

# Repair Manual



**R 1100 RT**

**R 1100 RS**

**R 850/1100 GS**

**R 850/1100 R**

**BMW Motorcycle  
After Sales**

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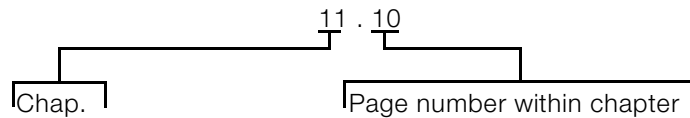
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# Introduction

This repair manual will help you to perform all the main maintenance and repair work correctly and efficiently. It should be consulted regularly by workshop personnel as an addition to the practical and theoretical knowledge obtained in Training School courses. It is a contribution towards achieving even higher Service quality.

All information in both text and illustrations refers to motorcycles in standard condition or with genuine BMW accessories installed, and not to motorcycles which have been modified in any way to depart from the manufacturer's specification.

- The repair manual is structured in the logical sequence of the work to be performed: Removal, Disassembly, Repair, Assembly, Installation.
- The entire contents are divided into individual chapters, corresponding to the Construction Groups.



- Work to be performed during an Inspection is described in Group "00". The various inspection routines are numbered I, II, III and IV. This numbering is repeated in the work descriptions which follow, so that work can take place without interruption.
- Use of the BMW special tools needed for certain tasks is described in the work instructions.

If the need arises, repair instructions are also issued in the form of Service Information. This information is of course incorporated into the next issue of the repair manual. We also recommend you to consult the detailed illustrations on the Parts microfiches as an additional source of information.

BMW Motorcycle  
After Sales

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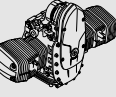
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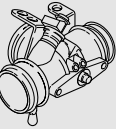
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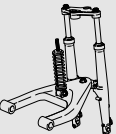
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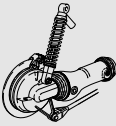
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# BMW AG Motorcycle Division Maintenance Schedule



## R 1100 RT/R 1100 RS/R 850 GS/R 1100 GS/R 850R/R 1100 R

| Customer _____<br>Registration No. _____  |  | BMW Inspection<br>1 000 km/600 mls | BMW Service<br>10 000 km/6000 mls | BMW Inspection<br>20 000 km/12 000 mls | BMW<br>Annual Service    |
|---|--|------------------------------------|-----------------------------------|--|--------------------------|
| Order No. _____<br>Signature of mechanic _____  |  |                                    |                                   |  |                          |
| Change engine oil when engine is warm, renew oil filter cartridge <sup>1)</sup>   |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               | <input type="checkbox"/> |
| Change oil in manual transmission and rear wheel drive when at operating temperature  |  | <input type="checkbox"/>           |                                   | <input type="checkbox"/>               | <input type="checkbox"/> |
| Retighten cylinder head nuts  |  | <input type="checkbox"/>           |                                   |  |                          |
| Adjust valve clearance  |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Check spark plugs   |  |                                    | <input type="checkbox"/>          |  |                          |
| Renew spark plugs   |  |                                    |                                   | <input type="checkbox"/>               |                          |
| Renew fuel filter <sup>3) *</sup>   |  |                                    |                                   | <input type="checkbox"/>               |                          |
| Check battery acid level, if necessary top up with distilled water  |  |                                    |                                   | <input type="checkbox"/>               | <input type="checkbox"/> |
| Clean and grease battery terminals  |  |                                    |                                   | <input type="checkbox"/>               | <input type="checkbox"/> |
| Renew intake air cleaner <sup>2)</sup>  |  |                                    |                                   | <input type="checkbox"/>               |                          |
| Check throttle cables for free movement, abrasion and kinking, renewing if necessary <sup>*</sup>   |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Check clutch clearance, adjust if necessary   |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Adjust Poly-V-belt [► SI 12 020 95 (700)] <sup>4) 5)</sup>  |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Retighten hose clips at intake pipe   |  | <input type="checkbox"/>           |                                   |  |                          |
| Check brake pads and discs for wear, renew if necessary <sup>*</sup>  |  |                                    | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Check front/rear brake fluid level, top up if necessary <sup>*</sup> [► SI 00 027 95 (716)]   |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Check brake system with regard to function, leaks; repair/renew as required <sup>*</sup>  |  |                                    |                                   | <input type="checkbox"/>               |                          |
| <b>Renew brake fluid at least once a year</b>   |  |                                    |                                   |  | <input type="checkbox"/> |
| Check wheel bearings, renew if necessary <sup>*</sup>   |  |                                    |                                   | <input type="checkbox"/>               |                          |
| Check swinging arm bearing (no play), adjust if necessary <sup>*</sup>  |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Check steering damper (R850/1100R)  |  |                                    | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Lubricate side stands, centre stand (R 1100 RS) and nipple for clutch cable assembly  |  |                                    | <input type="checkbox"/>          | <input type="checkbox"/>               | <input type="checkbox"/> |
| Check side stand switch for damage and correct operation [► SI 46 033 96 (722)]   |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               | <input type="checkbox"/> |
| Check fit of rear wheel bolts   |  | <input type="checkbox"/>           |                                   |  |                          |
| Check bolts of control arm to specified torque  |  | <input type="checkbox"/>           |                                   |  |                          |
| Clean and grease shaft for windshield adjustment (R 1100 RS)  |  |                                    |                                   | <input type="checkbox"/>               |                          |
| Grease lower eye of front spring strut (R 1100 RS slide bearing)  |  |                                    | <input type="checkbox"/>          | <input type="checkbox"/>               |                          |
| Check idle speed, throttle synchronisation and CO value, adjust if necessary  |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               | <input type="checkbox"/> |
| Final inspection with safety/operating check:<br>– condition of tyres and wheels, rims and spokes, tyre pressures<br>– lights and signal systems<br>– telltale and warning lights<br>– clutch and gear shift<br>– handbrake and footbrake, steering<br>– instruments<br>– test ride, if necessary |  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>               | <input type="checkbox"/> |

1) for short-distance driving or outside temperatures below 0°C every 3 months, every 3,000 km (1,800 miles) at the latest  
2) in very dirty or dusty conditions, renew the intake air cleaner element every 10,000 km (6,000 miles), or even more frequently if necessary  
3) normally every 40,000 km (24,000 miles), but if fuel is of poor quality every 20,000 km (12,000 miles)  
4) Renew Poly-V-belt every 40,000 km (24,000 miles)  
5) After 60,000 km (36,000 miles), change the maintenance free Poly-V-belt, do not adjust  
\*) invoiced as a separate item



|  |                                |   |
|--|--------------------------------|---|
| _____<br>Customer  | _____<br>Registration No.      | <b>BMW</b><br><b>Pre-delivery check</b> |
| _____<br>Order No.   | _____<br>Signature of mechanic |   |
| Inspect crates on receipt for signs of damage  |                                | <input type="checkbox"/>                |
| Motorcycle:<br>– unpack<br>– check scope of delivery<br>– install/complete<br>– clean  |                                | <input type="checkbox"/>                |
| Battery:<br>– remove<br>– add battery acid<br>– charge<br>– grease the terminal posts<br>– re-install (mark date)  |                                | <input type="checkbox"/>                |
| Check complete specification delivery:<br>– tools<br>– handbooks and documents<br>– keys<br>– optional extras  |                                | <input type="checkbox"/>                |
| Check headlight (basic setting), adjust if necessary   |                                | <input type="checkbox"/>                |
| Check front and rear wheel brake fluid levels  |                                | <input type="checkbox"/>                |
| Check torque setting of the rear wheel retaining studs   |                                | <input type="checkbox"/>                |
| Check tyre pressure  |                                | <input type="checkbox"/>                |
| Check engine oil level, top up if necessary  |                                | <input type="checkbox"/>                |
| Fuel the motorcycle  |                                | <input type="checkbox"/>                |
| Check basic clutch setting, adjust if necessary  |                                | <input type="checkbox"/>                |
| Safety/operating check as final inspection:<br>– idle speed<br>– clutch, gear shifting<br>– steering<br>– front and rear brakes<br>– telltale and warning lights, instruments, lighting and signalling equipment<br>– ABS<br>– test ride, if necessary |                                | <input type="checkbox"/>                |



| Designation  | Data                                | Measuring unit or specification  |
|--|-------------------------------------|--|
| <b>Oilcapacities</b>   |                                     |  |
| Engine (incl. filter)  | 3.75                                | litre  |
| Engine (without filter renewal)  | 5.50                                | litre  |
|  |                                     | [SI 11 048 90]<br>Brand-name HD oil for petrol engines of API classification SE, SF, SG; combination with CC or CD specification |
| Gearbox  | fresh fill 1.0<br>change 0.8        | litre<br>litre   |
| Rear wheel drive   | fresh fill 0.25<br>change 0.23      | litre<br>litre   |
| <b>Valve clearance</b><br>measured cold, i.e. at max. 35 °C  | E 0.15 / A 0.30                     | mm   |
| <b>Ignition</b><br>Static ignition   | disconnect at 6° b TDC              |  |
| <b>Spark plugs</b><br>Electrode gap<br>limit of wear   | Bosch FR5DTC<br>0.8<br>1.0          | mm<br>mm   |
| <b>Engine idle speed</b>   | 1000 +150                           | 1/min  |
| <b>CO value (without catalytic converter)</b>  | 1.5 ±0.5                            | Vol %  |
| <b>Cable adjustment</b><br>for increased cold starting speed (without cable junction)<br>(with cable junction) | < 1<br>no backslash                 | mm play  |
| throttle (without cable junction)<br>gas cable (one piece)<br>connecting cable                                 | ca. 0.5<br>no backslash             | mm play  |
| throttle (with cable junction)<br>gas cable (one piece)<br>junction cable                                      | ca. 0.5<br>no backslash             | mm play  |
| <b>Clutch cable adjustment</b><br>wire cable at handle bar lever<br>at lever                                   | 12.0<br>7.0                         | mm thread<br>mm play   |
| <b>Tyre pressure</b><br>depending on load and speed  | front: 2.2 – 2.5<br>rear: 2.5 – 2.9 | bar<br>bar   |
| <b>Tightening torques:</b>   |                                     |  |
| Oilfilter  | 11                                  | Nm   |
| Engine oil drain plug  | 32                                  | Nm   |
| Gearbox oil drain plug   | 23                                  | Nm   |
| Rear wheel drive oil drain plug  | 23                                  | Nm   |
| Locknut valve adjustment   | 8                                   | Nm   |
| Cylinder head cover  | 8                                   | Nm   |
| Generator to bracket   | 20                                  | Nm   |
| Tension multiple ripped belt (Poly-V)  | 8                                   | Nm   |
| Spark plugs  | 20                                  | Nm   |
| Fuel tank to rear frame  | 22                                  | Nm   |
| Fuel pump to tank  | 6                                   | Nm   |
| Adjustable handle bars   | 20                                  | Nm   |
| Quick release axle thread (axial)  | 30                                  | Nm   |
| Quick release axle clamp   | 22                                  | Nm   |
| Brake caliper  | front / rear 40                     | Nm   |
| Bearing bolt swingarm to gearbox/rear axle   | 150 (Loctite 2701)                  | Nm (clean thread)  |
| Idle bearing pin on swinging arm on gearbox/rear wheel drive   | 7 (Loctite 2701)                    | Nm (clean thread)  |
| Locknut  | 105 (Loctite 2701)                  | Nm (clean thread)  |
| Rear wheel retaining studs   | 105                                 | Nm   |
| Tube clips to air intake pipe  | 2                                   | Nm   |
| Screw connect. spring strut on control arm (RS with slide bearing)   | 43                                  | Nm (8.8 screw)   |
| Tighten cylinder head  | Tighten 20                          | Nm   |
|  | 180                                 | ° Torsion angle  |
|  | 40                                  | Nm   |
| – M 10 screw   |                                     |  |