

Maintenance BMW Integral ABS



R 1150 R

**BMW Motorrad
After Sales**

Published by: © BMW Motorrad
After Sales
UX-VS-2

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Produced in Germany 01/01

BMW Motorrad

Maintenance schedule

R 1100 S EVO / R 1150 R / R 1150 RT



Customer _____ Registration No. _____		BMW Inspection at 1,000 km (600 miles)	BMW Service 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 BMW MoDiTeC		☐	☐	☐	☐
[Integral ABS] perform bleed test with BMW MoDiTeC		☐	☐	☐	
Change oil while at regular operating temperature and replace the oil filter element If the motorcycle is ridden only for short distances or outside temperatures are below 0 °C: at the latest every 3,000 km (1,800 miles)*)		☐	☐	☐	☐
Change oil in gearbox while at operating temperature every 2 years*) at the latest				☐	☐ every 2 years
Change oil in rear wheel drive while at operating temperature if necessary, clean inductive sensor on rear wheel every 40,000 km (24,000 miles) or at the latest every 2 years*)		☐		☐ 40,000	☐ every 2 years
Replace fuel filter *) Normally every 40,000 km (24,000 miles), if fuel is of poor quality every 20,000 km (12,000 miles)				☐ 40,000	
Check the battery fluid level, if necessary top up with distilled water Clean and grease battery poles if necessary				☐	☐
Replace intake air filter element In very dirty and dusty operating conditions, replace every 10,000 km (6,000 miles) or even more frequently if necessary *)				☐	
Replace Poly-V belt *) Replace the Poly-V belt every 60,000 km (36,000 miles); do not adjust it				☐ 60,000	
Check brake fluid level at front and rear			☐	☐	
Check operation of brake system and freedom from leaks; repair/replace items if necessary*)				☐	
Examine brake pads and discs for wear, replace as necessary*)			☐	☐	
[Without ABS] change brake fluid every twelve months					☐
[Integral ABS] change brake fluid in wheel circuit every 12 months					☐
[Integral ABS] change brake fluid in control circuit every 2 years*)					☐ every 2 years
[Integral ABS] perform bleed test with BMW MoDiTeC					☐
Check clutch fluid level			☐	☐	
Change the clutch fluid*) every 2 years at the latest					☐ every 2 years
Check tightness of rear wheel studs		☐			
Check rear wheel bearing play by tilting wheel				☐	
Check swinging arm bearings (freedom from play), adjust if necessary *)		☐		☐	
Grease the side stand pivot		☐	☐	☐	
Check function of side stand contact switch		☐	☐	☐	☐
Check condition of spark plugs			☐		
Replace spark plugs				☐	
Tighten cylinder head nuts		☐			
Check/adjust valve clearances		☐	☐	☐	
Check that the throttle cable moves freely and is free of kinks and chaffing, replace if necessary *) Check throttle-cable play check synchronisation, repair leaks if necessary *)		☐	☐	☐	
Final inspection with road safety and functional check: – Condition of tyres and wheels, tyre pressures – Lights and signalling equipment, telltale and warning lights, instruments, – clutch, gearshift mechanism, hand brake and foot brake, steering, – if necessary, test drive		☐	☐	☐	☐

***) Charged as an additional item**

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Pre-delivery check

R 1100 S EVO / R 1150 R / R 1150 RT



Customer Registration No. Order No. Mechanic's signature		BMW Pre-delivery check
Check the shipping crate for damage		☐
Motorcycle: – unpack – install remaining items – inspect for damage – check that delivery is complete: Toolkit On-board literature Ignition keys Scope of optional extras		☐
Fill and charge the battery (mark with charging date)		☐
Check engine oil level when cold and correct if necessary.		☐
Check headlight setting and adjust if necessary.		☐
Check tightness of rear wheel studs (note correct tightening torque)		☐
Check tyre pressures		☐
Fill up with fuel		☐
[Integral ABS] perform bleed test with BMW MoDiTeC		☐
Final inspection as functional check: – Clutch, gear shift – Handbrake and foot brake – Lights and signalling equipment, telltale and warning lights, instruments, – Check operation of optional extras – If necessary, test drive		☐
Confirm pre-delivery check in "Service and Technical Booklet".		☐
Final cleaning		☐
Motorcycle handed over on:		

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Service data

R 1150 R



Item	Desired value	Unit of measurement/specification
Oil capacities		
Engine (with filter) (without filter)	3.75 (6.6) 3.50 (6.15)	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
Transmission Initial filling Oil changes	approx. 1.0 (1.76) approx. 0.8 (1.41) of oil to bottom edge of filler neck	litres (Imp. pints) litres (Imp. pints) Brand-name hypoid gear oil, SAE class GL 5 SAE 90
Rear wheel drive Initial filling/oil change	approx. 0.25 (0.44) of oil to bottom edge 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 (0.012)	mm (in) mm (in)
Ignition timing static setting	adjust at TDC	
Spark plugs Electrode gap Wear limit	0.8 (0.0315) 1.0 (0.039)	mm (in) mm (in)
Idle speed	1,100 ±50	rpm
Throttle cable setting for cold-start (increased idle) speed for throttle (twistgrip) cable for divider cable	zero play approx. 0.5 (0.02) zero play	mm (in) free travel
Brakes Colour of identification mark on brake calipers/brake pads, front Minimum front pad thickness Minimum rear pad thickness Minimum front disc thickness Minimum rear disc thickness	green 1.0 (0.039) 1.0 (0.039) (wear mark) 4.5 (0.177) 4.5 (0.177)	DOT 4 brake fluid mm (in) mm (in) mm (in) mm (in)
Tyre pressures depending on load	front: 2.2 – 2.5 (31.9 – 36.26) rear: 2.5 – 2.9 (36.26 – 42.06)	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	22	Nm
Fuel pump assembly to tank	5	Nm
Poly-V belt preload	8	Nm
Alternator to cover mount	20	Nm
Brake caliper fasteners, front	30	Nm
Brake caliper fasteners, rear	40	Nm
Rear wheel studs	105	Nm
Tightening cylinder heads		
Nut	unscrew/20 180	Nm ° tightening angle
M 10 screw	unscrew/40	Nm
Locknut, valve adjusting screw	8	Nm
Cylinder head cover	8	Nm
Spark plugs NGK BKR 7 EKC	25	Nm

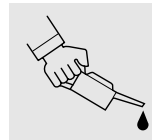
00 Tightening torque

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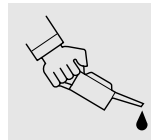
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Tightening torque

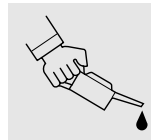
Model		R 1150 R
Connection		
11 Engine		
Cylinder head		
Tightening sequence:		
1 Tighten cylinder head nuts (oiled) in diagonally opposite sequence		
1.1 Tighten all nuts to closing torque	Nm	20
1.2 Tighten all nuts to correct angle	°	90
1.3 Tighten all nuts to correct angle	°	90
2 M 10 screw	Nm	40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





Model		R 1150 R
Connection		
11 Engine		
Oil filter		
Oil filter	Nm	11
Oil drain plug	Nm	32
Oil pump		
Mesh filter basket to engine block	Nm	10
Oil pump cover	Nm	9
Pressure relief valve	Nm	42
Oil pressure switch	Nm	30
Oil cooler		
Cooling oil line to engine block	Nm	10
Cooling oil line - banjo screw with oil vent valve	Nm	25
Oil lines to oil cooler	Nm	25
Oil cooler to bracket	Nm	8
Oil cooler return line to engine block	Nm	35
Oil cooler connection to crankcase	Nm	9
Cylinders		
Tightening sequence:		
1 M 8 screw	Nm	20
2 M 6 screw	Nm	9
3 Chain guide rail pivot screw	Nm	18
Timing chain		
Chain tensioner	Nm	32
Connecting rod		
Big end cap		
Closing torque	Nm	20
Wrench angle	°	80
Crankcase		
Tightening sequence:		
M 10 screw (oiled) to initial torque	Nm	25
Wrench angle	°	90
M 8 screw	Nm	22 (oiled)
M 6 screw	Nm	9

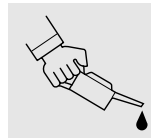
Model		R 1150 R
Connection		
12 Engine electrics		
Starter motor to engine	Nm	20
Starter cover to gearbox housing	Nm	7
Positive lead to starter motor	Nm	10
Alternator to alternator support cover	Nm	20
Tensioning and retaining link to alternator	Nm	21
Spacer to alternator	Nm	21
Positive lead to alternator	Nm	15
Belt pulley to alternator	Nm	50
Belt pulley to crankshaft	Nm	50
Poly-V belt preload	Nm	8
Spark plug NGK BKR 7 EKC	Nm	25
Model		R 1150 R
Connection		
13 Fuel preparation and control		
Temperature sensor, oil, in crankcase	Nm	25
Temperature sensor, air, in air-filter housing	Nm	10
Model		R 1150 R
Connection		
16 Fuel tank and lines		
Fuel tank to rear frame	Nm	22
Fuel pump assembly to tank	Nm	5





Model		R 1150 R
Connection		
18 Exhaust system		
Manifold to cylinder head	Nm	21
Clamp for manifold	Nm	45 (apply Optimoly TA to clamp seat)
Front silencer to manifold	Nm	45 (apply Optimoly TA to clamp seat)
Silencer to main stand lugs	Nm	20
Silencer to rear frame at top	Nm	35
Oxygen sensor to silencer	Nm	45 (apply Optimoly TA to thread)
End cap to rear silencer	Nm	8 (threads greased)
Bracket to rear silencer	Nm	15 (threads greased)
Model		R 1150 R
Connection		
21 Clutch		
Clutch housing		
Closing torque	Nm	40 (oil screw threads lightly)
Wrench angle	°	32
Housing cover to housing	Nm	12
Clutch line to handlebar fitting	Nm	14
Slave cylinder to gearbox	Nm	9
Grub screw in filler adapter	Nm	10

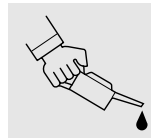
Model		R 1150 R
Connection		
23 Transmission		
Oil drain plug	Nm	30
Oil filler plug	Nm	30
Gearbox to engine block	Nm	22
Shift lever to footrest plate	Nm	35
Selector lever to selector shaft	Nm	9
Housing cover to housing	Nm	9
Frame tube to gearbox		
1. to gearbox and left footrest plate	Nm	42 (clean thread + Loctite 243)
2. clamp block, frame tube to gearbox	Nm	9
3. to gearbox and right footrest plate	Nm	42 (clean thread + Loctite 243)
Model		R 1150 R
Connection		
31 Front fork		
Quick-release axle clamp screws	Nm	22
Clamp, fork fixed tube to fork bridge	Nm	45 (free from oil and grease)
Slider tube bridge to slider tube	Nm	25 (clean thread + Loctite 243)
Threaded stud to frame	Nm	130 (clean thread + Loctite 243)
Ball joint to sliding tube bridge	Nm	230 (lightly grease threads with Optimoly TA)
Leading link to ball joint		
Initial tightening	Nm	80
Final tightening	Nm	130 (clean thread + Loctite 2701)
Leading link to engine	Nm	130
Spring strut to front frame	Nm	43
Spring strut to leading link	Nm	50





Model		R 1150 R
Connection		
32 Steering		
Handlebars to fork bridge, tightening sequence:		
1. Front fastener (as viewed in forward direction of travel) until seated	Nm	21
2. Rear fastener (as viewed in forward direction of travel)	Nm	21
Handlebar weight to handlebars	Nm	21
Pivot screw, handlebar lever	Nm	11 (Tuflok Blue thread-locking compound; screw can be released and tightened a number of times)
Model		R 1150 R
Connection		
33 Rear wheel drive		
Oil filler plug	Nm	23
Oil drain plug	Nm	23
Threaded ring	Nm	160 (clean thread + Loctite 577)
Hexagon nut, input bevel gear	Nm	200 (clean thread + Loctite 2701)
Cover to rear-wheel drive housing	Nm	35
Fixed bearing stud bolt, swinging arm to gearbox	Nm	160
Floating bearing stud bolt, swinging arm to gearbox		
1. initial torque	Nm	9
2. slacken		
3. final torque	Nm	7
Locknut, floating bearing stud bolt, swinging arm to gearbox	Nm	160
Fixed bearing stud bolt, swinging arm to rear axle housing	Nm	160 (clean thread + Loctite 2701)
Floating bearing stud bolt, swinging arm to rear axle housing		
1. initial torque	Nm	9
2. slacken		
3. final torque	Nm	7
Locknut, floating bearing stud bolt, swinging arm to rear axle housing	Nm	160 (clean thread + Loctite 2701)

Model		R 1150 R
Connection		
33 Rear wheel drive		
Reaction link to rear wheel drive / gearbox	Nm	43 (load approx. 85 kg (187 lbs) onto motorcycle and tighten loose reaction link)
Spring strut to rear frame	Nm	50
Spring strut to rear swinging arm	Nm	58 (clean thread + Loctite 243)
Hydraulic spring preload adjuster to foot-rest plate	Nm	22
Model		R 1150 R
Connection		
34 Brakes		
Brake caliper to fork slider tube, Evo brakes	Nm	30
Brake caliper to rear wheel drive	Nm	40
Brake disc to front wheel	Nm	21 (clean thread + Loctite 2701)
Brake disc to rear wheel drive	Nm	21 (clean thread + Loctite 2701)
Master cylinder to footrest assembly	Nm	9
Footbrake lever to footrest assembly	Nm	21 (clean thread + Loctite 2701)
Footbrake-lever stop	Nm	9
Ball socket to thrust rod	Nm	9
Brake lines/brake hose to brake components	Nm	18
Brake hose to bracket	Nm	9
Brake hose to brake lever fitting	Nm	18
Bracket to front frame	Nm	9
Bracket to rear frame	Nm	9 (clean thread + Loctite 2701)
Front brake caliper bleed screw	Nm	9
Rear brake caliper bleed screw	Nm	6
Filler adapter to brake line	Nm	18
ABS hydraulic unit to bracket	Nm	8
ABS hydraulic unit to battery carrier	Nm	8





Model		R 1150 R
Connection		
36 Wheels and tyres		
Quick-release axle clamp screws	Nm	22
Quick-release axle threaded fastener	Nm	30
Rear wheel to rear wheel drive Hand-tighten wheel studs and tighten in diagonally opposite sequence [Integral ABS] Note spacer	Nm	105
Model		R 1150 R
Connection		
46 Frame		
Frame to engine	Nm	82
Struts to frame	Nm	58
Strut to engine	Nm	58 (clean thread + Loctite 2701)
Rear frame to gearbox/engine to gearbox and footrest plate	Nm	42 (clean thread + Loctite 2701)
to engine	Nm	42
Carrier plate for main stand to engine, right M 12 screw	Nm	72 (clean thread + Loctite 2701)
Pivot mount to engine, left M 12 screw	Nm	72 (clean thread + Loctite 2701)
M 8 screw	Nm	21
Pivot mount of main (centre) stand (stud bolt)	Nm	21 (clean thread + Loctite 243)
Pivot mount of main (centre) stand (machine screw)	Nm	21
Side stand to pivot mount	Nm	58 (clean thread + Loctite 2701)
Footrest plate to gearbox	Nm	21
Rear footrest plate to rear frame	Nm	21
Front mudguard to fork slider tube bridge	Nm	6 (Tuflok Blue thread-locking compound; screw can be released and tightened a number of times alternatively: clean thread + Loctite 243)

Model		R 1150 R
Connection		
46 Frame		
Front and rear sections of front mudguard to slider tube	Nm	3 (Tuflok Blue thread-locking compound; screw can be released and tightened a number of times alternatively: clean thread + Loctite 243)
Headlight bracket to fork bridge	Nm	20
Model		R 1150 R
Connection		
51 Equipment		
Mirrors	Nm	15
Ignition/steering lock to fork bridge	Nm	20 (micro-encapsulated)
Model		R 1150 R
Connection		
61 General electrical equipment		
Horn to holder	Nm	8 (clean thread + Loctite 243)
Ground (earth) strap to engine block	Nm	9
Battery carrier to rubber-metal element	Nm	8

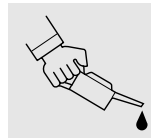


Table of operating fluids

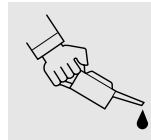


Item	Use	Order number	Quantity
Lubricant			
Staburags NBU 30 PTM	High-performance lubricating paste	07 55 9 056 992	75 g tube
Optimoly MP 3	High-performance lubricating paste	07 55 9 062 476	100 g tube
Optimoly TA	High-temperature assembly paste	18 21 9 062 599	100 g tube
Silicone grease 300, heavy	Damping 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 compound	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 (narrow gap)	07 58 9 067 732	5 g bottle
Loctite 638	Joint adhesive (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
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 aluminium housings	83 19 9 407 855	500 ml spray
Developer MR 70	Crack testing agent for aluminium housings	81 22 9 407 495	500 ml spray
Installation aids			
BMW cooling spray	Cooling spray	83 19 9 407 762	300 ml spray

00 Pre-delivery check

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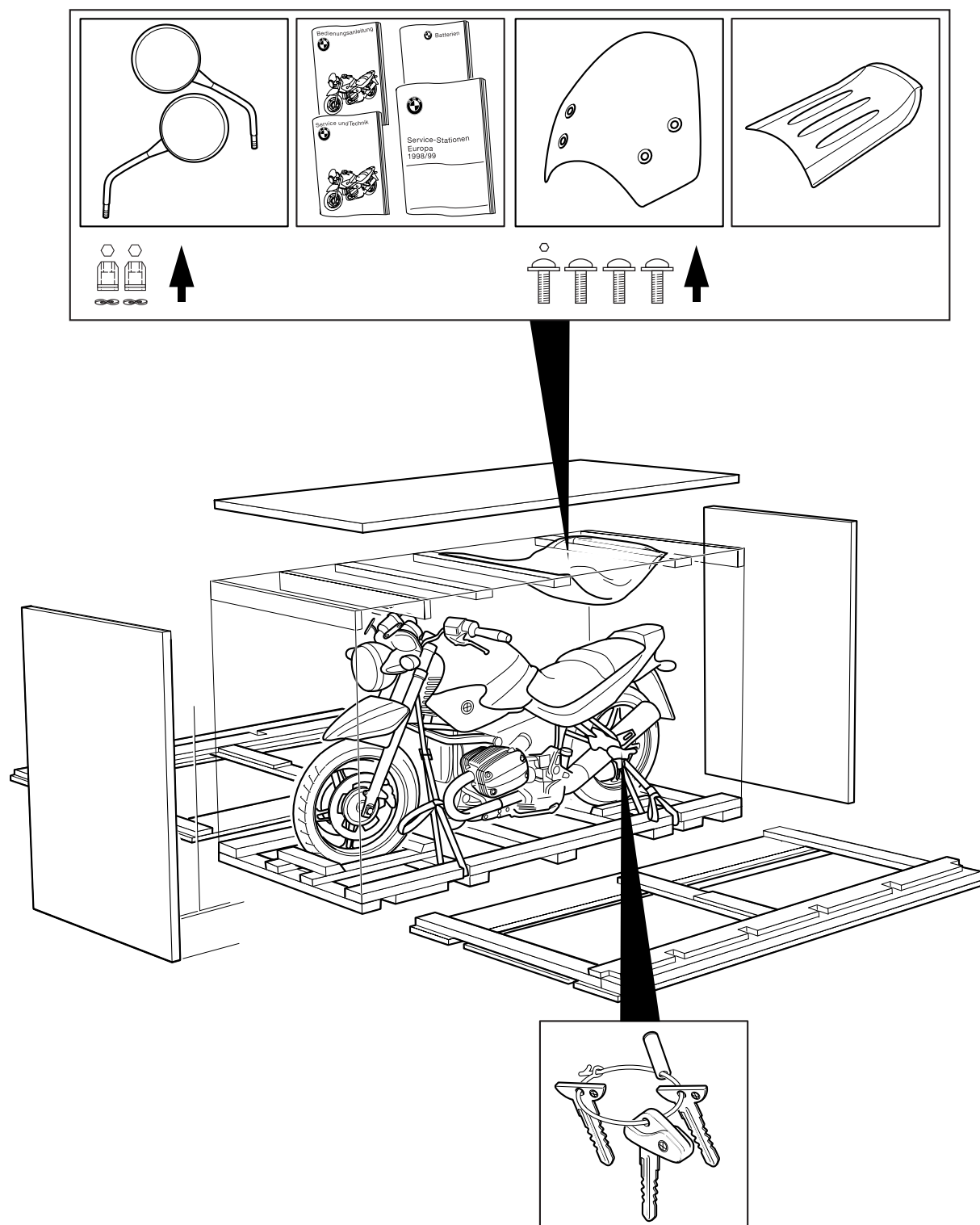
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General view of crated motorcycle



Checking the shipping pallet for damage

- When the motorcycle arrives, check the packing material immediately for damage and, if necessary, examine the contents for consequential damage.



In case of damage in Germany

- Note the damage on the delivery slip.
- Read the information sheet on damage in transit.
- Notify supplier (e.g. freight company or DB) and Bavaria Wirtschaftsagentur GmbH
Abteilung ZW - 12
80788 München
Tel. 089/14327-632
Fax 089/14327-709
without delay.

In case of damage in importer markets

- Note the damage on the delivery slip.
- Comply with specific national market procedures.
In case of doubt, please submit enquiries to:
Bavaria Wirtschaftsagentur GmbH
Abteilung ZW - 12
D-80788 München
Tel. +49 89/14327-632
Fax +49 89/14327-709
- Notify the supplier (e.g. freight company) without delay.

00 11 Unpacking the motorcycle

- Lever off the cover.
- Take out the separate pack of items:
 - Documentation
 - Optional Speedster fairing, if applicable
 - Optional seat cover, if applicable
- Force off cross-struts with a suitable lever.



Important:

Do not knock the cross-struts out or the motorcycle may be damaged.

- Remove the end-walls.
- Remove the side-walls.



Important:

Remove any nails projecting from the base of the packing or lying on the base or on the floor.

- Loosen the front tensioning straps.
- Loosen the rear tensioning straps.
- Push the motorcycle forwards off the pallet.
- Remove the set of keys from the left rear footrest.
- Dispose of the packing materials in an environmentally responsible manner as described in Circular 23/91 - Sales.

00 11 Installing remaining items on motorcycle

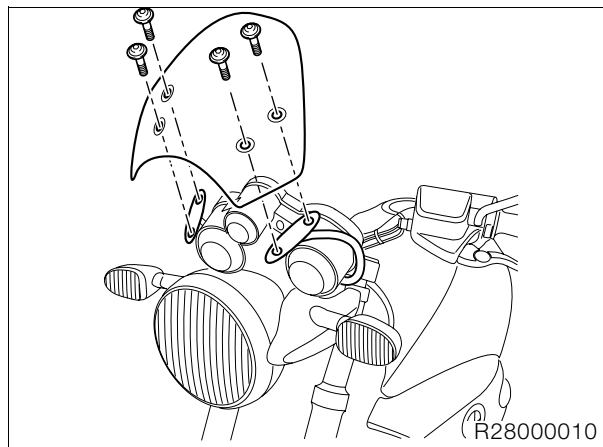
- Fit the rear-view mirror.



Tightening torque:

Mirror on handlebar fitting 10 Nm

71 63 099 Mounting the Speedster fairing



- Carefully tighten the Speedster fairing securing screws by hand.



Tightening torque:

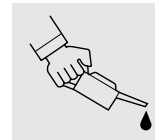
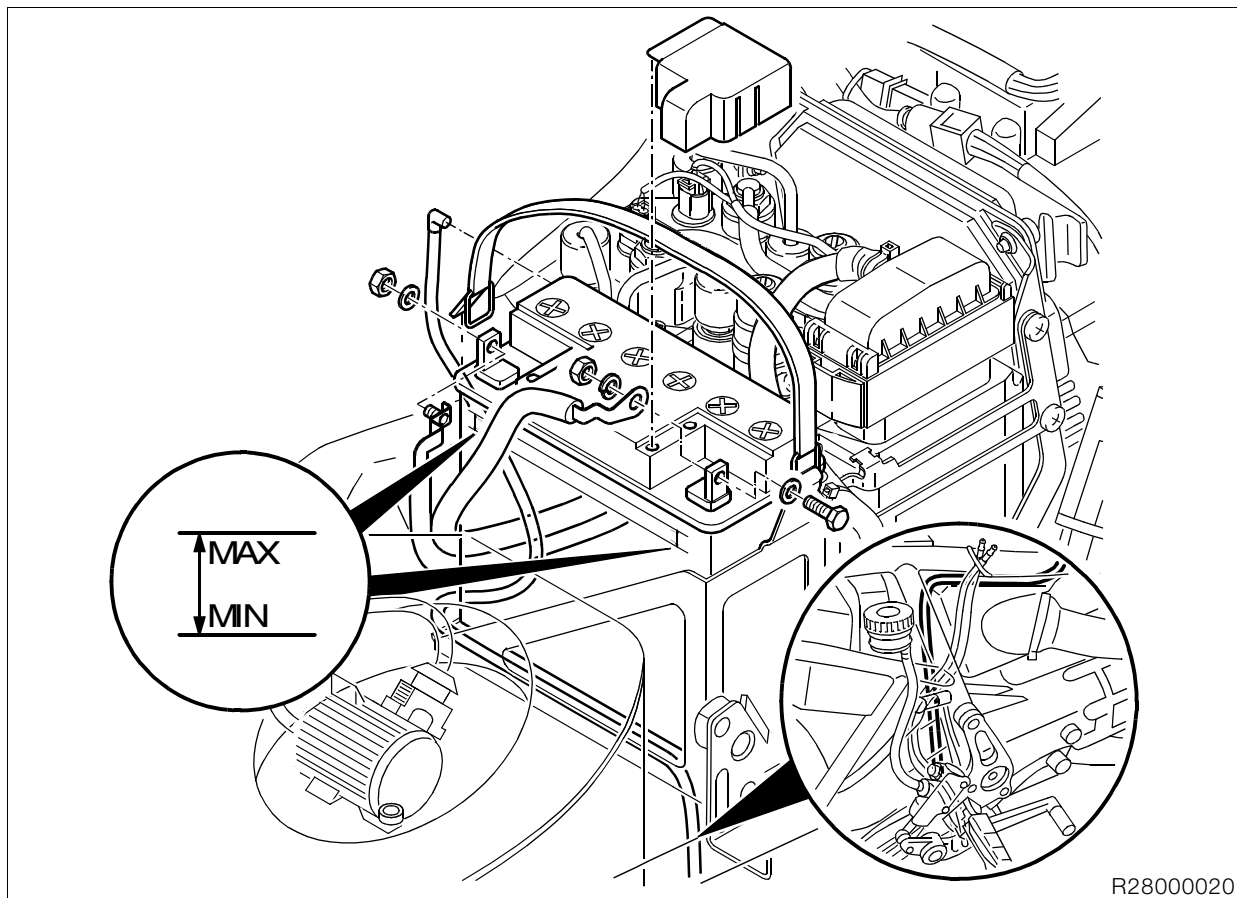
Fairing on fairing bracket 2 Nm

00 11 Inspecting motorcycle for damage

- Check for faults.
- "Express handling service" to:
BMW Motorrad
UX-VS-1
Fax number +49 (0)89-382-33220
- Rectify the fault.
- If parts are needed, order them through the usual channel.
- Costs are to be processed through the warranty claim system (stage 4). Defect codes:
 - Parts missing 10 01 00 00 00
 - Parts damaged 10 02 00 00 00
 - Incorrect parts delivered 10 03 00 00 00

Checking that delivery is complete

- All optional extras
- Toolkit
- Documentation



61 21 Filling and charging the battery

16 11 533 Removing the fuel tank

- Remove front/rear seat.
- Lever off the right-hand and left-hand front trim sections from the tank.
- Remove the right-hand and left-hand oil cooler trims.
- Remove the right-hand cable trim.
- Remove oil cooler with air ducting and fold forwards.



Important:

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

- Remove fuel tank retaining screw.
- Remove bleed line and overflow pipe.
- Disconnect the fuel line quick-release coupling.
- Disconnect the fuel pump plug connection.



Note:

Place a cloth between the fork stabilizer and the fuel tank to prevent paintwork damage to the front of the fuel tank.

- Remove the fuel tank upwards from the rear.

61 21 Filling and charging the battery



Warning:

Battery acid is highly caustic.

Protect your eyes, face, hands, clothing and the paintwork.

- Disengage the rubber strap holding the battery.
- Disconnect the battery breather hose.
- Remove the battery.
- Fill all the cells to the upper mark with pure battery acid of density 1.28.
- Allow the battery to stand for approximately 30 minutes.

- The battery does not achieve full charge capacity from being filled, so it has to be charged with a battery charger.



Note:

Follow the instructions for use supplied with the battery charger.



Charge current (A)

..... 10 % of rated battery capacity (Ah)

Charging time

..... 5-10 hours

- Battery charge can be measured by checking the density of the battery acid.

Acid density

Battery fully charged 1.26-1.30 at 20 °C (68 °F)

- Shake the battery slightly to allow the gas bubbles to escape.
- Wait until the battery acid has settled, check that no more bubbles rise and if necessary, top up the acid to the max. mark.
- Refit the plugs.
- Make a note of the charging date on the battery.



Important:

Connect the positive battery terminal first, then the negative terminal.

- Fit the battery.
- Apply acid-proof grease to the battery terminals.
- Connect the battery breather line.
- Fit the fuel tank.
- Connect the fuel pump connector and the fuel line quick-release couplings.
- Connect bleed line and overflow pipe.
- Fit oil cooler with air ducting.
- Fit cable trim.
- Fit oil cooler trim.
- Secure the right-hand and left-hand front trim sections to the tank.
- Fit front/rear seat.
- Switch on the ignition.
- Without starting the engine, fully open the throttle once or twice so that the Motronic control unit can record the throttle-valve positions.



Note:

Disconnecting the battery deletes all entries (e.g. faults, settings) stored in the Motronic control unit's memory.

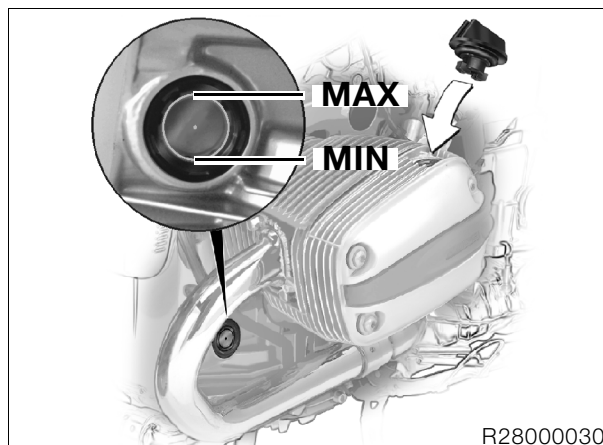
Loss of settings can temporarily impair the operating characteristics when the engine is restarted.



Tightening torque:

Fuel tank to frame 22 Nm

00 00 Checking engine oil when engine is cold, topping up if necessary



- Check oil level with the motorcycle upright.

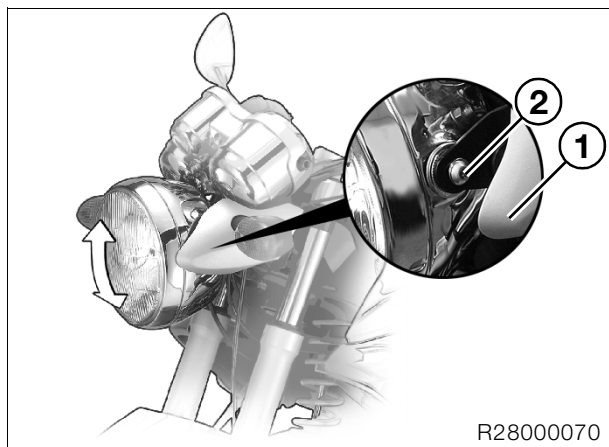


Important:

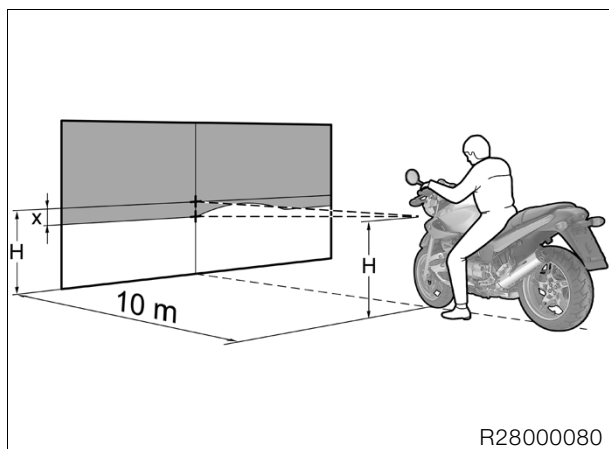
Never top up the engine-oil level past the "MAX" mark.

Required level:..... MAX

63 10 500 Checking headlight beam angle, adjusting if necessary



- Motorcycle must be on a level surface.
- Motorcycle with driver (approximately 85 kg/ 187 lbs).
- Remove trim (1).
- Remove headlight (2) retaining bolts.
- Correct the headlight range by swivelling the headlight.



Setting for headlight beam angle adjuster

.. -25 cm (9.8425 in) at a distance of 10 m (32.8 ft)

Checking tightness of rear wheel studs



Tightening torque:

Securing screws for rear wheel 105 Nm

Checking tyre pressures

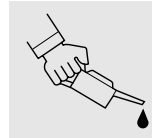
- Check/correct tyre pressures.

Tyre pressures:

Solo front 2.2 bar (31.3 psi)
 rear 2.5 bar (35.6 psi)

With pillion passenger front 2.5 bar (35.6 psi)
 rear 2.7 bar (38.4 psi)

With pillion passenger and
 luggage front 2.5 bar (35.6 psi)
 rear 2.9 bar (41.2 psi)



[Integral ABS] Performing bleed test with BMW MoDiTeC



Warning:

Self-diagnosis is not performed unless both brake levers are in their fully released positions. Prior to the conclusion of the self-diagnosis, only RESIDUAL BRAKE FUNCTION is available.

Performing BMW Integral ABS self-diagnosis:

- Release the brake levers if necessary.
- Switch on the ignition.

ABS warning light.....flashes at 4 Hz
General warning lampis continuous

- Self-diagnosis is in progress

ABS warning light.....flashes at 1 Hz
General warning lampgoes out

- Self-diagnosis successfully completed.

Performing a bleed test using the BMW MoDiTeC:

- Remove front/rear seat.
- Connect the **BMW MoDiTeC** to the diagnostic connector.



Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.

- Perform bleed test.
- Perform all requisite repair work.

Performing BMW Integral ABS pull-away test:

- The ABS warning light must go out when a speed of 5 km/h (approx. 3 mph) is reached.



Note:

The ABS warning light and the general warning light must both be OFF after successful self-diagnosis and the pull-away test.

Final inspection and function check

- Clutch
- Check gear shift action.
- Handbrake and foot brake
- Check lights and signalling equipment:
 - Front and rear parking lights
 - Instrument lighting
 - Low and high headlight beams, headlight flasher
 - Brake light (operate brake at front and rear)
 - Turn signals left/right
 - Hazard warning flashers
 - Horn
 - Indicator and warning lights
 - Instruments
- Where necessary, check function of optional extras:
- If necessary, take the motorcycle for a test ride.
- Confirm pre-delivery check in Service and Technical Booklet.
- See “Checking motorcycle for damage” if defects are found.

00 11 459 Final cleaning

- Clean the motorcycle.



Note:

Do not use a steam or high-pressure water jet. The high steam or water pressure could damage seals, the hydraulic system or electrical components.

Handing over the motorcycle

This is the ideal opportunity to familiarise the customer with the motorcycle in order to ensure the customer's satisfaction and safety.

- The following points must be demonstrated and explained to the customer:
 - documentation and stowage space
 - toolkit and stowage space
 - suspension preload adjustment to suit total weight
 - checking brake fluid/clutch operating fluid
 - provision for adjusting handlebar lever positions
 - how to adjust the mirrors
 - controls
 - instruments and indicator lights
 - optional equipment and accessories fitted
 - features of **BMW Integral ABS**:
 - brake servo,
 - residual braking function,
 - pump noises,
 - self-diagnosis with pull-away test.
- The user must be given the following information:
 - running-in recommendations and inspection intervals
 - safety check
 - features of **BMW Integral ABS**:
 - partially integral brake,
 - brake-fluid levels in the control circuits remain constant despite brake-pad wear.
 - the clutch fluid level rises gradually as the motorcycle is ridden (clutch lining wear)
 - before checking the engine oil level, the engine must be switched off for at least 10 minutes and the motorcycle must be standing on a flat, level surface.





00 Maintenance

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Key to maintenance intervals

- | | |
|--|------------|
| – BMW Inspection at 1,000 km
(approximately 600 miles) | I |
| – BMW Service every 10,000 km
(approximately 6,000 miles) | II |
| – BMW Inspection every 20,000 km
(approximately 12,000 miles) | III |
| – BMW Annual Service | IV |

00 13 624 Reading the **BMW** MoDiTeC fault code memory

(Inspections I, II, III and IV)

- Remove front/rear seat.
- Connect the **BMW** MoDiTeC to the diagnostic connector.
- Read all fault code memories.
- Perform all requisite repair work.



[Integral ABS] Performing bleed test with **BMW** MoDiTeC

(Inspections I, II, III and IV)

- Remove front/rear seat.
- Connect the **BMW** MoDiTeC to the diagnostic connector.



Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.

- Perform bleed test.
- Perform all requisite repair work.

00 11 209 Changing engine oil, replacing oil filter element

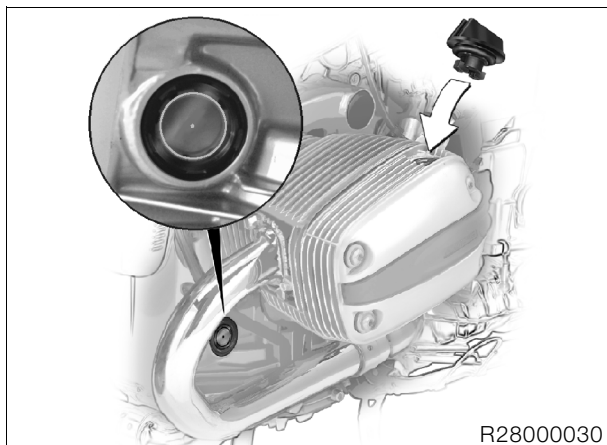
(Inspections I, II, III and IV)



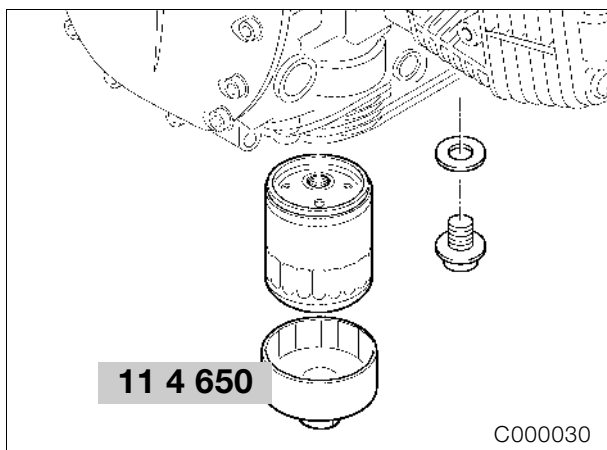
Note:

If the motorcycle is ridden only for short distances or outside temperatures are below 0°C (32 °F), change the oil and replace the oil filter element every 3 months, or not less than every 3,000 km (1,800 miles).

- Change the engine oil at operating temperature.



- Remove screw plug.



- Remove oil drain plug and drain off oil.
- Refit the oil drain plug with a new sealing ring.
- Use the oil filter wrench, **BMW No. 11 4 650**, to remove the oil filter.
- Coat the sealing ring on the new oil filter element with oil and install filter.
- Refill with oil to correct level.

- Insert and tighten the screw plug.



Important:

Never top up the engine-oil level past the "MAX" mark.



Tightening torque:

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

Engine oil quantities:

with oil filter change	
.....	3.75 l (6.6026 Imp. pints/3.9626 US quarts)
without oil filter change	
.....	3.50 l (6.1624 Imp. pints/3.6985 US quarts)
oil between	
MIN and MAX mark	
.....	0.50 l (0.8803 Imp. pints/0.5283 US quarts)

Engine oil grade:

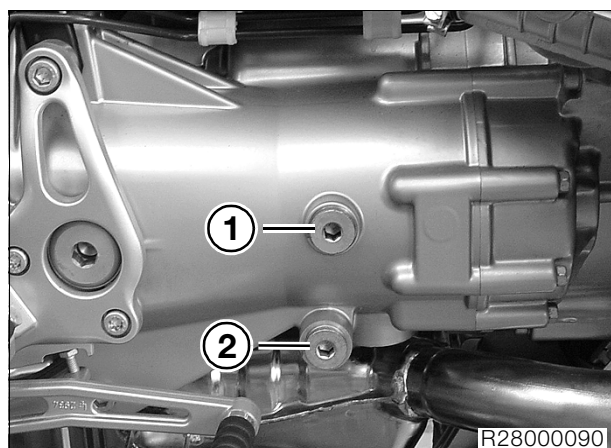
Brand-name HD oil for spark-ignition engines, API classifications SF, SG, SH; combination with CD or CE specification.

Brand-name HD oil of CCMC classification G4, G5; amendment PD2 is permissible.

00 11 229 Changing the transmission oil

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

- Change the transmission oil at operating temperature.



- Remove oil filler plug (1).
- Remove oil drain plug (2) and allow the oil to drain out.
- Refit the oil drain plug with a new sealing ring.
- Fill with gearbox oil.
- Insert oil filler plug with new seal.

Tightening torque:

Oil drain plug 30 Nm
Oil filler plug 30 Nm

Quantity:

Refill
to bottom of filler neck..... approx. 1.0 l
.....(1.7607 Imp. pints/1.0567 US quarts)
Oil change
to bottom of filler neck..... approx. 0.8 l
.....(1.4086 Imp. pints/0.8454 US quarts)

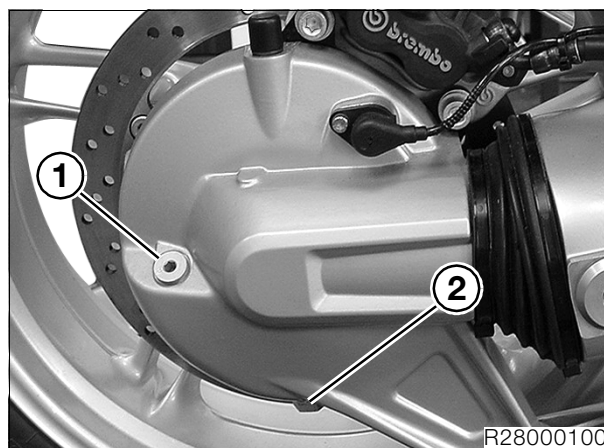
Oil grade for transmission:

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

00 11 229 Changing the oil in the rear wheel drive

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

- Change the transmission oil at operating temperature.



Important:

Do not let oil drip on the rear tyres.

- Remove oil filler plug (1).
- Remove oil drain plug (2) and allow the oil to drain out.
- Refit the oil drain plug with a new sealing ring.
- Fill with gearbox oil.
- Insert oil filler plug with new seal.

Tightening torque:

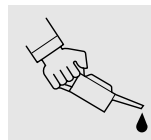
Oil drain plug 23 Nm
Oil filler plug 23 Nm

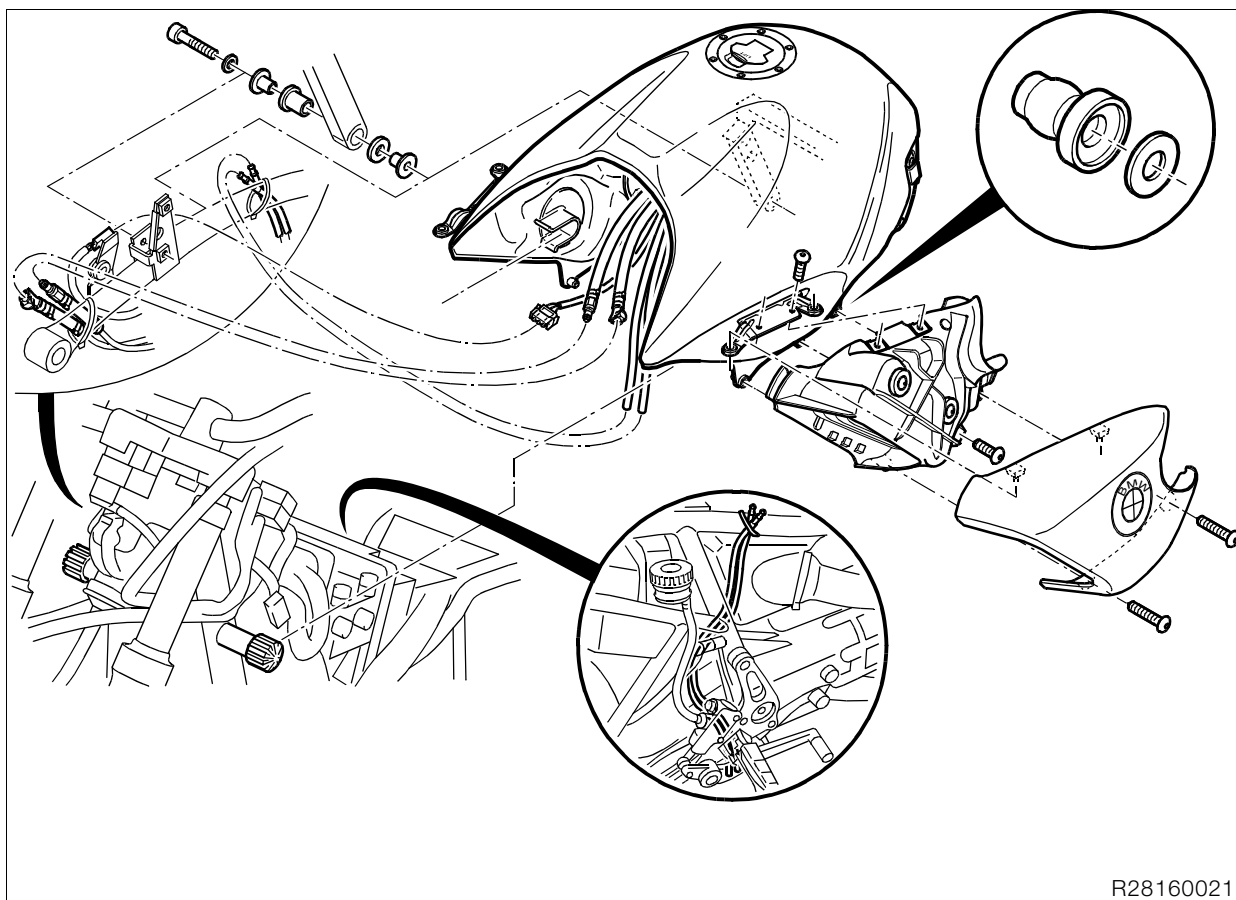
Quantity:

to bottom of filler neck approx. 0.25 l
.....(0.4401 Imp. pints/0.2641 US quarts)

Oil grade for rear wheel drive:

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





R28160021

16 12 008 Replacing 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 front/rear seat.
- Lever off the right-hand and left-hand front trim sections from the tank.
- Remove the right-hand and left-hand oil cooler trims.
- Remove the right-hand cable trim.
- Remove oil cooler with air ducting and fold forwards.



Important:

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

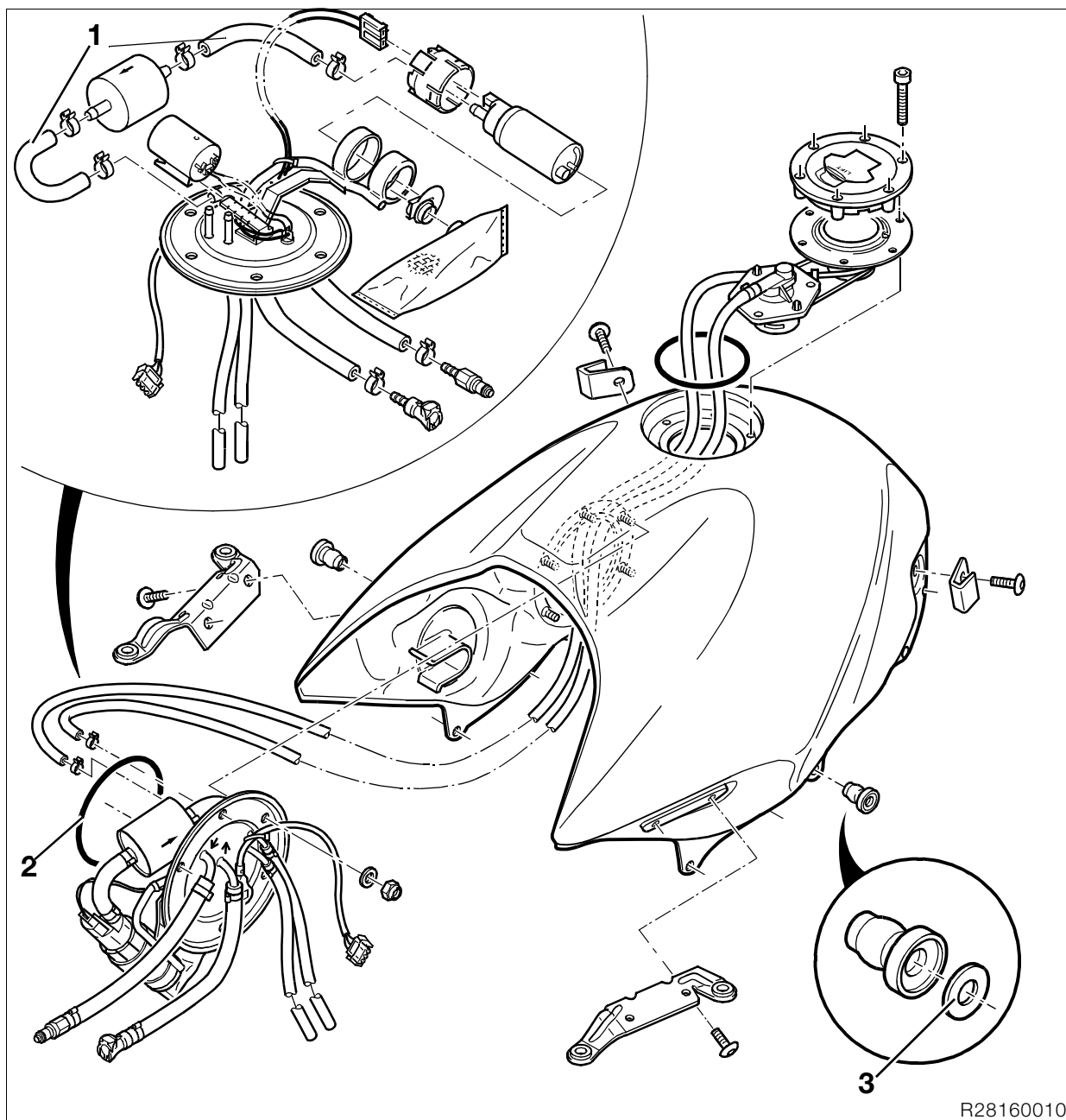
- Remove fuel tank retaining screw.
- Remove bleed line and overflow pipe.
- Disconnect the fuel line quick-release coupling.
- Disconnect the fuel pump plug connection.



Note:

Place a cloth between the fork stabilizer and the fuel tank to prevent damage to the paintwork on the front of the fuel tank.

- Remove the fuel tank upwards from the rear.
- Drain fuel tank.
- Remove fuel pump unit.



- Disconnect hoses from fuel filter (1).
- Replace the fuel filter



Important:

Note correct direction of flow through fuel filter.

- Tighten one-time hose clips with pliers, **BMW No. 13 1 500**.



Important:

Make sure that O-ring (2) is in perfect condition.

- Installation is the reverse of the removal procedure.



Tightening torque:

Fuel pump unit 5 Nm



Important:

After installing, check fuel pump unit for leaks.



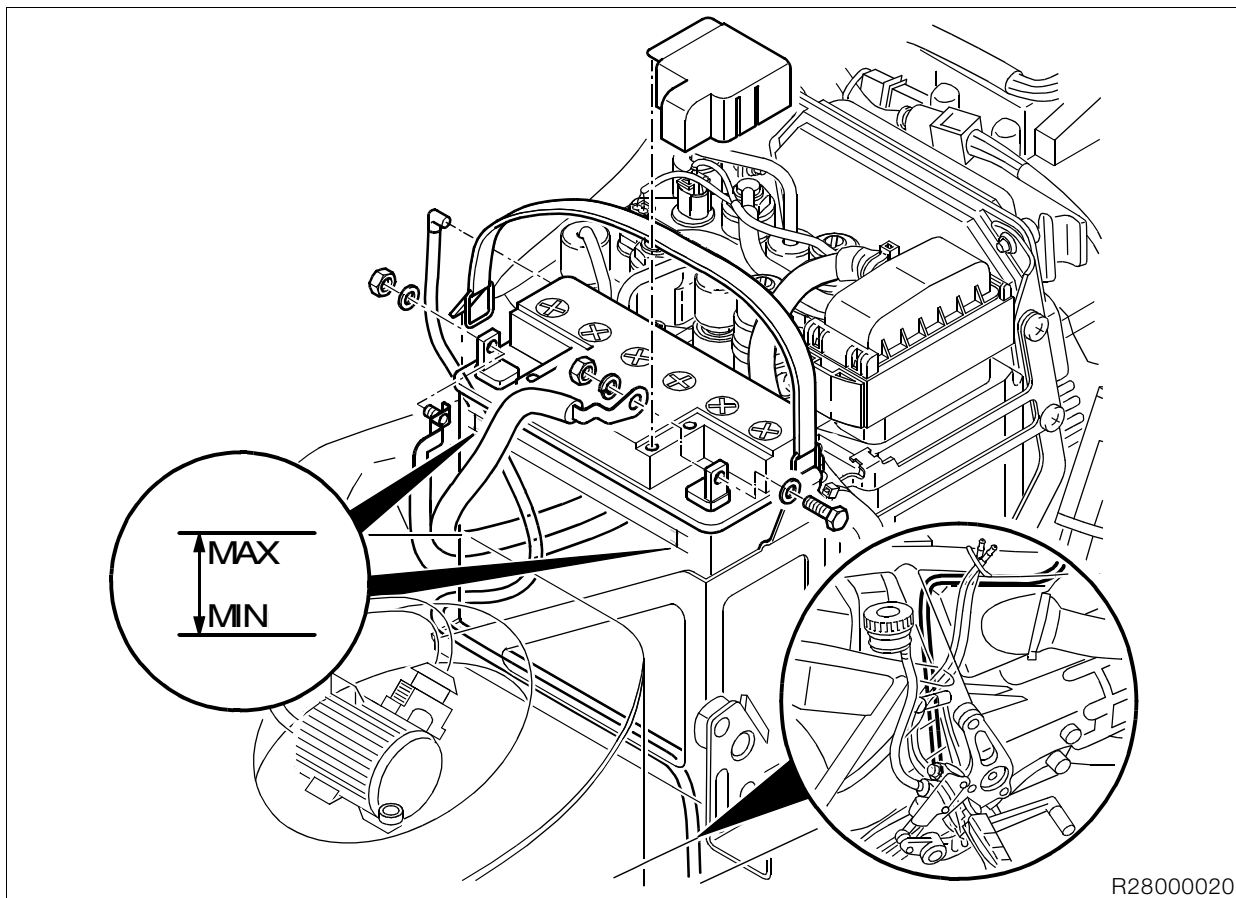
Note:

Make sure that breather lines are correctly routed.



Note:

Pay attention to washers (3).



R28000020

61 20 029 Checking battery fluid level and topping up if necessary; cleaning and greasing the battery terminals

(Inspections III and IV)

- If necessary, disengage fuel tank and lift it at rear.
- Disengage the rubber strap holding the battery.
- Check the battery fluid level.
- Top up the acid level to the "MAX" mark with distilled water.
- Grease the battery terminals.

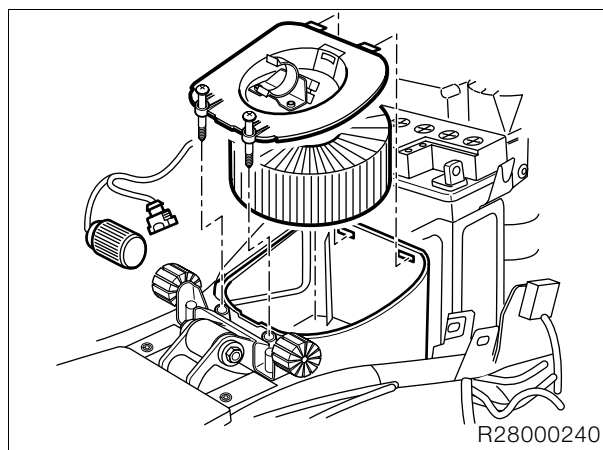
Acid proof battery-terminal grease:

.....e.g. Bosch Ft 40 V1

13 72 000 Replacing intake air filter element

(Inspection III)

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



R280000240

- Open clips securing air filter cover.
- Replace air filter element.
- Close air filter cover.
- Install fuel tank.
- Make sure that breather lines are correctly routed.



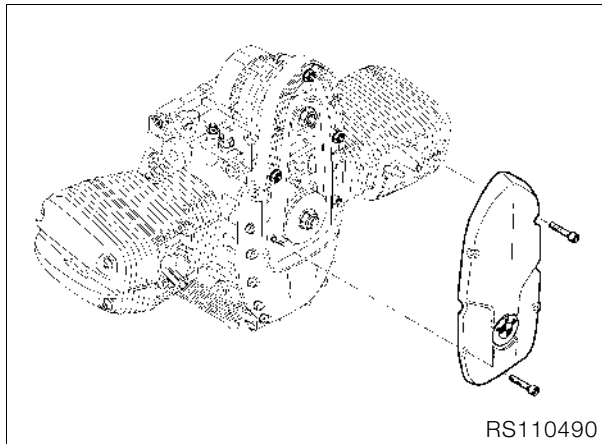
Tightening torque:

Fuel tank to frame 22 Nm

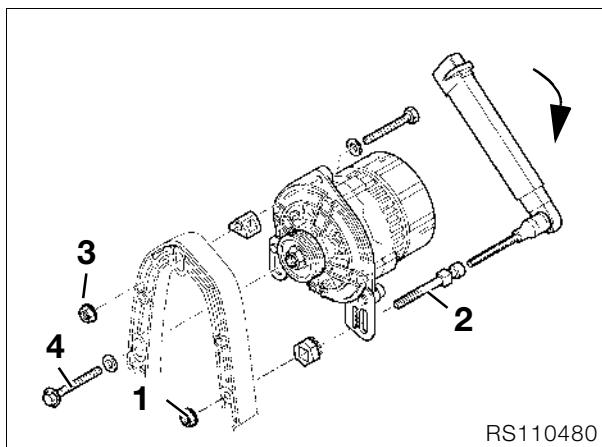
12 31 240 Replacing poly-V belt

(Inspection III)
every 60,000 km (36,000 miles)

- Remove left-hand oil cooler trim.



- Remove front cover.
- Slacken alternator mounting screws and nuts (1,3,4) and install a new poly-V belt if necessary.



Poly-V belt adjustment procedure:
Poly-V belt installation procedure:

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

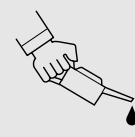
Poly-V belt tensioning procedure:

- 1 Slightly tighten hex nut (1) on adjusting screw (2) by hand (**do not use tools**).
- 2 Tighten adjusting screw (2) with a torque wrench and keep preload applied.
- 3 Tighten upper retaining nut (3), then remove torque wrench from adjusting screw.
- 4 Tighten all screws and nuts.



Tightening torque:

Poly-V belt preload 8 Nm
Alternator
to alternator support cover 20 Nm



[Without Integral ABS] Checking brake fluid level

(Inspections II and III)



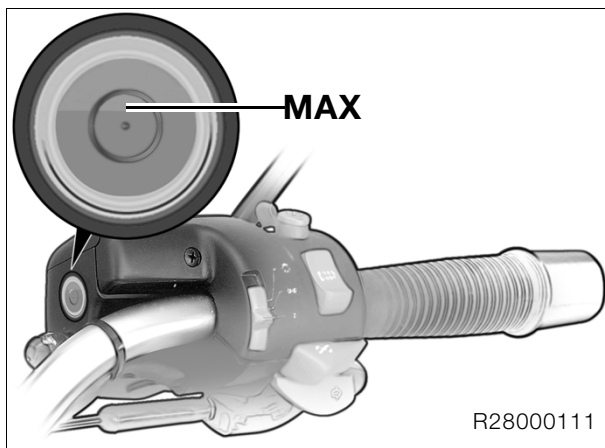
Note:

The volume of the brake fluid (MIN/MAX) is sufficient for lining thicknesses from new to the wear limit. It is not normally necessary to top up the fluid to accommodate lining wear. If the level drops below the MIN mark, this indicates some other fault.



Front brake

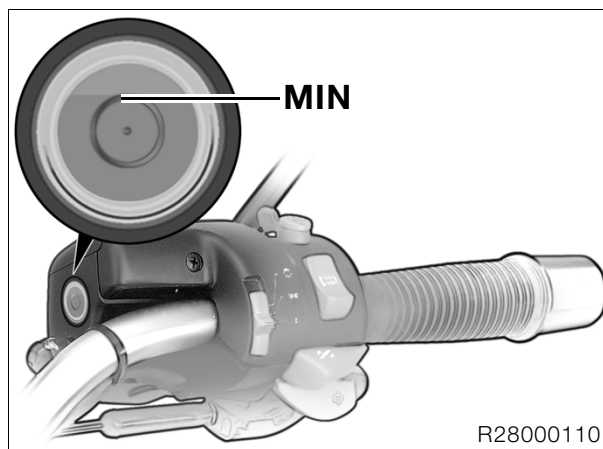
- Place the motorcycle on its centre stand.
- Turn the handlebars to the **right**.



Required level:

with new brake pads MAX
(exactly between the centre (point) of the sight glass and the top edge of the marking ring)

- Turn the handlebars to the **left**.



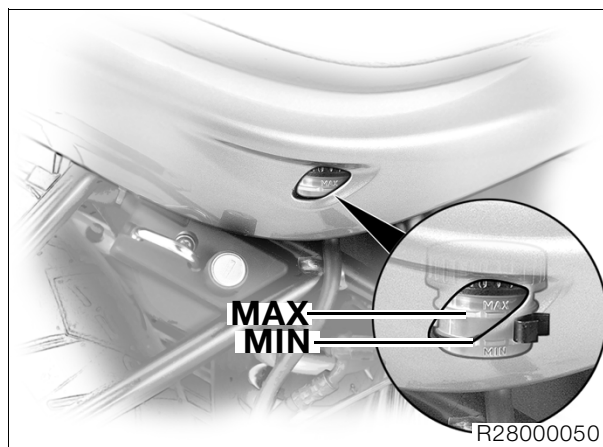
Required level

Brake pads worn
not less than MIN
(Top edge of the marking ring)

Brake fluidDOT 4

Rear brake

- The motorcycle must be upright.



Required level

with new brake pads MAX
brake pads worn not less than MIN

Brake fluidDOT 4

[Integral ABS] Checking brake fluid level

(Inspections II and III)

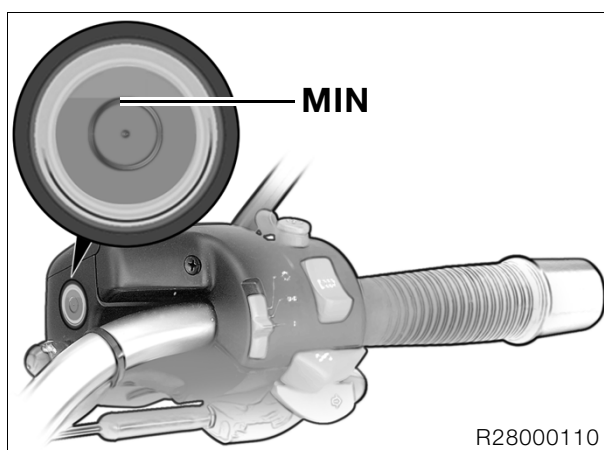


Note:

The brake fluid level in the sight glass/brake fluid level remains constant despite wear of the brake pads.
If the level drops below the MIN mark, this indicates some other fault.

Front brake

- Place the motorcycle on its centre stand.
- Turn the handlebars to the **left**.



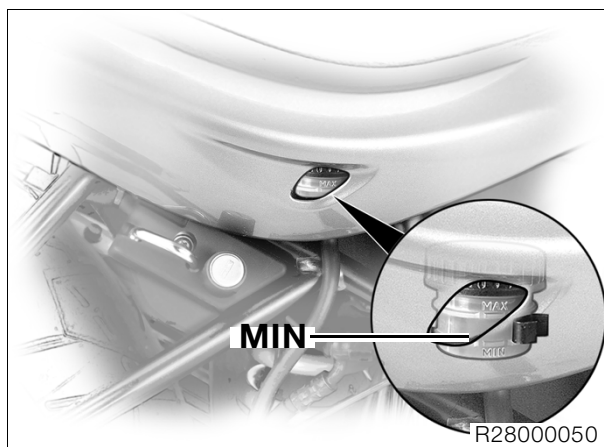
Required level

not below MIN
(Top edge of the marking ring)

Brake fluid.....DOT 4

Rear brake

- Place the motorcycle on its centre stand.



Required level

not below MIN

Brake fluid.....DOT 4

Checking brake system for correct operation and freedom from leaks; repairing/replacing if necessary

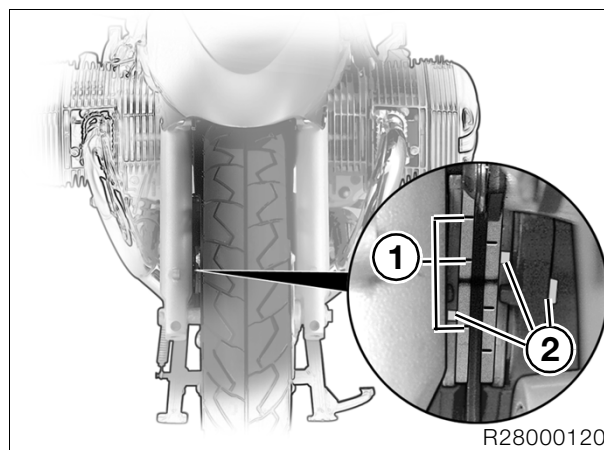
(Inspection III)

- Check brake system for leaks.

Checking brake pads and discs for wear/replacing

(Inspections II and III)

Checking front brake pad wear



- Wear indicators (1) must be clearly visible.
- If necessary, check/measure thickness of brake pads.



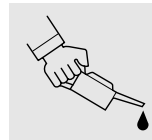
Important:

Brake pad thickness must not fall below the minimum value. Always replace the brake pads as a complete set.

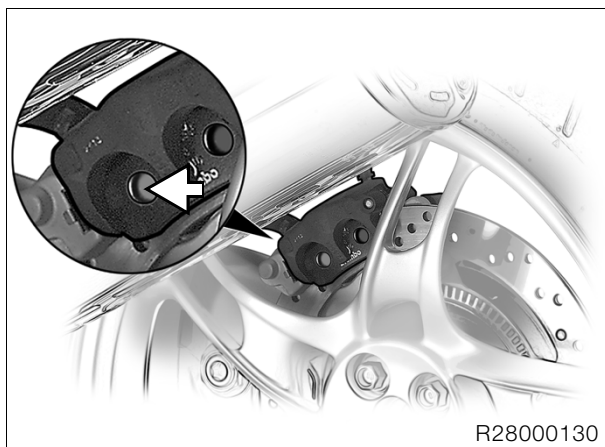
Minimum pad thickness:..... 1.0 mm (0.3937 in)

- Check that colour codes of brake pads and brake calipers (2) match.

Colour code:green



Checking rear brake pad wear



- Make sure that the brake disc is not visible through the bore (arrow) in the inner brake pad.
- If necessary, check/measure thickness of brake pads.



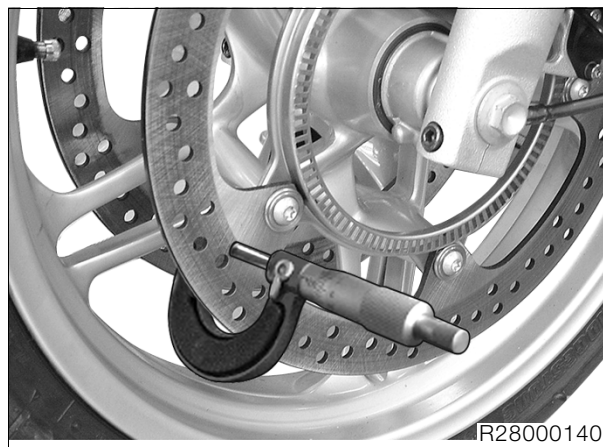
Important:

Brake pad thickness must not fall below the minimum value. Always replace the brake pads as a complete set.

Minimum pad thickness: 1.0 mm (0.3937 in)

- If the brake disc is visible through the bore in the wheel-side brake pad, the brake lining is worn to its minimum permissible thickness.

Checking brake disc wear



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

Brake disc wear limit:

front:..... 4.5 mm (0.1771 in)

rear:..... 4.5 mm (0.1771 in)

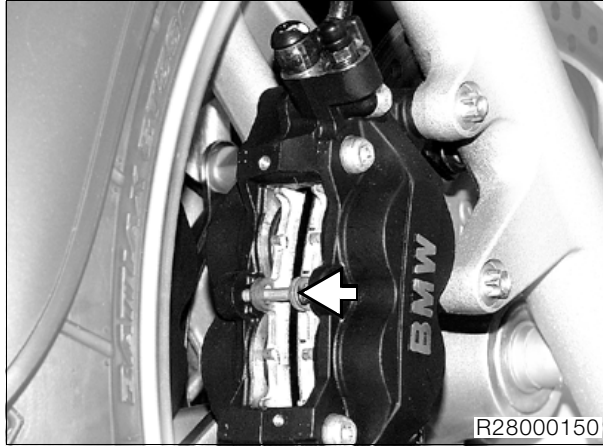
34 11 008 Replacing brake pads, front brake



Important:

Integral brakes, the rear brake must be ready for use.

- Remove retaining plate.



- Remove keeper (arrow) from retaining pin.
- Remove retaining pin.



Important:

[Integral ABS] Press back pistons on one side of the brake caliper only. Allow the brake pad on the opposite side to remain in the caliper during this process.

The fluid in the wheel circuit reservoir must not rise above "MAX".

Risk of fluid loss.

If fluid escapes, proceed in accordance with the instructions for filling the reservoir.

- Pistons with old brake pads should only be pressed back just far enough for the new brake pads to fit in.
- Remove old brake pad and insert new brake pad.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on.

Do not operate the brake lever until self-diagnosis is complete.

- After replacing the pads of a caliper, always bed in the new brake pads with the ignition switched on.

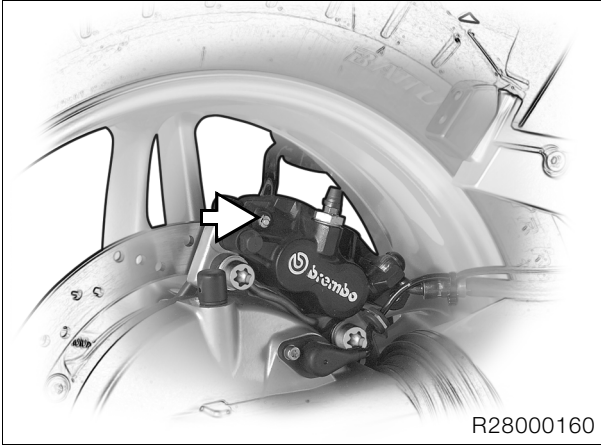
- Installation is the reverse of the removal procedure.
- Perform a function check on the brake system with the ignition switched on.

Colour code:

Brake pads, brake calipers..... green



34 21 200 Replacing brake pads, rear brake



- Remove keeper (arrow) from retaining pin.
- Drive the retaining pin out towards the wheel side.
- Remove brake caliper.
- Remove brake pads.



Important:

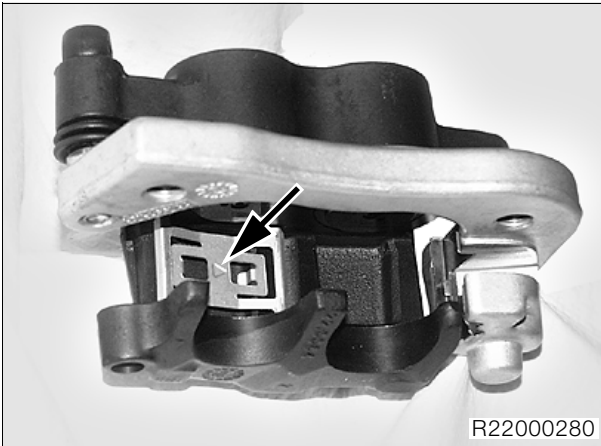
[Integral ABS] Press back pistons in brake caliper brake pad just far enough to allow the brake disc to be slipped in.

The fluid in the wheel circuit reservoir must not rise above "MAX".

Risk of fluid loss.

If fluid escapes, proceed in accordance with the instructions for filling the reservoir.

- Force back the pistons.



- Check the springs for correct seating and installation position.
 - The engraved arrow indicates the direction of travel.

- Installation is the reverse of the removal procedure.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.

- Perform a function check on the brake system with the ignition switched on.



Tightening torque:

Brake caliper to rear wheel drive 40 Nm

34 00 010 [Without Integral ABS] Changing brake fluid and bleeding the brake system

**Change the brake fluid annually
(Inspection IV)**

34 00 033 [Without Integral ABS] Bleeding/changing brake fluid in front system



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.

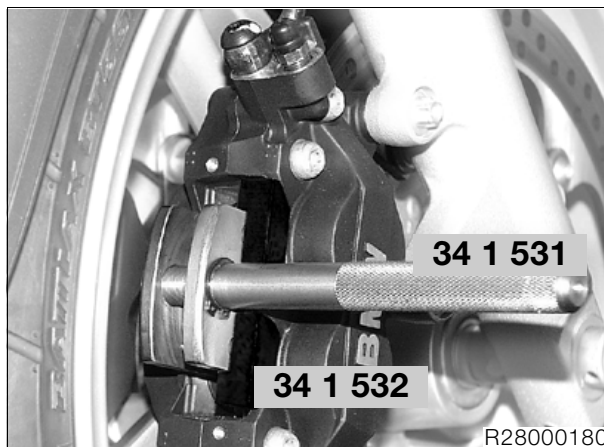
- Place the motorcycle on its side stand and turn the handlebars all the way to the left.
- Repeatedly pull front brake lever lightly to expel air from brake master cylinder.
- Place motorcycle on its centre stand.
- Place the front wheel and the handlebars such that the brake fluid expansion tank is level.
- Tighten the handlebar and secure the front wheel in this position.



Important:

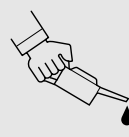
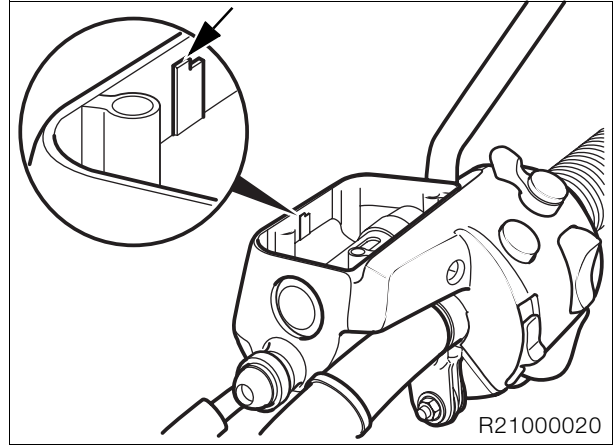
Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

- Remove front reservoir cap with rubber diaphragm, draw off the old brake fluid and clean the reservoir.
- Refit the reservoir cap with rubber diaphragm.
- Remove the brake pads.



- Use the reset device, **BMW No. 34 1 531**, and the positioning piece, **BMW No. 34 1 532**, to press back and position the brake caliper pistons on the left and right.

- Remove reservoir cap with rubber diaphragm, draw off the old brake fluid and clean the reservoir.



Important:

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

- Top up the brake fluid level to the "MAX" mark (arrow).
- Connect the brake bleeding device to the bleed screw of the left-hand brake caliper.



Important:

During the fluid-change and bleeding procedure, make sure that the fluid replenishing hole is always below the level of the brake fluid, otherwise air will be drawn into the brake system. Bleed the system again if this happens.

- Open the bleed screw.
- Draw off brake fluid until it emerges clear and free from air bubbles.

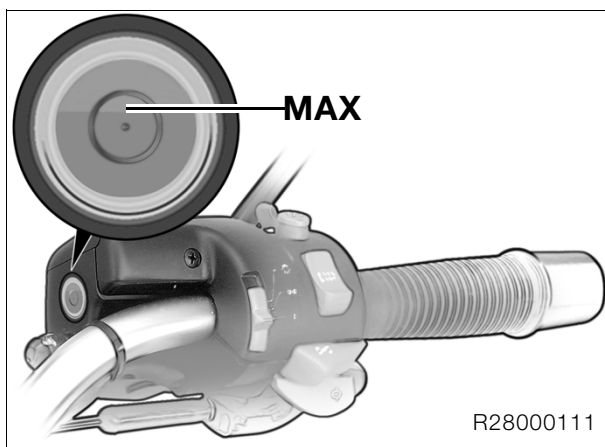


Important:

On account of the vacuum extraction process, it might not be possible to tell whether there is brake fluid in the hose of the brake bleeding device when it is free of bubbles.

In this case, bleed the system manually.

- Close the bleed screw.
- Disconnect the brake bleeding device from the bleed screw.
- The procedure for changing the brake fluid in the right brake caliper is the same as that for the left caliper.
- Assembly is the reverse of the disassembly procedure.
- Top up the brake fluid until the level reaches the "MAX" mark.
- Wipe the rim of the reservoir, the rubber gaiter and the cover to remove brake fluid, and carefully reassemble the components.
- If necessary, resecure the handlebars in the correct position (punch marks aligned) in accordance with the tightening sequence.
- Check the function of the brake system.
- Recheck the brake-fluid level.
- Place the motorcycle on its centre stand.
- Turn the handlebars to the **right**.



Required level with new brake pads:

(Initial fill quantity) MAX
(exactly between the centre (point) of the sight glass and the top edge of the marking ring)

- Handlebar centred.
- Check that the front wheel is on the ground.

Minimum fluid level

Brake pads worn
not less than the centre of the sight glass

Brake fluid.....DOT 4



Tightening torque:

Front brake caliper bleed screw 9 Nm

Handlebars tightening sequence:

1. Front connection to system
in direction of travel..... 21 Nm
2. Rear connection in direction of travel 21 Nm

34 00 035 [Without Integral ABS] Bleeding/changing brake fluid in rear system



Note:

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

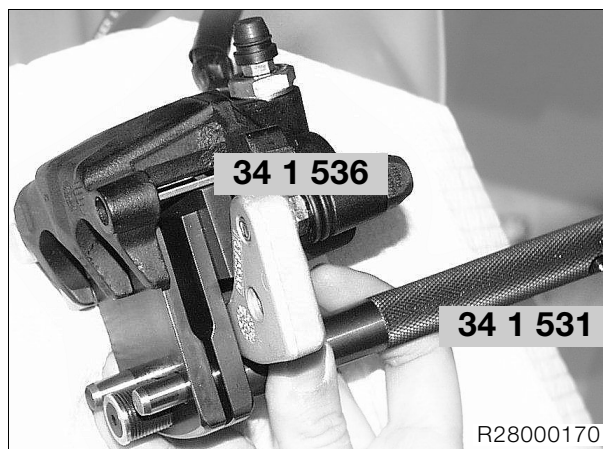
If other devices are used, comply with their manufacturers' instructions.



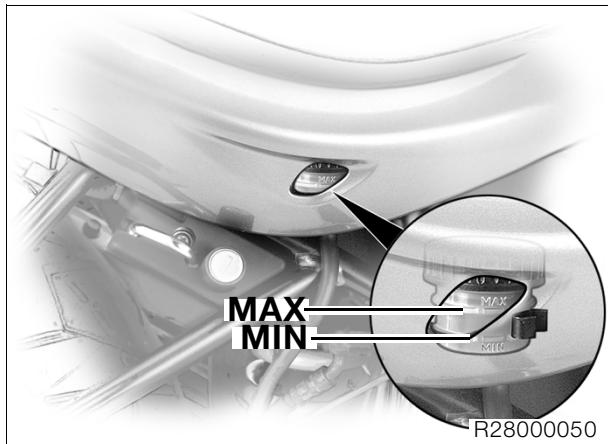
Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

- Place motorcycle on its centre stand.
- Remove right-hand rear panel if necessary.
- Remove rear reservoir cap, draw off the old brake fluid and clean the reservoir.
- Refit the reservoir cap.
- Remove the brake caliper.
- Remove rear brake pads.
- Move the brake caliper to a horizontal position.



- Use the reset device, **BMW No. 34 1 531**, and the adapter, **BMW No. 34 1 536**, to press the pistons completely back and to position them.
- Remove reservoir cap with rubber diaphragm, draw off the old brake fluid and clean the reservoir.



- Assembly is the reverse of the disassembly procedure.
- Check the function of the brake system.
- Recheck the brake-fluid level.

Minimum fluid level

Brake pads worn not less than

..... "MIN"

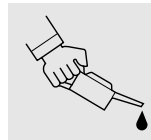
Brake fluid DOT 4



Tightening torque:

Rear brake caliper bleed screw 6 Nm

Brake caliper to rear wheel drive 40 Nm



- Top up the brake fluid level to the "MAX" mark.



Important:

While bleeding the system, do not allow the brake fluid level to drop below the "MIN" mark, as otherwise air will be drawn into the brake system. Bleed the system again if this happens.

- Connect the brake bleeding device and open the bleed screw.
- Draw off brake fluid until it emerges clear and free from air bubbles.



Important:

On account of the vacuum extraction process, it might not be possible to tell whether there is brake fluid in the hose of the brake bleeding device when it is free of bubbles. In this case, bleed the system manually.

- Close the bleed screw.
- Top up the brake fluid until the level reaches the "MAX" mark.

34 00 090 [Integral ABS] Changing/bleeding brake fluid in wheel circuit

Change brake fluid in wheel circuit once a year (Inspection IV)



Warning:

All repair and maintenance work on the BMW Integral ABS should be carried out by specially trained personnel. Maintenance and repair procedures and processes should be strictly observed. Use only new brake fluid from an unopened container.



Note:

This description applies to brake filling and bleeding devices with vacuum extraction of the brake fluid. If other devices are used, comply with their manufacturers' instructions.

34 00 070 [Integral ABS] Bleeding/changing brake fluid in front wheel circuit



Important:

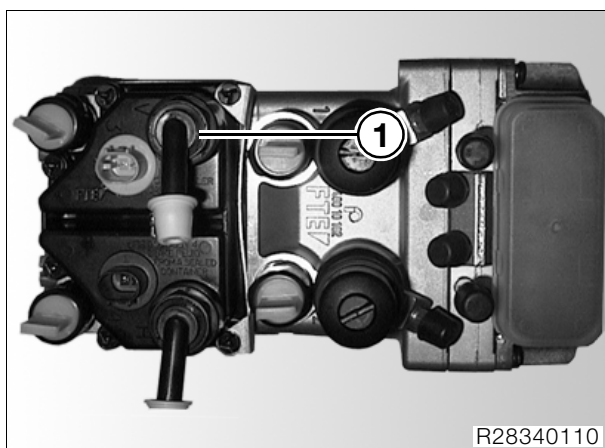
Integral brakes, the rear brake must be ready for use.

- Remove fuel tank.



Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.



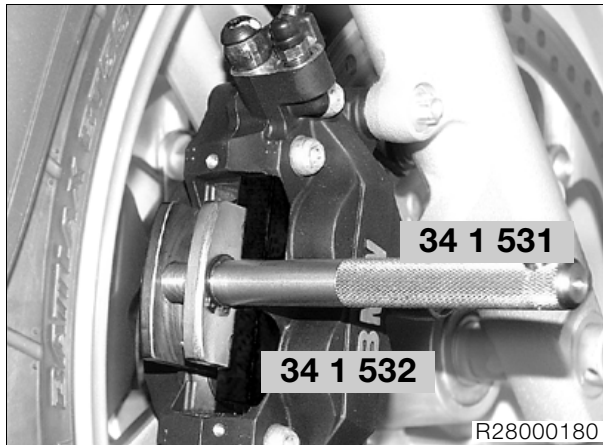
- Open front wheel circuit reservoir (1).

- Draw off the old brake fluid from the wheel circuit reservoir.
- Remove the front left and right brake pads.



Important:

Only use the piston reset device, **BMW No. 34 1 531**, if the wheel circuit reservoir cover is open.



- Use the reset device, **BMW No. 34 1 531**, and the positioning piece, **BMW No. 34 1 532**, to press the brake caliper pistons completely back and to position them.
- Wrap cloths around the left and right brake calipers.
- **[bleed only]** The front wheel circuit should be bled only. (→ 00.45)
- Draw off the old brake fluid from the wheel circuit reservoir.
- Refill the front wheel circuit reservoir (1) with new brake fluid.
- Connect the brake bleeding device to the bleed screw of the left brake caliper, but **do not switch it on**.



Note:

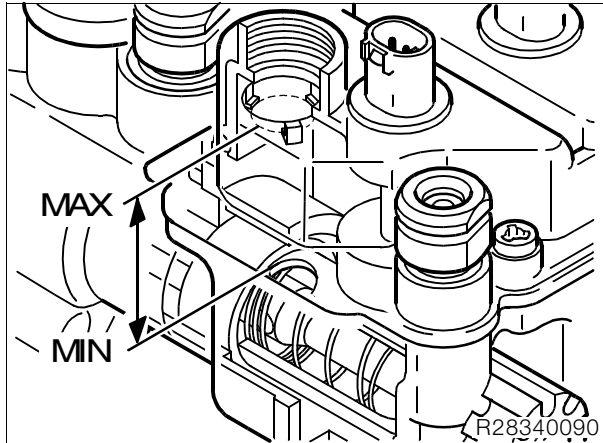
If necessary, use a cable tie to secure the bleed hose to the bleed screw.

- Switch on the ignition.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.



Important:

The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system. Bleed the system again if this happens.

- Very gently pull the handbrake lever until the pump just starts up.
- Open the bleed screw, while continuously topping up the wheel circuit reservoir with new brake fluid.
- Pump out the brake fluid under virtually no pressure to begin with, then vary the brake pressure.



Note:

The higher the brake pressure the faster the fluid is pumped through the system, which means that the level in the wheel circuit reservoir drops all the more rapidly.

- Pump off brake fluid until it emerges clear and free from air bubbles.
- Close the bleed screw.
- Release the brake.
- Disconnect the brake bleeding device from the bleed screw.

- Connect the brake bleeding device to the bleed screw of the right brake caliper, but **do not switch it on**.



Note:

If necessary, use a cable tie to secure the bleed hose to the bleed screw.

- The procedure for changing the brake fluid in the right brake caliper is the same as that for the left caliper.
- Close the bleed screw.
- Release the brake and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.



Important:

After changing and/or bleeding the brakes, always top up the fluid in the wheel circuit reservoir to the correct level in accordance with the instructions.

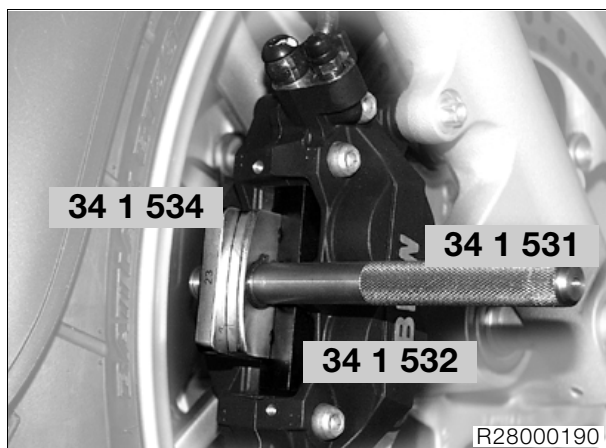


Front wheel circuit reservoir filling instructions



Important:

Integral brakes, the rear brake must be ready for use.



- Top up fluid in front wheel circuit reservoir to “MAX”
- Use adapter 23, **BMW No. 34 1 534**, in the reset device, **BMW No. 34 1 531/532**, on both front brake calipers, and screw on the reset device until the adapter is secure.



Important:

The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system. Bleed the system again if this happens.

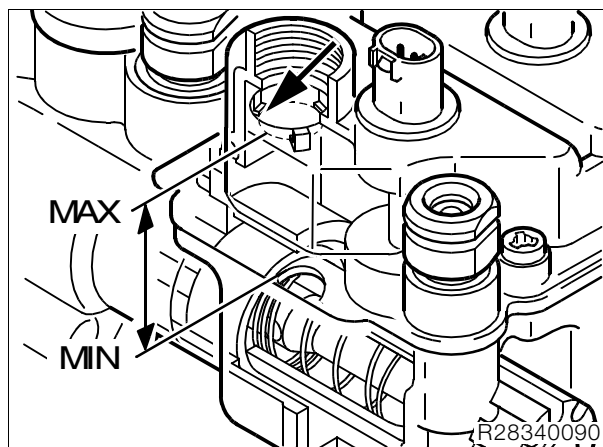
- Switch on the ignition.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.

- Squeeze the handbrake lever until the front brake caliper pistons are butt against the reset device, **BMW No. 34 1 531**.
- Switch off the ignition.



- Top up the fluid in the wheel circuit reservoir until one of the three protrusions in the filler neck just touches the surface of the fluid (arrow).
- Remove the reset device, **BMW No. 34 1 531/532**, with adapter, **BMW No. 34 1 534**.



Warning:

The wheel circuit reservoir may not overflow while the brake pads/brake calipers are being fitted.

- If necessary, carefully press back the pistons so that the pad just fits in.
- Install front brake pads.
- Hand-tighten front wheel circuit reservoir cap.
- Perform a function check on the brake system with the ignition switched on.



Important:

Once all the work has been completed, perform a bleed test using the **BMW MoDiTeC**.

- Install fuel tank.

Brake fluidDOT 4



Tightening torque:

Front brake caliper bleed screw 9 Nm

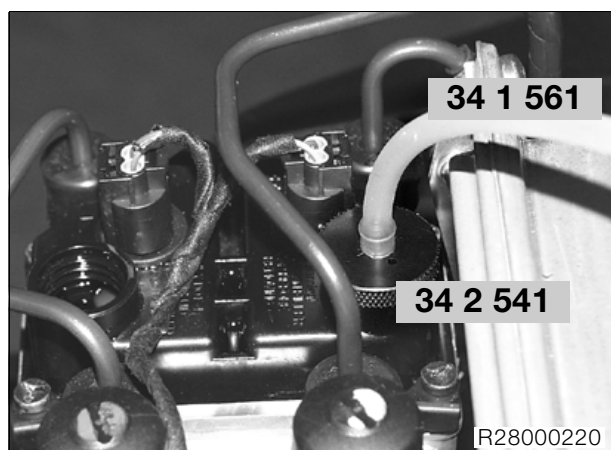
The front wheel circuit should be bled only

- Draw off the old brake fluid from the wheel circuit reservoir.
- Remove the front right and left brake pads, press back and position the pistons.
- Wrap cloths around the left and right brake calipers.



Important:

Integral brakes, the rear brake must be ready for use.



- Fill the front wheel circuit reservoir to the “MAX” marking and screw on the cover, **BMW No. 34 2 541**.
- Connect the 1.5 m (4.9214 ft) silicone hose, **BMW No. 34 1 561**, to the left brake caliper bleed screw.



Note:

If necessary, use a cable tie to secure the bleed hose to the bleed screw.

- Switch on the ignition.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.

- Very gently pull the handbrake lever until the pump just starts up.
- Open the bleed screw.
- Pump the brake fluid at virtually no pressure until the hose is full of brake fluid.
- Position the end of the hose on the cover, **BMW No. 34 2 541**.
- Pump the brake fluid under virtually no pressure to begin with, then vary the brake pressure.



Warning:

The brake fluid must not foam in the hose.

If this should happen, follow the procedure for bleeding/changing brake fluid in the front wheel circuit.

(→ 00.42)

- Pump brake fluid through the system until it is clear and free from air bubbles.
- Close the bleed screw.
- Release the brake and remove the silicone hose, **BMW No. 34 1 561**.
- Fill the front wheel circuit reservoir to the “MAX” marking and screw on the cover, **BMW No. 34 2 541**.
- Connect the 1.5 m (4.9214 ft) silicone hose, **BMW No. 34 1 561**, to the right brake caliper bleed screw.
- The procedure for bleeding the right brake caliper is the same as that for the left caliper.
- Release the brake and switch off the ignition.
- Detach the silicone hose, **BMW No. 34 1 561**, from the bleed screw and empty it.
- Remove the cover, **BMW No. 34 2 541**.



Important:

After changing and/or bleeding the brakes, always top up the fluid in the wheel circuit reservoir to the correct level in accordance with the instructions.

- Fill front wheel circuit reservoir with brake fluid in accordance with instructions.
(→ 00.44)
- Perform a function check on the brake system with the ignition switched on.



Important:

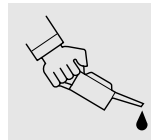
Once all the work has been completed, perform a bleed test using the **BMW MoDiTeC**.

Brake fluidDOT 4



Tightening torque:

Front brake caliper bleed screw 9 Nm



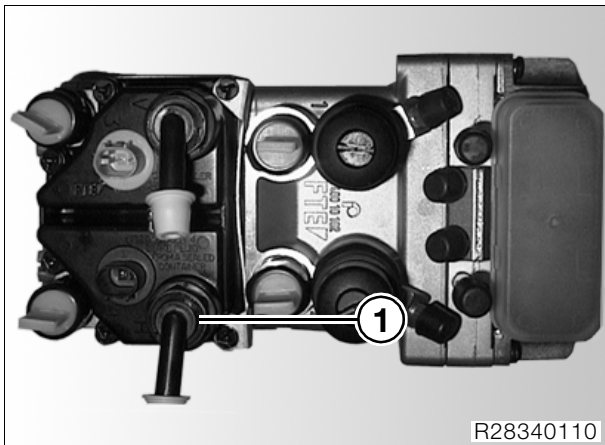
34 00 080 [Integral ABS] Bleeding/changing brake fluid in front wheel circuit

- Remove fuel tank.



Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

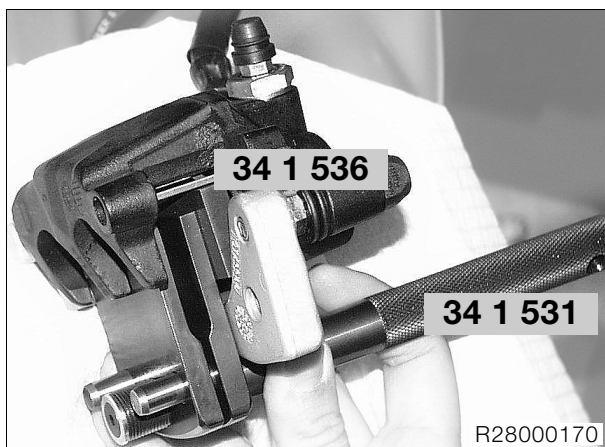


- Open rear wheel circuit reservoir (1).
- Draw off the old brake fluid from the wheel circuit reservoir.
- Remove rear brake pads.
- If necessary, press the brake pistons back by hand so that the reset device, **BMW No. 34 1 531**, can be used.



Important:

Only use the piston reset device, **BMW No. 34 1 531**, if the wheel circuit reservoir cover is open.



- Use the adapter, **BMW No. 34 1 536**, instead of the external brake pad.

- With the handle outwards, use the reset device, **BMW No. 34 1 531**, on the rear brake caliper to press back the pistons completely and to position them.
- Wrap a cloth around the brake caliper.
- **[bleed only]** The rear wheel circuit should be bled only.
(→ 00.49)
- Draw off the old brake fluid from the wheel circuit reservoir.
- Refill the rear wheel circuit reservoir (1) with new brake fluid.
- Connect the brake bleeding device to the bleed screw, but **do not switch it on**.



Note:

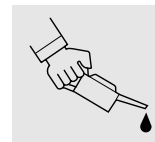
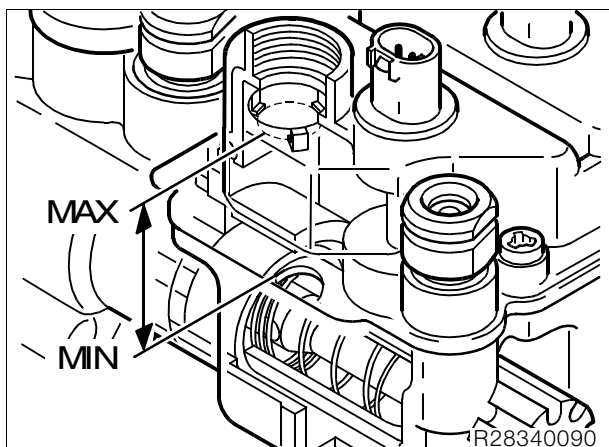
If necessary, use a cable tie to secure the bleed hose to the bleed screw.

- Switch on the ignition



Note:

After switching on the ignition, always wait for the BMW Integral ABS to complete its self-diagnosis. Do not operate the brake lever until self-diagnosis is complete.



Important:

The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system.

Bleed the system again if this happens.

- Very gently press the footbrake until the pump just starts up.
- Open the bleed screw, while continuously topping up the wheel circuit reservoir with new brake fluid.
- Pump out the brake fluid under virtually no pressure to begin with, then vary the brake pressure.



Note:

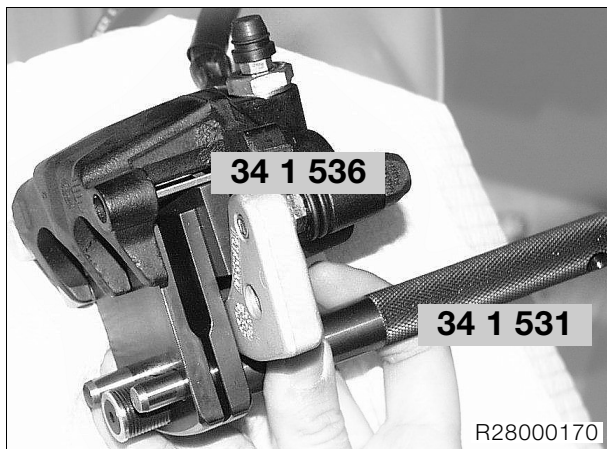
The higher the brake pressure, the faster the fluid is pumped through the system, which means that the level in the wheel circuit reservoir drops all the more rapidly.

- Pump off brake fluid until it emerges clear and free from air bubbles.
- Close the bleed screw.
- Release the brake and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.

Important:

After changing and/or bleeding the brakes, always top up the fluid in the wheel circuit reservoir to the correct level in accordance with the instructions.

Rear wheel circuit reservoir filling instructions



- Top up fluid in rear wheel circuit reservoir to "MAX".
- **Screw the reset device, BMW No. 34 1 531, to the adapter, BMW No. 34 1 536.**



Important:

The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system. Bleed the system again if this happens.

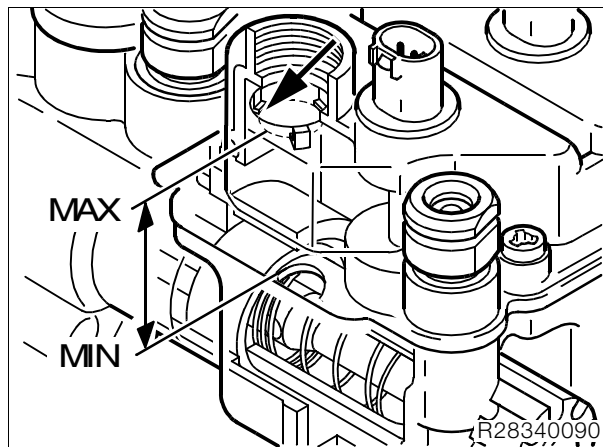
- Switch on the ignition.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.

- Press the foot brake lever until the rear brake caliper pistons rest on the reset device, **BMW No. 34 1 531**, and the adapter, **BMW No. 34 1 536**.
- Switch off the ignition.



- Top up the fluid in the wheel circuit reservoir until one of the three protrusions in the filler neck just touches the surface of the fluid (arrow).
- Remove the reset device, **BMW No. 34 1 531** with adapter, **BMW No. 34 1 536**.



Warning:

The wheel circuit reservoir may not overflow while the brake pads/brake calipers are being fitted.

- If necessary, carefully press back the pistons until the brake disc just fits between the brake pads.
- Fit the brake pads and brake caliper at the rear.
- Hand-tighten rear wheel circuit reservoir cap.
- Perform a function check on the brake system with the ignition switched on.



Important:

Once all the work has been completed, perform a bleed test using the **BMW MoDiTeC**.

- Performing a bleed test with **BMW MoDiTeC**. (→ 00.27)
- Install fuel tank.

Brake fluidDOT 4

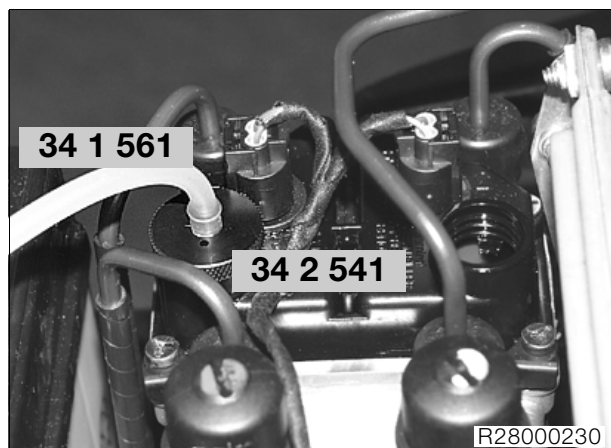


Tightening torque:

Rear brake caliper bleed screw 6 Nm
Brake caliper to rear wheel drive 40 Nm

The front wheel circuit should be bled only

- Draw off the old brake fluid from the wheel circuit reservoir.
- Remove the rear brake pads, press back and position the pistons.
- Wrap a cloth around the rear brake caliper.



- Fill the rear wheel circuit reservoir to the “MAX” marking and screw on the cover, **BMW No. 34 2 541**.
- Connect the 1.5 m (4.9214 ft) silicon hose, **BMW No. 34 1 561**, to the bleed screw.



Note:

If necessary, use a cable tie to secure the bleed hose to the bleed screw.

- Switch on the ignition.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.

- Very gently press the footbrake until the pump just starts up.
- Open the bleed screw.
- Pump the brake fluid at virtually no pressure until the hose is full of brake fluid.
- Position the end of the hose on the cover, **BMW No. 34 2 541**.
- Pump the brake fluid under virtually no pressure to begin with, then vary the brake pressure.



Warning:

The brake fluid must not foam in the hose. If this should happen, follow the procedure for bleeding/changing brake fluid in the rear wheel circuit.

(→ 00.46)

- Pump brake fluid through the system until it is clear and free from air bubbles.
- Close the bleed screw.
- Release the brake and switch off the ignition.
- Detach the silicone hose, **BMW No. 34 1 561**, from the bleed screw and empty it.
- Remove the cover, **BMW No. 34 2 541**.



Important:

After changing and/or bleeding the brakes, always top up the fluid in the wheel circuit reservoir to the correct level in accordance with the instructions.

- Fill rear wheel circuit reservoir with brake fluid in accordance with instructions.
(→ 00.48)
- Perform a function check on the brake system with the ignition switched on.



Important:

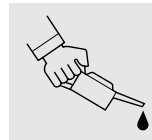
Once all the work has been completed, perform a bleed test using the **BMW MoDiTeC**.

Brake fluidDOT 4



Tightening torque:

Rear brake caliper bleed screw 6 Nm
Brake caliper to rear wheel drive 40 Nm



34 00 091 [Integral ABS] Changing/bleeding brake fluid in control circuit

Change brake fluid in control circuit every 2 years (Inspection IV)



Warning:

All repair and maintenance work on the BMW Integral ABS should be carried out by specially trained personnel. Maintenance and repair procedures and processes should be strictly observed. Use only new brake fluid from an unopened container.

34 00 072 [Integral ABS] Bleeding/changing brake fluid in front control circuit



Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.

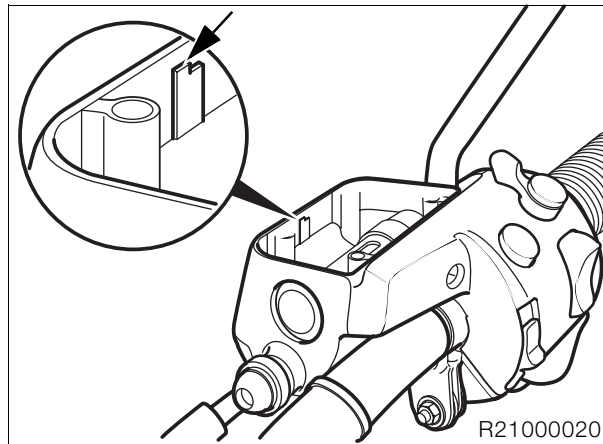
- Place the motorcycle on its side stand and turn the handlebars all the way to the left.
- Repeatedly and slowly pull the front brake lever lightly to expel air from brake master cylinder.
- Place motorcycle on its centre stand.
- Remove fuel tank.
- Place the front wheel and the handlebars such that the brake fluid expansion tank is level.
- Tighten the handlebar and secure the front wheel in this position.



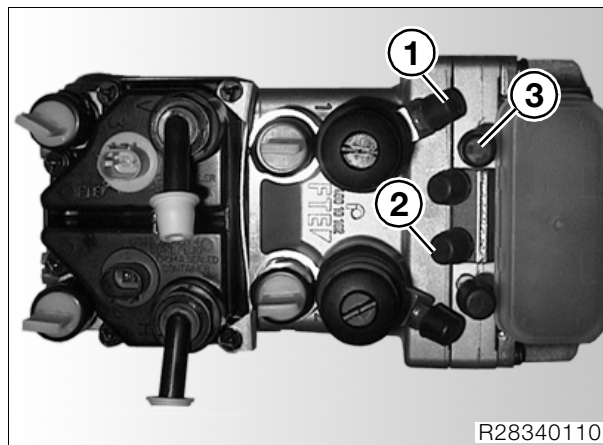
Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

- Wrap a cloth around the expansion tank.
- Remove front reservoir cap with rubber diaphragm, draw off the old brake fluid and clean the reservoir.



- Top up the brake fluid level to the "MAX" mark (arrow).



- Connect the bleed device to the front dosing cylinder bleed screw (1), but **do not switch it on**.



Warning:

When changing and bleeding the control circuit brake fluid, do not use vacuum extraction.

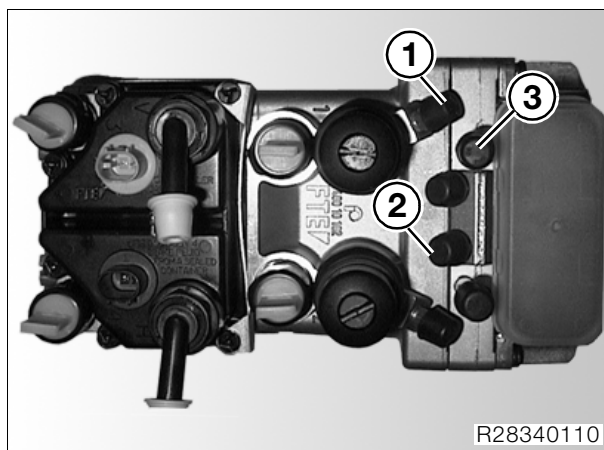
Important:

During the fluid-change and bleeding procedure, make sure that the fluid replenishing hole is always below the level of the brake fluid, otherwise air will be drawn into the brake system. Bleed the system again if this happens.

- Shift the handbrake lever to position 4.

Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.



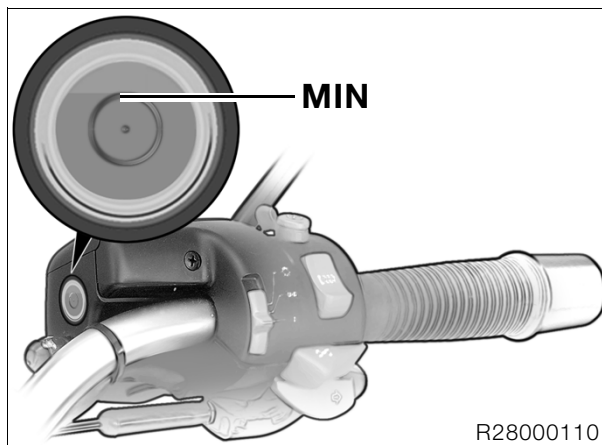
- In sequence, bleed the:
 - front dosing cylinder (1),
 - front integral circuit (2)
 - front control circuit (3) and,
 - again, front dosing cylinder (1)using the ring spanner, **BMW No. 34 2 532**, and in accordance with rules for bleeding.

Rules for bleeding:

1. Pull the brake lever slowly until the brake light switch clicks (snifter hole closed).
2. Open the bleed screw.
3. Pull the brake lever fully and close the bleed screw.
4. Release the brake lever slowly.
5. Repeat steps 1 to 4 until the brake fluid is clear and has no bubbles.

- Fit the protective caps on the bleed screws.
- Top up the brake fluid until the level reaches the “MAX” mark.
- Wipe the rim of the reservoir, the rubber gaiter and the cover to remove brake fluid, and carefully reassemble the components.
- Resecure the handlebars in the correct position (punch marks aligned) in accordance with the tightening sequence.

- Recheck the brake fluid level.
- Place the motorcycle on its centre stand.
- Turn the handlebars to the **left**.



Required level

not below MIN
(Top edge of the marking ring)

Important:

Once all the work has been completed, perform a bleed test using the **BMW MoDiTeC**.

- Fit fuel tank.

Brake fluidDOT 4



Tightening torque:

Handlebars tightening sequence:

1. Front connection to system
in direction of travel..... 21 Nm
2. Rear connection in direction of travel 21 Nm

34 00 082 [Integral ABS]

Bleeding/changing brake fluid in rear control circuit

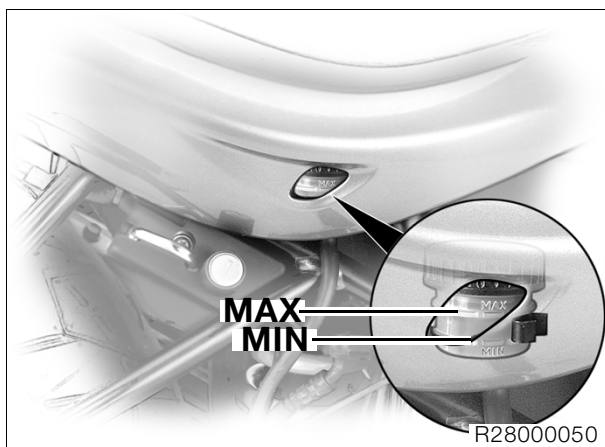
- Place motorcycle on its centre stand.
- Remove fuel tank.



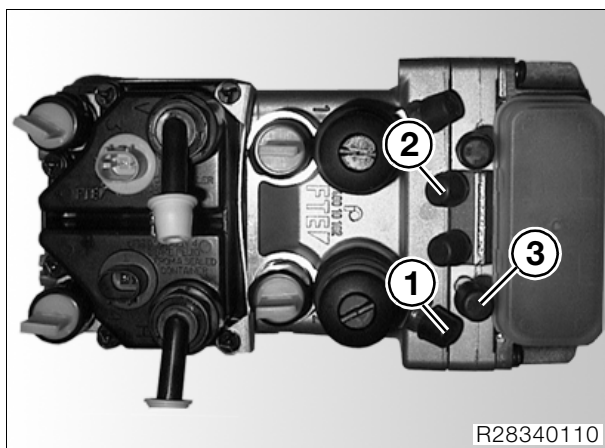
Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

- Remove right-hand rear panel if necessary.
- Remove rear reservoir cap with rubber diaphragm, draw off the old brake fluid and clean the reservoir.



- Top up the brake fluid level to the "MAX" mark.



- Connect the bleed device to the rear dosing cylinder bleed screw (1), but **do not switch it on**.



Warning:

When changing and bleeding the control circuit brake fluid, do not use vacuum extraction.



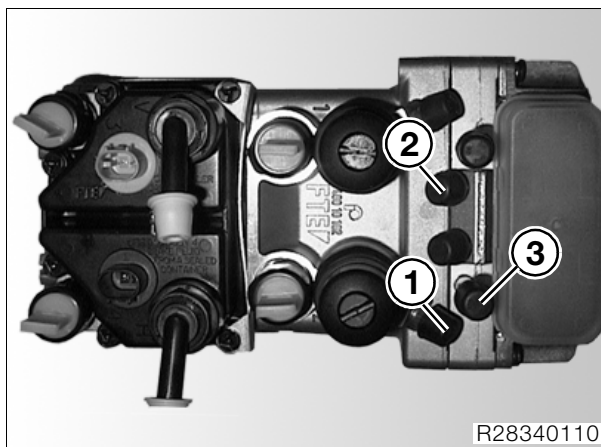
Important:

While bleeding the system, do not allow the brake fluid level to drop below the "MIN" mark, as otherwise air will be drawn into the brake system. Bleed the system again if this happens.



Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.



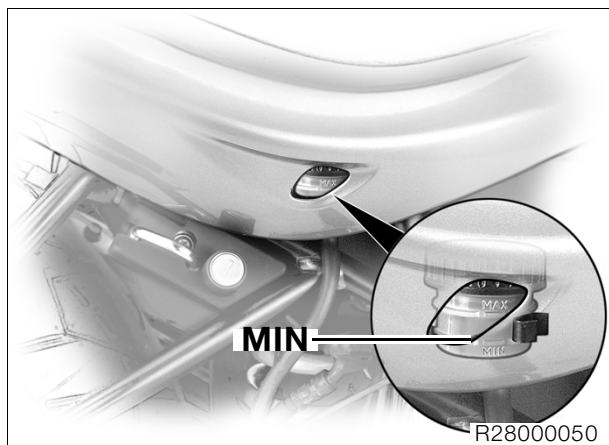
- In sequence, bleed the:
 - rear dosing cylinder (1),
 - rear integral circuit (2),
 - front control circuit (3) and,
 - again, front dosing cylinder (1)using the ring spanner, **BMW No. 34 2 532**, and in accordance with the rules for bleeding.

Rules for bleeding:

1. Press the brake lever slowly until the brake light switch clicks (sniffer hole closed).
2. Open the bleed screw.
3. Press the brake lever fully and close the bleed screw.
4. Release the brake lever slowly.
5. Repeat steps 1 to 4 until the brake fluid is clear and has no bubbles.

- Fit the protective caps on the bleed screws.

- Correct the brake fluid level.
- Wipe the rim of the reservoir, the rubber gaiter and the cover to remove brake fluid, and carefully reassemble the components.
- Place the motorcycle on its centre stand.



Required level

not below MIN



Important:

Once all the work has been completed, perform a bleed test using the **BMW MoDiTeC**.

- Performing a bleed test with **BMW MoDiTeC**.
(→ 00.27)
- Fit fuel tank.

Brake fluidDOT 4

Checking clutch operating fluid level

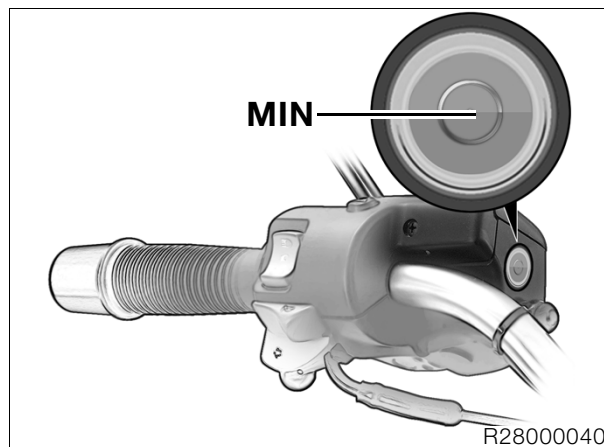
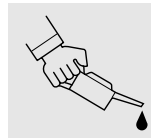
(Inspections II and III)



Important:

Keep the brake fluid in the clutch operating system away from painted motorcycle parts as brake fluid attacks paint.

- Support the motorcycle on its **side stand**.
- Turn the handlebars to the **right**.



Required level with a new clutch liner:

..... Half way up sight glass



Note:

As the clutch lining wears, the fluid level in the reservoir rises.

- If necessary, remove reservoir cover with insert.
- Correct the fluid level. Mark in reservoir: same as brake circuit.
- Reinstall the reservoir cover with insert.
- Tighten the reservoir cover carefully and without using force.

Brake fluidDOT 4

21 52 005 Changing the clutch fluid

(Inspection IV)
at least every 2 years



Note:

The description applies to a brake system filling and bleeding device with vacuum extraction of brake fluid at the bleed line.
If other devices are used, comply with their manufacturers' instructions.

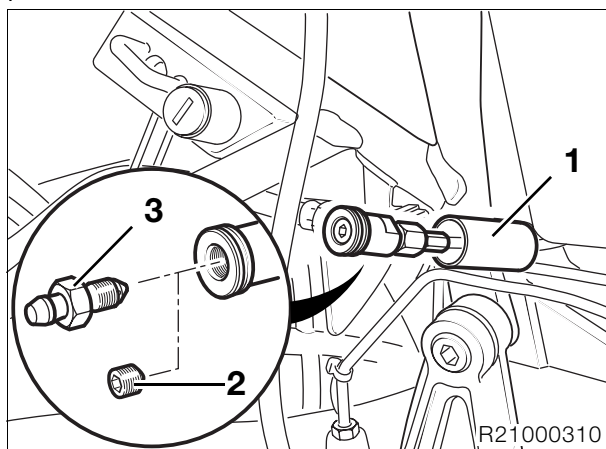
- Place motorcycle on its centre stand.
- Place the handlebars and the clutch fitting so that the clutch fluid expansion tank is level.
- Tighten the clutch fitting and secure the front wheel in the position.



Important:

Keep the brake fluid in the clutch operating system away from painted motorcycle parts as brake fluid attacks paint.

- Remove reservoir cover with rubber diaphragm.
- Draw off brake fluid and clean the reservoir.
- Top up the brake fluid.



- Pull back protective hose (1).
- Wrap a cloth around the filler adapter.
- Remove socket-head grub screw (2) from the filler adapter.
- Connect the brake bleeding device to bleed screw (3).

- Screw the bleed screw all the way into the filler adapter (valve in filler adapter closed).



Important:

While bleeding the system, do not allow the brake fluid level to drop below the bottom edge of the ring mark, as otherwise air will be drawn into the clutch system. Bleed the system again if this happens.

- Open the bleed screw by half a turn (valve open).
- Draw off brake fluid until it emerges clear and free from air bubbles.
- Remove the bleed screw.
- Disconnect the brake bleeding device from the bleed screw.



Note:

On account of the vacuum extraction process, it might not be possible to tell whether there is brake fluid in the hose of the brake bleeding device when it is free of bubbles.
In this case, bleed the system manually.

- Reinstall socket-head grub screw (2) in the filler adapter.



Important:

The motorcycle is not permitted on the road without the grub screw in place and secure in the filler adapter.

- Correct the fluid level.
- Reinstall the reservoir lid with rubber diaphragm in position.
- Tighten the reservoir cover carefully and without using force.
- Align the clutch fitting with the mark on the handlebar.
- Resecure the handlebar in the correct position (punch marks aligned).
- Recheck the fluid level.



Tightening torque:

Grubscrew in filler adapter 10 Nm

Consumables

Brake fluid.....DOT 4

Checking tightness of rear wheel studs

(Inspection I)

- Tighten the rear wheel studs with a torque wrench.



Tightening torque:

Securing screws for rear wheel 105 Nm

Checking rear wheel bearing play by tilting wheel

(Inspection III)

- Tilt the rear wheel to and fro across its axle.
- If play is detected, fit new shims to rear wheel drive or replace bearings.

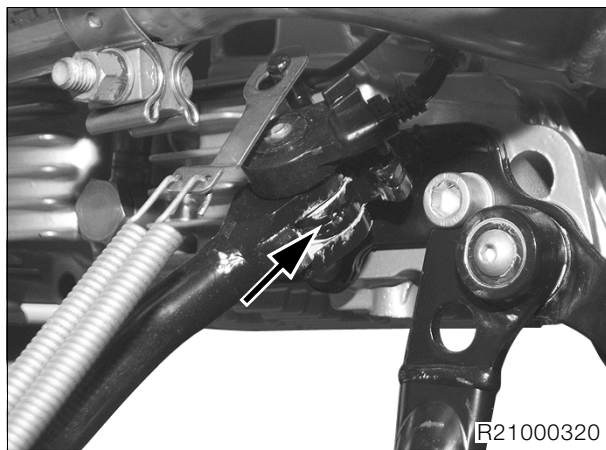
Checking swinging arm bearings, adjusting if necessary

(Inspections I and III)

- Grip rear tyre and try to move it sideways, bracing against the frame.

Greasing the side stand pivot

(Inspections I, II and III)



- Check free movement of side stand and grease if necessary.
- Grease pivot point (arrow).

Lubricant:

..... Shell Retinax EP2

Checking function of side stand contact switch

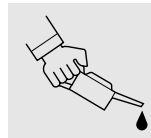
(Inspections I, II, III and IV)

- Place the motorcycle on its centre stand.
- Retract the side stand, if extended.
- Disengage the clutch and select a gear.
- Start the engine, without releasing the clutch lever.
- Extend the side stand.



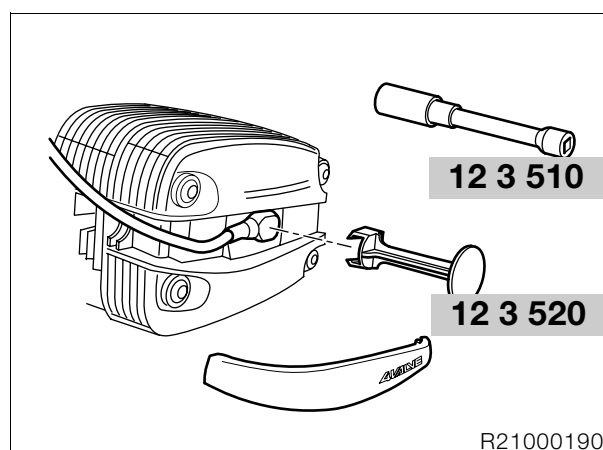
Note:

The side-stand switch is in correct working order if the engine stops when the side stand is extended.



12 12 011 Checking/replacing spark plugs

(Inspection II) check/(Inspection III) replace



- Pull off spark the plug caps using the special puller, **BMW No. 12 3 520**.
- Remove the spark plugs using the spark plug wrench, **BMW No. 12 3 510**.



Important:

Do not bend electrodes, there is a risk of breaking them.

Spark plug:..... NGK BKR 7 EKC

Electrode gap: 0.8 mm (0.0314 in)

Wear limit: 1.0 mm (0.0393 in)

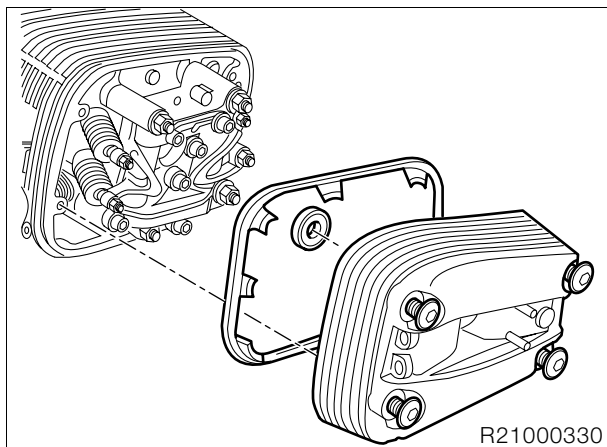


Tightening torque:

NGK BKR7EKC spark plug 25 Nm

11 12 009 Tightening cylinder heads

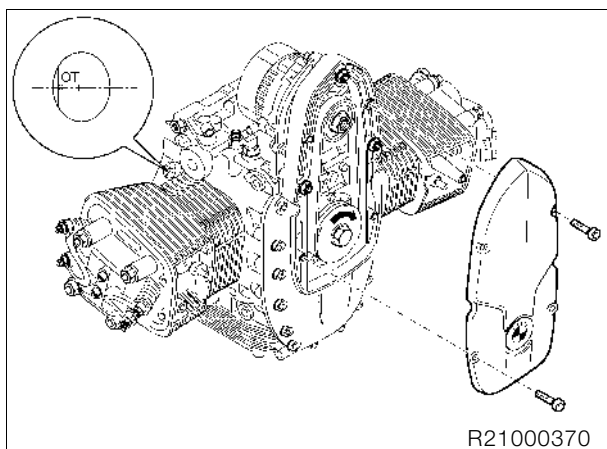
(Inspection I)



- Remove cylinder head cover.



Important:
Catch escaping oil.



- Select a gear and turn the rear wheel, or set the piston to TDC on the ignition stroke by turning the belt pulley.

Top dead centre on ignition stroke:

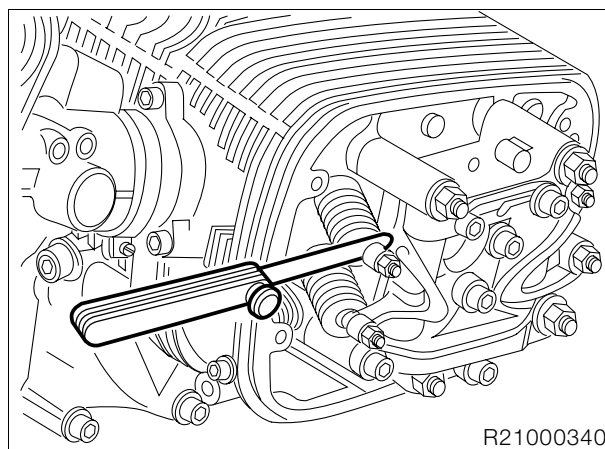
- The TDC mark is visible and the inlet and exhaust valves in the cylinder concerned are closed.
- Tighten cylinder head nuts.

Tightening procedure after 1,000 km (600 miles)

- Tighten the cylinder head nuts in a crosswise pattern one by one
 - Slacken off one nut at a time
 - Tighten nut to initial torque 20 Nm
 - Angle tighten nut 180°
- Undo/tighten M 10 bolt 40 Nm

11 34 004 Checking/adjusting valve clearances

(Inspections I, II and III)



- Check valve clearance with feeler gauge and, if necessary, correct with adjusting screw.

Valve clearances with engine cold

(max. 35 °C/95 °F):

Intake valve	0.15 mm (0.0059 in)
Exhaust valve	0.30 mm (0.0118 in)



Tightening torque:

Locknut 8 Nm

- Check valve clearance, it should be possible to pull the feeler gauge between the valve stem and adjusting screw with little resistance.
- Assembly is the reverse of the disassembly procedure.



Important:

Make sure that all seals are correctly seated. Seals and sealing faces must be free from oil and grease.



Tightening torque:

Cylinder head cover 8 Nm

13 60 110 Checking throttle cable freedom of movement, checking for chafes and kinks, replacing if necessary, checking throttle cable play Checking/adjusting idle speed and throttle valve synchronization

(Inspections I, II and III)

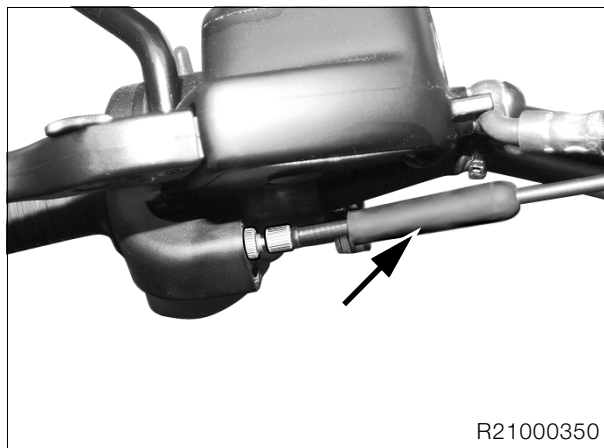
- Test-ride the motorcycle until the engine is warm, or allow the engine to idle for approximately 10 minutes.



Important:

Do not allow the engine to idle for longer than 20 minutes.

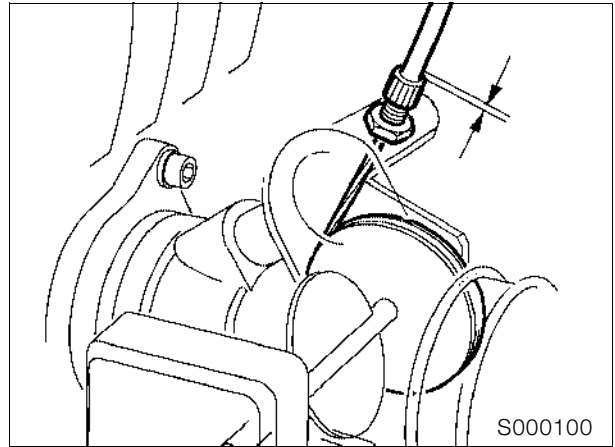
Oil temperature:.....at least 90 °C (130 °F)



- Push back rubber cap (arrow) on throttle and choke cables.
- Use the adjusting screws to adjust play of throttle and choke cables.

Play of choke cable: approx. 1 mm (0.0393 in)

Play of throttle cable: approx. 1 mm (0.0393 in)



- Turn the adjusting screws to adjust the play of the cables for the left and right throttle valves.

Play of throttle cable:approx. 2 mm (0.0787 in)

- Connect the **BMW** Synchro hose to the vacuum adapter and connect the cables to **BMW** MoDiTeC.
- Adjust idle speed by turning the air bypass screws while checking that the carburetors are balanced.

Idle speed: 1,100 ±50 rpm



Note:

Make sure that both throttle valves are closed.



Important:

The sealed throttle valve stop screws may not be altered since this may result in the manufacturer having to readjust the basic idling flow rate

- Carefully turn the adjusting screw of the left throttle valve and reduce play until the reading of the Synchro tester changes.
- Turn the adjusting screw very slightly in the opposite direction until the reading returns to its original value.
- Tighten the locknut to secure.



Note:

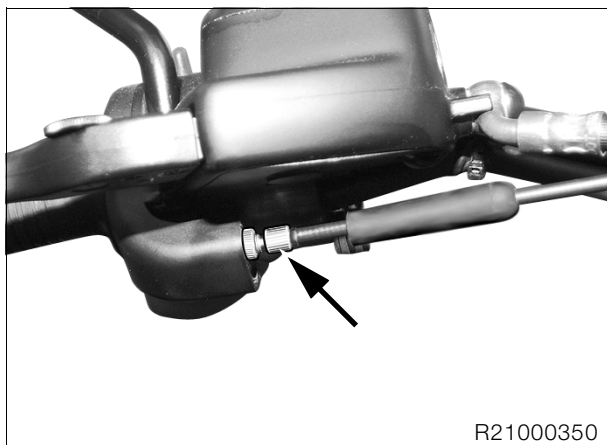
Make sure that the reading does not change when you tighten the locknut.
Adjust Bowden throttle cable play at throttle valve so that no play is perceptible, but the throttle valve reliably contacts the stop screw (no strain on cable).

- Adjust the right throttle valve in the same way.



Note:

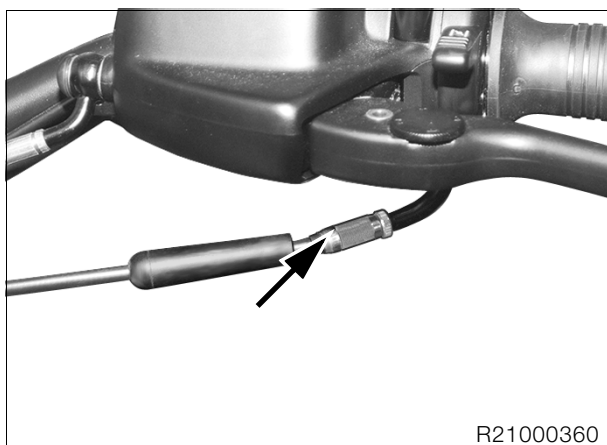
If play is zero, the throttle butterflies may chatter.



- Adjust the throttle cable play using the adjusting screw (arrow).
- Push the rubber cap into position over the adjusting screw.

Throttle cable play:

..... approx. 0.5 mm (0.0197 in)



- Use the adjusting screw (arrow) to adjust play of the choke cable to zero.

- Push the rubber cap into position over the adjusting screw.
- Move the handlebars all the way from left to right and check the settings. Make sure that engine speed does not vary when the handlebars are moved in this way.
- Repeatedly open the throttle gradually and increase engine speed from idle to approximately $n = 2,500$ rpm to check throttle-valve synchronisation. (Readings shown by Synchro tester must increase and decrease together). If necessary, correct by turning the adjusting screws of the throttle-valve Bowden cable.



Note:

Make sure that when the throttle grip is released both throttle valves return to their fully closed positions.

- Tighten the locknuts and recheck carburettor balance.
- Seal off the vacuum bores.

Final inspection with road safety and functional check

(Inspections I, II, III and IV)

Road safety check

- Check wheels and tyres.
- Check/correct tyre pressures.
- Wait at least 10 minutes after the trial run/road test before checking/correcting engine oil level.

Tyre pressures:

Solofront 2.2 bar (31.3 bar)
..... rear 2.5 bar (35.6 psi)
With pillion passenger front 2.5 bar (35.6 psi)
..... rear 2.7 bar (38.4 psi)
With pillion passenger and
luggage front 2.5 bar (35.6 psi)
..... rear 2.9 bar (41.2 psi)

Roadworthiness check

- Lights
- Indicator/warning lights
- Horn
- Instruments
- Special equipment
- Clutch
- Gear shift
- Steering
- Foot brake and handbrake
- If necessary, take the motorcycle for a test ride.

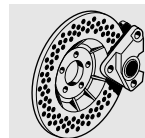




34 Brakes

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[Integral ABS]

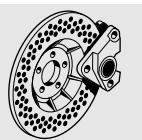
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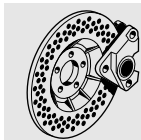
[Integral ABS] Removing/installing brake lines	27
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Removing and refitting front brake line	28
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Removing and refitting rear brake line	29
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Technical Data		R 1150 R
Brake fluid		DOT 4
Front wheel		
Colour of identification mark on brake calipers/brake pads		green
Brake disc diameter	mm (in)	320 (12.5987)
Brake disc thickness	mm (in)	5.0 (0.1969)
Minimum thickness	mm (in)	4.5 (0.1772)
Brake pad surface area	cm ² (sq in)	86 (13.33)
Piston diameter in brake caliper	mm (in)	32/36 (1.2599/1.4173)
Piston diameter in handlebar lever cylinder	mm (in)	16 (0.6299)
Sensor gap, front	mm (in)	0.2...1.7 (0.0079...0.0670) (active sensor)
Brake pad lining		Sintered metal
Minimum lining thickness, front	mm (in)	1.0 (0.0393)
Rear wheel		
Brake disc diameter	mm (in)	276 (10.8663)
Brake disc thickness	mm (in)	5.0 (0.1969)
Minimum thickness	mm (in)	4.5 (0.1772)
Brake pad surface area	cm ² (sq in)	34 (5.27)
Piston diameter in brake caliper	mm (in)	26/28 (1.0236/1.1023) with insulating piston
Piston diameter in foot brake cylinder	mm (in)	12 (0.4724)
	mm (in)	[Integral ABS] 16 (0.6299)
Sensor gap, rear	mm (in)	0.2...1.7 (0.0079...0.0670) (active sensor)
Brake pad lining		Organic
Minimum lining thickness, rear	mm (in)	1,0 (0.0393)
		If the brake disc is visible through the bore in the wheel-side brake pad, the brake lining is worn to its minimum permissible thickness.
[ABS] Braking system		BMW Integral ABS, partially integrated



34 11 Removing and refitting front brake caliper



Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

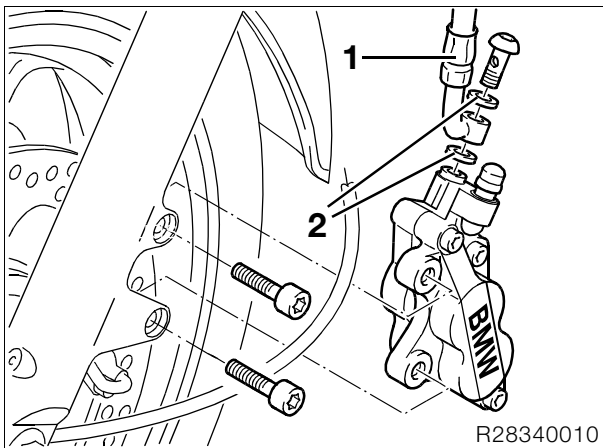
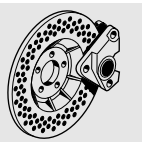
- Drain the brake system.
- **[Integral ABS]** Draining front wheel circuit (→ 34.15).

- Fill and bleed the brake system.
- **[Integral ABS]** Bleeding/filling the front wheel circuit (→ 34.21).

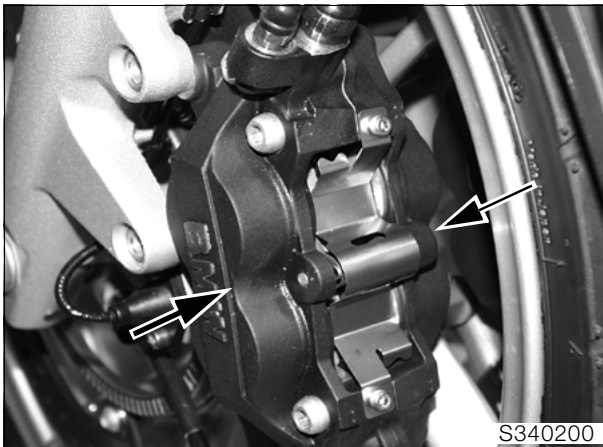


Tightening torque:

Brake caliper to fork slider 30 Nm
Brake hose to brake caliper 18 Nm
Brake caliper bleed screw 9 Nm



- Disconnect brake line (1).
- Remove screws securing the brake caliper.



- Press the brake pads/pistons back against the brake disc (arrow) by pressing the brake caliper.



Important:

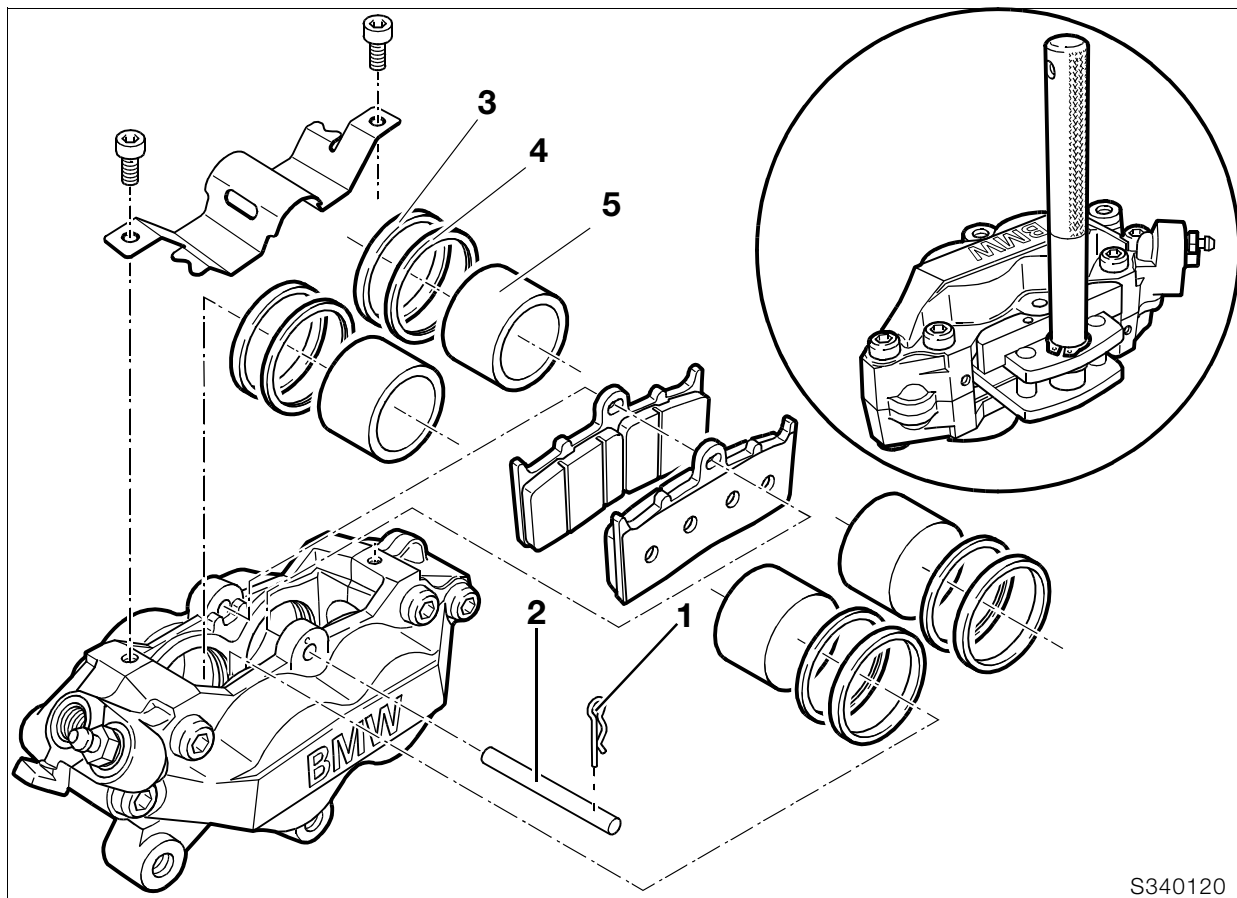
Do not damage brake pads.

- Carefully remove the brake caliper.
- Installation is the reverse of the removal procedure.



Important:

Replace the sealing rings (2) in the brake line.
Do not damage the brake pads when installing.



S340120

34 11 521 Disassembling and assembling front brake caliper



Important:

Do **not separate** the brake caliper halves.

- Remove retaining plate.
- Remove the split-pin keeper (1) from retaining pin.
- Remove retaining pin (2).
- Remove brake pads.
- Close the bleed screw.
- Use the spacer, **BMW No. 34 1 520**, to secure the two opposite brake pistons.
- Place a cloth between the other pair of pistons.



Important:

Ensure that fingers do not become trapped between the pistons; there is a risk of injury.

- Using the compressed-air gun on the brake line connection, **carefully** force out the brake pistons (5).
- Remove the two sealing rings from the brake piston holes.
- Inspect the brake caliper piston for hairline cracks, score-marks and other damage.
- Coat the new sealing rings (3, 4) with brake fluid and fit them.
- Coat the brake caliper pistons (5) with brake fluid and fit them.



Important:

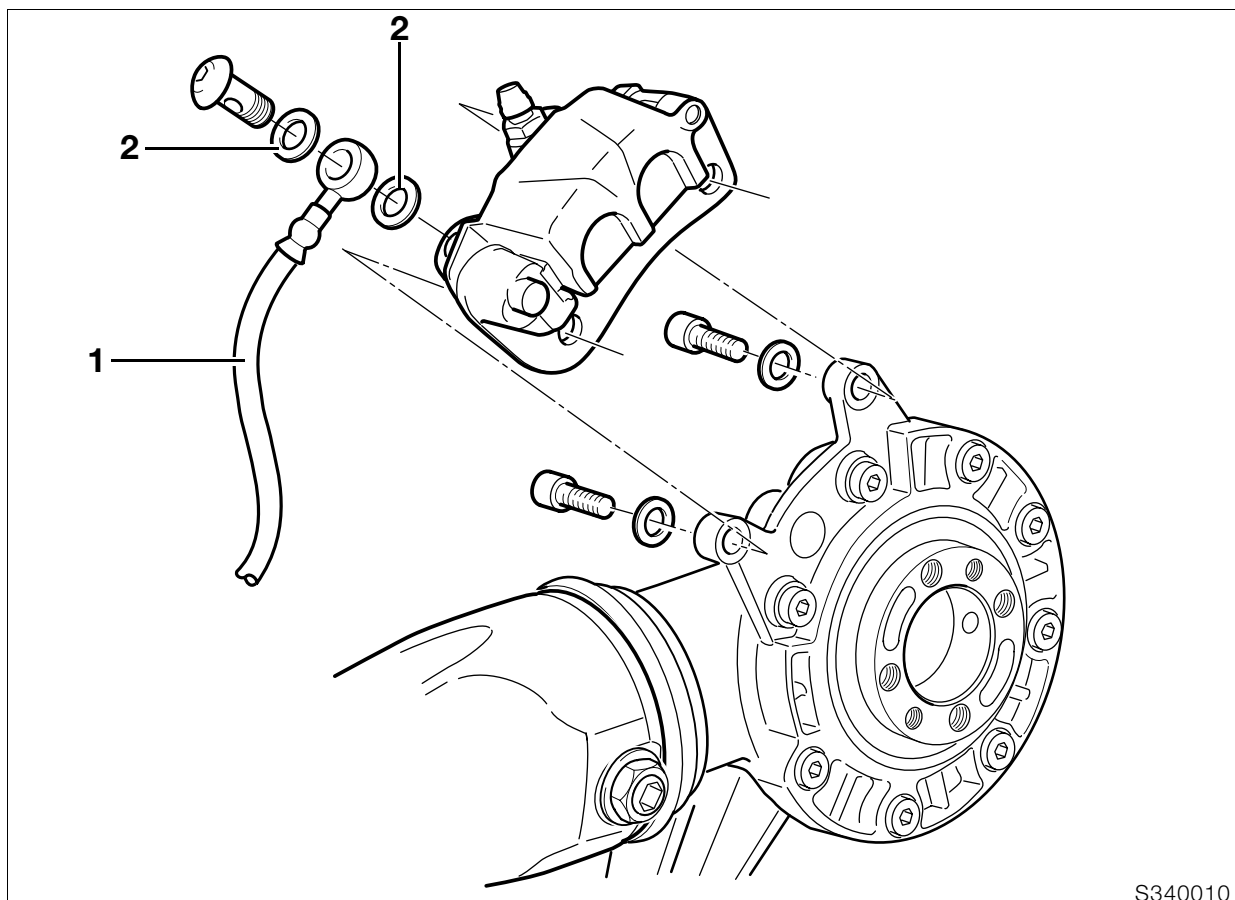
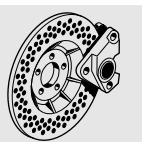
Keep the brake pistons parallel with their bores when fitting them.

- Remove and install the other two brake pistons in the same way.
- If necessary, press back the pistons fully using the resetting tool, **BMW No. 34 1 531**.
- Fit the brake pads.



Tightening torque:

Bleed screw to brake caliper 9 Nm



34 21 Removing and refitting rear brake caliper



Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

- Drain the brake system.
- **[Integral ABS]** Drain rear wheel circuit (→ 34.16).
- Disconnect brake line (1) from brake caliper.
- Carefully press back the brake pads/pistons.
- Remove the brake caliper.
- Installation is the reverse of the removal procedure.
- Fill and bleed the brake system.
- **[Integral ABS]** Bleed/fill the rear wheel circuit (→ 34.23).
- To bleed, undo the brake caliper and place it so that the bleed nipple is as high as possible.



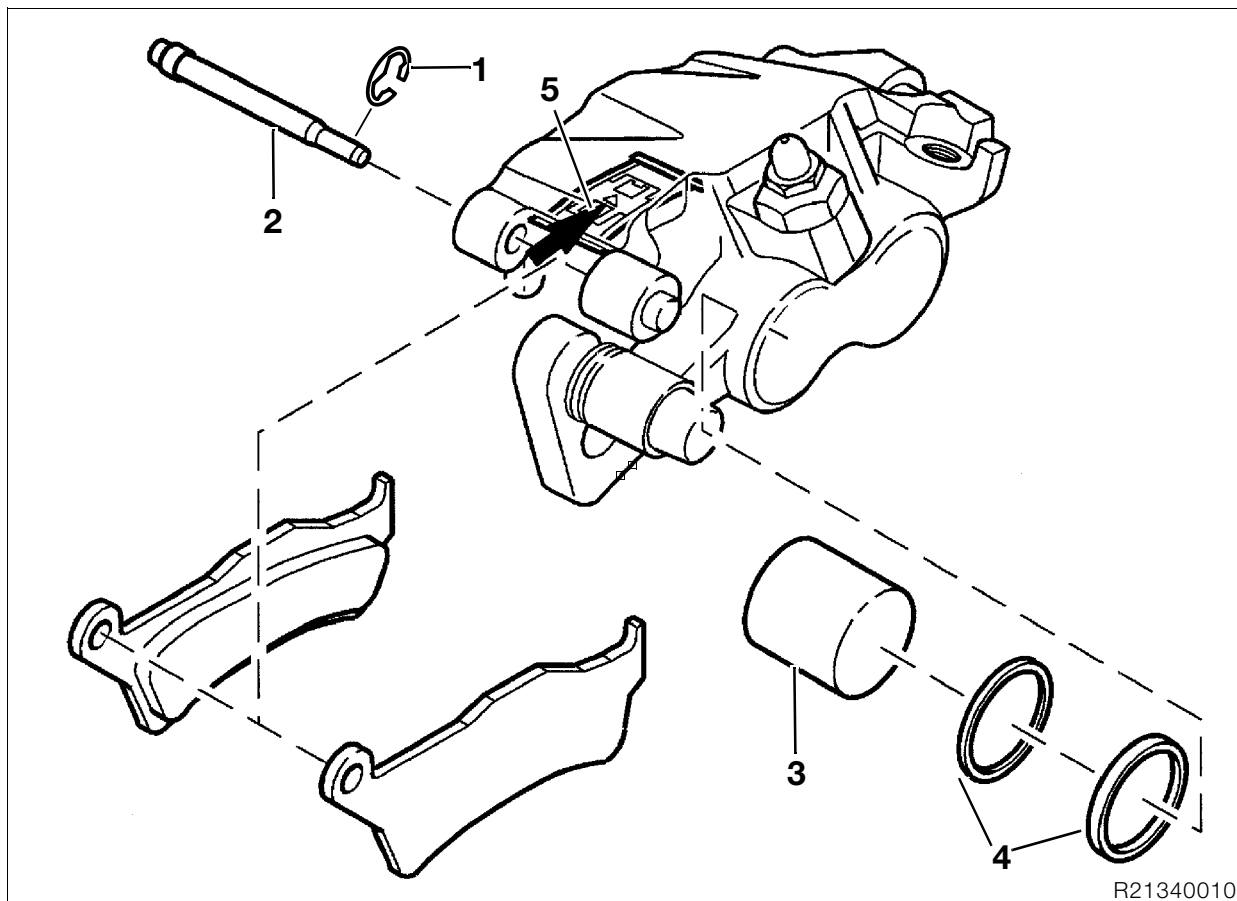
Important:

Replace the sealing rings (2) in the brake line. Do not damage brake pads.



Tightening torque:

Brake caliper to rear wheel drive	40 Nm
Brake hose to brake caliper	18 Nm
Bleed screw to brake caliper	7 Nm



34 21 Disassembling and assembling rear brake caliper

Dismantling rear brake caliper

- Remove retaining washer (1).
- Drive out retaining pin (2) towards the wheel side.
- Remove brake pads.
- Close the bleed screw.
- Hold a cloth over the brake caliper piston.
- Using the compressed-air gun on the connection hole, **carefully** force out the brake pistons (3) using minimum pressure.



Important:

Keep fingers away from gap between piston and side contact face of brake pads; there is a risk of injury.

- Remove sealing rings (4) from left/right cylinder.
- Inspect the brake caliper piston for hairline cracks, score-marks and other damage.



Tightening torque:

Bleed screw to brake caliper 7 Nm

Assembling rear brake caliper

- Coat the new sealing rings with brake fluid and insert them into the left and right brake caliper bores.
- Coat both brake caliper pistons with brake fluid and fit them.



Important:

Keep the brake pistons parallel with their bores when fitting them.

- Coat the adapter plate locating pins with **Shell Retinax A** and install the adapter plate.
- Insert locating plate (5) into brake caliper.



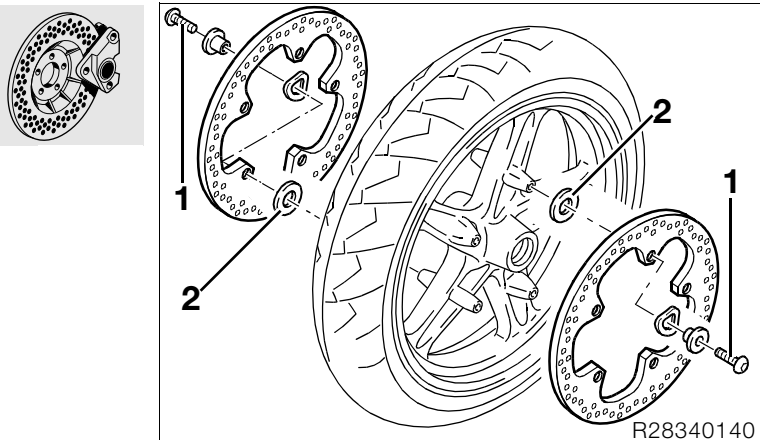
Note:

Ensure that the installed position is correct (arrow pointing in forward-travel direction).

- Insert the brake pads and secure them with retainers.

34 11 Removing and refitting front brake discs

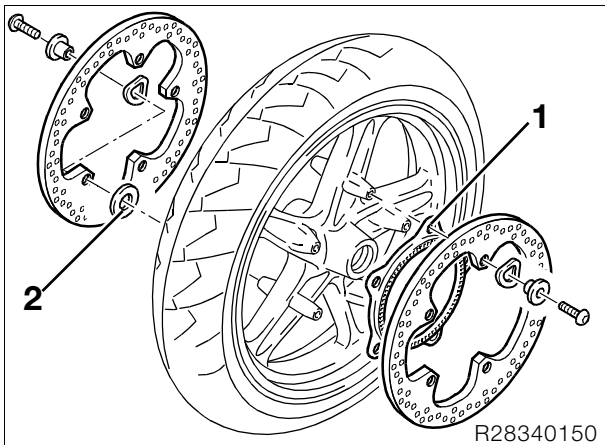
- Remove the brake caliper.
- Remove front wheel.



Note:

The retaining bolts (1) are secured and may have to be heated before being undone.

- Remove brake discs.
- Installation is the reverse of the removal procedure, pay particular attention to the thrust washers (2) below the brake discs.



- **[Integral ABS]** Fit the left-hand ABS sensor ring (1) and the right-hand thrust washers (2) below the brake disc.
- Degrease the brake discs before fitting them.



Important:

Pay attention to the thrust washers between the brake discs and the front wheel.

[Integral ABS] Pay attention to the thrust washers between the right brake disc and the front wheel, and to the ABS sensor ring between the left brake disc and the front wheel.



Important:

Note direction of installation for the brake disc (lettering to the outside).

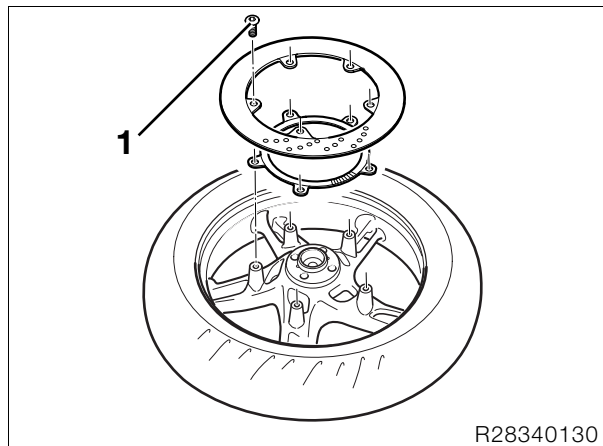


Tightening torque:

Brake disc to front wheel
(Clean thread + Loctite 2701) 21 Nm

34 21 Removing and refitting rear brake disc

- Remove the brake caliper.
- Remove rear wheel.



Note:

The retaining bolts (1) are secured and may have to be heated before being undone.

- Remove brake disc.
- Installation is the reverse of the removal procedure.
- Degrease the brake disc before installing it.



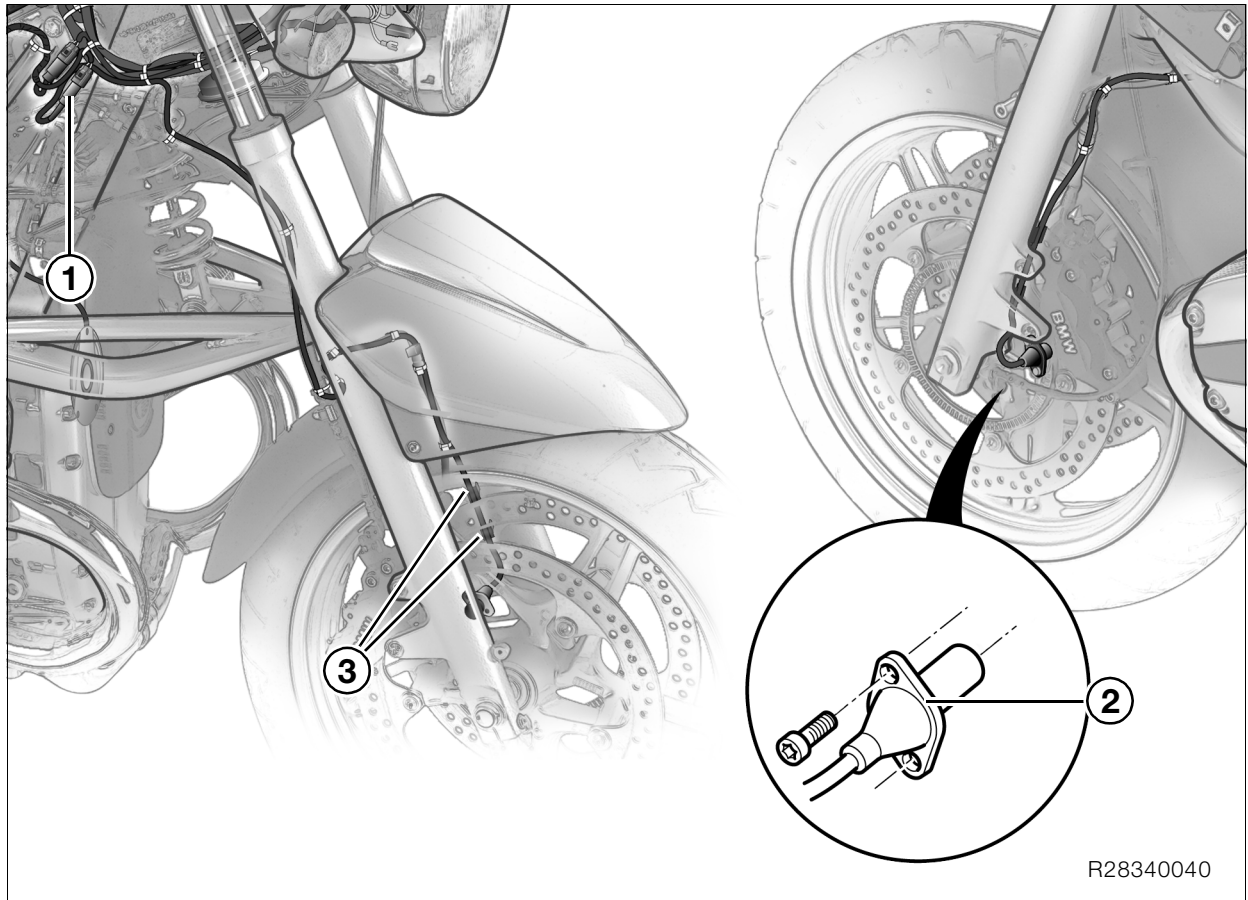
Important:

[Integral ABS] Pay attention to the shim when installing the rear wheel.



Tightening torque:

Brake disc to rear wheel drive
(Clean thread + Loctite 2701) 21 Nm



R28340040

34 52 044 [Integral ABS] Removing and refitting front ABS sensor

- Remove fuel tank (→ 16.5).
- Separate plug connector (1) in sensor line.
- Remove the left brake caliper.
- Remove the sensor (2).
- Installation is the reverse of the removal procedure.



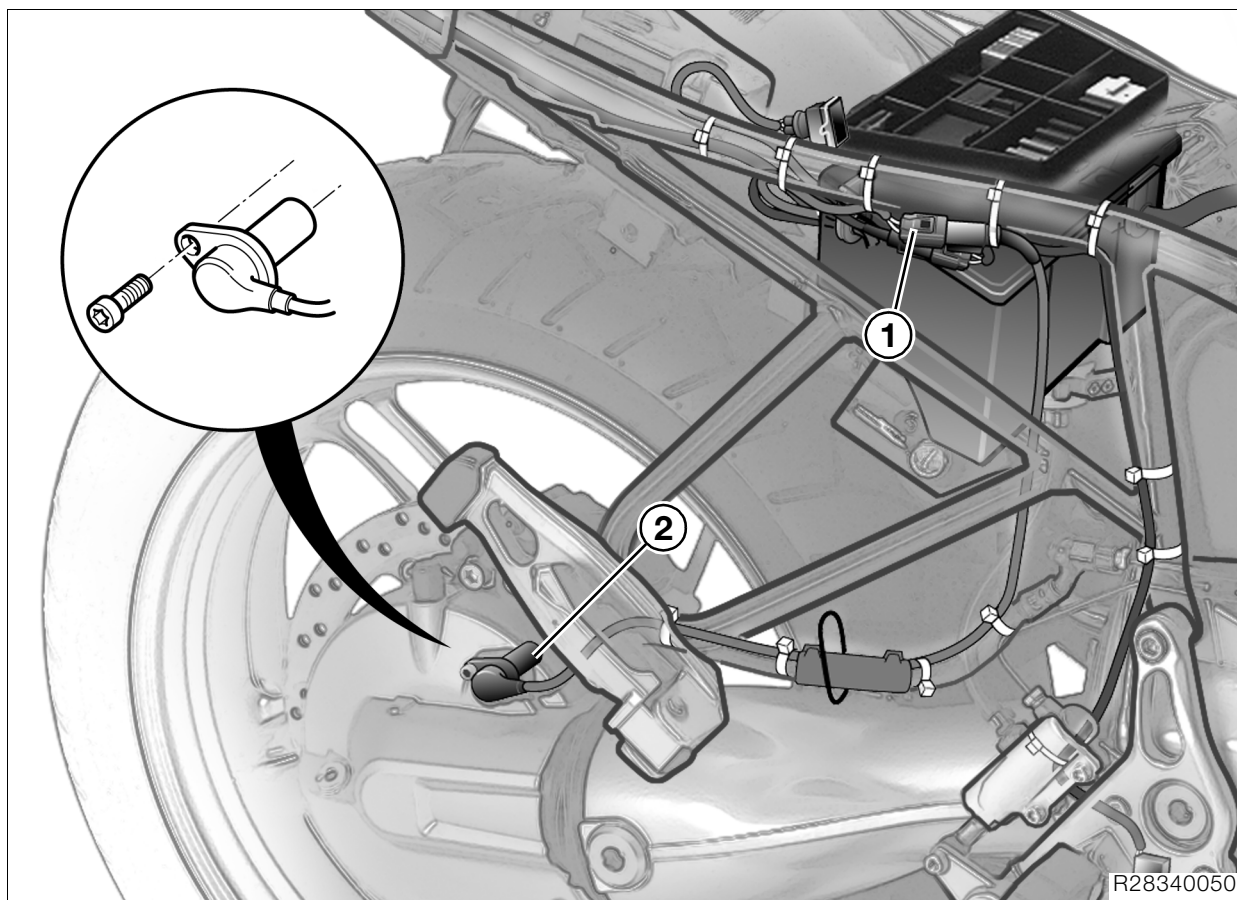
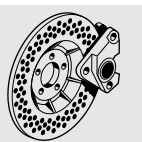
Important:

Route the sensor cable correctly.
Check that the clips (3) are correctly seated.



Tightening torque:

Tighten the sensor hand-tight, 4 Nm
Brake caliper to fork slider..... 30 Nm



34 52 111 [Integral ABS] Removing and refitting rear ABS sensor

- Remove front/rear seat.
- Separate plug connector (1) in sensor line.
- Before removing/refitting, clean the sensor and bore.
- Remove the sensor (2).
- Installation is the reverse of the removal procedure.
- Coat the O-rings with oil before fitting them.



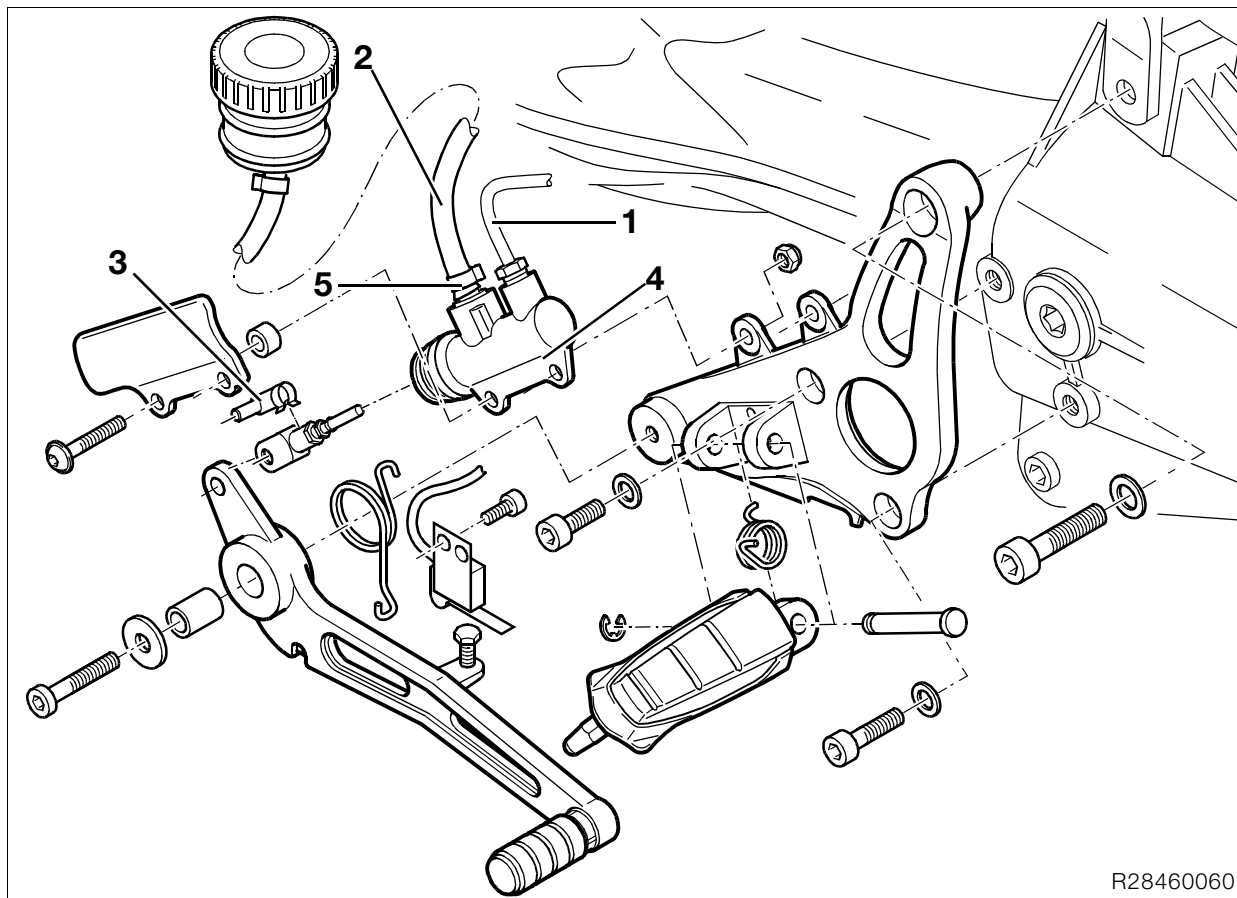
Important:

Route the sensor cable correctly.



Tightening torque:

Tighten the sensor hand-tight, 4 Nm



R28460060

35 21 Removing and refitting foot-brake lever

- Release the pin in the brake linkage.
- Remove fasteners securing footbrake lever.
- Remove footbrake lever with torsion spring.
- Installation is the reverse of the removal procedure.
- Lubricate pivot bushing with **Shell Retinax A**.

Important:

Piston rod play must be checked and adjusted. See removal and refitting of brake master cylinder. The brake light should light up when the rear brake is activated.



Tightening torque:

Brake pedal to footrest plate
(Clean thread + Loctite 2701) 21 Nm

34 31 Removing and refitting brake master cylinder

Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

- Drain the brake system.
- **[Integral ABS]** Drain rear control circuit (→ 34.17).
- Disconnect brake line (1) and hose (2).
- Release and remove pin (3).
- Remove brake master cylinder (4).
- Installation is the reverse of the removal procedure.
- Tighten one-time hose clip (5) with pliers, **BMW No. 13 1 500**.
- Fill and bleed the brake system.
- **[Integral ABS]** Bleed/fill the rear control circuit (→ 34.20).

Important:

Bleed the brake system carefully. Check/adjust piston rod play.

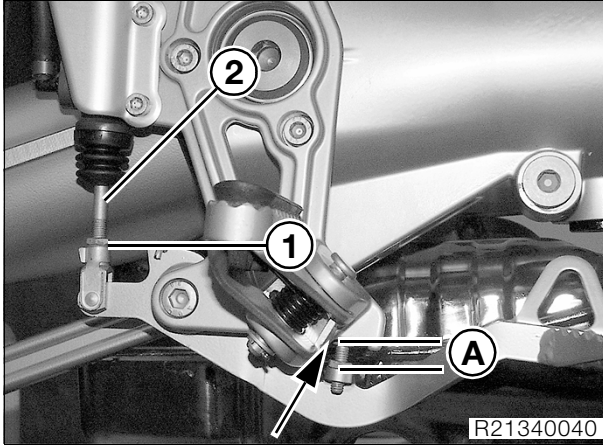


Tightening torque:

Master cylinder to footrest assembly 9 Nm

Checking and adjusting piston rod play

Removing and refitting brake piston in handlebar fitting (→ 32.7)



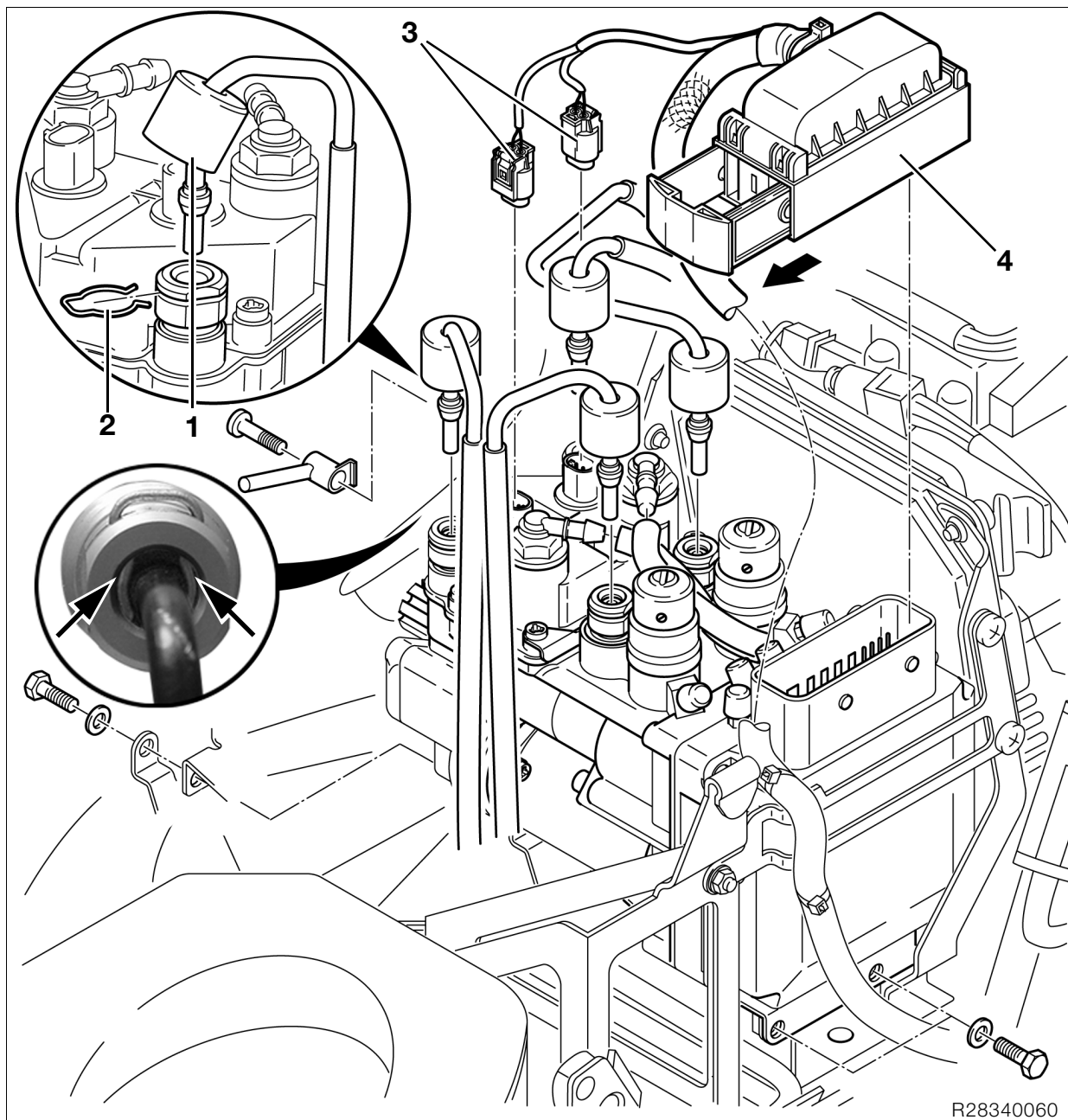
- Set the adjusting screw of the footbrake lever to distance A.

Distance A:... 14 +/- 0.5 mm (0.5512 +/- 0.1969 in)
(Top edge of footbrake lever to top edge of adjusting screw.)

- Insert feeler gauge at right angles to direction of travel between the brake-light switch lever and the stop on the footrest plate (arrow).

Feeler gauge thickness:..... 0.2 mm (0.0078 in)

- Slacken locknut (1).
- Turn the piston rod (2) to the right in the direction of the brake pedal until there is play.
- Carefully back off piston rod to take up play and tighten locknut.
- Remove feeler gauge.
- Check play.
- Apply coloured sealing lacquer to the locknut.



R28340060

34 00 [Integral ABS] Removing/installing the ABS pressure modulator



Warning:

All repair and maintenance work on the BMW Integral ABS should be carried out by specially trained personnel. Maintenance and repair procedures and processes should be strictly observed. Use only new brake fluid from an unopened container.

Removing the ABS pressure modulator



Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

- Drain the brake system (→ 34.15).
- Disconnect earth cable from battery and insulate it.
- Push the protective caps (1) upwards.
- Remove spring clips (2).

**Important:**

Do not bend brake lines.

- Disconnect the brake lines from the ABS pressure modulator.

**Important:**

Ensure that there is no brake fluid in the connector.

- Remove the connector (3) for the front and rear wheel circuit reservoirs.
- Release (arrow) the connector (4) and remove it.
- Disconnect plug from Hall sensor.
- Remove Motronic control unit.
- Release the ABS pressure modulator and carefully remove it to the left.

Installing the ABS pressure modulator

- Install in reverse order, noting the following activities.

**Note:**

When replacing the brake lines, always replace the seals (Quad rings) between the brake lines and the pressure modulator.

**Warning:**

Replace the spring clips each time the plug connection is opened. Ensure correct positioning.

- Install new spring clips.
- Fit the protective caps to the brake line.
- Clip in the brake lines.
- Check that the spring clips (arrows) are seated correctly.
- Pull the protective caps over the plug connection.
- Fill and bleed the brake system (→ 34.18).
- Once all the work on the brake system has been completed, read the fault code memory and perform a bleed test using **BMW** MoDiTeC (→ 34.24).

**Note:**

Disconnecting the battery deletes all entries (e.g. faults, settings) stored in the Motronic control unit's memory.

Loss of settings can temporarily impair the operating characteristics when the engine is restarted.

- Switch on the ignition.
- Without starting the engine, fully open the throttle once or twice so that the Motronic control unit can record the throttle-valve positions.

**Tightening torque:**

ABS pressure modulator on battery holder..... 8 Nm

34 00 [Integral ABS] Draining brake system



Warning:

All repair and maintenance work on the BMW Integral ABS should be carried out by specially trained personnel. Maintenance and repair procedures and processes should be strictly observed. Use only new brake fluid from an unopened container.



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.

- Remove front/rear seat.
- Remove fuel tank (→ 16.5).

Bleeding wheel circuits



Important:

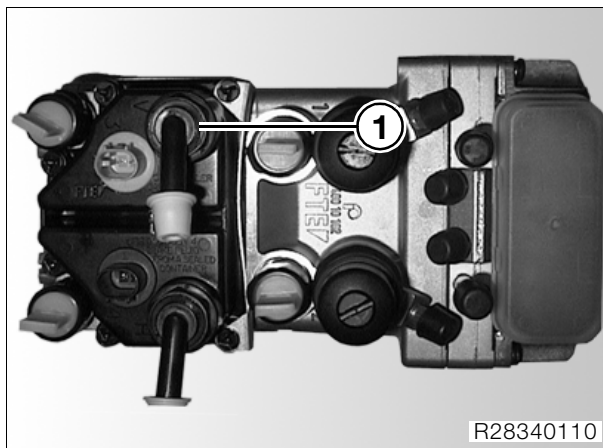
Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

Bleeding front wheel circuit



Important:

Integral brakes, the rear brake must be ready for use.



- Open front wheel circuit reservoir (1).



Important:

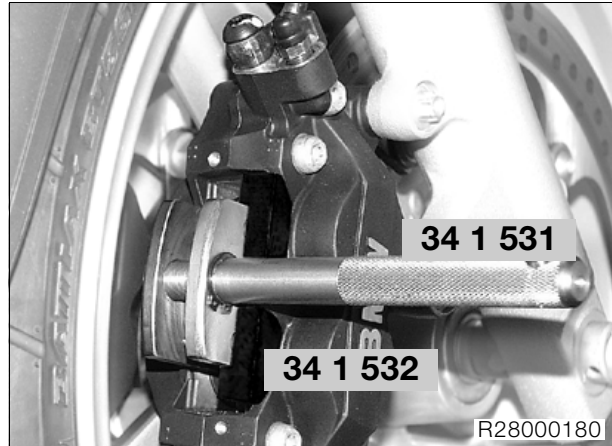
To prevent brake fluid from entering the connector, do not release the ABS pressure modulator plug connections.

- Draw off the old brake fluid from the wheel circuit reservoir.
- Remove front brake pads.



Important:

Only use the piston reset device, **BMW No. 34 1 531**, if the wheel circuit reservoir cover is open.



- Use the reset device, **BMW No. 34 1 531**, and the positioning piece, **BMW No. 34 1 532**, to press the brake caliper pistons completely back and to position them.
- Wrap cloths around the left and right brake calipers.
- Connect the brake bleeding device to the bleed screw of the left brake caliper, but do not switch it on.
- Switch on the ignition.



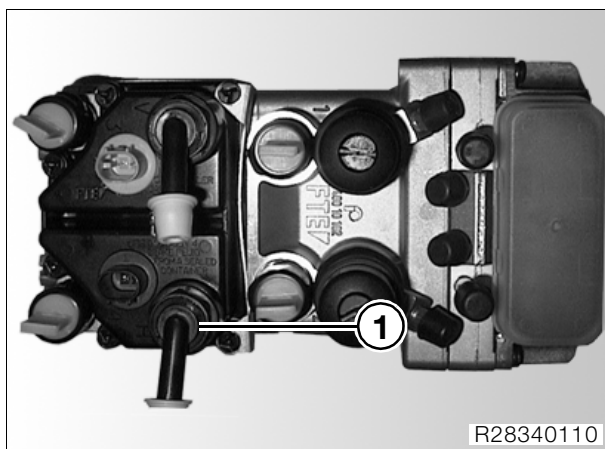
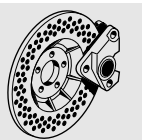
Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis has completed.

- Gently pull the handbrake lever until the pump just starts up.
- Open the bleed screw.
- Drain wheel circuit using a pump.
- Close the bleed screw.
- Release the brake.
- Disconnect the brake bleeding device from the bleed screw.
- The procedure for draining the right brake caliper is the same as that for the left caliper.
- Close the bleed screw.
- Release the brake and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.



Bleeding rear wheel circuit



Note:

After switching on the ignition, always wait for the BMW Integral ABS to complete its self-diagnosis. Do not operate the brake lever until self-diagnosis has completed.

- Gently press the footbrake until the pump just starts up.
- Open the bleed screw.
- Drain wheel circuit using a pump.
- Close the bleed screw.
- Release the brake and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.

- Open rear wheel circuit reservoir (1).



Important:

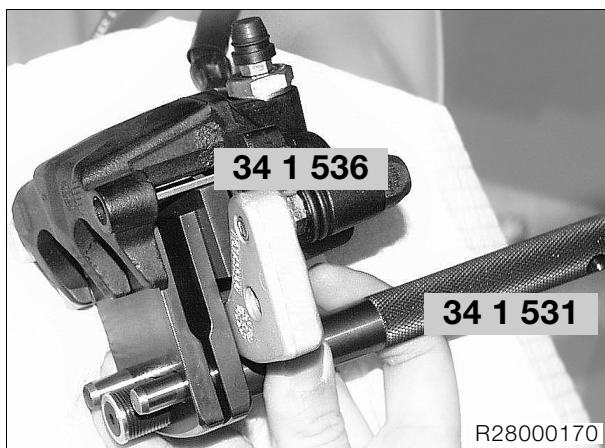
To prevent brake fluid from entering the connector, do not release the ABS pressure modulator plug connections.

- Draw off the old brake fluid from the wheel circuit reservoir.
- Remove rear brake pads.



Important:

Only use the piston reset device, **BMW No. 34 1 531**, if the wheel circuit reservoir cover is open.



- Use the adapter, **BMW No. 34 1 536**, instead of the external brake pad.
- With the handle outwards, use the reset device, **BMW No. 34 1 531**, on the rear brake caliper to press back the pistons completely and to position them.
- Wrap a cloth around the brake caliper.
- Connect the brake bleeding device to the bleed screw, but do not switch it on.
- Switch on the ignition.

Bleeding control circuits

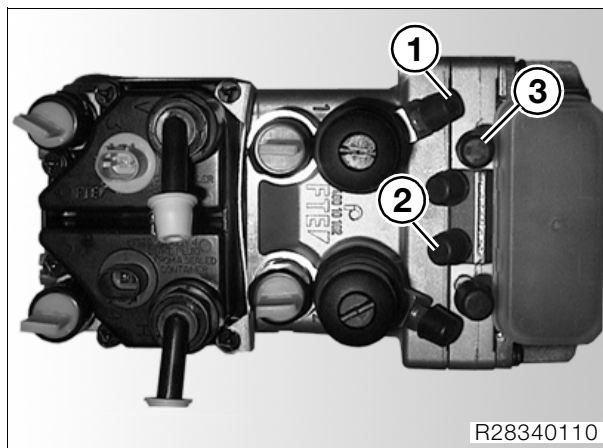


Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

Bleeding front control circuit

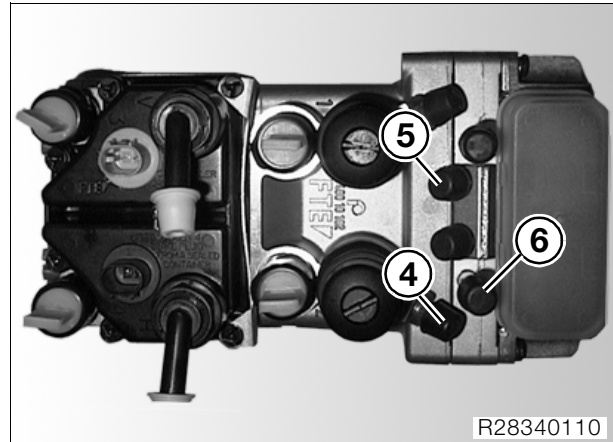
- Turn the handlebars to the left.
- Release clamps securing handlebar.
- Place the handlebars such that the brake fluid expansion tank is level.
- Tighten the handlebar and secure the front wheel in this position.
- Remove front reservoir cover with rubber diaphragm.
- Draw off old brake fluid and clean the reservoir.



- Draw off the brake fluid in accordance with the sequence, using the ring spanner, **BMW No. 34 2 532**.
 - Front dosing cylinder (1),
 - front integral circuit (2) and
 - front control circuit (3).

Bleeding rear control circuit

- Remove right-hand rear panel.
- Remove rear reservoir cap with rubber diaphragm, draw off the old brake fluid and clean the reservoir.



- Draw off the brake fluid in accordance with the sequence, using the ring spanner, **BMW No. 34 2 532**.
 - Rear dosing cylinder (4),
 - rear integral circuit (5) and
 - rear control circuit (6).

34 00 [Integral ABS] Filling the brake system



Warning:

All repair and maintenance work on the BMW Integral ABS should be carried out by specially trained personnel. Maintenance and repair procedures and processes should be strictly observed. Use only new brake fluid from an unopened container.



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.

Filling control circuits

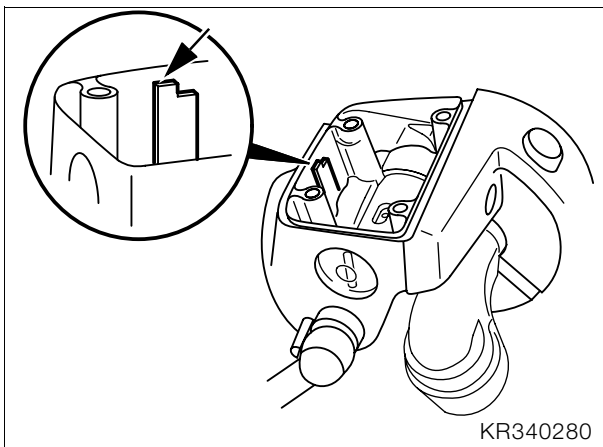


Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

Filling the front control circuit

- Level the handlebar fitting as necessary.



Important:

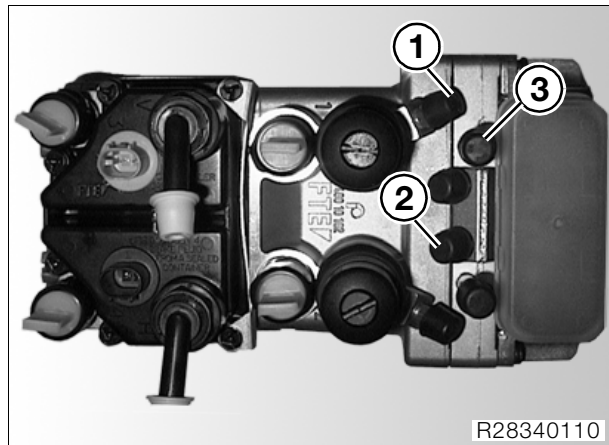
When adding brake fluid, do not allow it to enter the holes for the reservoir lid screws.

- Top up the brake fluid level to the "MAX" mark (arrow).



Important:

During the filling and bleeding procedure, make sure that the fluid replenishing hole is always below the level of the brake fluid, otherwise air will be drawn into the brake system.



- Draw off the brake fluid and simultaneously add the new brake fluid in accordance with the sequence, using the ring spanner, **BMW No. 34 2 532**.
- Front dosing cylinder (1),
- front integral circuit (2),
- front control circuit (3) and
- again, front dosing cylinder (1).
- Close expansion tank with rubber diaphragm and reservoir cap.
- Place the motorcycle carefully on its side stand and turn the handlebars fully to the left.
- Repeatedly pull front brake lever lightly to expel air from brake master cylinder.
- Place motorcycle on its centre stand.



Important:

On account of the vacuum extraction process, it is not possible to tell whether there is brake fluid in the hose of the brake bleeding device when it is free of bubbles.

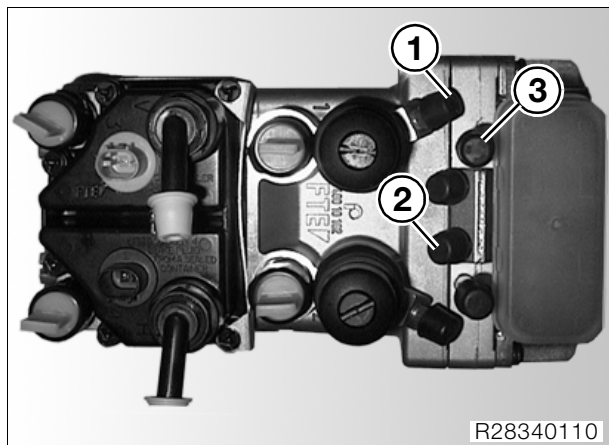
It is therefore necessary to bleed the hose by hand **in the specified sequence and in accordance with the rules for bleeding.**

- Switch off the bleed device.
- Shift the handbrake lever to position 4.



Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.



- Remove the reservoir cap with rubber diaphragm.
 - In sequence, bleed the:
 - Front dosing cylinder (1),
 - front integral circuit (2),
 - front control circuit (3) and
 - again, front dosing cylinder (1)
- using the ring spanner, **BMW No. 34 2 532**, and in accordance with the rules for bleeding.

Rules for bleeding:

1. Pull the brake lever slowly until the brake light switch clicks (snifter hole closed).
2. Open the bleed screw.
3. Pull the brake lever fully and close the bleed screw.
4. Release the brake lever slowly.
5. Repeat steps 1 to 4 until the brake fluid is clear and has no bubbles.

- Fit the protective caps on the bleed screws.
- Top up the brake fluid level to the "MAX" mark (arrow).
- Wipe the rim of the reservoir, the rubber gaiter and the cover to remove brake fluid, and carefully reassemble the components.
- Resecure the handlebars in the correct position (punch marks aligned) in accordance with the tightening sequence.

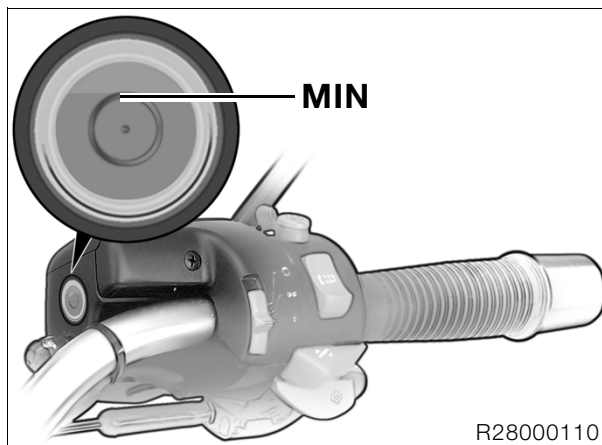


Tightening torque:

Handlebars tightening sequence:

1. Front connection to system 21 Nm
in direction of travel..... 21 Nm
2. Rear connection in direction of travel 21 Nm

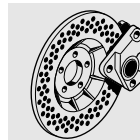
- Recheck the brake-fluid level.
- Place the motorcycle on its centre stand.
- Turn the handlebars to the **left**.



Required level

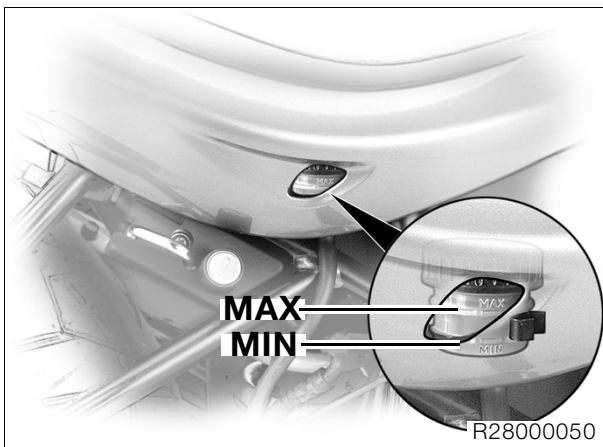
not below MIN
(Top edge of the marking ring)

Brake fluidDOT 4



Filling the rear control circuit

- Remove rear reservoir cap with rubber diaphragm.



- Top up the brake fluid level to the "MAX" mark.

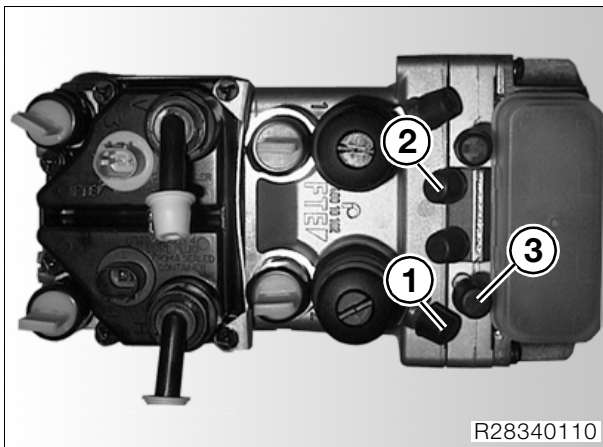
! Important:

While filling and bleeding the system, do not allow the brake fluid level to drop below the "MIN" mark, air will otherwise be drawn into the brake system.



Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.



- Draw off the brake fluid and simultaneously add the new brake fluid in accordance with the sequence, using the ring spanner, **BMW No. 34 2 532**.
 - Rear dosing cylinder (1),
 - rear integral circuit(2)
 - rear control circuit (3) and
 - again, front dosing cylinder (1)



Important:

On account of the vacuum extraction process, it is not possible to tell whether there is brake fluid in the hose of the brake bleeding device when it is free of bubbles.

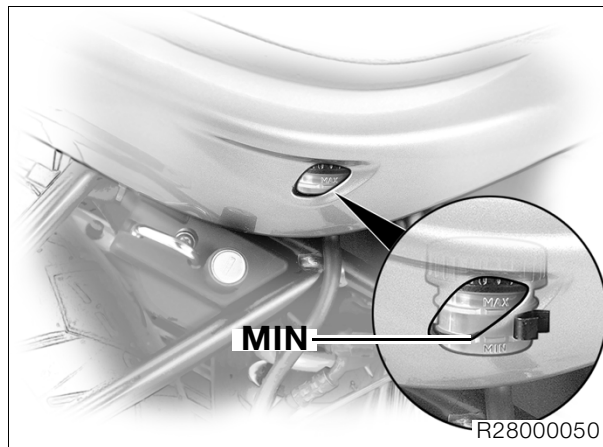
It is therefore necessary to bleed the hose by hand **in the predefined sequence and in accordance with the rules for bleeding.**

- Switch off the bleed device.
- In sequence, bleed the:
 - rear dosing cylinder (1),
 - rear integral circuit (2)
 - front control circuit (3) and,
 - again, rear dosing cylinder (1)
 using the ring spanner, **BMW No. 34 2 532**, and in accordance with the rules for bleeding.

Rules for bleeding:

- Press the brake lever slowly until the brake light switch clicks (snifter hole closed).
- Open the bleed screw.
- Press the brake lever fully and close the bleed screw.
- Release the brake lever slowly.
- Repeat steps 1 to 4 until the brake fluid is clear and has no bubbles.

- Fit the protective caps on the bleed screws.
- Top up the brake fluid until it reaches at least to the "MIN" mark.
- Wipe the rim of the reservoir, the rubber gaiter and the cover to remove brake fluid, and carefully reassemble the components.
- Recheck the brake-fluid level.
- Place the motorcycle on its centre stand.



Required level

not below MIN

Brake fluidDOT 4

Filling wheel circuits



Important:

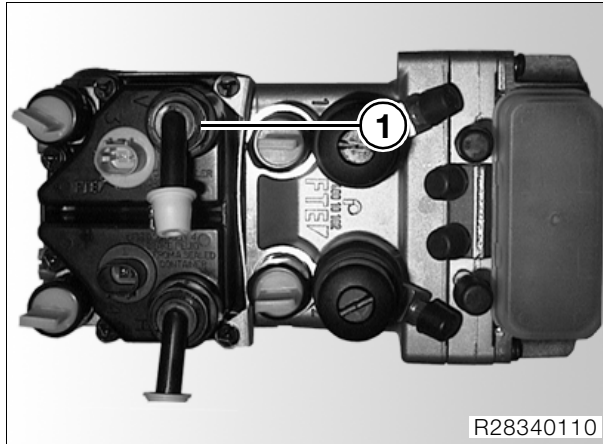
Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.

Filling the front wheel circuit

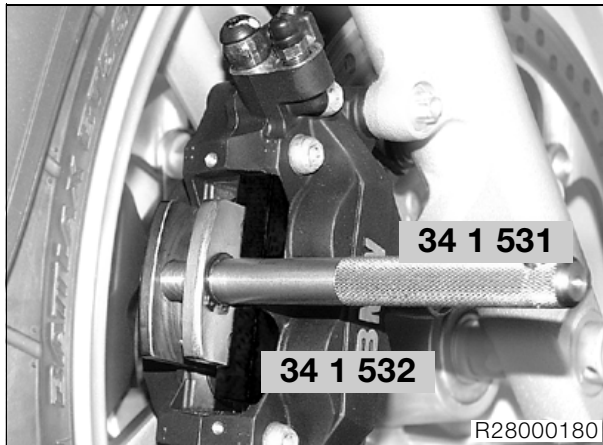


Important:

Integral brakes, the rear brake must be ready for use.



- Open front wheel circuit reservoir (1).
- Remove front brake pads.



- Use the reset device, **BMW No. 34 1 531**, and the positioning piece, **BMW No. 34 1 532**, to press the brake caliper pistons completely back and to position them.



Important:

To prevent brake fluid from entering the connector, do not release the ABS pressure modulator plug connections.

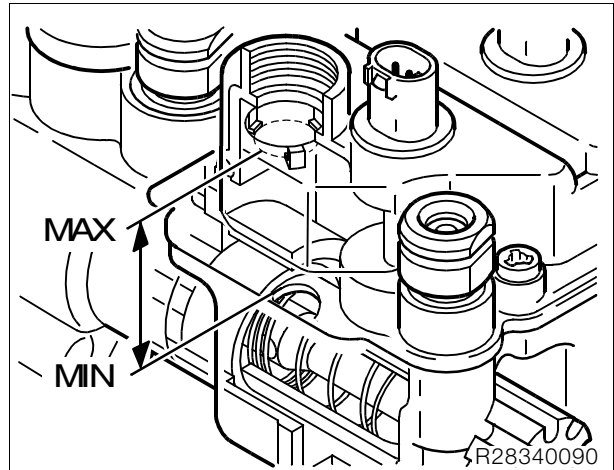
- Refill the front wheel circuit reservoir (1) with new brake fluid.

- Wrap cloths around the left and right brake calipers.
- Connect the brake bleeding device to the bleed screw of the left brake caliper, but **do not switch it on**.
- Switch on the ignition.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.



Important:

The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system.

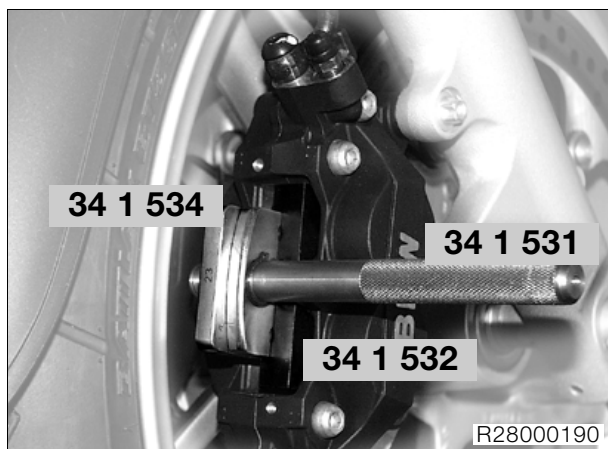
- Gently pull the handbrake lever until the pump just starts up.
- Open the bleed screw, while topping up the wheel circuit reservoir (1) with new brake fluid.
- Pump out the brake fluid under virtually no pressure to begin with, then vary the brake pressure.
- Pump off brake fluid until it emerges clear and free from air bubbles.
- Close the bleed screw.
- Release the brake.
- Disconnect the brake bleeding device from the bleed screw.
- The procedure for topping up the brake fluid in the right brake caliper is the same as that for the left caliper.
- Release the brake and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.



Important:

After changing and/or bleeding the brakes, always top up the fluid in the wheel circuit reservoir to the correct level in accordance with the instructions.

Front wheel circuit reservoir filling instructions



- Top up fluid in front wheel circuit reservoir to "MAX"
- Use adapter 23, **BMW No. 34 1 534**, in the reset device, **BMW No. 34 1 531/532**, on both front brake calipers, and screw on the reset device until the adapter is secure.



Important:

The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system. Bleed the system again if this happens.

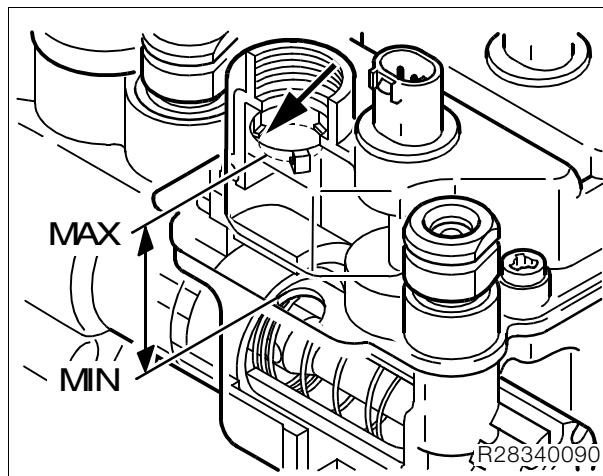
- Switch on the ignition.



Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.

- Squeeze the handbrake lever until the front brake caliper pistons are butt against the reset device, **BMW No. 34 1 531**.
- Switch off the ignition.



- Top up the fluid in the wheel circuit reservoir until one of the three protrusions in the filler neck just touches the surface of the fluid (arrow).
- Remove the reset device, **BMW No. 34 1 531/532**, with adapter, **BMW No. 34 1 534**.



Warning:

The wheel circuit reservoir may not overflow while the brake pads/brake calipers are being fitted.

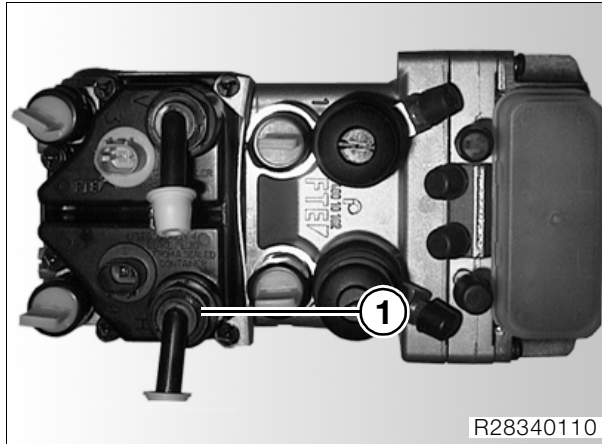
- If necessary, carefully press back the pistons so that the pad just fits in.
- Install front brake pads.
- Hand-tighten the front wheel circuit reservoir cap.
- Perform a function check on the brake system with the ignition switched on.



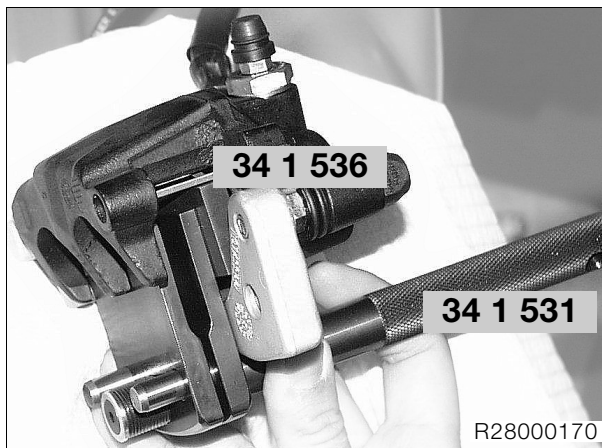
Tightening torque:

Front brake caliper bleed screw 9 Nm

Filling rear wheel circuit



- Open rear wheel circuit reservoir (1).
- Remove rear brake pads.



- Use the adapter, **BMW No. 34 1 536**, instead of the external brake pad.
- With the handle outwards, use the reset device, **BMW No. 34 1 531**, on the rear brake caliper to press back the pistons completely and to position them.



Important:

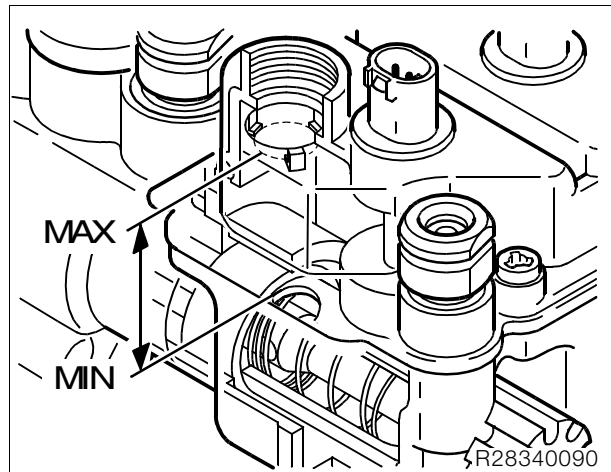
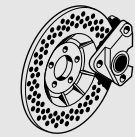
To prevent brake fluid from entering the connector, do not release the ABS pressure modulator plug connections.

- Refill the rear wheel circuit reservoir (1) with new brake fluid.
- Wrap a cloth around the brake caliper.
- Connect the brake bleeding device to the bleed screw, but **do not switch it on**.
- Switch on the ignition.



Note:

After switching on the ignition, always wait for the BMW Integral ABS to complete its self-diagnosis. Do not operate the brake lever until self-diagnosis has completed.



Important:

The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system.

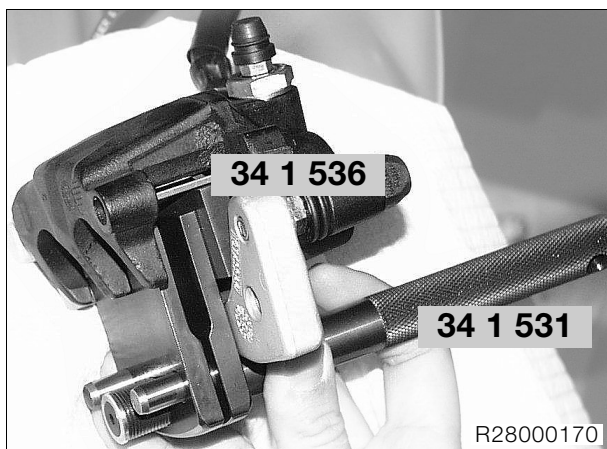
- Gently press the footbrake until the pump just starts up.
- Open the bleed screw, while topping up the wheel circuit reservoir (1) with new brake fluid.
- Pump out the brake fluid under virtually no pressure to begin with, then vary the brake pressure.
- Pump off brake fluid until it emerges clear and free from air bubbles.
- Close the bleed screw.
- Release the brake and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.



Important:

After changing and/or bleeding the brakes, always top up the fluid in the wheel circuit reservoir to the correct level in accordance with the instructions.

Rear wheel circuit filling instructions



- Top up fluid in rear wheel circuit reservoir to "MAX".
- **Screw the reset device, BMW No. 34 1 531, to the adapter, BMW No. 34 1 536.**

Important:

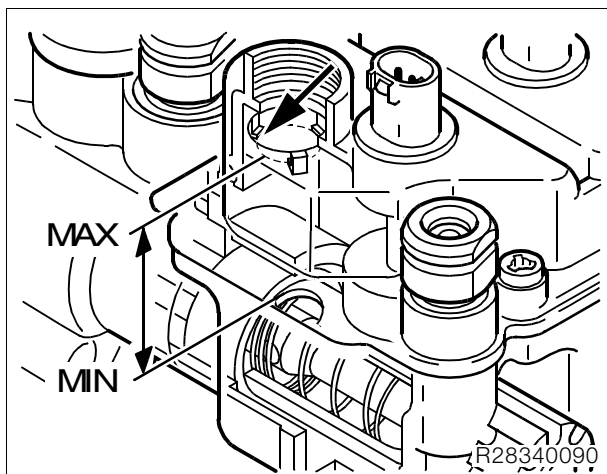
The piston in the base of the wheel circuit reservoir must always be covered by the fluid, as otherwise air can be drawn into the brake system. Bleed the system again if this happens.

- Switch on the ignition.

Note:

Always wait for the BMW Integral ABS to complete its self-diagnosis after the ignition is switched on. Do not operate the brake lever until self-diagnosis is complete.

- Press the foot brake lever until the rear brake caliper pistons rest on the reset device, **BMW No. 34 1 531**, and the adapter, **BMW No. 34 1 536**.
- Switch off the ignition.



- Top up the fluid in the wheel circuit reservoir until one of the three protrusions in the filler neck just touches the surface of the fluid (arrow).
- Remove the reset device, **BMW No. 34 1 531**, with adapter, **BMW No. 34 1 536**.



Warning:

The wheel circuit reservoir may not overflow while the brake pads/brake calipers are being fitted.

- If necessary, carefully press back the pistons until the brake disc just fits between the brake pads.
- Fit the brake pads and brake caliper at the rear.
- Hand-tighten the rear wheel circuit reservoir cap.
- Perform a function check on the brake system with the ignition switched on.
- Once all the work on the brake system has been completed, read the fault code memory and perform a bleed test using **BMW MoDiTeC**.
- Remove fuel tank (→ 16.5).
- Remove rear panel.
- Install front/rear seat.

Brake fluidDOT 4



Tightening torque:

Rear brake caliper bleed screw 7 Nm
Brake caliper to rear wheel drive 40 Nm

34 00 [Integral ABS] Reading fault code memory with BMW MoDiTeC

- Remove front/rear seat.
- Connect the **BMW MoDiTeC** to the diagnostic connector.
- Read out the fault memory.
- Clear fault code memory if necessary, or perform all requisite repair work.

34 00 [Integral ABS] Performing a bleed test with BMW MoDiTeC

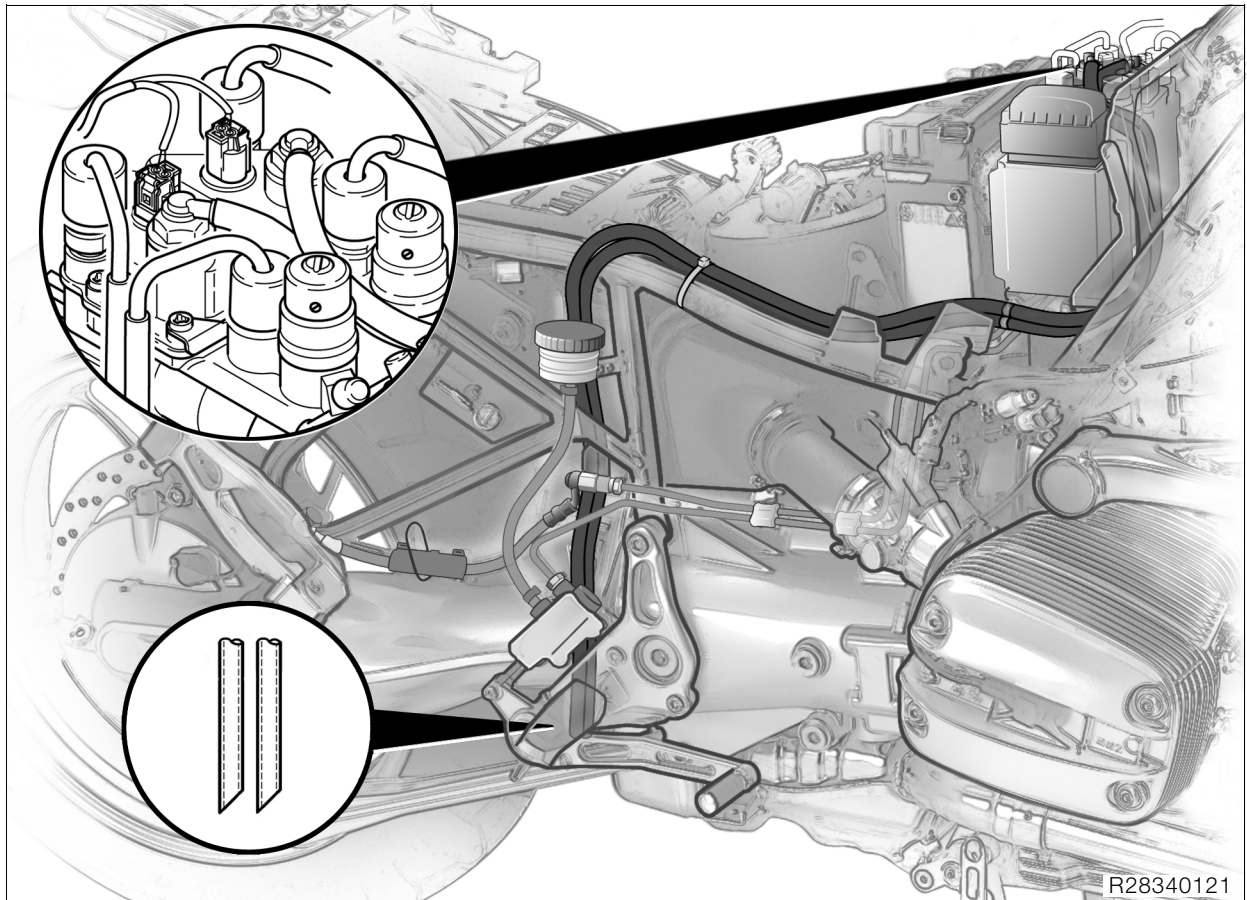
- Remove front/rear seat.
- Connect the **BMW MoDiTeC** to the diagnostic connector.



Warning:

Avoid rapid and forceful pumping of the brakes when performing maintenance and repair work on the BMW Integral ABS.

- Perform bleed test.
- Perform all requisite repair work.



34 51 [Integral ABS] Removing/installing wheel circuit reservoir bleed lines

- Remove the cover of the wheel circuit reservoir with bleed lines.
- Install in reverse order, ensuring that:
- the bleed lines are not kinked,
- bleed lines which have been shortened and bleed line ends are cut on the diagonal.

34 52 Removing/installing brake lines



Important:

Do not allow brake fluid to come into contact with painted motorcycle parts as brake fluid destroys paint.



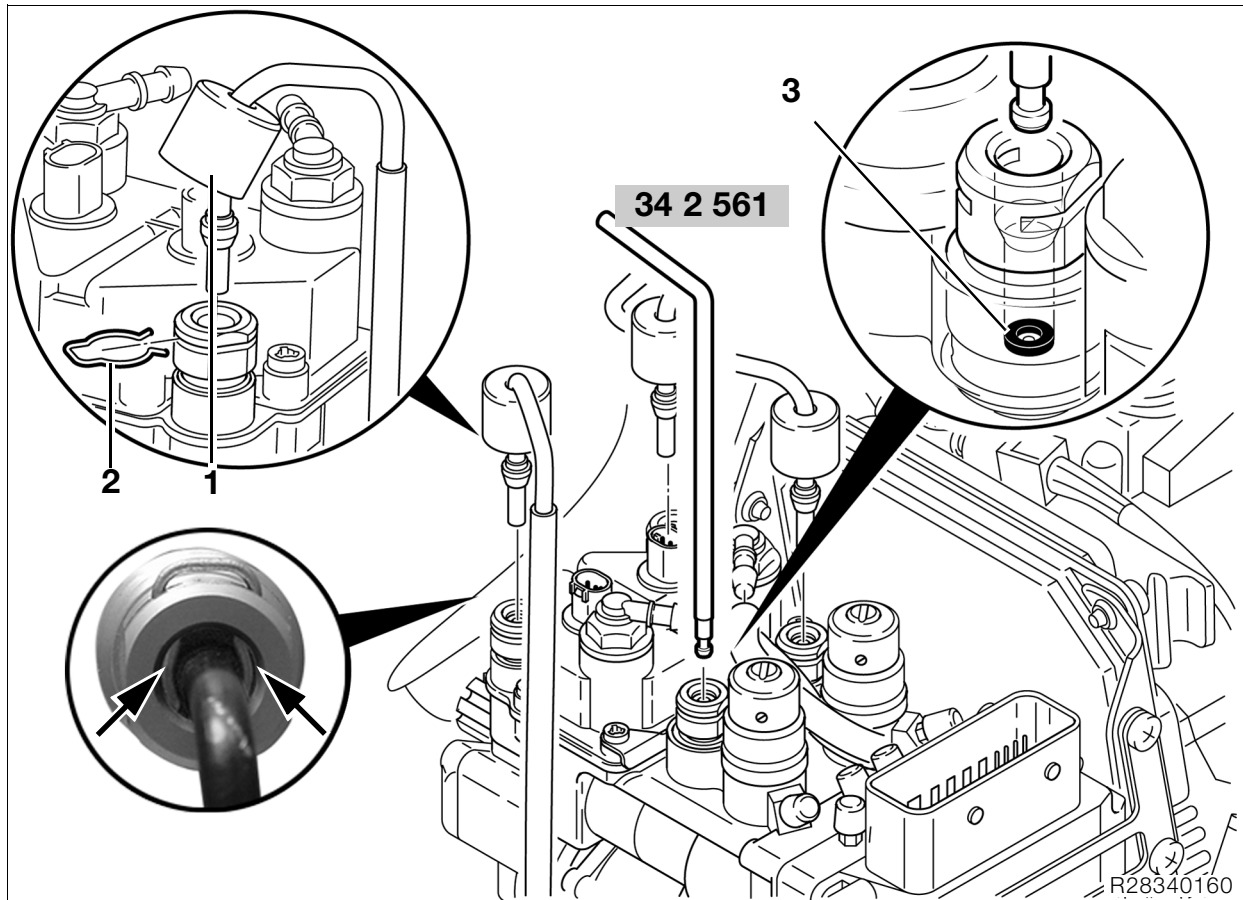
- Drain the brake system.
- Remove brake lines.
- Installation is the reverse of the removal procedure.



Important:

Remove sealing rings for brake line.
Secure the brake line to the brake master cylinder such that it is not chafed or bent when the handlebars are turned.

- Fill and bleed the brake system.



[Integral ABS] Removing/installing brake lines

- Drain the brake system (➡ 34.15).
- Push the protective caps (1) upwards.
- Remove spring clips (2).
- Remove brake lines.
- Installation is the reverse of the removal procedure, pay particular attention to the following:



Warning:

Replace the spring clips each time the plug connection is opened. Ensure correct positioning.



Important:

Remove sealing rings for brake line. Secure the brake line to the brake master cylinder such that it is not chafed or bent when the handlebars are turned.



Note:

When replacing the brake lines, always replace the seals (Quad rings) between the brake lines and the pressure modulator.

- Carefully remove the quad rings (3) using the dismantling tool, **BMW No. 34 2 561**.
- Install the quad rings with brake lines.
- Check that the quad rings are correctly seated.
- Install new spring clips.
- Fit the protective caps to the brake lines.
- Clip in the brake lines.

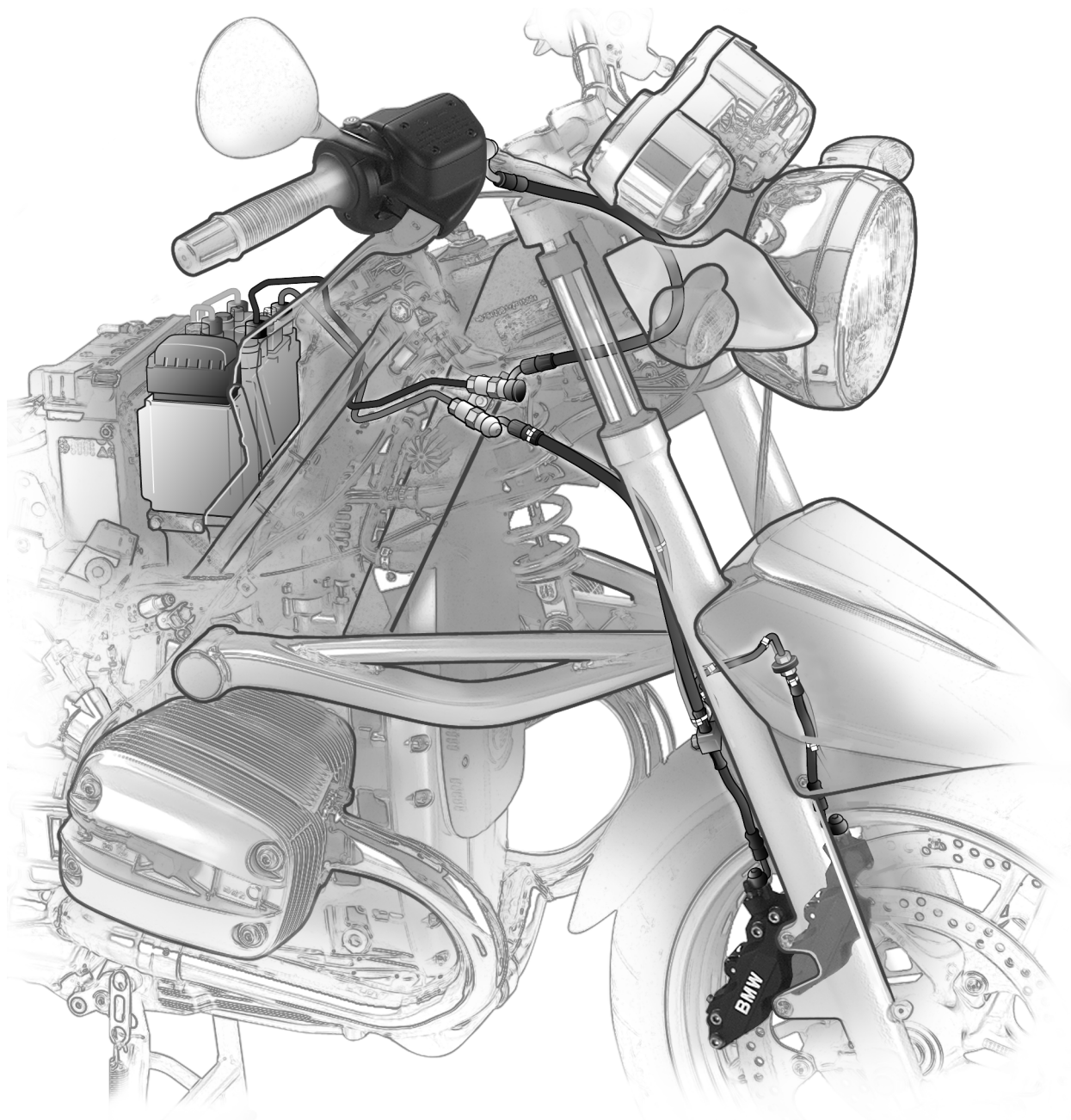
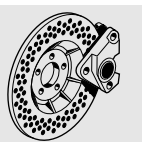
- Check that the spring clips (arrows) are seated correctly.
- Pull the protective caps over the plug connections.
- Fill and bleed the brake system (➡ 34.18).



Tightening torque:

Brake hose and brake line.....	18 Nm
Front brake caliper bleed screws	9 Nm
Rear brake caliper bleed screw	7 Nm

Removing and refitting front brake line



Removing and refitting rear brake line

