

BMW AG Motorcycle Division Service Data



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

Designation	Data	Measuring unit or specification
Oilcapacities		
Engine (incl. filter)	3.75	litre
Engine (without filter renewal)	5.50	litre
		[SI 11 048 90] Brand-name HD oil for petrol engines of API classification SE, SF, SG; combination with CC or CD specification
Gearbox	fresh fill 1.0 change 0.8	litre litre
Rear wheel drive	fresh fill 0.25 change 0.23	litre litre
Valve clearance measured cold, i.e. at max. 35 °C	E 0.15 / A 0.30	mm
Ignition Static ignition	disconnect at 6° b TDC	
Spark plugs Electrode gap limit of wear	Bosch FR5DTC 0.8 1.0	mm mm
Engine idle speed	1000 +150	1/min
CO value (without catalytic converter)	1.5 ±0.5	Vol %
Cable adjustment for increased cold starting speed (without cable junction) (with cable junction)	< 1 no backlash	mm play
throttle (without cable junction) gas cable (one piece) connecting cable	ca. 0.5 no backlash	mm play
throttle (with cable junction) gas cable (one piece) junction cable	ca. 0.5 no backlash	mm play
Clutch cable adjustment wire cable at handle bar lever at lever	12.0 7.0	mm thread mm play
Tyre pressure depending on load and speed	front: 2.2 – 2.5 rear: 2.5 – 2.9	bar bar
Tightening torques:		
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)
Idler 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		

Tightening torques R 1100 RS / R 1100 RT

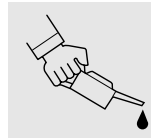
Model	R 1100 RS	R 1100 RT
11 Engine		
Connection	Nm	Nm
Cylinder head		
Tightening sequence:		
1. Tighten cylinder head nuts (oiled) crosswise	20	20
1.1 Tighten all nuts to correct torque for joint		
1.2 Tighten all nuts to correct angle	90°	
1.3 Tighten all nuts to correct angle	90°	
2. M 10 screw	40	40
3. M 6 screw	9	9
After 1000 km, tighten cylinder head nuts crosswise:		
1. Unfasten one nut		
2. Tighten one nut to initial value	20	20
3. Tighten nut to wrench angle	180°	
4. Unfasten/retighten M10 screw	40	40
Bearing cap on rocker shaft	15	15
Locknut on valve clearance adjusting screw	8	8
Cylinder head cover to cylinder head	8	8
Camshaft end cover to cylinder head	9	9
Air intake connection to cylinder head	9	9
Camshaft		
Chain sprocket to camshaft	65	65
Camshaft bearing cap	15	15
Rotary breather		
Vent line to alternator mount cover		
M 8 screw	20	20
Banjo screw	25	25
Alternator mount cover		
M 6 screw	9	9
M 8 screw	20	20
Auxiliary shaft		
Chain sprocket to crankshaft	10	10
Chainwheel to auxiliary shaft	70	70
Chain tensioner housing to engine block	9	9





Model	R 1100 RS	R 1100 RT
11 Engine		
Connection	Nm	Nm
Oil filter		
Oil filter	11	11
Oil drain plug	32	32
Oil pump		
Mesh filter basket to engine block	9	9
Oil pump cover	9	9
Pressure relief valve	35	35
Oil pressure switch	30	30
Oil cooler		
Oil cooler pipe to engine block	10	10
Cooling oil line - banjo screw	25	25
Cooling oil line - banjo screw with oil vent valve	25	25
Oil lines to oil cooler	25	-
Oil cooler to holder	9	9
Oil cooler return line to engine block	35	35
Oil cooler feed line to frame	20	20
Oil cooler feed line to engine block	25	25
Screw-in union for oil cooler connection at engine block	35	35
	Clean threads and apply Loctite 603 to inner and outer threads and in the contact face area	
Oil cooler hose at oil thermostat	-	40
Cylinders		
Tightening sequence		
M 8 screw	20	20
M 6 screw	9	9
Chain guide rail pivot screw	18	18
Timing chain		
Chain tensioner	32	32
Connecting rod		
Big end cap	Joint torque Additional wrench angle 80°	20
		20
Crankcase		
Tightening sequence:		
M 10 screw (oiled)	45	45
M 8 screw (oiled)	20	20
M 6 screw	9	9

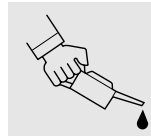
Model	R 1100 RS	R 1100 RT
12 Engine electrical system		
Connection	Nm	Nm
Starter motor to engine	20	20
Starter cover to gearbox housing	7	–
Positive lead to starter motor	10	10
Alternator to alternator support cover	20	20
Tensioning and retaining strap at alternator	20	20
Spacer at alternator	20	20
Positive lead to alternator	15	15
Belt pulley at alternator	50	50
Belt pulley to crankshaft	50	50
Poly-V belt preload	8	8
Spark plug	20	20
13 Fuel preparation and control		
Temperature sensor on engine block	25	25
16 Fuel tank and lines		
Fuel tank to rear frame	22	22
Fuel pump assembly to tank	6	6
18 Exhaust system		
Muffler to footrest	35	35
Manifold to cylinder head (with strap)	22	22
(with jacket pipe)	18	18
Muffler to support plate for center stand	20	20
Clip on muffler	50	50
	Grease clamping face with Never Seez	
Oxygen sensor (lambda probe) to muffler	55	55
	Grease with Never Seez	





Model		R 1100 RS	R 1100 RT
21 Clutch			
Connection		Nm	Nm
Clutch housing	Joint torque	40	40
		oil screw threads lightly	
	Additional wrench angle	32°	
Housing cover		18	18
Locknut on release lever		22	22
23 Gearbox			
Oil filler plug		23	23
Oil drain plug		23	23
Gearbox cover to gearbox housing		9	9
Screw for neutral detent		13	13
		clean thread + Loctite 243	
Oil guide plate at gearbox housing		9	9
		clean thread + Loctite 573, also apply Loctite 573 to sealing face between oil baffle plate and gearbox housing	
Gearbox to engine block		22	22
Clutch lever to gearbox housing		18	18
Selector lever to selector shaft		9	9
Pedal to footrest plate		35	18

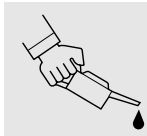
Model	R 1100 RS	R 1100 RT
31 Front fork		
Connection	Nm	Nm
Clamp between fixed tubes and fork bridge	22	–
Screw connection between fixed tube and fork bridge	–	45 (free from oil and grease)
Control arm to ball joint	130	130
	clean thread + Loctite 2701	
Fork bridge to ball joint	130	–
	clean threads + Loctite 2701	–
Threaded journal to frame	–	130
	–	clean threads + Loctite 243
Ball joint to fork slider tube bridge Frame	230	230
	230	–
Slider tube bridge to slider tube	22	–
	clean thread + Loctite 243	–
Screw plug to fixed fork tube	18	pressed fit, do not release
Clamping screws, quick-release axle	22	22
Control arm to engine	right 73	73
Screw cap	left 42	42
	apply light coat of Never Seez to thread	
Spring strut to frame	47	47
Spring strut to control arm	43 8.8 screw	43 8.8 screw
	50 10.9 screw	50 10.9 screw
32 Steering		
Handlebar at rubber mount	40	–
Rubber mount at fork bridge	40	–
Handlebar to fork bridge	–	21
Twistgrip to handlebar	7	7
Handlebar weight to fixed handlebar	20	–
Handlebar weight to handlebar	–	20
Handlebar weight to adjustable handlebar	7	7
	clean threads + Loctite 2701	–





Model	R 1100 RS	R 1100 RT
33 Rear wheel drive		
Connection	Nm	Nm
Oil drain plug	23	23
Oil filler plug	23	23
Threaded ring	118 (Hylomar SQ 32 M)	118 (Hylomar SQ 32 M)
Hexagon nut, input bevel gear	200	200
	clean thread + Loctite 273	
Housing cover	35	35
Fixed bearing journal Swinging arm to gearbox/ Swinging arm at rear wheel drive	150	150
	clean thread + Loctite 2701	
Free bearing journal Swinging arm to gearbox/ Swinging arm at rear wheel drive	7	7
	clean thread + Loctite 2701	
Locknut on free bearing journal	105	105
	clean thread + Loctite 2701	
Strut at rear wheel drive / gearbox	43	43
	load motorcycle with approx. 85 kg and tighten loose strut	
Spring strut to rear frame / rear swinging arm	43 8.8 screw	43 8.8 screw
	50 10.9 screw	50 10.9 screw
Hydraulic spring adjuster at footrest plate	-	22

Model	R 1100 RS	R 1100 RT	
34 Brakes			
Connection	Nm	Nm	
Brake caliper to slider tube	40	40	
Brake caliper to rear wheel drive	40	40	
Brake disc to front wheel	21	21	
Brake disc to rear wheel drive	21	21	
	clean thread + Loctite 273		
Brake hose to brake caliper, front/rear	15	15	
Brake hose to fitting	15	15	
Brake hose to flow distributor	15	15	
Flow distributor to frame	9	9	
Flow distributor to slider tube bridge	9	9	
Flow distributor to holder/slider tube	–	9	
Bleed screw on front brake caliper	7	7	
Bleed screw on rear brake caliper	7	4	
Master cylinder to footrest plate	9	9	
Brake pedal to footrest plate	37	37	
Handbrake lever pivot pinl	8	8	
	the Tuflok blue thread retaining agent can be slacked off and tightened several times if necessary		
ABS sensor	4 (handtight)	4 (handtight)	
ABS unit to holder			
M6 screw	9	9	
M6 screw (Torx)	5	5	
Brake line to ABS unit	15	15	
Bleed screw to ABS unit	9	9	
36 Wheels and tyres			
Clamping screws, quick-release axle	22	22	
Screw connection, quick-release axle	30	30	
Screw on wheel nuts handtight, then tighten crosswise:			
	Initial tightening	50	50
	Final tightening	105	105





Model	R 1100 RS	R 1100 RT
46 Frame		
Connection	Nm	Nm
Rear frame to gearbox/engine Screw connection on right of gearbo at right of engine at left of engine at left of gearbox	47	47
Footrest plate to gearbox	22	22
Frame to engine	82	82
Struts to frame	47 8.8 screw	47 8.8 screw
	58 10.9 screw	58 10.9 screw
Struts to engine	47	47
Guard hoop to cylinder head	20	20
Side stand to pivot mount	42	42
	clean thread + Loctite 2701	
Center stand to carrier plate	21	21
	clean thread + Loctite 2701	
Carrier plate for center stand to engine block M12 screw M 8 screw (countersunk)	72	72
	clean thread + Loctite 2701	
	21	21
	clean thread + Loctite 2701	
Grab handle to rear frame	9	9
Lifting handle to rear frame	10	10
Footrest plate to rear frame M 6 screw M 8 screw M 10 screw	9	-
	21	21
	42	-
Footrest to footrest plate	42	-
Fairing support bracket to frame	20	20

Model	R 1100 RS	R 1100 RT
51 Equipment		
Connection	Nm	Nm
Ignition/steering lock to fork bridg	15	15
61 General electrical system		
Horn to horn bracket	8	20
Ground (earth) strap to engine block	10	10
Rubber bushing for battery holder at gearbox	4	4

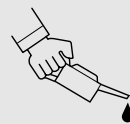


Tightening torques R 850/1100 GS und R 850/1100 R

Model	R 850/1100 GS	R 850/1100 R
11 Engine		
Connection	Nm	Nm
Cylinder head		
Tightening sequence:		
1. Tighten cylinder head nuts (oiled) crosswise	20	20
1.1 Tighten all nuts to correct torque for joint		
1.2 Tighten all nuts to correct angle	90°	
1.3 Tighten all nuts to correct angle	90°	
2. M 10 screw	40	40
3. M 6 screw	9	9
After 1000 km, tighten cylinder head nuts crosswise:		
1. Unfasten one nut		
2. Tighten one nut to initial value	20	20
3. Tighten nut to wrench angle	180°	
4. Unfasten/retighten M10 screw	40	40
Bearing cap on rocker shaft	15	15
Locknut on valve clearance adjusting screw	8	8
Cylinder head cover to cylinder head	8	8
Camshaft end cover to cylinder head	9	9
Air intake connection to cylinder head	9	9
Camshaft		
Chain sprocket to camshaft	65	65
Camshaft bearing cap	15	15
Rotary breather		
Vent line to alternator mount cover		
M 8 screw	20	20
Banjo screw	25	25
Alternator mount cover		
M 6 screw	9	9
M 8 screw	20	20
Auxiliary shaft		
Chain sprocket to crankshaft	10	10
Chainwheel to auxiliary shaft	70	70
Chain tensioner housing to engine block	9	9



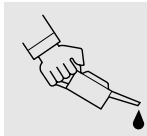
Model	R 850/1100 GS	R 850/1100 R
11 Engine		
Connection	Nm	Nm
Oil filter		
Oil filter	11	11
Oil drain plug	32	32
Oil pump		
Mesh filter basket to engine block	9	9
Oil pump cover	9	9
Pressure relief valve	35	35
Oil pressure switch	30	30
Oil cooler		
Oil cooler pipe to engine block	10	10
Cooling oil line - banjo screw	25	25
Cooling oil line - banjo screw with oil vent valve	25	25
Oil lines to oil cooler	25	-
Oil cooler to holder	9	9
Oil cooler return line to engine block	35	35
Oil cooler feed line to engine block	25	25
Screw-in union for oil cooler connection at engine block	35	35
	Clean threads and apply Loctite 603 to inner and outer threads and in the contact face area	
Cylinders		
Tightening sequence:		
1. M 8 screw	20	20
2. M 6 screw	9	9
3. Chain guide rail pivot screw	18	18
Timing chain		
Chain tensioner	32	32
Connecting rod		
Big end cap	Joint torque	20
	Additional wrench angle	80°
		20
Crankcase		
Tightening sequence:		
1. M 10 screw (oiled)	45	45
2. M 8 screw (oiled)	20	20
3. M 6 screw	9	9





Model	R 850/1100 GS	R 850/1100 R
12 Engine electrical system		
Connection	Nm	Nm
Starter motor to engine	20	20
Starter cover to gearbox housing	7	7
Positive lead to starter motor	10	10
Alternator to alternator support cover	20	20
Tensioning and retaining strap at alternator	20	20
Spacer at alternator	20	20
Positive lead to alternator	15	15
Belt pulley at alternator	50	50
Belt pulley to crankshaft	50	50
Poly-V belt preload	8	8
Spark plug	20	20
13 Fuel preparation and control		
Temperature sensor on engine block	25	25
16 Fuel tank and line		
Fuel tank to rear frame	22	22
Fuel pump assembly to tank	6	6
Strut to tank	–	15
18 Exhaust system		
Muffler to rear frame	24	24
Manifold to cylinder head	(with strap)	22
	(with jacket pipe)	18
Muffler to support plate for center stand	20	20
Clip on muffler		50
	Grease clamping face with Never Seez	
Oxygen sensor (lambda probe) to muffler		55
	Grease with Never Seez	

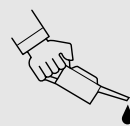
Model		R 850/1100 GS	R 850/1100 R
21 Clutch			
Connection		Nm	Nm
Clutch housing	Joint torque	40	40
		oil screw threads lightly	
	Additional wrench angle	32°	
Housing cover		18	18
Locknut on release lever		22	22
23 Gearbox			
Oil filler plug		23	23
Oil drain plug		23	23
Gearbox cover to gearbox housing		9	9
Screw for neutral detent		13	13
		clean thread + Loctite 243	
Oil guide plate at gearbox housing		9	9
		clean thread + Loctite 573, also apply Loctite 573 to sealing face between oil baffle plate and gearbox housing	
Gearbox to engine block		22	22
Clutch lever to gearbox housing		18	18
Selector lever to selector shaft		9	9
Pedal to footrest plate		35	35





Model	R 850/1100 GS	R 850/1100 R
31 Front fork		
Connection	Nm	Nm
Screw connection between fixed tube and fork bridge	45 (free from oil and grease)	45 (free from oil and grease)
Control arm to ball joint	130	130
	clean thread + Loctite 2701	
Threaded journal to frame	130	130
	clean threads + Loctite 243	
Ball joint to fork slider tube bridge	230	230
Slider tube bridge to slider tube	22	22
	clean threads + Loctite 243	
Screw plug to fixed fork tube	press fit, do not release!	
Clamping screws, quick-release axle	22	22
Control arm to engine	right 73	73
Screw cap	left 42	42
	apply light coat of Never Seez to thread	
Spring strut to frame	47	47
Spring strut to control arm	50 10.9 screw	50 10.9 screw
Steering damper to fork slider bridge mount	–	20 clean thread + Loctite 2701
Steering damper mount to fork slider bridge	–	9 clean thread + Loctite 2701
Steering damper to leading link pivot mount	–	20 clean thread + Loctite 2701
Steering damper pivot mount at leading link	–	20
Joint head against locknut	–	20

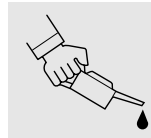
Model	R 850/1100 GS	R 850/1100 R
32 Steering		
Connection	Nm	Nm
Handlebar to fork bridge	21	21
Twistgrip to handlebar	7	7
Handlebar weight to fixed handlebar	20	20
33 Rear wheel drive		
Oil drain plug	23	23
Oil filler plug	23	23
Threaded ring	118 (Hylomar SQ 32 M)	118 (Hylomar SQ 32 M)
Hexagon nut, input bevel gear	200	200
	clean thread + Loctite 273	
Housing cover	35	35
Fixed bearing journal Swinging arm at gearbox Swinging arm at rear wheel drive	150	150
	clean thread + Loctite 2701	
Free bearing journal Swinging arm to gearbox/ Swinging arm to rear wheel drive	7	7
	clean thread + Loctite 2701	
Locknut on free bearing journal	105	105
	clean thread + Loctite 2701	
Strut at rear wheel drive / gearbox	43	43
	(load motorcycle with approx. 85 kg and tighten loose strut)	
Spring strut to rear frame / rear swinging arm	50 10.9 screw	50 10.9 screw
Hydraulic spring adjuster at footrest plat	22	–





Model	R 850/1100 GS	R 850/1100 R
34 Brakes		
Connection	Nm	Nm
Brake caliper to slider tube	40	40
Brake caliper to rear wheel drive	40	40
Brake disc to front wheel		
Cast wheel	–	21
Spoked wheel	24	24
	clean thread + Loctite 243	
Brake disc to rear wheel drive	21	21
	clean thread + Loctite 273	
Brake disc to rear wheel	21	21
	clean thread + Loctite 243	
Brake hose to brake caliper, front/rear	15	15
Brake hose to fitting	15	15
Brake hose to flow distributor	15	15
Flow distributor to frame	9	9
Flow distributor to slider tube bridge	9	–
Flow distributor to holder/slider tube	–	9
Bleed screw on front brake caliper	7	7
Bleed screw on rear brake caliper	4	4
Master cylinder to footrest plate	9	9
Brake pedal to footrest plate	37	37
Handbrake lever pivot pin	8	8
	(the Tuflok blue thread retaining agent can be slackened off and tightened several times if necessary)	
ABS sensor	4 (handtight)	4 (handtight)
ABS unit to holder		
M6 screw	9	9
M6 screw (Torx)	5	5
Brake line to ABS unit	15	15
Bleed screw to ABS unit	9	9

Model	R 850/1100 GS	R 850/1100 R
36 Wheels and tyres		
Connection	Nm	Nm
Clamping screws, quick-release axle	22	22
Screw connection, quick-release axle	30	30
Screw on wheel nuts handtight, then tighten crosswise:		
Initial tightening	50	50
Final tightening	105	105
46 Frame		
Rear frame to gearbox/engine	47	47
1. Screw connection on right of gearbox		
2. at right of engine		
3. at left of engine		
4. at left of gearbox		
Footrest plate to gearbox	22	22
Frame to engine	82	82
Struts to frame	47 8.8 screw	47 8.8 screw
	58 10.9 screw	58 10.9 screw
Struts to engine	58	58
Guard hoop to cylinder head	20	20
Side stand to pivot mount	42	42
	clean thread + Loctite 2701	
Center stand to carrier plate	21	21
	clean thread + Loctite 2701	
Carrier plate for center stand to engine block		
	M12 screw	72
	clean thread + Loctite 2701	
	M 8 screw (countersunk)	21
clean thread + Loctite 2701		
Footrest plate to rear frame		
	M 8 screw	21
Fairing support bracket to frame	20	-



Model	R 850/1100 GS	R 850/1100 R
51 Equipment		
Connection	Nm	Nm
Ignition/steering lock to fork bridge	15	15
61 General electrical system		
Horn to horn bracket	8	8
Ground (earth) strap to engine block	10	10
Rubber bushing for battery holder at gearbox	4	4

