Instruction Manual

Motorcycles
R 50 US
R 60 US
R 69 US

BMW AG

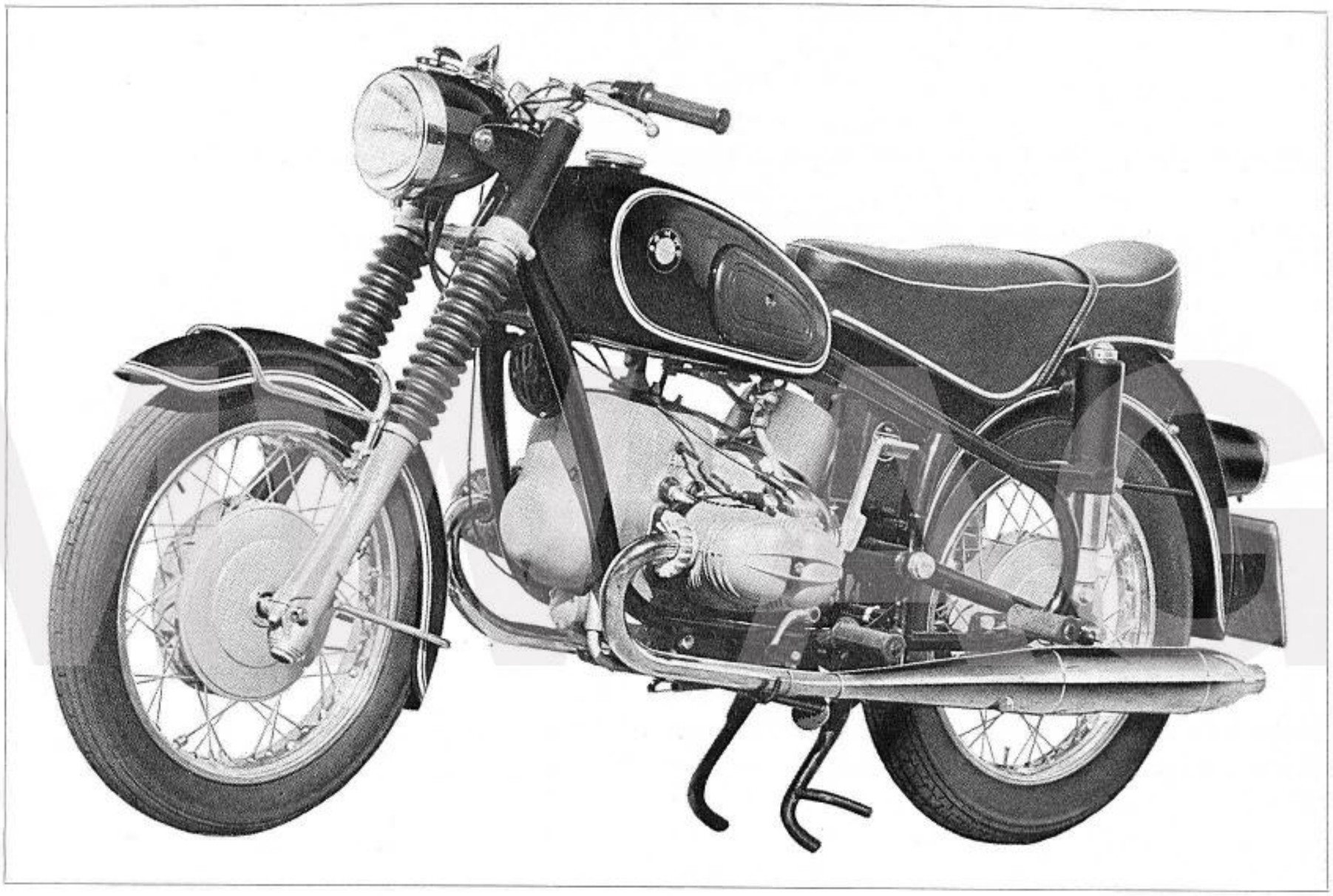
MB 187/75

BMW R 69 US

Special accessories for:

BMW R 50 US – R 60 US – R 69 US

1. **Dual seat** – Extra wide USA model
2. **Luggage rack (rear),** chromium plated
3. **Saddlebags with carrier** and luggage rack
4. **Oversize fuel tank,** 6½ gal. capacity, paint, chrome or part chrome finish
5. **Fuel tank filler cap**
6. **Sport handlebars** in raised position with control cables
7. **Sport grab handle** on rear mudguard, chrome
8. **Safety bar,** chrome or paint finish
9. **Prop stand**
10. **Inspection lamp,** 6 volt
11. **Mudguard trim** with BMW emblem
12. **Wheel rim,** polished light alloy
13. **Rear view mirror,** convex
14. **'IDEAL' windshield**
15. **Swivel spot lamp,** 6 or 12 volt
16. **Alternator,** 12 volt



BMW R 69 US

Dear BMW Enthusiast,

We hope you will allow us to call you "BMW Enthusiast". BMW products are famous all over the world for their performance, reliability and long life, and you too as the owner of a new motorcycle will feel yourself one of the wide, dedicated circle of BMW lovers, and will value the advantages that every BMW motorcycle offers.

Your BMW two-cylinder motorcycle incorporates the latest technical knowledge and our experience of more than 40 years in the construction of quality motorcycles. The distinguishing feature of the BMW twins is the continuous development of the outstanding, well-proved basic features — the refined flat twin engine with perfect balance to ensure maximum smoothness, the flexible, oilbath-enclosed shaft drive and the rugged frame designed for ultimate handling properties. BMW motorcycles have constantly triumphed in the toughest competitions and gained an international reputation as world record breakers.

The R 50 US 500 cc Sport Touring
R 60 US 600 cc Sport Touring and
R 69 US 600 cc Sport models use the same basic construction and have therefore been grouped together in these Operating Instructions. Where there are important constructional, operational or maintenance variations, these will be clearly indicated. Even if you have been riding for a long time and despite the high quality motorcycle which you have bought, it is in your interest, before your first ride, to read carefully through these instructions, which were written with you in mind. Many interesting facts about your motorcycle are explained, and there are valuable suggestions to save you from errors in operation or maintenance.

The small effort of reading and following the instructions will ensure trouble-free enjoyment of your motorcycle and guarantee its reliability and long life.

The BMW Customer Service Department is always at your disposal with its widespread organisation, its specialist factory trained staff and the necessary special tools. Every BMW dealer keeps a wide range of spare parts to guarantee trouble-free repair with genuine BMW parts in an emergency.

The makers have developed various special accessories for BMW motorcycles, including a prop stand, safety bar, oversize fuel tank, etc. Your BMW dealer will gladly give you full information on this subject.

Always carry the list of BMW dealers you received with the motorcycle so that you can obtain assistance quickly in any situation.

We wish you a lot of fun and safe journeys with your BMW

BAYERISCHE MOTOREN WERKE
Aktiengesellschaft

Contents

Technical data

		R 50 US	R 60 US	R 69 US
Engine:	Type	Four-cycle OHV, V-pattern valve layout		
	Max. effective power, bhp	26	30	42
	at engine speed, rpm	5800	5800	7000
	No. of cylinders	2	2	2
	Cylinder arrangement		horizontally opposed	
	Cylinder bore, mm	68	72	72
	Stroke, mm	68	73	73
	Capacity, cc	493	593	593
	Compression ratio	7.5:1	7.5:1	9.5:1
	Valve timing with 2 mm (0.08″) valve clearance (tolerance ± 2.5°)			
	Inlet opens	6° ATDC	6° ATDC	4° BTDC
	Inlet closes	34° ABDC	34° ABDC	44° ABDC
	Exhaust opens	34° BBDC	34° BBDC	44° BBDC
	Exhaust closes	6° BTDC	6° BTDC	4° ATDC
	Valve clearances measured with engine cold			
	Inlet	.006″ (0.15 mm)	.006″ (0.15 mm)	.006″ (0.15 mm)
	Exhaust	.008″ (0.20 mm)	.008″ (0.20 mm)	.008″ (0.20 mm)
	Lubrication system	Oil pump – splash lubrication with gear-type pump – wet sump.		
Carburetors	Type	Two semi-downdraught Bing flanged carburetors with needle jet, throttle slide and lever float.		
	Carburetor model			
	LH carburetor	1/24/149	1/24/151	1/26/91
	RH carburetor	1/24/150	1/24/152	1/26/92
	Barrel diameter, mm	24	24	26

		R 50 US	R 60 US	R 69 US
Carburetor contd.	Main jet	120	125	130
	Needle jet 45/251	1308	1308	2108
	Needle	46/255	46/255	46-254 Nr. 4
	Needle setting	3	3	2
	Idling jet	35	35	35
	Idling air bleed screw opened by	1–2½ turns	1–2½ turns	1–2½ turns
	Throttle slide	22-542	22-542	22-542
	Weight of float	7 g	7 g	7 g
	Intake air filter	One common 'micro-star' – dry filter for both carburetors, no starting choke.		
Electrical equipment	Ignition	Bosch magneto ignition Mz ad R 15°		
	Drive	direct from camshaft at half crankshaft speed		
	Contact breaker gap	.014–.016″ (0.35–0.40 mm)		
	Ignition advance	automatic centrifugal advance on camshaft		
	Ignition timing	9° BTDC (governor weights in neutral position)		
	Range of adjustment	30° at crankshaft		
	Max. advance	39° ± 2° BTDC		
	Plugs for R 50 US and R 60 US	Bosch W 240 T 1		
	R 69 US	During running in Bosch W 240 T 1 After running in Bosch W 260 T 1		
	Plug gap	.024″ (0.6 mm)		
	Generator	Bosch LJ/CGE 60/6/1700 R with integral voltage regulator		
	Drive	Direct from crankshaft		
	Horn	Klaxon ETF / 4 D		
	Battery	6 V, 16 Amp/hr.		
	Lighting equipment			
	Headlight	Bosch LE 27/9 F 2		
	Bulb for main and dimmed beams	6 V, 35/35 W, double filament		

		R 50 US	R 60 US	R 69 US
Electrical equipment contd.	Parking light	6 V, 2 W		
	Neutral indicator	6 V, 2 W pilot bulb		
	Charge indicator	6 V, 2 W pilot bulb		
	Main beam indicator	12 V, 2 W pilot bulb		
	Speedometer illumination	6 V, 0.6 W		
	Tail and stop light	6 V, 5/18 W double filament bulb		
	License plate light	6 V, 5 W, spherical bulb		
	Socket (single pole)	under saddle; for inspection light		
Drive	Clutch	Single dry plate with diaphragm spring		
	Transmission	Four-speed constant mesh integral with engine. Cushion drive in all gears.		
	Gear shift	positive stop, foot operated		
	Gear ratios		R 50 US, R 60 US and R 69 US	
		1st	4.171 : 1	
		2nd	2.725 : 1	
		3rd	1.938 : 1	
		4th	1.54 : 1	
	Drive from gearbox to rear wheel	universal joint shaft enclosed in r. h. swinging arm, rear wheel by spiral bevel gears		
	Rear wheel drive ratios	**R 50 US**	**R 60 US**	**R 69 US**
	Solo	3.375 : 1	3.375 : 1	3.375 : 1
	No. of teeth	8/27	8/27	8/27
	Overall ratios 1st		14.08	
	2nd		9.20	
	3rd		6.54	
	4th		5.2	
Frame and suspension	Frame	Seamless steel tubular frame, without sidecar mountings		
	Front suspension	Telescopic forks with large capacity double acting hydraulic shock absorbers, travel 8½″ (214 mm)		
	Rear suspension	Swinging arm with double acting hydraulic shock absorber spring units		

		R 50 US	R 60 US	R 69 US
Frame	Brakes	Light alloy full-width hub brakes with cast-in gray iron liners Brake drums 7.8″ (200 mm) dia. x 1.4″ (35 mm) wide Swept area 28.2 sq. in (182 cm²) Front wheel with 2 leading shoe brake Rear wheel with leading and trailing shoe brake		
	Rims	Front and rear, steel well-base rims 2.15 B x 18 (40 spokes)		
	Tire sizes Front	18″ (3.50)	18″ (3.50)	18″ (3.50 'S')
	Rear	18″ (4.00)	18″ (4.00)	18″ (4.00 'S')
	Max. wheel unbalance	0.32 oz. (9 g) on inside diameter of rim.		
	Tire pressures (psi)	**Front wheel**		**Rear wheel**
	Solo	24 psi (1.7 atm)		26 psi (1.8 atm)
	Rider and passenger	24 psi (1.7 atm)		30 psi (2.0 atm)
Dimensions (unladen)	Overall width	26″ (660 mm)	R 69 US = 28.4″ (722 mm) across cylinders	
	Solo handlebar width	23.6″ (600 mm)		
	Overall height	39.2″ (995 mm)		
	Saddle height	29.1″ (740 mm)		
	Overall length	84″ (2137 mm)		
	Wheelbase	56.3″ (1427 mm)		
	Ground clearance	5.9″ (150 mm)		
Weights	Curb weight[1] (ready for road)	430 lb. (195 kg)	430 lb. (195 kg)	440 lb. (199 kg)
	Permissible total weight[2]	794 lb. (360 kg)	794 lb. (360 kg)	794 lb. (360 kg)
	Permissible wheel loadings			
	Front	330 lb. (150 kg)	330 lb. (150 kg)	330 lb. (150 kg)
	Rear	705 lb. (320 kg)	705 lb. (320 kg)	705 lb. (320 kg)
	Max. no of persons to be carried (incl. rider): 2			

[1] Curb weight = weight of machine ready for road, with lubricants, fuel and tools.
[2] Permissible gross weight = curb weight + rider, passenger and luggage.

		R 50 US	R 60 US	R 69 US
Speeds:	Max. speeds of the motorcycles when run in are greatly influenced by the wind resistance offered by the rider due to his size, position and clothing. (For permissible max. speeds in the various gears and during running in, see page 20.)			
	Speed seated normally	81 mph (130 kph)	84 mph (135 kph)	100 mph (160 kph)
	Speed in crouched position	87 mph (140 kph)	90 mph (145 kph)	109 mph (175 kph)
	Acceleration	**R 50 US**	**R 60 US**	**R 69 US**
	0–31 mph (0–50 kph)	3.2 secs.	2.8 secs.	2.6 secs.
	0–37 mph (0–60 kph)	4.1 secs.	3.6 secs.	3.3 secs.
	0–50 mph (0–80 kph)	6.8 secs.	6.0 secs.	5.3 secs.
	0–62 mph (0–100 kph)	10.3 secs.	8.8 secs.	7.5 secs.
	0–75 mph (0–120 kph)	14.3 secs.	12.6 secs.	11.1 secs.
	0–87 mph (0–140 kph)	—	—	16.0 secs.
	1094 yd. (1 km) standing start	33.6 secs.	32.0 secs.	30.1 secs.

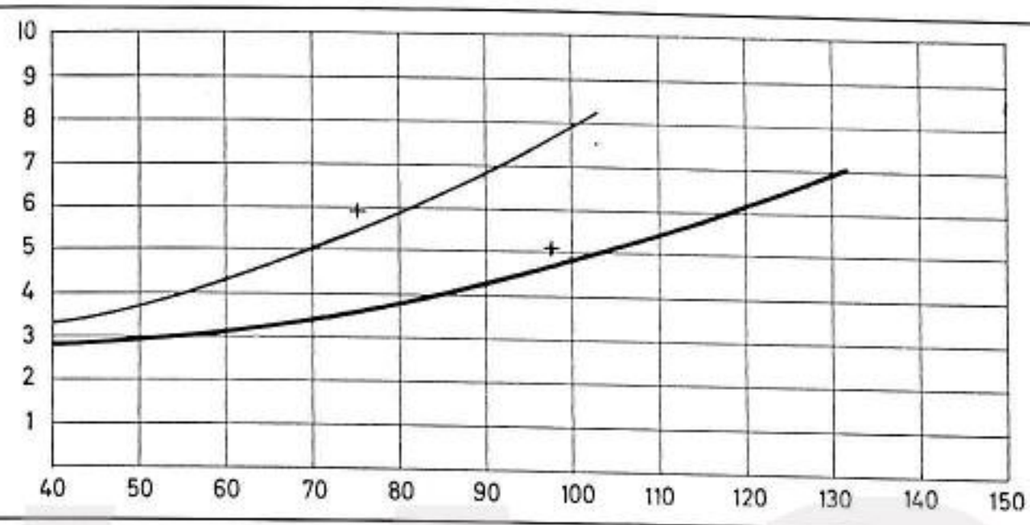
Fuel and Lubricants

Fuel	**R 50 US and R 60 US** regular grade gasoline	**R 69 US** super grade gasoline
Tank capacity including reserve approx. 4.2 pints (2 liters)	4½ gals. (17 liters) sufficient for approx. 19 miles (30 km)	
Lubricants	use only works tested lubricating oils as recommended by BMW dealers	
Engine	Branded HD 4-cycle engine oil, capacity 4¼ pints (2 liters)	
At outside temperature	**Grade**	
Below 32° F (0° C)	Multigrade oil SAE 10 W 30	
from 32–86° F (0–30° C)	Single grade oil SAE 30	
over 86° F (30° C) and for fast or hard riding	Single grade oil SAE 40	
Gearbox	Branded hypoid oil SAE 90, Summer and Winter, oil capacity 1.7 pints (0.8 liters)	
Rear swinging arm	Branded hypoid oil SAE 90, Summer and Winter, oil capacity 7 fl. oz. (200 cc)	
Rear wheel drive gears	Branded hypoid oil SAE 90, Summer and Winter, oil capacity 5 fl. oz. (150 cc)	
Telescopic forks	Shock absorber oil, Shell 4001, BP-Aero-Hydraulic 1 (BP Olex HL 2463), oil capacity per fork leg 9.6 fl. oz. (280 cc)	
Contact breaker felt pad and centrifugal advance	Bosch Ft 1 v 4 grease	
Wheel hubs and other greasing points	Branded multi-purpose grease with 356° F (180° C) melting point	
Tightening torques		
Cylinder head		25.3 ft. lbs. (3.5 mkp)
Shock absorbers		14.5 ft. lbs. (2 mkp)
Lock ring (for crosshead nut on fork guide tube)		7.2–8.7 ft. lbs. (1–1.2 mkp)
Centering nut on top of fork guide tube		86.8 ft. lb. (12 mkp)
Shock absorber tube securing nut SW 13 on lower end of fork unit for oil drainage		16.6 ft. lbs. (2.3 mkp)

Fuel consumption R 50 US

Dependent on riding technique. See also fuel consumption curve at uniform speed.

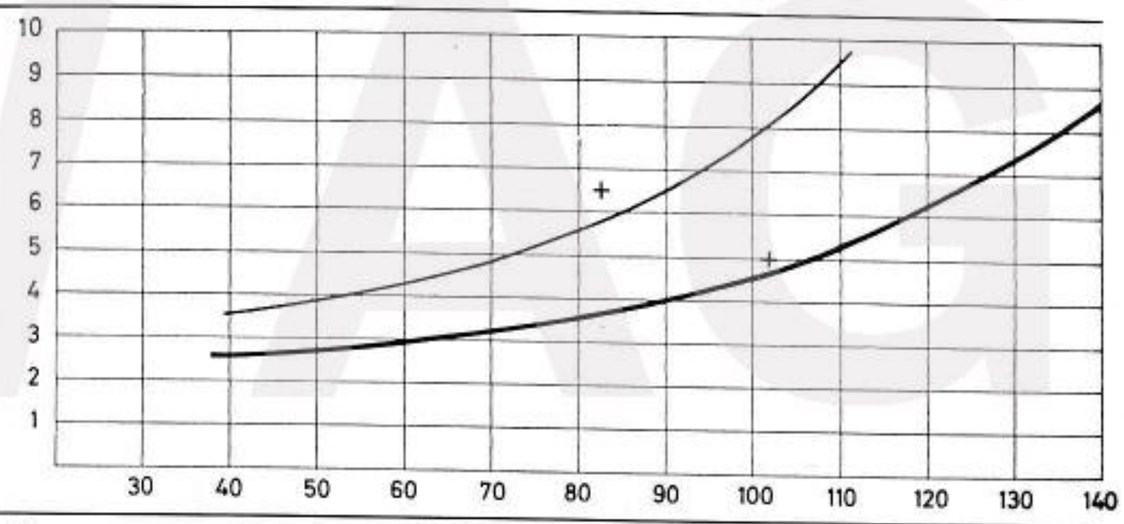
Fuel consumption according to German standard DIN 70030	at	46 mpg (5.1 liters/100 km) 60 mph (96.5 km/h)
Oil consumption approx.		1.0–2.1 pints (0.5–1 liter) per 1000 km (625 miles)



Fuel consumption R 60 US

Dependent on riding technique. See also fuel consumption curve at uniform speed.

Fuel consumption according to German standard DIN 70030	at	47 mpg (5 liters/100 km) 63 mph (102 km/h)
Oil consumption approx.		1.0–2.1 pints (0.5–1 liter) per 1000 km (625 miles)

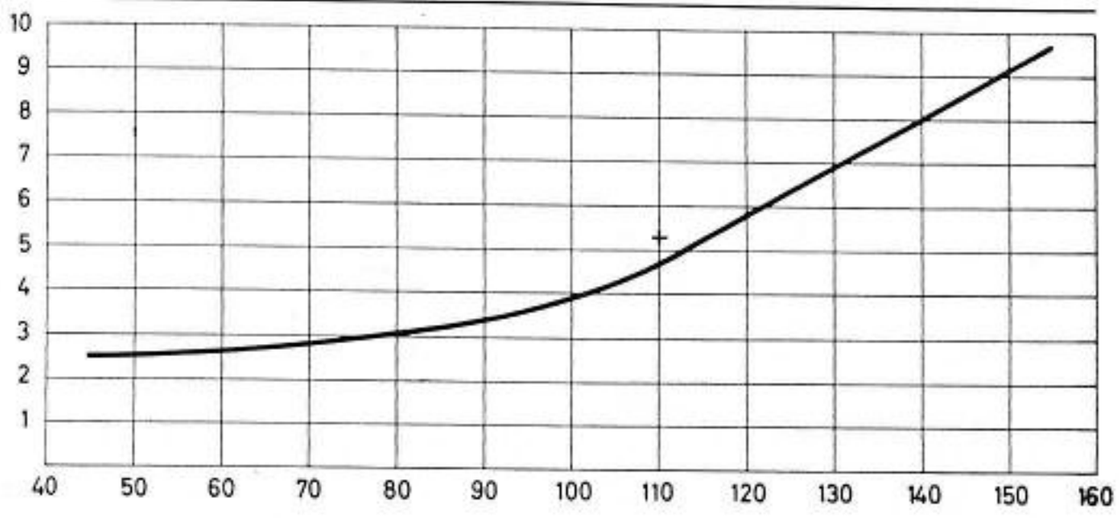


Fuel consumption R 69 US

Dependent on riding technique. See also fuel consumption curve at uniform speed.

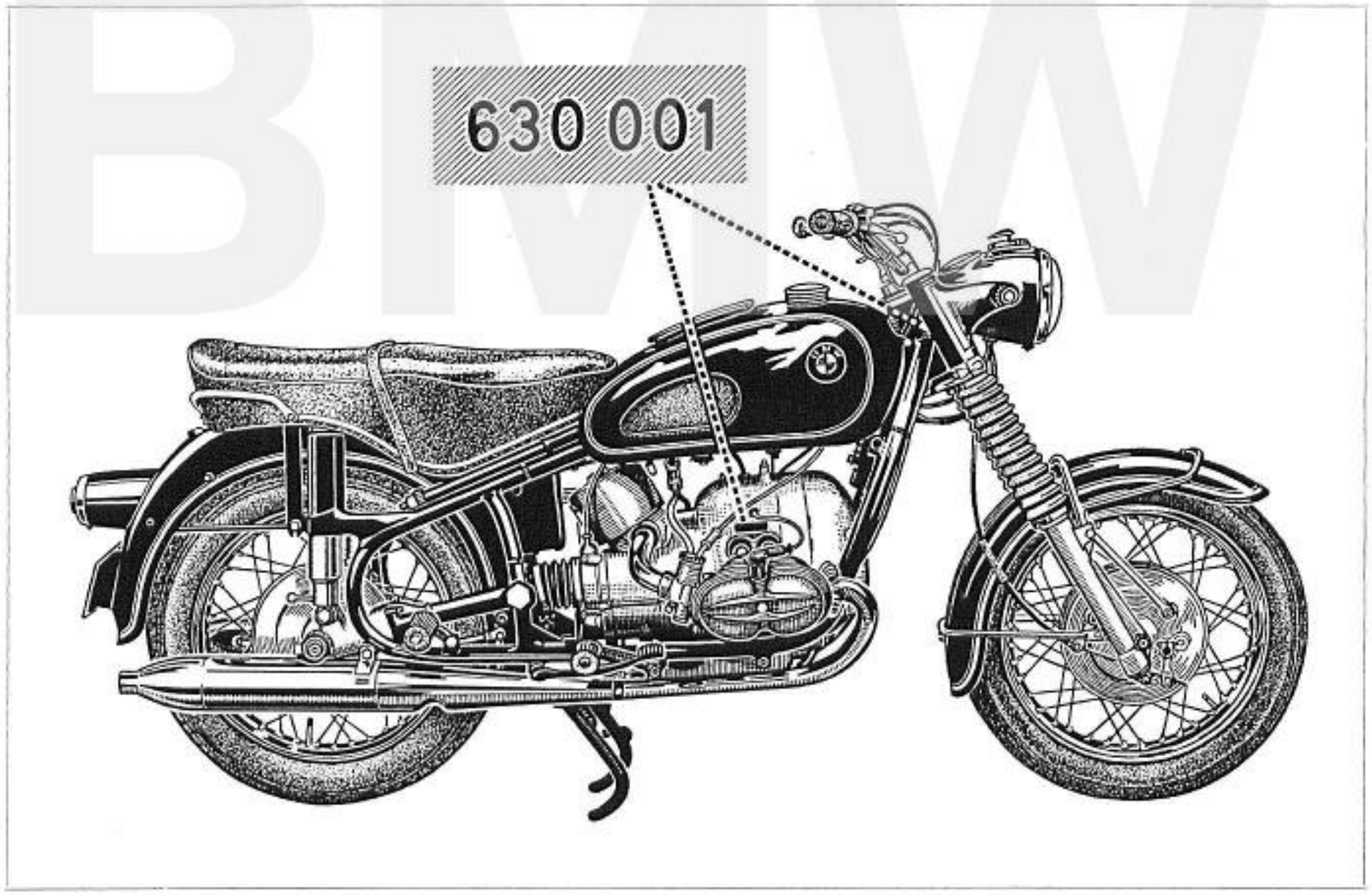
Fuel consumption according to German standard DIN 70030	at	44 mpg (5.5 liters/100 km) 69 mph (110 km/h)
Oil consumption approx.		1.0–2.1 pints (0.5–1 liter) per 1000 km (625 miles)

The crosses on the graphs indicate standard consumption measured according to DIN 70030.



For the Authorities:

Frame and engine
numbers
Maker's plate



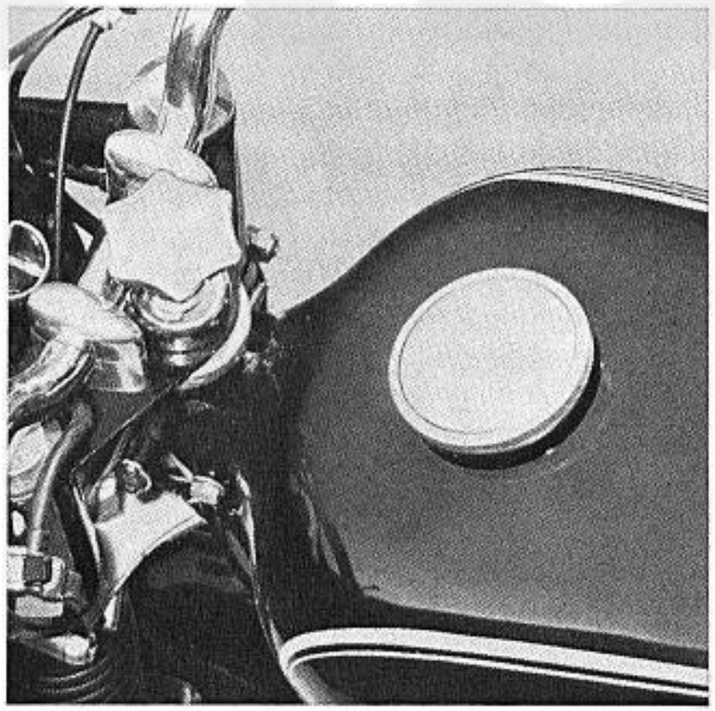
For the Gas Station

Gasoline:

For R 50 US and R 60 US, regular branded gasoline
For R 69 US, super grade gasoline

Tank capacity:

4.5 gals. (17 liters), with ½ US gal. (2 liters) reserve



Engine lubrication:

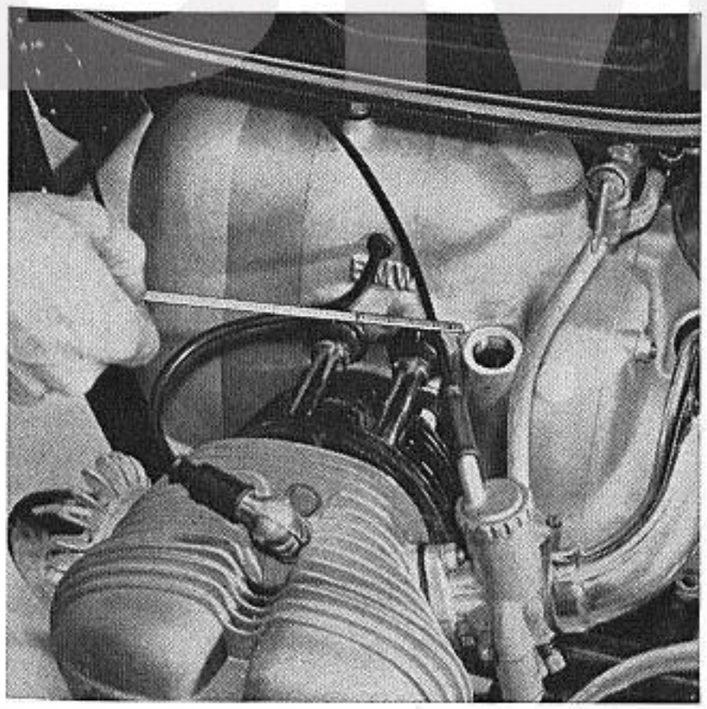
Branded HD oil for 4- cycle engines
Oil grade: see p. 12
Filling capacity: 4.2 pints (2 liters)
To check oil level initially every 300 miles (500 km), unscrew filler cap with dipstick, wipe dipstick, replace but do not screw in. The oil level should not fall below the bottom mark (MIN) and should not be filled above the top mark (MAX). Change oil with the engine warm initially at 300, 1000 and 2000 miles (500, 1500 and 3000 km) and subsequently every 2000 miles (3000 km). The oil drain plug, metric spanner size 19, is on the bottom of the sump.

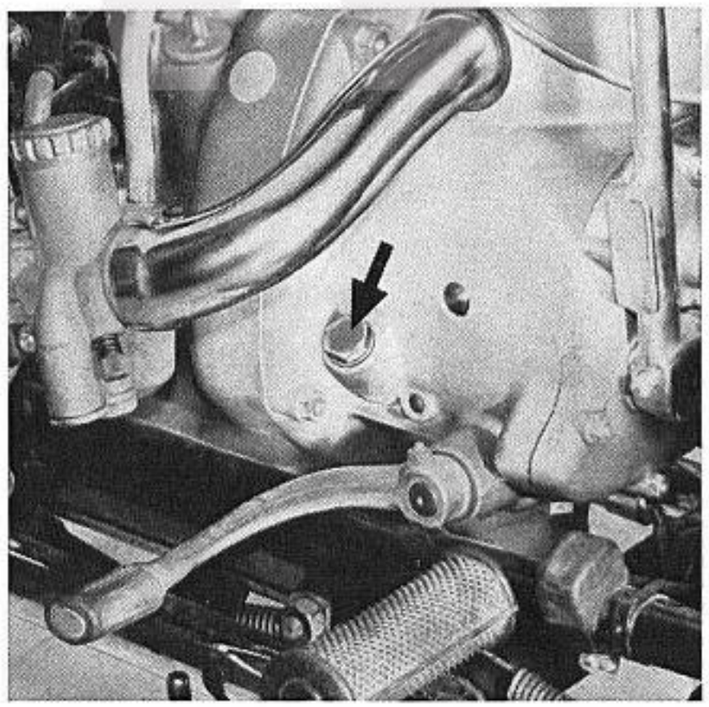
Gearbox lubrication:

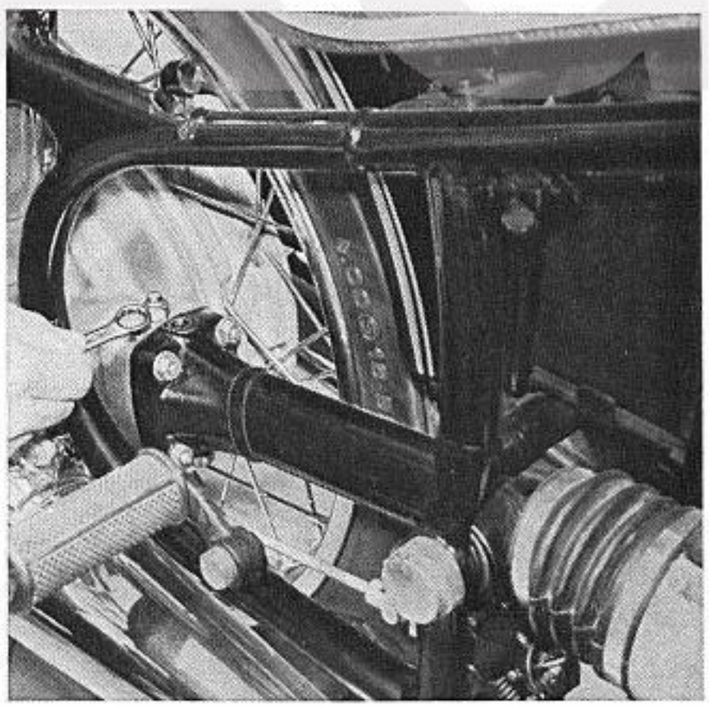
Branded hypoid oil SAE 90 for summer and winter.
Filling capacity: approx. 1.7 pints (0.8 liters)
Check the oil level regularly as shown in the servicing schedule, and top up to the bottom of the threaded portion of the filler orifice. Change oil initially at 1000 miles (1500 km) and subsequently every 16 000 miles (24 000 km) or at least once a year.
The oil drain plug, metric spanner size 19, is on the bottom of the gearbox.

Swinging arm lubrication:

Branded hypoid oil SAE 90 for summer and winter.
Filling capacity: RH swinging arm 200 cc
Check oil level regularly as shown in servicing schedule, and top up if necessary.
Change oil initially at 1000 miles (1500 km) and subsequently every 16 000 miles (24 000 km) or at least once a year.
Oil drain plug, metric spanner size 14, on swinging arm flange.







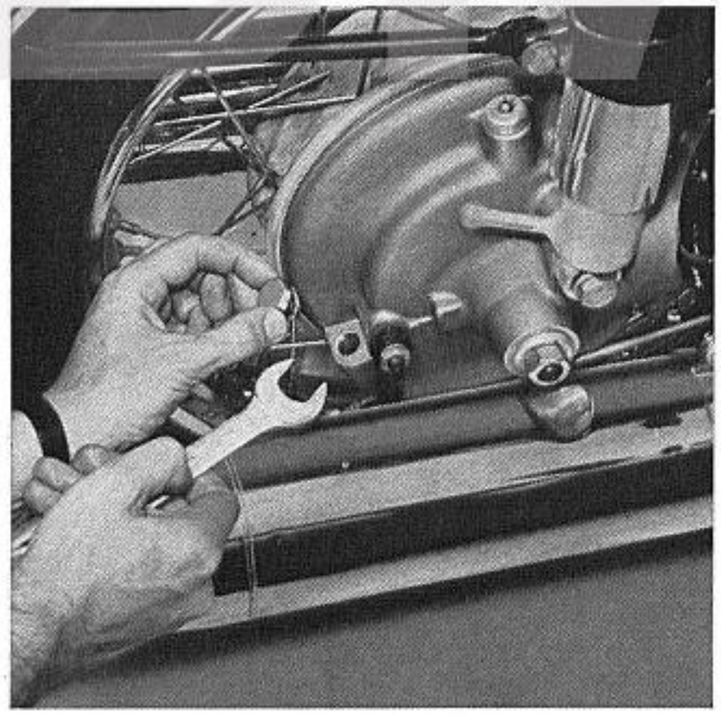
Lubrication of rear wheel drive gears:

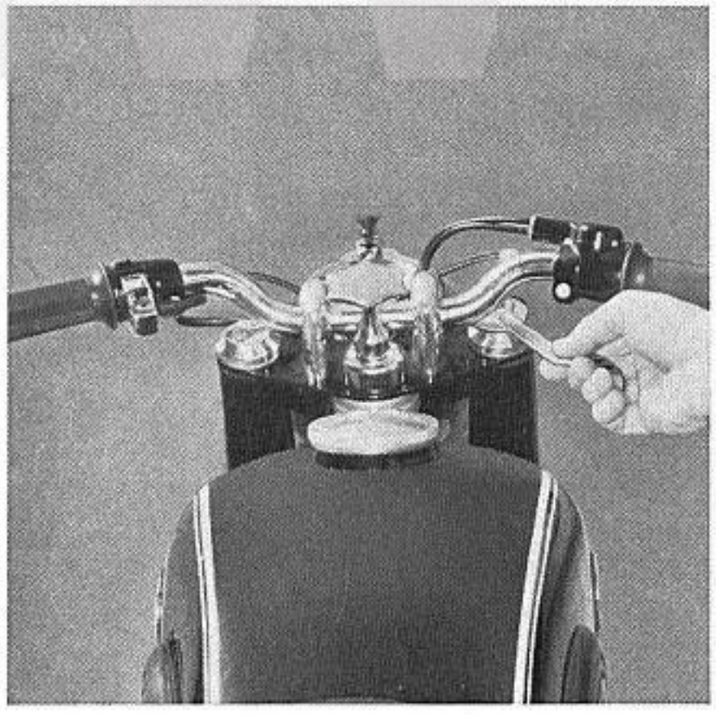
Hypoid oil SAE 90 for summer and winter.
Filling capacity: 150 cc.
Check oil level regularly as shown in servicing schedule and top up if necessary to the bottom of the threaded portion of the filler orifice.
Change oil initially at 1000 miles (1500 km) and subsequently every 16 000 miles (24 000 km) or at least once a year.
Oil drain plug, metric spanner size 19, on bottom of drive housing.

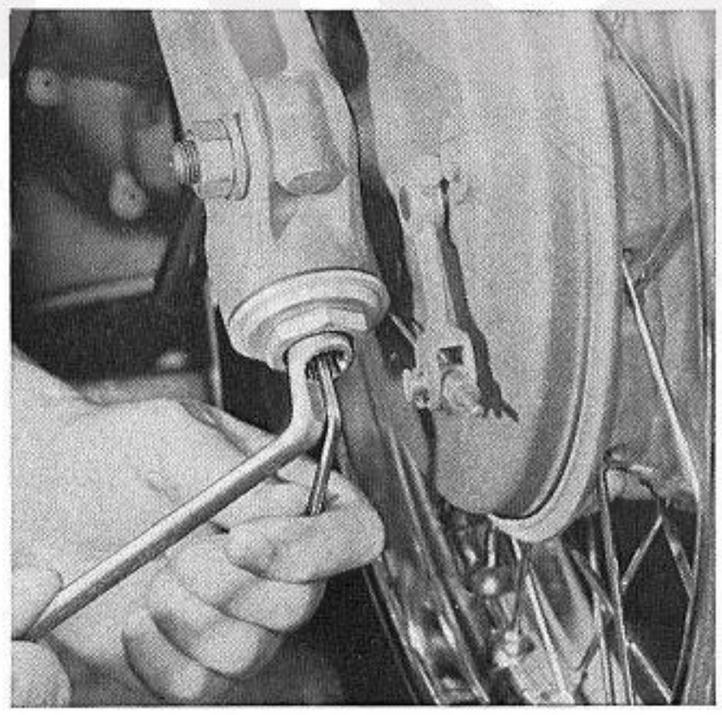
Lubrication for telescopic forks:

Shock absorber oil Shell 4001, BP-Aero-Hydraulic 1 (BP Olex HL 2463), filling capacity per strut 280 cc.
Check oil level regularly as shown in servicing schedule and top up if necessary.
Change oil every 16 000 miles (24 000 km) or at least once a year.
Remove rubber cap and damper tube retaining nut (metric spanner size 13). Support the motorcycle under the engine, pull the sliding tube on front wheel slightly down, loosen filler plug on top (pressure compensation), drain off oil.

Tire pressures:	Front	Rear
Solo	24 psi (1.7 atm)	26 psi (1.8 atm)
With passenger	24 psi (1.7 atm)	29 psi (2.0 atm)







Controls and instruments

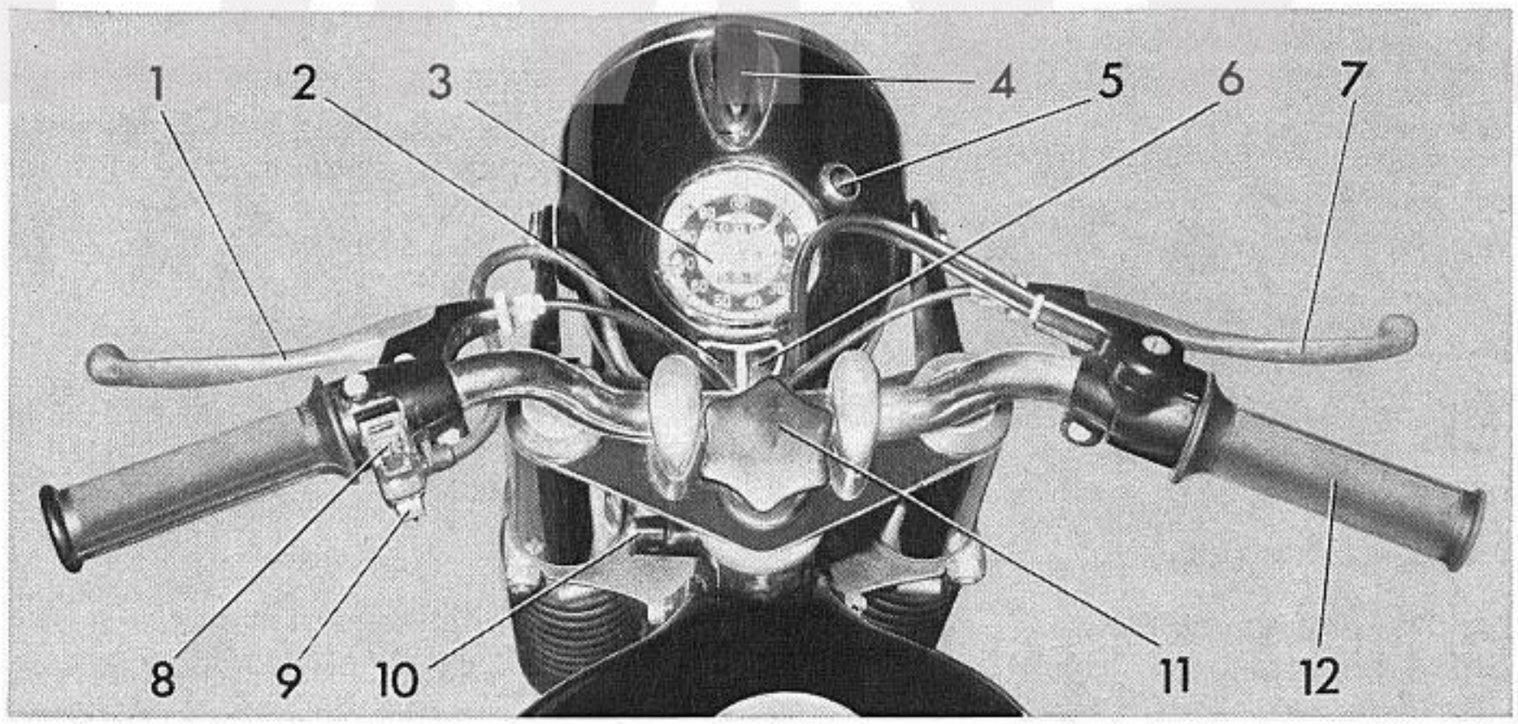
1. **Clutch lever.**
2. **High beam indicator light** (red), comes on when headlight is on high beam.
3. **Speedometer** with distance recorder, marked I, II, III for maximum speeds in Ist, 2nd and 3rd gears after running in.
4. **Ignition and light switch**
   Push cover forward to insert key.

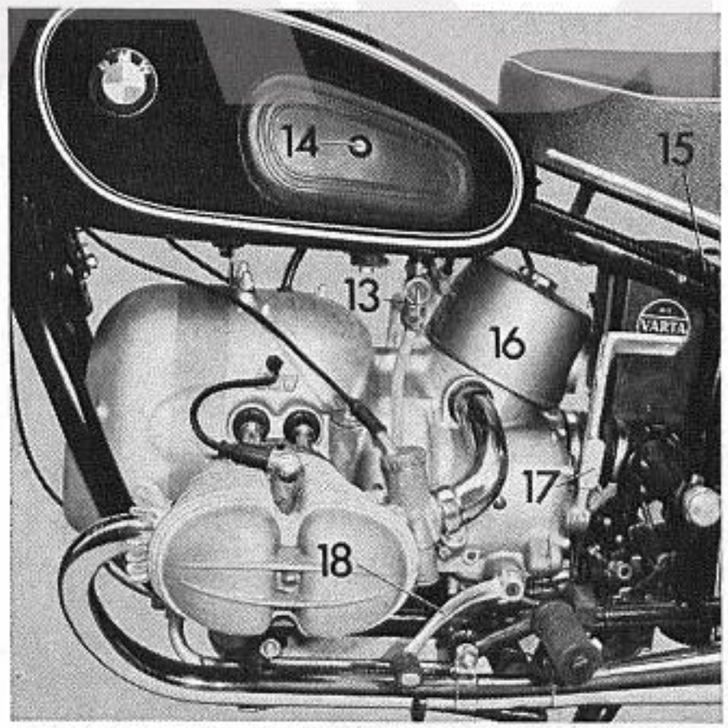
   With ignition key pushed in, in center position, the ignition is switched on and the red charge indicator light comes on when the engine is stationary and the battery is charged.

   Ignition key turned to right, ignition and driving lights switched on.

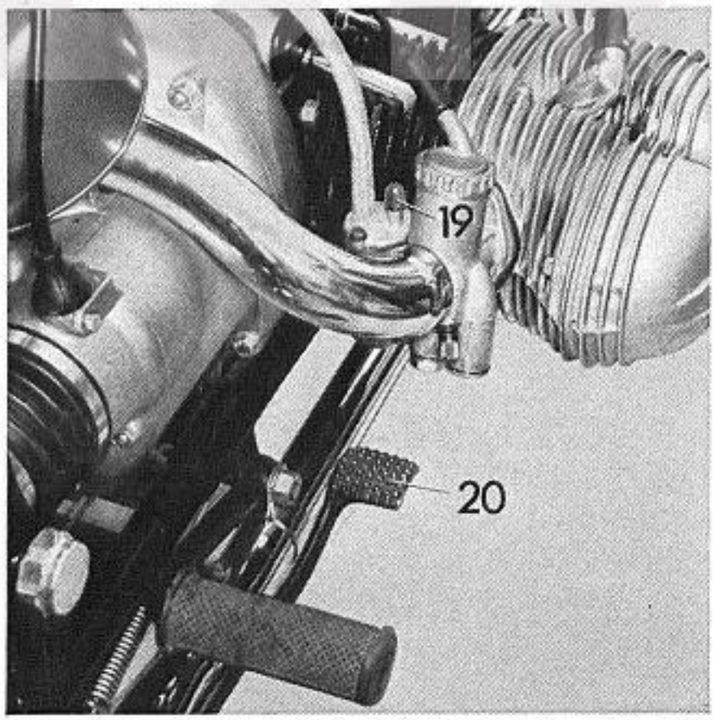
   Ignition key turned to left, ignition and parking lights switched on.

   The lights remain switched on after withdrawal of the key in this position.
5. **Charge indicator light** (red) goes out when the dynamo is charging.
6. **Neutral indicator light,** green light comes on when gearbox is in neutral with ignition switched on.
7. **Lever for front brake.**
8. **Dimmer switch.** Down = low beam, up = high beam.
9. **Horn button.**
10. **Steering lock:** with handlebars on full right lock swing the cover up, insert key, turn to the left and depress with lock, turn key to the right and withdraw.
11. **Steering damper.**
12. **Throttle twist grip.**
13. **Fuel tap. Positions:** down = "OFF", back = "ON" forward "Reserve".
14. **Tool box lock.**
15. **Socket** for inspection lamp or sidecar lighting.
16. **"Micro-star"-intake air filter.**
17. **Kickstarter.**
18. **Gear shift pedal.**





19. **Carburetor priming button.**
20. **Rear brake pedal.**

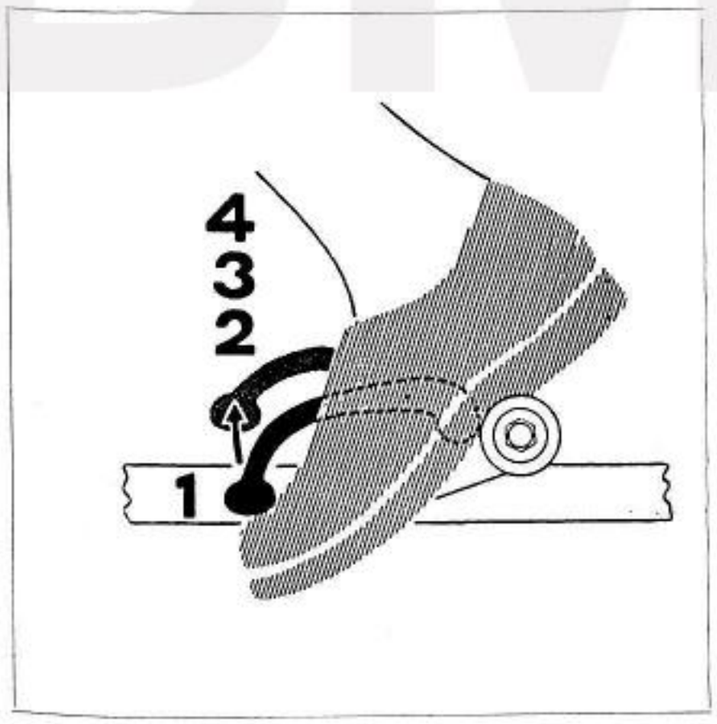


Starting the engine Open throttle with engine cold	Open twist grip slightly, depress both carburetor priming buttons simultaneously for 3—4 seconds.
With engine warm	Open the twist grip slightly, do not prime carburetor
Turning the engine over	With the ignition switched off and gearbox in neutral (red and green lights off), depress the kickstarter slowly twice.
Starting engine	Switch ignition on (red and green lights on), and depress the kickstarter firmly and vigorously.
Moving off To change from neutral into first gear	Declutch, depress gear shift pedal (green light goes out), release clutch lever slowly and slightly open twist grip at the same time. Never move off with the throttle too far open. Increase speed gradually.
Gear shifting: To shift from first through neutral into 2nd, 3rd and 4th gears	Declutch before each shift, closing the throttle, raise the foot change lever (once for each gear) and open the throttle again as required. The gear shift pedal returns automatically to its starting position after each gear shift movement.
Shifting down from 4th to 3rd and 2nd gears and through neutral into 1st gear	Declutch before each shift, leave the throttle slightly open, press down the gear shift pedal once for each gear, let in the clutch and accelerate as required.
Shifting into neutral from 3rd or 4th gear	Depress the gear shift pedal several times to select bottom gear and then lift up slightly to engage neutral.

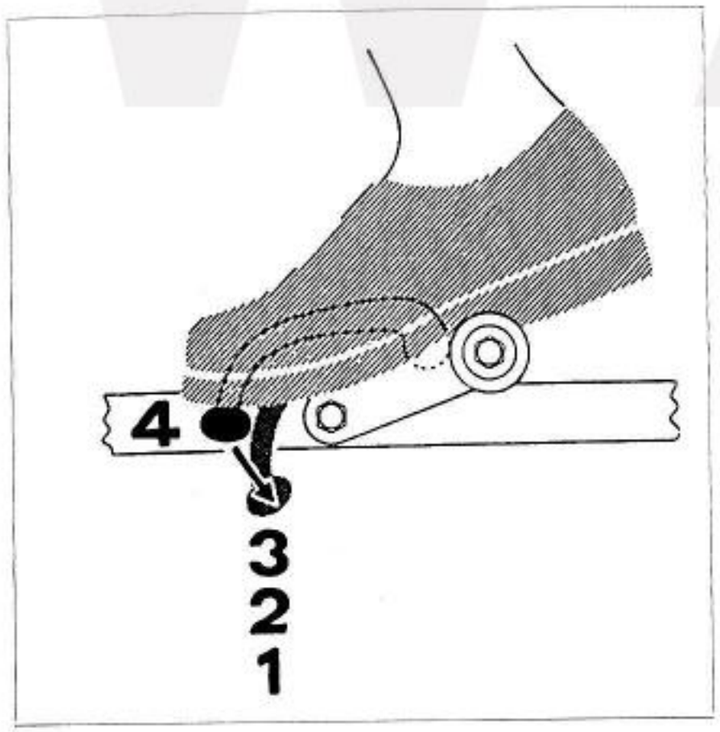
Running in

Careful running in of your motorcycle is important for its life and reliability for even the most carefully machined and ground parts need the final polish that running in gives. For your own sake ensure that when you are running in for the first 625 miles (1000 km) the maximum permitted speeds for each gear are not exceeded. The maximum speeds should not be maintained for too long. The engine, gearbox and rear wheel drive are best run in at varying speeds and loads and with frequent gear shifting on winding roads or in hilly country. On the level, drive only for short distances (about 600 yards) at the maximum permitted speed, then let the motorcycle run easily on part throttle. This completes running in of all sliding and rotating parts.

Shifting up through gears, from 1st to 4th, one gear at a time



Shifting down through gears, from 4th to 1st, one gear at a time



Do not race the engine in neutral. Shift to a lower gear in good time when climbing hills so that the engine does not labor. This means a downshift to the next lower gear before engine speed drops too low, since even quite long distances in the lower gears, provided the permitted speeds are not exceeded, will not damage the engine or gearbox. Even after the first 600 miles (1000 km) have been covered we would not advise use of full throttle for long periods. Instead, start with short distances at full throttle and increase them gradually over the next 600 miles (1000 km). At this point it will be necessary to change the spark plugs used for running in the R 69 US (heat value 240) for plugs with a heat value of 260. See technical data, p. 8.

The star shaped knob of the friction steering damper should be tightened further on bad roads and at high speeds than on good roads or at normal speeds. By turning the knob to the right the friction plates of the damper are compressed, and thus even out any front wheel flutter.

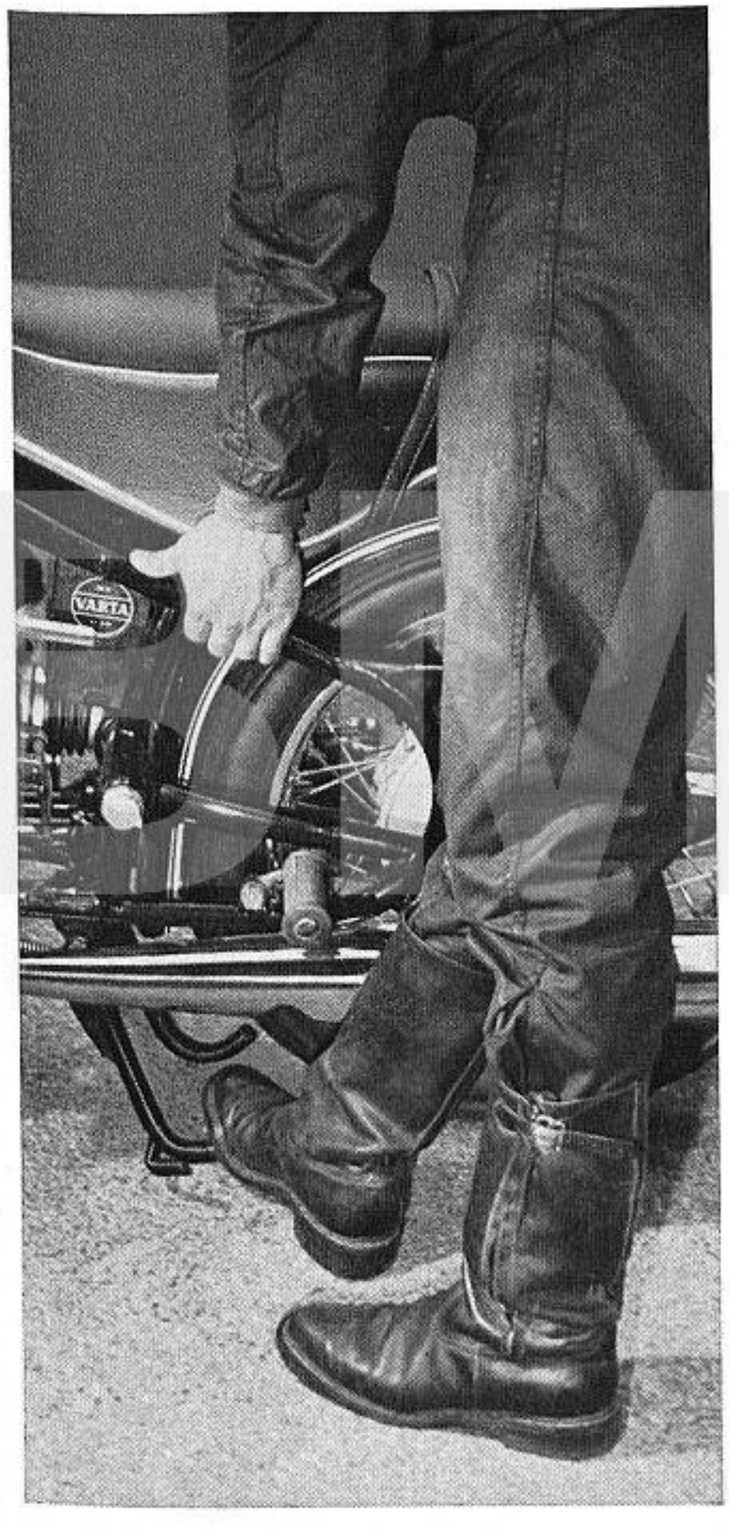
After the motorcycle has been run in, particularly on hills, do not let the engine speed drop too far, but shift down to the next gear in good time.

When riding downhill, shift down to 3rd gear or lower, but do not exceed the speed limits for the various gears. On long downhill gradients use the brakes where necessary, alternating between front and rear brakes so that one brake always has a chance to cool. Always

brake gently, i. e. gradually increase pressure on the lever or pedal so that the wheel never locks.
Note that during braking a force is generated which shifts weight forwards onto the front wheel, thus making more effective braking possible if the front brake is used.
After stopping always shift to neutral if possible and do not hold the clutch out of engagement. Use the clutch lever only for short periods to prevent unnecessary wear on the thrust rod. To stop the engine, switch off the ignition and, if the motorcycle is to be left for any time, turn off the fuel tap.

Maximum permitted speeds in gears:

	Speedometer reading	Speed in mph (km/h) for 1st gear	2nd gear	3rd gear	4th gear
(a) R 50 US					
	0–600 miles (0–1000 km)	22 (35)	34 (55)	50 (80)	62 (100)
	over 600 miles (1000 km)	31 (50)	47 (75)	69 (110)	–
(b) R 60 US					
	0–600 miles (0–1000 km)	22 (35)	34 (55)	50 (80)	62 (100)
	over 600 miles (1000 km)	31 (50)	47 (75)	69 (110)	–
(c) R 69 US					
	0–600 miles (0–1000 km)	25 (40)	37 (60)	53 (85)	70 (110)
	over 600 miles (1000 km)	37 (60)	60 (95)	85 (135)	–



Lifting the motorcycle onto the center stand

Swing the center stand down by means of the protruding lug on the side. Then press the right foot firmly down on one of the legs of the stand. With the help of this leverage the motorcycle can easily be pulled up and back onto the stand.

Description

General

The BMW R 50 US, R 60 US and R 69 US twins are identical in general construction. Externally the Sport model differs from the Sport Touring models in the finned light alloy nuts on the exhaust pipes and the rocker boxes with fewer, thicker ribs.

Of the two touring models, the R 50 US is recognisable externally by the circular cylinder finning as compared with the R 60 US fins, which taper slightly at front and rear. In addition it is easy to identify a type from the maker's plate on the frame steering tube.

The engine of the R 50 US Sport Touring model has a bore and stroke of 68 x 68 mm, and produces 26 bhp at 5800 rpm. This gives the lively performance, exceptional reliability and long life for which the BMW is famous.

The R 60 US and R 69 US are 600 cc models.

The R 60 US Sport Touring model is distinguished by its large power reserve (30 bhp at 5800 rpm, max. torque over 30.4 ft/lb [4.2 mkp] at 4000 [!] rpm), which makes it eminently suitable for use in mountainous country and everywhere where a motorcycle is subjected to heavy loading.

The genuine sport model in this engine class is also the most powerful, the R 69 US, with 42 bhp at 7000 rpm. This model, which belongs to the international class of high-performance motorcycles, continues the sporting tradition

of our factory in the production of high speed road vehicles.

A. Engine

1. Crankcase

The crankcase is made up of an integral internally braced crankshaft housing, the crankcase front bearing cover, the timing case cover and an additional protective cover for the magneto and dynamo. All parts of the housing are cast from an exceptionally robust light alloy and hardened.

2. Crankshaft, connecting rods and vibration damper

The forged steel split crankshaft, with 2 180° opposed pressed in crankpins, is carefully balanced to ensure vibration-free operation of the complete assembly. The crankshaft journals run in 2 robust ball bearings (on the R 69 US at the rear in a self-aligning roller bearing). The drop forged steel connecting rods of flat oval section (spring shank rods) are located on the crankpins by means of large size caged roller bearings. A bush is pressed into the small end of each connecting rod.
The vibration damper on the R 69 US works on the sprung mass principle. It consists of a steel disc located on a plastic ring, but free to rotate under load, and ensures that the vibrations occurring at very high engine speeds and power outputs are cancelled out.

3. Pistons

The pistons are cast from a special light alloy and fitted with 3 piston rings: the upper ring has a molybdenum insert the second is a chamfer ring and the lower ring an oil scraper. They ensure efficient sealing, reliable lubrication and a low rate of wear. The large size gudgeon pins are fully floating in the pistons and secured on both sides by circlips preventing axial displacement.

4. Cylinders and cylinder heads

The gray cast iron cylinders are provided with deep cooling fins. Two push-rod guide tubes are pressed into the cylinder and seat in the crankcase on rubber sleeves. An oil pipe is pressed into the base of each cylinder. The light alloy cylinder heads are carefully finned and provided with shrunk-in valve seats — inlet valve special gray cast iron, exhaust valve special heat resistant steel. Valve guides are pressed in. Each cylinder head is attached to the cylinder by 4 studs in such a way that each stud clamps the head by a long steel distance piece pressed into the head; this also secures the rocker arm bearing blocks.

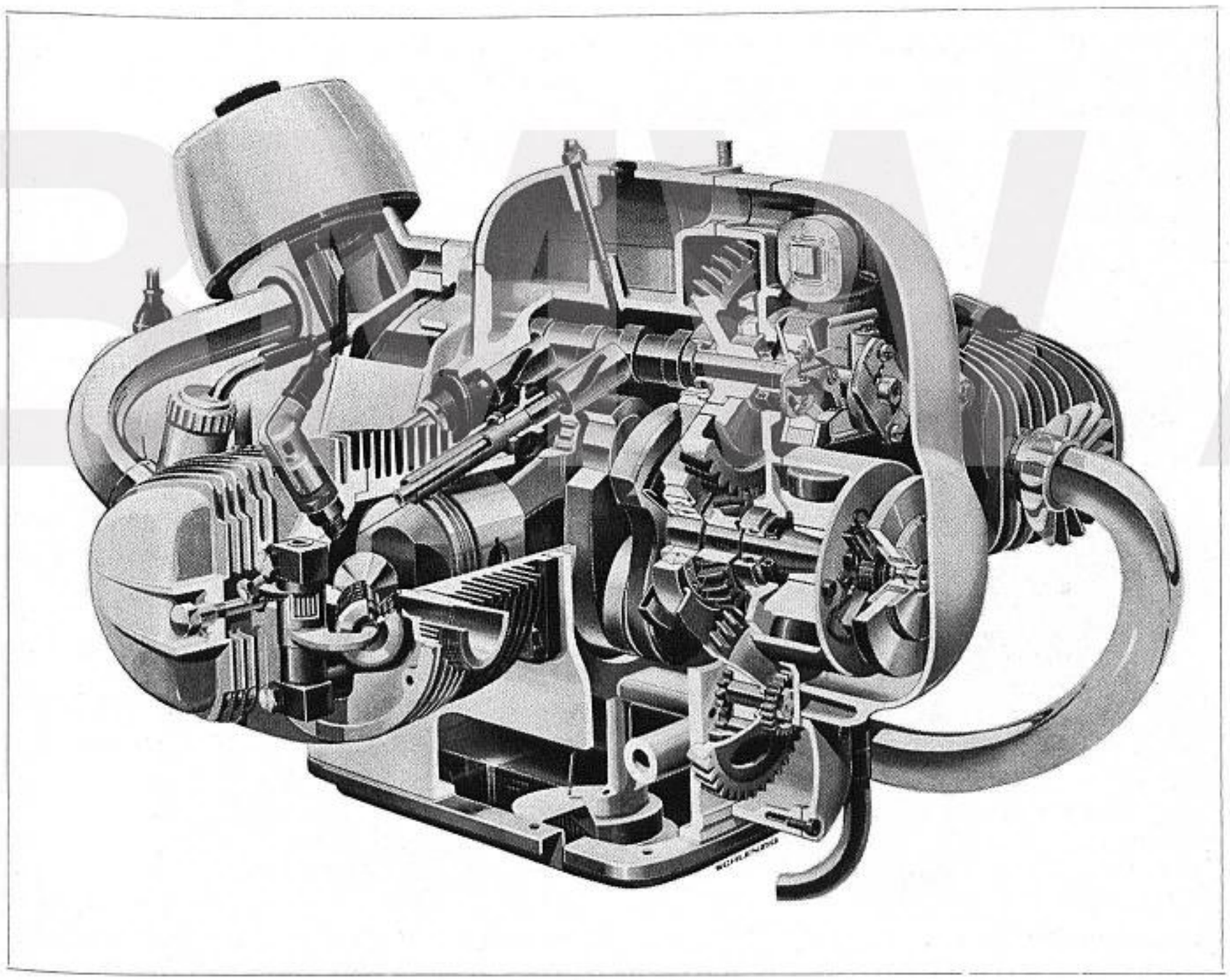
5. Valve gear

The camshaft is mounted on ball bearings above the crankshaft within the crankcase; it is driven at half crankshaft speed by a silent running helical gear train. For each of the 2 V-mounted valves in each cylinder head there is a cam on the camshaft which operates the valve through a tappet, a short pushrod and a rocker arm. The rocker arms are mounted on their journals in floating bushes, or in the case of the R 69 US on needle roller bearings.
Valve clearance is adjusted in the usual way by an adjusting screw and locknut on the rocker arm. The method of cylinder head fitting used transmits only a small proportion of total thermal expansion to the valve gear, so that clearances are not affected. The whole valve gear has been designed throughout for exceptionally quiet running and long life.

6. Lubrication system

The engine has oil pump and splash lubrication with a wet sump. The oil pump is a gear type, driven from the crankshaft by spur gears. The pump draws oil from the sump through a fine mesh filter and forces it through passages in the crankcase to the 2 oil thrower rings on the crankshaft. Abraded particles are thrown out here by centrifugal force and retained on the periphery of each oil ring, while the clean oil enters through the hollow drilled crank pins into the big-end bearings and is conducted from here by splash onto the cylinder wall, piston, gudgeon pin and crankshaft. The splash feed oil also passes through an orifice behind the tappets into the pushrod tubes and flows

into the rocker boxes to lubricate the rocker bearings; oil draining from here passes through drilled passages in the cylinder heads and an oil pipe pressed into each cylinder, and flows back to the sump.
Oil under pressure also passes from the oil sump through the oil distribution passage to a spray jet for the camshaft spur gear drive, as well as into an annular passage round each cylinder neck, from whence it also lubricates the cylinder bores through 2 pairs of small diameter passages (giving improved lubrication for cold starting and peak loads).
A rotary valve on the camshaft drive gear controls crankcase breathing so that a slight vacuum is maintained to help keep the crankcase oiltight.



7. Carburetor

The special Bing carburetors fitted have a barrel diameter of 0.94″ (24 mm) for the R 50 and R 60 US, and 1.02″ (26 mm) for the R 69 US. They are throttle slide carburetors with integral float chambers. The carburetors are mounted inclined at 15° and are made in separate left hand and right hand versions. They are flange mounted to the cylinders. Essentially each carburetor consists of a main jet system with needle control from the throttle slide. To prevent fuel starvation at the jets as a result of centrifugal force, a fuel compensating chamber is fitted opposite the float chamber.

Carburetor construction and operating principle

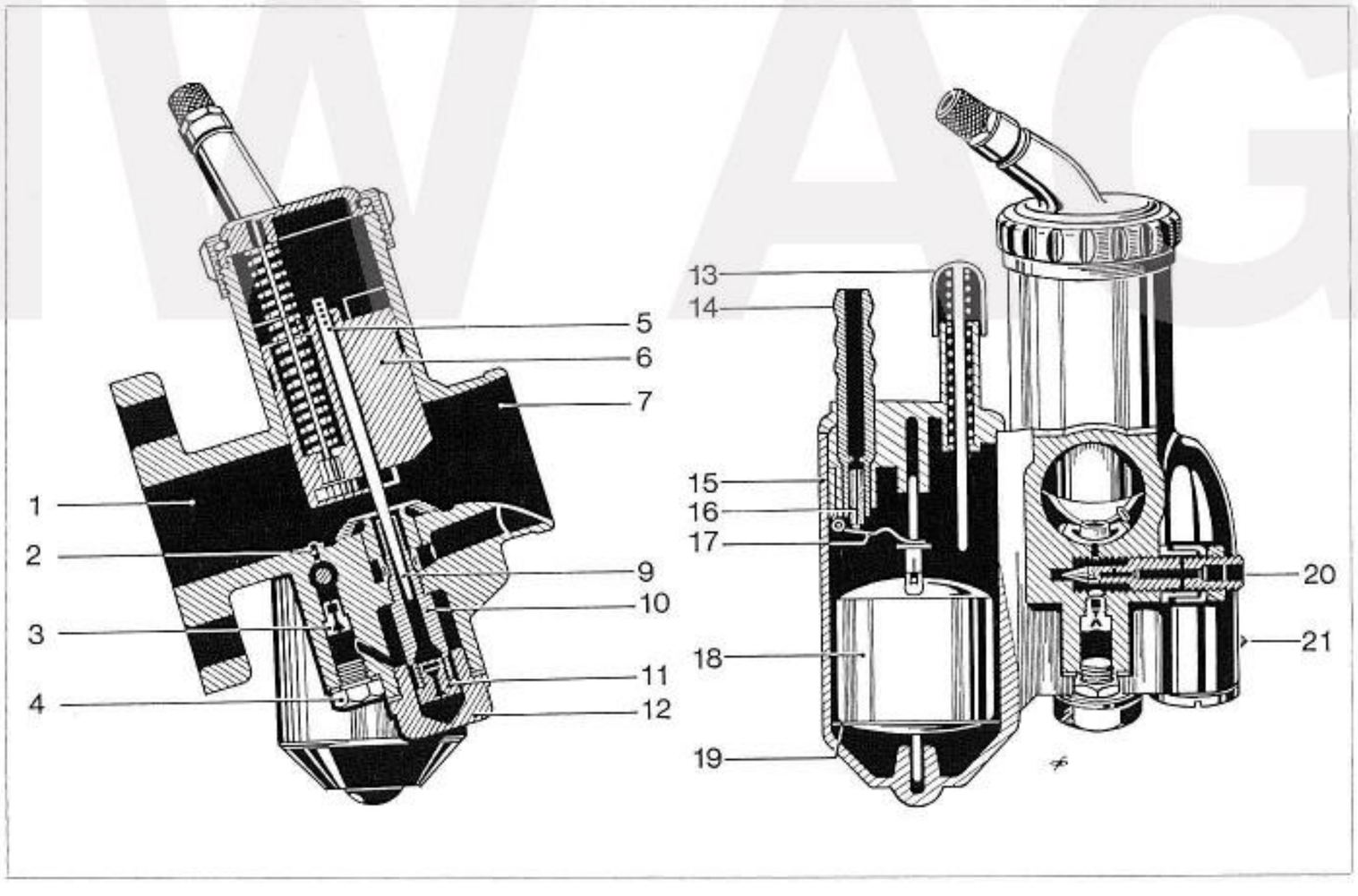
Fuel entering through pipe union 14 at the top of float chamber 15 is maintained at a constant level by the float valve. To ensure a uniform flow of fuel even under vibration, float 18 actuates fuel intake valve 16 by lever pivot 17. In addition the float is fitted with a damping ring 19. Depressing priming button 13 when starting the engine raises the level temporarily so that the engine receives a richer mixture. From the float chamber the fuel passes through drilled passages to the main jet 11 and slow running jet 3. The main jet is fitted into needle jet 10, into which in turn projects a tapered jet needle 9. When this is raised or lowered it alters the cross-sectional area of the fuel passage. A proportion of the intake air which has entered through a drilling from air intake port 7 flows past the outside of the needle jet and results in pre-atomization of the fuel emerging from the annular section of the needle jet. Finally further intensive atomization is produced by the impinging main air-stream before the fuel/air mixture passes into the combustion chamber of the engine.

Uniform fuel/air mixture strength is achieved at both upper and lower ends of the engine speed range by tapered needle 9, actuated by throttle slide 6.
Fuel drawn in through slow running jet 3 located above sealing screw 4 is mixed with air entering from the air intake via the slow running air passage, and then enters inlet tract 1 through a small drilling 2 directly behind the throttle slide. Coarse adjustment of slow running speed is carried out by means of throttle slide stop screw 21.

Fine adjustment of slow running speed is by mixture control screw 20. If this is screwed right in a richer mixture is obtained, and if unscrewed the mixture becomes weaker.

To ensure that in the event of a leaking fuel feed valve no fuel can pass through the inlet manifold into the cylinders, but will instead escape to atmosphere, air regulator screw 20 is drilled and fitted with a sleeve and cap.
The carburetors are set at the works for use with normal commercial grades of fuel. Any change of jets or needle setting 5 is necessary only in special cases and should be left to an expert.

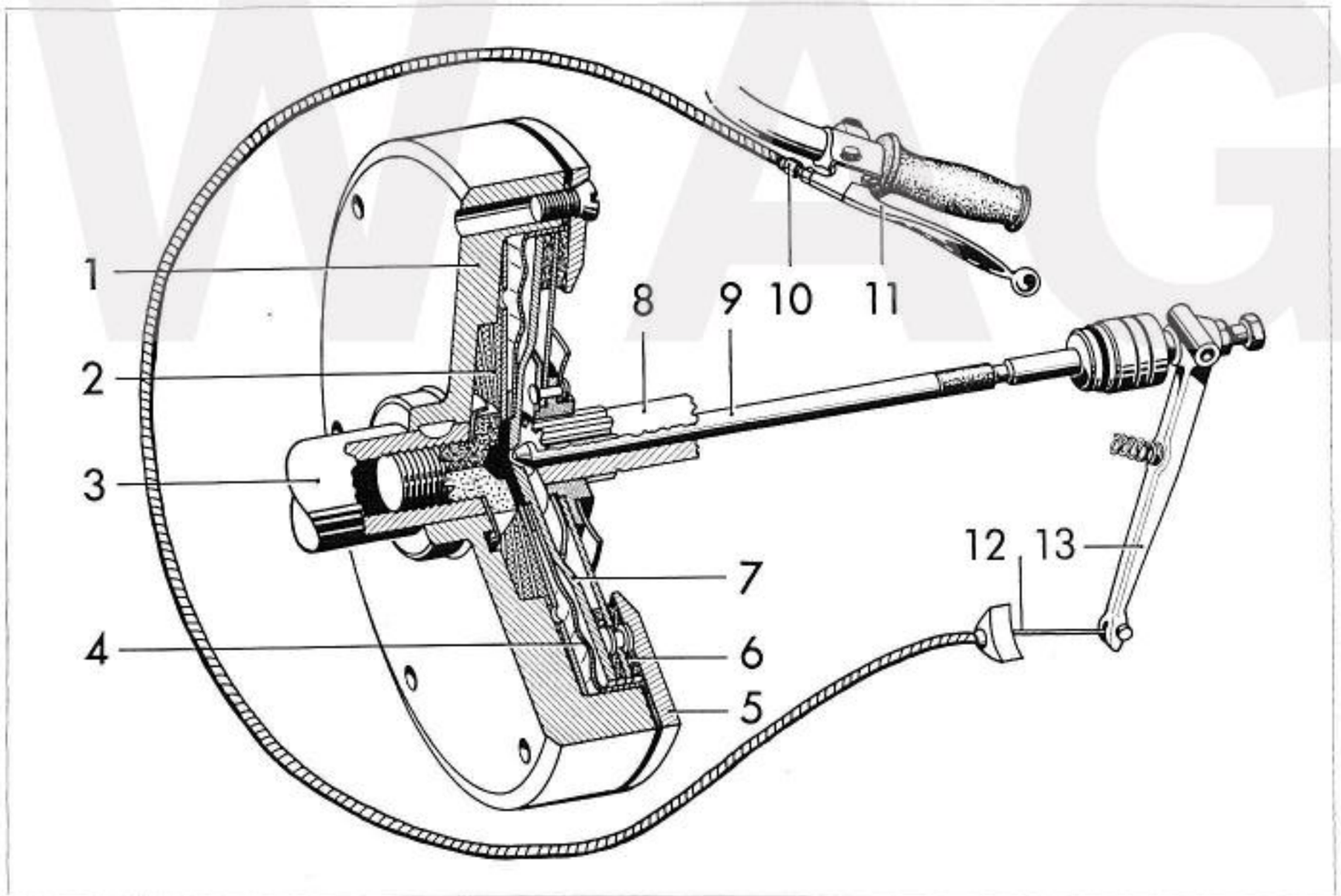
Warning: Prolonged idling is not good for the engine, whether it is cold or warm, and should be avoided as far as possible.

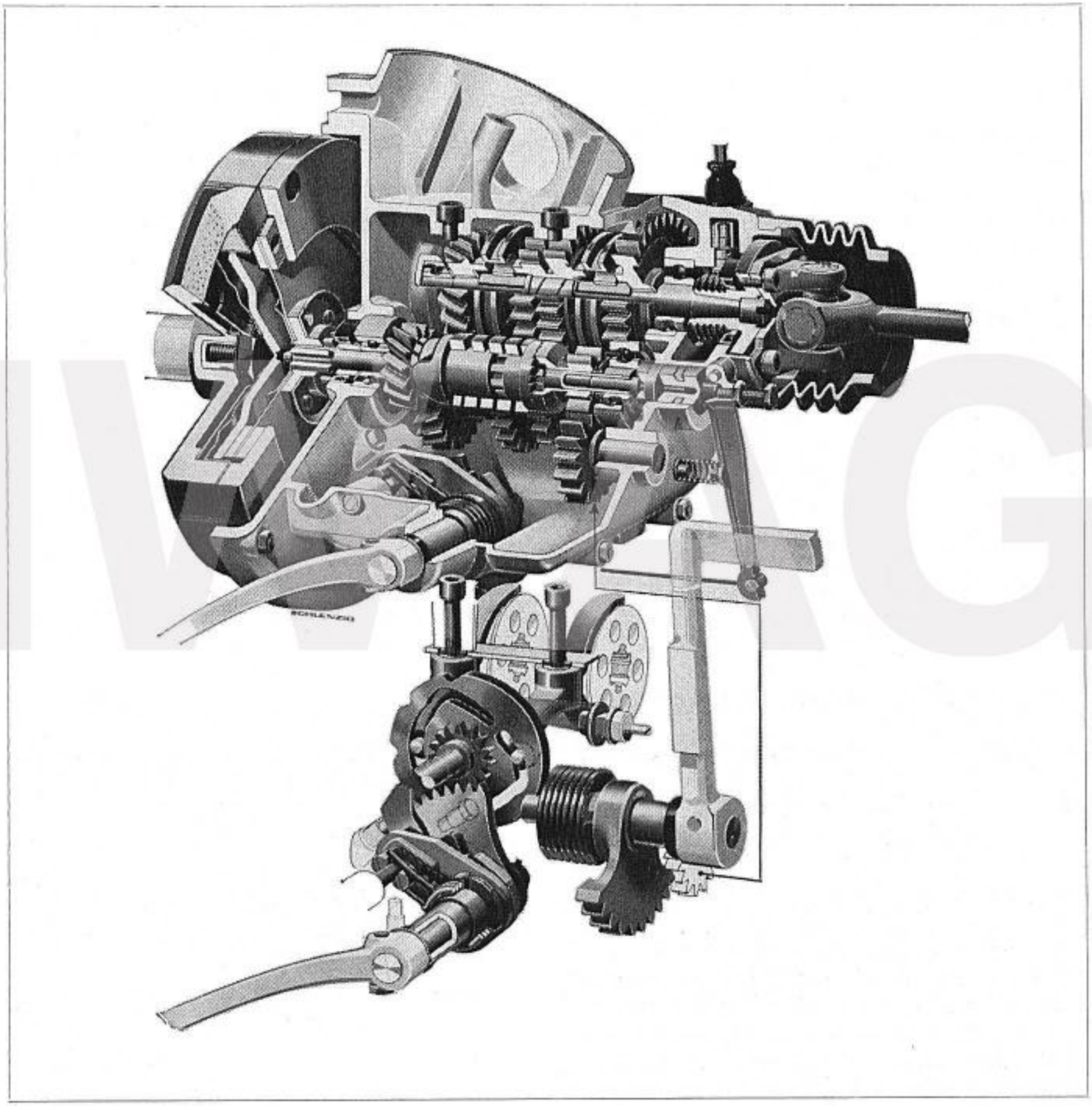


8. Clutch

Engine power is transmitted to the gearbox by a single dry plate clutch. A cup spring 2 presses pressure plate 7, which is coupled by diaphragm 4 to the flywheel but able to slide axially, against clutch plate 6, which is lined on both sides, and also against thrust ring 5. In this way clutch plate 6, located axially on sprung drive shaft 8 and free to move axially but not to rotate, is driven round. Crankshaft 3 is coupled to gearbox drive shaft 8. Clutch lever 11 on the left handlebar actuates throwout lever 13 on the gearbox by means of an armored cable. Power transmission from the engine to the gearbox is interrupted by squeezing clutch lever 11. This withdraws pressure plate 7 from clutch plate 6 by means of thrust rod 9.

The single dry plate clutch needs no maintenance. Correct operation will considerably increase its life. When starting off increase engine speed only slightly and let the clutch in slowly. Engaging the clutch sharply at high engine speeds will not only cause premature clutch wear but will also place undue strain on all the transmission components and the tires. A spring on the gearbox cover returns the throwout lever and maintains tension on cable 12. Gradual wear of the clutch lining will necessitate adjustment of the clutch. For this purpose move the throwout lever on the gearbox forward by hand at its lower end. After about 0.2″ (5 mm) movement a perceptible increase in pressure should be felt. If the free travel is less or if there is no free travel at all on the throwout lever, loosen the knurled nut and turn adjusting screw 10 on the cable at the handlebar lever end until correct play is obtained.



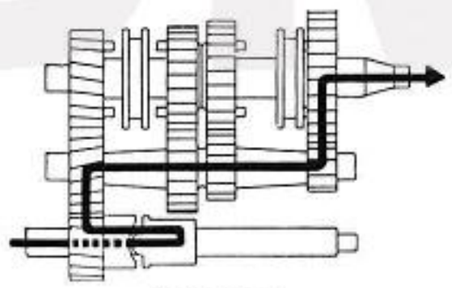


B. Gearbox

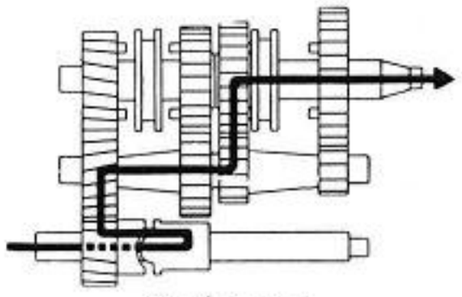
The gearbox is integral with the engine housing. It has 4 ratios to enable full use to be made of engine performance on all terrains and under all riding conditions. The ratios or 'speeds' are provided by pairs of spur gears in constant mesh even when shifting gears, to ensure easy, positive shift action.

In order to transmit power impulses from the engine to the drive components as smoothly as possible, the drive gear on the driving shaft is fitted with a rotary damping system. This reduces the strain on the transmission components in all gears and considerably lengthens their service life. The gearbox has a ratchet action foot shift. With each movement of the pedal a cam plate is rotated by one tooth segment. This cam plate has two curved milled tracks in which the tangs of a selector fork engage. When the cam plate is rotated the selector fork and thus the appropriate sliding dogs are moved by a distance corresponding to the travel of the curved tracks. The sliding dogs engage or separate the drive to and from the ratio being selected or disengaged. To ensure positive up and down movements of the pedal a locking device and ratchet mechanism have been provided.
A foot shift gives increased riding safety, since the rider can keep both hands on the handlebar when shifting gears.
Raising the gear shift pedal engages the next higher gear and depressing it engages the next lower gear or neutral.
An electrical contact built into the gearbox indicates neutral by means of a green light on top of the headlight.
The gearbox has its own lubrication supply which should be checked or renewed as shown in the lubrication schedule.

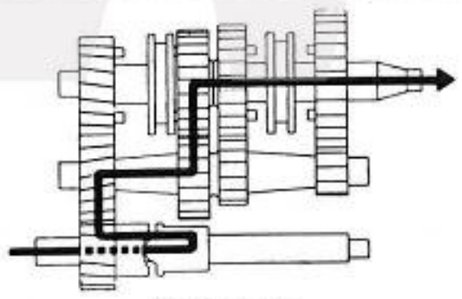
Power flow in the various gears



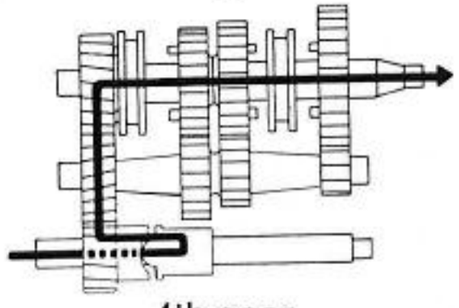
1st gear



2nd gear

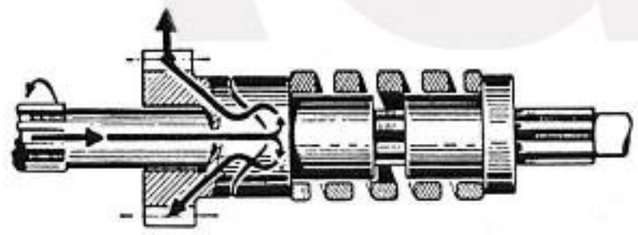


3rd gear



4th gear

Power flow through shock damper



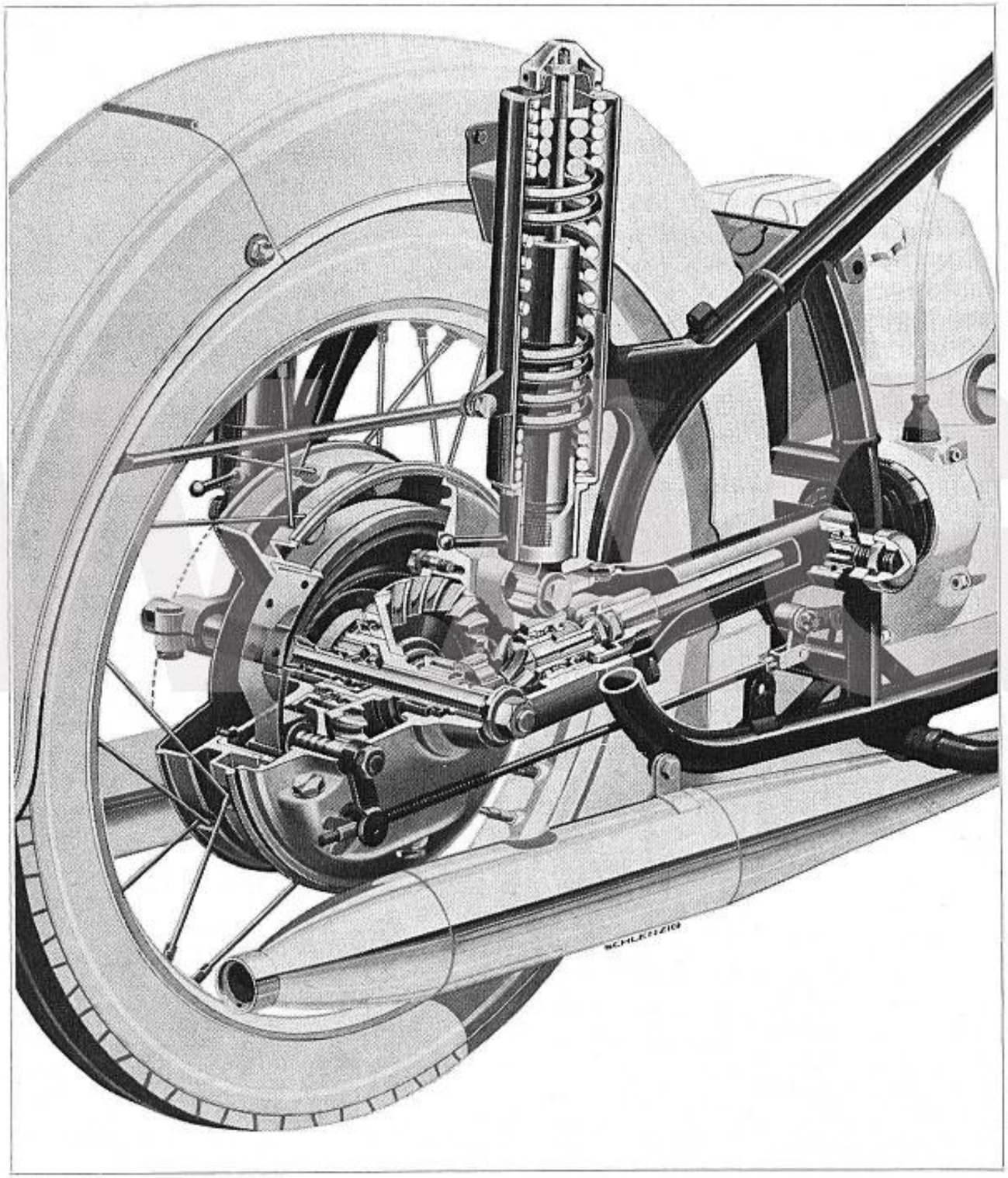
Drive gear in normal position

Drive gear displaced under power

C. Rear wheel drive

All BMW models are fitted with the well-proved shaft final drive to the rear wheel. The drive shaft is housed in the right hand rear swinging arm and runs in its own oil bath. At its front end the drive shaft is connected to the gearbox drive flange by a universal joint running on needle rollers. The rear end of the drive shaft is in the form of an internally splined cup which meshes with a coupling keyed onto the drive pinion. The rear wheel drive pinion is rigidly located at the front in a duplex ball thrust bearing, and at the rear by a needle roller bearing. The crown wheel is located externally in a needle roller bearing and internally by a ball bearing. The drive pinion and crown wheel are both helical tooth gears which run completely silently in an oil bath, as a result of careful lapping and precision assembly.

Power is transmitted to the rear wheel through splines on the crown wheel shaft. The rear wheel can be removed quite easily after withdrawal of the knockout spindle. The rear wheel drive housing and housing cover are made from a very strong light alloy and have oil and dust tight seals. Breathing is through a labyrinth located in a dome cast onto the housing. The shaft exit points are fitted with oil sealing rings. On the crown wheel ball bearing behind the oil seal ring there is a drilling in the drive housing leading to atmosphere,



with an outlet underneath near the oil drain plug. The brake, which is integral with the housing, will therefore remain oil-free in the event of leaks. The oil level in the rear wheel drive and in the right hand swinging arm should be checked regularly according to the lubrication schedule, and added to or changed as required.

D. Frame and suspension

1. Frame

The fully-enclosed tubular steel cradle frame is specially resistant to distortion. It forms the framework on which all other assemblies of the motorcycle are fitted.

2. Engine mounting

The crankcase is connected to the lower frame members by 2 long bolts passing right through them, and is suspended at the top from a rubber mounting on the top frame tube.

3. Fuel tank

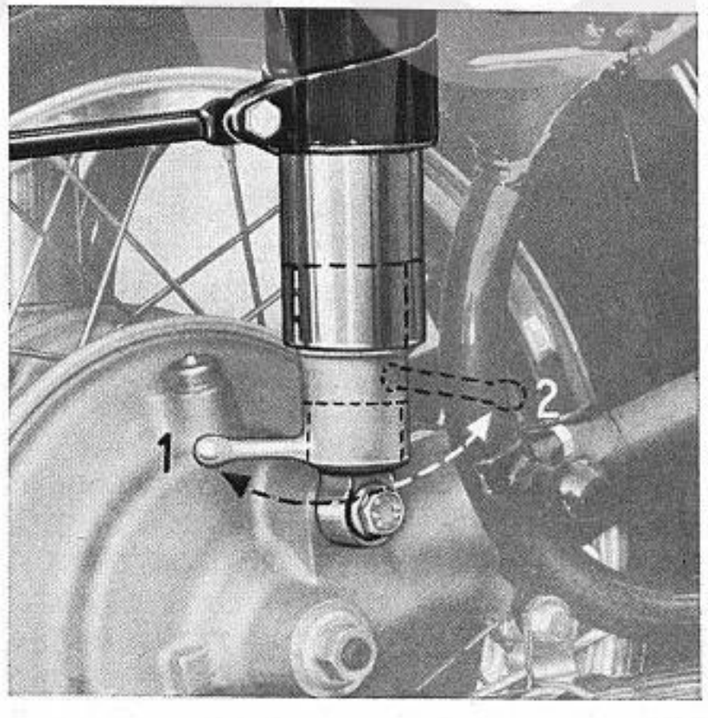
The fuel tank, with a capacity of 4.5 gal. (17 liters) has 2 outlets to the fuel tap, one of which is located high enough to provide a reserve of approx. ½ gal. (2 liters) in the tank. By turning the fuel tap to the "R" position (lever forward) a distance of approx. 19 miles (30 km) can be covered on this reserve. It is, however, always advisable to fill the tank in good time and make use of the reserve only in emergencies. Even then, always switch over before the main supply runs out. This will avoid momentary fuel starvation, which could lead to piston damage if riding at full power.

4. Center stand

To support the motorcycle, a center stand is fitted, pivoting under the frame and retained in the fully retracted position while in motion by 2 springs. To use the stand, pull it down by pressing with one foot on one of the legs until spring pressure is overcome.

5. Rear suspension

The rear wheel rides on a longitudinal swinging arm mounted in the frame on adjustable taper roller bearings set for zero play. Road shocks are absorbed by 2 telescopic spring units.
The connecting eyes of the telescopic units are fixed to the right hand swinging arm (the drive housing) and the left hand arm by silentblocs. A progressive action coil spring in each telescopic unit locates at the bottom on the inside shield tube and at the top on the outside shield tube, which is rigidly connected to the frame. In the bottom unions of the telescopic units is screwed a double acting hydraulic shock absorber, with the piston rod resting at the top of the outer shield tube on a rubber seating (see page 25). Rubber rings are provided on the piston rods as upper limit stops for the suspension; at the bottom limit the hydraulic action of the shock absorbers imposes a built-in restriction.
At the base of each telescopic unit is fitted an adjusting sleeve which bears on a cam. Turning the adjusting lever to position 1 for solo use or position 2 for passenger use gives suspension characteristics matched to the load.



6. Front suspension

The front telescopic fork steering tube is located free of axial play by 2 ball races at top and bottom. The 2 fork crosspieces above and below the steering tube accept the right and left hand fork legs and retain them in position.
The 2 two-part clamping blocks for the handlebar are bolted to the rigid pressed steel top fork crosspiece, a construction which permits particularly simple fitting and removal of the steering tube.
The lower fork crosspiece consists of a distortion-free aluminum forging, to the bottom of which the friction steering damper is fitted.
The telescopic fork ensures precise steering with optimum front wheel suspension, properties made possible by the large capacity shock absorbers filled with constant viscosity shock absorber oil, the progressive action coil springs and the low mass disposed around the steering tube. The fixed fork uprights of high temper steel (with hard chromed rubbing surfaces) are covered by cast alloy sliding tubes. The spring connection between the fixed and moving parts of the fork is by means of a load carrying coil spring located in each fork tube. This spring is in turn supported at the ends in spring mountings.
A damping tube firmly screwed to each of the moving fork slider tubes, and with the lower end provided with 2 sets of double opposed oil passages a short distance apart and a ball valve at the base, also carries at its upper end a

plunger forming the spring mounting for the bottom end of the coil spring.

The outside diameter of the damping tube tapers down from each end and controls oil flow in conjunction with the oil flow nozzle located at the lower end of the fork tube. The annular section is largest in the normal position, thus ensuring instant response of the suspension to the slightest irregularity in the road surface.

Each fork leg should be filled with 280 cc of shock absorber oil.

7. Saddle

A soft, carefully shaped dualseat accommodates both rider and passenger and in conjunction with the front and rear suspension ensures fatigue-free riding even on long journeys.
The rear footrests are adjustable to suit the passenger's riding position.

8. Roadwheels

The interchangeable roadwheels (tires are not interchangeable) are fitted with steel safety well-base rims. The rim section prevents tire roll-off in the event of sudden deflation and also facilitates tire fitting. The chromed weather resistant steel rims enhance the external appearance of the machine.

The rims are joined to the full width brake drums by robust straight (not cranked) spokes. Unbalance can occur at the roadwheels through uneven tire wear, high tire temperatures or incorrect re-tensioning of the spokes. At high speeds this can cause unstable roadholding and steering flutter. In such cases the wheels should be balanced by a specialist workshop.
Smooth running of the wheels is ensured by two sets of precisely set, adjustable taper roller bearings. High efficiency sealing – externally by means of radial shaft sealing rings, and from the brake drum side by specially treated enclosed felt rings – guarantees long service life with minimum maintenance.

9. Brakes

The front and rear wheels are fitted with light alloy full width brake drums with cast-in gray iron inserts. This gives minimum weight, optimum braking and efficient conduction of heat generated by braking friction.
The front wheel is fitted with an internal shoe brake with each of the two leading shoes expanded onto the drum by means of a separate actuating lever. However, both levers are controlled by a common pressure compensated cable system operated from the brake lever on the right hand handlebar. The two leading shoe brake has so powerful an effect that it is advisable to test its action carefully before use in an actual emergency.

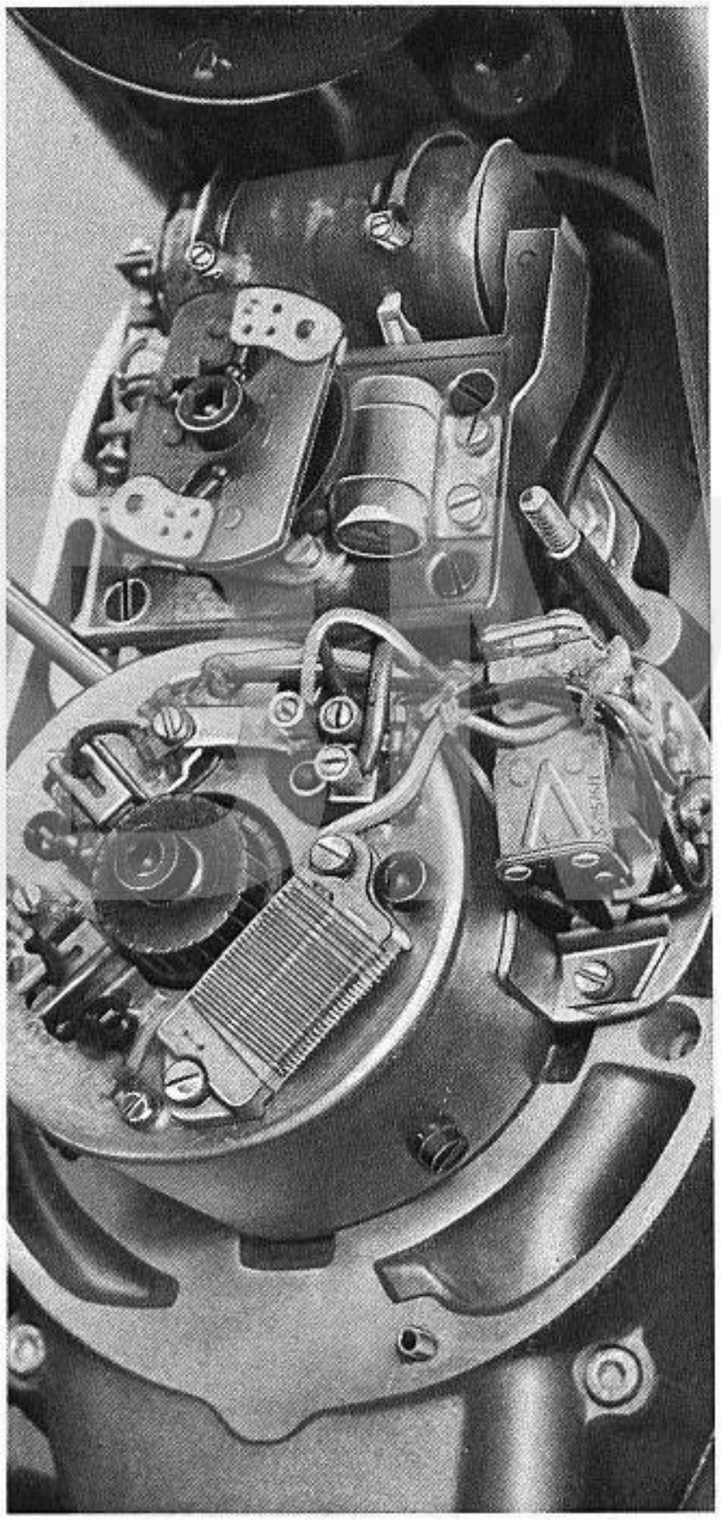
E. Electrical equipment

The electrical system consists of a magneto fitted under a protective cover on the engine, a dynamo with voltage regulator, a battery, full lighting equipment, horn and neutral indicator light.

The **magneto ignition** on the two cylinder engine is completely independent of all other electrical equipment. It guarantees a powerful spark even at high engine speeds and has proved outstandingly reliable. Magneto ignition consists of a permanent magnet fitted to the camshaft and forming the rotor, and the stator fixed to the casing, which in its turn consists of a laminated core with coil, contact breaker and centrifugal advance mechanism.

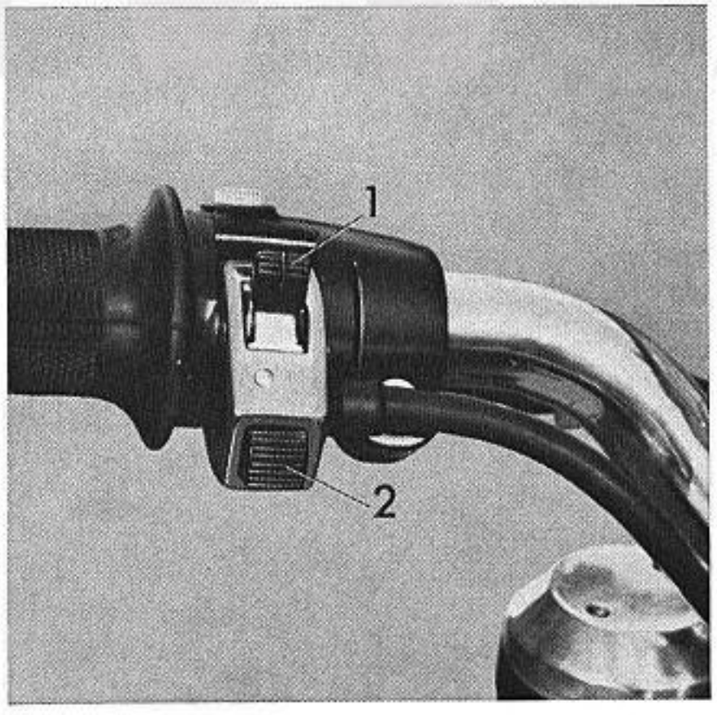
The **dynamo** is a shunt wound instrument driven direct from the engine crankshaft, with a built-in voltage regulator for 6 V nominal voltage, and reaching its rated output of 60 W at 1700 rpm and its maximum output of 90 W from 2100 rpm upwards. The regulator switches the battery in and out of charge from the dynamo depending on the state of charge and the load imposed by current consuming equipment.

The **battery,** of 16 Amp/hr capacity, is mounted on a rubber pad on its carrier and prevented from moving by a rubber strap. It acts as a current source when the engine is stopped or idling (red charge indicator light on). When the dynamo is supplying the necessary vol-



tage to the equipment, the charge indicator light goes out. This also means that the battery is being charged by the dynamo.

To **switch on the ignition** the key is inserted in the ignition switch on the headlight. The switch is protected by a sliding cover when the key is withdrawn. By pressing the key in and turning to the right or left, the driving lights or parking lights can be switched on. A socket on the frame under the saddle provides a connection for an inspection lamp. See also the wiring diagram for the electrical system.
The rotary dimmer switch 1 is fitted near the left handlebar grip. Horn button 2 is positioned below the switch.



Servicing the motorcycle

External cleaning

Cleaning the engine-gearbox unit and the rear wheel drive housing is best carried out with gasoline. Painted parts should be washed with a sponge and leathered dry. If the motorcycle is hosed down, care should be taken that the engine has cooled off sufficiently. The hose should not be used at too high a pressure and the jet should not be directed straight at the carburetors or the air filter. After drying, the brake pivots and mudguard hinges should be oiled to prevent rusting.
When washing down, water can enter the brakes, so that if the motorcycle is ridden immediately afterwards, the brakes should be applied carefully a few times to dry them out ready for an emergency.
Treatment of the painted and chrome parts with the usual commercial polishes will both clean and preserve them.

Technical maintenance

To maintain reliability and ensure long life your motorcycle should receive regular lubrication and servicing, which should ideally be entrusted to your BMW dealer. The following instructions should be used only in case of emergency.

For **lubrication** of **engine, gearbox, drive shaft** and **rear wheel drive,** see p. 15. The oil levels should be checked a few minutes after the motorcycle has been ridden. Oil changes for the individual assemblies should as far as possible be made when warm. Wait until the old oil has completely drained off.

The **rear swinging arm pivot** should be thoroughly lubricated according to the servicing schedule. Use only a hand grease gun (with conical nipple connector). Unscrew the aluminum cap nuts on both sides of the rear swinging arm (metric spanner size 36) and pump a few strokes of grease through the aperture provided in the pivot journal.
Lubrication of the wheel hubs and cables should be left to a BMW service station because of the dismantling work and readjustment necessary on reassembly.
Brake pivots, pedal and clutch lever, mudguard hinge and center stand mounting should be lubricated frequently with a few drops of engine oil. The pivots of the rear spring units are on silentblocs and do not therefore need lubrication.

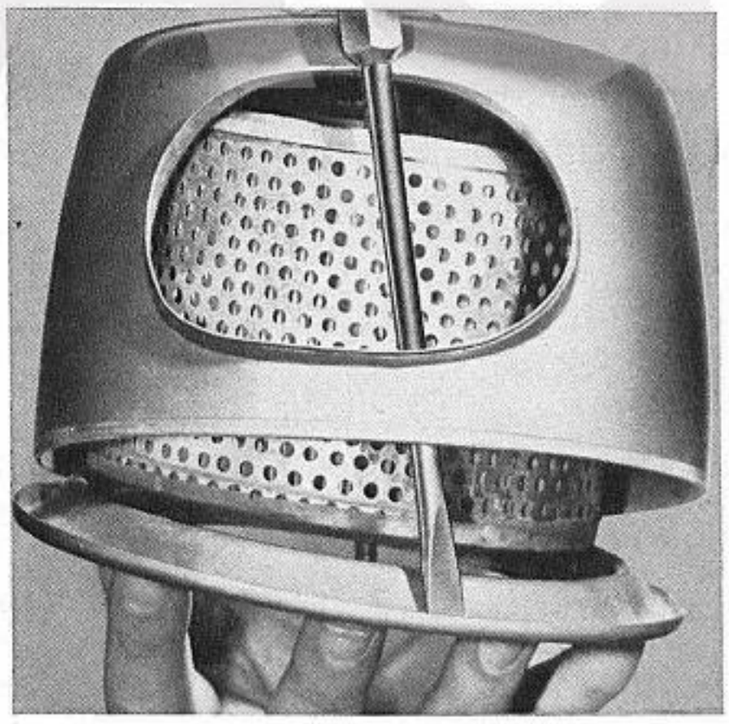
Inspection and routine maintenance

(see also Maintenance Schedule, p. 46)

You should carry out the following work yourself only if you cannot reach a BMW dealer's workshop.

Battery level should be checked every 4–6 weeks and if necessary distilled water added to the level of the perforated plate in the filler neck. The battery should be removed by loosening the rubber retaining strap, and placed on a level surface for inspection.

The **intake air filter** must, according to whether the motorcycle is ridden in dusty or relatively clean air, be removed frequently, at least every 4000 miles (6000 km) and the filter element carefully tapped out and blown through (but do not use compressed air). Every 8000 miles (12 000 km) — in dusty conditions more frequently — the filter element should be renewed. Dirty or blocked filters cause increased fuel consumption and power loss.

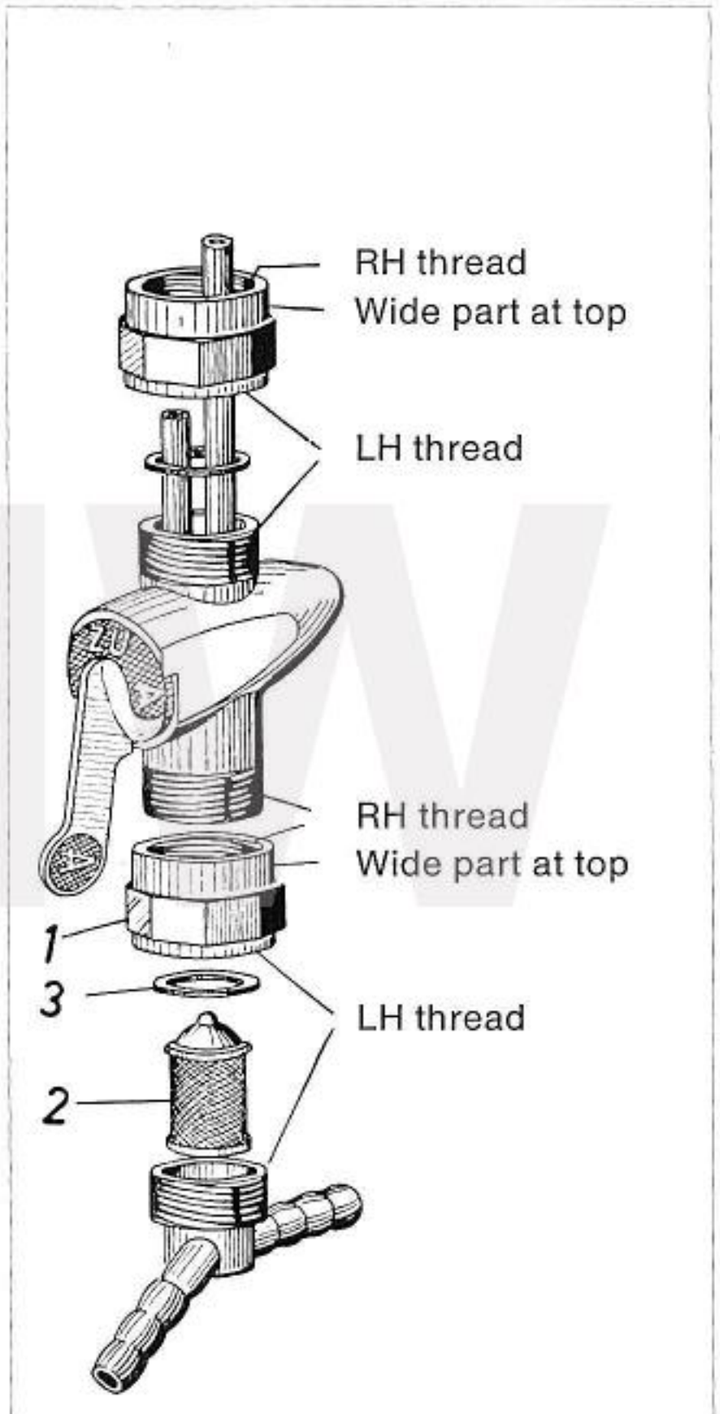


Cleaning the fuel tap:

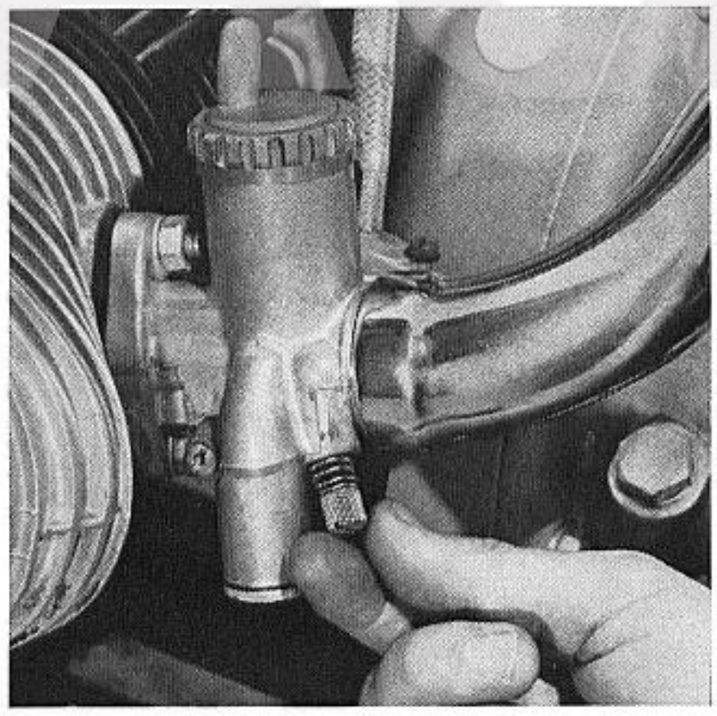
If any trouble is experienced with the fuel supply, or in any case every 4000 miles (6000 km) the filter in the fuel tap should be cleaned.

1. Close the fuel tap (lever down).
2. Unscrew union nut 1 (metric spanner size 24).
3. Remove filter 2 and clean in gasoline.
4. Renew seal 3 if damaged.

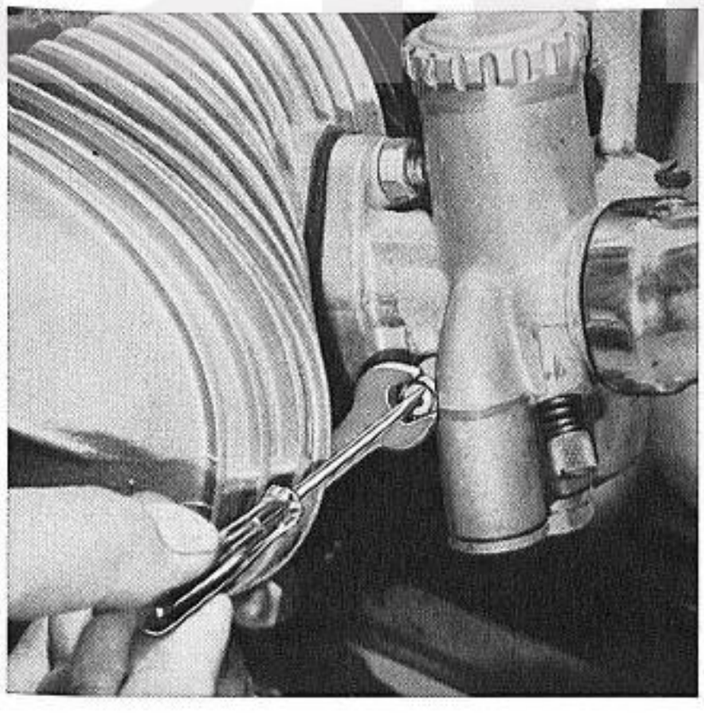
The top nut securing the tap has a right hand thread on the tank side and a left hand thread on the tap side.
To remove the tap, first drain the tank, then turn the nut to the left while preventing the tap from moving. To screw back into position, first insert the seal, and with the wider part of the nut at the top engage both threads at the same time and tighten the nut by turning to the right.
Note: the fuel tap should always be immersed in the gasoline so that it does not develop leaks. Leaving it dry for a few hours only is not harmful.

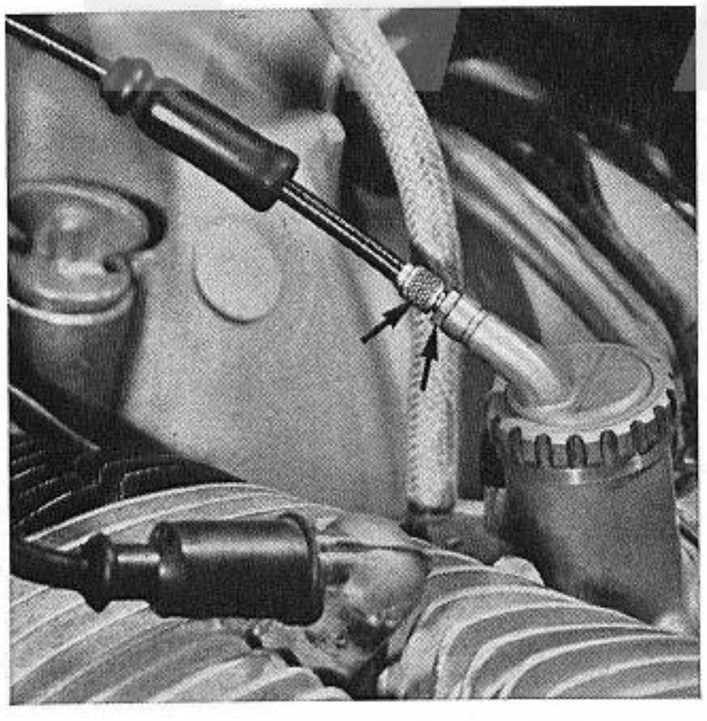


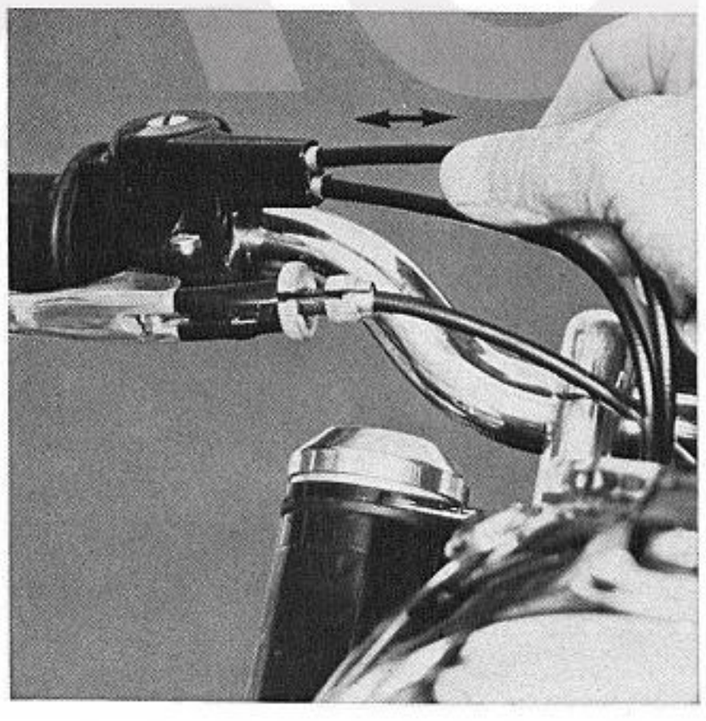
The carburetors should be removed every 4000 miles (6000 km), stripped, thoroughly cleaned and all holes, including jets, blown through. Ideally the throttle stop screw (see picture below) should be left undisturbed.
The pilot air screw (picture p. 35, col. 1) should be screwed right in without the use of force, then screwed out 2 turns to give the basic setting.
The throttle slide should be inserted dry and the cover screwed on by hand (not with pliers). Then with the twist grip fully closed the cable control of each carburetor should be set for approx. 1 mm (0.04″) play at the knurled screw. Check by gently pulling the cable in either direction at the twist grip or at the carburetor.



Adjust **idling speed** with the engine running and at normal operating temperature. First of all the cylinders should be compared for uniform idling by removing the plug lead from each side in turn. If idling is uneven the throttle stop of the slower cylinder should be screwed in as required. Final slow running adjustment is next carried out by slowly and carefully turning the pilot air screw both ways until at one point a slight increase in engine speed is heard. When this point is reached the optimum mixture ratio has been found and the screw can be locked in position. This operation should be repeated for the second carburetor. If the idling speed is now too high it can be reduced by screwing out both throttle stop screws. To obtain a completely uniform **transition from idling to part or full throttle,** open the twist grip by a small amount so that idling speed increases slightly. By removing the plug leads from each side in turn, check that both cylinders are running at the same speed. If necessary adjust the cable of the carburetor for the slower cylinder at the knurled screw.

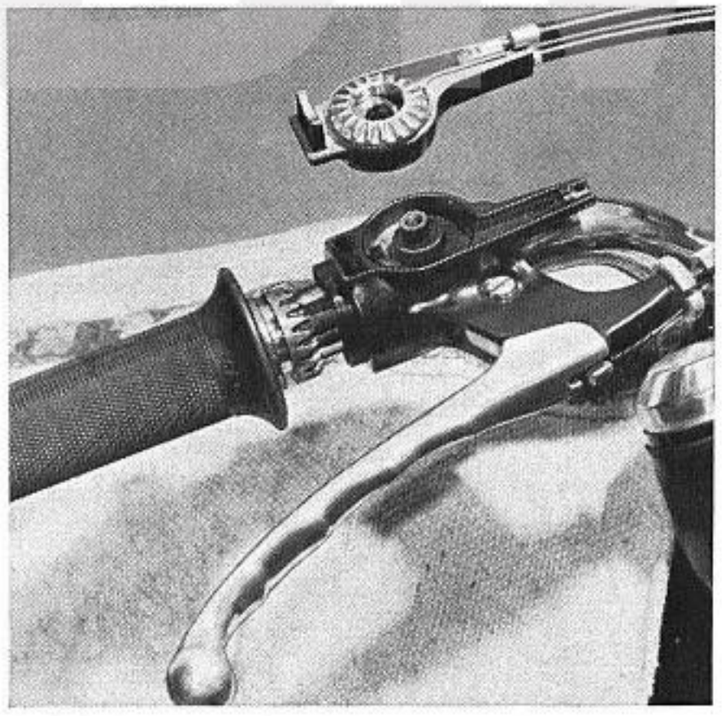


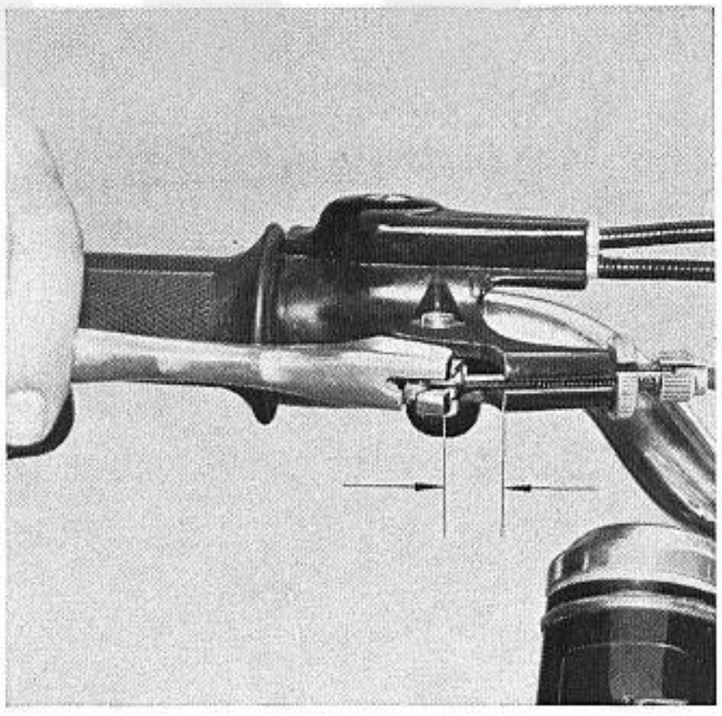


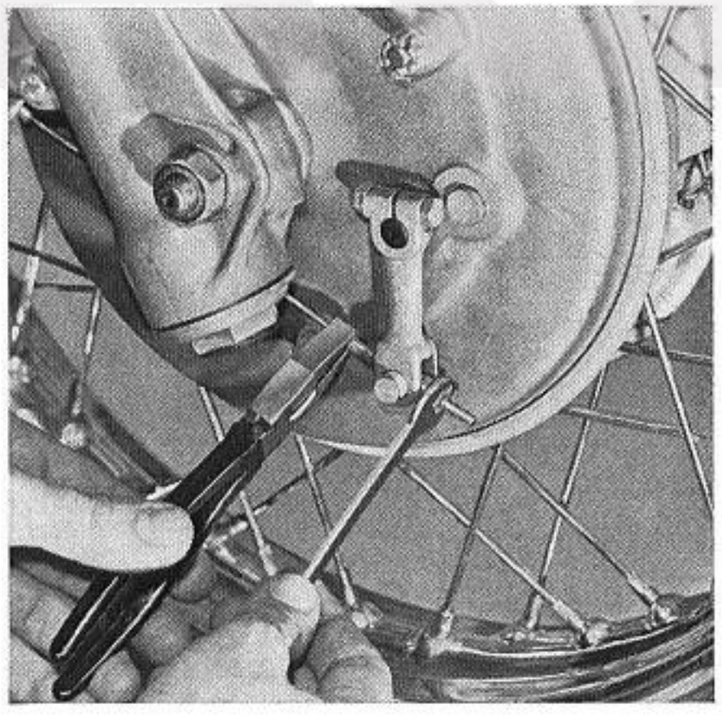


The **throttle twist grip** should be checked for freedom of movement. If necessary, unscrew the cover and pull off the grip. Lubricate the inside of the grip, the gear drive and the control cable. When re-assembling the twist grip, make sure that full travel of the cables is available and that the retaining slot is correctly positioned.

The brakes should be checked for your own safety before every journey, for efficiency and adequate lever travel.
Free travel of the cable for the **front brake** should be 0.55—0.63″ (14—16 mm) measured at the connection with the hand brake lever — it can be adjusted at the top of the hand brake lever by loosening the milled disc and turning the adjusting screw, or else by turning the hexagon nut (metric spanner size 10) at the lower end of the cable. Uniform lever travel of both brake actuating arms at the brake plate can be adjusted by carefully turning the eccentric screw by means of the flats milled on it.



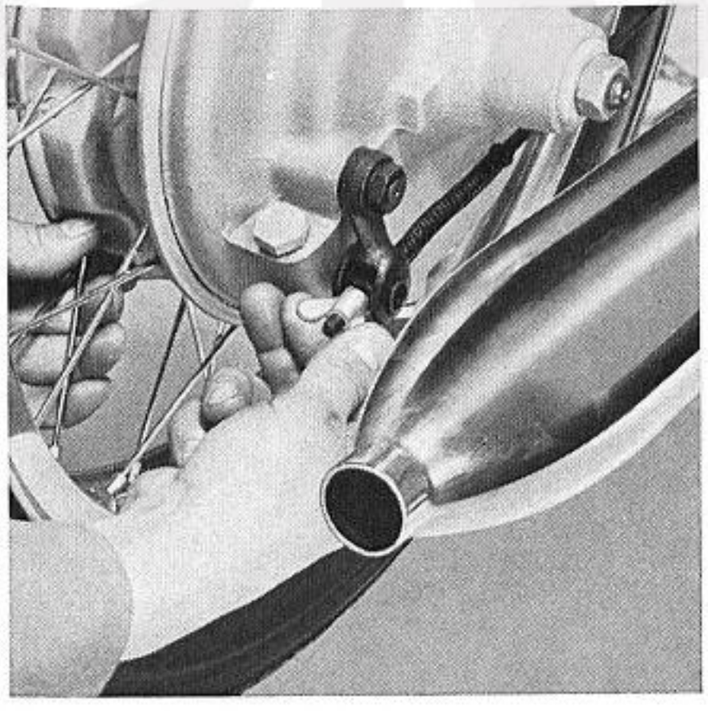


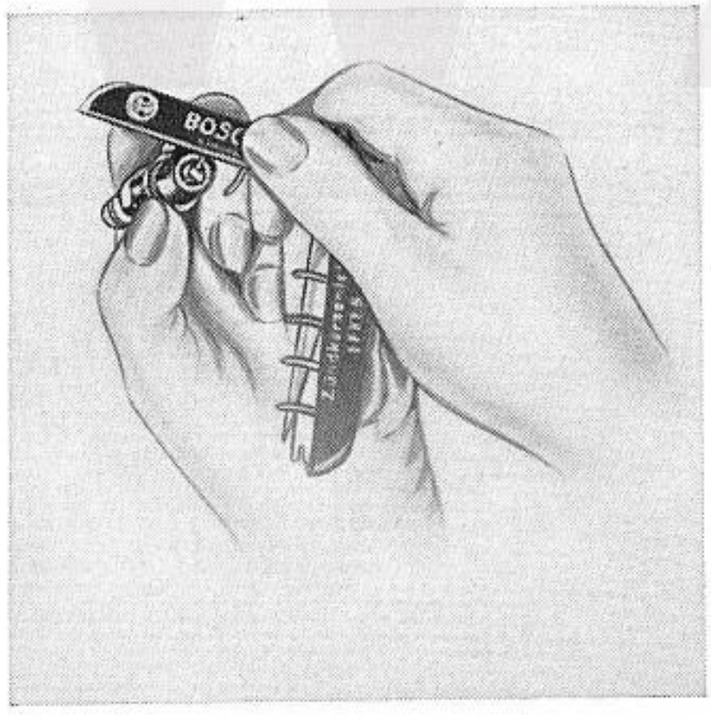


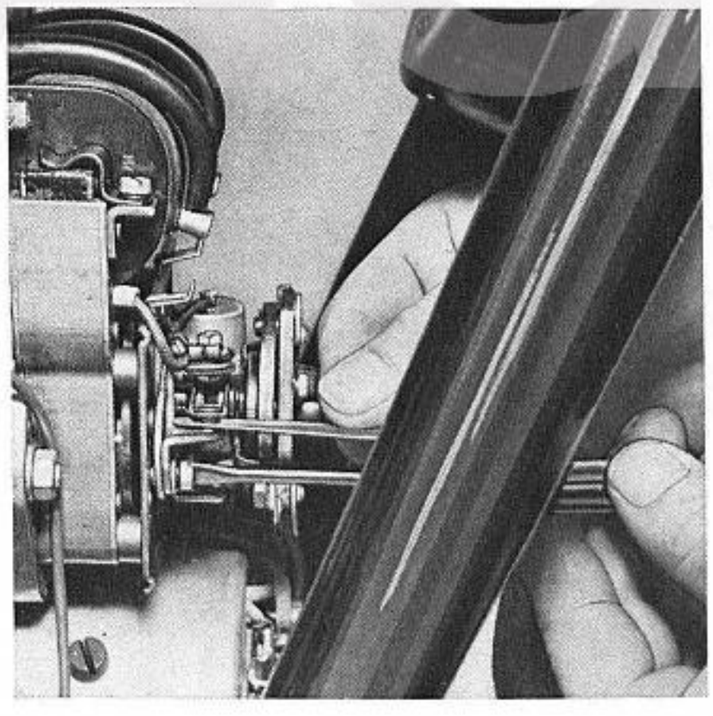
The **rear wheel brake** should be adjusted by turning the wingnut at the end of the brake rod to the right until the rear wheel just starts to brake, then turning the wing nut back about 4–5 turns. If even after adjustment satisfactory braking cannot be obtained, the brake linings are worn and should be replaced. Free travel of the control cable for the **clutch** should be 0.24–0.31″ (6–8 mm) – measured from where the cable joins the hand lever – this can be adjusted by slackening the milled disc on the hand lever and turning the adjusting screw in the same way as described for the front brake.

The spark plugs tell the expert a great deal about the running of the engine from their appearance. Oiled plugs, for example, denote worn or damaged piston rings. A greyish white deposit means weak mixture or ignition advanced too far, etc. It is advisable to consult your dealer on the subject. If necessary have the plugs cleaned, check the gap (it should be 0.024″/0.6 mm) with a feeler gauge, and correct if necessary. After 12 000 miles (18 000 km) at the most the plugs should be renewed. Only recommended plugs with the correct heat value should be used (see technical data, p. 8).

The **contact breaker** of the magneto should be inspected every 4000 miles (6000 km) and set with a feeler gauge to a gap of 0.014–0.016″ (0.35–0.40 mm). See that the points are clean and not pitted. If necessary dress the points with a special contact file or have them renewed.







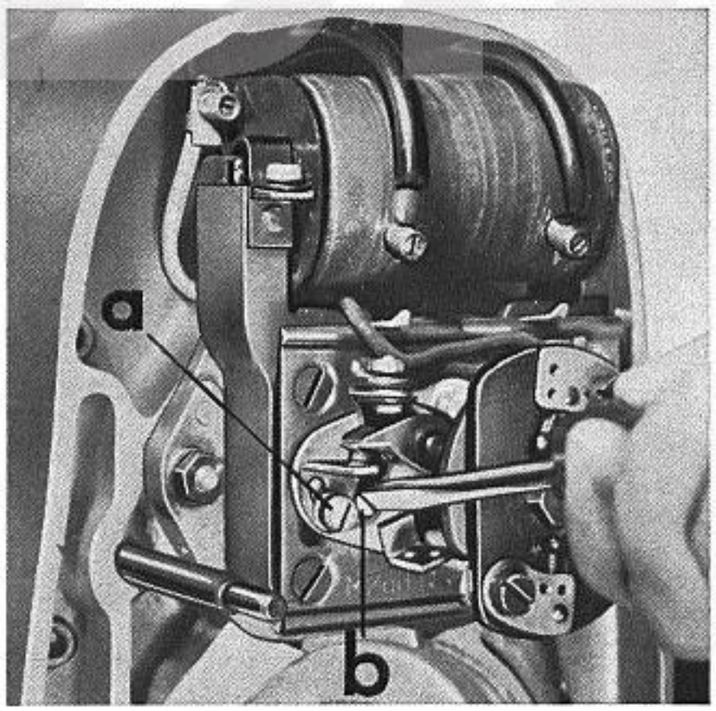
To adjust the contact breaker gap, locking screw "a" should be slackened and eccentric screw "b" turned as required.
If any adjustment of the eccentric screw is necessary it is normally advisable to take the motorcycle to your BMW dealer's workshop, since alteration of the contact breaker gap makes it essential for the ignition timing also to be checked. The ignition timing should be checked with the aid of a timing lamp or stroboscope.
As a temporary measure, remove the cover from the inspection hole on the left hand side of the crankcase and check the position of the flywheel mark "S" (retarded ignition). When the contact breaker points are just beginning to open, the "S" mark must be exactly opposite the housing mark on the inspection hole (turn the engine by hand with the motorcycle on its stand and the spark plugs removed).

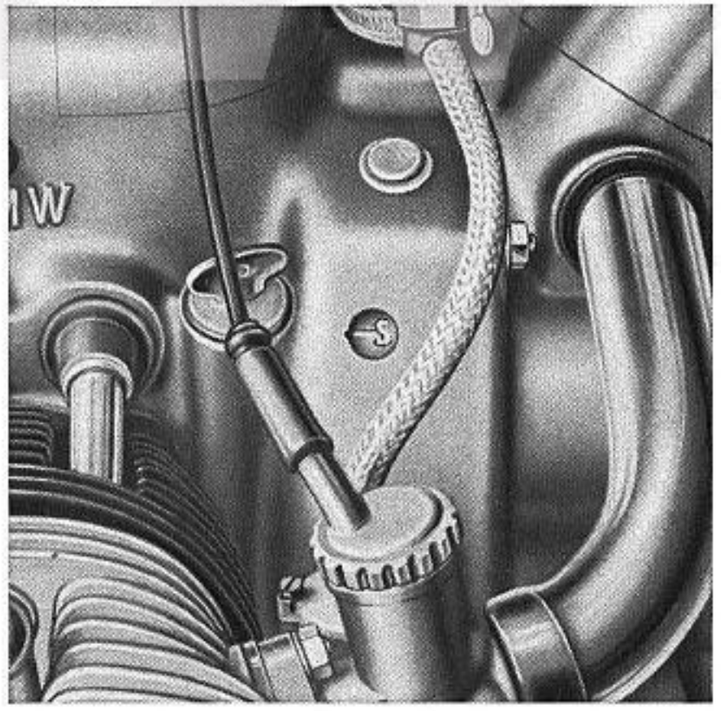
The **vibration damper** on the R 69 US model should be checked for efficiency every 4000 miles (6000 km).
For this purpose remove the dynamo cover and rotate the damper by hand on its hub. If the damper mass turns stiffly, the damper is still in good order — if it turns easily or has any radial play, then the vibration damper should be removed and the annular spring unit replaced. We recommend that any repair work of this kind should be carried out only by a BMW specialist workshop.

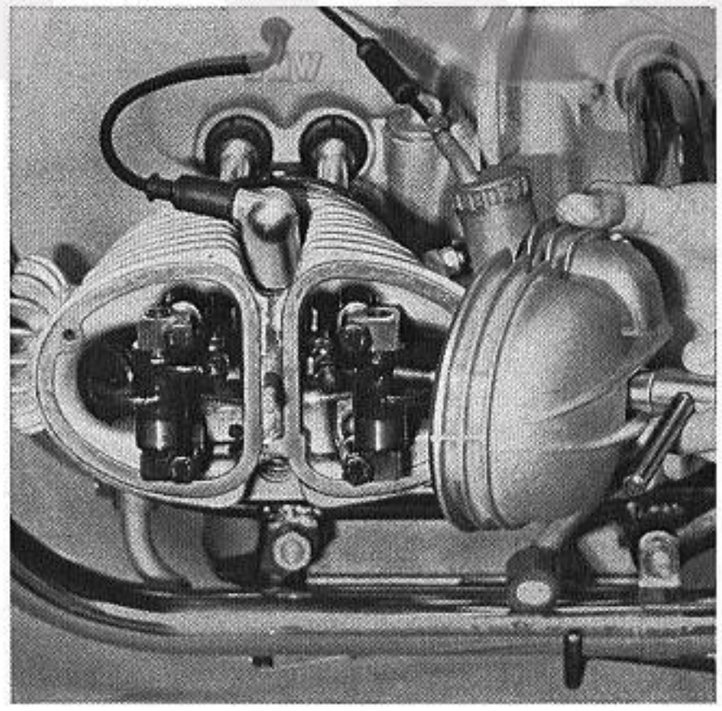
Valve clearance adjustment

Every 4000 miles (6000 km), with the engine cold and before adjusting valve clearances, the cylinder flange fixing nuts and the cylinder head bolts must be checked for tightness to a torque of 24 ft/lb (3.5 mkp). This work should be left to the BMW service workshop.
Valve clearance adjustment is described below, if you are not able to reach a BMW service workshop.

1. Unscrew the cap nut (metric spanner 14) in the centre of the cylinder head, and the 2 nuts at the side (metric spanner 10). Carefully remove the rocker cover together with corrugated washers and gasket.





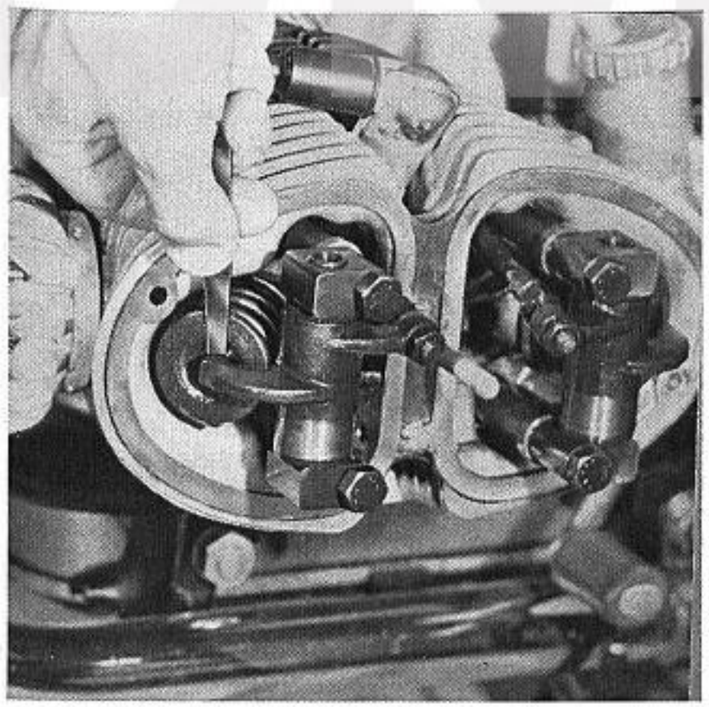


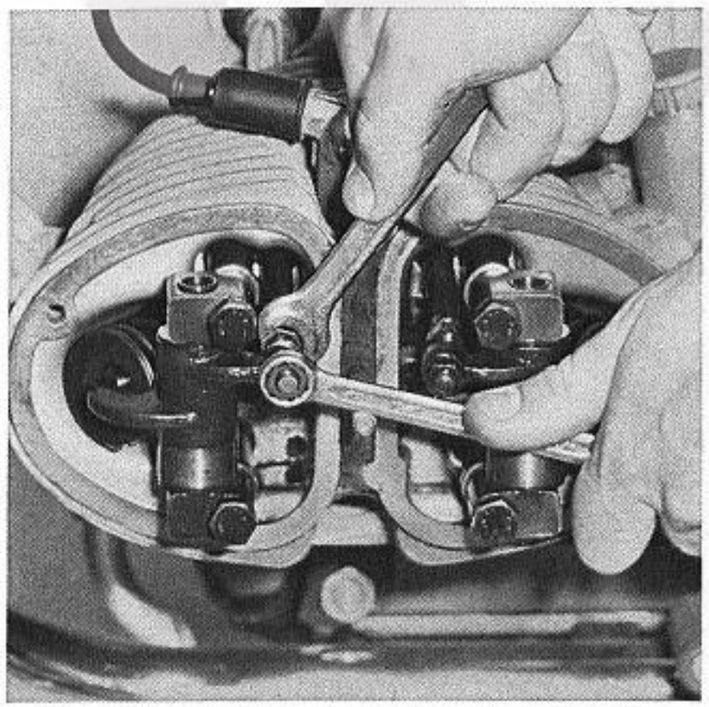
2. Remove spark plugs and turn engine over until the cylinder to be adjusted is on compression. Both valves will then be closed. Check clearances with a feeler gauge.
Inlet = 0.006″ (0.15 mm); Exhaust = 0.008″ (0.20 mm).

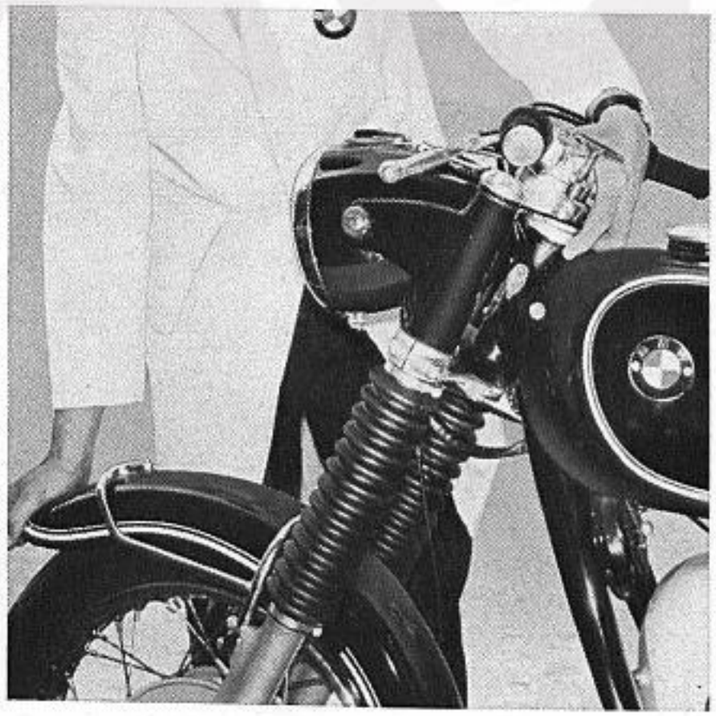
3. If necessary, reset the clearance by means of the adjusting screws (metric spanner 11), after slackening off the locknuts (metric spanner 12). Retighten the locknuts and check valve clearance once again.

All other **nuts and bolts** on the engine, accessible from the outside, and all frame nuts and bolts, should be checked for tightness every 4000 miles (6000 km). The spindle nuts (metric spanner 22) on the front and rear wheels should be tightened with a spanner alone, without using any form of additional lever.

The steering should be checked every 4000 miles (6000 km) for play. For this purpose the machine should be placed on the center stand and the damper fully released. When pushing or pulling on the mudguard no perceptible play should be present between the steering tube of the frame and the fork (protecting cap for ball races). If necessary adjust to remove play. For this purpose the capstan head screw on the friction steering damper should be completely unscrewed after removing the split pin and the damping plate removed from the bottom of the steering tube. Remove







the safety cap and safety ring from the top of the steering tube, slacken the top centering nut (metric spanner 36), remove headlight, slacken the compression joint with a 6 mm Allen key, adjust the capstan nut with a tommy bar and lock again with the compression joint. The fork should swing over to the right or left hand stop under its own weight with the wheel off the ground; no steering play should be perceptible.
The locknut (metric spanner 36) should be tightened to a torque of 87 ft./lbs. (12 mkp) and the compression joint to 7.2–8.7 ft./lbs. (1–1.2 mkp).

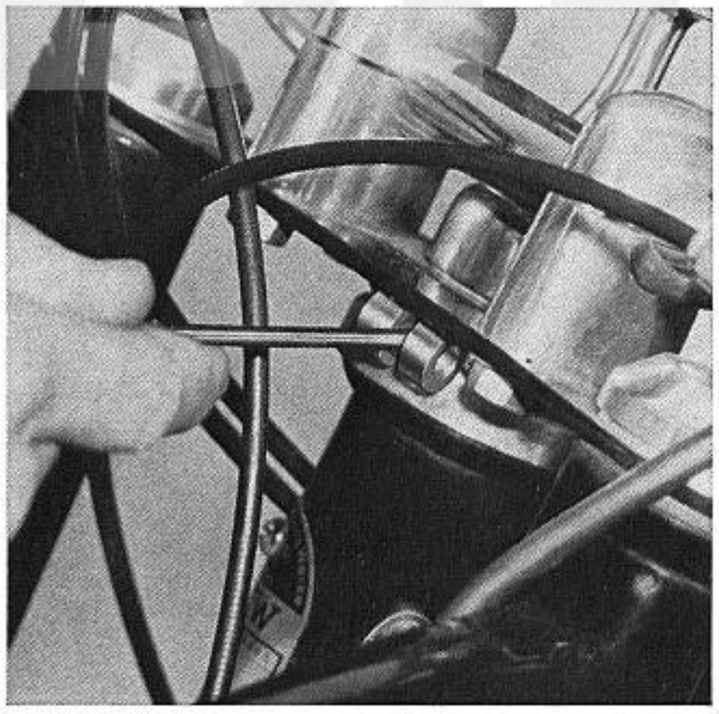
The road wheels are interchangeable (without tires) and at every major service should be checked for firm seating of all spokes. In the event of any tightening being necessary the rims should be precisely centered. Where special light alloy rims are fitted the above checks should be made initially at 1000 miles (1500 km) and at every second minor service 8000 miles (12 000 km).

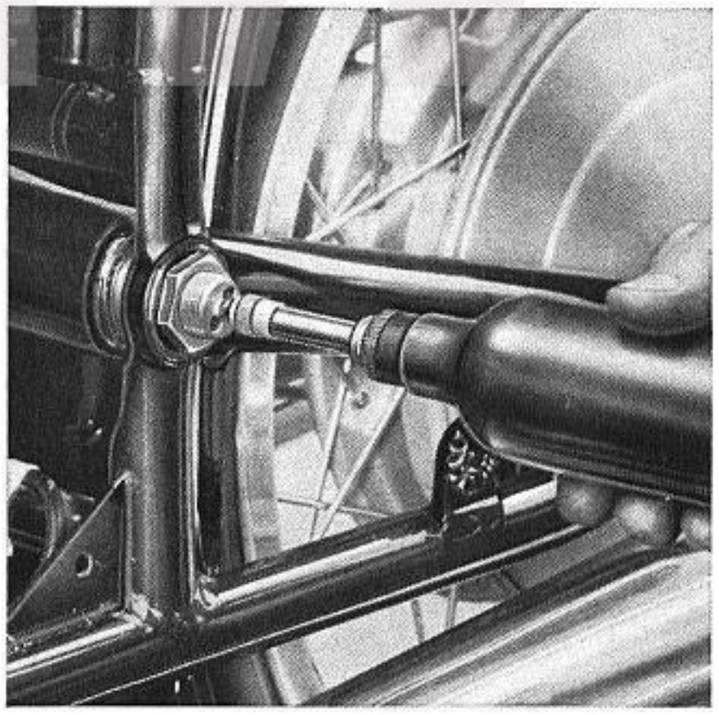
The wheel bearings should be checked for play every 4000 miles (6000 km). As the adjustment of the taper roller bearings has to be carried out by inserting shims, any adjustment should be left to your BMW dealer's workshop.

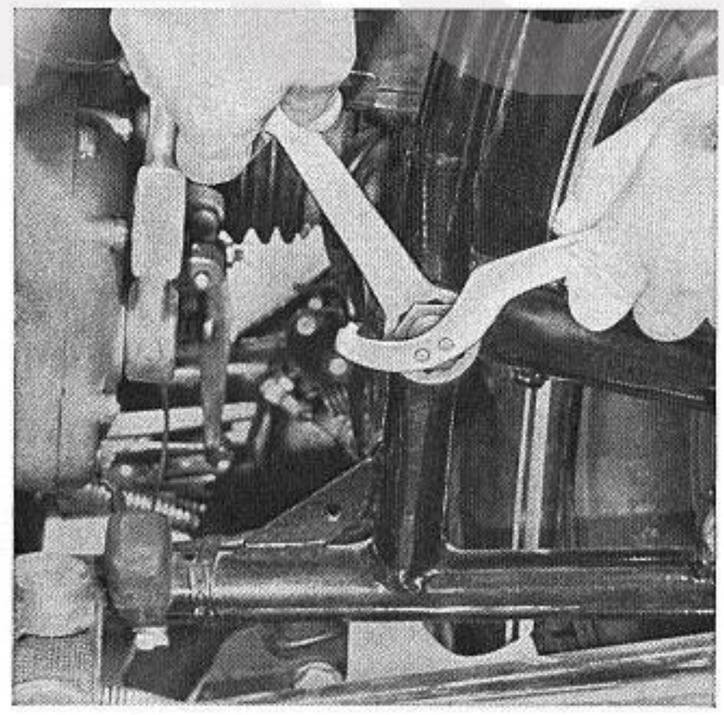
We recommend that you should take this opportunity to have the roadwheels balanced and corrected if required by the fitting of balance weights.

Well balanced wheels give smooth steering and better roadholding at high speeds.

The rear swinging arm bearings should be checked every 4000 miles (6000 km) for play and adjusted if necessary.
To adjust the rear swinging arm bearings, unscrew the capnuts on both sides (metric spanner 36), slacken the locknuts (metric size 27) and tighten up the threaded bolt with the pin wrench from the tool kit, and then slacken off slightly to relieve excess bearing load, so that the arm moves freely without sideplay. Re-tighten locknuts and cap nuts. The clearance at the bearing between swinging arm and frame should be the same on both sides.
Every 2000 miles (3000 km) the swinging arm bearings should be thoroughly lubricated.

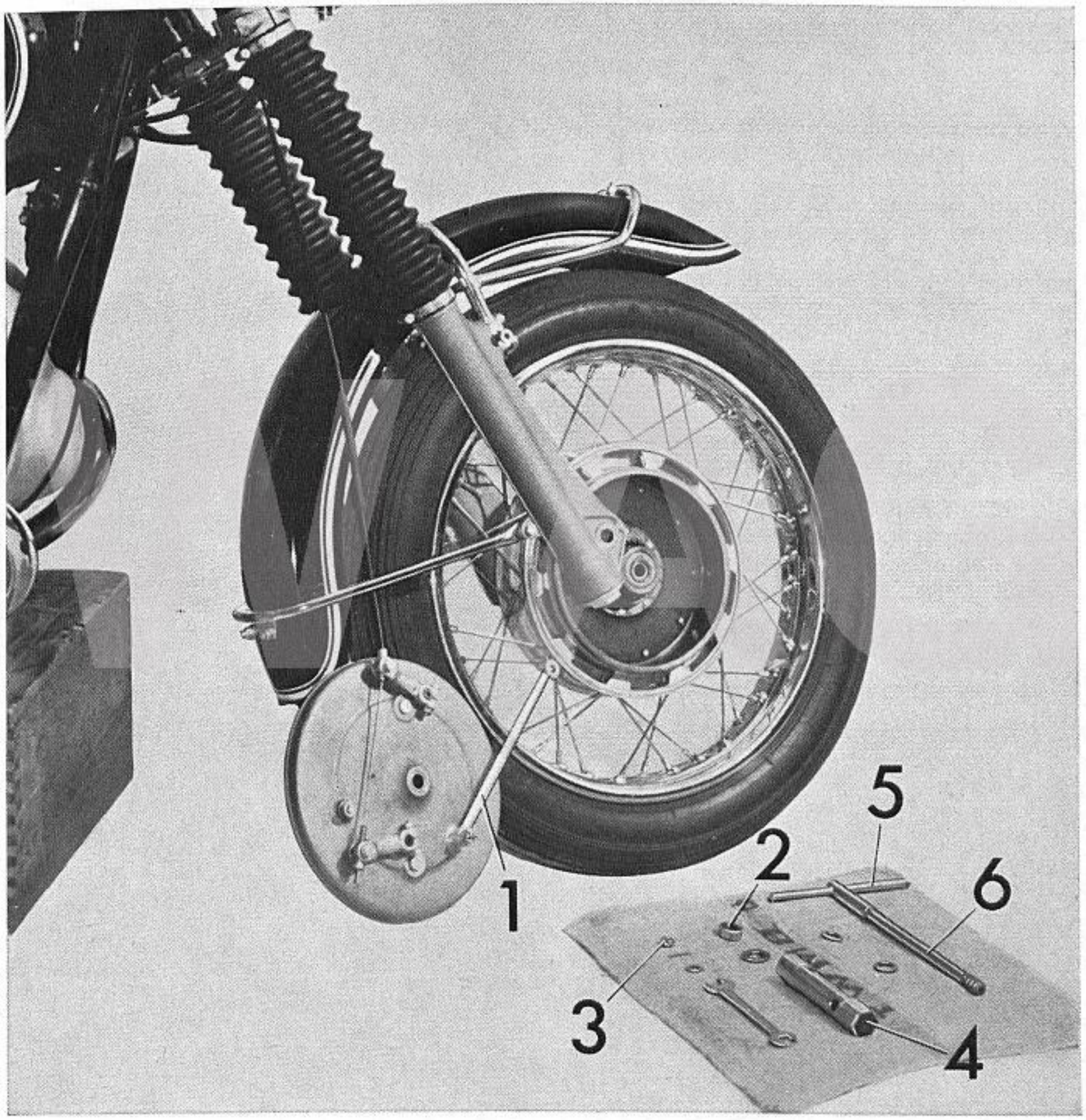




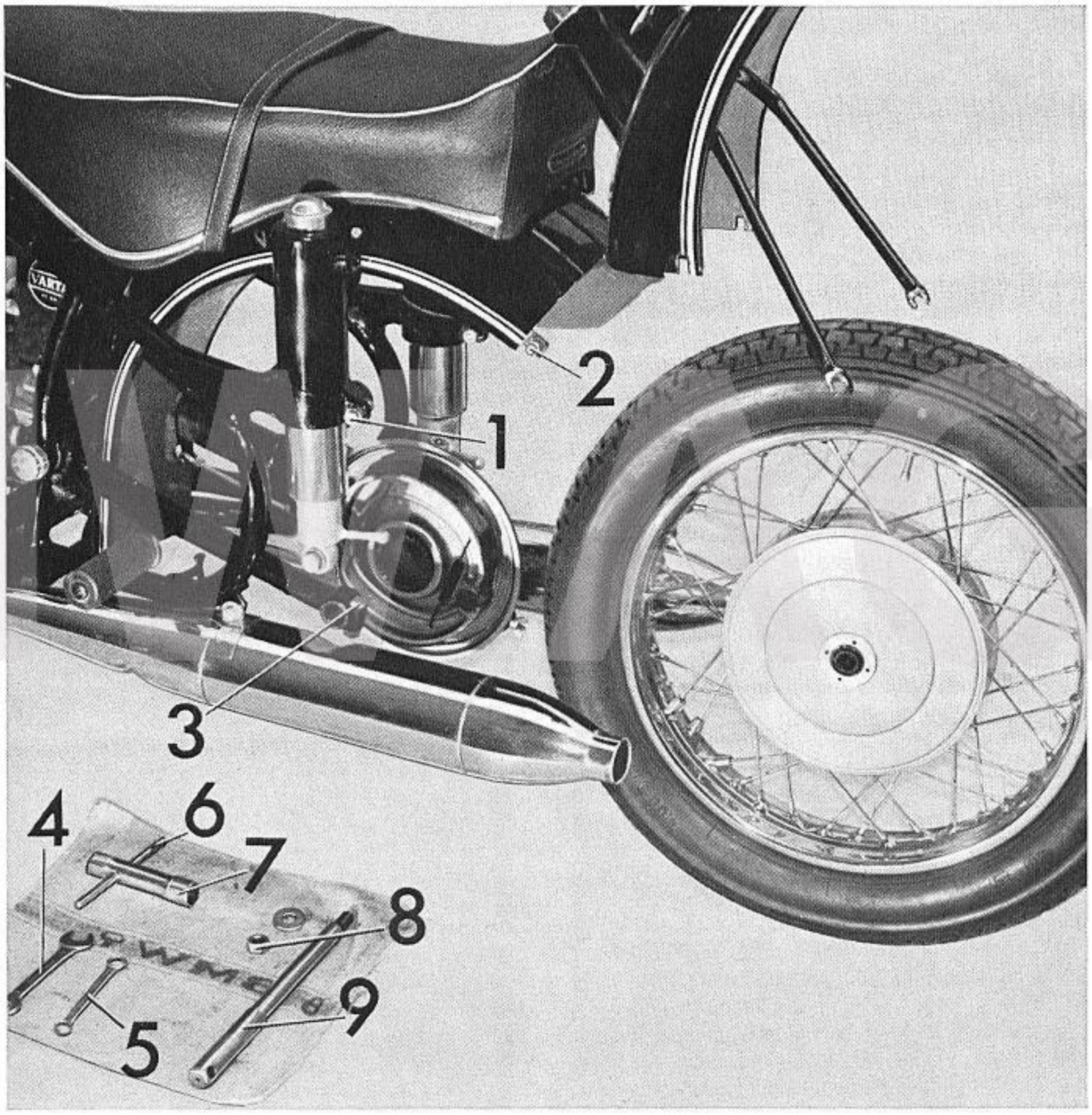


Removal and replacement of front wheel

1. Place motorcycle on stand and support at the front of the frame under the engine.
2. Remove cotter from the top castellated nut (3) of the brake reaction stay (1); remove castellated nut with washer and internal hex. bolt (metric size 6).
3. Slacken nut (2) on the spindle with metric size 22 box spanner (4) and remove complete with washer.
4. Slacken locking screw on lefthand fork leg end with 6 mm Allen key.
5. Remove spindle (6) with a drift (5), pull the front wheel out of the fork and push off the brake backplate. The brake backplate remains hanging on the brake cable (with unvaried adjustment).
6. Clean the spindle before replacement and grease lightly, secure the castellated nut on the brake reaction stay with a new split pin.



Removal and replacement of rear wheel



1. Place the machine on center stand.
2. Slacken mudguard stay bolts (1) and mudguard locking bolts (2) with size 14 ring spanner (5) and swing up the end section of the mudguard.
3. Slacken spindle nut (8) on drive side with size 22 spanner (7) and remove with washer.
4. Slacken locking bolt (3) — metric spanner 17 — on left hand swinging arm with open ended spanner (4) and withdraw spindle (9) by means of drift (6).
5. Remove wheel.
6. When inserting the spindle, which should be absolutely clean and lightly greased, rotate it so that it does not bind, replace washer and tighten spindle nut (8). Last of all re-tighten locking bolt (3) and mudguard fixing bolts (1) and (2).

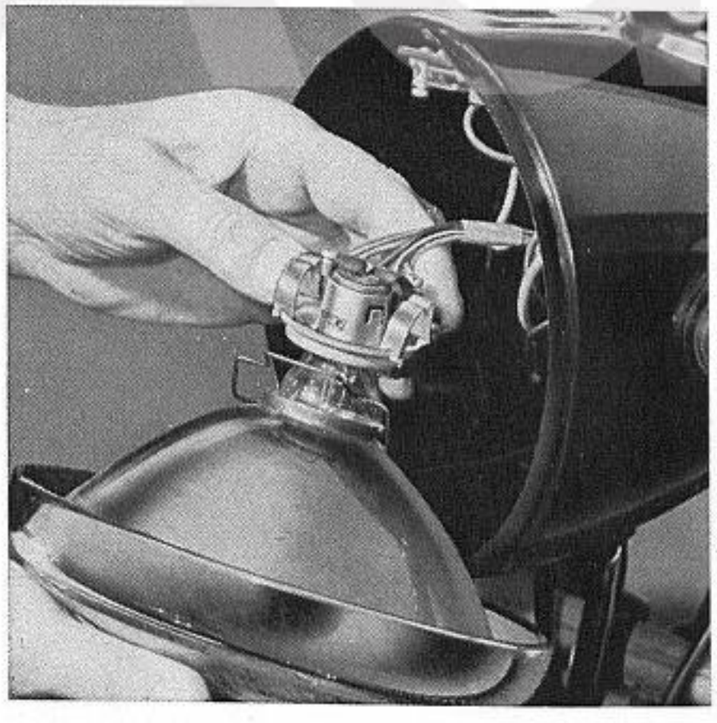
Tire changing

To remove the tire deflate and then press the cover down away from the rim shoulder all round. Unscrew the valve locking ring from the rim and press the valve down into the tire. Push the tire beading into the well of the rim on the valve side and start lifting the cover off the rim on the opposite side with two tire levers. Pull out the tube and proceed in the same way with the beading on the other side.

To replace the tire place the beading on the valve side in the well of the rim and, starting on the opposite side, lever over the rim edge: do not use force. Sprinkle lightly with talcum powder, inflate tube slightly and insert, push valve through valve hole and secure with a few turns on the valve locking ring. On the other side of the valve push the beading into the rim and as before lever it completely over the edge of the rim.
Inflate the tire, check for even seating of the beading on the rim and tighten valve locking ring. Tires should be replaced in precisely their original position on the rim. If marked with a red spot, this must be located over the valve hole in the rim.

Headlight bulbs should be replaced as follows:

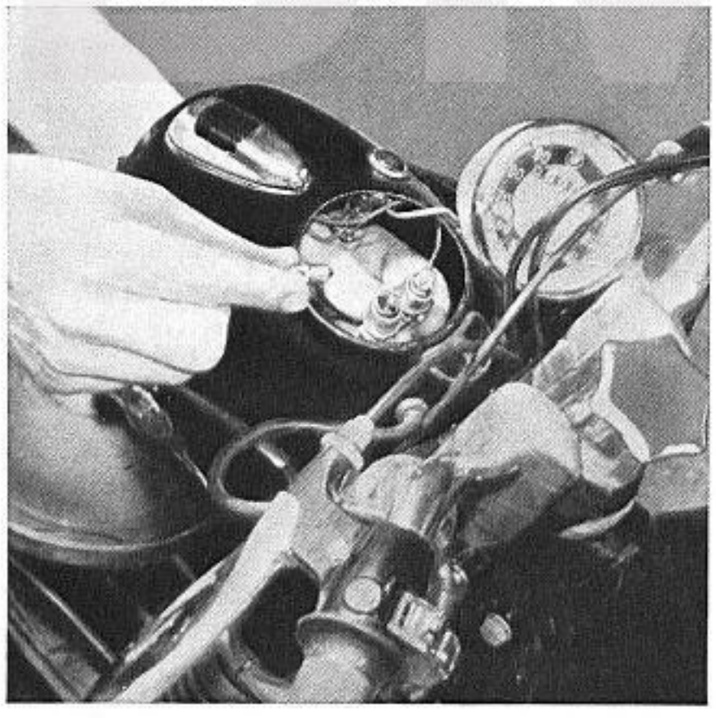
1. Slacken the slotted fixing screw under the rim, lift out rim and reflector.
2. Pull back the wire clip on the bulb holder and extract holder with bulbs.
3. Push in the double-filament bulb and parking bulb, turn to the left and withdraw from the holder. Do not touch the bulb glass with the fingers.

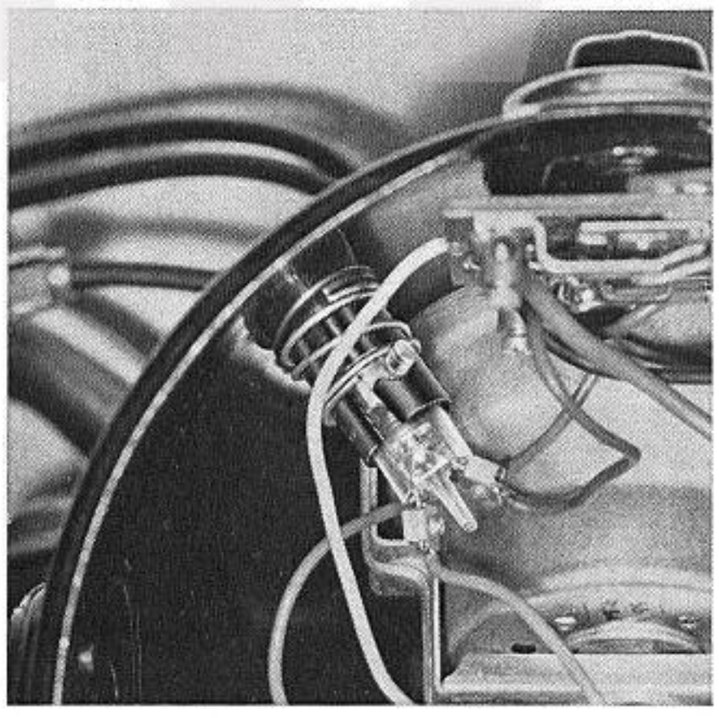


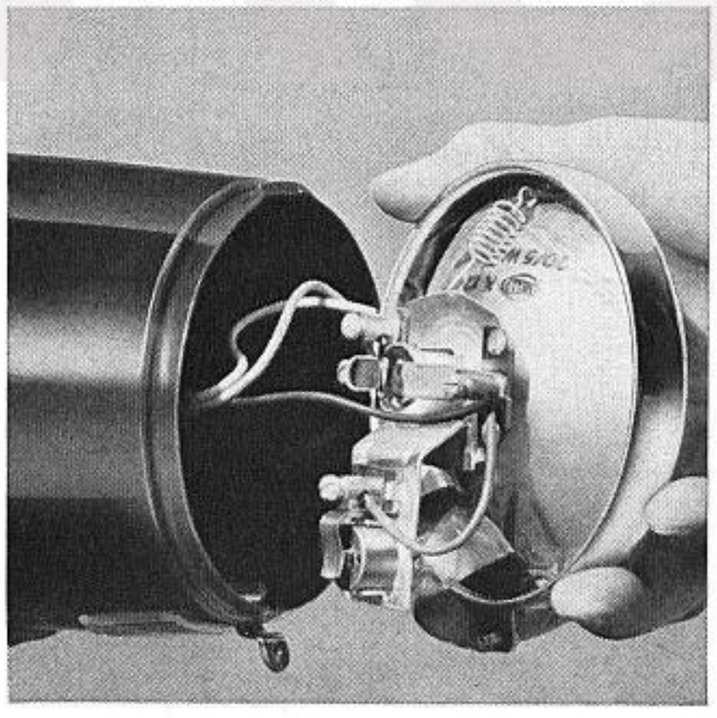
The bulbs for speedometer illumination and the high beam, neutral and battery charge indicators have bayonet fittings. Push in and turn to the left to remove.

To change the bulbs for speedometer illumination, high beam and neutral indicators, the speedometer should be lifted out after unscrewing the drive shaft and retaining nut.

The rear light has a twin filament bulb for tail and stop lights, and also a bulb for license plate illumination. All bulbs can easily be replaced after removing the rim (1 screw).



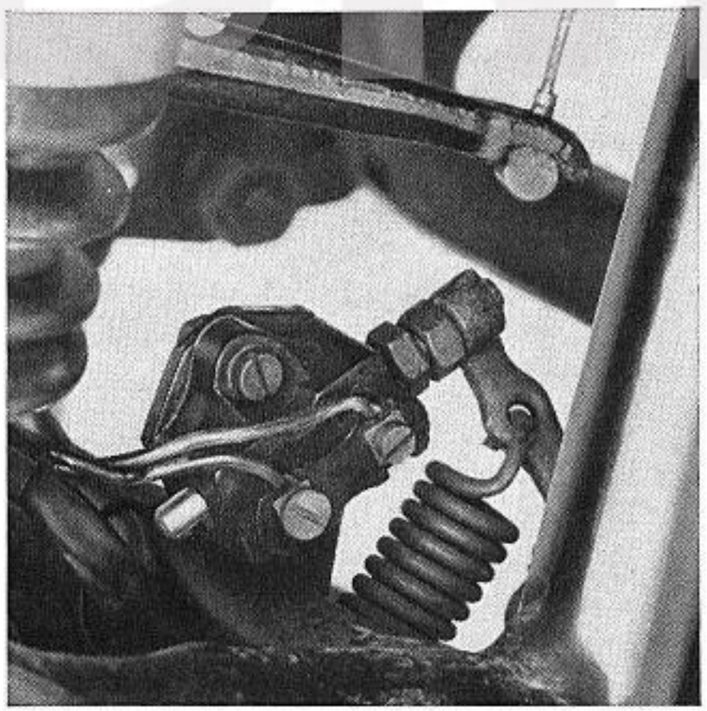


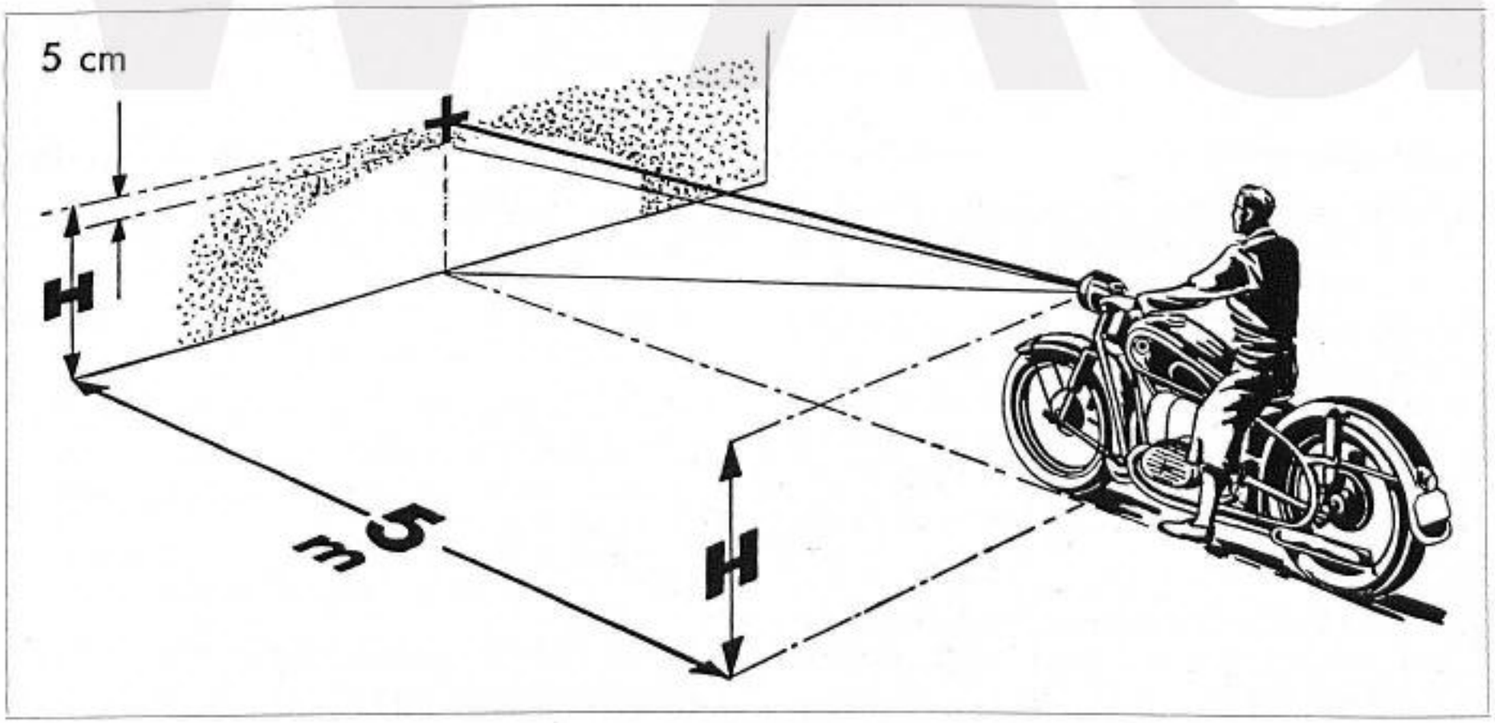


The stop light switch is operated by the brake pedal. It should be set so that the stop light comes on when about half the free travel of the pedal arm has been taken up.

Headlight alignment

If the road surface is insufficiently illuminated and there is a risk of blinding oncoming traffic, the headlight should be re-aligned.
For this purpose a cross should be marked on a light colored wall at the height of the center of the headlight. The machine should be placed 16'5″ (5 meters) away on its wheels and loaded with the rider. Switch on the high beam and align the headlight so that the cross forms the center point of the illuminated area. With the light dimmed the upper edge of the illuminated area must lie 2″ (5 cm) below the cross; adjust if necessary.





Storing the motorcycle
If you have to store the motorcycle for a long period, either during the winter or for other reasons, the following precautions should be taken:

1. Close the fuel tap and drain the gasoline from the float chamber.
2. If possible change the engine oil.
3. Thoroughly clean and dry the motorcycle. Oil the brake pivots, center stand mounting, mudguard and tool chest cover hinges.
4. Coat all plain and chromed steel parts with an acid-free grease, and if possible spray the motorcycle with protective oil. Painted parts should be wiped with a soft cloth.
5. Raise the motorcycle on blocks in a dry room (a stable or similar acid atmosphere will cause corrosion) on the center stand so that the wheels, with tires inflated, are not supporting any load.
6. With the piston near BDC insert a fine spray jet right into the cylinder through the spark plug hole and spray with a branded engine anticorrosion oil, once with the inlet valve open and once with the exhaust valve open. Then turn the engine over several times with the kickstarter. Finally set the pistons at TDC and screw in the spark plugs.
7. Remove the battery, allow to discharge slowly approx. every eight weeks, then recharge.

Lubrication and Maintenance Schedule

R 50 US, R 60 US and R 69 US models

First free service after 300 miles (500 km)

1. Change engine oil. On R 69 US clean magnetic drain plug.
2. Check tightness of cylinder head bolts with engine cold (25.3 ft.lb [3.5 mkp] torque) and tighten if necessary.
3. Check valve clearance, adjust if necessary (inlet = 0.006″ [0.15 mm], Exhaust = 0.008″ [0.20 mm]).

Second service after 1000 miles (1500 km)

As minor service, without item 10 (lubrication of centrifugal advance and contact breaker cam felt) but including:

1. Remove sump for oil change, clean oil filter and magnetic drain plug (R 69 US only).
2. Change gearbox oil.
3. Renew oil in rear wheel drive and in right hand swinging arm.
4. Where specially fitted with light alloy wheel rims, check spoke tension, if necessary equalise spoke tension and true rims.
5. Balance wheels on R 69 US.

Lubricants, materials, seals, etc., will be charged for separately.

Regular lubrication service at 2000 miles (3000 km), 4000 miles (6000 km), 6000 miles (9000 km), 8000 miles (12 000 km), 10 000 miles (15 000 km), etc.

1. Change engine oil. On R 69 US clean magnetic drain plug.
2. Lubricate rear swinging arm bearing (use only hand grease gun).
3. Oil hand levers, brake and clutch joints and mudguard hinge.
4. Check battery level, if necessary add distilled water. This should be done earlier if required.

Minor Service at 4000 miles (6000 km), 8000 miles (12 000 km), 12 000 miles (18 000 km), 16 000 miles (24 000 km), 20 000 miles (30 000 km), 24 000 miles (36 000 km), 28 000 miles (42 000 km).

1. Regular lubrication service.
2. Check gearbox oil level and add oil if necessary.
3. Check oil level in rear wheel drive, add oil if necessary.
4. Check oil level in right hand rear swinging arm. Drain oil for this purpose and refill with proper quantity.
5. Check oil level in both front fork legs. Drain for this purpose and refill with proper quantity.
6. Check intake air filter cartridge, carefully knock out dust (under no circumstances wash out). Renew filter cartridge if very dirty.

7. Check steering, wheel bearings, front wheel and rear wheel swinging arm for play.

8. Check all nuts and bolts for tightness, especially spindle nuts and their locking bolts, rear spring unit fixing screws, engine/gearbox joint, cylinder base nuts, etc. Warning: tighten front spindle nut only when clamping bolt has been loosened. Before final tightening of the clamping bolt compress the front forks strongly several times. Front and rear axle nuts to be tightened only with normal spanner, without using extension.

9. Check play in control cables and adjust if necessary.
   Remove twist grip and grease.

10. Check spark plug condition, and gap (0.024″ [0.6 mm]).

11. Check vibration damper on R 69 US for correct functioning.

12. Check contact breaker gap: 0.014—0.016″ (0.35—0.40 mm), grease the bush of the centrifugal advance and the contact breaker felt with Bosch grease Ft 1v4, and check that the felt lies correctly against the cam.

13. Check ignition timing.

14. Clean the carburetor and the filter in the fuel tap.

15. With the engine cold, check the tightness of the cylinder head bolts (torque = 25.3 ft.lb. [3.5 mkp]), and tighten if necessary.

16. Then check the valve clearance and adjust if necessary (inlet = 0.006″ [0.15 mm], exhaust = 0.008″ [0.20 mm]).

17. Make a test run to check for roadworthiness (tires, tire pressures, brakes, steering, lights) and if necessary adjust engine slow running.

Major Service at 16 000 miles (24 000 km), 32 000 miles (48 000 km), 45 000 miles (72 000 km), 64 000 miles (96 000 km), etc.

1. Minor service, with the addition of:
2. When changing the engine oil remove sump, clean sump and oil filter.
3. Change gearbox oil at least once a year.
4. Change the oil in the rear wheel drive and right hand rear swinging arm at least once a year.
5. Change the oil in both fork legs at least once a year.
6. Remove wheel hub bearing, clean and re-grease.
7. Check the roadwheel spokes for even tension. If necessary tighten spokes and true rims. Where specially fitted with light alloy rims, item 7 should be carried out every 8000 miles (12 000 km).
8. Balance the wheels.
9. Clean brakes, brake drums, brake shoes and brake linings, and check brake cams and linkage.
10. Renew the 'micro-star' filter cartridge.
11. Clean the carbon dust from the dynamo, clean the commutator and check that the contact face is smooth, check the brushes for wear and free movement in the brush holders. Under very dusty conditions item 11 should be carried out every 8000 miles (12 000 km).

Key to wiring diagram

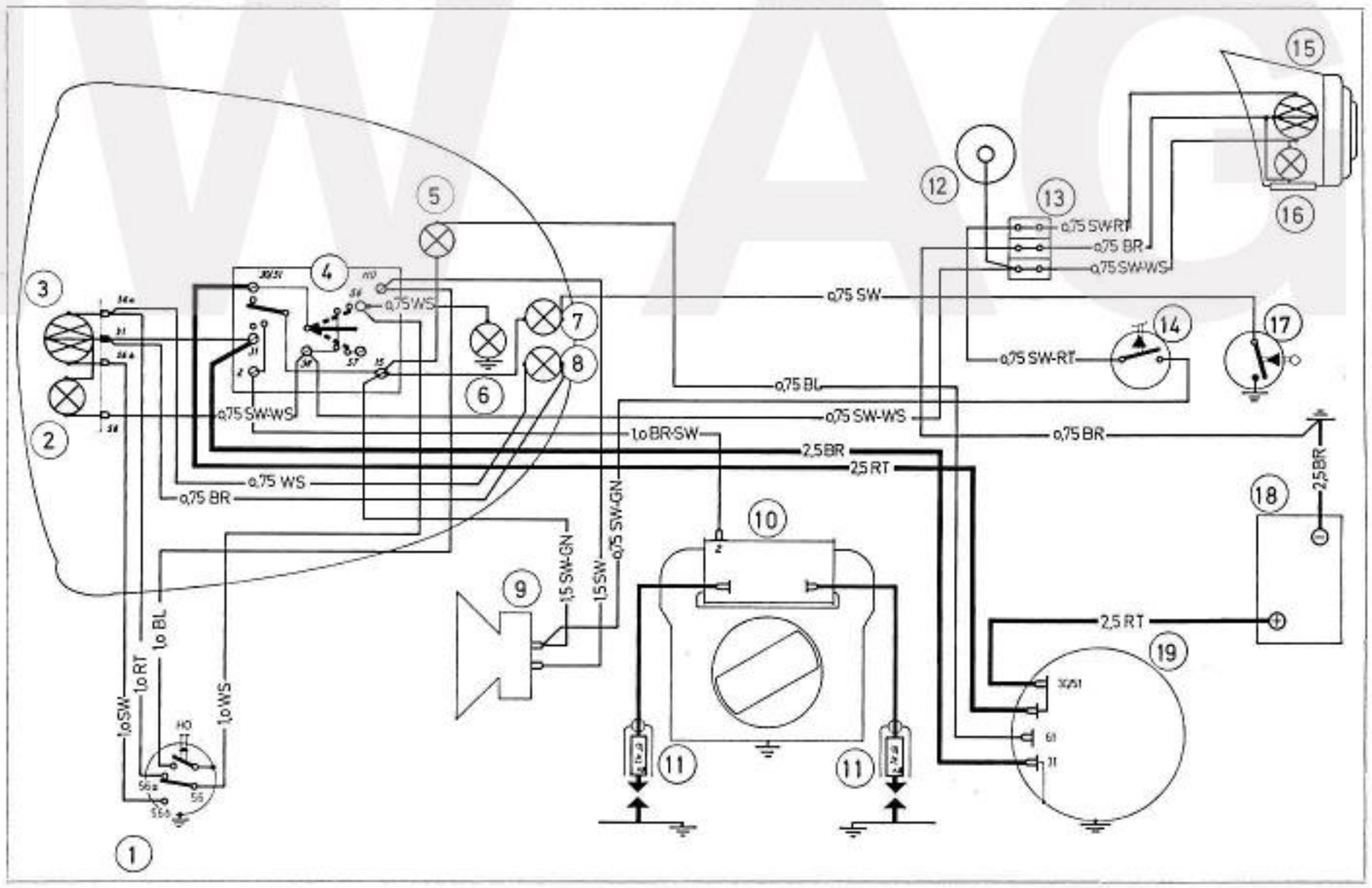
BMW R 50 US, R 60 US, R 69 US (6 V System)

Wiring color coding

BL = blue	SW = black	GN = green
BR = brown	WS = white	RT = red

Example: 0.75 BR = 0.75 mm² brown

1. Dimmer – horn button
2. Parking light bulb
3. Double filament bulb
4. Ignition/lighting switch
5. Charge indicator
6. Instrument illumination
7. Neutral indicator
8. High beam indicator
9. Horn
10. Magneto
11. Plug connector (suppressed)
12. Socket
13. 3-pole cable connector
14. Stop light switch
15. Stop/rear light
16. License plate illumination
17. Neutral indicator switch
18. Battery
19. Dynamo



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