Owner's Manual

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

Model

Chassis No.

Licence No.

Vehicle Owner

Address

Telephone No.

No. of key for steering lock

Dealer

Date of first registration

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

BMW R 75/5

Contents

	page
Operation and Inspection	7
From Starting to Riding	11
Break-in – But How?	13
Ready to Ride	14
Servicing	16
Greasing points	32
What to do and When ... (Hints in case of break-down)	34
... and in Winter? (Putting your motorcycle into storage)	41
Specification	42
Technical Data	56
Service	71
Table of Contents	77
At a glance	80

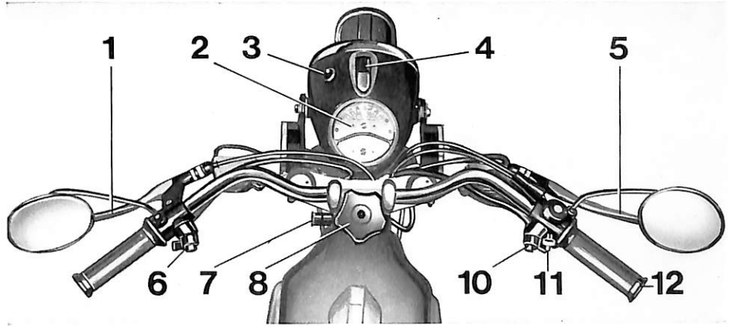
Operation and Inspection

Operating Controls at a Glance

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

Fig. 1

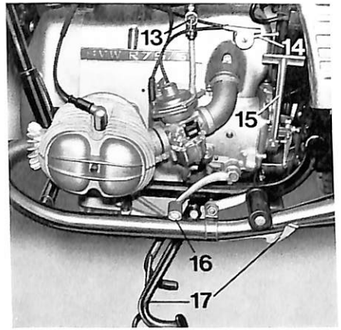
1



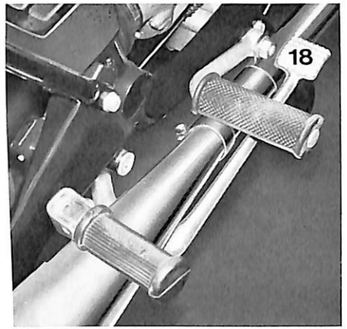
13. Fuel Petcock
14. Choke Lever R 75/5 with additional catch-in position
15. Kick Starter
16. Gear Shift Lever
17. Center Stand — Side Stand
18. Foot Brake Lever
19. Lifting Handle
20. Dual Seat Lock
21. Dual Seat Release Button
22. Rear Spring Tensioner
23. Folding Passenger Foot Rests

Fig. 2–4

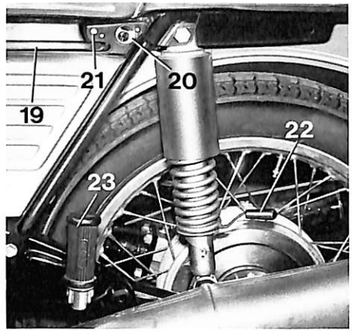
2



3



4



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**

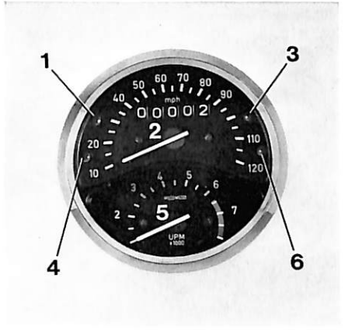
Dimmer and Signaling Switch

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

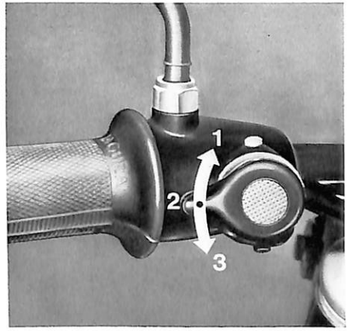
By turning the steering damper knob clockwise the friction damper will prevent the fork from being turned while the motorcycle is parked or transported.

5



6

7



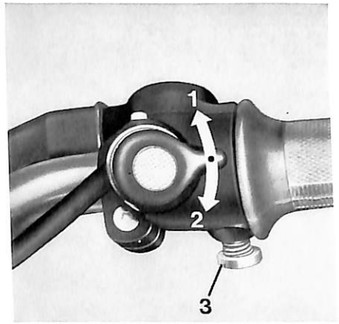
Turn Signal Switch, Starter Button
Position 1: Indicates left turn
Position 2: Indicates right turn
Switch Depressed: Starter Actuation

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

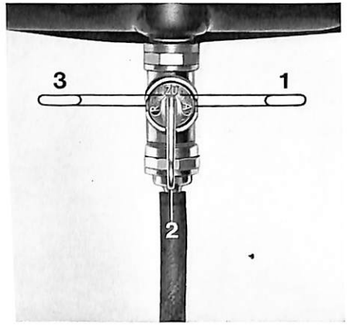
Fuel Petcock
Position 1: Fuel Petcock „open"
Position 2: Fuel Petcock „closed"
Position 3: Fuel Petcock „Reserve"
Figure 9

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

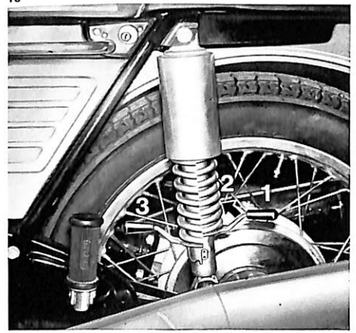
8



9



10



From Starting to Riding

Starting Point:

Stand motorcycle into upright position, open fuel petcock, put in neutral gear

	R 50/5, R 60/5	R 75/5
Starting of cold engine at outside temp. above 32° F	Depress both carburator ticklers two seconds longer than the time at which fuel is coming out of the float bowl lower part, turn on ignition, red, green and orange indicator lights have to be on. Press starter button respectively step on the kick starter briefly kicking forcefully, if necessary turn throttle slightly (max. ¼ turn).	Pull up choke. Turn on ignition, red, green and orange lights have to be on. The throttle grip is closed, press starter button, if necessary step on the gas slightly when the first series of ignition have been turned on. When the engine has started switch off the choke latest when engine starts faulty concentric running.
Starting of cold engine at outside temp. below 32° F	Same as above, however, step on the kick starter two or three times before turning on ingnition.	As above, however, step on the kick starter two or three times before turning on ignition.
Starting of warm engine at all kinds of outside temperature	Do not actuate ticklers, turn on ignition. Press starter button, resp. step on the kick starter, turn on throttle slightly (max. ¼ turn).	Do not actuate choke. Turn on ignition, press starter button, turn on throttle slightly (max. ¼ turn).

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.

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**

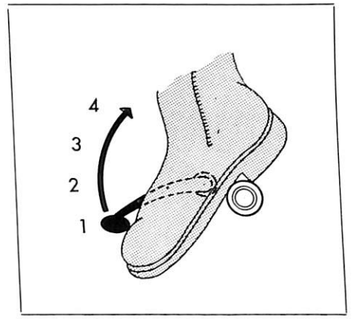
To shift down from fourth into third, second, and first gear, declutch, and depress foot shift lever once per gear and let in clutch.

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).

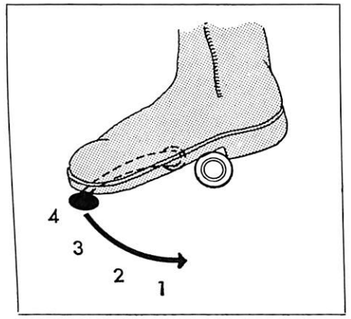
A tip: Letting the clutch slip lightly facilitates down-shifting while the motorcycle is standing still. **Figure 12**

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**

11



12



13

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**

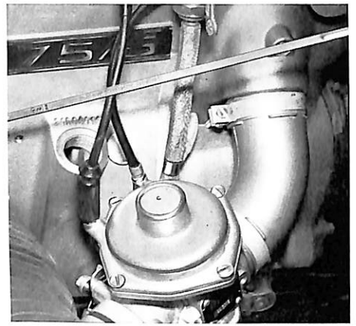
If you desire to switch to a different brand of oil, do so only if you change the oil as well as the oil filter.

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.

14



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, oil filter, 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.

15

	Minor Service every 4000 miles	Major Service every 8000 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 wheel bearings clearance		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 for short distance rides only or every 3 months, at the latest after 2000 miles for outside temperatures below 32° F.
2 At least once a month
3 At least once a year

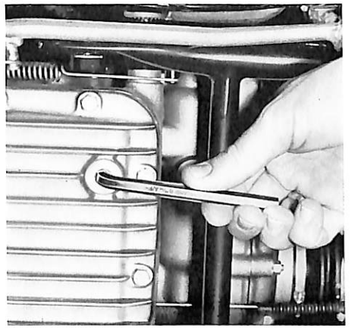
The service operations are described in detail on the following pages, in the same order as in the Service Schedule.

1. Change engine oil, replace filter cartridge
Change engine oil, only while engine is hot, every 4000 miles, the latest after 6 months. For short distance rides only – outside temperatures below 32° F – every 3 months, at the latest after 2000 miles. Unscrew socket head screw (allen wrench size 8), let old oil run out and screw drain plug back in tightly, watch for perfect tightness. If the oil filter shall be renewed during the oil change, at first dismount filter and then drain oil. **Figure 16**

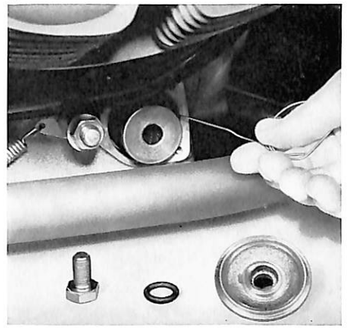
Total capacity: 4.2 pints + .5 pint when oil filter is changed.
Oil level to the upper mark on the dip stick, never higher, see figure 14.
Type of Oil: See Technical Data
Replace Filter Cartridge every 4000 miles when changing engine oil. Remove cover after unscrewing the three hex head screws (allen wrench size 10). 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 hex head screws (allen wrench size 10), clean thoroughly including oil screen and reinstall with a new gasket. **Figure 18**

16



17



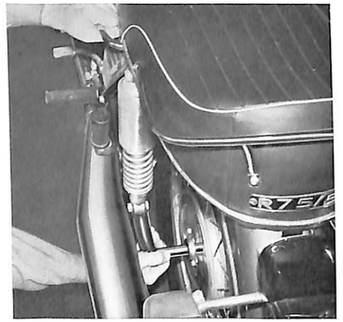
18

2. Rear Swing Arm Bearing
Check fit of the rear wheel swing arm bearing every 8000 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**

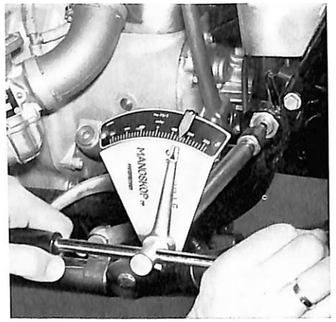
Readjust if necessary. To do this, remove plastic cap, loosen lock nut with socket wrench from tool kit, preload both bearing bolts with a socket wrench at 14.4 + 1.4 lb/ft and loosen again, then re-tighten to 7.2 + 1.4 lb/ft and secure with nut (approximately 72 lb/ft). **Figure 20**

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

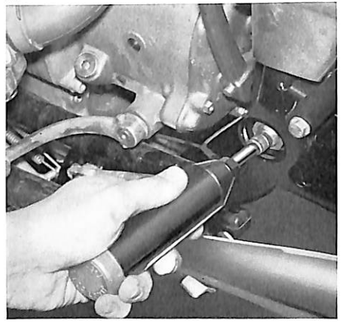
19



20



21

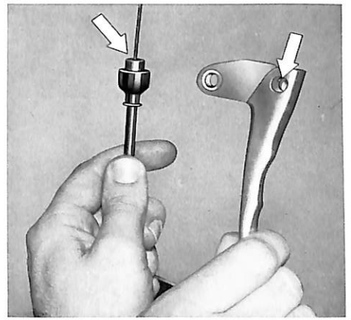


3. Brake and Clutch Joints, Throttle Grip
Grease **joints** of the foot brake (item 5) and of the clutch lever (item 1) figures 53/54 every 4000 miles with grease gun.
Lubricate the **fittings** of the cables for the clutch and the front wheel brake every 4000 miles. For this purpose, unhook the clutch 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**

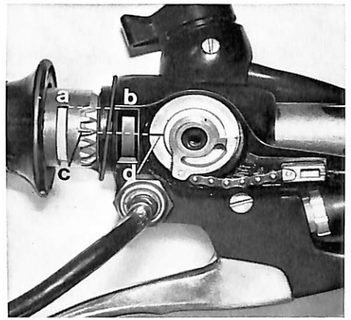
Adjust front wheel brake, see page 24.
Check **throttle twist grip** for easy turning every 4000 miles; push back water protection cap, unscrew cover if necessary, pull off handel. Lubricate the inside of the handle, the rack drive and the pull chain. See to it that the slot end **a** in the throttle 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 4000 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.

22



23



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 4000 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 size 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**

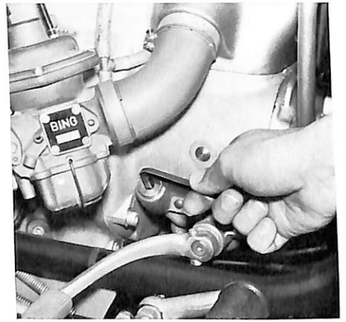
Amount of oil approximately 1.7 pints
Oil level lowest thread of the filler opening
Type of oil see Technical Data.

6. Drive shaft Housing, Oil level — oil change
Check oil level every 4000 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**

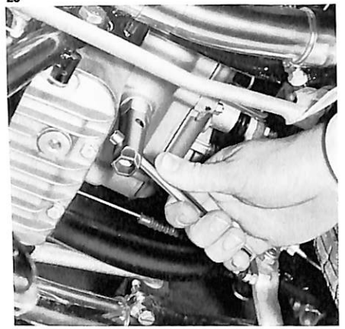
Change oil while oil is at normal operating temperature, every 8000 miles, but at least once a year. Unscrew oil drain plug and then oil filler plug (each use wrench size 17). After old oil has drained, screw drain plug back in tightly. Fill with new oil. **Figure 27**

Amount of oil approximately 0.27 pints.
Oil level 0.08" over clutch cup with motorcycle parked
Type of oil see Technical Data.

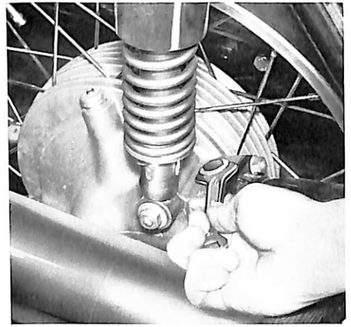
24



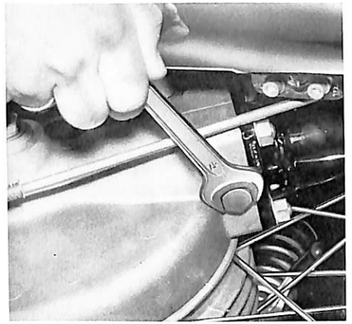
25



26



27

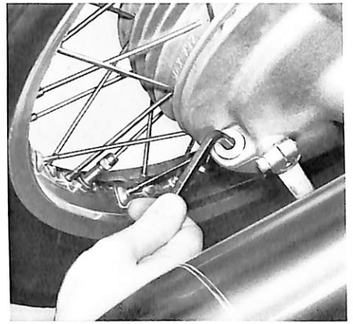


7. Rear Wheel Drive, Oil Level — Oil Change
Check **oil level** every 4000 miles and, if needed, refill to the lowest thread of the filler opening (see arrow) with name-brand oil of the same type; re-tighten filler screw (wrench size 8) with allen wrench. **Figure 28**

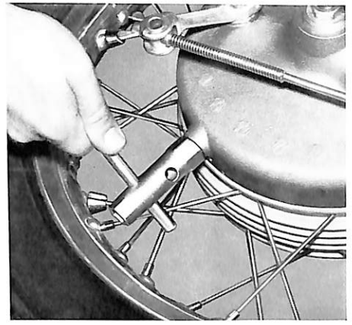
Change Oil while oil is at normal operating temperature, every 4000 miles but at least once a year. Unscrew oil drain plug (wrench size 19) and then oil filter plug (allen wrench size 8). After the oil has drained, replace drain plug tightly. Fill with new oil. **Figure 29**

Amount of oil approximately 0.5 pints
oil level lowest thread of filler opening
Type of oil see Technical Data.

28



29



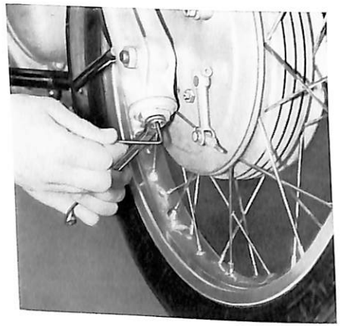
8. Telescopic Fork — Oil Change
every 8000 miles, but at least once a year.
Extend telescopic fork completely with motorcycle parked on the center stand. Remove rubber caps from the bottom plugs of the fork legs, unscrew hex nuts (wrench size 13) while holding the internal hex (wrench size 4) of the damper tube ends. **Figure 30**

Unscrew cover caps on top with pin wrench (from tool kit) to bleed the fork tubes. **Figure 31**

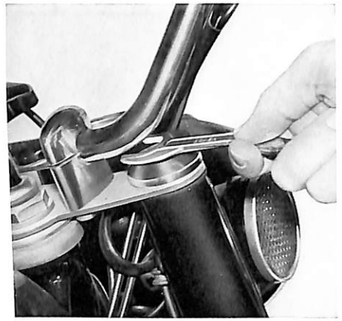
Pull down both fork legs, let oil drain. Screw in bottom nuts, fill with new oil. Initial filling capacity 280cc per fork leg, after draining, refill capacity 265cc.
Types of oil: see Technical Data.

9. Intake Air Filter
Remove air filter cartridge every 4000 miles — more often in dusty regions — tap out dust carefully and blow out from the inside with compressed air. Replace filter cartridge every 8000 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 cylinder head slotted screw (do not dismount choke actuating appliance), turn left half of the air filter housing to the side, pull out filter cartridge.
When remounting slip filter upon the three studs of rear half of the housing, fix left half of the air filter housing to the lower and lateral gear partition and push in. Cylinder head slotted screw will pass through easier when using your left hand.
Figure 32

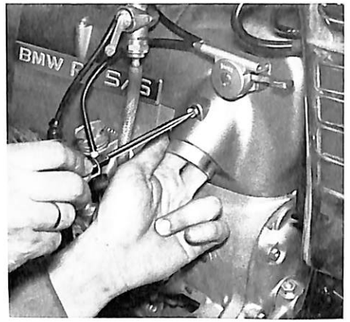
30



31



32



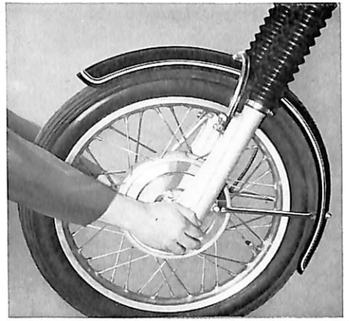
10. Play in Steering and Wheel Bearings
Check the steering head play after the first 600 miles. To do this, put motorcycle on center stand, hold on to both fork legs from the front and check for play by alternately pushing and pulling. No free motion must be noticeable — otherwise readjust the steering head bearings. **Figure 33**

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 handlebar clamp fixed to this side of clamp bolt to which box wrench has to be applied by untightening the two hex nuts (wrench size 13), loosen the other handlebar clamp. Remove clamp bolt from clamp ring (allen wrench sice 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 34**

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 8000 miles for axial play with the motorcycle on the center stand and the wheel off the ground. No play must be noticeable. **Figure 35**

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 16 000 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.

33



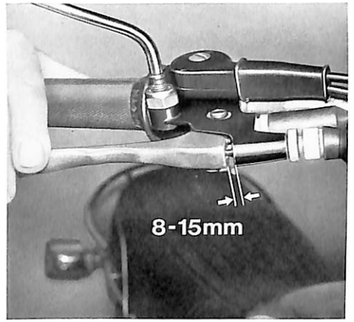
34

35

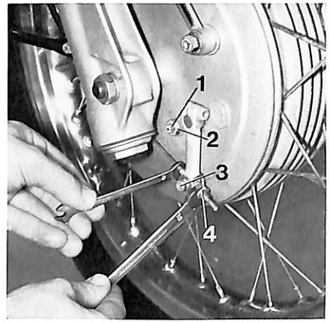
11. Brakes and Clutch
Check brakes regularly, at least every 4000 miles, for their effectiveness and sufficient lever travel.
Adjust front brake, hand lever to have a play of 8—15 mm (1/4—1/2") by turning the knurled screw 1 after loosening the lock nut 2. **Figure 36**
Loosen lock nut 2 (wrench size 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 37**
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 38**

The clutch is properly adjusted when there is play of approx. 0.08" at the clutch lever 3 on the transmission. The play is increased by turning the knurled cable adjuster into the clutch lever hand joint, 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 39

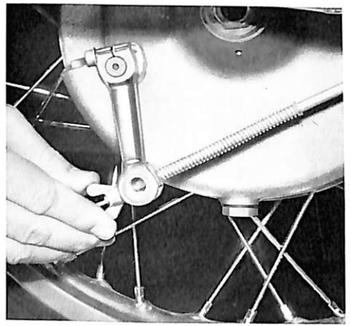
36



37



38

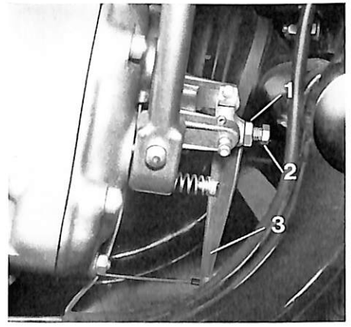


12. Carburetor, throttle cables, petcocks
Clean carburetor every 4000 miles, this should be done by an authorized BMW dealer.
In an emergency, the carburetors may be disassembled and all fuel and air passages, float needle, main and idle jets, as well as the float bowl, should be blown out with compressed 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 turn.

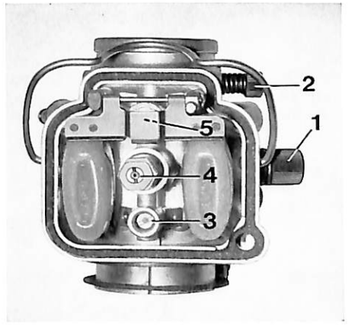
Figure 40 R 50/5, R 60/5
Figure 41 R 75/5

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 valve needle 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 on the side of start carburator and choke lever. 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

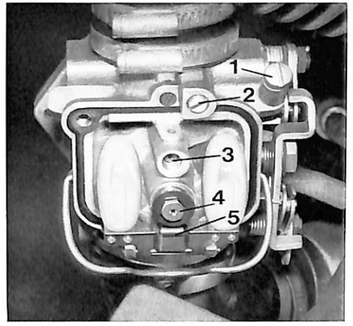
39



40



41



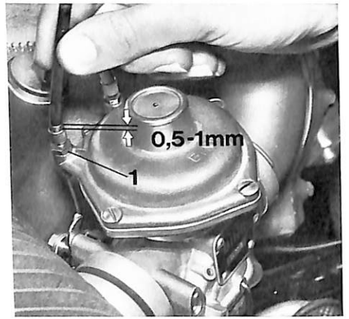
increases it. Both cables have to be adjusted exactly alike. **Figure 42**

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 600 and 800 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, adjust the carburetors as follows: **model R 50/5, R 60/5:** correct this by adjusting the slide stop screw 2, clockwise to increase, counter-clockwise to decrease speed.

For finding the most favorable petrol mixture turn idle air screw 1 carefully in either direction. The correct mixture adjustment has been found when the cylinder runs the fastest. Lock idle air regulating screw. Perform the same operations on the opposite carburetor.

42



43

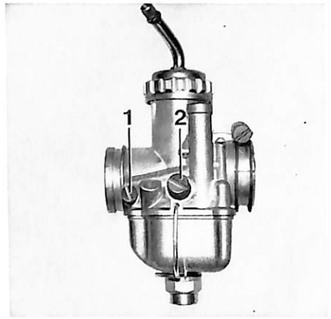


Figure 43, R 50/5, R 60/5

If the engine speed is now still not the prescribed 600–800 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.

Model R 75/5

Adjust cables of the starting device exactly alike to a free play of .02–.04″. Back off completely on both carburetors the cable adjustment screw, so that the butterfly lever is not suspended on the throttle cable. Position the idle mixture regulating screw 1 and the butterfly stop screw 2 of both carburetors into the basic setting: for this purpose, turn the idle mixture regulating screw in fully, then turn it counterclockwise one turn. Turn the butterfly stop screw inward until it just contacts the stop of the butterfly lever; then turn the butterfly stop screw inward one turn. Operate cold engine to normalize engine temperature; axtuate choke for starting.

Turn idle mixture regulating screw of both carburetors carefully in either direction until best engine idle "Feel" is obtained (when cylinder runs the fastest).

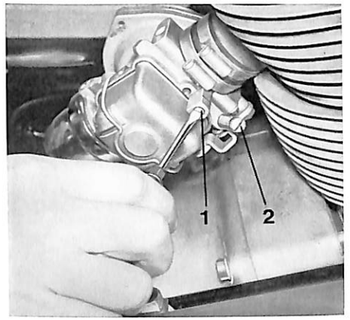
Continue carburetor adjustment alternately on the left and right carburetor. Gradually back off the butterfly stop screw and after each turning motion try to obtain best possible idle speed by means of the idle mixture regulating screw. Repeat this procedure until the cylinder to be adjusted ceases to function after few working strokes, when operating alone (spark plug cap of the opposite cylinder being with-drawn and provided with adaptor). According to recent experience, the correct mixture adjustment has been found when the engine idles at 600–800 RPM.

Caution: never allow the engine to idle for more than 10 minutes.

Figure 44 R 75/5

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).

44



Fuel Petcock

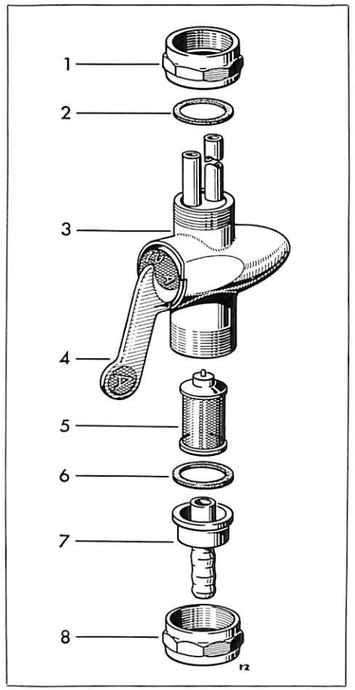
Disassemble and clean the **screen of the fuel petcock** every 8000 miles.

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

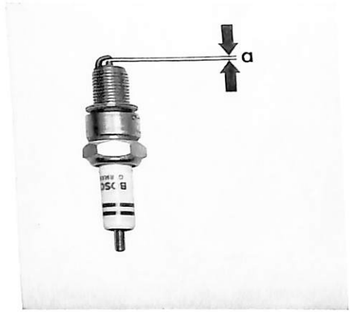
1. Empty fuel tank.
2. Nut 1 (wrench size 24) has a right-hand thread on the fuel tank side and a left-hand thread on the petcock side. Turn the nut to the left while holding the fuel 3; remove fuel petcock 3 and nut 1.
3. Use new gasket 2 for reassembly. Position wider smooth portion of nut 1 up, and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



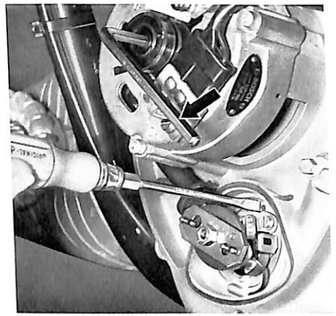
13. Spark Plugs
Check the **spark plug electrode gap** with spark plug gage every 4000 miles and before installing new spark plugs. If necessary, adjust the gap to the specified size of a = 0.024 + 0.004" by bending the side electrode. **Figure 45**
Do not clean spark plugs with a metal brush, — apply a graphite lubricant to the threads before screwing the plug into the cylinder head. It is good practice to replace the **spark plugs** every 8000 miles.

45



14. Breaker Contact Gap, Breaker Lubricating Felt, Ignition Timing
Check breaker contact gap every 4000 miles: First remove battery 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. Replace burnt contacts. 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 46**

46

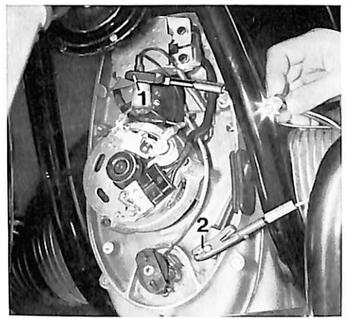


Rub a small amount of Bosch grease Ft 1 v 4 **into the lubrication felt** every 8000 miles and check whether the felt rests properly on the cam. Remove the centrifugal advance unit every 8000 miles. To do this, first remove the hex nut (wrench size 10). After you withdraw the advance unit lubricate the shaft with Bosch grease Ft 1 v 26. Watch for proper spring action. **Check ignition** every 4000 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 47**

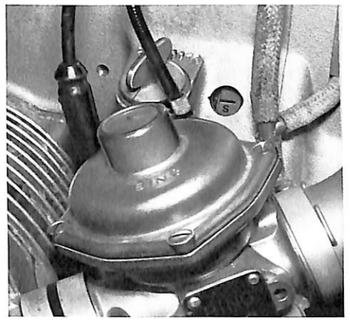
Test lamp must light up when the „S" marking at the flywheel coincides with the window marking as the engine is turned clockwise (direction of engine rotation) — (fly weights at rest). **Figure 48**

The ignition timing is 9° BTDC; it may fluctuate between the left and the right cylinder a maximum of ± 3° (which corresponds to 0.47" 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 (600 to 800 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 49**
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.

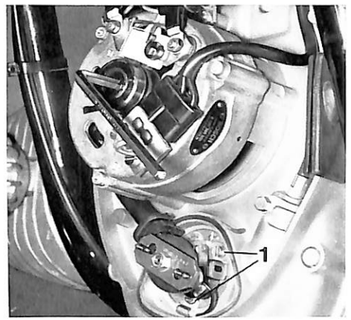
47



48



49



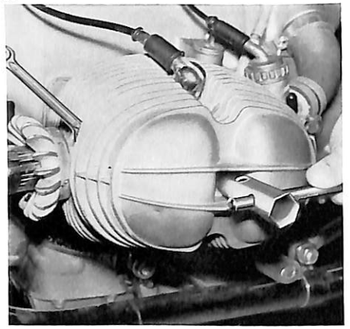
15. Cylinder Head Nuts Valve Clearance (with Engine cold)
Check the torque of the nuts of the four cylinder head nuts and the two cylinder head nuts every 4000 miles. First remove the box nut (wrench size 13) as well as both lateral nuts (wrench size 10) and remove rocker arm cover. **Figure 50**

If necessary, retighten cylinder head nuts and nuts as shown on diagram with torque wrench (25 + 2.8 lb/ft).
Figure 51

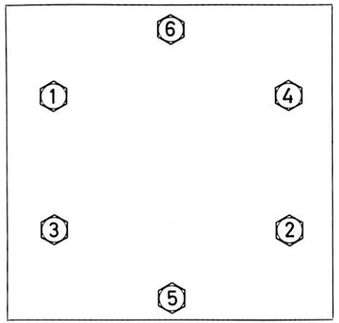
Check valve clearance — required after each retightening of the cylinder head nuts — with feeler gage between valve stem and rocker arm when engine is stopped and cold. To do this, unscrew spark plugs and turn engine over with allen wrench (wrench size 6) at the alternator rotor bolt until the cylinder 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 52**

16.—17. Wheel Spokes, Wheels, Wheel Hub Bearings, Brakes
The **Wheel spokes** must be checked for uniform tension every 8000 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 53

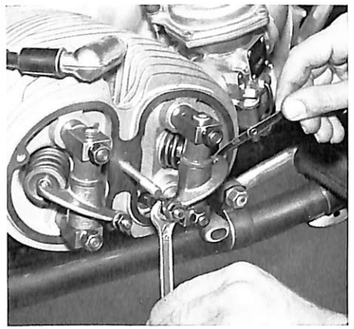
50



51



52

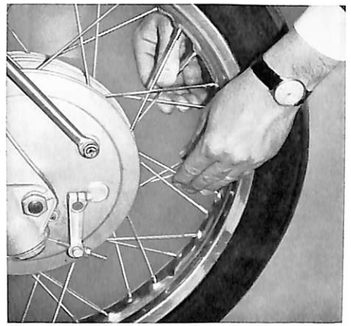


19. Tighten nuts an bolts
The correct torque of the following nuts and bolts is to be checked every 4000 miles.

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. Hex head bolts for the fastening of center stand to the frame	
4. Hose clamps: a) Telescopic fork top and bottom b) carburetor c) Between drive shaft and transmission	
5. Tightness of rocker arm cover 1 cap nut 2 hex nut	 13 mm 10 mm
6. Finned exhaust pipe nut (tighten when engine is cold)	Hook Wrench Ordering No. 338/2
7. Shock absorber mounting rear (top and bottom)	17 mm
8. Muffler suspension 2 screws with hexagonal recessed holes each clamp, 2 hexagon cap screws	5 mm 13 mm
9. Fuel petcocks to tank	24 mm
10. Engine to transmission, 1 nut 3 screws with hexagonal recessed holes	12 mm 6 mm
11. 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.

53



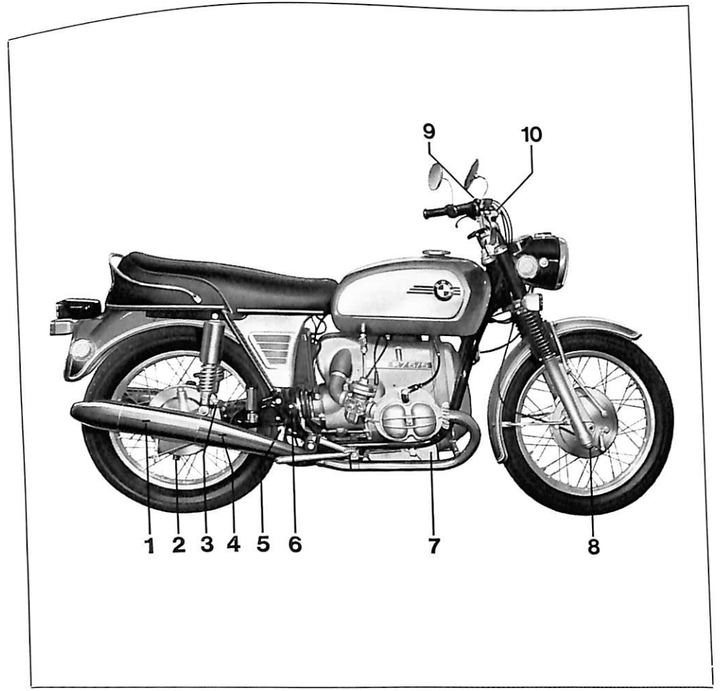
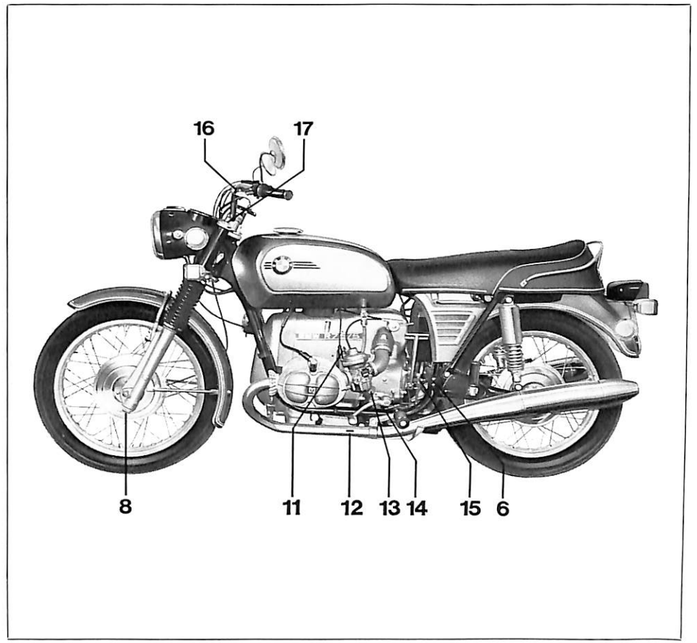
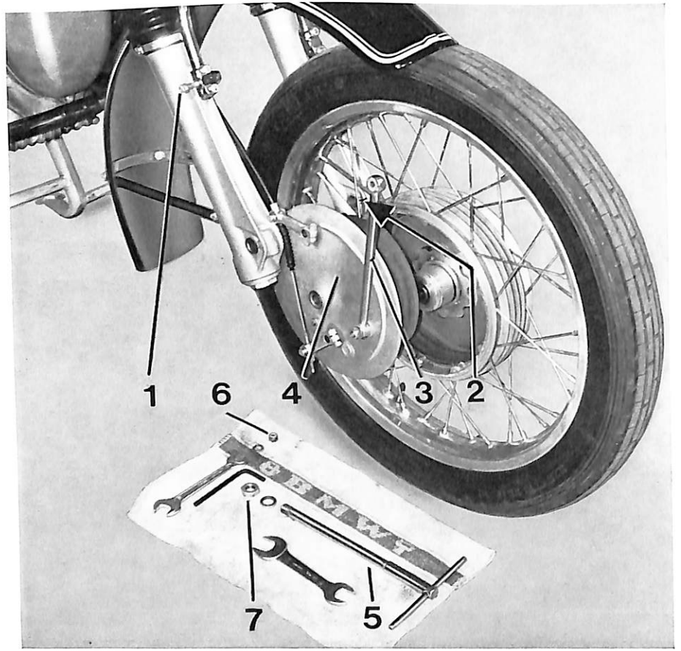


Diagram of Lubricating Points

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



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



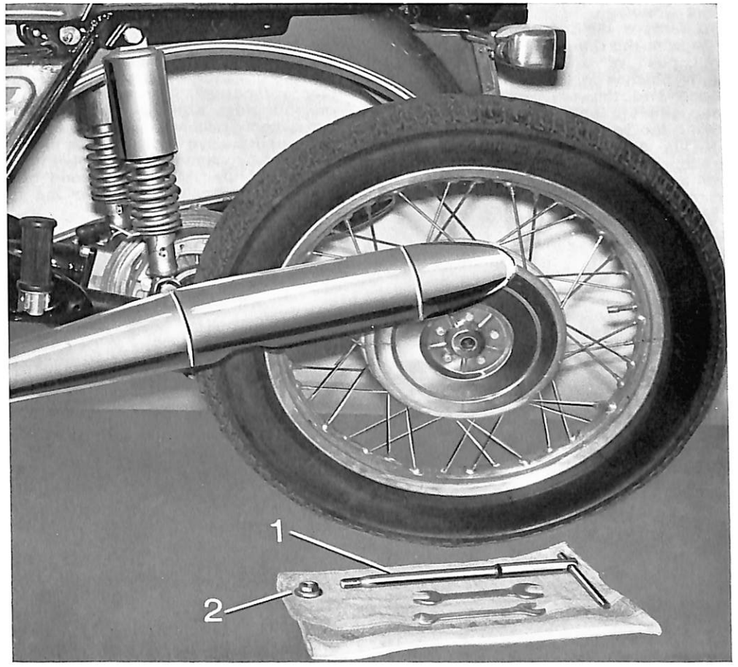
What to do when . . .

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. For reassambling clean and lightly grease the wheel axle. Before tightening the axle clamp bolt 2 (left fork leg lower part), remount brake plate torque arm 3, tighten axle nut 7 pumping telescopic fork several times forcefully; this to avoid binding of the fork legs. Observe torque figures.

Removing and reinstalling the rear wheel

1. Put motorcycle on center stand, change shifting lever to two-up riding.
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.
   Set shifting lever to desired position. Observe torque figures.



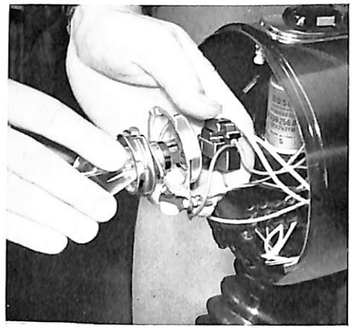
Tire Changing
To remove the tire, deflate, push the tire from the rim inward. Unscrew valve nut, push valve into tire. Observe the safty notches in the rim. Push the tire bead into the rim well on the side opposite the safety notches and start lifting the bead off the rim on the side of the safety notches 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

57

58

59



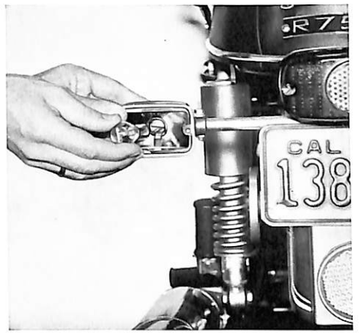
Head Light Bulbs, Bulbs for Control Lights, Speedometer Lighting, and **Turn Signals should be replaced as follows:**
Use screw driver to pry the headlight rim off the head light. Remove bulb holder from reflector. To remove bulb from holder, push it in and twist and then withdraw. When refitting the 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.

60

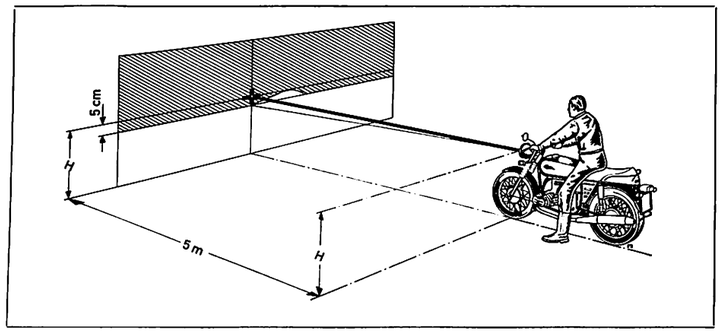


61

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**

62



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
Condensed water in float bowl	Clean float bowl
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, spezified quality (see Technical Data)
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
7. Starter does not work	
Starter button, lock relay to prevent repeat starting or rotor of threephase alternator defective	Press down kick-starter
Isolation of the gliding ring caused by cold wheather	Recharge battery, if necessary correct acid level
Battery is dead	Replace defective parts

. . . 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 ½ 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.

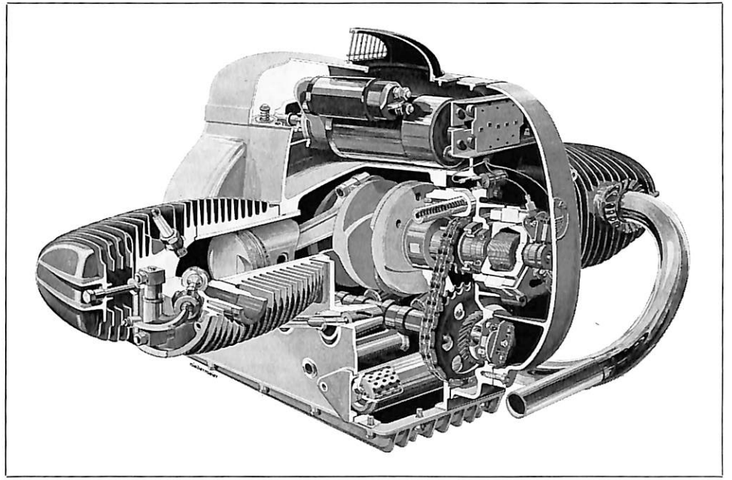
Specifications

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.

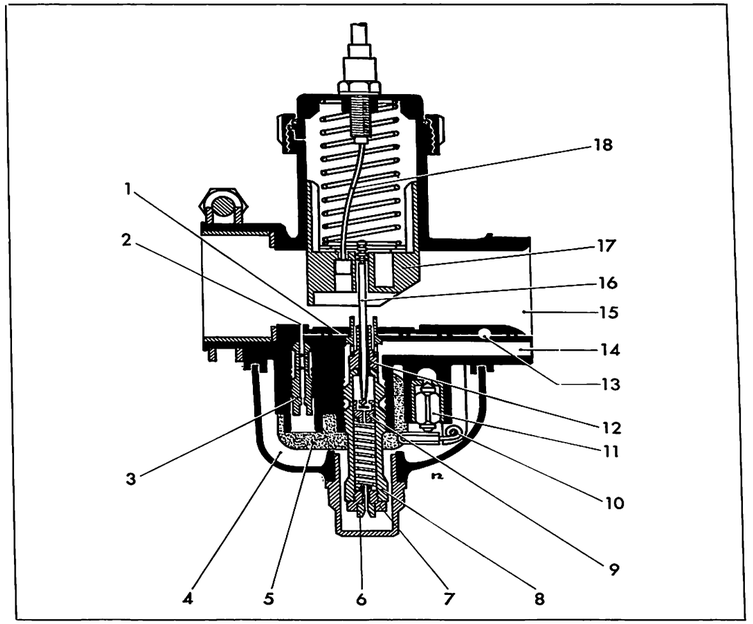
3. Carburetors

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.



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.

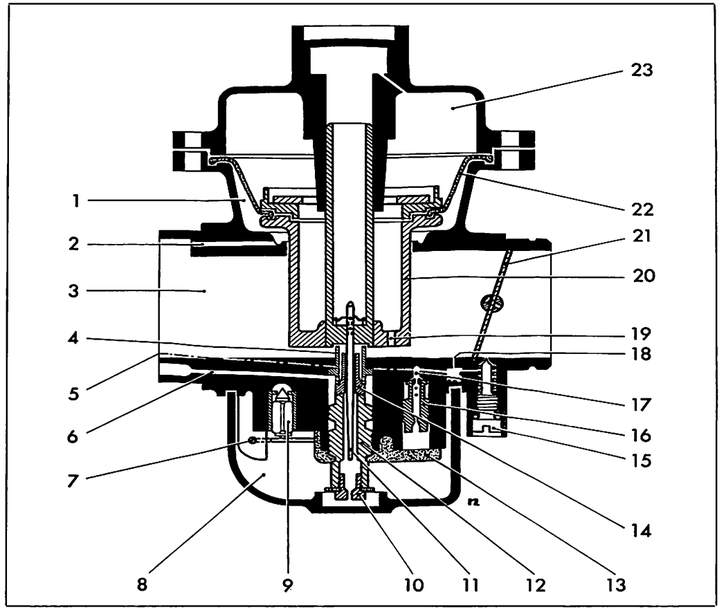
Main jet system
The fuel reaches the air intake throat by passing through the main jet 10, the jet holder 12, the needle jet 14, the pre-atomizer 4 where it is premixed and then introduced to the intake air through a passage 6. In the throat 3, the fuel/air mixture meets the incoming air stream and, 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.

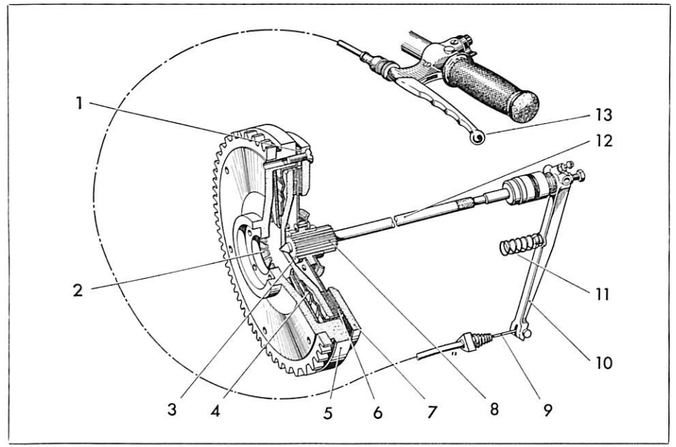
The starting device of the butterfly valve carburetor is a complete auxiliary carburetor which is equipped with a rotary valve. It functions only during starting and when the engine is cold. It can be turned on and off by the operator through cables. A space inside the float housing is designed as a 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.

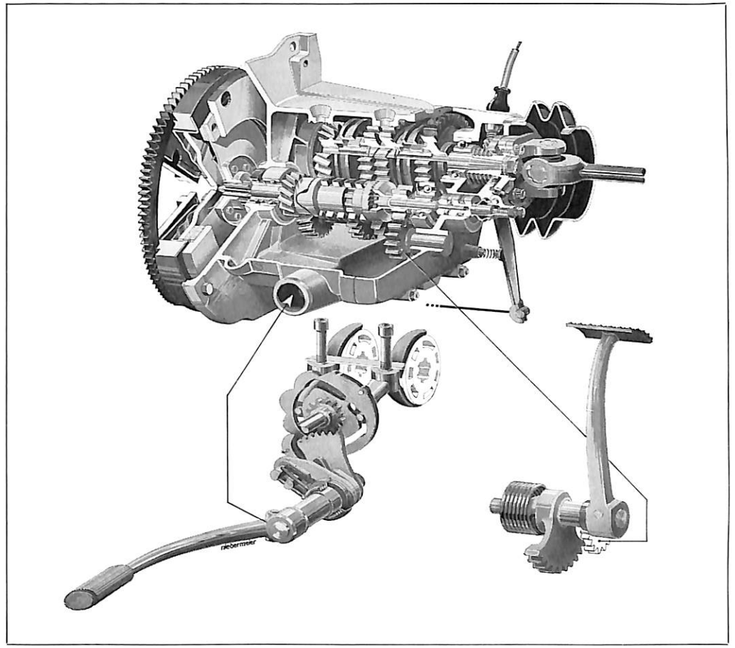
To disengage the engine from the transmission, the clutch lever 10, actuated by the clutch cable, presses through a push rod 12 against the pressure plate 3, this compresses the diaphragm spring 2; The contact between the clutch plate and the pressure plate and pressure ring 7 is interrupted. The clutch 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

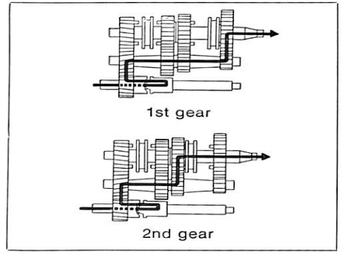
The four-speed transmission is mounted directly to the engine housing. The transmission permits changing the gear ratio to permit the engine to operate in idle RPM ranges at all times. The transmission consists essentially of an input shaft, counter shaft, and output shaft, all three of which are carried 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.

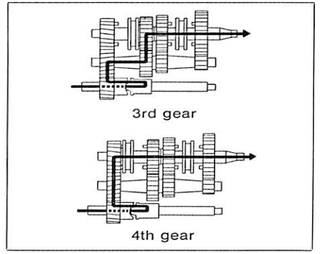
Shifting is accomplished by pushing the foot shift lower up or down. A segment gear turns the shifter cam plate when the foot shift lever is actuated; The 2 shifter forks are engaged in slots provided in the cam plate and into sliding dogs. The 2 dogs engage into the appropriate gear. The 2 dogs have 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.





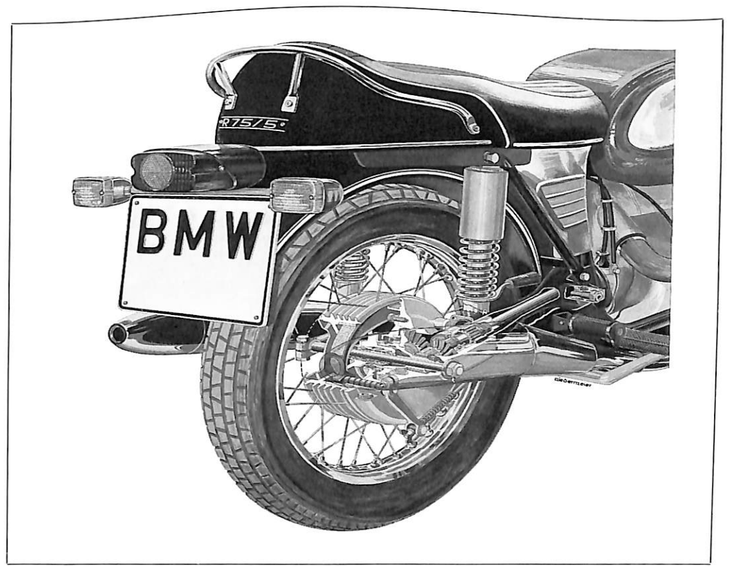
6. Frame

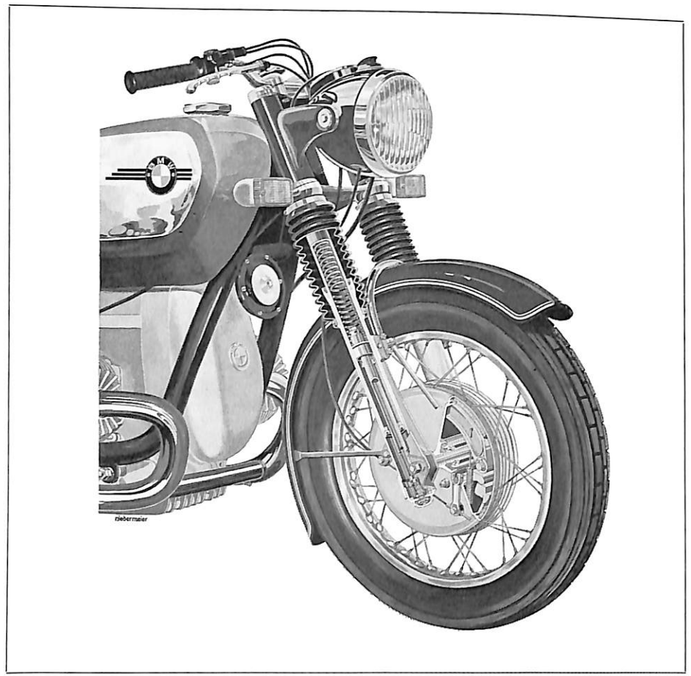
The double loop tubular frame made of oval tubes of great strength is of welded construction. In the area of the steering head, the transom tubes intersect the spinal tube. This permits a certain longitudinal elasticity of the steering head without affecting the very great torsional rigidity. Moreover, 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 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 provided the two fuel petcocks are opened.
For parking, the motorcycle, is provided with a center stand and a side stand.
The chassis is not suited for **side car use.**

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 42° 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**

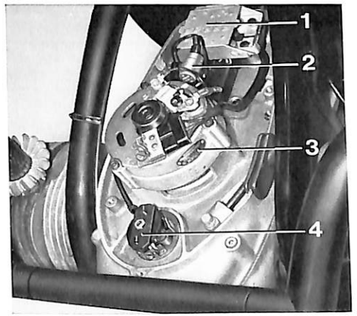
The three-phase alternator consists of a rotor running in the stator housing and mounted at the front end of the cranks haft on a taper. The energizing current of the alternator is supplied via two slip rings. Attached to the front cast ring of the stator is the carbon brush holder with two plug connections. 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.

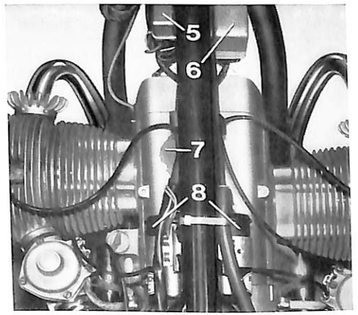
The centrifugal timing advance provides for the advance of the spark timing when speed increases.
The breaker interrupts at a predetermined moment the primary circuit of the ignition coils. This induces the 8,500—13 000 volts in the secondary winding of the **ignition coil** necessary to ignite the fuel-air 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



64



Technical Data

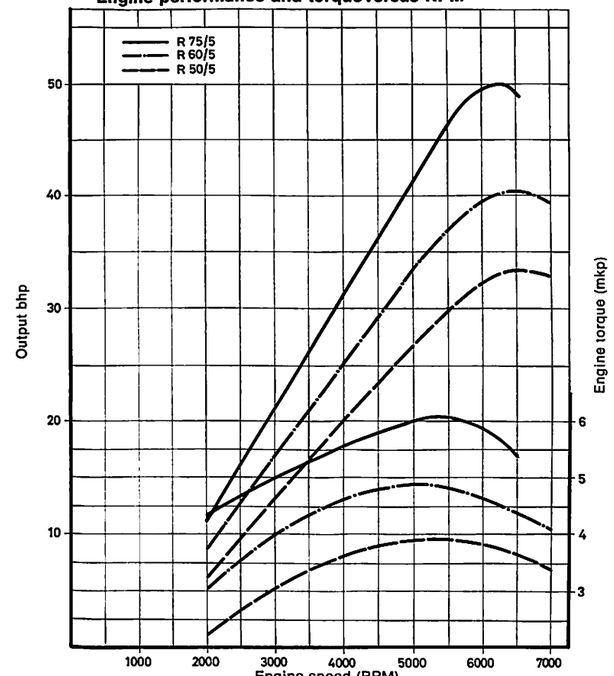
			R 50/5	R 60/5	R 75/5
Engine	Engine model		Four cycle opposed-twin with hemispherical combustion chambers		
	Greatest actual output	HP at RPM HP at RPM	36/6600	46/6600	57/6400
	Output per 1000 cc	HP/liter	72	76	76
	Maximum torque	lb/ft at RPM	29/5000	36/5000	43/5000
	Maximum permissible Permissible Cruising Idling	speed RPM speed RPM speed RPM	7000 6500 600 ÷ 800	7000 6500 600 ÷ 800	7000 6500 600 ÷ 800
	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 US according to DIN 70 030		47 (at 67 mph)	44,3 (at 68 mph)	52,3 (at 68 mph)

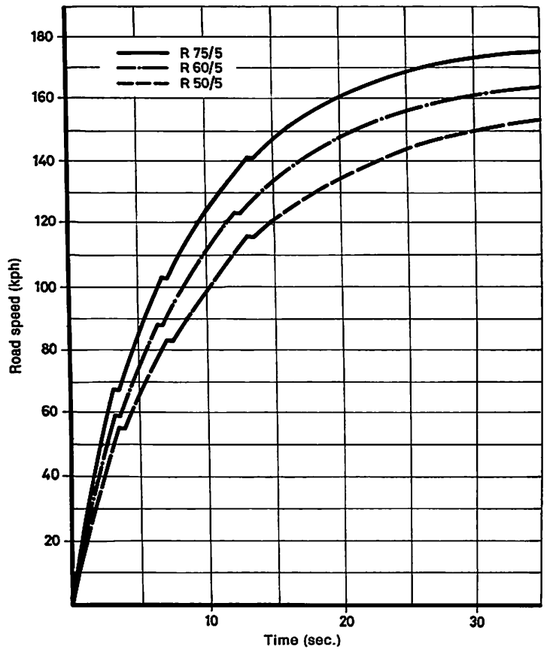
			R 50/5	R 60/5	R 75/5
Carburetor	Design		Two Bing carburetors inclined with needle valve, throttle slide and Concentric lever float.		Two inclined Bing Butterfly valve, constant velocity carburetors with needle valve, vacuum slide & Concentric lever float.
	Carburetor type left right		1/26/113 1/26/114	1/26/111 1/26/112	64/32/9 64/32/10
	Carburetor I. D.	mm	26	26	32
	Main jet		135	140	135
	Needle jet		2.68	2.68 with acc. pump	2,70
	Jet Needle No.		4	4	46–241
	Needle position		3	2	3
	Idling jet		35	40	45 44–950
	Idling air jet		–	–	⌀ 1
	Idling air screw/Idling Mixture regulating screw opened turns		0,5 ÷ 1,5	1/4 ÷ 1 1/4	1/2 ÷ 1
	By-pass bore	mm ⌀	0.8	0.8	1,0
	Float valve	mm ⌀	2.2	2.2	2.5
	Float weight	g	10	10	13
	Intake air filter		One common "micro-star" dry air filter for both carburetors		

		R 75/5
Rotary valve diaphragm		65–810
Rotary valve weight	g	102
Starting jet		60
Starting air jet	mm	2,0 ⌀
Mixture holes in rotary valve	mm	2,0/1,2/0,7 ⌀

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 Number of teeth	1 : 3.56 9/32	1 : 3.36 11/37	1 : 3,2 10/32

		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 8.20"		
	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	42°		
	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		
	Rim Front	1.85 B x 19		
	Rear	2.15 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 pressure in psi			
Front wheel solo		27	
with passenger		30	
Rear wheel solo		25	
with passenger		30	
Never exceed		30	

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

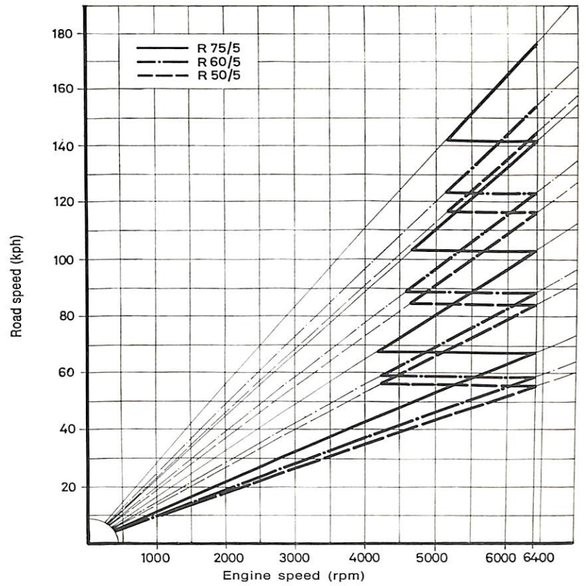
Fuels and Lubricants	Fuels		Regular	Hi Test Hi Test
	Tank capacity	gallons		4.5
	reserve	gallons		.5
	Engine			
	At outside temperatures			
	mostly above +30° C		SAE 40, SAE 20 W 50	
	mostly above 0° C		SAE 20 W 40, SAE 20 W 50	
	mostly below 0° C		SAE 10 W 30, SAE 10 W 40, SAE 10 W 50	

		R 50/5	R 60/5	R 75/5	
Capacity without filter change with filter change	pints pints	4.2 4.75			
Transmission Capacity pints	pints	1.7	Name-brand hypoid gear oil	above 41° F SAE 90	below 41° F SAE 80
Drive shaft housing Capacity pints	pints	0.2			
Rear wheel drive Capacity pints	pints	0.5			
Telescopic fork Capacity per fork leg	 ccm	Shock Absorber oil Shell 4001 BP Aero-Hydraulic 1 Shell Aero Fluid 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.)	412	423	423
	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.) Rear, at 28 psi tire pressure (lbs.)	353 539		
	Permissible wheel load with passenger front at 28 psi tire pressure (lbs.) rear at 32 psi tire pressure (lbs.)	391 606		
	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



Electrical System	R 50/5	R 60/5	R 75/5
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 ± 3°		
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"		

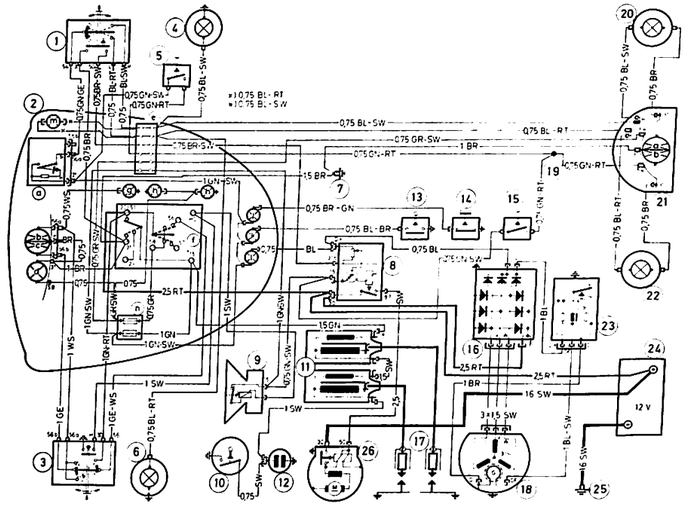
Head light	Bosch type 0 303 550 002
Turn signal flasher	Hella 91 M 2 E 2 x 21 W-12 V
Head light high and low beam	Double filament bulb 45/40 W
Parking light	12 V / 4 W
Indicator lights high beam, blue oil pressure, orange neutral, green charging control, red Turn signal green	 12 V / 2 W 12 V / 2 W 12 V / 2 W 12 V / 4 W 12 V / 2 W
Fuses, 2 pieces	8 A
turn signals, front and rear two each, amber tail light and license plate light, double filament stop light, bulb	12 V / 21 W 12 V / 5 W 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)
m Turn signal indicator
n fuses
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.** There 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 services at 600 miles, and commencing at speedometer reading 4000 miles, alternate Minor Service and Major Service procedures should be carried out at 4000 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.

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.

Detailed job description for the service work see page 16

600 miles Service Date Mileage Stamp and Signature	4 000 miles Service Date Mileage Stamp and Signature	8 000 miles Service Date Mileage Stamp and Signature
12 000 miles Service Date Mileage Stamp and Signature	16 000 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	28 000 miles Service Date Mileage Stamp and Signature	32 000 miles Service Date Mileage Stamp and Signature
36 000 miles Service Date Mileage Stamp and Signature	40 000 miles Service Date Mileage Stamp and Signature	44 000 miles Service Date Mileage Stamp and Signature

Detailed job description for the service work see page 16

48 000 miles Service Date Mileage Stamp and Signature	52 000 miles Service Date Mileage Stamp and Signature	56 000 miles Service Date Mileage Stamp and Signature
60 000 miles Service Date Mileage Stamp and Signature	64 000 miles Service Date Mileage Stamp and Signature	68 000 miles Service Date Mileage Stamp and Signature
72 000 miles Service Date Mileage Stamp and Signature	76 000 miles Service Date Mileage Stamp and Signature	80 000 miles Service Date Mileage Stamp and Signature
84 000 miles Service Date Mileage Stamp and Signature	88 000 miles Service Date Mileage Stamp and Signature	92 000 miles Service Date Mileage Stamp and Signature

Free Pre-delivery Check

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. Check torque of the four bolts for the attachment of drive shaft to drive flange of transmission output shaft (18 lb/ft ± 0.7 lb/ft).
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.

Service at 600 miles

1. Change engine oil, only after the engine has reached normal operating temperature, replace oil filter cartridge, 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.

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

Acceleration 66
Acceleration chart 60
Accelerator pump 44
Aeration engine 44
Air funnel 8, 22, 58
Air venturi 44, 46, 58

Battery 19, 55, 68
Battery charging indicator light 7, 9, 11, 37
Battery acid level 19
Bilux bulb 37
Blinker lights 37, 69
Blinker unit 37, 68
Boge Nivomat 53
Bowden cable 19, 25, 27
Brake light 37, 69
Brake linings 54
Brake pivots, foot and hand levers 19
Brake torque reaction arm 34
Brakes 24, 30, 54, 62
Breaker lubricating felt 28
Break-in of the motorcycle 13
By-pass hole 46, 58

Cam shifting disc 49
Camshaft 42, 43
Carburetor 25, 44, 46, 58
Carburetor throat 44, 46, 58
Carburetor tickers 11
Center stand 8
Centrifugal advance mechanism 28, 55
Chain 43
Chain tensioner 43
Chassis 60, 62
Choke 8
Clutch 25, 48, 61
Clutch operation 11
Clutch plate 48
Clutch release lever 19, 48
Clutch lever 7
Combination instrument 9
Compression ratio 56
Condensor 55, 68
Connecting rods 42
Constant velocity carburetor 46, 58
Contact breaker 55, 68
Contact breaker gap 28, 68
Continuous engine speed 56
Control cables 19, 25—27
Control elements 7
Corrosion protection oil 41, 64
Crankshaft 42
Cylinder bore 56
Cylinder head 42
Cylinder head bolts-tightening torque 30
Cylinders 42

Dimensions 65
Dimmer switch 7, 9
Diodes 55, 68
Direction of rotation, engine 57
Drive shaft 50
Driving habits 15
Dual seat 8, 54
Dual seat key 7, 54
Duplex brake 54
Duplex chain 43
Dwell angle 56
Dwell angle adjustment 56

Eaton pump 43
Electrical circuit diagram 70
Electrical system 55, 68
Electrode gap 68
Engine, description 42
Engine, technical data 56
Engine lubrication 14

Engine number position 57
Engine problems 39
Engine suspension 50

Final inspection 31
Float 25, 44, 46, 58
Foot brake 24
Foot brake lever 8
Foot gear shift lever 49
Fork lock 7
Frame 50, 62
Frame number 62
Friction lock for throttle twist grip 7
Front wheel 34
Front wheel caster 62
Fuel 14, 63
Fuel consumption 64
Fuel foller cap 7
Fuel tank 50, 63
Fuel Petcock 8, 10, 27, 50
Fuel valve 8, 10, 27, 50
Fuses 69

Gas handle 7, 19
Gear shifting lever 64
Gear shifting transmission 12
Grease 64

Hand brake 24
Hand brake lever 7
Headlight 37, 68
Headlight adjustment 38
High beam dimmer switch 7, 9
High beam indicator light 7, 9
Horn 9, 69
Horn button 7

Idling adjustment 26
Idling air passage 46
Idling air regulating screw 25, 44
Idling jet 25, 44, 46, 48
Idling mixture regulating screw 25, 26
Idling speed 26, 56
Ignition 28
Ignition coil 55, 68
Ignition and light switch 7, 9
Ignition key 7, 9
Ignition pinks 14
Ignition timing 28, 29, 68
Instrument cluster 9
Instrument illumination 37
Indicator lights 7, 9, 37, 69

Jet needle 44, 46, 58

Keys, ignition 7, 9
— passenger bench 7
— steering lock 7, 54
Kickstarter 8

License plate lights 69
Lifting handle 8
Lifting the motorcycle onto the center stand 12
Lights, dim and high beam headlights 9
Light signaling switch 9
Long swing arm 53
Lubricants 63, 64
Lubricating diagram 32
Lubricating felt, breaker 28
Lubricating system 43, 57

Main flow oil filter 17
Main jet 25, 44, 46, 58
Marker's plate 62
Max. RPM 56
Micro-star intake air filter 8, 22, 58

Needle jet 44, 46, 58
Needle position 58
Neutral indicator light 7, 9
Nivomat 53

Octane rating 14
Oil additives 14
Oil amount, engine 14, 17, 64
— rear wheel drive 21, 64
— rear wheel rocker 21, 64
— telescoping fork 22, 64
— transmission 20, 64
Oil change, engine 17
— drive shaft housing 21
— rear wheel drive 21
— telescoping fork 22
— transmission 20
Oil filter engine 17
Oil filter, full flow 17
Oil level, engine 14, 17
— driveshaft housing 21
— rear wheel drive 21
— transmission 20
Oil pressure indicator light 7, 9
Oil pump 43, 57
Oil screen 17
Oil sump 17
Oil types 63, 64
Operation 7
Operating controls 7

Parking light 9, 37
Passing light flasher 9
Performance 56, 59, 66
Pinking of the engine 14
Pistons 42
Piston speed, average 56
Play-in steering head 23
Power transmission 61
Preload handle 8

Problems 34
Pushrods 43

Rear wheel 35
Rear wheel drive 21, 50, 61
Rear wheel swinging arm 21
Rear wheel suspension 53
Rectifier 55
Relay for repear start prevention 11, 55
Remedies 34
Repairs 34
RPM 56, 59
Retarded ignition 29
Rims 54, 62
Road speed/engine speed diagram 67
Rocker arm 43

Servicing 16
Shifting fork 49
Shock absorbers, adjusting 10
— description 53
Side car use 50, 62
Side stand 8
Signaling switch 7
Simplex brakes 54
Slide type carburetors 44, 58
Spark advance 28, 55, 68
Spark plugs 28, 68
Specifications 42
Speedometer 7, 9
— gear ratio 66
— light 37
Starter button 7, 10
Starter immersion tube 47, 59
Starter motor 55, 68
Starting air jet 59
Starting device 46, 59
Starting jet 59
Starting the motorcycle 8, 11
Steeringdamper 7, 9
Steering free motion 23
Steering head 52
Storing when not in use 41
Stroke pistons 56
Stroke volume 56
Swinging arm bearings 18

Tachometer 7, 9
Tachometer gearing 66
Tachometer lighting 37
Tail light 37, 69
Tank reserve 10, 63
Tappets 43
Technical data 56
Telescopic fork 21, 52
Test drive 31
Three-phase generator 55, 68
Throttle twist grip 7, 10
Throttle valve 46
Throttle valve stop screw 25, 46
Tie-bolt 43
Timing chain 43, 44
Timing light 29
Tire inflation 53
Tools 16, 54
Torque 56, 59
Transmission 20, 49, 61
Travel preparations 15
Two-up riding 8, 10

Upperlube preservative 41, 64

Vacuum chamber 46
Vacuum piston 46, 26
Valve 43
Valve clearance 30, 57
Ventilation 44
Voltage regulator 55, 68

Weight of motorcycle 65
Wheels 54, 62
Wheel bearings 23
Wheel bearing play 23
Wheel spokes 30
Wheels, desmounting and remonting 34, 35
— servicing 30
Winter, storing-in 41
Wiring diagram 70

OWNER'S LAST NAME FIRST NAME INITIAL

NUMBER STREET

CITY STATE

ZIP CODE

TEL. NO. ( )

TIRE SERIAL NUMBER

IMPORTANT: Information must be recorded to comply with Federal Government regulations

SERIAL/ENGINE NO.

DELIV. DATE

MODEL ...../..... COLOR .....

DEALER NO.

FRONT:

REAR:

☐ MALE ☐ FEMALE

☐ SINGLE ☐ MARRIED

☐ CHILDREN YOUR AGE

OCCUPATION .....

WHY DID YOU SELECT A BMW:

☐ REPUTATION
☐ APPEARANCE
☐ PERFORMANCE
☐ RELIABILITY & LONG LIFE

MAIN USE(S)

☐ TRANSPORTATION TO WORK
☐ TOURING
☐ SPORT
☐ OTHER .....

IS THIS YOUR FIRST MOTORCYCLE ☐ YES ☐ NO
NUMBER PREVIOUSLY OWNED BY YOU .....

BRAND: ..... MOST RECENTLY OWNED DISPL. CC: .....

..... OTHERS ..... OTHERS

..... OTHERS ..... OTHERS

TRADE-IN: ☐ YES ☐ NO

DO YOU OWN A MOTORCYCLE IN ADDITION: ..... MAKE

WHERE DID YOU FIRST LEARN ABOUT BMW

☐ ADVERTISING ☐ FRIEND'S RECOMMENDATION
☐ WRITEUP IN CYCLE MAGS ☐ DEALER'S RECOMMENDATION

YOUR FAVORITE MAGAZINE(S) .....

DATE ..... OWNER'S SIGN. .....

SERIAL/ENGINE NO. ....

OWNER'S LAST NAME .... FIRST NAME .... INITIAL ....

DELIV. DATE ....

NUMBER .... STREET ....

MODEL ..../......... COLOR ....

DEALER NO. ....

CITY .... STATE ....

ZIP CODE ....

TIRE SERIAL NUMBER

FRONT: ....

REAR: ....

IMPORTANT: Information must be recorded to comply with Federal Government regulations

TEL. NO. ( )

☐ MALE ☐ FEMALE

☐ SINGLE ☐ MARRIED

☐ CHILDREN YOUR AGE ☐

IS THIS YOUR FIRST MOTORCYCLE ☐ YES ☐ NO

NUMBER PREVIOUSLY OWNED BY YOU ....

BRAND: .... MOST RECENTLY OWNED DISPL. CC: ....

.... OTHERS .... OTHERS

.... OTHERS .... OTHERS

OCCUPATION ....

WHY DID YOU SELECT A BMW:

☐ REPUTATION
☐ APPEARANCE
☐ PERFORMANCE
☐ RELIABILITY & LONG LIFE

TRADE-IN: ☐ YES ☐ NO

DO YOU OWN A MOTORCYCLE IN ADDITION: .... MAKE

MAIN USE(S)

☐ TRANSPORTATION TO WORK
☐ TOURING
☐ SPORT
☐ OTHER ....

WHERE DID YOU FIRST LEARN ABOUT BMW

☐ ADVERTISING ☐ FRIEND'S RECOMMENDATION
☐ WRITEUP IN CYCLE MAGS ☐ DEALER'S RECOMMENDATION

YOUR FAVORITE MAGAZINE(S) ....

DATE .... OWNER'S SIGN. ....

PRE-DELIVERY INSPECTION

☐ Check oil level engine, transmission, rear wheel drive, shaft housing.

☐ Check for operation: headlight high and low beam, parking light, stop- and license plate lights, turn signals and indicator lights for: high beam, charging control, neutral, oil pressure and horn.

☐ Bolts and nuts see page 31 of instruction manual, check for correct torque.

☐ Test drive, check operation of clutch, gear shift mechanism, speedometer, steering, foot- and hand brake, idling speed of engine.

☐ Check overall condition.

Vehicle in perfect condition:

....
Dealer Signature

DEALER NAME ....

STREET & NO ....

CITY / STATE ....

Zip code ....

POST CARD

PRE-DELIVERY INSPECTION

☐ Check oil level engine, transmission, rear wheel drive, shaft housing.

☐ Check for operation: headlight high and low beam, parking light, stop- and license plate lights, turn signals and indicator lights for: high beam, charging control, neutral, oil pressure and horn.

☐ Bolts and nuts see page 31 of instruction manual, check for correct torque.

☐ Test drive, check operation of clutch, gear shift mechanism, speedometer, steering, foot- and hand brake, idling speed of engine.

☐ Check overall condition.

Vehicle in perfect condition:

.....

Dealer Signature

DEALER NAME .....

STREET & NO .....

CITY / STATE .....

Zip code .....

POST CARD

At a glance

Tire pressure in psi Cold	**R 50/5**	**R 60/5**	**R 75/5**
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. 4.5	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 above + 30 C SAE 40, SAE 20 W 50 above 0 C SAE 20 W 40, SAE 20 W 50 below 0 C SAE 10 W 30, SAE 10 W 40, SAE 10 W 50
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 each fork leg	Shock absorber oil, Shell Aero Fluid 4, Shell 4001, Castrol BMW Shock Absorber Oil, BP Aero-Hydraulic 1
Breaker lubricating timing advance	felt and centrifugal	Bosch grease Ft 1 v 4
Guide shaft (for advance unit)		Bosch grease Ft 1 v 26
Wheel bearings and other greasing points		Name-brand Multi-purpose grease with 180° C dripping point
Location of engine No.		On oil filler stud, engine
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	10.9	+	1.5	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

Bayerische Motoren Werke AG München

Bestell-Nr. 01 41 9 099 101 e 14 IV 72 Printed in Western Germany