34 00 010 Change brake fluid in entire system

\+ 34 00 504

Preparatory work

=> Removing and installing the rear-wheel stand special tool (motorcycles without centre stand) (Description in item: 46 52 510, Billed as a separate item)

Removing seat

Removing battery cover

Removing right and left inboard covers

Removing left and right tank covers

Remove the fuel tank

Core activity

(-) Changing brake fluid in wheel circuits

⚠ CAUTION

Untrained personnel or failure to comply with repair specifications and the associated sequence of steps in the corresponding procedures

Risk of accident due to repair and maintenance work not in compliance with correct procedure

- Have all repair and maintenance work on the **BMW Motorrad**Integral **ABS**braking system by trained and qualified personnel.
- Always comply with maintenance and repair specifications and work strictly in accordance with the sequence of steps set out in the corresponding procedures.

⚠ WARNING

Use only fresh brake fluid from an unopened container.

WARNING

Foaming of the brake fluid during the bleeding procedure due to rapid pumping at the handbrake lever (presence of air in small quantities not detected in the bleed test with the BMW Motorraddiagnosis system).

Diminished braking effect

- When performing maintenance and repair work on the **BMW Motorrad**Integral **ABS**, always operate the brakes slowly.
- Do not pump quickly or vigorously.

ATTENTION

Brake fluid on painted surfaces, plastic and rubber components

Material damage

- Do not allow brake fluid to come into contact with painted surfaces, plastic or rubber components.
- Wash components immediately with clear water if required.

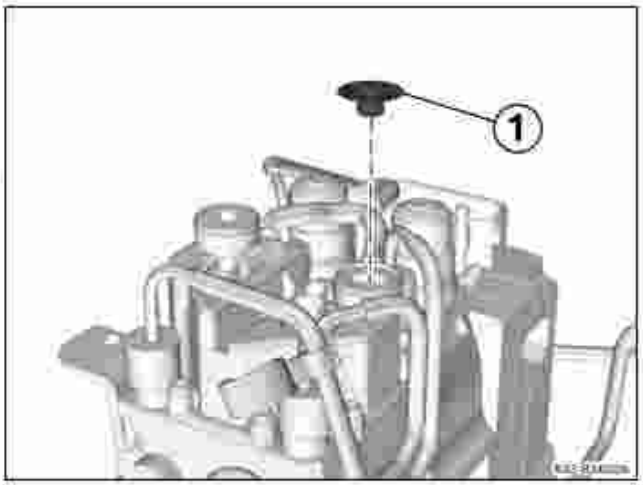
ATTENTION

Disengagement of plug connections at pressure modulator

Damage due to ingress of dirt and brake fluid

- Do not disengage plug connections at pressure modulator.

▶ **Changing brake fluid, front wheel circuit**

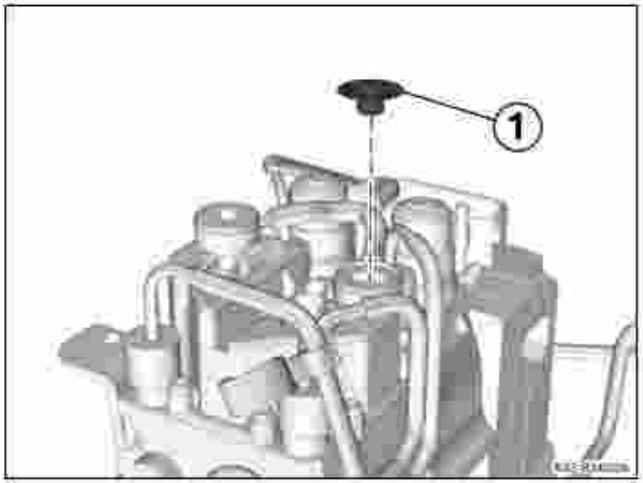


- Open front wheel-circuit reservoir (1)and draw off the old brake fluid.

▷ **Removing front brake pads**

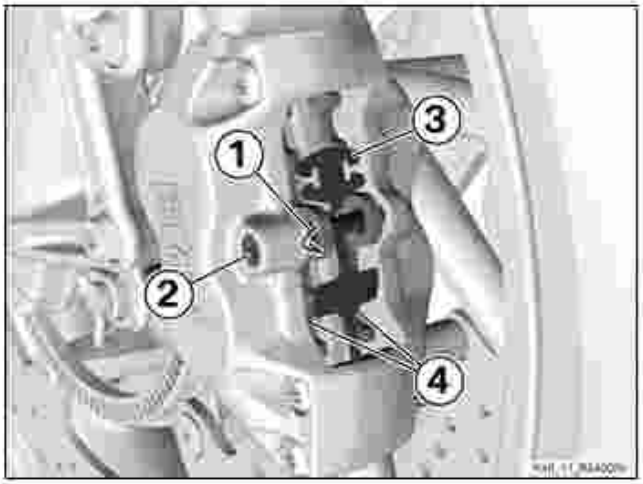
- Do not disengage plug connections at pressure modulator.

▶ Changing brake fluid, front wheel circuit



- Open front wheel-circuit reservoir (1)and draw off the old brake fluid.

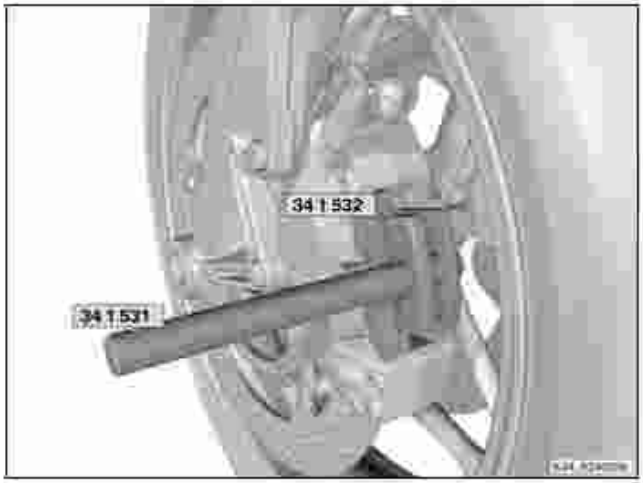
▷ Removing front brake pads

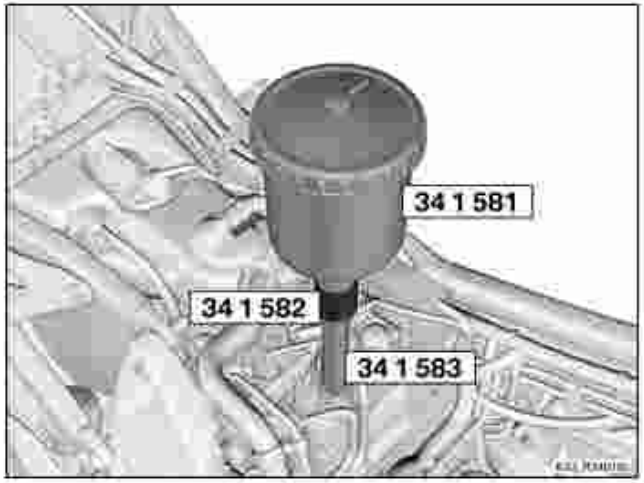


- Remove retainer (1).
- Remove screw (2)and remove spring plate (3).
- Remove brake pads (4).

◁

- Wrap cloths round the left and right brake calipers.
- Use the piston resetting device (No. 34 1 531)and locators (No. 34 1 532)to force the pistons in the left and right brake calipers all the way back and hold them in this position.





- Wrap cloths round the left and right brake calipers.
- Use the piston resetting device (No. 34 1 531)and locators (No. 34 1 532)to force the pistons in the left and right brake calipers all the way back and hold them in this position.
- Draw off the excess brake fluid from the wheel-circuit reservoir.
- Secure container (No. 34 1 581)with threaded adapter (No. 34 1 582)and sight glass (No. 34 1 583)on to the front wheel-circuit reservoir.
- Slowly pour fresh brake fluid into the container until it is approximately 1/2 full.

Hydraulic fluid	
Brake fluid, DOT4	

- Connect the brake bleeding device to the bleed screw of the right brake caliper, but **do not switch it on**.
- Secure the hose of the brake bleeding device to the bleed screw with a cable tie.

WARNING

Brake lever operated without self-diagnosis having completed.

Only residual braking function available.

- Do not operate the brake levers before or during self-diagnosis.

- Switch on the ignition.

ATTENTION

Operation of the front brake with brake calipers and brake pads removed (the front brake also operates the rear brake (Integral brakes))

Brake pistons pushed out.

tie.

WARNING

Brake lever operated without self-diagnosis having completed.

Only residual braking function available.

- Do not operate the brake levers before or during self-diagnosis.

- Switch on the ignition.

ATTENTION

Operation of the front brake with brake calipers and brake pads removed (the front brake also operates the rear brake (Integral brakes))

Brake pistons pushed out

- Do not operate the brakes while a brake caliper has been removed.
- Install brake caliper with brake pads or insert the piston resetting device.

- Very gently pull the handbrake lever until the pump is only just running.
- Open the bleed screw and at the same time top up the container with fresh brake fluid.

 **Hydraulic fluid**	
Brake fluid, DOT4	

WARNING

Low fluid level in wheel-circuit reservoir.

Ingress of air into brake system. Bleeding procedure has to be repeated.

- The brake fluid must always be visible in the container, because the piston in the wheel-circuit reservoir must always be covered by the fluid.

- Start by pumping off the brake fluid with virtually no pressure whatsoever, then vary the brake pressure.

NOTICE

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.

Brake fluid, DOT4		

WARNING

Low fluid level in wheel-circuit reservoir.

Ingress of air into brake system. Bleeding procedure has to be repeated.

- The brake fluid must always be visible in the container, because the piston in the wheel-circuit reservoir must always be covered by the fluid.

- Start by pumping off the brake fluid with virtually no pressure whatsoever, then vary the brake pressure.

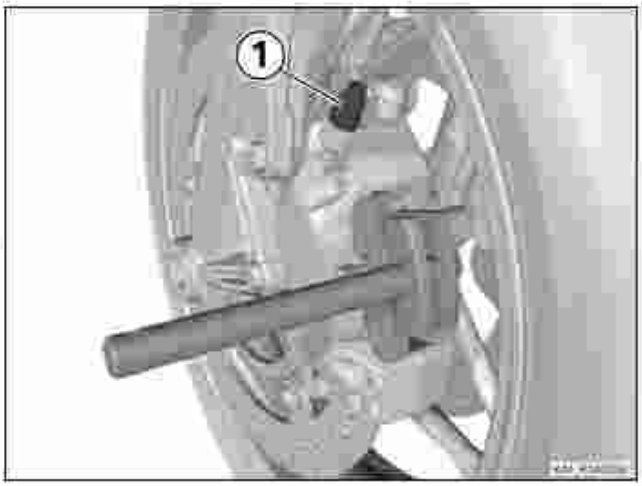
NOTICE

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.

Tightening torques		
Bleed screw, brake caliper, front		
	10 Nm	

- Release the brake lever.
- Disconnect the brake bleeding device from the bleed screw.
- Connect the brake bleeding device to bleed screw (1)of the left brake caliper, but **do not switch it on**.
- If necessary, secure the hose of the brake bleeding device to the bleed screw with a cable tie.
- Carry out the brake-fluid change procedure for the left brake caliper and the right brake caliper.
- When the brake fluid emerges clear and free from bubbles, continue pumping it off until the container is just on the point of being draining empty.
- Close the bleed screw.

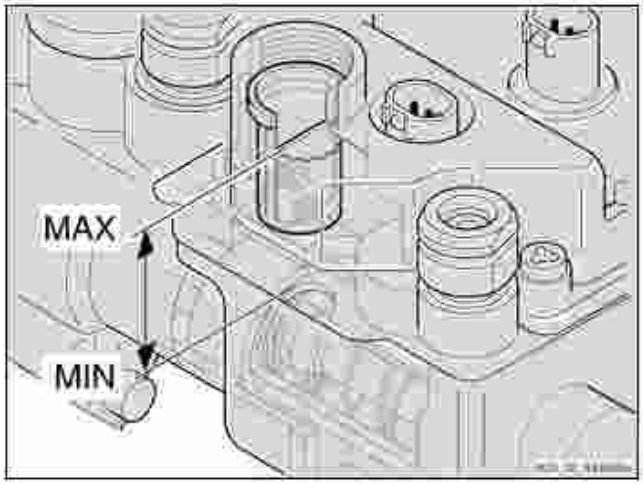


Tightening torques		
Bleed screw, brake caliper, front		
	10 Nm	

- Release the brake lever and switch off the ignition.

Tightening torques		
Bleed screw, brake caliper, front		
	10 Nm	

- Release the brake lever and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.
- Disconnect the container from the wheel-circuit reservoir.



WARNING

Undefined fluid level in wheel circuits after fluid change or bleeding procedure.

Not enough or too much fluid in the wheel circuit.

- Always correct the fluid level in the wheel circuits in accordance with the "Instructions for filling reservoir" after every fluid change or bleeding procedure.

- Top up the fluid in the wheel-circuit reservoir to the (MAX)mark.

▷ **Instructions for filling front wheel-circuit reservoir**

ATTENTION

Operation of the front brake with brake calipers and brake pads removed (the front brake also operates the rear brake (Integral brakes))

Brake pistons pushed out.

- Do not operate the brakes while a brake caliper has been removed.
- Install brake caliper with brake pads or insert the piston resetting device.

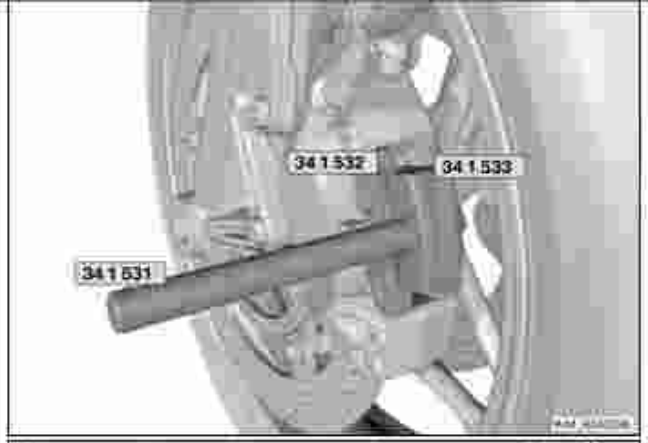
- Make sure that the front wheel-circuit reservoir is filled to the "MAX" mark.
- Insert adapter 22 (No. 34 1 533)in piston resetting device (No. 34 1 531)and locator (No. 34 1 532)in both front brake calipers and **fully screw together**piston resetting device until the adapter is secured.

WARNING

Low fluid level in wheel-circuit reservoir.

Ingress of air into brake system. Bleeding procedure has to be repeated.

- The brake fluid must always be visible in the container, because the piston in



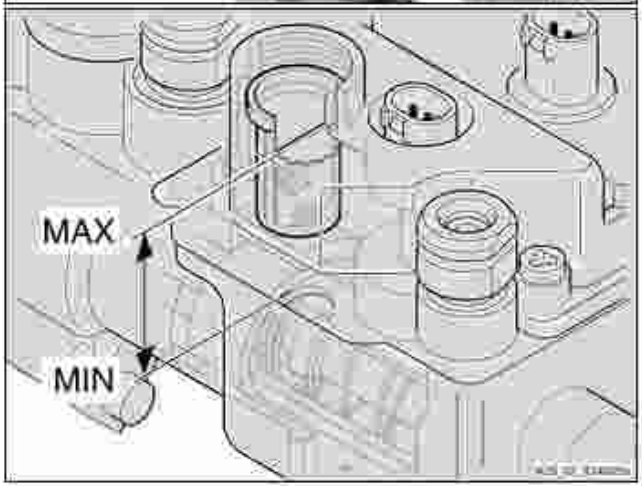
locator (No. 34 1 532)in both front brake calipers and **fully screw together**piston resetting device until the adapter is secured.

WARNING

Low fluid level in wheel-circuit reservoir.

Ingress of air into brake system. Bleeding procedure has to be repeated.

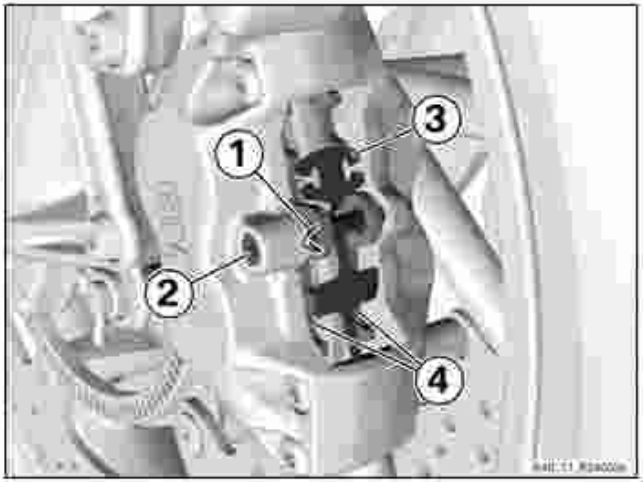
- The brake fluid must always be visible in the container, because the piston in the wheel-circuit reservoir must always be covered by the fluid.



- Switch on the ignition.
- Pull handbrake lever until the pistons of the front brake calipers are in contact with piston resetting device (No. 34 1 531).
- Top up the brake fluid in the wheel-circuit reservoir until the (MAX)mark in the filler aperture is just touching the surface of the fluid.

Hydraulic fluid	
Brake fluid, DOT4	

- Force back the brake pistons with piston resetting device (No. 34 1 531)and remove together with adapter 22 (No. 34 1 533).
- Engage the cap of the wheel-circuit reservoir on the threads and tighten until hand-tight.
- Replace the front brake pads **with new pads**, if necessary.



▷ **Install the front brake pads**

- Install brake pads (4).
- Install spring plate (3), making sure that the **arrow points in the direction of rotation**.
- Install screw (2).
- Install retainer (1).
- Operate the brake several times until the brake pads are bedded.

◁

WARNING

WARNING

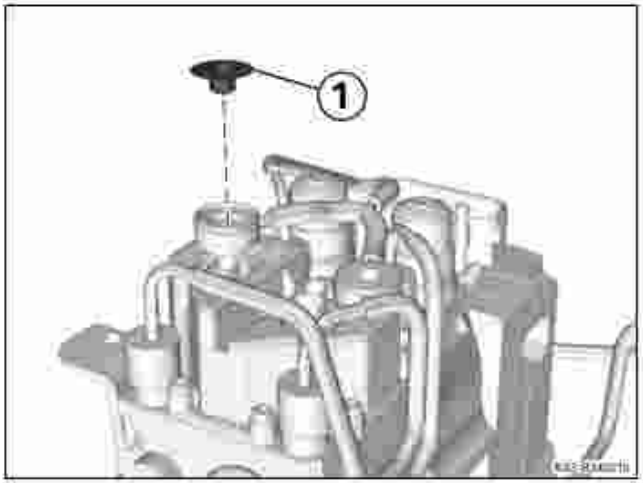
Brake lever operated without self-diagnosis having completed.

Only residual braking function available.

- Do not operate the brake levers before or during self-diagnosis.

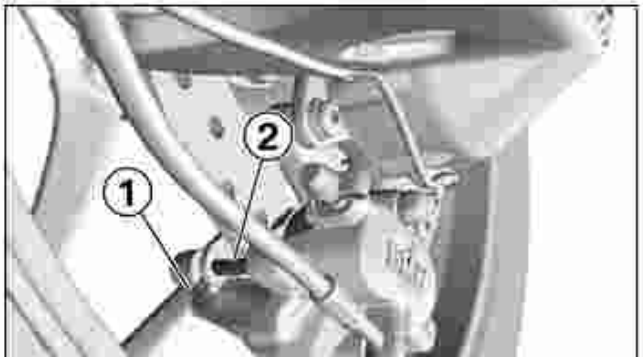
- Switch on the ignition and seat the brake pads against the discs.
- Check operation of the brake system with the ignition switched on.

Changing brake fluid in wheel circuit, rear



- Open rear wheel-circuit reservoir (1)and draw off the old brake fluid.

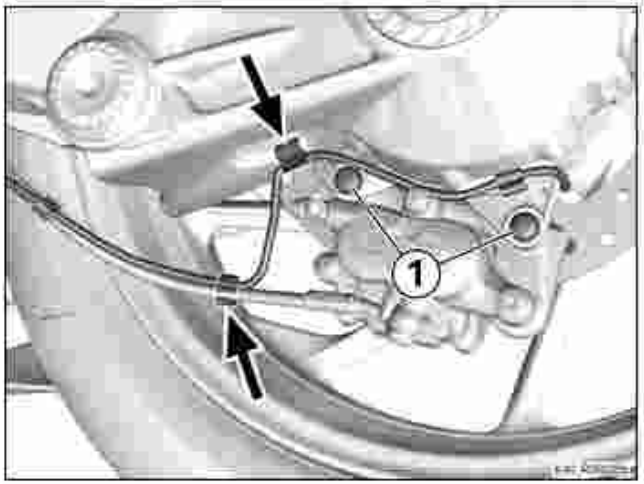
Removing rear brake pads



- Press the brake caliper against the brake disc in order to force the pistons back.
- Remove retainer (1).
- Drive retaining pin (2)out toward the wheel side.

▷ **Releasing brake caliper**

▷ **Releasing brake caliper**



- Remove screws (1).
- Release the sensor cable (arrows).

ATTENTION

Operation of the front brake with brake calipers and brake pads removed (the front brake also operates the rear brake (Integral brakes))

Brake pistons pushed out

- Do not operate the brakes while a brake caliper has been removed.
- Install brake caliper with brake pads or insert the piston resetting device.

- Remove the brake caliper.

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- Remove the brake pads.

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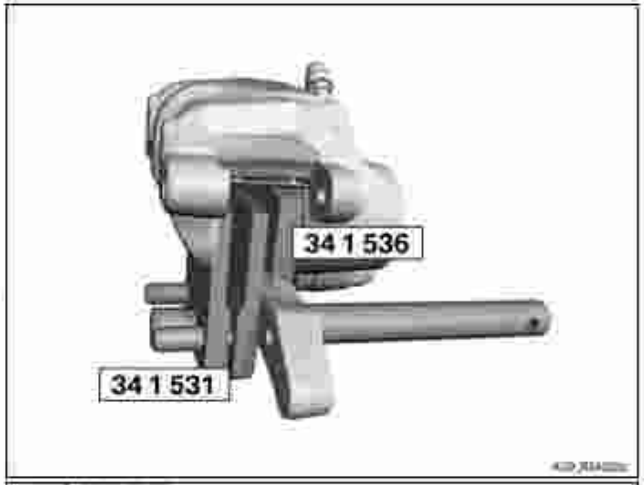
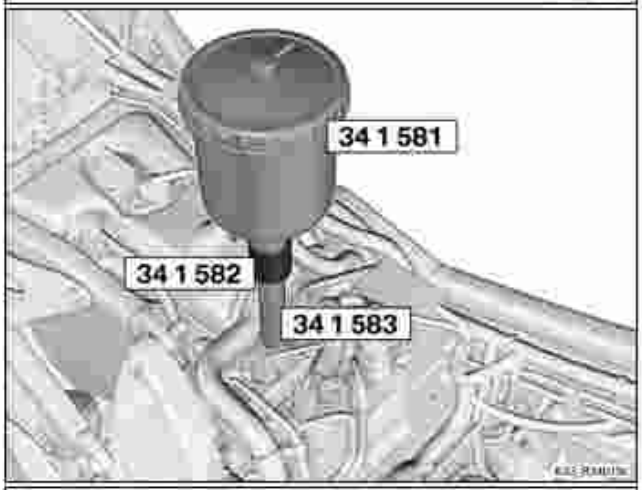


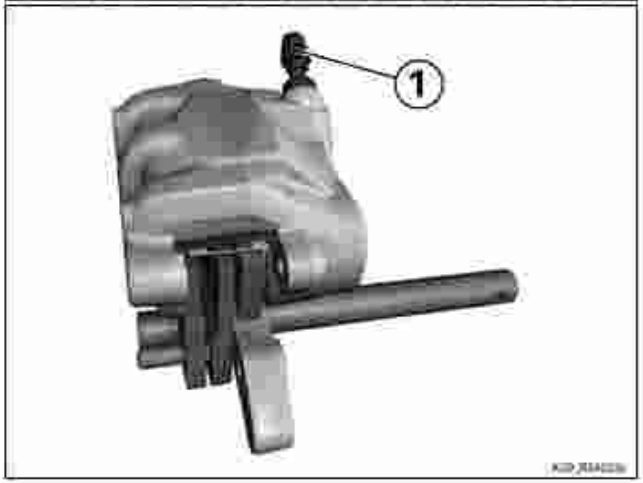
- Install piston resetting device (No. 34 1 531)and adapter (No. 34 1 536)and force the pistons all the way back.
- Wrap a cloth around the brake caliper.
- Draw off the excess brake fluid from the wheel-circuit reservoir.

- Connect container (No. 34 1 581)to the rear wheel-circuit reservoir with threaded adapter (No. 34 1 582)and sight glass (No. 34 1 583).
- Slowly fill the container with fresh brake fluid until it is approximately 1/3 full.



- Connect container (No. 34 1 581)to the rear wheel-circuit reservoir with threaded adapter (No. 34 1 582)and sight glass (No. 34 1 583).
- Slowly fill the container with fresh brake fluid until it is approximately 1/3 full.

Hydraulic fluid	
Brake fluid, DOT4	



- Connect the brake bleeding device to bleed screw (1), but **do not switch on.**
- Use a cable tie to secure the hose of the brake bleeding device to the bleed screw.

⚠ WARNING

Brake lever operated without self-diagnosis having completed.

Only residual braking function available.

- Do not operate the brake levers before or during self-diagnosis.

- Switch on the ignition.
- Very gently press the footbrake lever until the pump just starts up.
- Open the bleed screw, while topping up the container with new brake fluid if necessary.

Hydraulic fluid	
Brake fluid, DOT4	

⚠ WARNING

Low fluid level in wheel-circuit reservoir.

Ingress of air into brake system. Bleeding procedure has to be repeated.

- The brake fluid must always be visible in the container, because the piston in the wheel-circuit reservoir must always be covered by the fluid.

- Pump out the brake fluid with virtually no pressure to begin with, then vary the

Hydraulic fluid	
Brake fluid, DOT4	

WARNING

Low fluid level in wheel-circuit reservoir.

Ingress of air into brake system. Bleeding procedure has to be repeated.

- The brake fluid must always be visible in the container, because the piston in the wheel-circuit reservoir must always be covered by the fluid.

- Pump out the brake fluid with virtually no pressure to begin with, then vary the brake pressure.

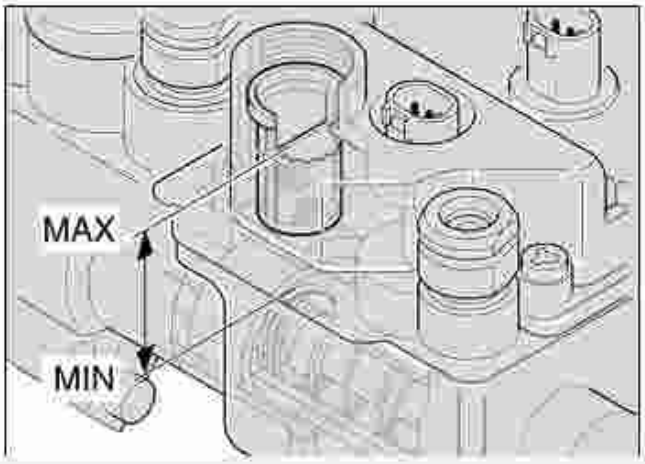
NOTICE

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.

- When the emerging brake fluid is clear and free of bubbles, continue pumping until the fluid in the container just disappears from view.
- Close the bleed screw.

Tightening torques		
Rear brake caliper bleed screw		
	10 Nm	

- Release the footbrake lever and switch off the ignition.
- Disconnect the brake bleeding device from the bleed screw.
- Disconnect the container from the wheel-circuit reservoir.



WARNING

Undefined fluid level in wheel circuits after fluid change or bleeding procedure.

Not enough or too much fluid in the wheel circuit.

- Always correct the fluid level in the wheel circuits in accordance with the "Instructions for filling reservoir" after every fluid change or bleeding procedure.

- Top up the fluid in the wheel-circuit reservoir to the (MAX)mark.

▷ **Instructions for filling rear wheel circuit reservoir**

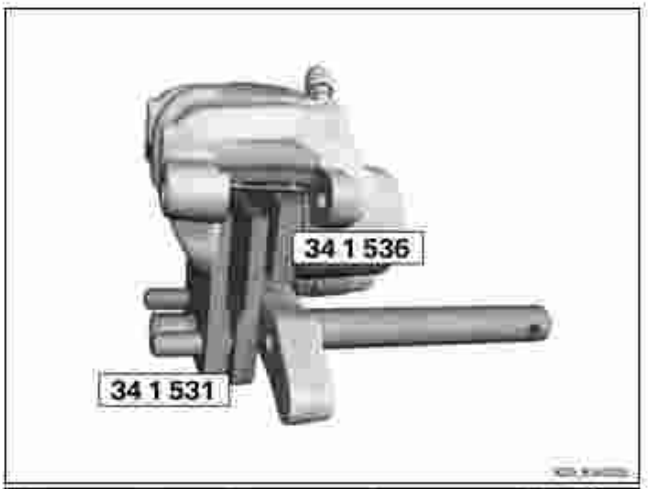
- Make sure that the rear wheel-circuit reservoir is topped up to the "MAX" mark.
- Compress piston resetting device (No. 34 1 531)**fully**and install it with adapter (No. 34 1 536)in the rear brake caliper.

⚠ WARNING

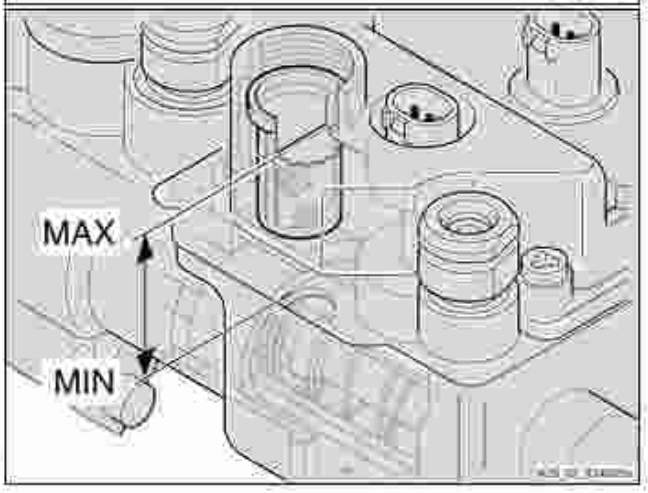
Low fluid level in wheel-circuit reservoir.

Ingress of air into brake system. Bleeding procedure has to be repeated.

- The brake fluid must always be visible in the container, because the piston in the wheel-circuit reservoir must always be covered by the fluid.



- Switch on the ignition.
- Operate the footbrake lever until the pistons of the rear brake caliper are in contact with piston resetting device (No. 34 1 531)and adapter for rear brakes(No. 34 1 536).



- Top up the brake fluid in the wheel-circuit reservoir until the (MAX)mark in the filler neck is just touching the surface of the fluid.

Hydraulic fluid	
Brake fluid, DOT4	

- Remove piston resetting device for integral brakes (No. 34 1 531)and adapter for rear brakes (No. 34 1 536).
- Hand-tighten the cap of the rear wheel-circuit reservoir.
- Replace the rear brake pads after removal, if necessary

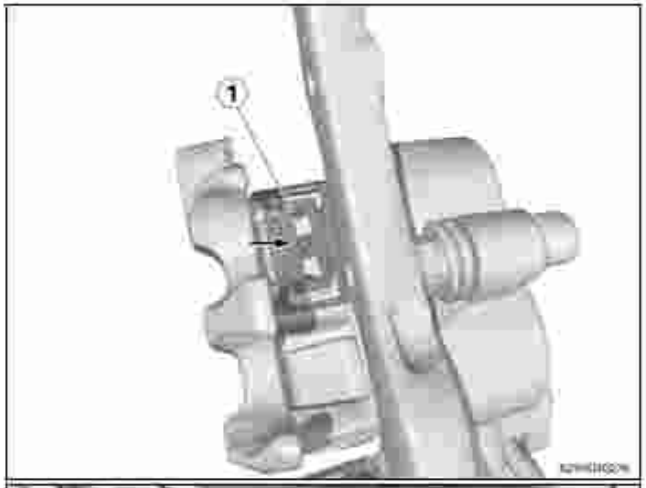
▷ **Installing rear brake pads**

- Check that spring (1)and the stop plate are correctly seated and installed in the correct positions.

» The (arrow)on the spring must point in the brake disc's direction of rotation.

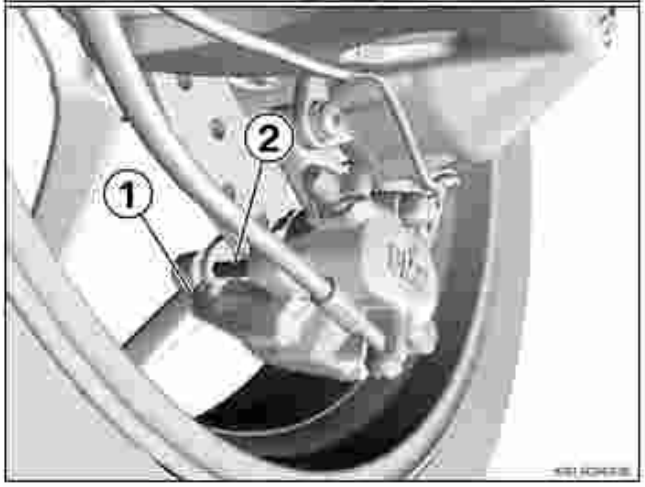
- Hand-tighten the cap of the rear wheel-circuit reservoir.
- Replace the rear brake pads after removal, if necessary

▷ **Installing rear brake pads**



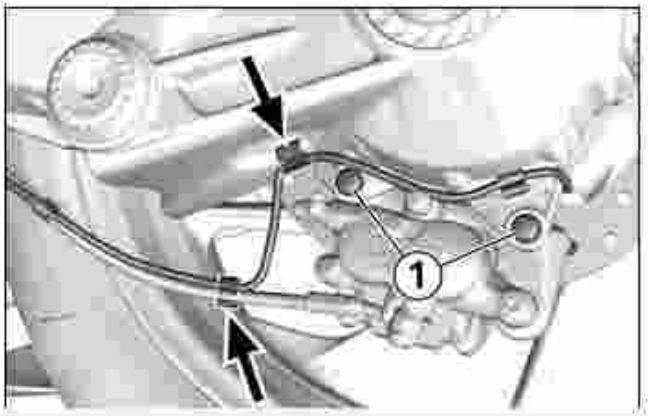
- Check that spring (1)and the stop plate are correctly seated and installed in the correct positions.

» The (arrow)on the spring must point in the brake disc's direction of rotation.



- Install the brake pads.
- Manually install retaining pin (2).
- Drive the retaining pin all the way into the brake caliper until seated.
- Install retainer (1).

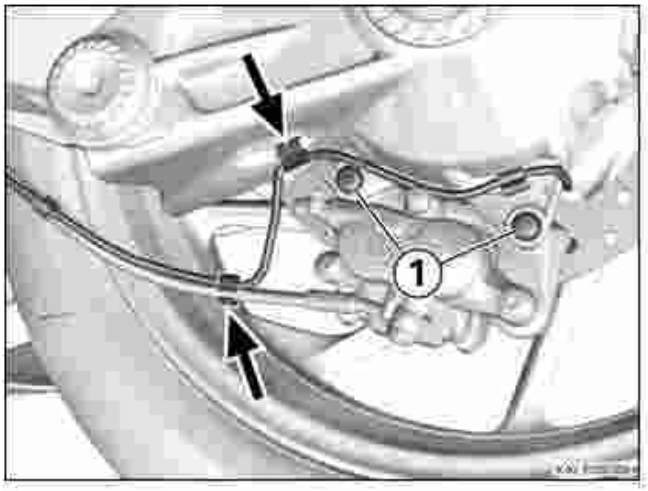
▷ **Securing rear brake caliper**



- Hold the brake caliper in position and install screws (1).

Tightening torques		
Brake caliper, rear, to final drive		
M8 x 25	24 Nm	

- Secure the sensor cable (arrows).
- Operate the brake several times until the brake pads are bedded.



Securing rear brake caliper

- Hold the brake caliper in position and install screws (1).

Tightening torques		
Brake caliper, rear, to final drive		
M8 x 25	24 Nm	

- Secure the sensor cable (arrows).
- Operate the brake several times until the brake pads are bedded.

WARNING

Brake lever operated without self-diagnosis having completed.

Only residual braking function available.

- Do not operate the brake levers before or during self-diagnosis.

- Check operation of the brake system with the ignition switched on.

(-) Changing brake fluid in control circuits

CAUTION

Untrained personnel or failure to comply with repair specifications and the associated sequence of steps in the corresponding procedures

Risk of accident due to repair and maintenance work not in compliance with correct procedure

- Have all repair and maintenance work on the **BMW Motorrad**Integral **ABS**braking system by trained and qualified personnel.
- Always comply with maintenance and repair specifications and work strictly in accordance with the sequence of steps set out in the corresponding procedures.

WARNING

Water ingress in the brake fluid due to air humidity

Decrease in the boiling point, formation of vapour bubbles reduces the

- When performing maintenance and repair work on the **BMW Motorrad** Integral **ABS**, always operate the brakes slowly.
- Do not pump quickly or vigorously.

▶ Changing brake fluid in front control circuit within framework of maintenance

- Set the brake lever to maximum span and turn the handlebars all the way to the left.
- Repeatedly and slowly pull front brake lever lightly to expel air from the handbrake cylinder.
- Turn the front wheel to a position in which the brake fluid reservoir is horizontal and secure the front wheel in this position.

ATTENTION

Brake fluid on painted surfaces, plastic and rubber components

Material damage

- Do not allow brake fluid to come into contact with painted surfaces, plastic or rubber components.
- Wash components immediately with clear water if required.

- Wrap cloths around the reservoir.
- Using disengagement tool (No. 32 1 511), press back the lugs on retainer (2) and open the reservoir cap.
- Remove reservoir cap (1), retainer (2) and diaphragm (3), draw off the old fluid and clean the reservoir.

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

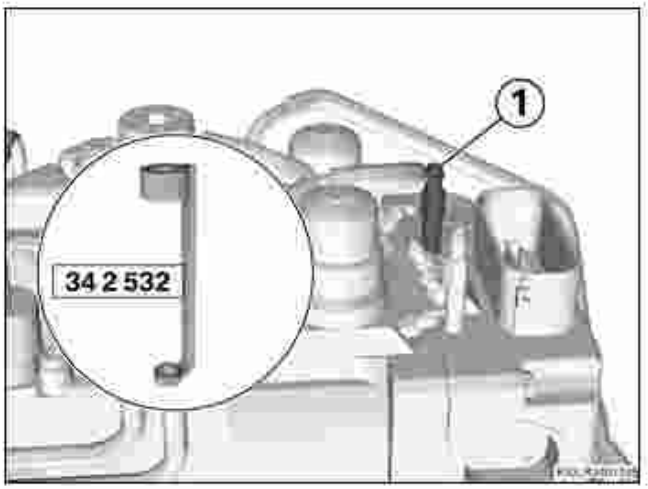
Hydraulic fluid

Brake fluid, DOT4	

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

Hydraulic fluid	
Brake fluid, DOT4	

- Set the handbrake lever to the position for maximum span.



ATTENTION

Disengagement of plug connections at pressure modulator

Damage due to ingress of dirt and brake fluid

- Do not disengage plug connections at pressure modulator.

- Connect the brake bleeding device to bleed screw (1)of the front control circuit, but **do not switch on**.

WARNING

Bleeding of the control circuits by vacuum extraction with conventional equipment.

Inadequate bleeding of the system.

- Do not attempt to draw off the fluid by vacuum extraction when changing the fluid or bleeding the control circuits.

- Change the brake fluid in the front control circuit in accordance with the instructions for bleeding and using special ring spanner (No. 34 2 532).

NOTICE

Changing the brake fluid within the framework of regular maintenance merely entails changing the fluid through the bleed valve of the control circuit.

The integral circuit and the metering cylinder do not have to be bled unless the brake system was opened.

▷ Instructions for bleeding

- In the following sequence, bleed:

- 1. Slowly operate brake lever until brake light switch clicks (blow-by bore closed)

entails changing the fluid through the bleed valve of the control circuit.

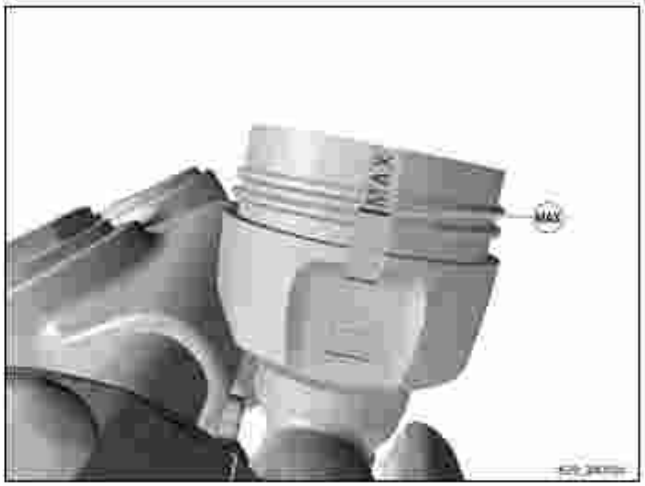
The integral circuit and the metering cylinder do not have to be bled unless the brake system was opened.

▷ **Instructions for bleeding**

- In the following sequence, bleed:
- 1. Slowly operate brake lever until brake light switch clicks (blow-by bore closed).
- 2. Open the bleed screw.
- 3. Slowly operate brake lever to full extent of its travel and close the bleed screw.
- 4. Slowly release the brake lever.
- 5. Repeat steps 1 to 4 until the brake fluid emerges clear and free of bubbles.

◁

- Fit the protective caps on the bleed screws.
- Make sure the **handlebars are in the straight-ahead position** and top up the brake fluid to the (MAX) mark.
- Wipe the rim of the reservoir, the diaphragm and the cover to remove brake fluid, and carefully re-assemble the components.



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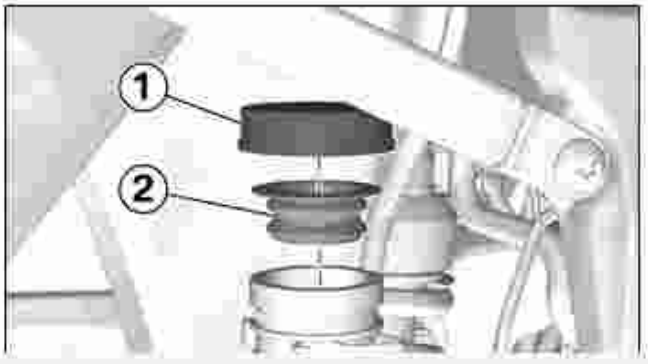
▶ **Changing brake fluid in rear control circuit within framework of maintenance**

ATTENTION

Brake fluid on painted surfaces, plastic and rubber components

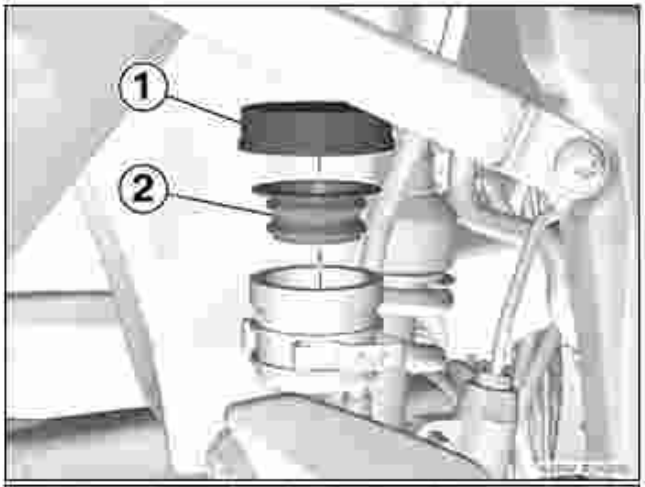
Material damage

- Do not allow brake fluid to come into contact with painted surfaces, plastic or rubber components.
- Wash components immediately with clear water if required.



- Install reservoir cap (1) with diaphragm (2).
- Drain off the brake fluid from the master

Changing brake fluid in rear control circuit within framework of maintenance



ATTENTION

Brake fluid on painted surfaces, plastic and rubber components

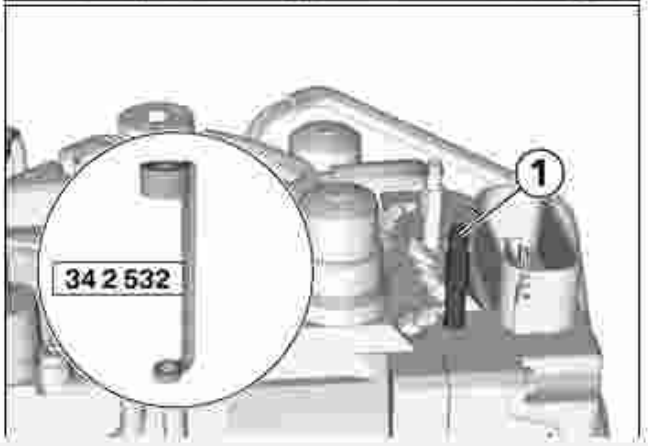
Material damage

- Do not allow brake fluid to come into contact with painted surfaces, plastic or rubber components.
- Wash components immediately with clear water if required.

- Install reservoir cap (1)with diaphragm (2).
- Draw off the brake fluid from the reservoir.

- Top up with fresh brake fluid to the (MAX)mark.

Hydraulic fluid	
Brake fluid, DOT4	



ATTENTION

Disengagement of plug connections at pressure modulator

Damage due to ingress of dirt and brake fluid

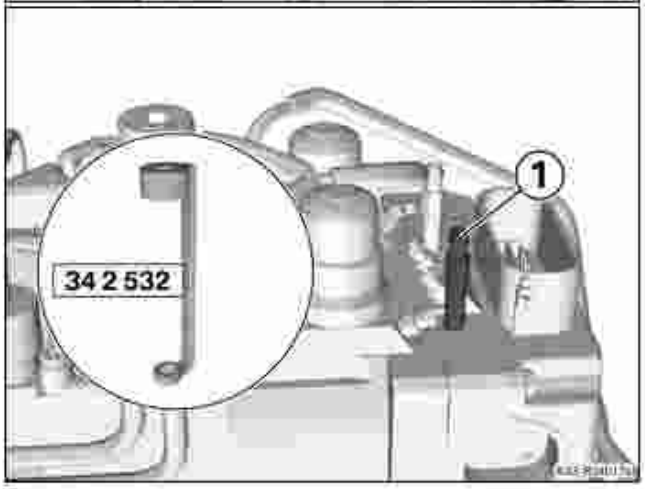
- Do not disengage plug connections at pressure modulator.

- Connect the brake bleeding device to bleed screw (1)of the rear control circuit, but **do not switch on.**

WARNING

Bleeding of the control circuits by vacuum extraction with conventional equipment.

Inadequate bleeding of the system.



ATTENTION

Disengagement of plug connections at pressure modulator

Damage due to ingress of dirt and brake fluid

- Do not disengage plug connections at pressure modulator.

- Connect the brake bleeding device to bleed screw (1)of the rear control circuit, but **do not switch on.**

WARNING

Bleeding of the control circuits by vacuum extraction with conventional equipment.

Inadequate bleeding of the system.

- Do not attempt to draw off the fluid by vacuum extraction when changing the fluid or bleeding the control circuits.

- Change the brake fluid in the rear control circuit in accordance with the instructions for bleeding and using special ring spanner (No. 34 2 532).

NOTICE

Changing the brake fluid within the framework of regular maintenance merely entails changing the fluid through the bleed valve of the control circuit.

The integral circuit and the metering cylinder do not have to be bled unless the brake system was opened.

▷ **Instructions for bleeding**

- In the following sequence, bleed:

- 1. Slowly operate brake lever until brake light switch clicks (blow-by bore closed).

- 2. Open the bleed screw.

- 3. Slowly operate brake lever to full extent of its travel and close the bleed screw.

- 4. Slowly release the brake lever.

- 5. Repeat steps 1 to 4 until the brake fluid emerges clear and free of bubbles.

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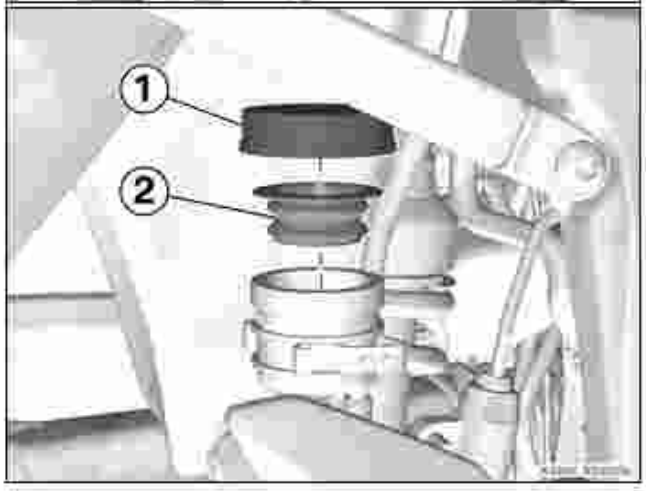
- Fit the protective caps on the bleed screws.

- Top up with fresh brake fluid to the (MAX)mark.

5. Repeat steps 1 to 4 until the brake fluid emerges clear and free of bubbles.

- Fit the protective caps on the bleed screws.
- Top up with fresh brake fluid to the (MAX)mark.



- Wipe the rim of the reservoir, diaphragm (2)and cap (1)to remove brake fluid and carefully re-assemble the components.

Follow-up work

Connecting **BMW Motorrad** diagnostic system to vehicle

Performing bleed test with **BMW Motorrad** diagnostic system

Install the fuel tank

Reading fault memory with **BMW Motorrad** diagnostic system

Disconnecting **BMW Motorrad** diagnostic system from motorcycle

Installing left and right tank covers

Installing right and left inboard covers

Installing battery cover