

BODY AND CHASSIS SHEET METAL PARTS

General Instructions

Before beginning work on body sheet metal parts, remove body attaching parts, assemblies or fittings which interfere with the work. Disconnect battery ground strap

After carrying out repair work on the body, ensure that the ground connections are correct. Poor ground connections lead to faults in the system and, in extreme cases, to destruction of the control unit.

The appropriate guidelines and regulations related to fire and accident prevention are to be followed in connection with welding or grinding work on the body

The same attention is to be devoted to following the environmental protection and health regulations.

NOTE:

SINCE LEGAL PROVISIONS DIFFER IN INDIVIDUAL COUNTRIES, IT IS NOT POSSIBLE TO INCLUDE LEGAL PROVISIONS DETAILS IN THE WORKSHOP LITERATURE. IT IS THE INDIVIDUAL'S RESPONSIBILITY TO OBTAIN AND OBSERVE THE RESPECTIVE REQUIREMENTS.

The section repairs shown in the operations are the result of extensive tests.

The welding procedures appearing in the various operations are identified with welding symbols.

There is basically no difference between the welding of body untreated deep drawn sheet metal and alloy-galvanized sheet metal. Alloy-galvanized sheet metal should preferably be spot welded.

Remove all paint layers completely from spot weld flanges.

Use corrosion protection measures and corrosion protection materials from the Parts and Accessories Department.

During any separation operations, grinding operations or welding operations, ensure that a suitable device for removing vapour is present.

Operations in this group are, on the whole, described and illustrated on left-hand drive vehicles. The operation processes on right-hand vehicles are generally a mirror image and analogous. The functions of the various systems are the same on both left-hand and right-hand drive vehicles. Any basic deviations are accompanied by the appropriate information.

The illustrated cutting sections and/or cutting lines are the result of comprehensive crash tests and examinations of vehicles which have been involved in accidents. Body sheet metal parts and body members (underbody) are made of cold-workable, deep drawn sheet steel in standard production. Consequently damaged parts must be cold when restoring them to their original shape.

No reference is made in these labour operations to continually recurring standard operations, such as separation of parts or grinding mating surfaces, as these should be known sufficiently well in the service workshops.

If the degree of damage does not permit restoration of the original shape, first straighten the mating surfaces. The damaged body section can then be replaced.

The repair methods specified in this group must be used in those areas where both cutting and joining would have an effect on the strength and safety of the body.

When delivered to the Paint shop, the surface of the body parts must be satisfactorily prepared for painting. The surface is paintable when damaged sheet metal parts have been repaired (dents removed, seams welded and soldered, overlapping seams in cases of partial replacement) in such a way that the paint shop does not need to apply more than three thin filler coats.

These operations belong to the sheet metal worker's working area and should be included in his specified repair time.

After accidents indicating considerable stress on the chassis, the following components in particular should be checked, independently of checking axle alignment, which should be carried out in all cases:

Check steering and steering linkage for correct operation through the complete turning circle, check visually for deformation and cracks.

Check all components of the chassis for deformation and cracks, including spring strut, steering knuckle, control arm, axle body and stabilizer and their fastening parts.

Test wheel rims and tyres for damage, examine tyres for cuts in the tread and the side walls and check for true running and balance.

SAFETY MEASURES:

- Disconnect battery from vehicle electrical system.
- Install ground cable of welding equipment immediately beside point to be welded.
- Control units can be damaged at temperatures above 60°C/140°F.
- During removal/installation operations on the engine or transmission, ensure that all ground connections are correctly routed. If the engine is started although the ground connections are incomplete, the control units can be destroyed.

BODY REPAIR USING CEMENTING

“Cementing” means joining of the same or different materials using an anorganic or organic substance at room temperature or with slight heating. Practical use of the cementing technique is limited to body components which do not bear a load (e.g. outer rear quarter panel). Load-bearing components, e.g. frame, members must not be cemented.

Using the previously employed repair method, welding in new sheet metal parts, an assortment of interior parts sensitive to fire and heat, e.g., inner trim panelling, seats, fuel tank, etc., had to be removed. The cementing method means a reduction in the amount of time required for the repair operations.

The cementing technique has a series of advantages compared to the welding process:

- Bond is free of tension.
- No change in material jointing.
- Maintenance of standard corrosion protection.
- Water-tight and corrosion-free joint. No electrochemical corrosion between different materials.
- Universal application. The cementing technique can be used after a short period of instruction.

A precondition for a stable bond which can tolerate the forces present in the bonded area is, besides exact observation of the processing instructions of the cement manufacturer, proper preparation and positioning of the joint surfaces and joining parts.

The joint surfaces shape which has been proven itself to be the most efficient in bodyworking and in repairs is the offset overlap with tapered upper plate, which is the preferred method.

The adhesion of the cement bond depends on the inner bonding force of the cement and of the bonding force between the cement layer and the surface of the parts being bonded. The specific properties of the cement and the condition of the surface of the parts being joined is important.

Thorough cleaning of the joining parts in the area to be cemented is a precondition for a stable cemented bond.

Any grease and wax remains, oxide layers, rust, scales, paint and primer must be completely removed from the surfaces being cemented.

For degreasing, only the solvent included in the repair set “TWO COMPONENT CEMENT (REPAIR PACKAGE) FOR CEMENTING OF BODY SHEET METAL” may be used.

WARNING:

NEVER USE ALCOHOL, BENZINE OR PAINT THINNER.

In areas where the new component cannot be fixed with clamps until the cement has hardened, steel flat-headed blind rivets — type 4 X 8 mm, must be used. The rivets transfer practically no force but serve only to hold the new component firmly in place while the cement is hardening.

The further development of cementing materials has already made it possible to spot weld the cement area while it is still wet, instead of using rivets (not plug welding or seam welding).

The “TWO COMPONENT CEMENT (REPAIR PACKAGE) FOR CEMENTING OF BODY SHEET METAL” intended for cementing body components, is designed for the special requirements of body repairs and must only be used in the prescribed combination. It must **NEVER** be replaced by or mixed with other unauthorized materials.

When using two component cement based on epoxy resin, observe the processing instructions and safety measures of the manufacturer and relevant institutional regulations. When processing cementing materials, special safety measures must be observed in order to avoid damage to health.

The same restrictions apply here as for paint materials.

Avoid direct skin contact with cements. Unhardened epoxy resin cement can cause irritations on sensitive skin.

If cement comes into contact with skin, wash immediately with warm water and soap. Rub in skin protection cream. If cement spray gets into the eyes, wash out immediately with plenty of luke-warm water for 10 to 15 minutes. Contact an eye specialist.

BODY REPAIR WITH STRAIGHTENING BENCHES

All work on supporting parts, frames and wheel well components are carried out on straightening benches

LEGEND FOR WELDING OPERATIONS

Process:
RP = Resistance Spot Welding
SG = Shielded Arc Welding
MIG (inert gas metal arc)
MAG (Active gas metal arc)
Brazing

1 = Spot welding tongs
2 = Shielded arc welding unit

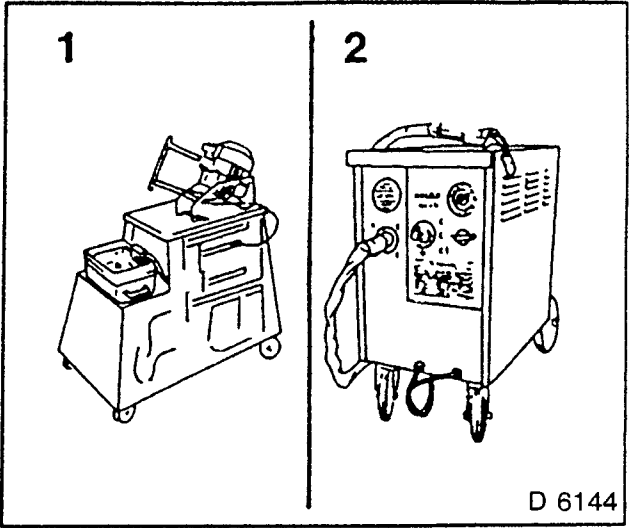


Fig. 1

Symbols:
1 — Resistance spot welding
2 — Plug spot welding
3 — Stitch seam spot welding
4 — Full seam
5 — Full seam, broken
6 — Brazing
8 — Number of spot welds

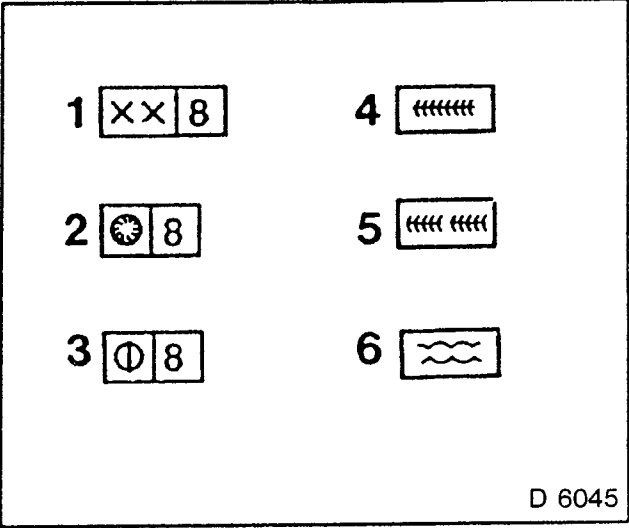


Fig 2

Welding Seams

1 — RESISTANCE SPOT WELDING

NOTE:
THE ELECTRODE PRESSURE REQUIRED FOR RESISTANCE SPOT WELDING WITH HAND SPOT WELDING TONGS IS NOT ADEQUATE WITH WELDING TONGS WITH A LENGTH OF OVER 40 cm.

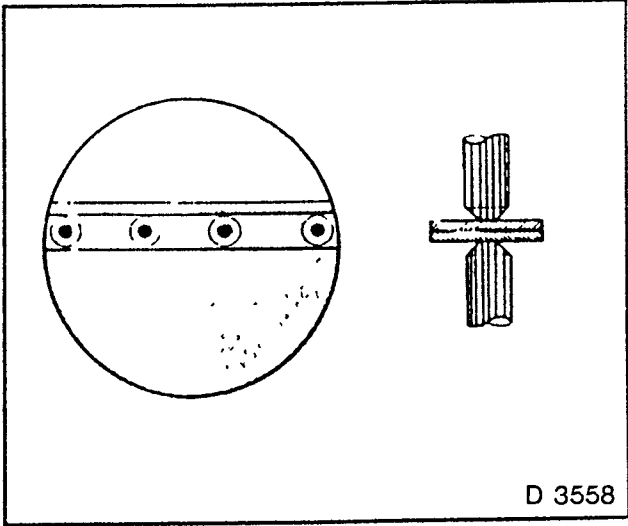


Fig. 3

2 — **PLUG SPOT WELDING**

- 1 — Overlapped
- 2 — Offset
- a = 10 — 14 mm
- b = 6 mm hole diameter with 0.75 mm or 7 mm hole diameter with 1.50 mm plates
- c = 20 — 40 mm

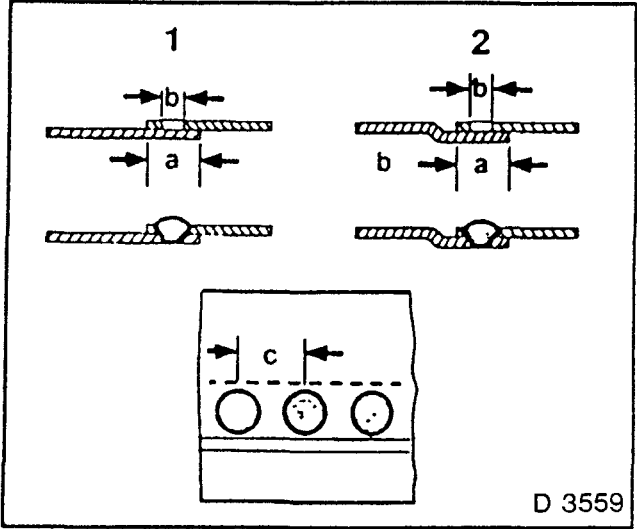


Fig. 4

3 — **STITCH SEAM SPOT WELDING**

- 1 — Overlapped
- 2 — Offset
- a = 10 — 14 mm
- b = 3 — 5 mm
- c = 20 — 40 mm

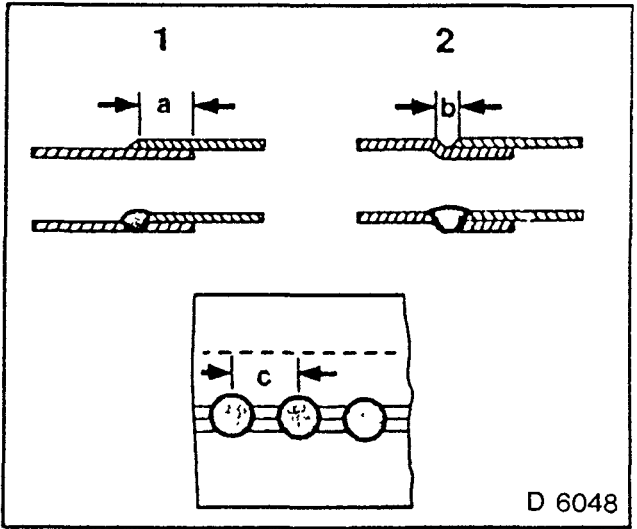


Fig. 5

4 — **FULL SEAM**

- 1 — Butt welded
- 2 — Overlapped
- 3 — Offset

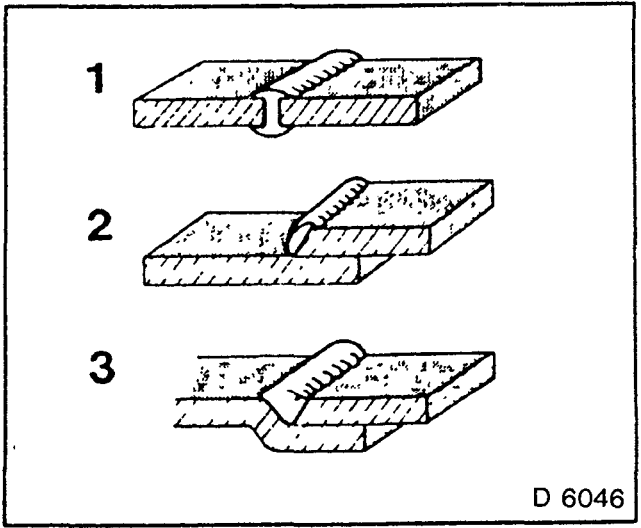


Fig. 6

BODY DIMENSION CHART

Observe precisely the body dimension chart when replacing welded sheet metal components

All dimensions without tolerances = ± 2 mm

ALL MODELS

Pos	Dimensions in mm
1	1 573
2	805
3	1 138
4	1 364
5	740

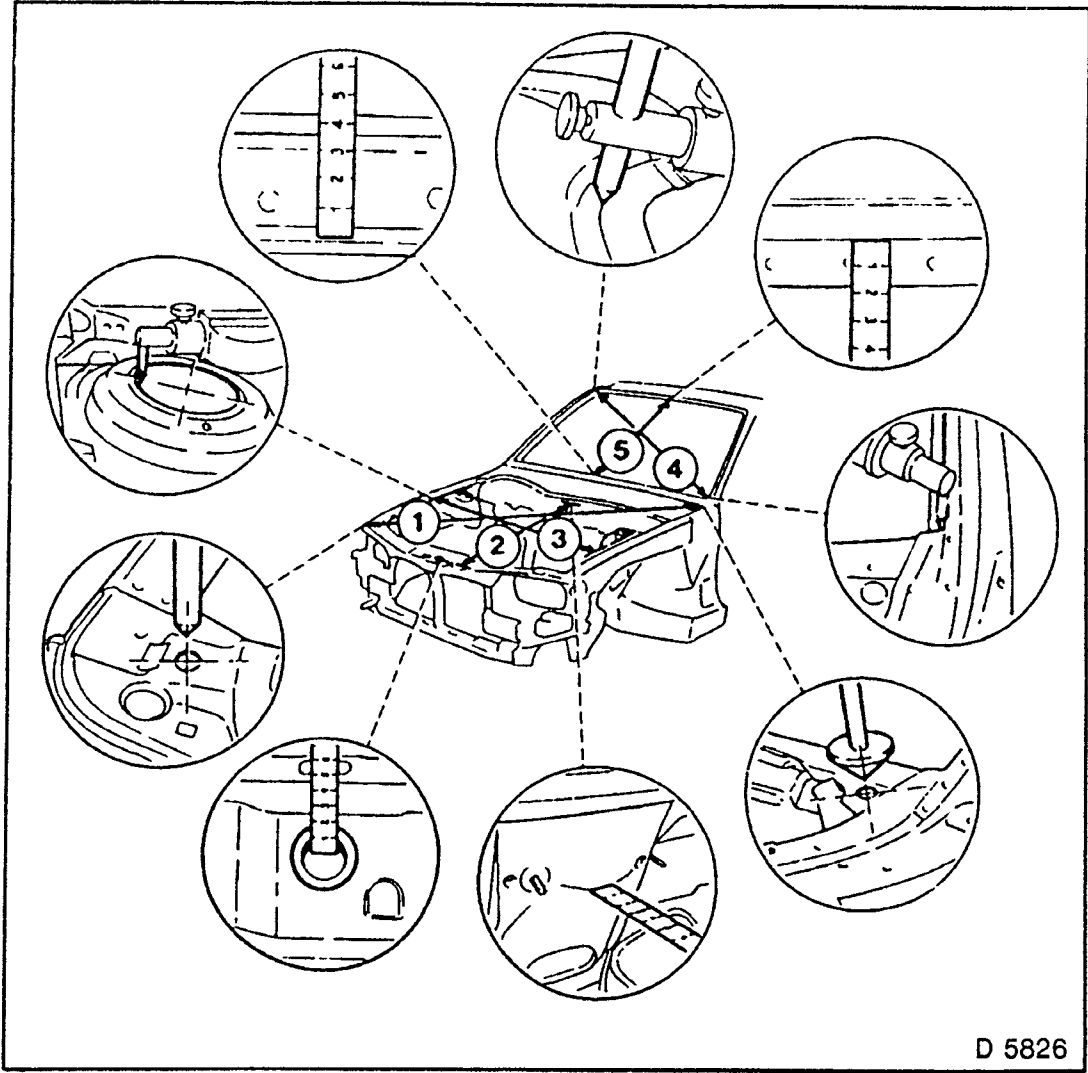


Fig. 7

ASTRA & KADETT

Pos.	Dimensions in mm
6	1 344
7	984
8	890
9	1 154
10	905
11	1 001
12	818

ASTRA

Pos	Dimensions in mm
13	615

KADETT

Pos.	Dimensions in mm
13	679

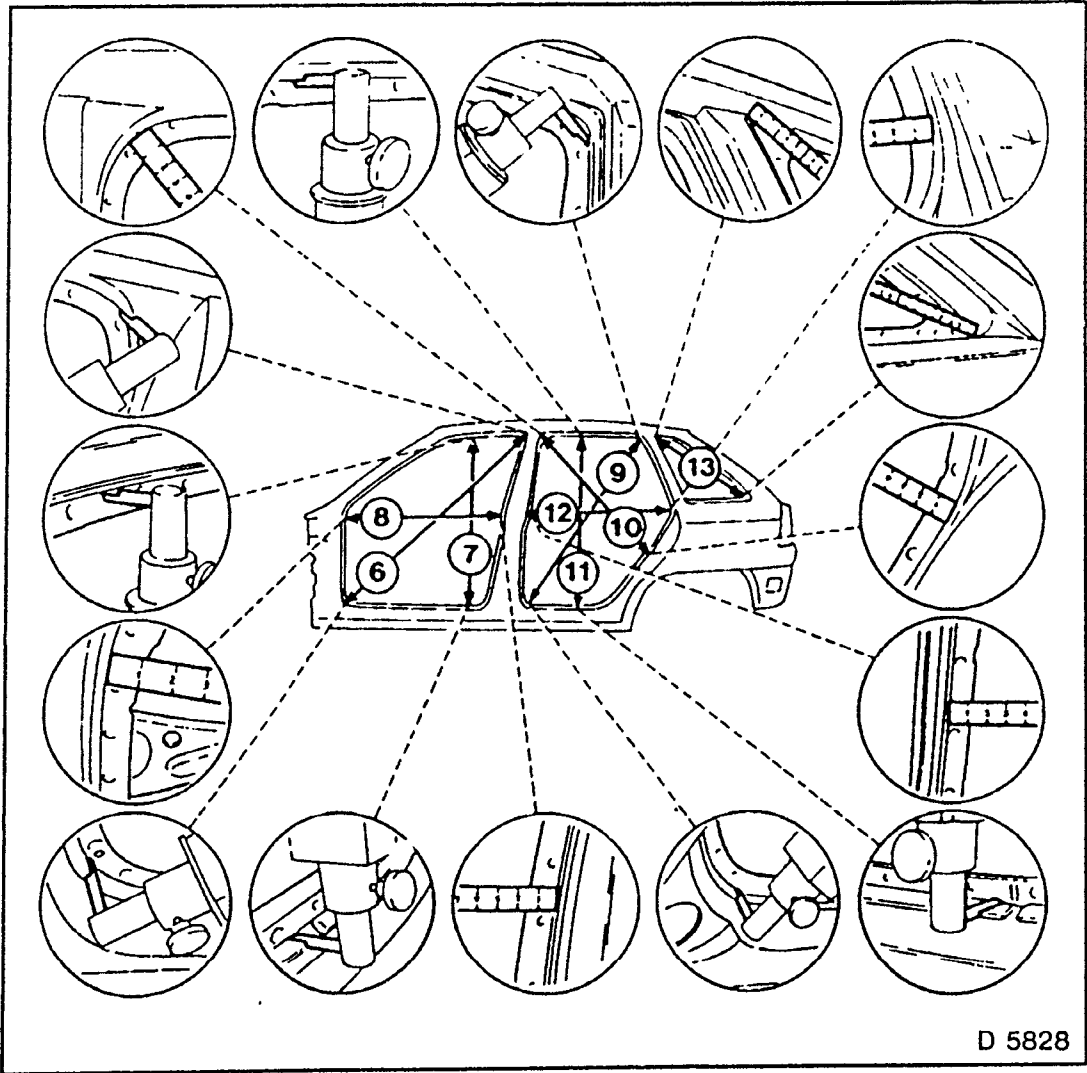


Fig. 8

KADETT

Pos.	Dimensions in mm
29	1 240
30	895
31	962

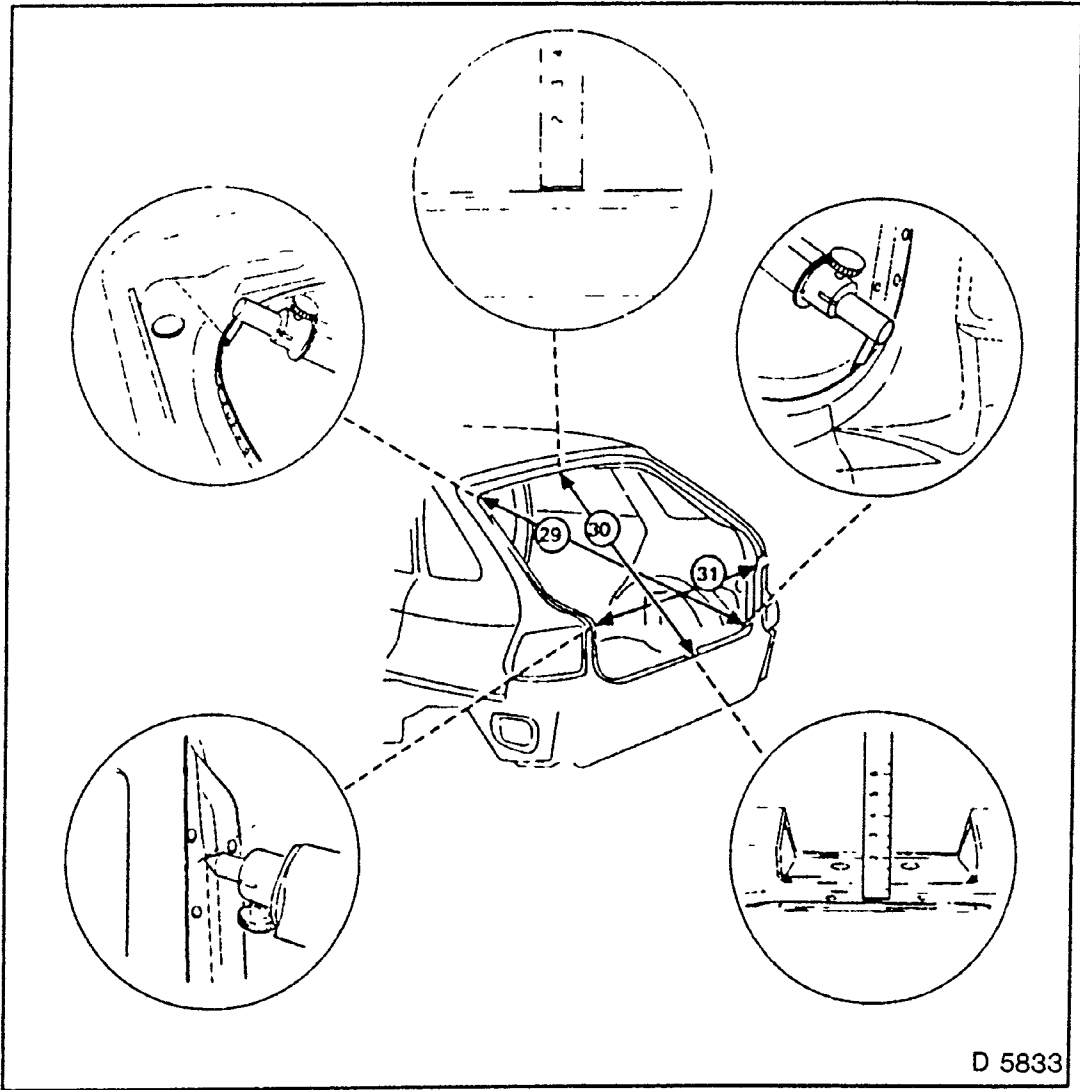


Fig. 9

ASTRA

Pos.	Dimensions in mm
36	1 082
37	505
38	1 215

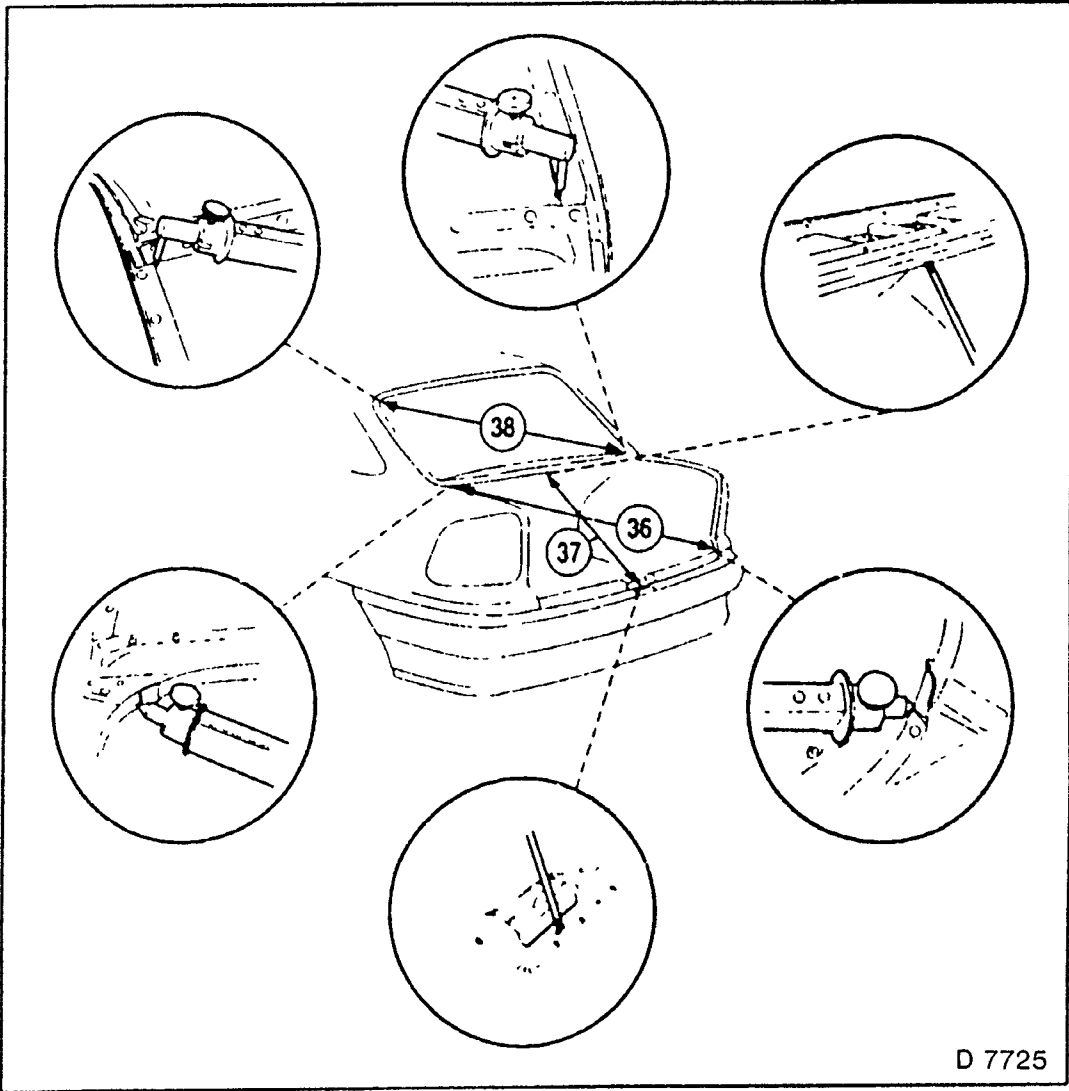


Fig. 10

ASTRA

Pos.	Dimensions in mm
34	945
35	777

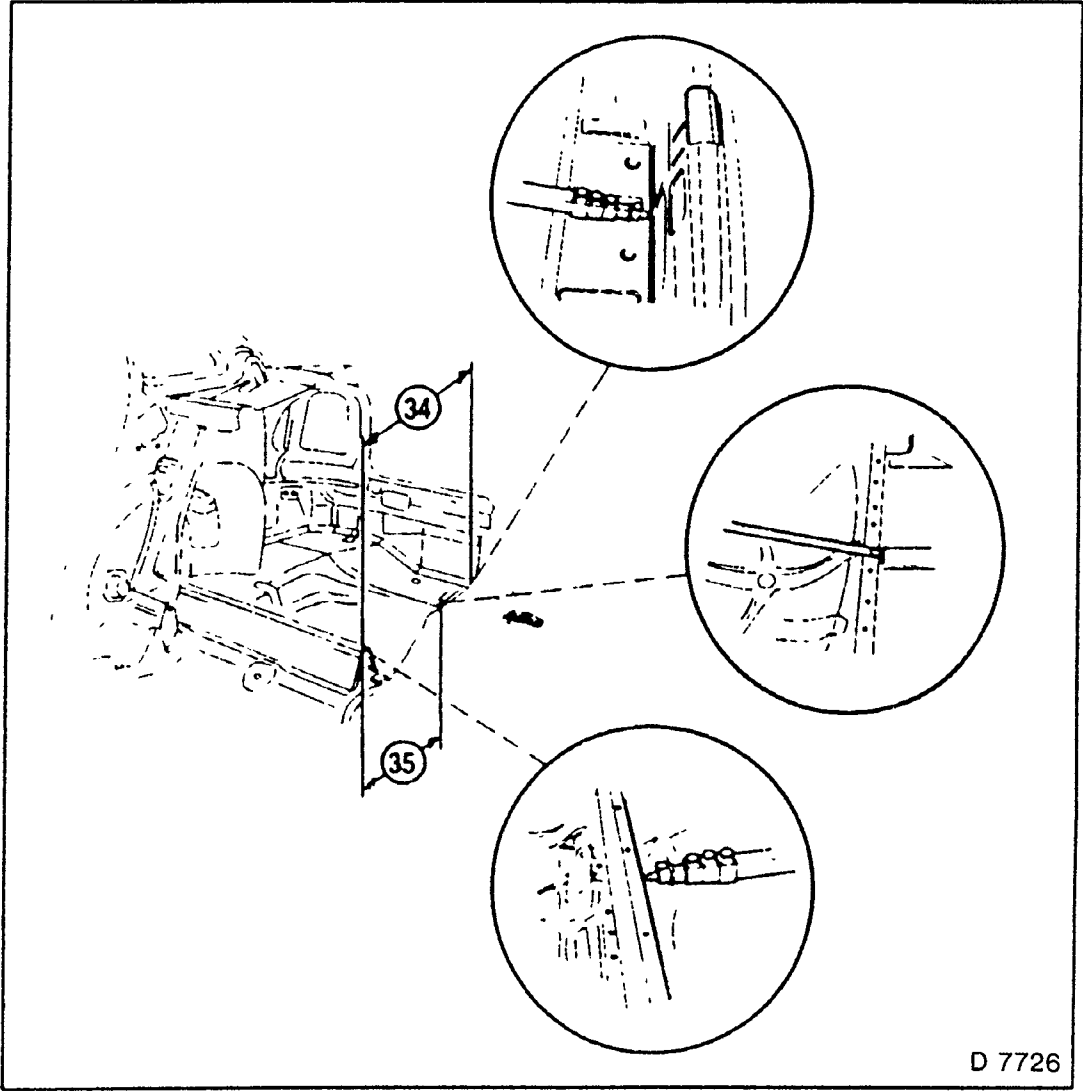


Fig. 11

ASTRA & KADETT

Pos.	Dimensions in mm
32	1 038

ALL MODELS

Pos.	Dimensions in mm
33	1 316

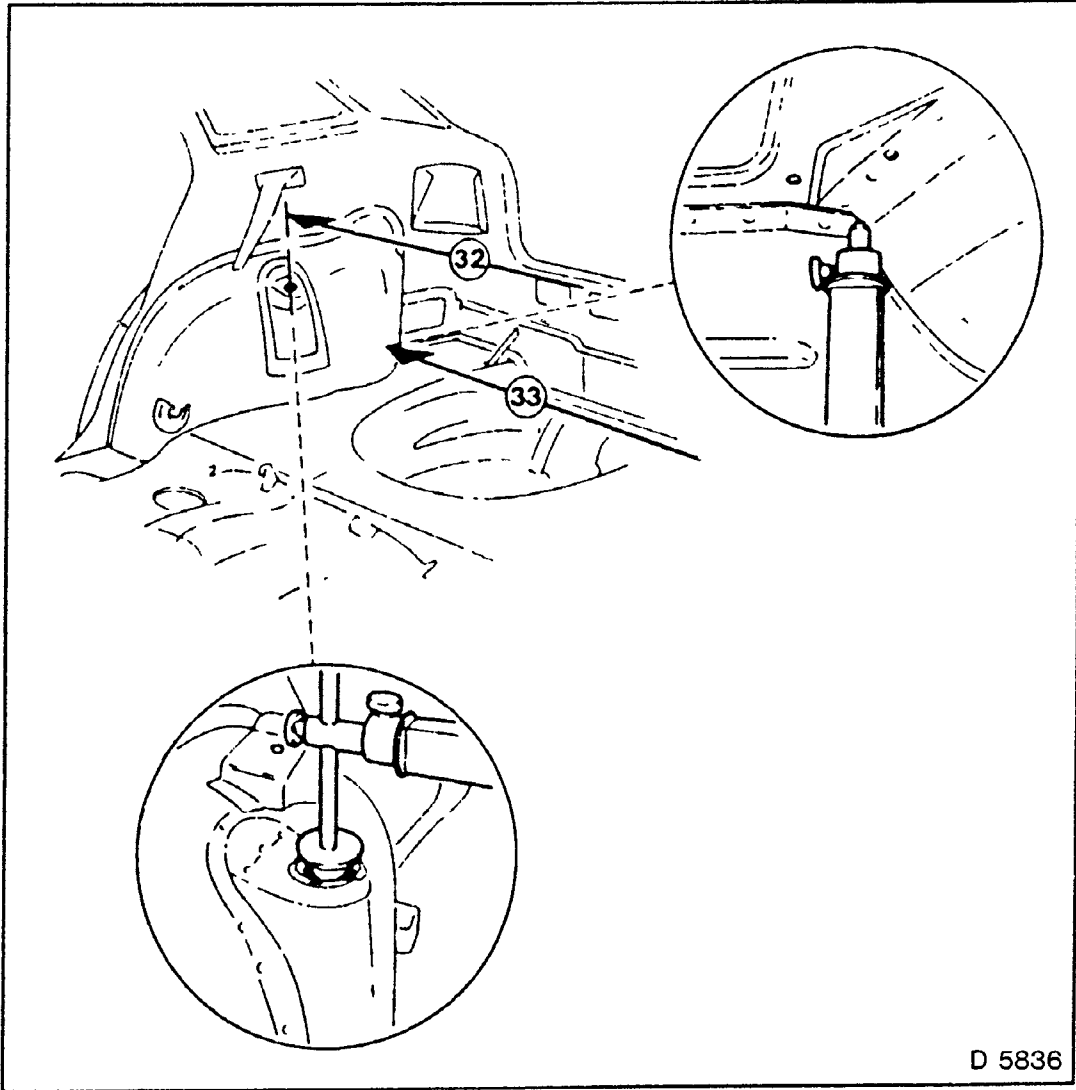


Fig. 12