

RIDER'S HANDBOOK

Operation

Service · Maintenance

Technical Data

R 45

R 65

R 65 LS



Model

Frame number

(on right frame tube at bottom, near rear engine mounting)

Engine number

(on engine oil filler pipe, left side of engine)

License number

Owner

Address

Tel. No.

Supplying dealer

Date first registered

You received three keys for your new BMW motorcycle:
one for the steering head, ignition/lighting switch, dualseat lock and fuel filler cap (with folding head), and two spare keys (rigid head).

Please keep the spare keys so that they can be reached in an emergency. Take care of the plate stating the key number, in case spare keys have to be obtained.

BMW AG

Your motorcycle may differ from the published description or the details in this handbook by virtue of the special equipment ordered with it, or because of slight differences in national specifications.

In the interests of continuing development we reserve the right to modify designs, equipment and accessories.

Dimensions, weights and performance data are quoted subject to generally accepted tolerances.

Errors and omissions excepted.

Dear motorcycling enthusiast,

We congratulate you on choosing a new BMW, with its powerful flat twin engine and shaft drive – acknowledged the world over to be among the finest motorcycles ever made.

Developed and refined for many years, this engineering concept is the secret of the BMW's international reputation for reliability, minimum maintenance effort and expense and a standard of ride comfort that is unsurpassed.

Our prime objective is to achieve customer satisfaction. This is closely linked with true mastery of the motorcycle, familiarity with its technical details and riding experience.

This rider's handbook has therefore been compiled to help you become familiar with the basic operating essentials for trouble-free riding. It will repay careful study, and contains a great deal of useful knowledge and information on operating the controls, general riding practice, servicing and maintenance, as well as a full specification.

In conclusion, let us wish you pleasant journeys everywhere on your BMW motorcycle.

Yours very sincerely,

BMW Motorrad GmbH + Co.

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OPERATION



**SERVICE AND
MAINTENANCE**



SPECIFICATIONS

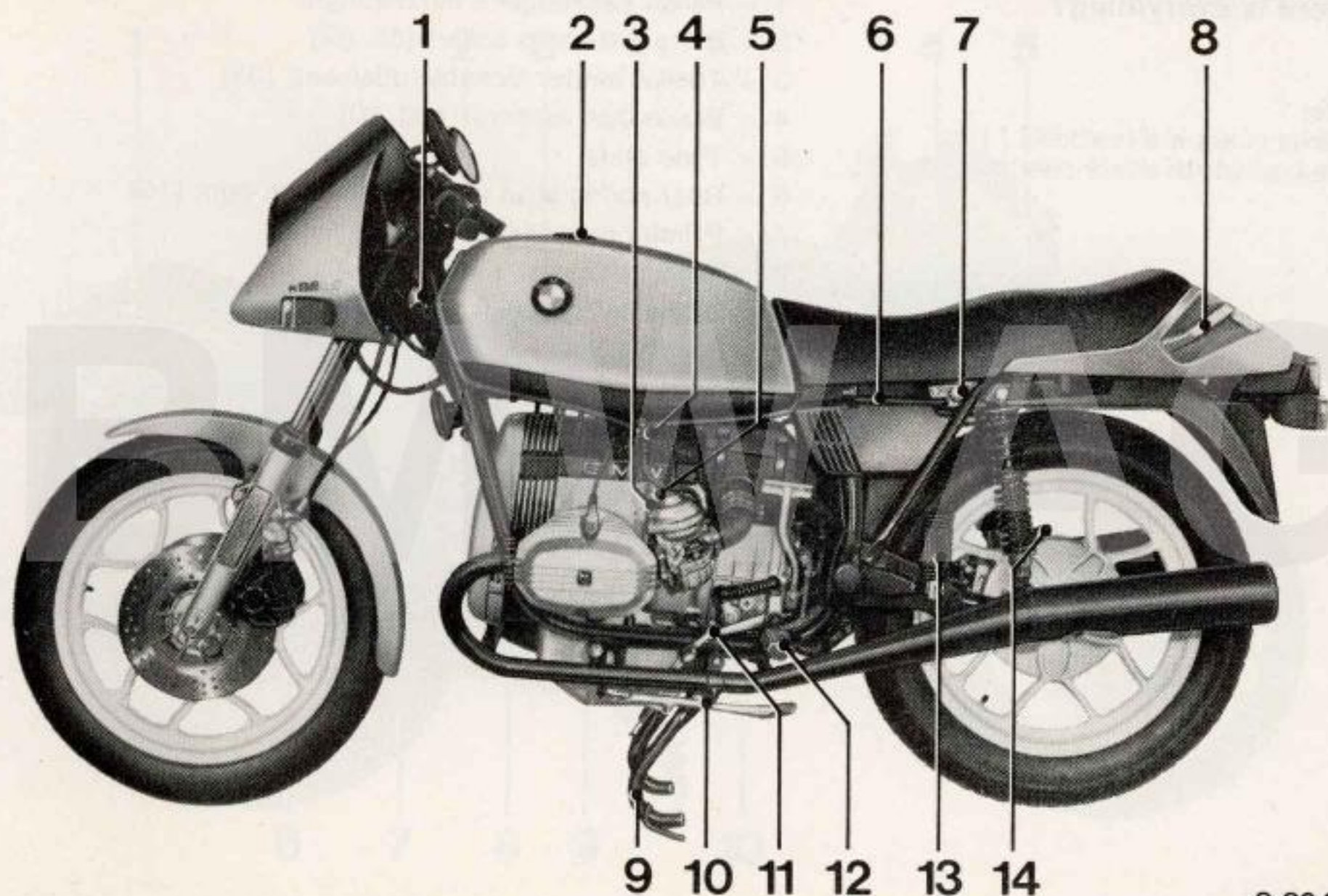


Where is everything?

Note:

Figures in square brackets [] =
pages on which descriptions appear

- 1 = Steering lock [21]
- 2 = Tank filler cap
- 3 = Engine oil dipstick/filler [22]
- 4 = Fuel tap [17]
- 5 = Engine number
- 6 = Grab handle for putting on stand [20]
- 7 = Dualseat lock [21]
- 8 = Pillion passenger's handle, left
- 9 = Central stand [20]
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- 12 = Rider's footrest, left
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- 14 = Rear spring strut adjusting lever, left [16]



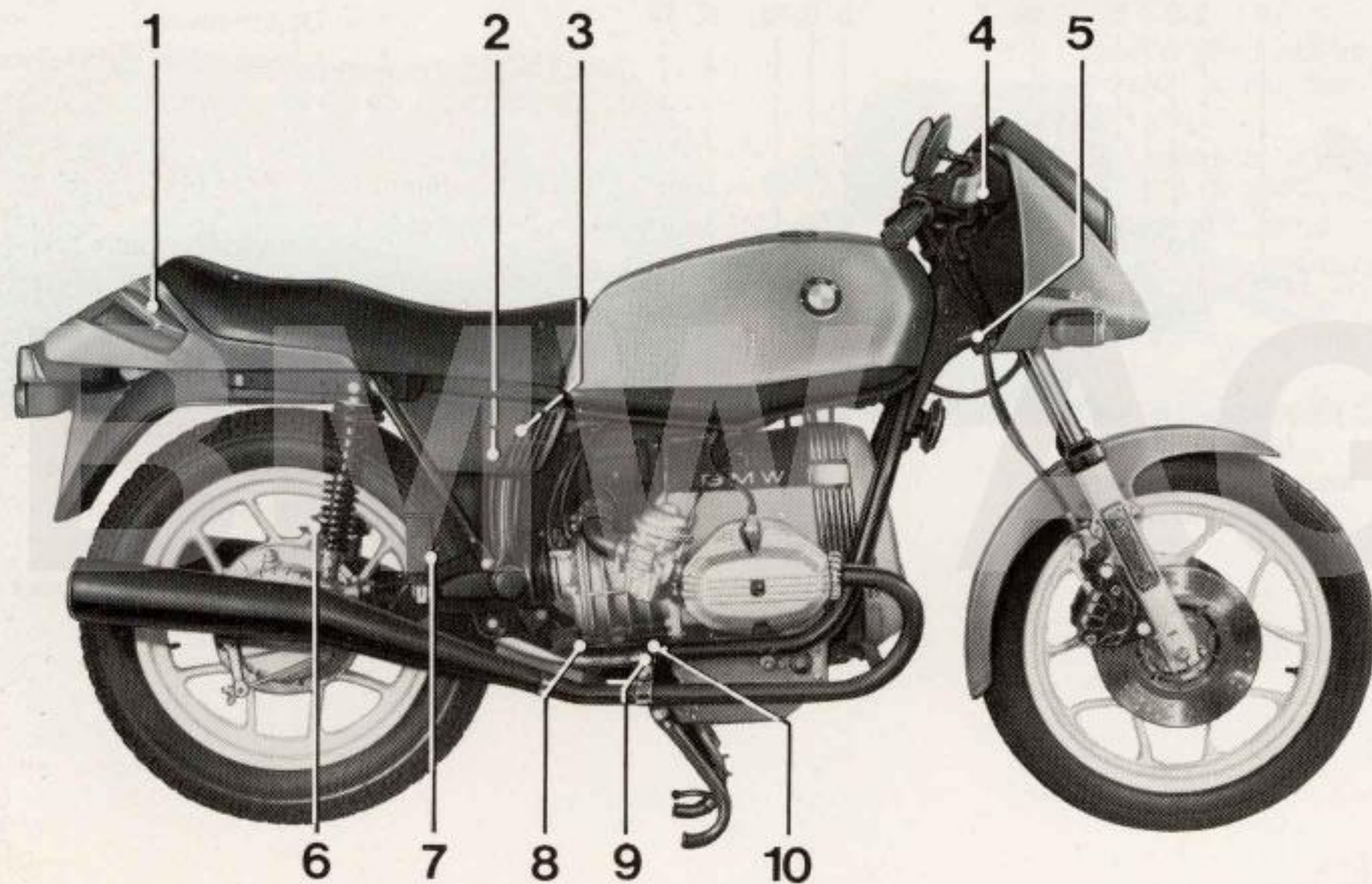
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Where is everything?

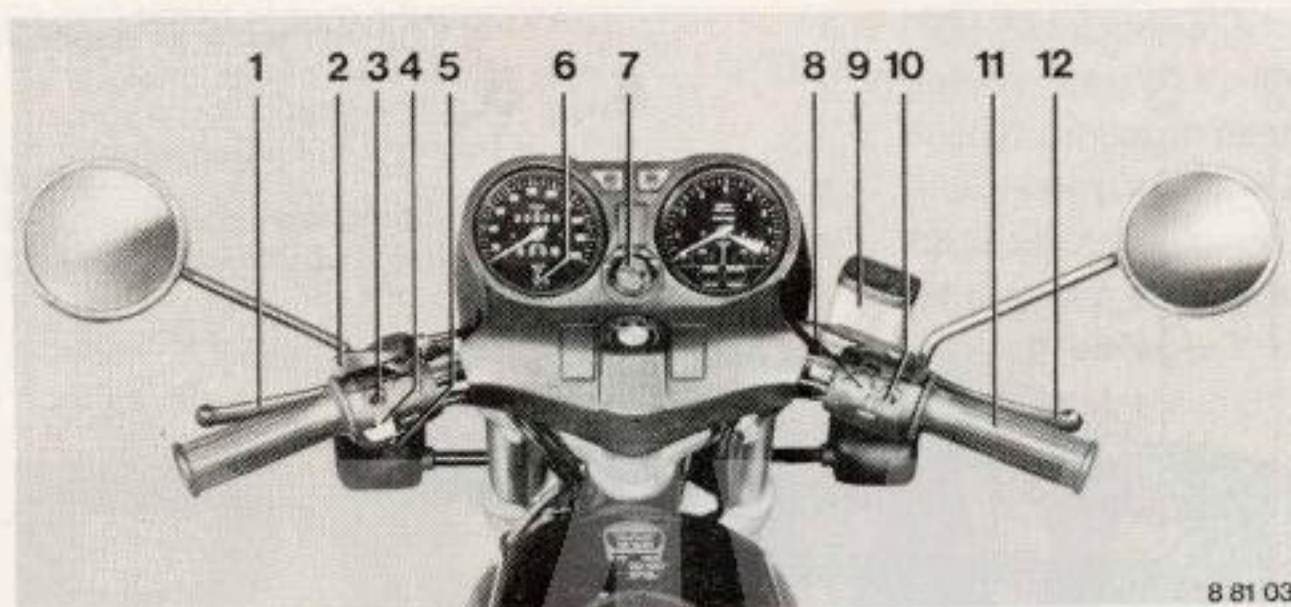
Note:

Figures in square brackets [] =
pages on which descriptions appear

- 1 = Pillion passenger's handle, right
- 2 = Battery (behind cover) [66, 67]
- 3 = Toolkit (under lockable dualseat) [32]
- 4 = Brake fluid reservoir [69, 70]
- 5 = Type plate
- 6 = Rear spring strut adjustment lever, right [16]
- 7 = Pillion passenger's footrest, right
- 8 = Rider's footrest, right
- 9 = Brake pedal [16]
- 10 = Frame number



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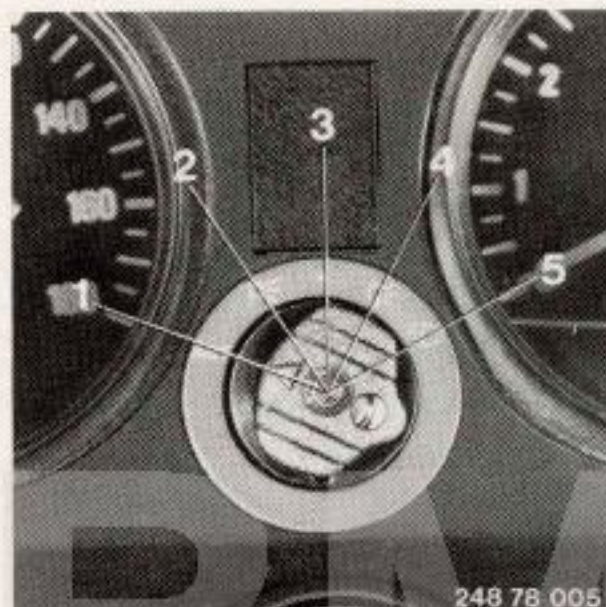
Controls

- 1 = Clutch lever
- 2 = Choke (cold-start) lever
- 3 = Horn push
- 4 = Headlight dip (low beam) switch and headlight flasher
- 5 = Turn indicator switch
- 6 = Trip distance recorder reset knob
- 7 = Ignition/light switch
- 8 = Emergency ignition cutout ('kill') switch
- 9 = Brake fluid reservoir
- 10 = Starter push button
- 11 = Throttle twistgrip
- 12 = Handbrake lever (front brake)



Instruments and telltale lamps

- 1 = Speedometer with odometer and trip distance recorder
- 2 = Turn indicator repeaters, left/right (green)
- 3 = Revolution counter
- 4 = Battery charge telltale lamp (red)
- 5 = Oil pressure warning lamp (red)
- 6 = Neutral indicator for gearbox (green)
- 7 = Headlight high beam telltale (blue)



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Ignition/light switch settings, Fig. 5

- 1 = Off. Key can be removed
- 2 = Parking light. Key can be removed
- 3 = Operating position (ignition and all electrical circuits switched on, charge telltale and oil pressure warning lamps illuminated, headlight high beam telltale and neutral indicating lamp will also come on if appropriate)

- 4 = Operating position with parking light
- 5 = Operating position with headlight (high or low beam as selected) and parking light

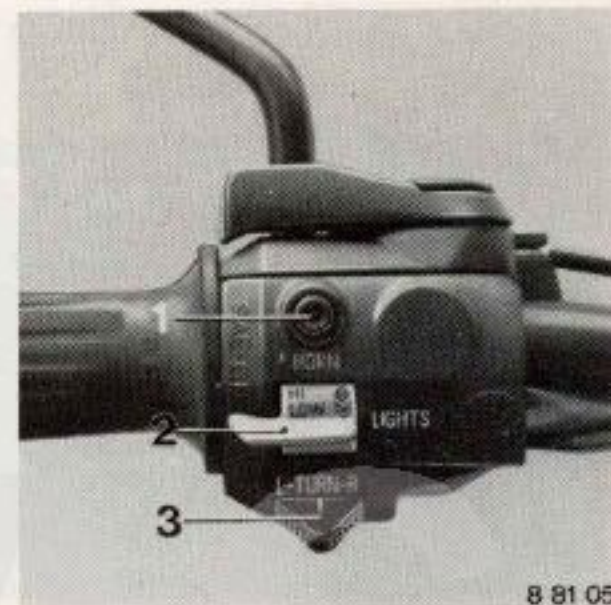
Warning: do not leave the parking light switched on for more than a short time when the engine is stopped.

Digital clock under the ignition/light switch (special equipment, only on R 65 LS).

Use a pointed, but not sharp object (e. g. ball-point pen) to alter the setting by applying light pressure to the rubber diaphragms above the display:
position "h" = hours setting
position "min" = minutes setting

Left-hand handlebar fittings, Fig. 6

- 1 = **Horn push**
Press to sound horn
- 2 = **Headlight dip (low beam) switch**
At top: high beam
In center: low beam



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At bottom: headlight flasher

When released, the switch returns automatically to the center position.

3 = Flashing turn indicator switch

- 'L' position: left turn indicated
- 'O' position: off
- 'R' position: right turn indicated



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Right-hand handlebar fittings, Fig. 7

1 = Emergency ignition cutout ('kill' switch)

Move the switch either up or down (to 'OFF') to stop the engine in an emergency.

Important:

The engine can only be started with the switch in the central 'RUN' position, since in the two 'OFF' positions it interrupts the ignition and starter circuits.

2 = Starter push button

Press to run the electric starter motor.

Note:

Before the engine can be started, neutral must be selected or the clutch disengaged by pulling up and holding the clutch lever. This is to prevent accidental starting with a gear selected.

Important note:

To ensure that the front brake operates correctly, the right-hand handlebar fitting must never be turned to a different position on the handlebar, nor must the handlebar be repositioned in its clamps. The punch marks on the tube must be aligned with the clamp block joint line and the dividing line at the right-hand handlebar fitting. This is to ensure that the brake fluid reservoir remains in the prescribed position.



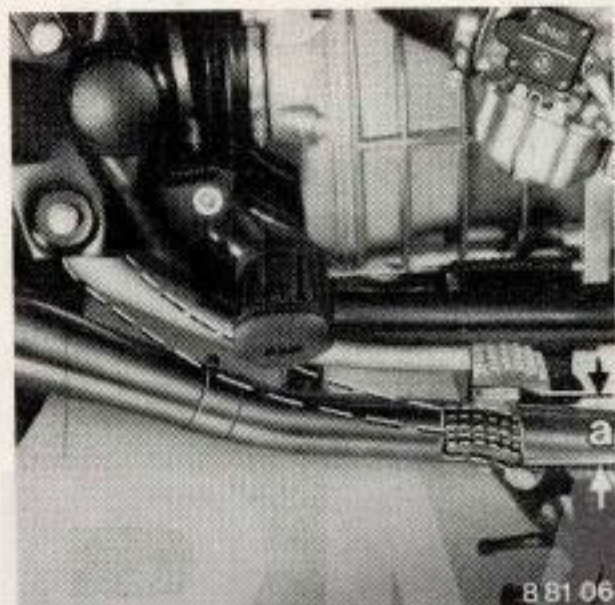
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8

Checking free travel at hand-brake lever

Free travel at the handbrake lever is a fixed design feature, and cannot be reset. **Fig. 8**

Any sudden change in the amount of free travel may indicate a hydraulic system fault. See pages 68–70.

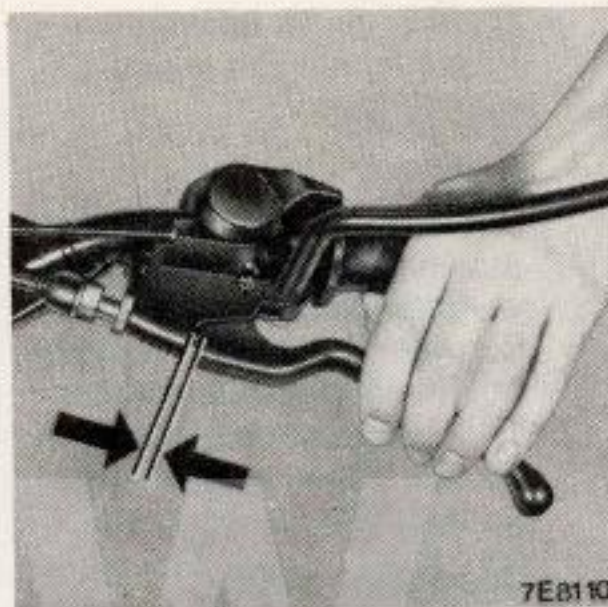


9

Checking free travel at brake pedal

The brake pedal must not have more than 25 mm (1 in) of free travel. **Fig. 9**

If necessary, take up slack in the brake operating linkage by turning the wingnut (10 mm wrench). See page 69.

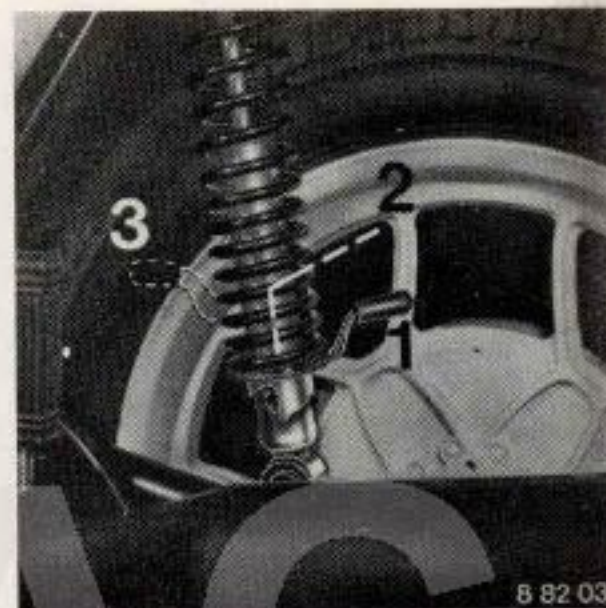


10

Checking free travel at clutch lever

Free travel at the clutch lever should be 2 ± 0.5 mm (0.08 ± 0.02 in). **Fig. 10**

If necessary, adjust the clutch operating mechanism – see page 77.



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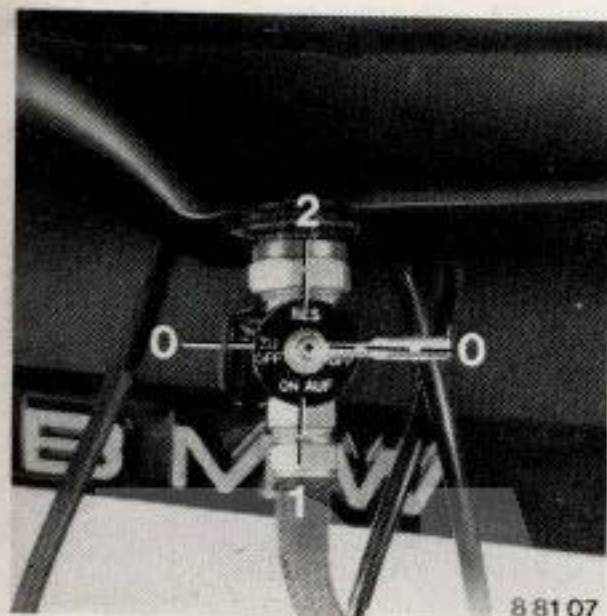
Spring strut adjustment

The preload value for the rear suspension strut coil springs can be reset to one of three positions to suit riding conditions. No tools are needed.

Position 1 = 'Normal', for solo riding

Position 2 = 'Medium', for two-up riding or heavy load (luggage)

Position 3 = 'Hard', for maximum load. **Fig. 11**



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Fuel tap positions, Fig. 12

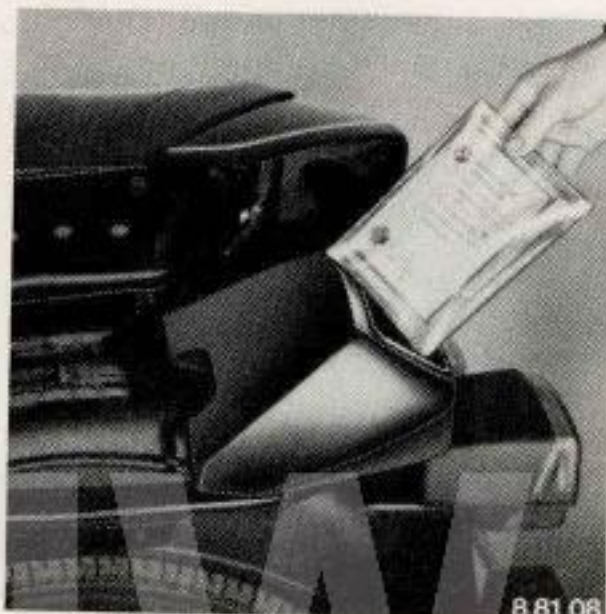
Position '0' (front/rear) = Closed (fuel off)

Position '1' (down) = Open (fuel on)

Position '2' (up) = Reserve
In the 'Reserve' position, only about 2 liters (0.3 – 0.4 gal) of fuel remain available.

Warning:

Do not forget to close the fuel tap when the engine is stopped and the motorcycle is out of use. Do not overfill the tank –



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leave space for the fuel to expand as it heats up, particularly in warm weather.

First aid kit

Your motorcycle is equipped with a first aid kit in a compartment under the rear end of the dual seat. **Fig. 13**

Check the contents regularly to ensure that they are fit for immediate use (ageing may occur if not used for a lengthy period), and replace any items taken out so that the first aid kit is always complete.

Starting a cold engine

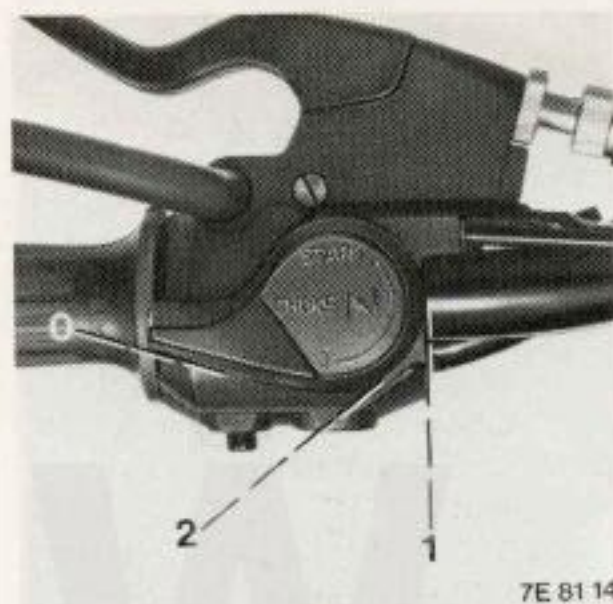
Pull the choke lever on fully = position 1, **Fig. 14**. Keep the throttle twistgrip closed. Open the fuel tap and switch on the ignition.

1. Using electric starter

Press the starter button. If the engine fires reluctantly, open the throttles slightly by turning the twistgrip. As soon as the engine runs, release the starter bush button **immediately**.

2. Using kick starter (optional extra)

Move the kick starter pedal down to a convenient position (pistons just ahead of TDC), then depress it powerfully. If the engine does not fire, wait for it to stop rotating, then repeat the attempt within app. 10 seconds, or else the electronic ignition will cut out and will have to be reset by turning the crankshaft again.



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After a cold engine has started, leave the choke in position 1 only until the engine begins to run hesitantly.

Choke lever moved to center (2) position (detent) = moving away with engine still cold (for improved throttle response).

Choke lever at position '0' = normal riding setting, choke out of action.

To start a warm engine (at normal operating temperature), open the throttles to max. 1/4 of their fully-open setting by turning the twistgrip.



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Telltale and warning lamps (engine), Fig. 15

- 1 = Battery charge telltale (red):

The telltale lamp must go out at a fast idle speed, to indicate that the alternator is charging the battery.

If it continues to burn when the motorcycle is being ridden, consult a BMW Service workshop without delay, or else the battery will go flat.

- 2 = Oil pressure drop warning lamp (red):

After the engine has started and is running at a normal idle speed, this warning lamp must go out.

If it comes on when the motorcycle is being ridden, declutch **immediately**, close the throttles and switch off the ignition. Check that engine oil level is not too low; if it is satisfactory, consult a BMW service workshop.



8 81 10

Center stand

To remove the motorcycle from its stand, hold the left handlebar grip with the left hand, and the handle under the dualseat with the right hand. Push the machine carefully forwards until the stand folds up.

To put the machine on its stand

Press the center stand down to the ground by applying the right foot to the projecting peg. Both curved feet of the stand must be in contact with the ground. Transfer the foot to the end of the center stand foot, apply the full weight of the body at this point and pull the motorcycle up and back at the dualseat handle. With the other hand, hold the handlebar to keep the motorcycle balanced and guide it on to the stand. **Fig. 16**

Make sure that the ground surface can bear the motorcycle's weight. Avoid soft surfaces (including soft tarred roads in hot weather), or the stand may sink in and the motorcycle fall over.



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17

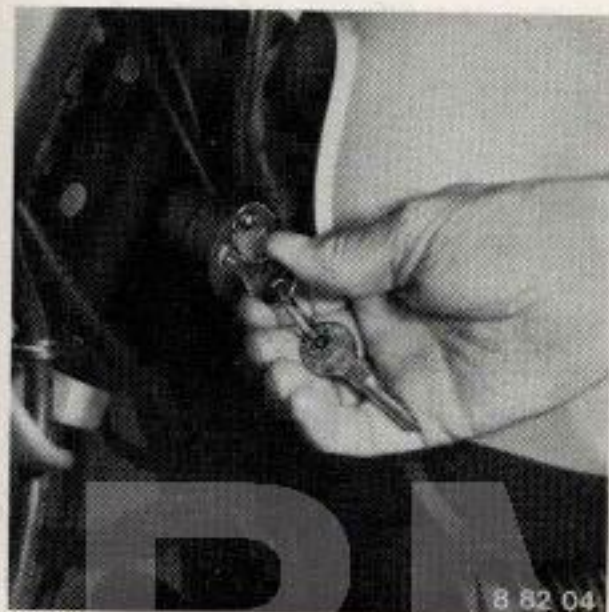
Side (prop) stand

The prop stand is intended only for parking the motorcycle quickly for a brief period.

Fig. 17

When you raise the motorcycle to a vertical position before riding away again, make sure that you have folded up the prop stand.

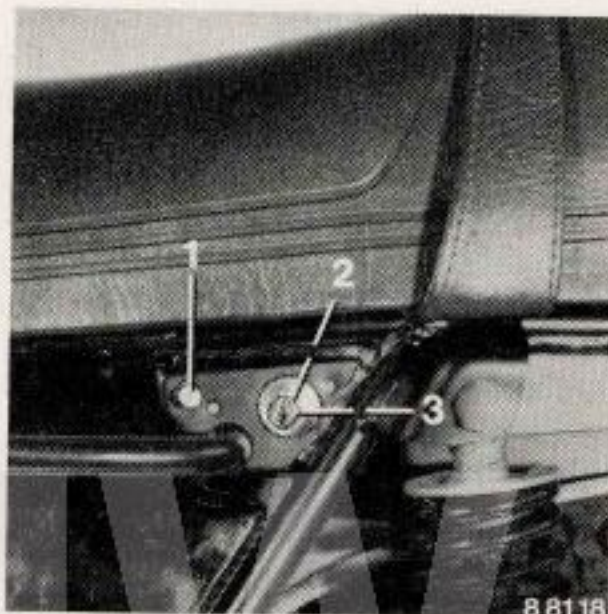
The ground surface under the prop stand must also be capable of bearing the motorcycle's weight without yielding.



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To lock the motorcycle, insert the key into the steering lock and turn the handlebars slightly to the right until the lock can be pressed in with the key. Then turn the key to the right (clockwise) to secure the lock. The key can then be withdrawn.

Fig. 18



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Warning:

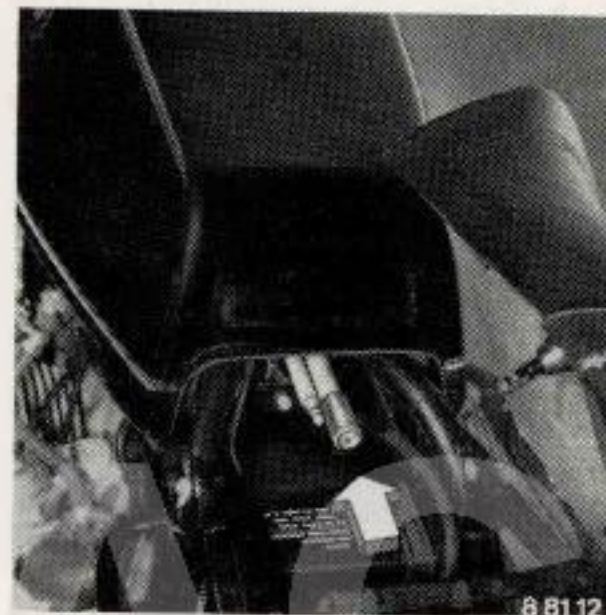
Never leave the key in the steering lock after it has been released. Turning the steering to one side could cause the key to break off.

Dualseat

Press push button (1) to open the dual seat. Unlock first if necessary (motorcycle has one-key lock system).

- Position (2) = open
- Position (3) = locked

Fig. 19



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As an additional precaution against theft, a steel-cable padlock (BMW accessory) can be kept neatly in the main frame tube of the motorcycle, where it is itself protected against theft until needed.

Fig. 20



21

Helmet holder

A hook is bolted to the lifting handle under the lockable, detachable dualseat. The helmet can be suspended from this hook and secured against theft by locking the dualseat.

Fig. 21

Before you start

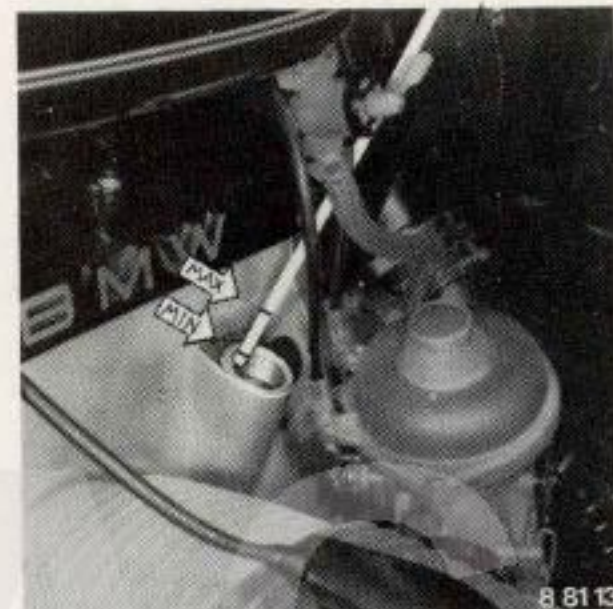
Safety checks

Tire treads

Although the national legal tread limit may quote a lower figure, the tires of a fast motorcycle should never be allowed to wear down below a tread depth of 2 mm (0.08 in) for speeds up to 130 km/h (81 mile/h), or 3 mm (0.12 in) for speeds above 130 km/h (81 mile/h).

Tire pressures

The tire pressures specified by BMW are designed to ensure optimum handling, grip and tire life. They should be checked once a week and the tires inflated to the correct pressures if necessary. See pages 88 and 95 for the correct pressures, or refer to the adhesive label on the rear mudguard under the dualseat.



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Engine oil level check

Check engine oil level **regularly**, if possible after the engine has been stopped for a fairly long period, to allow the oil to settle.

The oil level must be between the two marks on the dipstick (amount of oil between 'MIN' and 'MAX' marks = 0.85 liter [1.5 Imp. pints, 0.9 US quart]). Never allow the oil level to fall below the 'MIN' mark. On the other hand, it is pointless and

even harmful to fill the engine beyond the 'MAX' mark. To check oil level, **push the dipstick in but do not screw it in.** Fig. 22

Engine oil consumption max. 0.1 l/100 km (app. 350 mile/Imp. pint, 590 mile/US quart).

Do not change to a different type or grade of oil except during a complete oil change including filter renewal. Do not mix mineral oils and synthetics.

Our engines are designed to run in conjunction with the highly-developed modern engine oils supplied by reputable manufacturers. For this reason, **do not use any additives in the oil.** This also applies to the gearbox, final drive and telescopic fork oils.

Fuel tank

The tank holds 22 liters (4.8 Imp. gal, 5.8 US gal), including a reserve of app. 2 liters (0.44 Imp. gal, 0.53 US gal).

After the running-in period is over, you can fill the tank on

several occasions and use the trip distance recorder to establish how far you can ride on average before switching to 'Reserve'. This will avoid the risk of running out of fuel. A small amount of fuel (app. 0.5 l [0.1 gal]) may still remain in the right half of the tank. By leaning the motorcycle over on to its left cylinder head, this final reserve amount can reach the fuel tap.

For reliable operation, the engine needs a reputable commercial brand of petrol (gasoline) – either Super (premium) or regular depending on the model – with the octane rating not less than the value stated on pages 89 and 95. Additives such as upper-cylinder lubricants etc. are not needed.

Checking lights

After the engine has been started, check (if necessary by holding the hand in front of the headlight glass) that the following lights are in working order:

- Parking light
- High beam headlight
- Low (dipped) beam headlight

The low (dipped) headlight beam should be used for day-time riding as well, subject to local legislation.

Checking rear and brake lights

Check that the rear light is in working order. At the same time, apply the foot brake and then the hand brake, and make sure that the brake light comes on.

Checking flashing turn indicators

The turn indicator bulbs are exposed to severe loads as well as mechanical vibration. Note that a defective flashing turn indicator can prove highly dangerous, for instance when turning into a side road. Make sure that the complete flashing turn indicator system is kept in proper working order.

Failure of a turn indicator bulb is shown by the repeater lamp flashing at a higher frequency than usual.



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Correct riding equipment and clothing

Helmet, leather suit and rainsuit

Your helmet should be of an officially approved and tested pattern, and fit well enough to remain comfortable to wear even on long journeys.

The helmet in the BMW accessories range can be modified for wear in more than one form.

Fig. 23



8 81 14

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By means of a push-button catch at left and right, the chin guard with visor can be swung up as a complete unit, or even detached. This is ideal for spectacle wearers. **Fig. 24**

If worn in 'Jet' helmet form, together with goggles, a sun peak can also be attached.

As a safety precaution, always replace a scratched visor. It is good practice to carry a spare visor with you.

Anyone whose journeys regularly take him farther than just 'round the block' should consider purchasing a leather or multipurpose riding suit. These suits keep off the wind but can still 'breathe' for proper body ventilation. Gloves, a kidney belt and leather boots are the other items in the properly-equipped rider's gear.

However, leather suits and many multipurpose suits are not rainproof. You are therefore recommended to carry a rolled-up, waterproof rainsuit on long journeys and in bad weather, together with waterproof gloves and boots.

Details of the comprehensive range of BMW accessories and clothing are given on pages 80 to 83.

Remember . . . you've only yourself to blame if you catch a cold on a motorcycle!

Gear shift

Selecting neutral with the engine stopped:

Pull the clutch lever up and press the gear shift pedal down several times if necessary with the left toe, until the final detent position is reached. Then lift the pedal once with the toe. Neutral is selected when the green neutral indication lamp comes on. **Fig. 25**

Selecting neutral with the engine running:

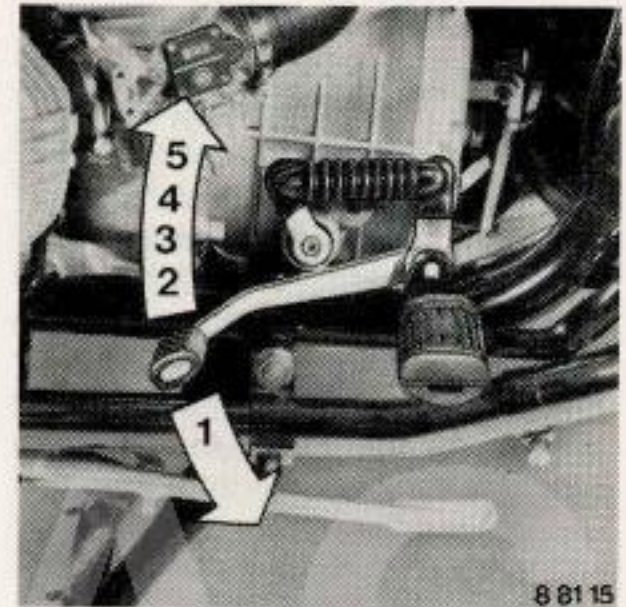
Finding neutral is easier if the task is performed before the engine is stopped. Allow the clutch to slip slightly to check that neutral has been found.

To prevent damage to the starter gear pinion, do not make any attempt to restart the engine until it has ceased to rotate.

To move away from a standstill, pull up the clutch lever and press the gear shift pedal down. The green neutral indicating lamp will go out. Open the throttles slightly by turning the twistgrip away from its stop, and at the same time release the clutch lever gradually. The easiest way of discovering the point at which the clutch takes up the drive is to release the lever slowly with the engine idling.

To **shift up** to 2nd, 3rd, 4th and 5th gears, close the throttles, disengage the clutch by pulling the lever and pull the gear shift pedal up to the next gear with the toecap. Then engage the clutch again smoothly and not too quickly, accelerating as necessary.

You can detect whether you are in 4th or 5th gear without de-clutching, simply by pulling gently up on the gear shift pedal with the toecap. If it does not move, you are still in 4th gear; if it can be moved, 5th gear is selected.



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To **shift down** to a lower gear, close the throttles, declutch and press the gear shift pedal down once. A smoother gear shift is obtained by accelerating as appropriate while re-engaging the clutch. The clutch must be fed in very carefully, particularly when shifting down to obtain more powerful engine braking, so that the load reversal is not transmitted violently to the rear wheel, with the risk of losing grip.

Some running-in hints

You can greatly influence the performance and operating life of your BMW by proper running-in (break-in) procedures. Even the most carefully machined rotating and sliding components of the motorcycle become smoother still during the initial period of operation. Running-in is best carried out during fairly long journeys on ordinary main roads with frequent curves and moderate gradients. Ride below the stated top speeds in the various gears, and vary engine speed and load quite often by changing gear, but do not exceed the specified engine speed limits in any gear.

Engine speed limits for the running-in period:

From 0 to 1000 km
(app. 600 miles)
= 4000 min⁻¹

From 1000 to 2000 km
(app. 600 to 1300 miles)
= 4500 min⁻¹

After covering 2000 km (app. 1300 miles), you can increase riding speeds on your BMW **gradually** to the maximum specified limits in each gear, provided of course that traffic and road conditions allow.

Until at least 500 km (300 miles) have been covered, try to avoid violent brake applications, particularly from high speeds, and do not subject the brakes to extended heavy applications. The brake pads and linings also have to be bedded in before they can achieve their full friction ratings and most favorable rates of wear. The tires, too, should be run in in the same manner as the brakes for the first 500 km (300 miles).

Important:

The first Inspection is due after 1000 km (600 miles). In addition to oil changes, a series of checks and adjustments are made which are of vital importance for your BMW's future performance and reliability (see 'Service and Maintenance').

Practical riding hints

Becoming familiar with your BMW

If this is your first big-engined motorcycle, try to become **fully familiar** with its performance and reactions before using full power or riding at high speeds. Remember: practice makes perfect.

Your BMW has a dry weight in standard trim of only app. 200 kg (440 lb), and is therefore surprisingly easy to handle once speed has built up to app. 20 km/h (12 – 13 mile/h). It takes rather more skill to steer it round bumps and obstacles at a walking pace. But even this will soon be learnt. Look for a few easy stretches of terrain on which to practise, preferably with a surface that is fairly firm. A garden, gravel pit, field or patch of woodland may prove suitable, provided that motor vehicles are not prohibited.

Try at first to ride in circles and figures-of-eight, reducing their

radius gradually, and turning to the left and right. Perform these manoeuvres seated and then standing on the pedals. When standing up, keep the body vertical and control the machine by applying downward pressure through the body and arms.

Remember: keep speeds right down at first. Turn the twistgrip smoothly and sensitively. Whenever you are accelerating, the motorcycle will tend to move forwards and remain stable.

Next, tackle a not-too-steep slope and patches of sand and loose gravel.

If you can find a few discarded cans, you can mark out a 'slalom' course with gaps of varying size. Practise negotiating this course smoothly and at increasing speed. You'll learn more about controlling a motorcycle in a short time than the owner of a 50 cc model will pick up in a year of average journeys. The slower you can ride without taking your feet off the footrests, the safer you will be in all circumstances.

When you take your BMW out on the public roads, where the traffic may be fast and heavy, the following precautions are invaluable:

Leave the low (dipped) headlight beam on even in the daytime, provided that this is permitted by law. Wear the proper motorcycling clothing, which should stand out clearly. Always wear a helmet – this cannot be emphasised too often. Remember that a minor dent on a car could mean a 'complete write-off' for your head, if it happens to have caused the damage!

Above all, stay alert. You must always be aware of what's happening in front, behind and at the sides, and also be conscious of the nature of the road surface beneath you.

Violent acceleration and braking both increase the rates of wear of tires and mechanical components.

Do not allow the engine speed to drop too low on uphill gradients: change down in good time. On downhill gradients, you can obtain increased engine braking by selecting the next-lower gear, but make sure the maximum engine speed limit is not exceeded. **Never** ride downhill with the clutch released, in neutral or – particularly dangerous – with the ignition switched off.

When braking, always apply both brakes uniformly and smoothly. Gradually increase pressure on the brake lever or pedal as necessary, but try at all costs to avoid wheel locking.

Note that thanks to a recent technical development your motorcycle is equipped with brake pads which slow the machine down immediately even when wet.

As you brake to a standstill, make it a habit to select neutral rather than just keeping the clutch pulled up. Holding the clutch out of engagement at the lever for long periods, or allowing it to slip, can cause local overheating and unnecessary wear.

To stop the engine, always turn off the ignition. Close the fuel tap when parking the machine or leaving the engine stopped for a lengthy period.

Straight-ahead riding

Does this heading surprise you? Do you feel that anyone can ride a motorcycle safely in a straight line? Well, this is not entirely true. The road surface is a vital factor in safe high-speed riding, and far more important for the motorcyclist than, for instance, his opposite number in a fast car. Is the road dry or wet? Is there a steep camber? Is it bumpy or wavy? All these hazards have to be considered.

Shadows under trees can mean a layer of frost at low temperatures, even in spring or before the winter season proper has arrived. And in spring, sand and chippings used to combat ice and snow frequently collect at the edge of the road before the authorities remove them.

Another danger to look out for!

Look well ahead at all times. Never disregard a road junction, even a minor track or yard entrance. And there are certain times, particularly at weekends, when inexperienced or absent-minded drivers take to the roads.

People often park off the road when they go for a country walk, and then reverse carelessly on to the main road, just as you are bearing down on them at a high speed. Don't trust to luck – a little healthy suspicion may save your life.

The golden rule is to look well ahead, keep alert – and ride 'defensively'.

Don't make the mistake of thinking that the farmer emerging from a country lane on his tractor has seen you, even if he slows down and stops. It's small comfort to know that you are covered by his insurance!

When you ride your motorcycle, concentrate on the job in hand. Riding along in a dream is highly dangerous. Above all, you must expect car drivers to underestimate your speed and sometimes not see you at all.

Keep an ample safety margin between your machine and other vehicles. Never overtake if the car in front is about to do the same – your turn will come soon enough.

Refrain from creeping through double rows of vehicles to the front. It's better to overtake on the outside, provided that the column of traffic is moving slowly enough and the man in front has seen you. Don't cross the central white line.

Cornering

The hardest part is getting **correctly lined up** as you approach the corner. The hints below, incidentally, apply to riding on the right. In countries with left-hand rule of the road, the descriptions of 'left-hand' and 'right-hand' cornering technique must of course be reversed.

Left-hand bends, particularly if you cannot see very far ahead, should be approached on the extreme right side of the road. Pull over towards the road centerline only when you can see round the corner and follow the line of the road.

Right-hand bends, on the other hand, should be approached towards the center of the road (after checking that it is clear to pull out). Keep a safe distance from the white line, however. This technique gives you an earlier view round the curve, so that you can estimate the cornering radius correctly and pull smoothly back over to the right side as you reach the

peak of the curve. If you are moving too fast, brake **before** turning into the corner! Braking during the actual corner is evidence that you have misjudged it.

Crossing curbs

Never ride too fast or hard across a curbstone or similar obstacle. If this is unavoidable, reduce speed to a walking pace. In an emergency, you may have to drive over a sharp-edged obstacle at quite high speed, in which case the wheels (particularly the front wheel, which bears the brunt of the impact) must always be examined afterwards for rim shoulder deformation. If the rim is visibly damaged, the wheel out of true or the tire or tube damaged, they must always be renewed without delay.

Warning: it is forbidden to straighten distorted cast wheel rims, and could lead to the machine becoming unsafe in traffic. The same applies to tires which may have suffered damage as described above.

Wet-weather riding

If you are **properly dressed** for riding in the rain, with integral helmet, rainsuit and waterproof gloves and boots, you can ride quite comfortably for hours in wet weather. Accelerate more carefully to prevent wheelspin, apply the brakes gently, increase the distance you maintain from other vehicles, and – don't hesitate to ride at slower speeds as a safety precaution. Take extra care when crossing rails, drain and sewer covers, road markings, cobblestones or basalt block surfaces.

The trade can supply suitable anti-misting agents to apply to the visor or goggles.

Two-up riding

It can be very pleasant to share one's journeys on the motorcycle with a friend or partner, but this imposes certain responsibilities on the rider. The pillion passenger must be just as well-clad, with complete equipment (including helmet), as the rider. The machine must be ridden particularly neatly and smoothly. First-time pillion passengers should have the basic rules explained to them, and the suspension setting can also be stiffened if this is felt to be necessary.

Hints for pillion riding: hold on firmly – to the dualseat strap or to the rider in front. Don't try to lean into curves exaggeratedly, but don't fight the natural banking movement of the machine. On right-hand bends, look over the rider's right shoulder, on left-hand bends, over his left shoulder. It's as simple as that!

The BMW motorcycle is not only one of the lightest in its class but also one of the easiest to handle. It has unusually long suspension travel front and rear, carefully chosen damper rates and a high payload limit (up to 398 kg [877 lb] gross weight in standard trim).



26

On long journeys

Side panniers, tank-top rucksack

The best way to carry your luggage is in the **BMW tank-top rucksack system** and the **BMW touring or pannier cases**. The cases hold 33 liters (1.16 ft³) and 30 liters (1.06 ft³) respectively, each, with space for a helmet if need be.

Although they are carefully designed to suit your BMW, do not carry more than 10 kg (22 lb)

weight of luggage in each case or 5 kg (11 lb) on the luggage grid. Keep below a maximum speed of 130 km/h (app. 80 mile/h). **Fig. 26**

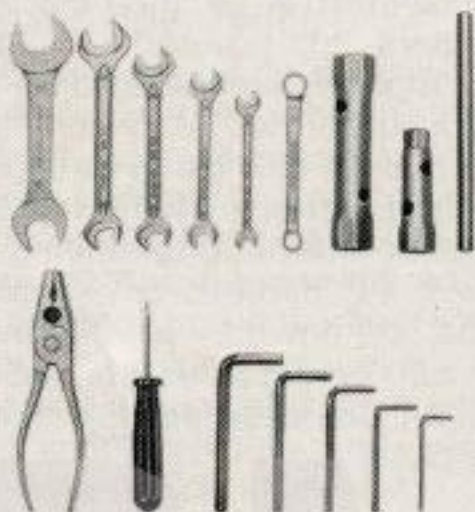
For safety reasons, always install both side pannier cases and distribute the load evenly between them.

Spare parts

For long journeys, in particular inter-continental touring, it is good practice to take with you the following spare parts and emergency items:

- 1 oil filter element
- 1 set of spark plugs
- 1 spark plug cap with lead
- 1 carburetor diaphragm
- 1 carburetor return spring
- Fuses (8 Amp)
- 1 set of wire (Bowden) control cables
- 1 spare inner tube for each wheel
- Several bolts and nuts, size M 6 and M 8
- Wire for tying up loose items, insulating tape and adhesive tape

Before starting all such major journeys, it is advisable to have your motorcycle checked by the BMW authorized dealer or workshop. For trips to foreign countries, check whether you need an international driving licence, inoculations or any other items laid down by law. Information can be obtained from consulates, travel bureaux, automobile clubs etc.



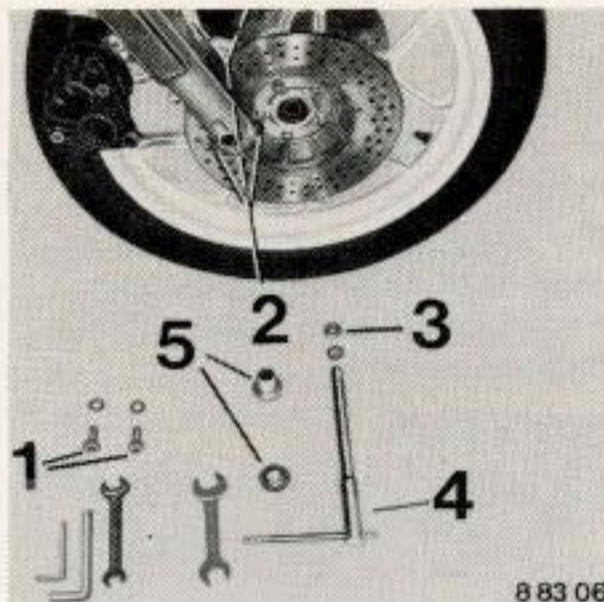
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27

Jobs you can tackle yourself

Removing and installing front wheel

- Raise the motorcycle so that the front wheel is off the ground.
- Remove the following items from the toolkit under the dualseat (see page 21):
 - a) 13 mm and 22 mm open-ended wrenches
 - b) 6 and 8 mm Allen keys
 - c) Drift **Fig. 27**



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28

On R 65 LS or with twin disc brake (optional extra):
Before removing wheel, detach left or right brake caliper by unscrewing the two Allen screws (1) with the 8 mm Allen key.
Warning: note locating sleeve positions when installing (shoulder at fork tube side).

- Slacken off the axle clamp screws (2) with the 6 mm Allen key and 13 mm wrench.
- Using the 22 mm open-ended wrench, unscrew the axle nut

(3) and set aside the shim washer.

- Place the drift through the cross-hole in axle (4), and pull the axle out by turning it to and fro slightly. Two spacing sleeves (5) will also fall out. The longer one must be installed against the left fork leg, looking forwards.
- Pull the wheel out forwards.
Fig. 28

With the twin disc brake (R 65 LS or optional extra) fitted, make sure that the direction of front wheel rotation is not changed, so that the correct installed positions of the brake discs and calipers are not lost (mark before removal if necessary).

Do not operate the hand brake when the front wheel has been removed. To install the front wheel, proceed in the reverse working sequence. Make sure that the brake disc(s) is (are) guided between the pads with great care.

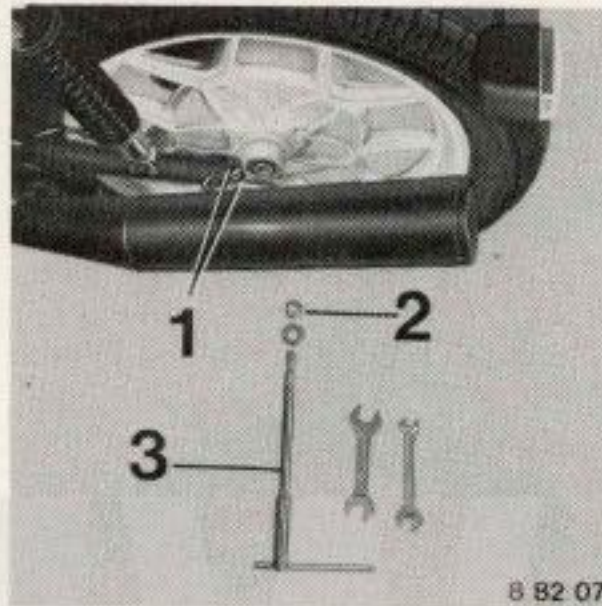
Before tightening the clamp screws, lower the motorcycle

from its stand and compress the front fork springs several times powerfully, to prevent fork distortion. Tighten the clamp screws. Note correct tightening torque.

Removing and installing rear wheel

Even front wheel removal and fitting on the disc-braked BMW is extremely straightforward, but the shaft-drive principle used on all BMW motorcycles makes rear wheel removal and installation even easier:

- Place the motorcycle on its center stand and set the spring strut adjusting levers to maximum load.
- From the toolkit under the dualseat, remove the following tools:
 - a) 13 and 22 mm open-ended wrench
 - b) Drift
- Slacken off the clamp bolt (1) with the 13 mm wrench.



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- Unscrew the axle nut (2) with the 22 mm wrench and set aside, complete with the shim washer.
- Insert the drift through the cross-hole in the axle (3) and pull the axle out, turning it slightly to and fro at the same time.
- Lift the wheel towards the left swinging arm and pull out rearwards and to the left.

Fig. 29

When the rear wheel has been removed, the drum brake and brake shoes can be cleaned. Apply Molykote BR 2 or Liqui Moly LM 47 L to the splines as a lubricant.

Re-assemble in the opposite working sequence to that just described. Clean the axle, grease it lightly and insert it into the wheel hub, turning slightly at the same time. Do not forget the shim washer. After tightening the axle nut, screw up the clamp bolt tightly as well. The cross-hole in the axle end must point to the rear as before.

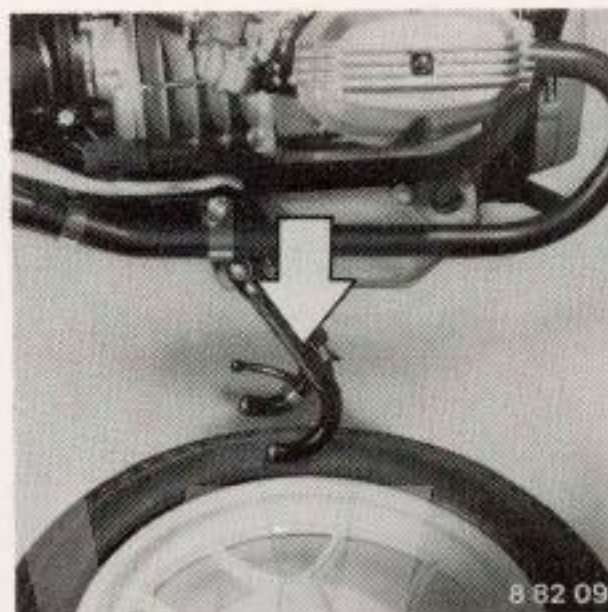
Note correct tightening torques.



30

Changing tires

To remove the tire, unscrew the valve core and the valve retaining nut. Place the wheel flat on the ground with the brake disc uppermost. Wheels with twin brake discs must be placed on a suitable underlay to avoid disc damage. Press the tire bead down into the rim well all round. Starting at the valve, insert tire levers (BMW accessory) and lift the tire over the rim shoulder. **Fig. 30**



31

To avoid damaging the rim shoulder, place leather strips or similar between tire levers and rim.

Take out the inner tube and lever off the second tire bead in the same way.

Important:

If the tire is very difficult to dislodge, get a second person to tilt the motorcycle so that the wheel can be placed under the right leg of the center stand.

The tire can then be pressed into the rim well by the weight of the motorcycle and the rider.

Fig. 31

Never place the center stand foot on the wheel rim, or the rim shoulder will be damaged.

When a new tire is installed, the inner tube should be renewed at the same time. Always use a tire and tube from the same manufacturer, and of the correct sizes. Do not patch the tube except in an emergency, and then renew it at the earliest opportunity.

To fit the new tire, press the lower bead over the upper rim shoulder.

The colored locating point on the tire must be immediately adjacent to the valve, or on light-alloy rims next to the heaviest point on the wheel (stamped circle on outside of rim). If this mark is not visible, the lightest point on the tire (colored spot) must be installed next to the valve.

Press the new tire over the rim shoulder, working from both sides with a tire lever (BMW accessory) and avoiding the use of force. To simplify tire fitting, a suitable slip agent should be applied (e. g. 'Conti-fix').

Insert the inner tube and prevent the valve from slipping out by screwing the valve nut on by about 5 turns. Inflate the inner tube slightly.

If no other air line is available, use the air pump (BMW accessory) which is kept under the dualseat.

Starting opposite the valve, press the second tire bead into the rim well. Finish off by lifting the tire bead over the rim shoulder alternately at opposite sides with the tire levers.

At the same time, press the valve back as far as the valve nut will permit.

Inflate the tire fully and check that the positioning line is the same distance from the rim all round on both sides. Note the specified tire pressure.

There is a possibility of the tire failing to bed down into the rim properly if no slip agent was used, since the motorcycle's own air pump (BMW accessory) can only reach a pressure of app. 2.5 bars. If the tire can be inflated to between 2.5 and 4.5 bars, it will be heard to spring into place over the safety hump on the rim with a sharp crack. If this situation has arisen after a tire change, ride slowly and carefully to the next repair shop, garage or filling station and use the air line to correct the fitted position of the tire. Correct the tire pressure again before continuing the journey.

Warning: do not tighten the threaded valve collar against the rim, but lock it against the dust cap. This helps prevent the development of undue stresses at low tire pressure, and in extreme cases (e. g. when braking hard), the valve from tearing away.

Have the wheel and tire balanced.

Important note:

Off-road tires, with a permitted maximum speed lower than that specified for the motorcycle, are only to be fitted if the sidewalls are marked 'M + S'. Depending on local regulations, an adhesive label may have to be attached in the rider's field of vision, stating the top speed limit.

Renewing bulbs and fuses, adjusting headlight beam

Before any work is attempted on the electrical system, the item of consumer equipment concerned should be switched off; it is better to disconnect the earth (ground) lead from the speedometer shaft connection on the gearbox.

Using a 10 mm open-ended wrench, detach the negative battery lead at the right side of the gearbox, next to the speedometer drive shaft.



32

Renewing the H4 bulb

Remove the slotted clamp screw at the base of the headlight bezel ring (on R 65 LS, tilt the headlight down slightly), and lever off the ring with reflector from the headlight casing, using a screwdriver.

After pulling off the multi-pin plug and releasing the wire spring clip, take the H4 bulb out of the reflector. **Fig. 32**

Do not hold the new bulb with the fingers – always use a clean cloth.



33

Renewing the parking light bulb

Pull the parking light bulb holder out of its socket. Press the bulb in and turn to the left to remove. **Fig. 33**

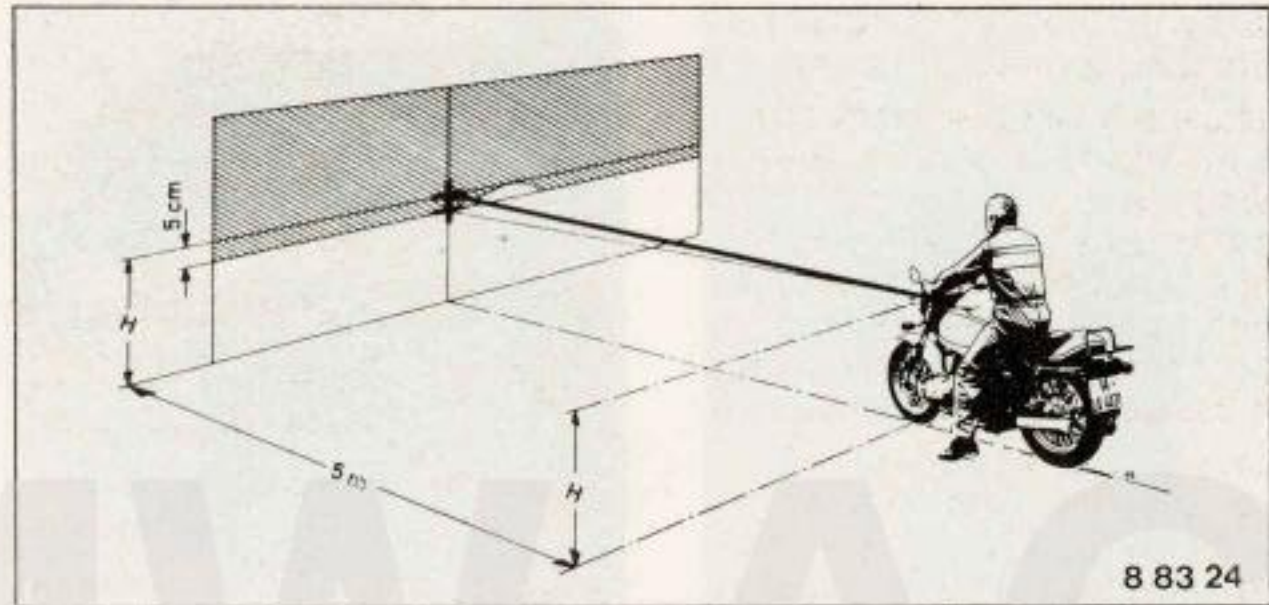
Headlight beam setting

The tire pressures must first of all be correct and the suspension set for solo riding. The machine must rest on its wheels, with the rider seated, at a distance of 5 meters (16 ft 5 in) from a light-colored wall, measured from the front wheel contact point. The floor must be flat and level.

The height from the floor to the center of the headlight is marked on the wall with a cross, and a second cross marked 5 cm (2 in) below the first.

Fig. 34

The low (dipped) headlight beam is then switched on, the headlight retaining screws slightly loosened and the headlight beam repositioned until the light/dark transition is on the center of the lower cross, climbing to the height of the upper cross on the right (right-hand rule of the road), then dropping away again. Retighten the headlight retaining bolts.



34



35

Renewing bulbs for instrument lighting and telltale/warning lamps

Detach the trim at the base of the combined instrument (2 Phillips-head screws).

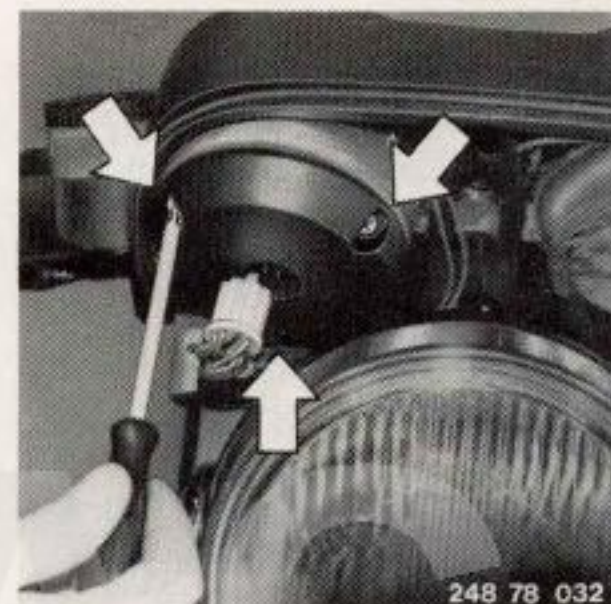
On R 65 LS: also remove upper section of cockpit fairing, by unscrewing the capstan nut on the ignition/light switch and pulling the fairing up and to the rear, out of its four locating points. **Fig. 35**



36

Speedometer lighting

Pull the holder out of the speedometer housing. Pull the glass-base bulb (3 Watt) gently to remove it. **Fig. 36**



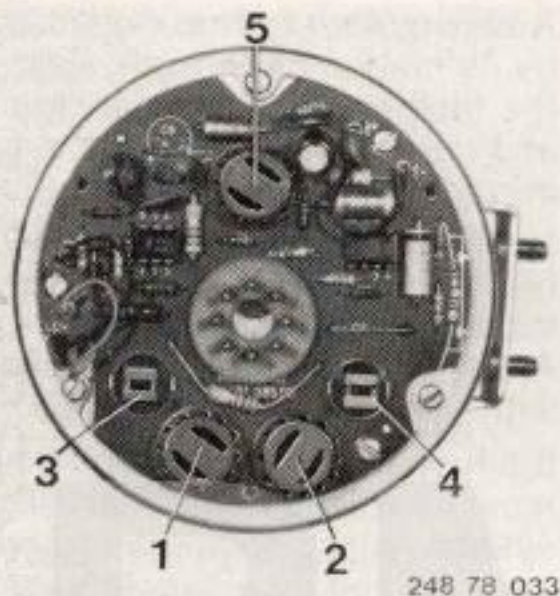
37

Revolution counter lighting

Detach the multi-pin plug and remove the cover after taking out the 3 Phillips-head screws holding it. When installing, make sure the seal is properly located.

Fig. 37

Turn the bulb holder (5, Fig. 38) for the 3 Watt glass-base bulb a quarter-turn to the left, and pull the bulb slightly to remove it.



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38

Telltale/warning lamps in revolution counter

After taking off the multi-pin plug and the cover (Fig 37), the holder of the blown bulb can be removed as for the revolution counter lighting, and the glass-base bulb renewed.

- 1 = Headlight high beam telltale (3 Watt)
- 2 = Neutral indicator (3 Watt)
- 3 = Oil pressure warning (3 Watt)
- 4 = Battery charge telltale (3 Watt)
- 5 = Revolution counter lighting (3 Watt) **Fig. 38**



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39

Flashing turn indicator repeater lamps

- 1 = Right flashing turn indicator (3 Watt)
- 2 = Left flashing turn indicator (3 Watt) **Fig. 39**

Turn the holder slightly to release it, and pull out. Renew the glass-base bulb as for speedometer lighting.

On R 65 LS: turn indicator repeater lamps are similarly mounted in upper section of cockpit fairing. For removal, see **Fig. 35**.



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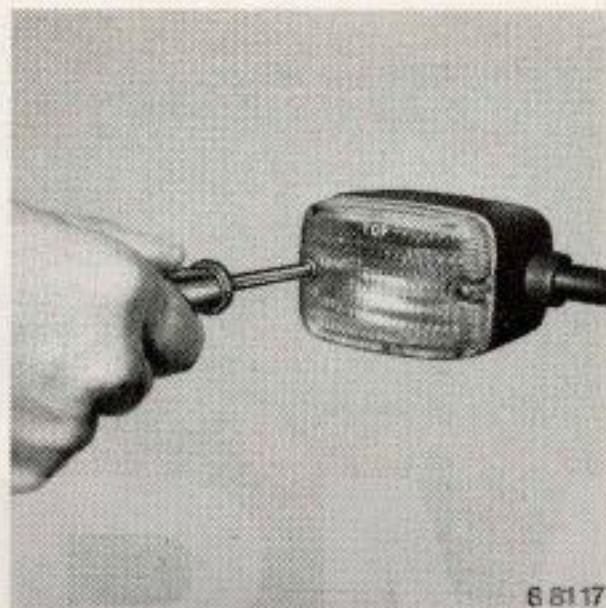
40

Renewing rear light bulb

Unscrew the two Phillips-head screws and take off the glass. Press the blown bulb in, turn to the left at the same time, and remove.

- 1 = Brake (stop) light (spherical bulb, 21 Watt)
- 2 = Rear light and license plate light (spherical bulb, 5 Watt)

Fig. 40



41

Renewing flashing turn indicator bulbs

Unscrew the two Phillips-head screws and take off the glass. Turn the 21 Watt spherical bulb to the left (counterclockwise) and press in to remove.

Note:

Re-attach the turn indicator glass to its housing with the "TOP" mark uppermost.

Fig. 41



42

Renewing blown fuses

Open the lockable dualseat (see Fig. 19). Lift out the tool tray; the fuse box with its cover secured by a screw is then accessible under the fuel tank.

2 fuses (8 Amp):

- 1 = Parking and rear lights, speedometer lighting
- 2 = Horn, flashing turn indicators, brake light, special equipment options

Fig. 42

A blown fuse can be identified by its melted metal strip. Pull the fuse out of its spring clips and insert a new fuse of the correct rating and pattern.

Never attempt to repair blown fuses with wire or other unsuitable materials – risk of fire. Always carry a few spare fuses with you.

If a fuse blows repeatedly, there must be a fault in the electrical system, which should be traced and rectified by a specialist repair shop.

Central electrical unit (power distribution box)

The main electrical modules and assemblies have been neatly grouped at a central point under the fuel tank, where they are easy to service.

To reach the central electrical unit:

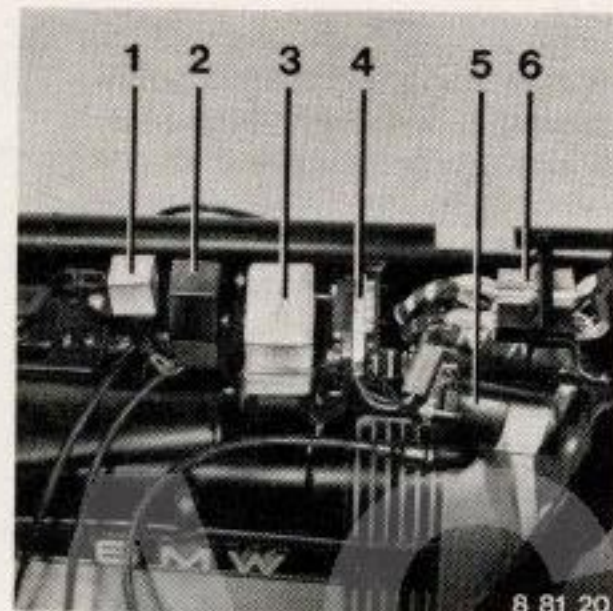
1. Open the dualseat (Fig. 19).
2. Remove the tool tray.
3. Close the fuel tap and pull off the connecting hose.
4. Pull the fuel tank retaining hoop backwards and upwards over the end of the upper frame tube, at the same time pressing the rear end of the tank down.
5. Raise the fuel tank slightly, pull it towards the dualseat and lift off (at the front end first). **Fig. 43**



43

Identification of electrical modules

- 1 = Starter relay
- 2 = IC hazard warning flasher
- 3 = Electronic voltage regulator for alternator
- 4 = Transistorized coil ignition control unit with heat sink
- 5 = Dual-spark coil
- 6 = Plug connectors for multi-function switch **Fig. 44**



44

Warning: this is a high-performance ignition system, and any contact with live components when the engine is running could lead to a fatal electric shock.

'Beauty care'

A special cold cleaning compound is to be preferred for cleaning the engine and gearbox block and the final drive casing.

All other painted and chromium-plated surfaces should be washed with water to which a mild detergent can be added. First protect the carburetors, muffler (silencer) tailpipes and handlebar fittings with plastic sheet. Do not allow cold cleaning compound, solvents or petrol (gasoline) etc. to contact plastic components. Road dirt, dust and the salt put down on roads in winter contain various chemicals which, if not removed promptly from the motorcycle, could cause corrosion and paintwork damage. For this reason the motorcycle should be washed regularly, particularly when it is new, and a suitable paint preservative applied. Wash salt deposits off with cold water if possible, since hot water will speed up the aggressive chemical action of the salt.

Important: it is essential to remove every trace of detergent or cold cleaning compound from the brake discs and pads.

Tar stains, dead insects and minor paint flaws caused by stones flung up from the road surface should be removed or touched in without delay, to prevent paint discoloration and localized rust.

When the dualseat is opened, an adhesive label will be seen, which indicates the paint shade designation of your machine. This prevents mistakes when purchasing the correct paint stick or aerosol from your BMW dealer. Never remove tar stains with a hard or sharp object such as a knife, but soften them with a proprietary tar remover before rubbing off. Clean rubber components and surfaces only with water or glycerine.

Laying up the motorcycle out of use

If you wish to store the motorcycle during the winter or for a lengthy period, the following precautions will prevent corrosion damage:

1. With the engine still warm, drain off the old oil.
2. Add corrosion-inhibiting oil up to the lower mark on the dipstick (about 1.5 liters [2.6 Imp. pints, 1.6 US quarts] will be needed). Run the engine off-load for about 1 minute. Remove the oil filter and seal the filter chamber. If the machine is to be laid up for more than 6 months, drain the oil from the gearbox, rear wheel swinging arm and final drive, and add 0.4 l (0.7 Imp. pint, 0.4 US quart) of corrosion-inhibiting oil to the gearbox, 0.5 l (0.09 Imp. pint, 0.05 US quart) to the rear wheel swinging arm and 0.1 l (0.18 Imp. pint, 0.1 US quart) to the final drive. Place the motorcycle on its center stand, select 2nd gear and run the engine for a few seconds at a fast idle.
3. Unscrew and remove the spark plugs and add 15 – 20 cm³ (5.2 – 7 fl. oz) of upper cylinder preservative compound through each spark plug hole. Turn the engine over briefly with the starter, and stop with the pistons at top dead center. Screw the spark plugs back in.
4. Clean the carburetors and close the fuel tap.
5. Remove the battery and hand it over to a specialist service station for maintenance and storage.
6. Thoroughly clean and dry the motorcycle externally. Spray the brake and clutch lever pivots and center stand pivots with a suitable penetrating oil.
7. Apply acid-free grease to all bright-metal or chromium-plated surfaces, and spray the motorcycle with a protective oil.

8. Set the motorcycle up on its center stand in a dry place. Place timber blocks under the two front fork ends and the rear swinging arm so that the road wheels are clear of the floor.

Restoring to use

1. Drain out the corrosion-inhibiting oil and add the correct quantity and grade of fresh oil. Do not forget to install a new full-flow engine oil filter element.
2. Install the battery and connect its leads. Tighten the nuts firmly and apply terminal-post grease.
3. Clean the spark plugs. Check the electrode gaps and correct if necessary. Before screwing the spark plugs in, apply graphite grease to the threads.

For fuels and lubricants, see pages 89 and 90.

What to do if . . .

Minor defects and their remedies

Warning: this motorcycle has a high-performance transistorized coil ignition system. Any contact with live components when the engine is running may lead to a fatal electric shock.

Malfunction and cause

Remedy

1. Engine will not start at all or is reluctant to start

Ignition key in wrong position
Emergency cutout ('kill') switch has been operated
A gear is in engagement
No fuel in tank
Fuel tap closed
Twistgrip opened too far when engine is cold
Air cleaner blocked
Fuel line leaking or blocked
Defective fuel feed valve in carburettor float chamber
Idle jet blocked
Loose or defective ignition lead
Spark plug wet (moisture condensate or too much fuel)
Spark plug electrode gap too large or too small
Battery flat

Switch to operating position

Reset to 'RUN'

Select neutral or declutch

Fill tank

Open fuel tap

Close twistgrip

Renew air cleaner element

Seal or blow through with air line

Clean or renew valve

Clean jet

Check lead, renew if necessary

Dry spark plug, renew if necessary

Adjust to correct gap

Have battery recharged by workshop.

Important: positive and negative battery leads must both be disconnected

Malfunction and cause**Remedy****2. Engine starts but idles irregularly**

Carburettor settings too lean or too rich
 Valve clearances too small
 Valve blow-by (mixture leakage)

Adjust carburettor settings
 Adjust valve clearances
 Have valves reground

3. When warm, engine idles irregularly, sooty exhaust

Fuel feed valve leaking, idle mixture setting too rich

Clean or renew valve, adjust idle settings

4. Engine runs erratically, misfires at intervals

Spark plug electrode gap too large
 Spark plugs oiled or sooted up
 Ignition leads wet or defective
 Short-circuit at spark plug cap (visible as sooty burn marks)
 Defective ignition system
 Carburettor jets blocked
 Fuel line blocked
 Moisture condensate in float chamber

Adjust gaps
 Clean or renew spark plugs
 Dry or renew leads
 Clean or renew plug caps

Renew defective components
 Clean jets
 Clean fuel line
 Dry out and clean float chamber

5. Engine overheats, runs on when ignition is switched off

Fuel/air mixture too lean

Ignition timing has slipped
 Blocked engine cooling fins
 Thermal value of spark plugs too low

Check carburettor, adjust settings.
 Check that correct jets are fitted
 Check ignition, retime
 Clean cooling fins
 Use the specified spark plug rating

Malfunction and cause**Remedy****6. Engine detonates ('pinks') under load**

Fuel has too low an octane number

Severe carbonization ('coking')
in combustion chambers

Ignition timing advanced too far

7. Starter motor does not run when switch is operated

Defective push button or starter relay

Battery flat

Use only brand-name fuel of the specified quality
(see Specifications)

Remove cylinder heads and clean
pistons

Retime ignition correctly

Renew defective items

Recharge battery, check acid level if necessary

What you shouldn't attempt

Many motorcycling enthusiasts possess the knowledge and the tools to perform quite a number of the routine maintenance jobs themselves, for instance oil changes, filter renewals, carburettor, valve and ignition adjustments. Major maintenance tasks, however, including adjustment of the swinging arm and steering head bearings, and all work on the brakes, call for much experience and the use of special tools. For this reason, the prescribed Services and Inspections should always be entrusted to an authorized BMW workshop.

For reasons of safety you are recommended only to use **Genuine BMW Parts and Accessories** – see pages 80 to 83.

Engineering modifications

Before you attempt any **modifications to the engineering specification** of your motorcycle, always discuss them with your BMW service station, which possesses full information as to the value, the legality and the factory's recommendations regarding the proposed modifications.

If different tires are fitted, please comply with the factory's recommendations (see adhesive label under dualseat).

Service and maintenance

Before you took delivery of your new BMW motorcycle from our authorized dealer, a **free pre-delivery check was performed**. Details of this work and confirmation that it has been carried out correctly are provided on the next page.

Please have all the maintenance work laid down in the BMW servicing program (see pages 50 – 57) carried out punctually by an authorized BMW dealer or workshop, and obtain confirmation in the form of a stamp and signature in the spaces provided in this handbook. This is essential if a later warranty claim is to be considered. In addition, it is useful to have evidence that all the maintenance work was carried out correctly at a later date, when you sell your motorcycle.

After the **1st Inspection** at 1000 km (600 miles) the BMW service program commences, with a series of regular maintenance routines. A **BMW Service** is due at speedometer reading 7500 km (5000 miles). Starting at speedometer reading 15 000 km (10 000 miles), the more comprehensive **BMW Inspection** is carried out.

After this, BMW Service and BMW Inspection alternate every 7500 km (5000 miles).

After the 1st Inspection, your BMW authorized dealer or workshop will remove the reminder label from this handbook and attach it under the dual-seat, at a point where it is seen immediately the dual-seat is opened. All subsequent BMW Inspection and Service routines will be recalled to mind in the same way.

In the interests of your motorcycle's reliability and long life, you are recommended to have **at least two BMW Inspections** carried out per year, even if your motorcycle has not yet reached the specified speedometer readings in the BMW service program.

Every BMW dealer has a list of charges for the BMW service program, based on the number of 'flat rate' units laid down by the factory for the work. This ensures that throughout the BMW service organization at home and abroad the same conditions govern the charges made for servicing work.

Lubricants, seals etc. which have to be replaced are billed additionally, as is the cost of cleaning the machine if necessary.

Please remember to take this rider's handbook with you when you have an appointment with the BMW authorized workshop for servicing.

Free pre-delivery check

1. Check oil levels in engine, gearbox, final drive and rear swinging arm. Check brake system fluid level.
Add distilled water to battery, charge battery, grease terminal clips and posts.
2. Check operation of high and low (dipped) beam headlights, parking light, brake and license plate lights and flashing turn indicators, telltale and warning lamps for state of battery charge, neutral indicator, oil pressure and high beam telltale, horn signal and additional instruments if fitted.
3. Check tightness of bolts and nuts: front and rear quick-release axle nut and clamp screws, front and rear engine mounting bolts, center stand retaining bolts, rear spring strut mountings (top and bottom), hose clips at carburetors and flexible gaiter on drive shaft, handlebar clamps.
4. Adjust headlight beam and check tire pressures. Check toolkit, keys, documentation and adhesive labels for completeness.
5. Check correct operation of clutch, gear change, instruments, steering, foot and hand brakes, engine idling settings and visible leaks on engine, gearbox, rear wheel swinging arm, final drive, telescopic forks and fuel system.

Free pre-delivery check

performed correctly

on: _____ (date)

at _____ km (miles)

by: _____

(stamp and signature)

1st Inspection at 1000 km (app. 600 miles)

1. Change the engine oil, including the oil in the filter, while still at normal operating temperature; renew the filter element.
2. Change the oil in the gearbox, rear swinging arm, final drive and telescopic forks.
3. Clean the carburettor float chambers.
4. Check clutch operating clearance and adjust if necessary.
5. Check free travel at rear wheel brake, and adjust if necessary.
6. Check brake fluid level and add fluid if necessary. Check brake system for leaks.
7. Take up slack at cylinder heads (for tightening torque, see pages 76 and 78). Adjust valve clearances.
8. Time the ignition.
9. Take up slack at bolts and nuts on: engine mountings, center stand at frame, spring strut mountings, front and rear quick-release axle nuts and axle clamp screws, hose clips on carburettors and drive shaft flexible gaiter.
10. Synchronize the carburettors and adjust the throttle cables.
11. Final inspection with road safety check: condition of tires and wheels, tire pressures, lighting and signalling equipment, telltale and warning lamps, clutch, gear change, foot and hand brakes, steering, instruments.

**1st Inspection
at 1000 km (app. 600 miles)**

performed correctly

on: _____ (date)

at: _____ km (miles)

by: _____
(stamp and signature)

**Confirmation panels for BMW Service and Inspection
work – see overleaf**

**BMW
Service**

**7 500 km
(5 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Service**

**22 500 km
(15 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Service**

**37 500 km
(25 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Service**

**52 500 km
(35 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**15 000 km
(10 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**30 000 km
(20 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**45 000 km
(30 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**60 000 km
(40 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Service**

**7 500 km
(5 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**22 500 km
(15 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**37 500 km
(25 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**52 500 km
(35 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**15 000 km
(10 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**30 000 km
(20 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**45 000 km
(30 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**60 000 km
(40 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**67 500 km
(45 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**82 500 km
(55 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**97 500 km
(65 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**112 500 km
(75 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**75 000 km
(50 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**90 000 km
(60 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**105 000 km
(70 000 miles)**

not later than
(6 months)

on _____

**BMW
Inspection**

**120 000 km
(80 000 miles)**

not later than
(6 months)

on _____

**BMW
Service**

**67 500 km
(45 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Service**

**82 500 km
(55 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Service**

**97 500 km
(65 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Service**

**112 500 km
(75 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**75 000 km
(50 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**90 000 km
(60 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**105 000 km
(70 000 miles)**

Date _____

km (miles) _____

Stamp and signature

**BMW
Inspection**

**120 000 km
(80 000 miles)**

Date _____

km (miles) _____

Stamp and signature

Confirmation panels for BMW
Service and Inspection work – see overleaf

Maintenance schedule

Note:

Figures in square brackets [] =
pages on which descriptions appear

Change engine oil including oil in filter while
at normal operating temperature; renew oil filter
element [60]

X¹⁾

X

Change oil in gearbox, rear swinging arm, final
drive and telescopic forks [61, 62, 63]

X²⁾

Grease rear swinging arm bearing and 2 clutch
cable nipples [65]

X

X

Renew intake air cleaner element [67]

X⁴⁾

Clean carburettor float chambers [71]

X

X

Clean fuel tap (mesh strainer in outlet) [73]

X

Remove front wheel and check brake components;
check wheel bearing play and recondition bearings if
necessary*. Install front wheel [32, 64, 68]

X

Remove rear wheel, check brake components, check
wheel bearing play (friction value) and adjust if
necessary*. Install rear wheel [33, 64, 69]

X

For footnotes, see bottom of page 57

BMW Service
every 15 000 km
(10 000 miles),
starting at 7500 km
(5000 miles)
speedometer
reading

BMW Inspection
every 15 000 km
(10 000 miles),
starting at 15 000 km
(10 000 miles)
speedometer
reading

Maintenance schedule

Note:

Figures in square brackets [] =
pages on which descriptions appear

Check free travel at handbrake and adjust if
necessary [69]

Check clutch operating clearance and adjust if
necessary [77]

Take up slack at cylinder head nuts (for tightening
torque, see page 78); adjust valve clearances [78]

Check condition of spark plugs [73]

Renew spark plugs [73]

Time the ignition [74, 75]

Check steering bearing play and adjust if
necessary*; adjust rear swinging arm bearing play [64, 65]

Check brake fluid level; examine hydraulic
brake circuit for leaks [69]

Important: brake fluid must be renewed after not more than 12 months*) [70]

BMW Service
every 15 000 km
(10 000 miles),
starting at 7500 km
(5000 miles)
speedometer
reading

BMW Inspection
every 15 000 km
(10 000 miles),
starting at 15 000 km
(10 000 miles)
speedometer
reading

X

X

X

X

X

X

X

X

X

Maintenance schedule

Note:

Figures in square brackets [] =
pages on which descriptions appear

Check battery acid level and top up with distilled water if necessary³⁾.

Check battery terminal posts and clips, clean if necessary
and apply grease* [66]

Take up slack at bolts and nuts on: engine mountings,
center stand at frame, spring strut mountings, axle nuts,
axle clamp screws, hose clips on carburettors and drive
shaft flexible gaiter [78]

Synchronize carburettors; adjust throttle cables [72]

Final inspection with road-safety check:

condition of tires and wheels, tire pressures, lighting and
signalling equipment, telltale and warning lamps, clutch, gear
change, foot brake and handbrake, steering, instruments [79]

BMW Service
every 15 000 km
(10 000 miles),
starting at 7500 km
(5000 miles)
speedometer
reading

BMW Inspection
every 15 000 km
(10 000 miles),
starting at 15 000 km
(10 000 miles)
speedometer
reading

X

X

X

X

X

X

Recommendation: if motorcycle is used regularly in arduous conditions, renew grease in steering and
wheel bearings every 30 000 km (20 000 miles)*

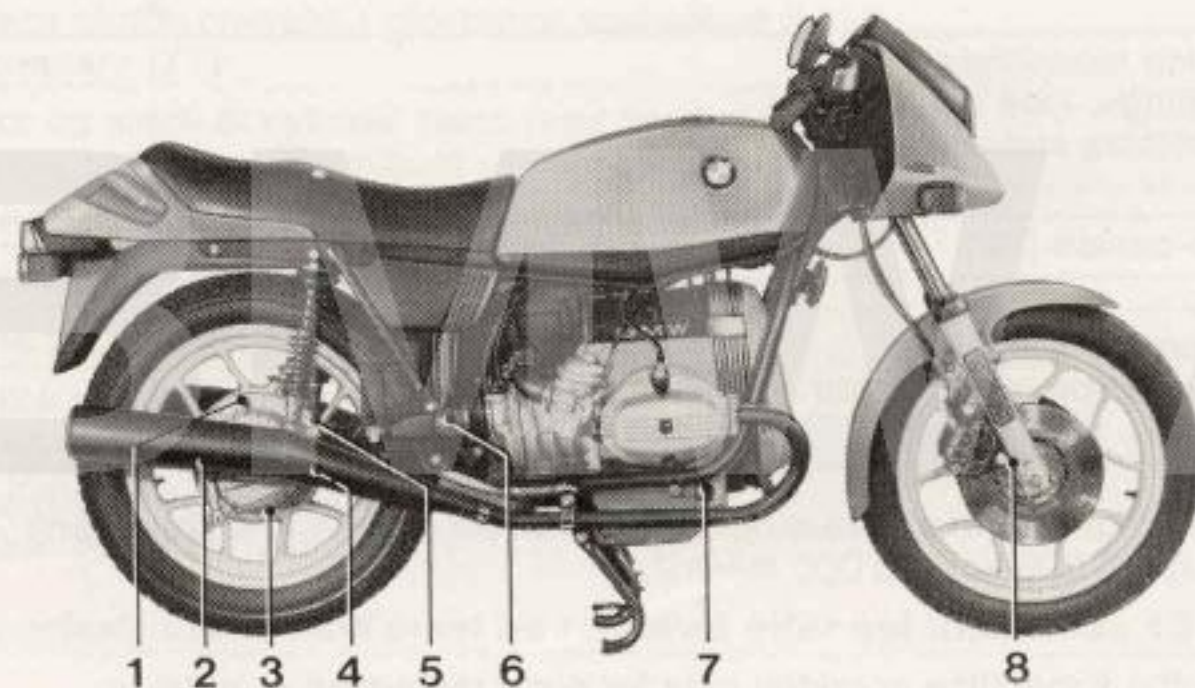
*) Item billed additionally

1) At least every 6 months; every 3 months if machine is ridden only for short distances or outside
temperatures are below 0° C (32° F). At the latest, after 3000 km (2000 miles)

2) At least once a year

3) At least once a month

4) If operated in very dirty or dusty conditions, renew air cleaner element every 7500 km (5000 miles) or
even more frequently



Lubrication points

- 1 = Oil filler for final drive
- 2 = Oil level check plug for final drive
- 3 = Oil drain plug for final drive
- 4 = Oil drain plug for rear swinging arm
- 5 = Oil filler for rear swinging arm
- 6 = Greasing point for right swinging arm bearing
- 7 = Full-flow oil filter
- 8 = Oil drain plug for telescopic forks

- 9 = Oil filler for engine, with dipstick
- 10 = Oil drain plug, engine
- 11 = Oil drain plug, gearbox
- 12 = Oil filler for gearbox
- 13 = Greasing point for left swinging arm bearing
- 14 = Oil filler plug, telescopic forks
- 15 = Nipple for oiling clutch cable



Oil changes, lubrication and maintenance work

Changing engine oil, renewing filter element

Change the engine oil (when still at normal operating temperature) every 7500 km (5000 miles), or at least every 6 months. If the machine is ridden only for short distances, or outside temperatures are below 0 °C (32 °F), change the oil every 3 months or after not more than 3000 km (2000 miles).

Remove the Allen screw (8 mm Allen key). Allow the old oil to drain out, then clean and replace the drain plug, tightening it firmly. Make sure that the gasket is in good condition.

Fig. 47

If the oil filter element has to be renewed during an oil change, remove the filter first, before draining the oil.



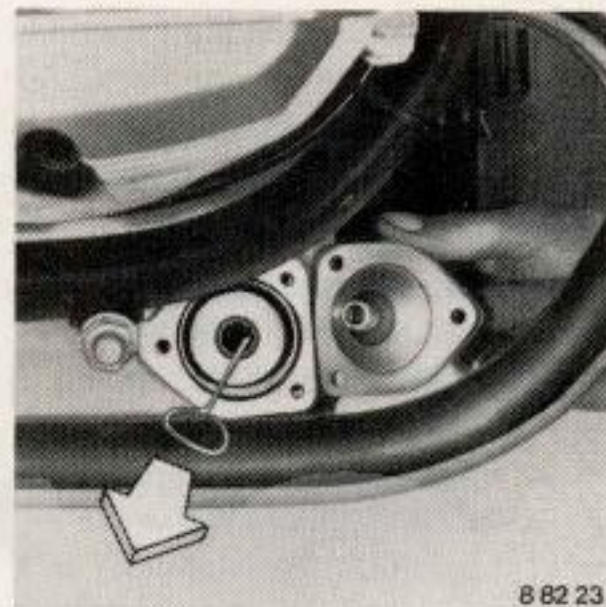
47

Total oil content: 2.25 liters (4.0 Imp. pints, 2.4 US quarts), plus 0.25 l (0.44 Imp. pint, 0.26 US quart) if the filter element is renewed.

Oil level: as far as the upper mark on the dipstick, but no higher. **Fig. 22**

Oil grades: see Specifications.

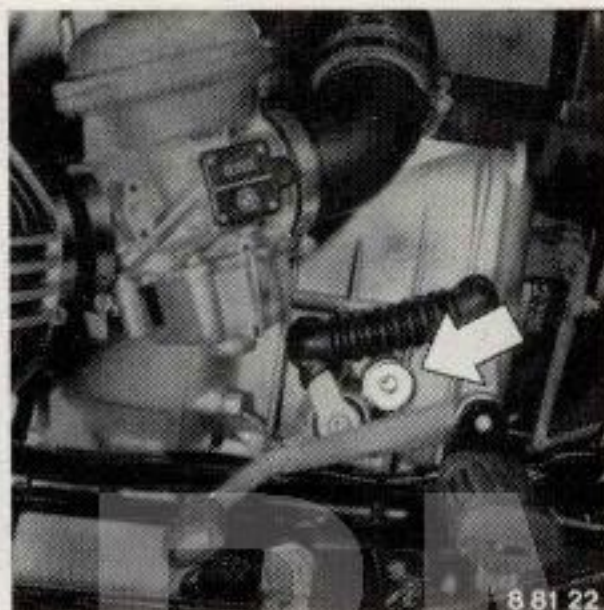
Filter element: renew every 7500 km (5000 miles) during an engine oil change. Remove the three hex bolts (10 mm wrench) and take off end cover, com-



48

plete with the O-ring. Use a thin wire hook to extract the filter element. When inserting the new filter element, do not re-use the old O-ring.

Fig. 48



49

Gearbox oil level check and oil change

Check oil level every 7500 km (5000 miles), and add a brand-name oil of the same grade and type up to the lowest turn of the thread in the filler orifice if necessary. To unscrew the filler plug, use an 8 mm Allen key. Afterwards, tighten the filler plug again firmly. **Fig. 49**

Change the gearbox oil only when it is still at normal operating temperature, every 15 000



50

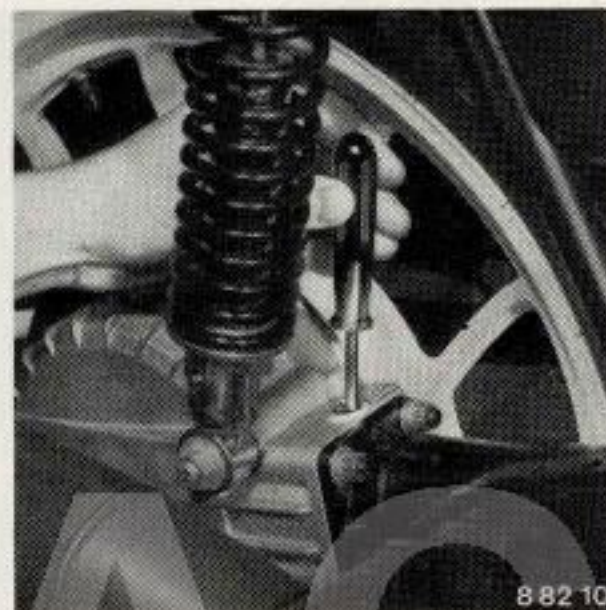
km (10 000 miles), or at least once a year. Unscrew and remove the oil drain plug (19 mm wrench) followed by the oil filler plug (8 mm Allen screw). After the old oil has drained out, insert the drain plug again and tighten firmly. Add fresh oil.

Figs. 49 and 50

Oil content: app. 0.8 liter (1.4 Imp. pints, 0.85 US quart).

Oil level: up to lowest turn of thread in filler orifice.

Oil grades: see Specifications.



51

Rear swinging arm oil level check and oil change

Oil level: check every 7500 km (5000 miles) with the motorcycle on its stand. Insert a screwdriver **vertically** into the filler orifice and up against the coupling bell. The oil level should be 2 mm (0.08 in) up the rod. If necessary, add brand-name oil of the same grade as before. Retighten the filler plug (17 mm wrench) firmly.

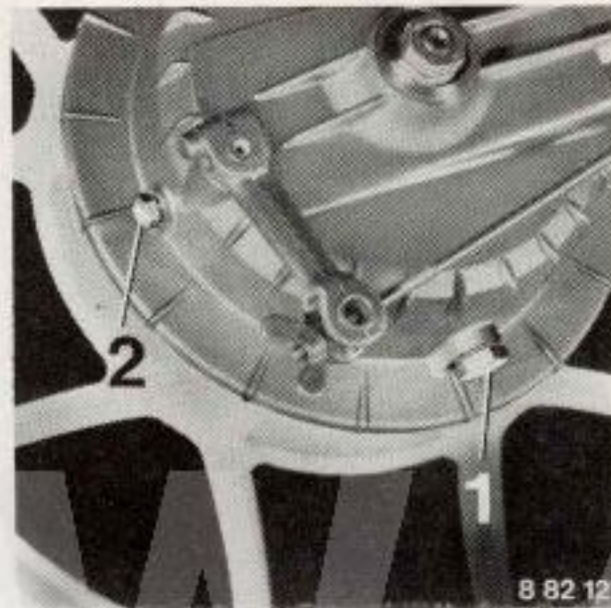
Fig. 51



52

Oil changes: only with the oil still at normal operating temperature, every 15 000 km (10 000 miles), but at least once a year. Unscrew and remove the oil drain plug, followed by the oil filler plug (both 17 mm wrench). Allow the old oil to escape, then retighten the drain plug firmly. Add fresh oil.
Figs. 51 and 52

Oil content: app. 0.10 liter (0.18 Imp. pint, 0.11 US quart).
Oil level: 2 mm (0.08 in) above coupling bell in housing, with motorcycle on stand.

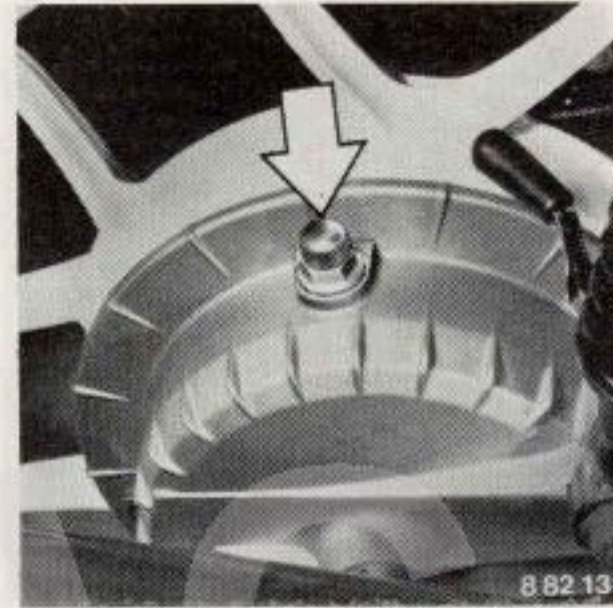


53

Oil grades: see Specifications
Final drive oil level check and oil change

Oil level: check every 7500 km (5000 miles), and add a brand-name oil of the same grade as before if necessary, up to the level check plug (2). Tighten the level check plug firmly (13 mm wrench). **Fig. 53**

Oil changes: only with the oil still at normal operating temperature, every 15 000 km (10 000 miles), but at least



54

once a year. Unscrew and remove the oil drain plug (1, 19 mm wrench) followed by the oil filler plug (arrow, 17 mm wrench, also acts as a breather). Allow the old oil to drain out, then retighten the drain plug firmly. Add fresh oil.

Figs. 53 and 54

Oil content: app. 0.35 l (0.62 Imp. pint, 0.37 US quart).

Oil level: up to level check plug (2).

Oil grades: see Specifications.



55

Telescopic forks – oil level check and oil change

To check oil level, place the motorcycle on its center stand and allow the forks to extend fully. Remove the upper end plugs (8 mm Allen key). Prevent from turning with 19 mm wrench. Insert a welding rod or similar, diameter app. 5 mm (0.2 in), length app. 80 cm (31 in) into the fork leg **until it contacts the base screw plug**. The depth of oil on the rod,



56

equivalent to the oil level in the fork leg, must be 20–50 mm (0.8–2.0 in).

Oil changes: every 15 000 km (10 000 miles), but at least once a year.

Remove the drain plugs (10 mm wrench) at the lower ends of the slider tubes. **Fig. 55**

Remove the 2 Phillips-head screws and unscrew the capstan nut from the ignition switch. Take off the instrument trim surround.

Warning: retighten the drain plugs carefully to avoid damaging the threads.

To vent the fork tubes, remove the upper screw plugs (8 mm Allen key). Prevent from turning with a 19 mm open-ended wrench. **Fig. 56**

Allow the oil to escape, at the same time compressing and extending the telescopic forks (5 to 10 strokes). Plug the drain holes again, and add fresh oil.

Total oil content per fork leg when filled for the first time or after an oil change: 109 cm³ (66.9 fl. oz).

Oil grades: see Specifications.

Important:

After filling, bleed the shock absorbers by compressing and extending the telescopic forks 5 to 10 times, until the full damping action is detected.



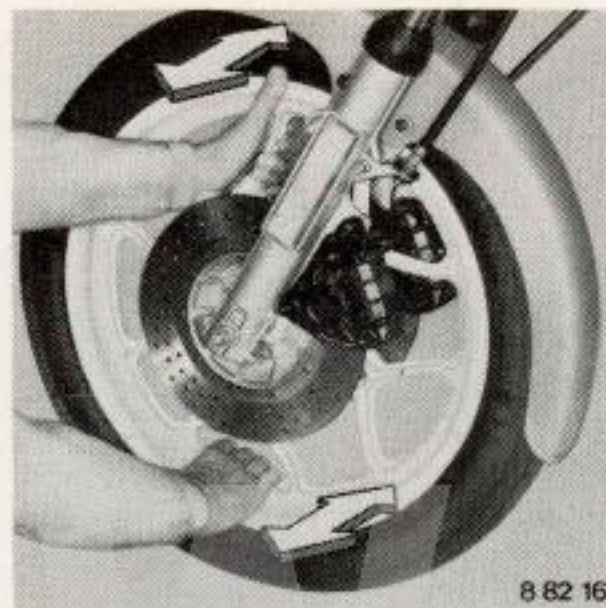
57

Steering head and wheel bearing play

Steering head bearing play after the first 1000 km (app. 600 miles) and then every 15 000 km (10 000 miles), put the machine on its stand and rock the fork legs vigorously to and fro. No play must be detected. If there is play, the steering head bearings must be adjusted.

Fig. 57

Note that only the BMW authorized workshop is pro-



58

perly equipped for accurate preloading of the steering head bearings.

Wheel bearing play after the first 1000 km (app. 600 miles) and again every 15 000 km (10 000 miles), put the machine on its stand and check wheel bearing play by pulling the wheels to and fro along the axles. No play should be detected. If it is, recondition the bearings (front wheel) or adjust them (rear wheel). **Fig. 58**

This work should also be performed only by an authorized BMW workshop.

Recommendation:

If operating conditions are very severe, renew the grease in the steering head and wheel bearings every 30 000 km (20 000 miles).

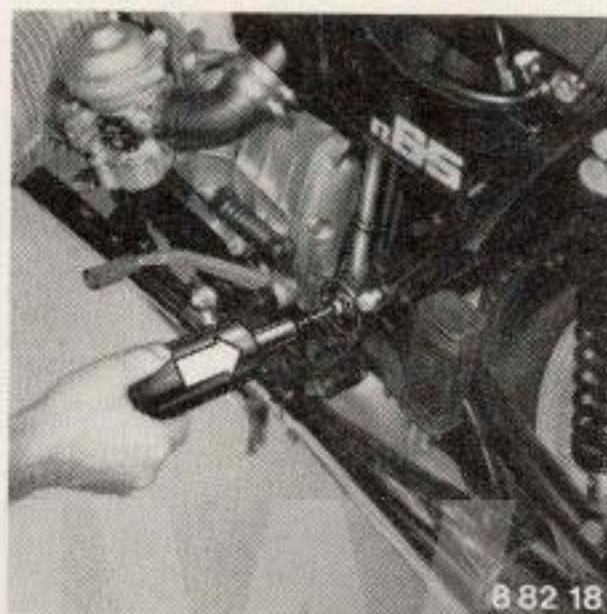


59

Rear swinging arm bearings

Freedom from play: check every 15 000 km (10 000 miles) by pulling and pushing at the swinging arm, holding the lifting handle with the left hand as shown. **Fig. 59**

If the swinging arm bearings require adjustment to eliminate play, the work must always be performed by an authorized BMW service workshop.



60

Grease the rear swinging arm bearings carefully every 7 500 km (5 000 miles) with a grease gun, after levering off the left and right plastic caps with a screwdriver. Use a grease gun with a conical nozzle.

Fig. 60



61

Oil the clutch cable nipple pivots (top and bottom ends) every 7500 km (5000 miles). **Fig. 61**

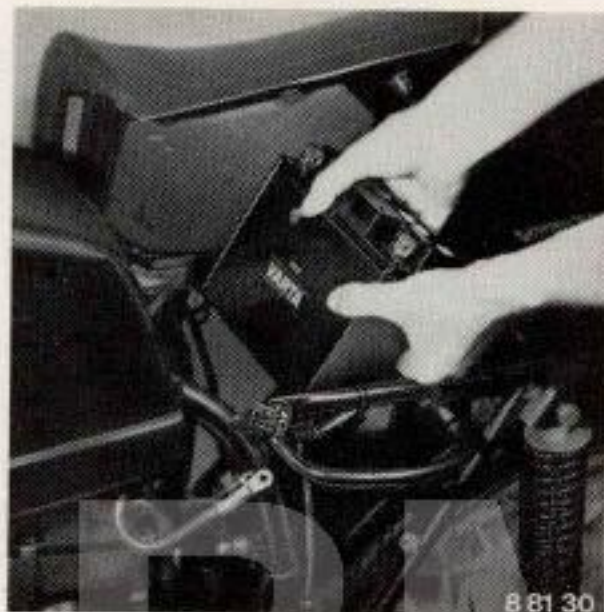
Battery maintenance

Every 7500 km (5000 miles), but at least once a month, check battery acid level. If it has dropped, add distilled water (not acid) after removal of the 6 screw plugs, until the level is about 5 mm (0.2 in) above the tops of the plates. Keep the top of the battery clean and dry. Apply terminal grease to the posts and clips to prevent corrosion.

Warning: never allow battery acid or lead oxide deposits from the battery terminals to reach the clothing. Do not bring a naked flame near the battery or an explosion may result.

If the motorcycle is out of use for a lengthy period, the battery should be recharged once a month, to prevent sulfate deposits from affecting the cell plates. For battery capacity, see Specifications.

Important: both terminals of the battery must be disconnected (with the engine stopped) for recharging, or else the peak voltages produced by the charger will damage the alternator diodes.



62

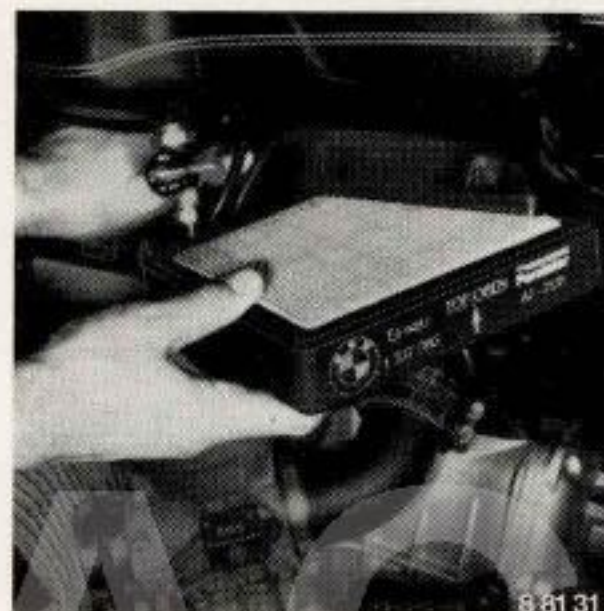
Removing and installing battery

1. Open the dualseat (see page 21) and remove the tool tray.
2. Carefully pull the side battery covers away from their fastenings (three rubber catches on each cover).
3. Disconnect both battery retaining straps.
4. Disconnect both battery leads (the negative lead first, then the positive lead).

5. Disconnect the left wiring harness plug.
6. Pull off the angled section of the breather hose at the left top of the battery casing.
7. Lift the battery out of its holder.

Fig. 62

Install by working in the reverse order.



63

Intake air cleaner

Air cleaner element: renew every 15 000 km (10 000 miles). If motorcycle operating conditions are very dusty or dirty, renew the air cleaner element every 7500 km (5000 miles), or even more frequently if necessary. Lift off the top of the air cleaner casing after releasing the four retaining springs, and pull the air cleaner element out sideways to the left. **Fig. 63**

Important: note correct installed position of air cleaner element, with inscription facing to rear and arrow mark 'TOP' uppermost.

Brakes

Check the brakes regularly (at least every 7500 km [5000 miles]) for efficiency and correct lever travel.

Brake pad or lining wear can be inspected visually.

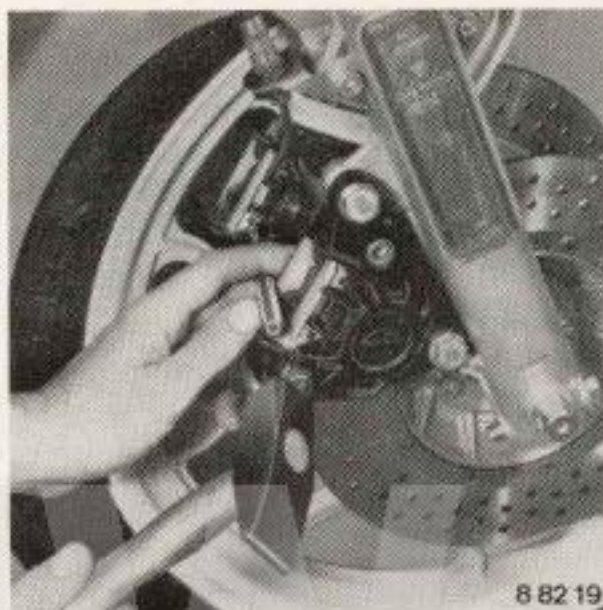
On the front disc brake the pads can be seen after levering off the plastic cover with a screwdriver.

On the rear drum brake the lining thickness can be seen through a side inspection hole on the left of the wheel hub after levering out the rubber sealing plug with a screwdriver.

For reasons of safety, worn brake shoes and pads must be renewed in good time (minimum thickness 1.5 mm [0.06 in]).

Renewing front disc brake pads

1. Lever off the plastic cap from the fixed brake caliper with a screwdriver.



64

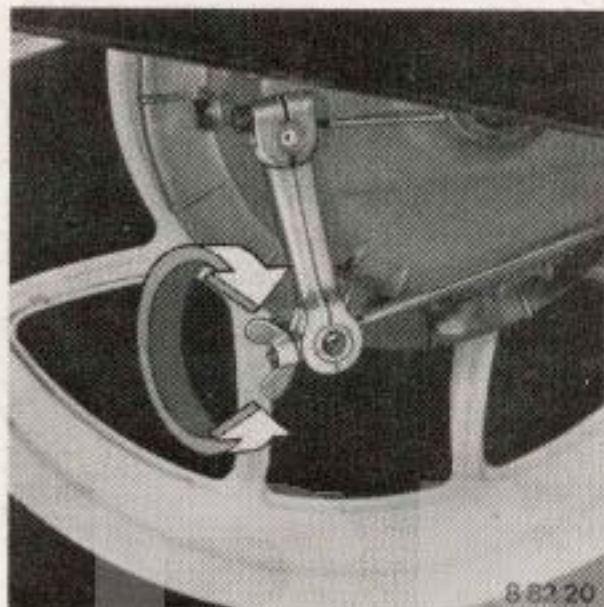
2. Using a drift, force out the two brake pad retaining pins.
3. Lift off the spreader spring and pull the brake pads out upwards. **Fig. 64**

Install new pads in the opposite working sequence.

The disc brake pads are self-adjusting for wear, so that no routine adjustment procedure needs to be followed.

Never operate the front brake lever when the front wheel has been removed, or else the disc brake pistons will be forced out and brake fluid will escape.

If insufficient pressure is built up at the handlebar lever, the brake system must be bled and checked for leaks.



65

Relining and adjusting rear drum brake:

Remove the rear wheel (see page 33).

Unscrew wingnut from pull rod. Using a screwdriver, force the upper brake shoe outwards. Disconnect the return spring and take out the brake shoe. Proceed in the opposite working sequence when installing.

Adjusting rear brake:

The basic position of the brake pedal can be varied at the stop light switch adjusting screw to suit the rider's foot position. The foot brake acts on the rear wheel: to adjust, turn the wing nut at the end of the pull rod to the right (clockwise) until the rear wheel is just braked. Then slacken off the wing nut by 3–4 turns (equivalent to about 25 mm [1 in] free travel at the brake pedal) – see Fig. 9, page 16.

Warning: if free travel is not sufficient, the brake could lock on while the machine is being ridden. **Fig. 65**

Every 15 000 km (10 000 miles), check the complete brake operating linkage.

Clean the brake drum and shoes and grease the brake shoe actuating cams. Do not use sandpaper or emery cloth to remove a shiny surface from the brake linings, and do not chamfer their ends. Check condition of brake disc.



66

Brake fluid

On the hydraulic system for the front brake, the quantity of brake fluid in the reservoir should be up to the 'MAX' mark when the brake pads are new.

Fig. 66

As the brake pads wear down, brake fluid level in the reservoir sinks. Do not add too much brake fluid, however, or else it may overflow. Note that brake fluid will damage the paintwork.

Important note:

Brake fluid is hygroscopic, that is to say it absorbs moisture from the air over a period. To ensure the absolute reliability of the brake system, the **brake fluid must be renewed once a year** by your BMW service station.

Bleeding the brake system

If the hand brake lever seems soft or 'spongy' when applied, the brake circuit must be bled.

Fill the brake fluid reservoir on the right handlebar (take off the cover with equalizing diaphragm after removing the 3 Phillips-head screws). Remove the dust cap from the bleed screw, connect the bleed hose and immerse its free end in a vessel containing brake fluid. Apply the hand brake several times until braking pressure builds up.



8 82 21

67

At this stage, hold the brake lever on (pulling it up firmly) and at the same time open the bleed screw so that the remaining air can escape. Do not release the brake lever until the bleed screw has been tightened again.

Repeat this procedure until brake fluid emerges from the hose free from air bubbles, then finally tighten the bleed screw.

Warning: make sure that the brake fluid reservoir on the handlebar is kept topped up and not pumped dry, or else air will again penetrate the brake circuit. **Figs. 66 and 67**

Note that all work on the brakes should be carried out only by an authorized BMW workshop.

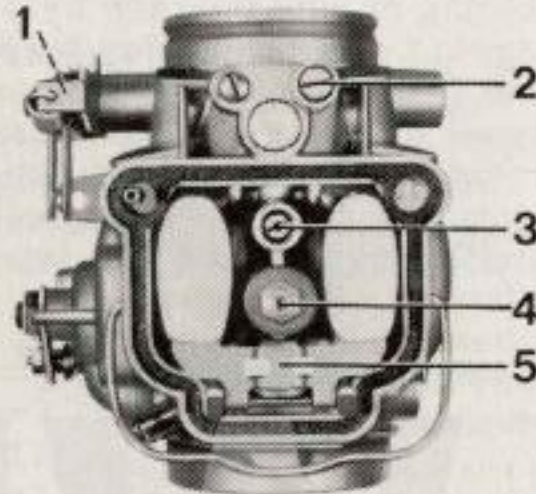
Warning: see 'Important note' on page 15.

Fuel system

Carburettor cleaning and adjustment should be carried out by an authorized BMW workshop.

In an emergency, the carburettors can be detached and all fuel and air passages, and also float needle valve 5, main jet 4 and idle jet 3 blown through and the float chamber cleaned. It is inadvisable to alter the setting of throttle slide (throttle stop) screw 1. When assembling, tighten idle air (idle mixture) regulating screw 2 fully, but without using force. Slacken it off again by app. 1 turn to obtain the correct basic setting.

Fig. 68

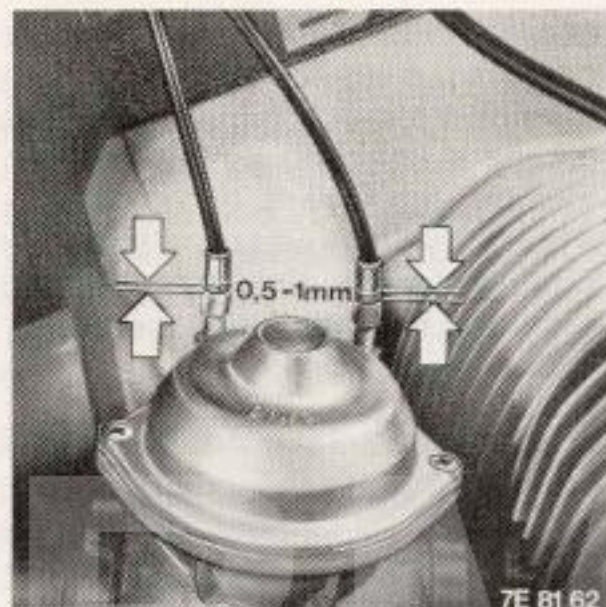


247 76 54

68

Insert the **vacuum slide** with diaphragm and jet needle in a dry condition; press the locating peg of the diaphragm into the cutout provided in the sealing groove on the upper part of the carburettor body so that the two pressure equalizing passages in the vacuum slide are on the throttle butterfly side.

Mount and tighten down the vacuum housing cover so that the wire cable adjusting screws are on the same side as the choke and throttle levers. If correctly assembled, the vacuum slide should move by its own weight between the two limit positions in the guide bore.



69

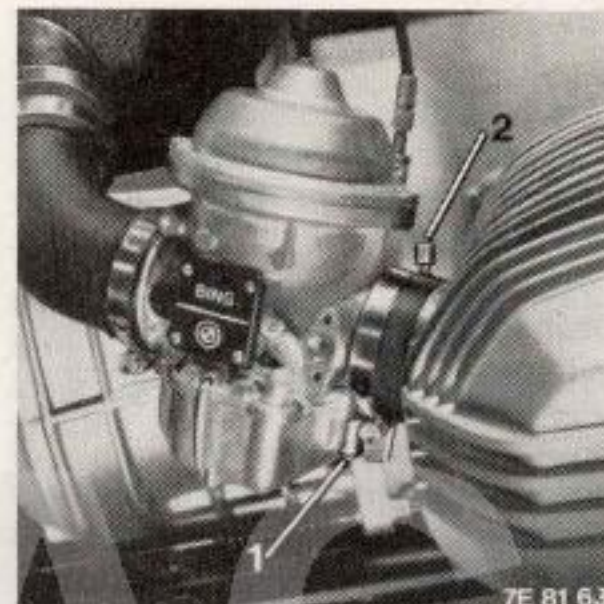
Attach the wire cables, and with the twistgrip closed adjust free cable travel (for the choke cable too if necessary) to 0.5–1 mm (0.02–0.04 in). **Fig. 69**

If free travel has to be adjusted, slacken off the locknuts (9 mm wrench) and turn the cable adjusting screws clockwise (to right) to increase free travel, or counterclockwise (to left) to reduce free travel. Free cable travel must always be identical at left and right.

The traditional method of testing engine balance by detaching one spark plug lead and then the other must never be used on this motorcycle, which has a high-performance transistorized coil ignition system, so that touching any live components when the engine is running may cause a fatal electric shock.

If the motorcycle cannot be taken to an authorized BMW workshop, engine idling can be adjusted **in an emergency** as follows:

Adjust the idle mixture regulating screw (1) and throttle stop screw (2) on both carburetors to the basic setting. This is obtained by tightening the idle mixture regulating screws fully and then slackening them off by app. 1 turn. The throttle stop screws should be tightened until they just touch the throttle levers, then screwed in by a further turn.



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Run the engine until warm, using the choke to start the cold engine.

Turn the idle mixture regulating screws on both carburetors to the left and right until the best mixture strength is found (engine speed increases to a maximum level). Adjust the left and right carburetors alternately until an idle speed of 800–1100 min^{-1} is reached.

Fig. 70



71

Warning: the engine may overheat if allowed to idle for more than about 10 minutes with no cooling airflow.

Cleaning fuel tap (mesh strainer in outlet)

Every 15 000 (10 000 miles), clean the mesh strainer in the fuel tap. Loosen the collar nut on the hose stub pipe and withdraw the mesh strainer from the tap. **Fig. 71**

For removing the fuel tank, see page 41.

Ignition system

Warning: this motorcycle has a high-performance transistorized coil (TSZ) ignition system. Do not touch any live components when the engine is running, or a fatal electric shock may result.

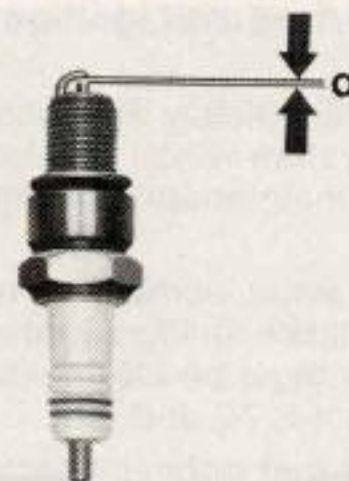
Spark plug electrode gaps

Every 7500 km (5000 miles), and also before installing new spark plugs, use a feeler gauge to check the electrode gaps, and bend if necessary to the specified value 'a' = $0.6 + 0.1$ mm ($0.024 + 0.004$ in).

Fig. 72

Clean spark plugs with a non-metallic brush in petrol (gasoline). Before installing, apply a light coating of graphite grease to the threads. Note correct tightening torque.

Spark plugs should always be renewed after not more than 15 000 km (10 000 miles).



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Transistorized coil ignition (TSZ)

This is a technically advanced ignition system which requires very little maintenance or attention.

However, when working on or near the entire ignition system, extra care must be taken – see pages 41, 44, 72 and 73.

To ensure that optimum performance is being maintained, the ignition timing should be checked every 15 000 km (10 000 miles). Since this is a breakerless system, dwell angle adjustment is no longer possible.

Note: ignition timing can only be checked with a strobe light. Static testing, using a lamp and test leads, is now impossible, and any such attempt may damage the system.

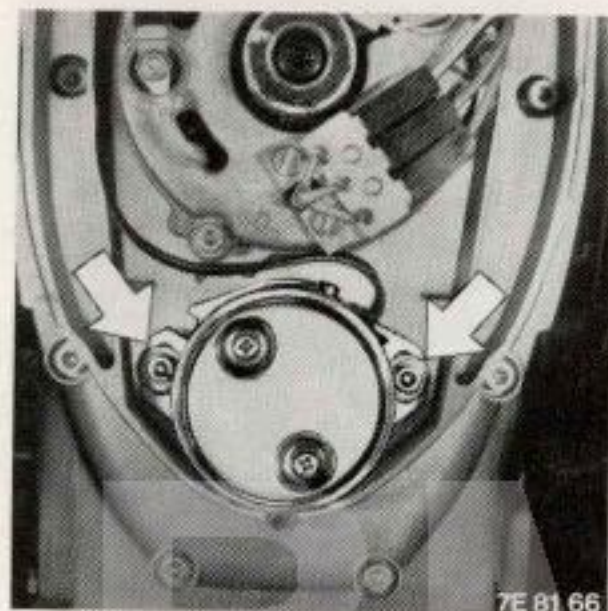
Ignition timing: 6° before TDC = 'S' mark on flywheel.



73

To check ignition timing, connect the strobe light by its trigger clip to the **right** ignition lead, and illuminate the flywheel with the engine running. At idle speed ($800\text{--}1100\text{ min}^{-1}$) the 'S' flywheel mark ('retard') must appear in the inspection hole. If it is above the centerline, the ignition is advanced too far; if it is below the centerline, the ignition is retarded too far.

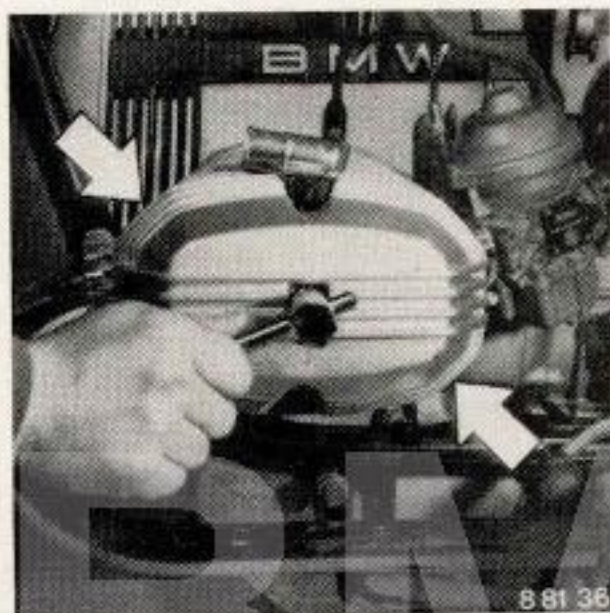
To check the centrifugal ignition advance system (max. advance 32° before TDC), run the engine at not less than 3000 min^{-1} . The 'Z' mark should then appear in the center of the inspection hole. **Fig. 73**



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Adjusting ignition timing

Remove the front engine cover (two 5 mm Allen screws). Slacken the ignition trigger (two 4 mm Allen screws). Turn it in the direction of engine rotation to retard the ignition, and in the opposite direction to engine rotation (the engine and the ignition trigger shaft both rotate in the same direction) to advance the ignition. Tighten the Allen screws again firmly. **Fig. 74**

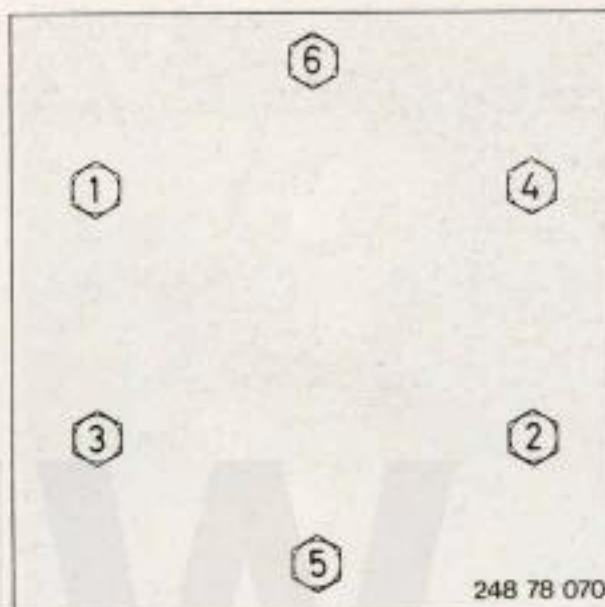


75

Cylinder head

Tightening torque of nuts on the four anchor bolts and of the two cylinder head retaining nuts: **check every 7500 km (5000 miles)**; remove the cap nut (13 mm wrench) and the two side nuts (10 mm wrench, see arrows) and take off the rocker cover. **Fig. 75**

Take up slack at the cylinder head nuts with a torque wrench in the order shown in the diagram. The engine must be stop-

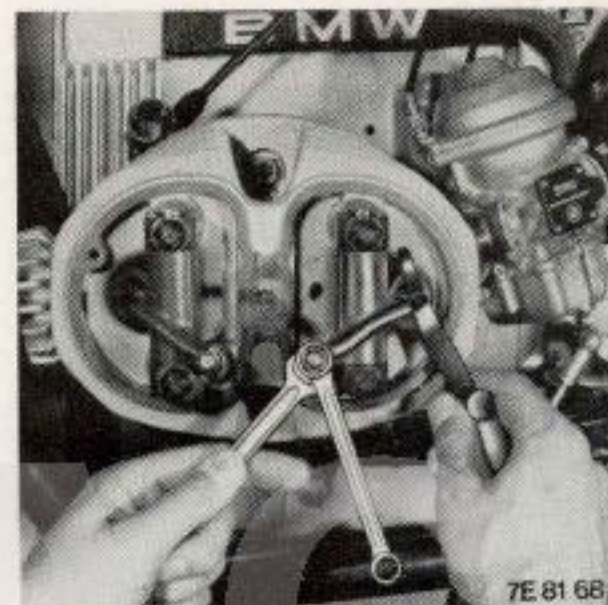


76

ped and cold. Tightening torque: $35 + 4 \text{ Nm}$ ($26 + 3 \text{ lb. ft.}$).

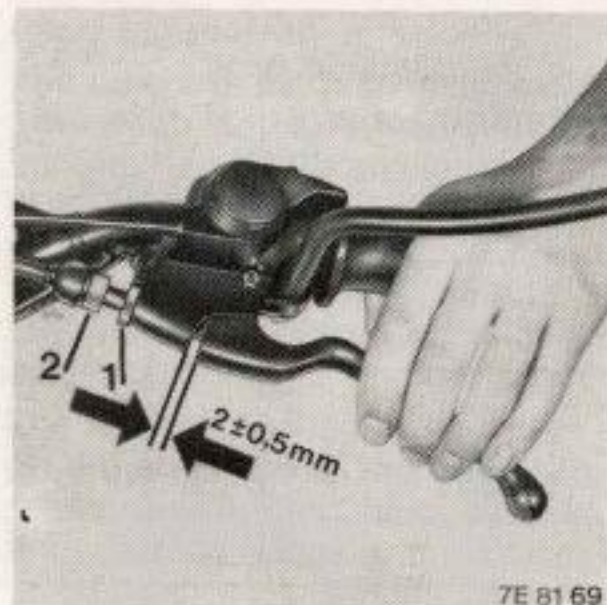
Fig. 76

Check valve clearances: this is essential each time the anchor bolt and cylinder head nuts are tightened. The engine must be stopped and cold. Insert a feeler gauge between the valve stem and the rocker. The spark plugs must be taken out and the engine turned at the rotor retaining bolt on the alternator with a 6 mm Allen key until the cylinder on which the valve



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clearances are to be adjusted is at top dead center on the compression stroke. Both valves will then be closed. Slacken the locknut (12 mm wrench) and turn the adjusting screw (12 mm wrench) as necessary. Valve clearances: inlet 0.10 mm (0.004 in), exhaust 0.20 mm (0.008 in). For the first 1000 km (app. 600 miles): inlet 0.15 mm (0.006 in), exhaust 0.25 mm (0.010 in). Tighten the locknut and check that the valve clearance has not altered. **Fig. 77**



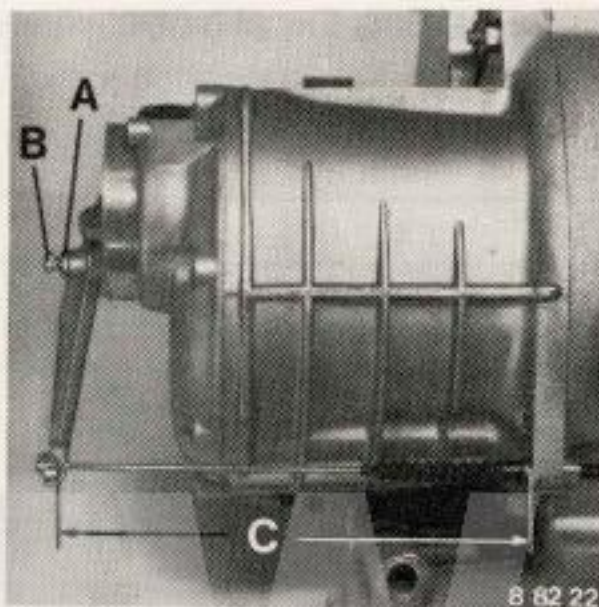
7E 81 69

78

Clutch

Clutch operating clearance: check at handlebar lever every 15 000 km (10 000 miles). Correct free travel is 2 ± 0.5 mm (0.08 ± 0.02 in). Adjust if necessary. **Figs. 78 and 79**

1. Slacken the locknut (1) on the wire cable adjusting screw.
2. Turn adjusting screw (2) until distance 'C' at the gearbox end is 201 ± 2 mm (7.91



8 62 22

79

+ 0.08 in). The lever should be app. 4° to the rear of vertical.

3. Tighten locknut (1) again firmly.
4. At the gearbox-end adjusting screw, unscrew locknut 'A' (13 mm wrench).
5. Turn adjusting screw 'B' (10 mm wrench) until free travel at the clutch handlebar lever is 2 ± 0.5 mm (0.08 ± 0.02 in).
6. Tighten locknut 'A' again firmly.

Check tightness of bolts and nuts every 15 000 km (10 000 miles):

Item	Wrench size (mm)	Tightening torque	
		Nm	(lb.ft)
Quick-release axle nuts	22	45 ... 48	33 ... 35
Axle clamp bolts, front rear	13	14 ... 16	10.3 ... 11.8
	13	15 ... 17	11.1 ... 12.5
Spring strut mountings, top bottom, right bottom, left	17	35 ... 40	26 ... 29
	17	35 ... 40	26 ... 29
	17	30 ... 35	22 ... 26
Center stand mounting	17	34 ... 37	25 ... 27
Engine mountings, front and rear	19	70 ... 77	52 ... 57
Cylinder head nuts – to be tightened in 3 stages	15	15	11.1
		25	18.4
		35 + 4	25.8 + 2.9
Other important threaded connections:			
Rear subframe mountings	13	15 ... 17	11.1 ... 12.5
Rear drive shaft flange at gearbox	10 (12-sided)	40	29
Exhaust pipe star nuts	–	160 ... 180	118 ... 133
Spark plugs	20.8	23 ... 30	17 ... 22
Brake caliper mounting	17	35	26

Note: to obtain mkp values, divide the torques in Nm by 10.

Final inspection

The machine must be examined after each inspection and the various items of equipment checked for road safety, in particular correct operation of the brakes, gear change, clutch and instruments, and free movement of the steering.

The final inspection must include the condition of the tires, tire pressures, lighting, horn, telltale and warning lamps and mirrors.

BMW AG

BMW Parts



Service – all the way!

Superior design and engineering inspire confidence. It doesn't take far to discover this when you ride a BMW.

A high-quality motorcycle needs expert maintenance and general care, and will then provide you with the same sheer riding pleasure for many years to come.

If possible, have your BMW serviced and repaired only by an authorized BMW workshop. The BMW dealership or service station concentrates on BMW models and possesses all the necessary special tools and equipment. In addition, all members of the BMW Service Organization are bound by contract to install only genuine BMW parts on your BMW motorcycle.

Genuine BMW parts protect you against the possibly unpleasant consequences of installing inferior parts of unknown origin, and reduce the risks of riding in present-day traffic and in all weathers to a minimum. Spare parts are available everywhere – but Genuine BMW Parts are the only ones identical in every respect with the parts originally fitted to your machine.

Genuine BMW parts are all parts, assemblies and accessory items supplied by BMW Motorrad GmbH + Co., regardless of whether BMW manufactures them or obtains them from an authorized outside supplier.

Only the replacement of one Genuine BMW Part by another ensures that you benefit to the full from BMW's design and engineering skills, and safeguard the performance and reliability of your motorcycle.

Quality guarantee

Genuine BMW Parts bought as replacements for your machine are identical in every respect with the parts used on new BMW motorcycles.

BMW Motorrad GmbH + Co. hereby issues a warranty in respect of these parts' freedom from defects in materials or workmanship.

BMW – Perfection in Detail

Every authorized BMW dealer or workshop is required to maintain stocks of the following genuine BMW parts:

- frequently-needed BMW replacement and exchange parts
- the complete range of BMW accessories.

Genuine BMW parts required less frequently (remembering that the list includes some 10 000 items in all) are obtained by smaller dealers and workshops from their larger colleagues or from national importers.

The worldwide parts service operated by BMW Motorrad GmbH + Co. ensures that all Genuine BMW Parts are available at short notice – with the reputation of BMW Motorrad GmbH + Co. as your guarantee of quality and reliability.

**Genuine
BMW Parts**



Look for this sign!

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We can offer you everything you need

Including a full range of systematically designed accessories for BMW models, and the ideal riding clothing for both solo or two-up travel.

The greater a motorcyclist's experience and the higher the standards he sets, the more critically he will examine the range of accessories on the market. Our recommendation is quite clear: don't accept any compromises – go for the very best. Take advantage of the extensive range of articles in the Genuine BMW Accessories list. In this way, you can personalize your motorcycle and still be sure that its reliability and safety are not impaired.

Genuine BMW accessories have been developed to the design and quality standards that BMW applies to every aspect of motorcycle design. This not only assures you of value for money and durability, but means too that every item is matched to your BMW motorcycle and cannot constitute a safety risk. BMW is proud to issue a quality guarantee for its genuine accessory range, to demonstrate the perfection in detail that BMW riders have come to value so highly.

Genuine BMW accessories for your motorcycle

The range that has everything!

Bags and cases

Touring and pannier cases with separate inner bags, BMW Vario and BMW Multivario tank top rucksack systems.

Technical accessories

For example, luggage grid, pannier case and bag holders, heavy-duty spring/damper struts, steering damper, touring 'high-riser' handlebars, cylinder guard bars, fairing, windshield, twin-tone horns, multipurpose light, additional driving lights, power socket, hazard warning flashers, additional instruments, heated handlebar grips.

Maintenance and Service

For example, Inspection set, oil-change set, tire service set, first aid kit, paint sprays, super toolkit, light bulb set.

For reasons of safety, we recommend you to fit and use only Genuine BMW Accessories

Genuine BMW motorcyclists' clothing

BMW motorcycling clothing incorporates the suggestions of our designers and road testers for a perfect blend of form and function, the two factors typical of the BMW styling approach.

BMW 'System' helmet

BMW intercom

BMW leather clothing:

- suits, boots, gloves, kidney belt –
a complete range, in various colors and patterns

BMW undersuit

BMW rainwear

BMW 'City' riding suit

BMW sports jacket and windcheater

BMW sportswear

You can obtain Genuine BMW Accessories and BMW Motorcycling Clothing from every authorized BMW dealer. Please note that on account of local licensing and approval laws, not all items may be available on certain export markets. Your BMW dealer will gladly advise you and supply detailed descriptive leaflets.

Specifications

Engine	R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
Type	Horizontally-opposed 4-stroke twin with overhead valves in hemispherical combustion chambers			
Max. power output (kW/hp DIN) – at engine speed (min ⁻¹)	20 (27)/6500	26 (35)/7250	37 (50)/7250	
Max. torque (Nm/lb.ft) – at engine speed (min ⁻¹)	32.9 (24.3)/5000	37.0 (27.3)/5500	52.3 (38.6)/6500	
Max. permissible engine speed (min ⁻¹)	7650	7650	7650	
Max. continuous engine speed (min ⁻¹)	7000	7300	7300	
Bore/stroke (mm)	70/61.5	70/61.5	82/61.5	
Displacement, effective cm ³ – for taxation purposes cm ³	473.4 470	473.4 470	649.6 645	
Compression ratio	8.2 to 1	9.2 to 1	9.2 to 1	
Direction of rotation	Clockwise, looking at alternator			
Fuel consumption by DIN standard test method (liters/100 km) (Imp./US mile/gal)	5.0* 56.5/47.0*	4.5** 62.8/52.3**	4.6** 61.4/51.1**	

* Regular grade fuel

** Super (premium) grade fuel

Carburetors	R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
Type	Two inclined Bing constant-depression carburetors with needle jet, vacuum slide, throttle butterfly and central lever float			
Ref. No., left right	64/26/303 64/26/304	64/28/303 64/28/304	64/32/347 64/32/348	
Throat diameter (mm)	Ø 26	Ø 28	Ø 32	
Main jet	98	105	138	
Needle jet	2.66	2.66	2.64	
Jet needle No.	46-241	46-241	46-242	
Needle position	2	2	3	
Idle jet	45	45	45	
Idling speed (min ⁻¹)	800 ... 1100			

Transmission	R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
Clutch	Single dry plate with increased-leverage diaphragm spring			
Gearbox	5-speed, with dog-clutch engagement, forming a single unit with the engine block; drive torque damping in all gears, hook-action gear selection			
Gear ratios	1st	4.40 to 1		
	2nd	2.86 to 1		
	3rd	2.07 to 1		
	4th	1.67 to 1		
	5th	1.50 to 1		
Rear wheel drive	Enclosed universal-joint shaft in right swinging arm tube, with universal joint at gearbox end and curved-spline coupling at final drive end; with torsional vibration damper			
Final drive	Crown wheel and pinion (spiral bevel, Palloid tooth pattern)			
Final drive ratio	4.25 to 1	3.89 to 1	3.44 to 1	
Number of teeth	8/34	9/35	9/31	
Speedometer drive ratio	0.978	0.895	0.793	
	(miles) 1.575	1.441	1.276	

Frame	R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
Frame pattern	Twin loop steel-tube frame with bolted-on rear subframe; sidecar attachment not permitted			
Location of manufacturer's plate and frame number	On right frame tube at bottom, near rear engine mounting			
Front suspension	Telescopic forks with large-volume double-acting hydraulic dampers; travel 175 mm (6.9 in)			
Rear suspension	Swinging arm with three-position progressive-rate spring struts and double-acting hydraulic dampers; travel 110 mm (4.3 in)			
Max. steering lock at forks	2 x 42°			2 x 35°
Front wheel castor (mm)	96 mm (3.78 in)			
Front brake	Hydraulic single disc with fixed caliper			Hydraulic twin discs, with fixed calipers
Disc diameter (mm)	260 (10.2 in)			
Effective lining area (cm ²)	41.5 (6.43 in ²)			83 (12.87 in ²)
Rear brake	Light alloy drum in full-width hub, leading and trailing shoes			
Drum diameter (mm)	220 (8.7 in)			
Effective lining area (cm ²)	89 (13.8 in ²)			

Frame	R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
Wheels	BMW compound aluminum			
Rim sizes – front	1.85 B x 18			2.15 B x 18
– rear	2.50 B x 18			2.50 B x 18
Tires	Cross-ply, tubed*			
Sizes – front	3.25 – 18	3.25 S 18	3.25 H 18	
– rear	4.00 – 18	4.00 S 18	4.00 H 18	

* see also page 35, "Important note"

Tire pressures

in bar (lb/in²) with tires cold

	Solo		Two-up	
	Front	Rear	Front	Rear
Up to 130 km/h/(81 mile/h)	1.9 (27)	1.8 (26)	2.1 (30)	2.0 (28)
130–160 km/h (100 mile/h)	1.9 (27)	2.0 (28)	2.1 (30)	2.2 (31)
Above 160 km/h (100 mile/h)	2.1 (30)	2.2 (31)	2.1 (30)	2.3 (33)

Note: comply with minimum legal tread requirements.

BMW minimum tread depth recommendations:

2 mm (0.08 in) up to 130 km/h (81 mile/h)
3 mm (0.12 in) above 130 km/h (81 mile/h)

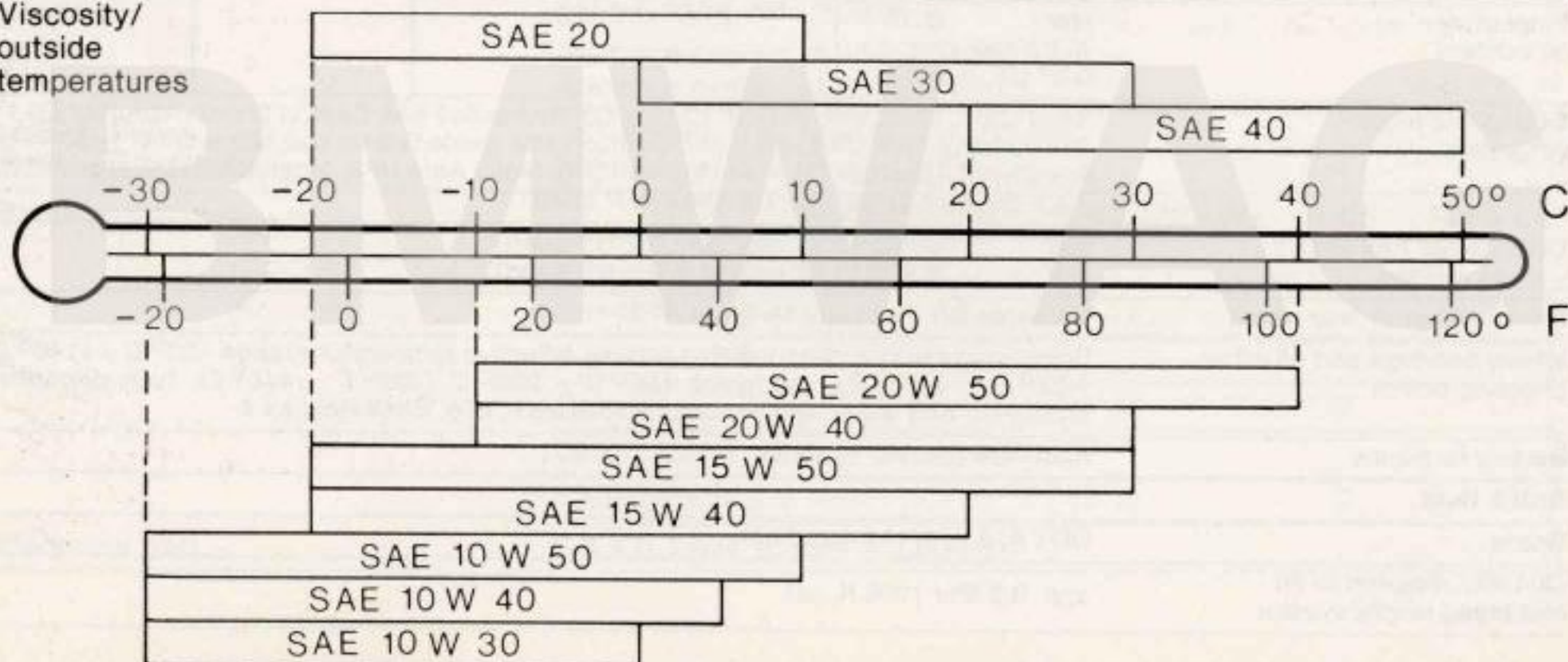
Fuels and lubricants**R 45 – R 65 LS**

Fuel Super (premium) petrol (gasoline) to German Industrial Standard 51 600 or equivalent, min. octane number 98 (RM) or 88 (MM)
 Regular grade petrol (gasoline) to German Industrial Standard 51 600 or equivalent, min. octane number 91 (RM) or 82 (MM)*

Tank capacity including reserve of
 liters 22 (4.8 Imp./5.8 US gal)
 liters 2 (0.44 Imp./0.53 US gal)

Engine oil Brand-name HD oil for spark-ignition engines, API Class SE or SF

**Viscosity/
outside
temperatures**



* R 45 with 20 kW engine only

Fuels and lubricants R 45 – R 65 LS

Engine oil content if filter element is not changed	liters	2.25 (4.0 Imp. pints, 2.4 US quarts)			
– if filter element is changed	liters	2.50 (4.4 Imp. pints, 2.65 US quarts)			
Gearbox oil content	liter	0.8 (1.4 Imp. pints, 0.85 US quart)	Brand-name hypoid gear oil API Class GL5	above 5° C	below 5° C
Rear swinging arm oil content	liter	0.10 (0.18 Imp. pint, 0.11 US quart)		SAE 90	SAE 80
Final drive oil content	liter	0.35 (0.62 Imp. pint, 0.37 US quart)			
Telescopic forks – oil grades	Shell 4001; Shell Aero Fluid 4; Castrol DB Hydraulic Fluid; Castrol Shock-Absorber Oil 1-318; Castrol Fork Oil Extra Light; Castrol LHM (preferred for use below 0° C [+ 32° F]); Aral Shock Absorber Oil P 3441; Aral 1010; Mobil Aero HFA, Mobil DTE 11; Esso UNIVIS J 13; BP Aero Hydraulic; BP-Olex HLP 2849				
Content per fork leg – when refilling	liter	0.190 (0.33 Imp. pint, 0.2 US quart)			
	liter	0.190 (0.33 Imp. pint, 0.2 US quart)			
Drive splines at rear wheel	Molykote BR 2 or Liqui Moly LM 47 L				
Wheel bearings and all other greasing points	Brand-name anti-friction bearing grease, effective temperature range –30° C – +140° C (–22° F – +284° F), drip point 150° C – 230° C (302° F – 446° F), high corrosion protection and water and oxidation resistance, e. g. Shell Retinax A				
Battery terminals	Acid-free grease, Vaseline				
Brake fluid					
Grade	DOT 4; ATE 'SL' brake fluid				
Quantity required to fill and bleed empty system	app. 0.3 liter (106 fl. oz)				

Electrical system	R 45 – R 65 LS				
Battery	BMW-Mareg 12 V 16 Amp/h				
Starter (optional extra)	Bosch, 0.7 kW				
Alternator	Bosch 280 W				
Voltage regulator (Wehrle)	BMW 12 32 1 355 456				
Coil	Bosch twin-spark, 12 V				
Ignition trigger	Contactless ignition pulse generator (Hall effect) with integral centrifugal advance, Mfr. Bosch				
	Advance begins at 1500 min ⁻¹				
	Advance ends at 3000 min ⁻¹				
Ignition timing	6° before TDC at 800... 1100 min ⁻¹				
Maximum advance	32° before TDC at min. 3000 min ⁻¹				
Spark plugs		R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
	Bosch W 7 D	○			
	Bosch W 5 D		○	○	○
	Beru 14 – 7 D	○			
	Beru 14 – 5 D		○	○	○
	Champion N 10 Y	○			
	Champion N 6 Y		○	○	○
Electrode gap	0.6 + 0.1 mm (0.024 + 0.004 in)				

		R 45 – R 65 LS	
IC hazard warning flasher (Wehrle)		BMW 61 31 1 244 377	
High and low (dipped) headlight beams		H4 halogen bulb, 60/55 Watt dual filament	
Parking light		12 V, 4 Watt	
Telltale and warning lamps:			
High beam	blue	12 V/3	Watt
Neutral	green	12 V/3	Watt
Turn indicator	green	12 V/3	Watt
Charge	red	12 V/3	Watt
Oil pressure	red	12 V/3	Watt
Speedometer lighting		12 V/3	Watt
Revolution counter lighting		12 V/3	Watt
Fuses (2)		8 Amp	
Flashing turn indicators, (2 front, 2 rear)		12 V, 21 Watt	
Rear light		12 V, 5	Watt
Brake light		12 V, 21	Watt

Dimensions

	R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
Overall width (engine)	mm (in) 688 (27.1)			
Overall height excl. mirrors (unladen)	mm (in) 1080 (42.5)			1090 (42.9)
Dualseat height (unladen)	mm (in) 810 (31.9)			
Overall length	mm (in) 2110 (83.1)			
Wheelbase	mm (in) 1400 (55.1)			

Weights

Weight with tank full, incl. tools and lubricants	kg (lb) 205 (452)			207 (456)
Gross weight limit = unladen weight + rider and pillion and/or luggage	kg (lb) 398 (877)			
Power/weight ratio, ready for road, incl. rider (75 kg [165 lb])	kg/kW 14.0	10.7	7.5	7.5
Permissible wheel loads, two-up				
– front, tire pressure 2.1 bars (30 lb/in ²)	kg (lb) 140 (309)			
– rear, tire pressure 2.2 bars (31 lb/in ²)	kg (lb) 270 (595)			
Max. number of persons to be carried	2 (1 rider, 1 pillion passenger)			

Performance		R 45 (20 kW)	R 45 (26 kW)	R 65	R 65 LS
Acceleration from 0 to 100 km/h (0 – 62 mile/h)	s	8.5	7.4	5.8	5.8
– from 0 to 400 m (1312 ft)	s	16.6	15.8	14.3	14.3
– from 0 to 1000 m (3281 ft)	s	32.5	30.7	28.1	28.1
Top speed km/h (mile/h)		145 (90)	160 (99)	175 (109)	175 (109)

The **maximum speed** the motorcycle can actually achieve depends to a great extent on aerodynamic drag caused by the size of the rider, his position and his clothing, the road surface and weather conditions.

BMW AG

At a glance

Tire pressures in bars (lb/in²) with tires cold

Up to 130 km/h (81 mile/h)
130 – 160 km/h (81 – 100 mile/h)
Above 160 km/h (100 mile/h)

Solo

Front

Rear

Two-up

Front

Rear

1.9 (27)	1.8 (26)	2.1 (30)	2.0 (28)
1.9 (27)	2.0 (28)	2.1 (30)	2.2 (31)
2.1 (30)	2.2 (31)	2.1 (30)	2.3 (33)

Warning: comply with minimum legal tread depth regulations.

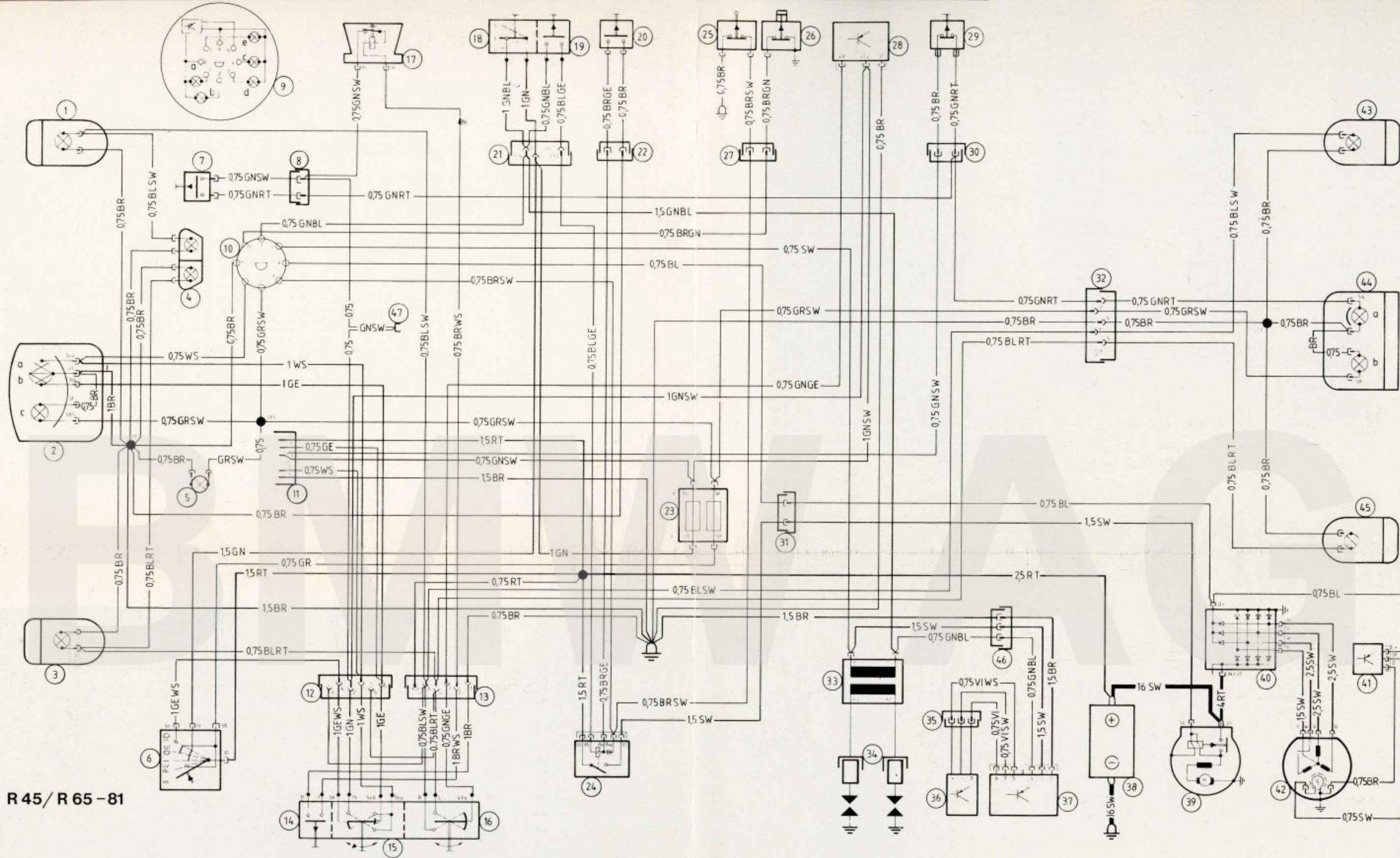
Recommended minimum tread depths: 2 mm (0.08 in) for speeds up to 130 km/h (81 mile/h); 3 mm (0.12 in) for speeds above 130 km/h (81 mile/h)

Filling capacities

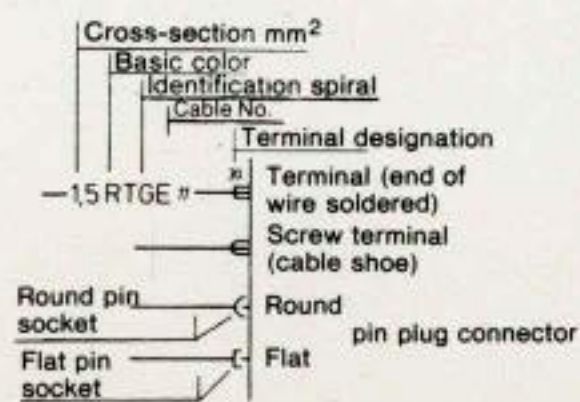
Fuel tank	22 liters (4.8 Imp./5.8 US gal), incl. 2 liters (0.44 Imp./0.53 US gal) reserve	Super (premium) grade petrol (gasoline) to DIN 51 600 standard, min. octane number 98 (RM) or 88 (MM) R 45 (20 kW engine): Regular grade petrol (gasoline) to DIN 51 600 standard, min. octane number 91 (MM) or 82 (MM)
Engine oil	2.25 liter (4.0 Imp. pints, 2.4 US quarts) + 0.25 liter (0.44 Imp. pint, 0.26 US quart) if filter element is changed	Brand-name HD oil for spark-ignition engines; see page 89 for grades
Gearbox	0.8 liter (1.4 Imp. pints, 0.85 US quart)	Brand-name hypoid gear oil
Rear swinging arm	0.10 liter (0.18 Imp. pint, 0.11 US quart)	Above 5° C (41° F) SAE 90 Below 5° C (41° F) SAE 80
Final drive	0.35 liter (0.62 Imp. pint, 0.37 US quart)	For oil grades, see page 90
Telescopic forks	0.190 liter per fork leg (0.33 Imp. pint, 0.2 US quart)	For oil grades, see page 90
Brake circuit	app. 0.3 liter (106 fl. oz) to fill and bleed empty system	DOT 4 SL brake fluid
Valve clearances with engine cold	Inlet 0.10 mm (0.004 in) Exhaust 0.20 mm (0.008 in)	For the first 1000 km (600 miles): Inlet 0.15 mm (0.006 in) Exhaust 0.25 mm (0.010 in)

Key to electrical circuit diagram – BMW R 45 / R 65 / R 65 LS

- | | |
|---|--|
| 1 Front right flashing turn indicator | 21 Plug connector for right handlebar switch (white) |
| 2 Headlight | 22 Plug connector for clutch switch |
| a High beam | 23 Fuse box |
| b Low (dipped) beam | 24 Starter relay |
| c Parking light | 25 Gearbox switch |
| 3 Front left flashing turn indicator | 26 Oil pressure switch |
| 4 Left/right turn indicator repeater | 27 Plug connector to gearbox and oil pressure switches |
| 5 Speedometer dial lighting | 28 Flasher unit |
| 6 Ignition/light switch | 29 Brake pedal (stop) switch |
| 7 Hand brake (stop) light switch | 30 Plug connector to brake pedal switch |
| 8 Plug connector to hand brake (stop) light switch | 31 Plug connector to engine |
| 9 Revolution counter | 32 Plug connector to rear light |
| a High beam telltale (blue) | 33 Twin-spark coil |
| b Dial lighting | 34 Spark plugs with caps |
| c Battery charge telltale (red) | 35 Plug connector to ignition trigger |
| d Neutral indicator (green) | 36 Ignition trigger (Hall effect transmitter) |
| e Oil pressure warning light (red) | 37 Control unit for transistorized coil ignition |
| 10 8-pin connector for revolution counter | 38 Battery |
| 11 Plug connector for optional extras | 39 Starter |
| 12 Plug connector for left handlebar switch (red) | 40 Diode board |
| 13 Plug connector for left handlebar switch (black) | 41 Voltage regulator |
| 14 Horn push | 42 Alternator |
| 15 Headlight low beam (dip) switch with headlight flasher | 43 Right rear flashing turn indicator |
| 16 Turn indicator switch | 44 Rear light |
| 17 Horn | a Brake (stop) light |
| 18 Emergency engine cutout ('kill') switch | b Rear and licence plate light |
| 19 Starter switch | 45 Left rear flashing turn indicator |
| 20 Clutch switch | 46 Plug connector for ignition |
| | 47 Connection for voltmeter |

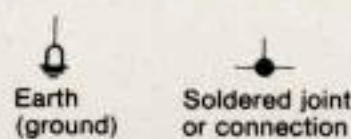


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Color codes

BL = blue
BR = brown
GE = yellow
GN = green
GR = gray
RT = red
SW = black
VI = violet
WS = white
TR = transparent



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