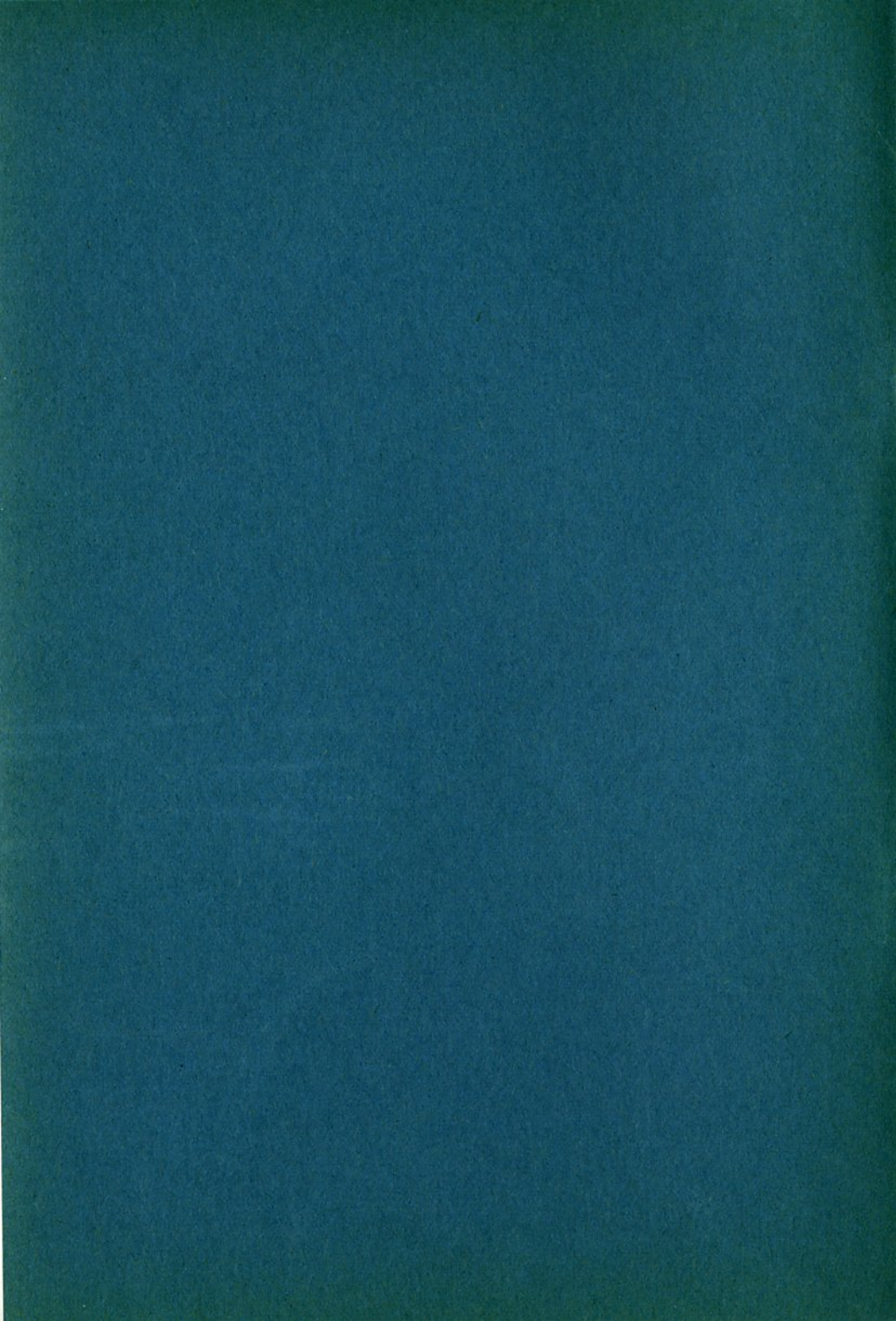


**LOOK
LISTEN
DO IT BETTER**



MAINTENANCE SERVICE TYPE 1

Slide Series N° 25



MAINTENANCE SERVICE TYPE 1

25/1 The Volkswagen 1200 is recognized as being an economical, reliable and roadworthy vehicle. Together with a high degree of technical achievements we have passed on these good properties to the Volkswagen 1300. Like its small brother, it goes and goes and goes. However, in order that it goes well we need your help.

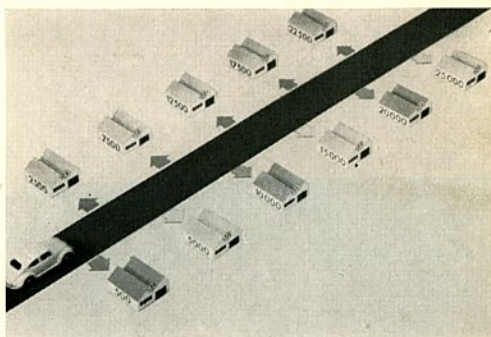
Here you see the service adviser arranging for a Lubrication and Maintenance to be carried out.

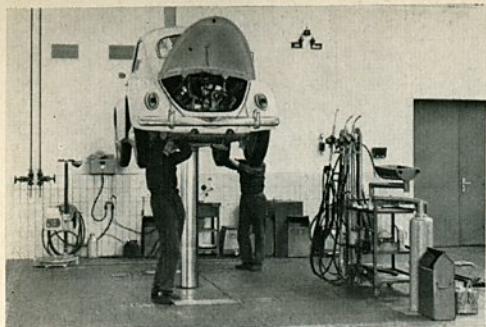
And now we proceed into the workshop.



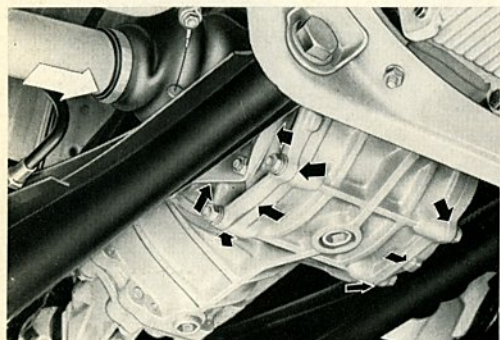
25/2 As you know, the Volkswagen 1300 and all other Volkswagens only require servicing every 10,000 km (6,000 miles) as from August 1965. Between maintenance services a lubrication service is carried out every 5,000 km (3,000 miles). The corresponding vouchers in the Service Booklet are represented by the dark and bright workshop models on the right. Due to the extended servicing period, the work you carry out during the lubrication and maintenance services has become even more important.

Please note, however, that for vehicles manufactured up to August 1965 we cannot omit the additional lubrication Service which is due every 2,500 km (1,500 miles). The workshops on the left represent this interval.

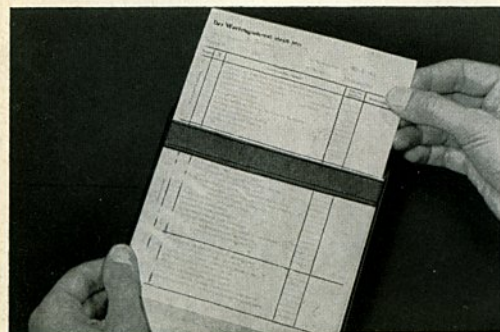




25/3 Let us now deal with the actual sequence of the lubrication and maintenance services as it is carried out on the hoist. Obviously the system will differ from workshop to workshop.

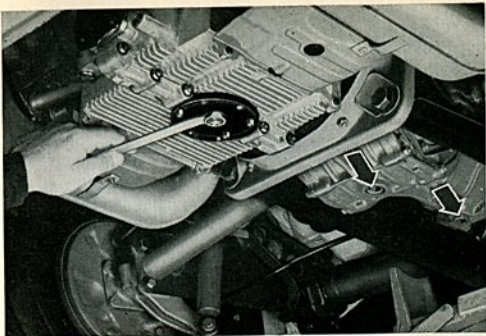


25/4 During the first maintenance service at 500 km (300 miles) we check the engine and rear axle for leaks. Should you forget to do this until later on, there is the danger that the sources of these leaks may have been eliminated by operations which have subsequently been carried out. If small leaks persist after nuts and bolts have been tightened . . .



25/5 make an entry on the card 'Defects noted during Maintenance' so that the service adviser or foreman can mention this to the customer and in urgent cases arrange for repairs to be carried out immediately after the vehicle has been serviced.

25/6 After checking for oil leaks we drain the engine oil immediately, and during the 300 mile maintenance service — then every 50,000 km (30,000 miles) — the transmission oil. On the one hand impurities will drain off better with the warm thin oil and on the other hand the engine will cool down quicker — a fact which has a major affect on the valve clearance and ignition adjustments which are carried out later on.

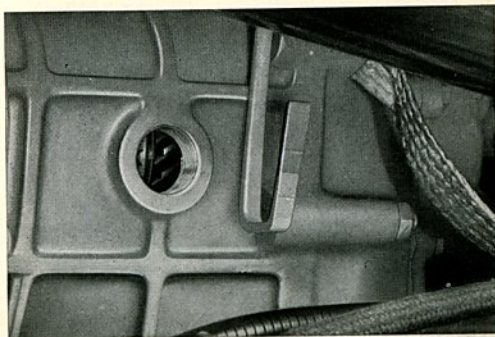


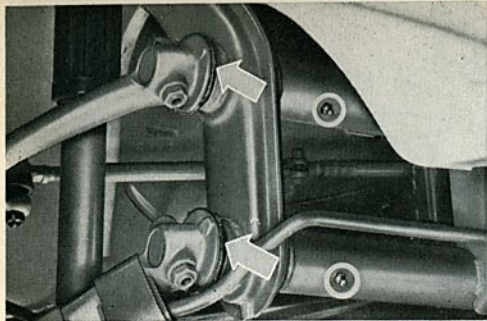
25/7 Of course we do not forget to clean the oil strainer each time and the magnetic oil drain plugs at the prescribed intervals.

New strainer gaskets and new sealing washers for the strainer cover cap nuts and oil drain plug are necessary for ensuring freedom from leaks for the next 3,000 miles. Time can be saved if, as shown here, cleaned strainers and magnetic drain plugs are kept ready for installation. Every minute saved is of importance during maintenance services.



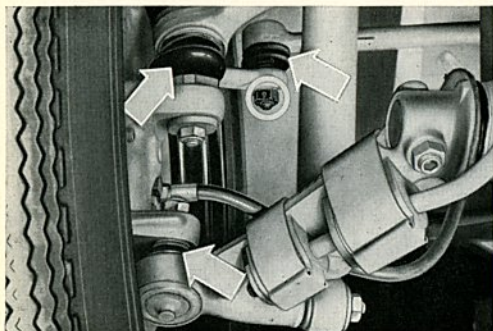
25/8 To be on the safe side the oil level in the transmission should be checked after each oil change with the help of the oil dipstick VW 679 local manufacture. The difference between the upper and lower mark is exactly one liter (1.75 Imp. pints).





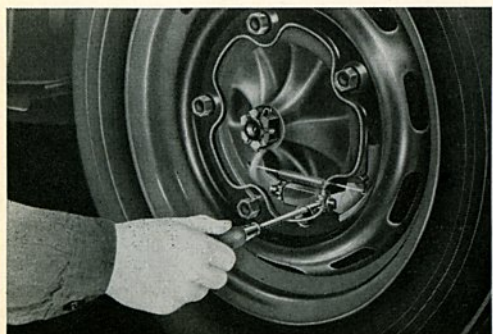
25/9 All the 4 grease nipples of the Type 1 are located on the front axle. Here you see two of them. When lubricating the torsion arm bearings, grease should be inserted until it emerges at the edge of the lubrication points.

Do not forget to clean the grease nipples carefully before lubrication as dirt will otherwise be forced into the bearing points.



25/10 The ball joints do not require greasing during lubrication services. However, check the dust seals of the joints shown here during each maintenance service: damaged seals must always be replaced. This also applies to the dust seals of the maintenance-free tie rod ends.

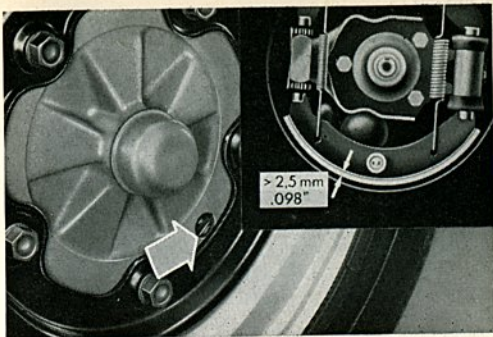
Convince yourself as well that the tie rod tubes and ends are correctly secured. Check the cotter pins as well — bright circle. If you see any signs of damage make an entry immediately in the 'Defect Card'.



25/11 The brake shoes are adjusted by turning the adjusting nuts with a screwdriver. To do this, turn the wheel until the inspection hole in the drums is opposite one of the adjusting nuts.

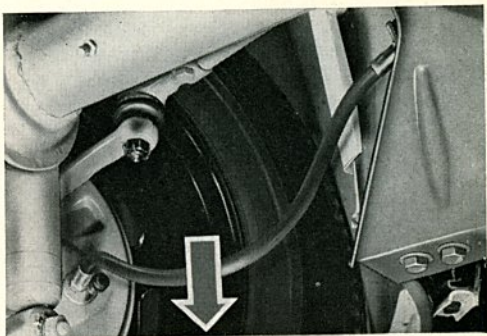
After adjustment the brake pedal should be depressed heavily a few times so as to avoid any danger arising should the brake shoes not have properly centered.

25/12 Regular checking of the brake linings during each maintenance service is an important contribution to the road safety of a vehicle. We check the lining-thickness through the inspection hole in the drum. The wear limit is 2.5 mm (.098").



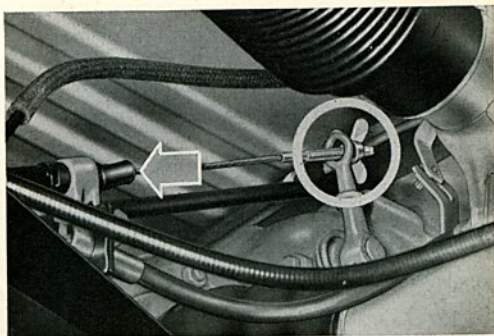
25/13 A damaged brake line or a worn brake hose, for example, impair the safety of the hydraulic brakes and endanger the lives of the occupants and other road users. When carrying out a visual check we should be very strict and also carry out this operation very carefully during maintenance services.

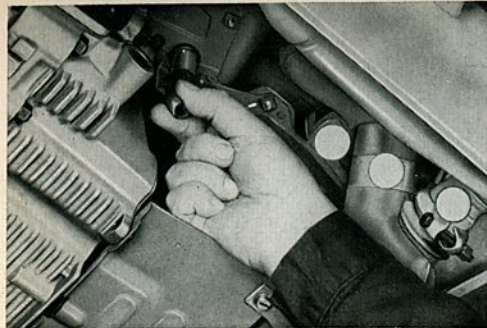
Here you see the correct installation position of the front brake hose. Take note of the position of the hoses when making the visual check and note the fact that the front brake hoses must be installed without twist and must sag.



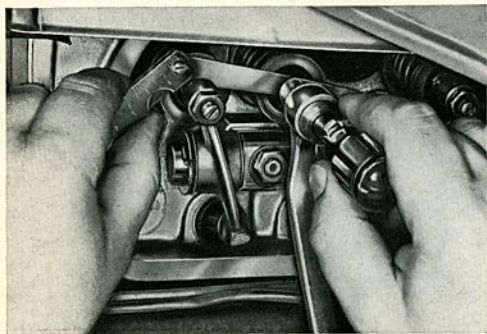
25/14 Clutch adjustment is very simple with the help of the wing nut — bright circle — situated at the threaded end of the clutch cable.

This operation can be very simple if we keep the socket and threaded piece well greased. This will ensure that the wing nut moves freely in the socket of the clutch operating lever and it will eliminate the time spent in freeing off the thread at the next maintenance service. The arrow points to the sleeve at the end of the conduit tube which should also be checked for correct seating.



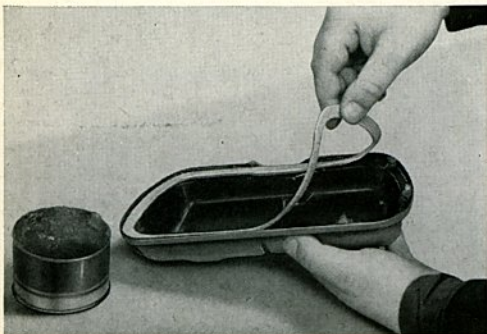


25/15 All connections of the exhaust and heating systems should be checked visually for leaks. Three of these connections are marked here. Check the exhaust muffler for damage. We should also ensure that the rubber valve for the crankcase ventilation is in perfect condition: the valve should seat firmly on the drain pipe and the slot in it should close properly after being squeezed apart.



25/16 The valve clearance is effected by the heat of the engine. The clearance increases when the engine becomes warm. This is why the valve clearance should only be checked or set when the engine is cold or fairly warm.

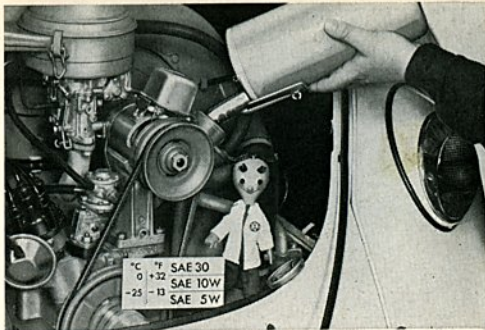
The clearance for the VW 1300 engine is: 0.1 mm (.004") for intake and exhaust valves up to a maximum oil temperature of 50° C (122° F). Since a normal 13 mm box wrench is not suitable we use a special wrench which incorporates a screwdriver in its head.



25/17 After having carefully set and checked the clearance, the cylinder head covers are installed. The cork gaskets should be replaced each time in order to ensure freedom from leaks up to the next maintenance service.

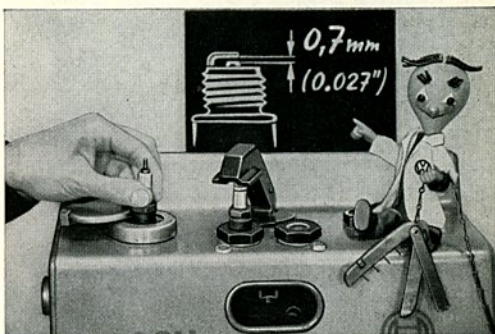
If a few spots of grease are applied, the gaskets will then seat correctly in the covers. Never use a sealing compound because time will be lost removing the gaskets later on.

25/18 When the hoist is lowered half way we fill in 2.5 liters (4.4 Imp. pints) of oil. We prefer to use single-grade oils for the Volkswagen 1300 as well. The miniature service adviser is pointing to the correct viscosity grades on the sign. You will see that the grades prescribed for the 1.3 liter engine are the same as those for the 1.5 and 1.6 liter engines. We should make a habit of checking the oil level after each oil change. We all know that an engine which does not require lubrication hat yet to be invented.



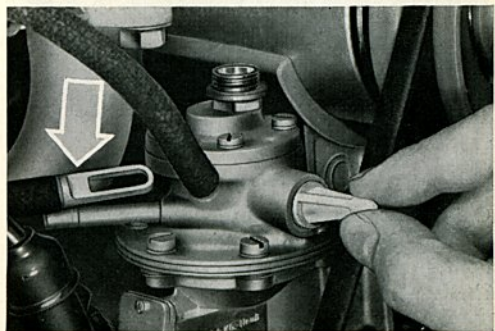
25/19 Not much time can be spent when cleaning the spark plugs. This operation can be carried out successfully by a sand blaster in a few seconds.

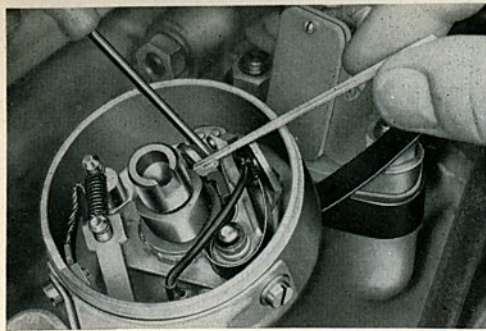
Please note, however, that depending on the amount of deposits, the sand blaster should only be operated for about 5 to 10 seconds — on no account for a longer period. If this period is exceeded not only will the desposits be removed but also the electrodes and insulator will be affected. If necessary the plug gap is re-set to $\frac{7}{10}$ mm (.028").



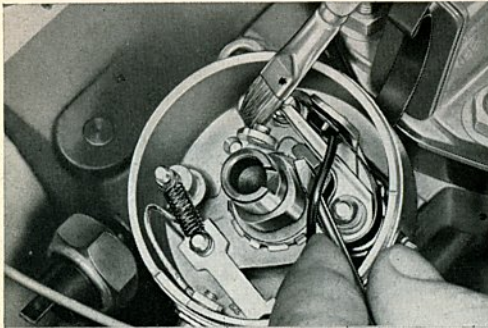
25/20 The presence of a fuel pump filter saves the time spent in cleaning the carburetor. The arrow shows the plug with which we seal off the feed hose before removing the hexagonal plug.

We clean the filter with benzine and blow it out with compressed air. Before screwing in the plug we make sure that the sealing washer is correctly seated.

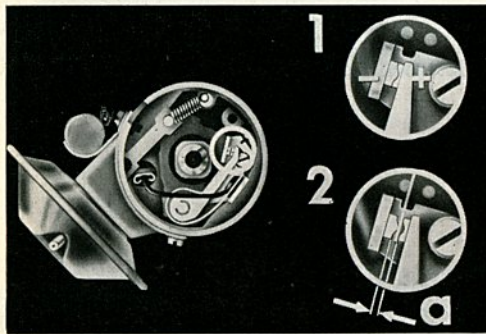




25/21 Care should be exercised when lubricating the distributor to ensure that grease is only applied where it is really required. The small amount of grease on the breaker arm fibre block usually contains abrasive dust. It is always best to remove the old grease, clean the cam slot with a cloth soaked in fuel and to apply Lithium grease.



25/22 The breaker points should always be cleaned with a benzine-soaked brush during maintenance services. The distributor cap should also be cleaned on the inside and outside and the breaker housing blown out with compressed air. On the other hand, the contacts should not be removed and fitted each time.



25/23 During the course of operation material is transferred from one contact to the other. If this is only slight the function of the contacts will not be impaired.

Picture 1 shows how a hole has formed on the breaker arm with the corresponding build-up on the fixed contact. The material is always transferred from plus to minus.

Picture 2 illustrates how the contacts are often adjusted incorrectly in such cases. If these contacts are measured with a feeler gauge and the build-up is not taken into consideration, the measuring error shown here will occur: the actual contact gap is the height of the build-up plus the thickness of the feeler gauge which is .4 mm (.016"). 'a' denotes the incorrect gap. These mistakes can be avoided if we insert the feeler gauge at the edge only.

Oxidized contacts or those with excessive build-up can be removed and cleaned up, but in most cases this takes too long. The best and most economical way is to replace the contacts.

25/24 The contact gap can be determined and corrected in a more precise manner with the aid of a dwell angle gauge. We carry out this check when the engine is running and the oil temperature in the crankcase must not be more than 50° C (122° F).

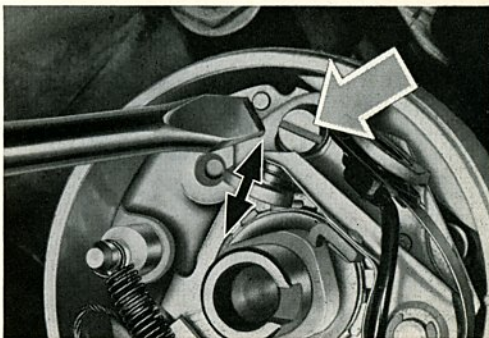
The gauge should be set and connected to terminal 15 on the ignition coil and to earth. The readings should be between 47 and 53° or 52 and 59 %.

If the readings are below these values the contact gap is too large. If the dwell angle is too large the gap is too small.



25/25 After having checked the dwell angle we know whether the contact gap will have to be increased or decreased. To do this we loosen the screw on the distributor contact shown by the arrow, insert a screwdriver in both short lugs on the breaker plate and into the slots in the breaker contact. By turning the screwdriver we can set the contact gap accordingly.

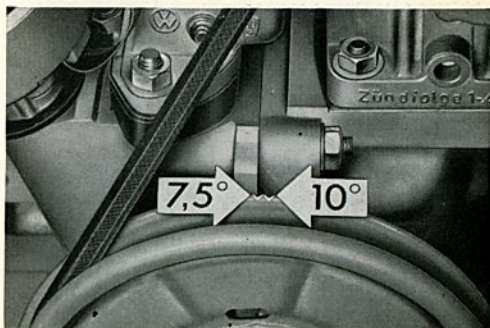
Please note, however, that the ignition must always be set after the contact gap has been corrected.



25/26 To this end there are two marks on the crankshaft pulley. The left mark signifies 7.5° and the right-hand one 10° before T. D. C.

Please note that the Volkswagen 1300 is set to 7.5°.

As opposed to this the Volkswagen 1200 is set to 10° before T. D. C.

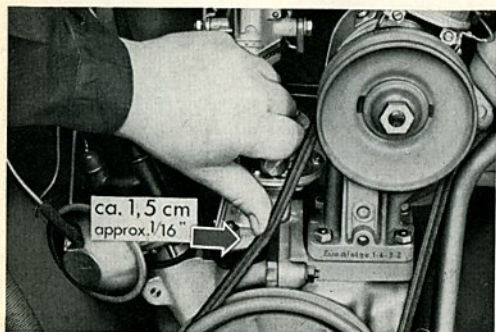




25/27 The engine must always be sufficiently cold before the ignition can be checked or set. The oil temperature in the crankcase must not exceed 50° C (122° F).

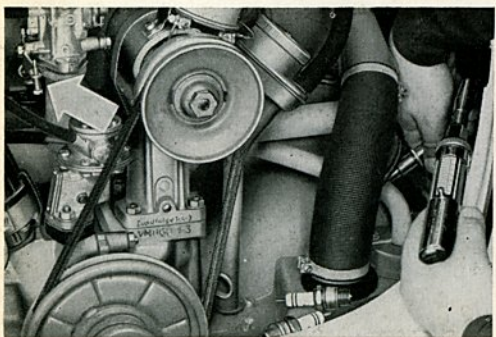
When checking and adjusting the ignition timing we use a 6 Volt test lamp. The engine must only be turned in a clockwise direction to take up the play in the distributor drive gear.

Make sure that the left hand mark — 7.5° — is in line with the crankcase jointing face and that the rotor points towards the mark on the edge of the distributor housing which is indicated by the arrow.



25/28 The fan belt drives the generator and is responsible for the cooling of the engine. Consequently, we must always check the tension and condition of the belt. Damaged fan belts must always be replaced.

We check the tension by depressing the belt midway between the crankshaft and generator pulleys. It should yield approximately 1.5 cm (.6"). The belt tension is corrected by removing or installing spacer washers.

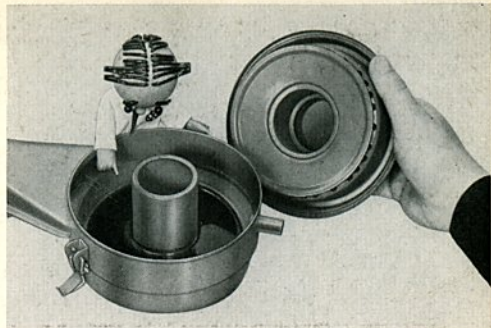


25/29 By checking the compression we gain knowledge on the condition of the engine. In particular we can ascertain whether the compression in one cylinder has fallen.

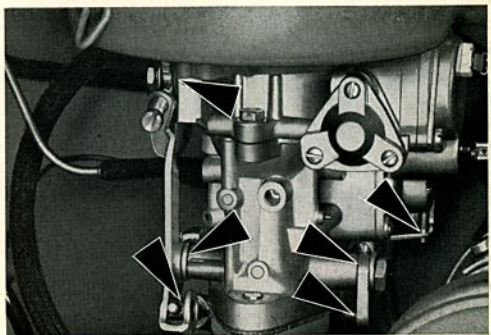
When doing so, do not forget to open the throttle valve pulley so that the cylinders receive an adequate charge during the intake stroke.

25/30 The condition of the oil bath air cleaner can have a considerable effect on the engine performance and fuel consumption. We check the oil bath air cleaner and clean the lower part at the latest when there is only a thin layer of oil above the layer of sludge.

We then fill in engine oil up to the mark. After installing the air cleaner we check the carburettor for correct seating and ensure that the hoses are connected up and that the warm air regulating flap in the air cleaner moves freely.

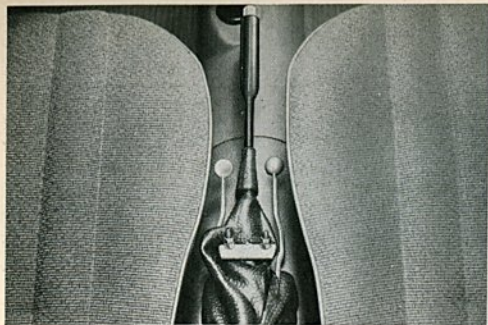


25/31 Before completing the lubrication and maintenance operations on the engine we lubricate the carburetor linkage. It is quite sufficient to apply a small quantity of oil to the locations marked with the arrows. If we are too generous when lubricating the linkage the oil will merely drop down on to other parts of the engine.



25/32 If all the auxiliary tools are readily to hand it only takes a few minutes to see to the battery. The acid level should be topped up to the correct mark. A damp oily film on the battery — nearly always a sign of excessive acid — should always be carefully removed. This layer facilitates tracking and causes the battery to discharge. After having replaced the battery caps, we use a cell tester to check whether the battery is sufficiently charged and that the cells are in order.

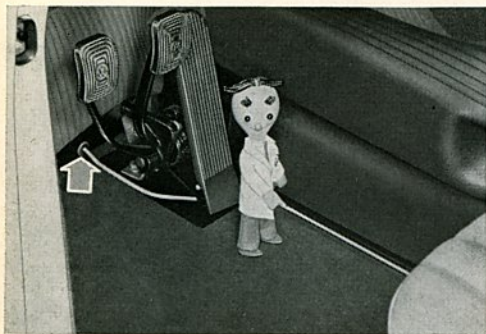




25/33 The handbrake cable adjusting nuts are excessive through two slots in the side of the boot. On no account — as shown here — should the boot be pushed aside as otherwise it will become damaged.

Tighten the adjusting nuts of both handbrake cables evenly until the rear wheels are just free to turn when the handbrake is released. Pull up the handbrake lever two notches and then check whether the rear wheels have an even braking effect. At the fourth notch it should be impossible to turn the wheels by hand.

Make sure that the compensating lever is horizontal when the handbrake is on. Do not forget to position the boot properly afterwards.



25/34 We should also check the condition of the brake lines inside the vehicle: in older vehicles, in particular, corrosion can set in if the lines have been exposed to dampness for a long time.

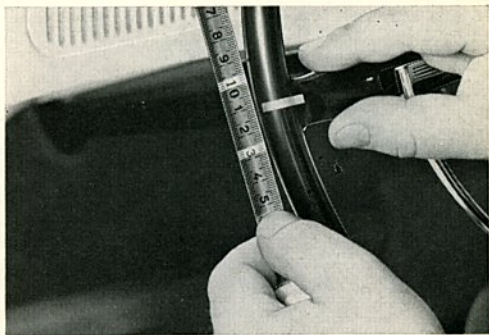
Make sure that the rubbers indicated by the arrow are in good condition.

25/35 We must always be suspicious if brake fluid losses occur between maintenance services. In such cases we must check the brake system very carefully and examine the lines and connections with the brake pedal depressed.

If the leak cannot be eliminated immediately during the maintenance service we must on no account omit to make an entry in the card 'Defects noted during maintenance'.



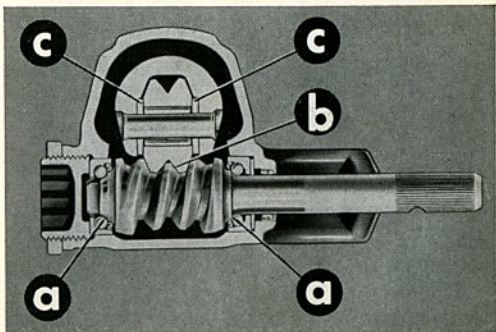
25/36 Before raising the vehicle, check the steering play. Turn the wheels to the straight-ahead position and move the steering wheel at the outer end of the spoke lightly to and fro as shown here. If the steering is correctly adjusted and the tie rods and steering components are in perfect condition it should only be possible to turn the steering wheel 25 mm (1") until resistance is felt in both directions.

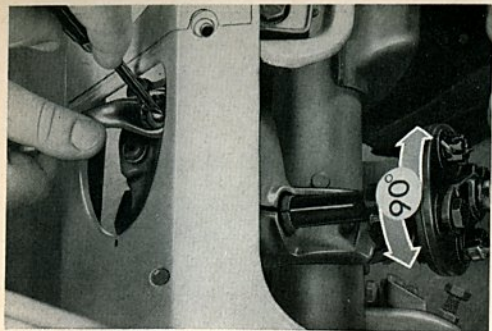


25/37 If the play is excessive, three points may be at fault:

- a — The steering worm has axial play
- b — The steering roller has play at the steering worm in the center position
- c — The steering roller has excessive axial play

We are interested in point b because during the maintenance service we can only adjust these parts. Please note the following: we can only adjust the steering roller if the worm has no axial play. This is usually the case because the ball bearing of the steering worm is preloaded.





25/38 In order to get a clear picture of the adjustment operations we have removed the fuel tank and are now looking down on the steering gear.

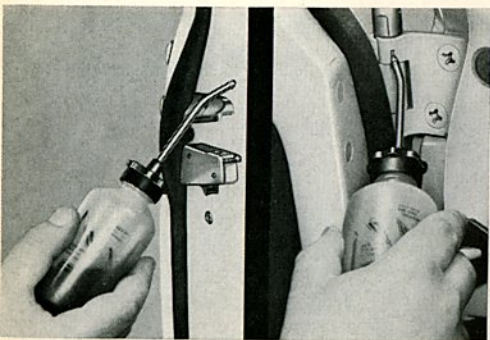
We use an offset box wrench and a screwdriver when adjusting the steering roller.

We turn the steering to the centre position. The extended groove of the marking ring shown here on this picture by a white line coincides with the casting rib on the steering gear case. We then turn the steering wheel 90° to one side. With the aid of the offset box wrench we loosen the lock nut of the roller shaft adjusting screw and loosen the adjusting screw approximately 1 turn with a screwdriver. Now we tighten the adjusting screw until the roller contacts the steering worm, we hold the adjusting screw and tighten the lock nut. If we have done this correctly we then check the steering play at 90° to the other side and, if necessary, make corrections in the same manner.

It is important to note that the adjustment must always be checked on both sides at a lock of 90° . When the range of play cannot be adjusted to the prescribed dimensions, the steering gear must be removed and the axial play of the steering roller checked.

The vehicle will be road-tested later on to establish whether the newly adjusted steering is sufficiently free.

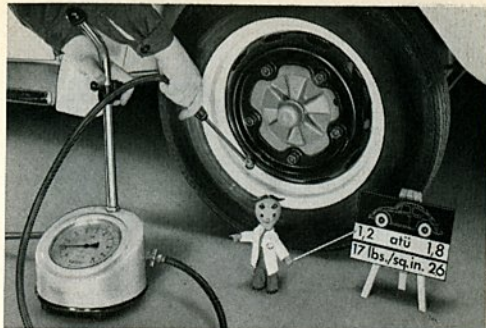
When road-testing it is important that the steering self-centres nearly to the centre position even at speeds of about 9 — 12 mph.



25/39 On this picture you see the locations where the door locks and hinges should be lubricated with a few drops of oil during the lubrication service.

Please wipe away traces of oil from the door hinges so that the oil will not spread to the doors and body later on.

25/40 We should also check the tyre pressures: it is a general practice to correct the tyre pressures to the values applicable when the vehicle is fully laden. These are: front 17 psi, rear 26 psi. Please note the following new factor: For long journeys at high speed the respective tyre pressures should be increased by 3 psi. Do not forget to check the pressure of the spare wheel and, if necessary, to inflate it to 26 psi.



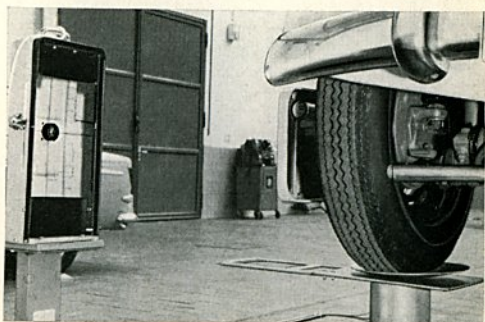
25/41 It would facilitate measures if the maintenance service is also equipped with a track gauge as shown here. This device is now fitted with swivelling wheel supports. If your maintenance stand is equipped in this manner you will be able to check and adjust the toe-in quickly.

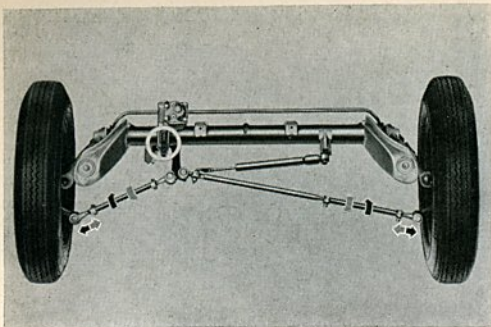
Other toe-in measuring gauges can also be used but the operation of such devices takes longer and is more complicated when carrying out the necessary adjustments.



25/42 After having attached and set the wheel mirrors at both front wheels we lower the vehicle on to the supports and measure it. Now turn the steering to the centre position.

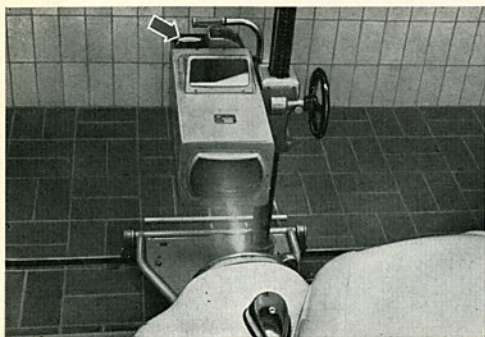
With the aid of a device press both wheels apart at the front so as to eliminate play in the tie rod ends. You can now take the readings for the toe-in value. It should be $5' \pm 10'$.





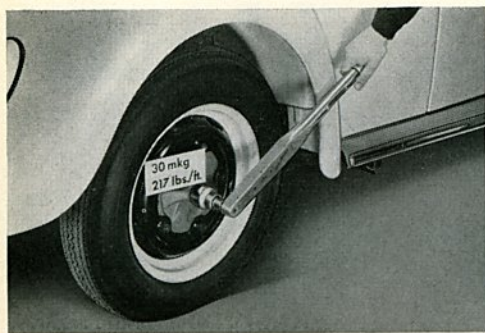
25/43 If the reading is not correct you adjust the toe-in by turning the tie rod tubes. Both tie rods must be lengthened or shortened by the same amount so that the centre position of the steering — bright circle — will not be affected.

By turning the tie rods in driving direction — dark arrows — we increase the toe-in, by turning them in the opposite direction — bright arrows — we reduce the toe-in. Do not forget to tighten the clamps after having adjusted the tie rods.



25/44 There are official regulations concerning the adjustment and brightness of headlamps. Both headlamps must be equally bright.

The arrow points to the light meter which is incorporated in the aiming device. The brightness of the headlamps can be read from this device. If the minimum values are not reached we must make an entry in the card 'defects noted during maintenance'.

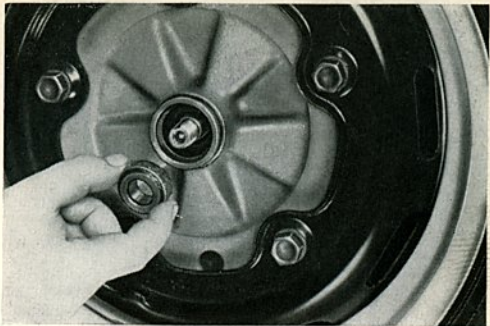


25/45 The rear axle shaft nuts should be checked for security during the 300 mile maintenance service only. We remove the cotter pin and use a torque wrench to check whether the nut has been tightened to 30 mkg (217 ft. lbs.).

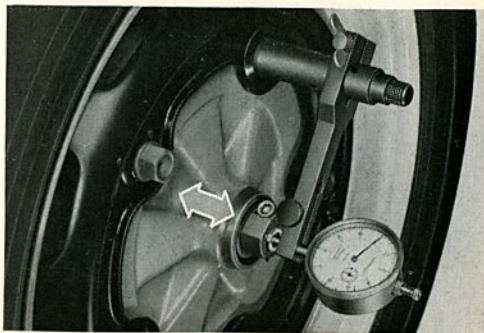
If it is possible to tighten the nut further and the cotter pin holes do not align you must increase the torque until the cotter pin can be inserted. Never slacken the axle shaft nut. This would jeopardize the security of the brake drum.

25/46 The front wheel bearings should be disassembled, cleaned carefully and checked for wear during the maintenance service every 50,000 km (30,000 miles). The prescribed heat-resistant multi-purpose grease is packed between the cages and the rollers and the space between the bearings is also filled with grease.

Why is it wrong to fill the complete hub with grease? Only a very thin layer of grease lubricates the roller bearings: superfluous grease must have space to expand into the hub. Consequently, the inner hub cap must never be packed with grease.



25/47 After installing the brake drums we must carefully adjust the wheel bearing play: turn the brake drum and simultaneously tighten the clamping nut to 1.5 mkg (10.8 ft. lbs.). We now remove one wheel bolt and attach the measuring device VW 765 so that the feeler pin of the dial gauge contacts the clamping nut. Now slacken the nut until the bearing play reading is between 0.03 and 0.12 mm (.001"—.005") when the wheel is rocked heavily to and fro axially. We then tighten the clamping nut screw to 1 mkg (7 ft. lbs.). We then remove the measuring device, insert the wheel bolt and replace the inner hub cap.





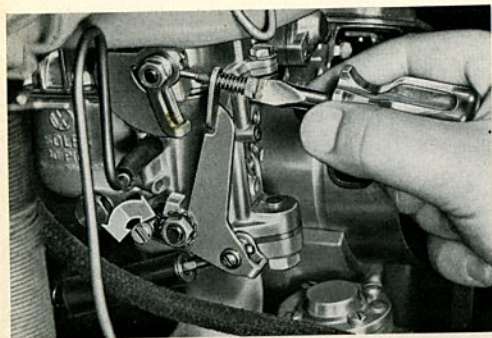
25/48 If a stationary test stand is not available, the vehicle will have to be road-tested after the maintenance service to check the vehicle thoroughly and to see if the adjustments have been carried out satisfactorily.

The use of a brake test stand does away with the necessity of the less reliable brake test and the element of danger. Here we see the car on the roller test stand which makes it possible to get a clear picture of the braking force of each individual wheel at a certain pedal pressure.

25/49 After the road test it is absolutely necessary to set the idling speed carefully when the engine is warm. We turn the idling adjusting screw until an idling speed of about 550 rpm has been attained.

Then we turn the volume control screw — shown here under the dual arrow — clockwise until the engine speed begins to drop. We now turn it anti clockwise until the engine runs smoothly. Then we give it a quarter to a third of a turn in an anti clockwise direction.

The adjustment is correct if the engine does not stall when the throttle is suddenly closed and the clutch pedal depressed simultaneously. Excessive idling revolutions or an overrich mixture can considerably increase the fuel consumption.



25/50 You have now carried out efficiently and reliably the operations stipulated for the maintenance service. Remember, however, that it is just as important that we discover defects in good time which, if they are not eliminated soon can involve heavy expenses later on. This is all the more important now because the interval between maintenance services is 6,000 miles. Consequently, we should keep an eye out for defects when the intermediate lubrication service is carried out.

In this way you will gain the customer's confidence who not unjustifiably thinks of the maintenance service in terms of a kind of a 'life insurance' for his car. Don't disappoint him. A satisfied customer will also gladly bring his car into your workshop for an oil change and lubrication. Here the service adviser is handing the vehicle over to the customer 'Bye-bye, hope to see you in for the next lubrication'.



