium paint.
- Adjust the new part, then secure it using a vice clamp.



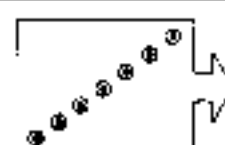
e = 5 mm
H = 55 mm

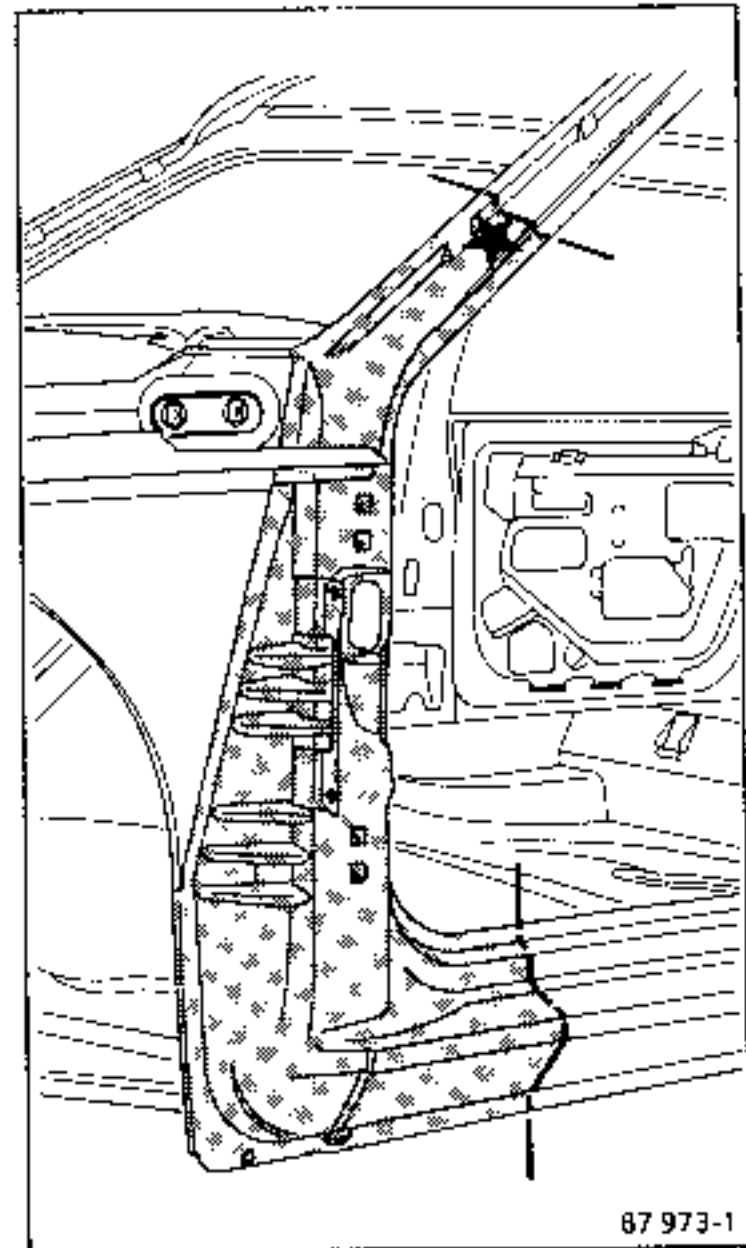
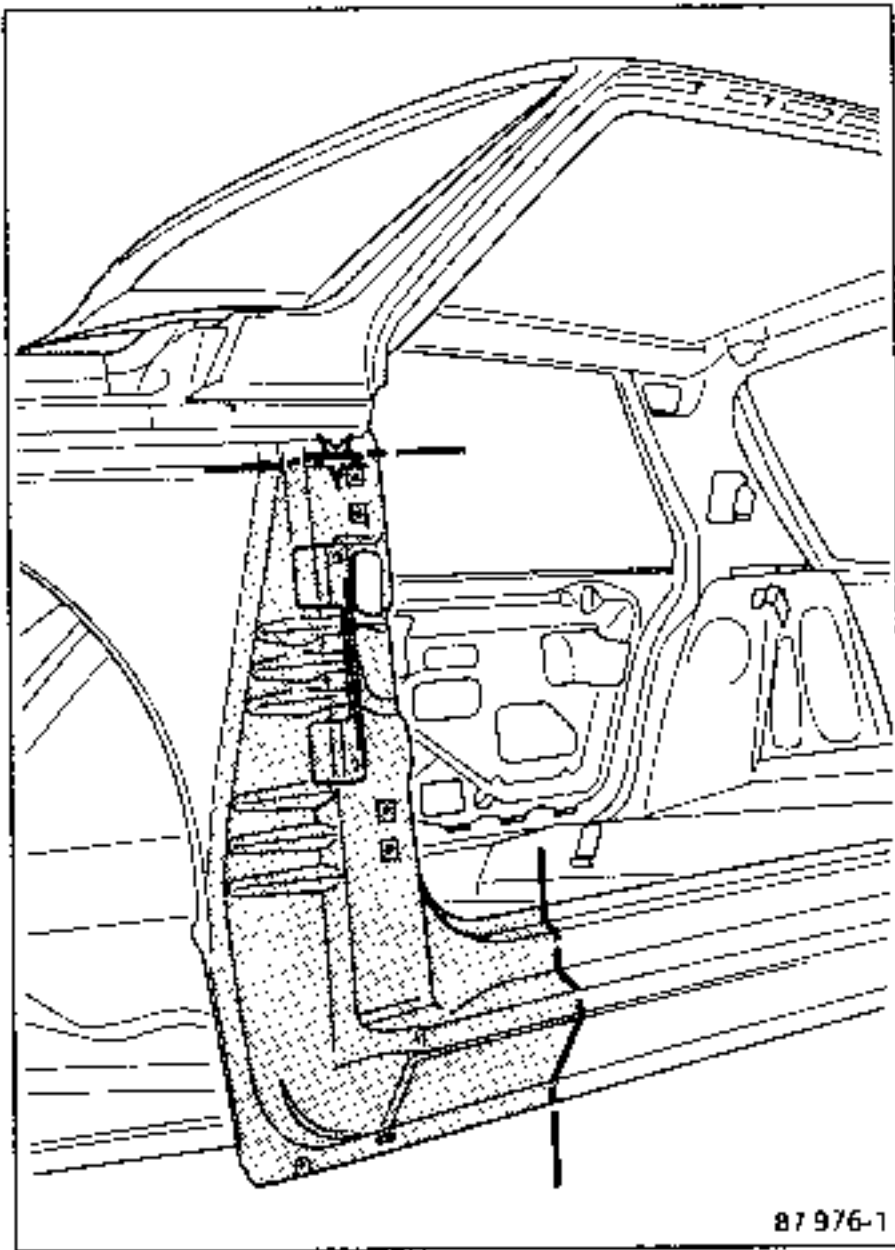


$D = 6,5 \text{ mm}$



$e = 1,4 \text{ mm}$
 $H = 55 \text{ mm}$





Depending on the impact, several pillar replacement solutions are possible:

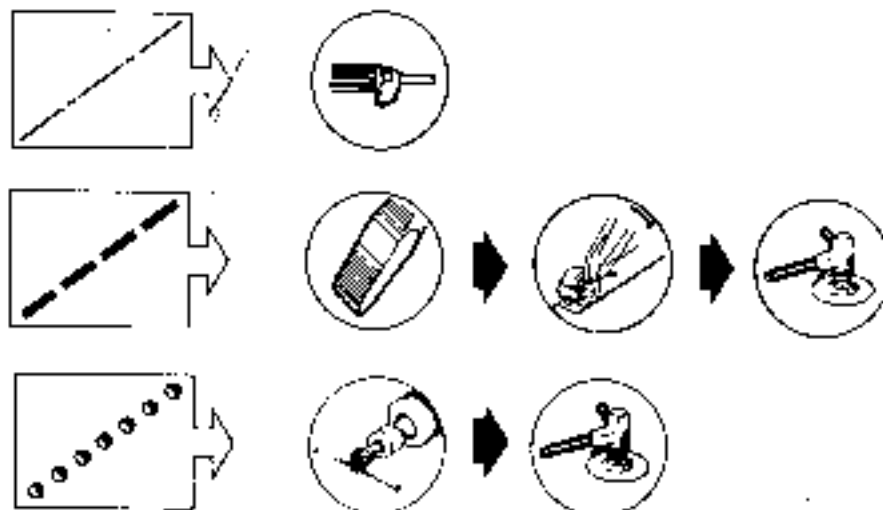
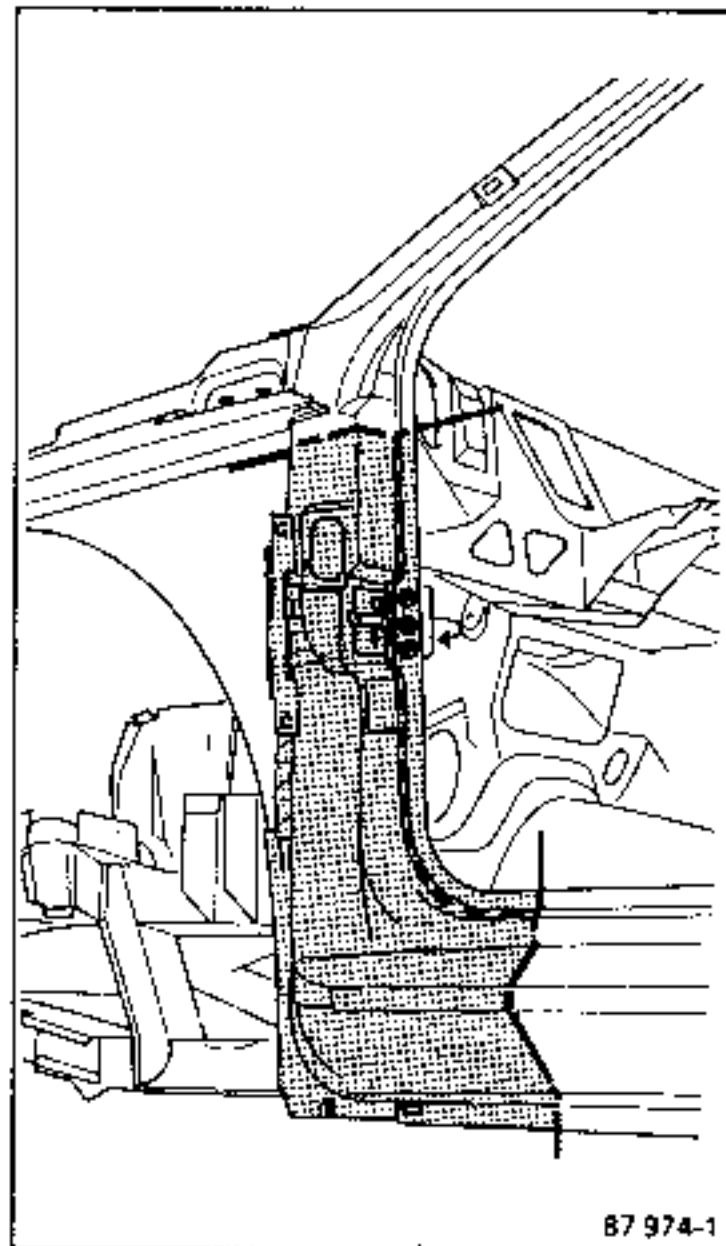
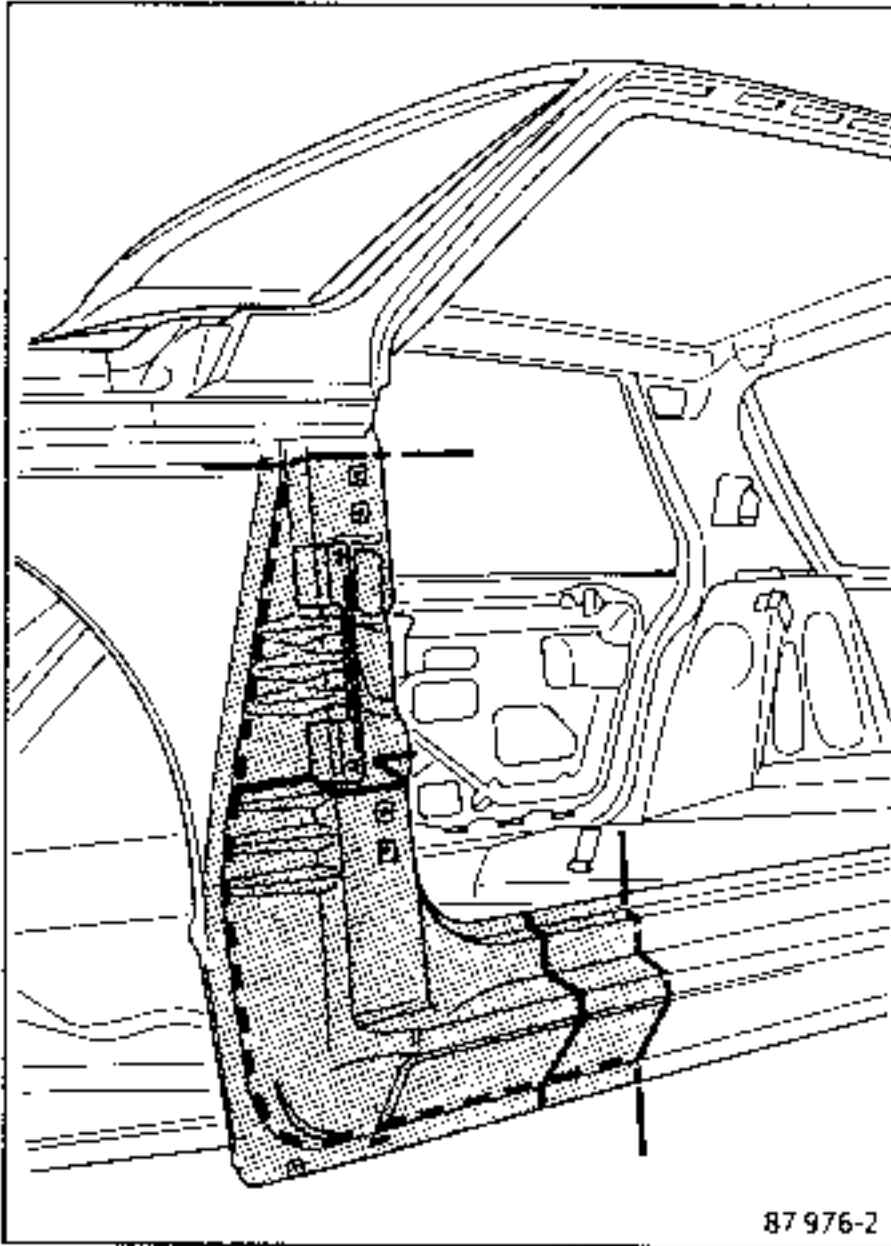
- Type 1** replacement of the pillar flush with the upper hinge reinforcement. This method does not require removal of the bonded windscreen.
- Type 2** replacement of the pillar at the windscreen frame pillar. This method involves removing or replacing the windscreen, as well as changing the windscreen frame and lining.

In order to be able to carry out the **type 2** replacement, the windscreen frame and the lining must first be removed.

CUTTING - UNPICKING

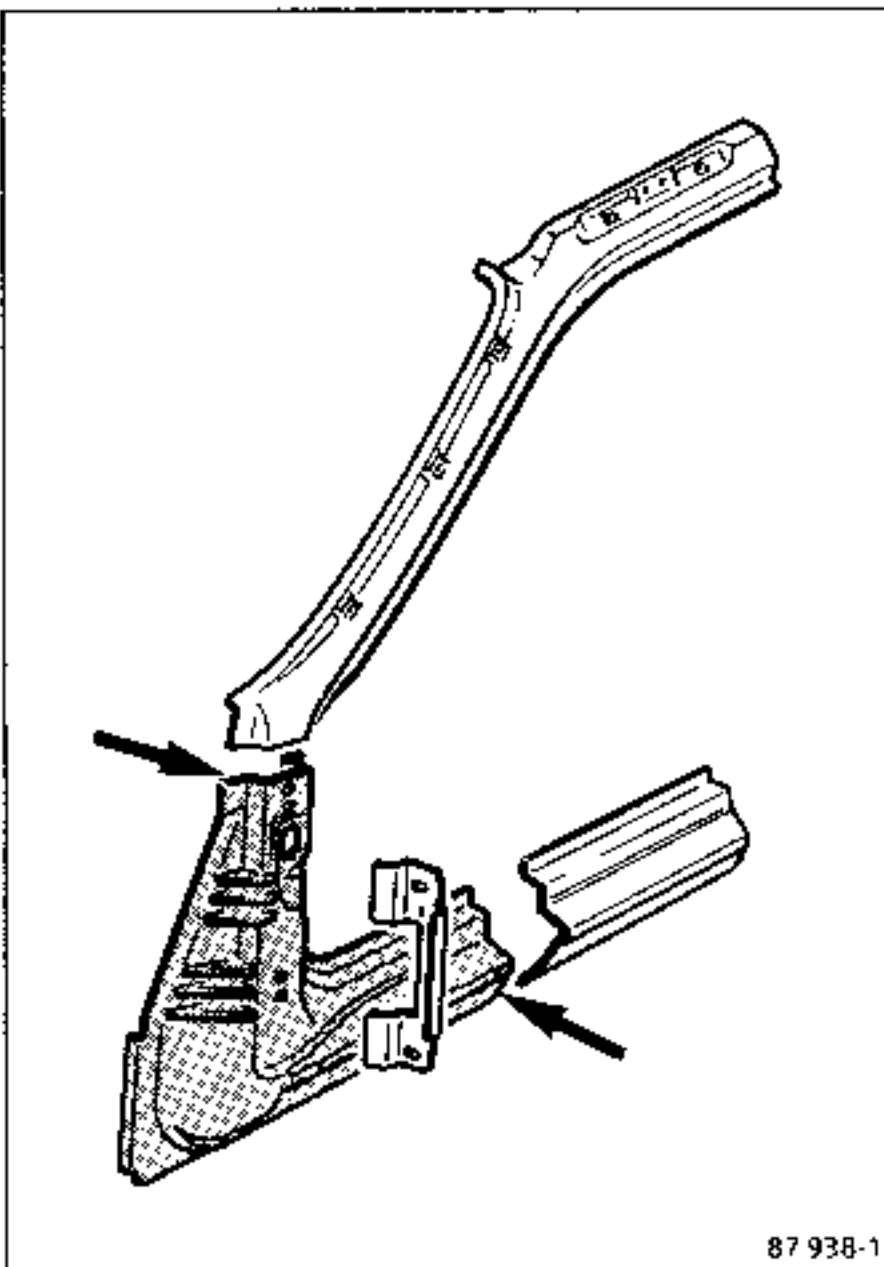
NOTE:

The cut in the upper part must be flush with the hinge reinforcement.



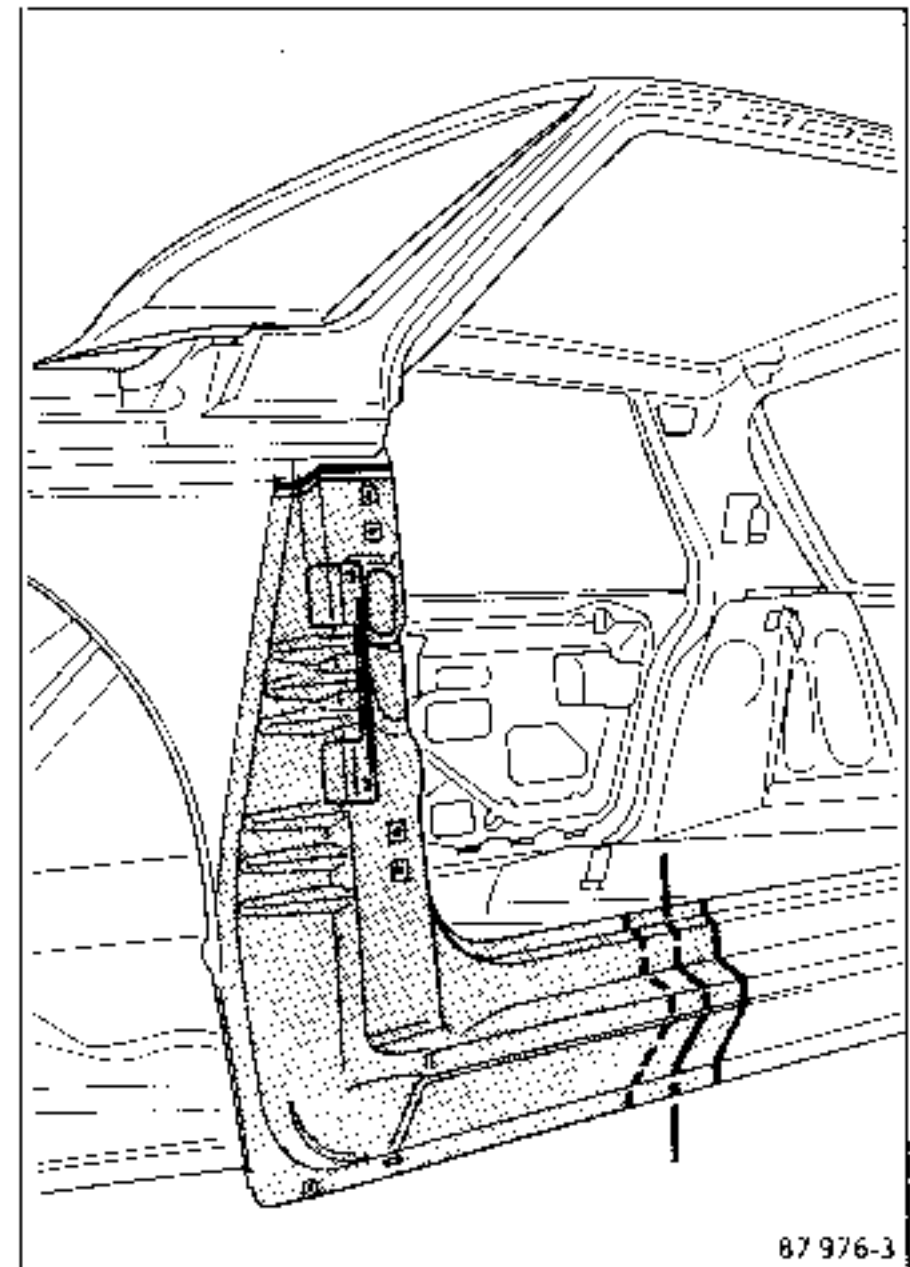
- Remove the damaged part, following the instructions given in the diagrams above (see list of symbols).
- Grind down any remnants of spotwelds remaining on the support panels.

PREPARING THE NEW PART



Make a final cut in the upper part.

Make a cut in the lower part beyond the one on the vehicle.

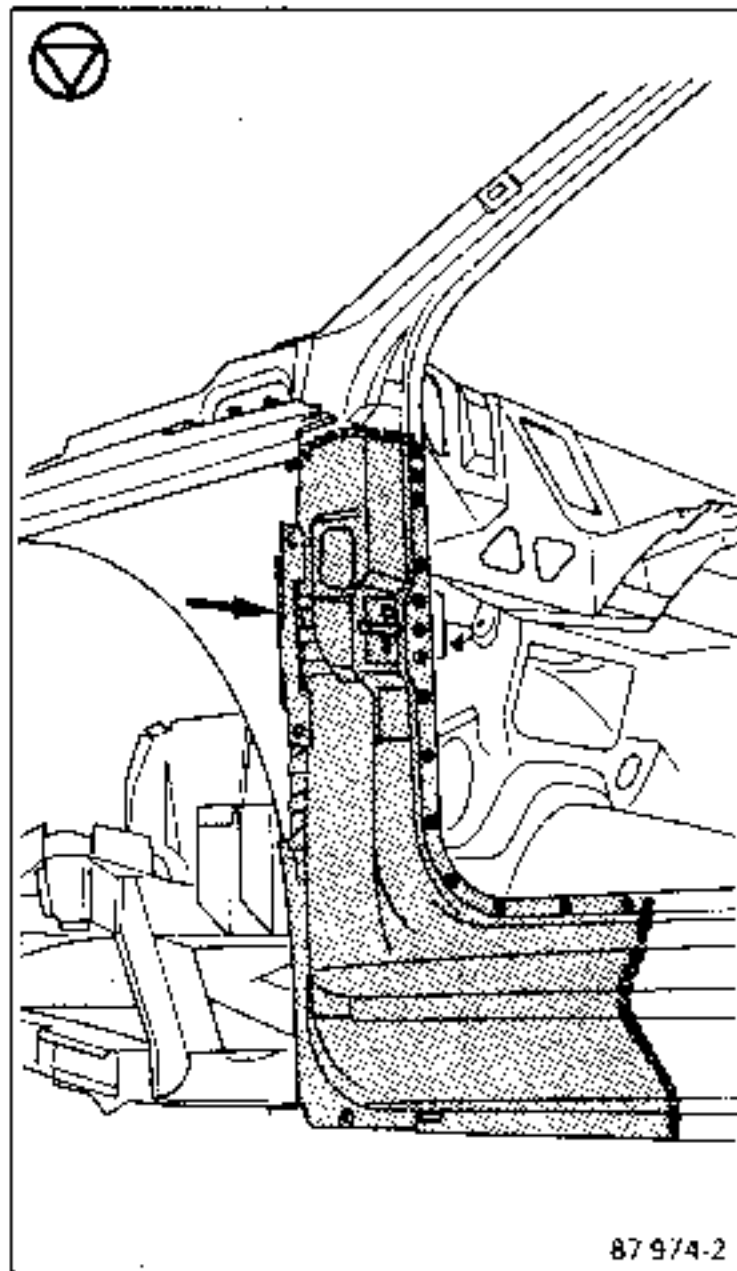
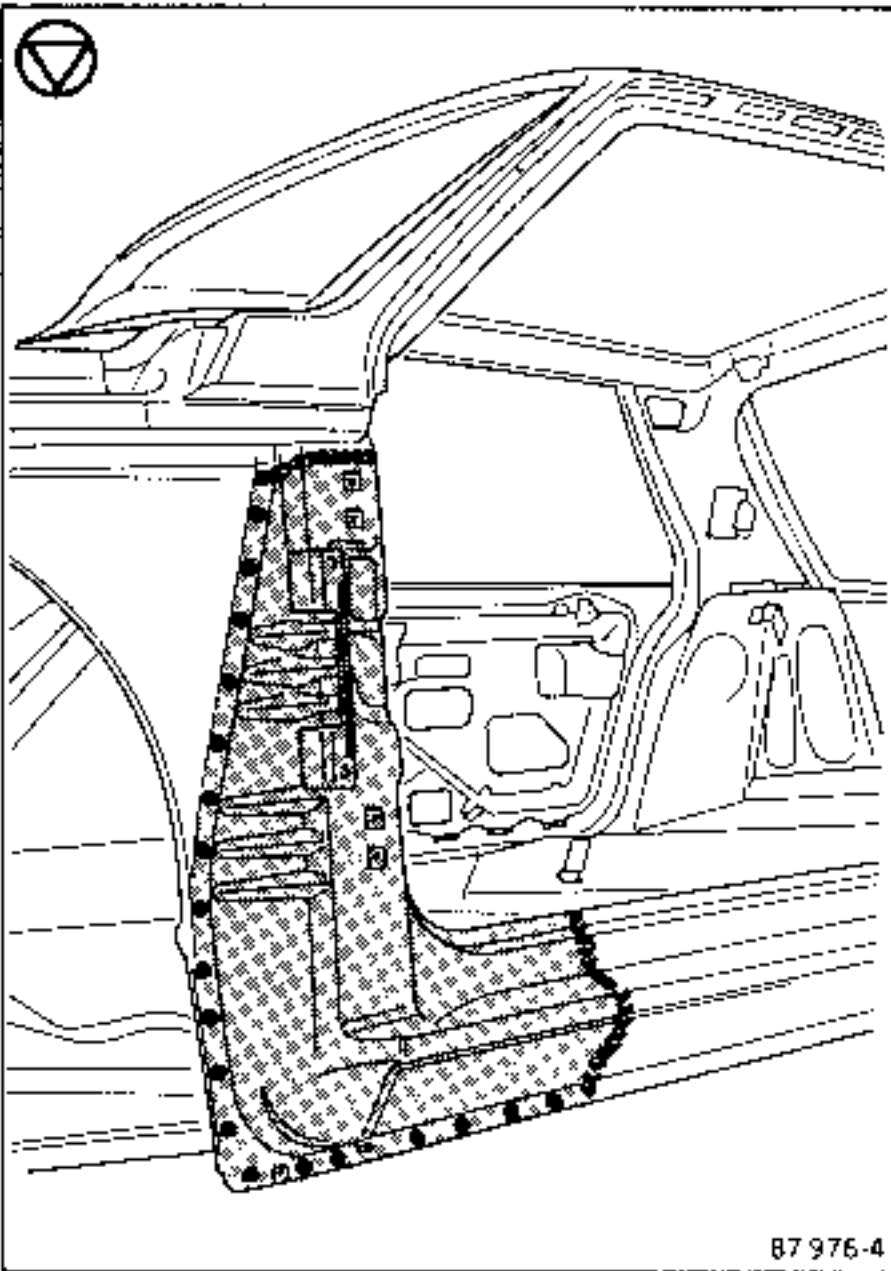


- Superimpose the new part on the vehicle, then secure it using a vice clamp.
- Saw the two panel thicknesses together to align the lower part joint.

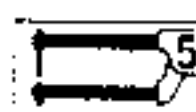
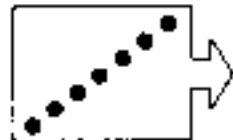
PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.

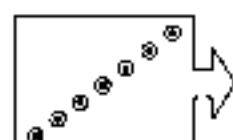
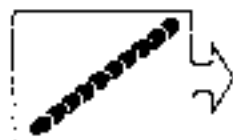
WELDING



$e = 1,4 \text{ mm}$
 $H = 55 \text{ mm}$



$e = 1,4 \text{ mm}$
 $H = 55 \text{ mm}$



- Stitch weld along the butt welding lines.
- Adjust the wing and the door (opening clearances, flushness).
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.

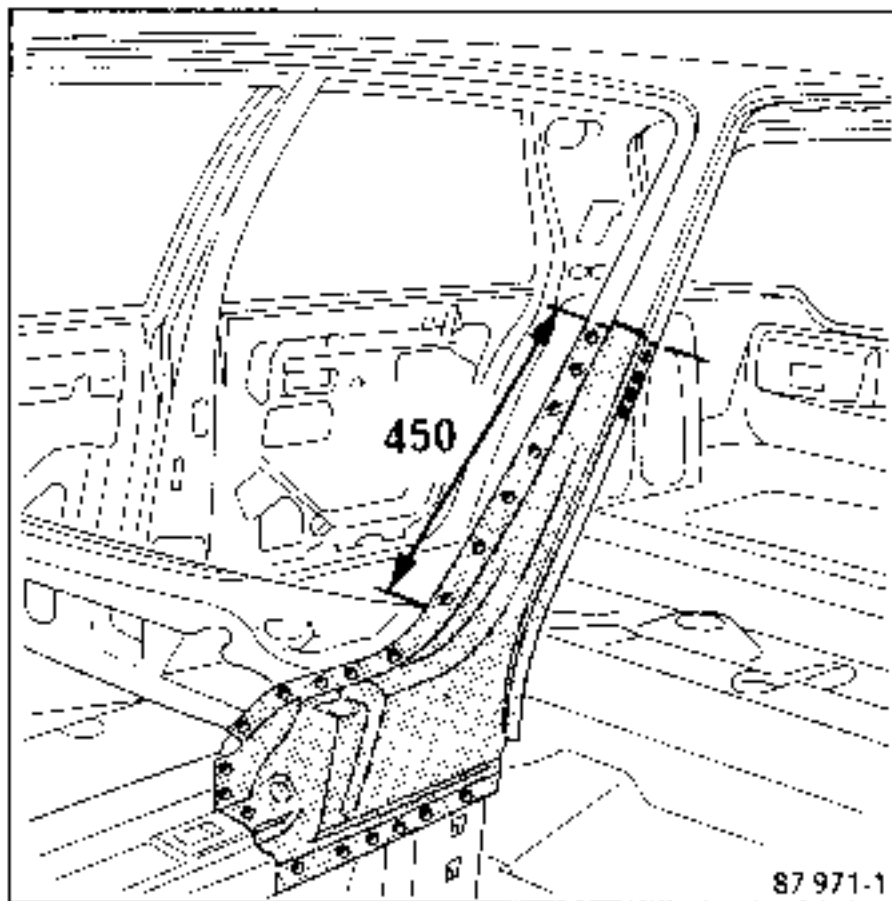
NOTE:

Using the same adjustment, plug weld the 3 holes in the lining on the hinge reinforcement and the rear wing mounting.

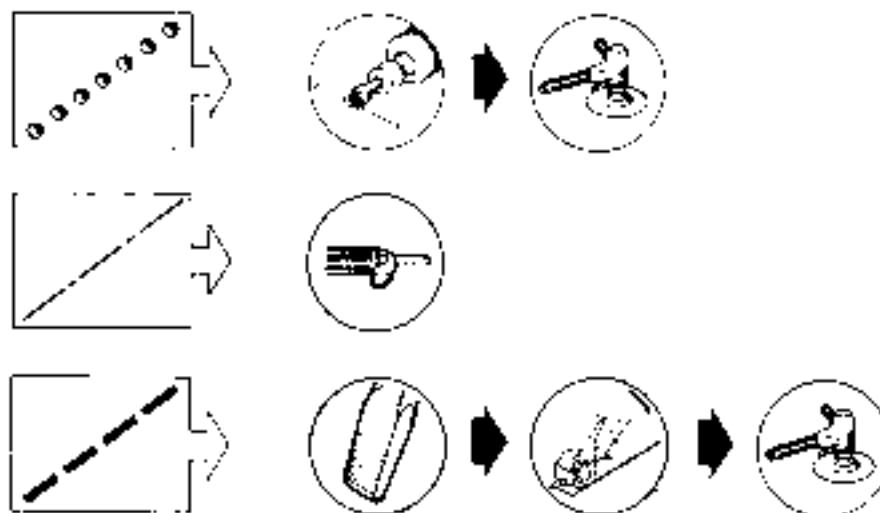
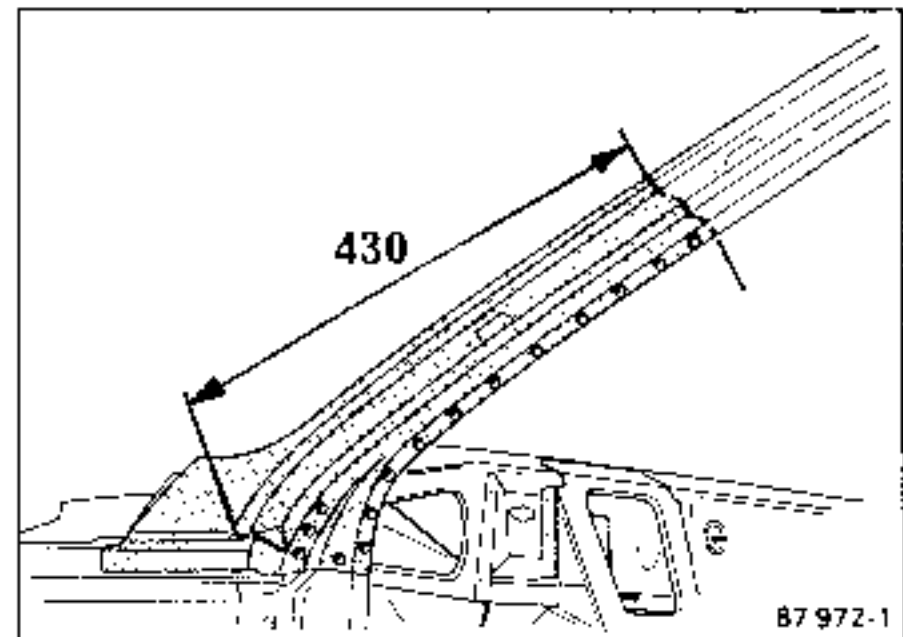
- Along the butt welded sections, after having ground down the weld seam, solder using a welding torch fitted with a 300 nozzle.
- Soldering can also be carried out using a 650 ° hot air blower.

CUTTING - UNPICKING

Windscreen frame pillar



Lining



NOTE:

The upper part of the windscreen pillar fits between the roof panel and the cross member.

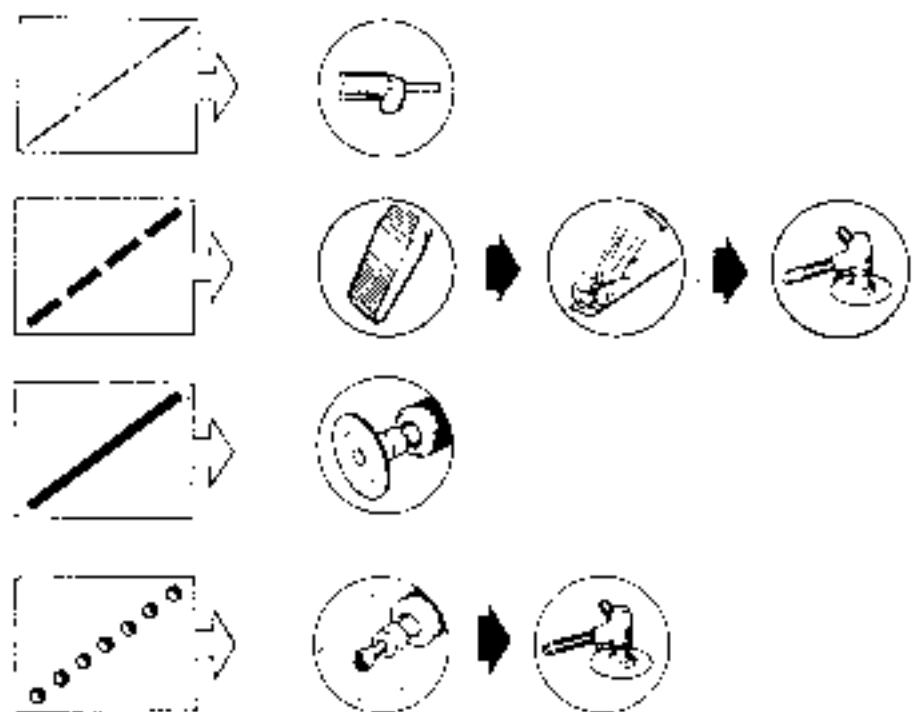
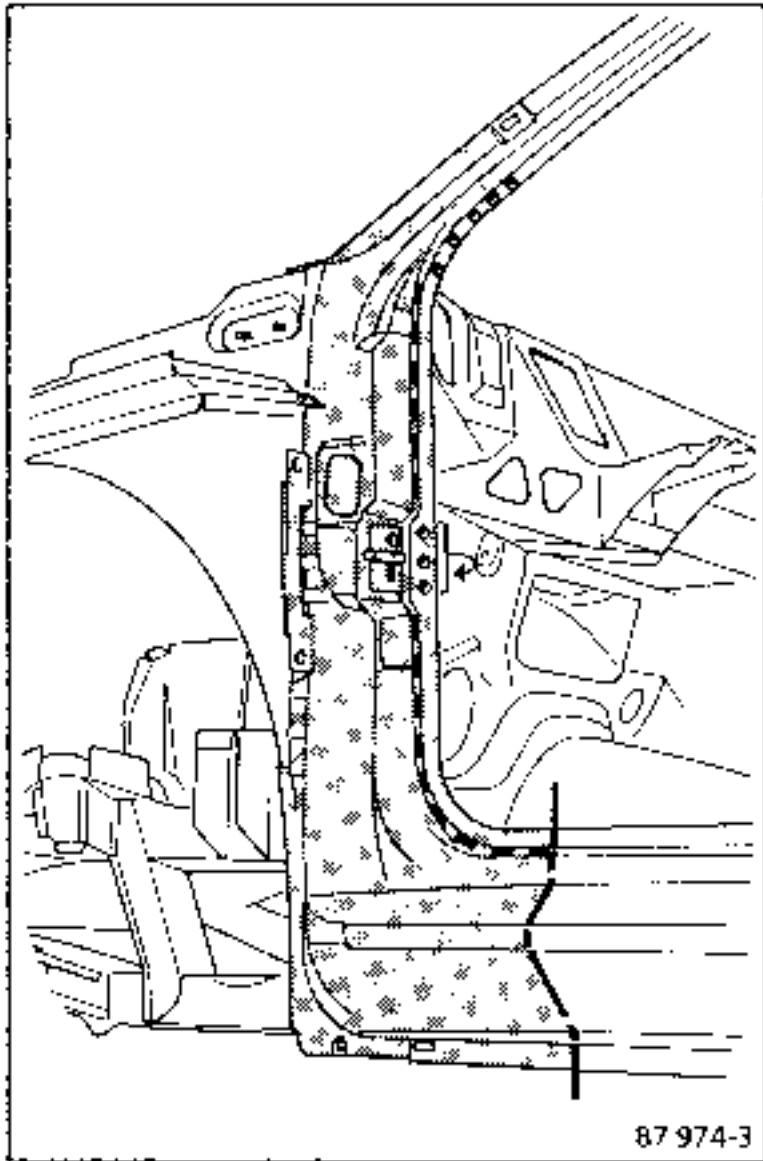
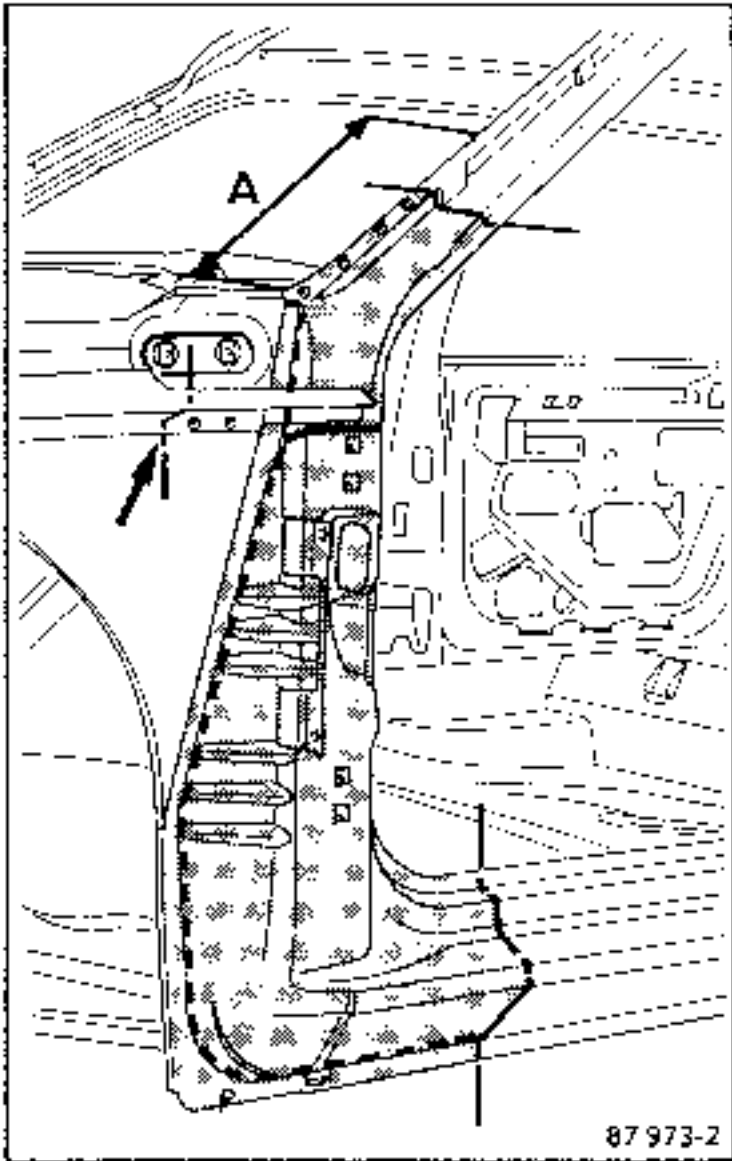
The windscreen pillar and the lining are replaced by making an offset cut. In order to avoid cutting the pillar lining, use a small reciprocating saw (i.e. MR 500** Tooling and Equipment Manual).

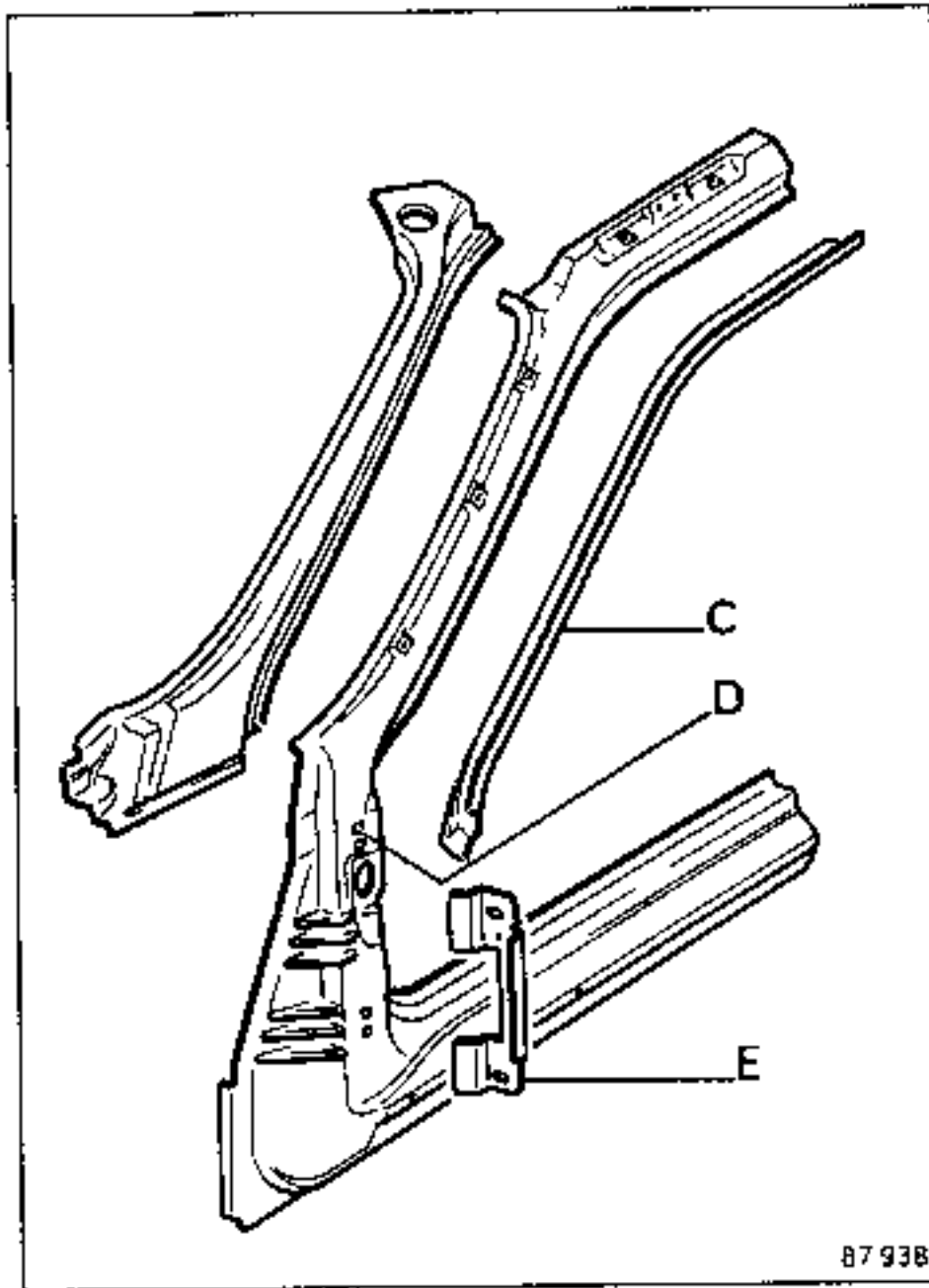
CUTTING - UNPICKING the pillar after removing the upper part.

NOTE:

Cutting zone (A) = 390 mm. The roof lining will prevent the roof dropping when the pillar is removed.

To make it easier to replace the pillar, partially cut and fold the bottom flange.





PREPARATION OF NEW PARTS

- The pillar is delivered with the lining welded (C), the hinge reinforcements (D) and with no rear wing mounting (E).

Cut a section from the following parts that is 30 mm larger than you actually require:

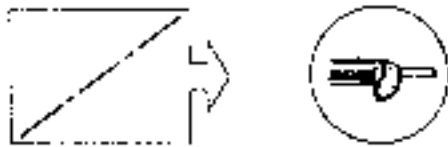
- the front pillar (grind back the remaining part of the lining);
- the windscreen frame pillar;
- the lining.

PREPARATION BEFORE WELDING

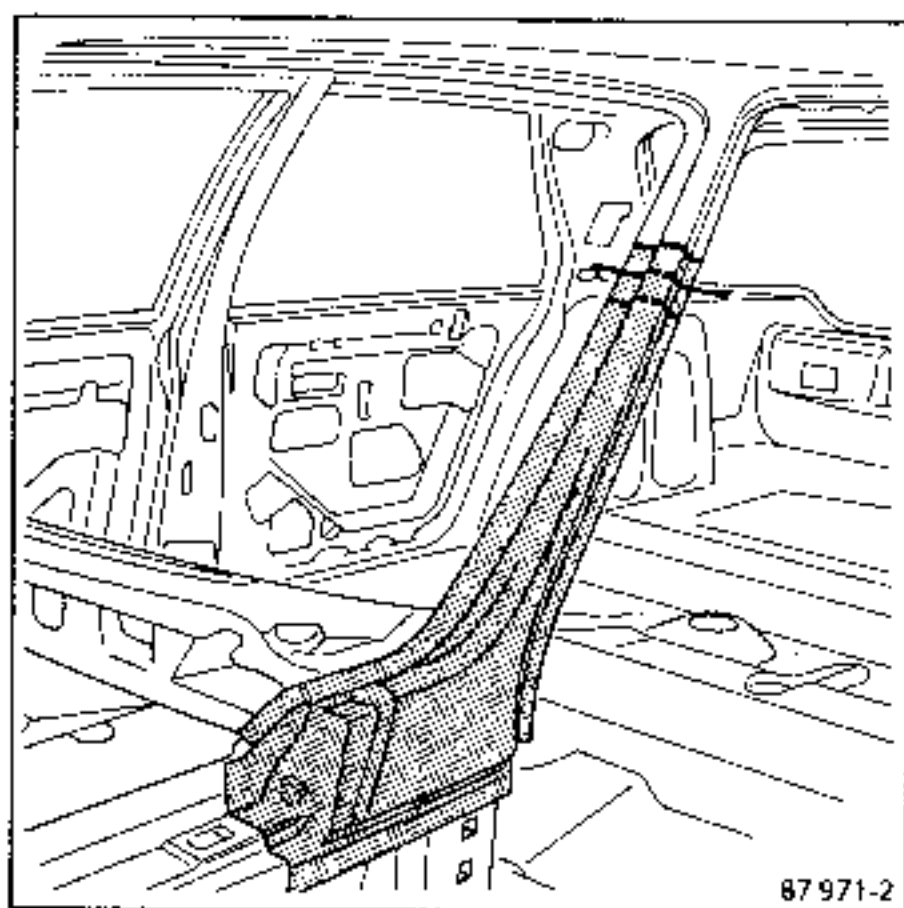
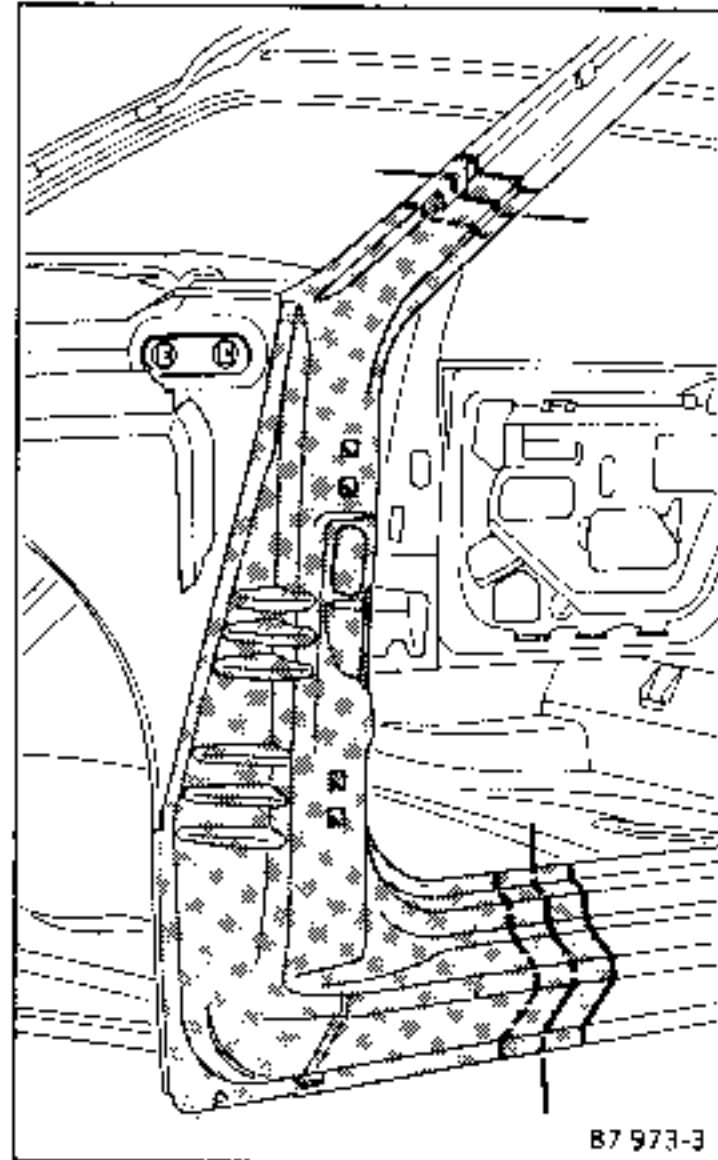
- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.

NOTE:

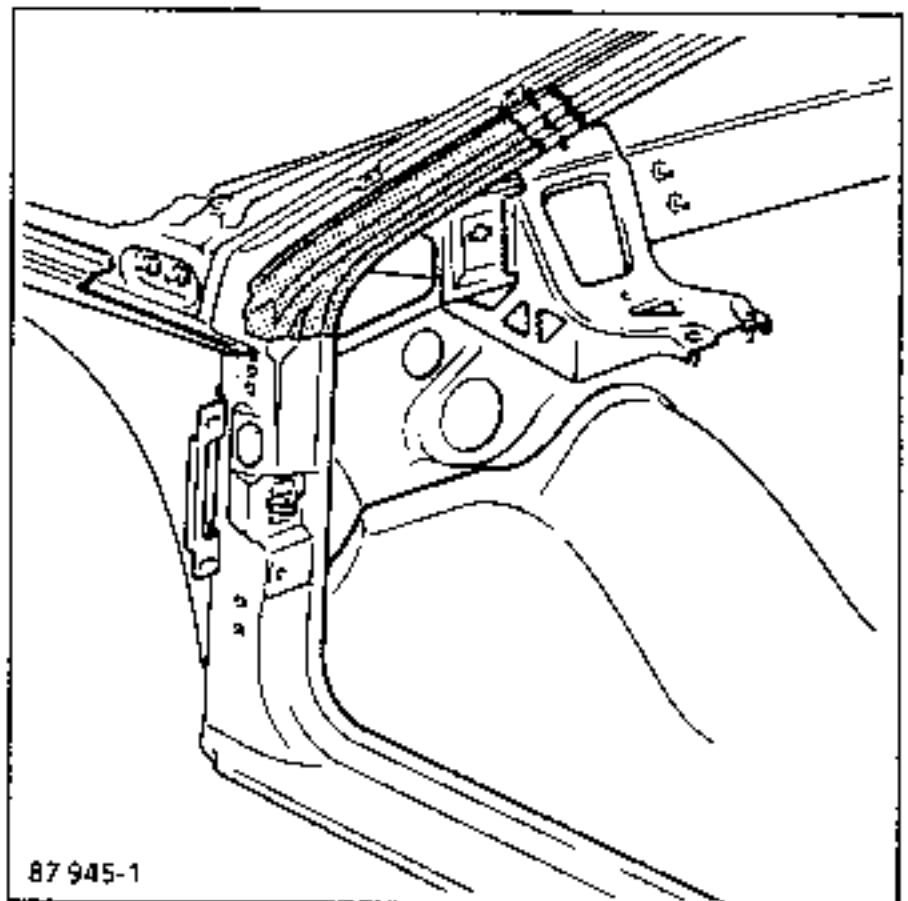
- Use the square holes, which are also present in the superimposed part, to achieve the required length.
- Check the windscreen and front door frame dimensions.



Remove the front pillar to unpick the spotweld remains from the vehicle; refit it to adjust the pillar and the lining.



First operation

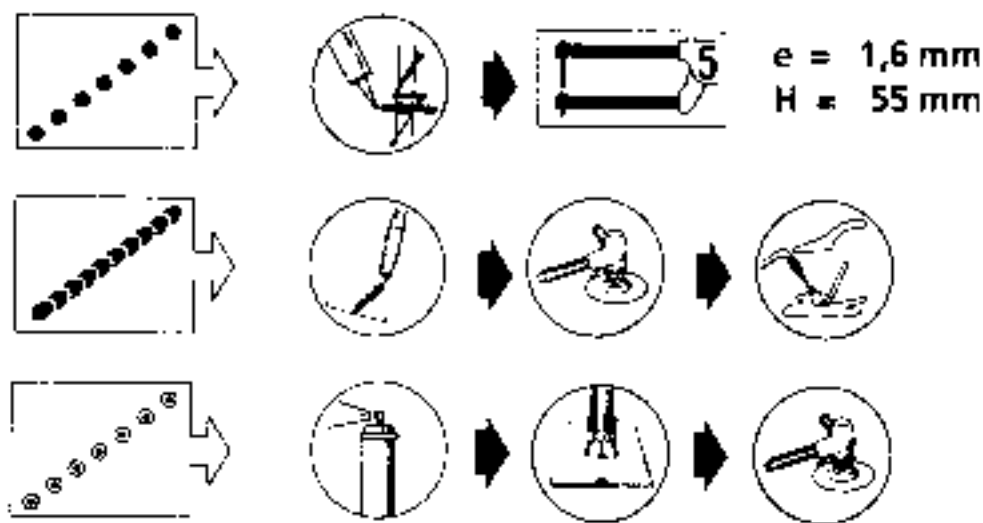
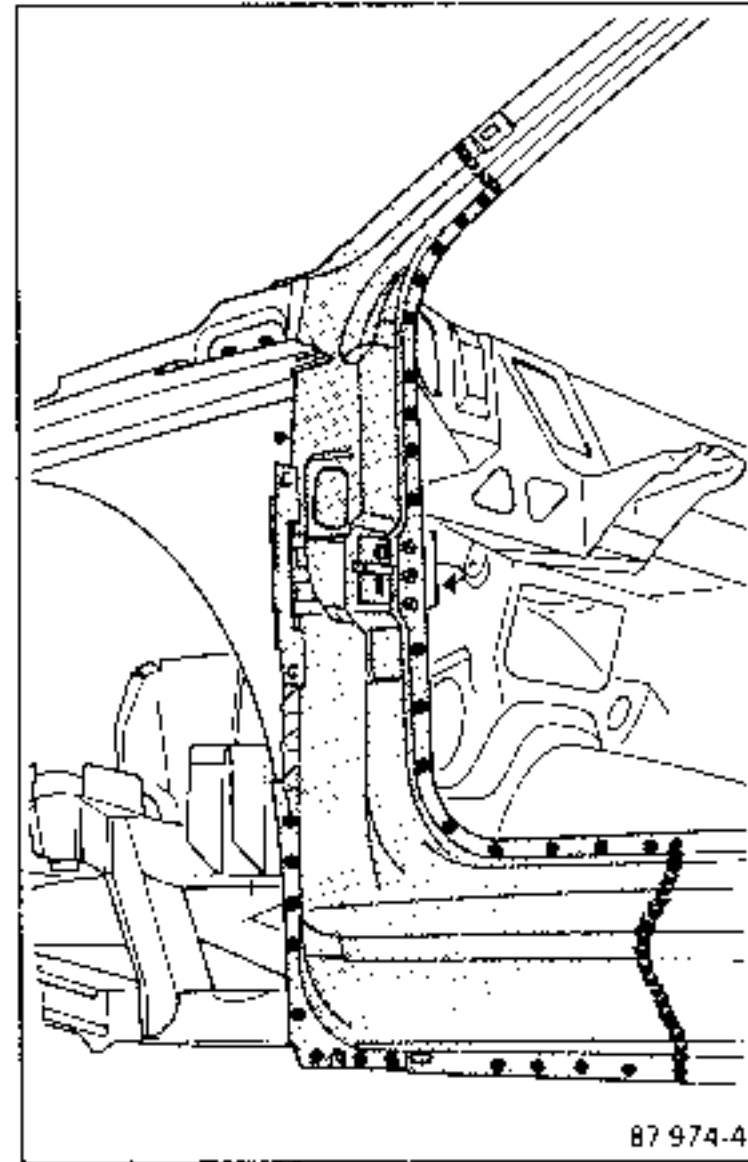
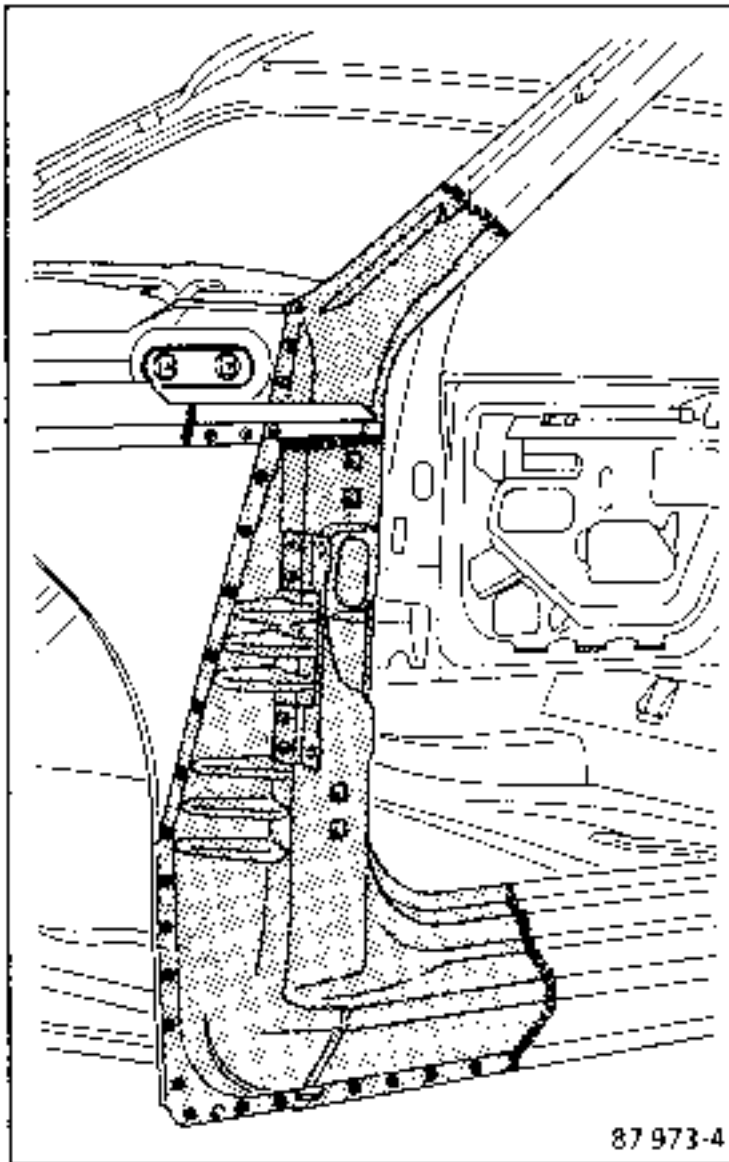


Second operation



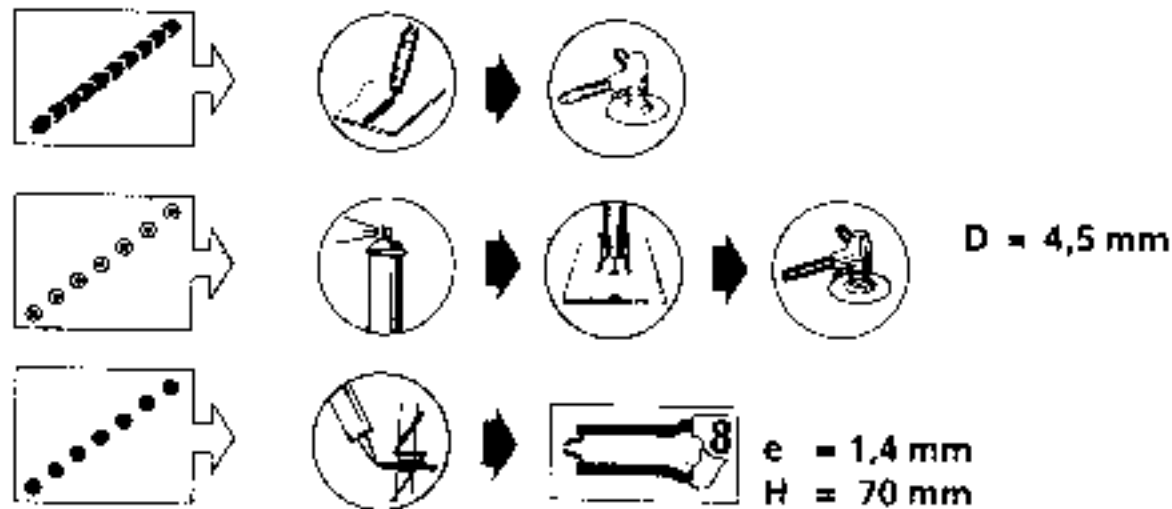
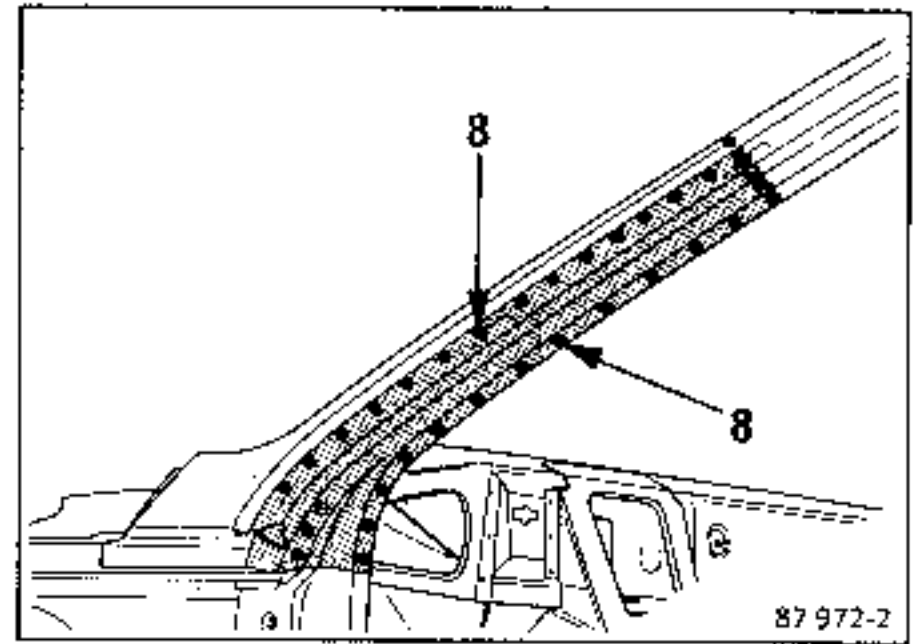
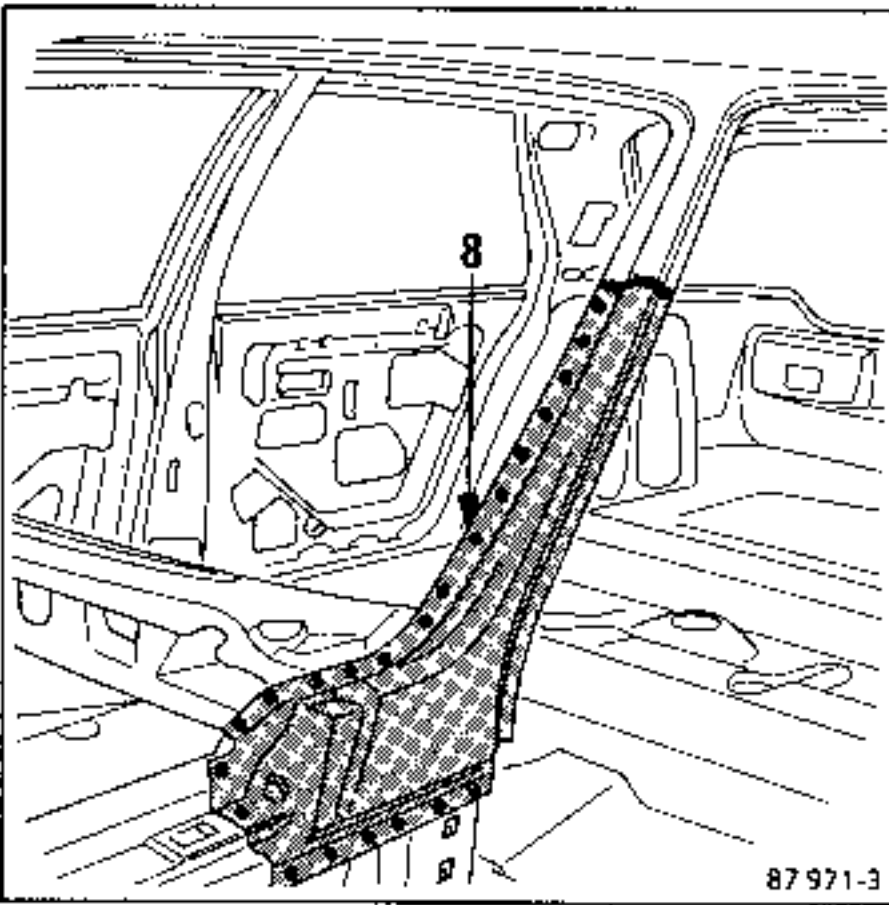
- Superimpose the new part on the vehicle, then secure it using a vice clamp.
- Cut the two panel thicknesses together using a hacksaw, to make it easier to line up the cuts.

WELDING



- Adjust the new part, then secure it using a vice clamp.
- Stitch weld along the butt welding lines.

WELDING

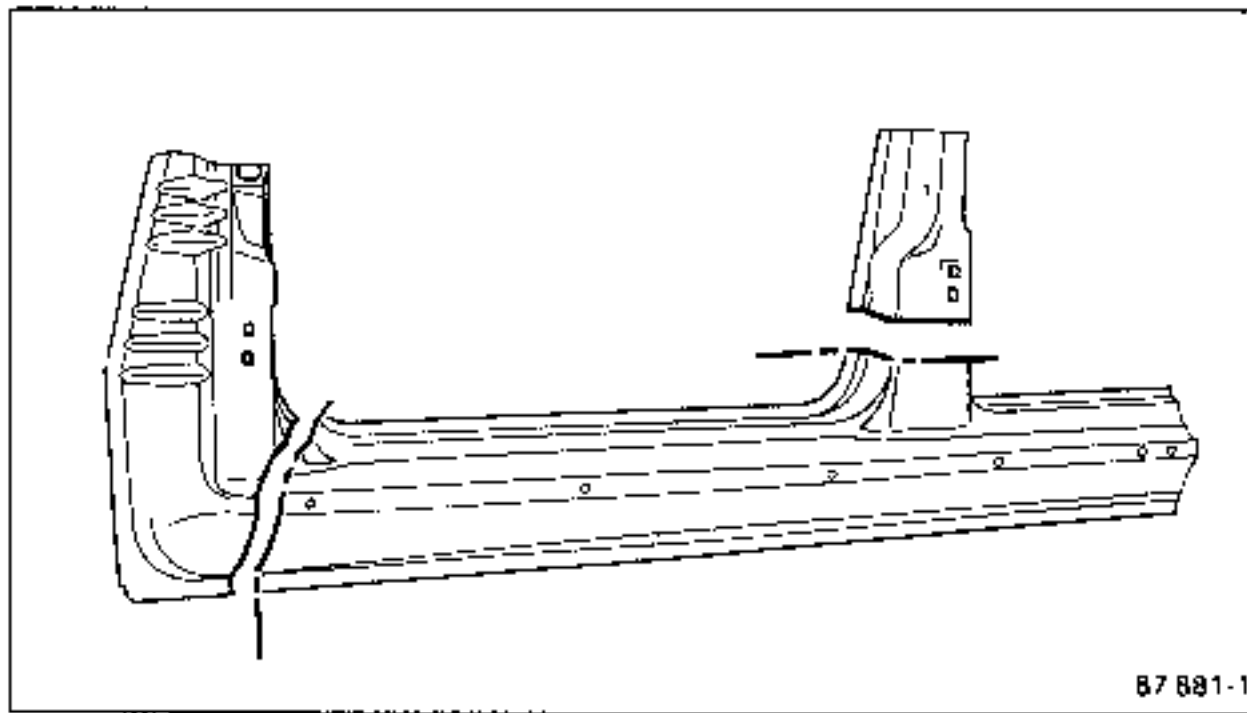


NOTE:

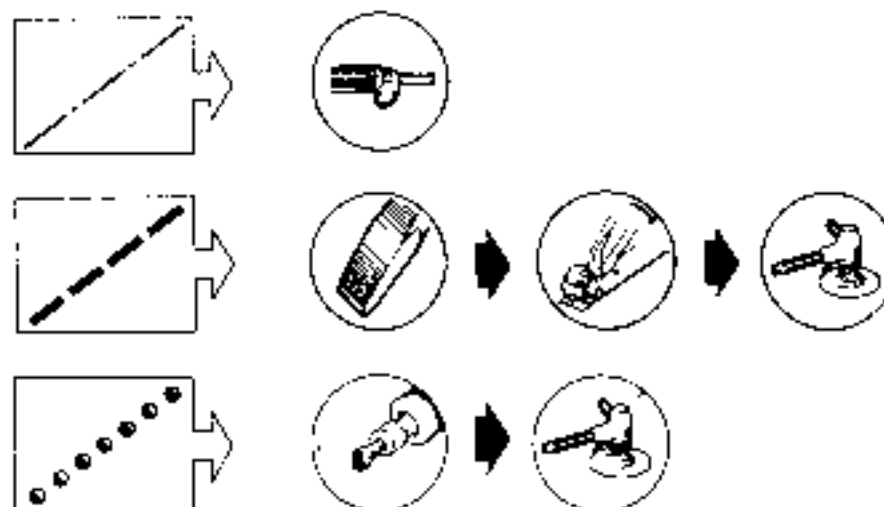
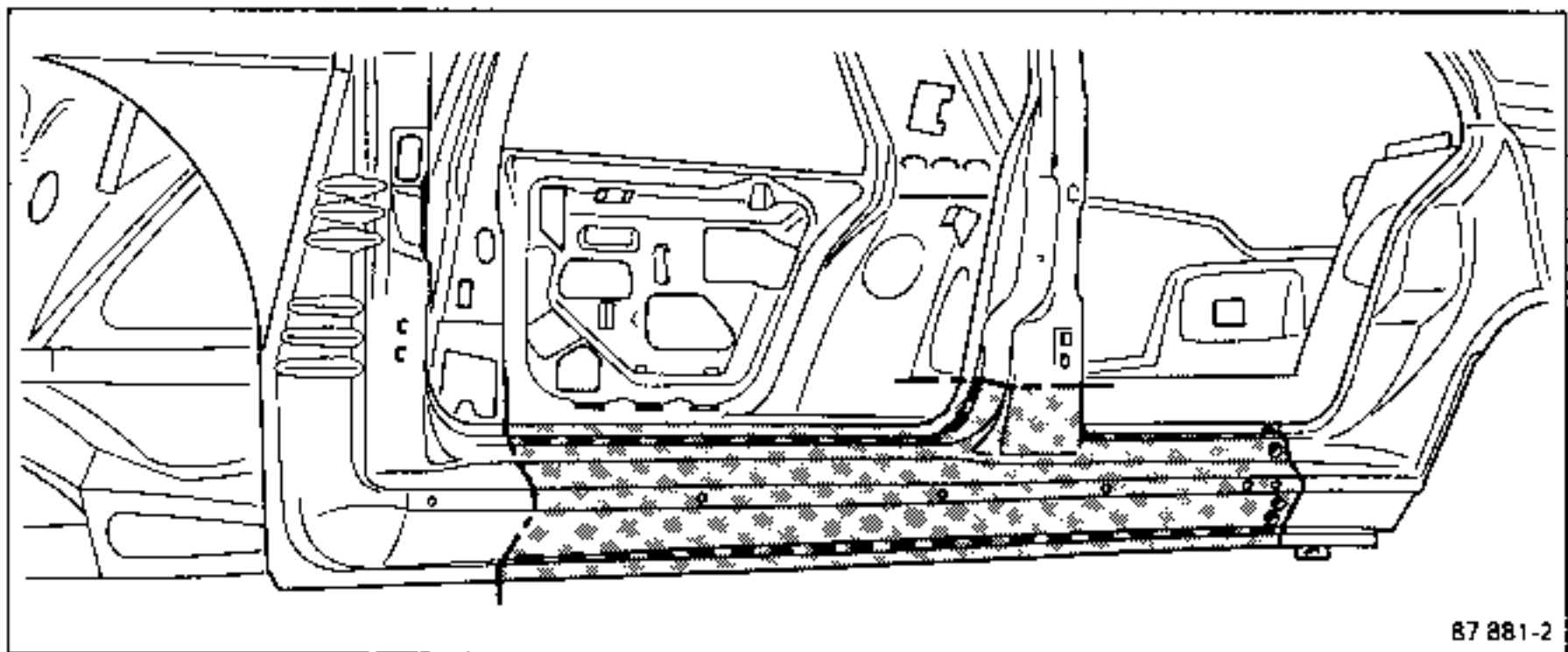
Fit the rear wing mounting. Plug weld after having marked its position.

- Stitch weld along the butt welding lines.
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas. (This operation can also be carried out using a welding torch with a 75 - 100 nozzle.)
- Plug weld under protective gas. To do this, drill the first panel to diameter D given under the drawings.
- After having ground down the weld seam on the butt welded parts, solder using a welding torch fitted with a 300 nozzle.

CUTTING - UNPICKING



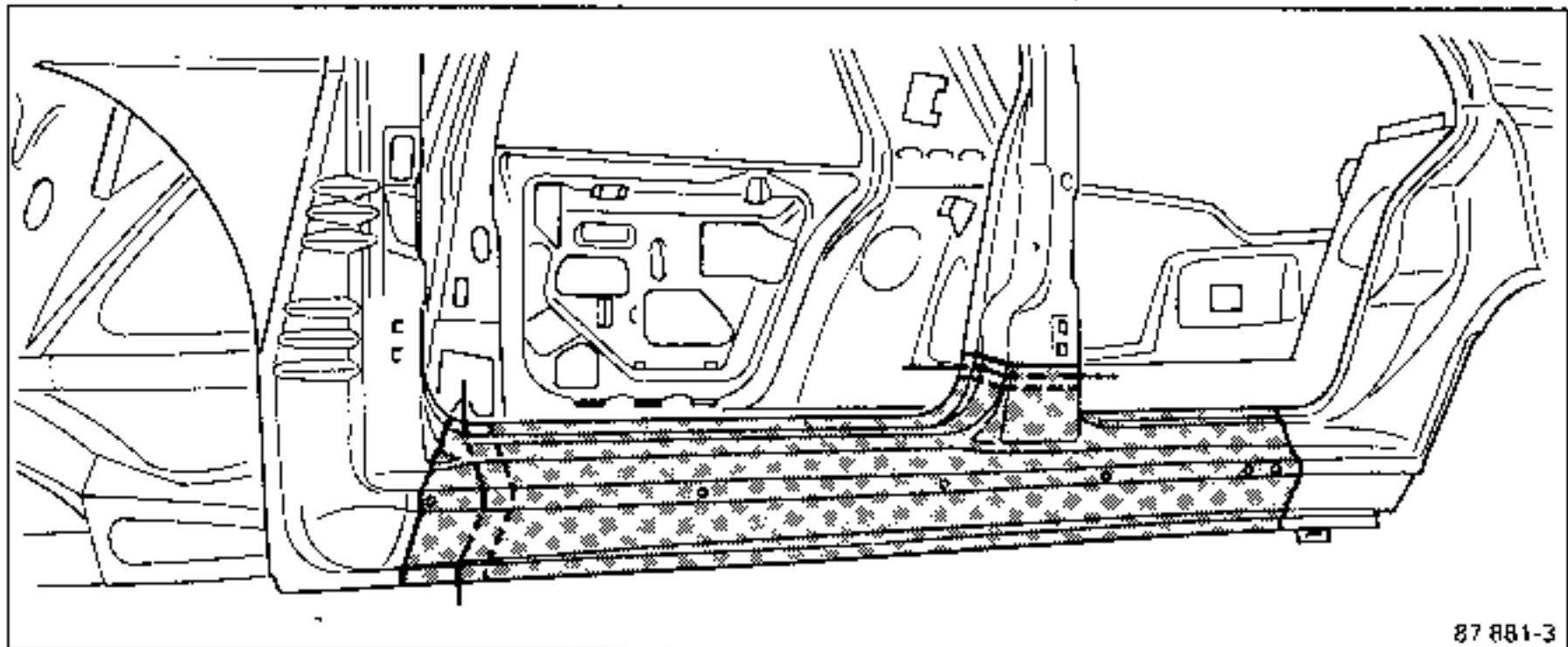
- Using a hacksaw, cut the new part at the lower section of the front pillar and the centre pillar approximately 20 mm below the square holes.



- Remove the damaged section, following the instructions in the diagrams above (see list of symbols).
- Grind down the remaining unpicked spot welded sections on the support panels.

PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.

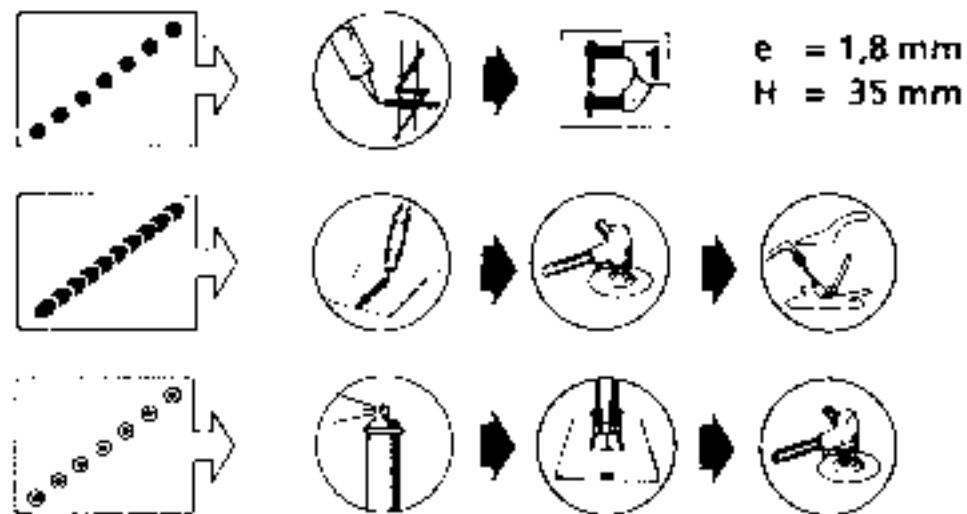
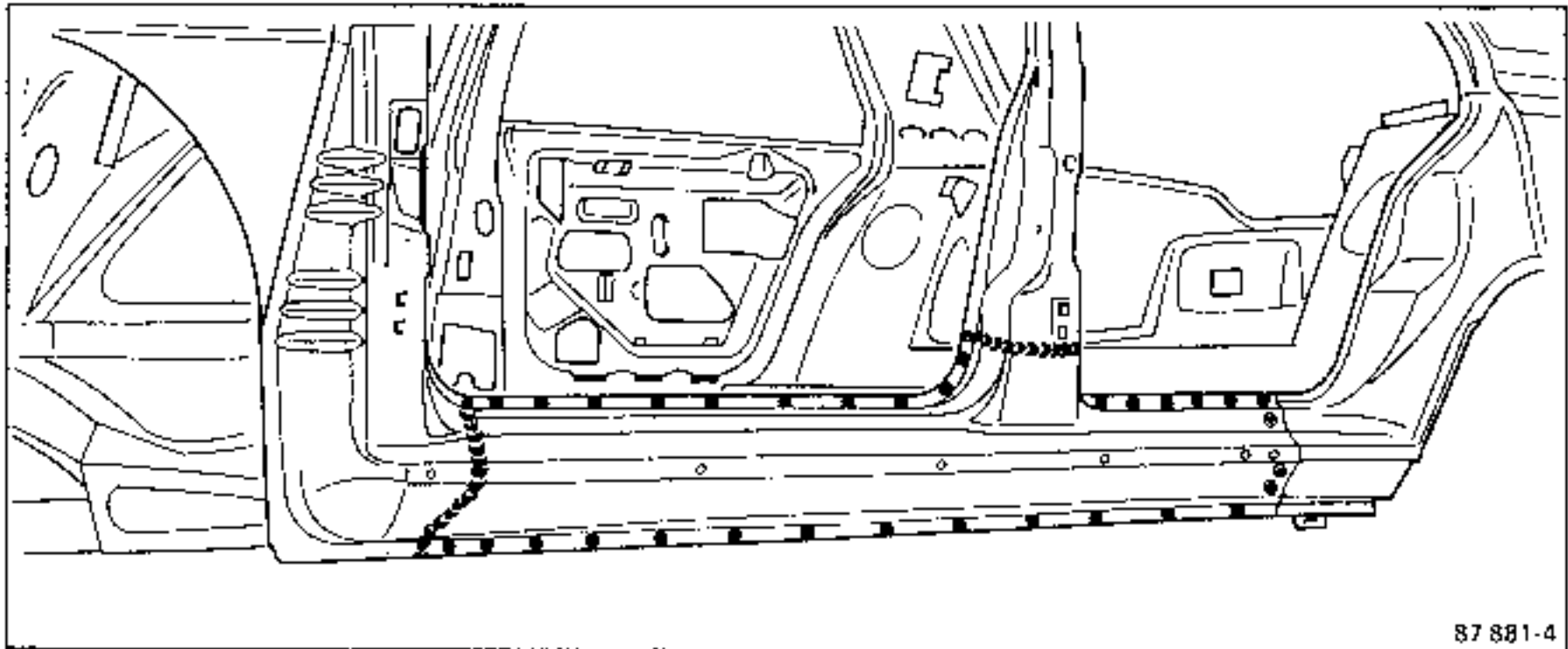


WELDING

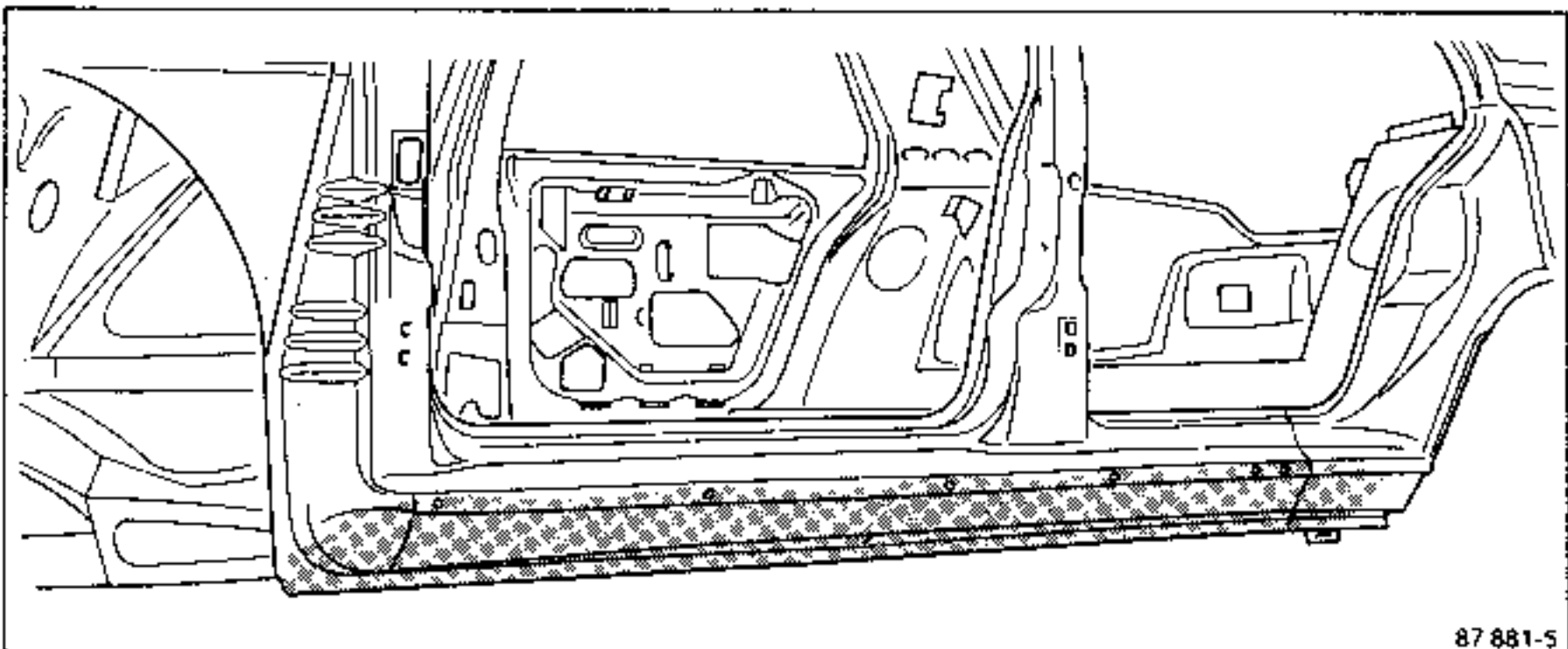
- Stitch weld along the butt welding lines.
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas. (This operation can also be carried out using a welding torch with a 75 - 100 nozzle.)
- Plug weld under protective gas. To do this, drill the first panel to diameter D given under the drawings.
- After having ground down the weld seam on the butt welded parts, solder using a welding torch fitted with a 300 nozzle.

NOTE:

Soldering can be carried out using a 650 °C hot air blower with a minimum output of 2500 watts.

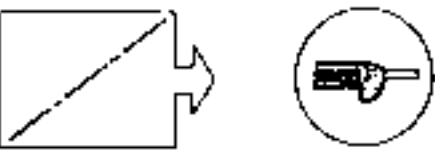
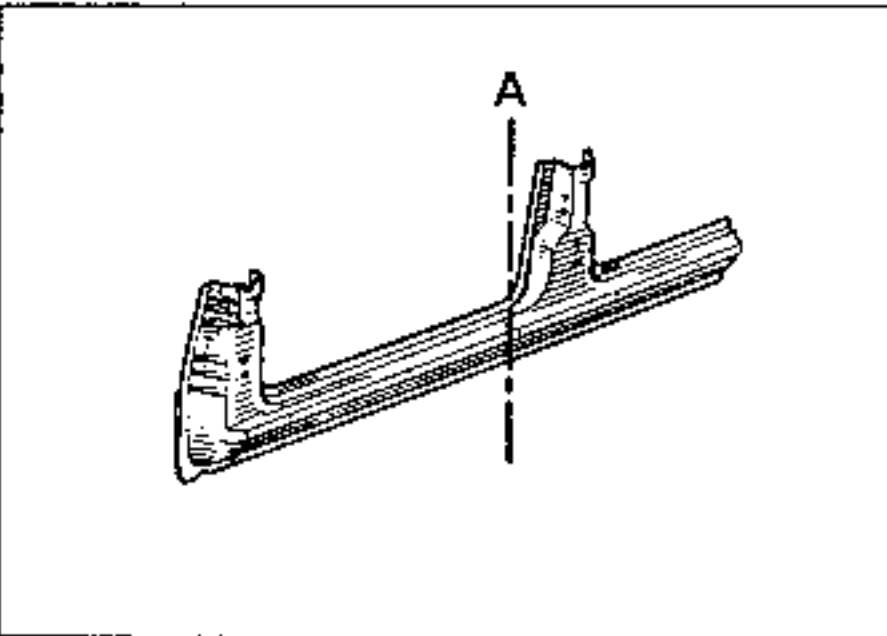


- After painting, treat with hollow section wax.



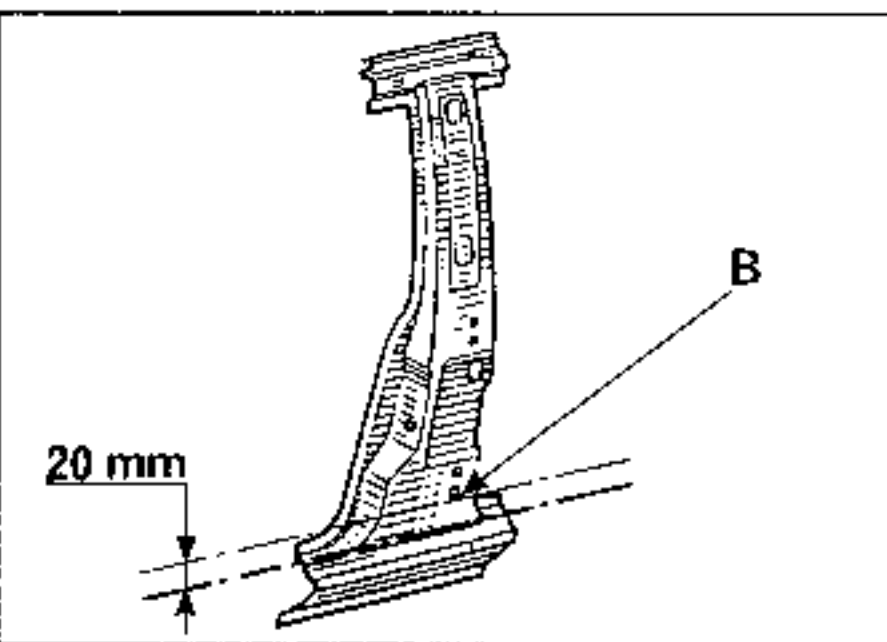
COMPOSITION OF MPR PARTS

1 - Front part



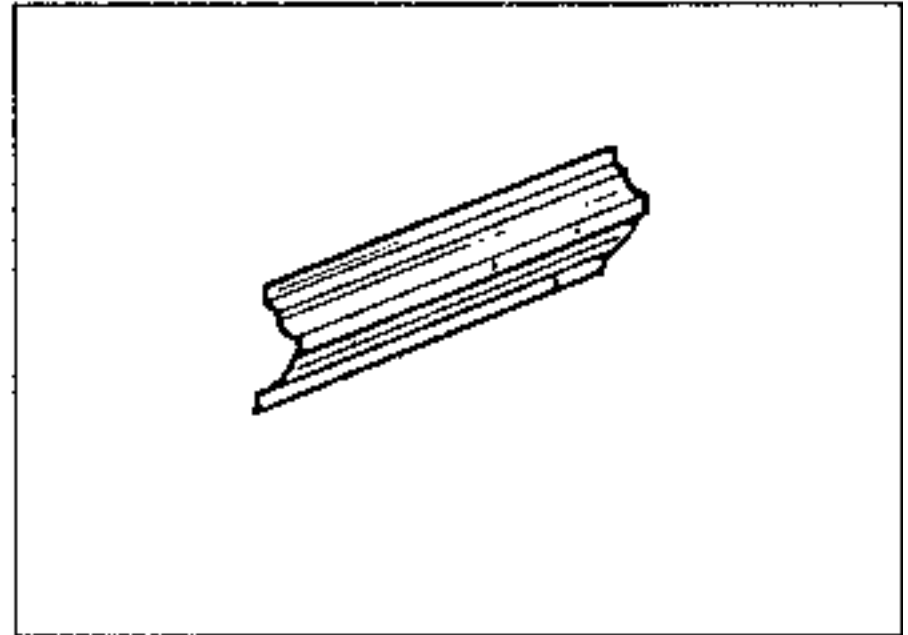
This must be cut from the B 29 sill cut at (A).

2 - Centre part



This must be cut in the centre pillar specific to the Limousine at 20 mm below the square hole (B).

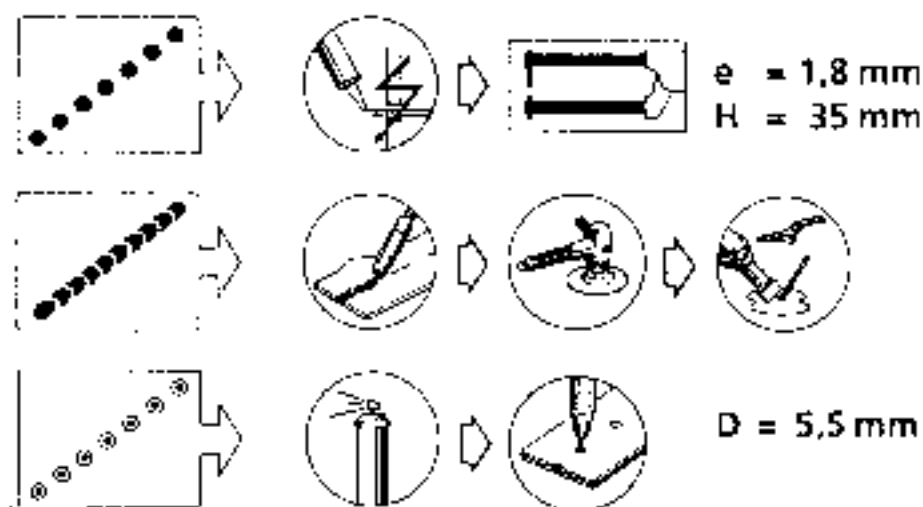
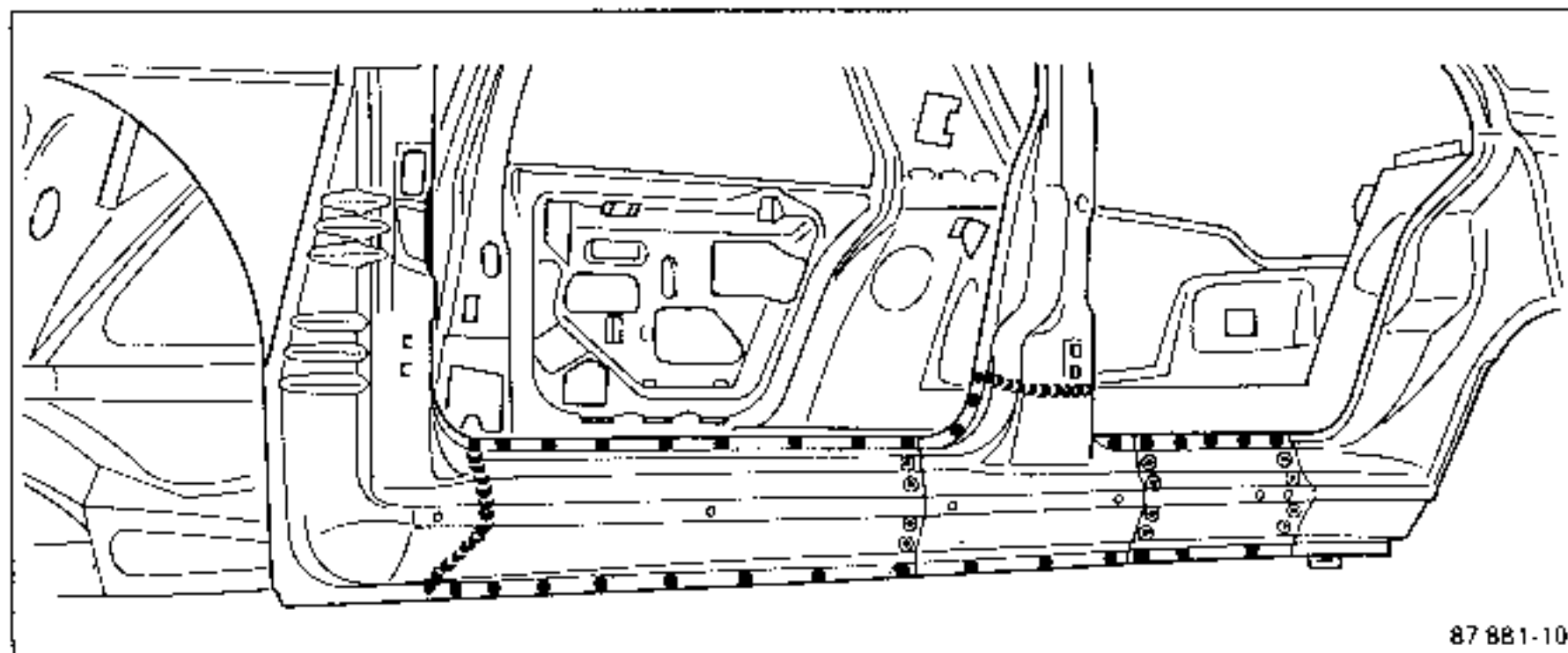
3 - Rear part



This is a part specific to the Limousine.

The method of replacing the front part is identical to that for the B29.

WELDING



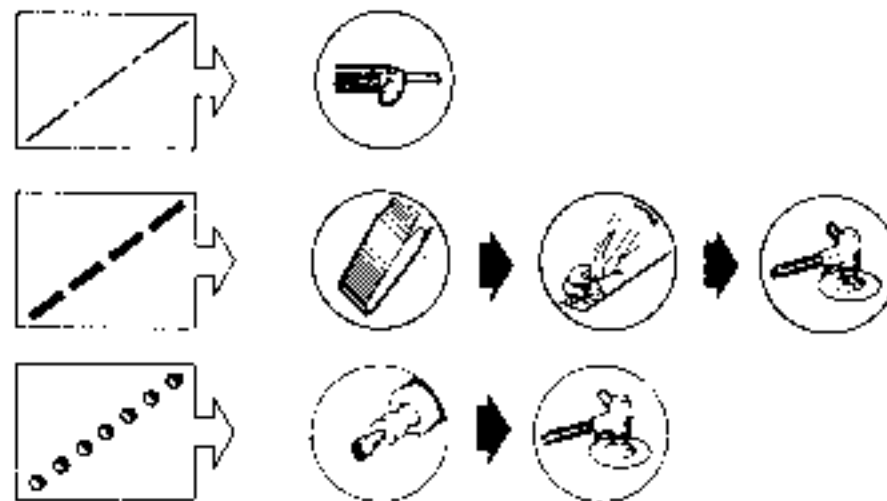
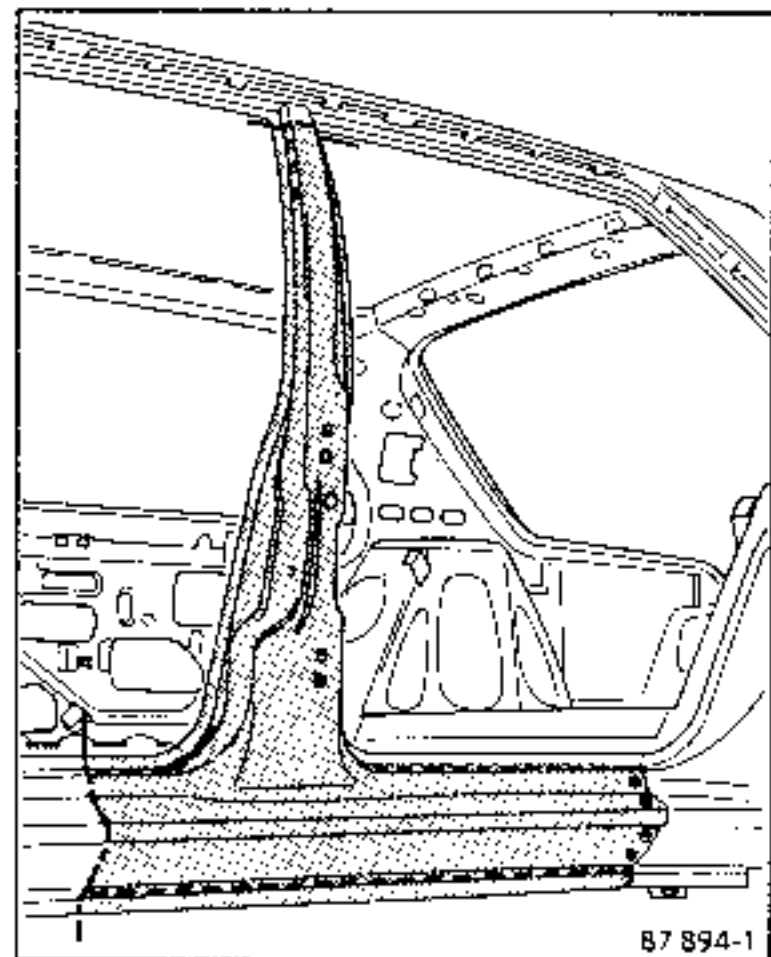
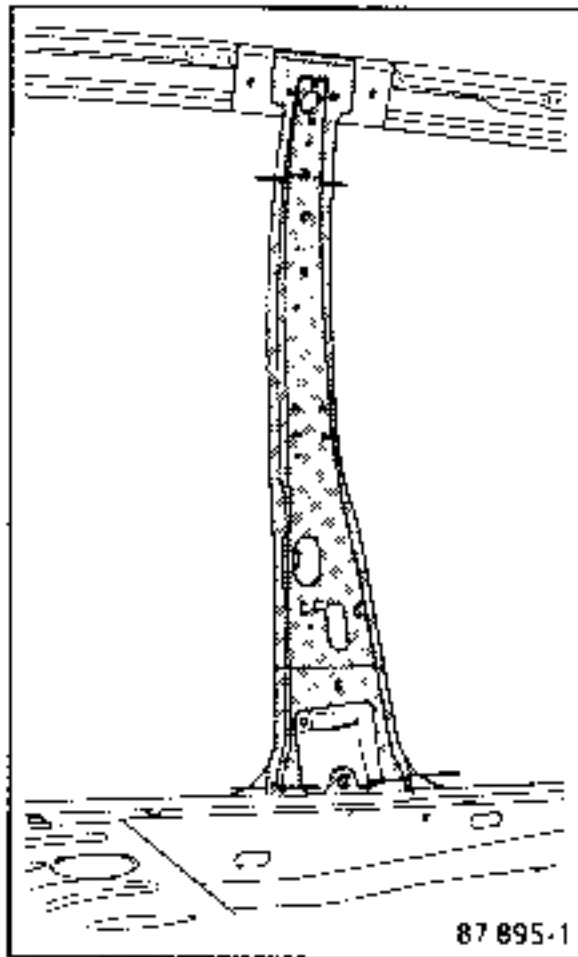
- Stitch weld along the butt welding lines.
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.
- Seam stitch weld under protective gas. (This operation can also be carried out using a welding torch with a 75 - 100 nozzle.)
- Plug weld under protective gas. To do this, drill the first panel to diameter D given under the drawings.
- After having ground down the weld seam on the butt welded parts, solder using a welding torch fitted with a 300 nozzle.

NOTE:

Soldering can be carried out using a 650 °C hot air blower with a minimum output of 2500 watts.

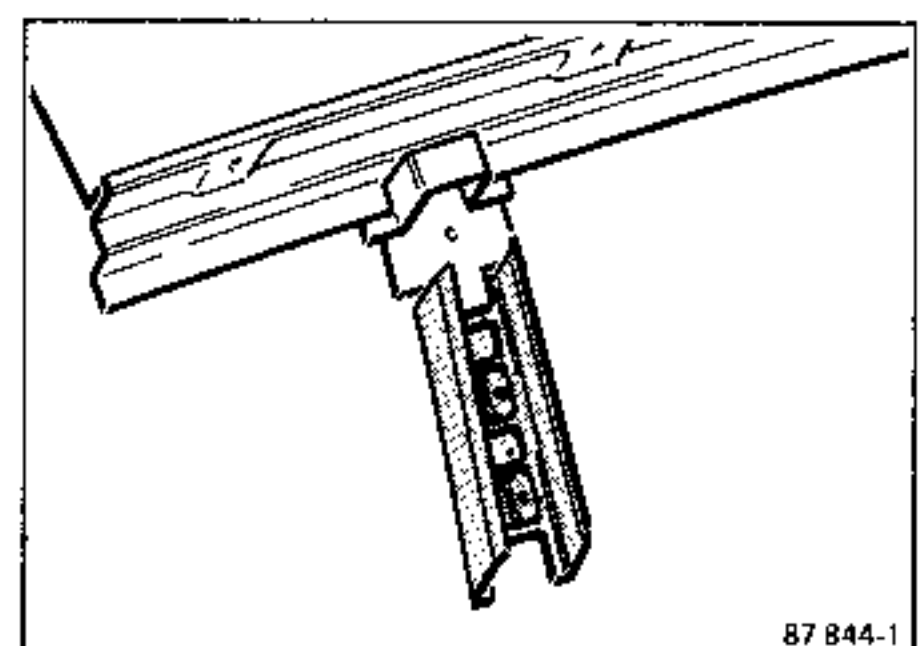
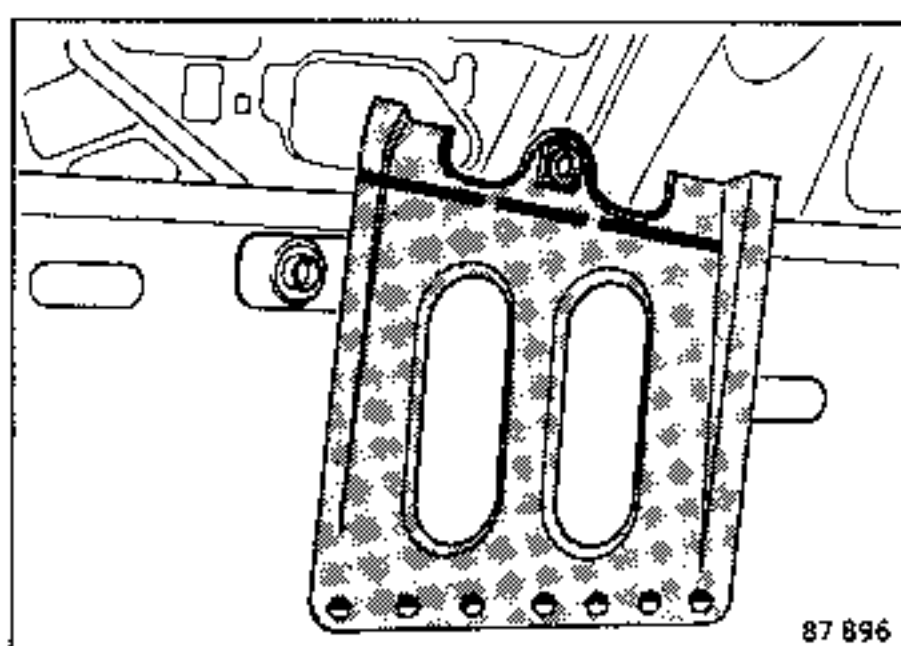
After painting and before retrimming, inject with hollow section wax.

CUTTING - UNPICKING

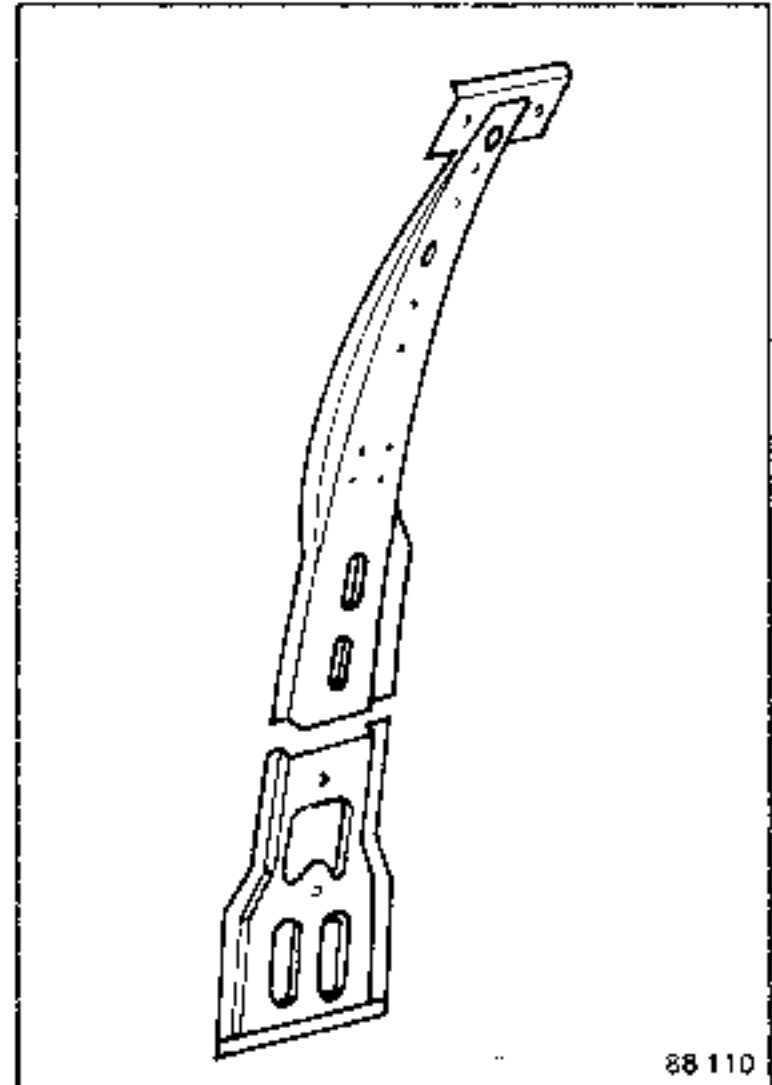
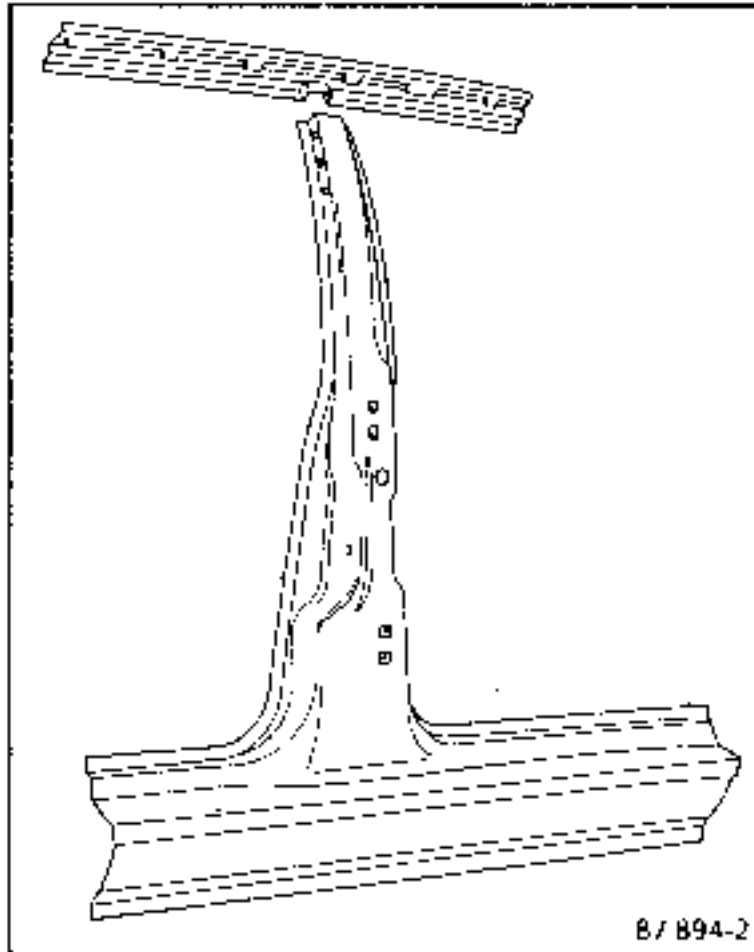


NOTE:

The upper safety belt mounting panel remains on the vehicle.



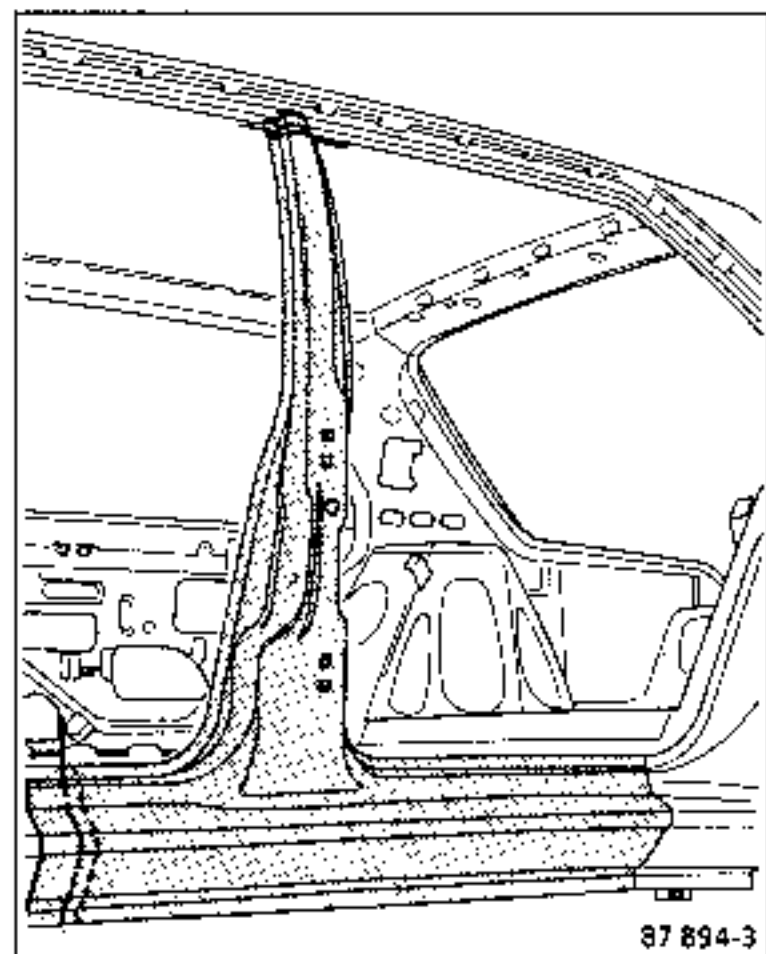
PREPARATION BEFORE WELDING



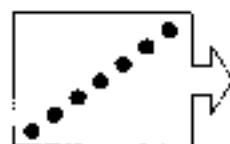
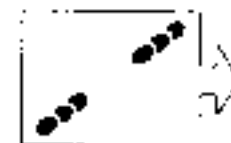
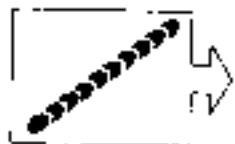
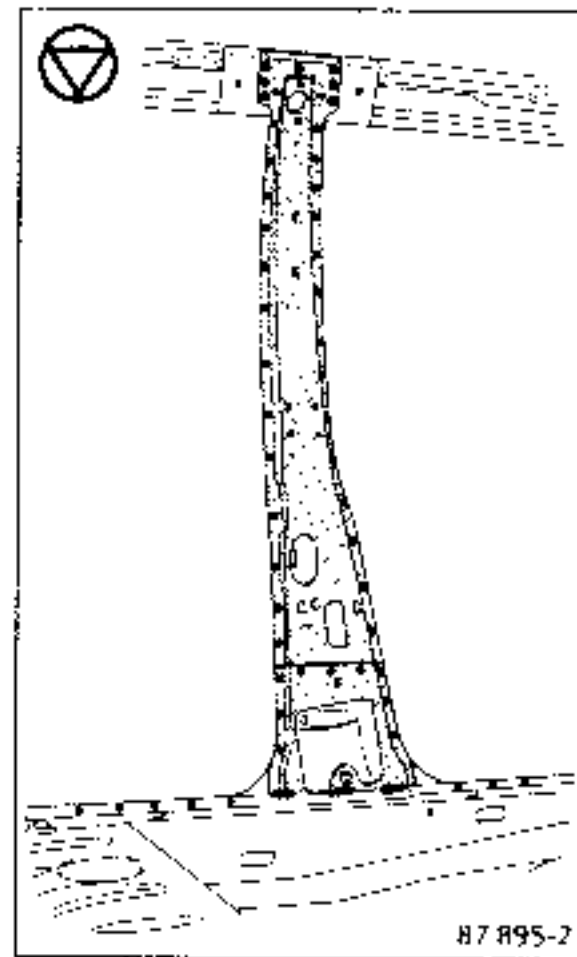
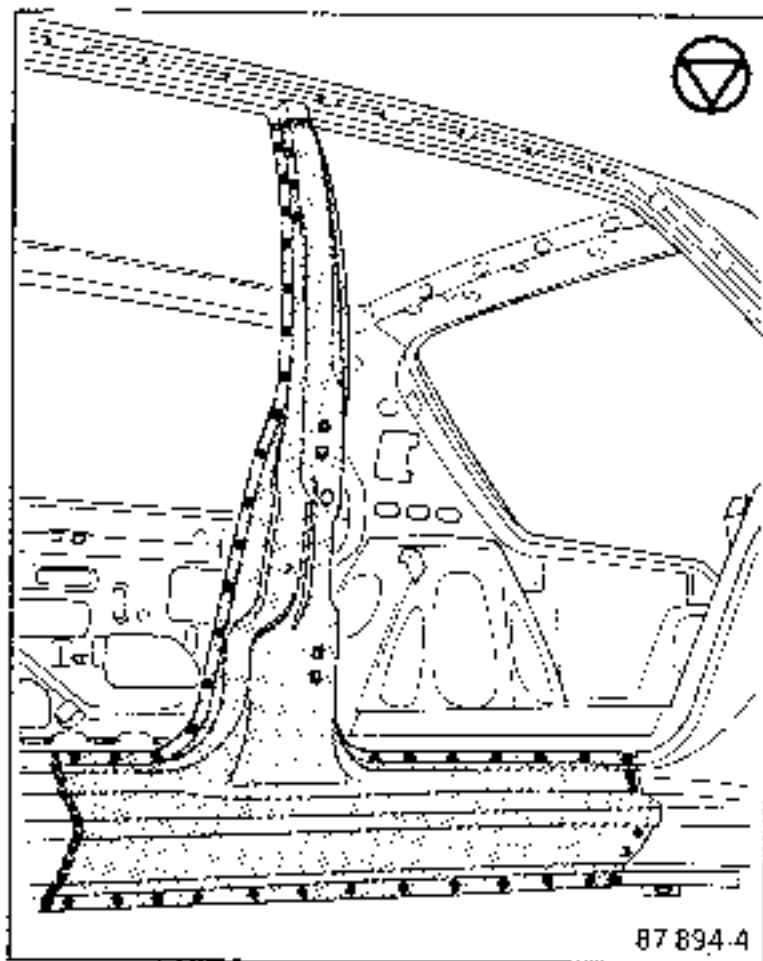
NOTE:

Grind back and remove the upper safety belt mounting panel.

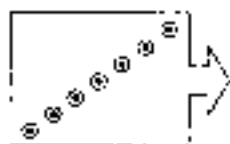
- Superimpose the new part on the vehicle, then secure it using a vice clamp.
- Using a hacksaw, cut the two panel thicknesses together in order to make it easier to line up the cuts.



- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.



$e = 1,5 \text{ mm}$
 $H = 40 \text{ mm}$

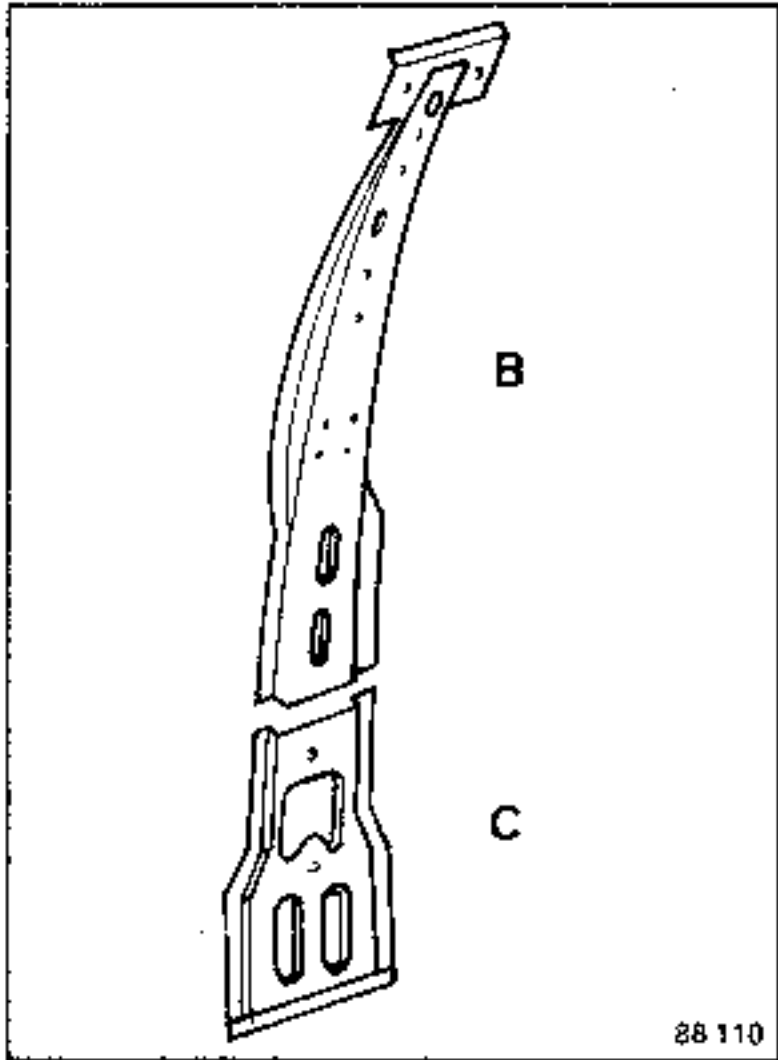
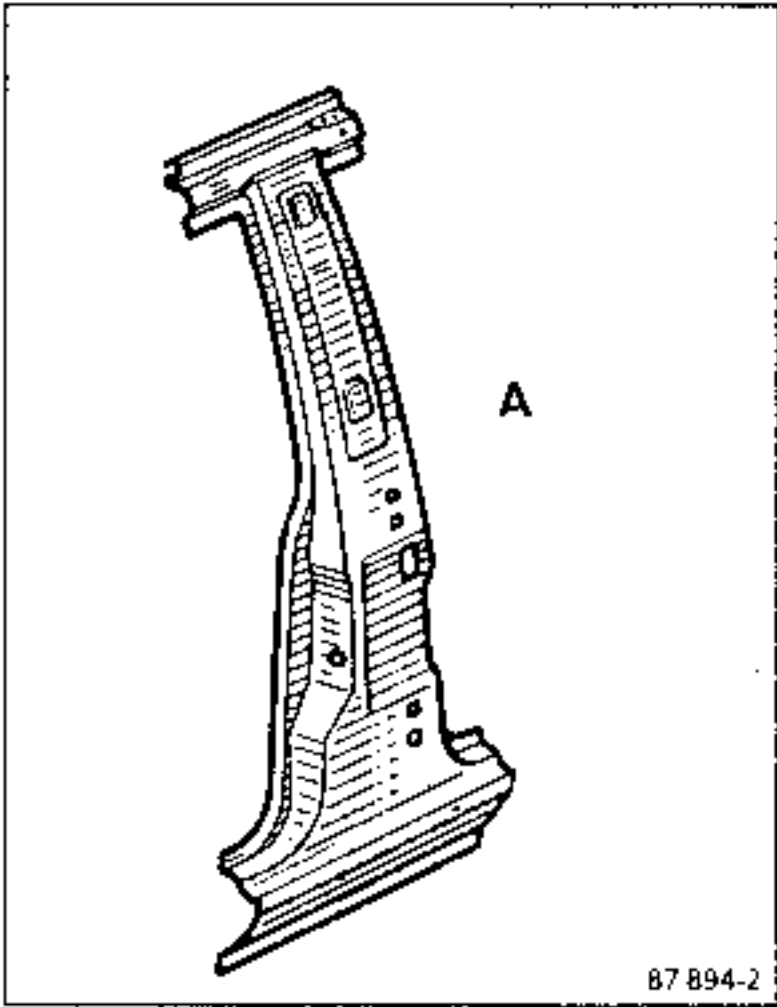


$D = 5,5 \text{ mm}$

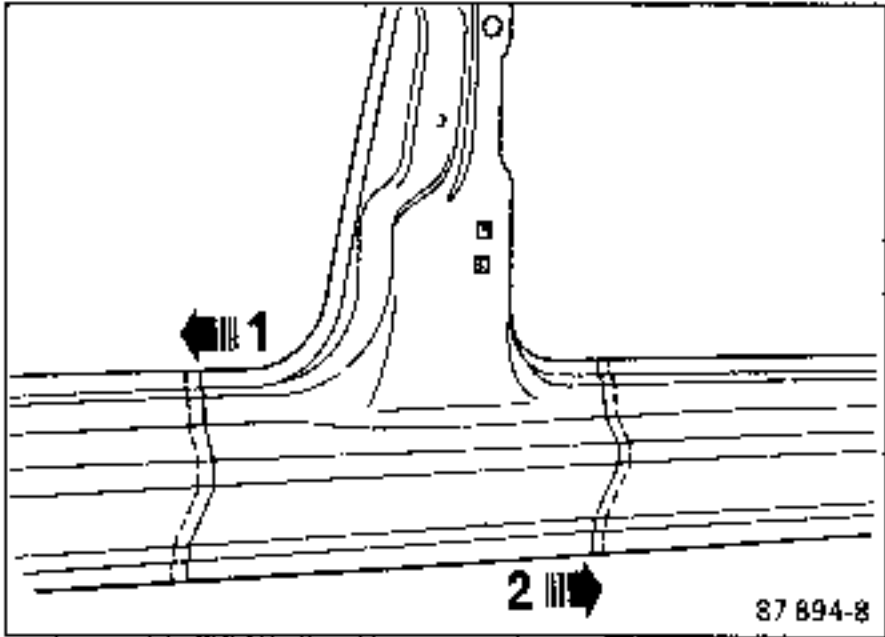
WELDING

- Stitch weld along the butt welding lines.
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.

PREPARATION BEFORE WELDING

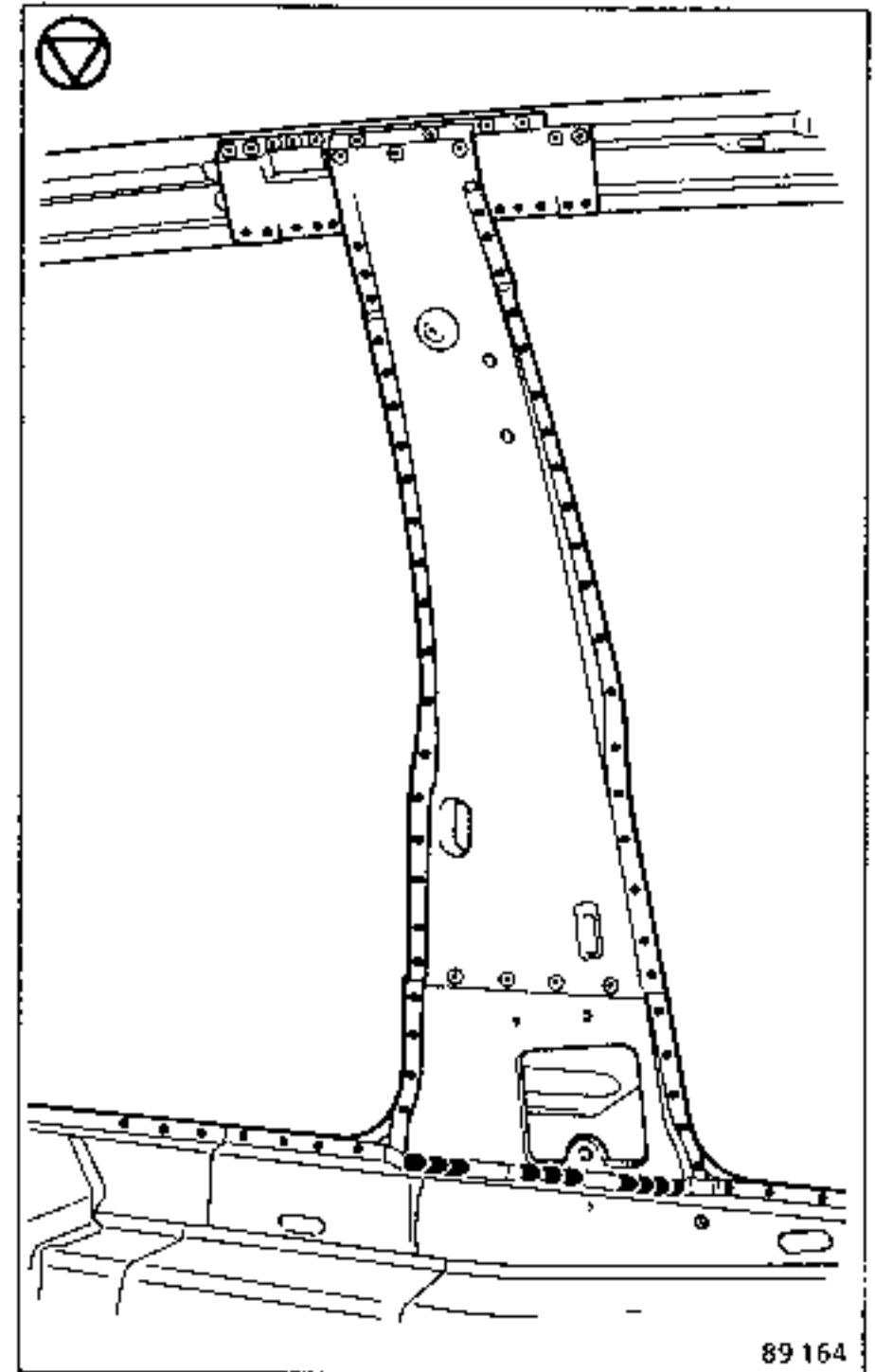
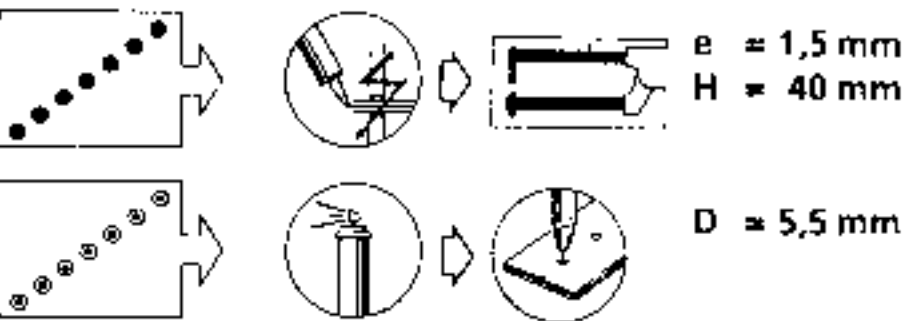
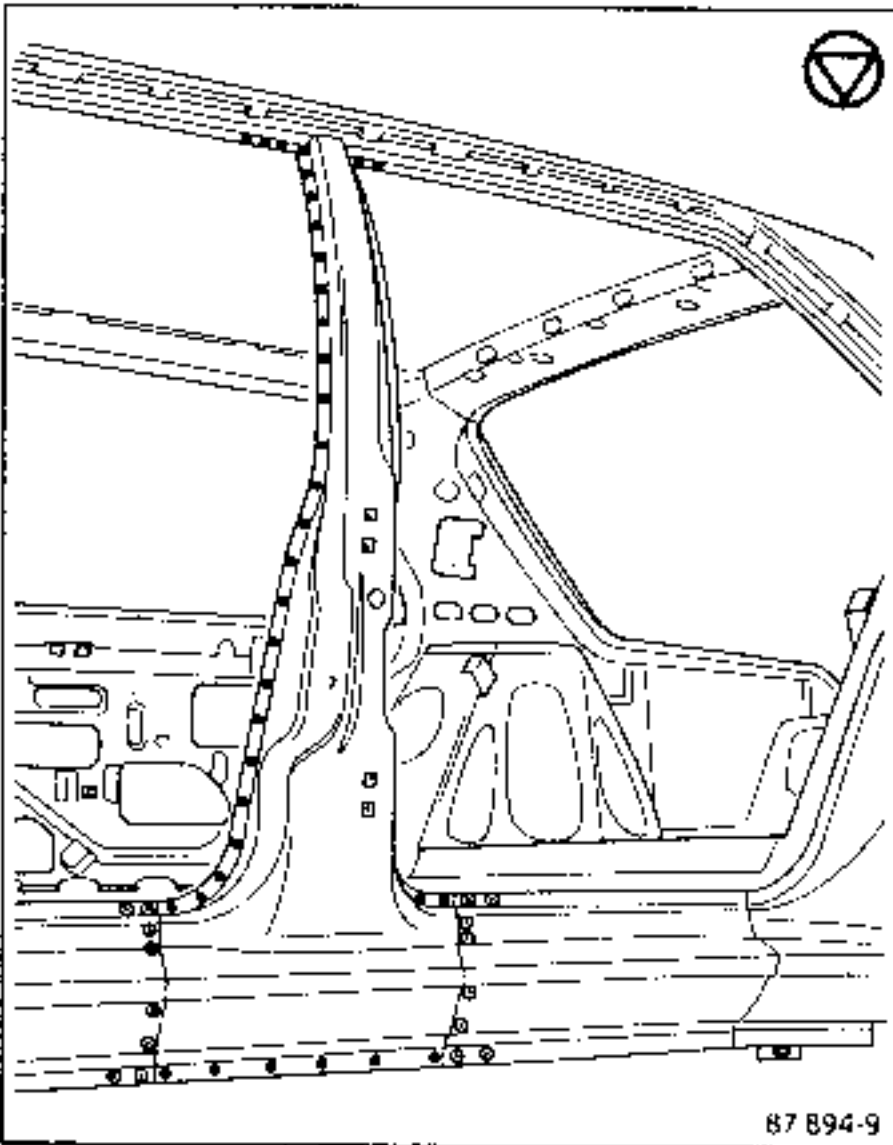


- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Between them, fit the 3 parts A, B and C, forming the pillar and fit them temporarily using several retaining points.
- Fit the centre pillar to the vehicle, sliding the lower section between the exterior panel and the sill lining (see diagram below).



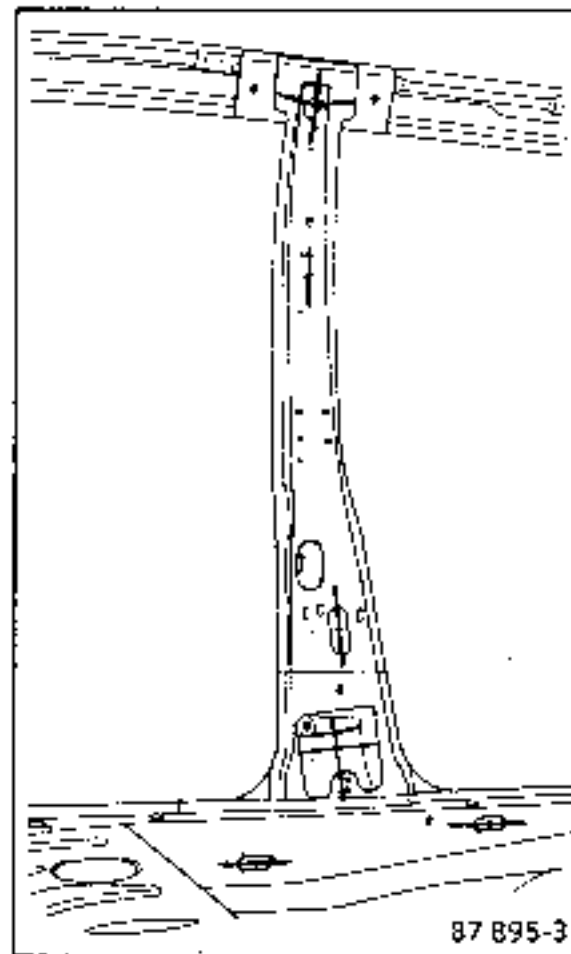
- Adjust the part using the front door, and secure it using a vice clamp.

WELDING

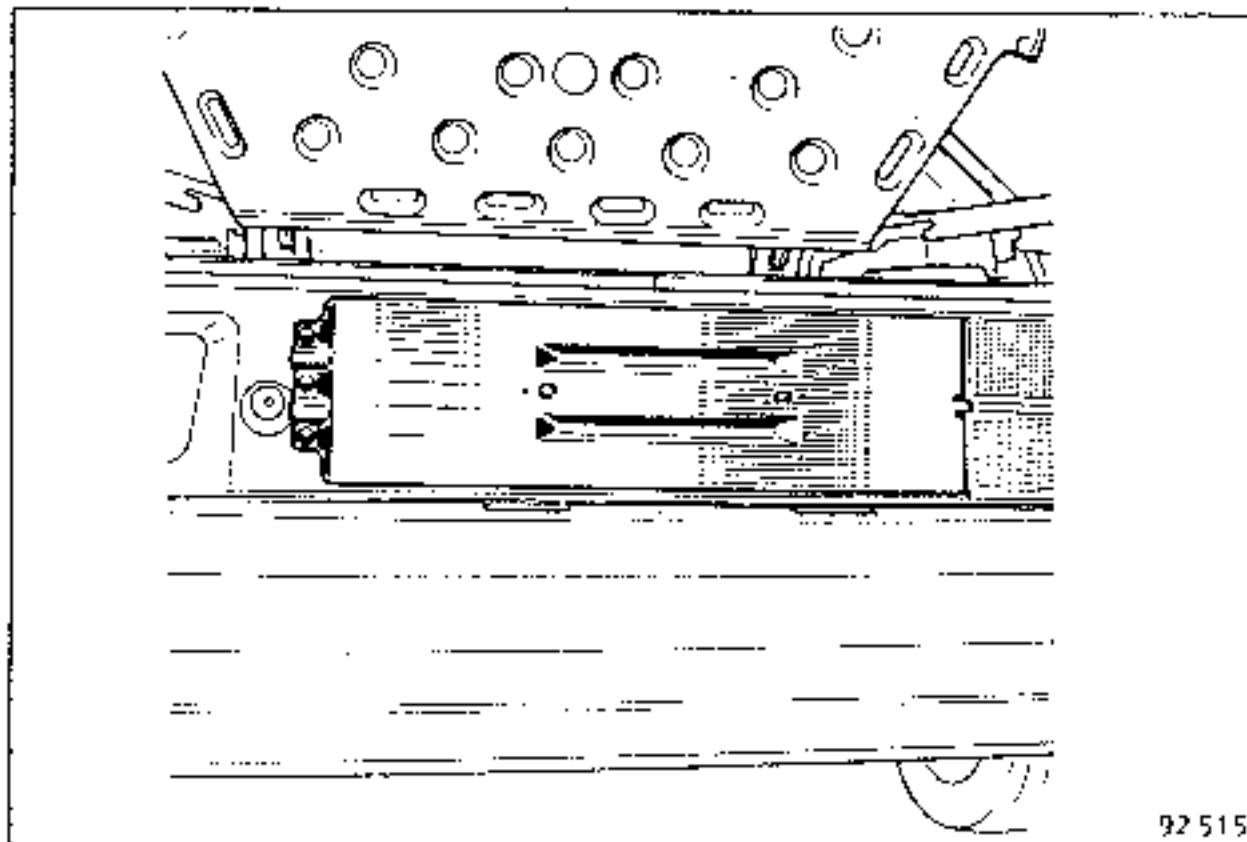


- Electric spot weld. The corresponding values of (e) and (H) are given under the drawings.
- Plug weld under protective gas. To do this, drill the first panel to diameter D given under the drawings.
- Chain weld.

- Seam stitch weld under protective gas. (This operation can also be carried out using a welding torch with a 75 - 100 nozzle.)
- Plug weld under protective gas. To do this, drill the first panel to diameter \varnothing given under the drawings.
- After having ground down the weld seam on the butt welded parts, solder using a welding torch fitted with a 300 nozzle.
- After painting, treat with hollow section wax, using the existing holes.



CUTTING - UNPICKING



NOTE:

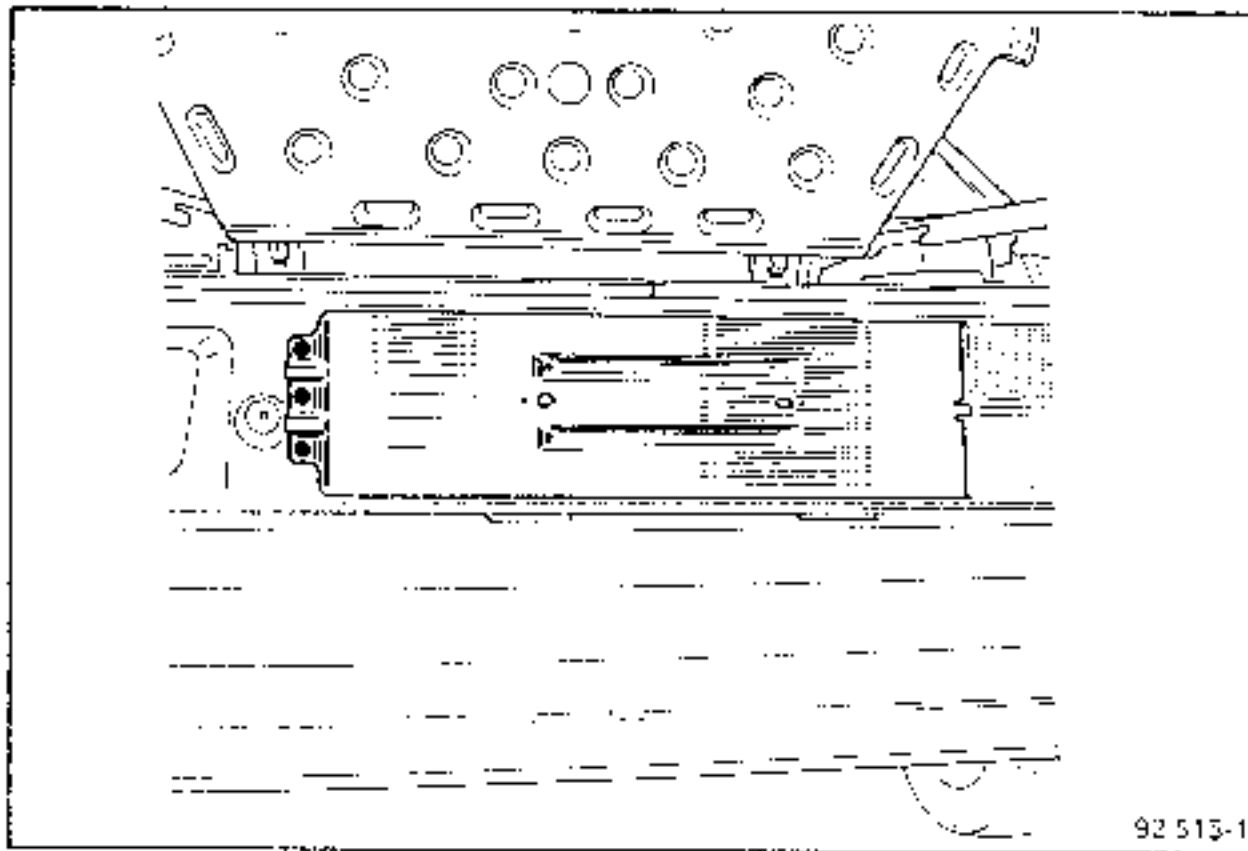
Grinding and unpicking are carried out on the part to be replaced.

- Remove the damaged part, following the instructions given in the diagrams above (see list of symbols).

PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts)
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Adjust the new part, then secure it using a vice clamp.

WELDING



$e = 1.4 \text{ mm}$
 $H = 75 \text{ mm}$

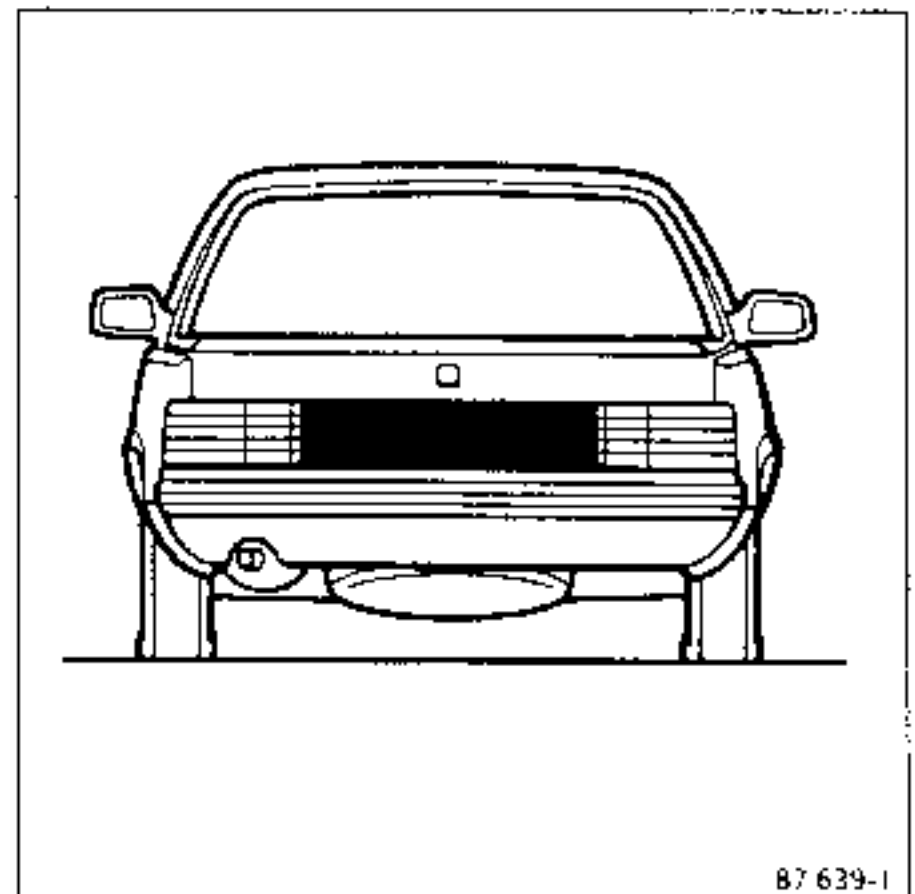
Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.

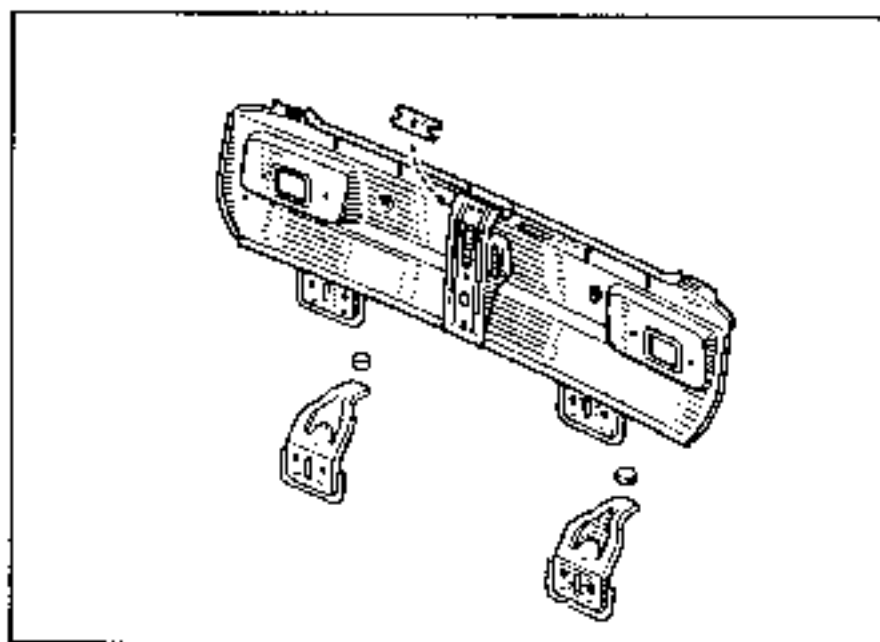
PAINTING

The licence plate support bracket forms part of the stylised zones of the vehicle.

It is to be painted using an aerosol and conventional spray painting

Black 698, part no.: 77 01 405 457.

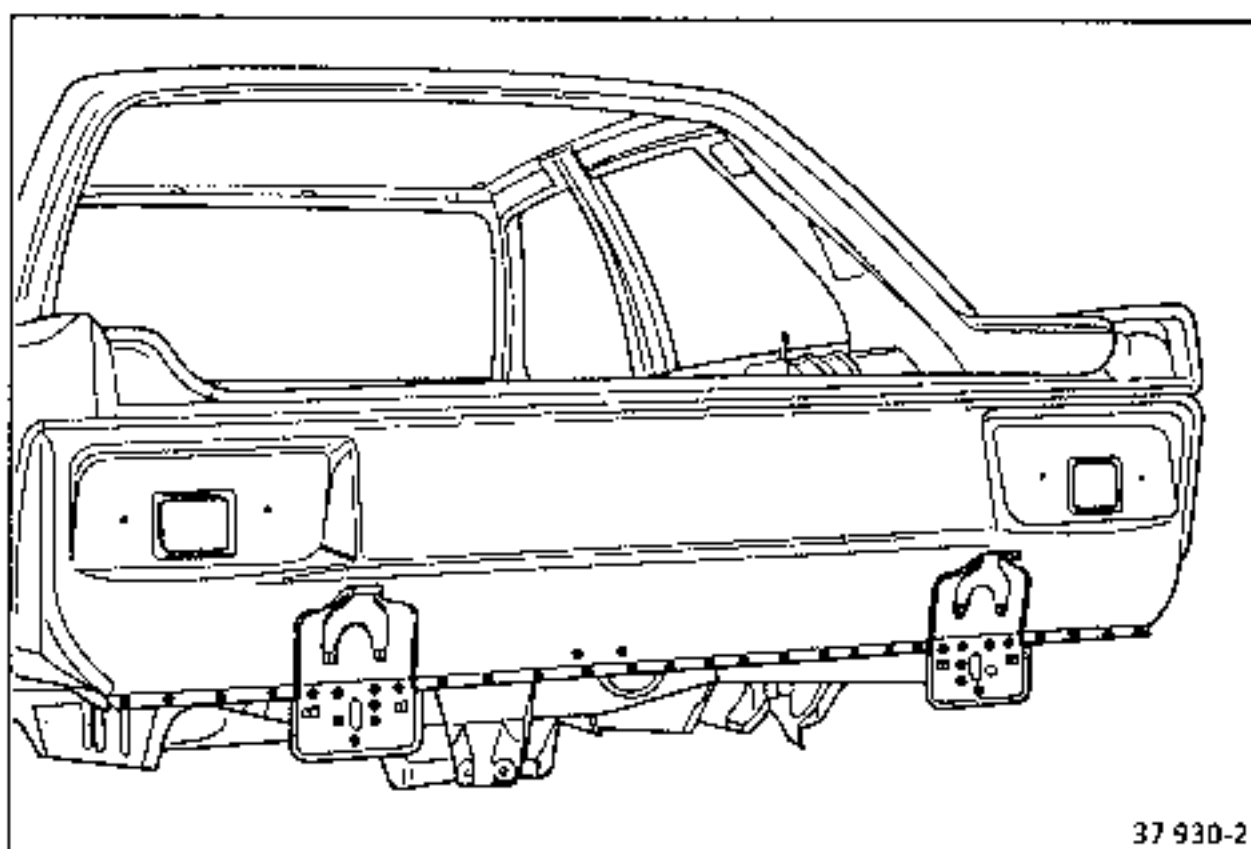




PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.

WELDING

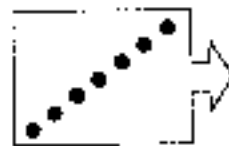
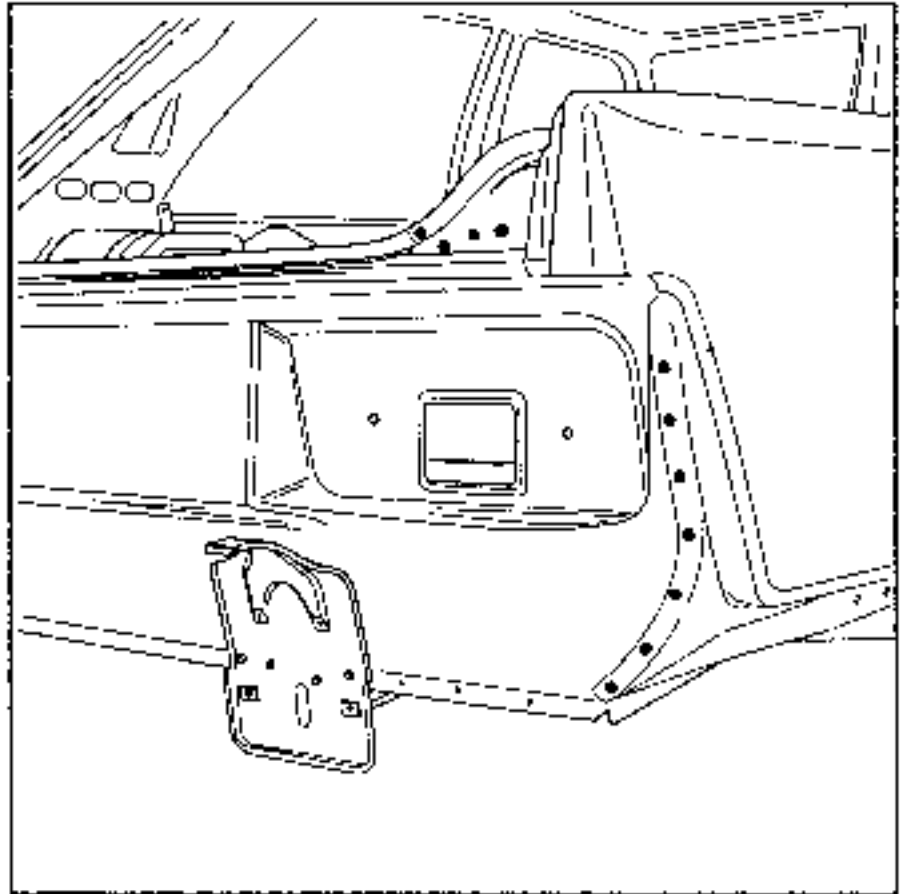
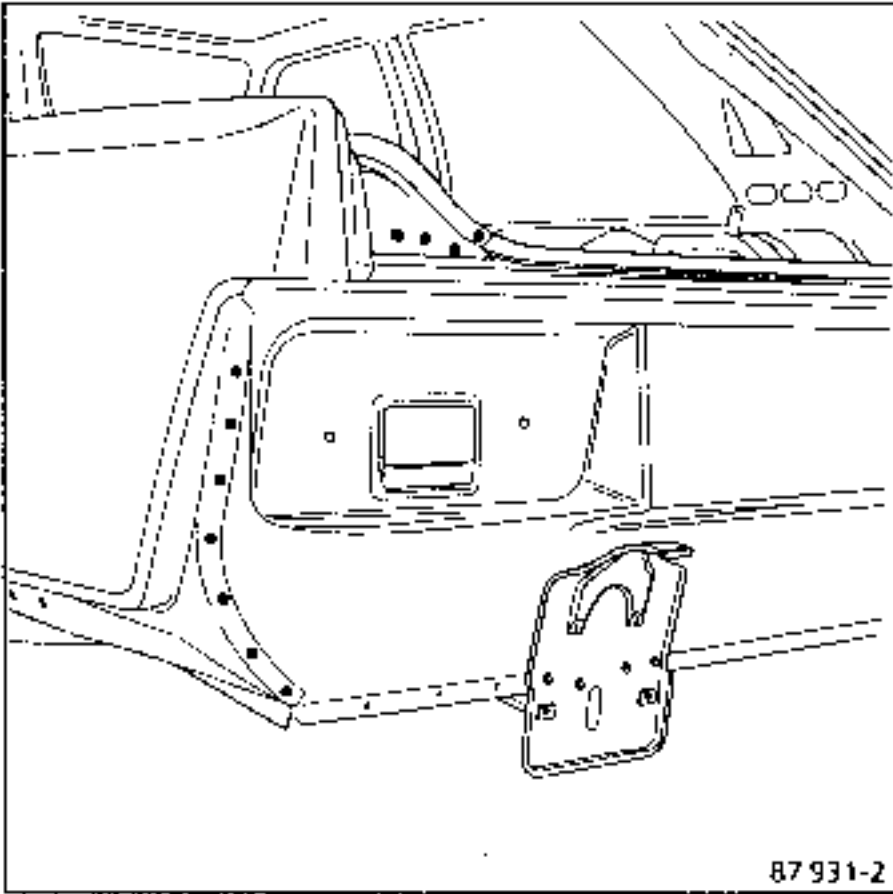


37 930-2



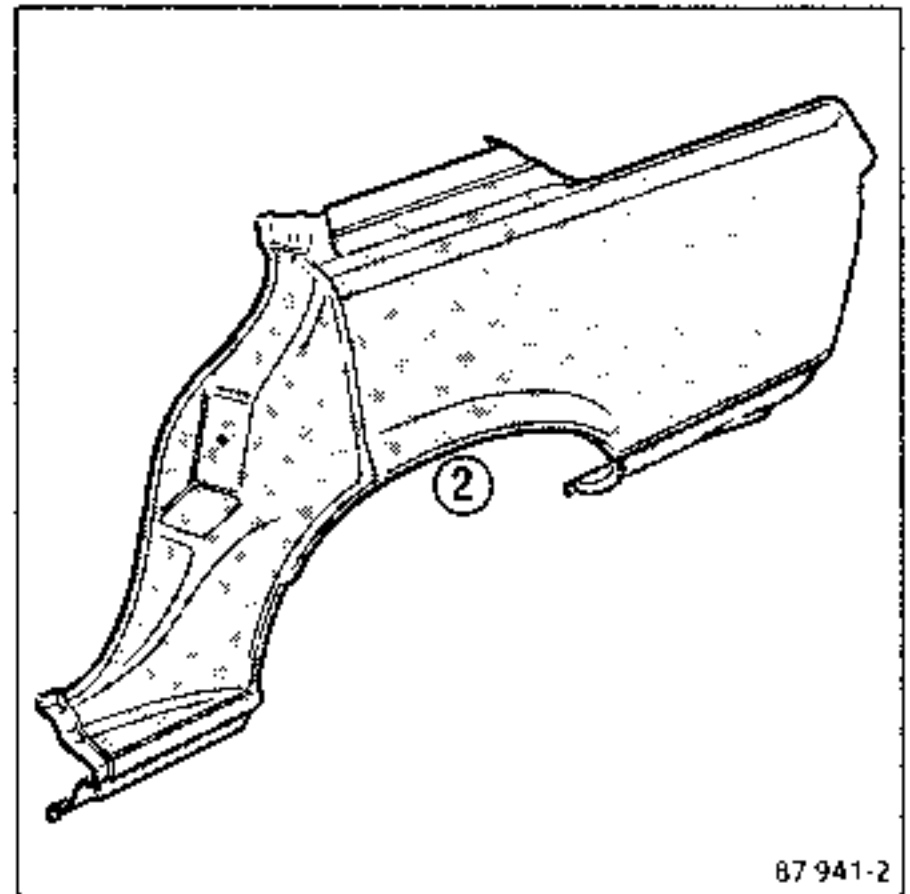
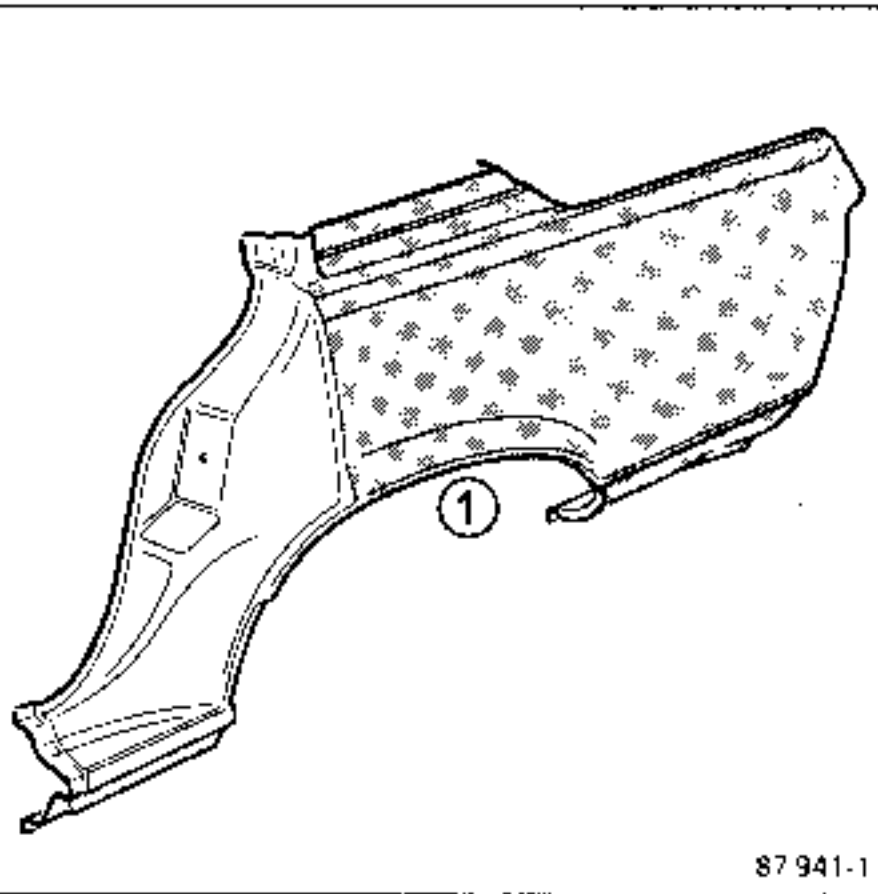
e = 1.4 mm

H = 35 mm



= 1,4 mm
= 75 mm

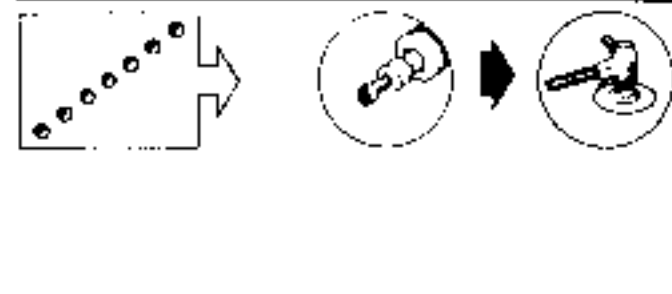
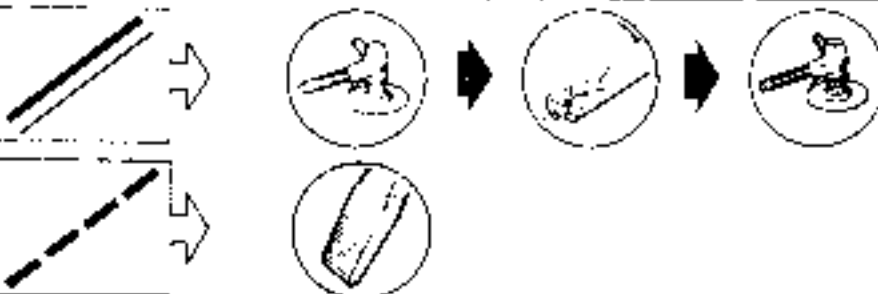
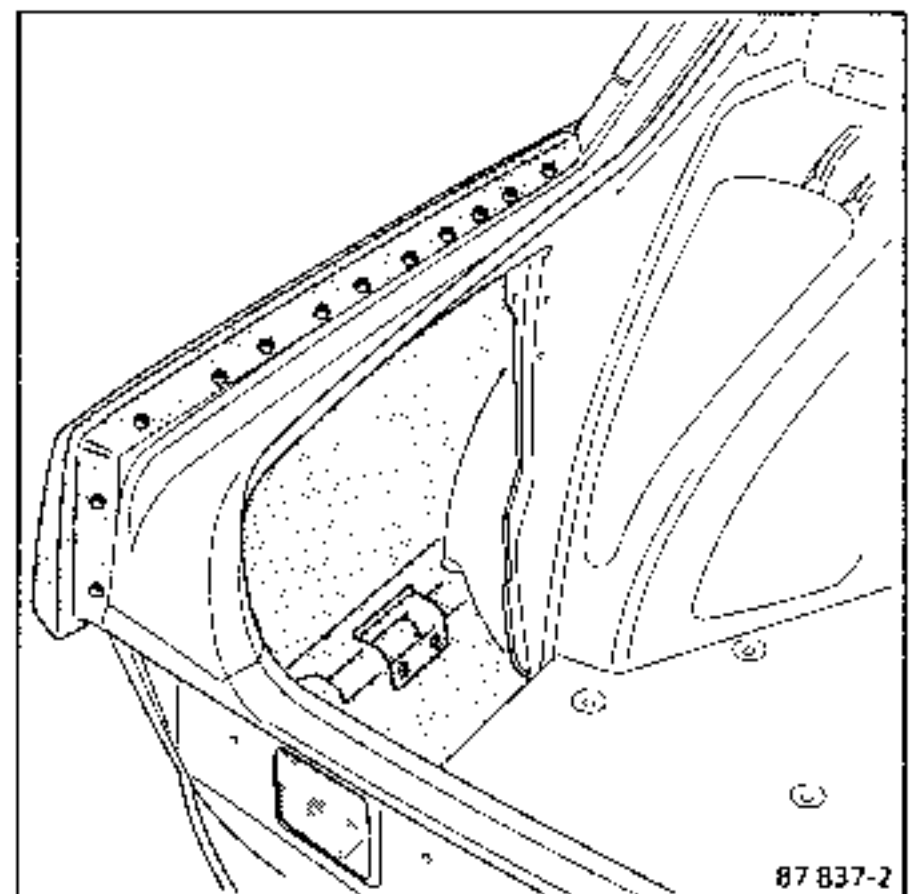
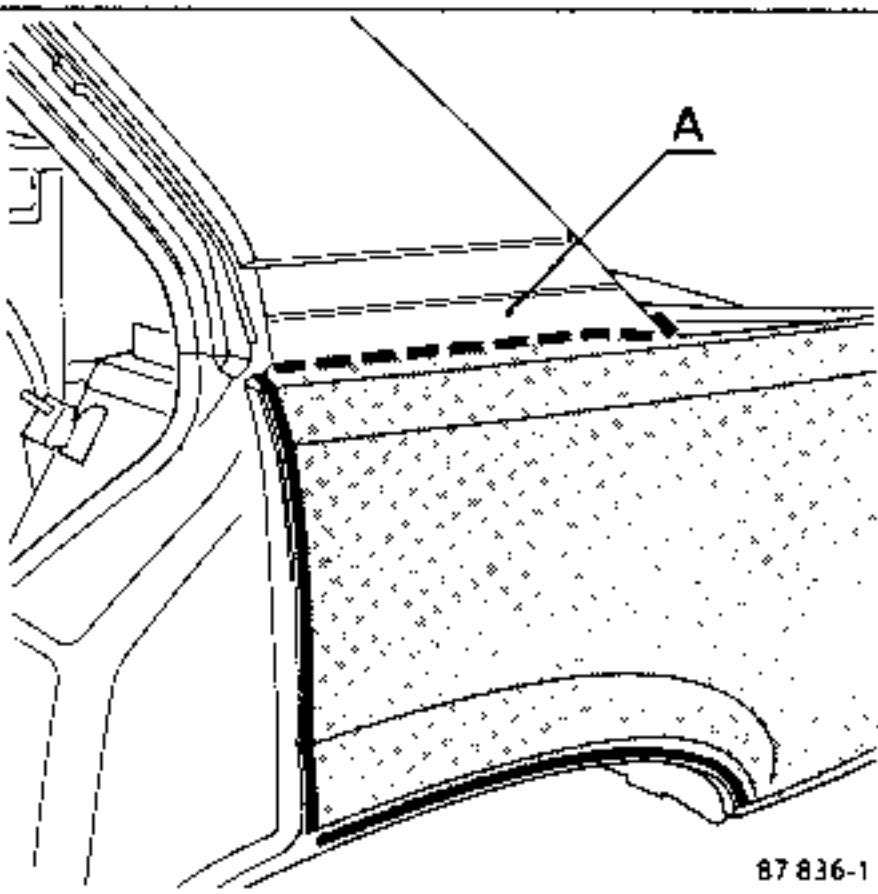
- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.



Depending on the impact, there are several ways in which the panel can be replaced:

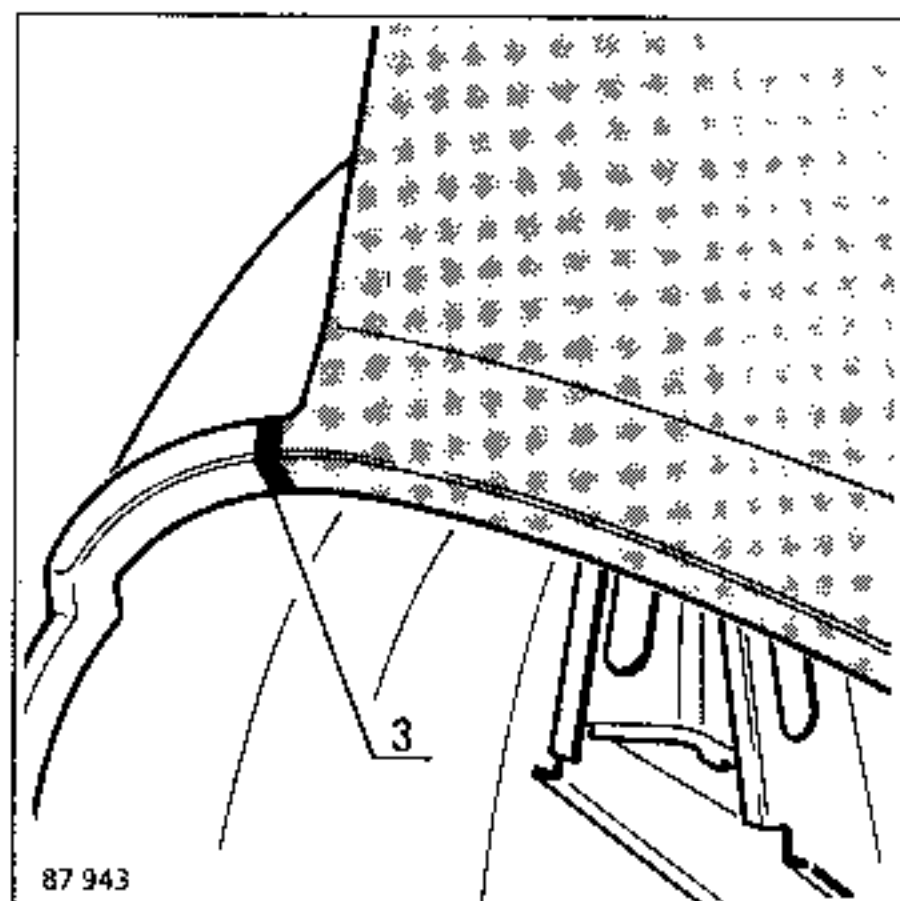
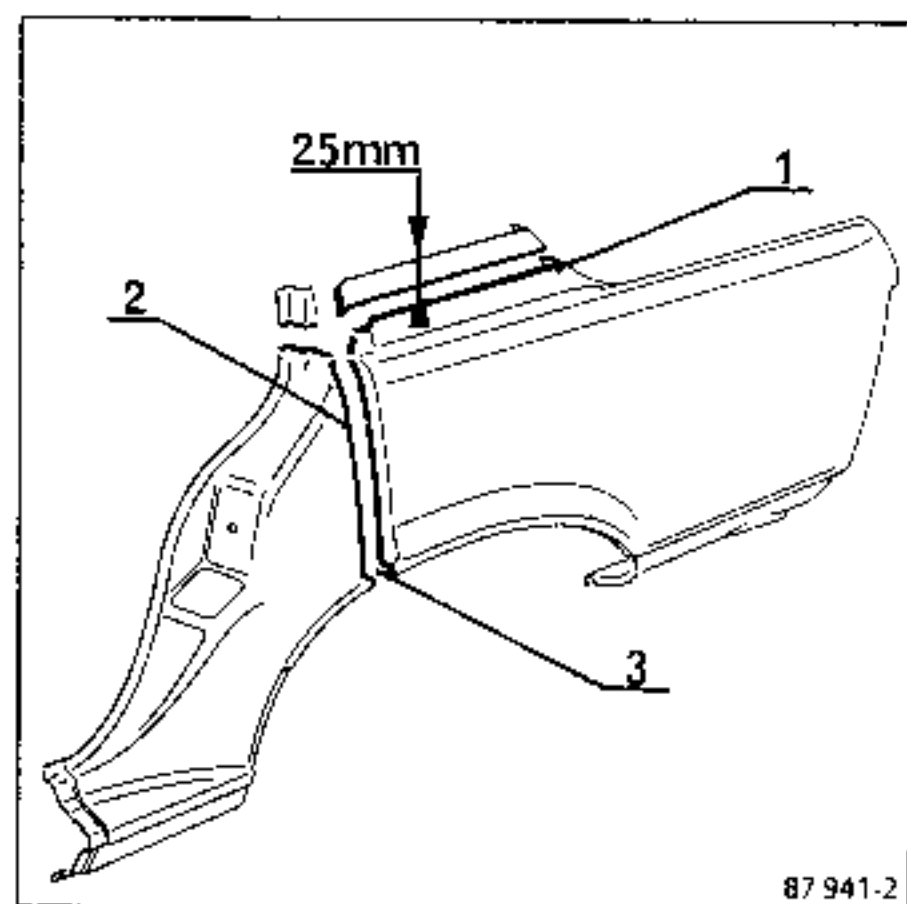
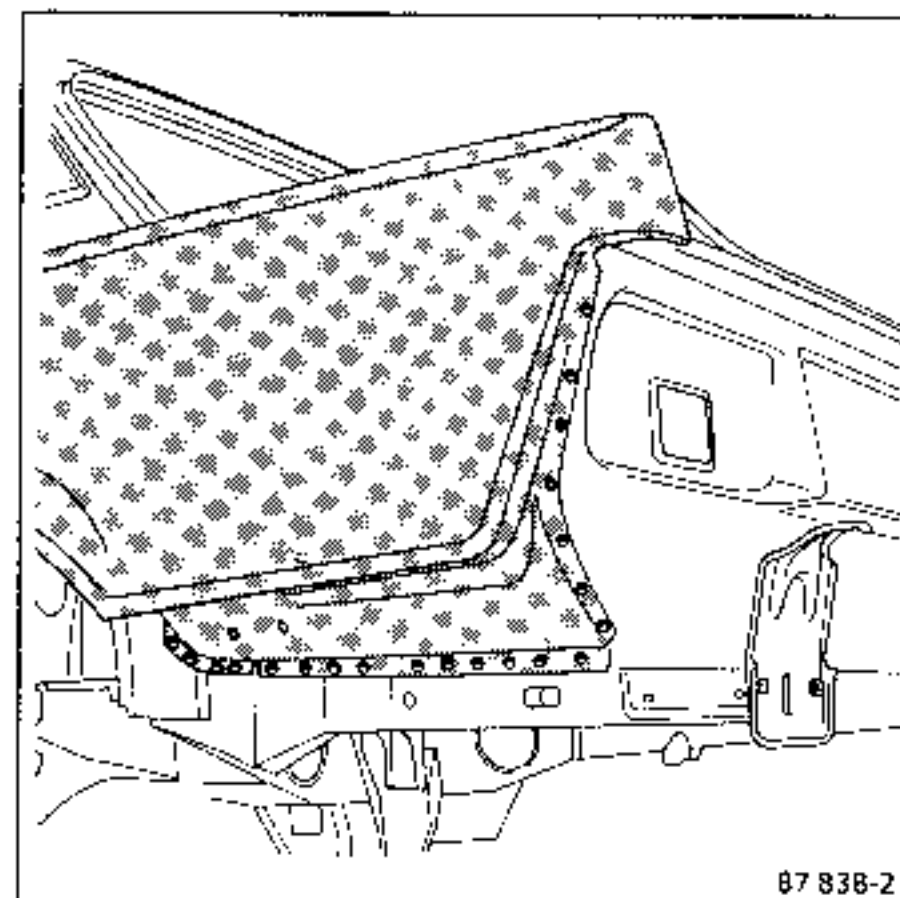
- 1 - Replacement of the panel without the door closure panel and by cutting the flange.
- 2 - Complete replacement.

CUTTING - UNPICKING ①



NOTE:

Part (A) remains on the vehicle.



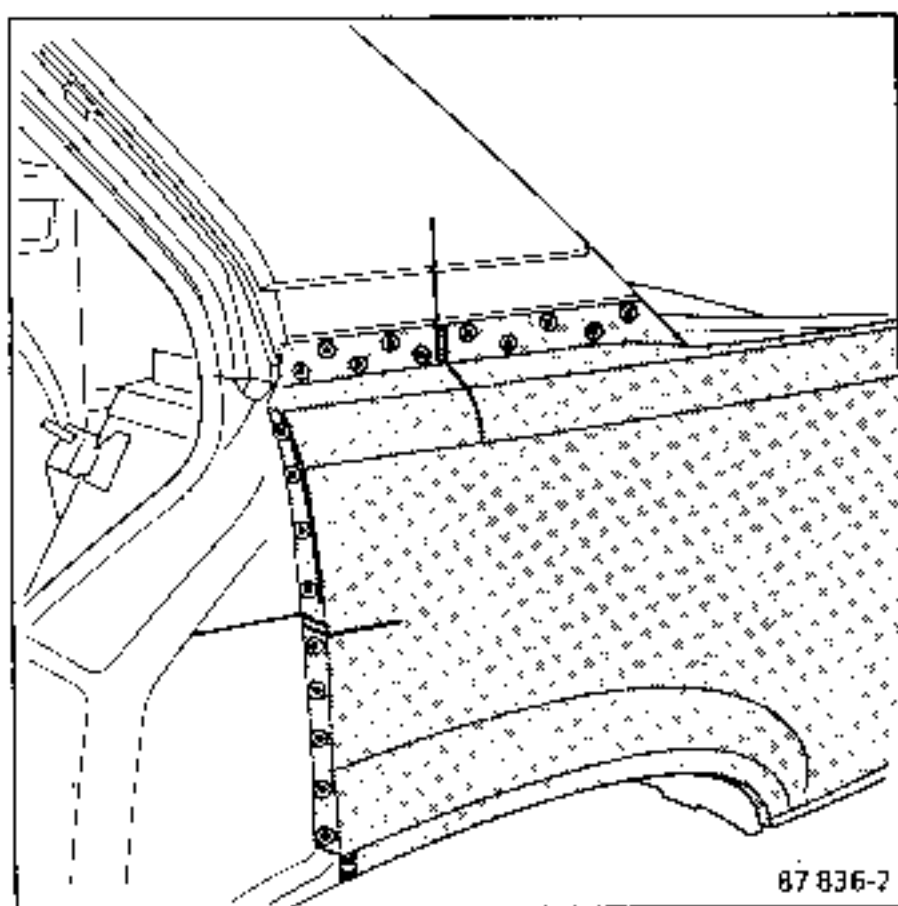
PREPARING THE PANEL

NOTE:

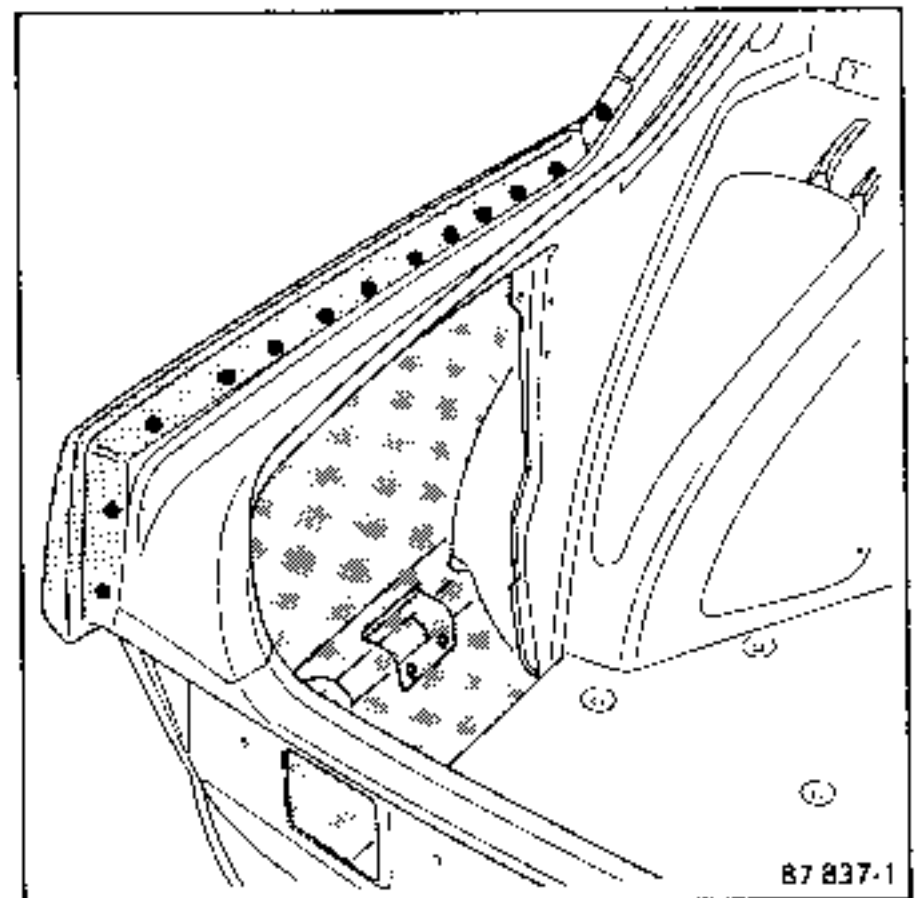
Cut the required panel section from the new component with a pneumatic hacksaw (type MIR) at angles 1, 2 and 3. 1 and 2 are overlapping and 3 butt-joint to the door closure panel.

PREPARATION BEFORE WELDING

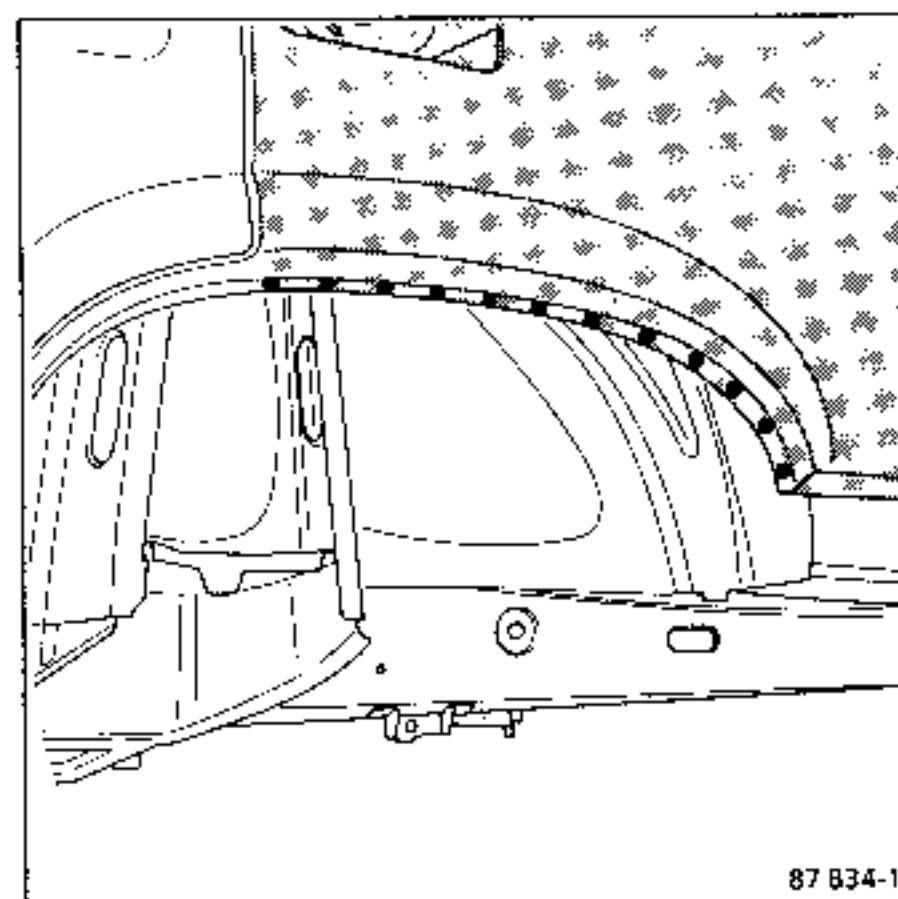
- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.



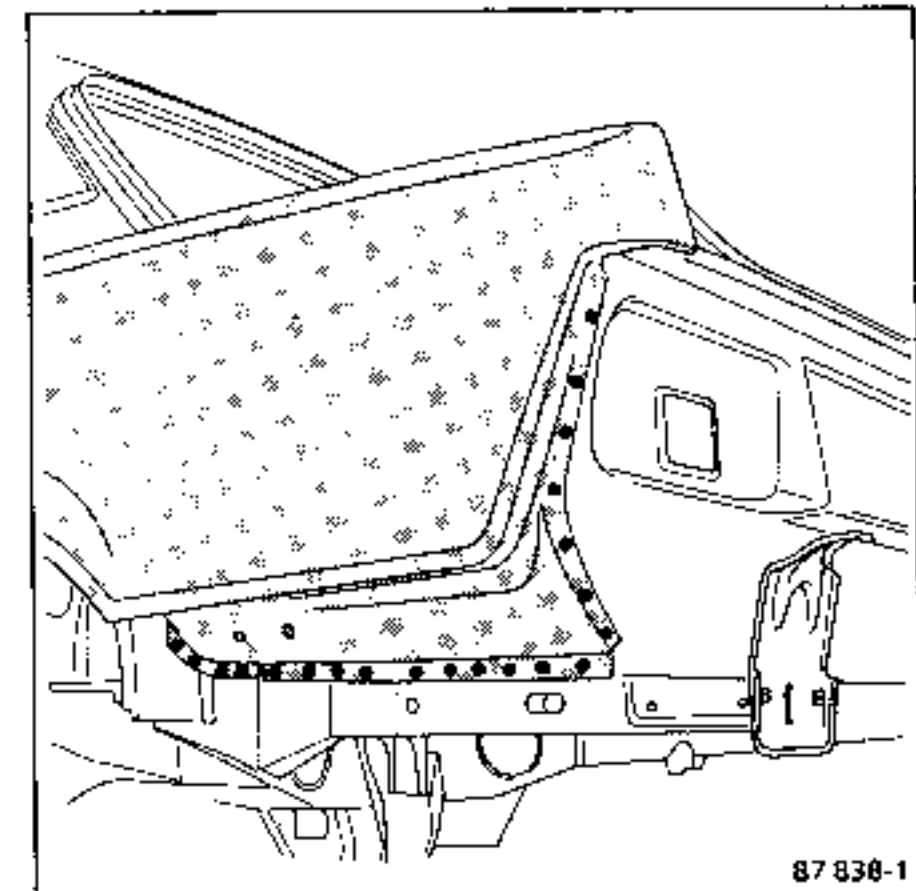
$D = 4,5 \text{ mm}$



$e = 1,4 \text{ mm}$
 $H = 75 \text{ mm}$



$e = 1,4 \text{ mm}$
 $H = 35 \text{ mm}$



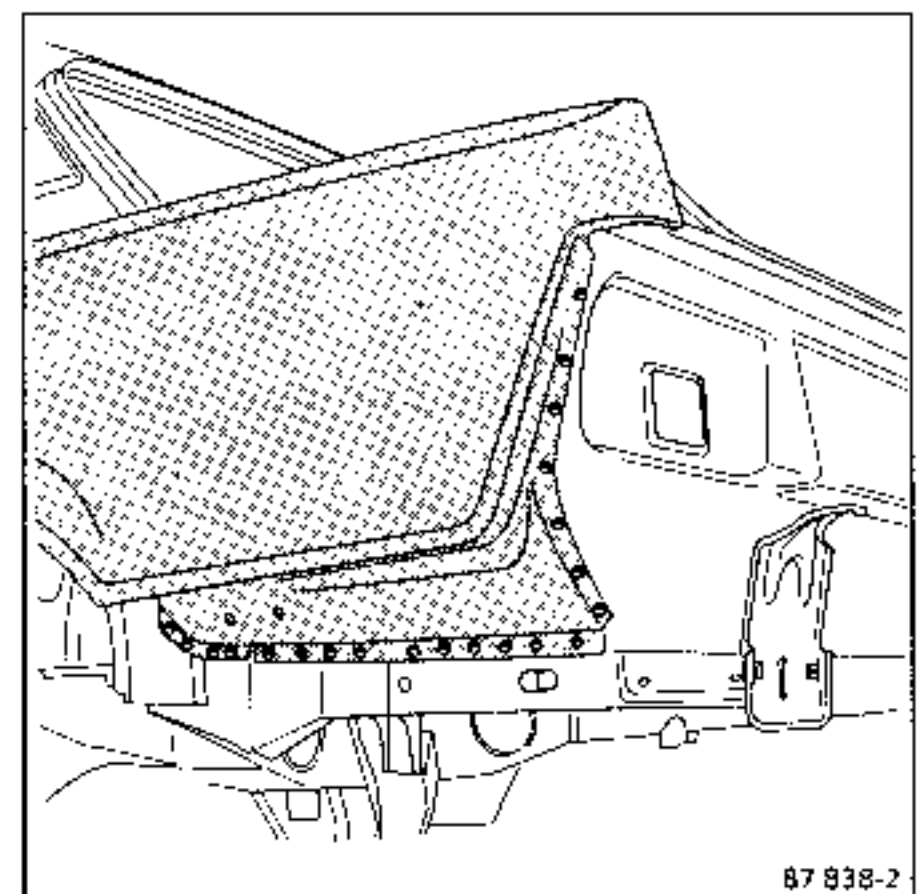
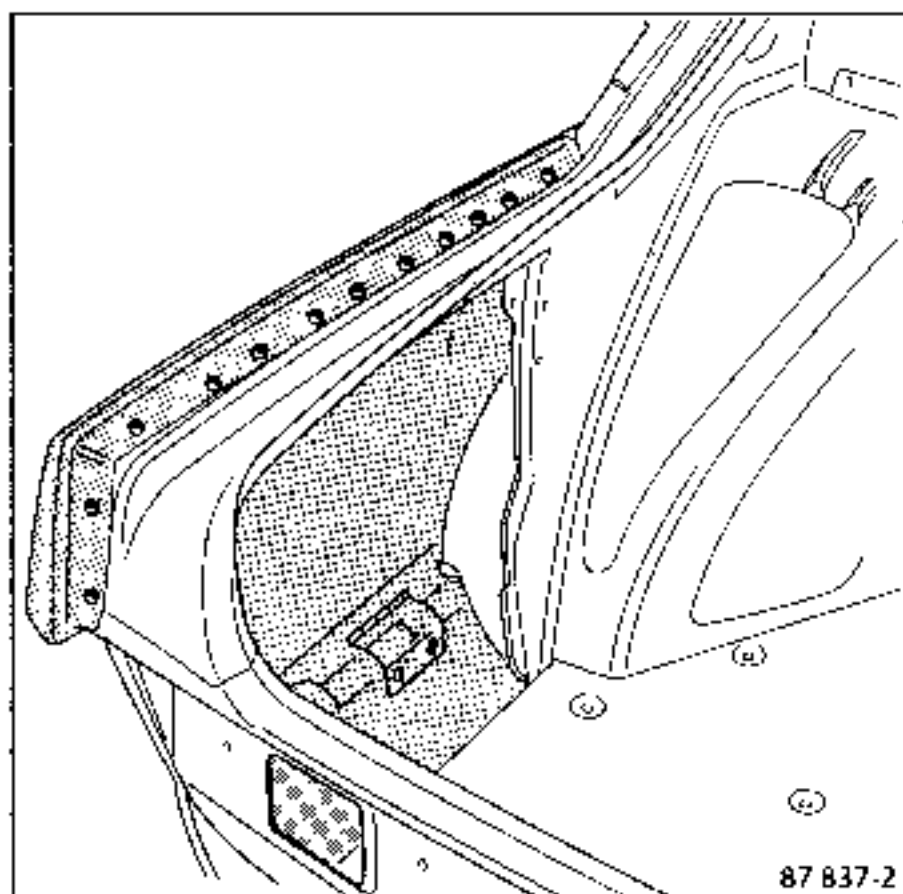
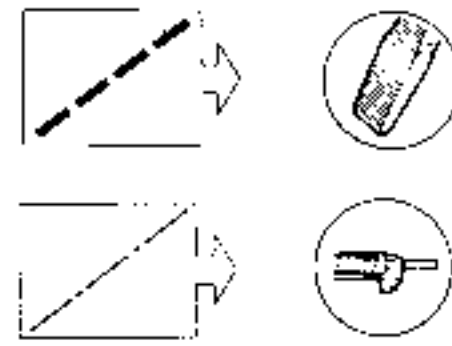
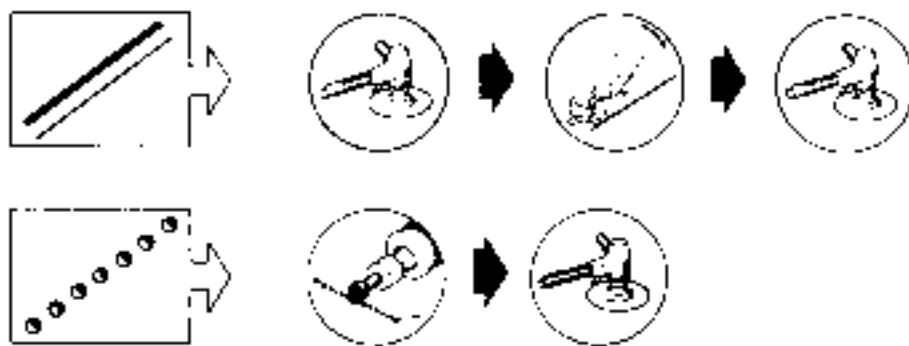
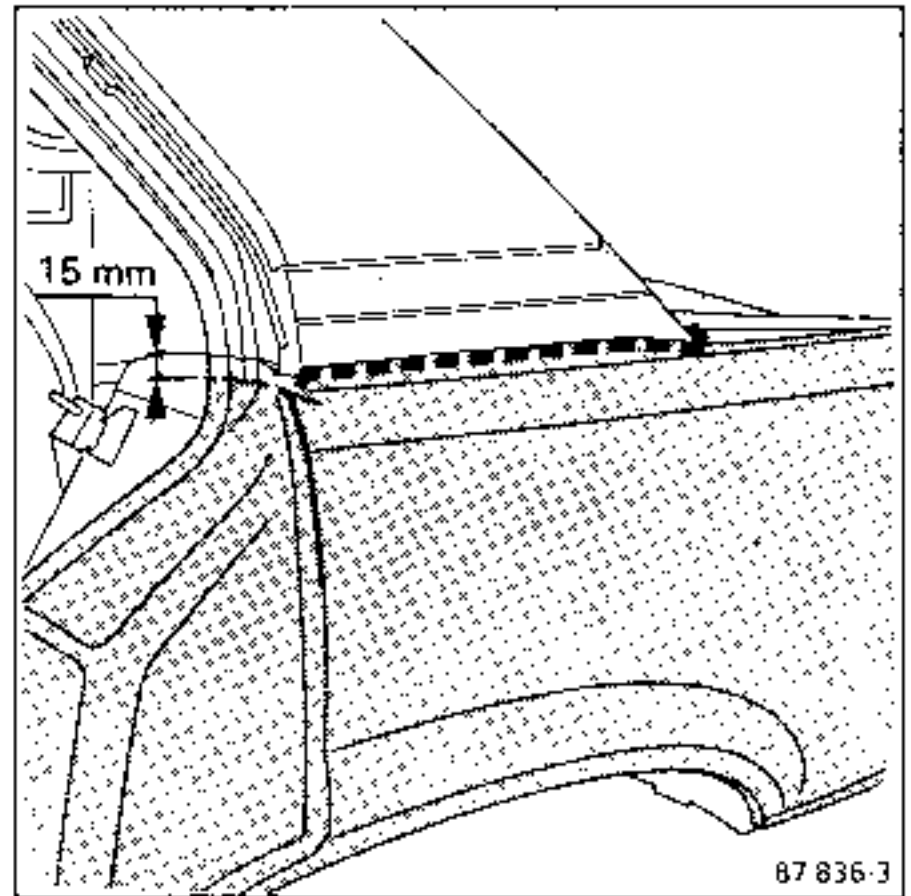
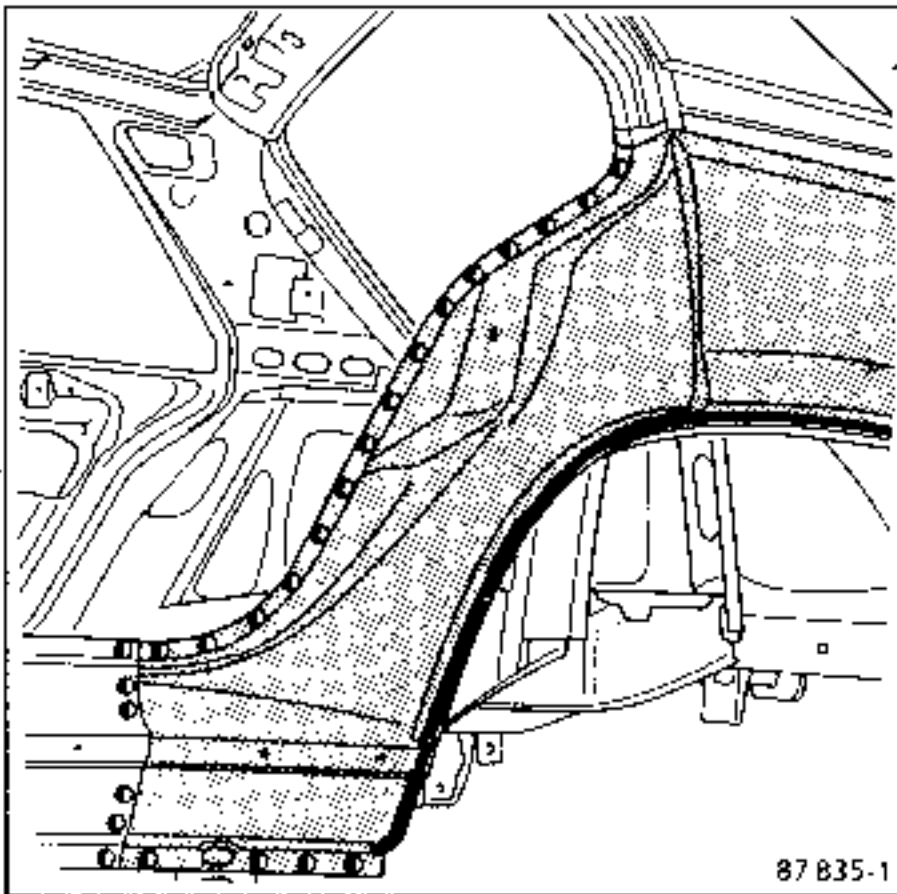
87 838-1

NOTE:

Solder the butt welded and plug welded parts of the door closure panel, using a hot air blower or a welding torch.

- Electric spot weld. The corresponding values of (e) and (H) are given under each drawing.

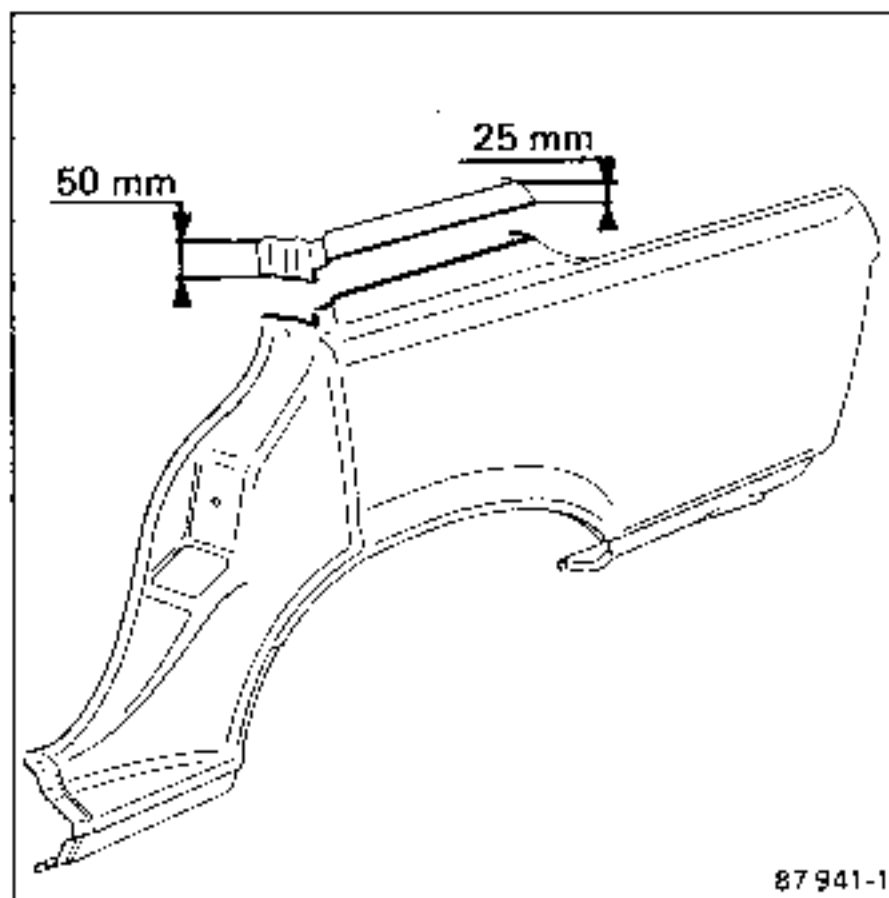
CUTTING - UNPICKING ②



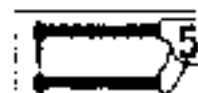
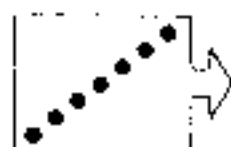
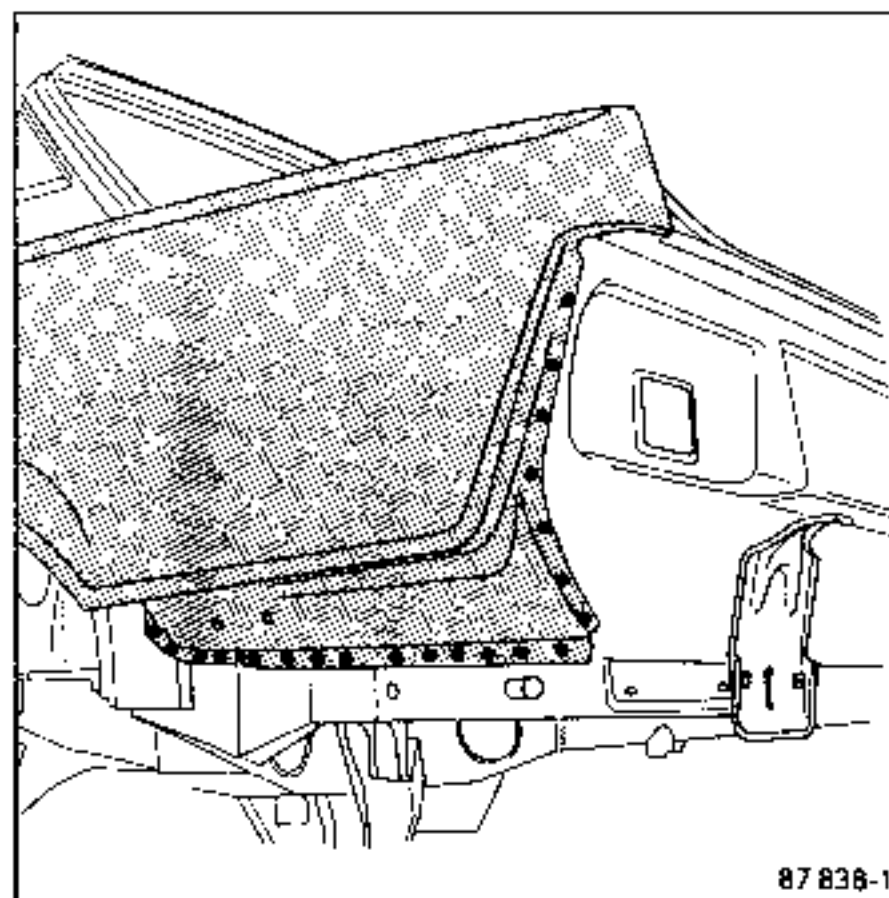
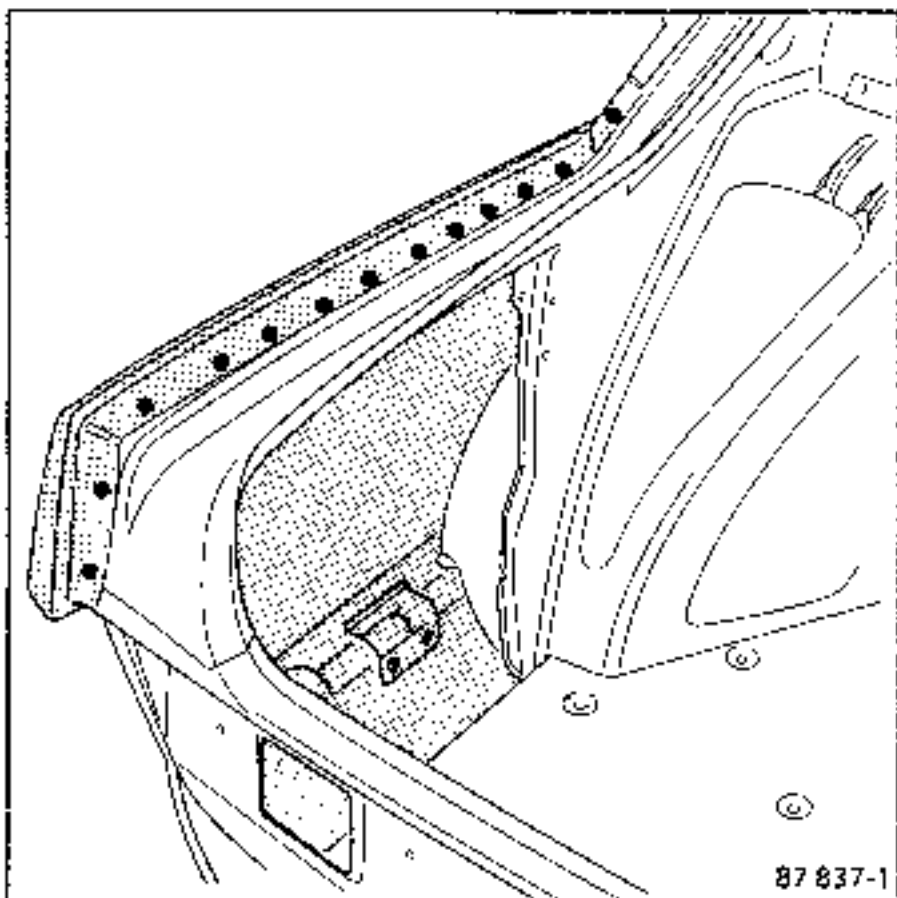
- Remove the damaged part, following the instructions given in the diagrams above (see list of symbols).

PREPARATION BEFORE WELDING

- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.
- Check the opening clearances and the flushness of the door and the tailgate.

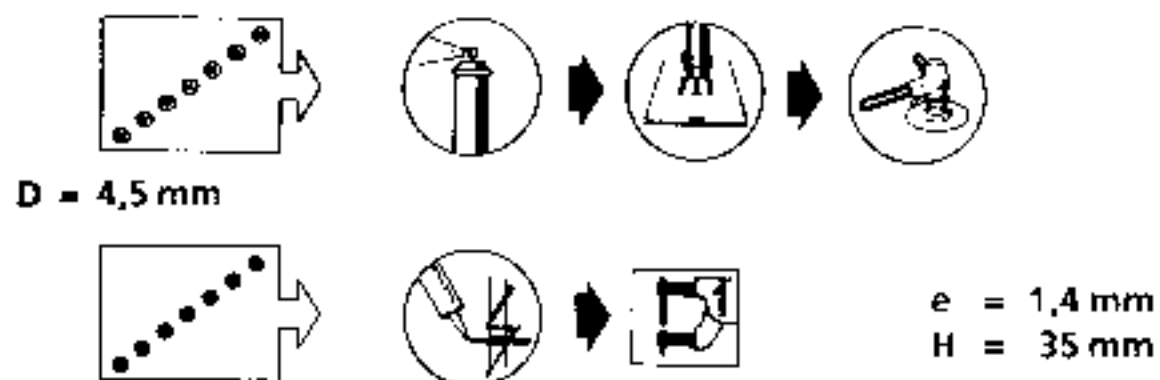
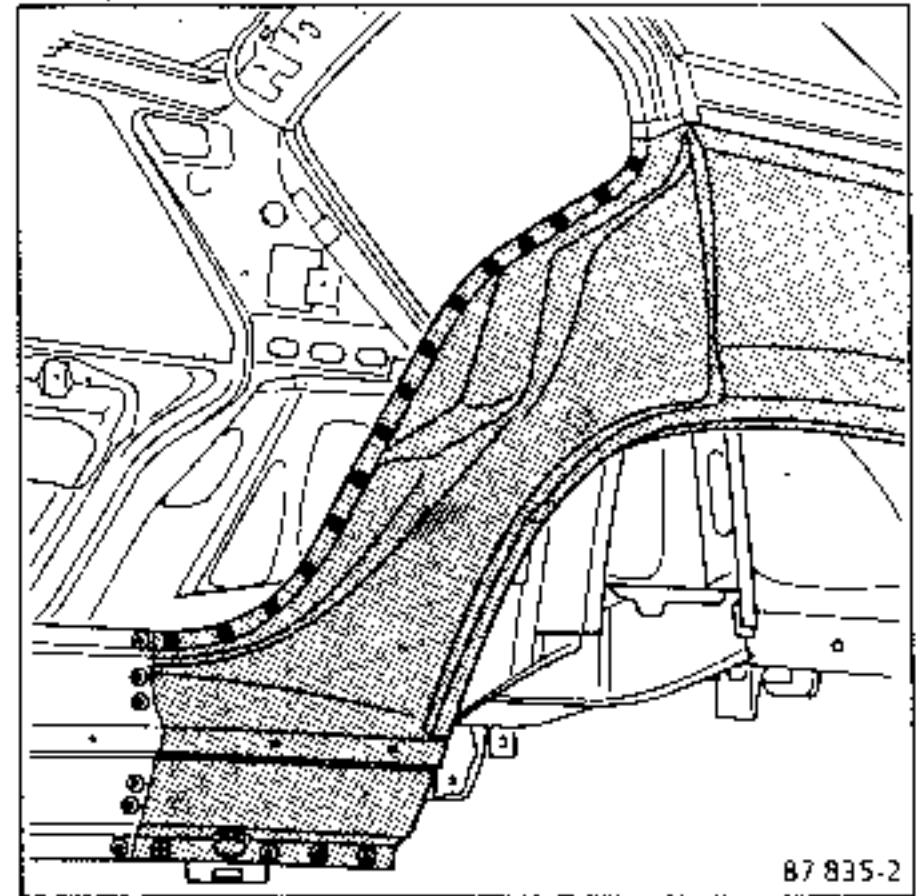
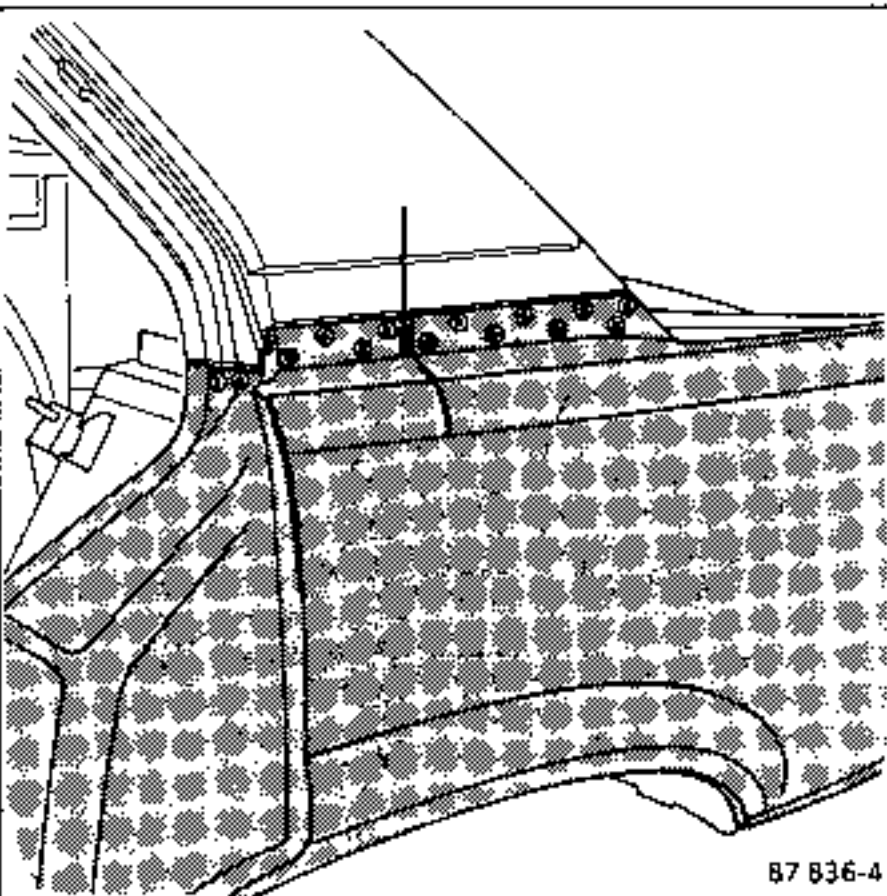
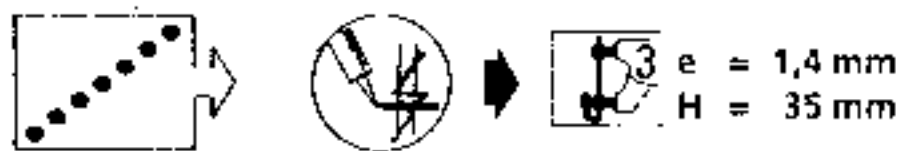
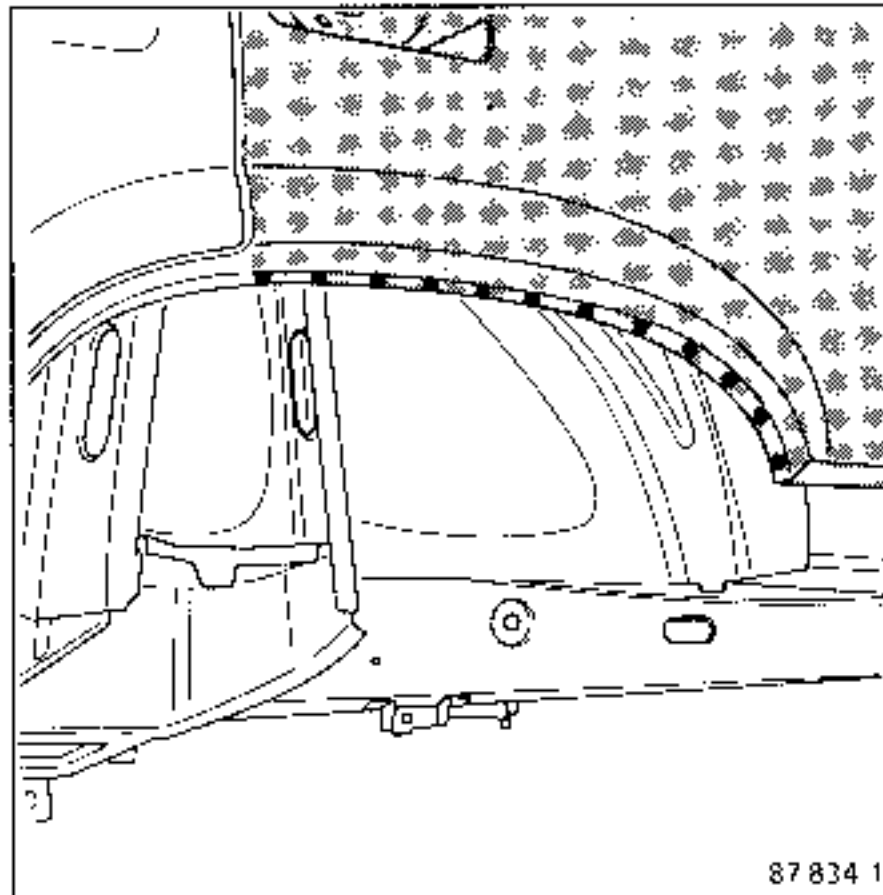


WELDING



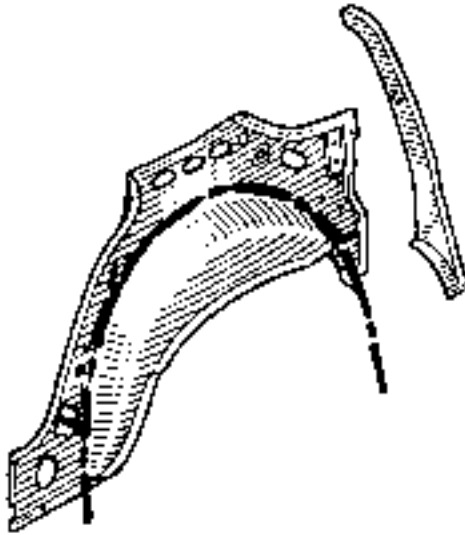
e = 1,4 mm
H = 75 mm

- Electric spot weld The corresponding values of (e) and (H) are given under each drawing.



- Plug weld under protective gas. To do this, drill the first panel.

THIS OPERATION IS ADDITIONAL TO REPLACING THE WING PANEL, TYPE ③

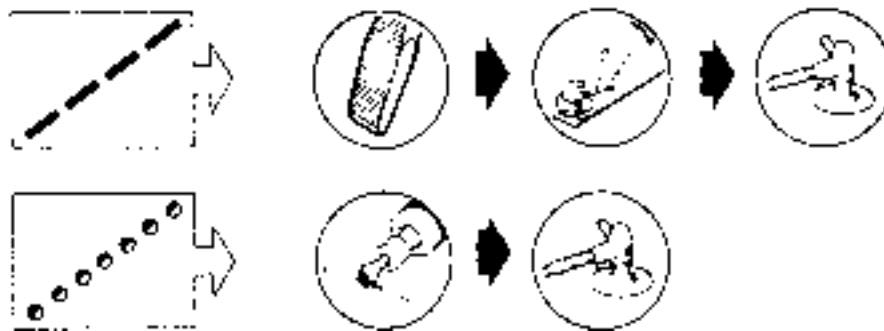
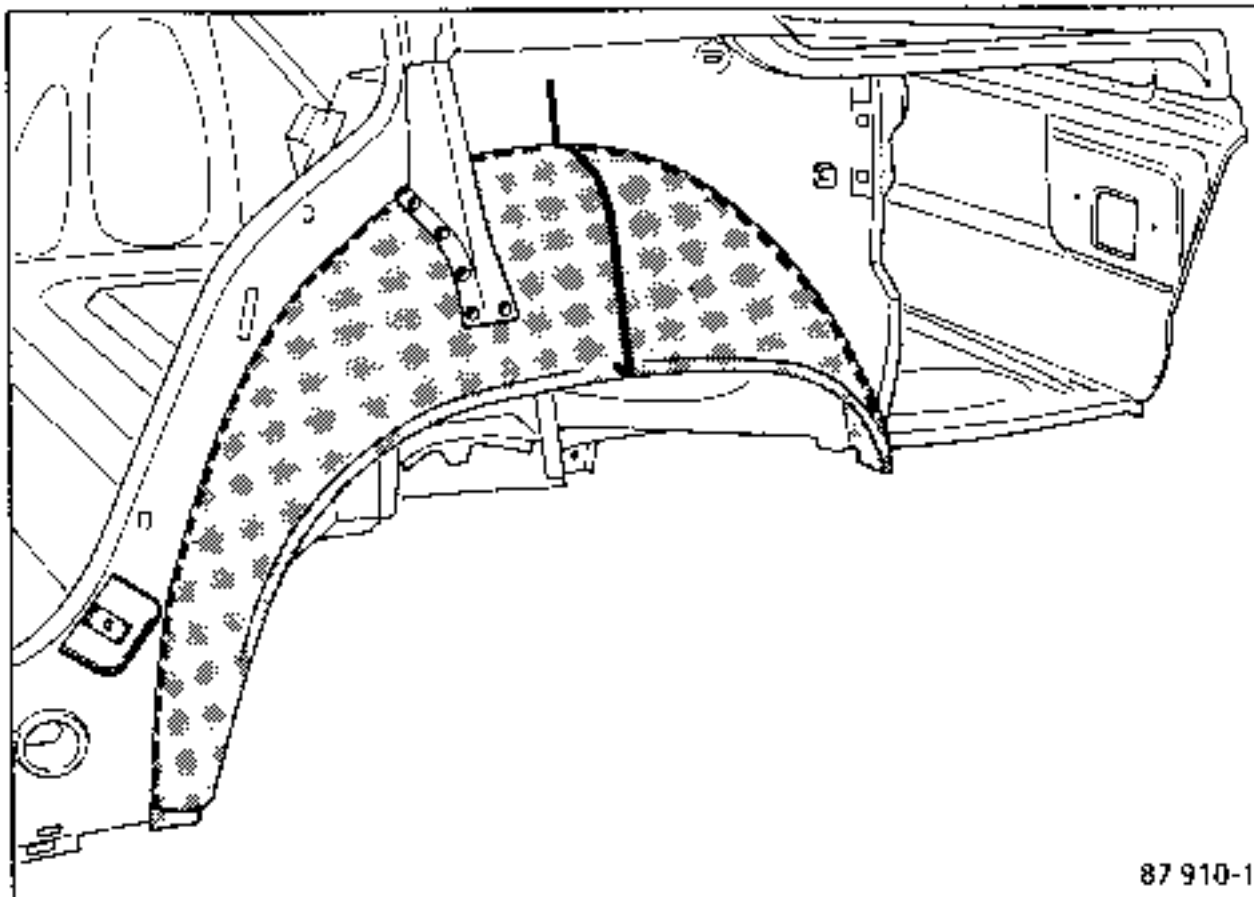
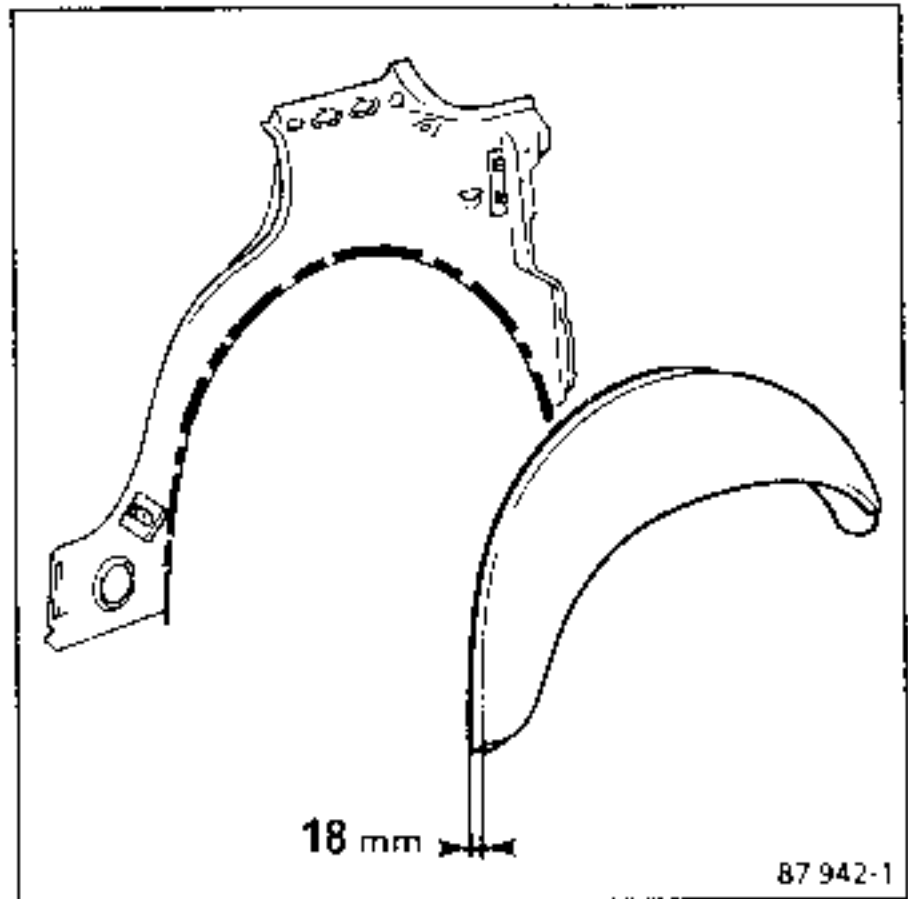


Preparing the new wheel arch recess:

Cut the new part approximately 18 mm from the corner.

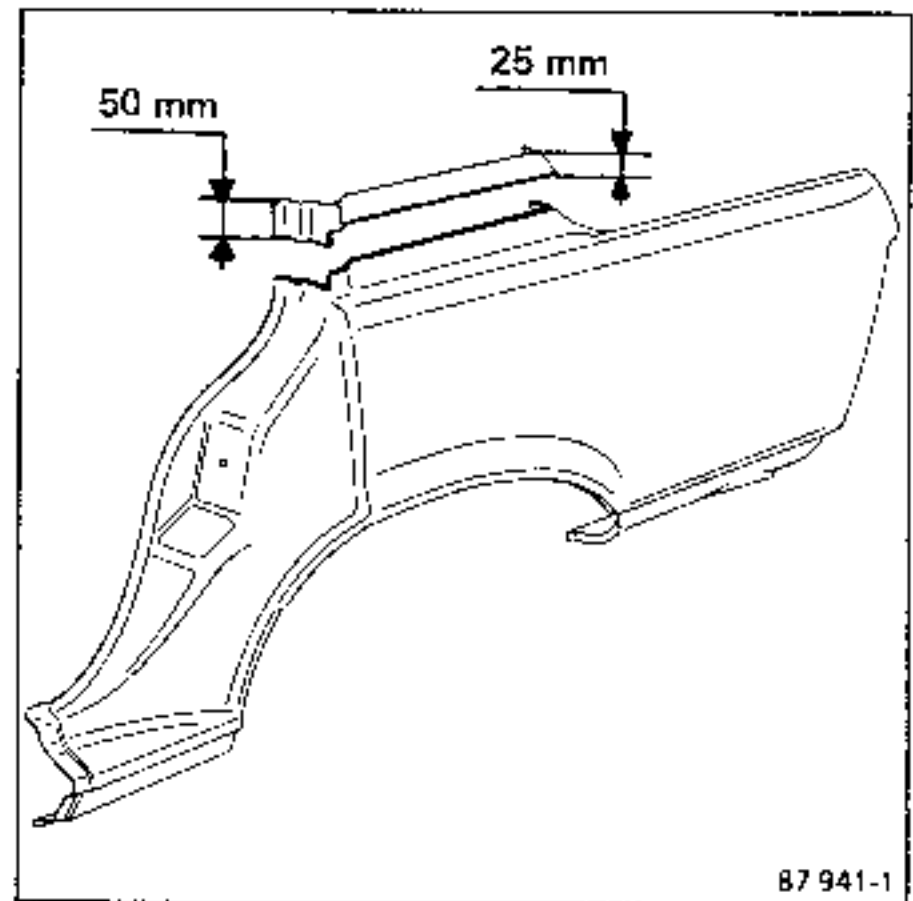
This edge will be plug welded.

- Coat with zinc paint the parts to be plug welded.



PREPARATION BEFORE WELDING

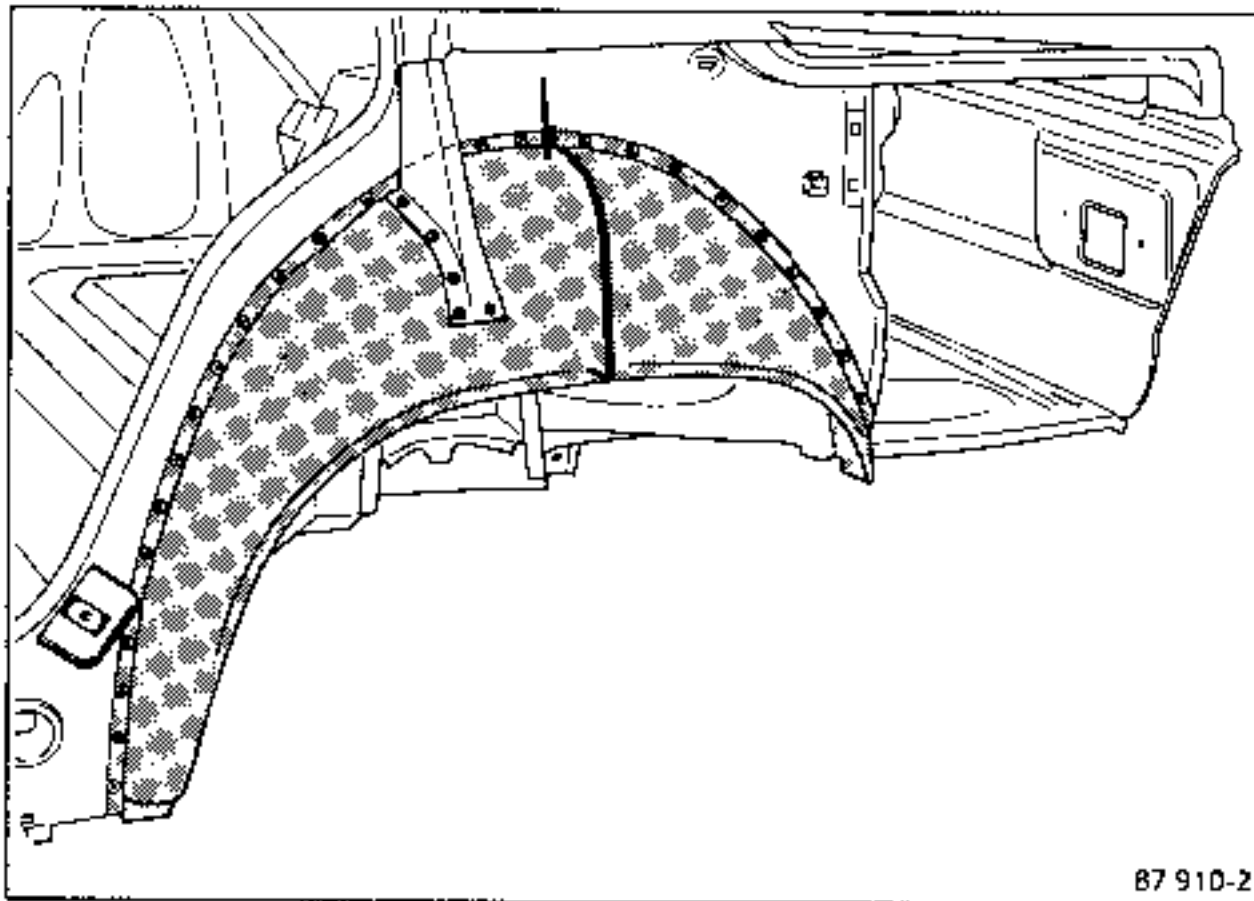
- Bare the interior and exterior surfaces of all the zones to be welded (on the vehicle and on new parts).
- Coat the parts to be spot welded with a bead of electroplastic mastic (see list of symbols at beginning of chapter).
- Coat with zinc paint the parts to be plug welded.
- Adjust the new part, then secure it using a vice clamp.



87 941-1

Preparing the panel

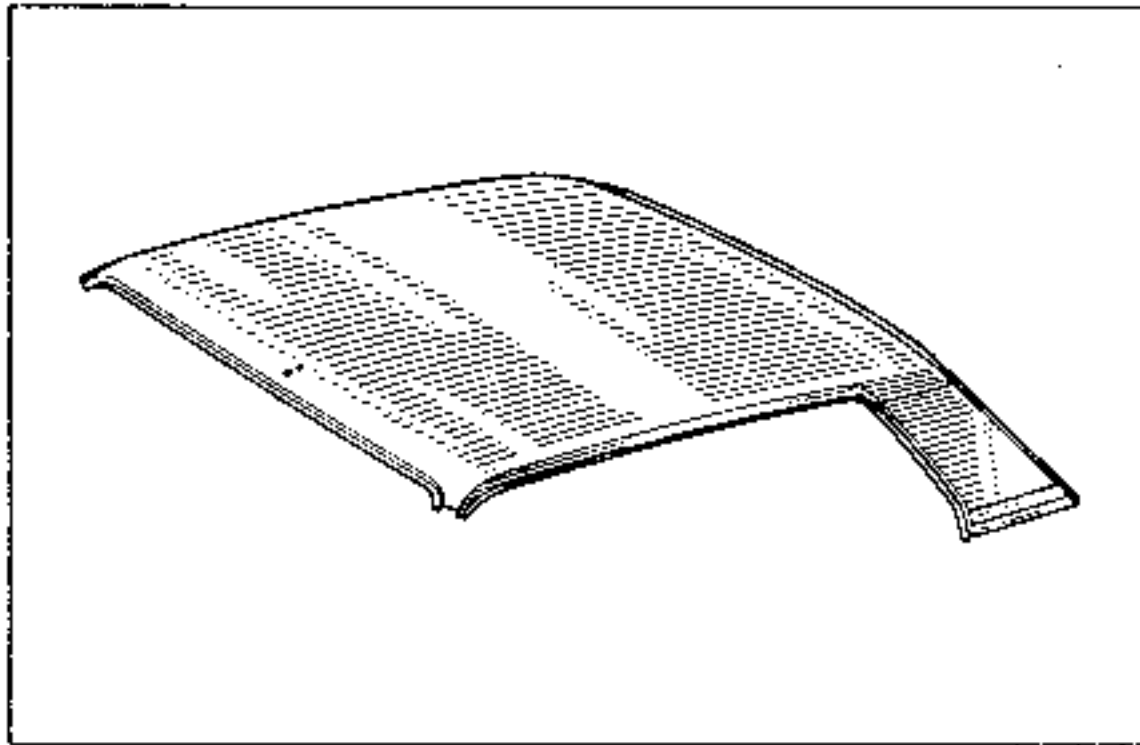
WELDING



87 910-2

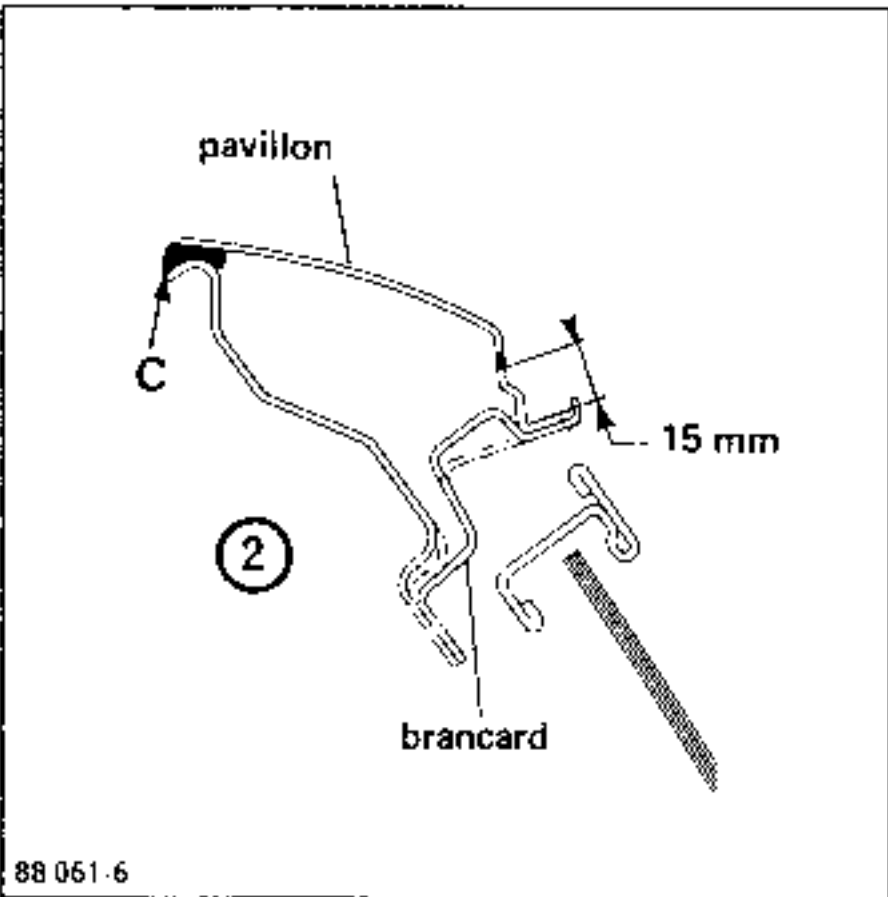
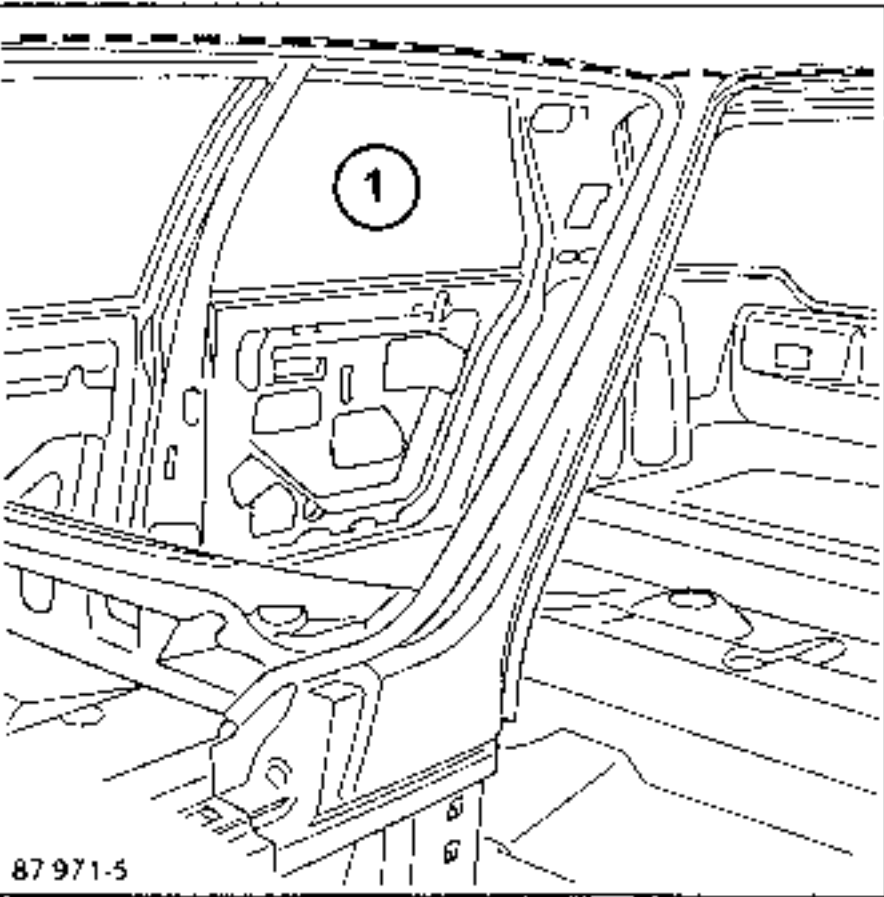
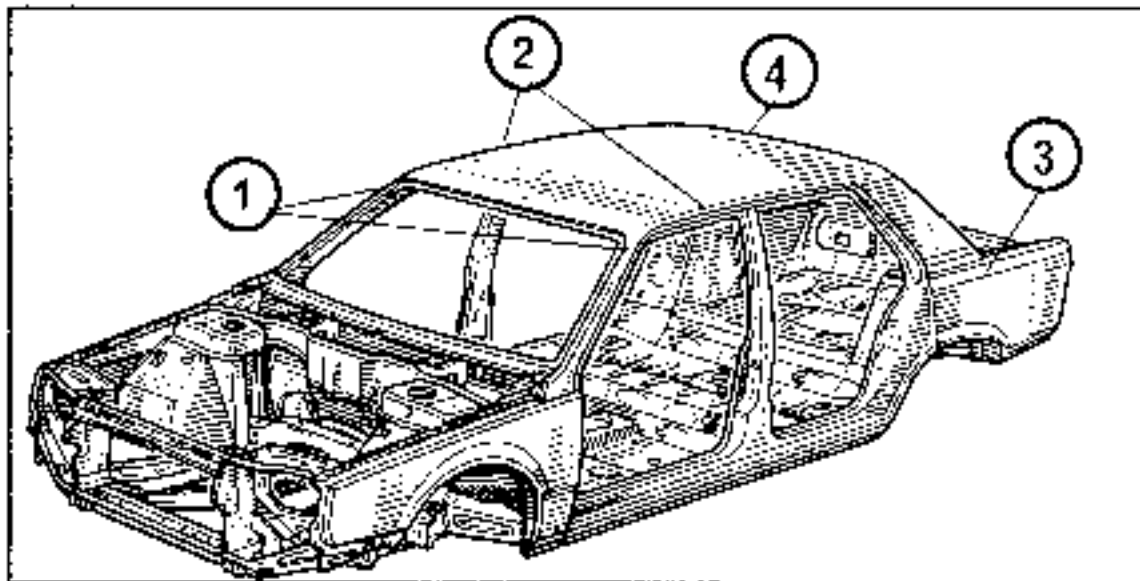


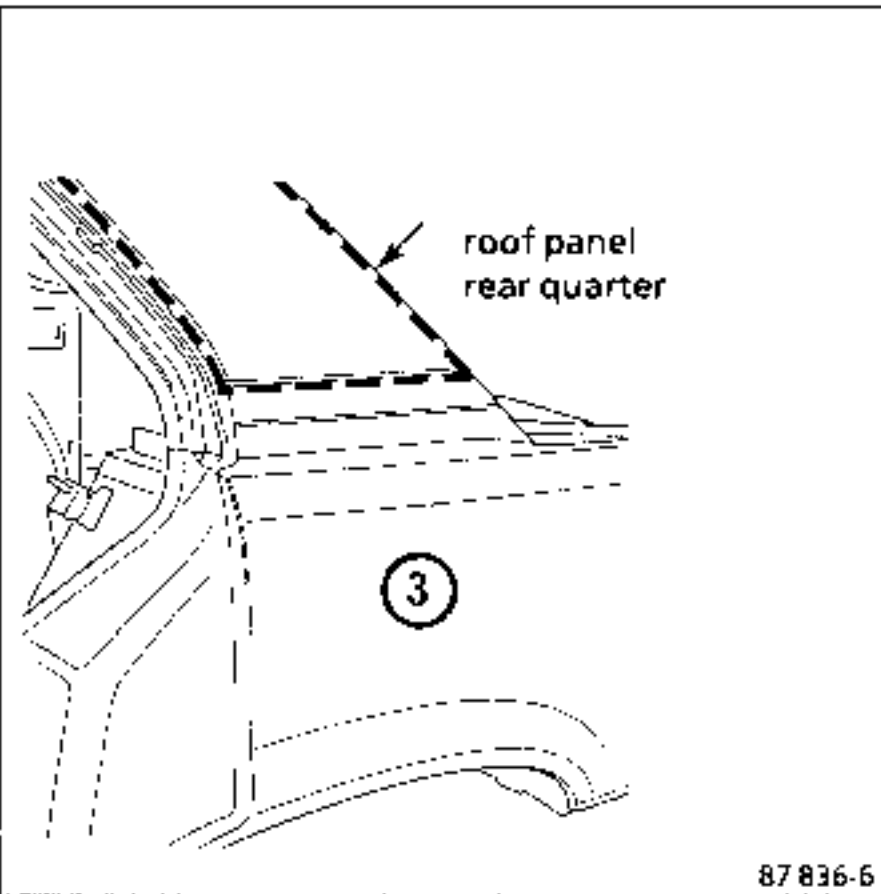
- Plug weld under protective gas. To do this, drill the first panel to diameter $D = 5\text{ mm}$.



The replacement roof panel is supplied with welded side rain channels and rear quarter panels.
The roof panel can be more easily replaced if the side rain channels are unsoldered.

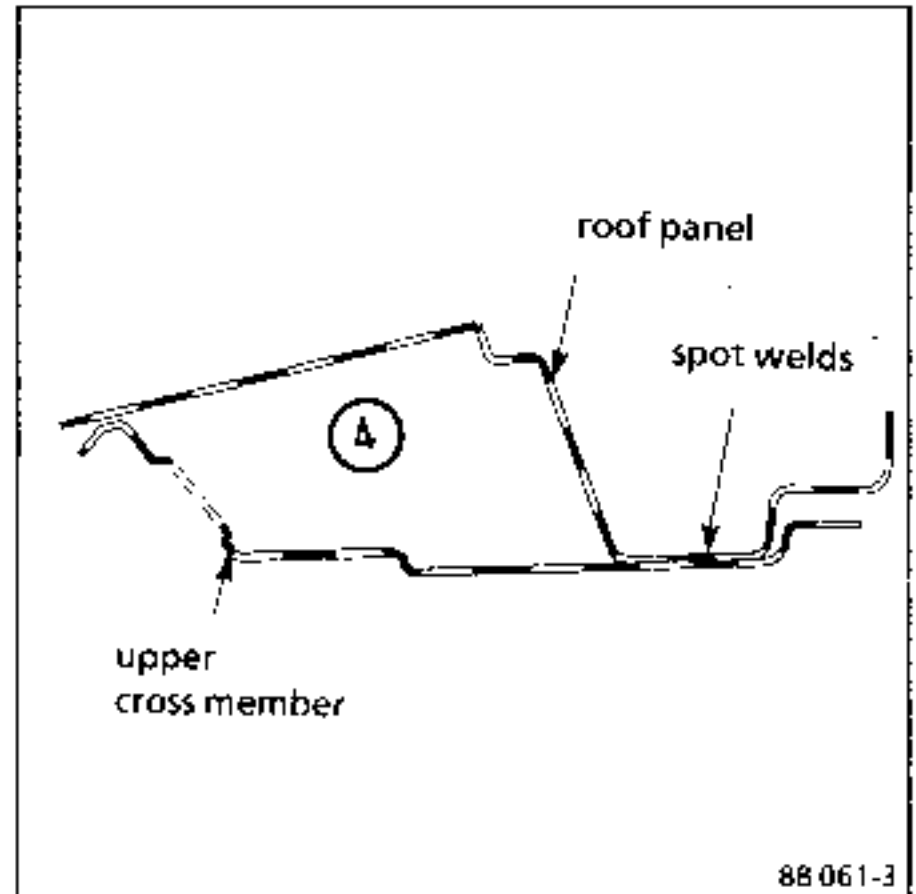
CUTTING





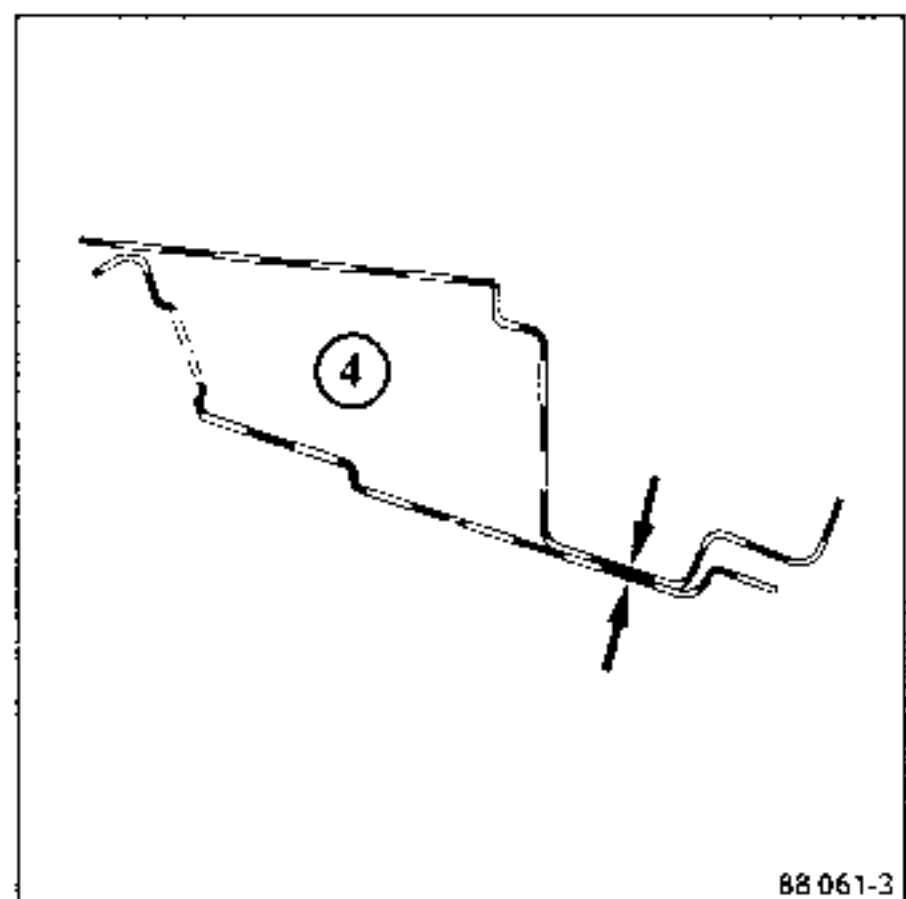
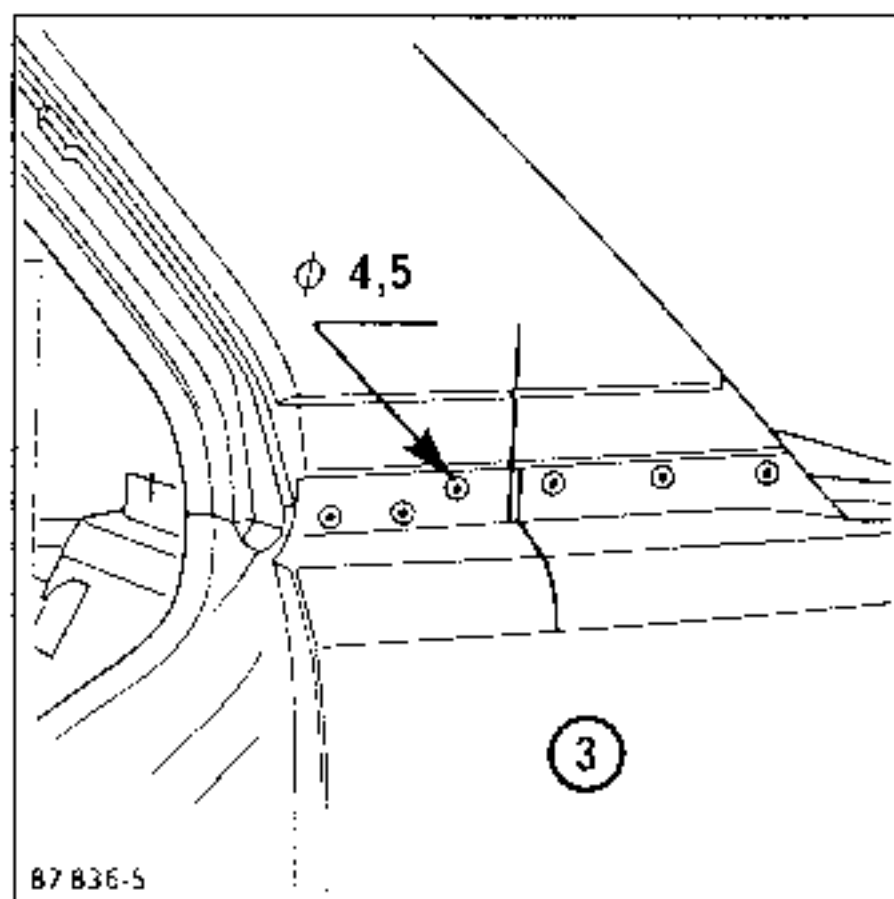
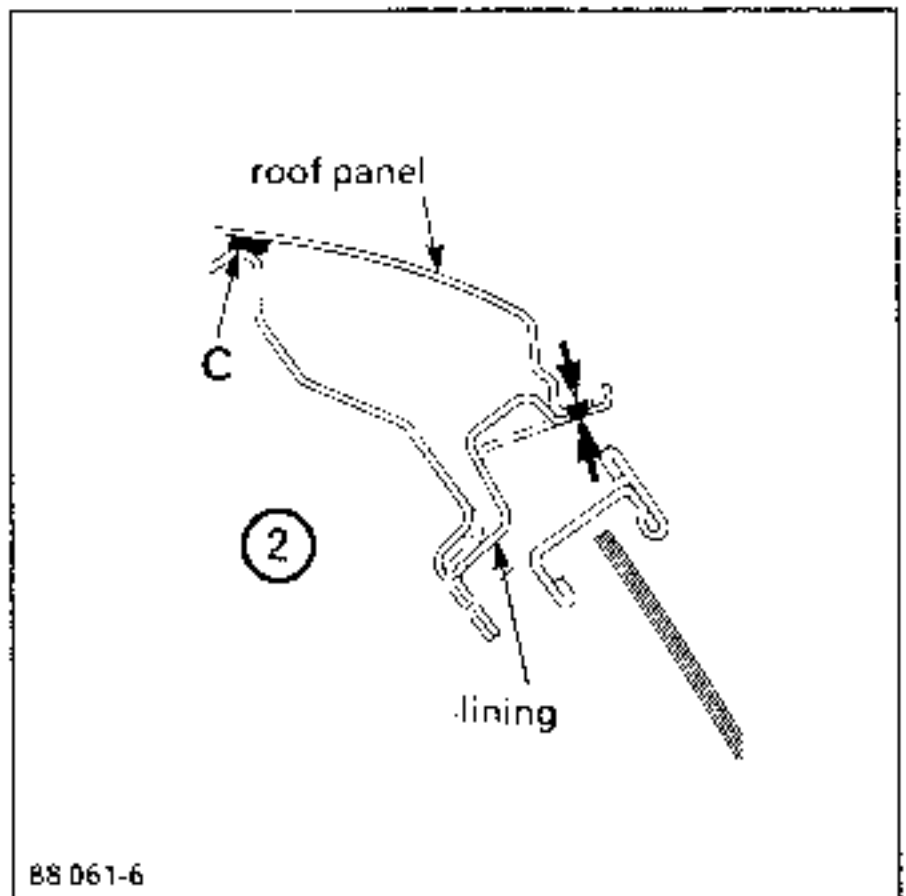
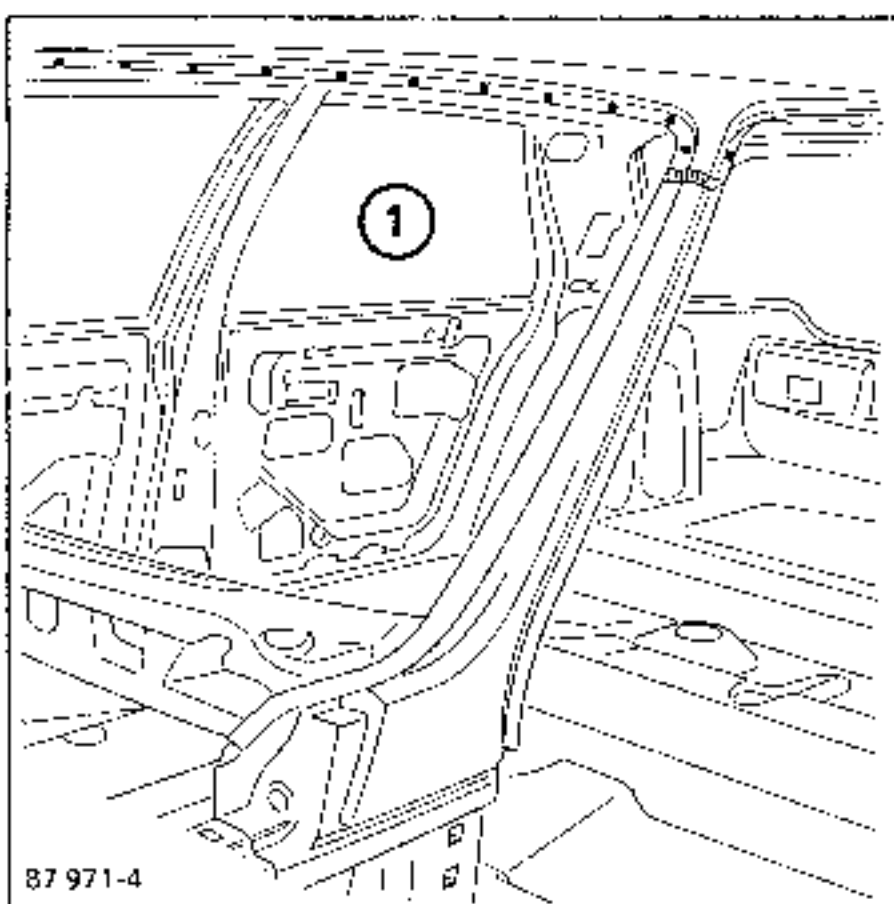
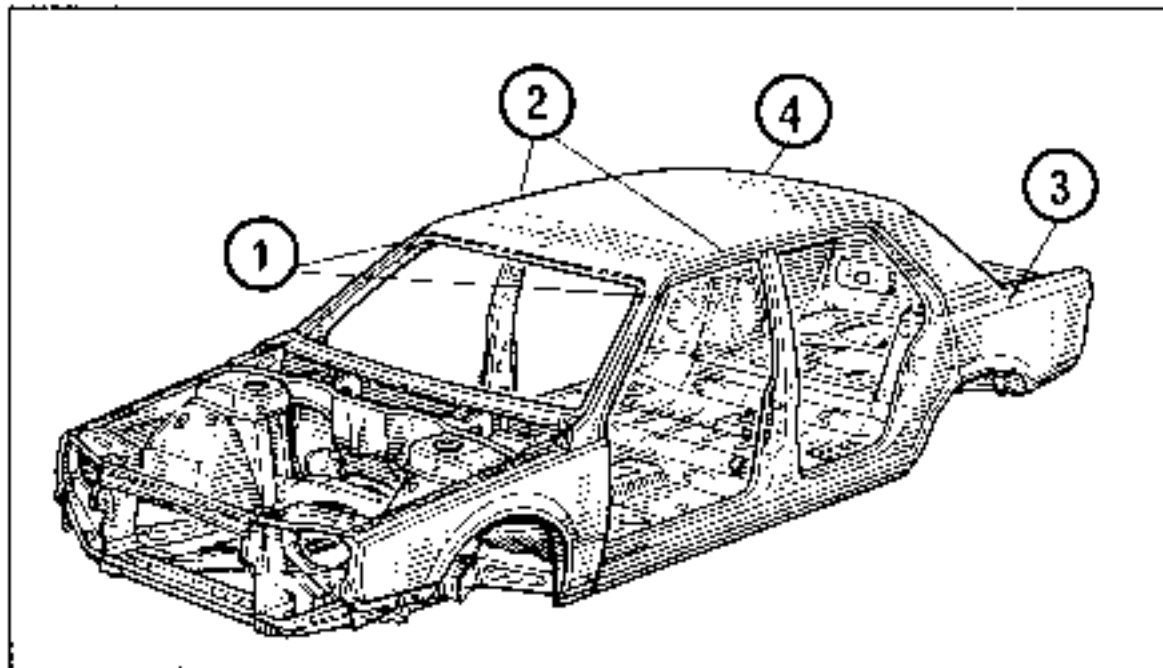
Chisel the following connections:

- ① In the angle:
 - Roof panel - upper cross member
 - Roof panel - upper corner.
- ② 15 mm above the rain channel so as not to damage the lining.
 - Roof panel - lining.
 - Roof rear quarter panel - lining.



- ③ In the upper rib angle:
 - Roof panel - side rain channels.
- ④ Grind back the weld spots at the following connections:
 - Roof panel - upper rain channels;
 - Roof panel - side rain channel upper end;
 - Tailgate mounting unit - upper cross member.

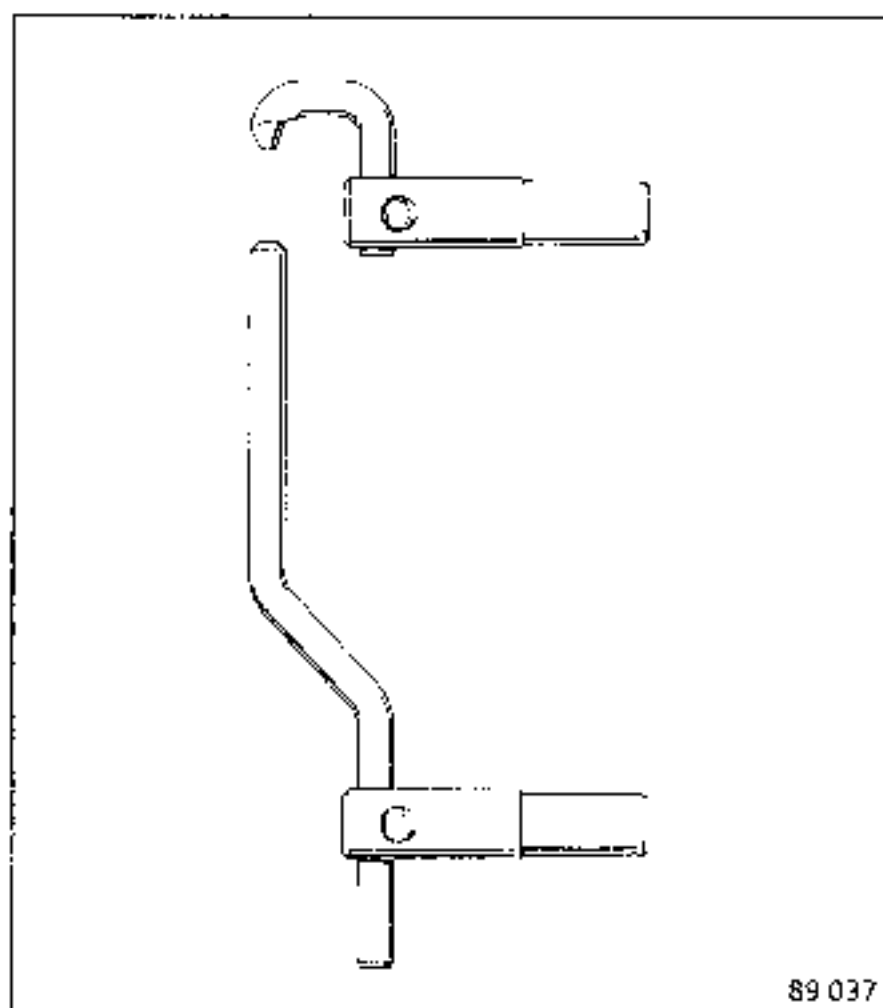
After carrying out the operations described above, remove the roof panel by heating the periphery of the bonded parts (C) and at the same time pushing from inside the vehicle.



WELDING

To enable the roof panel to be welded to the side rain channels, welding tips will have to be fitted; see drawing below.

This fitting can only be carried out using an assortment of ARO welding tips.



Weld at the connections:

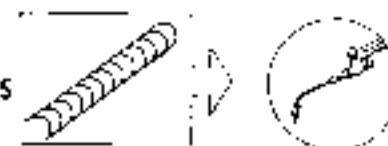
Spot welding



- ① Roof panel - front upper cross member
- ② Roof panel - side rain channels.
- ④ Roof panel - rear upper cross member.

Brazing

The two roof panel front corners



Plug welding



- ③ Roof panel - rear wing panels
- Roof panel - side rain channels.

NOTE:

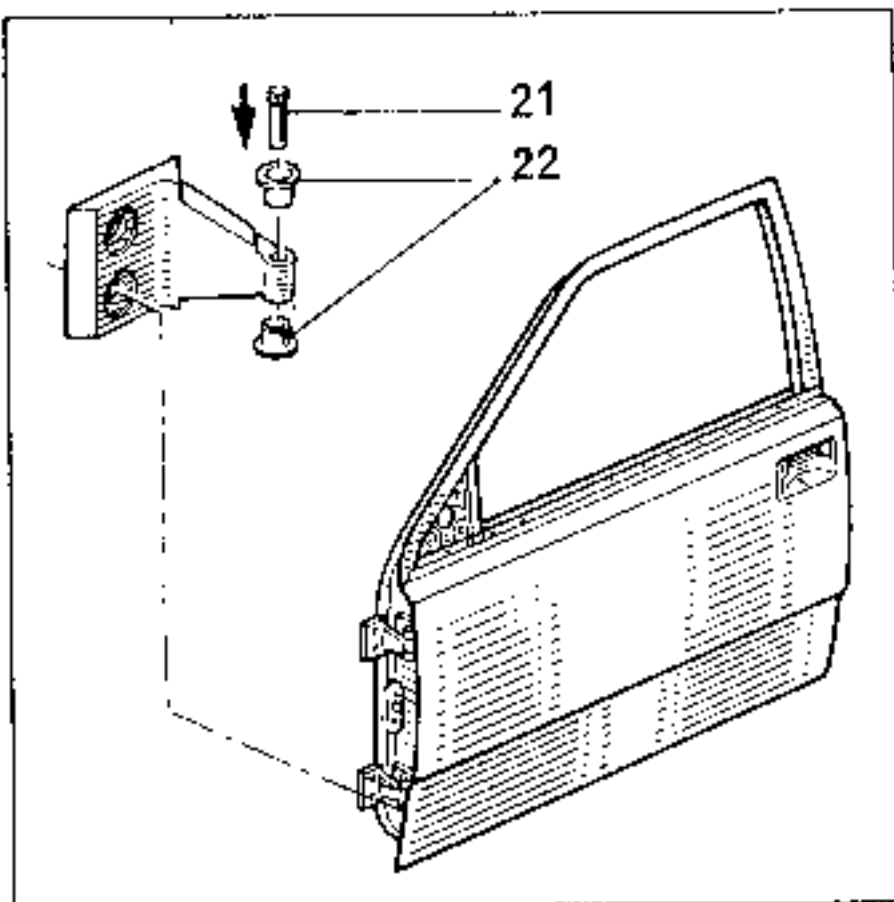
It is essential to apply the bonding mastic between the roof panel and the cross members, roof panel section and side members.

Use paint ranges n° 3 and n° 5 (see MR 250).

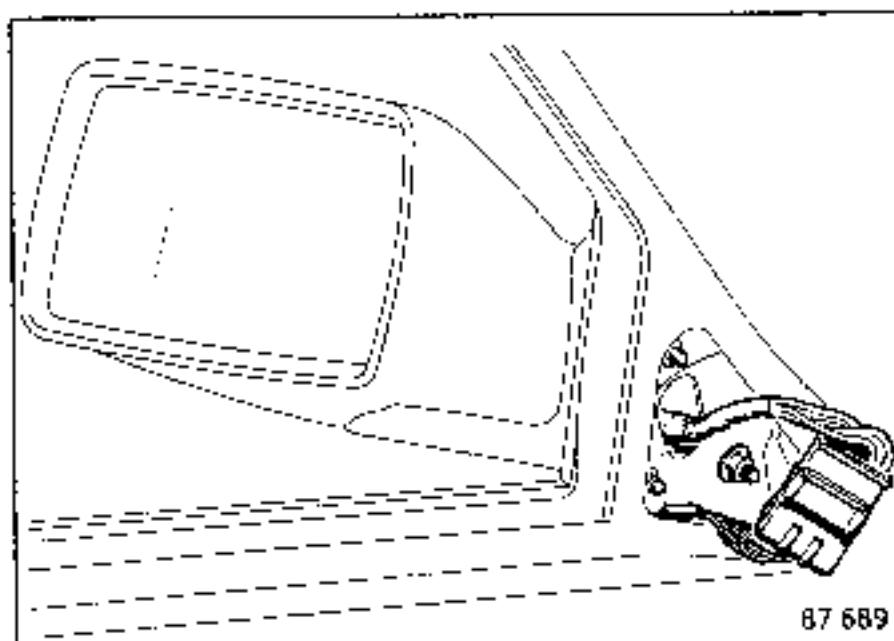
After painting and before retrimming, inject with hollow section wax.

IMPORTANT NOTE:

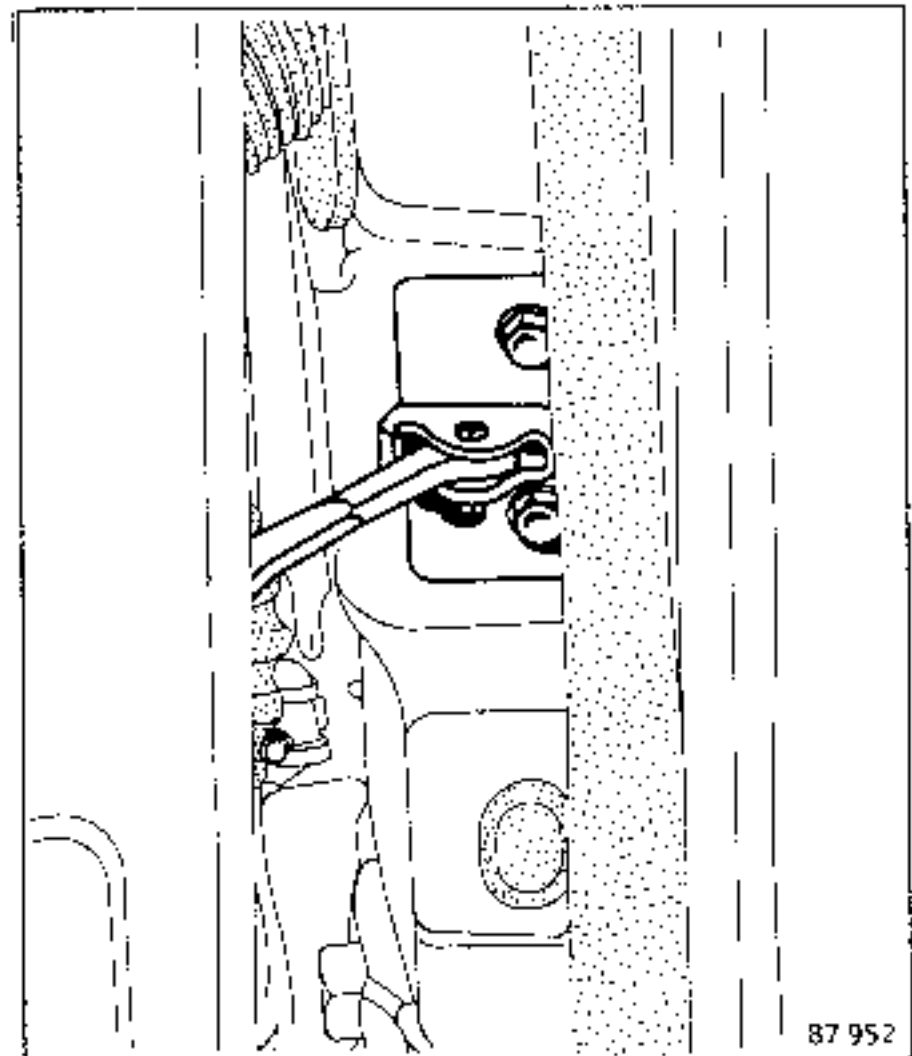
The doors of this vehicle are originally fitted with hinges bolted to the body shell and welded to the door assembly. The hinge pins are knurled and forced into self-lubricating collars. If the pins are removed they will be destroyed, as will the collars. You are therefore strongly advised not to remove them. Furthermore, doors ordered from the MPR will be delivered with hinge assemblies welded to the door unit. Pins should only be removed if there is a particular problem with the hinge. The pin (21) and the two collars (22) must then be replaced.



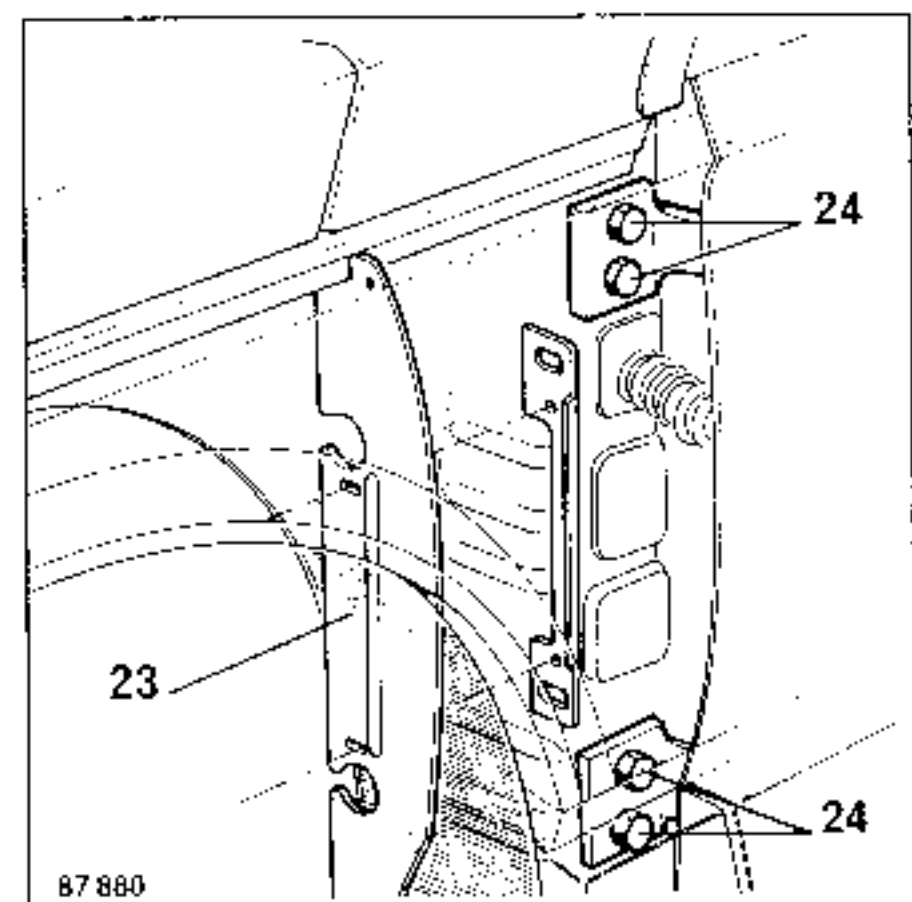
- When refitting the pin (21), fit its non-knurled end into the hinge.



Remove the exterior rear view mirror and remove the trim from the door (see relevant chapters).



Remove the 2 door check strap fixing bolts from the front pillar.

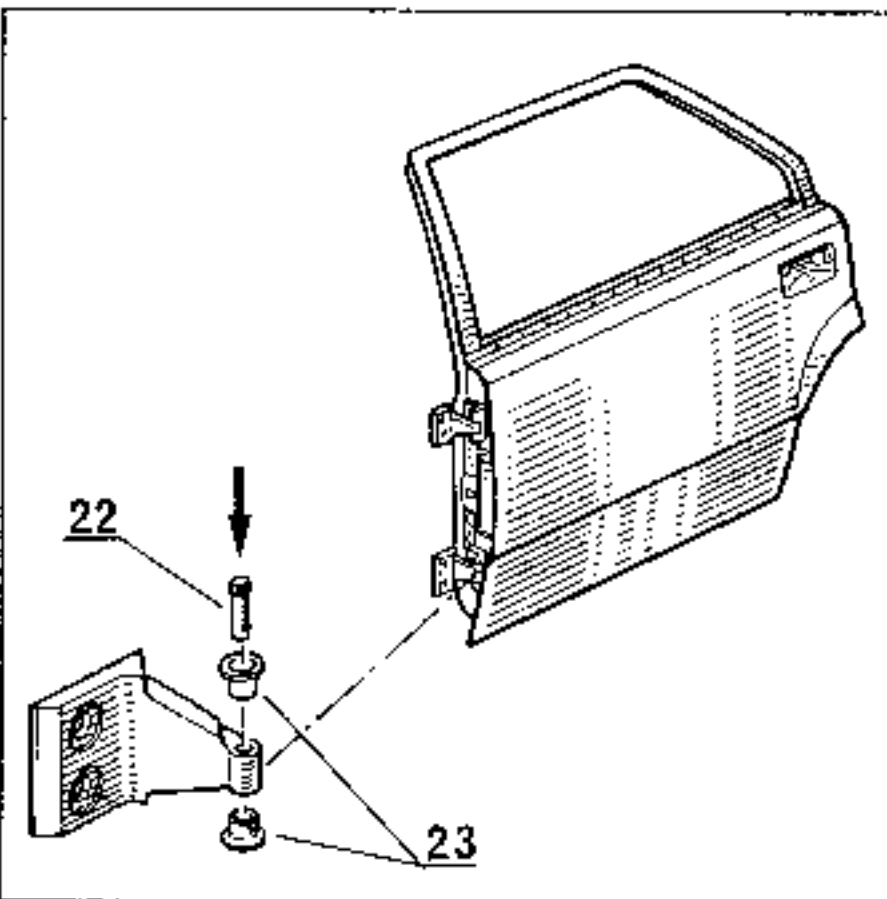


After removing the wheel arch protector, remove the steel mud deflection panel (23) and take it out without removing the 2 wing mountings.

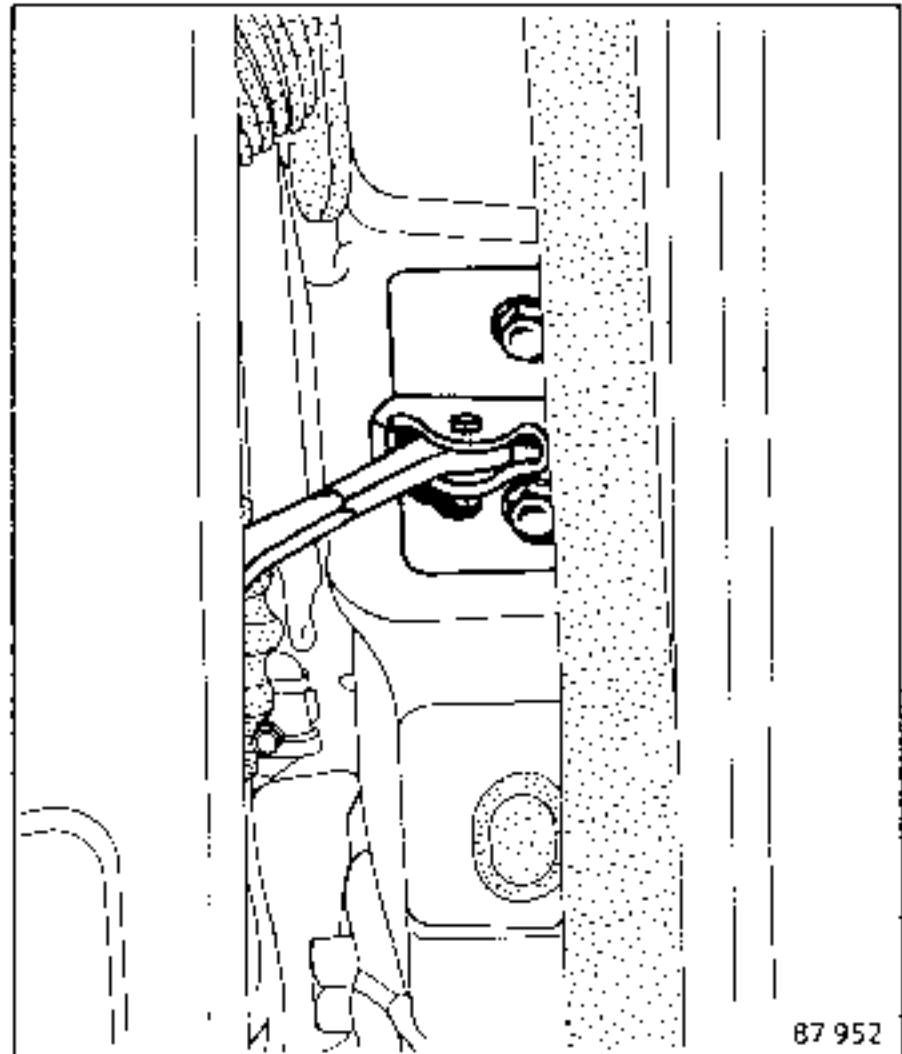
Remove the 4 hinge fixing bolts (24) from inside the wing.

IMPORTANT NOTE:

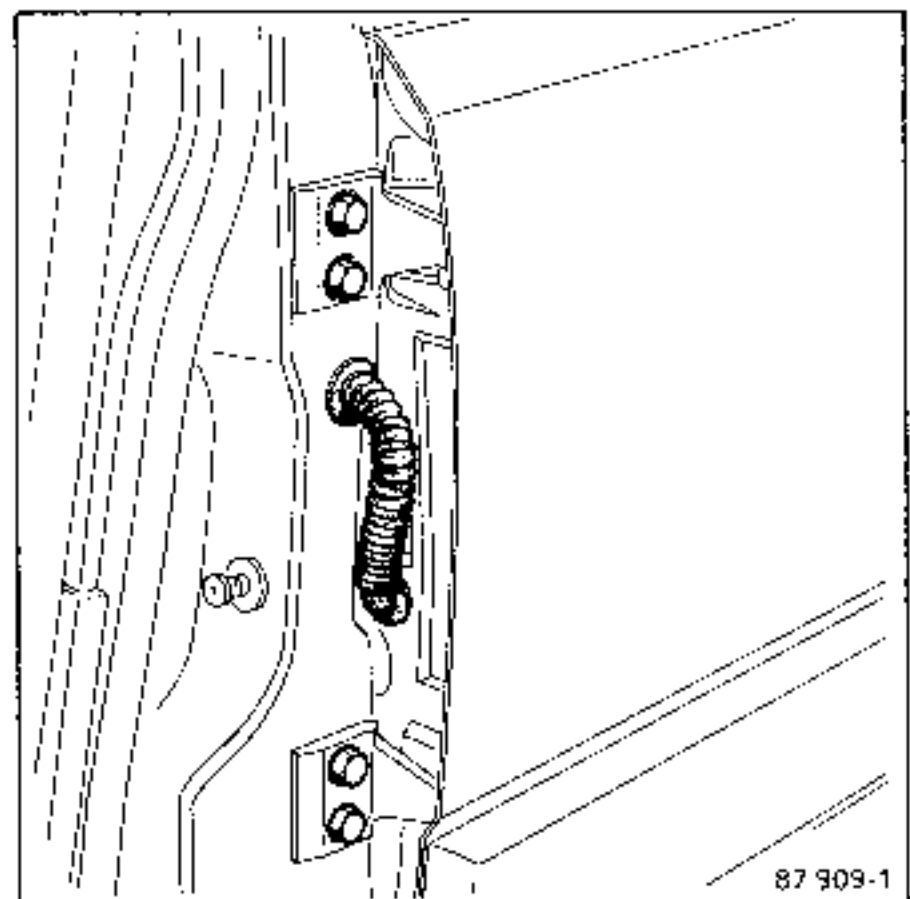
The doors of this vehicle are originally fitted with hinges bolted to the body shell and welded to the door assembly. The hinge pins are knurled and forced into self-lubricating collars. If the pins are removed they will be destroyed, as will the collars. You are therefore strongly advised not to remove them. Furthermore, doors ordered from the MPR will be delivered with hinge assemblies welded to the door unit. Pins should only be removed if there is a particular problem with the hinge. The pin (22) and the two collars (23) must then be replaced.



- When refitting the pin (22), fit its non-knurled end into the hinge.

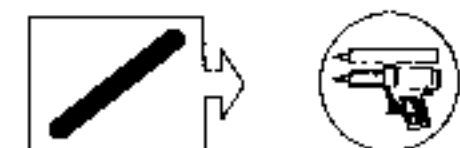
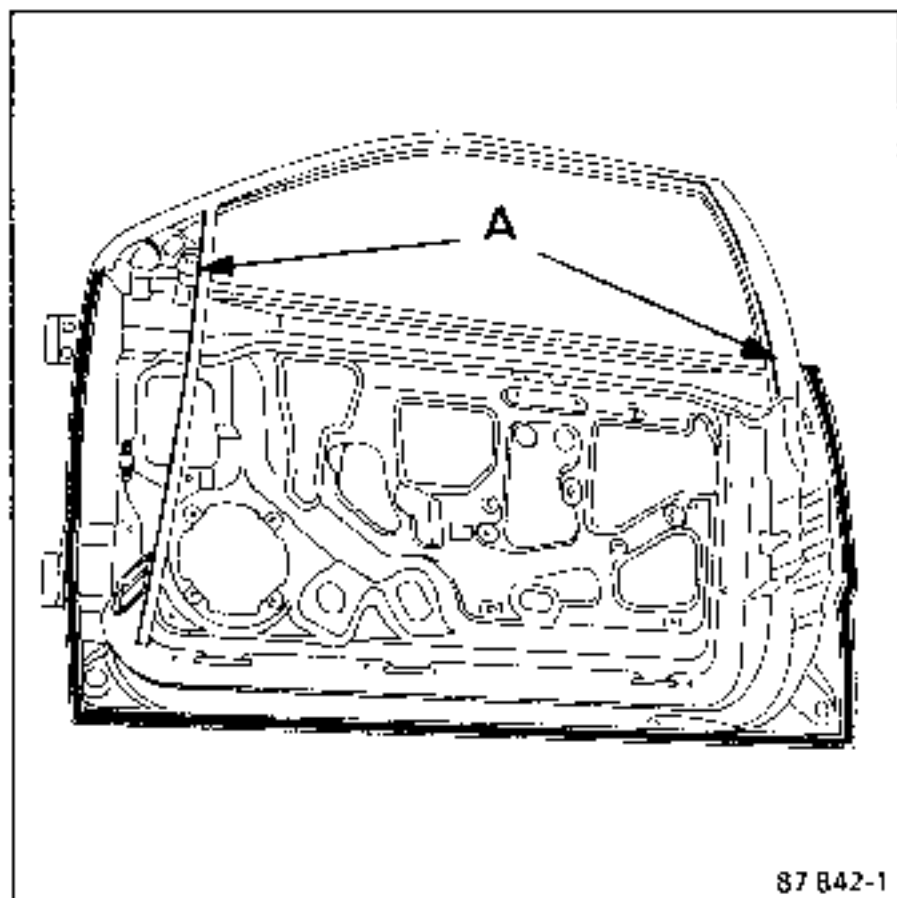
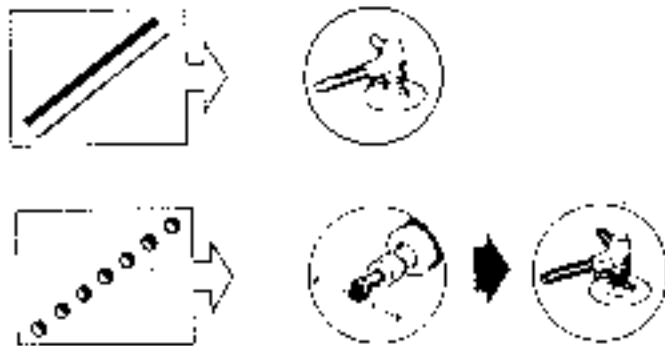
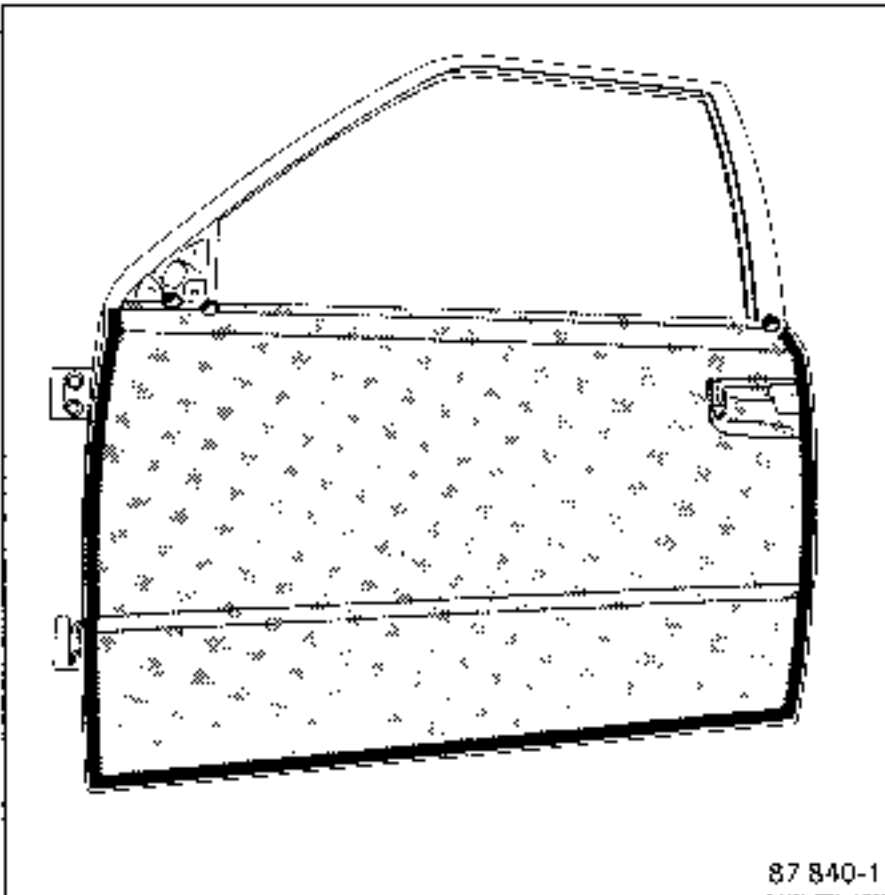


- Remove the 2 door check strap fixing bolts from the front pillar.

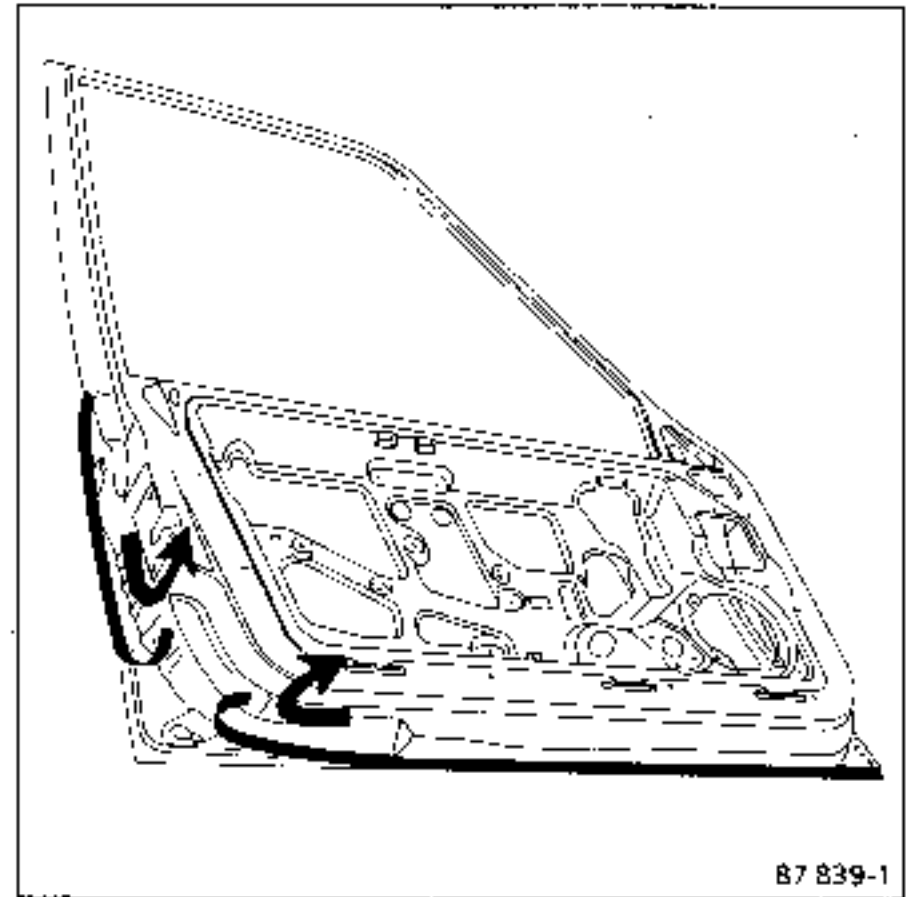


- Remove the 4 hinge fixing bolts.

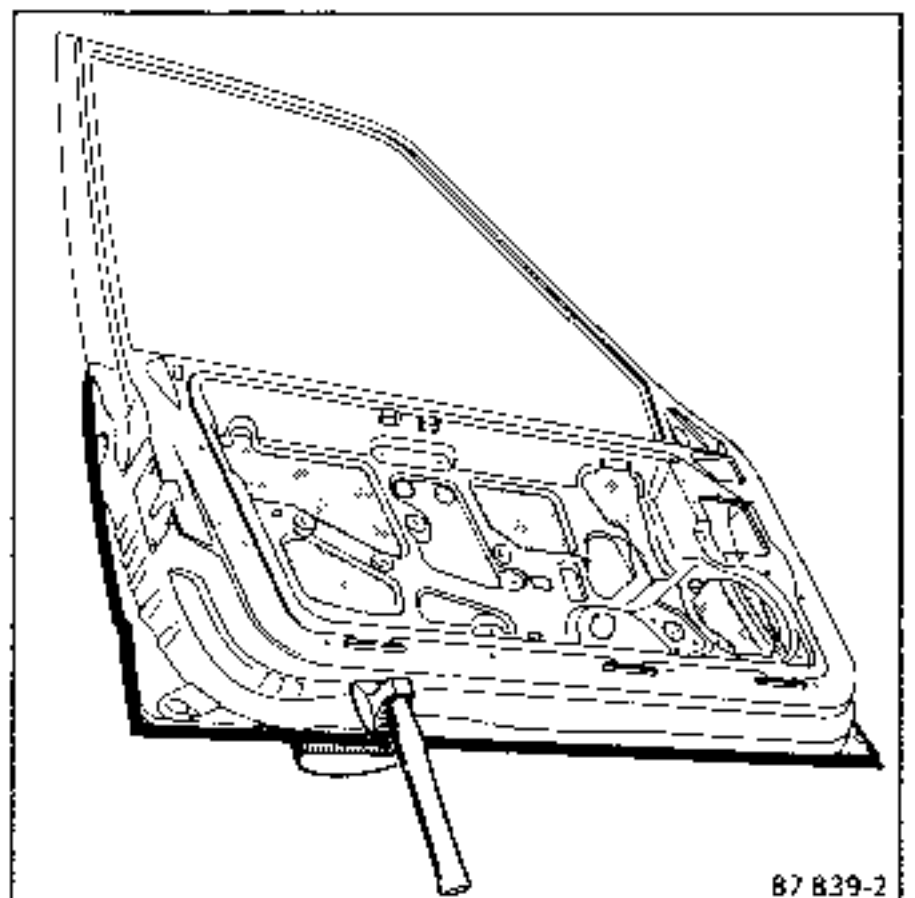
CUTTING - UNPICKING



Spray with ZINC at A.

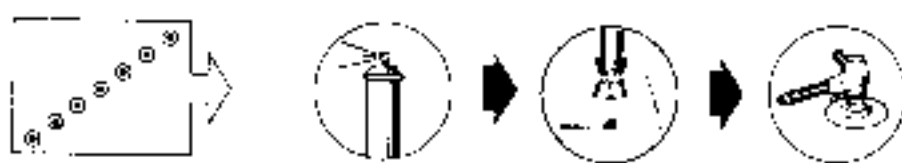
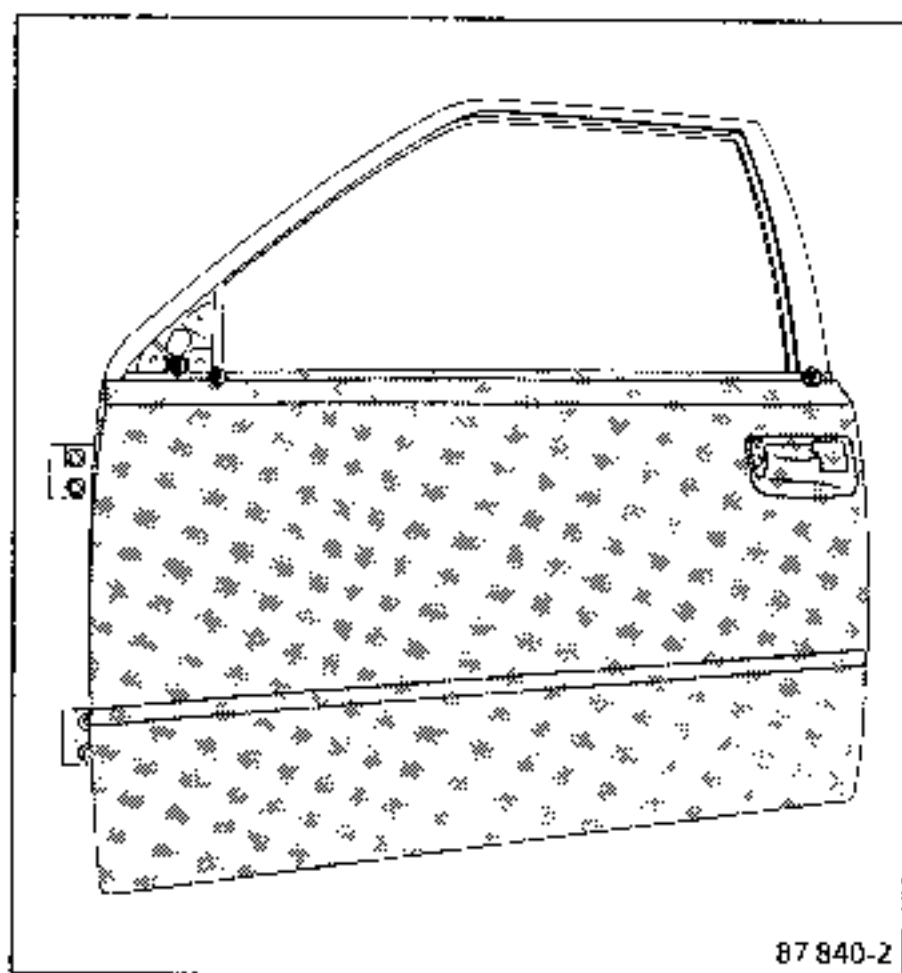


Remove the flange using pliers.



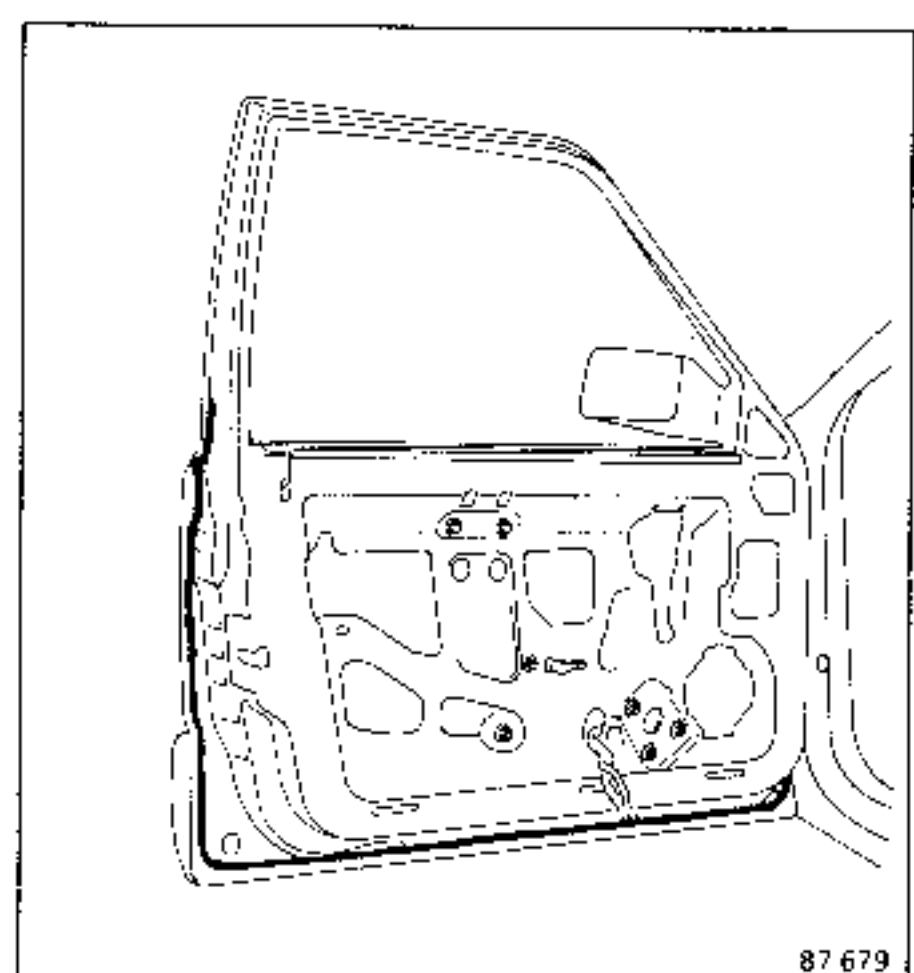
- Adjust the new part, then secure it using a vice clamp.

Gradually planish the panel around its periphery.



D = 4.5 mm

- Plug weld under protective gas. To do this, drill the first panel to diameter D given under the drawings.



PAINTING

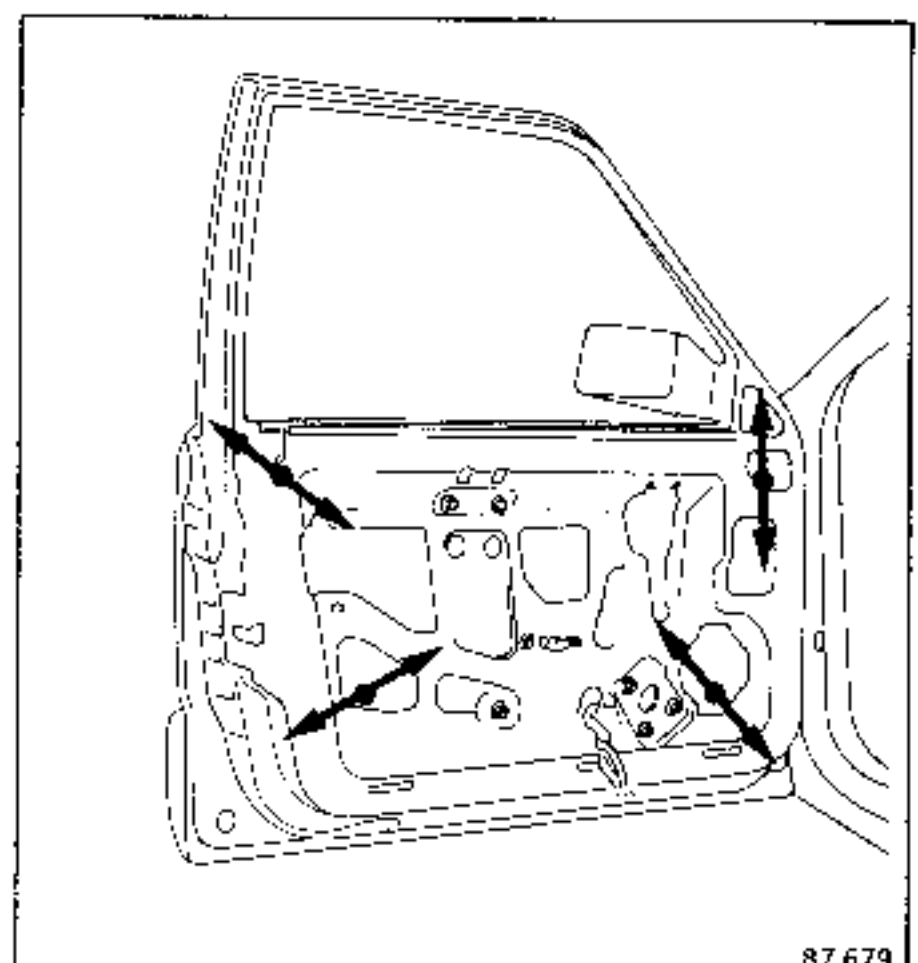
Use paint application range n° 1 (see Paintwork chapter).

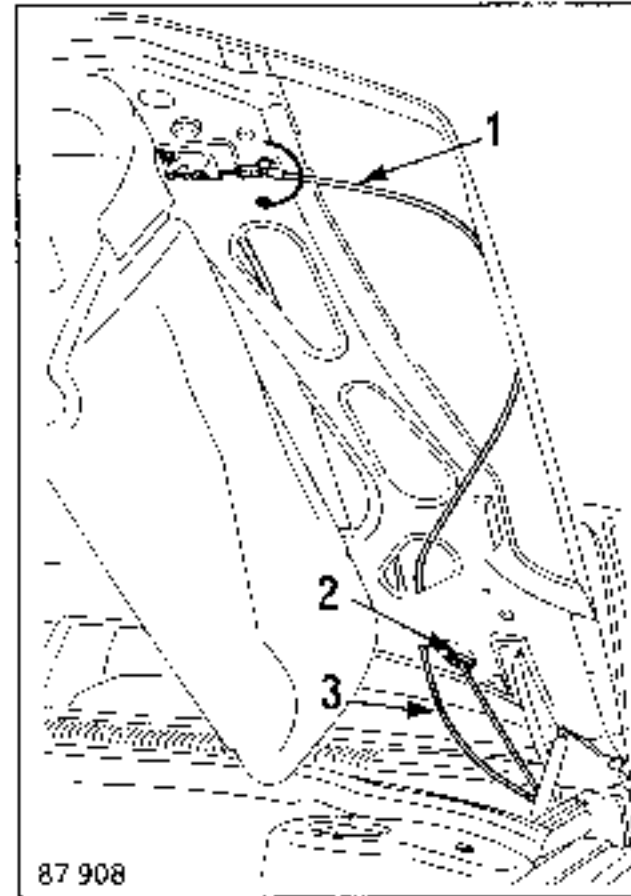
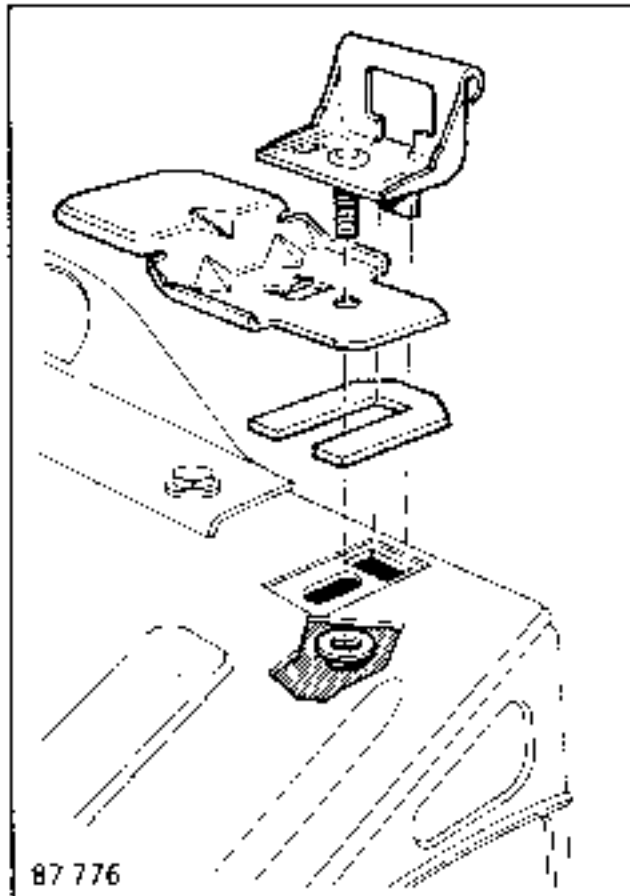
REFITTING THE DOOR BEFORE EXTERIOR PAINTWORK

Since the hinges of this vehicle are bolted, their flushness is adjusted using shims, and the frame adjusted using the clearances provided on the hinge mountings.



After painting and before retrimming, treat with hollow section wax.

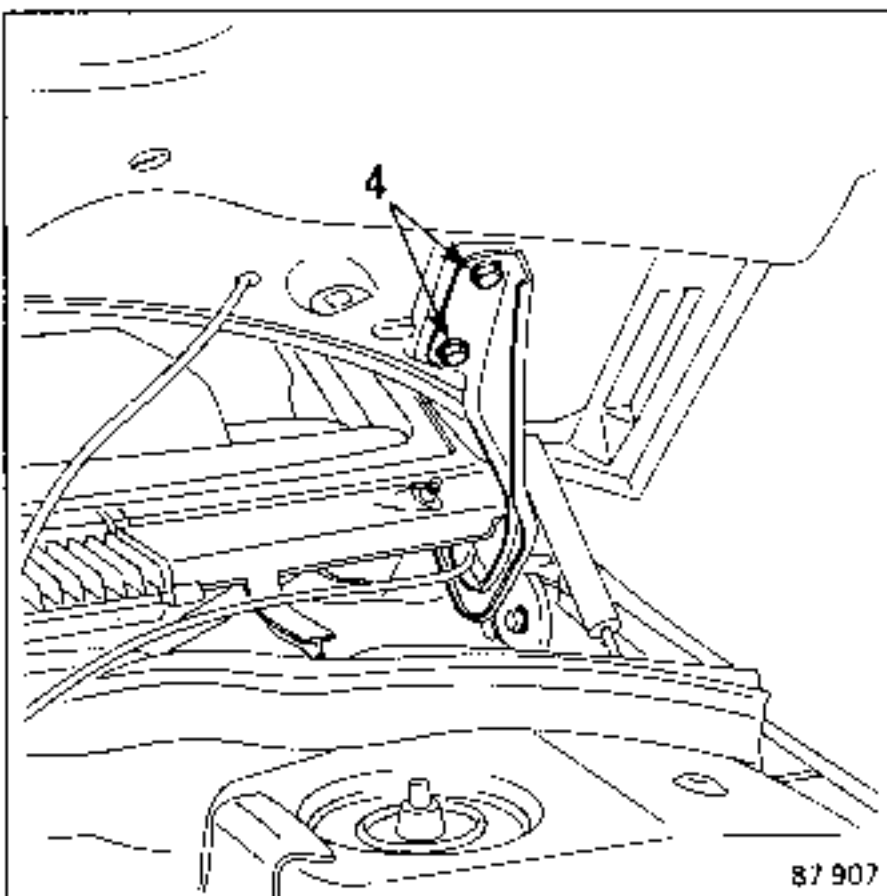


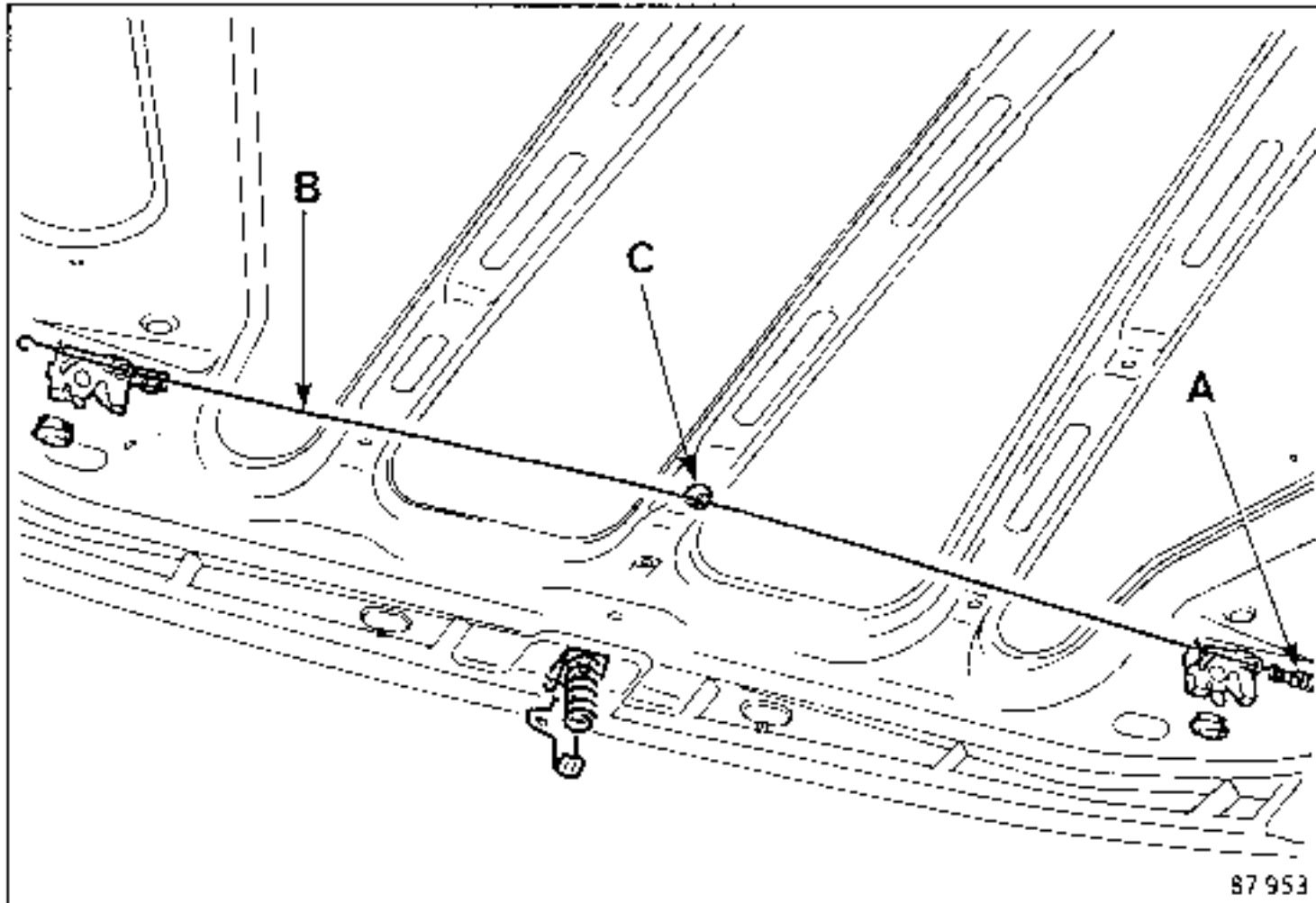


NOTE:

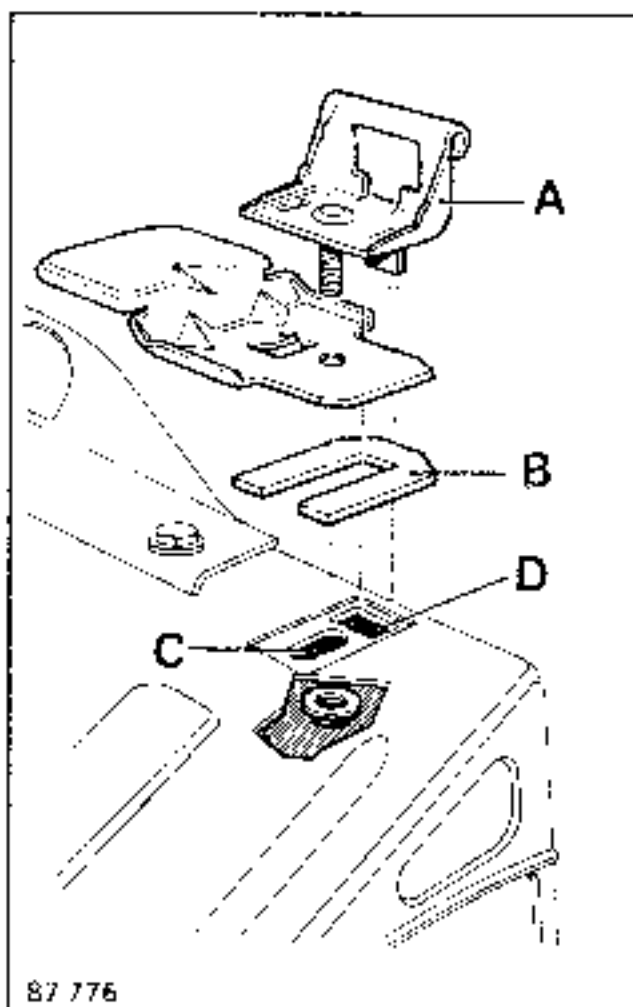
- If you cannot open the bonnet normally as the result of an impact or because the control cable is broken, remove the fixing nut from each striker under the headlight support panel, reaching it from under the vehicle.

- After opening, remove the felt insulation, depending on version, from the left.
- Unclip the opener cable (1) as shown, and remove it through aperture (2).
- Disconnect the locking warning light power supply cable (3).
- Remove the 4 bonnet fixing bolts (4) from the brackets.
- This operation does not involve removing the pneumatic equalisers





- Remove the felt insulation.
- Remove the spring (A).
- Unclip the rod (B) from the clip (C).
- Remove the 2 left and right-hand lock fixing bolts and take them out using the rod.
- Remove the 2 lock contacts and take out the power supply cable (1 cable for both contacts).
- Remove the safety locking catch.
- Unclip the various blanking covers and clips, noting their positions.



- The left and right-hand strikers are made of three parts which are identical on each side.
- Parts (A) and (B) are reversible and can therefore be interchanged from one side to the other.
- Transverse play is adjusted using slots (C) and (D).
- Height play is adjusted using shims (B).

Phase II vehicles

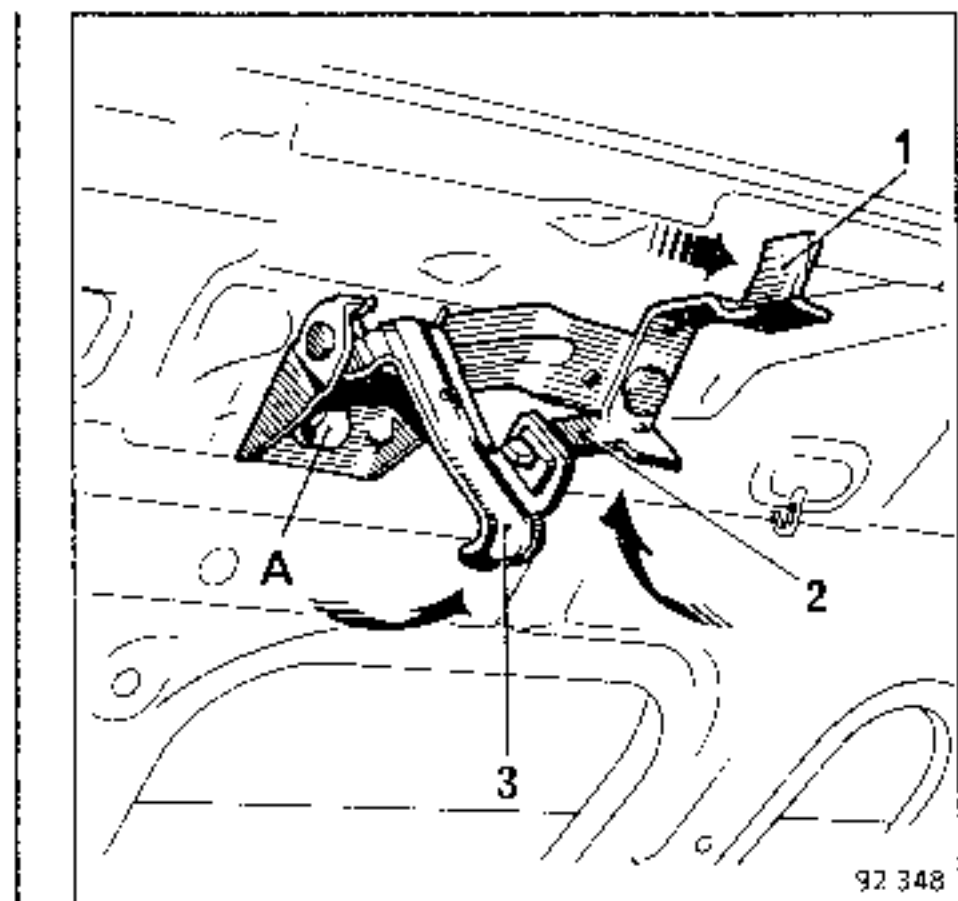
The bonnet is replaced and stripped in the same way as the method previously described.

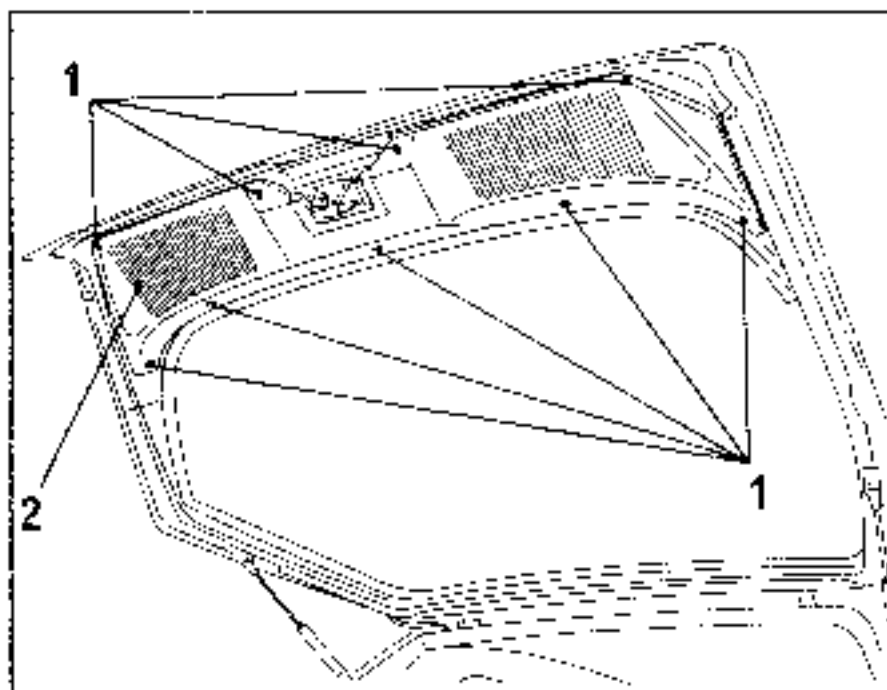
The difference lies in the safety catch, whose operating principle is given below.

- Remove the safety catch by removing bolt (A)

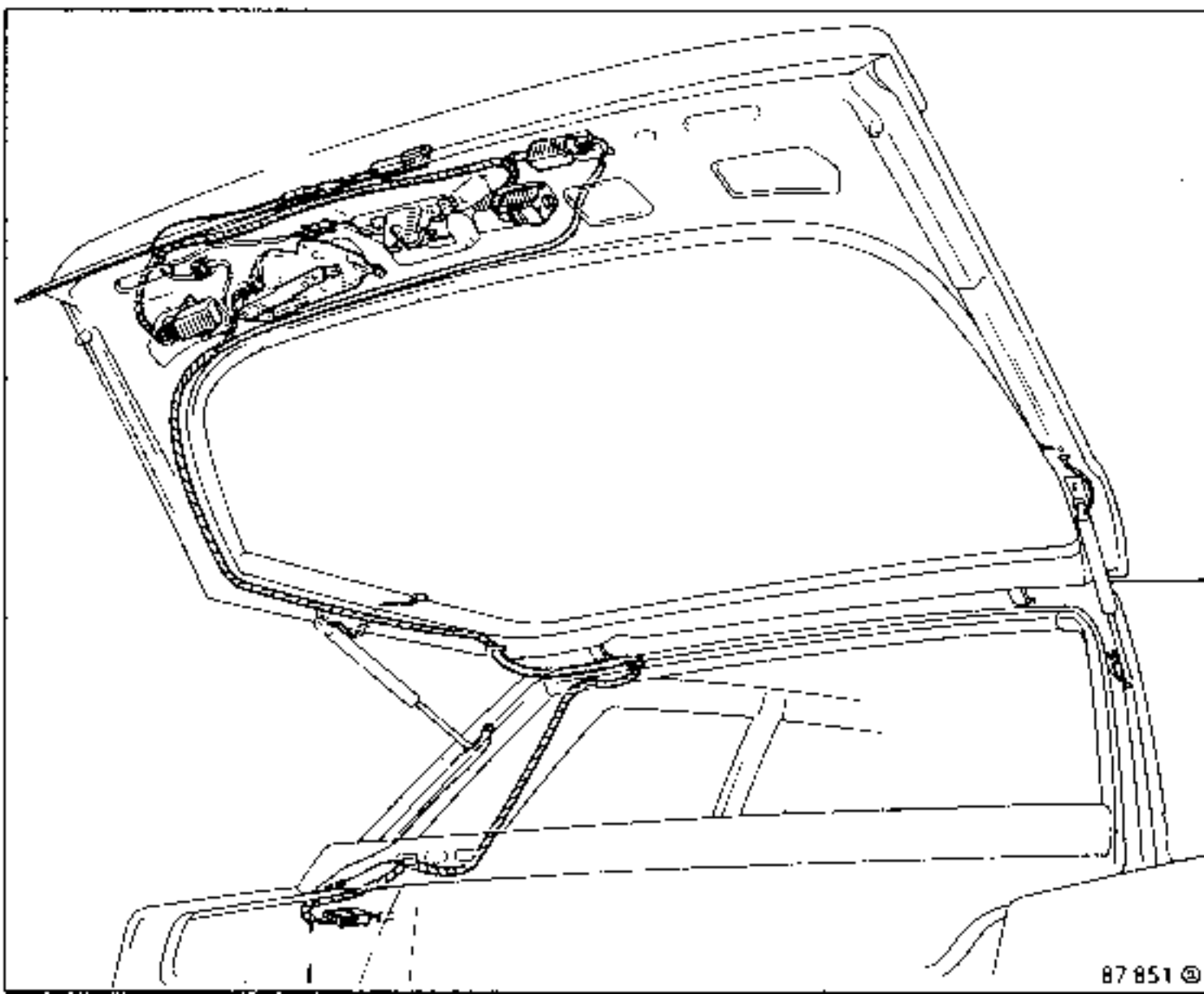
Operation:

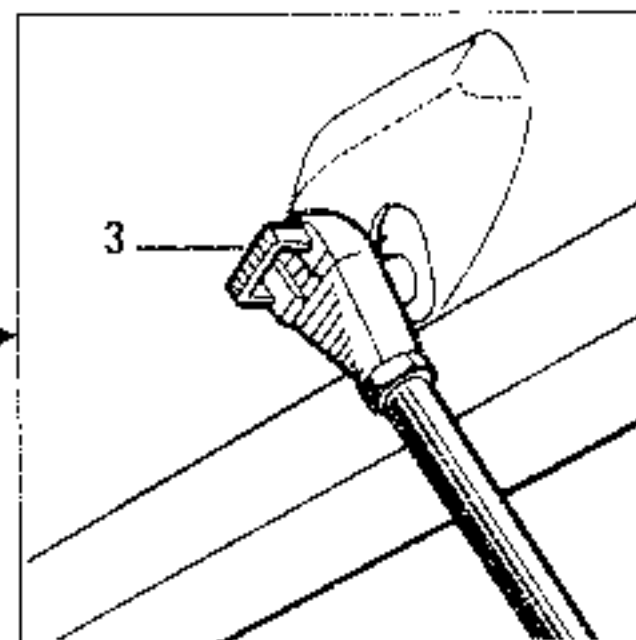
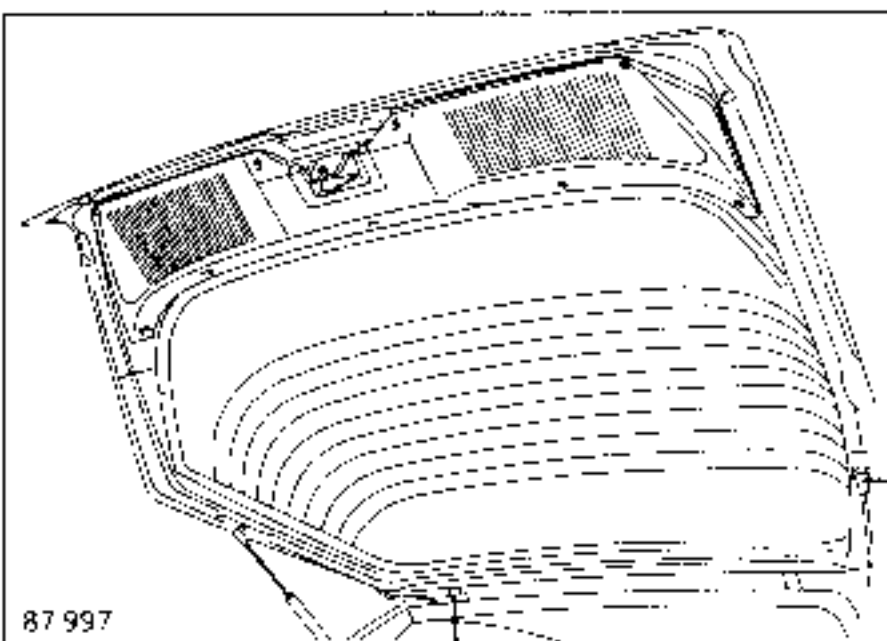
When lever (1) is moved sideways, latch (2) moves upwards, enabling the hook (3) to be unlocked from the upper radiator cross member.





- Remove the 9 trim (2) fixing bolts (1).
- Disconnect the electrical harness and remove it from the tailgate.





- Take out the two pneumatic equalisers.

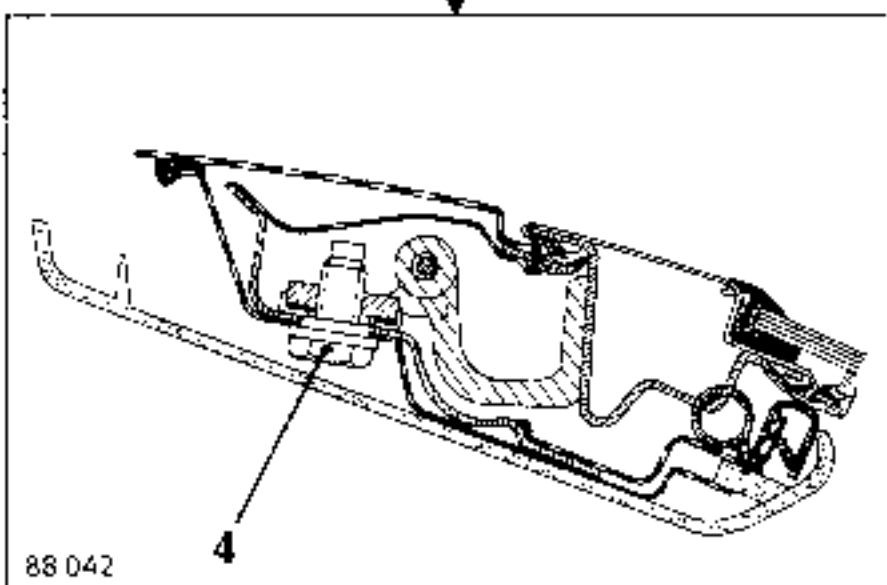
Using a screwdriver, lever up the tab (3) to release the balljoint.

Precautions to be taken with pneumatic equalisers.

The cylinder and, in particular, the piston rod must be protected from any potential damage and foreign bodies must not be allowed to enter (avoid scoring, dripping paint, allowing grease onto the piston rod) since this would damage the seal fairly rapidly.

The gas spring cannot withstand a temperature of 120 °C for more than 20 minutes. Precautions must be taken when using infra-red equipment and these cylinders should not be directly exposed to it.

The interior of the gas spring is under high pressure; you are therefore advised not to open these equalisers.



- Remove the 2 hinge fixing bolts (4).

PAINTWORK

Apply paint range n° 1 (see Paintwork chapter).

REFITTING THE TAILGATE BEFORE EXTERIOR PAINTING

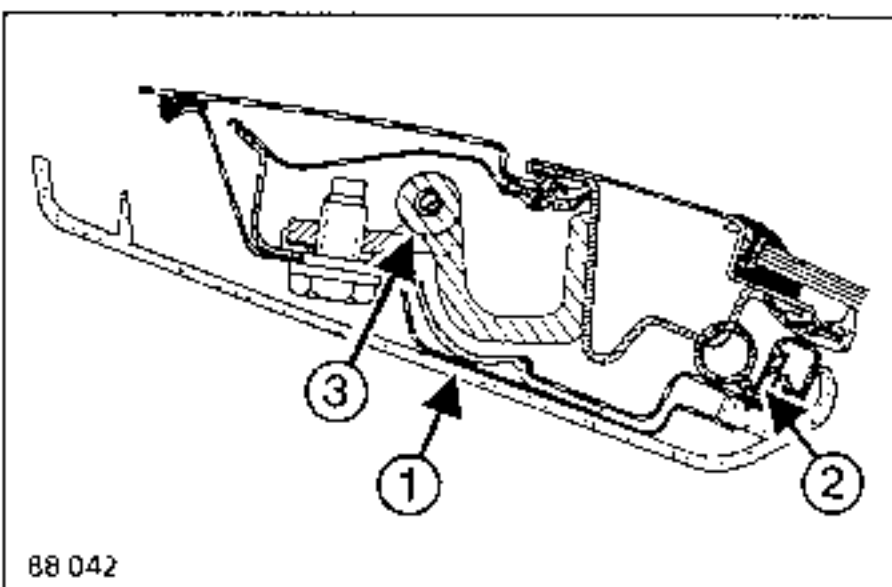
After painting and before retrimming, treat with hollow section wax.

SEIZURE OF TAILGATE HINGES

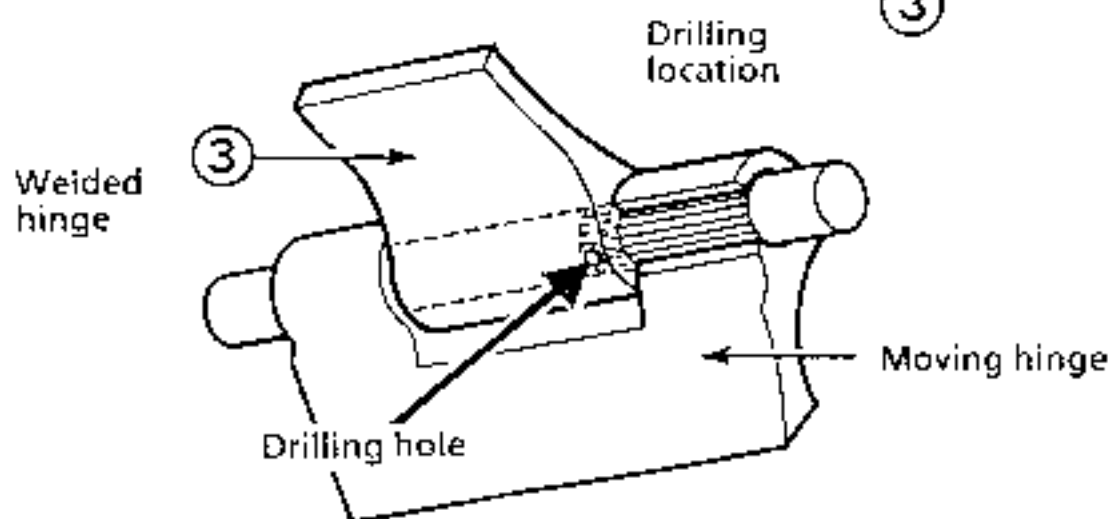
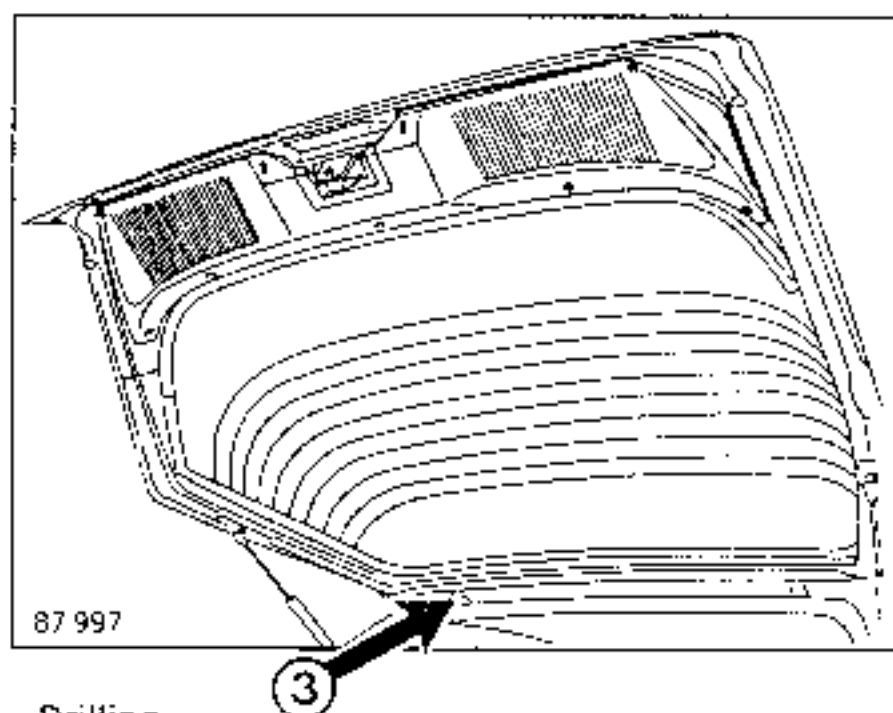
AFTER-SALES RECTIFICATION

I - SEIZURE DURING PRIMER PHASE

- Remove the roof panel rear cross member moulding ①.
- Remove the upper part of the snap-on clip ②.
- Drill a $\varnothing 2$ mm hole in the welded hinge ③ at the joint between the 2 hinges, on the grooved side, taking care not to drill the pin.



- Inject some penetrating oil;
 - move the tailgate,
 - inject some oil.
- Time required per hinge: 0.5 h.

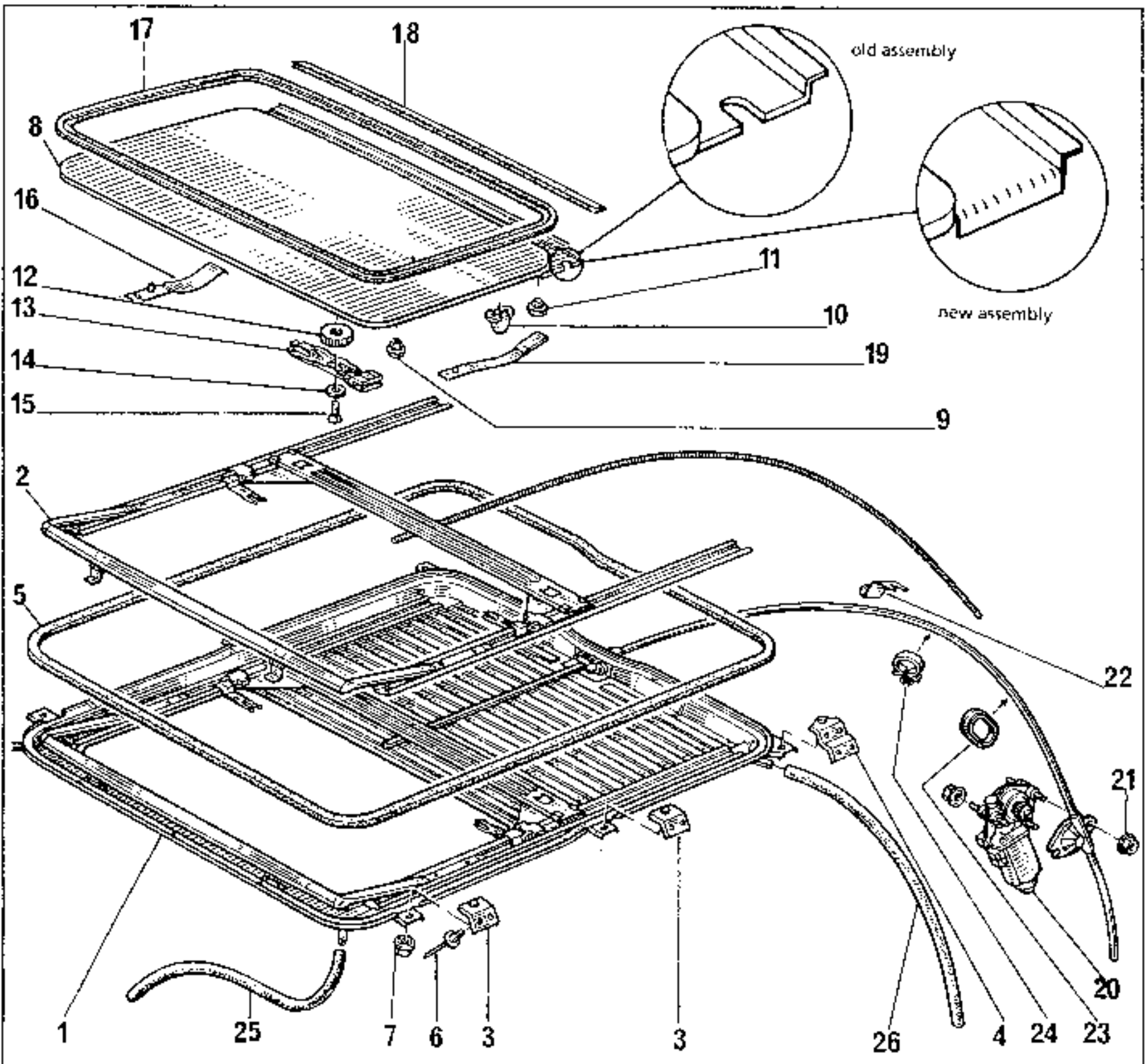


II - IRREPARABLE SEIZURE (or recurrent)

- Remove the tailgate.
 - Saw through the moving hinge.
 - Drill the seized pin to $\varnothing 7$ mm, perpendicular to the hinge.
 - Replace the moving hinge and the pin, with parts taken from a hinge assembly, part no. 77 00 754 344.
 - Apply paint to the hinge.
 - Refit the tailgate.
- Time required for the operation (not counting removing-refitting the tailgate): 0.5 h per hinge.

NOTE:

- Take care not to distort the welded hinge.
- If the roof panel cross member is distorted, refit the hinge, inserting a flat wide washer under the bolt head.



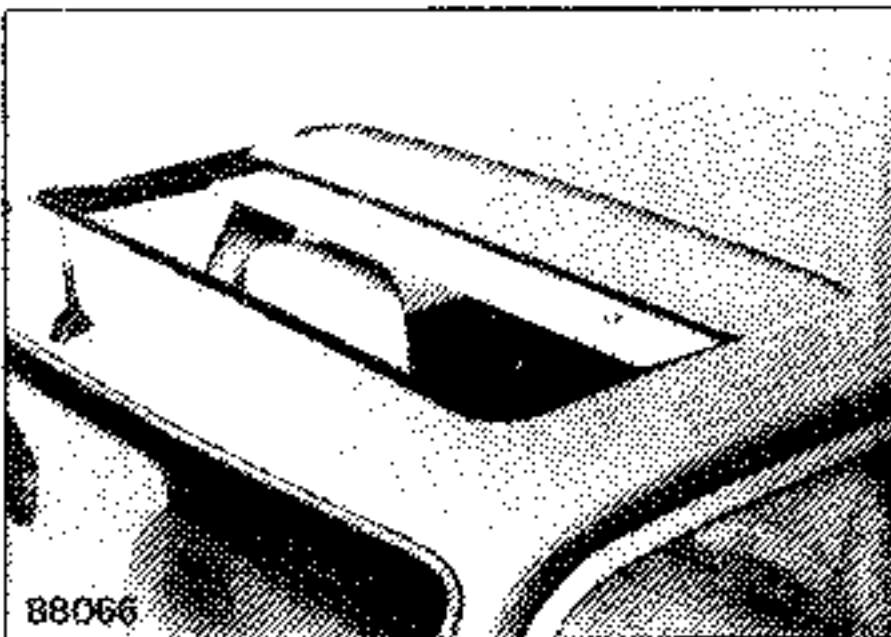
Description of parts:

- 1 - Rain channel.
- 2 - Sliding panel control.
- 3 - Rain channel mounting bracket.
- 4 - Rain channel mounting bracket.
- 5 - Seal.
- 6 - Rivet.
- 7 - Nuts.
- 8 - Sliding panel.
- 9 - Sliding panel deflector stop.
- 10 - Sliding panel plastic shoe.
- 11 - End stop.
- 12 - Sliding panel adjustment nuts.
- 13 - Front guide.

- 14 - Guide mounting washer.
- 15 - Guide fixing bolt.
- 16 - Guide.
- 17 - Sliding panel frame.
- 18 - Sliding panel seal.
- 19 - Sliding panel leaf spring.
- 20 - Sunroof electric motor.
- 21 - Base nuts.
- 22 - Sunroof sleeve support lug.
- 23 - Grommet.
- 24 - Clip.
- 25 - Water drain pipe.
- 26 - Water drain pipe.

Removal

Open the sunroof and unclip the sliding panel trim

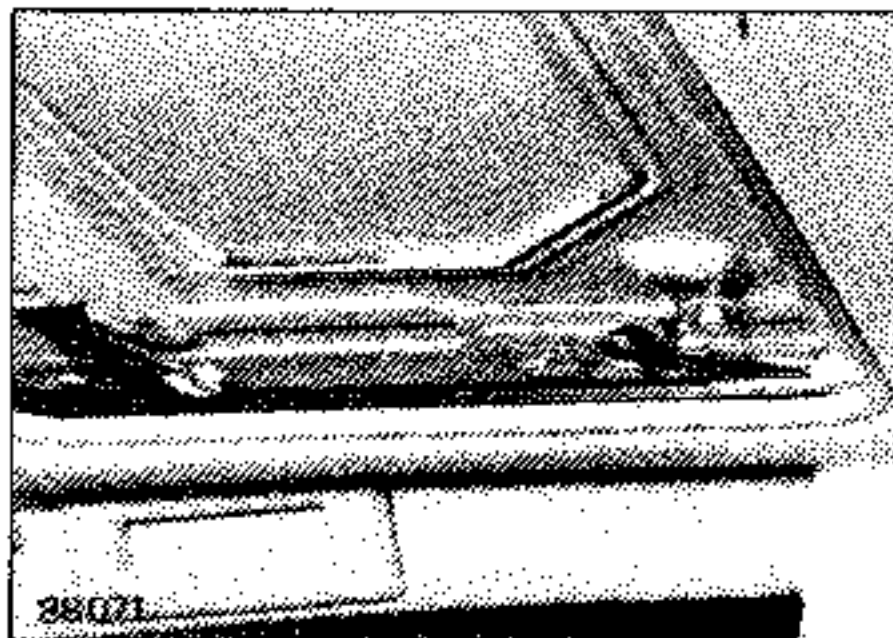
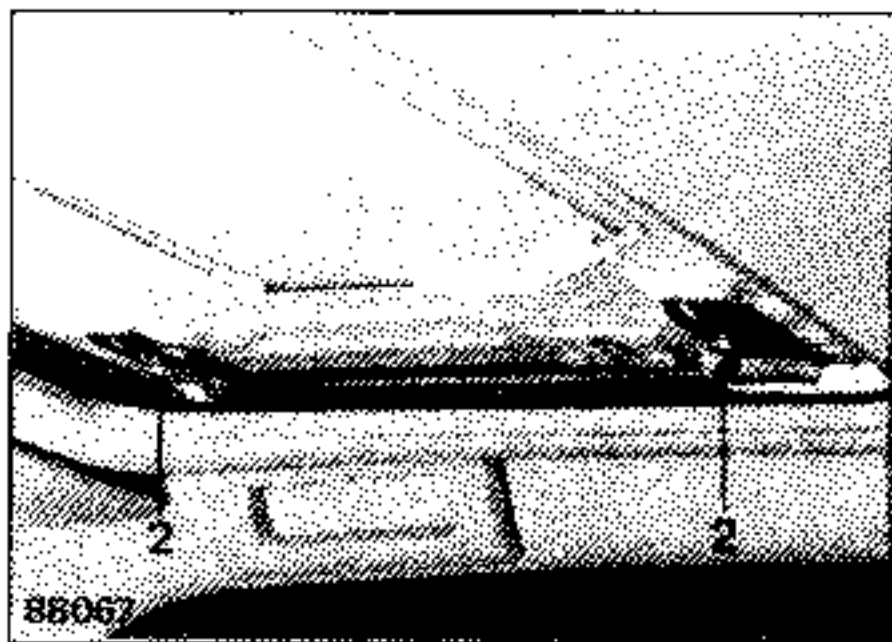


Remove:

- the 2 rear springs (1);
- the front and rear guide fixing bolts (2).



- Turn the front guides through 90 ° to release them from the sunroof.
- Gently raise the sunroof to remove the rear guides (do not take the rear guides out of their support brackets).
- Take out the sunroof



Refitting

When refitting, begin by locating the rear guides.

Do not forget to reposition the leaf springs located under the rear guides.

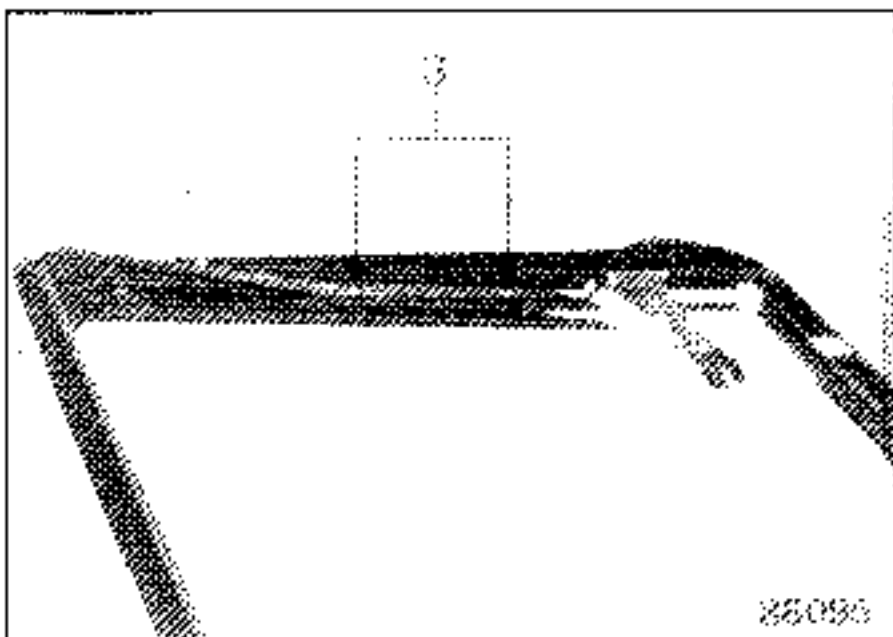
Adjust the sunroof so that it is flush with the roof panel, using the knurled nuts.



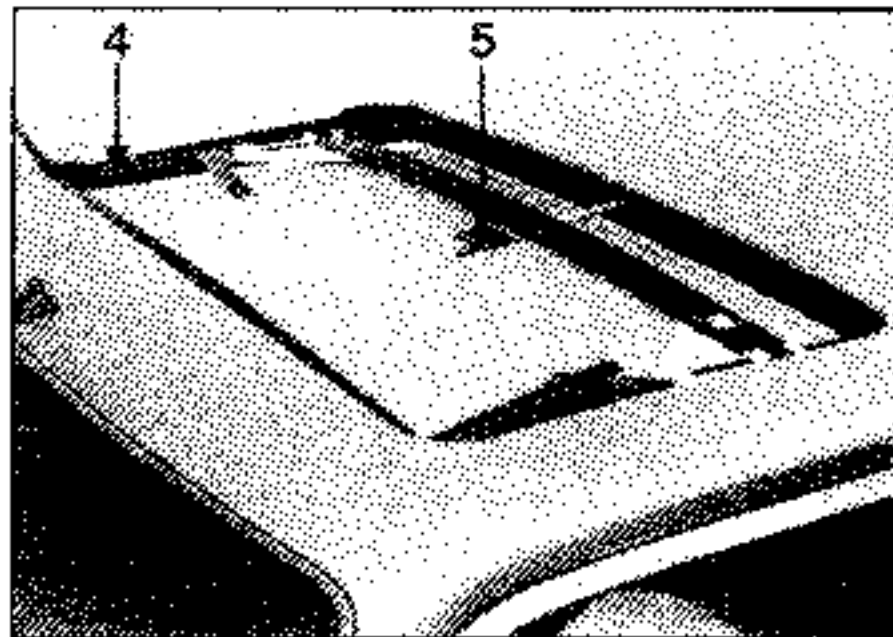
If the moving panel locks open or closed, it can be moved by disconnecting the electric motor cable.

Removing the moving panel

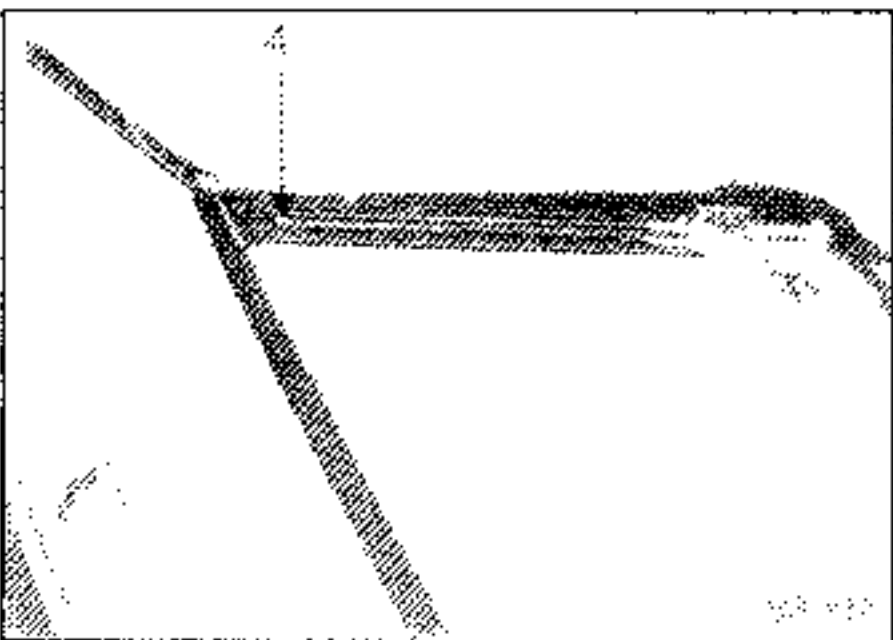
Remove the deflector pivot bracket fixing bolts (3).



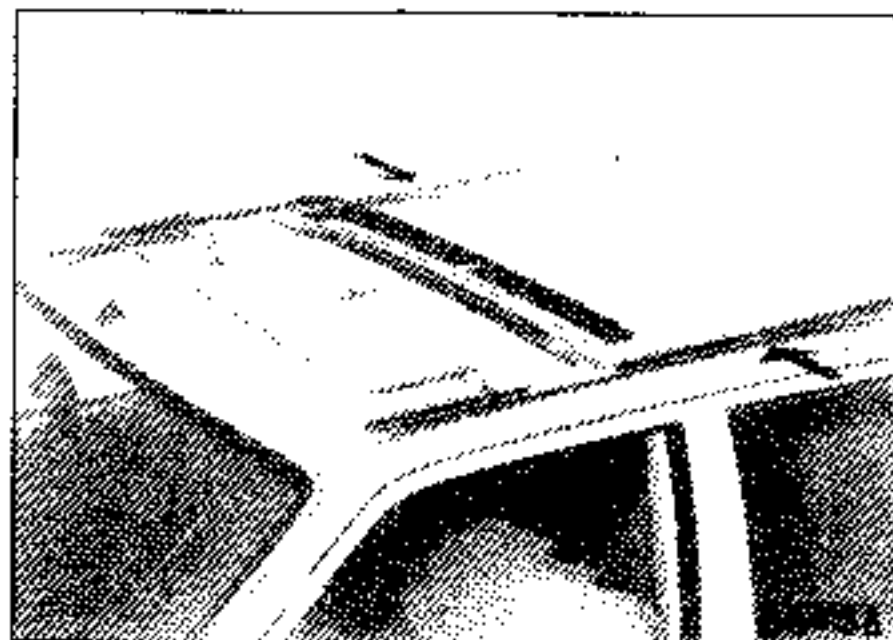
Remove the sliding panel control cable fixing bolts.



Remove the slide rail assembly fixing bolts (4).



Take the sliding panel control assembly out forwards.



REFITTING

Fit the rear ends of the slide rails into the rain channel.

Before proceeding further with refitting, check that the slide rails are properly located by pulling on them.

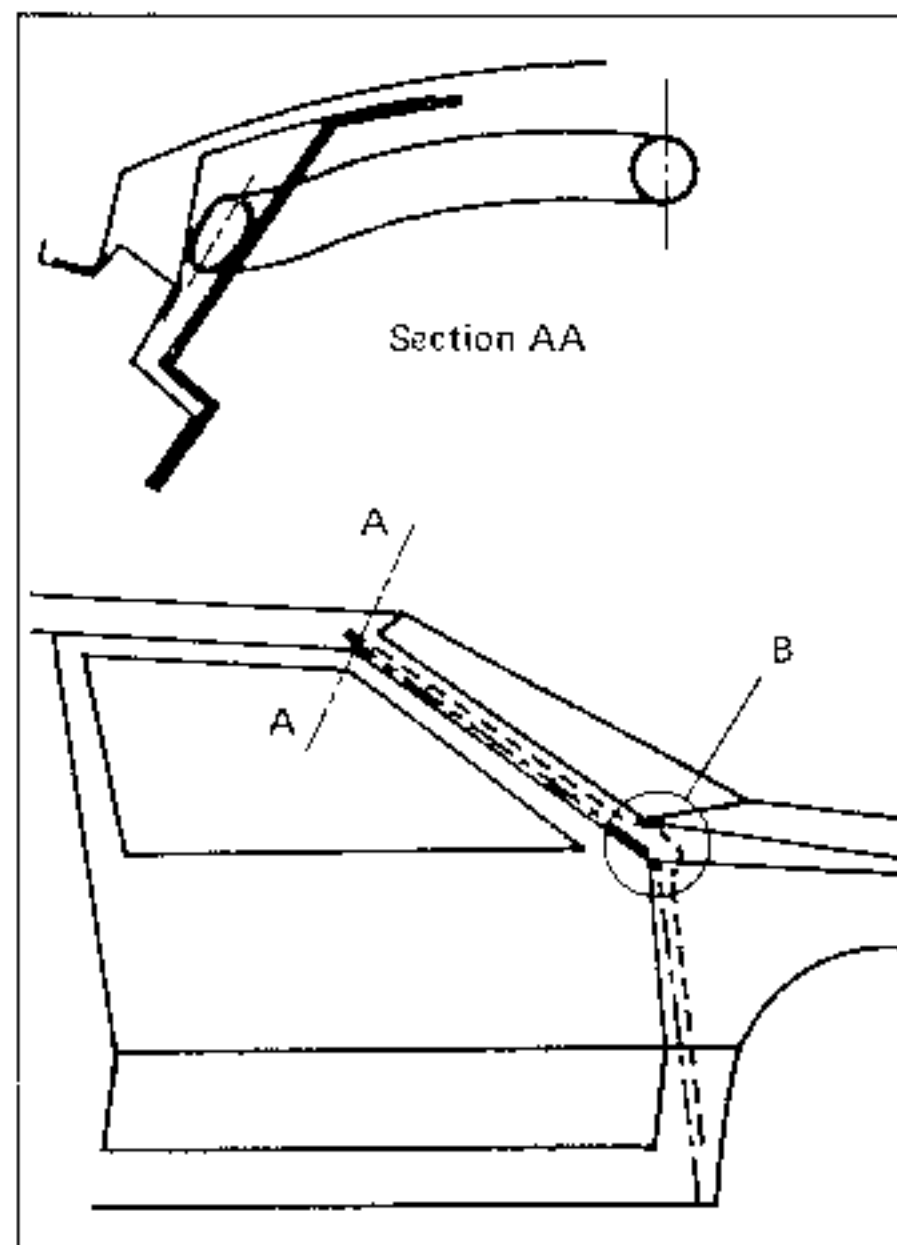
WATERTIGHTNESS

If you notice water entering the vehicle through the sunroof, we advise you to carry out the following checks in the order given below, to find out the cause(s) of the leak:

① Check the front runoffs

Using a container or a low-pressure spray, fill the front rain channel and check that it runs off correctly.

If necessary, remove the pillar trim and refit the pipe correctly (section AA) or replace it if it is pinched in zone B (in the foam).



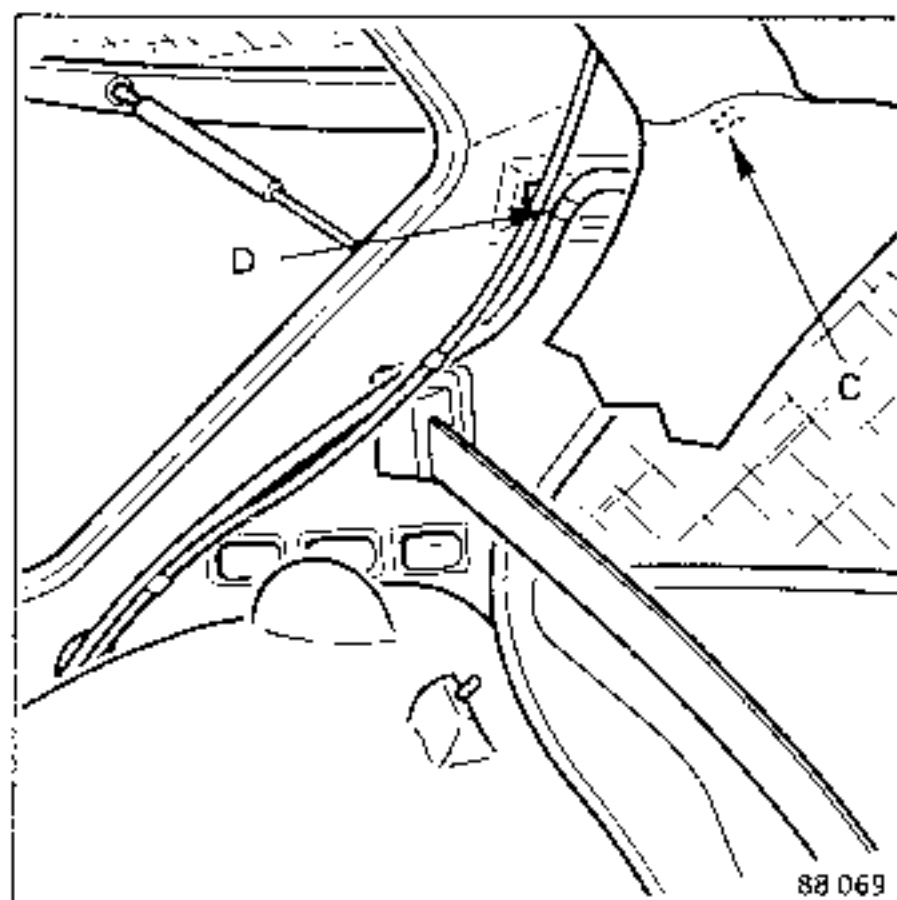
--- theoretical course
... accidental course

② Check the rear runoffs

Raise the front of the vehicle to make the water run towards the rear and continue as under ①.

If necessary, remove the rear quarter panel trim, check that trim retaining lug C is not resting on the pipe; if it is, cut it.

Check that clip D is not causing the pipe to bend. If it is, unclip it and free the pipe. Tape it to the rear quarter panel before refitting the trim.



③ Adjusting the moving panel

Obviously, the water drainage fittings can only cope with a small quantity of water. Seal 17 (see sketch on page 7) restricts the amount of water which enters the periphery of the sunroof and which is therefore, when the sunroof is closed, in contact with the roof panel aperture periphery.

The rear forks 2B are therefore adjusted to make sure that the panel is correctly located in the roof panel.

If seal 17 appears too thin, especially in the rear rounded sections ("pulled" too much during fitting), replace it.

④ Moving panel rear cross member runoff

The moving panel rear cross member (to which seal 18 is fitted) drains off the water which enters the rear section towards the side rain channels.

The side edges of this cross member now have a flanged edge which directs the water into the rain channels. Previously, the edges had a slot (see sketch on page 7), enabling the water to flow into the sunroof housing.

To repair, we advise sticking a piece of rubber taken from a glass bottom channel profile (for example) or a small piece of plastic or sheet metal to block the slot and create a flanged edge, as shown at section AA.

This enables the water to drain away properly in the side rain channels.

