

**Frame**

# Main Group F

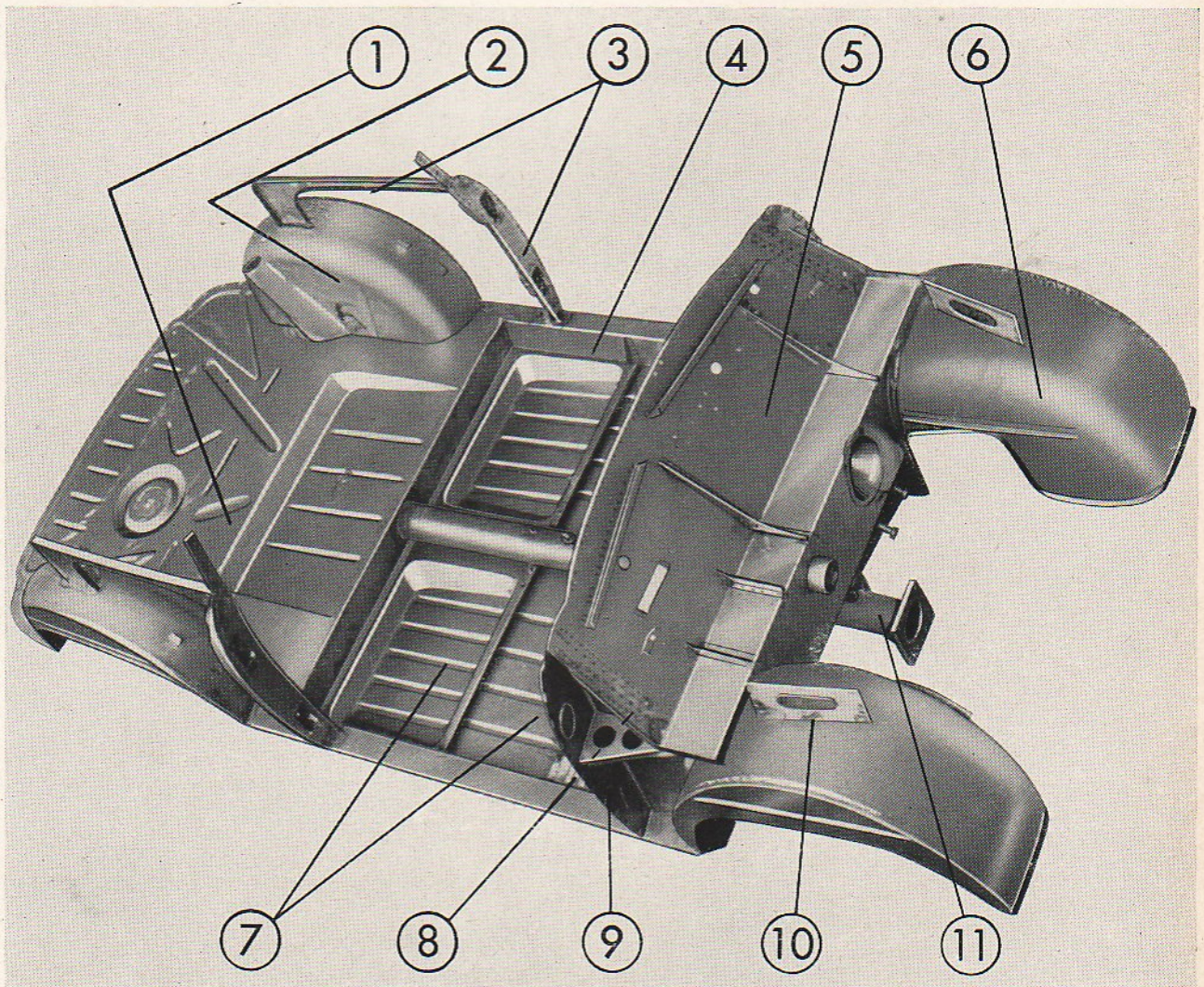
FRAME

- |                      |                     |
|----------------------|---------------------|
| <b>1 – Sub-Group</b> | Description         |
| <b>2 – Sub-Group</b> | Dimensions          |
| <b>3 – Sub-Group</b> | Repair work         |
| <b>4 – Sub-Group</b> | Foot control levers |
| <b>5 – Sub-Group</b> | Additional remarks  |

## General

The central tube with the floor plates, cross and side members forms the frame of all shell-constructed LLOYD vehicles, LP/LS 600, ALEXANDER and ALEXANDER TS.

The fire wall is spot-welded to the floor plates as well as to the front wheel wells, the rear wheel wells to the rear floor plates and the door pillars with the arm rests. (closed construction). The flanged end of the central tube takes up the front axle carrier with engine, transmission steering and steering knuckles. The rear wheel suspension (swinging or trailing axle) is taking up by the rear end of the central tube with side members and rear floor plate. (Fig. 1 - 1/1)



1 - Rear floor plate

2 - Rear wheel well

3 - Door hinge pillar with arm rest

4 - Side member

5 - Fire wall

6 - Front wheel well

7 - Center floor plate

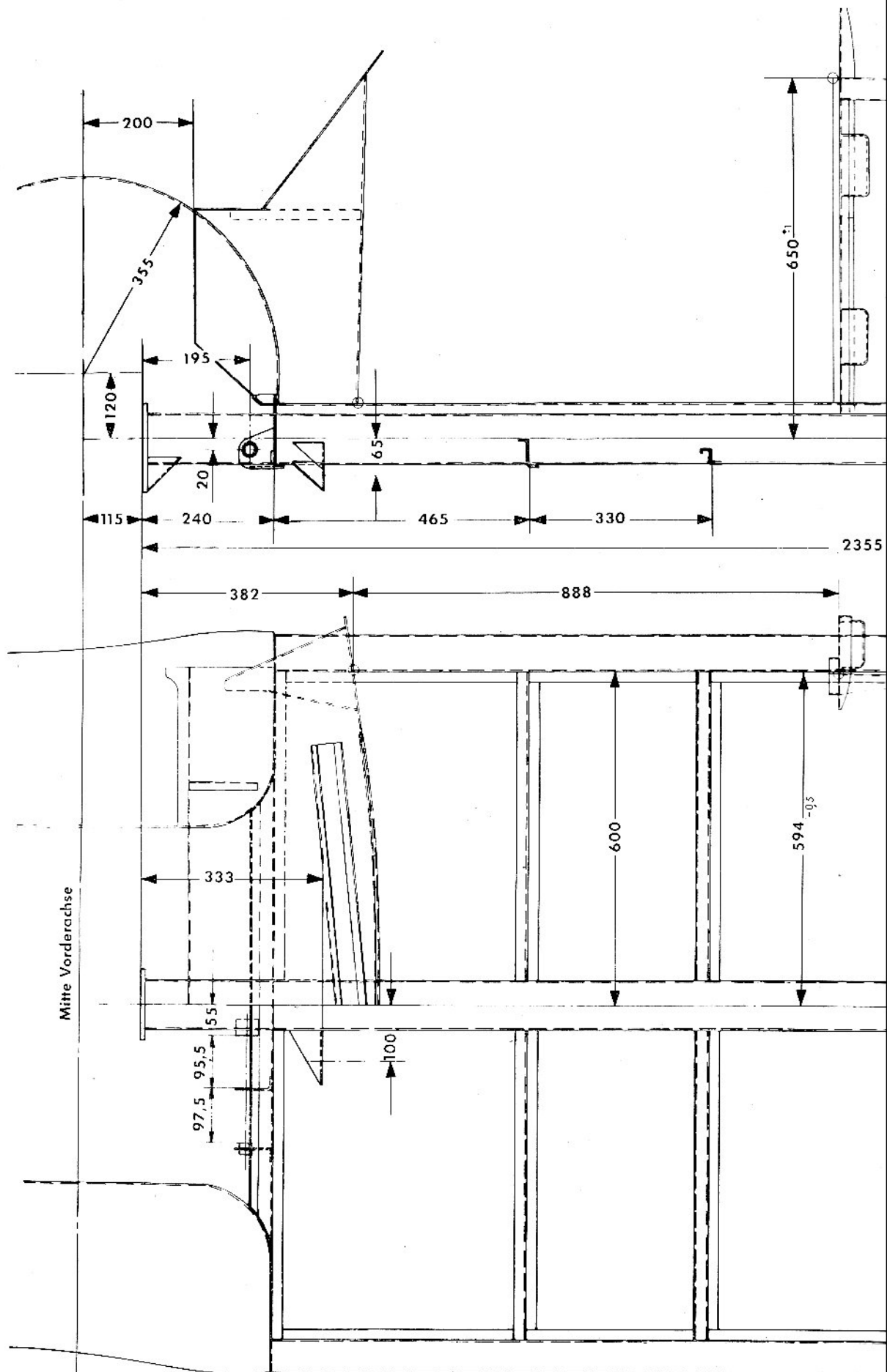
8 - Front floor plate

9 - Door lock pillar

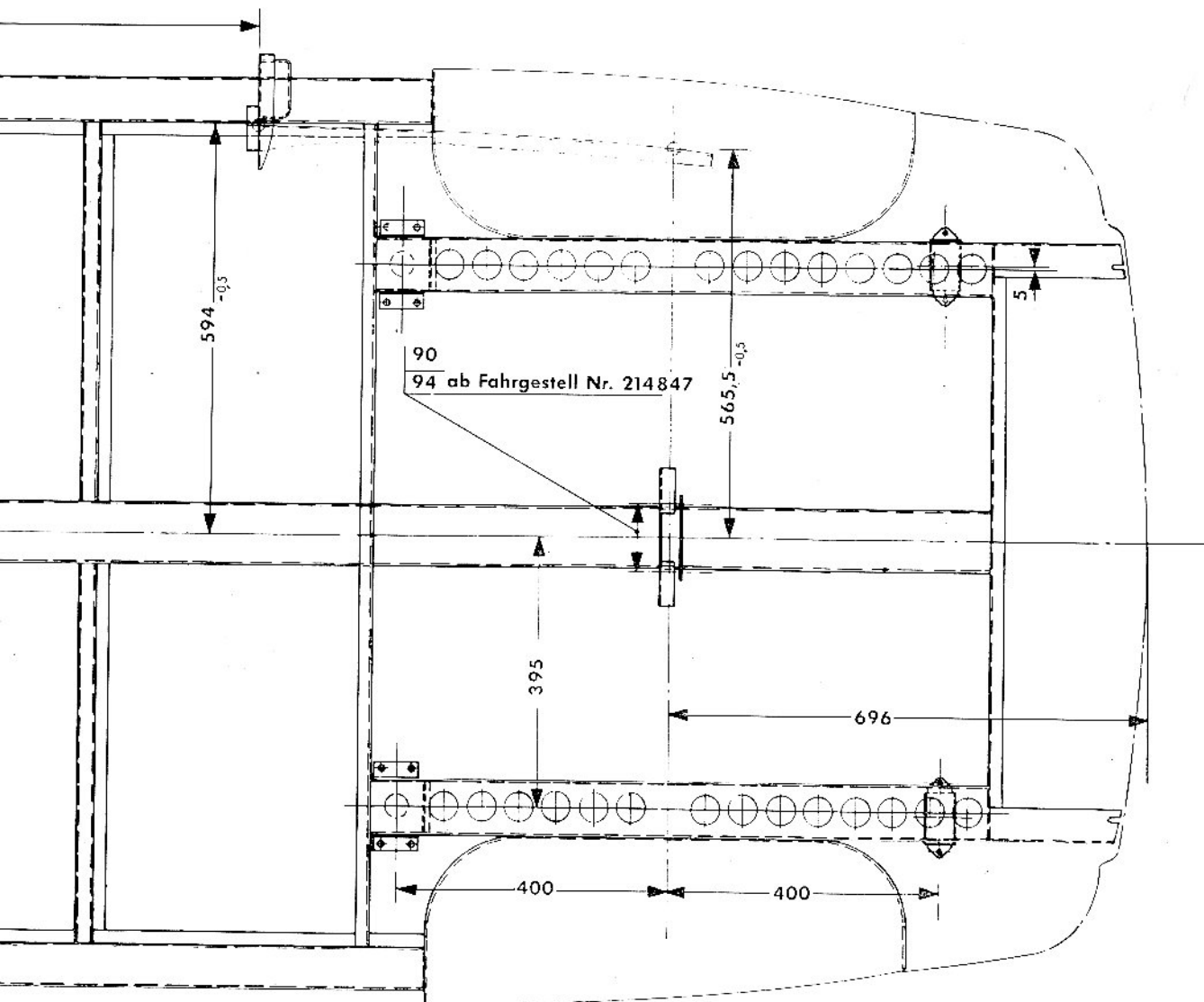
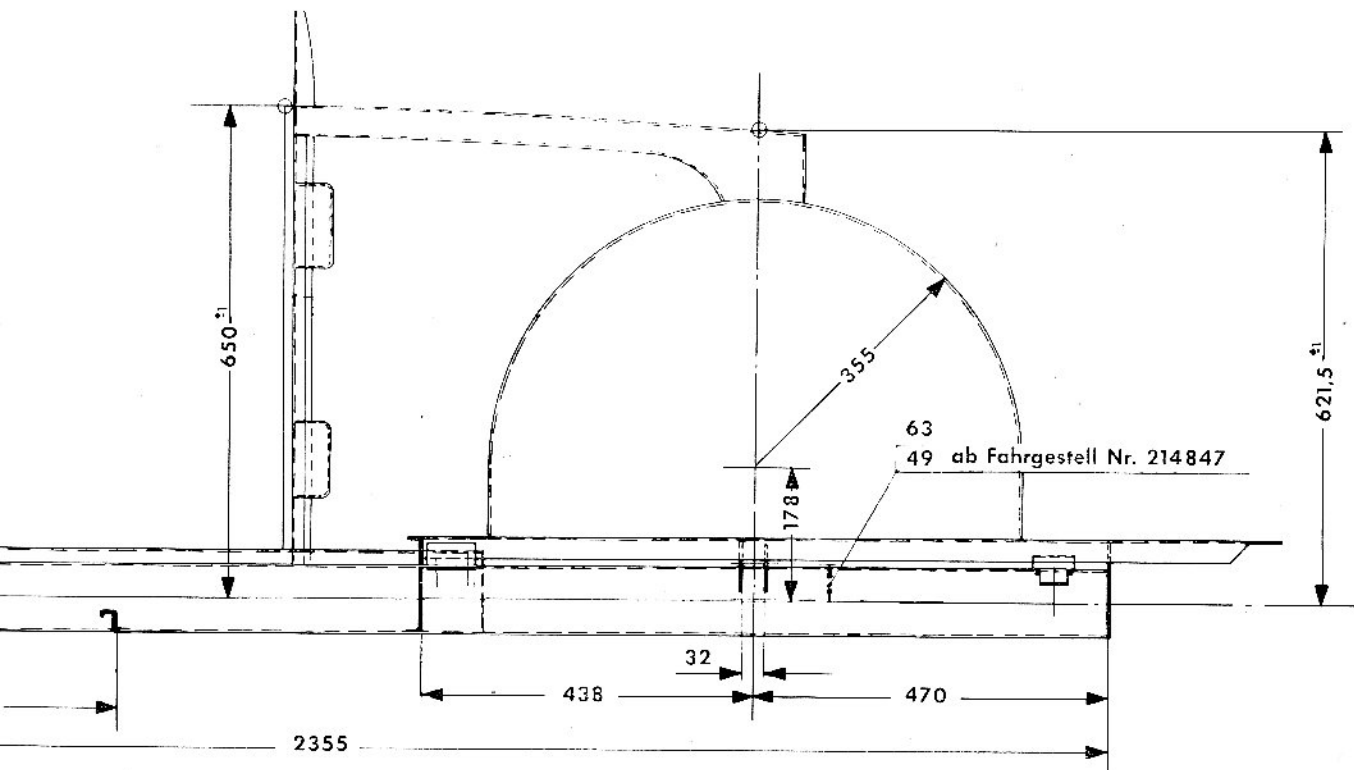
10 - Support bracket

11 - Central tube, front with flange

**Frame dimensions of LP/LS 600  
and Alexander up to Chassis  
No. 6-352 555**

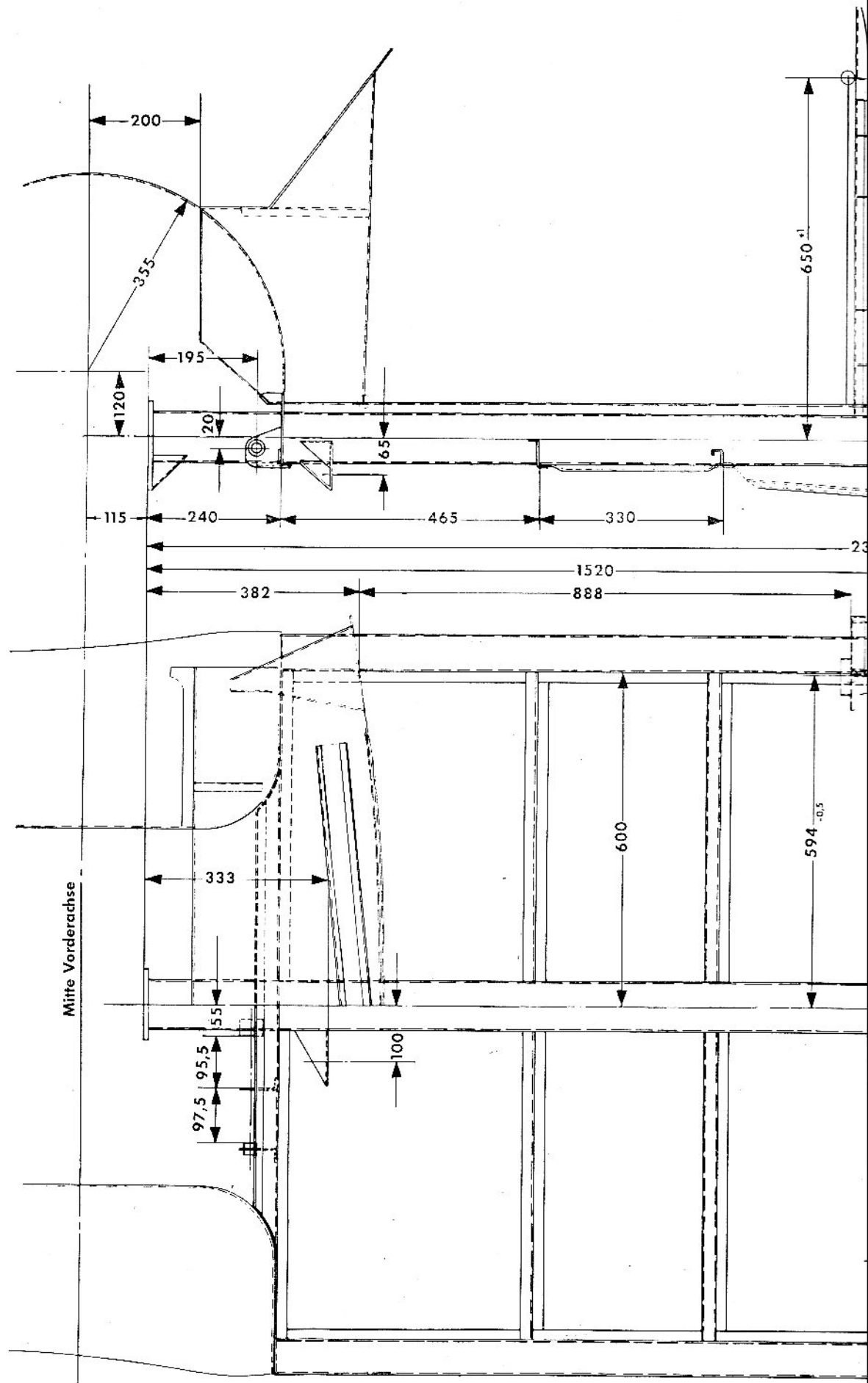


Dimensions given in mm: Mitte Vorderachse = Center front axle  
 Ab Fahrgestell-Nr. 214 847 = From Chassis No. 214 847 on



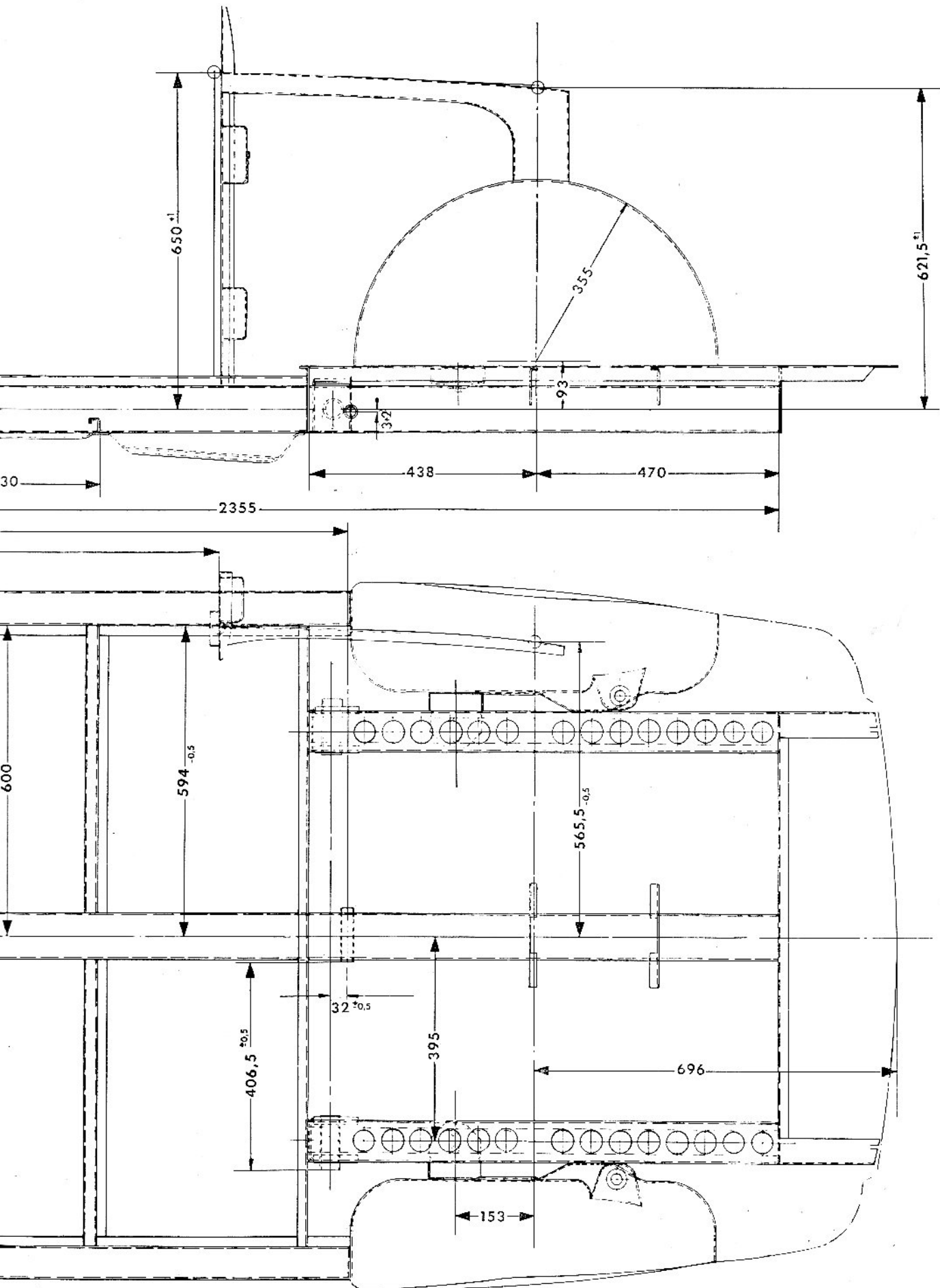
center front axle  
on Chassis No. 214847 on

**Frame dimensions  
of LP/LS 600 Alexander  
and Alexander TS from Chassis  
No. 6-352 556 on**



Mitte Vorderachse

Mitte Vorderachse = Center front axle



### General

All parts of the frame which are welded to the central tube like front end of central tube, fire wall, wheel wells, side members and floor plates are obtainable as components and can therefore be replaced if required. In case of excessive damage to the frame requiring extensive repair work the frame should be disassembled. Inspect the stripped frame and compare with the given dimensions.

It is up to the experienced mechanic to decide whether it is necessary to replace defective parts or whether to replace the complete frame. The fitting of a new frame takes less time and is advisable therefore provided that repair costs are lower.

Smaller repairs as for instance replacing of the front end of the central tube, wheel wells or side members can be carried out without having to strip the frame.

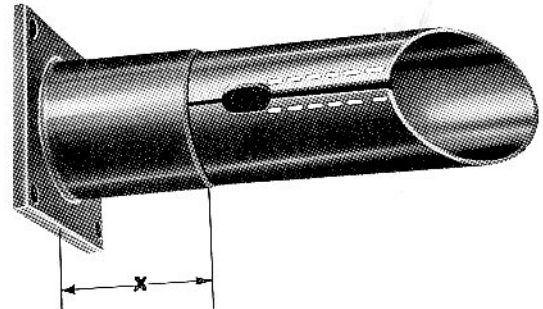
On the following pages the removal and assembly of a few parts is described on a stripped frame. The illustrations in particular show the welding seams which have to be opened. They further show measurements which are important when fitting new parts.

### Replacing Front of Central Tube

1. Remove front axle carrier complete with engine, transmission springs and wheels. (see also main group FA, subgroup front axle carrier, page 2-1 and 2-2)
2. Compare dimensions of frame with those given in this group.
3. Take the measure X from the new central tube front part (Part No. 429 000-0) (see Fig. 3-1/1)

#### Compare Chassis Number!

**Note:** If the central tube is damaged behind the front cross member due to an accident causing a deviation of the rear wheel track to the center line of the vehicle a repair should not be tried. Such defects necessitate the replacement of the complete frame.

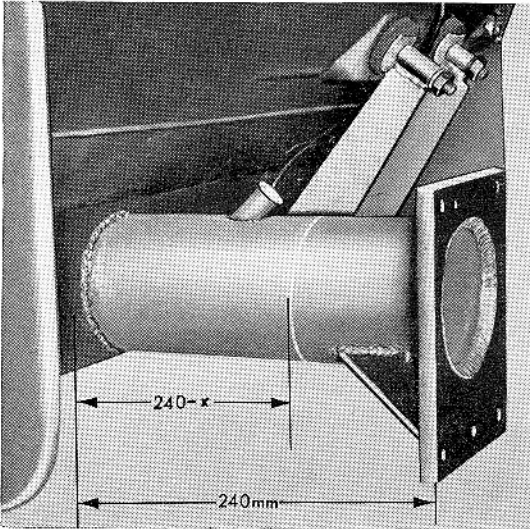


3-1/1

X = approx. 100 mm = approx. 4"

Repair work

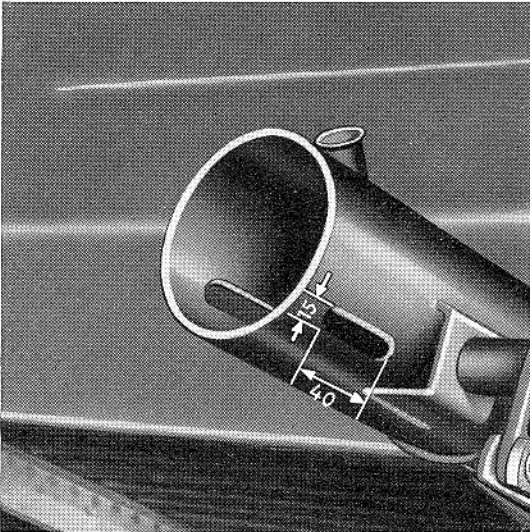
- The distance between flange and front cross member should be 240 mm = approx. 2,5". 240 mm less X (240 mm - 100 mm = 140 mm) should be the distance from the cross member to the cutting line. Exactly at this point the central tube is to be sawn off. (Fig. 3 - 2/1)



3 - 2/1

Do not saw off more as with a tubular thickness of 3 mm a fillet-seam does not become necessary.

- Cut a slotted hole on both sides of the central tube (Fig. 3 - 2/2)



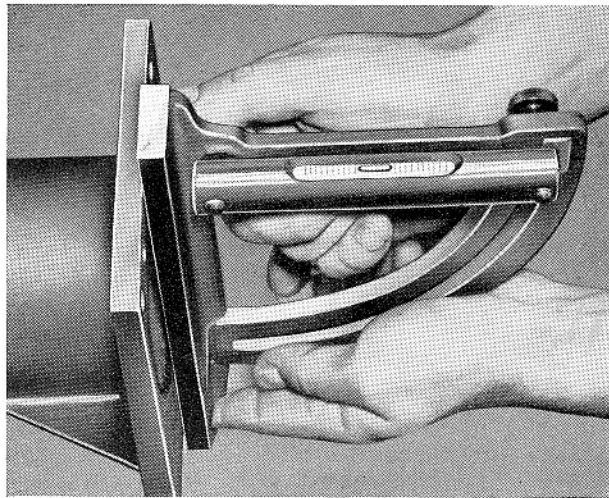
3 - 2/2

The slotted holes need not exactly be alike. By means of these holes the collar of the new part is welded with the central tube.

- Fit the new front part. The opening for the brake cable guide must be re-done. (see also Fig. 3 - 1/1, dotted line)

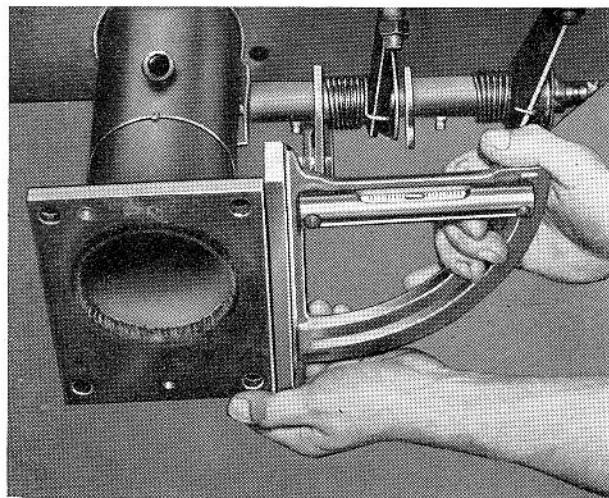
- Insert new front part, level out, spot-weld and level again. The flange should be horizontal and the mating surface of the flange right-angled to the central tube. It is recommended to carry out this work aided by a suitable spirit level. Proceed as follows:

- Place the frame in a horizontal position. The distance between the cross member and the floor should be the same on both sides. Also lift the frame until the central tube lies exactly horizontally.
- Check the right angle position of the flange to the central tube by means of the spirit level (Fig. 3 - 2/3)



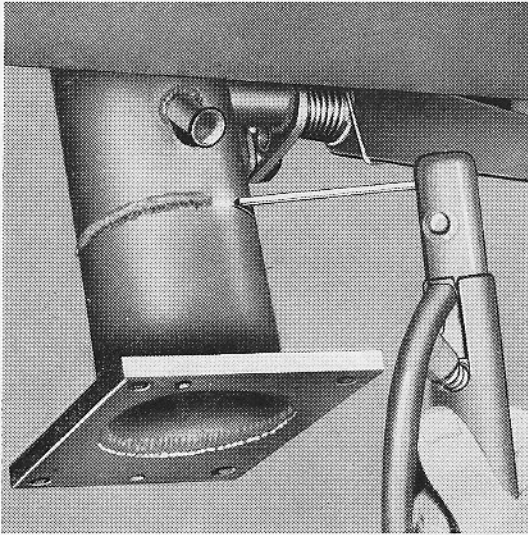
3 - 2/3

- It is advisable to place the spirit level against the side of the flange as this part is better finished than the upper horizontal one. (Fig. 3 - 2/4)



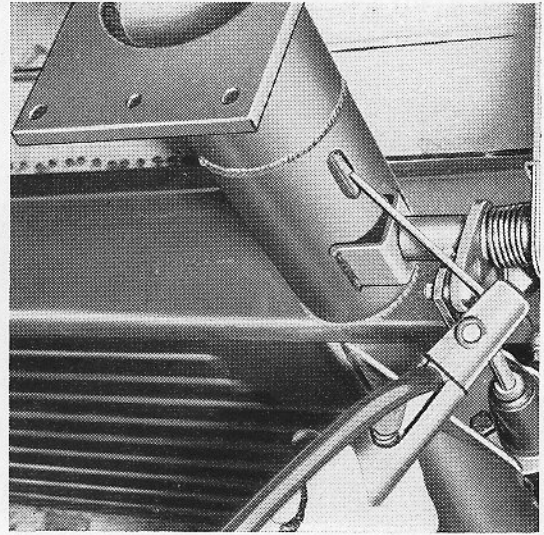
3 - 2/4

8. Connect the front part to the central tube by arc welding. In order to avoid distortion of the part caused by unavoidable tension weld in four sections.



3 - 3/1

9. Weld the collar of the front part through the slotted holes to the central tube (Fig. 3 - 3/2)

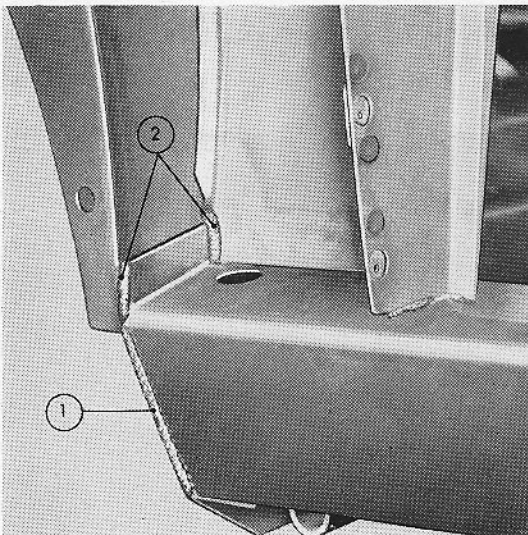


3 - 3/2

10. Re-assemble front axle carrier unit.

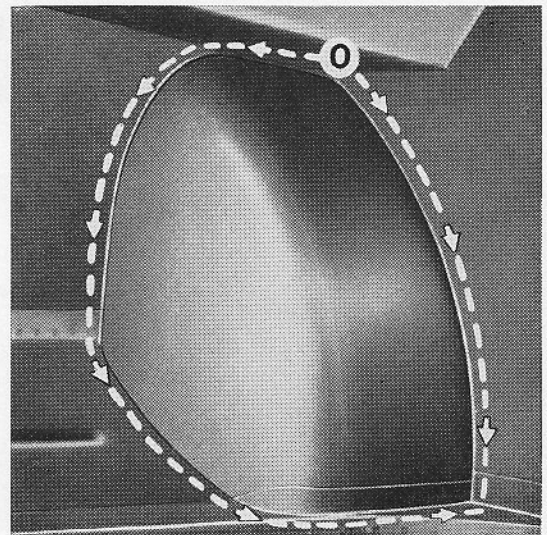
### Replacing of a Front Wheel Well

1. Cut welding seam of wheel well to side member. Well seam 1 can be opened by means of a grinding wheel. The angle bracket 2 of the side member can be separated by means of a chisel (Fig. 3 - 3/3)



3 - 3/3

2. Open spot welding between wheel well and fire wall using a flat chisel, beginning at O cutting down on left and right side (Fig. 3 - 3/4)

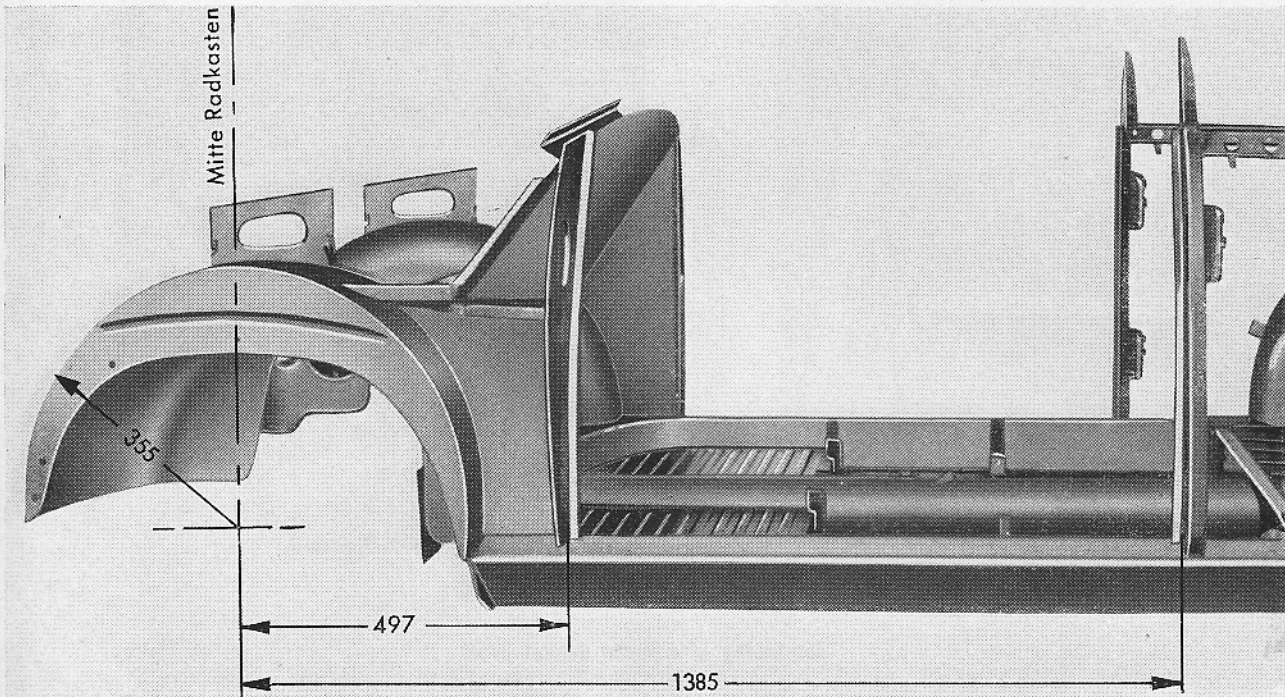


3 - 3/4

3. Straighten out and smoothen facing area of wheel well.

## Repair work

4. Fit the new wheel well with screw clamps. Check whether wheel well fits side member perfectly.
5. Mark center of wheel well, measuring the distance from there to door hinge pillar. Adjust if necessary. (Fig. 3 - 4/1)

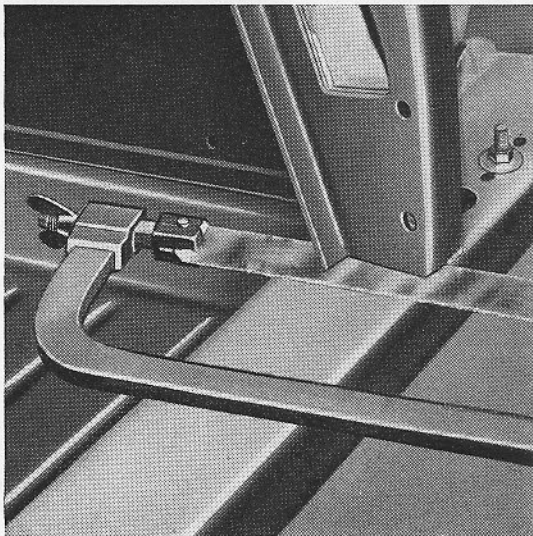


3 - 4/1

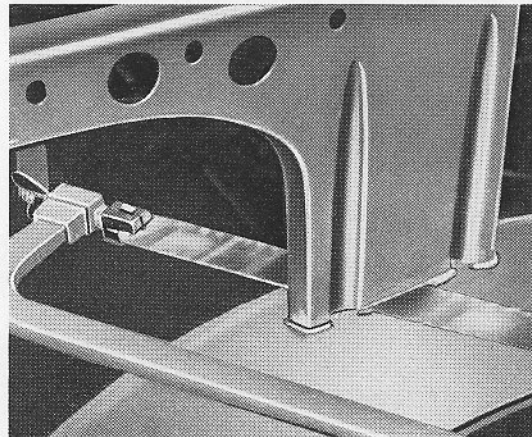
6. Spot weld wheel well in a few places, recheck and finish welding.

### Replacing of Door Hinge Pillar with Arm Rest

1. Cut welding seam of door hinge pillar to side member by use of a hack saw. (Fig. 3 - 4/2)
2. Disconnect arm rest above the rear wheel well (Fig. 3 - 4/3)



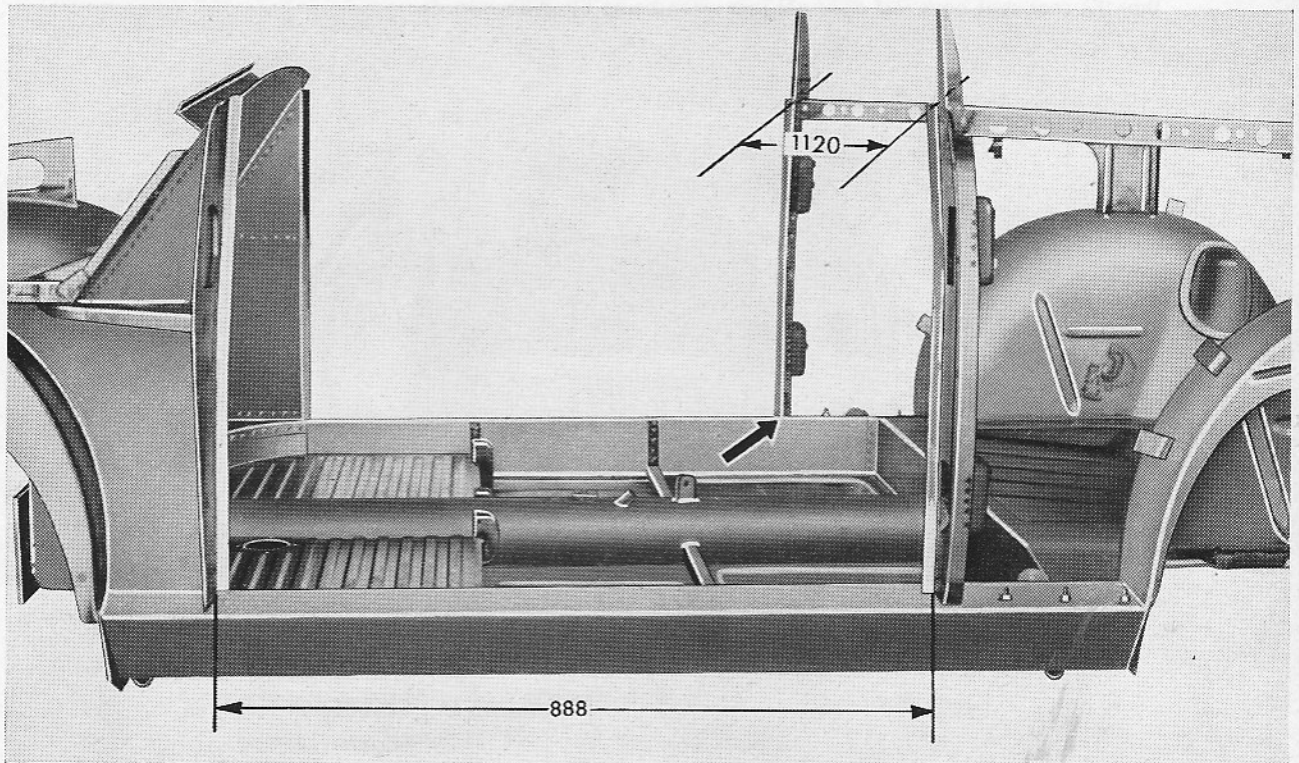
3 - 4/2



3 - 4/3

3. Straighten out and smoothen mating surfaces with a grinding wheel.

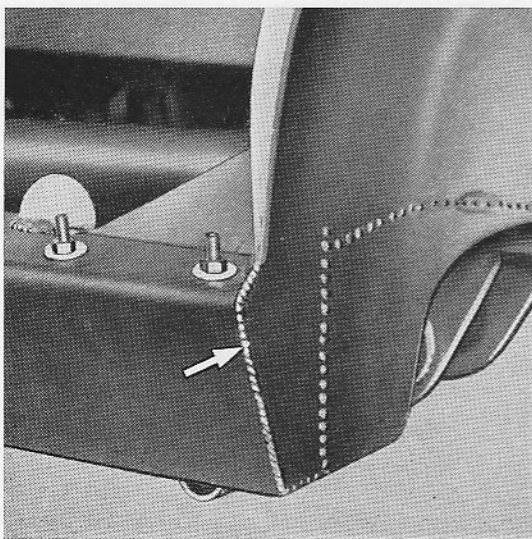
4. Fit new door hinge pillar with arm rest in accordance with the given measurements, secure by spot welding, re-check and finish welding. (Fig. 3 - 5/1)



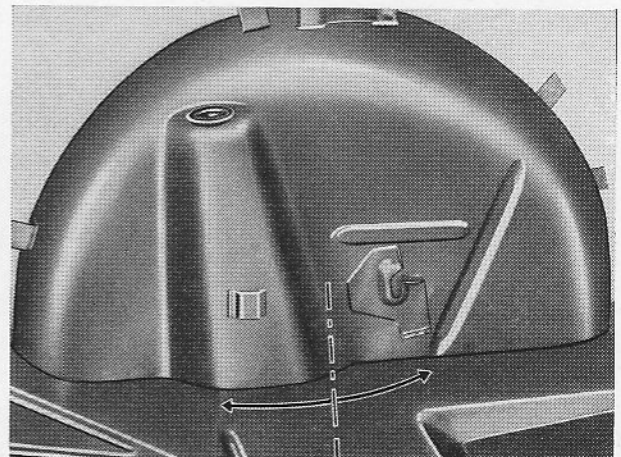
3 - 5/1

#### Replacing Rear Wheel Well

1. Saw off arm rest above rear wheel well. (see also Fig. 3 - 4/2)
2. Open welding seam between wheel well and side member. Welding seam can be filed off or grinded off by use of a grinding wheel. (Fig. 3 - 5/2)
3. Disconnect wheel well from floor plate using a flat chisel. Start from the center continuing to the left and right. (Fig. 3 - 5/3)



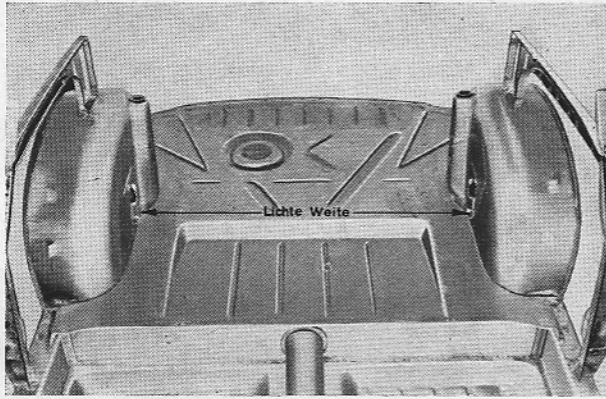
3 - 5/2



3 - 5/3

## Repair work

4. Straighten out and smoothen mating surfaces of wheel well at the floor plate and of side member.
5. Fit new wheel well with screw clamps, level out, check for the correct distance between the wheel wells in order that the rear seat back rest does not jam when being tilted backwards.



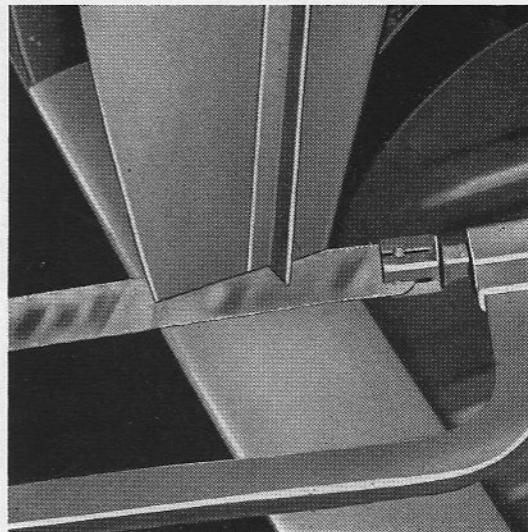
3 - 6/1

Distance between wheel wells: up to chasis No. 6-352 555  
= 870 mm  
from chasis No. 6-352 556 on  
= 940 mm.

6. Spot-weld wheel well, check distance and finish welding.

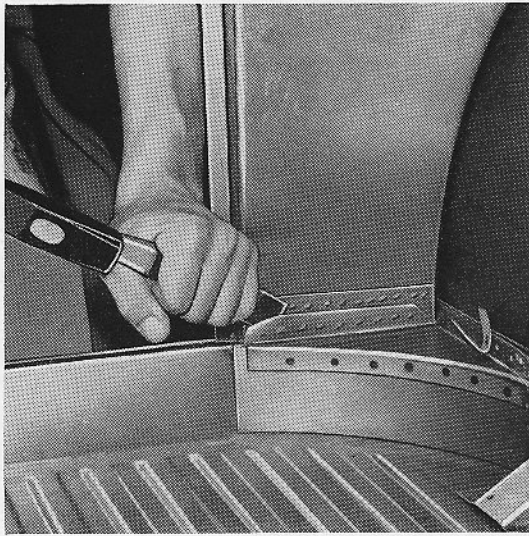
### Replacing Side Member

1. Disconnect cables of brake, indicator and tail light and withdraw wiring through side member to the front.
2. Open welding seams of side member and wheel well. (see also Fig. 3 - 3/3 and Fig. 3 - 5/2)
3. Saw off door pillar above side member as shown on Fig. 3 - 4/2.
4. Saw off front door pillar above side member (Fig. 3 - 6/2)



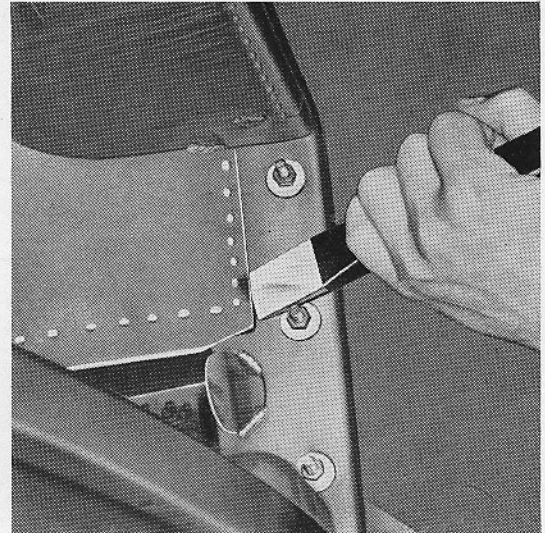
3 - 6/2

5. Open welding seams between front wheel well and side member by use of a chisel. (Fig. 3 - 7/1)



3 - 7/1

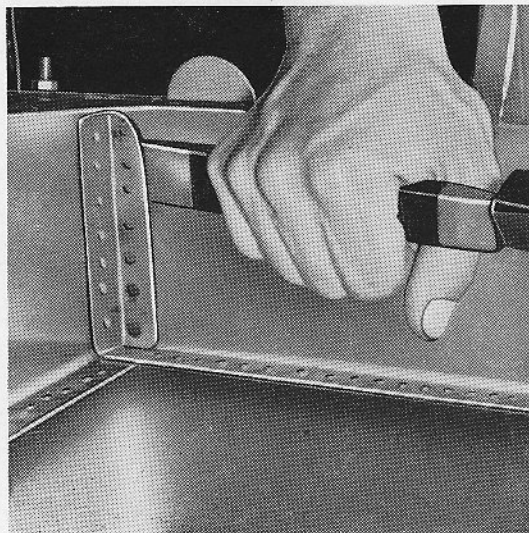
8. Separate rear floor plate from side member and open welding seam of side member and wheel well. (Fig. 3 - 7/3)



3 - 7/3

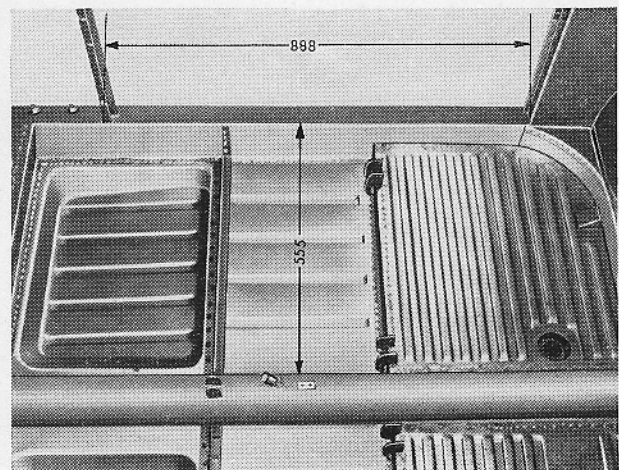
6. Separate floor plates from side member. The welding seam of the front plate can be cut from the top whilst the seam of the center plate must be opened from below.

7. Chisel off angle plates between side members and rear cross member. (Fig. 3 - 7/2)



3 - 7/2

9. Straighten out and smoothen mating surfaces.
10. Fit new side member with screw clamp and level out. Check correct distance between front and rear door pillars, also distance between central tube and side member. (Fig. 3 - 7/4)



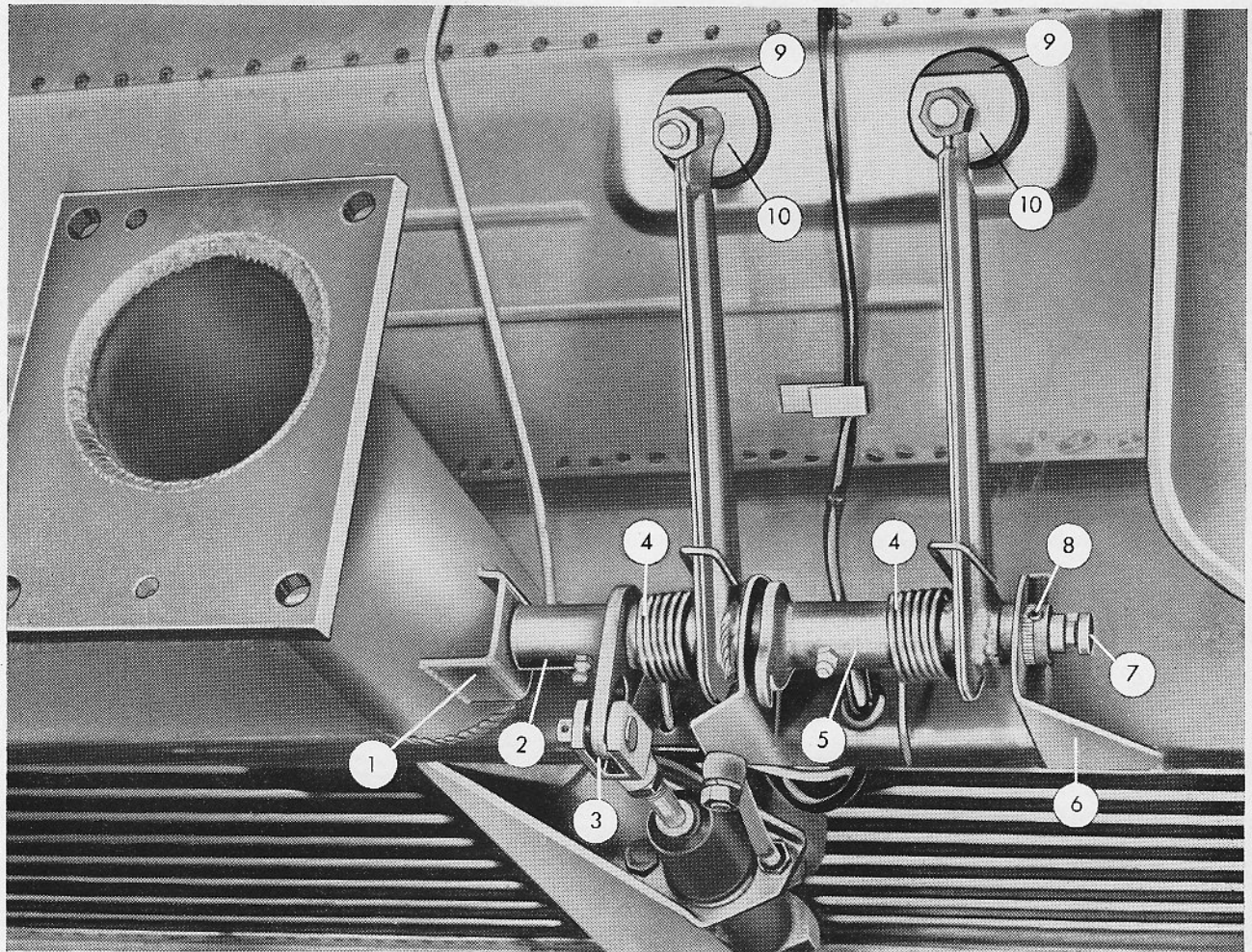
3 - 7/4

11. Spot weld, re-check distances and finish with welding.

## Pedal Shaft with Brake and Clutch Pedals

## General

Two support brackets hold the pedal shaft with brake and clutch pedal below the fire wall at the front door plate. On the left hand side the pedal shaft is secured by a cotter pin at the support bracket safeguarding against axial shifting. Two bushings each serve as bearings for the brake and clutch pedal. Foam rubber sealing rings cover the passages in the fire wall with the pedals in resting position. Each pedal is equipped with a return spring bringing the pedal back into home position after use.

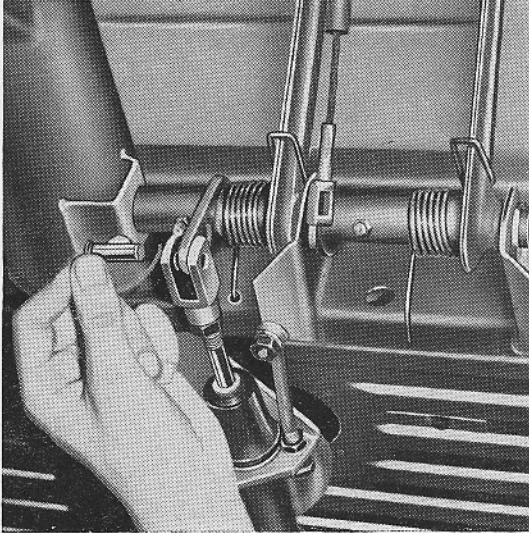


- |  |                          |
|--|--------------------------|
| 1 – Support bracket right                              | 6 – Support bracket left |
| 2 – Brake pedal  | 7 – Pedal shaft          |
| 3 – Forkhead with plunger rod to brake master cylinder | 8 – Cotter pin 5 x 24    |
| 4 – Return spring                                      | 9 – Foam rubber sealing  |
| 5 – Clutch pedal                                       | 10 – Steel disc          |

## Removal, Inspection and Assembly of Pedal shaft with Clutch and Brake Pedals

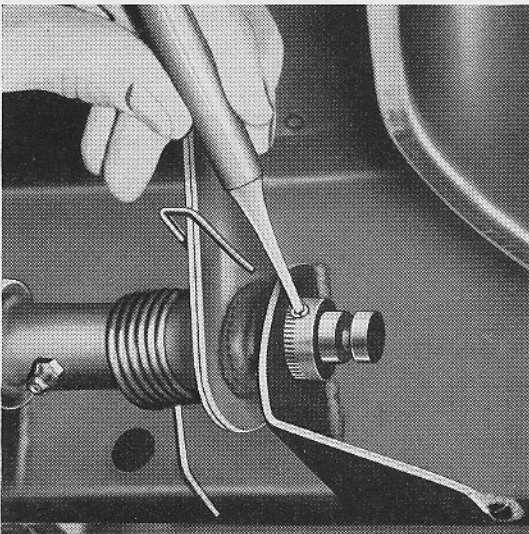
## Removal

1. Disconnect clutch cable. Remove pin from forkhead. (Fig. 4 - 2/1)
4. Extract pedal shaft from support brackets by means of auxiliary tool. (Fig. 4 - 2/3 and Fig. 4 - 2/4)

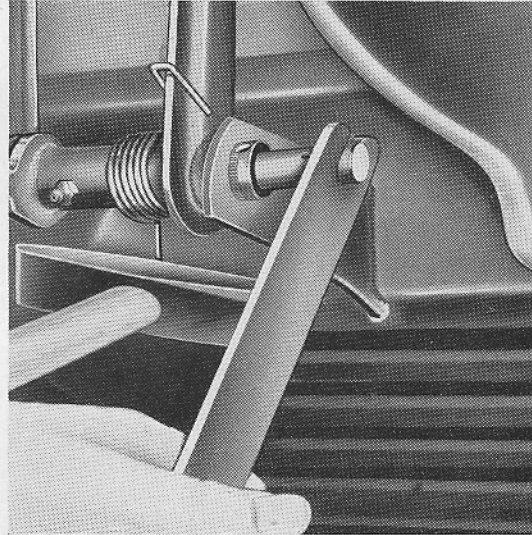


4 - 2/1

2. Open hex nuts SW 17 of clutch and brake pedal. Push upper part inside the car. Remove disk and rubber sealing.
3. Remove cotter pin with hammer and cylindrical drift from pedal shaft.

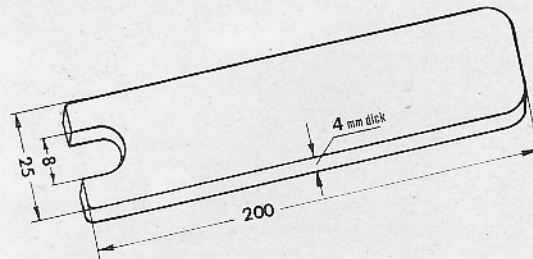


4 - 2/2



4 - 2/3

Auxiliary tool withdrawal of pedal shaft.  
(Fig. 4 - 2/4).



4 - 2/4

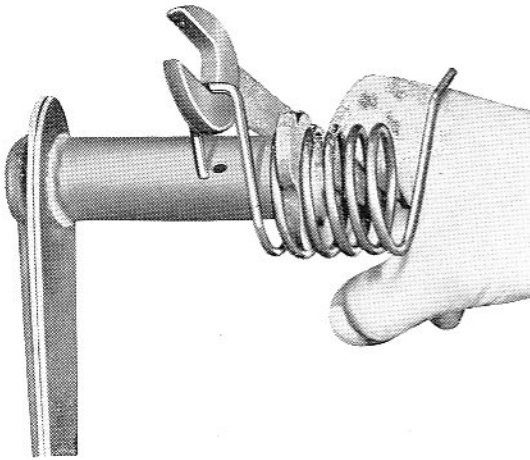
5. Remove brake and clutch pedals.

## Inspection and Assembly

1. Inspect bushes for wear. Remove defective bushes by means of a cylindrical drift of  $\phi$  15 mm. New bushes can be pressed in by use of a vice.

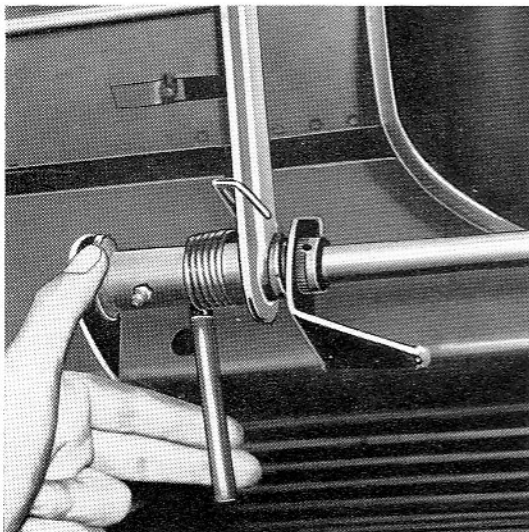
**Note:** These bushes are subject to little wear. In most cases removal of the pedal shaft is only necessary to repair damage caused through accident. New brake and clutch pedals are equipped with pressed-in bushes.

2. In case of weakened return springs replace by new ones. Hold the pedal by means of a vice and turn the spring onto the tube by use of a spanner (Fig. 4 - 3/1)



4 - 3/1

3. Insert pedal shaft through left support bracket, fit clutch pedal with tension spring and drive-in pedal shaft using a mallet.



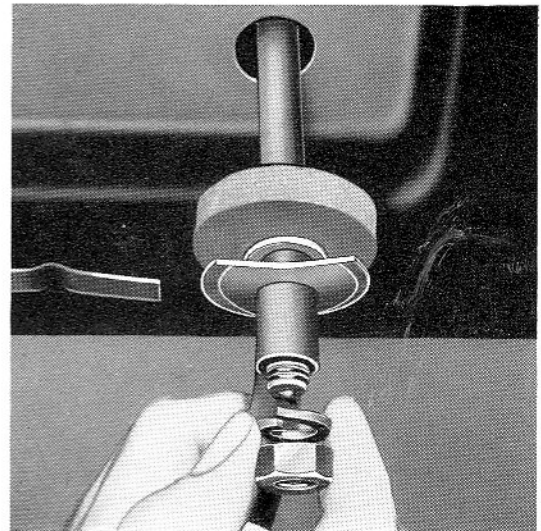
4 - 3/2

In order to facilitate the assembly of the pedal with tensioned spring it is advisable to use a tube as shown on Fig. 4 - 3/2.

Size of tube: 10 x 2,5 x 200 mm.

4. Insert the pedal shaft further until the brake pedal can be fitted on in the same way as the clutch pedal.
5. Secure pedal shaft by the cotter pin at the left hand support bracket.
6. Return upper parts clutch and brake pedals from the interior of the car, fit rubber sealings and discs, connect and secure with lock washers and hex nuts SW 17. (Fig. 4 - 3/3)

Fit the disc for the rubber sealing with section on top as shown on the figure or else the pedal is likely to jam.



4 - 3/3

7. Connect clutch cable, and forkhead of plunger rod. Check clutch and brake action, adjust as necessary.