VOLVO

# Service Manual

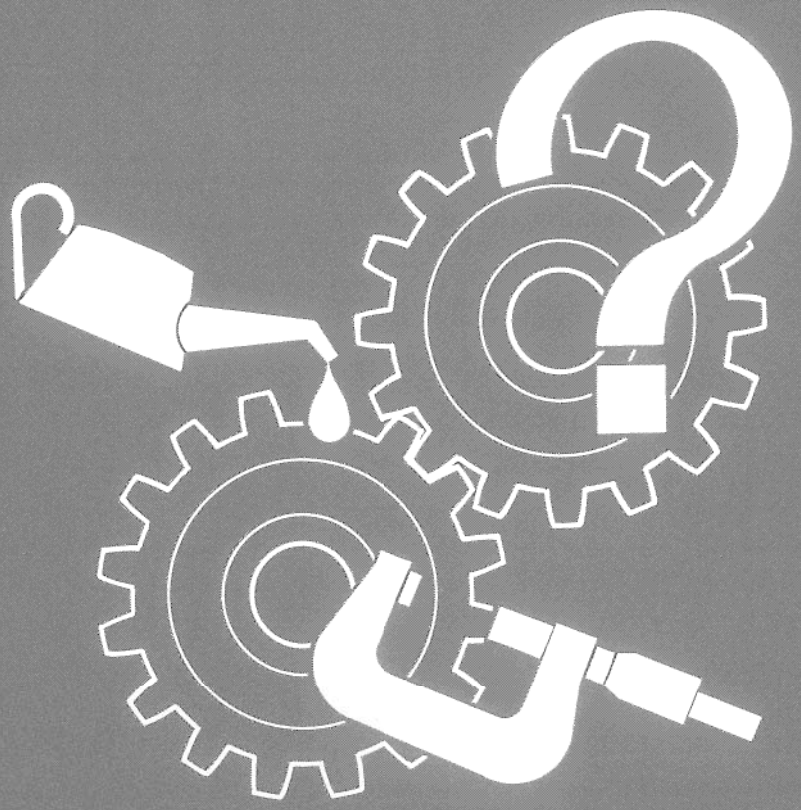
Fault tracing
Design
Repair
Function
Maintenance

Section 8 (81, 84)

Sheet metal and glass

700/900 1982-

TP 8101031



Volvo Car Corporation

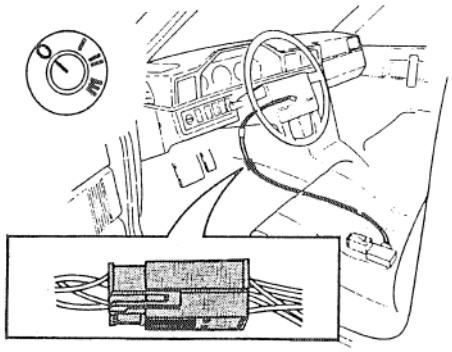
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# Cars with SRS

**Warning**
Cars equipped with a Supplemental Restraint System (SRS) must be treated extra carefully when repairs are being made. This is to help prevent: 1. Injuries when carrying out a repair. 2. Damage or malfunction of the SRS system. Repair to either the SRS itself or a related system or component must be carried out by an authorized Volvo workshop. Refer to the appropriate SRS service manual for complete system information.

## Is the car equipped with SRS?

Cars with SRS are most easily recognized by the SRS letters on the steering wheel pad. If the car is also equipped with an air bag on the passenger side, the letters 'SRS' will be embossed on the instrument panel above the glove compartment. Most cars with SRS are also equipped with pyrotechnical seat belt tensioners in the B-posts.



146 912

## 700 series 1987 -88 year models

Always disconnect the yellow SRS connector (see fig.) when performing a diagnostic troubleshooting of electric/electronic systems or if welding is to be performed.

**Important:** The ignition must be turned off (position "0") when disconnecting/connecting the SRS connector.

(It is not necessary to disconnect the connector on other year models.)

## Dashboard or around steering column

Take care to avoid electric wiring being pinched, frayed or pierced by screws when working on firewall, knee bolster, ignition switch, steering column casings, glove compartment, instrument panel, door sills and B-posts.

## Driver's seat, center console or carpeting at left front seat

The SRS collision sensor is located under the left front seat. Do not disconnect the collision sensor connector. Never install accessories on or near the sensor. The crash sensor connector on 1992 and earlier models must **never** be disconnected.

## Repairs to steering gear and column

When carrying out repairs to the steering wheel, steering gear or column always follow the repair procedures given in the appropriate SRS service manual. The contact reel in the steering column will be damaged if the steering wheel is turned more than three turns in either direction.

## Test terminal

- 1992 : An unused terminal in the fusebox is used as a hook-up for SRS diagnostics. Do not install a fuse or connect an accessory to this terminal.

1993 - : Diagnostic unit B in the engine compartment is used for fault-tracing purposes.

**Modifications to April 1994 included**

Modifications introduced after the above date are not covered in this manual.
See Service Bulletins as applicable.

Volvos are sold in versions adapted for different markets. These adaptations depend on many factors including legal, taxation and market requirements. This manual may therefore show illustrations and text which do not apply to cars in your country.
Volvo owners planning to export their car(s) to another country should investigate the applicable safety and exhaust emission requirements. In some cases, it may be impossible to comply with these requirements.

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**Order No: TP 8101031 (UK) TP 8101201 (USA/CDN)**
Replaces service manuals: TP 31298/1 and TP 31749/1

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# Bodywork repairs

## General

This service manual is designed to help you maximize the quality of your bodywork repairs.

Service bulletins cover any new items and major changes since the manual was printed.

Bodywork repairs must always be top quality, accordingly:

Use protective tools.

Remember surface treatment: electrodeposition (ED), phosphating and putty and welding primer.

Remember soundproofing and insulation.

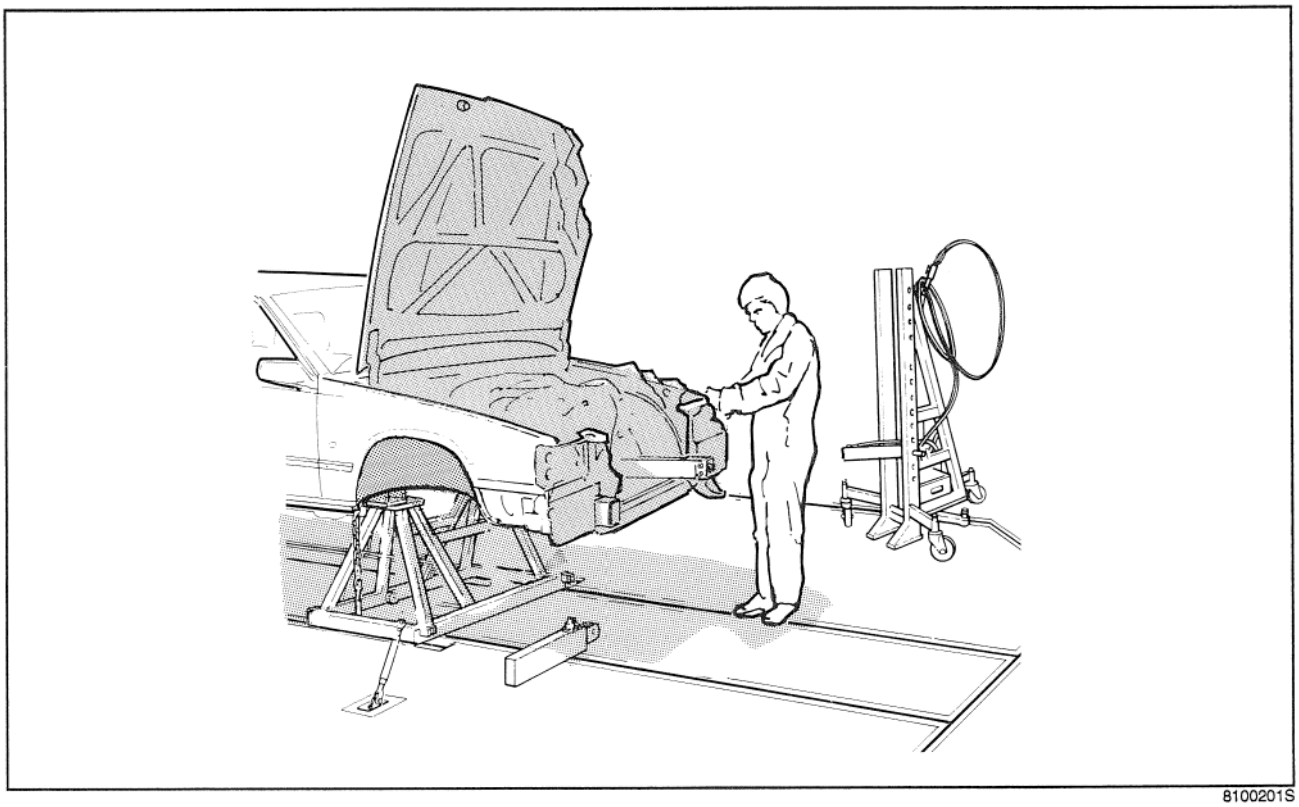
Bodywork dimensions:

Some bodywork repairs require the car to be jacked up in such a way that the bodywork dimensions do not change.

See section on bodywork dimensions at the back of this manual.

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# Alignment bench



8100201S

The car must be aligned on a bench:

- if it is deformed between the axles.

- if checks reveal major discrepancies in dimensions.

- when replacing structural sections.

- if any components of the basic structure of the car are damaged.

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# Using chemical agents

Always handle chemical agents with care.

| |
|---|
| Always read the instructions on the pack before starting work. |

The following precautions always apply:

Ensure adequate ventilation.

Wear gloves.

Avoid contact with skin.

The chemical agents used in bodywork and glass are as follows:

## Epoxy adhesive

Used for bonding body components.

Epoxy adhesive can cause allergic skin reactions. Avoid contact with skin.

Adhesive contains volatile allergenic substances, and should not be heated without adequate ventilation.

If vapor comes into contact with the skin, this may be enough to trigger an allergy in someone who has already been sensitised.

Even cured adhesives may contain small amounts of free epoxy radicals to which allergic individuals may be sensitive.

## PUR adhesive (polyurethane adhesive)

Used for bonding fixed windows.

Isocyanate vapors from adhesive or uncured primer can cause respiratory tract allergies (similar to an asthmatic attack).

Once you have been sensitised, it only takes a very small amount of a substance to trigger the allergy.

The risk remains until the agents have cured completely.

When using one-part PUR, curing can be accelerated by using damp rags and increasing the temperature.

Although using two-part PUR is faster than using one-part PUR, ther is no way of speeding up the process further.

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## Filler primer

Filler primer is used before applying sealing compound to body and at certain points where components have been ground down to bright metal, but not where welding primer is to be used.

Some compounds in the product can cause skin allergies. Chrome allergy is one of the commonest occupational allergies.

**Note:** Filler primer contains solvents. Spray mist or grinding dust may be carcinogenic if inhaled repeatedly over long periods.

## Welding primer

Used between the faces of welding joints.

If used repeatedly over long periods, the solvent in the primer may affect the nervous system and cause chronic afflictions.

Solvent can also be absorbed via the skin; its degreasing action can also cause eczema-type skin problems.

## Plastic putty

Used for filling small dents after panelwork.

The solvent (styrene) can affect the nervous system if inhaled repeatedly for any length of time and cause concentration problems and loss of memory.

Styrene can also be absorbed via the skin. Its degreasing effect can cause skin problems such as eczema.

## Caulking compound

Used for sealing bodywork joints.

The solvent (toluene) may affect the nervous system and cause memory lapses and concentration problems if inhaled repeatedly over long periods.

Toluene can also be absorbed via the skin. Its degreasing action can cause skin problems such as eczema.

## Rustproofing agent

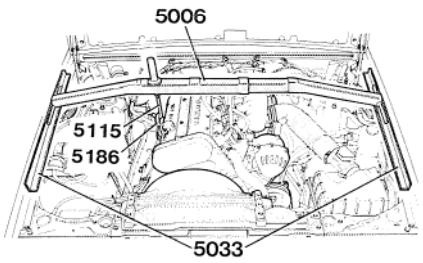
The solvent used may affect the nervous system and cause chronic afflictions if used repeatedly over time.

The solvent can also be absorbed via the skin. Its degreasing effect can cause skin problems such as eczema.

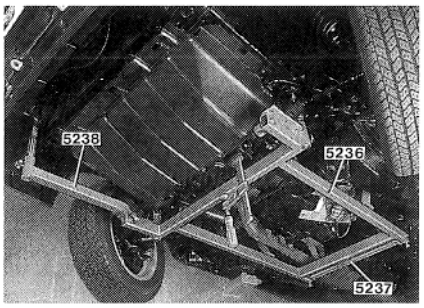
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# Special tools

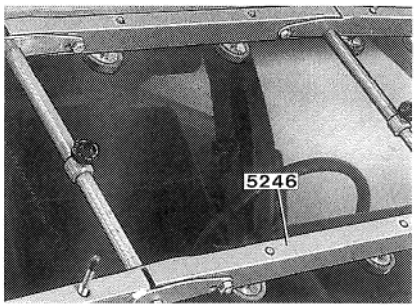
| | Name - use |
|---|---|
| 999 5006-5 | **Lifting bracket,** for lifting rear of engine. (Picture shows B234 engine) |
| 999 5033-9 | **Support rails,** for lifting engine |
| 999 5115-4 | **Suspension hook,** for 5006 (2 off). Hook varies depending on engine |
| 999 5185-7 | **Eyelet,** extension for 5115, RH side |
| 999 5186-5 | **Eyelet,** extension for 5115, LH side |
| 999 5236-8 | **Base fixture,** for aligning and replacing front side members. Used in conjunction with 5237 and 5238 |
| 999 5237-6 | **Anchorage,** for 5236 when lifting body |
| 999 5238-4 | **Gauge**, for checking front end, front side members. Used in conjunction with 5236 |
| 999 5246-7 | **Windshield fixture,** for installing windshield |
| 999 5247-5 | **Press brace**, for fixture 5246 (4 off) |
| 999 5248-3 | **LH brace**, for side and rear windows |
| 999 5249-1 | **RH brace,** side and rear windows |
| 999 5251-7 | **Pull brace,** front side member. Used in conjunction with 5252 and 5253 |
| 999 5252-5 | **Chain brace,** front side member. Used in conjunction with 5251 and 5253 |
| 999 5253-3 | **Cross yoke,** for chain. Used in conjunction with 5251 and 5252 |
| 999 5254-1 | **Pull brace,** for member ends, front and rear side members |
| 999 5255-8 | **Pulling plate**, aligning wheel arch turret |
| 999 5256-6 | **Brace**, rear side member. Used as counterhold |



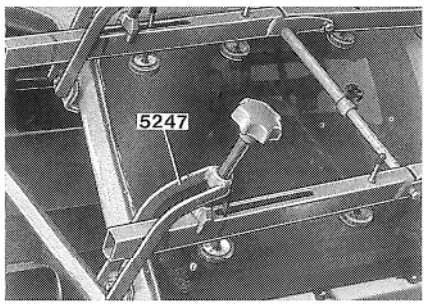

999 5006,5033,5115,5185,5186 144940S



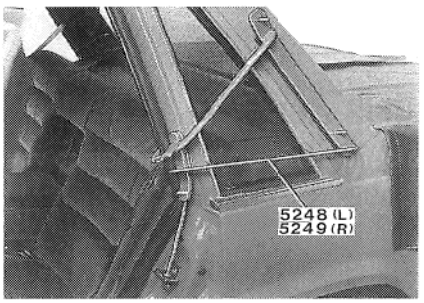

999 5236-8, 5237-6, 5238-4 134106S



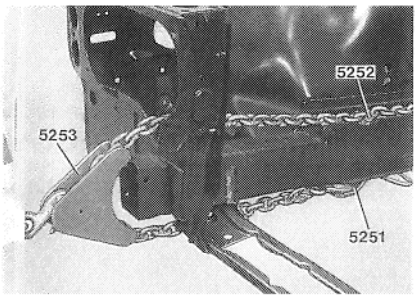

999 5246-7 132991S



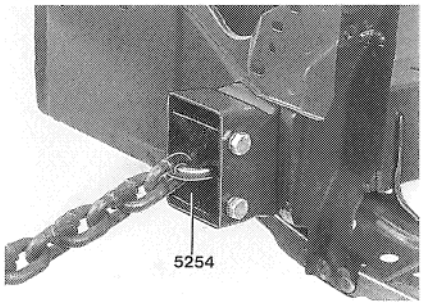

999 5247-5 132992S



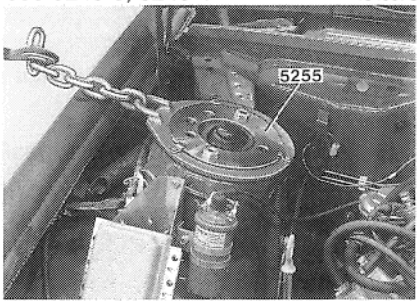

999 5248-3, 5249-1 134007S



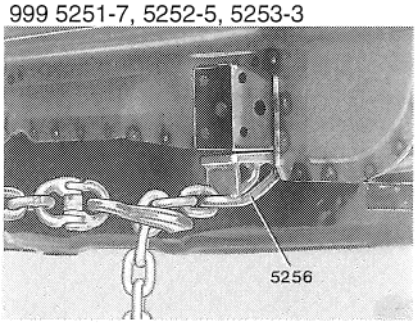

999 5251-7, 5252-5, 5253-3




999 5254-1 134043S



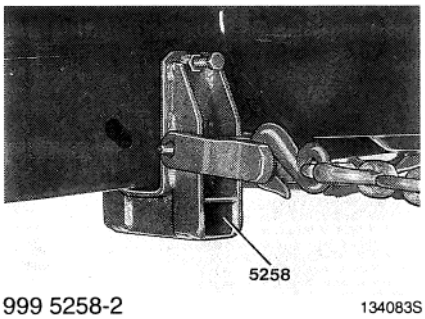

999 5255-8 134080S



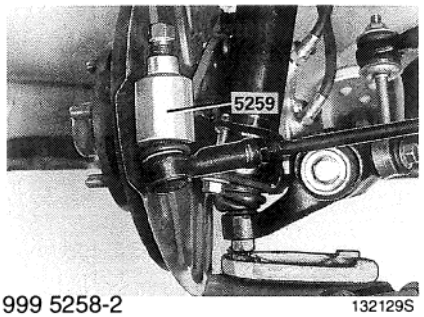

999 5256-6 134081S

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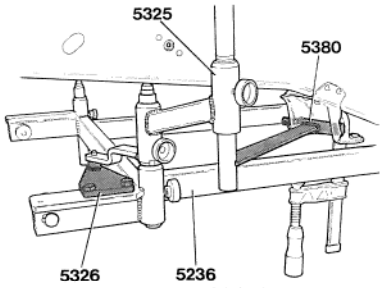
| | Name - use |
|---|---|
| 999 5258-2 | **U-bracket,** for front side member. Used in counterhold and side alignment |
| 999 5259-0 | **Puller,** for steering rod |
| 999 5325-9 | **Fixture,** measuring wheel arch turret position |
| 999 5326-7 | **Locating pin**, for 5236 when measuring wheel arch turret position |
| 999 5327-5 | **Gauge plate,** wheel arch turret too low |
| 999 5328-3 | **Gauge plate,** wheel arch turret too high |
| 999 5372-1 | **Fixture**, checking front side panel position |
| 999 5380-4 | **Fixture,** for steering arm bracket, used in conjunction with 5325 |



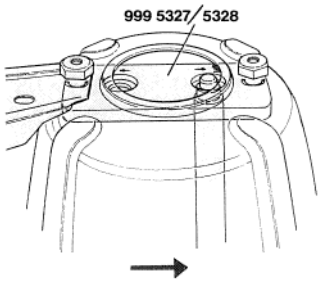

999 5258-2 134083S



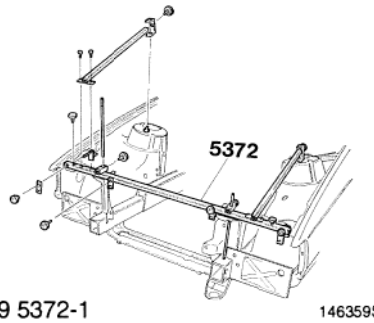

999 5258-2 132129S




999 5325-9, 5326-7, 5380-4 147007S




999 5327-5, 5328-3 142825S




999 5372-1 146359S

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# Consumables

| Equipment needed when changing a PUR-bonded window | |
|---|---|
| 1161381-7 | **PUR bonder kit,** 2-K, 450 ml |
| 1161382-5 | **PUR bonder kit**, 2-K, 220 ml |
| 1161383-3 | **PUR adhesive**, 2-K, 450 ml |
| 1161384-1 | **PUR adhesive**, 2-K, 220 ml |
| 1161287-6 | **PUR bonding kit**, 1-K, 300 ml |
| 1356443-0 | **PUR adhesive**, 1-K, 300 ml |
| 1161402-1 | **PUR adhesive**, 1-K, 150 ml |
| 1161387-4 | **Glass primer,** 250 ml |
| 1161385-8 | **Glass primer**, 30 ml |
| 1161388-2 | **Glass activator**, 250 ml |
| 1356444-8 | **Glass activator**, 30 ml |
| 1161386-6 | **Paintwork primer,** 30 ml |
| 1161373-4 | **PUR/RIM Activator**, 30 ml |
| | |
| 1161394-0 | **Bonder gun (220 V)** |
| 1161395-7 | **Bonder gun (110 V)** |
| 1159783-8 | **Counterhold** |
| 1159784-6 | **Puller handle** |
| 1159785-3 | **Piano wire** |
| 1161347-8 | **Double-sided tape** |
| 998 6030-6 | **Puller handles**, (2 off) |

## The following body materials are used in repairs:

Welding primer. Filler primer. Caulking compound. Masking tape.

Plastic putty. Anti-corrosion agent, thin.

Stoneguard. Rustproofing agent.

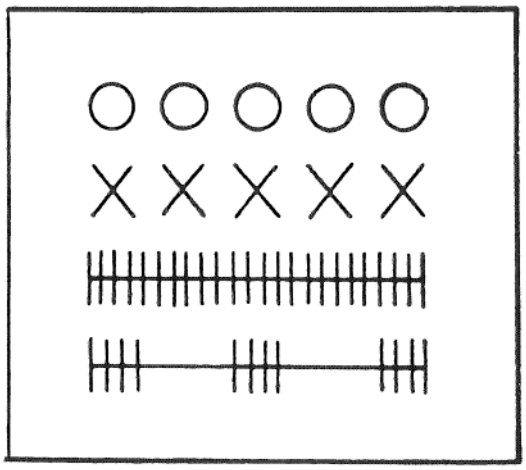
Underseal. Thin mounting guard (transparent).

Bodywork adhesive.

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# Welding symbols

## Welding symbols used in this manual



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Welding symbols used:

Spot weld

MAG weld: plug or resistance spot weld.

MAG weld: seam weld.

MAG weld: stitch weld.

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# A. Checking and measuring a collision-damaged car using special tools

A number of special tools have been designed for measuring.

These tools can also be used as welding fixtures when making minor repairs.

Most tools can be used without having to touch the car's mechanical components.

All bodywork depends on assessing the damage correctly. This is where special tools can be a great help.

**Note:** Don't just look for obvious damage. Look for indirect damage as well (secondary damage).

## AA. Modifying tools

*Special tools 5236 and 5237*

As there are positional tolerances between the two tunnel members, you will need to adjust bracket 5236 and fixture 5237 before setting up so as to ensure that the measurements on the front side members are correct.

*AA1*

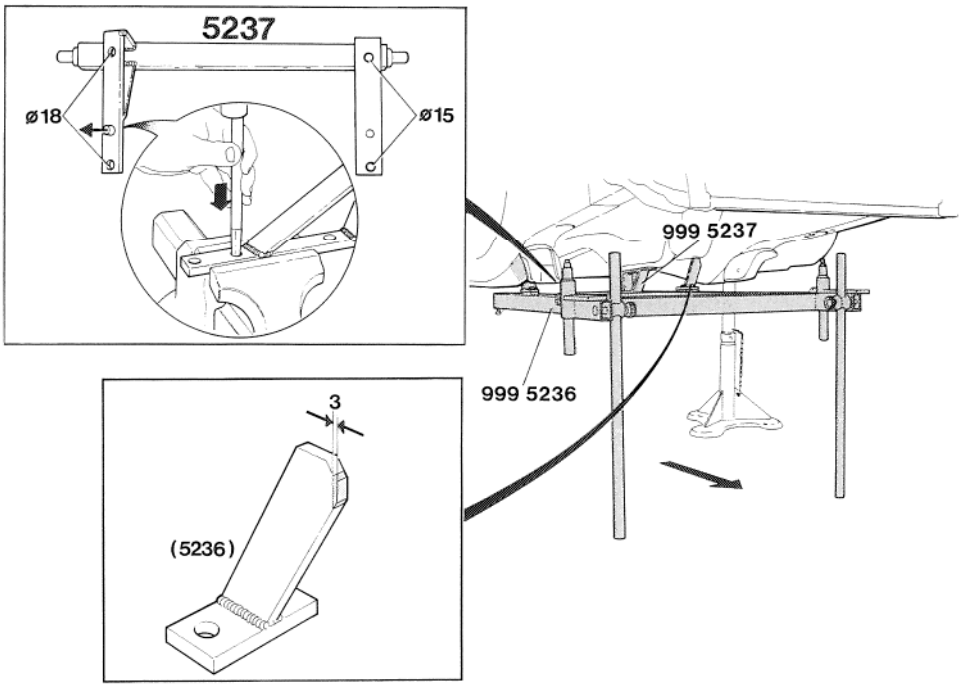
**Bracket 5237**

1. Drill hole in angled face out to 18 mm.
2. Drill hole in angled face out to 15 mm.
3. Remove locating pin from angled face.

*AA2*

**Fixture 5236**

Grind off 3 mm from outside of fixture support lugs.




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# Setting up fixture

# AB. Checking front side member position

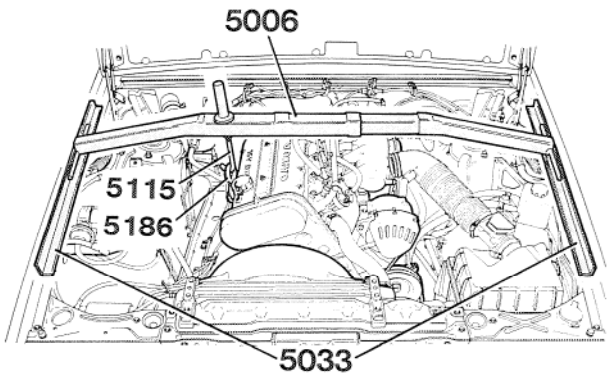
(Engine and front assembly installed)

*Special tools: 5006, 5033, 5115, 5185, 5186, 5236, 5237, 5238*

Modify fixture 5236 and bracket 5237.
(as per steps AA1-AA2.)

*AB1*

**Set up fixture:**




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(Hood in service position.)

Suspend rear of engine with lifting bracket 5006, two lifting hooks 5115 and eyelets 5185 and 5186.

*AB2*

**Remove:**

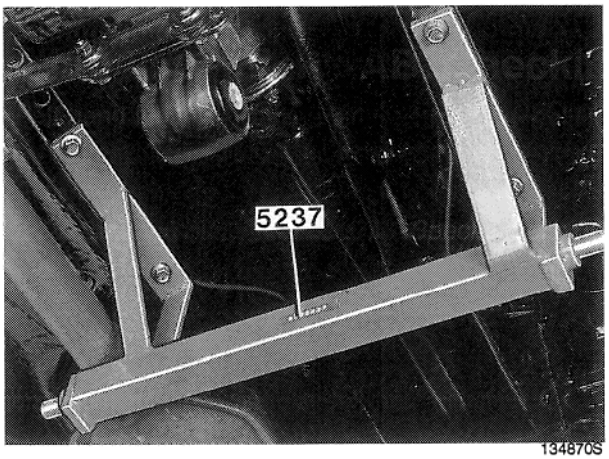
– shield under engine.
(If car is on beams.)

– Transmission mounting piece.

Scrape clean mounting surfaces for anchorage 5237.

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*AB3*




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**Mount anchorage 5237:**

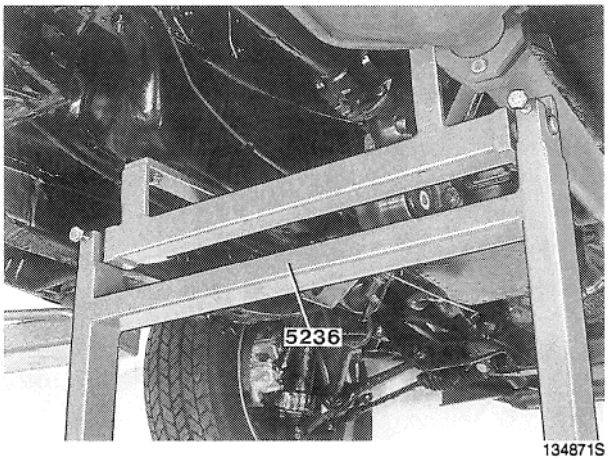
Mount anchorage with locating pin in left-hand tunnel piece.

Use bolts supplied.

**Note:** Do not over-tighten bolts.

Anchorage should be free to slide when adjusting.

*AB4*




134871S

**Attach fixture 5236 to anchorage 5237.**

Position forks at rear edge of fixture on the pins of the anchorage.

Tighten bolts by hand so fixture hangs from anchorage.

**Note:** Make sure pins are fully in the forks.

Clean side member flanges for fixture support lugs.

Make sure side member flanges are flat.

Grind off any welding bumps.

**Note:** When work is complete:

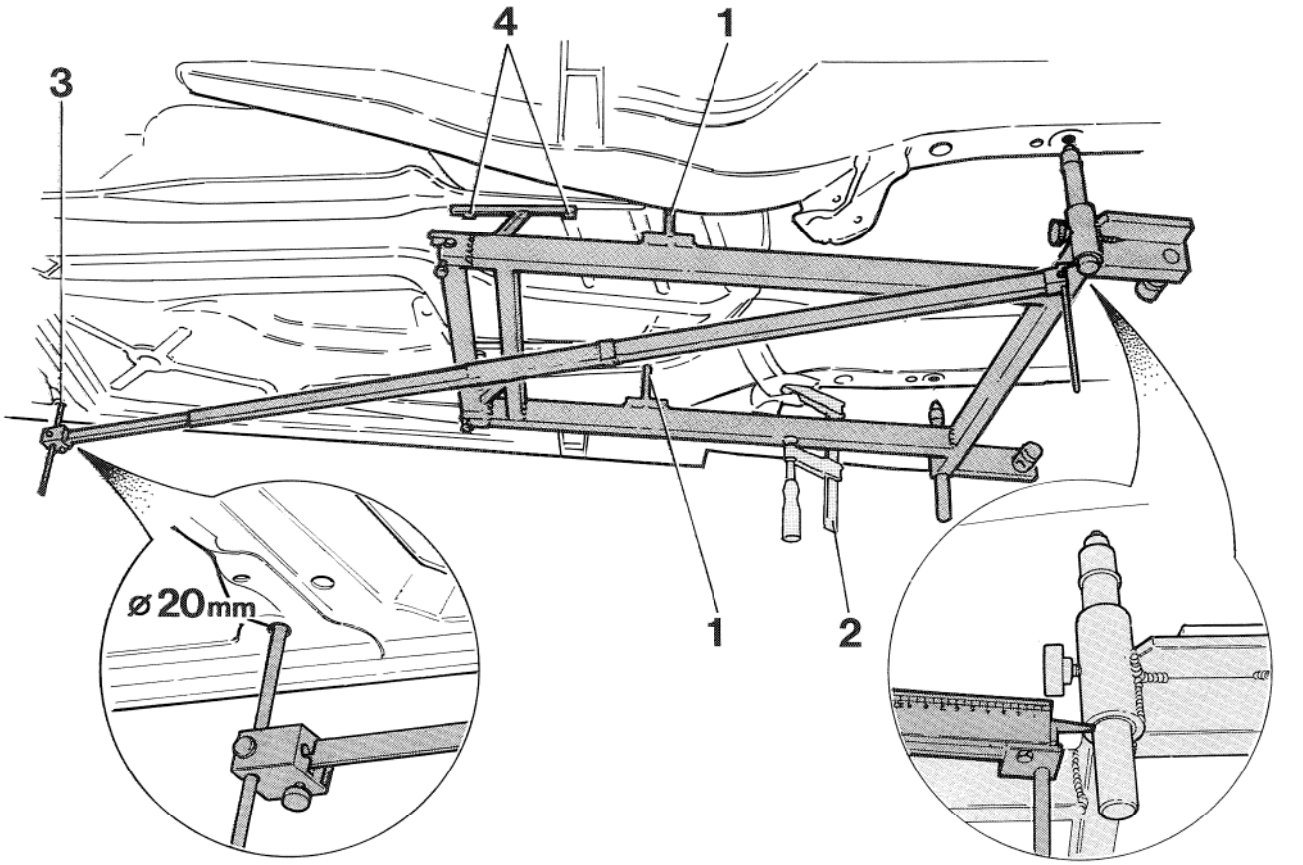
Remember to treat any ground areas with filler primer and anti-rust agent.

Push fuel and brake pipes out of the way.

Push any electrical leads out of the way.



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Raise front edge of fixture until support lugs (1) marry with side member flanges.

Lock fixture in this position

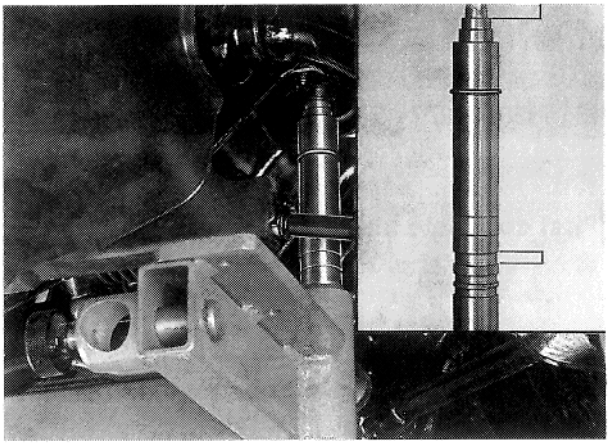
(with support legs if the car is on the floor: with a G-clamp (2) if the car is on a hoist.).

Measure diagonals from holes (3) in body and to gauges for front axle locating holes.

Tolerance = ±1 mm.

Tighten bolts to anchorage 5237 (4), on both sides.

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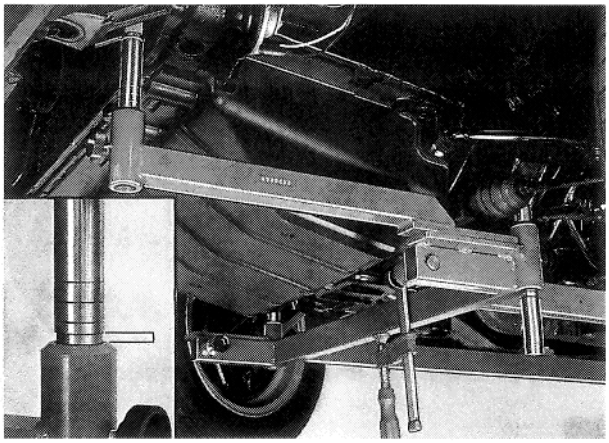
*AB5*

**Check positions of side members.**

(at front axle locating pins).

Smallest gauge diameter must fit into locating pin of front axle member.

Upper gauge groove.



134874S

*AB6*

**Check front end of side members.**

Put gauge 5238 on fixture 5236.

If the gauge groove is visible, this means the member is in the right position.

Downward deflection (due to engine weight and front assembly) to the lower mark is acceptable.

*AB7*

**Cars with air conditioning.**

If pipe from condenser covers a gauging hole on the right-hand side member:

Check LH side and line up gauge on RH side.

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# AC. Checking position of wheel arch turrets

*Special tools: 5236, 5237, 5325, 5326, 5327 or 5328*

*AC1*

**First complete steps AA1-AA2 :**

Modify fixture 5236 and anchorage 5237.

*AC2*

**Engine and front assembly are installed.**

As per AB2-AB7.

Remove suspension strut.

Set up measurement fixture 5325.

As per AE3-AE7.

*AC3*

**Engine and front assembly installed.**

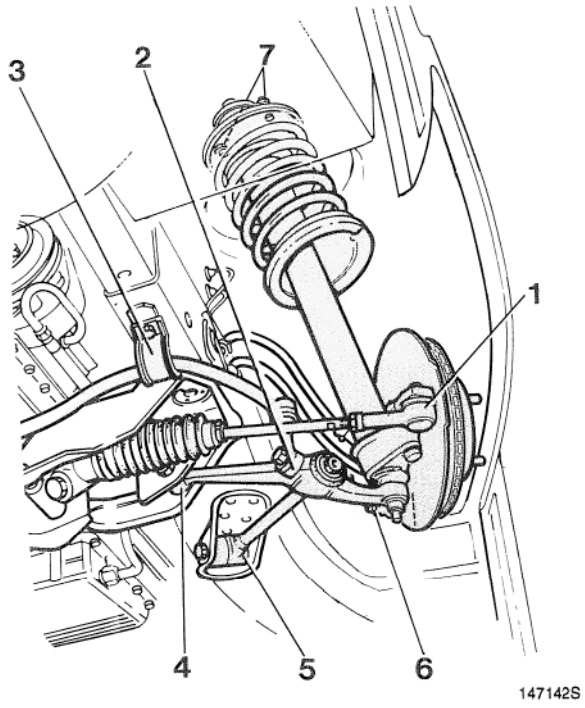
As per AF1-AF4.

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# AD. Removing front assembly parts (suspension strut) if using measurement fixture 5325.

(Suspension strut must be removed before mounting fixture 5325.)

*Special tools: 5259*



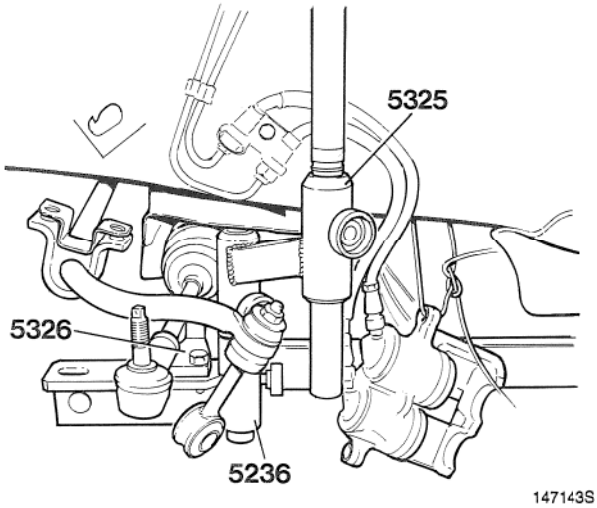
147142S

Remove gauge 5238 first if mounted on fixture 5236.

*AD1*

**Remove:**

- wheel.
- steering link (1) from steering arm. Use extractor 5259.
- anti-roll bar link (2) from link arm.
- anti-roll bar holder (3) from side member.
- link arm (4) from front axle member.
- link arm strut (5) from bracket.
- brake caliper (6).
  Hang it up so as not to damage hoses.
- nuts (7) securing top of suspension strut.



147143S

Push steering link into steering gear.

Remove rubber ring from gauge on fixture 5236 (for locating holes of front axle member).

Lower gauge and mount fixture 5325.

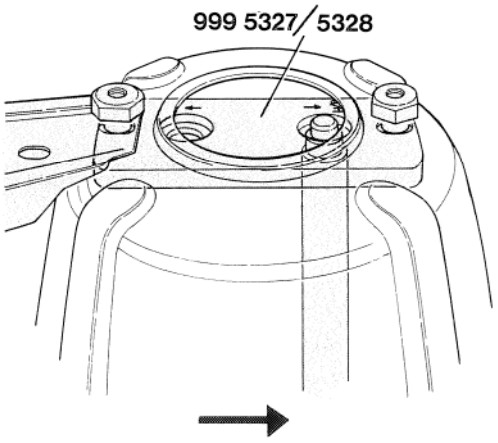
Push gauge up to locate front axle member holes.

Lock gauge fast to locating holes.

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*AD2*

**Secure gauge plate to turret.**

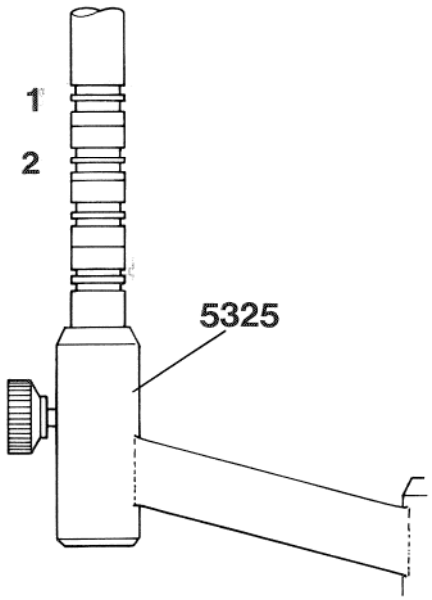



Low turret (1985-) 5327.

High turret (-1984) 5328.

**Note:** Gauge plate for RH turret is oriented differently for LH and RH sides.

See marking on plate. Make sure arrow is pointing forwards.




Positions 1 and 2 on fixture 5325 are for low and high turrets respectively.

1. Low turret.

2. High turret.

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# AE. Link arm bracket position in front side member (Replacement or inspection)

*Special tools: 5236, 5237, 5325, 5326, 5380*

*AE1*

**Set up fixtures 5236, 5237 and 5325.**

First modify fixture 5236 (as per AA2).

*AE2*

**Follow steps AB5-AB6.**

Remove rubber ring from gauge on fixture 5236 (for locating holes of front axle member).

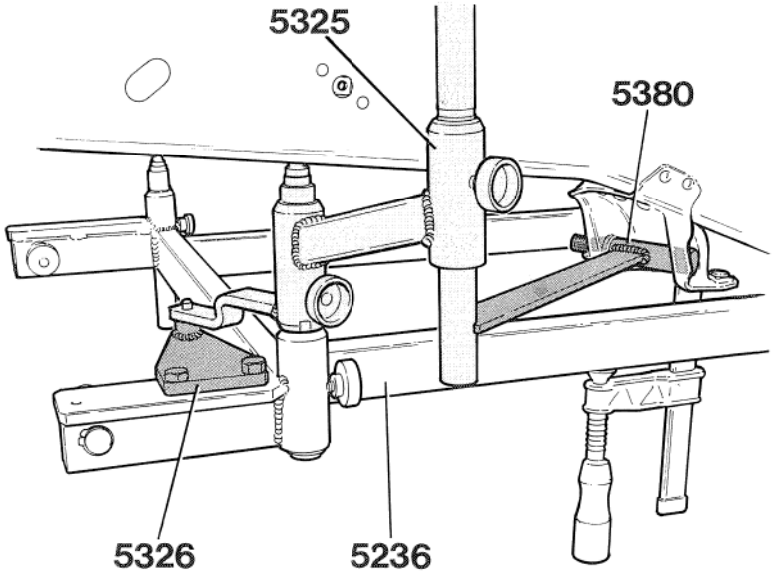
*AE3*

**Lower gauge slightly and mount fixture 5325.**

*AE4*

**Push gauge up to front axle member locating holes.**

Lock gauge fast with fixture locking bolts.




147007S

*AE5*

**Attach locating pin 5326 to fixture 5236.**

Insert locating pin in hole in fixture 5325.

Secure locating pin to fixture 5236 using bolts supplied.

*AE6*

**Attach fixture 5380 to link arm bracket.**

Use link arm bolt without nut.

**Note:** Fixture is reversible.

Can be used on both LH and RH sides.

*AE7*

**Check position of link arm bracket by lifting fixture towards gauge.**

Fixture must be at right angles to gauge and notch should fit into gauge. Acceptable position 0-3 mm clearance.



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# Setting up fixture
# AF. Checking front side member positions

(Engine and front assembly removed)

*Special tools: 5236, 5237, 5238*

*AF1*

**Modify fixture 5236 and anchorage 5237.**




134876S

Scrape clean mounting surfaces for anchorage 5237 to be bolted tight.

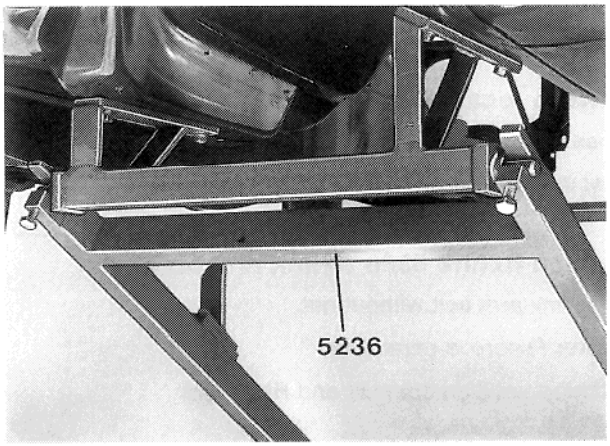
Mount anchorage with locating pin in LH tunnel member.

Use bolts supplied.

**Note:** Do not over-tighten bolts; anchorage should be free to slide when adjusting fixture 5236.

*AF2*

**Attach fixture 5236 to anchorage 5237.**




134877S

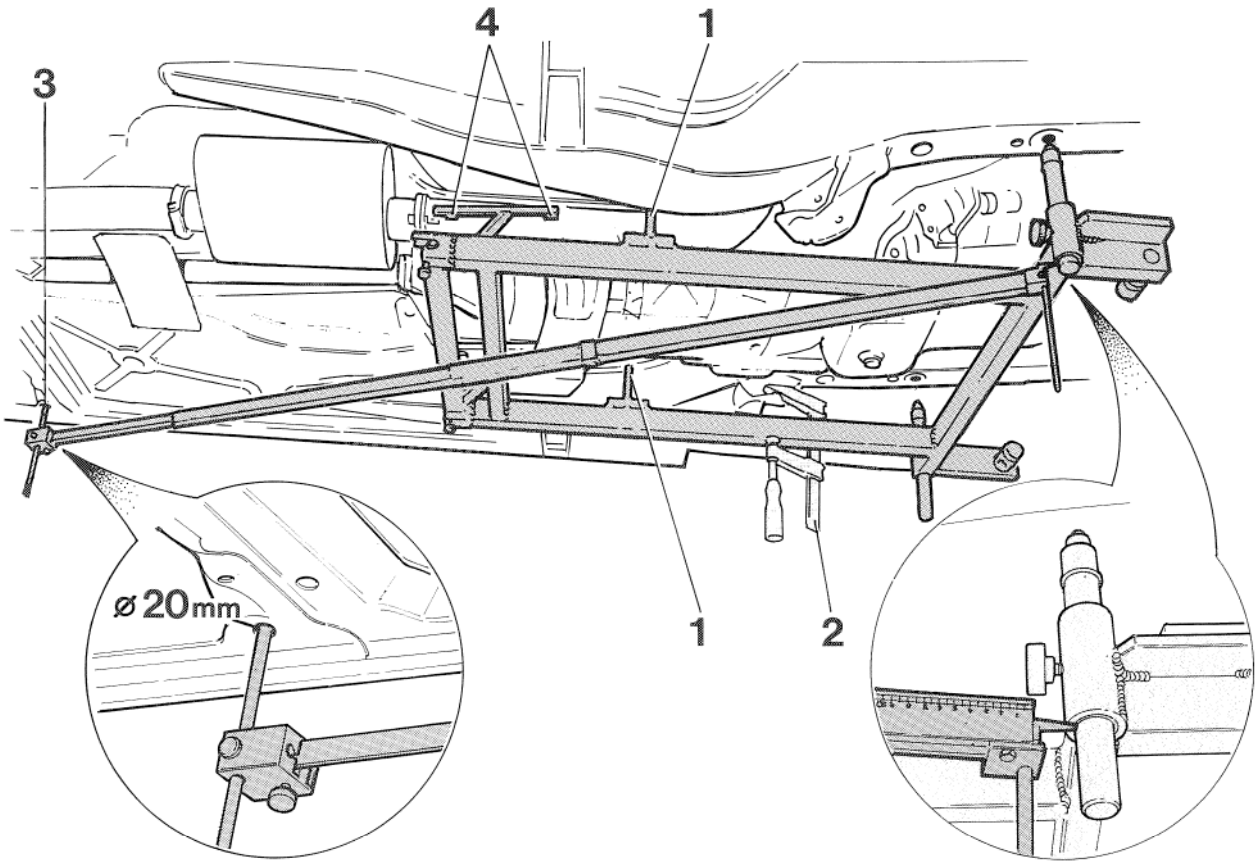
Position forks at rear edge of fixture on anchorage pins.

Tighten bolts by hand so fixture hangs from anchorage.

**Note:** Make sure pins are fully home in forks.

Clean member side flanges for fixture support lugs.

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146981S

Make sure side member flanges are flat.

Grind off any welding bumps.

Remember to treat any ground areas with filler primer and anti-rust agent.

Push fuel and brake pipes and any electrical leads back out of the way.

Raise front edge of fixture until support lugs (1) marry with side member flanges.

Lock fixture in this position. (Use support lugs if car is on floor, G-clamp (2) if car is on hoist.)

Measure diagonals from holes (3) in body to gauges for front axle locating holes.

Tolerance = ±1 mm.

Tighten bolts to anchorage 5237, on both sides (4).

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*AF3*

**Check positions of front side members.**

Acceptable position: Central gauge diameter fits into hole.

Central measurement groove should be visible.

Exact position: Largest gauge diameter fits into hole.

Lowest measurement groove should be visible.

Use exact position when installing a new side member.

*AF4*

**Check front ends of side members.**

Set up gauge 5238 and fixture 5236.

If gauge groove is visible, member is correctly positioned.

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# AG. Checking wheel arch turret positions

*Special tools: 5236, 5237, 5325, 5326,5327 alt 5328*

*AG1*

**Modify fixture 5236 and anchorage 5237.**

The next few steps depend on whether the engine and front assembly are installed.

*AG2*

**If engine and front assembly are installed:**

*AG3*

**Follow steps AB1-AB4.**

Remove suspension strut.

*AG4*

**Install measurement fixture 5325.**

As per AE3-AE7.

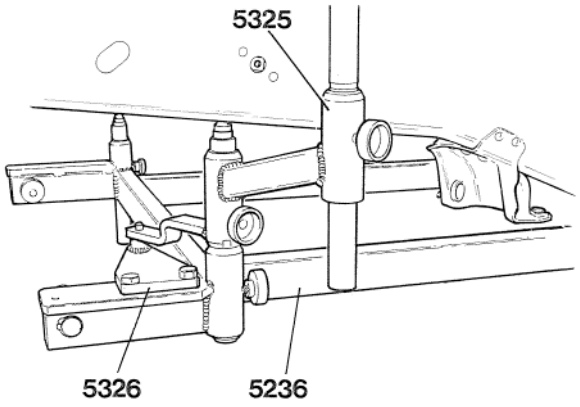
*AG5*

**If engine and front assembly are not installed:**

*AG6*

**Follow steps AF1-AF4.**

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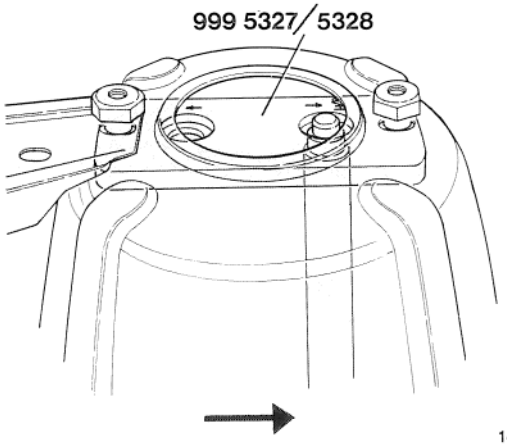



147141S

First remove gauge 5238 if installed on fixture 5236.

Mount locating pin 5326 on universal fixtures 5236 and 5237.

Set up measurement fixture 5325 on universal fixture 5236.




142825S

Insert measurement fixture in wheel arch.

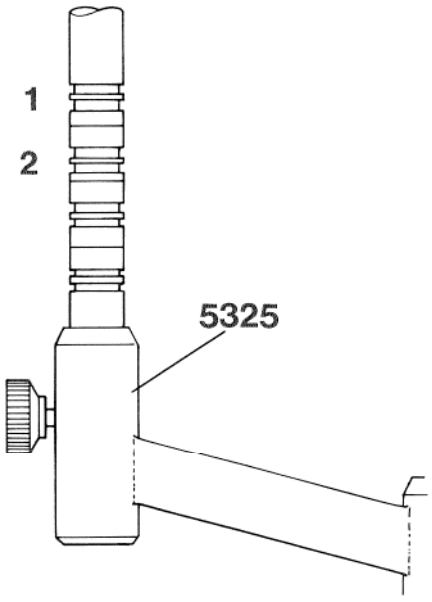
Secure gauge plate to turret.

Low turret (1985-) 5327.

High turret (-1984) 5328.

**Note:** Gauge plate for high turret must be positioned differently for LH nd RH turrets.

Check marking on plate. Arrow must point forwards.




142826S

Positions 1 and 2 on fixture 5325 are for low and high turrets respectively.

1. Low turret.
2. High turret.

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# AH. Link arm bracket position in front side member (Replacement or inspection)

*Special tools: 5236, 5237, 5325, 5326, 5380*

*AH1*

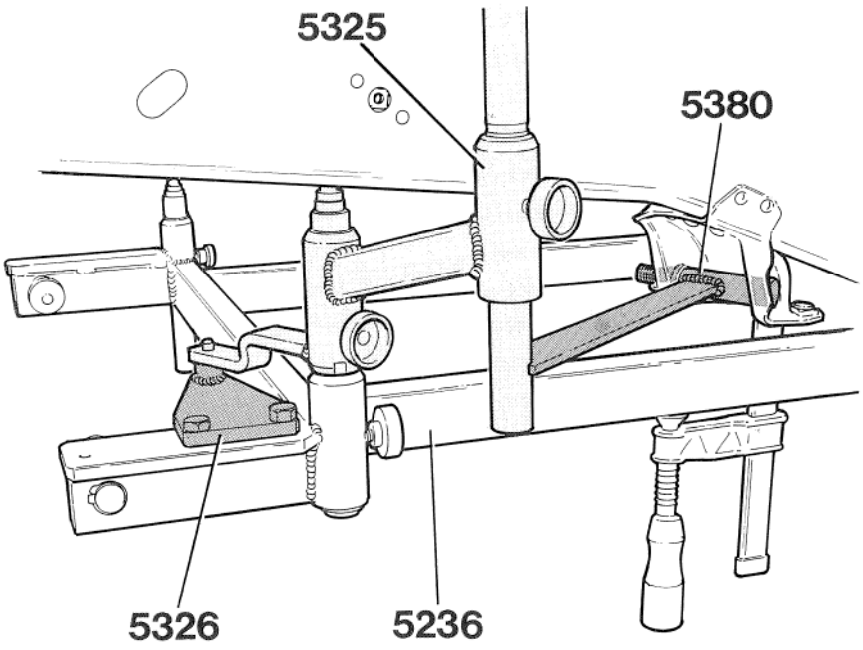
**Set up fixtures 5236 and 5237 (see steps AA1-AA2).**

Remove rubber ring from gauge on fixture 5236 for front axle member locating holes.

Lower gauge slightly and install fixture 5325.

Marry gauge up to front axle member locating holes.

Lock gauge fast with fixture locking bolts.




147007S

*AH2*

**Attach locating pin 5326 to fixture 5236.**

Insert pin in hole in fixture 5325.

Bolt locating pin fast to fixture 5236 using bolts supplied.

*AH3*

**Mount fixture 5380 into link arm bracket.**

Use link arm bolt without nut.

**Note:** Fixture is reversible and can be used on both LH and RH sides.

*AH4*

**Check position of link arm bracket by lifting fixture up towards gauge.**

Fixture should be at right angles to gauge and notch in it should match up with gauge. Acceptable position: 0-3 mm clearance.



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# AI. Checking front side panel positions

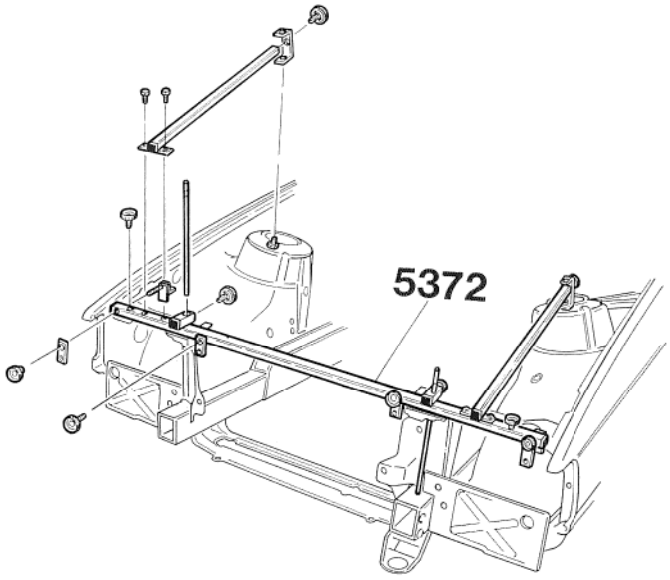
*Special tool: 5372*

To determine exact position of front side panels, use fixture 999 5372-1.

It is very important to get side panels right from the start as other parts depend on their positioning.

*AI1*

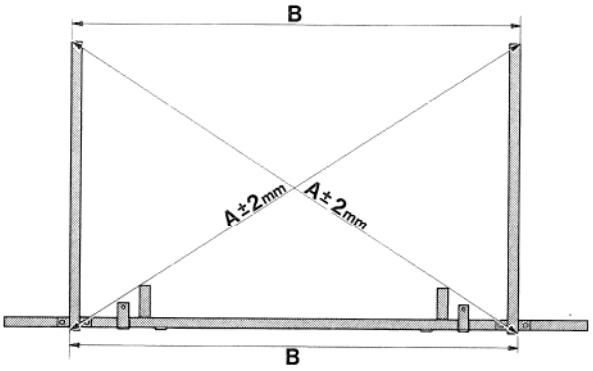
**Assemble fixture as shown in the illustration.**




146359S

*AI2*

**Checking the fixture**




157059S

Dimensions marked B should be equal.

Dimensions marked A can vary up to 2 mm.

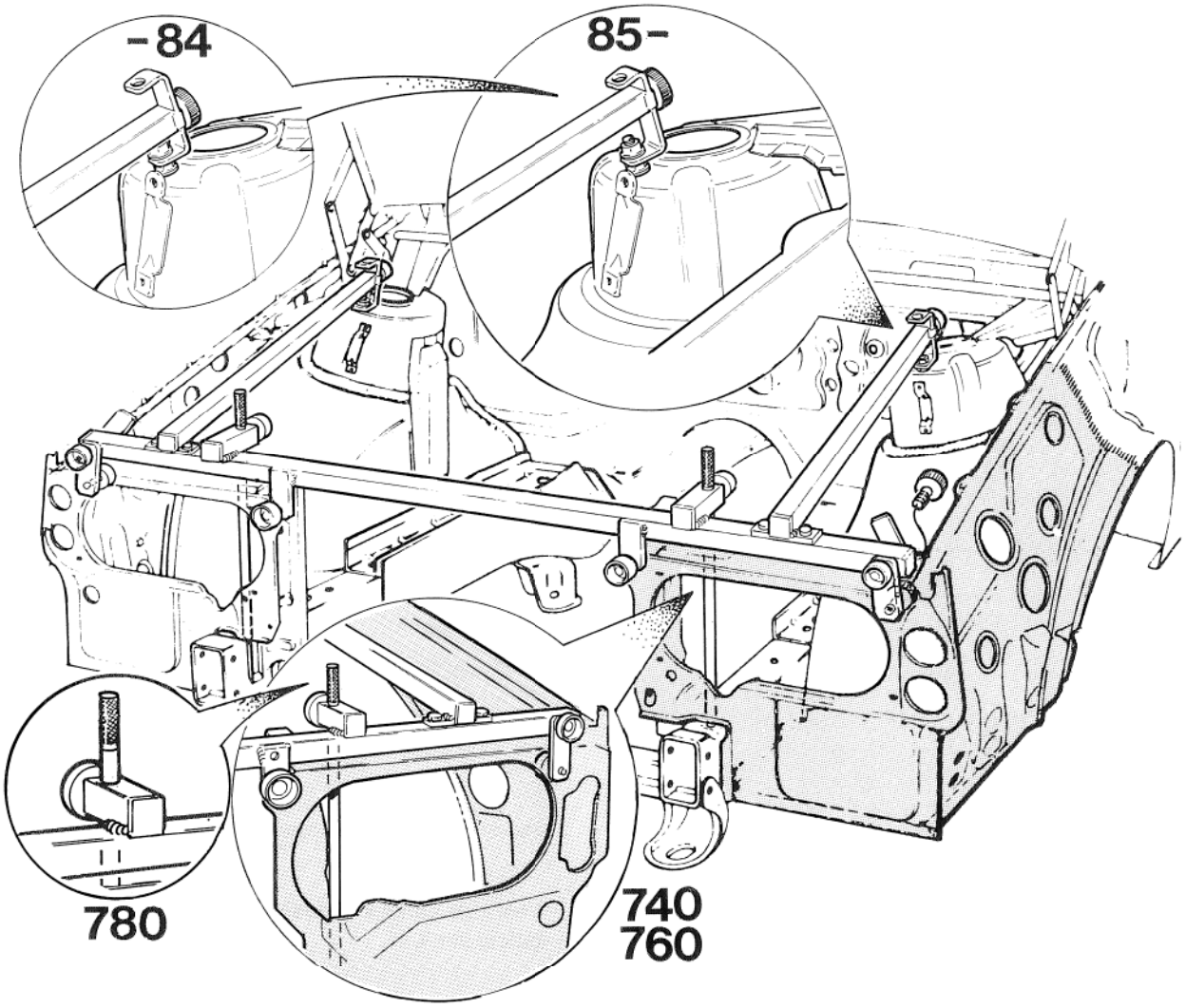
Different fixture settings:

See following pages

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# AJ. Setting up and installing fixtures

## 740 -1989, 780 and 760 -1987




147042S

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Wheel arch and battery shelf fitted.

All replacement parts should be ready for welding and mating surfaces primed.

Install side panel loose using welding clamps.

Set up fixture and install bracket in correct position:

740 high (-1984) or low (1985-) turret.
760 high (-1984) or low (1985-1987) turret.
780 low turret.

Bracket must rest on front nut of suspension strut.

If strut has been removed, run a bolt (M10 x 30 mm) through from the underside into the front turret hole, with the nut on top.

Set rod to correct height position:

Upper groove for 740/760.
Lower groove for 780.

Read off height on rod on top of fixture anchorage.
Rod should be lying along side member.

Undo any welding rods.

Bolt side panel to fixture.

Use existing wheel screws, two on each side.

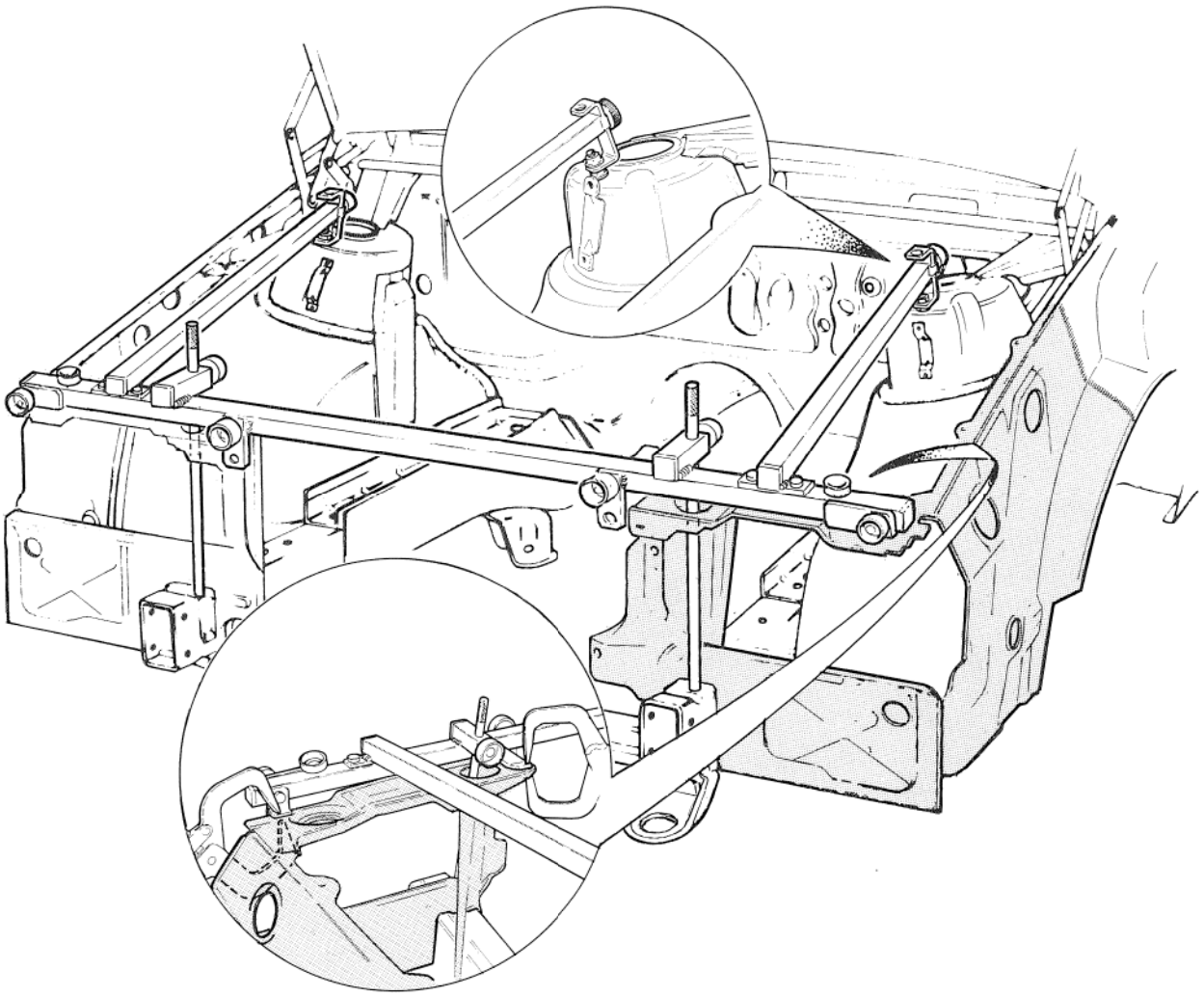
Weld side panel into position against side member and battery shelf.

Align outer wheel arch front section against existing rear section, side panel and battery shelf.

Weld outer wheel arch in position.

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## 760 1988-1994 and 740/940 1990-



147041S

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Wheel arch and battery shelf are installed.

All spare parts should be ready for welding, with mating surfaces primed.

Set up fixture.

Set bracket for low wheel arch turret.

Bracket should rest on front nut of suspension strut.

If suspension strut has been removed, run a bolt (M10 x 30 mm) through from underneath into wheel turret front hole with the nut on outside.

Set rod to correct height (lower groove).

Read off height on rod on top of fixture anchorage.

Rod should be touching side member.

Attach upper side plate to fixture with 2 welding clamps.
**Note:** Side plate must be touching fixture.

Attach lower side plate to side member, battery shelf and lower section of upper side plate.

Secure with welding clamps.

Marry front section of outer wheel arch up to existing rear section, side panels, battery shelf and inner wheel arch.

Secure with welding clamps.

Weld all parts in position.

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# B. Repair procedures

## BA. Bodywork repairs, general

Volvo car bodies are built to the highest standards.

So, all bodywork repairs must follow the same principles.

Always use high-quality tools and equipment.

Items to consider: surface coating, electrodeposition (ED), phosphating, caulk and welder primer.

**Note:** Always used genuine Volvo replacement parts in repairs.

Dismantling:

Plan work carefully. Don't remove more parts than necessary.

Remember that you will have to put them all back again.

Check car cable harnesses before making repairs.

Switch ignition off and disconnect battery leads.

If you will be working close to a control unit, remove it first.

Control units cannot be exposed to temperatures over 90°C (195°F).

If in doubt, take the control unit out.

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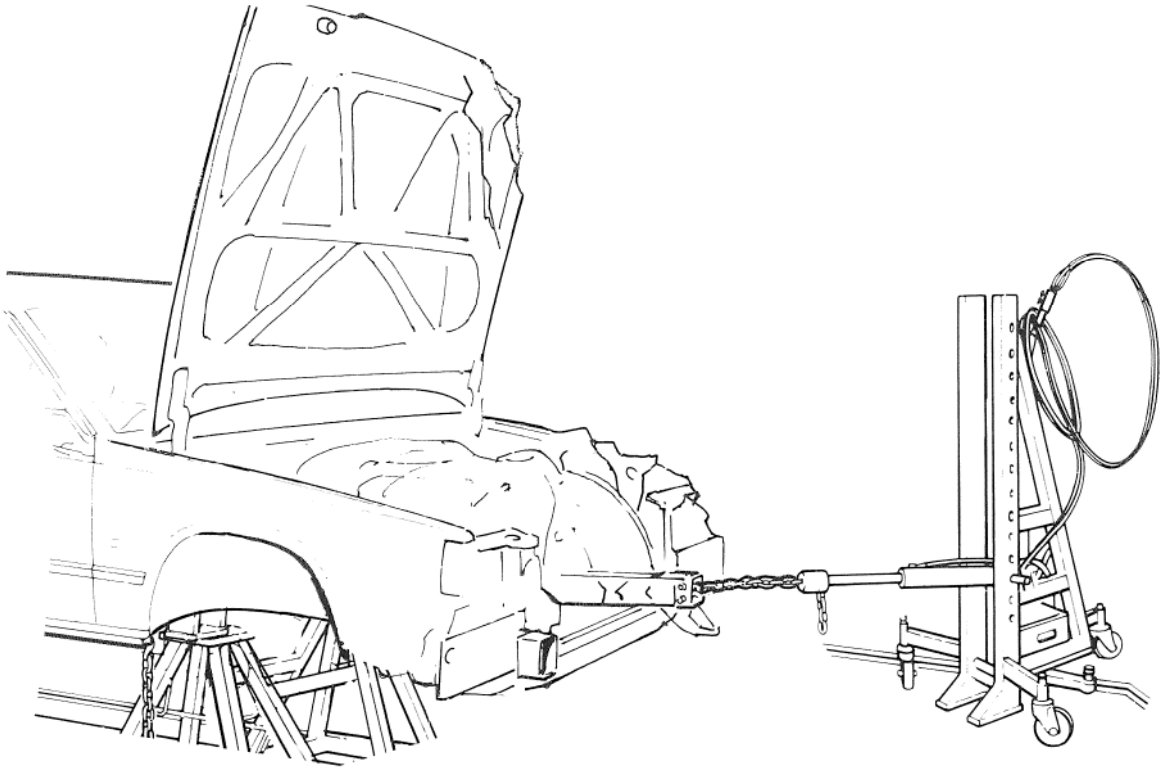
Rough alignment or rough cutting away:

Check that all secondary damage has been repaired.

Remove the parts to be replaced.

Use hydraulics for rough alignment.

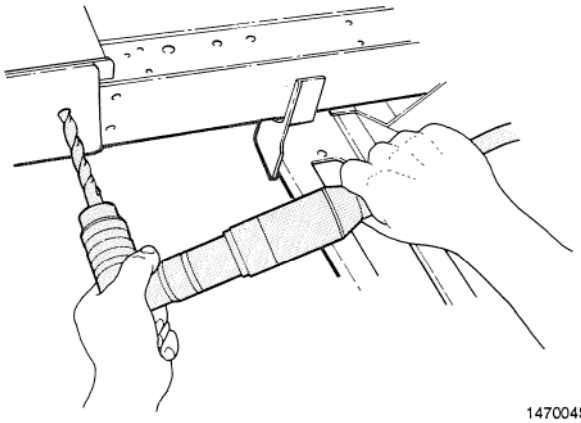
For rough cutaway work, use a pneumatic hammer or cutting burner if there is at least 50 mm from the components to be left in place.



147581S

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# BB. Welds



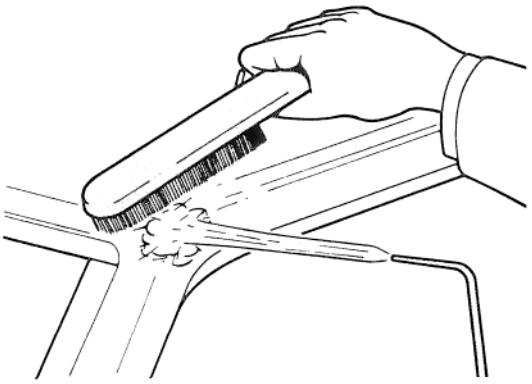
147004S

Dismantling welds:

Use a spot weld drill, diameter 13 mm,
and grinder with a cutting disc.

Chisel away damaged part by hand.

**Note:** Treat surfaces which are to be re-used with care.



147003S

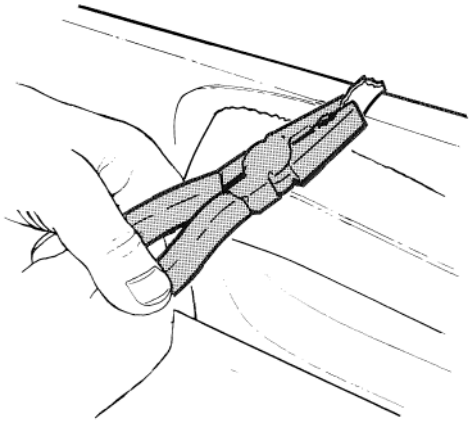
Hidden seams:

With hidden seams, solder, filler, caulk and wear protection must be removed before dismantling weld.

Use a gas burner with a gentle flame and stainless steel brush.

**Note:** Do not overheat panel.

Use a vacuum suction unit.

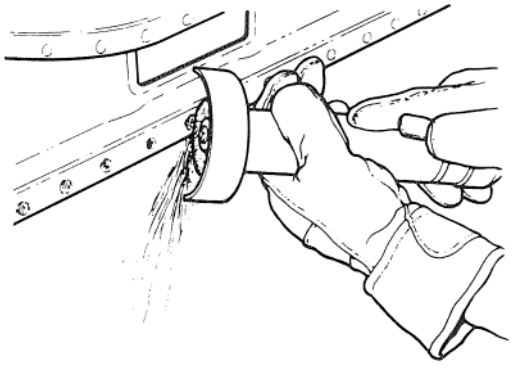


147005S

After rough cutting away:

Remove unwanted panel remnants in the same way as welds.

Use whichever method causes least damage.



147006S

Grind mating surfaces clean:

When grinding surfaces clean for a new weld, grind old weld spots and unwanted metal remnants only.

Use a wide grinding disc.

Take care not to grind panel down too thin.

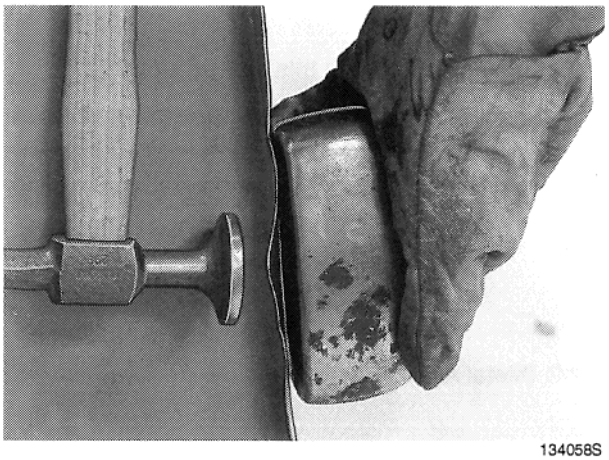
You can use a fibre disc for grinding other surfaces (coarsest grain: 60).

Remove caulk residues etc. with a gentle burner flame or rotary grinding sponge.

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# BC. Alignment and welding

## Align panel edges

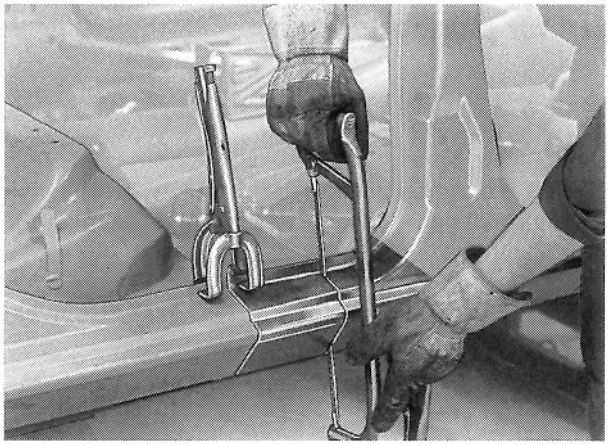


134058S

Work all panel edges and mating surfaces to correct shape.

Use a hammer and counterhold.

## Adjust replacement part.



134059S

Cut replacement part roughly to size if necessary.

If part must be replaced whole, install it provisionally to check alignment.

Cut both new replacement parts on body at the same time if possible.

Make butt joints.

Check fit with adjacent parts, such as doors and fenders.

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# BD. Preparations for welding

Choose welding method.

Prepare joint accordingly.

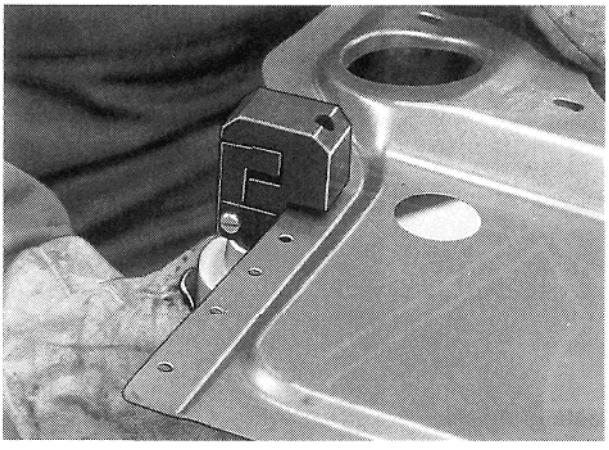
Follow the instructions in this manual carefully.

> **Note:** Never use gas welding when working on Volvo car bodies.

MAG (Metal Active Gas)

If using MAG welding, there is no need to remove electrodeposition (ED) or phosphating (primer); but the underlying panel must be cleaned with a suitable drill (see next page) by a hole cutter after assembly.

## Punch out replacement part for plug welding.



134060S

Select the right size hole for the plug welds for the thickness of panel concerned (both panels together).

Select 6 mm if combined panel thickness is less than 1.5 mm thick.

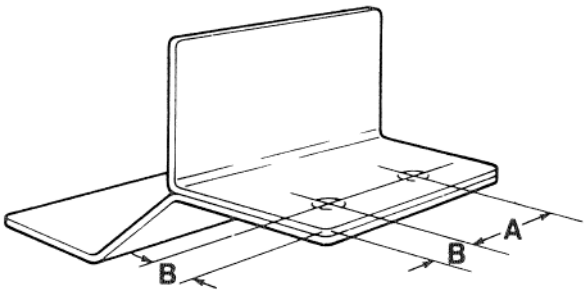
Select 8 mm if combined panel thickness is less than 2.5 mm.

Select 10 mm or more if combined panel thickness is over 2.5 mm.

Space holes 25-35 mm apart.

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# BE. Welding
# MAG welding




146999S

Hole spacing

| Sheet gauge (mm) | Spacing (A) (mm) | Spacing (B) (mm) |
|---|---|---|
| 0.6 | 25 | 10 |
| 0.8 | 25-30 | 10 |
| 1.2 | 30-35 | 12 |

**Note:** Check panel thicknesses carefully.

Check welds and settings by using test welds on pieces of the same thickness.




148047S

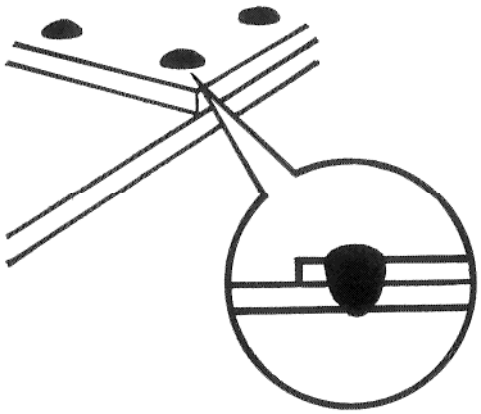
Clean before welding.

Use a flat-ended 5 mm bit.

Joints should look like this after cleaning but before welding.

**Note:** Remember to apply welding primer to both inside flanges (arrows).

Allow to dry for approx. 15 min.



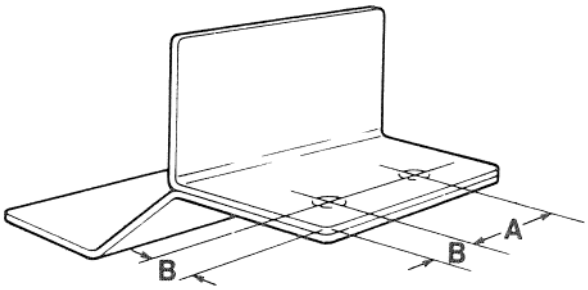
147001S

Check weld quality once work is complete.

Correct MAG welding.

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## Resistance spot welding




146999S

Resistance spot welding can be used if weld capacity is suitable for plate thickness.

Resistance spot welding needs clean, paint-free surfaces.

Clean surfaces with a rotary grinding sponge or low gas-weld flame and stainless wire brush.

This preserves the galvanizing and phosphating on panels and retains anti-corrosion protection without causing any problems when welding.

Spacing between spot welds should be approx. 25 mm.

Weld some test pieces first, then check weld quality by taking them apart.

| Sheet gauge (mm) | Spacing A (mm) between weld spots (min) | Spacing B (mm) (min) |
|---|---|---|
| | | |
| 0.6 | 11 | 5 |
| 0.8 | 14 | 5 |
| 1.0 | 18 | 6 |
| 1.2 | 22 | 7 |
| 1.4 | 25 | 8 |

**Note:** Heavy-gauge body parts (e.g. front members) must be MAG welded.

HSS parts need slightly larger holes for plug welds and spot welds closer together.

Before welding:

Check the area where new parts are to be installed.

If there is grinding damage, for example areas of bare metal beyond the ground welding flange, apply a coat of filler primer to area.

Allow primer to dry for around 15 min. before starting welding.

Apply welding primer to inside surfaces of both flanges.

Allow to dry for around 15 min.

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# BF. Welding and bonding

The main welding method used when bodies are originally built is tong spot welding.

Some workshops do not have such equipment, so the usual method used is MAG spot welding.

Properly done, MAG welds meet requirements in terms of both strength and appearance, and this is therefore the main method used in this manual.

The splicing diagrams use symbols to show the different welding methods which can be used.

There is a choice of methods in some cases.

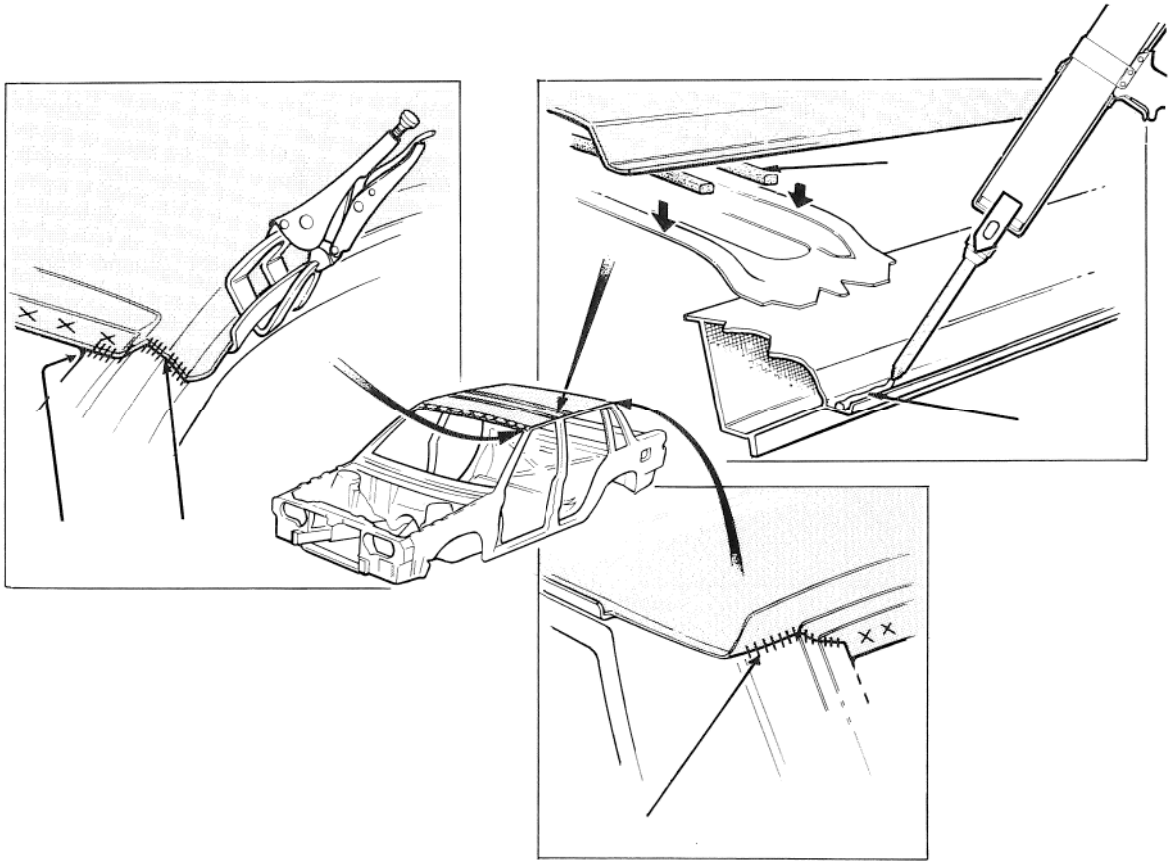
Panels can also be bonded together.

This method is an alternative where welding would cause heat problems or in inaccessible places.

At present, bonding is not a specification, merely an alternative.

Follow the environmental instructions for the market concerned.

Where there is more than one possible assembly method, all are shown. If only one method is shown, that method ONLY must be used.

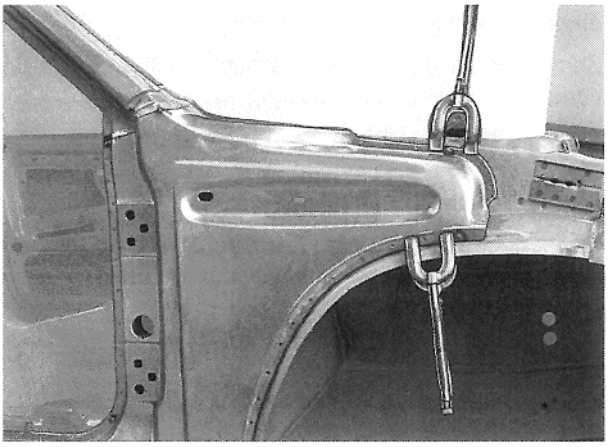


147044S



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# BG. Welding and grinding



134062S

Attach spare part.

Fix part in position with welding clamps.

Make a few spot welds.

Check that parts are in the right position.

If parts are in the right position:



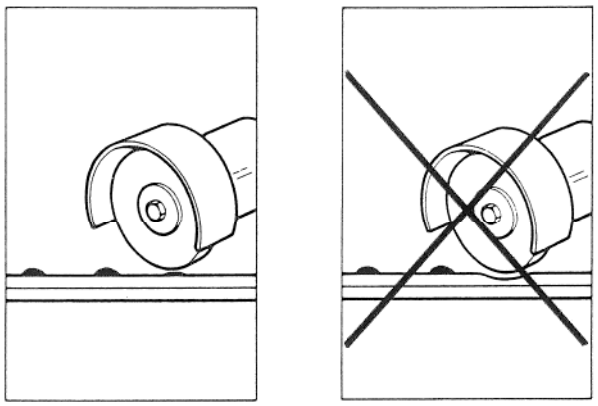
134064S

Weld complete.

Follow the instructions shown in the splicing diagram.

For safety's sake, welding must be carried out according to instructions.

The symbols indicate what welding method(s) to use.



146998S

Grind down weld bumps.

MAG spot welds must often be ground down with a cutting disc.

**Note:** Only grind down welds, not surrounding metal. Do not grind below plate thickness.

Grinding resistance spot welds is usually unnecessary.

If there is any weld spatter on the edges of weld spots, grind it off.

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# BH. Filling materials and caulking



10005

Plastic filler and solder can be used to smooth over joins and rough spots.

Volvo filler can also be used on ordinary sheet metal, aluminum and electro-deposited sheet if matted down.

**Note:** Max. 1 mm plastic. Max. 4 mm solder.

These dimensions indicate the maximum thickness of plastic and solder that may be used.

**Note:** When working on galvanised plate, follow instructions as per BN.

Dress area with a file and/or sanding block with no. 60 paper.

Grind area and caulk joints.

Coat all areas which have been ground and where caulk is to be applied to joints with filler primer.

Allow primer to cure for about 15 min. before applying caulk.

This will make the joint more resistant to corrosion.

Caulk can be painted after about 2 hours.

**Note:** For complete caulking diagram, see p.113.

**Note:** Replacement doors and hatches must be caulked before painting.

**Note:** Dry surface with acetone before caulking.

Rustroof components before painting.

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# BI. Cable harnesses

## All cars except 960 1995-

Before starting work, it is important to familiarize yourself with the routing of wiring and where connectors are in the car.

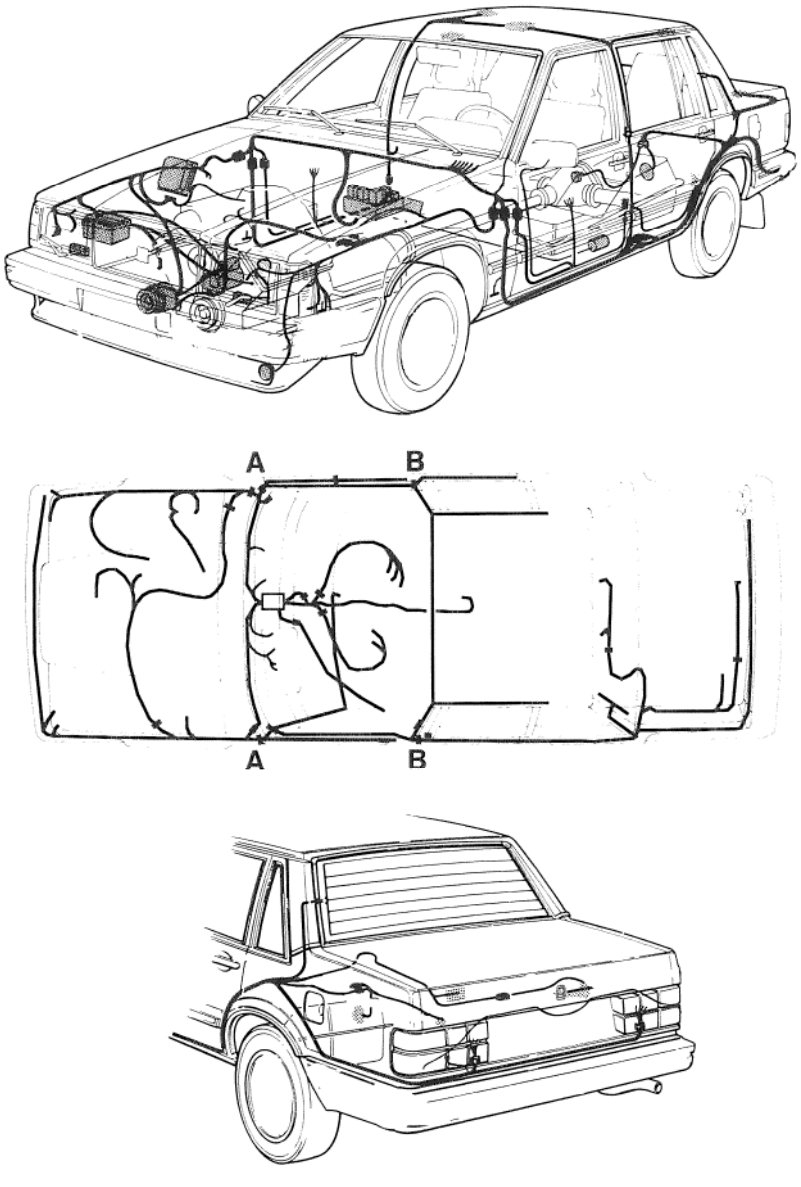
Body and engine are grounded to the negative battery terminal.

The main cable harness junctions are by the A and B posts and in front of the gear lever.

The drawings below show the main cable runs.

Some models with additional equipment may have more leads.

Accordingly, take maximum care when working on body in places where there is a risk of coming into contact with leads.

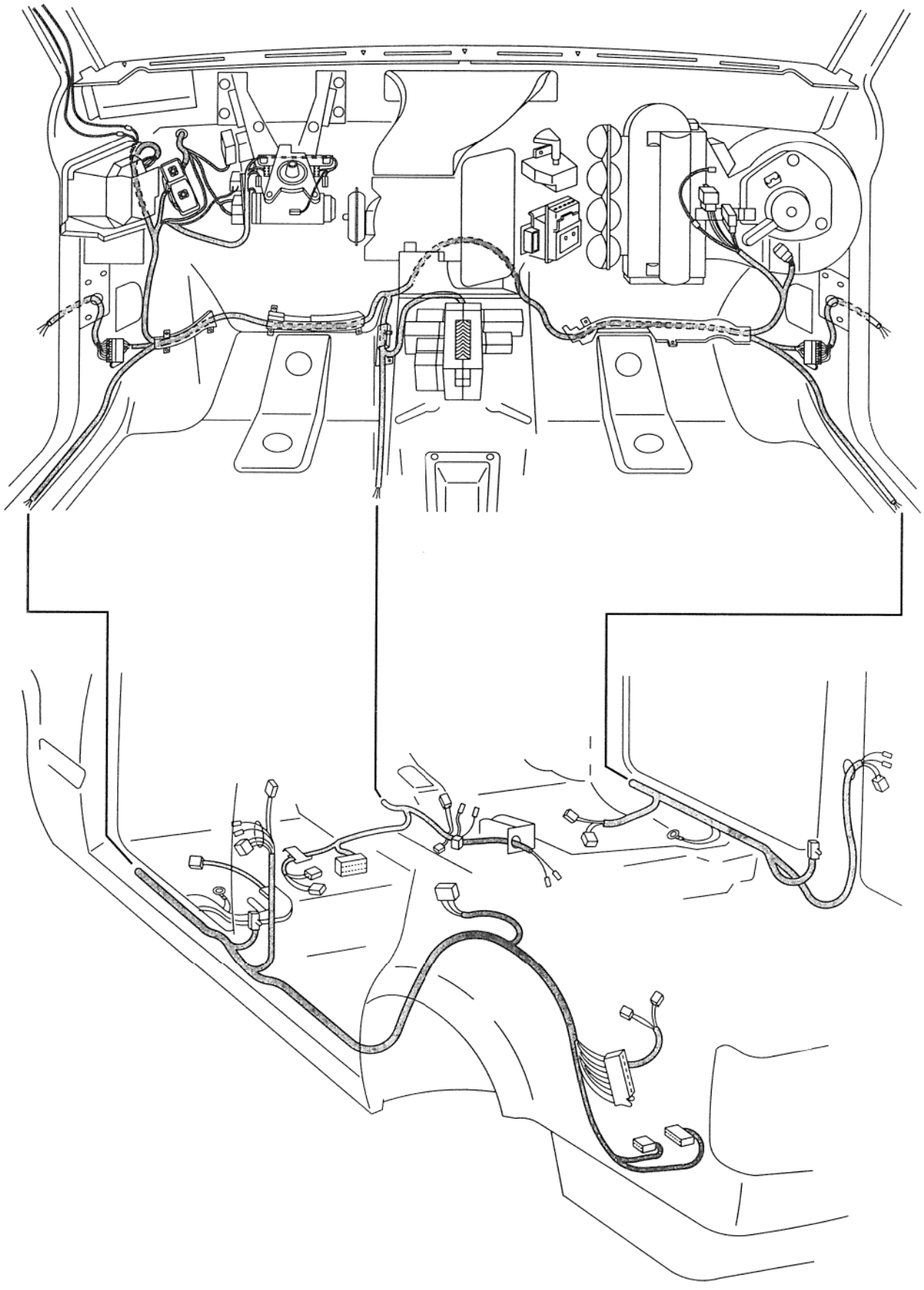



147557S



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## 960 1995-

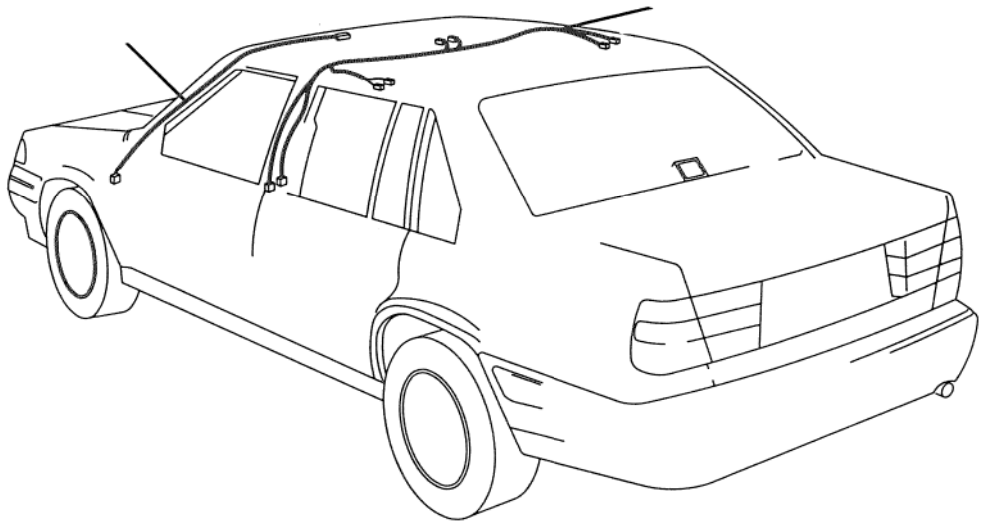


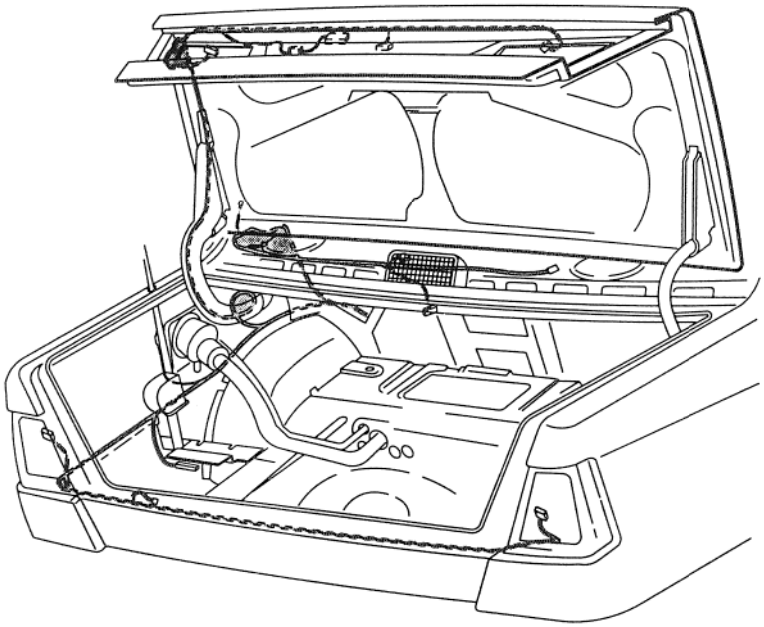
8100193S

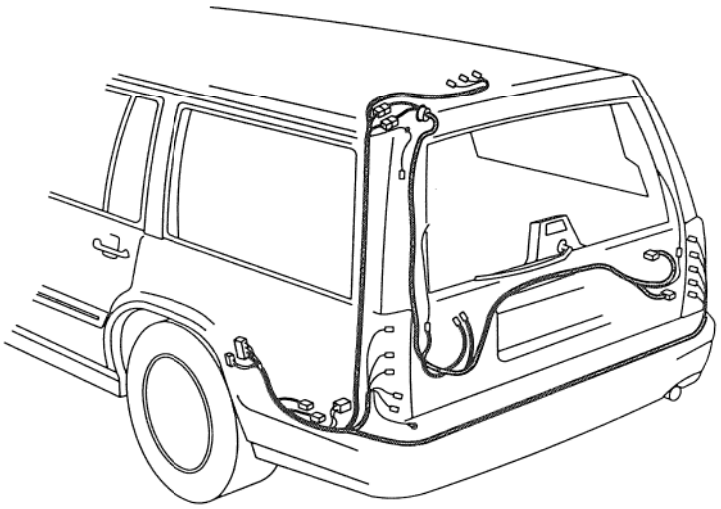


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## 960 1995-





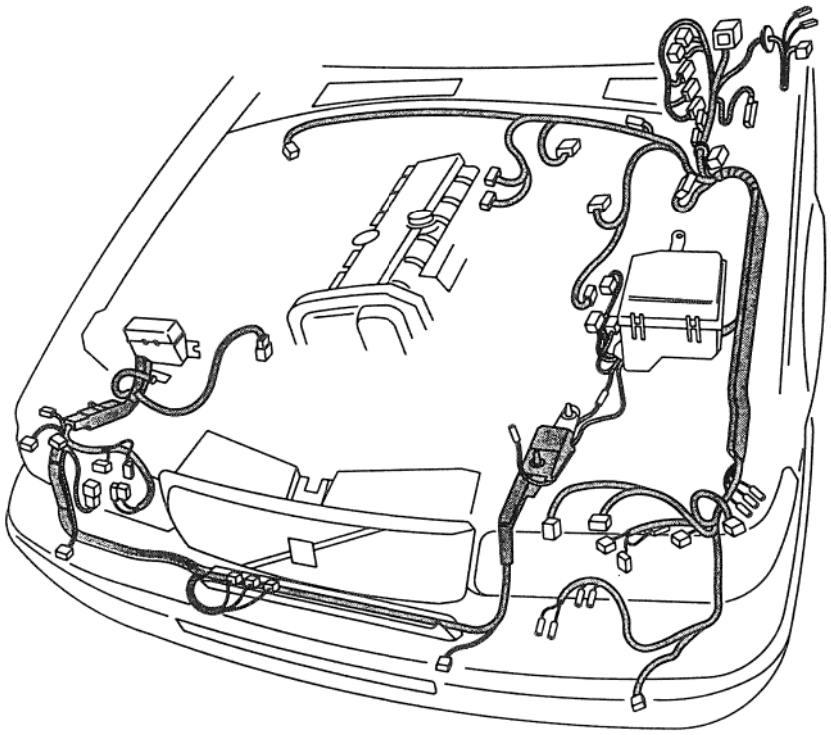


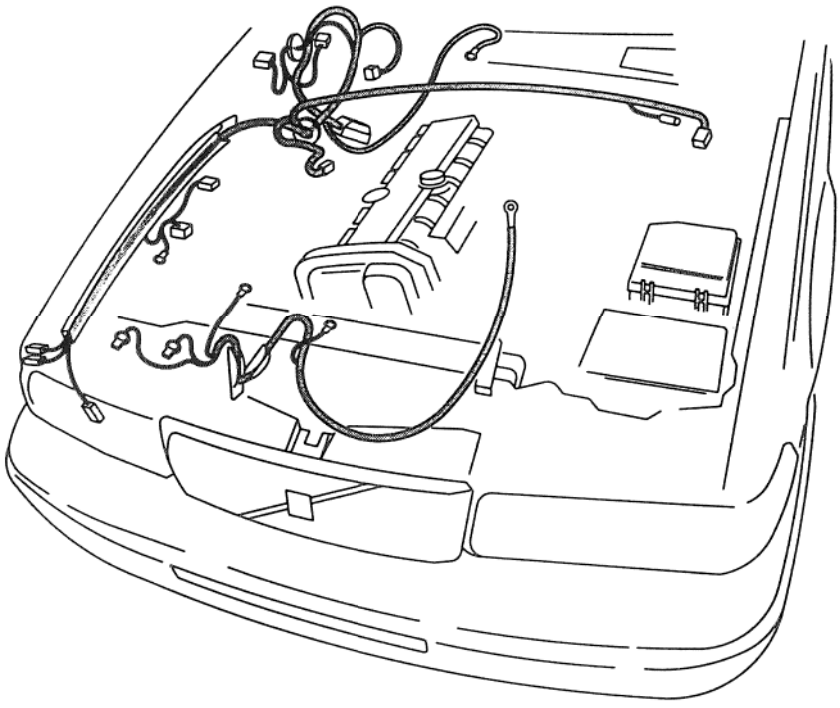
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## 960 1995-





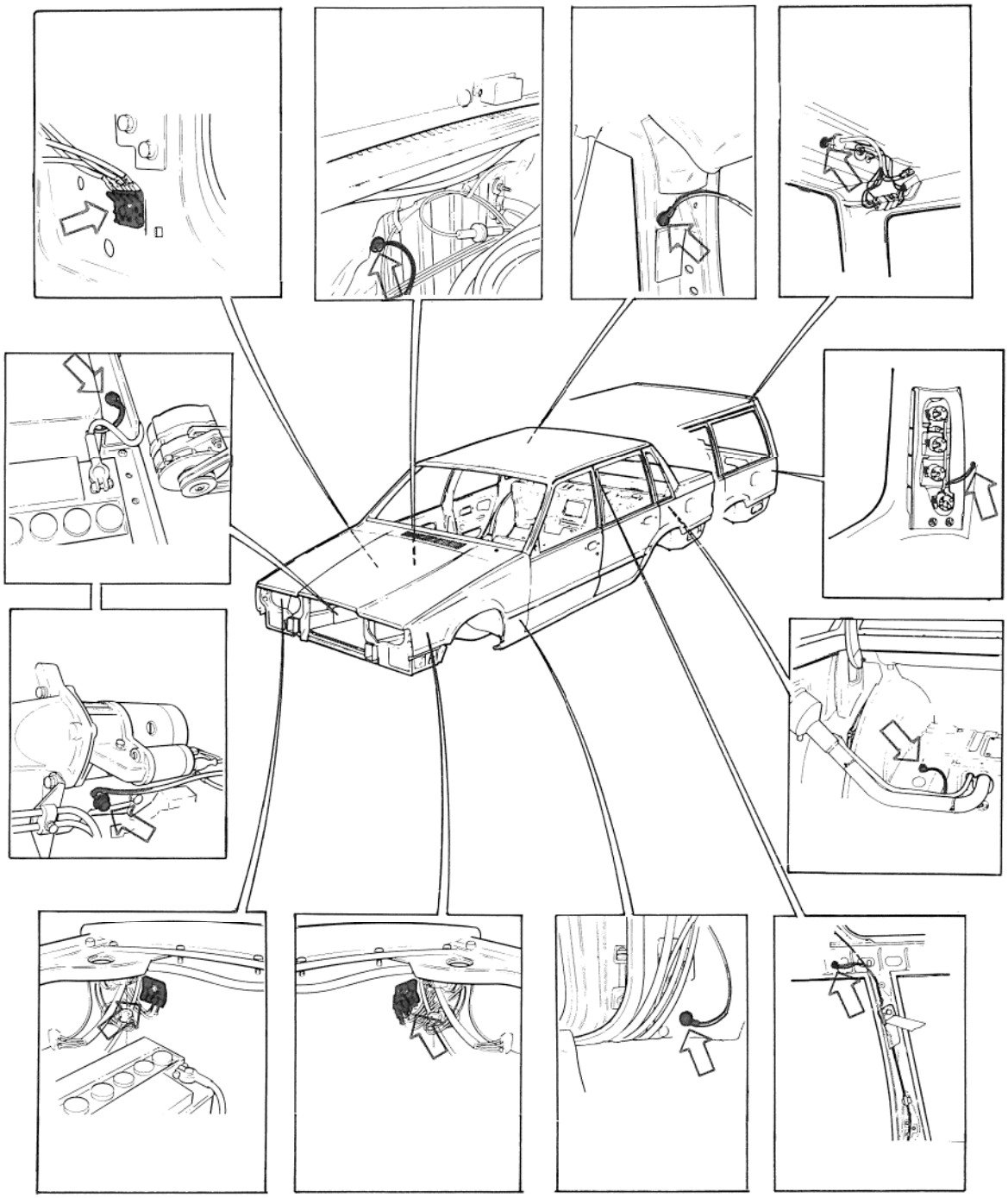


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# BJ. Ground points

## All except 960 1995-

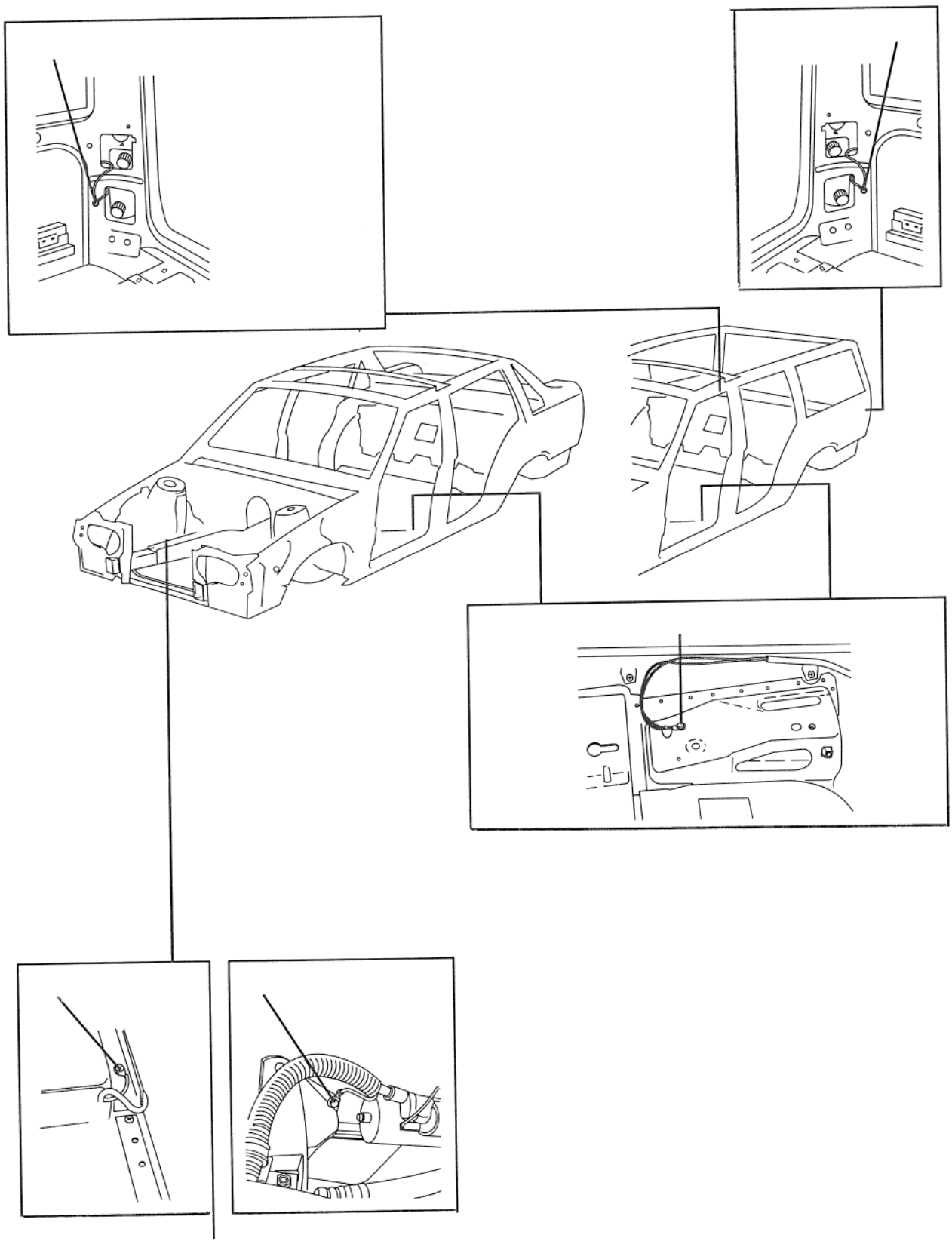
There are ground points at sill height at the A posts, behind the front turn indicators and in the center console by parking brake handle.



147213S

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## 960 1995-

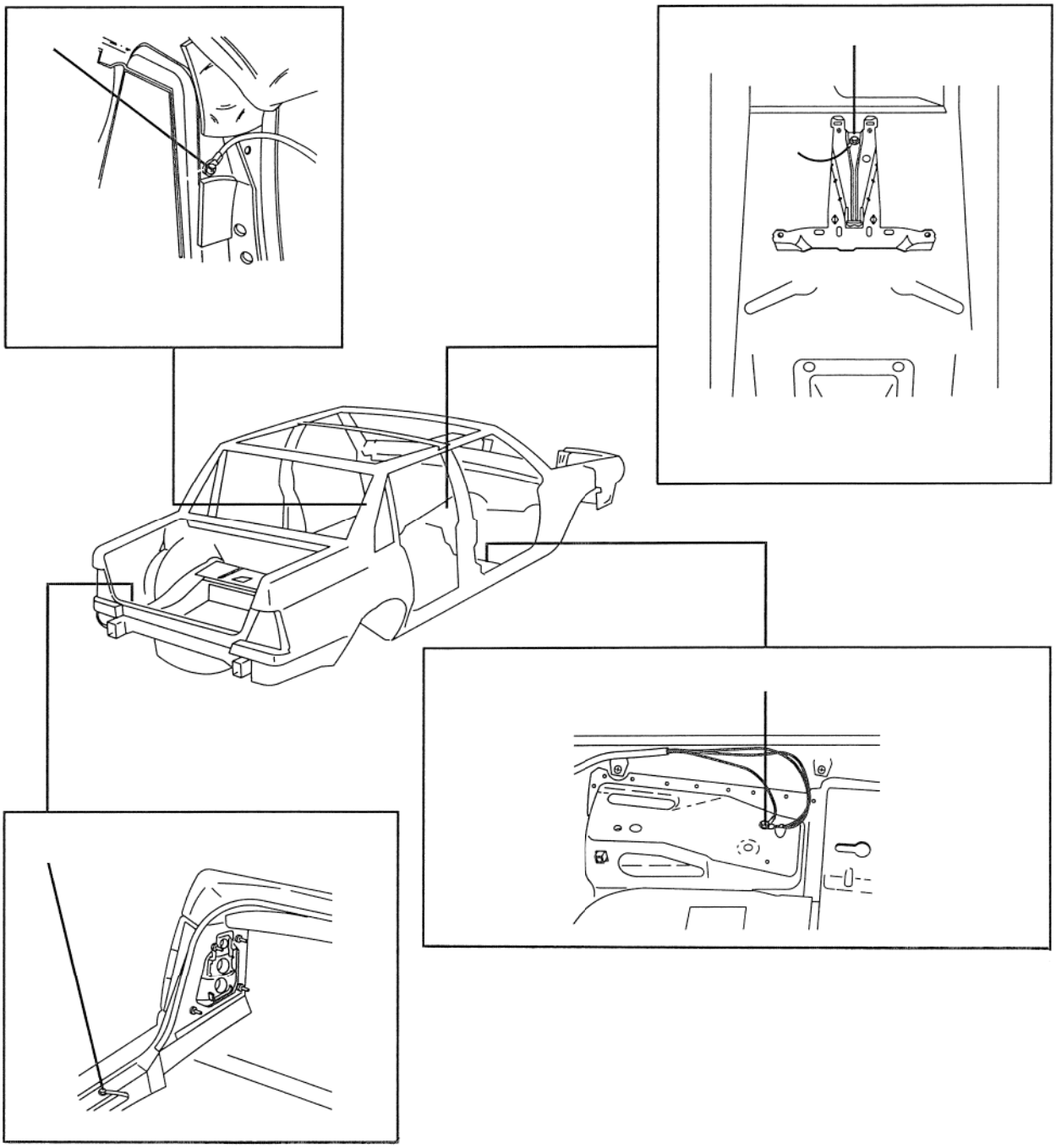


8100191S



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## 960 1995-



8100192S

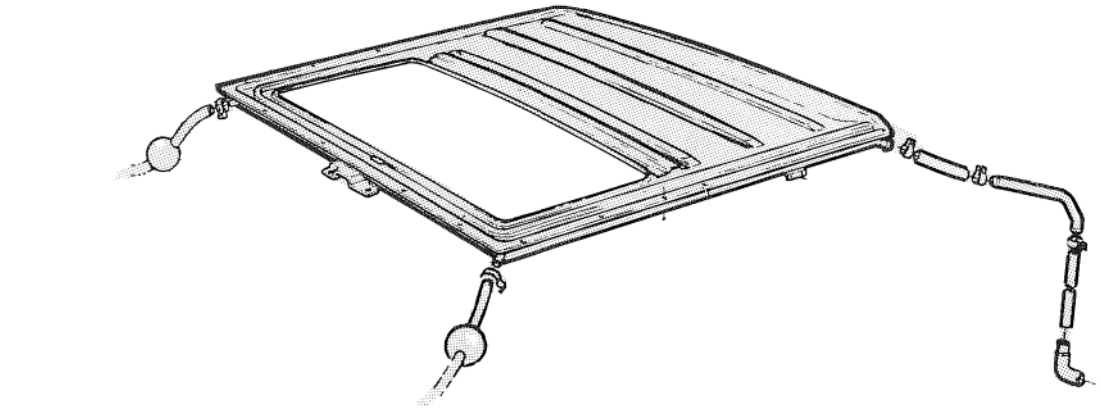


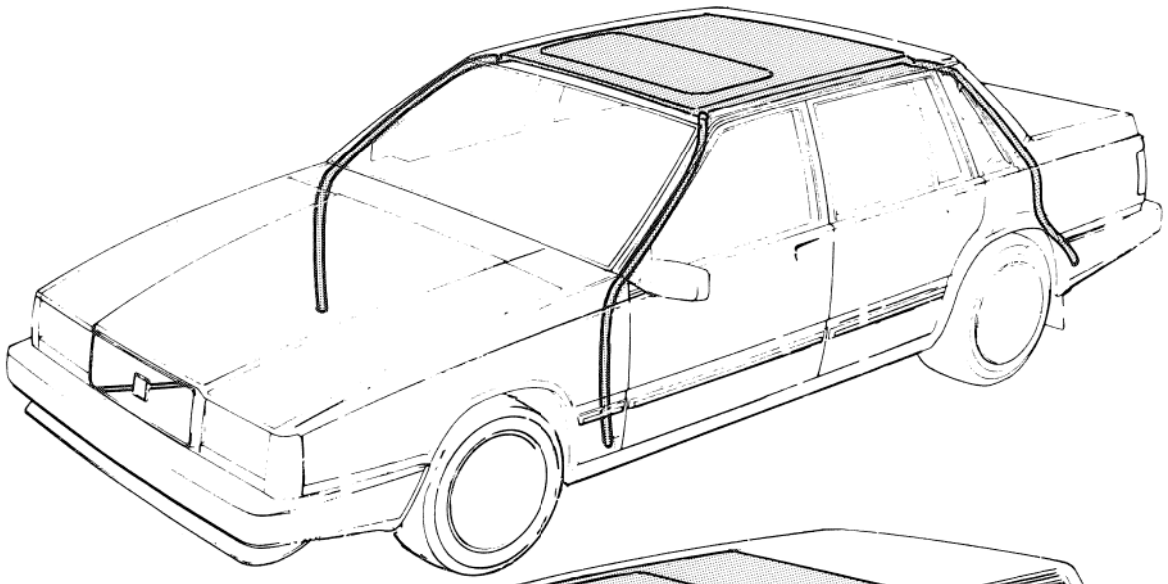
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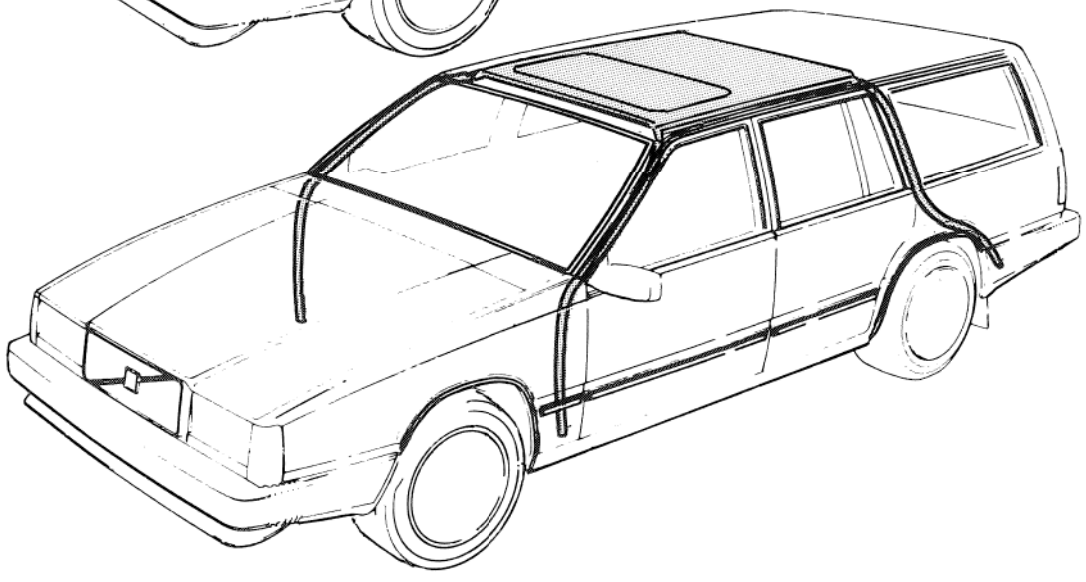
# BK. Cars with sunroofs

On cars with sunroofs, take care with sunroof drain pipes.

The diagram shows pipe routing.







147212S

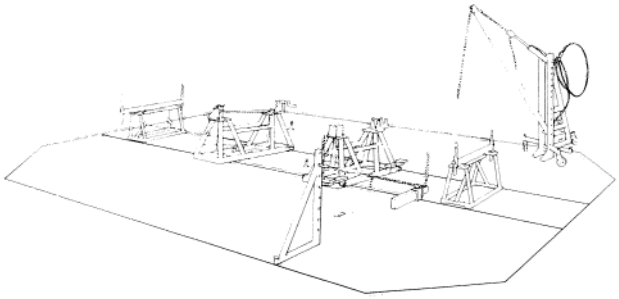


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# BL. Alignment benches

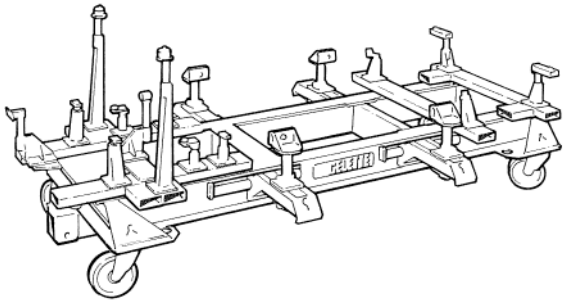
We recommend using alignment benches for major repairs.

There are four makes Volvo recommends:



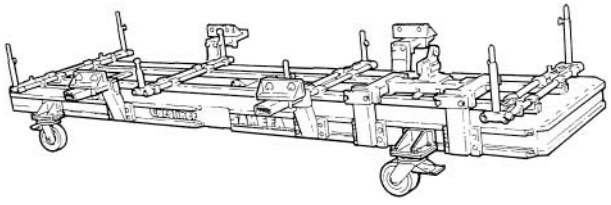
146994S

Volvo Body Aligner.



146997S

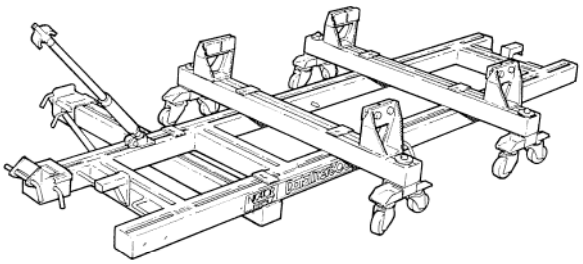
Celette.



146996S

Caroliner.

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Dataliner.

146995S

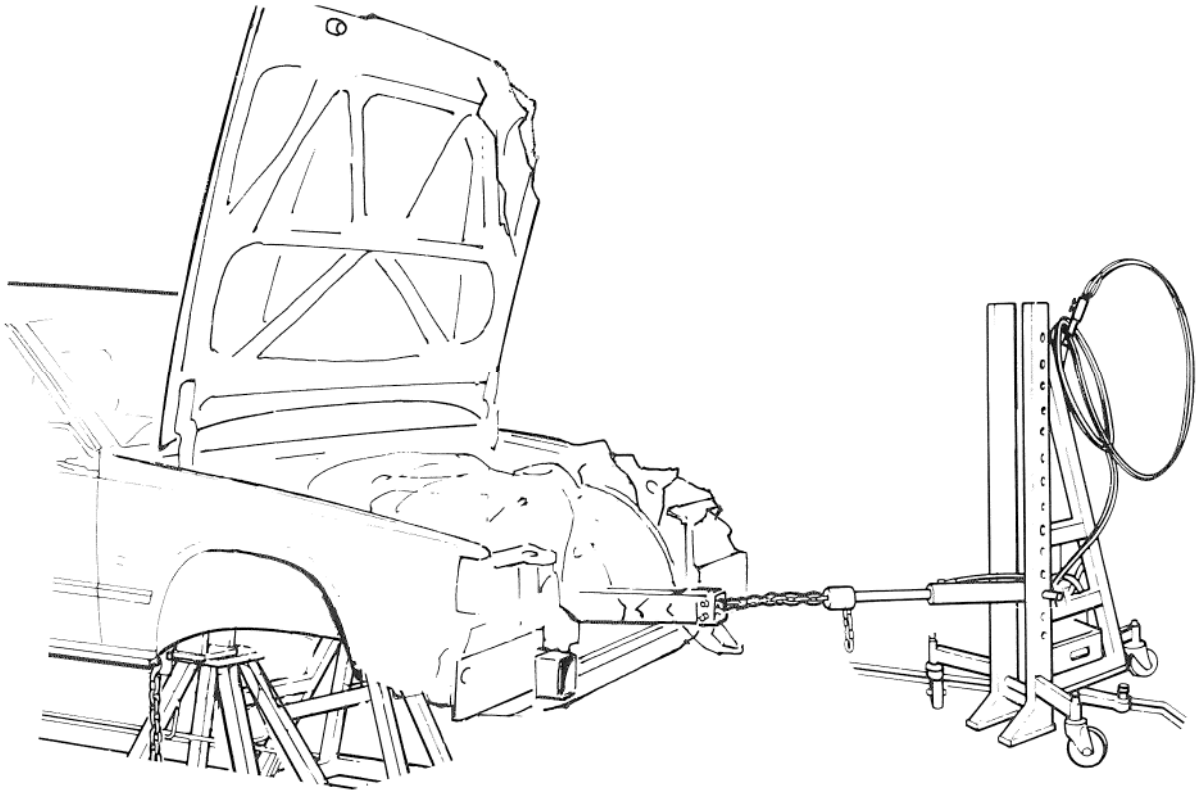
## Dismantling and mounting on alignment bench

It is important to plan the job carefully before putting the car on the bench.

Do not remove more parts than necessary.

Secure car before using pulling equipment.

If the member structure is deformed and alignment bench has only four sill attachment points, auxiliary anchorage points and extra supports underneath side members will be needed.

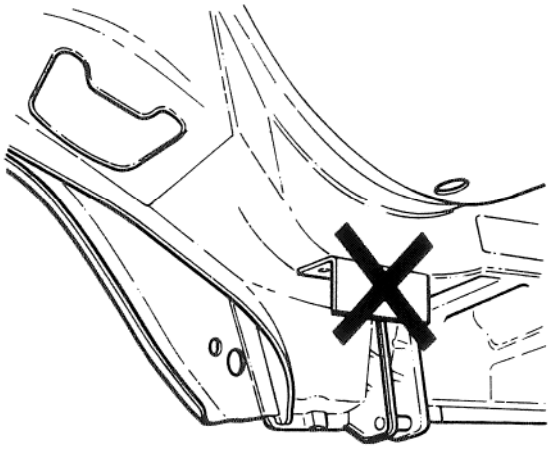


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# BM. Alignment

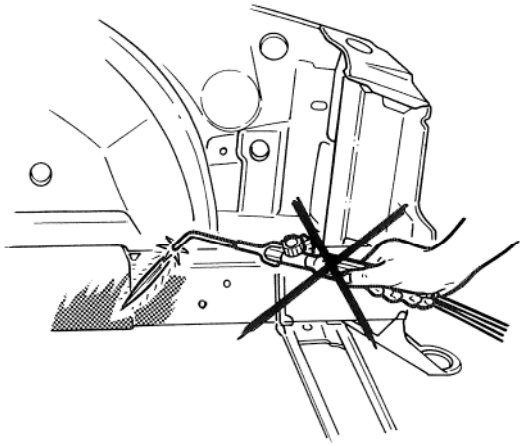


146992S

Do not use welded anchorages on sheet metal parts which will not be replaced.

Measuring gauges, gauge plates and fixtures should fit perfectly.

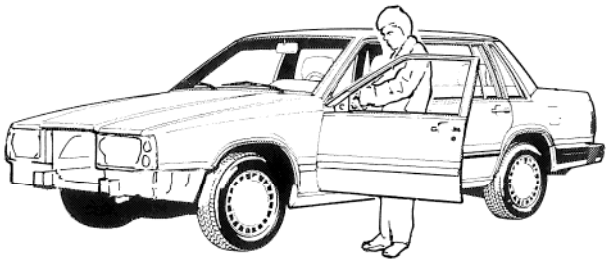
Check alignment continuously to achieve desired results.



146993S

Do not use heat when aligning.

Removing car from alignment bench.



147188S

Work on the alignment bench is not complete until the body is completely tension-free, welding is complete, all parts fit properly and all dimensions are correct.

**Note:** Final adjustment of doors and other loose parts must be carried out with car standing on all four wheels.

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# BN. Galvanised sheet

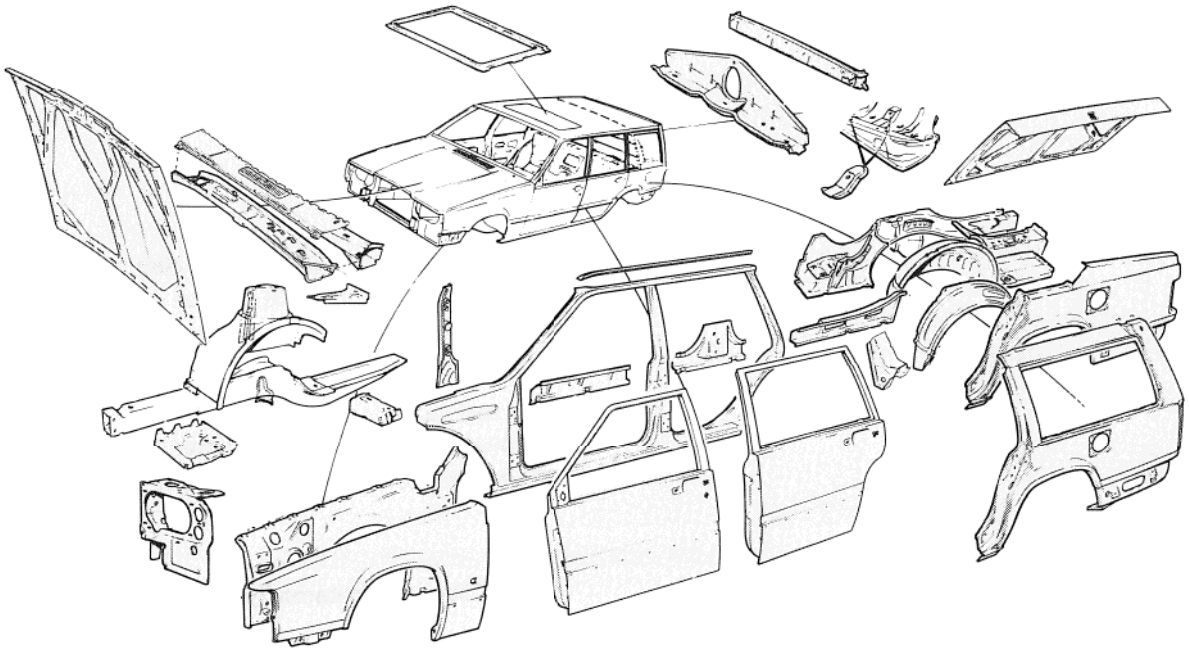
Volvo use many sheet metal parts made of sheet galvanised on one or both sides for maximum anti-corrosion protection.

When working on body, take care not to damage galvanising excessively and avoid grinding damage.

When working, replace damaged galvanising with Volvo recommended materials.

The parts shown in the diagram below are galvanised in the car as originally built.

Sheet metal parts must be cleaned and repaired as shown above.

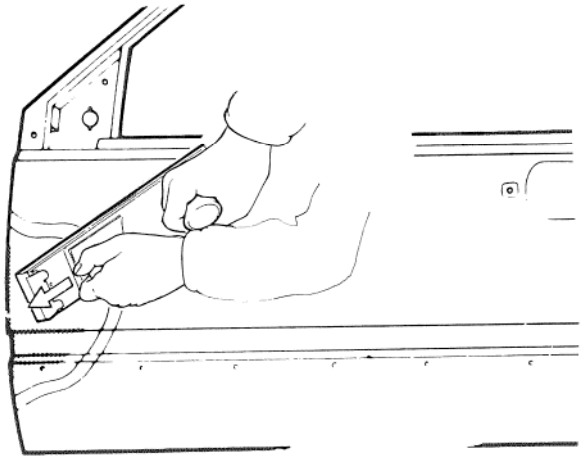


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## Aligning and welding galvanised sheet



147146S

Alignment:

Galvanised sheet can be aligned in the usual way, but avoid using a body file.

Use a sanding block or grinding disc with no. 60 paper.

Solder can be applied as usual.

Solder flux removes galvanising from the sheet, after which the solder attaches to the sheet in the usual way.

**Note:** Protect galvanised coating as far as possible, as it is part of anti-corrosion protection.

Welding:

Sheet metal parts of galvanised sheet may be welded using either MAG or resistance spot welding.

Protect galvanised layer during preparations as far as possible.

Don't forget to use weld primer.

Use point extraction.

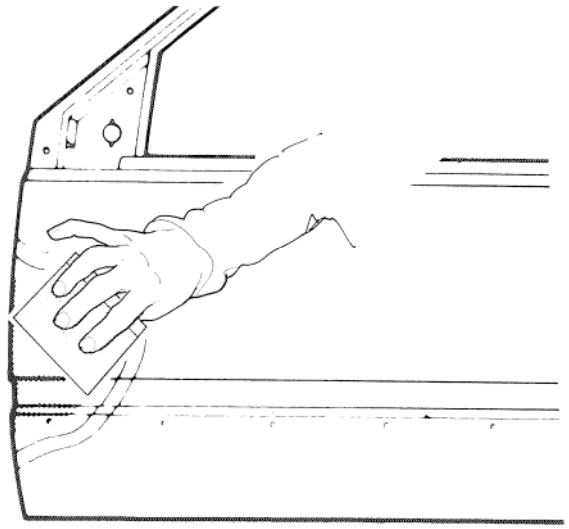
With MAG welding, the initial welding contact may be rather difficult, but, once proper contact has been made, welding can proceed as usual.

With resistance spot welding, welding electrodes on unit must be kept pressed together for longer than with conventional gauge sheet and a slightly higher voltage used.

**Note:** Check welds carefully.

**Note:** Resistance spot welding needs clean surfaces. Clean surfaces with a low gas flame and stainless wire brush or rotary grinding sponge to protect galvanising and phosphating on sheet.

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147186S

Filling:

After aligning galvanised sheet, plastic putty can be used in the same way as on ordinary body panels.

Some types of filler cannot be used directly on galvanised sheet.

Volvo have developed a special putty for this purpose.

It can also be used on conventional sheet and aluminum.

No primer is needed.

**Note:** When applying putty:

1. Grind off old paint.

2. Apply putty.

3. Try to avoid damaging galvanised layer.

4. Max. putty thickness 1 mm.

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# BO. HSS steel

## (HSS = High Strength Steel)

HSS steel has a higher yield point and fracture limit than ordinary steel sheet.

One feature is that its yield point increases with heat treatment.

HSS steel may therefore be harder to align.

Do not use heat to align sheet (e.g. on an alignment bench).

When using an alignment bench, deformed HSS sections may cause problems unless the counterhold is positioned correctly to give maximum pull.

Accordingly, watch how the body responds to tension and make sure only the deformed area moves.

If the front section of the front member is deformed, replace it.

10006



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# BP. Aluminum

Volvo use aluminum for body sections in some models.

The sections concerned are the:
- hood (760/960)
- tailgate (all station wagons).
- sunroof.
- sunroof surroundings.

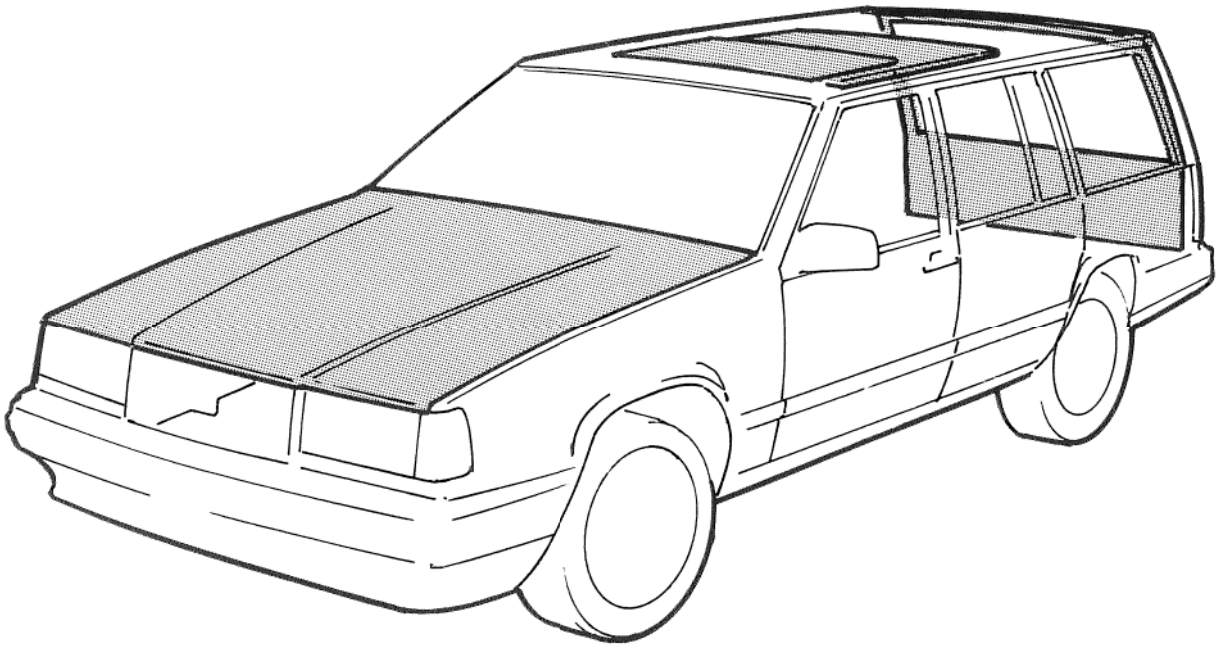
This aluminum sheet is called ALMG 3: it contains 3% magnesium to make it rigid enough for use in bodywork.

Aluminum sheet alloyed in this way is one of the non-hardenable alloys and so does not lose its strength when heated or welded.

Its melting point is approx. 630°C (1166°F).

It can be aligned and worked if you are careful.

| Working on aluminum sheet requires training. |
|---|



147147S



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Welding repairs to aluminum bodywork sections are only possible to a limited extent with the equipment available in workshops.

As welding equipment methods vary considerably, run trials before you start welding.

TIG welding (1):

TIG welding is the best way of welding aluminum.

The weld acts as an arc, and establishes the melt at high frequency.

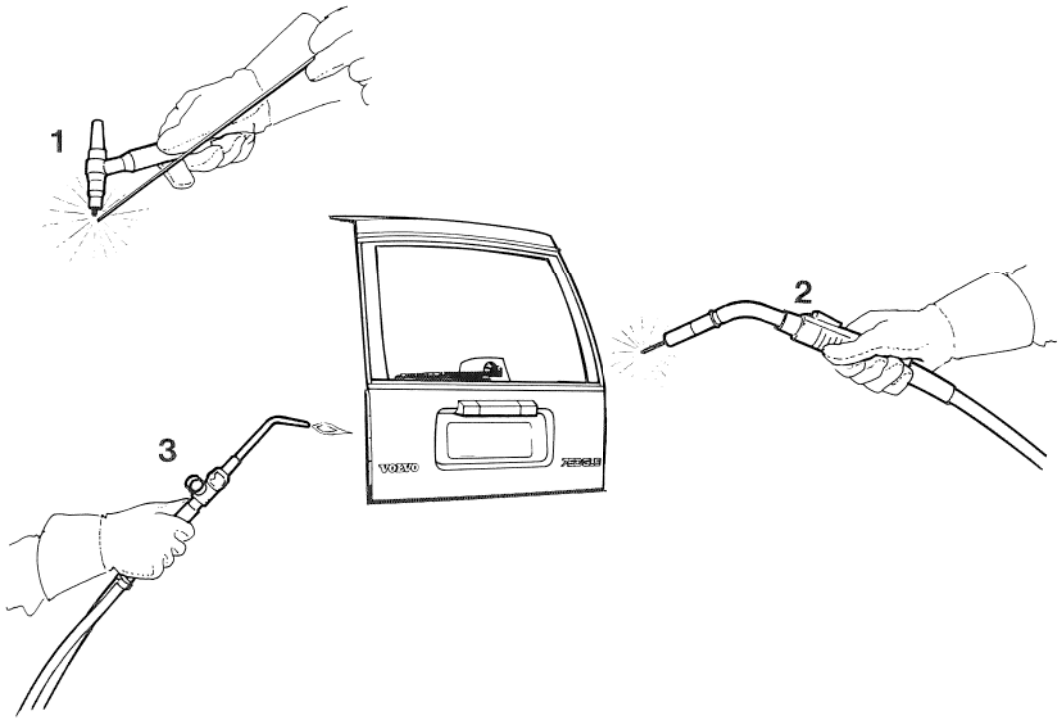
A filler wire also feeds into the arc and is melted down.

Suitable filler wire for Volvo panel sections: ALMG 3 or ALMG 5.

MIG welding (2):

Ordinary MIG welding sets of the most recent designs can be used for welding aluminum.

Equipment can be set to the gauge of sheet of which hood and tailgate are made. This must only be used for minor repairs such as detached spot welds, small cracks in edge areas and small holes.




147181S



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## Alignment

Aligning aluminum sheet must be done with the greatest of care.

Try to push out the damage first.

Then use aligning tools which allow for the fact that aluminum sheet is softer.

Use a wooden mallet, plastic mallet, rubber hammer or light sheet-metal hammer.

Use a wooden or hard rubber counterhold.

All work must be done precisely and with light taps.

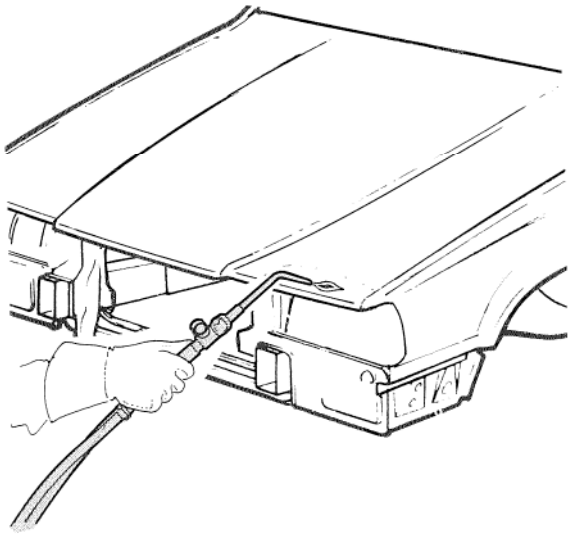
Providing you follow these instructions, and remember aluminum is softer, alignment can be done as with sheet steel.

Where large areas are involved, sheet may 'harden' and be very difficult to align any further.

Such areas may have been subject to deformation hardening and must be solution-annealed so as to restore their original characteristics.

## Solution annealing

For solution annealing, you need a suitable gas burner on a low flame.



147184S

Heat the deformation-hardened area up to approx. 350°C (662°F).

This can be checked with a digital thermometer, thermochrome sticks or a piece of wood pulled across the sheet.

If the piece of wood leaves a faint brown mark, the temperature is around 350°C (662°F).

Let the sheet cool and start straightening again.

The sheet will now be softened sufficiently.

Solution annealing can be repeated until straightening work is complete.



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## Shrinking

Shrinking is best done with a gas flame or carbon rod.

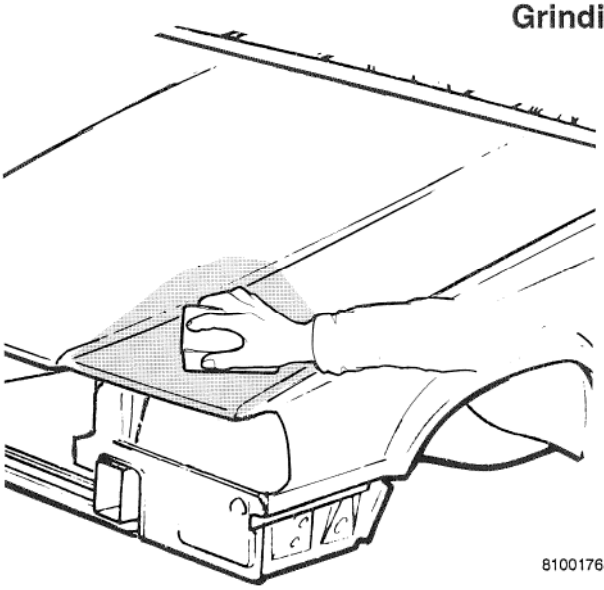
The procedure is the same as for ordinary body panels.

**Note:** Aluminum will not change color or turn red when the temperature is correct.

If using a gas flame, use on plate in the same way as for ordinary bodywork, but remove when aluminum sheet lifts, then cool sheet quickly with a wet cloth etc.

Repeat until sheet regains its normal spring.

## Grinding and filing



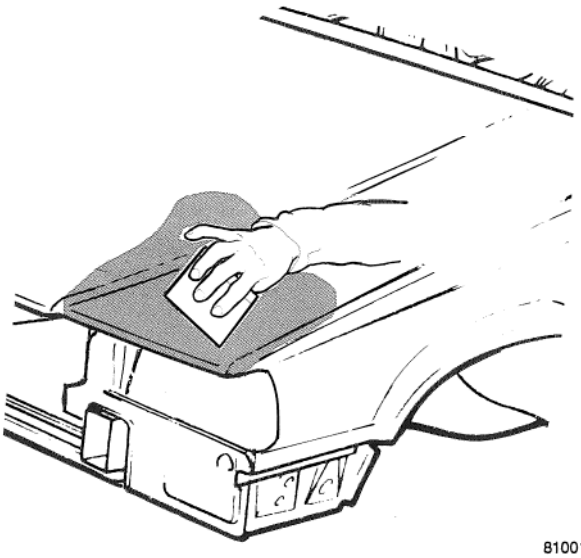
8100176S

If using a body file, be very careful, as aluminum sheet is very soft and the file can cut in very quickly.

It is preferable to use a grinding block with no. 60 paper.

If using a grinding disc, use a low-speed grinder (approx. 1200 rpm) and grinding disc with no. 80 paper in order to avoid friction heat and grinding off too much material.

## Filling



8100177S

Filling can be done with solder or plastic putty.

If filling with solder, use only ordinary body solder not solder paste.

Tinning is done by rubbing heated solder down into bright aluminum sheet.

Tinning is done with a solder burner and stainless wire brush.

Solder filling can then proceed as normal.

Plastic putty can only be used on clean, newly ground sheet. Some types of putty need sheet to be primed first.



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# C. Replacing sheet metal sections

## CA. General procedure for replacing sheet metal sections

The instructions in this section are general and apply to all models.

There may be differences between different models, but otherwise the work is the same.

The instructions for joint matching apply to all models, but on the 780, the parts must be taken from a complete unit.

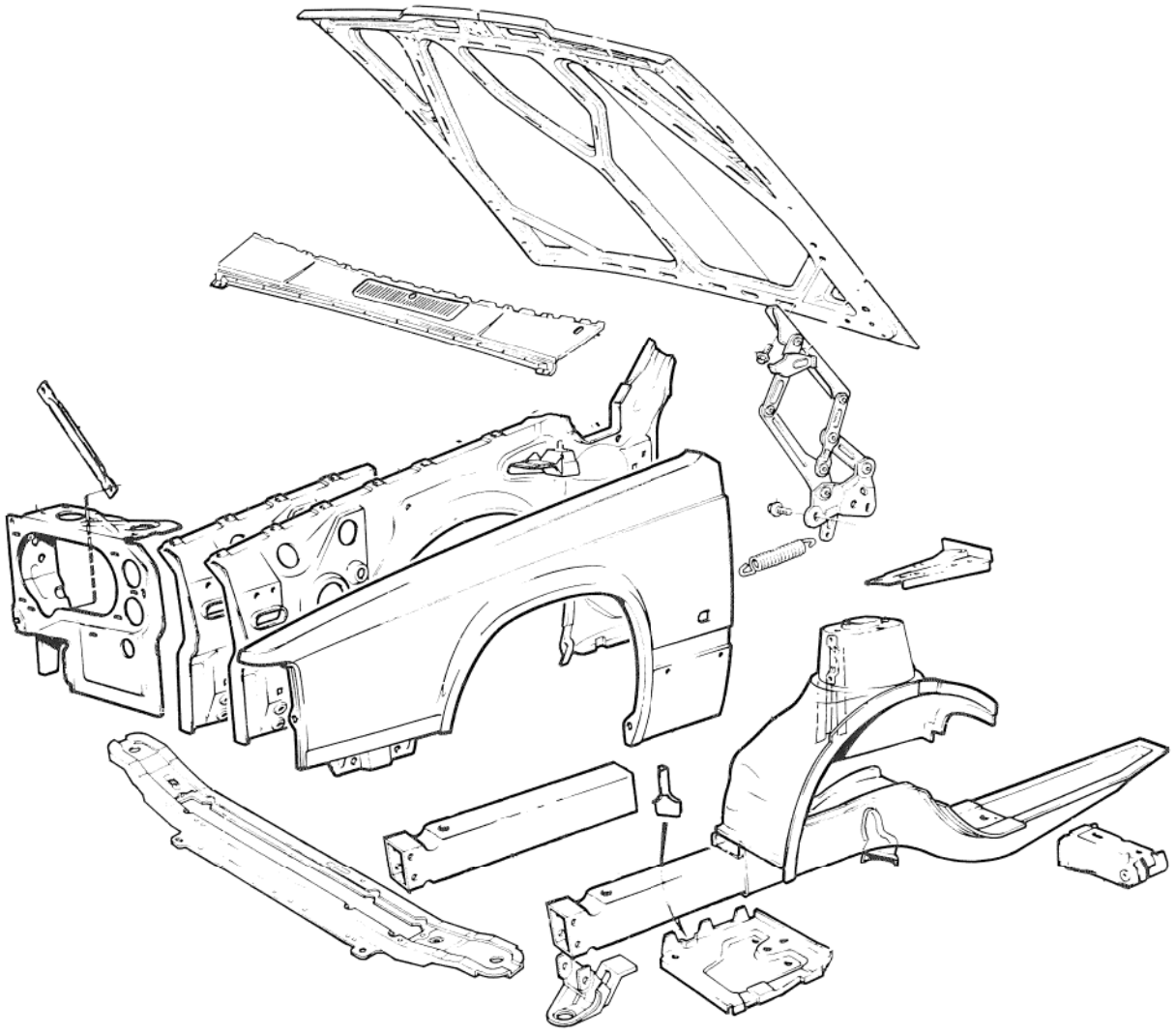
All joints must be edge to edge with full seam welding.

Apart from the information in this section, the general instructions on bodywork above also apply.

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# CB. Front assembly

## Component diagram 4- and 5-door models

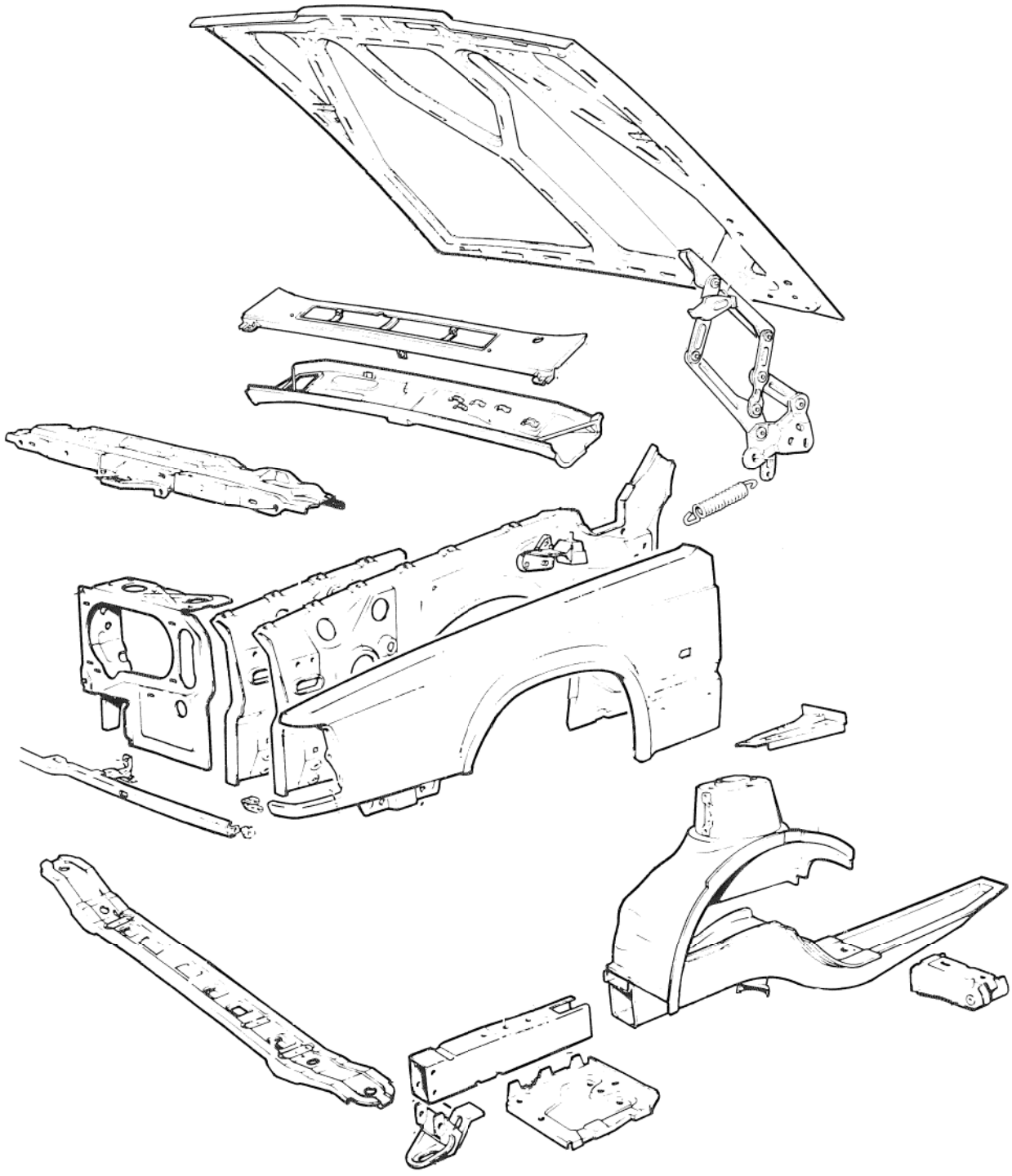


147200S



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**780**



148083S

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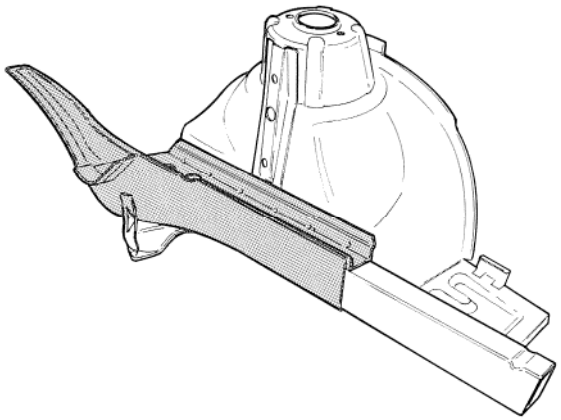
# CC. Front side member

**Note:** When working on front section of side member, the rules for HSS steel apply. Do not use heat alignment on **any** material. Replace front section instead.

Do not confuse front sections of 740/940s and 760/960s.

**Note:** On 960 models 1995-, the front side member is completely different (procede as per CC5-CC6).

Rear section:

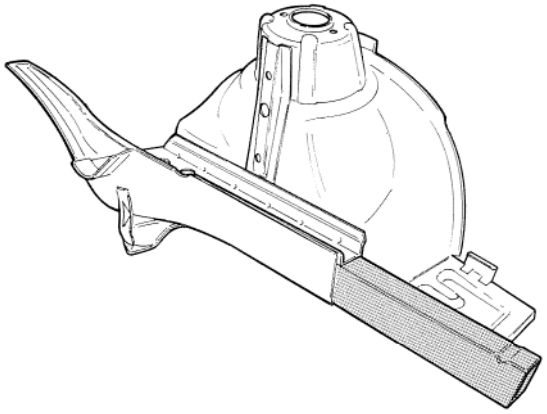


144135S

On 1988 740/760 models, the plate thickness of the front member was increased from 2.0 to 2.5 mm.

On 1989 760 models onwards, the member looks different. This new complete side member can also be used on earlier 740/760s.

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144135S

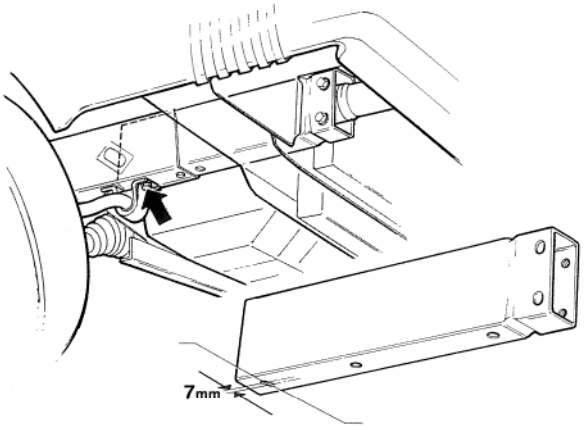
Front section:

On 1988 760s, ordinary body sheet was substituted for HSS steel.

Gauge was also increased from 1.6 to 2.5 mm.

In 740s 1988-, the member is still made of HSS steel.

When replacing the complete front side member, you can use the complete new 740 member on older 740s and 760 as well.




143248S

When fitting a new front section to an older car, the nut in the front side member must be moved 7 mm sideways.

Move anti-roll bar nut before installing member.

*CC1*

**Chip off welded nut.**

Put a bolt in the nut first to protect the threads.

*CC2*

**Weld nut back again.**

## Side member, front section, replacement (all except 960, 1995-)

*CC3*

**Remove:**

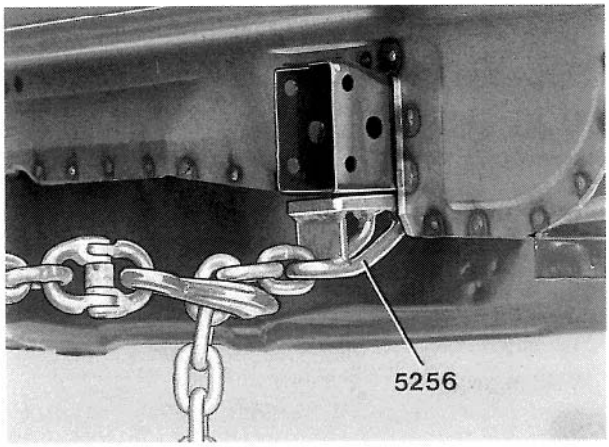
Drill and grind off spot and seam welds.

Use a puller aligner to remove welds if necessary.

*CC4*

**Install:**

Measure gauge of new part to make sure it is the right one for the model concerned.




134081S

| | |
|---|---|
| 760, 1988-1990 | 2.5 mm. |
| Others (i.e., older 760s and all 740s) | 1.6 mm. |

Weld in place.

Use MAG welding throughout.

Use gauge to ensure side member is in correct position.

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## Side member, front section, replacement (960, 1995-)

Carry out all work on alignment bench.

*CC5*

**Remove:**

Pull out deformed/damaged section.

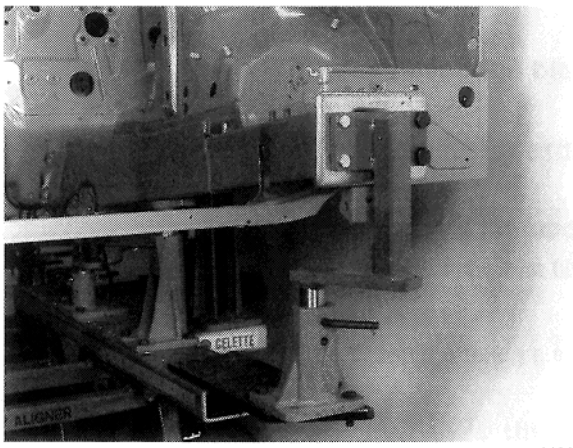
8100189S

Drill spot welds out.

Cut away front section of side member.

Grind clean

*CC6*




8100188S

**Install:**

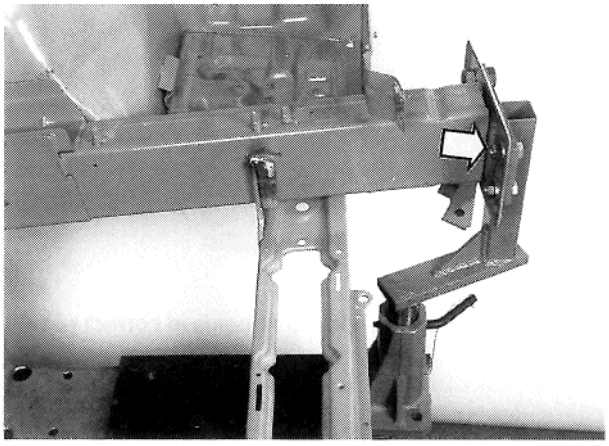
Install new side member in place.

Bolt new member in position in alignment bench fixture.

Weld in place.
Use MAG welding throughout.

*CC7*

**If replacing front fender mounting plate only:**



8100210S

Cut away mounting plate.

Grind clean.
Install mounting plate. Tack in position.

Check that it fits fender.

Weld in position.



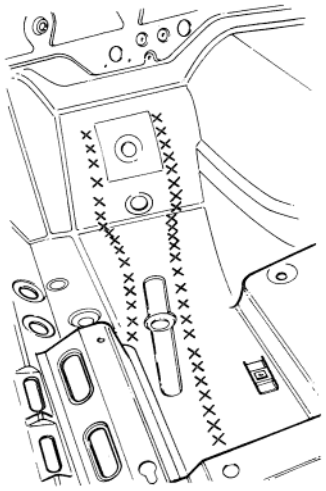
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# Side member complete, replacement (all except 960, 1995-)

Member is no longer available complete with front wheel arch, but only as shown in illustration.

*CC8*

## Removal:



134077S

Drill out spot welds on front cross-member, wheel arch, firewall and floor.

Only replace complete member if replacing inner and outer wheel arch.

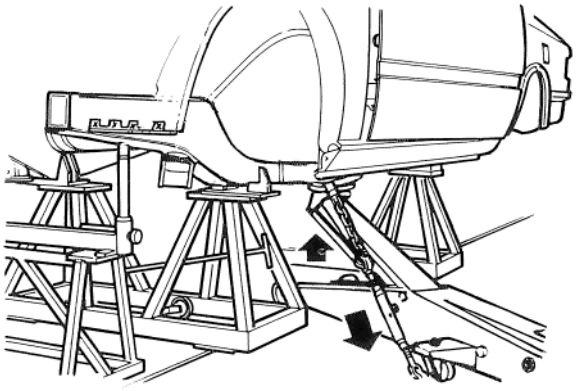
Chisel side member away from jacking point, firewall and floor.

Straighten mating surfaces.

*CC9*

## Installation:

Grind and locate member as per instructions (see above).



134085S

Fix member in correct position.

Apply welding primer to surfaces.

Align side member and check it together with wheel arch.

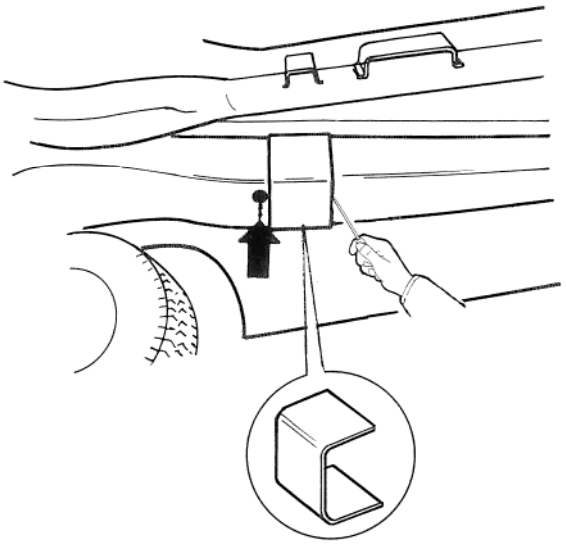
Tack side member in correct position to:

- floor.
- jacking point.

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*CC10*

**Jointing:**



139235S

Bend a 100 mm wide piece of sheet metal to the member.

Start from rear edge of drain hole.

Score on side member and replacement part along rear edge of shaped sheet metal piece.

(Shaped metal piece can be used on RH or LH side by turning over.)

**Note:** Ensure replacement part is same thickness as existing rear section.

Follow instructions as above.

*CC11*

**Finishing:**

Complete welding work.

Check welds.

Grind off weld heads.

Apply filler primer to all bare sheet surfaces.

Caulk joints.

Apply corrosion-proofing.

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# Side member (including wheel arch reinforcement) complete, replacement (960, 1995-)

Work on alignment bench throughout.

*CC12*

**Removal:**

Pull out damaged or deformed sections.

Cut away:

- upper and lower radiator members.
- front panel.
- outer wheel arch.

Grind off spot welds on wheel arch reinforcement.

8100189S

Drill out spot welds on side member.

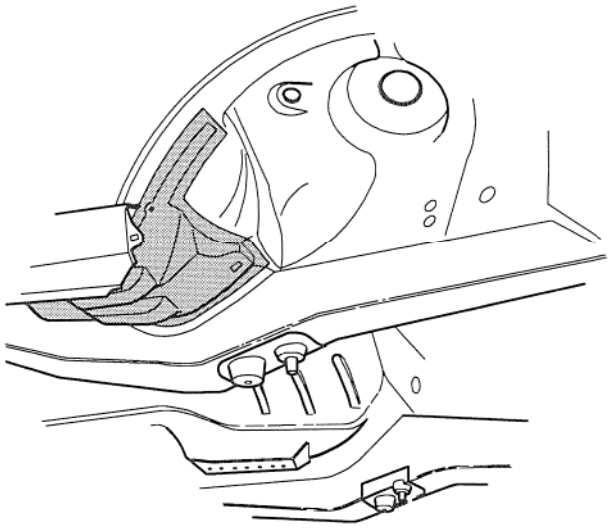
Drill out jacking point mountings:

- in floorpan.
- by flange against inner door sill.

Remove jacking point.

*CC13*

**Remove wheel arch reinforcement:**



8200018A

Grind off spot welds.

Break off wheel arch reinforcement panel.

Grind all mating surfaces clean.

Apply welding primer.

Drill holes for plug welds.

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*CC14*

**Install wheel arch reinforcement.**

Fix panel in position.

Plug weld to firewall and floorpan.

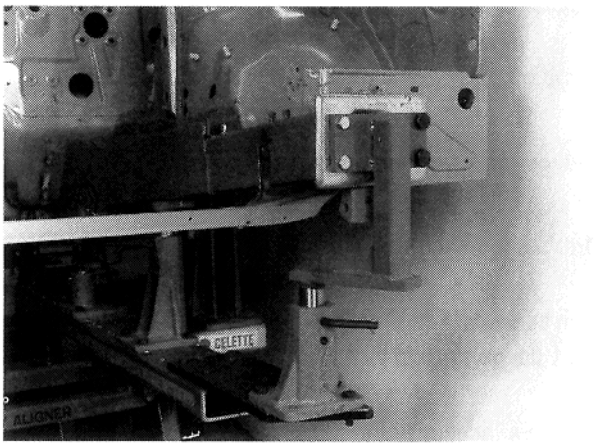
Plug weld holes drilled in floorpan towards side member from inside.

*CC15*

**Install side member but not wheel arch.**

Fix side member in position.

Bolt member to fixtures.




8100188S

Plug weld side member to floorpan from inside.

Plug weld wheel arch reinforcement in position from outside via holes drilled.

Spot weld wheelarch to side member.

**Note:** Apply welding primer between floorpan and jacking point.

Attach jacking point.

Weld in place.

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# CD. Rear link arm mounting bracket

On 960s from 1995- onwards, there is a bracket on the rear section of the front side member.

This bracket has mountings for the rear link arm mounting and for a transverse strut running from one member to the other.

The front mounting is for the link arm, the rear one for the transverse strut.

*CD1*

**Remove bracket:**

Grind off or drill out spot welds.

Grind side member clean by bracket mounting points.

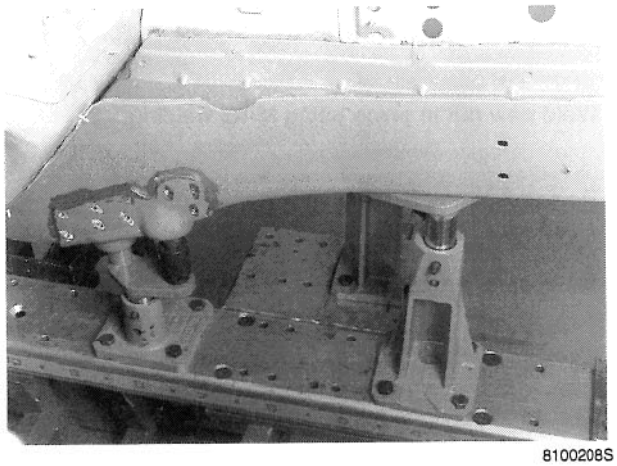
*CD2*

**Install:**

Drill holes for plug welds in bracket.

Drill 18 holes with diameter of 8 mm.

Apply welding primer to side member.



8100208S

Working on alignment bank, bolt bracket to rear link arm mounting fixture.

Plug weld bracket to side member.

Install front nut sleeve.

**Note:** Use special welding fixture.

Nut sleeve positioning is very important for the link arm positioning, both lengthways and crossways.

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## Welded nut to rear link arm mounting, replacement

*CD3*

**Grind off nut sleeve.**

Grind off weld around nut sleeve.

Remove nut sleeve.

Grind welding residues off bracket.

*CD4*

**Installing nut sleeve:**

Use fixture. MAG weld in position.

*CD5*

**Remove transverse strut welded nuts:**

Make an ink mark so welded nut panel goes back in right place.

Saw off pin around welded nut bracket. Use compressed air saw.

Grind welded nut off.

*CD6*

**Install:**

Weld new nut in place using MAG welding.

Reinstall pin on bracket with welded nut.

Make sure marks line up.

Weld in place using MAG welding.

Grind clean.

Rustproof.

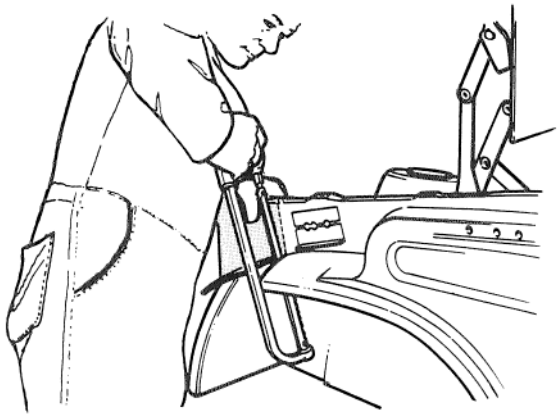
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# CE. Wheel arch

## Inner wheel arch, replacement

The inner wheel arch is usually replaced along with the front side panel and battery shelf.

Wheel arch can be joined.

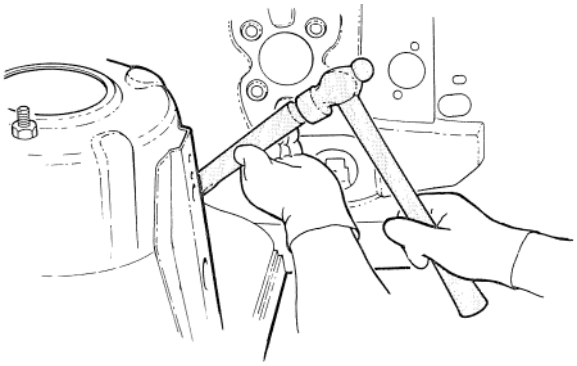


134087S

Outer wheel arch should be joined in front of hood hinges.

*CE1*

### Removing inner wheel arch.



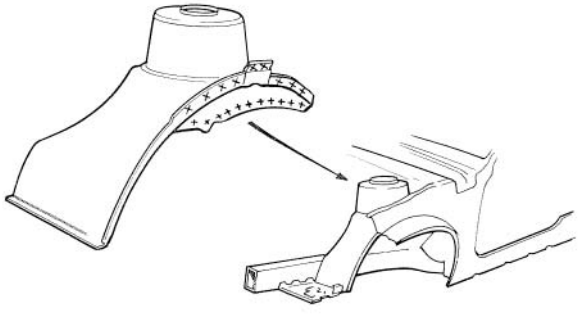
147040S

Use chisel and drill.

Take care with surfaces to be used again.

*CE2*

### Aligning and checking inner wheel arch.



147583S

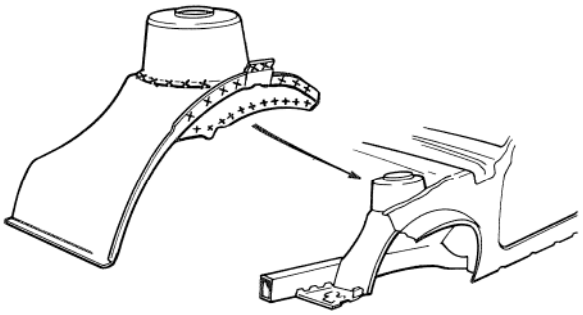
Align wheelarch and apply primer.

Check wheel arch position.

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*CE3*

**Install:**



147139S

Join wheel arch immediately in front of turret at the original join.

Position the cut for the join just in front of brake pipe hole.

Tack wheel arch in position.

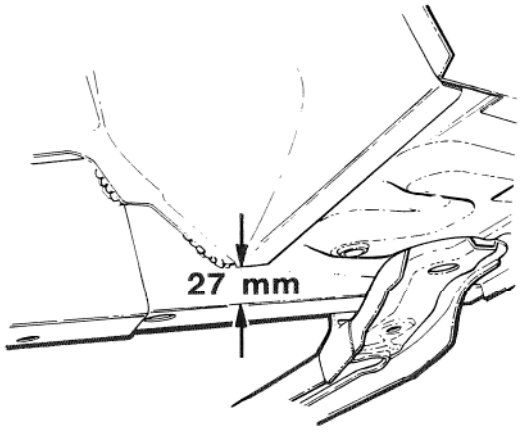
Check positions of:

- member.
- outer wheel arch.
- front side member.

| |
|---|
| Use spot welds as far as possible. |

*CE4*

**Check positioning:**




147028S

Dimension: 27 mm measured from lip on battery shelf to bottom of member.

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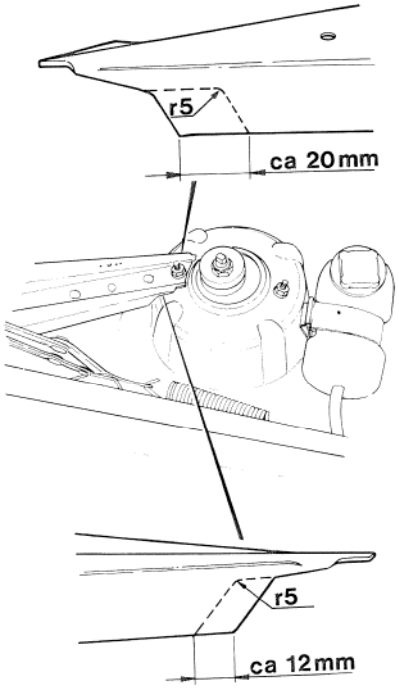
# CF. Member/stay between shock absorber turret and firewall,
## modification for cars with high wheel arch turrets

There is only one design of member/stay available as a replacement part.

This design fits all models with low wheel arch turrets from 1985 onwards, but not 760/960s from 1988 onwards, which have their own design.

*CF1*

**Modification for adjusting cars up to 1994.**




144128S

Cut out new member as shown in illustration.

Cut approx. 12 mm on outside and 20 mm on inside.

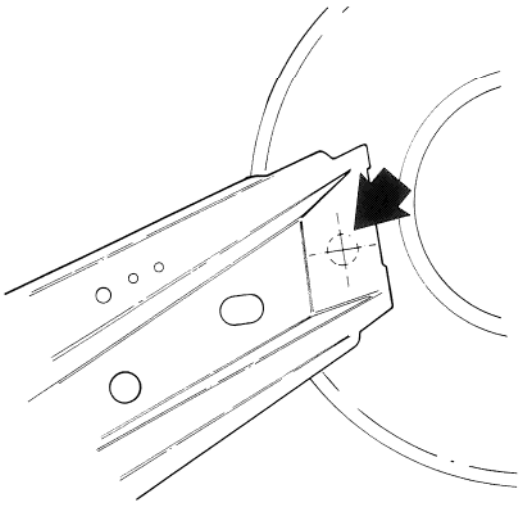
**Note:** Make radius approx. 5 mm.

Knock front edge of member down if necessary so it touches shock absorber turret.

Spot-weld member on 1988-model 760s to wheel arch turret at two points.

*CF2*

**Install:**



144131S

Line up member so that rear bolt hole on suspension strut is in center of member.

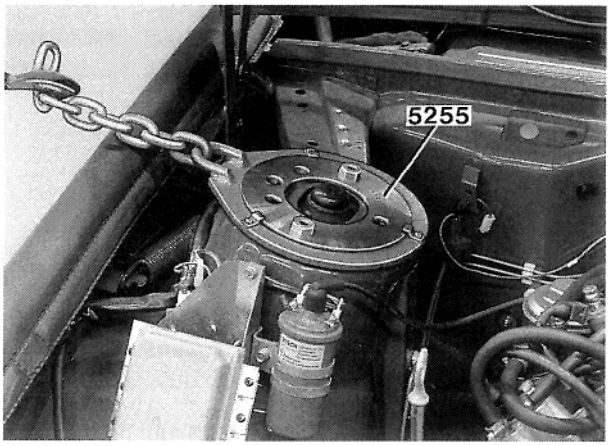
Drill a hole from underneath of the same size as the hole in the turret.

Screw member to turret.

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# CG. Battery shelf, front side panel and outer wheel arch

*Special tool: fixture 5372*




134080S

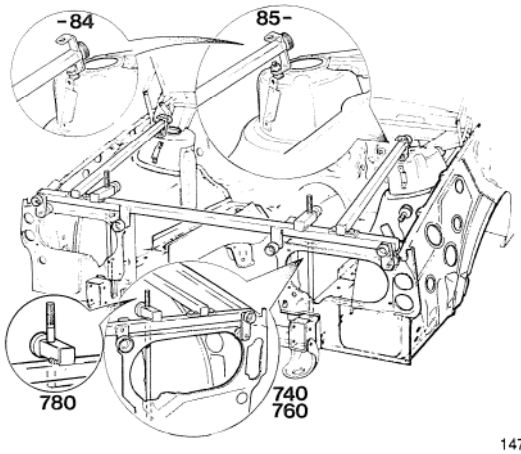
*CG1*

**Battery shelf.**

Place shelf on lip of inner wheel arch and on front edge of front side member.

Bottom of shelf must be on the same level as underside of member.

Check with a ruler.




147042S

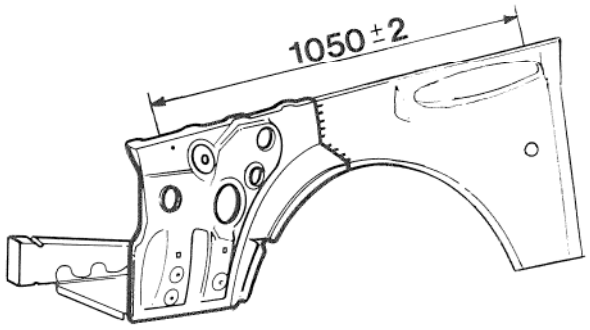
*CG2*

**Front side panel (For 960 -1994).**

To determine exact position of front side panel, use fixture 5372.

It is vital that front side panels are positioned correctly, as the position of other parts depends on them.

On 1988-model 760s, we recommend installing upper and lower parts of front side panel and outer wheel casing simultaneously.




134102S

*CG3*

**Outer wheel arch.**

Join outer wheel arch wherever it is most convenient.

Vertical position of front of outer wheel arch depends on edge of battery shelf which is flush with lower edge of outer wheel arch.

It can also be lined up with front side panel and appropriate fixture.

On 740, install front side panel before outer wheel arch.

**Note:** 960 1995- models have different dimensions. See section on 'Body dimensions'.

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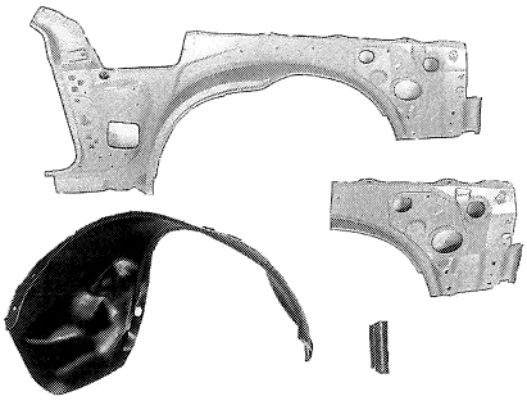
## Front outer wheel arch, repair/replacement

The front outer wheel arch for 1988/1989 models is being phased out as a spare.

When repairing cars from those years, you can use the equivalent replacement part for 1990 models onwards.

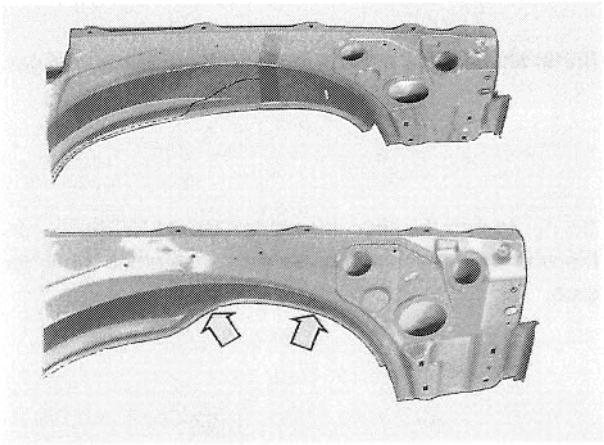
Wheel arch must have additional inner plastic shield.

Replacing front section of wheel arch only means making a minor modification to the car wheel arch.



151861S

| P/N | Parts in stock, 1990 models |
|---|---|
| 3528717-6 | Complete, LH |
| 3528718-4 | Complete, RH |
| 3528719-2 | Front fender section, LH |
| 3528720-0 | Front fender section, RH |
| 1380400-0 | Inner fender (plastic), LH |
| 1380401-8 | Inner fender (plastic), RH |
| 1392064-0 | Masking tape |
| | |
| | Parts being phased out for 1988/1989 models |
| 1355315-1 | Complete, LH |
| 1355516-9 | Complete, RH |
| 3503402-4 | Front section, LH |
| 3503403-2 | Front section, RH |



151862S

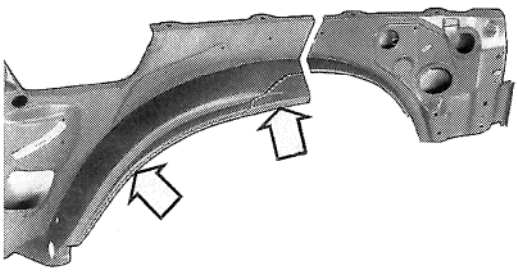
The outer wheel arch spares held in stock (1990 models onwards) have a smaller edge towards the fender than equivalent spares for 1988 and 1989 models.

This does not present a problem when replacing a complete wheel arch.

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If only replacing the front wheel arch section, the car wheel arch must be modified, as the edge of the fender on the replacement part is narrower than the corresponding edge on the car (1988 and 1989 models).

Modify wheel arch to fit car by removing a piece (see illustration).



151863S

Mould panel edge to more or less the same shape as the replacement part.

Cut away half the flange as shown in illustration.

Otherwise it will rub against the inner shield when installed.

Apply primer.

Apply rustproofing agent.



153864S

Fit plastic inner shield.

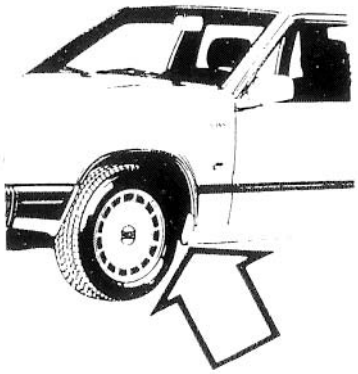
Use inner shield as template for drilling two holes in wheel arch diameter 4.5 mm.

(See illustration.)

The other three holes in the plastic shield already have matching holes in the wheel arch.

Bolt inner shield in place with nuts and bolts.

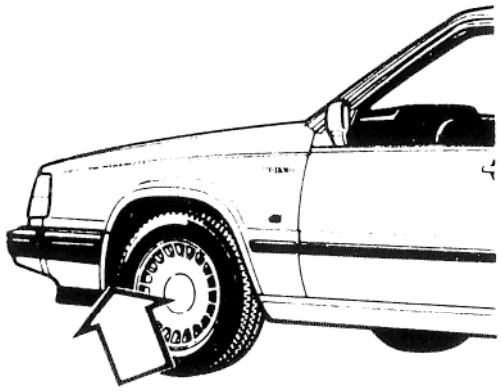
(Inner shield need only be fitted on repaired side of car.)



8300435S

Do not install the little triangular shield holder behind the wheel when installing the plastic shield in the wheel arch.

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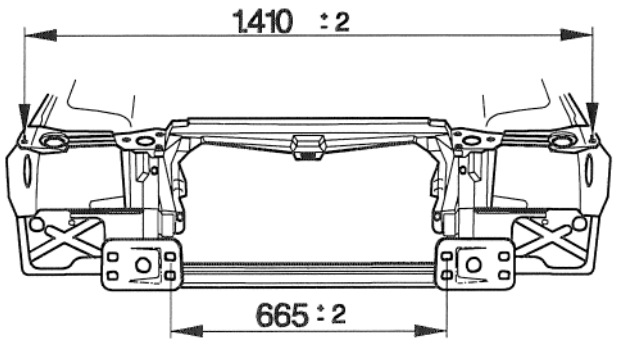
8300434S

Install the little cover strip on the outer front edge of the wheel arch.

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# CH. Radiator members

## Upper radiator member 960, 1995-, replacement




8200016A

A new upper radiator member is used on 960s from 1995 onwards.

The member is made of steel sheet and is made in a single piece.

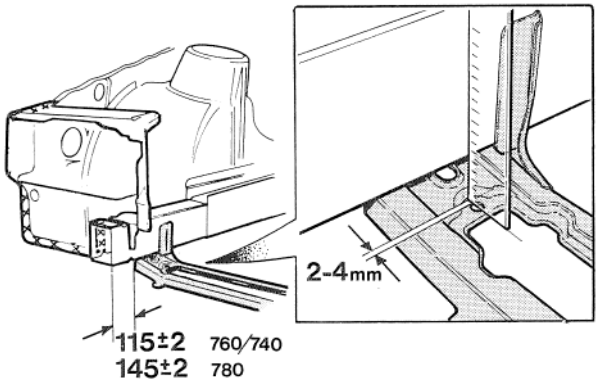
Install radiator member.

Check distance between pin bolt in radiator member and rear fender mounting.

**Distance should be 1125 mm.**

**Dimension between pin bolts should be 1414 mm.**

## Lower radiator member, replacement




147536S

**Note:** Install member between slits.

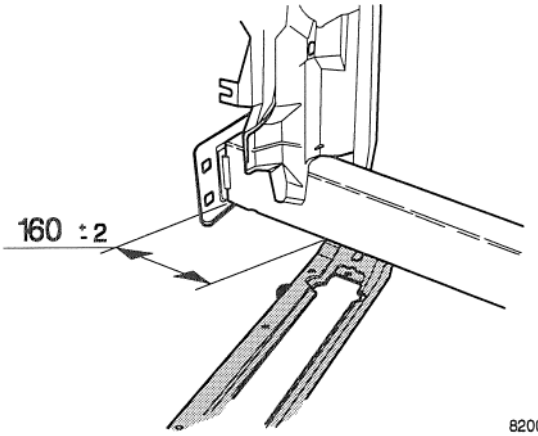
Take care that dimensions are correct when installing.

Distance between arrows should be:

115 mm = 760/740, 940 and 960 -1994.

145 mm = 780.

160 mm = 960 1995-.

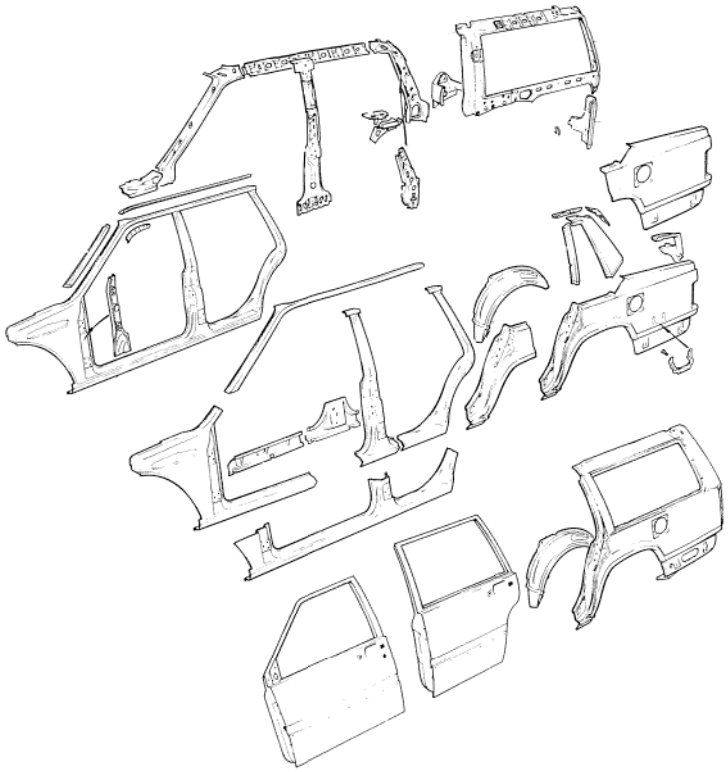



8200017A

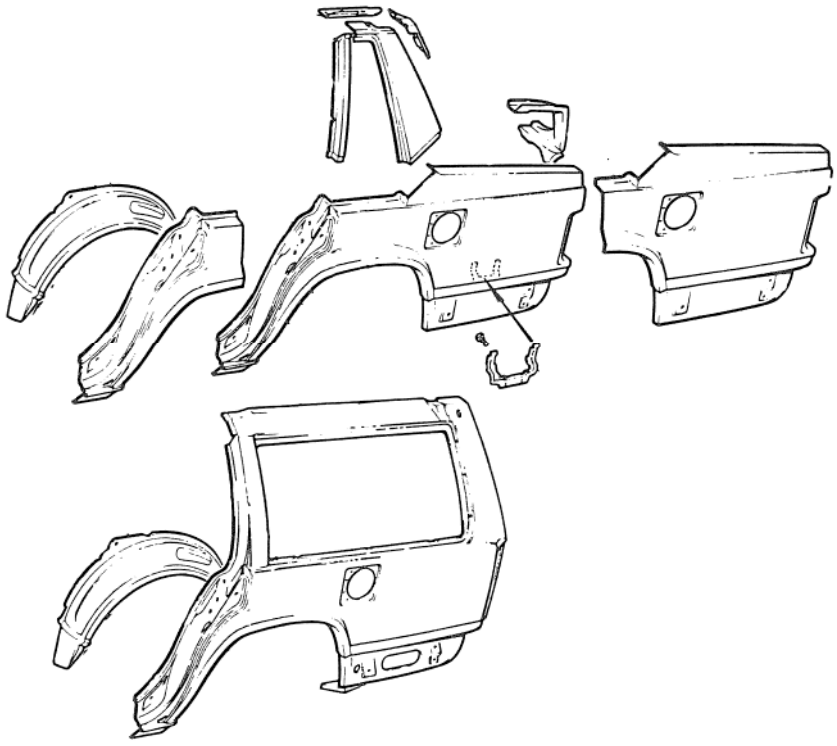
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# D. Side section

## Spares diagram, 4- and 5-door models



147195S

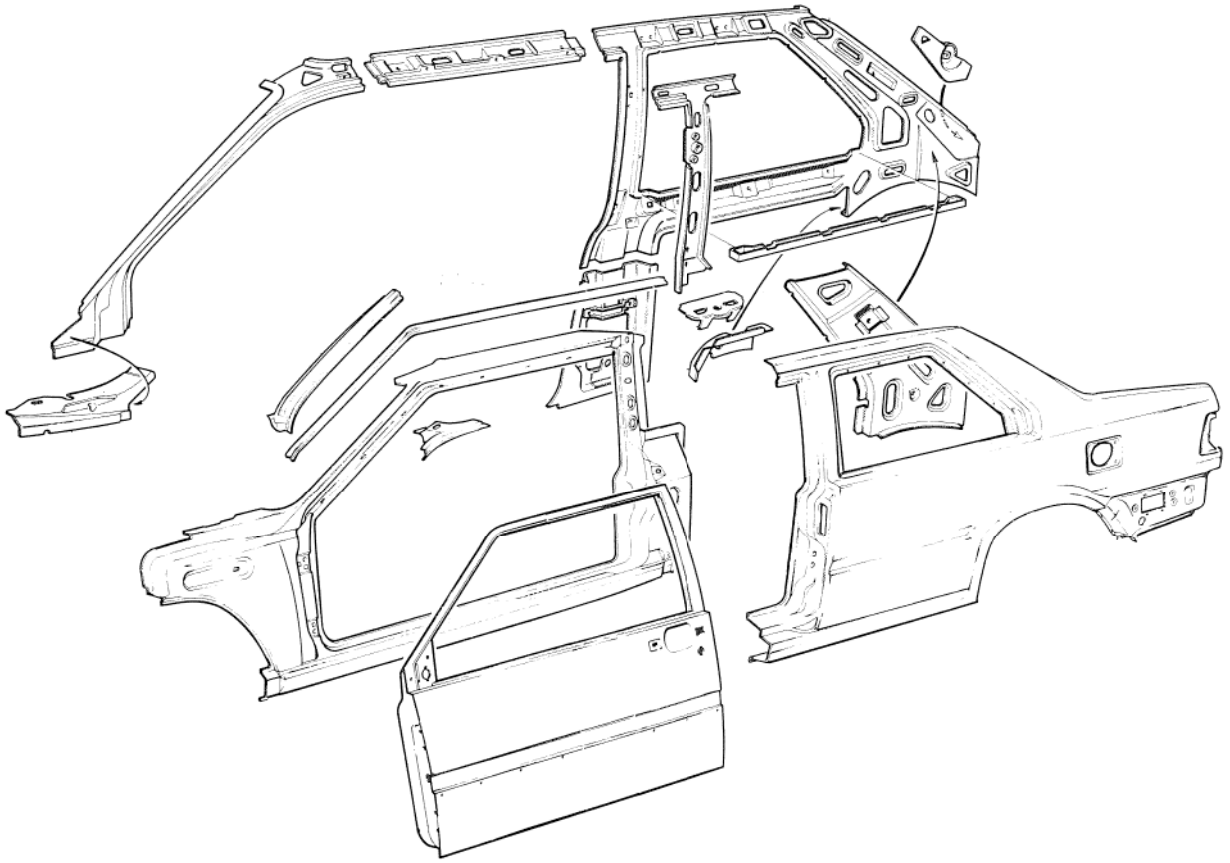


147199S



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## Spares diagram 780



148084S

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# DA. Door sill, joining

*DA1*

**Use joining section.**

There are a number of ways of joining door sills.

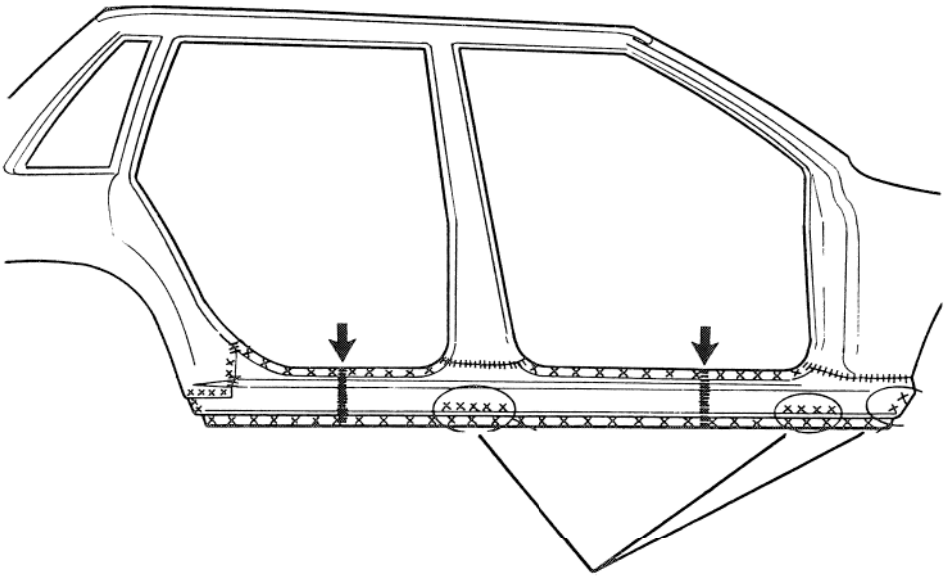
Arrows show alternative joining points.

If joining both inner and outer door sills, stagger joins by about 100 mm.

Test-hang door before welding sill in place.

Apply welding primer to flanges.

Apply rustproofing agent.



8100197S

Drill holes in door sills for plug welding to posts.

Arrows show alternative joining points.

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# DB. Outer cowl side, joining

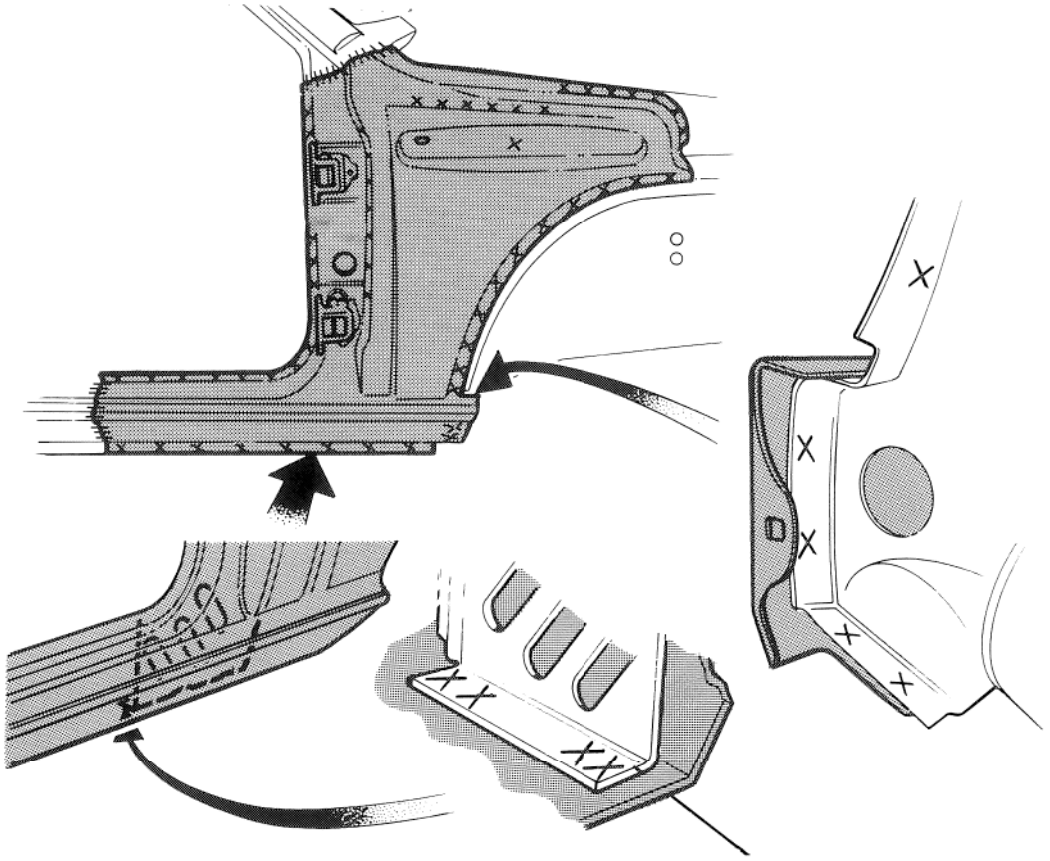
*DB1*

**Use joining section.**

When joining cowl side, it is important to have all holes for MAG welding made before starting installation.

The cowl side is an important part of the load-bearing structure in the front section of the side and A-posts.

**Note:** Use spot welding wherever possible.



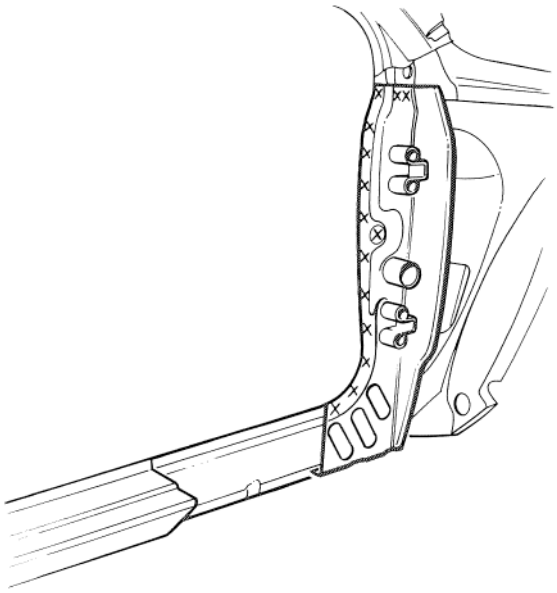
8100200S

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# DC. A-post

## A-post, inner, replacement

*DC1*



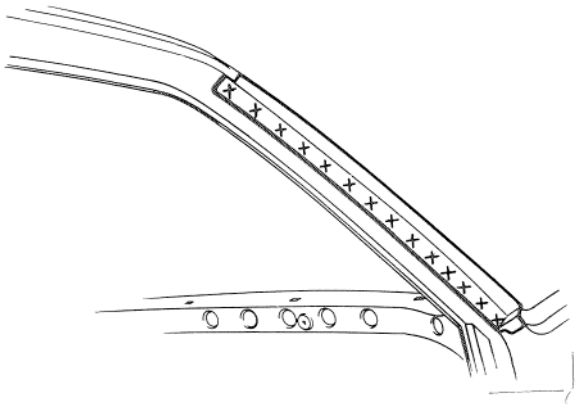
134086S

**A-post, inner, replacement.**

This work can be combined with joining the outer cowl side.

## A-post, outer, replacement

*DC2*



134105S

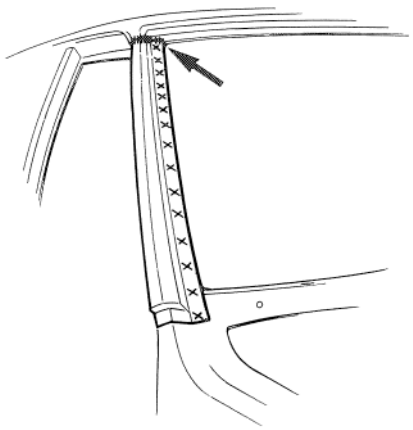
**A-post, outer, replacement.**

Check while installing that door and front fender match up to post.

Normally, the upper joint uses solder filler, but if roof has already been replaced, it may have been done with polyester putty.

The joint may then be bonded.

If so, the upper joint can be bonded again.



148142S

Replace roof panel, as per DJ2/DJ3 for 4-door models or DJ4 for 5-door models.

**Note:** Avoid grinding damage on window openings and corners.

**Note:** Joints must be puttied.

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# DD. B-post

## B-post, joining (all except 960 1995-)

Check that door lock nut plate is in place.

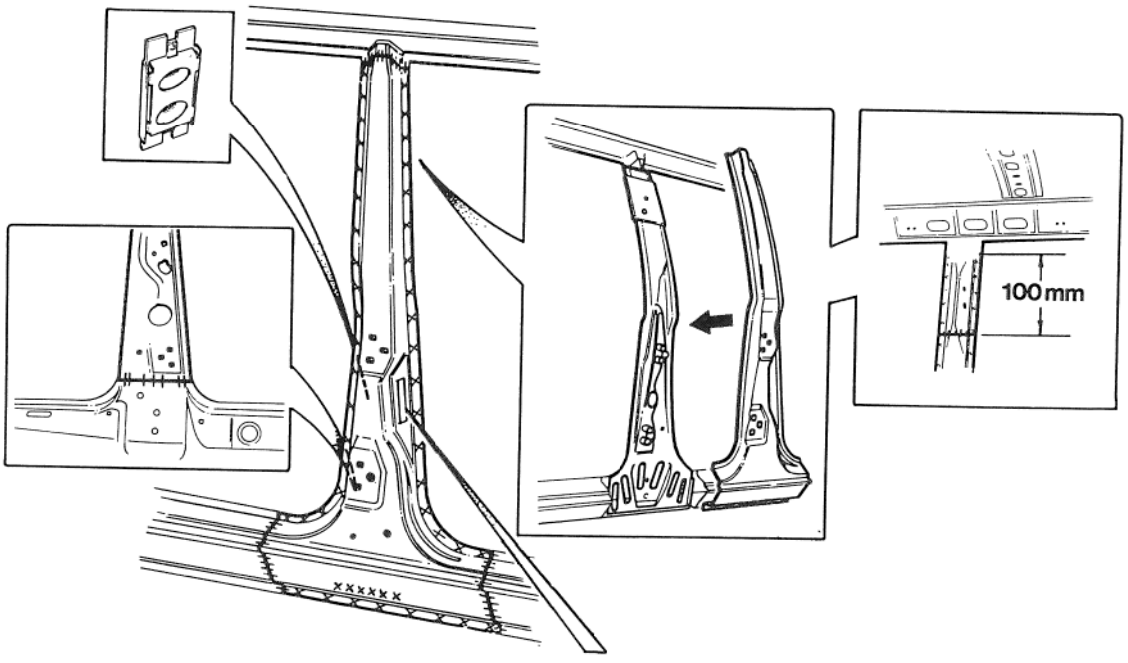
When replacing post, check that doors fit OK before welding post in position.

*DD1*

**Use join section.**

When replacing both inner and outer sills, stagger joins to roof sill by approx. 100 mm.

Avoid making joins close to seat belt mounting.




8100187S

Use spot welding as far as possible.

Drill holes for plug welds.

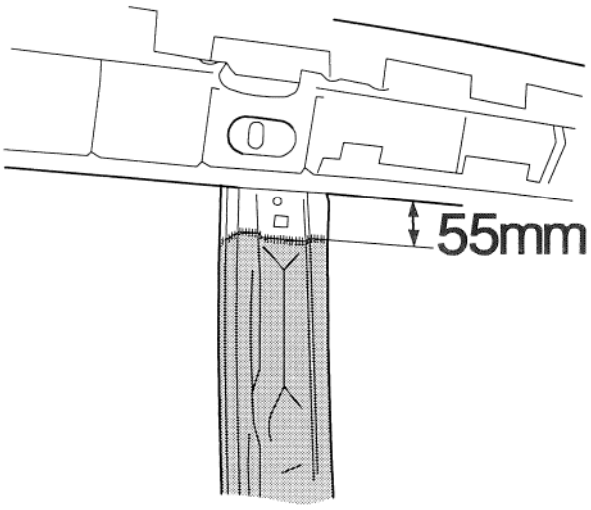
When replacing RH post, stamp chassis number on new post before welding.

Use 7 mm punch.



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## B-post, joining, 960 1995-




8100181A

Saw B-post off 55 mm from body flange (see illustration).

Measure up new inner B-post, using existing holes as guides.

**Note:** It is important to keep dimensions correct, otherwise reinforcement panel will be damaged.

Fit B-post in, measure and adjust.

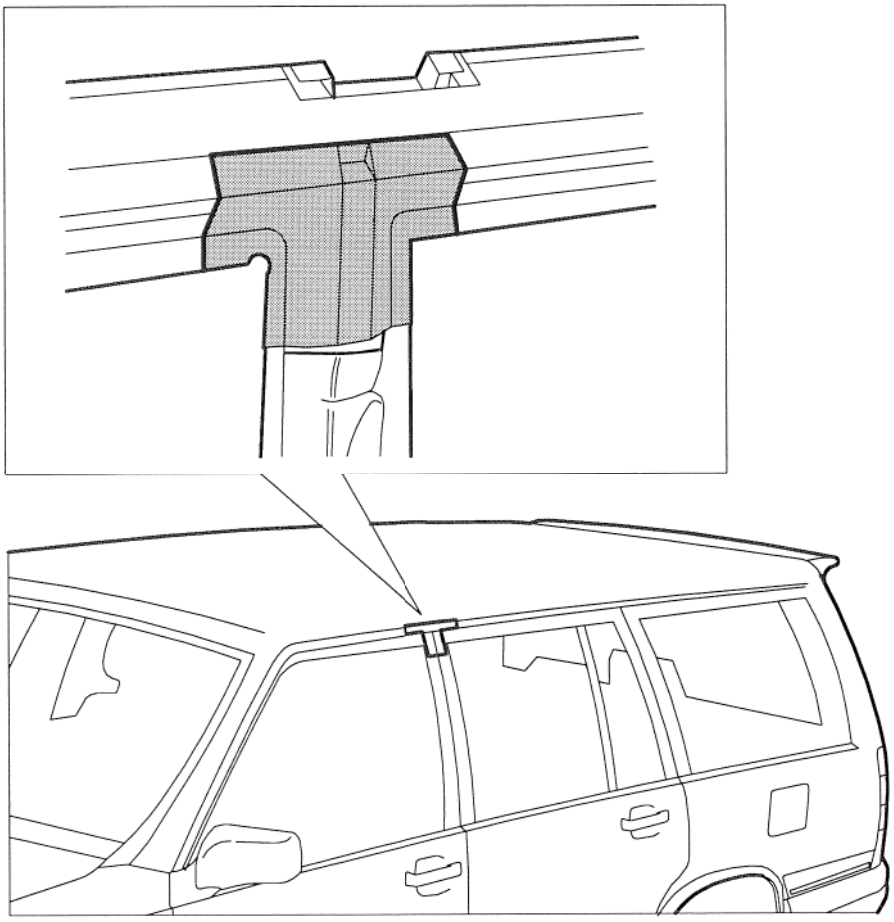
Use welding primer between panels where undercoat has been ground away

Weld in place.

Use spot welding.

Use MAG welding on joins.

Make welded join as close up to roof sill as possible.



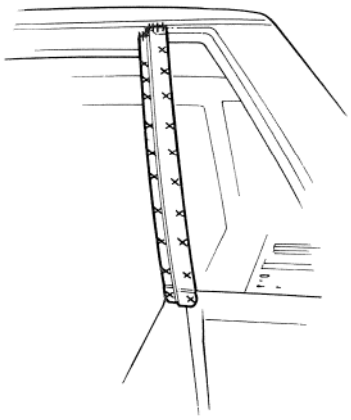
8100168A



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# DE. C-post,outer/ D-post, outer/ Body side, rear

## C-post, outer, replacement



134104S

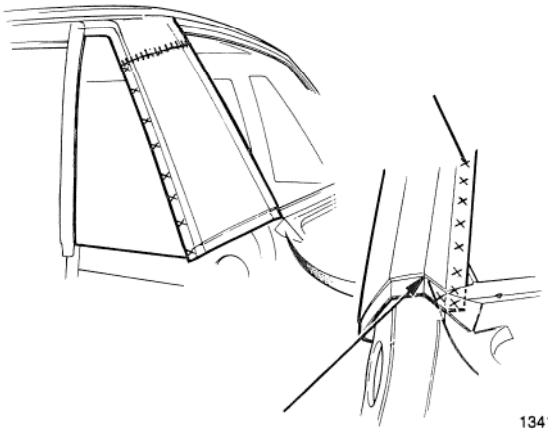
*DE1*

**C-post, outer, replacement.**

MAG seam weld upper post joint.

Spot or plug weld otherwise.

## D-post, outer, replacement



134107S

Use this method when replacing rear fender as well.

*DE2*

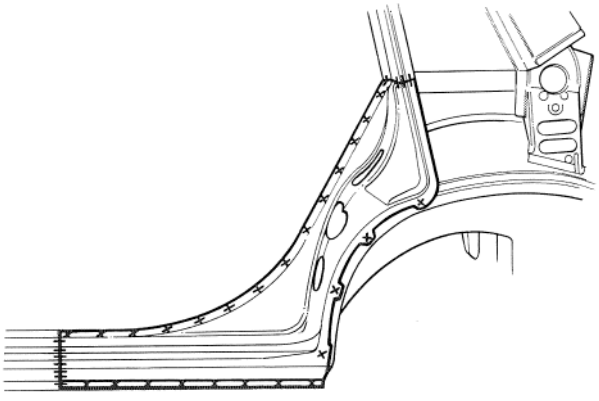
**Drill out spot welds in window opening.**

**Note:** Take care no grinding damage occurs after assembly.

*DE3*

**Use spot welding in window openings.**

## Body side, rear, joining



134116S

*DE4*

**Use join section.**

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# DF. D-post

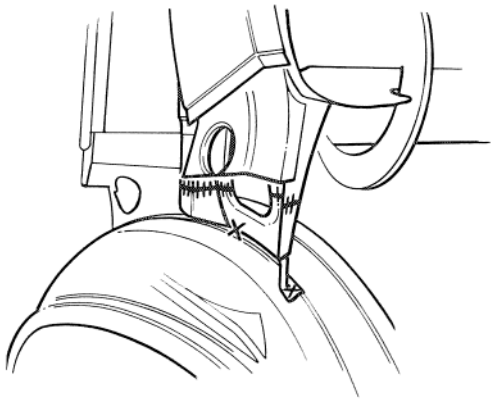
## D-post, lower inner section, joining

*DF1*

**D-post, lower inner section, joining.**

Join can be welded edge to edge.

Apply welding primer to join with wheel arch before installing part.



134074S

Apply filler primer to seam weld before installing outer section.

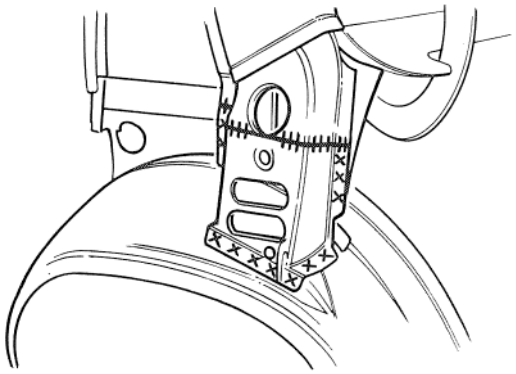
Weld inner section of D-post in place.

**Note:** Check and adjust position of rear side member before welding D-post in place.

## D-post, lower outer section, joining

*DF2*

**D-post, lower outer section, joining.**

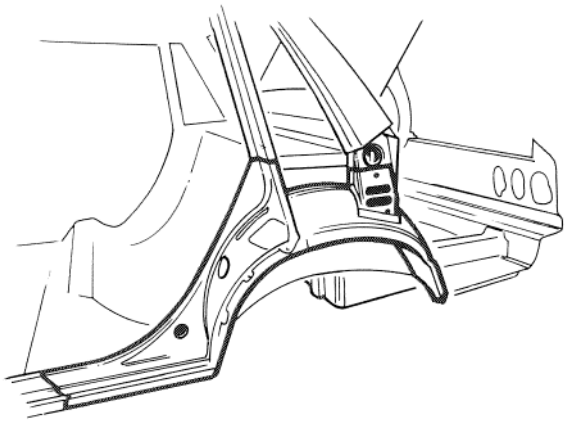


134073S

Apply welding primer to flange.

Weld outer panel in place.

Bend wheel arch edge down to make space for fuel tank filler pipe.



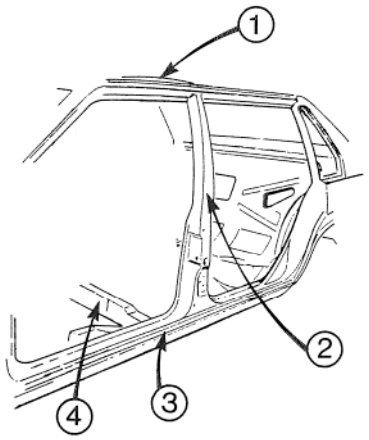
134076S

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# DG. Side impact protection system

1992 model 700/900s onwards have a new side impact protection system, with the following chassis numbers:

| Model: | Chassis number: |
|---|---|
| 740, 4-door | 531000 |
| 740, 5-door | 342700 |
| 940, 4-door | 52900 |
| 940, 5-door | 28000 |
| 960, 4-door | 14900 |
| 960, 5-door | 4700 |




152860S

This side impact protection system consists of:

1. Curved roof section (cars without sunroofs).

2. Reinforced inner B-posts.

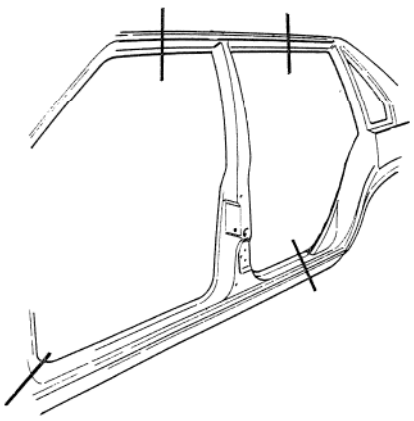
3. Door sills with built-in cross-members.

4. Front transverse floor beam.

*DG1*

**Cut replacement part:**

Body dimensions must be correct before installing replacement part.



152853S

Illustration shows suggestions for cutting replacement part (body side).

Match replacement part up to damaged section.

Adjust holes for hinge mountings on cowl side.

Hold body side fast with welding rods.

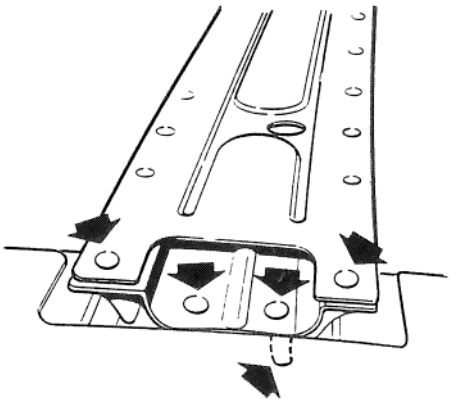
Cut through panels on rear section of door sill, cowl side and roof sill with curved file.

Remove replacement part.

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*DG2*

**Remove:**



152854S

Grind or drill out spot welds.

Cut the damaged section away with a jackhammer.

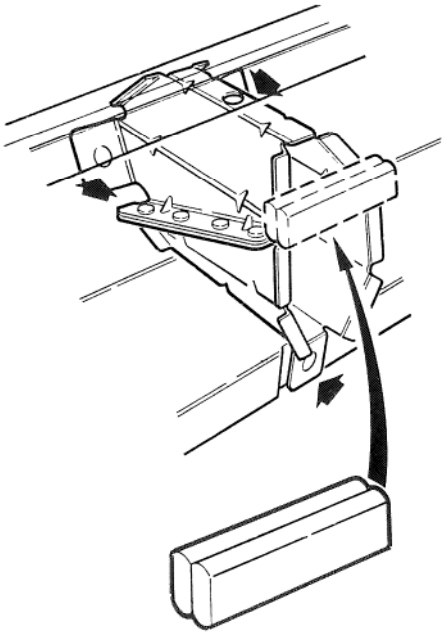
Grind all mating surfaces clean.

Apply welding primer to body and replacement part.

– curved roof section.
  Drill out spot welds on roof sill.

*DG3*

**Install door sill loose:**



152855S

Polish or grind off paint on door sill where cross-member spot welds will be.

Position cross-member in impression in outer door sill.

Apply welding primer.

Install cross-member.

Weld in place (3 points).

*DG4*

**To avoid noise and vibration.**

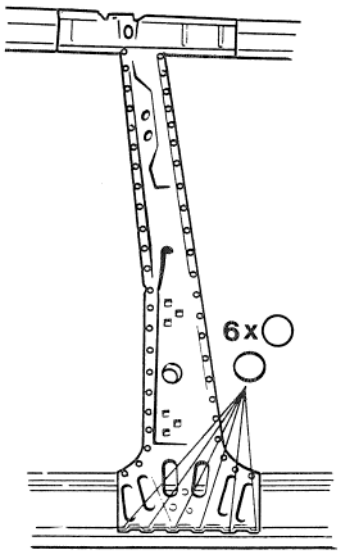
Apply two lengths of butyl tape (40 mm) to cross-member.

Lay butyl tape so it lies opposite inside of door sill.

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*DG5*

**Preparing body before installing B-post complete.**




152856S

Polish or grind off all paint from mating surfaces to be welded.

Apply welding primer.

Install gully (use spot welding).

Position B-post inside body.

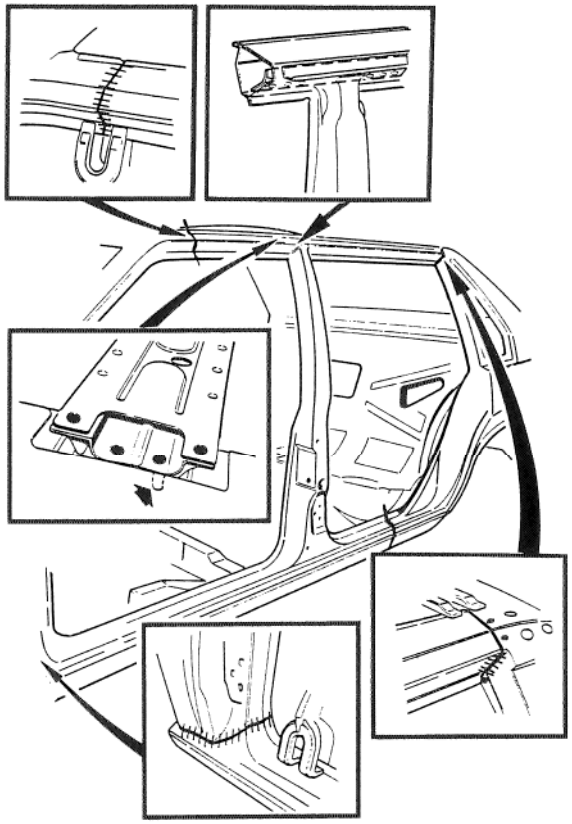
Adjust B-post and attach to body side.

Weld B-post to body side.

Move locking tab over.

*DG6*

**Complete body side.**



152857S

Install body side with reinforced B-post and cross-member in door sill.

Seam-weld joins on cowl side, door sill and roof sill.

Use spot welding for all other welds.

Grind welds on roof sill.

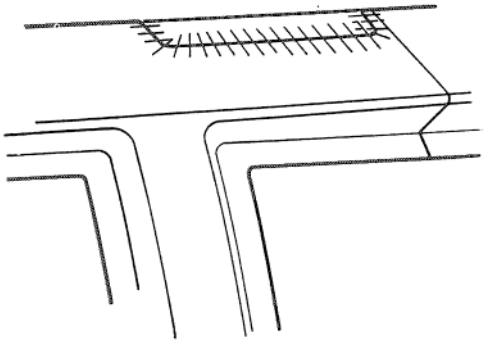
Install curved roof section.

Apply welder primer.

Weld in place.



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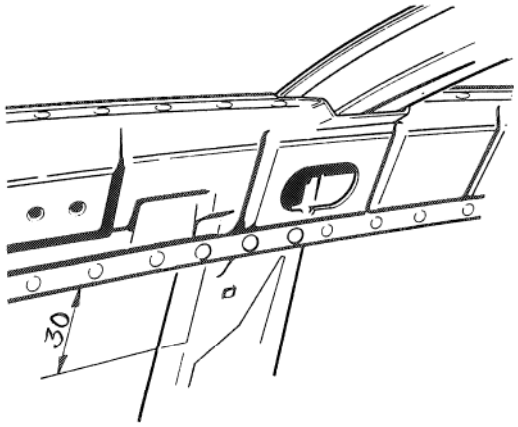


152858S

Cars fitted with old curved roof section (see chassis number details) need to be modified to give the outer roof sill the necessary strength.

The new body side comes with a new cutout for the new curved roof section.

This cutout must be covered with a panel which is then welded in position.




152859S

Position curved roof section (in front of old one) in existing position.

MAG weld curved roof section in place (step weld).

Join inner B-post.

When joining B-post, it is essential not to make the join more than 30 mm down from the flange edge. Otherwise, the method is unchanged.

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# DH. Rear fender

## Rear fender, replacement/joining, 700, 4-door

*DH1*

**Use join section.**

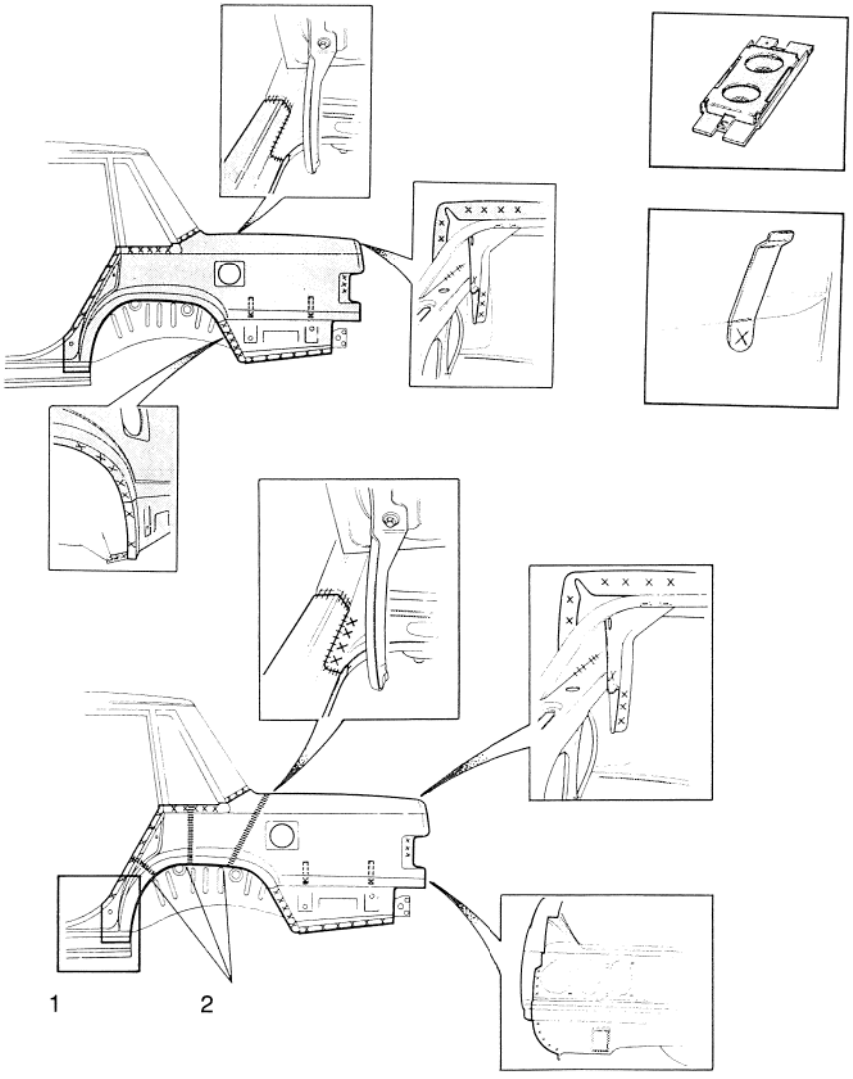
Bring rear fender up to door and check dimensions.

Be careful of leads and drain hoses on cars with sunroof.

Joins should be edge to edge.

**Note:** There must not be any grinding damage at corners at transition between window opening and baggage compartment.

Transfer lock nut plate and lead harness holder.




8100198S

1. This section can be bonded.
2. Alternative joining points.

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# Rear fender replacement/joining, 900, 4-door models

*DH2*

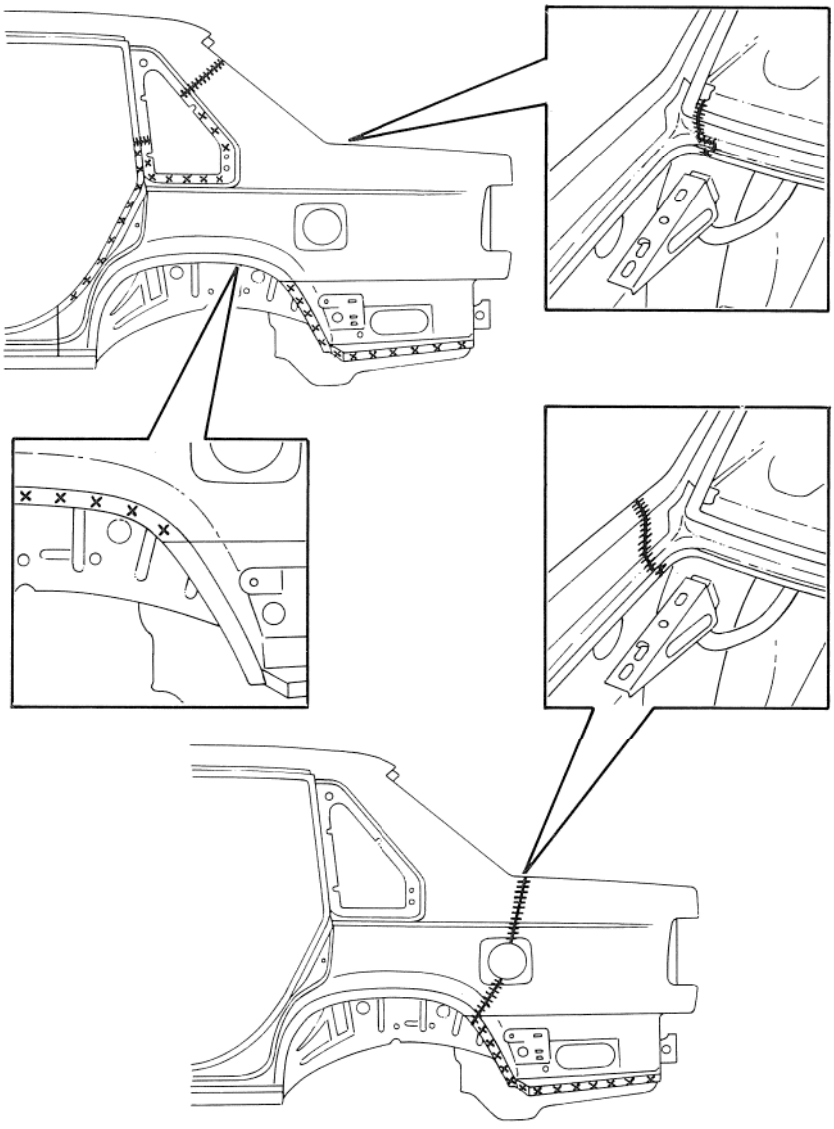
**Use join section:**

Bring rear fender up to door and check dimensions.

Watch out for lead harness and drain pipe to sunroof if any.

Make join edge to edge as shown on drawings on this page.

**Note:** Do not damage corner at transition between window opening/trunk through careless grinding.



150605S



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## Rear fender, replacement/joining, 5-door

The new rear fenders come with integral reinforcements.

**Note:** Reinforcements are not kept as spares.

*DH3*

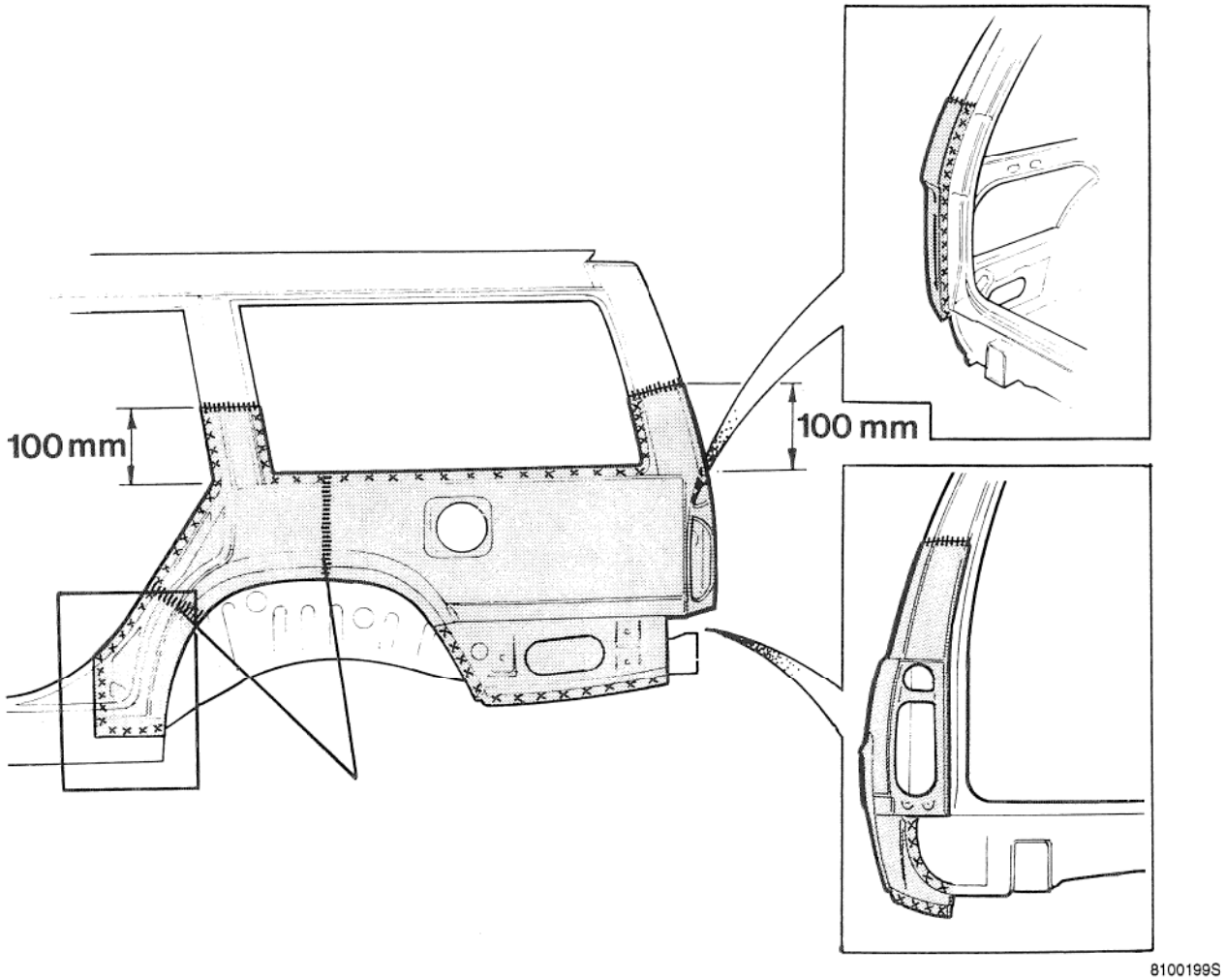
**Use join section.**

**Note:** Reinforcement sections for C and D posts are epoxy-bonded.

If aligning near them, they must be heated and removed and then bonded on again.

**Note:** Front section of rear fender can be used in same way as with 4-door models.

Transfer door lock nut plate.



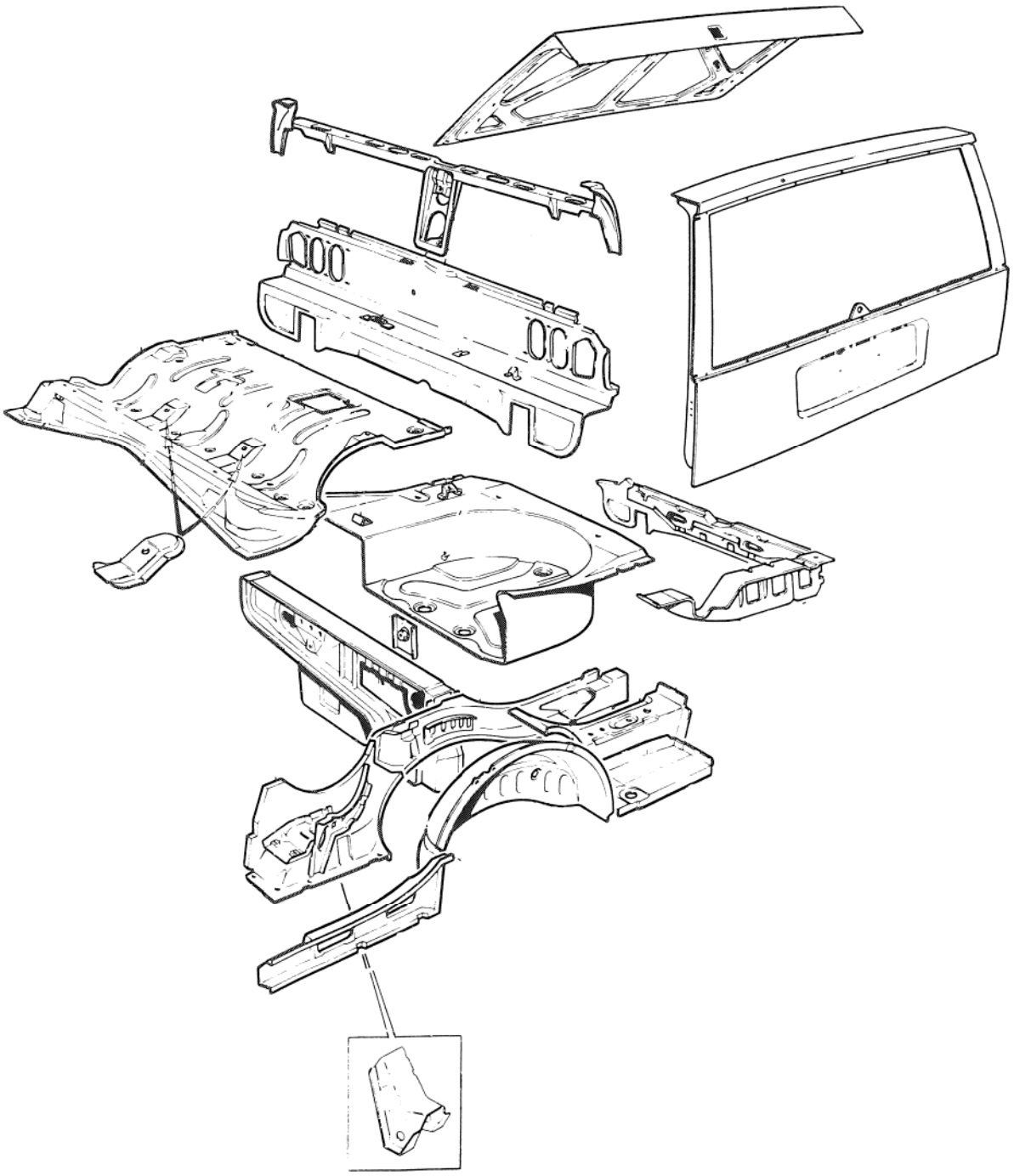

8100199S

1. This section can be bonded.
2. Or join.

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# DI. Rear section

## Spares diagram 4- and 5-door models

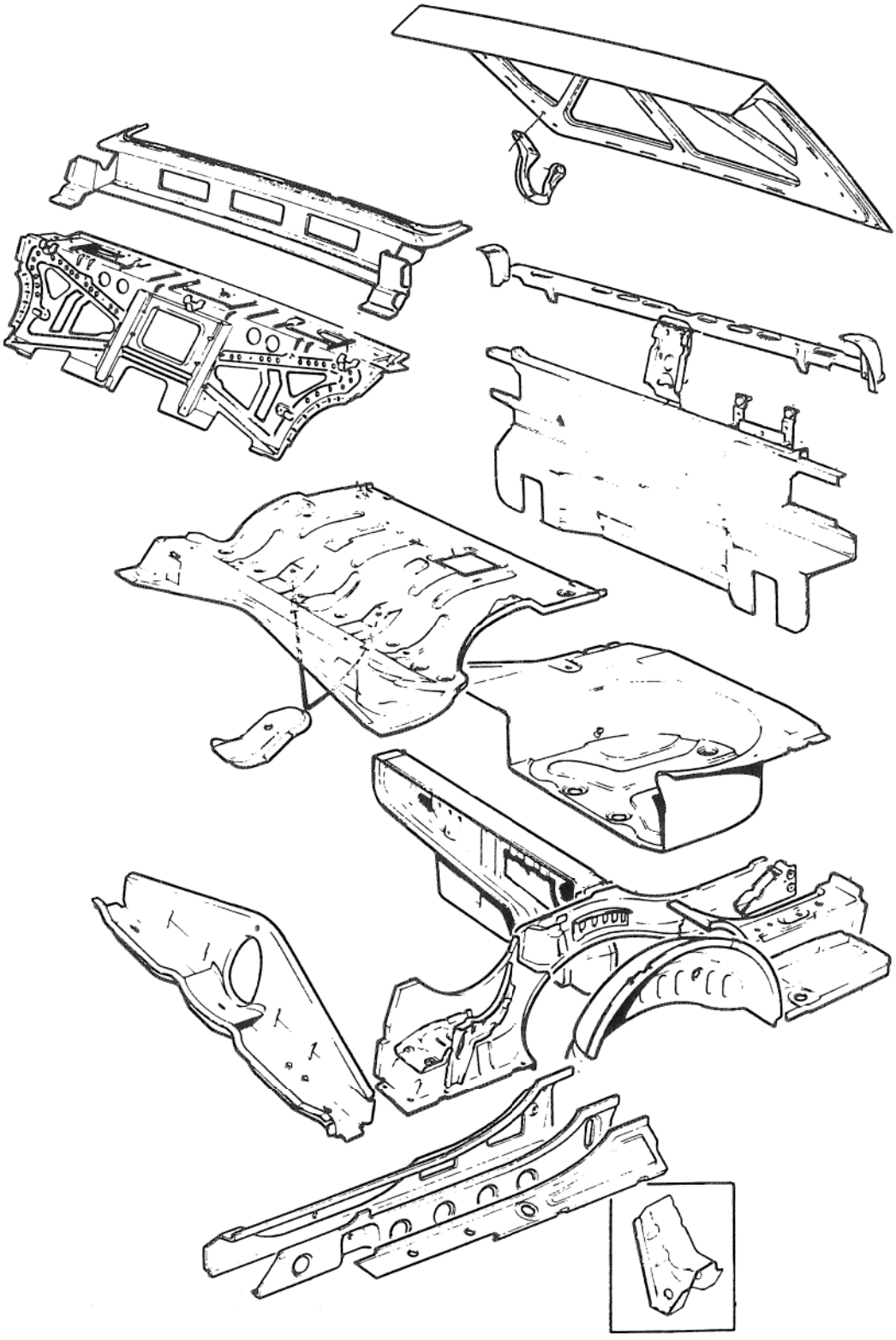


147203S



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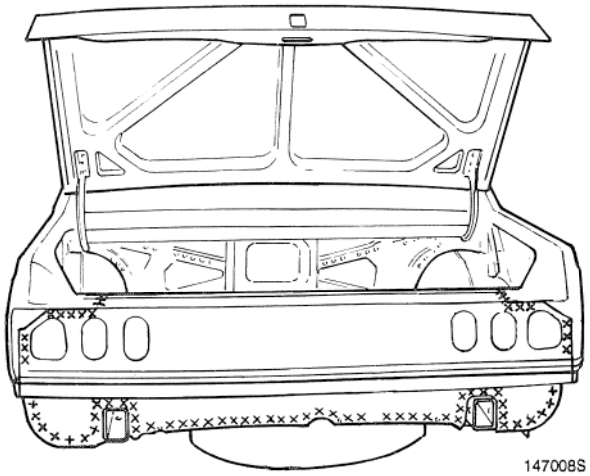
## Spares diagram 780



148082S

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# Tail section, replacement/joining, 4-door models



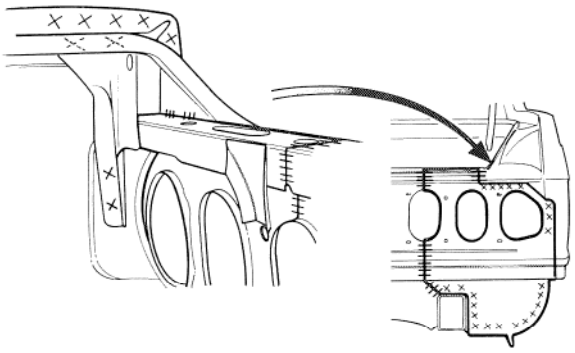
147008S

*DI1*

**700, 4-door models:**

If replacing the complete tail section, the following parts must also be replaced:

- reinforcement.
- corner panels.
- center lock reinforcement.



134089S

Rear section, joining:

Join in rear light cluster hole to minimize welding.

Make a template for back section for marking up.

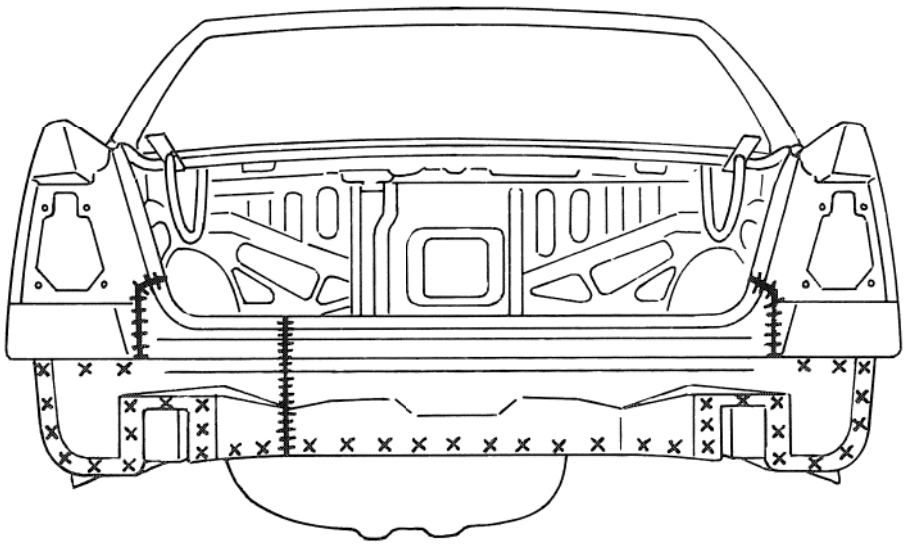
*DI2*

**900, 4-door models:**

Tail section, replacement complete or joining.

**Note:** A partially damaged tail section should be cut if possible.

Apply welding primer to all flanges, on the new component to be welded and matching surfaces of bodywork.



150606S



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# Tail section, replacement/joining, 5-door models

*DI3*

## Replacing panel under tailgate

Mark up join.

Mould a plate section on the tail section, using existing holes as reference.

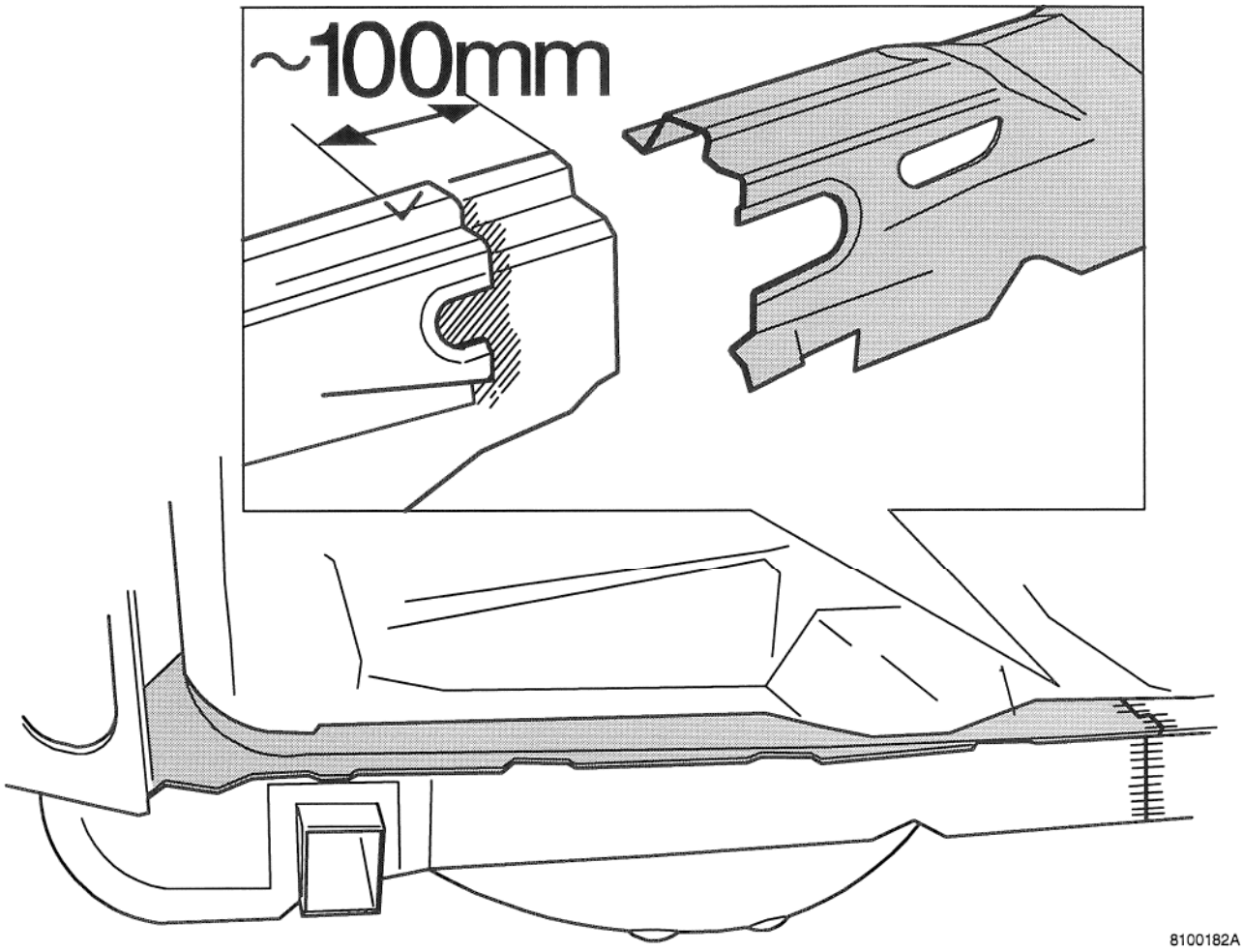
Make sure that join on inside is staggered 100 mm from join on outside.

Tack tail section in place.

Try tailgate. Check tailgate dimensions.

Apply welding primer.

Spot weld in place.




8100182A



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## Rear side member, joining

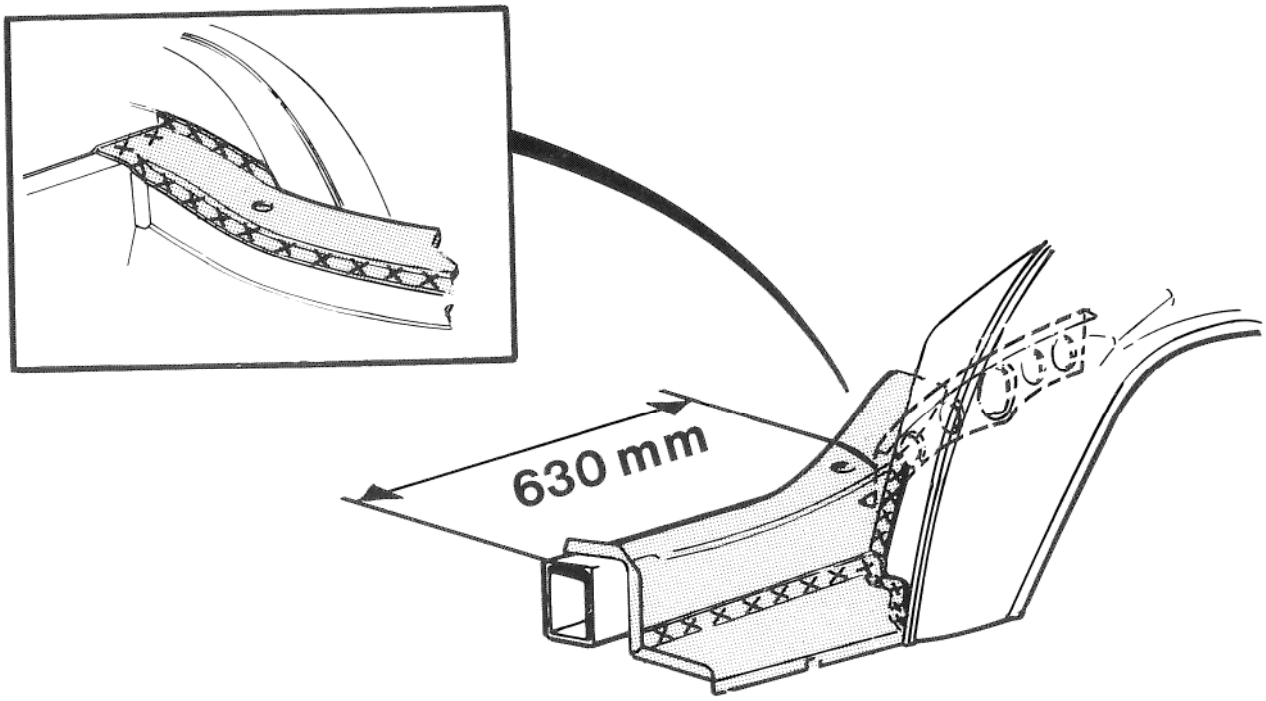
DI4

**Rear side member, joining.**

Member can be joined 630 mm from outer end, measured on underside of member.

Underside: Make join edge to edge.

Use MAG welding.

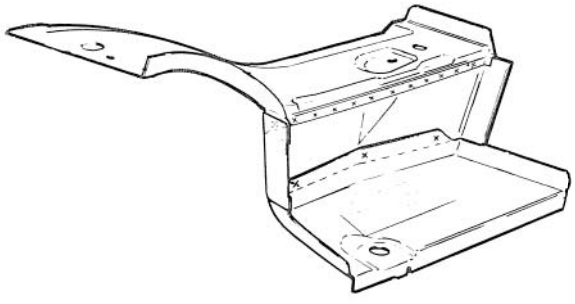



147597S

## Side panel, trunk floor, replacement

DI5

**Side panel, replacement.**



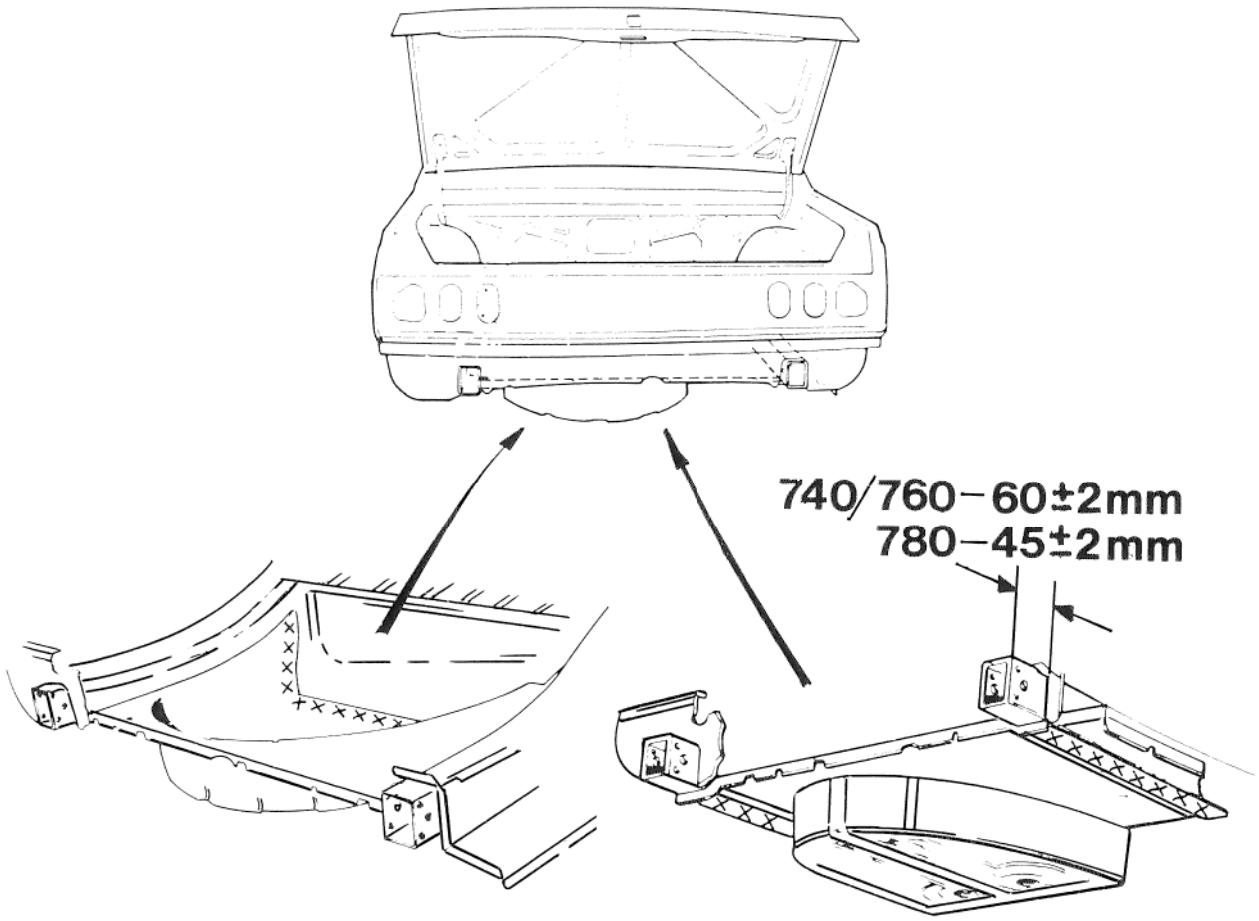
May have to be replaced when replacing wing or tail section.

147380S



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## Spare wheel well, replacement




147021S

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*DI6*

## New spare wheel well in old car.

All cars from 1988 onwards have a new design spare wheel well.

The exhaust pipe mountings are also different.

If changing endpiece (cross-member) on older cars, the new design spare wheel well must be used.

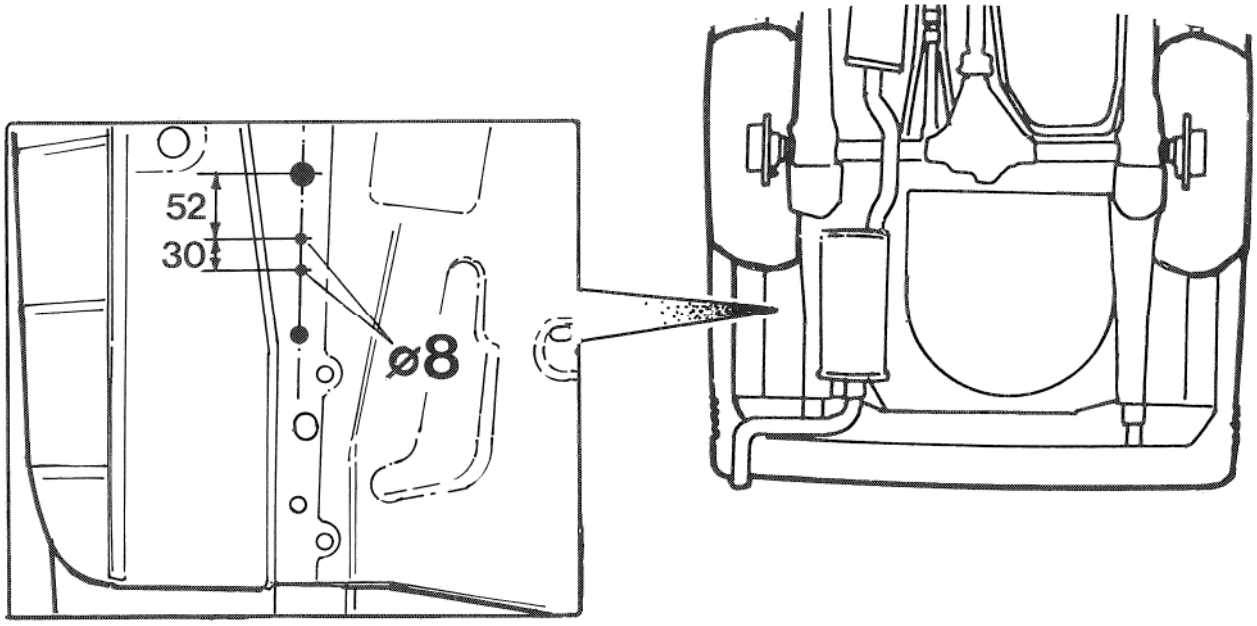
(Endpiece (cross-member), 5-door, as per DI17.)

A new exhaust gas mounting and suspension must also be used.

Drill two holes in RH member and install two 8mm rivet nuts (see illustration below).

This has already been done on all 1988 models.

**Note:** Endpiece (cross-member) varies, depending on whether cars have multilink suspension or not.




147038S



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*DI7*

## Endpiece (cross-member), 5-door, replacement

When replacing endpiece (cross-member) on 5-door cars, attachment for extra child seat must be fitted.

Spacing between attachments is 800 mm.

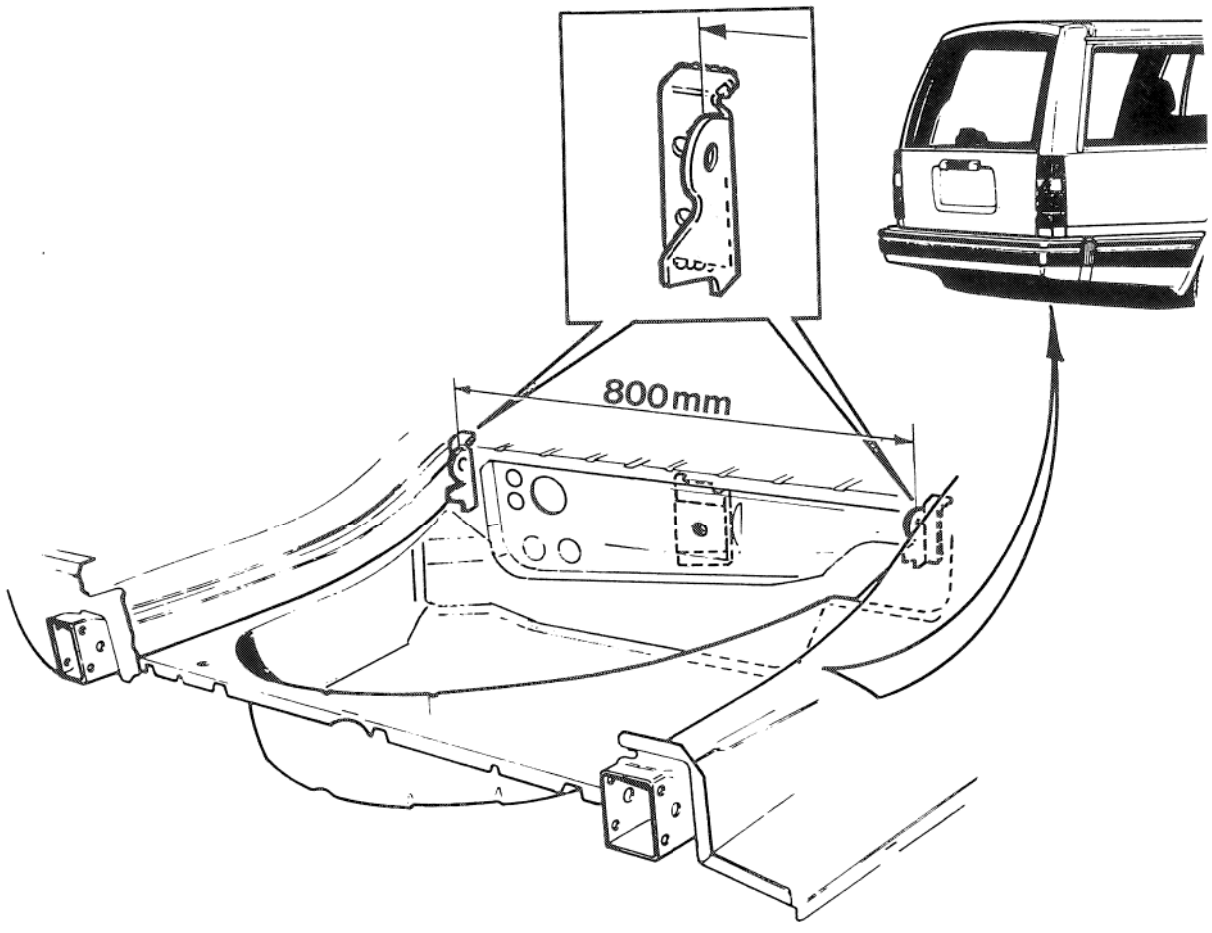
Line up attachments on member. Upper part must rest on floor.

Transfer old jack attachments to the new well.

Put jack in attachment and tack attachment into position.

Remove jack.

Complete welding.




8100185S



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# DJ. Roof panel

Roof can either be welded/soldered or bonded/welded in place.

Roof is bonded to avoid distortion when welding.

It must only be moulded at the gully and all four posts.

Window flanges must be welded.

When bonding, use only genuine Volvo two-part adhesive.

The adhesive packing is designed to prevent adhesive coming into contact with skin.

*DJ1*

**Roof panel, complete, replacement.**

Grind off old roof flanges.

Degrease thoroughly.

**Note:** New roof panel must also be down to bright metal in bonding area (Grind off primer.).

Bond only on bright metal plate.

In pillar areas, check that roof is low enough to allow filler to be added once adhesive has hardened.

Apply adhesive in a bead about 5 mm wide.

Install roof.

Apply welding clamps while adhesive is hardening.

Use about 15 double clamps each side.

Weld window openings.

Use resistance spot or MAG welding.

If car was involved in an accident, check post dimensions.

**Note:** Remove any excess adhesive once adhesive has hardened.

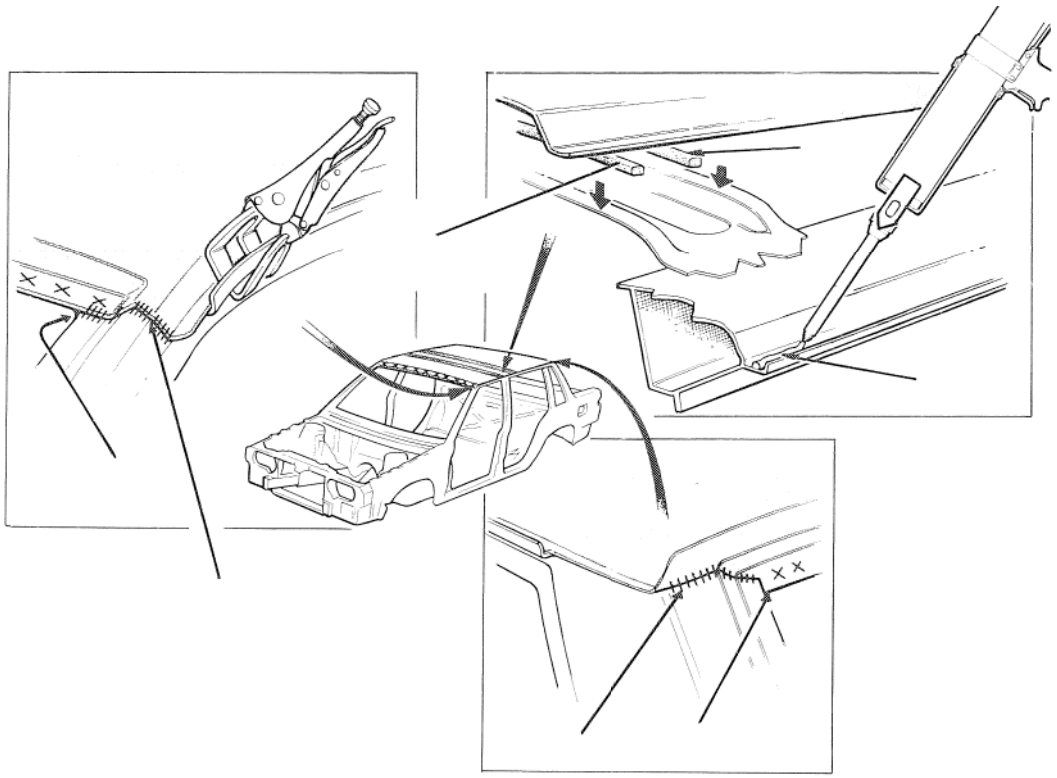
Use a hot air gun and scrape off with a screwdriver.



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*DJ2*

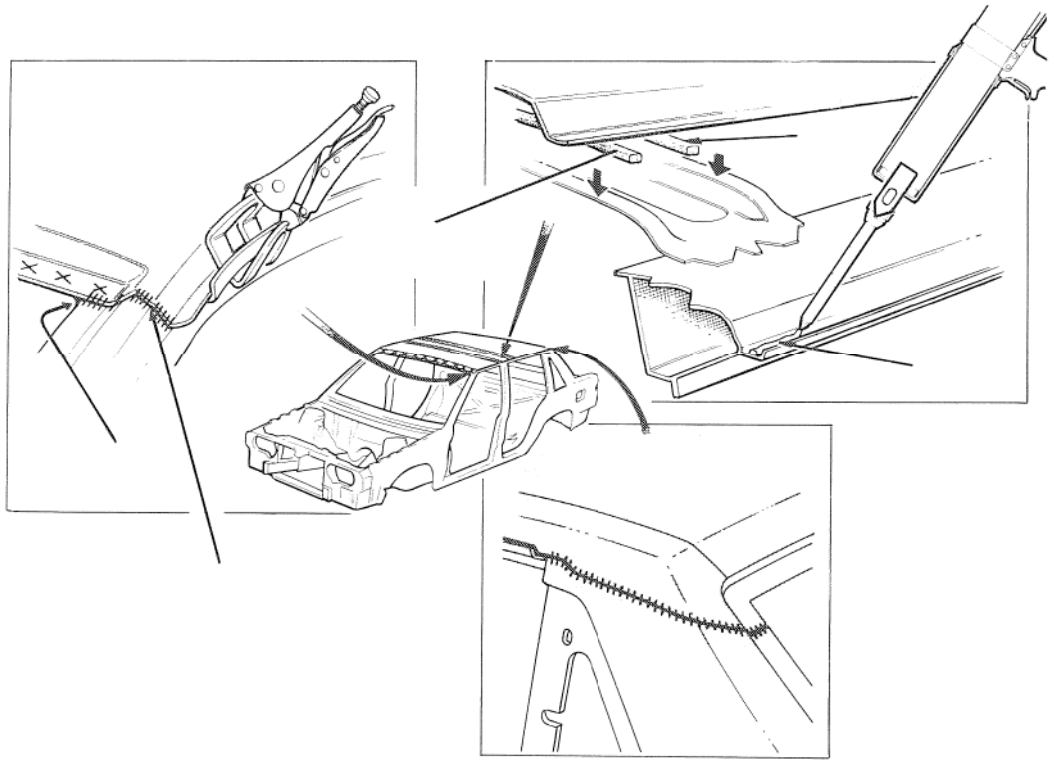
**700, 4-door**



147587S

*DJ3*

**900, 4-door**



150632S



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*DJ4*

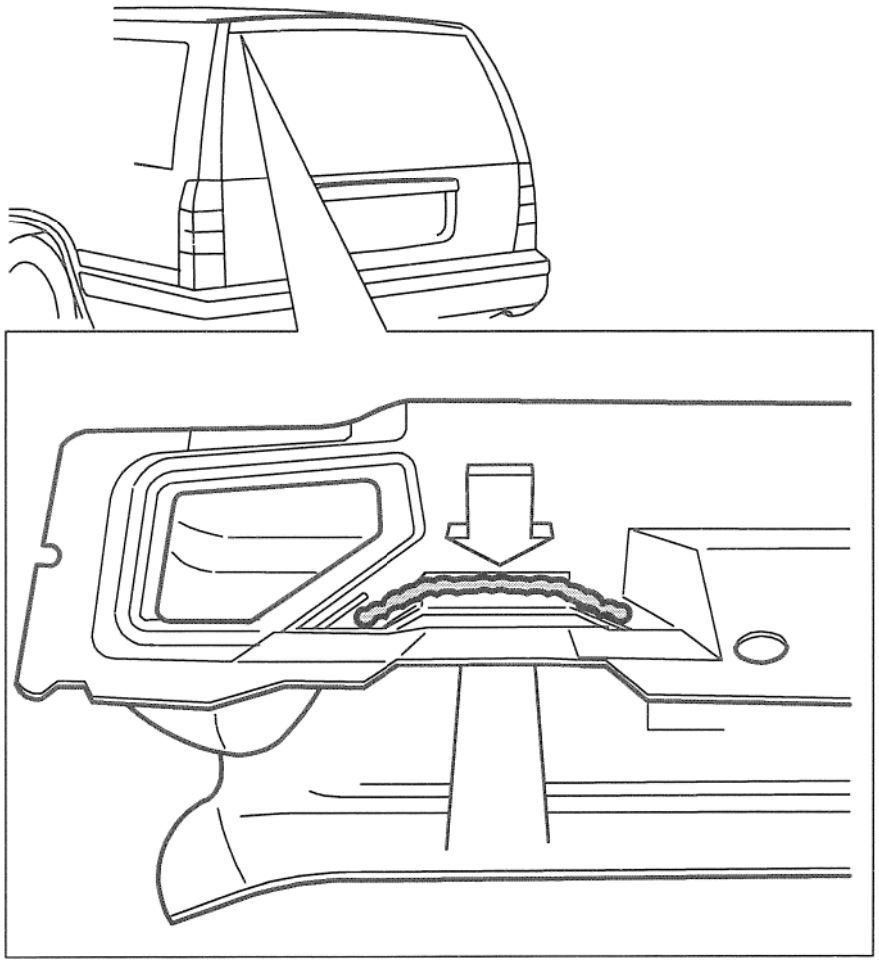
**700/900, 5-door**

Bonding the roof on 5-door models uses the same procedure as for 4-door models (as per DJ1).

Bonding the roof on 5-door models also involves bonding the reinforcement over the tailgate hinge mountings on each side.

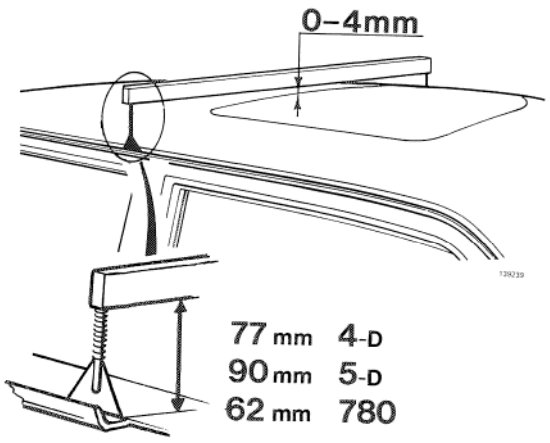
(See illustration)

Adhesive bead must be 15 mm wide and 80 mm long.



8100183A

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139239S

*DJ5*

**Check roof panel curvature.**

(Particularly important for cars with sunroofs.)

Make an alignment jig out of wood, size 20x50x1300 mm.

Weld sheet metal triangles to two wood screws

Screw the screws into the jig (see illustration).

Distance between centers of wood screws must be 1278 mm.

Permitted clearance at center of jig is 0 - 4 mm.

Dimension at either end must be:

77 mm = 4-door

90 mm = 5-door

62 mm = 780.

*DJ6*

**Two-part adhesive - one pack.**

The new body adhesive comes in a specially-designed cylindrical pack, contents 120 ml.

The adhesive is a two-part epoxy resin, with the two parts (base and hardener) held in separate components in the container.

**Note:** Adhesive is harmful! Follow instructions on pack.

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DJ7

**Mixes automatically.**

The two parts are squeezed out and meet in a mixer tube, where they mix.

Mixer tubes are disposable, and come in packs of 10.

DJ8

**Apply adhesive with airgun.**

A piston at the bottom of the cylindrical container squeezes adhesive out.

The higher the temperature, the faster the adhesive hardens.

| Temperature | Hardening time |
|---|---|
| 20-25°C (68-77°F) | 8-12 hours |
| 40°C (104°F) | 3-5 hours |
| 60°C (140°F) | 15-20 min. |
| 80°C (176°F) | 1-2 min. |

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# DK. Outer door panel

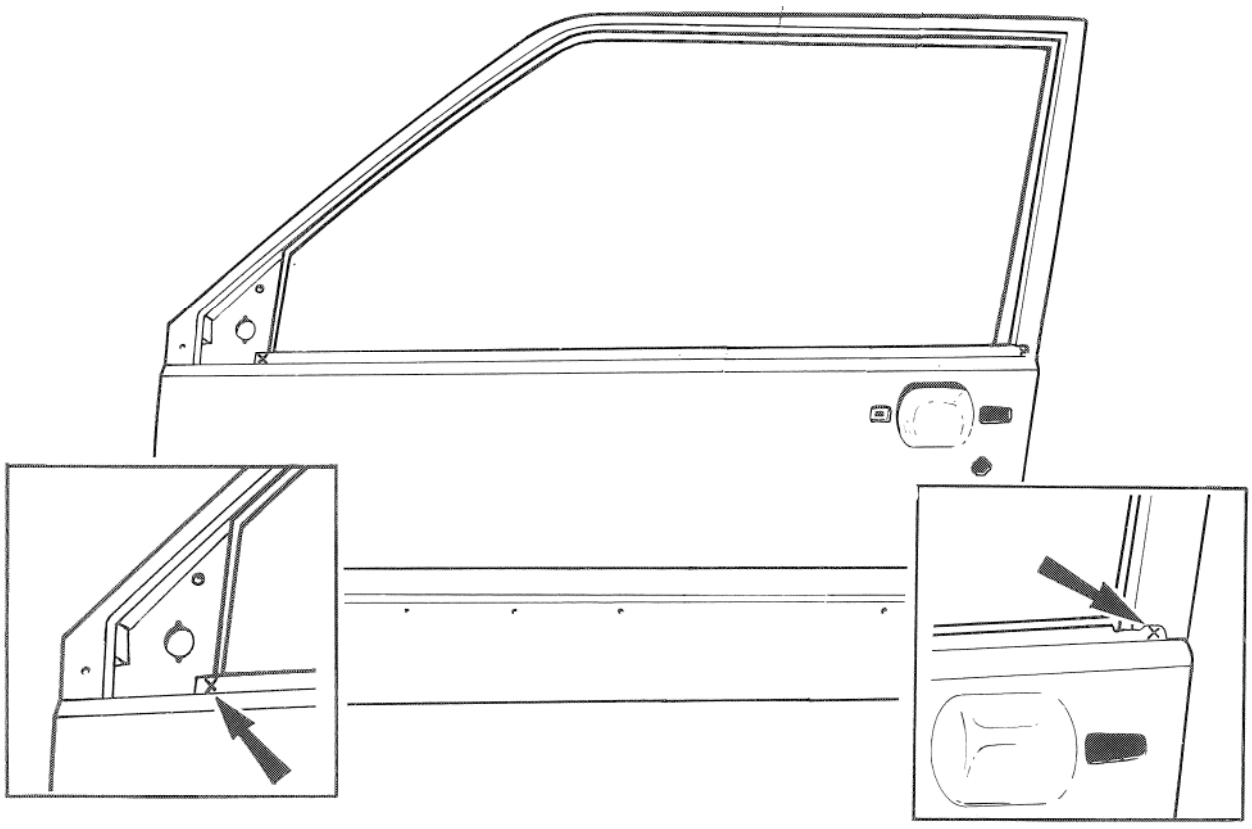
*DK1*

## Outer door panel, front door, replacement.

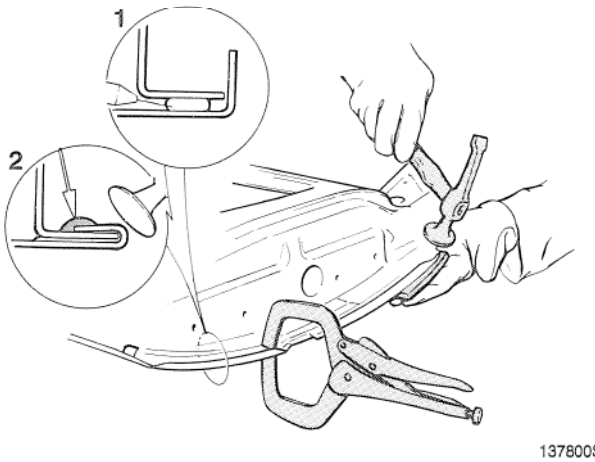
Door panel can be replaced by welding.

Alternatively, use two-part adhesive as when replacing roof (as per DJ1).

**Note:** Prime and putty door panel edges before painting.



146937S




137800S

If using a bonded joint, this can only be done where edge of door panel is folded over door frame.

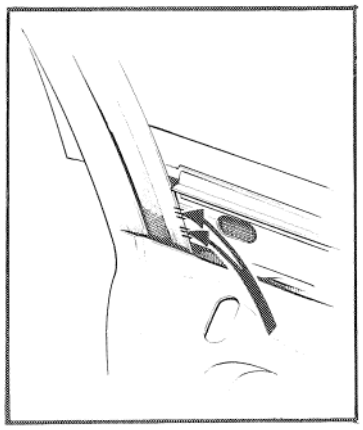
Adhesive instructions: as per 'roof replacement', step DJ1.

When installing, fold edge of door panel over frame.

1. Adhesive.
2. Caulking.



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146972S

Welding is still needed at window opening.

Apply filler primer and caulk joint on inside before final painting.

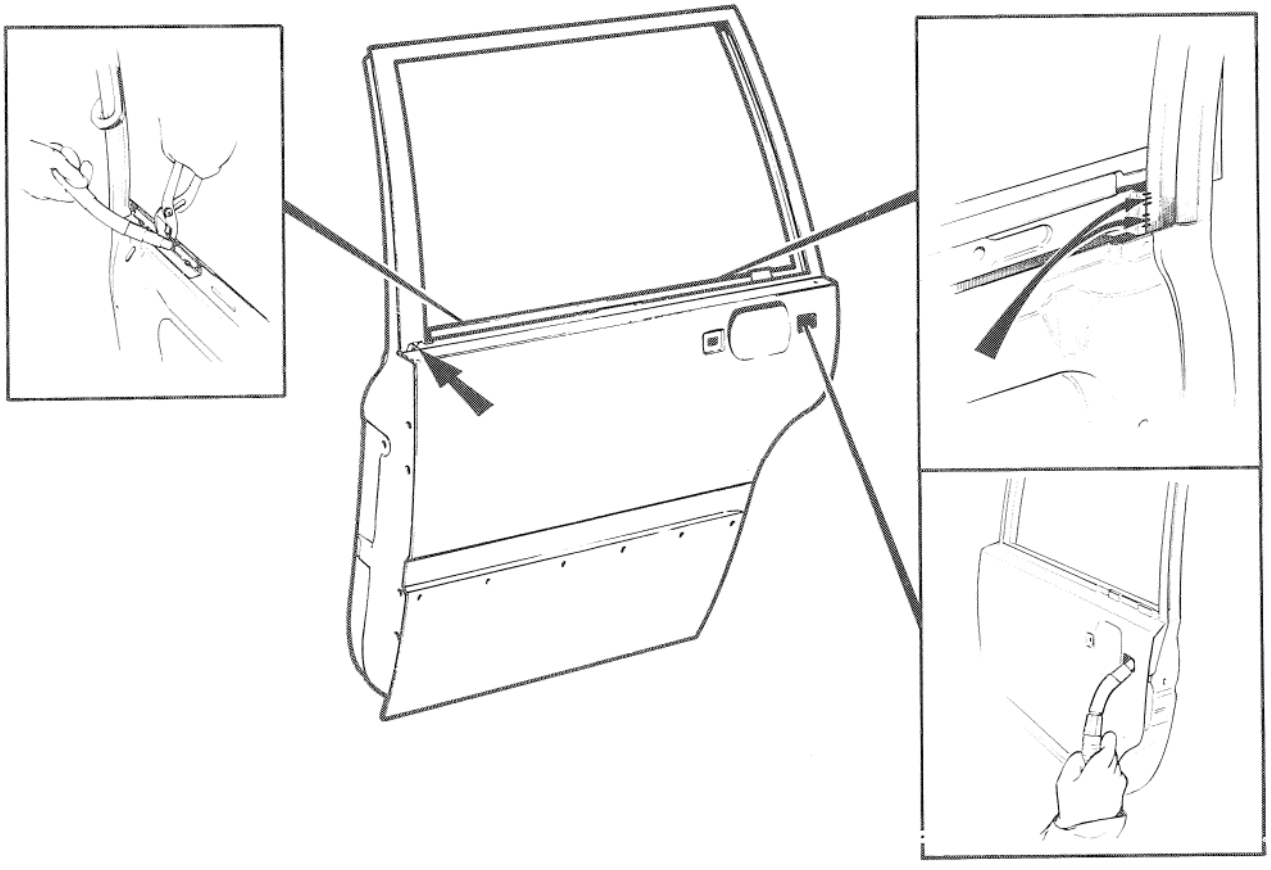
*DK2*

## Outer door panel, rear door, replacement.

Weld member together at bottom edge.

Member can be accessed via hole for door handle.

**Note:** Prime and putty door panel edges before painting.



146982S



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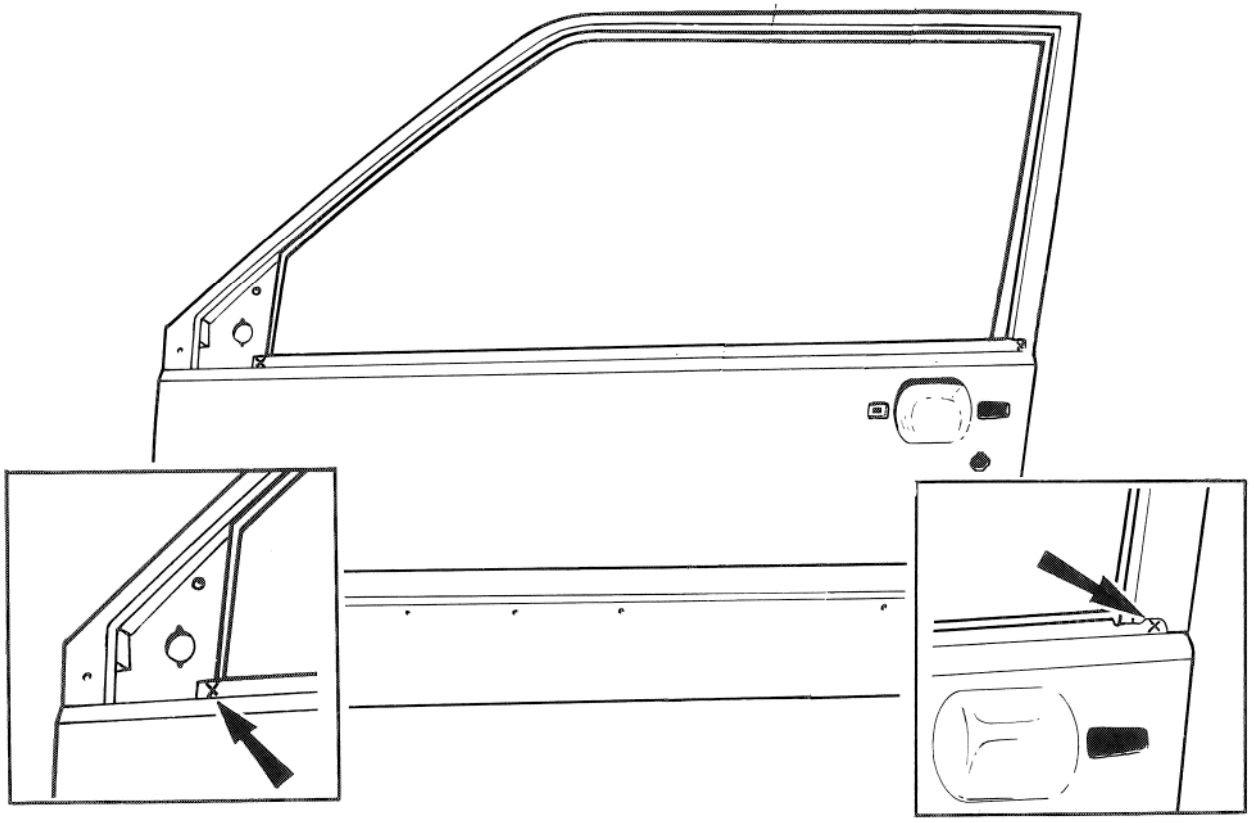
*DK3*

## Outer door panel, 780, replacement.

Remove door panel from upper member (lower window opening).

Member does not come with the new outer door panel as spare.

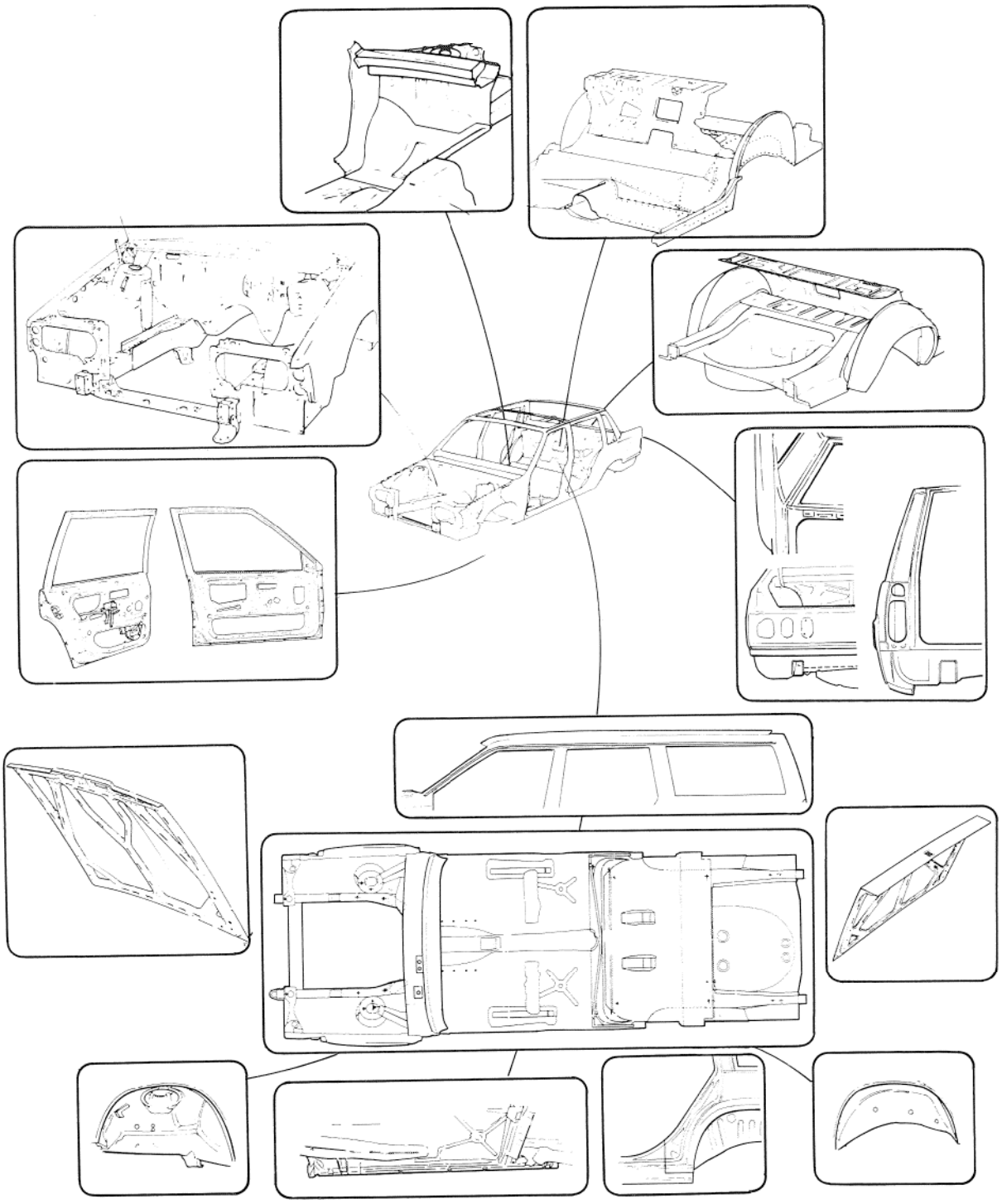
**Note:** Pre-paint door before installing it.



146973S

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# Caulking diagram



148081S



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# Group 84 Glass

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# E. Windshield

## Windshield, PUR-bonded, 760 1988-, 960, replacement

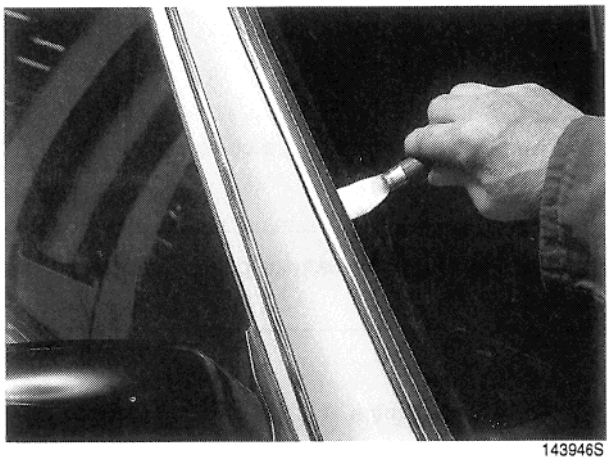
Important: Before starting work, read section on: Working with chemical agents.

Tools: See 'Special tools'.

**Note:** On cars with SRS (Airbag), always bond windshield with two-part PUR bonding agent.

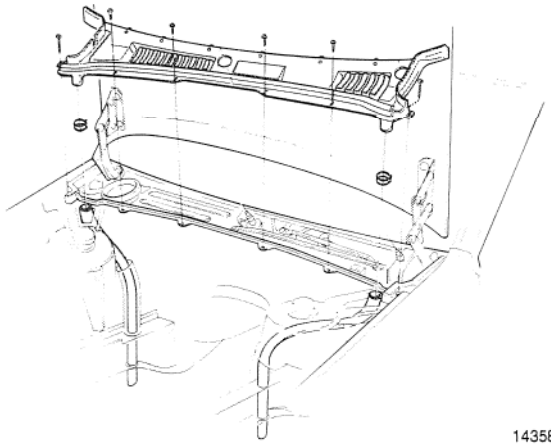
*E1*

**Remove:**



143946S

- mouldings around windshield.
  Use a curved spatula and lever off carefully at each clip.
- windshield wipers.



143580S

- plastic cover over wiper recess (plenum cover).
  It may be sufficient to tilt cover forwards without disconnecting drain hoses.
  Screws nearest windshield should only be unscrewed about 1-2 turns.

Fit tape strips around windshield opening to protect paintwork (sides and top).



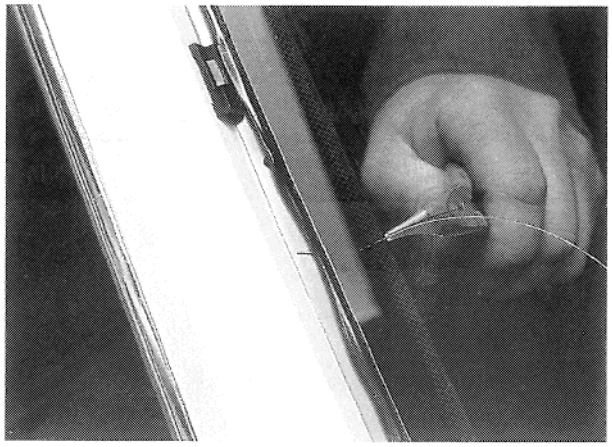
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Attach piano wire to counterhold.

Wire should be about 50 cm long.

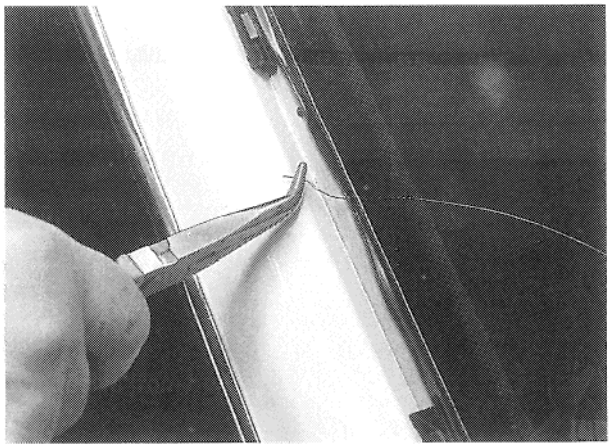
Clean windshield on outside to remove coarse particles.

Rinse with water or blow clean with compressed air to remove loose dirt before removing windshield.



143947S

Push wire through PUR adhesive, from inside and out, using bent-nose pliers.



143948S

Pull wire through from outside using pliers.

**Note:** Take care not to damage paintwork when cutting adhesive.

Fit wire into handgrips.

Two people are needed for this step:

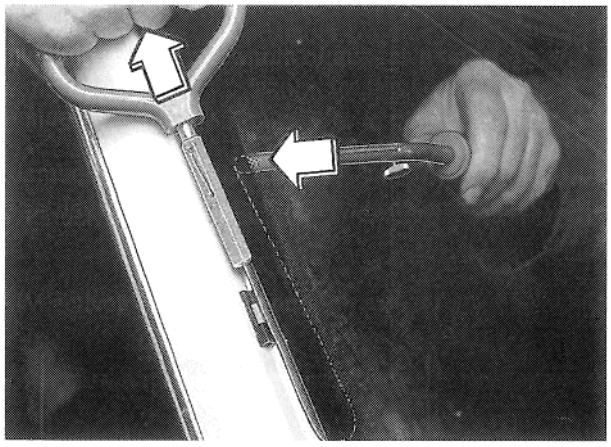
Press counterhold firmly against PUR beading on the inside as far away as possible.

Pull on handgrip from outside with a steady, even pull.

Stop and move counterhold forward as necessary.

Keep wire taut at all times.

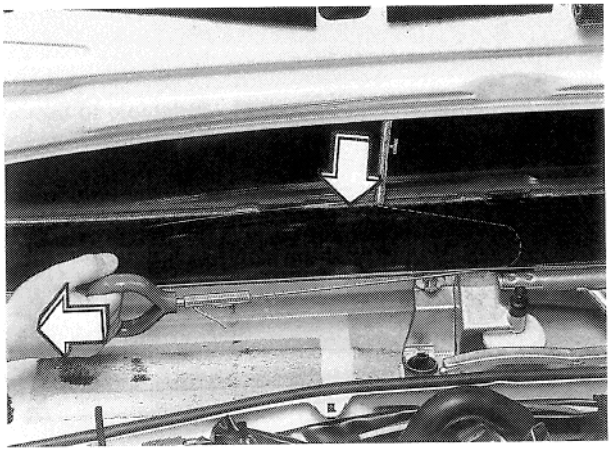
Take care not to damage trim.



143949S



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143950S

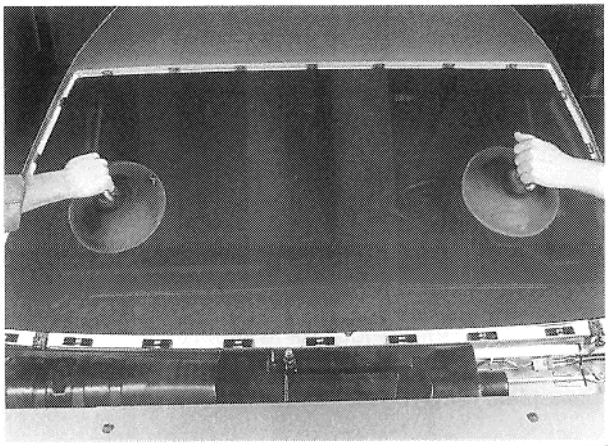
At corners:

Press counterhold into corner and pull on outside until wire goes into corner as well.

> **Note:** Make sure wire does not catch on corners of windshield.

At lower corners:

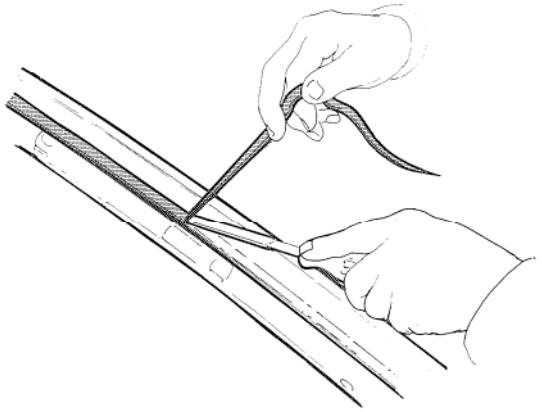
Use longer wire on outside. Stand on other side of car and pull.



143233S

Attach suction cups to windshield and lift it out.

Put windshield on frame.



147678S

Cut away old adhesive from body.

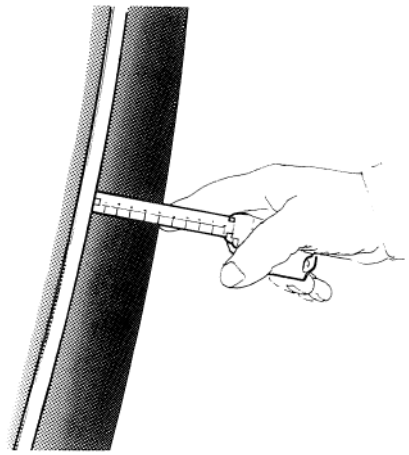
Use a 13 mm chisel.

Cut away until there are just a few mm of adhesive left on the bodywork.

**Note:** Avoid damaging paintwork.
Do not touch adhesive with fingers.

Apply PUR/RIM activator to body flange.

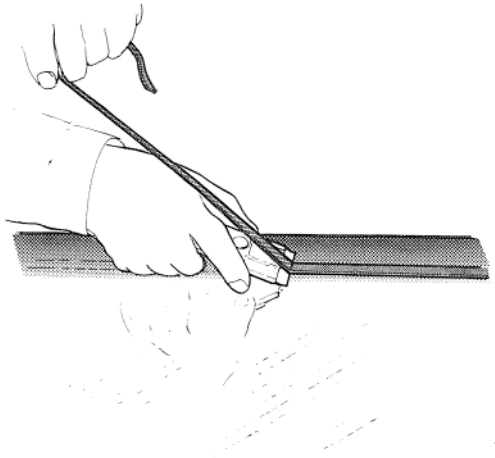
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147689S

Measure distance from bottom of windshield to bottom of adhesive bead.

Write it down.



147682S

If refitting windshield:

Scrape windshield surfaces clean by cutting away adhesive residue with a glass scraper.

**Note:** Do not damage black enamel.

Important: Clean edges of windshield with cleaner provided in kit, especially if car has stood with windshield removed for any length of time.

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E2

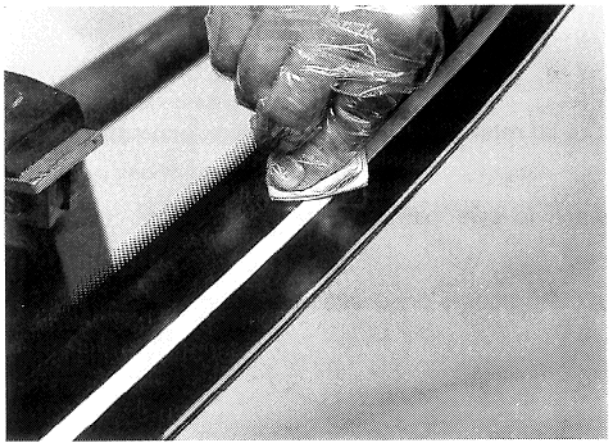
## Installation:

Check that PUR adhesive is at room temperature (approx. 20°C (68°F)).

If adhesive is below room temperature, it will be more viscous and harder to apply.

Check paintwork:

If paint has been damaged, apply filler primer and touch-up paint.



143952S

After panel repairs:

If any part of the windshield frame has been replaced or repaired, the body flange must be masked after the undercoat is applied.

Remove masking tape once topcoat has been applied.

Dry screen with H cleaner.

Apply glass activator (yellow cork).

Measure from underside where PUR-adhesive had been applied: See previous measurement.

Use masking tape. Position tape so its top edge is where underside of adhesive will be.

Wipe sides and top level with top edge of tape with cleaning fluid (yellow cork).

| |
|---|
| Use gloves. |

Apply PUR/RIM activator to body flanges.

Shake primer bottle thoroughly.

Pour primer into transparent applicator bottle.

Press cap onto plastic bottle, turn bottle upside down and squeeze out primer until felt applicator is saturated (black).

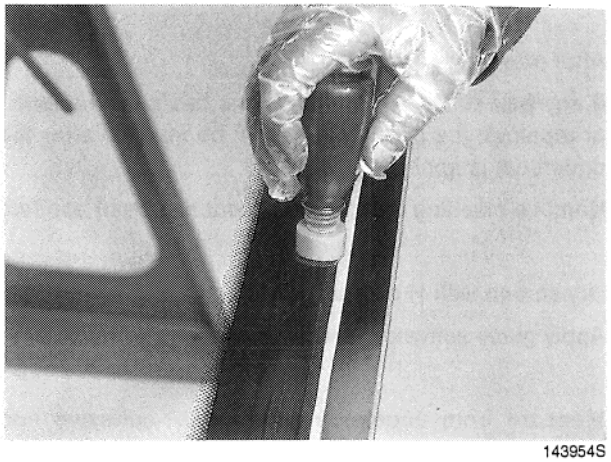
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Apply primer to glass.
(Even if reusing the old windshield.)

Hold support against edge of windshield.

Apply to sides and top edge first.

Apply generously but without letting primer run.



143954S

Cut off retaining edge around felt on primer bottle.

Apply to lower part up to top edge of tape.

Allow primer to dry until surface-dry.

Press spacer clips onto body flange.

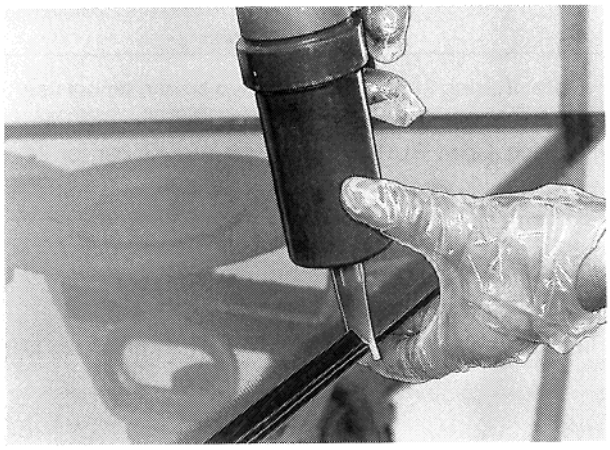
**Note:** All spacer clips are black except for the bottom ones on the A posts, which are blue.

Replace damaged trim moulding clips.

Insert cartridges in glue gun.

Fit nozzle.

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142727S

Apply adhesive to screen.

Hold spray at right-angles to screen.

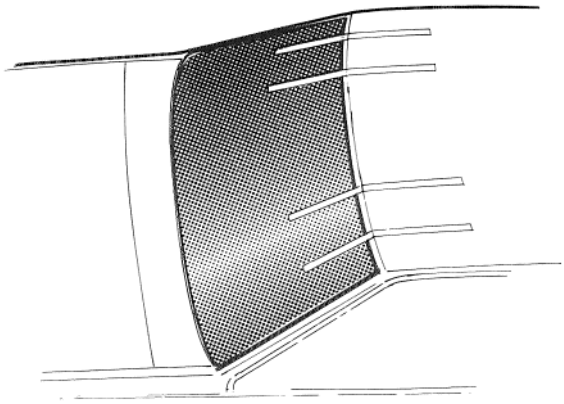
Make sure beading is continuous and unbroken, otherwise join will not be airtight.

**Note:** Always keep a side window open when glueing windshield, otherwise a newly fitted windshield may jump out of position when closing a door.

Put windshield in place within 10 minutes of applying adhesive.

Press windshield in by hand.

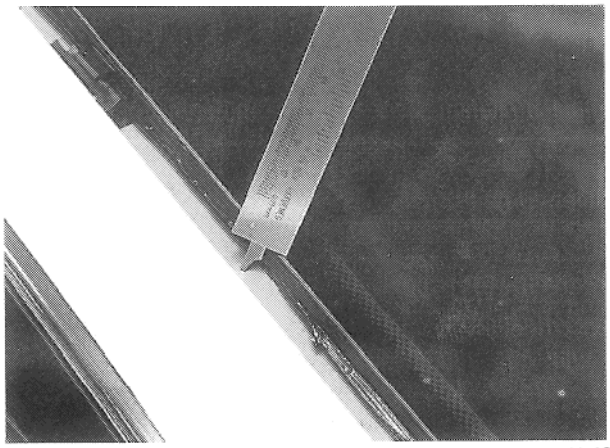
There should be an equal gap on both short sides and the top edge.



147677S

Attach windshield to roof.

Use some strips of tape.



143956S

Measure windshield vertical position with a slide gauge.

| | |
|---|---|
| Europe/Overseas | 10-12 mm |
| USA/Canada | 9-11 mm |

**Note:** Different windshield thicknesses.

| | |
|---|---|
| Europe/Overseas | 5.8 mm |
| USA/Canada | 5.0 mm |



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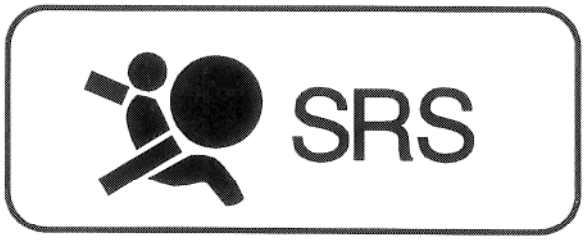
**Note:** If using 2-part PUR adhesive on car, do not use car for three hours before using.
If using 1-part PUR adhesive, do not use car for 24 hours.

Remove tape.

*E3*

**Install:**

- moulding strips.
- plastic wiper recess cover.




8800027A

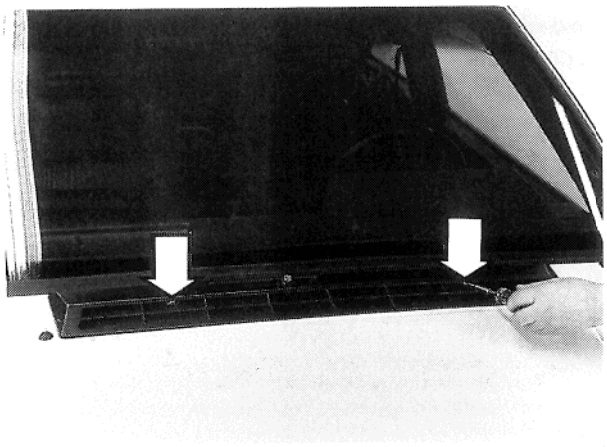
Note: If the car is equipped with a SRS-system then a decal (part no. 3517690-8) should be placed on the new windshield.

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# Windshield/rear window, PUR-bonded 780, replacement

E4

**Remove:**



142099S

– wiper arms.

– cowl panel.
Open hood.
Undo bolts.
Lift panel forwards and outwards.
Remove panel.



142100S

– bottom moulding.
Drive moulding out downwards using wooden spatula and mallet.

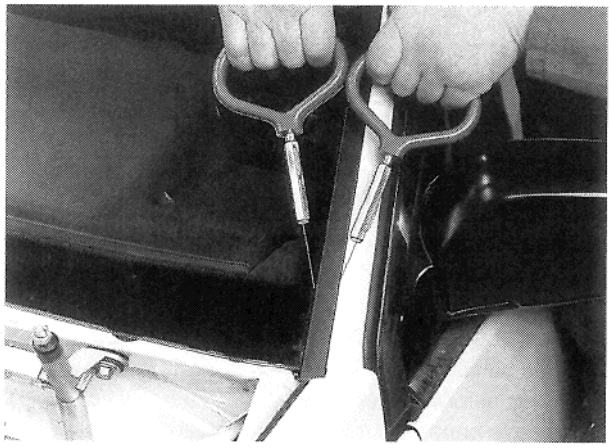
– moulding strips.

Attach piano wire to two handgrips.

There should be about 15 cm of wire between the handgrips.

Tape around windshield opening to protect paint at side and top edges.

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142102S

Thread wire under moulding at bottom edge.

Pull carefully upwards along moulding.

Hold wire at right angle so as not to damage mouldings or paintwork.

**Note:** Watch out for corners. Use a utility knife first, then wire.



142103S

Pull moulding downwards once wire reaches corner.

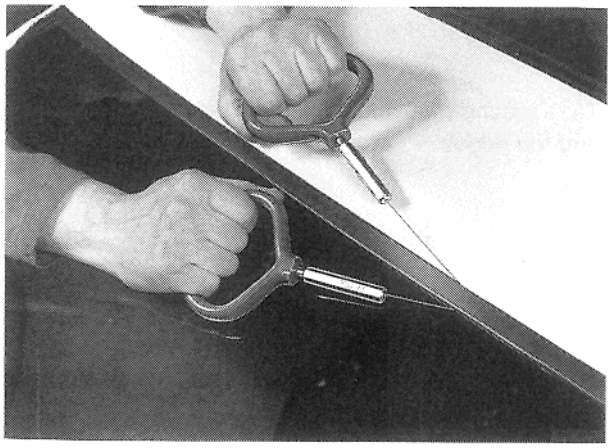


142093S

Cut corner free with utility knife if there are problems getting piano wire around corner.

Take care not to damage paintwork with knife.

Use a small screwdriver to help wire around corner if it catches.



142094S

Cut away upper moulding with piano wire.

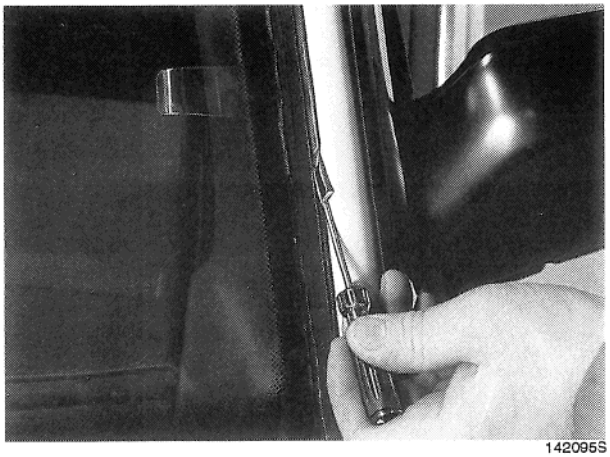
Remove moulding.



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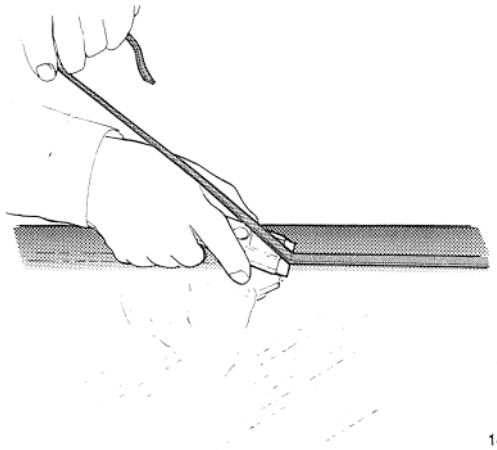
Clean windshield.

Rinse with water and blow dry or blow clean with compressed air to remove coarse dirt before removing windshield.



142095S

Remove spacers. (2 at top and 2 on each side).



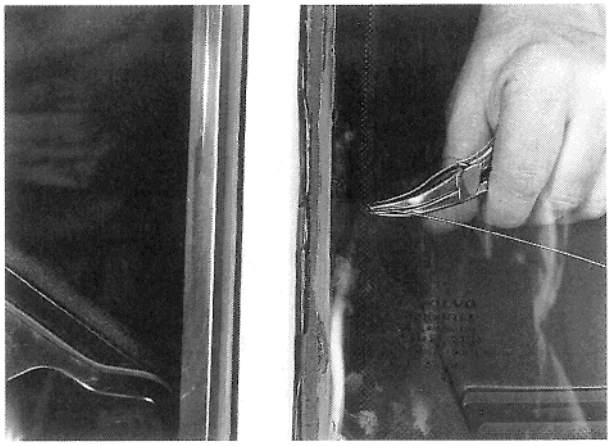
147682S

Cut away excess adhesive around edge of windshield.

Use a glass scraper.

Attach piano wire to counterhold.

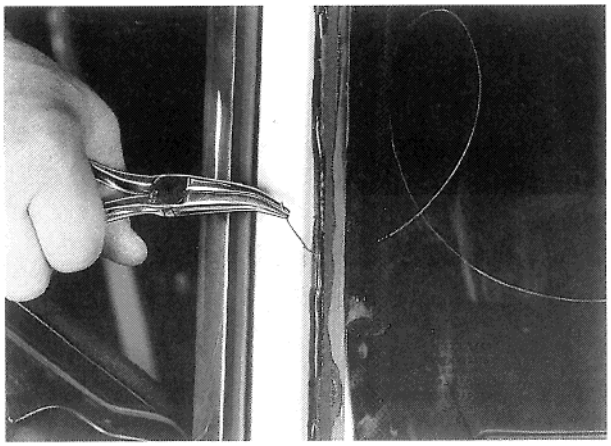
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142097S

Push wire through PUR adhesive.

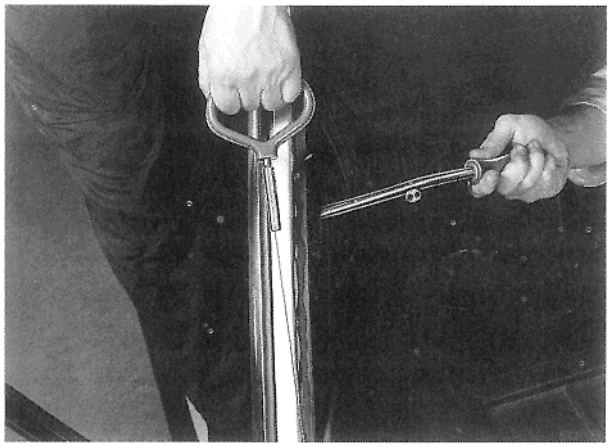
Push wire through adhesive from outside with the aid of pliers.



142098S

Pull wire through from outside with pliers.

Attach handgrip.



142087S

Two people required for this step:

Hold counterhold as firmly against inside edge as far from the handle as possible.

At the same time, pull evenly and steadily on the handgrip from the outside.

Stop and move counterhold forwards as necessary.

Keep wire taut at all times.



142088S

At corners:

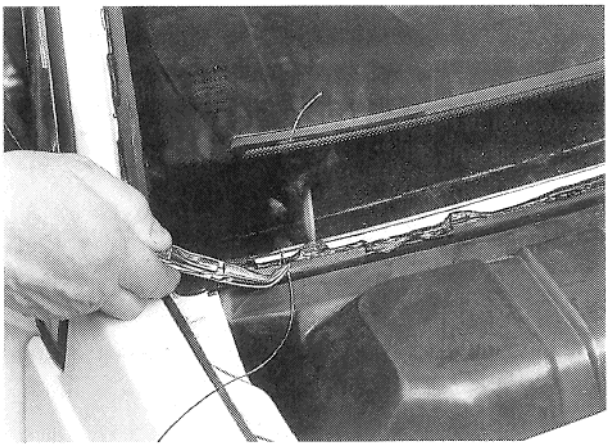
Press counterhold into corner and cut until wire on outside has reached corner as well.

Move counterhold forwards and start pulling again.

Cut until only the bottom edge and a bit at the very bottom of each side remains.



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142089S

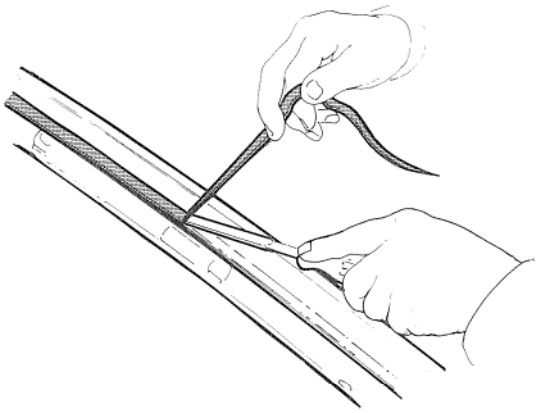
Push wire under lower edge of windshield from outside to get it around bottom corners.

Push wire in as close to glass as possible.

Attach counterhold.

Cut away the rest of windshield.

Lift windshield out.



147678S

Leave old PUR adhesive on body flange.

Remove any loose particles.

Smooth out join with a 13 mm chisel.

Mind paintwork.

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*E5*

**Installation:**

Apply PUR/RIM activator to body flange.

Check that PUR adhesive is at room temperature (approx. 20˚C (68˚F)).

If adhesive is below room temperature, it is more viscous and harder to use.

Check paintwork:

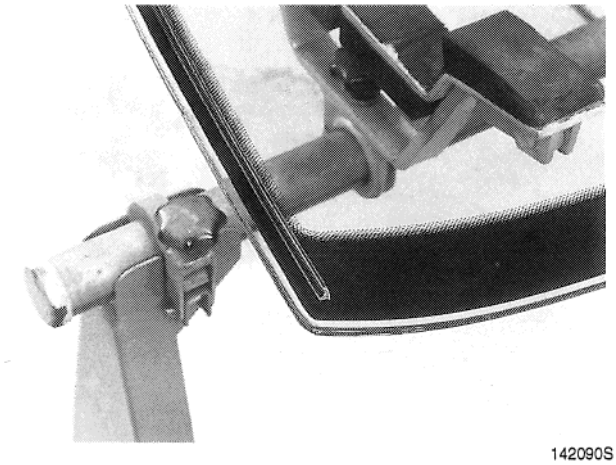
If any paintwork has been damaged, apply filler primer and touch-up paint.

After panel repairs:

If any of the window frame has been replaced or repaired, mask flange after undercoating.

Remove masking tape once topcoat has been applied.

Dry windshield and frame off with cleaner (yellow cork).



142090S

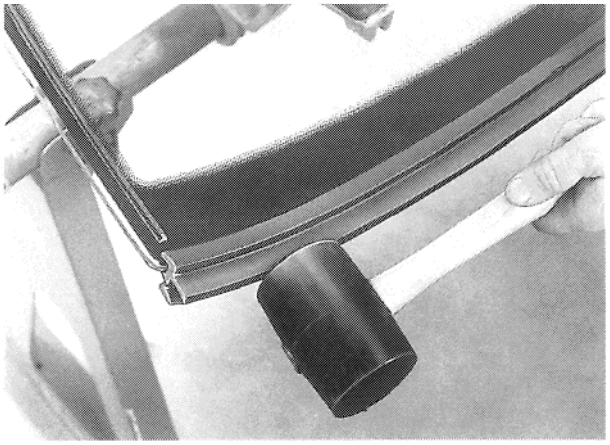
Place new windshield with inside facing upwards and easily accessible all around.

Attach support moulding to top and sides.

Place moulding 15 mm from edge of windshield.

Bend moulding around upper corners rather than cutting it.

(The moulding will prevent the PUR adhesive from flowing out too much and provides vertical support at the same time.)



142091S

Install thick moulding on underside of windshield.

Put on protective gloves.

**Note:** Clean windshield and flanges carefully.

Use cleaner (yellow cork) on windshield and PUR/RIM activator (blue cork) on existing PUR beading.



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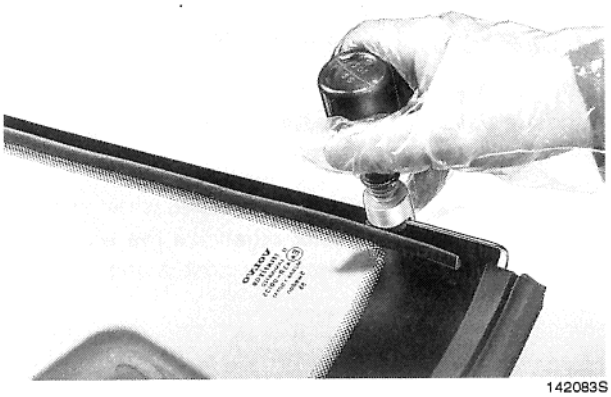
Shake glass primer container.

Pour glass primer into transparent plastic bottle.

Screw cap onto plastic bottle.

Turn bottle upside down and squeeze.

Squeeze primer out until felt applicator is saturated (black).

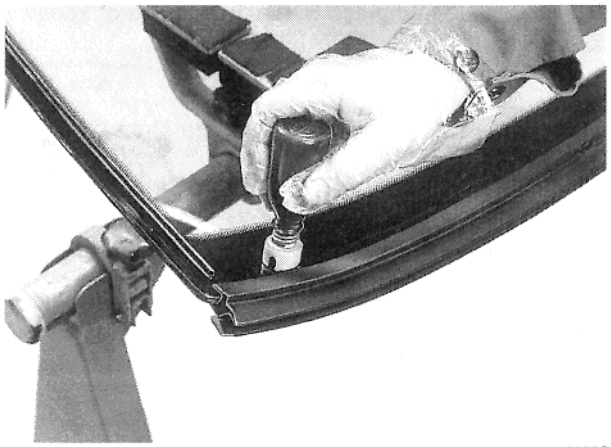


142083S

Apply primer to windshield.

Apply to sides and top first.

Apply generously but do not allow primer to run.



142082S

Apply to lower section last.

Cut support edge on primer bottle away first.

**Note:** Primer must not come into contact with moulding.

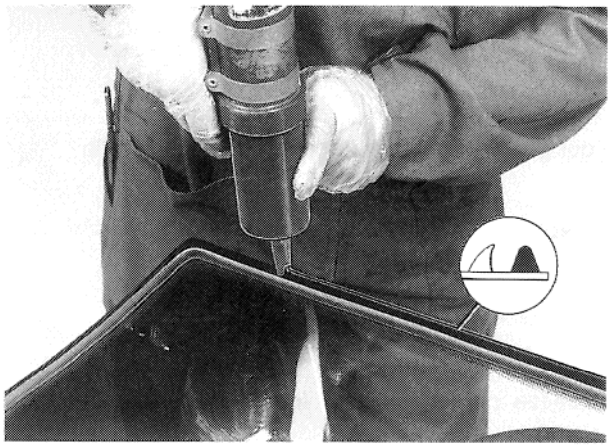
Allow primer to dry until surface is matt.

Attach suction cups to front of windshield.

Load PUR cartridges in gun.

Attach nozzle.

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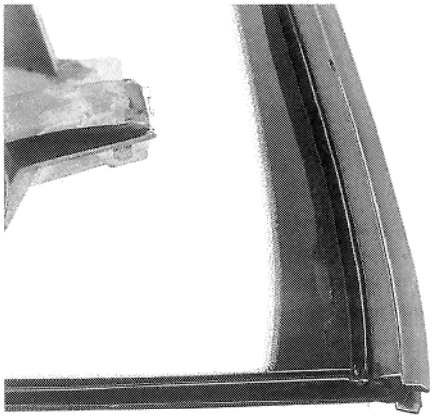
142084S

Apply adhesive to windshield.

Start with sides and top first.

Hold gun at right-angles to windshield.

Apply a continuous, unbroken bead of adhesive, otherwise joint will not be airtight.



142086S

Cut off locating pin and apply adhesive to underside.

Adhesive bead should be 2 mm from moulding.

**Note:** Always keep a side window open when applying adhesive to the windshield, otherwise the windshield may jump out of place when you close a door.

Lift windshield into place within 10 minutes of applying adhesive.

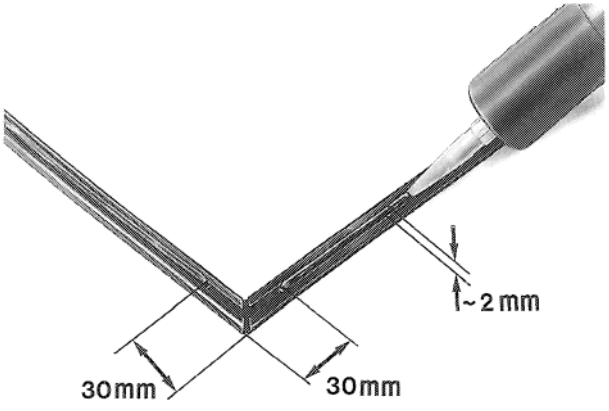
There should be an equal gap on the short sides and top.

Push windshield in by hand.

Check vertical position of windshield by placing trim mouldings on it. They should be flush with the body.

*E6*

**Install mouldings:**




142085S

Switch to other white nozzle and cut off end of tip.

Join upper and side mouldings.

New mouldings: Fill with adhesive.

Old mouldings: Apply thin bead of adhesive in center.



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Adhesive bead should project about 2 mm on back of moulding.

**Note:** Leave 30 mm at each corner and lower end free of adhesive.

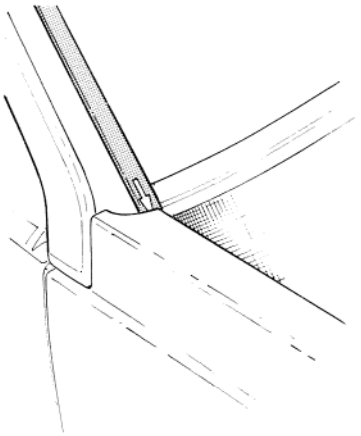
The next step requires two people:

Push lower ends of mouldings down at wings.

Press in top.

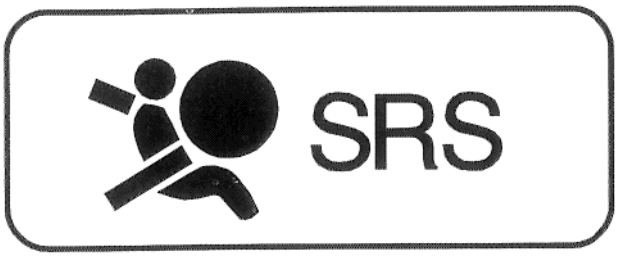
Press into place.

Wipe off any excess adhesive with cleaner.



147679S

**Note:** Do not use car for at least three hours.




8800027A

Note: If the car is equipped with a SRS-system then a decal (part no. 3517690-8) should be placed on the new windshield.

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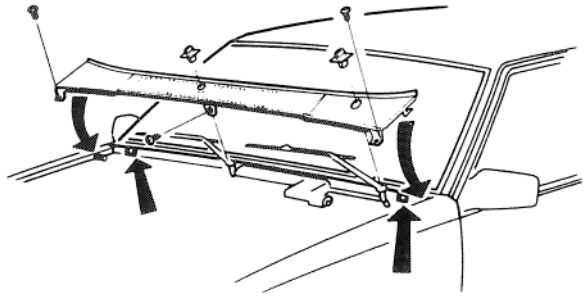
## Windshield, PUR-bonded, 940 1994-, replacement

For 1994- 940 models, the butyl tape used when attaching the windshield is replaced with PUR adhesive. Keep butyl tape as spare for older models.

At the same time, a new windshield has been introduced which is 3mm longer at the bottom and with a 20 mm radius in the lower corners instead of 10 mm. Only the new windshield will be kept in stock.

*E7*

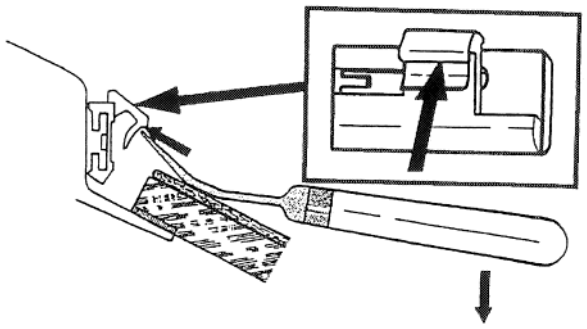
**Remove:**



S142931

- wiper arms.
- rubber grommets for wiper arms.
  Turn half a turn and pull straight up.
- cover plate over wiper channel (three screws).

**Note:** Replace plastic sleeves on outer screws.



S143214

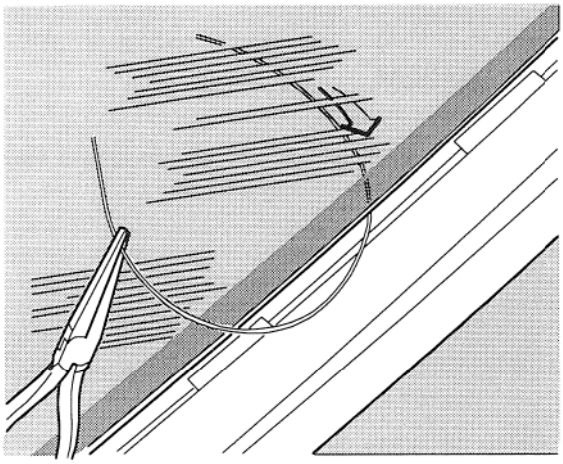
- top moulding.
- mouldings on A-posts.
  Use a putty knife.
  Insert putty knife under strip.
  Watch out for clip center plate.
  Press putty down towards windshield.

- clips from top and A-posts.

- support clip on underside of windshield (2x).

Mask windshield posts and screen edges with tape to prevent wire damaging tape.

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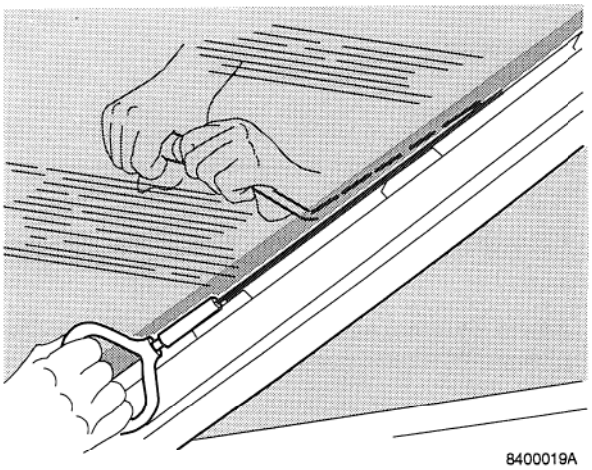


8400018A

Push wire through PUR adhesive from the inside outwards.

Pull wire through from outside with bent-nose pliers.

Attach wire to handgrip on outside and counterhold inside car.



8400019A

This next step needs two people:

Press counterhold hard against the inside as far away as possible.

Pull handgrip steadily and evenly from the outside.

Stop and move counterhold forwards as necessary.

Keep wire taut the whole time.

Use sawing motion around corners.

Take care not to damage paint or finishing.

Attach suction cups to windshield and lift it out.

Use a spatula to even out the PUR adhesive bead on the bodywork if necessary.

Always leave some PUR beading behind, about 1 mm.

Clean flange around PUR beading with PUR/RIM activator (blue cork).

If you are not putting windshield in place within an hour, activate PUR beading on bodywork with PUR/RIM activator.

Do not allow paint primer to come into contact with old PUR beading under any circumstances.

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*E8*

## Preparations

Open a side window, otherwise windshield may jump out of place when closing a door.

Put windshield on frame.

Attach suction cups.

Clean the areas of the windshield to be glued with H cleaner.

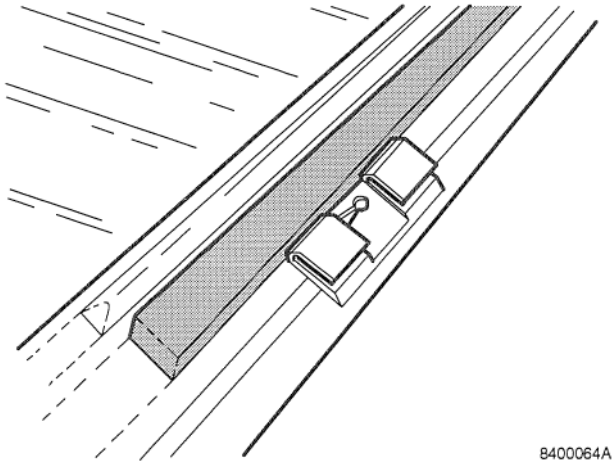
*E9*

## Panelling

If any part of the windshield surround has to be painted, mask the body flange after undercoating.

Remove masking tape once painting is complete.

Where a topcoat has been applied, use paint primer to give the PUR adhesive optimum adhesion.



8400064A

Apply glass activator (yellow cork) to the area of glass where the PUR adhesive will go (wipe on/wipe off).

Apply glass primer (green cork) over glass activator. Apply generously without overflowing.

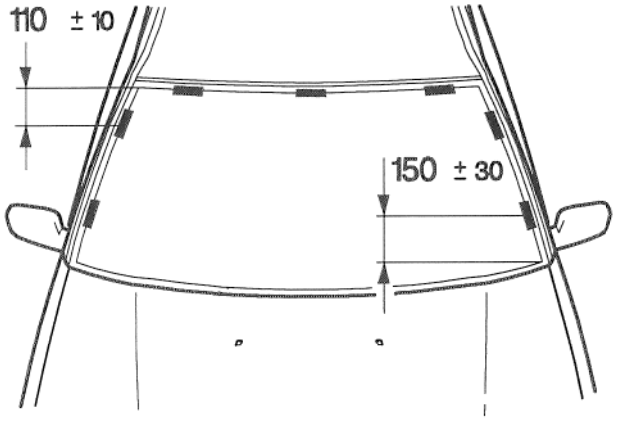
Apply double-sided tape (P/N 6846564) to bulkhead wall over clip to wiper channel cover plate (three pieces).

If there is already tape on the bulkhead wall, scrape it off.

Clean with H cleaner (black cork).

Attach new clips for mouldings in upper position.

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8400063A

Spacers:

Check that spacers on A-posts and top are undamaged and firmly in place.

Change if necessary.

3518259 (dark blue) at bottom of A-posts.

3518244 (black) everywhere else.

Locations on A-posts as shown.

There is a cutout in the flange at the top where the clip goes.

*E10*

## Install windshield

Apply PUR adhesive to windshield.

> **Note:** Always use two-part PUR adhesive on cars with SRS-Airbag.

> Use gloves and check ventilation is adequate.

S151869

Hold gun at right-angles to windshield with locating pin outside edge.

Lift windshield into position.

> If using two-part adhesive, windshield must be in place within ten minutes.

Press windshield into place by hand.

There should be an equal gap all around on the short sides and top.

Press window down until it stops against spacers and spacer tape.

Use some strips of tape to fix windshield to roof.

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Measure windshield position vertically with a slide gauge.

Maximum dimensions at the four corners should be 12 mm.

The distance on the long sides and down the posts should be between 8 and 11 mm.

Remove tape from posts and screen edges.

## Install

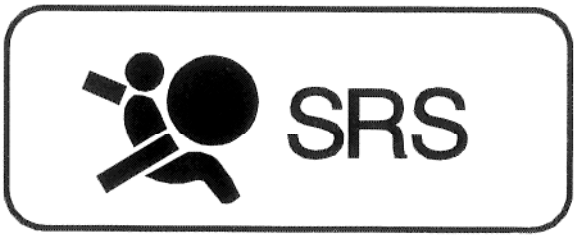
– moulding strips.

– cover panel.

– rubber grommets.

– wiper arms.

**Note:**
If car was bonded using two-part PUR adhesive, do not **drive** it for three hours.
If car was bonded with one-part PUR adhesive, do not **move** it for four hours or **drive** it for 24 hours.




8800027A

Note: If the car is equipped with a SRS-system then a decal (part no. 3517690-8) should be placed on the new windshield.

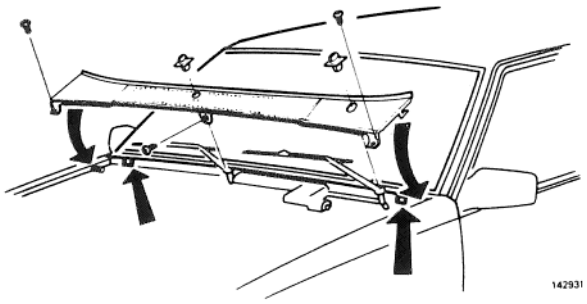
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# Windshield, butyl-bonded, 760 1982-1987, 740/940 -1993, replacement

*Special tools: 5245 (includes fixture 5246 and four clamps 5247)*

*E11*

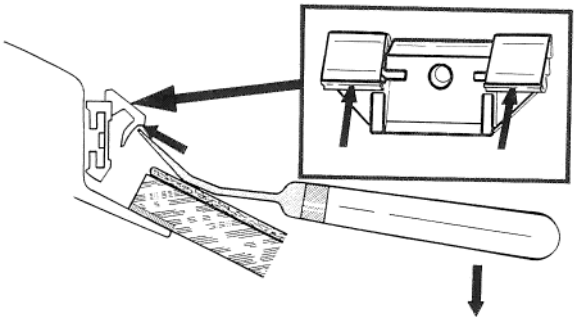
**Remove:**




142931S

- wiper arms.
- wiper motor rubber grommets.
  Turn half a turn and pull straight up.
- inlet grille.

- mouldings on A-posts.
- roof mouldings.



S143214

Use a putty knife, modifying it as shown.

Insert putty knife under moulding.

Check clip position.

Press carefully against center flap of clip, while pressing putty knife down against windshield (see illustration).

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*E12*

**Remove complete windshield:**

This next step needs two people:

One person sits on either front seat.

Press feet against windshield (take shoes off first).

Keep feet above center of windshield so butyl tape meets top first.

Once an opening appears, cut windshield out with a knife.

When the windshield starts to give, the other person takes hold of it and pulls it out.

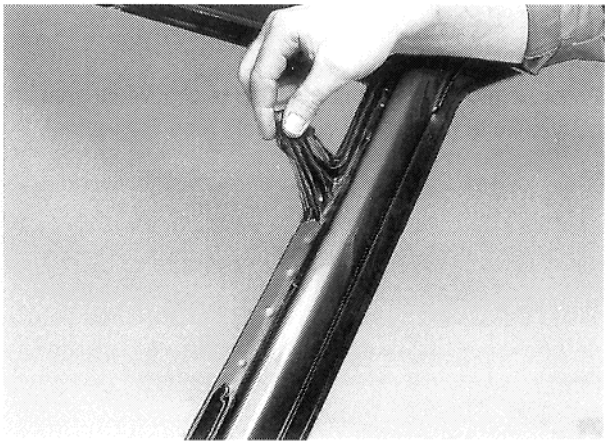
*E13*

**Removing a difficult windshield:**

Cut windshield out with knife.

*E14*

**Clean:**



134237S

Remove butyl tape residues from:

- windshield frame.
- windshield (if reusing it).

Clean windshield frame and mating surfaces with butyl primer.

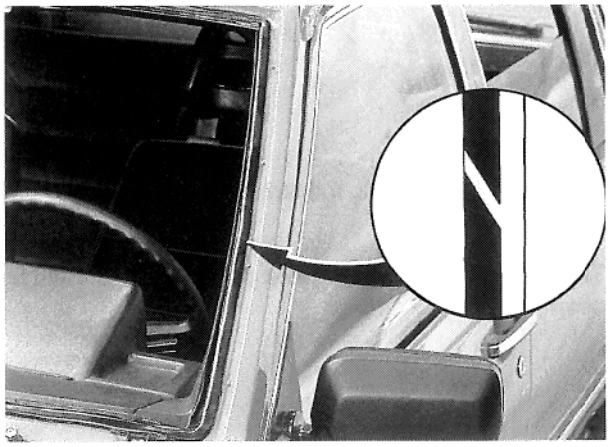
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Apply primer to:

- windshield frame mating surfaces with butyl tape.
- windshield mating surfaces with butyl tape. Minimum width 20 mm.

Allow to dry for at least two minutes.

**Note:** Primer must not be jelly-like in consistency. This means it is past its sell-by date.



132967S

Apply butyl tape:

Method 1: Roll tape out along inner edge of windshield frame.

Join should be angle-cut on one of the A-posts.

Remove backing paper from tape.

Method 2: Roll tape out, pulling backing paper off at the same time.

Remove the old support clips stopping windshield from sliding out.

Install new clips on second T-pad from end on each side.

Install trim moulding clips.

This next step requires two people:

Lift windshield into position.

Use suction cups.

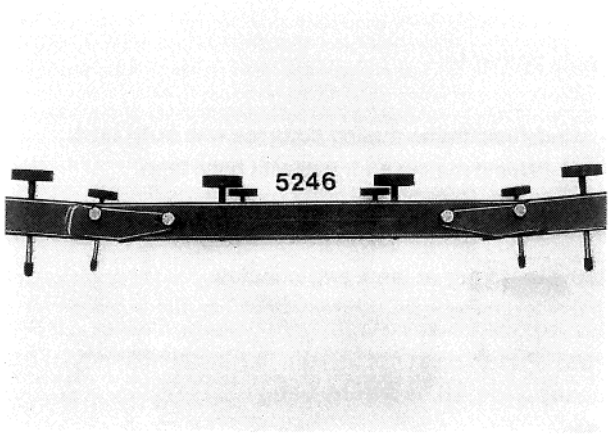
Position windshield centrally horizontally.

Clearance from roof should equal clearance from A-posts.

Adjust support clips as necessary.



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132990S

*E15*

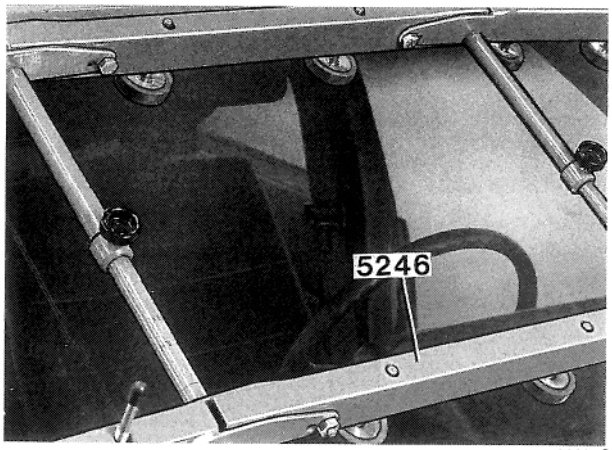
**Set up fixture 5346.**

Fixture should be in mid-position for windshield.

See illustration.

Adjust height setting to maximum width.

The four outer adjustable pads on each side should be screwed right in.

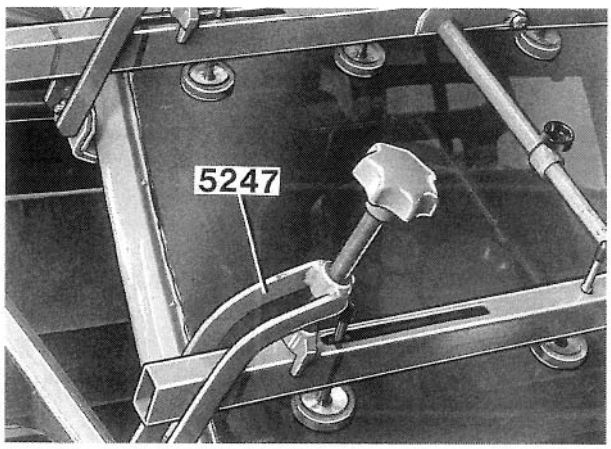



132991S

Secure fixture in place.

Should be central both horizontally and vertically.

The four central non-adjustable pads should be touching the windshield.




132992S

*E16*

**Secure fixture with clamps 5247.**

(The next step requires two people.)

The four angle pads on the clamps should be lying flat against the windshield.

Check that the center four pads are not pressing against the windshield, but just touching it.



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Adjust pads:

Angle the four outer pads on each side against the windshield and screw them down until they are touching the windshield.

Position the two outer pads on each side close to the clamps (see illustration).

Pads must not touch clamps when pressing window into position.

Press windshield in.

Press very carefully on clamps.

Turn all clamps one turn (can be done at same time).

Turn clamps on one side 1/4 turn.

Repeat with the clamps on the other side.

Wait 30 seconds.

Turn clamps on first side again.

Turn clamps less than 1/4 turn when windshield starts approaching the specified position.

Measure final position in center top and bottom.

Measure final position in center of A-posts.

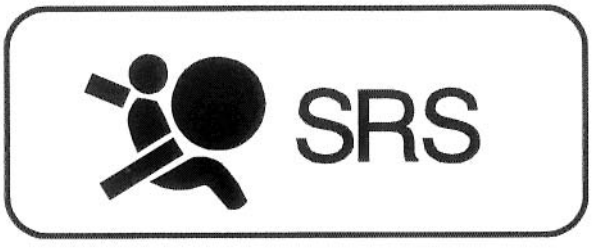
Outside of windshield should be 9 - 10.5 mm from windshield surrounding.

Remove fixture.

Install:
- trim strips.
- inlet grille.
- rubber grommets
- wiper arms.

Clean windshield and mouldings.

Note: If the car is equipped with a SRS-system then a decal (part no. 3517690-8) should be placed on the new windshield.




8800027A

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# F. Rear window

## Rear window, PUR-bonded, 960/940, 4-door models, replacement

Before starting work, read section on 'Working with chemical agents'.

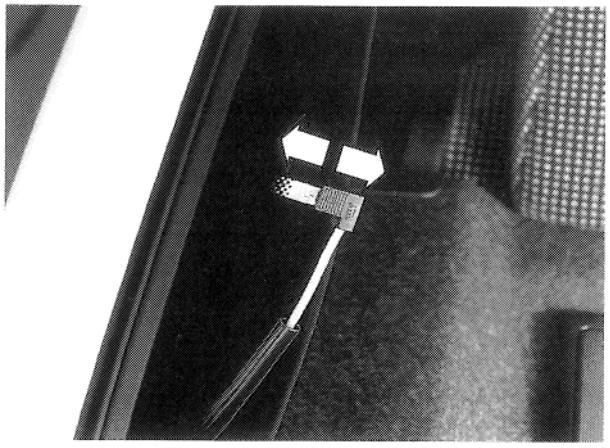
If window is of toughened glass (has shattered into fragment), any glass left can be cut away with a 13 mm chisel or putty knife.

If window is of laminated glass (has merely cracked), cut it out with piano wire.

Laminated glass windows have more (thinner) heater elements than toughened glass ones.

If window is undamaged and is to be re-used, always cut it out with piano wire

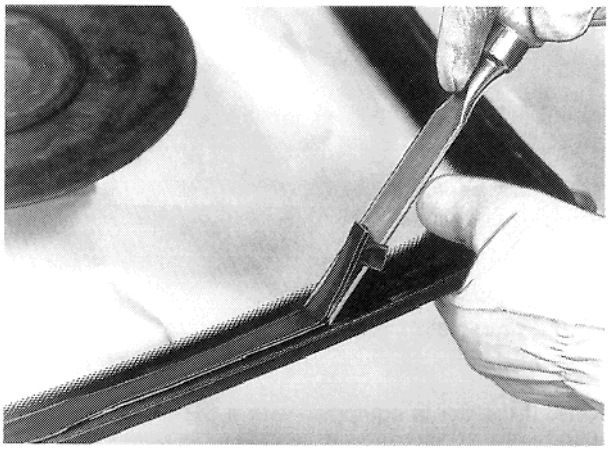
*F1*



150614S

**Remove:**

- rear window brake light (some markets only).
- electrical connections to rear window heater located behind each panel.
  Bend panel forward and undo electrical lead pin connectors to windshield.



150615S

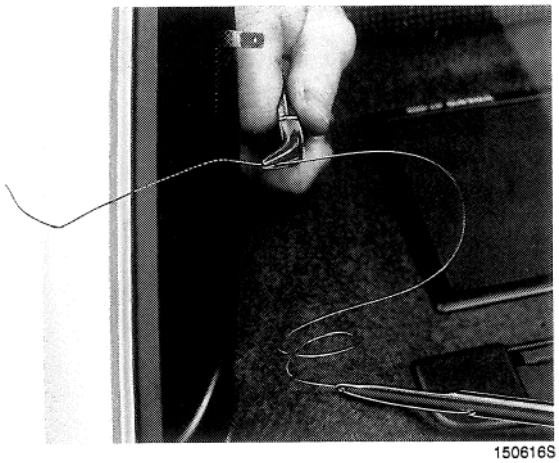
- rubber mouldings around rear window.
  Take hold of the end of the moulding down by the trunk (open trunk) and pull.
  Be careful with corners if using moulding again.

Clean slot around window to remove loose particles if necessary.

Apply tape strips by D-posts and roof to protect paintwork.



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150616S

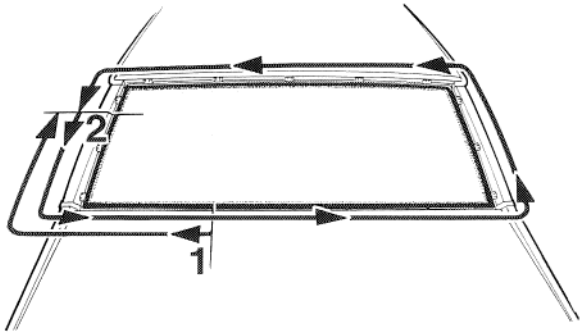
Attach piano wire to counterhold.

Push wire through PUR adhesive at the bottom edge of the window from the inside outwards.

Use bent-nose pliers.

Pull wire through from outside and attach it to handgrip.

Starting at lower edge, cut outwards and about 2/3 of the way up the short side.



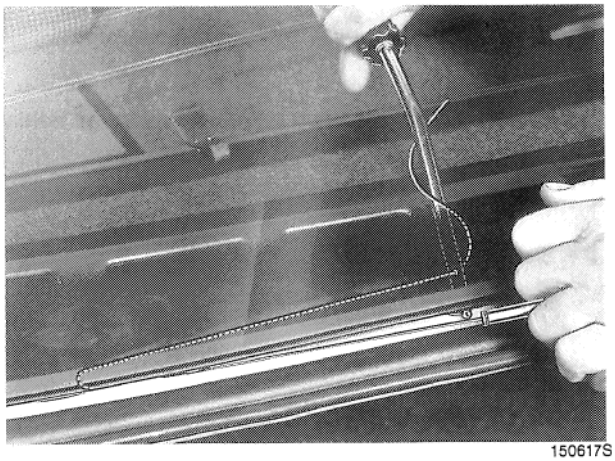

142750S

Go back to starting point.

Cut the rest of window free in the other direction.

Make sure wire does not catch on heated rear window connecting pins.

This next step takes two people:



150617S

Press counterhold firmly against inside edge of window as far forward as possible.

Using the handgrip, pull from the outside with an even, steady movement.

Stop pulling and move wire forwards as necessary.

Keep wire taut the whole time.

At corners:

Press counterhold into corner and cut until wire on outside reaches the corner as well.

Move counterhold forwards.

Start pulling again.



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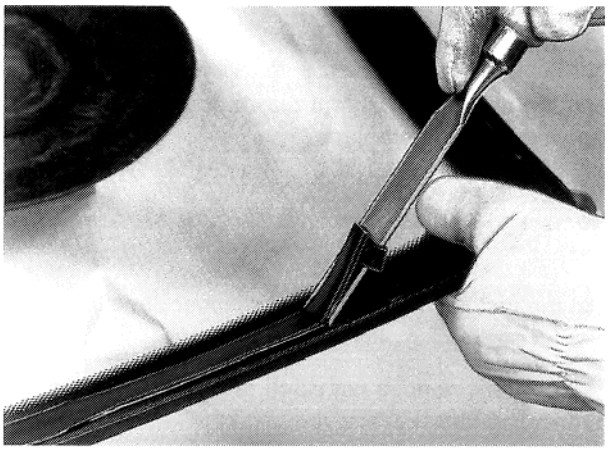
Even out PUR bead on bodywork flange with a 13 mm chisel. Be careful of the paintwork.

Do not touch PUR beading with your fingers.

*F2*

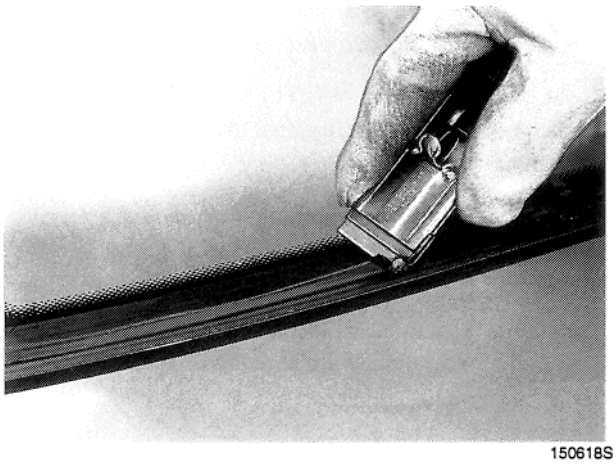
**Installation:**

If re-using window:



150615S

Cut any PUR residues away with a chisel.



150618S

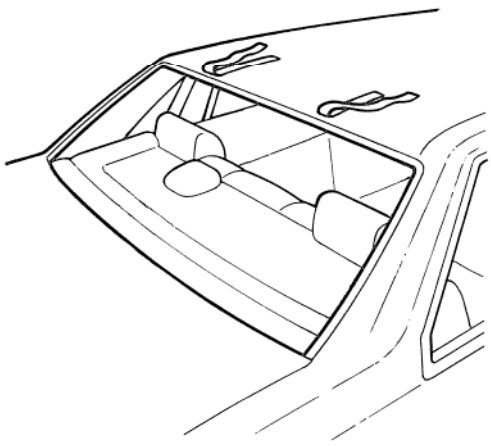
Scrape glass primer away with a glass scraper.

Do not leave any adhesive or primer residues behind after cleaning.

**Note:** Be careful not to damage black enamel on window.

Clean window mating surfaces with H cleaner (black cork).

Clean body flange with PUR/RIM activator (blue cork).



150619S

Put two tape strips vertically on the bodywork to fix the window in position once it is in place.

Apply trim strips/seals around window edges.

Important: Clean window edges with H cleaner (black cork), especially if car has been standing with window out for any length of time.



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Check paintwork.

If there is any damage, paint it over with filler primer and touch-up paint.

Make sure that PUR adhesive is at at least 20°C (68°F).

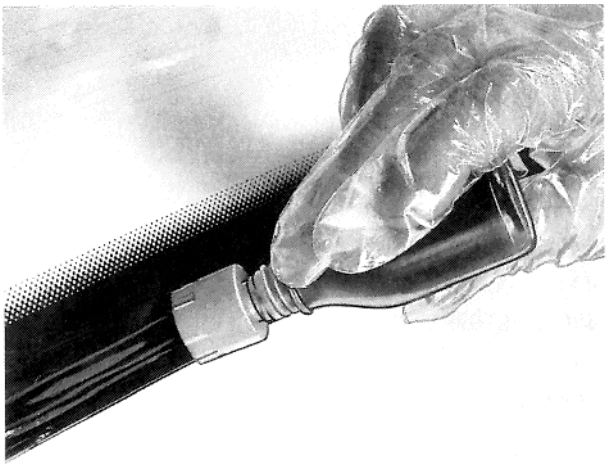
Otherwise it is more viscous and harder to apply.

Shake primer bottle (green cork) thoroughly.

Pour glass primer into transparent plastic bottle.

Put cap on plastic bottle.

Turn bottle upside down and squeeze primer out until the felt is saturated (black).



150620S

Apply primer to edge of window.

Apply generously but not to overflowing.

Allow primer to dry until surface is matt.

Install cartridges in gun.

Fit nozzle.

Attach suction cups to window.

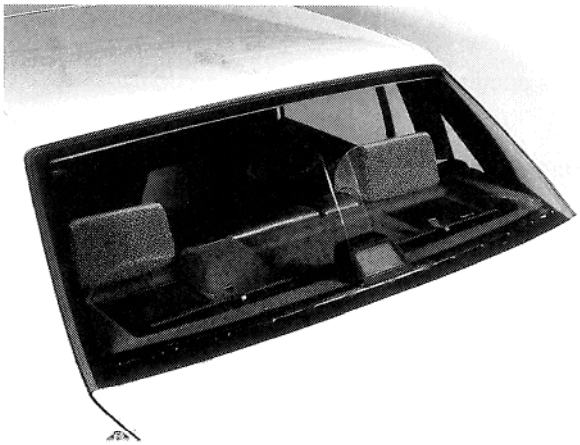
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Apply adhesive to window.

Hold gun at right angles to window.

Beading should be 10 mm thick.

Beading should be continuous and unbroken, otherwise joint will not be airtight.



150622S

Bend electrical lead connectors back at right angles to window.

Lift window into position within 10 minutes of applying adhesive.

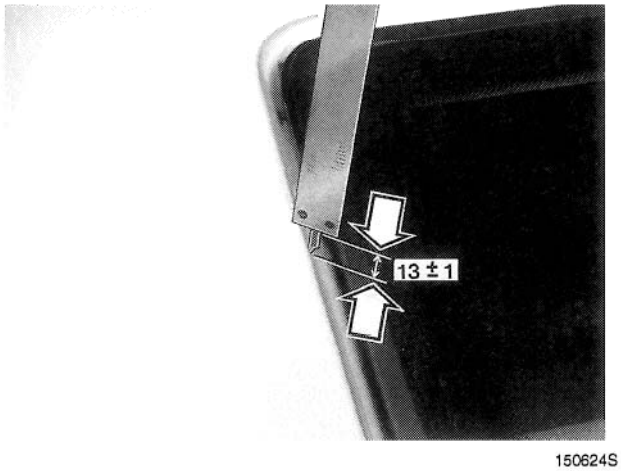
Check that connections are on inside of panel.

Fit window in carefully until:

- it is lying flush with bodywork.
- the trim strip centers in the groove.

Fix window in position by pushing down tape strips and pressing them home.

If fitting trim strips after putting window in position:




150624S

Center window so there is 8 mm between the window edge and D-post on each side.

Gap at top should also be 8 mm.

Depth from window surface to bottom of panel flange should be 13 mm.

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Remove suction cups.

Press window down by hand if further adjustment is necessary.

Remove any excess adhesive in corners, this will help if window has to be replaced again.

**Note:** Do not use car for three hours.

Remove tape strips.

If fitting window without trim strips:



150625S

Start at the top corners and press trim strips in along outer edge of window.

Connect electrical leads to rear window.

Install high level brake light (some markets only).

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## Rear window PUR-bonded, 760/740, 4-door models, replacement

PUR-bonded rear windows on 4-door 760/740 models were introduced during the course of 1985.

The switch was made at each factory in turn.

Some earlier 1986 models may therefore have butyl-bonded rear windows.

Cars with PUR-bonded rear windows should have a decal on the B-post reading PUR R.

There is an easy way of seeing whether a car's rear window is PUR- or butyl-bonded:

Insert a putty knife on the inside between the window and rubber moulding.

Look at adhesive.

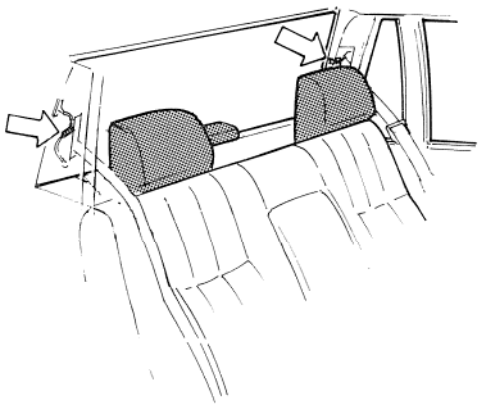
If adhesive is hard, window is PUR-bonded.

If adhesive is soft, window is butyl-bonded.

Butyl-bonded rear window, as per F6

*F3*

**Remove:**



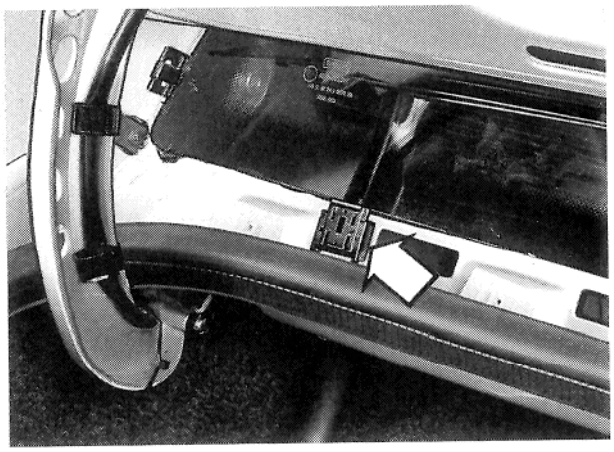
147681S

- headrests.
- rear window brake light (some markets only).
- rear window heater connectors behind belt slot covers on D-posts.

Bend electrical lead copper strips forward against window.

(Outside of panel.)

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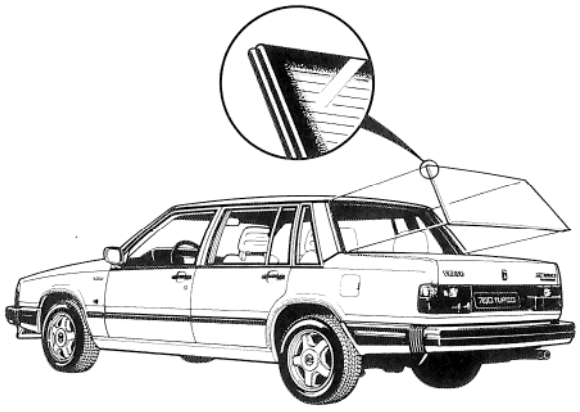
142720S

– trim mouldings around rear window.

– support clips from bottom edge (if any).

Clean groove around window to remove coarse particles.

Apply tape strips around window to protect paint on sides and top edge.



142390S

Toughened glass (window has shattered):

Remove fragments with utility knife.

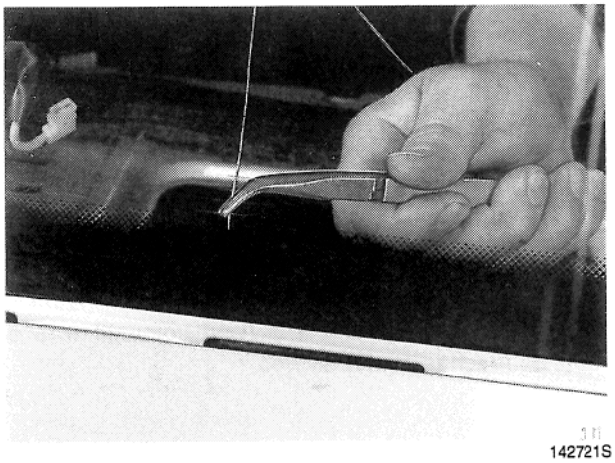
Laminated glass (e.g., windshield):

Cut window away with piano wire.

Laminated glass windows have more (thinner) heater elements than toughened glass ones.

Attach piano wire to counterhold.

Wire should be about 50 cm in length.



142721S

Push wire through PUR adhesive at bottom edge of window.

Push wire through from inside out.

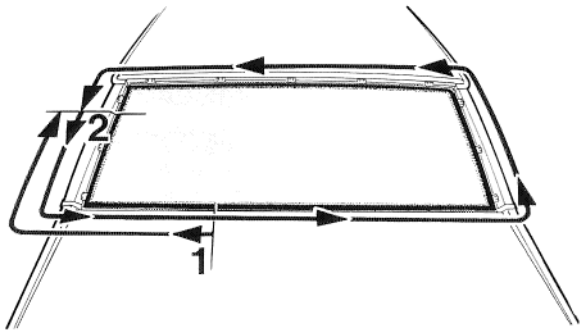
Use bent-nose pliers.

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Pull wire out from outside and attach it to handgrip.

*F4*

**Cut window loose:**



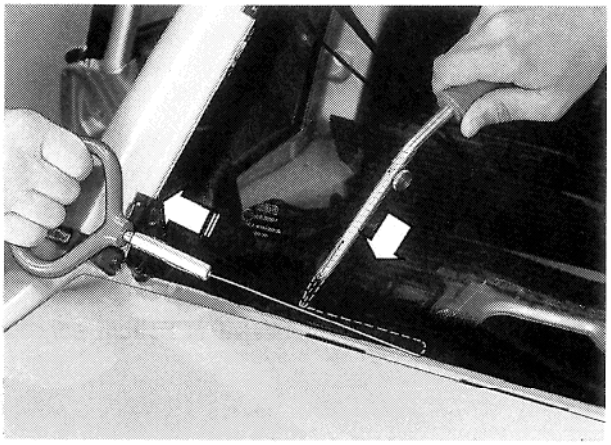

142750S

Starting on the bottom edge, cut outwards and about 2/3 of the way up the short side.

Go back and cut the rest of the window loose in the other direction.

**Note:** Make sure wire dows not catch on heated rear window copper strips.

This next step takes two people.



142723S

Press counterhold firmly against inside edge as far forward as possible.

At the same time, pull on handgrip from outside with an even, steady motion.

Stop and move counterhold forwards as necessary.

Keep wire taut the whole time.

At the corners:

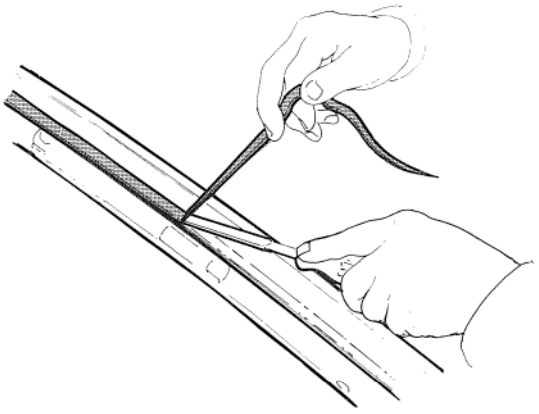
Push counterhold into corner and cut until wire on outside reaches corner as well.

Move counterhold forwards and start pulling again.

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Attach suction cups to window and lift it up.

Replace any damaged trim clips.

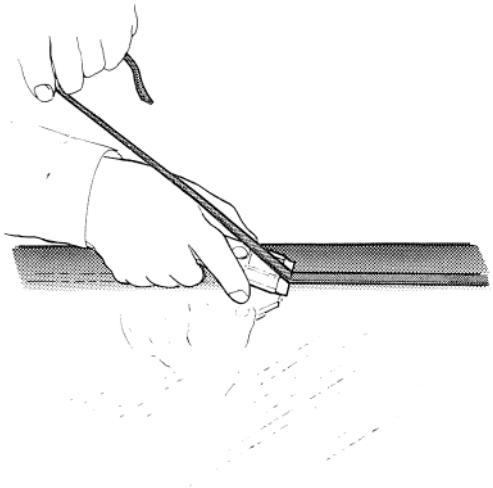


147678S

Cut away old with a 13 mm chisel until there is just a few mm of the old PUR adhesive left on the body flange.

Do not touch adhesive with your fingers.

Watch out for paintwork.



147682S

If reusing window:

Cut away adhesive residues with a chisel.

Scrape off glass primer with a glass scraper.

Do not leave any adhesive or primer behind after cleaning.

**Note:** Clean groove flange with H cleaner (black cork), especially if car has been standing with window out for any length of time.

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*F5*

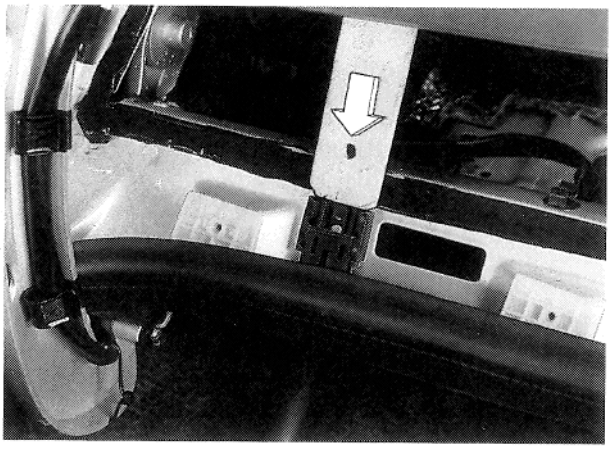
**Installation:**

Make sure PUR adhesive is at room temperature (around 20°C (68°F)).

If it is colder, the adhesive will be more viscous and harder to use.

Check paintwork:

If any paintwork damage has occurred, paint it over with filler primer and touch-up paint.



142725S

– new window supports to pads at bottom of window frame.

– spacer clips on body flange/member.
Replace any damaged or broken clips.

Shake primer bottle throroughly.

Pour glass primer into transparent plastic bottle.

Fit felt applicator to plastic bottle.

Turn bottle upside down and squeeze primer out until felt is black (saturated).

Apply glass activator to window edges.

Apply generously but not to overflowing.

Allow primer to dry until surface is matt.

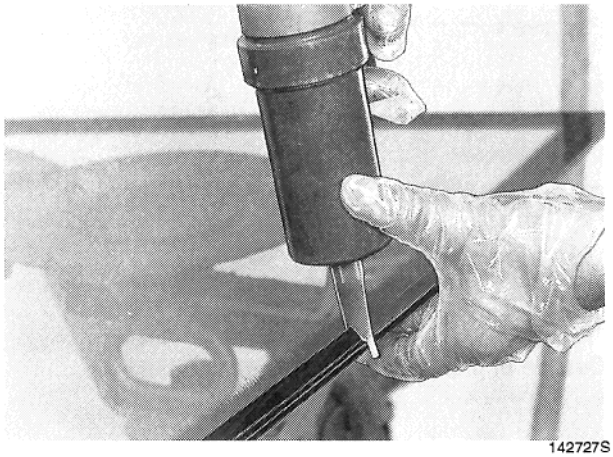
Apply PUR/RIM activator to body flange.

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Attach adhesive cartridges to gun.

**Note:** Follow instructions on pack for one- and two-part PUR adhesive.

Use the white nozzle with the guide pin.


142727S

Apply adhesive to window.

Hold gun at right angles to window with guide pin on outside of window.

Beading should be 10 mm thick.

Bend electrical lead copper strips back at right angles to glass.

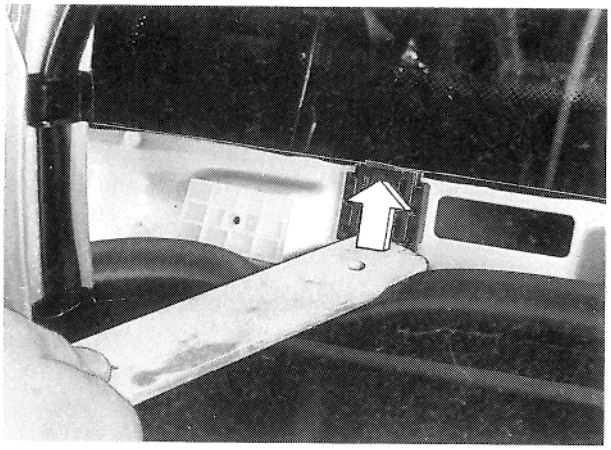
Lift glass into position within 10 minutes of applying adhesive.

Fit glass into place.

There should be an even clearance on both short sides and the top edge.

Make sure copper strips are on inside of panel.

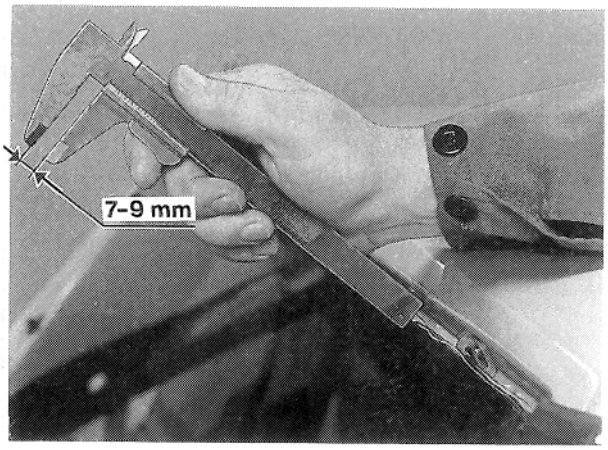
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142729S

Push window supports up until they meet glass.

Remove suction heads.



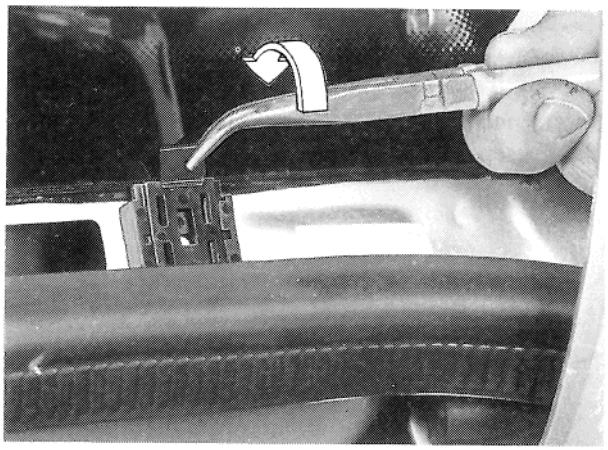

142730S

Press glass down by hand to correct depth.

Measure at sides and at top edge.

Outside of glass should be 7-9 mm from flange.

Remove any excess adhesive from corners. This will make it easier if the window has to be changed again.



142731S

Break off locating lug on window supports.

Remove tape strips.

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Install:

- trim strips on outside.
- electrical leads to rear window.
- seat belt covers.
- headrests.

**Note:**

If using two-part adhesive, do not use car for three hours.

If using one-part adhesive, do not use car for 24 hours.

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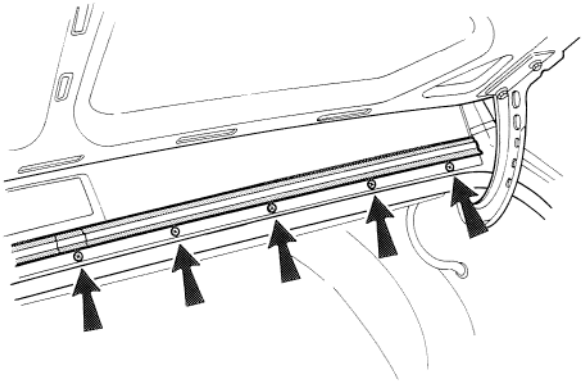
## Rear window, butyl-bonded (760/740), 4-door models, replacement

*Special tools: 5246, 5247, 5248, 5249*

*F6*

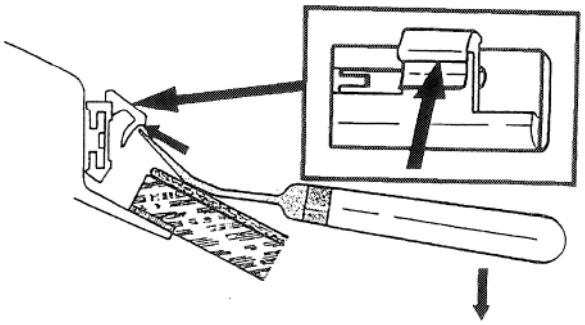
**Remove:**

Trunk lid.



143216S

– lower mouldings (2)
Remove joining strip.
Undo screws at bottom edge.



S143214

– trim strips by D-posts and top edge.
Use putty knife.

Insert putty knife under strip.

Find location of clips.

Press carefully on center flap of clip while pressing putty knife down towards window (see illustration).

– clips from top edge and sides.
– support clips on underside.

*F6*

**Cut window out.**

Use same method as for PUR-bonded rear window.

(As per F3.)

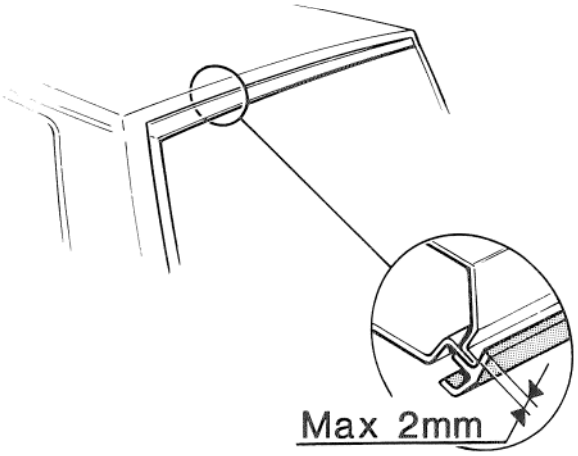
The only difference is it is much easier to cut and the window must be pressed out slightly to prevent it 'sticking back' into the butyl beading.

Remove butyl adhesive residues from rear window frame.

If re-using window, remove butyl residues from window.

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F7




138070S

**Install:**

**Note:** Butyl adhesive, glass and rear window frame must be at room temperature.

Check inside mouldings:

They must not stick out more than 2 mm from rear window frame.

If necessary:

Remove strip.

Cut away excess material.

Smooth off with sandpaper.

**Note:** Do not use grinder (could cause discoloration).

Clean rear window frame and window mating surfaces with cleaning thinners.

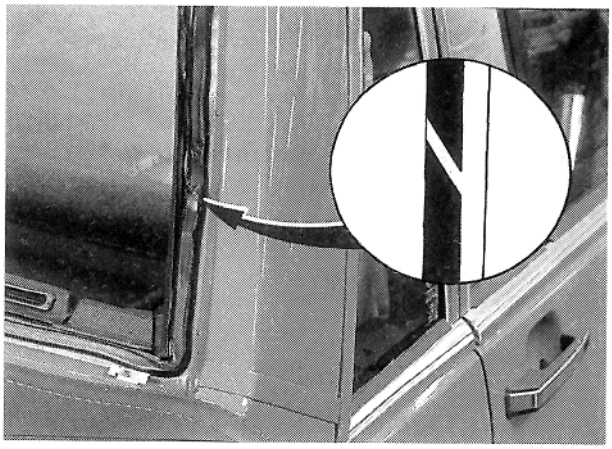
Apply butyl primer to:

- rear window mating surfaces with butyl tape.
- window mating surfaces with butyl tape.
  (The black painted frame on the window.)

Allow at least two minutes' drying time.

**Note:** Butyl primer should not be jelly-like in consistency (past the sell-by date).

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134002S

Apply butyl tape:

Method 1:

Roll tape along inner edge of window.

Position join (angled cut) on one of the side posts.

Remove backing paper from tape.

Method 2:

Roll out tape, removing backing paper at same time.

Install:

– support clips on next to last T pad on each side.

– clips for trim mouldings.

This next step needs two people:

Lift underside of glass into place.

Use suction cups.

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*F8*

**Before fixing window in place:**

RH side:

Insert ground lead between D-post and panel.

Crimp a splicing tube between cut ends of ground lead.

LH side:

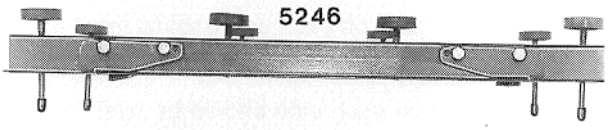
Reconnect leads to heated rear window.

Push up support clips.

Center glass so spacing between glass and D-posts on both sides and between glass and top edge is the same.

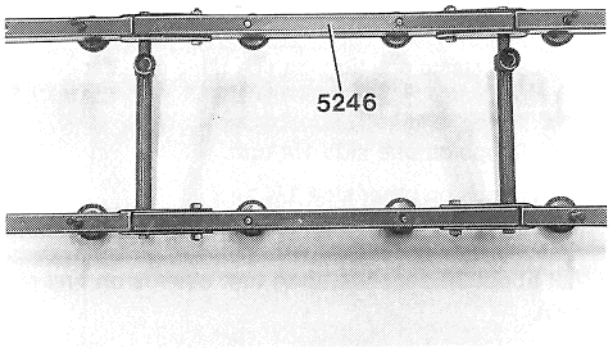
*F9*

**Set up fixture 5246**




134005S

Position screws as shown in picture.

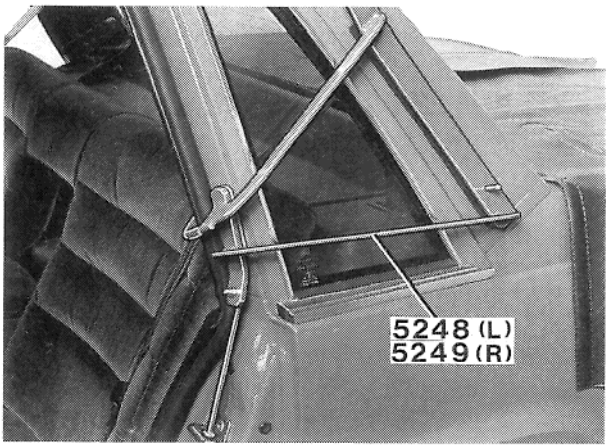



134006S

Adjust height to lowest possible setting.

Screw the four adjustable pads on each side in so they do not press against glass.

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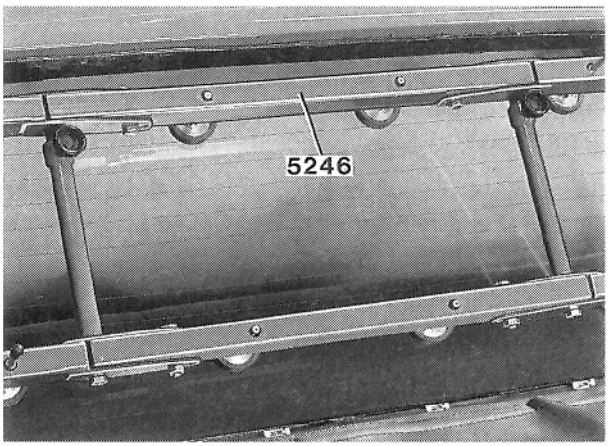



134007S

*F10*

**Set up side fixtures 5248 and 5249 against rear door opening.**

Remove any angle brackets from the four clamps.

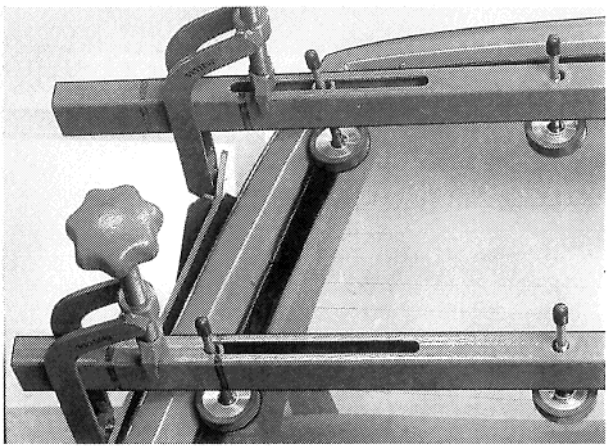



134008S

Attach fixture to plate.

Center it vertically and horizontally.

The four central non-adjustable pads should just touch the glass.



134009S

Adjust side fixtures:

Angle the four pads on each side against the glass.

The outer feet on each side should be over the butyl tape.

**Note:** Do not let clamps lean inwards, otherwise rear pillars may be damaged when pressure is applied to glass.

Press window into position.

Press very carefully into position with clamps.

Turn each clamp one turn (can be done simultaneously).

Turn clamps on one side 1/4 turn.

Turn clamps on other side 1/4 turn.

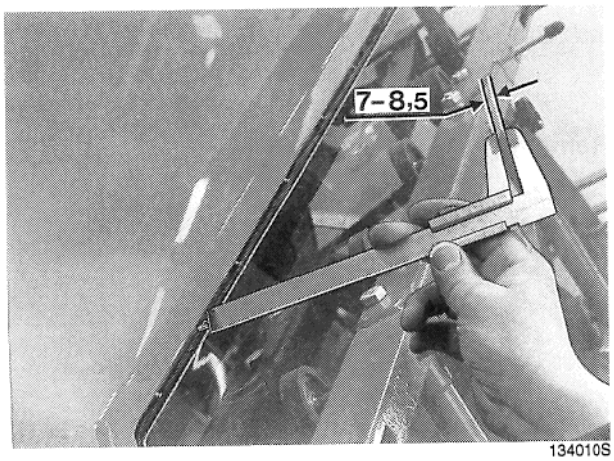
Wait about 30 seconds, then turn clamps on first side again.

Turn less than 1/4 turn once glass starts getting close to specified position.



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Check specified position.

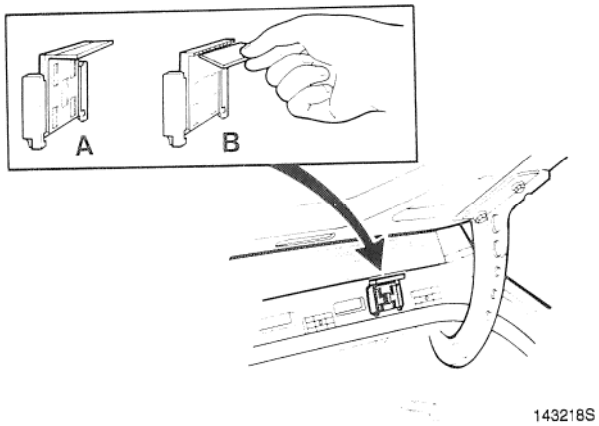


134010S

Measure in middle, at top and bottom edges and halfway up D-posts.

Outside of windshield should be 7 - 8.5 mm from window frame.

Remove fixture.



143218S

Snap off upper part of support clips.

Install trim mouldings.

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## Tailgate window (butyl-bonded) 960/760/940/740, 5-door models, replacement

*Special tools 5246 and 5247 (4x).*

*F11*

**Remove:**

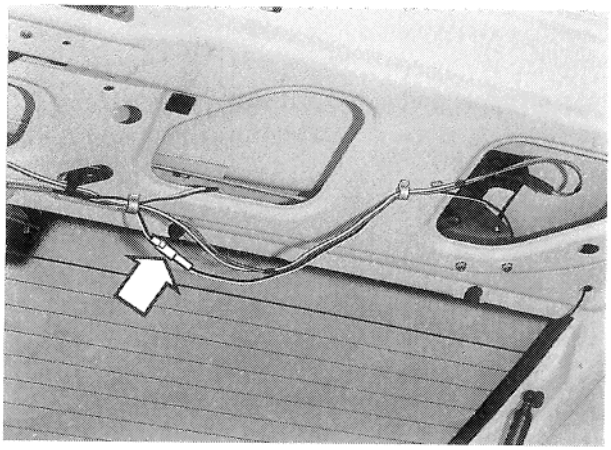
– frame around inside handle.
Pull straight out.

– two screws by handle.

– reinforcement.

– clips at bottom of tailgate.
Turn 1/4 turn in each direction.

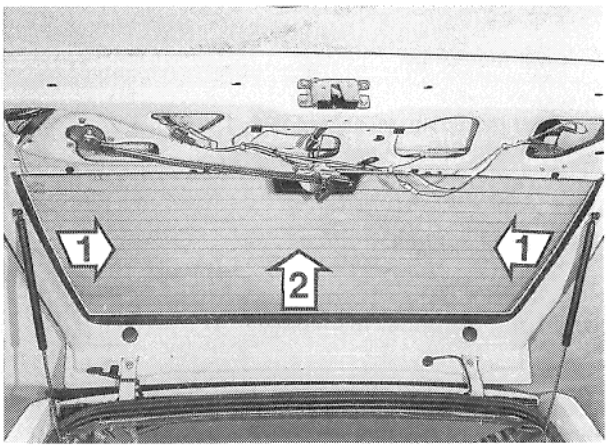
Push panel forwards.



139444S

– electrical leads to tailgate window.

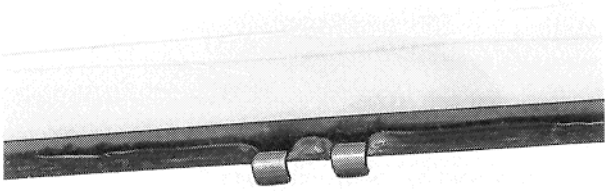
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139496S

– side mouldings
  Pull straight out (1).

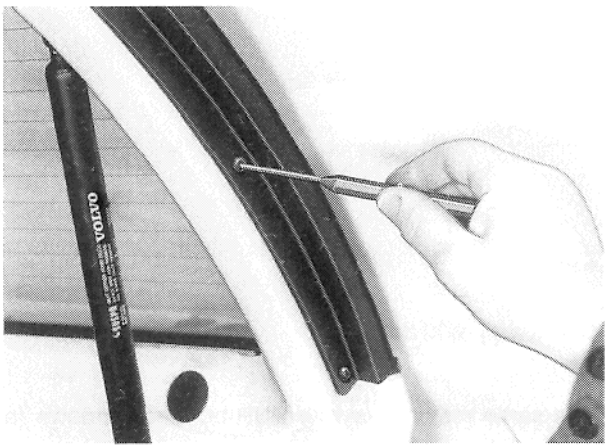
– upper mouldings
  Pull straight out (2).



139445S

Band up locking tabs around window.

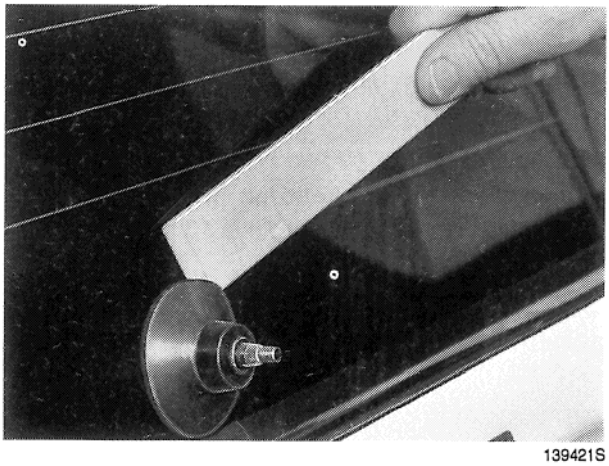
There are locking tabs top and bottom.




139420S

– outer side mouldings.
  Push in center pin on clips with a small drift.

  Pull moulding straight out.



139421S

– wiper arm.

– rubber seal.
  **Note:** Seal is bonded to window.

  Insert a wooden spatula carefully and lever off seal.

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– lower moulding.

– upper moulding, all except 960, 1995-
(960, 1995- models have spoilers).

Use a bent spatula.

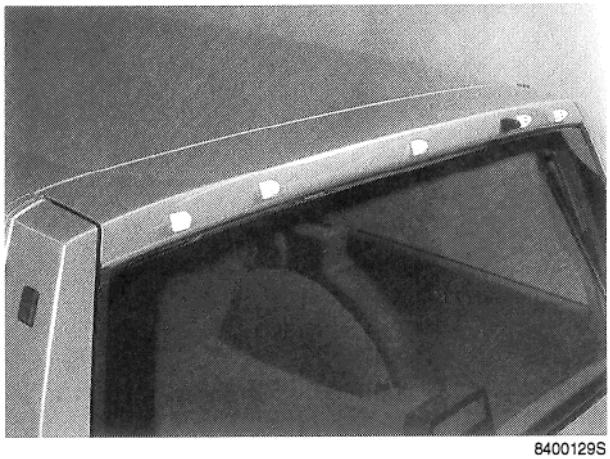
Insert spatula under moulding.

Press carefully on outer parts of clips while pushing spatula towards window.

– all clips.

– spoiler on 960, 1995-.

Spoiler is held by five plastic clips.



8400129S

Lift edge of spoiler carefully so it comes away from window (See arrow in illustration.).

Push spoiler to the right (See arrows in illustration.).

Lift spoiler off.

*F12*

**Cut away window.**

Use same method as with PUR-bonded windows (as per F3-F4).

The only difference is the butyl is easier to cut and you need to push the window out a little to prevent butyl 'sticking' again.

If the window has shattered into fragments, cut remnants away from flange with a 13 mm chisel.

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Remove butyl tape residues from window frame.

Remove butyl tape residues from glass if re-using it.

Clean mating surfaces with cleaning thinners.

*F13*

**Installation:**

Apply butyl primer to butyl tape mating surfaces with glass (at sides along outside edge) and to glass.

Apply at least 20 mm wide.

Allow to dry for at least 2 minutes.

**Note:** Primer must not be jelly-like (This means it is past its sell-by date.).

– butyl tape.

Method 1:

Roll tape out along inner edge of window.

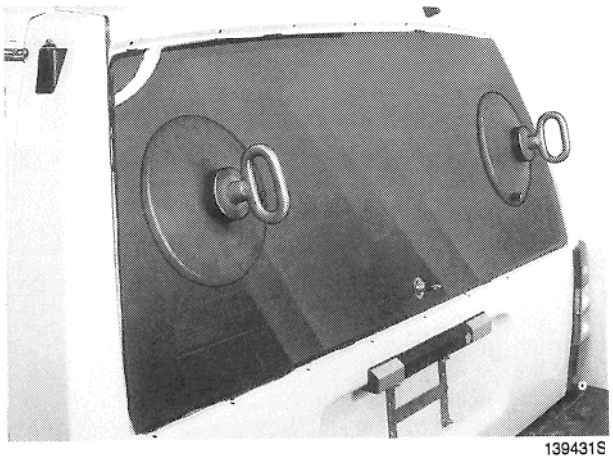
**Note:** On sides 5 mm from outside edge, position join (angled cut) at side.

Remove backing paper from tape.

Method 2:

Roll tape out, removing backing paper at same time.

This next step takes two people:



139431S

Lift glass into position using suction cups.

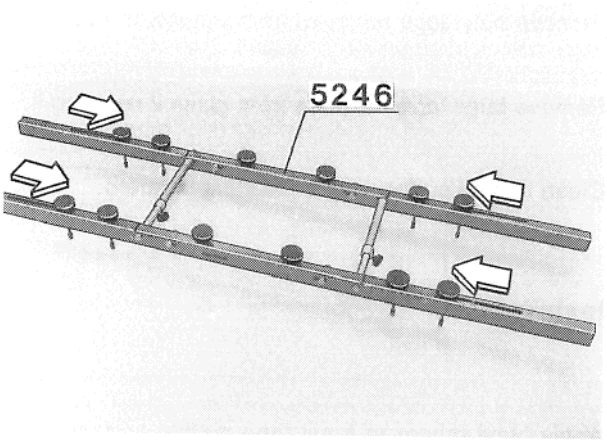
Run electrical leads in through window opening.

Center glass accurately horizontally and vertically before pressing it into position.

Open tailgate.



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139410S

*F14*

**Set up fixture 5246**

Set fixture straight.

Height setting: midway.

Move the four outer pads on each side towards the center as far as possible (See illustration.).

Screw all pads right in.

(Two people) Open tailgate.

Put fixture in place.

Center horizontally and vertically.

The four center pads should touch the window.

Put a support under the tailgate to keep it horizontal.




139418S

*F15*

**Secure fixture with four clamps (5247) and angle foot.**

Clamps must be at right-angles to glass.

Start pressing in. Check that four center pads are touching glass.

Adjust outer pads:

Pull the two outer pads on each side out as far as possible.

Screw all pads down until they are touching the glass.

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*F16*

**Press window home.**

Press clamps with extreme caution.

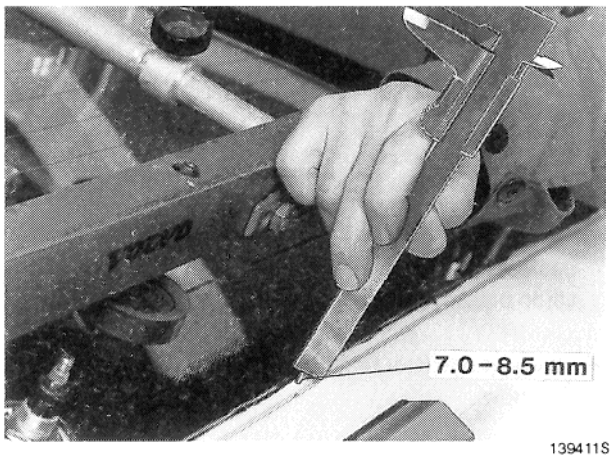
Turn all clamps one turn (This can be done simultaneously.).

Turn clamps on one side 1/4 turn.

Turn clamps on other side 1/4 turn.

Wait about 30 seconds, then turn clamps on first side again.

Turn less than 1/4 turn at a time once glass starts getting close to specified position.



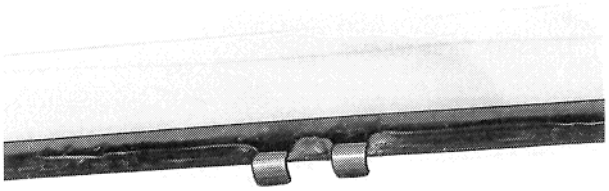

139411S

*F17*

**Check position.**

Take measurements at two places top and bottom, approx. 20 cm from corners.

Outer window surface should be 7.0 - 8.5 mm from window frame.



139445S

Bend locking tabs over edge of tailgate on inside.

Push leads in between glass and frame so they come out in the bottom corners.

*F18*

**Remove fixture.**

*F19*

**Install:**

- rear window heater connectors.
- new clips.
- outside mouldings (See illustration.).
- spoiler (960): Press straight into position from behind.
- rubber seal.
- wiper arm.
- inside mouldings.
- reinforcement, screws on handle and handle.
- panel.



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# G.Rear side window

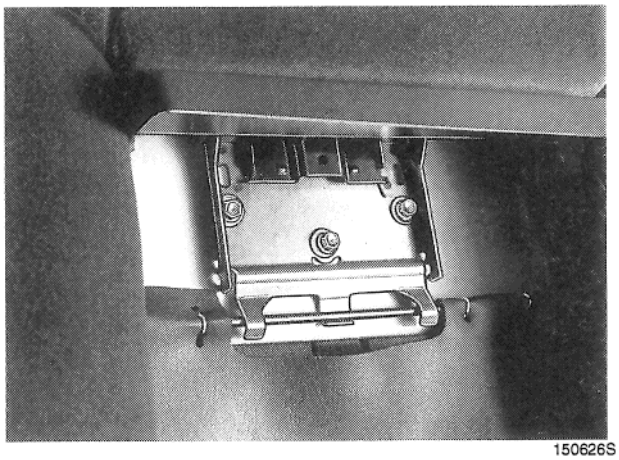
## EA. Butyl bonded rear side window 960/940, 4-door models, replacement

Before starting work, protect paint on D-posts with a strip of tape right along the rear section of the post.

*G1*

**Remove:**

– seat cushion.
Press downwards and backwards.



150626S

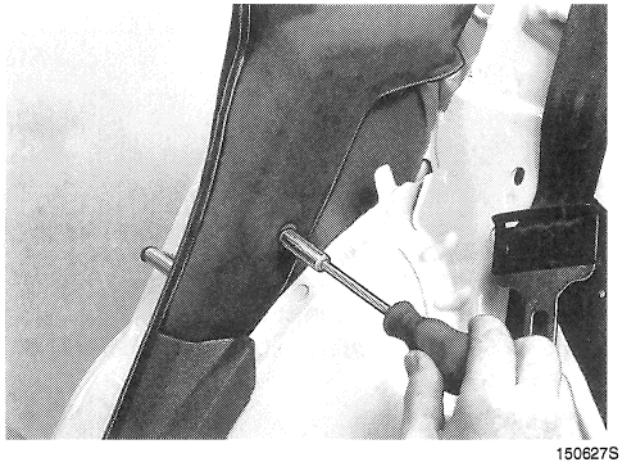
– center headrest fixture (3 x M3).

– backrest.
Undo brackets by wheel arch and lift upwards.

– headrest brackets and headrest.
Unscrew.

– parcel shelf.
Pry safety belts out of their runners. Move them to the side.
Unscrew three screws.

– rear handgrip.
Four screws.



150627S

– side window panel.
One screw at bottom.
A spring clip at the top.
Pull panel forwards in car.

– plastic nuts on inside of window (3 x).

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Attach a suction cup to outside of window.

Pull glass out carefully until there is enough room to cut away the butyl tape.

**Note:** Butyl must be at room temperature.
Heat with hot air gun if necessary.

Remove side window.

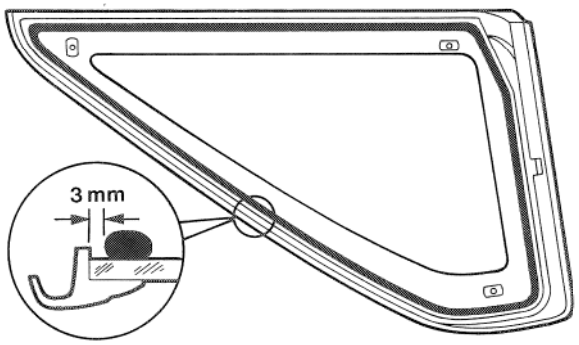
Remove butyl residues from window frame (and from window if re-using it).

*G2*

**Install:**

Clean window frame and window with cleaning gasoline.

Apply butyl primer to window frame and window edges.
Allow to dry for at least two minutes.




150634S

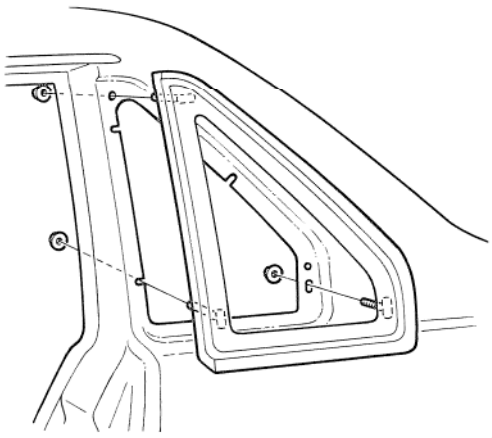
Roll out butyl tape along glass mating surfaces.

Tape should be approx. 3 mm from inside of plastic frame.

Position join in center of front of glass.

*G3*

**Put glass in place.**



150633S

Bottom of window frame should rest on rear fender.

Press glass in by hand.

Check that window frame is lying flush with C post.

Screw the three plastic nuts on carefully.

Check that fit is airtight.



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*G4*

**Install:**

– high-level brake light if parcel shelf guide strip was removed.

Guide parcel shelf in along guide strip.

– safety belts into their tracks in the parcel shelf.

– the three screws.

– headrest brackets and headrests.
**Note:** Make sure that clip on bracket goes into backrest reinforcement bar correctly.

– backrest.

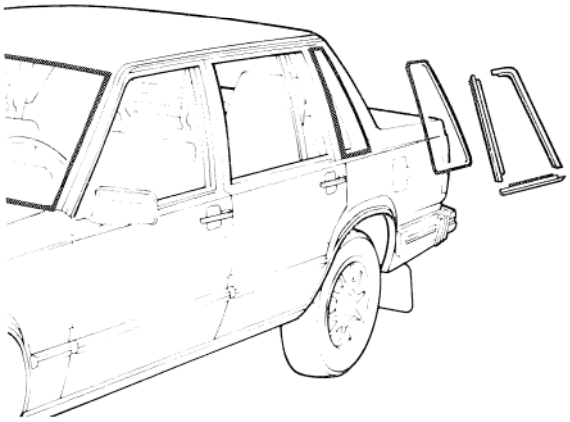
– seat cushion.

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# Rear side window PUR-bonded, 760, 1988-1990, 4-door models, replacement

*G5*

**Remove:**



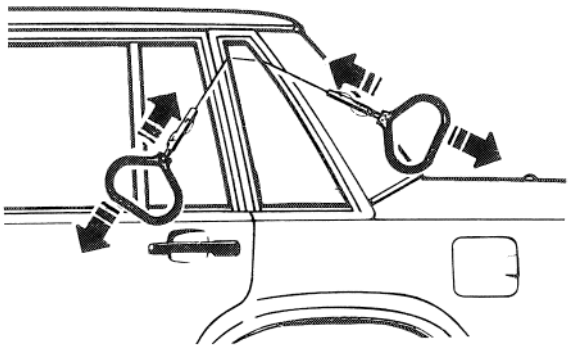
143219S

– trim strips all round.
  Start with the bottom strip.
  Break with a bent putty knife.
  Put a wooden spatula under the putty knife to protect paint.

– clips all around windshield.
  Use a wooden spatula.

Use two handgrips and piano wire.

Put tape strips around window opening to protect paintwork.



147683S

Pull handgrips diagonally downwards along car.

'Saw' through the adhesive.

Keep wire taut all the time.

*G6*

**Lift glass off.**

Cut away adhesive on body flange with a 13 mm chisel.

Cut until there is only a few mm of the old adhesive left on the body flange.



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If re-using glass:

Scrape old PUR adhesive off of glass with a glass scraper.

**Note:** Take care not to scratch glass.

Check paintwork:

If there is damage to paintwork, touch it up with primer and touch-up paint.

Use PUR/RIM activator on body flange.

*G7*

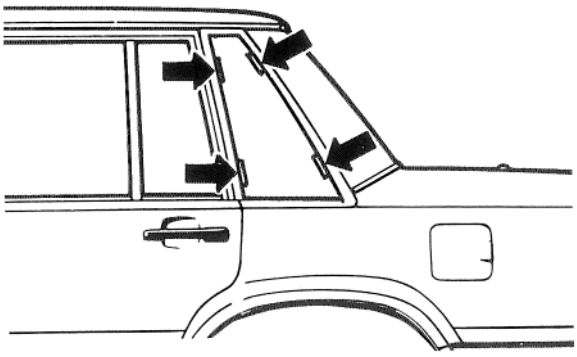
**Install:**

Check that PUR adhesive is at room temperature (approx. 20°C (68°F)).

If adhesive is colder, it will be viscous and harder to use.

Important: Clean glass edges with H cleaner (included in kit), especially if car has stood with window out for any length of time.

Install clips at bottom.



147684S

Check the four spacer clips around window opening on body flange.

Put gloves on (included in adhesive kit).

Dry glass edges off with glass activator.

Shake primer bottle thoroughly.

Pour primer into transparent plastic bottle.

Put cap on plastic bottle.

Turn bottle upside down. Squeeze primer out until felt pad is saturated (black).

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Apply primer to edges of glass.

Apply generously but without overflowing.

Allow primer to dry until surface is matt.

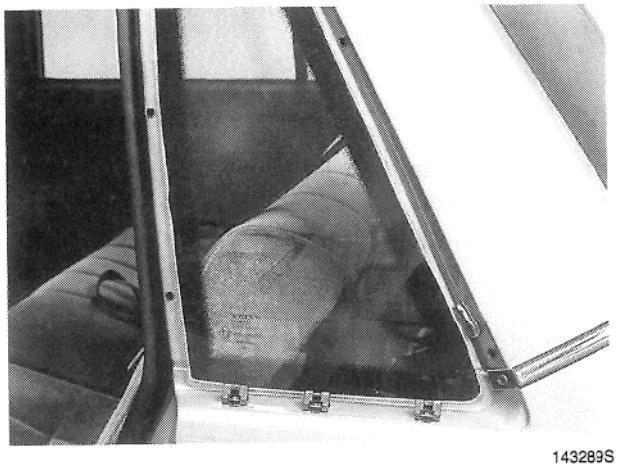
Put adhesive cartridges in gun:

Follow instructions on adhesive pack for one- or two-part PUR.

Apply adhesive to glass. Use the white nozzle with the guide pin.

Hold the gun at right angles to the glass, with the guide pin outside the edge.

Lay adhesive 10 mm thick.



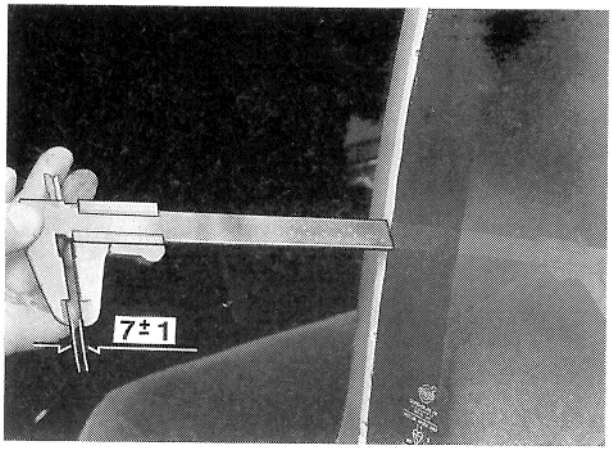
143289S

Put glass in place.

Make sure glass is centered.

Underside should rest on clips.

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134015S

Press glass into position by hand.

Glass should be 7 mm from body flange.

Install trim strip clips. Replace any broken clips.



143275S

Install trim strips:

Rear strip first.

Front strip next.

Bottom strip last.

Adjust glass horizontally if necessary so black frame is equal all around.

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# Rear side window, butyl-bonded 740 and 760 -1987, 4-door models, replacement

*G8*

**Remove:**

– trim strips.
Start at the bottom.
Lift off with a bent putty knife.
Put a wooden spatula underneath to protect paintwork.

– clips all round window.
Use a putty knife.

Attach a suction cup to the glass and pull glass out until you can cut the butyl with a knife.

– butyl residues from body flange.

– butyl residues from glass (if re-using glass).

If glass has shattered, cut remains away with a chisel.

*G9*

**Installation:**

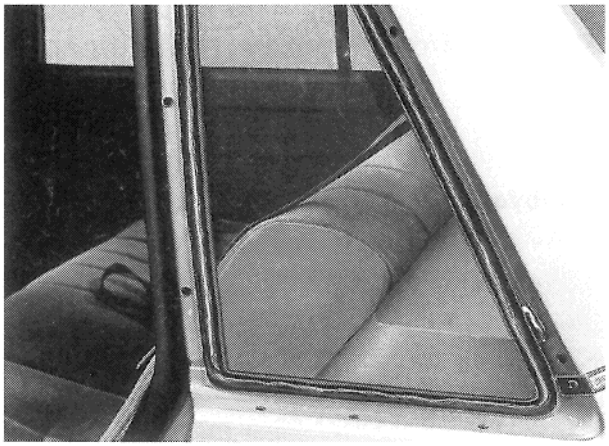
Apply butyl primer to:

– glass mating surfaces with butyl tape (10 mm wide strip).

– body flange mating surfaces with butyl tape.

Allow to dry for at least two minutes.

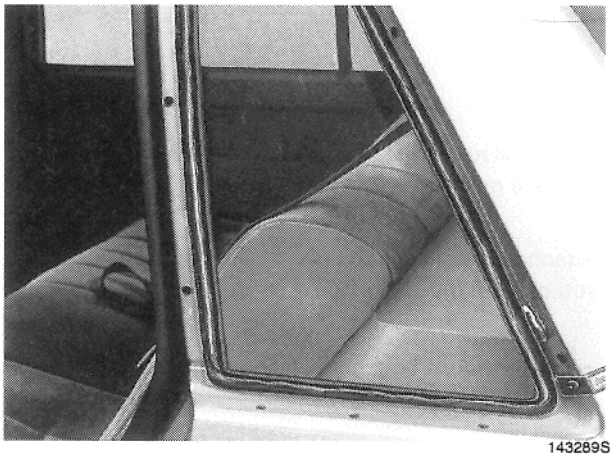
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143279S

Roll butyl tape out along body flange.

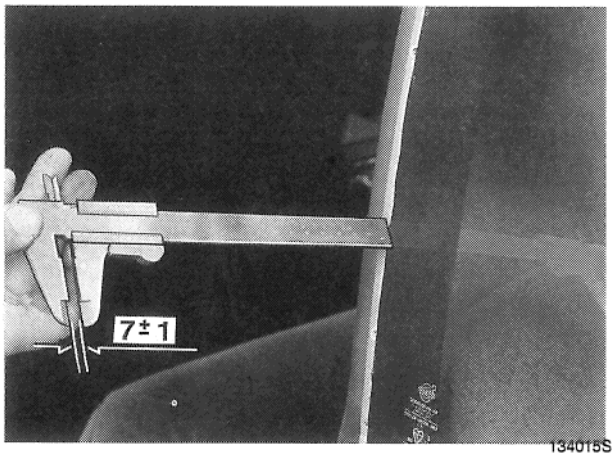
Position join in lower rear corner.



143289S

– glass.
  Glass should be centered, with its bottom edge resting on clips.

Press glass in by hand.




134015S

Outside of glass should be 7 mm from body flange.

– trim strip clips.



143275S

– trim strips.
  Back first.
  Front next.
  Bottom last.

Adjust glass sideways if necessary so black frame is even all around.



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# Rear side window, PUR-bonded 960, 940 1995- and 760 1988-, 5-door models, replacement

945 models made at Kalmar with chassis numbers 65556 onwards have PUR-bonded rear side windows.

Cars made at Kalmar have a 0 in their works code.

**Note:** If glass has shattered, cut remains away from body flange with a 13 mm chisel.

Tip seat cushion and backrest forwards.

*G10*

**Remove:**

- plastic plug and screw on underside of top of C-post panel.
- clip from back of C-post panel.
  Turn 1/4 turn.
- backrest mounting (2 screws).
- C-post panel.

- screw clips on outside of rear roof panel (2x).

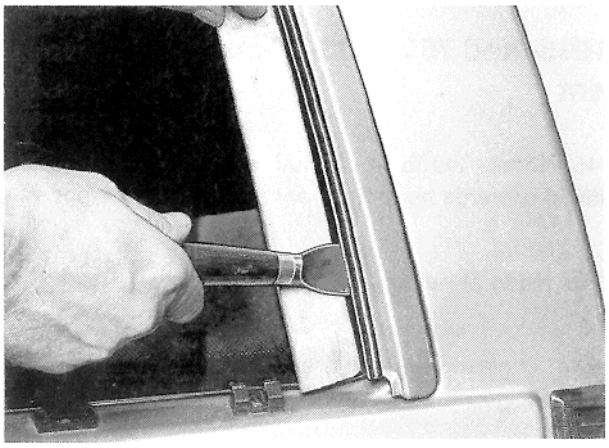
Bend panel down slightly.

- D-post panel.
  Pull straight out.

- rear side panel.
  Pull panel straight out to release clips.
  Pull backwards.

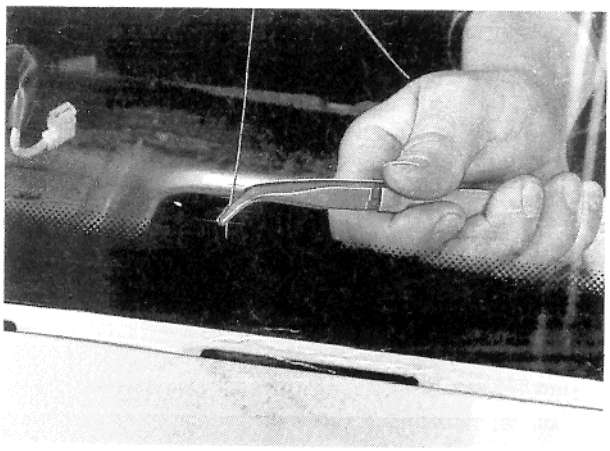
- covers over side compartments in floor.
- front and rear clips from D-post panel.

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143244S

– outer trim strips in following order:
  Bottom.
  Front.
  Top.
  Back.
  Use a steel spatula.



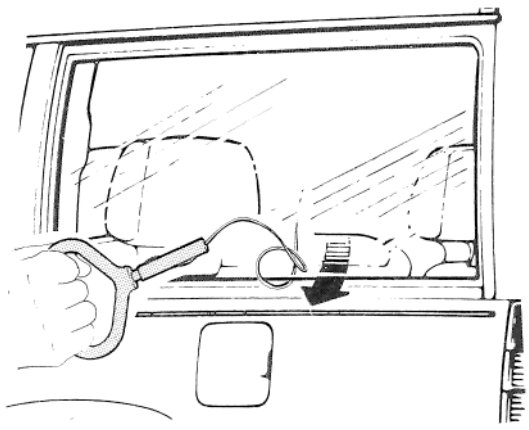
142721S

– all clips at bottom.

Push piano wire through PUR adhesive.

Push from inside out using bent-nose pliers.

Attach wire to counterhold.



147690S

Pull wire forward on outside and attach to handgrip.

This next step needs two people:



147691S

Press counterhold against edge as far forward as possible.

Pull handgrip on outside with a smooth, even movement.

Stop and move counterhold forwards as necessary.

Keep wire taut the whole time.



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At the corners:

Press counterhold into corner.

Cut until wire on outside reaches corner also.

Move counterhold forward and start pulling again.

Attach suction cups to glass.

Lift window out and lay it on a frame.

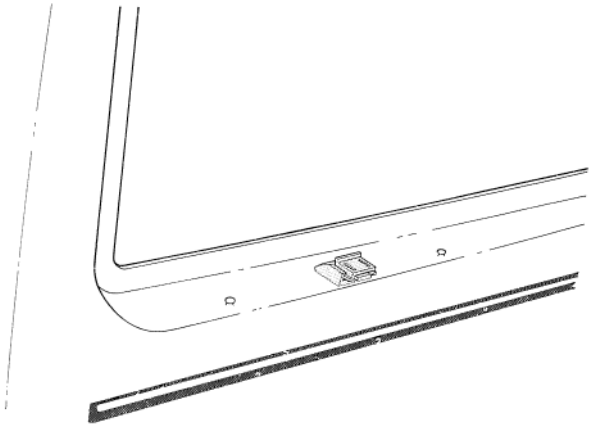
Check paintwork. If there is any damage, repair with filler primer and touch-up paint.

*G11*

**Install:**

Check that PUR adhesive is at room temperature (approx. 20°C (68°F)).

If adhesive is colder, it will be more viscous and harder to use.

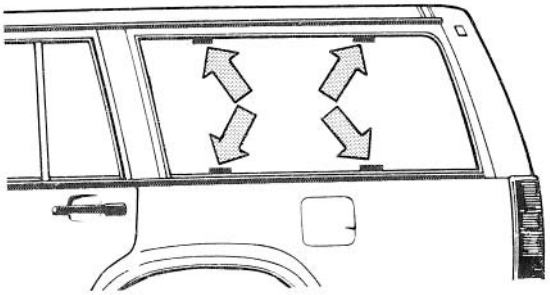


139446S

Install support clips.

Clips should sit on the next to outermost pads.

**Note:** Don't press in top of clips yet.



147687S

Press the four spacer clips into place on body flange.

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Put gloves on (included in kit).

Wipe edges of glass off with H cleaner.

Apply glass activator.

Shake primer bottle thoroughly.

Pour glass primer into transparent plastic bottle.

Put cap on plastic bottle.

Turn bottle upside down.

Squeeze primer out until felt is saturated (black).

Apply primer to edge of glass.

Apply generously without overflowing.

Allow primer to dry until surface is matt.

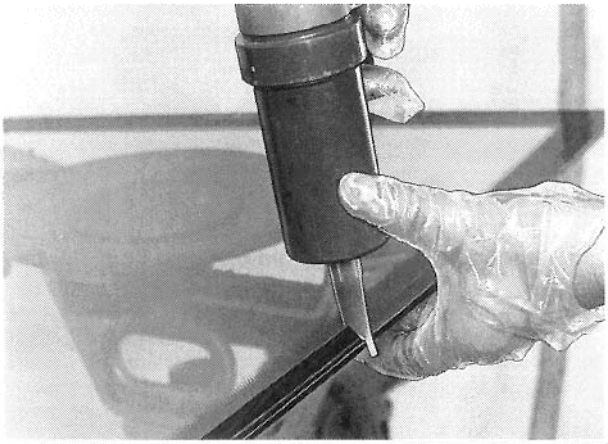
Apply PUR/RIM activator to body flange.

Apply adhesive in glue gun.

Read instructions for one- and two-part PUR adhesive on pack.

Use white nozzle with guide pin.

Apply adhesive to glass.



142727S

Hold gun at right angles to glass with guide pin outside edge of glass.

Apply a continuous, unbroken bead, otherwise join will not be airtight.

Apply adhesive 10 mm thick.



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This next step needs two people:

Lift glass into place. Use suction cups.

Lift glass into place within 10 minutes of applying adhesive.

Rest glass on support clips.

Center glass horizontally.

Press into place.

Outside edge of glass should be 7 mm from body flange.

Measure with sliding calipers.

Press in top of support clips.

Install trim strip clips.

Install:

- panels on inside.
  **Note:** Wait at least three minutes.
- trim strips.

Adjust backrest mounting in C-post.

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## Rear side window, butyl-bonded, 760 -1987, 740 and 940 -1994, 5-door models, replacement

*Special tools: Fixture 5246 and clamps 5247 (4 x).*

**Note:** 945 models made at Kalmar with chassis numbers over 65556 have PUR-bonded rear side windows.

Cars made at Kalmar have a '0' in the works code.

**Note:** If glass has shattered, cut any glass left on body flange away with a knife.

*G12*

**Removal:**

Fold seat cushion and backrest forwards.

– C-post panel.
Plug and screw at top.
Backrest mounting (2 screws).
Clip at back (turn 1/4 turn).

– rear panel.
Undo two screwclips.
Bend panel down slightly.

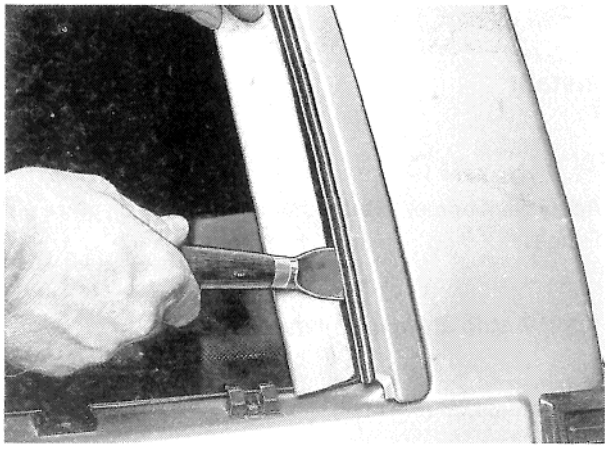
– D-post panel.
Pull straight out.

– rear side panel.
Pull straight out to release clips.
Pull panel backwards.

– cover over side floor compartment.

– clips from front and back of panel in front of D-post.

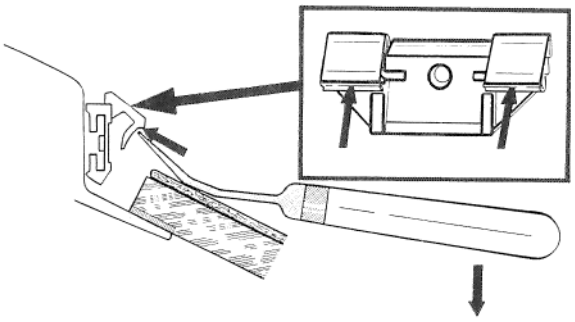
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143244S

– outer trim strips in following order:
  Bottom.
  Front.
  Top.
  Back.

Use a steel spatula.



143220S

Insert spatula under strips.

Find where clips are placed.

Press carefully on outer part of clips while pressing spatula down towards window.

– all clips around window.
  Take care not to damage paint.

Cut glass away as for PUR-bonded windows, as per step G10.

Push wire through butyl from inside out.

Use counterhold on inside and handgrip on outside.

Once glass starts to come loose, push it out from the inside slightly to prevent butyl 'pulling back'.

Remove butyl residues from flange.

If re-using glass, remove butyl residues from glass too.

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*G13*

**Install:**

Apply butyl primer to butyl mating surfaces on glass and flange.

Apply a strip at least 20 mm wide.

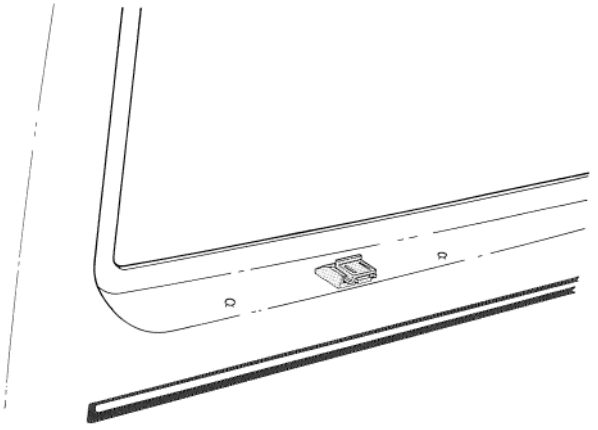
Drying time: at least two minutes.

**Note:** Primer must not be jelly-like in consistency (This means it is past its sell-by date.).

– butyl tape.
  Method 1: Roll tape out along inside edge of frame. Position join (angle-cut) halfway up C- or D-post. Remove backing paper.

  Method 2: Roll tape out, pulling backing paper off at same time.

**Note:** With either method, make sure that join 'meets up', otherwise it may not be airtight.



139446S

– support clips.
  Clips should sit on bottom row, on next to last pads. Do not press tops in yet.

This next step needs two people:

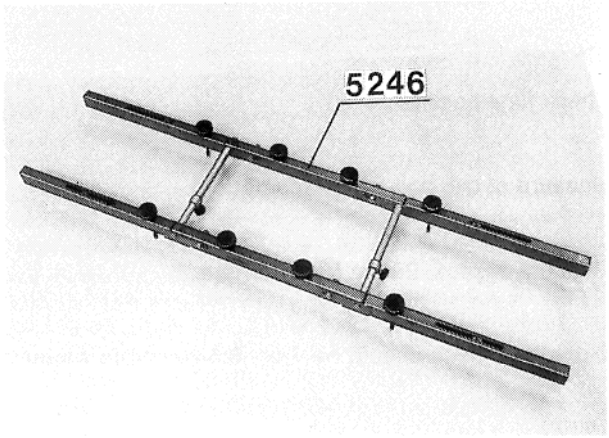
Lift glass into place using suction cups.

Rest glass on support clips.

Center it horizontally.

Press into place.

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139488S

*G14*

**Set up fixture 5246.**

Set fixture up straight.

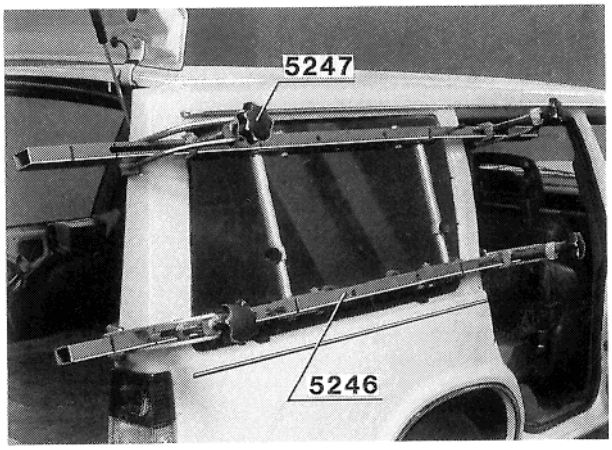
Height setting: midway position.

Remove the two outermost pads on each side.

Screw remaining adjustable pads out as far as they will go (from the glass).

This next step needs two people:

Set fixture up.




139471S

Center it horizontally and vertically.

The middle four pads should be touching the window.

*G15*

**Secure fixture with four clamps 5247 and angle foot.**

Clamps should be more or less at right angles to glass.

Check that the four center pads are touching the glass (slight pressure).

Screw outer pads down until they are touching the glass.

Press very carefully on clamps.

First, turn all clamps one turn (can be done at same time).

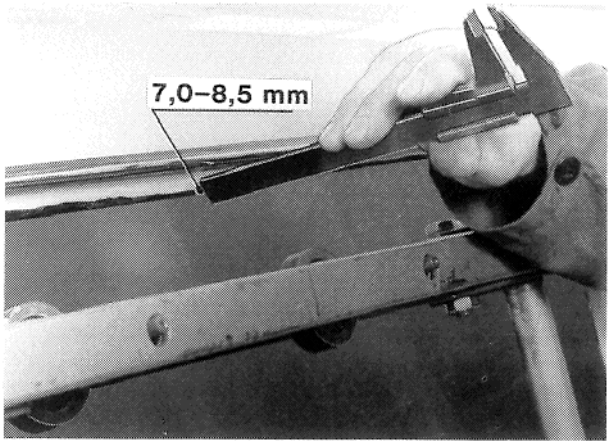
Then turn another 1/4 turn.

Wait 30 seconds, then turn clamps again.

Turn less than 1/4 turn once clamps start reaching final position.



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139489S

Check final position:

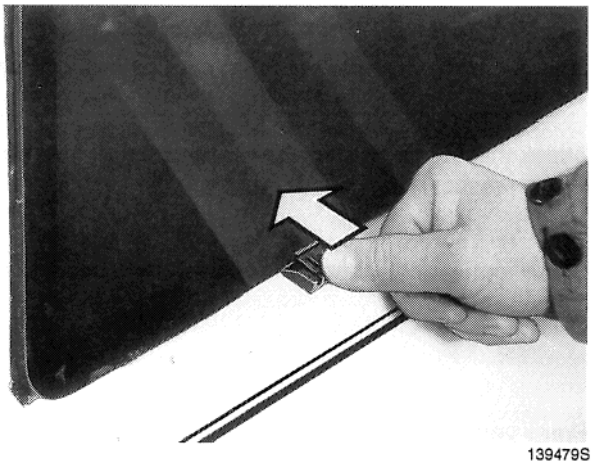
Measure at two points top and bottom.

Measure approx. 20 cm from corners.

Outside of glass should be 7.0 - 8.5 mm from window frame.

Bend locking tabs over inside edge of frame.

Remove fixture.



139479S

Press top of support clips in.

**Install:**

– new trim strip clips.
  Trim strips in following order:
  Back.
  Top.
  Front.
  Bottom.

– panels on inside.
  Adjust backrest mounting in C-post.

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# Spraying chart for rustproofing

## Main rules

Spraying must always be done after painting but before installing equipment such as door linings, panels, lamps etc.

If using stone chip protection (blue), it must always be applied before other fluids.

Splashes of green, red or blue liquid reduce stone chip protection's adhesion.

It is important for rustproofing agent to reach the parts where welding has burnt off surface coating.

Thin (green) and thick (red) fluids must always be used together.

Always spray green first, then wait at least 10 minutes before spraying red.

Bright metal surfaces must always be primed before using stone chip protection (blue) or underseal (black).

Use this spraying chart in conjunction with Volvo rustproofing equipment:

See "Workshop guide manual 5".

| |
|---|
| Use chart both for treating complete cars and where part of the body has been painted or replaced. |

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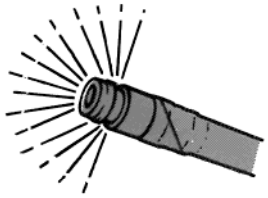
## Liquids and spray nozzles

There are five different fluids:

| Fluid | Colour of lid | Spray setting |
|---|---|---|
| Thin (penetrerating) | Green | 2 |
| Thick (sealing) | Red | 3 |
| Underseal | Black | 4 |
| Stone chip protection | Blue | 4 |
| Solvent | White | 1 |

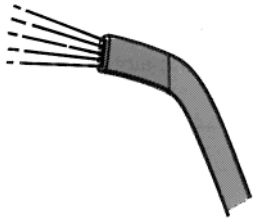
**Note:** The spraying chart works by lid color only.
The symbols below show which fluid and nozzle to use.

There are three different nozzles:



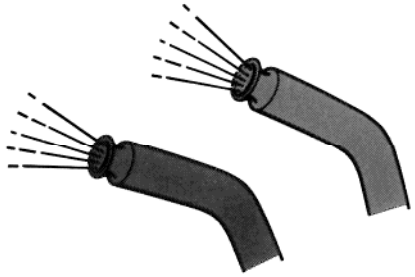
Hose 360.

Used with green and red.



Angled, fine.

Used with green and red.



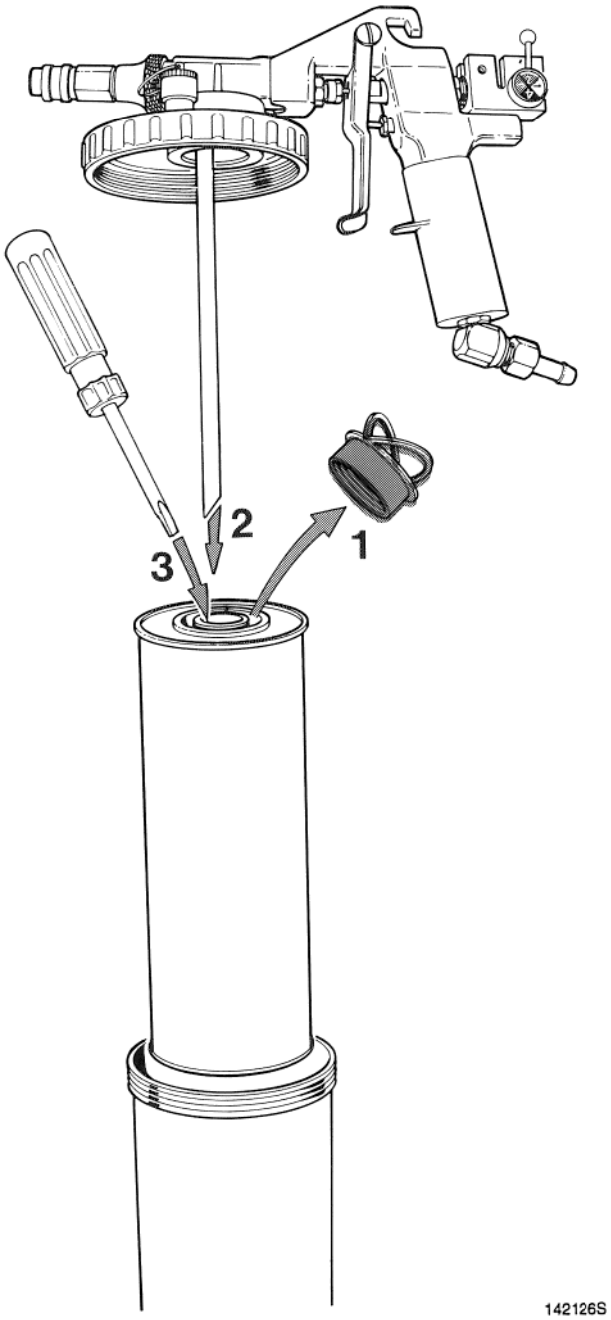
Angled, coarse.

Used with black and blue.

8100190S

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## Using the spray gun




142126S

Clean surface to be treated if possible.

Allow surface to dry.

Make sure that surface to be treated and rustproofing agent are at room temperature.

Load spray gun as shown in illustration.

Release any residual pressure first by pulling on safety valve ring.

Puncture plastic lid alongside riser pipe.

Set spray gun product selector:

| Setting | Fluid |
|---|---|
| 1 | Solvent (cleaning) |
| 2 | Thin (green) |
| 3 | Thick (red) |
| 4 | Underseal (black) |
| 4 | Stone chip protection (blue) |

Set working pressure.

Recommended pressure: 700 kPa: Max 1000 kPa.

Keep trigger fully depressed when spraying.

Depressing it only part way lets only air through.

(This is used to blow nozzle clean.)

Spraying with wide-angle nozzle:

Insert hose into cavity as far as possible, and start spraying. Pull hose out slowly.

Spraying with angled nozzle:

Hold nozzle 30 - 40 cm from surface (except when spraying in cavities).

Always use extension hose.

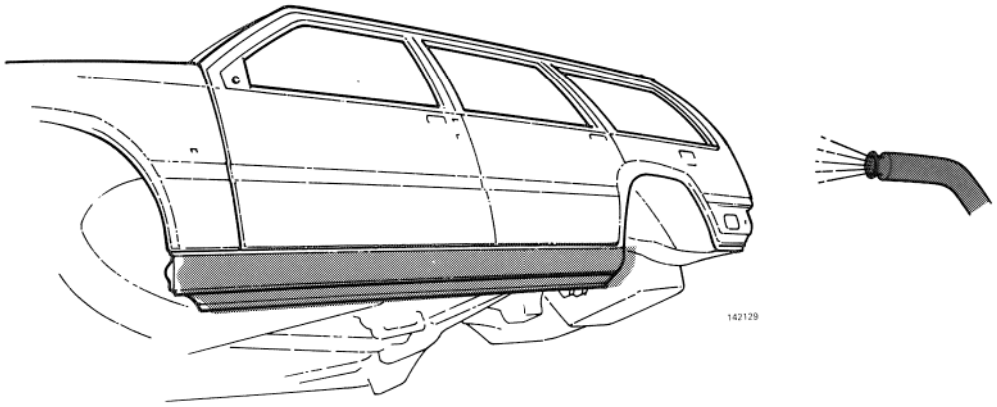
Clean spray gun with solvent,

P/N 1161300-7.

**Note:** After using stone chip protection, clean spray gun out with water.

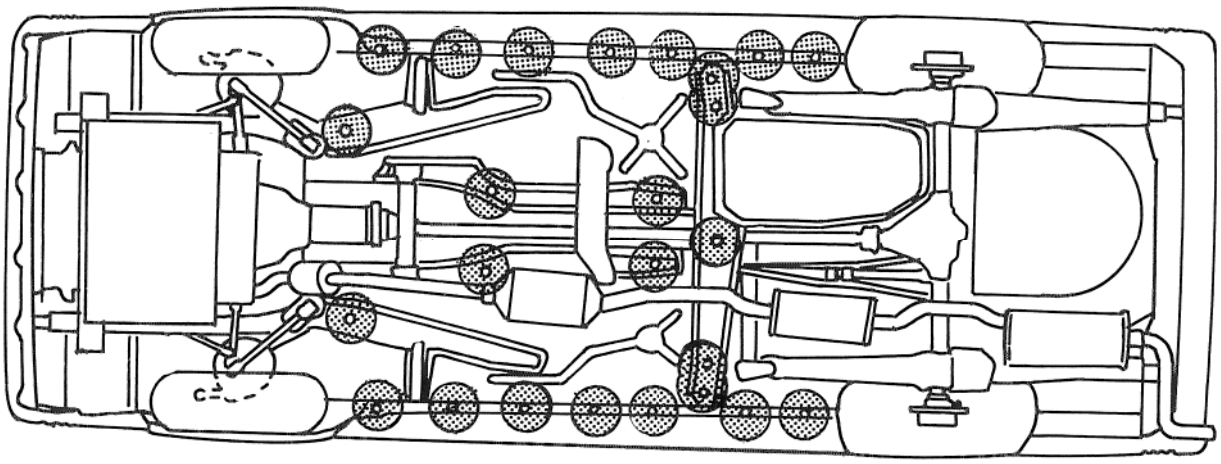
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## Sill panel, outside




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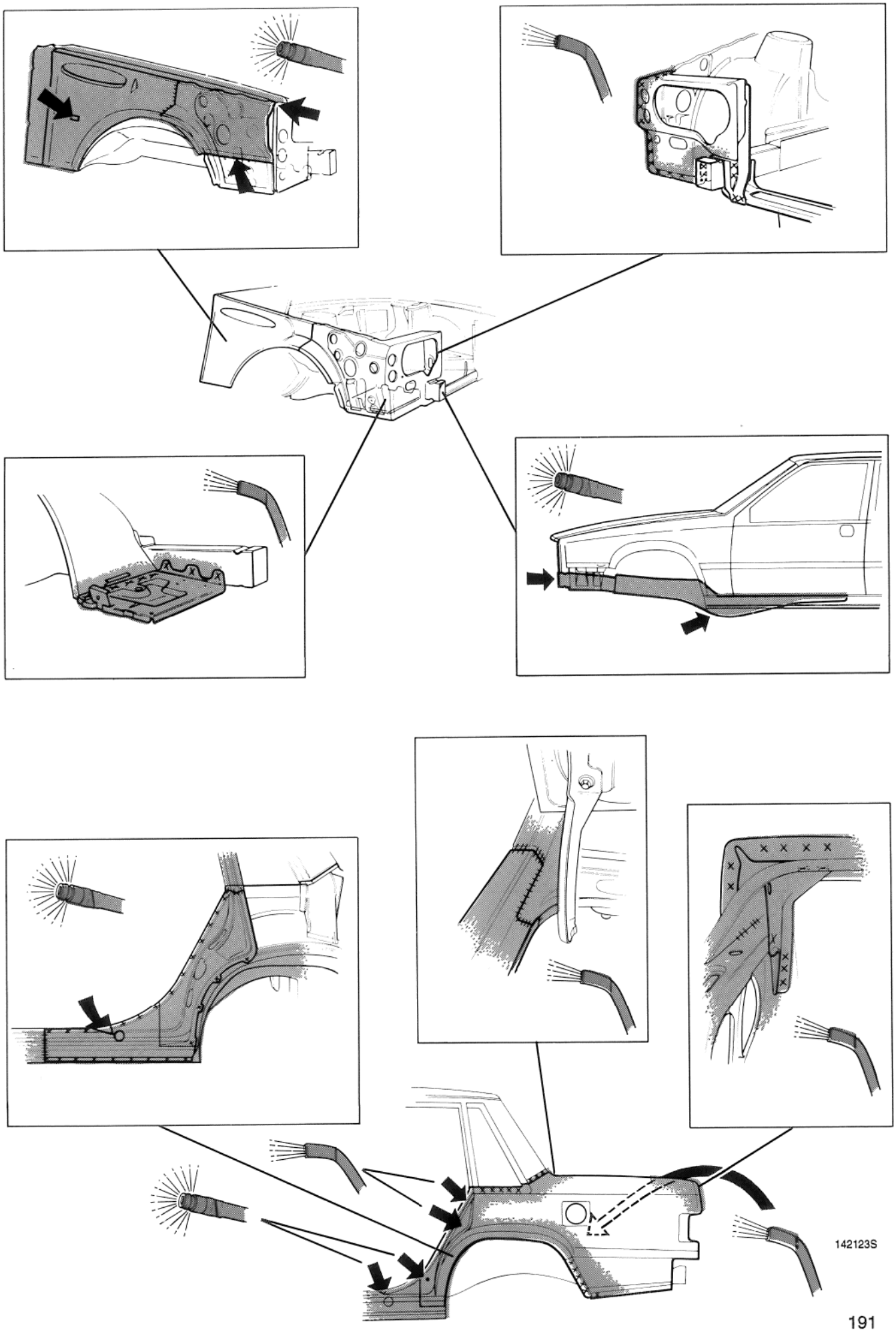
## Underbody



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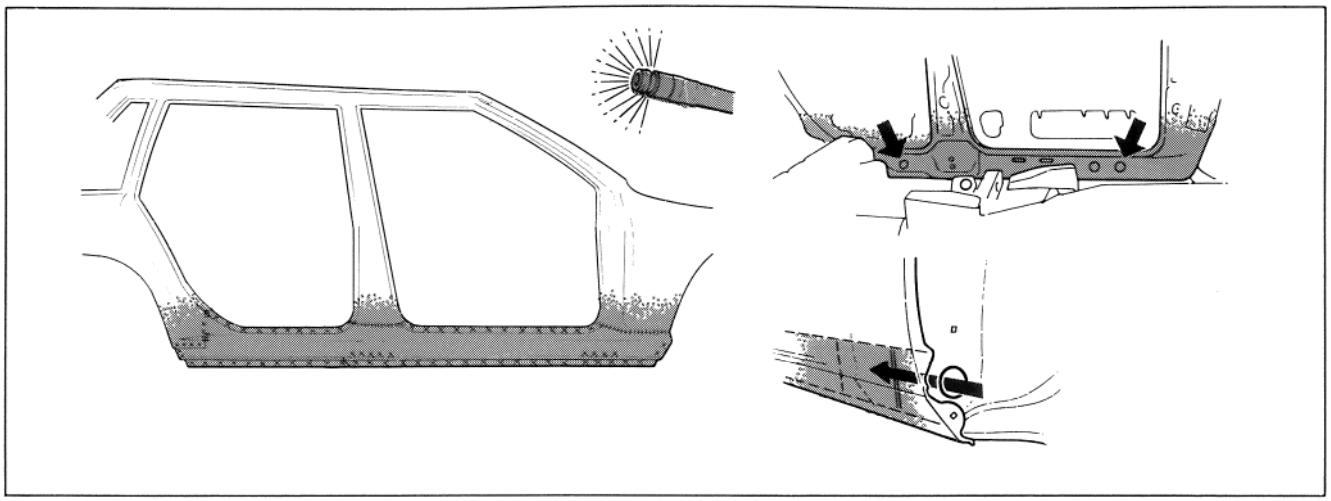


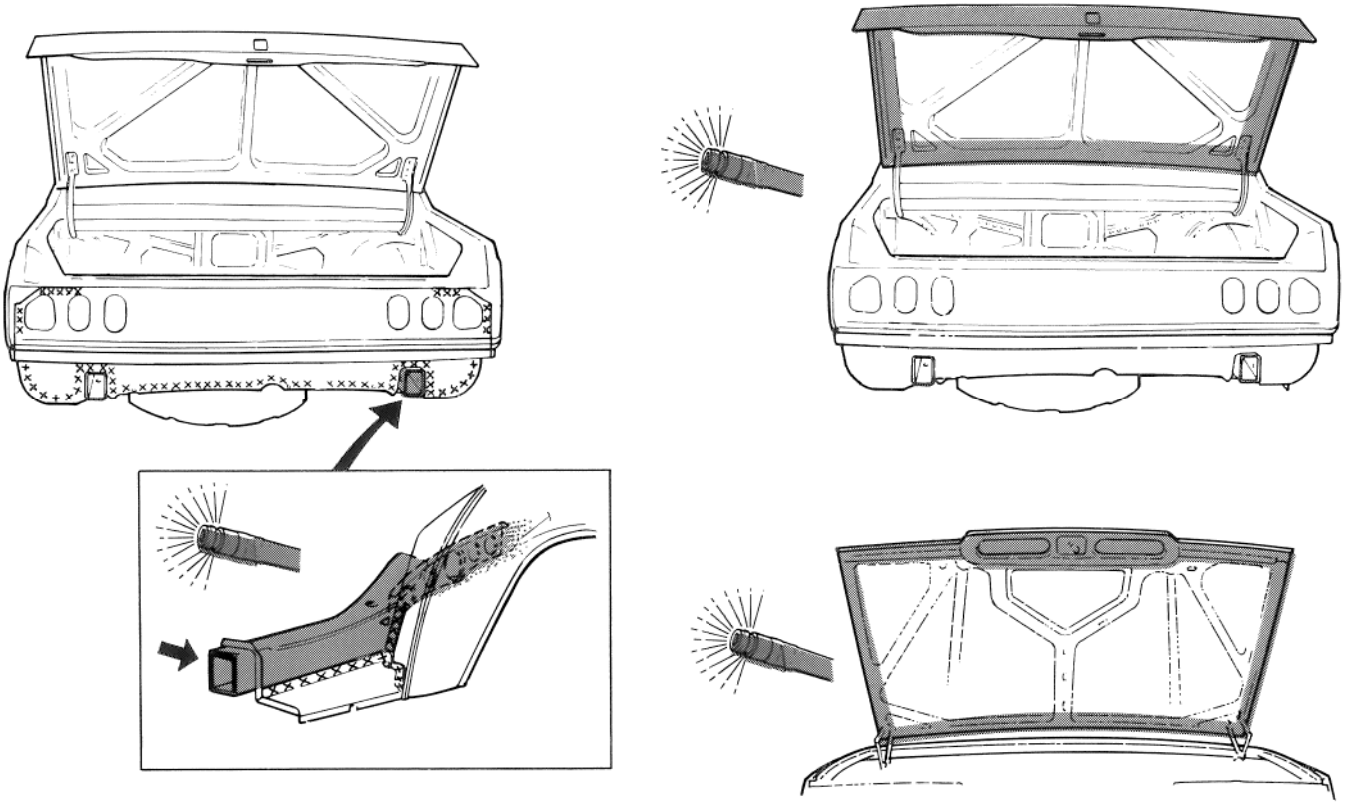
142123S

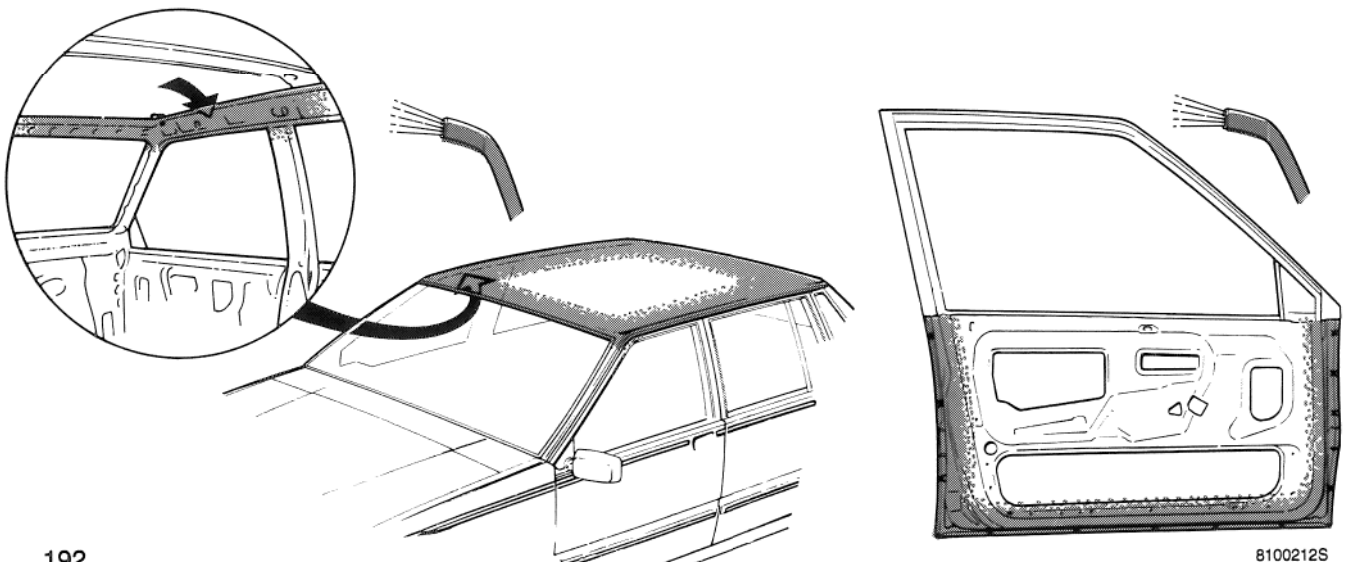


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## *Spraying chart for rustproofing*



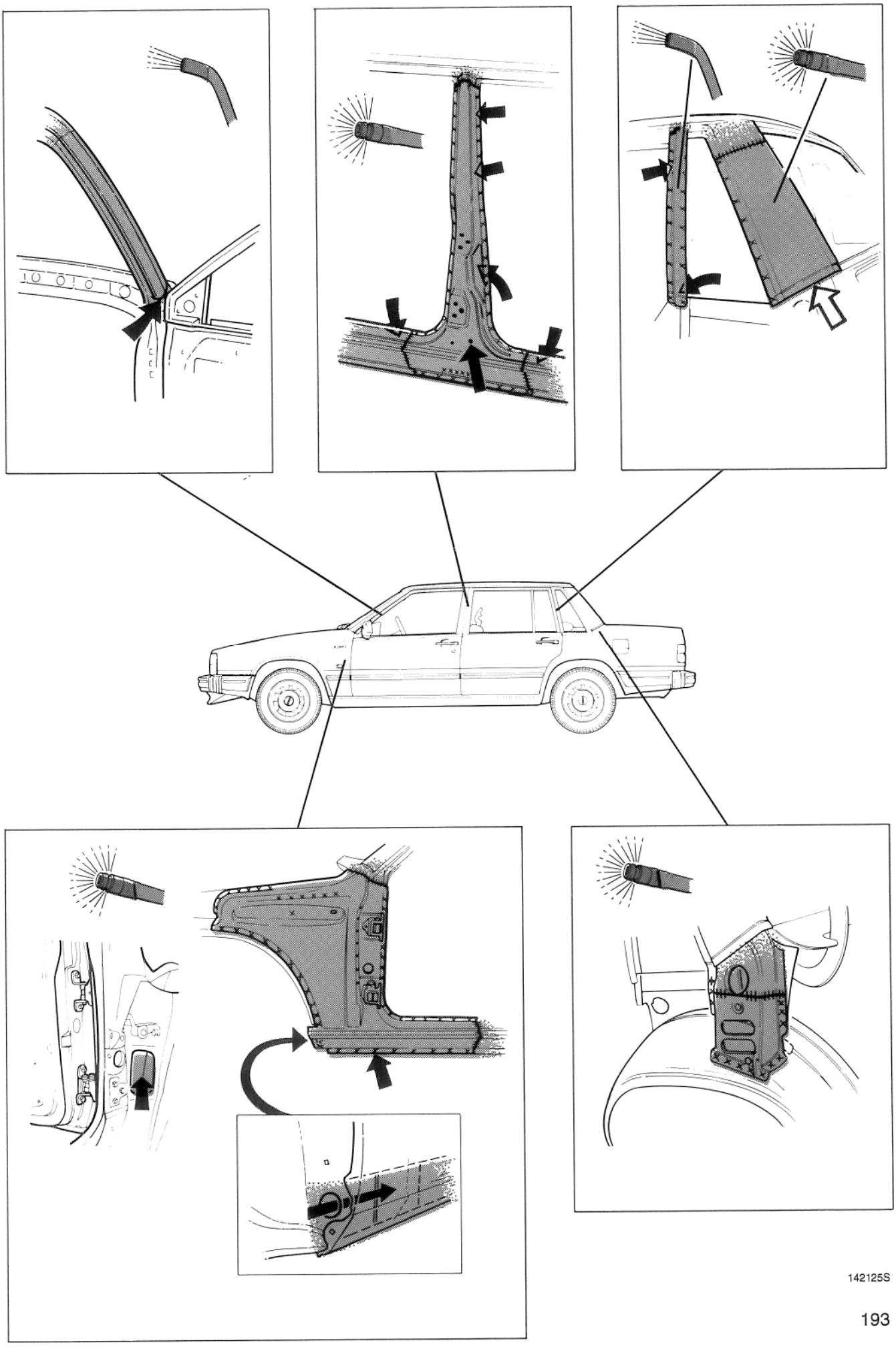






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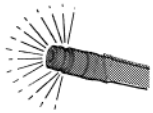
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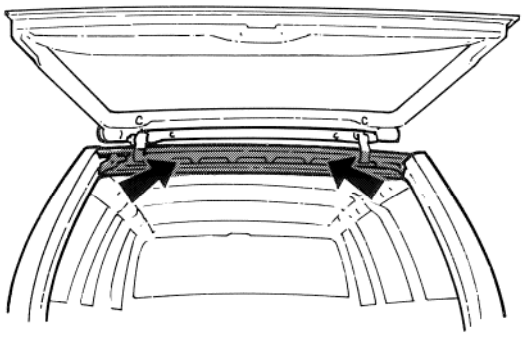


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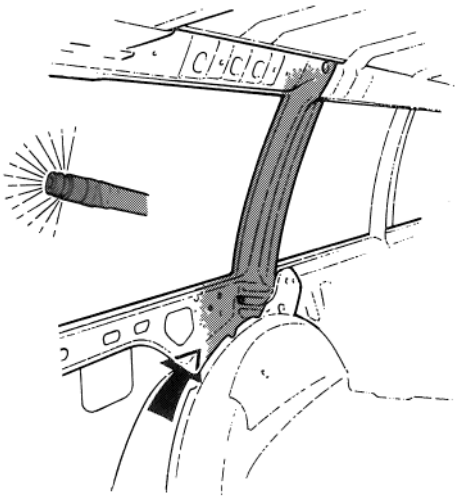


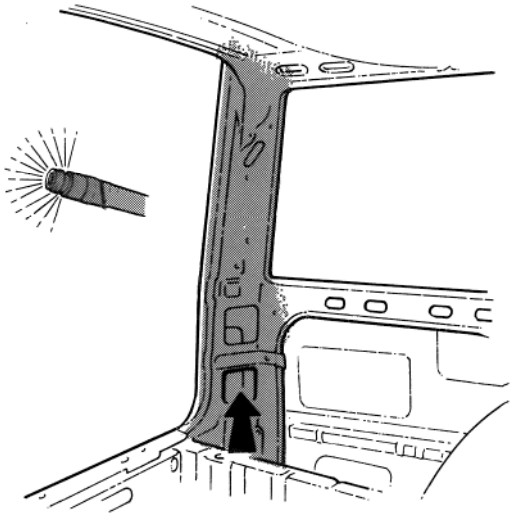
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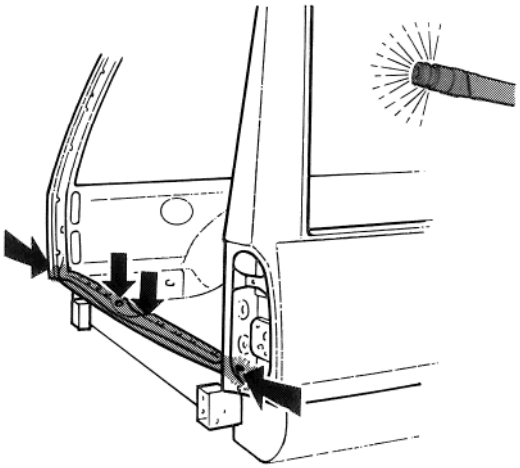


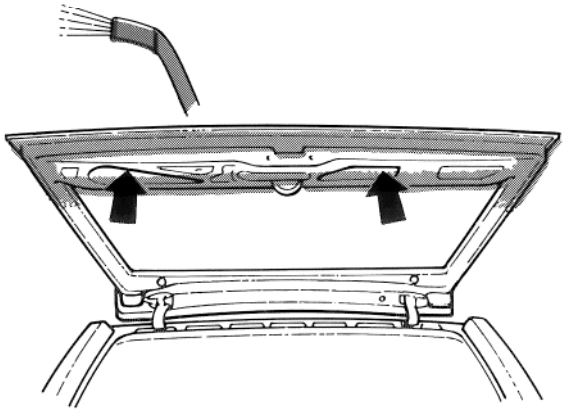


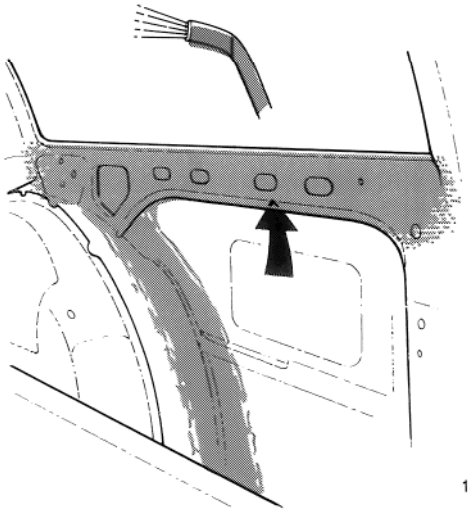
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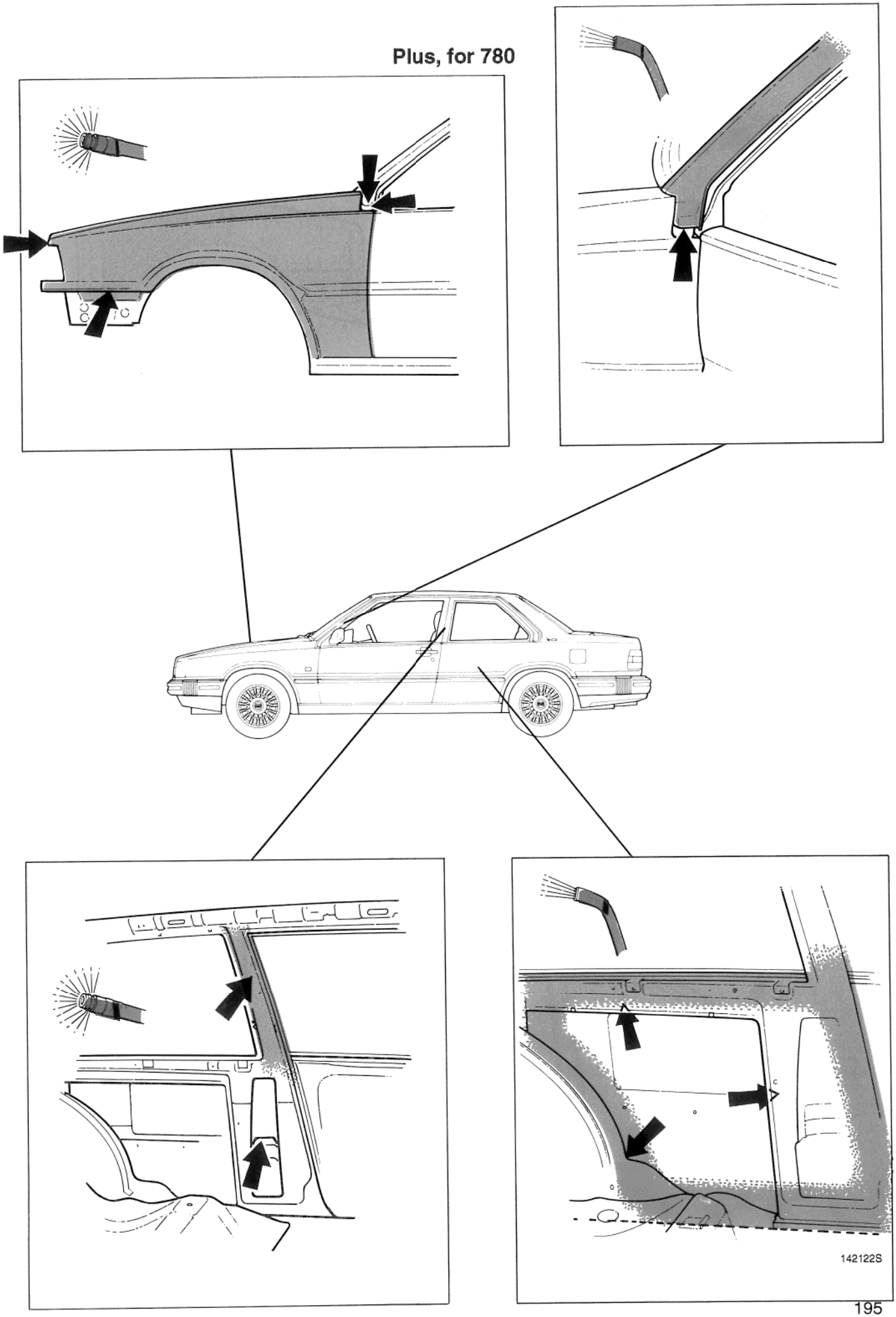


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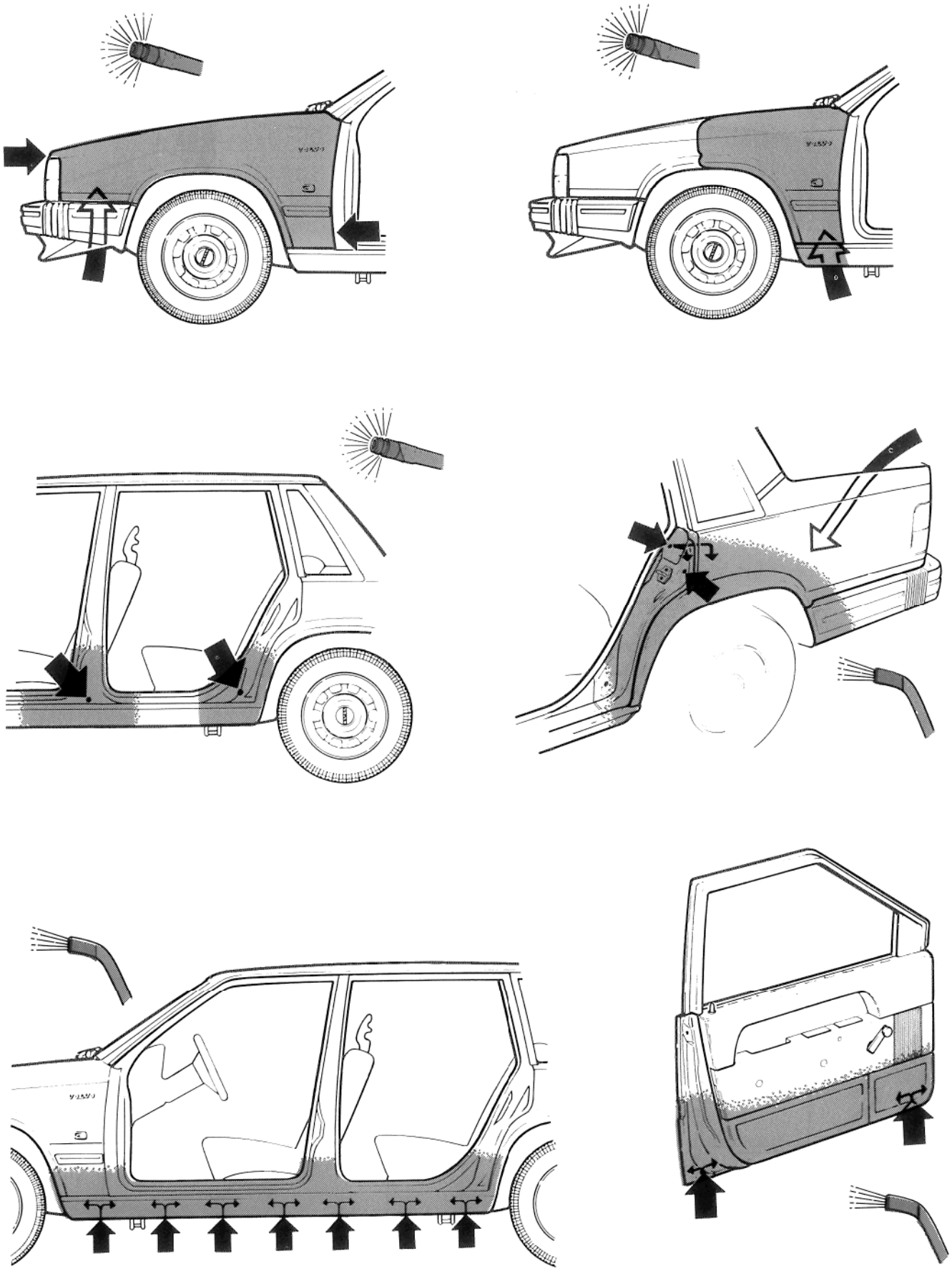
**Plus, for 780**






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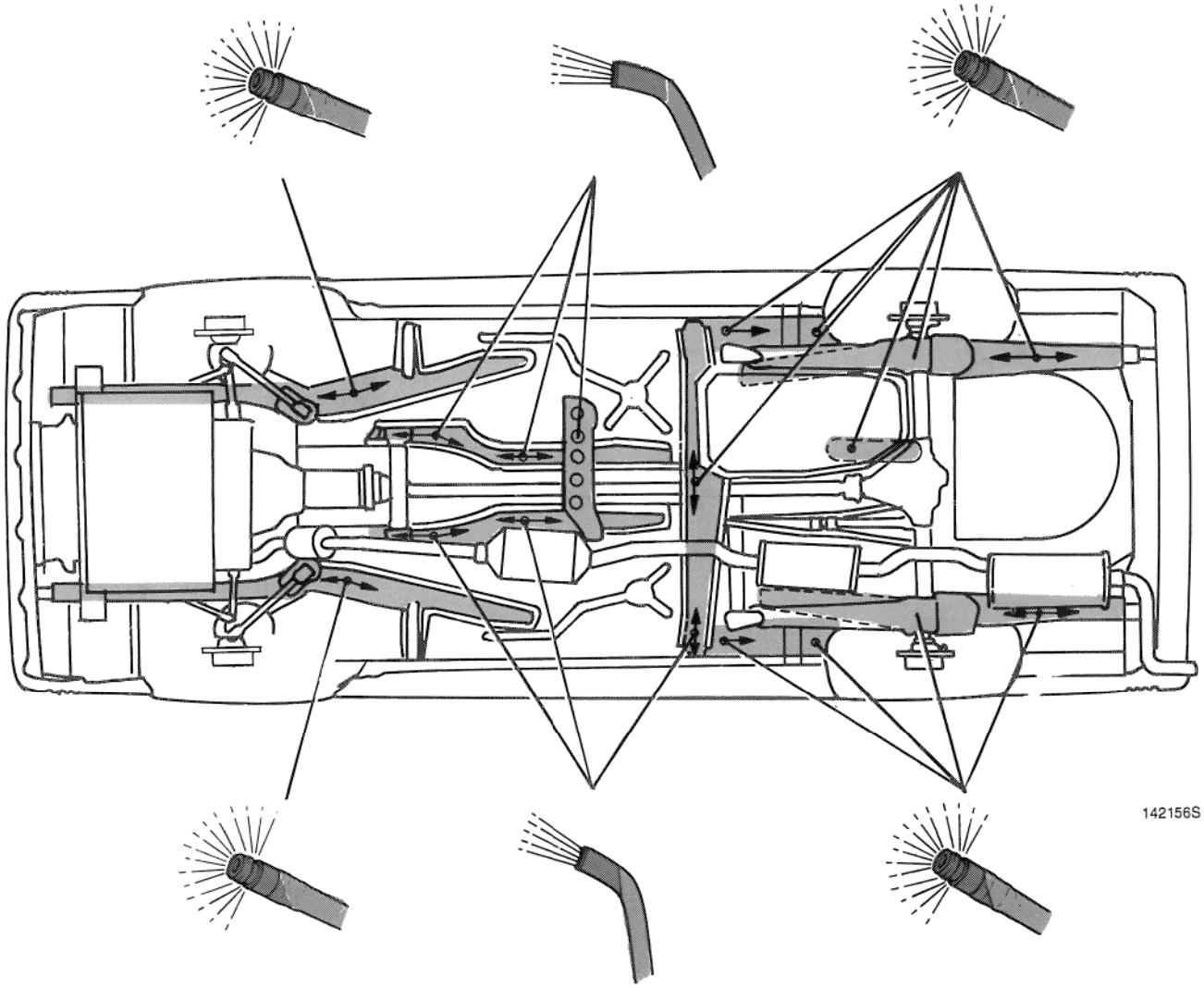
## Spraying complete car



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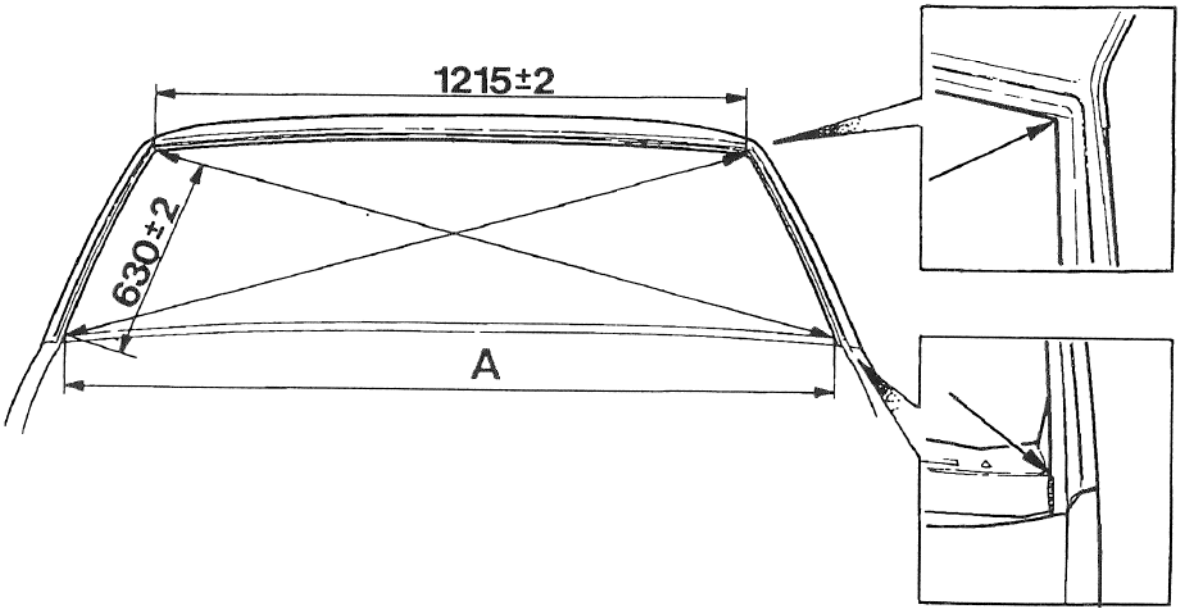
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# Dimensions

## 740/760/940/960

### Front

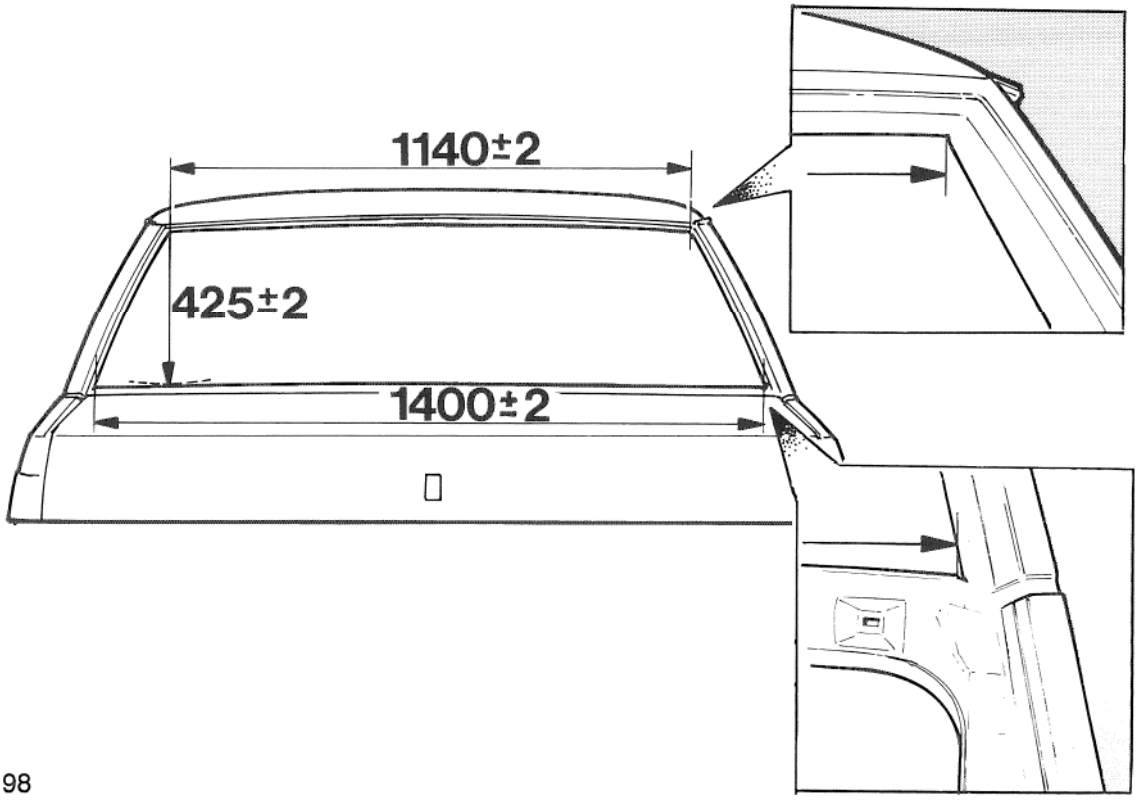



8100015S

A = 1485 +/- 2 for 740/940 and 760 -1988.

A = 1465 +/- 2 for 960 and 760 1988-.

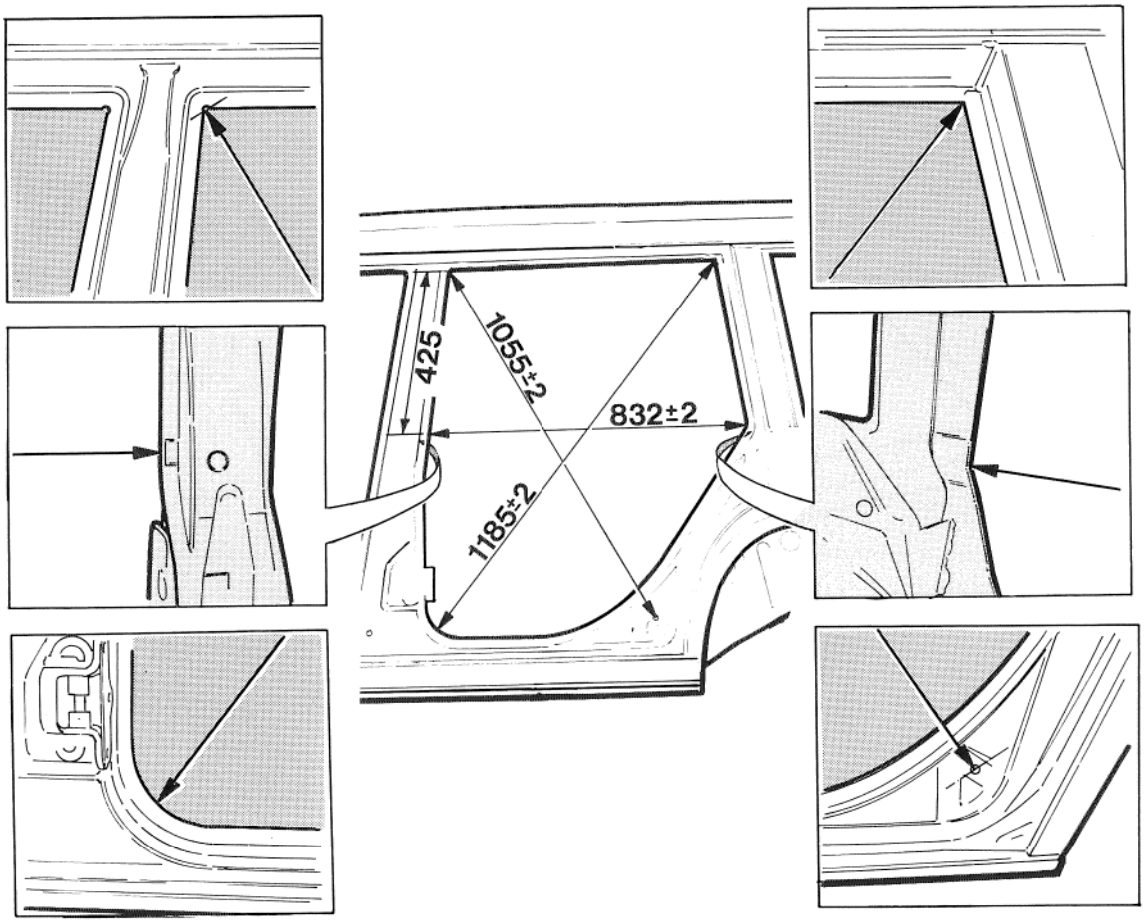
### Rear



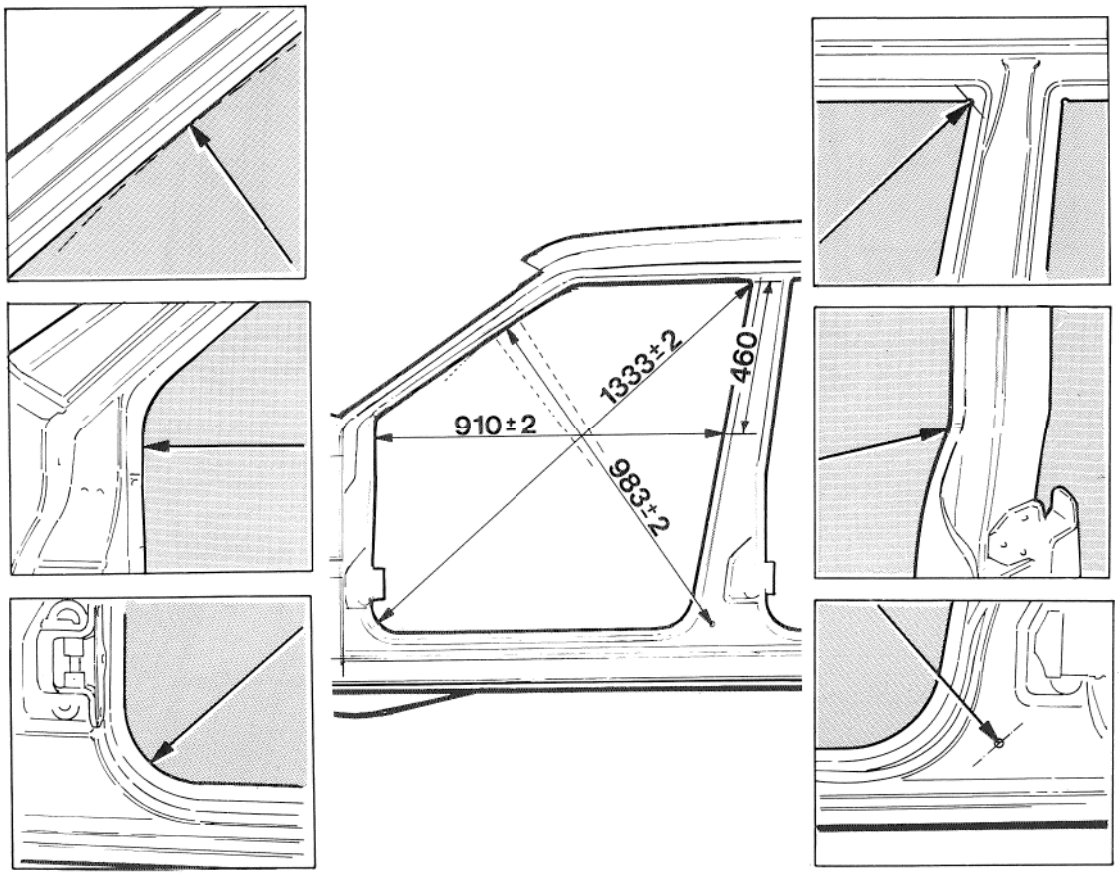

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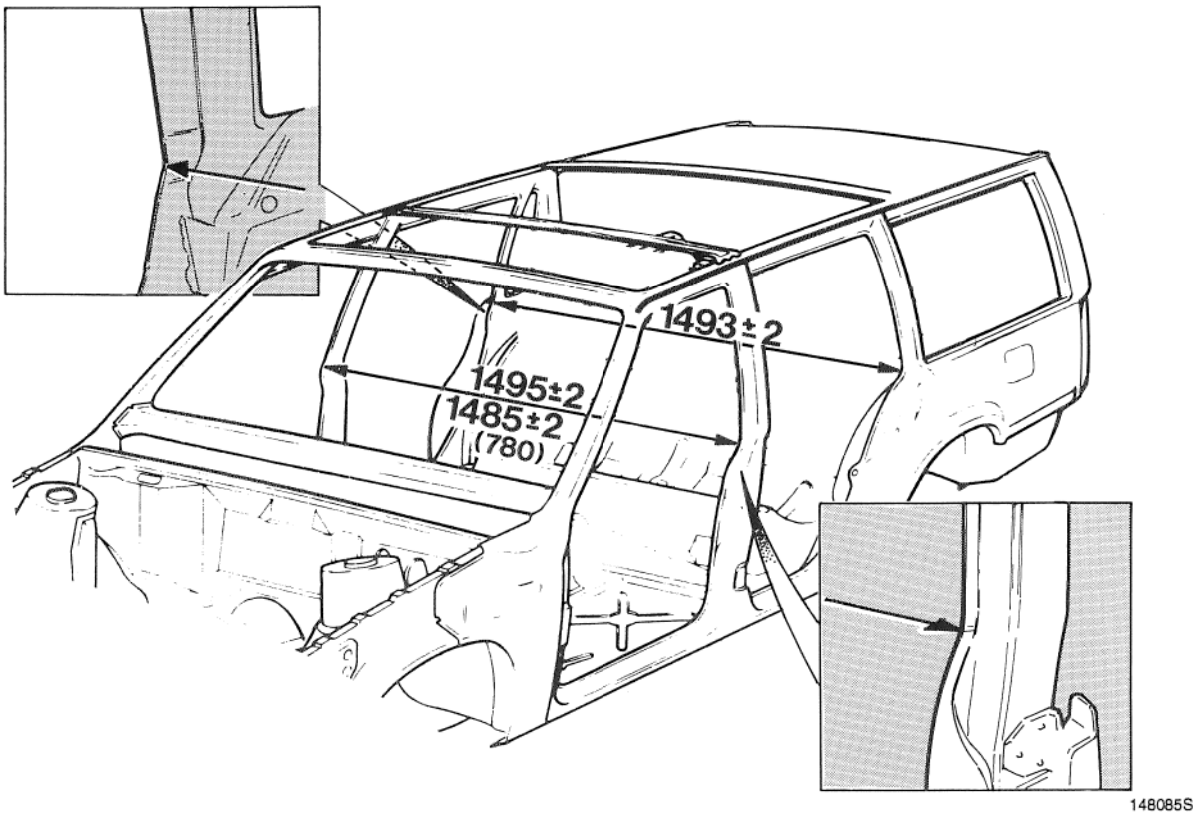

148079S



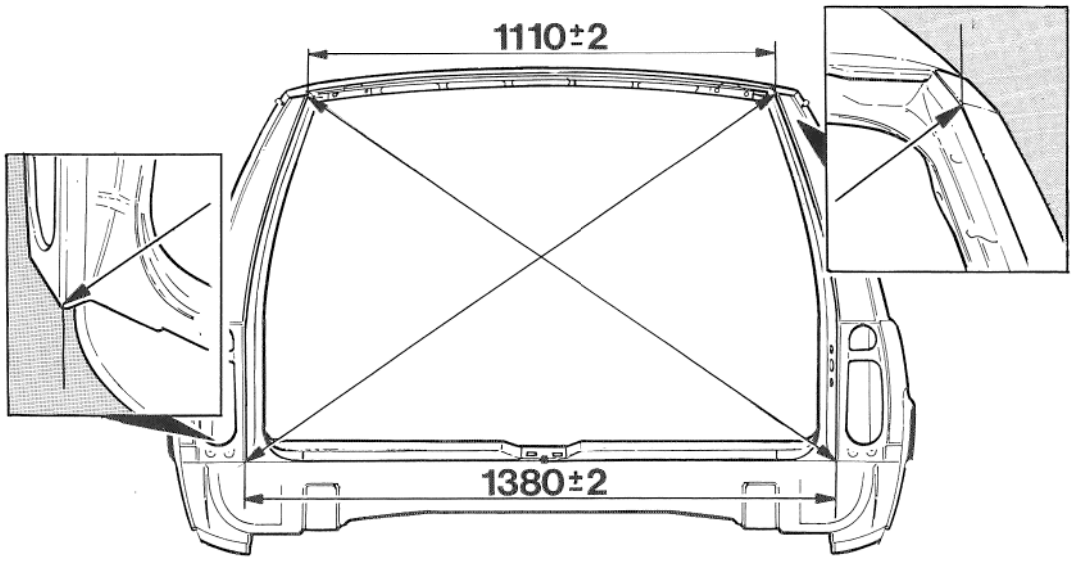

148078S



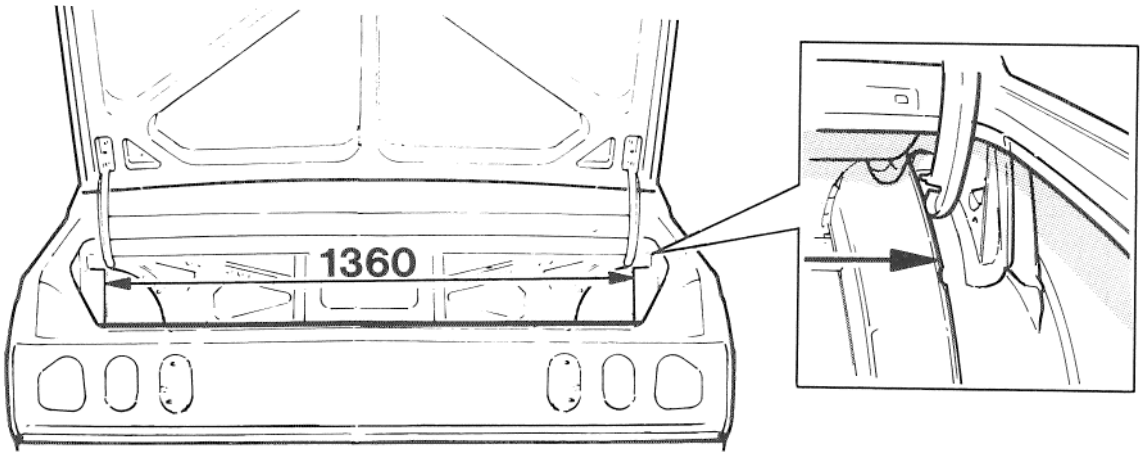
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148085S




147039S

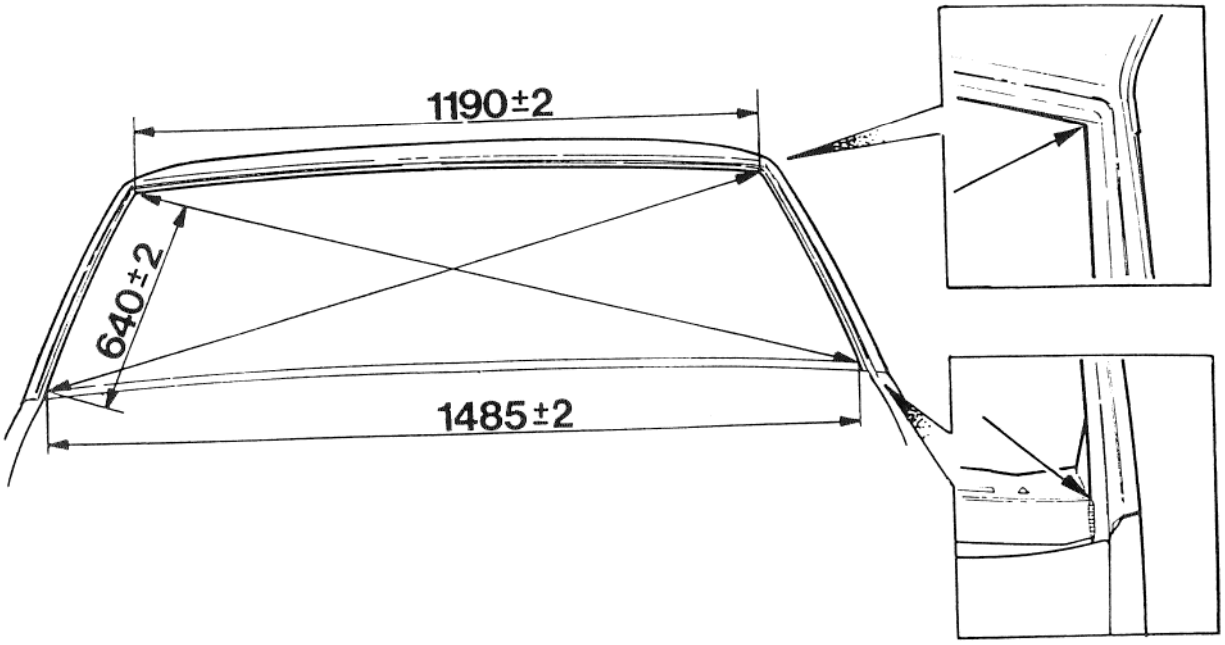



148080S

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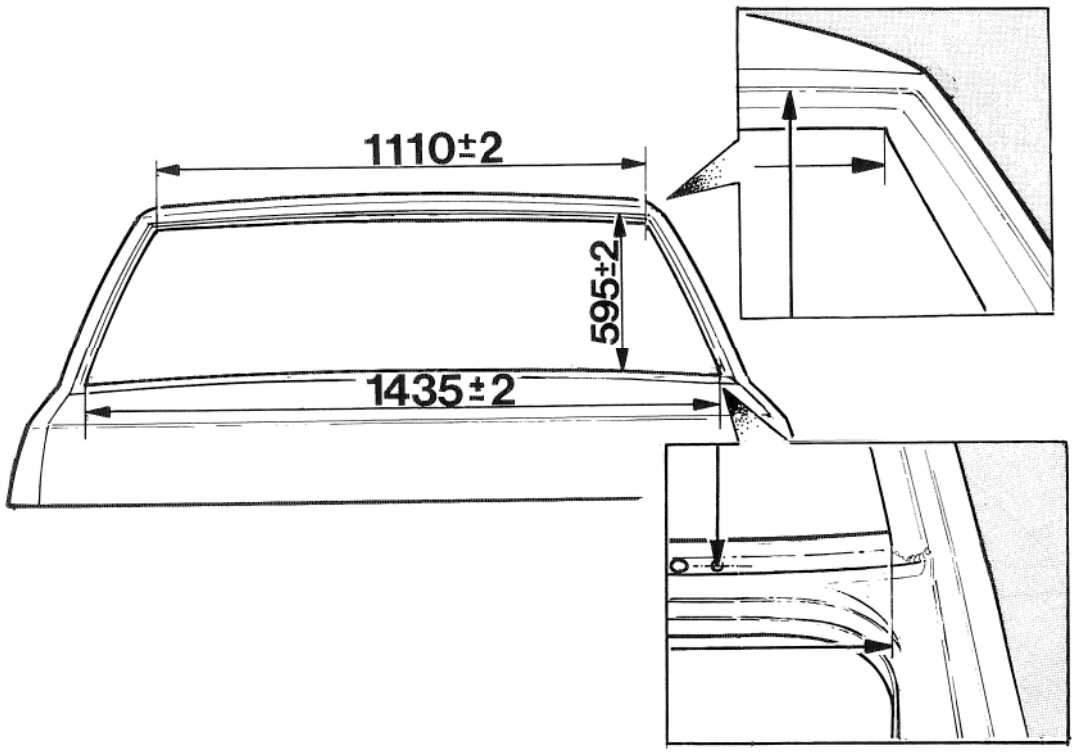
## 780

### Front




148087S

### Rear

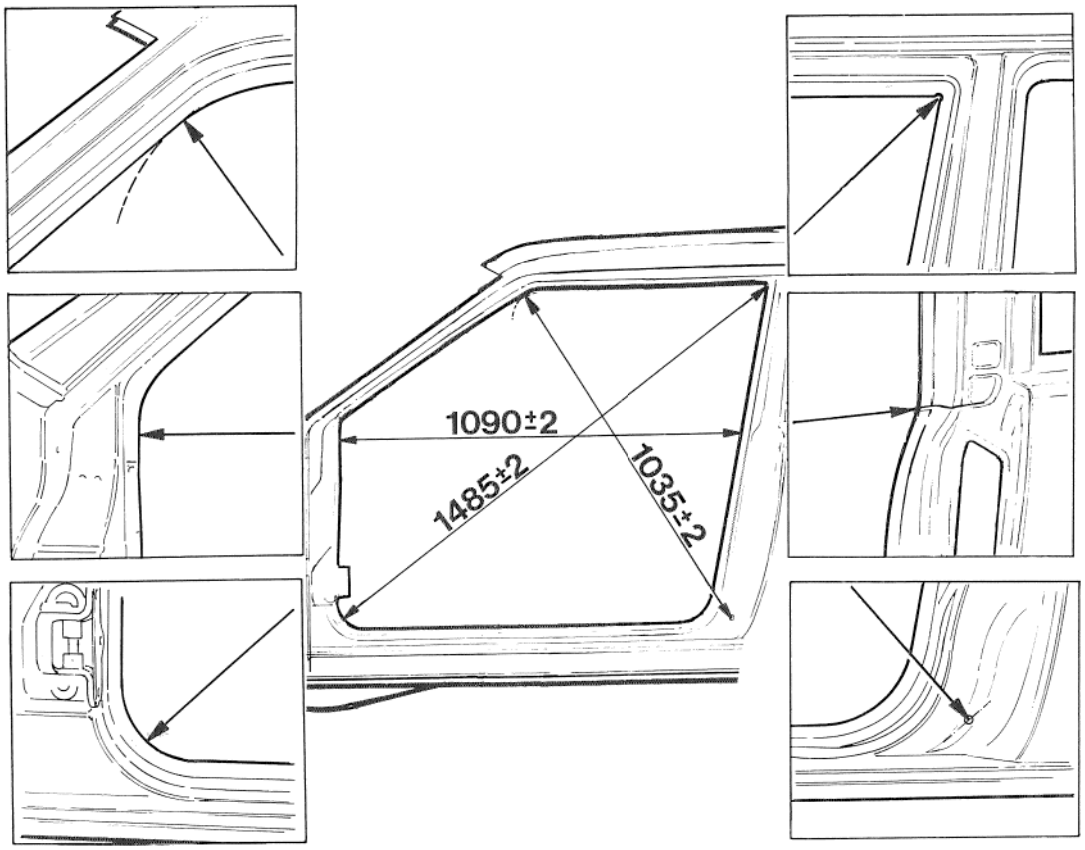



148088S

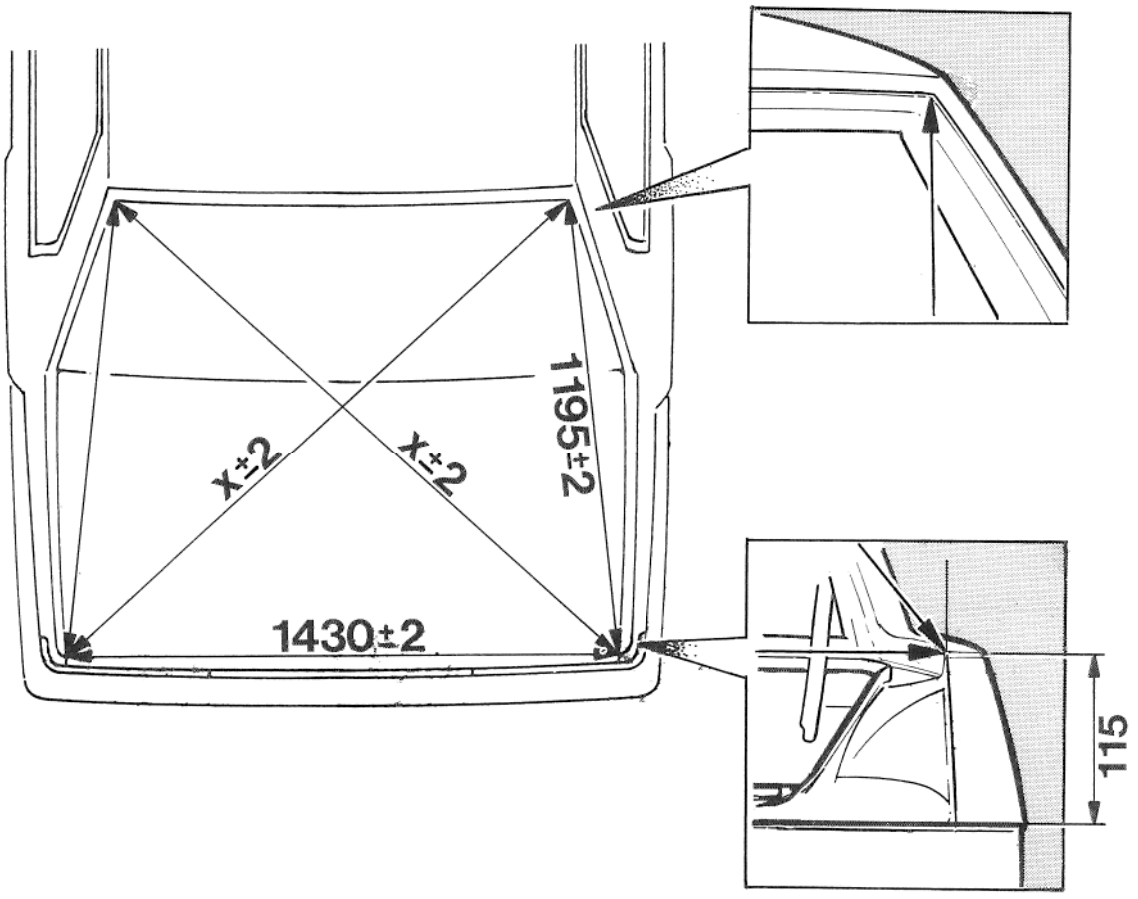


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## 780




10005

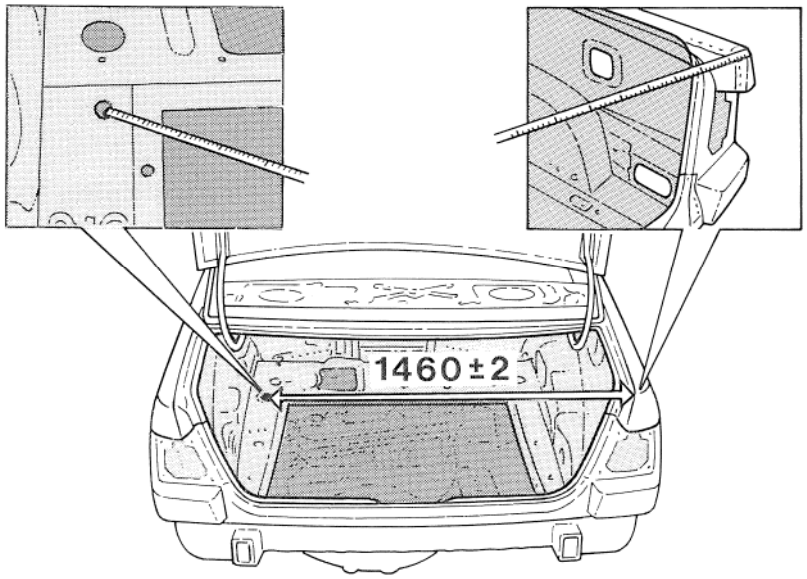



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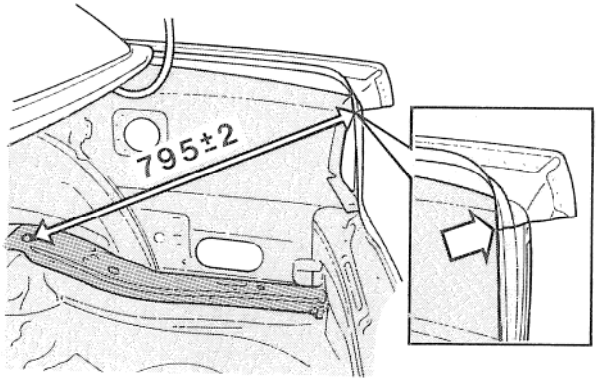


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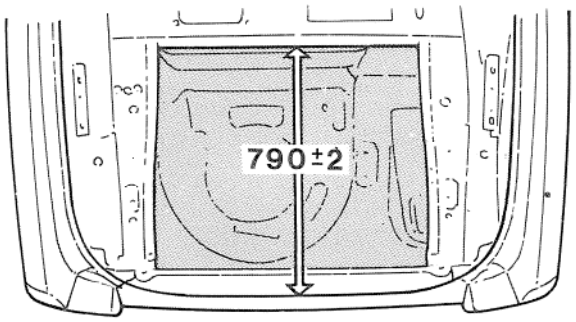
## 960/940, 4-door



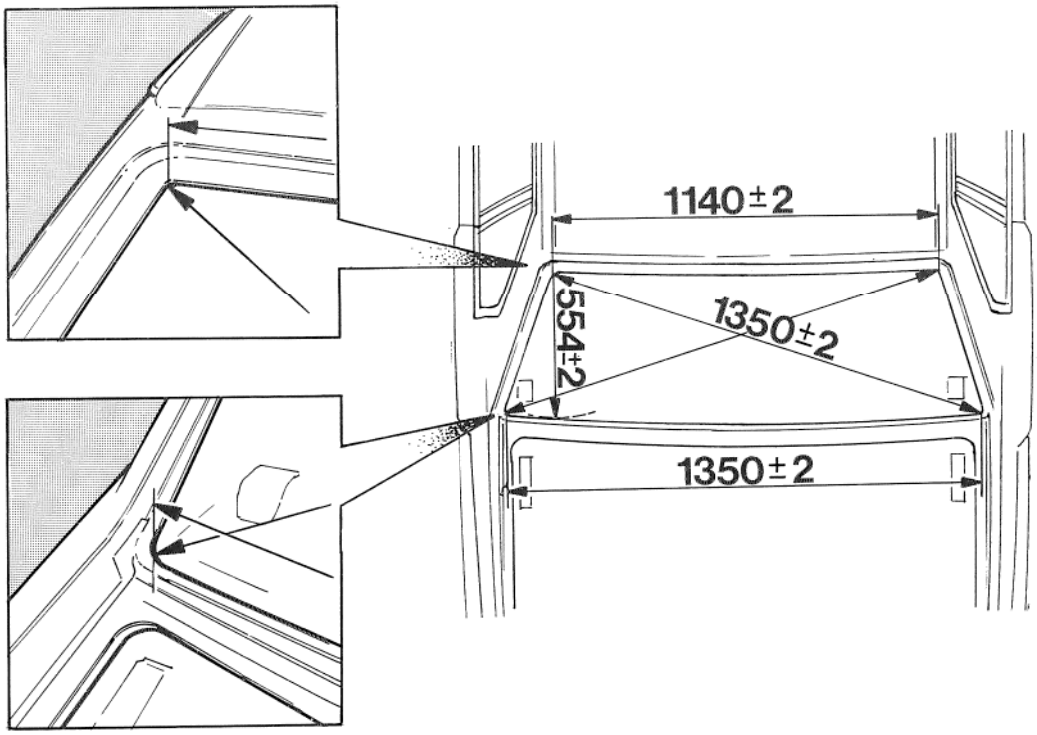

150636S




150637S




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150699S



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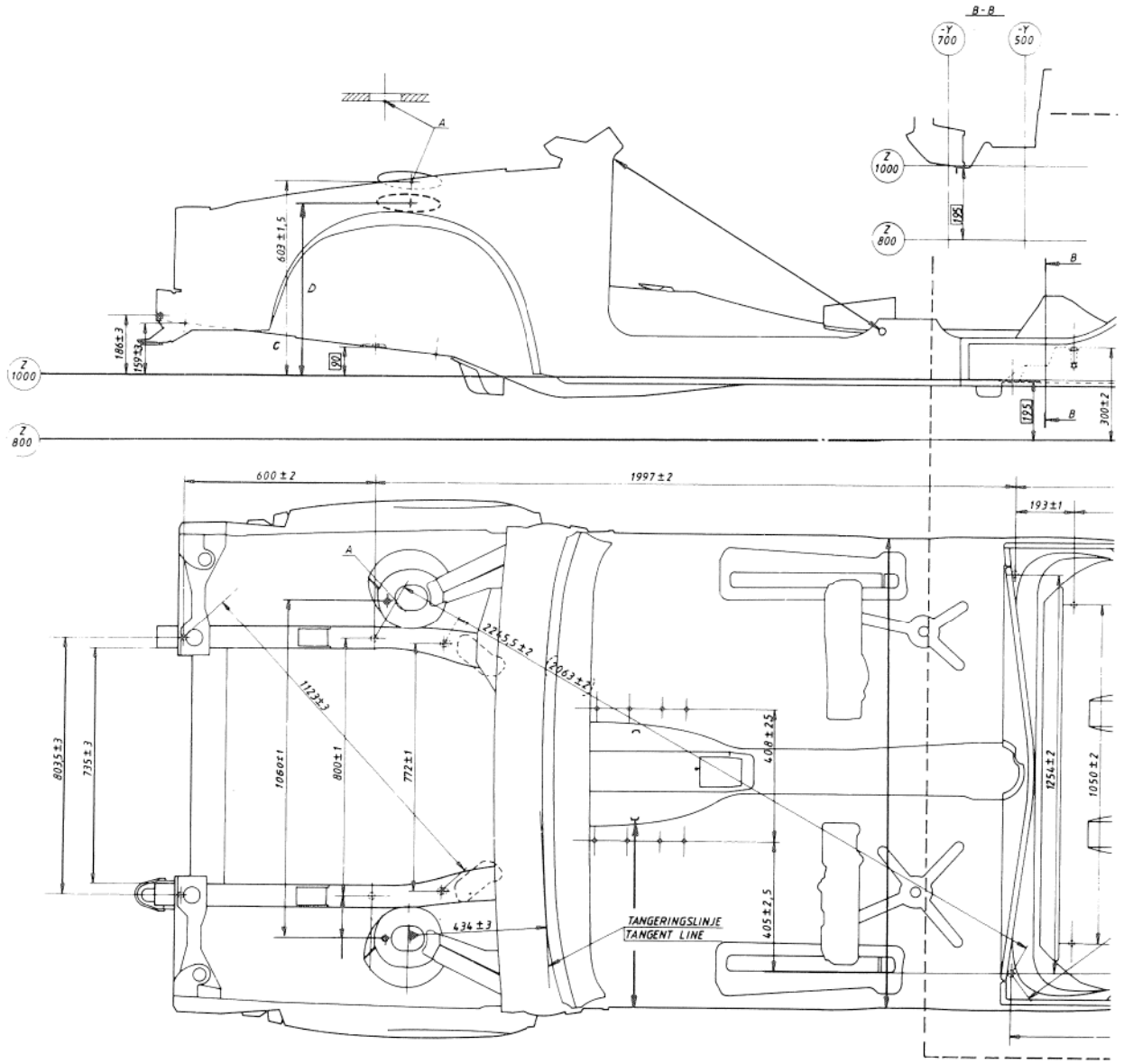
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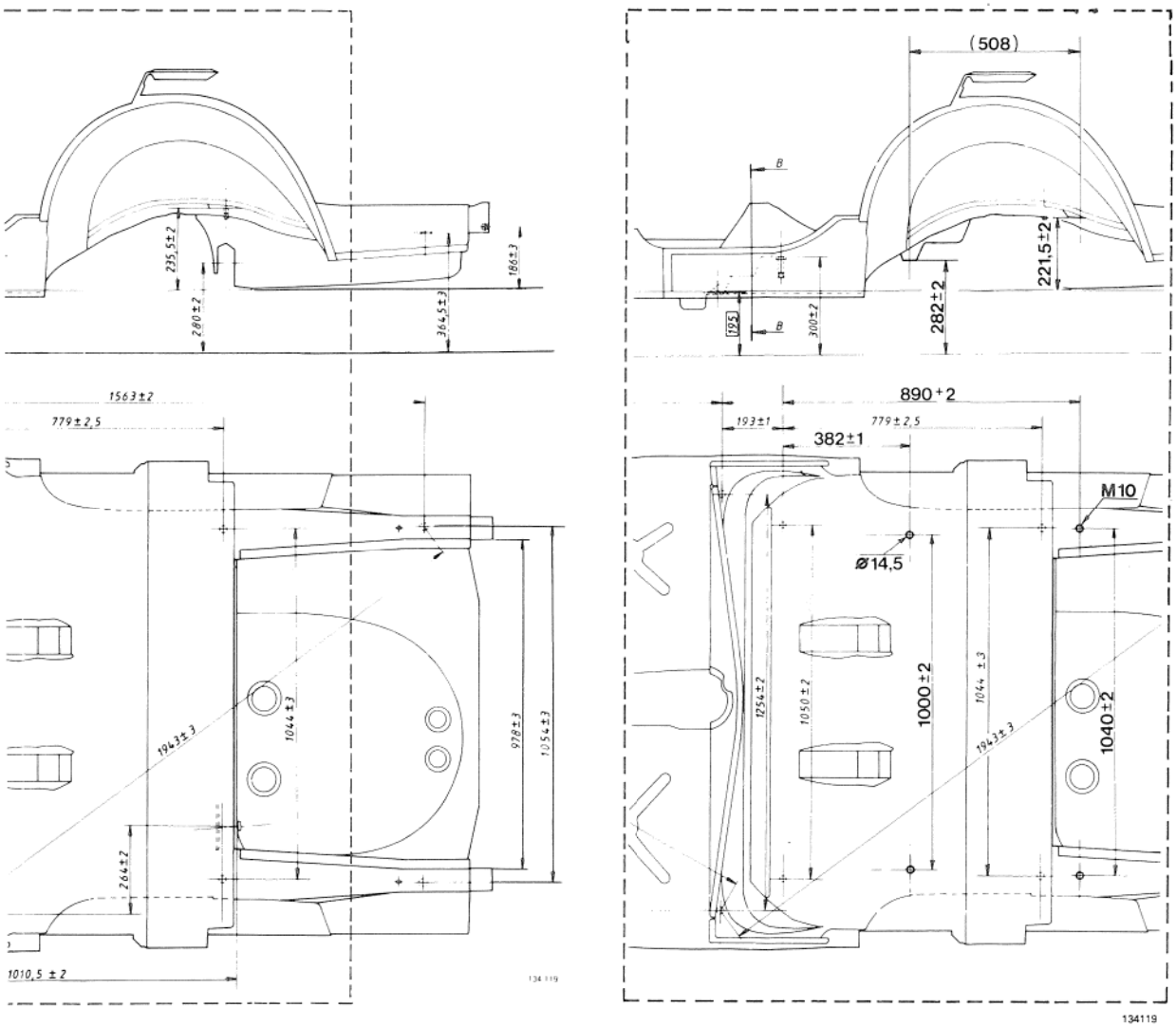
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