

Prüfung



REPARATUR-HANDBUCH



INTRODUCTION

A reliable after-sales service is the essential condition of future sales. The good names of NSU and its dealers and registered workshops depend upon service more than any other single factor. SERVICE should be the watchword of every dealer and workshop.

Good after sales service is based on a thorough knowledge of the vehicle and of the recommended methods of carrying out repair work.

This book provides information on skilled maintenance methods requiring expert knowledge and special tools.

This shop manual is based on the spare parts list. We advise that, before any work is undertaken, both the handbook and the spare parts list should be consulted and that the proper tools and materials be acquired.

We believe that this manual will enable NSU dealers and registered workshops to give efficient and speedy aftersales service.

Only thus will the good name of the NSU Prinz be spread and maintained.

May 1958

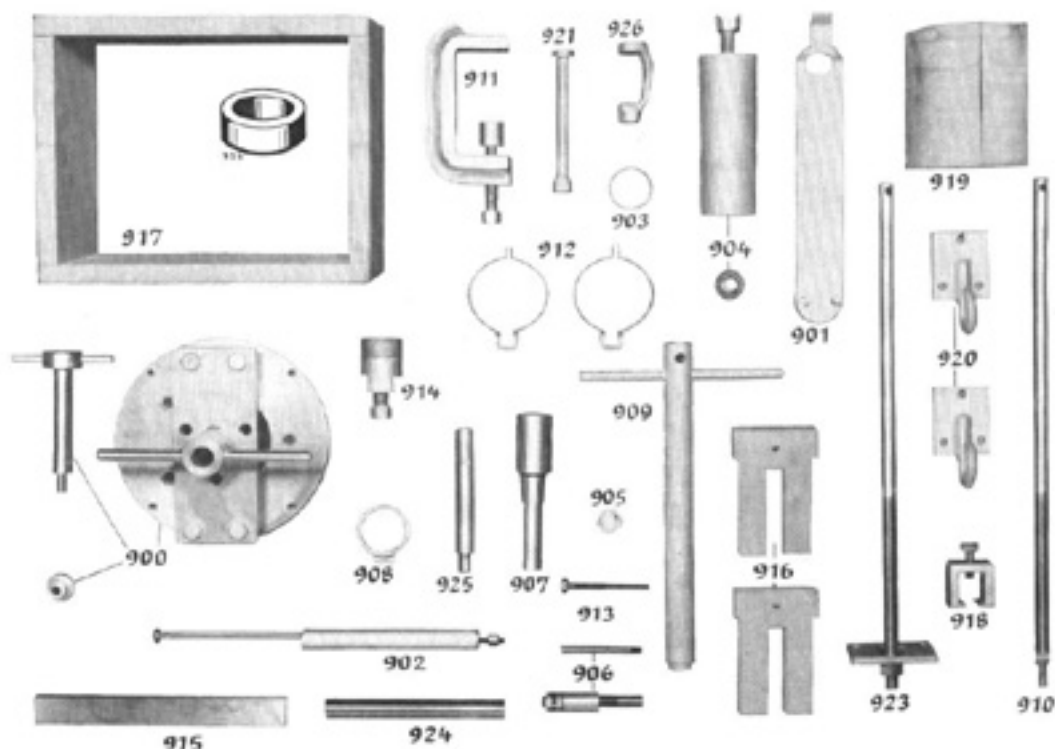
NSU Works Ltd.
Service Dept.

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Special Tools



The special tools have been given nine figure order numbers. In the repair handbook they have, for the sake of brevity been indicated by Spec. Tool No. 900 etc. to indicate Special tool No. 40 91 00 900 etc.

Motor

- 40 91 00 900 Puller with spindle and collar
- 40 91 00 901 Puller for valves and camshaft outer bearing
- 40 91 00 902 Puller for rocker shaft
- 40 91 00 903 Pilot bush for oil retainer (clutch)
- 40 91 00 904 Puller and mounting tool for pinion
- 40 91 00 905 Packing collar
- 40 91 00 906 Camshaft drive assembly kit
- 40 91 00 907 Clutch alignment pilot
- 40 91 00 908 Setting gauge clutch pressure plate
- 40 91 00 909 Splined spanner for U. J. bolts
- 40 91 00 911 Special clamp for dismantling U. Js.
- 40 91 00 912 Piston ring clamps
- 40 91 01 913 Puller pin for dynastarter armature
- 40 91 00 914 Flywheel extractor
- 40 91 00 915 Parallel strip
- 40 91 00 916 Wood blocks for piston steadys
- 40 91 00 917 Engine unit stand
- 40 91 00 921 Socket extension bar for cylinder head nuts

- 40 91 00 924 Puller tube
- 40 91 00 925 Wrist pin pilot and punch
- 40 91 00 926 Cylinder head spanner

Suspension. Front and rear

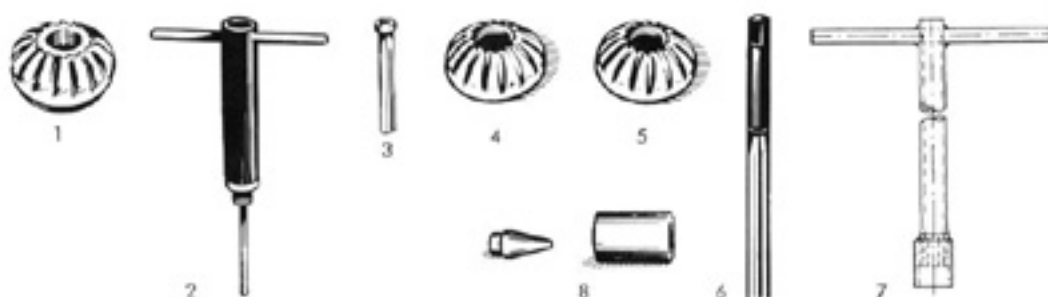
- 40 91 00 918 Puller for ball joints
- 40 91 00 919 Holding clamp for front suspension assembly
- 40 91 00 920 Engine lifting hooks
- 40 91 00 910 Circlip tool for gear lever assembly
- 40 91 00 923 Dismantling and reassembly tool for suspension springs
- 40 91 00 930 Recommended tool-kit for Prinz Work shop

Additional special tools

- 048 422 020 Valve seat refacing tool pilot
- 40 91 00 922 Valve seat refacing tool
- 038 110 337 Valve seat refacing tool
- 088 891 912 Valve guide reamer
- 088 891 915 Dummy valve guide
- 40 91 00 927 Shock absorber overhaul kit
- 40 91 00 928 Reamer for relieving valve seating in port

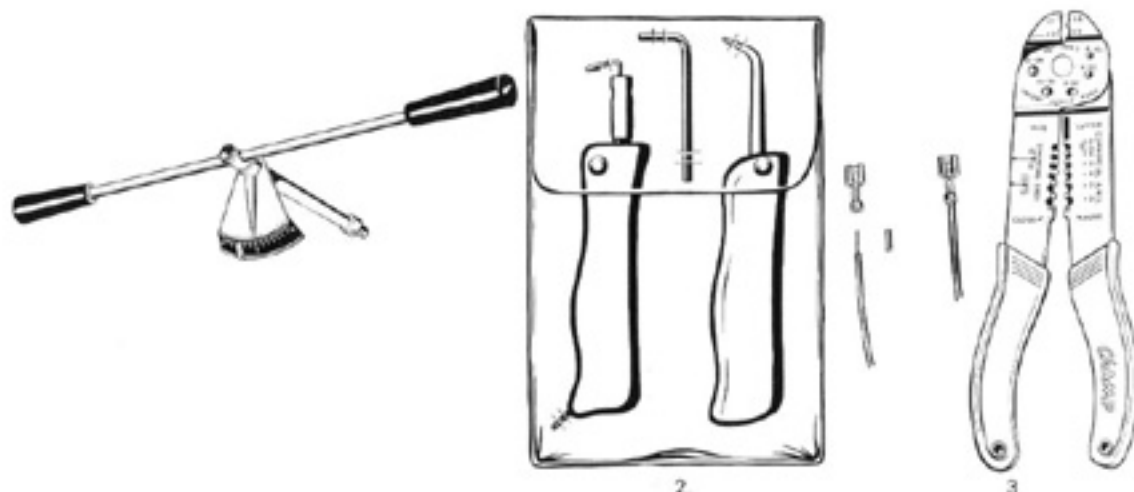
Zusätzliches Spezialwerkzeug (einzeln lieferbar)

1	Ventilsitzfräser	038 110 337
2	Schaft für Ventilsitzfräser	048 422 020
3	Führungsbüchse für Frälerschaft	088 891 915
4	Kugelformfräser für Ventilsitz, außen	40 91 00 922
5	Kugelformfräser für Ventilsitz, innen	40 91 00 928
6	Reibahle für Ventilführung	088 891 912
7	Steckschlüssel (SW 7) für Kupplungseinbau	40 91 00 929
8	Aus- und Einpreßwerkzeug für Gummipuffer und Buchsen des Stoßdämpfers	40 91 00 927

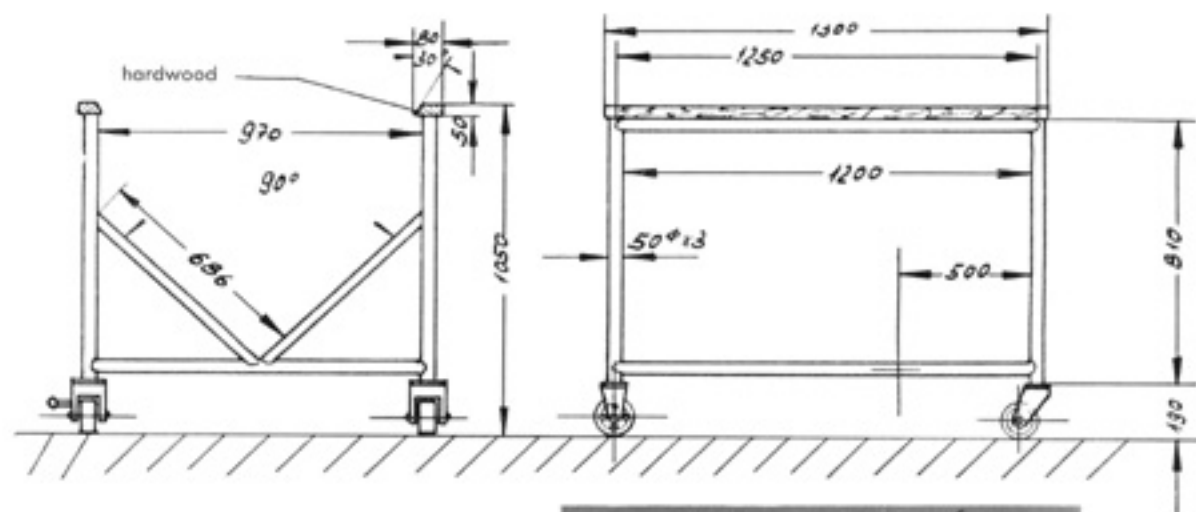


Hilfswerkzeug (handelsüblich)

- 1 Drehmomentschlüssel, mittlere Leistung 3,5 mkg (für Export auch durch NSU lieferbar)
- 2 Werkzeug für Fenster-Aus- und Einbau (NSU Nr. 40 91 00 933)
- 3 Spezialkabelzange (NSU Nr. 40 91 00 934)



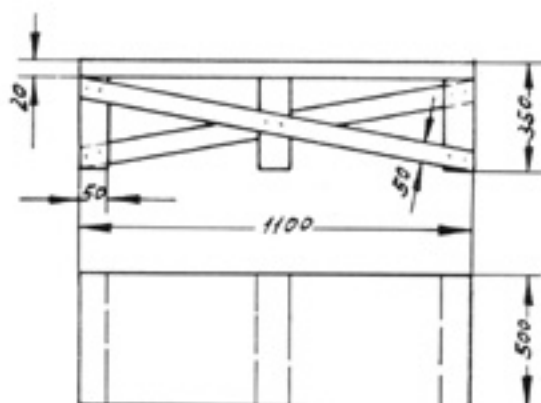
Self manufacture of Tools and Appliances



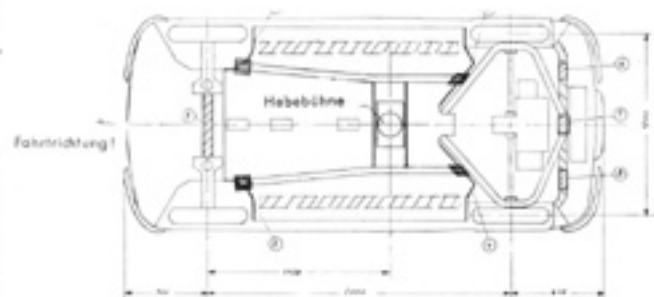
To enable work to be done on the vehicles from all sides and to cut down shunting the vehicle around in a confined space, it is carried onto an "assembly wagon" (self manufactured) with the help of a ramp or hoist. The rollers on the "assembly wagon" are 150 mm in diameter and each will bear a weight of 200 kg.



Having placed the vehicle on the "Assembly wagon", an assembly trestle will enable work to be carried out on the motor and on units accessible from above.



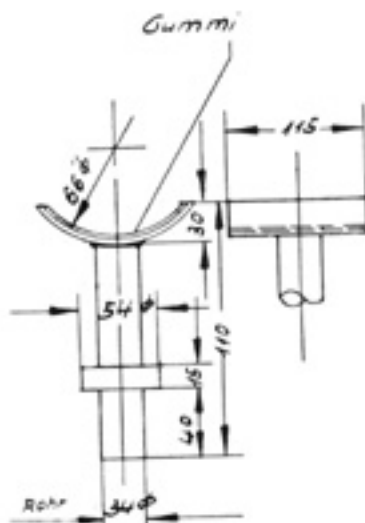
This is how a vehicle is placed on the "assembly wagon". The car floor must rest evenly on both sides of the wooden beams of the "assembly wagon".



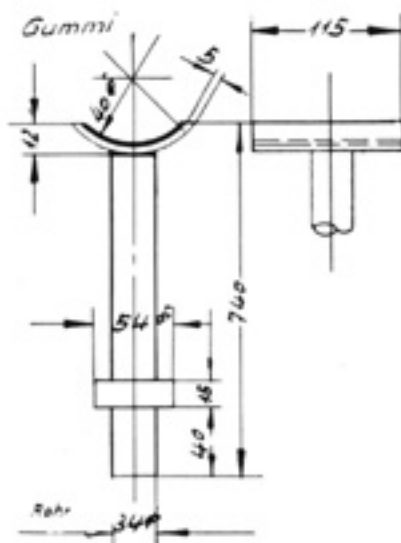
Points on the vehicle at the vehicle jack or trestle are set. 1 - Tubing on the front axle beam where the jack is placed (see also p. 8) 2-5 Points at which the rising platform fit, 7 - Point at which the rear jack is set, 6 and 8 - Points at which the rear trestles are set.

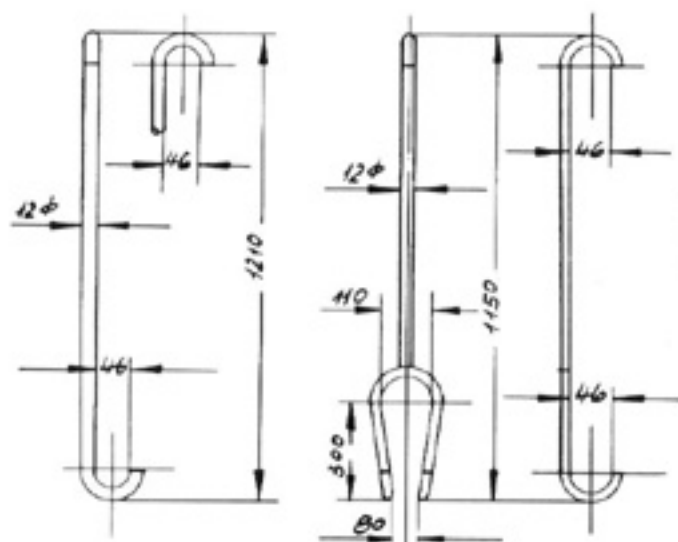


Where the vehicle is to be raised at the front or rear and supported by blocks, the vehicle jack (diagram of self manufactured jack on right) is used and the vehicle is supported at the front under both lower suspension arms by trestles.

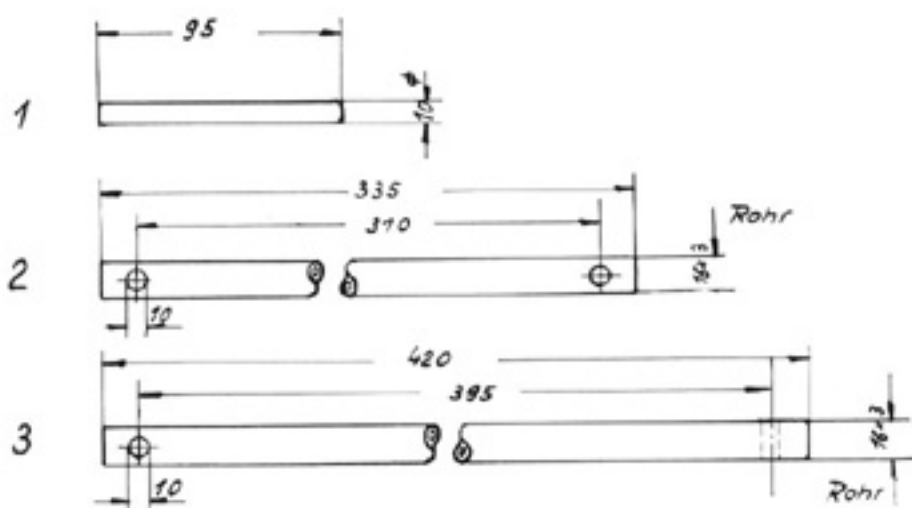


Where the vehicle is raised at the rear both trestles are placed under the flanges of the rear wheel suspension arms (see illustr.). If it is required to raise the vehicle further an extension to the jack is used (see illustr. right).



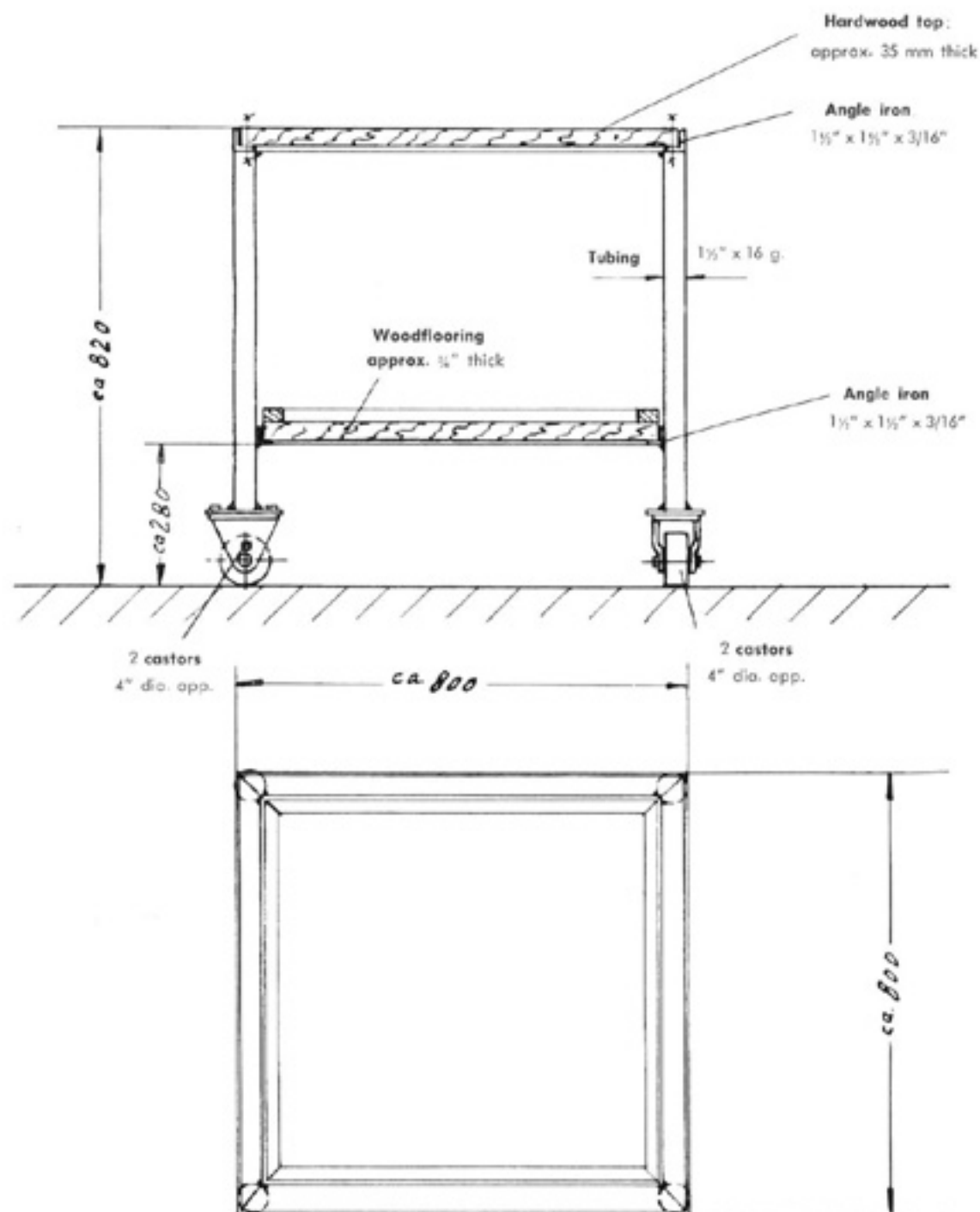


When dismantling front and rear springs, erecting hooks (self manufactured) could be used in place of spring dismantling and assembly tools SpW 923. These hooks are described in the text under V 21.



Teil	1	2	3	Stk.
"	2	"	2	"
"	3	"	2	"

To check wheel alignment (see text V 35) tension rods and pins are used for front and rear springs (self manufactured). Tension rods, 335 mm in length are used for front wheel suspension and rods 395 mm in length for rear wheel suspension.



The motor transporting and erecting wagon (self manufacture) can be used to hold, transport or when working on the motor unit.

Gruppe MG Motor - Getriebeblock

MG

Technical data for motor-unit

Motor

Number of cylinders	2
Cycle	4 stroke
Bore	75 mm
Stroke	66 mm
Cyl. capacity	583 c. c.
Compression chamber	50 c. c.
Compression full throttle	9—11 atmos.
Compression ratio	6.8—1
HP	26 (No rpm)
Max. revolutions	4,800 r. p. m.
Max. torque	30 lbs/ft at 2,250 r. p. m.
Valve gear	Overhead camshaft. Connecting rod drive
Valve play (cold motor)	
Inlet valve	.004"
Exhaust valve	.004"
Lubrication	Pressure circulation (motor oil supply 2.5 l, oil change supply 2.1 l)
Type of oil pump	Gear pump
Oil filter	Micronic filter, renewable
Cooling system	Turbine air cooling
Upper eccentric drive	Non-adjustable
Play of oil pump pinions	.004"—.008"
Play of clutch drive	.008"—.012"
Axial play of cardan joint	0

Piston

Play on KS piston	.0022"—.0025"
Gudgeon pin dia.	.001"—.002"
Bore of connecting rod box indented no longer bored out	
Diameter of valve stems	8 mm — 0.04 — 0.055
Bore of valve guides	.33"
Width of valve seating	.045"—.055"
Angle of valve seating	45°
Correction angle outer	15°
Correction angle inner	60°

Gears

Type of gear change	4 speed, permanently engaged gears. Dog coupling
Gear ratios	
1st gear	1 : 18.74
2nd gear	1 : 10.00
3rd gear	1 : 6.39
4th gear	1 : 4.52
Reverse	1 : 24.35
Axial play on gears	.008"—.012"
Axial play on differential	0

Fuel unit

Fuel supply
 Fuel filter
 Fuel tank
 Filler cap
 Fuel control

Diaphragm pump, mechanical drive
 screen in fuel pump cover
 under hood luggage compartment
 o/s front, raise boot hood
~~yellow indicator light at dashboard~~
 reserve tank

Carburetor

Type of carburetor
 Manufacturer and type
 Carburettor settings:
 Jet — Stage 1
 Jet — Stage 2
 Jet — Stage 3
 Idling jet
 Air regulator screw
 Starter jet
 Air filter

Gravity registering carburetor
 Bing 7/26/1

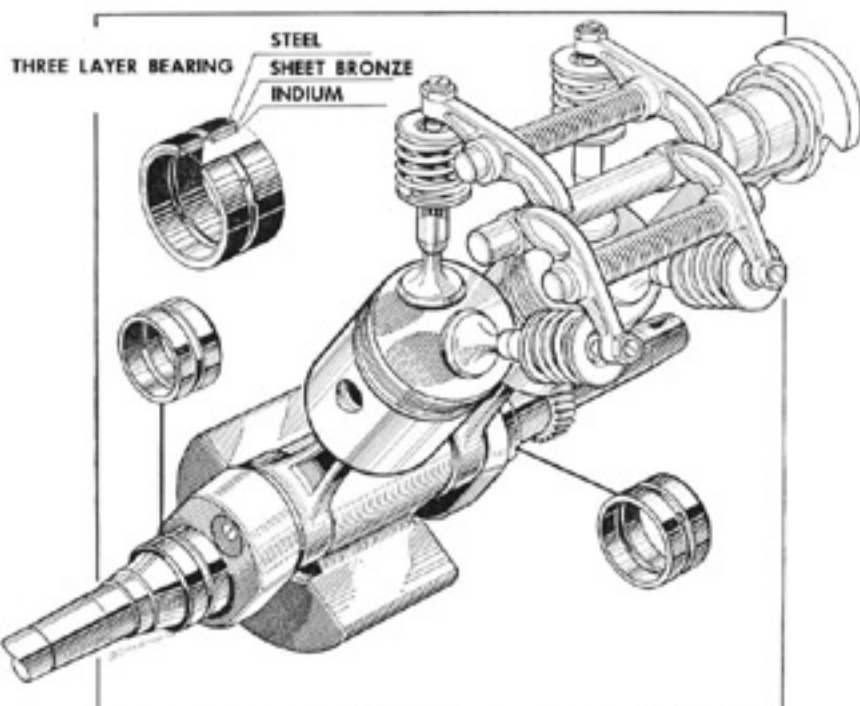
58
 60
 122
 36
 $\frac{1}{8}$ — $1\frac{1}{8}$ open
 80

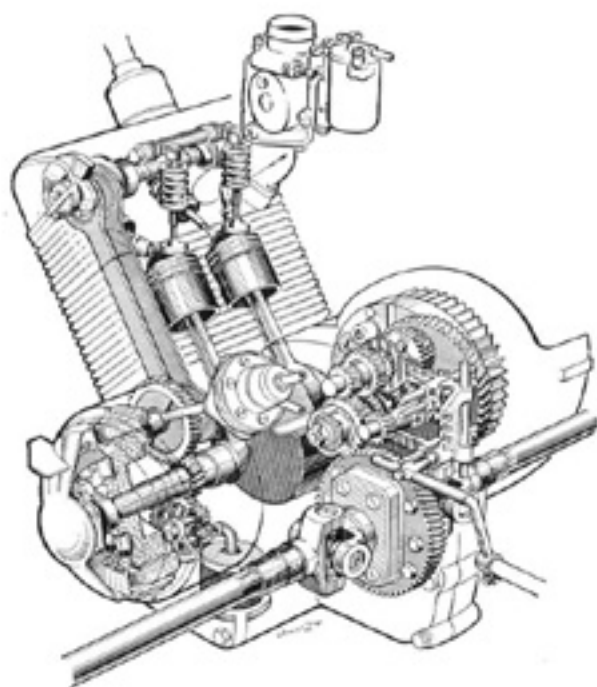
Micronic Filter pad, renewable in
 suction silencer

Clutch

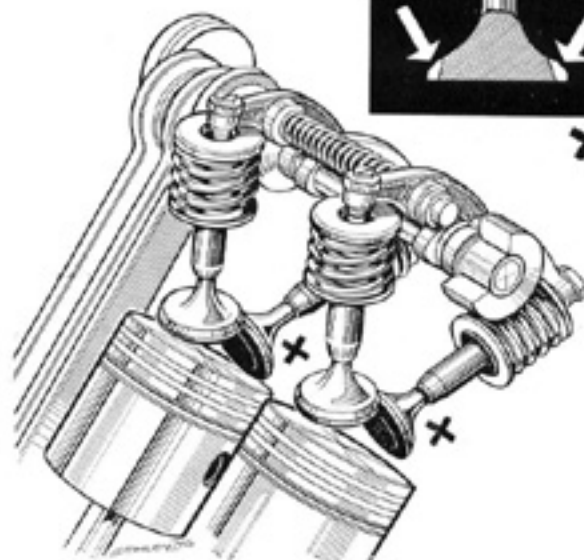
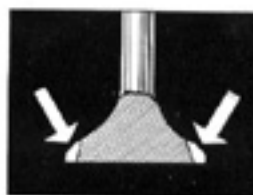
Play on clutch pedal top

.8"—1.2"





ARMoured RING VALVE



After-sales Service

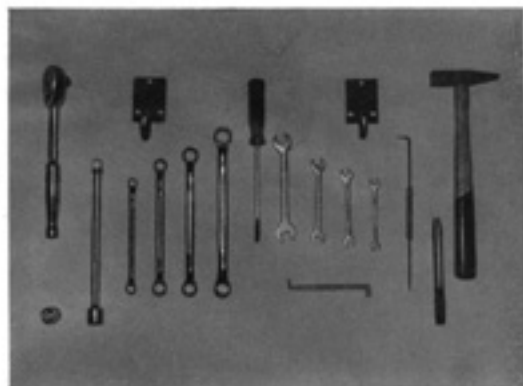
Post sales maintenance work to be thoroughly and expertly carried out		before delivery of vehicle	after 250 miles	after 1,000 miles	every 2,500 miles	every 7,500 miles	every 15,000 miles	every 30,000 miles
1	Check oil level (oil must reach the top mark on dipstick)	+						
2	Check oil filter (sooner if oil very dirty)			+	+	+	+	+
3	Change oil and filter and clean oil screen (Oil supply 2.1 l. SAE 20. Note: when changing oil after 1,000 ms. but not filter, oil supply 2.0 l. SAE 20)		+	+	+	+	+	+
4	Clean air filter (do not wash out merely blow through)			+	+			
5	Renew air filter cartridge (earlier if in dusty road area)					+	+	+
6	Clean carburetor					+	+	+
7	Clean fuel pump					+	+	+
8	Tighten cylinder head nuts with Torque spanner (25 ft. lb.)		+	+				
9	Check valve play (.004" with cold motor)		+	+		+	+	+
10	Test spark plugs (.028" gap)				+	+	+	+
11	Check ignition setting and cable connections (contact gap .014")				+	+	+	+
12	Dynastarter: check collector, clean carbon brush holder, renew carbon brushes where necessary						+	+
13	Clutch lever: Check play (.8"—1.2" on clutch pedal)		+	+	+	+	+	+
14	Grease lubricating nipples on King Pins and clutch spindle (Use hand grease gun!) After driving over muddy or snowy slush grease every 750 miles.			+	+	+	+	+
15	Tighten all screws and nuts accessible from outside (but not castellated nuts)		+	+	+	+	+	+
16	Tighten all motor and front axle suspension screws bolts and nuts. On 12 nuts bend over safety washers, tighten nuts and reset washers (Steering rack housing)					+	+	+
17	Check all nuts, screws and cotter pins on steering, front, suspension, rear axle shaft, rubber seating, washer and rear link and tighten (remove cotter pins from 18 castellated nuts and renew cotter pins (after check)							+
18	Grease windshield wiper joints							+
19	Repack wheel hubs						+	+
20	Clean brake drums, check brake lining					+	+	+
21	Check brakes — brake pipes and brake cylinders	+		+	+	+	+	+
22	Check wheel nuts and tyre wear	+	+	+	+	+	+	+
23	Check tyre pressures and adjust (for 2 persons 19 lbs / 21 lbs front / rear) (for 4 persons 21 lbs / 24 lbs front / rear)	+	+	+	+	+	+	+
24	Check wheel alignment (1—1.5 mm Toe in)			+		+	+	+
25	Fill up steering rack box with fresh grease							+
26	Top up batteries (observe makers' instructions)	+	+	+	+	+	+	+
27	Check all lights and signals	+	+	+	+	+	+	+
28	See that door and hood hinges move easily, oil all moving parts. Do not oil door locks, use flaked graphite			+		+	+	+
29	On test run check performance and roadworthiness	+	+	+	+	+	+	+

MG 1 **Motor-Gear Box** **dismantle and reassemble**

Tools: Ring spanner 10, 11, 14, 17, 19 mm, socket wrench 14 mm and extension and lever, straight spanner 7, 9, 2 x 10, 11, 14 mm, angled spanner 10 mm angled screw driver, screwdriver, hammer, chisel, scriber, 2 hooks SpW 920 (special tool).

Illustr. No. 1

1



MG

1. Vehicle on erecting wagon.

Illustr. No. 2

2

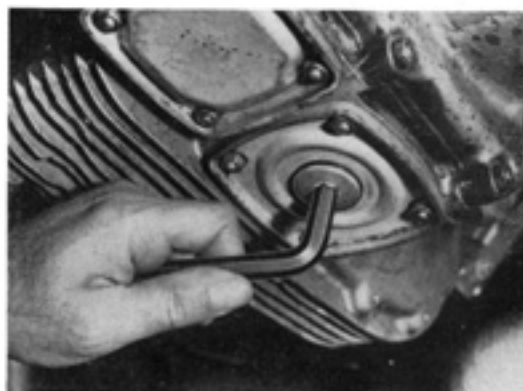


2. Draining off oil
 (Allen wrench 10 mm)

Note: To prevent dripping during subsequent operation replace oil drain plug.

Illustr. No. 3

3

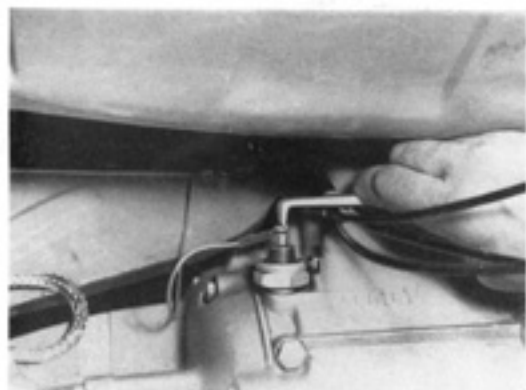


3. Raise rear seat.
 4. Fold back cover plate over + pole.
 5. Loosen clip on + pole and remove.
 (2 straight spanners 10 mm)

Illustr. No. 4

4





5

A. Working from above

6. Open motor hood.
7. Withdraw spark plug cables.
8. Remove breather tube.
9. Remove clip from Air Filter.
(screw driver)
10. Loosen cable to oil pressure switch.
(angled screw driver).

Illustr. No. 5



6

11. Loosen screws on special casing cover.
(2 screws, angled screw driver, hold inside with
9 mm spanner)

Illustr. No. 6 left



7

12. Loosen multi-strand cable from motor.
(10 mm nut spanner)

Illustr. No. 6 right

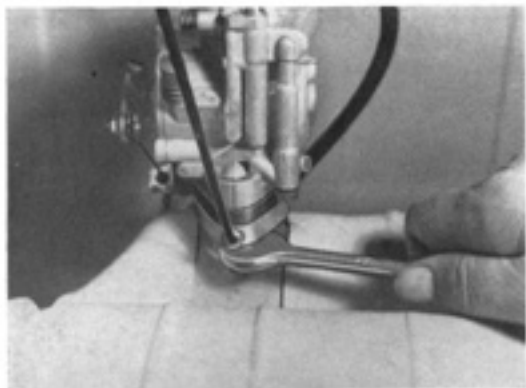
13. Loosen Air Filter clip.
(11 mm ring spanner)

Illustr. No. 7 left

14. Remove air filter.

15. Loosen cable to heating valve.
(screwdriver and 10 mm ring spanner)

Illustr. No. 7 right



8

16. Loosen carburetor.
(2 nuts, 14 mm spanner)

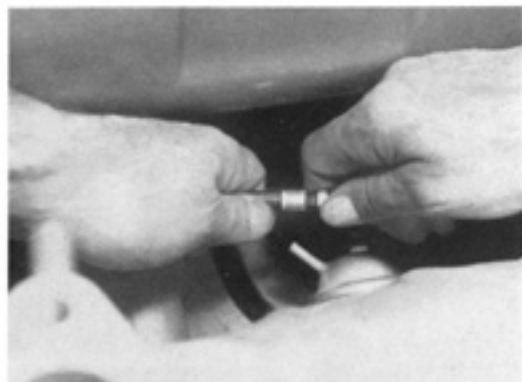
Illustr. No. 8

18. Remove fuel pipes from fuel pump.

Note: The pipe to the fuel tank should be plugged to prevent syhponing.

Illustr. No. 9

9



MG

19. Loosen heater unit pipe and press down.

20. Remove starter cable (black) from dynastarter.
(Screwdriver or 7 mm spanner)

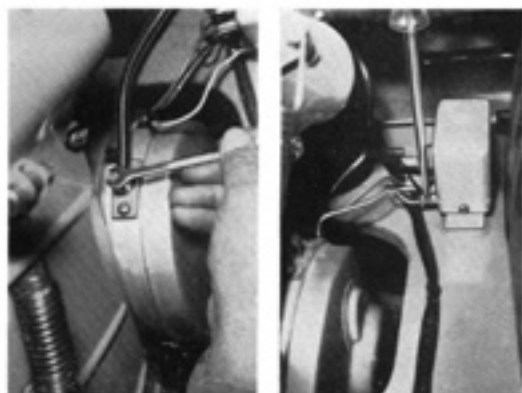
Illustr. No. 10 left

21. Remove cable connecting plug.
(cable, black)

22. Loosen cable to regulator (yellow) and dynastarter
(blue).
(Screwdriver)

Illustr. No. 10 right

10



23. Remove exhaust pipe nuts.
(2 x 3 nuts, 11 mm ring spanner)

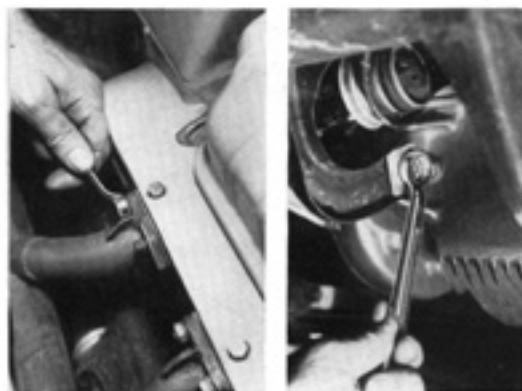
Illustr. No. 11 left

24. Bend back locking washers on nuts of exhaust.
(2 washers, Hammer, Chisel)

25. Unscrew locking nuts on exhaust.
(2 nuts, 17 mm Ring spanner)

Illustr. No. 11 right

11

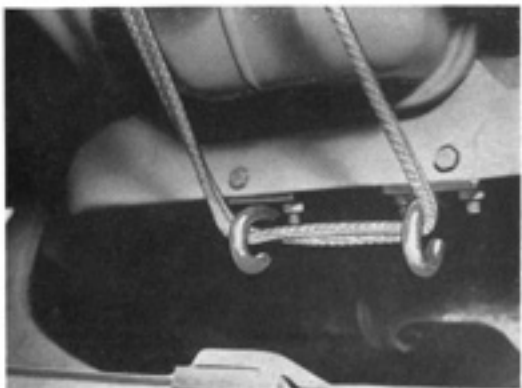


26. Remove exhaust system complete.

27. Fit two hooks for motor removal.
(2 hooks SpW 920, 11 mm ring spanner)

Illustr. No. 12

12



28. Fix rope for removal of motor and lift the motor gently.



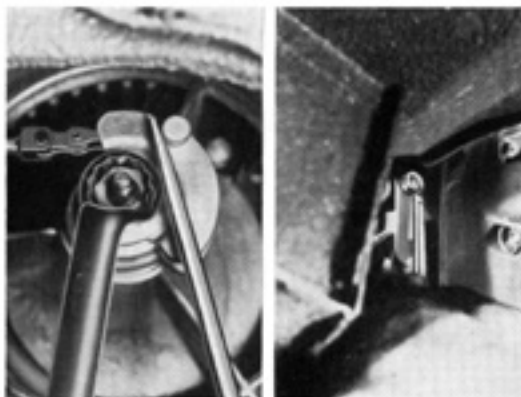
13

B. Working from underneath

29. Remove axle shaft bolts, right and left.
(3 bolts on each, 14 mm ring spanner)
30. Push axle shafts forward and remove from joint.

Note: When re-inserting grease thoroughly.

Illustr. No. 13



14

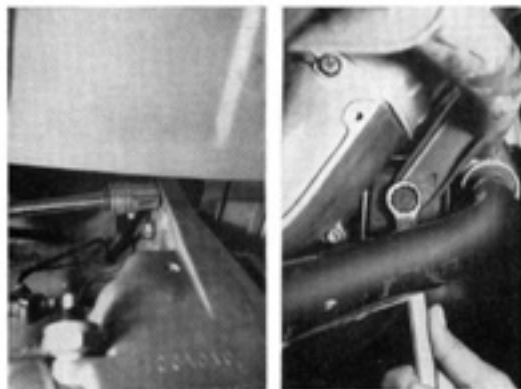
31. Remove clutch cover.
(3 screws, 16 mm Ring spanner)
32. Disconnect clutch spring.
33. Loosen clutch lever.
 - a) Mark position of clutch lever
(see also Illustr. Nos. 189—190)
 - b) Loosen nut on clutch lever
(19 mm ring spanner)
 - c) Remove clutch lever and cable
 - d) Loosen lock nut, unscrew adjusting screw
(11 mm spanner)
 - e) Detatch cable.

Illustr. No. 14 left

34. Loosen upper screw on Gear change block.
(Use 11 mm ring spanner and 11 mm spanner to hold).

Illustr. No. 14 right

Note: To facilitate this operation the reserve gear should be engaged.



15

35. Remove screw.
36. Remove block.

Note: Check seating of the two Vulkolan washers on the right and left and the Vulkolan bush underneath.

37. Loosen motor fastening bolts at rear.
(2 screws, 19 mm ring spanner)

Illustr. No. 15 left

38. Loosen motor fastening bolt at front.
(2 bolts, 14 mm socket wrench with extension and ratchet)

Illustr. No. 15 right



16

39. Loosen mountings.
(19 mm ring spanner)
40. Remove mountings downwards.
41. Lift off motor, press forward and tilt rear end upward.

Illustr. No. 16

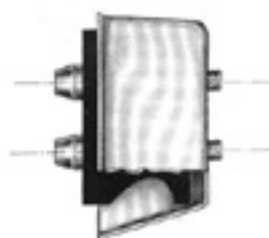
To re-install motor carry out operations in reverse order.

MG 2 Motoraufhängung (Lagerelemente) auswechseln

1. Beim Ausbau des Motors bleibt das vordere Lagerelement und die Tasse grundsätzlich im Fahrzeug.
Beim Auswechseln dieses Lagerelements samt Tasse darauf achten, daß beim Einbau die schräge Auflage der Tasse nach unten zeigt.

Bild a

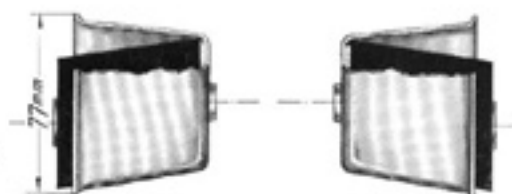
a



2. Die beiden hinteren Anschlagtassen werden zusammen mit den Lagerelementen so eingebaut, daß jeweils die hohe Seite (ca. 77 mm) der Anschlagtasse senkrecht steht und das Lagerelement an der unteren Fläche der Tasse anliegt.

Bild b

b



Achtung: Wird diese Anordnung nicht beachtet, so kann der Motor nicht frei schwingen, was zu polternden Geräuschen und frühzeitigem Verschleiß der Lagerelemente führt.

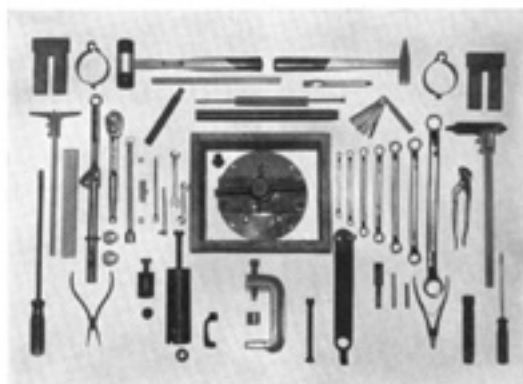
MG

MG 3 Motor and Gear Box. Dismantle and reassemble

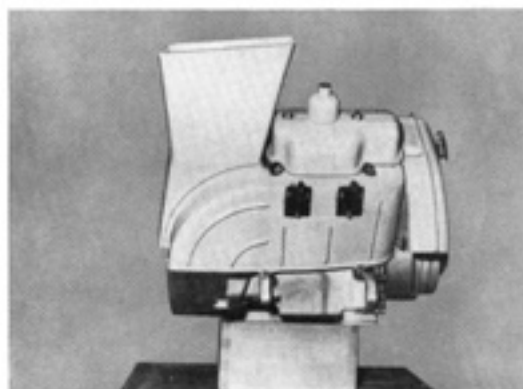
Tools: Ring spanners 9, 10, 11, 14, 17, 19, 22, 27 mm, socket wrench 9, 10, 11, 22, 24 mm, spanner 2x10 mm, spark plug key, shifting spanner, screw drivers large and small, circlip pliers, pointed pliers, pipe grips, rubber headed hammer, hammer, brass punch, chisel, depth gauge, set of feeler gauges, erecting frame for motor SpW 917, special tool for removal of rocker lever bearing SpW 902. Tools for dismantling and reassembly of valves and camshaft bearing SpW 901, reassembly tool for upper eccentric shaft and pin SpW 906, special cylinder head key SpW 921, special cylinder head key SpW 926 spring pin for dynostarter seating SpW 913, special tool for removing clutch SpW 914, extractor bolt SpW 905, erecting tool and spindle SpW 900, 2 wooden blocks for pistons SpW 916, 2 spring bands and clips for piston ring SpW 912, top end pin punch SpW 925, Vernier gauge SpW 915, tools for removal and reassembly of drive shafts, SpW 40, special tool for removal of universal couplings SpW 911, socket wrench for splined screw on universal coupling SpW 909.

Illustr. No. 17

17



18

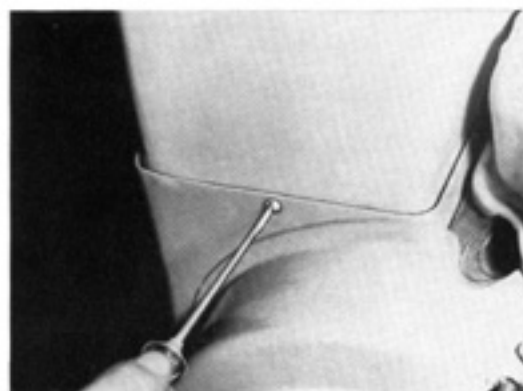


Note: When completely dismantling motor the oil in the motor should be removed by dismantling the micronic filter (4 nuts, 10 mm socket wrench).

1. Motor on erecting frame.
(erecting frame for motor SpW 917)

Illustr. No. 18

19



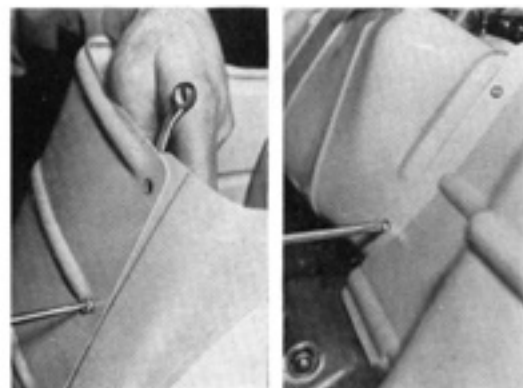
2. Remove two lifting hooks.
(3 nuts to each, 11 mm socket wrench)
3. Remove cooling ducts.
(3 Screws, Screw driver, hold with 9 mm spanner)
(1 screw, 9 mm spanner)

Illustr. No. 19

4. Remove screw from cooling unit casing.
(Screwdriver, hold with 9 mm spanner)

Illustr. No. 20 left

20



5. Remove screws from cooling ducts.
(2 Screws, Screw driver)

Illustr. No. 20 right



21

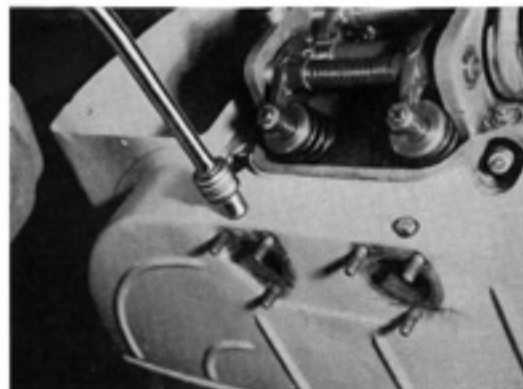
6. Remove bolt on multi-strand cable.
(2 spanners 10 mm, hold with 11 mm spanner)

Illustr. No. 21 left

7. Remove cylinder head cover.
(11 mm Socket wrench)

Note: When replacing cylinder head cover ensure all ducting guides are held firm by the rim of cylinder head cover.

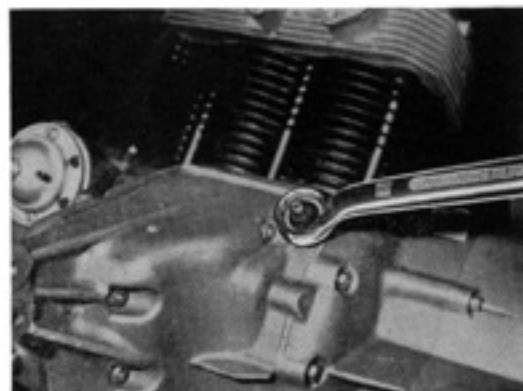
Illustr. No. 21 right



22

8. Remove screws on cooling unit guide sockets.
(8 screws, 10 mm socket wrench)

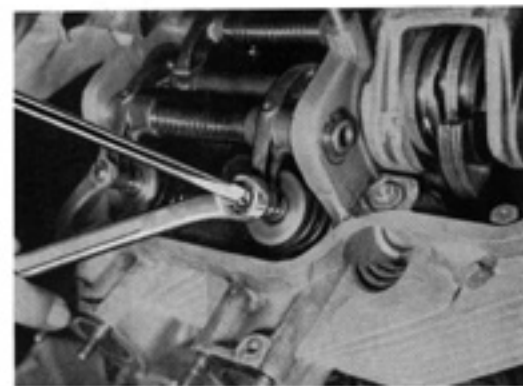
Illustr. No. 22



23

9. Unscrew spark plugs.
(Spark plug wrench)
10. Dismantle oil pressure switch.
(27 mm spanner)

Illustr. No. 23



24

11. Turn motor to top dead centre and loosen tappets to release rocker.
(14 mm nut spanner, screw driver)

Illustr. No. 24

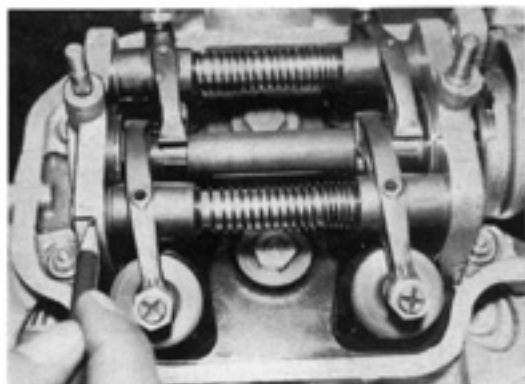
Note: To turn the motor remove the cover casing of the Dynastarter and turn the motor by the securing bolt on the Dynastarter seating, turning it to the right. (17 mm spanner.) (see also Illustr. MG 150.)

Dismantling valves

12. Mark rocker levers.

Illustr. No. 25

25

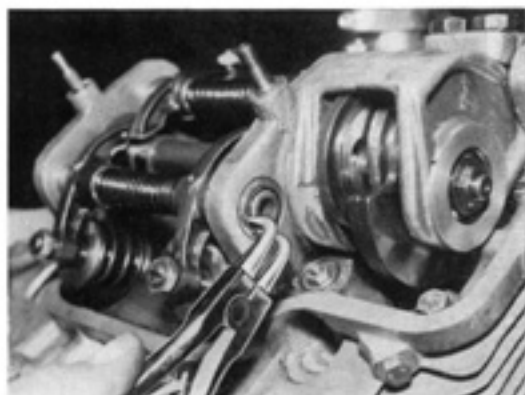


Note: When re-using rocker levers and bearings they should be replaced in the same position.

13. Remove outer collars from shafts.
(2 washers, special washer pliers)

Illustr. No. 26

26



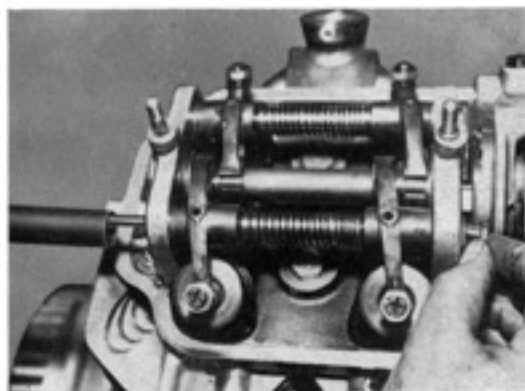
14. Remove outer collars from shafts.
(2 washers, special washer pliers)

Note: All collars must be removed to enable the bearing to be withdrawn.

15. Withdraw bearing.
(Tool for withdrawing rocking lever bearing SpW 902)

Illustr. No. 27

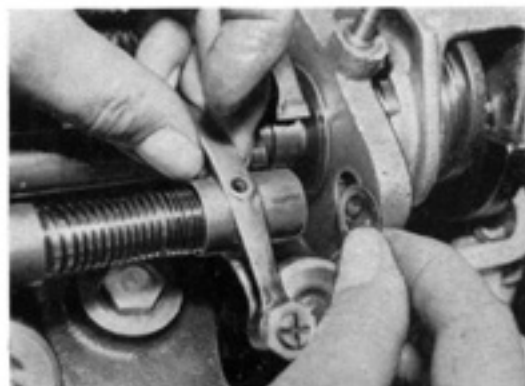
27



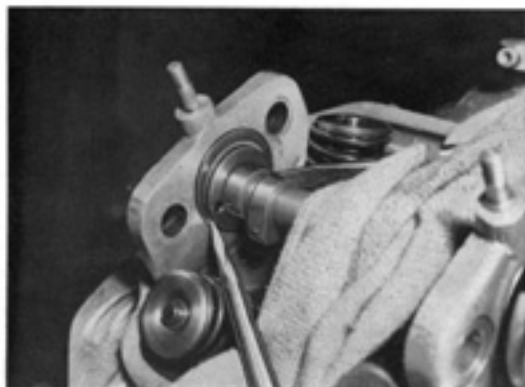
Note: Rocker levers are positioned by washers. Note number and position of the washer.

Illustr. No. 28

28



The bearing is replaced by using a hammer and brass punch.
(Hammer, Brass punch)

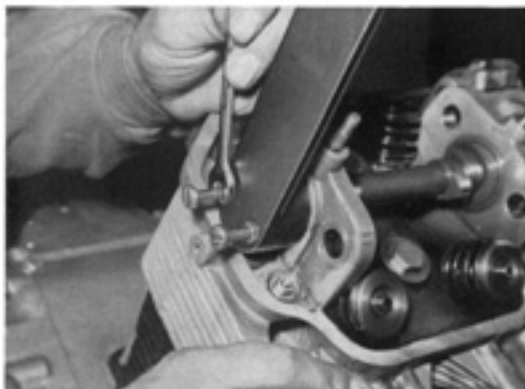


29

Dismantling camshaft

16. Lift out locking ring on the left inner side of the camshaft bearing.
(2 screw drivers)

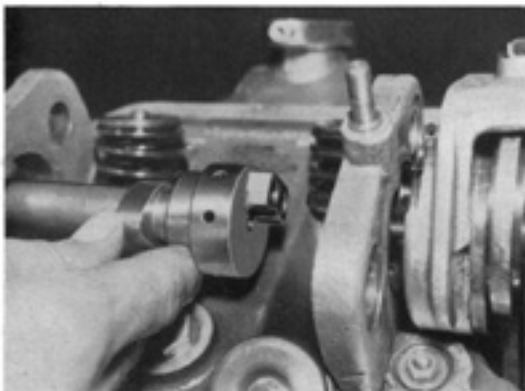
Illustr. No. 29



30

17. Withdraw camshaft bearing.
(Special tool SpW 901 for removal and reinsertion of valves and camshaft guide bush)

Illustr. No. 30



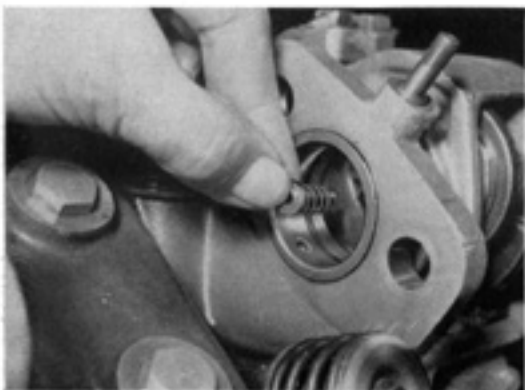
31

Note: The two nuts must be turned gradually and evenly to ensure that the guide bush is removed evenly. Screw in the bolts used for removal at least 10 turns.

18. Remove camshaft.

Note: When replacing camshaft, position the driving block with bearing grease. Driving block pins must be good fit.

Illustr. No. 31



32

19. Remove thrust pin and spring.

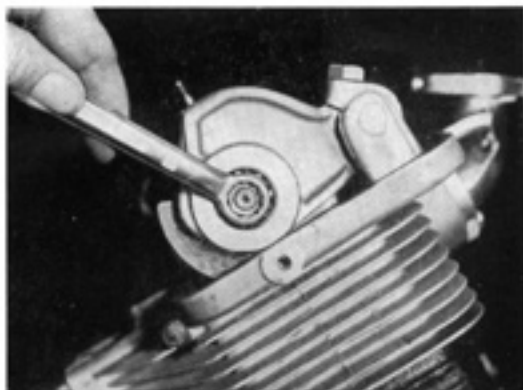
Illustr. No. 32

Dismantling upper eccentric drive

20. Loosen nut on upper eccentric shaft.
(spanner 14 mm)

Illustr. No. 33

33

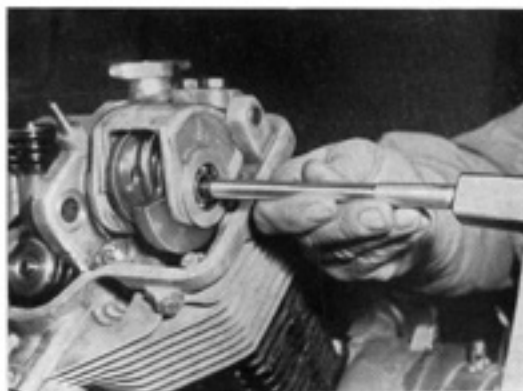


MG

21. Punch out eccentric shaft until balance weight and spacing ring are free.
(Hammer and brass punch)

Illustr. No. 34

34

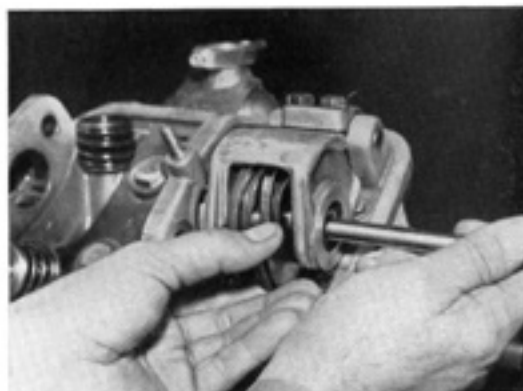


22. Remove balance weight and spacing ring.

Note: The balance weight should not be turned round or else the spacing ring will fall inside.

Illustr. No. 35

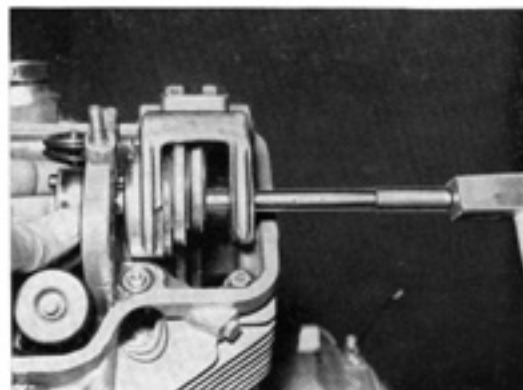
35



23. Remove eccentric shaft drive pin.
(Hammer and Punch).

Illustr. No. 36

36

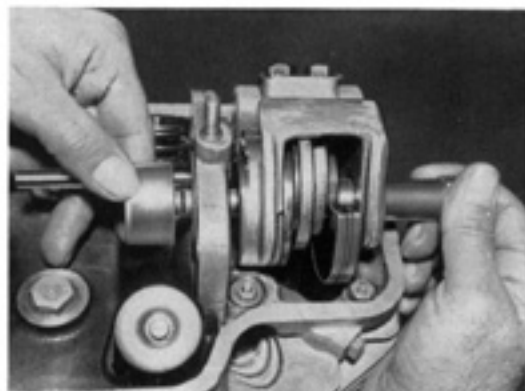




37

Illustr. No. 37

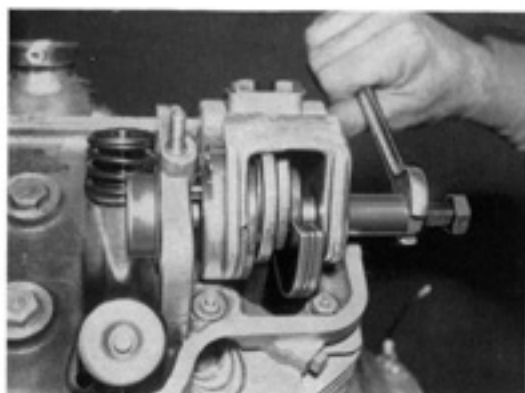
Note: When replacing eccentric shaft, drive out pin from shaft and replace by pin of assembly tool SpW 906. Use punch and hammer to drive out and the special assembly tool for upper eccentric shaft SpW 906 reassemble.



38

Illustr. No. 38

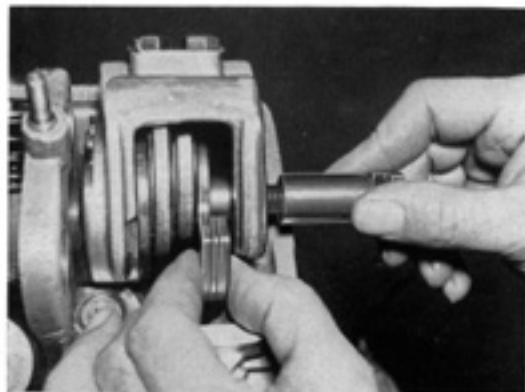
Note: When reassembling, the connecting rods must be at TDC. The borings for the upper eccentric shaft must be flush with the ball bearing. Use a special assembly tool with an eccentric shaft fitting to align the spacer and compensating weight with the connecting rod dowels.



39

Illustr. No. 39

Next, the eccentric shaft and pin is introduced from inside, screwed and adjusted with an assembly tool. The pin must be screwed up to its cone into the balance weight.



40

Illustr. No. 40

Insert eccentric shaft with special assembly tool until the nut can be fitted.
(Assembly tool for upper eccentric shaft SpW 906)

■ Remove pin from assembly tool.

Note: Insert dowel and drive home.
(Hammer, Brass punch)

Illustr. No. 41

41

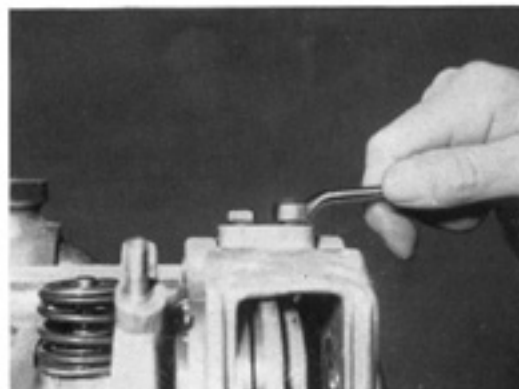


MG

24. Loosen bolts on eccentric bearing link.
(On 10 mm Nut spanner)

Illustr. No. 42

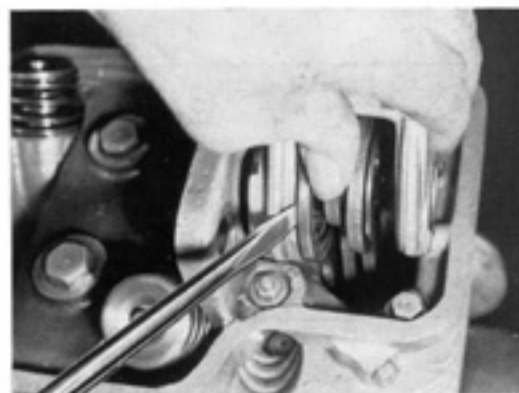
42



25. Remove spacer from bearing bush.
(Screw driver)

Illustr. No. 43

43



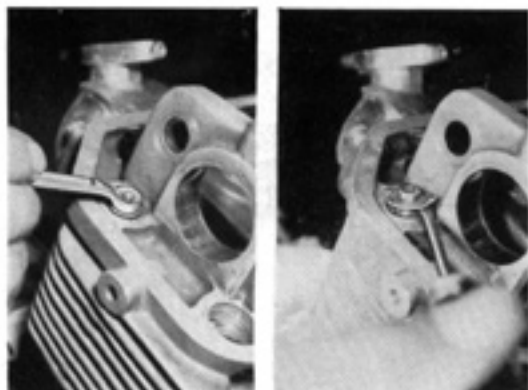
26. Lift up eccentric bearing link.
27. Move both connecting rods to TDC (but not dead
centre of camshaft) and drive out eccentric pads.

Illustr. No. 44

44



Note: It is advisable to mark the eccentric pads
to enable them to be replaced in the same posi-
tion. Use indelible pencil.



45

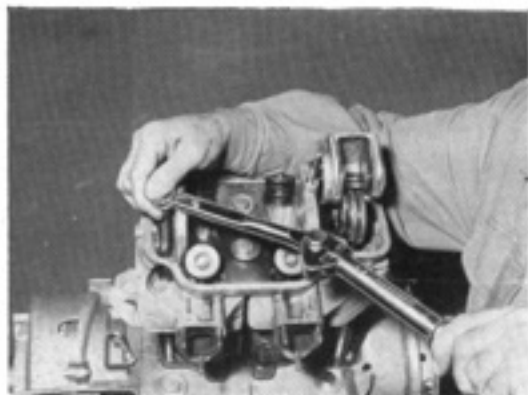
Remove cylinder head

28. Loosen the nuts on the 4 cylinder head gasket rings
(a few turns).
(4 nuts, 9 mm nut spanner)

Illustr. No. 45 left

29. Remove rings.
(4 Rings, Screw driver)

Illustr. No. 45 right

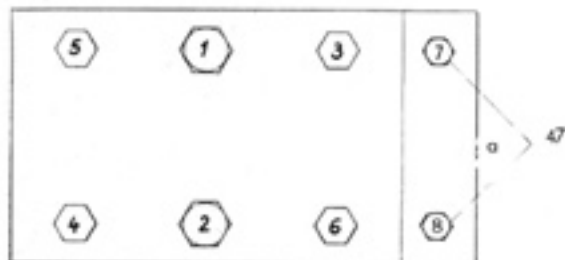


46

Note: The circular rings used as packing must always be renewed.

30. Loosen cylinder head nuts (outside)
(4 nuts, special cylinder head key SpW 921, for re-assembly spanner 19 mm gauge)

Illustr. No. 46

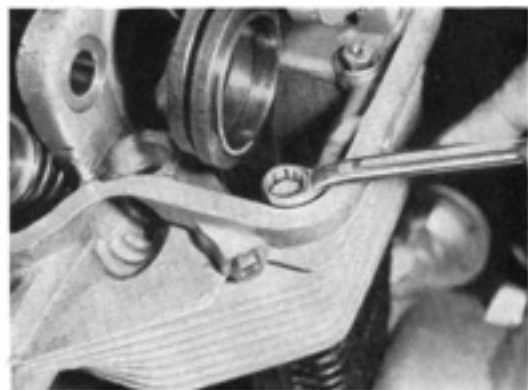


47

31. Loosen cylinder head nuts (centre).
(2 nuts, for reassembly, spanner 19 mm gauge)

Note: The cylinder head should be tightened at 25 ft. lb. For sequence see diagram. The two nuts 7 and 8 marked (a) are tightened without torque bar.

Illustr. No. 47



48

Note: The cylinder head should be tightened after 350 and 1,000 miles similarly when head has been removed for any other reason. A special spanner SpW 926 is used to tighten the cylinder head bolts.

32. Loosen hex nuts outside.
(2 nuts, 11 mm nut spanner)

Illustr. No. 48

33. Lift off cylinder head.

Dismantling dynostarter

34. Loosen nut on auto advance with a light blow on spanner with a hammer and remove.
(17 mm nut spanner, hammer)

Illustr. No. 49

49



Note: When replacing auto advance watch key and keyway.

35. Remove auto advance.
36. Remove dynamo brushes.
(4 carbons, screw driver)

Illustr. No. 50

50



37. Loosen nuts on dynostarter casing.
(4 bolts, 5 mm key)

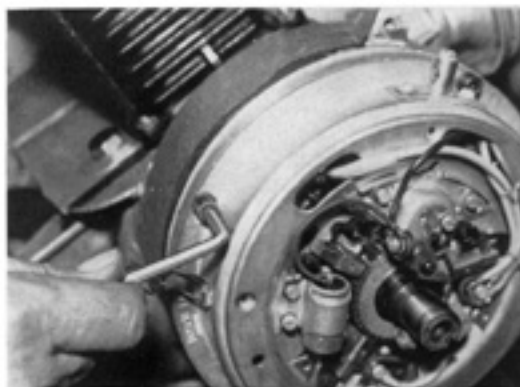
Illustr. No. 51

38. Remove dynostarter casing.

Note: When reassembling, the starter cable socket must be on the top of the air ducting.

Illustr. No. 51

51



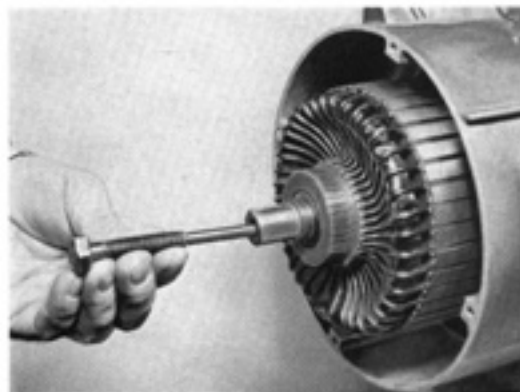
39. Insert pin for dynostarter register SpW 913 in crank shaft end.

Illustr. No. 52

40. Tighten puller bolt.
(Ejector for regulator, 17 mm spanner, hammer)

Illustr. No. 52

52



Note: Loosen the seating by a light blow with a hammer on the bolt head.

41. Remove key from crank drive taper.
(Hammer, Brass punch)



53

Dismantling fuel pump

42. Loosen fastening bolts on fuel pump.
(Screwdriver)

Note: The pump must be dismantled in such a way that the small cam on the membrane faces upward and the wide cam outwards, and the slanting connection (feed pipe) inwards.

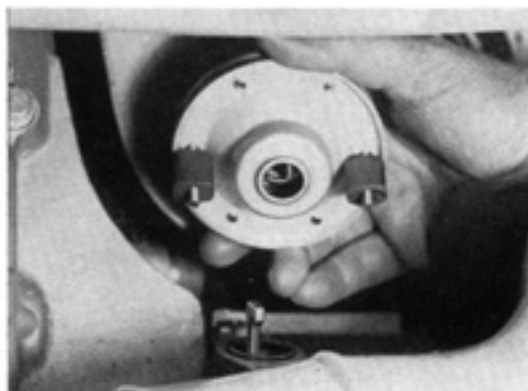
Illustr. No. 53



54

43. Turn pump $\frac{1}{4}$ turn to left, lift out and remove.

Illustr. No. 54

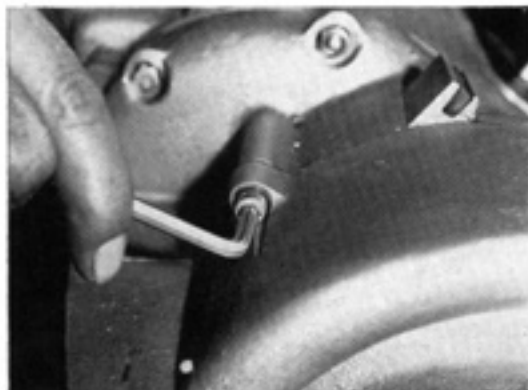


55

44. To reassemble push driving rod as far out as possible by turning the cam drive.

45. Fit pump by $\frac{1}{4}$ turn to left, press driving rod into place and engage by $\frac{1}{4}$ turn to right.

Illustr. No. 55



56

Dismantling clutch

46. Loosen fastening bolts on housing.
(4 screw bolts, 5 mm bolt spanner)

Illustr. No. 56

Note: Of the four fastening bolts those top right and bottom left are dowel bolts.

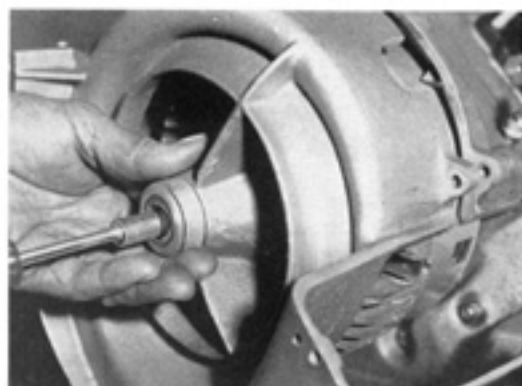
47. Remove housing.

Dismantling housing

Note: When dismantling or reassembling the housing, the work can be simplified by using a socket wrench to turn the spindle on the lubricating head to position housing. (9 mm socket wrench)

Illustr. No. 57

57

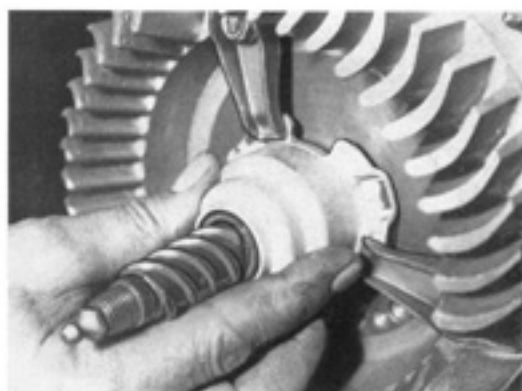


MG

48. Press back spindle and spring socket and turn to right or left until free then remove.

Illustr. No. 58

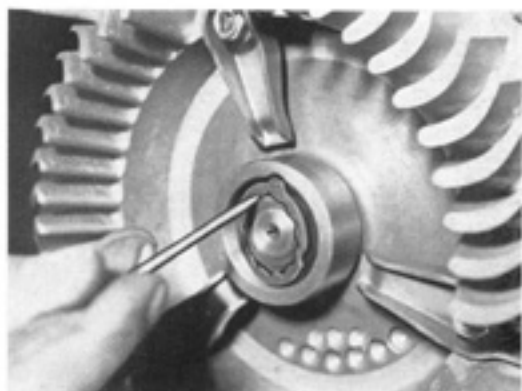
58



49. Lift out nut locking washer. (Scriber)

Illustr. No. 59

59



50. Unscrew nut (clutch). (24 mm. socket wrench)

51. Remove lock washer.

52. Withdraw clutch body (Tool for clutch, removal SpW 914, also special tool SpW 905 22 mm socket wrench, rubber mallet)

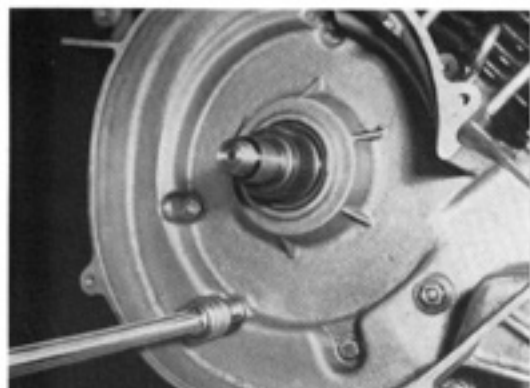
Illustr. No. 60

60



53. Remove clutch.

54. Remove spring washer from shaft. (Hammer and Brass punch)

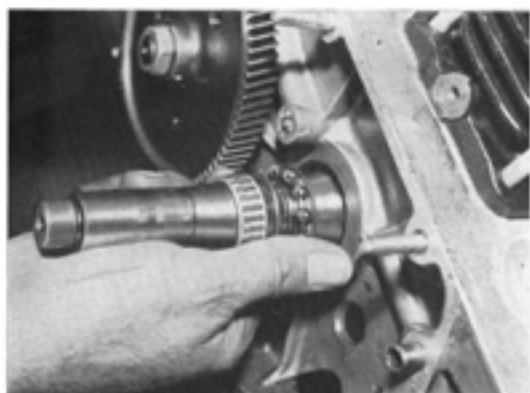


61

Clutch casing and Constant Mesh Pinions

55. Loosen clutch casing.
(6 bolts, 10 mm socket wrench; 4 nuts, 11 mm socket wrench)

Illustr. No. 61

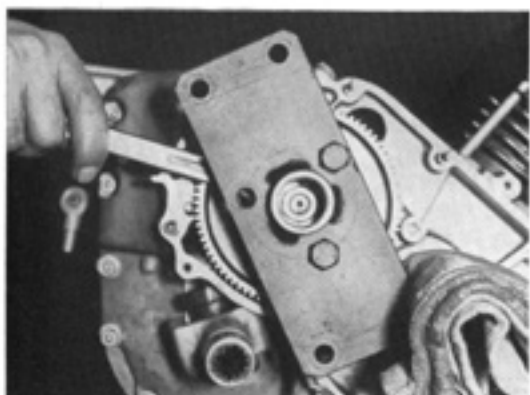


62

56. Withdraw oil dipstick.
57. Remove clutch casing.

Note: When reassembling stick the packing to the clutch casing with grease. Needle cage, washer and ball bearing cage are removed in this order and reassembled in the same sequence.

Illustr. No. 62



63

58. Open turned lock washer of gear drive wheel
(Hammer and Chisel).
59. Fit plate for the dismantling tool with 2 screws and two spacing collars. Tighten screws, cover crank shaft with a rag.
(Special dismantling tool Sp/W 900, 17 mm nut spanner)
60. Unscrew nut on gear drive wheel.
(22 mm Spanner)

Note: The plate for the dismantling tool rests on the crank.

Illustr. No. 63



64

61. Remove nut and lock washer.
62. Insert third bolt in plate of dismantling tool, insert spindle and pressure pad, remove wheel.

Note: Spindle has left hand thread.

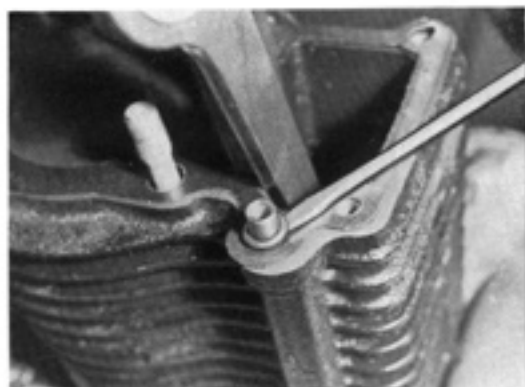
Illustr. No. 64

Remove cylinder

63. Remove rubber ring for oil pipe.

Illustr. No. 65

65



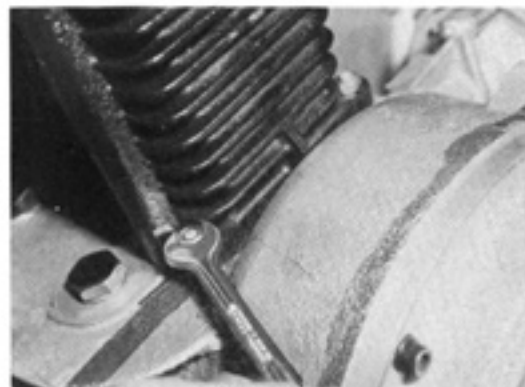
MG

Note: This rubber ring must be renewed each time.

64. Remove oil feed packing.
65. Loosen cylinder base nuts
(2 nuts, 11 mm spanner)

Illustr. No. 66

66

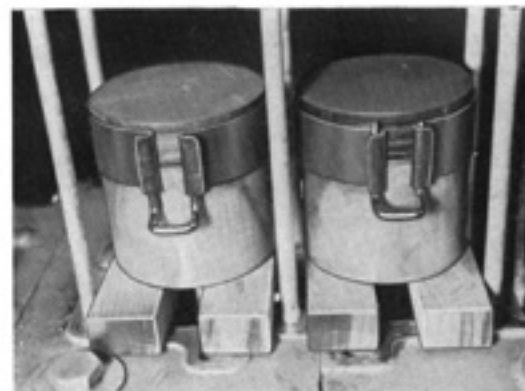


66. Lift off cylinder

Note: When reassembling the pistons should be placed on two wooden piston blocks. The piston rings are fixed by spring clips
(2 wooden piston blocks SpW 916, 2 spring clips and pin for piston rings SpW 912)

Illustr. No. 67

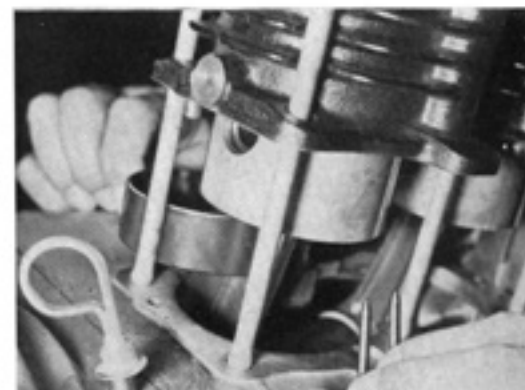
67

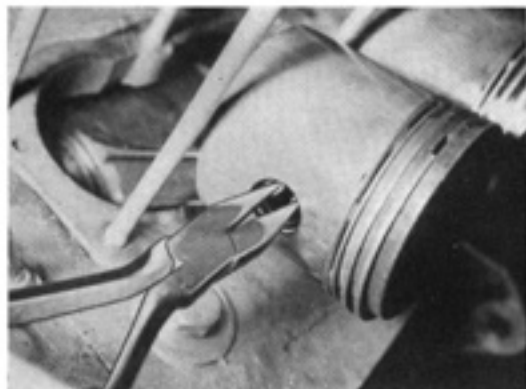


67. As soon as the spring clips are clear of the rings the pistons are moved in an upward direction and the wooden blocks and spring clips are removed.

Illustr. No. 68

68



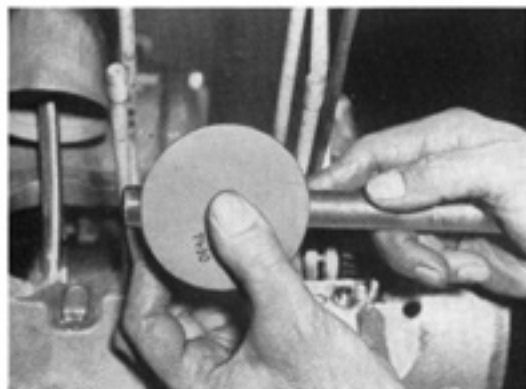


69

Dismantling pistons

68. Remove circlips from pistons
(pointed pliers)

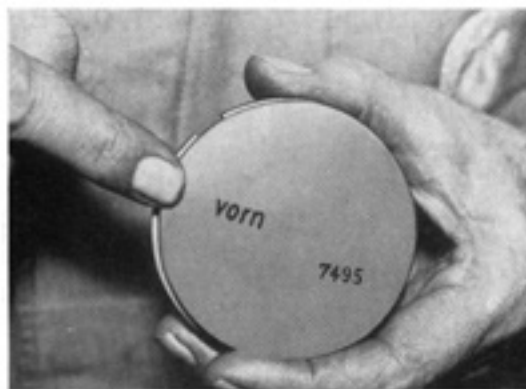
Illustr. No. 69



70

69. Drive out wrist pin with punch
(SpW 925)

Illustr. No. 70



71

Note: When remounting the piston, the word "Vorn" or the arrow must face forward. The wrist pin bore is off centre. Larger portion of the piston faces forward.

Illustr. No. 71



72

Note: Before replacing cylinder, oil and space the piston rings.

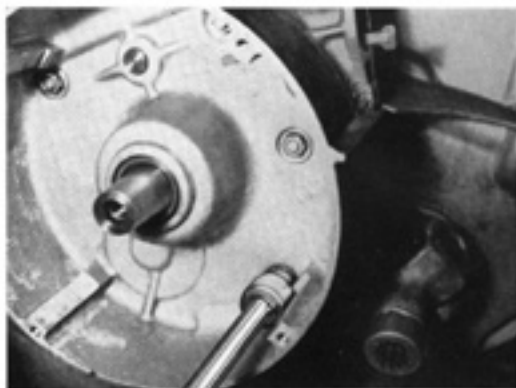
Illustr. No. 72

Removing lower eccentric drive

70. Remove crank case cover, right
(4 nuts, inner, 4 nuts, outer, 11 mm spanner)

Illustr. No. 73

73



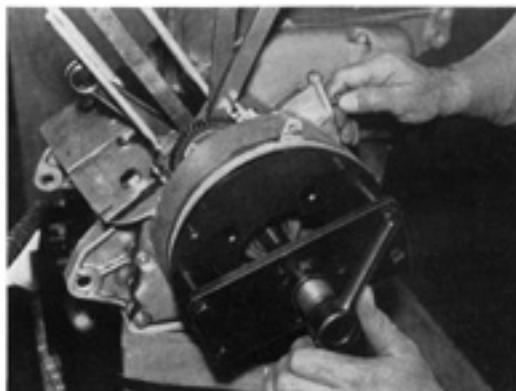
71. Set puller and spindle and SpW 900 with SpW 905 and tighten 4 bolts.

72. Remove crank case cover

Note: The driving shaft of the fuel pump must be extracted with the cover (Take care with shims)

Illustr. No. 74

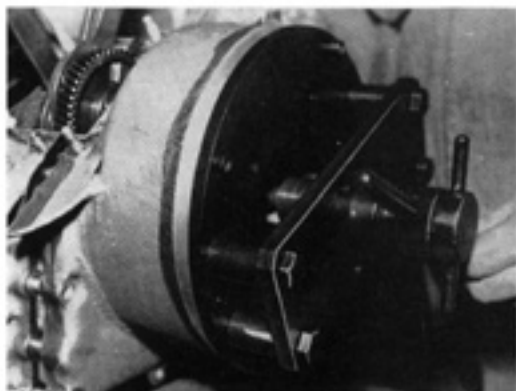
74



Note: When rebuilding, the extractor and spindle are used to replace the ball race.
(Special assembly tool and spindle SpW 900).

Illustr. No. 75

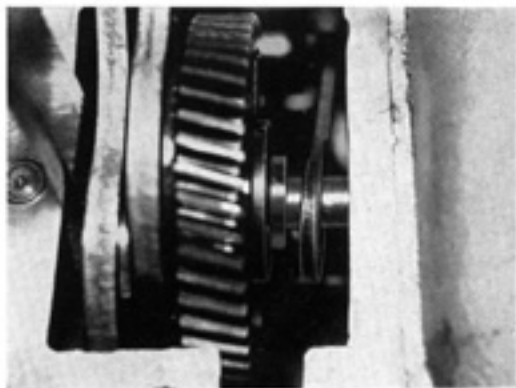
75



Note: At the same time the driving shaft of the fuel pump and the shims (see Illustr. Nos. 77/78) must be replaced. The driving shaft must register on the eccentric shafting.

Illustr. No. 76

76





77

Illustr. No. 77

To measure the thickness of shims required for the driving shaft of the fuel pump, the distance between the eccentric driving shaft and the joint in the motor casing is measured.



78

Illustr. No. 78

Similarly the spacing between the surface and the gap in the cover is measured (measure, depth gauge SpW 915)



79

Illustr. No. 79

The difference between the two measurements will give the number of shims required.

Example:

Measurement as in Illustr. No. 77

Parallel measurement 1.2" .47"

Measurement as in Illustr. No. 78 .45"

Shims .02"

Thickness of packing = play of .008"

73. Remove lower eccentric drive and timing pinion.

Note: When reassembling the pinion should be adjusted to the drive wheel timing marks.

Illustr. No. 79



80

Illustr. No. 80

Note: When reusing the same parts, the position of connecting rods should be marked before dismantling.

Dismantling oil pump

74. Remove cover.
(2 screws, 10 mm spanner)

Illustr. No. 81

81



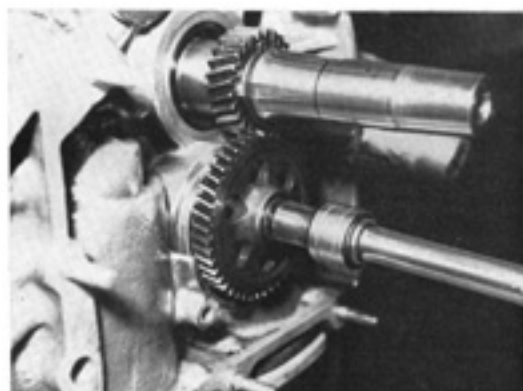
MG

75. Loosen nut on oil pump shaft.
(11 mm spanner)

Note: Left hand thread to nut.
(Hold crankshaft by means of wooden blocks).
(Wood piston blocks SpW 916)

Illustr. No. 82

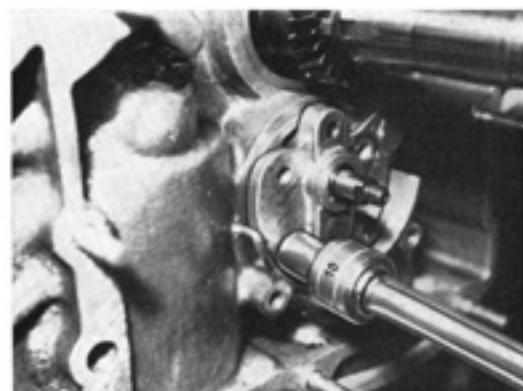
82



76. Loosen screws of oil pump body.
(4 screws, 10 mm spanner)

Illustr. No. 83

83



77. Remove oil pump as single unit.

Illustr. No. 84

84



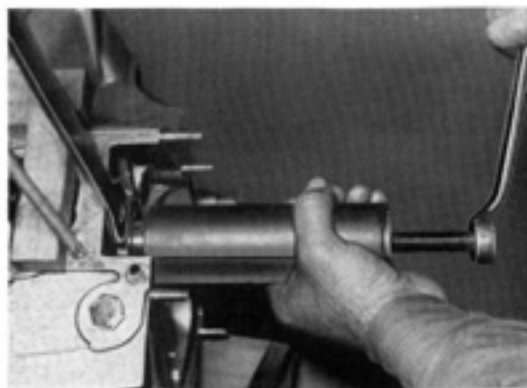


85

Dismantling timing

78. Remove circlip from crank shaft.
(Special washer tool)

Illustr. No. 85



86

79. Remove timing wheel
(Dismantling and assembly tool SpW 904, use with
SpW 905, 22 mm spanner)

Note: The open end of the tool must be placed over the pinion.

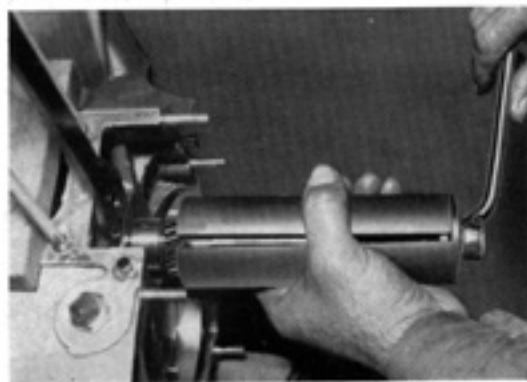
Illustr. No. 86



87

Note: When reassembling, the connecting rods are placed at dead centre and the marking on the timing wheel must face upward. Take care that the driving keys are a good fit.

Illustr. No. 87



88

Note: To tighten the wheel use special dismantling and assembly tool SpW 904 with washer and screw used on armature puller.

Illustr. No. 88

Dismantling universal joint On both joints

80. Remove ring washer on inner joint fork,
(2 ring washers on each, ring washer tool).

Illustr. No. 89

89

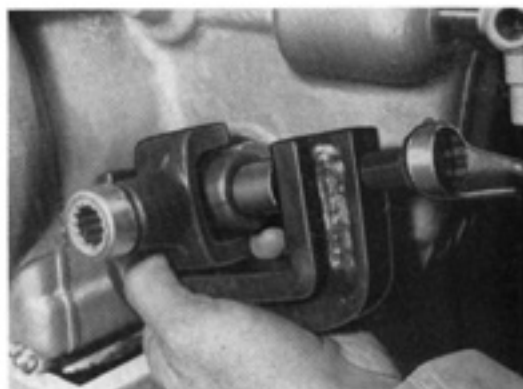


Note: When replacing ring washer the bent tags should face inwards so that they will rest on the needle casing.

81. Set dismantling and assembly tool and bridge for bearing SpW 911.
82. Press roller cage joint to one side but only so far as to allow for a play in the needle bearing case.

Illustr. No. 90

90



91



83. Withdraw tool and remove bearing bush.
(Waterpump pliers)

Illustr. No. 91

92



84. Insert pad to loosen bearing.

Illustr. No. 92



93

85. Press joint right through
(Dismantling and assembly tool for the bush SpW 911)

86. Remove second bearing
(Water pump pliers).

87. Grip bearing and remove.

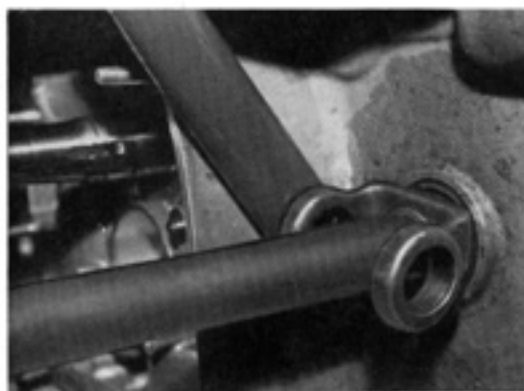
Illustr. No. 93



94

88. Remove locking washer.
(Screwdriver)

Illustr. No. 94



95

89. Loosen cone nut.
(Splined spanner SpW 908)

Illustr. No. 95



96

90. Remove joint fork.
(Screwdriver)

Illustr. No. 96

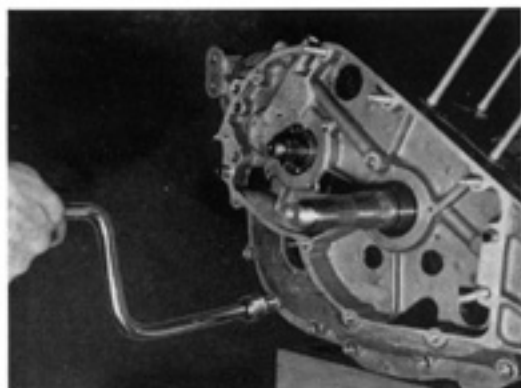
Note: When reassembling grease the needle bearing well (Vaseline). Joints must have no axial play, but should move easily. The bent lip of the ring washers must rest on the needle bearing bush.

Separating the crank

91. Loosen the bolts on one half of the casing.
(10 nuts, 11 mm spanner)

Illustr. No. 97

97



92. Turn motor 90° and lay on left half of casing.
93. Lift right half of casing — striking lightly under the back of rear motor suspension

Illustr. No. 98

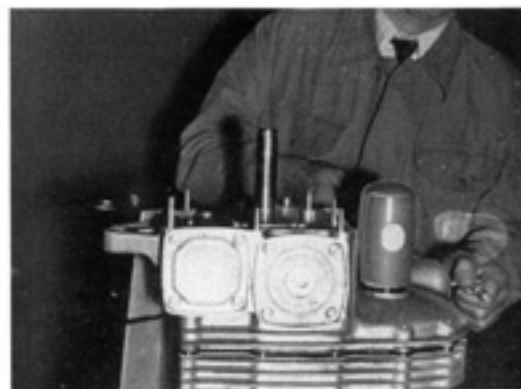
98



also the half of the casing on the differential shaft, and separate.
(Rubber mallet)

Illustr. No. 99

99



Note: When reassembling watch the two sockets for casing and the compensating washers on gear shaft. The rounded head of the selector lever must be pushed into the selector gate.

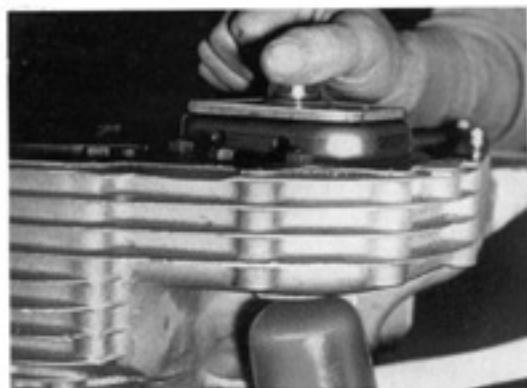
94. Remove crank shaft.

Illustr. No. 100

100



Note: When reassembling insert crank with the thread (clutch side) down.



101

Dismantling and reassembly of differential

95. Loosen differential by striking lightly from below and lift out.
(Rubber mallet)

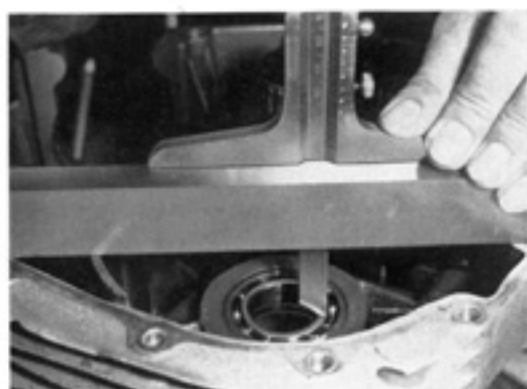
Illustr. No. 101



102

Note: When reassembling, the nuts on the differential must face upwards. When using new parts the differential must be set by adjusting the axial play. The spacing between driving wheels on the differential must be indicated by a number.

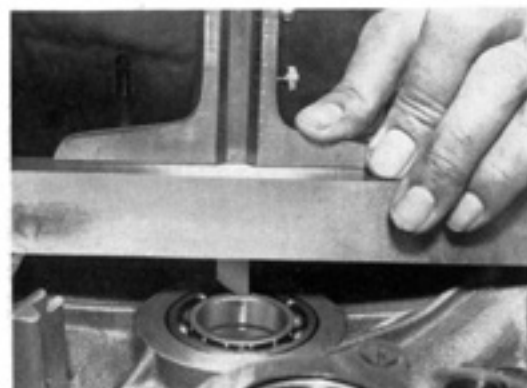
Illustr. No. 102



103

The figure represents the distance between thrust faces of unit allowing an axial play of about .012" on the differential shafts. This dia. is gauged by measuring the depth of the two halves of the casing.
(Gauge SpW 915)

Illustr. Nos. 103 and 104



104

The dia. must correspond to the dia. of the differential (see Illustr. No. 102). Any variation should be adjusted by using shims. The thickness of the casing should be allowed for by allowing .008" in order to permit the differential to operate freely.

Dismantling and reassembling selector levers in the right half of casing

96. Remove locking screw from Selector gate fitting.
(11 mm nut spanner)

Notes: The spring is calibrated and should not be altered.

Illustr. No. 105

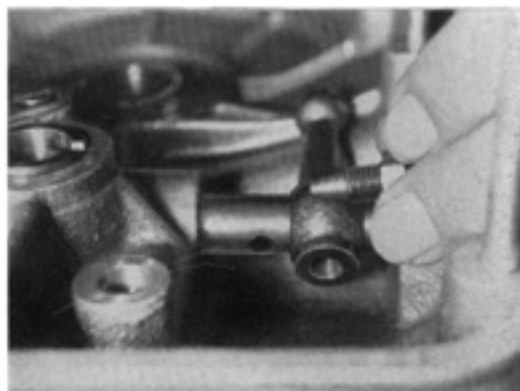


MG

97. Remove Selector grub screws from Selector.
(11 mm nut spanner)

Notes: Grub screw must grip in the Selector in order to lock in the correct position.

Illustr. No. 106



98. Withdraw Selector.

In left hand casing

99. Remove washers on Selector Forks.
(3 washers, screwdriver)

Illustr. No. 107 left



107



100. Drive out Selector Shafts downward with a suitable punch.
(Hammer, Punch)

Illustr. No. 107 right

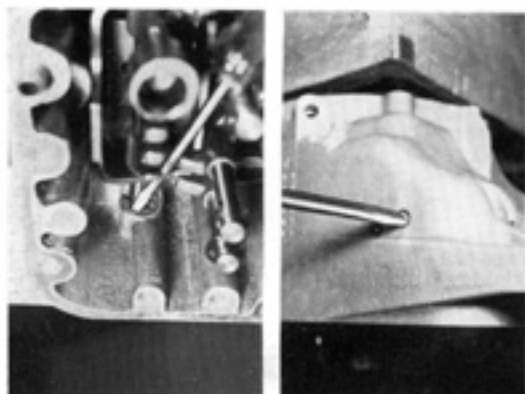


108

101. Remove locking nuts from retainer plate.
(3 nuts, 11 mm spanner)

Illustr. No. 108

102. Lift out Retainer plate.



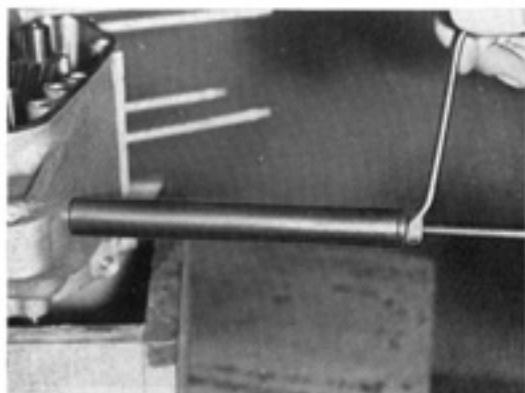
109

103. Remove circlip from Gate Spindle.
(Screwdriver)

Illustr. No. 109 left

104. Remove Screw from outer end of Gate Spindle.
(Screwdriver)

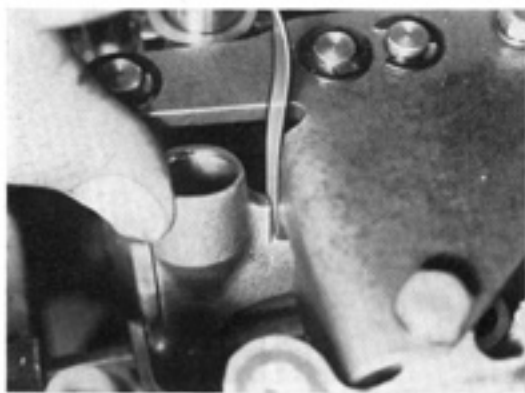
Illustr. No. 109 right



110

105. Remove spindle.
(Special tool SpW 902)

Illustr. No. 110



111

106. Lift out Selector Shafts or use suitable punch to drive out from below to enable the Selector arm, Gate and 3 forks to be removed.

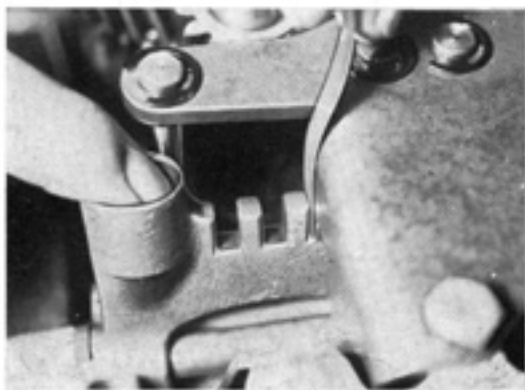
Note: When reassembling, insert slotted screw into shaft and drive shaft in with rubber mallet.

Note: When reassembling:

- Insert large diameter fork and guide bracket from above.
- Insert secondary shaft fork and guide bracket upward from below.
- Insert fork (reverse drive) with the long face of the yoke from below.

All the forks should now be level.
After reassembly it should be tested to ensure easy working. Both for freedom through the Gate and the Selector lever must be clear of the Gate.

Illustr. Nos. 111 and 112



112

Use a Feeler gauge for measuring. Selector and Gate must have about .006" clearance.

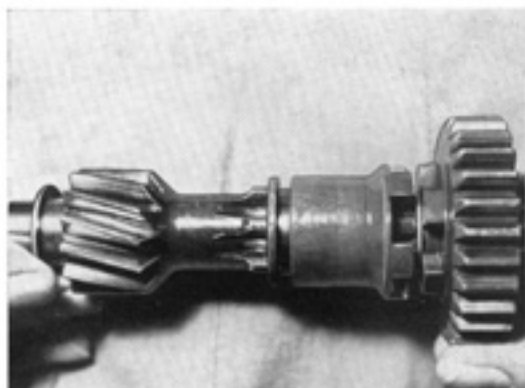
Dismantling and reassembling gears and taking apart Clusters

107. Dismantle reverse drive shaft.

Note: On either side of the reverse drive shaft there are shims which adjust to a prescribed amount of shaft play.

Illustr. No. 113

113

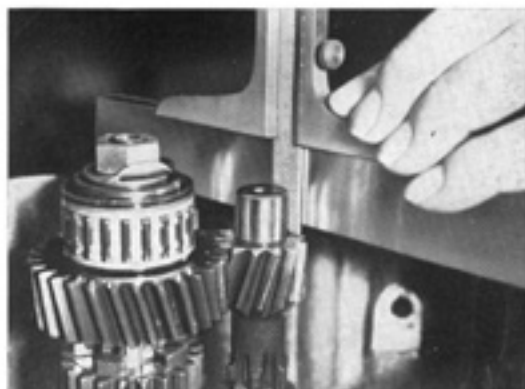


To adjust and gauge the play, the lower washer on the shaft is engaged and its distance from the dividing joint of the casing measured. (Strip and Vernier SpW 915).

The spacing is compensated by a washer of similar dimensions each end until the .008" play of the Shaft is obtained.

Illustr. No. 114

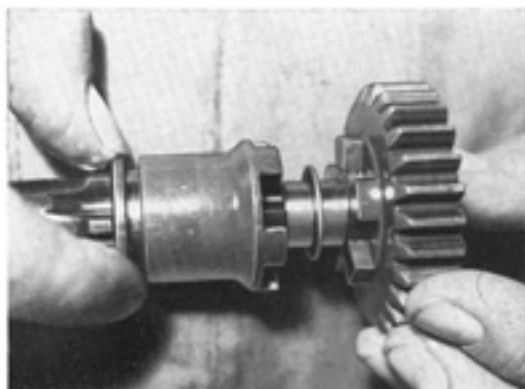
114



There is a thrust washer between sliding dog and reverse drive wheel.

Illustr. No. 115

115

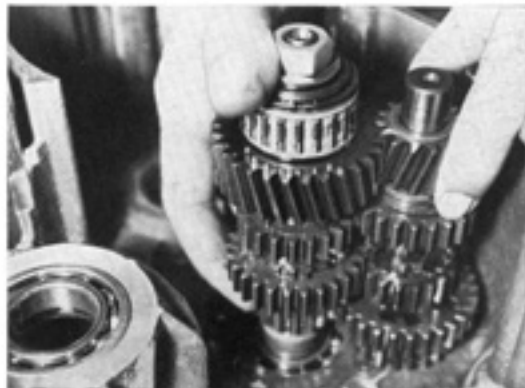


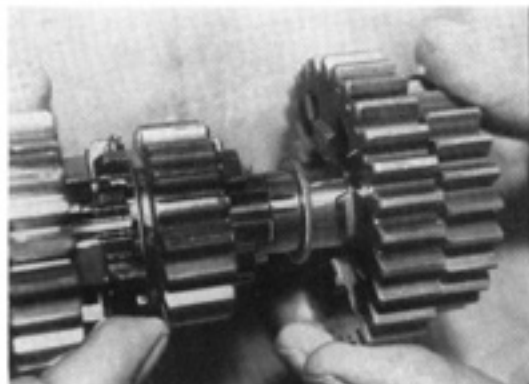
108. Remove Lay Shaft and Main Shaft together.

Illustr. No. 116

116

Note: Both Layshaft and Mainshaft and reverse gears have thrust washers on each side which should be gauged as shown in Illustr. No. 114.



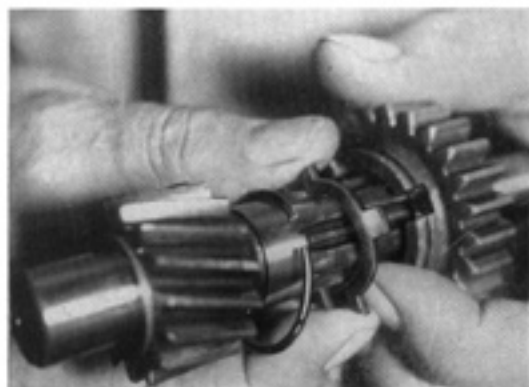


117

109. Dismantle lay shaft.

Note: There is another thrust washer between the sliding pinion and the dogs or the 2nd gear.

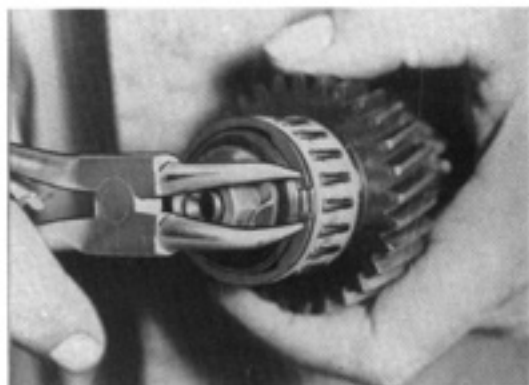
Illustr. No. 117



118

110. Remove wire ring for 3rd gear on lay shaft and remove split locking washer, remove wheel from shaft.
(Screwdriver)

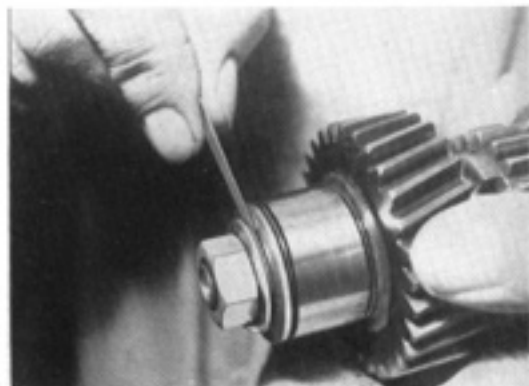
Illustr. No. 118



119

111. To remove bearing, open and remove circlip.
(Circlip pliers)

Illustr. No. 119



120

112. To dismantle shaft

- Bend back locking washer on main shaft.
(Hammer, Chisel)
- Unscrew nut on main shaft.
(19 mm nut spanner)

Note: The free play on the drive wheel is .008" and is adjusted by means of compensating washers of various sizes.
(Gauge, .008")

Illustr. No. 120

For Reassembly follow the same sequence.

MG 11

Renew motor and gear bearings

Text and illustrations to follow

MG 68 Lager der Exzenterlagerschwinge auswechseln

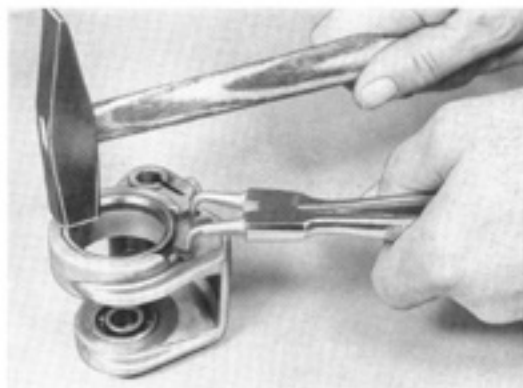
(Exzenterchwinge ist ausgebaut)

Werkzeuge: Heizofen, Seegerringzange außen, Hammer, passende Rohre.

1. Exzenterlagerschwinge im Ofen ca. 160—180° anwärmen. Haltering mit Seegerringzange aus Laufbüchse ausheben, dabei Laufbüchse etwas nach innen schlagen.

Bild 121

121

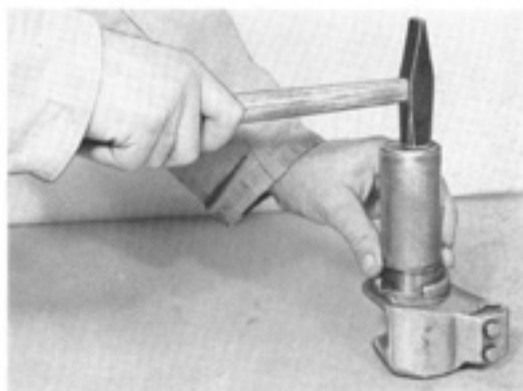


Laufbüchse mit passendem Rohr vollends austreiben.

2. Beim Einbau Haltering in angewärmter Exzenterlagerschwinge mit Seegerringzange aufdrücken, Laufbüchse einsetzen, mit Hammer und passendem Rohr eintreiben.

Bild 122

122

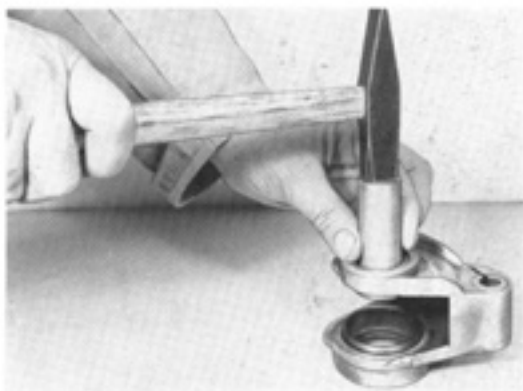


Achtung: Auf richtigen Sitz des Halterings achten. Nadelkäfing und Laufring werden nur zusammen geliefert.

3. Kugellager mit passendem Rohr und Hammer austreiben.

Bild 123

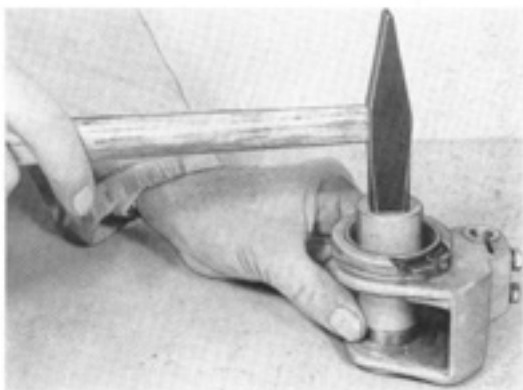
123



4. Kugellager mit passendem Rohr und Hammer in die noch warme Exzenterlagerschwinge eintreiben.

Bild 124

124





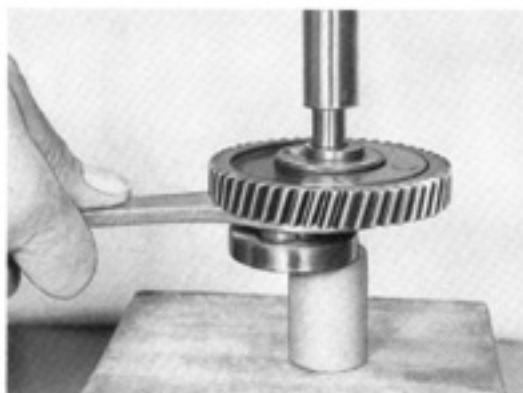
125

MG 6 Unteren Exzenterantrieb zerlegen und zusammenbauen

Werkzeug: Dornpresse oder Schraubstock, Dorn $\varnothing$ 10 mm, Dorn $\varnothing$ 7 mm, passendes Rohr Innen- $\varnothing$ ca. 18 mm.

1. Bei Wiederverwendung der gleichen Teile Pleuellstangen und Exzenter scheiben in ihrer Stellung und ihrem Zusammenbau zeichnen.

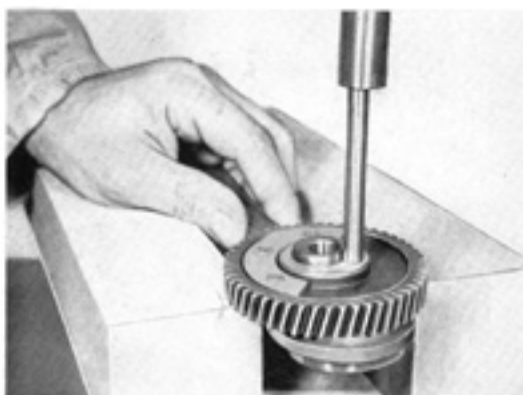
Bild 125



126

2. Exzenterwelle in Richtung Exzenter scheiben herausdrücken.
(Dornpresse oder Schraubstock, Dorn $\varnothing$ 10 mm, Rohr Innen- $\varnothing$ 18 mm)

Bild 126



127

3. Mitnehmerbolzen auspressen, dabei muß das Zwischenrad auf beiden Seiten aufliegen.
(Dornpresse, Dorn $\varnothing$ 7 mm, Auflage)

Bild 127



128

4. Beim Einpressen des Mitnehmerbolzens muß dessen kurze Seite gegen das Zwischenrad zeigen.

Bild 128

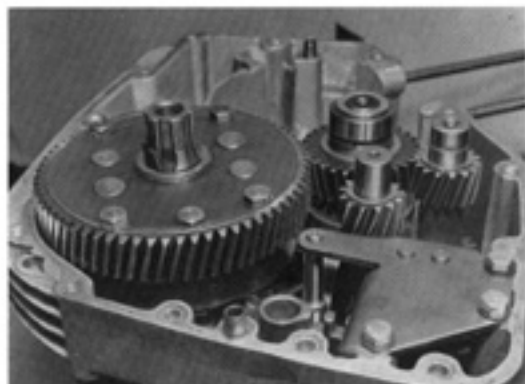
Achtung: Bohrungen müssen einwandfrei fluchten! Einzupressende Teile gut einölen!

Der Einbau erfolgt in umgekehrter Reihenfolge.

MG 7 Synchron-Getriebe mit Schaltung aus- und einbauen (Motor ist ausgebaut)

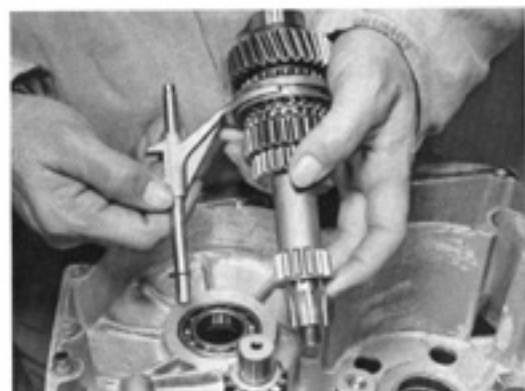
1. Gehäuse trennen und Differential ausbauen (Bild 97—101).
2. Schaltgabelachsen ohne Sicherungen. Ausbau der Schaltbetätigung (Bild 105—112); Verschraubung für Winkelhebelachse (Bild 109 rechts) durch Gummistopfen ersetzt; außerdem entfallen bei Arbeitsgang 106 die Hinweise a) und b).

Bild a



3. Schaltgabelachsen mit passendem Dorn nach oben heraustreiben, dabei auf die Sicherungen am unteren Ende der Achsen achten (gehen passend an den Getrieberädern vorbei), Hauptwelle komplett mit Ausgleichscheiben, Schaltgabel und Schaltgabelachse herausnehmen.

Bild b



Achtung: Gleichlaufringe und die dazugehörigen Zahnräder zusammenbinden. Das gleiche gilt für die Teile der Vorgelegewelle.

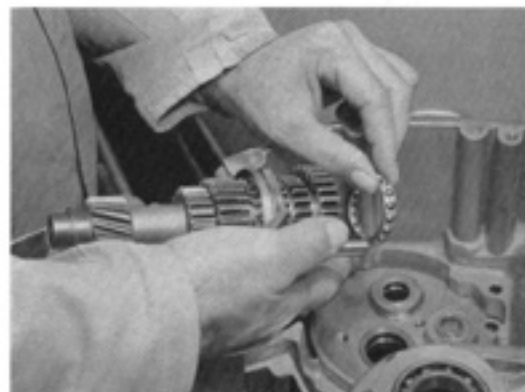
4. Rückwärtsgangwelle komplett mit Schaltgabel, Schaltgabelachse und Ausgleichscheiben entfernen.

Bild c

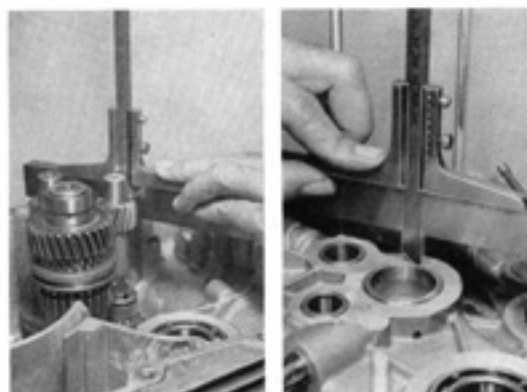


5. Vorgelegewelle komplett mit Schaltgabel, Schaltgabelachse, Ausgleichscheibe und Star-Kugellagerhalter ausbauen.

Bild d



Achtung: Beim Einbau der Schaltgabelachsen beachten: Lange Achse mit Sicherungsring für Rückwärtsgangwelle; kurze Achse mit Sicherungsring für Hauptwelle; Achse ohne Sicherungsring aber mit Abziehwende für Vorgelegewelle. Die beiden Schaltgabeln für Vorgelege- und Hauptwelle sind gleich.



6. Zum Ausmessen des Axialspiels die Anlaufscheiben (siehe Bilder auf vorangehender Seite!) zwischen Getrieberäder und Wellen einsetzen und die Vorgelegewelle mit Star-Kugelhalter am Doppelzahnrad, sowie die Hauptwelle und die Rückwärtsgangwelle unten mit je einer Scheibe versehen und einsetzen. Abstand von Trennfuge des Gehäuses messen und mit Scheibe in Stärke des festgestellten Maßes ausgleichen. Das vorgeschriebene Maximalspiel (0,2 mm) der Wellen erhält man durch die Stärke der Gehäuse-dichtung.

Bild e

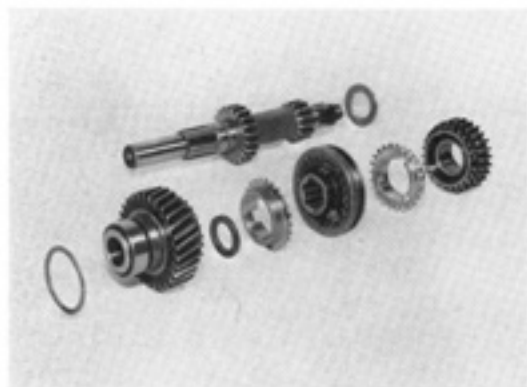
7. Um eine einwandfreie Montage zu gewährleisten, verdient nebenstehende Abbildung besondere Beachtung.

Achtung: Das Getriebe ist einzubauen (ohne Differential und Kurbeltrieb) und zu prüfen.

- Gleichlaufringe müssen frei sein, dürfen nicht unter Druck stehen, sondern müssen sich mit kleinem Schraubenzieher leicht axial bewegen lassen.
- Die Gleichlaufringe sind frei, wenn beim Einschalten der jeweiligen Gänge die Schaltmuffe gleichmäßig im Eingriff ist; dies gilt für die Haupt- und Vorgelegewelle.
- Bei ungleichmäßigem Eingriff der Schaltmuffe ist auf der geringeren Eingriffsseite eine stärkere Ausgleichscheibe, auf der gegenüberliegenden eine um den gleichen Betrag schwächere Ausgleichscheibe beizulegen, damit das Axialspiel von maximal 0,2 mm eingehalten wird. (Unter dem Lagerring der Vorgelegewelle können ebenfalls Ausgleichscheiben beigelegt sein.) (Schraubenzieher klein, Stab- oder Taschenlampe)

Achtung: Nichtbeachtung führt zu frühzeitigem Verschleiß der Gleichlaufringe und Heraus-springen der Gänge.

Bild f



8. Beim Zusammenbau der Hauptwelle das Zahnrad mit 26 Zähnen (III Gg) auf Welle stecken.

Achtung: Beim Einbauen der drei Abstandskellen den Federring nicht deformieren, da derselbe kalibriert ist. Durchgehendes Keilwellenprofil der Mitnahme und breite Seite der Schaltmuffen zeigen nach rechts, die Anlaufscheibe muß zwischen Mitnahme und Getrieberad liegen.

Bild g

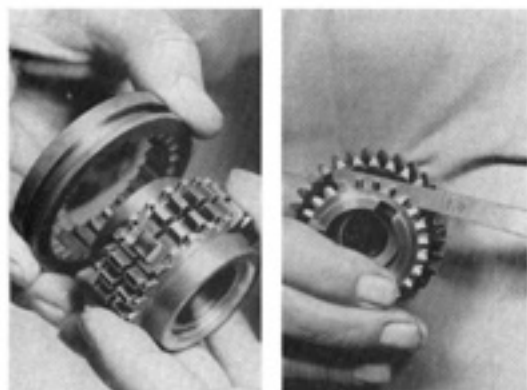
Bei der Vorgelegewelle zeigt das durchgehende Keilwellenprofil nach links. (Bild f)

9. Mitnahme, Federringe, Abstandskellen, Gleichlaufringe und Schaltmuffen zusammenbauen und dann auf Hauptwelle und Vorgelegewelle setzen.

Bild h links

Achtung: Vor Einbau Gleichlaufringe mit schraubender Bewegung in Getrieberäder einsetzen und Abstand messen; ist dieser geringer als 1 mm, so muß der Gleichlaufring erneuert werden.

Bild h rechts



MG 9 Gleichlaufringe auswechseln

(Motor ist ausgebaut)

Werkzeug: Holzrahmen für Motorzerlegung SpW 917, Abzieher für Kupplung SpW 914, Montagewerkzeug SpW 900, Steckschlüssel 11 mm, Durchschlag, Reißnadel, Zange.

1. Am ausgebauten Motor den Trichter und das Abschirmblech entfernen (MG 3, Bilder 19 u. 20) sowie die Kupplung, das Gehäuse und die Antriebsräder ausbauen (MG 3, Bilder 56—64).
2. Am Lagerdeckel sechs Schrauben entfernen, Lagerdeckel abziehen, dabei beide Schaltgabelachsen mit Durchschlag aus Lagerdeckel austreiben.

(Steckschlüssel 11 mm, Montagewerkzeug SpW 900)

Bild a

Achtung: Vor Einbau des Lagerdeckels den Kugellager mit Fett auf den Lagerring aufkleben. Die beiden Schaltgabelachsen für Hauptwelle (kurz) und Rückwärtsgangwelle (lang) mit Reißnadel etwas anheben und fluchten, den Lagerdeckel mit Gummihammer vorsichtig einschlagen; dabei auf die beiden Paßstifte achten, welche mit dem kurzen Teil gegen den Lagerdeckel zeigen müssen.

Bild b

3. Schaltgabelachsen herausziehen, an Schaltgabelachse der Vorgelegewelle Schraube M 5 einsetzen und Achse mit Zange herausziehen.

Bild c

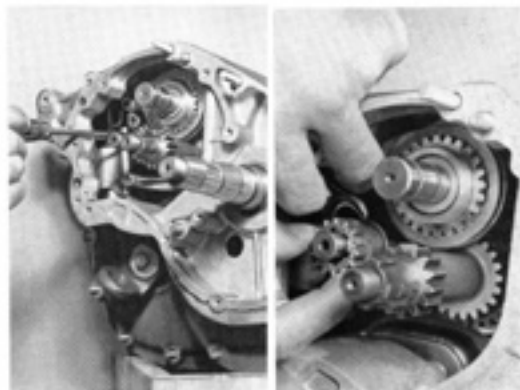
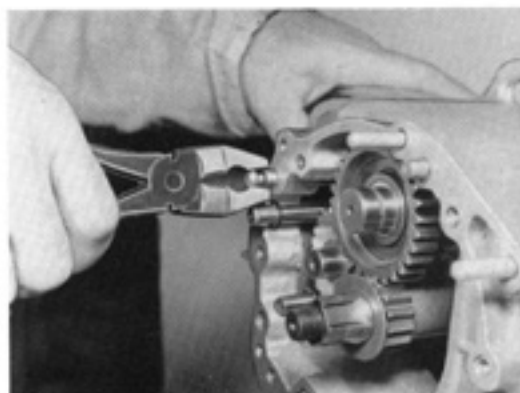
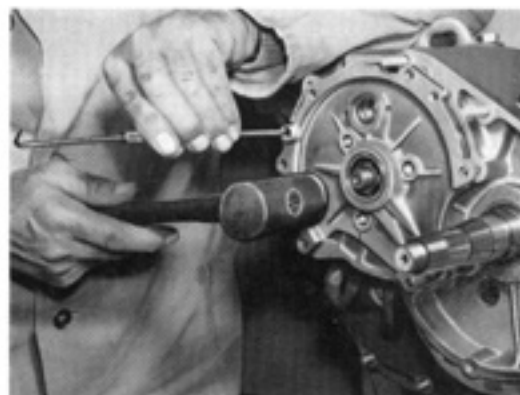
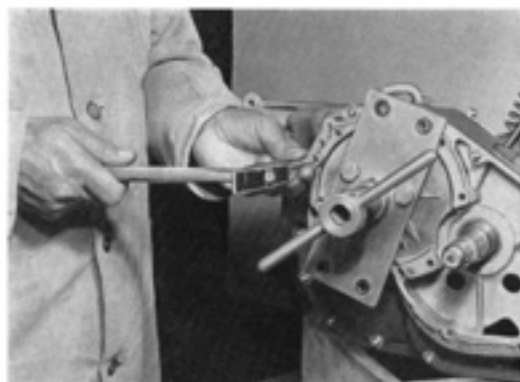
Ausgleichscheiben der Hauptwelle und der Rückwärtsgangwelle abnehmen, Doppelzahnrad der Vorgelegewelle und Zahnrad der Rückwärtsgangwelle entfernen. Auf Ausgleichscheiben achten!

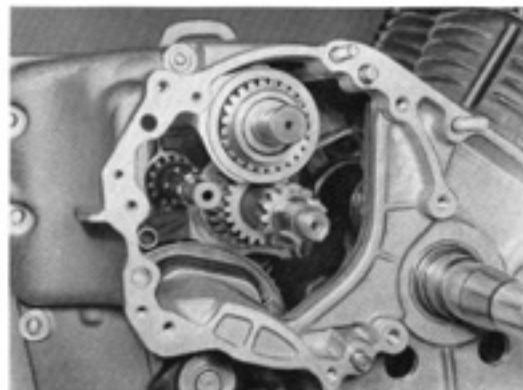
4. Bei eingeschaltetem Leerlauf die Schaltgabel der Rückwärtsgangwelle etwas anheben und aus der Arretierung herausnehmen, Schaltgabel und Schaltstück einzeln entfernen.

Bild d links

Achtung: Schaltgabel in das Schaltstück einsetzen, dann in Arretierung einbauen.

Bild d rechts

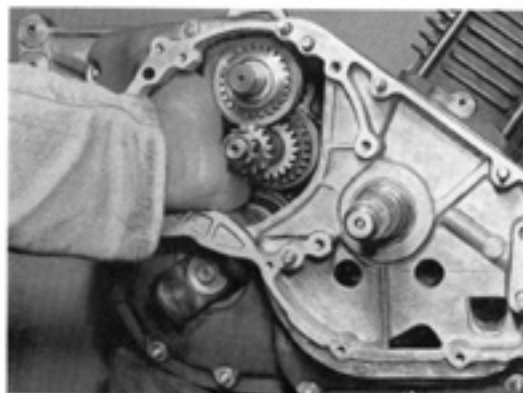




e

5. Vor Aus- und Einbau der Schaltgabel auf der Hauptwelle wird das Differential so durchgedreht, daß die Fläche ohne Muttern nach oben zeigt.

Bild e



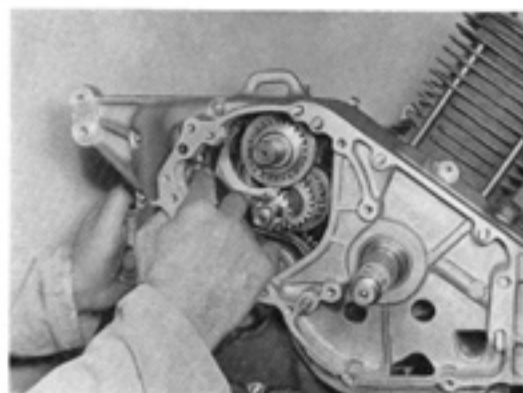
f

In dieser Stellung Rückwärtsgangwelle aus- und einbauen; Schaltgabel der Hauptwelle herausnehmen.

Achtung: Auf Ausgleichscheibe der Rückwärtsgangwelle achten!

6. Zum Einbau der Schaltgabel für die Hauptwelle werden bei eingeschaltetem 3. Gang die Haupt- und Vorgelegewelle komplett von innen nach außen gedrückt.

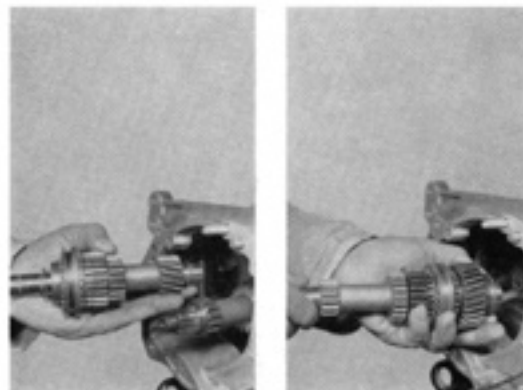
Bild f



g

7. Zum Ausbau der Schaltgabel auf der Vorgelegewelle werden beide Wellen wieder vollständig eingeschoben bei gleichzeitigem Einschalten des Leerlaufs, dann wird die Schaltgabel herausgenommen.

Bild g



h

8. Vor Ausbau der Vorgelege- und Hauptwelle werden beide Wellen komplett zusammen ca. 10 mm nach außen gedrückt (Bild f), dann die Vorgelegewelle komplett und danach die Hauptwelle herausgenommen (Bild h links). Dabei Ausgleichscheiben mit der Hand anhalten.

Bild h links u. rechts

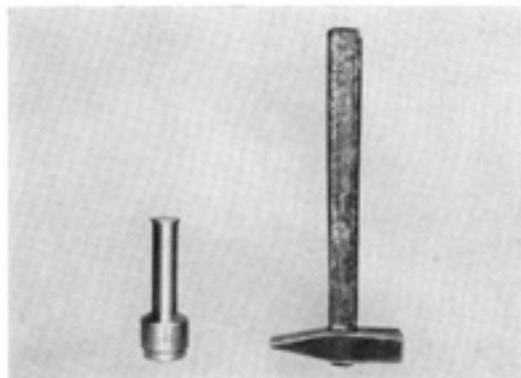
Der Einbau erfolgt in umgekehrter Reihenfolge.

MG 13 Motorlagerung erneuern (bei Sport-[Klauen-] und Synchrongetriebe)

Werkzeug: Heizofen, Hammer, passender Dorn.

Bild a

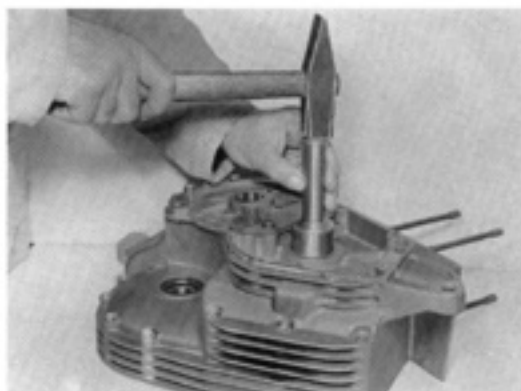
a



1. Die beiden gereinigten Kurbelgehäusehälften im Ofen ca. 160—180° anwärmen. Büchse für Kurbelwelle mit passendem Dorn von außen nach innen her austreiben.

Bild b

b



Achtung: Bei Motor mit Sport-(Klauen-)Getriebe auch gleichzeitig aus der rechten Kurbelgehäusehälfte die Scheibe für Kurbelwelle entfernen.

2. Neue Büchsen mit passendem Dorn (der Stoß der Büchsen muß nach hinten zeigen) in die noch angewärmten Gehäusehälften einschlagen.

Bild c

c

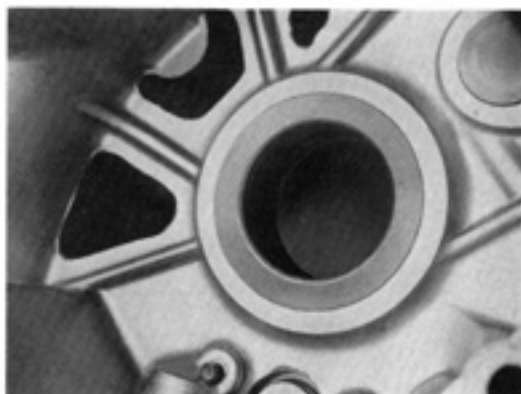


Achtung: Büchsen sorgfältig einsetzen. Nachträgliche Bearbeitung der Büchsen nicht statthaft.

3. Beim Einsetzen der Scheibe für Kurbelwelle (nur bei Motoren mit Sport-(Klauen-)Getriebe in der rechten Kurbelgehäusehälfte darauf achten, daß die stark gebrochene Innenkante der Scheibe nach oben zeigt. Diese Scheibe so weit einschlagen, daß sie auf der Büchse aufsitzt.

Bild d

d



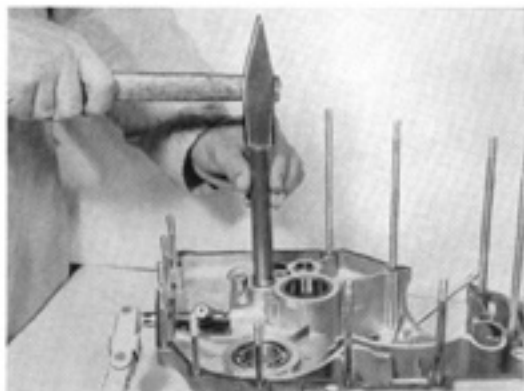


MG 14 Getriebelagerung erneuern (bei Sport- [Klauen-] und Synchron-Getriebe)

- a Werkzeug:** Heizofen, Innenauszieher 12—14, 15—18, 19—23, 31—37 mm $\varnothing$, Gegenstütz-Vorrichtung 21/1—21/3 von der Fa. Kuko oder ähnliche Fabrikate, Grundreibahlen $\varnothing$ 14,5 mm E 8, $\varnothing$ 17,8 mm E 8, $\varnothing$ 20 mm E 8, $\varnothing$ 35 mm E 8, Maulschlüssel 22 mm, Hammer, passende Dorne, Meißel, Steckschlüssel 17 mm.

1. Aus den im Ofen angewärmten Kurbelgehäusen (ca. 160—180°) Büchsen ausziehen.
(Gegenstütz-Vorrichtung, Innenauszieher, Maulschlüssel 22 mm, Dorn)

Bild a



- b** 2. In das angewärmte Gehäuse sofort Büchsen einreiben.
(Hammer, Dorn)

Bild b



3. Nach Erkalten der Gehäuse Büchsen nötigenfalls ausreiben.

Bild c

Achtung: Nach dem Ausreiben sämtliche Büchsen durchblasen und mit Motorenöl aus der Spritzkanne auf Durchgang prüfen!



4. Der Lagerring für Abtriebsrad (nur für Sport- [Klauen-]Getriebe) kann erst nach der Entfernung der Schraube, des Sicherungsblechs und der Ölleitasse ausgezogen werden.

Bild d

Dazu Sicherung am Schraubenkopf aufbiegen, Schraube herausschrauben.
(Steckschlüssel 17 mm, Hammer, Meißel)

Achtung: Beim Einbau der Ölleitasse Schraube kräftig anziehen und sichern!

MG 113 Differential bei Sport- [Klauen-] Getriebe zerlegen und zusammenbauen (Differential ist ausgebaut)

Werkzeug: Hammer, Durchschlag, Dorn, Meißel, Ringmutter Schlüssel 12 mm, Dornpresse, Schieb-
lehre, Tiefenmaß.

1. Sicherungsbleche an Muttern und Paßschrauben aufbiegen, Muttern entfernen, Paßschrauben her-
ausstreifen.
(Hammer, Meißel, Durchschlag, Ringmutter Schlüssel 12 mm)

Achtung: Antriebsrad und Gehäusehälfte zu-
sammen zeichnen, damit die Drehrichtung bei-
behalten wird. Muttern der Paßschrauben
wieder auf der gleichen Seite einbauen.

Bild a

2. Lagerbolzen auf der Seite, auf der die Planeten-
räder am Gehäuse anlaufen (durch seitliche Boh-
rungen ersichtlich), zeichnen und von dieser Seite
aus auf Dornpresse auspressen.

Bild b

Achtung: Planetenräder und Antriebsräder
zeichnen und beim Zusammenbau an gleicher
Stelle wieder einsetzen!

3. Räder, Büchsen und Lagerrohr prüfen und nö-
tigenfalls erneuern. Beim Einbau neuer Teile ein
Axialspiel von 0,3 mm vorsehen.
Die Stärke der Ausgleichscheibe ergibt sich aus
folgenden Messungen und Rechnungen:

- a) Von Trennfuge der linken Gehäuse-
hälfte bis zum Bund der Büchse zu-
sätzlich von Trennfuge der rechten
Gehäusehälfte bis zum Bund der
Büchse (Tiefenmaß verwenden!) a 35,00 mm
- b) Stärke des Antriebsrades für Dif-
ferential b 14,80 mm

Bild c rechts und links

$$(a + b) 49,80 \text{ mm}$$

- c) Stärke der Antriebsräder für Hin-
terrad — ohne Lagerrohr und ohne
Ausgleichscheibe — c 46,10 mm
3,70 mm
— Vorgeschriebenes Axialspiel
0,30 mm f. 0,30 mm
- d) Stärke der Ausgleichscheibe d 3,40 mm

Bild d rechts und links





a

MG 114 Differential für Synchron-Getriebe zerlegen und zusammenbauen

(Differential ist ausgebaut)

Werkzeug: Hammer, Durchschlag, Dorn, Meißel, Ringmutter Schlüssel 12 mm, Dornpresse, Schieblehre, Tiefenmaß.

1. Sicherungsbleche an Muttern und Paßschrauben auflegen, Muttern entfernen, Paßschrauben heraustreiben. (Hammer, Meißel, Durchschlag, Ringmutter Schlüssel 12 mm)

Achtung: Muttern der Paßschrauben wieder auf der gleichen Seite einbauen.

Bild a



b

2. Lagerbolzen auf der Seite, auf der die Planetenräder am Gehäuse anlaufen (durch seitliche Bohrungen ersichtlich), zeichnen und von dieser Seite aus auf Dornpresse auspressen.

Bild b

Achtung: Planetenräder und Antriebsräder zeichnen und beim Zusammenbau an gleicher Stelle wieder einsetzen!



c

3. Räder, Büchsen und Lagerrohr prüfen und nötigenfalls erneuern. Beim Einbau neuer Teile ein Axialspiel von 0,3 mm vorsehen. Die Stärke der Ausgleichscheibe ergibt sich aus folgenden Messungen und Rechnungen:

- a) Von Trennfuge des Gehäusedeckels bis zum Bund der Büchse (Tiefenmaß verwenden!) (MG 113)
- b) Stärke des Antriebsrades für Differential

a 17,50 mm

b 37,80 mm

Bild c links

- c) Vom Bund der Büchse zur Trennfuge der Führungsplatte

(a + b) 55,30 mm

c 5,70 mm

Bild c rechts



d

- d) Stärke der Antriebsräder für Hinterrad — ohne Lagerrohr und ohne Ausgleichscheibe —

d + 46,10 mm

Bild d links

(a + b) 55,30 mm

(c + d) - 51,80 mm

3,50 mm

Axialspiel - 0,30 mm

- e) Stärke der Ausgleichscheibe 3,20 mm

Bild d rechts

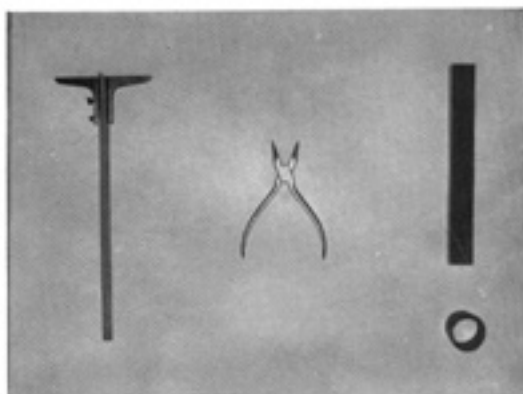
MG 17

Bearing for clutch drive wheel-renewal (with clutch casing dismantled)

Tools: Circlip pliers, gauge, parallel bar (SpW 915),
Sleeve for clutch drive wheel packing ring (SpW 903).

Illustr. No. 129

129



MG

1. Remove clutch drive wheel from casing.
2. Remove ball race circlip.
(Circlip pliers)

Illustr. No. 130

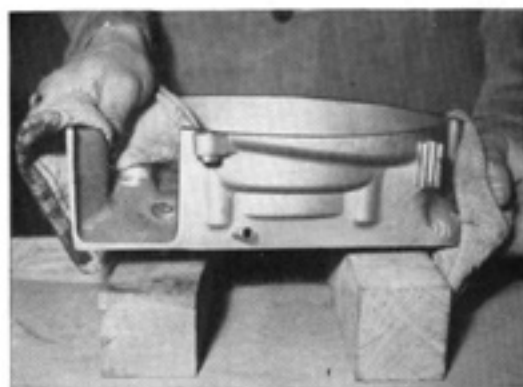
130



3. Warm up clutch casing.
4. Tap clutch casing on wooden blocks until split ring
and ball race fall out.

Illustr. No. 131

131



Note: When fitting new bearings and split rings
warm up casing and, if necessary, use suitable
punch.

Illustr. No. 132

132

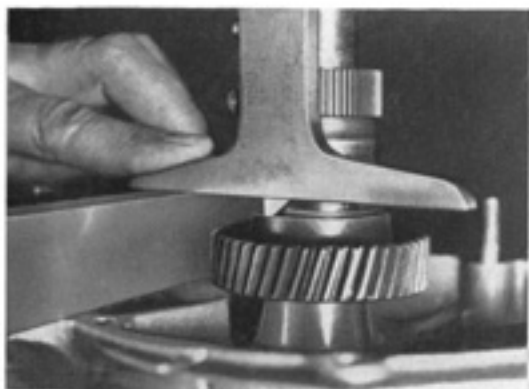




133

5. Place clutch drive wheel and ball bearing cage, thrust washer and needle cage on crank shaft; watch packing (felt ring) and needle cage in upper half of clutch drive wheel.

Illustr. No. 133



134

6. Measure spacing between casing joint and the clutch drive wheel joint.
(Gauge and parallel bar SpW 915)

Illustr. No. 134



135

7. Gauge spacing of clutch casing and inner ring of ball bearing.

Illustr. No. 135



136

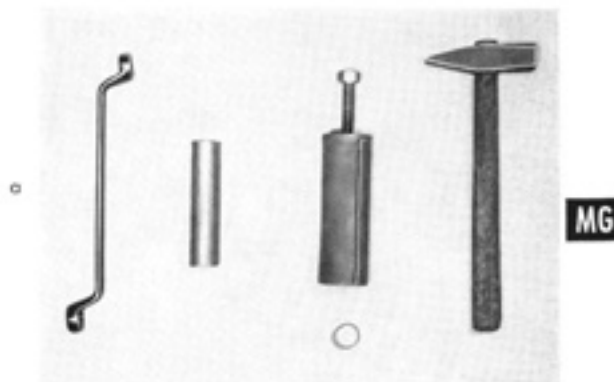
8. Insert spacing washer to make up gap. The axial play is thus controlled by the thickness of the .008" packing. When reassembling clutch casing check both faces.
9. When reassembling clutch drive wheel the oil retainer must be protected by using a refitting sleeve. (Refitting sleeve for packing ring on clutch drive wheel SpW 903).

Illustr. No. 136

**MG 138 Lagerring auf Kurbeltrieb links
aus- und einbauen (vermessen)
(bei Fahrzeugen mit Sport-[Klaue]-Getriebe)
(Kupplungsgehäuse ist ausgebaut)**

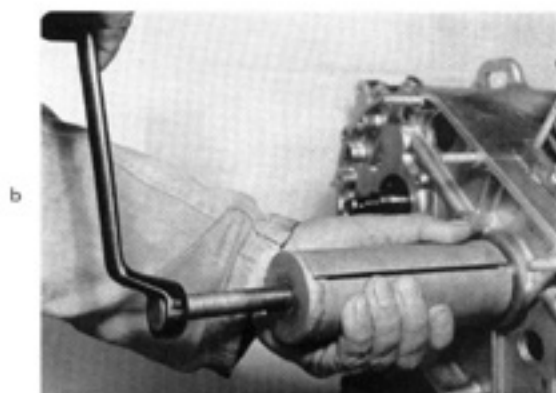
Werkzeug: Abzieher SpW 904, Druckstück SpW 905,
Hammer, passendes Rohr, Ringmutter-
schlüssel 22 mm.

Bild a



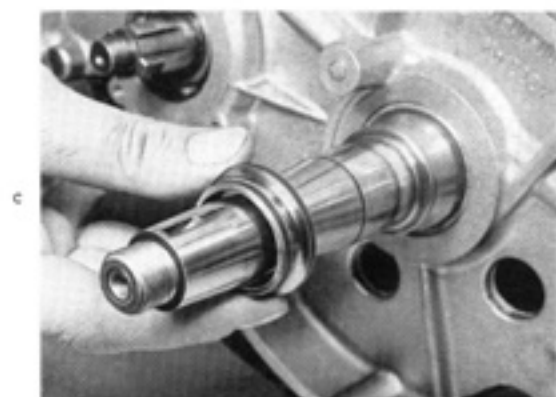
1. Lagerring abziehen.
(Abzieher SpW 904, Druckstück SpW 905, Ring-
mutterschlüssel 22 mm)

Bild b



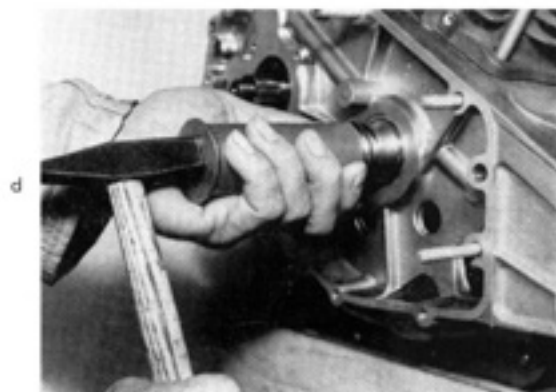
2. Lagerring aufsetzen.

Bild c



3. Lagerring vorsichtig bis zum Bund der Kurbel-
welle aufschlagen.
(Passendes Rohr, Hammer)

Bild d

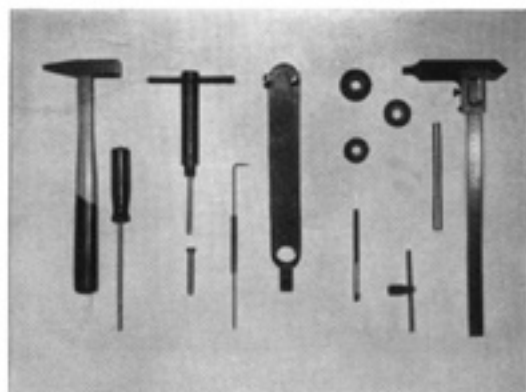


MG 33 Overhauling cylinder head

Tools: Brass punch, hammer, pin, screwdriver, assembly and dismantling tool for valves SpW 901, reamer 088 891 912 8 mm H 7. Shaft 048 422 020 for seating cutter, guide bush 088 891 915 for seating cutter shaft SpW 038 110, Seating cutter for valve seating (outer) SpW 922, seating cutting for valve seating (inner) SpW 928.

Illustr. No. 137

137



MG

1. Dismantle valve.
(Brass punch, dismantling and reassembly tools for valves SpW 901, pin)

Illustr. No. 138

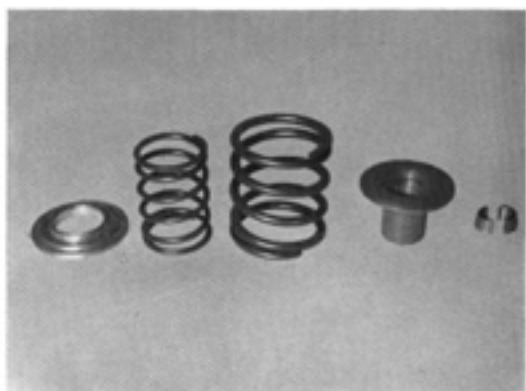
138



Note: To support the valve, place suitable block in combustion chamber. When reassembling watch sequence of parts. Lower spring seating with arch uppermost, inner spring, outer spring, upper spring seating keepers.

Illustr. No. 139

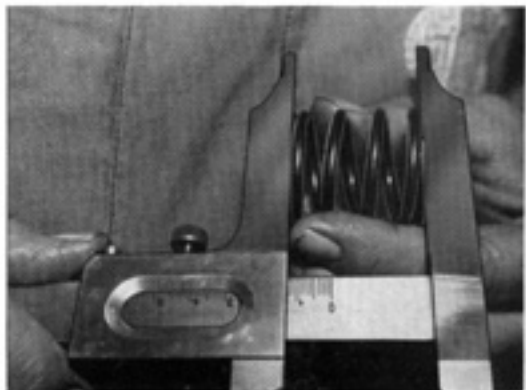
139



2. Measure and check valve springs.
Outer spring 1.58" long
Inner spring 1.58" long
(Vernier gauge)

Illustr. No. 140

140



Note: Where shortening exceed normal by more than .004", renew spring.



141

3. Remove circlips from valve guides.
(Screwdriver)

Illustr. No. 141



142

4. Warm head to about 200° F when removing and replacing valve guides.
5. Drive out towards back and downwards.
(Punch, Hammer)

Illustr. No. 142



143

6. Drive in new guides, from outside inwards.
(Punch, Hammer)

Note: Before replacing guides, replace locking rings, the guides are then driven home until they sit firmly.

Illustr. No. 143



144

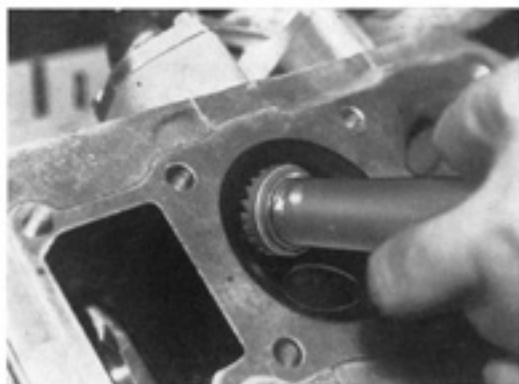
7. Ream out valve guides.
(8 mm reamer H7 088 891 912)

Illustr. No. 144

8. Cut valve seating
(Shaft for valve cutter 048 422 020, cutter 038 110 337, guide bush 088 891 915 for shaft 048 422 020 for valve seating cutter.

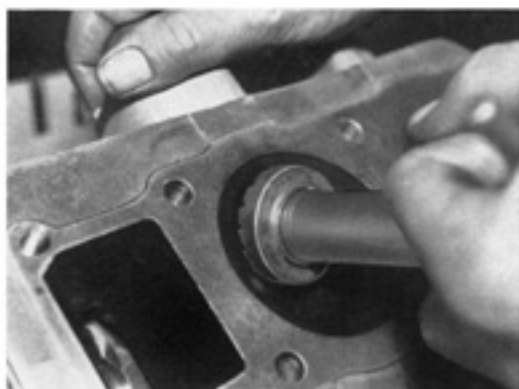
Illustr. No. 145

145



MG

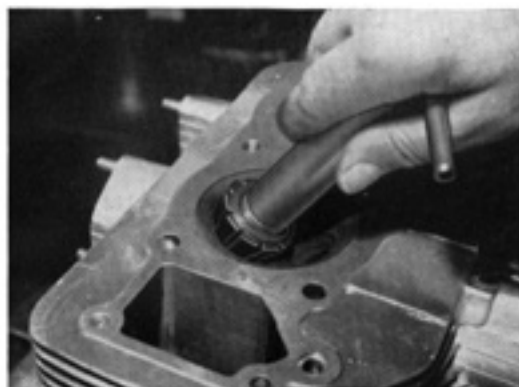
146



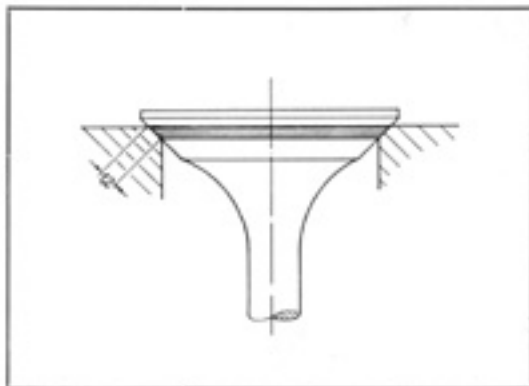
9. Relieve valve seating.
(Shaft 048 422 020 for valve seat cutter, guide bush 088 891 915 for valve seat cutter, seating cutter for valve seating (outer) SpW 922 and for valve seating (inner) SpW 928.

Illustr. No. 146/147

147



148



Note: The valve seat should be about .051" wide and the upper 1/3 of the valve should be inside the seating.

Illustr. No. 148



149

MG 35

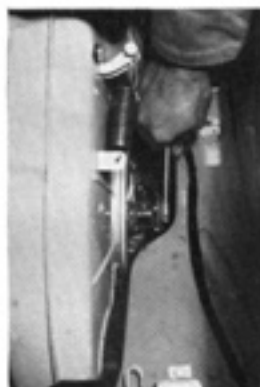
Adjusting valves

Tools: Ring spanner 11, 14 mm, 17 mm spanner, spark plug wrench, screwdriver, .004" gauge.

■ **Note:** Adjust valves when motor is **cold**.

1. Lift motor hood.
2. Remove breather tubing from cylinder head.
3. Remove cylinder head cover.
(11 mm ring spanner)

Illustr. No. 149



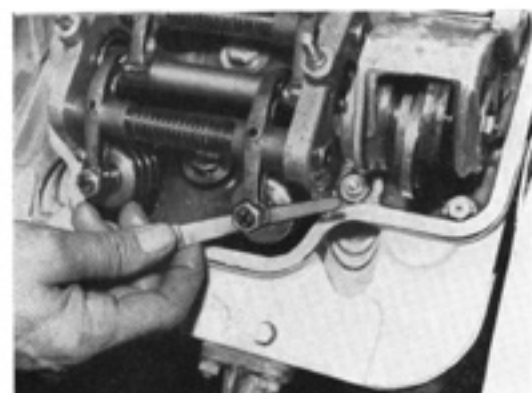
150

4. Detach spark plug cables.
5. Remove spark plugs (spark plug wrench).
6. Remove dynastarter cover.
7. Remove inspection cover (for TDC position).
8. Turn motor by dynastarter bolt to right.
(17 mm ring spanner)

Illustr. No. 150 right

until in TDC position.

Illustr. No. 150 left



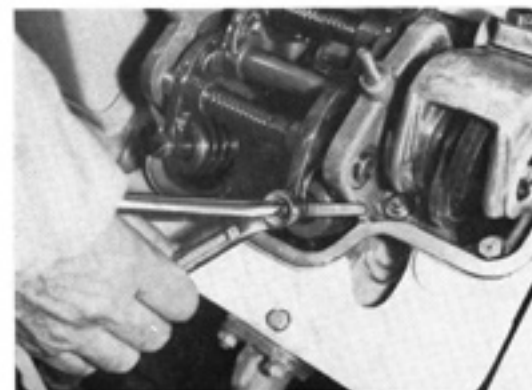
151

9. Set cylinder valves - which is in TDC firing position.
a) Adjustment .004"
(.004" feeler gauge)

Illustr. No. 151

- b) Adjust (after loosening locking nut) with screwdriver.
(14 mm ring spanner, screwdriver)

Illustr. No. 152



152

■ **Note:** If the valve is properly adjusted the gauge should be easily withdrawn.

10. Turn crank shaft one turn to right, until the TDC position is reached again.
11. Set valves on second cylinder.

The remaining operations are carried out in the opposite sequence.

MG 43

Dismantling crank shaft and reassemble

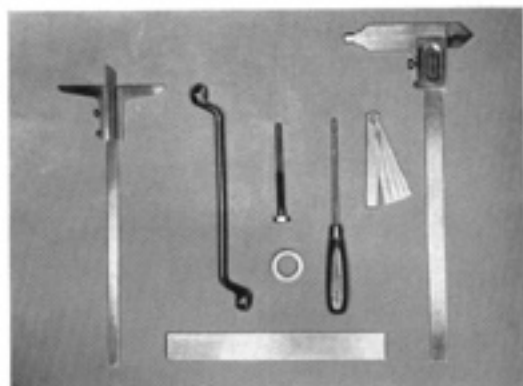
Texts and illustrations to follow.

MG 44 Kurbeltrieb aus- und einbauen und vermessen

(ab Fahrzeugen mit Synchron-Getriebe)

Werkzeug: Tiefenmaß, Schieblehre, Meßeiste SpW 915, Meßring, SpW 935, Druckschraube SpW 913, Blattmaß, Schraubenzieher, Ringmutterschlüssel 17 mm, Hammer.

Bild 153



1. Anker abziehen:

Bild 154

Dazu Druckschraube SpW 913 (neues Werkzeug) in Kurbeltriebachse einsetzen. (Druckschraube SpW 913, Ringmutterschlüssel 17 mm, Hammer)

Achtung: Der Anker wird durch einen leichten Hammerschlag auf die Druckschraube gelöst. Anker dabei festhalten, Scheibenfeder, Feder-scheibe und Ausgleichscheiben entfernen.

2. Zerlegung (MG 3, Bilder 73—100).
3. Kurbeltrieb vermessen:
Dazu Kurbeltrieb festlegen mit Blattmaß 2,8 mm und Schraubenzieher. Abstandsbüchse und Meßring SpW 935 auf Kurbelwelle stecken und Abstand von Meßring zur Trennfuge des Kurbelgehäuses messen.

Bild 155

Beispiel: Abstand von Meßring zur Trennfuge des Kurbelgehäuses
Stärke des Meßringes

a	59,30 mm
b	15,00 mm
c	44,30 mm

Von Trennfuge des rechten Deckels bis zum Innenring des Kugellagers messen.

Bild 156

Beispiel: Abstand der Trennfuge des rechten Deckels zum Innenring des Kugellagers
Stärke der Meßeiste (angenommenes Maß 30 mm)

d	72,00 mm
e	30,00 mm
f	42,00 mm

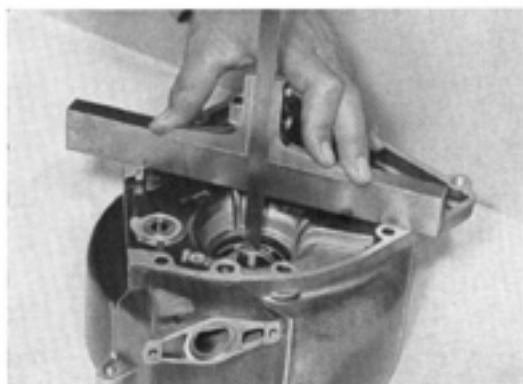
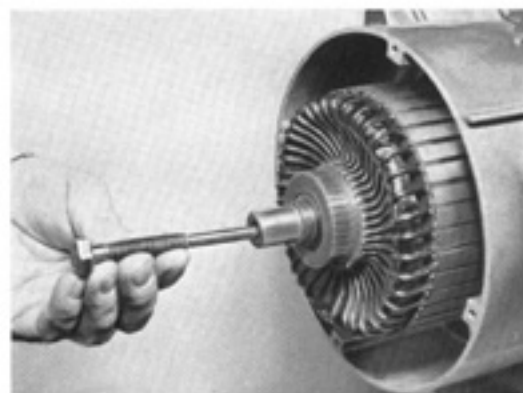
Die Differenz der beiden Meßergebnisse (c + f) ergibt die Stärke der inneren Ausgleichscheiben.

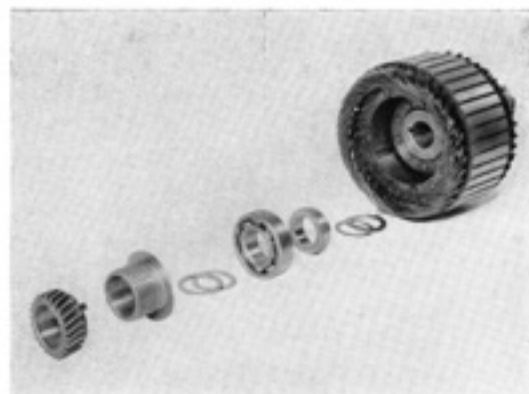
Beispiel:

c	44,30 mm
f	42,00 mm
	<u>2,30 mm</u>

Ausgleichscheiben (Innen)

Achtung: Nach Einbau des rechten Deckels mit Dichtung ändert sich der Abstand des Kurbeltriebs von 2,8 mm auf das vorgesehene Einbaumaß von 2,6 mm.



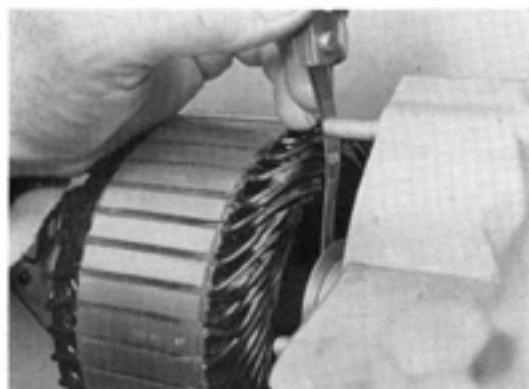


157

4. Messung außerhalb des Kugellagers im Deckel rechts.

Achtung: Die unter dem Anker eingelegte Federscheibe darf nur etwa $\frac{1}{3}$ ihrer Gesamtstärke zusammengedrückt sein. Reihenfolge des Einbaus der Teile nach nebenstehender Abbildung.

Bild 157



158

Um die Stärke der Ausgleichscheibe besser feststellen zu können, wird die Federscheibe (nur bei der Messung) vor den anstelle des Kugellagers eingesetzten Meßring SpW 935 eingelegt.

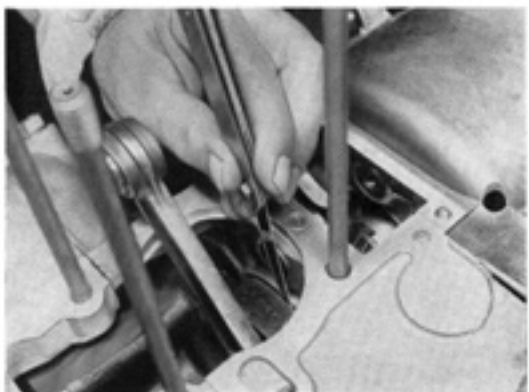
Bild 158



159

Achtung: Beim Zusammenbau wird der Rückfördererring mit dem Gewindeanfang nach innen eingebaut!

Bild 159



160

5. Nach Einbau des Ankers den Abstand zwischen Kurbeltrieb und Kurbelgehäuse mit Blattmaß (2,5—2,7 mm) kontrollieren.

Bild 160

MG 73 **Dismantling and checking Oil pump** **(Oil pump removed)**

Tools: Parallel bar, feeler gauge.

Where the efficiency of the oil pump drops, the following checks, or measurements should be carried out:

1. Oil pump cover should be level and must show no wear. Check with parallel bar and if necessary face down oil pump cover.

Illustr. No. 161

161



2. Check axial play of gears. Max play 0.02 mm; check with parallel bar and feeler gauge. If necessary face down casing.

Illustr. No. 162

162



3. There should be no play between the oil pump gears.
4. Clearance between gears and casing. This indicates wear on spindle bearings. Renew wheels and bearings which should have a gap of not more than 0.03 mm. Check with 0.02 mm feeler gauge.

Illustr. No. 163

163



5. Play in wheel. Check with feeler gauge to max. 0.015 mm when play on casing is max. 0.02 mm.

Illustr. No. 164

164



Note: When testing the performance of the oil pump, the pressure valve in pressure chamber of oil filter should also be tested. Pressure should not be altered by adjusting the spring. If necessary test by inserting a fresh oil pressure switch (or clock gauge).



165

MG 81**Dismantle and reassemble fuel pump****Tools:** Ringspanner (10 mm), screwdriver.

1. Remove suction silencer.
(Ring spanner, 10 mm)
2. Remove fuel pump, tubing (centre pressure joint).
3. Remove tubing from fuel pump, remove suction joint and close with 6 mm bolt.

Illustr. No. 165

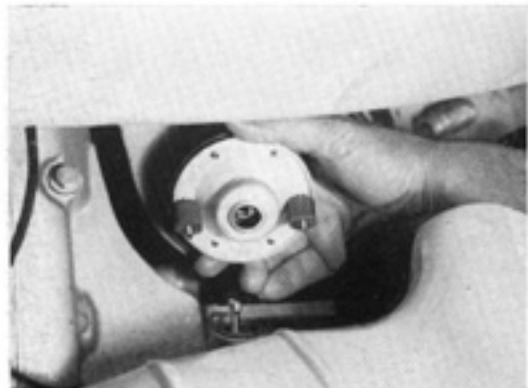
166

4. Loosen securing screws, top and bottom
(2 screws, screwdriver)

Illustr. No. 166

167

5. Turn pump about 45° to left and remove

Illustr. No. 167

168

Note: When reassembling the drive shaft must be brought fully out by turning the engine. Turn pump 90° to left, insert drive shaft and engage tongue by turning 90° to right; press pump into place and screw down.

Illustr. No. 168

Watch the rubber ring. For assembling pump see MG 3 Illustr. Nos. 53—55.

MG 83

Dismantling and reassembling fuel pump

Tools: Ring spanner (19 mm), screwdriver.

Note: There are two lips on the diaphragm of the fuel pump, a small one which has to be lifted when reassembling the pump and a large one which is opposite the suction joint. Both should be marked before dismantling the pump since they control the position of the compensating cap on the diaphragm.

Illustr. No. 169

169

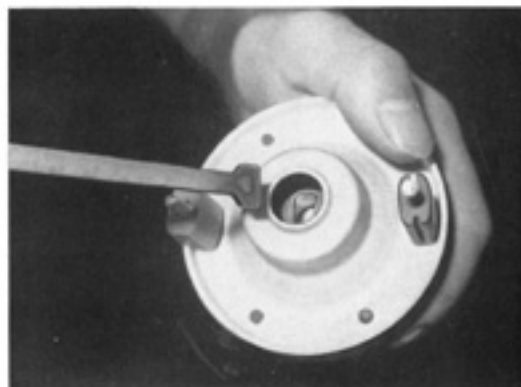


MG

The fuel pump is engaged on the drive shaft by turning it 90°. Watch the rubber washer.

Illustr. No. 170

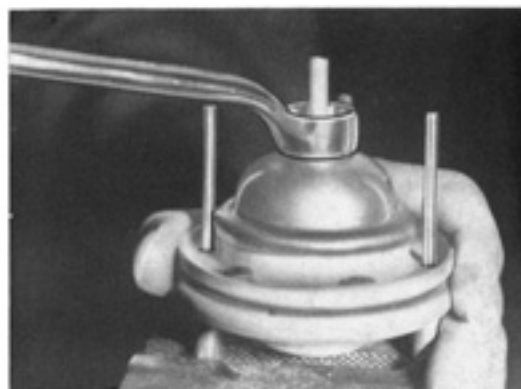
170



When working on the pump do not hold it into a vice, hold it in the hand. If you cannot loosen the screws on the pump by holding it this way, it must be held by two punches fixed in the vice as dowels.

Illustr. No. 171

171



1. Unscrew nuts on filter dome (19 mm ring spanner)

Illustr. No. 171

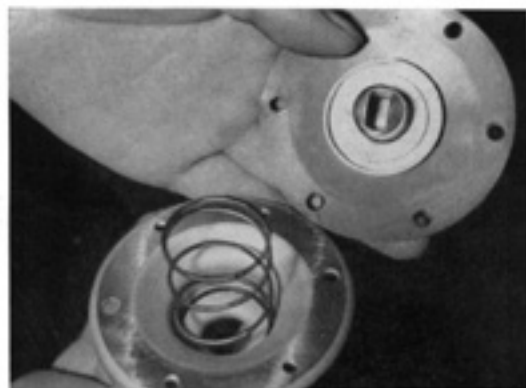
Note: These nuts are also removed when the pump is cleaned whilst still assembled after the connections have been detached. The screen in the filter dome should be blown out with compressed air.

2. Loosen locking screws on upper half of pump. (4 screws, screwdriver)

Illustr. No. 172

172

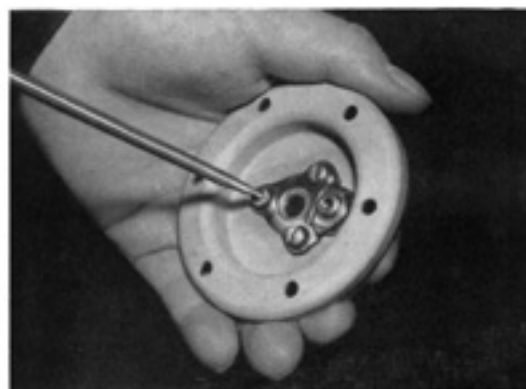




173

3. Remove top half of pump and diaphragm.

Illustr. No. 173

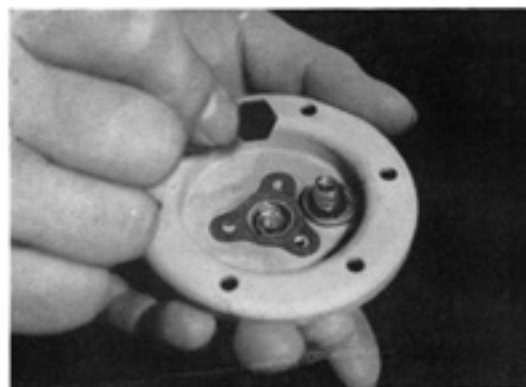


174

Note: The spring is calibrated and adjusted to the pump pressure. This should not be altered.

4. Loosen valve plate.
(3 screws, screwdriver)

Illustr. No. 174

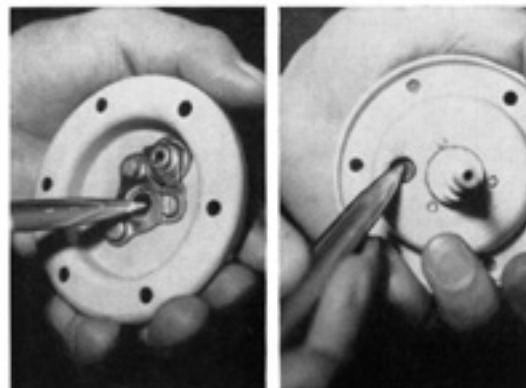


175

5. Remove valve plate, packing, small valve plate and springs.

Note: The small springs for the valve plates are calibrated and should not be altered. Examine valve plates for damage and if necessary renew.

Illustr. No. 175



176

Note: After re-assembly of valves, the valve plates should be tested by operating with a blunt instrument to ensure that they are returning correctly.

Illustr. No. 176

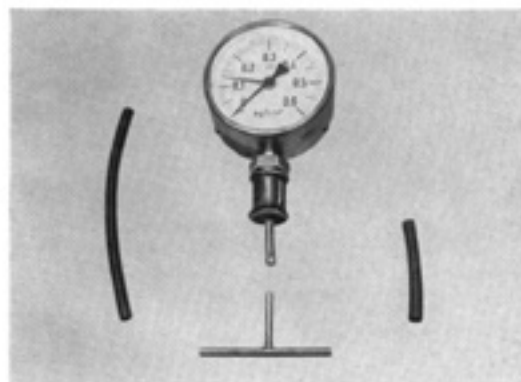
For reassembly the procedure is reversed.

MG 85 Kraftstoffpumpe auf Druckleistung prüfen

Werkzeug: Manometer von 0—0,6 kg/cm², T-Stück aus Rohr Außen- $\varnothing$ 6 mm, Benzinschlauch ca. 300 mm lang, Benzinschlauch ca. 100 mm lang.

Bild a

a

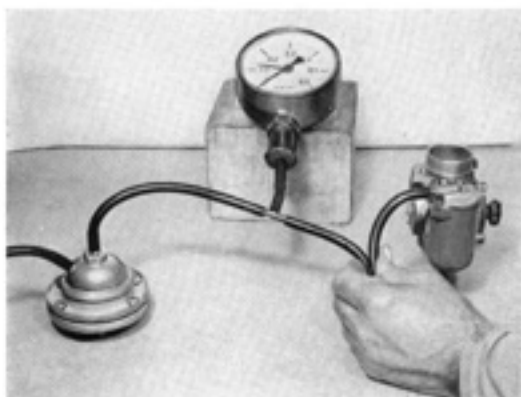


MG

1. Manometer in Kraftstoffdruckleitung zwischen Pumpe und Vergaser einsetzen.

Bild b

b



2. Prüfung der Druckleistung bei laufendem Motor mit niedriger und hoher Drehzahl durch kurzfristiges Abknicken des Kraftstoffschlauches und Ablesen der Druckanzeige am Manometer.

Bild c

c



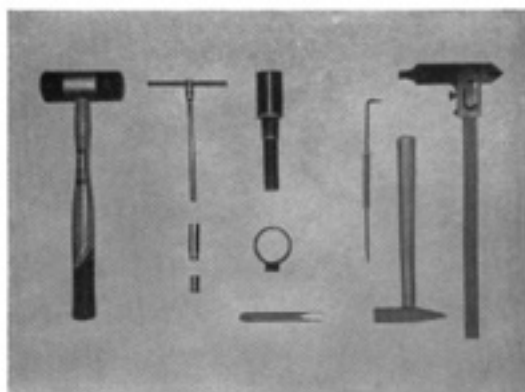
Achtung: Der Druck muß im Meßbereich von 0,08—0,15 liegen. Abweichungen werden durch Auswechseln der kalibrierten Druckfeder in der Kraftstoffpumpe behoben.

MG 133 **Dismantling and reassembling clutch**

Tools: 10 and 11 mm spanner, 11 mm long handle spanner, pin, hide mallet, hammer, chisel, Vernier, punch SpW 907, clutch setting gauge SpW 908.

Illustr. No. 177

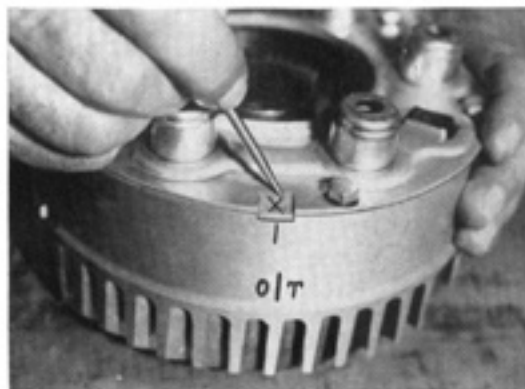
177



Note: It is advisable to mark the positions of the various clutch parts to maintain the same spacing. Mark TDC position on clutch cover.

Illustr. No. 178

178

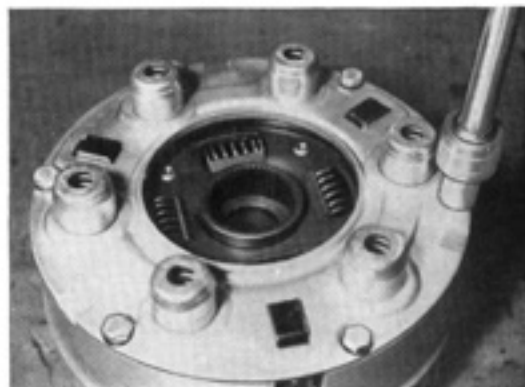


1. Loosen locking screws on clutch cover. (10 mm spanner)

Note: Loosen bolts evenly and slowly and tighten similarly.

Illustr. No. 179

179

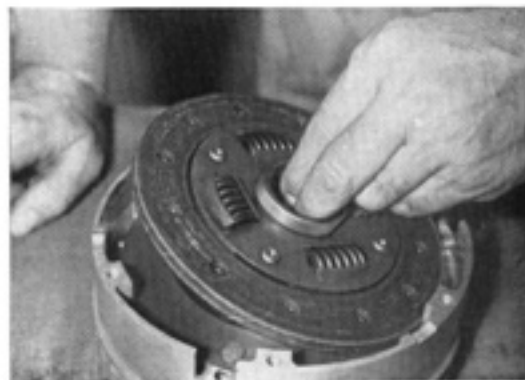


2. Remove clutch cover, spring cups and clutch spring.
3. Check springs for re-use, replace "tired" springs. Length of springs $1.41" \pm .019"$. Renew if variation over .04". (Slidegauge)
4. Remove clutch drive plate.
5. Remove clutch driven plate.

Note: Do not touch clutch lining. When reassembling, replace clutch plate with splines uppermost.

Illustr. No. 180

180

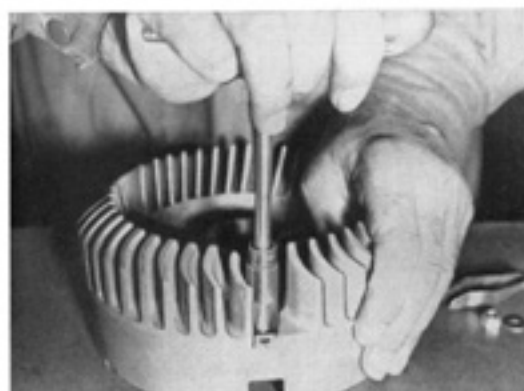




181

Note: When reassembling clutch, use alignment pilot.
(SpW 907)

Illustr. No. 181



182

6. Remove 3 spring bolts.
7. Turn clutch casing.
8. Loosen locking nuts.
(3 nuts, 11 mm adjustable spanner)
9. Remove fulcrum levers and washers.
10. Loosen nuts on adjuster bolts

Illustr. No. 182



183

11. Mark clutch drive face plate position in bellows wheel.
12. Remove clutch drive shaft from bellows wheel.
(rubber headed hammer)

Reassembly, procedure reversed.

Note: Use adjustable gauge to set clutch.
(Adjustable gauge for clutch SpW 908)

Illustr. No. 183



184

Adjusting nuts to be turned until the fulcrum levers rest gently and evenly on the gauge. Lock adjusting nuts with centre punch dot.
(11 mm spanner, hammer, chisel)

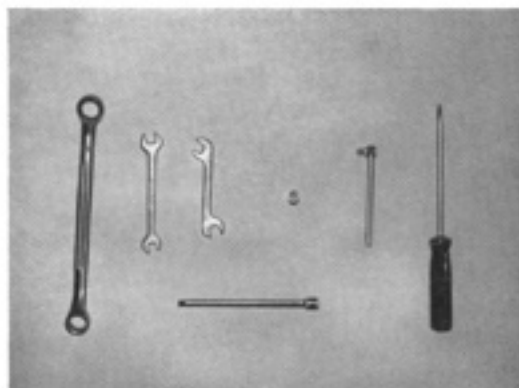
Illustr. No. 184

MG 135 Adjusting clutch

Tools: 2.11 mm spanners, 10 mm spanner, 19 mm ring spanner, screwdriver.

Illustr. No. 185

185

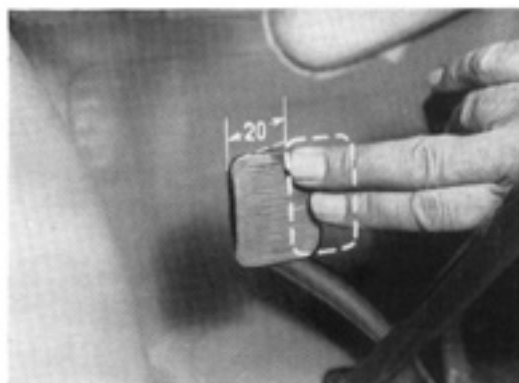


MG

1. The play on the clutch pedal should be .8"—1.2"
(Top of pedal)

Illustr. No. 186

186



2. Setting the cable adjustable socket on clutch casing
 - a) Loosen lock nut
(2 11 mm spanners)
 - b) Move adjustable socket until play is 20 mm 30 mm
(11 mm spanner)
 - c) Tighten lock nut
(2 11 mm spanners)

Illustr. No. 187

187



3. Remove cover.
(3 screws, 10 mm spanner)
4. Detach spring.

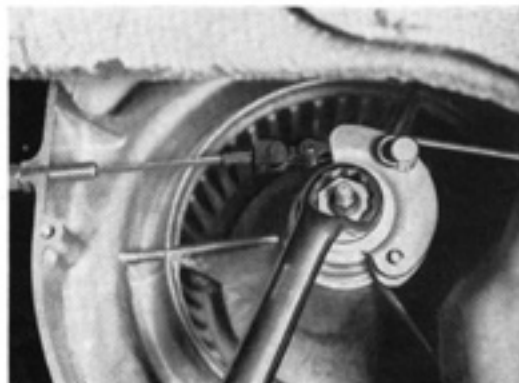
When further adjustment is impossible, the clutch lever should be adjusted on spline shaft.

Note: Move clutch lever with 19 mm ring spanner and remove spring.
(19 mm ring spanner)

Illustr. No. 188

Bild 188

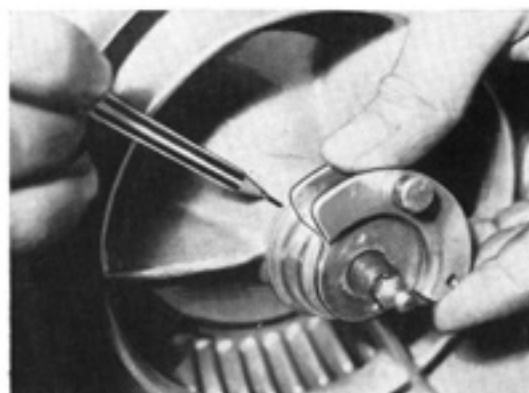
188





189

5. Loosen nut on clutch lever.
(19 mm ring spanner, hold with screwdriver)
Illustr. No. 189

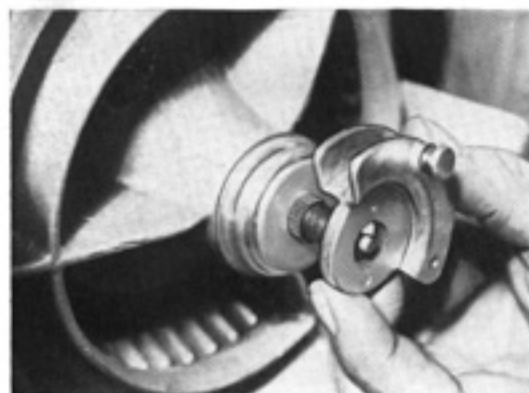


190

6. Mark setting of clutch lever in casing.

Note: To show this more clearly, the clutch cable and chain are not shown in the illustration.

Illustr. No. 190



191

7. Remove clutch lever, rotate lever required number of teeth and replace

Illustr. No. 191

When reassembling proceed in reversed order.



192

Note: For any further work on the clutch (e. g. when dismantling) it is advisable to loosen the motor suspension and to lower the motor on one side.

Illustr. No. 192

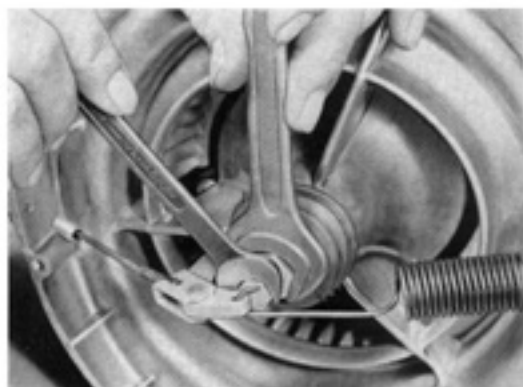
MG 140 Kupplung (mit Ausrückhebel) einstellen

(Für Synchron- und Sport-[Klauen-]Getriebe)

Werkzeug: Maulschlüssel 10, 11, 12, 19 mm.

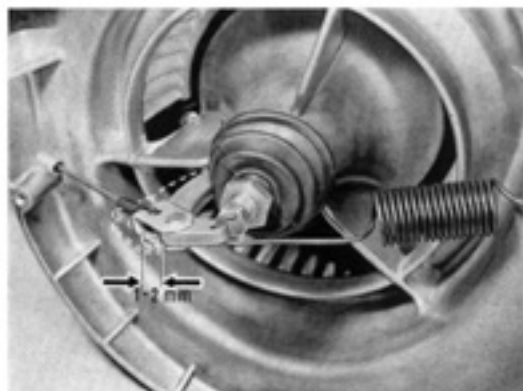
1. Spiel am Kupplungspedal einstellen (siehe MG 135, Bild 186—187).
2. Spiel für Ausrückhebel an der Stellschraube und Kontermutter einstellen.

Bild a



Achtung: Damit die Kupplung nicht unter Druck steht, muß ein Spiel von 1—2 mm vorhanden sein.

Bild b

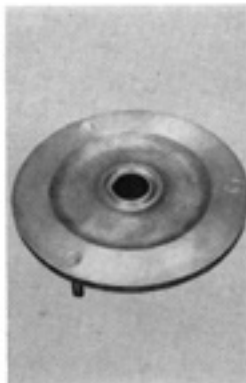
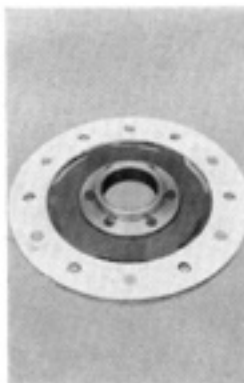


3. Kupplungsscheibe ohne Dämpferfedern kann auch für Kupplung mit Zugspindel verwendet werden.

Bild c links

Achtung: An Fahrzeugen mit Synchron-Getriebe darf nur die Treibscheibe mit ausgedrehter Nabe und Ölbohrung verwendet werden.

Bild c rechts





MG 141 Kupplungsdrucklager auswechseln

Werkzeug: Maulschlüssel 12 u. 19 mm, Schraubenzieher, Gummihammer, Hammer, passende Rohre, Kukko-Gegenstütz-Vorrichtung, Innenauszieher 24—30 mm, Inbusschlüssel 5 mm.

1. Vor Ausbau des Spiralgehäuses (MG 3, Bild 56—60) wird die Einstellschraube und Kontermutter entfernt, die Staubkappe zurückgestülpt und der Ausrückhebel nach Entfernen des Lagerbolzens abgenommen.

Bild a



2. Zum Austreiben des Ausrückbolzens mit Drucklager und Kappe wird die Einstellschraube im Ausrückbolzen eingesetzt.

Bild b

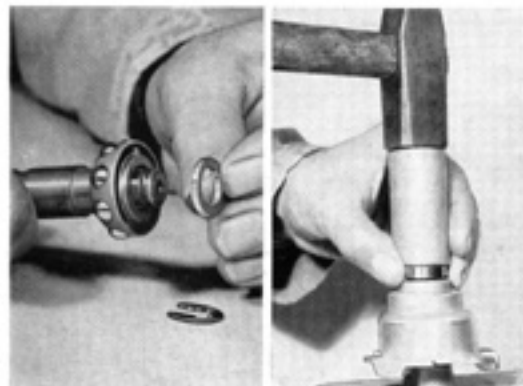


3. Lagerring mit Auszieher ausziehen.

Bild c

4. Scheibe einlegen und mit Sicherungsring sichern.

Bild d links



5. Beim Einbau des Radialdichtrings wird dieser auf den Ausrückbolzen gesetzt, damit die Lippe des Dichtrings (die nach innen zeigen muß), nicht beschädigt wird. Radialdichtring mit passendem Rohr und Hammer eintreiben.

Bild d rechts

Achtung: Beim Einbau Lager komplett auf Ausrückbolzen setzen, dabei Druckseite des Lagers beachten und Lager vorsichtig einschlagen. Lager vollständig in Fett einbetten und mit Kappe verschließen.

M 137 Lining clutch plate

Tools: 4 mm drill, hammer, punch, 2 driving pins, riveting set, shaft for clutch desk, clock gauge and spigot shaft.

Note: Where possible new clutch disks should be procured from spares depot. If self relined, the following procedure should be followed:

1. Drill out old rivets, do not punch out (4 mm drill)

Illustr. No. 193

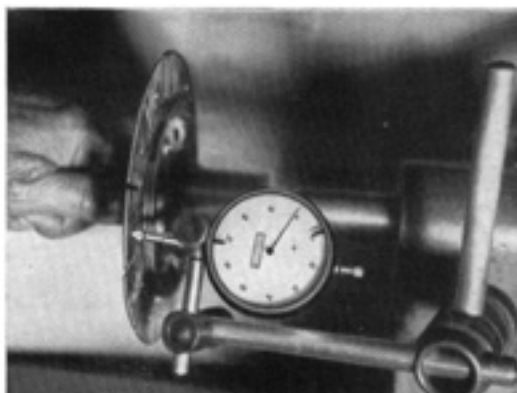


193

MG

2. Set clutch plate on suitable shaft and test for true running. The offset of segments should not exceed .008" error.

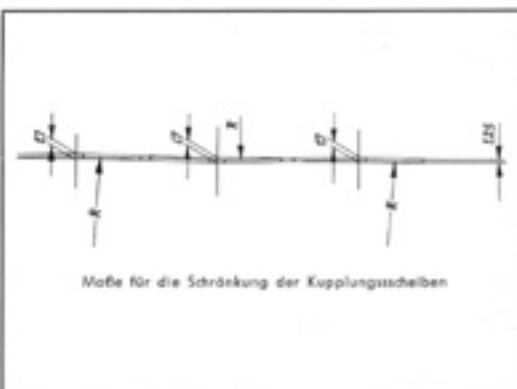
Illustr. No. 194



194

3. Angle of the clutch disks should be as shown in Illustr. No. 195

Illustr. No. 195



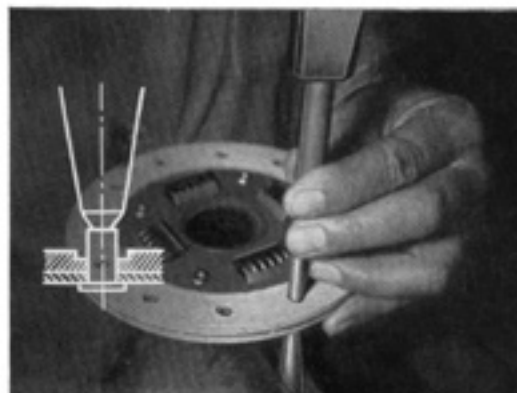
195

4. Renew clutch lining and fix with 3 screws (4 mm)

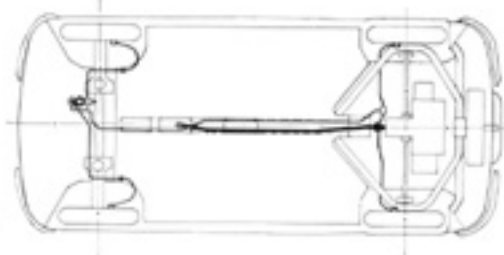
Note: Lining should be riveted in such a way as to preserve the springing of the clutch plate.

5. Cross rivet hollow rivets
 - a) Insert rivets and draw up tubular snap.
 - b) Bell rivet ends with riveting set.
 - c) Flatten rivets with punch.

Illustr. No. 196



196



197

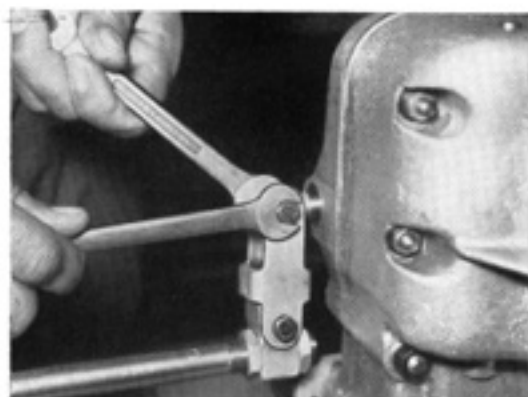
MG 145**Adjusting gear lever**

Tools: Spanners 2 x 11 mm, 20 mm and 22 mm. Ring spanner (14 mm), screwdriver.

Note: The gear lever shaft must be assembled as shown in Illustr. No. 197 with the shaft on the right of the tunnel (cable assembly and leads are on the left).

(Illustr. are in outline for easier interpretation.)

Illustr. No. 197



198

1. Loosen gear lever.

Note: The gear lever should be put in reverse position to enable the upper screw and nut connecting the shaft and fish plate to be loosened.

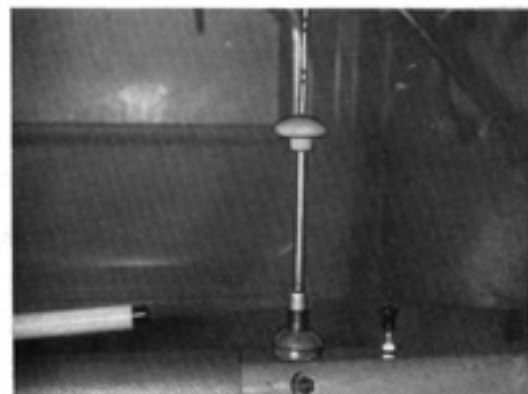
Illustr. No. 198



199

If the gear lever has to be dismantled (after motor has been fitted) the fish plate and nut must be removed.
(20 and 22 mm spanners)

Illustr. No. 199



200

2. Adjust length of shaft.
 - a) Loosen front and rear nuts
(20 and 22 mm spanners)

see also **Illustr. No. 199**

- b) Gear box in neutral.
 - c) The gear lever should now be vertical.

Illustr. No. 200

- d) The front and rear play of the gear lever should be identical.

- e) Move the gear lever until in vertical position as in Illustr. No. 200.
- f) Fit gear lever, fish plate and seating (rubber) with screws and nuts, watch both neoprene washers. (2—11 mm spanners)

Illustr. No. 201

201

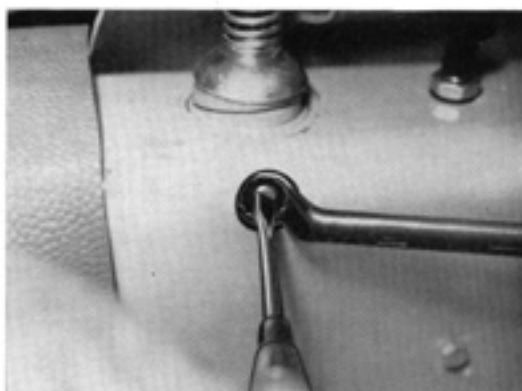


3. Adjusting gears.

- a) Lever in neutral position
- b) Adjust stop so that gear lever is vertical (see Illustr. Nos. 200—202)
(Screwdriver, 14 mm ring spanner)

Illustr. No. 202

202



4. Switch to 2nd gear on motor

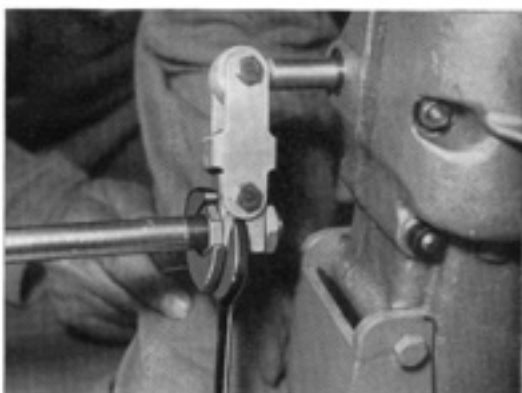
- a) Note that 2nd and 4th gear are engaged by drawing out the gear shaft whilst the reverse drive, 1st and 3rd gear are engaged by pushing it in.
- b) To find 2nd gear: Turn shaft slowly to left in neutral and draw out whilst turning one rear wheel till the 2nd gear engages.

Note: The 4th gear is on the extreme left.

- c) Press gear lever against seating.
- d) Tighten nut and lock nut on bearing.

Illustr. No. 203

203



- e) Adjust on seating bolt until there is no play. The gear lever must be free.

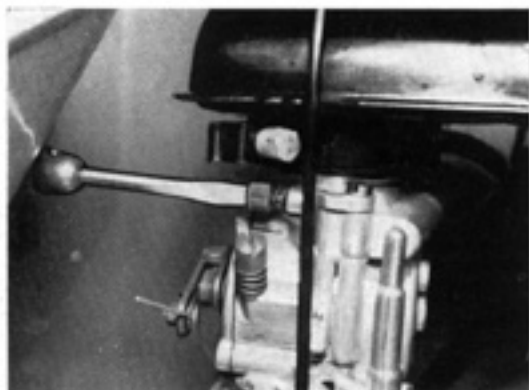
- 5. When dismantling and assembling spacing collar on gear lever, a special tool is used to fit the spring retainers. This tool consists of a spanner for the cross jointing cone screw SpW 909 and a special tool SpW 910. The locking ring is laid on the tool SpW 910 and is pressed into place on the shaft by giving it a sharp blow with the spanner SpW 909. At the same time an assistant will push the spacing collar downwards.

Illustr. No. 204

204



Note: When reassembling, grease the spacing piece and guide collar. Do not damage or stretch the spring retainer when inserting the gear lever.

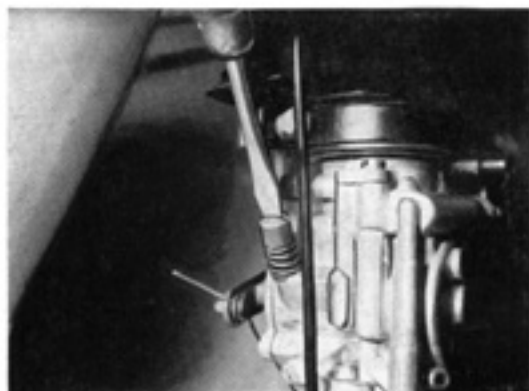


205

MG 165**Adjusting the carburetor****Tools:** Screwdriver, 9 mm spanner.

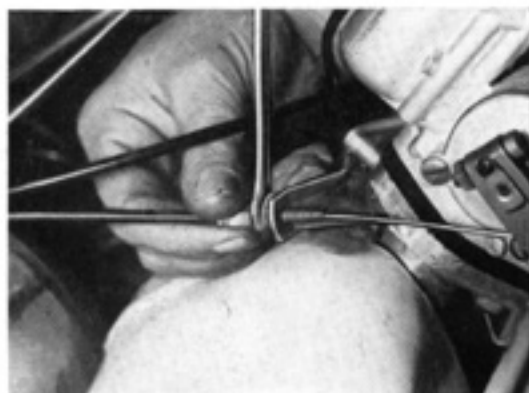
Note: It is useless to attempt to improve performance by replacing jets or by adjusting them. Jets and their setting have been adjusted to give the best performance at lowest consumption. Any tuning should be done when the motor is warm.

1. Shut air regulator screw and then open one turn. (Screwdriver)

Illustr. No. 205

206

2. Adjust idling speed regulator till r.p.m. are about 600. If running too fast at idling speed it will be difficult to change gear, if too slowly the motor will stall. (Screwdriver)

Illustr. No. 206

207

3. Adjust regulating screw till the motor runs perfectly.
4. Setting throttle cable. Accelerator pedal must operate freely. The cable between lever and base fitting must be adjusted to give full throttle. Adjust by setting screw and counter nut. (9 mm spanner)

Illustr. No. 207

208

5. Setting rich mixture cable. Cable should not be tight. It should have about .039" play on the carburettor. Adjust by setting screw and lock nut. (9 mm spanner)

Illustr. No. 208

2)

Remove cam shaft. When replacing cam shaft position driving blocks with bearing grease. Driving block (Verbindungsglied muß immer ziehend eingebaut werden (good fitting driving block pins)

Remove thrust pin & spring (From side 

Upper eccentric drive dismantle: Nut Loosen with 14 mm ring

Punch out eccentric shaft until balance weight & spacing ring are free (brass punch)

Remove balance weight & spacing ring

Note: Balance ring should not be turned round or else the spacing ring will fall inside.

Remove eccentric shaft with drive pin (hammer & punch)

Reassembling When replacing eccentric shaft drive out pin from shaft & repl. by pin of assembling tool (use punch)

When reassembling the connecting rod must be at TDC. The bearings for the upper eccentric shaft must be flush with ball bearing. Use a special assembling tool with an eccentric shaft fitting (after reassembling in Buch)

dismantling: Insert dowel (Mitnehmerstift) & drive home (brass punch)

Loosen bolts on eccentric bearing link (Excenterlagerschwingel) 10 mm

Remove spacer from bearing bush (Postendstopbolzen)

Lift up eccentric bearing (Excenterlagerschwingel)

Move both connecting rods to TDC (but not dead center crankshaft)

3) Remove cylinder head

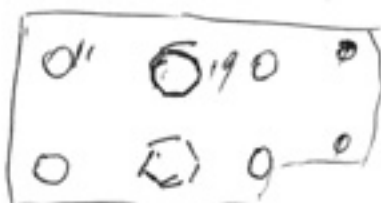
Loosen a few turns on 4 Cyl. head gasket rings
? 11 $\frac{1}{16}$ in Ring
? (9 $\frac{1}{16}$ in)

Remove rings (Hodick rings)
4 Rings (screwdriver)

Loosen cylinder head nuts outside 4 Spec. tool. 18 $\frac{1}{16}$ in

Loosen cylinder head nuts (Centre) 19 $\frac{1}{16}$ in

Loosen hex nuts outside 2 Ring 11 $\frac{1}{16}$ in



MG 173

Checking dynamo

Note: To locate faults or to check any electrical fittings, any type of commercial apparatus may be used. Here the testing appliance "PROFEX K 21 A" has been used. The testing of any electrical fitting will of course depend on the nature of the fault. Here we only mention a few tests.

Testing the field coils for multistrand cable contacts, current circuit, and magnetisation

1. Current circuit (unbroken field coils).
One pole of the apparatus touching the field winding (blue cable).
One pole touching the end of field winding (contact with battery cable). The flow must be recorded on apparatus.

Illustr. No. 209

2. Testing field winding on multistrand cable.
One pole of apparatus touching battery cable connection, one pole touching multistrand cable.
3. Testing brush holder on multistrand cable.
One pole touching brush holder, one pole touching multistrand cable.
The apparatus should not record and there should be no spark.

Illustr. No. 210

4. Testing field winding for magnetisation.
One pole on start of winding and one on base of winding.
A saw blade should be attracted by the magnets.

Note: Where the attraction of the magnets varies the winding is faulty and must be changed.

Illustr. No. 211

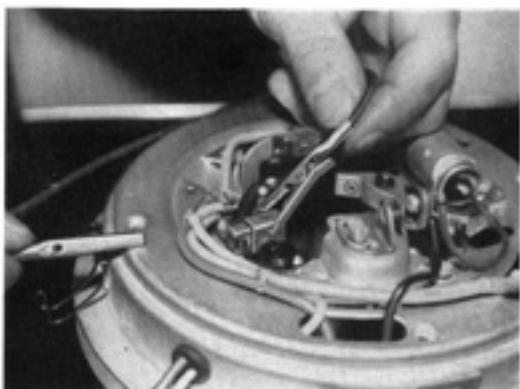
5. Testing charge of condenser.
The condenser should be connected to the appropriate points.

Illustr. No. 212

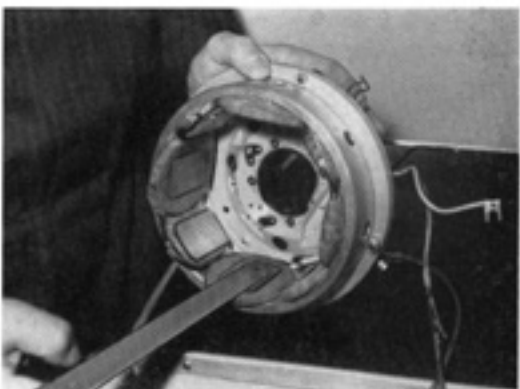
209



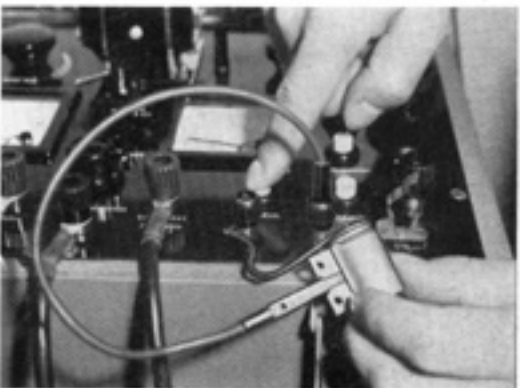
210



211



212



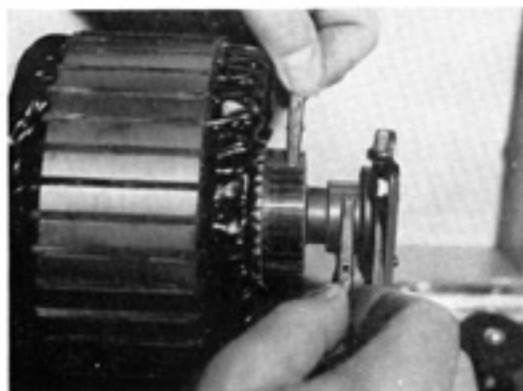


213

Testing armature

1. Lay armature on testing apparatus, set magnet and switch on, turn armature slowly and follow round with magnet. If armature is in working order no light should appear on the inspection bulb of the magnet apparatus.

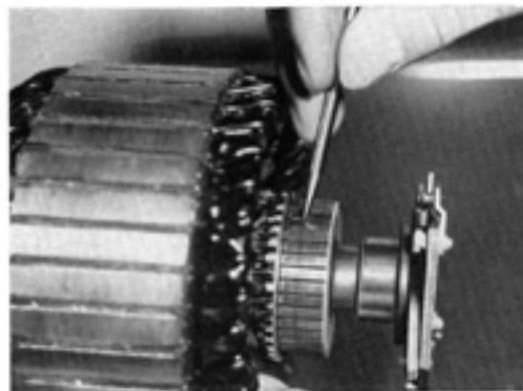
Illustr. No. 213



214

2. Test multicable connection of armature. Place the points on multistrand cable and on each of the collector plates. If the armature is in working order the apparatus will not record; if there is a short circuit in the cable it will record.

Illustr. No. 214

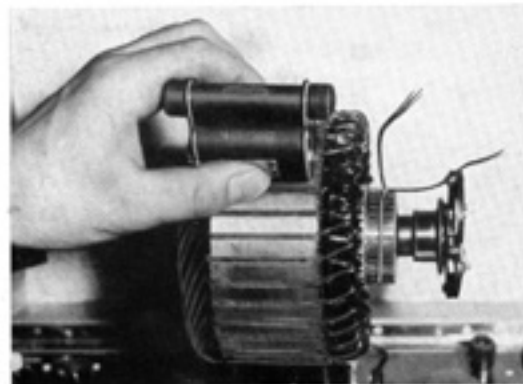


215

3. When armature is faulty you will get:

- a) one or two light flashes = short circuit in **winding**; cure. Rewind
- b) two flashes = short circuit in **commutator**; cure, turn and clean commutator — possibly only cleaning will be necessary. (collector saw, or if necessary use scriber)

Illustr. No. 215



216

- c) three or more flashes = short circuit in coil; cure, rewind.
- d) Broken wire or interruption. Watch for loose connections on commutator, short circuit armature with length of wire; it should buzz all the way round.

Illustr. No. 216

The commutator plates can be short circuited with a pin. This type of short circuit sounds in the earpiece.

Note: When reassembling grease the auto advance liberally.

MG 195

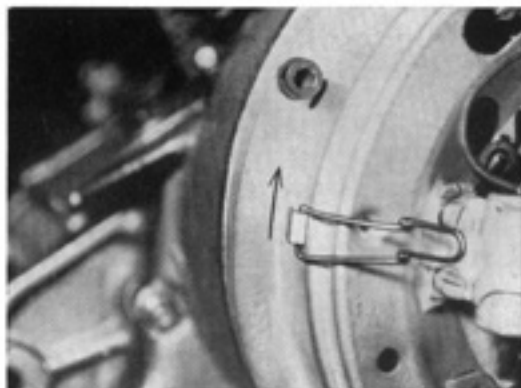
Adjusting timing

Tools: 17 mm spanner, screwdriver, contact pin, .014" — .016" feeler gauge, 12 volt test bulb, spark plug wrench.

1. Screw out spark plugs.
2. Remove dynastarter cover.
3. Turn motor by armature locking screw

Illustr. No. 217

217

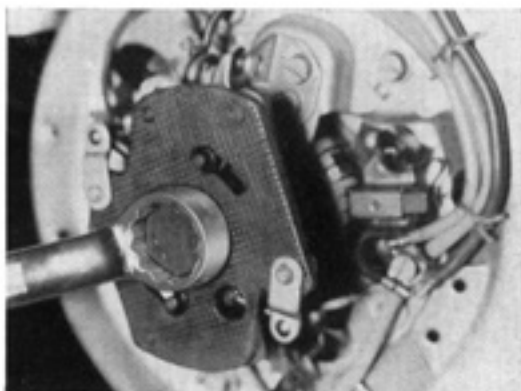


MG

turn clockwise until contact breaker points can be removed.
(17 mm ring spanner)

Illustr. No. 218

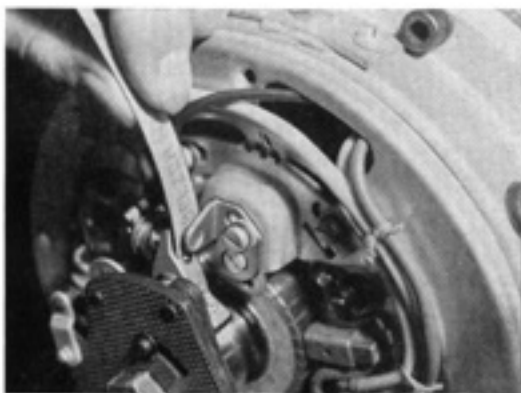
218



4. Force contact breaker points wide apart, check and if necessary remove and replace.
(Contact pin or contact file)

Illustr. No. 219

219

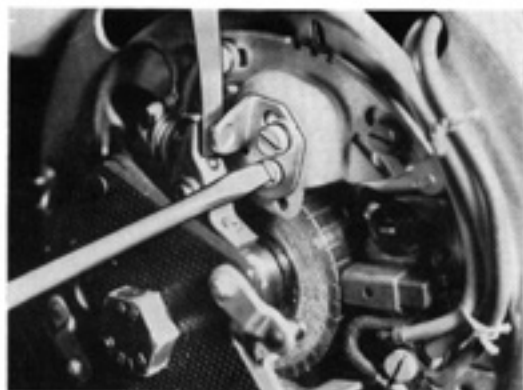


5. Check gap in contact breaker points and set.
a) Loosen locking nut of anvil and set
(Screwdriver)

Illustr. No. 220

220





- b) turn adjustable (eccentric) screw till contact clearance is .014" — .016"
(Screwdriver, .016" feeler gauge).

Illustr. No. 221

221



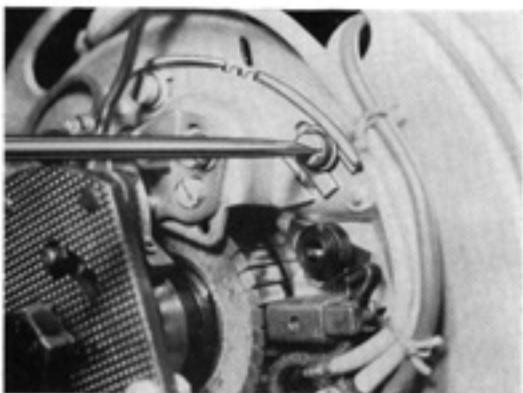
The 0.4 mm feeler gauge should pass easily between the two points.

- c) Tighten adjusting screw of contact breaker
(anvil)
(Screwdriver)

6. Remove rubber plugs from clutch casing.
7. Turn motor to right till the "dead centre" mark on bellows is opposite the mark.

Illustr. No. 222

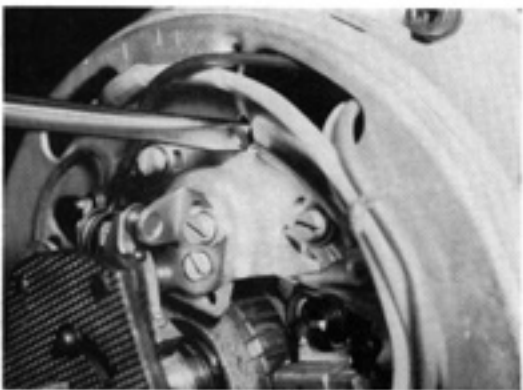
222



8. Loosen locking screws on contact breaker plate.
(2 screws, screwdriver)

Illustr. No. 223

223



9. Attach 12 volt test lamp, 1 pole on contact breaker terminal and one on pole of multi strand cable.
10. Switch on ignition.
11. Turn contact breaker plate in opposite direction to the motor rotation, i.e. to the left, until the test lamp begins to light up.

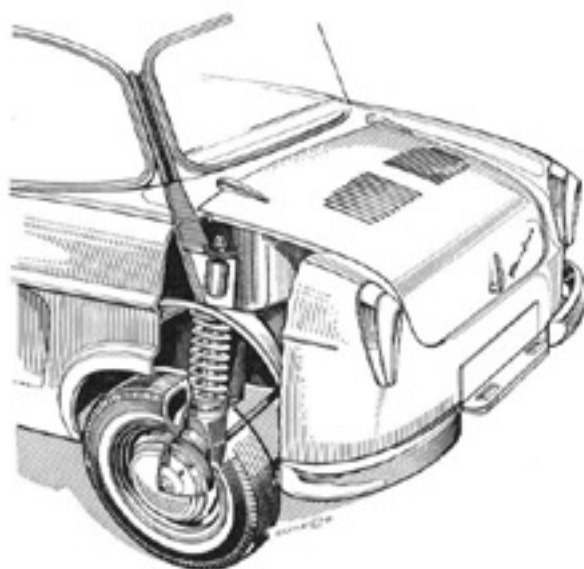
Illustr. No. 224

224

12. Tighten locking screws on contact breaker plate.
13. When the contact breaker arm is lightly depressed the test lamp should go out.
14. Detach test lamp, switch off ignition, replace Dyno-starter cover. Screw spark plugs in place, replace rubber plug in clutch casing.

Tech. data on rear axle

Rear axle	Independent wheel suspension on swing arm
Springing	Coil springs
Shock absorber	Hydraulic, double acting
Type of road wheels	Steel disk wheels with well base rims
Rims, size	3.00 x 12
Tires, size front and rear	4.40 x 12
Tire pressure (when tires are cold)	
with 2 up:	
front 1.3	20 lbs sq. inch
rear 1.5	22 lbs sq. inch
with 4 up:	
front 1.5	22 lbs sq. inch
rear 1.7	24 lbs sq. inch
Spare wheel	In front, under luggage trunk lid.



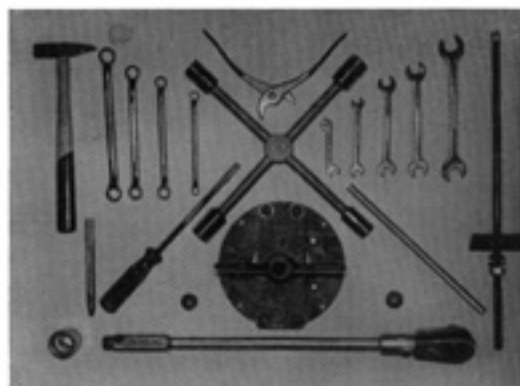
H 1

Dismantling and reassembling rear wheel and swingarm

Tools: 11, 14, 17, 19 mm ring spanners, 2 x 10 mm, 11, 14, 17, 22 mm box spanners, 14 and 30 mm spanners, extension, ratchet, wheel nut wrench, split pin pliers, hammer, chisel, punch, erecting tools, special tool SpW 900, rim tool SpW 923.

Illustr. No. 1

1

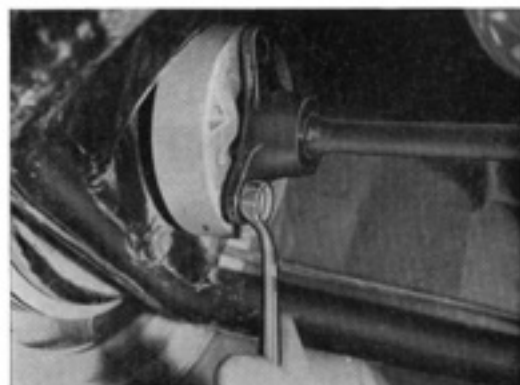


H

1. Remove wheelcap.
(screwdriver)
2. Loosen wheel nuts.
(wheel nut wrench)
3. Jack up vehicle.
4. Remove wheel nuts.
(wheel nut wrench)
5. Remove wheel.
6. Remove axle shaft bolts.
(3 bolts, 14 mm ring spanner)

Illustr. No. 2

2



7. Push axle shaft forward and remove from U. J.

Illustr. No. 3

3

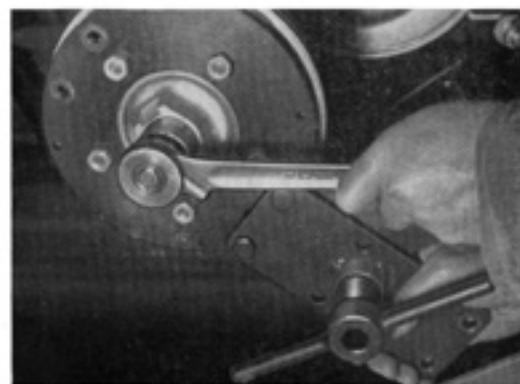


8. Loosen axle nut locking washer
(hammer, chisel)
9. Tighten hand brake.
10. Loosen axle nut
(30 mm spanner)
11. Release hand brake.

Note: The hand brake must be released before removing the hub or the brake shoes will jam.

Illustr. No. 4

4



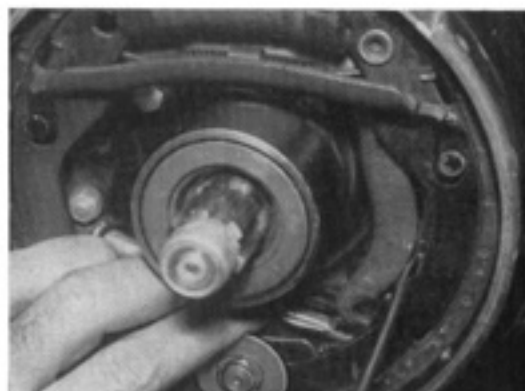


5

12. Remove hub
(The special erecting tool SpW 900 and spindle)

■ **Note:** Spindle has a left hand thread.

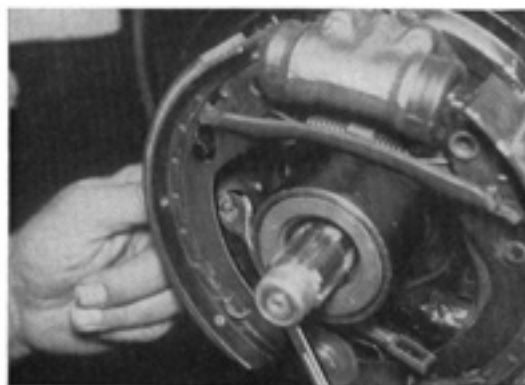
Illustr. No. 5



6

13. Detach hand brake cable
(screwdriver)

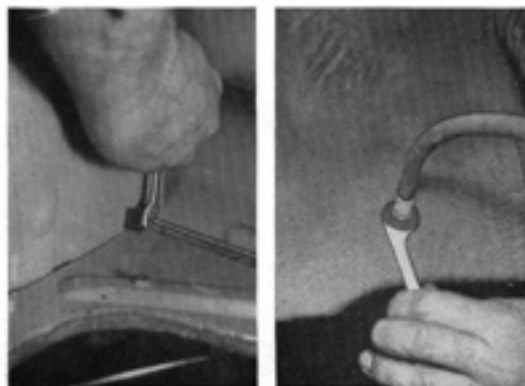
Illustr. No. 6



7

14. Loosen hand brake cable clip.
(10 mm spanner hold with 10 mm spanner)

Illustr. No. 7



8

15. Loosen brake cable screws.
(11 mm spanner on inside, hold on outside with 14 mm spanner)

Illustr. No. 8

■ **Note:** After reassembly, the brakes must be bled.

16. Loosen shock absorber bolts.
(17 mm spanner, hold with 17 mm spanner)

Illustr. No. 9

9



17. Loosen shock absorber fitting at top.
(2 screws, 11 mm spanner, hold with 11 mm spanner)

Illustr. No. 10

10



18. Drive out the shock absorber from below and remove.

Illustr. No. 11

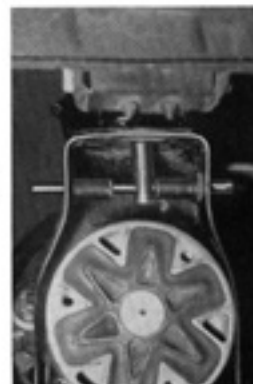
11



19. Apply special spring dismantling and assembly tool SpW 923 and punch

Illustr. No. 12 left

12



20. Compress spring until limit stop plate is free.
(22 mm ring spanner)

Illustr. No. 12 right





13

21. Loosen locking screws on stop plate.
(2 screws, 14 mm ring spanner)

Illustr. No. 13



14

22. Remove plate.
23. Release spring. Remove dismantling and assembly tool.
24. Remove from below spring and 2 spring seatings,
2 rubber rings and rubber sleeve.

Illustr. No. 14



15

25. Locate swing arm in the holes of the shock absorber plate with punch.
26. Remove split pin from crown nut of pivot
(split pin pliers)
27. Loosen pivot crown nut.
(19 mm ring spanner)

Illustr. No. 15



16

28. Remove washer, cover-washer, rubber ring and centralising collar.
29. Loosen pivot bearing, front.
(3 nuts, 14 mm spanner)

Illustr. No. 16

30. Remove swing arm and hub.

When reassembling proceed in reverse sequence.

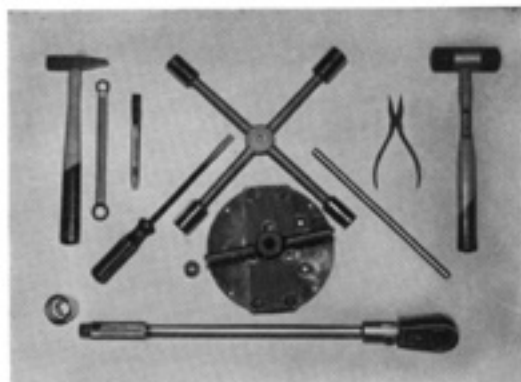
H 4

Renewing bearing or repacking of rear axle

Tools: Wheel nut spanner, 14 mm ring spanner, 30 mm spanner, hammer, chisel, punch, screwdriver, hide hammer, pliers, various pieces of tubing, special assembly tool SpW 900.

Illustr. No. 17

17



1. Remove wheel cap.
(screwdriver)
2. Loosen wheel nuts.
(wheel nut spanner)
3. Jack up vehicle.
4. Remove wheel.
5. Dismantle axle shaft.
(14 mm ring spanner)
6. Loosen locking plate of axle nut.
(hammer, chisel)
7. Tighten hand brake.
8. Loosen axle nut.
(30 mm spanner)
9. Release hand brake.

Note: The hand brake must be released before removing the hub or the brake shoes will jam.

10. Remove hub.
(Use special erecting tool SpW 900).

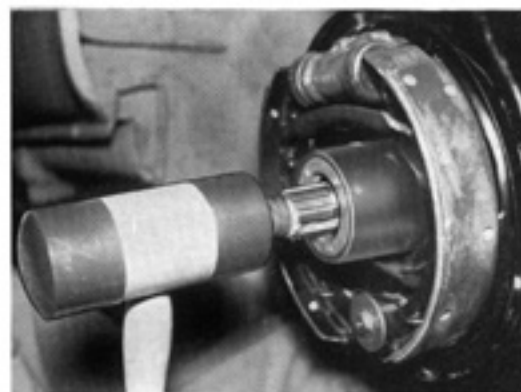
Note: The spindle has a left hand thread.

Illustr. No. 18

18



19



11. Drive spline shaft inwards.
(hide hammer)

Illustr. No. 19

20



12. Remove oil seal.
(screwdriver)

Note: Always renew the oil seal.

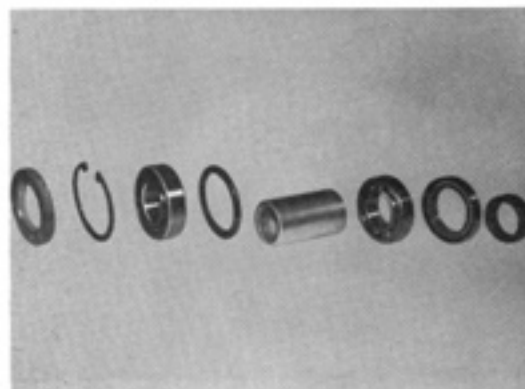
Illustr. No. 20



21

13. Remove ball race retainer.
(washer pliers)

Illustr. No. 21

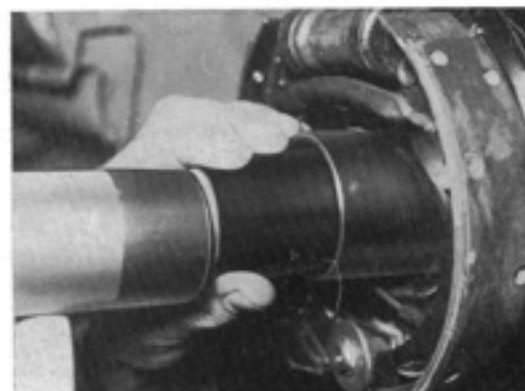


22

14. Push out the outer ball bearings from inside and remove spacing washer (hammer, punch)
15. Push out the inner ball bearing, spacing ring and washer from outside. (hammer, punch)

Note: The sequence from inside to outside is, spacing washer, washer, ball bearing, spacing collar; from outside to inside, washer, locking washer, ball bearing, spacing ring.

Illustr. No. 22



23

When reinserting the spacing ring, its sharp edge must point inwards. Suitable pieces of tubing are used to insert and remove the bearing. They will rest on the outer bearing ring of the ball bearing and on the outer edge of the washer.

Illustr. No. 23



24

16. Replace the rear wheel shaft from inside. (hide, hammer)

Illustr. No. 24

When reassembling, proceed in the reverse sequence.

H 11

Dismantling and reassembling shock absorbers

Tools: 11 and 17 mm ring spanners, 11, 17 mm spanners

Note: The shock absorber can be dismantled without dismantling the wheels.

1. Loosen the lower shock absorber screw.
(17 mm ring spanner and hold with 17 mm spanner)

Illustr. No. 25

25

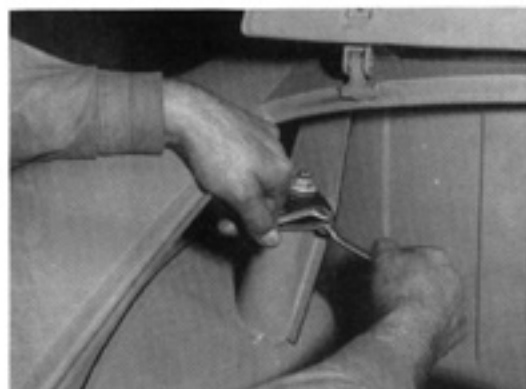


H

2. Remove screw.
3. Loosen shock absorber clip (top)
(2 screws, 11 mm ring spanner and hold with 11 mm spanner)

Illustr. No. 26

26



4. Press shock absorber together slightly from below and remove

Illustr. No. 27

27

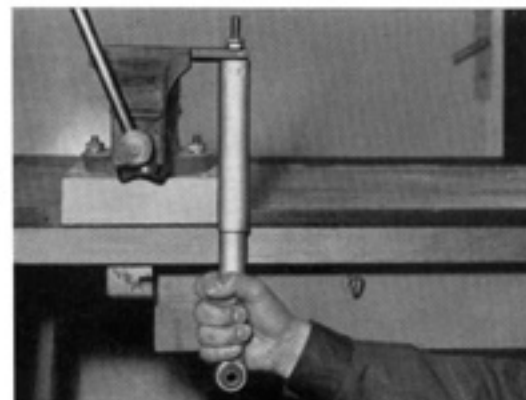


Note: The shock absorber cannot be tested with ordinary workshop tools. A superficial check can be carried out as follows:

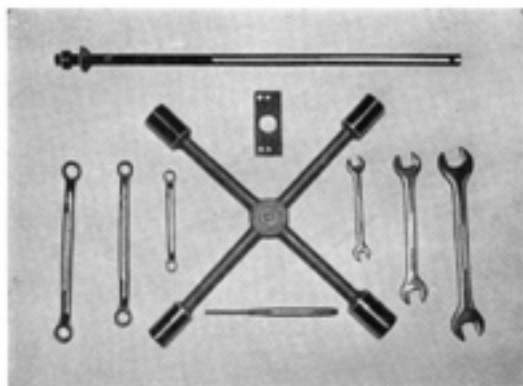
1. Place the shock absorber at one end of the vice and hold it in both hands.
2. Stretch and compress several times. Stretching should be difficult compression easy.

Illustr. No. 28

28



3. Give shock absorber a sharp pull or push when half extended. There should be no appreciable play. If there is any, it points to air in the shock absorber and the shock absorber should be changed.

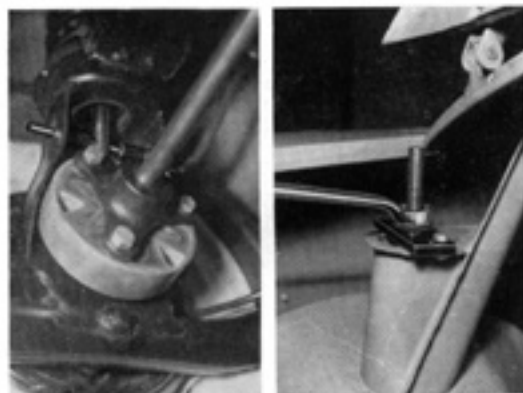


29

H 21**Dismantling and reassembling gear springs**

Tools: 11, 14, 17 mm ring spanners, 11, 17, 22 mm spanners, wheel nut spanner, punch, special spring dismantling and assembly tool SpW 923.

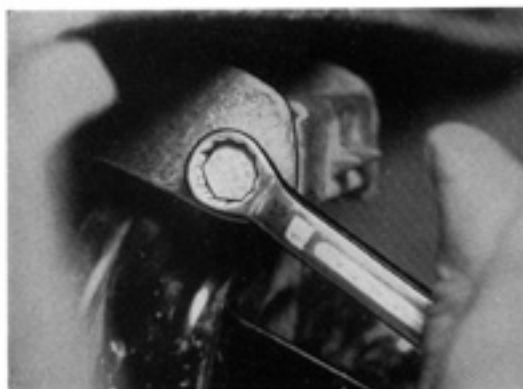
Illustr. No. 29



30

1. Remove wheel cap (screwdriver)
2. Loosen wheel nuts (wheel nut spanner)
3. Jack up vehicle.
4. Remove wheel.
5. Dismantle shock absorber (see H 11)
(11 and 17 mm ring spanner, 11 and 17 mm spanner)
6. Compress spring till limit stop is free.
(Spring dismantling and assembly tool SpW 923, punch, 22 mm spanner)

Illustr. No. 30



31

7. Loosen locking screws over limit stop.
(2 screws, 14 mm ring spanner)

Illustr. No. 31



32

8. Remove limit stop
9. Release spring tension tool
(22 mm spanner)

Note: When releasing spring, watch tension on brake tubing.

10. Remove spring tension tool.
11. Remove spring downwards.

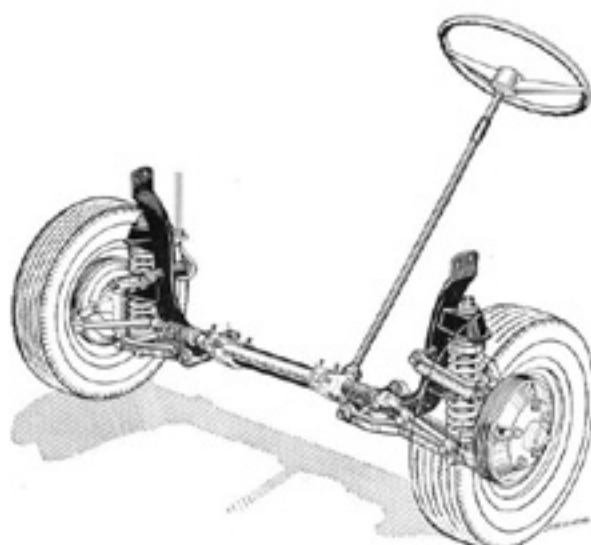
Illustr. No. 32

When reassembling proceed in reverse sequence.

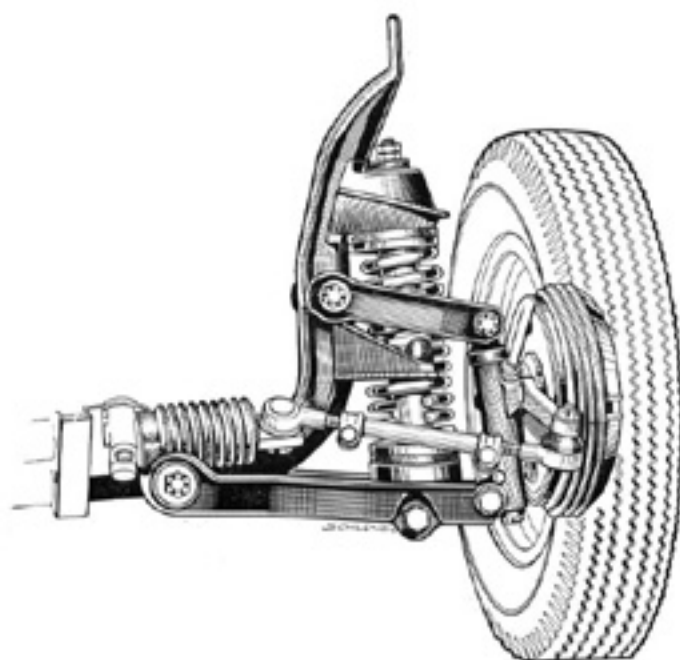
Techn. data on front axle

Front axle	Independent wheel suspension on trapeze steering
Springing	Coil springs
Shock absorbers	Hydraulic, double acting
Camber	2°
Caster	6°
King pin inclination	7°
Track	.04" — .08" toe, in. (Measured on inner border of rims)
Dimension of King pin	18 mm — 0.016 — 0.027 mm
Bore of King pin bushes	18 mm + 0.027 mm

Front and rear wheel springs to be exchanged only in pairs



(Siehe auch Rückseite)



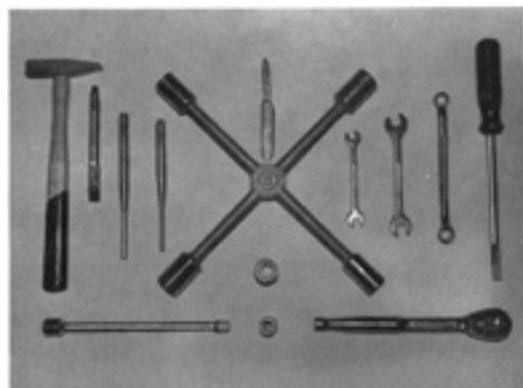
V 1

Dismantling and reassembling front axle and steering

Tools: 14 mm ring spanner, 11 and 14 mm spanners, 14 and 24 mm socket spanners, wheel nut spanner, screwdriver, hammer, chisel, 2 punches, rule.

Illustr. No. 1

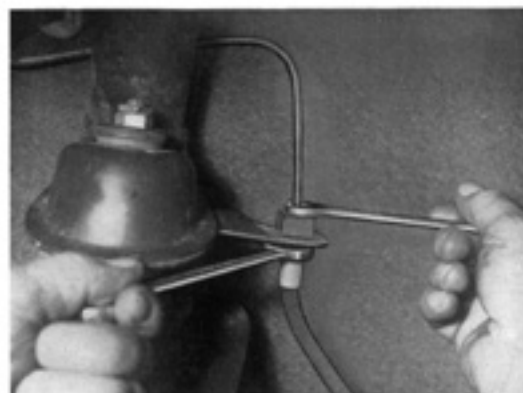
1



1. Remove front wheel cap. (screwdriver)
2. Loosen wheelnuts. (wheel nut spanner)
3. Jack up vehicle.
4. Remove wheel nuts and wheels.
5. Detach brake pipe from brake assembly, clean surrounding parts. Seal off. (14 and 11 mm spanner)

Illustr. No. 2

2



6. Bend upwards and sideways locking washer under nuts. (hammer and chisel)
7. Loosen nut on side locking bolts (14 mm ring spanner, hold in luggage boot with 14 mm spanner)

Illustr. No. 3

3



8. Insert punch into one bolt hole to attach axle.

Illustr. No. 4

4



Note: There may be shims under the holding plate. Watch the number and thickness and when assembling new parts, insert only a sufficient number to correct setting of assembly.



5

9. Remove speedometer drive. L. h. front wheel.

Illustr. No. 5



6

10. Remove button on steering wheel (knife)

Illustr. No. 6



7

11. Loosen nut on steering wheel. (24 mm spanner)

Illustr. No. 7

12. Remove steering wheel.

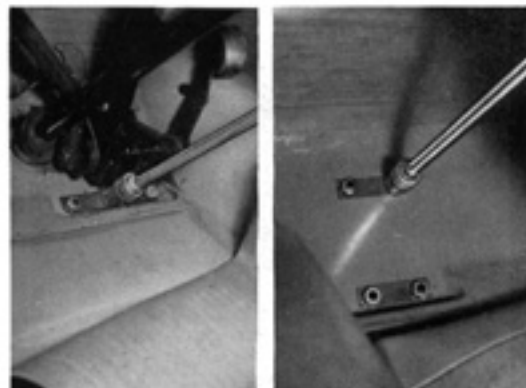
Note: When replacing steering wheel, set wheels for driving straight ahead, set steering wheel with spokes pointing obliquely downwards (see also L 5, Illustrs. Nos. 13—16)

13. Fold back rubber floor mats at front (below).

14. Bend up lock washers under locking nuts. (2 for each, left and right, hammer and chisel)

15. Loosen nuts on axle fitting. (4 on left, 4 on right, 14 mm spanner)

Illustr. No. 8



8

16. Remove axle, remove both punches and move forward and downward.

When reassembling proceed in reverse sequence.

Note: If, after reassembly, the steering should be heavy, loosen the screws and nuts on the bearing and steering casing (see Illustr. to L 3 Nos. 7 and 8) operate the steering a few times left and right and retighten screws.

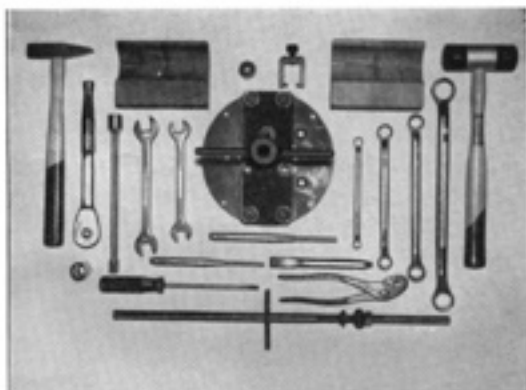
V 3

Dismantling and reassembling front axle

Tools: 11, 17, 19, 24 mm ring spanners, 17, 19 mm spanner, hammer, chisel, split pin pliers, hide mallet, screwdriver, punch, thin punch, special front axle block SpW 919, erecting tool SpW 900, track rod ball joint extractor SpW 918, spring assembly and dismantling tool SpW 923.

Illustr. No. 9

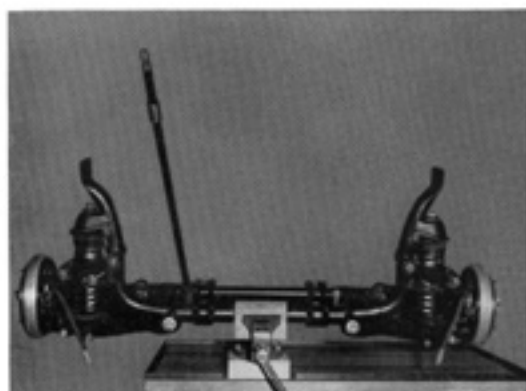
9



1. Remove axle. Hold in vice.
(Special tool SpW 919)

Illustr. No. 10

10

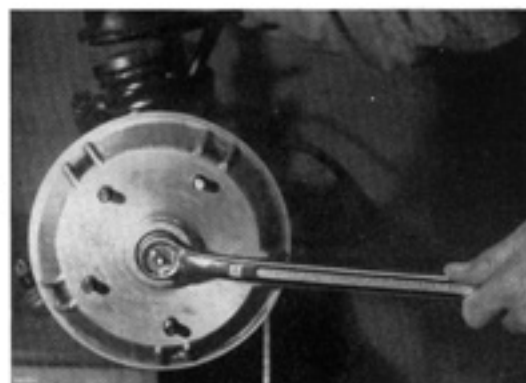


V

2. Bend up locking plate under axle nut.
(Hammer, chisel)
3. Loosen axle nut
(24 mm ring spanner)

Illustr. No. 11

11



4. Remove locking ring and Nilo ring.

Note: The nilo ring is always replaced with the sharp outer edge against the bearing.

Illustr. No. 12

12





13

5. Remove hub.
(special erecting tool SpW 900)

Note: The special tool spindle has a left hand thread.

Illustr. No. 13

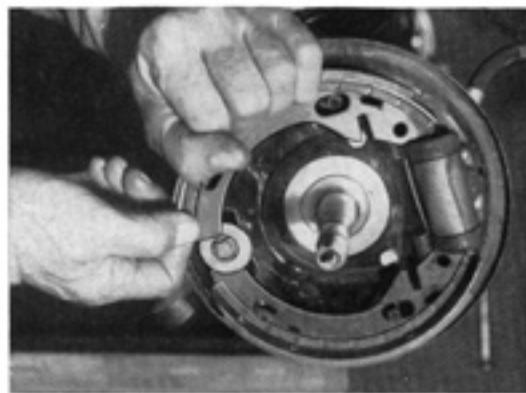


14

6. Remove Nilo ring and spacing ring.

Note: Assemble the spacing ring with its hollowed out side facing inwards and the Nilo ring with its sharp edge facing outward. To prevent damaging the latter, the lettered side of the wheel bearing must not touch the Nilo ring.

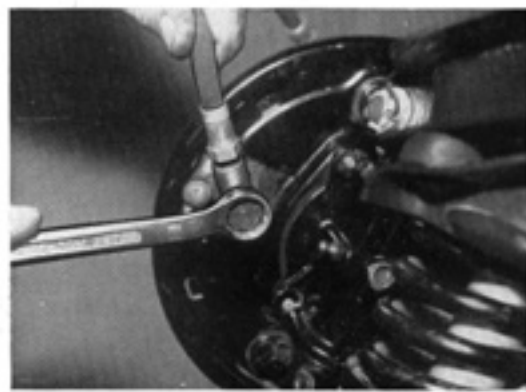
Illustr. No. 14



15

7. Remove brake shoes first from the countershaft and then from the brake cylinder.

Illustr. No. 15



16

8. Unscrew brake line.
(17 mm ring spanner)

Illustr. No. 16

Note: When replacing, insert brake shoes into the slot of the rubber cover of the brake cylinder.

Note: When reassembling, the brake lines must be placed close up to the brake pipe and then tightened. Clean carefully before joining up.

9. Remove split pin of track rod crown nut.
(split pin pliers)
10. Loosen crown nut on track rod.
(17 mm ring spanner)
11. Remove track rod.
(special removing tool SpW 918)

Illustr. No. 17

17



12. Dismantle shock absorber.
(see V 11, Illustr. Nos. 33—36)
(17 mm ring spanner, hold with 17 mm spanner)
13. Remove split pin from upper wishbone nuts (out and inside).
(4 split pins, split pin pliers)
14. Loosen crown nut on upper wishbone.
(19 mm ring spanner)

Illustr. No. 18

18



15. Dismantle front spring.
(see V 21 Illustr. No. 37—40)
(Dismantling and assembly tool for springs SpW 923, split pin pliers, 19 mm ring spanner, hold with 19 mm spanner)

Note: When reassembling, after loosening the nuts under the flange block, watch the setting of the wishbone. It should be 30—32 mm.

Illustr. No. 19

At this setting between the wish bone and the stopblocks the wishbone bearing must be tightened.

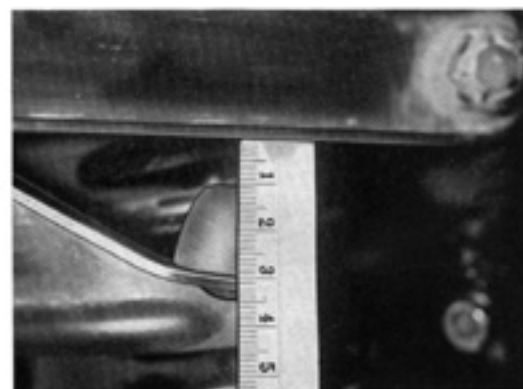
16. Unscrew crown nuts on upper wishbone bearings.
17. Remove wishbone sections.
(screwdriver, hide mallet)

Note: When reassembling observe the 30—32 mm setting. (see illustr. No. 19).
Sequence:

- a) Locate one section (top) at 30—32 mm setting. Close spring with special tool SpW 923).
- b) Insert king pin (top)
- c) Locate second section
- d) Set nuts, tighten and split pins.

Illustr. No. 20

19



20



18. Remove lower section.
19. Remove split pin from lower cross bearing.
(2 nuts, split pin pliers)
20. Loosen crown nuts on cross bearing.
21. Remove cross bearing.

Note: Do not tighten nuts until the wish bones have been correctly set.
(see Illustr. No. 19)



21

22. Hold hub assy. in vice.
23. Remove split pin from king pin.
(split pin pliers)
24. Loosen crown nut on king pin.
(19 mm spanner)
25. Loosen nut on taper pin.
(11 mm ring spanner)

Illustr. No. 21



22

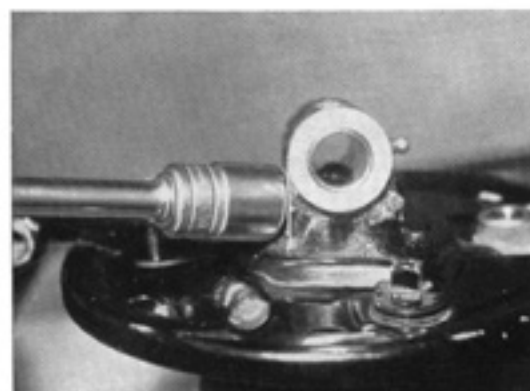
26. Drive out taper pin.
(hammer, punch)

Note: Insert wedge on left side from the back and wedge on the right side from the front.

27. Extract king pin

Note: When reassembling watch thrust washers on top and underneath. The top thrust washer has a chamfer on the inside which should rest on the shoulder of the king pin. Tighten nut until the king pin is difficult to move, release slightly and then secure. There should be no play.

Illustr. No. 22



23

Additional operations on the left hand side

28. Dismantle secondary drive shaft for speedometer.
(19 mm spanner)

Illustr. No. 23

Note: Observe the washer between locating cap nut and drive shaft and the washer on the front of the drive shaft.

29. Drive out primary drive shaft and sealing cap from stub axle.
(hammer, thin punch)

Illustr. No. 24



24

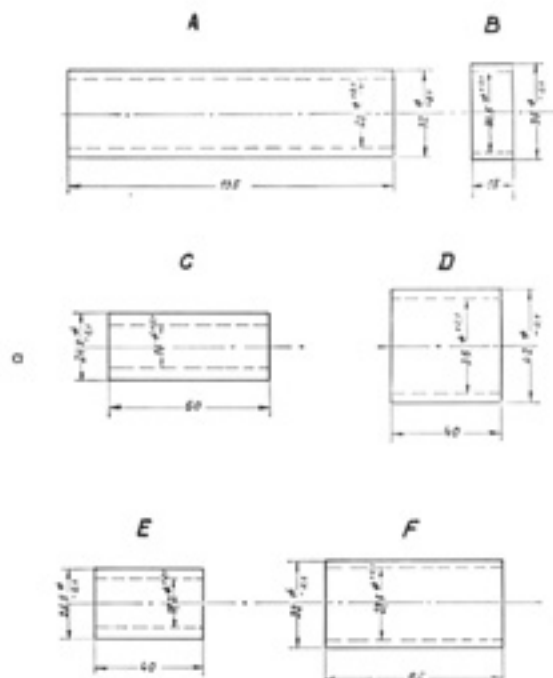
Note: When reassembling fit new cap. When reassembling proceed in reverse sequence.

Note: After reassembling front axle, check front wheel track and adjust (see V 35) and bleed brake (see B 5)

V 30 Sämtliche Silentblöcke der Vorderachse auswechseln

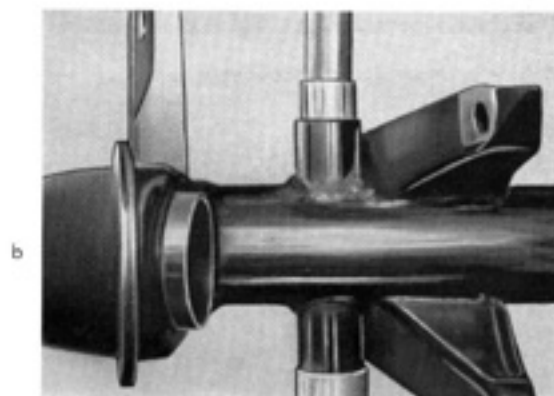
Werkzeug: 6 Hilfswerkzeuge (Rohr), die in jeder Werkstatt selbst angefertigt werden können. Montagedor (40-91-00-925), enthalten in PRINZ-Spezialwerkzeugsatz, Schraubstock, hydraulische Presse (ca. 3,5 t).

Bild a



1. Alte Silentblöcke des Rohrträgers werden mit der Presse ausgedrückt. (Presse, Montagedor (40-91-00-925), Hilfswerkzeug A und C)

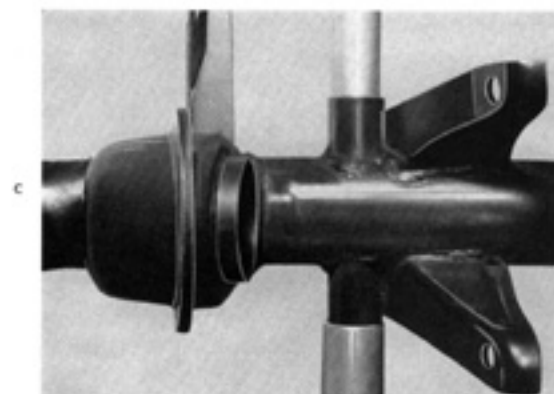
Bild b



b

2. Neue Silentblöcke des Rohrträgers einpressen. (Presse, Hilfswerkzeug A und C)

Bild c



c



d

Achtung: Für alle weiteren Arbeiten genügt ein kräftiger Schraubstock.

3. Alte Silentblöcke der unteren Querlenker auspressen.
(Schraubstock, Hilfswerkzeug E und D)

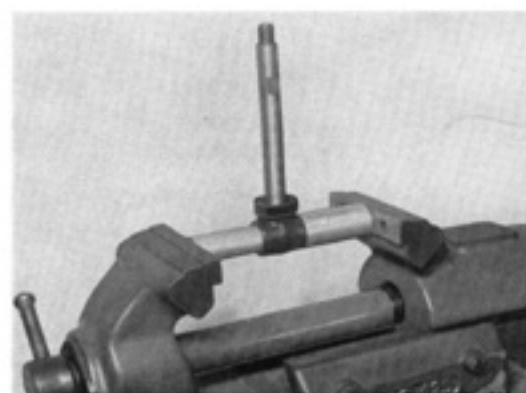
Bild d



e

4. Neue Silentblöcke der unteren Querlenker einpressen.
(Schraubstock, Hilfswerkzeug B und D)

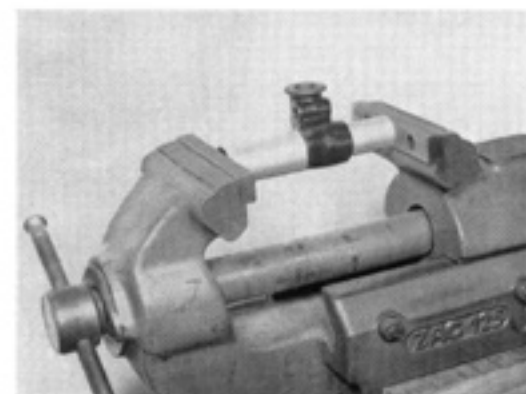
Bild e



f

5. Alte Silentblöcke der Achsschenkelbolzen aus- und neue Silentblöcke einpressen.
(Schraubstock, Hilfswerkzeug C und F)

Bild f



g

6. Alte Silentblöcke in den unteren Lagerstücken der Achsschenkelbolzen aus- und neue Silentblöcke einpressen.
(Schraubstock, Hilfswerkzeug E und F)

Bild g

V 5

Geometry of front suspension etc

The correct adjustment of the independent front suspension and the alignment of the front wheels to the back wheels will determine the perfection of steering and the road holding of a vehicle. Let us explain the terms track, camber, king pin inclination and caster.

1. Track

Track, also known as front wheel track, is set so that the front wheels are closer together at the front than they are at the back. The roll resistance developed when running, forces the wheels outwards so that they will run parallel. They are adjusted by the left hand track rod. This has two clips to lock adjusters and is attached between the steering rack and the stub axle. The clips are loosened and the track rod is twisted (r and l hand thread) until the correct position is attained.

Should there be considerable deviation in the track, you should investigate whether there are contributory causes (bent steering arm or track rod) or some other damage. The mere elimination of this cause will not in itself put the fault right.

The track, i.e. the difference in measurement a and b should be .08" — .12" at the wheel rims.

Illustr. No. 25

2. Camber

By camber we mean that the wheels are slightly out of the upright (outward) in relation to the ground (positive camber). The type of suspension used will alter the camber by virtue of springing. When checking, both wheels should have the stated angle for the geometry to be correct.

The correct angle (see V 35 illustr. No. 50) is 2°.

The camber is set when the vehicle is built and should not be altered. It cannot, therefore, be adjusted. Should any variation be detected, the parts concerned should be inspected for damage.

(See V 35)

Illustr. No. 26

3. King Pin Inclination

By this we mean the inclination of the king pin making an angle with a vertical line adjacent. This angle is 7°.

This angle is set when the vehicle is built and should not be altered. There is no adjustment. Should any variation be detected, the parts concerned should be checked.

(See V 35)

Illustr. No. 27

4. Caster

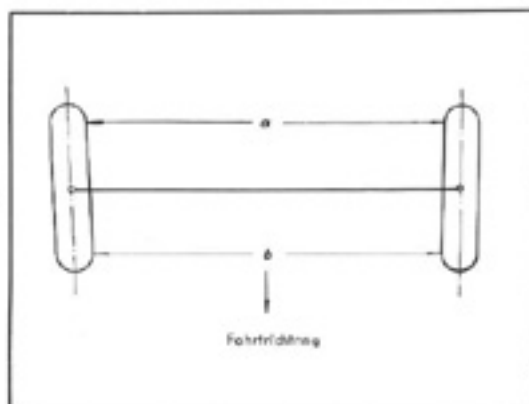
The inclination of the king pin tends to make the wheel follow the wheel track on the ground. An inclination of the top of the king pin to the rear sets up a drag. This drag, together with camber and king pin inclination, tends to make the wheels centralise after taking a bend.

The caster angle is 6°.

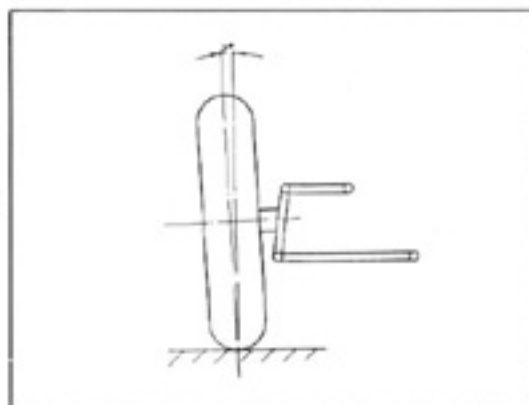
This is set when the vehicle is built and should not be altered. Therefore, there is no means of adjustment. Should any variation be detected, the parts concerned should be checked for damage. (See V 35).

Illustr. No. 28

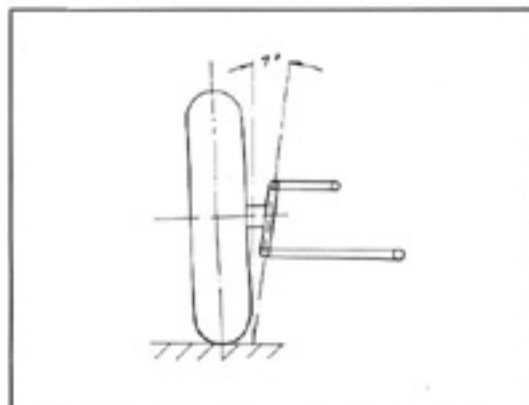
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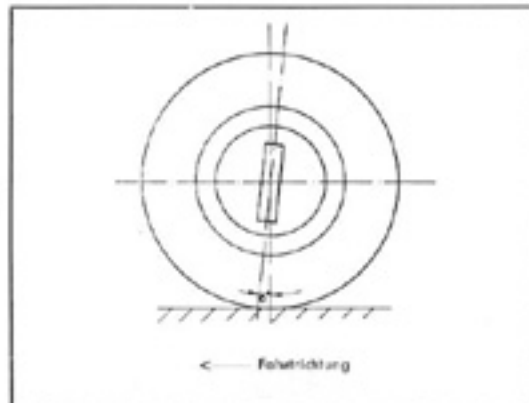
26



27



28





29

Practical measurements (calibration)

Tools: Trammels, Dunlop camber/caster gauge CG. 3. With these appliances, accurate checking can be achieved. Suspension measurements should be carried out only on completely even and flat surfaces. The tires must show the same amount of wear and equal pressures. The rims must be undamaged.

1. Track measurement.

- Telescope measurement between front tires at axle height.
(Chain length = axle height)
- Force front wheels apart.
- Check distances between rims at front and rear. Adjust if necessary.
- Draw vehicle forward slowly ($\frac{1}{2}$ wheel turn) re-check as above. Figures should be identical.

Illustr. No. 29

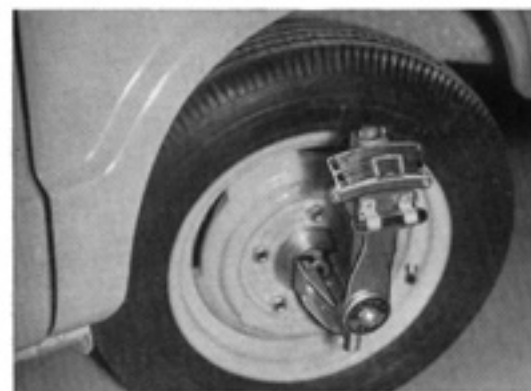


30

2. Camber measurement.

- Attach instrument to rims.
- Set instrument pointer in vertical position.
- Set pitch measurement on the lower scale with pointer and read off.

Illustr. No. 30



31

3. King pin inclination measurement

- Remove wheel cap.
- Attach instrument to axle nut.
- Set instrument pointer in vertical position.
- Turn wheel to right and left to find angle of spread and read off on dial, top scale.

Illustr. No. 31



32

4. Castor measurement.

- Attach instrument to rims.
- Set instrument pointer in vertical position.
- Turn wheel to right and left to find amount of drag and read off on top scale.

Illustr. No. 32

Note: Follow instruction of manufacturers of all instruments. They cover general handling.

V 11

Dismantling and reassembling shock absorbers

Tools: 15 and 17 mm ring spanner, 17 mm spanner, screwdriver, angled screwdriver, wheelnut-spanner, hide mallet.

1. Remove wheel cap (screwdriver)
2. Loosen wheel nuts (wheelnut spanner)
3. Jack up vehicle.
4. Remove wheel nuts and wheel
5. Loosen nut on upper shock absorber fitting. (17 mm ring spanner, hold with 17 mm spanner)

Illustr. No. 33

6. Loosen top fitting (15 mm ring spanner hold with angled screwdriver)

Illustr. No. 34

7. Remove cup and rubber ring and centralising cap
8. Loosen holding screws (17 mm ring spanner hold with 17 mm spanner).

Illustr. No. 35

9. Remove holding screw from below
10. Knock shock absorber upwards, turn 90° and remove downwards (hide mallet)

Illustr. No. 36

11. Remove spacing collar and rubber ring. When reassembling proceed in reverse sequence.



33



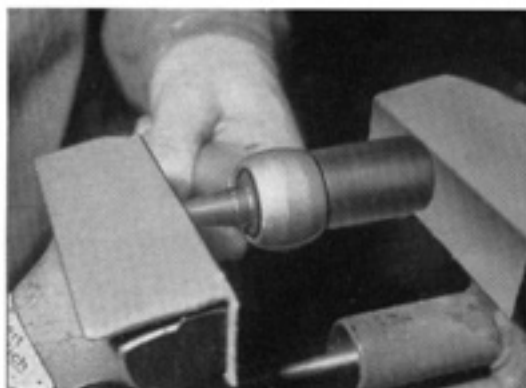
34



35



36



37

V 14

Renewing rubber mounting link

Tools: Special tool SpW 927, 22 mm punch, rubber headed and ordinary hammer

1. Remove centre sleeve (special tool SpW 927)

Illustr. No. 37



38

2. Drive rubber bearing from shock absorber (22 mm punch, hammer)

Illustr. No. 38

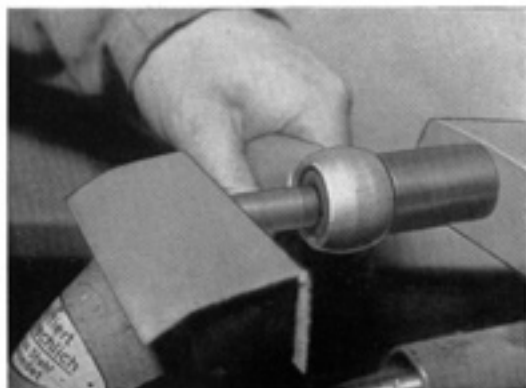


39

3. Insert fresh rubber mounting (rubber headed hammer)

Note: See that the new mounting is centrally placed

Illustr. No. 39



40

4. Insert new centre sleeve (special tool SpW 927)

Illustr. No. 40

V 21

Desmantling and refitting front spring (Shock absorber dismantled as in V 11)

Tools: 19 mm ring spanner, 19 and 22 mm spanners, split pin pliers, special tool (for springs) SpW 923

1. Apply dismantling and refitting tool (springs) (special tool SpW 923)

Illustr. 41 left

41



2. Compress spring and spindle (22 mm spanner)

Illustr. No. right

42



Note: The spring must be compressed so as to give a space of 1.2"—1.3" between the stop and the upper cross link with rubber bearings free. The nuts holding the cross link should be tightened only in this position

Illustr. No. 42

3. Remove castellated nut of bearing, hold on lower cross link (split pin pliers)
4. Loosen lower swivel bolt on king pin and remove (19 mm ring spanner, hold with 19 mm spanner)

Illustr. No. 43

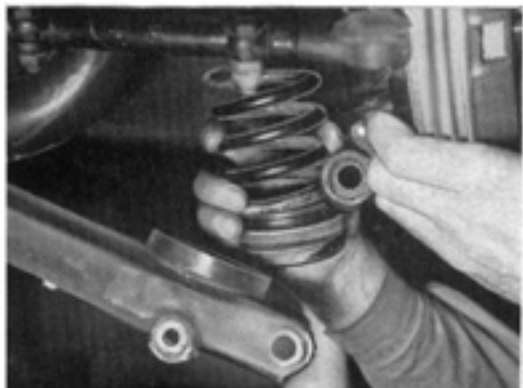
43



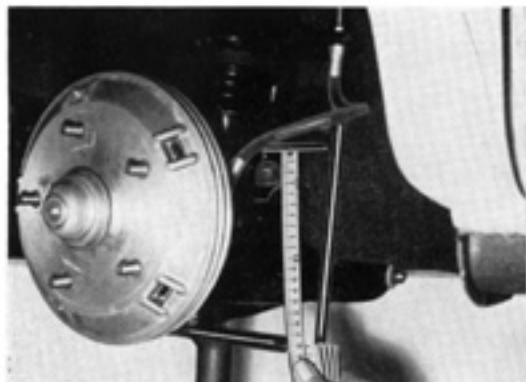
5. Loosen castellated nut on lower swivel bolt (inside)
6. Loosen springs (22 mm spanner) until dismantling tool can be removed.
7. Press lower cross link downward, remove spring from below.

Illustr. No. 44

44



When reassembling, proceed in reverse sequence.



45

V 21**Dismantling and refitting front spring**
(Shock absorber dismantled as in V 11)

Tools: 19 mm ring spanner, 19 mm spanner, split pin pliers, hammer, brass punch, rubber headed hammer, erecting hook and vehicle jack (see p. 8 and 9)

1. Attach erecting hook to upper cross link

Illustr. No. 45



46

2. Attach hook to vehicle jack

Illustr. No. 46



47

3. Lift axle with jack and extension (self manufactured) until the spring compressed to 1.2"—1.3" gap.

Illustr. No. 45

4. Remove split pins from castellated nuts on cross link bolts (in and outside)
(Split pin pliers)

5. Loosen castellated nuts on lower cross link (inside)
(19 mm ring spanner)

Illustr. No. 47

6. Loosen bolt
(rubber mallet)

7. Loosen castellated nuts on swivel bolt
(19 mm ring spanner, hold with 19 mm spanner)

Illustr. No. 48



48

8. Drive out bolt
(hammer, brass punch)

9. Let down jack, release spring
10. Remove spring from side.

For reassembly proceed in reverse sequence.

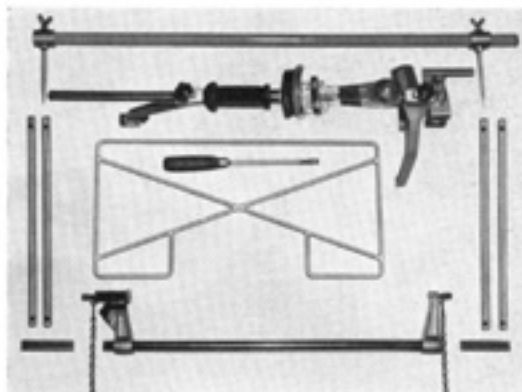
V 35

Measure axle, then measure frame, measure rear and front axle

Tools: Track, caster/comber and king pin measuring instruments, plumb line, trammels to check wheel spacing, scribing block to measure wheel rims (self manufactured) erecting hook and vehicle jack extension (self manufactured). Special tools as in H 11 Illustr. 25 and V 11.

Illustr. No. 49

49

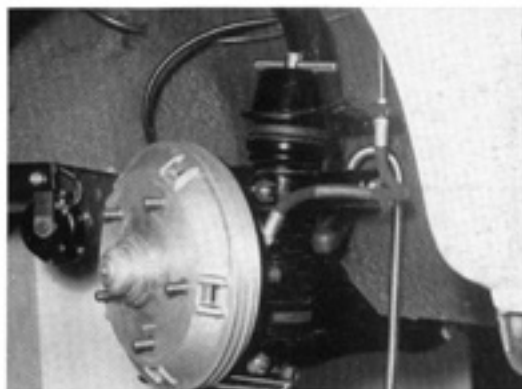


Note: The procedure in V 35 is intended to be used where an accident or wear and tear may have damaged the wheel suspension or body work, which is not immediately apparent. Measurements must be taken when the vehicle is on level and even ground.

1. To obtain accurate measurements, the springs must be loaded to give an fixed tension.
 - a) Dismantle shock absorber compress springs on rods to prescribed tension (see V 11 and H 11)

Illustr. No. 50

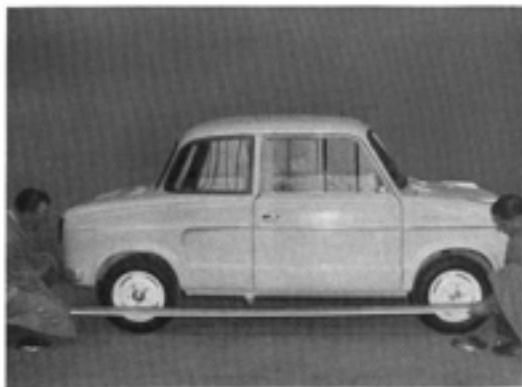
50



- b) Place vehicle on level ground
 - c) Check measurements of track, castor, comber etc. (see V 5)
2. Checking wheel spacing and whether axles are parallel.
 - a) Remove hub caps (screwdriver)
 - b) Remove dust caps (screwdriver)
 - c) Place wheels on measuring bed facing forwards

Illustr. N. 51

51



- d) Measure distance between point of stub axle on the front and on the rear wheels (trammel to check wheel spacing)

Illustr. No. 52

52



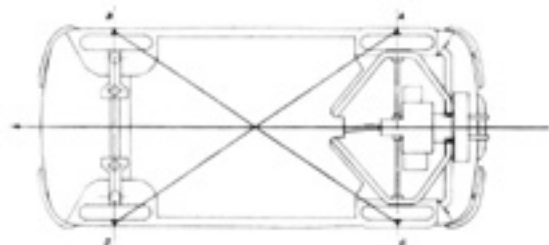
When the front wheels face straight ahead the wheel centres the right and left must be equal.



53

3. Lay out with plumb line the axle centres and mark points on floor.

Illustr. No. 53

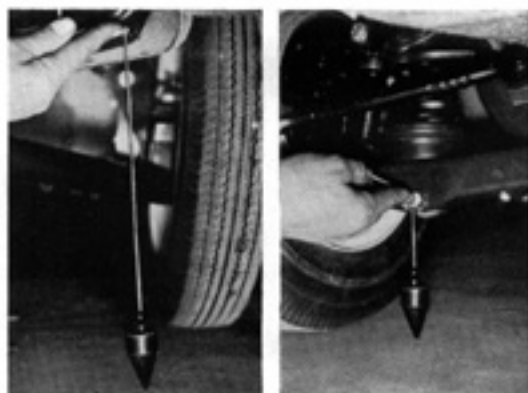


54

Note: The plumb line readings of both wheels on each axle must be identical. Take into account the speedometer drive when measuring the left front wheel. If necessary, extend the plumb line measuring point outward in a straight line.

4. Drive the vehicle off the measuring base and measure the points diagonally.

Illustr. No. 54



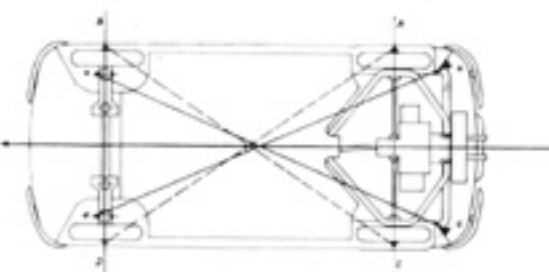
55

Any slight divergence from the standard setting is enlarged on the diagonal scale.

5. The same method is used to check the suspension points of the bodywork.

- a) Take plumb line to the ground for: front, bolt head of shock absorber and rear outer bolts of cross bar.

Illustr. No. 55



56

Note: When bolts etc. obstruct the taking of a plumb line, the point must be taken by extending the line.

- b) Measure plumb line points diagonally.

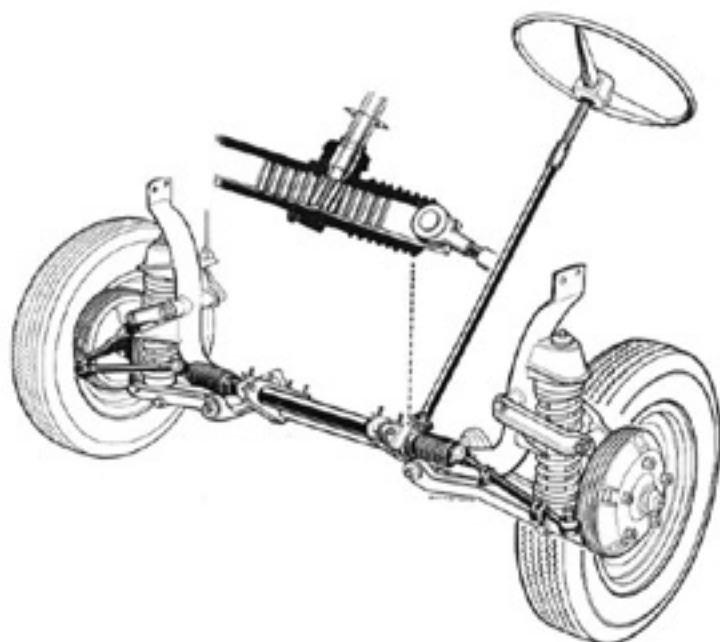
Illustr. No. 56

Note: When there is any doubt, the measurement 3 and 5 must be completed as a single process before the vehicle is driven away and the measuring points correlated.

Techn. Data on Steering

Type:	Rock and Pinion with symmetrical divided track rods.
Ratio:	2.4 steering wheel revs: lock to lock
Turning circle diam:	28 ft.
Play on steering:	0

Adjustment by eccentric bolt.



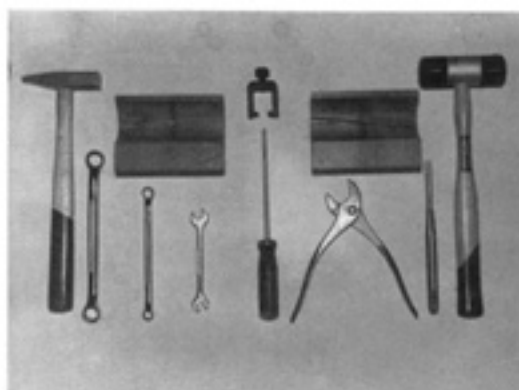
L 3

Dismantling and reassembling steering (Front axle and steering dismantled as in V 1)

Tools: 11, 17 ring spanner, 11 mm spanner, hammer, screwdriver, split pin pliers, hide mallet, special tool for front axle SpW 919, track rod extractor SpW 918

Illustr. No. 1

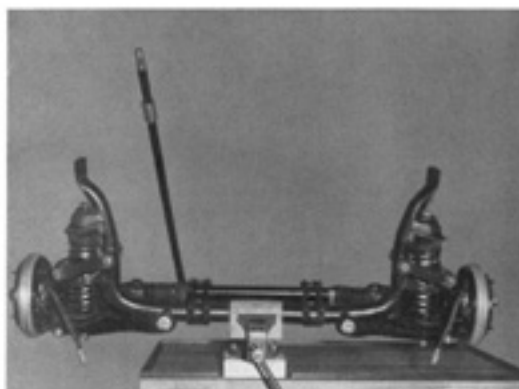
1



1. Fix front axle and steering in vice.
(Special tool SpW 919)

Illustr. No. 2

2



2. Lift rubber cap on steering column.
3. Remove locking ring from steering.
(Screwdriver)

Illustr. No. 3

3

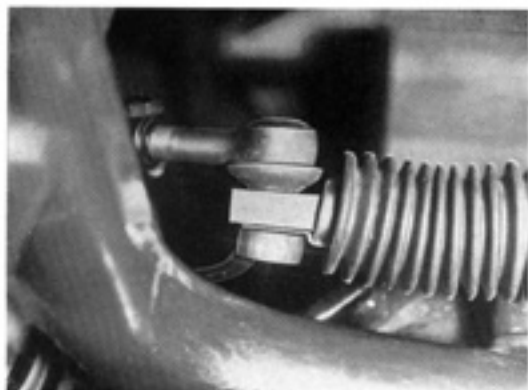


4. Remove steering column and split ring from steering box.

Illustr. No. 4

4





5

5. Remove split pin from crown nuts on trackrod.
(2 nuts, split pin pliers)
6. Loosen crown nuts.
(2 nuts, 17 mm ring spanner)

Illustr. No. 5



6

7. Remove locking washer from bellows.
8. Remove track rods.
(2 track rods, extractor SpW 918, 17 mm spanner)

Note: To remove rack move to right or left.
Lightly grease the extractor.

Illustr. No. 6



7

9. Remove bellows and two pins
(hammer, chisel)
10. Loosen screws on steering box.
(2 screws, 11 mm ring spanner)

Illustr. No. 7



8

11. Loosen bearing collar flange.
(2 screws, 11 mm ring spanner, hold with 11 mm spanner)

Illustr. No. 8

12. Remove bearing collar (Forwards) to right and left. Rack in opposite direction.

Illustr. No. 9

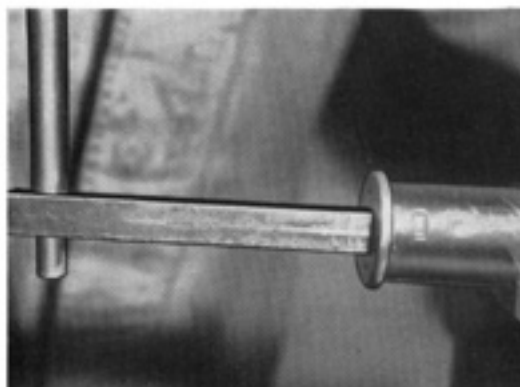
9



13. Remove bearing bush bayonet clip from bearing collar by turning to left. (punch)

Illustr. No. 10

10



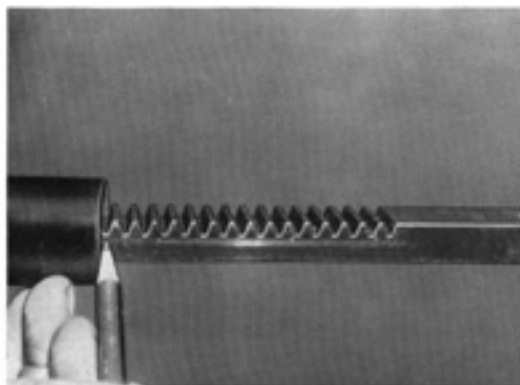
14. Drive out rack and bearing bush (lay on wooden block)

When reassembling proceed in reverse sequence.

Note: When reassembling, fill the steering box with grease. Greased under pressure. When reassembling rack, insert to 16th tooth.

Illustr. No. 11

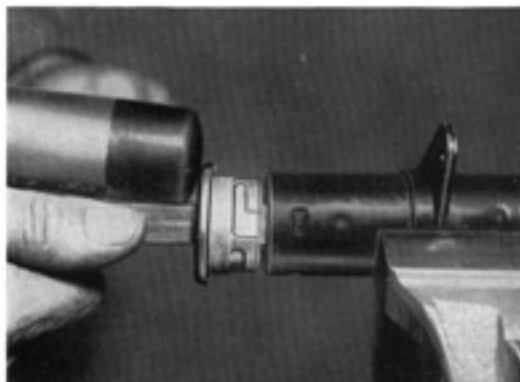
11



next drive in bearing bush (hide mallet) and secure by quarter turn.

Illustr. No. 12

12



When driving in stop pins, the slot must face outward. If the steering is heavy, proceed as in V1, section 17.



13

L 5 Adjusting steering

Tools: 11 mm ring spanner, 24 mm spanner, screwdriver, knife.

1. Set front wheels straight ahead, the spokes of steering wheel should point downward.
2. Test the "feel" by pressing lightly with a couple of fingers on the steering wheel. There should be no play

Illustr. No. 13



14

3. To adjust any play, use the setting screw. Eliminate all play, but wheel should turn freely. When setting is correct, hold screw with a screw driver and tighten lock nut.
(11 mm ring spanner, screw driver)

Illustr. No. 14



15

4. Original setting should be set by removing steering wheel. (See V 1, Illustr. No. 6 and 7)
 - a) Remove button on steering wheel (knife)
 - b) Loosen nut (24 mm spanner)
 - c) Remove steering wheel.

Illustr. No. 15



16

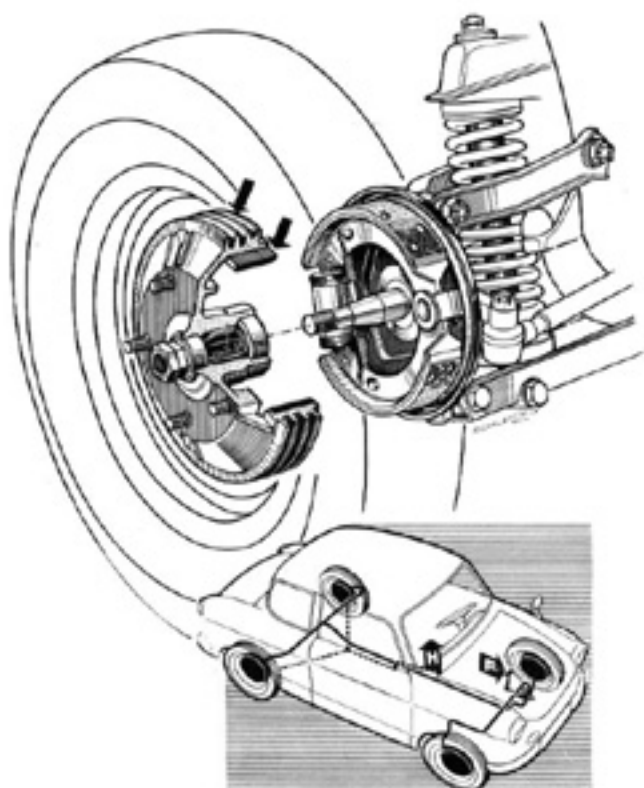
5. Set steering at centre
 - a) Turn steering to right and left; count revolutions.
 - b) Turn half number of revs. in one direction.
 - c) The front wheels will face straight forward.
 - d) Replace steering wheel and tighten

Illustr. No. 16

Techn. Data - brakes

Brakes:

Type of foot brake	Internal friction brakes, hydraulic.
Operating on	all 4 wheels
Type of hand brake	cable brakes
Operating on	both rear wheels
Diam of brake drum	180 mm
Width of brake lining	30 mm
Handbrake setting	3 clicks
Foot brake setting on piston rod:	.04"—.08" play
Foot brake pedal play of	.4"—.8" (top of pedal)
Wheel cylinder diam front	19.05 mm
Wheel cylinder diam rear	14.29 mm



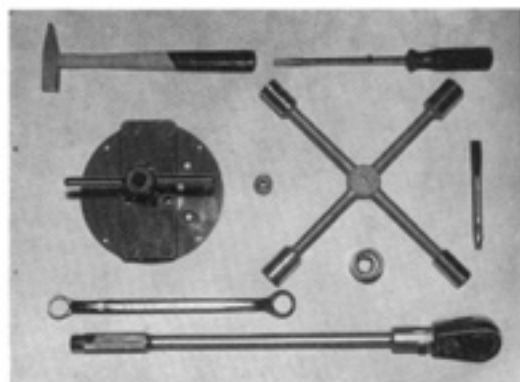
B 1

Dismantling and reassembling brakes

Tools: 24 mm ring spanner, 30 mm socked spanner and wrench, screw driver, hammer, wheel nut spanner, chisel, assembly tool SpW 900

Illustr. No. 1

1. Remove wheel caps from all four wheels. (screwdriver)
2. Loosen wheel nuts on all four wheels. (wheel nut spanner)
3. Jack up vehicle.
4. Remove wheel nuts and wheels.



Dismantling rear brake

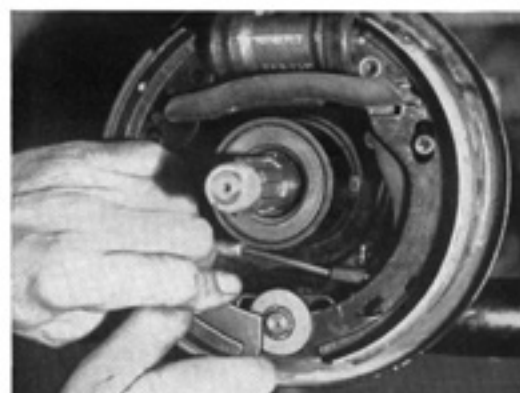
5. Tighten hand brake
6. Open locking washer on axle nut (hammer, chisel)
7. Loosen axle nut (30 mm spanner)
8. Release hand brake.

Note: The handbrake should always be released before removing the hub or the brake shoes may jam.

9. Apply special tool SpW 900 (wheel nut spanner)
10. Remove wheel hub.

Note: The special tool spindle has a left hand thread.

Illustr. No. 2



11. Remove brake shoes from bearing.

Illustr. No. 3

12. Remove brake shoes from wheel cylinder

Illustr. No. 4





5

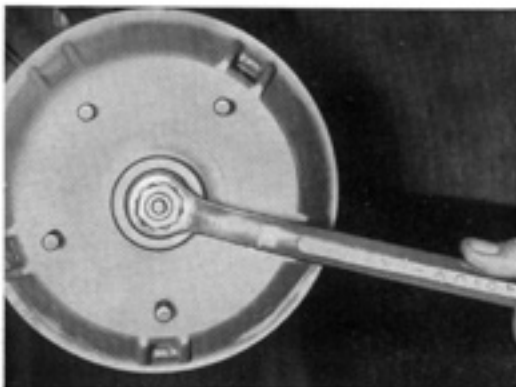
13. Release handbrake cable from brake lever.

Illustr. No. 5

Note: The assembly of the brake shoes must follow exactly reverse sequence, i.e.

- a) Attach shoe spring
 - b) Attach handbrake cable
 - c) Insert shoes in slots in brake piston and watch position of rubber sleeves.
 - d) Press the shoes against the bearing.
- When inserting the second shoe it will have to be tilted slightly to prevent its fouling the guide pin.

When fitting new shoes, do not handle the brake lining with greasy fingers.



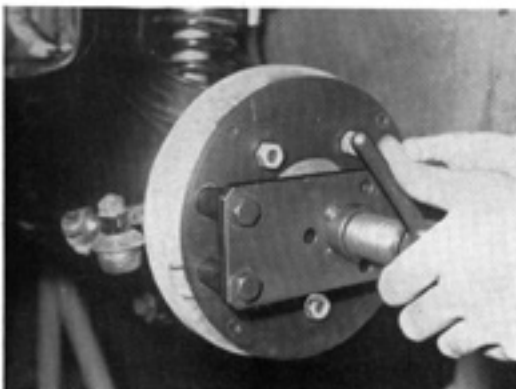
6

Dismantling front brake

- 14. Remove wheel caps (screwdriver)
- 15. Bend back locking washer on axle nuts. (hammer, chisel)
- 16. Loosen axle nut (24 mm ring spanner)

Note: The turned edge of the axle nut should face inward.

Illustr. No. 6

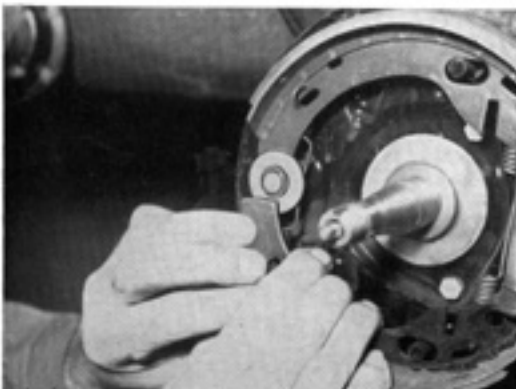


7

- 17. Remove locking washer and NILOS ring.
- 18. Apply special tool SpW 900
- 19. Remove front wheel hub.

Note: The special tool spindle has left hand thread. Apply adaptor so that the square fitting on the speedometer shaft is not damaged.

Illustr. No. 7



8

- 20. Detach brake shoes. This is done in the same way as for the rear wheel brake shoes. The handbrake lever is not used.

Illustr. No. 8

When reassembling proceed in reverse sequence.

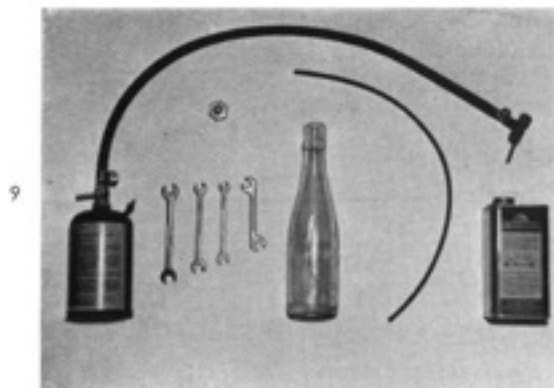
B 5

Adjusting and bleeding air out from brakes

Tools: 7, 9, and two 10 mm spanners, bleeder tube, ATE brake fluid, transparent flask or glass jar, ATE filling and bleeder appliance with pressure control and brake fluid gauge No. 3.9302-0200.4 or a ½ ltr. appliance without controlfitting No. 3.9302-0100.3 and filler nozzle 3.9308-0200.2.

Note: The appliance shown in the illustration and in the text is No. 3.9308-0200.2.

Illustr. No. 9



Adjusting brakes

1. Jack up vehicle (erecting stand or hydraulic platform)
2. **Front brakes:** adjust both brake setting screws (top bottom) on each front brake till the wheel begins to drag, release until it just runs freely. Adjust by turning outwards. (9 mm spanner)

Illustr. No. 10

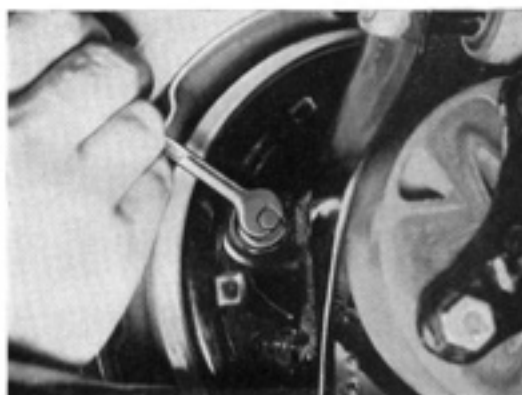
10



3. **Rear brakes:** adjust both brake setting screws (right and left) on each back brake till the wheel begins to drag, release until it just runs freely. Adjust by turning outwards. (9 mm spanner)

Illustr. No. 11

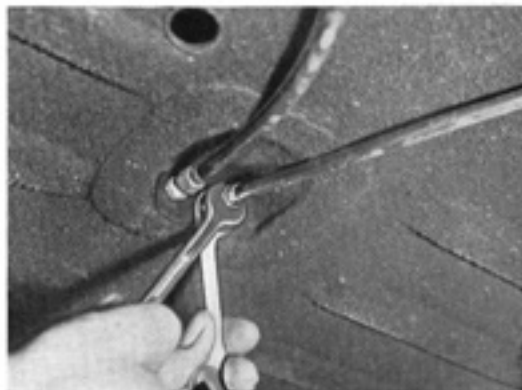
11



4. To adjust the handbrake
 - a) tighten the handbrake by 3 teeth (ratchet)
 - b) loosen lock nut (10 mm spanner)
 - c) adjust setting nut till the wheel can just be turned (10 mm spanner)

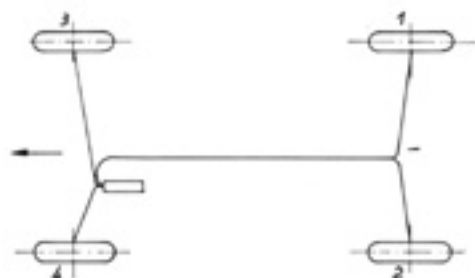
Illustr. No. 12

12



- d) set position with lock nut
- e) adjust second cable in same way

Note: When testing brakes on the road never adjust a wheel with less efficient braking action. The brakes should be made to operate equally by adjusting the brake setting screws.



13

5. The air is exhausted from the wheel brake cylinder in the sequence of their distance from the main brake cylinder.

Illustr. No. 13

6. Fill receptable with 1/2 ltr. ATE brake fluid and pump up to about 2.5 atms. through valve.

Illustr. No. 14



14

7. Remove screw from main brake cylinder and replace by air exhaust fitting 3.9308-0200.2.
8. Attach filling apparatus and hose to air bleed valve.

Illustr. No. 15



15

9. For each wheel, following sequence shown in illustration No. 13:
 - a) remove rubber cap
 - b) fit air exhaust tube and insert in transparent container filled with brake fluid.
 - c) Open valve (7 mm spanner)
 - d) Open tap on brake filling apparatus and let fluid run through piping. Watch brake fluid in container until bubbles cease to rise, close valve.

Illustr. No. 16



16

- e) Remove brake tubing and replace rubber cap.

Note: Use only ATE standard brake fluid for filling up.

Techn. data - electrical equipment

Type	Dyno starter 12 volt 130 W/Bosch	
Battery	12 volt / 24 amphrs	
Ignition	2 x 6 volt / Bosch TJ 6/4 DIN 72535 coils	
Contact breaker	in dyno starter	
Ignition adjustment	flywheel	
Ignition setting	full retard ignition in TDC	
	TDC recording on bellows wheel	
Type of spark plug	Bosch W 175 T 2 or other make of similar value	
	Electrode gap .025" — .028"	
Light bulbs:		
Head light	B 12 volt 35/35 watt DIN 72601	sealed beams
Parking light	M 12 volt 2 watt DIN 72601	
Brake and blinker light	F 12 volt 15 watt DIN 72601	
Blinker light front	F 12 volt 15 watt DIN 72601	
License plate light	L 12 volt 5 watt DIN 72601	
Speedometer lighting		
Gauge light	H 12 volt 2 watt DIN 72601	
Combined lighting		
Rear light	G 12 volt 3 watt DIN 72601	
Interior lighting	Osram 6253 Socket BA 9S/12 Volt 6 Watt	
Fuses	8 amp.	

Cable circuits switch diagram

from	terminal	to	terminal	colour	cross sectn sq. mm
Battery	+	regulator	30/31	black	a 16
Battery	+	distributor "30"		black	a 2,5
distributor "30"		ignition/starter switch	30	black-yellow	q 1,5
distributor "30"		light switch	30	red	b 1,5
distributor "30"		fuses	5	black-yellow	q 1,5
distributor "30"		interior lighting		yellow	d 1,5
ignition starter switch	50	regulator	50	green	g 1,5
distributor "15"		ignition/starter switch	15/34	black-red	p 1,5
distributor "15"		spark plug No. II	15	red	b 1,5
distributor "15"		charge indicator lamp		lightblue	f 0,75
distributor "15"		fuses	6	black	a 1
charge indicator		regulator	D-61	lightblue	f 0,75
double switch	56	light switch	56	white-black	w 1
fuses	2	light switch	58	grey	h 0,75
double switch	15	fuses	5	black	a 1
switch, wiper	53 (54)	fuses	5	black-lilac	o 0,75
switch, wiper	53 54d	wiper motor	54d	lightblue	f 0,75
double switch	56a	fuses	4	white	e 1
fuses	4	head light switch		white	e 0,75
fuses	4	head light left	56a	white	e 1
head light left	56a	head light right	56a	white	e 1
double switch	56a	fuses	3	yellow	d 1
fuses	3	dimmer, left	56b	yellow	d 1
dimmer left	56b	dimmer, right	56b	yellow	d 1
fuses	2	parking light left	58	grey	h 0,75
parking light left	58	parking light right	58	grey	h 0,75
fuses	2	rear light right		grey-red	t 0,75
rear light right		number plate r.		grey-red	t 0,75
number plate right		number plate l.		grey-red	t 0,75
fuses	1	rear light left		grey-black	s 0,75
light switch	58	instrument panel I		grey	h 0,75
instrument panel I		instrument panel II		grey	h 0,75
double switch	71	horn		grey	h 1
fuses	6	blinker	15X	grey-green	r 0,75
double switch	54	blinker	54L	grey-black	s 0,75
blinker	KP	blinker switch		black-white	m 0,75
double switch	L	blinker front left		black-white	m 0,75
double switch	R	blinker front right		black-green	n 0,75
double switch	54L	brake light, rear, left		black-red	p 0,75
double switch	54R	brake light, rear, right		black-yellow	q 0,75
double switch	54f	brake light switch		black-lilac	o 0,75
fuses	6	brake light switch		grey-green	r 0,75
fuel gauge		fuel gauge light		lightblue-black	u 0,75
distributor "15"		fuel gauge light		lightblue-black	u 0,75
spark plug No. I	15	spark plug No. II	1	black	a 1
dyno starter	1	spark plug No. II	1	black	a 1,5
dyno starter	30h	regulator	30h	black	a 16
fuses	5	wiper switch	54	black-lilac	o 0,75
wiper switch	54	wiper motor	54	black-lilac	o 0,75
wiper switch	54d	wiper motor	54d	lightblue	f 0,75
wiper switch	31b	wiper motor	31b	lightblue-white	x 0,75
wiper switch	31	wiper motor	31	black	a 0,75
distributor "15"		oil gauge lamp		brown	c 0,75
oil pressure switch		oil gauge lamp		brown	c 0,75
distributor "30"		socket		grey	h 1
battery or motor		multi strand cable		bright (metal)	16
horn		multi strand cable		brown	c 1,5
wiper motor		multi strand cable		black	a 1

Interpretation of large letters on diagram

- | | |
|--------------------------------------|--|
| A Dyno starter | P Twin lever switch on steering column |
| B Regulator | Q Special fittings (reversing light, fog lamp, ventilator) |
| C Battery | R Blinker |
| D Ignition/starter switch | S Wiper motor |
| E Spark plugs | T Windshield wiper motor |
| F Spark plugs | U Electric horn |
| G Head light | V Steering column fuse and ignition/starter switch |
| H Blinker light | W Fuel gauge light |
| I Brake blinker light and rear light | X Brake light switch on main brake cylinder |
| K License plate light | Y Radio |
| L Interior lighting | Z Aerial |
| M Light switch | |
| N Fuse box | |
| O Cable junction | |

E 1

Dismantling and reassembling cable unit

Tools: Screwdriver, 2 x 10 mm spanners

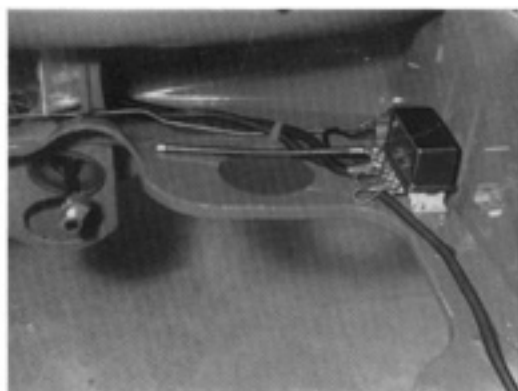
Note: Battery should be detached before any work is done on the electrical unit.

1. Remove main cable from battery (see MG 1, paras 3—5).
(2 10 mm spanners)
2. Loosen cable connections in front luggage trunk and bend up holding clip
(Screwdriver)
3. Detach head light, horn, blinker light, fuelgauge light, brake light cables.

Illustr. No. 1



1



2

4. Loosen cable points in rear (motor) casing and bend up holding clip
(screwdriver)
5. Detach rear light clips.

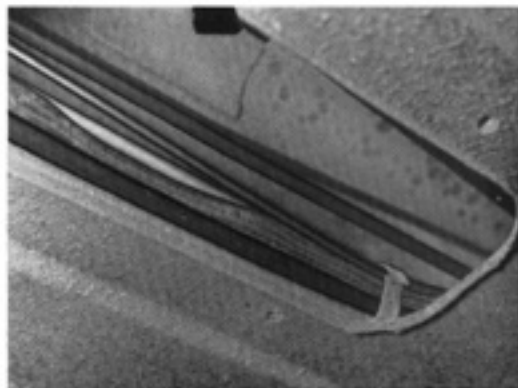
Illustr. No. 2



3

6. Detach and withdraw cables on the following: fuse box, junction board, switch combination and instrument panel
7. Bend up holding clip on cable assembly in tunnel.
8. Withdraw cable assembly.
9. When reassembling cable assembly lay in tunnel alongside the hydraulic pipe together with wire cables and fuel piping.

Illustr. Nos. 3 and 4



4

follow switch diagram!!!



5

E 11**Dismantle and reassemble instrument panel
(Steering wheel removed)**

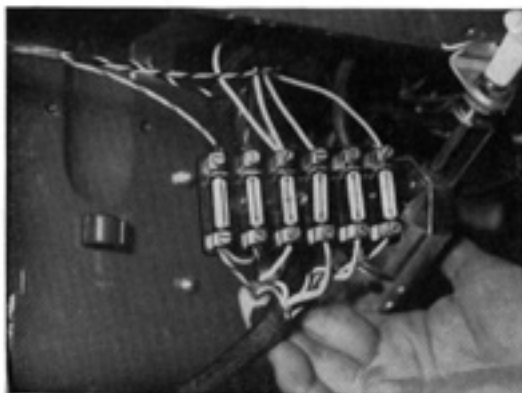
Note: The steering wheel will have to be removed to enable the instrument panel to be pulled forward. Remove to switch combination.

1. Loosen nut on speedometer fitting.
2. Loosen the nuts holding instrument panel at back.
3. Pull instrument panel out and tip forward.
4. To change a cable or bulb, pull out cable or remove bulb fitting.

Illustr. No. 5

6

5. To dismantle speedometer, bend up wire clip, remove speedometer and both bulbs.

Illustr. No. 6

7

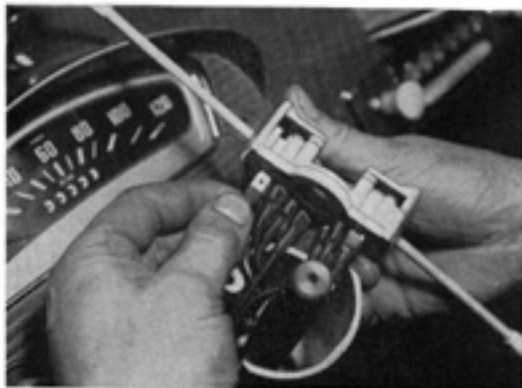
E 16**Dismantling and reassembling switch
combination
(Horn switch and light flasher)**

Tools: Pocket knife, 24 mm spanner, Phillips screwdriver.

1. Remove button from steering wheel (knife)
2. Loosen nut on steering wheel (24 mm spanner)
3. Remove steering wheel.

Note: When replacing steering wheel set for driving straight ahead with spokes pointing obliquely downwards (see L 5, illustr. No. 16)

4. Loosen fuse box cover.
5. Remove fuse box (2 screws, Phillips screwdriver)
6. Pull out fuse box, pull it as far up and to left as possible.

Illustr. No. 7

8

7. Remove screw of switch combination (Phillips screwdriver)

Illustr. No. 8

8. Lift out switch combination, pull forward and remove cable plug.

When reassembling proceed in reverse sequence.

Consult switch diagram

E12 Zündschloß mit Schließzylinder erneuern PRINZ I und II

Werkzeug: Schraubenzieher klein, Stemmer, Hammer.

1. Bei PRINZ I Instrumententafel nicht ausbauen, sondern Ringmutter entfernen.

Bild a links

Zündanlaßschalter herausnehmen, Kabel abziehen.

2. Drei Klemmstellen mit Schraubenzieher aufbiegen und Schalter mit Schließzylinder aus Hülse herausnehmen.

Bild a rechts

Achtung: Beim Zusammenbau und Einbau auf richtigen Eingriff der Haltenasen achten, Zündanlaßschalter und Hülse vorsichtig sichern.
(Hammer, Stemmer)

Bild b

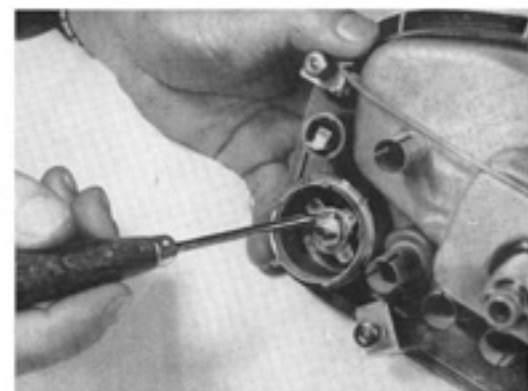
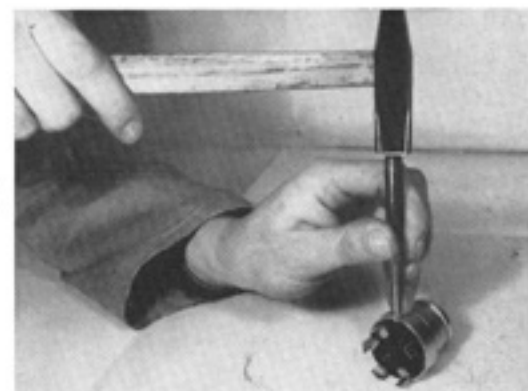
3. Bei PRINZ II Instrumententafel ausbauen (siehe E 11, Seite 114).
4. Fünf Halteklemmen mit kleinem Schraubenzieher vorsichtig aufbiegen und Zündanlaßschalter herausnehmen.
5. Zuhaltung des Schließzylinders mit kleinem Schraubenzieher nach innen drücken und Schließzylinder entfernen.

Bild c

Achtung: Vor dem Einsetzen des Schließzylinders wird der auf Zündstellung gebrachte Anlaßschalter eingesetzt und die Halteklemmen zugebogen.

6. Schließzylinder mit Zündschlüssel über die schräge Fläche der Fassung einsetzen.

Bild d



E 21

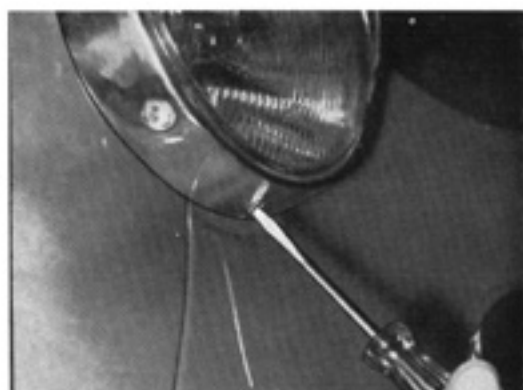
Dismantling and reassembling head light

Tools: Phillips screwdriver, screwdriver

1. Loosen head light (screwdriver)

Illustr. No. 9

9



2. Raise head light and withdraw.

Illustr. No. 10

10

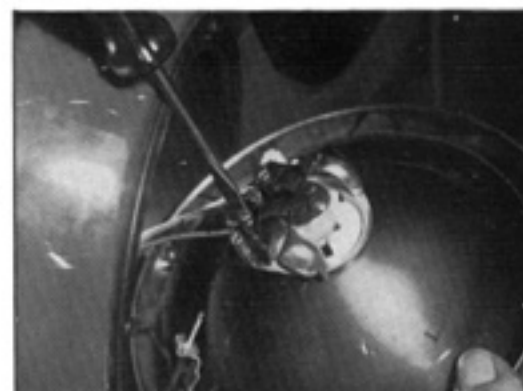


3. Detach leads sequence:

white lead to 56a
yellow lead to 56b
grey lead to 58
connection No. 31 is dead

Illustr. No. 11

11

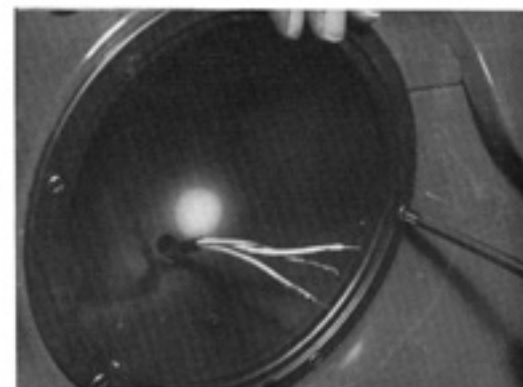


E

4. Detach lead from head light fitting
5. Dismantle the head light housing. (5 screws, phillips screwdriver)

Illustr. No. 12

12





13

E 23
Removing and replacing bulbs
 (Head light dismantled as in E 2 pos. 1—2)

1. Bend back clip on lamp holder

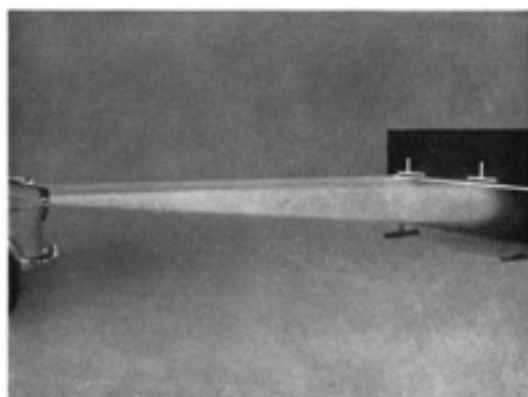
Illustr. No. 13


14

2. Remove holder from reflector

3. Loosen bulb and remove (bayonet fitting)

Note: Do not handle bulb with bare hand use clean rag or tissue.

Illustr. No. 14


15

E 25
Aiming head light

The head light is set by using a "setting frame",

Illustr. No. 15


16

or by a special apparatus. When setting note the following.

1. Distance from setting point = centre of head light
2. Height of edge of light pattern = centre of head light
3. Dimmer edge 2" below edge of light pattern
To set, turn the two screws to right and left of locking screw.
 - a) The left hand screw is for lateral setting. A turn to the right will set to the left.
 - b) The righthand screw is for vertical setting. A turn to the right will raise the setting.

Illustr. No. 16

E 26

Replacing head light glass (Head light dismantled as in E 2 pos. 1—2 and E 23 pos. 1—2)

Tools: Screwdriver

1. Lay head light on soft pad.
2. Remove spring clips (screwdriver)

■ **Note:** Depress spring clips by their flat ends.

Illustr. No. 17

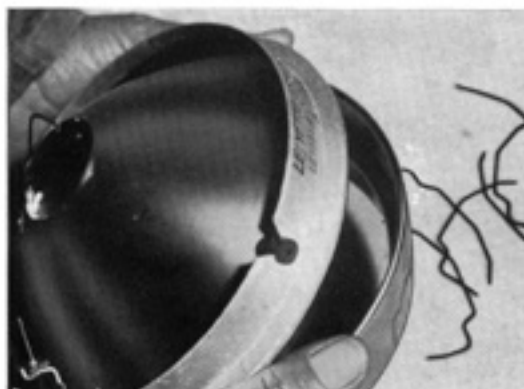
17



3. Remove fitting and glass.

Illustr. No. 18

18



4. Lift out rubber washer

Illustr. No. 19

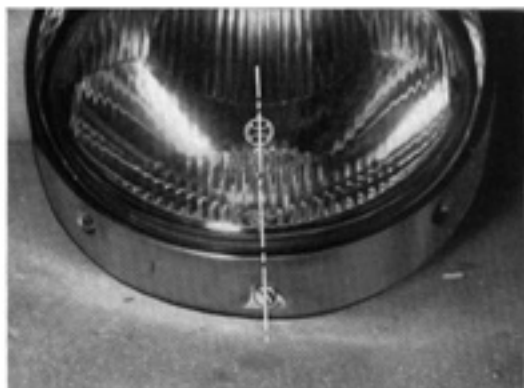
19



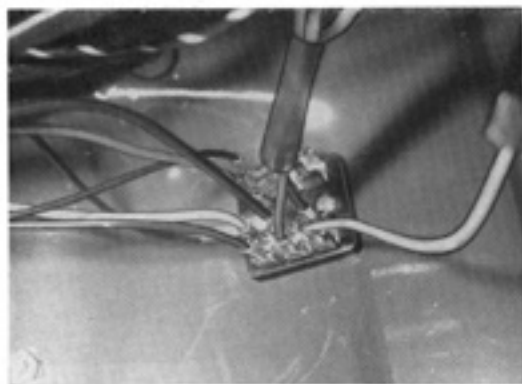
5. Fit new glass with rubber washer.
6. Fit glass in correct position. The manufacturers name on the glass should be at the bottom.

Illustr. No. 20

20



■ **Note:** When working on the head light, bulbs and reflector should never be touched with the bare hand.



21

E 27**Dismantling and reassembling light switch****Tools:** Screwdriver, 2 10 mm spanners

1. Disconnect battery (see MG 1, illus. 4)
(2 10 mm spanners)

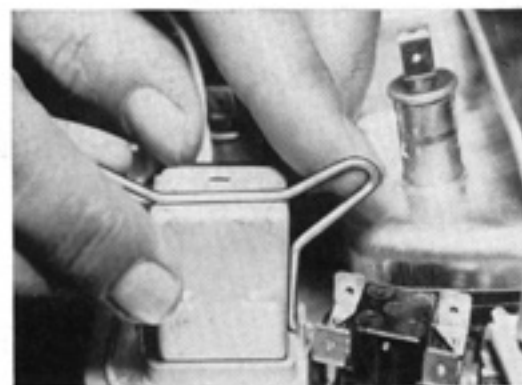
Note: The current for the light switch comes from the junction. The battery must therefore be disconnected. It should always be disconnected when changing switches and working on cables.

2. Disconnect cables from junction to light switch.

Illustr. No. 21

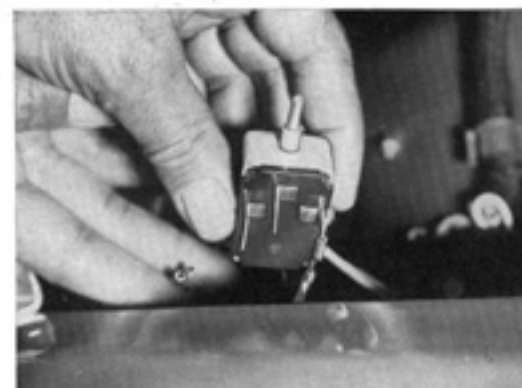
22

3. Unscrew push button.

Illustr. No. 22

23

4. Bend back clip on light switch.

Illustr. No. 23

24

5. Pull out light switch and disconnect cables

Illustr. No. 24

For re-connection see switch diagram.

E 31

Dismantling and reassembling rear, blinker, brake and back reflector lights

Tools: Phillips screw driver

1. Remove cover to rear light
(Phillips screwdriver)

Illustr. No. 25

25



2. Change bulbs

Note: Turn bulb to left and remove. Do not handle lamp and reflector with bare hands use clean rag or tissue.

Illustr. No. 26

26



3. Unscrew rear light casing
(Phillips screwdriver)

Note: When reassembling the casing must be fitted under the hook at the top and fit tight in the slot at the bottom. The rubber washer should lay evenly.

Illustr. No. 27

27

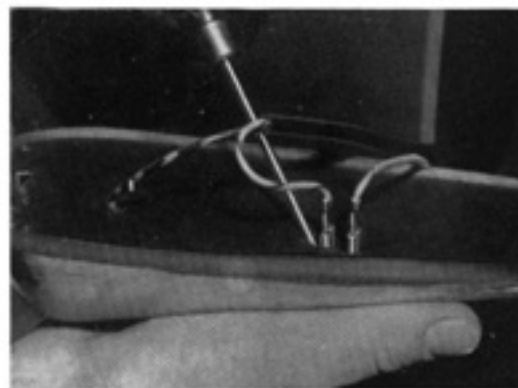


4. Remove cable.

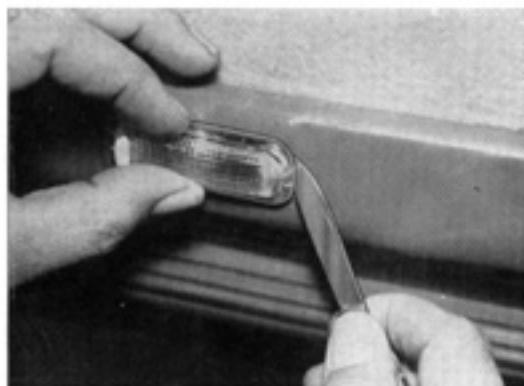
Note: After removing cable lift out rubber washer to allow connection to be placed underneath.

Illustr. No. 28

28



Consult switch diagram



29

E 41**Dismantling and reassembling interior lighting****Tools:** Pocket knife

1. Remove casing to interior lighting (pocket knife)

Illustr. No. 29

30

Note: Remove evenly to avoid splitting the plastic casing.

2. Remove casing, change bulbs.

Illustr. No. 30

31

E 51**Dismantling and reassembling number plate lights****Tools:** Phillips screwdriver

1. Loosen screws holding number plate (2 screws, phillips screwdriver)

Illustr. No. 31

32

2. Lift up number plate light.
3. Separate top and bottom halves.

Illustr. No. 32

4. Change lamps

When reassembling proceed in reverse sequence.

Technische Daten Aufbau

Gesamtmaße

Länge über alles	3145 mm
Breite über alles	1420 mm
Höhe über alles unbelastet	1350 mm
Bodenfreiheit belastet ca.	190 mm
Spurweite vorn und hinten	1200 mm
Radstand	2000 mm

PRINZ I

PRINZ II

Gewichte

Leergewicht nach DIN 70 020

(fahrfertig, vollgetankt)

Zulässiges Gesamtgewicht

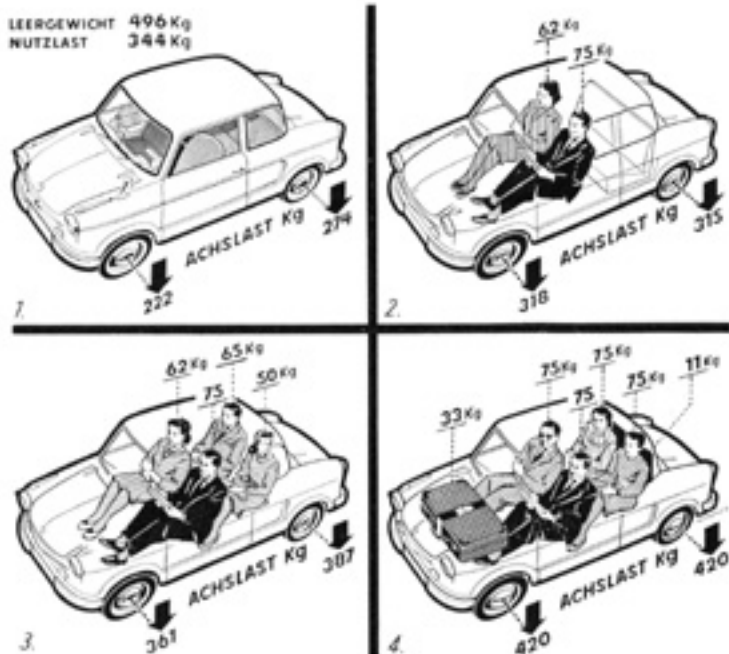
496 kg

840 kg

506 kg

840 kg

Gewichtsverteilung



A

A 162 Prüfmaße für Fahrwerksteile (Aufbau)

Zum Prüfen der Fahrwerksteile dienen nachstehende Maße. Dabei werden zweckmäßigerweise geeignete Dorne verwendet.

Diejenigen Teile, die maßliche Abweichungen aufweisen, aber nicht völlig deformiert sind, werden auf Wunsch in den NSU-Werken auf Spezialeinrichtungen gerichtet.

1. Rohrträger der Vorderachse vermessen

Maß a (mittleres Maß)	= $925 \pm 1,00$ mm
Maß b	= $780 \pm 0,3$ mm
Maß c	= $480 \pm 0,3$ mm

Bild a

Um auf seitliche Deformierung kontrollieren zu können, werden die Bohrungen diagonal vermessen.

2. Oberen und unteren Querlenker vermessen

Maß a	= $36 \pm 0,2$ mm
Maß b	= $146,7 \pm 0,2$ mm
Maß c	= $292 \pm 0,2$ mm

Am unteren Querlenker müssen zwei zur Kontrolle eingesteckte Dorne fluchten; im Verhältnis zur Mittellinie sind beide Hälften gleich.

Bild b

3. Hintere Schwinge vermessen (Schwinge links und rechts sind spiegelbildlich gleich). Die verlängerte Mittellinie der Achse muß am Schnittpunkt c der Linie von Bolzen zu Bolzen auf einer Ebene liegen.

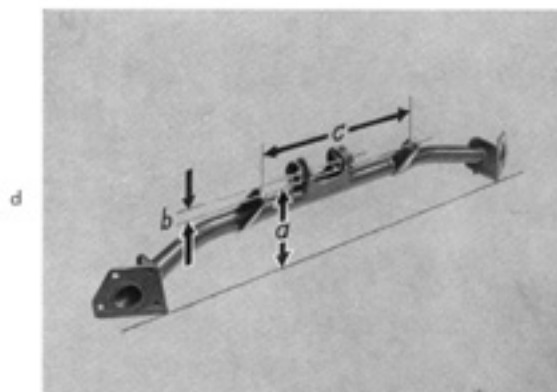
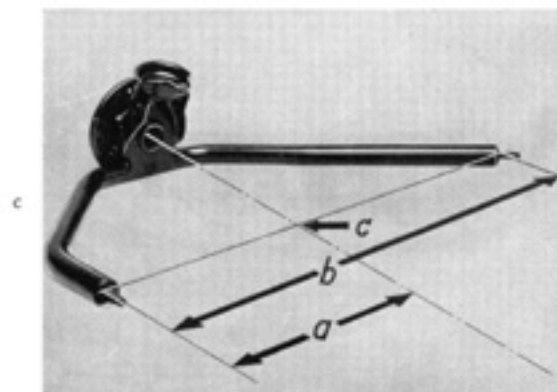
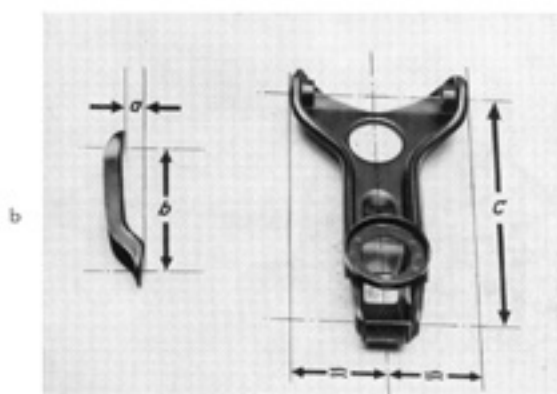
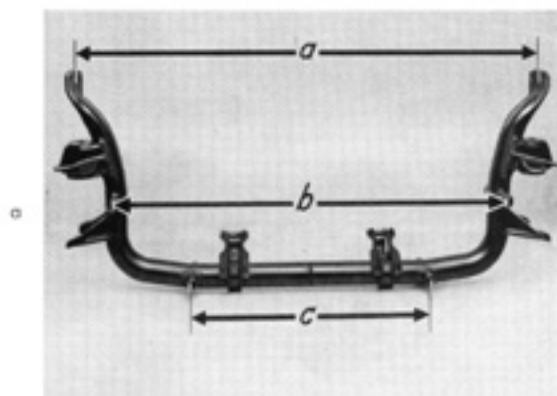
Maß a	= $362 \pm 0,2$ mm
Maß b	= $854 \pm 0,2$ mm
Maß c	= 0

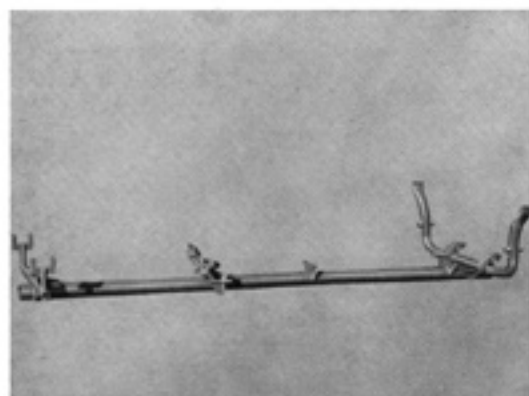
Bild c

4. Traverse vermessen. Die Traverse wird zum Vermessen mit den beiden Stehbolzen nach unten zeigend auf einer ebenen Fläche aufgelegt; zwei durch die Bohrungen gesteckte Dorne müssen fluchten. Das Maß d, von Stehbolzen zu Stehbolzen gemessen, beträgt $880 \pm 0,2$ mm (auf nebenstehender Abbildung nicht ersichtlich).

Maß a	= $131 \pm 0,5$ mm
Maß b	= $76 \pm 0,5$ mm
Maß c	= $379 \pm 0,5$ mm

Bild d

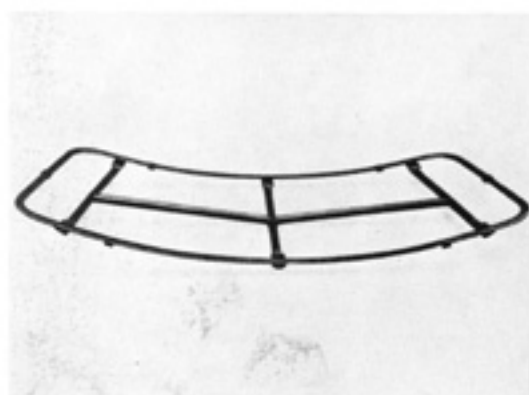




a

A 163 Vermessungslehren für Aufbau (Anfertigung bei Bestellung durch die NSU-Werke)

1. Rahmenlehre (40-91-00-950) für die Aufnahmepunkte des Fahrwerks.

Bild a

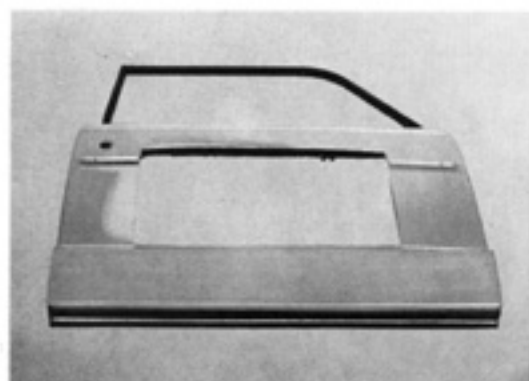
b

2. Lehre (40-91-00-951) für Windschutzscheibe zur Kontrolle des Windschutzscheibenausschnittes und zum Aufsetzen eines neuen Daches.

Bild b

c

3. Lehre (40-91-00-952) für Rückwandscheibe zur Kontrolle des Rückwandscheibenausschnittes und zum Aufsetzen eines neuen Daches.

Bild c

d

4. Türlehre links (40-91-00-953), Türlehre rechts (40-91-00-954) zur Kontrolle der Schloß- und Scharniersäule sowie zum Einsetzen neuer Säulen.

Bild d

A 1

Dismantling and reassembling fuel tank

Tools: 11 mm ring spanner, 6 mm spanner

1. Raise front hood
2. Remove cover
(2 screws, ring spanner)

Illustr. No. 1



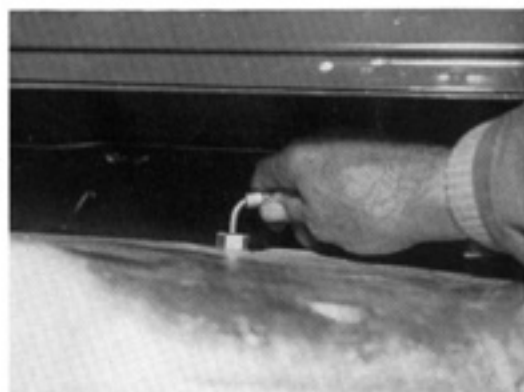
3. Loosen fuel tank fittings
(11 mm ring spanner)

Illustr. No. 2



4. Raise fuel tank and pull forward
5. Remove fuel pipe

Illustr. No. 3



Note: If any fuel left in tank close connection at once with plug.

6. Tip fuel tank downwards to right
7. Detach fuel gauge fitting
(6 mm spanner)

Illustr. No. 4



When reassembling proceed in reverse sequence.

Note: Watch rubber cushions! Two each top and bottom



5

A 3 Renewing fuel gauge

A 5 Testing fuel gauge (Fuel tank dismantled as in A 1)

Tools: 19 mm spanner, fuel container, two leads and clips, 12 volt battery, 12 volt test bulb.

1. Unscrew fuel gauge from fuel tank (19 mm spanner)

Illustr. No. 5



6

2. Connect + pole of battery to cable of fuel gauge and include a 12 volt test bulb.
3. Connect - pole of battery with fuel gauge multi strand cable
4. Bulb should light up
5. Immerse gauge in fuel
6. When fuel reaches the hole in the gauge the bulb light should go out.

Illustr. No. 6



7

A 6 Renewing or repairing fuel suction pipe (Fuel tank dismantled as in A 1)

Tools: 19 mm spanner

1. Loosen nut (19 mm spanner)

Illustr. No. 7



8

Note: When reassembling the fuel pipe must be replaced so that it lies parallel to the floor and across the line of the filling points.

Illustr. No. 8

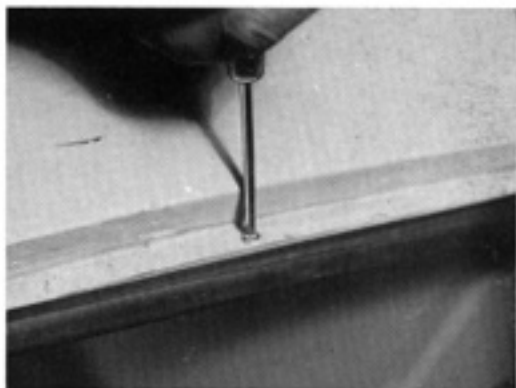
A 51

Dismantling and reassembling front wings (Headlight dismantled as in E 21)

Tools: 6 mm spanner, phillips screwdriver, hammer, punch.

1. Remove rubber cover from hood on door frame.
2. Loosen screw holding wings
(5 screws, phillips screwdriver)

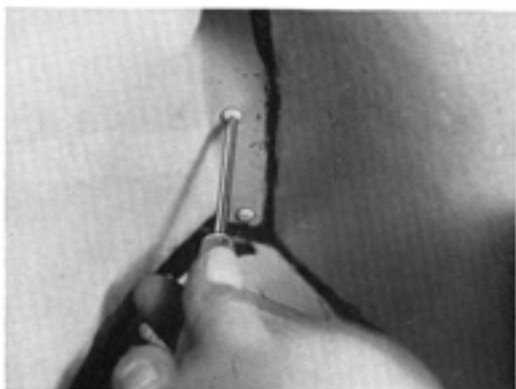
Illustr. No. 9



9

3. Loosen front screws holding wing.
(3 screws, phillips screw driver)

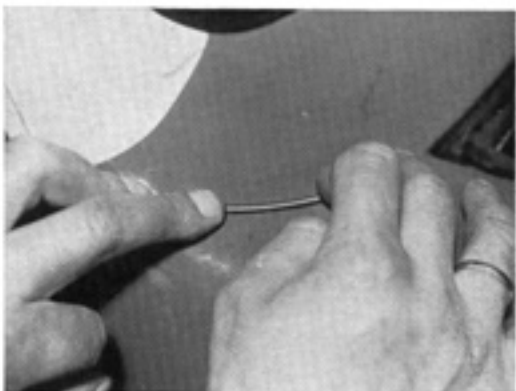
Illustr. No. 10



10

4. Dismantle door (see A 71, Illustr. Nos. 13—16)
(6 mm spanner)
5. Loosen screws holding wings to door frame
(5 screws, phillips screwdriver)

Illustr. No. 11



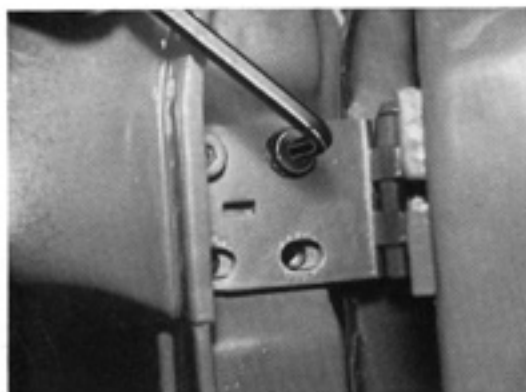
11

6. When replacing wing, care should be taken to ensure that the upper edges and the jointing are laid evenly.

Illustr. No. 12



12



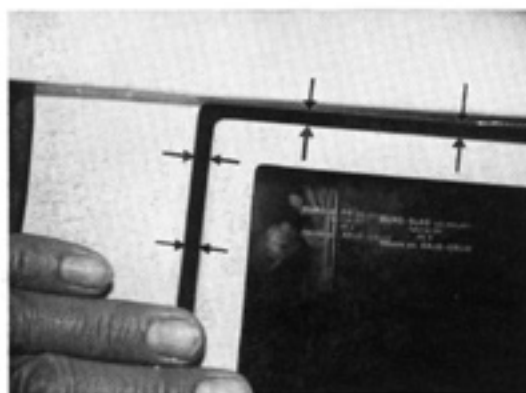
13

A 71**Dismantling and refitting doors**

Tools: 6 mm spanner, 11 mm ring spanner, phillips screwdriver.

1. Loosen hinge screws, top and bottom (2 sets of 4 screws, 6 mm spanner)

Illustr. No. 13



14

Note: There is no need to remove the inner hinge screws completely since the hinge is slotted.

Note when refitting

1. The door must fit close to the body. Adjust by the slots in hinge.
2. The window frame must be at an even distance from the body and layflat.

Illustr. No. 14



15

3. To adjust window frame, loosen screws and adjust frame.

(2 sets of 2 screws front and back, 11 mm ring spanner)

Illustr. No. 15



16

4. The side of the door with the lock must also fit evenly. If necessary loosen lock and adjust. (Phillips screwdriver.)

Illustr. No. 16

A 73

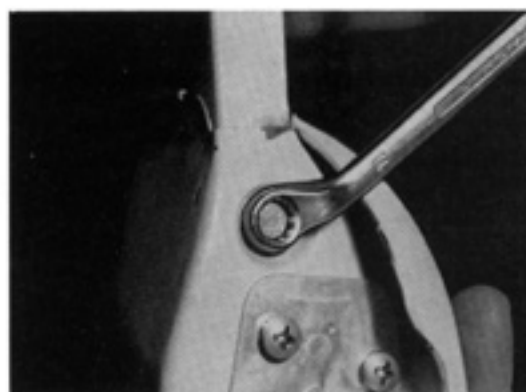
Dismantling and refitting window glasses

Tools: 11 mm ring spanner, screwdriver.

1. Loosen window frame top and bottom.
(4 screws, 11 mm ring spanner)

Illustr. No. 17/18

17



18



2. When removing winding window, loosen runner.
(Screwdriver)

Illustr. No. 19

19

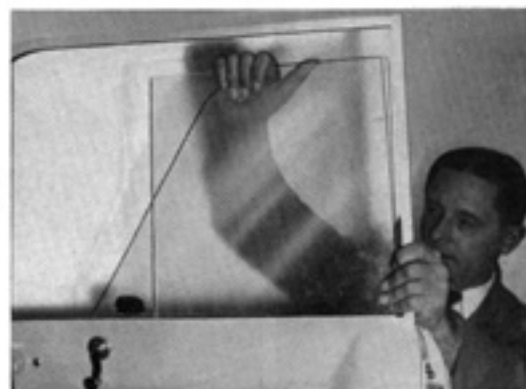


3. Place window glass together, raise frame and remove.

Note: Prevent doors from being closed by accident!

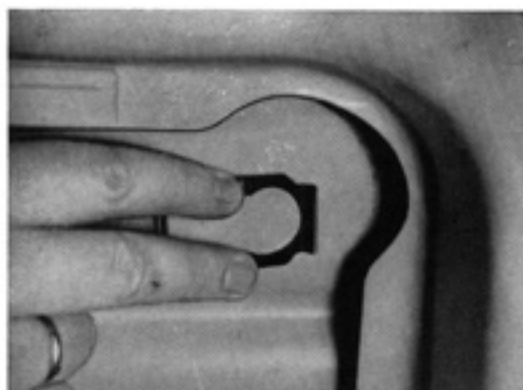
Illustr. No. 20

20



When refitting, proceed in reverse sequence.

Note: When replacing runner, see A 76, section 4



21

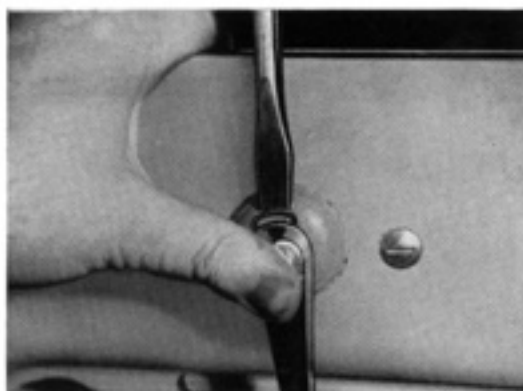
A 74 Dismantling and reassembling a door lock

Tools: Small and large screwdrivers, phillips screwdriver, hook.

1. Remove side pockets. (On export model) (screwdriver)
2. Remove door covering. Raise with screwdriver, pull off covering by hand and remove from frame.
3. Remove locking spring from door handle (inside) and pull out handle (hook).

Note: When reassemble push locking spring in until it the door handle passes through spring. Then fix with hook.

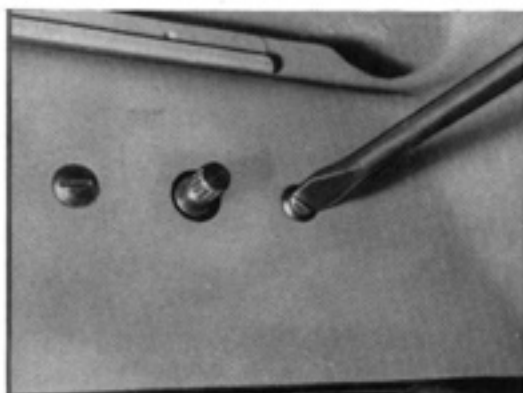
Illustr. No. 21



22

4. Remove lyre shaped spring from handle (inside), push rubber washer down. Push spring forward and pull out with hook. When refitting, push spring in with a screwdriver.

Illustr. No. 22



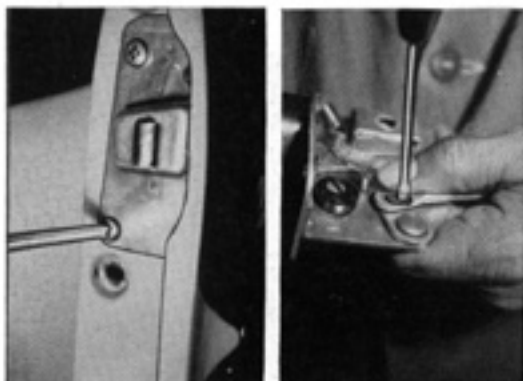
23

5. Unscrew remote control (locking) device.

Illustr. No. 23

6. Unscrew door lock (4 screws, phillips screwdriver)

Illustr. No. 24 left



24

7. Withdraw lock.
8. Remove locking ring on rod. (small screwdriver)
9. Rod operating remote control should be removed from inside.

When refitting replace in reverse sequence

Illustr. No. 24 right

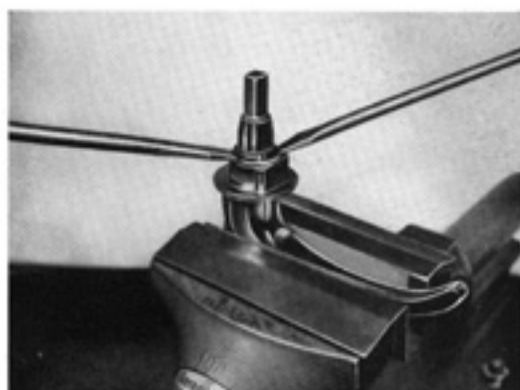
Note: When refitting the rod should be under the remote control fitting.

A 77 Schließzylinder im Türgriff aus- und einbauen

Werkzeug: 2 Schraubenzieher groß, 1 Schraubenzieher klein, Kreuzschraubenzieher, Haken, Schraubstock, Schutzbacken.

1. Türgriff aus- und einbauen (siehe A 74, Abs. 1-3).
2. Sicherung am Türgriff abnehmen, Anlaufscheibe und Federscheibe entfernen.
(2 große Schraubenzieher)

Bild a



3. Schloß mit Schlüssel abschließen und Führungsstück abziehen, Madenschraube mit gut passendem Schraubenzieher entfernen.
(Schraubenzieher klein)

Bild b



4. Schließzylinder mit Schlüssel herausnehmen, auf Verriegelung achten!

Bild c



5. Vor Einbau des Schließzylinders die Verriegelung so einsetzen, daß das lange Teil zum Griffende zeigt.

Bild d



Weiterer Einbau in umgekehrter Reihenfolge.

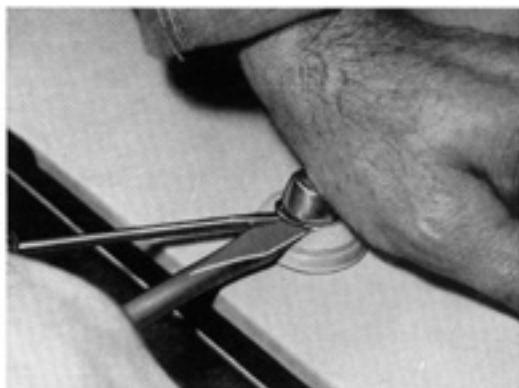
A 76

Dismantling and reassembling window winder
(Door is dismantled as in A 71, windows are dismantled as in A 73)

Tools: Screwdriver, angle screwdriver, ring spanner 24 mm.

1. Remove lyre spring. Press in rubber washer with a screwdriver and push lyre spring forward and remove with bent screwdriver.
(screwdriver, bent screwdriver)

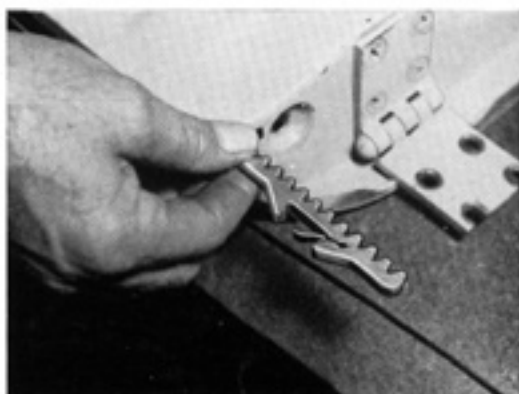
Illustr. No. 25



25

2. Unscrew ratchet bar on the door frame side.
3. Unscrew winder
(24 mm ring spanner)

Illustr. No. 26



26

4. When replacing window frame guide, the spring on the ratchet bar must be depressed to allow the frame to rest on the ratchets.

Illustr. No. 27



27

5. When replacing the ratchet bar depress the second spring at the other end of the ratchet bar with a screwdriver to fit it under the metal beading on the door.

Illustr. No. 28



28



29

A 81**Replacing windscreen**

Tools: Special tool No. 36 943, curtain cord 2.5 m long, glycerine.

1. Lay screen on felt.
2. Place rubber frame around glass first at four corners then lengthwise.

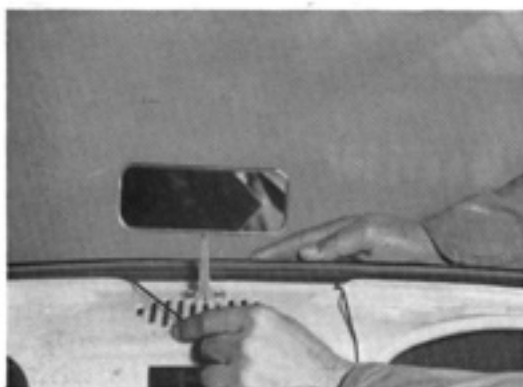
Illustr. No. 29



30

3. Lay curtain cord in frame with ends crossing.

Illustr. No. 30



31

4. Fit rubber at regular intervals in frame.
5. Tighten cord so that the inner edge of the frame rubber fits over the frame. Press down glass evenly.

Illustr. No. 31



32

6. Press down glass with hand allround.
7. Lay filler in special tool 36 943

Illustr. No. 32 left

8. Moisten frame rubber with glycerine.
9. Operate filler starting at bottom.

Illustr. No. 32 right

10. Cut off at right angles.

Note: Dismantling and refitting the glass can also be done with a special tool (Happich) Order No. 36 970 and operating instructions.

A 91

Renewing ornamental beading

Tools: Flat pliers, special pliers (self manufactured)
"Terostat" sealing mixture

1. Fix clamps to beading.

Note: If it is impossible to insert the clamps into the edge, use flat pliers to pinch it together.

Illustr. No. 33

33



2. Cover the clamps with "Terostat"

Illustr. No. 34

34



3. Set ornamental beading, lay out clamps, compress with special pliers and press in.

Note: The special tool consists of flat pliers with a long handle with both points bent inwards.

Illustr. No. 35

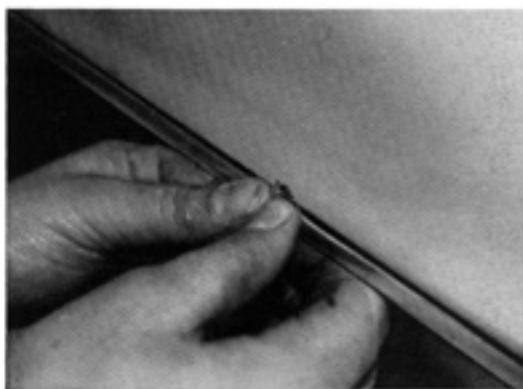
35



4. Press beading down evenly allround.

Illustr. No. 36

36



A



37

A 101**Dismantling and reassembling pedals**

Tools: 14 mm spanner, 2 10, 14 and 17 mm spanners, pointed pliers, hammer, chisel.

1. Loosen nuts on pedal fish plate inside tunnel (14 mm spanner)

Note: Insert spanner sideways. Lift rubber mat on right side of tunnel.

Illustr. No. 37



38

2. Remove angled lever and clutch cable.
3. Remove locking washer on fuel pipe. (pointed pliers)

Note: Remove locking ring through front tunnel opening and replace the same way.

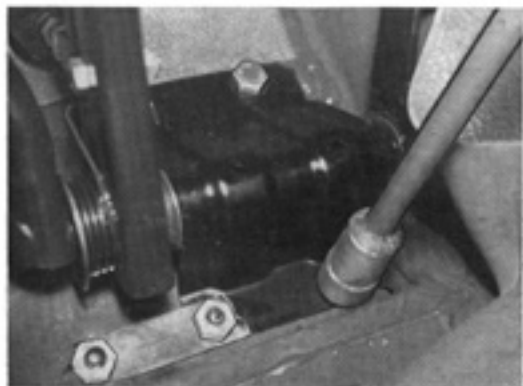
Illustr. No. 38



39

4. Separate main brake cylinder piston rod from brake pedal. (2 10 mm spanners)

Illustr. No. 39



40

- Note:** When the nut and screw have been replaced the piston rod should have a 1—2 mm play. Adjust on piston rod. (14 and 17 mm spanner)

5. Bend up locking washer under nuts holding bearing block and front axle (2 nuts, hammer, chisel)
6. Loosen screws holding bearing block (on right) (2 screws, 14 mm spanner)

Illustr. No. 40

7. Loosen nuts holding bearing block and front axle (2 nuts, 14 mm screwdriver)

For reassembly proceed in reverse sequence.

A 111

Dismantling and reassembling rich mixture cables

Tools: 9, 11 mm spanners, 10 mm spanner, vernier gauge

1. Raise motor hood.
2. Remove air silencer (11 mm spanner)
3. Loosen cable lock nut on carburettor. (11 mm spanner)
4. Detach cable.

Illustr. No. 41



5. Remove cover in tunnel (4 screws, 10 mm spanner)
6. Withdraw cable knob.
7. Loosen locking collar (9 mm spanner)
8. Disconnect cable.

Note: To give a clearer picture, further work on the cable run has been shown with a dismantled unit.

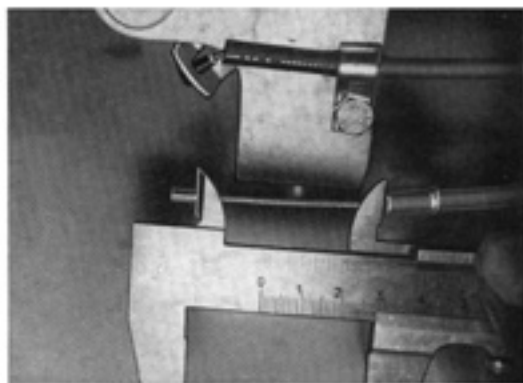
Illustr. No. 42



9. Lift out cable run.

Note: When extracting the cable run, insert a wire to pull through the new cable. Fix cable in a holder and clip so that on the carburettor end it can be drawn out to a length of 45 mm.

Illustr. No. 43



The friction brake must be adjusted to allow the cable to rest in any position but it must operate freely.

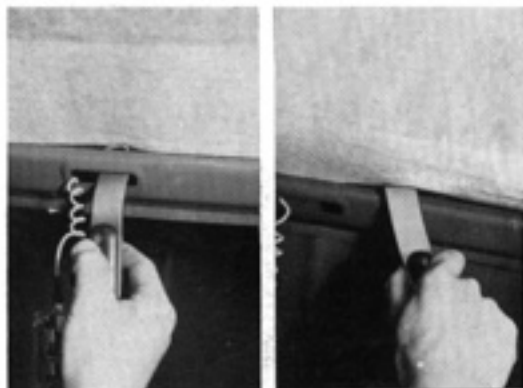
Illustr. No. 44

The rich mixture cable is the only one in the tunnel not fixed by clips. It should not pass across the gear change shaft.

When reassembling follow the reverse sequence.

Note: When removing other pipes or cables the holding clips must be bent up. Refitting is as described above by inserting a pull through wire.





45

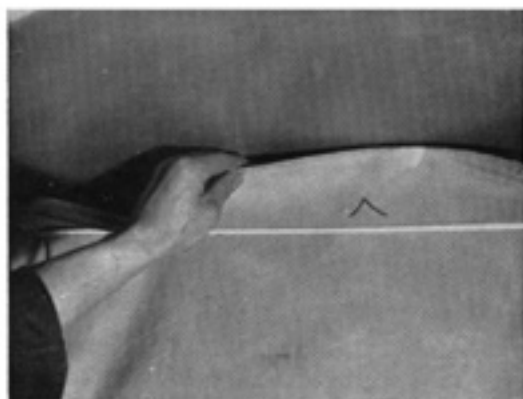
A 121 Dismantling and reassembling head lining and frame

Tools: Selfmanufactured tool of flat steel 30 x 2 mm bent at right angles over about 10 mm of its length and fitted with a handle.

Note: For any interior work see that your hands are clean.

1. When dismantling roof cover remove interior lighting and begin at the edges (special selfmanufactured tool)

Illustr. No. 45 left



46

2. When replacing roofing the special tool is pressed into the stiff card-board strip along the rim in the following sequence: (special self manufactured tool)

Illustr. No. 45 right



47

- a) Attach cover to frame.
- b) Pull cover at front and centre, fix interior lighting in center.

Illustr. No. 46



48

- c) Press cover in at front.
- d) Pull back and fix centre where marked.
- e) Press down at back.
- f) Fix frame.

Illustr. No. 47

- g) Press in cover at sides and corners.
3. Where there is inadequate tension insert stiff card-board strips 20 x 1,5 mm of adequate length (special self manufactured tool)

Illustr. No. 48

A 131

Dismantling and reassembling heater unit

Tools: 10 mm spanner, 11 mm spanner, phillips screwdriver, screwdriver

1. Raise boot hood.
2. Remove cover casing (2 screws, 11 mm spanner)
3. Loosen fuel tank and push forward
4. Remove locking screw on switch (screwdriver)
5. Detach cable to heater cover on motor close to switch

Illustr. No. 49

Note: When adjusting heating, the switch guide must be central.

6. Loosen lock nut on heater knob (10 mm spanner)

Illustr. No. 50

7. Push back stop washer of heater knob and unscrew knob.

Note: When adjusting the heating, the central position of the switch guide (Illustr. No. 49) must coincide with the central position of the heater knob.

Illustr. No. 51 left

The heater outer cable must have a 1 mm play at the guide fitting.

Illustr. No. 51 right

8. Remove heating tubes where they branch
9. Loosen front wall mat (it is stuck down)
10. Remove metal threads on switch cover (7 screws, cross screwdriver)

Illustr. No. 52

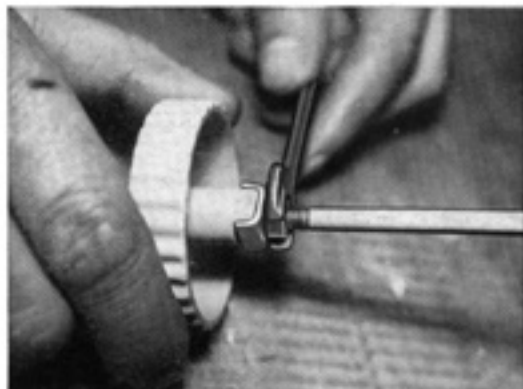
11. Remove switch cover with operating rod from fitting.

When reassembling proceed in reverse sequence.

49



50

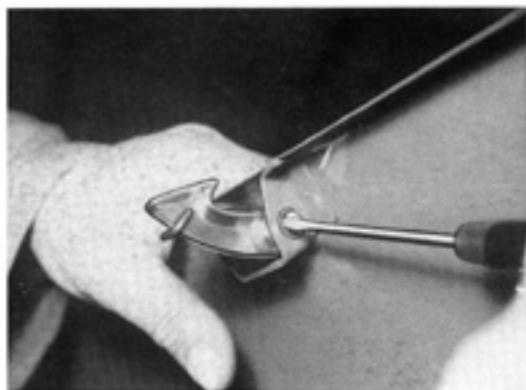


51



52





53

A 141**Dismantling and reassembling motor hood lock****Tools:** Screwdriver, punch

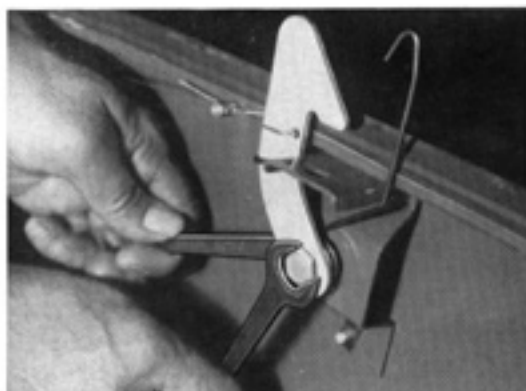
1. Remove locking ring (screwdriver)

Illustr. No. 53

2. Remove bolt

Note: The spring is under considerable tension, when reassembling use punch to insert motor hood lock.

54

**A 151****Dismantling and reassembling boot cover lock****Tools:** 2 14 mm spanners, screwdriver, dual purpose pliers

1. Release screw nipple of cable and detach (screwdriver)
2. Unscrew bolt (2 14 mm spanners)

Illustr. No. 54

55



Note: When reassembling, adjust cable. It must not be taut. It is set at 25 mm by a second nipple.

Illustr. No. 55

3. Press the guide pin on the locking bar upwards and remove locking ring. (screwdriver)

Illustr. No. 56

56



4. Remove guide pin and spring.

Note: The guide pin also is under pressure so hold the pressure with your thumb.

When reassembling proceed in reverse sequence.

A 152 Kofferhaubenverschluß (Führungsstift unten) auswechseln

Werkzeug: 2 Maulschlüssel 14 mm, Schraubenzieher, Kombizange, Rohr Innen- $\varnothing$ 10 mm, Außen- $\varnothing$ 13 mm, ca. 100 mm lang.

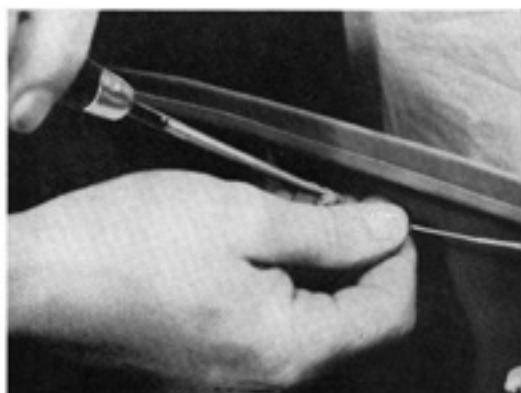
1. Schraubnippel für Seilzug lösen, Seilzug aushängen. (Schraubenzieher)
2. Verriegelung abschrauben. (2 Maulschlüssel 14 mm)

Bild a



Achtung: Beim Einbau muß der Seilzug eingestellt werden. Um ein selbsttätiges Öffnen der Kofferhaube zu vermeiden, darf der Seilzug nicht unter Spannung stehen. Die Begrenzung erfolgt auf 25 mm durch einen zweiten Schraubnippel.

Bild b



3. Zum Einsetzen einer neuen Feder den Führungsbolzen einfetten und die Feder mit passendem Rohr einschlagen.

Bild c



4. Abstützung für Kofferhaube. Ab Fahrzeug Nr. 4 006 287 / 4 007 024 ist nebenstehend abgebildete Kofferhaubenstütze eingebaut; der nachträgliche Einbau erfordert Änderung am Aufbau und eine neue Kofferhaube.

Bild d





a

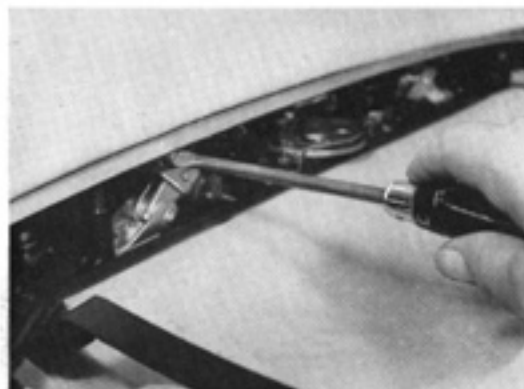
A 123 Schiebedach aus- und einbauen

Werkzeug: Kreuzschraubenzieher, Schraubenzieher, Reißnadel, Messer, Schere, Kunststoffhammer, Spezialkleber.

1. Dachverkleidung mit Spiegel aus- und einbauen (siehe Seite 134).

Achtung: Nach Einbau der Dachverkleidung wird die scharfe Kante des Dachausschnittes mit einem Klebestreifen versehen, der Stoff zum Dachausschnitt hin gespannt und festgeklebt. (Schere, Spezialkleber)

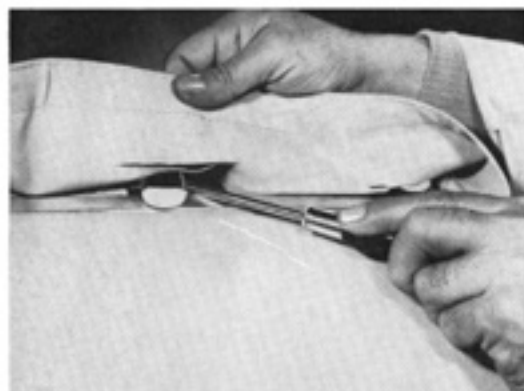
Bild a



b

2. Vor Abnahme des Verdeckstoffes das Schiebedach öffnen, beide Lagerbolzen entfernen. (Schraubenzieher)

Bild b



c

3. Verdeckstoff links und rechts aus den drei Spiegeln herausziehen.

Bild c



d

Achtung: Um ein Durchschieuern des Verdeckstoffes zu vermeiden, darf beim Einbau der Mittelspiegel nicht zu stark auf die Laufschiene drücken.

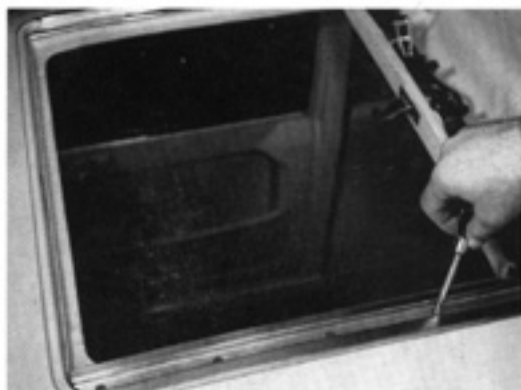
4. Blechschrauben für Klemmstreifen hinten und Blechschrauben für Verdeckstoff hinten entfernen. (Kreuzschraubenzieher)

Bild d

Achtung: Diese beiden Befestigungen sind beim Einbau maßgebend für die Spannung der Schiebedachverkleidung und des Verdeckstoffes.

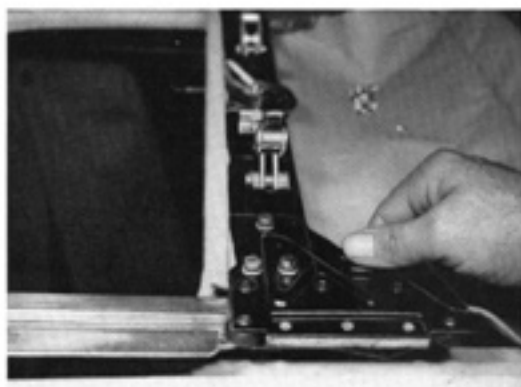
5. An Laufschienen links und rechts Blechschrauben entfernen, Schiene mit Gummianterlage und Schiebedachverkleidung abnehmen.

Bild e



6. Vor Einbau der Laufschienen muß der Vorder- und Mittelspiegel der Schiebedachverkleidung in die Laufschienen eingesetzt werden.

Bild f



Die Gummianterlage der Laufschiene muß gleichmäßig anliegen. Beide vorderen Kanten der Laufschiene sind mit geeigneter Dichtungsmasse abzudichten. Die Bohrungen werden mit der Reißnadel geflüchtet und die Blechschrauben eingeschraubt.

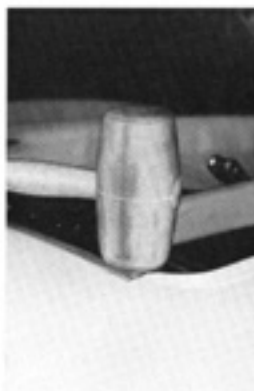
Achtung: Zur einwandfreien Abdichtung beide vorderen Kanten der Laufschienen mit Kunststoffhammer vorsichtig nach unten richten, überstehende Enden der Gummianterlage mit scharfem Messer abschneiden!

(Lackierung nicht beschädigen!)

Bild g links

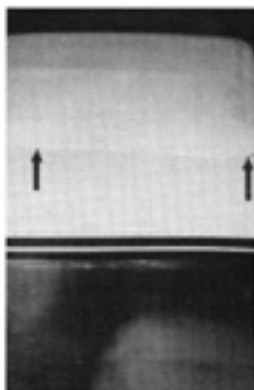
7. Vor Einsetzen des Verdeckstoffes in die Spiegel (s. Abs. 3) die Betätigung des Schiebedaches auf Leichtgängigkeit prüfen. Dazu drei Schlitzschrauben lösen und Rollen nach innen oder außen verschieben und wieder festziehen.

Bild g rechts



8. Bei geschlossenem Schiebedach muß der Verdeckstoff überall satt am Dach anliegen.

Bild h links



Gegebenenfalls das Schiebedach vorne mit Wasserpumpenzange und zwei Hartkartonstreifen nachrichten.

(Kunststoffhammer, Wasserpumpenzange, Hartkartonstreifen)

Bild h rechts

Arbeitsrichtzeiten

(Die mit * bezeichneten Arbeitsvorgänge sind ohne Motorausbau möglich)

Gruppe MG Motor-Getriebeblock

MG 1	Motor-Getriebeblock aus- und einbauen	15-18	160	—	160
* MG 2	1 Lagerelement für Motoraufhängung auswechseln	18 a	20	—	20
MG 3	Motor-Getriebeblock zerlegen und zusammenbauen	19-44	560	MG 1	720
* MG 6	Unteren Exzenterantrieb zerlegen und zusammenbauen	46	30	MG 61	400
MG 7	Synchron-Getriebe mit Schaltung aus- und einbauen	46a 46b	30	MG 3	750
MG 9	Gleichlaufringe auswechseln (Motor ist ausgebaut)	46c 46d	165	MG 130	300
MG 11	Motor- und Getriebelagerung erneuern	46e + 46f	120	MG 3	840
MG 13	Motorlagerung erneuern	46 e	30	MG 3	750
MG 14	Getriebelagerung erneuern	46 f	90	MG 3	810
* MG 17	Lagerung (Simmerring) für Kupplungsantriebsrad erneuern	47	30	MG 18 + MG 130	195
MG 18	Axialspiel des Kurbeltriebes festlegen (nur bei Sport- [Klauen-] Getriebe)	48	30	MG 130	165
* MG 19	Kühlluftführung aus- und einbauen	19-20	90	A 155, MG 161	120
* MG 21	Zylinder mit Kolben aus- und einbauen	31-32	30	MG 31	235
* MG 31	Zylinderkopf aus- und einbauen	21-26	20	MG 19, MG 67	205
* MG 33	Zylinderkopf überholen (einschl. Ventillführungen wechseln)	49-51	135	MG 31	340
* MG 35	Ventile einstellen	52	15	—	15
MG 41	Kurbeltrieb mit Lagerung für Sport-[Klauen-] Getriebe aus- und einbauen	19-44	30	MG 3	750
MG 43	Kurbeltrieb zerlegen und zusammenbauen Austauschteil verwenden	—	—	—	—
MG 44	Kurbeltrieb mit Lagerung aus- und einbauen (ab Fahrzeug mit Synchron-Getriebe)	53-54	30	MG 3	750
* MG 60	Deckel rechts aus- und einbauen	19-28 + 31-33	30	MG 21, MG 172, MG 81	360
* MG 61	Steuerpleuel mit Exzenter Scheiben aus- und einbauen	19-28 + 31-34	10	MG 60	370
* MG 64	Nockenwelle aus- und einbauen	21-22	45	MG 35	60
* MG 67	Exzenter lagerschwinge aus- und einbauen	21-25	30	MG 64	90
MG 68	Lager der Exzenter lagerschwinge auswechseln (Exzenter lagerschwinge ist ausgebaut)	45	35	—	35
* MG 71	Ölpumpe aus- und einbauen	19-28 + 31-35	20	MG 60	380
MG 73	Ölpumpe zerlegen und überprüfen (Ölpumpe ist ausgebaut)	55	15	—	15
* MG 74	Öldruckschalter aus- und einbauen	20	15	—	15
* MG 76	Überdruckventil aus- und einbauen	55	30	—	30
* MG 81	Kraftstoffpumpe aus- und einbauen	56	20	—	20
* MG 83	Kraftstoffpumpe zerlegen und zusammenbauen	56-58	15	MG 81	35
MG 85	Kraftstoffpumpe auf Druckleistung prüfen	58 a	30	—	30
* MG 88	Kraftstoffleitung reinigen bzw. durchblasen	56	15	—	15
MG 111	Differential aus- und einbauen	19-40	—	s. MG 3	720
MG 113	Differential für Sport- (Klauen-) Getriebe zerlegen und zusammenbauen	46 g	60	MG 3	780
MG 114	Differential für Synchron-Getriebe zerlegen und zusammenbauen	46 h	60	MG 3	780
MG 119	Sport-[Klauen-] Getriebe mit Schaltung aus- und einbauen	41-44	—	s. MG 3	720

Arbeitsrichtzeiten

		Seite	Einzelzeit min.	erforderliche Zusatzarbeiten	Gesamtzeit min.
* MG 130	Kupplung aus- und einbauen	29+61-62	115	MG 135	135
* MG 133	Kupplung zerlegen und zusammenbauen (Kupplung ist ausgebaut)	59-60	30	—	30
* MG 134	Spiralgehäuse aus- und einbauen	29+62 b	80	MG 135	100
* MG 135	Kupplung (mit Zugspindel) einstellen	61-62	20	—	20
* MG 136	Drucktasche für Kupplung (mit Zugspindel) aus- und einbauen	29	85	MG 135	105
* MG 137	Kupplungsscheibe belegen (Kupplung ist ausgebaut) — möglichst Austauschteil verwenden!	63	30	—	30
* MG 138	Lagering auf Kurbeltrieb links, bei Sport-(Klauen-)Getriebe aus- und einbauen	48+48 a	60	MG 130	195
* MG 139	Kupplungsscheibe auswechseln (Kupplung ist ausgebaut)	59-60	15	—	15
* MG 140	Kupplung (mit Ausrückhebel) einstellen	62 a	20	—	20
* MG 141	Kupplungsdrucklager auswechseln	62 b	40	MG 134	140
MG 145	Getriebebeschaltung einstellen	64-65	30	—	30
MG 146	Handschalthebel aus- und einbauen	65	20	MG 145	50
* MG 147	Schaltstange aus- und einbauen und auf Länge einstellen	64-65	60	MG 145	90
MG 160	Luftfilter reinigen		15	—	15
MG 161	Vergaser aus- und einbauen	16	15	—	15
MG 163	Vergaser reinigen		15	—	15
MG 165	Vergaser einstellen	66	15	—	15
* MG 172	Lichtanlasser aus- und einbauen	27	60	MG 195	90
* MG 173	Lichtanlasser überholen (Lichtanlasser ist ausgebaut)	67-68	180	—	180
* MG 174	Unterbrecherkontakte aus- und einbauen	69-70	40	MG 195	70
* MG 175	Kohlebürsten aus- und einbauen		45	—	45
* MG 176	Kondensator aus- und einbauen		30	—	30
* MG 195	Zündung einstellen	69-70	30	—	30
* MG 196	Regler aus- und einbauen	17	30	—	30
Gruppe H Hinterachse					
H 1	Ein Hinterrad mit Schwinge aus- und einbauen	73-76	50	H 21, B 5	120
H 2	Lagergummi einer Schwinge erneuern (Hinterrad)	76	10	H 1	130
H 4	Lager oder Abdichtringe für Hinterachse erneuern	77-78	45	H 7	60
H 6	Eine Hinterradachswelle erneuern	77-78	30	H 7	45
H 7	Eine Antriebswelle aus- und einbauen	73	15	—	15
H 11	Einen Stoßdämpfer aus- und einbauen	79	20	—	20
H 14	Gummibüchse mit Lagerbüchse in Stoßdämpfer erneuern	92	10	H 11	30
H 21	Eine Hinterfeder aus- und einbauen	80	25	H 11	45
H 22	Beide Kreuzgelenke aus- und einbauen	37-38	90	2 x H 7	120
H 24	Radioldichtringe für Gelenkgabeln erneuern	37-38	15	H 22	135
Gruppe V Vorderachse					
V 1	Vorderachse mit Lenkung aus- und einbauen	83-84	80	B 5, V 31	140
V 3	Vorderachse zerlegen und zusammenbauen	85-88	160	V 1	300
V 5	Vorderachse einstellen und vermessen	89-90	90	—	90
V 11	Einen Stoßdämpfer vorn aus- und einbauen	91	20	—	20
V 14	Gummibüchse mit Lagerbüchse in Stoßdämpfer erneuern	92	10	V 11	30

Arbeitsrichtzeiten

		Seite	Einzelzeit min.	erforderliche Zusatzarbeiten	Gesamtzeit min.
V 21	Eine Vorderfeder aus- und einbauen	93-94	20	V 11	40
V 23	Unteren Querlenker aus- und einbauen	93-94	20	V 21	60
V 25	Oberen Querlenker aus- und einbauen	93-94	40	V 11	60
V 27	Einen Achsschenkel aus- und einbauen	87-88 u. 93	70	V 11	90
V 28	Einen Achsschenkel ausbüchsen		40	V 27	130
V 30	Sämtliche Silentblöcke der Vorderachse auswechseln	88a+88b	60	V 3	360
V 31	Vorspur prüfen und einstellen	90	15	—	15
V 35	Achse vermessen, schließt an; Rahmen vermessen, Hinterachse zur Vorderachse vermessen	95-96	150	V 5	240
V 36	Tachoantrieb aus- und einbauen	88	20	V 27	110
V 37	Lager und Abdichtung eines Vorderrades aus- und einbauen	85-86	45	—	45
Gruppe L Lenkung					
L 1	Lenkung aus- und einbauen	83-84	—	s. V 1	140
L 2	Lenkrod aus- und einbauen	102	15	—	15
L 3	Lenkung zerlegen und zusammenbauen	99-101	40	V 1	180
L 5	Lenkung einstellen	102	10	—	10
L 7	Eine Spurstangenhälfte aus- und einbauen	100	15	V 31	30
L 9	Laufbüchsen der Zahnstange erneuern	99-102	10	V 1	150
Gruppe B Bremsen					
B 1	Bremsen aus- und einbauen (Vorder- und Hinterräder)	105-106	80	B 5	125
B 5	Bremsen einstellen und entlüften (alle 4)	107-108	45	—	45
B 6	Bremsen nachstellen (ohne entlüften)	107	15	—	15
B 7	Bremsbeläge bei allen 4 Naben erneuern	105-106	90	B 1	215
B 8	Einen Radzylinder auswechseln	105-106	35	B 5	80
B 10	Hauptbremszylinder aus- und einbauen	132	20	B 5	65
B 11	Handbremse einstellen	107	10	—	10
B 12	Einen Bremschlauch auswechseln	83+86	10	B 5	55
Gruppe E elektrische Anlage, Armaturen					
E 1	Kabelbaum aus- und einbauen	113	215	E 16, E 21, E 31, E 33, E 25	290
E 8	Verteilerleiste aus- und einbauen	118	25	—	25
E 9	Sicherungsdose aus- und einbauen	114	15	—	15
E 11	Instrumententafel aus- und einbauen	114	30	—	30
E 12	Zündschloß mit Schließzylinder erneuern	114 a	15	E 11	45
E 13	Batterie aus- und einbauen	15	10	—	10
E 14	Signalhorn aus- und einbauen		10	—	10
E 15	Scheibenwischermotor aus- und einbauen		45	—	45
E 16	Schalterkombination aus- und einbauen	114	20	L 2	35
E 17	Zündspulen aus- und einbauen		20	—	20
E 21	Scheinwerfer aus- und einbauen	115	10	—	10
E 23	Eine Glühlampe aus- und einbauen (Scheinwerfer)	116	5	—	5
E 25	Scheinwerfer erstellen	116	10	—	10
E 26	Ein Scheinwerferglas erneuern	117	20	E 25	30
E 27	Lichtschalter aus- und einbauen	118	15	—	15
E 31	Eine Schlußlicht-Blink-Brems- und Rückstrahlerleuchte aus- und einbauen	119	10	—	10
E 32	Eine Glühlampe der Schlußlicht-Blink-Brems- und Rückstrahlerleuchte wechseln	119	10	—	10
E 33	Eine Blinkleuchte vorn aus- und einbauen		10	—	10

Arbeitsrichtzeiten

		Seite	Einzelzeit min.	erforderliche Zusatz- arbeiten	Gesamt- zeit min.
E 34	Eine Glühlampe der Blinkleuchte vorn aus- auswechseln		10	—	10
E 36	Blinkgeber aus- und einbauen		10	—	10
E 41	Innenbeleuchtung aus- und einbauen	120	10	—	10
E 51	Eine Kennzeichenleuchte aus- und einbauen	120	10	—	10
E 52	Antriebswelle für Tachometer aus- und einbauen	84+114	15	—	15
E 54	Tachometer aus- und einbauen	114	5	E 11	35
E 55	Bremslichtschalter aus- und einbauen	113	5	B 5	50
Gruppe A Aufbau					
A 1	Kraftstoffbehälter aus- und einbauen	123	20	—	20
A 3	Kraftstoffsignalgeber erneuern	124	5	A 1	25
A 5	Kraftstoffsignalgeber prüfen	124	5	A 3	30
A 6	Kraftstoffsaugrohr erneuern oder abdichten	124	5	A 1	25
A 10	Einen Satz Schonbezüge einbauen		150	—	150
A 51	Vorderradkotflügel aus- und einbauen	125	60	A 71, A 91, A 153, E 21, E 33	125
A 71	Eine Türe aus- und einbauen	126	20	—	20
A 73	Türscheiben einer Türe aus- und einbauen	127	30	—	30
A 74	Ein Türschloß aus- und einbauen	128	30	A 79	60
A 75	Einen Türgriff aus- und einbauen	128	10	A 79	40
A 76	Eine Fensterkurbel aus- und einbauen	129	30	A 71, A 73	80
A 77	Schließzylinder im Türgriff aus- und einbauen	128 a	10	A 75	50
A 79	Türverkleidung aus- und einbauen		30	—	30
A 81	Eine Windschutzscheibe aus- und einbauen (mit Fensterscheibenzement abdichten)	130	45	—	45
A 82	Rückwandscheibe aus- und einbauen (abdichten)	130	45	—	45
A 83	Eine Seitenscheibe aus- und einbauen (abdichten)	130	45	—	45
A 91	Ein Zierteil aus- und einbauen	131	10	—	10
A 96	Eine Stoßstangenhälfte mit Federbügel aus- und einbauen		15	—	15
A 101	Fußhebelwerk aus- und einbauen	132	60	—	60
A 102	Fußhebelwerk zerlegen und zusammenbauen mit ausbüchsen		15	A 101	75
A 111	Seilzug für Starter aus- und einbauen	133	45	—	45
A 112	Seilzug für Gas aus- und einbauen	132+133	45	—	45
A 113	Seilzug für Kupplung aus- und einbauen	132+133	45	—	45
A 114	Seilzug für Heizung aus- und einbauen	133-135	45	—	45
A 115	Seilzug für Kofferhaube aus- und einbauen	136-137	20	—	20
A 116	Seilzüge für Handbremse aus- und einbauen	106+107	60	—	60
A 121	Dachverkleidung mit Spriegel aus- und einbauen	134	90	—	90
A 123	Schiebedach aus- und einbauen	138-139	240	—	240
A 131	Heizung aus- und einbauen	135	60	—	60
A 141	Motorhaubenverschluß aus- und einbauen	136	10	—	10
A 142	Motor- oder Kofferhaube aus- und einbauen	136	10	A 141 oder A 151/152	25
A 146	Abdichtgummi für Kofferhaube aus- und einbauen		30	—	30
A 151	Kofferhaubenverschluß (Führungstift oben) aus- und einbauen	136	20	—	20
A 152	Kofferhaubenverschluß (Führungstift unten) aus- und einbauen	137	20	—	20
A 153	Rückspiegel aus- und einbauen		15	—	15
A 155	Auspufftopf aus- und einbauen	17	20	—	20
A 160	Handbremshebel aus- und einbauen		30	—	30

Bedeutung der großen Buchstaben im Schaltplan

A Lichtanlasser
 B Regler
 C Batterie
 D Zündanlaßschalter
 E Zündspulen
 F Zündkerzen
 G Scheinwerfer
 H Blinkleuchte
 I Bremsblinkleuchte + Schlußleuchte
 K Kennzeichenleuchten
 L Innenleuchte
 M Lichtschalter
 N Sicherungskasten

O Kabelverteiler
 P Doppel-Hebelschalter des Lenkrohrs
 Q Sonderausstattung (Rückfahrcheinwerfer, Nebellampen, Frischluftventilator)
 R Blinkgeber
 S Kombinationsinstrument
 T Scheibenwischermotor
 U Elektrisches Horn
 V Lenkstabsicherung mit Zündanlaßschalter
 W Kraftstoff-Signalgeber
 X Bremslichtschalter am Hauptbremszylinder
 Y Radio
 Z Antenne

