NSU

HANDLING THE PRINZ

INSTRUCTION BOOK FOR NSU PRINZ OWNERS

Without tears

Introductions to instruction books are as often as not read only by the printers. Many readers believe that they are already familiar with their contents. Indeed, most of us are today reasonably well versed in motoring matters and we may assume that many who drive a PRINZ for the first time have already handled some other type of car, or perhaps a moped, a motorcycle, or a scooter. Everyone knows how a clutch works and how to regulate the petrol supply.

Nevertheless, we strongly advise you not to lay aside this instruction book, trusting in your own knowledge, but to study it throroughly. In order to avoid making it a tedious lesson in elementary mechanics, we have given this PRINZ instruction book an entirely new form which is not only readable but, we hope, entertaining.

The reasons for asking you to read this instruction book can be stated in a few words: a motor car is not only as good as its construction, it is as good as the treatment it receives. We have, therefore, included all we know about driving, service and maintenance. Not only do we advise you to read this instruction book, we warn you of the danger of failing to do so. In the long run it is only the driver who has got to know his car thoroughly whose driving will be economical and trouble-free. We think it not only wise but honest to stress this point. Repair bills are an unpleasant means of discovering the importance of proper care and maintenance!

NSU WERKE AKTIENGESELLSCHAFT

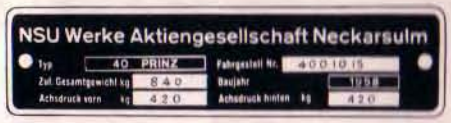
As important as your certificate of baptism

The motor vehicle certificate

You become the owner of a motor car not when you pay for it, but when you slip the motor vehicle registration book into your pocket and take it home, to be as carefully put away as the family allowance. You only realize its value when you lose it. Without it, you cannot re-licence or sell the vehicle. Not even a bailiff will accept a car without one. Don't lose it!

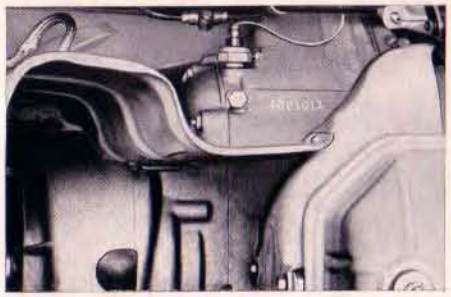
The keys

There are two keys for every PRINZ. One fits the right-hand door lock and the ignition, the other is a spare. Don't tell us you wouldn't lose a key; it is sure to happen. Take a note of the number engraved on the key so that your NSU dealer can replace it.



Specification Plate

The specification plate fixed at the top of the luggage boot under the hood cover is the PRINZ's identity card. It is of interest primarily to the police and to anyone subsequently purchasing the car from you. That is because of the manufacturing date engraved on it.



The chassis number

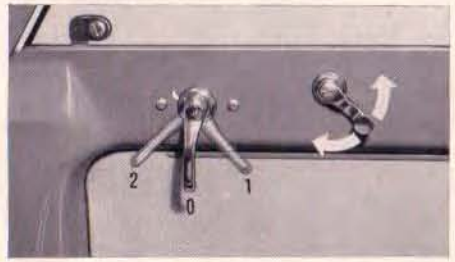
is also engraved at another spot - on the inner edge of the luggage boot over the righthand front wheel. Customs officers at the frontier often ask to see it. Now you know where to find it.

The engine number

The engine, like every valuable object, has a reference number which is frequently inspected by Customs officers. Take a look. It's at the back of the carburettor air conduit.

We're not nearly ready to start yet

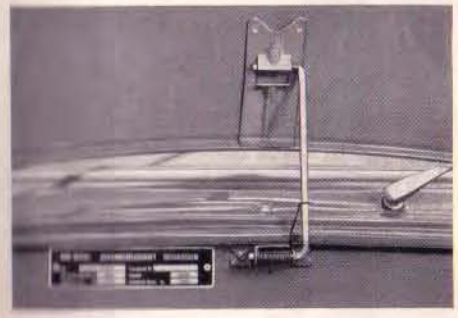
You don't have to worry about the door handles on a PRINZ. They work like ordinary door handles: press them down and the doors open. But you must first place the key in the right-hand door handle and unlatch the left-hand door handle. It will operate when the inside handle is vertical as shown in position "0" in the picture on the right. Position "1" - still referring to the left-hand door - bolts the door so that it cannot be opened from the outside. Position "2" - which also applies to the left-hand inside lever - enables the door to be opened from inside. If you want to open or close the windows, note that you have to turn the handles in the same direction as you wish the windows to go.



How to get under the 'boot' and why

The front boot lid

There is a wire inside the vehicle which starts at the front of the PRINZ and ends in a knob under the dashboard. When you pull it, the boot lid lifts sufficiently for you to insert a finger. In order to raise the lid, move a wire hook to the left with your finger. Now you will be able to lift the lid. Lift it until its spring support moves from its socket, top left, and hold up the lid. Now you can fill the tank and load the luggage. To close the lid, pull the support lightly towards you and let it slide back into the slot. A slight pressure with your hand will snap it back into place. Still we are not quite ready. Check that the spare



wheel is pumped up and test the security of the fuel tank cover (it works like a screw-top cocktail shaker). Now close the lid.

The rear lid

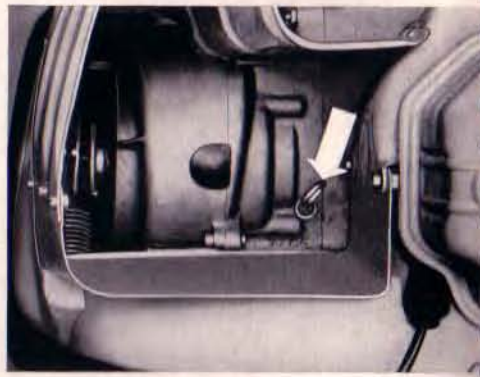
Now move to the back of the PRINZ. Raise the lid over the engine to check the oil supply. This is most important! Press down the lever handle to raise the lid and rest it against the rear window.

On the left, inside the air supply casing, you will find the oil dipstick. Pull it out,

top and bottom safety marks.

wipe with a clean rag. Push it right back again. Withdraw it once more and inspect. If the oil reaches the top mark all is well; you have enough oil; never let the level drop below the bottom mark.

Replace dipstick. Close lid.



We're not ready yet to drive off. Just a few more checks.

The tyres: You can't be too particular about these. And not only at the start. If you want your tyres to last a long time, you must adhere to the pressures indicated here. Too little pressure is particularly harmful - even if only by a small amount. To carry your own pressure gauge does not necessarily mean that you distrust filling station gauges - but it's a good check.

	2 persons	4 persons
front	19 lbs/sq. in.	21 lbs./sq. in.
rear	21 lbs./sq. in.	24 lbs./sq. in.

Now sit down

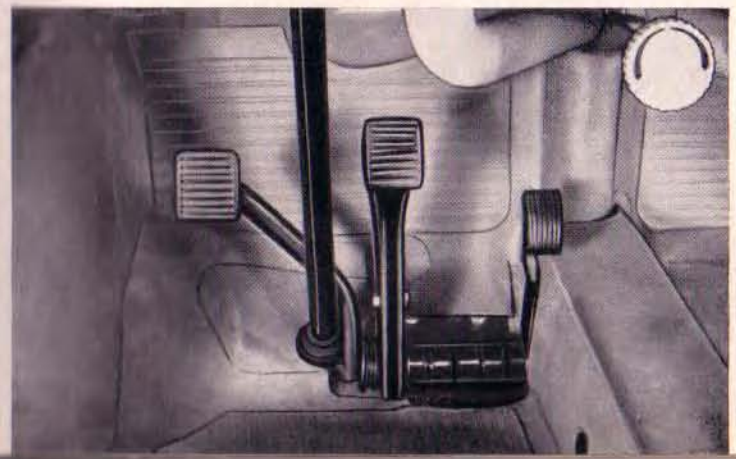
To adjust the seat: this is best done by sitting on it and pushing with your feet rather than by trying to adjust it by hand from the outside. After all, your hands will not tell you how long your legs are. Press down the lever on the right of the seat, move the seat in its runners to a position in which you can reach the foot pedals easily. Release the lever and rock the seat to and fro until it slips into position.

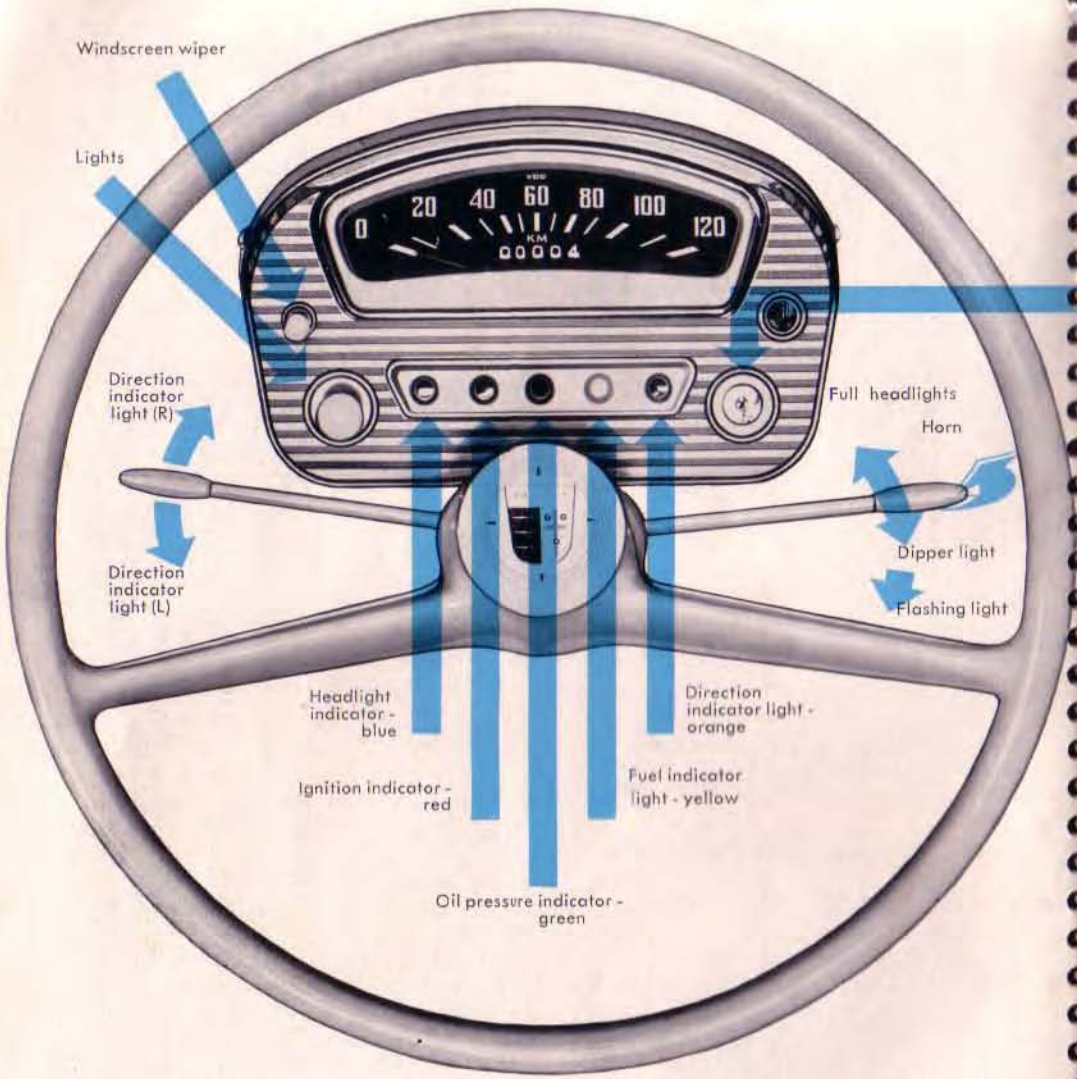
We can now proceed but wait

. . . there's the position of the pedals to consider.

The clutch pedal is on the left. This should be pressed right home, but do not let it slip for an unnecessarily long period when starting since this may ruin the clutch lining and cost money. Further, you should never keep the clutch pedal down and a gear engaged; for example, when waiting for traffic lights to change. Disengage the gear and only re-engage when you get the amber light. If you don't, a workshop bill sooner or later will remind you of the folly of impatient driving.

The brake pedal is alongside the clutch pedal and it's a good brake. So take it gently! Treat it carefully - further remarks on this on p. 49. Next comes the accelerator pedal. How to deal with this is shown on p. 10.





A feast for the eyes

Now let us devote our attention to the battery of buttons, lamps and levers on and around the dashboard. You really need them all, but fortunately not simultaneously. Your fingers may slip at first on the miniature levers which represent horn and light controls. The easiest way to learn to operate the horn is to remember that it has a rich, full-blooded tone which comes forth when you press the lever on the right of the steering column up towards your throat clearly indicated by arrows on the illustration.

This section of the instruction booklet is of vital importance to the PRINZ owner. Since many people find the study of technical details particularly arduous, we have overcome the difficulty by setting it out in two separate sections. Those whose only concern is „how" and not „why" may confine their reading to the paragraphs on the left.* In the panels on the right we have printed exhaustive technical information on driving and maintenance.

* Understanding is surely nine-tenths of enjoyment. The man who goes in pursuit of innocent pleasure should not confuse innocence with ignorance. With a car, lack of knowledge of some essential features not only detracts from the enjoyment of ownership. At best it's expensive, at worst it is positively dangerous. That is why those who study this section fully will derive the most pleasure from their PRINZ.

Now we are really getting down to business

Start up the engine

Are you in neutral? Will the gear lever move freely right and left? Good. Now push the key into the ignition switch. Position "0" is merely for insertion and withdrawal. Position "1": the ignition is switched on and to prove it the ignition indicator light shows red, and, on the PRINZ II, the oil pressure indicator shows green. If you turn the key further to the right against a light spring pressure, you note that the starter immediately sets the engine in motion. Should the motor be cold, pull out the choke button (near the gear lever). If a radio is installed you should know that your PRINZ ignition lock is equipped with a special safety switch permitting the starting even with the radio "on" (key position 2) without the risk of damage for the sensitive wireless. When the motor starts up, let key snap back immediately. Never turn it beyond position "1" when the engine is running! When

Normally, a dynamo (belt-driven) produces the electrical current; a battery stores this current. Separated from the dynamo there is the starter motor. The dynamo, starter motor and flywheel are separate units. On a PRINZ it is different: a light starter is connected direct to the crankshaft. Thus we get dynamo, starting motor, flywheel and contact breaker, four separate units all in one! No belt drive, no distributor. Each spark plug has its own ignition coil - a particular advantage.

From idling to full throttle the carburettor provides a fuel-air mixture of the proportions demanded by the engine. A cold start requires a very rich fuel mixture. On the other hand, when parked in the heat of summer the air under the bonnet may become very hot and the engine will require full throttle when starting up again.

the revolutions have picked up, the two control lights will go out.

We're off!

Good. The engine is running well. Now you can press your left foot on the clutch pedal, but do it gently! Now move the gear lever from the neutral position to the left and push it gently forward. And now it's the question, what kind of transmission your prinz is fitted. Gently and with a little resting you handle the synchromesh, while the sportive version likes a quick treatment without

any delay. You are now in 1st gear. (Don't be afraid that you will get into reverse, for that gear is protected by a spring and can only be moving the lever from neutral to legaged by moving the lever from neutral to the left against the spring pressure, and finally forwards.) It's a lively starter, so mind those admiring spectators. Release the clutch pedal **slowly** and accelerate. We're off! Or are we? If not, there was a lack of co-ordination between your two feet. Try again.

Now for the gears
To change gear: -
Foot off accelerator, de-clutch, change gear slowly, engage clutch and accelerate.

The gears, differential and half-axles harness the motor power to the wheels. When starting off, stopping or changing gear, this power has to be temporarily disconnected. This is done by the clutch. It is located at the left end of the crankshaft, where the driving power of the motor is transferred to the gears. See how simple the clutch is. Two plate-sized discs on the crankshaft, the one rigidly connected to the shaft and the other adjustable and rotating and held in place by springs to connect the engine to the gearbox. A non-metal friction washer is placed between the steel discs.

Two steel discs, a friction washer between, all under spring pressure = power transmission. Moveable steel disc shifted by pedal = power transmission interrupted. Between full power transmission and disengaged clutch there are various stages of engagement from light to rigid, all controlled by the clutch pedal. To allow the clutch to remain half engaged for long periods is clumsy and will wear out the clutch lining.

The revolutions of the crankshaft are far too high to permit direct drive; they must therefore be stepped down. The four-speed gear box sees to that - four pairs of gear wheels which can be engaged as required. To this end the main shaft of the PRINZ gearbox turns much more slowly than the crankshaft - almost four times as slowly.

Don't waste fuel
Don't fiddle with the accelerator when in neutral so that the engine and the neighbours shriek in protest! Don't forget to push the choke back into place as soon as the motor is running well. Too much rich spirit is bad for the "innards" of the car.

There is no difficulty anywhere. You only have to move the gear lever softly into the wanted direction and to wait. The synchromesh will work in the meanwhile until all parts are running in the same speed. Unnessecary to say, that all handling can be done without violence. Look at the following table:

If you slow down:

from	into	no more than
4. gear	3. gear	40 m. p. h.
3. gear	2. gear	25 m. p. h.
2. gear	1. gear	12,5 m. p. h.

And if you speed up: you may add in each case ca. 8 m. p. h.

The brakes

The PRINZ has three efficient brakes: the foot brake, the hand brake and (when driving downhill in bottom gear) the engine. There's no point, however, in boasting that you have driven down Ben Nevis without using your footbrake.

When changing gear, the separate parts should as far as possible run at the same speed; only thus will the gear change be true and silent. It is quite simple: when changing **up** the parts will run at the same speed shortly after de-clutching. You just say "pause" and then quickly engage the lever. That is easiest on the clutch. If you change gear as described in the column on the left, it will ensure that the gear parts run at the same speed without forcing them in.

Changing down the sportive transmission version affords a different manner from that you learned to do with the synchromesh: Double declutching ensures a clean change and a further intermediate stage is introduced.

- Foot off accelerator
- De-clutch
- Gear lever to neutral
- Re-engage clutch
- Accelerate
- De-clutch
- Engage next lowest gear
- Re-engage clutch
- Accelerate

Thus you can also change synchromesh gears at sportive high r. p. m.
Since the PRINZ has a four-stroke engine, this exerts considerable braking power when throttle is closed to. It is, however, inadvisable to use the engine as a brake too often when its revolutions are high, or when it is in low gear, except when driving down a steep hill or to check high speeds drastically.

If you want to reduce speed only slightly, however, you can close the throttle and use the motor as a brake.

If you want to reduce speed firmly, brake until engine revolutions have dropped, then change to a lower gear.

On medium length or short but very steep gradients, drop into low gear and let the wheel brakes do part, preferably the larger part, of the braking. Motor wear and tear costs more than brake linings. Further, when on a long downhill run in low gear, the motor will get too cool.

Running in

Probably even before your first visit to a service station you will run across an "old hand" who is as adept at wearing out motor cars as he is other people's nerves. He will tell you: "Run in a car as the makers say? Rot, old boy! Drive all out and let the old bus rip from the start!"

Well, if you are sure of that ship coming home next week, by all means "let her rip". But if you are not sure, then carry on as follows for the first 1250 miles: -

- Change gear in such a way that the engine neither races in low gear nor stalls in top gear.
- Do not drive for long stretches all out.
- Use no more than two-thirds full throttle on hills.
- Do not race the engine when in neutral.
- Accelerate gently and avoid jerky stops.
- Wear thin soled shoes - they give you a better "feel".

Winter driving

Should you warm up?

Chauffeur-driven motorists can afford to allow the motor to warm up in the garage - but the PRINZ was not designed with that particular luxury in mind. You will have to drive off straight away - but gently, sir, with that right foot - almost as soon as the engine

Shafts, bearings, gear wheels, cylinders, pistons and ghafts,however well-made, will not when new have absolutely smooth running surfaces when viewed under a microscope. A perfect sliding surface cannot be manufactured; it is only developed after a certain driving period. A vehicle is a mass of parts which rub together and which will only settle down in time. They must first be subjected to a certain amount of abrasion and must smooth themselves out mutually during the running-in period. But first a reliable film of oil must be formed. The new engine does not run "freely"; the parts do not fit perfectly, the oil film is not yet evenly distributed - the various parts take time engine does not run "freely"; the parts do to settle down. High initial speeds are bad for the engine. This may cause delays, but it pays. It is only in this way that the motor will automatically acquire the correct oil film. It is only then that the effective layer of oil will do its work.

Oil thinning, due to too frequent use of the choke when starting the engine going from cold, is the cause of engine corrosion, reduced lubricating efficiency and early deterioration of the oil. It also is the cause of the formation of sludge because the motor has been insufficiently cooled. All these factors lead to wear and tear and are the result of continually starting from cold through unavoidable wintry conditions and the omission to release the choke sufficiently soon. A lukewarm engine is far more liable to wear and tear than one correctly warmed up. When starting from cold or for short journeys, therefore, do not let the engine turn over slowly, but let it run at a moderate speed. Do not race it, but keep the revolutions up; the fan will provide plenty of cool air!

starts up. It will warm up quickest under a load, but don't race through the gears. In very cold weather it will merely be necessary to warm up whilst you close the garage door and kiss the wife goodbye. Then you're away!

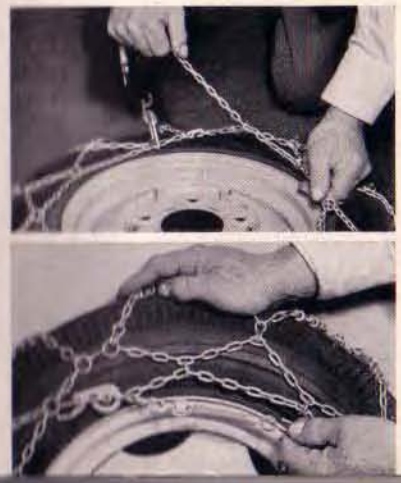
Do net cover the air intake with a rug whilst driving to keep the engine warm. If the engine can't get air from above, it will get it from underneath, and a lot of dirt into the bargain.

Frozen handbrake

In changeable weather with snowy slush, damp and frost, leave the handbrake **off** when parking your vehicle. Prevent the car from moving by engaging first or reverse gear.

What type of oil?

Basically type SAE 20 W/20 should be used. If you have difficulty in starting in winter, you should use a similar type of oil but with a viscosity of SAE 10 W, but as soon as the weather permits revert to SAE 20 W/20.



Naturally, the apertures in the new bonnet lid have a purpose. Particularly in summer, when you have shut off the engine, they will release heat through the lid.

The shoes of the four wheel brakes are hydraulically operated. There is nothing to freeze up. But the hand brake cables may do so. This will only happen where the brake cable covers have become worn through damage by flying stones so that water can enter and freeze in cold weather.

Oil will age with use. Carbon deposits, vapour, dust, are all injurious to oil. In winter you will more frequently get increased sludge and thinning, so change the oil more frequently than in summer. Do not try to save pence. The oil will look after lubrication, cleaning, water-tight caulking, cooling, so use a recognised grade and change it regularly.

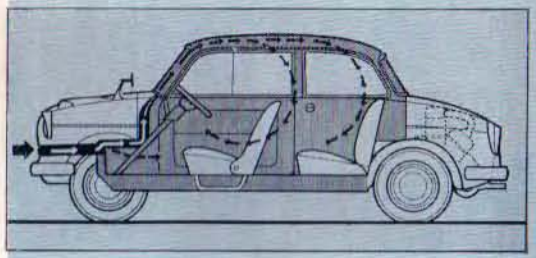
Non - skid chains

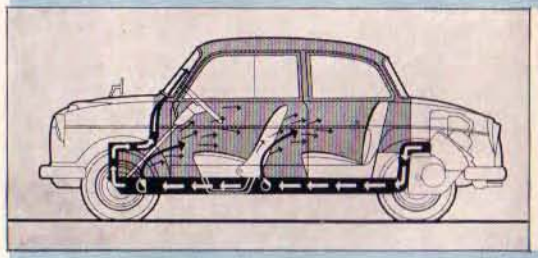
When roads are covered with snow and ice, then time has come for using chains. But there is one thing you have to pay attention to: The size of the chains must be corresponding to the size of the tires. But one moment more: Chains with plump links are unfitting.

Air-conditioned ventilation

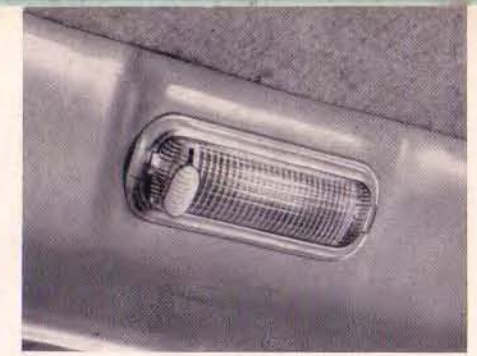
The knob operating the air conditioning is in neutral position when the two coloured marks (blue for fresh air and red for warm air) look like a melancholy Chinaman's beard. If while driving you turn the button to the right, warm air will flow into the vehicle and over the windscreen. The flow can be controlled. In summer a turn to the left will provide a cool breeze inside the vehicle. When in neutral or before it is turned to the left or right, pull the button slightly towards you into a "resting" position.

The large cooling fram is fitted directly to the crankshaft. There is no belt to break. Metal sheeting conducts fresh air from the can to the cylinder; the cool air is heated by radiation and is carried from the engine through a central tunnel to the interior of the vehicle. Distribution is controlled as required: two outlets at floor level for the rear floor space and two in the front foot space. There are also two outlets on the windscreen for de-frosting in winter. A useful tip: open one of the side windows slightly and you will get a free circulation of air both when the heating is on and when it is off.





This dark hole in the speedometer casing is for a handlamp plug. When purchasing, you can order a DIN. 72591 plug.

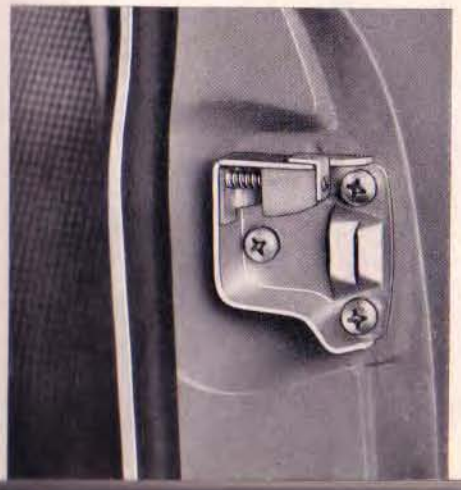


The interior light is controlled by a small switch on the left of the casing. Dismantling instructions on p. 46.

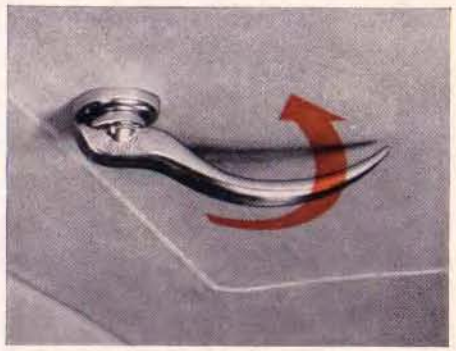
Five small features

To empty the ashtray depress the spring and lift out the ashtray.

Do the doors close too easily or with difficulty?
Use a small screw-driver to loosen the three double-slotted screws, shift the lock plate in or out and re-tighten screws.



The sliding roof can be releasd by moving the lever in the direction of the arrow. It can be locked in any position required to prevent it from being shifted by the wind whilst driving.



Service

Oil change
(p. 18)

a Oil drainage plug, oil sieve

b Oil filter pad

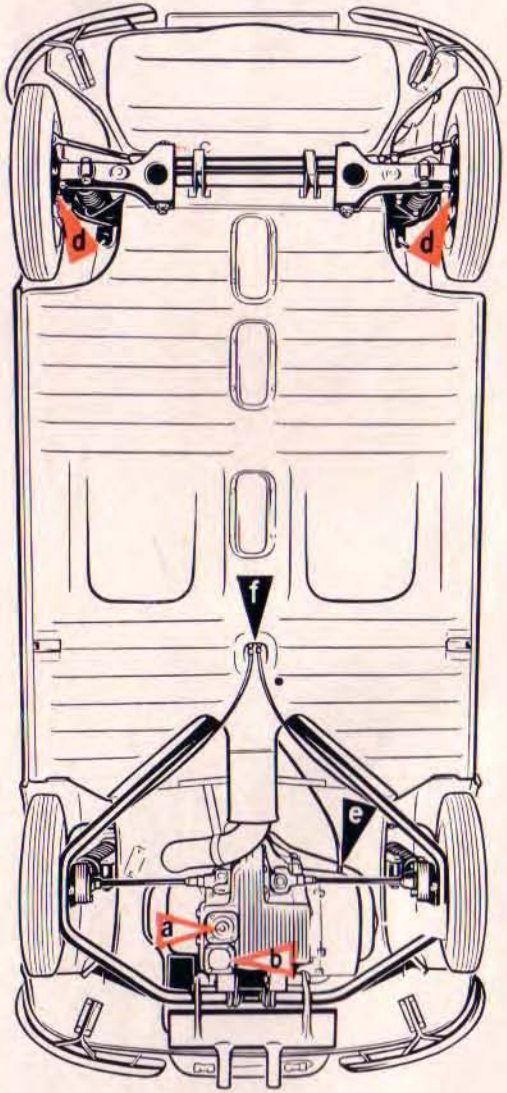
Lubrication
(p. 17)

d Steering swivel pirys

Adjusting screws
(pp. 49/50)

e Clutch cable

f Handbrake cables



Lubrication

If you have your PRINZ lubricated regularly at an NSU dealer's workshop, you need not bother about what follows here. But if you intend to do it yourself, these notes will tell you how to do it. The tools you will require to do the job you will find on p. 24.

The PRINZ has only two lubrica-

ting points in all! The two nipples by which the steering swivel pins are lubricated are located at the ends of the front axle.

Wipe all nipples before inserting the grease gun to keep out dirt. Continue to feed grease (every 2,500 miles and in bad weather every 1,250 miles) till it drips from the joints. Of the swivel pins.

Much to the annoyance of most car owners but to the delight of the lubricating service, most cars have up to 15 lubricating nipples. The PRINZ has two - a very real pleasure if you've ever tried to grease 15 points! You **can't** forget two lubricating nipples; you simply fill them with grease. The steering and its various parts actually need no attention on a PRINZ. They have rubber bearings. There is nothing to rattle, shift or shake. There is no mystery about "why"; just two steel casings enclosing a rubber washer. A long-life shock-absorber bearing with a long-period resistance; you do not even have to worry about it.

Oil change

Change old oil only when the engine is warm. The oil drainage plug is on the right underside of engine the ook? the front cover plate. An oil filter is fitted which, after serlovine? the lid, should be cleaned after the first 300 miles and every 2,500 miles thereafter.

There is a second cover behind the first. This holds the oil filter. Only the oil change after the first 1000 miles is carried out without changing the filter. After the first 300, 2,500 and every subsequent 2,500 miles, it must be removed and a new one fitted.

This is one of the regular maintenance jobs for your NSU workshop. Should you have the job done elsewhere at any time, see that on re-assembly both rubber packing rings have been placed correctly over and under the filter pad. When everything is fixed and the draim plug tight, take very special care that ½ gallon of fresh oil **of the same make** has been poured into the cylinder head cover.

Other cars change the oil at three points: the engine, gearbox and differential. In the PRINZ there is only one point. It does not need three types of oil but only one - engine oil - a small quantity of approx. ½ gallon (2.2 litres). About ½ pint (1/3 litre) always remains in the engine. A gear pump sees to the powerful oil circulation; gear box and differential are given pressure lubrication and a centrifugal oil supply. As soon as you start, all the lubricating points are flooded with oil. Even in winter it does not become a tough sticky mess which needs a short run to make it warm and fluid. The ½ gallon (2.2 litres) of oil in the power unit of the PRINZ warms up easily and the engine is correctly lubricated in an instant. The small quantity required also shows how compact a PRINZ engine really is.

Your PRINZ is delivered with "running-in" oil, but henceforward it will be quite content with ordinary oil. Since you will wish to treat the engine well, however, we recommend changing over to detergent oil e. g. HD oil. This should, where possible, be done after 300 miles. Attention should be paid to instructions with which your NSU dealer's workshop will be familiar. The important thing is always to stick to the type of oil which you have decided to use.

The NSU after sales service

Single maintenance and services

	Part	Work to be done	See page
after 300 miles	Engine	Change oil and filter, clean oil filter	18
		Tighten cylinder head nuts with a torque spanner (25 lbs/ft)	—
		Check valve play (inlet and exhaust .04" with cold engine)	52
		Tighten exhaust flanges	—
	Clutch	Check play on clutch pedal (top 20—30 mm - .78"—1.15" - on pedal)	49
	Wheels	Check that wheel nuts are tight	—
		Check tyre pressures	7
	Electrical System	Top up batteries (see makers' instructions)	—
		Check lighting and signal lights	44
	Chassis and body	Tighten all screws and nuts accessible from outside (but not castle nuts)	—
	On trial run check general running and road worthiness.		
after 1000 miles	Engine	Check engine compression	—
		Change oil (but **not** filter: oil supply ½ gallon (2.2 litres)	18
		Clean air filter	22
		Tighten cylinder head nuts with a torque spanner (25 lbs/ft)	—
		Tighten exhaust flanges	—
		Check valve play inlet and outlet (.04") with cold engine	52
	Clutch	Check play on clutch lever (.78—1.15") on pedal	49
	Front axle and wheels	Lubricate grease nipples on steering swivel pins (use hand grease gun)	17
		Check that all wheel nuts are tight	
		Check tyre wear and pressures	7/25
		Check wheel alignment (front wheels .04—.059" toe in	—
	Brakes	Check brakes pipes and brake reservoir	15
	Electrical System	Top up batteries (see makers' instructions	—
		Check lighting and signal lights	44
	Chassis and body	Oil door and hood hinges and other moving parts and see that they work easily. Do not oil door locks, use flaked graphite	—
		Tighten all screws and nuts accessible from outside (but not castle nuts)	—
	On trial run check general running and safety worthiness.		

Periodical lubrication and general check

	Part	Work to be done	See page
after 2500 miles and then every 2500 miles	Engine	Check engine compression	—
		Change oil and filter, clean oil sieve	18
		Clean air filter	22
	Clutch	Check play on clutch lever — .78 — 1.15" on pedal	49
	Electrical System	Test spark plugs (electrode gap .027")	40
		Check ignition adjustment and cable connections (contact breaker gap .014")	47/48
	Front axle and wheels	Top up battery (see makers' instructions)	—
		Lubricate grease nipples on axle (use hand grease gun). In bad weather or in snowy slush lubricate every 1250 miles (2000 km)	17
	Front axle and wheels	Check that all wheel nuts are tight	—
		Check tyre wear and pressures	7/25
	Brakes	Check brake pipes and brake reservoir	51
	Chassis and body	Tighten all screws and nuts accessible from outside (but not castle nuts)	—
		On tiral run check general running and .oad safety	
every 7500 miles	Engine	**As at 2500 miles - plus**	
		Clean carburettor	42/43
	Front axle and wheels	Clean fuel pump filter	41
		Check valve clearance (.04") with cold engine.	52
	Brakes	Tighten exhaust flanges	—
		Tighten bolts and nuts on suspension (front wheel .04—.059" toe in)	—
	Body	Check acid in battery and top up.	—
		Oil door and hood hinges and other moving parts and see that they run easily. Do not oil door locks, use flaked graphite	—
every 15,000 miles	Wheels	**As at 2500 and 7500 miles. Plus**	
		Clean wheel hubs and fill with fresh grease	—
	Starter Unit	Check commutator, clean carbon brush holders, fit eventually new carbon brushes	
every 30,000 miles	Starter Unit	**Same as at 7500 — 15000 miles, plus**	
		Check commutator, clean carbon brush holders and fit new carbon brushes.	—
	Chassis	Check nuts, bolts and split pins on steering, and cross shaft, the rear axle shaft, the rubber joint check the rear suspension arms.	—
	Windscreen wiper	Oil joints	—
	Steering	Fill steering rack casing with fresh grease	—

Lights and signal light circuit
Oil in motor, Tyre pressures
(both undertaken by your filling station as an After-Sales service)
Check acid in battery and top up - (every 4—6 weeks).

Checks you should carry out at regular intervals

Cleaning the air filter

At last all 2500 miles, the oil in the air filter has to be changed. But when you drive your car every day you will do well in testing the oil in the pot each weekend. This oil has to be clean and of normal consistence. But before you are going to test the oil-condition, please wait about one hour after last driving.

If the oil is sticky and black, all parts of filter should be washed out with petrol and blasted out. Then you will fit again the filter-pot to the motor and fill in 150 c.c. motor-oil (SAE 20) up to the red mark. Finally you put in the fabric.

Battery maintenance

Although from outside a battery appears static, there is plenty of work going on inside. Acting as a bank, it stores up current from the generator in order to supply it to the final consumer.

Your vehicle battery is a small factory which will repay careful attention by giving full-scale, consistent production.

Where will you find the battery? Merely lift the rear seat and there it is. Raise the holding strap and remove the battery cover. Unscrew the cell caps and check whether the liquid reaches a third of an inch above the edge of the plates (best done by inserting a clean piece of wood). If it does not, top up with distilled water to the right level. Any other type of water, even if you get it from an artesian well, is poison to a battery!

You should do this or have it done for you every four weeks, particularly in summer.

Every 2500 miles the terminals and clips should be thoroughly cleaned and covered with non-acid grease to prevent oxydation. These operations are simple; but testing the gravity of the acid is a job for the workshop.

Capacities

Fuel tank	5½ Jmp. gal.; 6,6 US gal.
Oil for crank-casing and power unit	
(a) when entirely empty	4½ pints (approx.)
(b) when changing oil and filter	4 pints (approx.)
(c) when changing oil only	3½ pints (approx.)
Hydraulic brake assembly	100 cc. (approx.)

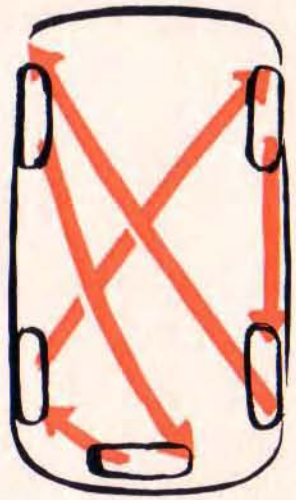
Lubricating and fuel instructions

Engine	Trade Mark oil SAE 20 (SAE 10 W see p. 13)
Hydraulic brake unit	Ate blue brake fluid
Steering swivel pin	High pressure lubricating grease*
Steering rack	- do -*
Front and rear wheel hubs	- do -*
Windscreen wiper joints	Engine oil
Front and rear lid and door hinges	Engine oil
Door locks	Flaked graphite
Battery clips and terminals	Non-acid grease

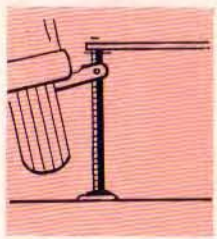
*must be water-resistant

Tyres

From time to time you should carefully check the tyres to see that they have not worn down considerably on one side. If they have, report this to your garage immediately in order that they may check wheel alignment and suspension. Small differences in the wear are of course unavoidable even with a new car. It would therefore be advisable to change over the wheels (including the spare wheel) as shown in the accompanying diagram, in order to ensure that all the tyres wear evenly.



If you do it yourself, it will give you practice in case you have a puncture and have to change a wheel.



The **Car jack** should be used for wheel changing:

- To operate, place the moveable nose into the square tubing located under the PRINZ.
- Fit spanner (with the inscription AUF facing upwards) and move to and fro like an oar.

To lower the vehicle reverse the jack key to show the inscription AB. Note, the jack should be placed at an angle, and the rising vehicle will pull it upright. Car jacks have a small base and on soft ground will sink in rather than lift the car. Simply lay a small board under the jack (always carry a piece of board in the boot).

You can only get at the dirty underbelly of the car with a hose and a powerful stream of water. All the rest can be done with a long handled brush and plenty of water. First, soften up the dirt with a gentle flow of water from the hose or watering can. Never use a heavy flow on the paintwork and never use

a sponge until the dust has been completely washed off. And **do** stop your wife from wiping down the vehicle with a duster when visitors are expected. It will rub the dust and grit in rather than off.

Use a wet sponge to remove the dirt, working from the top downwards. Rinse the sponge thoroughly several times. Finally, rub down with the leather immediately after washing, to avoid water stains on paintwork; these are difficult to remove.

And never wash your Car down or polish the paintwork in bright sunlight. This work must be done in the shade. Let warm parts cool down first.

After two or three months, when the paintwork begins to show slight stains of exhaust fumes from other vehicles, you may add a detergent to the water used for surface washing. Purchase a certified brand and observe the makers' instructions. Above all, finish off with a thorough washdown.

After washing with chemical detergents, the use of which should not be overdone, the paintwork will require nourishing, so use

A preserving material

Your NSU dealer holds a stock of materials which the Works and the paint manufacturers have evolved to suit the PRINZ paintwork. Instructions for their use are issued with these materials and should be carefully followed.

Make sure to distinguish between preserving and polishing materials, for the latter add nothing to the paintwork, in

fact they take something from it, i. e. the microscopic thin flakes which have formed with time. To re-polish old paintwork is really a job for a professional. By correctly selecting and mixing the materials he will be able to prevent the paint from being polished unevenly or even down to the bare metal base. If you are determined to do it yourself (your NSU dealer has a brand of polishing liquid recommended by the Works), you must follow the instructions carefully. And don't forget to apply a preserving material occasionally.

The folding roof

If it is covered with dust, wash the plastic cover with clean water.

A mild lukewarm detergent will do no harm. Never use a stain remover to which chlorine or a volatile solvent has been added.

Insects

There are paint preservers on the market to remove dead insects and splashes of tar. A sponge and water alone are no use. If you use your fingernail to scratch them off you will, so to speak, erect a tombstone over the fly's grave! The most important thing is to clean it off **at once,** otherwise you will get a permanent mark.

Chromium plating

Don't let it perish after insisting on having it. There are plenty of wax materials on the market for protecting chromium plating. They will render further attention unnecessary over long periods. Winter weather is hardest on chromium plating, particularly when salt has been used to thaw the roads. The only thing to do then is to use a preservative frequently.

Windows

Any woman knows how to clean windows. If the wife won't help, try the next best thing - do it yourself! Spirits of sal-ammoniac or alcohol will make it easier in really bad cases. Window-runners should be given a coating of talcum powder occasionally to keep them supple. Oil and silicon used on the windscreen will produce a dangerous film. This can be avoided by using standard household cleaning materials such as muslin or ordinary absorbent newspaper.

Wheel changing

- Pull hand brake on, also put a stone under the wheel to prevent the car running away.
- alongside one of the three rim hooks Remove wheel cap (insert screwdriver which hold the wheel cap in place, and force out the cap, lifting it over the other hooks).
- **Loosen** the wheel nuts with a spanner; insert a bar through the hole in the spanner for leverage.
- Place jack in position and raise the PRINZ.
- Unscrew wheel nuts and place them in upturned wheel cap. Remove wheel, fit spare wheel. Tighten wheel nuts in the order 1, 3, 2, 40.
- Lower the PRINZ, re-tighten wheel nuts.
- Replace wheel cap (lift over two of the hooks and press over the other with flat of the hand - never force home by the centre).
- Load up damaged wheel, remove stone, get in and drive away.

Have the damaged wheel repaired at the nearest workshop.

After 5 miles get out and check that the wheel nuts are tight.

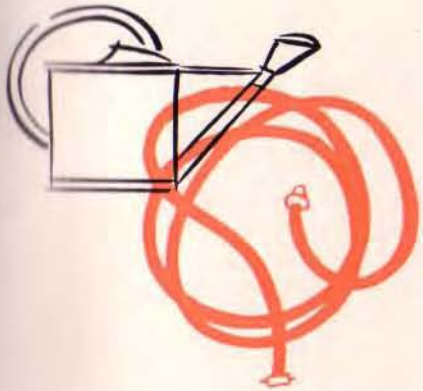
You will find the jack, screwdriver, spanner and bar in the tool kit.

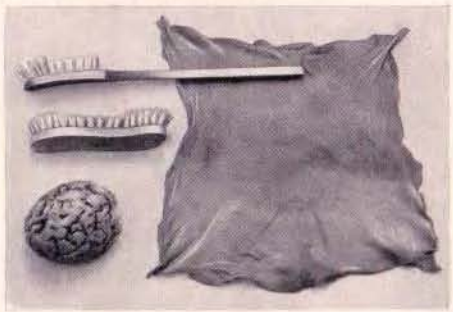
Maintenance

There's no end to it. The sun in Italy, flies in Spain; rain, ice and snow in England and Germany; dust, soot, tar, not to mention little boy's dirty fingermarks! The paintwork, or at least your paintwork, will stand them all fairly well as long as you give it some help.
You can't expect professional garage service hands to do the job with the same care and affection that you yourself would bring to the task. They do the job adequately. But to do it really well takes time. You will appreciate the fine finish of your car when you come to wash and polish it.

The tools

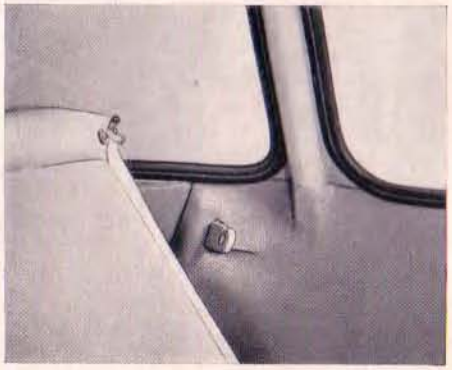
Acquire a sponge, and we advise a genuine sponge. It should be thick and soft and have large pores. Use this for the bodywork. Next a soft brush for the wheels. Now a hard brush, the kind you use in your bath to scrub your back - with a long handle. You will use this underneath the car. Then you will need a windowcleaning leather which should be of generous proportions. Finally, you will need a stout watering can, unless you have a garden hose.





Rubber "Persian rugs"

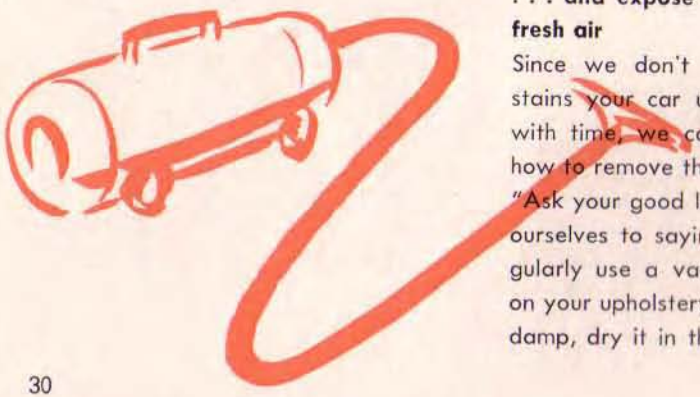
The floor of your PRINZ has a two-piece rubber carpet which has this in common with a genuine Persian rug: it has to be taken up occasionally in order to sweep underneath it. To do so, remove the front seat (see picture). Sweep the bare floor thoroughly, dry it and then re-lay the washed, dry rubber mats. They are not interchangeable.



We take out a bench seat . . .

In course of time various objects, some of them quite extraordinary but mostly things like crumbs from picnic baskets, collect behind the rear bench seat and are difficult to get at unless it is removed. It is fixed at both ends by two plates held by screw bolts and wing nuts. If these are loosened the back upholstery can be raised and removed from the car sideways.

As far as lifting and pulling goes, the rear bench seat can also be removed, since it is fixed to the inner walls of the body by a flat steel bar fitting.

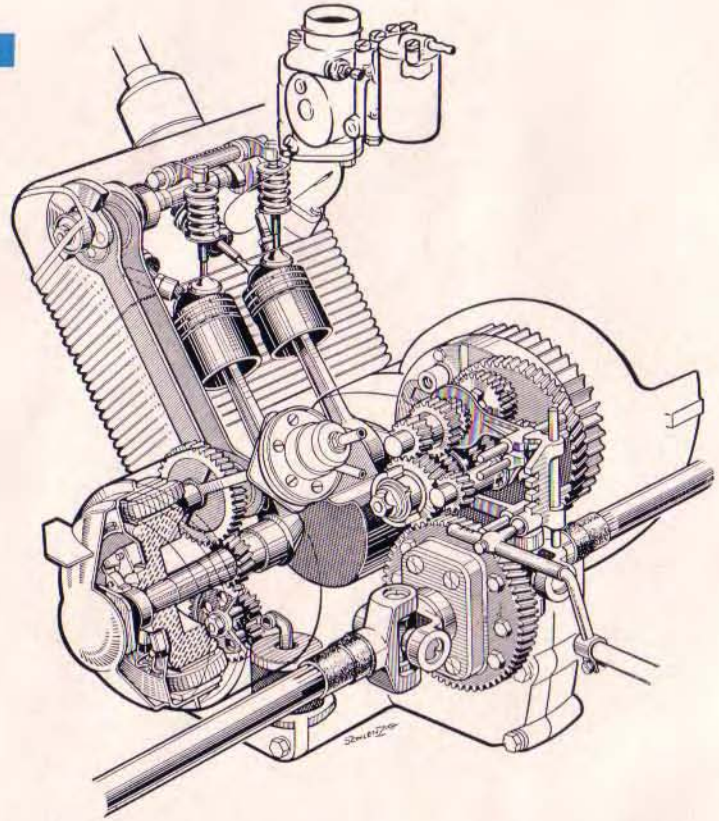


. . . and expose the upholstery to the fresh air

Since we don't know what kinds of stains your car upholstery will develop with time, we can't very well tell you how to remove them. Our best advice is: "Ask your good lady!" We shall confine ourselves to saying that you should regularly use a vacuum cleaner or brush on your upholstery and, if it has become damp, dry it in the fresh air.

Technical Data

The engine



Number of cylinders	2
Type	4 stroke
Bore	75 mm
Stroke	66 mm
Cylinder capacity	583 cc
Compression ratio	6.8—1
Max. revolutions	4800 rpm
Max. torque	30 ft./lbs at. 2250 rpm
Valve gear	Overhead camshaft connecting rod drive
Valve clearance (with cold motor) Inlet valve	0.1 mm (.004")
Exhaust valve	0.1 mm (.004")
Lubricating system	Pressure circulation
Oil pump	Gear type
Oil filter	Micronic filter, interchangeable
Cooling system	Forced air cooling

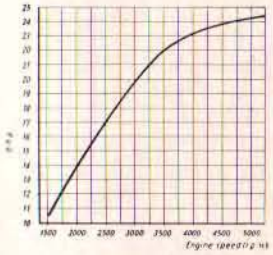
Fuel unit

Fuel supply (feed)	Diaphragra pump, mechanical drive
Fuel filter	Sieve in fuel pump cover
Fuel tank	Under the front boot lid
Filling	Raise front boot lid
Contents (incl. reserve supply)	5,5 Imp. gal. / 6,6 US gal.
Fuel gauge	Fuel warning indicator light in speedometer casing

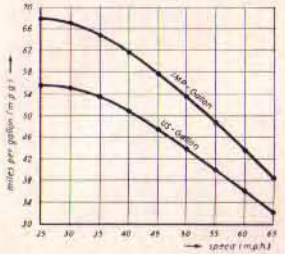
Carburettor

Construction	Down draught
Manufacturer's type	Bing 7/26/2
Carburettor settings:	
Main jets:	
Jet — stage 1	54
Jet — stage 2	56
Jet — stage 3	102
Idling jet	36
Air regulator screw	½—1½ open
Starter jet	80

Brake Horsepower Curve (SAE)



New style fuel consumption/m. p. h. curve and graph



Clutch

Single plate dry clutch

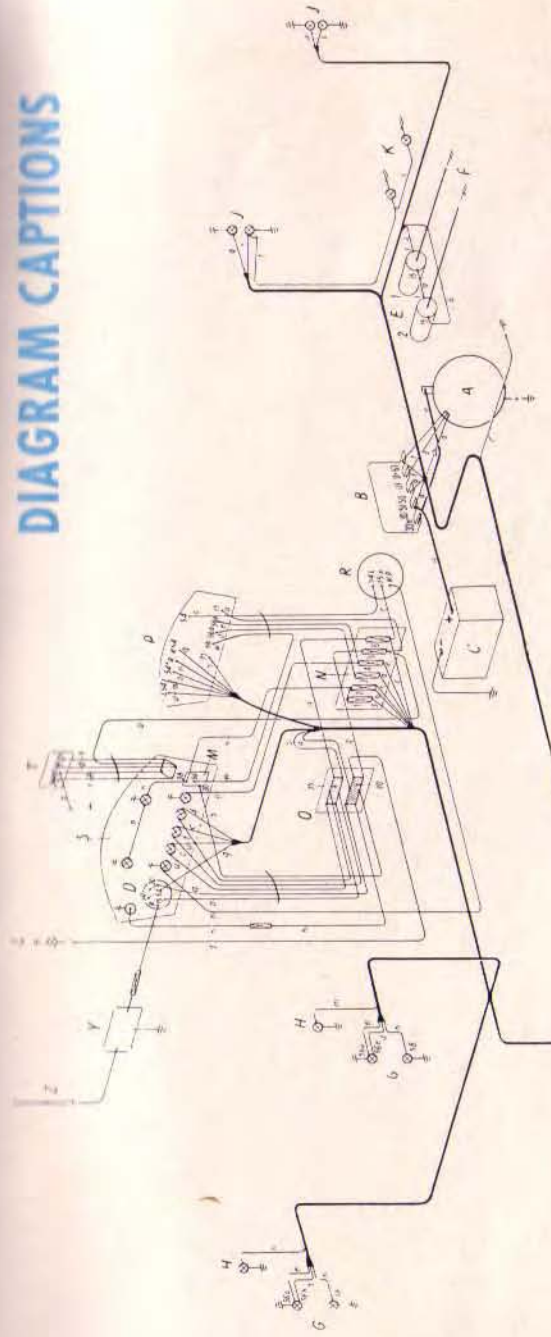
Gearbox

Construction	4-speed, gears permanently engaged,	
Gear ratio in	Sportive Vers.	Syncromesh
1st	18.74	19.8
2nd	10.00	10.57
3 rd	6.39	6.74
4th	4.52	4.78
Reverse	24.35	25.73

Electrical System

Type	Dynamo starter unit, 12 volt, 130 watt Bosch	
Ignition coils	2 sets of 6 V/Bosch TJ 6/4 DIN 72535	
Contact breaker	In starter unit	
Spark adjustment	By flywheel	
Spark setting	Retard ignition at OT (top dead centre)	
Type of spark plug	Bosch W 175 T 2, or other made of similar type	
		NSU-spareparts
Light bulbs:		
Headlights	B 12 volt, 35/35 watt	11 81 60 600
Parking light	M 12 volt 2 watt	11 81 60 601
Brake and indicator lights	F 12 volt 15 watt	11 81 00 902
Number plate light	L 12 volt 5 watt	11 81 00 904
Speedometer lights, operating combination	H 12 volt 2 watt	11 81 00 905
Tail light	G 12 volt 3 watt	40 81 00 903
Interior lighting	12 volt, 5 watt	40 81 00 904
Fuses	8 amp fuse	40 81 00 600

DIAGRAM CAPTIONS



A dynamo starter
B regulator
C battery
D ignition-starter switch
E ignition coils
F spark plugs
G headlights
H indicator light
I brake light and rear light
K registration number light
L interior lighting
M light switch
N fusebox
O cable lead distributor
P twin lever switch on steering column
R indicator fitting
S instrument panel
T windscreen wiper motor
U electric horn
W fuel indicator light
X brake light switch on main brake cylinder
Y radio
Z wireless aerial

a black
b red
c brown
d yellow
e white
f light blue
g green
h grey
l lilac
m black/white
n black/green
o black/lilac
p black/red
q black/yellow
r grey/green
s grey/red
t grey/black
u light blue/black
w white/black
x light blue/white

Principal dimensions

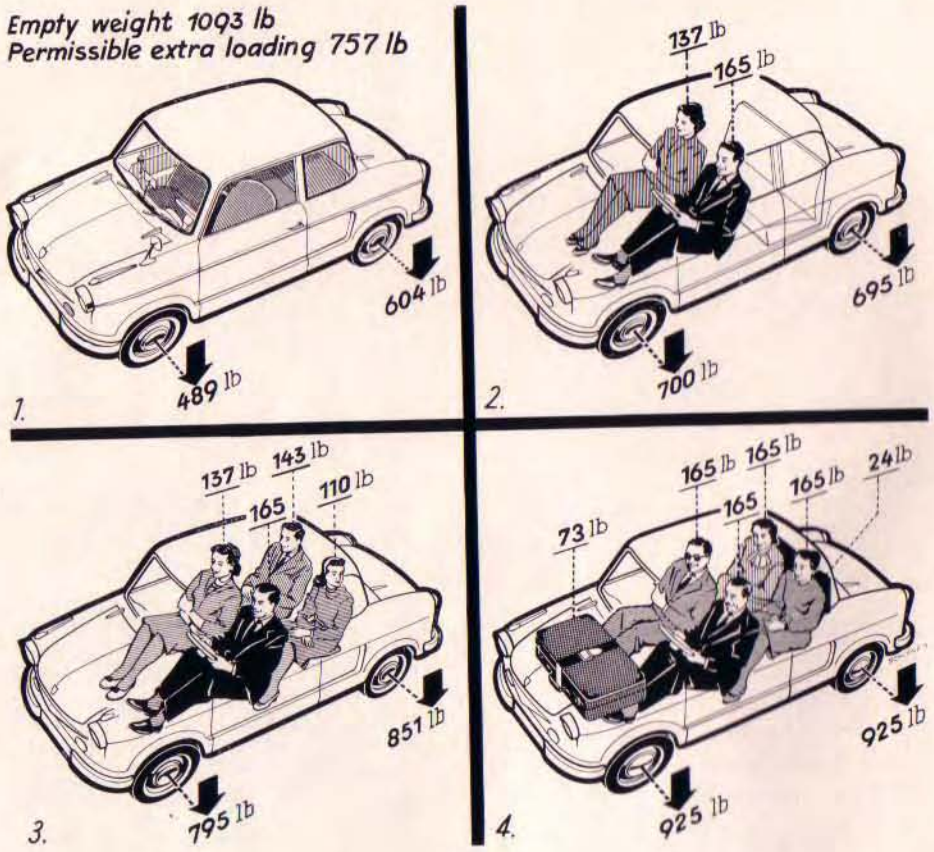
Overall measurements:	
Overall length	3145 mm (123.82")
Overall width	1420 mm (55.90")
Overall height, unloaded	1350 mm (53,15")
Clearance, loaded	approx. 190 mm (7,48")
Track (front, rear)	1200 mm (47.24")
Wheel base	2000 mm (78.74")
Boot	92 x 52 x 28 = 135 litres = 135000 cc = 8250 cu. in.

Weight

	PRINZ I	PRINZ II
Empty weight (DIN 70020) (ready for road, with full tank)	496 kg (1091 lb)	506 kg (1113 lb)
Total permissible weight	840 kg (1848 lb)	840 kg (1848 lb)

Examples of good load distribution with various loads

Empty weight 1093 lb
Permissible extra loading 757 lb



In case of emergency

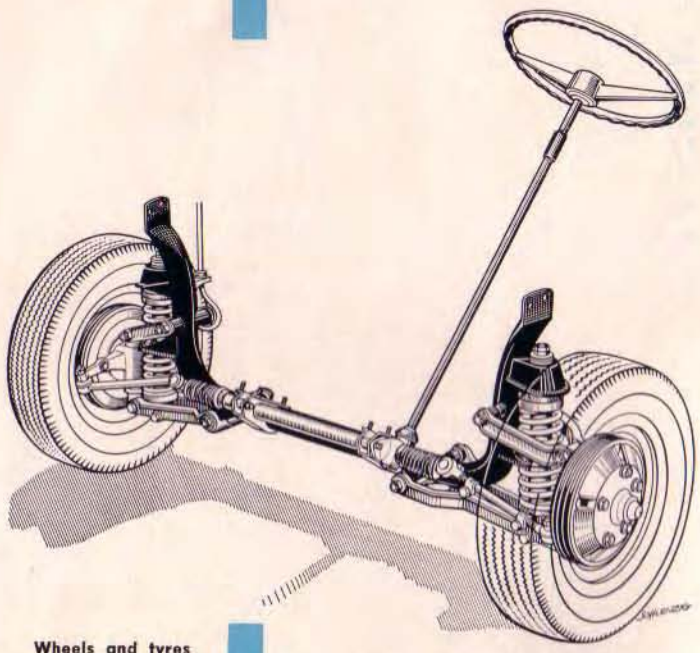
We have said before and we repeat — repairs and mechanical maintenance are tasks for the expert. Only after thorough study and practice can some of the more intricate maintenance jobs be carried out with assurance. Incidentally, the mechanic's livelihood depends on such matters being referred to him! Unless you are really expert, you could make mistakes in adjusting the steering or brakes which might prove a source of danger.

Nevertheless, we have included these pages as a guide to action in case of a breakdown or urgent need.

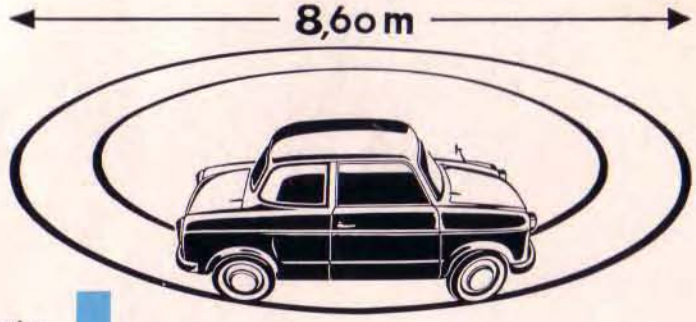
Should you have cause to rely on a non-NSU workshop, hand this booklet to the motor mechanic; it will tell him immediately how to go about the job without the risk of laying up the PRINZ for good. You may, in any case, find these pages interesting — or instructive. You can't know too much about your car.

Chassis

Wheel axles and springing	
Front axles	Independent wheel suspension by wishbones
Springing	Coil springs
Dampers	Hydraulic, double acting
Rear axles	Independent suspension by swing axles
Springing	Coil springs
Dampers	Hydraulic, double acting



Wheels and tyres	
Type	Steel disc wheels with well base rims
Rim dimensions	3.00 x 12
camber	2°
castor	6°
Track (alignment)	0.4—0.6 in. toe-in (measured from edge of rim)
Tyre pressure (cold)	4.40 — 12
Tyre pressure (in cold weather)	
with 2 up	
front	19 lbs/sq. in.
rear	21 lbs/sq. in.
with 4 up	
front	21 lbs/sq. in.
rear	24 lbs/sq. in.
Spare wheels	In front — stowed under boot hood



Steering	
Type	Rack and pinion steering with equal-length track rods
Steering ratio	2.4 wheel revs from lock to lock
Diameter of turning circle	28.2 ft. (8.6 m)

The PRINZ is available with both left and right-hand drive and accords with the traffic regulations in all countries in which it is sold.

Brakes

Type of footbrake	Hydraulic internal expanding shoe brake
Operates on	All four wheels
Type of hand brake	Cable brake
Operates on	Both rear wheels
Brake drum diameter	180 mm (7")
Width of brake lining	30 mm (1.18")

Attaching the towing line

Should you have to be towed at any time you should:

attach the rope from the towing car (the rope should be of elastic Nylon or Perlon) to the lower wishbone on the front wheel suspension. To prevent it getting under the wheels attach it, allowing adequate play, to the bumper by a piece of string.

When the PRINZ goes on strike

A PRINZ is, after all, capable of developing faults. There are times when it comes to the end of its tether. It is, in many ways, remarkably human. You press the starter — it fails to operate. Don't despair! There are actually only three causes of a PRINZ going on strike: lack of youthful energy, when a sparkplug refuses to work (**A**), constitution when a fuel pipe becomes blocked (**B**), and finally a nervous breakdown when its control system ceases to function (**C**). In most cases you can put things right with the tools supplied and your own skill. (We have omitted a fourth possibility, i. e. that you forgot to fill the petrol tank. So when in doubt check that first.)

A The sparking plugs

The PRINZ has two; they produce the sparks which fire the petrol air mixture in the engine - or fail to do so, hence the breakdown.

First, test the plugs. To do so you must dismantle them. Remove the rubber clips at the end of the electric lead and unscrew the plugs with a spanner (from the toolbox).

Replace the rubber clips and place the metal casing of the plug against a polished metal spot on the motor. Get your wife to press the starter. If a spark appears on the plug, all is well.

A plug that fails to work when the clip is firmly attached may have a damaged insulator. Generally, the electrode gap is too wide — in which case the electrodes should be bent back to a gap of .027" (0.7 mm). It is a good idea to keep two spare plugs in the glove compartment.

Experts know by a glance at a spark plug if all is well with the engine. If the plug is sooted up inside or the insulator coloured white instead of medium brown, something is wrong. Consult a workshop.

Note when buying: The PRINZ requires spark plugs with an M. 14 thread, about .70" (18 mm) in length and a heat value of 175.

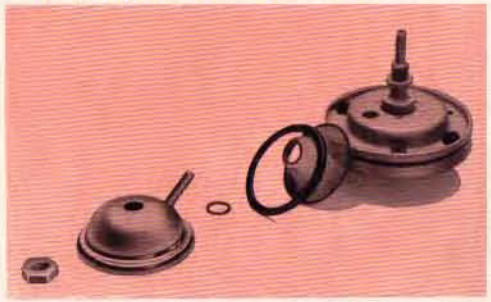
How to measure the electrode gap with a feeler gauge.

B The fuel supply

Only a chemist has absolutely guaranteed pure spirit. But any dirt that may penetrate into the PRINZ interior will be trapped in the fuel pump filter or the carburettor.

The pump (which draws the fuel from the tank to the carburettor) is opened by turning the upper nut (see picture on the left) with a 17 mm spanner. Under the cap you will find the brass filter (see picture to the right) in which the dirt should be trapped. Remove filter to clean but be careful, for it is very delicate. Remember to replace rubber packing ring when re-assembling.

How the deal with the carburettor, see the next page ▶



C The starter

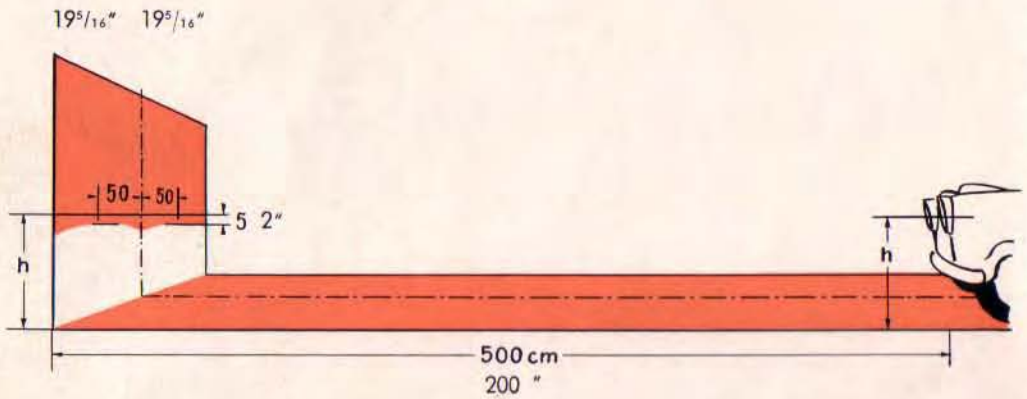
Should the starter fail to operate when you turn the ignition key, there is nothing you can do by way of repair, but in an emergency there are steps you can take to help yourself temperarily. You can find out whether the fault is in the starter or in the electrical circuit. To do this, switch on the interior lighting — if it lights up, at least the current is on and you will be able to start the car either by pushing it or having it towed. If no lights work, the fault is clearly close to the battery. Check the cable clips and see that there is a perfect connection between the main contacts and the bodywork.

When pushing (with the whole family lending a hand) or when towed the procedure should be as follows: switch on ignition, step on clutch pedal, engage second gear. Slowly release clutch as soon as the PRINZ is moving fast enough for the engine to pick up. Accelerate and de-clutch. Stow towing rope (see p. 37)

The lighting

Light is life — particularly in a car, where a faulty headlight may mean danger to a pedestrian and a burnt-out rear light danger to you.

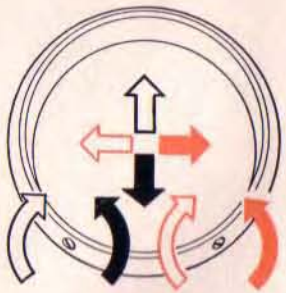
Headlight-check
Check the correct adjustment of your headlights as shown in our diagram.



Headlight adjustment

This is how to adjust the headlights:
Viewed from the front each headlight has:

- a right hand adjusting screw, for lateral setting (turn to the right - set to the right; turn to the left - set to the left)
- a left hand adjusting screw, for vertical setting (turn to the right to raise, turn to the left to lower).



Changing light bulbs
Turn off light switch.
Withdraw ignition key.
Take hold of new bulb with a handkerchief when inserting as your fingerprints would vaporise on the glass and dull the sensitive mirror.
If you want to change a burnt-out bulb, withdraw the central screw below the headlight; the whole headlight unit can now be detached at the top and withdrawn.

After removing the holding spring, the lamp-holder can be removed from the headlight reflector; the bulb is fixed in the lampholder by a bayonet fitting. It is removed by a pressing and turning movement. You will also find the small parking light bulb in the lampholder.

The small lamps with bayonet fittings for rear winker and brake lights can be changed by loosening the double slot screw in the centre of the red cover and removing it. The brake and winker lights have 15 watts and the rear light beneath them 3 watt lamps. And remember to replace the pin (see arrow) which maintains the correct spacing between the cap and small lamps.

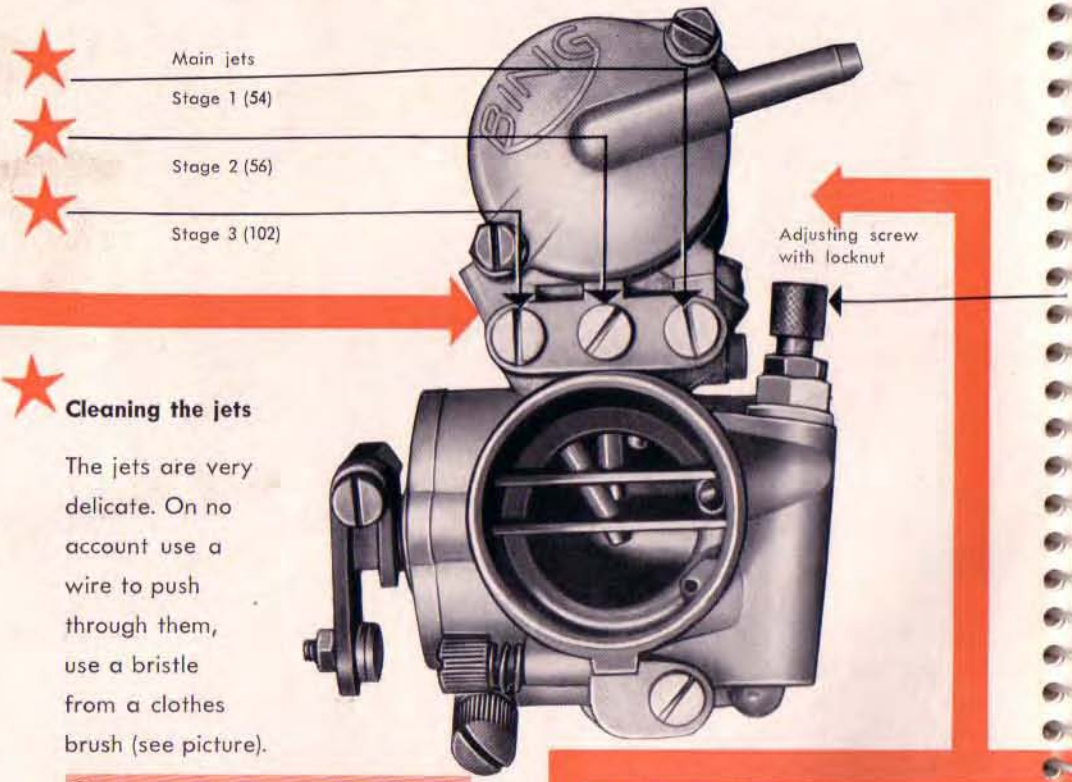
The front winker lights have 15 watt bulbs and the cap is held in place by a double slot screw. When re-assembling be sure that the rubber and cardboard washers are in place.

The sign light below the number plate can be reached by loosening the two double slot screws and removing the small glass window cover. Underneath you will find a 5 watt festoon bulb.

B The carburettor

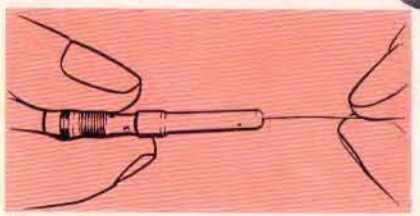
The PRINZ has a barrele valve carburettor and also a carburettor "offspring" — the starting carburettor. The important facts are: that the carburettor has a number of jets which emit measured quantities of fuel; the PRINZ has 5 of these jets which could easily become blocked by dirt particles.

To clean them you will have to unscrew them and to do this you will first have to remove the air intake silencer from the carburettor; you do this by loosening the screws indicated by arrows on the right of our picture and removing the wire clip. The carburettor is now free.



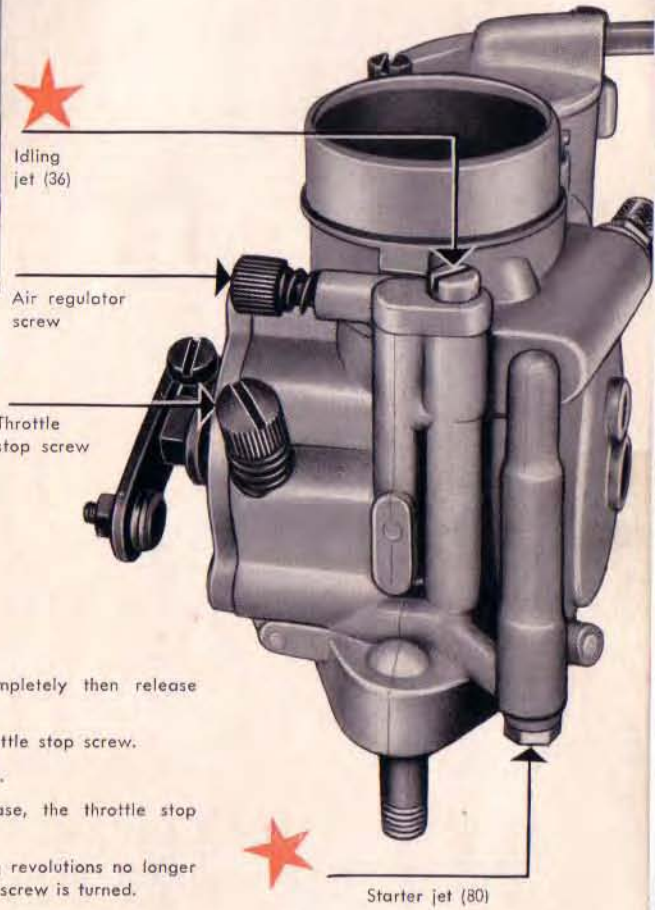
Cleaning the jets

The jets are very delicate. On no account use a wire to push through them, use a bristle from a clothes brush (see picture).



To adjust the choke

Here at the top is the end of the choke cable which is attached to the front of the choke button inside the car. Ensure that the Bowden wire casing fits loosely into the adjustable screw. When fully inserted (i. e. not in use) the button should have approximately $^1/_{16}$"—$^1/_8$" (2—3 mm) play to prevent the piston from slipping into the normal starter position inadvertently. The play in the Bowden wire can be adjusted by turning the adjustable screw (see arrow) further in or out after you have loosened the lock nut.

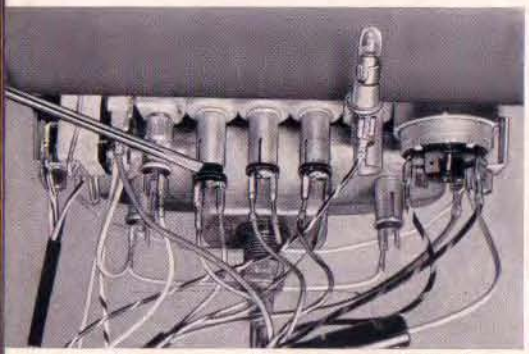


Idling setting

The carburettor is delivered by the works correctly set. Only the idling setting needs occasional adjustment. (You will notice when this is necessary, i. e. when the motor stalls or races in idling position).

Procedure:

- Let the engine warm up.
- Close air regulator screw completely then release half a turn.
- Set idling by means of the throttle stop screw.
- Turn air regulator screw to left.
- If the idling revolutions increase, the throttle stop screw should be opened up.
- Continue to adjust till the idling revolutions no longer increase when the air regulator screw is turned.



If you remove the electrical contacts of more than one bulb at a time you may become muddled and that will mean calling in a mechanic.

There are seven small 2 watt lamps around the speedometer fixed into plugs by bayonet fittings. The picture on the left gives a view from the rear and from underneath. If they have to be changed, first detach the multi-strand cable from the battery to prevent a short circuit, and the, without disconnecting the electrical contacts, remove it from its clip fastening. Lay it across the front seat to enable you to look behind and below the dashboard.

Next insert the edge of a screwdriver between the edge of the assembly and the collar of the clip fastening and lever out the small lamps. You can now remove the bulbs from the holder and change them.

To dismantle the interior light, insert a screwdriver between the light clip and the car roof. This presses a holding clip to one side. The light can now be drawn forwards to the right and the small 5 watt bulb can be changed. To replace, insert the light from the right and press into place from the right (it may be necessary to push an obstinate spring back with a screwdriver).

Careful drivers will always carry a 35/35 watt double filament bulb and one 15, 5, 3 and 2 watt bulb as a reserve, and also a double slot screw driver. When purchasing bulbs, the table on p. 34 will be of assistance.

The problem of the electrical contacts has been solved in a very practical way on the PRINZ. The contacts are not screw connections or soldered joints but brass tongues and links which engage by means of a spring. Do not worry if, when changing bulbs, a contact accidentally works loose. If the contact appears to be too loose, you need only pinch the link together with pliers.

A table printed inside the lid of the fuse box shows which fuse controls which circuit and gives a list of numbers. Note: No. 1 should always indicate the centre of the vehicle. When ordering spare fuses (you should always carry 3) ask for 8 amp fuses.

Changing the fuses

If the headlight fails to light up or the horn will not function, first look at the small fuse box (easily accessible from the driving seat) to see whether a fuse has burned out. It probably has, in which case lever it out (using a screwdriver if you have to) and insert a new fuse.

Should this fuse also burn out, do not attempt to replace it with a piece of wire. Drive, somehow, to the nearest workshop to have the short circuit investigated.

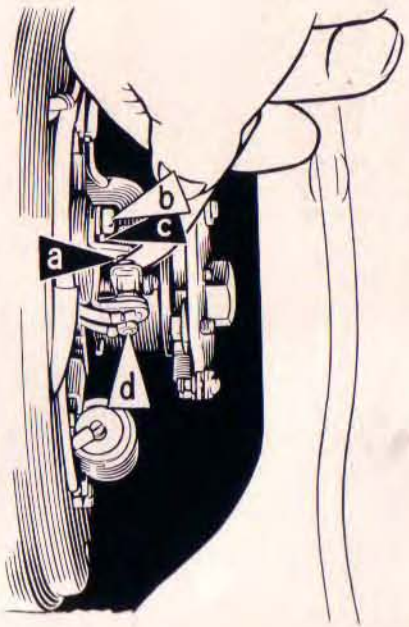
Adjusting the ignition

The engine will operate perfectly as long as the two spark plugs spark at the correct intervals. They can be regulated by adjusting the contact breaker and timing.

It is a happy device on the PRINZ that the two spark plugs do not spark alternately, but simultaneously, when the pistons reach the top. Naturally, only the cylinder in which an ignition mixture has been built up will operate; the spark in the other cylinder will not be effective. Thus we produce twice as many sparks as we need (but we can dispense with the spark distributor required by other engines).

You can get at the adjusting screws by loosening the two catches of the cover (on the right of the engine) and removing it. The drawing shows the ignition mechanism. An angled screwdriver will enable you to reach the screws easily.

The contact breaker contacts (a) burn away gradually. The gap therefore needs adjusting periodically. (After removing



the spark plugs, turn the engine over by means of the starter until the contacts are fully open). The gap should be exactly .014" (0.35 mm) measured with a feeler gauge. If the gap needs altering:

- Loosen the locking screw (b)
- Adjust the eccentric screw (c) underneath ultil the gap is correct
- Tighten the locking screw

Sooty or dirty contacts can be cleaned with a contact file; it is even better (and cheaper) to insert new contacts.

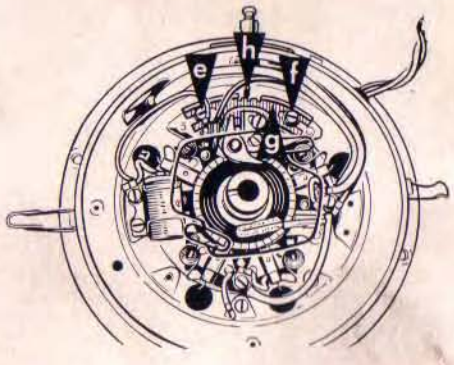
After adjusting the contact breaker, the ignition timing (the point in every crankshaft revolution at which the spark should leap across) will have to be reset. You use a small 12 volt bulb with crocodile clip contacts. Place one clip on the cable joint of the contact breaker lever (d) and the other on any polished metal surface.

To adjust:

- Remove small rubber cap on aperture in cooling fan housing (alongside the dipstick) and turn until the mark OT appears in aperture.

- Loosen screw clips on ignition timing adjustment (e) and (f).
- Move the adjuster (g) clockwise until the contact breaker contacts are closed.
- Switch on the ignition (with the ignition key on the dashboard)
- Move the adjustor counter-clockwise until the contacts open up and the indicator bulb lights up.
- Tighten the screws (e) and (f). The ignition timing is now correct.

The adjustor has a couple of small teeth in the centre and the base plate has two apertures (h). If you place the angled screwdriver into the aperture and turn it to move the small teeth to and fro, you will be able to adjust the ignition point accurately.



For those who want exact details: the ignition on the PRINZ is accurately adjusted to top dead centre (i. e. the point at which the piston is at the top) when the ignition is retarded. The advance required when driving at higher revolutions is secured by automatic ignition adjustment (by means of a gouernor).

Finally, do not forget to replace and fasten the cap.

Adjusting the clutch

If the clutch tends to slip, some adjustment is possible. It will of course be necessary to jack up the PRINZ. The adjusting screw shown here will be found on the left (facing forwards) under the engine block; loosen the locking nut and screw the thread **into the engine block.**

Checking: the play on the clutch foot pedal should be $^1/_{16}$ in — $^1/_8$ in (2—3 cm).

If you do not possess a jack and are unable to jack up the car in any other way, the adjusting screw can be reached by removing the rear wheel.

Adjusting the brakes

As required by police regulations, the PRINZ has two separate braking systems:

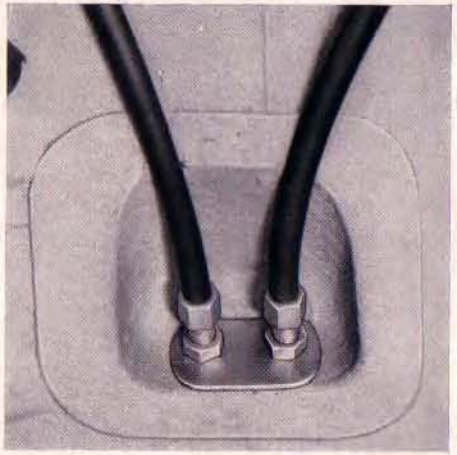
- a hydraulic system operated by the foot brake on all four wheels;
- a mechanical system operated by the handbrake through brake cables on the brakes of the rear wheels.

Roughly, there are four reasons for driving immediately to the nearest garage to have your brakes tested, apart from the fact that neglect could prove disastrous.

1. If you find that you have to feather the brake pedal a short distance against the spring (or have to push it down repeatedly before you get any result), air in the braking system is suspect or the popes or joints may be leaky.
2. If the brake pedal develops too much play before the brake grips, your brake linings are worn (you should not attempt to adjust them more than once before fitting fresh linings).
3. If the hand brake develops too much play, it too should be adjusted.
4. If the brakes **should** work because you cannot find any of the faults in points 1—3, but still do not do so, the brake linings are worn out and need changing.

An exception: after washing down or after driving through deep puddles when water may have got into the brake drum, the car may fail to brake properly. You can rectify this yourself by allowing the brakes to slip for a short period with the pedal slightly depressed to make the water evaporate through friction.

In cases 1 and 4 above, a workshop should always be consulted, in cases 2 and 3 you could do it yourself in an emergency.



You can **adjust the handbrake** by a setting screw under the centre of the PRINZ (see picture):

- Loosen lock nuts.
- Turn the setting screws as far as required.

Important note: turn both screws exactly the same number of turns to ensure that the brakes grip evenly. This will show you whether you have done it correctly: in every position of the handbrake both rear wheels must be equally hard or easy to turn; when the handbrake is fully off none of the brake linings must touch the brake drum. The handbrake must be full on when it is in the third ratchet position.

Finally, re-tighten the lock nuts

(After a lot of wear it may still be impossible - even if you try to secure a proper balance with the adjusting screw - to get even braking; in that case consult your nearest workshop).

Adjusting the foot brake: The brake bearers on all four wheels are each fitted with small square nuts (which adjust the brake shoe (?) an eccentric bearing). The procedure is as follows:

- Turn the square nut with a box spanner - always turn away from the brake cylinder - until the wheel can no longer be turned freely and drags on the brake lining.
- Release square nut (approx. $^1/_8$th turn) till the wheel just turns freely.

Do this to all eight brake shoes; there are no counter or similar type of nuts, the eccentric bearings are held in place by spring washers.

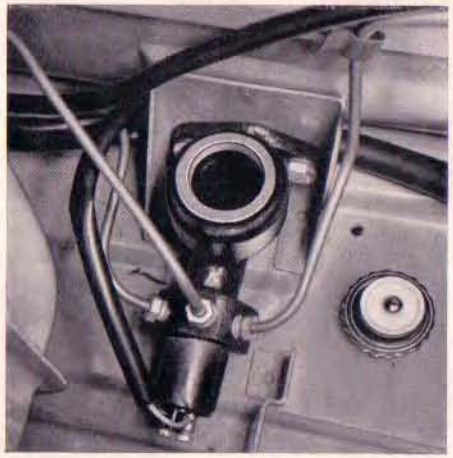
Check brake fluid

The value of the footbrake as an independent hydraulic system has been proved a millionfold in motor vehicle construction. Its advantages are obvious and too well-known to need much emphasis. Totally enclosed, it is impervious to dirt, damp and frost. It should, however, be checked occasionally if only to increase one's feeling of confidence.

In a hydraulic brake the power exerted on the foot pedal is transferred to the brake drum by means of a fluid passing through small tubes and pipes. The fluid is, therefore, the heart of the system. All you have to worry about is that none of this "special fluid" should be lost.

How do you find out? In the equalising chamber of the master brake cylinder.

Lift the front boot cover and stick your head into the boot. The floor is divided into two parts and the section nearest to your stomach can be lifted out by removing the two holding screws on the right and left. The picture on right shows you how to remove the covering. Now you will find only the thick hose piping which supplies the fresh air installation in the way. Simply remove it from its supports. The apparatus which you will find with its small tubes and cable joints alongside the spare wheel is the master brake cylinder. Remove its large fluted locking cap and look to see if the brake



fluid reaches approximately up to the thread. If it does, all is well and you need not fear that there is a leak in the braking system.

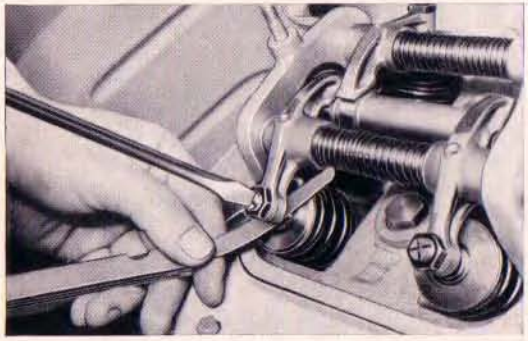
Should you find that the level of the fluid has dropped, get your workshop to look into the matter.

Adjusting the tappets

On the PRINZ adjust the valve clearance between the rocker arms and valve **stems to .004" (.1 mm) when the engine is cold.**

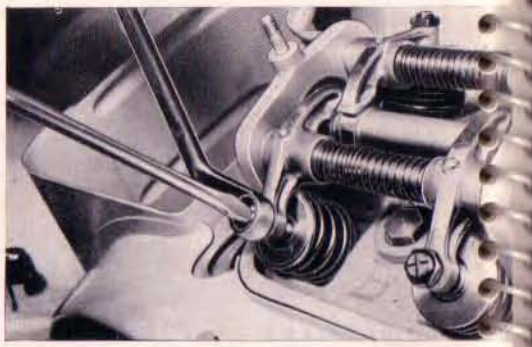
You would, of course, rarely attempt to do this yourself for tappet adjustment is not a breakdown but a maintenance job which you may in any case decide to leave to your garage.

But in case of need, this is how it is done: -



- Remove both hexagon nuts on the top of the cylinder cover and remove cover.
- Set flywheel to the OT mark (s. p. 48). Loosen the lock nuts of the two adjusting screws on the cylinder in which the valves are closed.
- Set ball cap so that the gap between rocker arm and valve stem is .004" (.1 mm). Check with feeler gauge (illustration right), and re-tighten lock nuts.
- Turn flywheel once till the OT mark reappears; the valves of the other cylinder will now be closed.
- Set the other two adjusting screws as above.
- Tighten lock nuts, holding the adjusting screws firm meanwhile (see picture right).
- Re-check play.

Renew gasket packing and replace cover, screw tight, start engine.



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