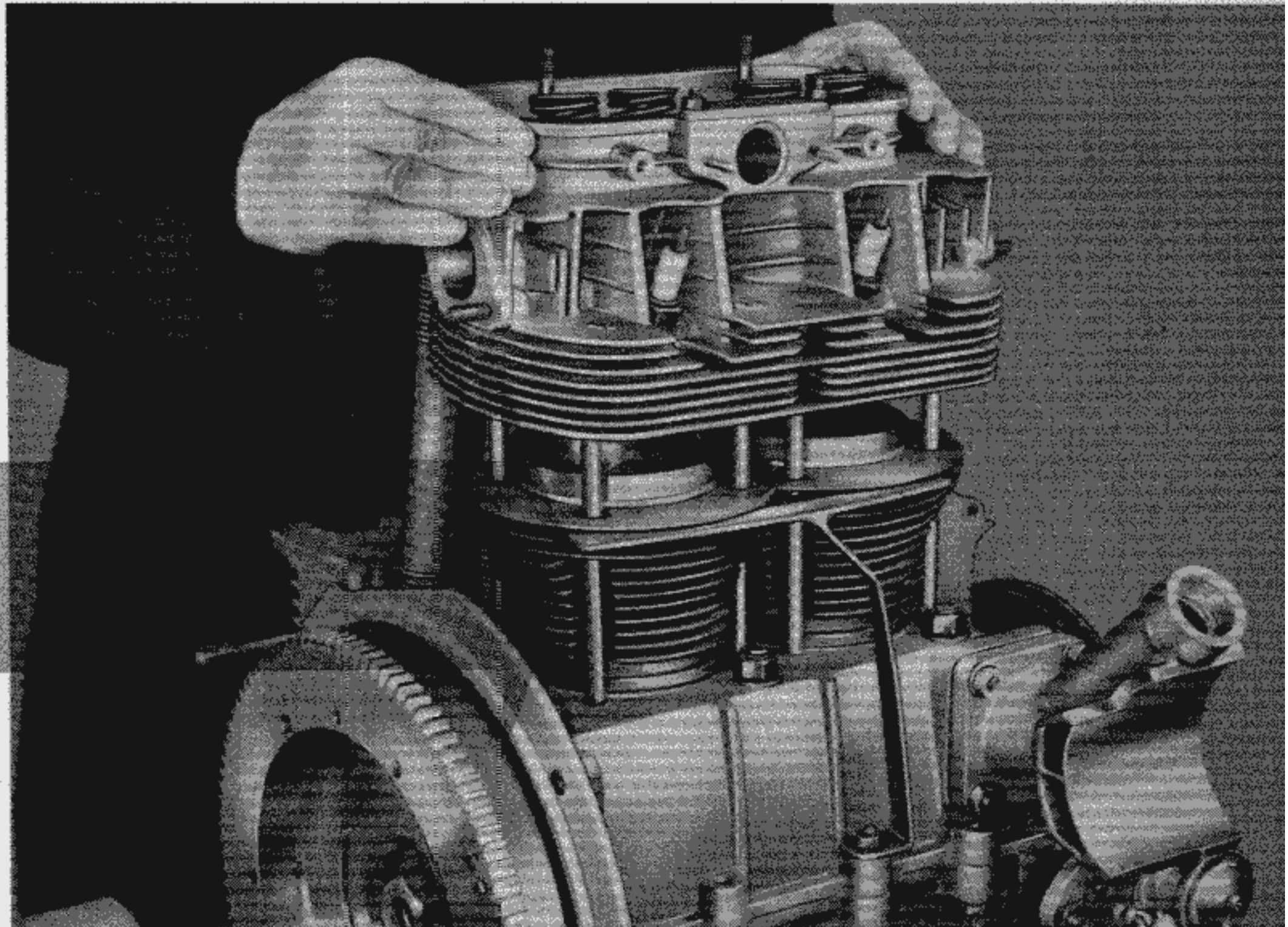
**Cylinder Retainer**

The cylinder retainer prevents the cylinders from slipping off when removing the cylinder heads. This is particularly important in the case of high mileage engines, otherwise the contact conditions between the piston rings and cylinder wall are almost certain to be altered when re-assembling. This in turn usually results in a substantial increase in oil consumption.

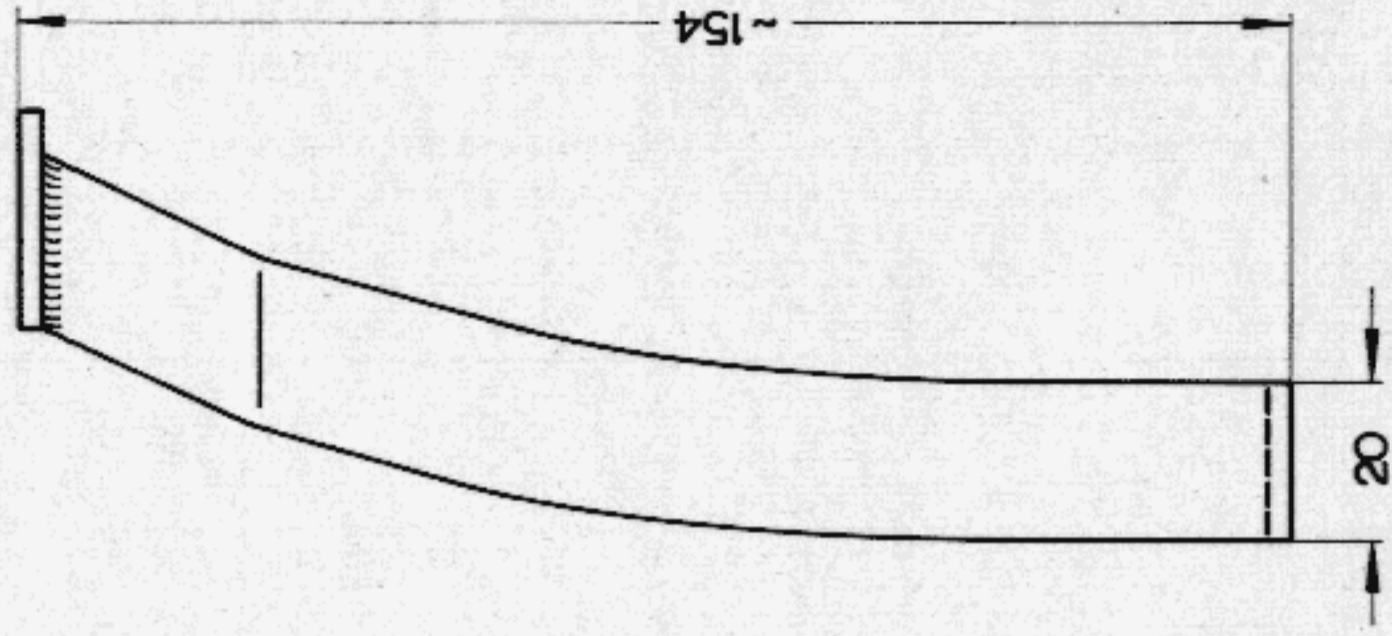
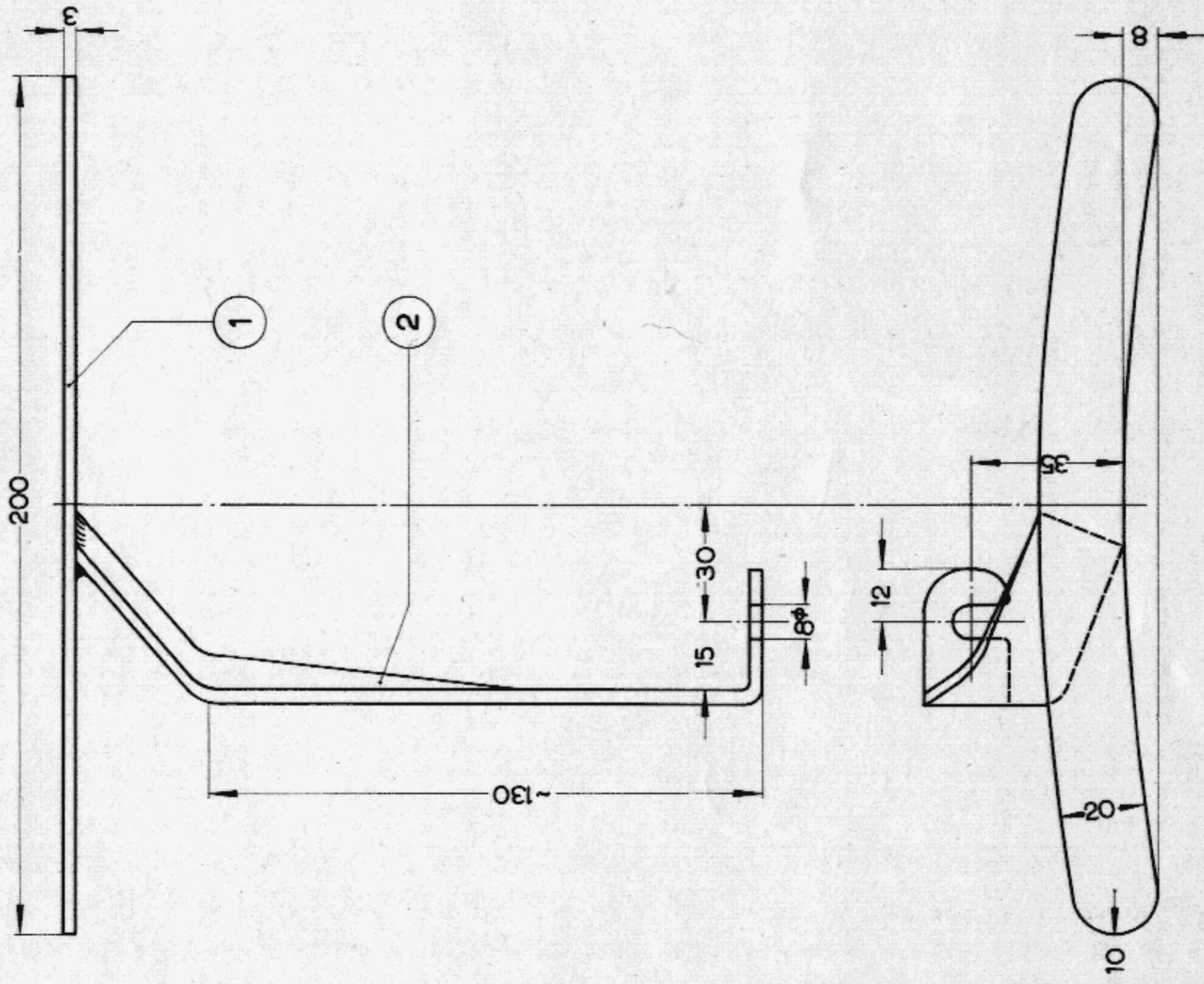




**Construction Details for VW 650/1**

- 1 – Cut strip to dimensions given in list of parts.
- 2 – Bend parts as shown in drawing and drill an 8.0 mm (0.315") elongate hole as shown.
- 3 – Weld parts together as shown in drawing.
- 4 – Paint retainer in prevailing colour of equipment and machines in the shop.





2	1	Bracket	20 x 3 x 210	MS strip	MS strip
1	1	Curved clamp	20 x 3 x 215	MS strip	MS strip
Part No		Description	Rough Size or	Remarks	
No Required			Standard Spec.		

**VOLKSWAGENWERK GMBH.**  
**WOLFSBURG**  
 Service Department

Scale  
1:1

Drawn:  
2-3-59 Sandau

Checked:  
3-3-59 Gramm

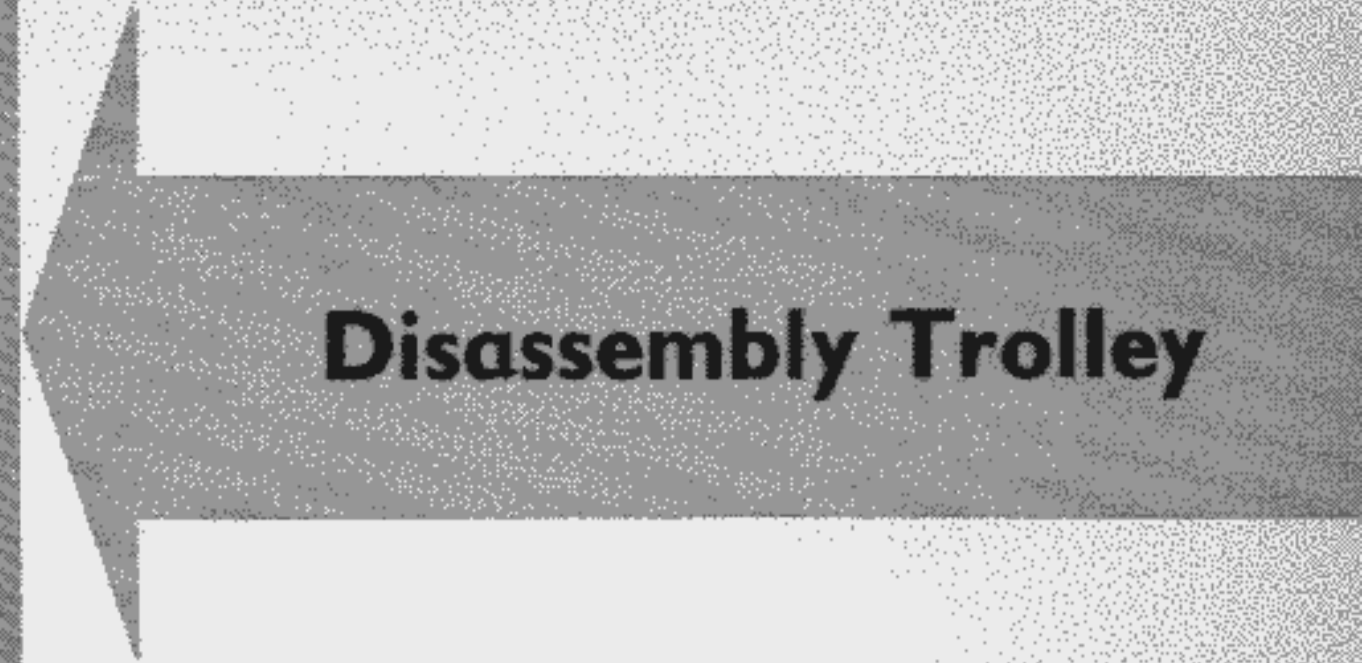
Replacement for:

Replaced by:

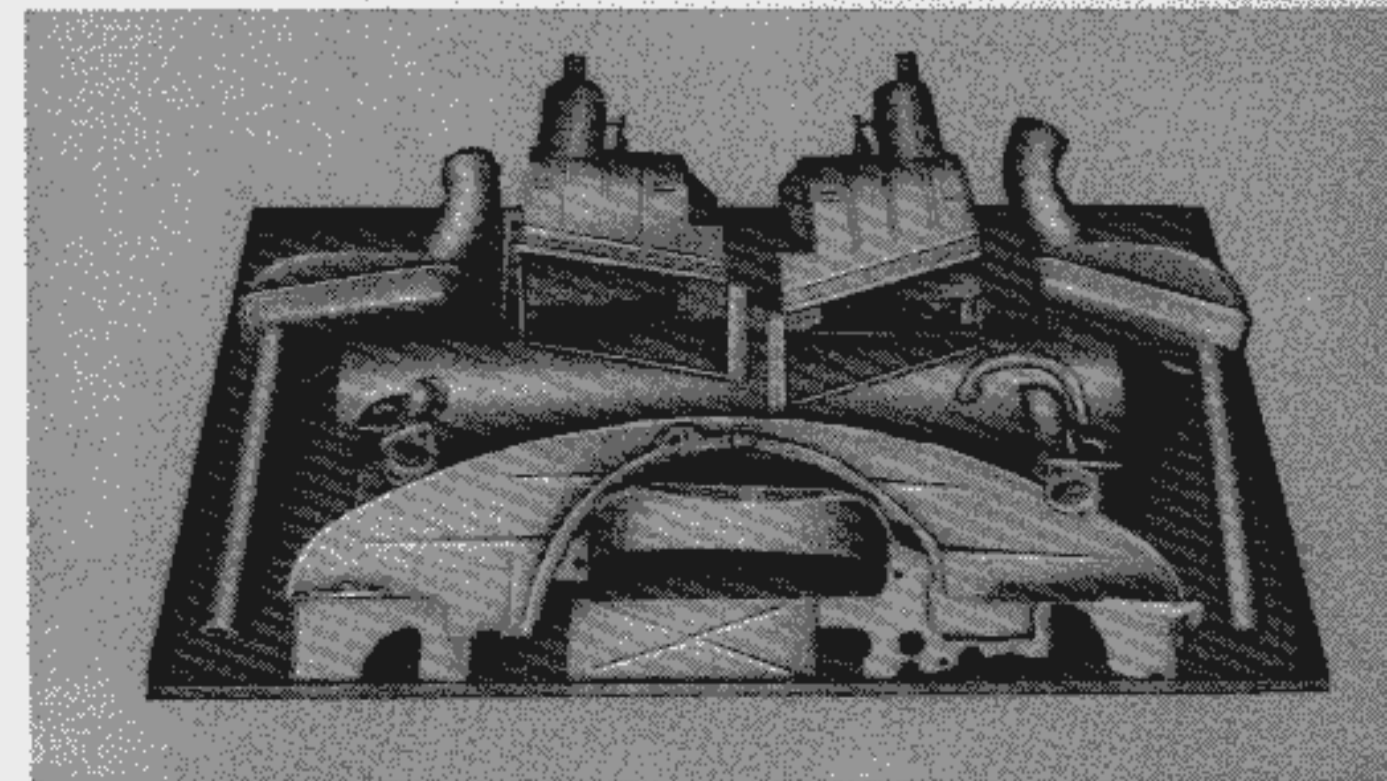
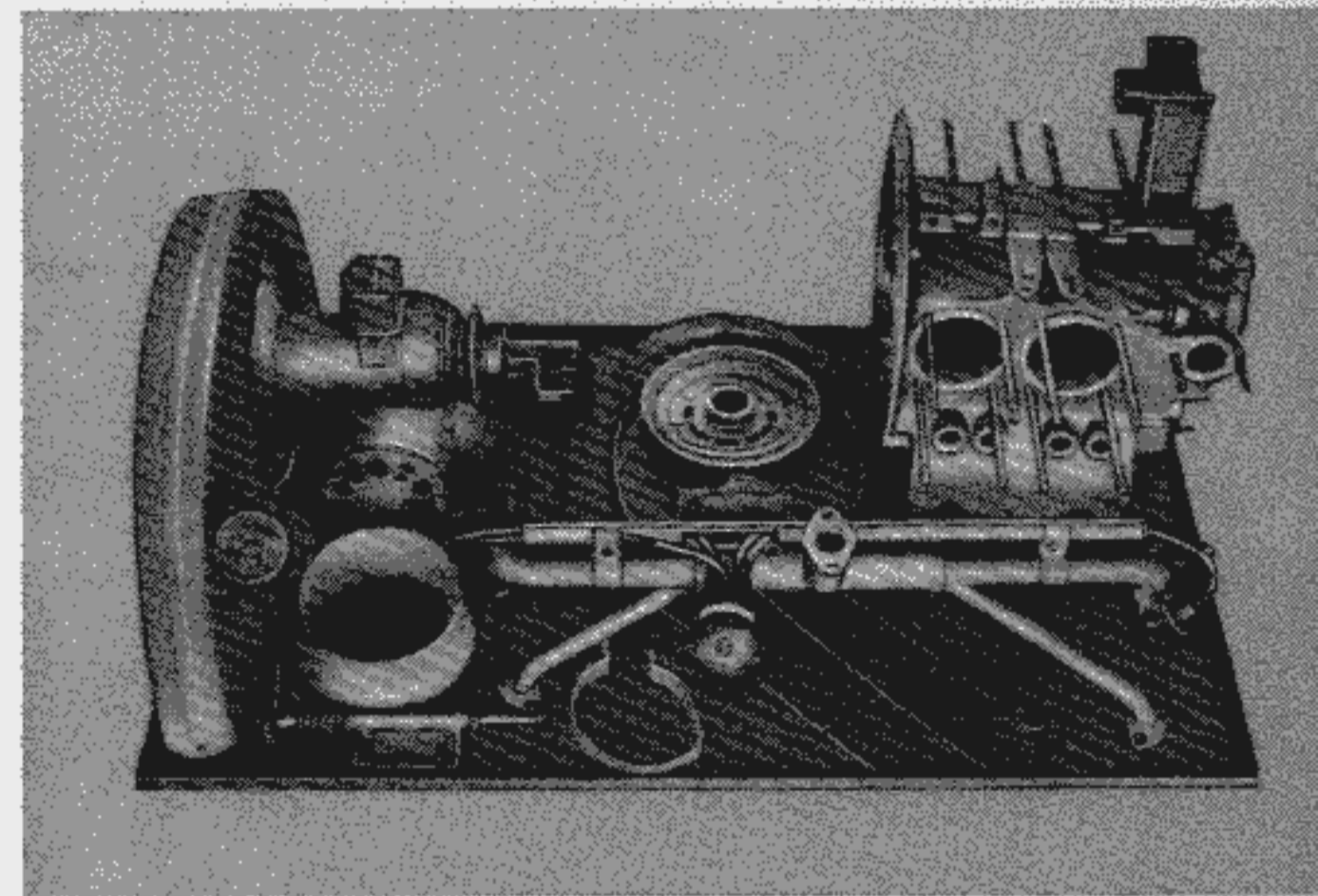
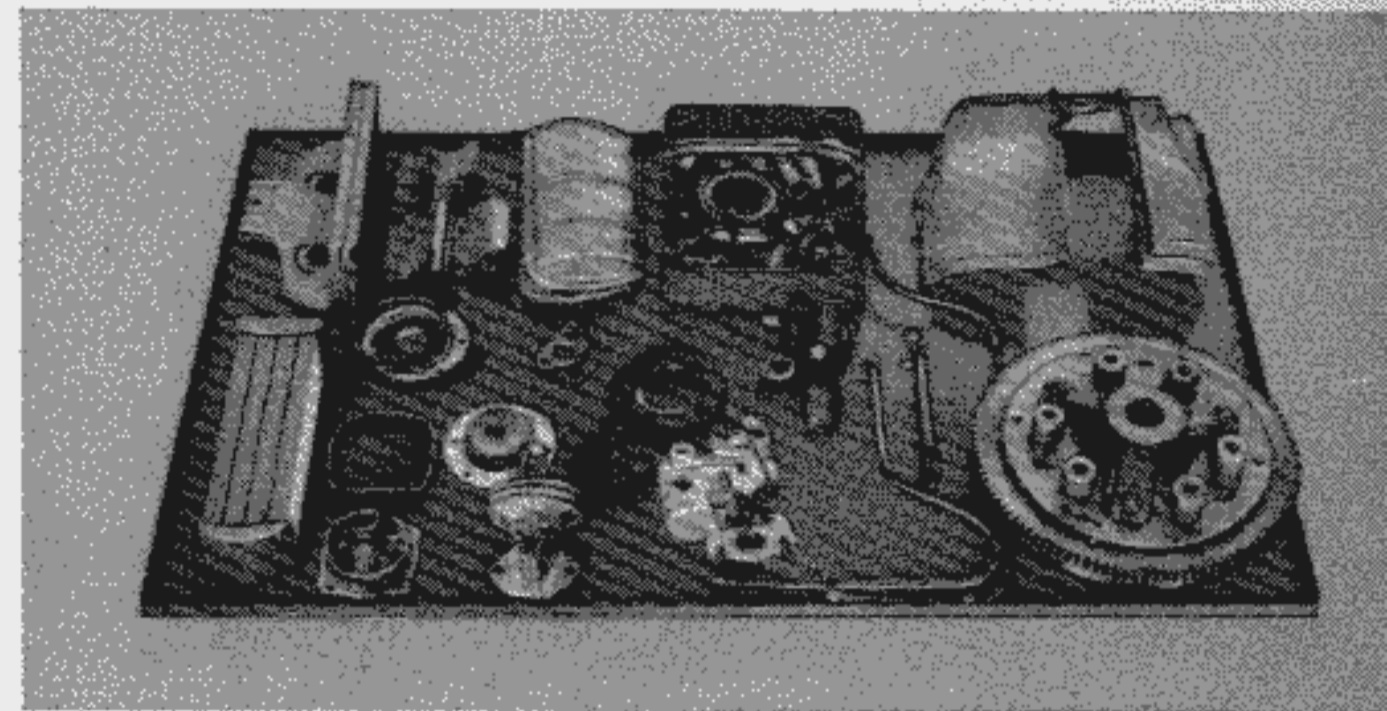
**Cylinder Retainer**

**VW 650/1**





The three shelves of the trolley will accommodate the larger components of a dismantled engine or rear axle. The dimensions of the shelves are based on the sizes of the parts to be handled.



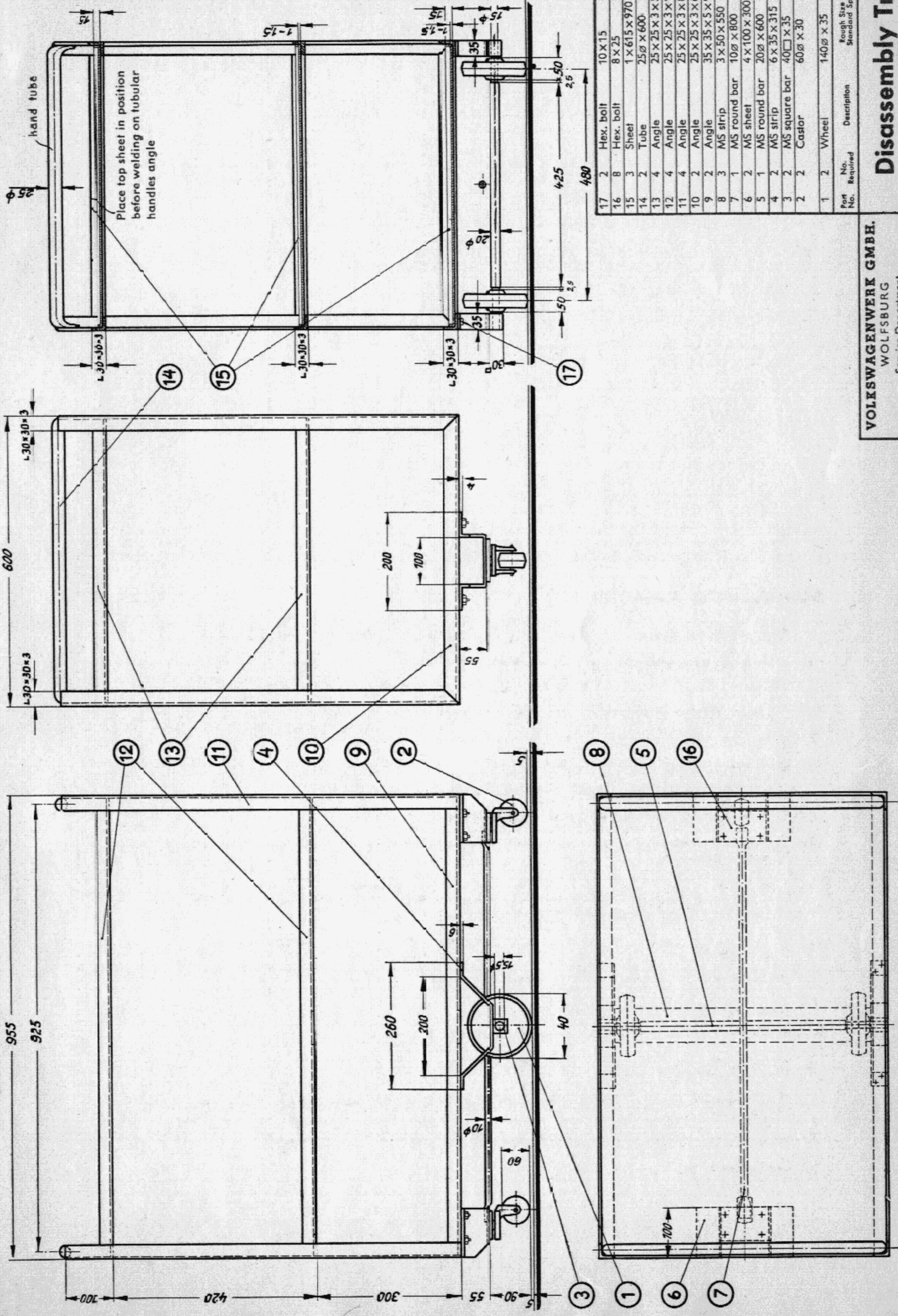
Rack No. VW 652 is an item which can be usefully employed in conjunction with the trolley when dismantling an engine. A further piece of equipment which can be used in this connection is the Strainer — Local Construction Service Equipment No. VW 634 — for holding small parts such as nuts, washers, split pins, etc.



### Construction Details for VW 651

- 1 - Cut material to dimensions given in list of parts and place other items ready to hand.
- 2 - Weld angles (9) and (11) together as shown in drawing.
- 3 - Fit angles (10), (12) and (13) and weld to angles (9) and (11).
- 4 - Fit strips (8) and weld to frame as shown in drawing.
- 5 - Drill a 15.5 mm ( $\frac{39}{64}$  in.) hole in each of axle carriers (3).
- 6 - Bend strips (4) as shown in drawing and weld on axle carriers (3).
- 7 - Drill a 10.5 mm ( $\frac{27}{64}$  in.) hole in the center of each end of strips (4).
- 8 - Position strips (4) on angles (9), mark off holes and tap M 10.
- 9 - Turn down both ends of bar (5) to a diameter of 15 mm ( $\frac{19}{32}$  in.) for a distance of 87.5 mm ( $2\frac{5}{16}$  in.).
- 10 - Mount wheels (1) on journals turned on bar (5), push axle carriers (3) — to which strips (4) have been welded — over the journals and attach strips (4) to angles (9) by means of two M 10 screws (17) as shown in drawing.
- 11 - Bend plates (6), mark off holes from castor mounting plates (2) and drill 8.5 mm ( $\frac{11}{32}$  in.) holes.
- 12 - Weld plates (6) to angles (10) as shown in drawing.
- 13 - Fit bar (7) and weld to plates (6).
- 14 - Attach castors (2) to plates (6) with hex. head bolts and nuts.
- 15 - Bend up edges of sheets (15), weld at corners and insert the three trays thus produced into the frame.
- 16 - Shape ends of tubes (14) and weld to top of angles (11). Top tray (15) must be in position before welding.
- 17 - Paint trolley in prevailing colour of equipment and machines in the shop.
- 18 - Oil all bearings.





Part No.	No. Required	Description	rough Size or Standard Spec.	Remarks
17	2	Hex. bolt	10 X 15	
16	8	Hex. bolt	8 X 25	
15	3	Sheet	1 X 615 X 970	
14	2	Tube	25 Ø X 600	
13	4	Angle	25 X 25 X 3 X 590	
12	4	Angle	25 X 25 X 3 X 900	
11	4	Angle	25 X 25 X 3 X 825	
10	2	Angle	25 X 25 X 3 X 600	
9	2	Angle	35 X 35 X 5 X 900	
8	3	MS strip	3 X 50 X 550	
7	1	MS round bar	10 Ø X 800	
6	2	MS sheet	4 X 100 X 300	
5	1	MS round bar	20 Ø X 600	
4	2	MS strip	6 X 35 X 315	
3	2	MS square bar	40 X 35	
2	2	Castor	60 Ø X 30	Overall height 90
1	2	Wheel	140 Ø X 35	Hub width 50

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**WOLFSBURG**  
 Service Department

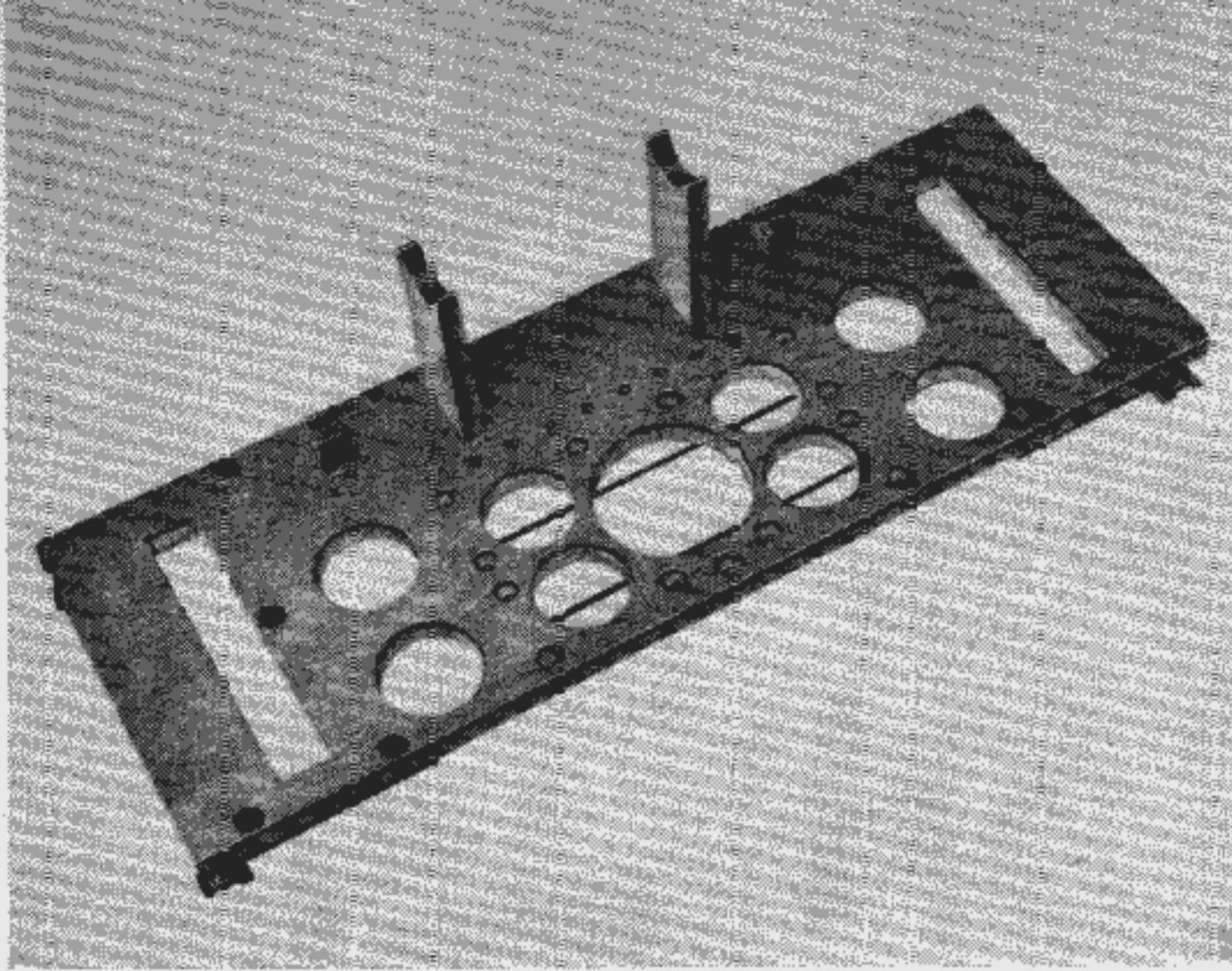
Drawn: 25 July, 50  
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# Disassembly Trolley

VW 651

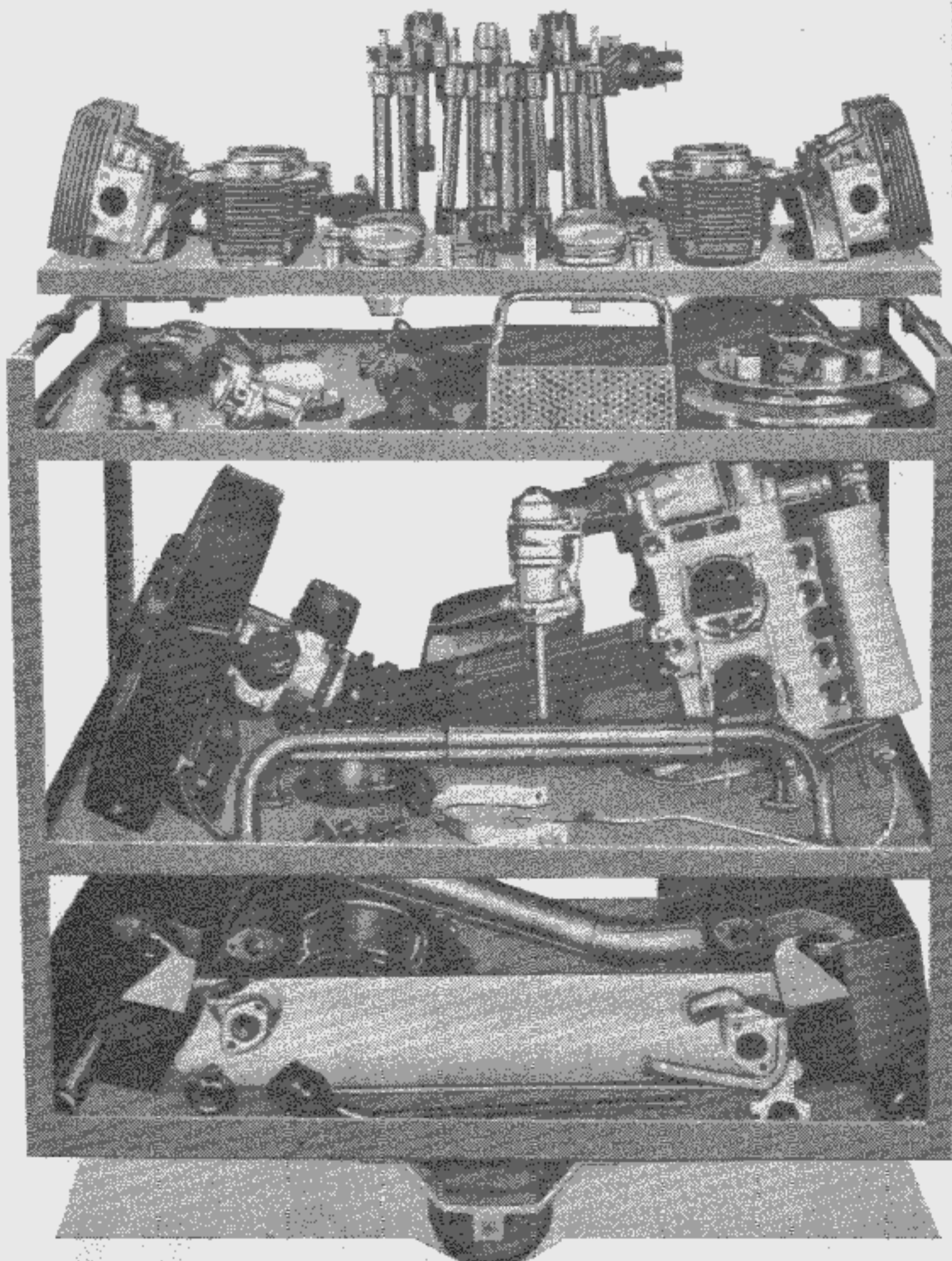
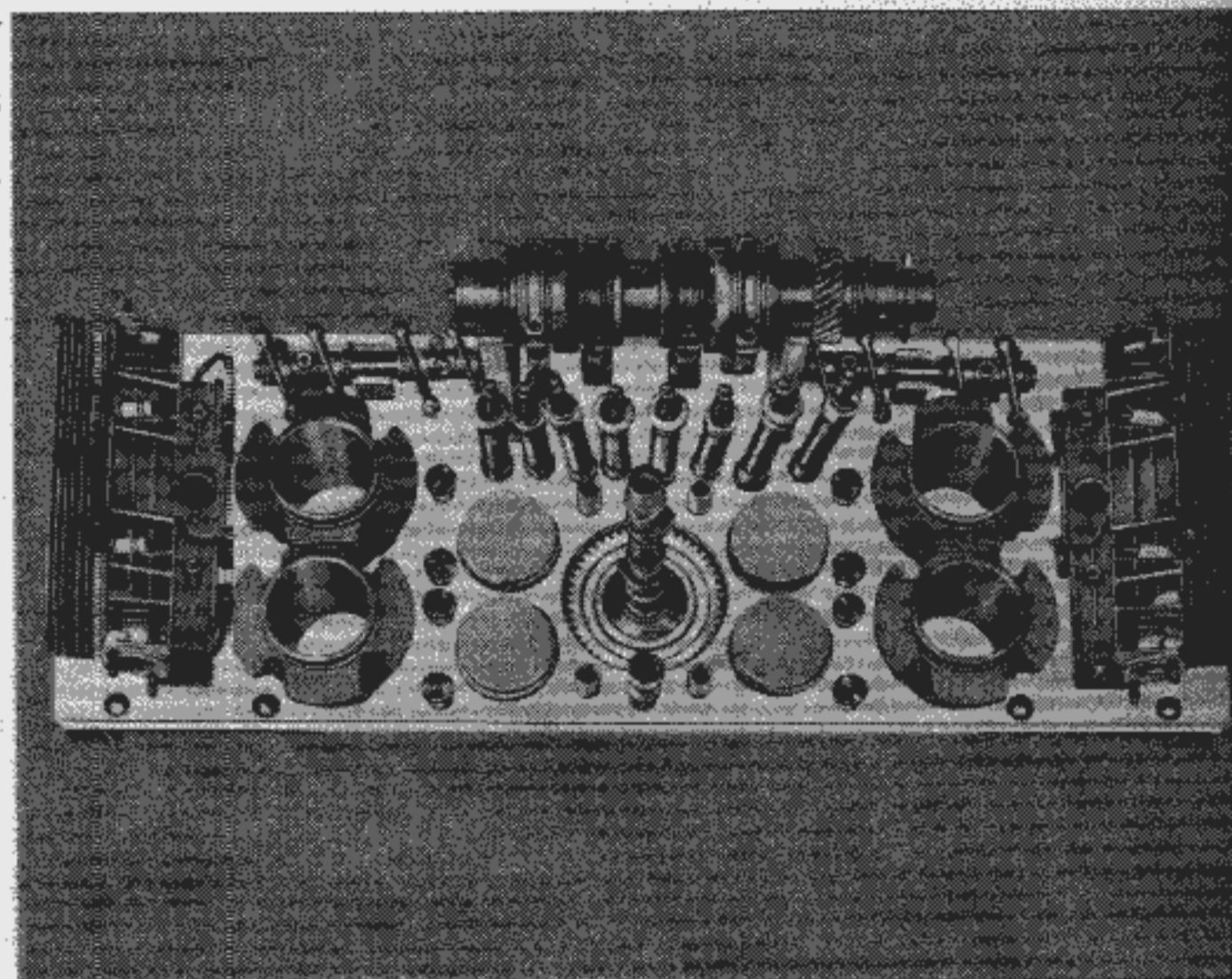


**LOCAL MANUFACTURE OF WORKSHOP EQUIPMENT**



**Assembly Rack  
Type 1, 2, 3, 122, 124, 126**

The rack is designed to take engine components after dismantling. The layout of the parts on the rack guarantees that the parts which are already run in are reinstalled in their original position.



The rack is very suitable for use in conjunction with the castor-wheeled repair stand No. VW 651.

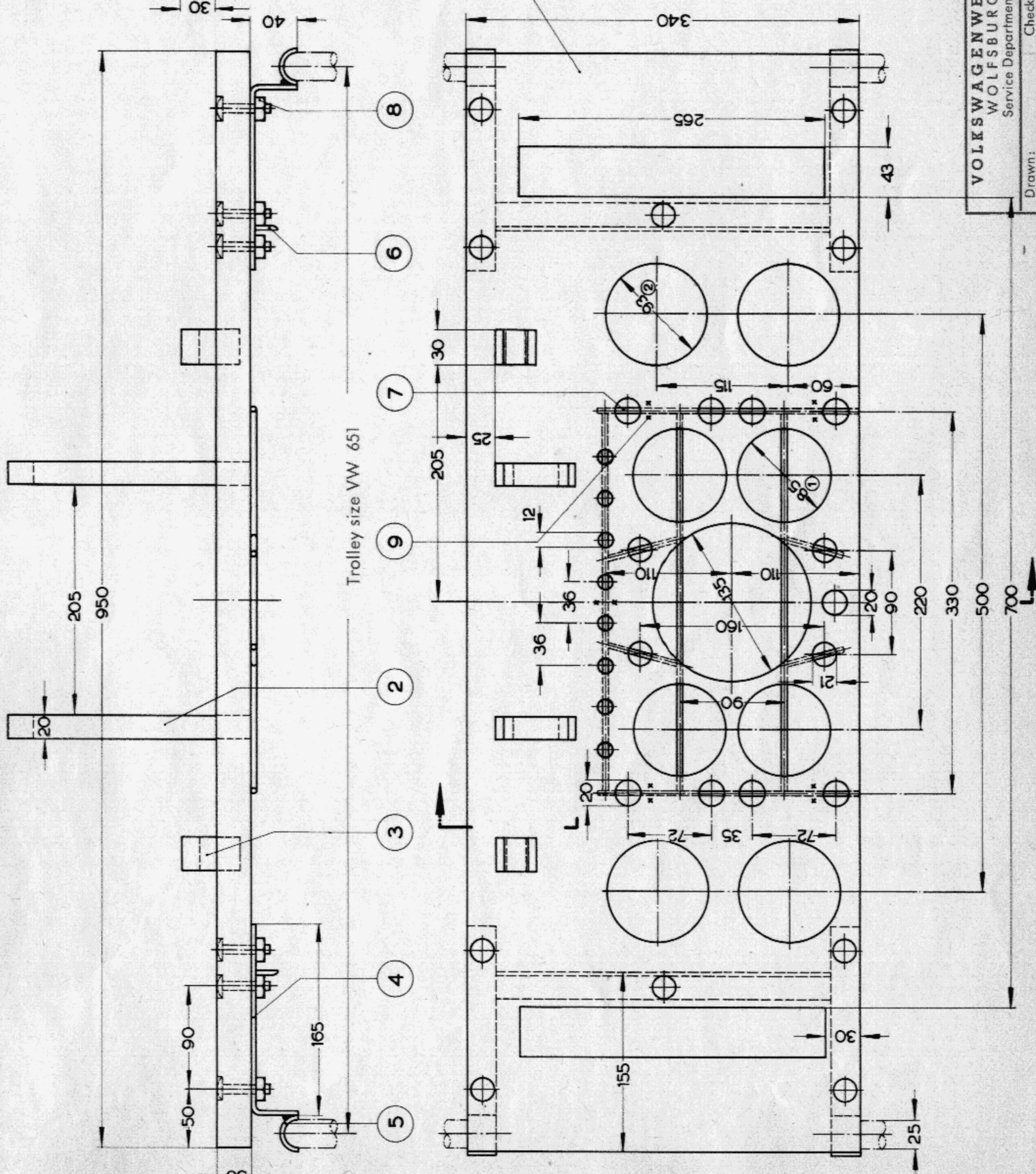
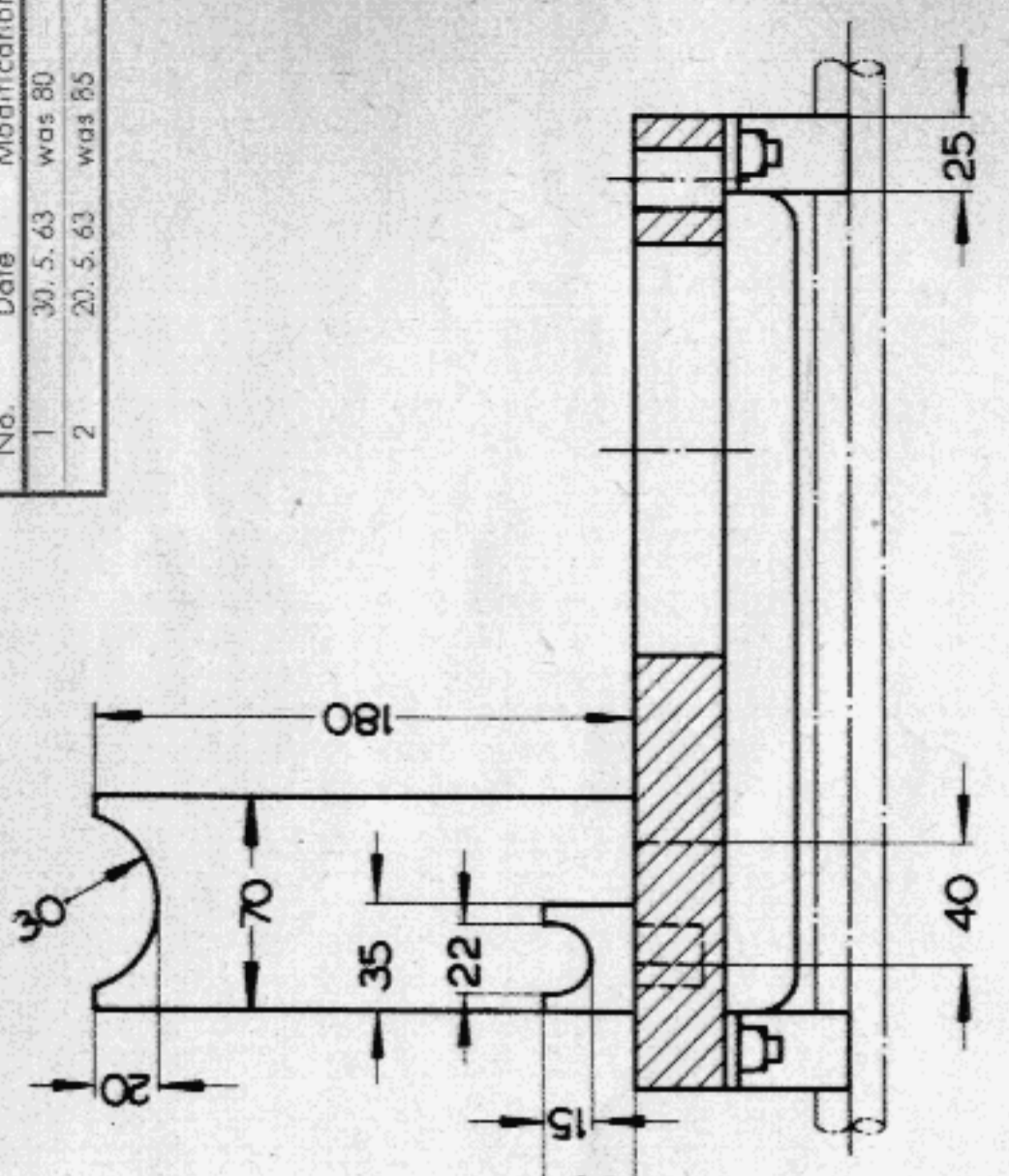


#### Construction Details for VW 652/4

- 1 — Cut all material to dimensions given in list of parts.
- 2 — Drill and shape wooden board (1).
- 3 — Prepare wooden blocks (2) and (3) and provide each with one dowel 12 mm ( $1^5/32$  in.) diameter and 20 mm ( $2^5/32$  in.) long.
- 4 — Drill 8 mm ( $5/16$  in.) holes in strips (4) bend up one end of each strip to form a bracket as shown.
- 5 — Cut down tube to form hooks (5) and weld to bent-up end of brackets.
- 6 — Drill an 8 mm ( $5/16$  in.) hole in each of angles (6) and weld latter to brackets.
- 7 — Weld up wire (7) to form frame.
- 8 — Attach wire frame by means of staples (9) to underside of base board (1) so that the wire passes under each of the holes shown in drawing.
- 9 — Mark off 8 mm ( $5/16$  in.) hole on underside of base board, and drill.
- 10 — Attach bracket assemblies, previously built up from angles and strip, to base board by means of square-neck bolts (8)-with their heads on the top face of the base board. Pull up bolts by tightening nuts (8).
- 11 — Glue dowels of blocks (2) and (3) and insert into appropriate holes in base board.
- 12 — Paint rack.



No.	Date	Modification
1	30.5.63	was 80
2	20.5.63	was 85



Trolley size VW 651

Chamfer all sharp edges

9	Staples	34 X 34	DIN 1159
8	Coach bolts	M8 X 40	DIN 557
7	Wire frame	5 dia. X 1700	Steel wire
6	Angle	25 X 25 X 3 X 290	DIN 1928
5	Bracket	34 dia. X 4	tubing
4	Support	25 X 4 X 200	MS strip
3	Holder	30 X 35 X 50	Wood
2	Holder	30 X 70 X 210	Wood
1	Base board	30 X 950 X 340	Plywood

Part No. required	Description	Rough Size or Standard Spec.	Remarks

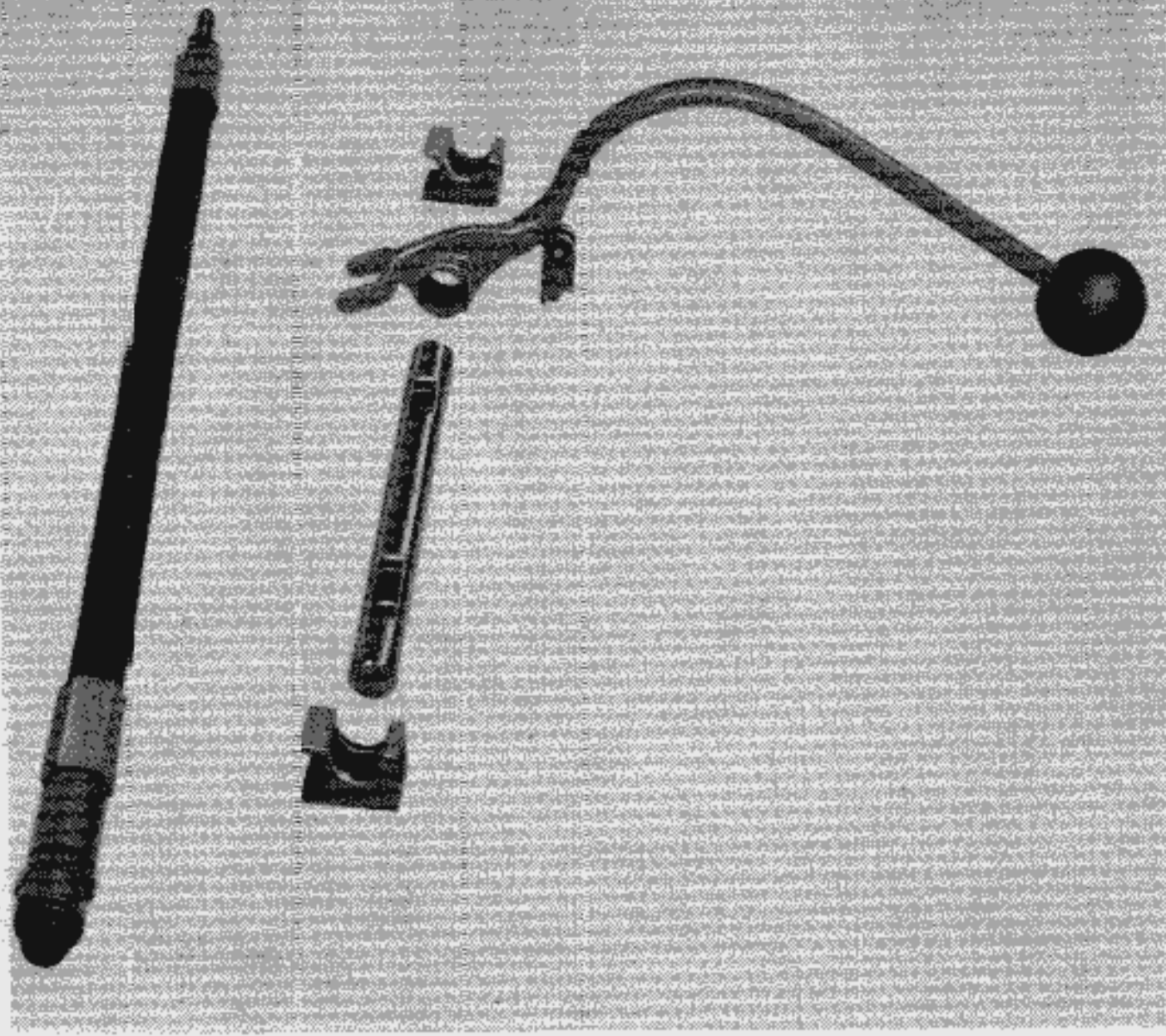
### Assembly Rack

VOLKSWAGENWERK AG  
WOLFSBURG  
Service Department

Drawn: 3.4.59 Sandau  
Checked: 7.4.59 Hendriok

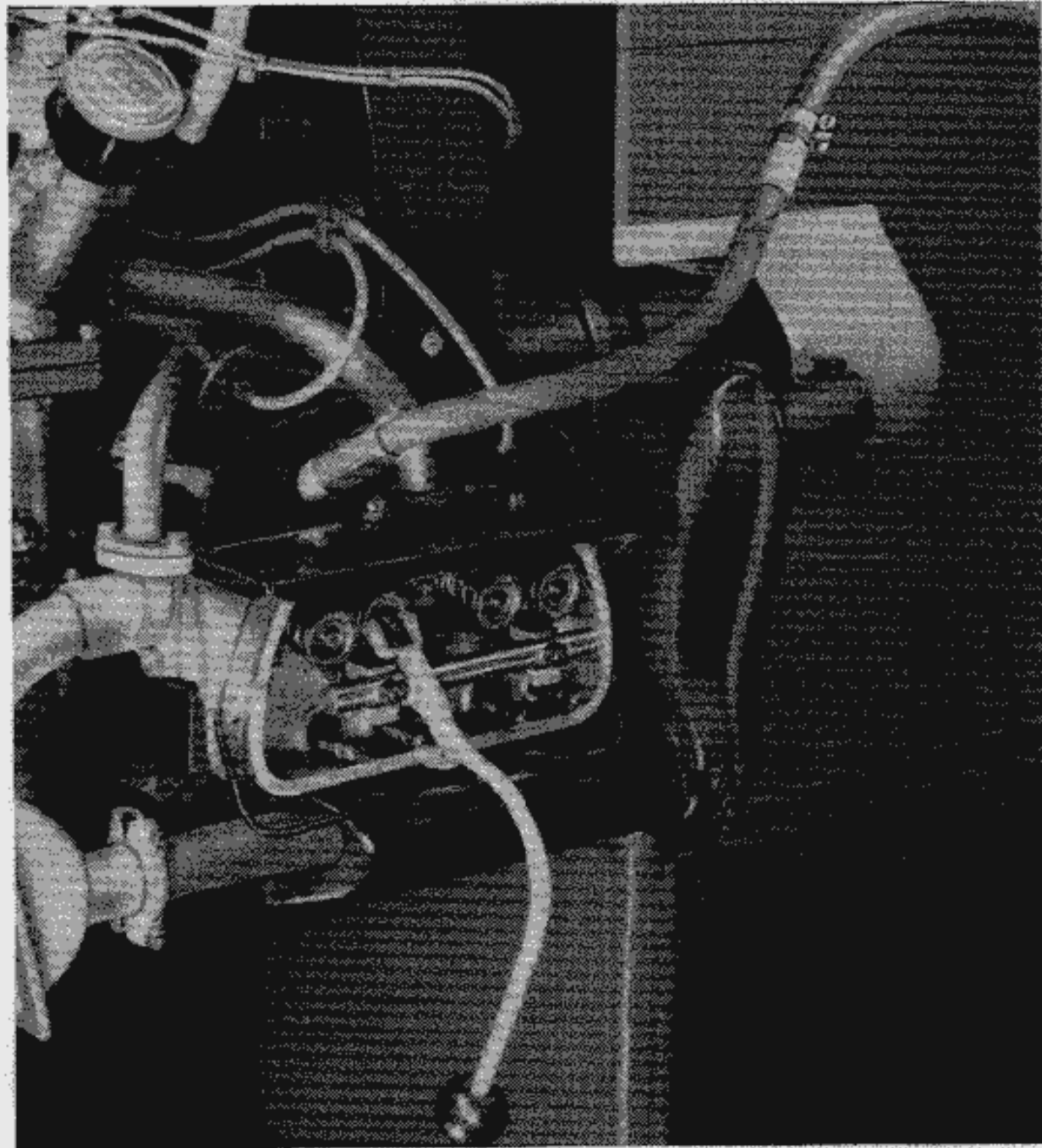
VW 652/4





Valve Spring Compressing Tool  
for Types 1, 2, 3, 122, 126

The valve spring compressing tool is used for removing and refitting the valve springs with the engine in situ or removed. The tool is used in conjunction with a compressed air hose. One end of the air hose is screwed into the spark plug hole, the other end being connected to a compressed air line having a pressure of about 6 kg/cm<sup>2</sup> (85.34 lbs/sq.in.). The pressure built up in the combustion chamber holds the valves against the valve seats. The valve spring compressing tool is mounted on the rocker shaft supports. By raising the lever the forked end presses down the valve spring seat enabling the split cotters to be removed or installed.





### **Construction Details for VW 653/2 — Sheet 1**

- 1 — Cut all parts to dimensions given in list of parts; obtain all necessary Genuine VW spare parts, as detailed in list, and place ready to hand.
- 2 — Mark out and work part (1) according to drawing.
- 3 — Make part (2) as shown in drawing.
- 4 — Cut M 8 thread on part (3) and bend as shown in drawing.
- 5 — Mark out and work part (6) as detailed in drawing.
- 6 — Carry out all welding work as shown in drawing.
- 7 — Smooth out all welds.
- 8 — Mark out and work part (4) as shown in drawing.
- 9 — Make parts (7) and (9) as shown in drawing.
- 10 — Mark out and work part (10) as shown in drawing.
- 11 — Treat all parts with a rust solvent.
- 12 — Assemble the tool.

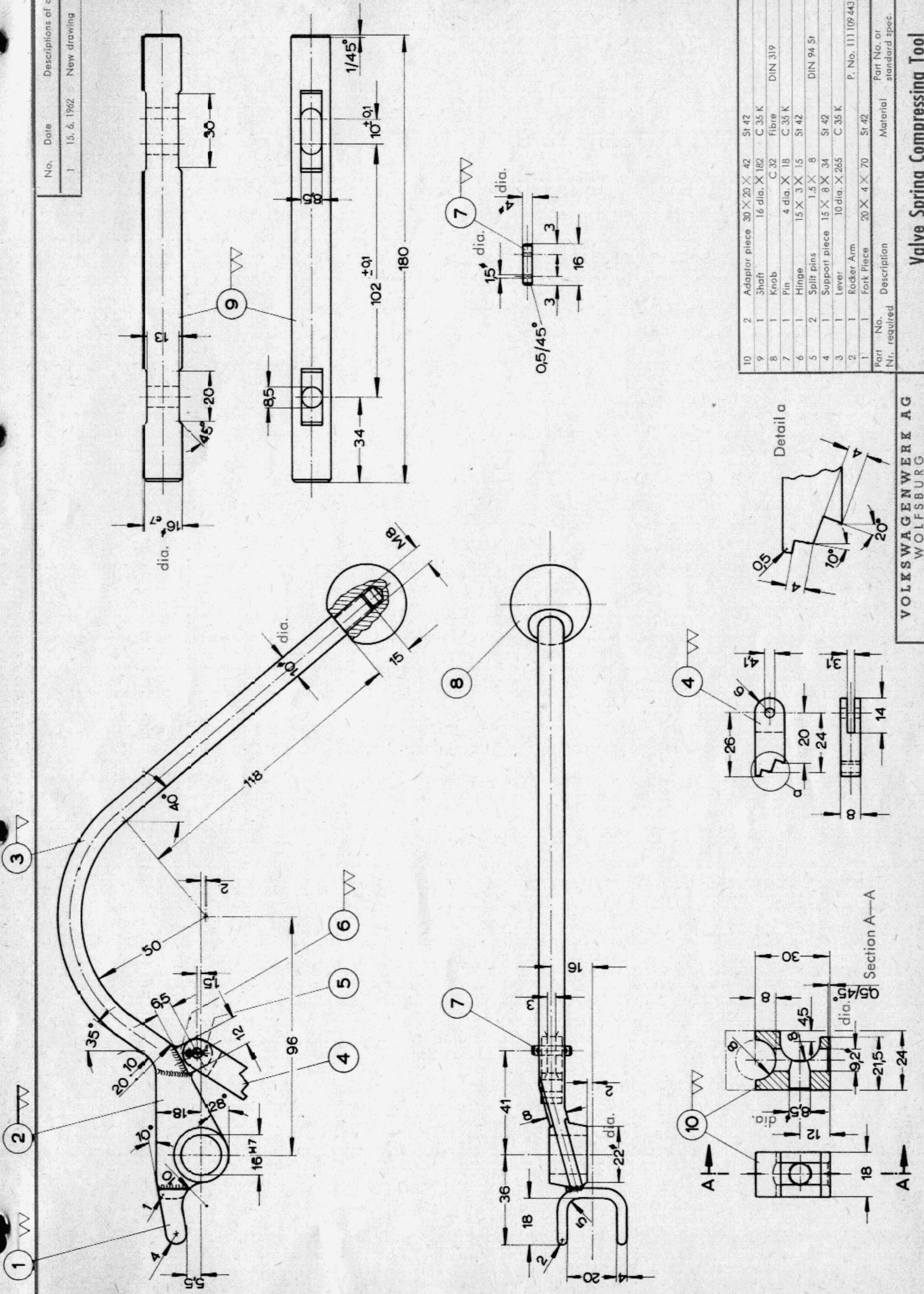
### **Construction Details for VW 653/2 — Sheet 2**

- 1 — Cut all parts to dimensions given in list of parts; obtain all necessary Genuine VW spare parts, as detailed in list, and place ready to hand.
- 2 — Make part (1) as detailed.
- 3 — Drill parts (2), (6) and (7) with 5 mm drill.
- 4 — Centralize parts (1) and (2) also (6) and (7) carry out welding work as shown in drawing.
- 5 — Smooth out welds.
- 6 — Make parts (3) and (5) as shown.
- 7 — Treat all parts with rust solvent.
- 8 — Push compressed air hose into parts (3) and (5) with the aid of soapy water.
- 9 — Screw in parts (1) and (2) also (6) and (7) as shown in drawing.
- 10 — Weld parts (1) and (2) to part (3). Weld on two opposite faces.
- 11 — Smooth welds and treat with rust solvent.



No. Date Descriptions of alterations

1 15. 6. 1962 New drawing



10	2	Adaptor piece	30 X 20 X 42	St 42
9	1	Shaft	16 dia. X 182	C 35 K
8	1	Knob	C 32	Fibre
7	1	Pin	4 dia. X 18	C 35 K
6	1	Hinge	15 X 3 X 15	St 42
5	2	Split pins	1.5 X 8	DIN 94 St
4	1	Support piece	15 X 8 X 34	St 42
3	1	Lever	10 dia. X 265	C 35 K
2	1	Rocker Arm		
1	1	Fork Piece	20 X 4 X 70	St 42

Part No. Description Material Part No. or standard spec. Remarks

**Valve Spring Compressing Tool**

**VOLKSWAGENWERK AG**  
**WOLFSBURG**  
 Service Department

Drawn by:  
 15. 6. 62 Giesecking

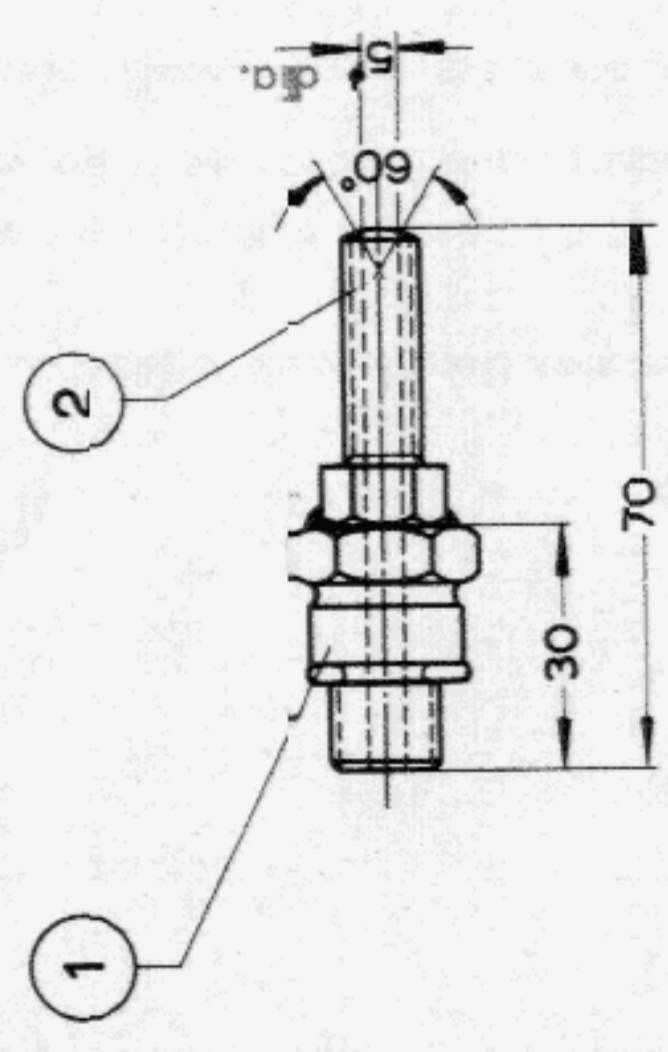
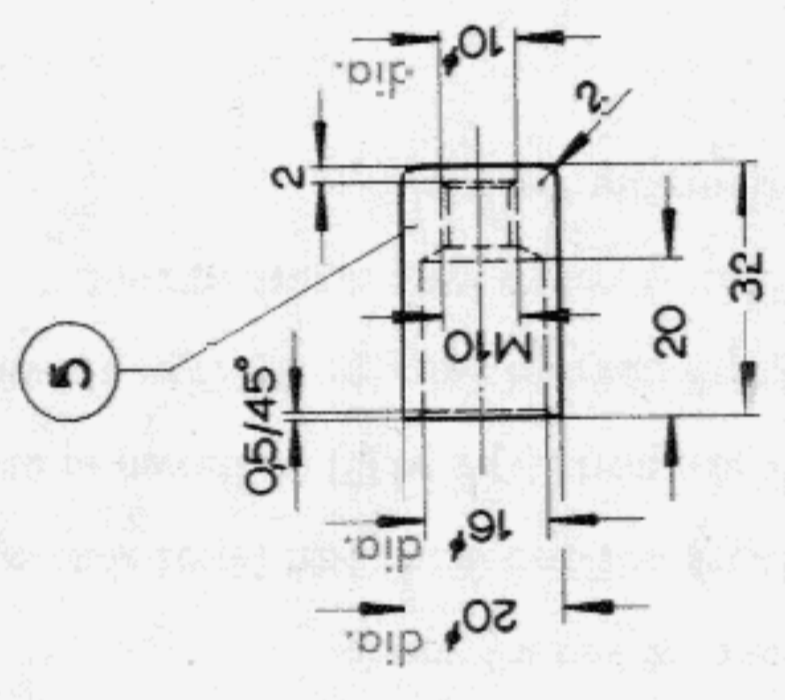
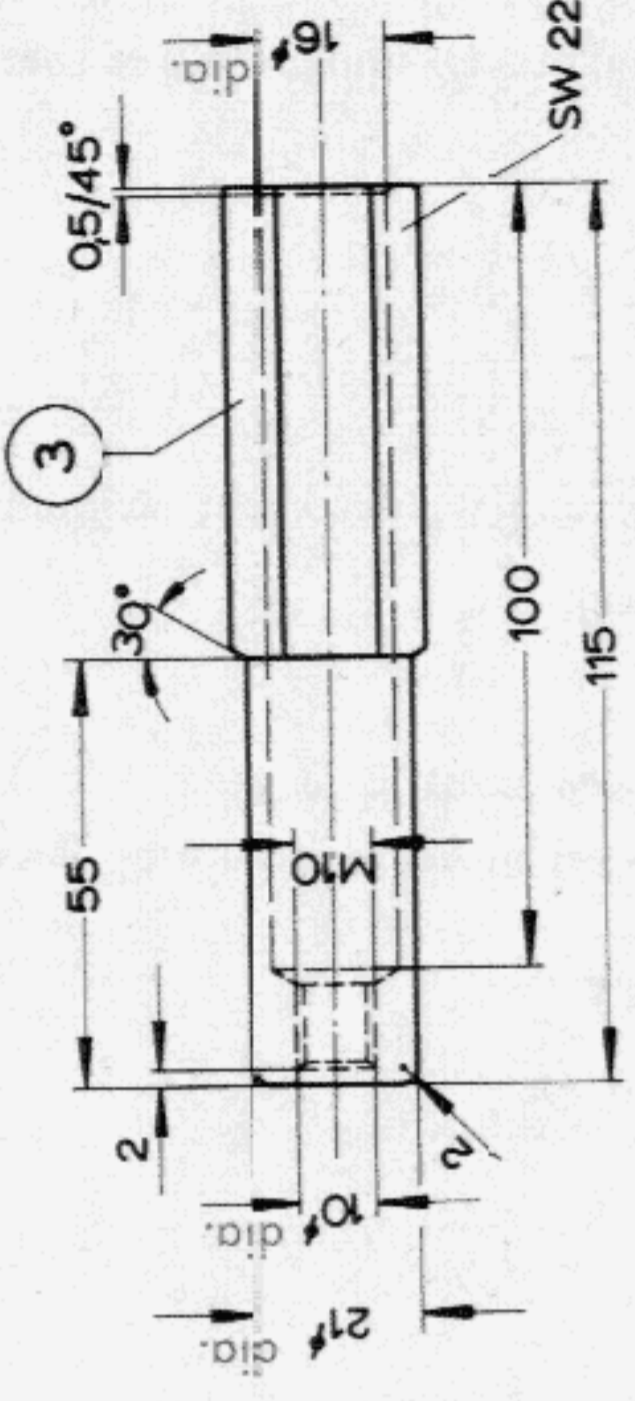
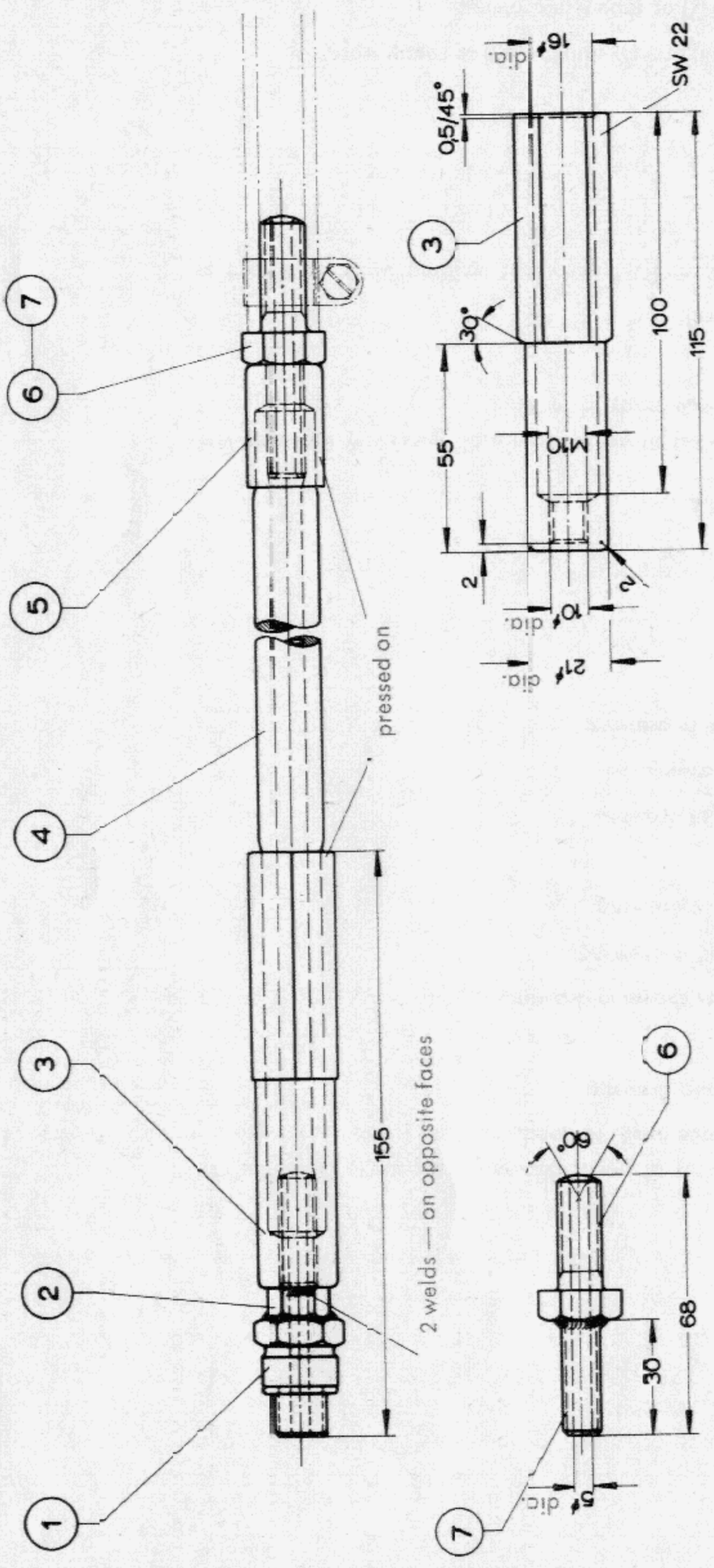
Checked by:  
 29. 6. 62 Ratte

Section A-A

Sheet No. 1  
 No. of Sheets 2

VW 653/2





7	Threaded bolt	M 10 X 30	DIN 601
6	Hex. bolt	M 10 X 30	C 15
5	Bush	20 dia. X 35	Rubber with double textile layer
4	Compressed air hose	8 X 4.5 X 450	Black
3	Hex. sleeve	M 8 X 22 X 110	9.5 20 K
2	Hex. bolt	M 10 X 30	DIN 601
1	Spark plug	N 178011	shortened

Part No. No. required	Description	Material	Part No. or standard spec.	Remarks

**Compressed Air Hose for Valve Spring Compressing Tool**

**VOLKSWAGENWERK AG**  
**WOLFSBURG**  
 Service — Department

Drawn by:  
 14. 3. 62 Raebel

Checked by:  
 17. 4. 62 Gieseeking

**VW 653/2**

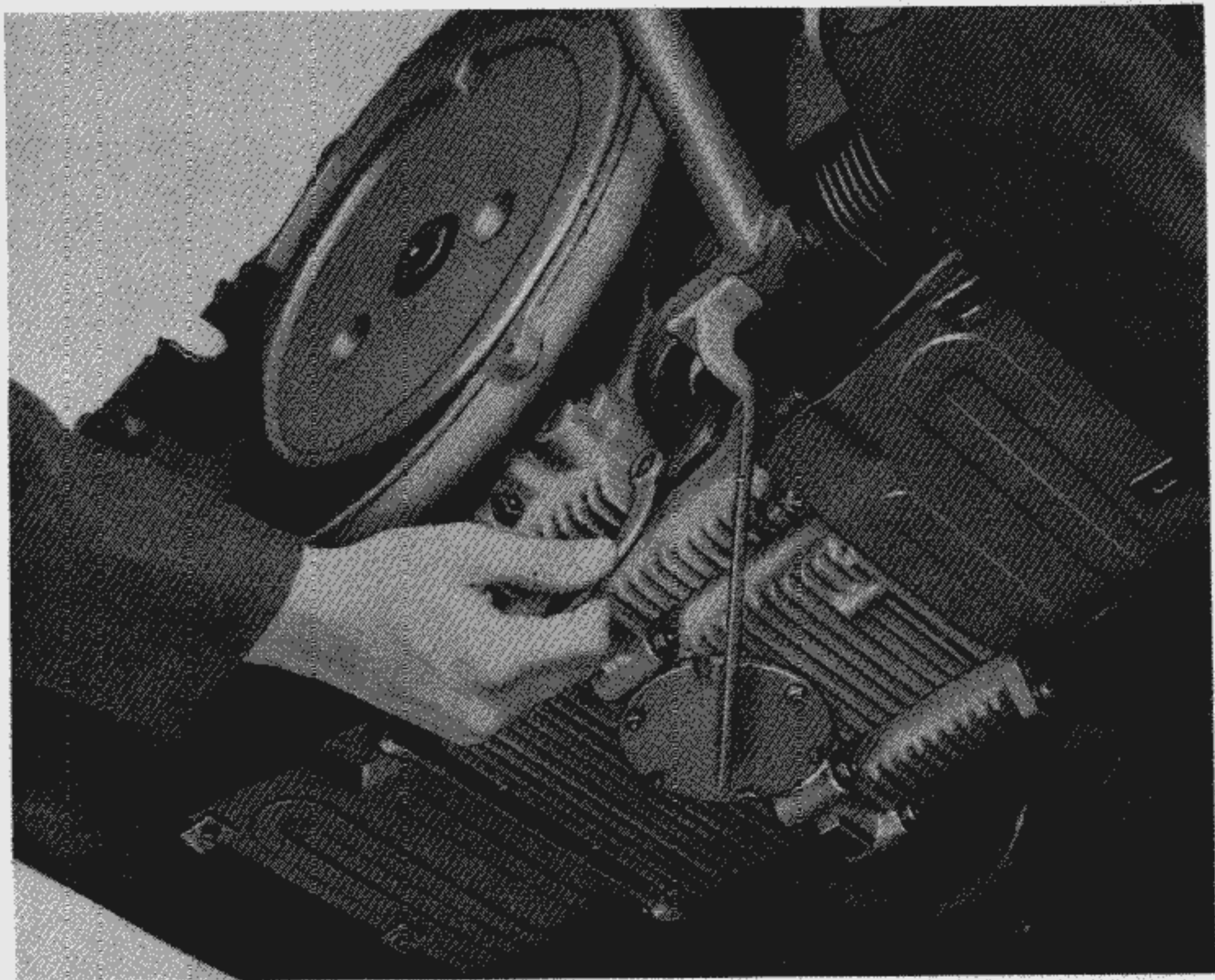
Sheet No. 2  
 No. of Sheets 2





**Fitting Jig for Oil Filler**

The jig is used to support the oil filler whilst bolting it onto the crankcase. The specified height is guaranteed, if the oil filler pipe rest on the extension arm whilst it is being bolted to the crankcase.

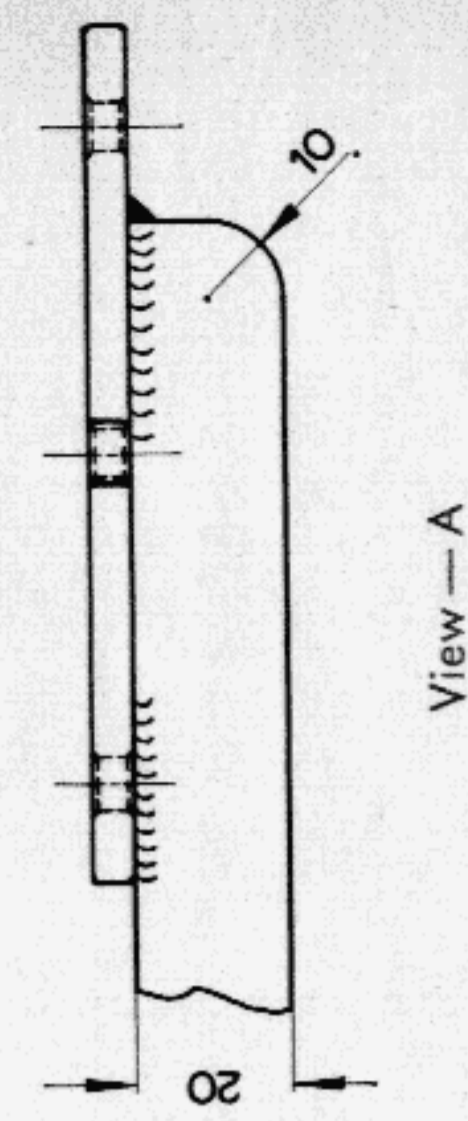
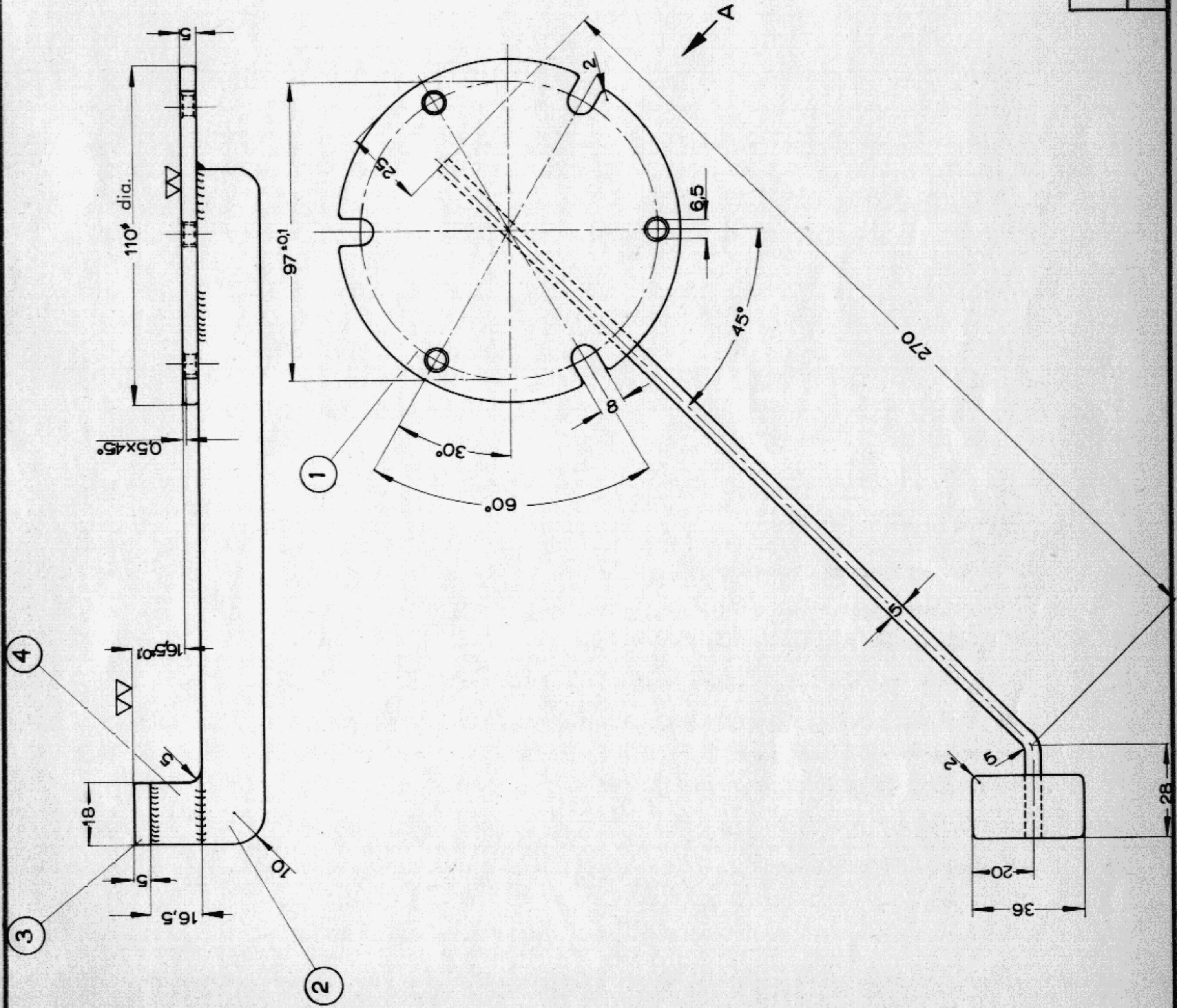




### **Construction Details for VW 654**

- 1 — Cut all parts as detailed in parts list.
- 2 — Turn part 1 to a diameter of 110 mm and a thickness of 5 mm.
- 3 — Mark out holes and slots as shown in drawing.
- 4 — Mark out and centre punch welding position of extension arm.
- 5 — Drill the three 6.5 mm holes and also the three 8 mm holes, trim after drilling.
- 6 — Cut out slots with saw and file.
- 7 — Finish parts 2, 3 and 4 as shown in drawing.
- 8 — Weld up as shown.
- 9 — Smooth all welded seams.
- 10 — Paint jig, except on matching faces.





Part No.	Description	Material
4	1 Spacing piece	20 X 5 X 20 C 15
3	1 Rest	20 X 5 X 40 C 15
2	1 Extension arm	20 X 5 X 310 C 15
1	1 Disc	115 dia. X 8 C 15

VOLKSWAGENWERK AG WOLFSBURG Service — Department		Checked 12. 6. 61 Giesecking	
Drawn 12. 6. 61 Raebel			
<b>Fitting Jig for Oil Filler</b>		<b>VW 654</b>	





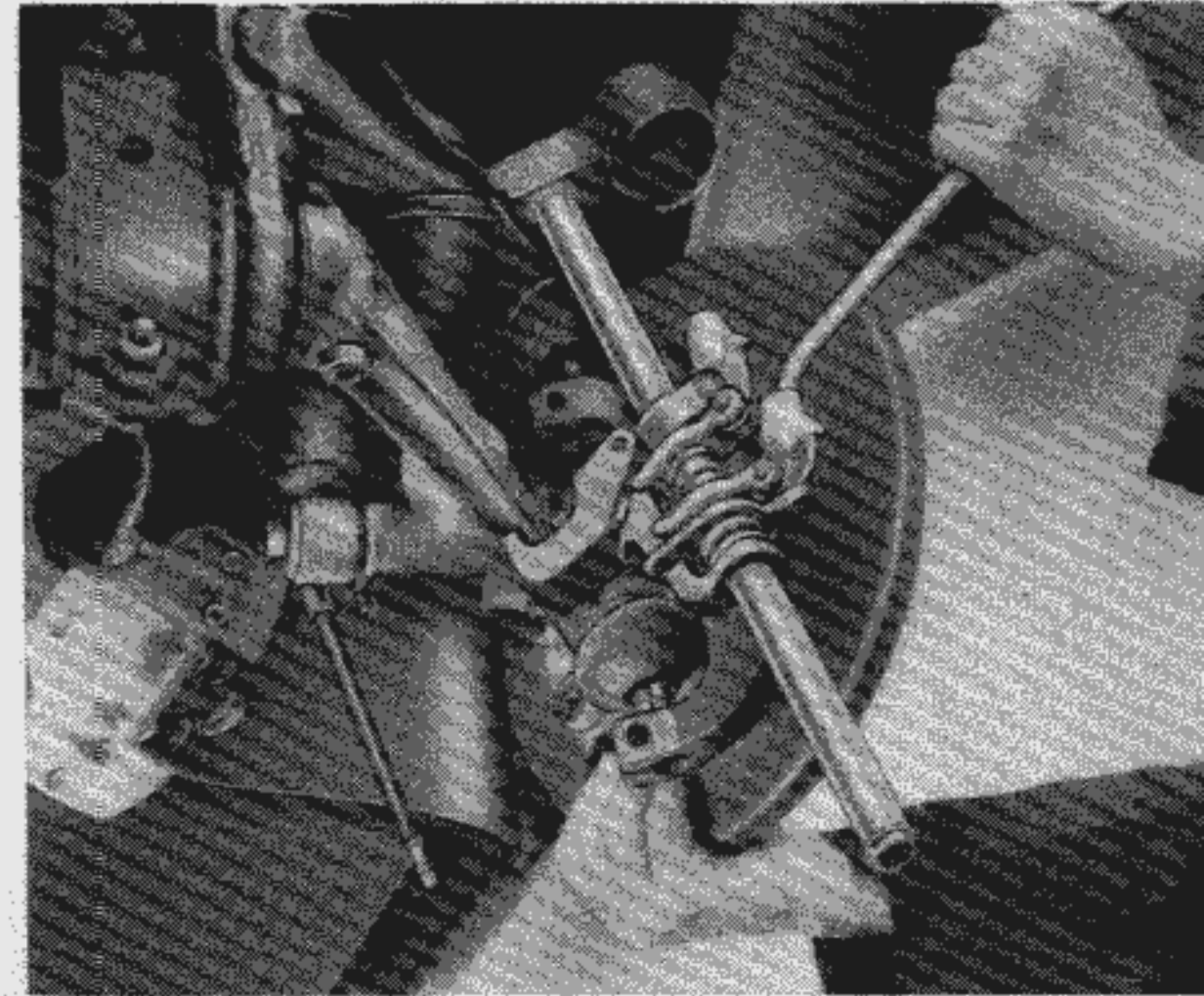
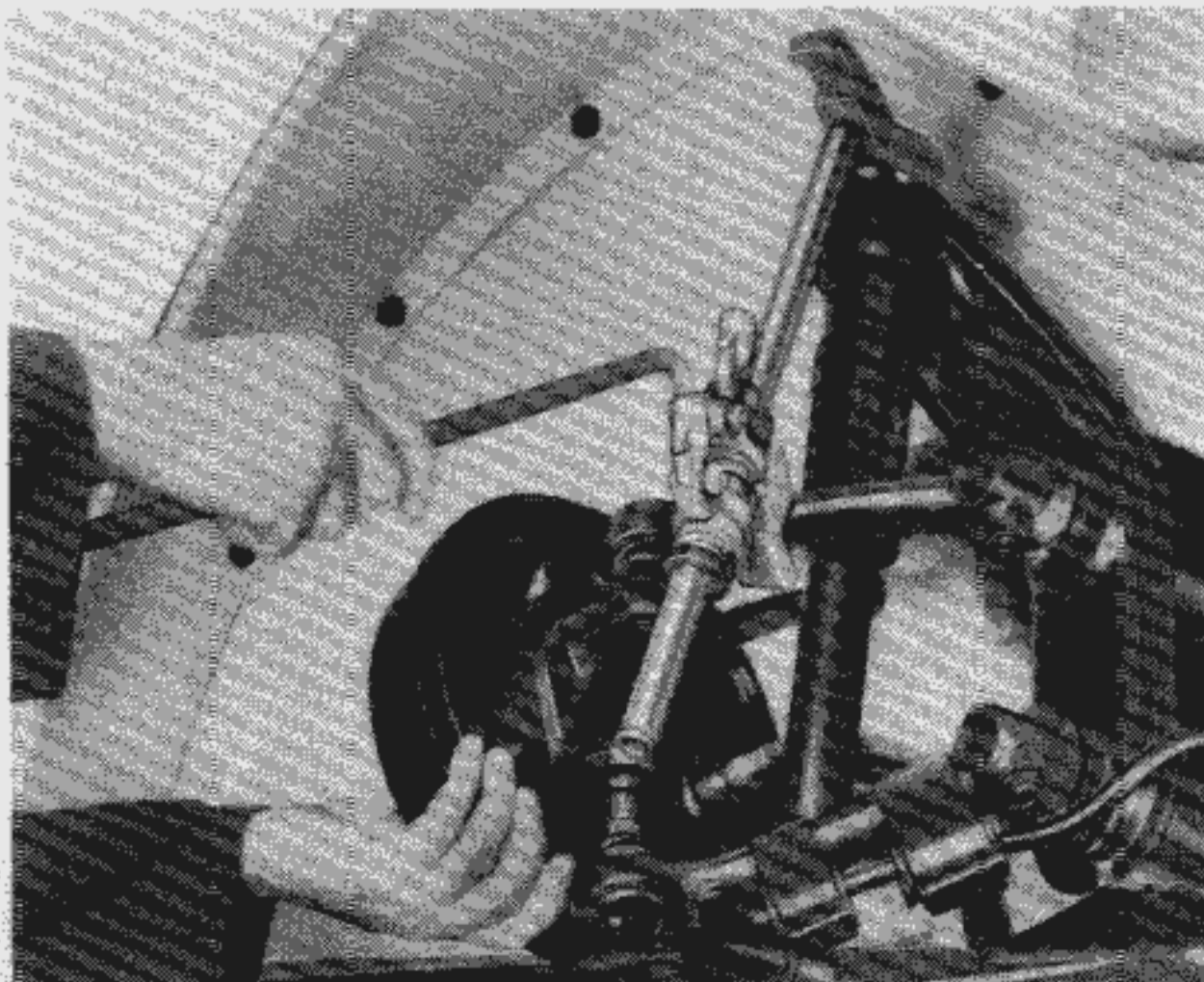
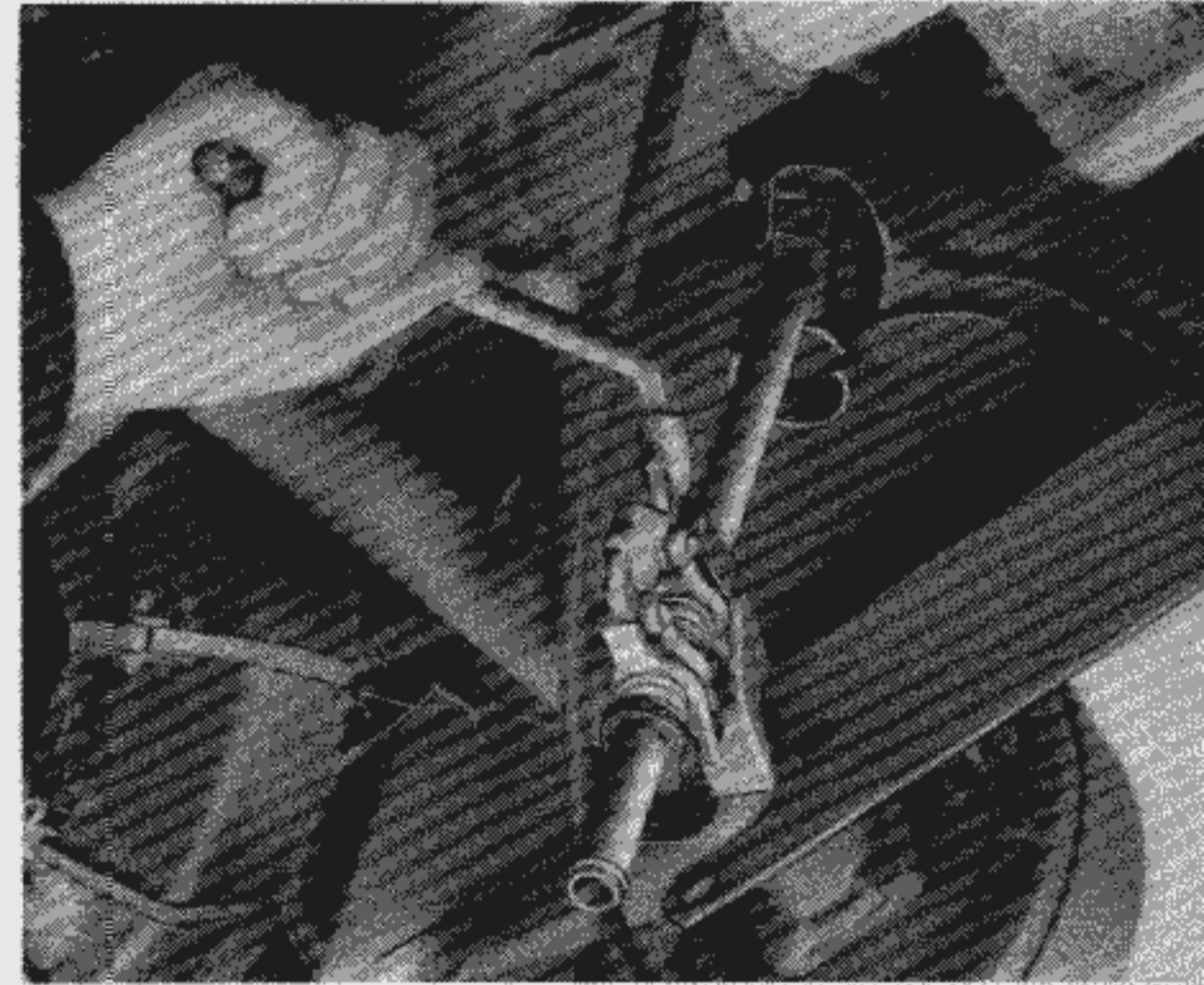
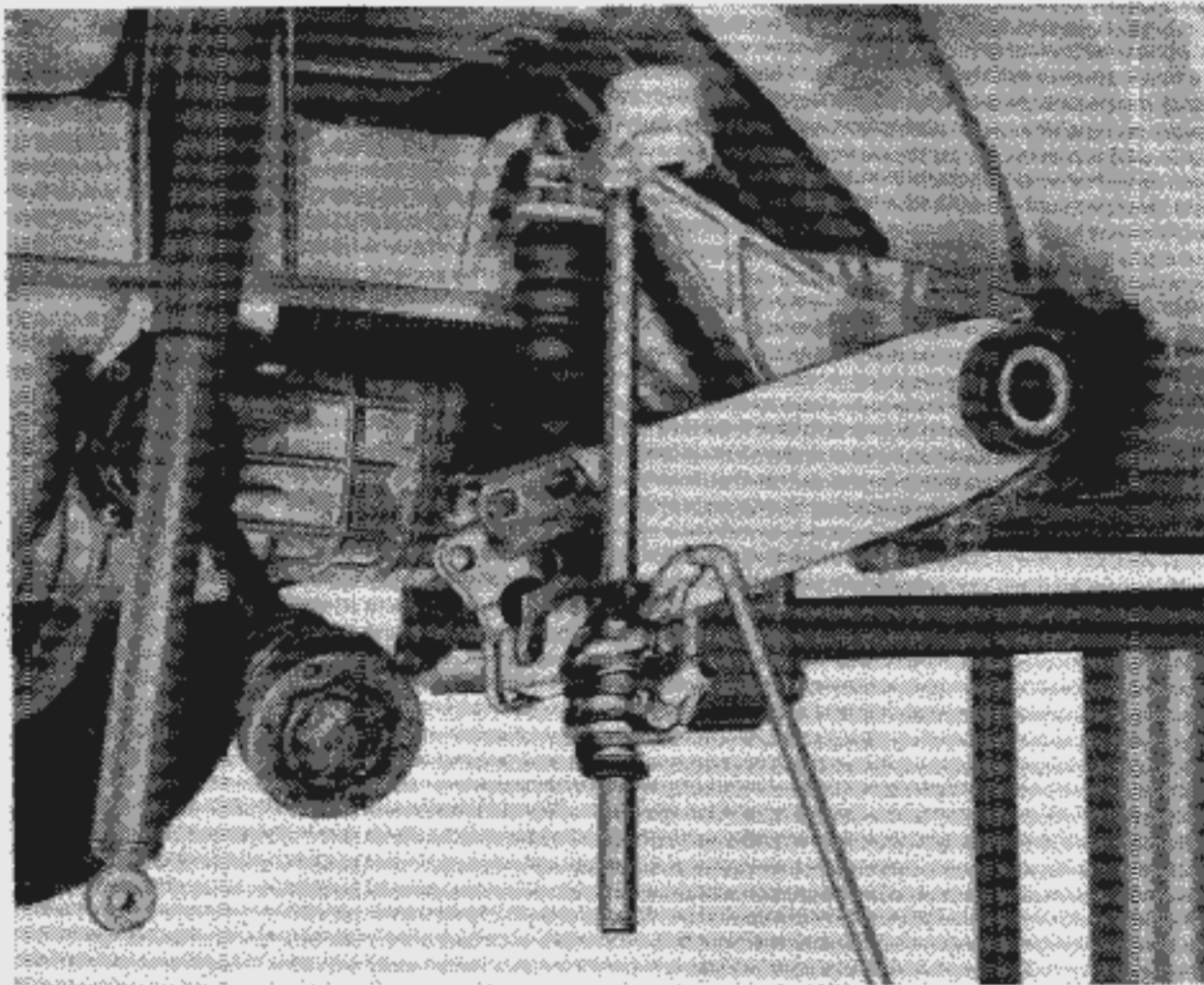
**Spring Plate and Torsion  
Arm Tensioner  
Type 1, 2, 3**

The rear spring plates on all VW models and the torsion arms of Type 1 and 3 front axles can be lifted easily with this appliance.

The illustrations give examples of how the appliance is applied for the various work. The basic part of the appliance is the vehicle jack (Part No. 111 011 03 C). For this purpose it can be obtained from

A. Bilstein  
5828 Ennepetal-Altenvoerde  
Postfach 15

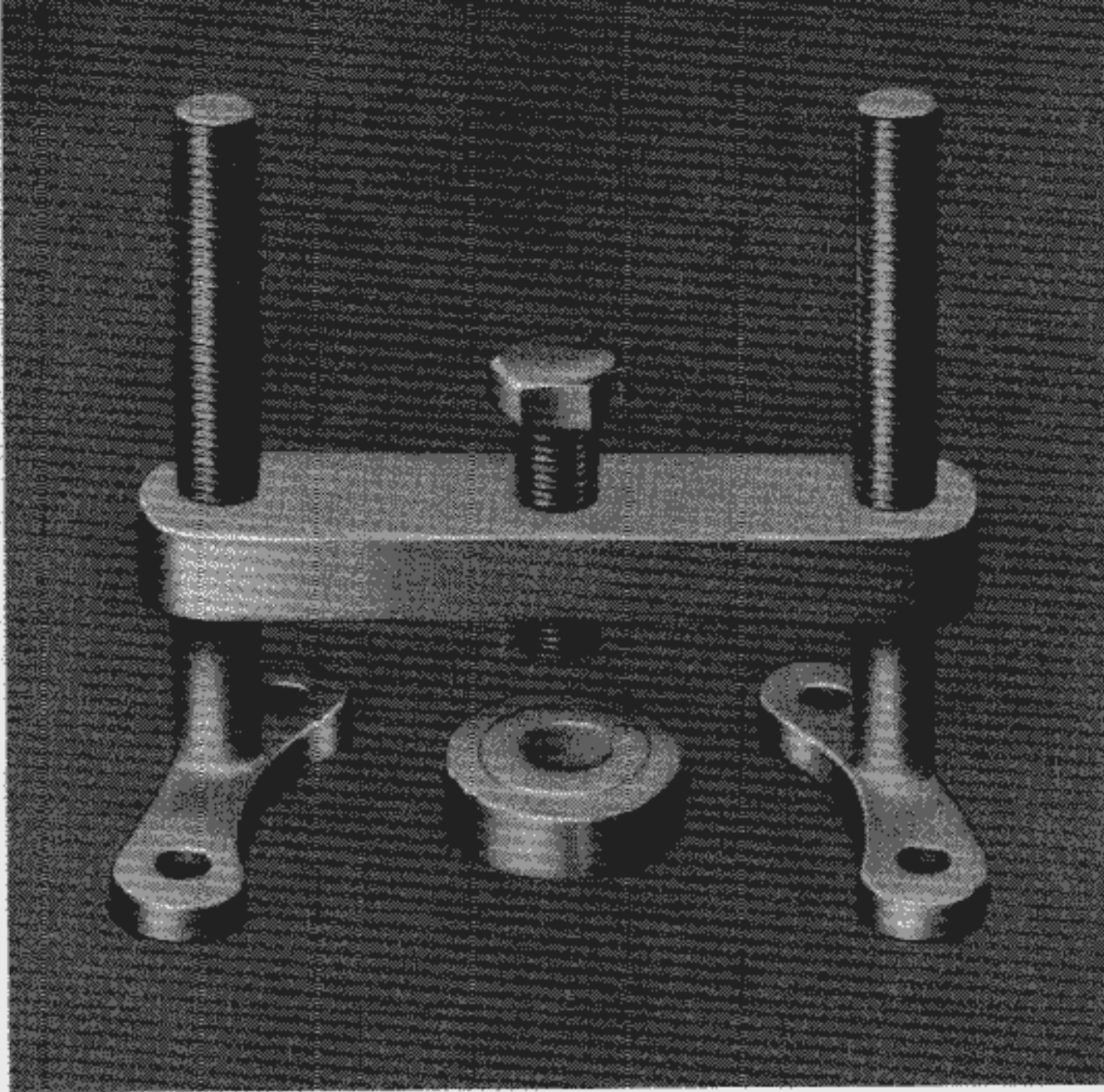
without foot, lifting arm and pressure spring — or if required as a complete tensioning appliance.









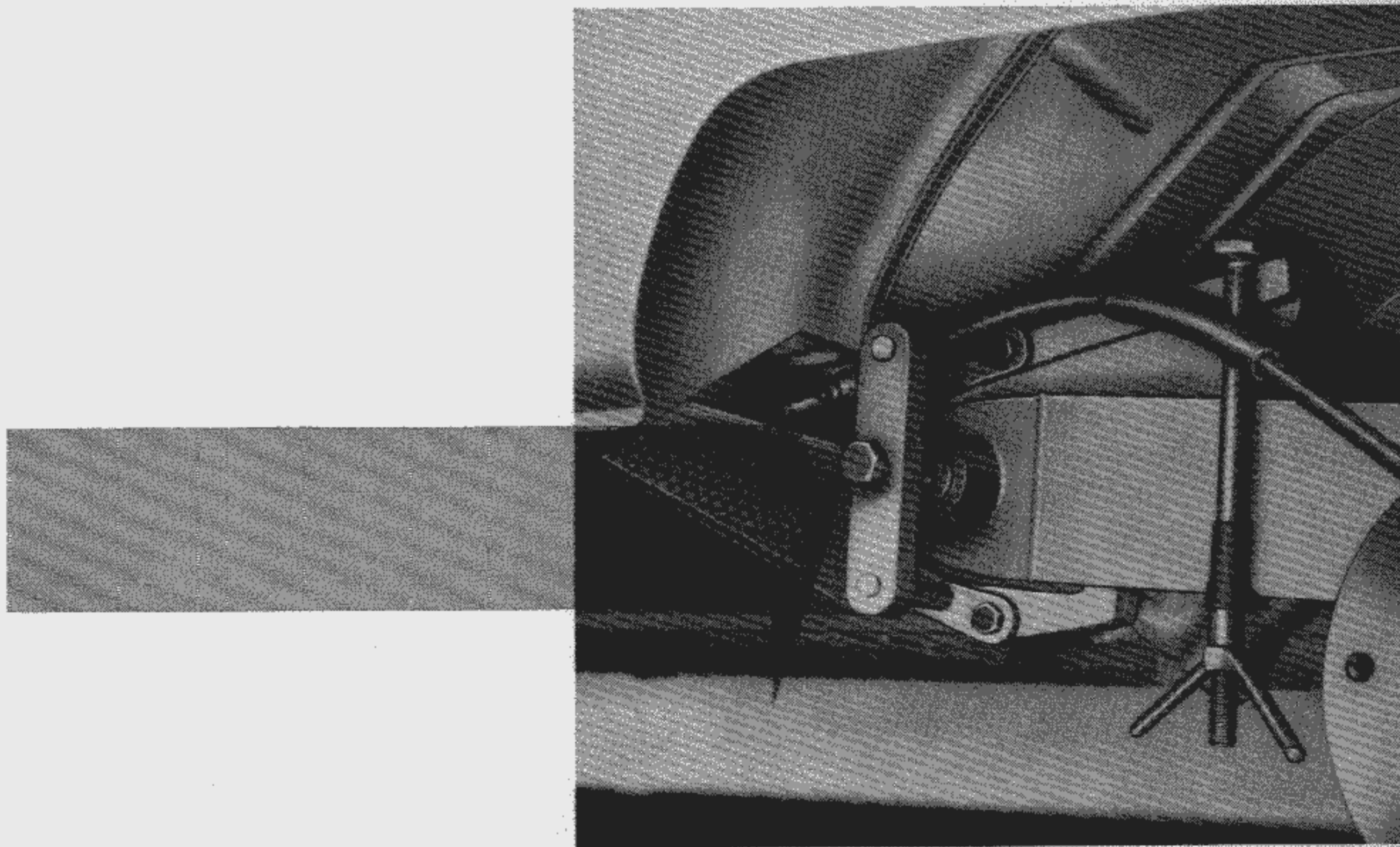


**Spring Plate  
Installing Tool**

This tool is used for pressing in the rear torsion bar after pre-loading with tensioner No. VW 655.

The tool is bolted on in place of the cover for the spring plate hub. The thrust pad which goes with the tool is positioned on the spring plate hub and, in conjunction with the thrust screw, ensures that the boss is pulled up concentrically to the rear cross-tube.

When using the tool on vehicles belonging to earlier series (prior to October 1952), the two pillars must be screwed into the head of the tool until the distance between the contact face of each pillar and the underside of the head is approximately 50 mm (2 in.).





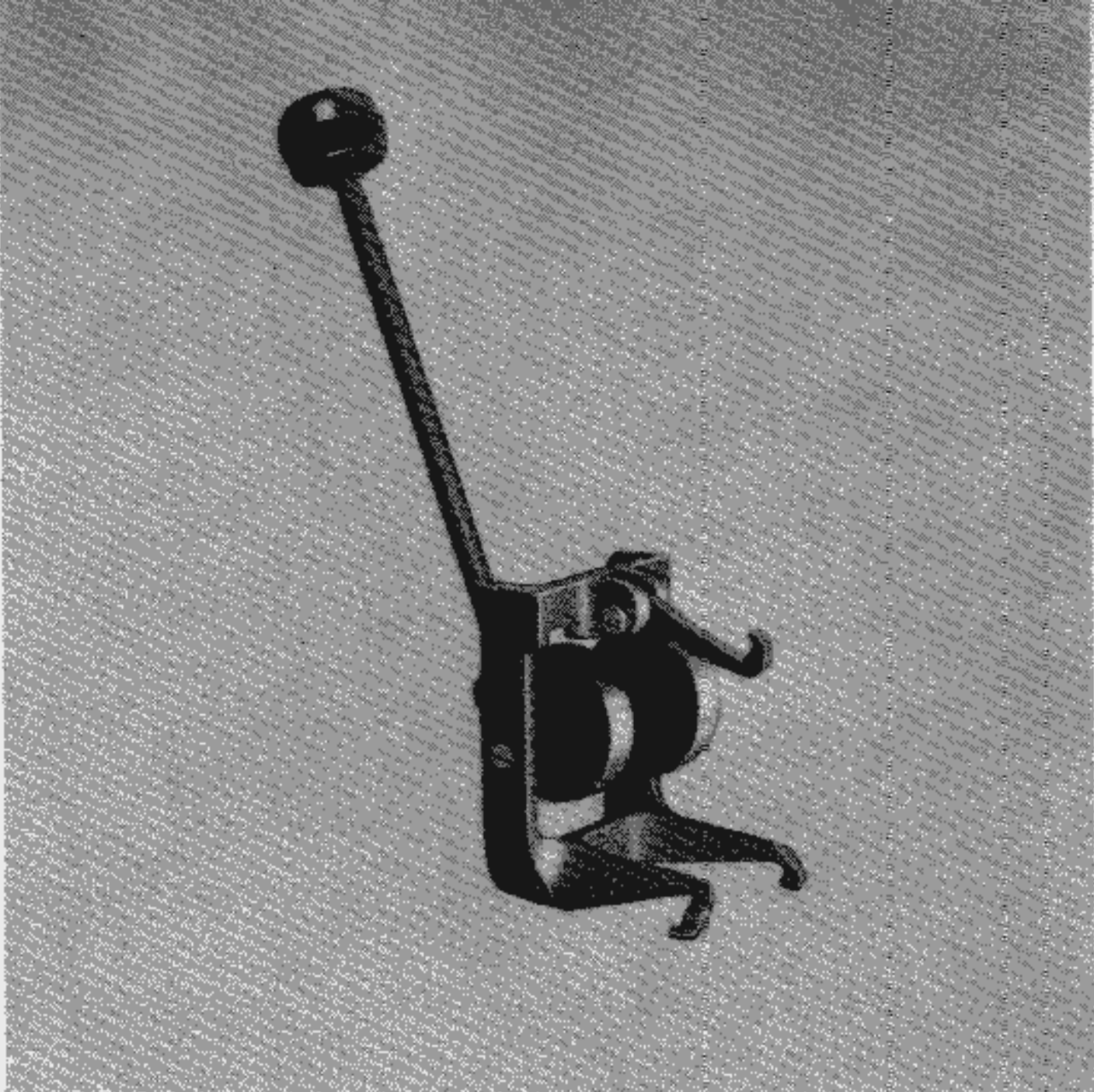
### **Construction Details for VW 656**

- 1 – Cut strip and bar to dimensions given in list of parts.
- 2 – Drill 11 mm ( $\frac{7}{16}$  in.) holes in plates (1) and shape the plates as shown in drawing.
- 3 – Radius one end of bars (2) and cut a M 16 thread for a distance of 105 mm ( $4\frac{9}{64}$  in.).
- 4 – Weld plain end of each bar to plate as shown in drawing.
- 5 – Round both ends of plate (4) as shown in drawing, drill 13.4 mm ( $1\frac{7}{32}$  in.) holes and tap M 16.
- 6 – Make up adapter cap (3) from round bar as shown in drawing.
- 7 – Screw bars (2) into the outer tapped holes in plate (4).
- 8 – Run screw (5) into the center hole of plate (4) on the opposite side to bars (2).
- 9 – Paint installing tool in prevailing colour of equipment and machines in the shop.
- 10 – Apply grease lightly to threads and tapped holes.



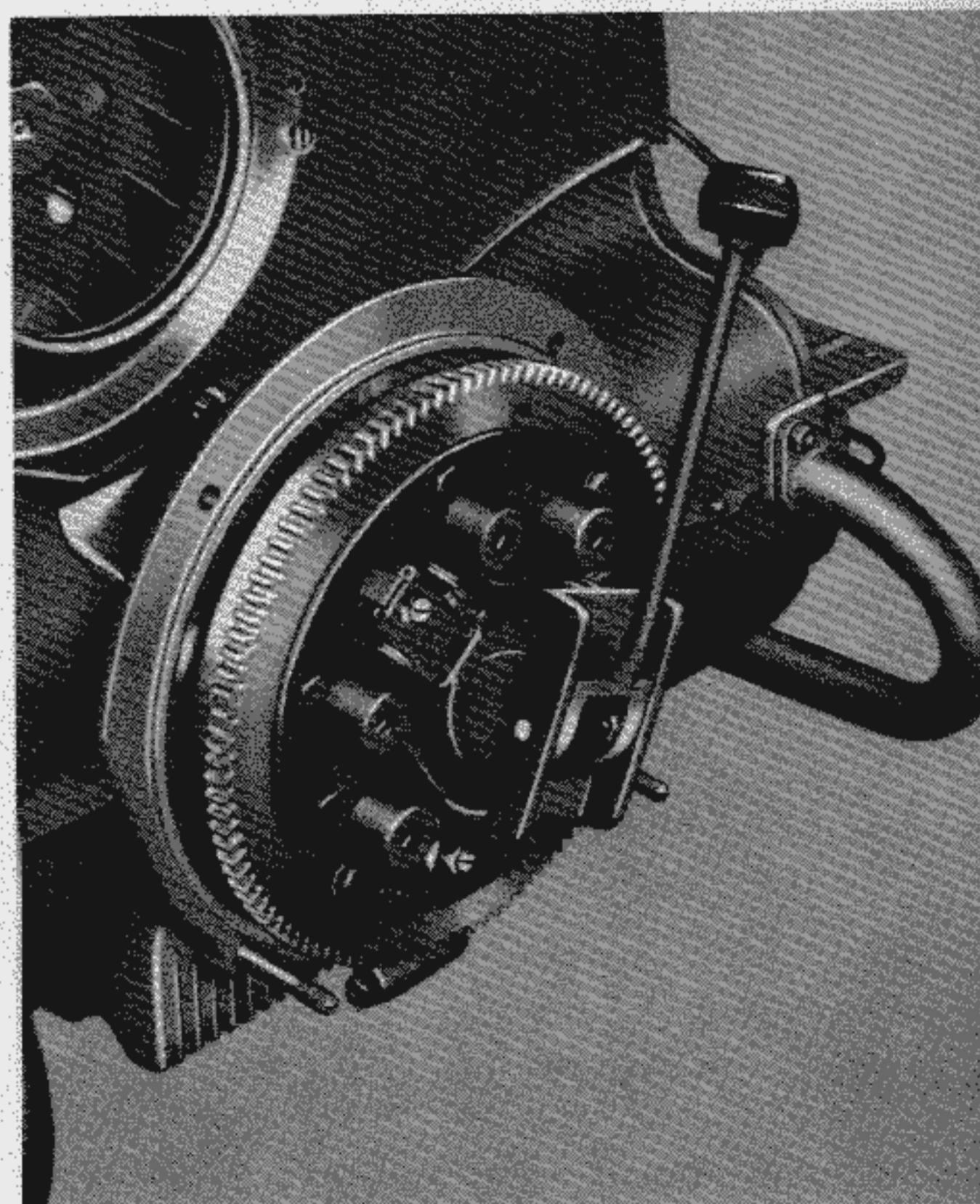






**Clutch Pressure Plate  
Compressing Tool**

This tool is used for adjusting the release plate on the clutch cover when the clutch is assembled to the flywheel. The tool has three hooks which grip behind the clutch cover. On pulling down the lever the two eccentric plates of the tool depress the release plate.





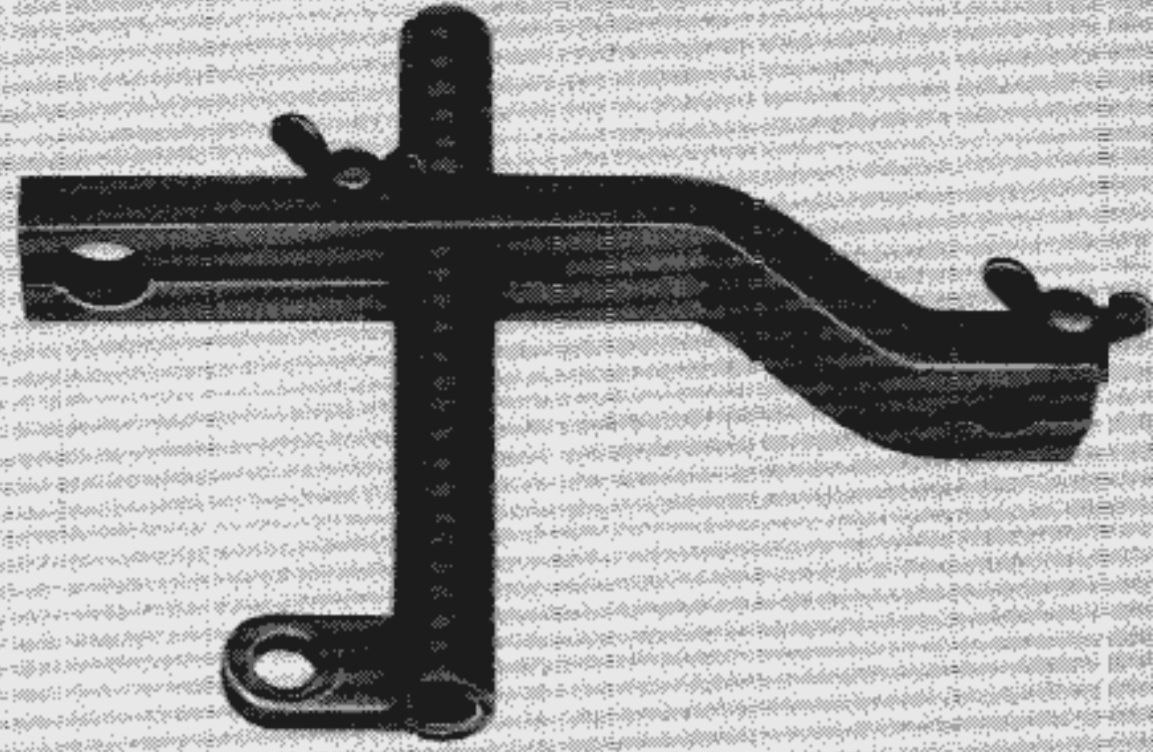
### Construction Details for VW 657

- 1 – Cut or prepare material as detailed in list of parts.
- 2 – Drill 6.6 mm (0.26 in.) holes in plates (5) as shown in drawing.
- 3 – Radius two corners of each plate as shown in drawing and file recess in opposite side.
- 4 – Weld plate (6) to plates (5).
- 5 – Shape plate (13) as shown in drawing and weld to plates (5). Drill a 3 mm ( $\frac{3}{8}$  in.) hole in plate (13) as shown in drawing and tap M 4.
- 6 – Drill a 6.6 mm (0.26 in.) hole in plates (12) as shown in drawing.
- 7 – Shape plates as shown in drawing and weld to plate (13).
- 8 – Shape plates (4) as shown in drawing and weld to plate (6).
- 9 – Shape plate (11) as shown in drawing and drill a 6.5 mm (0.256 in.) hole.
- 10 – Insert plate (11) between plates (12) and attach by means of M 6 bolt (2). Secure bolt by M 6 nut.
- 11 – Drill a 6.6 mm (0.26 in.) hole in discs (7) as shown in drawing.
- 12 – Weld up rod (3), discs (7) and lever (14) as shown in drawing.
- 13 – Attach discs by M 6 bolts (1) to plates (5). Secure bolts by M 6 nuts and split-pins.
- 14 – Drill a 5 mm ( $\frac{13}{64}$  in.) hole in spring (10), bend latter as shown in drawing and attach to plate (13) by a M 4  $\times$  5 screw.
- 15 – Screw knob (15) on to lever (14).
- 16 – Paint clutch pressure plate compressing tool in prevailing colour of equipment and machines in the shop.
- 17 – Do not oil bearings of moving parts.



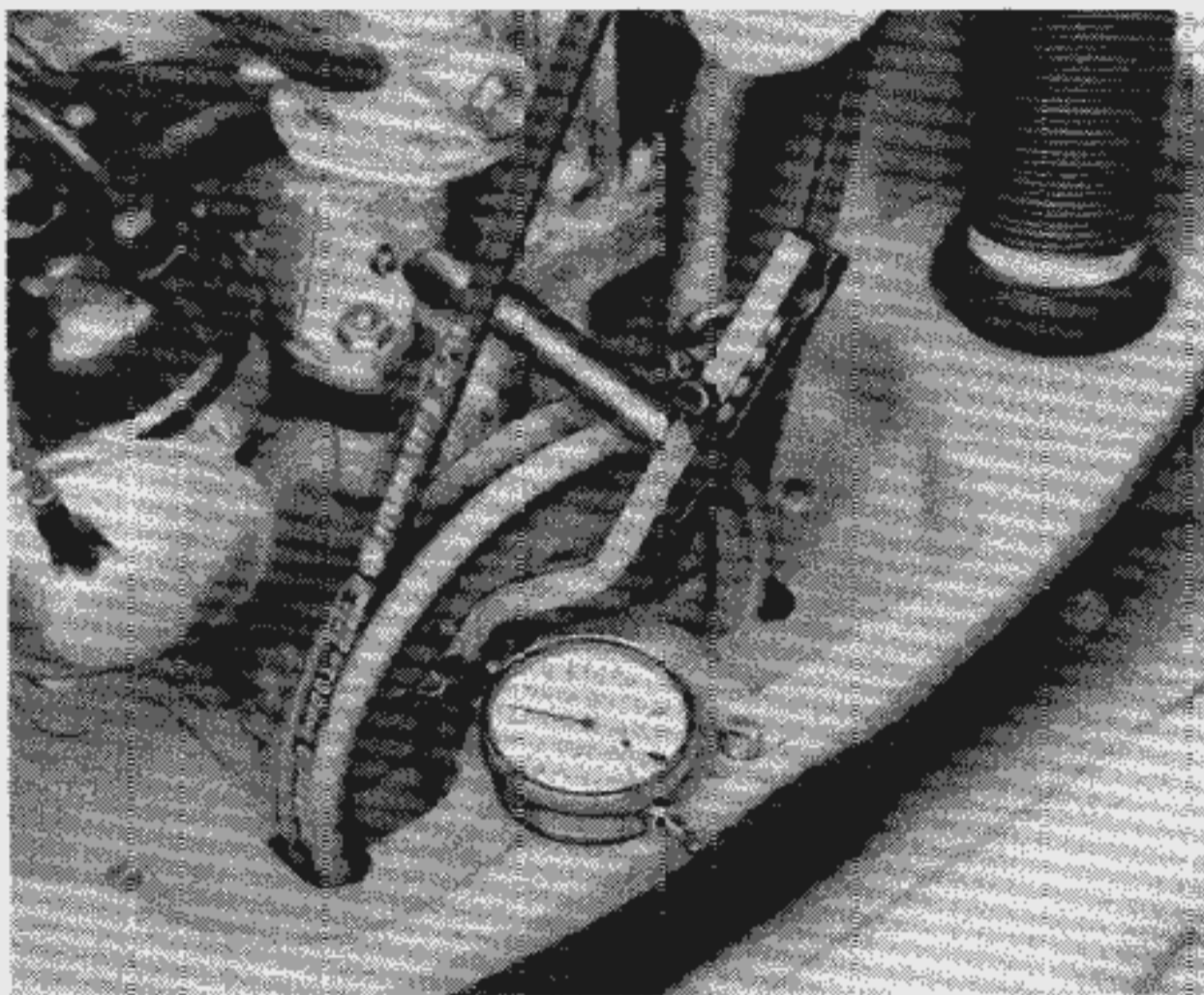




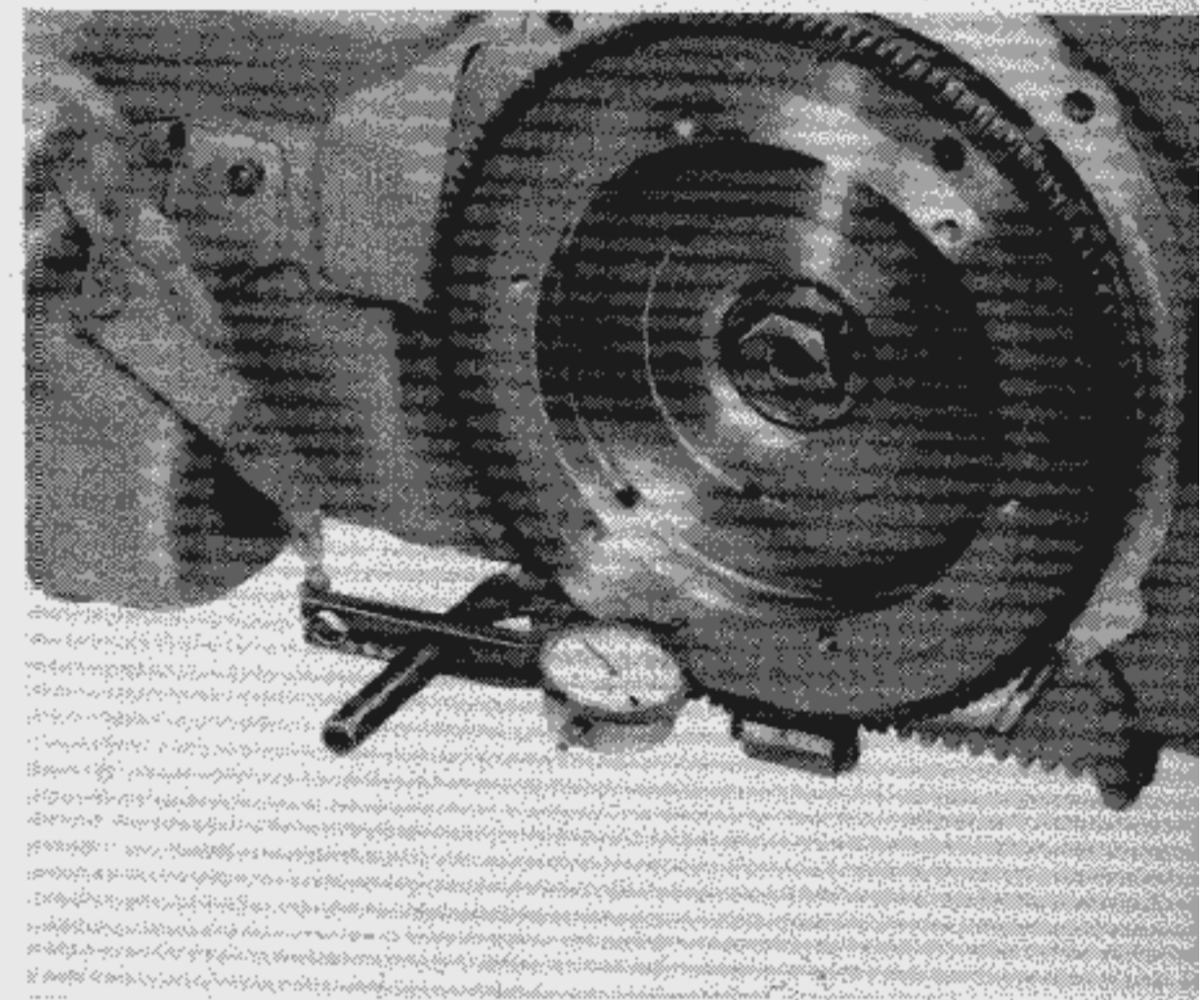


**Dial Gauge Bracket  
Type 1, 2, 3, 122, 124, 126**

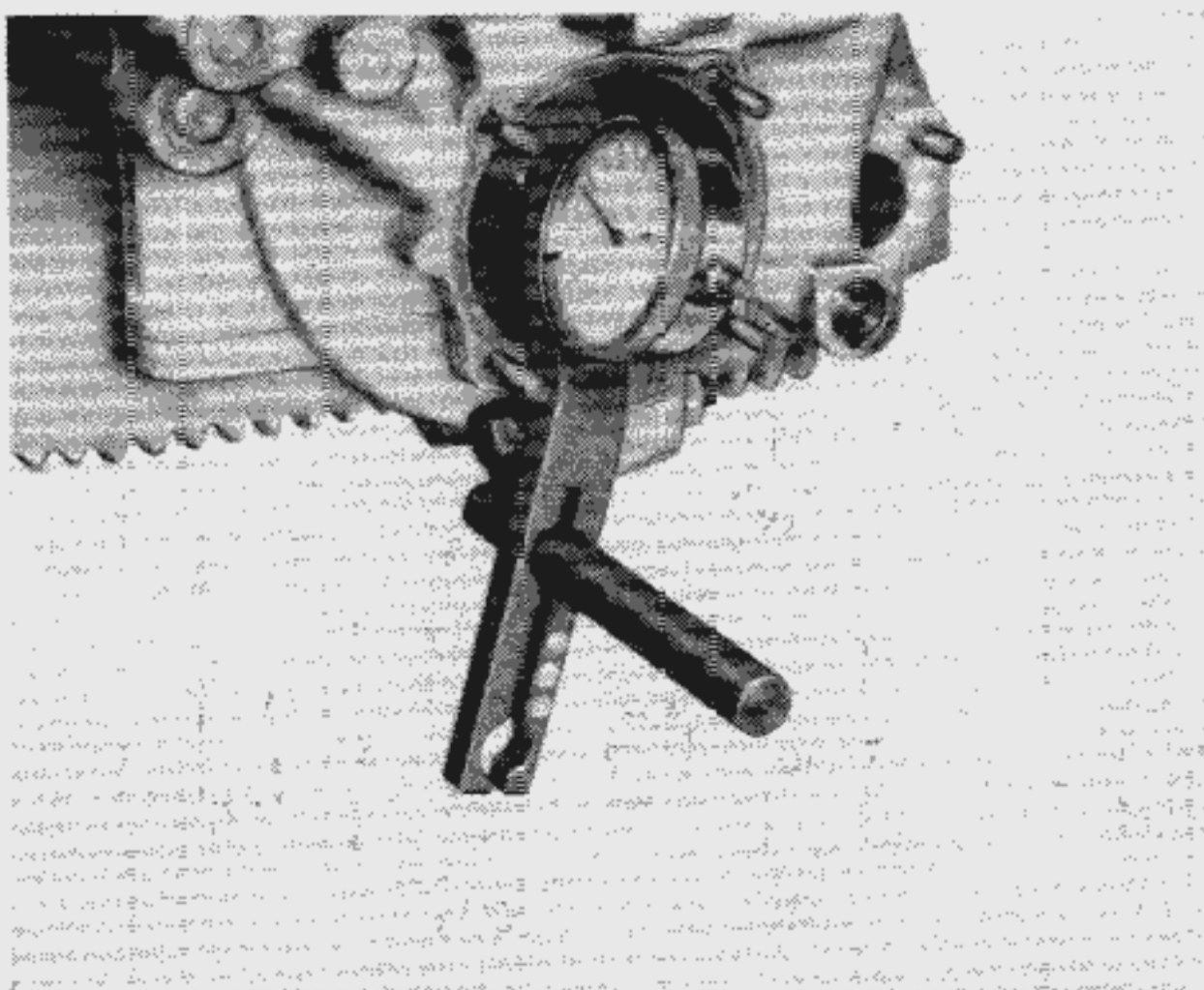
By using a dial gauge in conjunction with the dial gauge bracket the following measurements can be carried out:



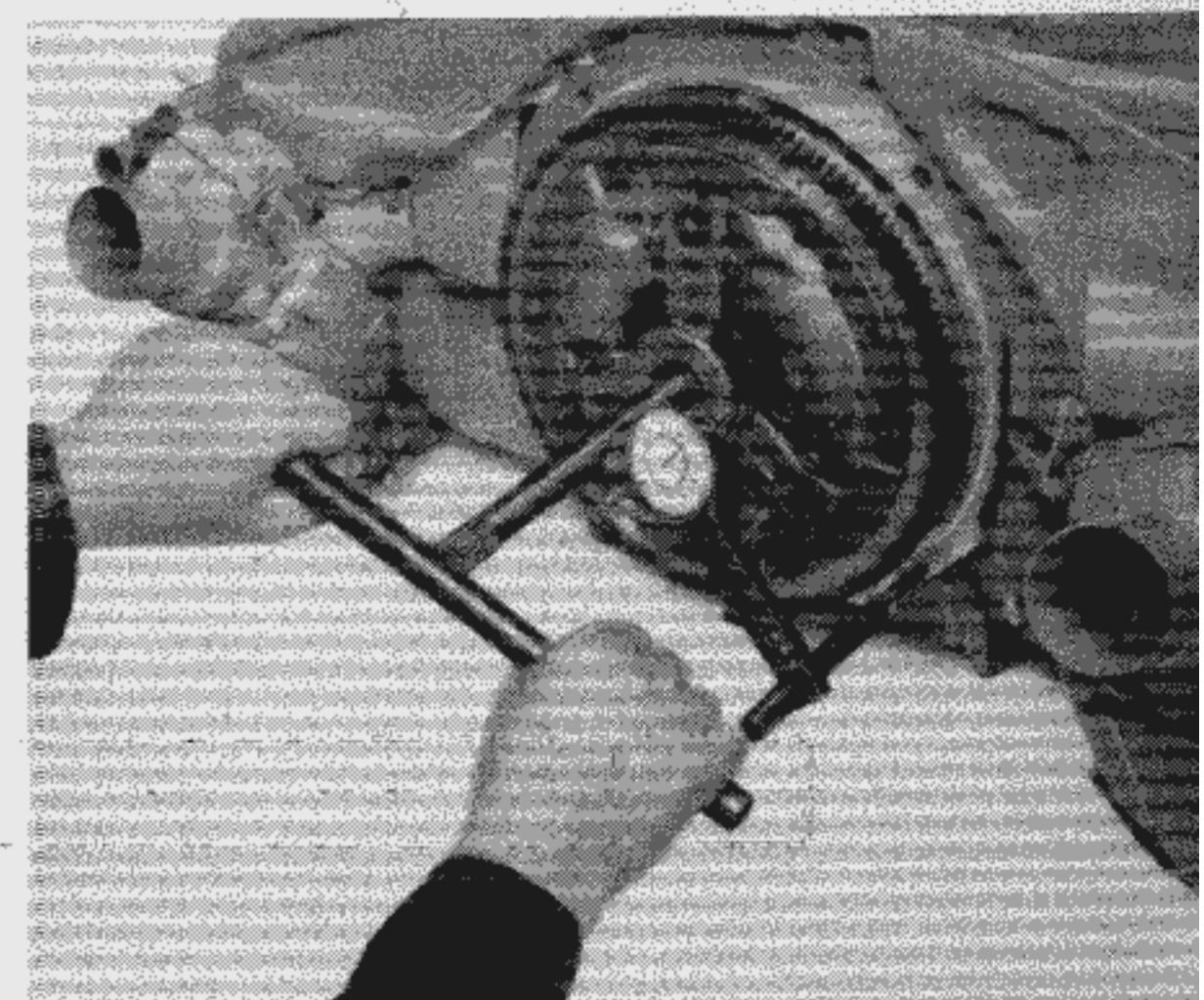
1 — Axial play of the crankshaft with the engine installed.



2 — Axial play of the crankshaft with the engine removed.



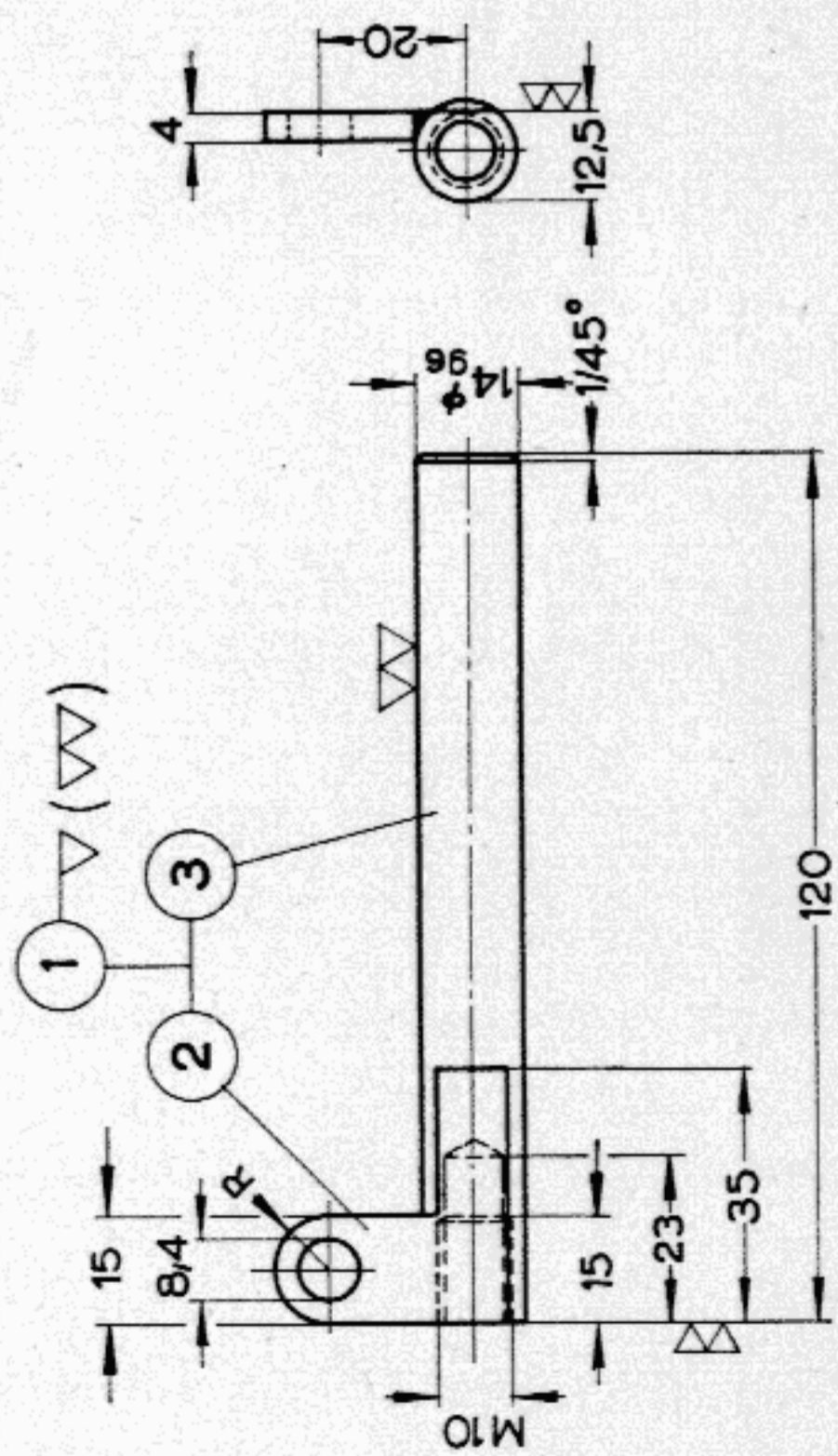
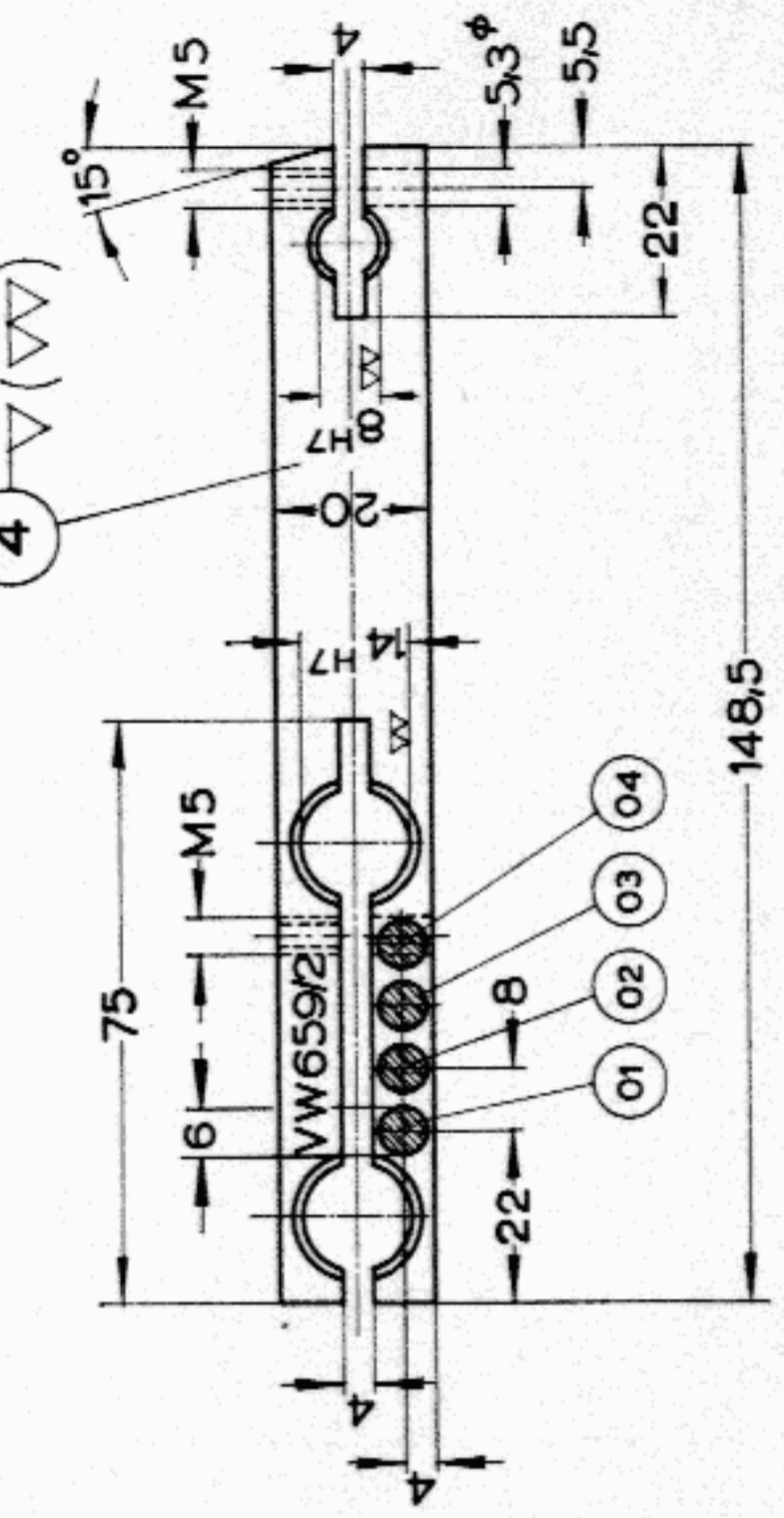
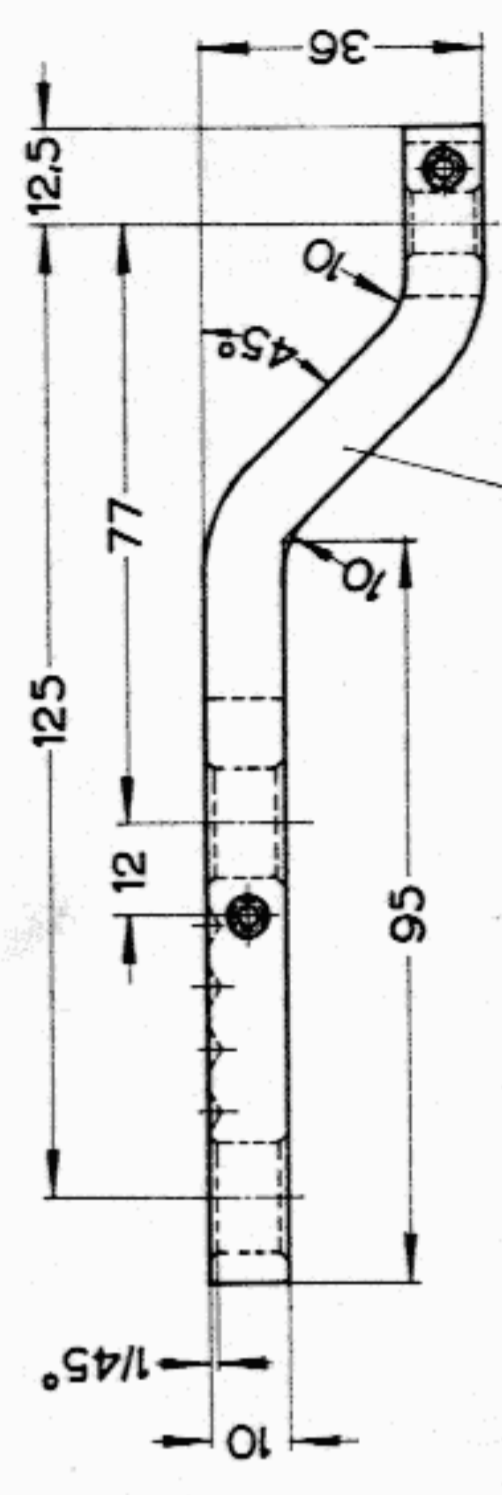
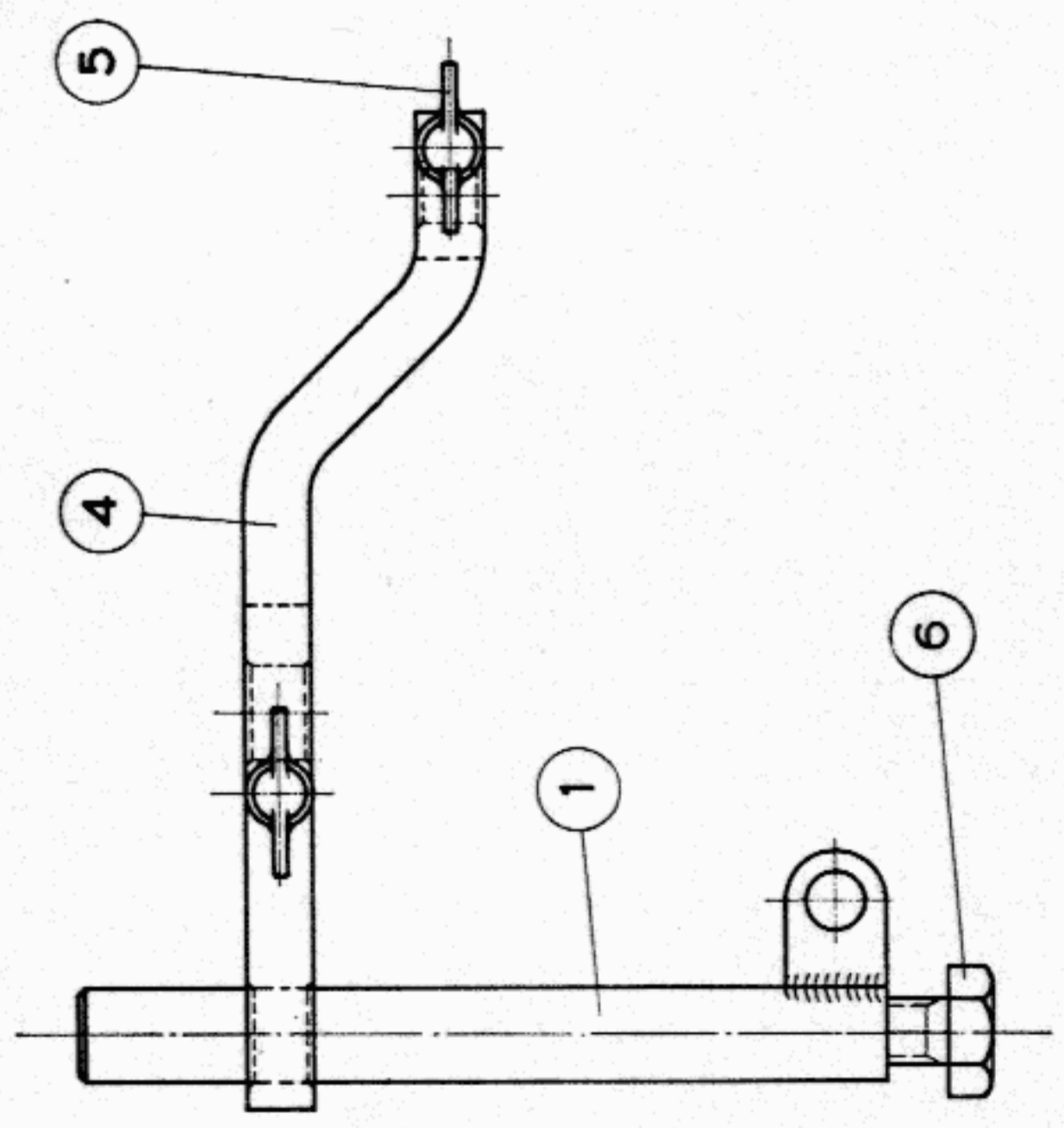
3 — Axial play of the crankshaft with the engine removed and partly dismantled.



4 — Checking the clutch release ring for runout.



Date Description of modification  
 9. 5. 67 New drawing, was VW 659/1



Chamfer edges

1	Hex. bolt	M 10x25	6	DIN 933-5 D N 10 254
2	Wing bolts	M 5x20	5	DIN 316 mg 4 D
1		FI 20x10x165	4	St 37 K
1		Rd 15x125	3	C 15
1		FI 15x4x25	2	C 15
1	Welded part		1	Parts 2 and 3

When no limit is given tolerance  
 ± 0.25; ± 30' applies

**VOLKSWAGENWERK AG**  
 WOLFSBURG  
 Service Department  
 Drawn: 9. 5. 67 H. Krumbholz  
 Checked: 17. 5. 67 Giesecking

**Colour identification marks**  
 04 green RAL 6018  
 05 black RAL 9005  
 Surfaces in given colours (synthetic resin) shown thus

**Dial Gauge Bracket**

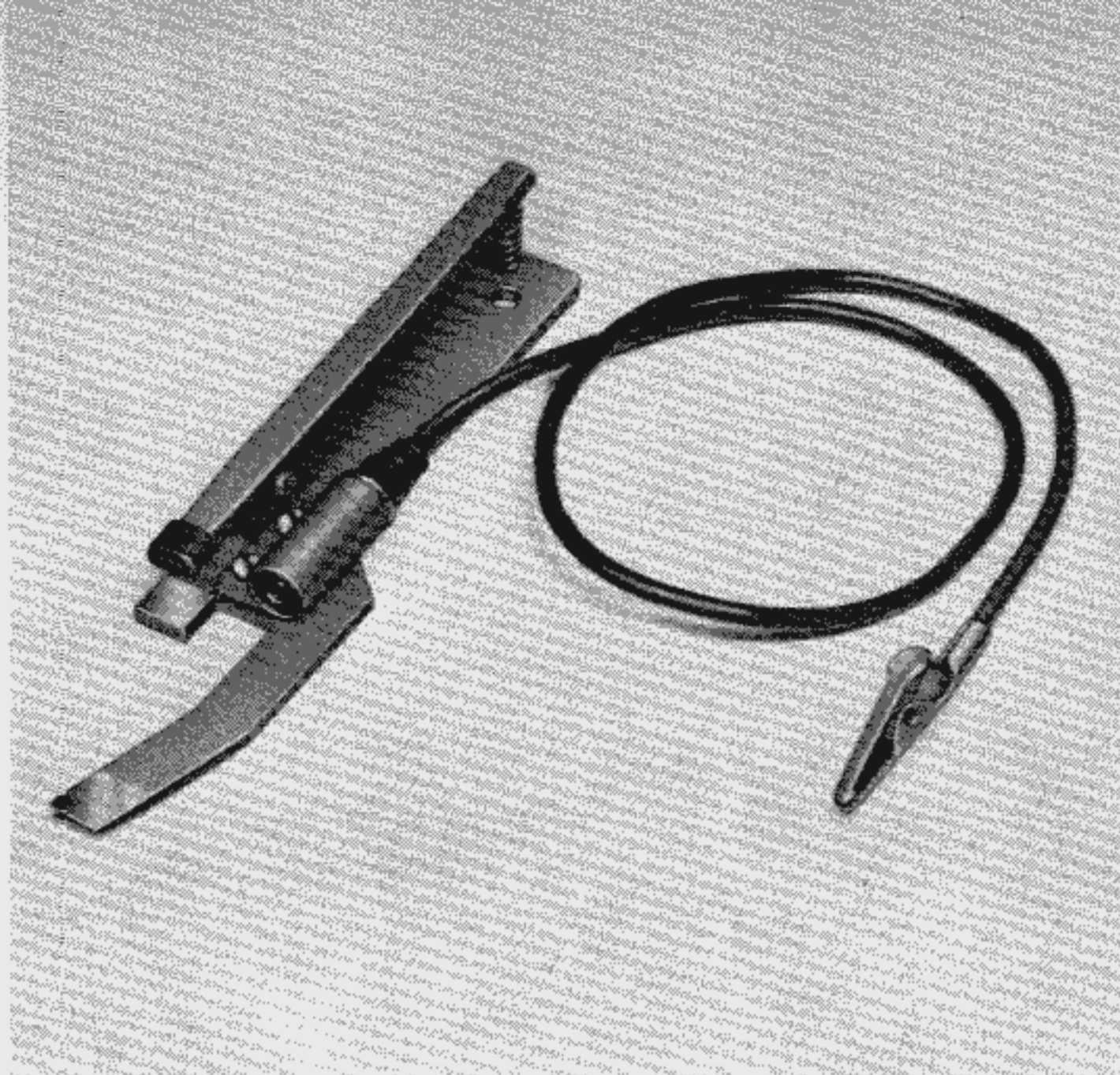
VW 659/2

No of Sheets 1  
 Sheet no. 1

Qty.	Designation	Part	Material	Part No. or Standard spec.	Remarks
1	Welded part	1			Parts 2 and 3

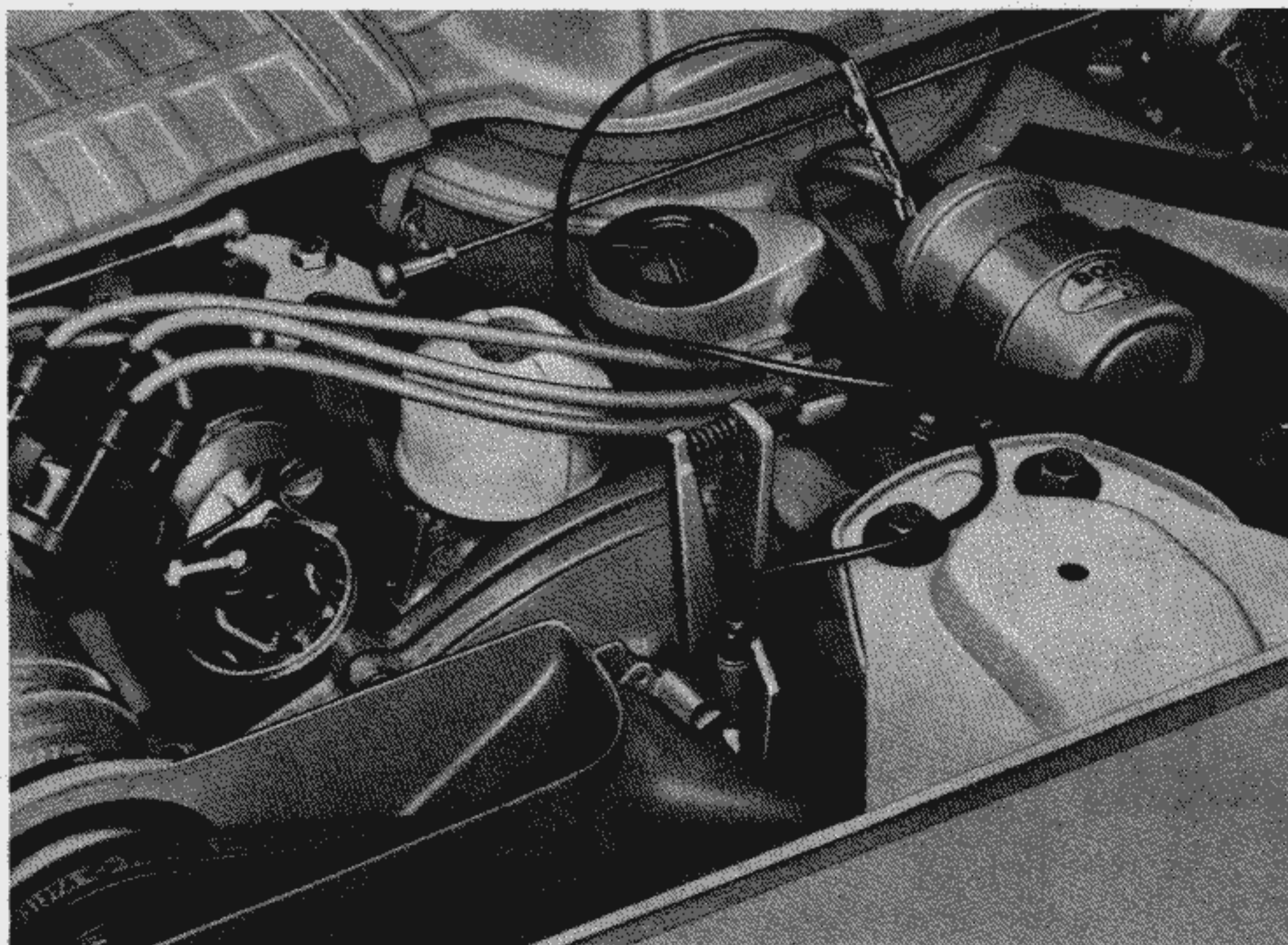


MAY 11 1965



Ignition Timing Adjustment Gauge  
with Test Lamp  
Type 3, 124

By using the gauge the ignition timing can be checked and if necessary adjusted. For this purpose the gauge is put onto the adjustment cam on the fan housing. The point of the gauge and the centre of the adjustment groove in the fan belt pulley must be aligned when adjusting the ignition timing. Whilst carrying out this operation the lead of the test lamp should be connected to terminal 15 on the ignition coil. It now illuminates the adjustment groove in the fan belt pulley. After this operation has been completed disconnect the lead from terminal 15 and connect it to terminal 1. The test lamp now serves for checking the ignition firing point. It lights up as soon as the contact points begin to open.





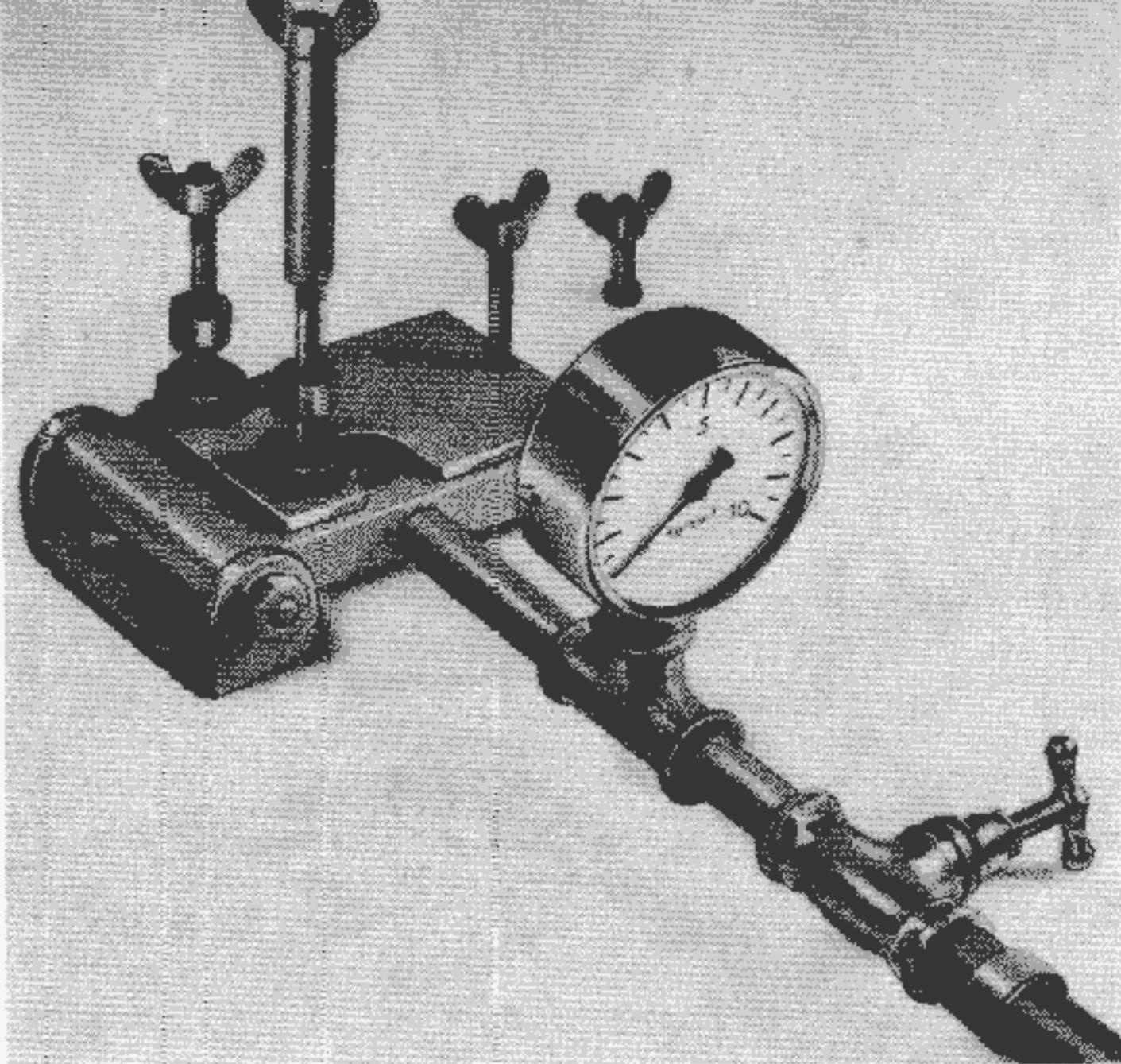
#### Construction Details for VW 660

- 1 — Cut all parts as detailed in parts list and have standard parts ready to hand.
- 2 — Mark out part 1, centre punch, cut out and file.
- 3 — Mark out, centre punch and drill all holes.
- 4 — Cut M 3 internal thread.
- 5 — Grind surfaces.
- 6 — Knock in dowel pins.
- 7 — Mark out part 2, centre punch, saw out and file.
- 8 — Bend to shape.
- 9 — Mark out 3.8 mm dia. hole, centre punch, drill and ream up to 4 H 7.
- 10 — Make parts 4 and 7 and braze to part 2.
- 11 — Smooth down brazed joints.
- 12 — Mark out dowel hole in part 5, centre punch, drill and knock in dowel pin.
- 13 — Mark out part 9, centre punch, saw out and file.
- 14 — Mark out holes for M 3 threads, centre punch, drill using a 2.4 mm drill, trim up and cut M 3 threads.
- 15 — Mark out 3.8 mm dia. holes, centre punch, drill, trim up and ream up to 4 H 7.
- 16 — Mark out part 14 and bend to shape.
- 17 — Mark out 3.6 mm dia. holes, centre punch, drill.
- 18 — Make part 3.
- 19 — Assemble gauge.
- 20 — Paint gauge, except measuring surfaces.







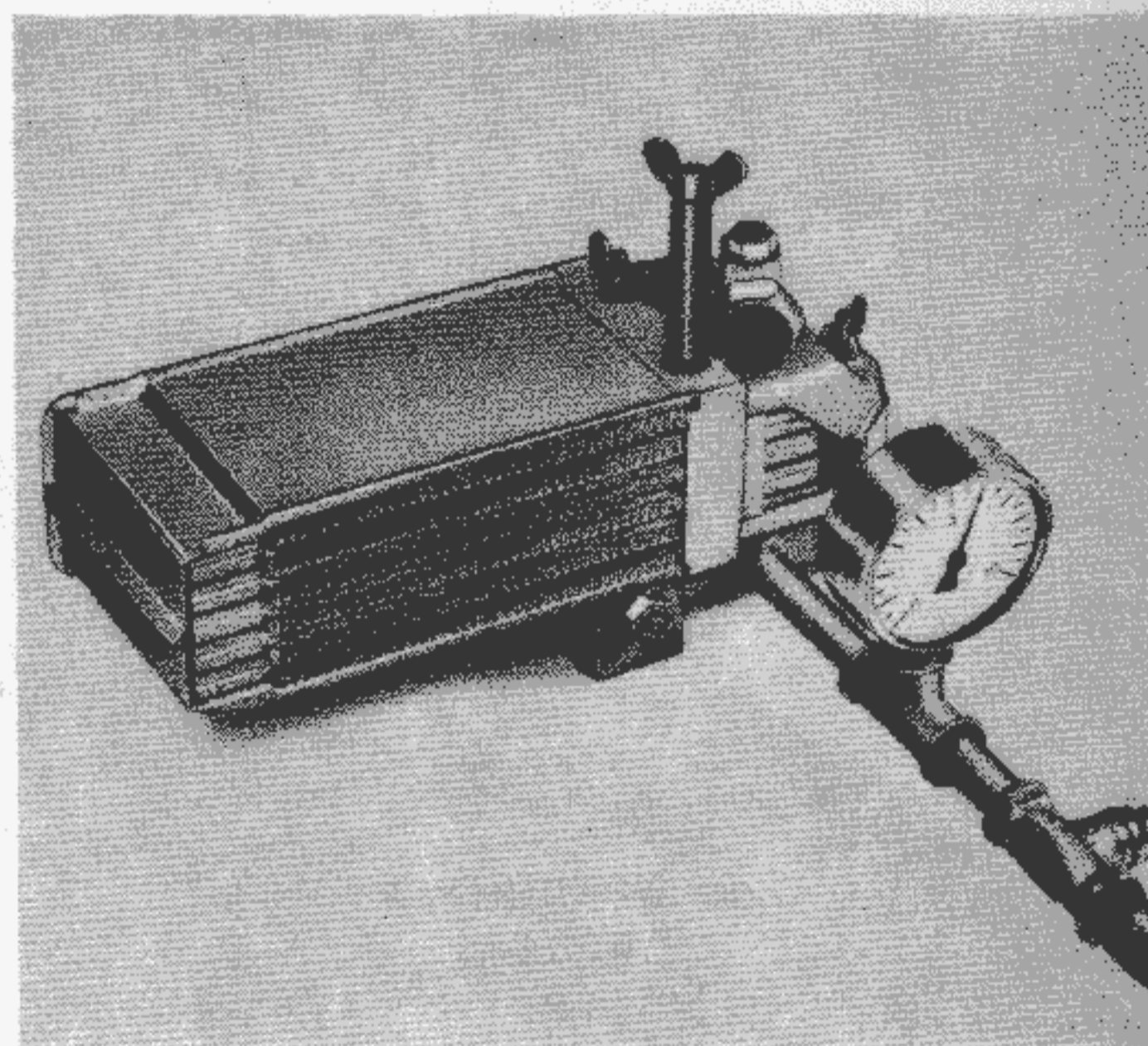


VW 661/2

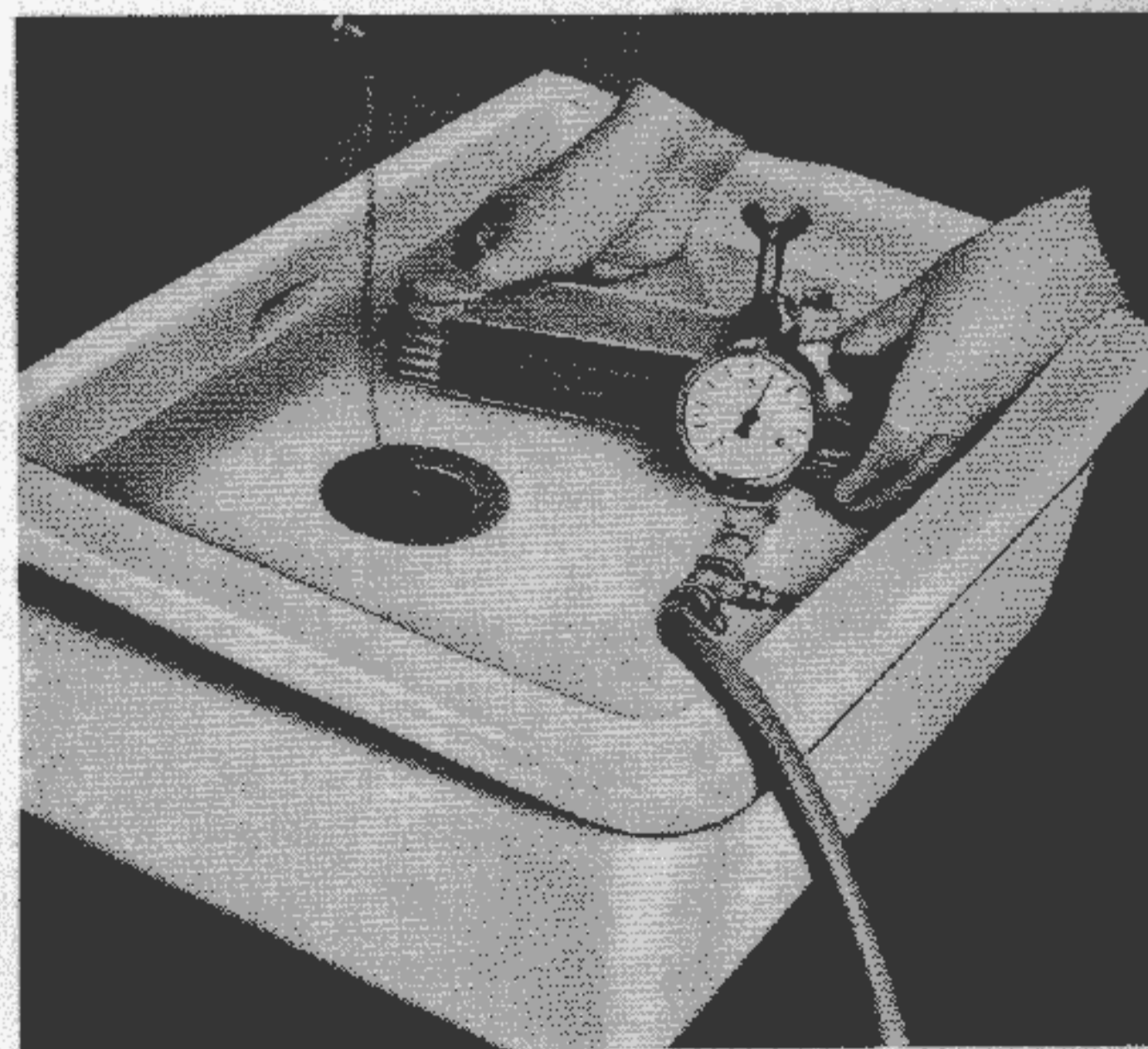
MAY 11 1965

Oil Cooler Test Appliance  
Type 1, 2, 3, 122, 124, 126

This test appliance enables the oil cooler to be checked for leaks. It is connected to a compressed air supply of about 85 lbs/sq.in. If the pressure in the oil cooler sinks after the compressed air is turned off — visible on the pressure gauge — the oil cooler is leaking.



The test appliance together with the oil cooler bolted to it can be placed in a tank of water. Naturally the pressure gauge must be held above the level of the water. Air bubbles rising in the water show the exact position of the leak on the oil cooler. Alternatively the leak can be found easily by painting the soldered joints with soapy water.

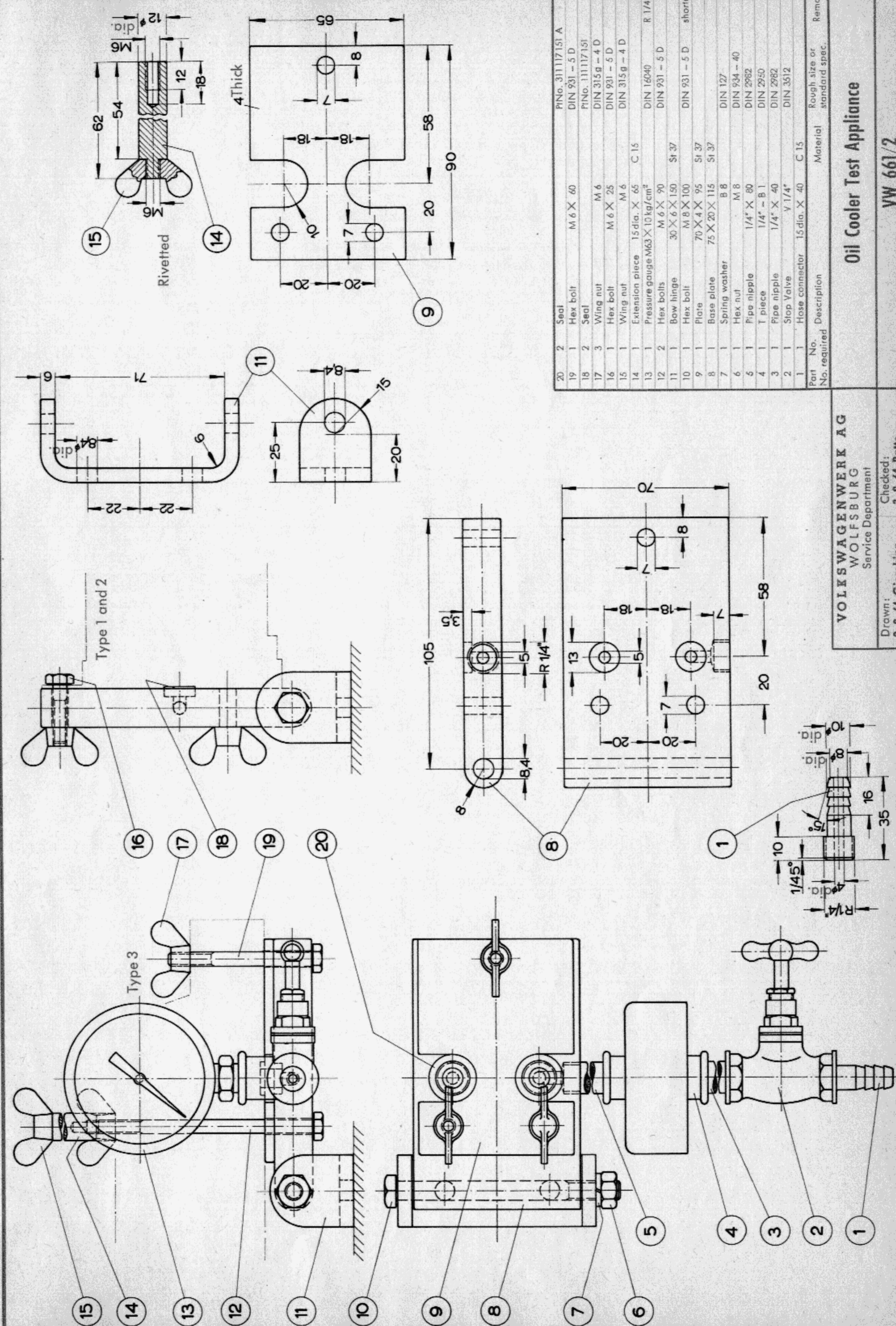




#### **Construction Details for YW 661/2**

- 1 — Cut all parts to sizes given in the parts list and have all standard parts ready to hand.
- 2 — Mark out part (8), centre punch and work.
- 3 — Mark out position of all drill holes and centre punch.
- 4 — Drill 11.5 mm hole and remove burrs, cut R 1/4" thread.
- 5 — Drill remaining holes and remove burrs.
- 6 — Cut R 1/4" thread.
- 7 — Mark out part (9), centre punch and work.
- 8 — Mark out 7 mm holes, drill and remove burrs.
- 9 — Mark out part (11), centre punch and work.
- 10 — Bend part (11).
- 11 — Mark 8.4 mm holes, drill and remove burrs.
- 12 — Turn part (1) (R 1/4" = 13.2 mm nominal diameter), drill and cut R 1/4" thread.
- 13 — Turn part (14), drill and cut M 6 thread.
- 14 — Rivet parts (14) and (15).
- 15 — Screw parts (1) to (5) and parts (8) to (13) together using sealing compound.
- 16 — Paint appliance.
- 17 — Assemble complete appliance.





Part No.	Description	Material	Rough size or standard spec.	Remarks
20	Seal			
19	Hex bolt	M 6 X 60		
18	Seal			
17	Wing nut	M 6		
16	Hex bolt	M 6 X 25		
15	Wing nut	M 6		
14	Extension piece	15 dia. X 65	C 15	
13	Pressure gauge	M 63 X 10 kg/cm <sup>2</sup>		
12	Hex bolts	M 6 X 90		
11	Bow hinge	30 X 6 X 150	St 37	
10	Hex bolt	M 8 X 100		
9	Plate	70 X 4 X 95	St 37	
8	Base plate	75 X 20 X 115	St 37	
7	Spring washer	B 8		
6	Hex nut	M 8		
5	Pipe nipple	1/4" X 80		
4	T piece	1/4" - B 1		
3	Pipe nipple	1/4" X 40		
2	Stop Valve	V 1/4"		
1	Hose connector	15 dia. X 40	C 15	

**VOLKSWAGENWERK AG**  
**WOLFSBURG**  
 Service Department

Drawn: 2. 9. 64 Giesecking  
 Checked: 3. 9. 64 Ratte

**Oil Cooler Test Appliance**

VW 661/2





## Oil Pressure Switch Tester

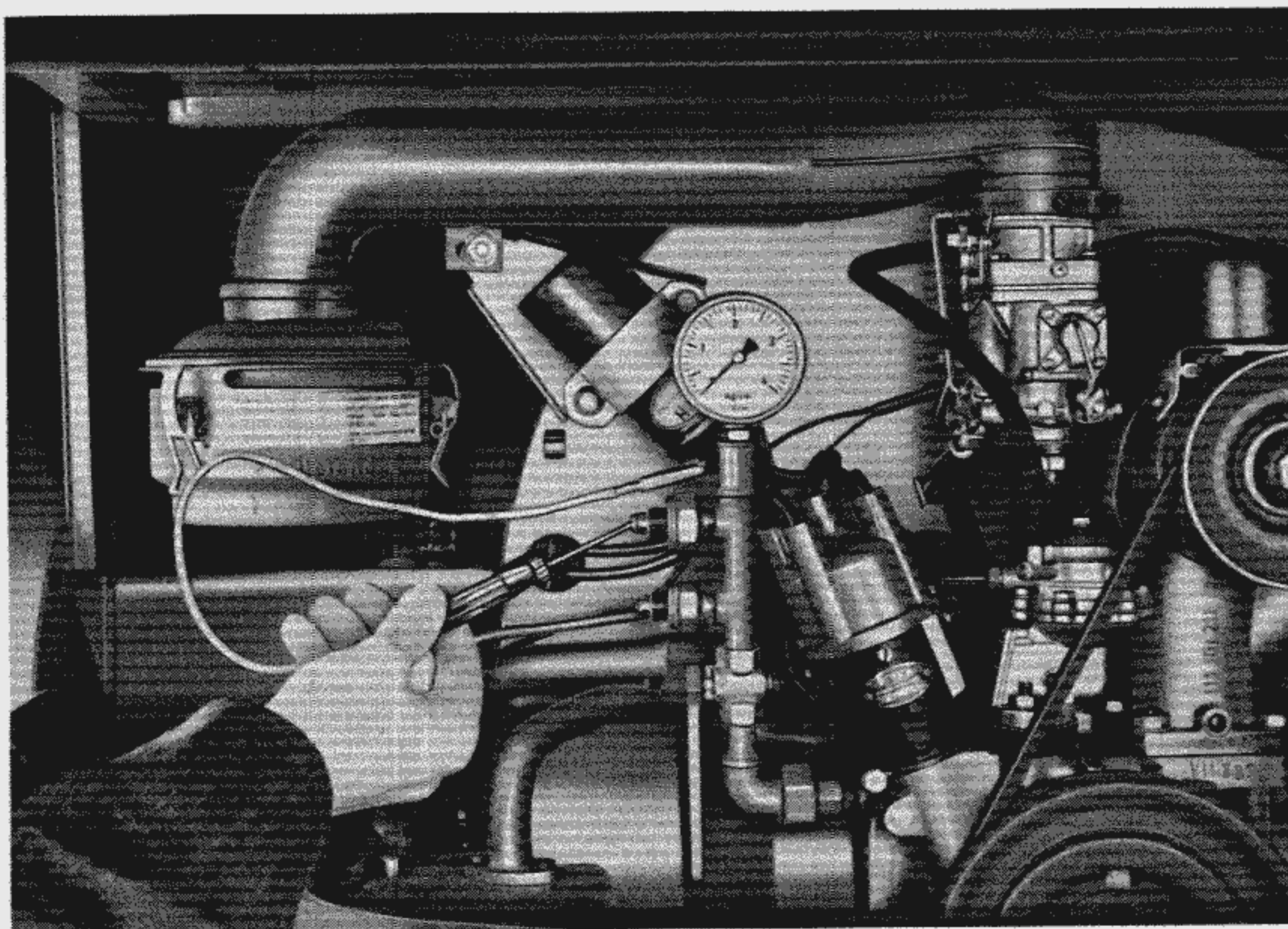
The oil pressure switch is removed and is substituted by the tester which is screwed into the crankcase. The switch undergoing test is screwed—according to type—into the appropriate socket (two are provided, tapped M 10 and M 12) and connected up via terminal 15 of the ignition coil to the electrical warning device on the instrument panel. A test lamp is installed in the connecting lead. When the ignition is switched on, the lamp should light up; when the engine has started and is picking up speed the lamp should go out.

**Test:** 1 – Install tester and connect wires.

2 – Start engine. As soon as normal oil pressure is indicated (4.3—8.5 lbs./sq. in.) close shut-off tap and stop the engine.

3 – Lower oil pressure gradually and watch dial till test lamp lights up.

4 – If the switch does not work properly adjust it according to special instruction in Workshop Manual.

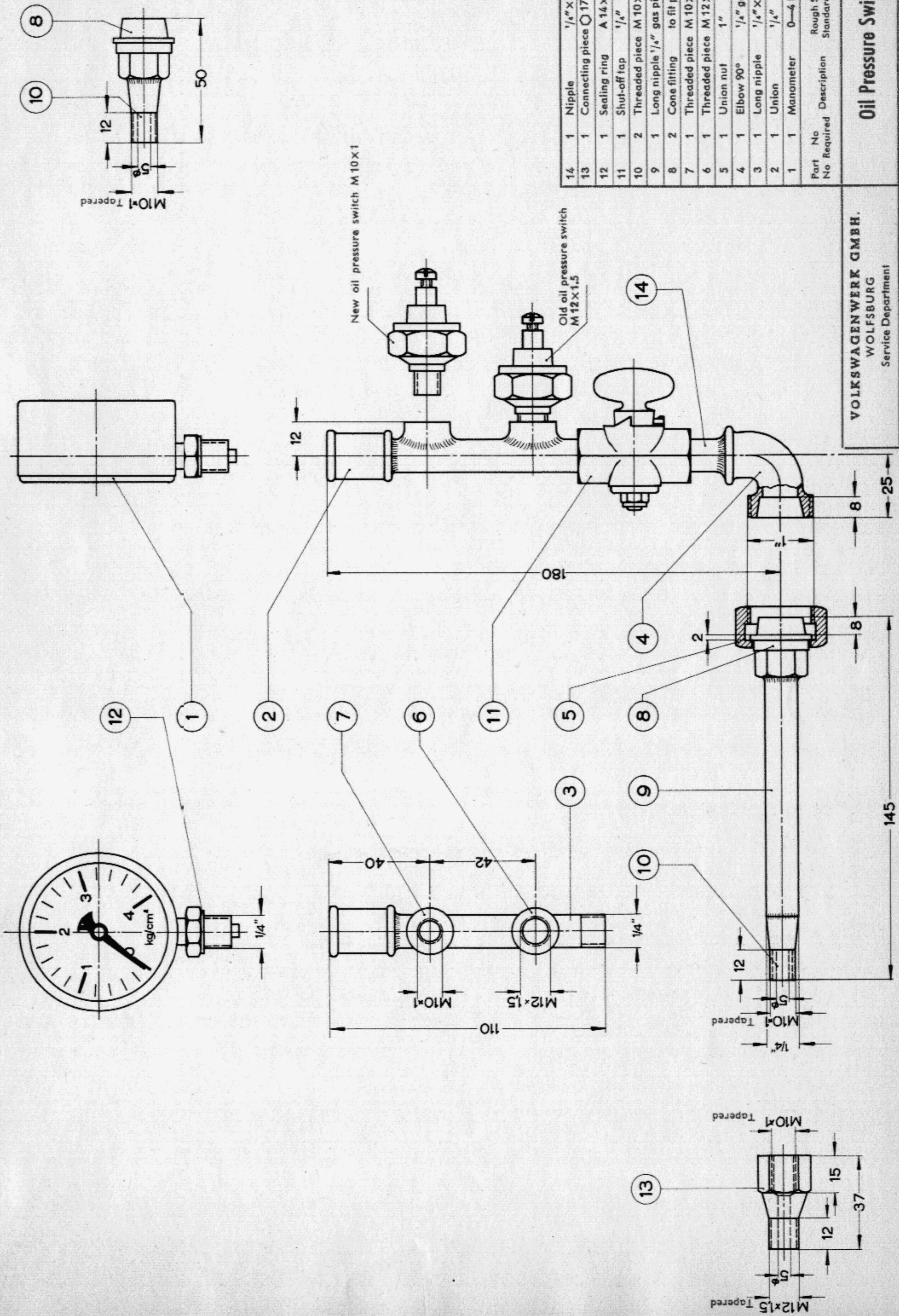




### **Construction Details for VW 662/2**

- 1 - Cut all pipes and other parts to dimensions given in list of parts and have them ready to hand.
- 2 - Weld tapped sockets (6) and (7) to pipe (3) as shown in drawing. Bore a 5 mm dia. hole through the center of each of the tapped sockets into the pipe.
- 3 - Weld nipple (14) to elbow 90° (4) and screw into open end of shut-off tap.
- 4 - Weld union (2) to one end of pipe (3). Screw shut-off tap (11) tightly into the other end.
- 5 - Weld cone (8) to one end of pipe (9). Weld threaded piece (10) to the other end of the pipe. This piece has a total length of 145 mm. Weld a cone to a second threaded piece (10). This piece has a total length of 50 mm.
- 6 - Screw manometer (1) to sleeve. Check for tightness.
- 7 - Connect both pipes by means of union nut (5).
- 8 - Machine connecting piece (13) as specified in drawing.
- 9 - Paint oil pressure switch tester in prevailing colour of equipment and machinery in the shop.





Part No	Description	Rough Size or Standard Spec.	Remarks
14	1 Nipple	1/4" X 30	gas pipe
13	1 Connecting piece	Ø 17	DIN 1015
12	1 Sealing ring	A 14 X 18	DIN 7603
11	1 Shut-off tap	1/4"	
10	2 Threaded piece	M 10 X 1 tapered	oil switch bore
9	1 Long nipple	1/4" gas pipe	1 end cut off
8	2 Cone fitting	to fit parts 4 + 5	
7	1 Threaded piece	M 10 X 1 X 14	
6	1 Threaded piece	M 12 X 1.5 X 14	
5	1 Union nut	1" hex.	
4	1 Elbow 90°	1/4" gas pipe	with cone
3	1 Long nipple	1/4" X 100	gas pipe
2	1 Union	1/4"	gas pipe
1	1 Manometer	0-4 kg/cm²	dial range

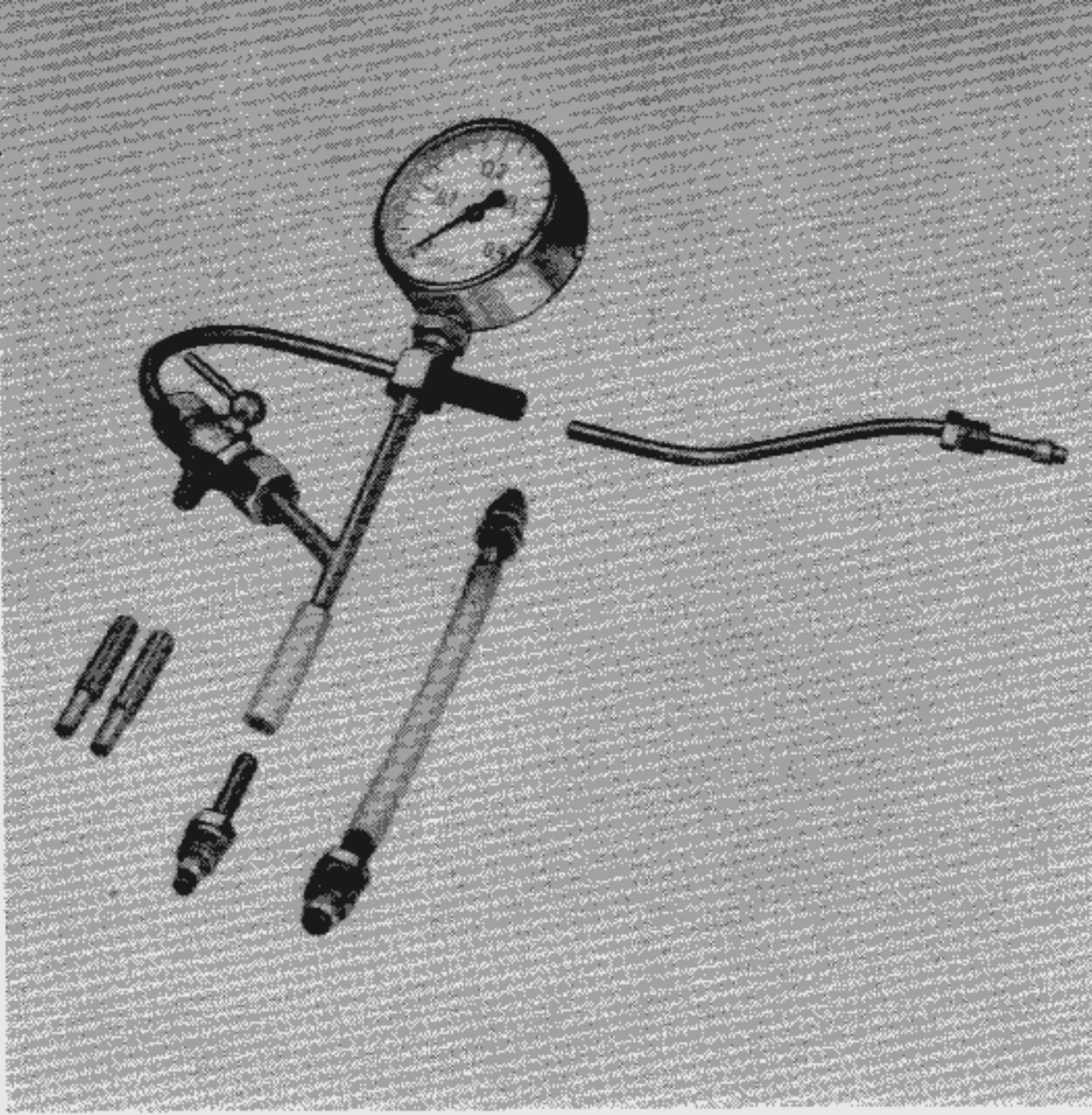
VOLKSWAGENWERK GMBH.  
WOLFSBURG  
Service Department

Scale 1:1  
Drawn: 27-2-59 Sandau  
Checked: 27-2-59 Gramm

Oil Pressure Switch Tester

VW 662/2

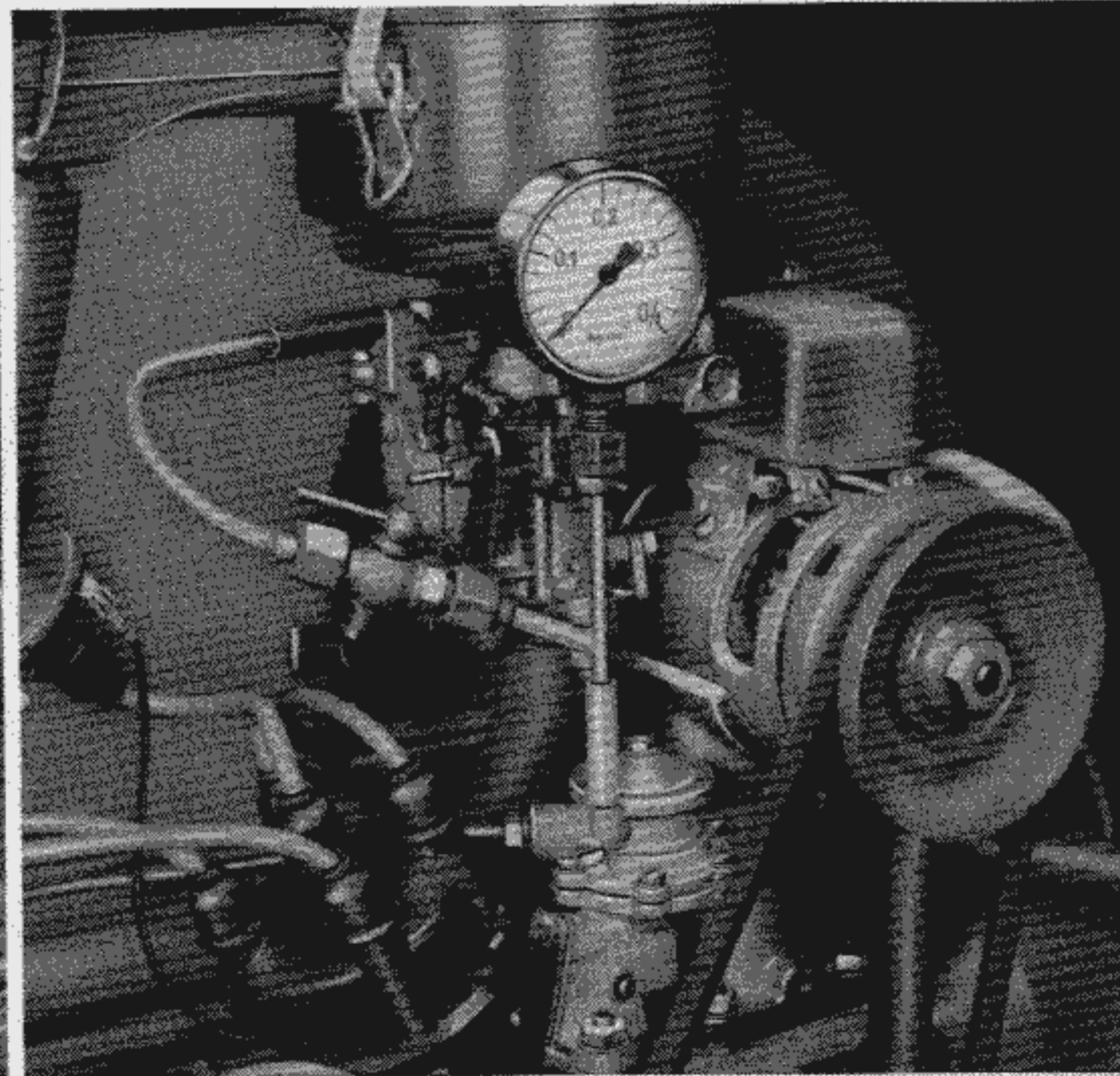
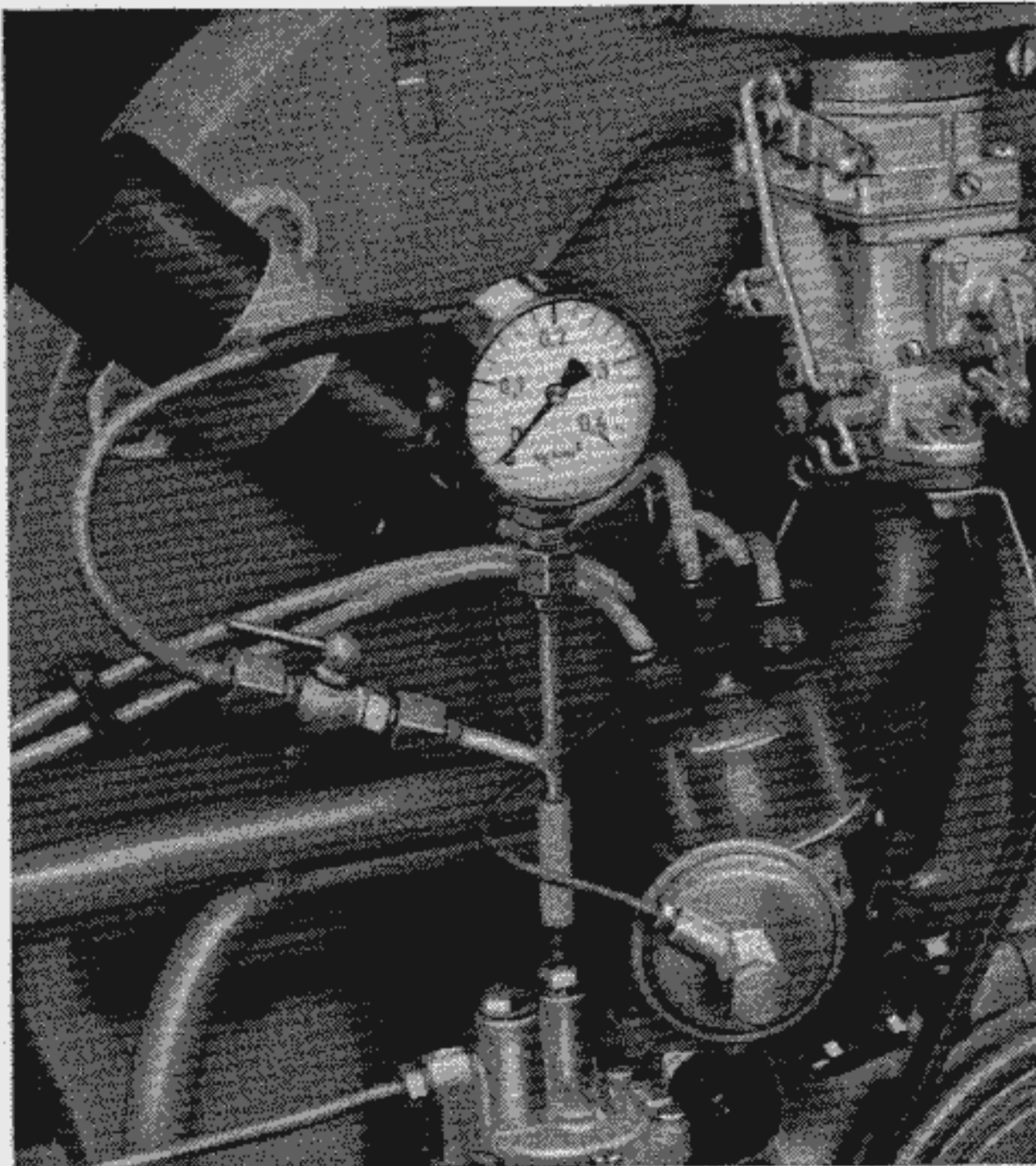




## Fuel Pump Tester

The tester is fitted in place of the fuel line connecting the fuel pump to the carburetor. When the engine is running, the gauge indicates the pressure of the fuel delivered by the pump.

The tester can also be fitted between the fuel pump and carburetor by means of threaded connectors.

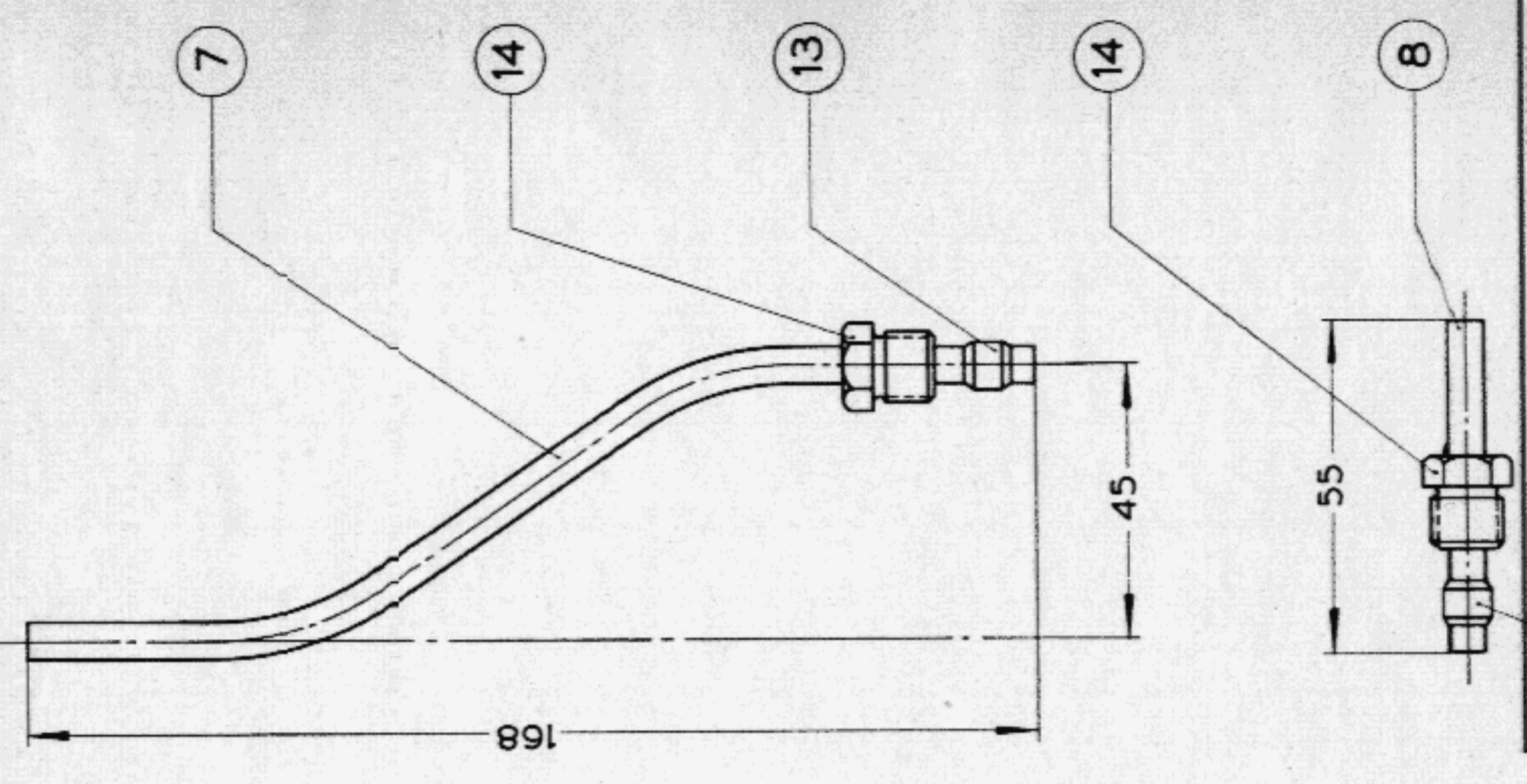
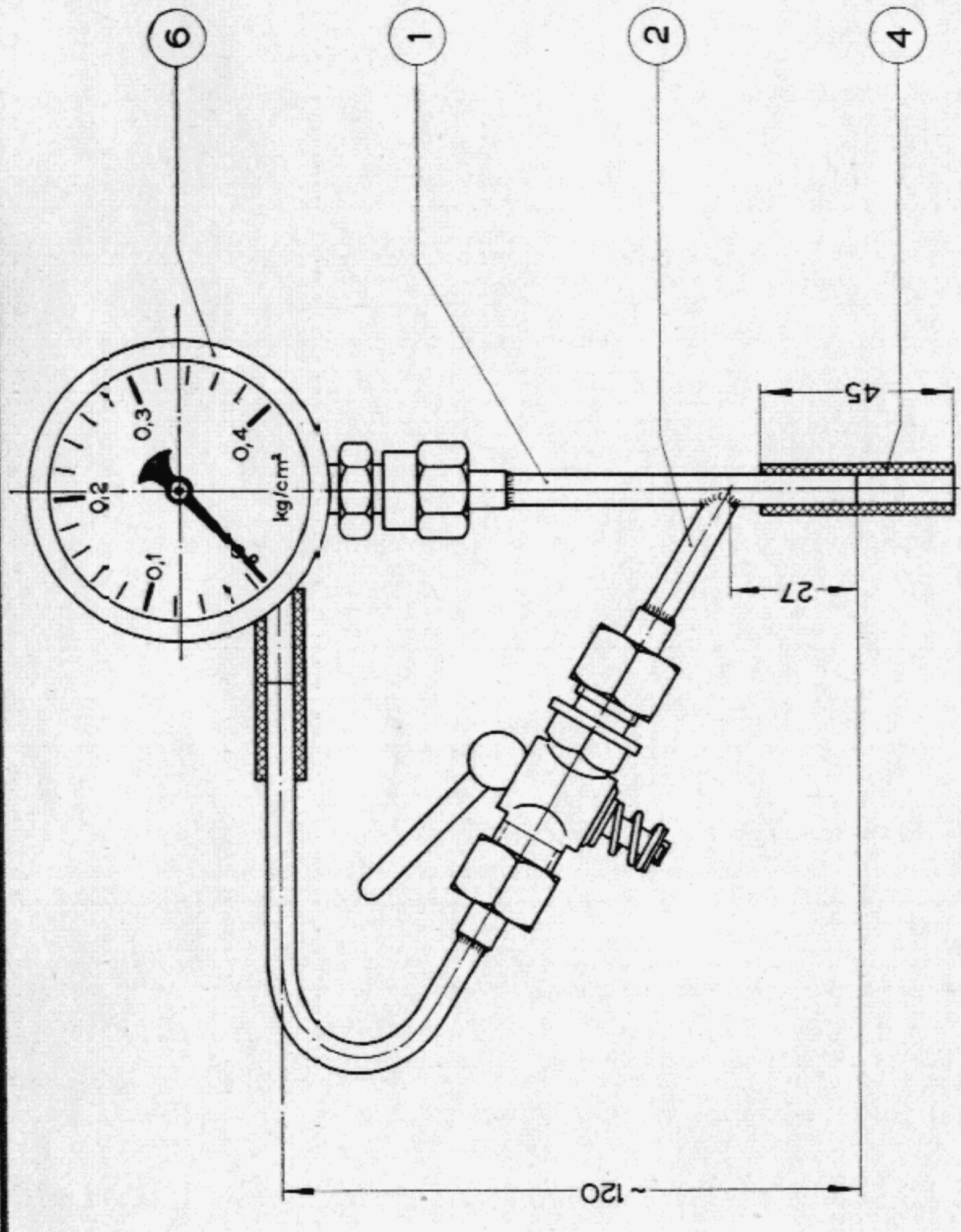
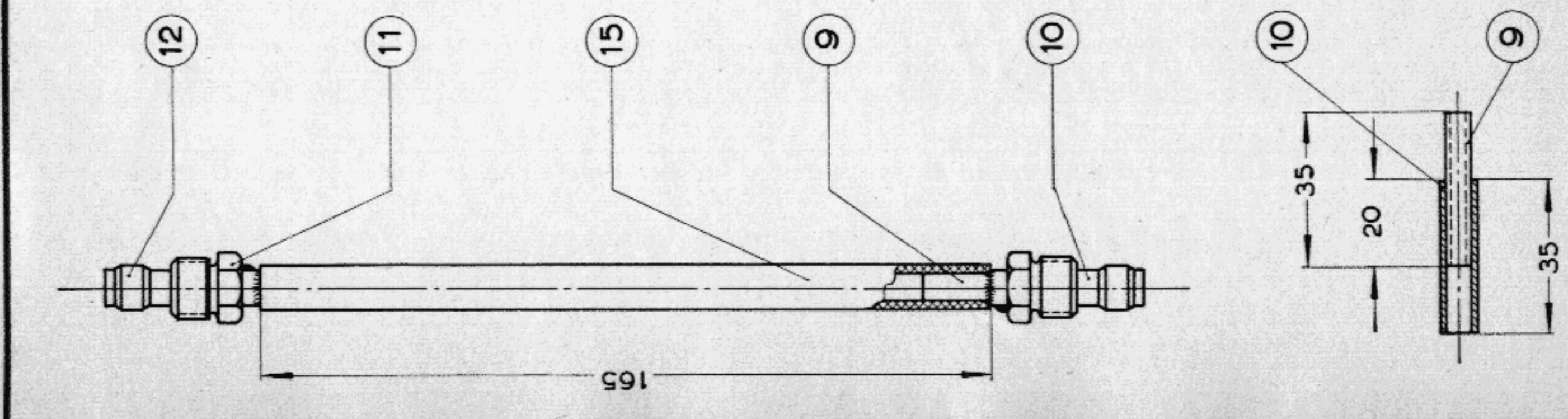




### Construction Detail for VW 663/1

- 1 — Cut tubes to dimensions given in specification and place connecting pieces ready to hand.
- 2 — Bend tubes (3) and (7) as shown on drawing and cut to length.
- 3 — Braze tube (2) to tube (1), tubes (10) to tubes (9), and fit union nuts to tubes (7) and (8).
- 4 — After brazing, tap the tubes gently and blow out with compressed air.
- 5 — Screw fuel tap (5) onto bent tube (3).
- 6 — Cut rubber tubes (4) to length as shown on drawing.
- 7 — Screw pressure gauge (6) onto tube (1).
- 8 — Press nipple (12) onto tube (9), and nipple (13) onto tube (7).
- 9 — Union nut (11) on tube (8) and union nut (14) on tube (10) secured against falling back by means of solder stops.
- 10 — Complete connection piece.
- 11 — Paint pump tester.





Part No.	Description	Remarks
15	Connecton tube	VW-part No. 113 127 511
14	Union nut	VW-part No. 111 127 541 A
13	Nipple	VW-part No. 111 127 531 A
12	Nipple	VW-part No. 111 127 531
11	Union Nut	VW-part No. 111 127 541
10	Tube	8 mm dia. X 35 No 111 127 511
9	Tube	6 mm dia. X 351 VW-part
8	Tube	6 mm dia. X 551 No.
7	Tube	6 mm dia. X 1901 111 127 511 A
6	Pressure gauge	0 - 0.4 kg/cm <sup>2</sup> dial range
5	Fuel tap	14 X 15 threaded at both ends
4	Connection tube	C 6 X 10 DIN 73 379
3	Bent tube	6 mm dia. X 2001 VW-part
2	Tube	6 mm dia. X 351 No.
1	Tube	6 mm dia. X 751 111 127 511 A

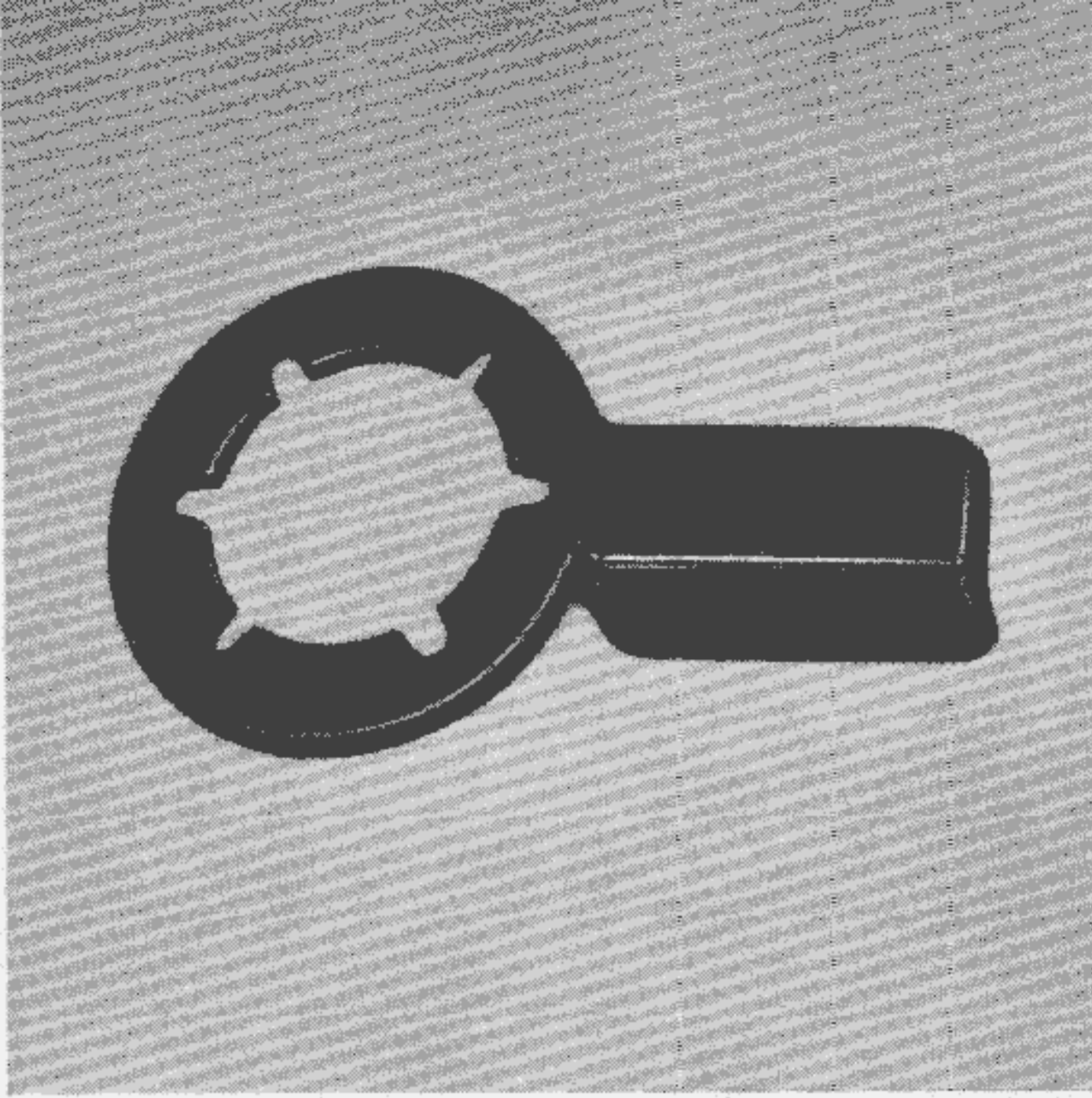
**VOLKSWAGENWERK AG**  
**WOLFSBURG**  
 Service — Department

drawn: 24. 5. 60 Gieseking checked: 25. 5. 60 Sent

**Fuel Pump Tester**

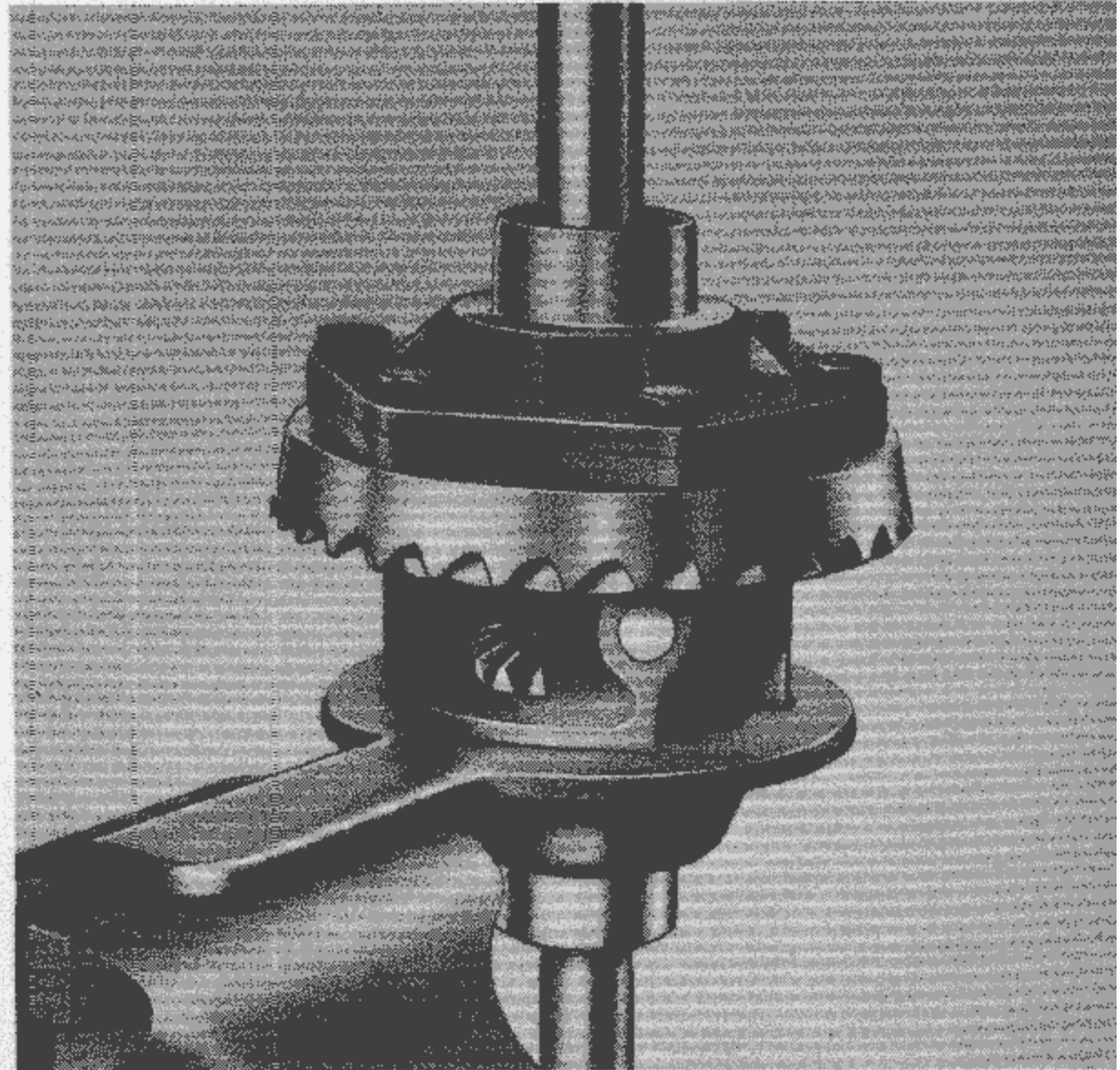
VW 663/1





**Differential Housing  
Holding Fixture**

The fixture is used for holding all type differential housings.





#### **Construction Details for VW 664**

- 1 – Cut plate to dimensions given in list of parts.
- 2 – Mark outline of fixture on the plate.
- 3 – Machine the fixture to its outer shape.
- 4 – Drill and cut out the metal as shown in drawing to form hole for accepting differential housing.
- 5 – Bend the angle as shown in drawing.



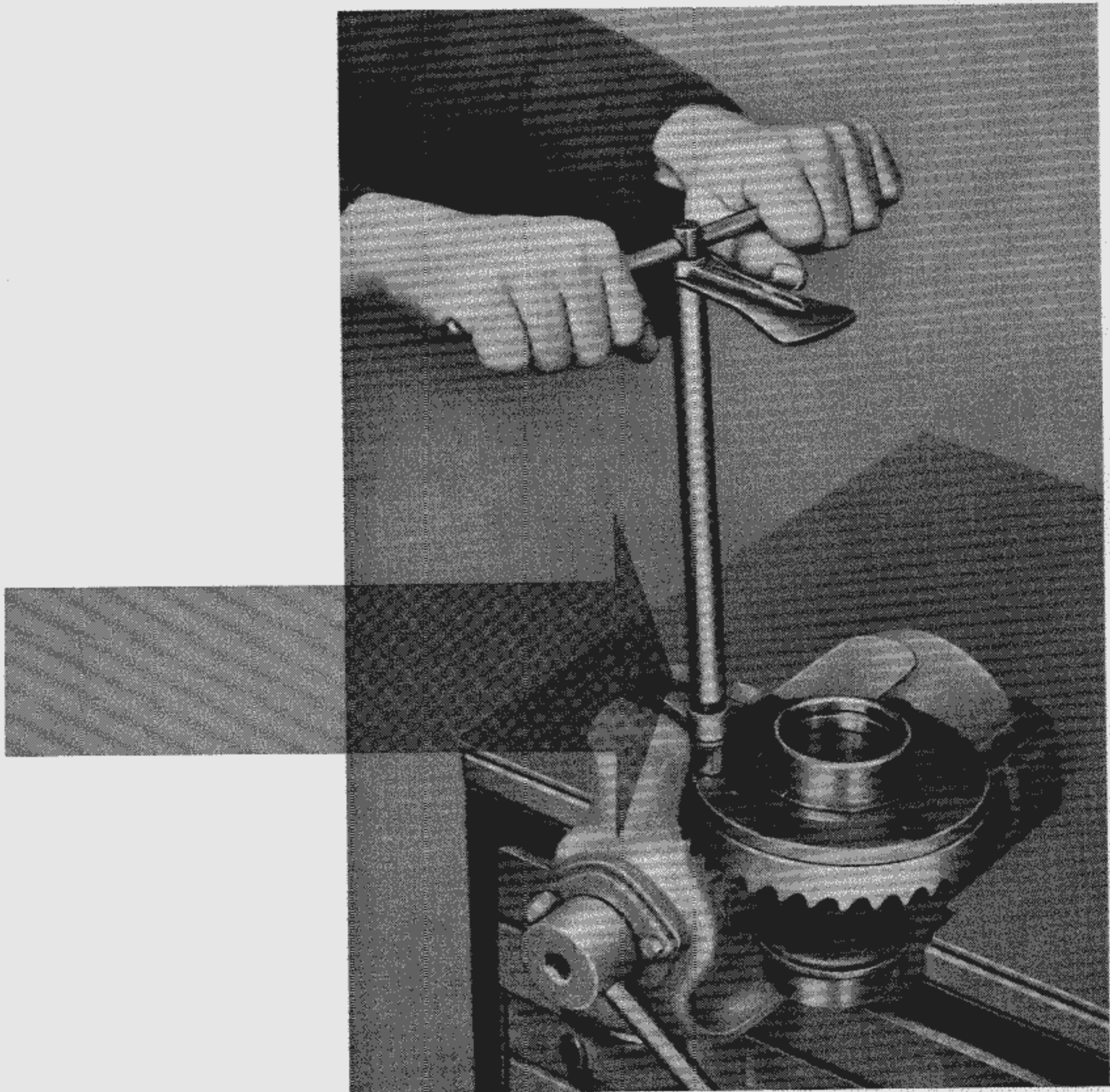






## Differential Housing Holding Fixture

The fixture is used for holding the differential housing of vehicles from Chassis No. 469447 or transmission No. B 2268121 onwards.

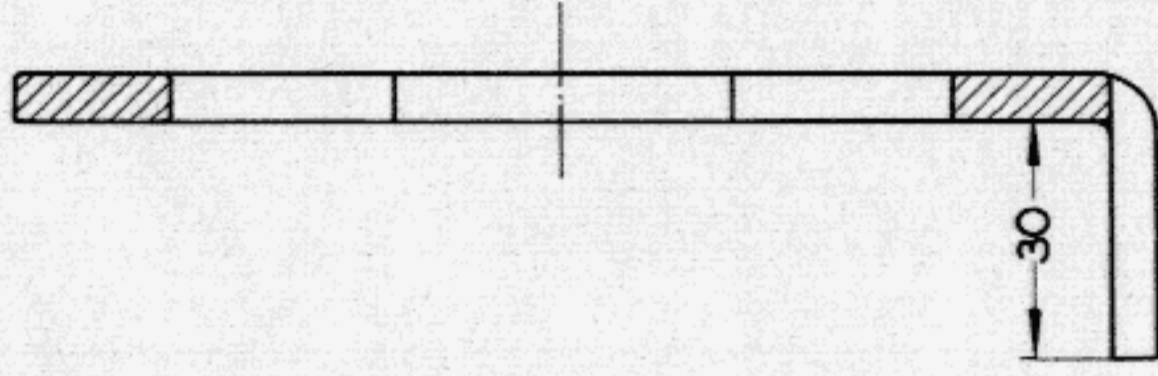
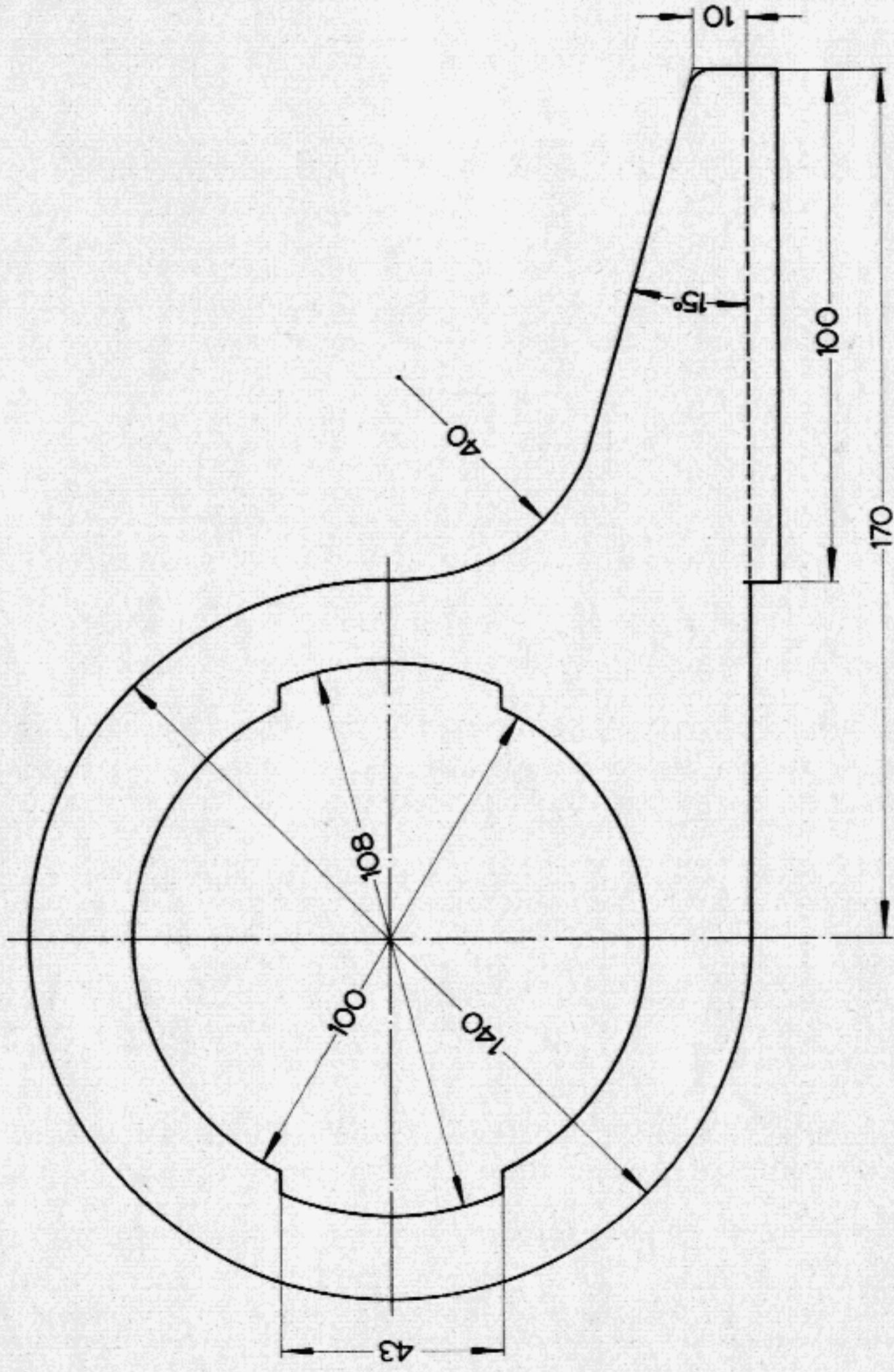




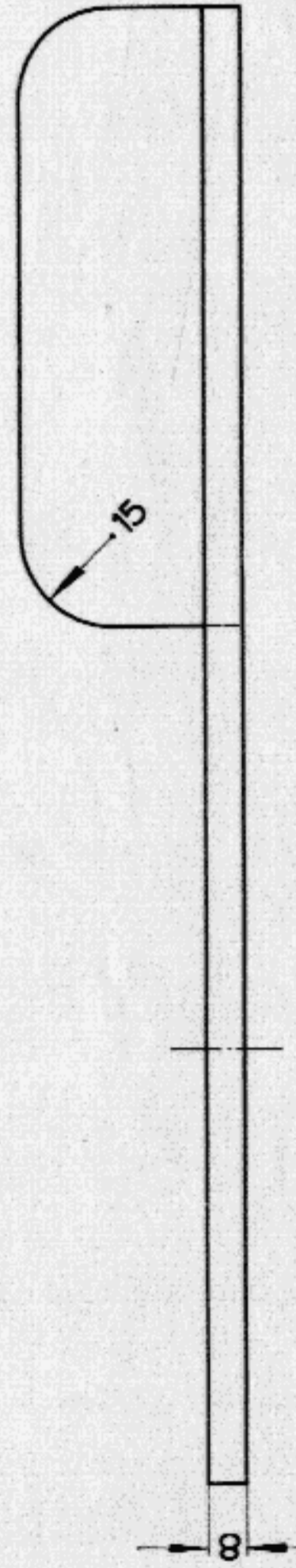
#### **Construction Details for VW 664/1**

- 1 — Cut plate to dimensions given in list of parts.
- 2 — Mark outline of fixture on the plate.
- 3 — Machine the fixture to its outer shape.
- 4 — Drill and cut out the metal as shown in drawing to form hole for accepting differential housing.
- 5 — Bend the angle as shown in drawing.





Round off all sharp edges



Part No	Description	Rough Size or Standard Spec.	Remarks
1	Plate	Ø x 140 x 270	Steel Plate

**Differential Housing Holding Fixture**

**VOLKSWAGENWERK GMBH.**  
WOLFSBURG  
Service Department

Drawn: 26-11-58 Sandau

Checked: 26-11-58 Hendriok

Replacement for:

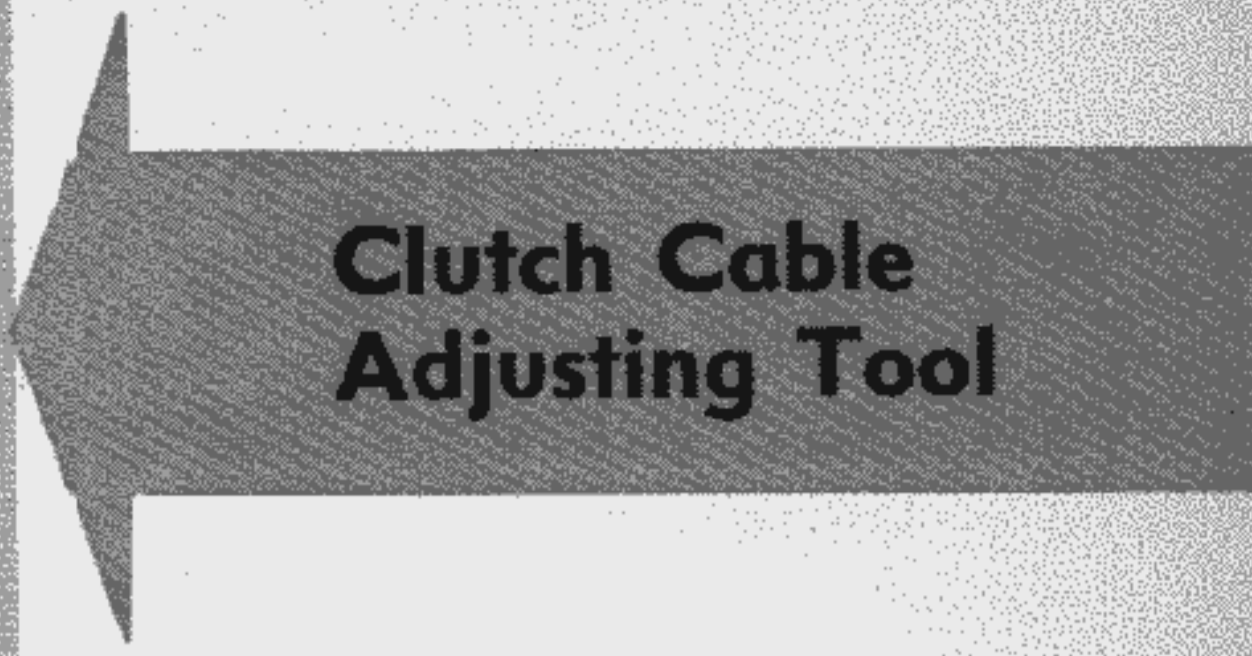
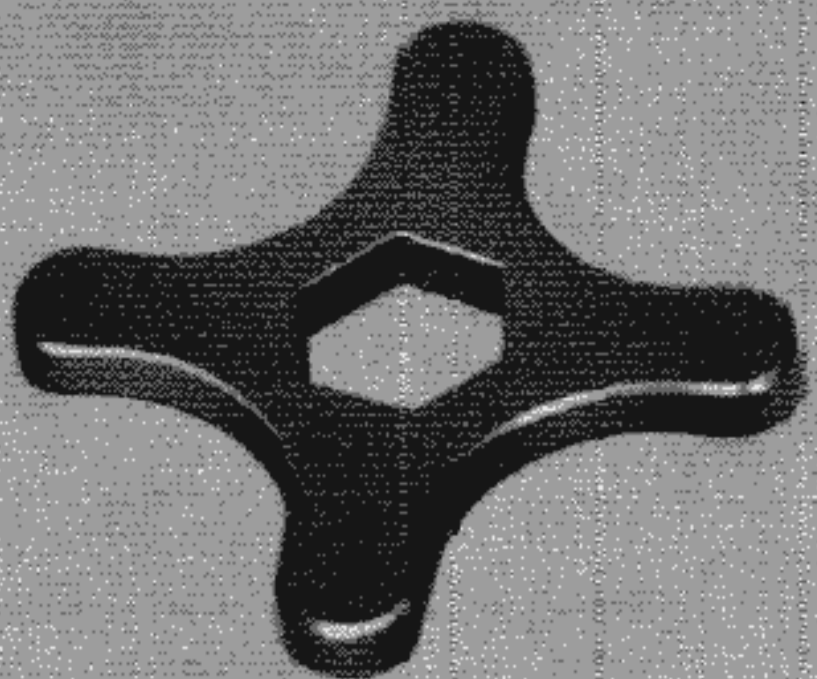
Replaced by:

Scale  
1:1

VW 664/1



LOCAL MANUFACTURE OF WORKSHOP EQUIPMENT

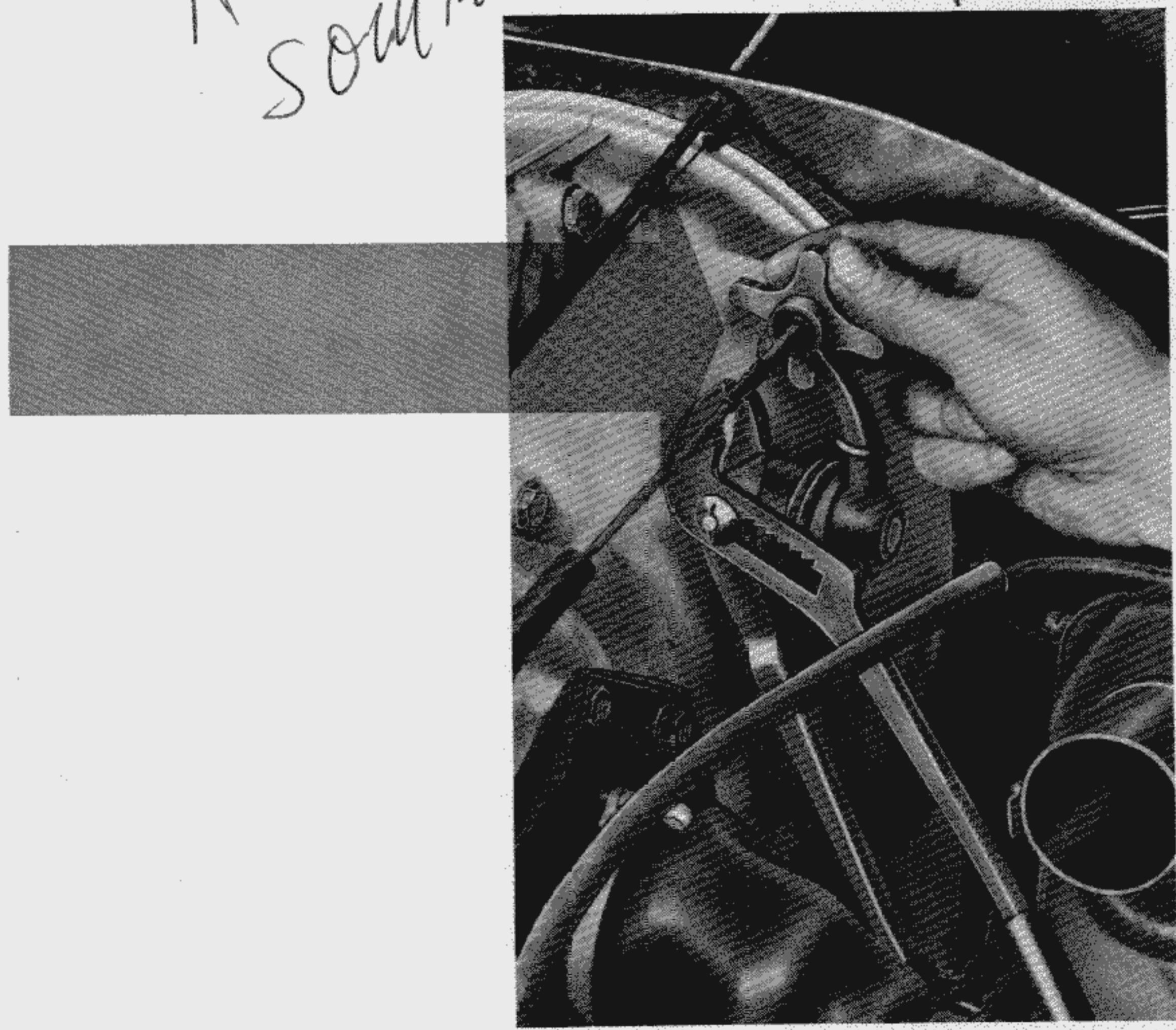


Clutch Cable Adjusting Tool

*FROM*

The clutch Cable Adjusting Tool is for easy adjustment of the clutch pedal free play. In order to prevent twisting of the cable end it is advisable to lock it tightly with a pipe wrench, the handles of which are clamped together.

*AVAILABLE  
SOMMERS W.P.J.*

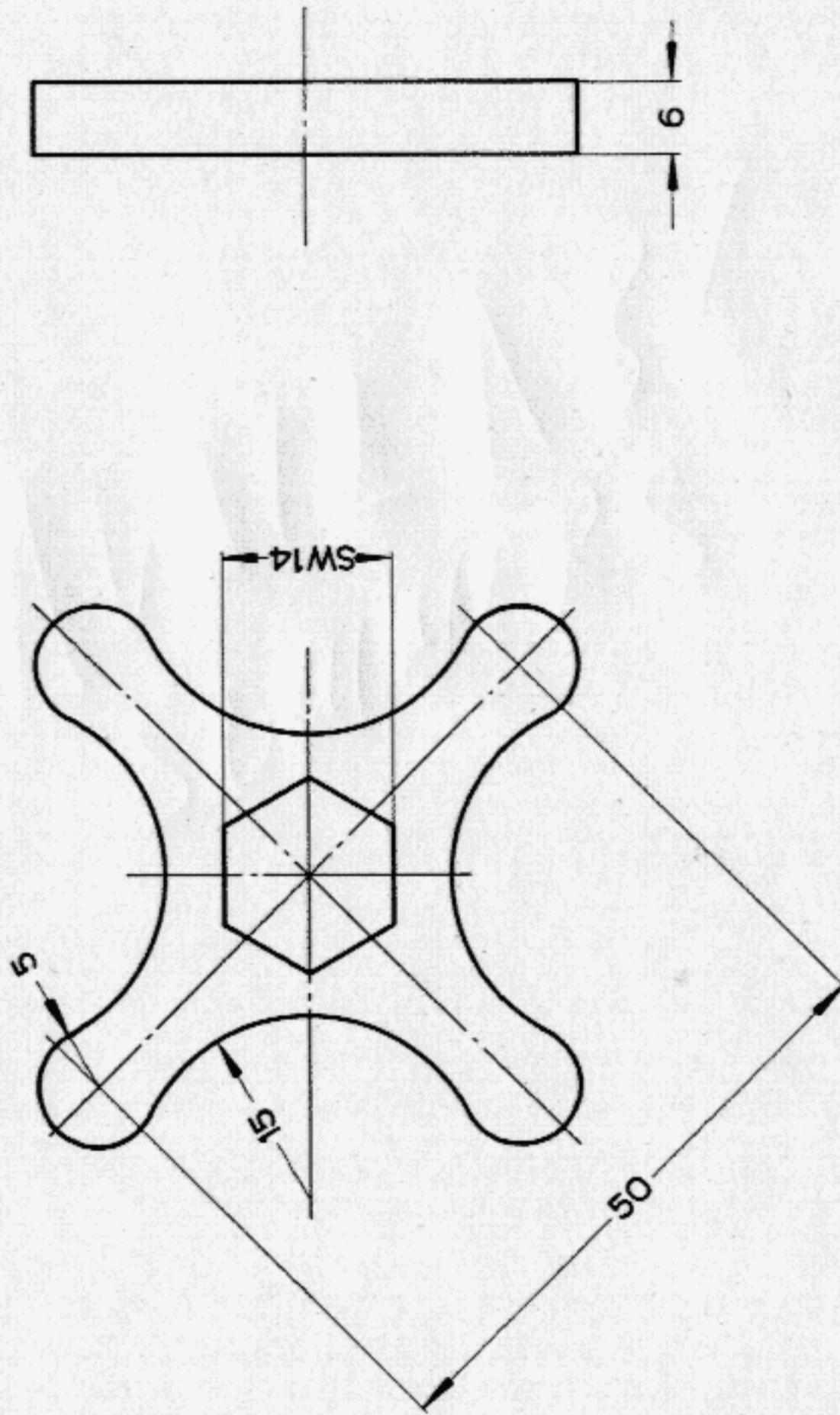




**Construction Details for VW 667**

- 1 - Cut strip steel to dimensions given in list of parts.
- 2 - Mark center hexagon and outer dimensions of tool. Use center punch for marking 14 mm hole to be drilled in center hexagon.
- 3 - Drill 14 mm hole.
- 4 - Machine center hexagon and outer dimensions as marked.





Part No.	No. Required	Description	Rough Size or Standard Spec.	Remarks
1		strip steel	6 X 50 X 50	

**VOLKSWAGENWERK GMBH.**  
**WOLFSBURG**  
 Service Department

Drawn:  
 13. 9. 56 Sandau

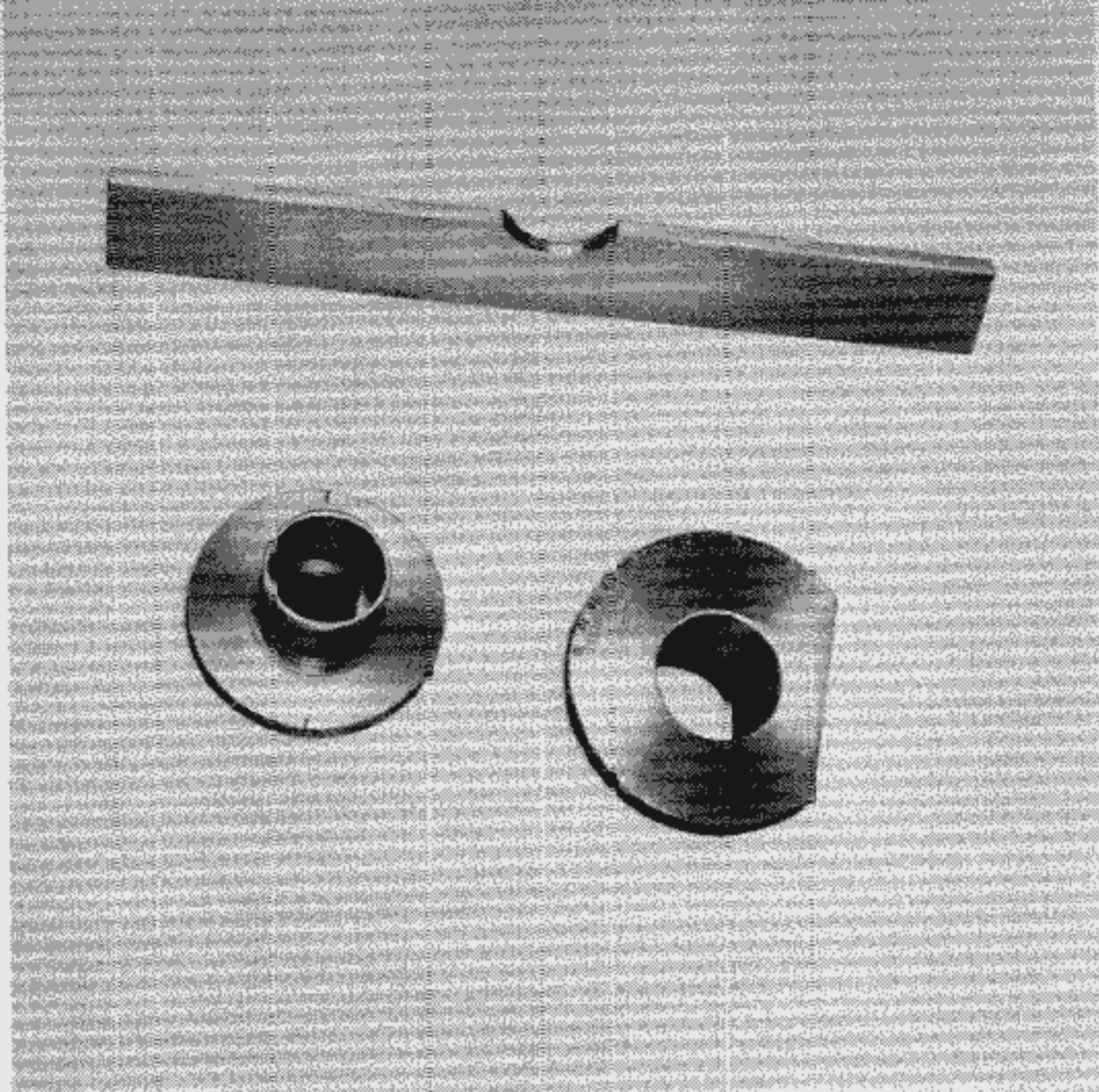
Checked:  
 14. 9. 56 Hendriok  
 14. 9. 56 Sant

# Clutch Cable Adjusting Tool

VW 667

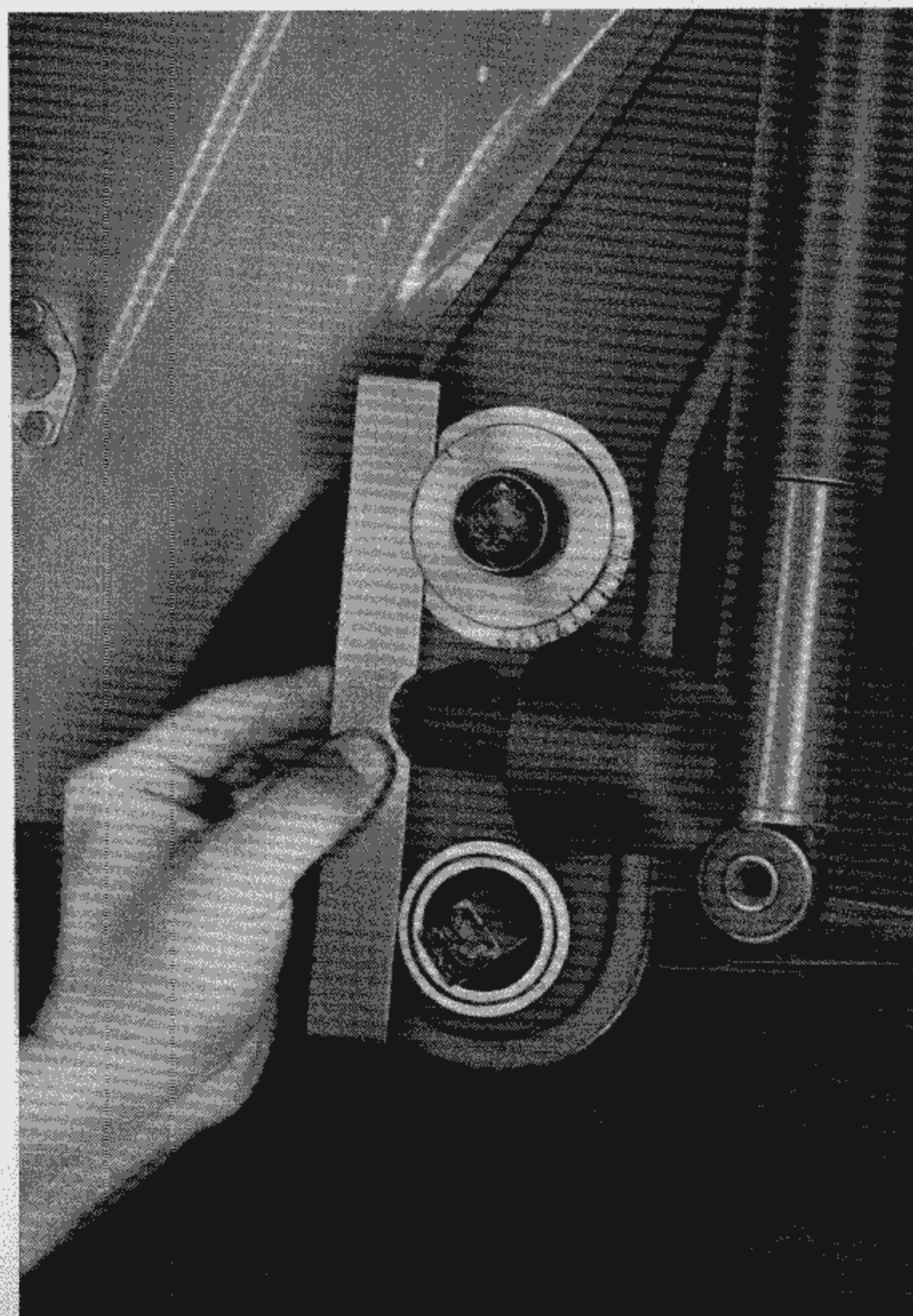


## Checking Device for Mounting Angle of Front Axle Torsion Bars



The guide sleeve of the checking device is provided with a scale. Slip it over the torsion bar into the upper torsion arm bush until it comes to rest against the torsion arm. Then slip the measuring sleeve with the square hole over the torsion bar until it touches the guide sleeve. Put the ruler against the straight surface provided at the guide sleeve, and against the outside of the lower tube. The mounting angle of the upper torsion bar can now be read from the scale.

The mounting angle of the lower torsion bar is measured in the same way.

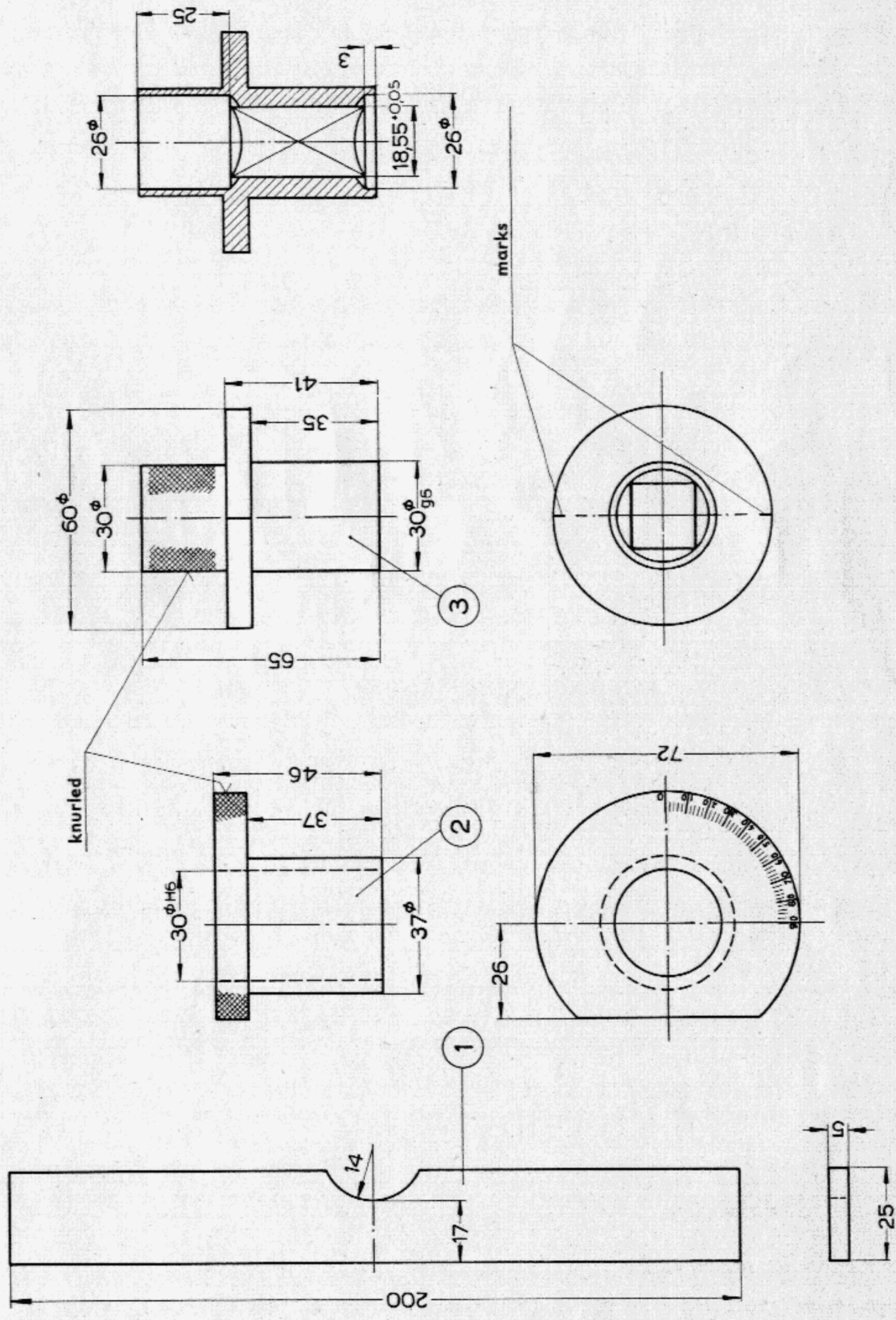




#### **Construction Details for VW 668**

- 1 - Cut round and flat bars as specified in the list of parts.
- 2 - Drill, turn and mill the round bar for the guide sleeve (2) as shown in the drawing. Then knurl the collar and mark down a scale of 0 to 90 degrees.
- 3 - Drill and turn the round bar for the measuring sleeve (3) and provide the square hole as shown in the drawing. Knurl the short cylindrical section and provide the marking.
- 4 - Make sure the guide sleeve moves freely and easily.
- 5 - Machine flat bar for ruler (1) as shown in the drawing and file out the recessed section.
- 6 - Slightly oil all parts with pure machine oil.





Part No. required	Description	Rough size or Standard Spec.	Remarks
3	1	Measuring sleeve	73 $\phi$ x 75 Round bar
2	1	Guide sleeve	63 $\phi$ x 90 Round bar
1	1	Ruler	26 x 5 x 205 Flat bar

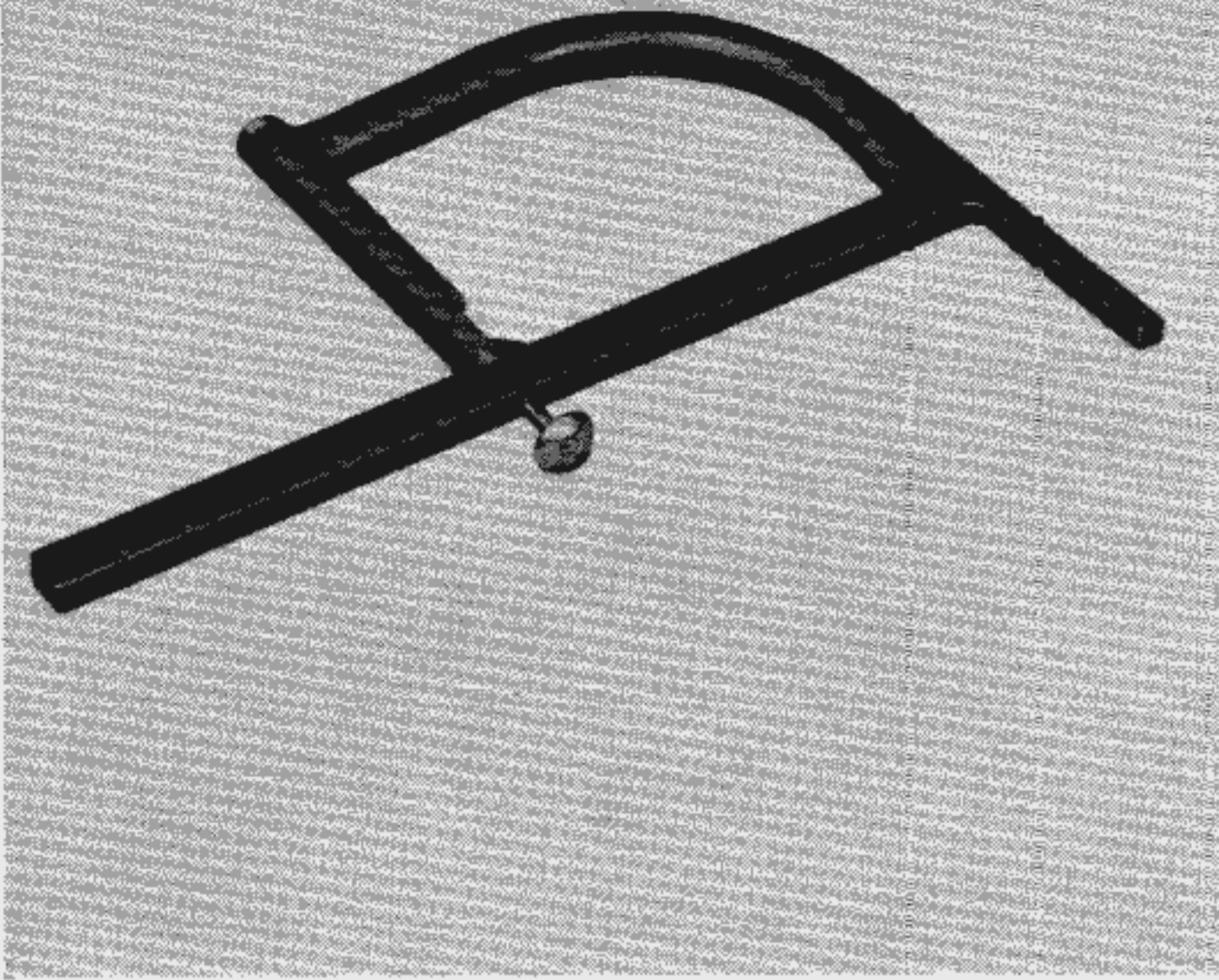
**Checking Device for Mounting Angle of Front Axle Torsion Bars**

VW  
**VOLKSWAGENWERK GMBH.**  
 WOLFSBURG  
 Service Department

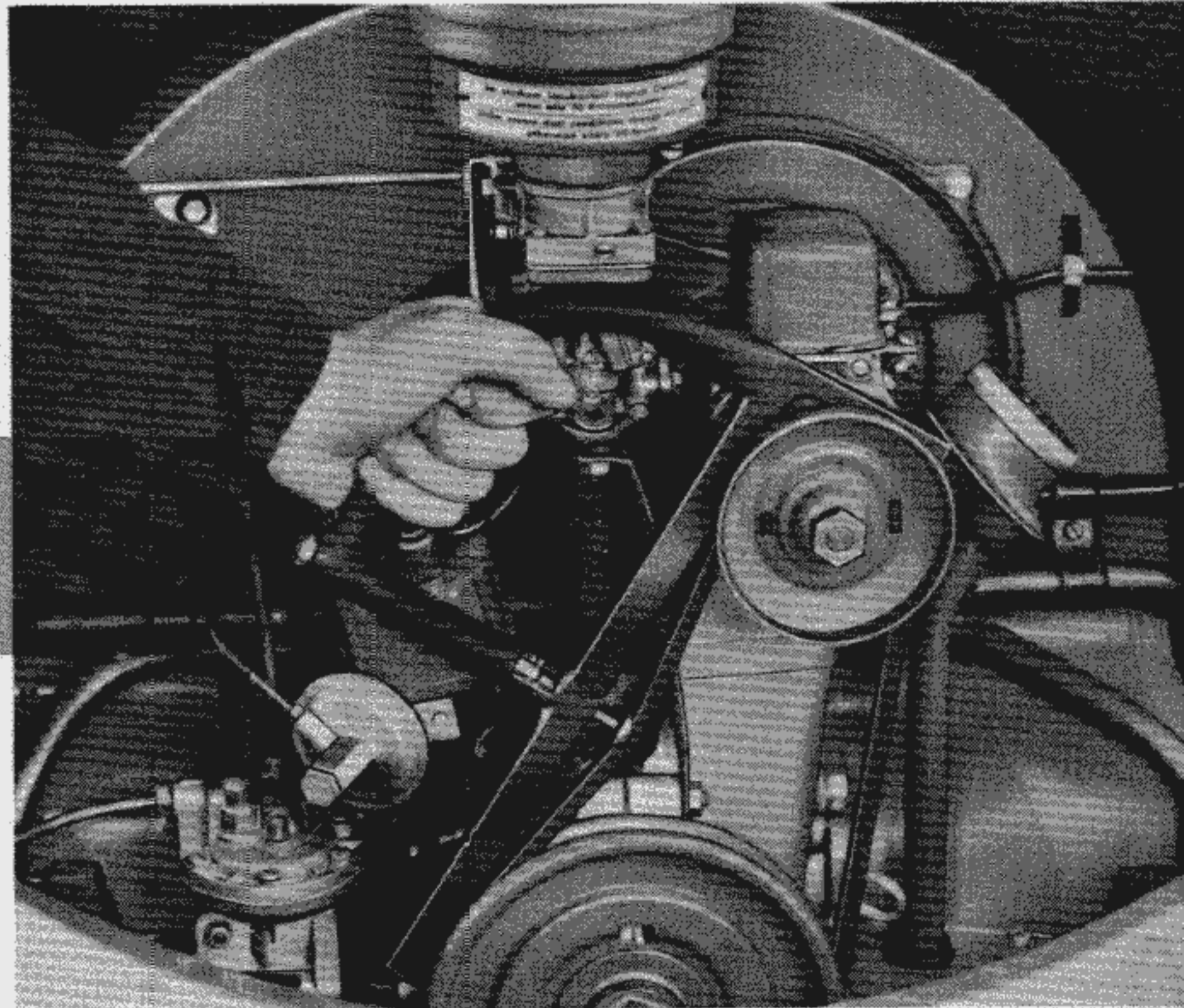
Drawn: Febr. 22, 57 Sandau  
 Checked: Febr. 29, 57 Hendriok  
 March 6, 57 Senf

VW 668



**Tension Tester for V-Belt**

This test apparatus serves to measure the tension of the V-belt, or, having ascertained that the V-belt is either too tight or too loose, can be used to reset the belt to the specified tension.

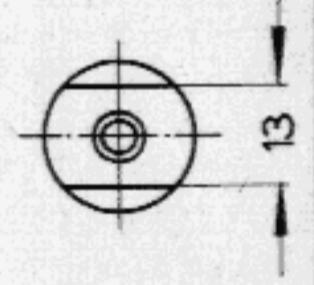
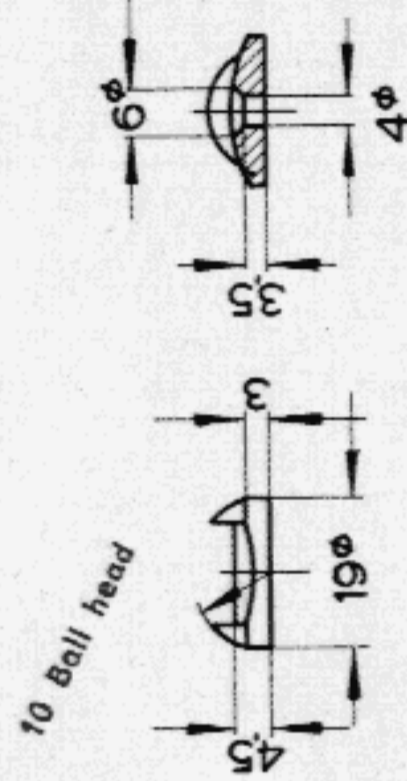
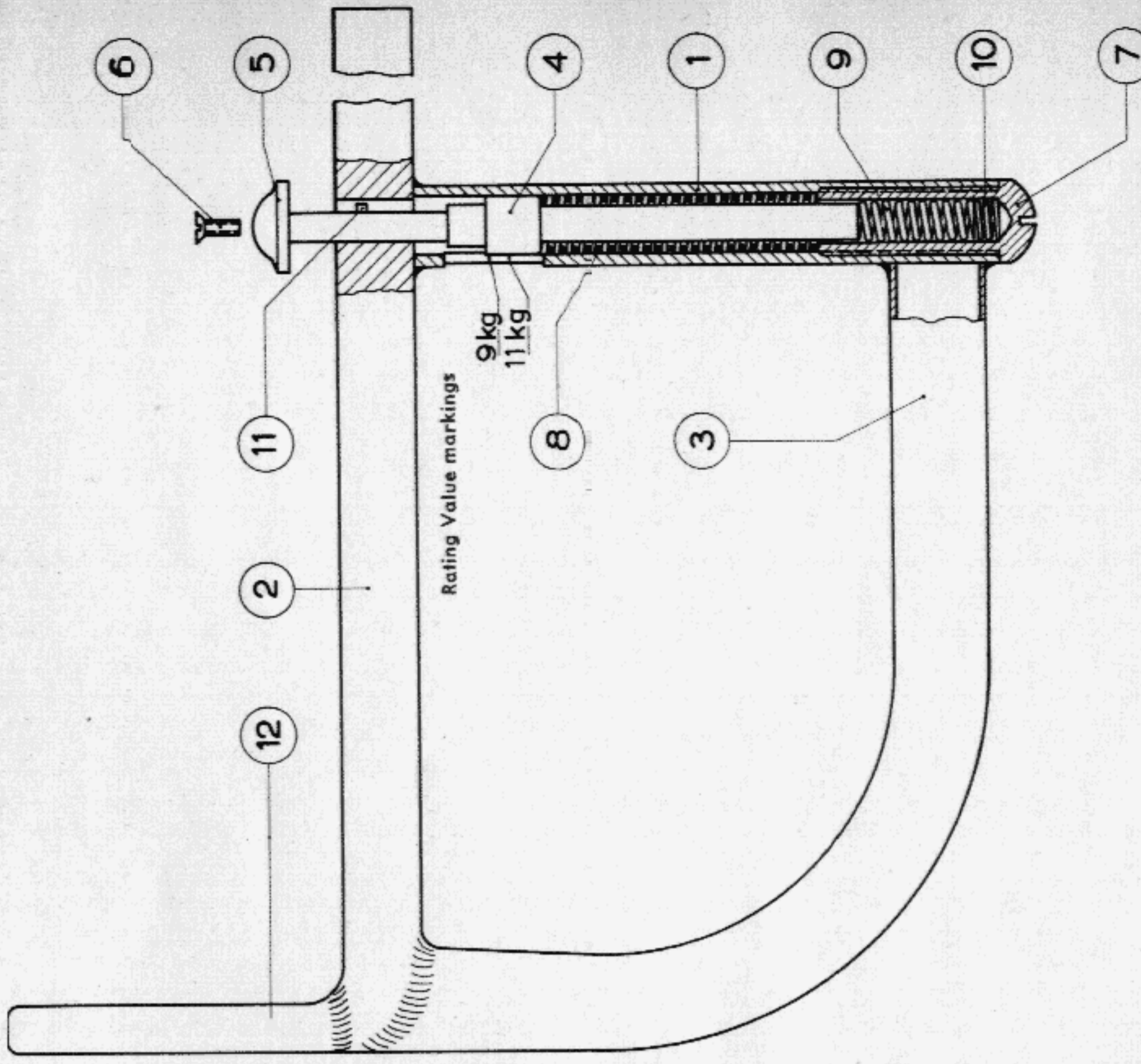
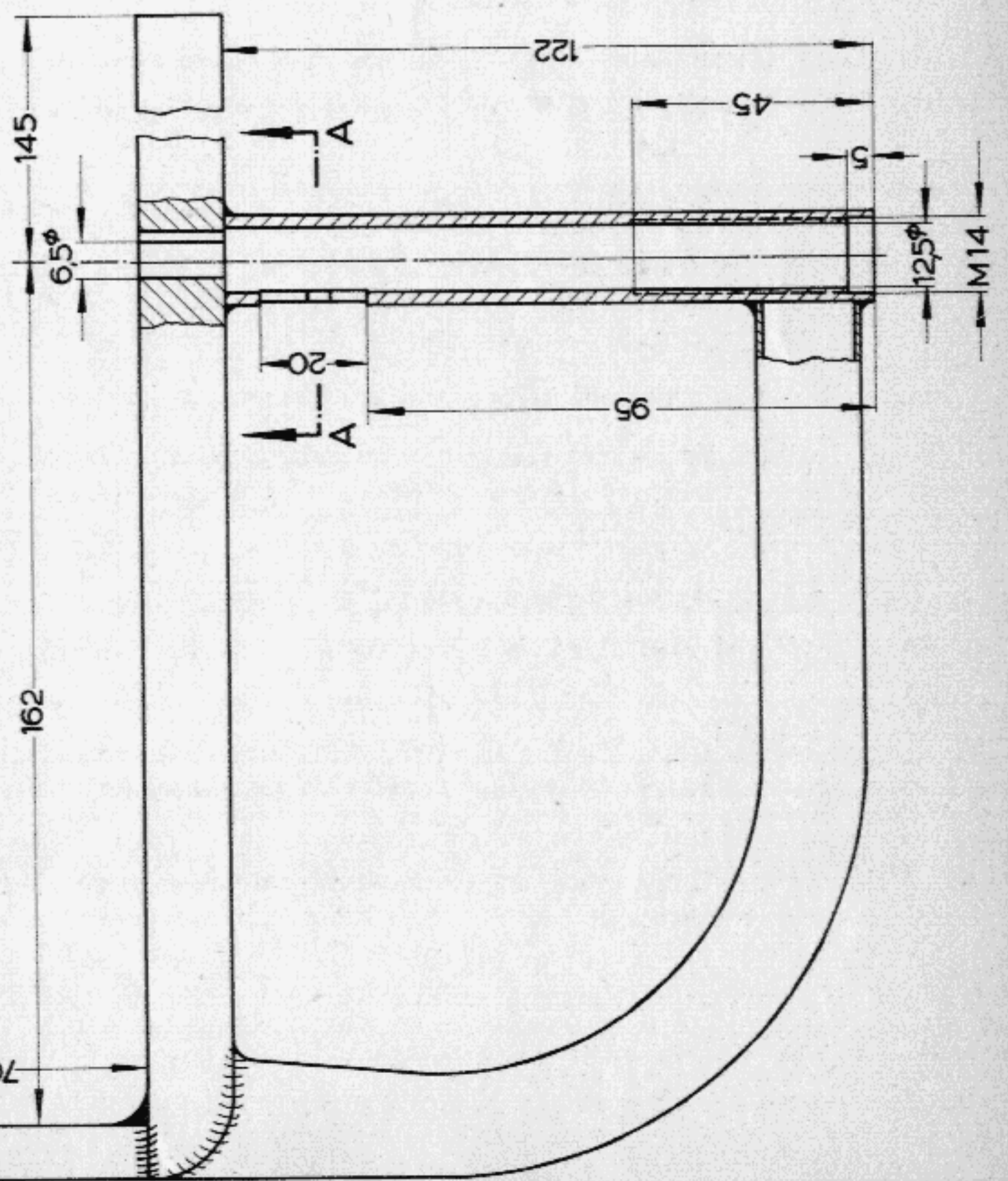
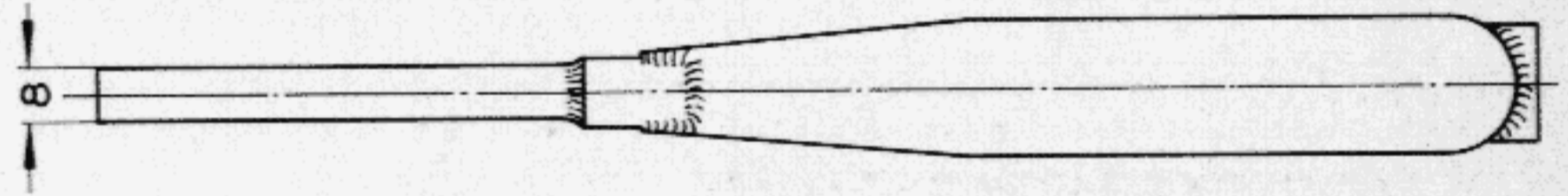
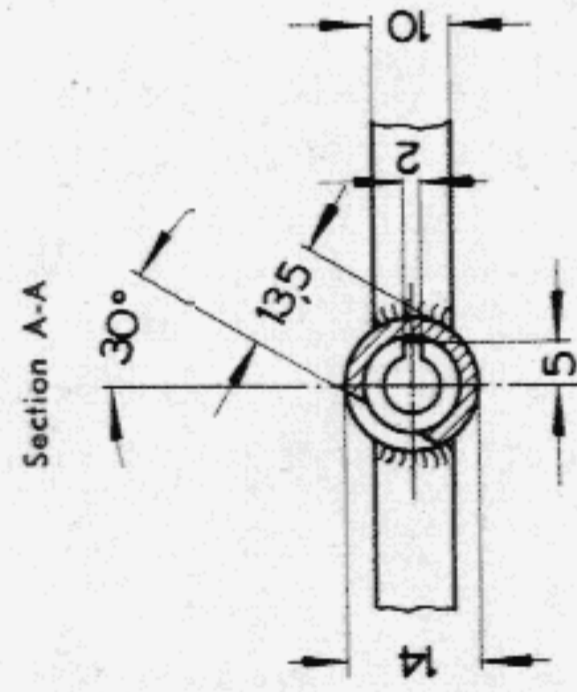
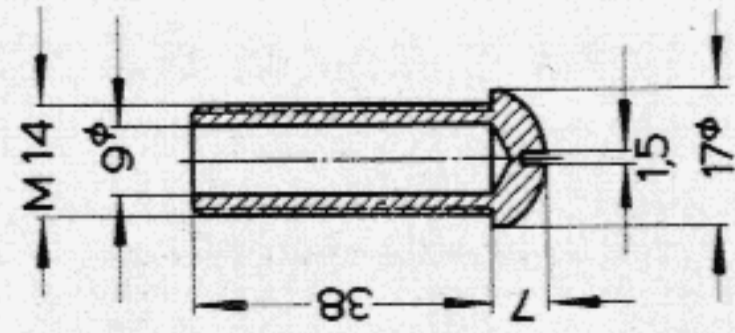
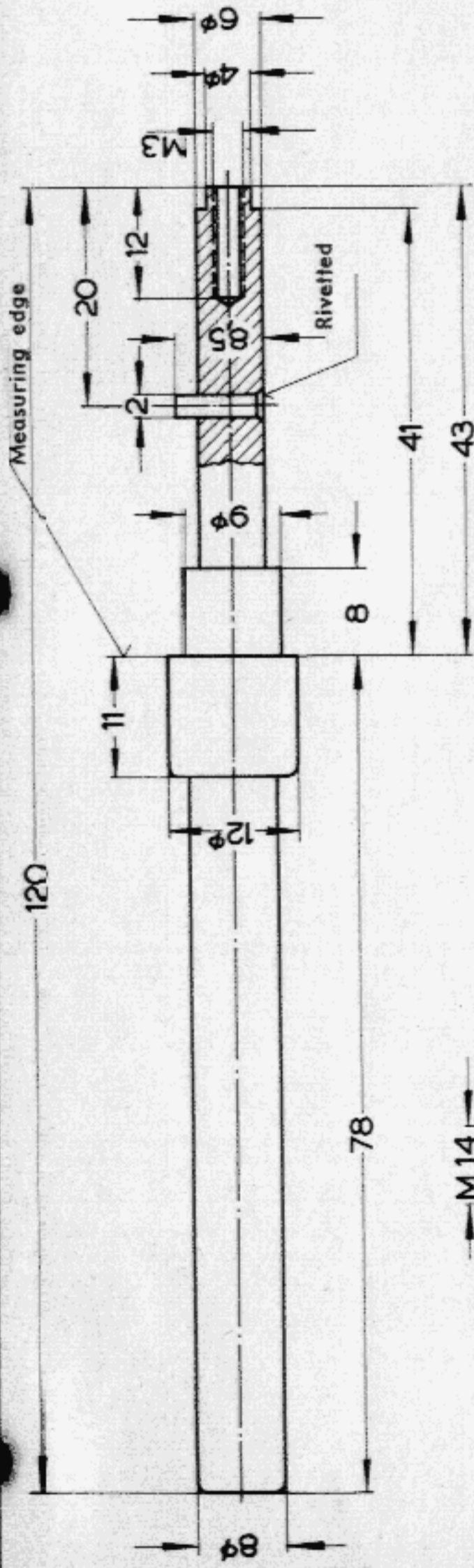




#### **Construction Details for VW 669/1**

- 1 - Cut the flat and round steel and also steel tubing according to the specification.
- 2 - The flat steel piece (2) should be finished off as shown on drawing, bore hole, using a 6.5 mm dia. drill.
- 3 - Finish off tube (1) as shown on drawing.
- 4 - Finish off the round steel piece (4) as shown on the drawing, insert guide pin, and rivet.
- 5 - Insert indicator plunger (4) into tube (1), spot weld the web (2) to the tube.
- 6 - Bend tube (3) as shown and fasten to tube (1) by spot welding, spot weld angular strut to web (2), subsequently remove the regulating plunger and completely weld around all spot welded joints.
- 7 - Finish off round steel parts (5 and 7) as shown on drawing.
- 8 - Replace the indicator plunger (4) and insert pressure spring (8), place springs (10 and 9) in adjusting screw sleeve and screw into tube (1).
- 9 - Load the indicator plunger (4) with 9 and 11 kg pressure respectively and mark off on cut away portion of tube (1).
- 10 - Remove adjusting screw (7) withdraw indicator plunger from tube (1), subsequently remove all springs.
- 11 - Deepen rating value markings on tube (1), paint the tool in the prevailing colour of equipment and machines in the shop ensuring that the markings and cutaway portion is left free from paint.
- 12 - Reassemble all parts dismantled under point 8, lightly smear the indicator plunger with oil.





12	1	Angular Strut	8 x 10 x 75	Flat Steel
11	1	Guide Pin	2 dia. x 10	
10	1	Spring from Switch	Part No 113 925 079	
9	1	Regulating Spring	Part No 111 307 625	
8	1	Pressure Spring	Part No 111 721 575	
7	1	Adjusting Screw	18 dia. x 80	Steel Rod
6	1	Countersunk head Screw	AM 3	DIN 87
5	1	Pressure piece	20 dia. x 30	Steel Rod
4	1	Indicating Plunger	14 dia. x 140	Round Steel
3	1	Tube	20 dia. x 1 x 260	Steel Tube
2	1	Web	10 x 16 x 315	Flat Steel
1	1	Pipe	3/8" x 125	Gas pipe

Part No  
No Required

Description

Rough Size or  
Standard Spec.

Remarks

**Tension Tester for V-Belt**

**VOLKSWAGENWERK GMBH.**  
WOLFSBURG  
Service Department

Scale  
1:1  
2:1

Drawn:  
5-12-58 Sandau

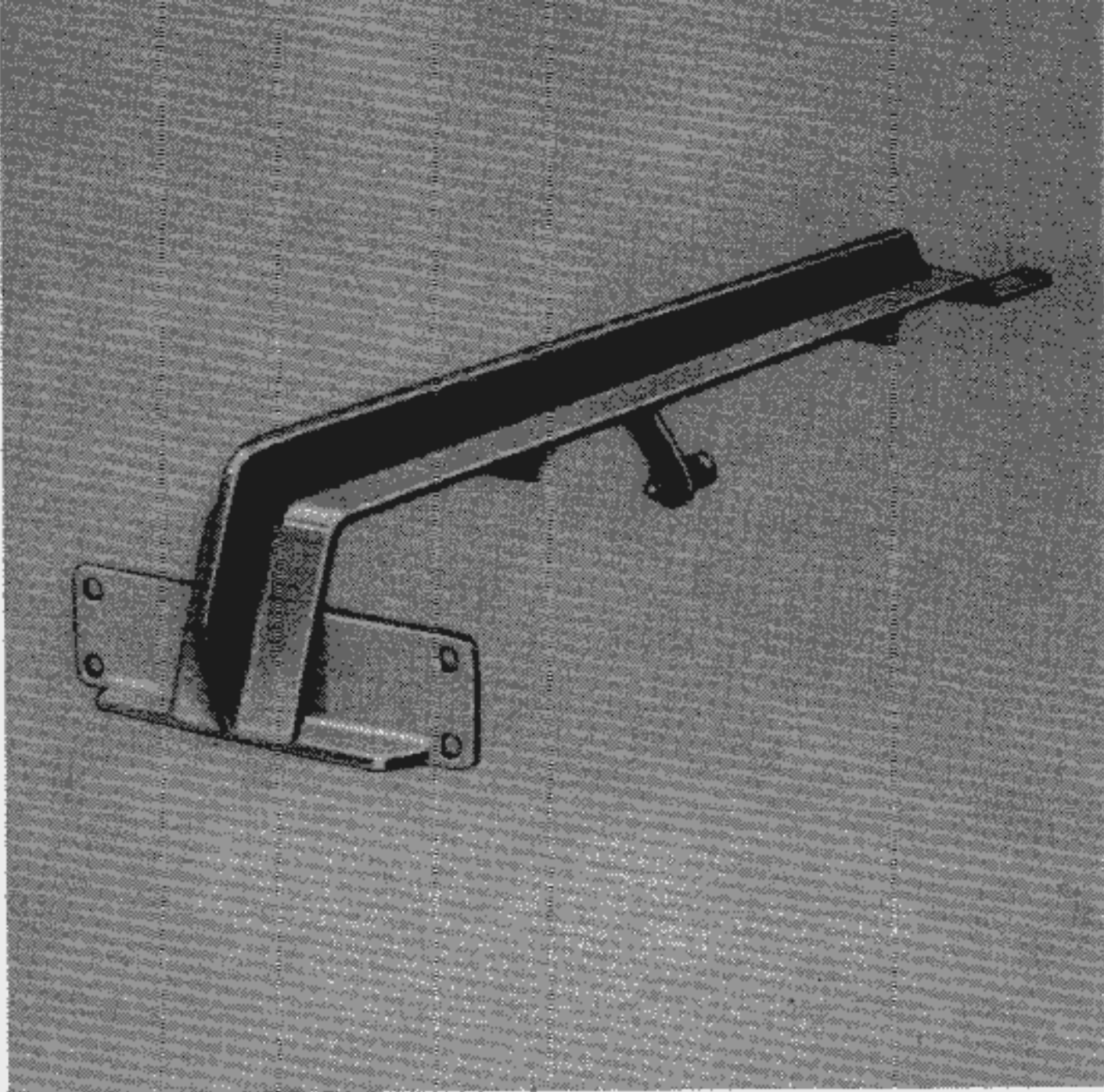
Checked:  
16-12-58 Hendriak

Replacement for:

Replaced by:

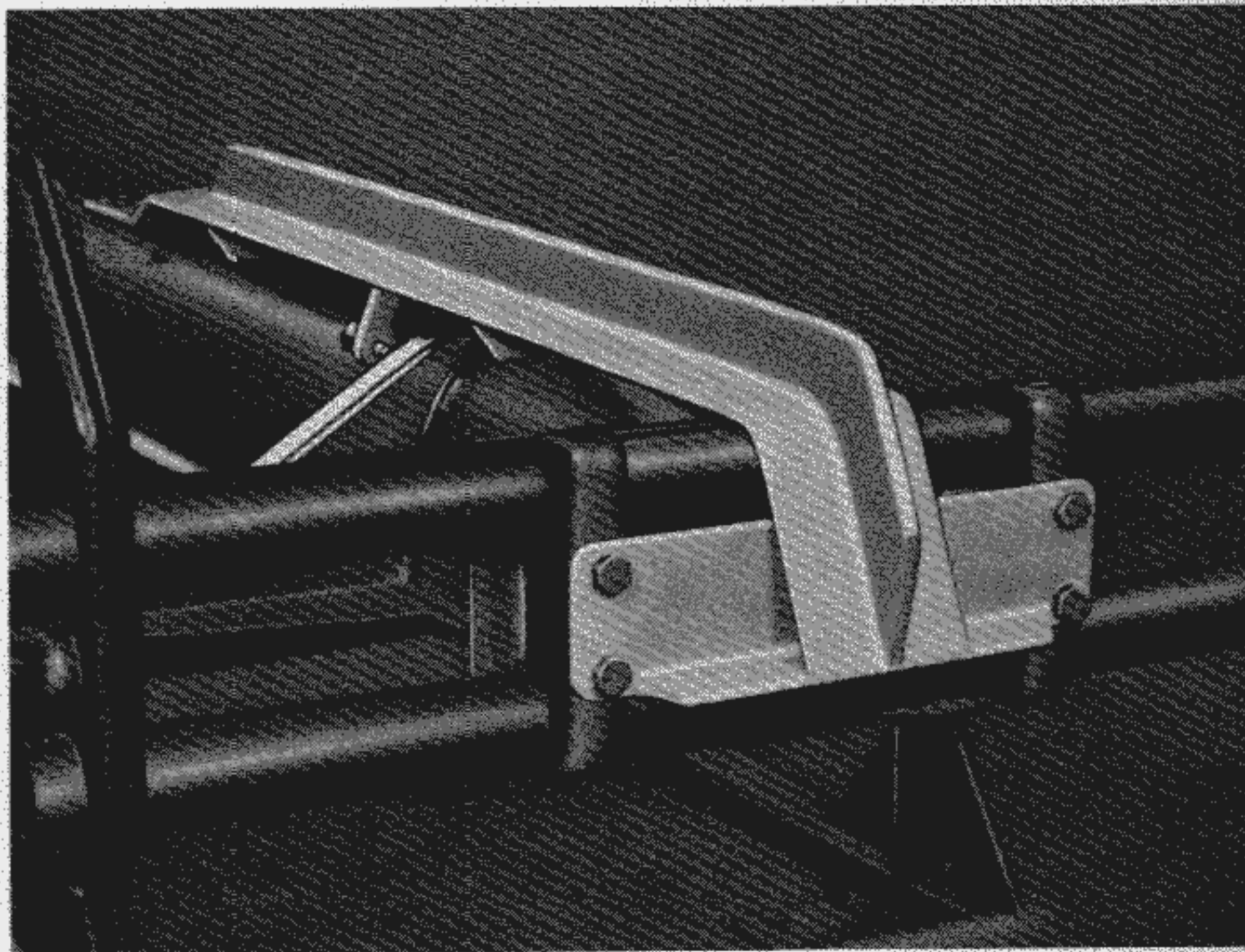
VW 66911





**Frame Head  
Assembly Jig**

The jig is designed to hold a new frame head in such a manner that the welder has unrestricted access. It also ensures that the correct angle of the front axle cradle is maintained.





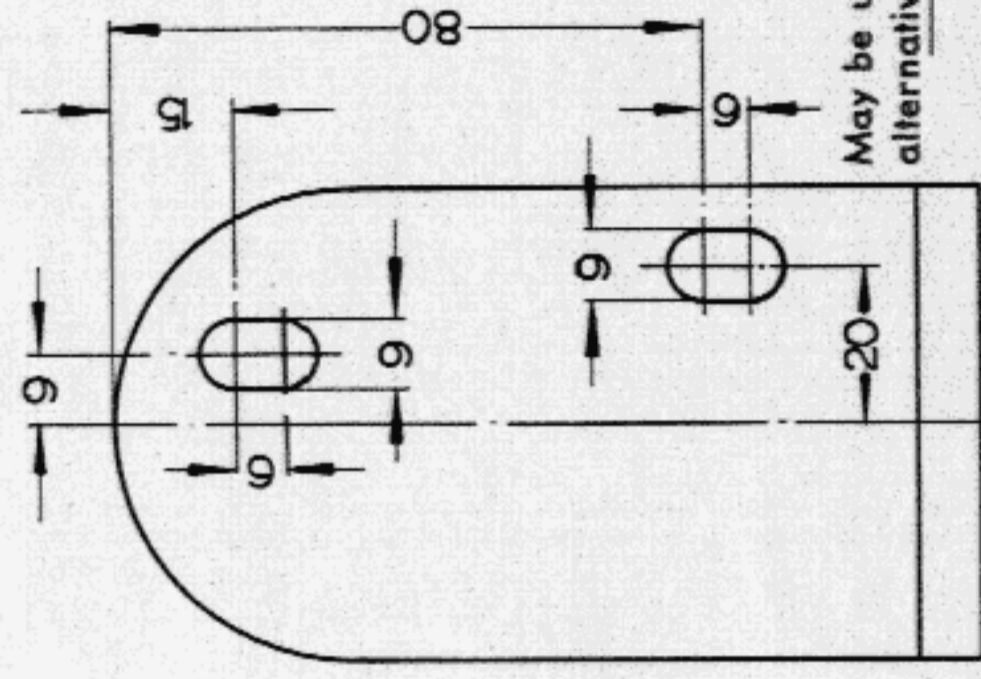
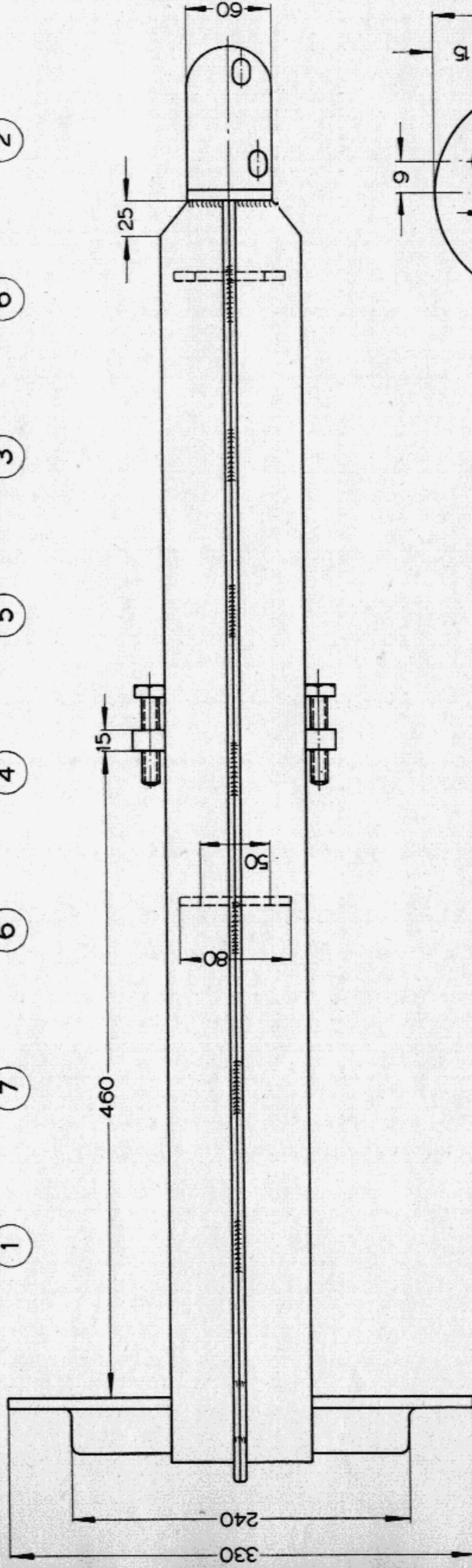
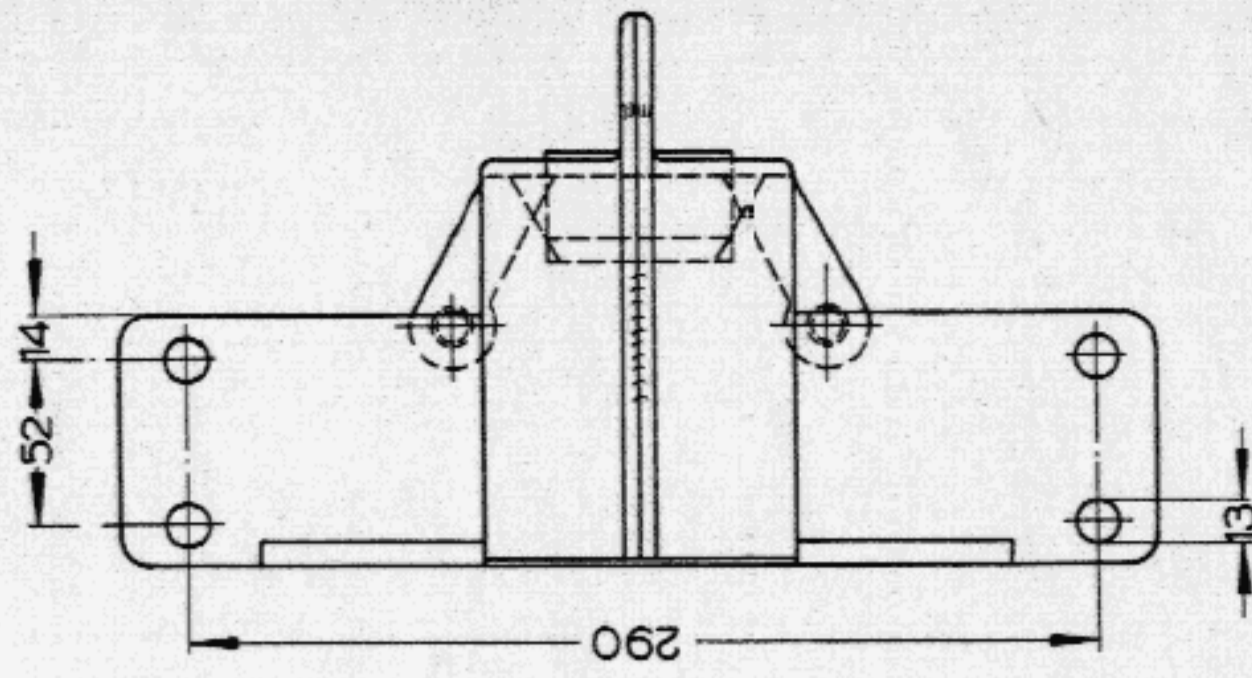
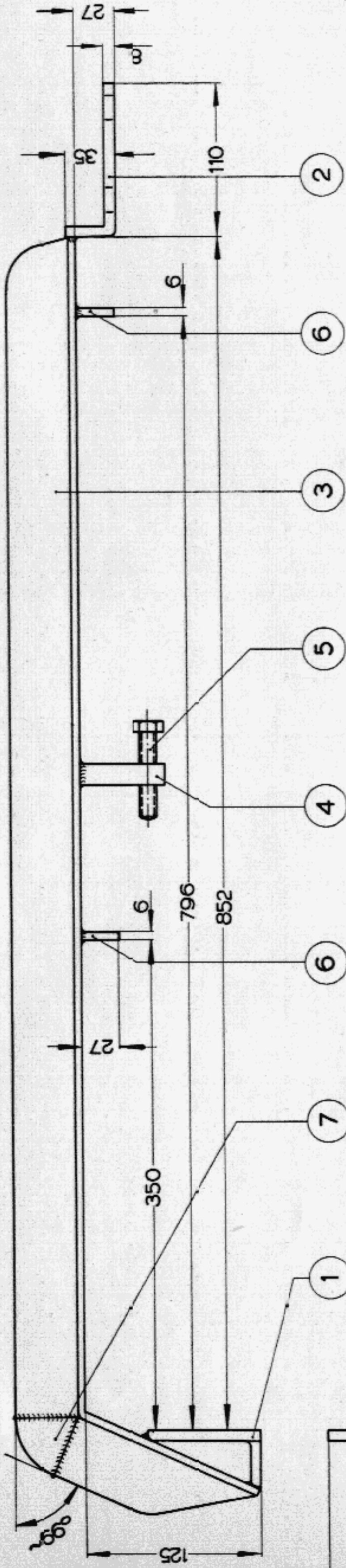
#### Construction Details for VW 670

- 1 – Cut angles, T-sections and strip to dimensions given in list of parts. Have a new frame and new front axle assembly ready for the purpose of fitting the jig.
- 2 – Drill 13 mm ( $\frac{23}{64}$  in.) holes in angle (1) as shown in drawing and step the flanges.
- 3 – Cut and bevel the web of T-section beam (3) as shown in drawing, radius corners and bend to shape.
- 4 – Drill a 9.6 mm (0.378 in.) hole in each of plates (4) and tap M 12. Cut plates to shape and weld to beam (3).
- 5 – Drill a 9 mm ( $\frac{25}{64}$  in.) hole in plate (2) as shown in drawing, file to a slot 15 mm ( $\frac{11}{32}$  in.) long, bend plate and weld to beam (3).
- 6 – Cut plates (6) to shape and weld to beam (3).
- 7 – Re-cut threads of M 12  $\times$  60 machine screws (5) right up to head and run screws into tapped holes in plates (4).
- 8 – Attach front axle assembly and angle (1) to frame head by means of original hex. head bolts. At the same time make sure that any mis-alignment between the front axle assembly and the rear frame cross-tubes does not exceed the maximum permissible value of 15°. Then place beam (3) accurately on center line of frame tunnel and on center of angle (1). If necessary, true up plates (6) until they and plate (2) bear over their full width on the frame tunnel and beam (3) contacts angle (1) at two points as indicated in the drawing.
- 9 – Fix beam (3) in position by inserting a M 8  $\times$  25 DIN 931 hex. head screw in the foremost tapped hole provided for attaching the gearshift ball housing to the frame tunnel. Arc weld at points of contact between angle (1), beam (3) and closer (7).
- 10 – Unbolt jig and front axle assembly from frame and finish welding up angle (1), beam (3) and closer (7).
- 11 – Paint jig in prevailing colour of equipment and machines in the shop.
- 12 – Apply grease lightly to bolts and nuts.

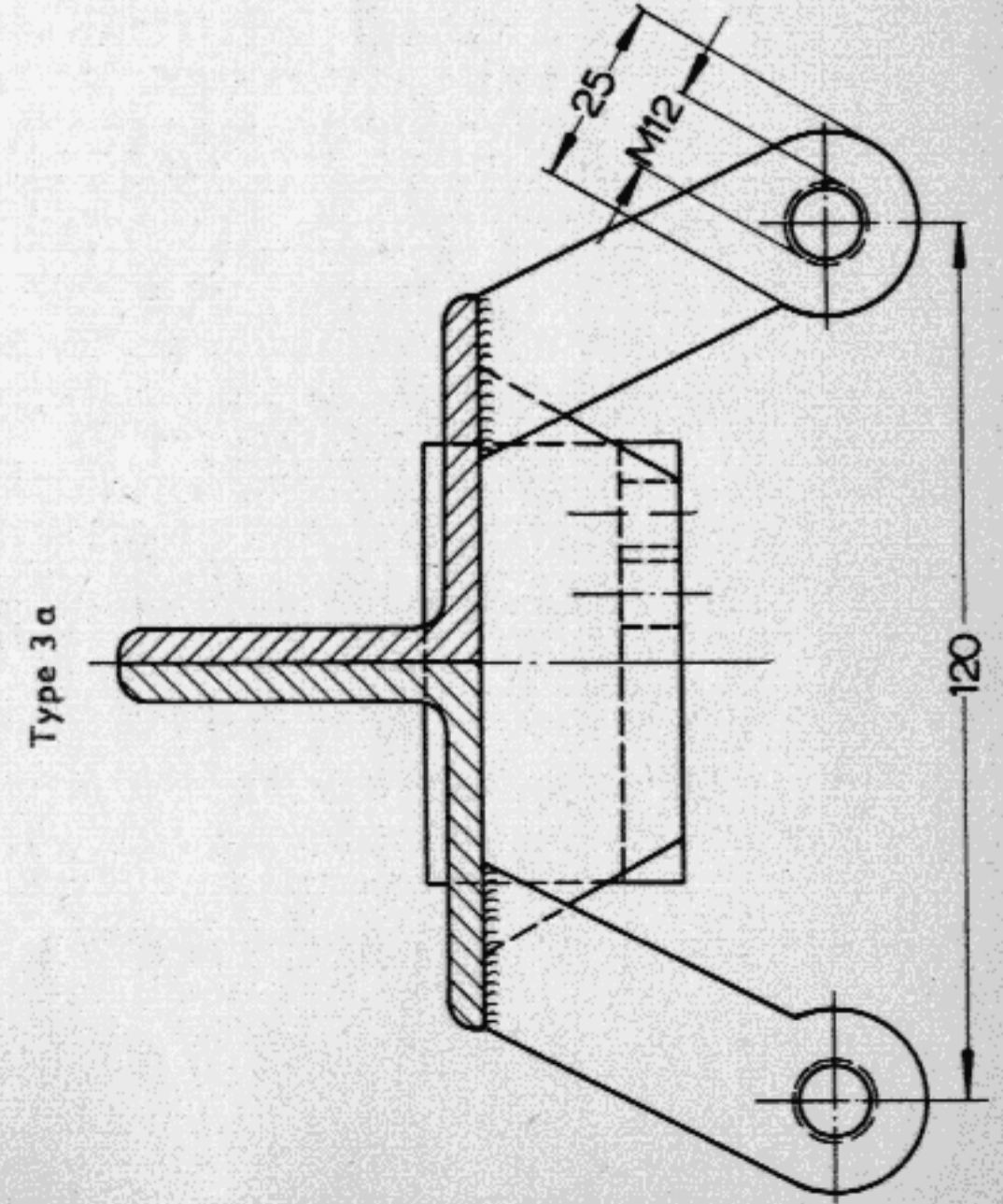
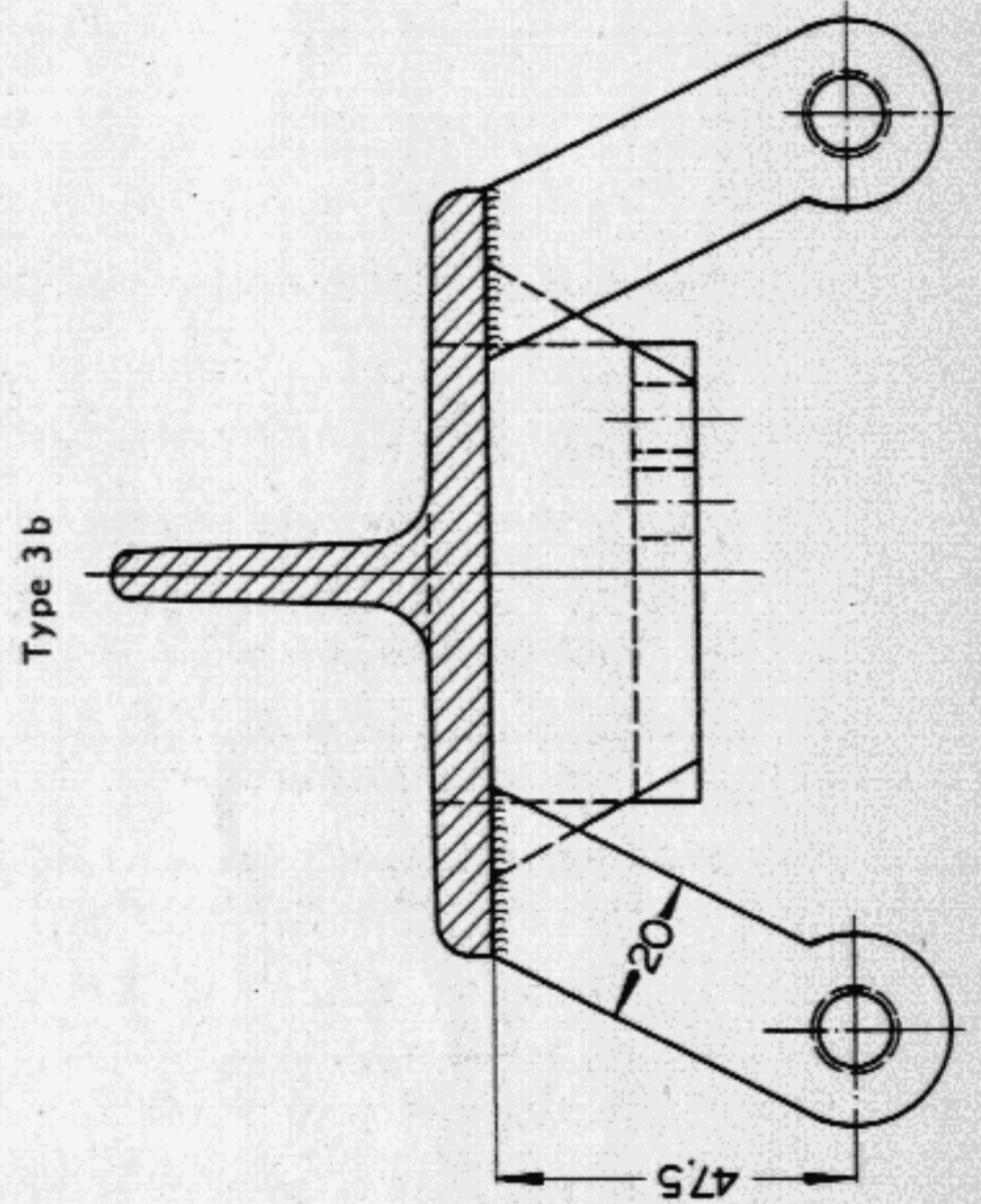
#### Note

All welds must be carried out by the arc welding process.





May be used alternatively



Arc welding to be used throughout

Part No. required	Description	Rough size or Standard Spec.	Remarks
7	1 Closer	40 x 10 x 40	MS strip
6	2 Rest	80 x 6 x 30	MS strip
5	2 Machine screw	M12 x 60	to DIN 931
4	2 Bracket	25 x 15 x 70	MS plate
3b	1 Beam	T 10 x 5 x 1000	to DIN 1024
3a	2 Beam	L 50 x 50 x 5 x 1000	to DIN 1028
2	1 End	60 x 8 x 150	MS strip
1	1 Plate	80 x 40 x 8 x 340	to DIN 1029

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WOLFSBURG  
Service Department

Drawn: May 20, 57 Sandau  
Checked: May 21, 57 Hendriok  
May 22, 57 Senf

### Frame Head Assembly Jig

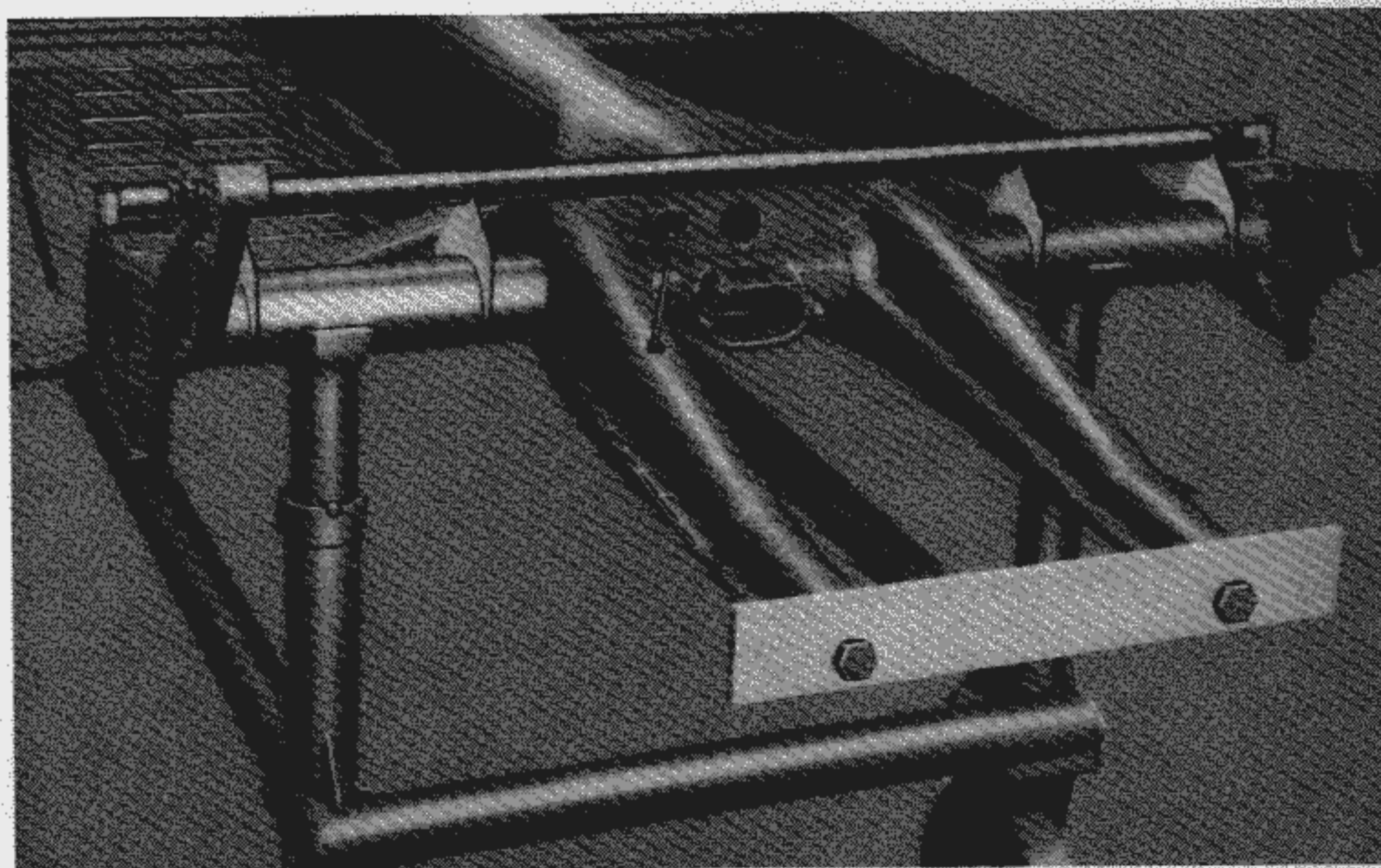
VW 670





## Frame Alignment Gauge

The gauge is used for checking the frame for misalignment of the rear cross-tube. The four distance plates of the gauge must be a snug fit on the two sections of the cross-tube.

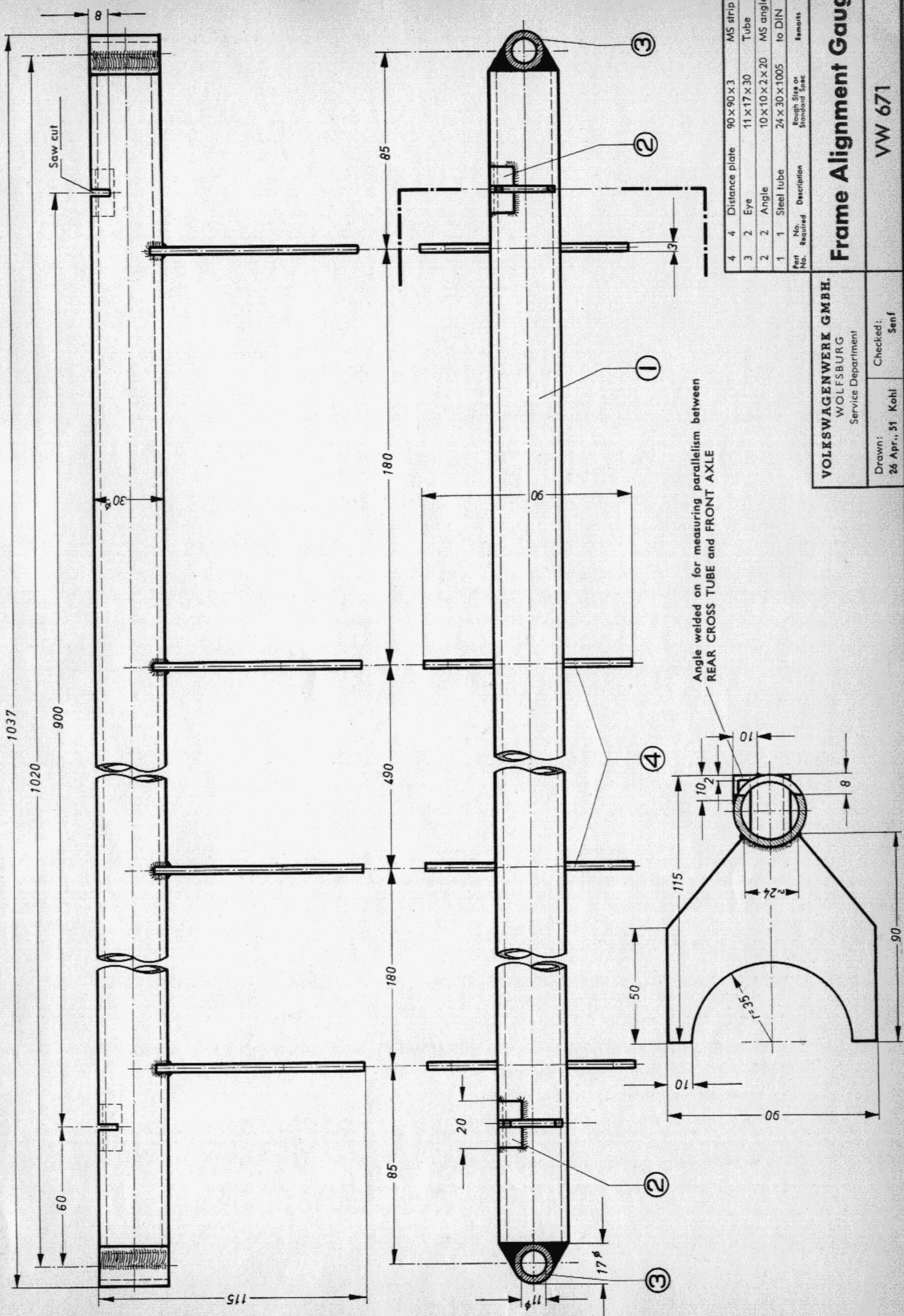




### **Construction Details for VW 671**

- 1 - Cut tube, angles and strip to dimensions given in list of parts. Have a new frame available for fitting the alignment gauge.
- 2 - Cut plates (4) to shape shown in drawing.
- 3 - Weld angles (2) to tube (1) as shown in drawing and then cut slots.
- 4 - Weld tubes (3) to tube (1) as shown in drawing.
- 5 - Weld plates (4) to tube as shown in drawing.
- 6 - Place alignment gauge on frame cross-tube and secure by inserting a pair of hex. head M 10 x 40 bolts into the tapped holes provided in the frame for attaching the body. Make sure that the distance plates (4) and the welded-on eyes (3) fit correctly without causing any distortion. If necessary, re-adjust to fit.
- 7 - Paint alignment gauge in prevailing colour of equipment and machines in the shop.





Part No.	No. Required	Description	Rough Size or Standard Spec	Remarks
4	4	Distance plate	90 X 90 X 3	MS strip
3	2	Eye	11 X 17 X 30	Tube
2	2	Angle	10 X 10 X 2 X 20	MS angle
1	1	Steel tube	24 X 30 X 1005	to DIN

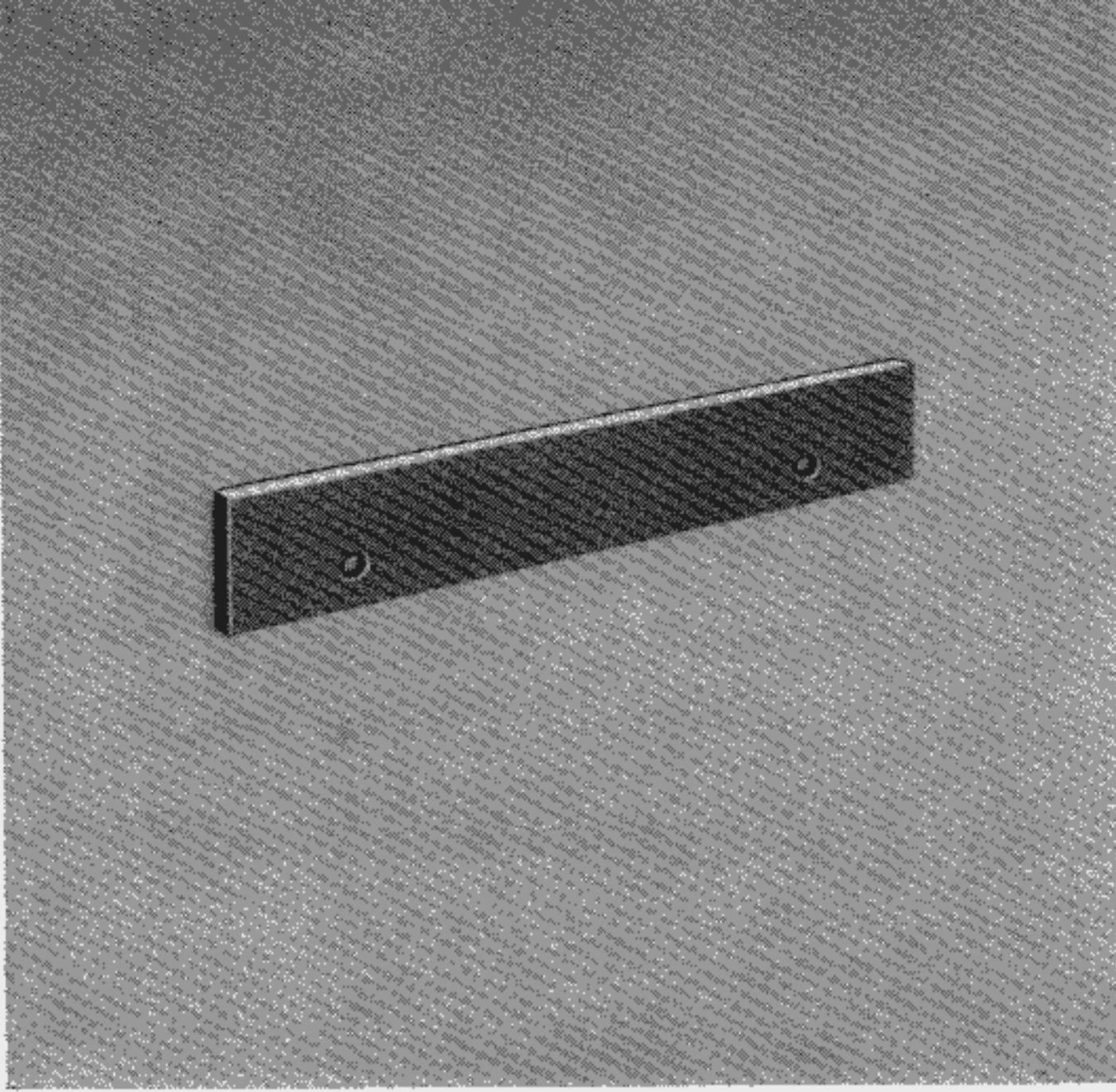
# Frame Alignment Gauge

**VOLKSWAGENWERK GMBH.**  
**WOLFSBURG**  
 Service Department

Drawn: 26 Apr., 51 Kohl  
 Checked: Senf

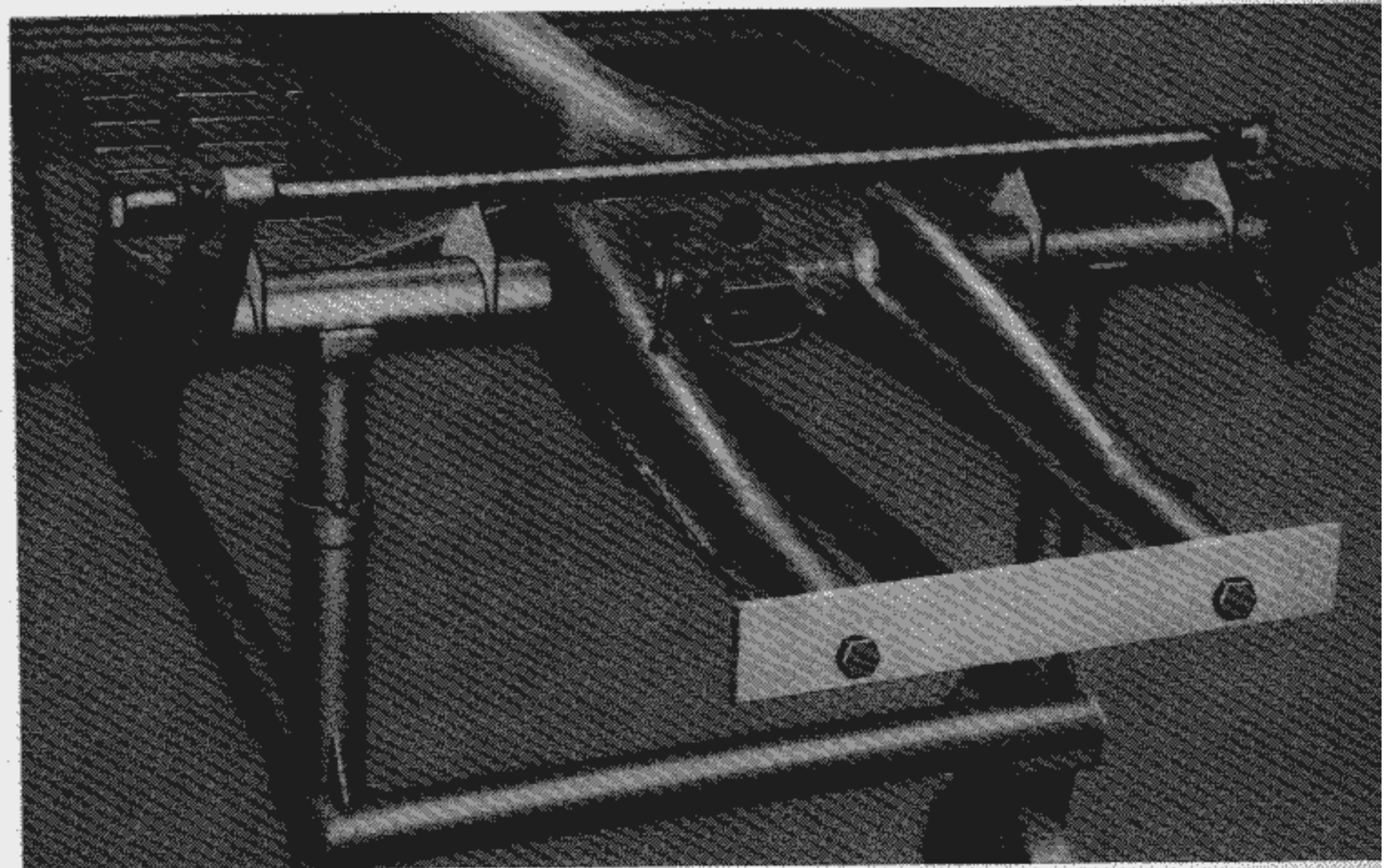
VW 671





**Frame Alignment Gauge**

The gauge is bolted to the bifurcated ends of the frame tunnel and is used in conjunction with frame alignment gauge No. 671 to indicate whether the frame ends have undergone any misalignment.

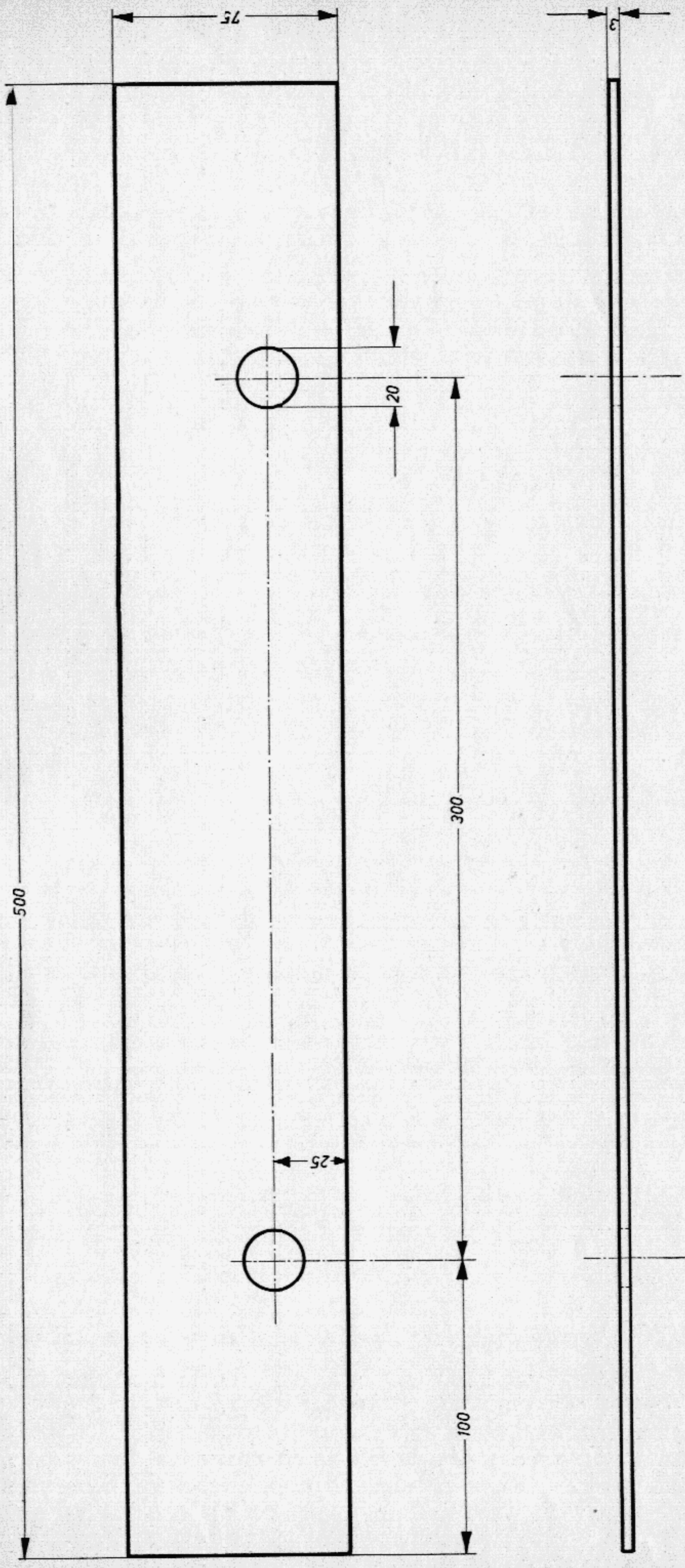




**Construction Details for VW 672**

- 1 - Cut strip to dimensions given in list of parts.
- 2 - Drill 20 mm ( $\frac{25}{32}$  in.) holes in plate (1) as shown in drawing and chamfer all sharp edges.
- 3 - Paint alignment gauge in prevailing colour of equipment and machines in the shop.





1	1	Plate	75 x 3 x 500	MS strip
Part No.	No. Required	Description	Rough Size or Standard Spec.	Remarks

**VOLKSWAGENWERK GMBH.**  
**WOLFSBURG**  
 Service Department

Drawn:  
 26 Apr., 51 Kohl

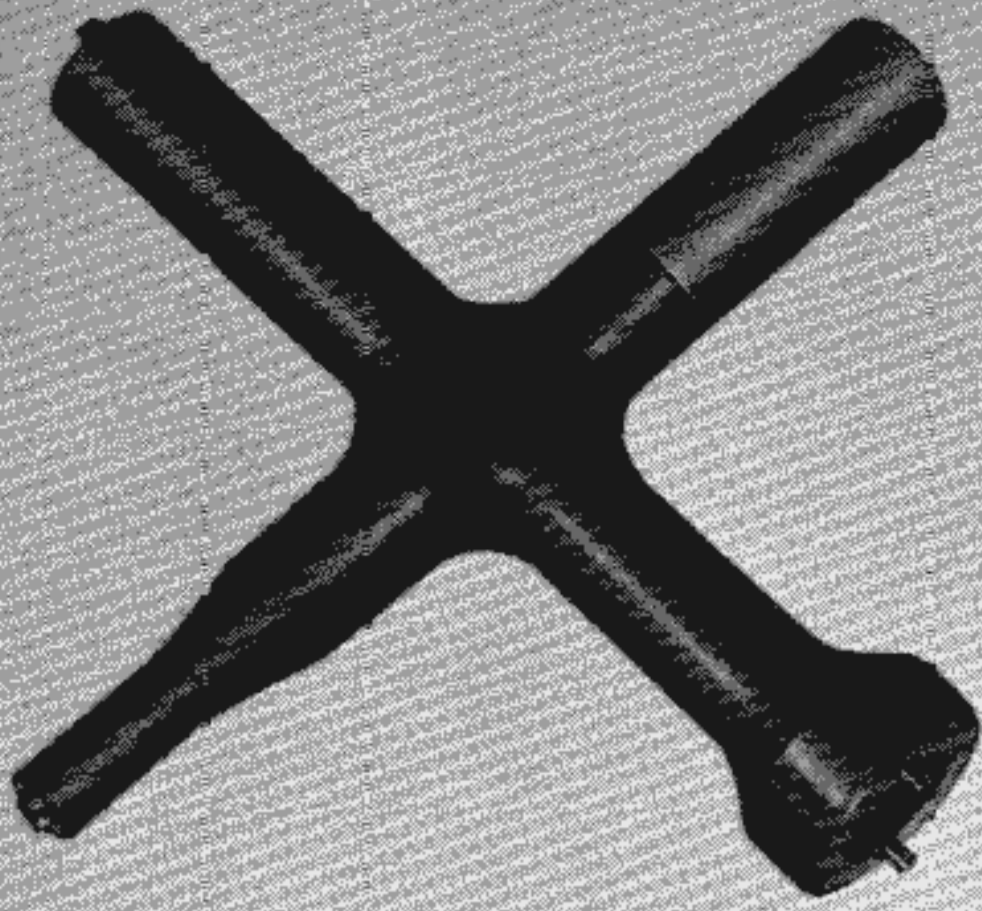
Checked:  
 Senf

# Frame Alignment Gauge

VW 672



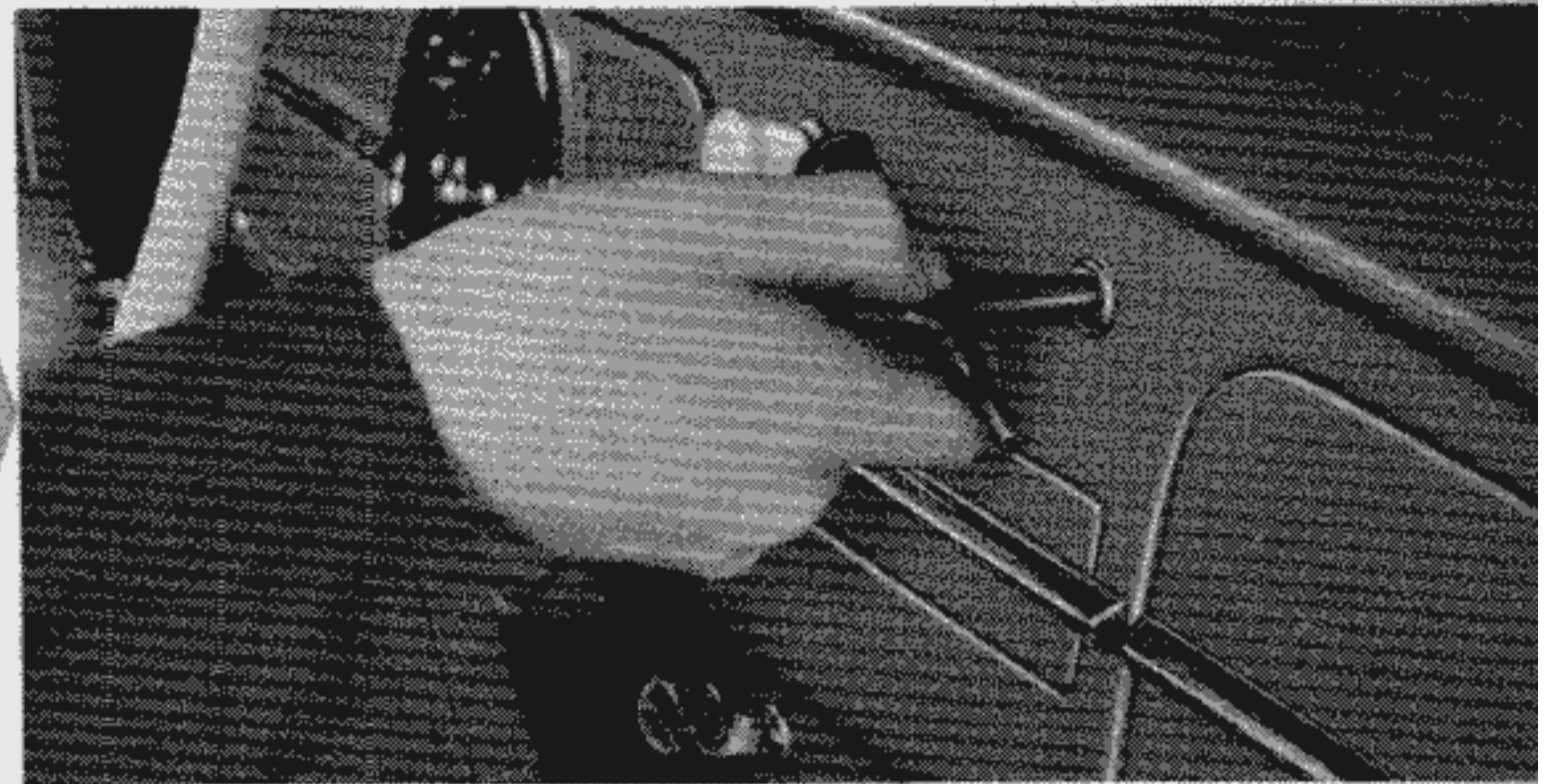
LOCAL MANUFACTURE OF WORKSHOP EQUIPMENT



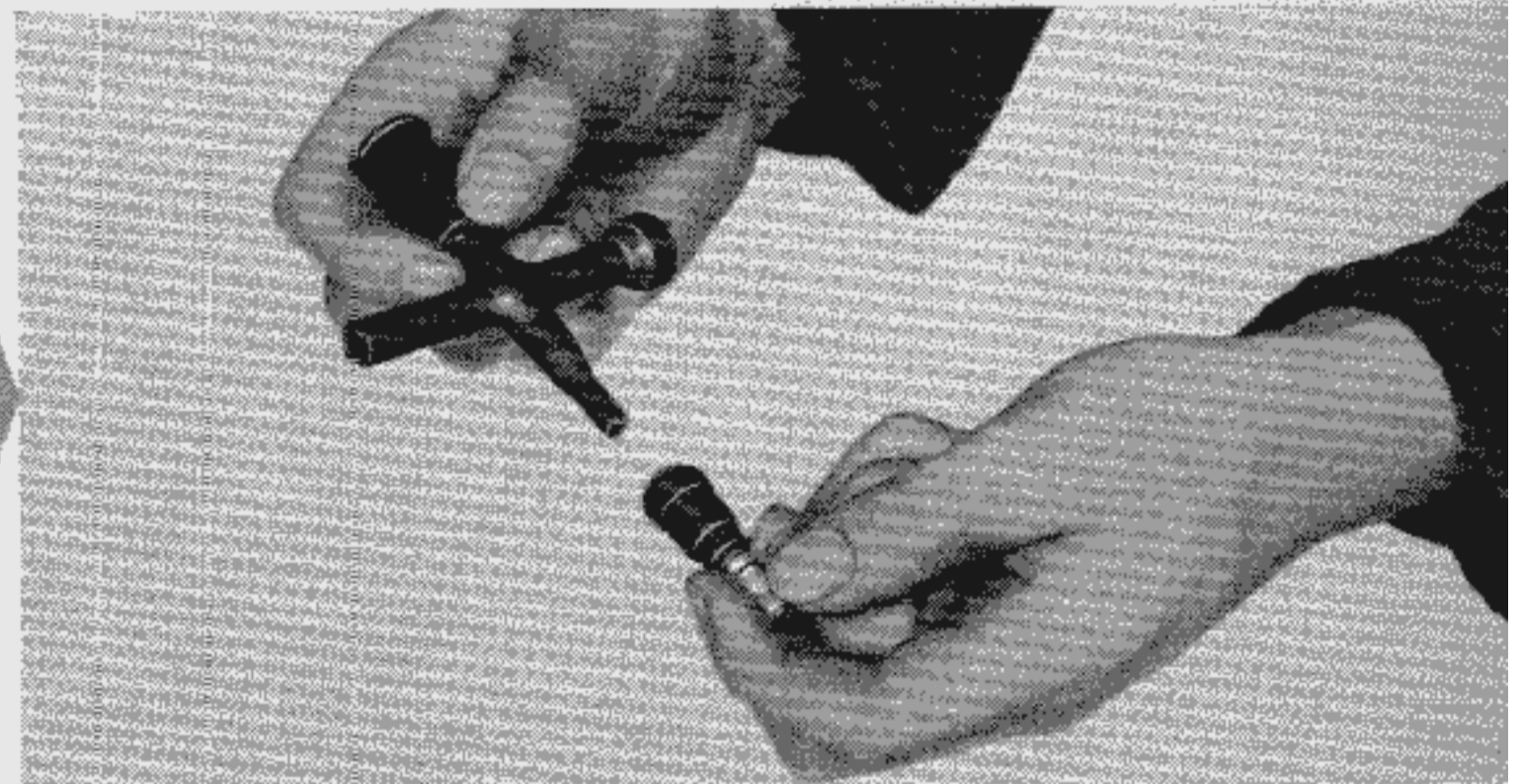
Special Cross Key

The special cross key can be used to loosen or tighten

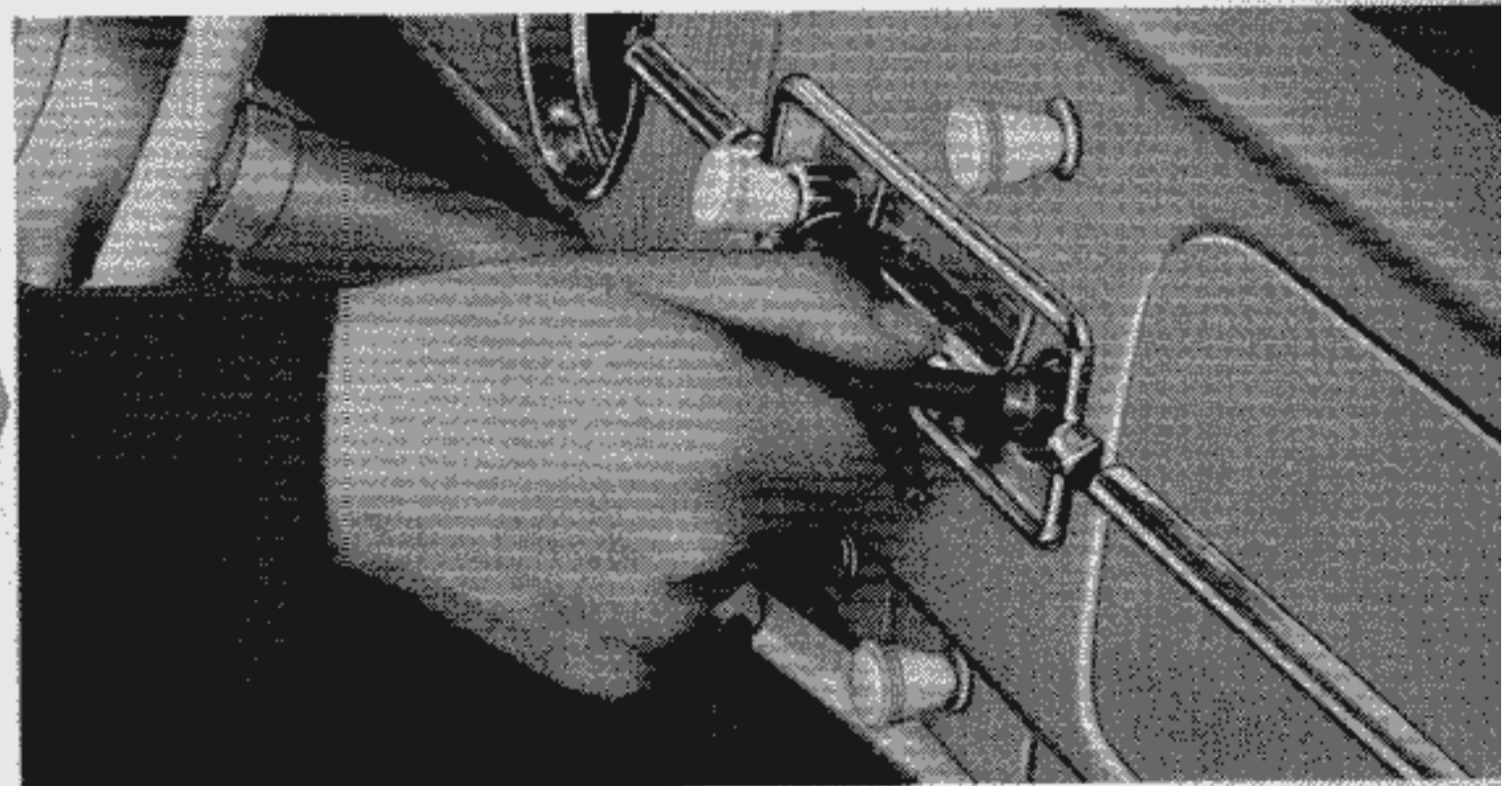
the escutcheon for the light and wind-screen push pull switch,



the suppressor plug of the BOSCH distributor cap,



or the special holding nuts when installing a radio.

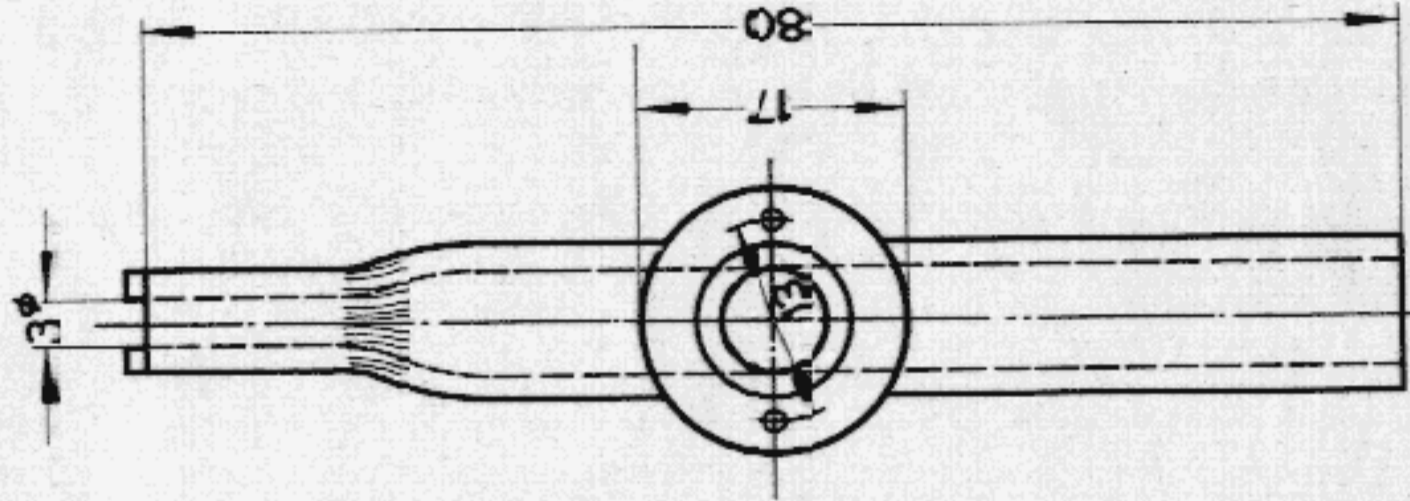
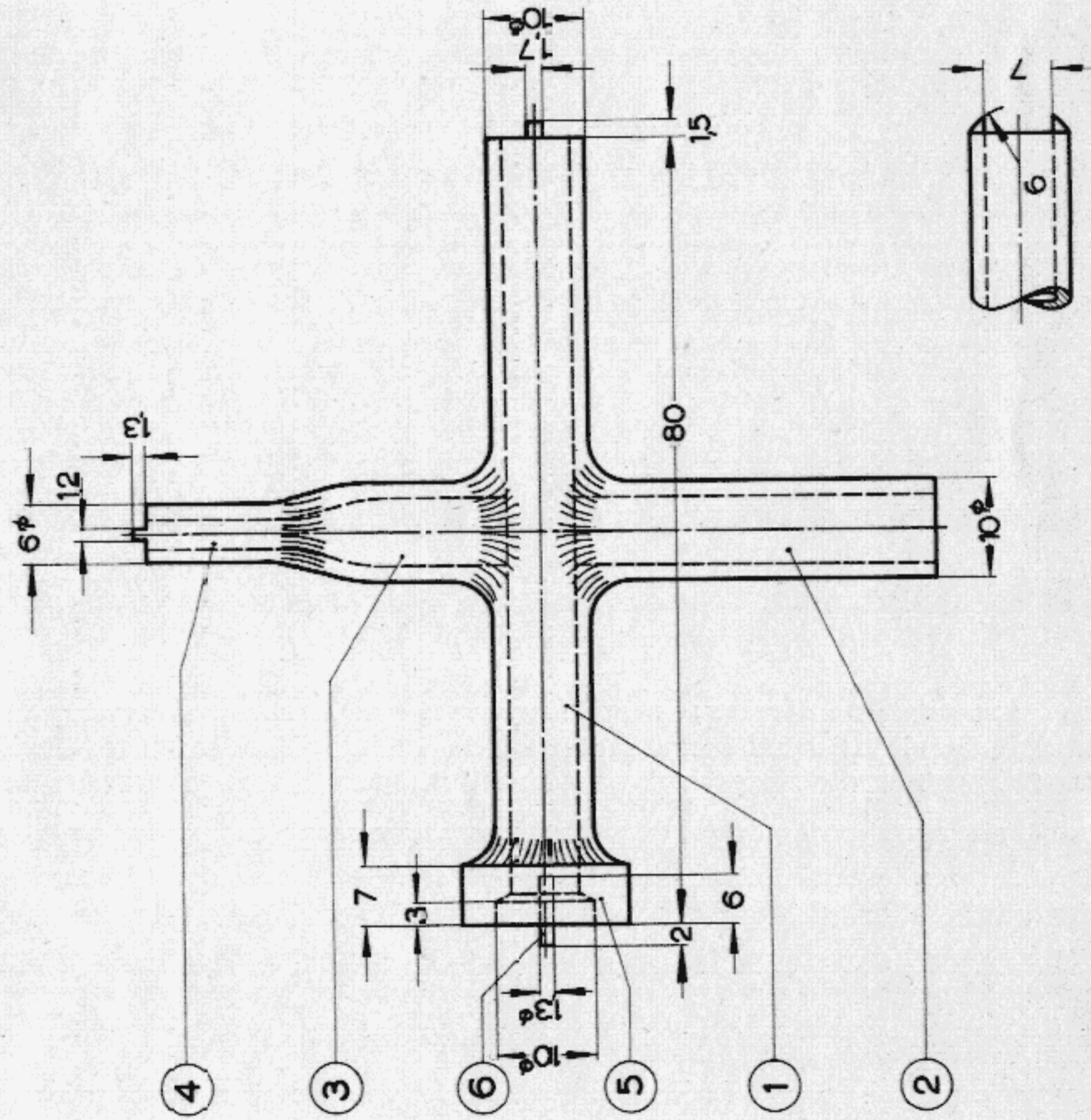




#### **Construction Details for VW 674**

- 1 - Cut tubing as detailed in the specification.
- 2 - Weld tubes (2 and 3) onto tube (1).
- 3 - Weld tube (4) onto tube (3).
- 4 - Prepare a collar (5) as shown on drawing, and weld same onto tube (1).
- 5 - Shape the open ends of the tubes as shown on the drawing, drill two holes 13 mm dia. in the collar (5), knock in dowel pins.
- 6 - Paint the special cross key in the prevailing colour of the equipment and machines in the shop.





6	2	Dowel Pin	1.3 dia. X 8
5	1	Collar	18 dia. X 25
4	1	Tube	6 dia. X 1.5 X 20
3	1	Tube	10 dia. X 1.5 X 20
2	1	Tube	10 dia. X 1.5 X 35
1	1	Tube	10 dia. X 1.5 X 75

Part No. No Required Description Rough Size or Standard Spec. Remarks

VOLKSWAGENWERK GMBH. WOLFSBURG Service Department	
Scale 2:1	Replacement for:
Drawn: 4-3-58 Sandau	Replaced by:
Checked: 7-3-58 Hendriok	

Special Cross Key

VW 674