Repairs and Inspection

General

Repairs

Repairs and measurements of the chassis and frame can only be made by Porsche shops which are specially equipped with the necessary measuring devices and chassis repair jigs. In the event of serious damage it is necessary to make measurements without which repairs are merely superficial and result in improper alignment.

The chassis jig serves as an accurate chassis measuring and alignment device. All structural parts of the chassis and frame must be in proper alignment and lateral location within the prescribed tolerances. The jig must seat firmly on a level surface. To insure that all four legs rest squarely on the floor, one of the legs has an adjustable foot. With only minor alterations, the Porsche chassis jig can be used for 356, 356 A and 356 B cars with either single or dual front suspension of the transmission.

Measurement

In order to measure the critical chassis dimensions, the entire under frame must be stripped including the transmission, front and rear suspension and various accessory linkage. The set screws of the chassis jig must be screwed apart to receive the car. For 356 and 356 B cars with single front suspension of the transmission, the locating blocks must be screwed apart, while for 356 A and 356 B cars with dual suspension of the transmission they must be screwed together. After placing the car on the jig, the chassis is secured in sequence starting at the rear suspension tube, then the jaws of the transmission mounts and then the front suspension tubes. Do not use force to fit the measuring bolts into the sockets in question. When the chassis is properly positioned, the screws of the gearbox suspension jaws can be screwed into place. The depth of the front measuring bolts is shown in the form of graduated lines. The bolts are to be inserted by hand until they stop against the contact in question.

Permissible deviations are marked on the base plates of the measuring points. From these marks it can easily be determined how badly the chassis has been deformed. Small deformations can be corrected by carefully applying force to the correct places. If greater damage has occured, it is necessary to cut out and replace entire frame sections. The chassis jig should be used only to spot weld the parts in place. Heavy welding and alignment work must not be performed on the measuring jig. As previously mentioned, the jig is not to be used with force and is principally a measuring device. The most critical dimensions are the front and rear suspension tubes, which should always be replaced as units.

Chassis Jig

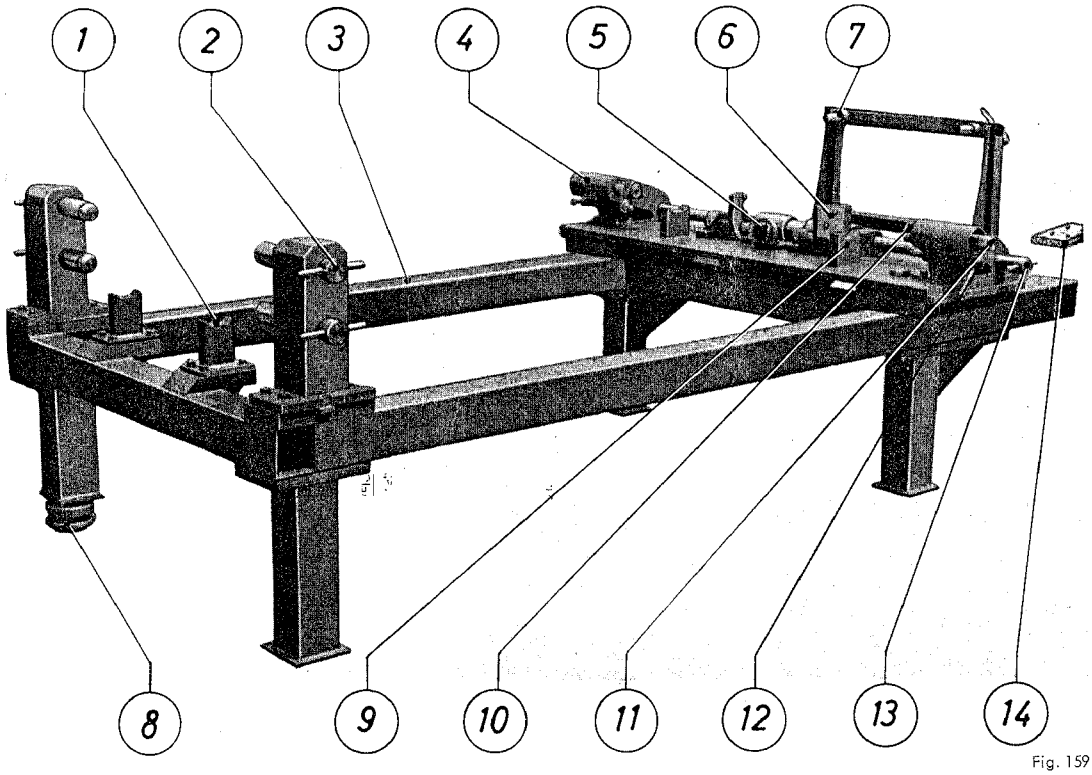

Fig. 159

	Required for 356	356 A	356 B* Type I	356 B* Type II
1. Support for front suspension tube, left and right	×	×	×	×
2. Measuring pin for front suspension tube, left and right upper and lower				
using markings for 356	×	○	○	○
using markings for 644	○	×	×	×
3. Chassis jig frame	×	×	×	×
4. Measuring pin bearing bracket for rear suspension tube	×	×	×	×
5. Centering device	○	○	×	○
6. Angle block for front gearbox suspension, left and right	○	×	○	×
7. Measuring pin for rear gearbox suspension, left and right	×	×	×	×
8. Levelling screw	×	×	×	×
9. Rear chassis support, left and right	×	×	×	×
10. Measuring pin for rear suspension tube, left and right	○	×	×	×
11. Shaft extension with 32 mm hex. head for item 10	○	×	×	×
12. Measuring pin for bumper mounting hole	×	○	○	○
13. Hand lever for operating item 6	○	×	×	×
14. Adapter plate	×	×	○	○

× = required
○ = not required

* Type 1: central transmission suspension
Type 2: dual transmission suspension

Measuring Chassis on Jig

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1. Remove all front and rear suspension members.
2. Place chassis on the jig so that the measuring pins are opposite the suspension tubes.
3. Insert the measuring pins in the suspension point which appears to be the least damaged.
4. Adjust the frame so that the connected points indicate zero on the calibrated marks.
5. Move the base of the measuring pins which do not fit until a fit or approximate fit is obtained.

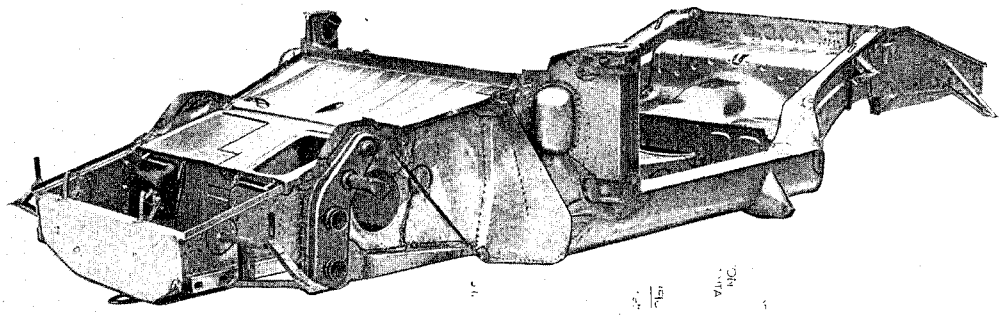


Fig. 160

Chassis, seen from left front

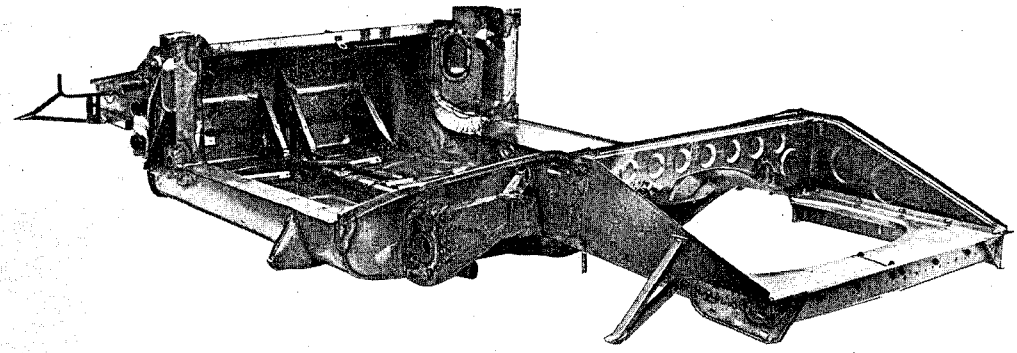


Fig. 161

Chassis, seen from left rear

6. Adjust measuring pins to zero.

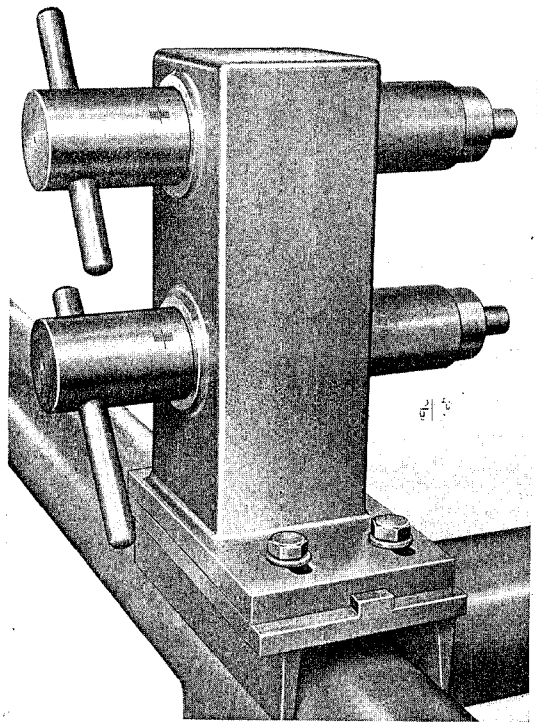


Fig. 162

7. The undamaged side of the chassis and thereby the centerline of the car can be centered latterally by setting the pins to zero.

8. The measuring pins on the damaged side will now show how great the deformation is and whether new sections are necessary or whether adjustments will suffice.

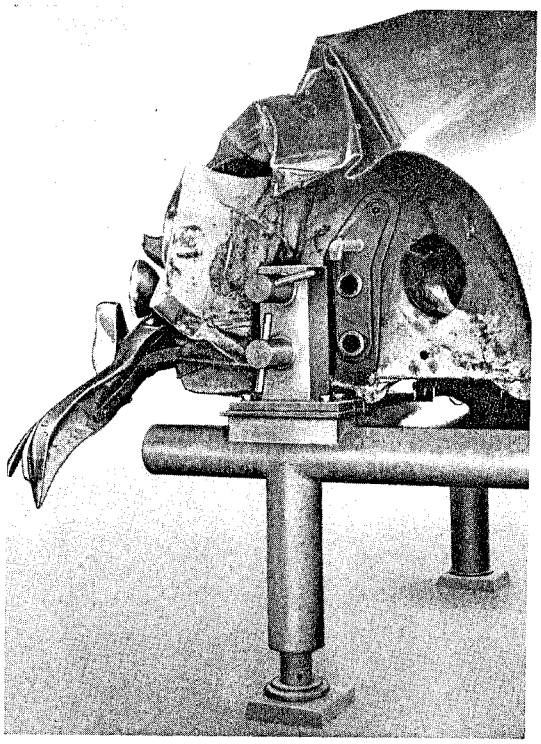


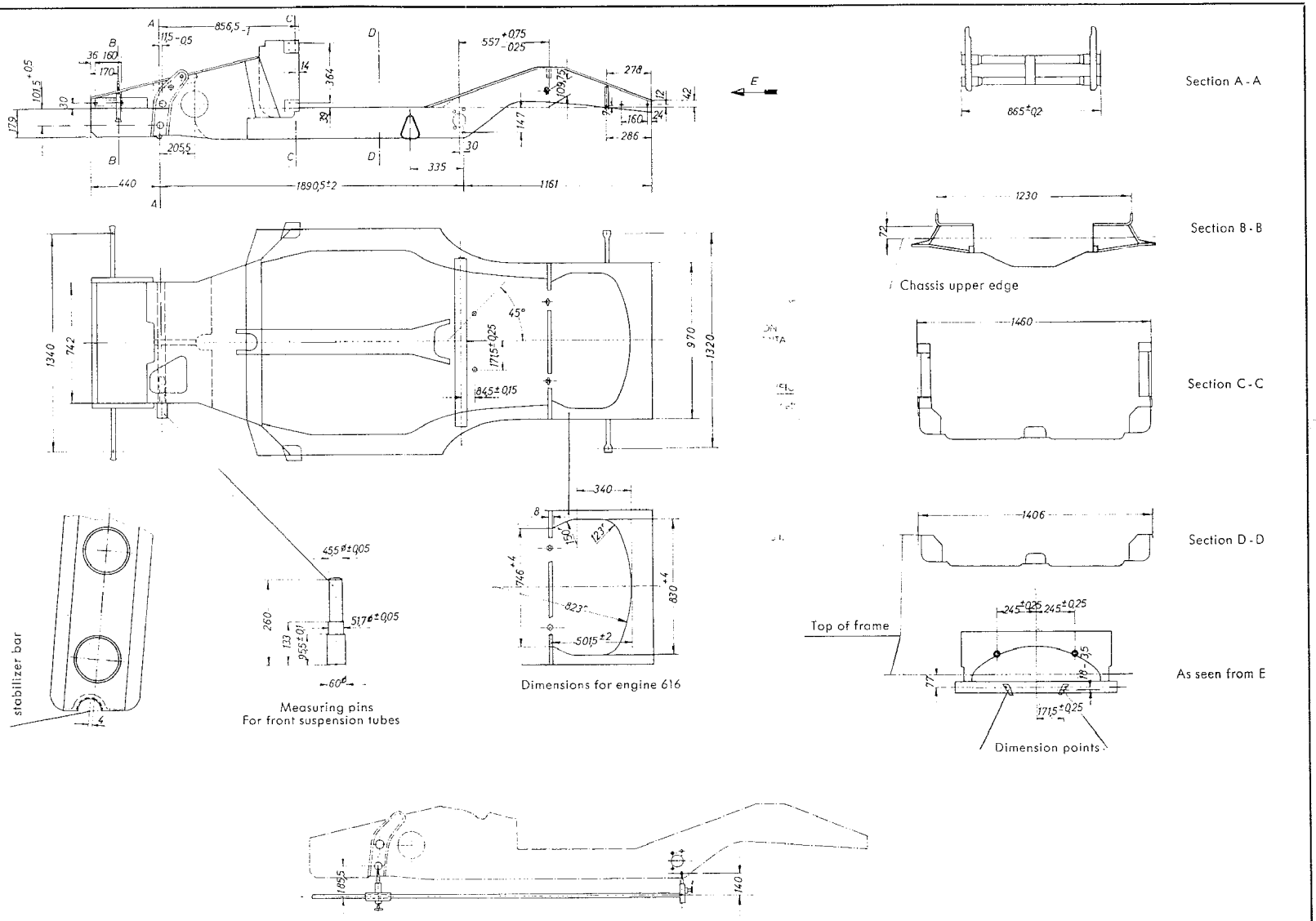
Fig. 163

Tolerances

32 B0

The drawing on page B 61 gives all necessary dimensions and tolerances in millimeters. Chassis measurements which are not within the tolerances but not greater than 4 mm may be corrected.

Beyond 4 mm new sections should be installed.



Chassis Dimensions

Dimensions in mm

Fig. 164

Damage to Chassis and Body

General

Since the body, frame and chassis are welded together into a self supporting unit construction, it is always possible that body damage can result in chassis distortion. A car which has been involved in a serious collision should be measured accurately at the chassis suspension points for distortion.

Straightening Front Axle Tubes

33 B0

To be performed only for distortions which lie within ± 4 mm of the required dimensions.

1. Cut the flange of the front torsion bar tubes free on both sides with a cutting torch.

2. Using a hydraulic press, adjust the position of the suspension members until the required dimension is obtained. The two central reinforcing brackets must be heated simultaneously so that the tubes can be moved without being bent.

3. Tack the flanges to the suspension tubes and flame weld in place, working evenly on all sides to avoid distortion. Readjust if necessary before the joints cool.

Note

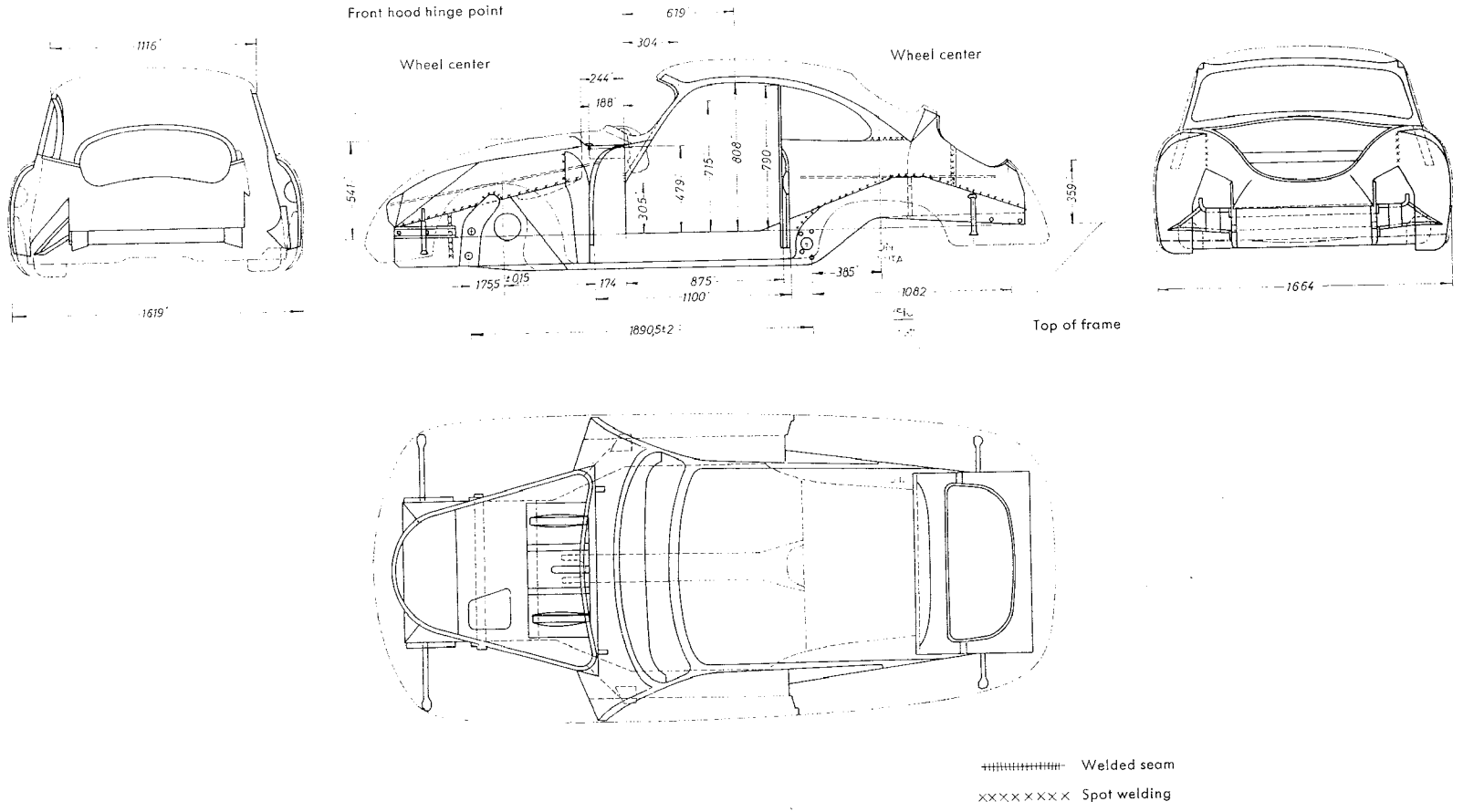
1. In cases where damage is small it may be possible to straighten the parts by heating the area in question and adjusting with a hydraulic press.

2. Besides specially designed hydraulic presses, car jacks having sufficient lift and a sturdy shaft can be used.

3. All welding, cutting and forming work should be done on a special working jig in order to protect the measuring jig from becoming inaccurate.

General

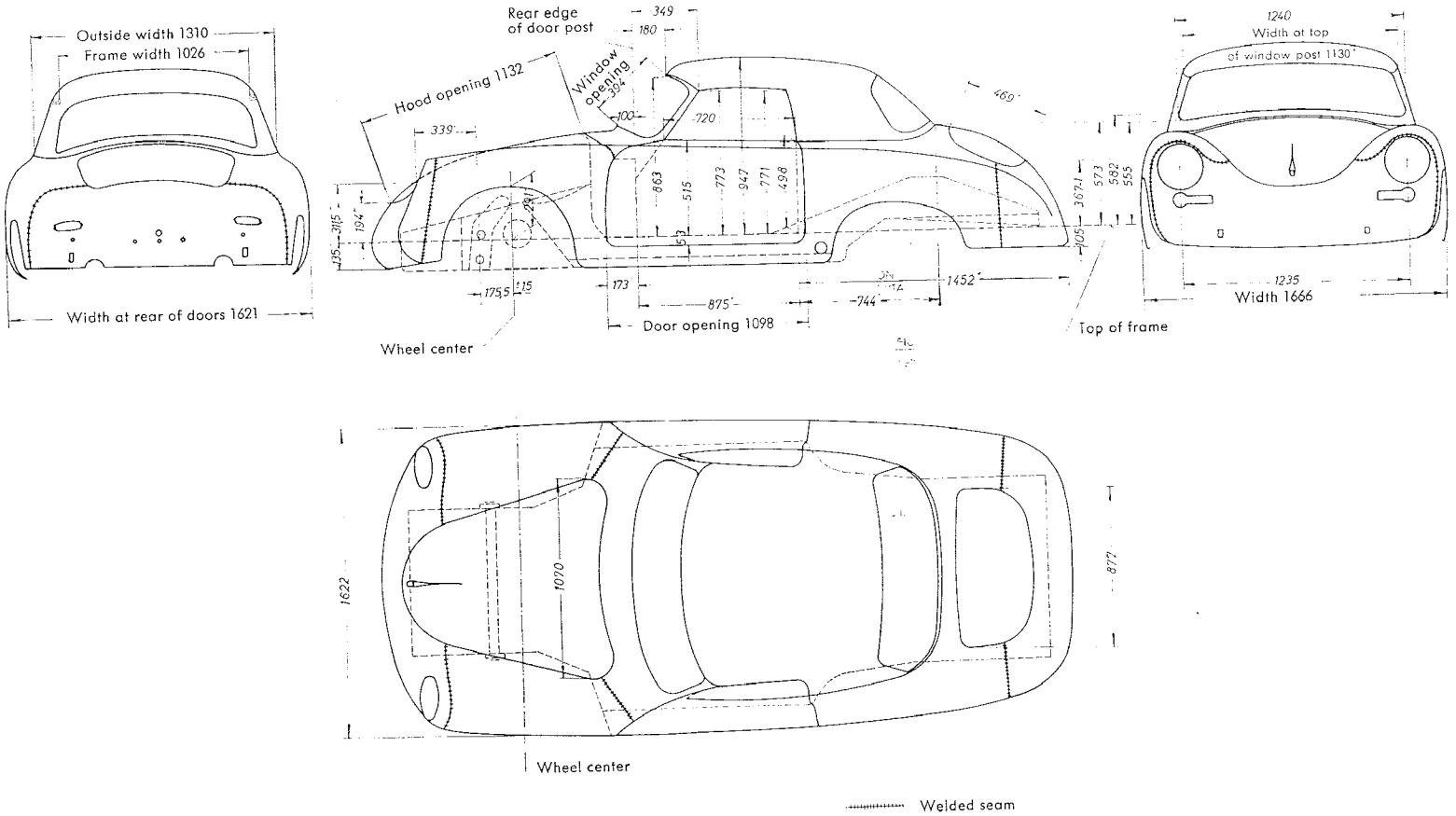
In the event that new chassis or body parts are required, it is important that the parts are properly cut from the body in accordance with the size and shape of the replacement parts. For correct dimensions see the spare parts catalog sections five through nine. For additional dimensions and cutting lines, a series of drawings for the Coupe, Cabriolet/Hardtop and Roadster are shown on the following pages.



Body Work Dimensions for Interior of Coupe

Dimensions in mm

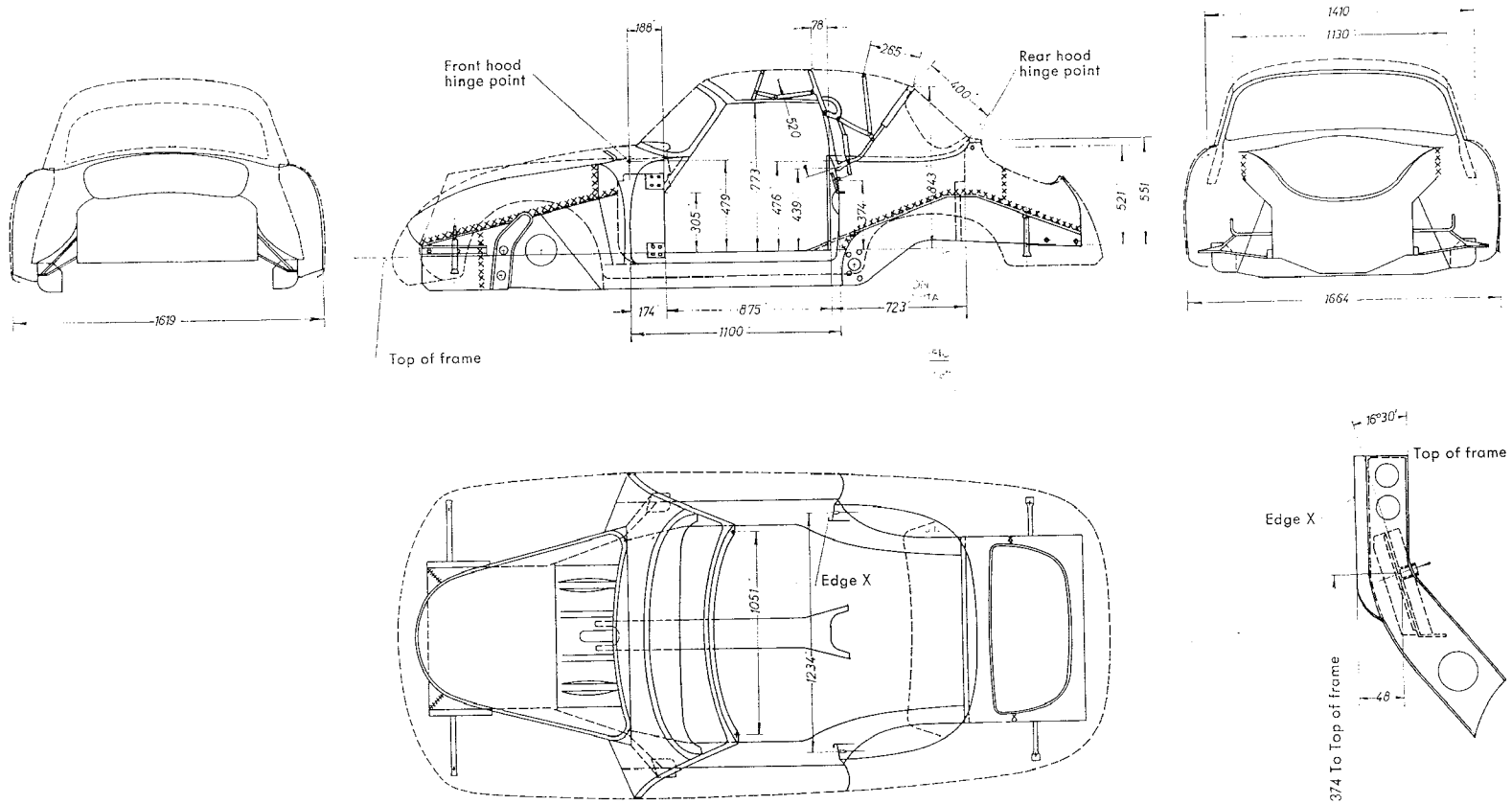
Fig. 166



Body Work Dimensions for Cabriolet/Hardtop

Dimensions in mm

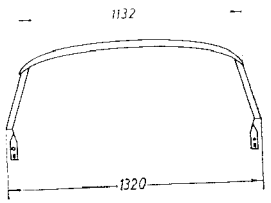
Fig. 167

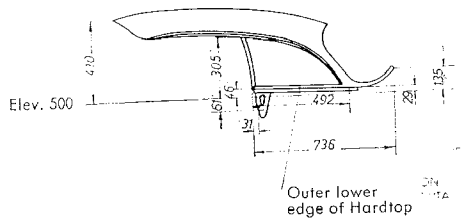


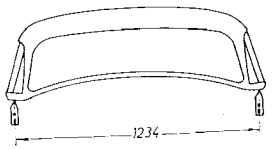
Body Work Dimensions for Interior of Cabriolet/Hardtop

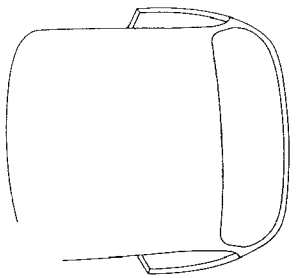
Dimensions in mm

Fig. 168





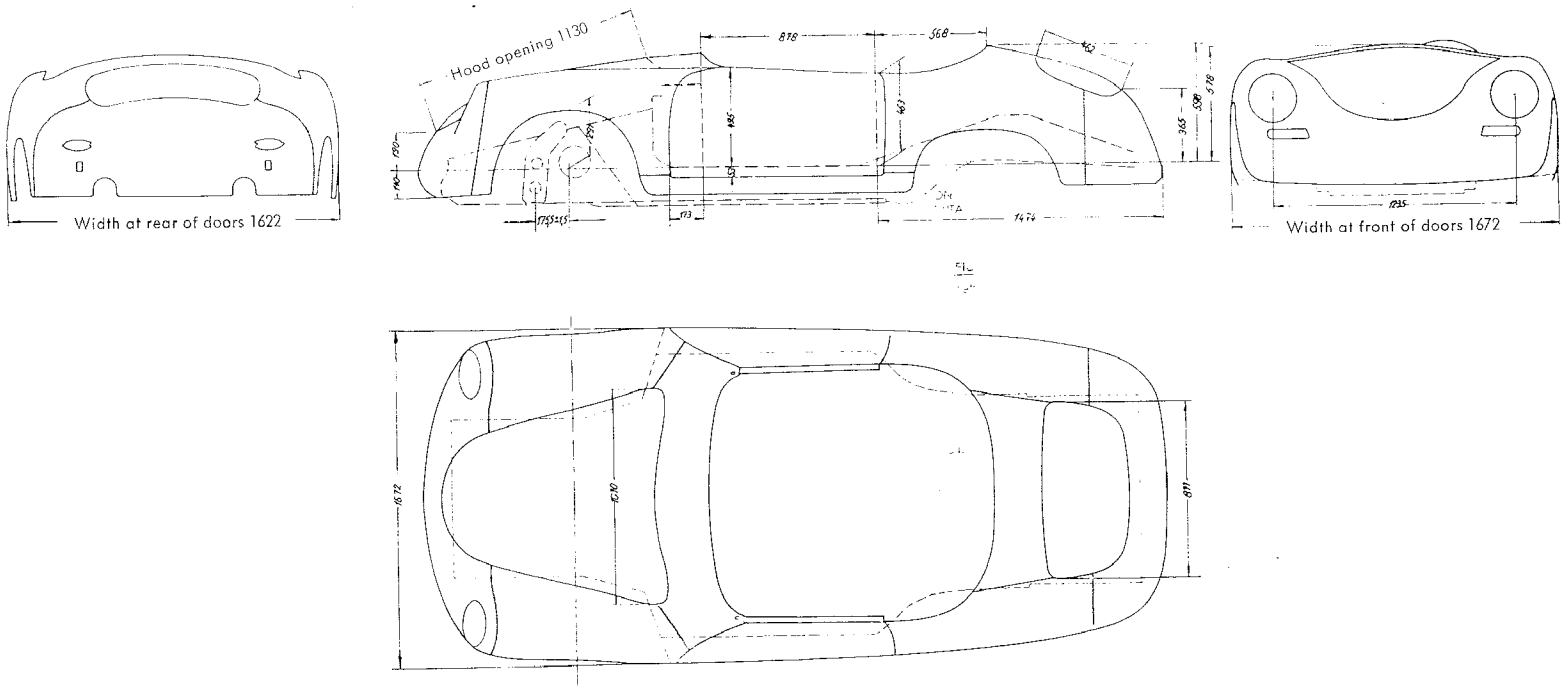




Dimensions of Hardtop

Dimensions in mm

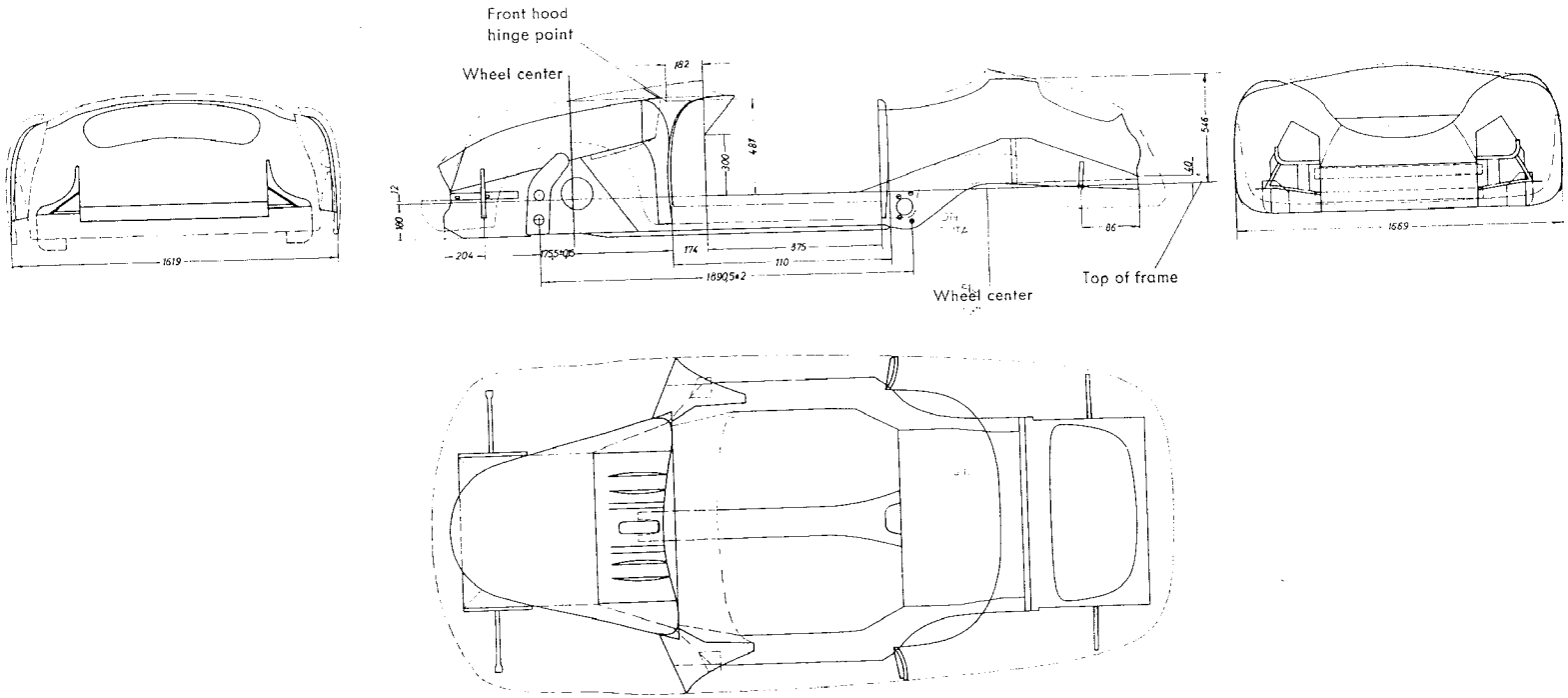
Fig. 169



Body Work Dimensions for Roadster

Dimensions in mm

Fig. 170



Body Work Dimensions for Interior of Roadster

Dimensions in mm

Fig. 171

Attaching New Chassis Members

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It is, of course, impossible to enumerate the separate operations that are required at the various stages of body and chassis repair work. The repairs must be carried out by an experienced body repair man who is familiar with the problems involved in such an operation and can foresee the work required to meet with various situations. For this reason, only general instructions are given which serve to pass on to the body shop those things which have been learned through experience.

When removing damaged frame sections, particular care should be taken to leave sufficient material to furnish a surface to which the new section may be lap welded. This method is required to give a strong weld using a gas welding set. See pages 80 to 82 for location of weld seams.

Attaching Interior Panels

35 B0

Damage to the interior panels is usually not apparent from the outside. In the event of body damage, the interior panels must be checked to determine the extent of distrotion and which panels have been affected. The interior panels are of great importance and must be brought to the original shape so that the body will retain its rigidity. The interior panels form the connection between chassis and body and contribute largely to the stability of the car.

The interior sections are installed similarly to the chassis members. New sections are flame welded with lapped seams inside and out. The remaining edges are spot welded to the chassis and are waterproofed with calking compound.

Attaching Body Panels

36 B0

When replacing or straightening front or rear body sections, the hood in question is used as the pattern for the shape of the hood opening. The slots for the bumper braces in the body panels can be used as alignment points by mounting a 30 × 5 × approx. 300 mm ($^3/_{16}$ × $1^3/_{16}$ × 12 in.) iron bar in each bumper brace socket. Particular care should be taken to see that the headlight openings are horizontal and equidistant from the center of the car. The gap between the hood and body, when closed, should be adjusted to 3 mm ($^1/_8$ in.) by filing or building up with lead.

When replacing roof sections, the top should be cut off carefully at the pillars and door posts so that they will give a starting point for mounting the new roof. It is important that an overlap is retained between the undamaged portion and new parts.

To build up the body and interior panels to the roof frame, wooden or metal templates in the shape of the doors and windows should be used to assist in the correct reconstruction of the upper body. The door posts must also be braced if they are not secure in place. All welded seams on the body skin are smoothed over with lead after being hammered smooth.