

Product: BMW R850C, R1200C Motorcycle Service Repair Workshop Manual
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R 850 C
R 1200 C

BMW AG Motorcycle Division
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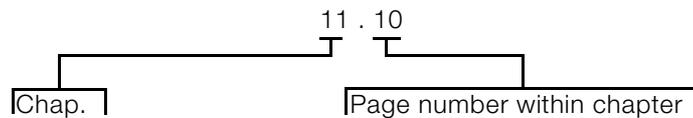
Introduction

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 Original 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, Dismantling, 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 AG Motorcycle Division
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BMW AG Motorcycle Division

Maintenance schedule

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



		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
Customer _____	Licence plate No. _____				
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 and top up if necessary *)		<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	
Change the clutch fluid every 40 000 km (24 000 miles) or at least every 2 years *)				<input type="checkbox"/> 40 000 (24 000)	<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					

BMW AG Motorcycle Division

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 clutch operating fluid level and brake fluid levels at front and rear		<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:		

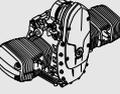
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00 Maintenance and general instructions



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Tightening torques

Model	R 850/1200 C
Connection	Nm
11 Engine	
Cylinder head	
Tightening sequence:	
1. Tighten cylinder head nuts (oiled) crosswise	
1.1 Tighten all nuts to correct torque for joint	20
1.2 Tighten all nuts to correct angle	90°
1.3 Tighten all nuts to correct angle	90°
2. M 10 bolt	40
3. M 6 screw	9
After 1000 km (600 miles), tighten cylinder head nuts crosswise:	
1. Unfasten one nut	
2. Tighten one nut to initial value	20
3. Tighten nut to wrench angle	180°
4. Unfasten/retighten M10 screw	40
Timing gear carrier to cylinder head	9
Bearing cap on rocker shaft	15
Locknut, valve adjusting screw	8
Cylinder head cover to cylinder head	9
Camshaft end cover to cylinder head	9
Air intake connection to cylinder head	9
Camshaft	
Chain sprocket to camshaft	65
Camshaft bearing cap	15
Rotary breather	
Vent line to alternator mount cover	
M 8 screw	20
Banjo screw	25
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



Model	R 850/1200 C	
Connection	Nm	
11 Engine		
Oil filter		
Oil filter	11	
Oil drain plug	32	
Oil pump		
Mesh filter basket to engine block	9	
Oil pump cover	9	
Pressure relief valve	35	
Oil pressure switch	30	
Oil cooler		
Oil cooler pipe to engine block	10	
Cooling oil line - banjo screw with oil vent valve	25	
Oil cooler to frame	9	
Oil cooler return line to engine block	35	
Screw-in union for oil cooler connection at engine block	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	
2. M 6 screw	9	
3. Chain guide rail pivot screw	18	
Timing chain		
Chain tensioner	32	
Connecting rod		
Big end cap	Joint torque	20
	Additional wrench angle	80°
Crankcase		
Tightening sequence:		
1. M10 screw (oiled)	45	
2. M 8 screw (oiled)	20	
3. M 6 screw	9	



Model	R 850/1200 C	
Connection	Nm	
12 Engine electrics		
Starter motor to engine	20	
Starter cover to housing	7	
Positive lead to starter motor	10	
Alternator to cover mount	20	
Tensioning and retaining strap at alternator	20	
Spacer at alternator	20	
Positive lead to alternator	15	
Belt pulley at alternator	50	
Belt pulley to crankshaft	50	
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16 Fuel tank and lines		
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18 Exhaust system		
Manifold to cylinder head	24	
Clip on muffler	55 (apply Never Seez to clip contact surface)	
Oxygen sensor (lambda probe) to muffler	45 (apply Never Seez to thread)	
21 Clutch		
Clutch housing	Joint torque Additional wrench angle	40 (oil screw threads lightly) 32°
Housing cover	12	
Slave cylinder to gearbox	9	
Clutch line to handlebar fitting	18	



Model	R 850/1200 C	
Connection	Nm	
23 Transmission		
Oil filler plug	23	
Oil drain plug	55	
Gearbox to engine block	22	
Gear shift pedal to rear frame	41	
Selector lever to selector shaft	9	
Gearbox cover to gearbox housing	9	
31 Front fork		
Fixed tube to fork bridge	35 (free from oil and grease)	
Slider tube bridge to slider tube	22 (clean thread + Loctite 243)	
Quick-release axle clamp screws	20	
Threaded journal to frame	130 (clean thread + Loctite 243)	
Ball joint to fork slider bridge	230 (apply light coat of Never Seez to thread)	
Leading link to ball joint	130 (clean thread + Loctite 2701)	
Leading link to engine	right	73
Screw cap at leading link	left	42 (apply light coat of Never Seez to thread)
Spring strut to frame	40	
Spring strut to leading link	40	
32 Steering		
Handlebar at fork bridge	21 (apply light coat of Never Seez to thread)	
Twistgrip to handlebar	8	
33 Rear wheel drive		
Oil filler plug	23	
Oil drain plug	23	
Threaded ring	118 (Hylomar SQ 32 M)	
Hexagon nut, input bevel gear	200 (clean thread + Loctite 2701)	
Cover at rear-wheel drive housing	35	
Rear-wheel drive to swinging arm	24	
Swinging arm bearing journal to rear frame	right	9
Swinging arm bearing journal to rear frame	left	7 (clean thread + Loctite 2701)
Locknut at swinging arm bearing journal	160	
Suspension strut to rear frame	50	
Suspension strut to rear swinging arm	50	



Model	R 850/1200 C
Connection	Nm
34 Brakes	
Brake caliper at fork slider tube	40
Brake caliper to rear wheel drive	40
Brake disc to front wheel	24 (clean thread + Loctite 2701)
34 Brakes	
Brake disc to rear wheel drive	21 (clean thread + Loctite 2701)
Master cylinder to footrest assembly	8
Brake pedal to footrest assembly	37
Brake lines/brake hose to brake components	18
ABS sensor	4 (handtight)
Front brake caliper bleed screw	7
Rear brake caliper bleed screw	4
Pressure modulator bleed screw	9
36 Wheels and tyres	
Quick-release axle clamp screws	20
Quick-release axle threaded connection	30
Rear wheel to rear wheel drive Screw wheel studs in handtight, then tighten in a crosswise pattern	
Initial tightening	50
Final tightening	105



Model	R 850/1200 C
Connection	Nm
46 Frame	
Frame to engine M12 pin	82
M10 screw	58
Rear frame to engine	41
to gearbox	71
Side (prop) stand pivot mount to engine	21
Side (prop) stand to pivot mount	42 (clean thread + Loctite 243)
Footrest assembly to engine M12 screw	71
M8 screw	21
Pillion footrest holder to rear frame	21
Pillion seat mount	21
Mudguard to slider tube bridge	8
51 Equipment	
Mirrors	15
Ignition/steering lock to fork bridge	15 (shear bolt)
61 General electrical equipment	
Horn to holder	13
Ground (earth) strap to engine block	10
63 Lights	
Headlight to holder	15



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 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 aerosol
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
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 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
Cleaner			
Brake cleaner	Brake cleaner	83 11 9 407 848	600 ml aerosol
Metal Polish	Polish for chromium plated parts	82 14 9 400 890	100 g tube
Testing agent			
Penetrant MR 68	Crack testing agent for aluminum housings	83 19 9 407 855	500 ml spray
Entwickler MR 70	Crack testing agent for aluminum housings	81 22 9 407 495	500 ml spray





Key to maintenance intervals

- BMW Inspection 1000 km/600 miles **I**
- BMW Service **II**
- BMW Inspection **III**
- BMW Annual Service **IV**

Reading out MoDiTeC fault memory

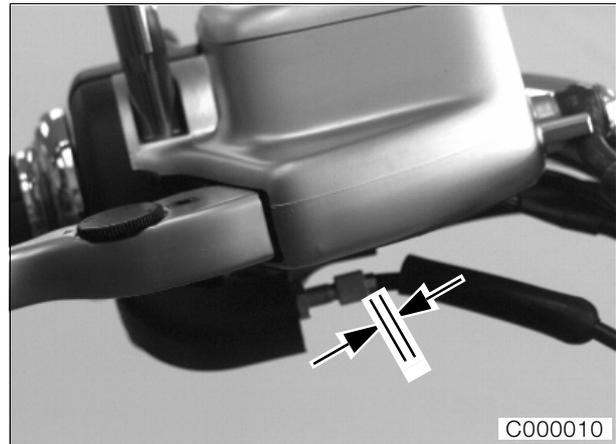
(Inspections I, II, III and IV)

- Remove the left air cleaner trim panel.
- Connect MoDiTeC to diagnostic plug.
- Read out the fault memory.
- Perform any repair work indicated.

Checking throttle cable play, adjusting if necessary

(Inspections I and III)

- Check throttle cable for free movement and freedom from abrasion or kinking; renew if necessary.
- With the steering turned to various angles, open the throttle twistgrip fully and allow it to close again.
- When released, the twistgrip must return to the closed position by itself.



- Pull back the protective cap.
- Preset throttle cable play with the engine cold to 1.5 mm (0.06 in).
- Warm the engine up to its regular operating temperature.
- Adjust throttle cable play to 0.5 mm (0.02 in).

Adjusting value:

Initial throttle cable play setting

(engine cold) 1.5 mm (0.06 in)
Throttle cable play (engine warm) .. 0.5 mm (0.02 in)

Changing engine oil, renew oil filter element

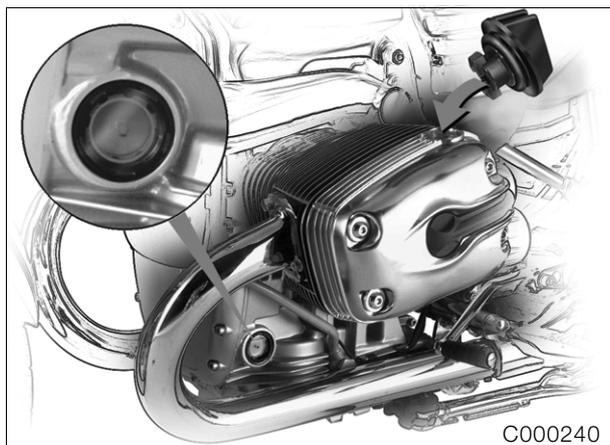
(Inspections I, II, III and IV)



Note:

If the motorcycle is ridden only for short distances or outside temperatures are below 0°C (32°F): change the oil and renew the oil filter element every 3 months, but at least every 3 000 km (1 800 miles).

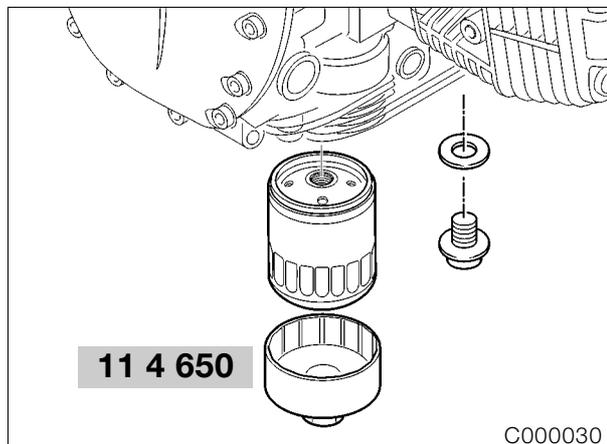
- Change the oil while it is at regular operating temperature.



C000240

- Remove screw plug.

- Unscrew oil drain plug and drain off oil.
- Fit new seal and screw in drain plug.



11 4 650

C000030

- Use oil filter wrench, **BMW No. 11 4 650**, to unscrew and remove the oil filter.
- Coat sealing ring on new oil filter element with oil and screw in.
- Add oil.
- Insert and tighten the screw plug.
- Check engine oil level with the motorcycle in a horizontal position; use the auxiliary stand, **BMW No. 00 1 550**.



Caution:

Never add engine oil above the MAX mark.



Tightening torque:

Oil filter.....	11 Nm
Oil drain plug.....	32 Nm

Fill quantity for engine:

With oil	
filter change ..	3.75 l (6.6 Imp. pints/3.96 US quarts)
Without oil	
filter change ..	3.50 l (6.2 Imp. pints/3.69 US quarts)
Oil volume between MIN and MAX marks.....	0.50 l (0.88 Imp. pint/0.52 US quart)

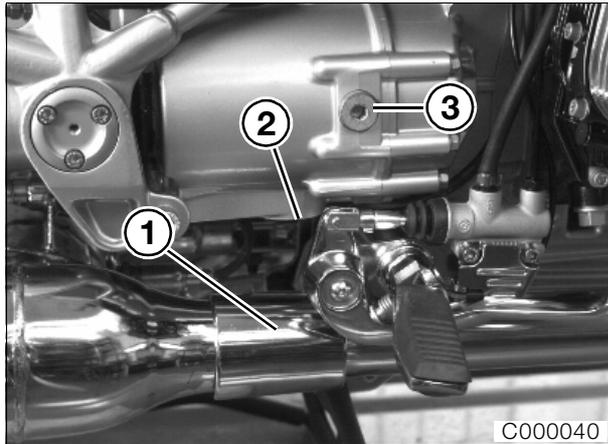
Engine oil grade:

Brand-name HD oil for four-stroke spark-ignition engine, API classifications SE, SF, SG; combination with CC or CD specification.

Changing oil in gearbox

(Inspections III and IV)
or at least every 2 years

- Change the gearbox oil while at regular operating temperature.



- Loosen clip/trim (1) at right silencer and turn downwards.
- Take out oil filler plug (3) and oil drain plug (2) and allow the oil to drain out.
- Clean the magnet in the oil drain plug.
- Insert the oil drain plug again.



Note:

Add oil to the gearbox up to the lower edge of the filler hole, then place the motorcycle on its side (prop) stand and add the remaining 0.2 litre (0.35 Imp. pint, 0.21 US quart).

- Add gearbox oil.
- Insert oil filler plug with new seal.

Tightening torque:

Oil drain plug	55 Nm
Oil filler plug	23 Nm
Exhaust pipe clip at silencer (muffler)	55 Nm

Fill quantity:

Initial filling..... 1.0 l (1.76 Imp. pints/1.06 US quart)
During
oil changes..... 1.0 l (1.76 Imp. pints/1.06 US quart)

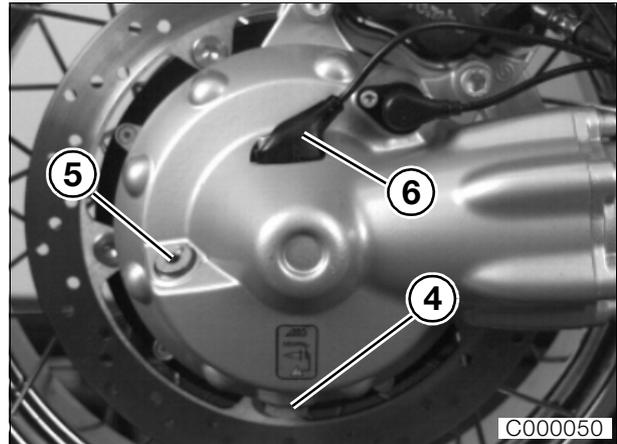
Oil grade for gearbox:

Brand-name hypoid gear oil, SAE 90, API class GL 5

Changing oil in rear wheel drive; cleaning inductive signal transmitter at rear wheel

(Inspections I, III and IV)
Every 40 000 km (24 000 miles) or at least every
2 years

- Change the gearbox oil while at regular operating temperature.



Caution:

Note that the interior of the gearbox is slightly pressurised.

- Slacken off oil drain plug (4) so that the pressure drops.
- Unscrew and remove oil filler plug (5).
- Unscrew and remove oil drain plug (4) and allow the oil to drain out.
- Fit new seal and screw in drain plug.
- Add gearbox oil.
- Insert oil filler plug with new seal.
- Release the fastening, pull out inductive signal transmitter (6) and clean it.

Tightening torque:

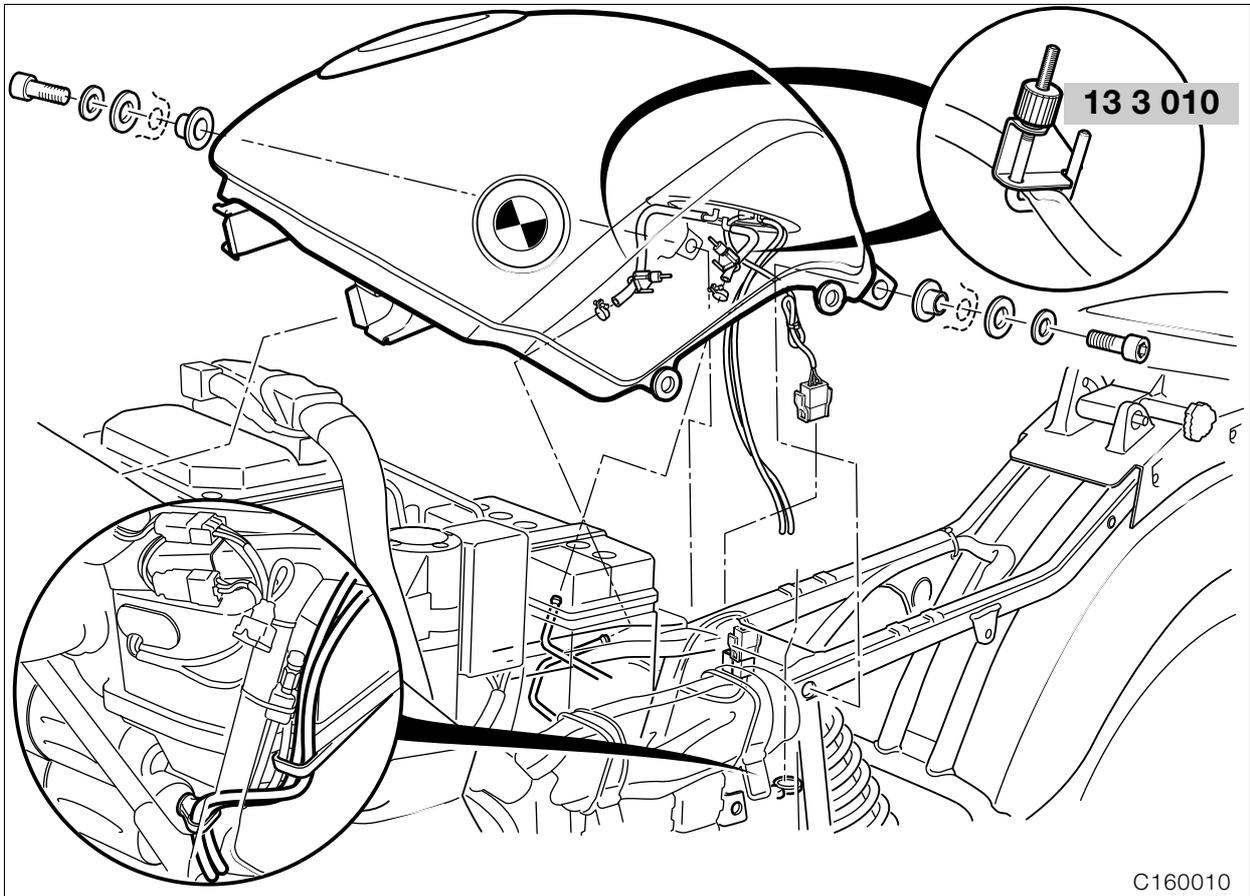
Oil drain plug	23 Nm
Oil filler plug	23 Nm

Fill quantity:

Initial filling up to lower edge of filler
hole.....app. 0.20 l (0.35 Imp. pint/0.21 US quart)
Oil change up to lower edge of filler
hole.....app. 0.20 l (0.35 Imp. pint/0.21 US quart)

Oil grade for rear wheel drive:

Brand-name hypoid gear oil, SAE 90, API class GL 5



Renewing fuel filter

(Inspection III)

In normal operating conditions every 40 000 km (24 000 miles); if fuel quality is poor every 20 000 km (12 000 miles)

- Remove seat.
- Remove right air cleaner trim panel.
- Remove left and right trim panels.

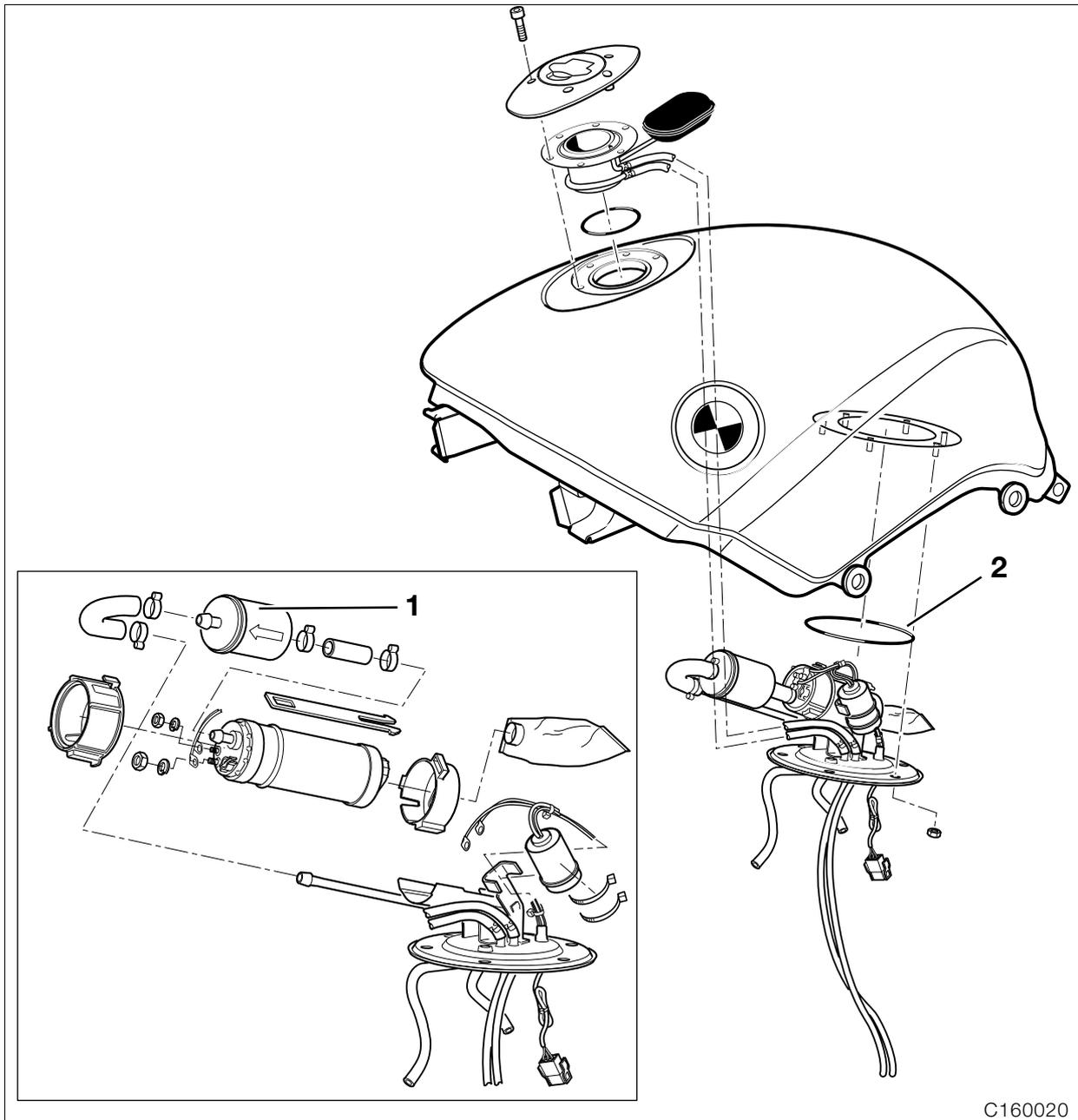


Caution:

Fuel is flammable and a hazard to health. Observe relevant safety regulations.

- Take off the fuel tank.
- Seal the fuel feed and return lines with a hose clip, **BMW No. 13 3 010**, detach and pull off.

- Pull the plug connector off the fuel pump assembly.
- Lift off fuel tank.



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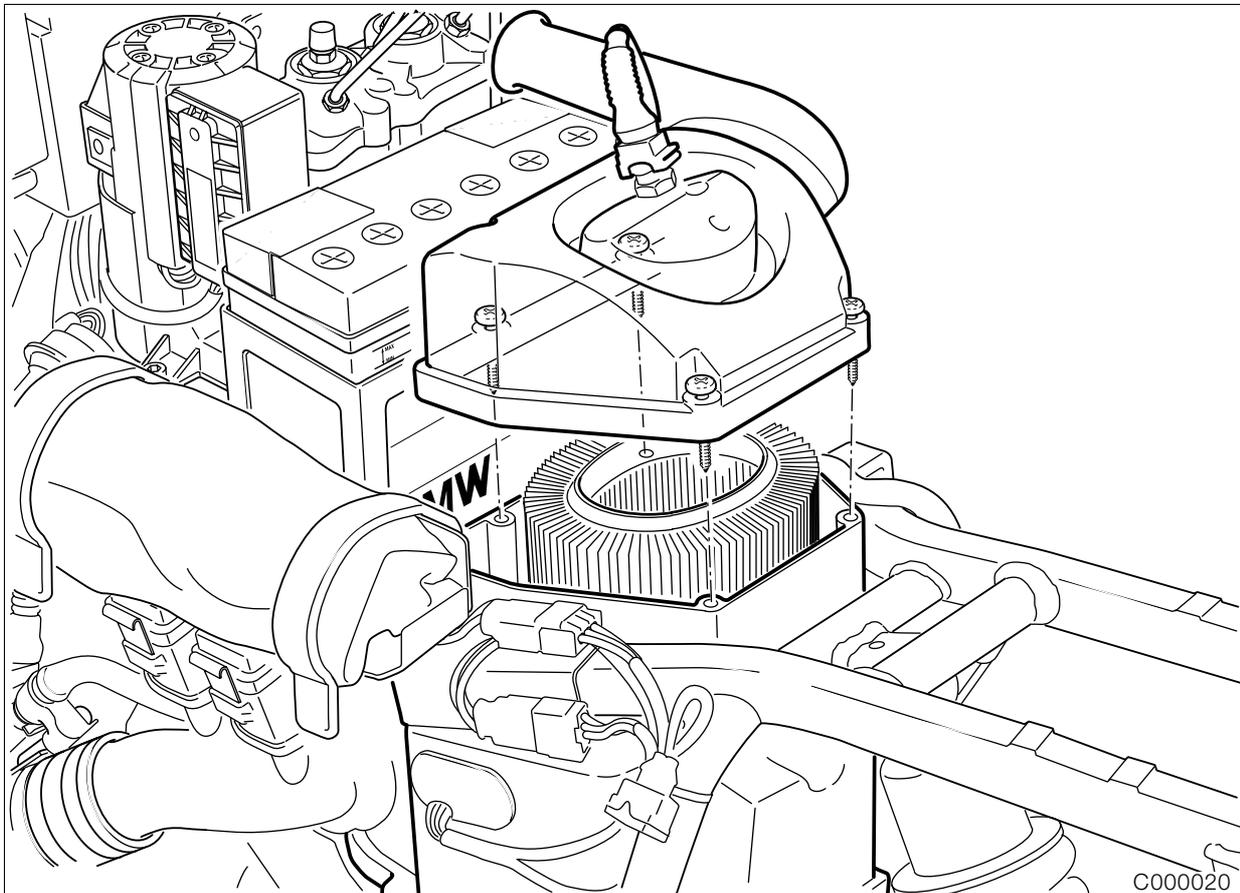
- Drain fuel tank.
- Remove fuel pump assembly.
- Detach hoses from fuel filter (1).

⚠ Caution:
 Note correct direction of flow through fuel filter.
 Use only an O-ring seal (2) in good condition.
 After installing, check fuel pump assembly for leaks.

⚙ Tightening torque:
 Fuel pump unit 5 Nm

Installing:
📄 Note:
 Note correct path of vent lines.

- Fit new fuel filter.
- Secure non-reusable hose clips with pliers,
BMW No. 13 1 500.



Checking battery acid level/topping up if necessary, cleaning/greasing battery posts

(Inspections III and IV)

- Release the rubber strap holding the battery.
- Raise the battery and check its acid level.
- Top up battery acid level with distilled water as far as the MAX mark.

Protective battery-post grease:e.g. Bosch Ft 40 V1

Renewing intake air cleaner element

(Inspection III)
In very dirty and dusty operating conditions, renew every 10 000 km (6 000 miles) or even more frequently if necessary

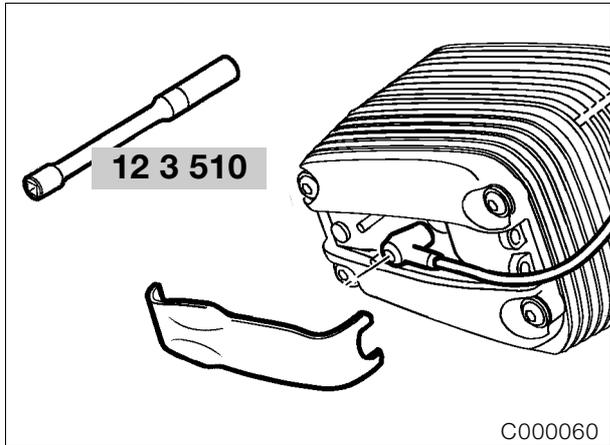
- Detach and raise the upper part of the air cleaner housing.
- Renew air cleaner element.
- Install the fuel tank.
- Note correct path of vent lines.
- Install the left/right trim panels.

 **Tightening torque:**
 Fuel tank to rear frame 10 Nm

Renewing Poly-V belt

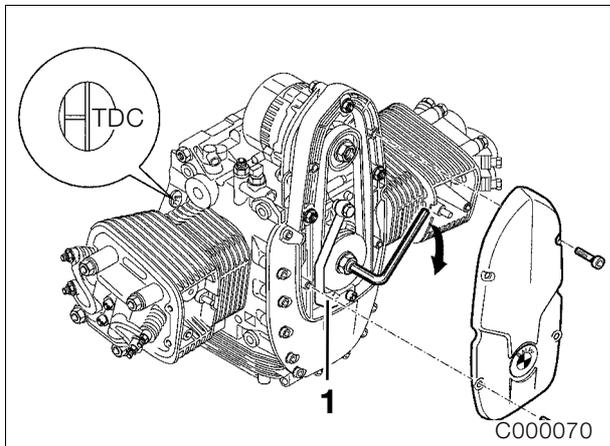
(every 60 000 km/36 000 miles)

(Inspection III)



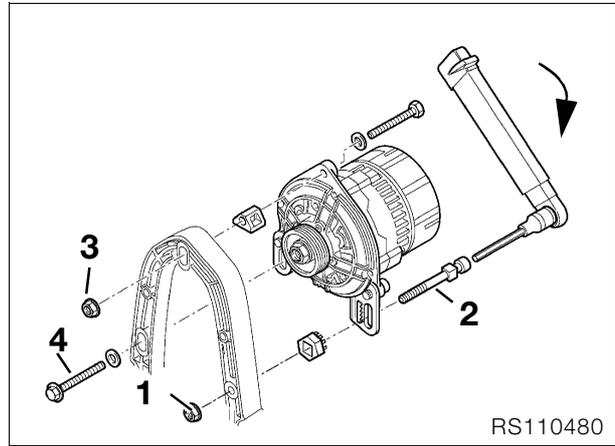
C000060

- Remove the cover.
- Use the spark plug cap assembly tool from the toolkit to pull off the spark plug caps.
- Use spark plug wrench, **BMW No. 12 3 510**, to unscrew and remove the spark plugs.



C000070

- Remove the horn with its mount.
- Remove front cover.
- Remove vent line (1).



RS110480

- Slacken off alternator mounting screws (1,3,4) and install a new Poly-V belt if necessary.

Poly-V belt adjusting procedure:

Poly-V belt installation procedure:

- Place the Poly-V belt in position, tension it and turn the engine over once, then release belt tension.

Poly-V belt tensioning procedure:

1. Screw hex nut (1) on adjusting screw (2) up handtight (**no tools to be used**)
2. Tighten adjusting screw (2) with a torque wrench and keep it under tension.
3. Tighten upper retaining nut (3), then release the tension at the adjusting screw.
4. Tighten all screws and nuts.

Tightening torque:

Poly-V belt preload.....	8 Nm
Alternator to alternator support cover.....	20 Nm
Vent line at generator mount cover:	
Banjo screw	25 Nm
Machine screw	10 Nm

Caution:

Install the vent line with new O-ring seals.

Checking brake system for correct operation and freedom from leaks; repairing/renewing if necessary (Inspection III)

- Checking brake system for leaks.

Checking brake fluid level



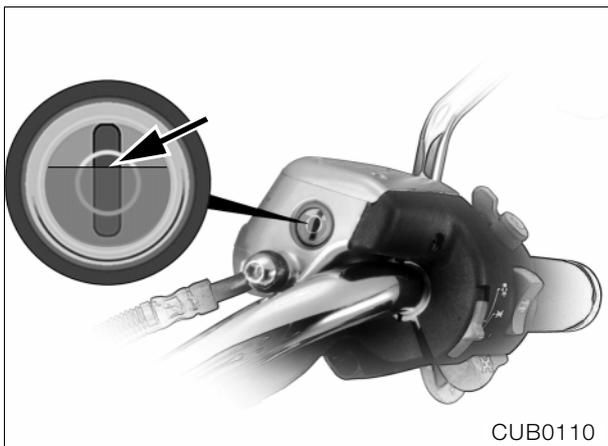
Note:

The brake fluid volume (between MIN and MAX) is sufficient for the complete range of pad wear from new to the wear limit. It is not normally necessary to add fluid to compensate for pad wear. If the level drops below the minimum mark, this indicates some other fault.

(Inspections I, II and III)

Front brake

- Make sure that the specified setting (distance between handlebar and fuel tank 30-50 mm/ 1.2-2 in) is correct.
- Check with the motorcycle on its side (prop stand).
- Turn the handlebar fully to the left.
- The brake fluid must not drop below the minimum level 2 mm (0.08 in) below the ring mark (arrow).

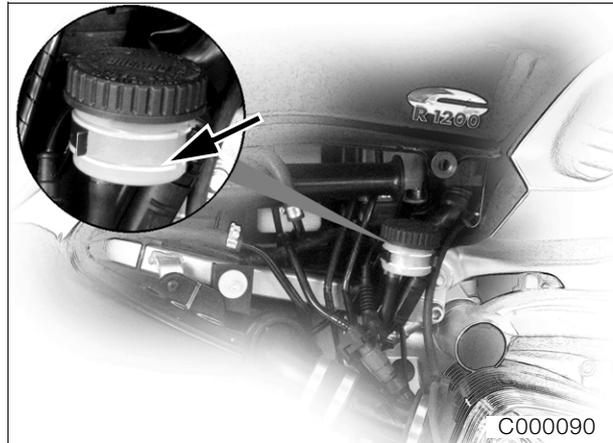


CUB0110

Brake fluid gradeDOT 4

Rear brake

- Position the motorcycle horizontally with auxiliary stand, **BMW No. 00 1 550**.
- Brake fluid must not drop below the minimum level (arrow).



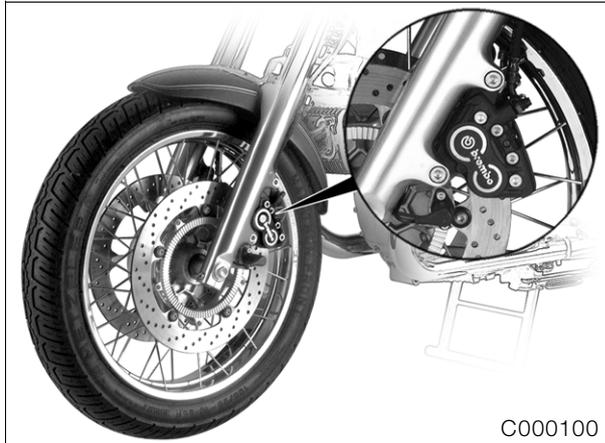
C000090

Brake fluid gradeDOT 4

Checking brake pads and discs for wear/renewing

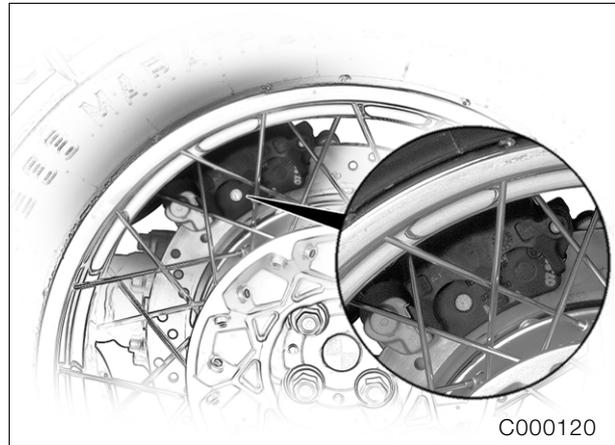
(Inspections II and III)

Checking front brake pad wear



C000100

Checking rear brake pad wear

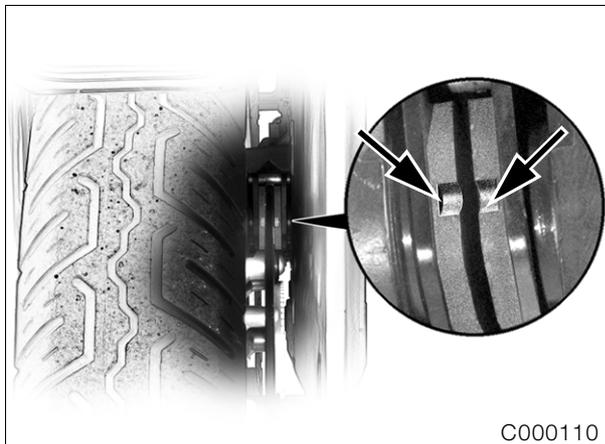


C000120



It should not be possible to see the brake disc through the hole (arrow) in the inner brake pad.

If the brake disc is visible, the wear limit has been reached and the pads must be renewed.



C000110

- Examine the wear limit marks (arrows).

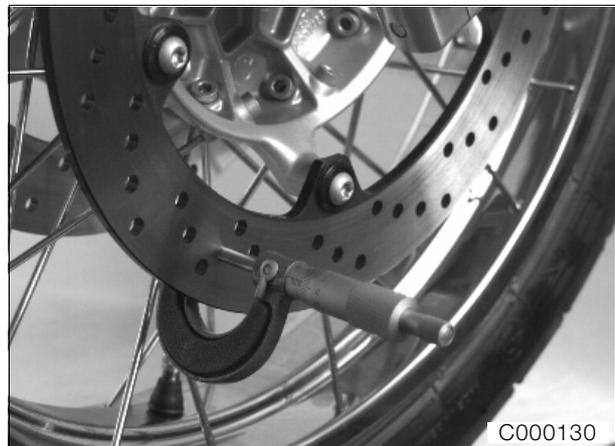
Caution:

Brake pad thickness must not fall below the minimum value.

Change pads only as a complete set.

Minimum lining thickness: 1.5 mm (0.06 in)

Checking brake disc wear



C000130

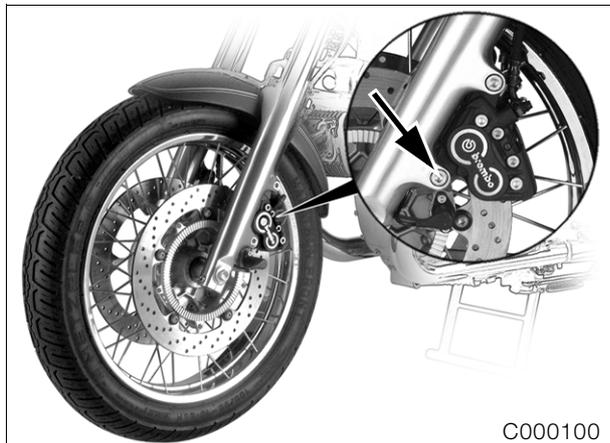
- Examine the brake discs carefully for cracks, damage, distortion, wear and score-marks.

Brake disc wear limit:

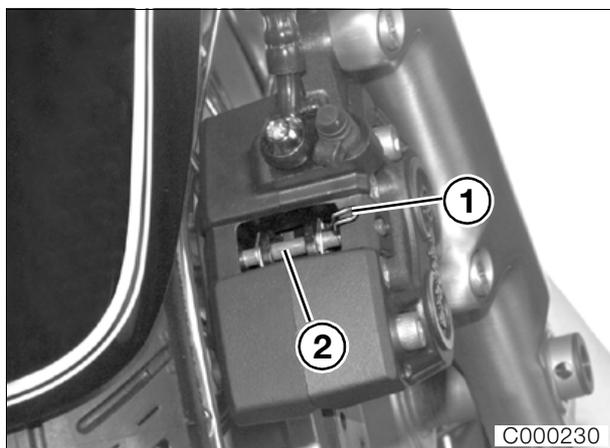
front:..... 4.5 mm (0.177 in)

rear:..... 4.6 mm (0.181 in)

Renewing brake pads Front brake



- Detach/remove brake caliper from mounting (arrow).



- Remove the split-pin keeper (1) from the retaining pin (2).
- Drive out retaining pin (2).
- Remove brake pads by pulling downwards.
- Install by following the above work instructions in the reverse order.
- Before installing the brake caliper, force the pistons fully back with resetting tool, **BMW No. 34 1 500**.

 **Tightening torque:**
Brake caliper at fork slider tube 40 Nm

Renewing brake pads Rear brake



- Loosen the rear wheel.
- Unfasten/remove brake caliper.
- Remove circlip (arrow) at retaining pin.
- Drive the retaining pin out towards the wheel side.
- Remove brake pads.
- Install by following the above work instructions in the reverse order.
- Before installing the brake caliper, depress the piston fully.

 **Tightening torque:**
Brake caliper to rear wheel drive 40 Nm
Screw the rear wheel studs in handtight, then tighten them in a crosswise pattern.
Initial tightening 50 Nm
Final tightening 105 Nm

Renewing brake fluid and bleeding brake system

Renew the brake fluid annually (Inspection IV)

[ABS Inspection II and III]

Bleeding front brake circuit/renewing brake fluid



Note:

This description applies to brake filling and bleeding devices with vacuum extraction of the brake fluid at the brake caliper.

If other devices are used, comply with their manufacturers' instructions.

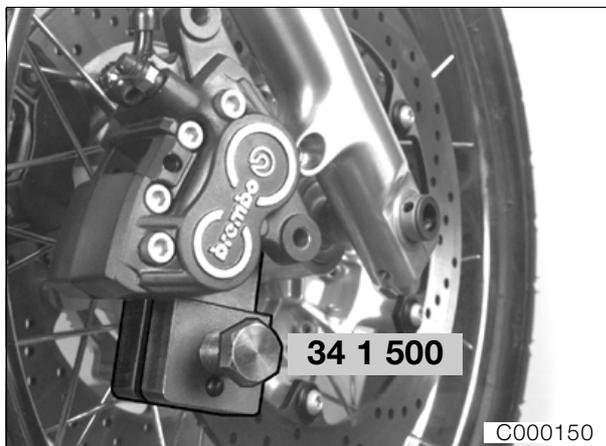
- Turn the steering to the left.



Caution:

When bleeding the brakes, always start on the **right** side.

- Take off the brake caliper.
- Remove the brake pads.



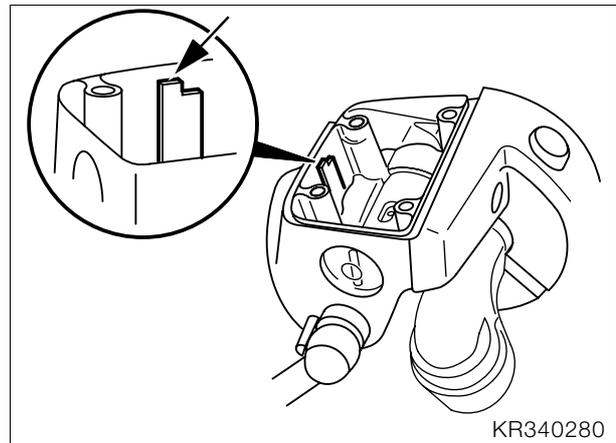
- Force the pistons fully back with resetting tool, **BMW No. 34 1 500**.



Caution:

Do not allow brake fluid to come into contact with painted parts of the motorcycle, because brake fluid destroys paint.

- Take off reservoir cover with rubber diaphragm.
- Release the right handlebar switch.
- Loosen the clamp screw for the handbrake fitting and turn the fitting until the brake fluid reservoir is horizontal.



Caution:

When adding brake fluid, do not allow it to enter the holes for the reservoir lid screws.

- Add brake fluid up to the MAX mark (arrow).
- Connect the brake bleeding device to the bleed screw on the **right** brake caliper.
- Open the bleed screw by half a turn.
- Draw off brake fluid until it emerges clear and free from air bubbles.
- Close the bleed screw on the right brake caliper.
- Repeat the bleeding process at the left brake caliper.

When installing:



Note:

Clean the rim of the reservoir, the rubber gaiter and the cover to remove brake fluid, and re-assemble the components with great care.



Next check brake fluid level with the motorcycle on its side (prop) stand and the handlebar turned to the left, and ensure that no air bubbles are visible in the sight glass.



- Connect the brake bleeding device to the pressure modulator for the **front brake** (arrow); this is marked **VR**.
- Open the bleed screw by half a turn.
- Draw off brake fluid until it emerges clear and free from air bubbles.
- Close the bleed screw.
- Bleed the **left** brake caliper in precisely the same way as on the right.
- If necessary, repeat the brake bleeding procedure at the right/left.

Tightening torque:
 Bleed screw on pressure modulator..... 9 Nm

- Take out the resetting tool and insert spacer, **BMW No. 34 1 520**, in its place.
- Press the pistons back in the second brake caliper, but do not remove the resetting tool.
- Fill and bleed the front brake circuit.
- Installation takes place in the reverse order of removal.

Brake fluid gradeDOT 4

Tightening torque:
 Brake caliper to fork tube 40 Nm
 Bleed screw at brake caliper 7 Nm