

Bmw R1150gs Service Repair Manual

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Repair Manual



R 1150 GS

**BMW Motorrad
After Sales**

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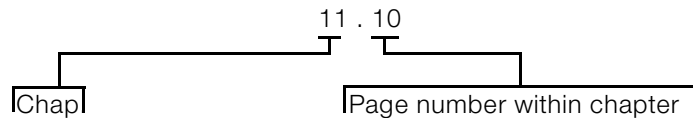
Introduction

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.

A new issue of this repair manual will be published if amendments or additions (supplements) are needed. The latest issue date is shown in the header of the microfiche. Microfiches rendered invalid by the new issue should be destroyed without delay.

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.

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After Sales

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Maintenance schedule

R 1100 S / R 850/1200 C / R 1150 GS



Customer _____ Licence plate No. _____		BMW Inspection at 1000 km (600 miles)	BMW Service every 10 000 km (6 000 miles)	BMW Inspection every 20 000 km (12 000 miles)	BMW Annual Service
Order No. _____ Mechanic's signature _____					
Read the fault code memory with the MoDiTeC		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change oil while at regular operating temperature and renew the oil filter element if motorcycle is used only for short journeys or at outside temperatures under 0°C (32 °F), every 3 months, but at least every 3 000 km (1 800 miles) *)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change oil in gearbox while at operating temperature at least every 2 years*)				<input type="checkbox"/>	<input type="checkbox"/> every 2 years
Change oil in rear wheel drive while at regular operating temperature; if necessary, clean inductive sensor on rear wheel every 40 000 km (24 000 miles) or at least every 2 years *)		<input type="checkbox"/>		<input type="checkbox"/> 40 000 (24 000)	<input type="checkbox"/> every 2 years
Renew fuel filter *) normally every 40 000 km (24 000 miles), if fuel quality is poor every 20 000 km (12 000 miles)				<input type="checkbox"/> 40 000 (24 000)	
Check battery acid level, if necessary add distilled water Clean and grease the battery terminals, if necessary				<input type="checkbox"/>	<input type="checkbox"/>
Renew intake air filter element in very dusty or dirty operating conditions, renew the intake air filter element every 10 000 km (6 000 miles) or even more often if necessary *)				<input type="checkbox"/>	
Renew Poly-V belt *) renew Poly-V belt every 60 000 km (36 000 miles); do not adjust				<input type="checkbox"/> 60 000 (36 000)	
Check brake fluid level at front and rear			<input type="checkbox"/>	<input type="checkbox"/>	
Check operation of brake system and freedom from leaks; repair/replace items if nec. *)				<input type="checkbox"/>	
Examine brake pads and discs for wear, renew if necessary *)			<input type="checkbox"/>	<input type="checkbox"/>	
Change the brake fluid annually					<input type="checkbox"/>
Check clutch fluid level			<input type="checkbox"/>	<input type="checkbox"/>	
Change the clutch fluid at least every 2 years *)					<input type="checkbox"/> every 2 years
Check tightness of rear wheel studs		<input type="checkbox"/>			
Check rear wheel bearing play by tilting wheel				<input type="checkbox"/>	
Check swinging arm bearings (zero play); adjust if necessary *)		<input type="checkbox"/>		<input type="checkbox"/>	
Grease the side stand pivot		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Check function of side stand contact switch		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check condition of spark plugs			<input type="checkbox"/>		
Renew spark plugs				<input type="checkbox"/>	
Check security of cylinder head nuts		<input type="checkbox"/>			
Check/adjust valve clearances		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Check throttle cable for free movement, abrasion and kinking; renew if necessary *) Check cable play Check synchronisation and eliminate leaks *)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Final inspection with road safety and functional check: – Condition of tyres and wheels, rims and spokes if applicable, tyre pressures – Lights and signalling equipment – Telltale and warning lights – Clutch, gear shift – Front and rear brakes, steering – Instruments – If necessary, test ride		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*) **Charged as an additional item**

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Pre-delivery check

R 1100 S / R 850/1200 C / R 1150 GS



Customer _____	Licence plate No. _____	BMW Pre-delivery check
Order No. _____	Mechanic's signature _____	
Check the shipping crate for damage		<input type="checkbox"/>
Motorcycle: <ul style="list-style-type: none"> - unpack - install remaining items - inspect for damage - check that delivery is complete: <ul style="list-style-type: none"> tools documentation keys correct optional extras 		<input type="checkbox"/>
Fill and charge the battery (mark with charging date)		<input type="checkbox"/>
Check engine oil level when cold; add oil if necessary		<input type="checkbox"/>
Check headlight beam angle, adjust if necessary		<input type="checkbox"/>
Check security of rear wheel studs (comply with correct tightening torque)		<input type="checkbox"/>
Check tyre pressures		<input type="checkbox"/>
Fill fuel tank		<input type="checkbox"/>
Final inspection as functional check: <ul style="list-style-type: none"> - Clutch, gear shift - Front and rear brakes - Lights and signalling equipment, telltale and warning lights, instruments - Check operation of optional extras, ABS - If necessary, test ride 		<input type="checkbox"/>
Confirm pre-delivery check in Service and Technical Booklet		<input type="checkbox"/>
Final cleaning		<input type="checkbox"/>
Motorcycle handed over on:		

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Service data

R 1150 GS

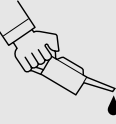


Item	Desired value	Unit of measurement/ specification
Oil capacities		
Engine (with filter) (without filter)	3.75 (6.60) 3.50 (6.16)	litres (Imp. pints) litres (Imp. pints) [SI 11 048 90] Engine oil grade: brand-name HD oil for four-stroke spark-ignition engines, API classes SE, SF, SG; combination with CC or CD specification
Gearbox Initial filling/oil changes	approx. 1.0 (1.76) up to lower edge of filler hole	litres (Imp. pints) Brand-name hypoid gear oil, SAE class GL 5 SAE 90
Rear wheel drive Initial filling/oil changes	approx. 0.25 (0.44) oil level with bottom of filler neck	litres (Imp. pints) Brand-name hypoid gear oil, SAE class GL 5 SAE 90
Valve clearances		
Measured cold (max. 35 °C/95 °F)	Inlet: 0.15 (0.006) Exhaust: 0.30 (0.011)	mm (in) mm (in)
Ignition timing		
Static setting	adjust at TDC	
Spark plugs		
Electrode gap	0.8 (0.03)	mm (in)
Wear limit	1.0 (0.04)	mm (in)
Idle speed		
	1100± ⁵⁰	min ⁻¹
Throttle cable setting		
for cold-start (increased idle) speed for throttle (twistgrip) cable for divider cable	zero play app. 0.5 (0.02) zero play	mm (in) free travel
Brakes		
Minimum front pad thickness	1.0 (0.04)	DOT 4 brake fluid mm (in)
Minimum rear pad thickness	wear mark	
Minimum front disc thickness	4.5 (0.18)	mm (in)
Minimum rear disc thickness	4.5 (0.18)	mm (in)
Tyre pressures		
depending on load	front: 2.2 – 2.5 (31.3 – 35.6) rear: 2.5 – 2.9 (35.6 – 41.2)	bar (psi) bar (psi)
Tightening torques:		
Oil filter	11	Nm
Engine oil drain plug	32	Nm
Gearbox oil filler plug	30	Nm
Gearbox oil drain plug	30	Nm
Rear wheel drive oil filler/drain plug	23	Nm
Fuel tank to rear frame	21	Nm
Fuel pump unit to tank	6	Nm
Poly-V belt preload	8	Nm
Alternator to alternator carrier cover	20	Nm
Brake calliper mounting, front/rear	40	Nm
Rear wheel studs	initial torque 72 105	Nm Nm
Tightening cylinder heads Nut	slacken/20 180	Nm ° tightening angle
M 10 screw	slacken/40	Nm
Locknut, valve adjusting screw	8	Nm
Cylinder head cover	8	Nm
Spark plugs	20	Nm

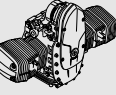
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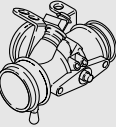
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12 Engine electrics



13 Fuel preparation and control



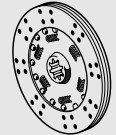
16 Fuel tank and lines



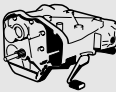
18 Exhaust system



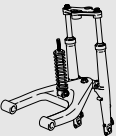
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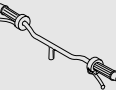
23 Transmission



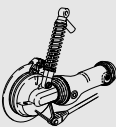
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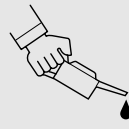




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Tightening torques

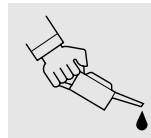
Model	R 1150 GS
Connection	Nm
11 Engine	
Cylinder head	
Tightening sequence:	
1. Tighten cylinder head nuts (oiled) in diagonally opposite sequence	
1.1 Tighten all nuts to closing torque	20
1.2 Tighten all nuts to correct angle	90°
1.3 Tighten all nuts to correct angle	90°
2. M 10 screw	40
3. M 6 screw	9
After 1,000 km (600 miles), tighten cylinder head nuts in diagonally opposite sequence:	
1. Slacken one nut	
2. Tighten nut to initial torque	20
3. Tighten nut to wrench angle	180°
4. Slacken and retighten M 10 screw	40
Timing gear carrier to cylinder head	9
Bearing cap on rocker shaft	18
Locknut, valve adjusting screw	8
Cylinder head cover to cylinder head	8
Camshaft end cover to cylinder head	9
Air intake connection to cylinder head	9
Camshaft	
Chain sprocket to camshaft	65
Camshaft bearing cap	15
Alternator mount cover	
M 6 screw	9
M 8 screw	20
Auxiliary shaft	
Chain sprocket to crankshaft	10
Chainwheel to auxiliary shaft	70
Chain tensioner housing to engine block	9
Oil filter	
Oil filter	11
Oil drain plug	32





Model		R 1150 GS	
Connection		Nm	
11 Engine			
Oil pump			
Mesh filter basket to engine block		10	
Oil pump cover		9	
Pressure relief valve		42	
Oil pressure switch		30	
Oil cooler			
Cooling oil line to engine block		10	
Cooling oil line - banjo screw with oil vent valve		25	
Oil lines to oil cooler		25	
Oil cooler to bracket		9	
Oil cooler return line to engine block		35	
Oil cooler connection to crankcase		9	
Cylinders			
Tightening sequence:			
1. M 8 screw		20	
2. M 6 screw		9	
3. Chain guide rail pivot screw		18	
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Chain tensioner		32	
Connecting rod			
Big end cap	Closing torque	20	
	Wrench angle	80°	
Crankcase			
Tightening sequence:			
M 10 screw (oiled)	Initial torque	25	
	Wrench angle	90°	
M 8 screw (oiled)		22	
M 6 screw		9	
12 Engine electrics			
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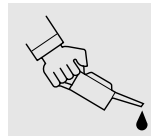
Model	R 1150 GS	
Connection	Nm	
12 Engine electrics		
Spacer to alternator	21	
Positive lead to alternator	15	
Belt pulley to alternator Standard alternator 560 W Special alternator 700 W	Do not release 50	
Belt pulley to crankshaft	50	
Poly-V belt preload	8	
Spark plug	20	
13 Fuel preparation and control		
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Temperature sensor, air, in air-filter housing	10	
16 Fuel tank and lines		
Fuel tank to rear frame	21	
Fuel pump assembly to tank	6	
18 Exhaust system		
Manifold to cylinder head	21	
Clamp for manifold	45 (apply Optimoly TA to clamp seat)	
Front silencer to manifold	45 (apply Optimoly TA to clamp seat)	
Front silencer to main-stand link	20	
Silencer to rear frame at top	35	
Oxygen sensor to silencer	45 (apply Optimoly TA to thread)	
End cap to rear silencer	8 (threads greased)	
Bracket to rear silencer	15 (threads greased)	
21 Clutch		
Clutch housing	Closing torque Wrench angle	40 (oil screw threads lightly) 32°
Housing cover to housing	12	
Clutch line to handlebar fitting	14	
Slave cylinder to gearbox	9	
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Model	R 1150 GS	
Connection	Nm	
23 Transmission		
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Oil filler plug		30
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1. to gearbox and left footrest plate		42 (clean thread + Loctite 243)
2. clamp block, frame tube to gearbox		9
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Threaded stud to frame		130 (clean thread + Loctite 243)
Ball joint to fork slider bridge		230 (apply light coat of Never Seeze to thread)
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32 Steering		
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Model	R 1150 GS
Connection	Nm
33 Rear wheel drive	
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Bracket to rear frame	9 (clean thread + Loctite 2701)
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ABS sensor	4 (handtight)





Model	R 1150 GS
Connection	Nm
34 Brakes	
Front brake caliper bleed screw	14
Rear brake caliper bleed screw	6
Pressure modulator bleed screw	14
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Model	R 1150 GS
Connection	Nm
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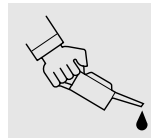


Table of operating fluids



Item	Use	Order number	Quantity
Lubricant			
Staburags NBU 30 PTM	High-performance lubricating paste	07 55 9 056 992	75 g tube
Optimoly MP 3	High-performance lubricating paste	07 55 9 062 476	100 g tube
Optimoly TA	High-temperature assembly paste	18 21 9 062 599	100 g tube
Silicone grease 300, heavy	Damping grease	07 58 9 058 193	10 g tube
Retinax EP2	Wheel, steering head and taper roller bearing grease	83 22 9 407 845	100 g tube
Contact spray	Contact spray	81 22 9 400 208	300 ml spray
Chain spray	Drive chain	72 60 2 316 676 72 60 2 316 667	50 ml spray 300 ml spray
Sealants			
3-Bond 1110 B	Surface sealant	07 58 9 056 998	5 g tube
3-Bond 1209	Surface sealant	07 58 9 062 376	30 g tube
OMNI VISC 1002	Surface sealant	07 58 1 465 170	90 g tube
Loctite 574	Surface sealant	81 22 9 407 301	50 ml tube
Loctite 577	Thread locking compounds	07 58 2 328 736	5 g tube
Curil K 2	Heat-conductive sealant	81 22 9 400 243	250 g can
Adhesives and retaining agents			
Loctite 648	Joint adhesive (low clearance)	07 58 9 067 732	5 g bottle
Loctite 638	Joint adhesive (greater clearance)	07 58 9 056 030	10 ml bottle
Loctite 243	Thread retainer, medium-strength	07 58 9 056 031	10 ml bottle
Loctite 270	Thread retainer, strong	81 22 9 400 086	10 ml bottle
Loctite 2701	Thread retainer, strong	33 17 2 331 095	10 ml bottle
Loctite 454	Cyanacrylate adhesive (gel)	07 58 9 062 157	20 g tube
Cleaners			
Brake cleaner	Brake cleaner	83 11 9 407 848	600 ml spray
Metal Polish	Polish for chrome-plated parts	82 14 9 400 890	100 g tube
Testing agents			
Penetrant MR 68	Crack testing agent for aluminum housings	83 19 9 407 855	500 ml spray
Developer MR 70	Crack testing agent for aluminum housings	81 22 9 407 495	500 ml spray
Installation aids			
BMW cooling spray	Cooling spray	83 19 9 407 762	300 ml spray