

2007 BRAKES**Brakes - Repair Instructions - Cooper****00 BRAKE TESTING AND BLEEDING****00 SAFETY INFORMATION FOR WORKING ON VEHICLES WITH AUTOMATIC ENGINE START-STOP SYSTEM (MSA)**

WARNING: If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

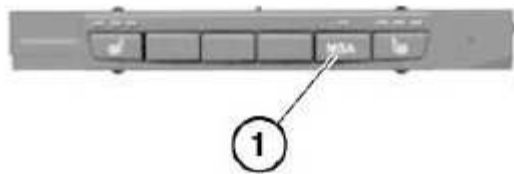
An automatic engine start may ensue.

Observe safety precautions when working on MSA vehicles.

Before carrying out practical work on the engine, always ensure that the MSA function is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by:

- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door



R61 1948

Fig. 1: Identifying Button

Courtesy of BMW OF NORTH AMERICA, INC.

- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
 - Workshop mode A = 10 mm
 - Basic setting (engine hood/bonnet open) B = 7 mm

To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the stop before starting work and slowly release.

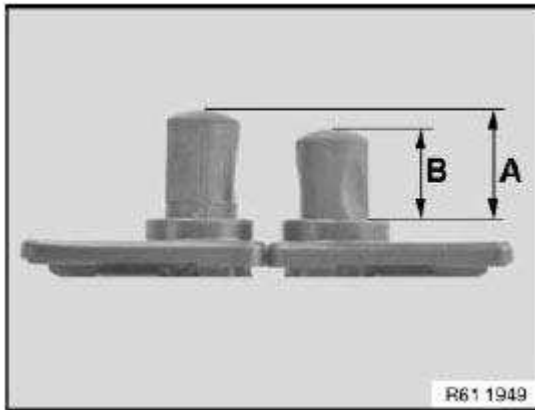


Fig. 2: Identifying Engine Hood Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

When working with diagnosis tools:

- Observe instructions in diagnosis tool

34 00 ... GENERAL INFORMATION

The brake system is one of the most important safety systems on any motor vehicle. It is therefore essential to act with utmost care when working on the brake system and to follow the instructions below.

General:

- Ensure cleanliness and only use rags which do not lose lint.
- Wash away or vacuum up brake dust, do not clear it away using compressed air. This dust is a health hazard.
- Ensure that no oils or grease enter the brake system: these substances would cause complete failure of the entire brake system.
- When cleaning brake components with brake cleaner, do not allow brake cleaner to get into the brake system.
- Even the most minute traces of brake cleaner must be avoided.

Brake fluid:

- Replace brake fluid at least every two years.
- Never reuse drained brake fluid.
- Always use BMW-approved brake fluid.
- Always dispose of brake fluid in approved receptacles.
- Do not allow brake fluid to drain into drain pipes, into the outside environment or into unsuitable facilities. This would create the risk of groundwater contamination since brake fluid is classed as a fluid that is hazardous to water.
- Do not allow brake fluid to come into contact with paintwork as this will destroy the paint.

- Brake fluid must not be allowed to remain on bare skin too long in order to avoid skin problems. Wash skin coated with brake fluid with water and soap.
- If brake fluid makes contact with eyes, immediately flush with large quantity of clean water and visit eye doctor.

Wheel brakes:

- Brake pads:

Brake linings must be replaced when the warning threshold value of the brake lining wear indicator is reached.

Refer to **FRONT BRAKE R56** and **REAR BRAKE DISCS R56** .

Brake pads must always be replaced on both sides of any axle.

The friction surfaces of the brake linings must not come into contact with oils or greases. The brake pads must be replaced if they are fouled by such substances.

In the case of rotation-dependent brake pads, make sure the arrow marking points in the direction of rotation of the brake disk for when the vehicle is moving forward. Brake pads with left/right markings must be fitted on the relevant side of the vehicle.

One-sided angled areas on the brake pads must be located on the disk contact side of the brake calliper for when the vehicle is moving forward.

- Brake discs:

Brake disks must not be scored or cracked. Furthermore, minimum brake disk thickness , disk runout, parallelism and surface roughness of the friction surfaces must not exceed or drop below the permitted values.

Refer to **FRONT BRAKE R56** and **REAR BRAKE DISCS R56** .

Always strip preservative off new parts before installation. With the rear brake discs, also strip preservative off brake drum on parking brake.

- Brake drums:

Brake drums must not be scored or cracked. Furthermore, the maximum drum inside diameter, radial runout and surface roughness of the friction surfaces must not exceed or drop below the permitted values.

Always strip preservative off new parts before installation.

- Brake callipers:

Only approved pastes on the basis of glycol must be used for repairs on brake callipers.

All moving parts on the brake calliper must move freely: note grease specifications.

Use only BMW-approved lubricants to grease calliper guides.

Brake lines, brake hoses:

- Brake lines and brake hoses must be correctly routed and must not abut with body or components in a way which would cause chafing.
- To prevent damage, release and tighten brake line couplings with a special brake line wrench only.
- The system must be bled each time any brake lines have been detached.
- All connection points must be checked for leaks.
- Only tighten down brake hoses on the front axle when wheels are in straight-ahead position.
- Close open connections on brake lines and individual components to prevent dirt from entering the brake system.
- Observe tightening torques when tightening down brake line screw connections.

Tightening torque: 34 32 1AZ . See **BRAKE LINES** for specs.

Wheel-slip control system:

The slip control system is basically maintenance-free.

However, be sure to adhere to the following:

- When carrying out welding work with electric welding equipment, be sure to disconnect the plug from the electronic control unit (ignition turned off).
- During painting work, the control unit may be subjected for brief periods to loads of max. 95°C and for long periods (approx. 2 hours) to loads of max. 85°C.
- Tighten down the battery terminals completely.
- The brake lines on the hydraulic unit must not be mixed up; if necessary, mark them before they are removed and after completing repairs perform the mix-up check with the DIS Tester.

34 00 ... GENERAL INFORMATION ON BREAKING IN NEW BRAKE DISCS / BRAKE PADS**IMPORTANT:****After completing work:**

- **Carry out function check on brake analyzer (test stand) to ensure that the brakes complies with legal requirements.**
- **Carry out test braking while driving at low speed; the effectiveness of the brakes may be reduced during the initial braking operations.**
- **Exaggerated drastic and continuous braking operations for faster braking in are not permitted.**
- **Advise the customer not to perform any wilful drastic braking in the first 200 km after brake replacement.**

- **Attach mirror tag to interior rearview mirror.**

34 00 009 CHECKING BRAKES ON TEST STAND

Necessary preliminary tasks:

- Check tires for damage
- Check tire treads
- Check tire pressure

IMPORTANT: The corresponding system must be deactivated on vehicles equipped with ASC+T or DSC.

The ASC+T or DSC telltale and warning light must light up in the instrument cluster!

The brakes must be at normal operating temperature. To do so, gently warm up the brake disks and brake drums while dry by braking the vehicle several times.

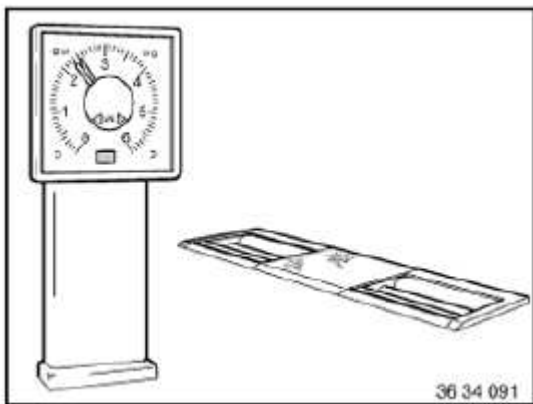


Fig. 3: Identifying Brake Test Stand

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Only brake test stands (analyzers) with test speeds of $< \text{ or } = 5 \text{ km/h}$ may be used.

You must follow without fail the guidelines contained in the operating instructions of the relevant test stand manufacturer.

Failure to do so may result in damage to the vehicle and the system and also personal injury.

34 00 010 CHECKING THICKNESS OF BRAKE LINING

Special tools required:

- **34 1 260**

NOTE: **The thickness of the outer brake pads can be determined without removing the road wheels.**

If necessary, move car until inspection opening for brake pad wear indicator (brake pad) can be seen through rim.

Insert special tool 34 1 260 through rim into recess for brake pad wear indicator.

Fit special tool on brake pad, slide ring (1) in direction of arrow towards well and read off measured value.

In this case, a brake pad thickness of 6 mm is measured.

NOTE: **(A) Brake disk**
 (B) Brake lining

SAFE LIMIT FOR LINING WEAR ON FRONT BRAKE .

SAFE LIMIT FOR LINING WEAR ON REAR BRAKE .

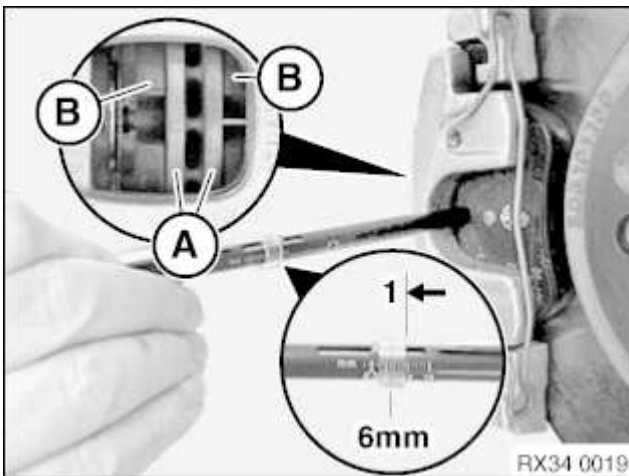


Fig. 4: Measuring Brake Pad Thickness Using Special Tool (34 1 260)
Courtesy of BMW OF NORTH AMERICA, INC.

34 00 012 PARKING BRAKE FUNCTION CHECK

Perform inspection in the following manner:

When 1st ratchet is engaged, no braking force should be exerted.

The difference in wheel circumferential forces between the left and right wheels may deviate by max. 30 %

from the greater value (measured on brake analyzer).

In event of larger deviations of wheel circumferential force: **READJUST HANDBRAKE**.

Braking with locked wheels must be possible with the handbrake.

The handbrake must be readjusted if the actuation stroke is greater than 6 teeth.

NOTE: The handbrake can only be adjusted correctly when the parking brake Bowden cables and all moving handbrake parts are free to move and fully operational.

Basic handbrake adjustment is necessary:

- In event of excessive actuation stroke (6 teeth).
- When replacing parking brake Bowden cables
- When replacing handbrake lever.

34 00 025 REPLACING FLUID IN ABS/ASC+T BRAKE SYSTEM

NOTE: Read and comply with **GENERAL INFORMATION**.

IMPORTANT: When carrying out repairs to the brake system, follow the procedure set out in **BLEEDING BRAKE SYSTEM WITH DSC**.

Open cover (1).

Connect bleeder unit to expansion tank (2) and switch on.

IMPORTANT: Check relevant Operating Instructions for each device.

Charging pressure should not exceed 2 bar.

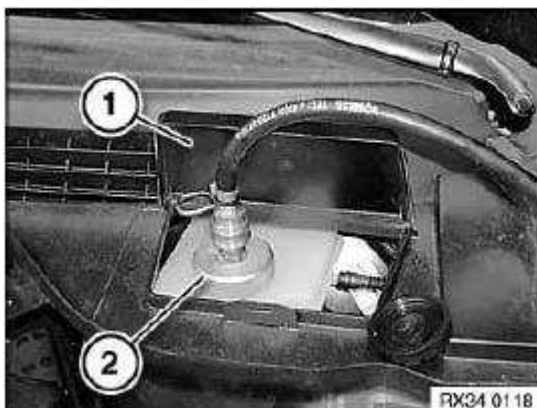


Fig. 5: Identifying Expansion Tank And Cover

Courtesy of BMW OF NORTH AMERICA, INC.

Flushing brake system completely

Connect bleeder hose with collecting tray to bleeder valve on rear right brake caliper.

Open bleeder valve and purge until clear, bubble-free brake fluid emerges.

Close bleed valve.

Follow same procedure on rear left, front right and front left wheel brake.

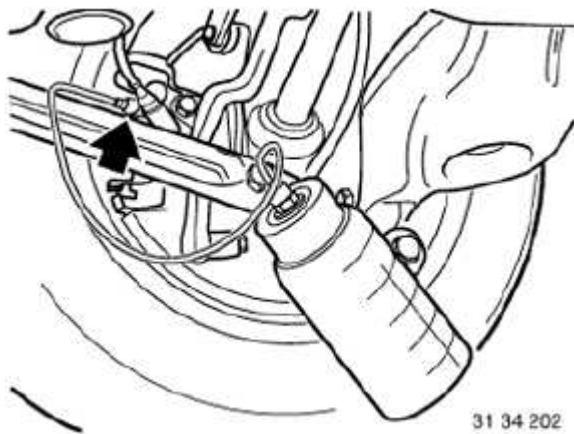


Fig. 6: Locating Bleeder Valve

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **The CLUTCH SLAVE CYLINDER must be scavenged in cars with manual transmissions.**

Switch off bleeder unit and remove from expansion tank.

Check brake fluid level.

Close expansion tank.

NOTE: **Pay attention to rubber seal (1) in sealing cap.**

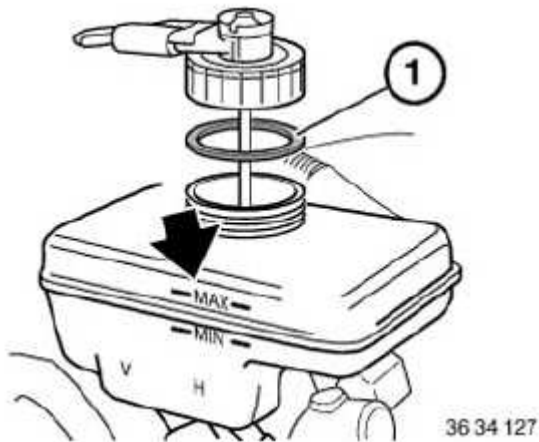


Fig. 7: Locating Rubber Seal

Courtesy of BMW OF NORTH AMERICA, INC.

34 00 048 BLEEDING BRAKE SYSTEM WITH ABS/ASC+T

NOTE: This procedure is described in the section headed **BLEEDING BRAKE SYSTEM WITH DSC.**

34 00 050 BLEEDING BRAKE SYSTEM WITH DSC

NOTE: Read and comply with **GENERAL INFORMATION.**

When replacing or repairing, observe the filling and bleeding instructions for the following parts:

- Tandem brake master cylinder
- Hydraulic unit
- Components and connecting lines which are fitted between these assemblies.

Connect bleeder unit with max. 2 bar filling pressure.

A second person is needed to help carry out this work.

Open cover (1).

Connect bleeder unit to expansion tank (2) and switch on.

Connect DIS.

Select path: Service functions - Chassis/Suspension - Slip control systems - Bleeding procedure.

IMPORTANT: Check relevant Operating Instructions for each device.

Charging pressure should not exceed 2 bar.

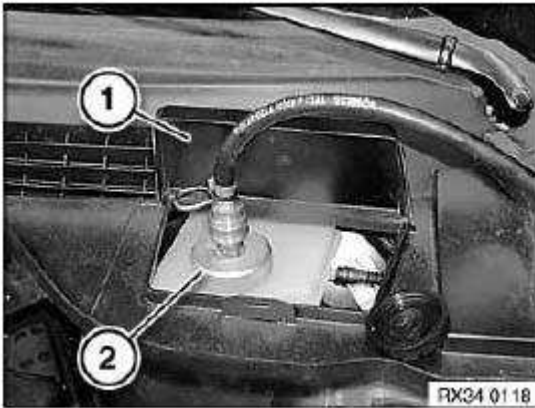


Fig. 8: Identifying Expansion Tank And Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Flushing brake system completely

Connect bleeder hose with collecting tray to bleeder valve on rear right brake caliper.

Open bleeder valve and purge until clear, bubble-free brake fluid emerges.

Close bleed valve.

Follow same procedure on rear left, front right and front left wheel brake.

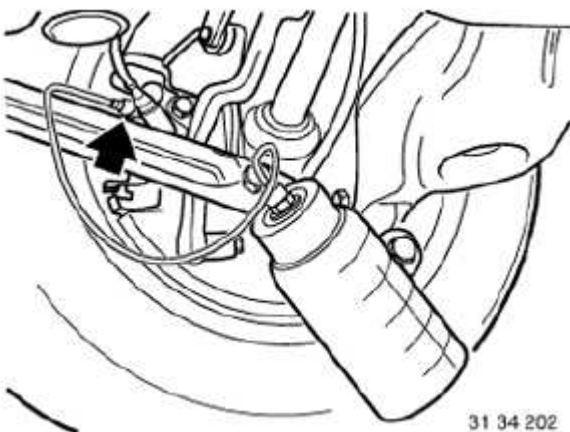


Fig. 9: Locating Bleeder Valve
Courtesy of BMW OF NORTH AMERICA, INC.

Bleeding rear-axle brake circuit

Connect bleeder hose with collecting tray to bleeder valve on rear right brake caliper.

Close bleeder valve.

Run bleeding routine with DIS with bleeder valve open.

After completing routine, press brake pedal 5 times to floor; clear and bubble-free brake fluid must flow out.

Close bleed valve.

Repeat procedure at rear left.

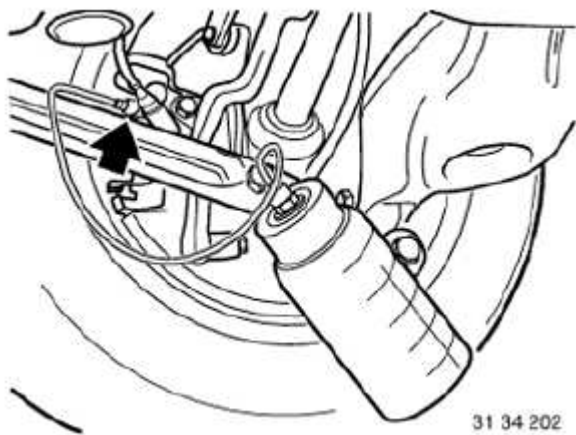


Fig. 10: Locating Bleeder Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Bleeding front-axle brake circuit

Connect bleeder hose with collecting tray to bleeder valve on front right brake caliper.

Close bleeder valve.

Run bleeding routine with DIS with bleeder valve open.

After completing routine, press brake pedal 5 times to floor, clear and bubble-free brake fluid must flow out.

Close bleed valve.

Repeat procedure at front left.

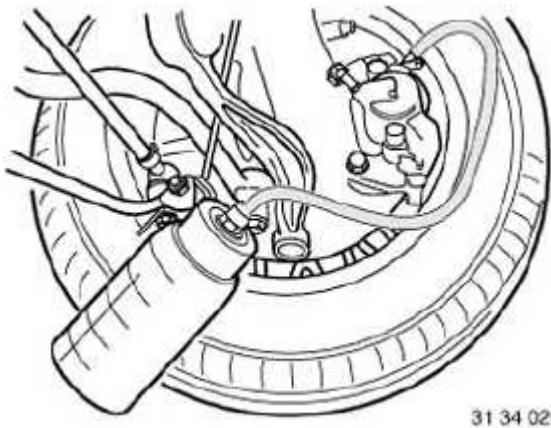


Fig. 11: Connecting Bleeder Hose To Bleeder Valve
Courtesy of BMW OF NORTH AMERICA, INC.

Switch off bleeder unit and remove from expansion tank.

Check brake fluid level.

Close expansion tank.

NOTE: Pay attention to rubber seal (1) in sealing cap.

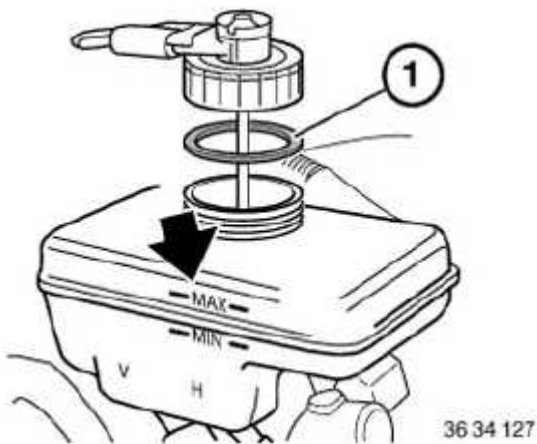
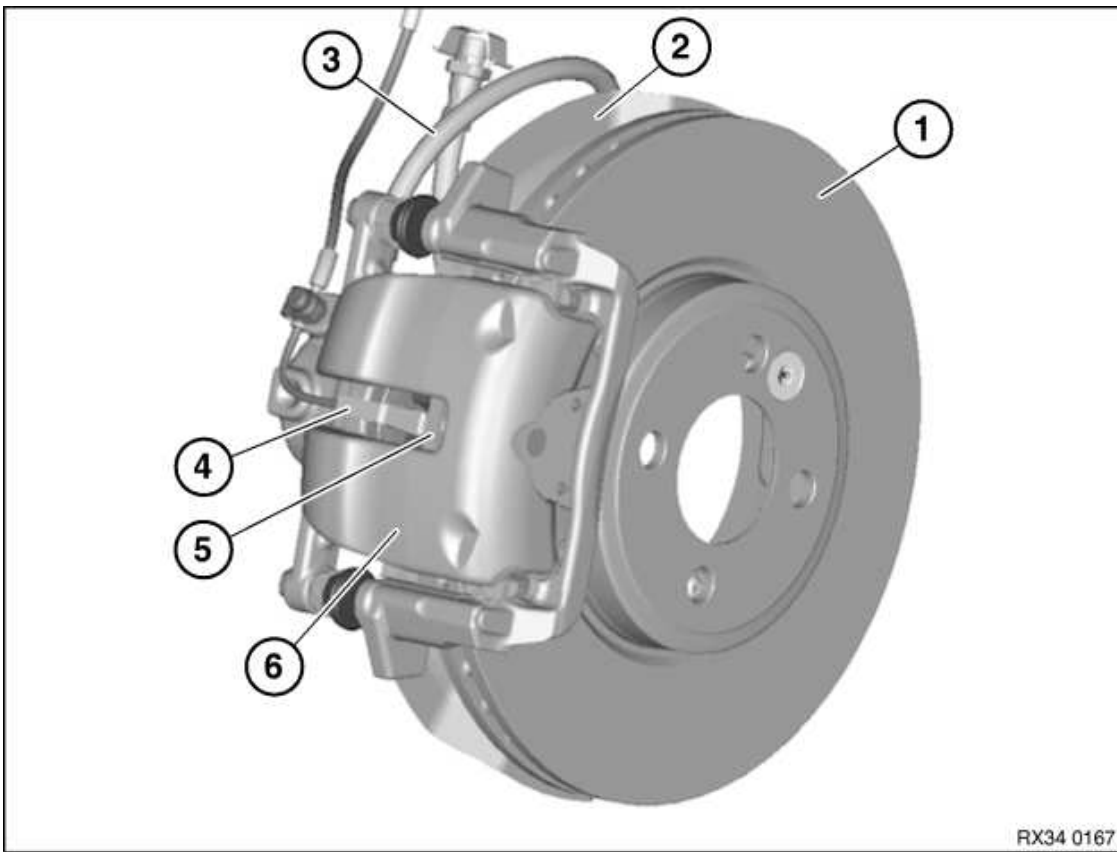


Fig. 12: Locating Rubber Seal
Courtesy of BMW OF NORTH AMERICA, INC.

11 FRONT BRAKES

34 11 ... OVERVIEW OF FRONT BRAKES



RX34 0167

Fig. 13: Identifying Front Brake Components

Courtesy of BMW OF NORTH AMERICA, INC.

IDENTIFYING FRONT BRAKE COMPONENTS

1	Brake disc	2	Brake guard plate
3	Brake hose	4	Brake-pad wear sensor
5	Brake pad	6	Brake calliper

34 11 000 REMOVING AND INSTALLING/REPLACING BRAKE LININGS ON BOTH FRONT DISC BRAKES**Special tools required:**

- **34 1 050**
- **34 1 280**

IMPORTANT: The brake pad wear sensor must be replaced once it has been removed (brake pad wear sensor loses its retention capability in the brake pad).

Necessary preliminary tasks:

- Remove front **WHEELS**

- Remove **BRAKE PAD WEAR SENSOR**

Pull brake pad wear sensor (1) towards front out of pad (left side only).

If necessary, replace brake pad wear sensor.

Release guide screw (2).

If necessary, grip at hexagon head (3).

Tilt brake calliper upwards.

Installation:

Replace guide screws.

Tightening torque: 34 11 3AZ . See **FRONT BRAKE R56** for specs.

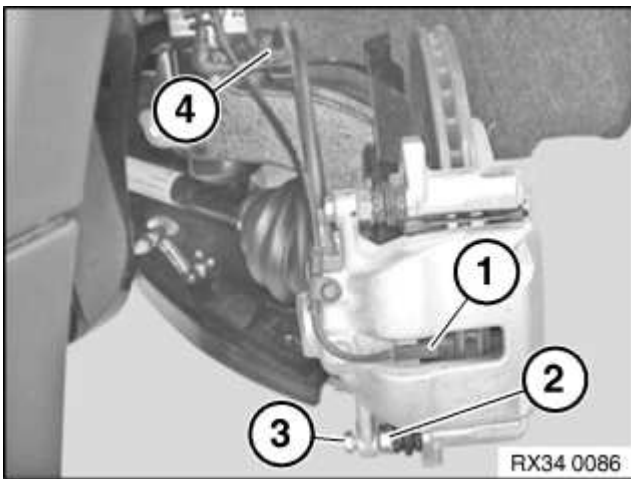


Fig. 14: Identifying Brake Pad Sensor, Guide Screw, Hexagon Head, And Brake Hose Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Remove brake pads (1) in direction of arrow from brake console.

IMPORTANT: Mark any worn brake pads.

In the event of one-sided brake pad wear, do not change brake pads round.

Observe **MINIMUM THICKNESS OF BRAKE PADS** .

Clean brake pads.

Do not apply grease to brake pad backplate.

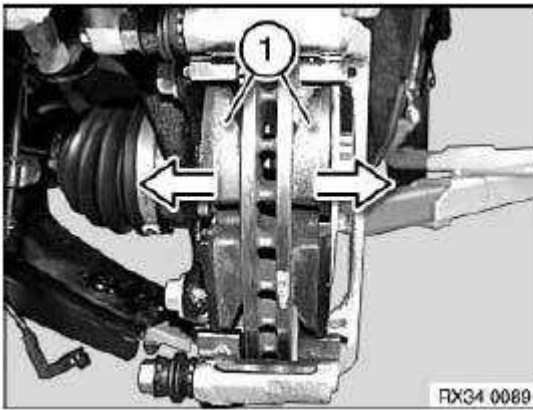


Fig. 15: Identifying Brake Pads

Courtesy of BMW OF NORTH AMERICA, INC.

Check minimum brake disc thickness:

- Position special tool 34 1 280 at three measuring points in area (1) and measure.
- Compare measurement result and lowest value with **SETPOINT VALUE** .

New brake pads may only be installed if the brake disc thickness is greater than or equal to the **MINIMUM BRAKE DISC THICKNESS (MIN TH)** .

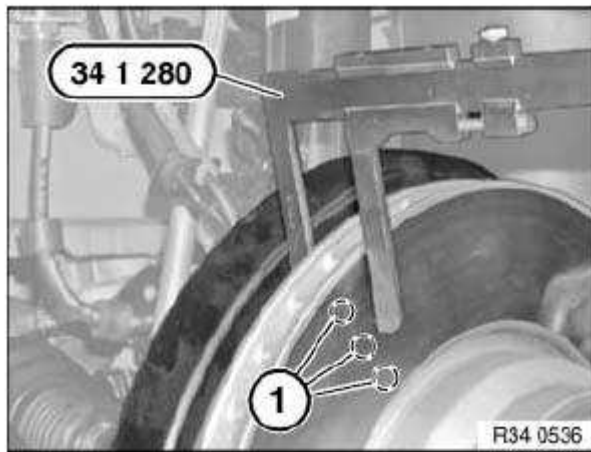


Fig. 16: Identifying Special Tool (34 1 280)

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The minimum thickness of the brake disc is designed so that it holds over the service life of a further set of brake pads if it is greater than or equal to the **MINIMUM BRAKE DISC THICKNESS (MIN TH)** .

Press brake piston fully back with special tool 34 1 050 .

IMPORTANT: When pressing piston back, note brake fluid level in expansion tank.

Overflowing brake fluid will damage the paintwork.

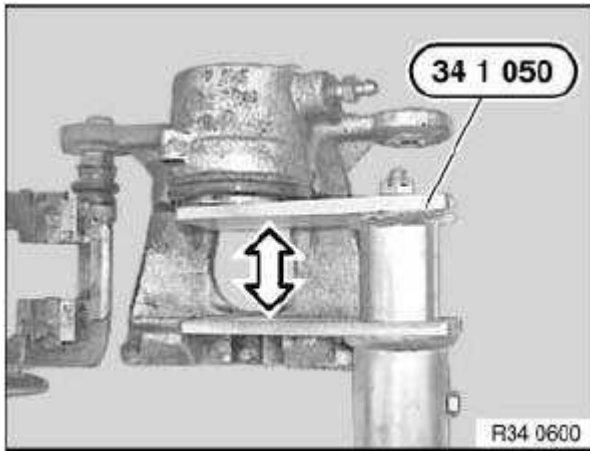


Fig. 17: Identifying Special Tool (34 1 050)
Courtesy of BMW OF NORTH AMERICA, INC.

Check dust sleeve (1) for damage and replace if necessary.

Clean contact face (2) of brake piston and apply a thin coating of anti-squeak compound.

IMPORTANT: Dust sleeve must not come into contact with anti-squeak compound as this may cause the dust sleeve to swell.

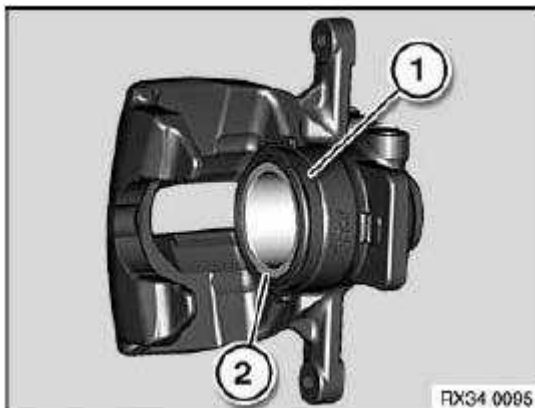


Fig. 18: Identifying Dust Sleeve And Contact Face Of Brake Piston
Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact face (1) of brake calliper and apply a thin coating of anti-squeak compound.

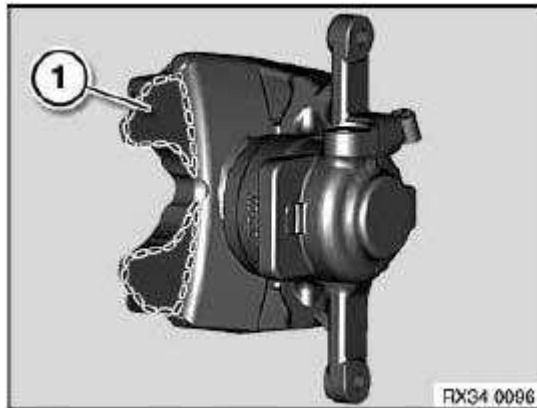


Fig. 19: Identifying Contact Face Of Brake Calliper
Courtesy of BMW OF NORTH AMERICA, INC.

Clean hammerhead guides and apply a thin coating of anti-squeak compound.

IMPORTANT: Brake pad with indentation (1) is intended for accommodating the brake pad wear sensor and must be fitted on the piston side.

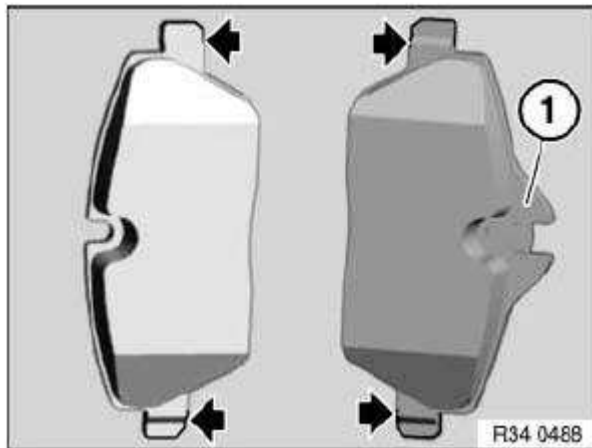


Fig. 20: Identifying Brake Pad With Indentation
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE:

After completing work:

- If necessary, when replacing linings, reset CBS display in accordance with factory specification.
- Fully depress brake pedal several times so that brake pads contact brake discs.
- When installing new brake pads at front and rear axles, brake fluid level must be brought up to "MAX" marking.
- Read and comply with notes on **BREAKING IN NEW BRAKE DISCS /**

BRAKE PADS.**Replacement:**

Remove lining retaining springs (1).

Installation:

Clean contact face of brake carrier and apply a thin coating of anti-squeak compound.

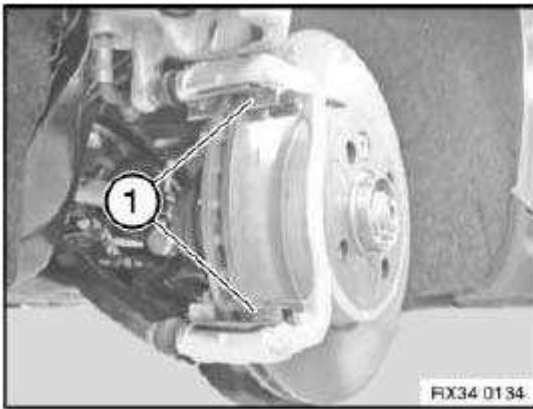


Fig. 21: Identifying Pad Retaining Springs
Courtesy of BMW OF NORTH AMERICA, INC.

34 11 220 REMOVING AND INSTALLING OR REPLACING BOTH FRONT BRAKE DISCS**Special tools required:**

- **34 1 280**

Necessary preliminary tasks:

- Remove **FRONT BRAKE PADS**

After completing work, read and comply with notes on **BREAKING IN NEW BRAKE DISCS / BRAKE PADS**

Release screws (1).

Remove brake caliper with brake anchor plate in direction of arrow and tie up.

Installation:

Tightening torque: 34 11 2AZ . See **FRONT BRAKE R56** for specs.

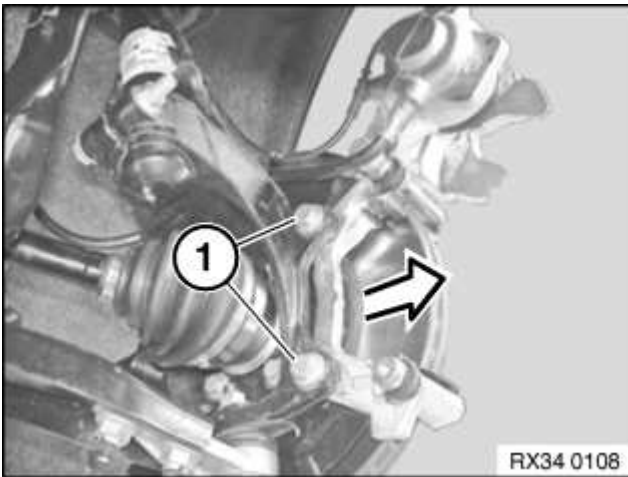


Fig. 22: Identifying Brake Caliper Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) and remove brake disc.

Installation:

Replace screw (1).

Tightening torque: 34 11 1AZ . See **FRONT BRAKE R56** for specs.

Clean contact face of wheel hub thoroughly and remove any traces of rust if necessary.

Irregularities in the contact surface can cause distortion in the brake disc!

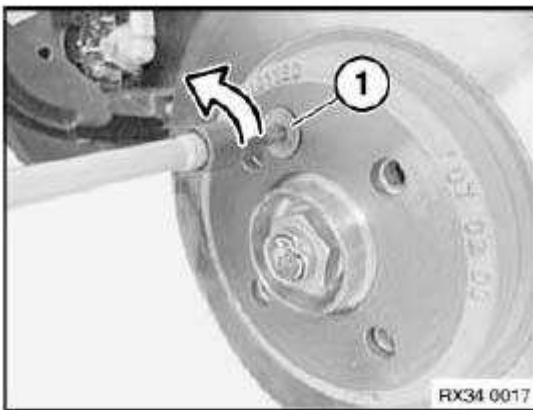


Fig. 23: Identifying Screw
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: When removing the brake disc: On no account strike the friction ring with a hammer or similar object! If necessary, carefully tap with a rubber hammer against the brake disc nave.

34 11 250 REMOVING AND INSTALLING/REPLACING FRONT LEFT OR RIGHT BRAKE CONSOLE/BACK PLATE

Necessary preliminary tasks:

- **REMOVE FRONT BRAKE DISCS**

Release screws (1) and remove brake back plate.

Installation:

Tightening torque: 34 11 4AZ . See **FRONT BRAKE R56** for specs.

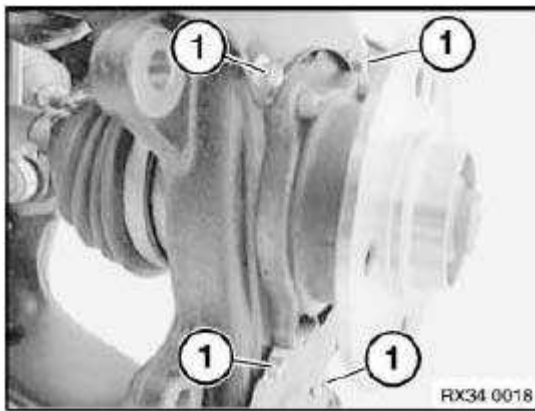


Fig. 24: Identifying Screws

Courtesy of BMW OF NORTH AMERICA, INC.

34 11 519 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT FRONT BRAKE CALIPER

Necessary preliminary tasks:

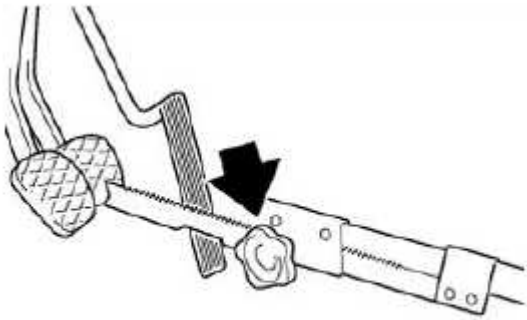
- Read and comply with **GENERAL INFORMATION**
- Remove **FRONT LEFT OR RIGHT WHEEL**

NOTE: After completing tasks, **BLEED BRAKE SYSTEM.**

Press clutch pedal down to floor and secure with pedal support.

NOTE: The pedal support may only be released when the brake lines are reconnected.

This prevents brake fluid from emerging from the expansion tank and air from entering the system when the brake lines are opened.



31 34 021

Fig. 25: Locating Pedal Prop

Courtesy of BMW OF NORTH AMERICA, INC.

Pull brake hose out of holder (1).

IMPORTANT: Grip brake hose at square head (3) to prevent connecting piece from turning in retaining bracket.

Disconnect brake hose from brake line (2).

Installation:

Tightening torque: 34 32 1AZ . See **BRAKE LINES** for specs.

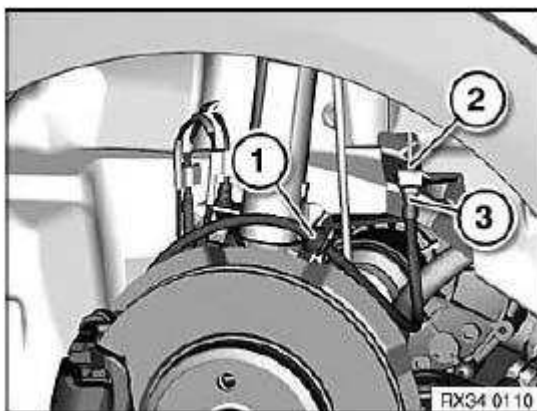


Fig. 26: Identifying Holder, Brake Line And Square Head

Courtesy of BMW OF NORTH AMERICA, INC.

Detach brake hose from brake caliper (1).

Installation:

Tightening torque: 34 32 2AZ . See **BRAKE LINES** for specs.

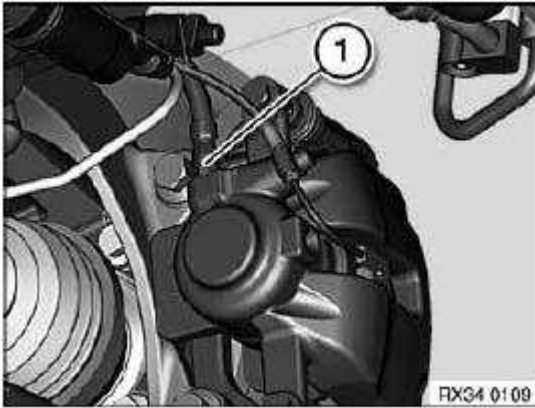


Fig. 27: Identifying Brake Caliper

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Never twist brake hose when installing it and avoid all contact with parts attached rigidly to the body.

NOTE: First tighten brake hose on brake calliper.

Move wheels into straight-ahead position.

Insert brake hose in bracket and screw onto brake pipe.

Pull brake lining wear sensor (1) out of brake lining (left side only).

Unscrew guide bolts (2).

Detach brake caliper in direction of arrow.

Installation:

Replace guide screws.

Tightening torque: 34 11 3AZ . See **FRONT BRAKE R56** for specs.

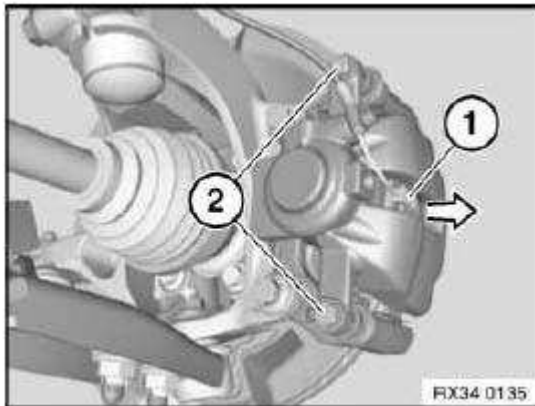


Fig. 28: Identifying Brake Lining Wear Sensor And Guide Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

21 REAR BRAKES

34 21 ... OVERVIEW OF REAR BRAKES

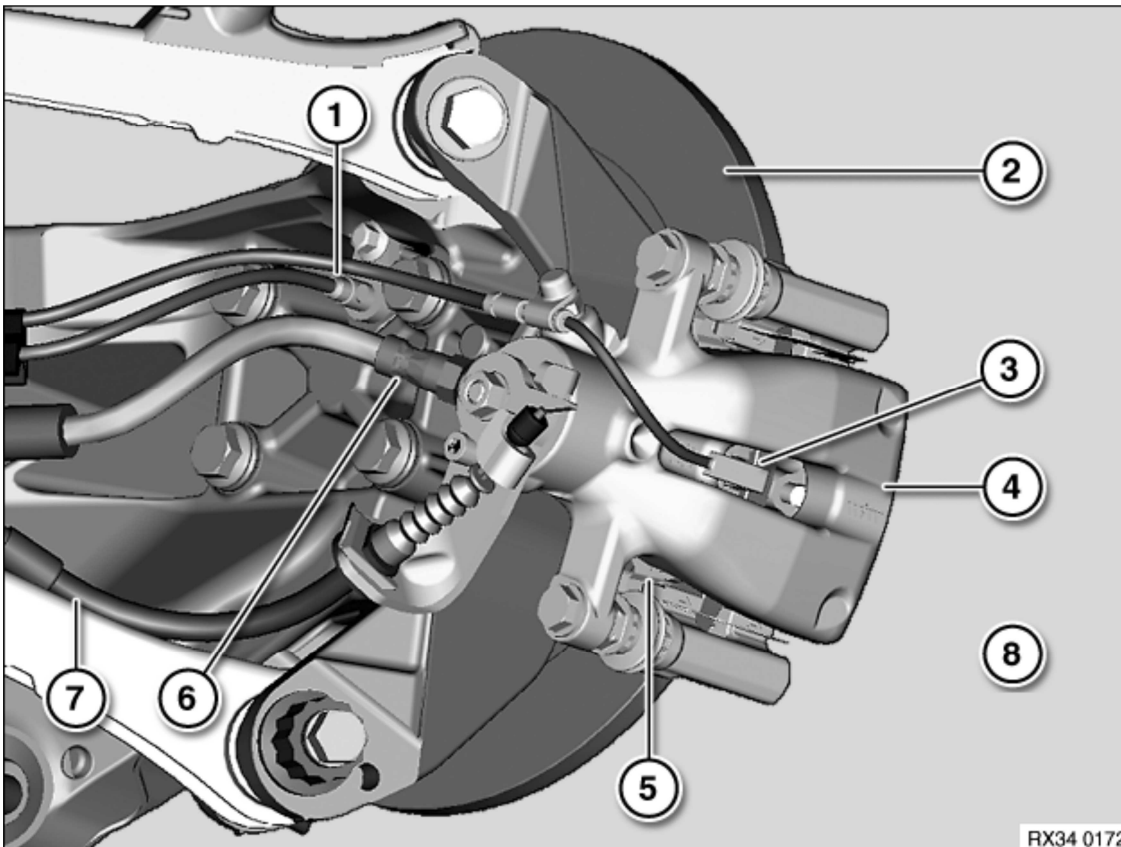


Fig. 29: Overview Of Rear Brakes
Courtesy of BMW OF NORTH AMERICA, INC.

REAR BRAKES OVERVIEW

2008 MINI Cooper

2007 BRAKES Brakes - Repair Instructions - Cooper

1	Pulse generator, rear	2	Brake discs
3	Brake-pad wear sensor	4	Brake caliper
5	Brake pads	6	Brake hose
7	Handbrake Bowden cables		

34 21 200 REMOVING AND INSTALLING/REPLACING BOTH REAR DISC BRAKES

Special tools required:

- 34 1 280
- 34 6 306
- 34 6 307
- 34 6 308
- 34 6 309

IMPORTANT: The brake pad wear sensor must be replaced once it has been removed (brake pad wear sensor loses its retention capability in the brake pad).

Necessary preliminary tasks:

- Remove WHEELS
- Remove BRAKE PAD WEAR SENSOR

Detach locking clip (1) in direction of arrow.

Disengage parking brake Bowden cable (2) from actuating lever (3) at brake caliper.

Feed out parking brake Bowden cable (2) downwards.

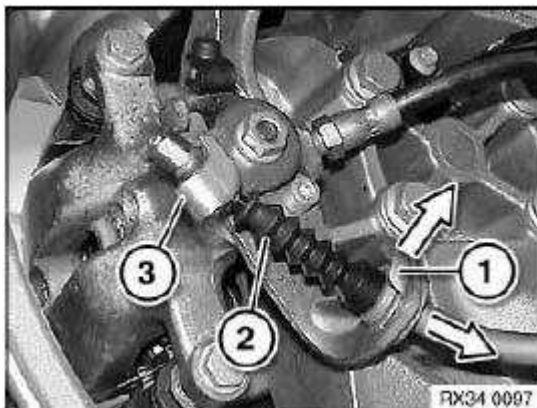


Fig. 30: Identifying Parking Brake Bowden Cable And Locking Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Pull brake pad wear sensor towards rear out of lining (right side only).

If necessary, replace brake pad wear sensor.

Unscrew guide bolts (1).

If necessary, grip at hexagon head (2).

IMPORTANT: Both guide bolts must be released and then the brake caliper detached towards the rear!

The springs may be bent when only one bolt is released and the brake caliper is folded up!

Installation:

Replace guide screws.

Tightening torque: 34 21 3AZ . See **REAR BRAKE** for specs.

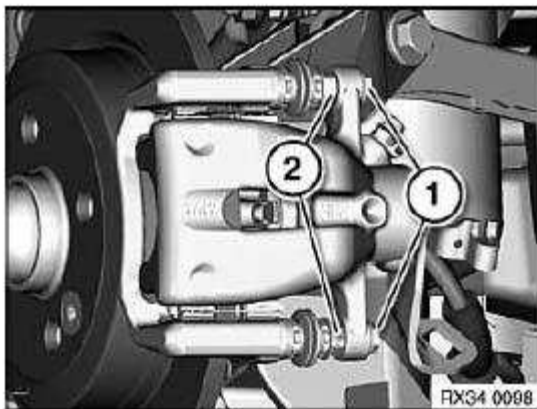


Fig. 31: Identifying Guide Bolts And Hexagon Head
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Mark any worn brake pads.

In the event of one-sided brake pad wear, do not change brake pads round.

Remove brake pads (1) in direction of arrow from brake console.

Observe **MINIMUM THICKNESS OF BRAKE PADS** .

Clean brake pads.

Do not apply grease to brake pad backplate.

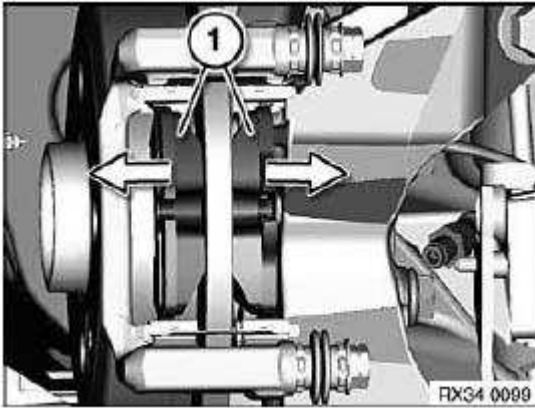


Fig. 32: Identifying Brake Pads

Courtesy of BMW OF NORTH AMERICA, INC.

Check minimum brake disc thickness:

- Position special tool 34 1 280 at three measuring points in area (1) and measure.
- Compare measurement result and lowest value with **SETPOINT VALUE** .

New brake linings may only be installed if the brake disc thickness is greater than or equal to the **MINIMUM BRAKE DISC THICKNESS (MIN TH)** .

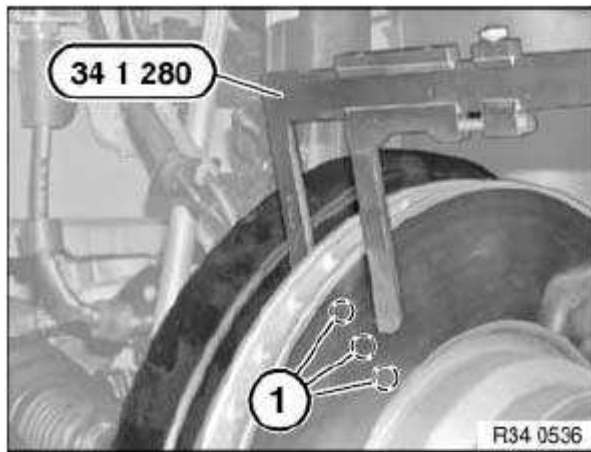


Fig. 33: Identifying Special Tool (34 1 280)

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: When pressing piston back, note brake fluid level in expansion tank.

Overflowing brake fluid will damage the paintwork.

Insert brake piston into brake caliper with special tools 34 6 309 , 34 6 306 , 34 6 307 , 34 6 308 .

2008 MINI Cooper

2007 BRAKES Brakes - Repair Instructions - Cooper

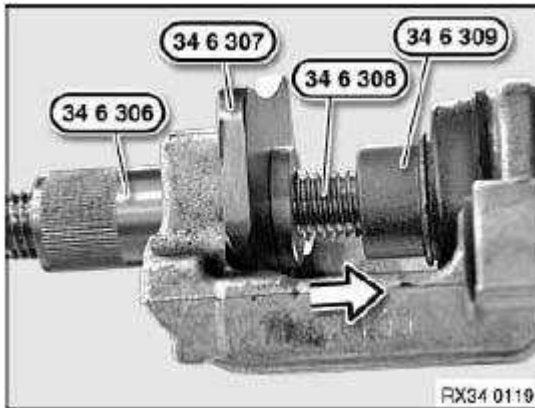


Fig. 34: Identifying Special Tools (34 6 309, 34 6 306, 34 6 307 And 34 6 308)

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Dust sleeve must not come into contact with anti-squeak compound as this may cause the dust sleeve to swell.

Check dust sleeve (1) for damage and replace if necessary.

Clean contact face (2) of brake piston and apply a thin coating of anti-squeak compound.

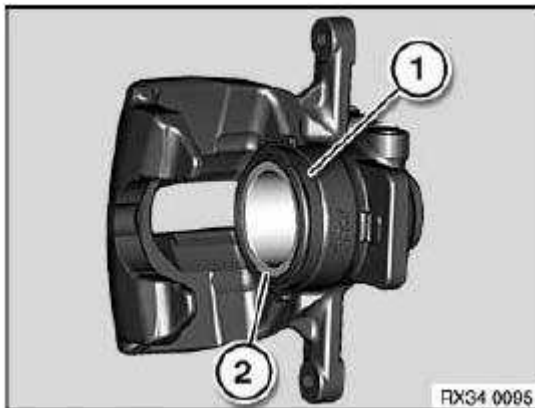


Fig. 35: Identifying Dust Sleeve And Contact Face Of Brake Piston

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact face (1) of brake caliper and apply a thin coating of anti-squeak compound.

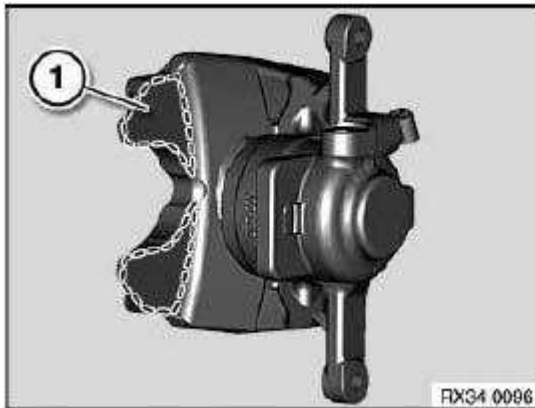


Fig. 36: Identifying Contact Face Of Brake Calliper
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Brake pad with indentation (1) is intended for accommodating the brake pad wear sensor and must be fitted on the piston side.

Clean hammerhead guides and apply a thin coating of anti-squeak compound.

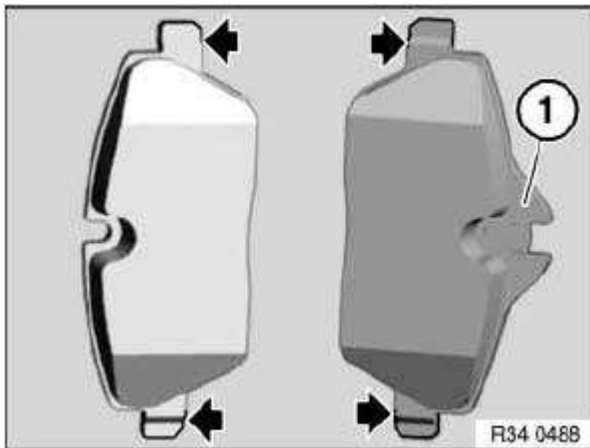


Fig. 37: Identifying Brake Pad With Indentation
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: After completing work:

- When installing new brake pads at front and rear axles, brake fluid level must be brought up to "MAX" marking.
- Read and comply with notes on **BREAKING IN NEW BRAKE DISCS / BRAKE PADS.**
- Fully depress brake pedal several times so that brake pads contact brake discs.
- If necessary, when replacing pads, reset CBS display in accordance with

factory specification.

Replacement:

Remove lining retaining springs (1).

Installation:

Clean contact face of brake carrier and apply a thin coating of anti-squeak compound.

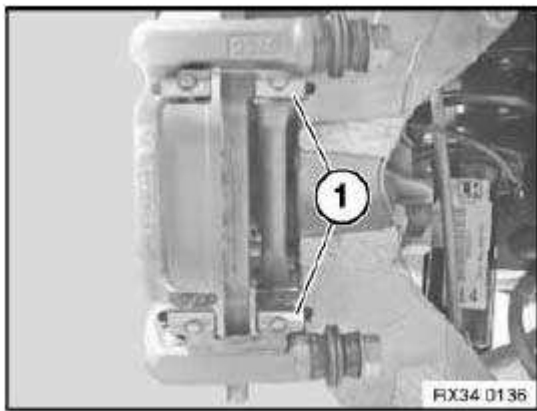


Fig. 38: Identifying Lining Retaining Springs
Courtesy of BMW OF NORTH AMERICA, INC.

34 21 320 REMOVING AND INSTALLING/REPLACING BOTH BRAKE DISCS**Special tools required:**

- **34 1 280**

IMPORTANT: Always replace brake discs in pairs.

New brake pads must always be fitted when replacing the brake discs.

Necessary preliminary tasks:

- **REMOVE REAR BRAKE PADS**

Check minimum brake disc thickness:

- Position special tool 34 1 280 at three measuring points in area (1) and measure.
- Compare measurement result and lowest value with **SETPOINT VALUE** .

New brake linings may only be installed if the brake disc thickness is greater than or equal to the **MINIMUM BRAKE DISC THICKNESS (MIN TH)** .

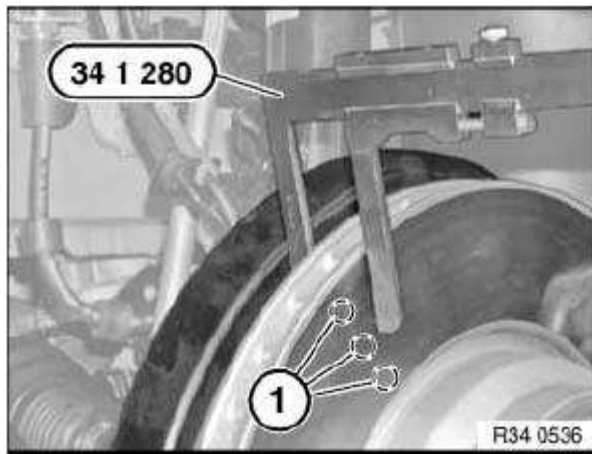


Fig. 39: Identifying Special Tool (34 1 280)
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: When removing the brake disc: On no account strike the friction ring with a hammer or similar object! If necessary, carefully tap with a rubber hammer against the brake disc nave.

Release retaining screw

Remove brake disc.

Installation:

Replace screw.

Tightening torque: 34 21 1AZ . See **REAR BRAKE** for specs.

Clean contact face of wheel hub thoroughly and remove any traces of rust if necessary.

Irregularities in the contact surface can cause distortion in the brake disc!



Fig. 40: Identifying Retaining Screw

Courtesy of BMW OF NORTH AMERICA, INC.

34 21 745 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT REAR BRAKE CALIPER

Necessary preliminary tasks:

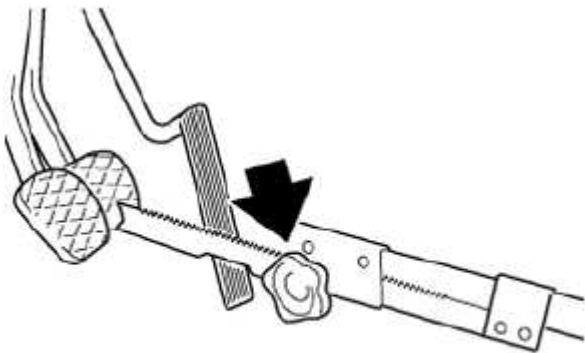
- **READ AND COMPLY WITH GENERAL INFORMATION.**
- Remove **FRONT LEFT OR RIGHT WHEEL**

NOTE: After completing tasks, **BLEED BRAKE SYSTEM.**

Press clutch pedal down to floor and secure with pedal support.

NOTE: The pedal support may only be released when the brake lines are reconnected.

This prevents brake fluid from emerging from the expansion tank and air from entering the system when the brake lines are opened.



31 34 021

Fig. 41: Locating Pedal Prop

Courtesy of BMW OF NORTH AMERICA, INC.

Detach locking clip (1) in direction of arrow.

Disengage parking brake Bowden cable (2) from actuating lever (3) at brake caliper.

Feed out parking brake Bowden cable (2) downwards.

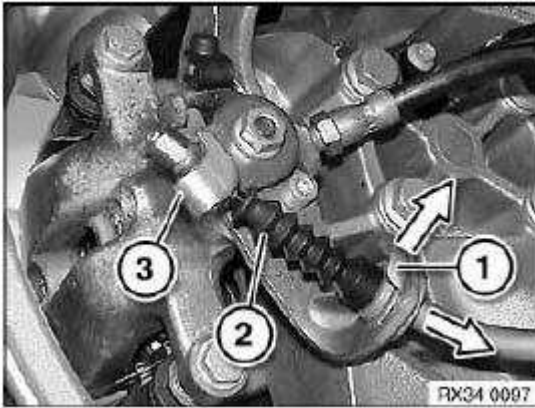


Fig. 42: Identifying Parking Brake Bowden Cable And Locking Clip
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Grip brake hose at square head (2) so that connecting piece cannot rotate in retaining bracket.

Disconnect brake hose from brake line (1).

Installation:

Tightening torque: 34 32 1AZ . See **BRAKE LINES** for specs.

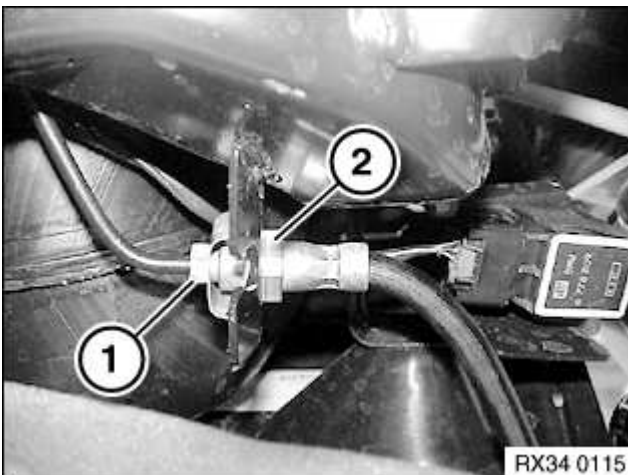


Fig. 43: Identifying Brake Line And Square Head
Courtesy of BMW OF NORTH AMERICA, INC.

Disengage brake hose from holder (1).

Detach brake hose (2) from brake caliper.

Installation:

Tightening torque: 34 32 3AZ . See **BRAKE LINES** for specs.

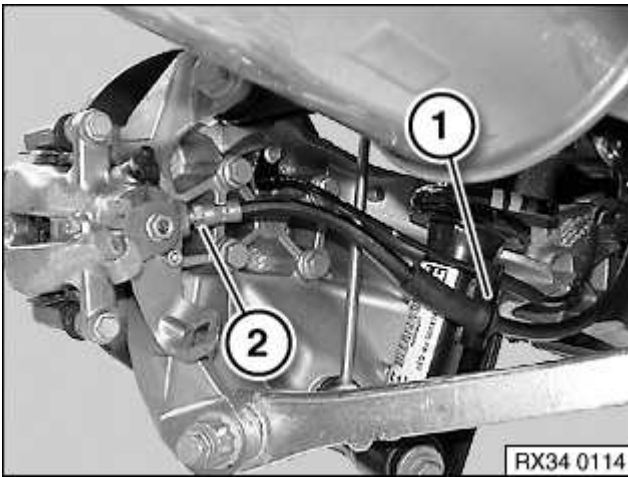


Fig. 44: Identifying Holder And Brake Hose
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Never twist brake hose when installing it and avoid all contact with parts attached rigidly to the body.

NOTE: First tighten brake hose on brake calliper.

Insert brake hose in bracket and screw onto brake pipe.

Pull brake lining wear sensor out of brake lining (right side only).

Unscrew guide bolts (1).

If necessary, grip at hexagon head (2).

Remove brake caliper.

Installation:

Replace guide screws.

Tightening torque: 34 21 3AZ . See **REAR BRAKE** for specs.

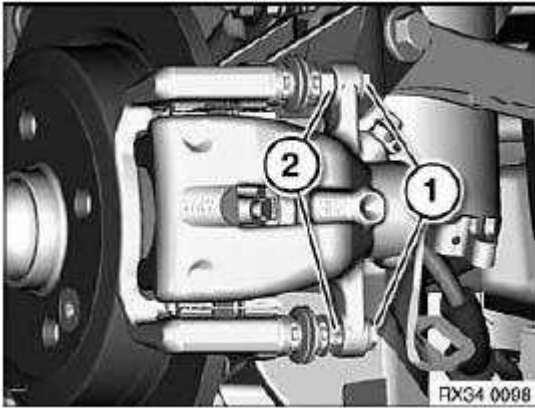


Fig. 45: Identifying Guide Bolts And Hexagon Head
Courtesy of BMW OF NORTH AMERICA, INC.

31 MASTER BRAKE CYLINDER

34 31 ... OVERVIEW OF BRAKE MASTER CYLINDER / BRAKE BOOSTER

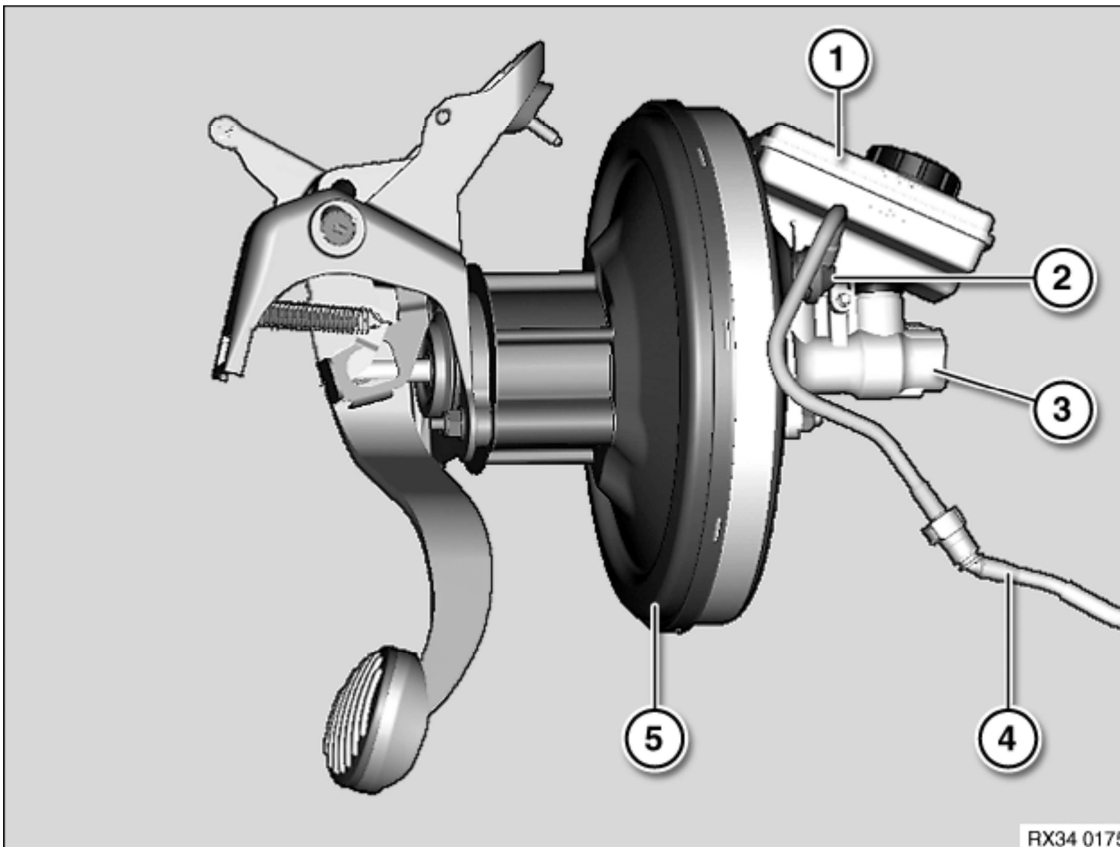


Fig. 46: Identifying Brake Master Cylinder / Brake Booster
Courtesy of BMW OF NORTH AMERICA, INC.

BRAKE MASTER CYLINDER / BRAKE BOOSTER COMPONENTS

2008 MINI Cooper

2007 BRAKES Brakes - Repair Instructions - Cooper

1	Expansion tank	2	Non-return valve
3	Brake master cylinder	4	Vacuum hose
5			Brake booster

34 31 181 REMOVING AND INSTALLING / REPLACING EXPANSION TANK FOR HYDRAULIC BRAKE ACTUATION

Necessary preliminary tasks:

- Read and comply with GENERAL INFORMATION
- Remove COVER FOR COWL PANEL on left

NOTE: Suck the brake fluid out of the expansion tank.

Use a suction bottle used exclusively for drawing off brake fluid.

Do not reuse drawn out brake fluid.

Unfasten plug connection (1) and disconnect.

Pull off supply hose (2) on clutch hydraulics.

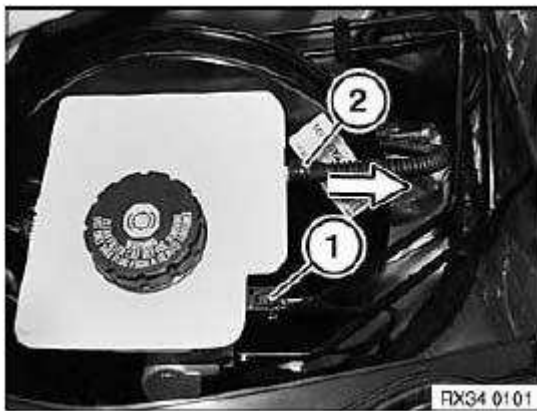


Fig. 47: Identifying Plug Connection And Supply Hose
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) and lift off expansion tank.

Installation:

Tightening torque: 34 31 2AZ . See BRAKE MASTER CYLINDER for specs.

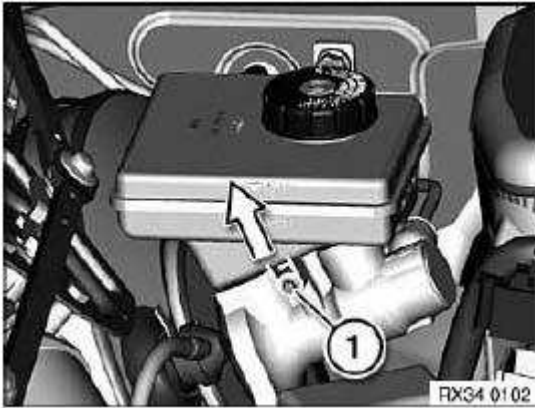


Fig. 48: Identifying Screw

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Check rubber plugs (1) in brake master cylinder for damage and replace if necessary.

Press expansion tank (2) vertically onto brake master cylinder.

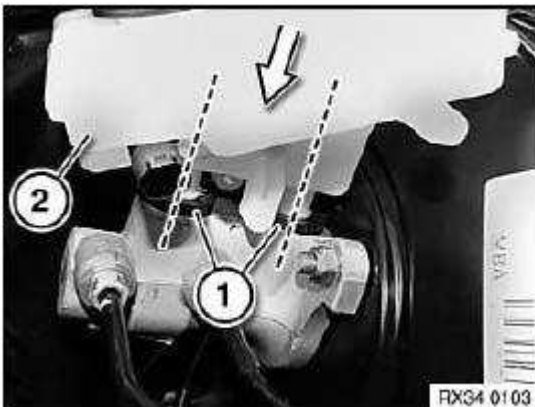


Fig. 49: Identifying Rubber Plugs And Expansion Tank

Courtesy of BMW OF NORTH AMERICA, INC.

34 31 500 REMOVING AND INSTALLING/REPLACING BRAKE MASTER CYLINDER

Special tools required:

- **32 1 270**

Necessary preliminary tasks:

- Remove **EXPANSION TANK**.
- Read and comply with **GENERAL INFORMATION**.

After completing tasks, bleed **BRAKE SYSTEM WITH DSC**.

IMPORTANT: Do not bend brake lines.

Close off brake lines and brake master cylinder with plugs 32 1 270 .

Unfasten brake lines (1).

Installation:

Tightening torque: 34 32 1AZ . See **BRAKE LINES** for specs.

Release nuts (2) and feed brake master cylinder out of brake booster.

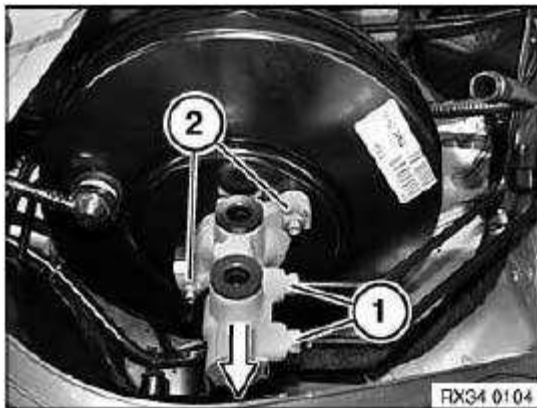


Fig. 50: Identifying Brake Lines And Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace self-locking nuts.

Tightening torque: 34 31 1AZ . See **BRAKE MASTER CYLINDER** for specs.

Installation:

Replace sealing ring (1).

Check rubber plugs (2) and replace if necessary.

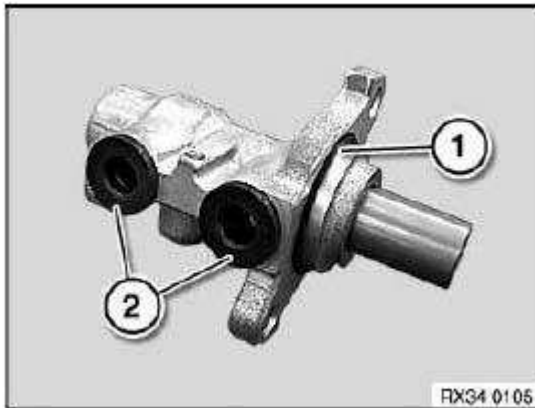


Fig. 51: Identifying Rubber Plugs And Sealing Ring
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

When inserting the brake master cylinder (1) into the brake booster, make sure the pressure rod of the brake booster and the brake master cylinder meet each other on one level.

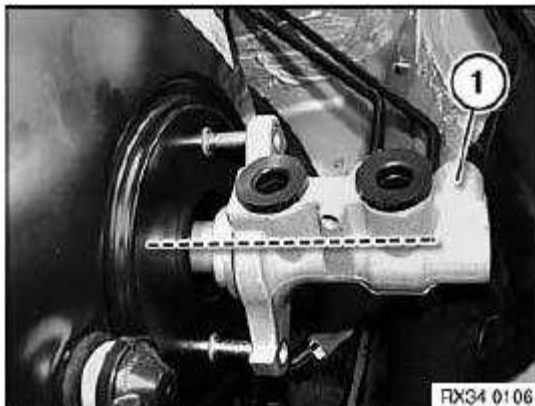


Fig. 52: Identifying Brake Master Cylinder
Courtesy of BMW OF NORTH AMERICA, INC.

32 BRAKE LINES

34 32 861 REPLACING ALL BRAKE PIPES

Special tools required:

- **34 5 100**

NOTE: The brake lines are only supplied in the straight version and correct length with connecting nipple.

Read and comply with GENERAL INFORMATION.

After completing tasks, BLEED BRAKE SYSTEM.

OBSERVE SAFETY INSTRUCTIONS ON RAISING THE VEHICLE .

New brake lines are bent into shape with bending tool 34 5 100 .

Removed brake pipes can be used as templates for bending.

IMPORTANT:

- **Protective coating of brake line must not be damaged during bending.**
- **Do not kink or bend back brake lines.**
- **Watch distances to rigid and movable vehicle parts. Brake lines may not make contact or rub.**
- **Tighten down brake line couplings with torque wrench.**

Installation:

Tightening torque: 34 32 1AZ . See BRAKE LINES for specs.



Fig. 53: Identifying Special Tool (34 5 100)
Courtesy of BMW OF NORTH AMERICA, INC.

34 32 881 REPLACING FRONT LEFT OR RIGHT BRAKE HOSES

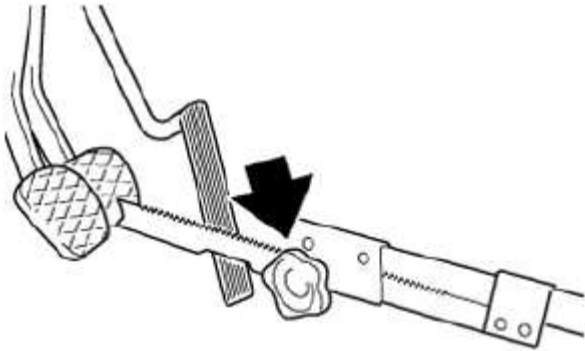
NOTE: Read and comply with GENERAL INFORMATION.

After completing tasks, BLEED BRAKE SYSTEM.

Press clutch pedal down to floor and secure with pedal support.

NOTE: The pedal support may only be released when the brake lines are reconnected.

This prevents brake fluid from emerging from the expansion tank when the brake lines are opened.



31 34 021

Fig. 54: Locating Pedal Prop

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Grip brake hose at square head (3) to prevent connecting piece from turning in retaining bracket.

Pull brake hose out of holder (1).

Disconnect brake hose from brake line (2).

Installation:

Tightening torque: 34 32 1AZ . See **BRAKE LINES** for specs.

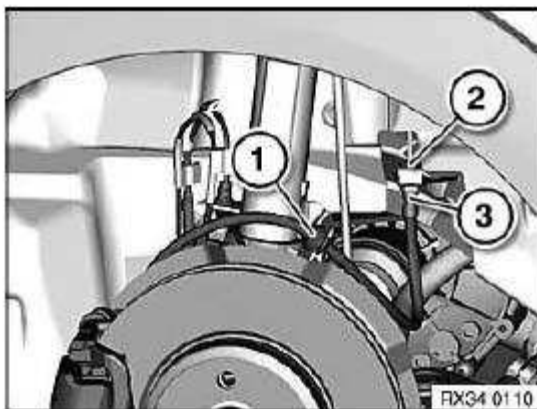


Fig. 55: Identifying Holder, Brake Line And Square Head

Courtesy of BMW OF NORTH AMERICA, INC.

Detach brake hose from brake caliper (1).

Installation:

Tightening torque: 34 32 2AZ . See **BRAKE LINES** for specs.

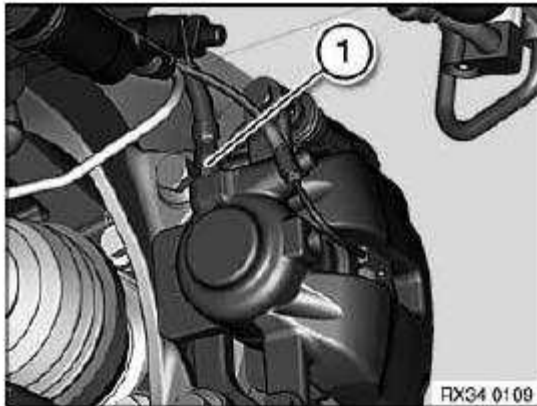


Fig. 56: Identifying Brake Caliper

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: First tighten brake hose on brake caliper.

Move wheels into straight-ahead position.

Insert brake hose in bracket and screw onto brake pipe.

Never twist brake hose when installing it and avoid all contact with parts attached rigidly to the body.

34 32 980 REPLACING REAR LEFT OR RIGHT BRAKE HOSES

Necessary preliminary tasks:

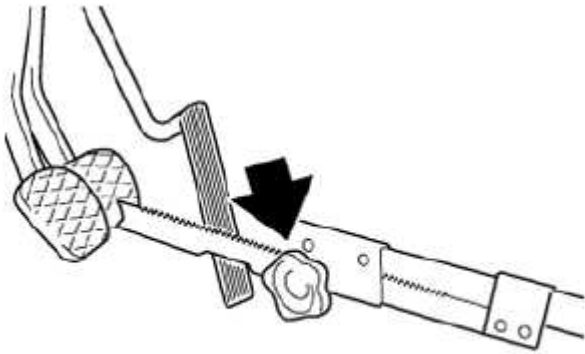
- **READ AND COMPLY WITH GENERAL INFORMATION.**
- Partially detach **UNDERBODY PANELLING**

After completing tasks, bleed brake system.

Press clutch pedal down to floor and secure with pedal support.

NOTE: **The pedal support may only be released when the brake lines are reconnected.**

This prevents brake fluid from emerging from the expansion tank when the brake lines are opened.



31 34 021

Fig. 57: Locating Pedal Prop

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Grip brake hose at square head (2) so that connecting piece cannot rotate in retaining bracket.

Disconnect brake hose from brake line (1).

Installation:

Tightening torque: 34 32 1AZ . See **BRAKE LINES** for specs.

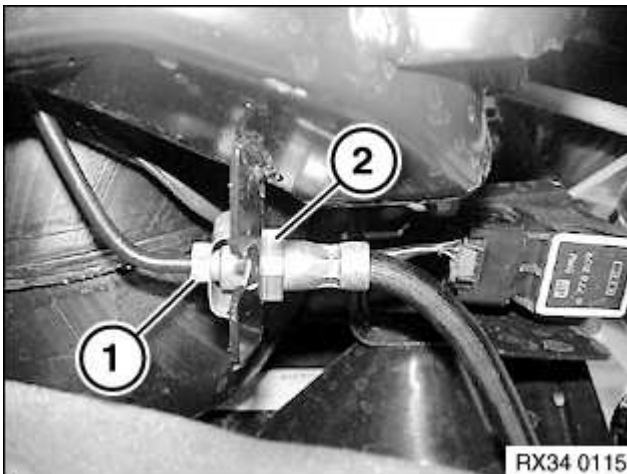


Fig. 58: Identifying Brake Line And Square Head

Courtesy of BMW OF NORTH AMERICA, INC.

Disengage brake hose from holder (1).

Detach brake hose (2) from brake caliper.

Installation:

Tightening torque: 34 32 3AZ . See **BRAKE LINES** for specs.

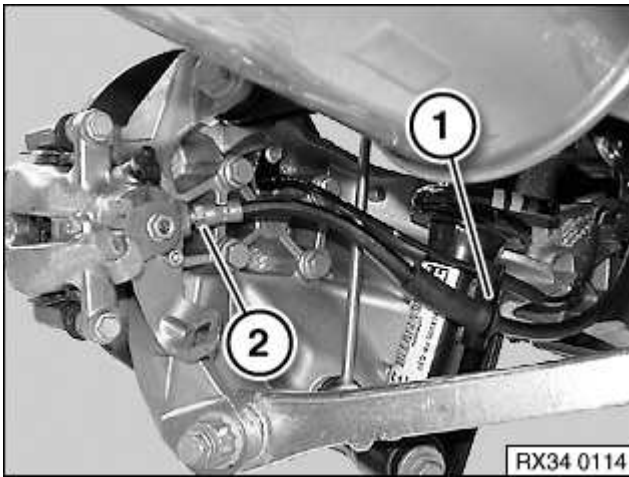


Fig. 59: Identifying Holder And Brake Hose
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Never twist brake hose when installing it and avoid all contact with parts attached rigidly to the body.

NOTE: First tighten brake hose on brake caliper.

Insert brake hose in bracket and screw onto brake pipe.

33 BRAKE BOOSTER

34 33 000 REMOVING AND INSTALLING OR REPLACING BRAKE BOOSTER

Necessary preliminary tasks:

- Read and comply with **GENERAL INFORMATION**
- Remove **BRAKE MASTER CYLINDER**
- Remove left **FOOTWELL TRIM**

Detach locking clip (1) from brake pedal, disengage and pull out locking pin.

Unscrew nuts (2).

Installation:

Replace self-locking nuts.

Tightening torque: 34 33 1AZ . See **BRAKE BOOSTER** for specs.

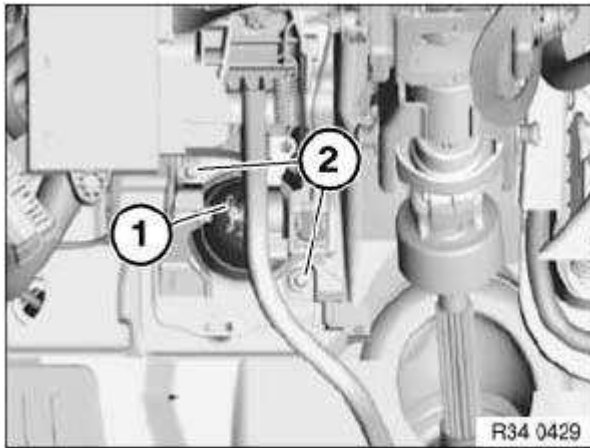


Fig. 60: Identifying Locking Clip And Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Pull non-return valve (1) in direction of arrow out of brake booster.

Unclip brake lines from holder (2).

IMPORTANT: Do not use any force when removing and installing the brake unit; the brake unit can be damaged under certain circumstances.

Brake lines must not be bent.

Carefully pull brake booster (3) out of bulkhead and tilt out in upward direction.

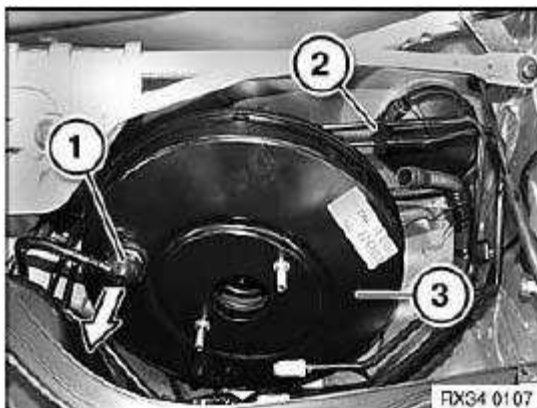


Fig. 61: Identifying Non-Return Valve, Holder And Brake Booster
Courtesy of BMW OF NORTH AMERICA, INC.

34 33 051 REPLACING NON-RETURN VALVE FOR BRAKE BOOSTER

Necessary preliminary tasks:

- Remove **COVER FOR COWL PANEL** on left
- Remove **INTAKE FILTER HOUSING**

Before beginning work, fully press the brake pedal several times to reduce the vacuum pressure in the brake booster. This makes it easier to detach the vacuum hose.

The non-return valve and the moulded hose are permanently connected to each other and are replaced together as a single unit.

Remove non-return valve (1) from brake booster.

Installation:

Check seal in brake booster and replace if necessary.

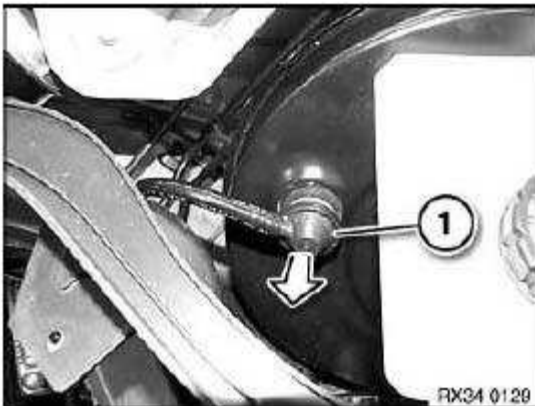


Fig. 62: Identifying Non-Return Valve
Courtesy of BMW OF NORTH AMERICA, INC.

Remove line holder (1).

Disconnect quick-release fastener (2) and feed out vacuum line with non-return valve.

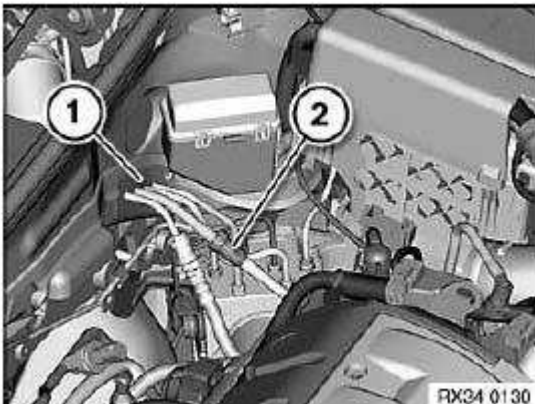


Fig. 63: Identifying Line Holder And Quick-Release Fastener

Courtesy of BMW OF NORTH AMERICA, INC.

34 33 071 REPLACING VACUUM HOSE FOR BRAKE BOOSTER (N12)

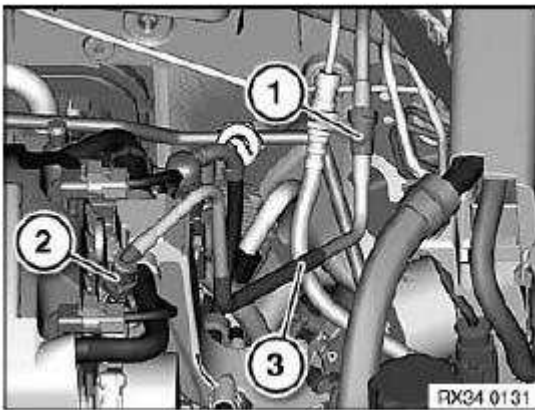
Necessary preliminary tasks:

- Remove **INTAKE FILTER HOUSING**

Before beginning work, fully press the brake pedal several times to reduce the vacuum pressure in the brake booster. This makes it easier to detach the vacuum hose.

Detach quick-release fastener (1).

Unlock quick-release fastener (2) and detach vacuum line (3).

**Fig. 64: Identifying Quick-Release Fastener And Vacuum Line**

Courtesy of BMW OF NORTH AMERICA, INC.

35 ELECTRICAL COMPONENTS**34 35 001 REPLACING A FRONT BRAKE PAD SENSOR**

Necessary preliminary tasks:

- Remove **WHEEL**

IMPORTANT: The brake pad wear sensor must be replaced once it has been removed (brake pad wear sensor loses its retention capability in the brake pad).

If a brake pad sensor that has already been ground has to be replaced even though the **MINIMUM BRAKE PAD THICKNESS** has not yet been reached, you must observe the following: The new sliding contact must be filed down with a file to the same length as the ground sliding contact.

Press clip (1) together and detach brake pad sensor (2) in direction of arrow from brake caliper.

Unclip brake pad sensor (2) from holder (3).

Installation:

Make sure clip (1) and brake pad sensor (2) are correctly seated in brake caliper.

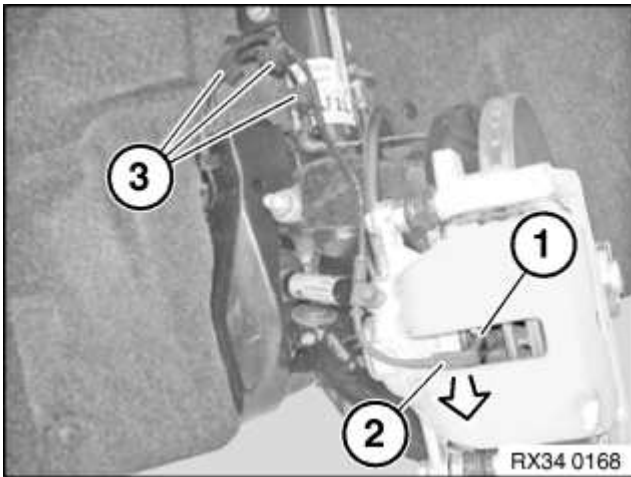


Fig. 65: Identifying Brake Pad Sensor, Clip, And Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Installation:

Make sure plug connection engages correctly.

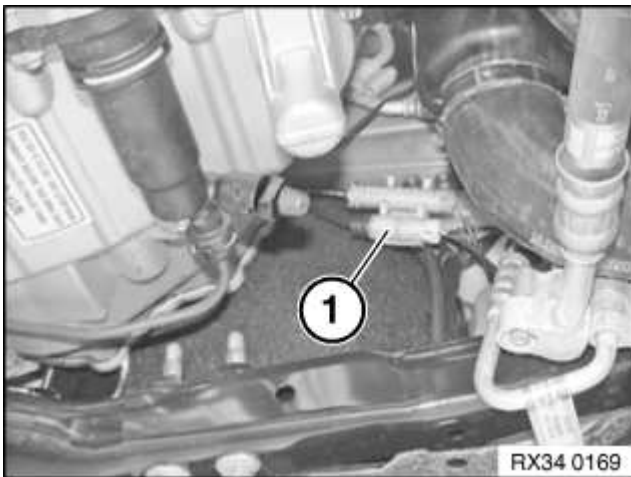


Fig. 66: Identifying Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

34 35 001 REPLACING A REAR BRAKE PAD SENSOR

Necessary preliminary tasks:

- Remove WHEEL
- Remove REAR RIGHT UNDERBODY PANELLING

IMPORTANT: The brake pad wear sensor must be replaced once it has been removed (brake pad wear sensor loses its retention capability in the brake pad).

If a brake pad sensor that has already been ground has to be replaced even though the MINIMUM BRAKE PAD THICKNESS has not yet been reached, you must observe the following: The new sliding contact must be filed down with a file to the same length as the ground sliding contact.

Detach brake pad sensor (1) in direction of arrow from brake caliper.

Unclip brake pad sensor (1) from holder (2).

Installation:

Make sure brake pad sensor (1) is correctly seated in brake caliper.

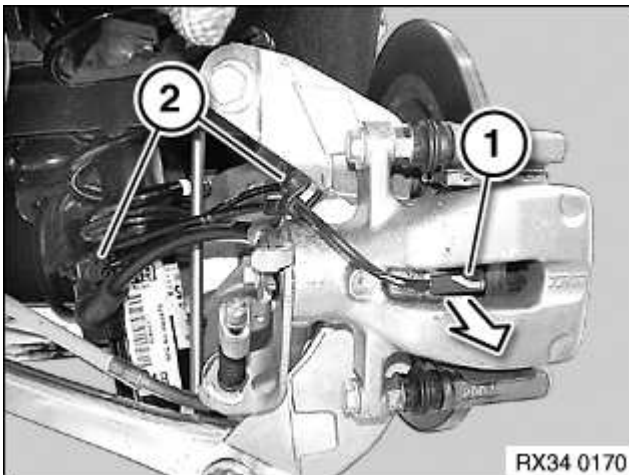


Fig. 67: Unclipping Brake Pad Sensor From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Unclip brake pad sensor from holder (2).

Installation:

Make sure plug connection engages correctly.

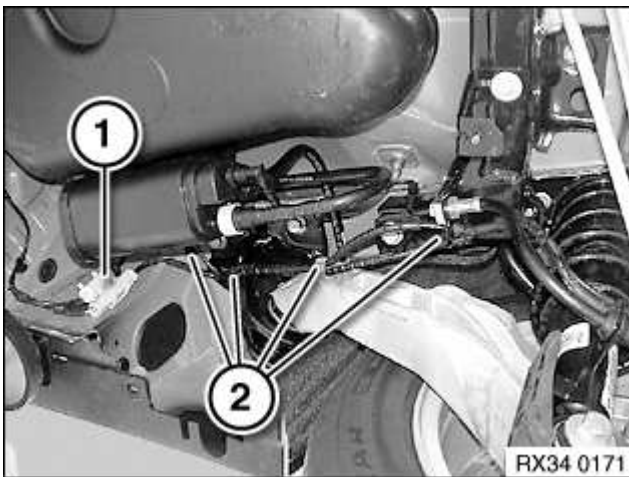


Fig. 68: Identifying Brake Pad Sensor Plug Connection And Holders
Courtesy of BMW OF NORTH AMERICA, INC.

41 PARKING BRAKE

34 10 014 ADJUSTING HANDBRAKE

Special tools required:

- **34 6 306**
- **34 6 307**
- **34 6 308**
- **34 6 309**

Perform inspection in the following manner:

When 1st ratchet is engaged, no braking force should be exerted.

The difference in wheel circumferential forces between the left and right wheels may deviate by max. 30 % from the greater value (measured on brake analyzer).

In event of larger deviations of wheel circumferential force: readjust handbrake.

Braking with locked wheels must be possible with the handbrake.

The handbrake must be readjusted if the actuation stroke is greater than 6 teeth.

NOTE: **The handbrake can only be adjusted correctly when the parking brake Bowden cables and all moving handbrake parts are free to move and fully operational.**

Basic handbrake adjustment is necessary:

- **In event of excessive actuation stroke (6 teeth).**

- **When replacing parking brake Bowden cables**
- **When replacing handbrake lever.**

Setting instruction for parking brake Bowden cables

Release gaiter (1) of parking brake lever from clip.

Release self-locking nut (2) until the load on the Bowden cable has been relieved completely.

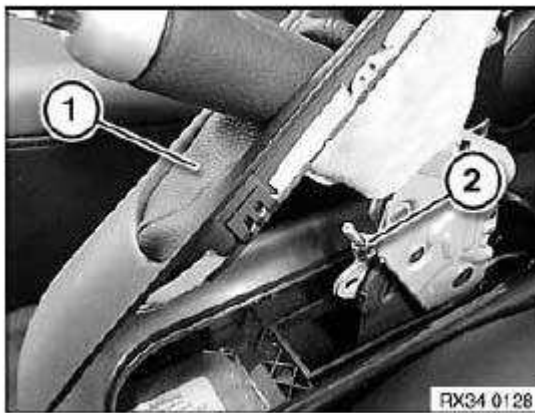


Fig. 69: Identifying Gaiter And Self-Locking Nut
Courtesy of BMW OF NORTH AMERICA, INC.

REMOVE REAR BRAKE PADS.

Insert brake piston into brake caliper with special tools 34 6 309 , 34 6 306 , 34 6 307 , 34 6 308 .

Install brake pads.

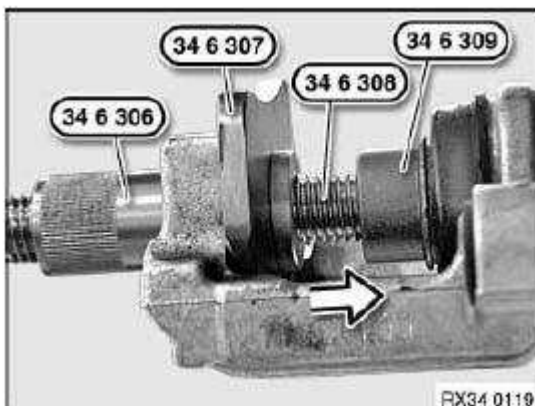


Fig. 70: Identifying Special Tool 34 6 309, 34 6 306, 34 6 307 And 34 6 308
Courtesy of BMW OF NORTH AMERICA, INC.

Screw in adjusting nut on handbrake lever until a gap (A) of 0.5 - 1.5 mm between handbrake actuating lever

(2) and stop (1) is set at brake calipers.

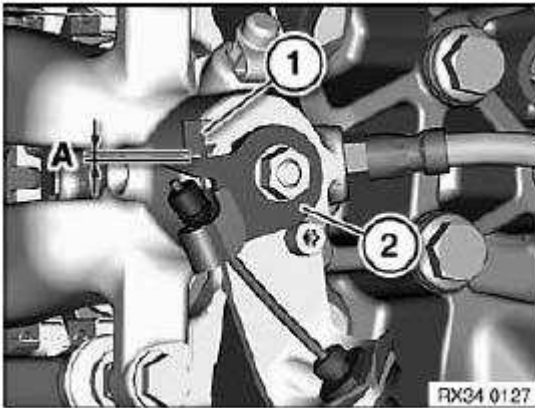


Fig. 71: Identifying Handbrake Actuating Lever
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Observe following sequence:

1. Release adjusting nut on handbrake lever completely.
2. Remove brake pads.
3. Insert brake piston into brake caliper.
4. Install brake pads.
5. Adjust adjusting nut on handbrake lever as shown above.
6. Apply handbrake lever three times.
7. Press brake pedal to floor at least three times so that air gap can be set.
8. Carry out operational check

Checking adjustment on brake analyzer

0th tooth (handbrake released): Vehicles with manual transmission: Shift lever in neutral position.

Vehicles with automatic transmission: Selector lever in "N" position wheel circumferential force ≤ 100 N.

1st tooth: No increase in braking force with regard to 0th tooth. Indicator lamp can be lit.

2nd tooth: An increase in braking force must take place. Indicator lamp must be lit.

3rd tooth: Increase in braking force.

4th tooth: Wheel circumferential force per wheel: 700 N to 1300 N.

(Must be achieved in the 4th tooth at the latest)

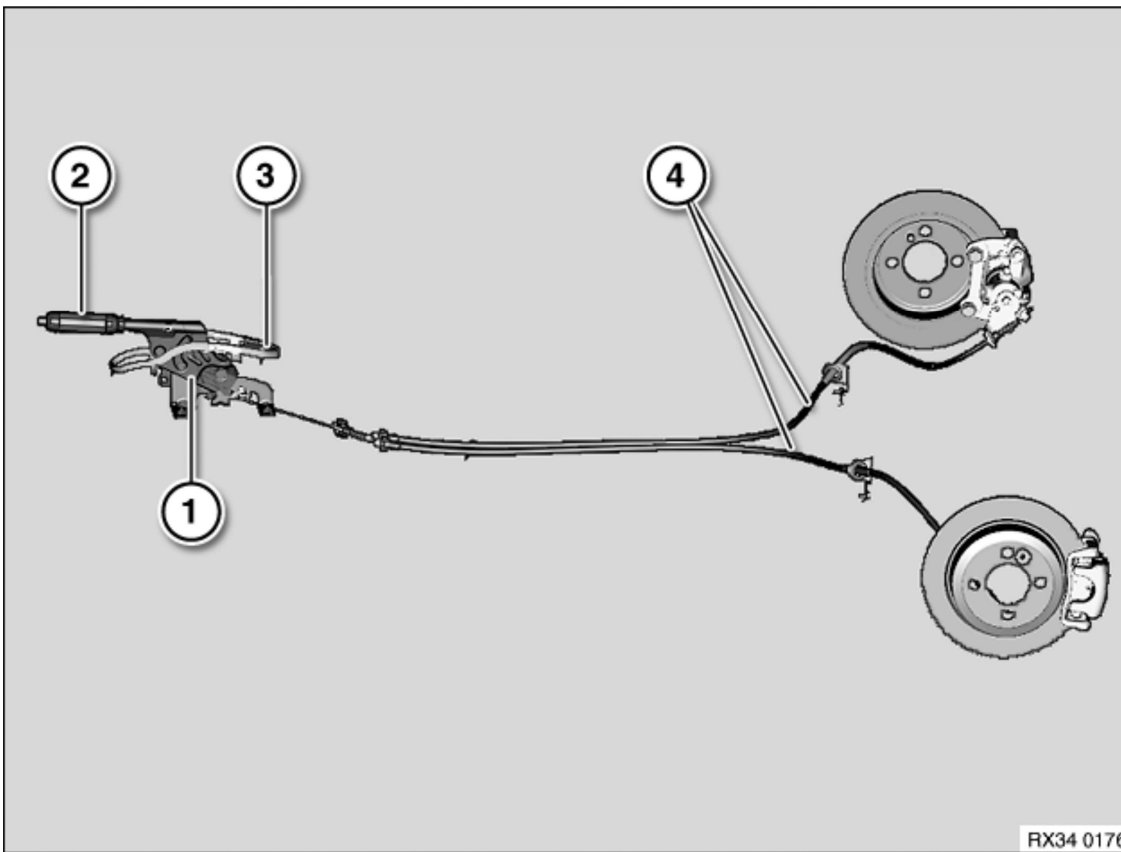


Fig. 72: Overview Of Parking Brake
Courtesy of BMW OF NORTH AMERICA, INC.

OVERVIEW OF PARKING BRAKE

1	Handbrake lever	2	Handle for handbrake lever
3	Gaiter for handbrake lever	4	Handbrake Bowden cables

34 41 ... REMOVING AND INSTALLING OR REPLACING BOOT FOR HANDBRAKE LEVER

Special tools required:

- 00 9 317

Unclip boot with special tool 00 9 317 .

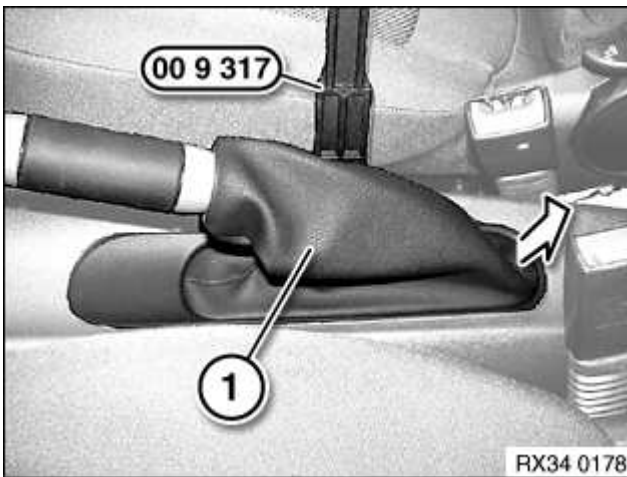


Fig. 73: Identifying Boot And Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Pull boot (1) over handbrake lever.

Cut cable ties (2) and remove boot.

Installation:

Eye of cable tie must face downward

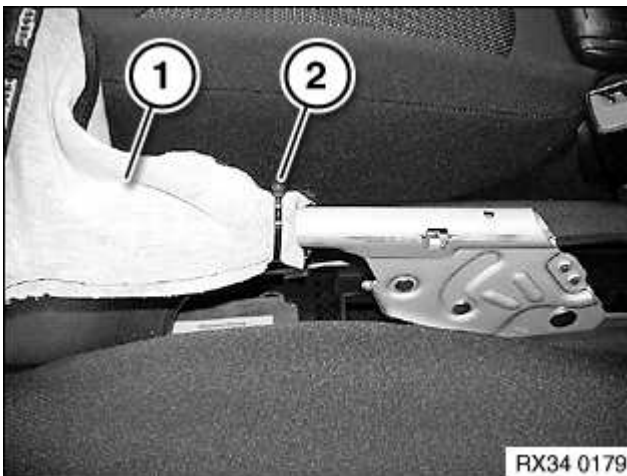


Fig. 74: Identifying Boot And Cable Ties
Courtesy of BMW OF NORTH AMERICA, INC.

34 41 001 REMOVING AND INSTALLING HANDBRAKE LEVER

Necessary preliminary tasks:

- **REMOVE REAR STORAGE COMPARTMENT HOLDER**

After completing tasks, **ADJUST HANDBRAKE**.

Release adjustment unit (1) for handbrake lever.

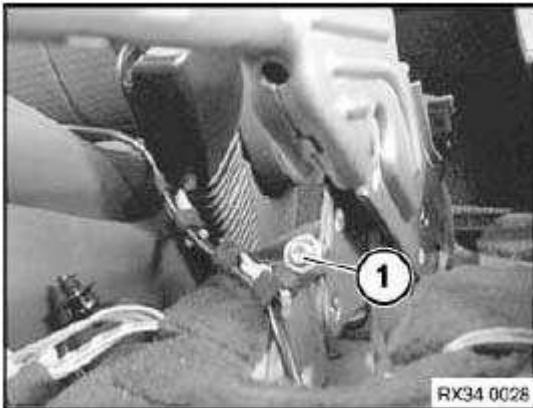


Fig. 75: Identifying Adjustment Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Detach both parking brake Bowden cables from balance arm.

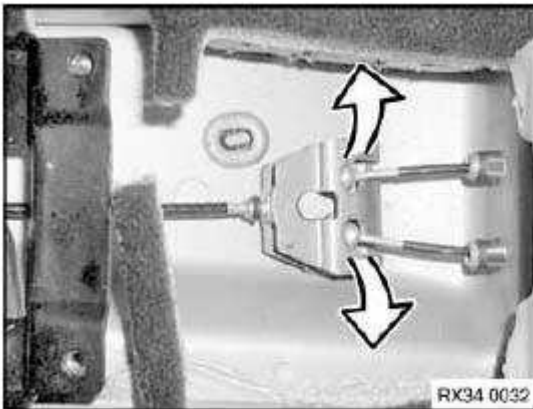


Fig. 76: Identifying Parking Brake Bowden Cables
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection for handbrake check switch.

Release screws (1) and remove fastener (2).

Installation:

Tightening torque: 34 41 1AZ . See **PARKING BRAKE** for specs.

Remove handbrake lever.

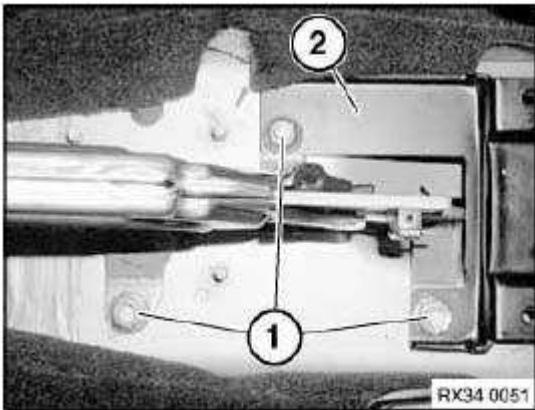


Fig. 77: Identifying Screws And Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

34 41 120 REMOVING AND INSTALLING / REPLACING BOTH HANDBRAKE BOWDEN CABLES

Special tools required:

- **34 6 330**

Necessary preliminary tasks:

- **REMOVE BRACKET ON CENTRE CONSOLE**
- Release heat shield and slide over exhaust system

After completing tasks, **ADJUST HANDBRAKE**

Release adjusting fixture (1) for parking brake Bowden cable.

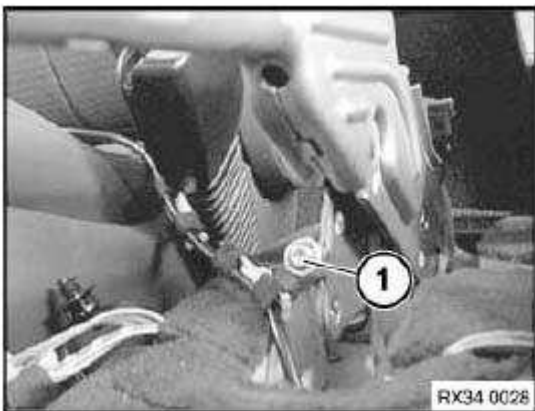


Fig. 78: Identifying Adjustment Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Detach both parking brake Bowden cables from balance arm.

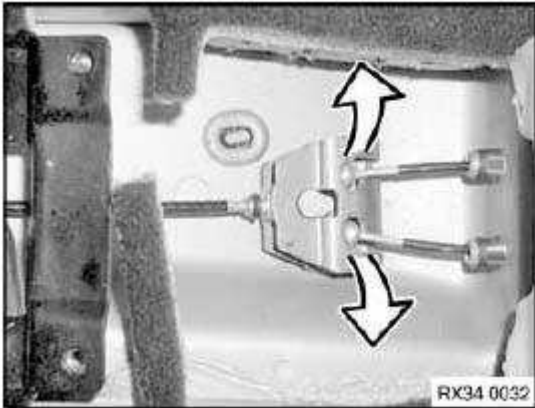


Fig. 79: Identifying Parking Brake Bowden Cables
Courtesy of BMW OF NORTH AMERICA, INC.

Attach special tool 34 6 330 to parking brake Bowden cable (1).

Slide special tool 34 6 330 in direction of arrow onto barbs of parking brake Bowden cable (1) until barbs are free.

Push parking brake Bowden cable towards rear.

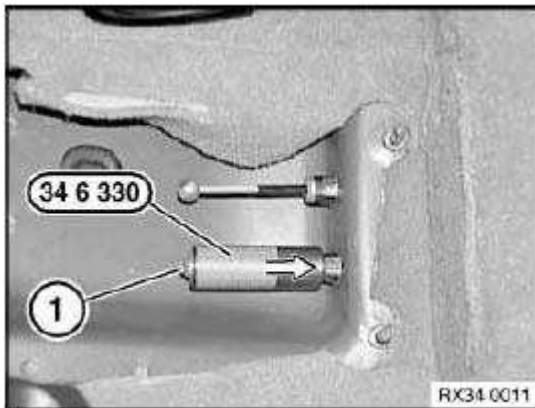


Fig. 80: Identifying Special Tool (34 6 330)
Courtesy of BMW OF NORTH AMERICA, INC.

Release cable assemblies from clips (1) on fuel tank.

Release screws (2) and remove bracket from control arm at top.

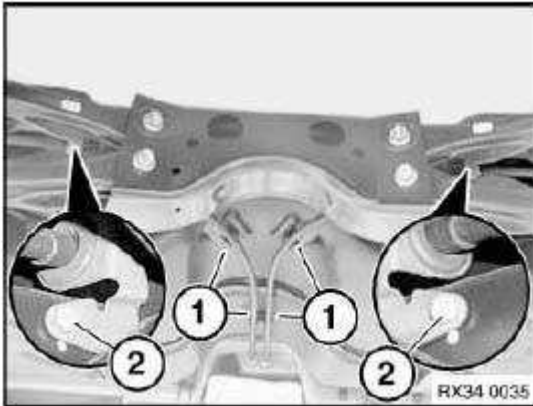


Fig. 81: Identifying Clips And Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Detach locking clip (1) in direction of arrow.

Disengage parking brake Bowden cable (2) from actuating lever (3) at brake caliper.

Feed out parking brake Bowden cable (2) downwards.

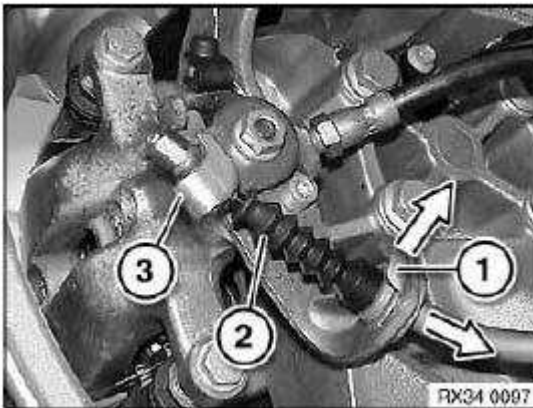


Fig. 82: Identifying Parking Brake Bowden Cable And Locking Clip

Courtesy of BMW OF NORTH AMERICA, INC.

51 MECHANICAL-HYDRAULIC COMPONENTS

34 51 525 REMOVING AND INSTALLING/REPLACING HYDRAULIC UNIT FOR ASC+T

NOTE: This operation is described in the section headed **Removing and installing HYDRAULIC UNIT FOR DSC**.

34 51 527 REMOVING AND INSTALLING/REPLACING HYDRAULIC UNIT FOR DSC

Necessary preliminary tasks:

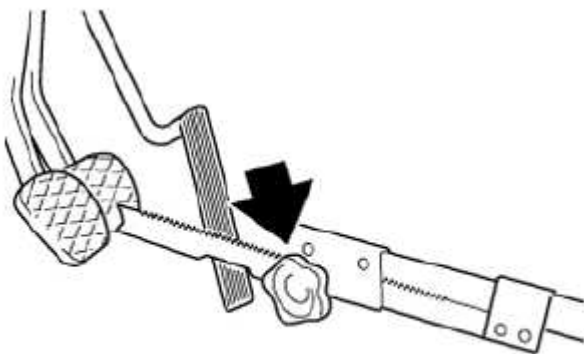
- Remove AIR CLEANER
- **READ AND COMPLY WITH GENERAL INFORMATION.**

After completing tasks, **BLEED BRAKE SYSTEM.**

Press clutch pedal down to floor and secure with pedal support.

NOTE: **The pedal support may only be released when the brake lines are reconnected.**

This prevents brake fluid from escaping from the expansion tank and air from entering the system after the brake lines have been disconnected.



31 34 021

Fig. 83: Locating Pedal Prop
Courtesy of BMW OF NORTH AMERICA, INC.

Remove line holder (1) from bulkhead.

Disconnect plug connection (2).

IMPORTANT: Do not mix up brake lines and if necessary mark prior to removal.

Close off connection bores with plugs.

Brake lines must not be bent.

Unfasten brake lines (3).

Installation:

Tightening torque: 34 32 1AZ . See **BRAKE LINES** for specs.

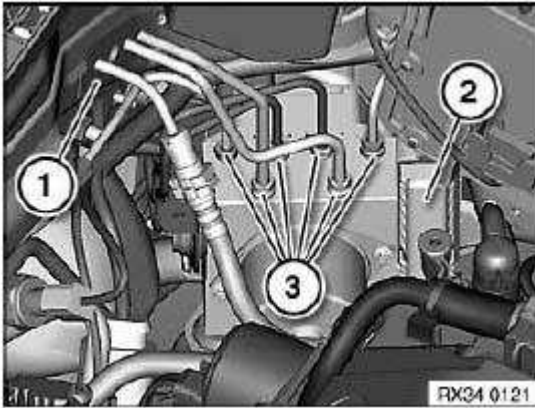


Fig. 84: Identifying Line Holder, Plug Connection And Brake Lines
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

The clutch hydraulic line can be easily pressed to one side by release the holder.

Release screw (2).

Installation:

Tightening torque: 34 51 2AZ . See **SLIP CONTROL SYSTEM (ABS, ASC+T, DSC)** for specs.

First raise hydraulic unit (3) a little and then swing out.

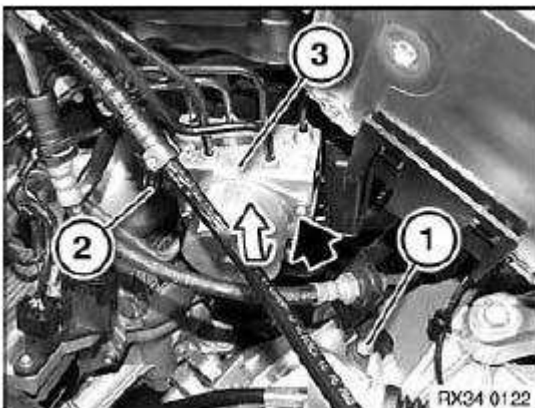


Fig. 85: Identifying Hydraulic Unit And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure rubber mounts (1) are correctly fitted in bores.

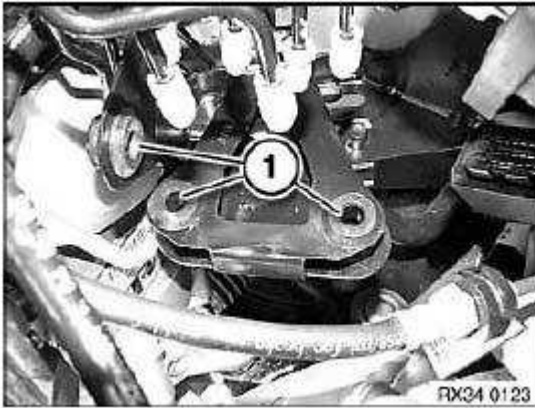


Fig. 86: Identifying Rubber Mounts

Courtesy of BMW OF NORTH AMERICA, INC.

Adjustment of steering angle sensor

Mix-up check of brake lines

Function check, hydraulic unit

Replacement:

- Carry out **PROGRAMMING/CODING**

52 ELECTRONIC COMPONENTS

34 52 ... OVERVIEW OF ELECTRONIC COMPONENTS

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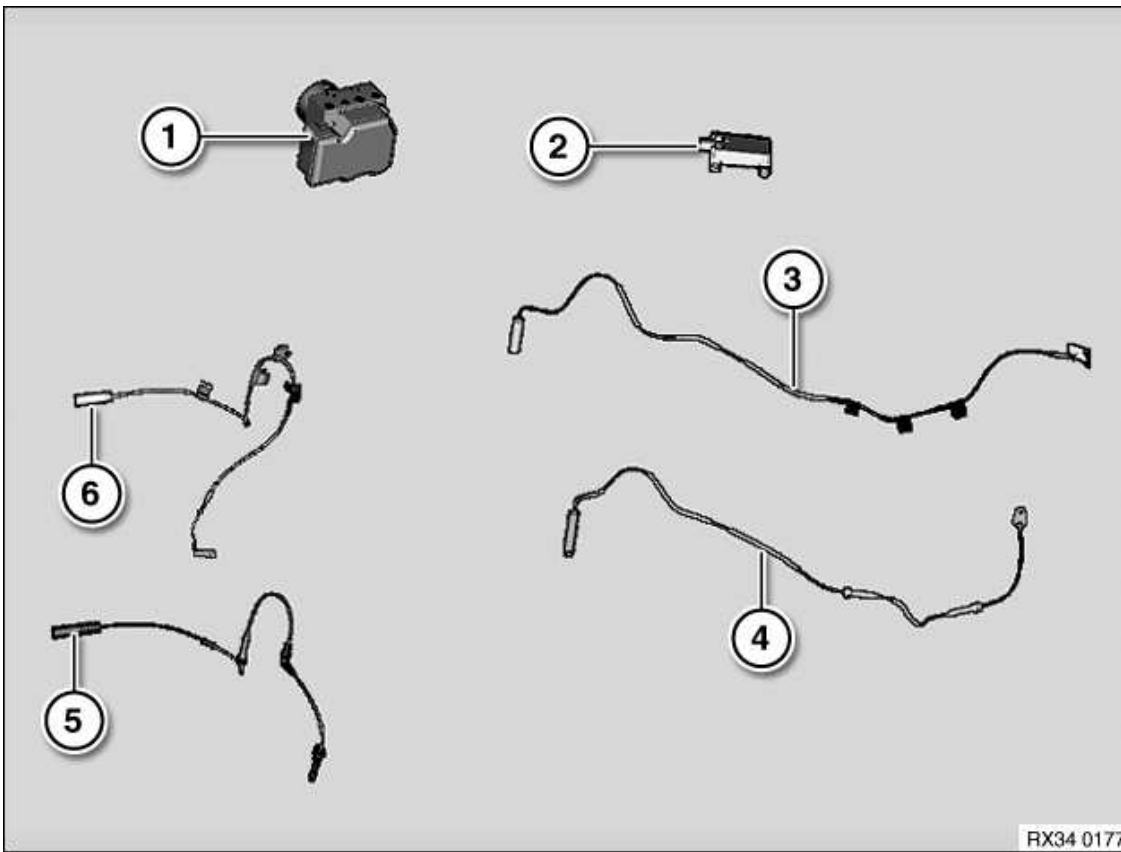


Fig. 87: Overview Of Electronic Components
Courtesy of BMW OF NORTH AMERICA, INC.

ELECTRONIC COMPONENTS: OVERVIEW

1	DSC control unit	2	DSC sensor
3	Brake pad sensor, rear	4	Pulse generator, rear
5	Pulse generator, front	6	Brake pad sensor, front

34 52 516 REMOVING AND INSTALLING / REPLACING DSC CONTROL UNIT

Necessary preliminary tasks:

- Remove **HYDRAULIC UNIT**

Release screws (1) and carefully remove control unit (2).

Necessary preliminary tasks:

Tightening torque: 34 51 1AZ . See **SLIP CONTROL SYSTEM (ABS, ASC+T, DSC)** for specs.

Observe following notes on installation.

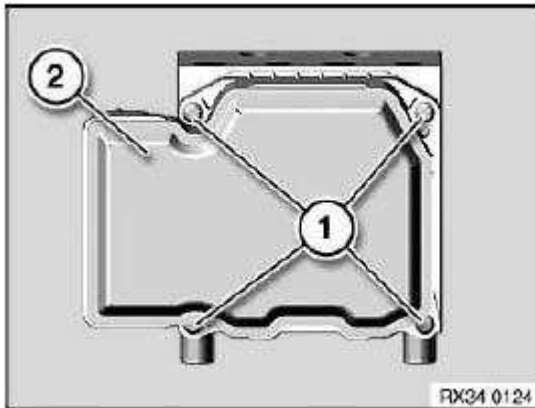


Fig. 88: Identifying Screws And Control Unit
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not use force to fit the control unit.

The two pins (2) must not be bent under any circumstances!

Installation:

Carefully insert control unit (1) in direction of arrow, paying attention to the two pins (2).

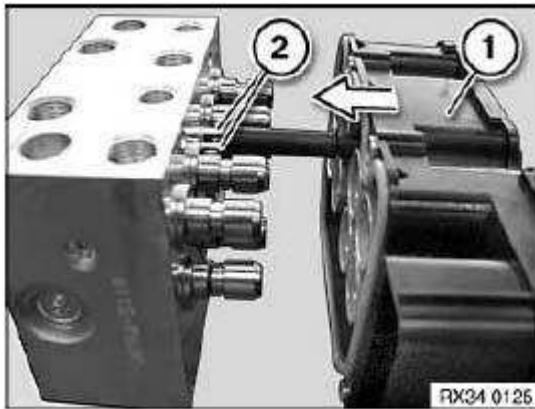


Fig. 89: Identifying Control Unit And Pins
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Observe tightening sequence (1-4).

Tightening torque: 34 51 1AZ . See **SLIP CONTROL SYSTEM (ABS, ASC+T, DSC)** for specs.

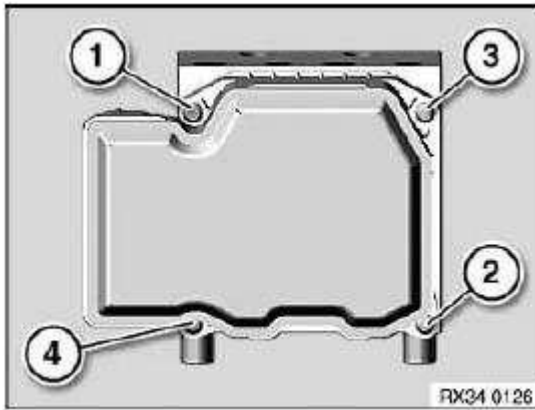


Fig. 90: Identifying Pins

Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

- Carry out **PROGRAMMING/CODING**
- Adjustment of steering angle sensor

34 52 525 REPLACING ONE FRONT PULSE GENERATOR

Necessary preliminary tasks:

- **REMOVE WHEEL**

Remove cable from holder (1) on spring strut.

Release screw (2) and remove pulse generator (3).

Installation:

Tightening torque: 34 51 4AZ . See **SLIP CONTROL SYSTEM (ABS, ASC+T, DSC)** for specs.

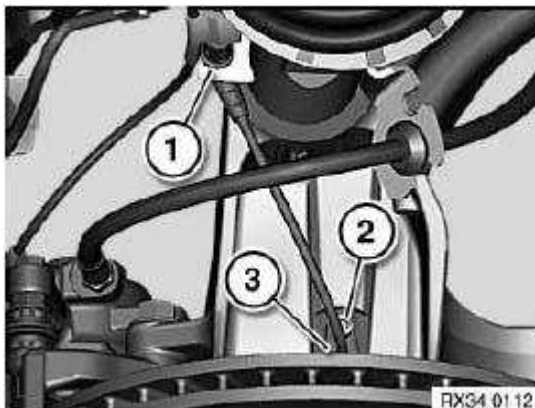


Fig. 91: Identifying Holder, Screw And Pulse Generator
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Installation:

Make sure plug connection engages correctly.

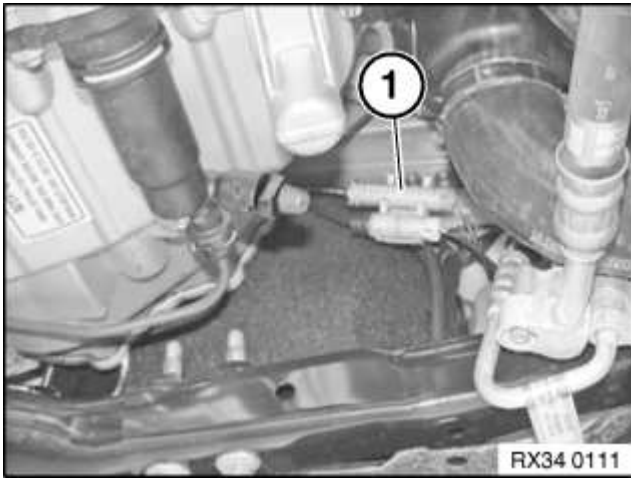


Fig. 92: Identifying Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Clean bore hole for pulse generator and grease with Staburags NBU 12/K lubricating grease.

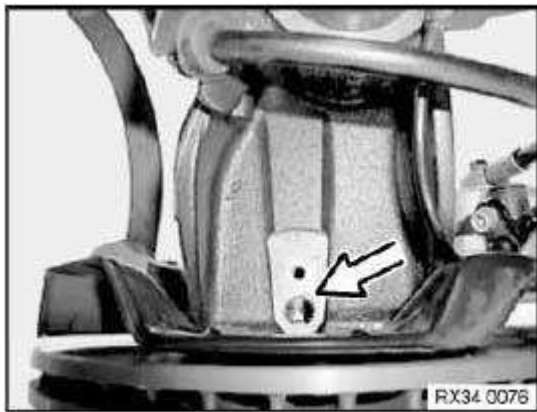


Fig. 93: Locating Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Necessary preliminary tasks:

- Partially detach **REAR UNDERBODY PANELLING**

Release cable from retaining clip on rear axle carrier (1).

Disengage cable from holder (1) at shock absorber.

Release screw (2) and remove pulse generator (3).

Installation:

Tightening torque: 34 51 4AZ . See **SLIP CONTROL SYSTEM (ABS, ASC+T, DSC)** for specs.

Clean bore hole for pulse generator and grease with Staburags NBU 12/K lubricating grease.

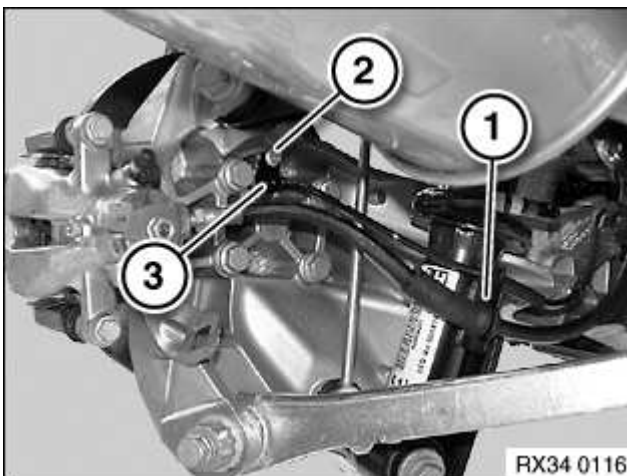


Fig. 94: Locating Bore Hole

Courtesy of BMW OF NORTH AMERICA, INC.

Unclip cable from retainers (1).

Disconnect plug connection (2).

Installation:

Make sure plug connection engages correctly.

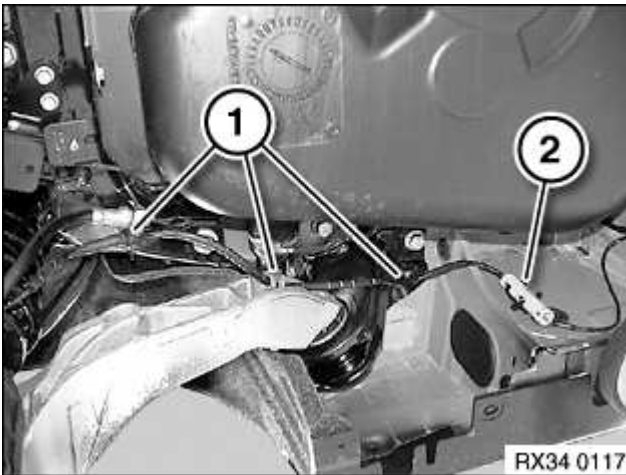


Fig. 95: Identifying Retaining Clips And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

34 52 550 REMOVING AND INSTALLING/REPLACING DSC YAW SENSOR (DSC SENSOR)

Necessary preliminary tasks:

- Remove **PASSENGER SEAT**
- If necessary, remove cover for video module

Disconnect plug connection (1).

IMPORTANT: Vibration-sensitive component.

Implement screw connection correctly, otherwise there may be malfunctions in the DSC.

Release nuts (2) and remove DSC sensor.

Installation:

Tightening torque: 34 51 5AZ . See **SLIP CONTROL SYSTEM (ABS, ASC+T, DSC)** for specs.

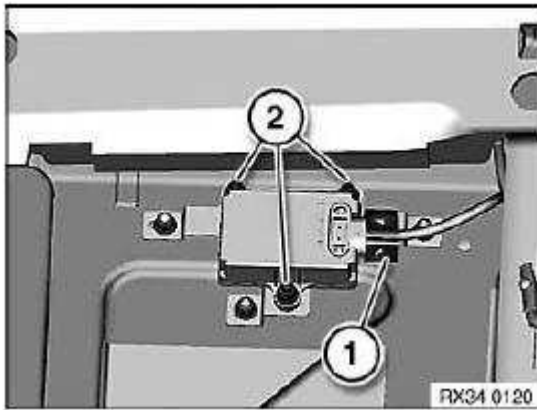


Fig. 96: Identifying Plug Connection And Nut
Courtesy of BMW OF NORTH AMERICA, INC.

90 TROUBLESHOOTING

34 90 ... TROUBLESHOOTING BRAKE SYSTEM

TROUBLESHOOTING BRAKE SYSTEM

Fault	Cause	Remedy
Brakes pull to one side	a. Tyre inflation pressure not in keeping with regulations b. Unevenly worn tyre treads c. Oil on pads/liners d. Wrong type of pads/liners e. Guide bolts dirty or damaged f. Axle geometry not correct g. Corrosion in floating calipers h. No shock absorber action i. Pad of one caliper worn	a. Correct tyre inflation pressure b. Change or replace tyres c. Replace brake pads, Check for causes d. Replace brake pads, Check for causes e. Replace guide bolts f. Check wheel alignment g. Remove and install, repair or replace floating calipers h. Check shock absorbers, replace if necessary i. Replace brake pads, check floating caliper
Brakes excessively hot while driving	a. Compensating port in brake master cylinder blocked b. Swollen rubber parts due to use of wrong brake fluid	a. Replace master brake cylinder b. Replace master brake cylinder

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	c. Bleeder hole on expansion tank blocked d. Corroded floating calipers e. Handbrake lever not released fully	c. Clean expansion tank d. Remove and install, repair or replace floating calipers e. Check handbrake and handbrake Bowden cables, repair if necessary
Poor braking effect in spite of great force on pedal Travel at brake pedal normal	Brake pads oil-splattered or burnt; wrong type of brake pads	Replace brake pads
Poor braking effect in spite of great force on pedal Travel at brake pedal too short	Brake booster malfunctions - engine vacuum	Check brake booster
Poor braking effect in spite of great force on pedal Travel at brake pedal too long	One brake circuit failed due to leaks or damage	Leakage test of brake system
Brake pedal can be pressed down softly and springily	a. Air in brake system b. Not enough brake fluid in expansion tank c. Overheated brake fluid - vapour lock due to excessive water content in brake fluid or excessive brake loads	a. Bleed brakes b. Top up or change brake fluid Bleed brakes c. Change brake fluid, Bleed brakes
Brake is bled and readjusted, but brake pedal can be pressed down too far	a. Primary cup seal in brake master cylinder damaged b. Leaking separating cup seals on floating piston of brake master cylinder c. Leak in brake system	a. Replace master brake cylinder b. Replace master brake cylinder c. Leakage test of brake system
Uneven pad wear	a. Wrong type of pads/liners b. Dirty floating caliper recesses, damaged caps c. Corrosion in floating calipers d. Swollen rubber ring for piston control	a. Replace brake pads b. Remove and install, repair or replace floating calipers c. Remove and install, repair or replace floating calipers d. Remove and install, repair or replace floating calipers
Brake pads worn at angle	a. Wheel-bearing play excessive b. Brake disc not aligned with floating caliper	a. Replace wheel bearings b. Check floating caliper installation c. Remove and install, repair

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	c. Corrosion in floating calipers d. Angular brake-disc wear e. Minimum pad thickness undershot f. Spring force insufficient g. Guide bolts damaged	- or replace floating calipers d. Replace brake discs e. Replace brake pads f. Replace spring g. Replace guide bolts
Seized brake pads, pad does not move off brake disc	a. Dirty floating caliper recesses, damaged caps b. Corrosion in floating calipers c. Compensating port in brake master cylinder blocked	a. Remove and install, repair or replace floating calipers b. Remove and install, repair or replace floating calipers c. Replace master brake cylinder
Brakes squeal or rattle	a. Wrong type of pads/liners b. Dirty floating caliper recesses c. Spring force insufficient d. Brake disc not aligned with floating caliper e. Brake-disc runout f. Excessive thickness deviation within braking surface g. Liner wear excessive or one-sided h. Rust edges on brake discs i. Pad loose j. Wheel-bearing play excessive	a. Replace brake pads b. Remove and install/clean floating calipers c. Replace spring d. Check floating caliper installation e. Replace brake discs f. Measure brake disc thickness - Replace discs g. Replace brake shoes h. Replace brake discs i. Replace brake pads j. Replace wheel bearings
Brake-pedal dead travel excessive	a. Wheel-bearing play excessive b. Brake disc not aligned with floating caliper c. Brake-disc runout d. Excessive thickness deviation within braking surface e. Brake system leaking f. Air in brake system g. Wrong type of pads/liners	a. Replace wheel bearings b. Check floating caliper installation c. Replace brake discs d. Measure brake disc thickness - Replace discs e. Leakage test of brake system f. Bleed brakes

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		g. Replace brake pads
Jammed piston in brake caliper	a. Dirty floating caliper recesses, damaged caps b. Brake disc not aligned with floating caliper c. Pistons corroded in floating calipers	a. Remove and install, repair or replace floating caliper b. Check floating caliper installation c. Remove and install, repair or replace floating caliper
Pulsating effect on brake pedal	a. Wheel-bearing play excessive b. Brake disc not aligned with floating caliper c. Brake-disc runout d. Excessive thickness deviation within braking surface	a. Replace wheel bearings b. Check floating caliper installation c. Replace brake discs d. Measure brake disc thickness Replace discs
Handbrake effect insufficient	a. Brake pad fouled by oil b. Excessive free play c. Corroded transmitting elements Replace discs	a. Replace brake pads, determine cause b. Adjust handbrake c. Remove and install handbrake, check brake caliper, Bowden cables, replace if necessary check brake caliper, Bowden cables, replace if necessary