Owner's Manual

Motorcycles
R 50/5
R 60/5
R 75/5

BMW AG

C sis No.

Licence No.

Vehicle Owner

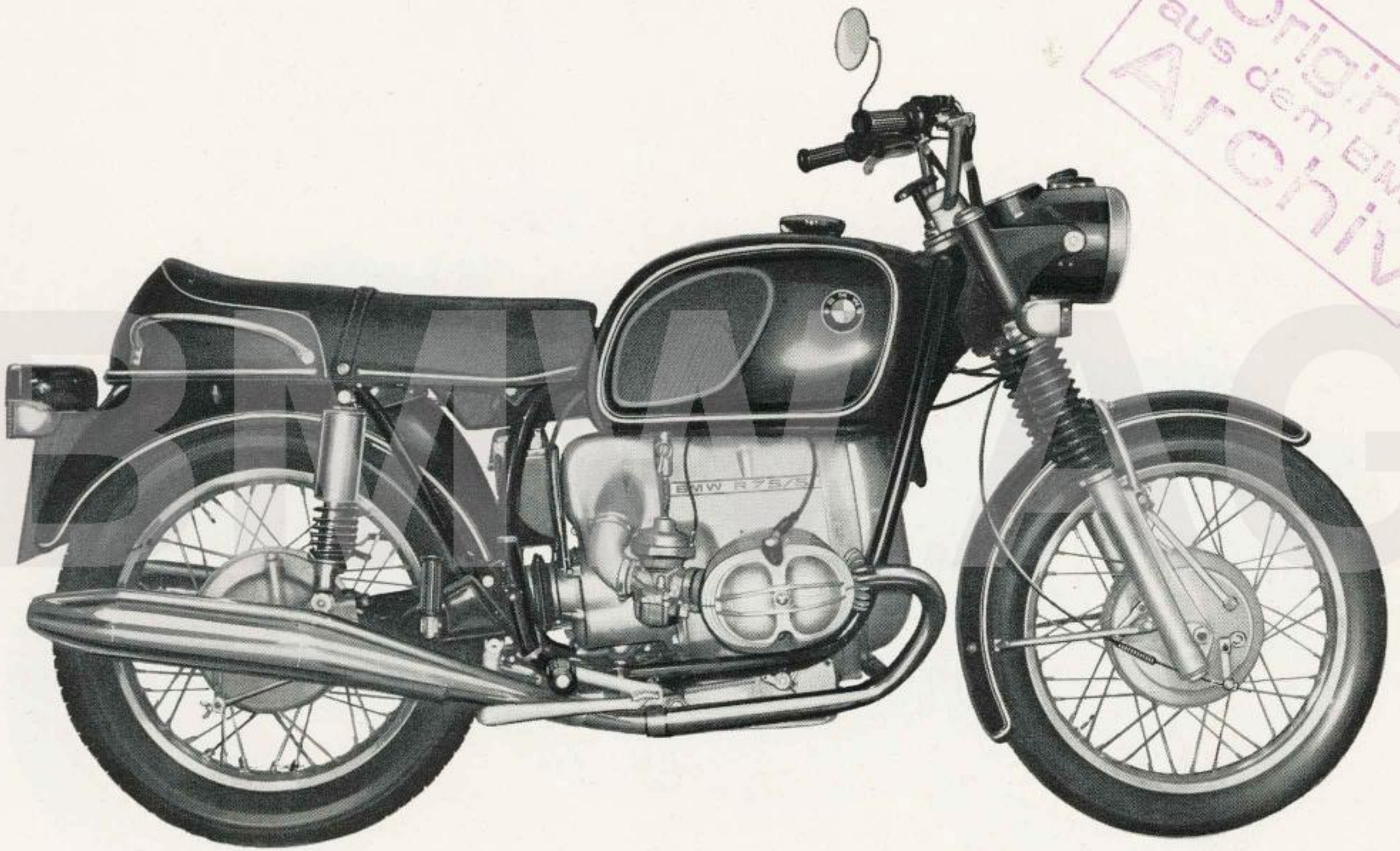
Adress

Telephone No.

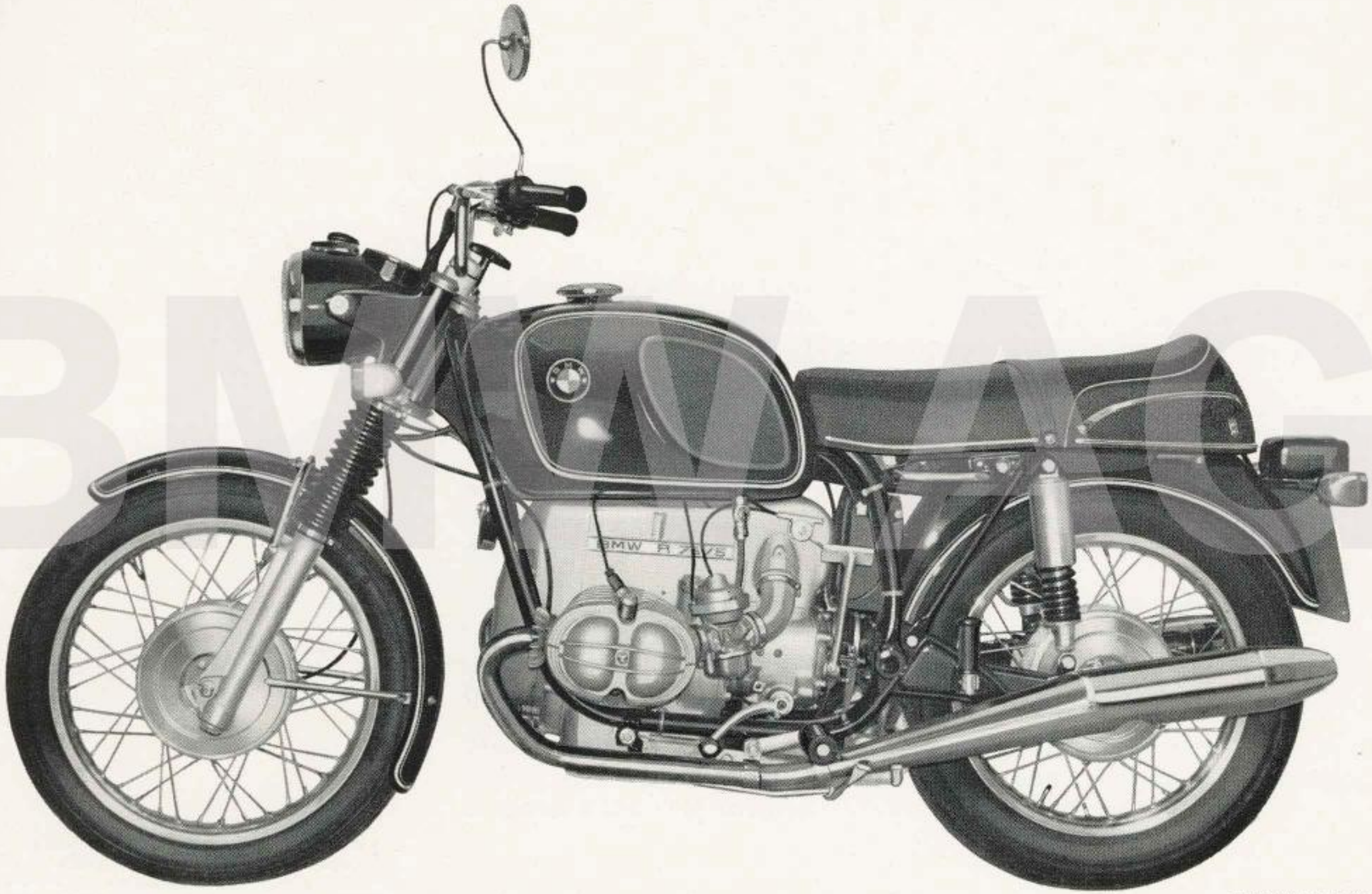
No. of key of steering lock

Dealer

Date of first registration



BMW R 75/5



BMW R 75/5

BMW AG

We reserve the right to modify designs, equipment and fittings in the interests of continuing technical development. Dimensions, weights and performance data are quoted to generally accepted tolerances. Errors and omissions excepted

Dear BMW Friend,

The motorcycle is a constant challenge to the man; a challenge to experience the adventure of man's command over the machine — directly, unadulterated. Over and over again, wind, weather and road must be conquered and mastered anew.
For this, the machine —

You chose a BMW with twin-cylinder opposed engine, quick running with plenty of reserve power, and with shaft drive – "the finest" as our American friends put it simply. We congratulate you on your decision.

Our Operating Instructions contain the information you must know to fully enjoy riding your motorcycle, and what care is needed to keep up the value of your investment. Soon you will enjoy the feeling of being connected with the name BMW.

Start now, experience the extraordinary: Enjoy riding — in City traffic, on narrow, winding mountain roads, along the stretches of endless super-highways.

Your
BAYERISCHE MOTOREN WERKE AG

Contents

Operation and Inspection

Operating Controls at a Glance

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2. Instrument Cluster containing Speedometer and Odometer, Tachometer, Oil Pressure Indicator Light, High Beam Indicator Light and Neutral Indicator Light.
3. Ignition and Light Switch
4. Front Brake Lever
5. Dimmer Switch, Horn Button, and Passing Light Flasher
6. Steering Damper
7. Fork Lock, the fork lock key also operates the lock of the dual seat
8. Fuel Filler Cap
9. Turn Signal Switch and Starter Button
10. Throttle Grip Tensioner
11. Throttle Grip

Fig. 1

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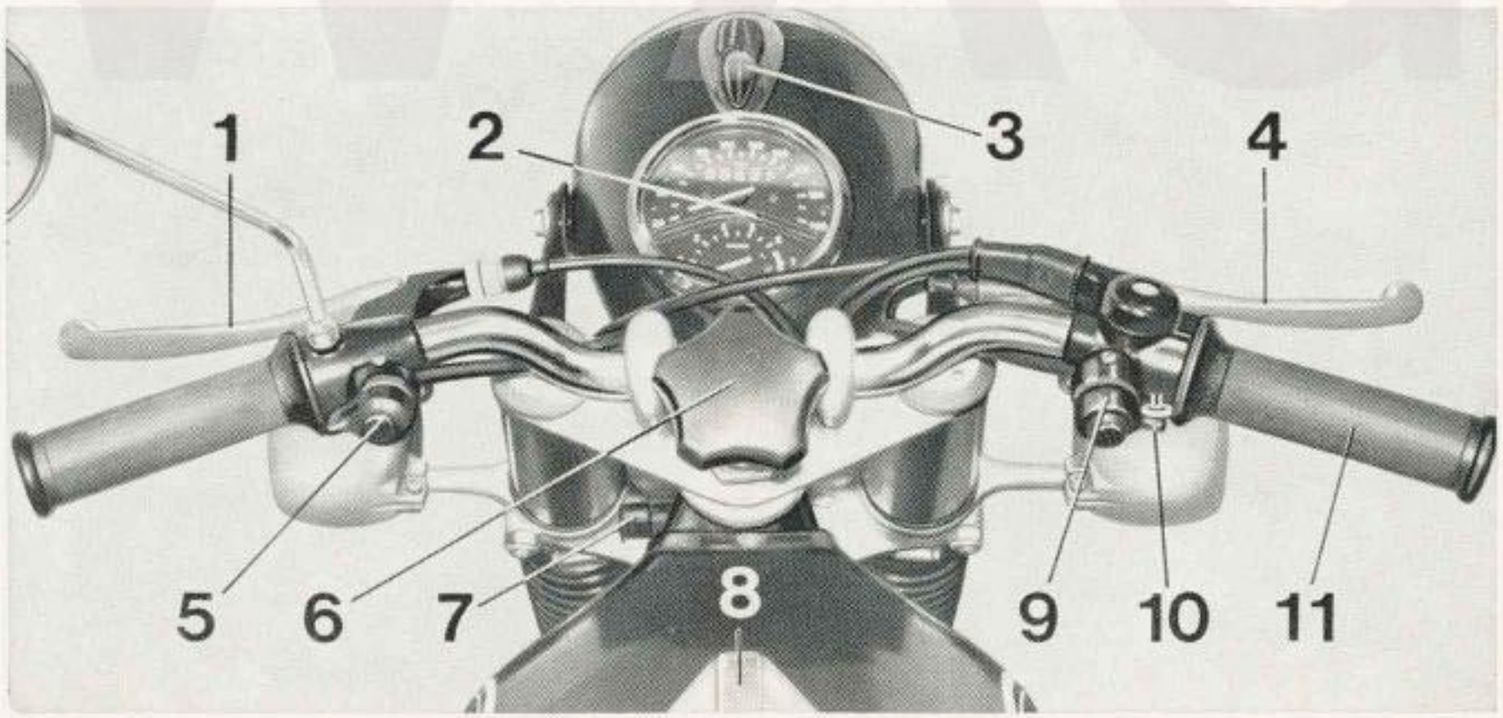

12. Fuel Petcock
13. Air Filter Housing
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15. Kick Starter
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17. Center Stand — Side Stand
18. Foot Brake Lever
19. Lifting Handle
20. Dual Seat Lock
21. Dual Seat Release Button
22. Rear Spring Tensioner
23. Folding Passenger Foot Rests

Fig. 2–4

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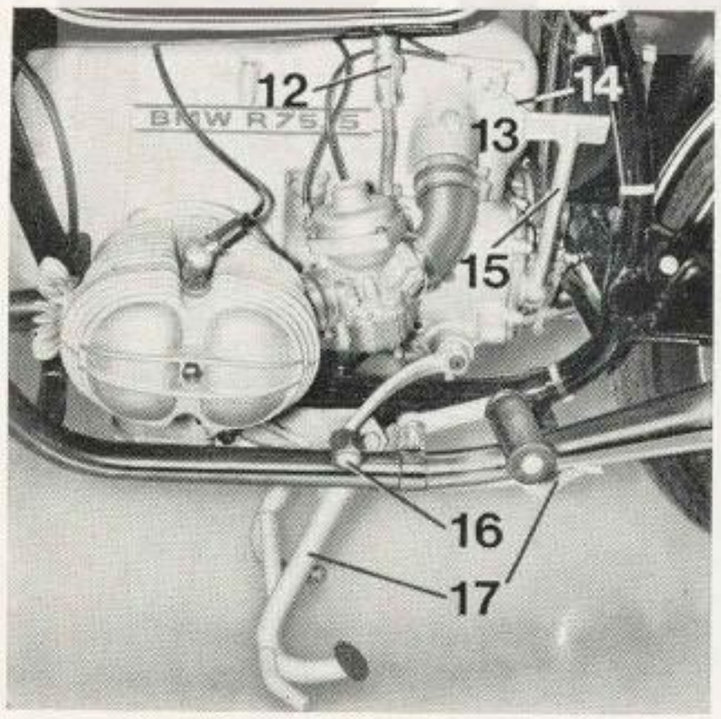

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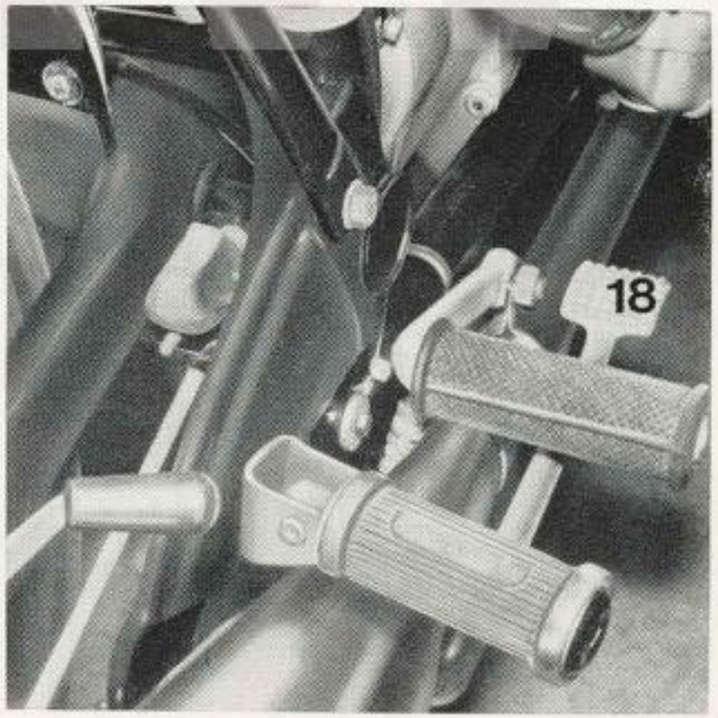

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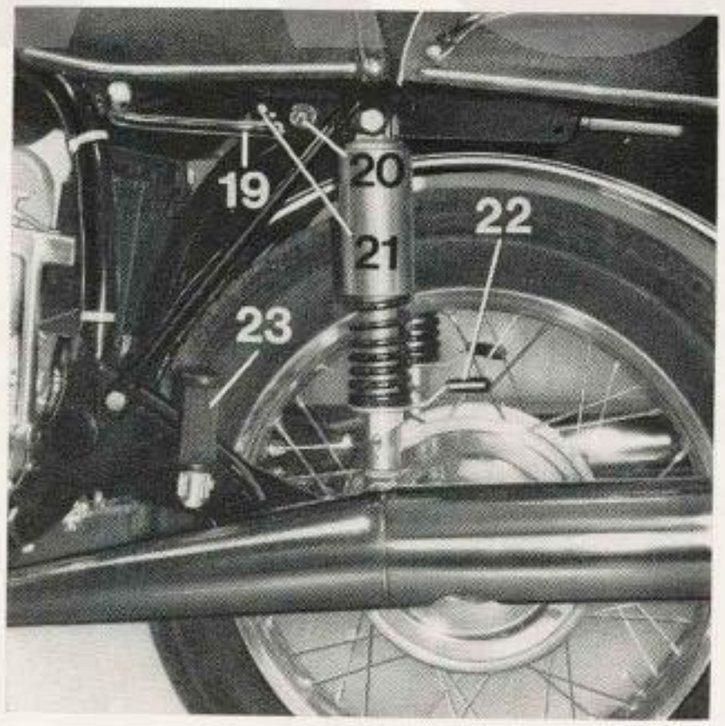

Instrument Cluster

1. High Beam Indicator Light, Blue
2. Speedometer with Odometer
3. Battery Charging Indicator Light, Red
4. Neutral Indicator Light, Green
5. Tachometer
6. Oil Pressure Indicator Light, Orange

Figure 5

Ignition and Light Switch

Pull protective slide cover forward and insert ignition key and push it down.

Position 1 of Ignition Key: The Ignition is switched on. The charge indicator light shows that the battery is adequately charged.

Position 2 of Ignition Key: The ignition and headlight are switched on.

Position 3 of Ignition Key: The ignition and the parking lights are switched on. When pulling the key out from this position, the parking lights will stay on. **Figure 6**

Dimmer and Signaling Switch

Position 1: High Beam
Position 2: Low Beam
Position 3: Passing Light Flasher, spring loading automatically returns switch to Position 2.
Switch Depressed: Horn **Figure 7**

Steering Damper

By turning the steering damper knob clockwise the friction damper will prevent the fork from being turned while the motorcycle is parked or transported.

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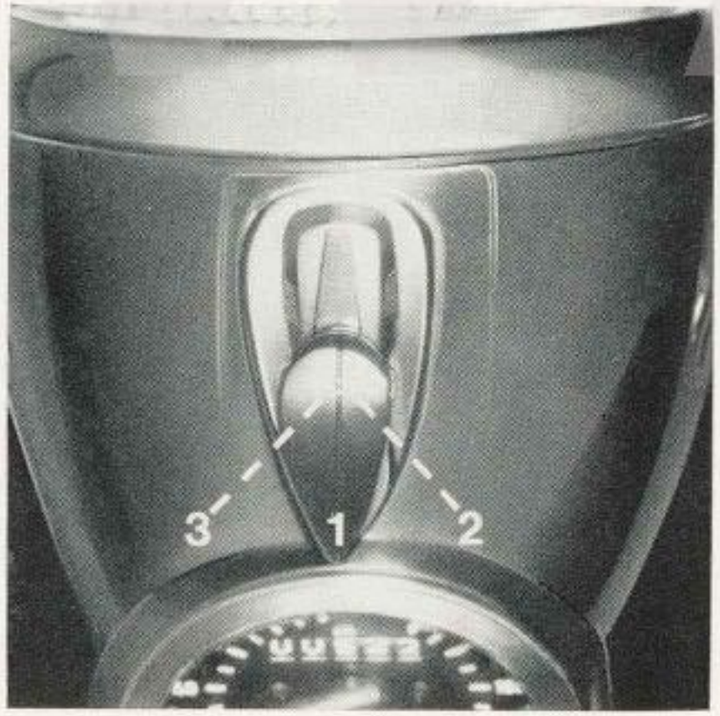

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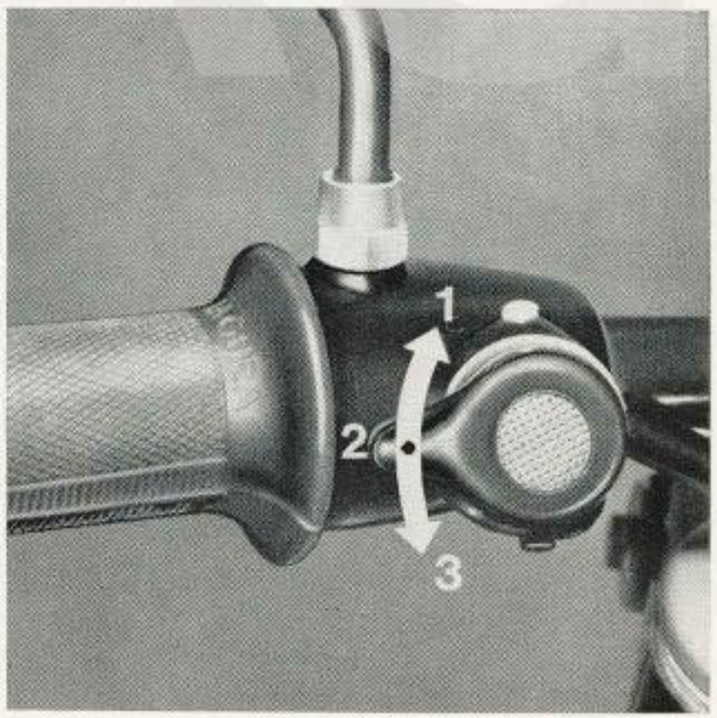

Turn Signal Switch, Starter Button
Position 1: Indicates left turn
Position 2: Indicates right turn
Switch Depressed: Starter Actuation

Friction Lock for Throttle Assembly
The throttle grip is self closing. A cruising setting can be attained by turning the set screw No. 3 clockwise.
Figure 8

Fuel Petcock
Position 1: Fuel Petcock „open"
Position 2: Fuel Petcock „closed"
Position 3: Fuel Petcock „Reserve"
Figure 9

Rear Suspension Adjustment
Position 1: for Solo operation
Position 2: for Rider plus Baggage
Position 3: for two-up riding
Figure 10

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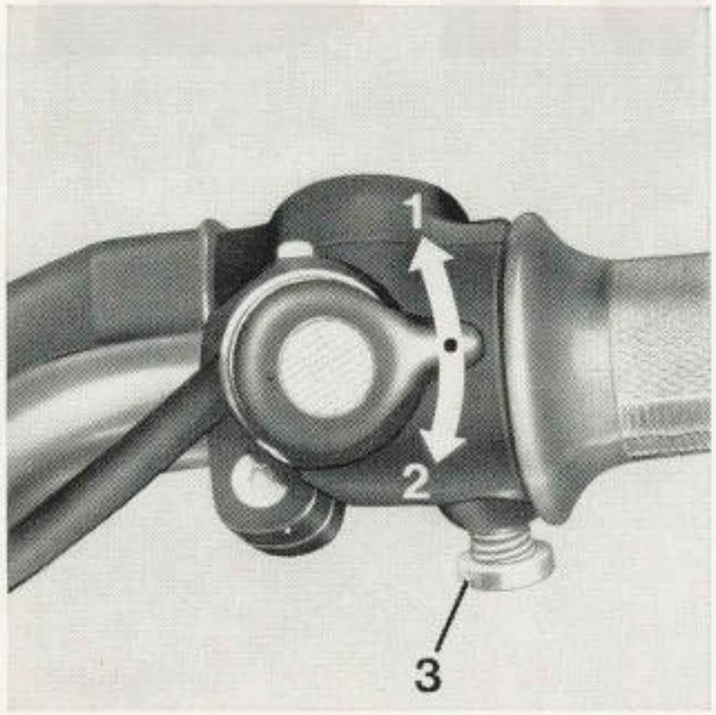

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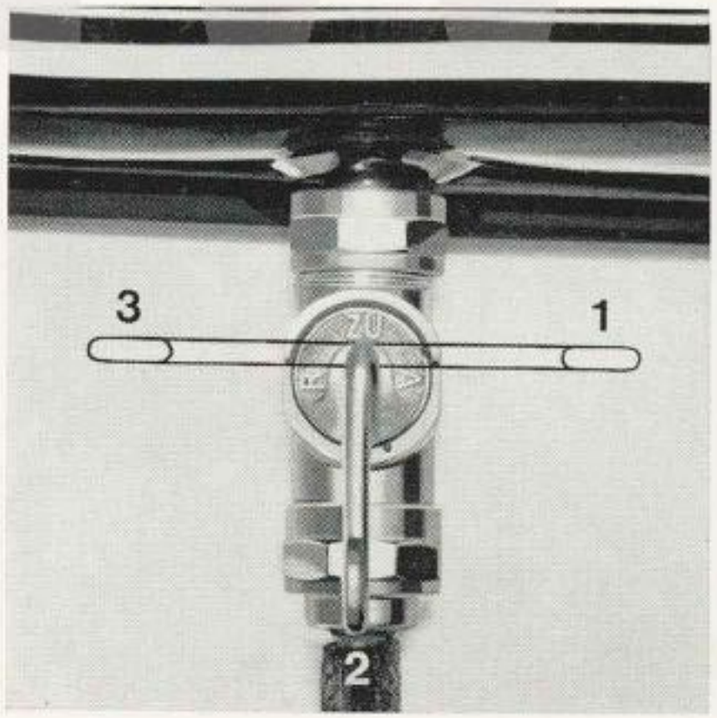

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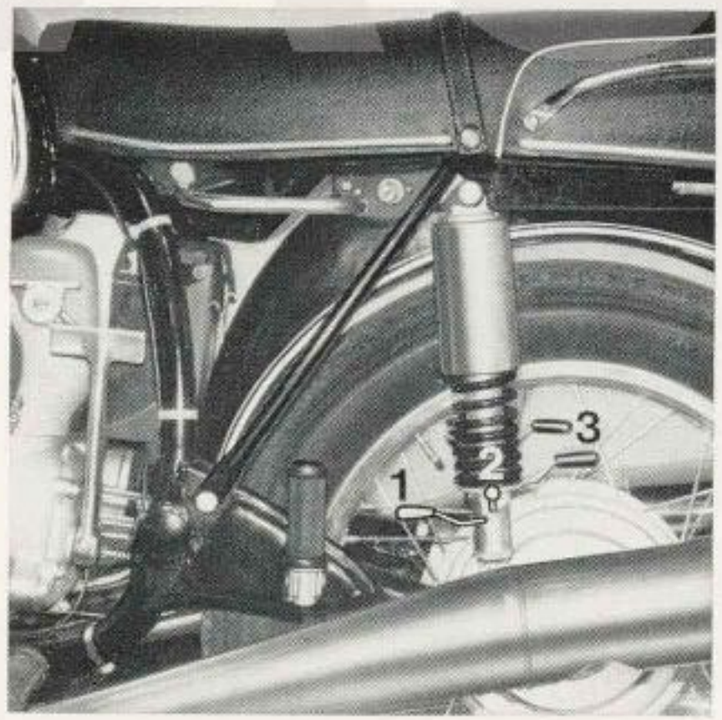

From Starting to Riding

When engine is cold, depress both carburetor ticklers 2 seconds longer as the time at which the petrol is coming out of the overflow bore of the float bowl lower part (Models R 50/5 and R 60/5) or open choke as far as possible, never use intermediate position (Model R 75/5).
When engine is hot, do not actuate ticklers or choke.
For starting, turn on ignition; red, green and orange indicator lights must be on.
Depress starter button. If you start manually depress kick starter briefly and then kick through forcefully, only at warm engine eventually turn on throttle slightly (max. ¼ turn). If engine (R 75/5) does not start when it is very hot, put choke for a short time on medium position, throttle closed.
At low outside temperatures, crank engine with kick starter two or three times, with ignition switched off; actuate starter for no longer than 10 seconds to protect the battery. A second attempt at starting which might become necessary should be made only after a short pause of 20 to 30 seconds, and it must not be of much longer duration than the first one.
A starter protection switch prevents unintentional repeat starting while the engine is running; This protection switch is actuated by the alternator. Only if the engine RPM is sufficient for the alternator to produce current will the starter lock. Please avoid restarting the engine before it has stopped completely so that no damage will be done to the teeth of the flywheel or the starter pinion.
When the engine has started and the idle speed increases, the oil pressure indicator light (orange) and the charging indicator light (red) in the instrument cluster must go out. If the oil pressure control lamp lights up while driving, declutch **immediately** and turn off the ignition. If the engine oil level is adequate, consult your BMW dealer. If the charging indicator light stays on during operation consult your BMW dealer. This is an indication that your alternator is not working, and will ultimately result in a dead battery.
Letting the engine idle for extented periods is harmful since this will cause the engine to overheat. For Model R 75/5, switch off the choke latest when engine starts faulty concentric running.
To start riding, disengage clutch, depress foot shift lever (neutral indicator lamp, green, goes out), release clutch slowly and apply a little throttle at the same time. Proper operation of the clutch increases its life; therefore, avoid popping the clutch in at high RPM.

To shift into second, third, and fourth gear, declutch and simultaneously release the throttle, pull up foot shift lever once per gear, then let in clutch and apply throttle as needed. **Figure 11**

To shift down from fourth into third, second, and first gear, declutch, and depress foot shift lever once per gear and let in clutch.

To go to neutral from fourth, third, or second gear when the motorcycle is standing still, disengage clutch and shift to first by depressing the shift lever repeatedly and then „pull up" the shift lever partially (green neutral indicator lights up).

A tip: Letting the clutch slip lightly facilitates down-shifting while the motorcycle is standing still. **Figure 12**

To park the motorcycle, push the center stand down with your right foot so that both roll-off brackets are on the ground. Put your full body weight on the foot pedal of the center stand and pull the motorcycle up and backwards by the lifting handle, keep your left hand on the handlebars to stabilize the motorcycle. **Figure 13**

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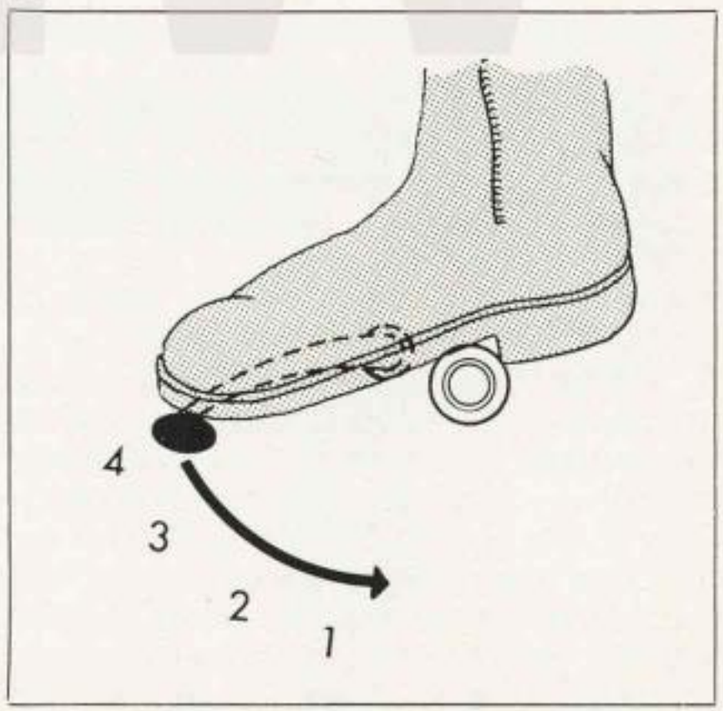

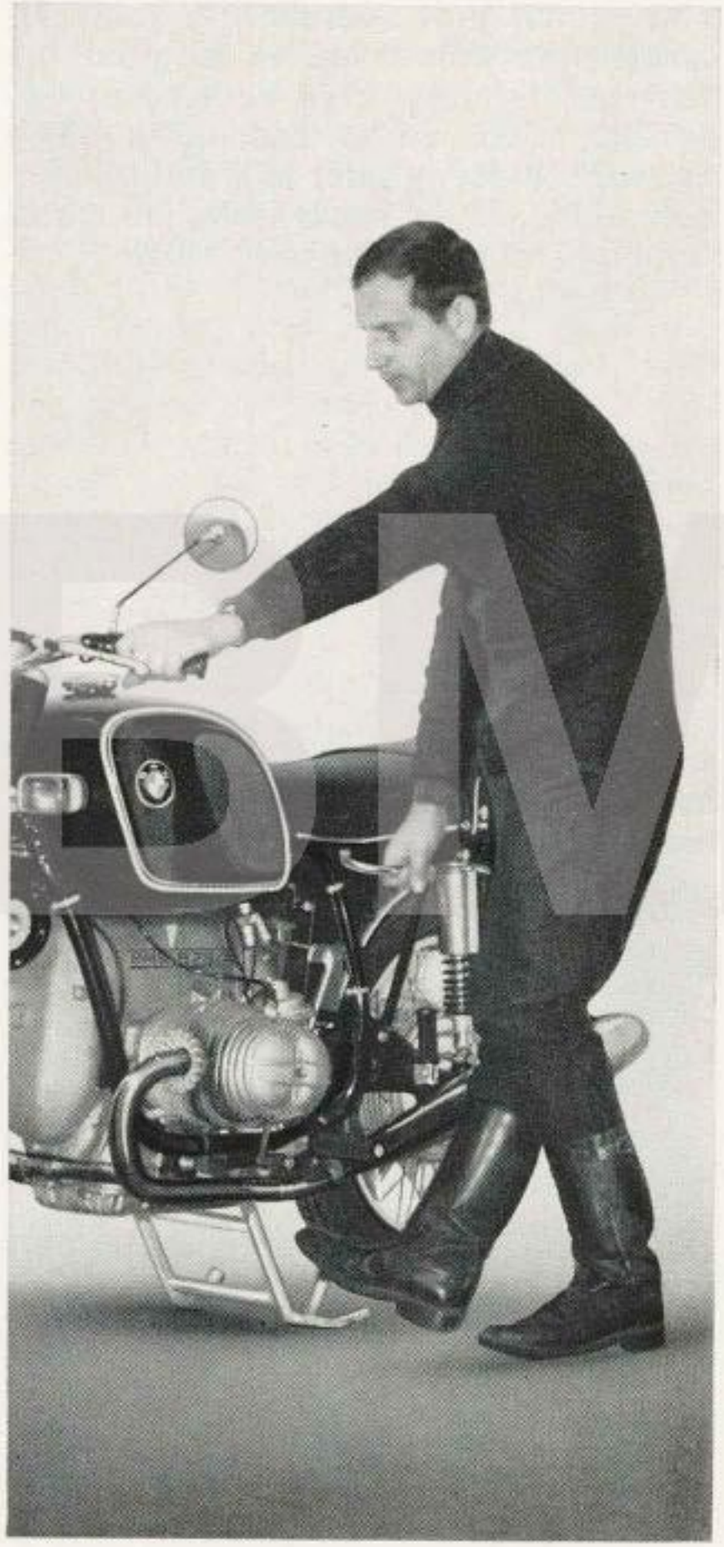

Break-in — But How?

Even the most carefully machined parts require a certain break-in period. The performance and longevity of your motorcycle depends to a great extent on how carefully it is broken in. The surest method is to:

1. Never exceed the permissible maximum speed in each gear
2. Ride mostly on winding country roads; avoid turnpikes
3. If turnpikes cannot be avoided, try to vary your speed constantly; do not operate at a constant speed for long periods.
4. Always approach the maximum allowable speed and immediately back off.
5. The maximum allowable RPM up to 600 miles is 4000; from 600 miles to 1200 miles it is 5000.
6. Avoid rude braking up to 300 miles, especially at a high speed. Otherwise the brake pads won't get a good abrasion value in the future.

Ready to Ride

Fuel: For perfect operation the Models R 60/5 and R 75/5 require the use of a brand-name high test fuel with a minimum octane rating of 99 (ROZ). The Model R 50/5 can be operated with regular gasoline, with a minimum octane rating of 92 (ROZ). In the event you are forced to use gasoline with a lower octane rating, you can prevent detonation by keeping the Engine RPM above 2500, by shifting down earlier than usual and by turning the throttle very slowly.

Engine Oil: We recommend checking the oil level regularly. During break-in it should be checked every 300 miles. To top up always use the same brand and type, fill only to the upper mark on the dip stick. Too much oil in the Engine is useless and may cause damage. The amount of oil between the two marks on the dip stick amounts to 2.1 pints. The oil level must never be below the lower mark. Under no circumstances open the filler cap while the engine is running! Push the dip stick in when checking, do not screw it in. **Figure 14**

If you desire to switch to a different brand of oil, do so only if you change the oil as well as the oil filter.

Our engines are designed to operate with all high grade, brand name engine oils; they do not require any additives. For types of recommended oil see Technical Data.

The same applies to transmission, rear wheel drive, and driveshaft housing.

The economy of operation of your motorcycle is influenced to a great extent by the way it is operated. High speeds, fast starts and quick stops cause, besides greater fuel and oil consumption, more rapid wear of tires, brakes, and all power train parts.

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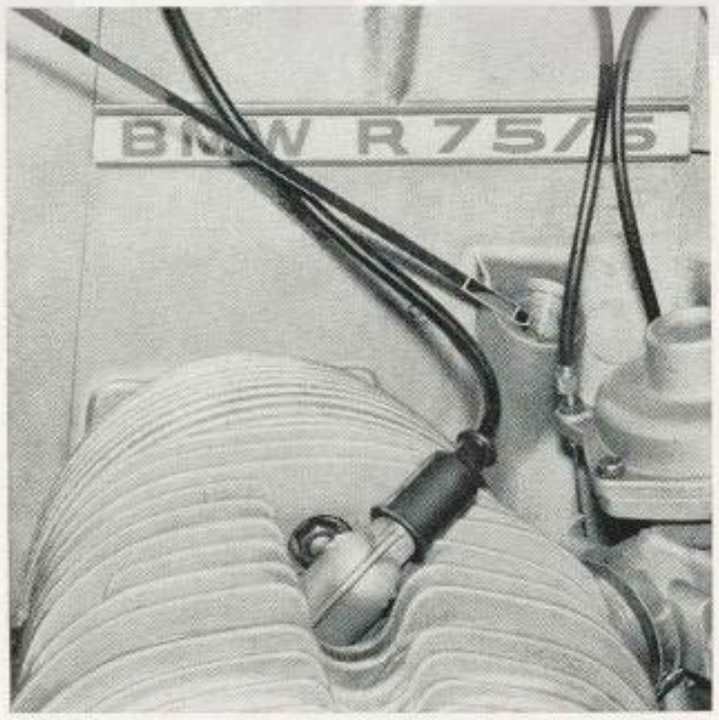

Driving habits: Never allow the engine RPM to be too low. Always engage the next lower gear especially when going uphill. Downhill, the engine's braking effect may be increased even more by shifting down to the next lower gear; but in so doing, the maximum RPM allowed must not be exceeded. Never ride in neutral with the clutch depressed or, worse yet, with the ignition switched off.

Principally, use both brakes simultaneously for all braking-operations and brake softly — which means increase the pull or the pressure on the brake levers gradually so that the wheels will never lock, if at all possible. Always shift to neutral when stopping. Do not let the engine idle in gear with the clutch disengaged. Riding the clutch or letting it slip for long periods of time causes local overheating and unnecessary wear.

Always turn off the ignition when stopping the engine and close the petcock when standing still for longer periods.

Travel Preparations

We recommend taking along the following spare parts when taking longer trips: one air filter cartridge, one set of spark plugs and light bulbs, cylinderhead and cylinder base gasket, some screws and nuts M6 + M8, spring washers, tying wire, rubber bands (appr. 0.2'' wide, cut off from motorcycle or auto tubes) one pneumatic tube (always replace punctured tubes). Should you own a motorcycle with considerable mileage, we suggest you bring it to a BMW dealer to have it checked thoroughly. Before going on a trip it is important to check the functioning and condition of the light and ignition systems, the cylinderheads, cylinders, pistons, clutch, brakes, control cables, carburetor, wheels, and tires. If any repairs are necessary they should be accomplished before you start on your trip.

If a trip is intended to take several months and also cover countries with difficult travel conditions, it is recommended to add the following to the already mentioned spare parts: a set of ignition points, a centrifugal spark advance, and a set of control cables, to be attached parallel to the cables in the cycle with adhesive tape.

Servicing

Servicing should be performed, if possible, only by an authorized BMW dealer.
Tool Kit supplied with the motorcycle.

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	Minor Service every 3000 miles	Major Service every 6000 miles
1. Change engine oil, replace oil filter	x[1]	x
2. Grease rear swing arm bearings		x
3. Grease brake and clutch levers, throttle grip	x	x
4. Service battery	x[2]	x
5. Transmission, oil level	x	x
oil change		x[3]
6. Drive shaft housing, oil level	x	x
oil change		x[3]
7. Rear wheel drive, oil level	x	x
oil change		x[3]
8. Telescopic fork, oil change		x[3]
9. Clean intake air filter	x	x
10. Check head and wheel bearings clearance	x	x
11. Check brakes and clutch	x	x
12. Check adjust carburetor, throttle cables, fuel valve	x	x
13. Check spark plugs	x	x
14. Check adjust breaker contact gap, breaker lubricating felt, ignition timing	x	x
15. Check cylinder head nuts, valve clearance		x
16. Check wheel spokes		x
17. Check brakes		x
18. Tighten nuts and screws	x	x
19. Test drive, final inspection	x	x

1 At least every 6 months, in winter every 1500 miles or every 3 months
2 At least once a month
3 At least once a year

The service operations are described in detail on the following pages, in the same order as in the Service Schedule.

1. Change engine oil, replace filter cartridge

Change engine oil, only while engine is hot, during the Summer months every 3000 miles or after no more than 6 months. During the Fall, Winter, and Spring months (below +50°F) every 1500 miles or after no more than 3 months. Unscrew socket head screw (allen wrench size 8), let old oil run out and screw drain plug back in tightly, watch for perfect tightness. **Figure 16**

Total capacity: 4.2 pints + .5 pint when oil filter is changed.

Oil level to the upper mark on the dip stick, never higher, see figure 14.

Type of Oil: See Technical Data

Replace Filter Cartridge every 3000 miles when changing engine oil. Remove cover after unscrewing the three allenhead screws (allen wrench size 4). Unscrew hex head screw (wrench size 17), lay aside with filter cover and o-ring. Pull out filter cartridge with thin wire hooks and install new filter cartridge with new gaskets. **Figure 17**

Remove oil pan after the first 1000 miles by unscrewing the allen-head screws (allen wrench size 5), clean thoroughly including oil screen and reinstall with a new gasket. **Figure 18**

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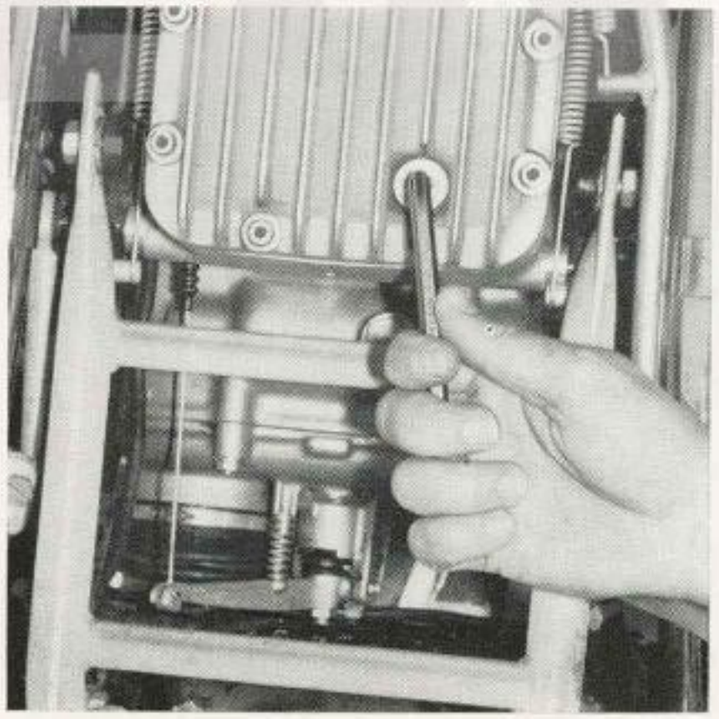

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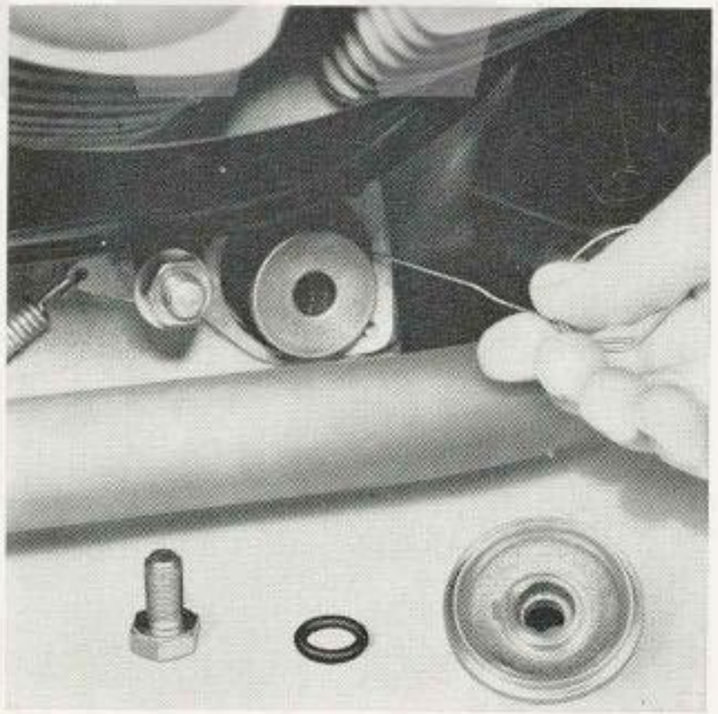

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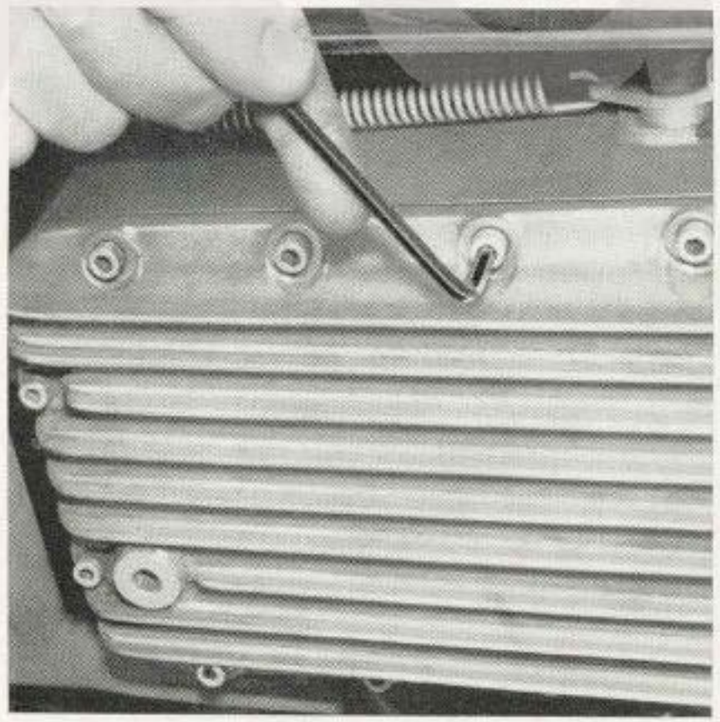

2. Rear Swing Arm Bearing
Check fit of the rear wheel swing arm bearing every 6000 miles by pulling the swing arm back and forth firmly, hold on to the lifting handle with your left hand while pulling the swing arm with your right hand. **Figure 19**

Readjust if necessary. To do this, remove plastic cap, loosen lock nut with socket wrench from tool kit, preload both bearing bolts with a socket wrench at 14.4 + 1.4 lb/ft and loosen again, then re-tighten to 7.2 + 1.4 lb/ft and secure with nut (approximately 72 lb/ft). **Figure 20**

Grease rear wheel swing arm bearing with grease gun; use grease gun with tapered head. **Figure 21**

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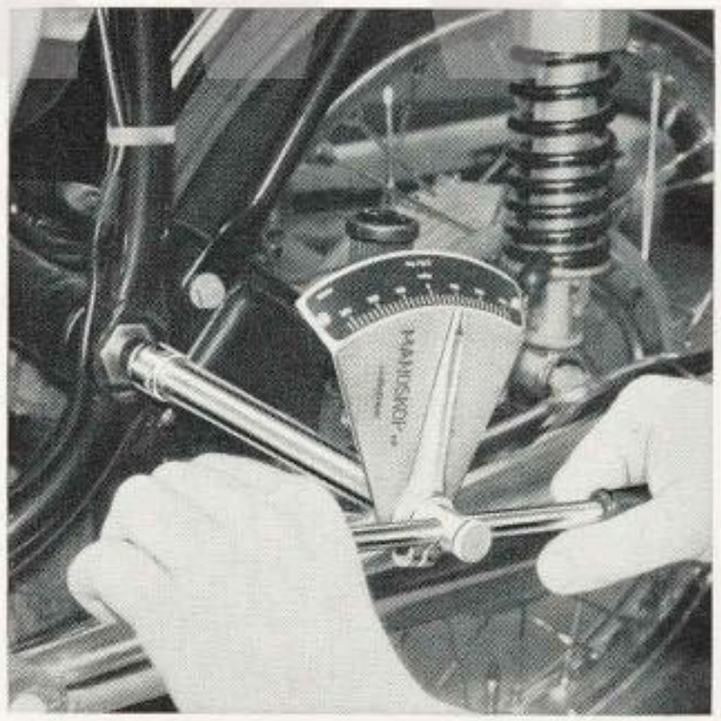

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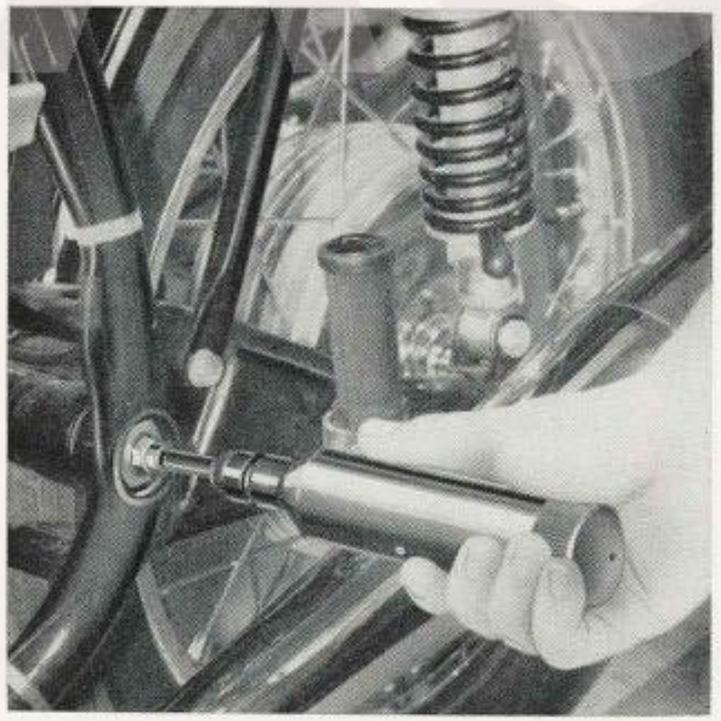

3. Brake and Clutch Joints, Throttle Grip

Grease **joints** of the foot brake (item 5) and of the clutch lever (item 1) figures 53/54 every 3000 miles with grease gun.

Lubricate the **fittings** of the cables for the clutch and the front wheel brake every 3000 miles. For this purpose, unhook the clutch cable at the clutch lever, unscrew the brake adjustment screw (wrench size 10) of the front wheel brake. Loosen the lock nut of the clutch and brake hand lever pivot bolts, unscrew the bolt, pull the lever out of the joint, unhook the cables, let a few drops of oil run into the cable sleeve to lubricate. Reassemble in reverse order. Take care not to kink the cables. **Figure 22**

Adjust front wheel brake, see page 24.

Check **throttle twist grip** for easy turning every 3000 miles; push back water protection cap, unscrew cover if necessary, pull off handel. Lubricate the inside of the handle, the rack drive and the pull chain. See to it that the slot end **a** in the throttle grip is even on the operator's side to recress **b** in the throttle bracket when reassembling.

Thread the ower cable into the double nipple and insert it, together with the pull chain and throttle cam, into the throttle bracket tha marks **c** and **d** at the cam and the bracket face each other. The full travel of the cables is assured only when these instructions are followed. Insert the upper cable into the double nipple, replace cover and simultaneously pull back the upper cable housing far enough for the cable end sleeve to be able to snap into its seat in the recess in the cover. Screw cover tight, push on water protection cap. **Figure 23**

4. Battery

Check every 3000 miles, but at least once a month, whether the acid level of the battery is within the level markings of the acid level window. If the level is too low, fill with distilled water (not acid). The top of the battery should be kept clean and dry. Protect the terminals against corrosion with grease.

Caution! Do not let acid and lead oxides of the terminals touch your clothes. Do not approach the battery with an open flame-danger of explosion.

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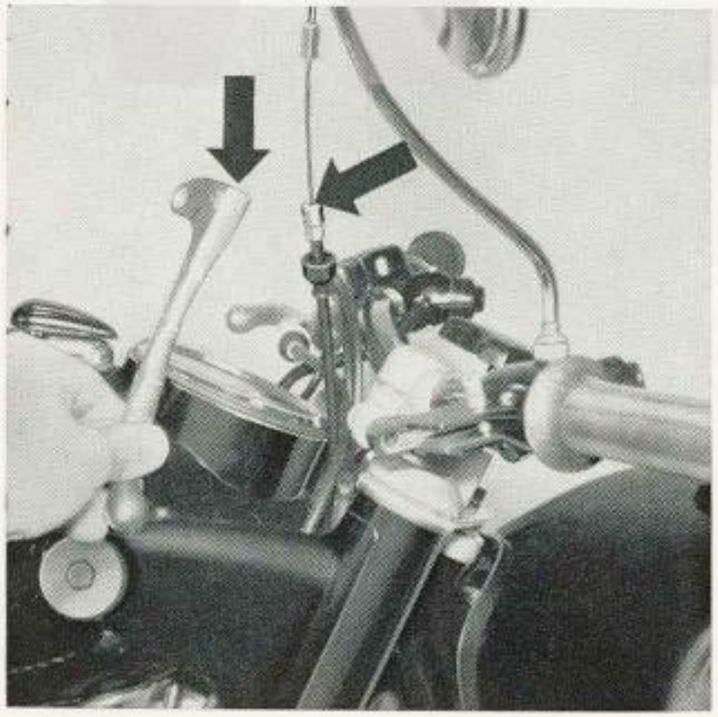

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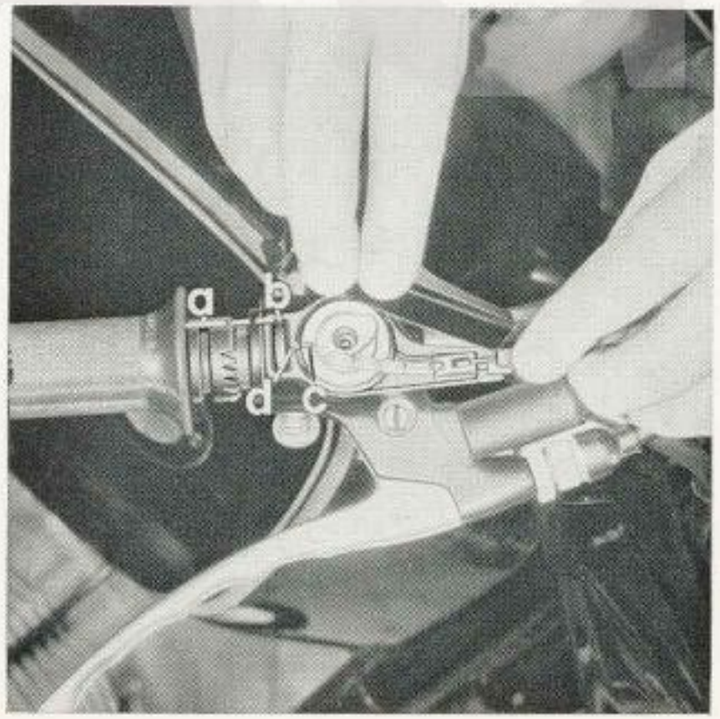

If the motorcycle was not in use for a longer period of time, the battery should be recharged onca a month in order to prevent the plates from sulfating. Battery capacity, see Technical Data.
Caution! For recharging, remove the battery cables (not when engine is running), otherwise there is the danger that the voltage peaks generated by the charger will destroy the diodes.

5. Transmission, oil level — oil change
Check oil level every 3000 miles and op up if necessary with a brand-name oil of the same type to the lowest thread of the filler opening; to do this, unscrew the filler plug with an allen wrench (wrench size 8) make certain filler plug is sufficiently re-tightened. **Figure 24**

Oil Change: Change oil after engine has reached normal operating temperature, once a year, unscrew oil drain plug (wrench **s**ize 19) and then oil filler plug (allen wrench size 8). After the old oil has drained, replace the drain plug tightly. Fill with new oil. **Figure 25**

Amount of oil approximately 1.7 pints
Oil level lowest thread of the filler opening
Type of oil name-brand hypoid gear oil SAE 90

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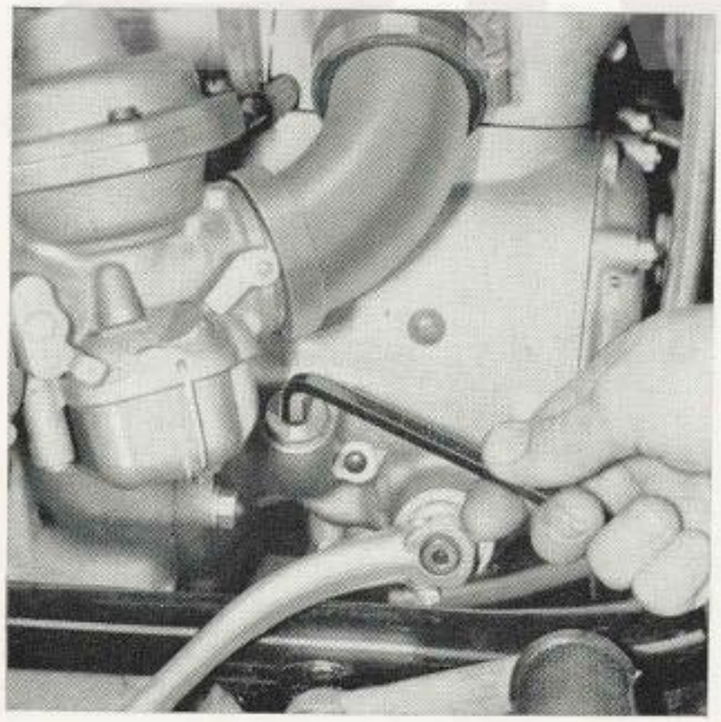

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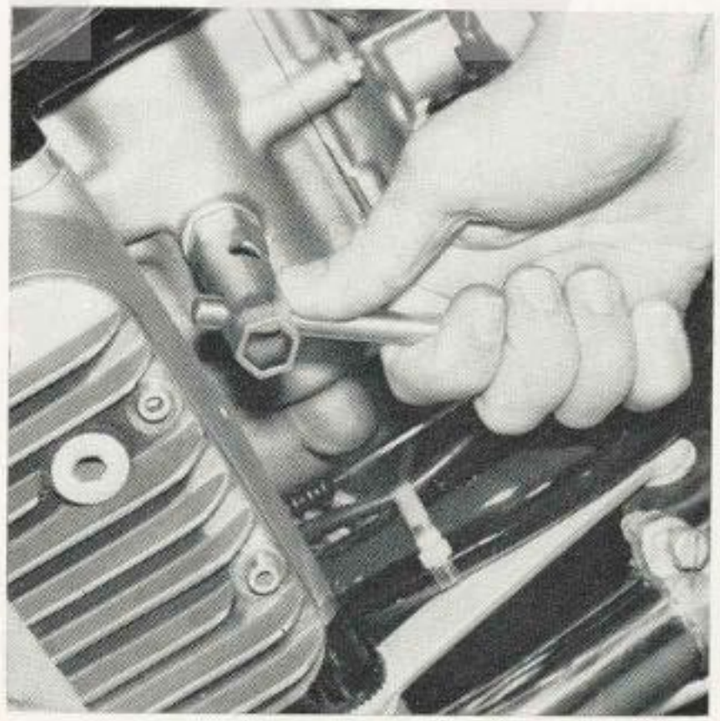

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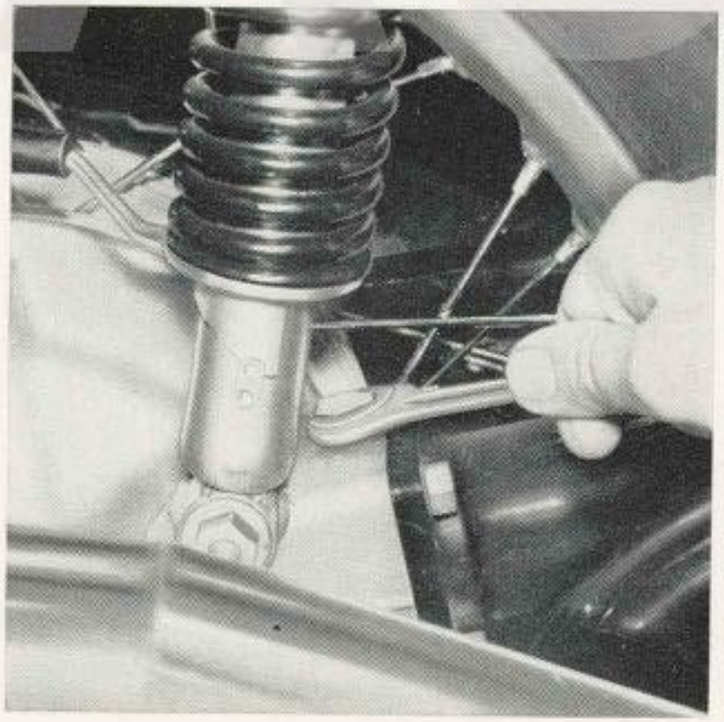

6. Drive shaft Housing, Oil level — oil change
Check oil level every 3000 miles with motorcycle parked on the center stand. To do this, remove the filler plug. Insert a pin into the filler opening deep enough to touch the drive shaft. Remove and check the oil level, it should be 0.080 inches above the drive shaft. Top up with name-brand oil of the same type; if necessary, retighten filler plug (wrench size 17). **Figure 26**

Change oil while oil is at normal operating temperature, every 6000 miles, but at least once a year. Unscrew oil drain plug and then oil filler plug (each use wrench size 17). After old oil has drained, screw drain plug back in tightly. Fill with new oil. **Figure 27**

Amount of oil approximately 0.27 pints.
Oil level 0.08" over clutch cup with motorcycle parked
Type of oil name-brand hypoid gear oil SAE 90

7. Rear Wheel Drive, Oil Level — Oil Change
Check **oil level** every 3000 miles and, if needed, refill to the lowest thread of the filler opening (see arrow) with name-brand oil of the same type; retighten filler screw (wrench size 8) with allen wrench. **Figure 28**

Change Oil while oil is at normal operating temperature, every 6000 miles but at least once a year. Unscrew oil drain plug (wrench size 19) and then oil filter plug (allen wrench size 8). After the oil has drained, replace drain plug tightly. Fill with new oil. **Figure 28**

Amount of oil approximately 0.5 pints
oil level lowest thread of filler opening
Type of oil name-brand hypoid gear oil SAE 90

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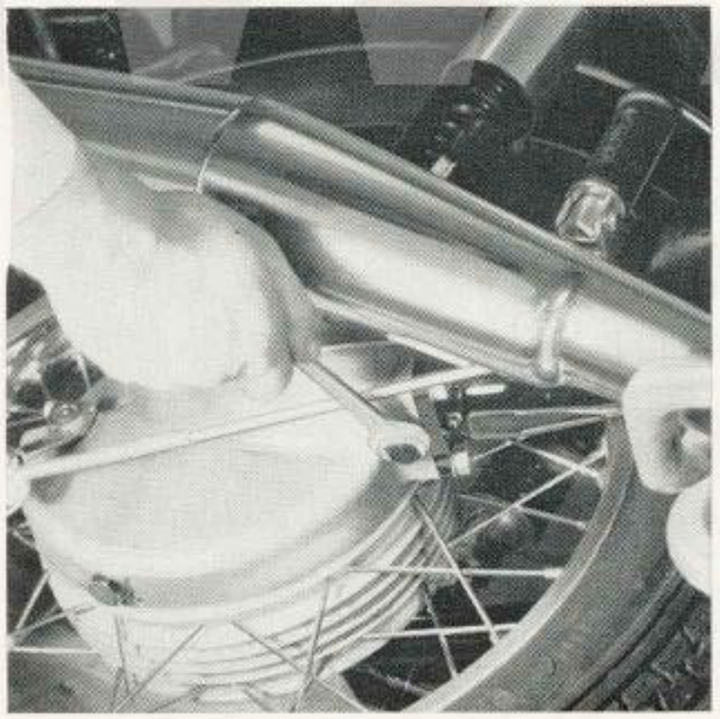

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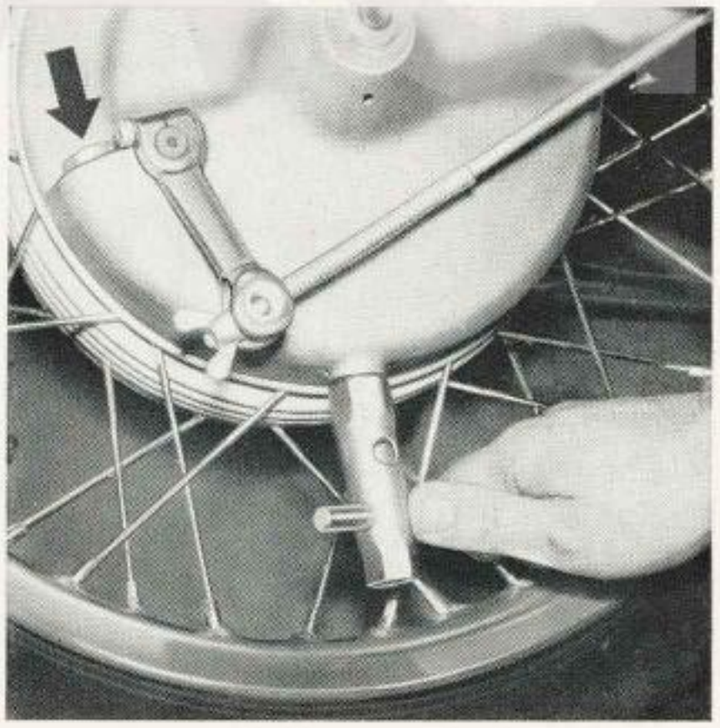

8. Telescopic Fork — Oil Change
every 6000 miles, but at least once a year.
Extend telescopic fork completely with motorcycle parked on the center stand. Remove rubber caps from the bottom plugs of the fork legs, unscrew hex nuts (wrench size 13) while holding the internal hex (wrench size 4) of the damper tube ends. **Figure 29**

Unscrew cover caps on top with pin wrench (from tool kit) to bleed the fork tubes. **Figure 30**

Pull down both fork legs, let oil drain. Screw in bottom nuts, fill with new oil. Initial filling capacity 280cc per fork leg, after draining, refill capacity 265cc.
Types of oil: Shock absorber oil Shell Aero Fluid 4, Shell 4001, Castrol BMW shock absorber oil or BP OLEX HL 2463 (Aero-Hydraulik).

9. Intake Air Filter
Remove air filter cartridge every 3000 miles — more often in dusty regions — tap out dust carefully and blow out from the inside with compressed air. Replace filter cartridge every 6000 miles; under extreme conditions replace more frequently. A clogged air filter cartridge increases fuel consumption and reduces power output.
To remove the air filter cartridge, tie kick starter to foot rest, remove air intake tube, unscrew allen head screw (wrench size 5). Turn left half of the air filter housing to the side, and pull out filter cartridge. **Figure 31**

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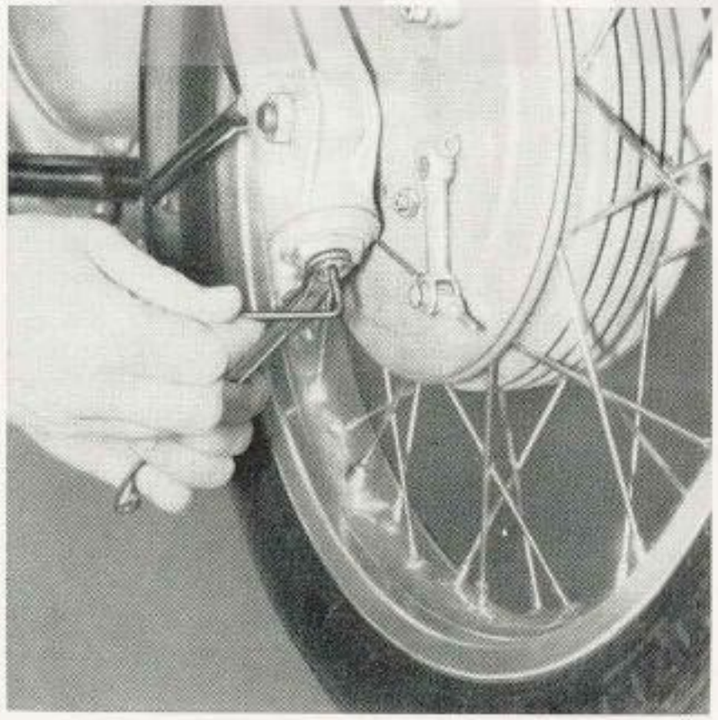

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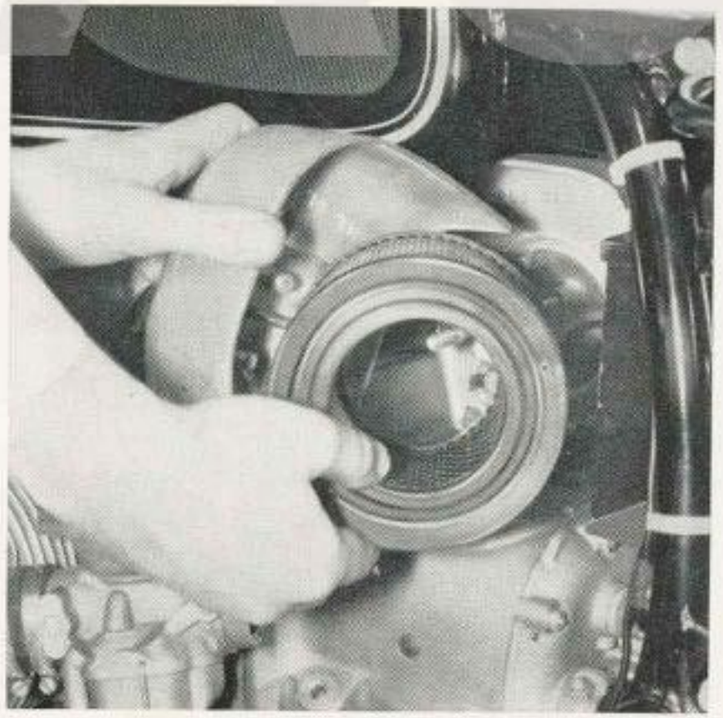

10. Play in Steering and Wheel Bearings
Check the steering head play after the first 1000 miles. To do this, put motorcycle on center stand, hold on to both fork legs from the front and check for play by alternately pushing and pulling. No free motion must be noticeable — otherwise readjust the steering head bearings. **Figure 32**

To do this, remove the steering damper knob, also the upper cap and lock washer. Dismount head light but do not disconnect, let it hang down but protect it and the fender with rags. Remove the right handlebar clamp by removing the two hex nuts (wrench size 13); loosen left handlebar clamp. Remove clamp bolt from clamp ring (allen wrench size 6). Loosen centering nut (wrench size 36) with box wrench (from tool kit). The steering-head play can now be adjusted. Push the pin (from tool kit) through the opening of the clamp ring into one of the holes of the split nut and turn clockwise to tighten and counter-clockwise to loosen. **Figure 33**

Reassemble in reverse order.
Caution! Tighten clamp ring first, then tighten centering nut with approximately 87 lb/ft.
Recheck play; if properly adjusted, the fork will fall to its left or right end position by its own weight. To make certain that the **wheel bearings have no play**, check every 3000 miles for axial play with the motorcycle on the center stand and the wheel off the ground. No play must be noticeable. **Figure 34**

The wheel bearing should be greased and adjusted every 6000 miles. This can be done only by your authorized BMW dealer. He has the right tools and training to do this properly. Every 12 000 miles, check whether the wheel hubs are packed sufficiently with grease. Check under Technical Data for the proper grease.
Also this work should only be made by an authorized BMW workshop.

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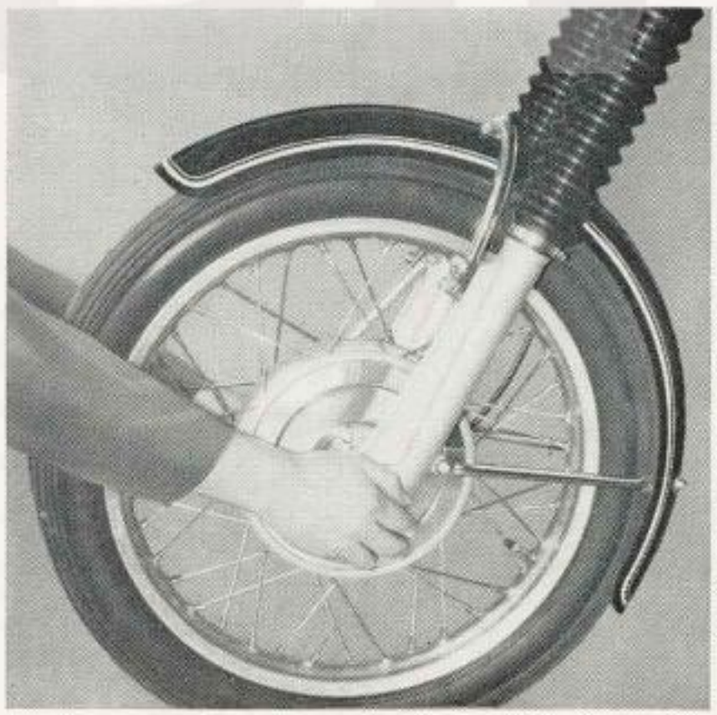

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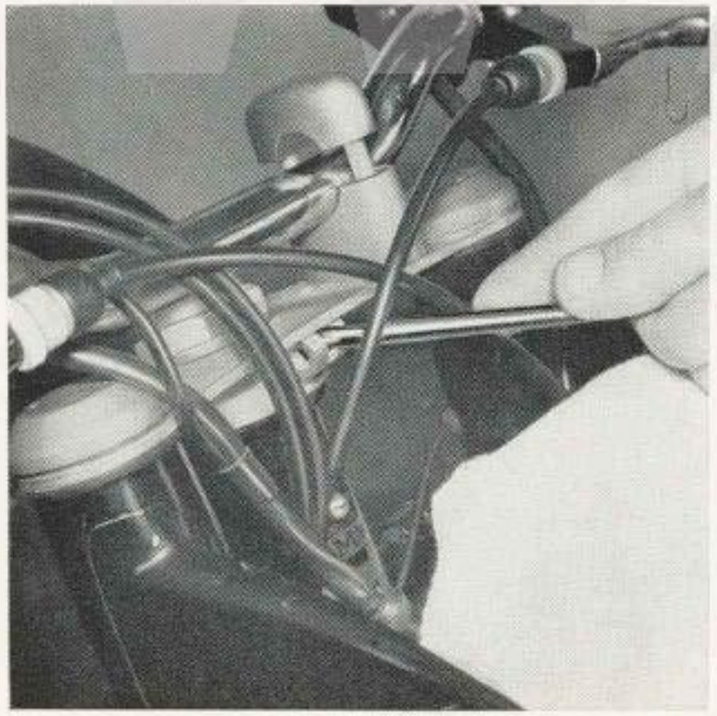

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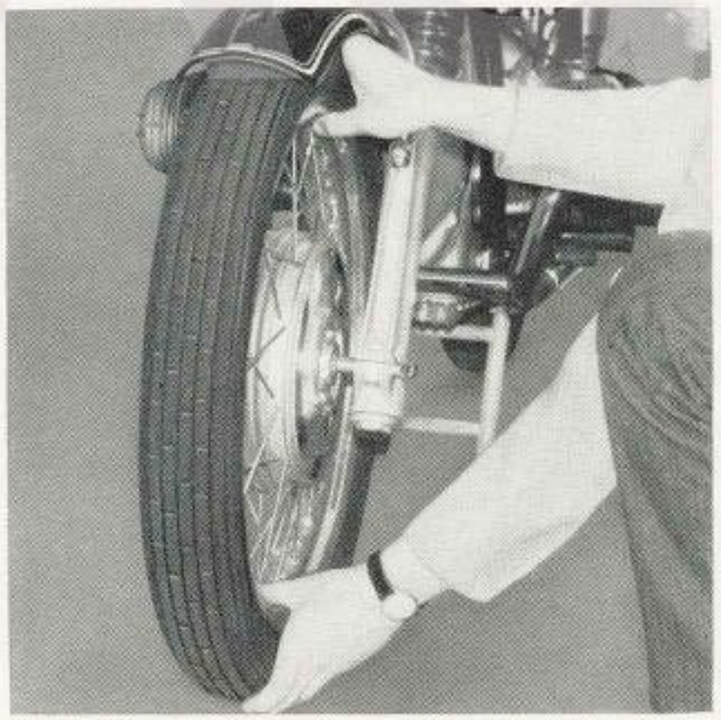

11. Brakes and Clutch
Check brakes regularly, at least every 3000 miles, for their effectiveness and sufficient lever travel.
Adjust front brake, hand lever to have a play of 8—15 mm ($^1/_4$—$^1/_2$") by turning the knurled screw 1 after loosening the lock nut 2. **Figure 35**

Loosen lock nut 2 (wrench size 13) of the adjustment cam 1, turn internal hex to the left with an allen wrench until it is tight, then turn it back to a point where the lower front brake lever has a free movement of 4 mm, measured at the cable anchor (3), before the shoe is fully applied. Tighten lock nut 2. Now adjust the cable, by turning the nut 4 (wrench size 10) while holding the sleeve (wrench size 4), to get a free movement of the upper brake lever of 4 mm before the upper shoe is fully applied. **Figure 36**

Adjust the foot brake by turning the wing nut at the end of the brake rod to the right until the rear wheel barely starts braking. Then back the wing nut off 3—4 turns.
Caution! If there is too little free movement, the brake could lock during operation. **Figure 37**

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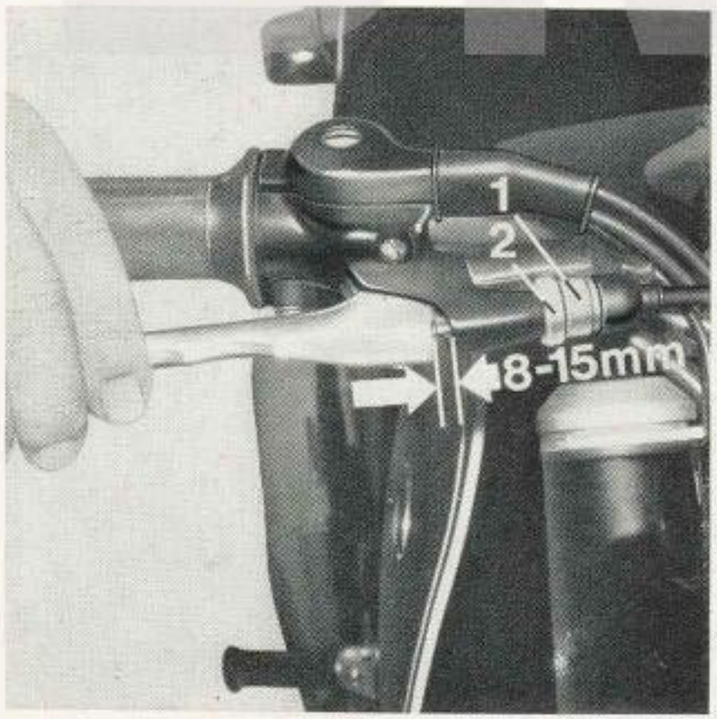

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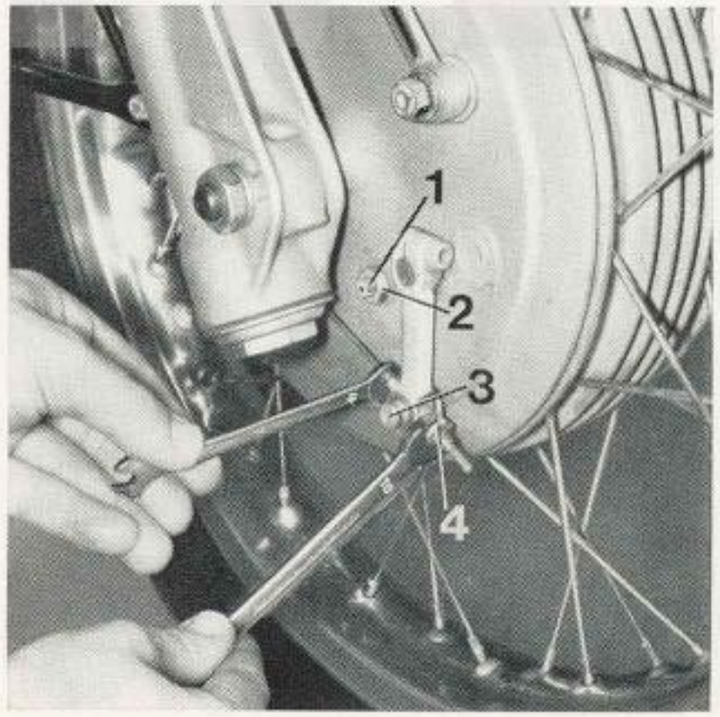

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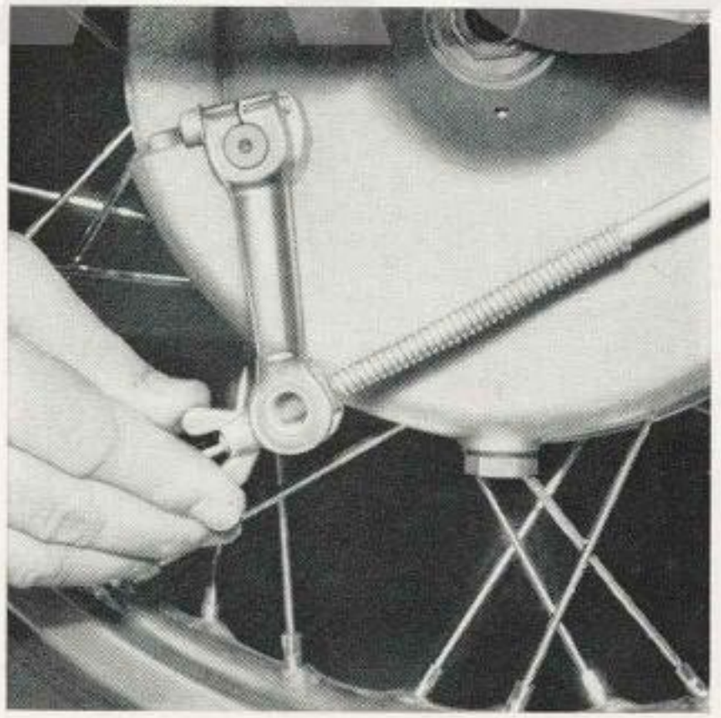

The clutch is properly adjusted when there is play of approx. 0.08" at the clutch lever on the transmission. The play is increased by turning the knurled cable adjuster into the clutch lever bracket, and decreased by unscrewing it. When this adjustment possibility is exhausted, the play can be decreased by tightening the clutch adjustment screw 2 (wrench size 10) after loosening the lock nut 1 (wrench size 13) at the clutch lever on the transmission, and increased by turning it out. Lock the adjustment screw.
Figure 38

12. Carburetor, throttle cables, petcocks
Clean carburetor every 3000 miles, this should be done by an authorized BMW dealer.
In an emergency, the carburetors may be disassembled and all fuel and air passages, float needle, main and idle jets, as well as the float bowl, should be blown out with compressed air. While doing this try not to turn the stop screw for the throttle slide or butterfly 1.
When reassembling, turn the idle air (idle mixture) screw or idle mixture regulating screw 2 in fully. Then turn back for R 50/5 by 0,5 ÷ 1,5 turns, for R 60/5 by 1/4 ÷ 1 1/4 turns or for R 75/5 by 1 ÷ 1 1/2 turns.

Figure 39 R 50/5, R 60/5
Figure 40 R 75/5

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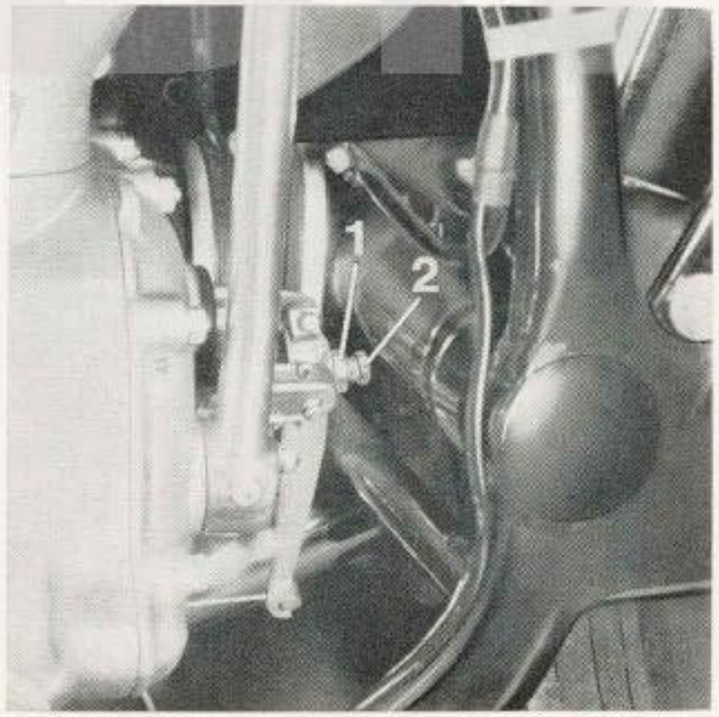

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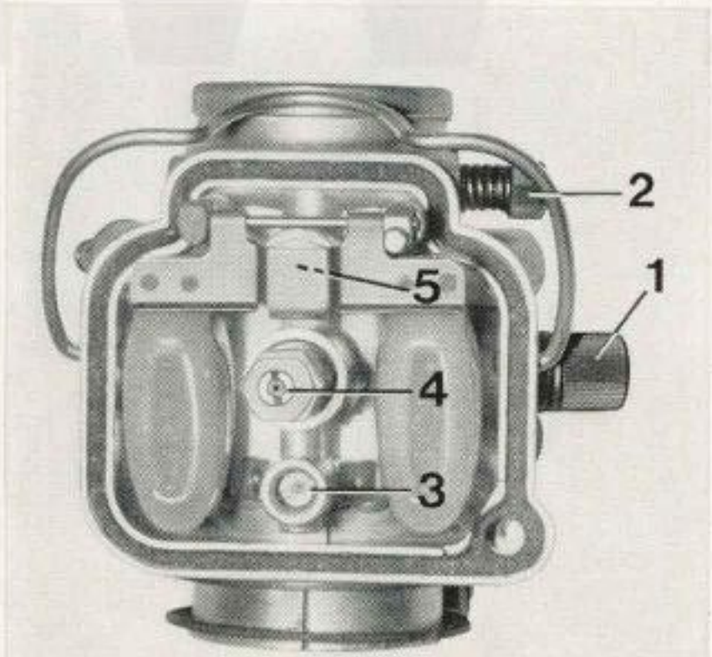

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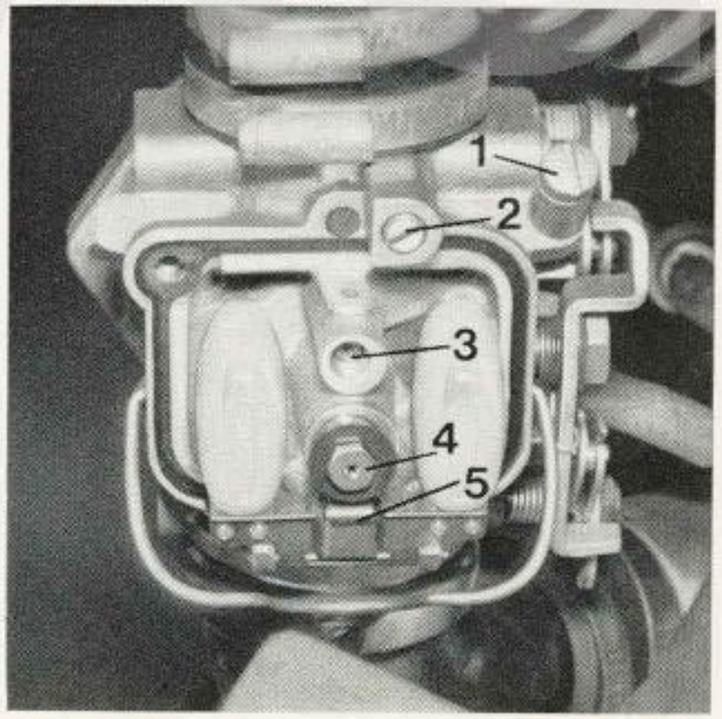

Insert **throttle slide (R 50/5, R 60/5)** dry, and tighten the ring nut tightly by hand (without pliers); make certain that the locating tab of the cover is placed properly into the recess of the housing.
Insert **vacuum piston (R 75/5)** with diaphragm and needle valve without oil; place the locating pin of the diaphragm so that it fits into the corresponding recess of the upper part of the carburetor. The two pressure equalization holes in the vacuum piston must be positioned near the butterfly. The upper diaphragm housing has to be positioned in such a way that the cable adjustment screws are positioned near the butterfly and choke levers. Insert the four screws and lock washers and tighten crosswise. When correctly mounted, the diaphragm, only by its own weight, should be moveable in both final positions on the guide bore. Install throttle cables and adjust to a free play of (.02—.04"), with throttle grip closed. If necessary, adjust cables by loosening lock nut (wrench size 9) and make preliminary adjustment. Turning adjustment screw to the left reduces free play, turning it to the right increases it. Both cables have to be adjusted exactly alike. **Figure 41**

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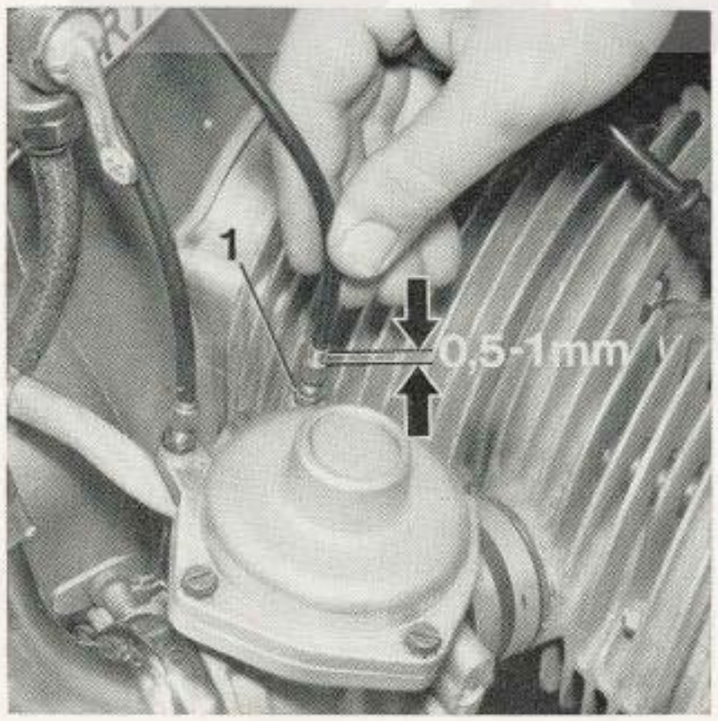

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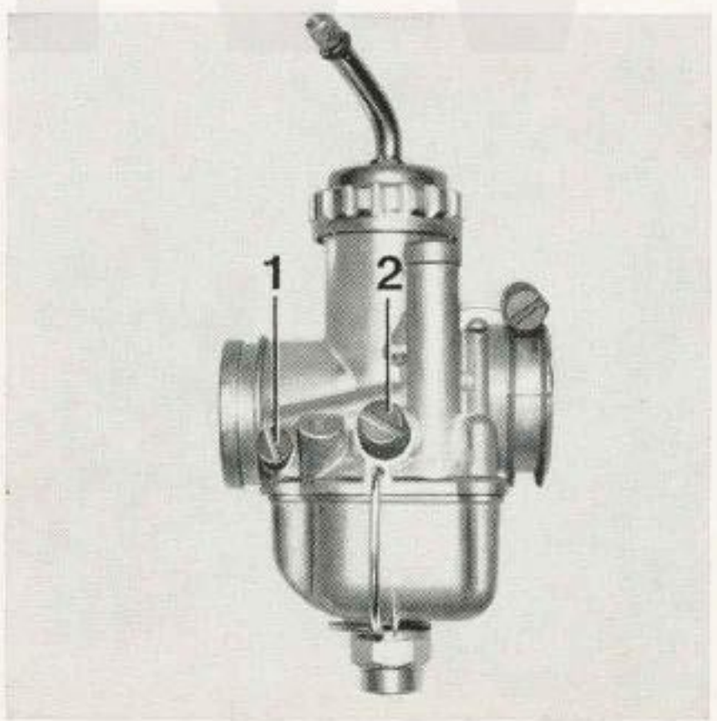

Adjust the idle while the engine is running, and after it has reached normal operating temperature, with the throttle fully closed. Put adaptor (antistatic cartridge Beru EP 1) into spark plug cap. This prevents the spark plug cap from being damaged while it is removed from the spark plug and placed on the cylinder while the engine is running. The proper idling speed is between 800 and 1000 RPM. If the engine idles at that speed, check for even speed of both cylinders by alternately removing the spark plug cap. Observe the tachometer or listen for even running during this check.
If the speed of both cylinders is uneven or if the idle speed is insufficient or excessive, correct this by adjusting the slide stop screw or butterfly stop screw 2, clockwise to increase, counter-clockwise to decrease speed.
For finding the most favorable petrol mixture turn idle air screw (R 50/5, R 60/5) or idle mixture regulating screw 1 (R 75/5) carefully in either direction. The correct mixture adjustment has been found when the cylinder runs the fastest. Lock idle air regulating screw (R 50/5, R 60/5). Perform the same operations on the opposite carburetor.

Figure 42, R 50/5, R 60/5
Figure 43, R 75/5

If the engine speed is now still not the prescribed 800—1000 RPM, it can be decreased by turning the throttle slide or butterfly stop screws 2 on both sides simultaneously counter-clockwise or it can be increased by turning them clock-wise.

To adjust the transition from idling to the part load range, turn the throttle slightly so that the idling speed increases slightly. Check by alternately removing the spark plug cap whether both cylinders operate evenly. If necessary, adjust the throttle cable of the slower cylinder to have less free play. Secure with hex nut (wrench size 9).

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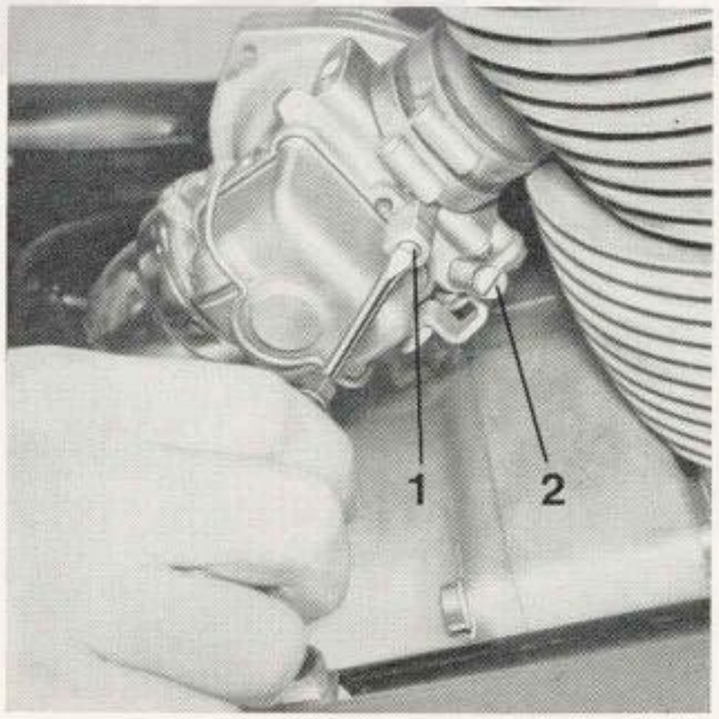


Fuel Petcock

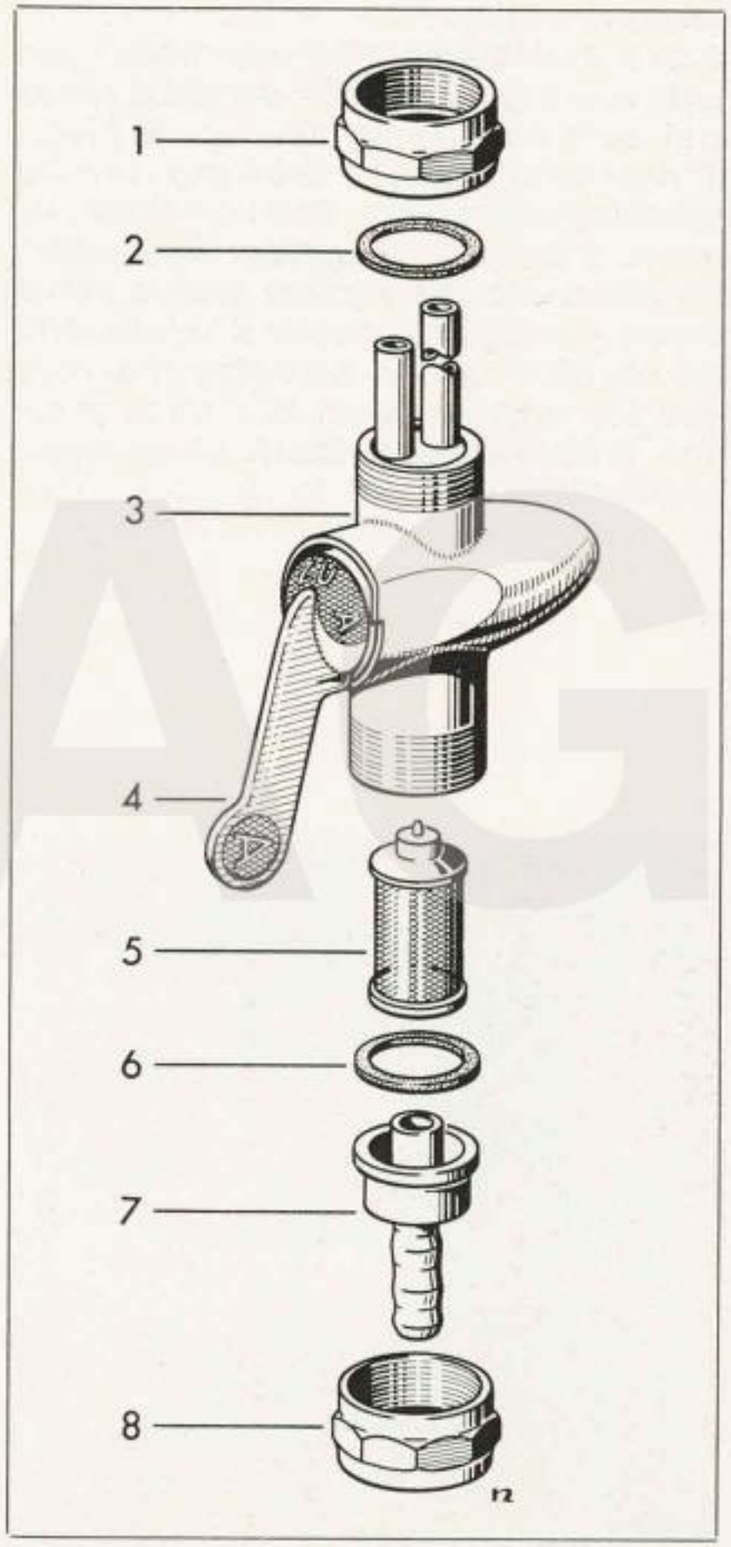
Disassemble and clean the **screen of the fuel petcock** every 6000 miles.

1. Close fuel petcock — lever 4 points down
2. Unscrew octagonal nut 8 (wrench size 24).
3. Remove hose connection 7 and screen 5, clean screen in gasoline and blow out.
4. Replace gasket 6, if damaged. Reassemble screen 5.

To remove the fuel petcock

1. Empty fuel tank.
2. Nut 1 (wrench size 24) has a right-hand thread on the fuel tank side and a left-hand thread on the petcock side. Turn the nut to the left while holding the fuel 3; remove fuel petcock 3 and nut 1.
3. Use new gasket 2 for reassembly. Position wider smooth portion of nut 1 up, and make both threads of nut 1 engage the fuel petcock and the fuel tank simultaneously.

Caution — the fuel tank should never be completely empty of fuel so that the gasket will not dry out.



13. Spark Plugs
Check the **spark plug electrode gap** with spark plug gage every 3000 miles and before installing new spark plugs. If necessary, adjust the gap to the specified size of a = 0.024 + 0.004" by bending the side electrode. **Figure 44**
Do not clean spark plugs with a metal brush, — apply a graphite lubricant to the threads before screwing the plug into the cylinder head. It is good practice to replace the **spark plugs** every 10 000 miles.

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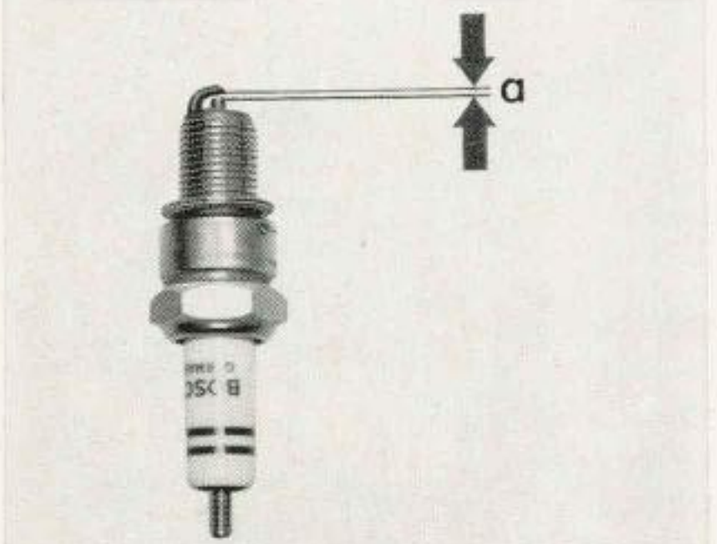

14. Breaker Contact Gap, Breaker Lubricating Felt, Ignition Timing
Check breaker contact gap every 3000 miles: First remove battary cable, then remove the generator cover by removing the three allen-head screws (wrench size 5). If no dwell angle meter is available, proceed as follows: Remove spark plugs, insert 6 mm allen wrench into the alternator rotor bolt and turn engine clockwise in direction of rotation until breaker lever lifts off fully. If necessary, contacts can be cleaned with a contact file; however the best practice is to replace them. Check contact gap with feeler gage 0.014 to 0.016". To adjust the breaker contact gap: loosen set screw slightly, position screw driver between the two little pins and into the slot of the breaker anvil and set to 0.014 to 0.016". Tighten set screw 1 and recheck contact gap. **Figure 45**

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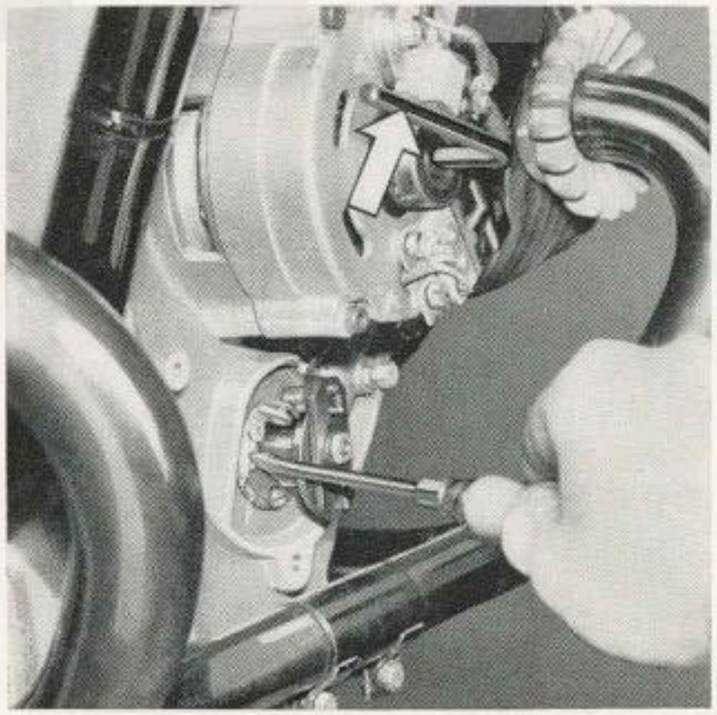

Rub a small amount of Bosch grease Ft 1 v 4 **into the lubrication felt** every 6000 miles and check whether the felt rests properly on the cam. Remove the centrifugal advance unit every 6000 miles. To do this, first remove the hex nut (wrench size 10). After you withdraw the advance unit lubricate the shaft with Bosch grease Ft 1 v 22 or 26. Watch for proper spring action. **Check ignition** every 3000 miles or after each readjustment of the breaker contact gap.
(a) Connect one terminal of **test lamp** to condenser 1, the other to ground 2, with ignition switched on. **Figure 46**

Test lamp must light up when the „S" marking at the flywheel coincides with the window marking as the engine is turned clockwise (direction of engine rotation) — (fly weights at rest). **Figure 47**

The ignition timing may fluctuate between the left and the right cylinder a maximum of 2° (which corresponds to 0.1″ of the flywheel diameter).
(b) Put timing light between spark plug cap and spark plug and direct light against the flywheel periphery in the window with engine running. At idling speed of the engine (800 to 1000 RPM), the flywheel marking „S" (late spark) must appear in the window as a bright line; if the bright line is above center, the spark is too far advanced, if below center, the spark is too far retarded. By increasing the engine RPM the "S" mark will disappear toward the top (movement starts approx. at 800 RPM) until the flywheel marking "F" (advanced timing) appears in the window from below at 3000 RPM (full advance).
Adjust timing: Loosen the two slotted screws 1 in the breaker base plate. Turning the base plate in the direction of rotation retards the timing; turning it against the direction of rotation advances the timing (direction of rotation of crank-shaft and cam-shaft is the same). After completion of adjustment retighten the two screws. **Figure 48**

When checking the ignition timing with a test lamp, turn the engine approximately 45° against the direction of rotation before test (test lamp goes out). This will eliminate any possible lost motion. Recheck timing with timing light. If the timing is incorrect, check trueness of shaft (max. 0.0008") and ease of travel of the cam of the centrifugal advance unit on the shaft.

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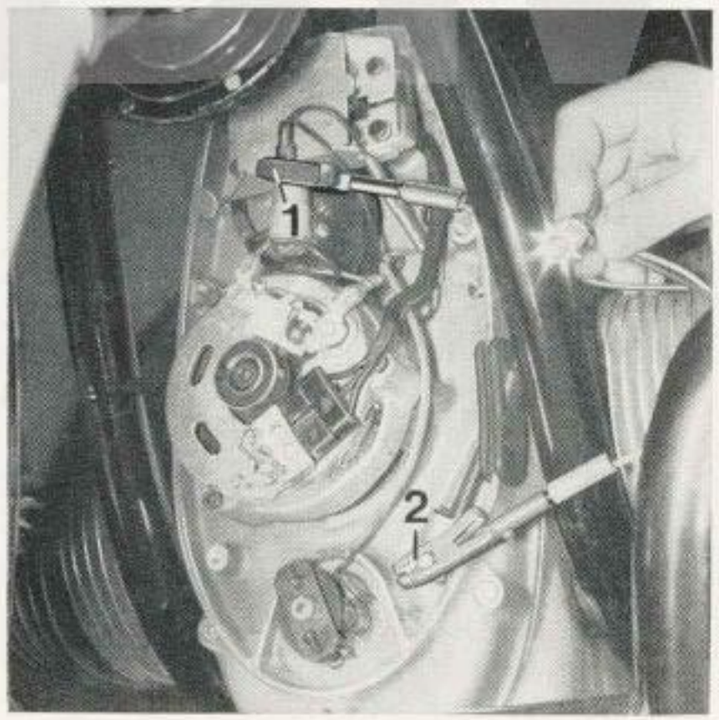

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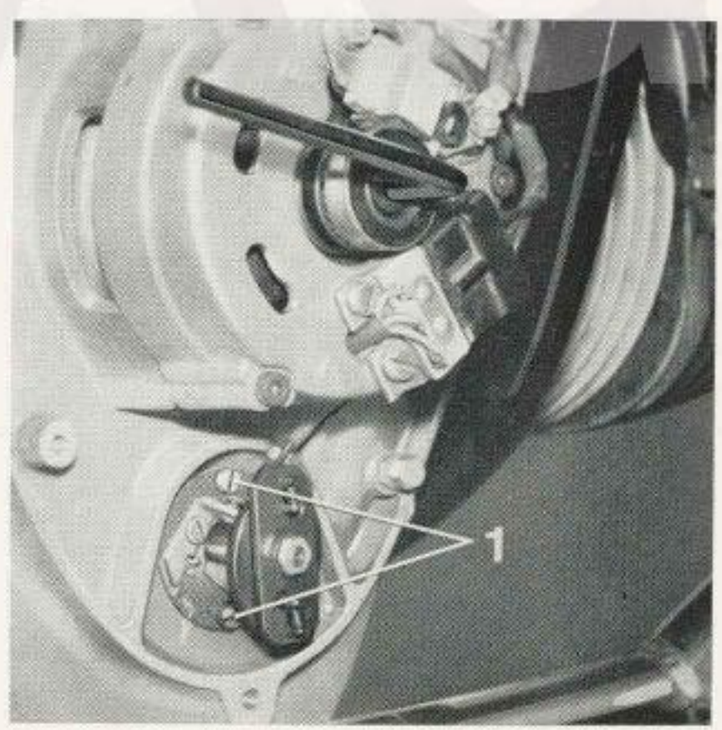

15. Cylinder Head Nuts Valve Clearance (with Engine cold)
Check the torque of the nuts of the four cylinder head nuts and the two cylinder head nuts every 3000 miles. First remove the hex nut (wrench size 14) as well as both lateral nuts (wrench size 10) and remove rocker arm cover. **Figure 49**

If necessary, retighten cylinder head nuts and nuts as shown on diagram with torque wrench (25 + 2.8 lb/ft). **Figure 50**

Check valve clearance — required after each retightening of the cylinder head nuts — with feeler gage between valve stem and rocker arm when engine is stopped and cold. To do this, unscrew spark plugs and turn engine over with allen wrench (wrench size 6) at the alternator rotor bolt until the cylinder to be adjusted is at **compression** top dead center. Both valves are closed. If necessary, readjust clearance (wrench size 12) after loosening the lock nut (wrench size 12), secure with lock nut, recheck valve clearance. **Figure 51**

16.—17. Wheel Spokes, Wheels, Wheel Hub Bearings, Brakes
The **Wheel spokes** must be checked for uniform tension every 6000 miles. Clean **brakes,** brake drums, brake shoes and brake linings (minimum thickness 0.06") and check brake cams and actuating parts Grease brake cams lightly. Do not emery the shiny film on the brake linings, do not bevel the linings.
These operations should be performed only by an authorized BMW Dealer Figure 52

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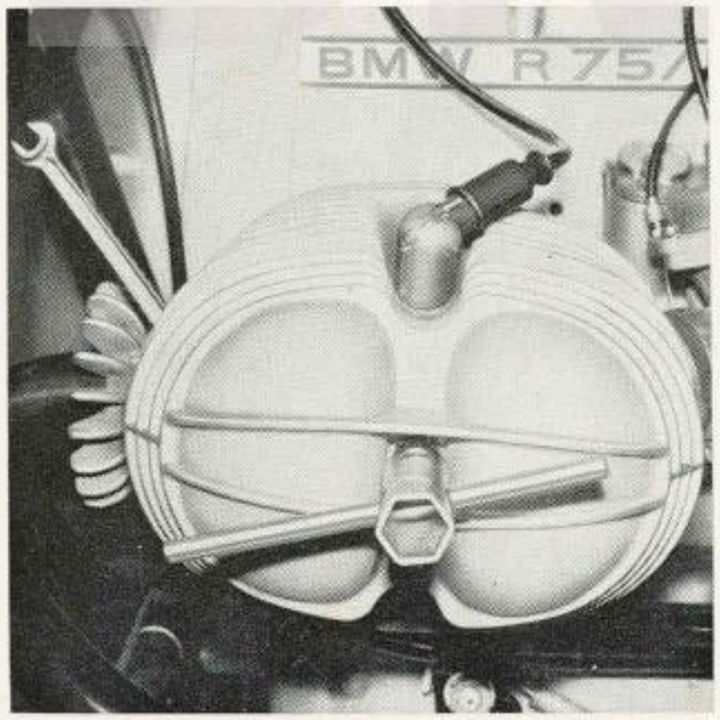

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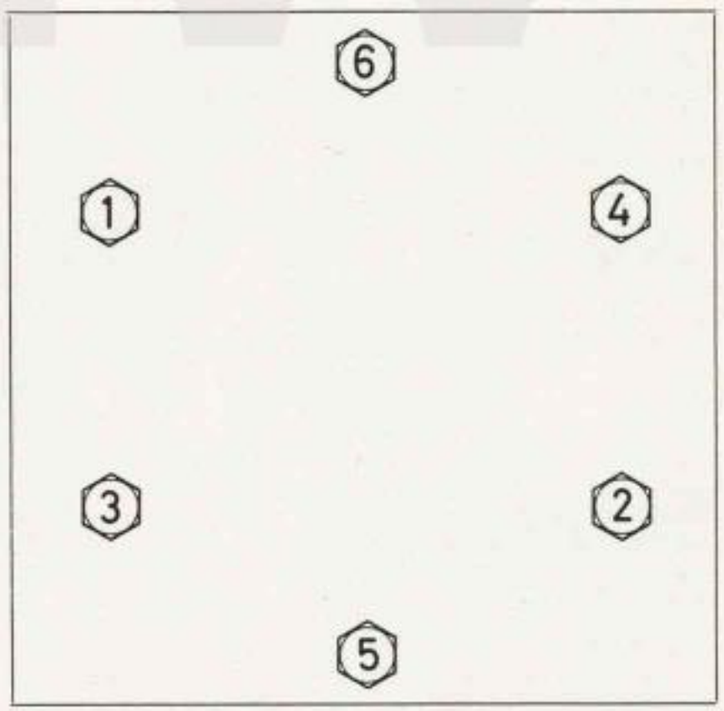

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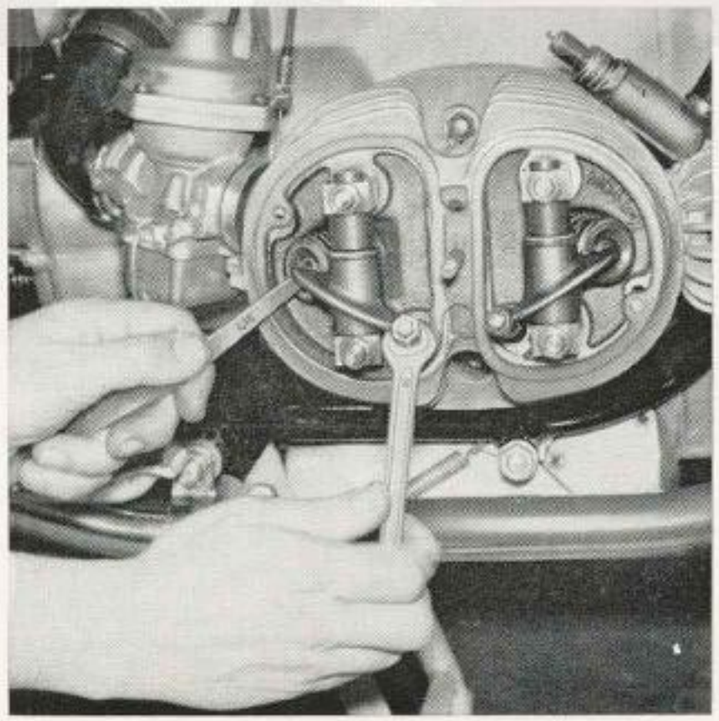

19. Tighten nuts an bolts
The correct torque of the following nuts and bolts is to be checked every 3000 miles.

Name	Wrench Size
1. Axle nut front and rear, torque 32.5 lb/ft.	22 mm
2. Engine mounting screws, front and rear	19 mm
3. Hose clamps: a) Telescopic fork top and bottom b) carburetor c) Between drive shaft and transmission	
4. Tightness of rocker arm cover 1 x cap nut 2 x hex nut	 14 mm 10 mm
5. Finned exhaust pipe nut (tighten when engine is cold)	Hook Wrench Ordering No. 338/2
6. Shock absorber mounting rear (top and bottom)	17 mm
7. Muffler suspension 2 screws with hexagonal recessed holes each clamp, 2 hexagon cap screws	5 mm 13 mm
8. Fuel petcocks to tank	24 mm
9. Engine to transmission, 1 nut 3 screws with hexagonal recessed holes	12 mm 6 mm
10. Timing chain cover to engine, 9 allen crews 3 allen nuts	 5 mm 5 mm

20. Test Ride, Final Inspection
A test ride is to be taken after every service to check the motorcycle for safe operation. Watch in particular for proper functioning of the brake and the ease of operation of the steering.
Final inspection includes checking the condition of the tires, the air pressure in the tires, and the proper functioning of the lighting and signal system.

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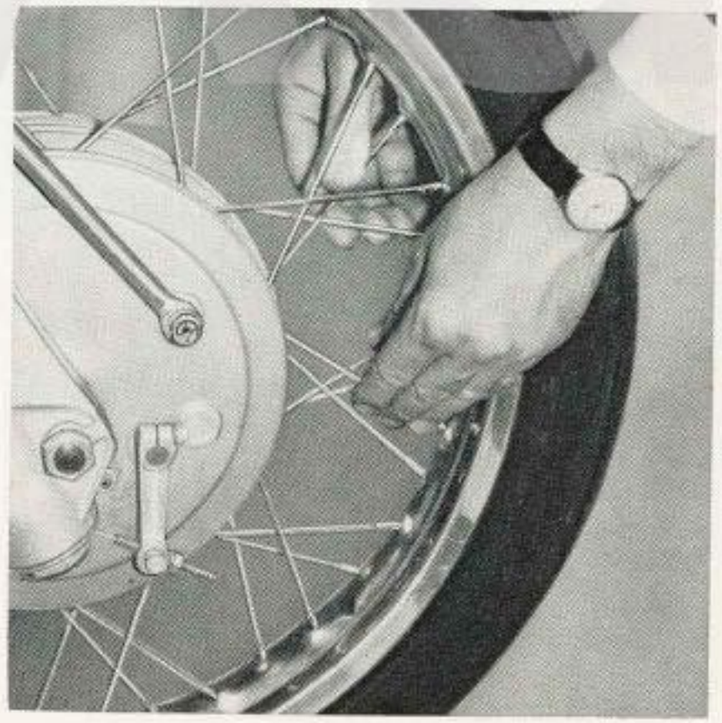
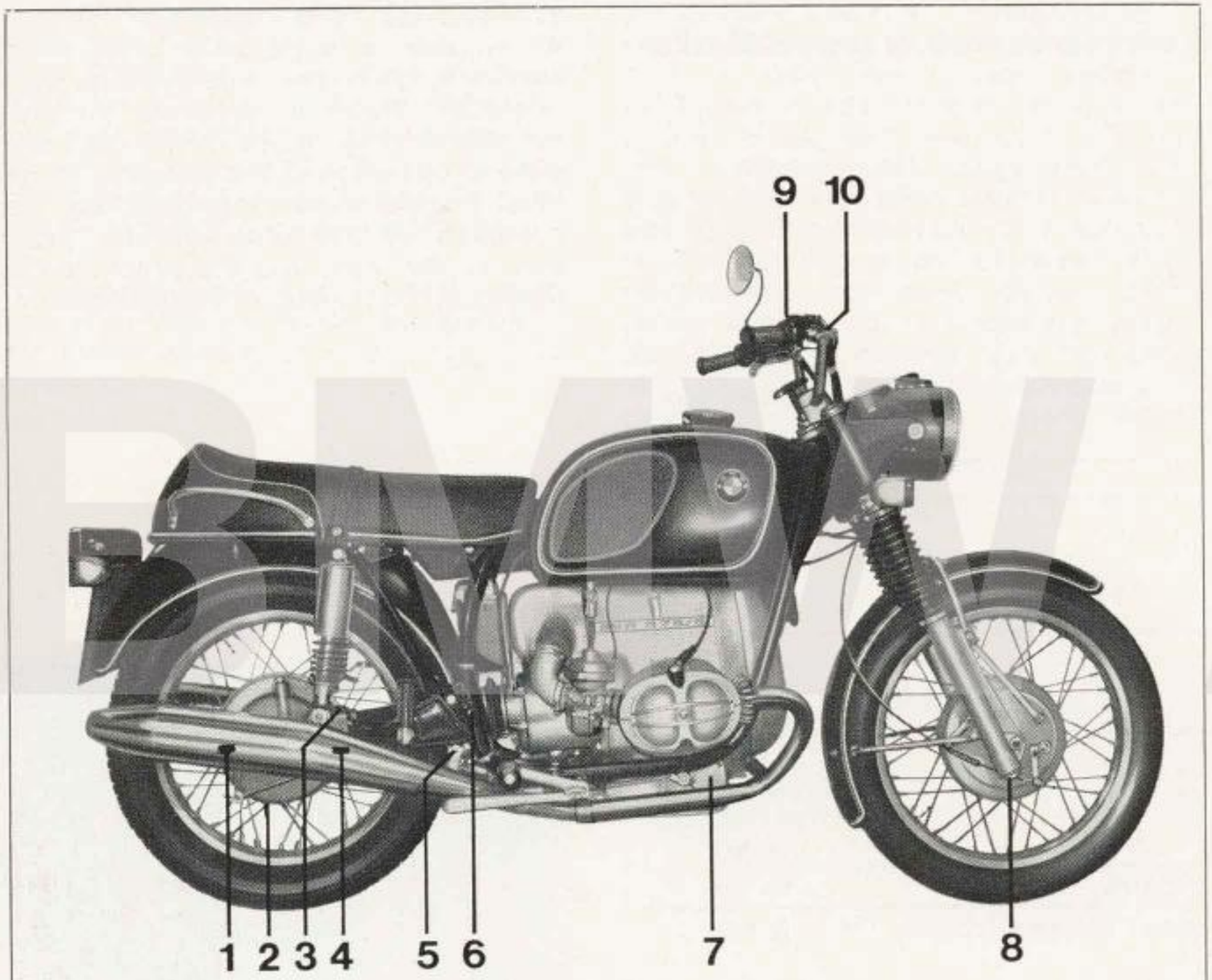
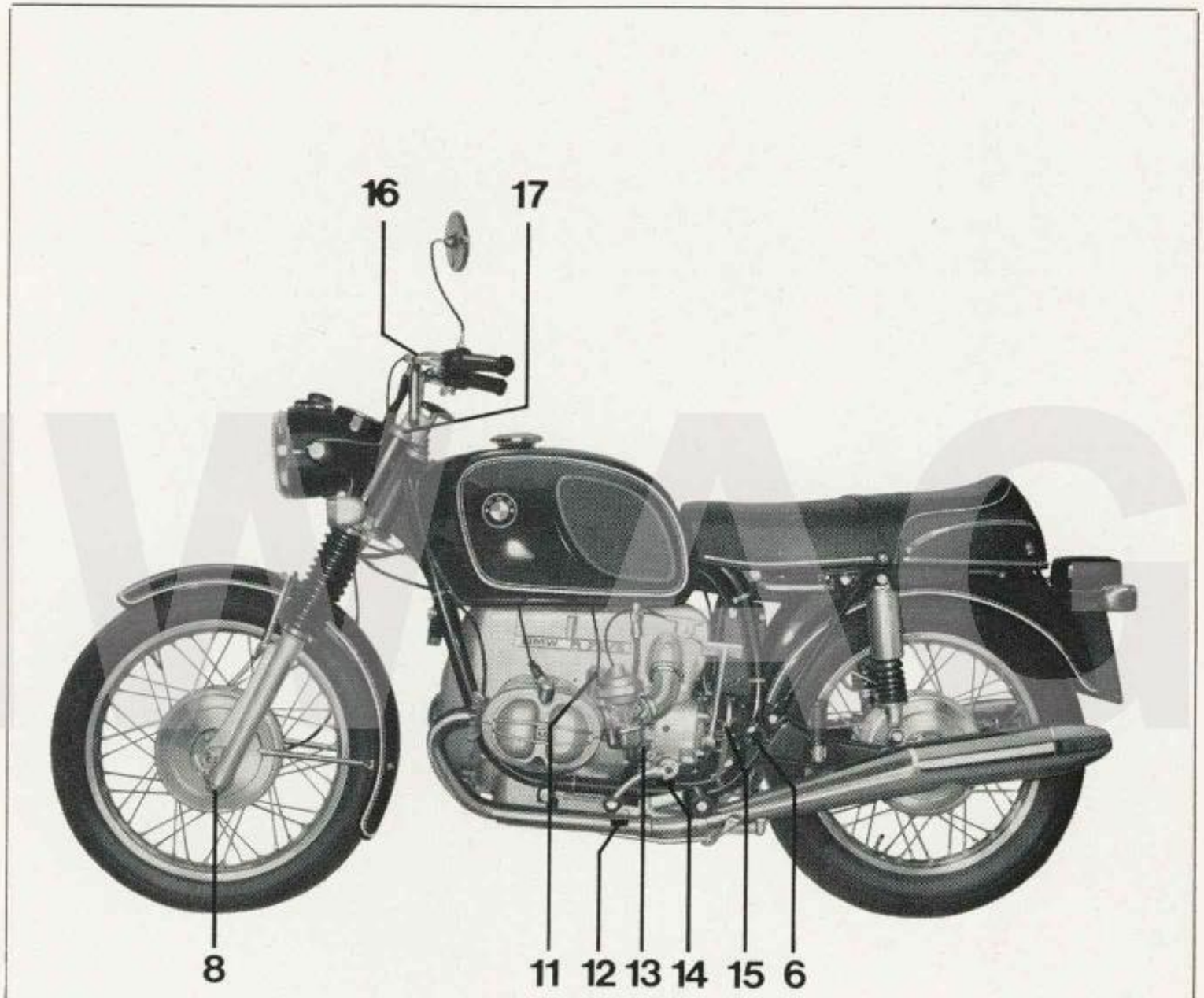


Diagram of Lubricating Points



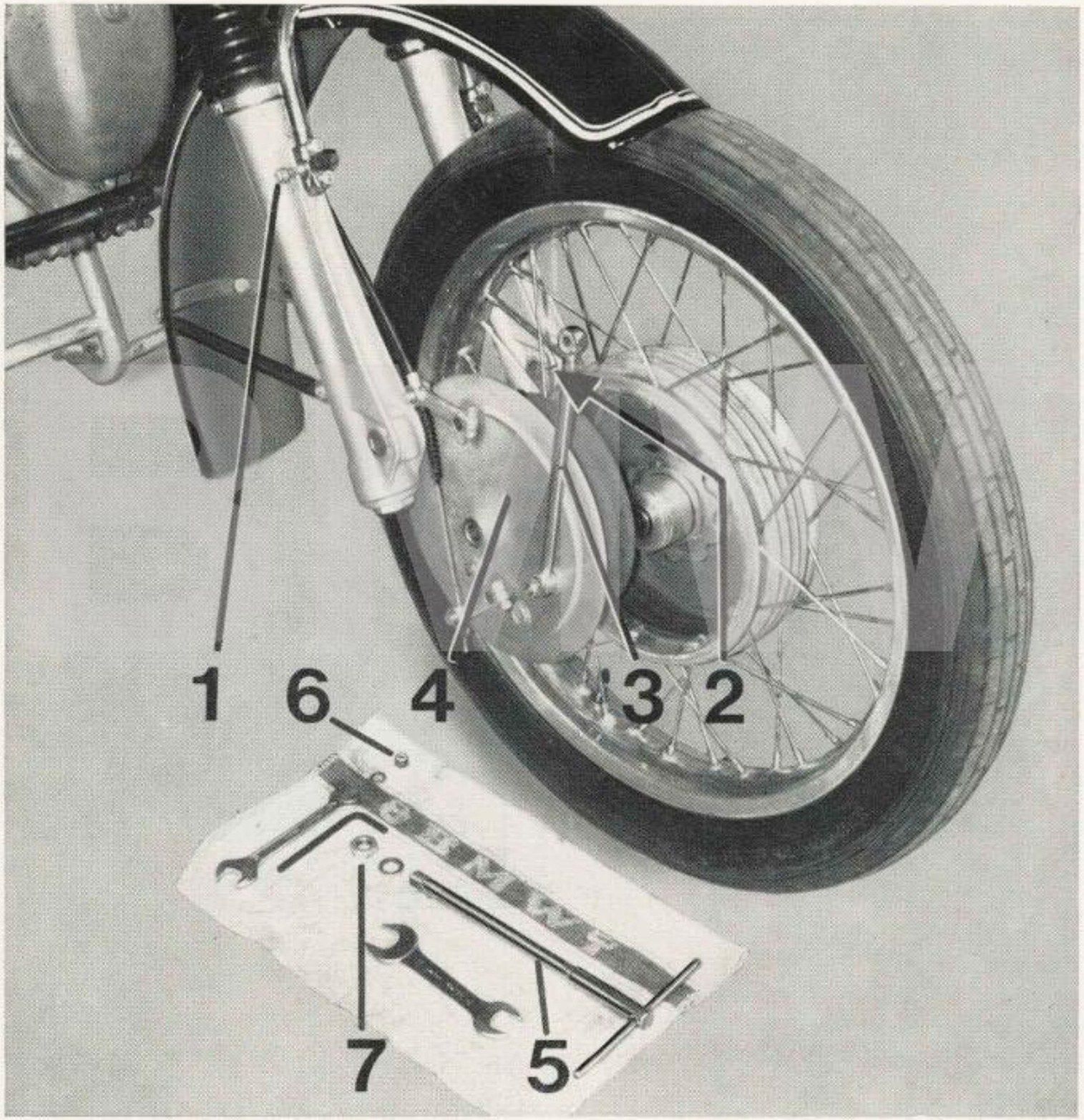
1. Filler hole, rear wheel drive
2. Drain hole, rear wheel drive
3. Filler hole, drive shaft housing
4. Drain hole, drive shaft housing
5. Grease fitting, foot brake linkage
6. Grease fitting, right hand swing arm bearing
7. Main flow oil filter
8. Oil drain, telescopic fork
9. Throttle assembly
10. Brake lever pivot

Figure 53



11. Oil dip stick, engine
12. Oil drain, engine
13. Filler hole, transmission
14. Oil drain, transmission
15. Grease fitting, clutch lever
16. Clutch lever pivot
17. Filler hole, telescopic fork

Figure 54



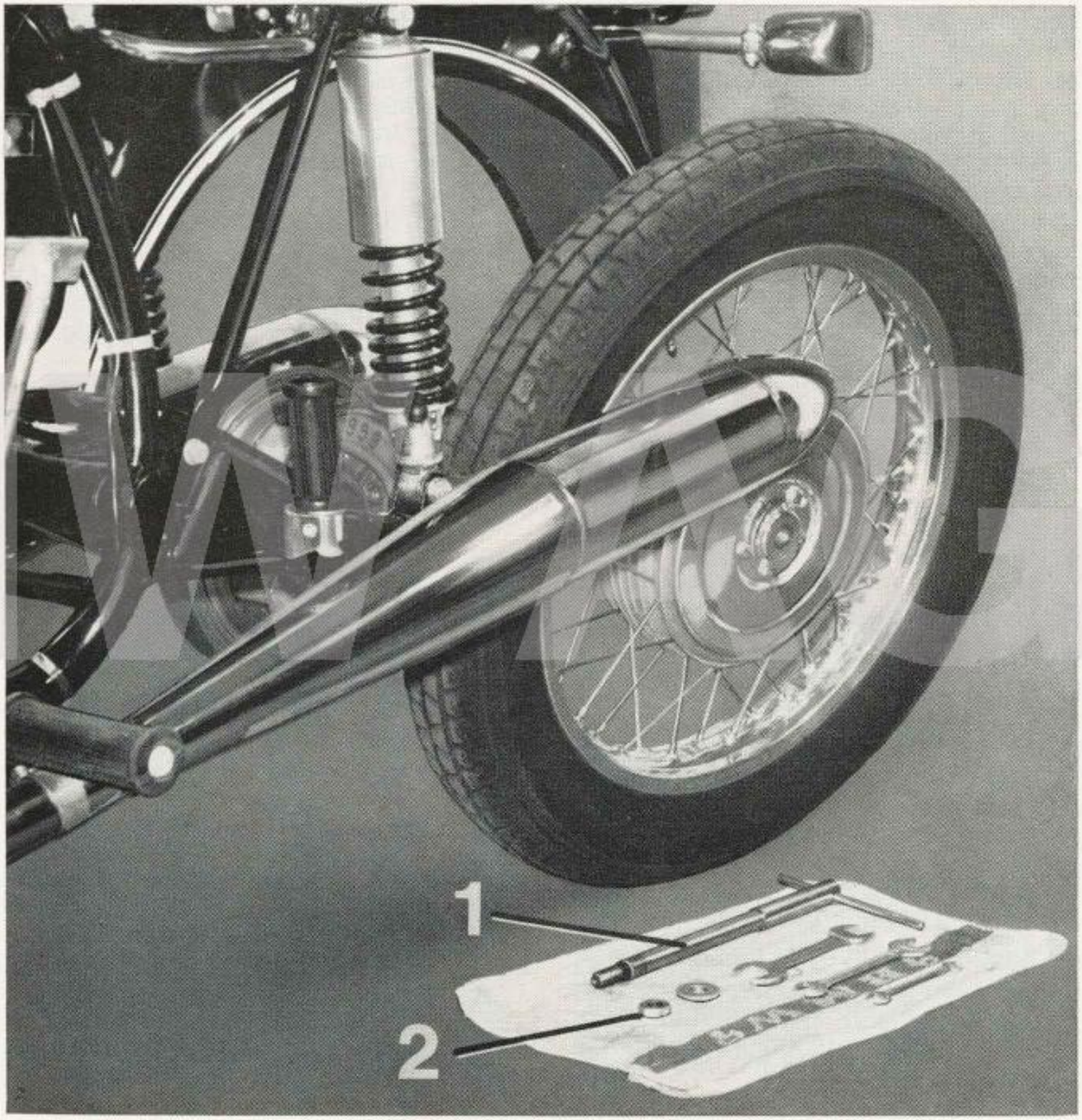
What to do when . . .

Removing and reinstalling the front wheel

1. Put motorcycle on center stand
2. Remove axle nut 7 (wrench size 22) and washer.
3. Unscrew upper stop nut 6 of the brake plate torque arm 3 (wrench size 13), holding the allen-head screw (wrench size 6) with an allen wrench, pull torque arm 3 forward.
4. Loosen axle clamping screw 2 with allen wrench (wrench size 6). Pull out wheel axle 5 with mandrel.
5. Pull wheel forward slightly, take brake anchor plate 4 out of wheel hub, remove wheel.
6. Reassemble in reverse order. Clean and lightly grease the wheel axle before inserting it. Pump the telescopic fork several times before tightening the axle clamp bolt 2 in order to avoid binding of the fork legs. **Figure 55**

Removing and reinstalling the rear wheel

1. Put motorcycle on center stand.
2. Unscrew axle nut 2 (wrench size 22) and put aside together with washer. Loosen clamp bolt (wrench size 13), pull out wheel axle 1 with mandrel over the inclined plane.
3. Pull wheel off toward the left swing arm and pull out toward the left rear.
4. Reassemble in reverse sequence. Clean and lightly grease axle before inserting it into the wheel. Rotate wheel while the axle is being pushed in. Tighten clamp bolt last. The hole in the head of the axle should be horizontal. **Figure 56**



Tire Changing

To remove the tire, deflate, push the tire from the rim inward. Unscrew valve nut, push valve into tire. Observe the safty notches in the rim. Push the tire bead into the rim well on the side opposite the safety notches and start lifting the bead off the rim on the side of the safety notches with the tire irons. Remove tube and completely remove tire from wheel in the same manner. **Figure 57**

To mount the tire, push the tire bead into the rim well on the side opposite the safety notches; the red point of the tire should be in height of the valve. Lift the tire over the rim flange step by step, without using force, and uniformly on both sides with the help of the tire irons, apply talcum powder. Insert tube and secure valve with the lock nut; do not tighten lock nut; turn it on 4–5 turns; inflate slightly. Push the second bead of the tire over the rim into the rim well, again first on the side opposite safety notches; in so doing, the valve must be pushed back until the safety nut makes contact. Proceed to push the tire bead over the rim flange with the tire irons. Inflate tire, make certain that the check line has an equal distance from the rim edge over its entire circumference on both sides. Balance tire.
Figure 58

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Head Light Bulbs, Bulbs for Control Lights, Speedometer Lighting, and **Turn Signals should be replaced as follows**

Use screw driver to pry the headlight rim off the head light. Remove bulb holder from reflector. To remove bulb from holder, push it in and twist and then withdraw. When refitting the bulb holder take care that the locating tab of the holder lines up with the recess on the reflector. **Figure 59**

Remove the **parking light bulb** from the reflector through the bulb holder opening. Do **not** touch the reflector surface. **All sockets for the control lights and the speedometer lighting** can be withdrawn from their receptacles. The bulbs can be removed by pushing them into the socket while simultaneously turning them to the left.

Caution! The charging indicator light (red) must be lit when the ignition is switched on. The charging of the battery during operation depends upon the charging control light working properly; use only a 12 V 4 W bulb. Pull flasher from its socket.

When reassembling, place **head light insert** into the top of the edge of the head light housing, push it against the head light housing at the bottom making certain that the locating tab is properly positioned. Ascertain that the holding springs are fully engaged.

Disassembly of turn signals and tail/ stop light

The turn signal lens and tail light lens can be removed after the two philips-head screws have been removed. The turn signal and tail light bulbs are removed by pushing them in and simultaneously turning them to the left. **Figures 60 and 61**

Observe the marking "top" when re-installing the turn signal lens. Make certain that the clear portion of the tail light lens faces down.

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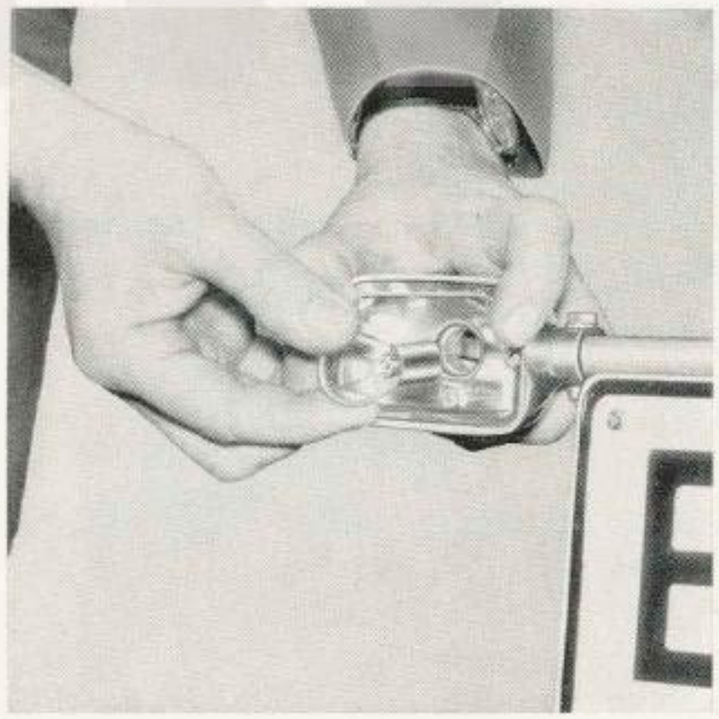

61

Head Light Adjustment

Check tire pressure and correct, if necessary. Place motorcycle on its wheels with the rider aboard on a level surface 16 1/2 feet from a light-colored wall. The rear springs should be set for solo operation. Measure distance from ground to head light center, mark this distance on the wall with a cross and draw another cross 2" below the first one. Switch on low beam and align the head light, so that the bright-dark boundary runs from the left, from the center of the lower cross, rising to the right to the horizontal line of the upper cross (16 1/2 feet) and then falls off. **Figure 62**

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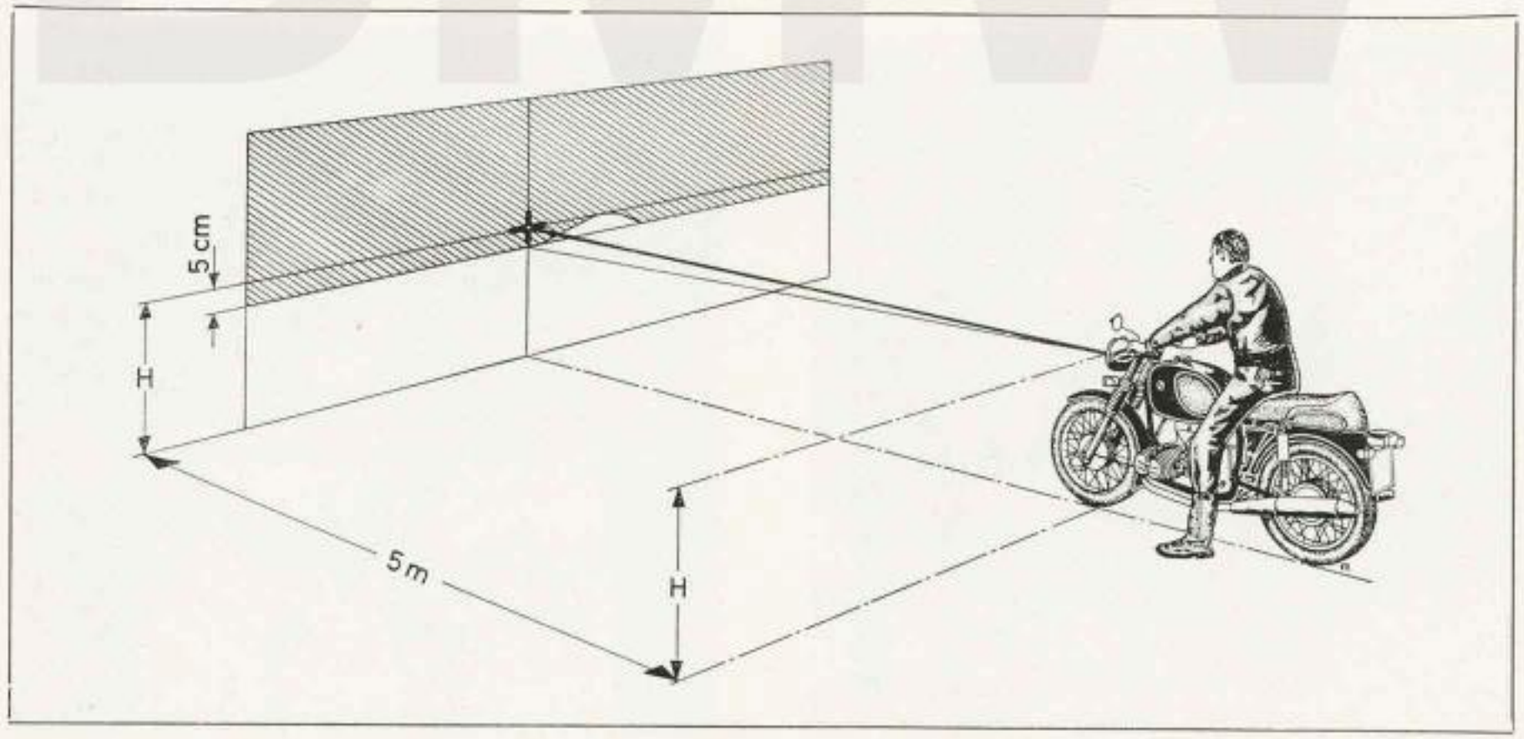


Engine Problems, Causes and Corrections

1. Engine does not start or starts poorly

Cause	Remedy
Fuel tank empty	Fill tank
Fuel petcock closed	Open petcock
Trottle grip turned on too far when engine is cold	Close throttle grip
Air filter clogged	Clean air filter cartridge or replace it
Leaking or clogged fuel line	Stop leak in line or blow it out
Defective float needle	Replace needle valve
Clogged idling jet	Clean jet
Contaminated breaker points	Clean points
Loose or defective ignition cable	Check cable; replace af necessary
Wet spark plugs due to condensation or too much fuel	Clean spark plugs
Breaker contact gap or spark plug electrode gap incorrect	Correct gap
Sticky valve	Remove possible carbon deposits from valve — should be performed by an autorized BMW dealer
Dead battery	Have battery charged in service station. **Caution!** Charge battery only with + and — cables removed.

2. Engine starts, but idles irregularly

Carburetor set too rich or too lean	Readjust carburetor
Valve clearance insufficient	Readjust valve clearance
Leaky valve	Have valves ground
Leak between cylinder and head gasket or carburetor	Check cylinder and carburetor connections for leaks — should be performed by an authorized BMW dealer
Low compression	Have valves ground Check piston rings or rebove cylinders

3. Hot engine idles irregularly Exhaust smokes

Float needle valve leaks, idle mixture set too rich	Repair valve; readjust idle mixture

4. Engine runs irregularly, stalls Occasionally

Spark plug electrode gap too wide	Readjust electrode gap
Oily or sooty spark plug	Clean or replace spark plugs

Cause	Remedy
Ignition cable wet or defective	Dry or replace cable
Spark plug cap shorted (recognizable by sooty burned spots)	Dry or replace plug cap
Defective ignition system	Replace defective parts
Clogged carburetor jets	Clean jets
Clogged fuel line	Clean the fuel line

5. Engine runs excessively hot, keeps running after ignition is turned off

Fuel mixture too lean	Check and readjust carburetor, check jet selection
Timing off	Check and readjust ignition
Breaker contact gap off	Check and readjust points
Dirty engine cooling fins	Clean cooling fins
Spark plug heat value too low	Use specified spark plugs

6. Engine pinks under load

Fuel octane rating too low	Use name-brand fuel
Heavy oil carbon residues in combustion chamber	Clean pistons, for which cylinder head must be removed, see your BMW dealer
Timing too far advanced	Correct timing

. . . and in Winter!

If the motorcycle is to be stored for the winter or even longer, the following steps can protect it against corrosion and harmful effects of the weather:

1. Drain oil when engine is hot, clean oil screen and oil pan.
2. Fill anti-corrosion oil to the lower mark of the dip stick (approximately 2.1 pints), then let engine run without load for about 1 minute. Remove the oil filter and close the filter chamber. If you take your motorcycle out of operation for more than $^1/_2$ year to three years maximum drain oil from transmission, drive shaft housing and rear wheel drive and fill 0.8 pints anti-corrosion oil into the transmission, 0.1 pints into the drive shaft housing and 0.2 pints into the rear wheel drive. Place motorcycle onto center stand, shift to second gear and let engine run at high idling speed for several seconds.
3. Remove spark plugs and fill 15 to 20 cc upperlube preservative per cylinder into the spark plug holes. With the kick starter, turn the engine over twice forcefully, set piston to the top dead center. Screw the spark plugs back in.
4. Clean the carburetor, close the fuel petcocks. The fuel tank should be kept full to protect the inside tank coating and the petcock gaskets.
5. Remove the battery. Before reinstalling battery have it serviced at your authorized BMW dealer.
6. Clean and dry your motorcycle thoroughly. Lubricate brake and clutch lever pivots and the center stand bearing by spraying with lubricant.
7. Grease all bare and chromed steel parts with an acidfree grease and spray the motorcycle with protective oil.
8. Put motorcycle on center stand in a dry place (acid-laden air is unsuited). Tighten steering damper and support both fork ends and rear wheel wing with wooden blocks so that both wheels are off the ground.

Corrosion inhibiting, Upperlube Preservative, acid-free oil and protective oil, see Technical Data

When you put your motorcycle back into operation, drain the anti-corrosion oil and fill with new oil, see Technical Data. Do not forget to put the main flow oil filter back into the engine. Fill the gas tank. Put the battery back in, connect the cables, tighten nuts and apply terminal lubricant to the battery terminals. Clean the spark plugs, check and, if necessary, correct their electrode gap. Lubricate the spark plug threads lightly with graphite lubricant prior to screwing them in.

Specifications

1. Engine

The engine in the R 50/5, R 60/5 and R 75/5 is an air-cooled, two-cylinder, four cycle spark-ignition engine.
The **engine housing** is designed as a one-piece tunnel housing, reinforced by internal gussets; it accommodates the crankshaft and the camshaft.
The one-piece crankshaft is drop-forged steel. Great rigidity is achieved by amply dimensioning the main bearing journals which overlap the connecting rod bearing journals. The main and the connecting rod bearing surfaces are treated to have a high surface hardness and abrasion resistance.
The crankshaft runs in three-layer bearings, pressed into a die-forged alloy bearing retained in the front and into the crankcase in the rear. Careful dynamic balancing of the crankshaft assures minimum vibration. The split connecting rods run on the crankpins also in three-layer bearings. They are die-forged, with an I-profile. The expansion-type connecting rod bolt is screwed directly into the connecting rod caps. Locating pins assure insert alignment. The wrist pin runs in a bronze bushing.
The camshaft is a case-hardened die casting, phosphated for better glide characteristic. It is located below the crankshaft and runs directly in the engine housing in the rear and in a flanged aluminum bearing in the front. In the rear, the camshaft carries the internal rotor of the oil pump. It is driven from the front through a sprocket. The ignition advance unit and the tachometer drive gear is also located in the front of the camshaft.
The pistons are aluminium alloy cast and equipped with three piston rings; the top ring is hard-chromed, the second is a nose ring, the third is an oil scavenger ring. The large dimensioned off center wrist pin is floating and is secured against axial movement by circlips.
The cylinders are cast iron sleeves with aluminum fins manufactured by utilizing the Al-Fin process. This assures excellent heat dissipation thereby assuring good oil adhesion. Two push rod protection tubes are pressed into the bottom of the cylinder and sealed against the motor housing with rubber sleeves; they also serve as oil return tubes. The cylinder is sealed to the engine housing with a combination aluminum fiber gasket, and to the cylinder head with a metal-asbestos gasket.
The aluminum alloy **cylinder head** is carefully fined and equipped with shrunk-in valve seats (fine pearlitic gray iron for the intake, high alloy gray iron for the exhaust). The valve guides are press-fitted.
With the cylinder interposed, the cylinder head is connected to the engine housing by four through-bolts. In addition, two bolts connect the cylinder head directly to the cylinder. Attached to the through-bolts are, at the same time, also the rocker arm blocks. The rocker arms pivot on floating bronze

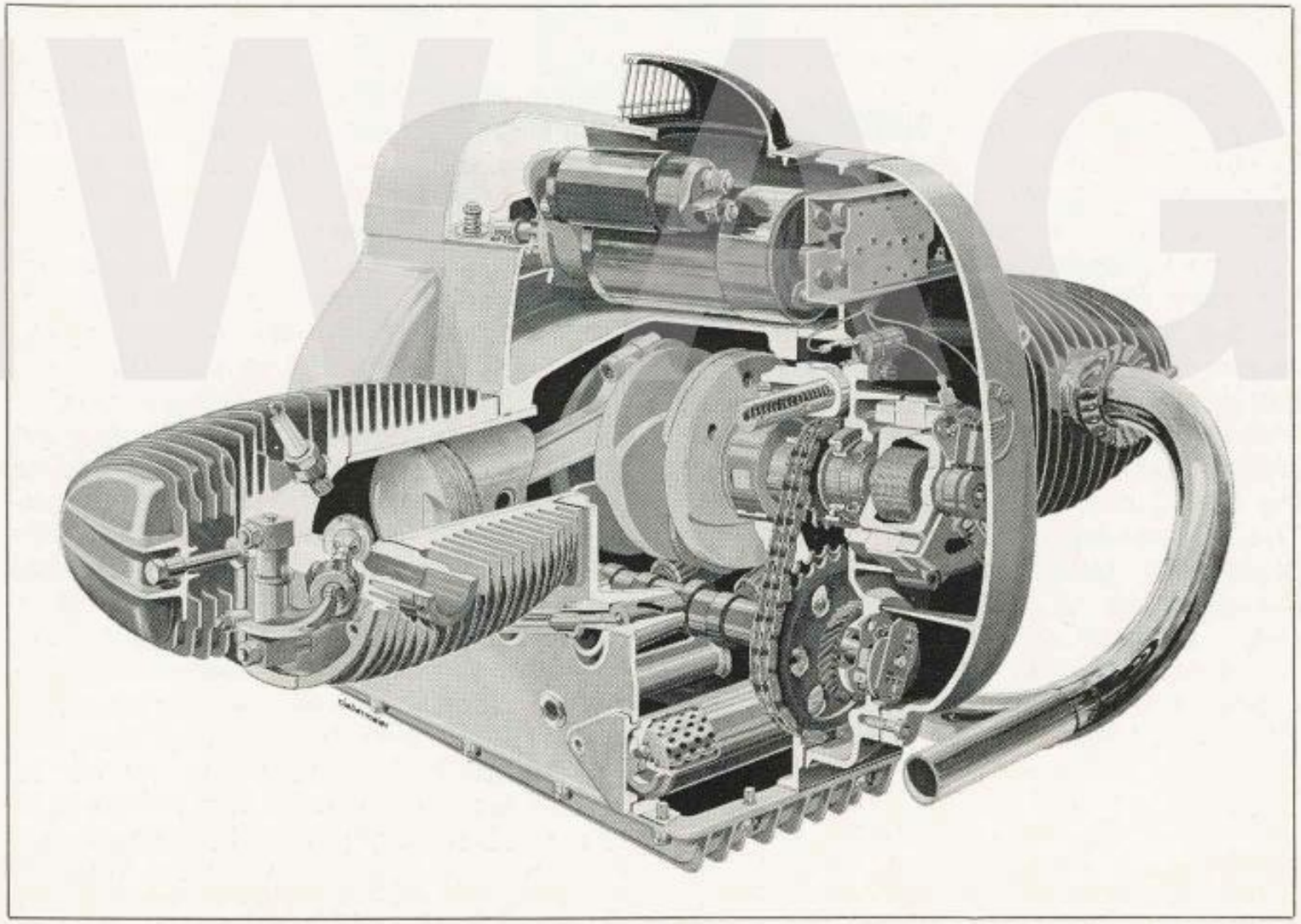
bushings. This cylinder head design utilizing pressed-in sleeves and protection tubes permits the cooling air to reach the areas that are subject to the highest temperatures, this assures maximum cooling.

The valves are actuated by the camshaft through hardened followers, push rods, and rocker arms. A duplex chain drives the camshaft at half the crankshaft speed. The stretching of the duplex chain is compensated for by a spring loaded (leaf spring) chain tightener. The push rod has approximately the same coefficient of expansion as the cylinder, maintaining constant valve clearance.

The exhaust valves have a highly heat conductive, ferritic, stem and an austenitic, scale resistant, head; in addition, the valve stems are hard-chrome plated, the valve seat has a coating plated onto it. The keeper arrangement allows the valves to rotate during operation.

2. Lubricating System

The engine has a high pressure lubricating system with a main flow filter. The oil pump is an Eaton trochoid-gear pump, driven by the camshaft. It sucks the oil from the oil pan through an immersed bell with a perforated screen, pumps it through the main lubricating passages into the main flow filter and from there through an annular passage in the camshaft bearing flange to the



annular passage in the main bearing cover. From the annular passage of the bearing cover the oil flows, first, through a hole in the left side wall of the engine housing to the rear main bearing and then, through two holes leading obliquely upward in the two side walls of the engine housing, to the upper tie rod bolts. Through the two upper through bolts holes in the cylinder it gets to the tappet bearing blocks and shafts; there it lubricates the tappet bearings and the valve mechanism. From the two already mentioned oblique holes in the left and right housing wall, passages, also oblique, lead to the annular groove of the cylinder from which the cylinder wall is lubricated. The connecting rods are lubricated through holes in the crankshaft, receiving their oil from the annular groove of the front or rear main bearing sleeve. The rear camshaft bearing is lubricated directly by the oil pump. The timing chain dips into the oil sump and splashes oil over all parts inside the timing cover.

The **crankcase ventilation** is accomplished by guiding the fumes against the direction of rotation of the crankshaft, through a settling chamber in which the oil mist can separate to a check valve. From there it is introduced into the intake.

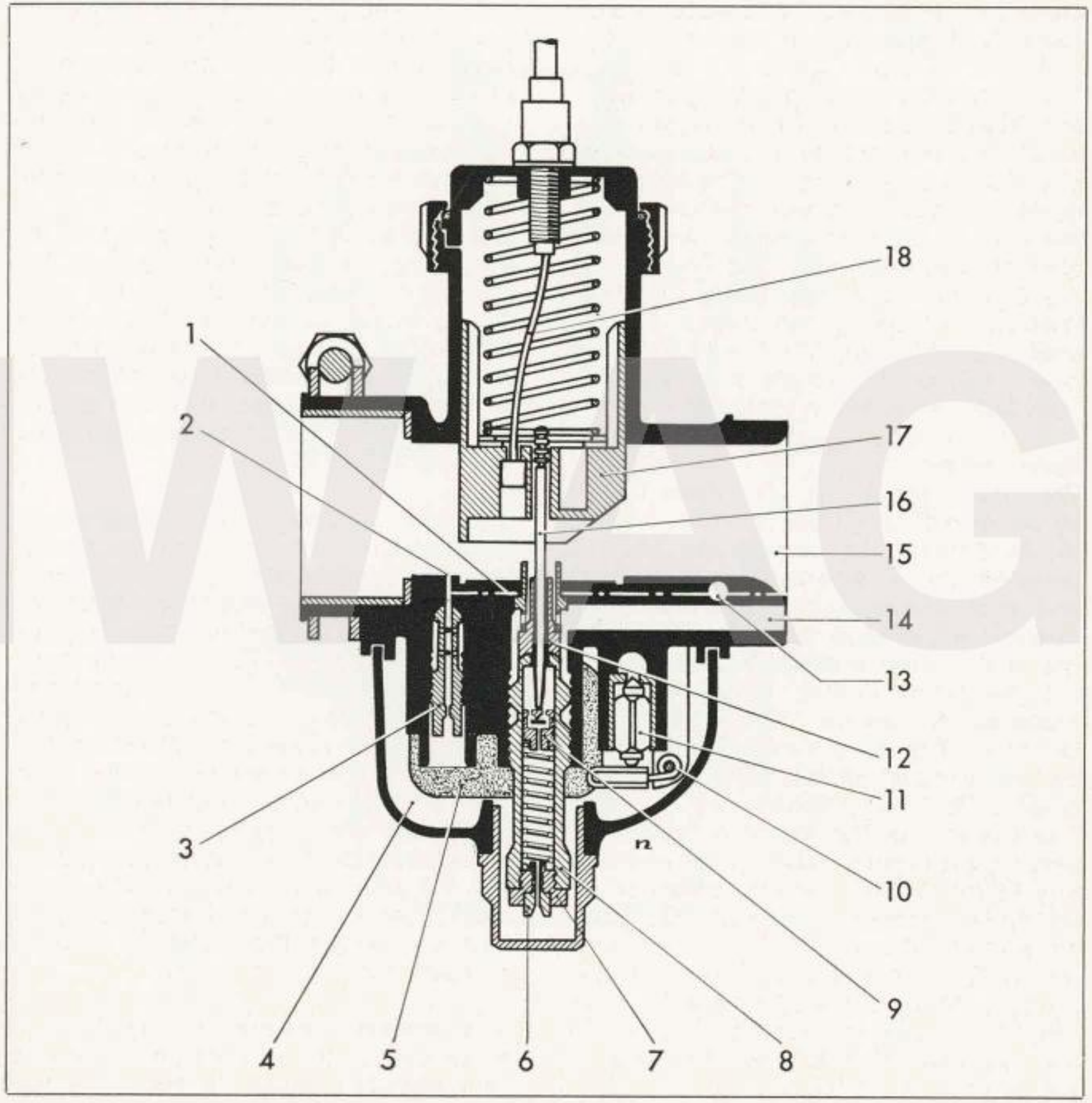
3. Carburetors

Concentric float Carburetor Models R 50/5 and R 60/5

The models R 50/5 and R 60/5 are equipped with two Bing slide type carburetors with a 26 mm throat with removable, concentric float housing. The carburetors are inclined and attached to the cylinder head with a clamp ring.

The ruel flows into the float bowl 4 and is there kept at a constant level at all times by means of the plastic double float 5 which actuates the float needle valve 11 through a coupling 10. For starting, the fuel level can be raised temporarily by depressing the tickler so that the engine receives a richer mixture. The outside of the float housing is vented. From the float housing, the fuel goes to the main and the idle jets. **The main jet** 6 is screwed into the lower mixing tube end 8 together with the main jet support 7. The needle jet 12, into which a conical needle 16 is immersed, is located at the upper mixing tube end. The needle, together with the throttle slide 17, is raised and lowered by the throttle cable 18. The throat and main fuel discharge nozzle are thereby varied simultaneously. A small amount of air passes through passage 14 thereby aerating the fuel in the main fuel discharge nozzle to aid in the atomization. The piston 9 of the accelerating pump, located in the mixing tube 8 and actuated by the slide needle, enriches the fuel/air mixture during slow and fast acceleration. In the carburetor throat 15 the fuel strikes the intake air and is now fully atomized before it reaches the engine's combustion chamber.

The fuel sucked from the float chamber through the **idling jet 3** is mixed with the air flowing in from an idle air passage 1, the volume of which is adjusted by the idle air regulating screw 13, and it enters the air funnel directly behind the throttle slide through a small hole 2. A richer mixture is obtained by screwing the idle air regulating screw in, a leaner mixture by screwing it out. The idle speed is regulated by the throttle slide stop screw. The fuel/air mixture is adjusted with the idle mixture screw. A provision is made to allow fuel to flow overboard in case the gastank fuel petcock is left on.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The vacuum type carburetor with butterfly (Model R 75/5)

The model R 75/5 is equipped with two Bing vacuum type carburetors with a 32 mm throat with concentric float bowl. The carburetors are inclined and flexibly attached to the cylinder head through a rubber sleeve and two clamps. The fuel enters the float housing 8 where it is kept at a constant level a tall times through a plastic double float 13 which actuates the float needle valve 9 through a pivot. The float bowl is vented in 2 places.

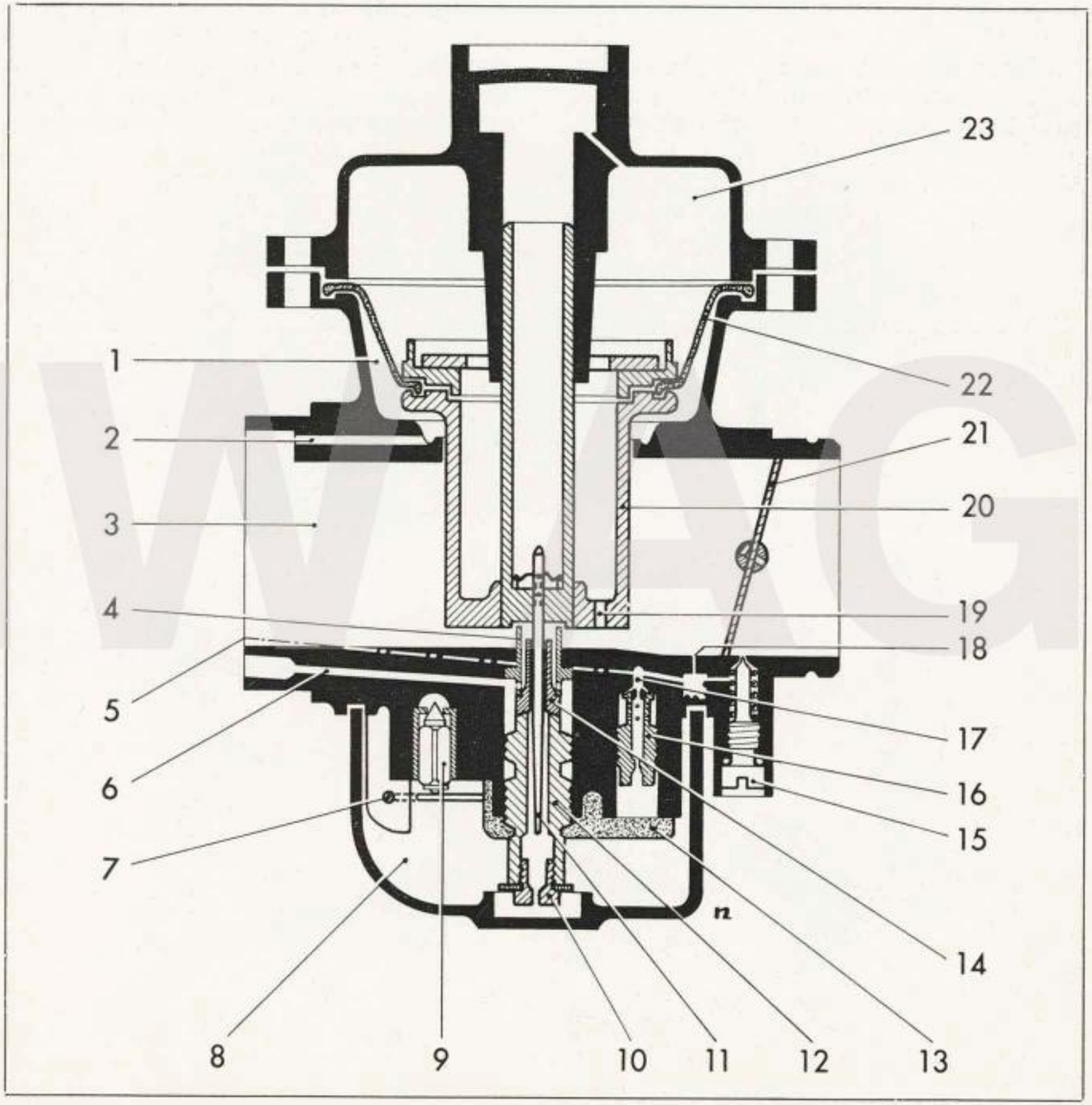
Main jet system
The fuel reaches the air intake throat by passing through the main jet 10, the jet holder 12, the needle jet 14, the pre-atomizer 4 where it is premixed and then introduced to the intake air through a passage 6. In the throat 3, the fuel/air mixture meets the incoming air stream and, after intensive atomization, enters the combustion chamber. The air volume is controlled by the vacuum piston 20 to which a diaphragm 22 is attached:
The vacuum in the throat 3, increases when the butterfly valve 21, is opened, this is felt in the vacuum chamber 23 which is connected through two passages 19 in the vacuum piston 20, with the throat. The space 1 below the diaphragm 20 is connected directly with the intake opening through a hole 2; for this reason, the pressure here is higher than in the throat.

The diaphragm 22 now effects a pressure equalization by lifting the vacuum piston 20 so far that the pressure below the vacuum piston assumes its original value again (equal pressure carburetor). The piston has a certain position for each opening of the butterfly and engine RPM.
Besides the vacuum prevailing in the intake port, the amount of fuel is controlled, under full load, by the main jet 10, in the partial load range by the jet needle 11 attached to the vacuum piston 20; depending upon the position of the vacuum piston, it opens a greater or smaller annular cross-section in the needle valve 14.

The idle system functions completely independently of the main jet system. The fuel sucked through the idling jet 16 is mixed in the chamber 17 with the air coming from the idling air passage 5, and enters the throat behind the butterfly valve 21 trough a small passage. The fuel mixture for idling can be regulated by means of the idling mixture regulating screw 15 and the idling fuel quantity can be adjusted by means of the butterfly valve set screw.
A by-pass passage 18, is provided to aid the transition from the idle to the main fuel system. It becomes operative only when the butterfly valve 21 is open slightly.

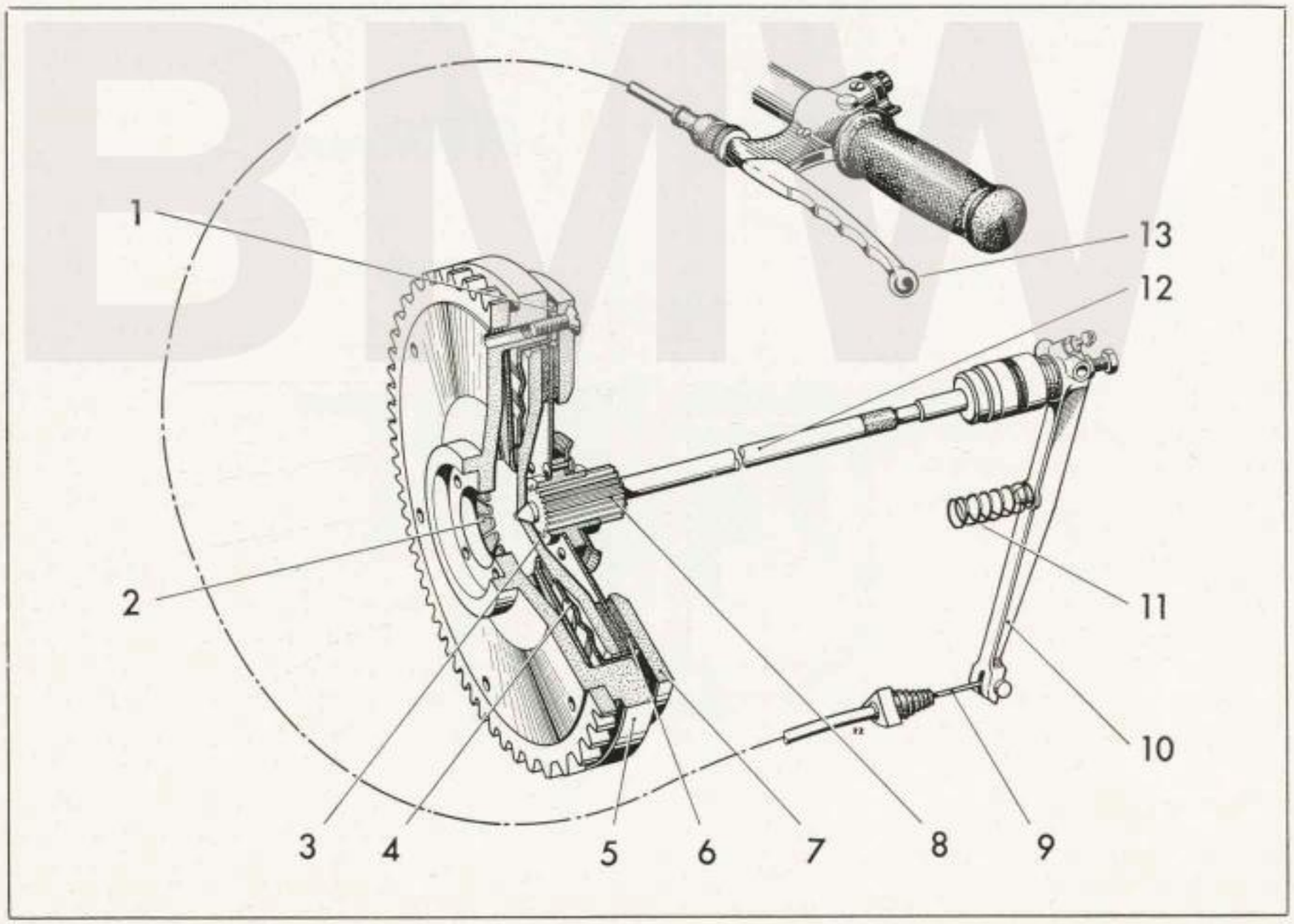
The starting device of the butterfly valve carburetor is a complete auxiliary carburetor which is equipped with a rotary valve. It functions only during starting and when the engine is cold. It can be turned on and off by the operator through cables. A space inside the float housing is designed as a starter fuel reservoir, into which a starter immersion tube is introduced from above. The vacuum developing when starting now has its effect, since the butterfly valve is almost closed (idling position) on the escape passage of the chocke system behind the butterfly valve and, hence, also upon the starter immersion tube; the fuel in the starter reservoir, being replenished from the float bowl, is thus syphoned off and mixed in the mixing chamber of the rotary valve with the starter air entering through a calibrated hole, forming a bubbly mixture. This very fuel-rich starter mixture then meets the air flowing through the butterfly valve gap and forms the starting mixture which assures perfect starting, even at low temperatures. After the engine has started, a pre-emulsion is formed in the starter immersion tube through a calibrated air hole, which makes the starting mixture leaner to the point where continued smooth running of the engine during the start is assured.
Turn off the choke system as soon as possible so as to avoid excess fuel consumption and a wash-off of the oil-film from the cylinder walls.

The carburetors are adjusted at the factory, to operate with commercially available fuels. Changing the jets and the position of the needle is required only in special cases and should be left to the specialist.



4. Clutch

A single disc dry clutch connects the engine crank shaft and the transmission input shaft 8. When the clutch is engaged the diaphragm spring 2 presses the pressure plate 3 and the clutch disc 6 against the pressure ring 7 which is bolted to the flywheel 5. This establishes the power connection between transmission and engine, since the flywheel is rigidly connected to the engine crank shaft, and the clutch plate is connected rigidly to the transmission drive shaft.



A diaphragm is spot welded to the pressure plate 3 between flywheel and pressure ring. This diaphragm allows the pressure plate freedom of axial movement, and it transmits a part of the engine torque.

The clutch plate, equipped with bonded friction lining, is mounted on the splines of the transmission input shaft and is movable in an axial direction. Spacer bushings 1 between flywheel 5 and pressure ring 7 provide slots through which the abraded clutch particles can escape. The slots also facilitate cooling of the clutch.

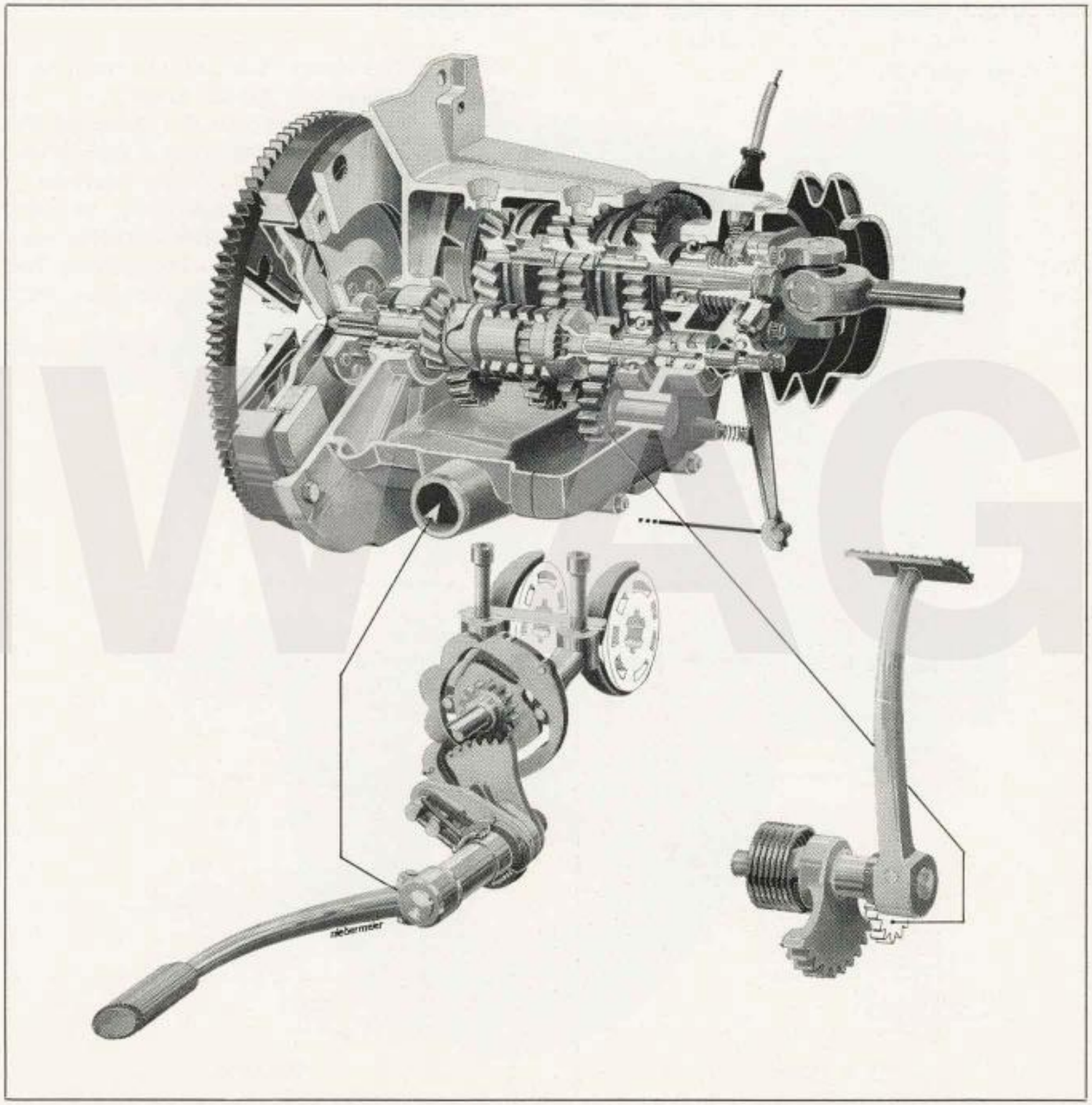
To disengage the engine from the transmission, the clutch lever 10, actuated by the clutch cable, presses through a push rod 12 against the pressure plate 3, this compresses the diaphragm spring 2; The contact between the clutch plate and the pressure plate and pressure ring 7 is interrupted. The clutch lever pivots in a bearing block cast into the transmission cover. After the clutch hand lever is released, the clutch lever is returned into its initial position by a spring 11.

5. Transmission

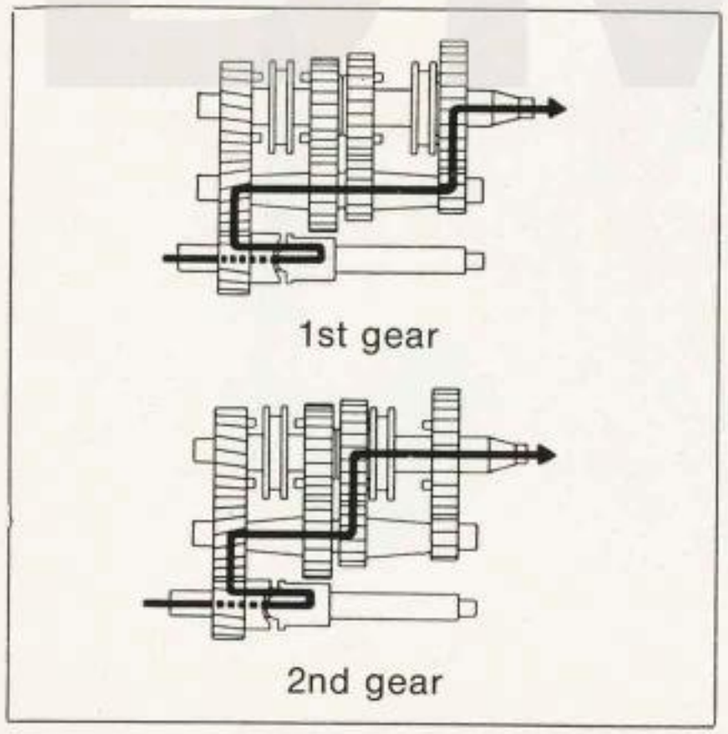
The four-speed transmission is mounted directly to the engine housing. The transmission permits changing the gear ratio to permit the engine to operate in idle RPM ranges at all times. The transmission consists essentially of an input shaft, counter shaft, and output shaft, all three of which are carried front and rear in over-rated ball bearings; and of the shifting mechanism. The input shaft has in front, the drive gear and in the rear, the gear to actuate the kickstarter. The clutch push rod is located inside the input shaft. The drive gear is mounted with a cushioning device to absorb shock. The counter shaft and output shaft have 4 gears each which are constantly meshed.

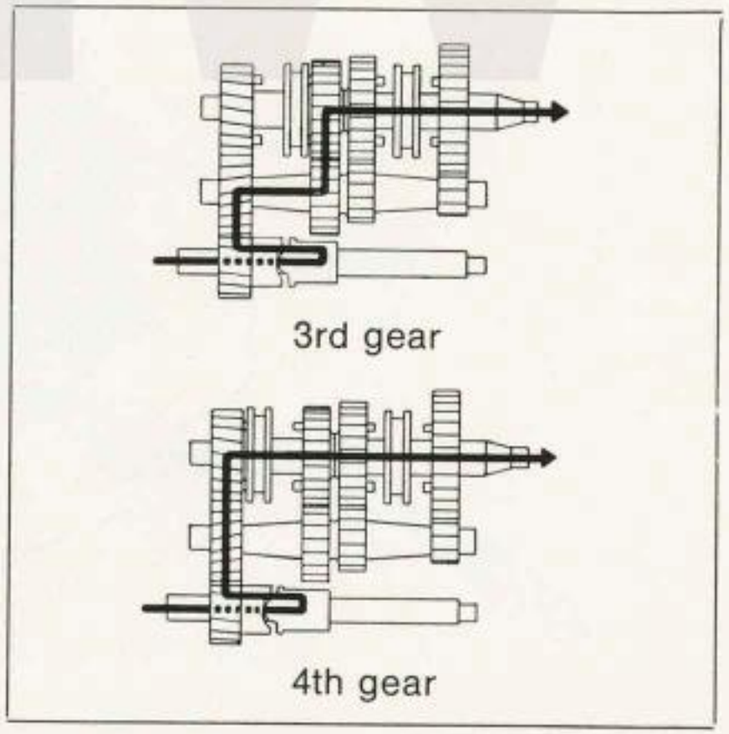
Shifting is accomplished by pushing the foot shift lower up or down. A segment gear turns the shifter cam plate when the foot shift lever is actuated; The 2 shifter forks are engaged in slots provided in the cam plate and into sliding dogs. The 2 dogs engage into the appropriate gear. The 2 dogs have 7 windows which engage into 7 corresponding dowels on each gear. The dogs are splined on the haft and move axially between 2 gears, thereby engaging them. To prevent the gear from slipping out the cam plate is spring locked with a pawl.

In neutral, a contact pin mounted on the shifter cam plate closes a circuit,



the green indicating light in the headlight instrument cluster lights up, indicating neutral.





6. Frame

The double loop tubular frame made of oval tubes of great strength is of welded construction. In the area of the steering head, the transom tubes intersect the spinal tube. This permits a certain longitudinal elasticity of the steering head without affecting the very great torsional rigidity. Moreover, the tunnel for the fuel tank can be kept very shallow.

The rear portion of the frame, a very light triangular structure, is bolted to the double loop tubular frame and is readily detachable.

The passenger foot rests can be folded. They are adjustable for the most comfortable position.

The engine is mounted in the frame with 2 studs, interconnecting both frame transoms.

The fuel tank, capacity is approximately 6.35 gallons. The fuel tank is rubber mounted with a form fitting rubber element in front, on two vibration dampening rubber blocks in the rear. This eliminates stress. Two wing nuts enable quick removal.

Two fuel petcocks are screwed directly into the tank. They are equipped with two fuel intake tubes each, the longer one being so dimensioned that a reserve of 1 gallon remains in the tank. The same fuel level in both tank halves is assured due to an equalizer line which passes through the air filter chamber.

For parking, the motorcycle, is provided with a center stand and a side stand.

7. Rear wheel drive

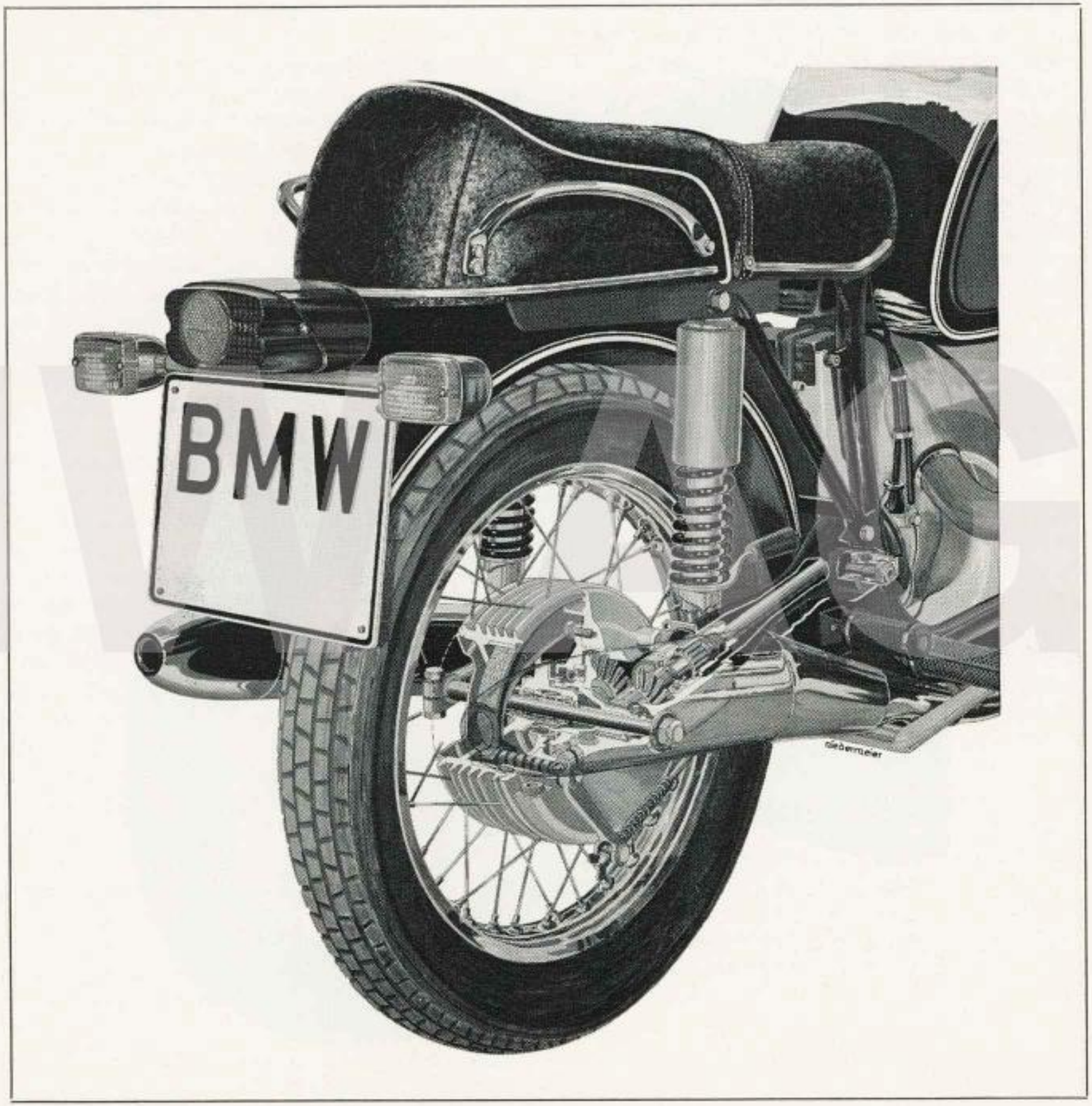
The rear wheel is driven by a drive shaft which runs in an oil bath in the rear swing arm. The universal joint mounted on the drive shaft on the transmission side, is bolted to a drive flange mounted to the taper of the output shaft of the transmission. An internally splined coupling is mounted to

the rear of the shaft and is connected to the rear drive. The teeth are curved to allow lateral movement. This helical tooth coupling compensates for the required variation in the length of the drive-shaft.

The rear wheel drive pinion runs in front in a double-row, slanting ball bearing with split inner race; in the rear in a needle bearing; the spur bevel gear with which it meshes runs in a needle bearing on the outside, in a ball bearing on the wheel side. Drive pinion and spur bevel gear are spiral gears which run completely noiselessly due to their careful running-in treatment and adjustment during assembly. The bevel spur gear dips in an oil bath and supplies the bevel gear set and the bearings with oil. A splined connection takes over the function of power transmission from the bevel spur gear to the rear wheel. This connection makes dismounting of the rear wheel easy.

The rear wheel drive housing and the housing cover are made of a very strong aluminum alloy and are bolted together. The rear wheel drive is vented through a passage, located in a dome, cast in the upper portion of the housing.

To prevent possible oil leakages through the radial sealing ring located in the housing cover toward the brake linings spurious oil is directed through a hole, next to the oil drain plug, overboard. The ratio of the rear wheel drive varies, depending on the model (see Technical Data).



8. The telescopic front fork

The fork stem of the telescopic front fork turns in two tapered roller bearings to assure rigid frictionless mounting without play. An upper steel fork yoke and a lower forged aluminum fork yoke hold the hard chrome plated steel fork tubes. The aluminum fork legs slide up and down on the fork tubes. The shock absorbers are fastened into the bottom of each fork leg. The shock absorbers thus slide inside the fork tubes. A nozzle is screwed into the bottom of each fork tube. These nozzles provide damping on extension while calibrated holes in the shock absorber itself provide damping on compression. An important role is played in this process by the damper chamber located between the hydraulic piston screwed onto the shock absorber tube and the damping nozzle. The valve attached on the bottom of the hydraulic piston closes the damper chamber on extention (in tension) so that oil must flow through the damper nozzle and opens it under compression so that the oil can escape through the calibrated holes in the damper tube and return from the spring chamber into the damper chamber. Since the outside diameter of the damper tube is tapered conically at both ends, the damper nozzle provides for a hydraulic stop in the lowest and highest fork position. A valve at the lower end of the shock absorber tube prevents the fork tubes from jamming,

should the fork be moved beyond the hydraulic stop.
A progressively wound spring in the fork tube supports itself on top in a fixed spring retainer and at the bottom against the hydraulic shock absorber. The two fork legs are interconnected by a strong tubular yoke which provides the required torsional rigidity and supports the fender. The turning angle of the front fork is 46° in both directions.

9. Rear wheel springing

The rear wheel is guided by a long swing arm, held in the frame by two adjustable tapered roller bearings.
These are adjusted to have no play. This mounting allows a small amount of adjustability for adjustment of the tracking. Road shocks are absorbed and attenuated by two spring shock units. The bottom of these shock legs are attached at the bottom to the swing arm on one side and to the rear drive unit on the other. On the top they are attached to the frame. A progressively wound carrying spring per spring leg is supported at the bottom by the adjusting sleeve, on the top by the protective tube. While the lower connecting eyes of the spring legs are welded to the outside tubes of the hydraulic shock absorbers, the upper spring leg eyes are screwed to the shock rod.
The end stop for retracted springs is a double tapered rubber plug between the upper spring leg eye and the shock absorber. The stop for the extended springs is a plastic plug inside the double-acting hydraulic shock absorber. The preload of the progressively acting carrying spring can be adjusted to three positions, depending on the load carried, through an adjustment sleeve attached to the spring legs and resting against an adjusting cam.
The Boge automatic leveler, "Nivomat", a hydro-pneumatic strut with automatic self-leveling can be furnished as optional equipment instead of the conventional struts (hydraulic shock absorber and helical spring). The advantage of the Boge automatic leveler is to be found in its load-dependent damping action resulting in always the same normal position and in comfortable spring action regardless of load.
When the motorcycle is loaded the rear springs initially will compress to a point commensurate with the load. As soon as the vehicle is set in motion the rear suspension due to the reverse torque of the drive and irregularities of the road surface will pump itself up to the correct level. After traveling a short distance the pressure rises in the high pressure portion of the unit due to this pumping action so that the motorcycle's rear structure is raised to the normal level; regulating holes prevent continued raising. When the load is removed from the motorcycle, the regulating holes provide for pressure equalization to the inflation pressure of the unit. The working media used in the Boge Nivomat are shock absorber oil and nitrogen.
Caution the high filling pressure is likely to cause accidents as the Boge leveler is opened. Repairs should be left exclusively to the maker.
Removed Boge levelers should be stored absolutely in vertical position; otherwise danger of defects.

10. Dual seat

The dual seat flips open from the right revealing the tool kit and tire pump. It can be locked and utilizes the same key as the steering lock.
The dual seat is not independently sprung so as not to interfer with the carefully balanced front and rear suspension. It has a thick foam rubber cushion.

11. The Wheels

The wheels have aluminum alloy safety drop center rims with a provision to prevent the tire from dismounting in case of rapid deflation. 40 straight spokes each connect the rims with the full-hub brake drums. Two exactly adjusted and readjustable tapered roller bearings provide for easy running of the wheels without axial play. The bearings are sealed to the outside dust and are water-tight through the use of a special multi-lip corrugated sealing ring toward the brake drum by an oil-impregnated enclosed felt ring.

12. Brakes

Both front and rear wheels are equipped with large area ribbed, light metal, full hub brake drums with cast-in gray cast iron rings. The front wheel brake is designed as a double leading-shoe brake. Both brake levers are moved in opposite directions by a cable; the applied pressure of both brake shoes is the same regardless of the braking force applied. Return springs of varying strength enable the uniform adjustment of both brake shoes.
The rear wheel is equipped with a simplex internal shoe brake with one leading and one trailing brake shoe; the rear wheel brake is actuated by the foot brake lever through a linkage.
The brake linings are bonded to the brake shoes, and they consist of a material whose coefficient of friction does not decrease with heat. All brake levers are made of forged aluminum. The stop light is lit when either the front or the rear wheel brake is applied.

13. Electrical System

The electrical system consists of the three-phase alternator 3 driven by the crank shaft the centrifugal spark advance with breaker 4, driven by the camshaft the diode plate 1 mounted above the three-phase generator the condenser 2, and the following electrical components located underneath the tank: relay 5 to prevent repeat starting voltage regulator 6, starter 7, two ignition coils 8; in addition there is the battery located underneath the tool box, the two spark plugs and the lighting, signaling, and monitoring systems. **Figures 63 and 64**

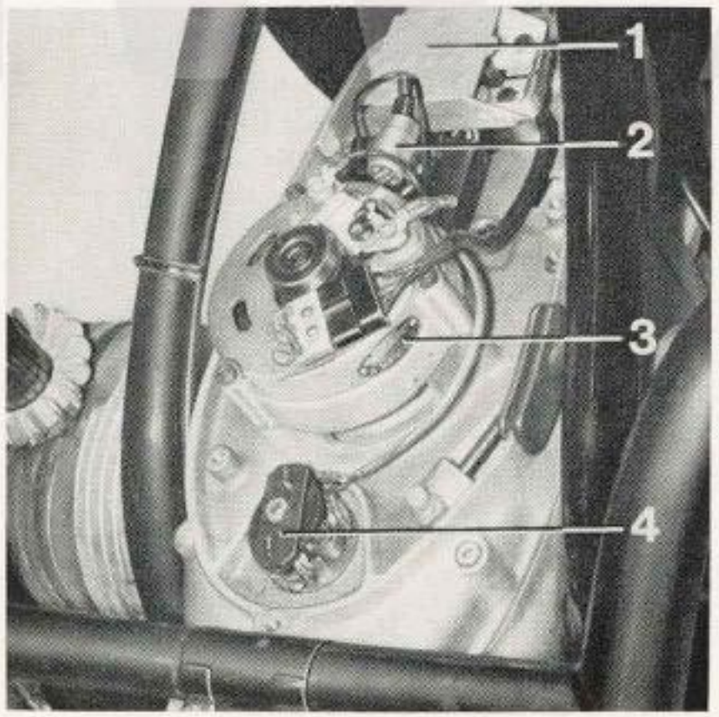
The three-phase alternator consists of a rotor running in the stator housing and mounted at the front end of the cranks haft on a taper. The energizing current of the alternator is supplied via two slip rings. Attached to the front cast ring of the stator is the carbon brush holder with two plug connections. Opposite this there is a strip with three plug connections for the current take-off. Already during a fast idle the three-phase generator delivers power thus assuring a sufficient power supply, even under increasing loads. The current flowing through the **charging current control light** serves to pre-energize the three-phase generator; if there is no defect in the electrical system, the charging current control light goes out when the idle speed is increased.

The diodes at the diode plate 1 provide for the rectification of the three-phase current furnished by the generator. A mechanical contactor 6 is used as a **voltage regulator** mounted underneath the tank to the spinal tube of the frame.

The centrifugal timing advance provides for the advance of the spark timing when speed increases.
The breaker interrupts at a predetermined moment the primary circuit of the ignition coils. This induces the 8, 500—13 000 volts in the secondary winding of the **ignition coil** necessary to ignite the fuel-air mixture. The primary job of the **condenser** is to keep sparking of the breaker points to a minimum.
The starter consists of a series-wound D.C. motor with starter pinion and slip clutch device.

The lock to prevent repeat starting is a transistor-controlled relay which prevents accidental engagement of the starter while the engine is running.
The 12-Volt battery is mounted on a bracket fastened to the frame and is held in place by two rubber straps. It serves to start the engine and supplies the energy required by the electrical system when standing still and during idle.

63



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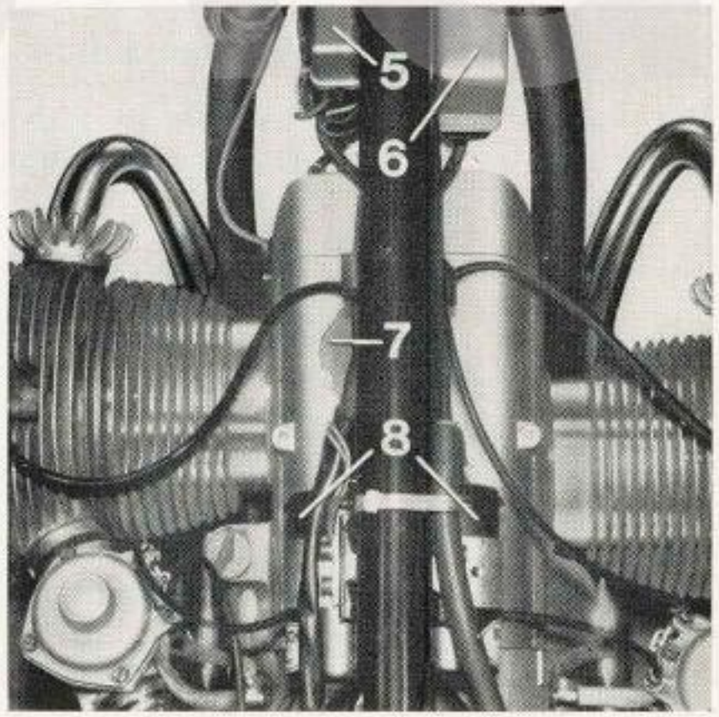


Technical Data

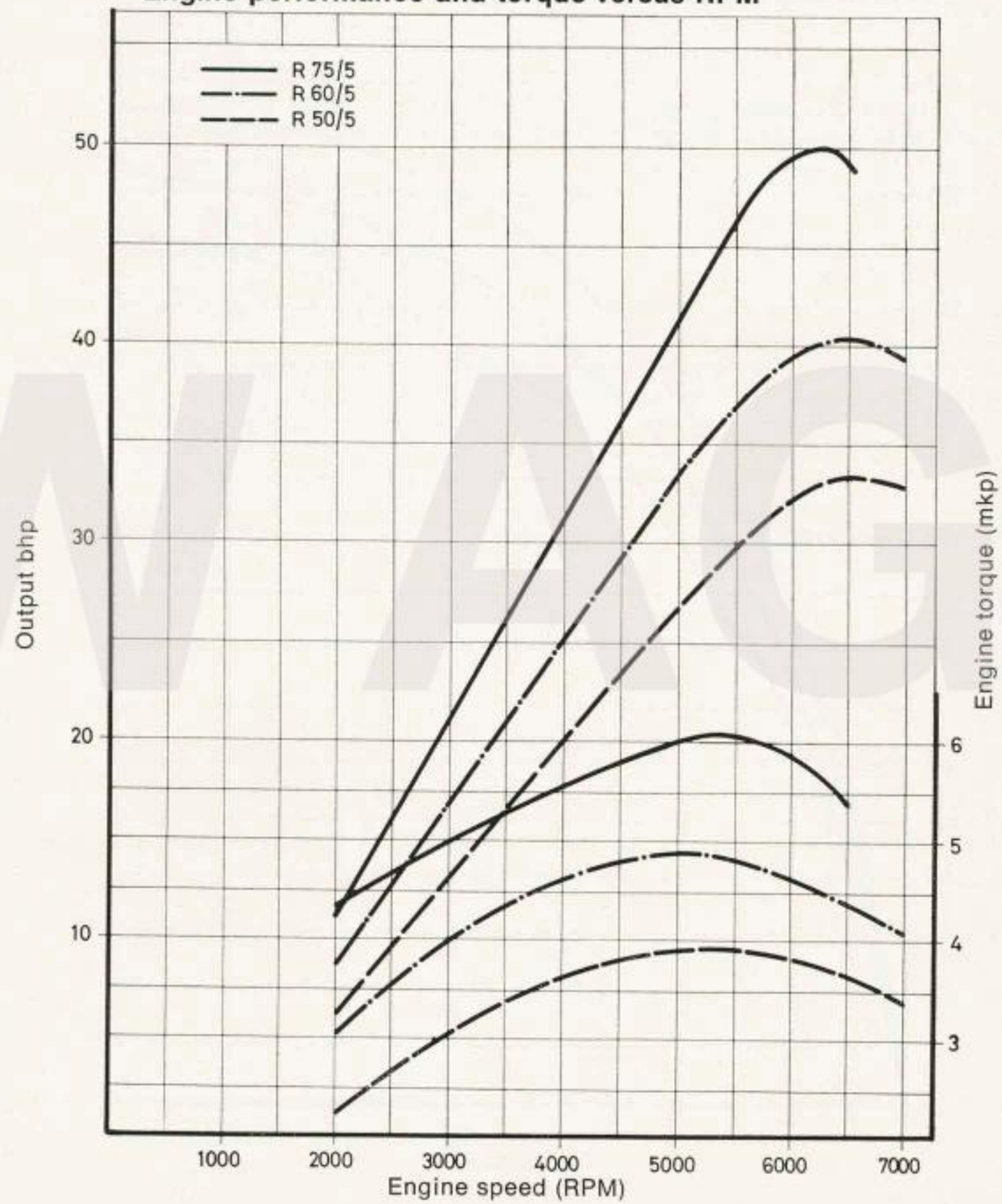
			R 50/5	R 60/5	R 75/5
Engine	Engine model		Four cycle opposed-twin with hemispherical combustion chambers		
	Greatest actual output	HP at RPM HP at RPM	36/6600	46/6600	57/6400
	Output per 1000 cc	HP/liter	72	76	76
	Maximum torque	lb/ft at RPM	29/5000	36/5000	43/5000
	Maximum permissible Permissible Cruising Idling	speed RPM speed RPM speed RPM	7000 6500 800 ÷ 1000	7000 6500 800 ÷ 1000	7000 6300 800 ÷ 1000
	Max. permissible speed during break-in period up to 600 miles up to 1200 miles	 RPM RPM	 4000 5000		
	Average piston speed	ft/sec at RPM	50.6/6400	50.6/6400	47.9/6200
	Number of cylinders Cylinder arrangement		2	2 opposed	2
	Cylinder bore Piston stroke	mm mm	67 70.6	73.5 70.6	82 70.6
	Effective stroke volume	c.c	498	599	745
	Compression ratio		8.6:1	9.2:1	9.0:1
	Dwell angle adjustment at .08" valve clearance (tolerance ± 2.5°) Intake opens Intake closes Exhaust opens Exhaust closes	 	 ATDC 40° ABDC 40° BBDC BTDC	 ATDC 40° ABDC 40° BBDC BTDC	 10° BTDC 50° ABDC 50° BBDC 10° BTDC

		R 50/5	R 60/5	R 75/5
Breaker dwell angle			110° + 1°	
Operating valve clearance measured when engine is cold	Intake Exhaust		.006" .008"	
Rotation Right hand		clockwise when viewed toward alternator		
Lubricating system Oil pump		high pressure wet sump Eeaton system (hypo-trochoid teeth)		
Fuel consumption in mpg according to DIN 70 030		51 (at 67 mph)	49 (at 68 mph)	53 (at 68 mph)

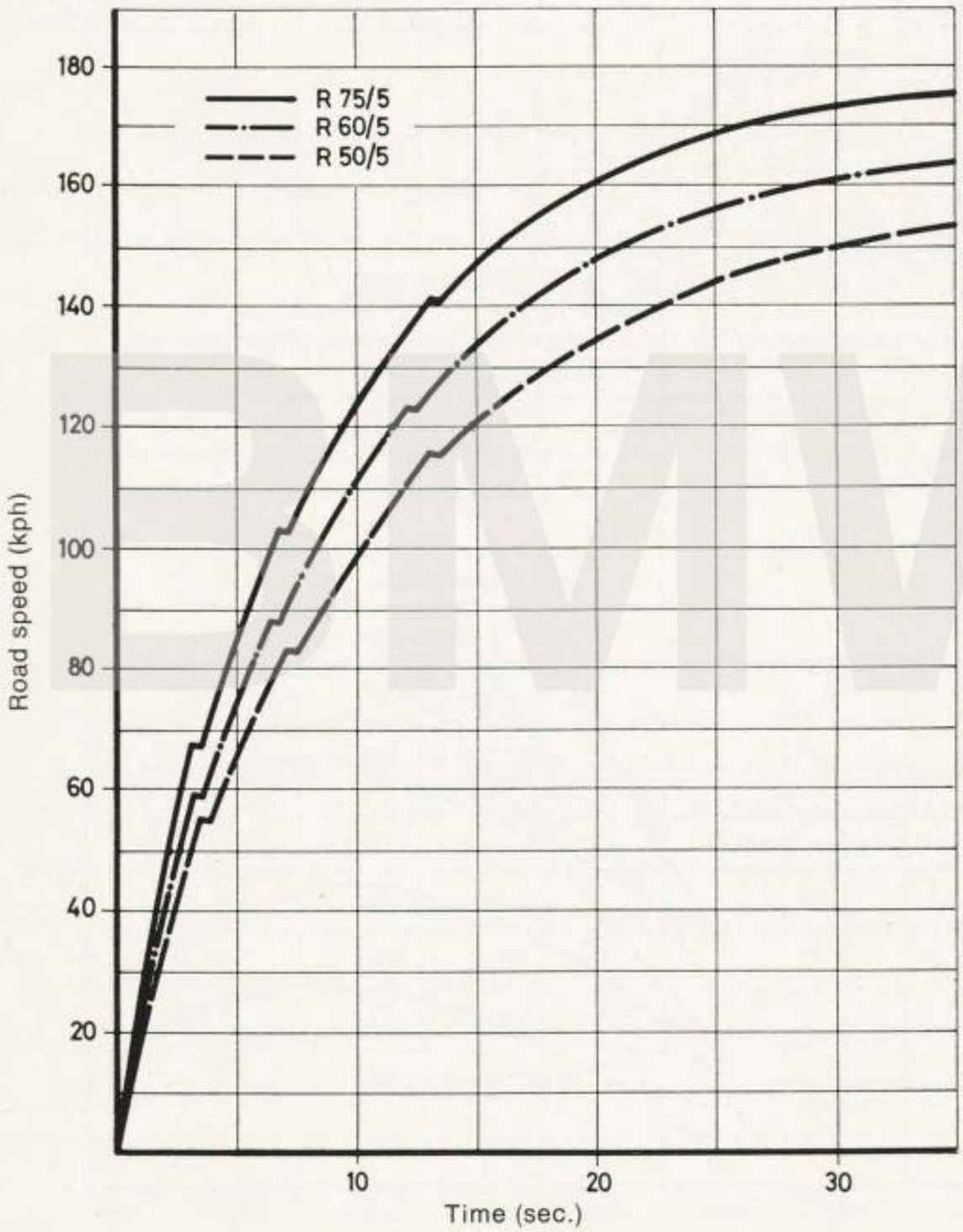
			R 50/5	R 60/5	R 75/5
Carburetor	Design		Two Bing carburetors inclined with needle valve, throttle slide and Concentric lever float.		Two inclined Bing Butterfly valve, constant velocity carburetors with needle valve, vacuum slide & Concentric lever float.
	Carburetor type left right		1/26/113 1/26/114	1/26/111 1/26/112	64/32/4 64/32/3
	Carburetor I. D.	mm	26	26	32
	Main jet		135	140	140
	Needle jet		2.68 with acc. pump	2.68	2,73
	Jet Needle No.		4	4	46–241
	Needle position		2	2	2
	Idling jet		35	40	45
	Idling air jet		–	–	⌀ 1
	Idling air screw/Idling Mixture regulating screw opened turns		0,5 ÷ 1,5	1/4 ÷ 1 1/4	1 ÷ 1.5
	By-pass bore	mm ⌀	0.8	0.8	0.7
	Float valve	mm ⌀	2.2	2.2	2.5
	Float weight	g	10	10	10
	Intake air filter		One common "micro-star" dry air filter for both carburetors		

	R 75/5
Starting (choke) jet	0.6
Starting air jet	2.0
Mixture hole in rotary valve	2.0
Rotary valve diaphragm	65–810
Distributing slide valve	g 102

Engine performance and torque versus RPM



Acceleration through gears



		R 50/5	R 60/5	R 75/5
Power Transmission	Clutch	Single plate dry clutch with diaphragm spring		
	Transmission	4-speed, claw – type transmission mounted to the engine. Shock absorption of the drive in all speeds. Ratchet type foot shifting.		
	Transmission Ratios:	1. Gear 3.896 : 1 2. Gear 2.578 : 1 3. Gear 1.875 : 1 4. Gear 1.50 : 1		
	Power transmission from the transmission to the rear wheel	Enclosed drive shaft in the right swing arm tube with universal joint, equipped on the side of the rear drive with Hypoid Gear coupling.		
	Rear wheel drive	Palloid Spiral Bevel Gears		
	Rear drive ratio	1 : 3.56	1 : 3.36	1 : 2.91
	Number of teeth	9/32	11/37	11/32

		R 50/5 R 60/5 R 75/5
Chassis	Frame	Tubular steel cradle frame made of oval tubes with bolted-on frame rear section, not admitted for side-car
	Suspension front wheel	Telescopic fork with large volume, double acting, hydraulic shock absorbers, front fork travel 8.43''
	rear wheel	Swing arm with 3-position-spring-legs and double acting, hydraulic shock absorbers rear swing arm travel 4.92″
	Lock angle of front fork	46°
	Front wheel caster	3.35'' approximately
	Brakes	Aluminium alloy, full hub brakes with cast-in perlite rings
	Front wheel	Duplex brake (two leading brake shoes)
	rear wheel	Simplex brake
	Brake drum	7.9'' diameter, lining width 1.2''
	Effektive brake lining Area per brake in sq. in.	17 approximately
	Rims Front	1.85 B x 19
	Rear	1.85 B x 18
	Tires Front	3.25 S 19
	Rear	4.00 S 18
	Maximum tire imbalance, measured in cmp at the inside diameter of the rim	170
	Corresponds to oz.	.28 — .32

	R 50/5	R 60/5	R 75/5
Tire inflation in psi			
Cold Front Wheel	27	27	27
with passenger	30	30	30
Rear Wheel	30	30	30
with passenger	35	35	35
When tires are hot, increase by 4 psi			
When driving at maximum speed for longer periods, increase the tire inflation by 3 psi			

Exhaust system	Sylencer	∅ mm	100
	Exhaust tube	∅ mm	38 x 1,5

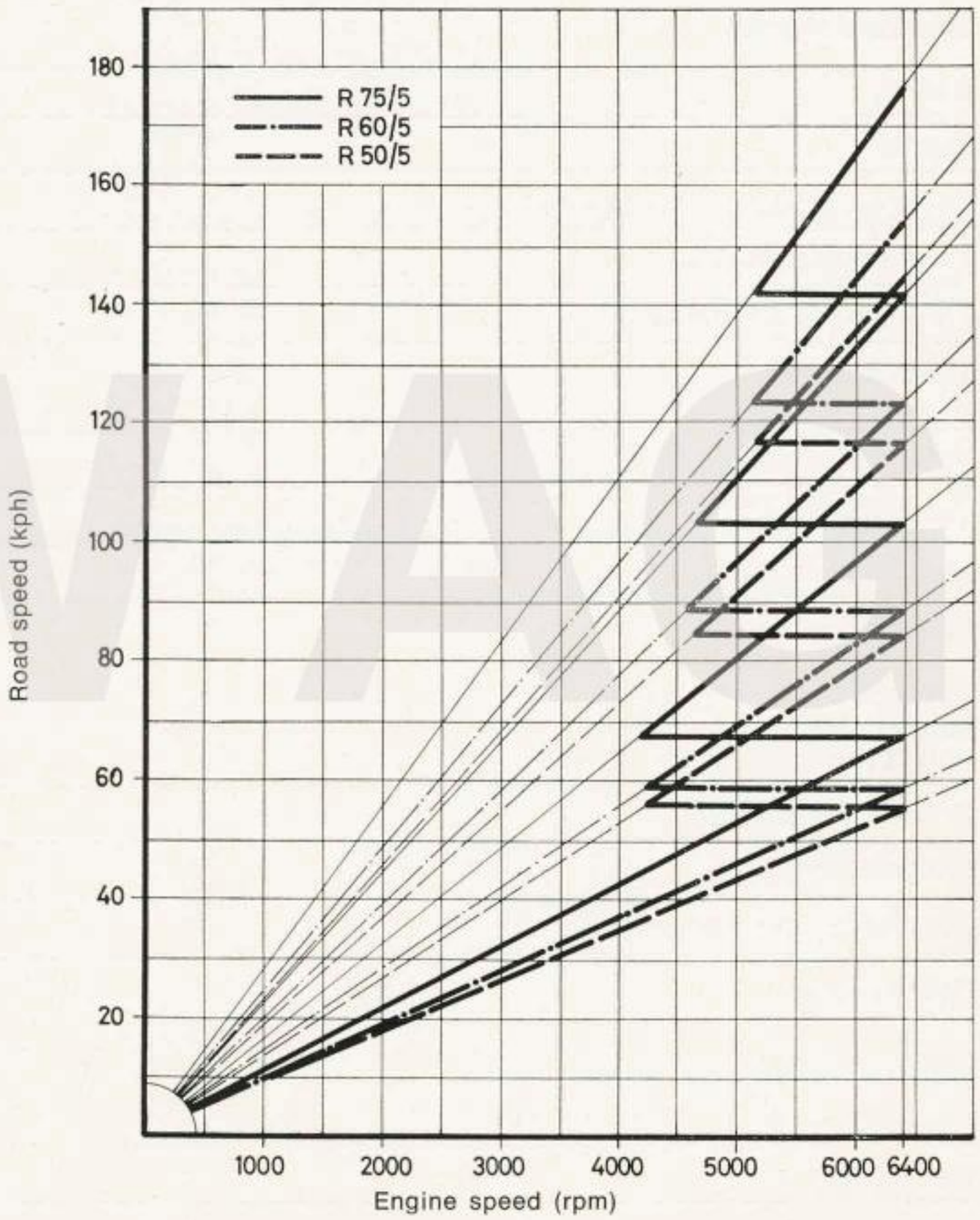
Fuels and Lubricants	Fuels		Regular	Hi Test	Hi Test
	Tank capacity	gallons		6.3	
	reserve	gallons		.5	
	Lubricating Oil Engine		Name-brand HD oil for gasoline engines		
	Below 32° F outside temp.		Multi-grade oil SAE 10W30 HD		

		R 50/5	R 60/5	R 75/5
From 32–86° F outside temp.		Single grade oil SAE 30 HD		
Over 86° F outside temp. and for sustained high speed driving		Single grade oil SAE 40 HD		
Capacity without filter change with filter change	 pints pints	 4.2 4.75		
Transmission Capacity pints		Name-brand hypoid gear oil SAE 90 1.7		
Drive shaft housing Capacity pints		Name-brand hypoid gear oil SAE 90 0.2		
Rear wheel drive Capacity pints		Name-brand hypoid gear oil SAE 90 0.5		
Telescopic fork Capacity per fork leg	 ccm	Shock Absorber oil Shell 4001 BP Olex HL 2463 Aero-Hydraulic Shell aerofluid 4 Castrol BMW shock absorber oil 280		
Breaker lubricating felt and centrifugal timing advance		Bosch grease Ft 1 v 4		
Guide shaft (for advance unit)		Bosch grease Ft 1 v 22 or Ft 1 v 26		
Wheel bearings & other greasing points		Name-brand multi-purpose grease with 180°C dripping point		
Corrosion inlubiting oil		Engine corrosion inhibiting oil SAE 20		
Upperlube conservative		Upperlube conservative for four-cycle engines		
Acid-free grease		Corrosion prevention grease		
Protective Oil		Finish preservative		

		R 50/5	R 60/5	R 75/5
Dimensions	Overall width (engine)	29.1"	29.1"	29.1"
	Overall height without mirror (motorcycle without load)	40.7"	40.7"	40.7"
	Saddle height without load	33.5"	33.5"	33.5"
	Overall length	82.7"	82.7"	82.7"
	Wheelbase	54.5"	54.5"	54.5"
	Ground clearance under load of a rider weighing 165 lbs.	6.5"	6.5"	6.5"
Weights	Curb weight, including lubricants but less fuel and tools (lbs.)	408	419	419
	Curb weight including lubricants, fuel and tools (lbs.)	452	463	463
	Permissible total weight = curb weight + persons and baggage (lbs.)	881	881	881
	Permissible wheel load Solo front at 27 psi tire pressure (lbs.)	353		
	Rear, at 28 psi tire pressure (lbs.)	539		
	Permissible wheel load with passenger front at 28 psi tire pressure (lbs.)	391		
	rear at 32 psi tire pressure (lbs.)	606		
	Maximum number of persons including rider	2 persons		

		R 50/5	R 60/5	R 75/5
Performance	The actually achieved maximum speed of a broken-in motorcycle depends to a large extent on the air resistance offered by the rider due to his size, posture and clothing, and upon road and weather conditions.			
	Speed mph approximately	98	104	110
	Acceleration from zero			
	to 30 mph in s	2.9	2.6	2.2
	40 mph in s	4.8	4.0	3.0
	50 mph in s	6.8	5.4	4.7
	60 mph in s	9.6	7.7	6.1
	70 mph in s	12.5	10.2	8.4
	80 mph in s	17.5	13.6	10.7
	Standing 1/4 mile per hour	17.2	15.8	14.6
	Standing kilometer in s	32.3	30.4	28.2
	Average speed in mph achieved thereby	68.3	73.3	79.5
	Speedometer gear ratio (km)	.811	.766	.655
	(miles)	1.297	1.226	1.0625

Road speed — Engine speed



	R 50/5	R 60/5	R 75/5
Electrical System			
Battery	Varta, 12 V 15 Ah		
Starter	Bosch DF 12 V .5 HP		
Relay for repeat start prevention	Stribel SR 9570		
Three-phase alternator	Bosch G 1 14 V 13 A 19		
Three-phase alternator drive	Direct from crankshaft		
Diode board	Bosch type 0 197 002 001 RS 20/1 A 1 A		
Voltage Regulator	Bosch AD 1/ 14 V		
Condenser	0.2 µF — 25 %		
Ignition coils, two	Bosch E 6 V		
Ignition breaker	Automatic centrifugal Advance on the camshaft		
advance start at rpm end at rpm	 800 2500		
Breaker contact gap	0.014 to 0.016"		
Ignition Timing	9° before TDC		
Automatic timing advance	25° ± 2° 30' CS		
Spark plugs	Bosch W 230 T 30 (R 50/5, R 60/5) Bosch W 200 T 30 (R 75/5) Beru 230/14/3 A (R 50/5, R 60/5) Beru 200/14/3 A (R 75/5) Champion N 7 Y (R 50/5, R 60/5, R 75/5)		
Electrode gap	.027"		

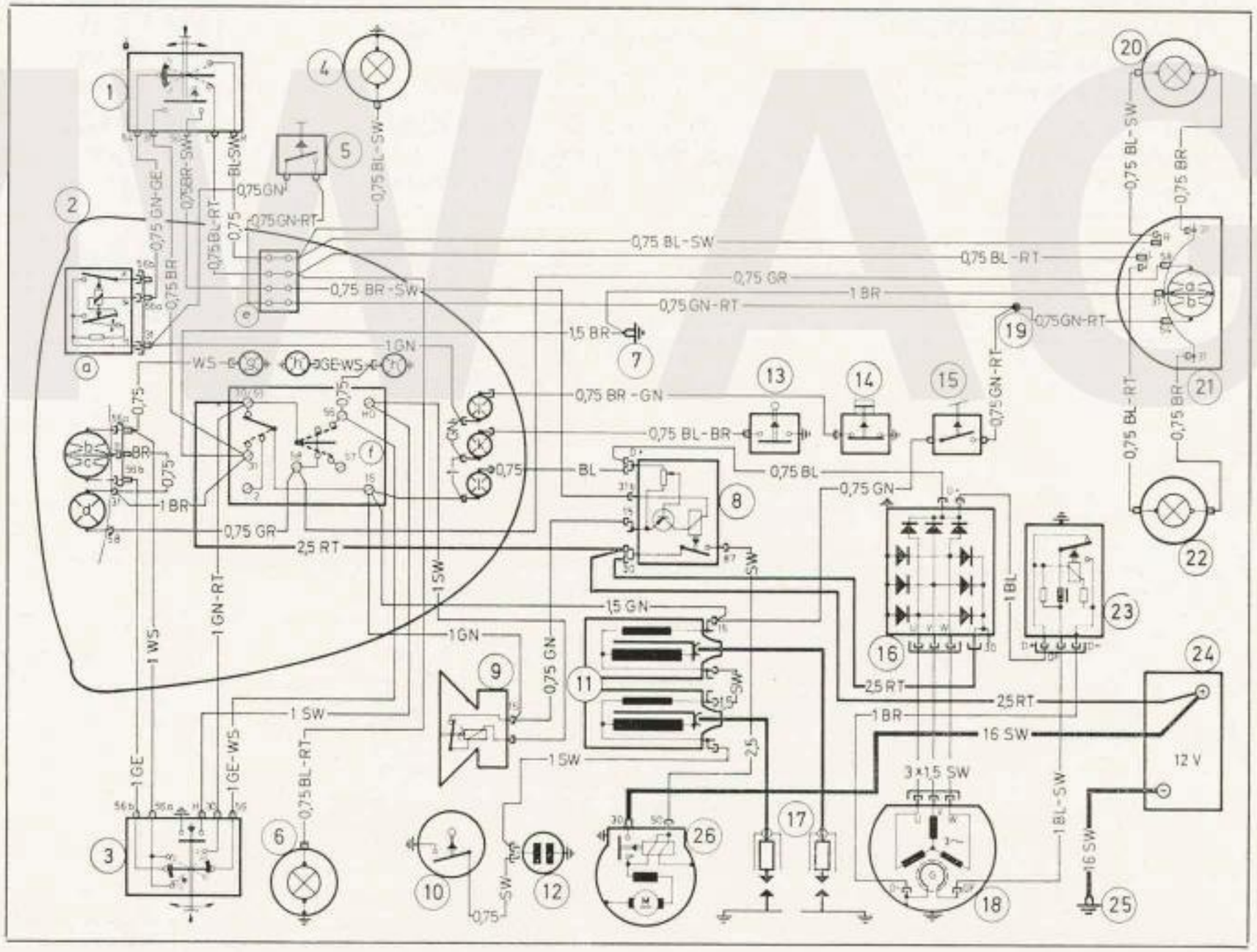
Head light	Bosch type 0 303 550 002
Turn signal flasher	Hella 91 M 2 E 2 x 21 W-12 V
Head light high and low beam	Double filament bulb 45/40 W
Parking light	12 V / 4 W
Indicator lights	
high beam, blue	12 V / 2 W
oil pressure, orange	12 V / 2 W
neutral, green	12 V / 2 W
charging control, red	12 V / 4 W
turn signals, front and rear two each, amber	12 V / 21 W
tail light and license plate light, double filament	12 V / 5 W
stop light, bulb	12 V / 21 W
Horn	Bosch type 0 320 123 013 12 V 400 HZ or Hella type B 31-12VOH3

Wiring diagram

1 Turn signal switch
2 Head light
a Turn signal flasher
b Head light high beam
c Head light low beam
d Parking light
e Cable connector
f Ignition and light switch
g High beam indicator light (blue)
h Instrument illumination
j Oil pressure indicator light (orange)
k Neutral indicator light (green)
l Battery charging indicator light (red)
3 Dimmer switch
4 Turn signal, front, right
5 Hand brake stop light switch
6 Turn signal, front, left
7 Ground connection on frame for ignition coils
8 Relay for repeat start prevention
9 Horn
10 Contact breaker
11 Ignition coils
12 Condenser
13 Neutral indicator light switch
14 Oil pressure indicator light switch
15 Foot brake stop light switch
16 Diode plate
17 Spark plugs with caps
18 Three-phase alternator
19 Plug connection in wiring harness
20 Turn signal, rear, right
21 Tail light
a Rear light and license plate illumination
b Stop light
22 Turn signal, rear left
23 Voltage regulator
24 Battery
25 Ground connection on transmission cover
26 Starter motor

Wiring color coding:

BL = blue
BR = brown
GE = amber
GR = grey
GN = green
RT = red
SW = black
WS = white



Servicing

Please have all the maintenance procedures laid down in the Owner's Manual, pages 16–31, carried out regularly by an authorized BMW dealer, and make sure that the work done is confirmed by rubber stamp and signature in the appropriate spaces of pages 72 and 73. These details must be available before any guarantee claims can be considered.

Before you receive this vehicle from your dealer he will have carried out a **free pre-delivery check.** These is a schedule of the volume of the inspection work on page 75. Performance of that inspection work is verified on page 74.

After the **free services** at 300 and 1000 miles, and commencing at speedometer reading 3000 miles, alternate Minor Service and Major Service procedures should be carried out at 3000 mile intervals.

In the interests of obtaining maximum reliability and long service life from your vehicle, we recommend that **at least two services per year** be carried out even if the prescribed mileage as per the servicing chart on page 16 has not in fact been completed.

We have calculated work time schedules for all service operations, and BMW importers or their authorized dealers will invoice you in accordance with the rates current in your country, using the official times as a guide.

All lubricants, gaskets etc. used, any cleaning work necessary will be shown separately on the invoice.

In all export markets it is customary to make an initial charge for the free services Nos. 1 and 2. Your dealer will then credit you with the officially recommended value of this work. Any sum in excess of this value you will be required to meet yourself.

Please keep this Owner's Manual in the tool box of your motorcycle in the at all times.

The service supplement of this Owner's Manual is not transferable.

3 000 miles Service Date Mileage Stamp and Signature	6 000 miles Service Date Mileage Stamp and Signature	9 000 miles Service Date Mileage Stamp and Signature
12 000 miles Service Date Mileage Stamp and Signature	15 000 miles Service Date Mileage Stamp and Signature	18 000 miles Service Date Mileage Stamp and Signature
20 000 miles Service Date Mileage Stamp and Signature	24 000 miles Service Date Mileage Stamp and Signature	27 000 miles Service Date Mileage Stamp and Signature
31 000 miles Service Date Mileage Stamp and Signature	34 000 miles Service Date Mileage Stamp and Signature	37 000 miles Service Date Mileage Stamp and Signature

40 000 miles Service Date Mileage Stamp and Signature	43 000 miles Service Date Mileage Stamp and Signature	46 000 miles Service Date Mileage Stamp and Signature
49 000 miles Service Date Mileage Stamp and Signature	52 000 miles Service Date Mileage Stamp and Signature	55 000 miles Service Date Mileage Stamp and Signature
59 000 miles Service Date Mileage Stamp and Signature	62 000 miles Service Date Mileage Stamp and Signature	65 000 miles Service Date Mileage Stamp and Signature
68 000 miles Service Date Mileage Stamp and Signature	71 000 miles Service Date Mileage Stamp and Signature	74 000 miles Service Date Mileage Stamp and Signature

Free Pre-delivery Check

correctly carried out

on _____

at _____ miles

Stamp and Signature

Free 300 miles Inspection

correctly carried out

on _____

at _____ miles

Stamp and Signature

Free 900 miles Inspection

correctly carried out

on _____

at _____ miles

Stamp and Signature

Free Pre-delivery check

1. Check oil level in engine, transmission, rear wheel drive, shaft housing.
2. Check for operation: headlight high and low beam, parking light, stop- and licence plate lights, red turn signals and indicator lights for: high beam, charging control, neutral, oil pressure and horn.
3. Bolts and nuts see page 31 of instruction manual, check for correct torque.
4. Test drive, check operation of clutch, gear shift mechanism, speedometer, steering, foot- and hand brake, idling speed of engine.
5. Check outer condition of vehicle.

Free of Charge Service 1 *)
at 300 miles

1. Change oil in the engine only when engine has reached normal operating temperature replace oil filter cartridge.
2. Check torque of the four nuts for the trough studs (cylinder and cylinder head and locker arm attachment) and of the two additional cylinder head bolts (25 lb/ft), tighten if necessary.

Figure 19

3. Check valve clearance, adjust if necessary. Intake = 0.006 inches, exhaust = 0.008 inches.
4. Check timing.

Free of Charge Service 2
at 1000 miles

1. Change engine oil, only after the engine has reached normal operating temperature, clean oil pan and oil screen.
2. Lubricate rear wheel swing arm bearings.
3. Lubricate brake and clutch levers and throttle assembly.
4. Service battery.
5. Change transmission oil.
6. Change oil in drive shaft housing.
7. Change rear wheel drive oil.
8. Change telescopic fork oil.
9. Clean air filter (blow out)
10. Check fork and wheel bearings, adjust if needed.
11. Adjust brakes and clutch.
12. Clean carburetor and adjust if needed, check throttle cables and adjust. Clean petcock screen.
13. Check electrode gap of spark plugs.
14. Check contact breaker cap and ignition timing.
15. Tighten cylinder head nuts (25 lb/ft), then adjust valve clearance when engine is cold.
16. Tighten nuts and screws, (observe torque figures, see Technical Data).
17. Tighten wheel spokes.
18. Test Drive.

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*) Lubricants, oilfilter and gaskets are at the expense of the owner.

Guarantee

1. The Vendor hereby guarantees freedom from defects in respect of materials or workmanship in accordance with the technological standards applicable at the time for any purchased article leaving its factory, such guarantee to remain in force until a total distance of 10,000 km (6,000 miles) has been covered, but in no case longer than 6 months commencing with the date on which the purchased article is first licensed. No claim under the Guarantee will be entertained unless it be notified immediately following discovery to the Vendor, a BMW contractual agent or a BMW contractual workshop.
2. The Vendor hereby guarantees to repair the purchased article or to replace defective parts, the decision of the Vendor in this respect being final. The Vendor may determine the place where the guarantee work is to be executed, giving due consideration to the interests of the Purchaser.
3. Protection under the guarantee shall be afforded by the Vendor even in respect of parts not manufactured by the Supplier's works, with the exception of batteries and tyres and tubes. In respect of these last the Vendor hereby assigns any entitlements under guarantee made to the Vendor by the suppliers to the Purchaser. The Vendor shall not be held liable to entertain guarantee claims in respect of incandescent bulbs and spark plugs.
4. If a guarantee claim be accepted by the Vendor, the latter will also be responsible for the cost of despatch by the most economical method and all reasonable installation costs provided always that the installation be carried out by the Vendor, a BMW contractual agent or a BMW contractual workshop in accordance with the instructions issued by the Supplier's works. Parts exhibiting defects in materials or workmanship will be replaced, together with all parts damaged as a result of such defects. Parts replaced in this manner become the property of the Vendor and must be surrendered.
5. The Vendor shall not be liable under the terms of the Guarantee for neutral wear and tear or damage attributable to negligent or improper treatment, nor for damage occurring through incorrect storage or corrosion.
6. The Guarantee shall be considered as null and void if
   a) the purchased article is modified by a third party or by the incorporation of parts of third party origin while under Guarantee;
   b) the Purchaser has not conformed to the instructions contained in the BMW Operating Instructions or has not arranged for the regular inspections prescribed in the BMW Servicing Booklet to be carried out correctly;
   c) the Purchaser sells the purchased article after it has been licensed;
   d) the Purchaser uses the purchased article in competitive events.
7. No claim for the reimbursement of direct or indirect damages will be considered.
8. No claim regarding amendment to the purchase contract or reduction in the purchase price will be considered.
9. No guarantee is extended in respect of secondhand motor vehicles.

Index

At a glance

Tire pressure in psi	R 50/5	R 60/5	R 75/5
Cold			
Front wheel Solo	27	27	27
For two-up riding	30	30	30
Rear wheel Solo	30	30	30
For two-up riding	35	35	35

Capacities	Fuel tank US gal. 6.3	Regular R 50/5 Hi Test R 60/5, R 75/5
	Engine oil US pints 4.2 with filter change 4.75	Name-brand HD oil for gasoline engine Below 32°F Multi-grade oil SAE 10 W 30 From 32-86°F Single grade oil SAE 30 Over 86°F and for sustained high speed driving Single grade oil SAE 40
Transmission	1.7	Name-brand hypoid gear oil SAE 90
Drive shaft housing	0.2	Name-brand hypoid gear oil SAE 90
Rear wheel drive	0.5	Name-brand hypoid gear oil SAE 90
Telescopic fork	cc 280	Shock absorber oil, Shell Aero Fluid 4, Shell 4001, Castrol BMW Shock Absorber Oil, BP Olex HL 2463 (Aero-Hydraulic)
Breaker lubricating felt and centrifugal timing advance		Bosch grease Ft 1 v 4
Guide shaft (for advance unit)		Bosch grease Ft 1 v 22 or Ft 1 v 26
Wheel bearings and other greasing points		Name-brand Multi-purose grease with 180° C dripping point
Location of engine No.		On engine bloc at left next the oil filler neck
Location of frame No.		On steering head, at right

Valve clearances with engine cold	
Intake	.006"
Exhaust	.008"
Spark plugs	
Electrode gap	.027"
Bosch W 230 T 30 (R 50/5, R 60/5)	
Bosch W 200 T 30 (R 75/5)	
Beru 230/14/3 A (R 50/5, R 60/5)	
Beru 200/14/3 A (R 75/5)	
Champion N 7 y (R 50/5, R 60/5, R 75/5)	
Breaker contact gap	.014 to .016"
Dwell angle	110° ± 1°
Ignition timing	9° before TDC

Tightening torques

Swing arm mounting to rear wheel	7.2	+	1.5	lb/ft
Centering nut telescopic fork	87	+	7.2	lb/ft
Cylinder head nuts	25	+	3	lb/ft
Axle nut front and rear	32.5	+	2	lb/ft
Clamp screw for wheel axle front	16.6	+	2	lb/ft
Clamp screw for wheel axle rear	11.5	+	1.5	lb/ft
Hex. nut for oil drain telescopic fork	16.6	+	2	lb/ft
Finned exhaust pipe nut	144.6	+	14	lb/ft

Voucher

for free of charge service 2

at 1000 miles

Valid only for the vehicle registered in this booklet

Workshop Order No. _____ Type _____

Frame No. _____ Licence No. _____

Mileage reading: _____

Handing over this card to an authorised BMW Service Agent represents and order for the work detailed overleaf to be carried out. Completion of the free of charge service should be confirmed by an entry on page 74.
Any lubricants, gaskets, etc., any cleaning work necessary and any charges for wheel balancing will be invoiced seperately.

Warning!
This voucher is not valid unless stamped by the authorized Sales Agent.

Vehicle sold by: _____

(Stamp)

Date _____ Customer's signature

Voucher

for free of charge service 1

at 300 miles

Valid only for the vehicle registered in this booklet

Workshop Order No. _____ Type _____

Frame No. _____ Licence No. _____

Mileage reading: _____

Handing over this card to an authorised BMW Service Agent represents and order for the work detailed overleaf to be carried out. Completion of the free of charge service should be confirmed by an entry on page 74.
Any lubricants, gaskets, etc., any cleaning work necessary and any charges for wheel balancing will be invoiced seperately.

Warning!
This voucher is not valid unless stamped by the authorized Sales Agent.

Vehicle sold by: _____

(Stamp)

Date _____ Customer's signature

Free of Charge Service 1

at 300 miles

1. Change oil in the engine only when engine has reached normal operating temperature replace oil filter cartridge.
2. Check torque of the four nuts for the trough studs (cylinder and cylinder head and locker arm attachment) and of the two additional cylinder head bolts (25 lb/ft), tighten if necessary.

Figure 19

3. Check valve clearance, adjust if necessary. Intake = 0.006 inches, exhaust = 0.008 inches.
4. Check timing.

Recommended time allowance: ..... hours

Free of Charge Service 2

at 1000 miles

1. Change engine oil, only after the engine has reached normal operating temperature, clean oil pan and oil screen.
2. Lubricate rear wheel swing arm bearings.
3. Lubricate brake and clutch levers and throttle assembly.
4. Service battery.
5. Change transmission oil.
6. Change oil in drive shaft housing.
7. Change rear wheel drive oil.
8. Change telescopic fork oil.
9. Clean air filter (blow out).
10. Check fork and wheel bearings, adjust if needed.
11. Adjust brakes and clutch.
12. Clean carburetor and adjust if needed, check throttle cables and adjust. Clean petcock screen.
13. Check electrode gap of spark plugs.
14. Check contact breaker cap and ignition timing.
15. Tighten cylinder head nuts (25 lb/ft), then adjust valve clearance when engine is cold.
16. Tighten nuts and screws (observe torque figures, see Technical Data).
17. Tighten wheel spokes.
18. Test Drive.

Recommended time allowance: ..... hours

BMW AG

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