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Repair Manual



K 1100 LT/RS

BMW AG Motorcycle Division After Sales

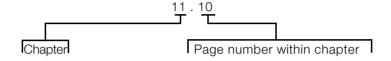
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Introduction

This repair manual will help you to perform all the main maintenance and repair work correctly and efficiently. If it is consulted regularly by workshop personnel it will form a useful addition to the theoretical and practical knowledge acquired at the BMW Training Centre. 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, as an additional source of information, the Electronic Parts Catalogue (ETC), which contains clear and easy-to-follow illustrations.

If the work described here is restricted to a particular equipment specification, for instance if a specific optional extra (OE) is fitted, this is stated in square brackets at the start of the item concerned, e.g. **[LT]**.

Please refer to the following pages as well for a description of other symbols used and how to work with it.

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Usage

Each chapter starts with the list of contents.

The list of contents is followed by the Technical Data table.

Chapter 00 "Maintenance and general instructions" details the handover checklist and lists all tightening torques and operating fluids.

Key to symbols

In this Workshop Manual for the K 1200 LT model, the following symbols are used; their meanings are explained in the table.

Special instructions aimed at improving the work procedures



Note:

Specific information on operating, inspecting and adjusting work for the motorcycle as well as maintenance procedures.



∠!\ Caution:

Instructions and precautions specifically intended to prevent damage to the motorcycle. Failure to comply with them could invalidate the warranty.



Caution:

This symbol stands for precautions and measures which are essential in order to protect the rider or other persons from possibly severe or fatal injury.

Contents

Headlines for the work described in the chapter...... with the relevant page number



Tightening torques:

Values are stated if they differ from DIN EN 24 014 or DIN 912 ISO industrial standards.

BMW AG Motorcycle Division Maintenance Schedule K 75 RT/K 1100 RS/LT (from 1993 onlys)



				_	
Customer	Registration No.	BMW Inspection 1000 km/600 mls	BMW Service 10000 km/ 6000 miles	BMW Inspection 20 000 km/ 12 000 miles	BMW Annual Service
Order No.	Signature of mechanic	100C	1000 6000	BM 200 120	BMW Annu
Change oil when engine at regular operating t	emperature, renew oil filter element 1)				
Change oil in gearbox, final drive and telescopy Clean inductive sensor at rear wheel ²⁾	oic fork ²⁾				
Grease upper/lower clutch cable nipples and	side/centre stand pivots				
Renew intake air cleaner element 3)					
Renew fuel filter element 4)					
Check hose clips on fuel and cooling system to Check coolant level and concentration, and to					
Renew coolant after at least every 2 years ?					
Check brake pads and discs for wear, renew					
Check front/rear brake fluid level, top up if ned	•				
Check brake system with regard to function, le					
Renew brake fluid at least once a year					
Check sensor gap for ABS at front and rear, adj	ust if necessary ⁶⁾				
Check sensor/pulse wheel for ABS at front and					
Check operation of electric side stand switch	•				
Check clutch operating clearance, adjust if ne					
Check free travel at throttle and cold-start (ch					
Renew spark plugs	, , ,				
Read out MOTRONIC fault memory 7)					
Check valve clearences, adjust if necessary 8)		5)			
Check steering head bearing play, adjust if necessary *					
Check battery acid level, top up with distilled water if necessary					
Clean and grease the battery posts, if necessary					
Take up slack at bolts and nuts:					
- power unit to frame				П	
 suspension strut mounts side/center stand pivot 					
- rear wheel studs					
Apply silicone spray to guide rods of adjustab	e windshield (only K 1100 LT, K 75 RT)				
Check idle speed, throttle synchronisation and	d CO value, adjust if necessary				
Final inspection with safety/operating check: - condition of tyres and wheels, tyre pressures - lights and signal systems - telltale and warning lights					
clutch and gear shifthandbrake and footbrake, ABSsteering					
instrumentstest ride, if necessary					
Recommendation: In severe operating condi	tions, grease the throttle twistgrip and				
steering head bearings at least every 30,000 k					
1) at least every 6 months; if motorcycle is used only for short journeys or at outside temperatures below 0°C, every 3 months, and at least every 3,000 km (1,800 miles)					
2) at least once a year					
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 normally every 40,000 km (24,000 miles), but if fuel is of poor quality every 20,000 km (12,000 miles)					
5) K 75 models only 6) only motorcycles with ABS					
only motorcycles with ABS only motorcycles with catalytic converter					
on all K models, renew the lining on the chain tensioner rail every 60,000 km (36,000 miles)					
*) invoiced as a separate item					

BMW AG Motorcycle Division Pre-delivery Check K 75 RT/K 1100 RS/LT (from 1993 onlys)



Customer	Registration No.	BMW Pre-delivery check
Order No.	Signature of mechanic	
Inspect crates on receipt for signs of damage)	
Motorcycle: - unpack - check scope of delivery - install front wheel - complete - clean		
Battery: - remove - add battery acid - charge - grease the terminal posts - re-install (mark date)		
Check complete specification delivery: - tools - handbooks and documents - keys - optional extras		
Check front and rear wheel brake fluid levels	(only disc brake)	
Check switch function of electrically-operated side stand (angle)		
Check torque setting of the rear wheel retaining studs		
Check tyre pressure		
Fuel the motorcycle		
Safety/operating check as final inspection: - idle speed - clutch, gear shifting - steering - front and rear brakes, ABS - telltale and warning lights, instruments, lighting and signalling equipment - adjust the headlight - test ride, if necessary		

Contents

Group / Chapter

00 Maintenance and general instructions 00.1
11 Motor 11.1
12 Engine electrics 12.1
13 Fuel preparation and control 13.1
16 Fuel tank and lines 16.1
17 Radiator 17.1
18 Exhaust system 18.1
21 Clutch 21.1
23 Gearbox 23.1
31 Front fork 31.1
32 Steering 32.1























Group / Chapter

33 Rear wheel drive	33.1
34 Brakes	34.1
36 Wheels and tyres	36.1
46 Frame	46.1
51 Equipment	51.1
61 General electrical equipment	61.1
62 Instruments	62.1
62 Lights	62.1

















00 Maintenance and general instructions



Contents	Page
Tightening torque	3
Table of operating fluids	10
Key to maintenance intervals	11
Changing engine oil	11
Changing oil in transmission (gearbox)	11
Changing oil in rear wheel drive	12
Changing oil in telescopic fork	12
Renewing intake air cleaner	12
Renewing fuel filter	13
Cleaning inductive pulse generator at rear wheel drive	13
Checking brake pads, brake discs for wear and renewing if nec Inspection II, III Front wheel brake Rear wheel brake	essary14
Checking brake fluid level and correcting if necessary Inspections I, II, III Checking brake fluid level Adding brake fluid	15
Checking brake system	15
Checking ABS sensor spacing and adjusting if necessary	15
Renewing brake fluid Renewing front brake fluid Renewing rear brake fluid	16

Contents Page



Checking function of electric switch on side stand and adjusting if necessary1 Inspections I, II, III	7
Checking clutch clearance and adjusting if necessary1 Inspections I, III	8
Reading out Motronic defect code memory	8
Checking increased starting speed (choke) and adjusting if necessary1 Inspections I, III Checking increased starting speed	9
Checking valve clearance and adjusting if necessary2	0
Adjusting valve clearance Removing sprockets Removing camshafts Installing camshafts Installing sprockets Installing cylinder head cover	0
Checking steering bearing play and adjusting if necessary2	3
Lubricating guide pins, adjustable screen	4
Checking idle speed, synchronising and CO value and adjusting if necessary	5

Tightening torque

Model	K 1100 LT K 1100 RS
Connection	Nm
11 Engine	
Freewheel	
Cover plate/freewheel cage at countershaft gear	10
Oil – water pump	
Oil pressure switch	40
Temperature sensor/screw plug	9
Pressure relief valve	40
Impeller	33
Pump housing to crankcase	10
Cover to pump housing	10 (3-Bond 1209)
Intermediate flange	
Thrust plate at intermediate flange	9 (Loctite 243)
Intermediate flange at crankcase	9
Crankshaft	
Pinion/rotor flange at crankshaft	50
Main bearing cap to crankcase	50
Connecting rod	
Big end cap Wrench angle 80 °	30
Input shaft	
Front bearing	18
Rear bearing	40
Engine block	
Crankshaft cover	9
Lower part, outer	10
Oil sump	10
Oil filter cover	10
Oil drain plug	30
Cylinder head	
Cylinder head bolts (SI 11 062 95 (697) Short thread (from 6/93 to 11/94): Wrench angle, 1st stage 64° Wrench angle, 2nd stage 42° Long thread (since 12/94): Wrench angle, 1st stage 75° Wrench angle, 2nd stage 75°	22 20
Cylinder head cover	9
Camshaft	
Bearing cap	9 (Apply a thin coat of 3-Bond 1209 only at corners and butt edges)
Chain sprockets	54



Model	K 1100 LT	K 1100 RS
Connection	Nm	
Timing chain		
Chain tensioner	9	
Slide rail at camshaft bearing cap	9	
Timing case cover		
Timing case cover	10 (3-Bond 1209)	
Cover for Hall-effect signal transmitter	9	
Screw plug	40	
Clutch		
Clutch housing to output shaft Tighten to Release and re-tighten to Wrench angle 50°	140 50	
Housing cover	19	
Alternator		
Alternator to intermediate flange	22	
Driver	33	
Starter motor		
Starter motor to gearbox	9	
Mixture preparation		
Intake stub pipe	9	
Fuel injection rail	9	
Cooling system		
Coolant stub pipe at cylinder head	9	
Temperature sensor at coolant stub pipe	30	
Air cleaner		
Lower part of air cleaner housing	21	
12 Engine electrical system		
Starter to transmission	9	
Positive lead to starter	5	
Alternator to intermediate flange	22	
Clutch housing	50	
Base plate	3,5	
Setting ring	2,5	
Hall generator cover	9	
Ignition coils to intermediate flange	5	

20



Spark plug

Model	K 1100 LT	K 1100 RS	
Connection	Nm		
13 Fuel preparation and control			
Injection rail	9		
Intake stub pipe	9		
Lower section of air cleaner housing	21		
Intake air line	9		
Motronic control unit	5		
17 Radiator			
Connecting screw, temperature sensor	9		
Fastening, thermostat cover	3		
Radiator to frame	9		
Coolant stub pipe to cylinder head	9 (with Loctite 243)		
Temperature sensor to coolant stub pipe	30		
18 Exhaust System			
Exhaust system to cylinder head	21		
Front silencer (muffler)	12		
Exhaust system holder to footrest plate	33		
Exhaust system to holder/footrest plate	9		
Retaining bracket to gearbox	41		
Oxygen sensor	Hand-tight		
21 Clutch			
Clutch housing to output shaft tighten to loosen and retighten to tightening angle 50°	140 50		
Housing cover	19		



Model	K 1100 LT	K 1100 RS
Connection	Nm	
23 Transmission		
Transmission cover to transmission	9	
	13	
Machine screw for neutral stop		
Stud bolt, selector shaft	17 (Loctite 243)	
Transmission to intermediate flange	16	
Frame mounting to transmission	45	
Bearing mount to transmission Starter motor to transmission	41 (Loctite 243)	
	9	
Positive lead to starter motor Fixed begging of availaging arm to transmission	5	
Fixed bearing of swinging arm to transmission	9	
Swinging arm bearing journal (loose bearing)	7,5	
Locknut of bearing journal	41	1 111 - 07041
Fixed bearing rear wheel drive in swinging arm	150 (clean thread +	
Bearing pin, loose bearing rear wheel drive in swinging arm	7 (clean thread + Lo	octite 2701)
Locknut, loose bearing rear wheel drive in swinging arm	105 (clean thread +	Loctite 2701)
Suspension strut to frame/rear wheel drive	51	
Brake caliper	32	
Hinterradschrauben	105	
Exhaust to cylinder head	21	
Silencer to holder/footrest plate	9	
Front silencer to transmission	12	
Footrest plate to transmission	15	
31 Front fork		
Oil filler plug	10	
Oil drain plug	3,5	
Spring support bearing	20	
Locking tube	65	
Hexagon nut	65	
Clamping screws of fork bridges	15	
Bottom screw fitting	47	
Handlebar clamp block	22	

22



Fork stabilisor

Model	K 1100 LT	K 1100 RS
Connection	Nm	
32 Steering		
Clamping screws for handlebar fitting	5	
Clamping screws	22	
Clamping block to fork bridge	16	
33 Rear wheel drive		



Clamping block to fork bridge	16
33 Rear wheel drive	
Threaded ring	118 (clean thread + Hylomar SQ 32M)
Hexagon nut, drive bevel gear	200 (clean thread + Loctite 273)
Housing cover	35
Swinging arm fixed bearing to transmission	9
Swinging arm bearing journal, loose bearing	7 (clean thread + Loctite 2701)
Locknut, loose bearing	41
Fixed bearing rear wheel drive in swinging arm	150 (clean thread + Loctite 2701)
Bearing pin, loose bearing rear wheel drive in swinging arm	7 (clean thread + Loctite 2701)
Locknut, loose bearing rear wheel drive in swinging arm	105 (clean thread + Loctite 2701)
Strut to rear wheel drive	43
Spring strut to frame/rear wheel drive	51
Brake disc to rear wheel drive	21
Brake caliper to rear wheel drive	32
Wheel bolts: 1st stage 2nd stage	50 105
Oil drain plug	23
Oil filler plug	23
Inductive sensor to rear wheel drive	2,5

Model	K 1100 LT	K 1100 RS
Connection	Nm	
34 Brakes		
ABS pulse wheel	4	
ABS sensor front/rear	4	
Brake caliperto sliding tube/rear wheel drive	40	
Brake line to brake caliper	18	
Bleed screws at brake caliper front	14	
Bleed screws at brake caliper rear	11	
Brake hose to distributor	18	
Brake hose to master brake cylinder	18	
Brake disc to front wheel	24	
Brake disc to rear wheel drive	21	
Foot brake cylinder to foot rest plate	25	
Locknut, adjusting screw foot brake cylinder	9	
Distributor to fork bridge	6	
Brake caliperto sliding tube/rear wheel drive	9	
ABS unit to mounting	9	
Bleed screw at ABS unit	9	
Master brake cylinder to foot rest plate	9	
Mounting pin to handbrake lever	8	
36 Wheels and tyres		
Quick-release axle threaded connection	33	
Quick-release axle clamp screws	14	
Brake caliper to fork slider tube/rear wheel drive	32	
Wheel studs (tighten in the order stated): 1. All studs handtight 2. Preload the outer wheel studs in a crosswise pattern 3. Tighten the central stud 4. Tighten the outer studs	50 105 105	



Model	K 1100 LT	K 1100 RS
Connection	Nm	
46 Frame		
Frame to engine	45	
Fairing support bracket to frame	9	
Suspension strut to frame/rear wheel drive	51	
Handlebar to clamping block	22	
Clamping screws of fork bridge	15	
Locking tube	65	
Hexagon nut	65	
Centre stand to bearing block	41	
Side stand to bearing block	41	
Footrest plate	15	
Brake line to handbrake cylinder	11	
Brake line to distributor	11	
51 Equipment		
Handlebar clamping blocks	22	
Shear bolts	to shear point (~ 20))
61 General electrical equipment		
Central earth (ground)	9	
Motronic control unit	5	



Table of operating fluids



Item	Use	Order number	Quantity
Lubricant			
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 A	Wheel, steering head and taper roller bearing grease	81 22 9 407 710	100 g tube
Contact spray	Contact spray	81 22 9 400 208	300 ml spray
Sealants			
3-Bond 1209	Surface sealant	07 58 9 062 376	30 g tube
Loctite 574	Surface sealant	81 22 9 407 301	50 ml tube
Curil K 2	Heat-conductive sealant	81 22 9 400 243	250 g can
Hylomar SQ 32 M	Permanently elastic sealant	81 22 9 400 339	100 g tube
Adhesives and retaining agen	ts		
Loctite 648	Surface sealant (narrow gap)	07 58 9 067 732	5 g bottle
Loctite 638	Surface sealant (wide gap)	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
3-Bond 1110 B	Surface sealant	07 58 9 056 998	5 g tube
Cleaners			
Brake cleaner	Brake cleaner	83 11 9 407 848	600 ml spray
Testing agents			
Penetrant MR 68	Crack testing agent for aluminium housings	81 22 9 407 494	500 ml Spray
Developer MR 70	Crack testing agent for aluminium housings	81 22 9 407 495	500 ml spray

Key to maintenance intervals

- Inspection at 1000 km (600 miles)
- BMW Service at 10.000 km (6000 miles))II
- BMW Inspection at 20,000 km (12,000 miles)III
 - BMW Annual Service

Cover to oil sump...... 6 Nm

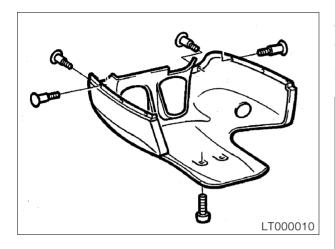
Quantities:

Oil content with filter change 3.75 (6.6 Imp.pt) See service data for oil grades Seite 00.3

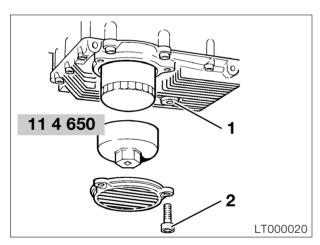


Changing engine oil

Inspections I, II, III, IV



• [RS] Remove lower section of fairing.



- Change oil at operating temperature.
- Oil drain plug (1).
- Remove oil filter cover retainer (2).
- Unscrew oil filter with special wrench BMW No. 11 4 650.



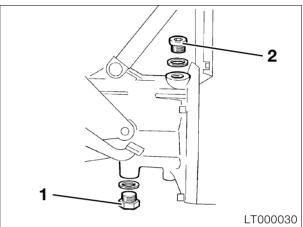
Coat sealing ring on new oil filter element with oil. Screw in oil filter handtight, take note of hint at filter.

Changing oil in transmission (gearbox)

• Replace O-ring in cover, if necessary.

Tightening torques:

Inspections I, III, IV



- Drain off oil with engine at operating temperature.
- Oil drain plug (1)
- Oil filler plug (2)

Note:

Renew sealing rings.

1	Tightening torques:	

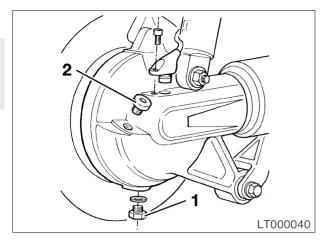
Oil drain plug	20	Nm
Oil filler plug	20	Nm

Quantities:

Oil filling capacity	0.85	I (1.496 Imp.pt)
See service data for	oil grades	Page 00.3

Changing oil in rear wheel drive

Inspections I, III, IV



- Drain off oil with drive at operating temperature.
- Oil drain plug (1)
- Oil filler plug (2)



Note:

Fill oil only up to the bottom-most thread turn of the filler hole.

Oil content:

Initial filling	0.25 I (0.44 Imp.pt)
Oil changes	0.35 I (0.616 Imp.pt)
See service data for oil gra	ades Page 00.3

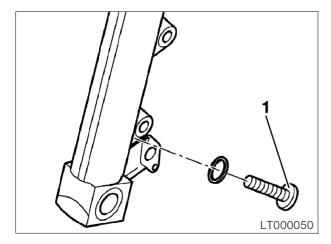
Tightening torques:

Oil filler plug	23 Nm
Oil drain plug	23 Nm

Changing oil in telescopic fork

Inspection I, III, IV

- Support motorcycle on stand.
- Unscrew oil filler plugs.



Release left and right oil drain plug (1).

- Pump out oil by compressing forks several times.
- Screw in oil filler plugs.
- Lift vehicle with lifting gear, BMW No. 00 1 510, until the front wheel can move freely.



Note:

The load on the front wheel must be relieved to ensure as much air as possible flows in before the fixed tubes are closed off with the filler plugs so as to provide additional damping.

- Fill with specified quantity of oil.
- Close off fixed tubes.

Quantities:

Oil capacity, left	0.35 - 0.01
Oil capacity, right	
See service data for oil grad	



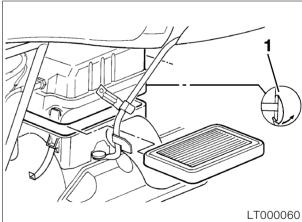
Tightening torque:

Oil filler plugs 20 Nm

Renewing intake air cleaner

Inspection III

- Detach battery panel on right.
- Remove right knee pad.
- Detach right side section of fairing.
- [LT] Take off intake air pipe.



- Release clips (1) at front and rear.
- Slightly raise casing cover, lift out air cleaner.
- Install in the reverse order of removal.



Note:

Note installation position of air cleaner. Lettering at rear, arrow marking "TOP-OBEN".