

BRAKES

BMW Operating Fluids

1.0 GENERAL INFORMATION

Brake fluid, (glycol-based) as used in BMW brake systems, must conform with the following requirements:

- High boiling point
- Good low temperature resistance
- Low compressibility
- Corrosion inhibition for all metal parts inside of brake system
- Compatibility with all rubber parts used in brake system

These requirements are fulfilled by reputable brand name DOT 4 brake fluids.

Silicone-based brake fluid has better compressibility, but because it cannot absorb moisture, is subject to vapor lock at temperatures above 212°F/100°C. At lower temperatures, it may even ice-up. **Silicone-based brake fluid is not approved by BMW.**

Glycol-based brake fluid absorbs moisture from the atmosphere (hygroscopicity) through the brake fluid reservoir, brake hoses, etc. This absorption of water lowers the original boiling point of brake fluid and active safety of the entire system. If there is extended use of the brakes while driving downhill at high speeds, the thermal loads could cause vapor bubbles in the brake fluid. This situation could lead to reduced braking effectiveness.

The original boiling point of factory-approved brake fluids is approximately 500°F/260°C. Due to the hygroscopic behavior of brake fluid, 2% of water within one year is permissible. The boiling point of brake fluid will drop by 100°C with 3% water absorption. It is essential to conform with brake fluid changing intervals in order to guarantee the safety and maximum effectiveness of a brake system.

It would not be sufficient simply to replace the brake fluid in the reservoir. Experience has shown that vapor bubbles will occur first on areas of the brake caliper. This area is subjected to high thermal loads and also exposed to heat transmission.

When replacing the brake fluid, the brake fluid used as the working fluid in the hydraulic clutch should also be replaced. This is done by draining the clutch operation system or bleeding with the help of the clutch slave cylinder.

The brake fluid should be replaced by filling the brake fluid reservoir. Make sure that each bleeder valve of all wheel cylinders or brake calipers is kept open until the escaping brake fluid is clear and without air bubbles. Never use brake fluid that has been drained from the system.

Storage of brake fluids also deserves your special attention. The aging process begins with the initial contact between the brake fluid and the atmosphere. This means immediately after a new container is opened.

To keep the boiling point of stored brake fluids as high as possible, we recommend conforming with the following points:

- Close all containers tightly.
- Select small size containers, which can be used up quickly.
- Avoid pouring contents of one container into a different container.

2.0 HANDLING BRAKE FLUIDS

Brake fluids could be mixed up accidentally with mineral oil products so it is important to leave them in their original containers and not pour them into a different container.

CAUTION

If brake fluid accidentally comes into contact with your skin, wash it off with soap and water immediately. Eyes should be thoroughly flushed with cold water if contacted by brake fluid. Vomiting should be induced if brake fluid is internally consumed and a physician should be consulted.

If brake fluid is spilled or drips on a painted surface, wash it off with water immediately to prevent damage to the paint finish. Never rub it off. Brake fluids should not have contact with grease or oil. Wash hands to remove grease and oil before working with brake fluids. Also make sure that grease cannot enter the brake system.

Drained brake fluid must never be discarded in the garbage, oil disposal tanks or water drains.

Read instructions on container label prior to use.

3.0 BMW TESTED AND APPROVED BRAKE FLUIDS

BMW Tested and Approved **DOT 4 ESL** Brake Fluid is available as follows:

12 fl. oz. bottle BMW Part No. 81 22 0 142 156

1 gallon container BMW Part No. 81 22 0 142 155

4.0 BRAKE FLUID CHANGE INTERVALS

All Models Brake fluid change interval every 2 years.

5.0 OTHER OPERATING FLUIDS

ANTI-SQUEAK/CORROSION PASTE

Bostik NEVER-SEEZÂ® to prevent disc brake squeaking. It is applied on cleaned recesses, pressure surfaces of piston crowns, brake pad backplates and possibly transfer plates - but not on friction liners.

To prevent corrosion between the ABS impulse sensor and the hole in the wheel suspension component, apply a thin coat of Bostik NEVER-SEEZÂ® to cleaned sensor and hole before assembly.

Bostik NEVER-SEEZÂ® Part No. NSBT-16

BRAKE CLEANER SPRAY

Non-CFC spray (former BMW Part No. 81 22 9 407 704) for cleaning brakes, brake pads, brake shoes, drums, disks and other brake components. Also suitable for clutch pressure plates.

3M Part No. 8895

Loctite Part No. 82220

CRC Part No. 08088

BRAKES

Brakes - Repair Instructions - X3 Utility

BRAKE TESTING AND BLEEDING

34 00 050 BLEEDING BRAKE SYSTEM WITH DSC

Necessary preliminary tasks:

- Remove left sensor opening.
- Read and comply with [GENERAL INFORMATION](#).

IMPORTANT: Under certain circumstances it is not possible after the brake system is opened to bleed the brake system fully at the rear EMF brake calipers. If there is still residual air in the rear brake calipers after normal bleeding, it will be necessary to work through an [ADDITIONAL BLEEDING PROCEDURE](#)!

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

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

Connect bleeder unit with max. 2 bar filling pressure.

A second person is needed for this repair work.

Use only BMW-approved brake fluids, see [BRAKES - OPERATING FLUIDS](#).

Connect diagnosis and information system.

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

IMPORTANT: Check relevant equipment manufacturer's operating instructions for each device.
Charging pressure should not exceed 2 bar.

Connect bleeder unit to expansion tank and switch on.

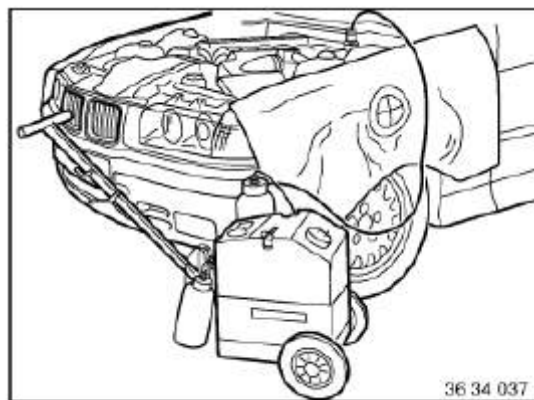


Fig. 1: Connecting Brake Fluid Changer To Expansion Tank

Courtesy of BMW OF NORTH AMERICA, INC.

Completely bleed the brake system.

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 vent valve.

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

In vehicles with 6-piston fixed caliper brakes two vent valves per brake caliper are installed on
IMPORTANT: the front axle!

In each case start by bleeding at the outer vent valve and then bleed at the inner vent valve.

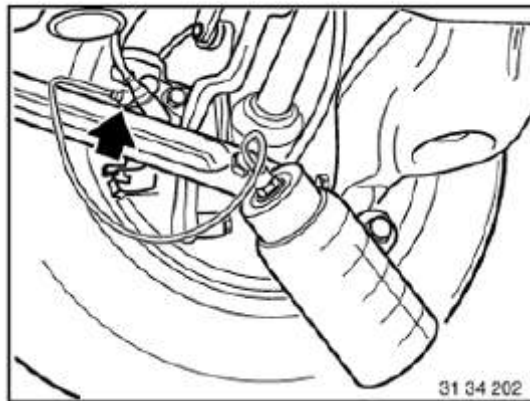


Fig. 2: Connecting Bleeder Hose With Collecting Tray To Bleeder Valve On Rear Right Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

Bleed the rear axle brake circuit.

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

Open vent valve.

Run brake bleeding procedure using the diagnosis and information system with the vent valve open.

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

Close vent valve.

Repeat procedure at rear left.

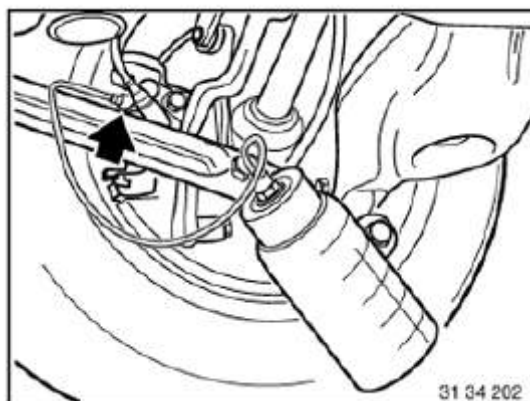


Fig. 3: Connecting Bleeder Hose With Collecting Tray To Bleeder Valve On Rear Right Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

Bleed front-axle brake circuit.

Connect vent hose with collecting vessel to vent valve on front right brake caliper.

Open vent valve.

IMPORTANT: In vehicles with 6-piston fixed caliper brakes two vent valves per brake caliper are installed on the front axle!

In each case start by bleeding at the outer vent valve and then bleed at the inner vent valve.

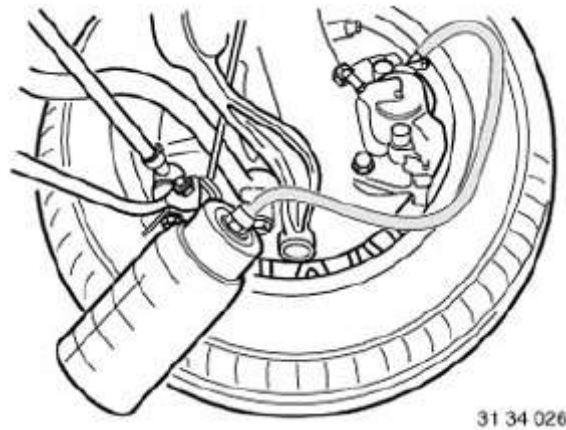


Fig. 4: Connecting Bleeder Hose With Collecting Tray To Bleeder Valve
Courtesy of BMW OF NORTH AMERICA, INC.

Run brake bleeding procedure using the diagnosis and information system with the vent valve open.

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

Close vent valve.

Repeat procedure at front left.

Switch off bleeder unit and remove from expansion tank.

Check brake fluid level. If necessary, top up/draw off to "MAX" level.

Close expansion tank.

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

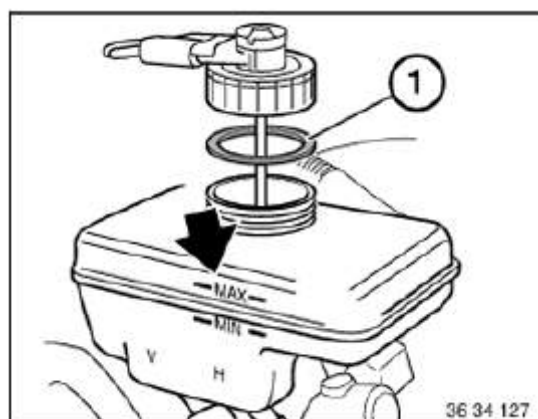


Fig. 5: Identifying Gasket And Sealing Cap
Courtesy of BMW OF NORTH AMERICA, INC.

34 00 009 CHECKING BRAKES ON TEST STAND

Necessary preliminary work:

- Check tires for damage.
- Check tire treads.
- Checking tire inflation pressure.

IMPORTANT: Make sure the Hill Descent Control (HDC) is not active before driving on to the brake test rig!
The Hill Descent Control (HDC) indicator light must not be on!

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

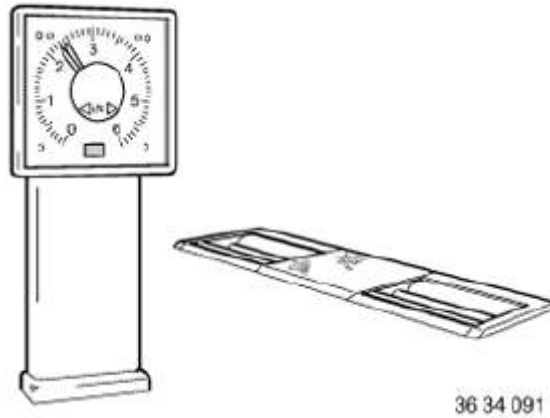


Fig. 6: Dynamic Brake Analyzer

Courtesy of BMW OF NORTH AMERICA, INC.

Only brake test stands with test speeds of 2.5-6 km/h may be used.

Max. bedding-in time 2 minutes.

IMPORTANT: 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.

Front axle on brake test rig:

No gear or drive range must be engaged! Selector lever position "Neutral" on automatic transmission vehicles.

IMPORTANT: Do not press accelerator!

Disregard of these instructions will result in the transfer box engaging, forcing the vehicle off the brake test rig!

Drive vehicle on to brake test rig and carry out brake test.

Rear axle on brake test rig:

No gear or drive range must be engaged! Selector lever position "Neutral" on automatic transmission vehicles.

IMPORTANT: Do not press accelerator!

Disregard of these instructions will result in the transfer box engaging, forcing the vehicle off the brake test rig!

Drive vehicle onto brake test stand

The vehicle utilises a plausibility check (wheel speed comparison) to detect the brake test rig within a few seconds and switches to brake test rig mode.

The parking brake indicator light flashes slowly when brake test stand mode is activated and parking brake actuators are released.

Following indicator lights are permanently on:

- Parking brake
- Brake system
- Dynamic stability control (DSC)
- Antilock Brake System ABS

Actuate parking brake switch = application of brake pads.

The parking brake indicator light flashes quickly when brake test stand mode is activated and parking brake actuators are partially locked.

Actuate parking brake switch = test force 1

Actuate parking brake switch again = test force 2

Actuate parking brake switch again = test force 3

The parking brake is released again when the button is actuated in the Release direction.

The parking brake indicator light is permanently activated when brake test stand mode is not detected and parking brake actuators are fully locked.

Brake test stand mode is automatically terminated when the vehicle is driven off the brake test stand.

All indicator lights go out automatically!

34 00 010 CHECKING THICKNESS OF BRAKE PAD

Special tools required:

- 34 1 260

NOTE: The thickness of the outer brake pads can be determined without removing the wheels.
If necessary, move vehicle until opening for brake pad wear indicator (brake pad) can be seen through rim styling.

Insert special tool 34 1 260 wheel rim into opening for brake pad wear indicator.

Press special tool onto brake pad. Slide ring (1) in direction of arrow up to stop and read off measured value.

NOTE:

- A. Brake disc**
- B. Brake pad with backplate**

REMAINING BRAKE PAD THICKNESS OF FRONT BRAKE .

REMAINING BRAKE PAD THICKNESS OF REAR BRAKE .

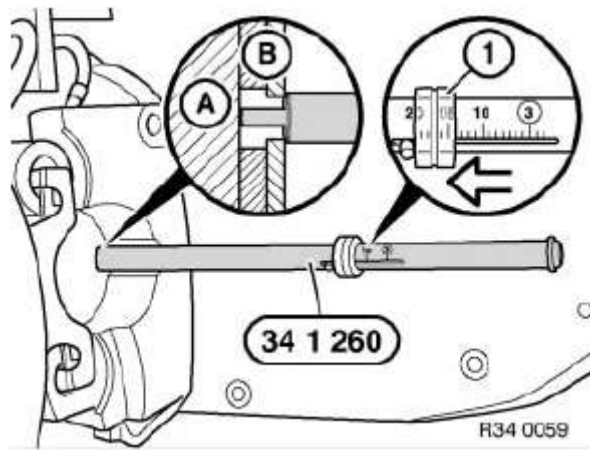


Fig. 7: Inserting Special Tool 34 1 260 Wheel Rim Into Brake Pad Wear Indicator Opening
 Courtesy of BMW OF NORTH AMERICA, INC.

34 00... GENERAL NOTES

The brake system is one of the most important safety systems in the vehicle. Therefore, it is important to exercise special care when performing repair work on the brake system and to adhere to the following instructions.

- Ensure cleanliness and use only fluff-free cleaning cloths.
- Wash away or vacuum up brake dust, do not clear it away using compressed air. This dust is a health hazard.
- Oil or grease must never enter the brake system. This would result in failure of the entire brake system.
- When cleaning brake components with brake cleaner, never let brake cleaner enter the brake system.
- Even a minute amount of brake cleaner residue must be avoided.
- Replace brake fluid at least every two years.
- Important: Never reuse drained off brake fluid.
- Use only BMW-approved brake fluid, see **BRAKES - OPERATING FLUIDS**.
- Dispose of brake fluid in approved appliances only.
- 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.
- Brake pads:

Brake pads must be replaced when the remaining brake pad thickness is reached.

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

The friction surfaces of the brake pads must not come into contact with oil or grease. The brake pads must be replaced if they are dirt contamination 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 disc 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 disc contact side of the brake caliper for

when the vehicle is moving forward.

- Brake discs:

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

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

- Always strip preservative off new parts before installation.
- Brake calipers:

Only approved glycol-based assembly pastes may be used for repairs on brake calipers.

All moving components on the brake caliper must move freely: note grease specifications.

Use only BMW-approved lubricants to grease the brake caliper guides.

- 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 driving position.
- Close open connections on brake lines and individual components to prevent dirt from entering the brake system.
- Observe **TIGHTENING TORQUE** when tightening down brake line couplings.

The traction control system is basically maintenance-free. However, be sure to adhere to the following:

- When carrying out welding work with electric welder, be sure to disconnect the connector from the electronic control unit (ignition turned off).
- During painting work, the control unit may be subjected for brief periods to max. 95 °C and for long periods (approx. 2 hours) to max. 85 °C.
- Battery clamps must be completely tight on battery terminals.
- The brake lines on the hydraulic unit must not be mixed up; if necessary, mark them prior to disassembly.
- On completion of repair work, carry out mix-up test with the DIS diagnosis system.

34 00 X01 GUIDELINE FOR APPLYING BRAKE PAD PASTE ON BRAKE PADS AND BRAKE ANCHOR PLATE

So as not to damage the surface coating, if possible do not mechanically clean the guide surfaces for the brake pads on the brake caliper mounting bracket. Instead, clean with brake

IMPORTANT: cleaner BMW part no. 83 19 2 154 780 and apply a thin coating of brake pad paste BMW part no. 83 19 2 158 851 (3 g) or 83 19 2 158 852 (100 g).

Spread brake pad paste onto the marked surfaces using a brush!

- (1) Brake pad paste 100 gr. BMW part no. 83 19 2 158 852
- (2) Brake pad paste 3 gr. BMW part no. 83 19 2 158 851
- (3) Brush for spreading brake pad paste over the marked areas.



Fig. 8: Identifying Brake Pad Paste Tube

Courtesy of BMW OF NORTH AMERICA, INC.

Brake IPS (CBI) 1-piston floating caliper brake (model ranges: 1-Series, 3-Series, 4-Series, X3)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

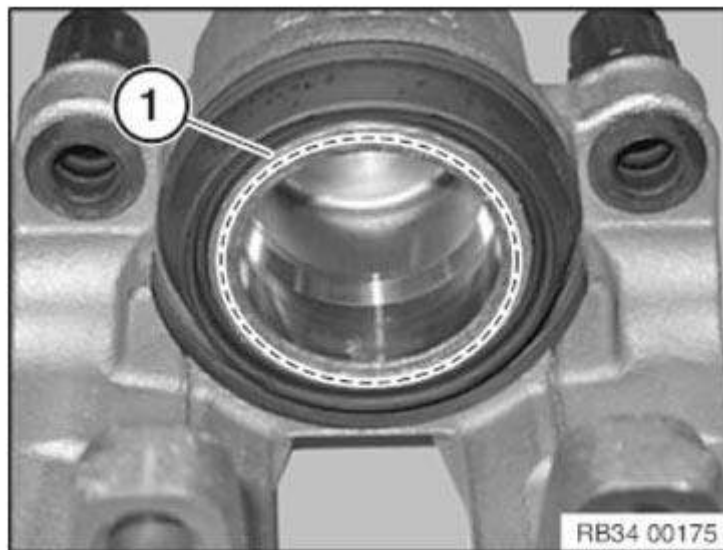


Fig. 9: Identifying Brake Cleaner Contact Surface Area

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surfaces (1) of T-heads/brake caliper housing with brake cleaner and apply a thin coating of brake pad paste.

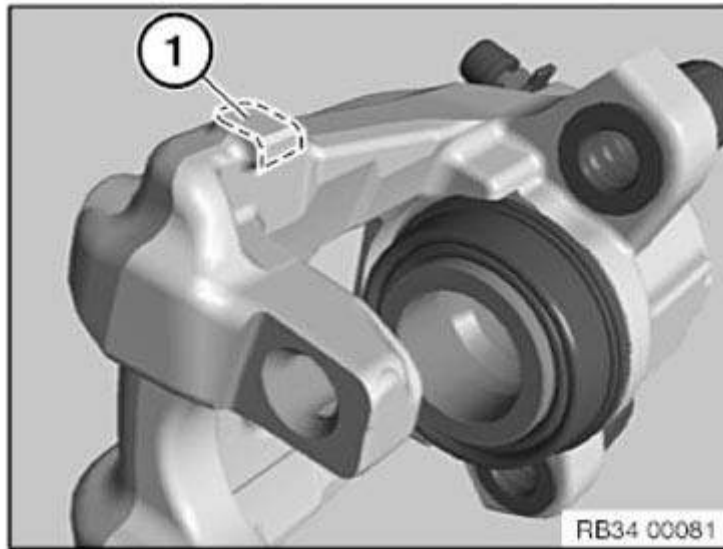


Fig. 10: Identifying Contact Surfaces Of T-Heads/Brake Caliper Housing
 Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

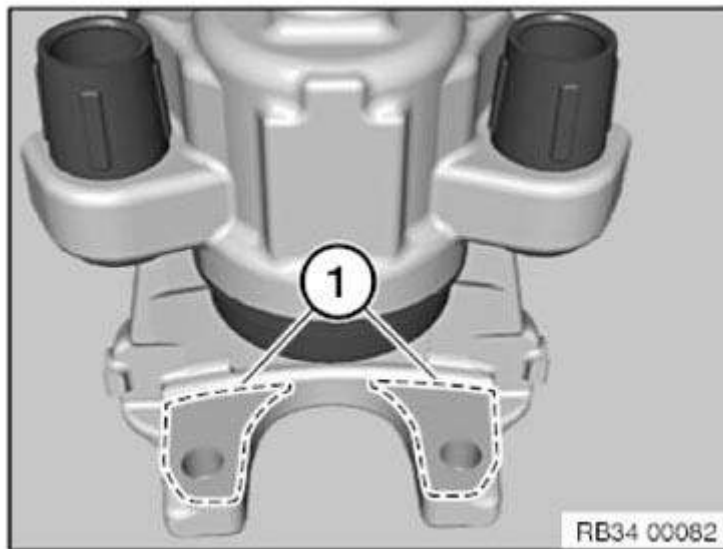


Fig. 11: Brake Caliper Contact Surface
 Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

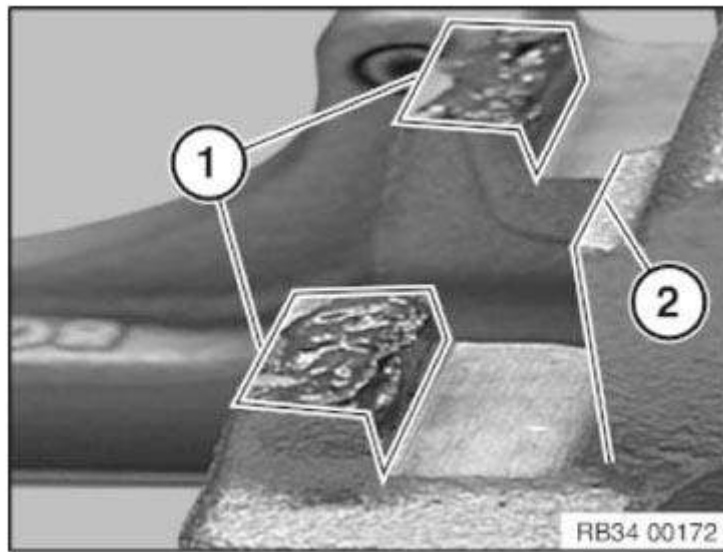


Fig. 12: Identifying Brake Pad Guide Surfaces On Brake Caliper Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

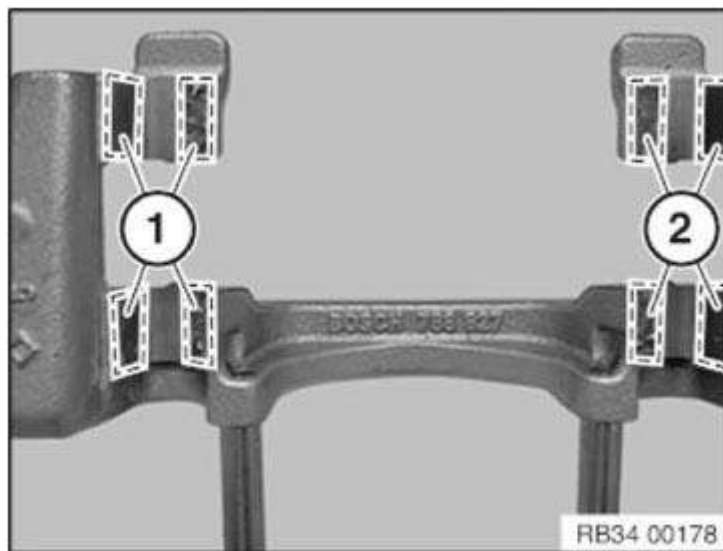


Fig. 13: Identifying Guide Surfaces For Brake Pads On Brake Caliper Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

Apply a thin coating of brake pad paste to T-head of inner brake pad in area (1) and (2).

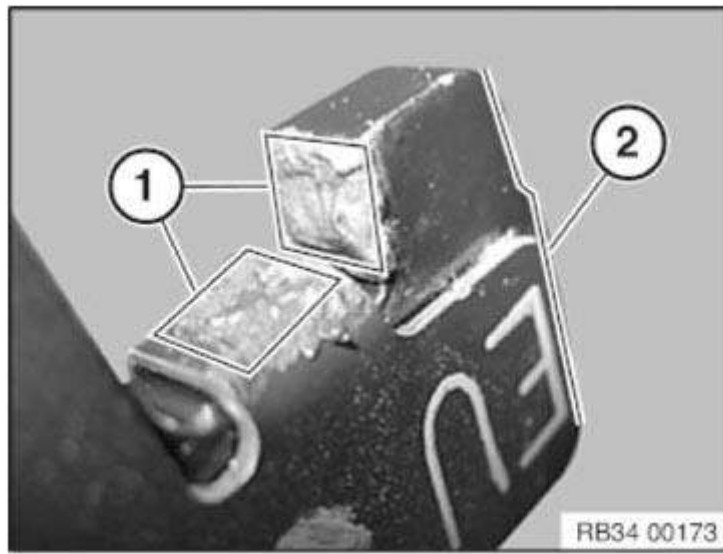


Fig. 14: Brake Pad Paste Application Area

Courtesy of BMW OF NORTH AMERICA, INC.

Apply a thin coating of brake pad paste to T-head of outer brake pad in area (1) and (2).

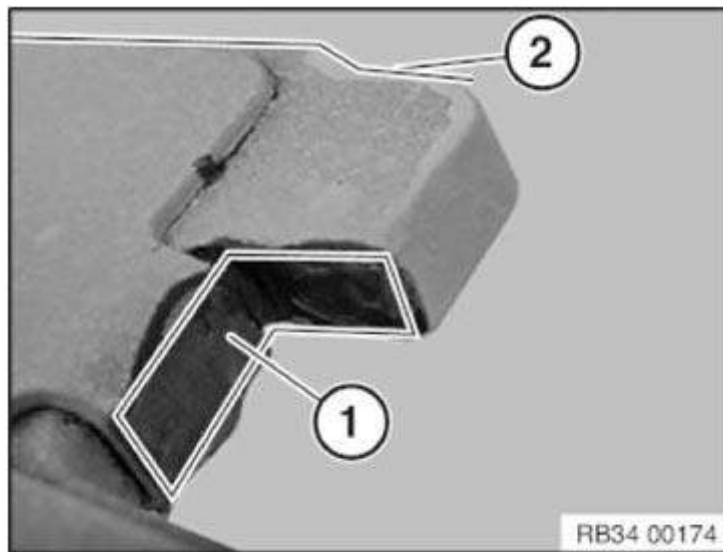


Fig. 15: Applying Thin Coating Of Brake Pad Paste To T-Head Of Outer Brake Pad Area

Courtesy of BMW OF NORTH AMERICA, INC.

Brake FN (Continental Teves) 1-piston floating caliper brake (model ranges: 5-Series, 6-Series, 7-Series, 8-Series, X1, X3, X5, Z4, RR)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

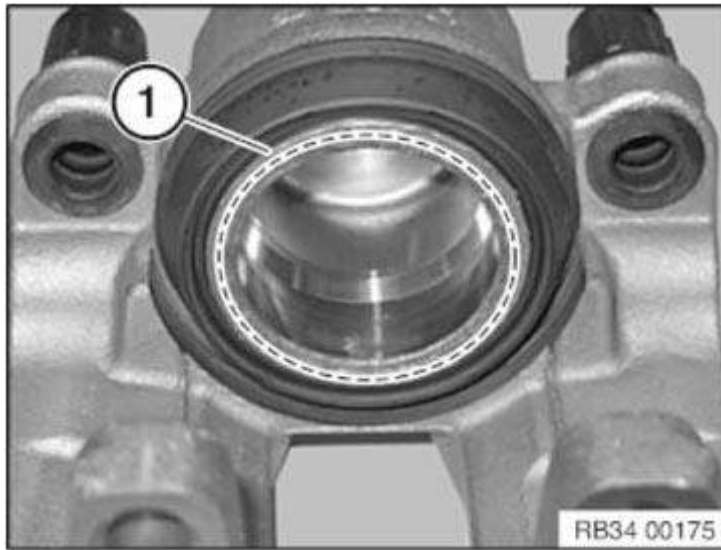


Fig. 16: Identifying Brake Cleaner Contact Surface Area

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surfaces (1) of T-heads/brake caliper housing with brake cleaner and apply a thin coating of brake pad paste.

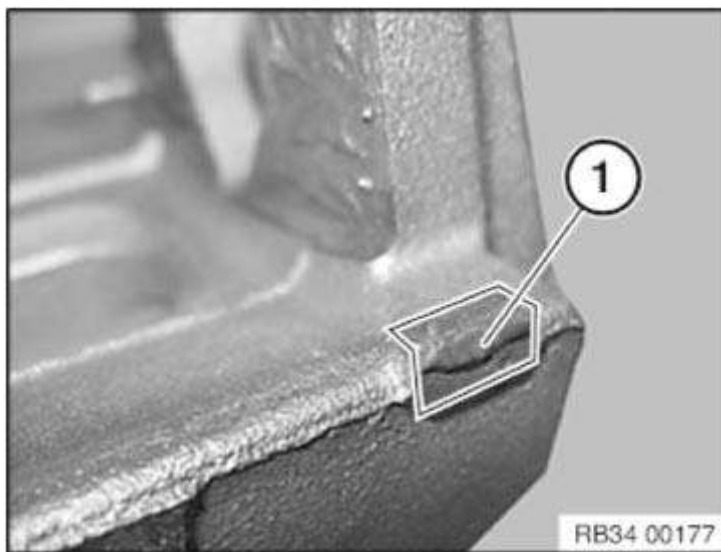


Fig. 17: T-Heads/Brake Caliper Housing Contact Surfaces

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

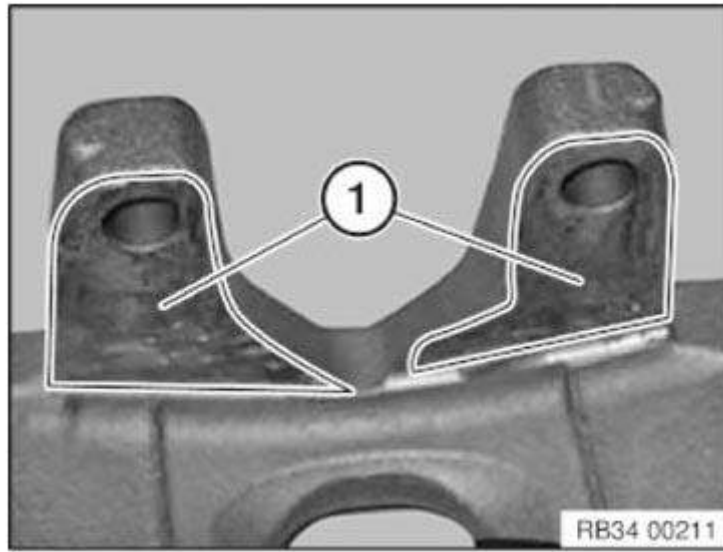


Fig. 18: Identifying Contact Surface Of Brake Caliper

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1) with brake cleaner and apply a thin coating of brake pad paste.

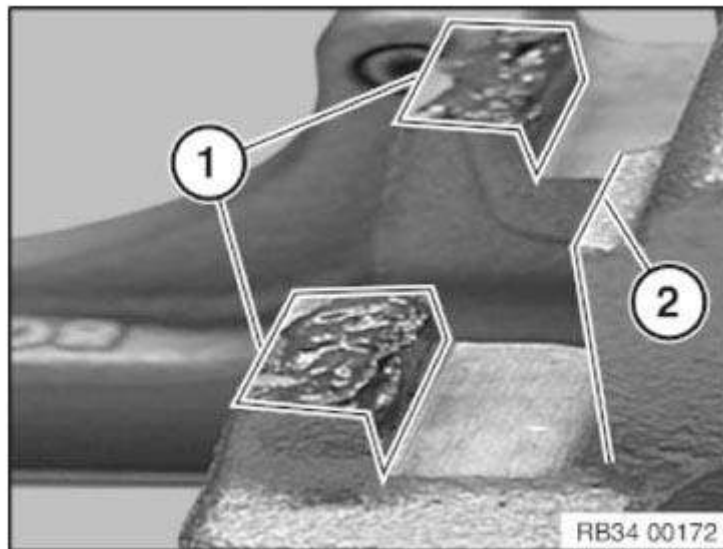


Fig. 19: Identifying Brake Pad Guide Surfaces On Brake Caliper Mounting Bracket

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

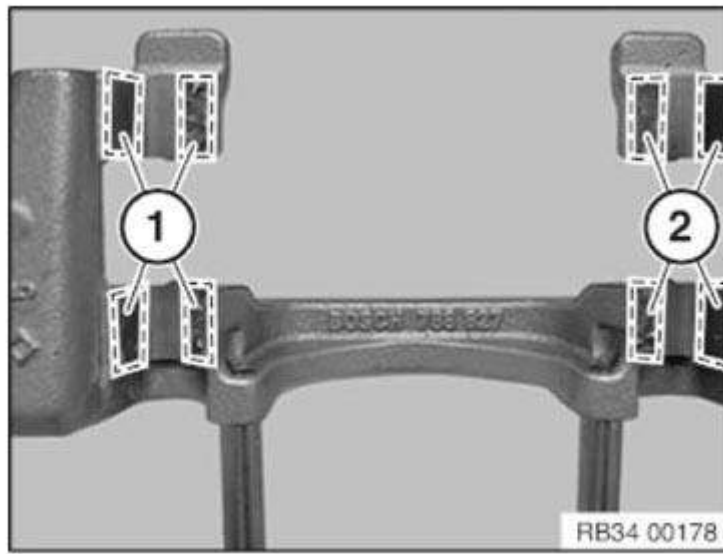


Fig. 20: Identifying Guide Surfaces For Brake Pads On Brake Caliper Mounting Bracket
 Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the inner brake pad with brake pad paste in area (1 and 2).

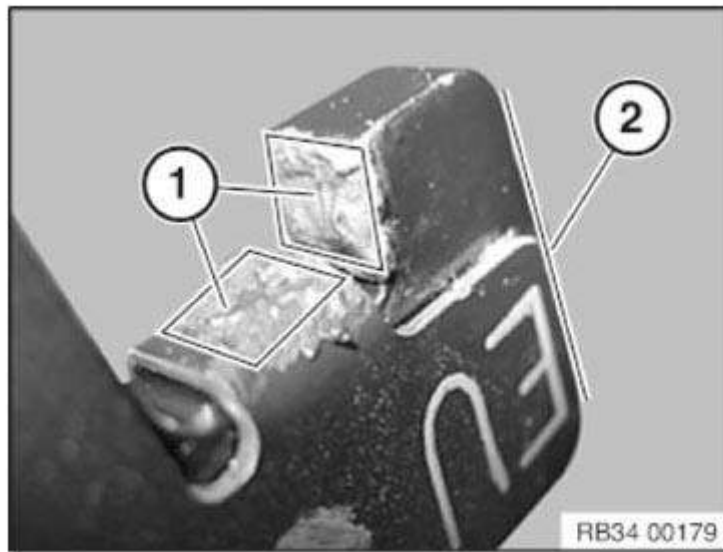


Fig. 21: Coating T-Head Of Inner Brake Pad With Brake Pad Paste
 Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the outer brake pad with brake pad paste in area (1 and 2).

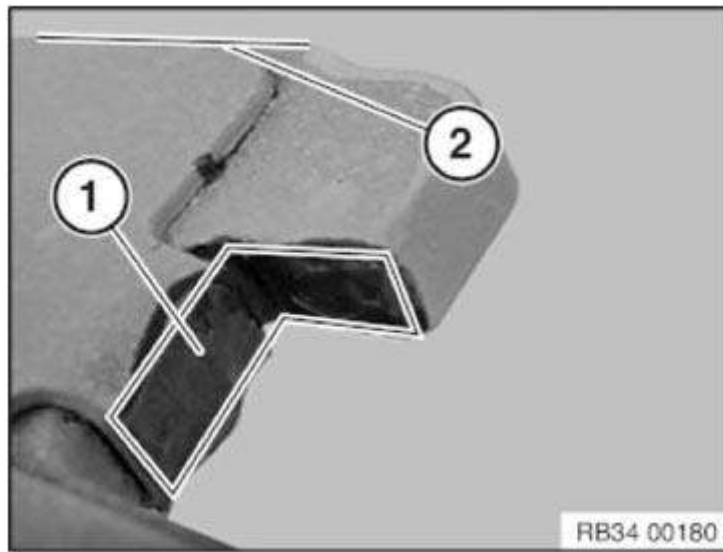


Fig. 22: Coating T-Head Of Outer Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Brake FN (Continental Teves) 2-piston floating caliper brake (model ranges: 5-Series, 6-Series, 7-Series, 8-Series, X5, RR)

Clean contact surface (2) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

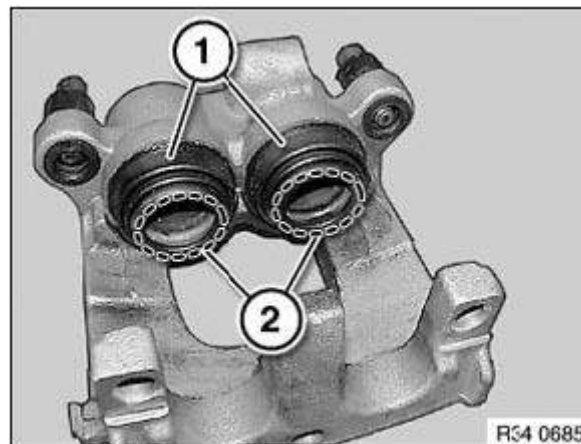


Fig. 23: Identifying Contact Surface Of Brake Piston

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surfaces (1) of T-heads/brake caliper housing with brake cleaner and apply a thin coating of brake pad paste.

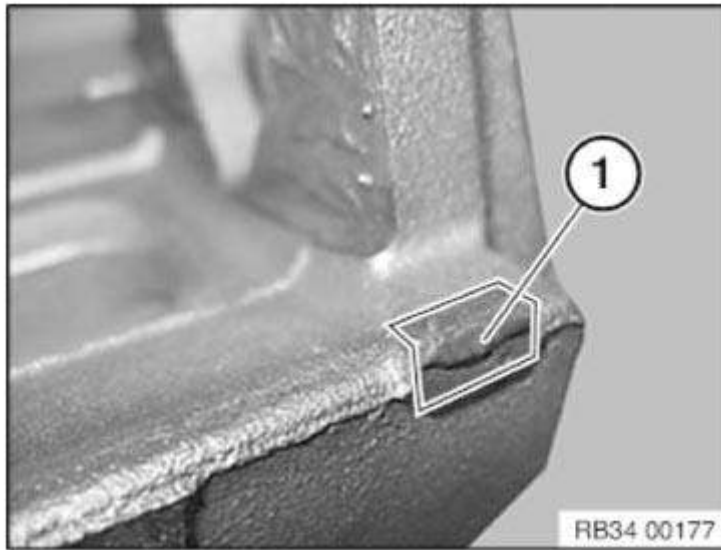


Fig. 24: T-Heads/Brake Caliper Housing Contact Surfaces

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) and brake caliper with brake cleaner and apply a thin coating of brake pad paste.

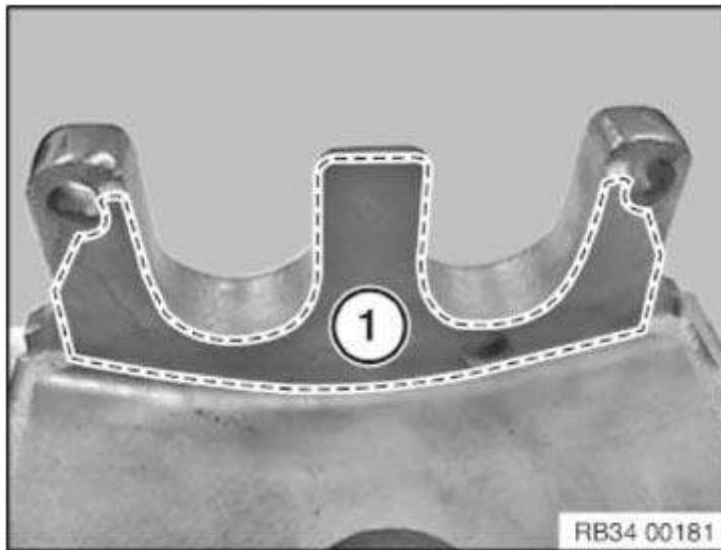


Fig. 25: Identifying Contact Surface Of Brake Caliper

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

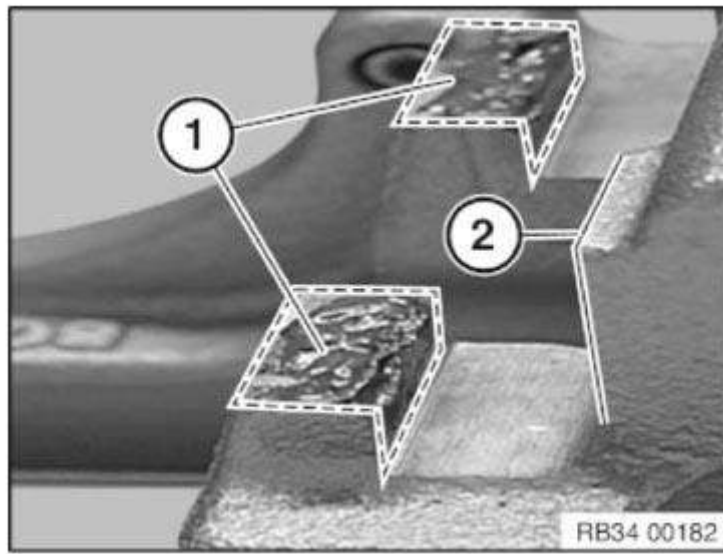


Fig. 26: Brake Caliper Mounting Bracket Guide Surfaces For Brake Pads

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket.

Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

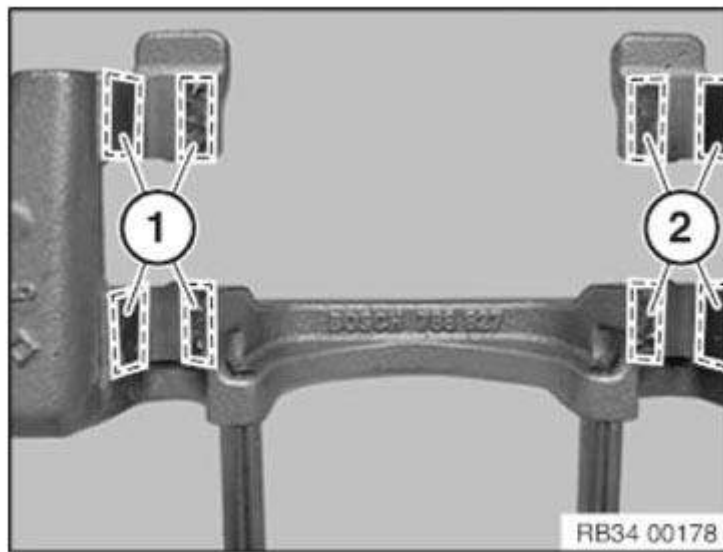


Fig. 27: Identifying Guide Surfaces For Brake Pads On Brake Caliper Mounting Bracket

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the inner brake pad with brake pad paste in area (1 and 2).

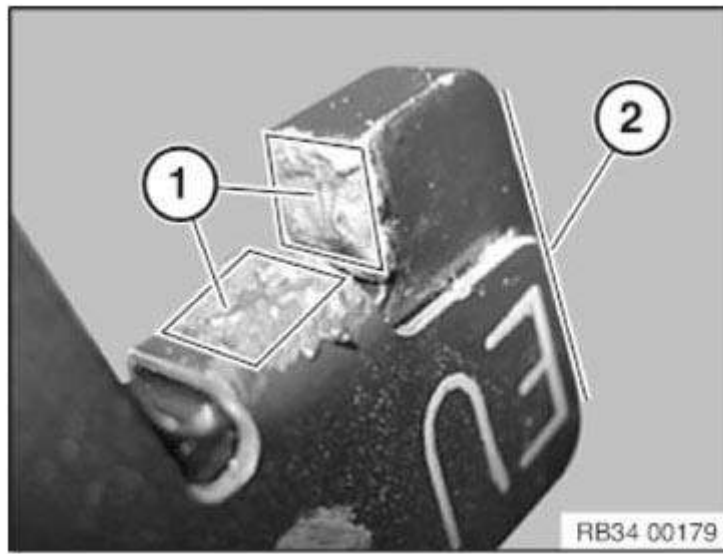


Fig. 28: Coating T-Head Of Inner Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the outer brake pad with brake pad paste in area (1 and 2).

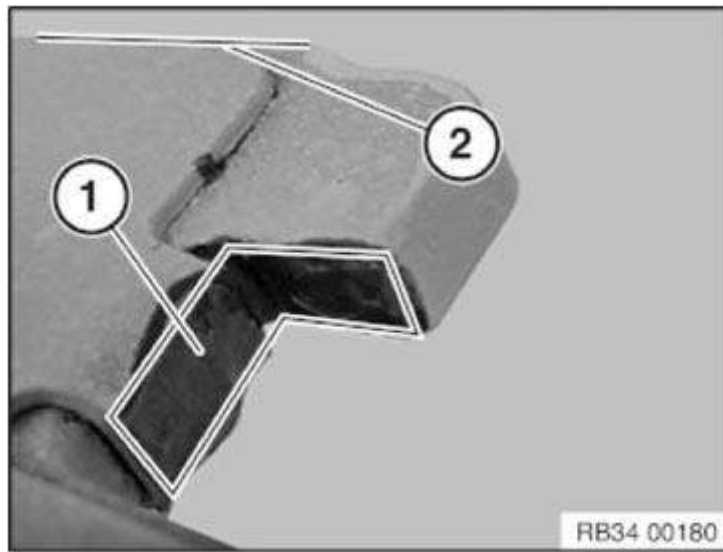


Fig. 29: Coating T-Head Of Outer Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Brake Collette (TRW) 1-piston brake caliper (model ranges: MINI, 1-Series, 5-Series, 6-Series, Z4)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

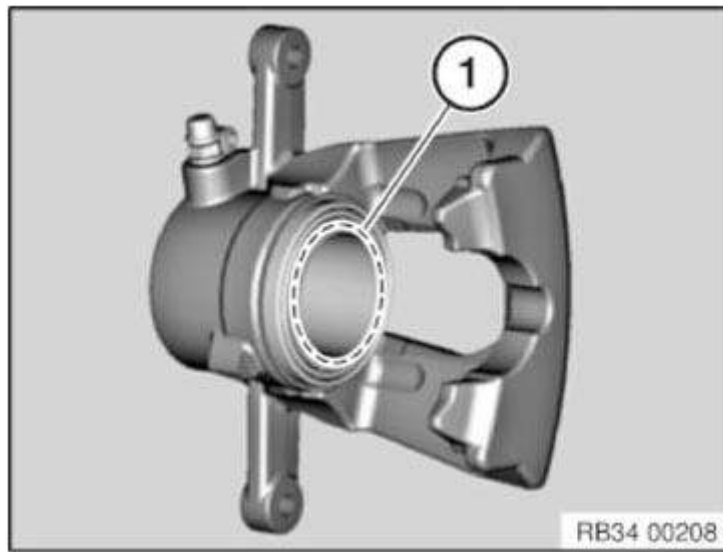


Fig. 30: Identifying Contact Surface Of Brake Piston

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

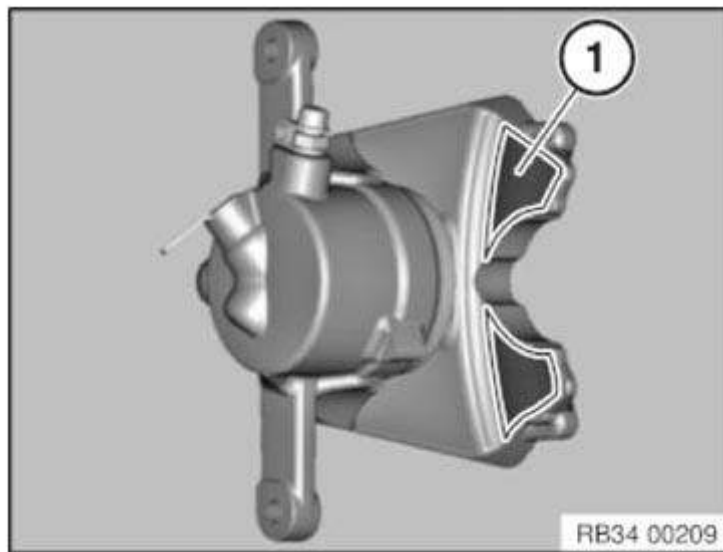


Fig. 31: Identifying Contact Surface Of Brake Caliper With Brake Cleaner

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surface (1) for the brake pads on the brake caliper mounting bracket. Clean guide surface (1) with brake cleaner and apply a thin coating of brake pad paste.

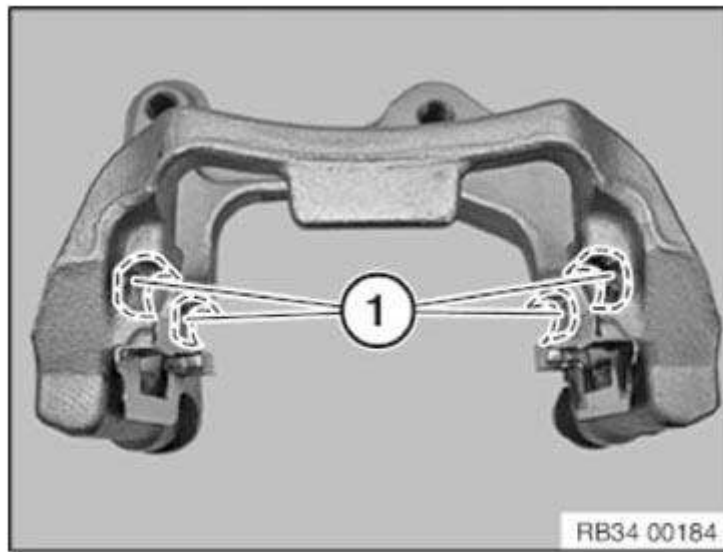


Fig. 32: Identifying Guide Surface For Brake Pads On Brake Caliper Mounting Bracket
 Courtesy of BMW OF NORTH AMERICA, INC.

Apply a thin coating of brake pad paste to both sides of T-head of brake pad in area (1).

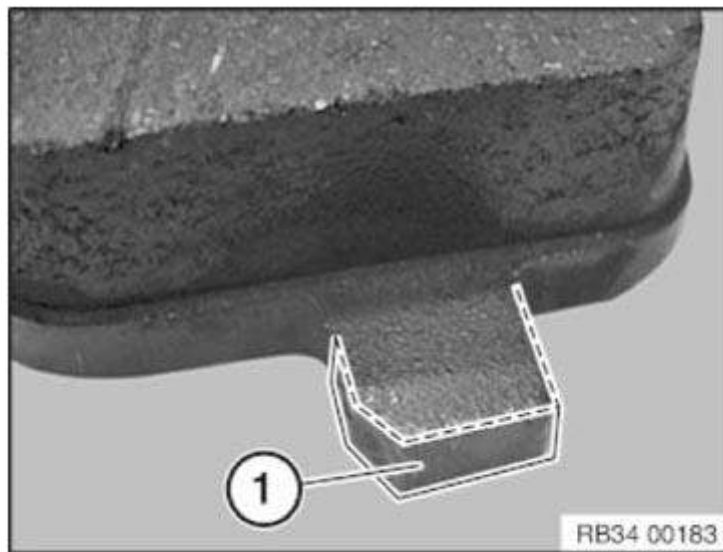


Fig. 33: Identifying Brake Pad Paste Application Area On Both Sides Of T-Head
 Courtesy of BMW OF NORTH AMERICA, INC.

Brake P 4.40 (Brembo) 4-piston fixed caliper brake (model ranges: MINI, 1-Series, 3-Series, 4-Series, 5-Series, 6-Series, 7-Series, 8-Series, X5, RR)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (2) for the brake pads on the brake caliper mounting bracket. Clean guide surface (2) with brake cleaner and apply a thin coating of brake pad paste.

Clean both inner and outer guide surfaces (2) and apply a thin coating of brake pad paste.

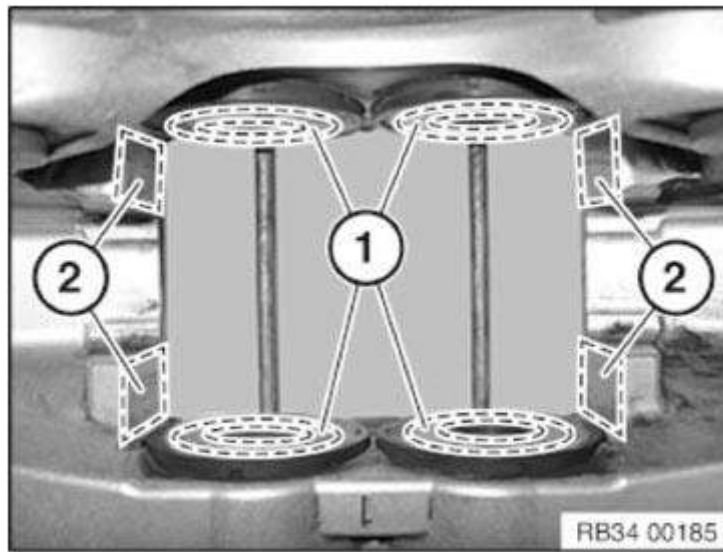


Fig. 34: Identifying Brake Piston Inner And Outer Guide Surfaces

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat both sides of the contact surface in area (1 and 2) with brake pad paste.

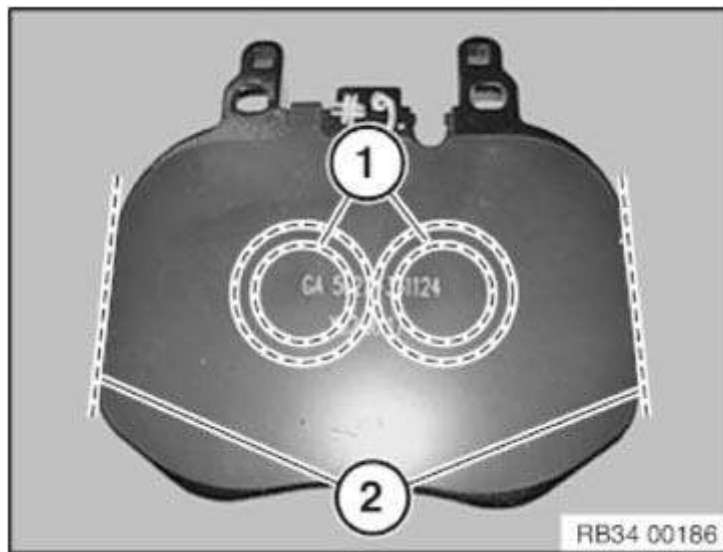


Fig. 35: Identifying Contact Surface Area For Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the brake pad contact surface on both sides in area (1) with brake pad paste.

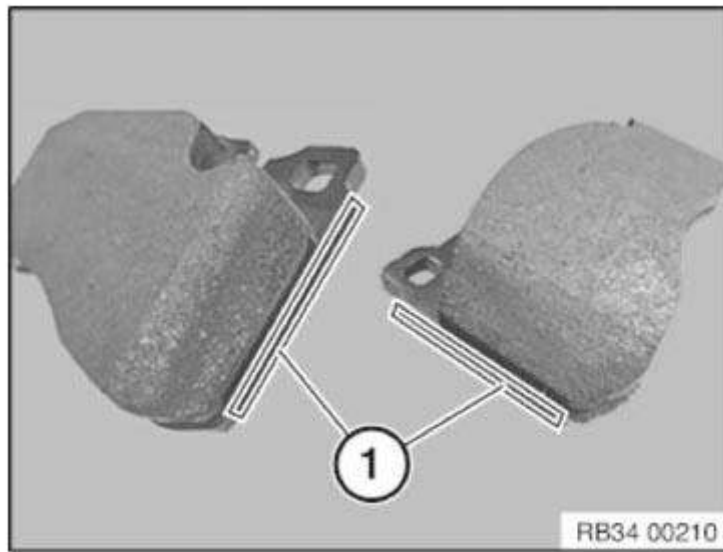


Fig. 36: Brake Pad Contact Surface Area For Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Brake P 4.40 (Brembo) 2-piston fixed caliper brake (model ranges: 1-Series, 3-Series)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (2) for the brake pads on the brake caliper mounting bracket. Clean guide surface (2) with brake cleaner and apply a thin coating of brake pad paste.

Clean both inner and outer guide surfaces (2) and apply a thin coating of brake pad paste.

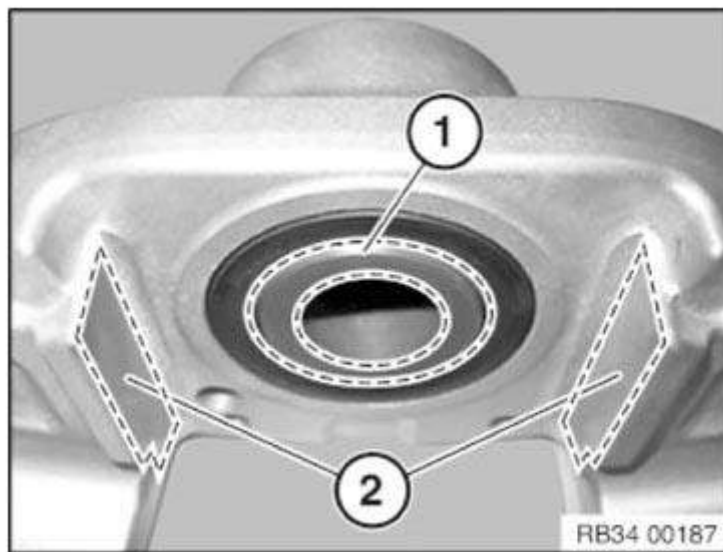


Fig. 37: Identifying Contact Surface Of Brake Piston With Brake Cleaner

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat both sides of the contact surface in area (1 and 2) with brake pad paste.

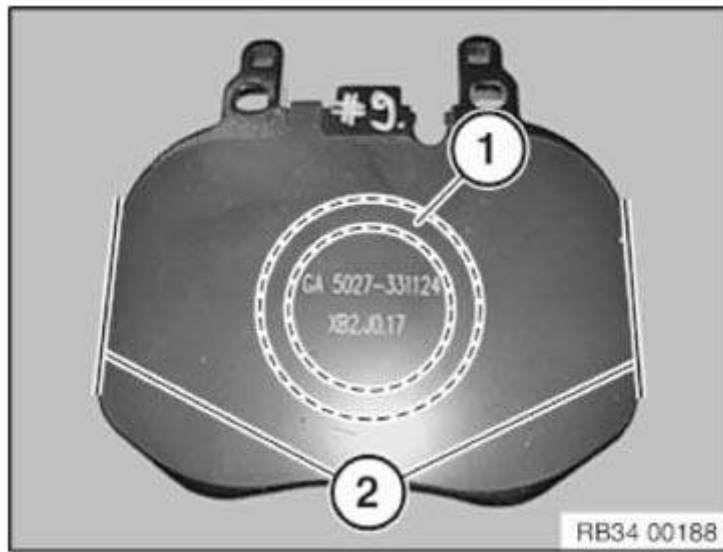


Fig. 38: Identifying Brake Pad Paste Contact Surface Area

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the brake pad contact surface on both sides in area (1) with brake pad paste.

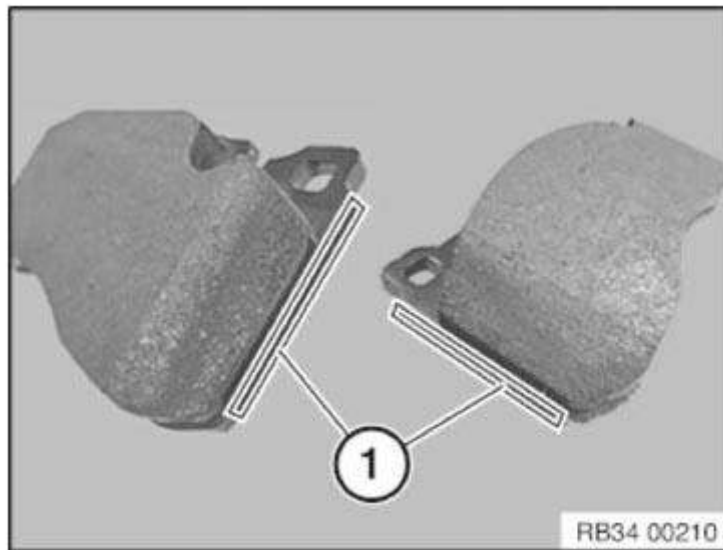


Fig. 39: Brake Pad Contact Surface Area For Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

34 00 022 MINIMUM BRAKE DISC THICKNESS

NOTE: New brake pads may only be fitted if the brake disc thickness is greater than the minimum brake disc thickness (MIN TH).

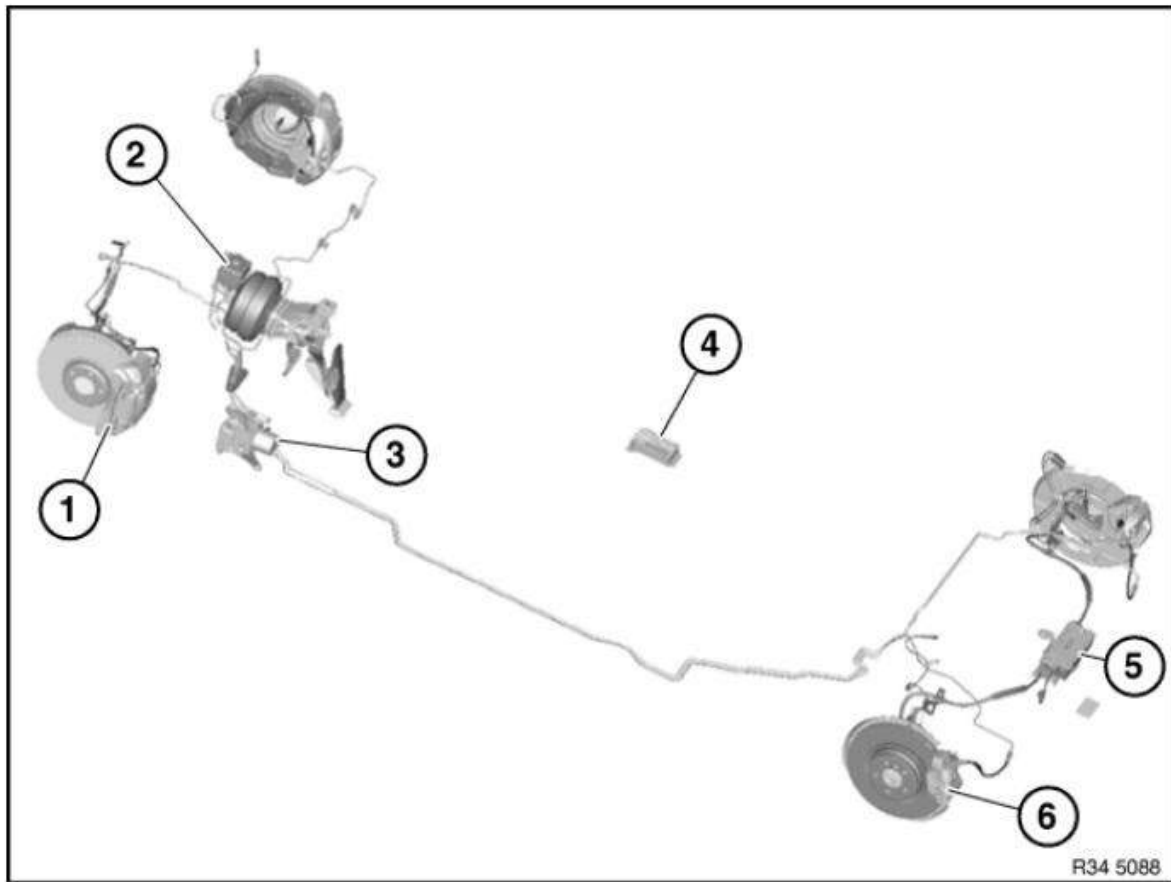
Test specification <!-- [sect] --> 29 Limit value for brake disc thickness:

- BMW, MINI and Rolls-Royce vehicles: **nominal dimension minus 2.4 mm**
- Vehicles of BMW Motorsport (perforated brake disc): **nominal dimension minus 1.6 mm**

This limit dimensions is also applicable to perforated brake discs which are fitted on BMW AG vehicles as optional accessories!

- **Minimum thickness of brake pads: 3 mm.**

34 00 XXX OVERVIEW OF BRAKES



- | | |
|----------------------------------|---|
| 1 Front brake | 2 Brake master cylinder / brake servo |
| 3 Hydraulic unit | 4 Electrical components |
| 5 Parking brake | 6 Brake_rear |

Fig. 40: Overview Of Brakes

Courtesy of BMW OF NORTH AMERICA, INC.

34 00... PARKING BRAKE (EMF) - ADDITIONAL BRAKE BLEEDING PROCEDURE

NOTE: This bleeding procedure serves to eliminate residual air in the brake system. Under certain circumstances it may not be possible to remove the entire residual air from the parking brake (EMF) brake calipers by means of the normal bleeding procedure. In these cases, the following procedure applies.

Connect brake fluid changer to expansion tank and switch on.

NOTE: Check relevant equipment manufacturer's Operating Instructions for each device.
Charging pressure should not exceed 2 bar.

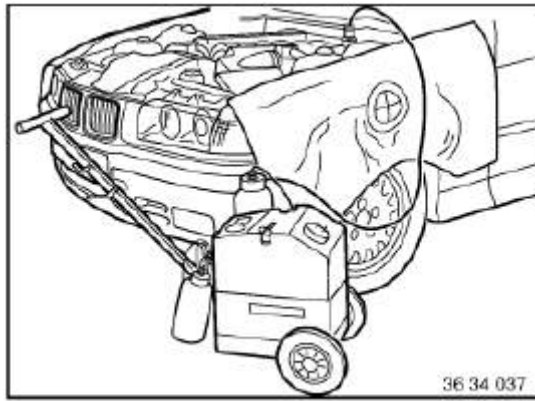


Fig. 41: Connecting Brake Fluid Changer To Expansion Tank
 Courtesy of BMW OF NORTH AMERICA, INC.

Close vent valve.

Flush brake caliper in installation position.

Close vent valve.

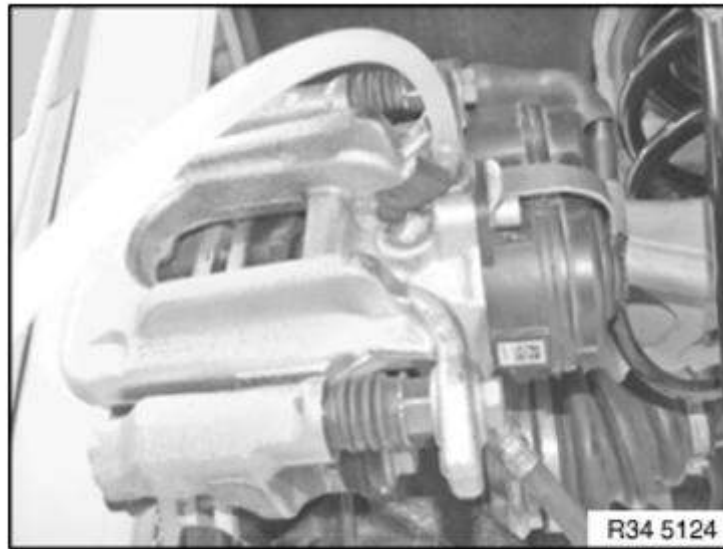


Fig. 42: Brake Caliper In Installation Position
 Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew guide bolts (1).

If necessary, grip at hexagon head (2).

Remove brake caliper (3).

Installation note:

Replace guide bolts.

Tightening torque **34 21 4AZ** .

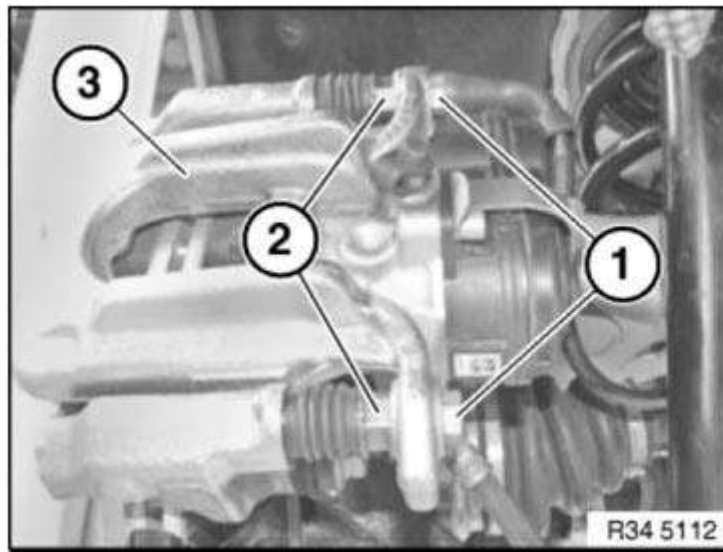


Fig. 43: Brake Caliper, Hexagon Head And Guide Bolts

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection on EMF actuator and detach cable from cable clip.

Turn brake caliper so that EMF actuator points downwards.

Open vent valve and flush brake caliper.

Close vent valve.

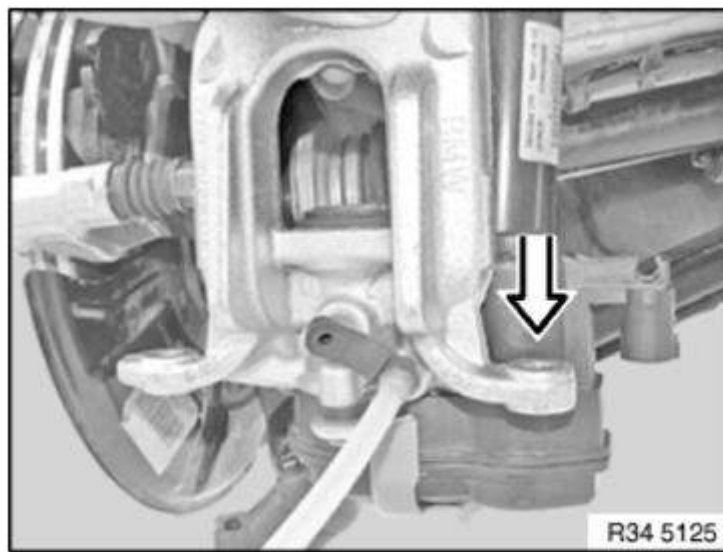


Fig. 44: Detaching Cable From Cable Clip

Courtesy of BMW OF NORTH AMERICA, INC.

Turn brake caliper so that EMF actuator points upwards.

Open vent valve and flush brake caliper.

Close vent valve.

Reinstall brake caliper in installation position and flush again.

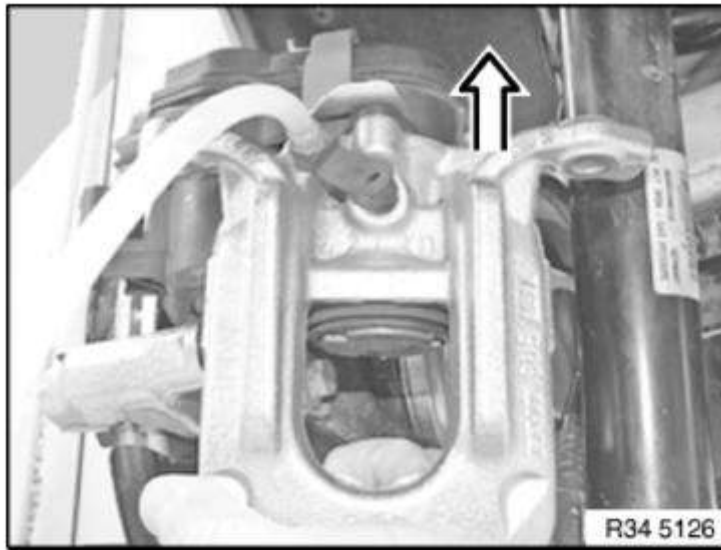


Fig. 45: Brake Caliper With EMF Actuator Pointing Upwards

Courtesy of BMW OF NORTH AMERICA, INC.

Switch off brake fluid changer and remove from expansion tank.

Check brake fluid level. If necessary, top up/draw off to max. level.

Close expansion tank.

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

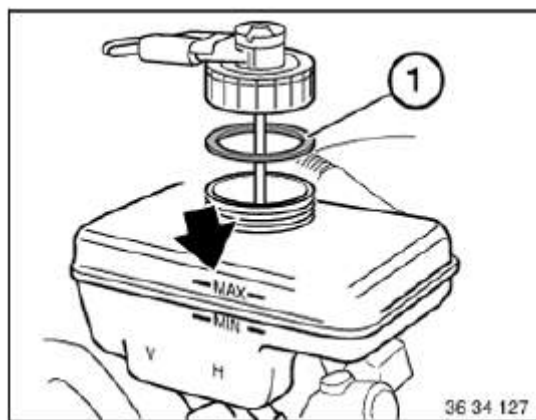


Fig. 46: Identifying Rubber Seal In Sealing Cap

Courtesy of BMW OF NORTH AMERICA, INC.

34 00 012 PARKING BRAKE FUNCTION CHECK

IMPORTANT: Follow instructions for Brake testing on test stand.

Rear axle on brake test rig:

No gear or drive range must be engaged! Selector lever position "Neutral" on automatic transmission vehicles.

IMPORTANT: Do not press accelerator!

Disregard of these instructions will result in the transfer box engaging, forcing the vehicle off the brake test rig!

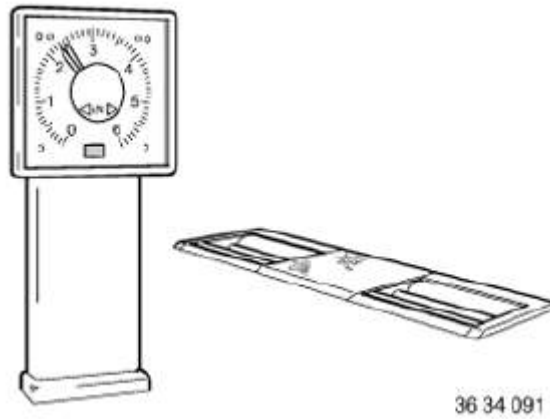


Fig. 47: Checking Parking Brake Function
Courtesy of BMW OF NORTH AMERICA, INC.

Drive vehicle onto brake test stand

The vehicle utilises a plausibility check (wheel speed comparison) to detect the brake test rig within a few seconds and switches to brake test rig mode.

The parking brake indicator light flashes slowly when brake test stand mode is activated and parking brake actuators are released.

Following indicator lights are permanently on:

- Parking brake
- Brake system
- Dynamic stability control (DSC)
- Antilock Brake System ABS

Actuate parking brake switch = application of brake pads.

The parking brake indicator light flashes quickly when brake test stand mode is activated and parking brake actuators are partially locked.

Actuate parking brake switch = test force 1

Actuate parking brake switch again = test force 2

Actuate parking brake switch again = test force 3

The parking brake is released again when the button is actuated in the Release direction.

The parking brake indicator light is permanently activated when brake test stand mode is not detected and parking brake actuators are fully locked.

Brake test stand mode is automatically terminated when the vehicle is driven off the brake test stand.

All indicator lights go out automatically!

Checking brake force differential at wheel:

Apply parking brake until a wheel circumferential force (measured on brake test stand) of min. 1000 N is reached.

Max. permitted brake force differential right/left $\leq 35\%$ (referred to greater brake value).

34 00 XXX REMOVING AND INSTALLING/REPLACING VENT VALVE FOR BRAKE CALIPER

Necessary preliminary work:

- Raise vehicle.

Removal:

Press brake 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.

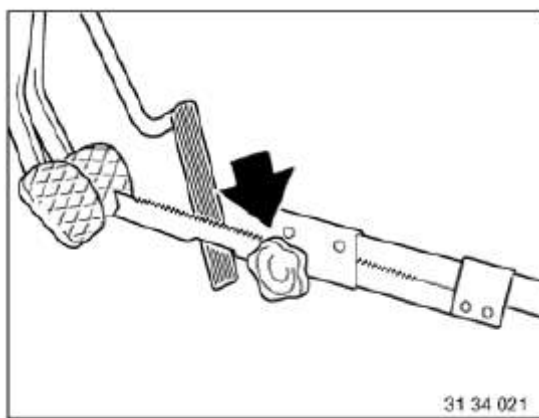


Fig. 48: Pressing Brake Pedal Down To Floor

Courtesy of BMW OF NORTH AMERICA, INC.

Remove dust cap (1).

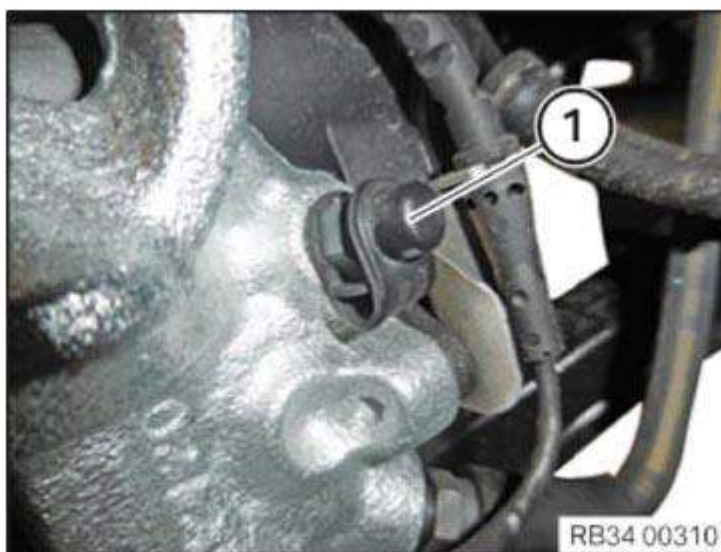


Fig. 49: Identifying Dust Cap

Courtesy of BMW OF NORTH AMERICA, INC.

Remove vent valve (1).

IMPORTANT: Collect escaping brake fluid in a suitable collecting vessel.

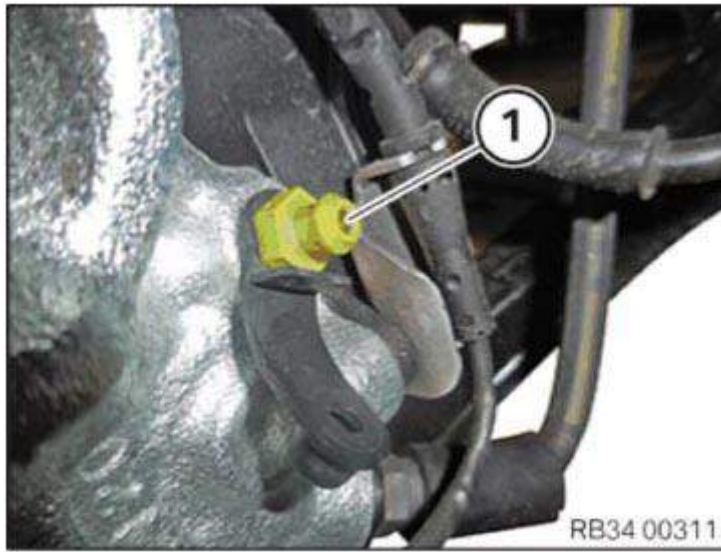


Fig. 50: Identifying Vent Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

IMPORTANT: The bore hole must be free of contamination!

Install vent valve (1).

Tightening torque: **34 00 1AZ**

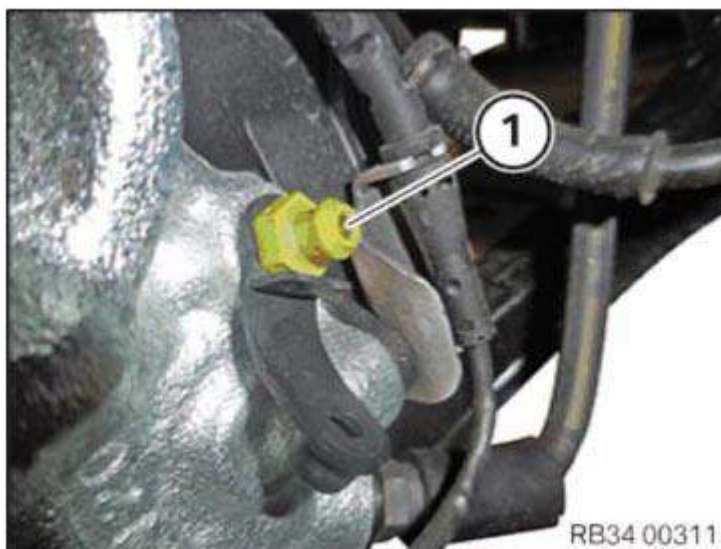


Fig. 51: Identifying Vent Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Mount dust cap (1).

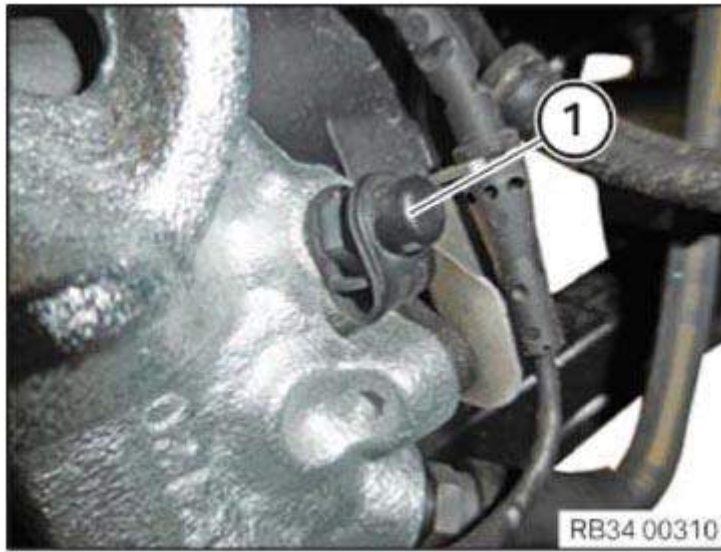


Fig. 52: Identifying Dust Cap

Courtesy of BMW OF NORTH AMERICA, INC.

Remove pedal support.

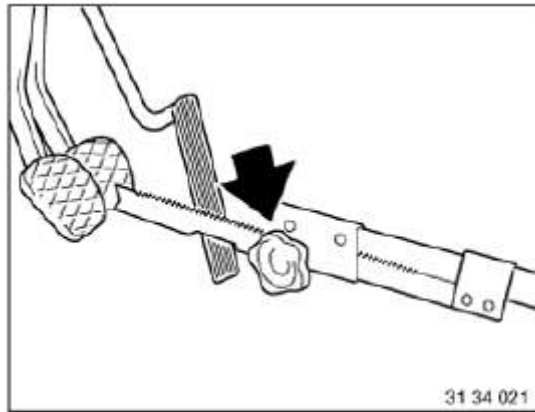


Fig. 53: Pressing Brake Pedal Down To Floor

Courtesy of BMW OF NORTH AMERICA, INC.

Required follow-up work:

- Bleed brake system.

34 00 027 REPLACING FLUID IN BRAKE SYSTEM

Necessary preliminary tasks:

- Remove left sensor opening

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

IMPORTANT: Under certain circumstances it is not possible after the brake system is opened to bleed the brake system fully at the rear EMF brake calipers. If there is still residual air in the rear brake calipers after normal bleeding, it will be necessary to work through an **ADDITIONAL BRAKE BLEEDING PROCEDURE**!

Use only BMW-approved brake fluids, see **BRAKES - OPERATING FLUIDS** .

Connect bleeder unit to expansion tank and switch on.

NOTE: Follow the applicable equipment manufacturer's Owner's Handbook.

Charging pressure should not exceed 2 bar.

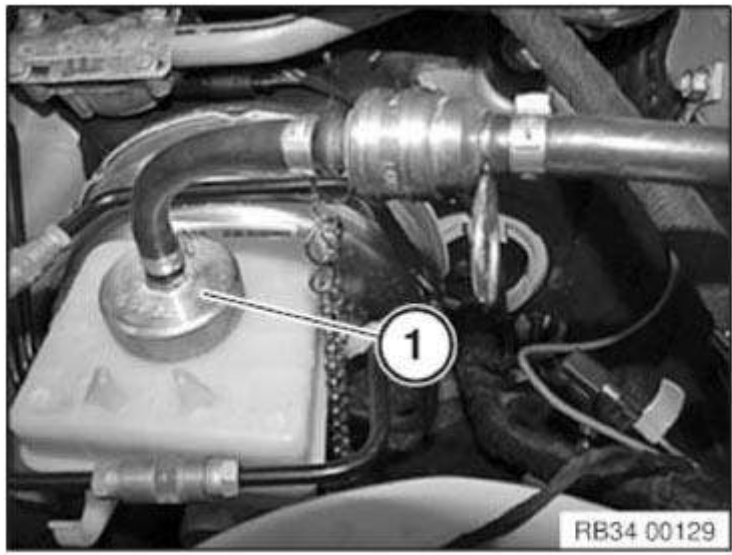


Fig. 54: Identifying Expansion Tank Cap
Courtesy of BMW OF NORTH AMERICA, INC.

Completely bleed the brake system.

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 vent valve.

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

In vehicles with 6-piston fixed caliper brakes two vent valves per brake caliper are installed on
IMPORTANT: the front axle!

In each case start by bleeding at the outer vent valve and then bleed at the inner vent valve.

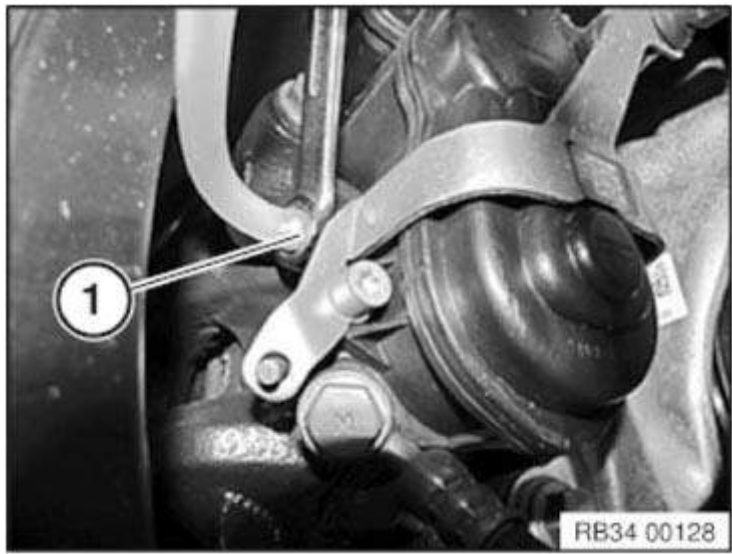


Fig. 55: Identifying Bleeder Valve On Rear Right Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

Switch off bleeder unit and remove from expansion tank.

Check brake fluid level. If necessary, top up/draw off to "Maximum" level.

Close expansion tank.

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

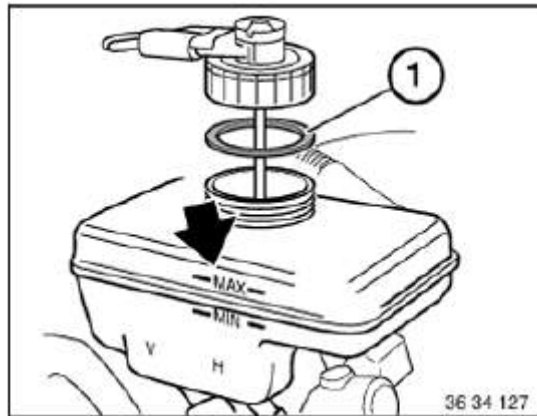


Fig. 56: Identifying Gasket In Sealing Cap

Courtesy of BMW OF NORTH AMERICA, INC.

00 SAFETY INFORMATION FOR WORKING ON VEHICLES WITH AUTOMATIC ENGINE START-STOP FUNCTION (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 is possible.

Observe safety precautions when working on MSA vehicles.

Before carrying out practical work on the engine, always ensure that the MSA functionality 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

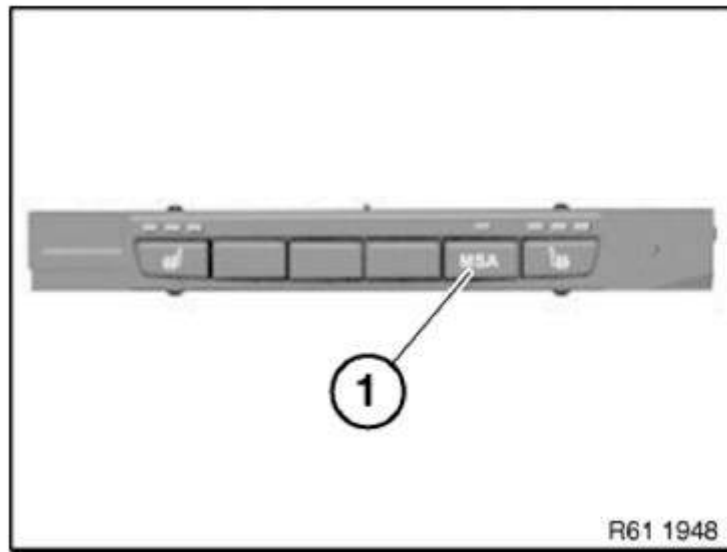


Fig. 57: Identifying MSA Button In Passenger Compartment

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

$A = 10\text{ mm}$
 - Basic setting (engine hood/bonnet open)

$B = 7\text{ mm}$

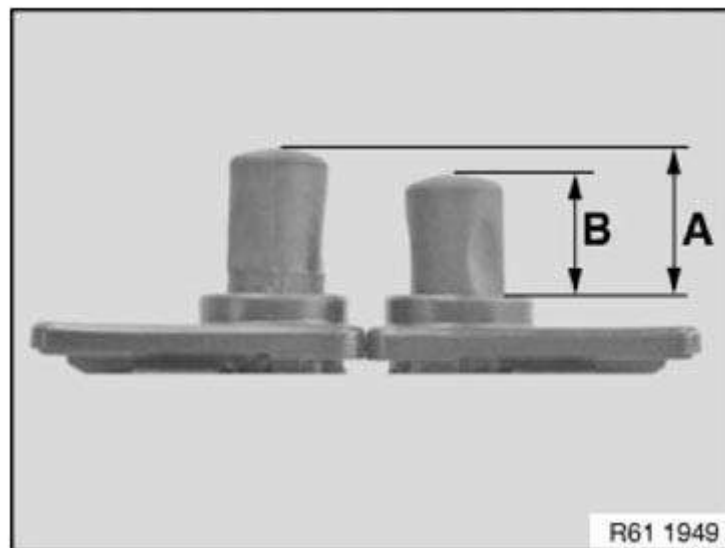


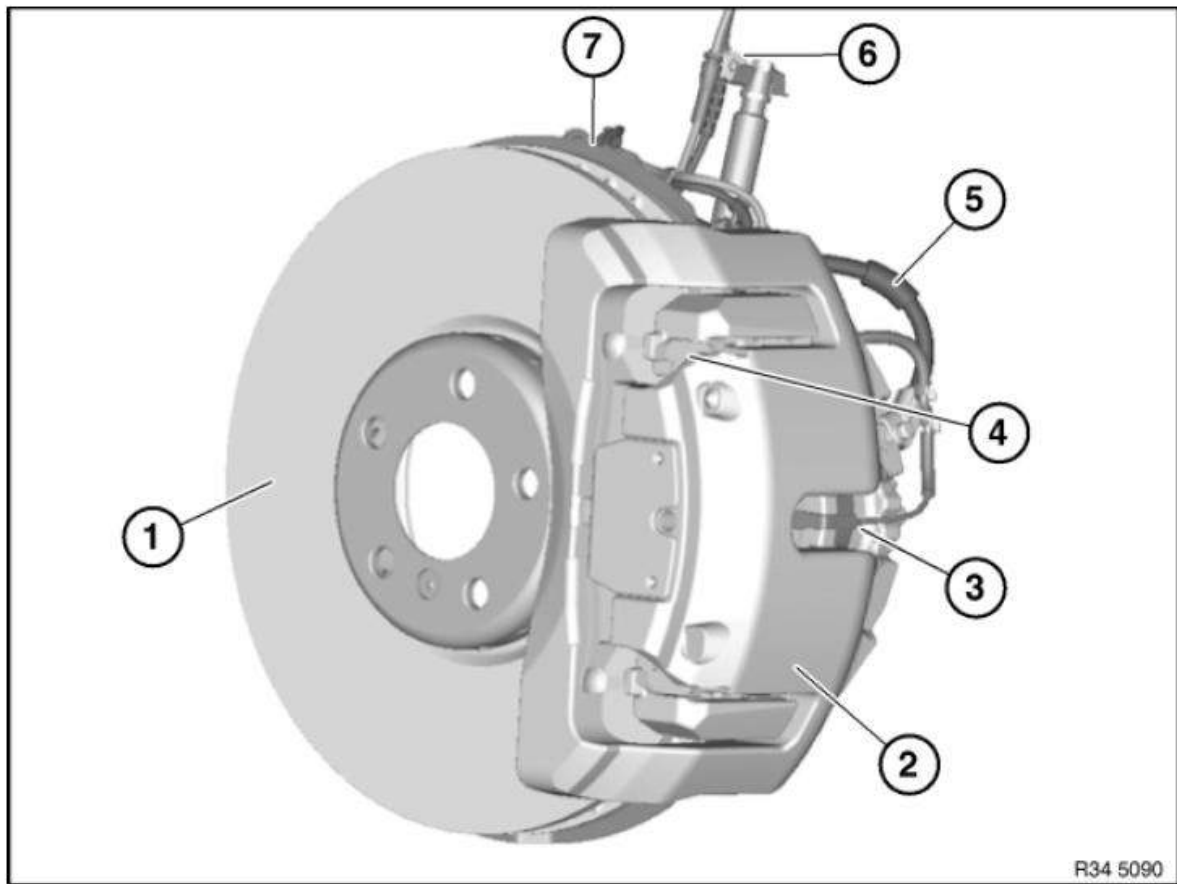
Fig. 58: Identifying Engine Hood/Bonnet Dimension

Courtesy of BMW OF NORTH AMERICA, INC.

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

FRONT BRAKES

34 11... OVERVIEW OF FRONT BRAKES



- | | |
|------------------------------|--------------------------------|
| 1 Brake disc | 2 Brake caliper |
| 3 Brake pad wear sensor | 4 Brake pads |
| 5 Brake hose | 6 Pulse sensor |
| 7 Brake guard plate | |

Fig. 59: Overview Of Front Brakes

Courtesy of BMW OF NORTH AMERICA, INC.

34 11 667 PRECISION-TURNING BOTH FRONT BRAKE DISCS ON BOTH SIDES

Always precision-turn both sides of both brake discs on one axle.

Maximum machining dimension per friction ring side is 0.8 mm!

IMPORTANT: Observe **MINIMUM BRAKE DISC THICKNESS** (MIN TH).
 Brake discs of M models (Compound brake discs) must **not** be machined!
 Only one brake pad set may be used up on brake discs which have been lathe-turned to minimum thickness (MIN TH).

Stationary brake disc lathe:

IMPORTANT: Only BMW-approved brake disc lathes may be used!

In the case of stationary brake disc lathes, the **BRAKE DISC** must be removed.

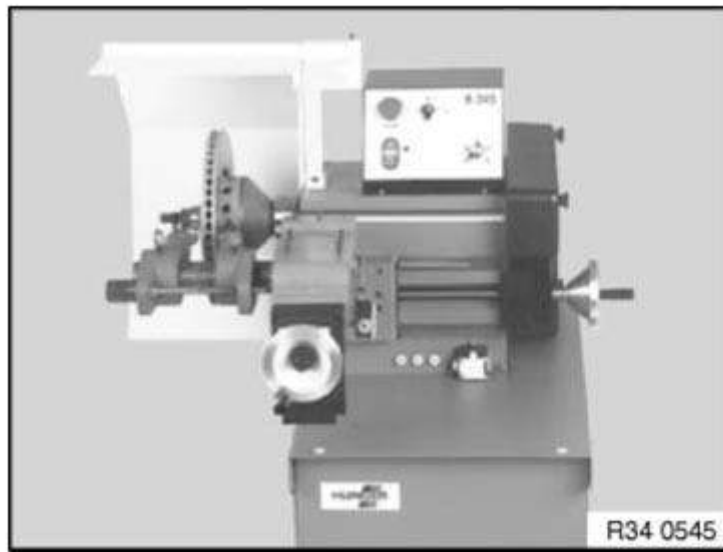


Fig. 60: Identifying Stationary Brake Disc Lathe
 Courtesy of BMW OF NORTH AMERICA, INC.

Mobile brake disc lathe:

IMPORTANT: Only BMW-approved brake disc lathes may be used!

In the case of mobile brake disc lathes, the brake calipers and brake anchor plates must be removed.

The brake discs remain on the vehicle.



Fig. 61: Identifying Mobile Brake Disc Lathe
 Courtesy of BMW OF NORTH AMERICA, INC.

After fine-grinding the brake discs, measure the thickness difference inside the braking surfaces at 8 points with an caliper gauge.

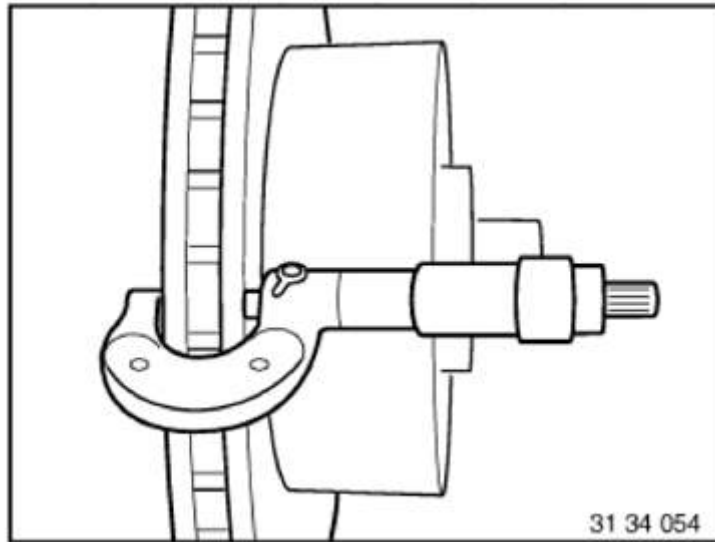


Fig. 62: Measuring Thickness Difference At Brake Surface

Courtesy of BMW OF NORTH AMERICA, INC.

34 11 000 REMOVING AND INSTALLING/RENEWING BRAKE PADS ON BOTH FRONT DISC BRAKES

Special tools required:

- 34 1 050
- 34 1 280
- Brake pad wear sensor: after removal it must be replaced (brake pad wear sensor loses its retention capability in the brake pad).
- Retaining pins and expanding spring: for vehicles older than 48 months it is recommended to replace the retaining spring!

IMPORTANT:

So as not to damage the surface coating, if possible do not mechanically clean the guide surfaces for the brake pads on the brake caliper mounting bracket. Instead, clean with brake cleaner BMW part no. 83 19 2 154 780 and apply a thin coating of brake pad paste BMW part no. 83 19 2 158 851 (3 g) or 83 19 2 158 852 (100 g). Spread brake pad paste onto the marked surfaces using a brush!

Necessary preliminary tasks:

- Remove **FRONT WHEELS** .
- Remove **BRAKE PAD WEAR SENSOR**.

NOTE:

After completing repair work:

- 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.
- When replacing pads, reset CBS display in accordance with factory specification.

Lever out retaining spring (1) in direction of arrow towards rear.

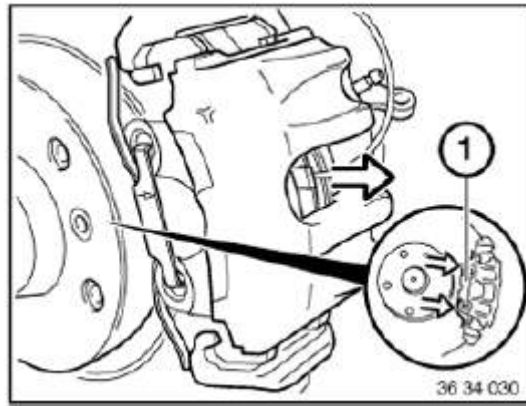


Fig. 63: Removing Retaining Spring

Courtesy of BMW OF NORTH AMERICA, INC.

Remove plastic plugs (1).

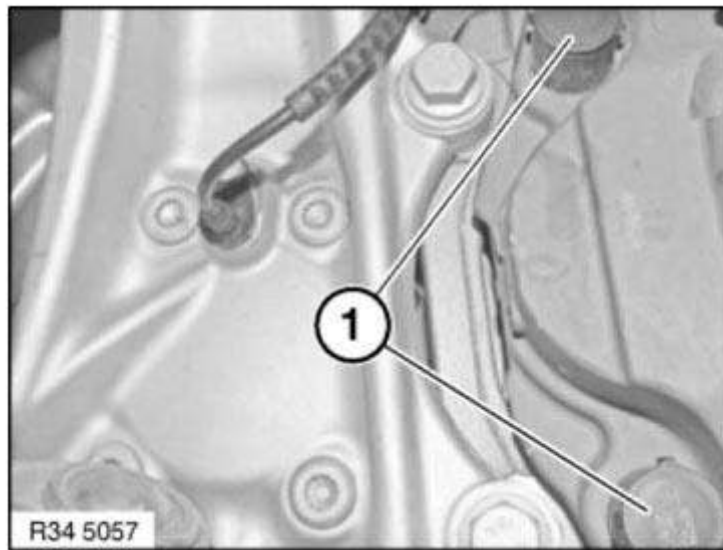


Fig. 64: Identifying Plastic Plugs

Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew guide bolts (1).

IMPORTANT: Tie brake caliper back and do not allow to hang from brake hose.

Withdraw brake caliper backwards.

Installation note:

Only clean guide bolts; do not grease.

Check thread.

Replace all guide screws which are not in perfect condition.

Tightening torque [34 11 4AZ](#) .

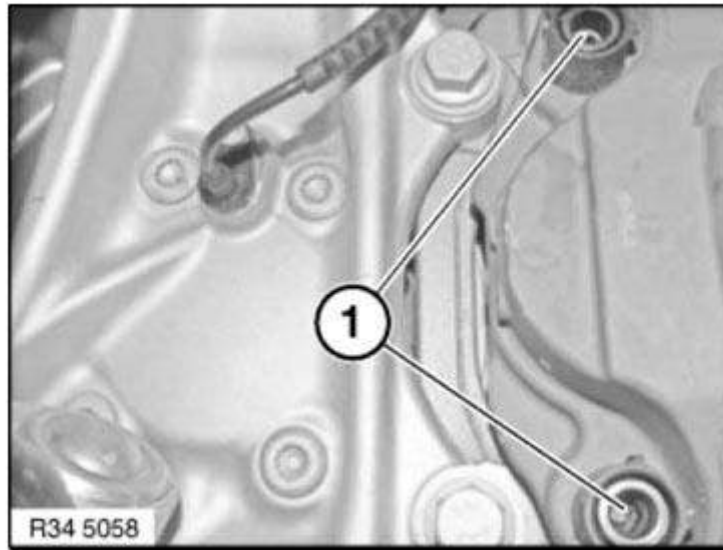


Fig. 65: Identifying Guide Bolts

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Piston-side brake pad is installed directional!
Pay attention to direction-of-rotation arrow!

Mark any worn brake pads.

Remove brake pads in direction of arrow.

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

Observe **MINIMUM THICKNESS OF BRAKE PADS** .

Clean brake pads.

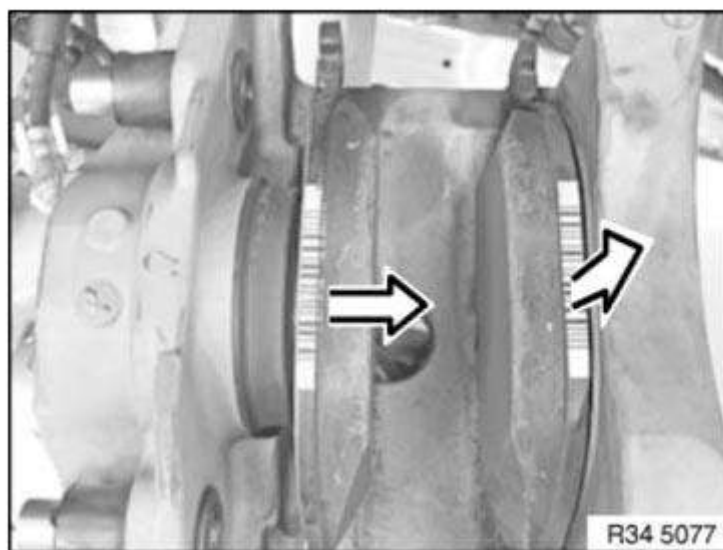


Fig. 66: Removing Brake Pads

Courtesy of BMW OF NORTH AMERICA, INC.

Do not apply grease to brake lining backplate.

When forcing piston back:

IMPORTANT: • Pay attention to brake fluid level in expansion tank; brake fluid that spills over will

damage paintwork.

Press back brake pads and piston with special tool 34 1 050.

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**.

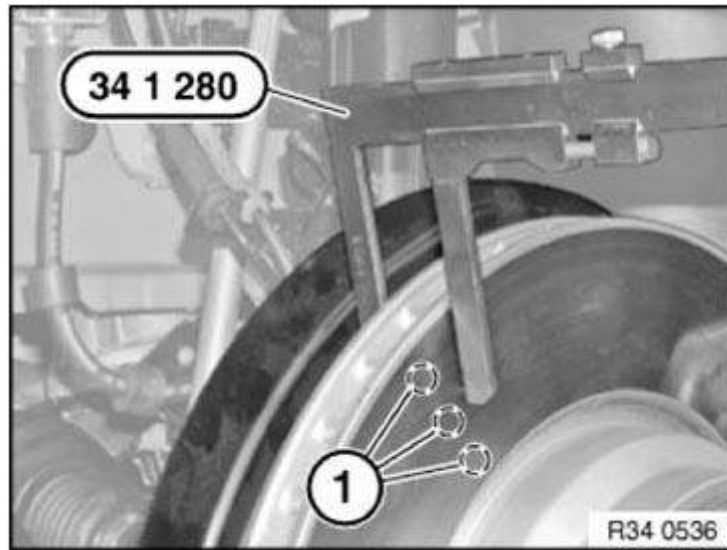


Fig. 67: Checking Minimum Brake Disc Thickness

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: New brake pads may only be fitted if the brake disc thickness is greater than the **MINIMUM BRAKE DISC THICKNESS** (MIN TH).

Check dust boot for damage and renew if necessary.

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

IMPORTANT: Dust boot must not come into contact with brake pad paste as this may cause the dust boot to swell.

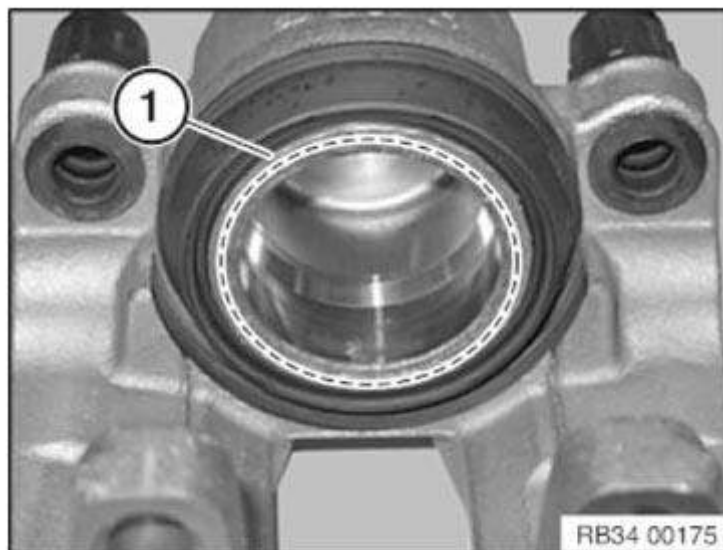


Fig. 68: Identifying Brake Cleaner Contact Surface Area
Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surfaces (1) of T-heads/brake caliper housing with brake cleaner and apply a thin coating of brake pad paste.

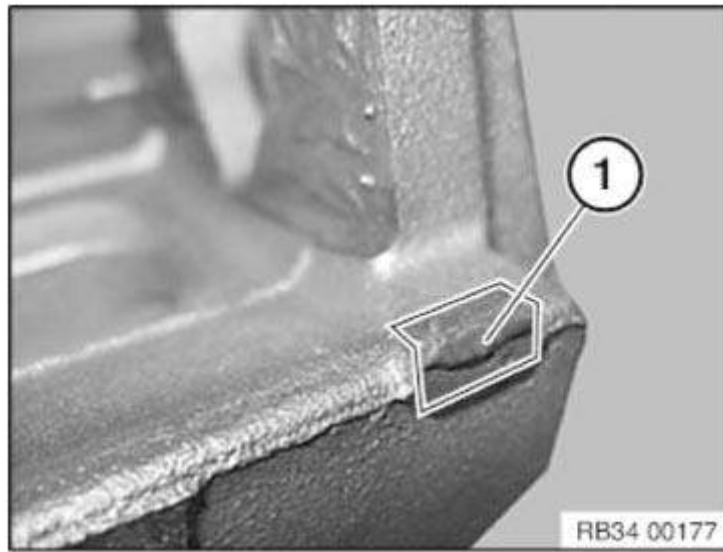


Fig. 69: T-Heads/Brake Caliper Housing Contact Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

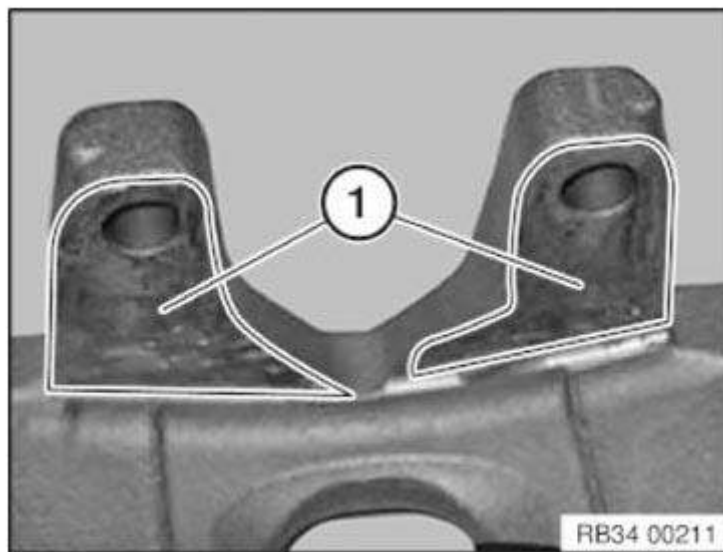


Fig. 70: Identifying Contact Surface Of Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1) with brake cleaner and apply a thin coating of brake pad paste.

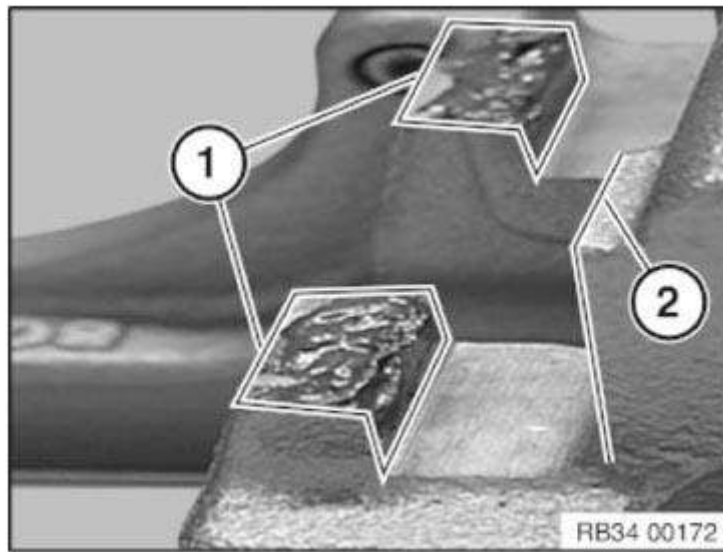


Fig. 71: Identifying Brake Pad Guide Surfaces On Brake Caliper Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

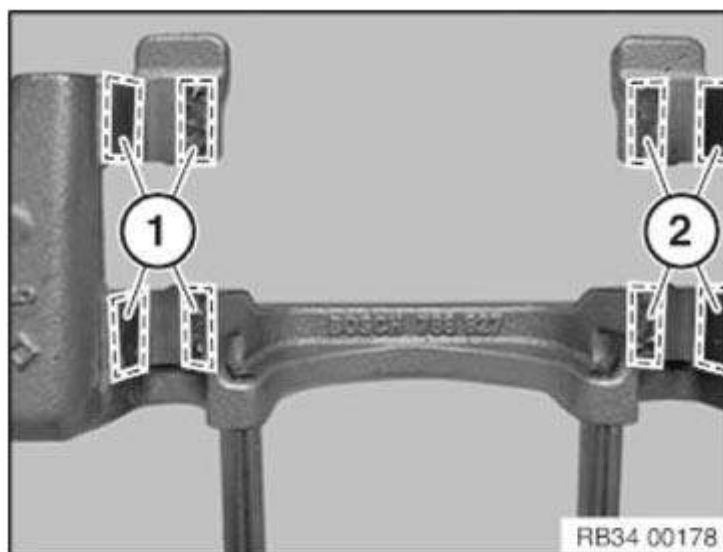


Fig. 72: Identifying Guide Surfaces For Brake Pads On Brake Caliper Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the inner brake pad with brake pad paste in area (1 and 2).

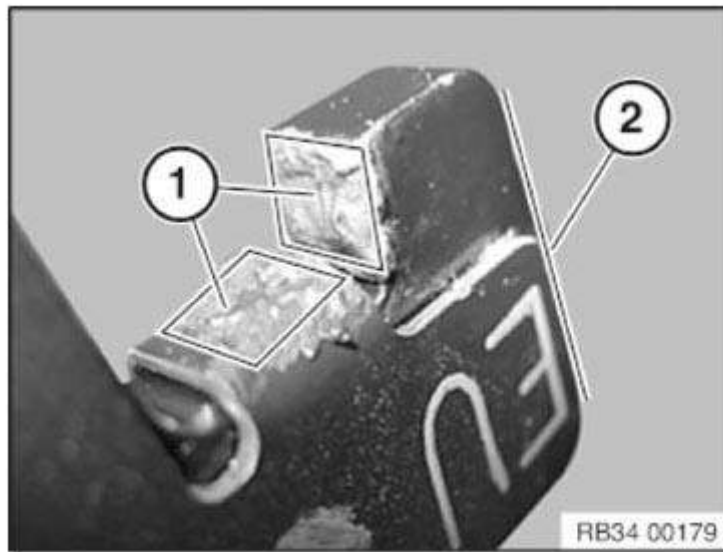


Fig. 73: Coating T-Head Of Inner Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the outer brake pad with brake pad paste in area (1 and 2).

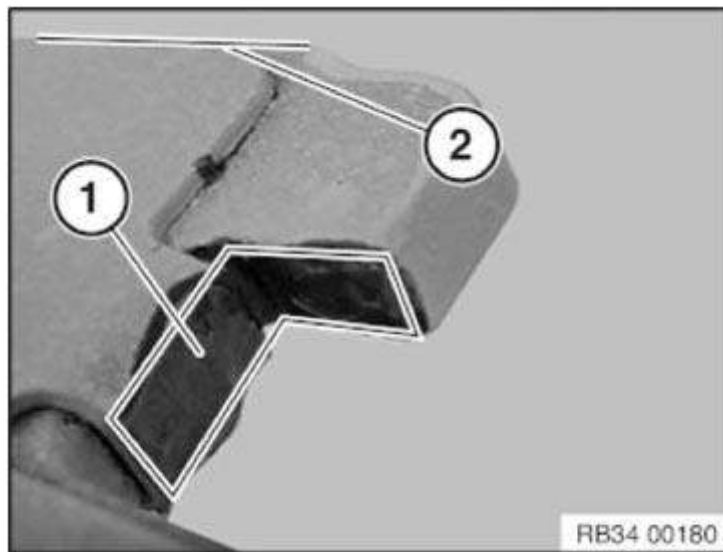


Fig. 74: Coating T-Head Of Outer Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

34 11 220 REMOVING AND INSTALLING/REPLACING BOTH FRONT BRAKE DISCS

Special tools required:

- 34 1 280

Necessary preliminary tasks:

- Remove **FRONT WHEELS** .
- Remove and clean **BRAKE PADS**.

NOTE: After completing repair work, read and comply with notes on breaking in new brake discs/brake pads.

Check minimum brake disc thickness:

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

NOTE: If the brake discs are replaced, you must also fit new brake pads.

Brake discs may only be replaced in pairs (on each axle).

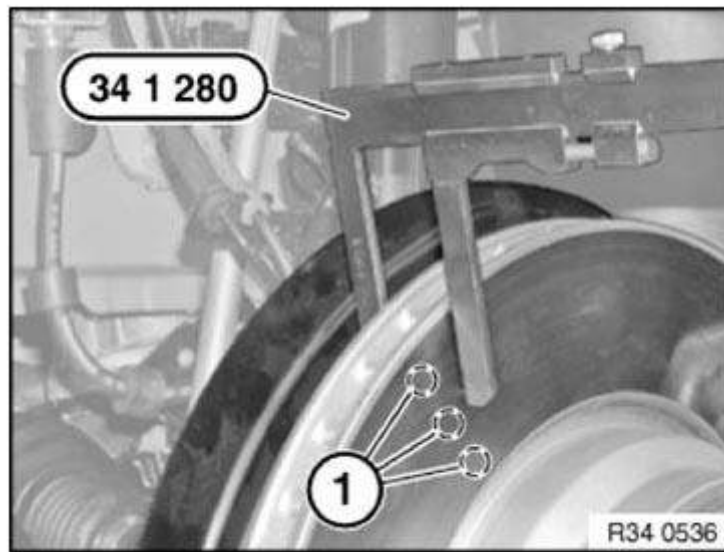


Fig. 75: Checking Minimum Brake Disc Thickness
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: New brake pads may only be fitted if the brake disk thickness is greater than the MINIMUM BRAKE DISC THICKNESS (MIN TH).

Release screws (1). Remove brake-caliper support.

Installation note:

Tightening torque 34 11 2AZ .

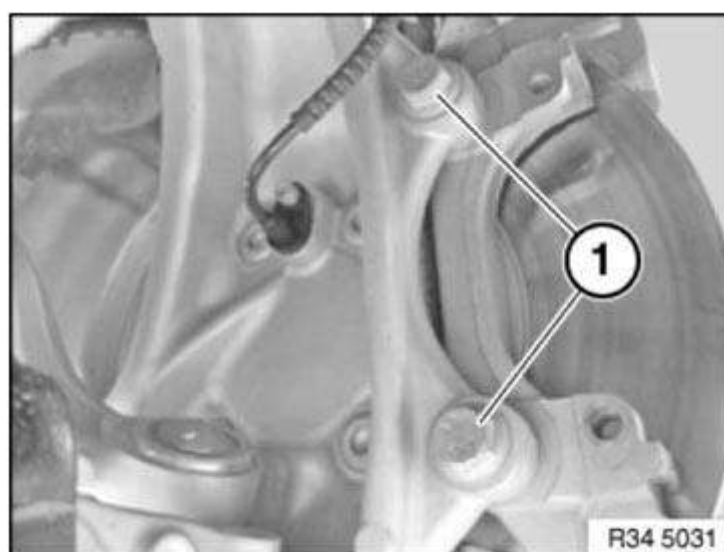


Fig. 76: Identifying Brake Caliper Support Screws
Courtesy of BMW OF NORTH AMERICA, INC.

To release brake disc: Do not under any circumstances strike friction ring with a hammer or

IMPORTANT: similar!
If necessary, carefully tap on base of brake disc chamber with a rubber mallet.
Clean contact surface of brake disc at wheel hub thoroughly and remove traces of corrosion.
Unevenness on contact surface may result in distortion of brake disc!

Release screw (1) and remove brake disc (2).

Installation note:

Replace screw.

Tightening torque **34 11 1AZ**.

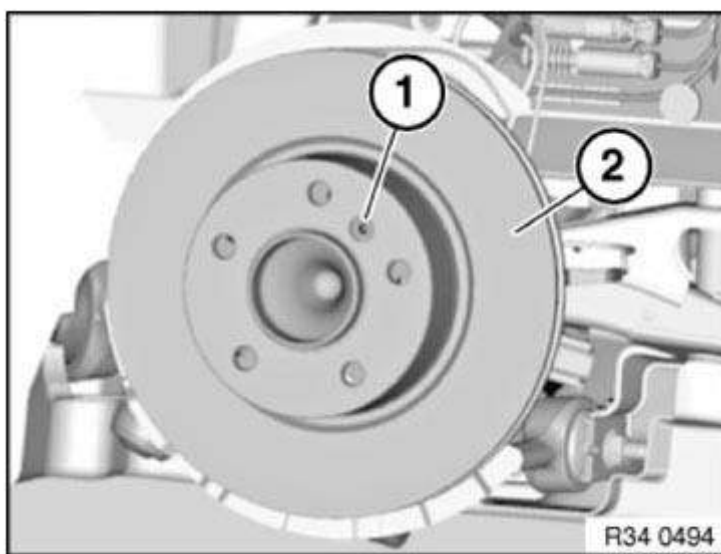


Fig. 77: Identifying Brake Disc And Screw

Courtesy of BMW OF NORTH AMERICA, INC.

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

Necessary preliminary tasks:

- **REMOVE WHEEL** .
- Read and comply with **GENERAL INFORMATION**.

After completing repair work: **BLEED BRAKE SYSTEM**.

Press brake 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.

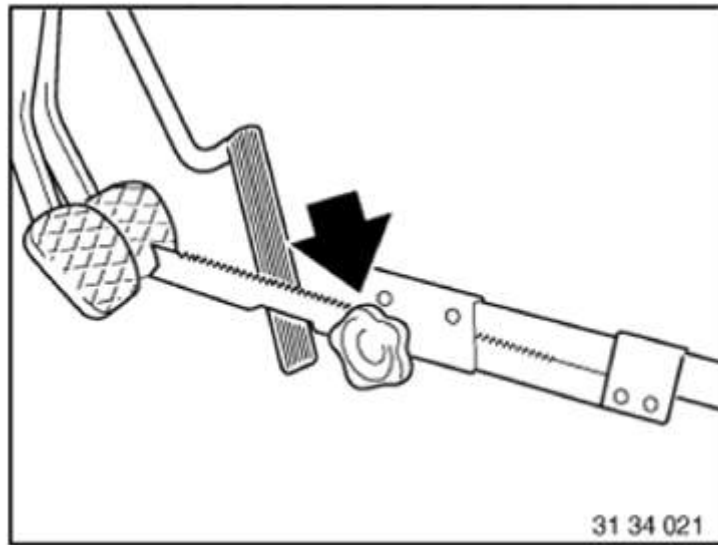


Fig. 78: Pressing Brake Pedal Down To Floor

Courtesy of BMW OF NORTH AMERICA, INC.

Release retaining screw (1).

Installation note:

Tightening torque **34 32 2AZ**.

If necessary, grip at knurling (2).

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

If necessary, remove brake pad wear sensor.

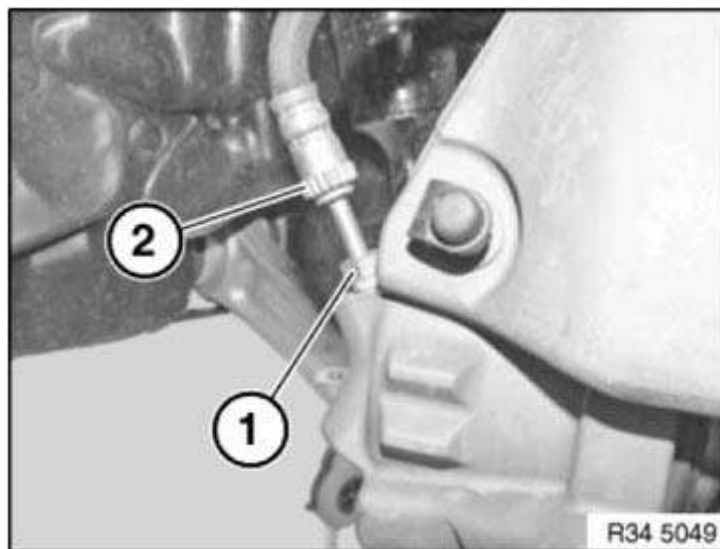


Fig. 79: Identifying Retaining Screw And Knurling

Courtesy of BMW OF NORTH AMERICA, INC.

Lever out retaining spring (1) in direction of arrow towards rear.

Installation note:

Place retaining spring (1) first at top and bottom of brake caliper and then allow to engage in recess (2) of brake

caliper housing.

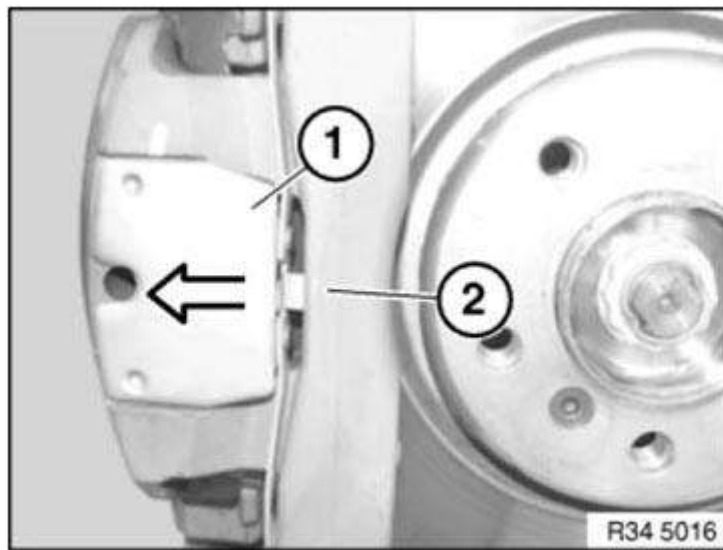


Fig. 80: Removing Retaining Spring
Courtesy of BMW OF NORTH AMERICA, INC.

Remove plastic plugs (1).

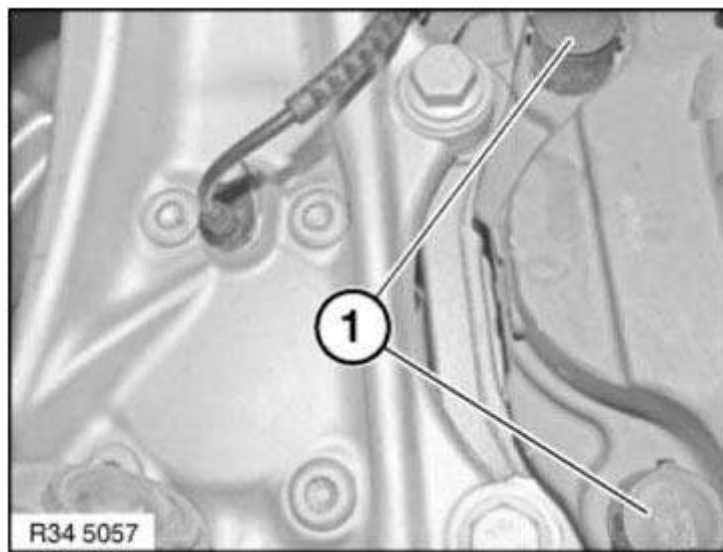


Fig. 81: Identifying Plastic Plugs
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew guide bolts (1).

Withdraw brake caliper backwards.

Installation note:

Only clean guide bolts; do not grease.

Check threads.

Replace all guide screws which are not in perfect condition.

Tightening torque [34 11 4AZ](#) .

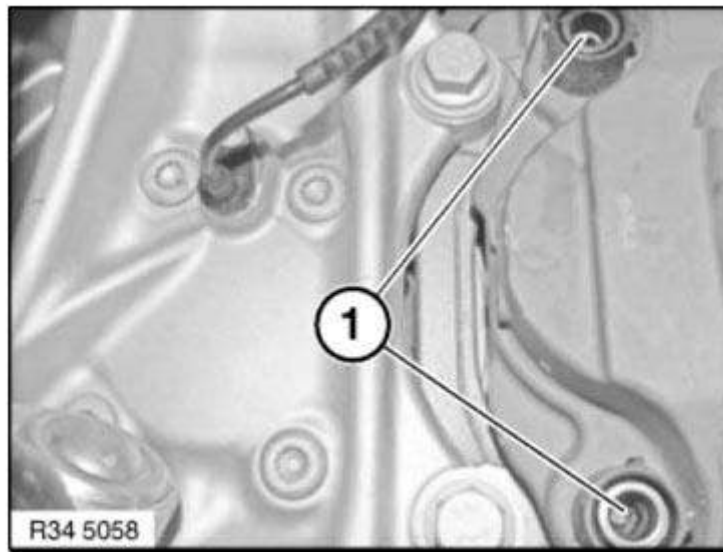


Fig. 82: Identifying Guide Bolts

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Mark any worn brake pads.

Remove brake pads in direction of arrow.

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

If necessary, clean brake caliper and brake pad.

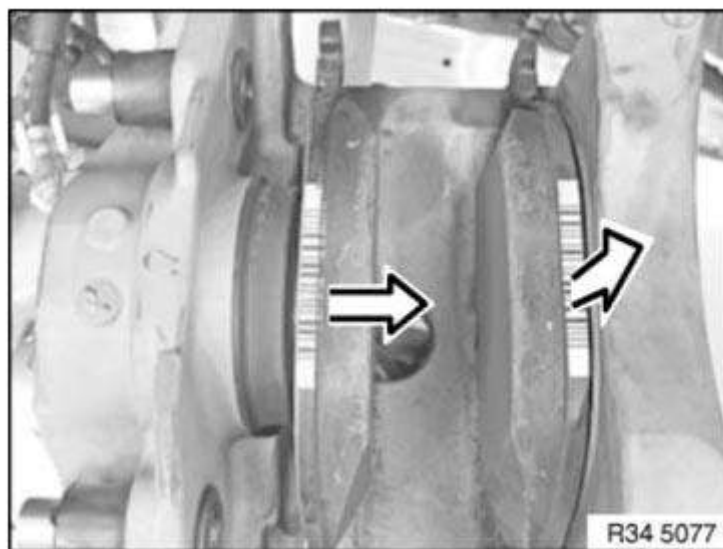


Fig. 83: Removing Brake Pads

Courtesy of BMW OF NORTH AMERICA, INC.

Equipment specification, high-speed brake system.

IMPORTANT: Mark any worn brake pads.

Remove brake pads in direction of arrow.

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

If necessary, clean brake caliper and brake pad.

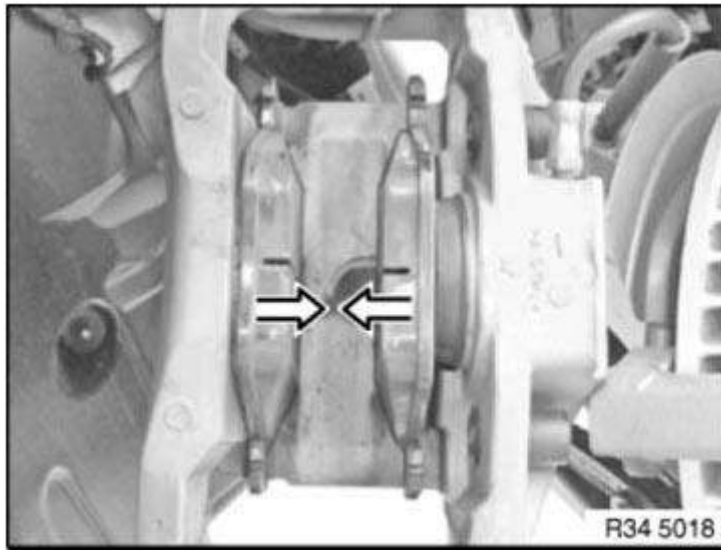


Fig. 84: Removing Brake Pads

Courtesy of BMW OF NORTH AMERICA, INC.

34 00 XXX REMOVING AND INSTALLING/REPLACING VENT VALVE FOR BRAKE CALIPER

Necessary preliminary work:

- Raise vehicle.

Removal:

Press brake 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.

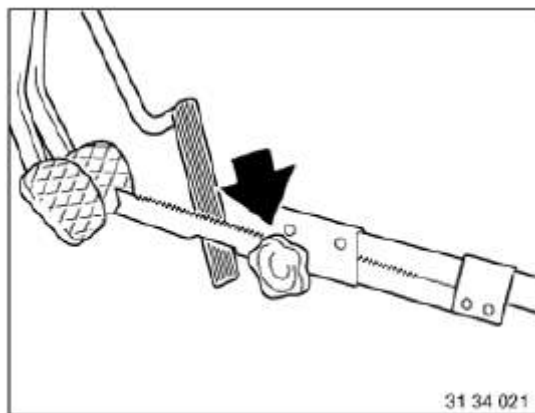


Fig. 85: Pressing Brake Pedal Down To Floor

Courtesy of BMW OF NORTH AMERICA, INC.

Remove dust cap (1).

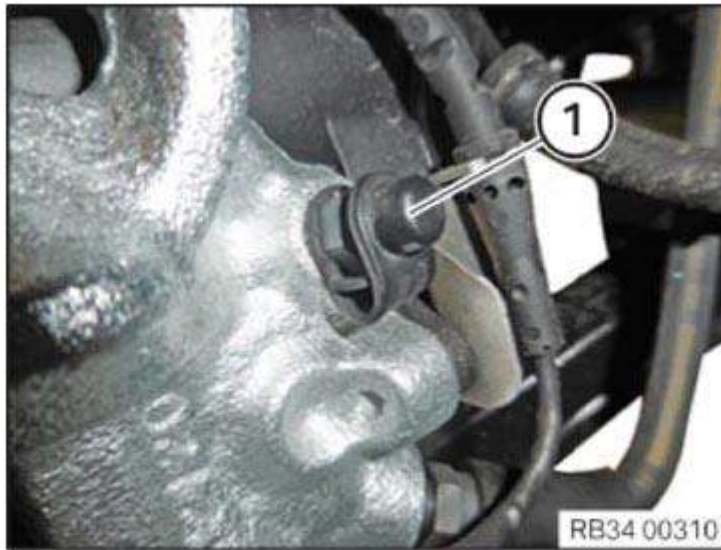


Fig. 86: Identifying Dust Cap

Courtesy of BMW OF NORTH AMERICA, INC.

Remove vent valve (1).

IMPORTANT: Collect escaping brake fluid in a suitable collecting vessel.

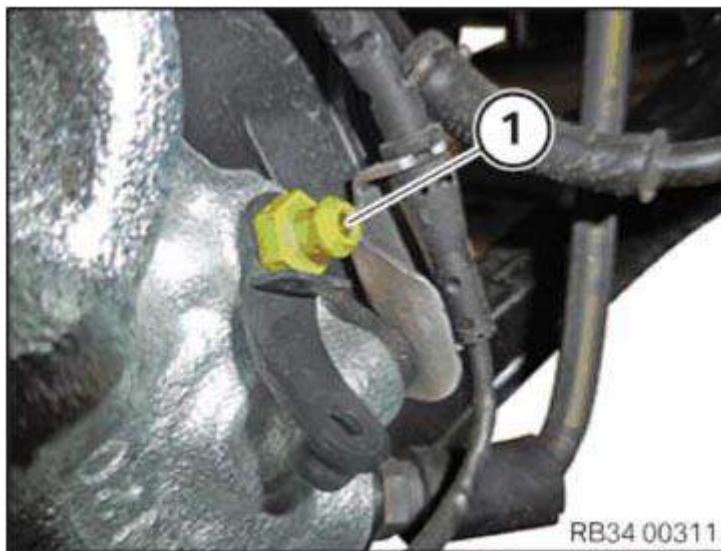


Fig. 87: Identifying Vent Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

IMPORTANT: The bore hole must be free of contamination!

Install vent valve (1).

Tightening torque: **34 00 1AZ** .

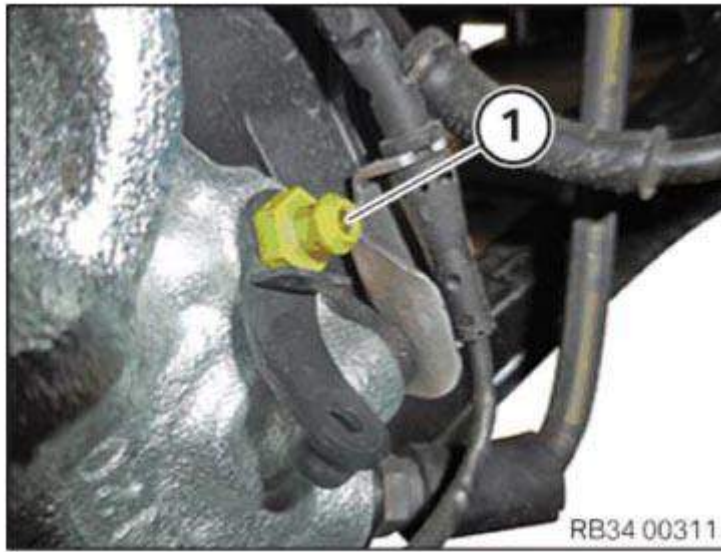


Fig. 88: Identifying Vent Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Mount dust cap (1).

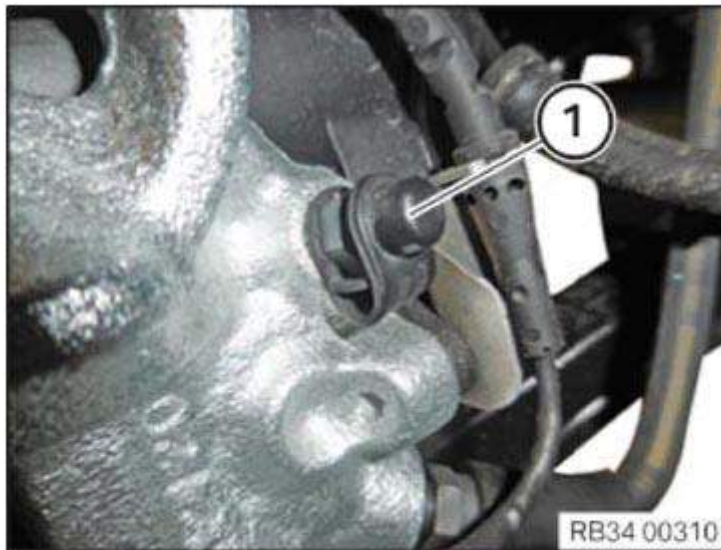


Fig. 89: Identifying Dust Cap

Courtesy of BMW OF NORTH AMERICA, INC.

Remove pedal support.

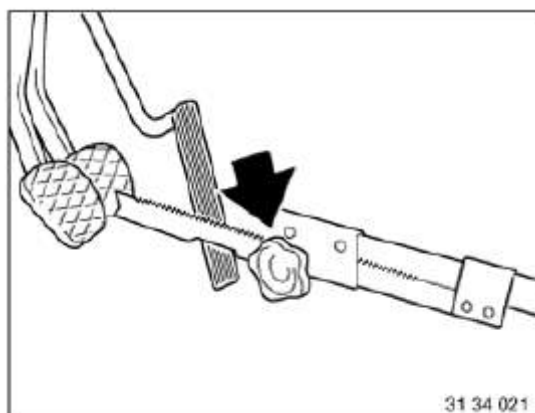


Fig. 90: Pressing Brake Pedal Down To Floor

Courtesy of BMW OF NORTH AMERICA, INC.

Required follow-up work:

- Bleed brake system.

34 11 250 REPLACING FRONT LEFT OR RIGHT BRAKE ANCHOR PLATE/GUARD PLATE

Necessary preliminary work:

- Remove front **BRAKE DISC**.

Release screws (1) and remove brake guard plate (2).

Installation note:

Tightening torque **34 11 3AZ** .

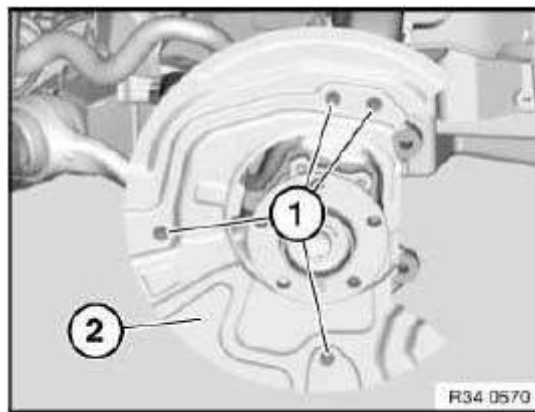


Fig. 91: Identifying Brake Guard Plate Screws

Courtesy of BMW OF NORTH AMERICA, INC.

REAR BRAKES

34 00 X01 GUIDELINE FOR APPLYING BRAKE PAD PASTE ON BRAKE PADS AND BRAKE ANCHOR PLATE

So as not to damage the surface coating, if possible do not mechanically clean the guide surfaces for the brake pads on the brake caliper mounting bracket. Instead, clean with brake

IMPORTANT: cleaner BMW part no. 83 19 2 154 780 and apply a thin coating of brake pad paste BMW part no. 83 19 2 158 851 (3 g) or 83 19 2 158 852 (100 g).

Spread brake pad paste onto the marked surfaces using a brush!

- (1) Brake pad paste 100 gr. BMW part no. 83 19 2 158 852
- (2) Brake pad paste 3 gr. BMW part no. 83 19 2 158 851
- (3) Brush for spreading brake pad paste over the marked areas.



Fig. 92: Identifying Brake Pad Paste Tube

Courtesy of BMW OF NORTH AMERICA, INC.

Brake IPS (CBI) 1-piston floating caliper brake (model ranges: 1-Series, 3-Series, 4-Series, X3)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

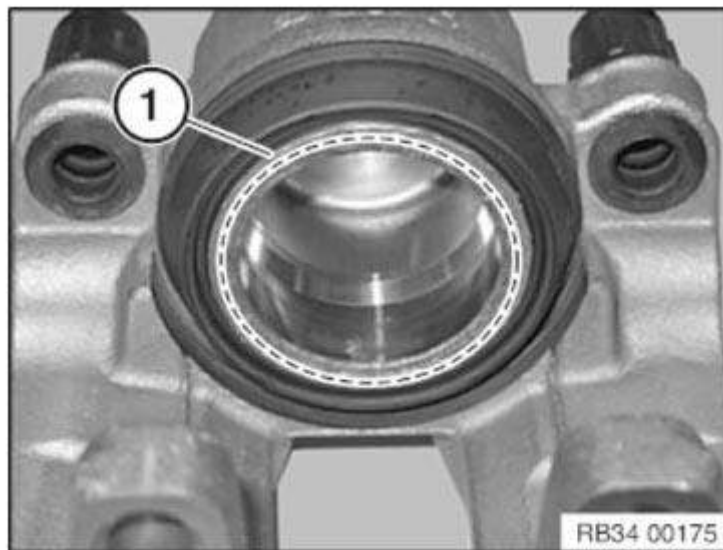


Fig. 93: Identifying Brake Cleaner Contact Surface Area

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surfaces (1) of T-heads/brake caliper housing with brake cleaner and apply a thin coating of brake pad paste.

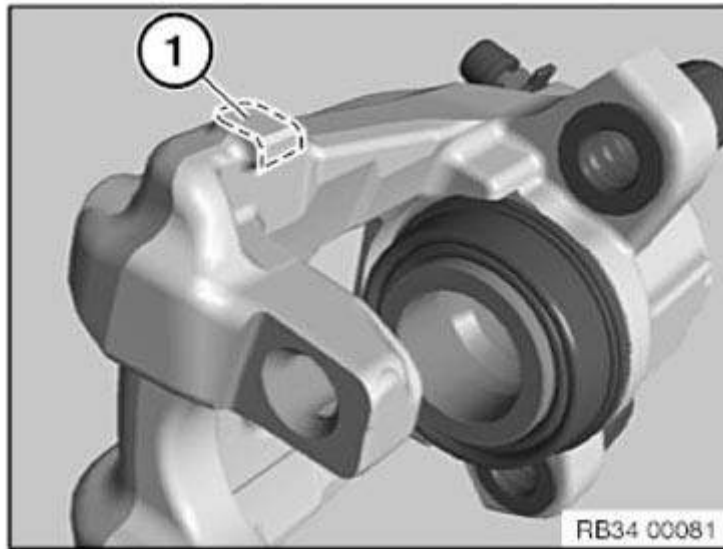


Fig. 94: Identifying Contact Surfaces Of T-Heads/Brake Caliper Housing
 Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

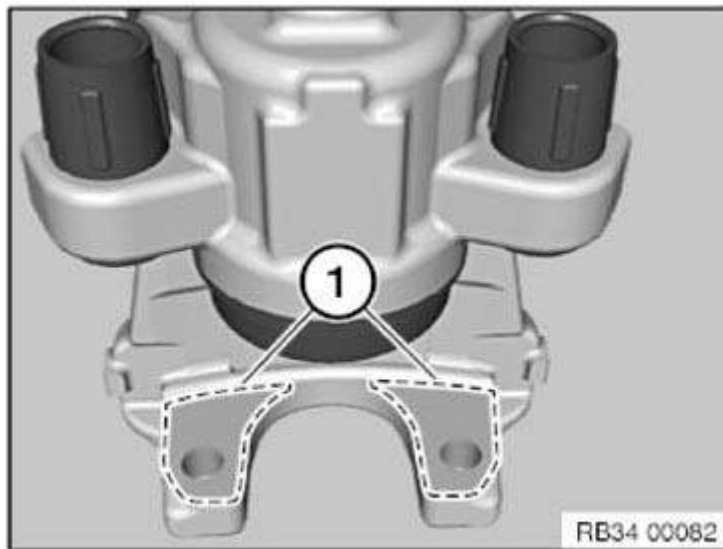


Fig. 95: Brake Caliper Contact Surface
 Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

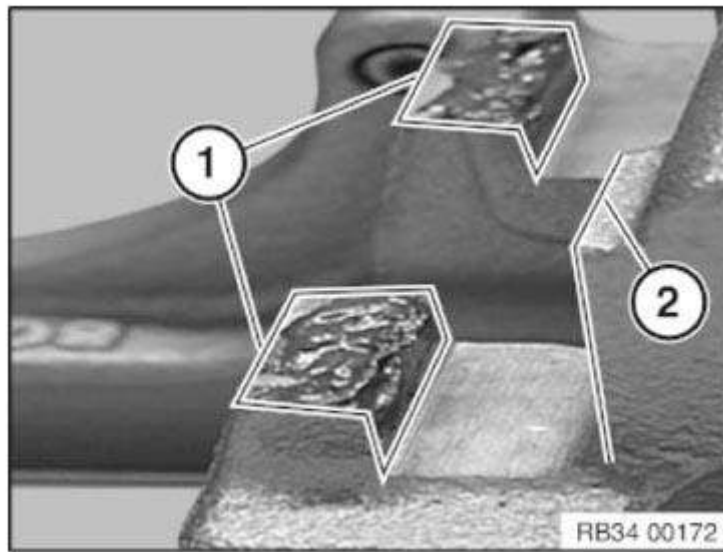


Fig. 96: Identifying Brake Pad Guide Surfaces On Brake Caliper Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

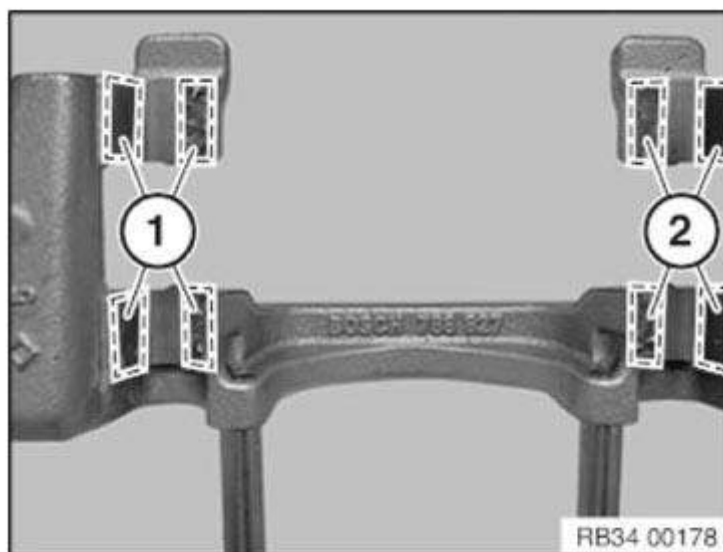


Fig. 97: Identifying Guide Surfaces For Brake Pads On Brake Caliper Mounting Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

Apply a thin coating of brake pad paste to T-head of inner brake pad in area (1) and (2).

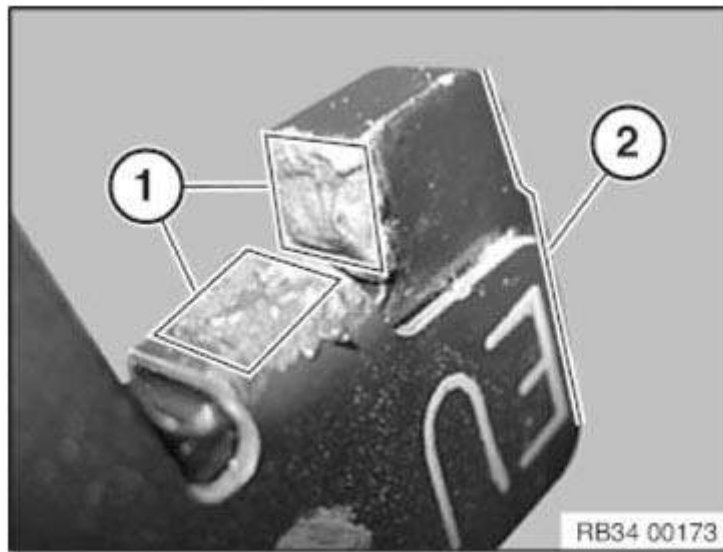


Fig. 98: Brake Pad Paste Application Area

Courtesy of BMW OF NORTH AMERICA, INC.

Apply a thin coating of brake pad paste to T-head of outer brake pad in area (1) and (2).

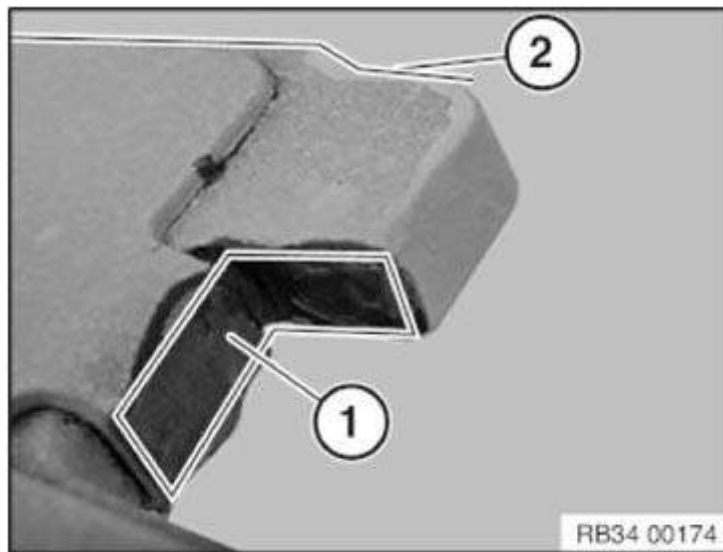


Fig. 99: Applying Thin Coating Of Brake Pad Paste To T-Head Of Outer Brake Pad Area

Courtesy of BMW OF NORTH AMERICA, INC.

Brake FN (Continental Teves) 1-piston floating caliper brake (model ranges: 5-Series, 6-Series, 7-Series, 8-Series, X1, X3, X5, Z4, RR)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

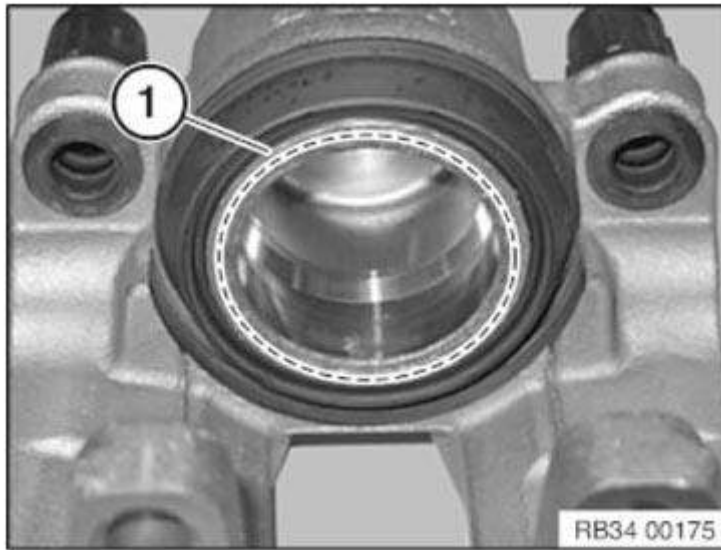


Fig. 100: Identifying Brake Cleaner Contact Surface Area

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surfaces (1) of T-heads/brake caliper housing with brake cleaner and apply a thin coating of brake pad paste.

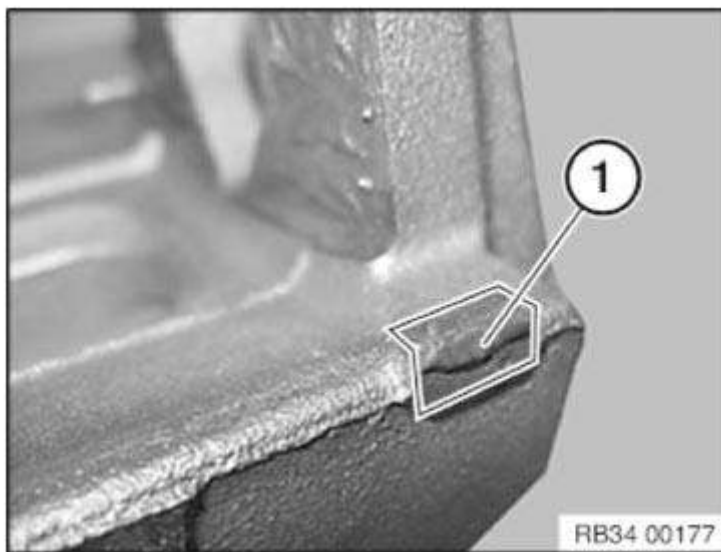


Fig. 101: T-Heads/Brake Caliper Housing Contact Surfaces

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

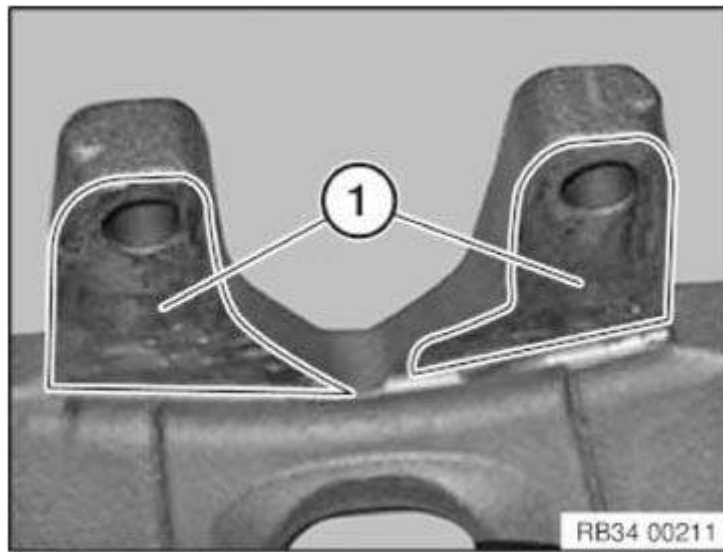


Fig. 102: Identifying Contact Surface Of Brake Caliper

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1) with brake cleaner and apply a thin coating of brake pad paste.

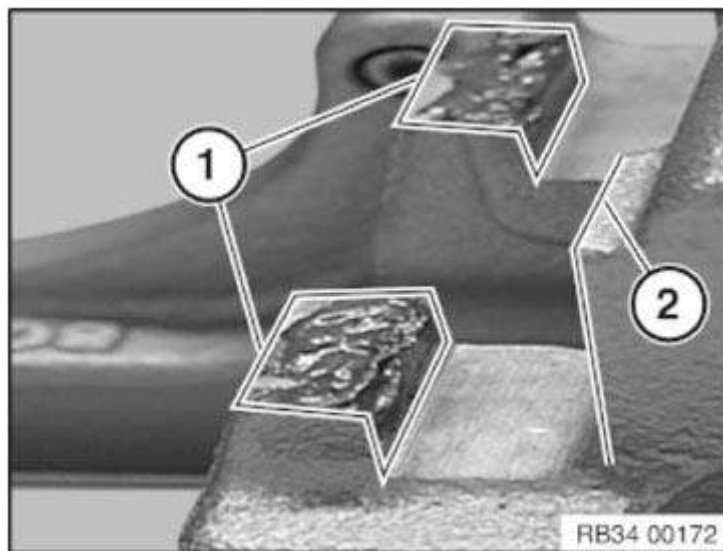


Fig. 103: Identifying Brake Pad Guide Surfaces On Brake Caliper Mounting Bracket

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

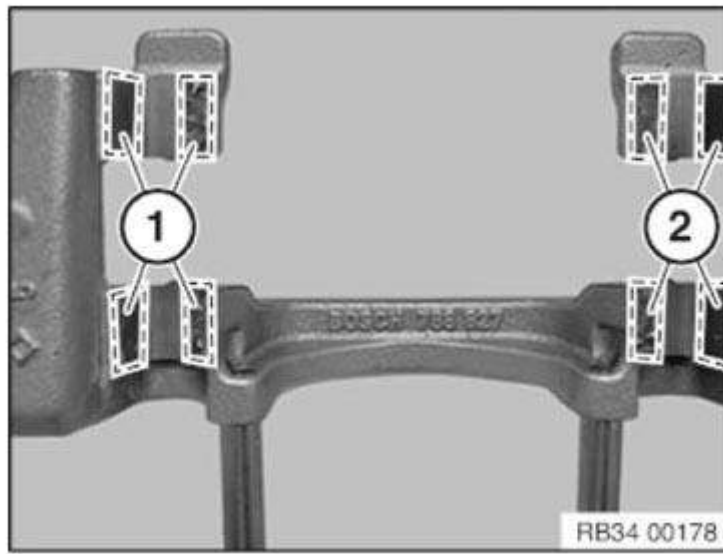


Fig. 104: Identifying Guide Surfaces For Brake Pads On Brake Caliper Mounting Bracket
 Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the inner brake pad with brake pad paste in area (1 and 2).

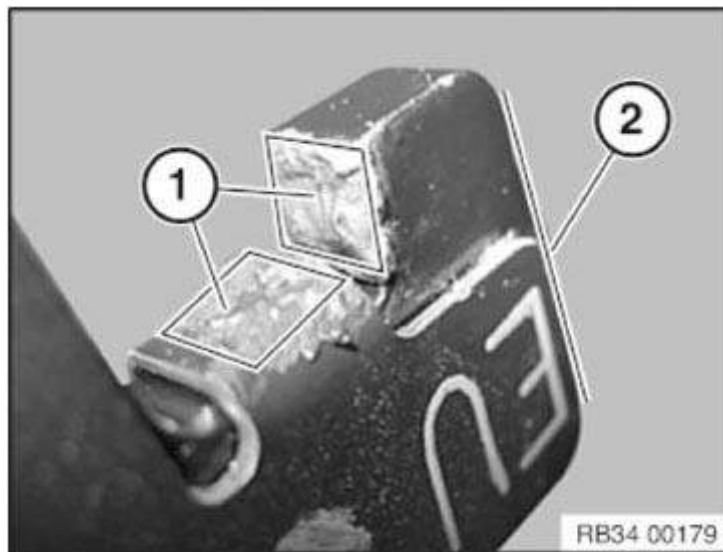


Fig. 105: Coating T-Head Of Inner Brake Pad With Brake Pad Paste
 Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the outer brake pad with brake pad paste in area (1 and 2).

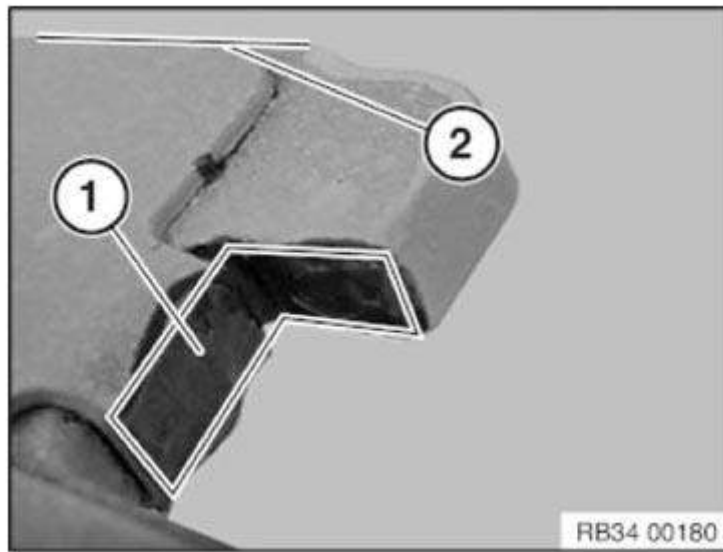


Fig. 106: Coating T-Head Of Outer Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Brake FN (Continental Teves) 2-piston floating caliper brake (model ranges: 5-Series, 6-Series, 7-Series, 8-Series, X5, RR)

Clean contact surface (2) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

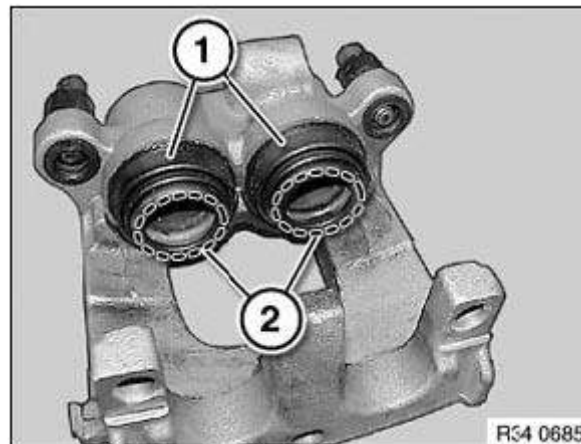


Fig. 107: Identifying Contact Surface Of Brake Piston

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surfaces (1) of T-heads/brake caliper housing with brake cleaner and apply a thin coating of brake pad paste.

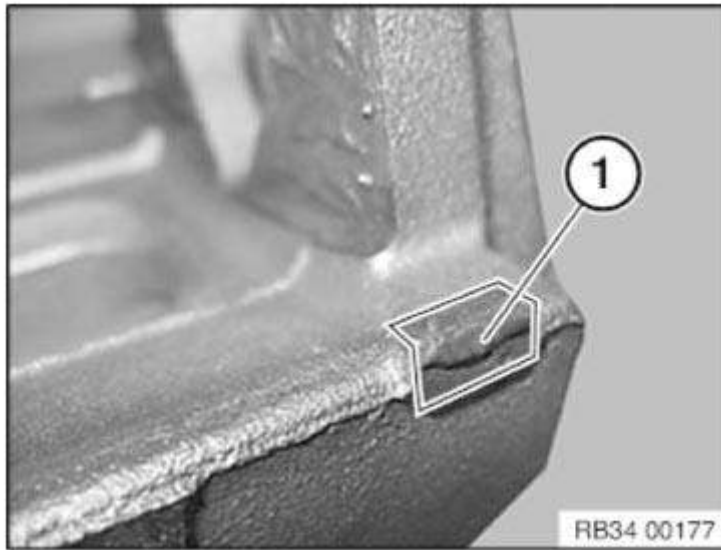


Fig. 108: T-Heads/Brake Caliper Housing Contact Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) and brake caliper with brake cleaner and apply a thin coating of brake pad paste.

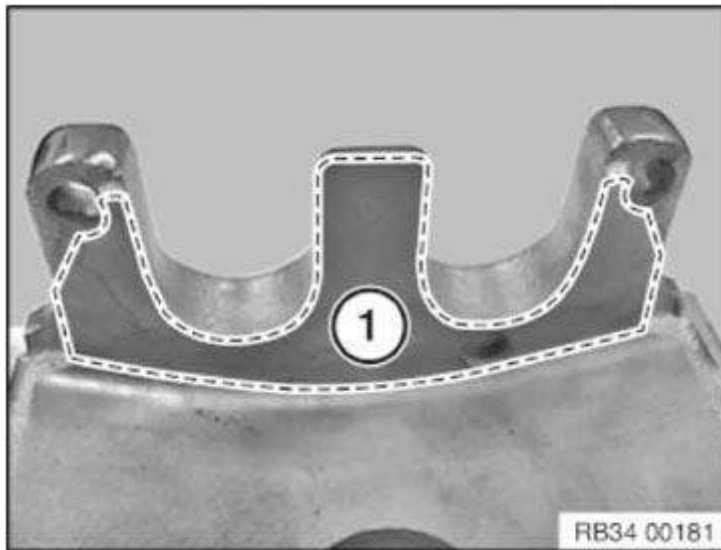


Fig. 109: Identifying Contact Surface Of Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

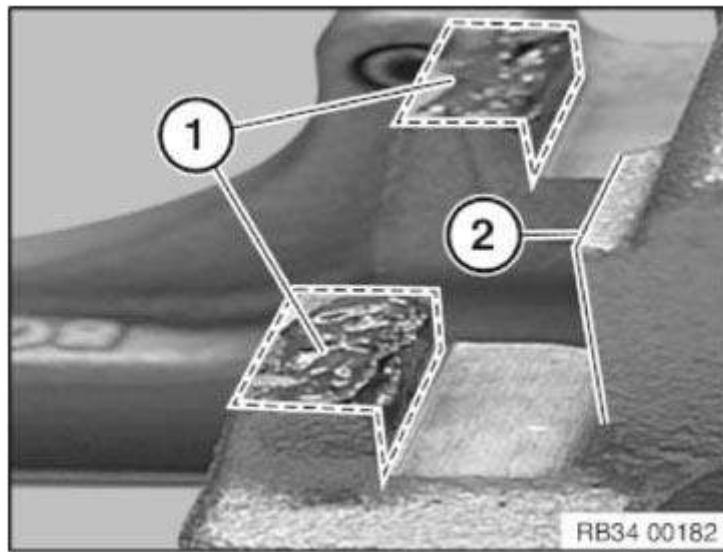


Fig. 110: Brake Caliper Mounting Bracket Guide Surfaces For Brake Pads

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1 and 2) for the brake pads on the brake caliper mounting bracket. Clean guide surfaces (1 and 2) with brake cleaner and apply a thin coating of brake pad paste.

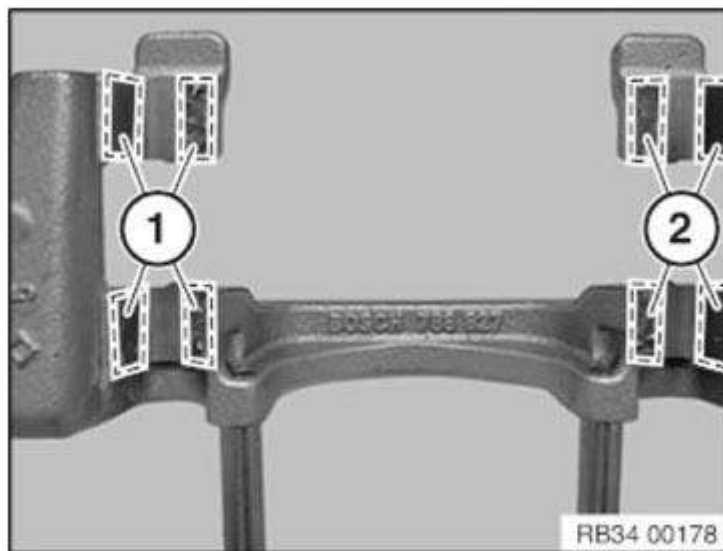


Fig. 111: Identifying Guide Surfaces For Brake Pads On Brake Caliper Mounting Bracket

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the inner brake pad with brake pad paste in area (1 and 2).

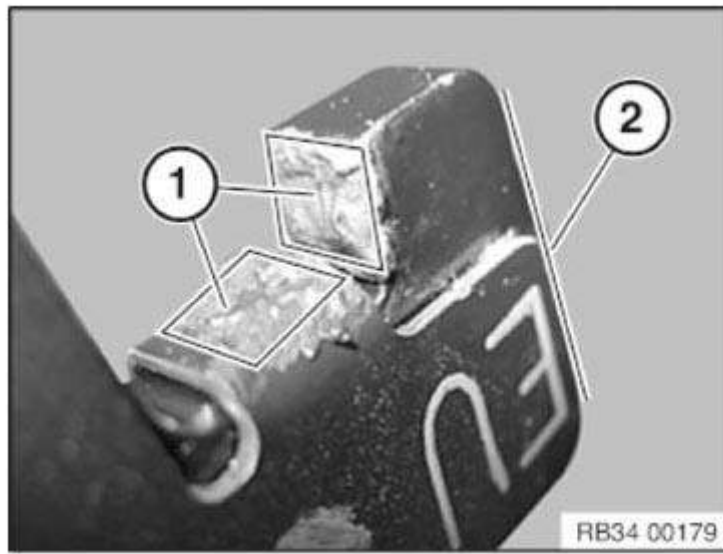


Fig. 112: Coating T-Head Of Inner Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the T-head of the outer brake pad with brake pad paste in area (1 and 2).

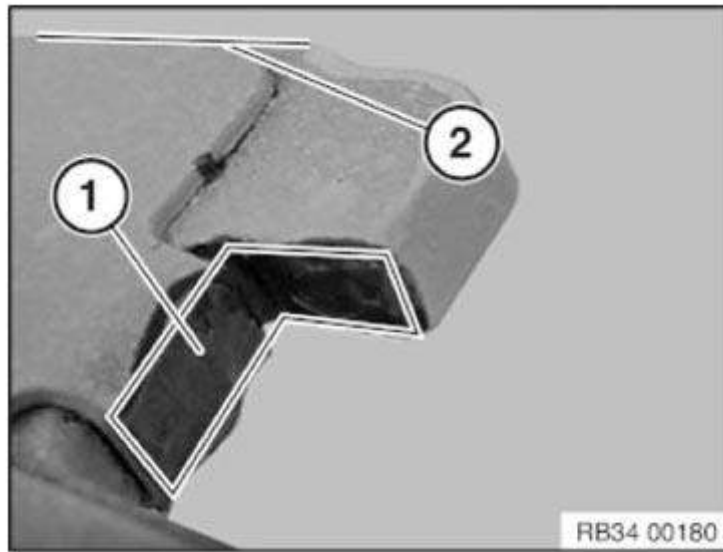


Fig. 113: Coating T-Head Of Outer Brake Pad With Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Brake Collette (TRW) 1-piston brake caliper (model ranges: MINI, 1-Series, 5-Series, 6-Series, Z4)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

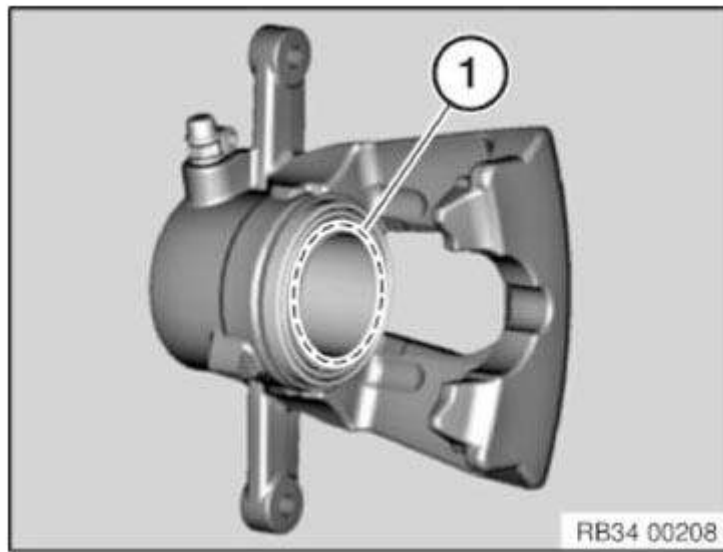


Fig. 114: Identifying Contact Surface Of Brake Piston

Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

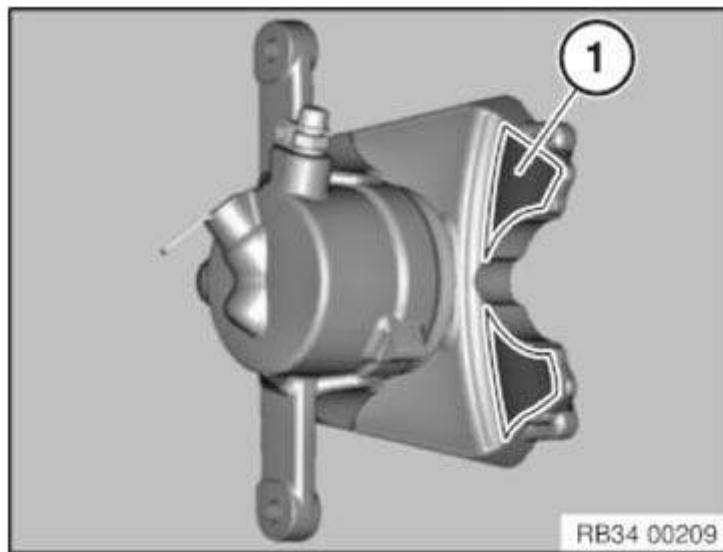


Fig. 115: Identifying Contact Surface Of Brake Caliper With Brake Cleaner

Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surface (1) for the brake pads on the brake caliper mounting bracket. Clean guide surface (1) with brake cleaner and apply a thin coating of brake pad paste.

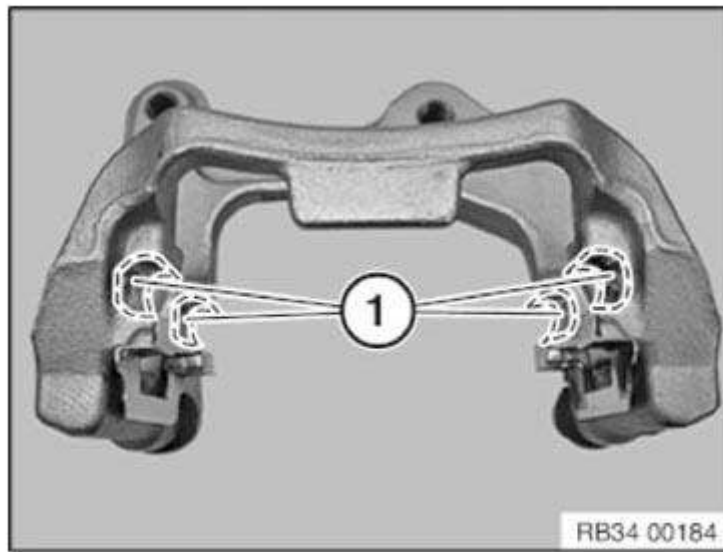


Fig. 116: Identifying Guide Surface For Brake Pads On Brake Caliper Mounting Bracket
 Courtesy of BMW OF NORTH AMERICA, INC.

Apply a thin coating of brake pad paste to both sides of T-head of brake pad in area (1).

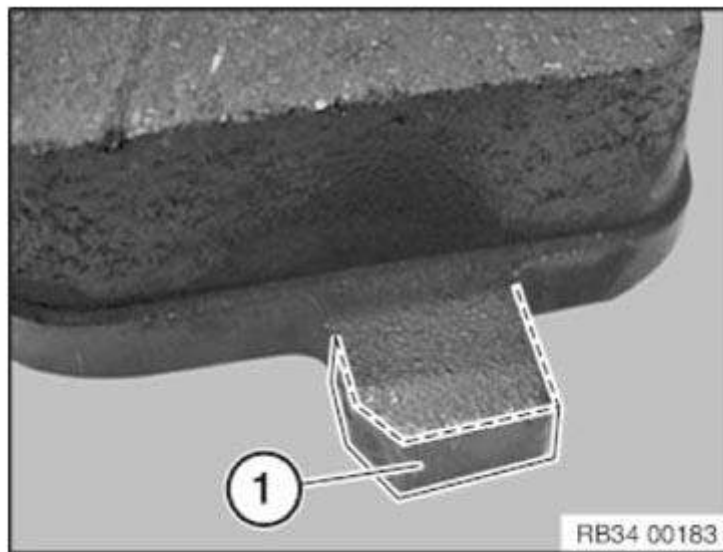


Fig. 117: Identifying Brake Pad Paste Application Area On Both Sides Of T-Head
 Courtesy of BMW OF NORTH AMERICA, INC.

Brake P 4.40 (Brembo) 4-piston fixed caliper brake (model ranges: MINI, 1-Series, 3-Series, 4-Series, 5-Series, 6-Series, 7-Series, 8-Series, X5, RR)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (2) for the brake pads on the brake caliper mounting bracket. Clean guide surface (2) with brake cleaner and apply a thin coating of brake pad paste.

Clean both inner and outer guide surfaces (2) and apply a thin coating of brake pad paste.

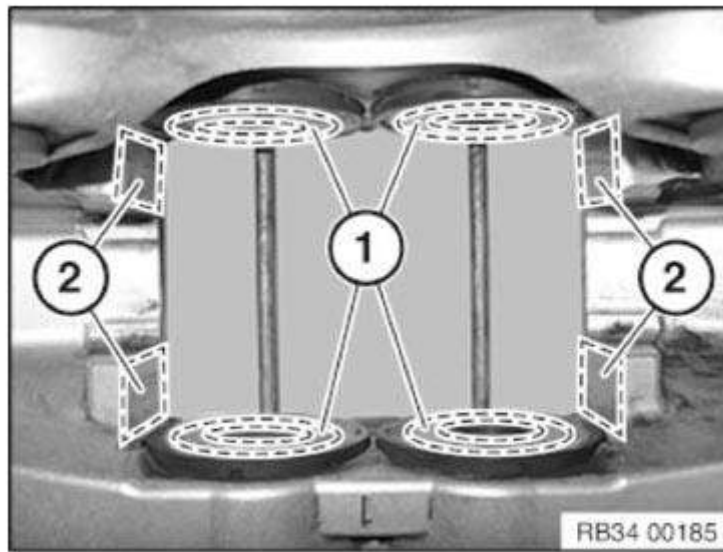


Fig. 118: Identifying Brake Piston Inner And Outer Guide Surfaces

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat both sides of the contact surface in area (1 and 2) with brake pad paste.

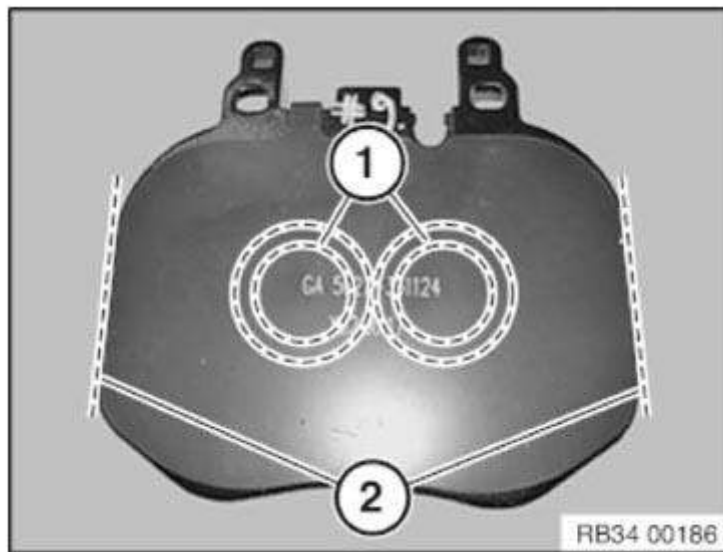


Fig. 119: Identifying Contact Surface Area For Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the brake pad contact surface on both sides in area (1) with brake pad paste.

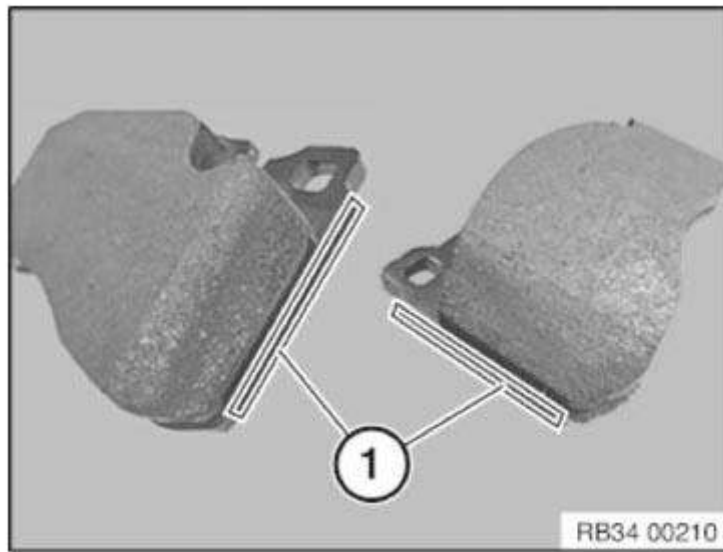


Fig. 120: Brake Pad Contact Surface Area For Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

Brake P 4.40 (Brembo) 2-piston fixed caliper brake (model ranges: 1-Series, 3-Series)

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (2) for the brake pads on the brake caliper mounting bracket. Clean guide surface (2) with brake cleaner and apply a thin coating of brake pad paste.

Clean both inner and outer guide surfaces (2) and apply a thin coating of brake pad paste.

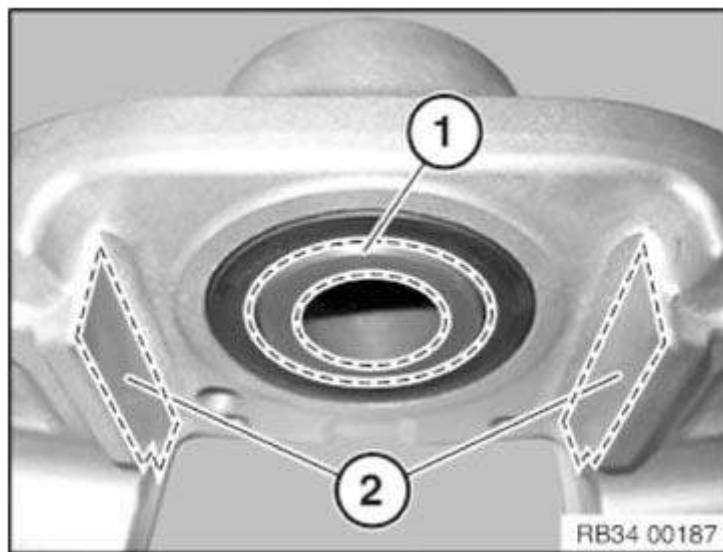


Fig. 121: Identifying Contact Surface Of Brake Piston With Brake Cleaner

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat both sides of the contact surface in area (1 and 2) with brake pad paste.

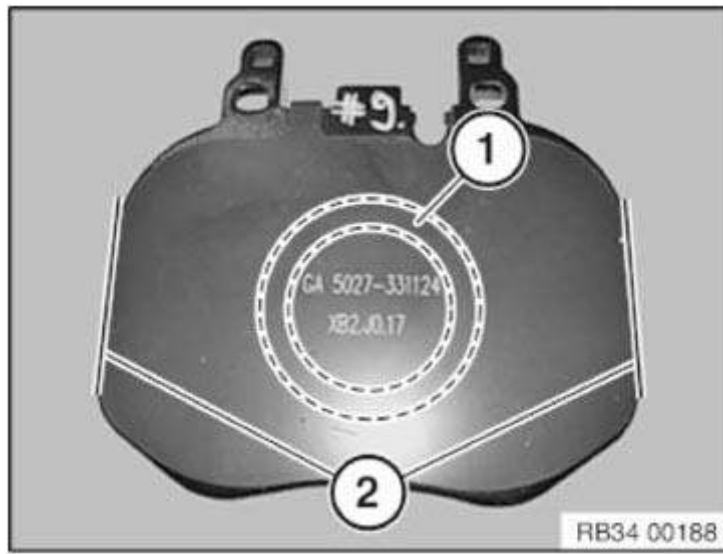


Fig. 122: Identifying Brake Pad Paste Contact Surface Area

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly coat the brake pad contact surface on both sides in area (1) with brake pad paste.

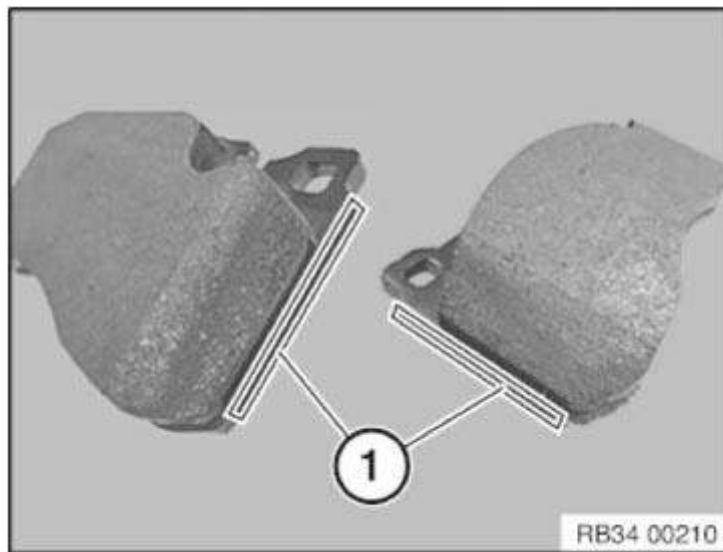
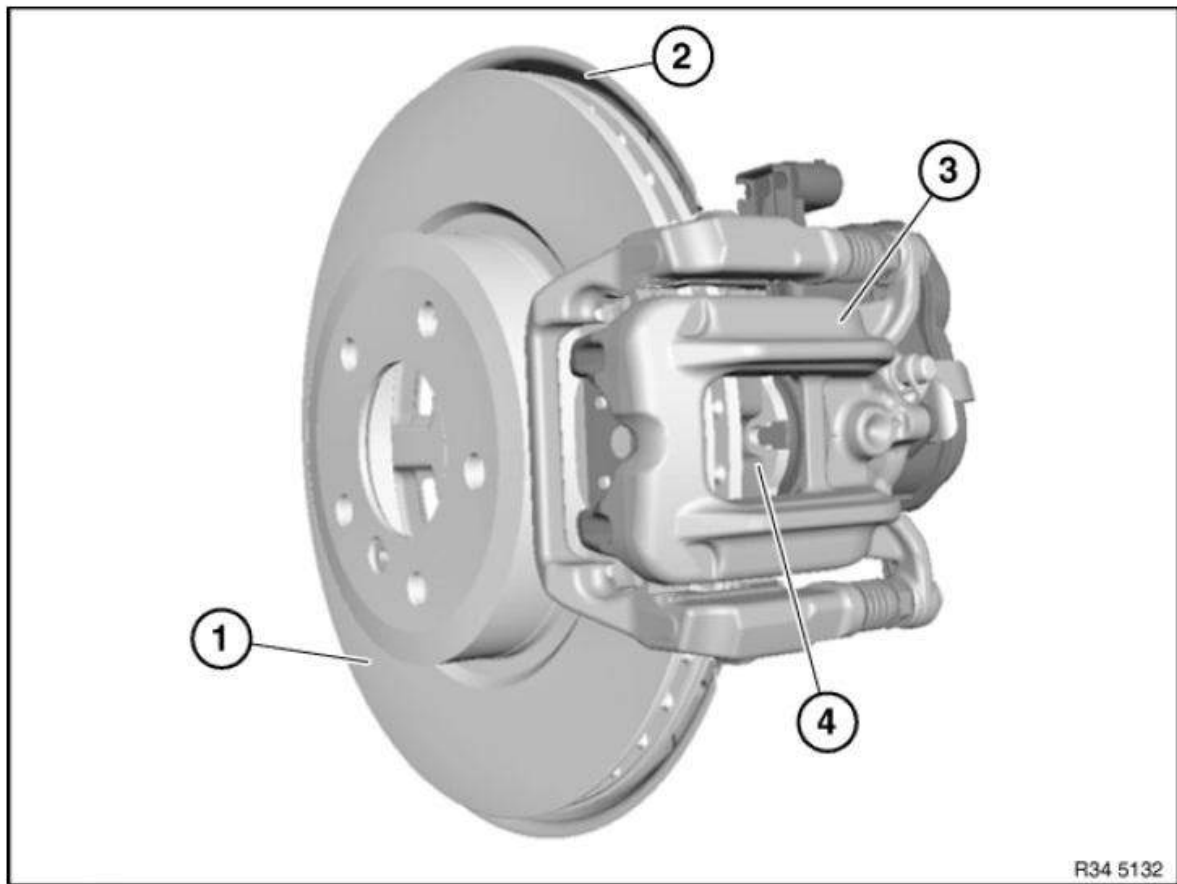


Fig. 123: Brake Pad Contact Surface Area For Brake Pad Paste

Courtesy of BMW OF NORTH AMERICA, INC.

34 21... OVERVIEW OF REAR BRAKE



- | | |
|----------------------------------|-------------------------------------|
| 1 Brake disc | 4 Brake guard plate |
| 2 Brake pad | |
| 3 Brake calliper | |

Fig. 124: Overview Of Rear Brake

Courtesy of BMW OF NORTH AMERICA, INC.

34 21 947 PRECISION-TURNING BOTH REAR BRAKE DISCS ON BOTH SIDES

Always precision-turn both sides of both brake discs on one axle.

Maximum machining dimension per friction ring side is 0.8 mm!

IMPORTANT: Observe **MINIMUM BRAKE DISC THICKNESS** (MIN TH).
 Brake discs of M models (Compound brake discs) must **not** be machined!
 Only one brake pad set may be used up on brake discs which have been lathe-turned to minimum thickness (MIN TH).

Stationary brake disc lathe:

IMPORTANT: Only BMW-approved brake disc lathes may be used!

In the case of stationary brake disc lathes, the **BRAKE DISC** must be removed.

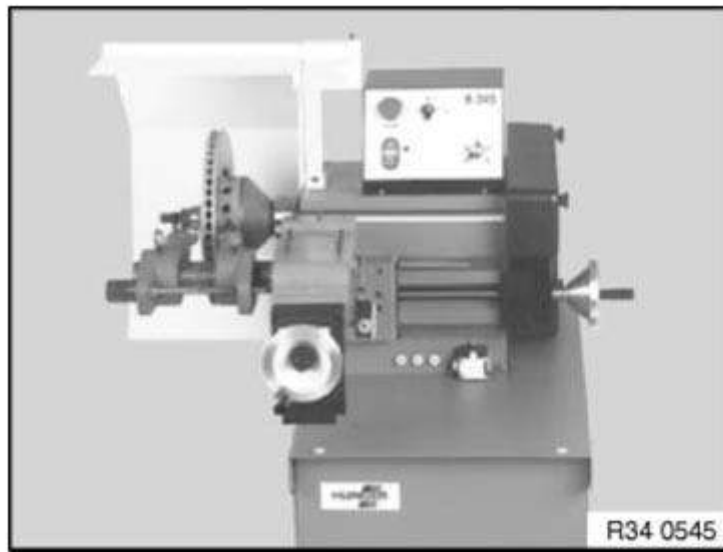


Fig. 125: Identifying Stationary Brake Disc Lathe
 Courtesy of BMW OF NORTH AMERICA, INC.

Mobile brake disc lathe:

IMPORTANT: Only BMW-approved brake disc lathes may be used!

In the case of mobile brake disc lathes, the brake calipers and brake anchor plates must be removed.

The brake discs remain on the vehicle.



Fig. 126: Identifying Mobile Brake Disc Lathe
 Courtesy of BMW OF NORTH AMERICA, INC.

After fine-grinding the brake discs, measure the **THICKNESS DIFFERENCE** inside the braking surfaces at 8 points with an external caliper gauge.

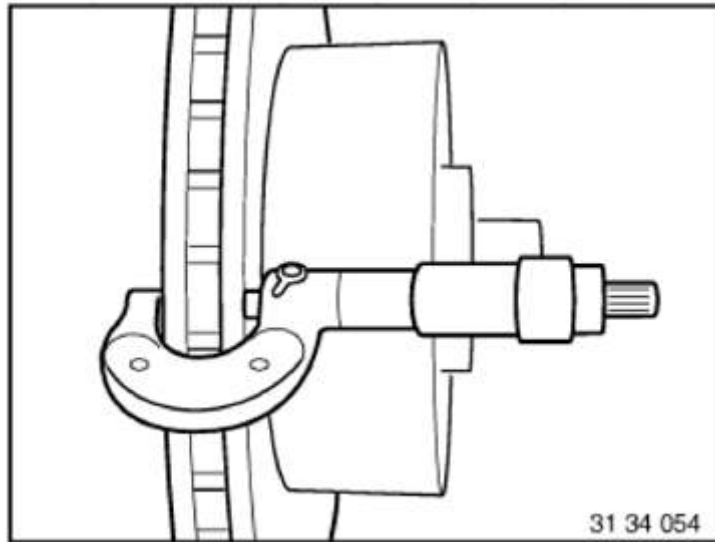


Fig. 127: Measuring Thickness Difference At Brake Surface

Courtesy of BMW OF NORTH AMERICA, INC.

34 21 320 REMOVING AND INSTALLING OR REPLACING BOTH REAR BRAKE DISCS

Special tools required:

- 34 1 280

Necessary preliminary tasks:

- Remove **WHEELS** .
- Remove and clean **BRAKE PADS**.

After completing repair work:

- Adjust parking brake (not F10, F11, F12, F13, F18, F25).
- Read and comply with notes on breaking in new brake discs/brake pads.

Check minimum brake disc thickness:

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

NOTE: **If the brake discs are replaced, you must also fit new brake pads.**

Always replace brake discs in pairs.

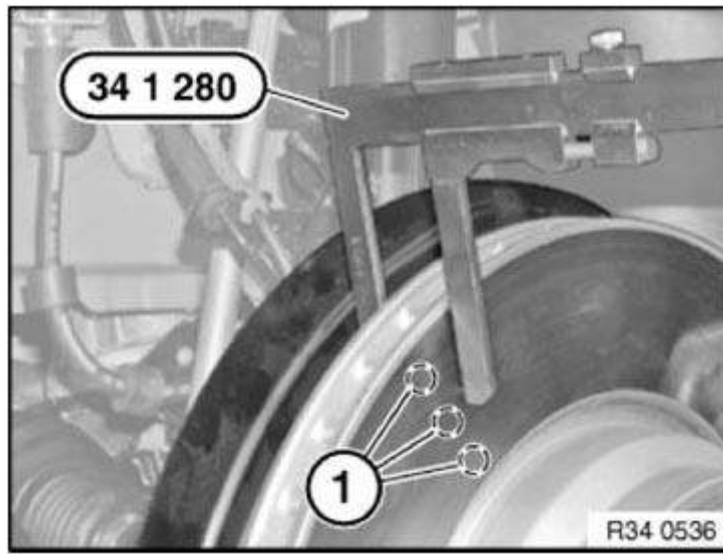


Fig. 128: Checking Minimum Brake Disc Thickness

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: New brake pads may only be fitted if the brake disc thickness is greater than the **MINIMUM BRAKE DISC THICKNESS** (MIN TH).

Release screws (1). Detach brake-caliper support.

Installation note:

Tightening torque **34 21 2AZ** .

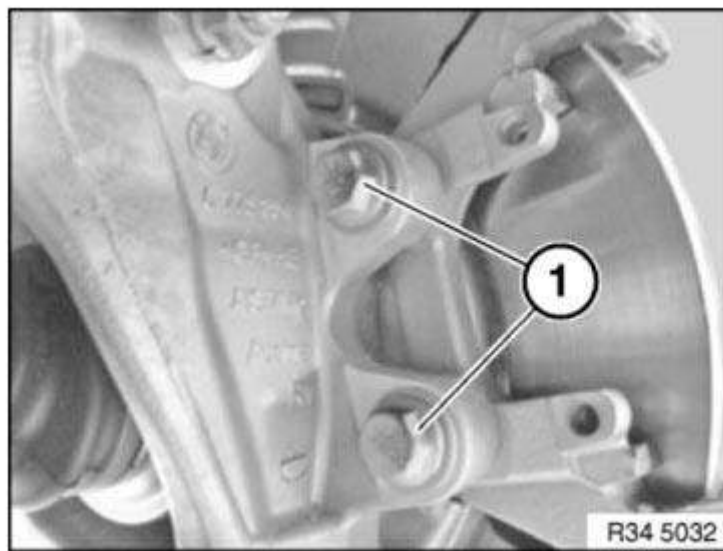


Fig. 129: Identifying Brake Caliper Support Screws

Courtesy of BMW OF NORTH AMERICA, INC.

To release brake disc: Do not under any circumstances strike friction ring with a hammer or similar!

IMPORTANT: If necessary, carefully tap on base of brake disc chamber with a rubber mallet.
Clean contact surface of brake disc at wheel hub thoroughly and remove traces of corrosion.
Unevenness on contact surface may result in distortion of brake disc!

Release screw (1) and remove brake disc (2).

Installation note:

Replace screw.

Tightening torque [34 21 1AZ](#) .

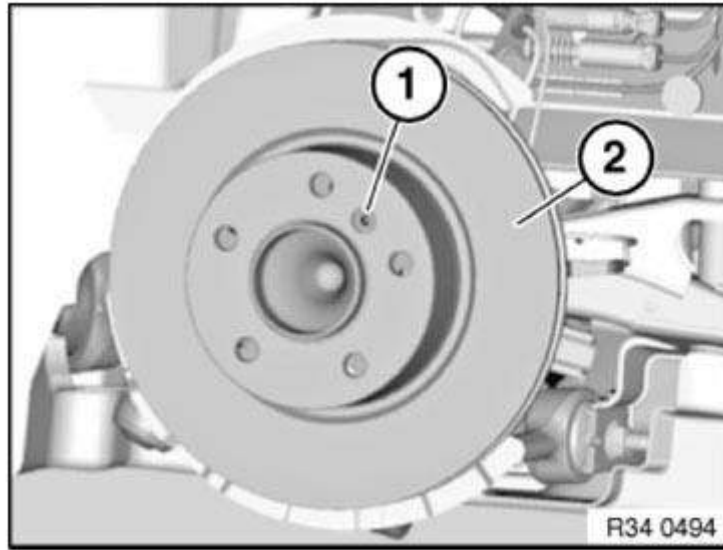


Fig. 130: Identifying Brake Disc And Screw

Courtesy of BMW OF NORTH AMERICA, INC.

34 21 200 REMOVING AND INSTALLING OR REPLACING BRAKE PADS ON BOTH REAR DISC BRAKES (TRW FLOATING CALIPER)

Special tools required:

- 34 1 280
- [2 320 871](#)
- [2 320 299](#)

- Brake pad wear sensor: after removal it must be replaced (brake pad wear sensor loses its retention capability in the break pad).
- Retaining pins and expanding spring: for vehicles older than 48 months it is recommended to replace the retaining spring!

IMPORTANT:

So as not to damage the surface coating, if possible do not mechanically clean the guide surfaces for the brake pads on the brake caliper mounting bracket. Instead, clean with brake cleaner BMW part no. 83 19 2 154 780 and apply a thin coating of brake pad paste BMW part no. 83 19 2 158 851 (3 g) or 83 19 2 158 852 (100 g).

Spread brake pad paste onto the marked surfaces using a brush!

Observe [REGULATION ON APPLYING BRAKE PAD PASTE TO BRAKE PADS AND BRAKE ANCHOR PLATES!](#)

WARNING:

During repair work on the rear brake it must be ensured that the push button for the electrical parking brake cannot be activated.

Necessary preliminary tasks:

- [REMOVE WHEELS](#) .
- Remove rear brake pad wear sensor.

When the repair work is complete, please pay attention to the following:

- Switch on ignition and, using electrical parking brake operating element, open parking brake once, close once and open again.

Unscrew guide bolts (1).

If necessary, grip at hexagon head (2).

Remove brake caliper (3).

Installation note:

Replace guide bolts.

Tightening torque **34 21 5AZ** .

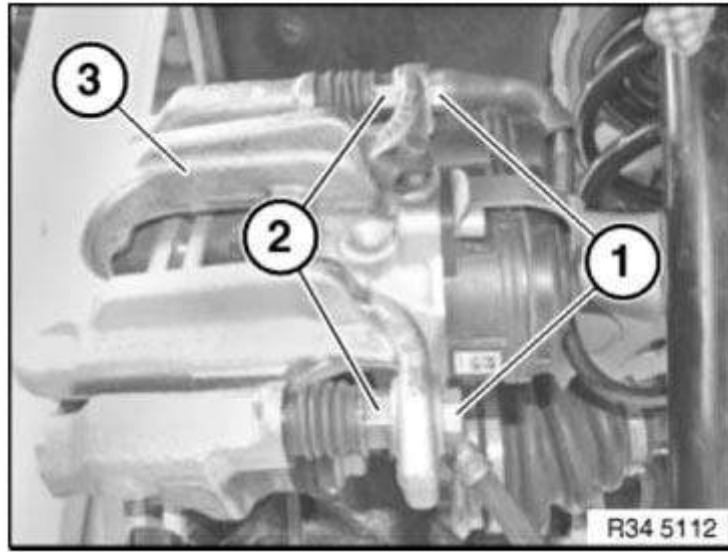


Fig. 131: Brake Caliper, Hexagon Head And Guide Bolts

Courtesy of BMW OF NORTH AMERICA, INC.

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

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 lining backplate.

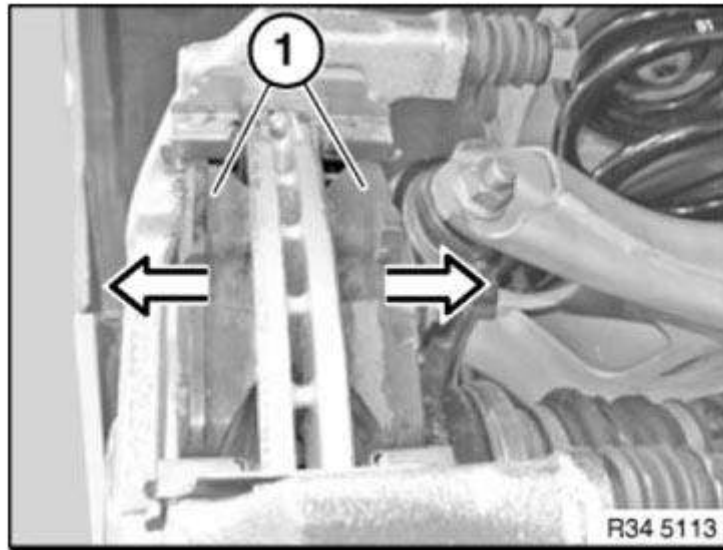


Fig. 132: Removing Brake Pads From Brake Anchor Plate

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 measuring result and lowest value with **SETPOINT VALUE** .

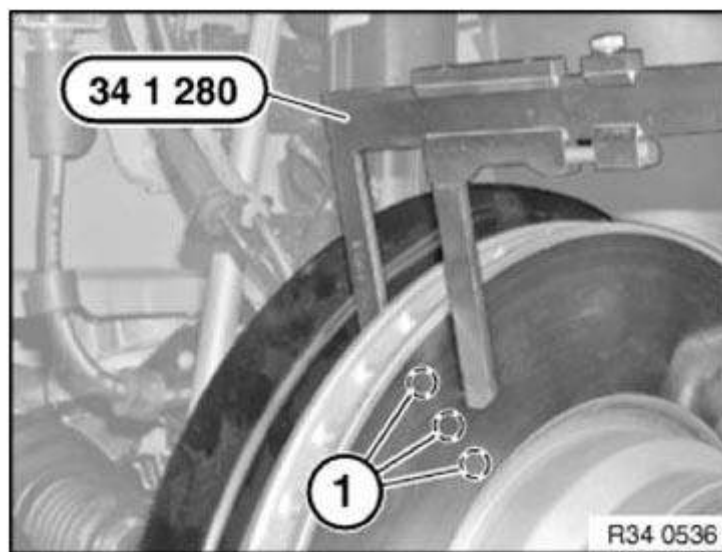


Fig. 133: Checking Minimum Brake Disc Thickness

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: New brake pads may only be fitted if the brake disc thickness is greater than the **MINIMUM BRAKE DISC THICKNESS** (MIN TH).

Place special tool **2 320 871** , **2 320 299** on brake piston.

Use reversible ratchet (1) to turn back brake piston up to limit position.

IMPORTANT: When pressing piston back, note brake fluid level in expansion tank.
Overflowing brake fluid will damage the paintwork.

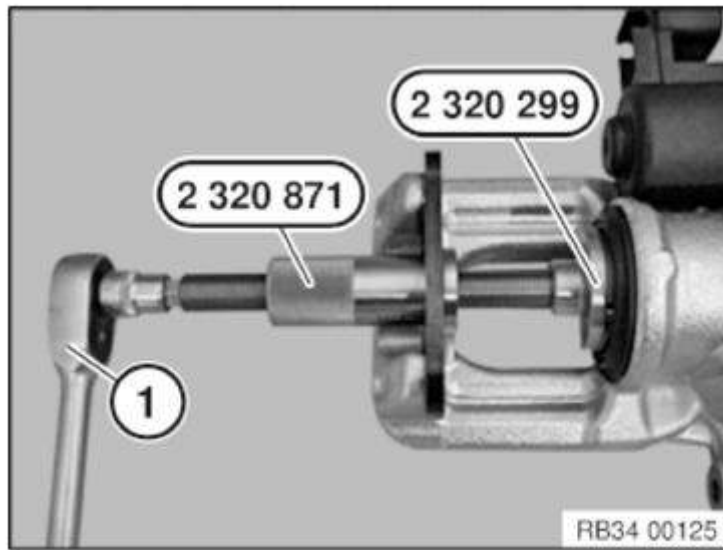


Fig. 134: Placing Special Tool 2 320 871, 2 320 299 On Brake Piston
 Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Dust boot must not come into contact with brake pad paste as this may cause the dust boot to swell.

Check dust boot for damage and renew if necessary.

Clean contact surface (1) of brake piston with brake cleaner and apply a thin coating of brake pad paste.

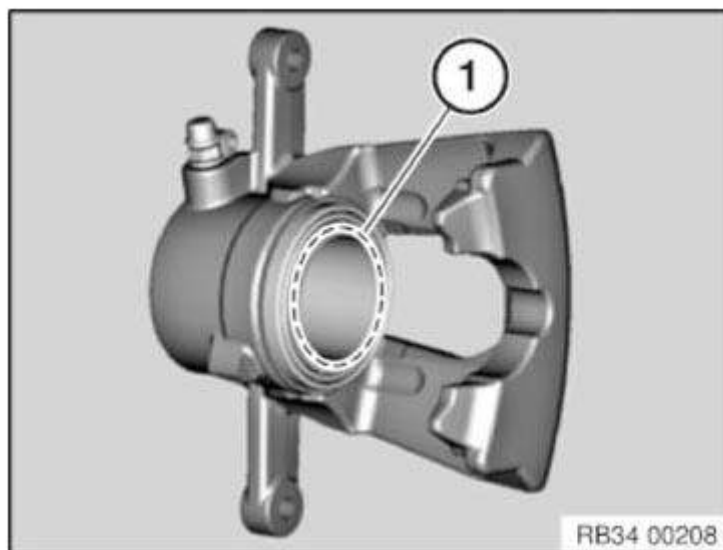


Fig. 135: Identifying Contact Surface Of Brake Piston
 Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface (1) of brake caliper with brake cleaner and apply a thin coating of brake pad paste.

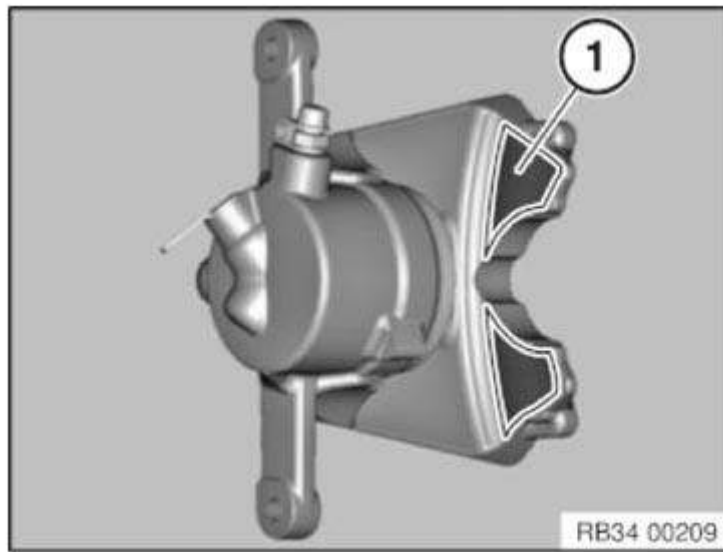


Fig. 136: Identifying Contact Surface Of Brake Caliper With Brake Cleaner
 Courtesy of BMW OF NORTH AMERICA, INC.

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surface (1) for the brake pads on the brake caliper mounting bracket. Clean guide surface (1) with brake cleaner and apply a thin coating of brake pad paste.

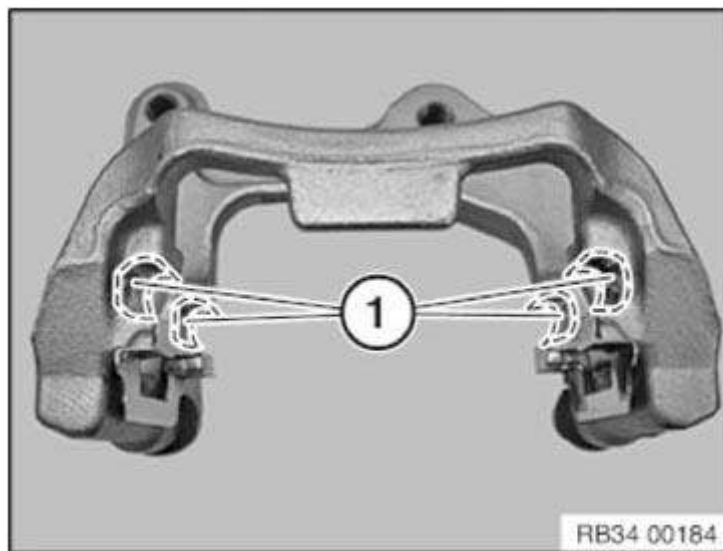


Fig. 137: Identifying Guide Surface For Brake Pads On Brake Caliper Mounting Bracket
 Courtesy of BMW OF NORTH AMERICA, INC.

Apply a thin coating of brake pad paste to both sides of T-head of brake pad in area (1).

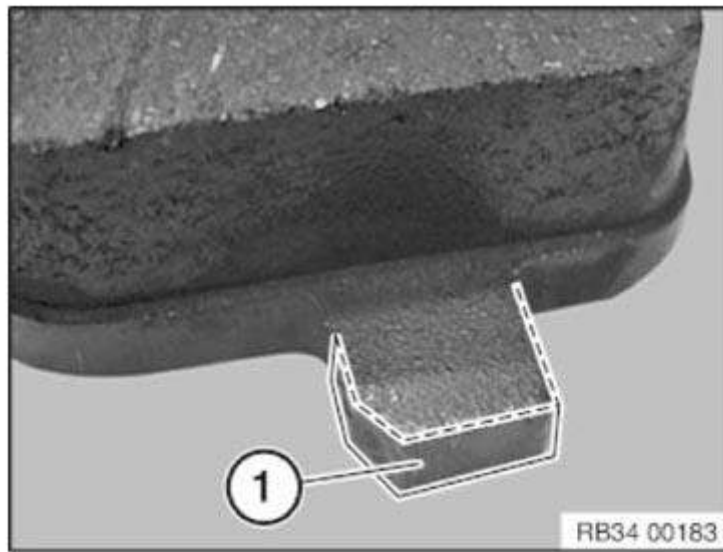


Fig. 138: Identifying Brake Pad Paste Application Area On Both Sides Of T-Head

Courtesy of BMW OF NORTH AMERICA, INC.

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

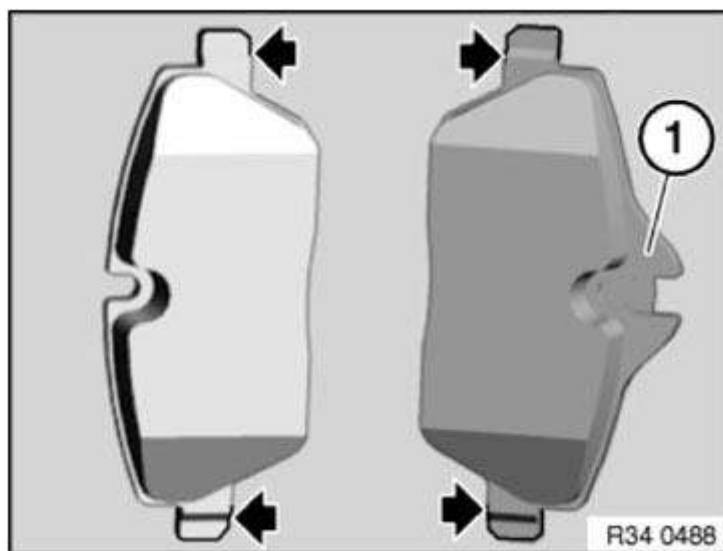


Fig. 139: Identifying Brake Pad With Bulge

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: After completing repair work:

- 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" mark.
- Read and comply with notes on breaking in new brake discs/brake pads.
- When replacing pads, reset CBS display in accordance with factory specification.
- The installation position of the actuators is automatically overridden by detecting a speed signal.

Replacement:

Remove lining springs (1) and replace.

Installation note:

So as not to damage the surface coating, **if possible do not mechanically clean** the guide surfaces (1) for the brake pads on the brake caliper mounting bracket. Instead, clean with brake cleaner and apply a thin coating of brake pad paste.

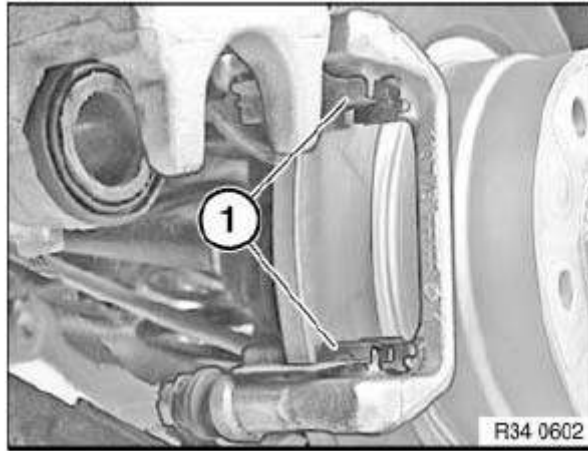


Fig. 140: Identifying Lining Springs

Courtesy of BMW OF NORTH AMERICA, INC.

34 21 745 REMOVING AND INSTALLING OR REPLACING REAR LEFT OR RIGHT BRAKE CALIPER (TRW)

Necessary preliminary tasks:

- Remove **WHEEL** .
- Read and comply with **GENERAL INFORMATION**.
- Switch off ignition.

After completing repair work: **BLEED BRAKE SYSTEM**.

Press brake 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.

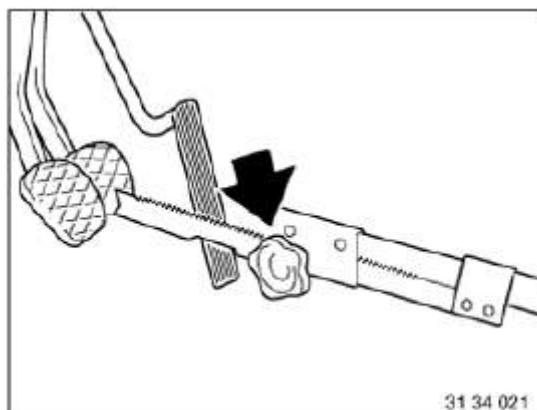


Fig. 141: Pressing Brake Pedal Down To Floor
Courtesy of BMW OF NORTH AMERICA, INC.

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 note:

Tightening torque [34 32 1AZ](#) .

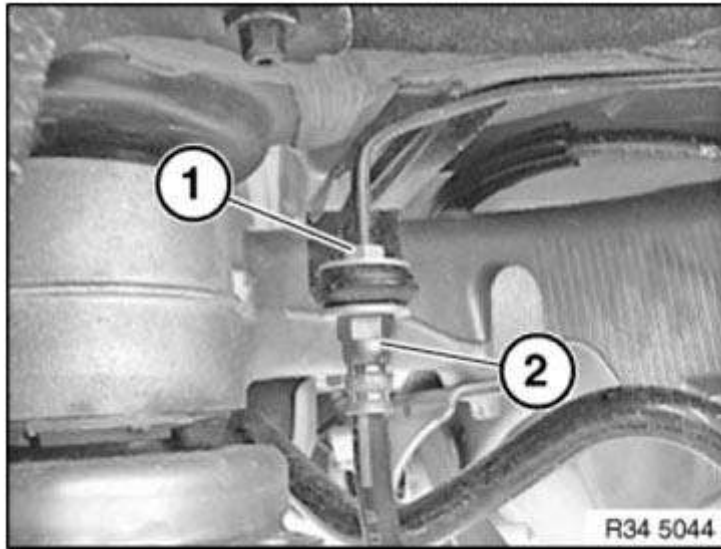


Fig. 142: Identifying Brake Line And Square Head
Courtesy of BMW OF NORTH AMERICA, INC.

Detach brake hose (1) from brake caliper.

Installation note:

Tightening torque [34 32 3AZ](#) .

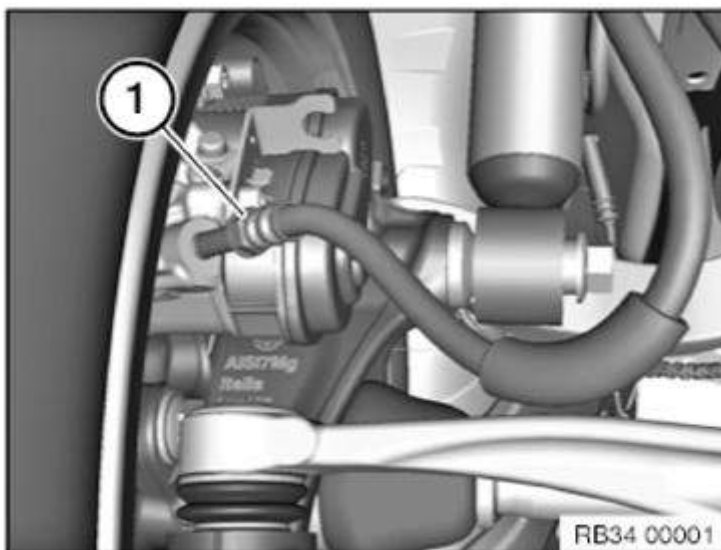


Fig. 143: Identifying Brake Hose At Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Never twist brake hose when installing it and avoid all contact with components attached

rigidly to the body.

NOTE: **First tighten brake hose on brake caliper.
Insert brake hose in bracket and screw onto brake pipe.**

Disconnect plug connection on parking brake actuator.

IMPORTANT: Switch off ignition at least 30 s before disconnecting the plug connection!

Unscrew guide bolts (1).

If necessary, grip at hexagon head (2).

Remove brake caliper (3).

Installation note:

Replace guide bolts.

Tightening torque **34 21 5AZ** .

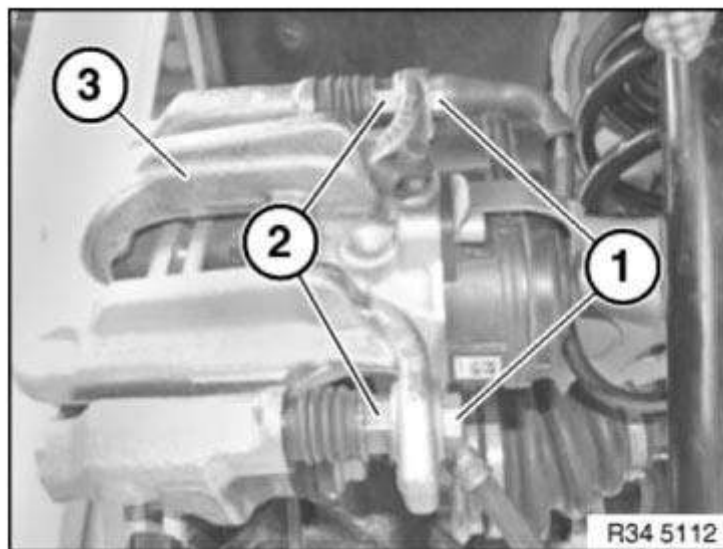


Fig. 144: Brake Caliper, Hexagon Head And Guide Bolts

Courtesy of BMW OF NORTH AMERICA, INC.

The EMF actuator must be remounted if the brake caliper is replaced.

After installation, observe the following: switch on ignition and, using parking brake operating element, open parking brake once, close once and open again.

34 21 169 REMOVING AND INSTALLING/RENEWING A BRAKE ANCHOR PLATE/BRAKE GUARD PLATE AT REAR

Necessary preliminary tasks:

- Remove wheel bearing.

Unscrew bolts (1) and remove brake guard plate (2).

Installation note:

Replace screws.

Tightening torque [34 21 3AZ](#).

Remove retaining plate (2) in direction of arrow.

Feed out brake guard plate (3) over wheel hub.

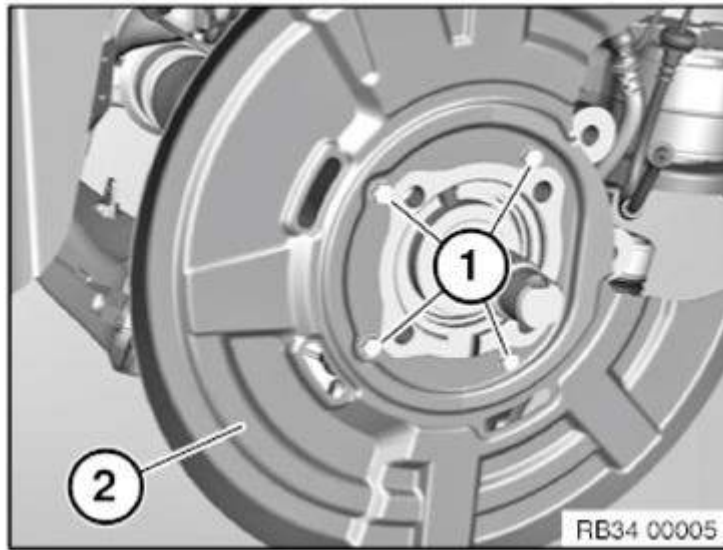


Fig. 145: Identifying Brake Guard Plate And Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

34 00 XXX REMOVING AND INSTALLING/REPLACING VENT VALVE FOR BRAKE CALIPER

Necessary preliminary work:

- Raise vehicle.

Removal:

Press brake 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.

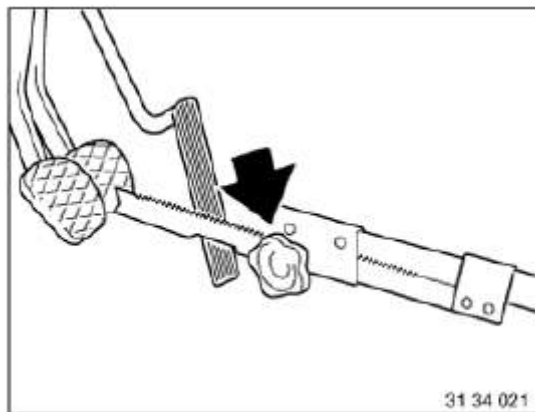


Fig. 146: Pressing Brake Pedal
Courtesy of BMW OF NORTH AMERICA, INC.

Remove dust cap (1).

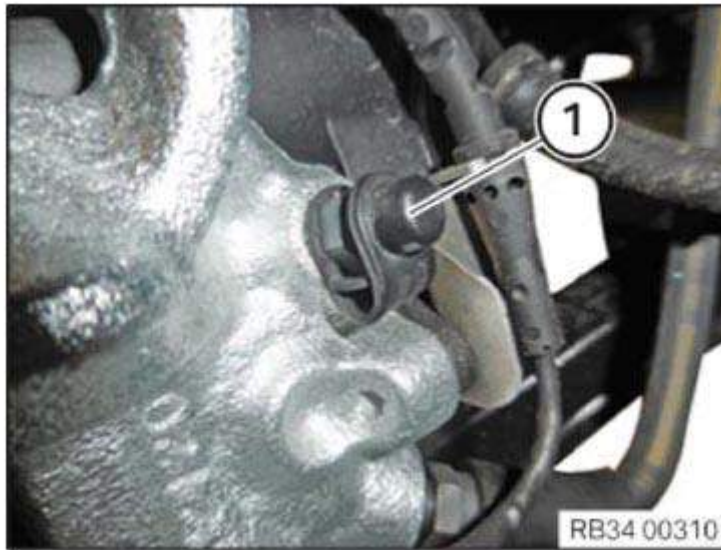


Fig. 147: Identifying Dust Cap

Courtesy of BMW OF NORTH AMERICA, INC.

Remove vent valve (1).

IMPORTANT: Collect escaping brake fluid in a suitable collecting vessel.

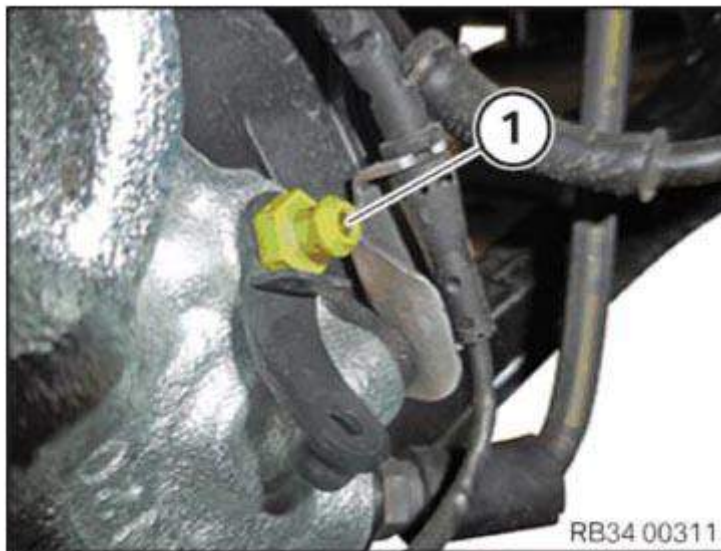


Fig. 148: Identifying Vent Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

IMPORTANT: The bore hole must be free of contamination!

Install vent valve (1).

Tightening torque: **34 00 1AZ**

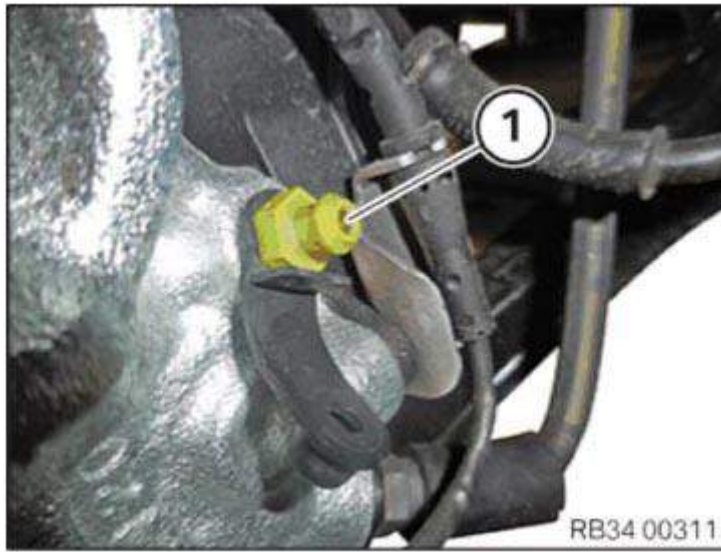


Fig. 149: Identifying Vent Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Mount dust cap (1).

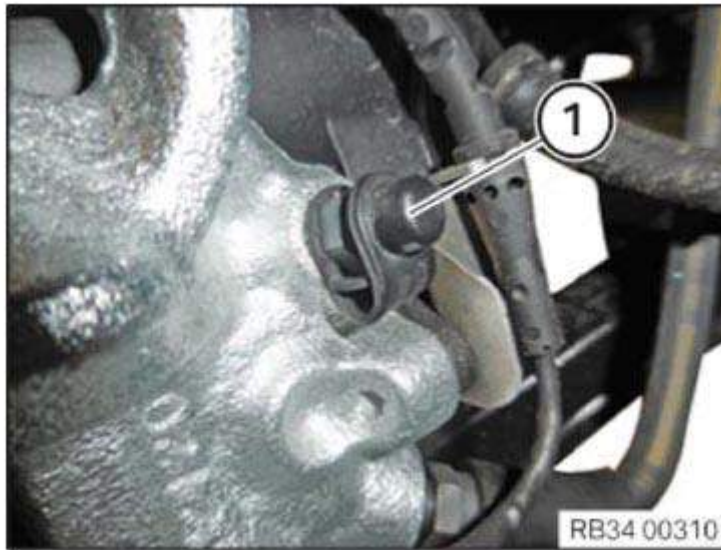


Fig. 150: Identifying Dust Cap

Courtesy of BMW OF NORTH AMERICA, INC.

Remove pedal support.

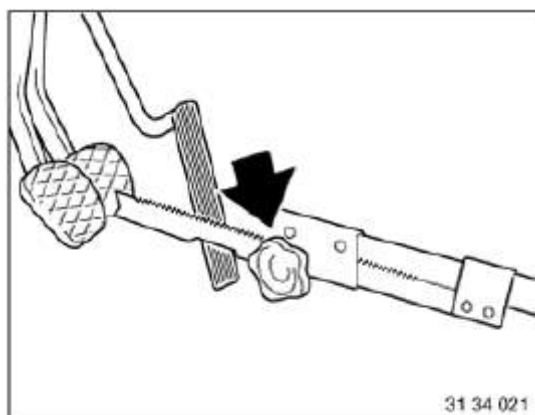


Fig. 151: Pressing Brake Pedal Down To Floor

Courtesy of BMW OF NORTH AMERICA, INC.

Required follow-up work:

- Bleed brake system.

34 21 295 REPLACING REAR LEFT OR RIGHT DUST BOOT ON BRAKE CALIPER

Necessary preliminary tasks:

- Remove rear **BRAKE PADS**.

NOTE: Dust boot can be replaced without dismantling the brake caliper and without removing the piston.
Use original BMW repair kit.
When the repair work is complete, please pay attention to the following:

- Check brake pads and brake discs for wear.
- Perform brake test on test stand
- Perform test drive.

Remove dust boot (1) from brake caliper (2) in direction of arrow with a suitable tool.

IMPORTANT: Dust boot must not be re-used!

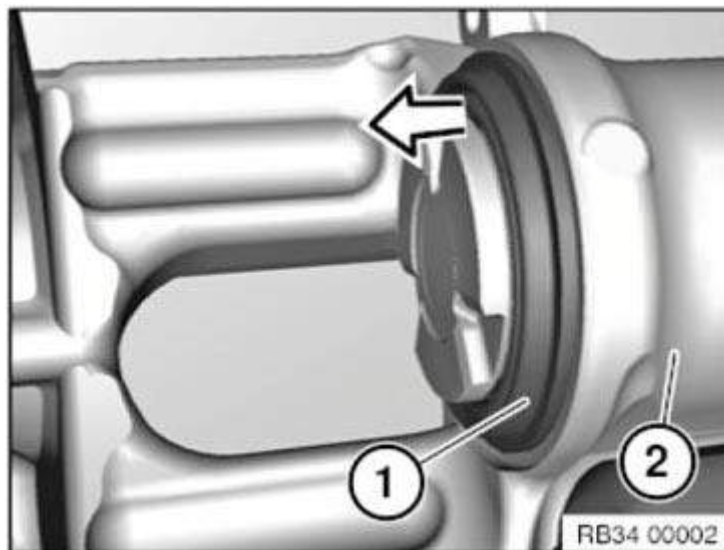


Fig. 152: Removing Dust Boot From Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

Clean contact surface of dust boot at brake caliper housing (1) and piston groove (2) with a lint-free cloth.

Carefully check brake caliper housing, cylinder bore and brake piston for damage and corrosion!

IMPORTANT: Corroded or damaged components must be replaced!

The contact surface on the brake caliper housing must be dry and free of grease before installing the dust boot!

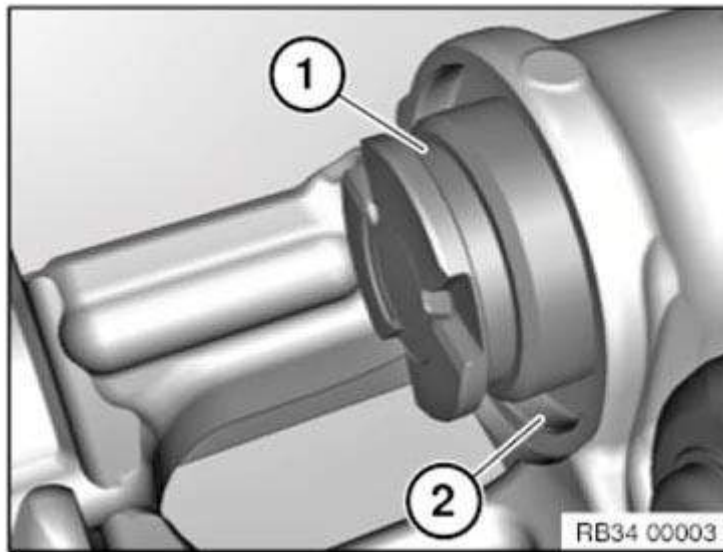


Fig. 153: Identifying Brake Caliper Housing And Piston Groove

Courtesy of BMW OF NORTH AMERICA, INC.

Pull sealing lip (1) of dust boot over the brake piston until the dust boot (2) is properly seated in the brake piston groove.

Put dust boot (2) uniformly onto contact surface of brake caliper housing and uniformly push in.

IMPORTANT: The dust boot must be correctly lying against the entire circumference of the brake caliper housing and the brake piston groove.

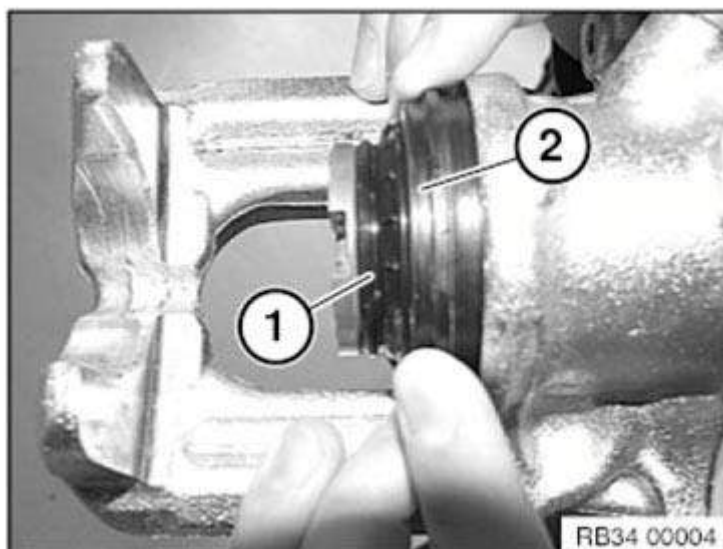
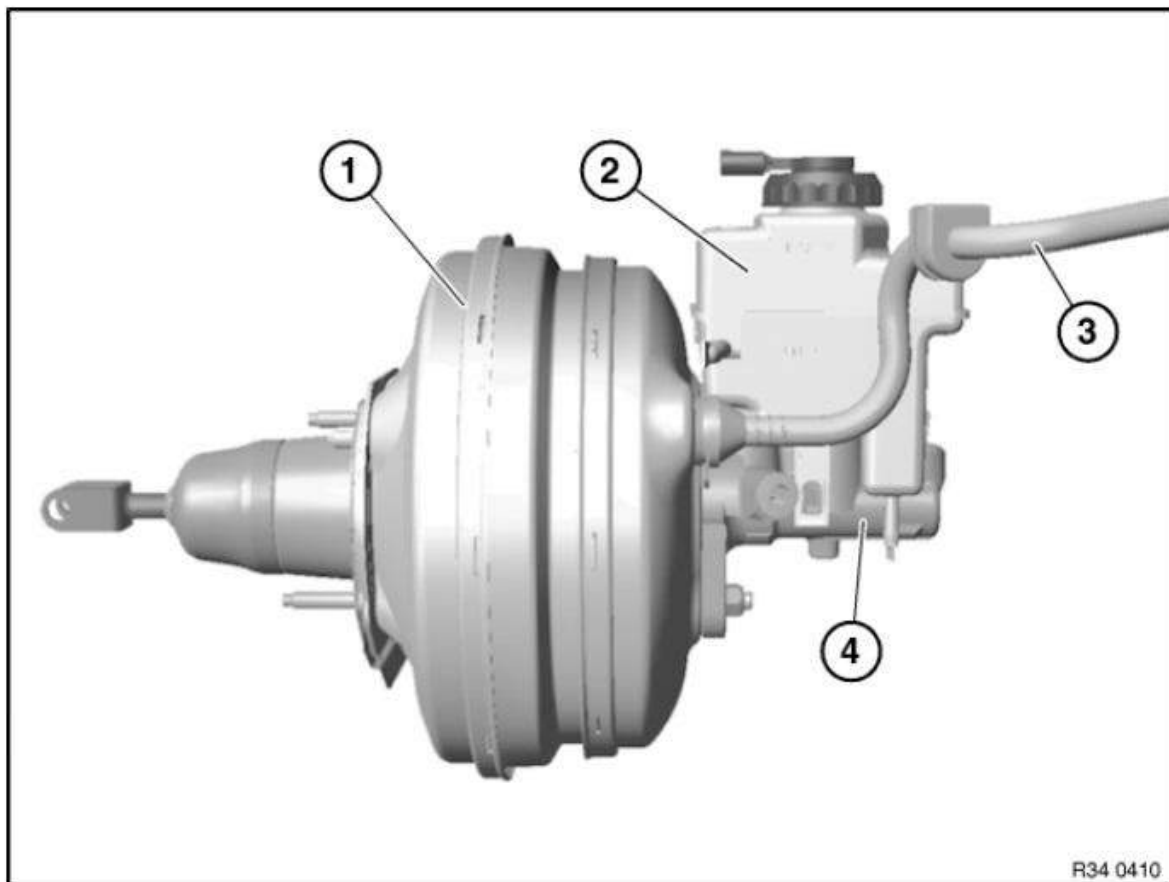


Fig. 154: Pulling Sealing Lip Of Dust Boot Over Brake Piston

Courtesy of BMW OF NORTH AMERICA, INC.

MASTER BRAKE CYLINDER

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



- | | |
|---------------------------------|---|
| 1 Brake booster | 2 Expansion tank |
| 3 Vacuum hose | 4 Brake master cylinder |

Fig. 155: Overview Of Brake Master Cylinder/Brake Booster
 Courtesy of BMW OF NORTH AMERICA, INC.

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

Necessary preliminary tasks:

- Read and comply with [GENERAL INFORMATION](#).
- Remove [COWL PANEL COVER](#) /service opening on left.

NOTE: Extract brake fluid out of expansion tank. Use a suction bottle used exclusively for drawing off brake fluid.
 Do not reuse drawn out brake fluid.

Disconnect plug connection (1).

Release retaining screw (2).

Detach expansion tank (3) by pulling vertically upward.

Installation note:

Tightening torque [34 31 3AZ](#) .

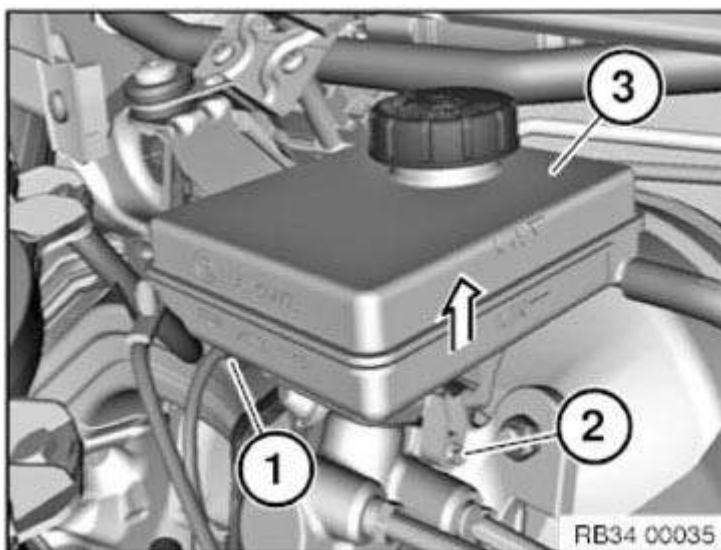


Fig. 156: Detaching Expansion Tank

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Check rubber plugs (1) in brake master cylinder for damage and replace if necessary.
Push the expansion tank vertically onto the master brake cylinder.

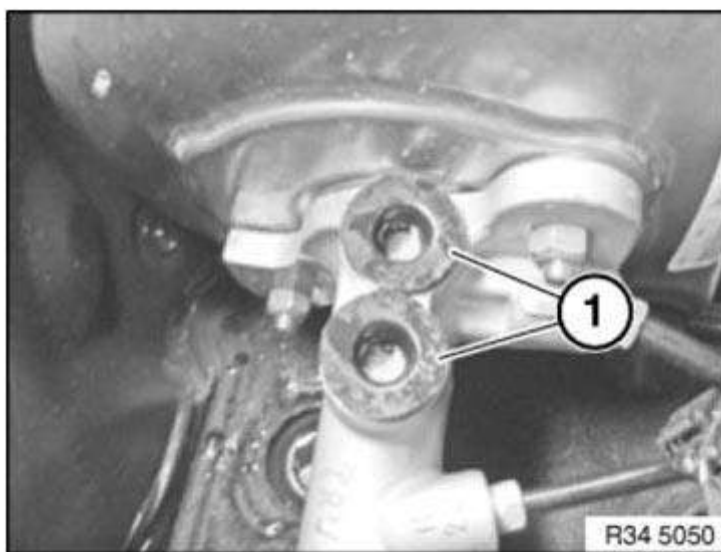


Fig. 157: Identifying Rubber Plugs In Brake Master Cylinder

Courtesy of BMW OF NORTH AMERICA, INC.

34 31 505 REMOVING AND INSTALLING/REPLACING TANDEM BRAKE MASTER CYLINDER FOR DSC

Necessary preliminary tasks:

- Read and comply with **GENERAL INFORMATION**.
- Remove **EXPANSION TANK**.
- **REMOVE** left partition wall for units compartment.

After completing repair work, bleed **BRAKE SYSTEM WITH DSC**.

IMPORTANT: Before beginning repair work, fully press the brake pedal several times to reduce the vacuum pressure in the brake servo.

Undo pipes (1) and close off.

Installation note:

Tightening torque [34 32 1AZ](#) .

Undo nuts (2) and pull tandem brake master cylinder (3) out of the brake servo.

Installation note:

Replace self-locking nuts.

Tightening torque [34 31 1AZ](#) .

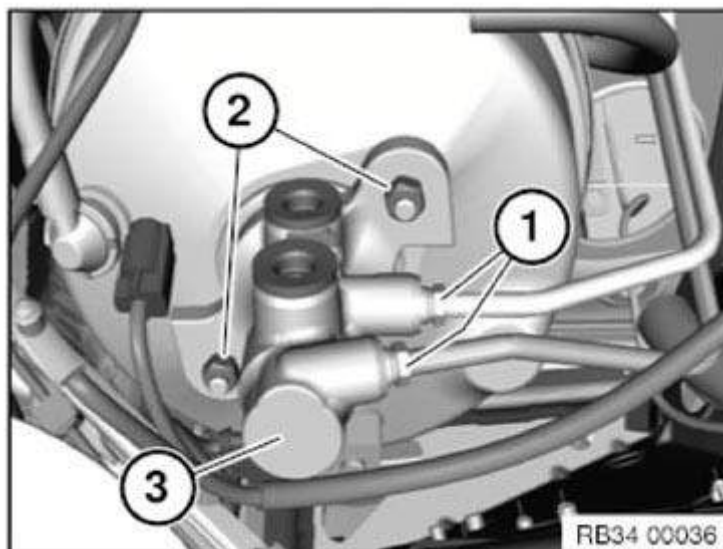


Fig. 158: Identifying Tandem Brake Master Cylinder

Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Replace sealing ring (1).

When inserting the tandem brake master cylinder, the brake servo, make sure that the pushrod of the brake servo and the tandem brake master cylinder are exactly aligned with each other.

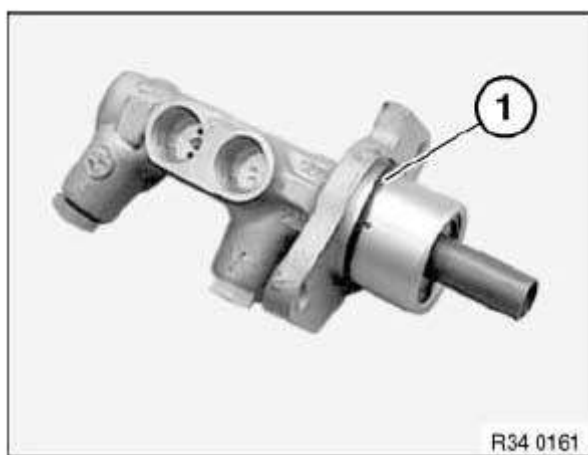
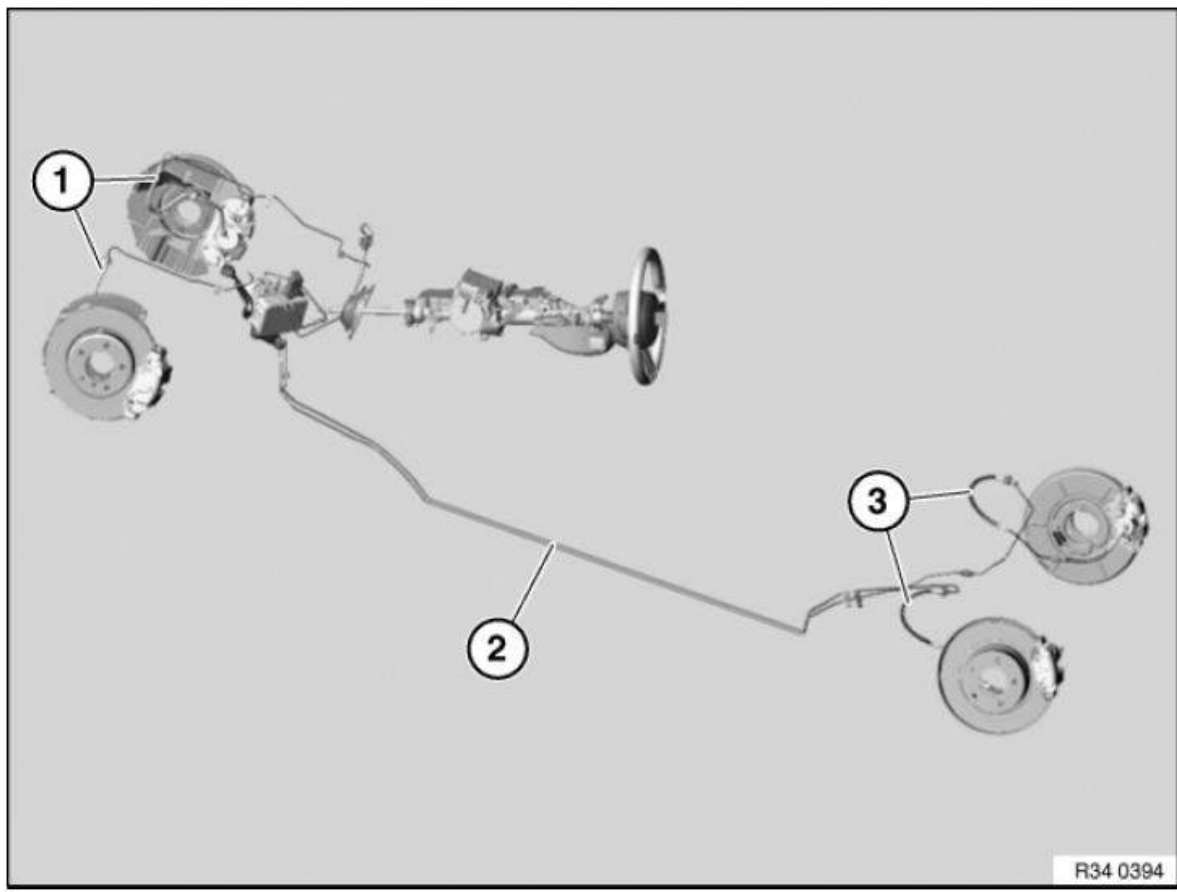


Fig. 159: Identifying Sealing Ring

Courtesy of BMW OF NORTH AMERICA, INC.

BRAKE LINES

34 32... OVERVIEW OF BRAKE LINES



- 1 [Brake hose, front](#) 2 Brake pipes
3 [Brake hose, rear](#)

Fig. 160: Overview Of Brake Lines

Courtesy of BMW OF NORTH AMERICA, INC.

34 32 881 REPLACING FRONT LEFT OR RIGHT BRAKE HOSE

Necessary preliminary tasks:

- Remove [WHEEL](#) .
- Read and comply with [GENERAL INFORMATION](#).

After completing repair work: [BLEED BRAKING SYSTEM](#).

Press brake 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.

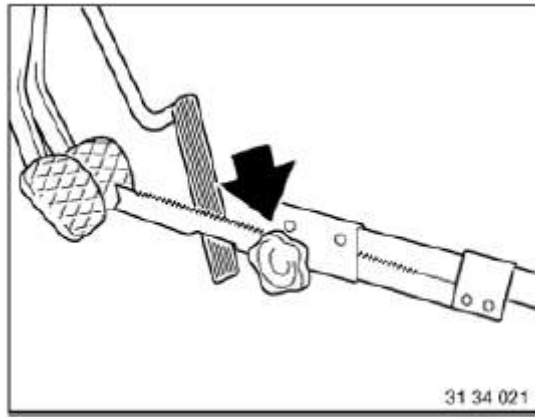


Fig. 161: Pressing Brake Pedal

Courtesy of BMW OF NORTH AMERICA, INC.

Detach brake hose (1) from brake caliper.

If necessary, grip at knurling (2).

Installation note:

Tightening torque [34 32 2AZ](#).

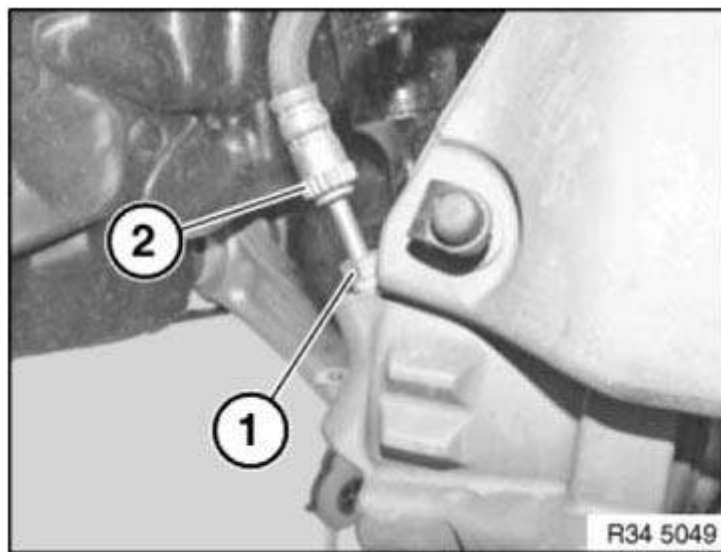


Fig. 162: Identifying Retaining Screw And Knurling

Courtesy of BMW OF NORTH AMERICA, INC.

Release retaining screw (1). If necessary, grip at square head.

Installation note:

Position guides (3) correctly in holder (4).

Tightening torque [34 32 1AZ](#).

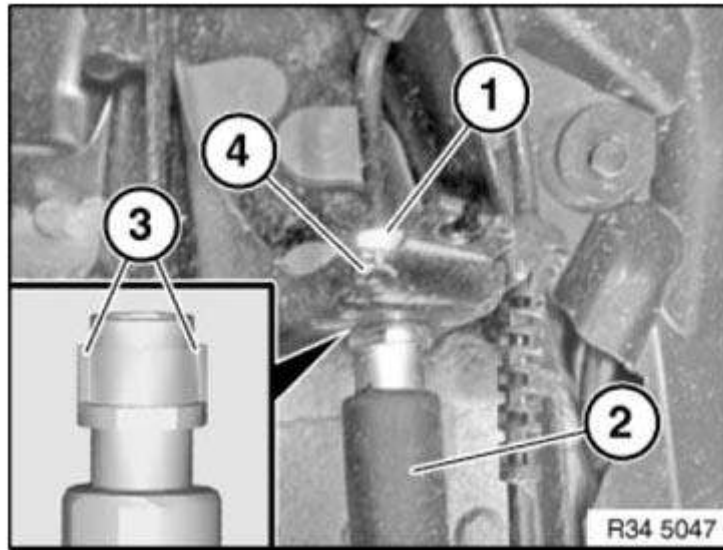


Fig. 163: Identifying Guides In Holder And Retaining Screw

Courtesy of BMW OF NORTH AMERICA, INC.

Release brake hose from holders (1).

Unscrew holder (2).

Observe assembly sequence:

1. Fasten brake hose in holders (1).
2. Move wheels into straight-ahead position.
3. Fasten brake hose at pipe/brake hose connection.
4. Fasten brake hose at brake caliper.

IMPORTANT:

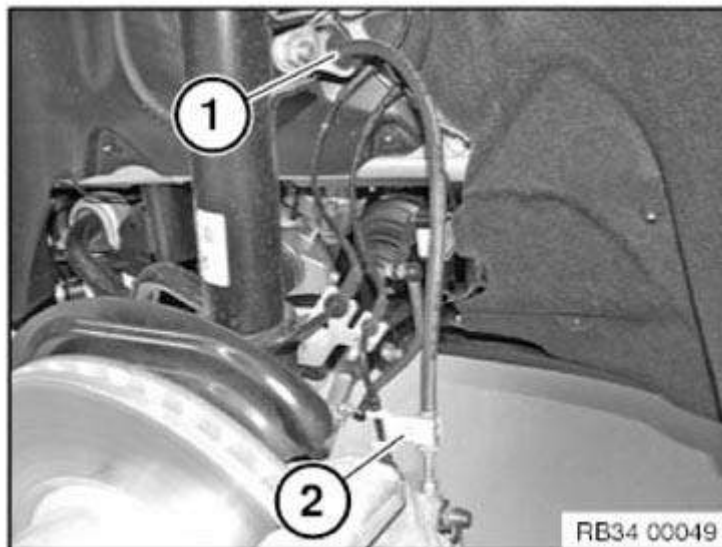


Fig. 164: Fastening Brake Hose In Holders

Courtesy of BMW OF NORTH AMERICA, INC.

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 HOSE

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

After completing repair work: BLEED BRAKING SYSTEM

Press brake 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.

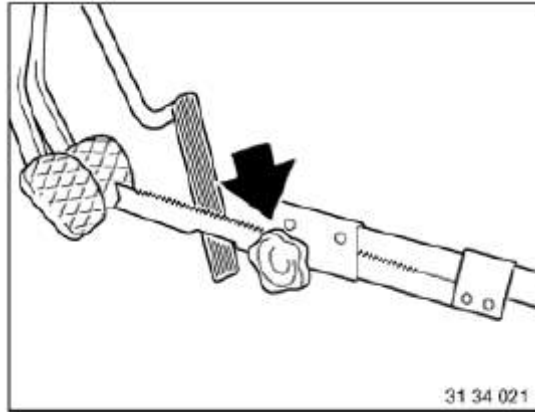


Fig. 165: Pressing Brake Pedal Down To Floor

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 note:

Tightening torque 34 32 1AZ .

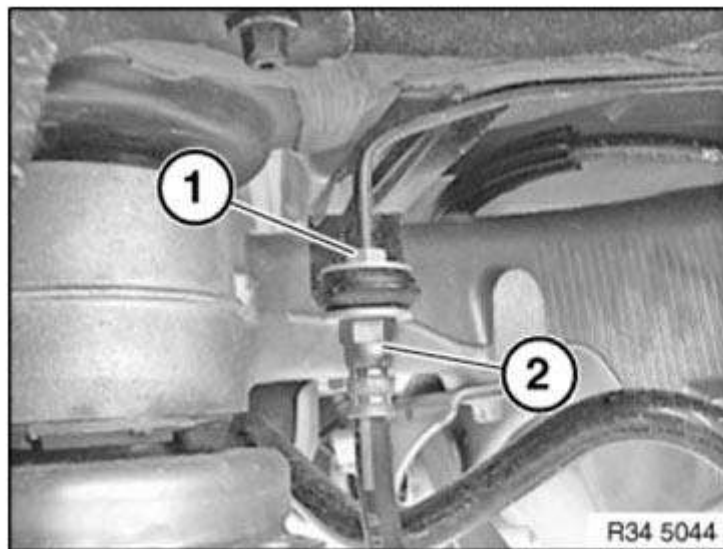


Fig. 166: Identifying Brake Line And Square Head

Courtesy of BMW OF NORTH AMERICA, INC.

Detach brake hose (1) from brake caliper.

Installation note:

First tighten brake hose on brake caliper.

Tightening torque [34 32 3AZ](#) .

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

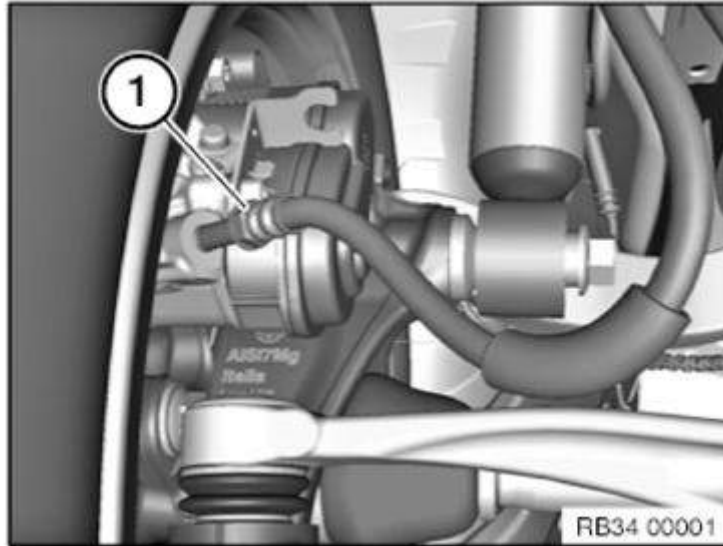


Fig. 167: Identifying Brake Hose At Brake Caliper
Courtesy of BMW OF NORTH AMERICA, INC.

BRAKE BOOSTER

34 33 280 REMOVING AND INSTALLING BRAKE BOOSTER VACUUM PRESSURE SENSOR

Detach service opening (1).

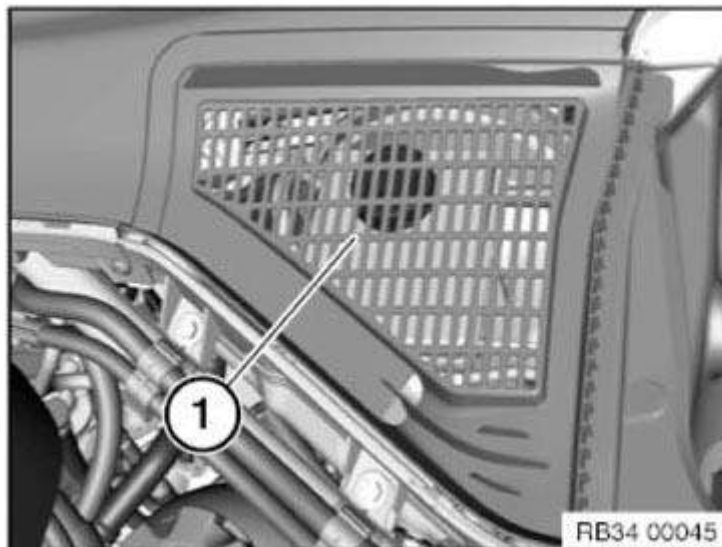


Fig. 168: Identifying Brake Booster Service Opening
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) at vacuum sensor.

Carefully remove vacuum sensor (2) from brake booster in direction of arrow.

Installation note:

Check seal in brake booster and replace if necessary.

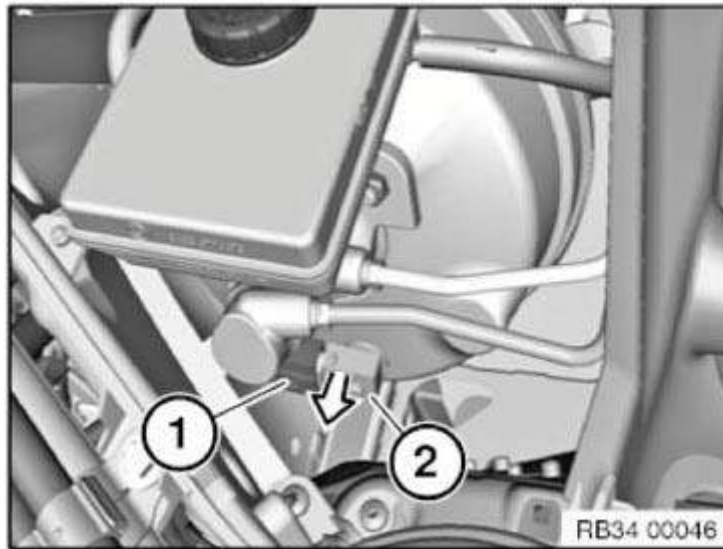


Fig. 169: Removing Vacuum Sensor From Brake Booster

Courtesy of BMW OF NORTH AMERICA, INC.

34 33 505 REMOVING AND INSTALLING OR REPLACING BRAKE BOOSTER

Necessary preliminary work:

- Read and comply with **GENERAL INFORMATION**.
- Remove left **footwell trim** . See **51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY (ECE ONLY)** or **51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY (US ONLY)** .
- Remove **BRAKE MASTER CYLINDER**.
- Remove **WIPER MOUNTING BRACKET** .

Detach retaining clip (1) on brake pedal.

Pull out locking pin.

Unscrew nuts (2).

Installation note:

Replace self-locking nuts.

Tightening torque **35 11 1AZ** .

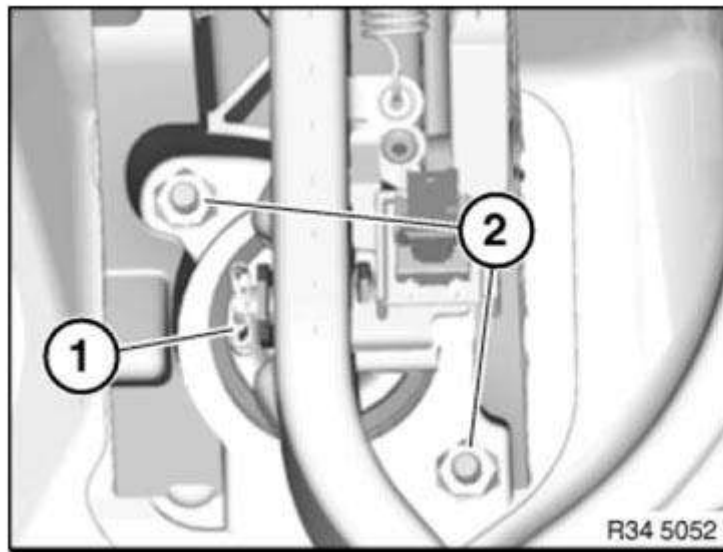


Fig. 170: Identifying Retaining Clip On Brake Pedal With Nuts
 Courtesy of BMW OF NORTH AMERICA, INC.

Release brake lines (1) from holder on bulkhead.

If necessary disconnect plug connection of vacuum sensor.

Pull vacuum line (2) out of brake booster.

Installation note:

Check gasket, replace if necessary.

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

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

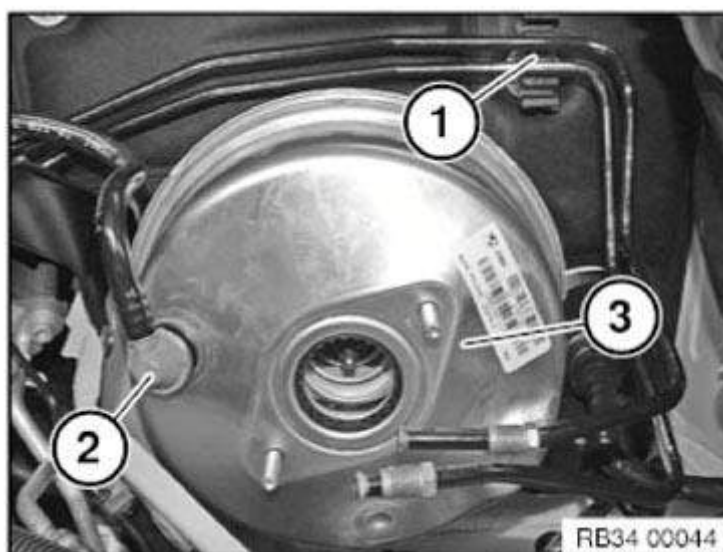


Fig. 171: Releasing Brake Lines From Holder On Bulkhead
 Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Make sure seal (2) is present and correctly seated.

The protective film on the connection of the vacuum line must be removed when replacing the brake booster!



Fig. 172: Identifying Protective Film On Connection Of Vacuum Line

Courtesy of BMW OF NORTH AMERICA, INC.

34 33 071 REPLACING VACUUM HOSE FOR BRAKE BOOSTER (N63)

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

IMPORTANT: Vacuum hose and non-return valve are welded together and are replaced together as a single unit.

Necessary preliminary tasks:

- Read and comply with **GENERAL INFORMATION**.
- Remove partition wall, units compartment

Pull off partition wall seal upper part (1) in direction of arrow.

Remove non-return valve (2) from brake servo.

Installation note:

Check gasket for non-return valve and replace if necessary.

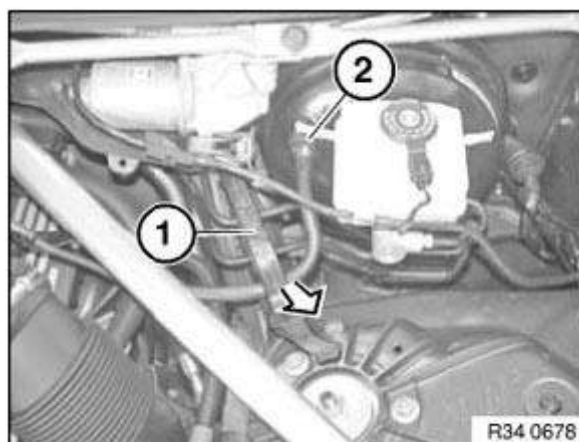


Fig. 173: Removing Non-Return Valve From Brake Servo
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip vacuum line (1) from line clip (2).

Unlock snap fastener (3) and detach vacuum line.

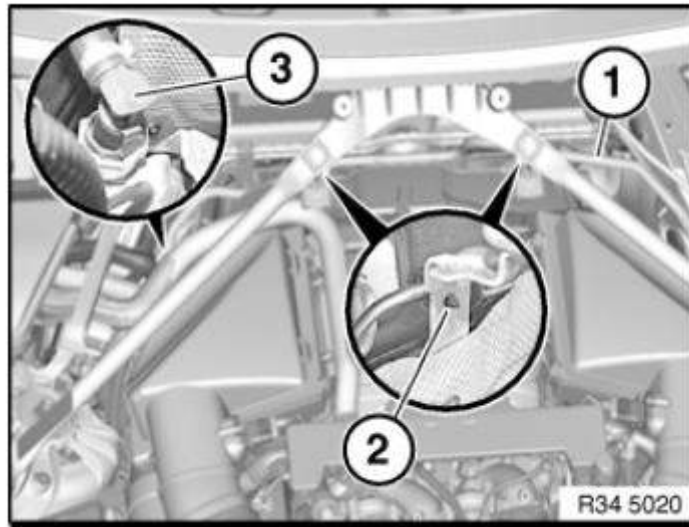


Fig. 174: Identifying Vacuum Line, Line Clip And Snap Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

34 33 071 REPLACING VACUUM HOSE FOR BRAKE BOOSTER (DIESEL FUEL)

Necessary preliminary tasks:

- Read and comply with **GENERAL INFORMATION**.
- Remove left **TRAILING LINK**.
- **REMOVE** left partition wall for units compartment.

IMPORTANT: Before beginning repair work, fully press the brake pedal several times to reduce the vacuum pressure in the brake servo.

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

Installation note:

Check seal in brake booster and replace if necessary.

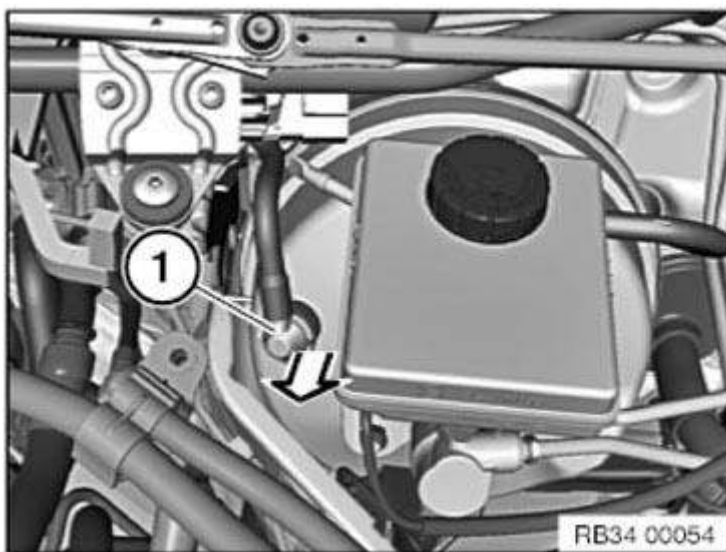


Fig. 175: Pulling Non-Return Valve Out Of Brake Booster
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect snap fastener (1) and feed out vacuum line (2).

Installation note:

Make sure that snap fastener (1) is correctly engaged.

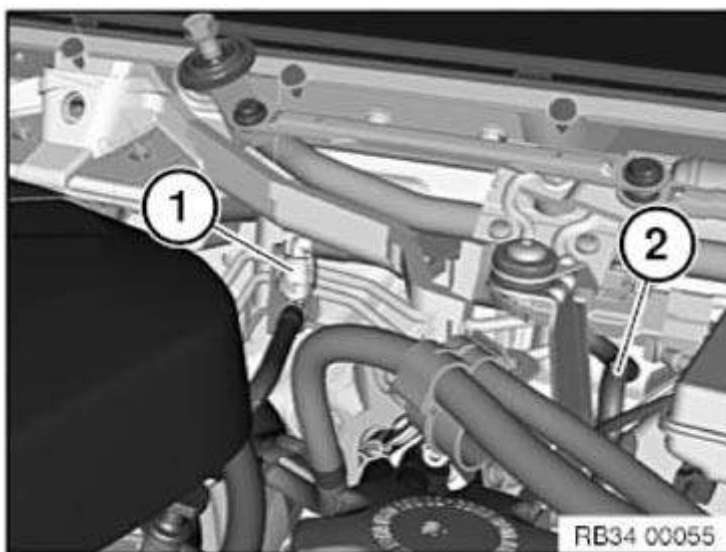


Fig. 176: Identifying Snap Fastener And Vacuum Line
Courtesy of BMW OF NORTH AMERICA, INC.

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

Necessary preliminary tasks:

- Read and comply with **GENERAL INFORMATION**.
- Remove left **TRAILING LINK**.
- **REMOVE** left partition wall for units compartment.

IMPORTANT: Before beginning repair work, fully press the brake pedal several times to reduce the vacuum pressure in the brake servo.

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

Installation note:

Check seal in brake booster and replace if necessary.

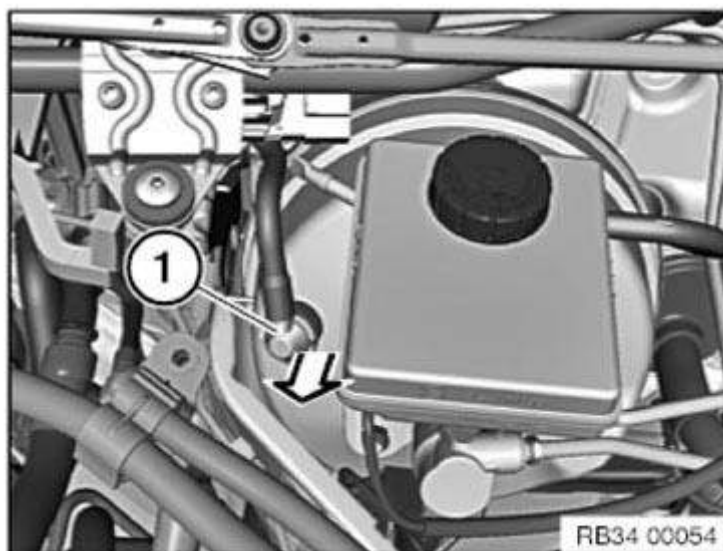


Fig. 177: Pulling Non-Return Valve Out Of Brake Booster

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect snap fastener (1) and feed out vacuum line (2).

Installation note:

Make sure that snap fastener (1) is correctly engaged.

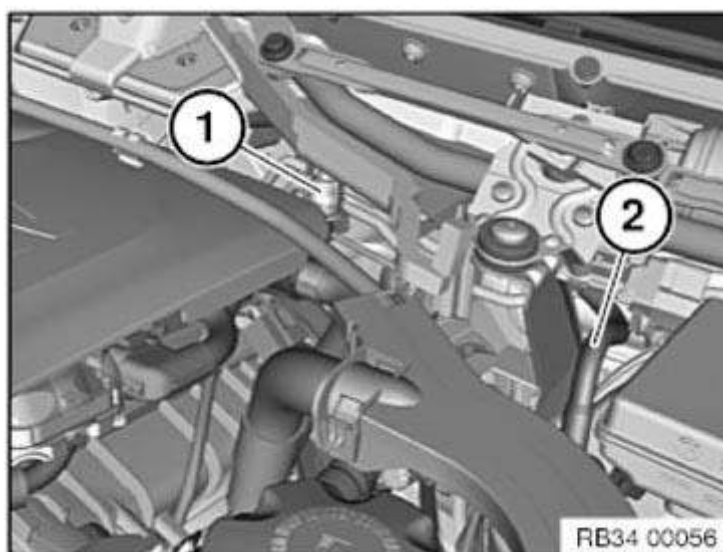


Fig. 178: Identifying Snap Fastener And Vacuum Line

Courtesy of BMW OF NORTH AMERICA, INC.

ELECTRICAL COMPONENTS/WEAR INDICATOR

34 35 001 REPLACING A BRAKE PAD SENSOR (FRONT)

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 an already ground brake pad wear sensor has to be replaced although the minimum brake pad thickness has not yet been reached, it is necessary to file down the new sliding contact with a file to the same length as the ground sliding contact.

Necessary preliminary work:

- Remove front left **WHEEL** .

Unclip line from holder (1).

Open housing cover.

Disconnect plug connection (2).

Installation note:

Make sure the plug connections snaps in correctly and the line is fitted correctly in the holders.

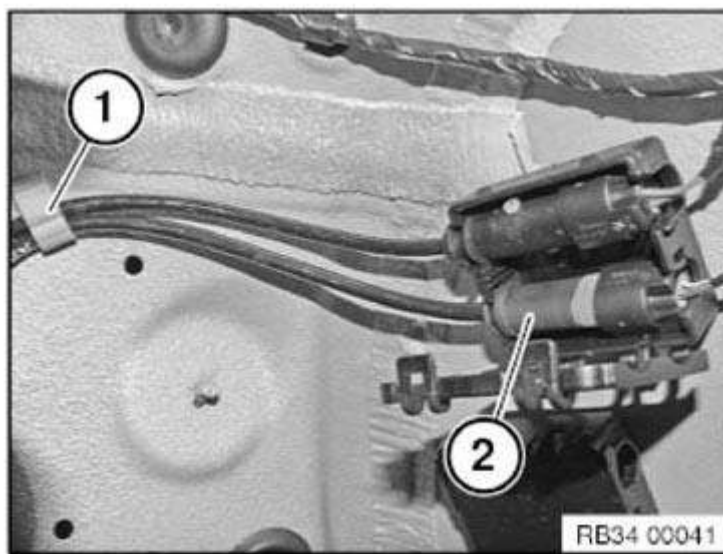


Fig. 179: Removing Line From Holder

Courtesy of BMW OF NORTH AMERICA, INC.

Unclip line from holders (1).

Installation note:

Ensure proper locking of the holders and proper seating of the line in the holders.

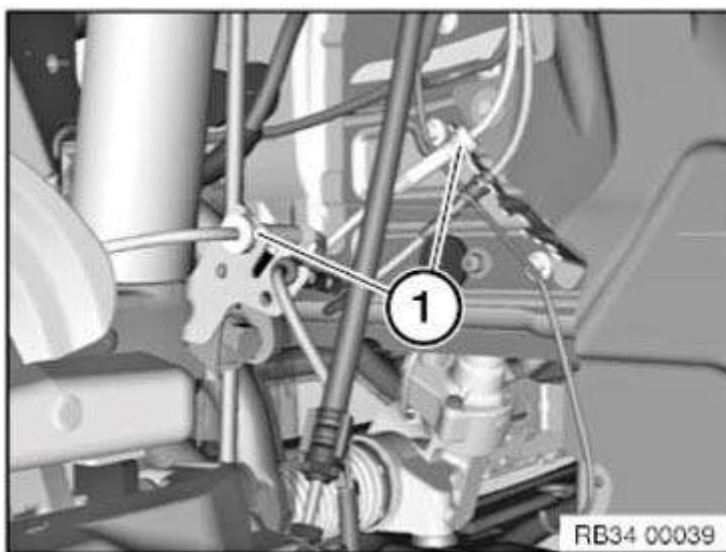


Fig. 180: Identifying Brake Line And Holders
Courtesy of BMW OF NORTH AMERICA, INC.

Disengage line from brake pad wear sensor from holder (1).

Pull brake pad wear sensor (2) in direction of arrow out of brake pad.

Installation note:

Make sure brake pad wear sensor (2) is correctly seated in brake pad and holder (1).

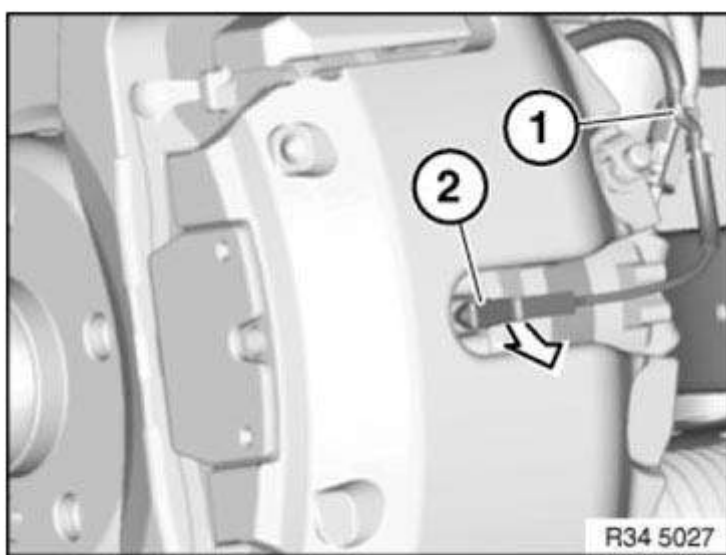


Fig. 181: Disengaging Line From Brake Pad Wear Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

34 35 001 REPLACING A BRAKE PAD SENSOR (REAR)

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 an already ground brake pad wear sensor has to be replaced although the minimum brake pad thickness has not yet been reached, it is necessary to file down the new sliding contact with a file to the same length as the ground sliding contact.

Necessary preliminary work:

- Remove rear right **WHEEL** .

Open housing cover (1).

Disconnect plug connection for pulse generator.

Unclip line from holders (2).

Installation note:

Ensure proper locking of plug connector and proper seating of rubber grommets.

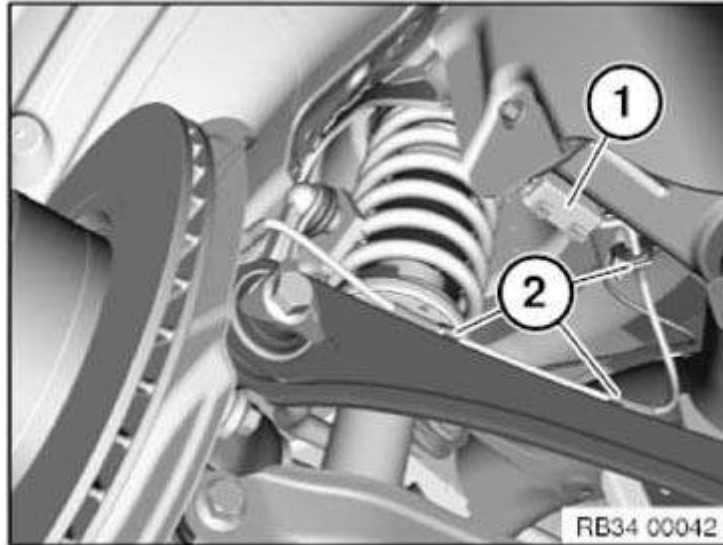


Fig. 182: Identifying Housing Cover And Line Holders

Courtesy of BMW OF NORTH AMERICA, INC.

Disengage line from brake pad wear sensor from holders (1).

Pull brake pad wear sensor (2) in direction of arrow out of brake pad.

Installation note:

Make sure brake pad wear sensor (2) is correctly seated in brake pad and holder (1).

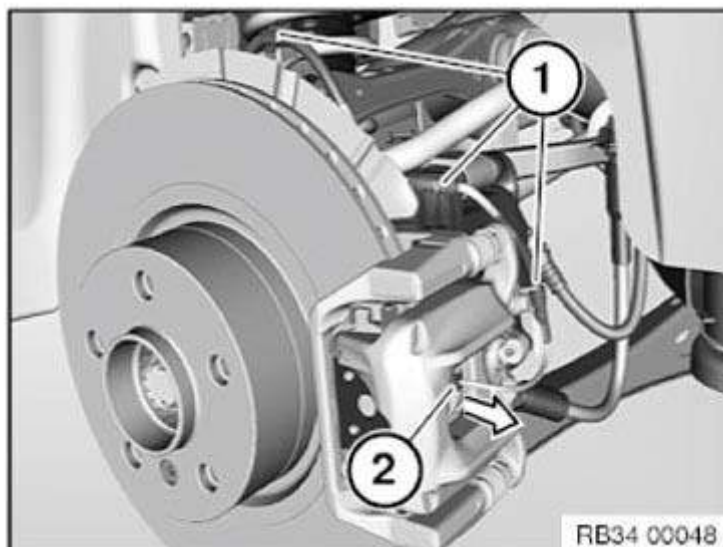


Fig. 183: Pulling Brake Pad Wear Sensor Out Of Brake Pad

Courtesy of BMW OF NORTH AMERICA, INC.

PARKING BRAKE

34 41... ELECTROMECHANICAL PARKING BRAKE - EMERGENCY RELEASE

Necessary preliminary tasks:

- Remove **EMF ACTUATORS** on left and right.

IMPORTANT: Secure vehicle against rolling, e.g. with chocks.

Using an 7 mm WAF hexagon socket wrench (1), turn back brake caliper spindle in clockwise direction.

Turn back until wheel can turn freely.

Do not turn the spindle to the end stop.

IMPORTANT: At the end stop a fault code is set which will cause the system to shut down!
If this is the case, clear the fault memory

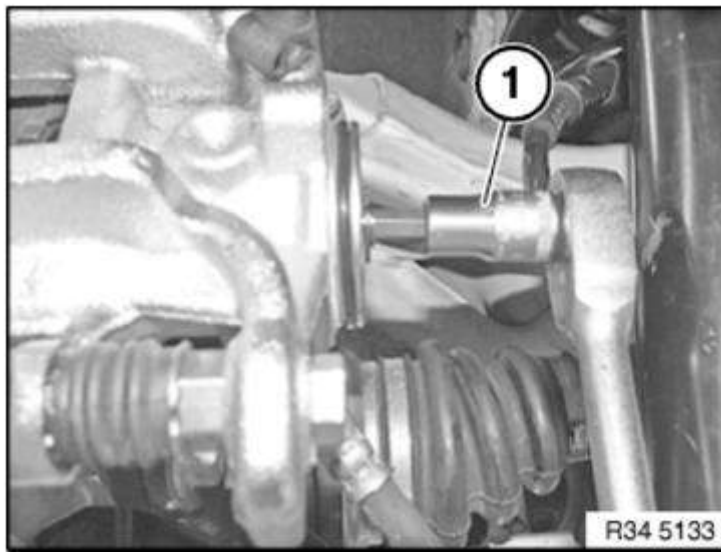


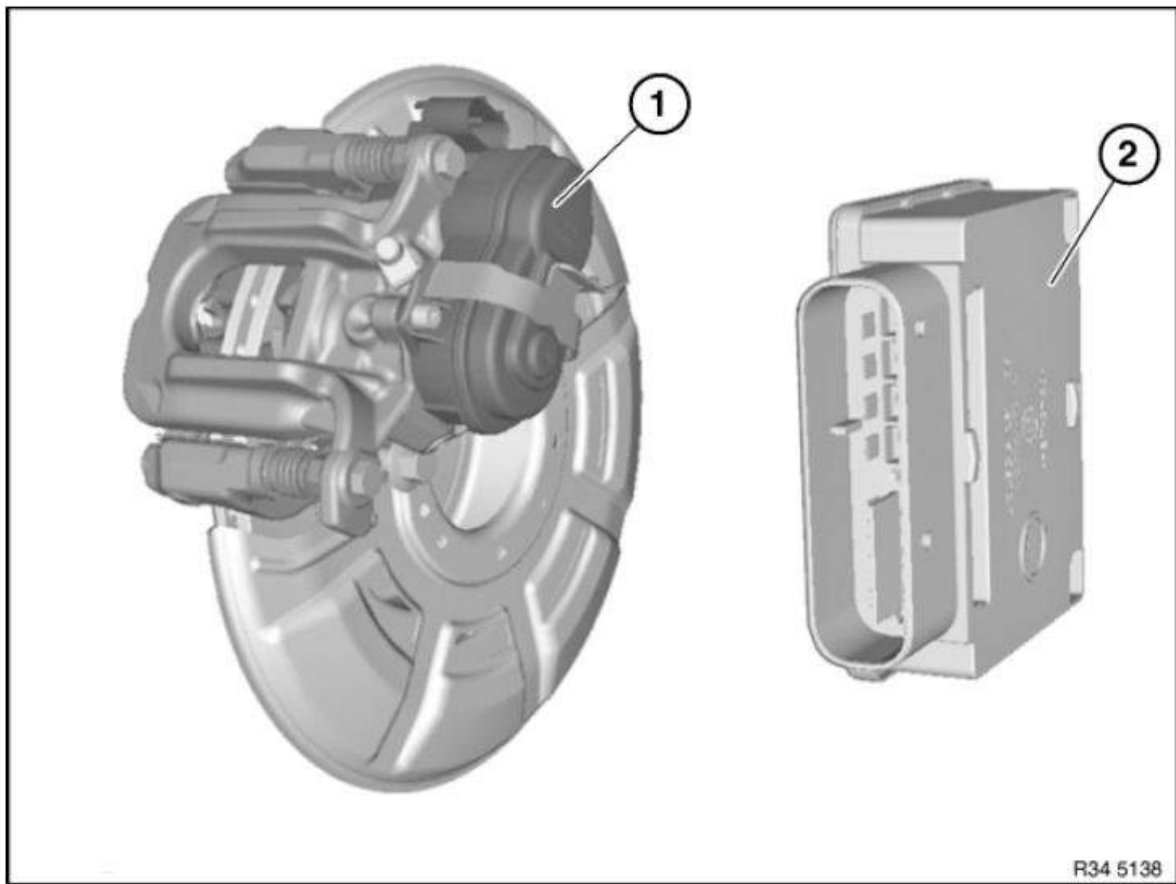
Fig. 184: Identifying WAF Hexagon Socket Wrench

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Start-up after open circuit:

1. Switch on ignition.
2. Press brake button with brake pedal pressed.
3. The indicator light in the instrument panel goes out as soon as the parking brake is released.

34 41... OVERVIEW OF PARKING BRAKE



- 1 [EMF actuator](#)
- 2 [Parking brake control unit](#)

Fig. 185: Overview Of Parking Brake

Courtesy of BMW OF NORTH AMERICA, INC.

34 41 295 REMOVING AND INSTALLING CONTROL UNIT FOR PARKING BRAKE

IMPORTANT: Read and comply with notes on protection against electrostatic damage (ESD protection).

Necessary preliminary work:

- Raise luggage compartment floor trim.

Disconnect plug connection (1) and remove control unit (2).

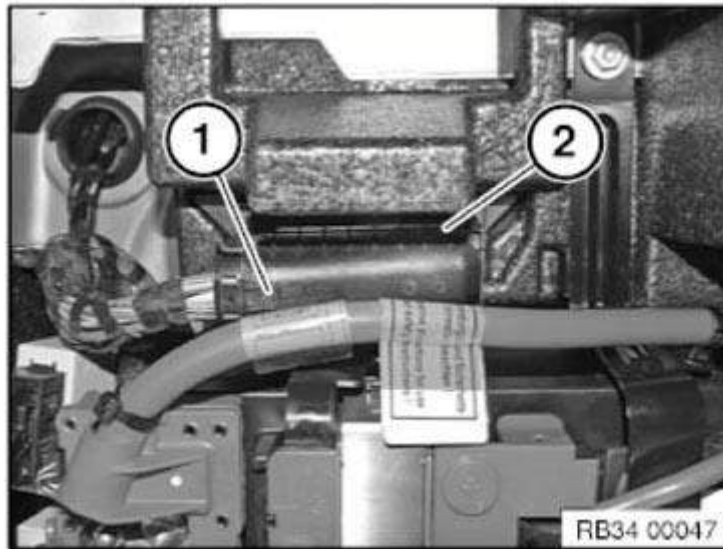


Fig. 186: Identifying Control Unit Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

- Carry out programming/encoding of control units.

34 52 162 REMOVING AND INSTALLING/REPLACING EMF ACTUATOR

Necessary preliminary tasks:

- Release parking brake.
- Switch off ignition.

IMPORTANT: Switch off ignition at least 30 s before disconnecting the plug connection!

After installation, observe the following: switch on ignition and, using parking brake operating element, open parking brake once, close once and open again.

Disconnect plug connection (1).

Disengage cable from cable clip.

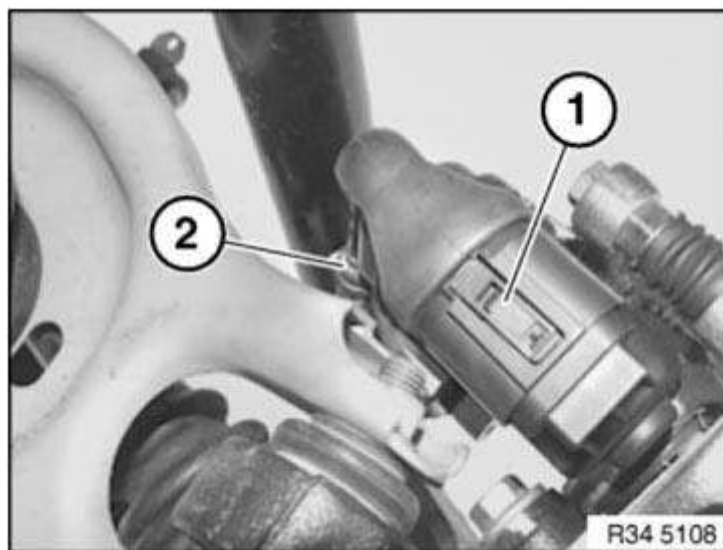


Fig. 187: Identifying EMF Actuator Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Installation note:

Replace screws

Anziehdrehmoment [34 41 5AZ](#) .

Take off holder (2).

Detach actuator drive (3) from brake caliper.

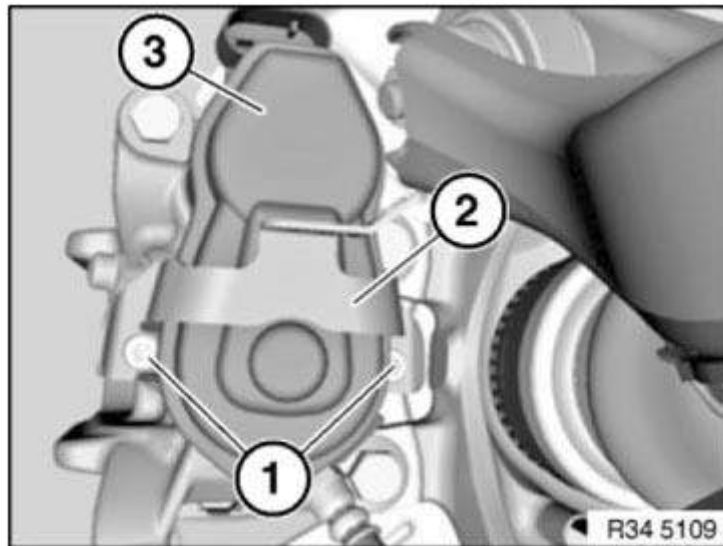


Fig. 188: Identifying Actuator Drive With Holder And Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Check sealing ring (1), replace if necessary.

Apply a light coating of brake fluid to sealing ring (1) before fitting.

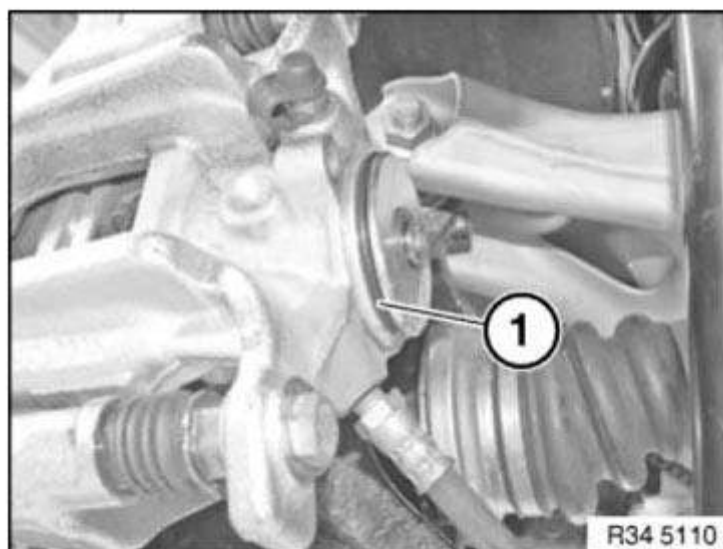


Fig. 189: Identifying Sealing Ring

Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Carefully fit actuator drive until teeth engage and actuator drive rests flush on brake caliper.

If necessary, turn actuator drive slightly until bore hole and thread are flush.

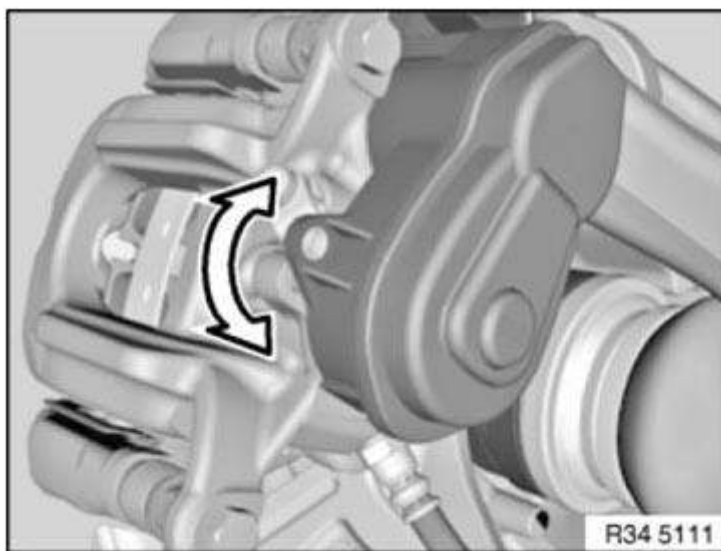


Fig. 190: Turning Actuator Drive

Courtesy of BMW OF NORTH AMERICA, INC.

MECHANICAL/HYDRAULIC COMPONENTS

34 33 280 REMOVING AND INSTALLING BRAKE BOOSTER VACUUM PRESSURE SENSOR

Detach service opening (1).

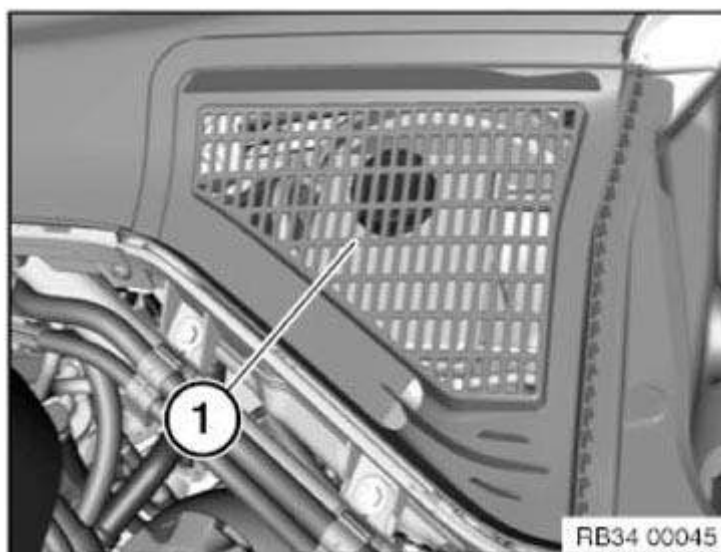


Fig. 191: Identifying Brake Booster Service Opening

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) at vacuum sensor.

Carefully remove vacuum sensor (2) from brake booster in direction of arrow.

Installation note:

Check seal in brake booster and replace if necessary.

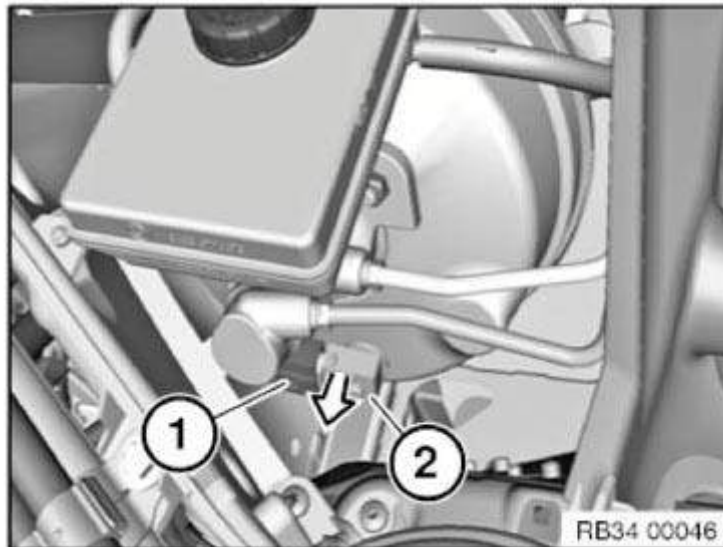


Fig. 192: Removing Vacuum Sensor From Brake Booster

Courtesy of BMW OF NORTH AMERICA, INC.

34 51 527 REMOVING AND INSTALLING/REPLACING DSC HYDRAULIC UNIT

Necessary preliminary tasks:

- Read and comply with **GENERAL INFORMATION**.

After completing repair work:

- **BLEED BRAKE SYSTEM**.

IMPORTANT: Do not mix up brake lines.
If necessary, mark before removal.
Brake lines must not be bent.
Close off connecting bores with seal plugs.

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

NOTE: The brake pedal 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.

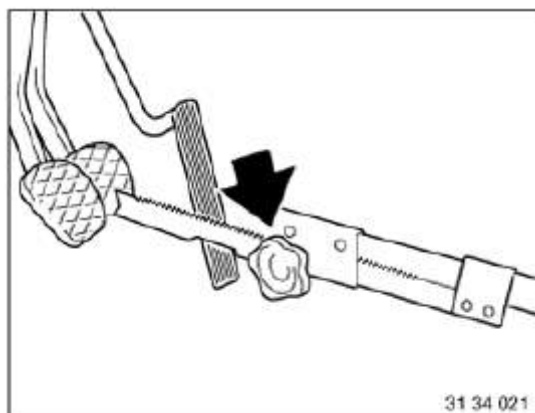


Fig. 193: Pressing Brake Pedal Down To Floor

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Unfasten brake lines (1).

Installation note:

Tightening torque [34 32 1AZ](#) .

Undo screw (3) and remove hydraulic unit upwards in direction of arrow

Installation note:

Tightening torque [34 51 4AZ](#) .

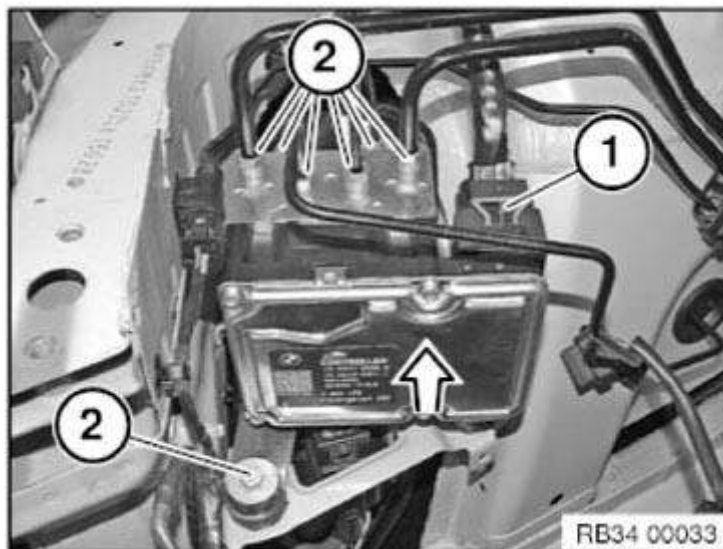


Fig. 194: Removing Hydraulic Unit

Courtesy of BMW OF NORTH AMERICA, INC.

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

Installation note:

Tightening torque [34 51 4AZ](#) .

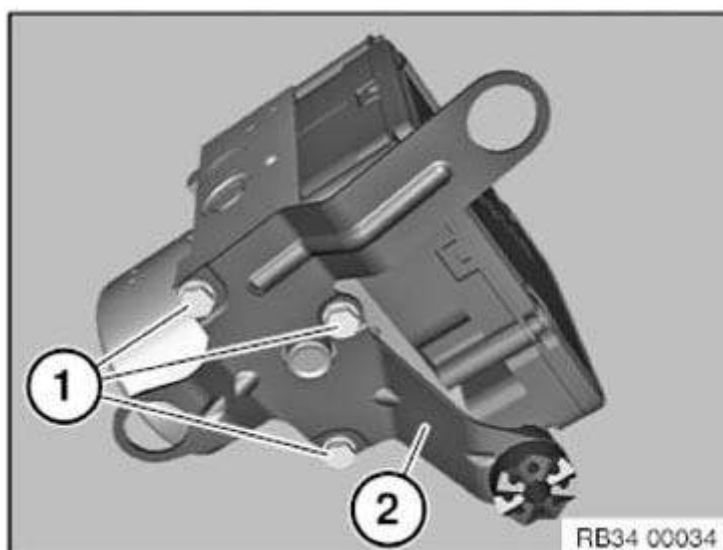


Fig. 195: Identifying Holder With Screws

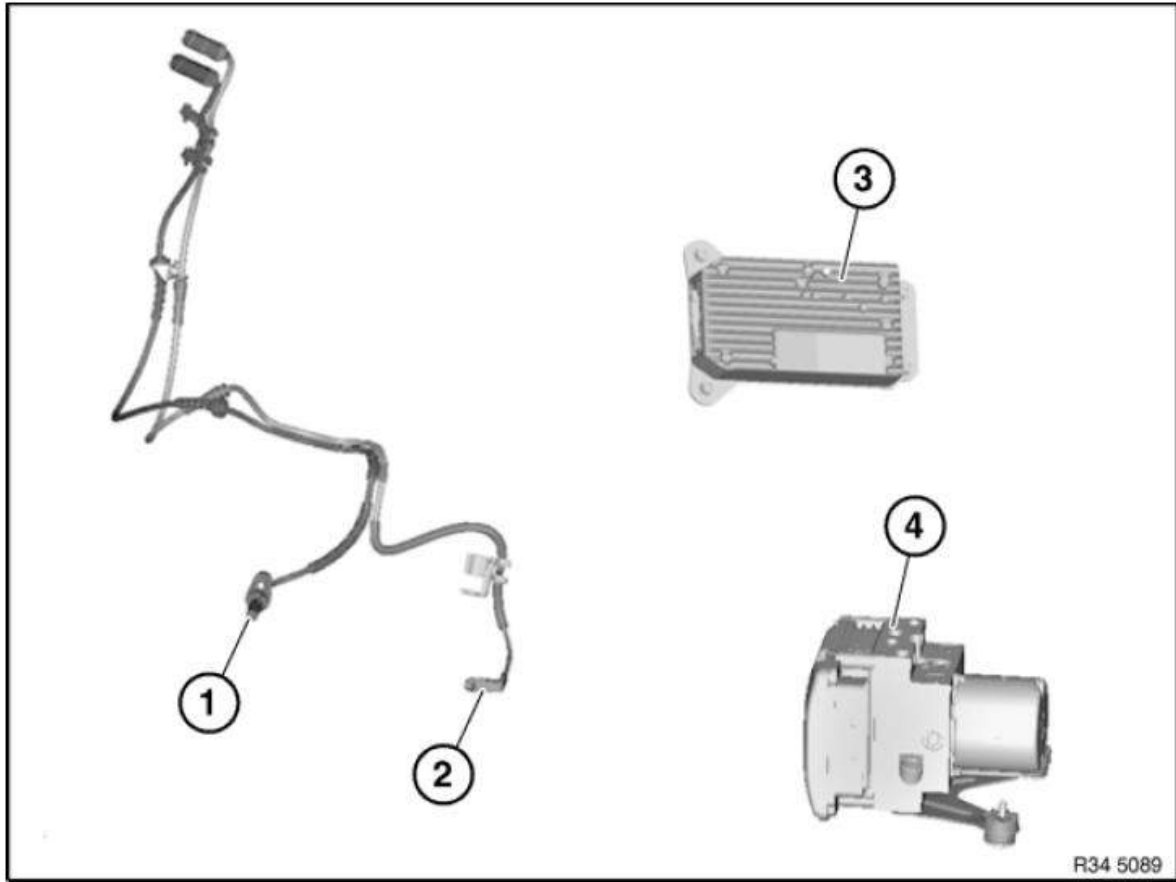
Courtesy of BMW OF NORTH AMERICA, INC.

If the control unit is replaced:

- Carry out programming/encoding.

ELECTRONIC COMPONENTS

34 52... OVERVIEW OF ELECTRONIC COMPONENTS



- 1 [Pulse sensor](#) 2 [Brake pad wear sensor](#)
3 [ICM control unit](#) 4 [DSC control unit](#)

Fig. 196: Overview Of Electronic Components

Courtesy of BMW OF NORTH AMERICA, INC.

34 52 121 REMOVING AND INSTALLING/RENEWING ICM CONTROL UNIT

IMPORTANT: Read and comply with notes on [PROTECTION AGAINST ELECTROSTATIC DAMAGE](#) (ESD protection).

WARNING: The sensor system for triggering the airbag is installed in the ICM control unit! The battery must be disconnected before removing the ICM control unit (ICM control unit de-energised)! There is a risk of the airbag being triggered inadvertently if this requirement is disregarded!

Necessary preliminary tasks:

- Disconnect negative battery cable.

- Remove **CENTER CONSOLE** assy.

Make service opening (2) in carpet.

Carefully cut carpet along pre-punched line (1).

Fold back service opening (2) in direction of arrow.

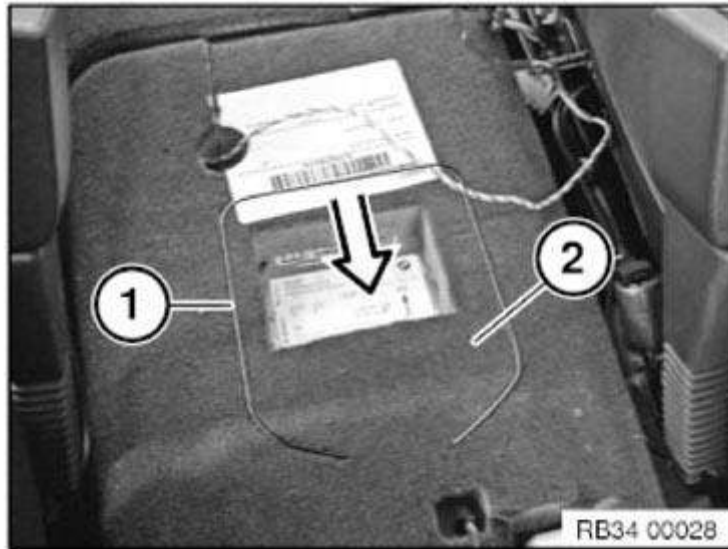


Fig. 197: Folding Back Service Opening

Courtesy of BMW OF NORTH AMERICA, INC.

WARNING: Make sure that the negative battery lead is disconnected!
There is a risk of the airbag being triggered inadvertently!

Undo nuts (1) and raise ICM control unit (2).

Disconnect plug connection and remove ICM control unit (2).

Installation note:

Replace self-locking nuts.

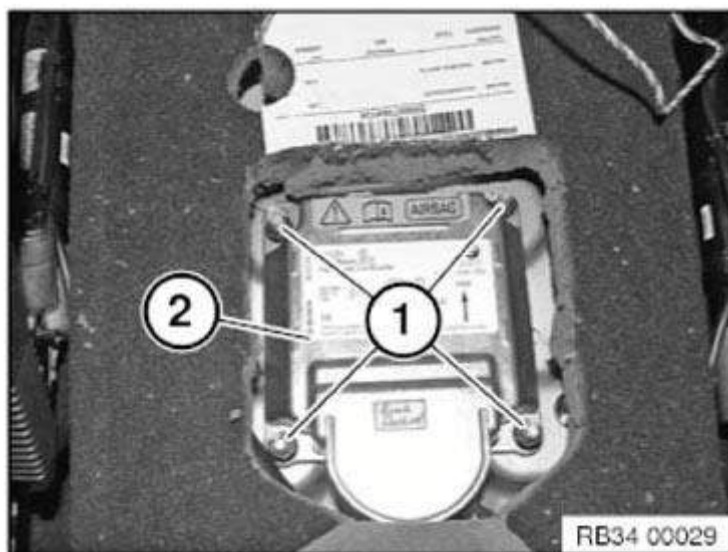


Fig. 198: Identifying ICM Control Unit With Nuts

Courtesy of BMW OF NORTH AMERICA, INC.

Tightening torque **34 51 2AZ** .

IMPORTANT: Do not trap any electrical wires when installing ICM control unit!

After removing and installing ICM control unit:

After completing repairs, use BMW Diagnosis and Information System to

- carry out adjustment/start-up of ICM control unit

After replacement of the ICM control unit:

Vehicles built before 03/2012:

- Adjust vehicle order according to conversion of ICM control unit.
- Program/encode ICM control unit.
- Encode ACSM.
- Carry out **ADJUSTMENT/START-UP OF ICM CONTROL UNIT** .
- Carry out **RIDE HEIGHT ADJUSTMENT** .

On vehicles from 03/2012:

After completing repairs, use BMW Diagnosis and Information System to

- Program/encode ICM control unit.
- Carry out **ADJUSTMENT/START-UP OF ICM CONTROL UNIT** .
- Carry out **RIDE HEIGHT ADJUSTMENT** .

34 52 516 REMOVING AND INSTALLING/REPLACING DSC CONTROL UNIT

IMPORTANT: Read and comply with notes on **PROTECTION AGAINST ELECTROSTATIC DAMAGE** (ESD protection).

IMPORTANT: Maintain conditions of absolute cleanliness.

IMPORTANT: Risk of damage to the contacts when removing and installing the hydraulic unit.

Disconnect plug connection (1).

Release screws (2) and carefully detach DSC control unit by pulling forward.

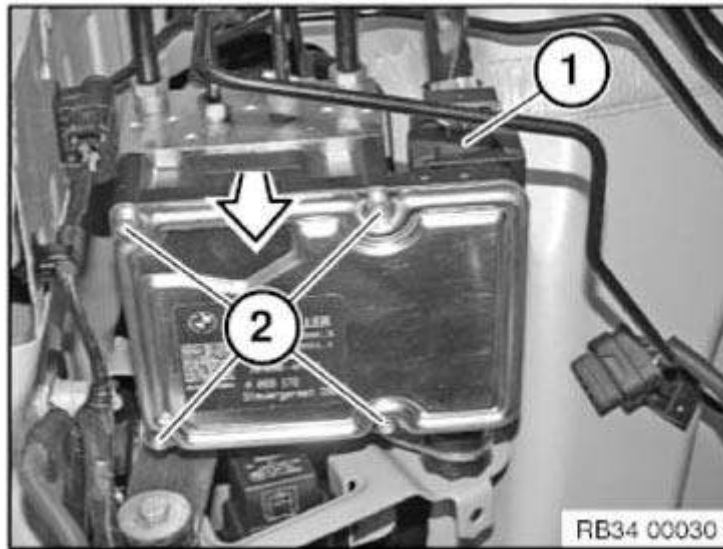


Fig. 199: Removing DSC Control Unit

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Cleaning with compressed air, chemical solvents and sharp-edged objects is not permitted. Do not touch or clean pressure sensor contacts with your fingers.

If necessary, clean sealing surface (1) with a plastic scraper or a fluff-free cloth.

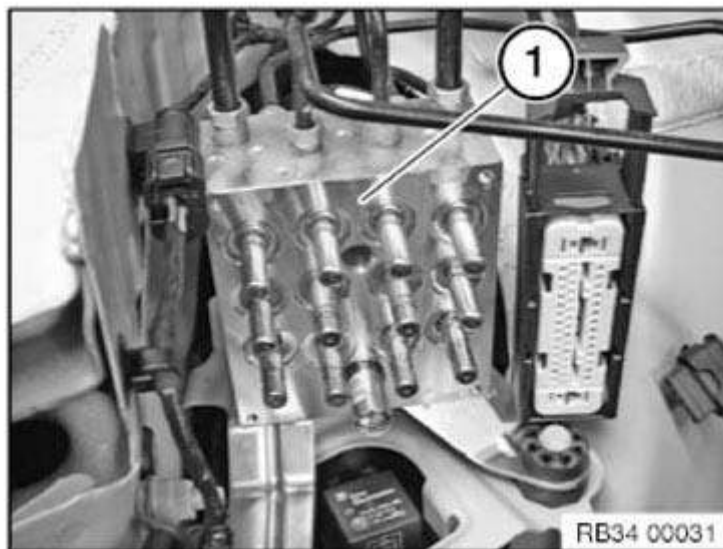


Fig. 200: Identifying DSC Control Unit Sealing Surface

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not touch, clean or readjust valve coils (1) and pressure sensor contact springs with your fingers.

Check gasket (2) for damage. If damaged, replace DSC control unit (3).

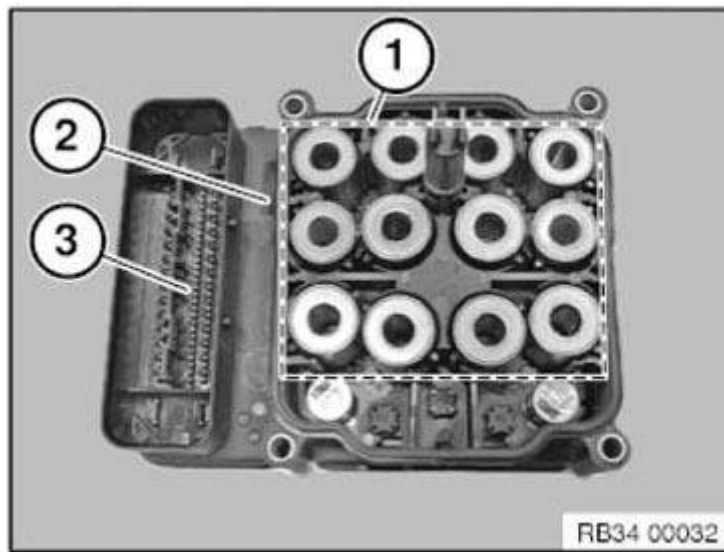


Fig. 201: Identifying DSC Control Unit, Readjust Valve Coils, Gasket
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Make sure screws are inserted evenly and DSC control unit rests on hydraulic unit.

Replace screws.

Observe tightening sequence (1-4).

Tightening torque [34 51 1AZ](#) .

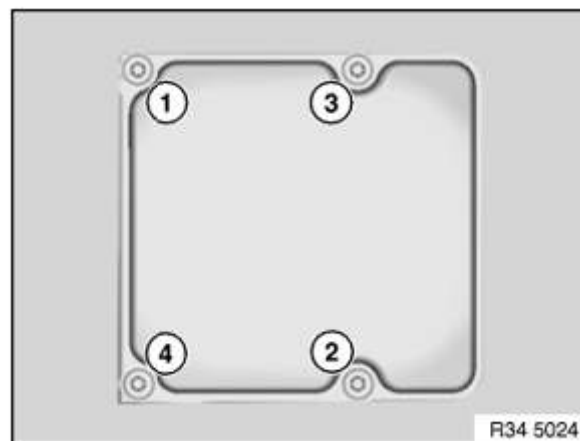


Fig. 202: DSC Control Unit Tightening Screw Sequence
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

- Carry out programming/encoding
- Function check - hydraulic unit

34 52 162 REMOVING AND INSTALLING/REPLACING EMF ACTUATOR

Necessary preliminary tasks:

- Release parking brake.
- Switch off ignition.

IMPORTANT: Switch off ignition at least 30 s before disconnecting the plug connection!

After installation, observe the following: switch on ignition and, using parking brake operating element, open parking brake once, close once and open again.

Disconnect plug connection (1).

Disengage cable from cable clip.

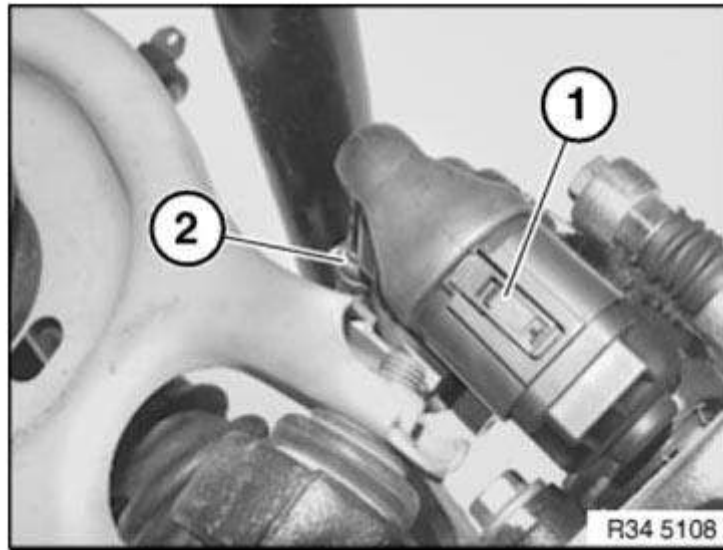


Fig. 203: Identifying EMF Actuator Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Installation note:

Replace screws

Anziehdrehmoment **34 41 5AZ** .

Take off holder (2).

Detach actuator drive (3) from brake caliper.

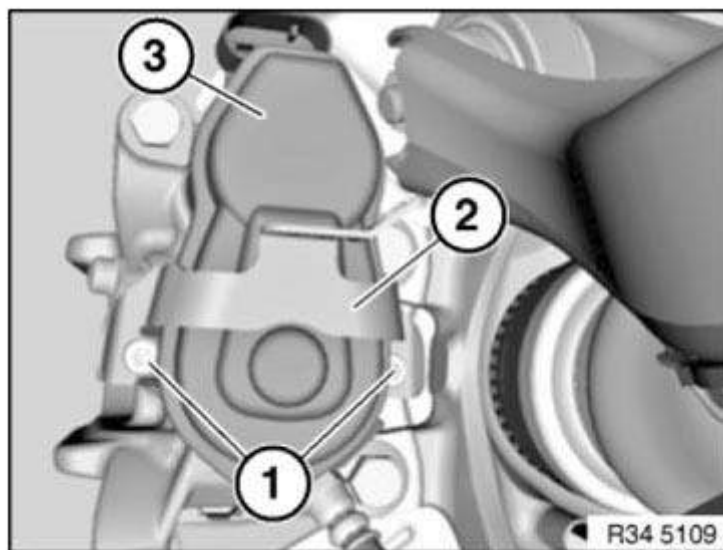


Fig. 204: Identifying Actuator Drive With Holder And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Check sealing ring (1), replace if necessary.

Apply a light coating of brake fluid to sealing ring (1) before fitting.

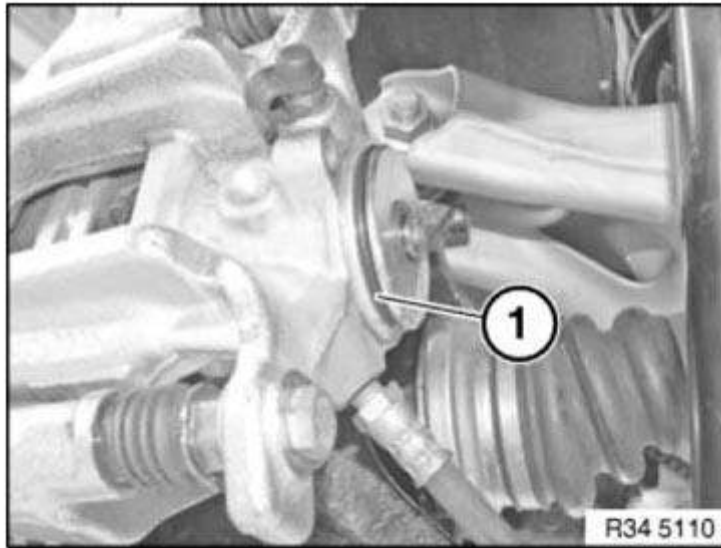


Fig. 205: Identifying Sealing Ring
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Carefully fit actuator drive until teeth engage and actuator drive rests flush on brake caliper.

If necessary, turn actuator drive slightly until bore hole and thread are flush.

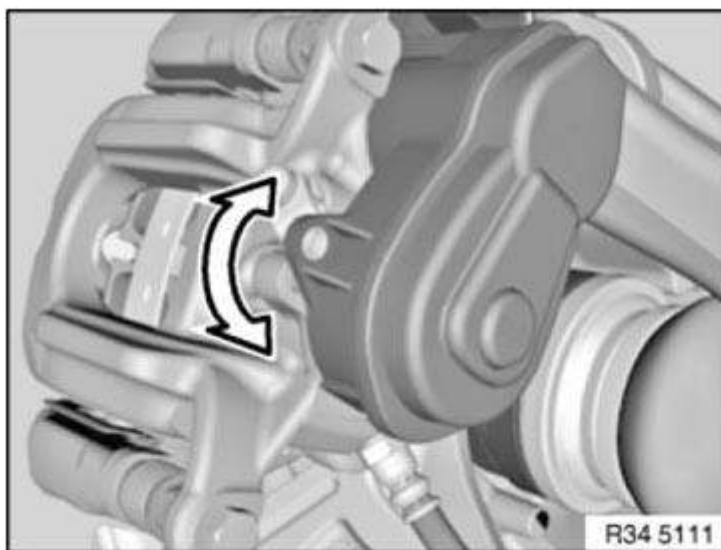


Fig. 206: Turning Actuator Drive
Courtesy of BMW OF NORTH AMERICA, INC.

34 35 001 REPLACING A BRAKE PAD SENSOR (FRONT)

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 an already ground brake pad wear sensor has to be replaced although the minimum brake pad thickness has not yet been reached, it is necessary to file down the new sliding contact with a file to the same length as the ground sliding contact.

Necessary preliminary work:

- Remove front left **WHEEL** .

Unclip line from holder (1).

Open housing cover.

Disconnect plug connection (2).

Installation note:

Make sure the plug connections snaps in correctly and the line is fitted correctly in the holders.

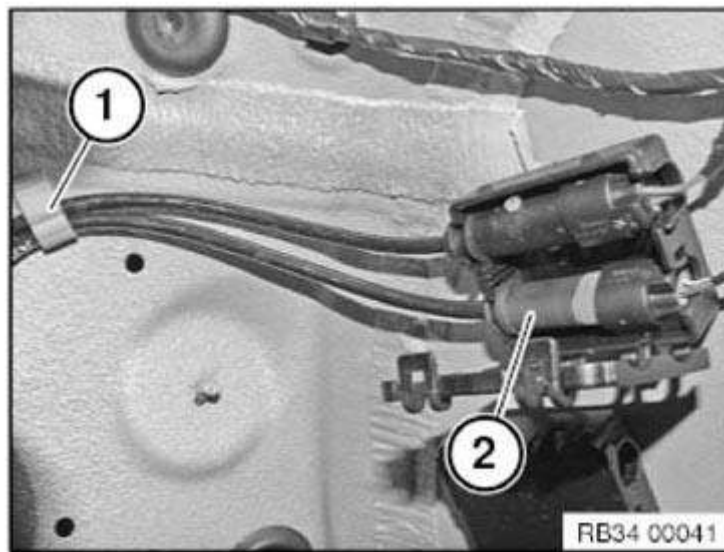


Fig. 207: Unclipping Line From Holder And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip line from holders (1).

Installation note:

Ensure proper locking of the holders and proper seating of the line in the holders.

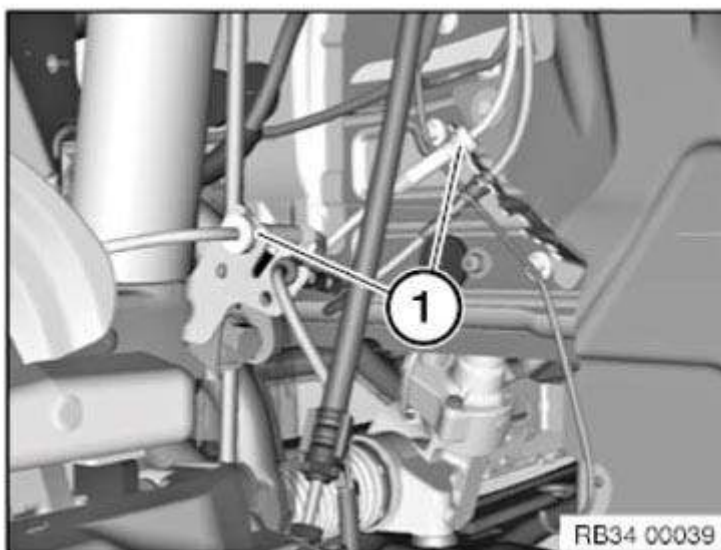


Fig. 208: Identifying Brake Line And Holders
Courtesy of BMW OF NORTH AMERICA, INC.

Disengage line from brake pad wear sensor from holder (1).

Pull brake pad wear sensor (2) in direction of arrow out of brake pad.

Installation note:

Make sure brake pad wear sensor (2) is correctly seated in brake pad and holder (1).

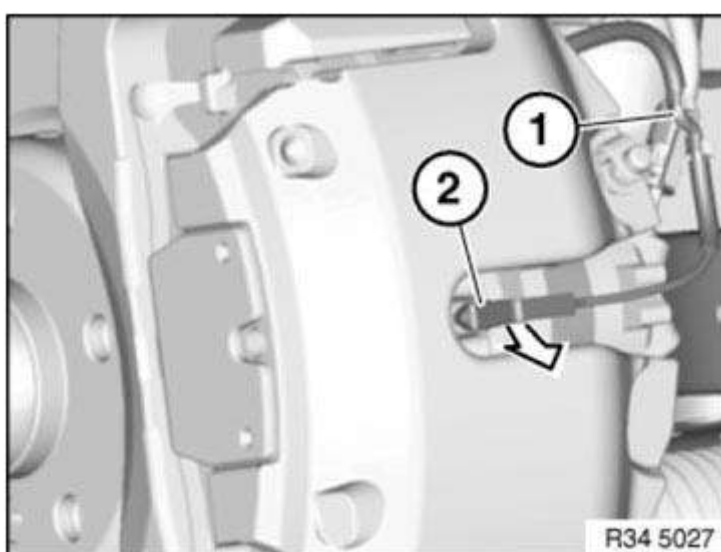


Fig. 209: Identifying Brake Pad Wear Sensor Line And Bracket
Courtesy of BMW OF NORTH AMERICA, INC.

34 35 001 REPLACING A BRAKE PAD SENSOR (REAR)

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 an already ground brake pad wear sensor has to be replaced although the minimum brake pad thickness has not yet been reached, it is necessary to file down the new sliding contact with a file to the same length as the ground sliding contact.

Necessary preliminary work:

- Remove rear right **WHEEL** .

Open housing cover (1).

Disconnect plug connection for pulse generator.

Unclip line from holders (2).

Installation note:

Ensure proper locking of plug connector and proper seating of rubber grommets.

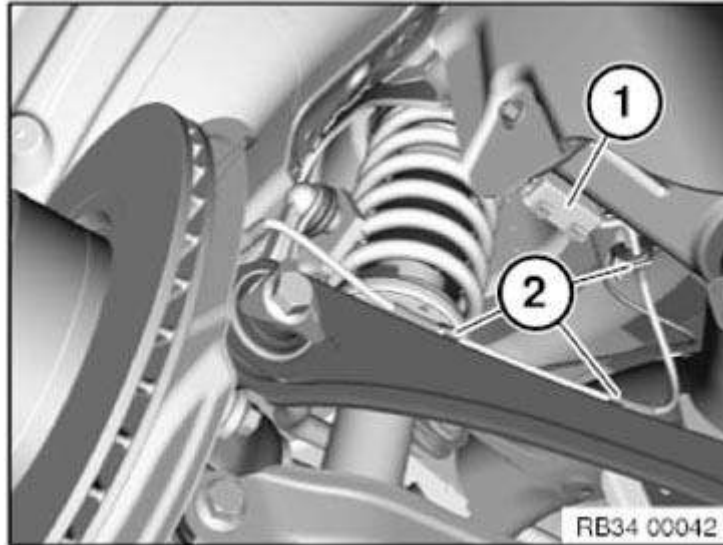


Fig. 210: Identifying Housing Cover And Line Holders

Courtesy of BMW OF NORTH AMERICA, INC.

Disengage line from brake pad wear sensor from holders (1).

Pull brake pad wear sensor (2) in direction of arrow out of brake pad.

Installation note:

Make sure brake pad wear sensor (2) is correctly seated in brake pad and holder (1).

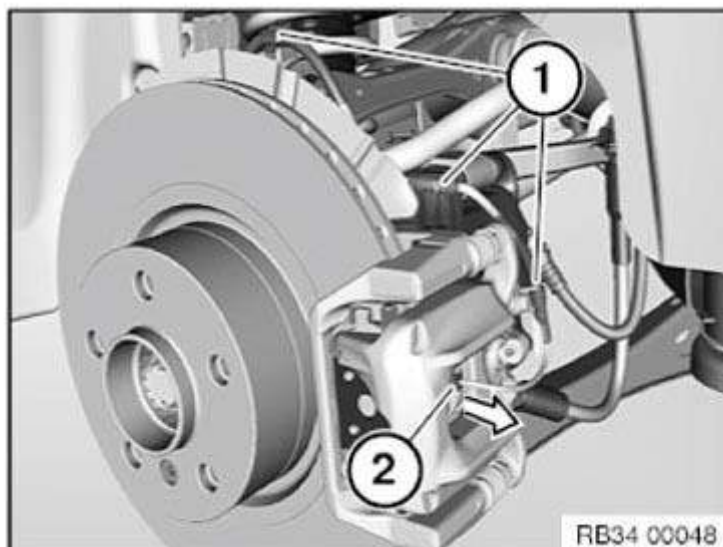


Fig. 211: Pulling Brake Pad Wear Sensor Out Of Brake Pad

Courtesy of BMW OF NORTH AMERICA, INC.

34 52 535 REPLACING A REAR PULSE GENERATOR

IMPORTANT: Read and comply with notes on PROTECTION AGAINST ELECTROSTATIC DAMAGE (ESD protection).

Necessary preliminary work:

- Remove rear WHEEL .
- Read and comply with GENERAL INFORMATION.

Open housing cover (1).

Disconnect plug connection for pulse generator.

Unclip line from holders (2).

Installation note:

Ensure proper locking of plug connector and proper seating of rubber grommets.

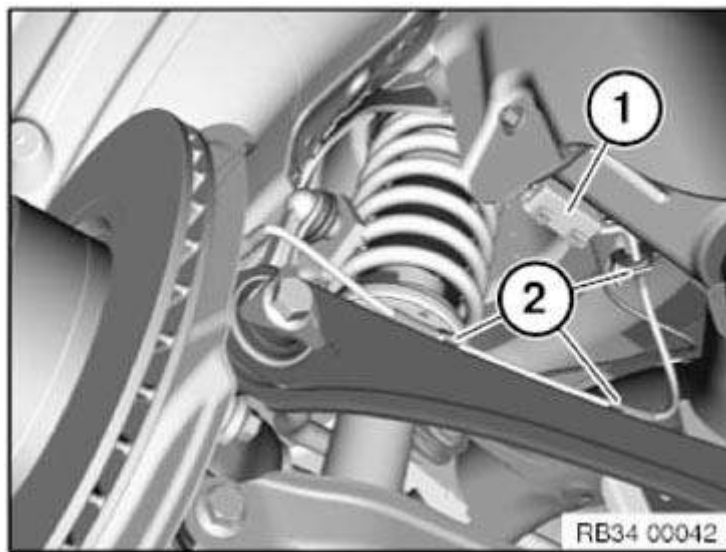


Fig. 212: Identifying Housing Cover And Line Holders
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Withdraw wheel speed sensor (2) from bore hole.

Unclip line from holder (3).

Installation note:

Tightening torque 34 51 3AZ .

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

IMPORTANT: Prior to installation, check sensor head for damage and replace if necessary.

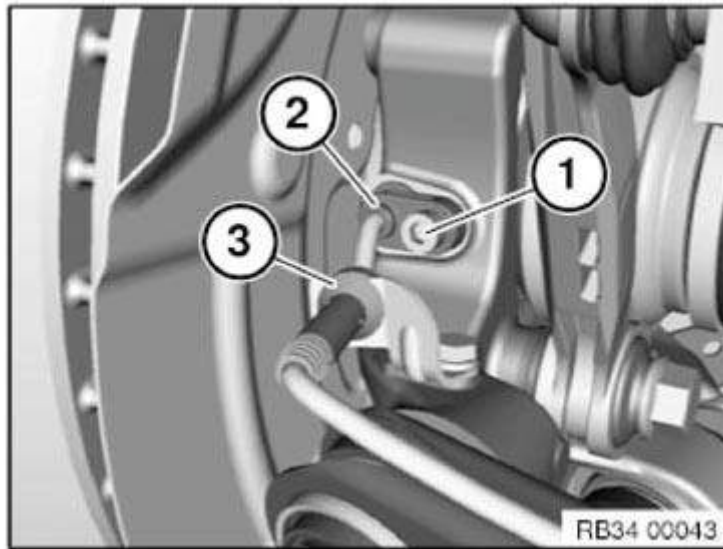


Fig. 213: Removing Wheel Speed Sensor From Bore Hole

Courtesy of BMW OF NORTH AMERICA, INC.

34 52 525 REPLACING ONE FRONT PULSE GENERATOR

IMPORTANT: Read and comply with notes on **PROTECTION AGAINST ELECTROSTATIC DAMAGE** (ESD protection).

Necessary preliminary work:

- Remove front **WHEEL** .
- Read and comply with **GENERAL INFORMATION**.

Unclip line from holder (1).

Open housing cover.

Disconnect plug connection (2).

Installation note:

Make sure the plug connections snaps in correctly and the line is fitted correctly in the holders.

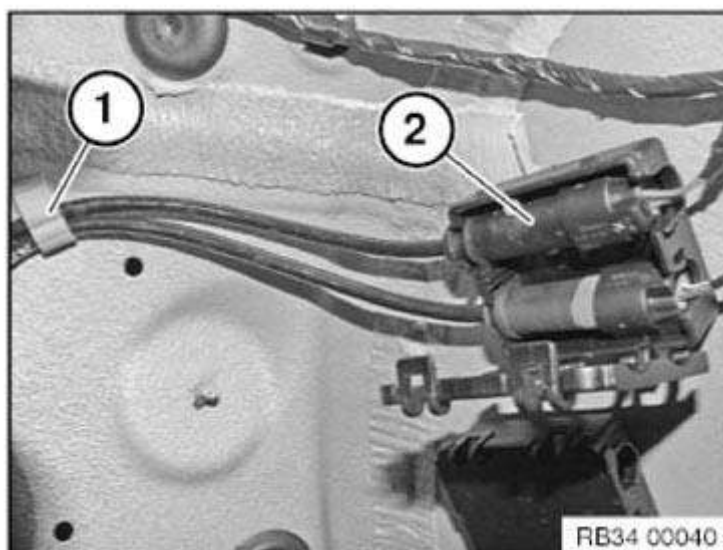


Fig. 214: Identifying Line, Holder And Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Unclip line from holders (1).

Installation note:

Ensure proper locking of the holders and proper seating of the line in the holders.

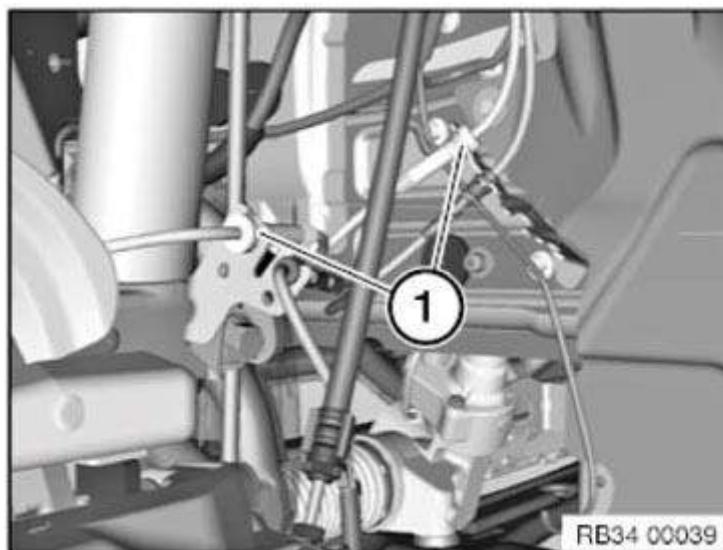


Fig. 215: Identifying Brake Line And Holders

Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) and withdraw pulse generator (2) from bore.

Unclip line from holder (3).

Installation note:

Tightening torque **31 51 3AZ** .

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

IMPORTANT: Prior to installation, check sensor head for damage and replace if necessary.

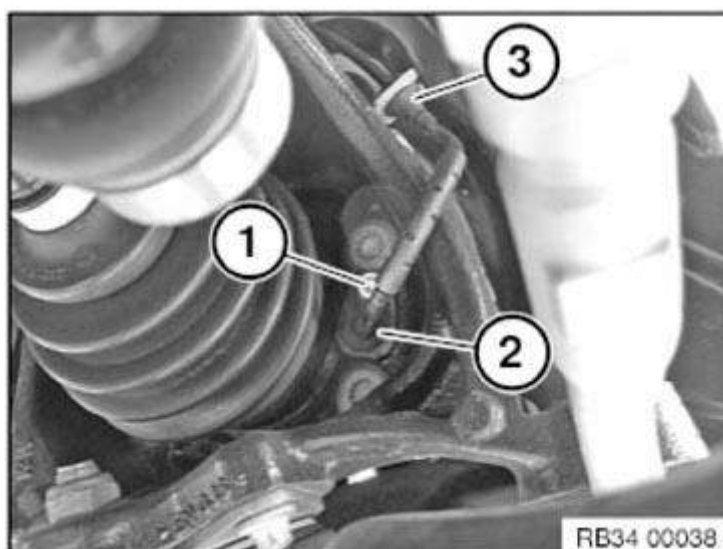


Fig. 216: Removing Pulse Generator From Bore

Courtesy of BMW OF NORTH AMERICA, INC.

34 52.. START-UP OF ICM CONTROL UNIT

NOTE: Start-up of ICM control unit must be carried out:

- After replacement or removal and installation of ICM control unit

Connect vehicle to BMW diagnosis system.

Select and carry out start-up of ICM control unit under Service functions.

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BRAKES

Brakes - Special Tools - X3 Utility

BRAKES

0492494 ADAPTER

0492494 345020 Adapter Mechanical tool

Replaced by: 83300492499

NOTE: (test adapter) For ABS periphery/model year: From 83 Replaced by 34 5 110. (0 492 499)

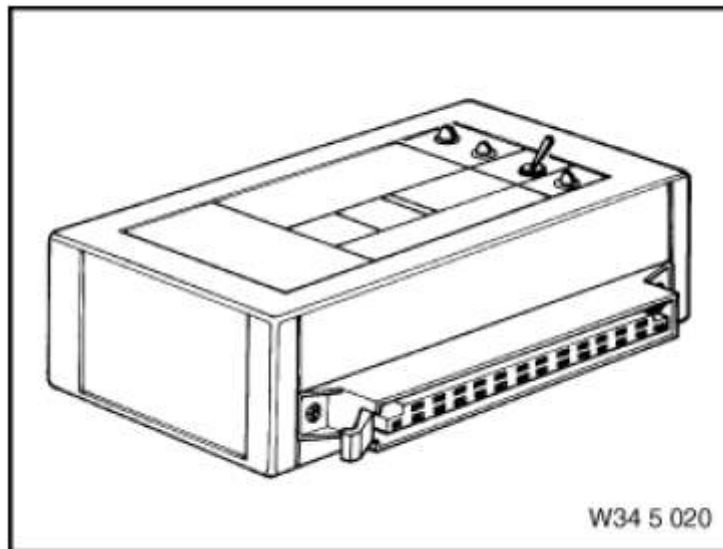


Fig. 1: Identifying Adapter (0492494)

Courtesy of BMW OF NORTH AMERICA, INC.

0492481 ADAPTER

0492481 343160 Adapter Mechanical tool

NOTE: (Adapter) For checking the switch-on and shutoff pressure on the H31 brake system and the self-levelling suspension

Storage Location

B3

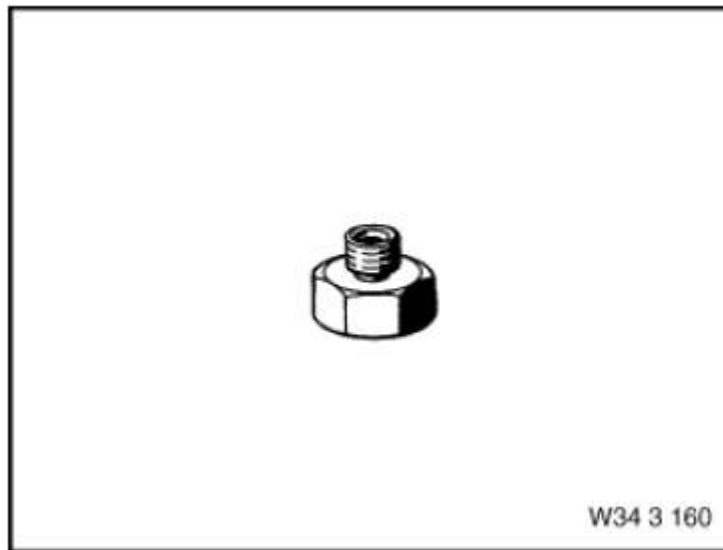


Fig. 2: Identifying Adapter (0492481)

Courtesy of BMW OF NORTH AMERICA, INC.

0492502 ADAPTER

0492502 345113 Adapter AM

NOTE: (Test adapter 35/55-pin)

Storage Location

K 105

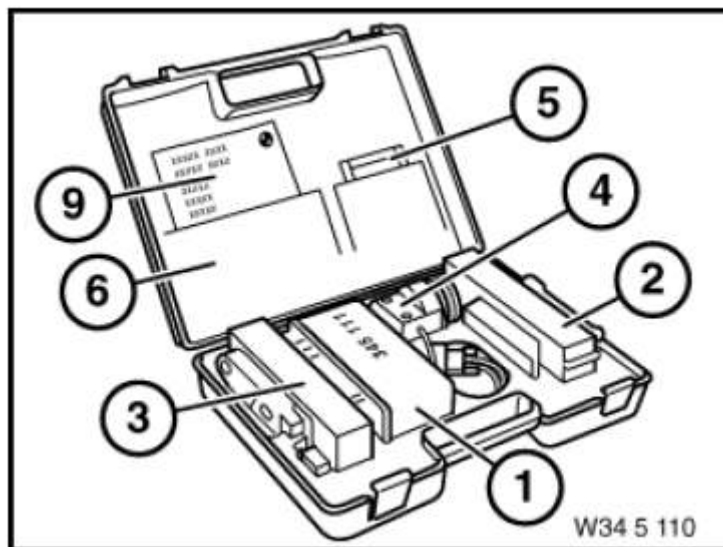


Fig. 3: Identifying Adapter (0492502)

Courtesy of BMW OF NORTH AMERICA, INC.

0492493 ADAPTER

0492493 345010 Adapter Mechanical tool

Replaced by: 83300492499

NOTE: (Test adapter) For ABS control unit/model year: From 83 Replaced by 34 5 110.
(0 492 499)

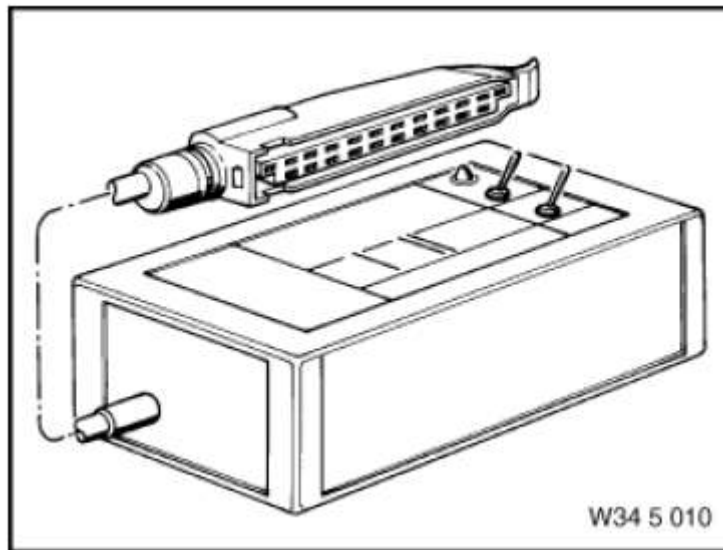


Fig. 4: Identifying Adapter (0492493)

Courtesy of BMW OF NORTH AMERICA, INC.

0492501 ADAPTER

0492501 345112 Adapter AM

NOTE: (Test adapter 35/35-pin)

Storage Location

K 105

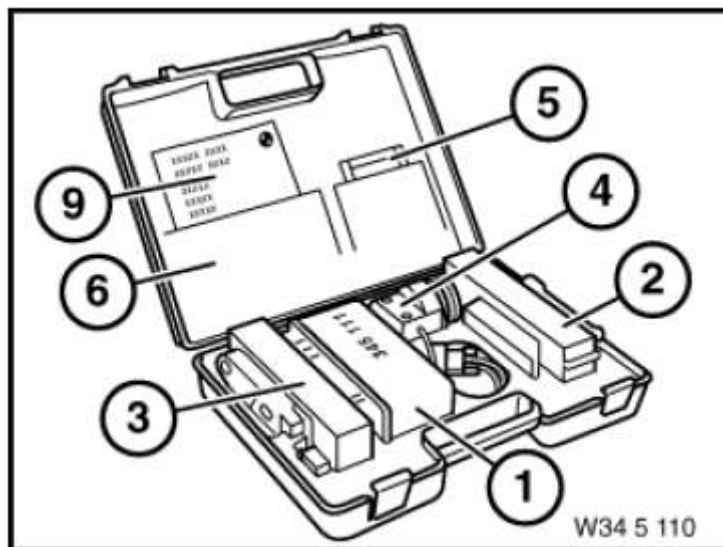


Fig. 5: Identifying Adapter (0492501)

Courtesy of BMW OF NORTH AMERICA, INC.

0492508 ADAPTER CABLE

0492508 345200 Adapter cable Mechanical tool

NOTE: (V adapter cable) For Antilock Brake System and Automatic Stability Control for electrical check and troubleshooting - Model year: from 94

Storage Location

Y3

SI number

02 05 94 (861)

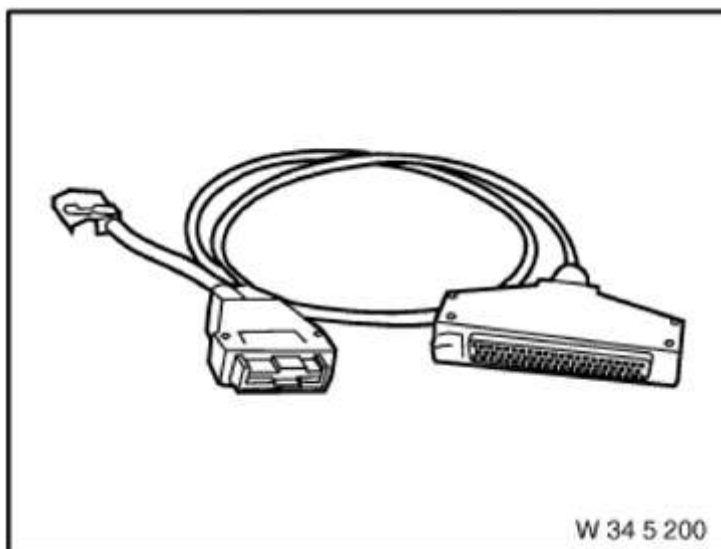


Fig. 6: Identifying Adapter Cable (0492508)

Courtesy of BMW OF NORTH AMERICA, INC.

0492503 ADAPTER CABLE

0492503 345114 Adapter cable AM

NOTE: (Adapter cable) Connecting line diagnosis

Storage Location

K 105

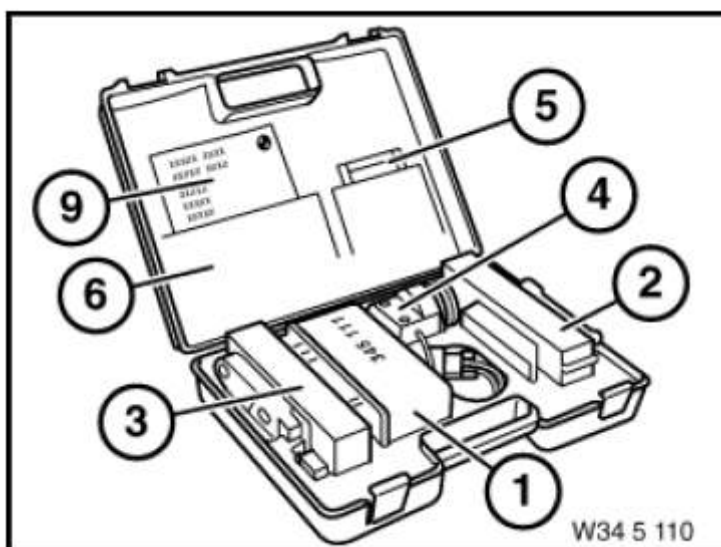


Fig. 7: Identifying Adapter Cable (0492503)

Courtesy of BMW OF NORTH AMERICA, INC.

0493137 ADAPTER CABLE

0493137 345230 Adapter cable MP

NOTE: (V adapter cable, 43-pin) For measuring electrical variables at 43-pin plug connection on Anti-lock Brake System/DSC control unit

Storage Location

M 203

SI number

02 02 98 (308)

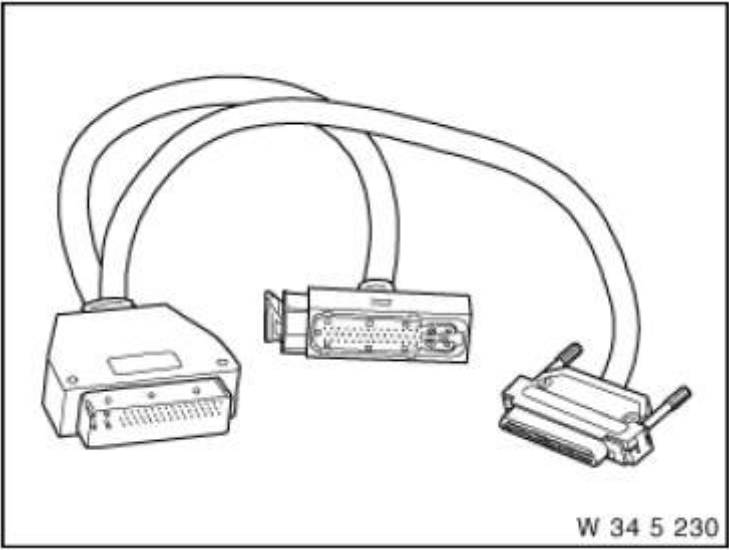


Fig. 8: Identifying Adapter Cable (0493137)
Courtesy of BMW OF NORTH AMERICA, INC.

0493135 ADAPTER CABLE

0493135 345210 Adapter cable Mechanical tool

NOTE: (V adapter cable, 25-pin) For checkinf DSC control unit and periphery

Storage Location

M 201

SI number

02 01 98 (307)

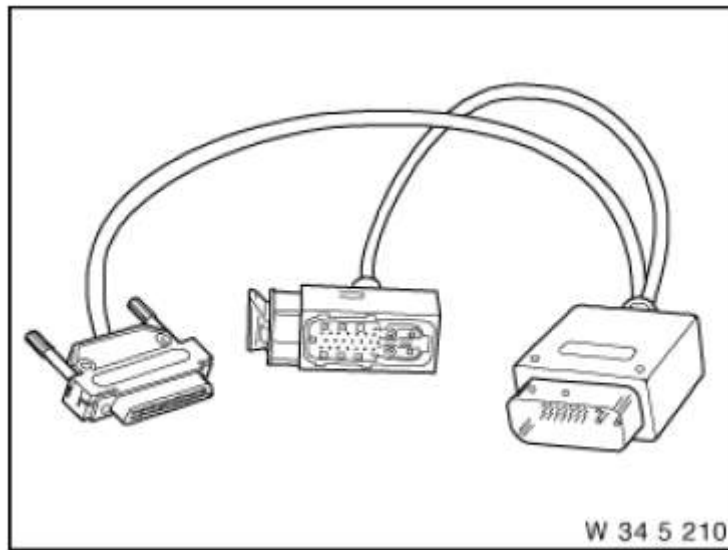


Fig. 9: Identifying Adapter Cable (0493135)

Courtesy of BMW OF NORTH AMERICA, INC.

0494197 ADAPTER CABLE

0494197 345250 Adapter cable MP

NOTE: (V adapter cable 47-pin) For troubleshooting and diagnosis on the slip control system with control unit MK 60 (also E36/7)

Storage Location

N205

SI number

02 07 00 (647)

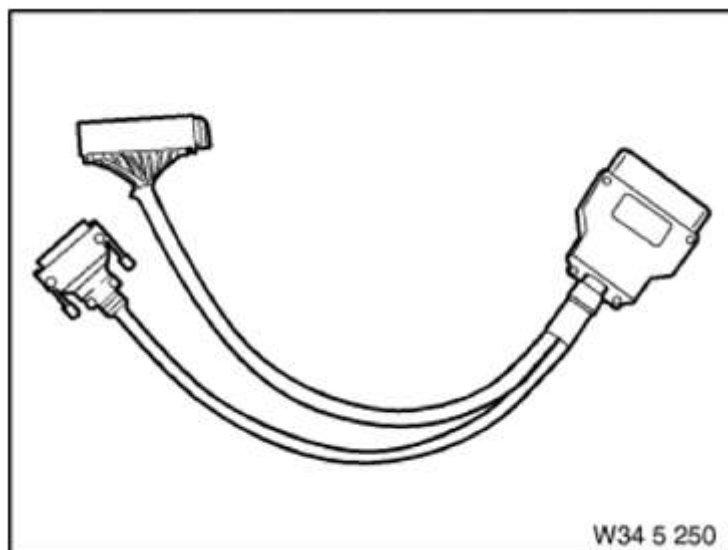


Fig. 10: Identifying Adapter Cable (0494197)

Courtesy of BMW OF NORTH AMERICA, INC.

0493136 ADAPTER CABLE

0493136 345220 Adapter cable MP

NOTE: (V adapter cable, 25-pin) For measuring electrical variables at 25-pin plug connection on control unit for Anti-lock Brake System with Automatic Stability Control

Storage Location

M 202

SI number

02 02 98 (308)

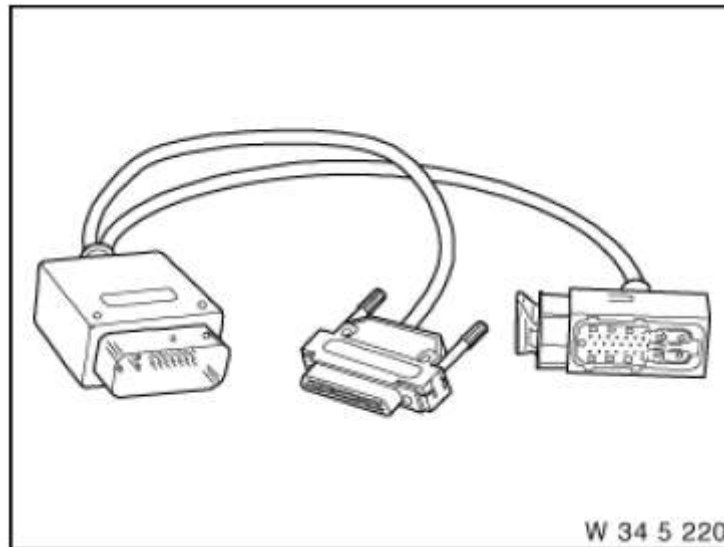


Fig. 11: Identifying Adapter Cable (0493136)
Courtesy of BMW OF NORTH AMERICA, INC.

0492495 CABLE

0492495 345030 Cable Mechanical tool

Replaced by: 83300492499

NOTE: (Cable) For test adapter/model year: From 83 Replaced by 34 5 110. (0 492 499)

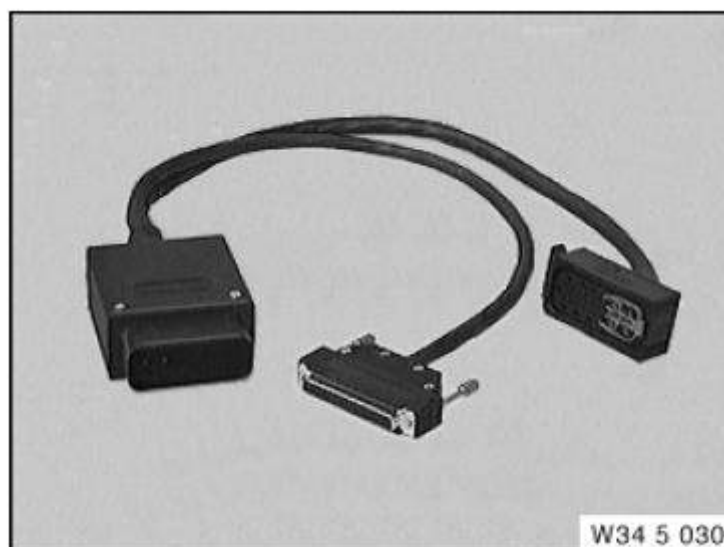


Fig. 12: Identifying Cable (0492495)
Courtesy of BMW OF NORTH AMERICA, INC.

0492505 CASE

0492505 345116 Case AM

NOTE: Not for individual order

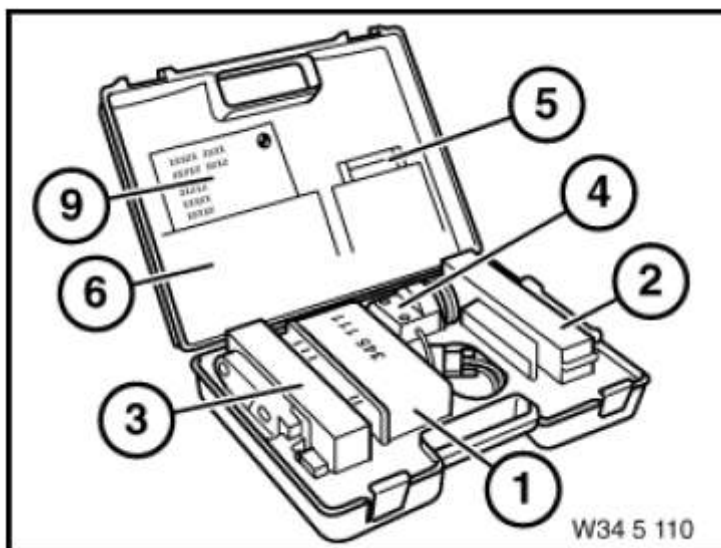


Fig. 13: Identifying Case (0492505)

Courtesy of BMW OF NORTH AMERICA, INC.

0492466 DEVICE

0492466 341250 Device Mechanical tool

NOTE: (Measuring device) For checking brake disc lateral runout, front or rear

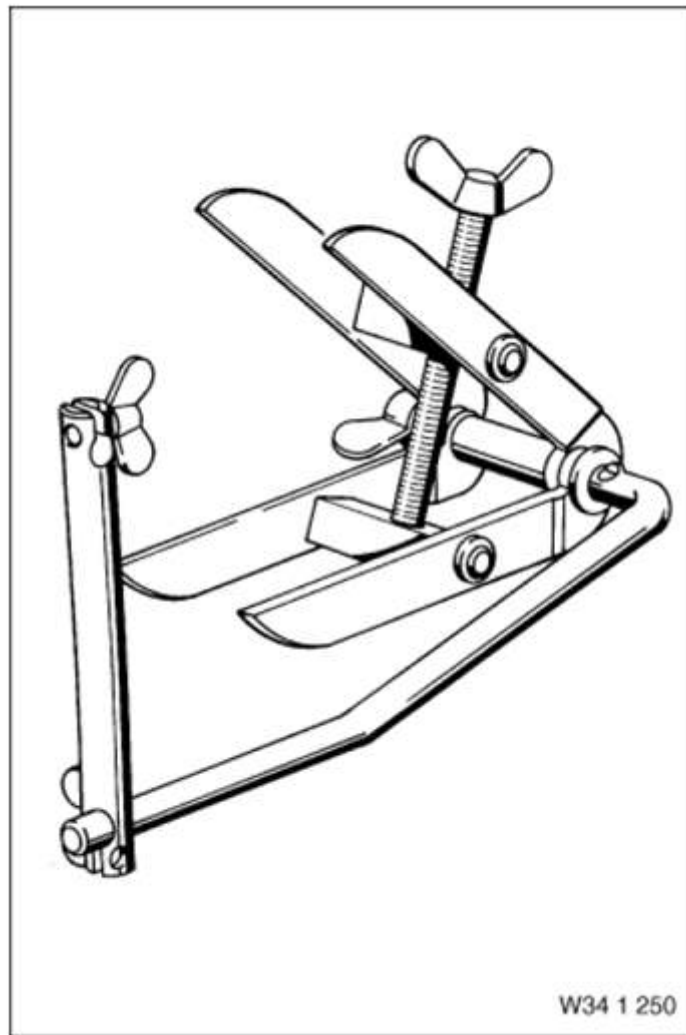


Fig. 14: Identifying Device (0492466)

Courtesy of BMW OF NORTH AMERICA, INC.

0492485 DEVICE

0492485 343200 Device Mechanical tool

NOTE: (Mounting device) For pressure regulator, H31 brake system

Storage Location

B13

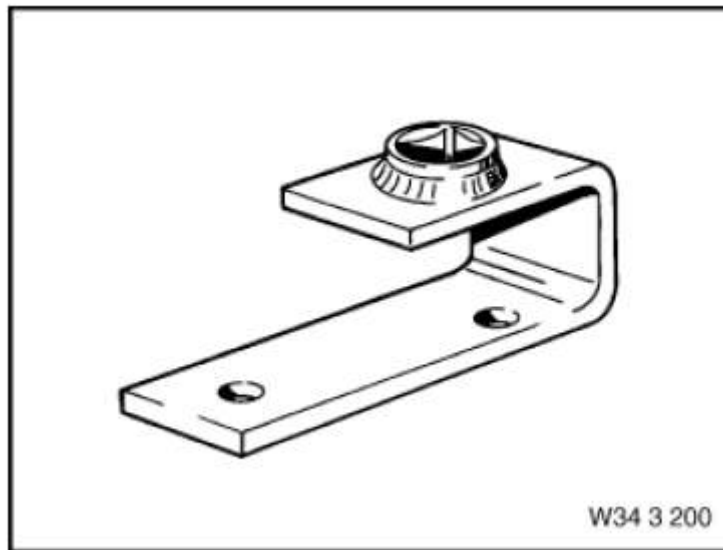


Fig. 15: Identifying Device (0492485)

Courtesy of BMW OF NORTH AMERICA, INC.

0492504 DISK

0492504 345115 Disk AM

NOTE: (Disk) Test disk 3 1/2"

Storage Location

K 105

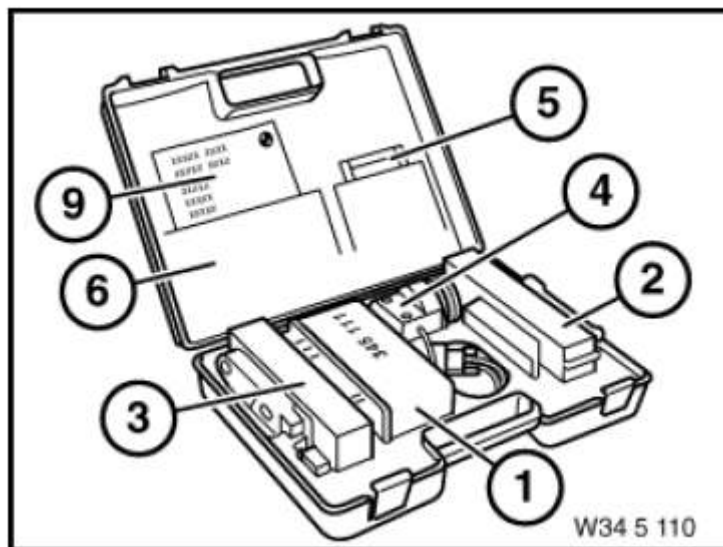


Fig. 16: Identifying Disk (0492504)

Courtesy of BMW OF NORTH AMERICA, INC.

2162483 EXTRACTOR

2162483 Extractor AM

NOTE: Pull off the extractor for the brake discs.

SI number

08 14 09 (565)



Fig. 17: Identifying Extractor (2162483)

Courtesy of BMW OF NORTH AMERICA, INC.

0492507 GAUGE

0492507 345150 Gauge Mechanical tool

NOTE: For adjusting the acceleration sensors - all-wheel drive vehicles

Storage Location

Z9

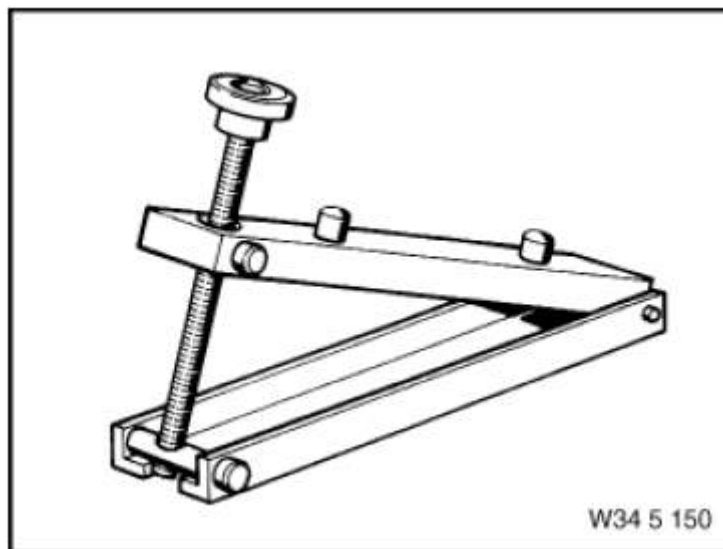


Fig. 18: Identifying Gauge (0492507)

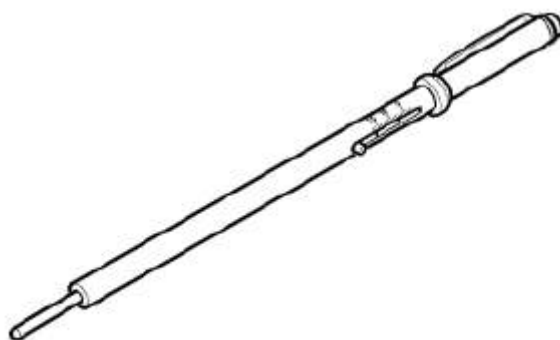
Courtesy of BMW OF NORTH AMERICA, INC.

0492467 GAUGE

0492467 341260 Gauge Minimum set: Mechanical tools Mechanical tool

NOTE: (Brake pad measuring gauge) For measuring brake pad thickness without removing wheels.

SI number



W34 1 260

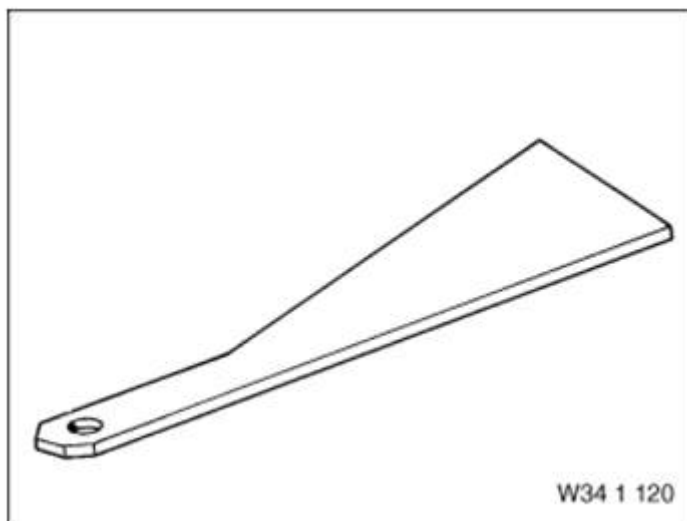
Fig. 19: Identifying Gauge (0492467)

Courtesy of BMW OF NORTH AMERICA, INC.

0492458 GAUGE

0492458 341120 Gauge Mechanical tool

NOTE: For checking the brake piston setting in the front fixed calliper, brake piston diameter 54...57 mm/single-circuit brake system



W34 1 120

Fig. 20: Identifying Gauge (0492458)

Courtesy of BMW OF NORTH AMERICA, INC.

0492457 GAUGE

0492457 341100 Gauge Mechanical tool

NOTE: For checking the brake piston setting in the front fixed calliper, brake piston diameter 44 - 48 mm/single-circuit brake system

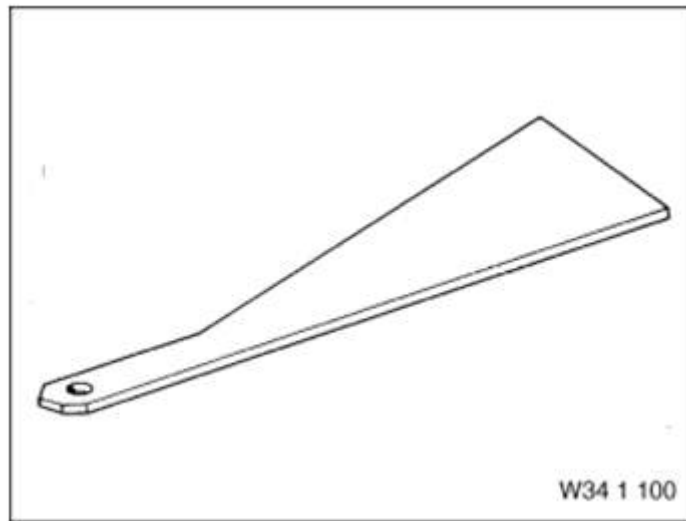


Fig. 21: Identifying Gauge (0492457)

Courtesy of BMW OF NORTH AMERICA, INC.

0492472 HOLDING SLEEVE

0492472 343050 Holding sleeve Mechanical tool

NOTE: (Assembly sleeve) with a diameter of 22 mm to insert piston and sleeve into the tandem brake master cylinder

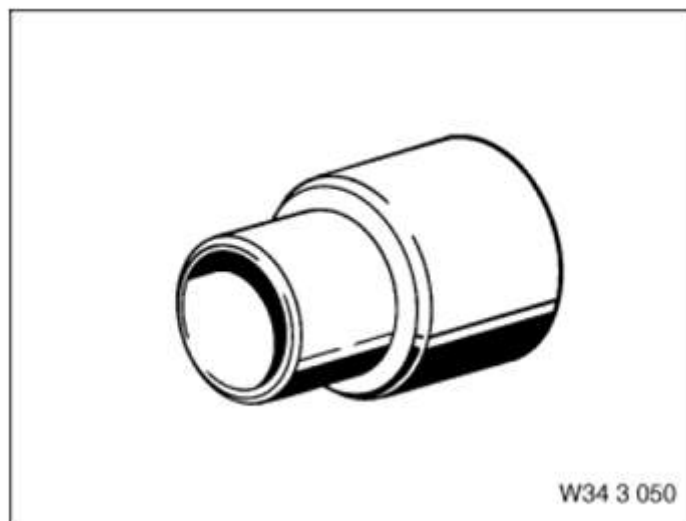


Fig. 22: Identifying Holding Sleeve (0492472)

Courtesy of BMW OF NORTH AMERICA, INC.

0492471 HOLDING SLEEVE

0492471 343000 Holding sleeve Mechanical tool

NOTE: (Assembly sleeve) For inserting the piston with sleeve into the tandem brake master cylinder, dual-circuit brake system

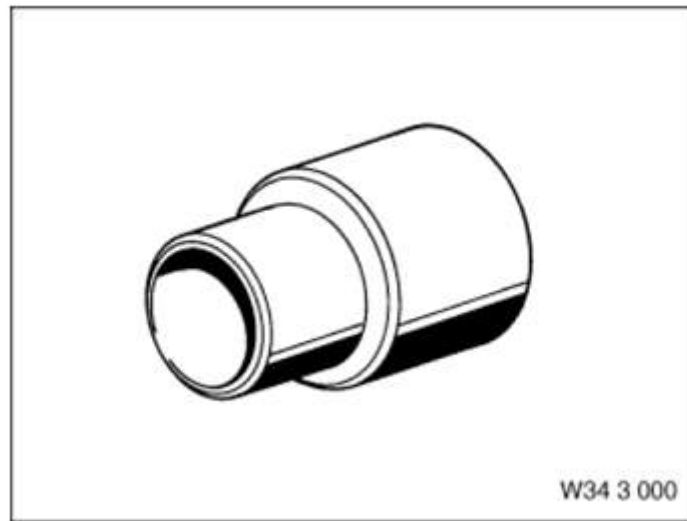


Fig. 23: Identifying Holding Sleeve (0492471)

Courtesy of BMW OF NORTH AMERICA, INC.

0492454 JOINT

0492454 341040 Joint Mechanical tool

Replaced by: 83300493705

NOTE: With hexagon socket WAF 7 mm, 3/8" connection for removing and installing the guide bolts on the rear brake calliper Replaced by 34 1 080. (0 493 705)

Storage Location

A7

SI number

01 05 90 (207)

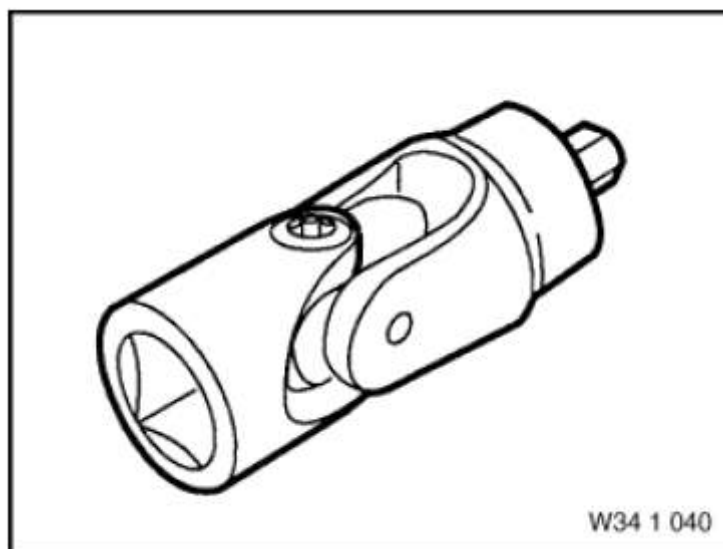


Fig. 24: Identifying Joint (0492454)

Courtesy of BMW OF NORTH AMERICA, INC.

2320880 NUT

2320880 Nut Minimum set: Mechanical tools AM

NOTE: Nut is an integral part of resetter 83 30 2 320 871 with identification A.

SI number

01 11 12 (807)

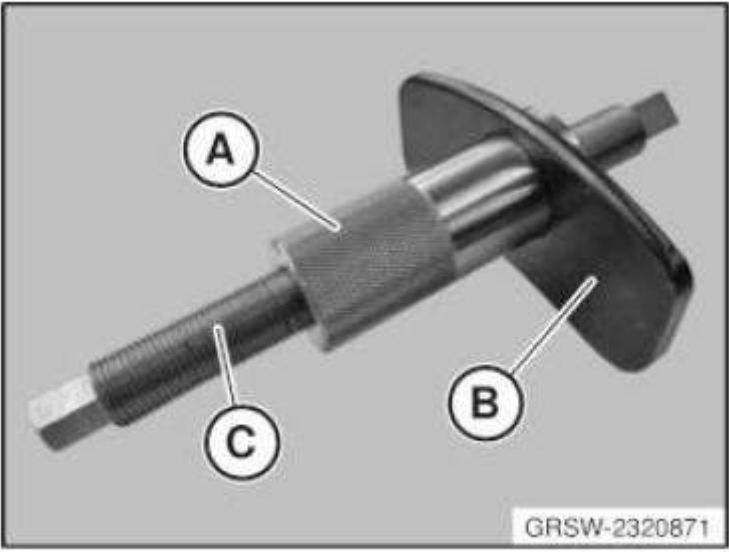


Fig. 25: Identifying Nut (2320880)
Courtesy of BMW OF NORTH AMERICA, INC.

0492506 OPERATING INSTRUCTIONS

0492506 345119 Operating instructions AM

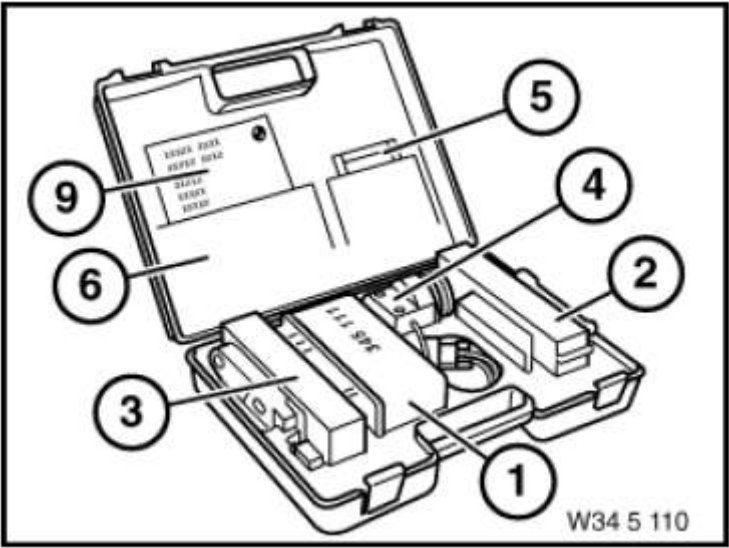


Fig. 26: Identifying Operating Instructions (0492506)
Courtesy of BMW OF NORTH AMERICA, INC.

2320299 PIN WRENCH

2320299 Pin wrench Minimum set: Mechanical tools Mechanical tool

NOTE: To reset the automatic readjustment of the electrical parking brake (rear disc brake)

Storage Location

B33

SI number

01 11 12 (807)



Fig. 27: Identifying Pin Wrench (2320299)

Courtesy of BMW OF NORTH AMERICA, INC.

2320882 PLATE

2320882 Plate Minimum set: Mechanical tools AM

NOTE: Plate is an integral part of reset 83 30 2 320 871 with identification B.

SI number

01 11 12 (807)

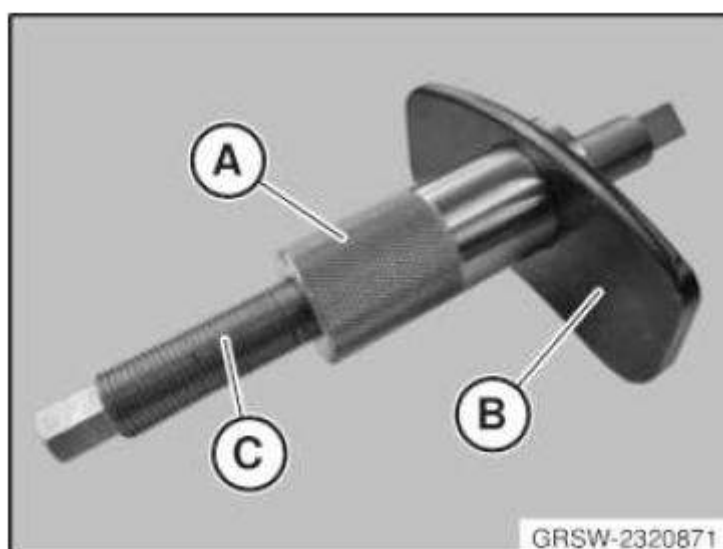


Fig. 28: Identifying Plate (2320882)

Courtesy of BMW OF NORTH AMERICA, INC.

0492456 PLIERS

0492456 341060 Pliers AM

NOTE: (Piston pliers) for twisting the brake piston in the fixed calliper

Consisting of:

1. [0494632](#) Shaped part

NOTE: (Shaped parts)

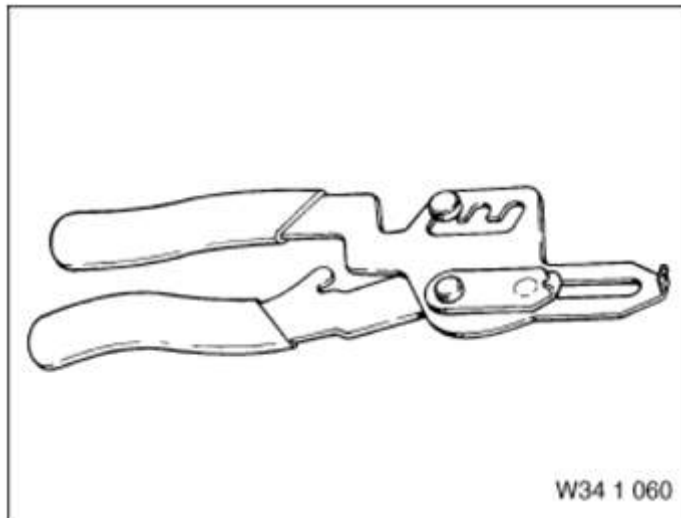


Fig. 29: Identifying Pliers (0492456)

Courtesy of BMW OF NORTH AMERICA, INC.

0492451 PULLER

0492451 341010 Puller Mechanical tool

Replaced by: 83300492450

NOTE: For brake pads of disc brakes, front and rear Replaced by 34 1 000. (0 492 450)

2352960 RESET

2352960 Reset Minimum set: Mechanical tools Mechanical tool

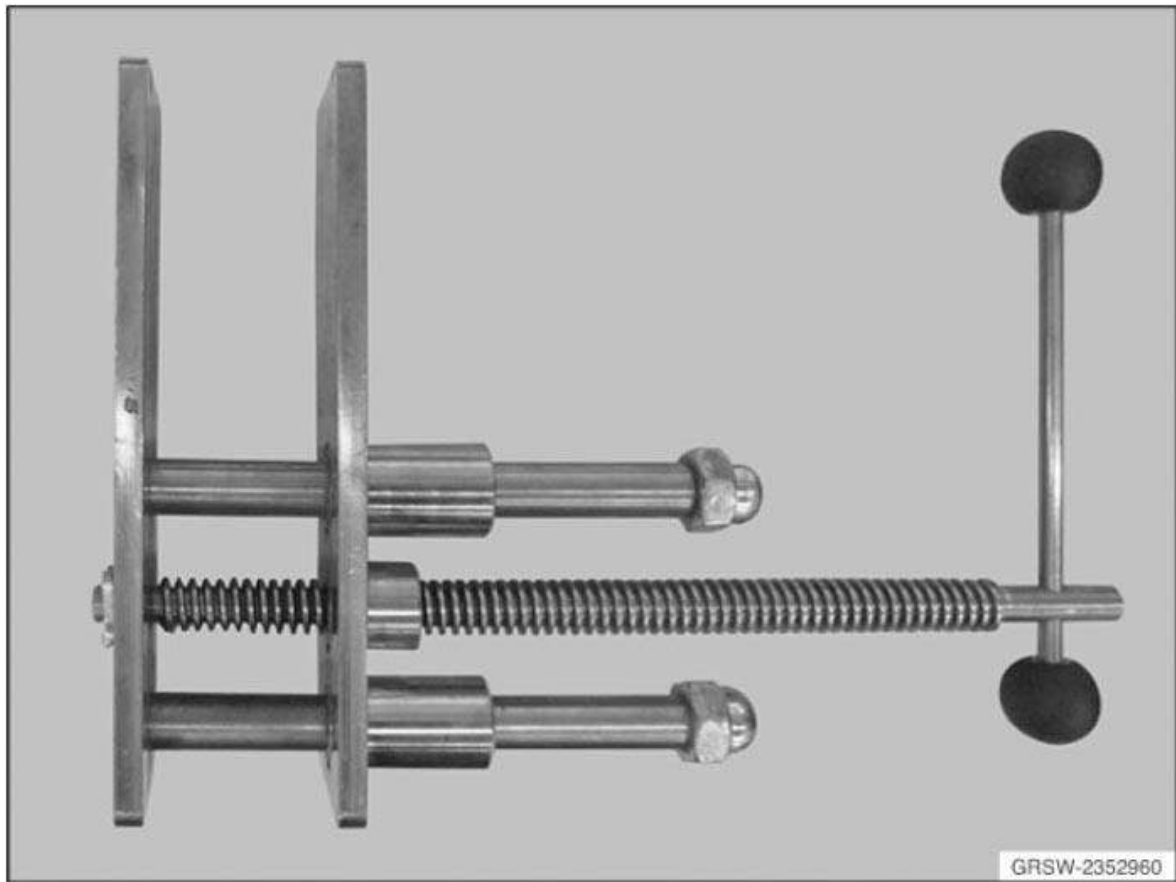


Fig. 30: Identifying Reset Tools (2352960)

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Set back to brake piston. Replacement for 34 1 050 (83300492455).

2320871 RESET

2320871 Reset Minimum set: Mechanical tools AM

NOTE: Resetting the electrical Automatic Hold brake in combination with the pin wrench 83 30 2 320 299

Storage Location

A34

SI number

01 11 12 (807)

Consisting of:

1. **2320880** Nut

NOTE: Nut is an integral part of resetter 83 30 2 320 871 with identification A.

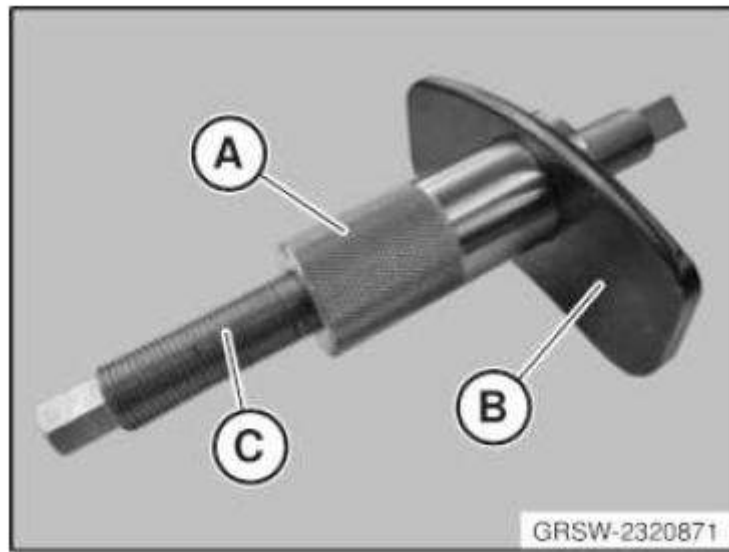


Fig. 31: Identifying Reset Tools (2320871)

Courtesy of BMW OF NORTH AMERICA, INC.

2. **2320882** Plate

NOTE: Plate is an integral part of reset 83 30 2 320 871 with identification B.

3. **2320300** Spindle

NOTE: Spindle is an integral part of resetter 83 30 2 320 871 with identification B.

0492478 RING SPANNER

0492478 343152 Ring spanner AM

NOTE: (Ring spanner 19 mm)

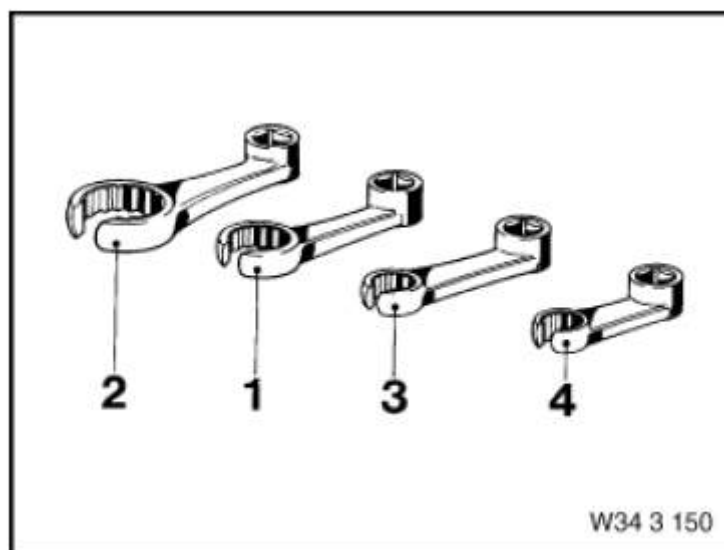


Fig. 32: Identifying Ring Spanner (0492478)

Courtesy of BMW OF NORTH AMERICA, INC.

0492476 RING SPANNER

0492476 343150 Ring spanner AM

NOTE: (Open ring spanner) Open ring spanner set, for unfastening and tightening the pressure lines on the pressure regulator and brake servo, H31-brake system

Storage Location

A12

Consisting of:

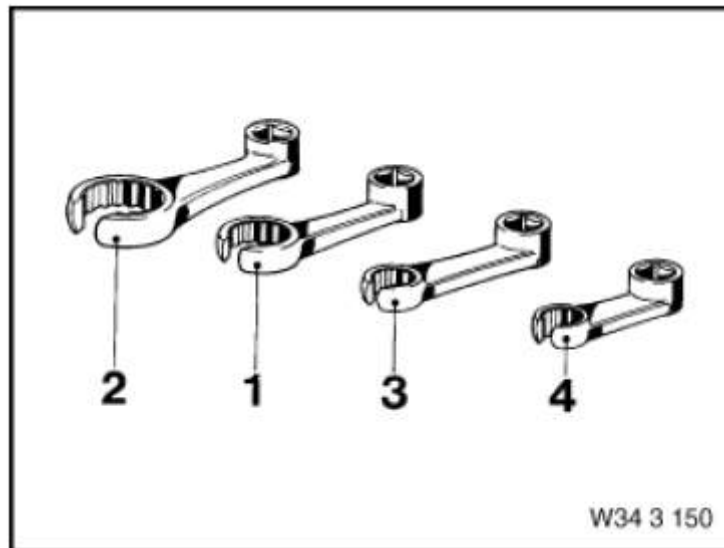


Fig. 33: Identifying Ring Spanner (0492476)
Courtesy of BMW OF NORTH AMERICA, INC.

1. [0492477](#) Ring spanner

NOTE: (Ring spanner 17 mm)

2. [0492478](#) Ring spanner

NOTE: (Ring spanner 19 mm)

3. [0492479](#) Ring spanner

NOTE: (Ring spanner 14 mm)

4. [0492480](#) Ring spanner

NOTE: (Ring spanner 12 mm)

0492477 RING SPANNER

0492477 343151 Ring spanner AM

NOTE: (Ring spanner 17 mm)

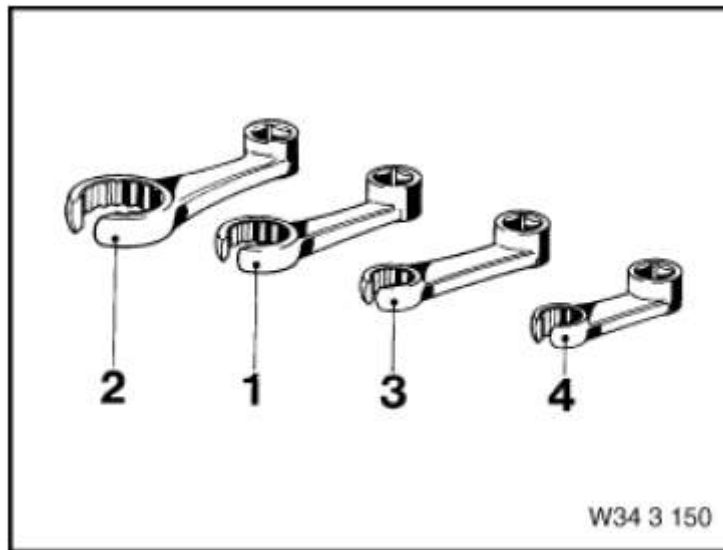


Fig. 34: Identifying Ring Spanner (0492477)

Courtesy of BMW OF NORTH AMERICA, INC.

0492479 RING SPANNER

0492479 343153 Ring spanner AM

NOTE: (Ring spanner 14 mm)

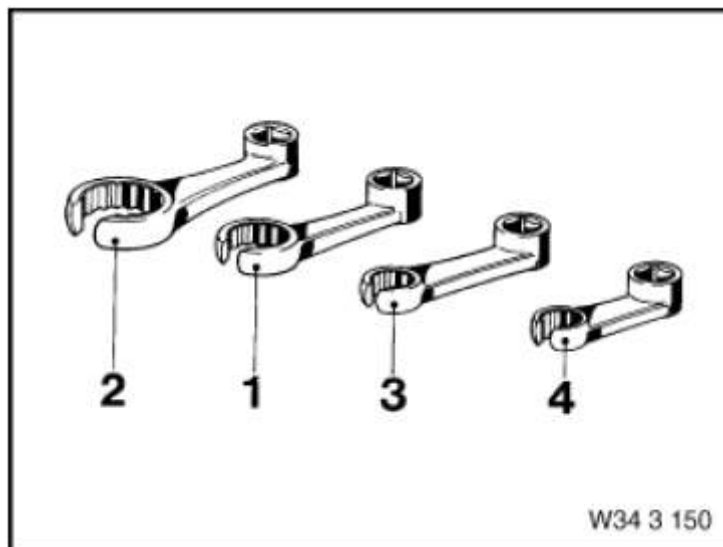


Fig. 35: Identifying Ring Spanner (0492479)

Courtesy of BMW OF NORTH AMERICA, INC.

0492480 RING SPANNER

0492480 343154 Ring spanner AM

NOTE: (Ring spanner 12 mm)

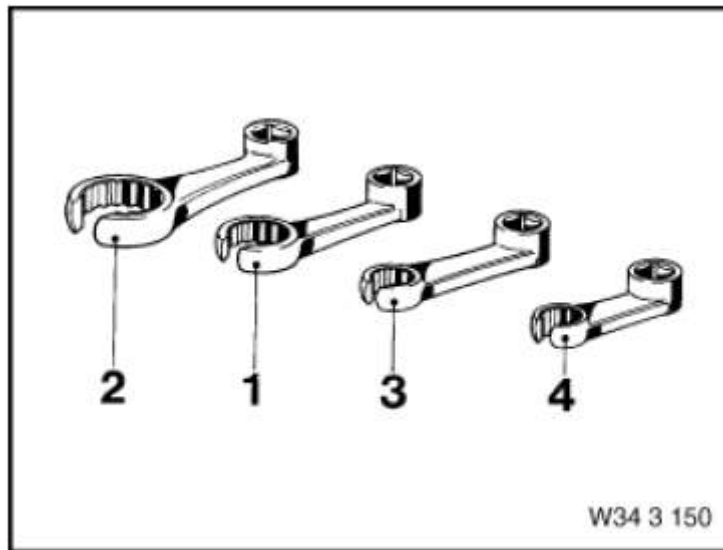


Fig. 36: Identifying Ring Spanner (0492480)

Courtesy of BMW OF NORTH AMERICA, INC.

0494632 SHAPED PART

0494632 341061 Shaped part AM

NOTE: (Shaped parts)

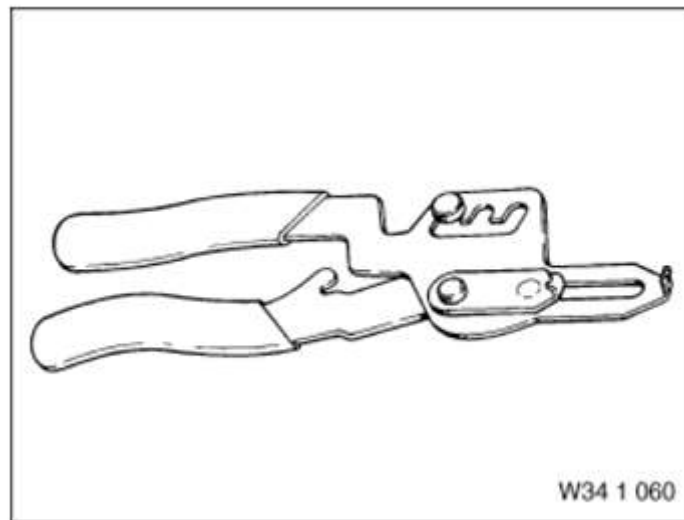


Fig. 37: Identifying Shaped Part (0494632)

Courtesy of BMW OF NORTH AMERICA, INC.

0492487 SHELL

0492487 343220 Shell Mechanical tool

NOTE: (bearing shells) 2 pieces For the pressure accumulator of the H31brake system

Storage Location

Y2

SI number

01 04 88 (906)

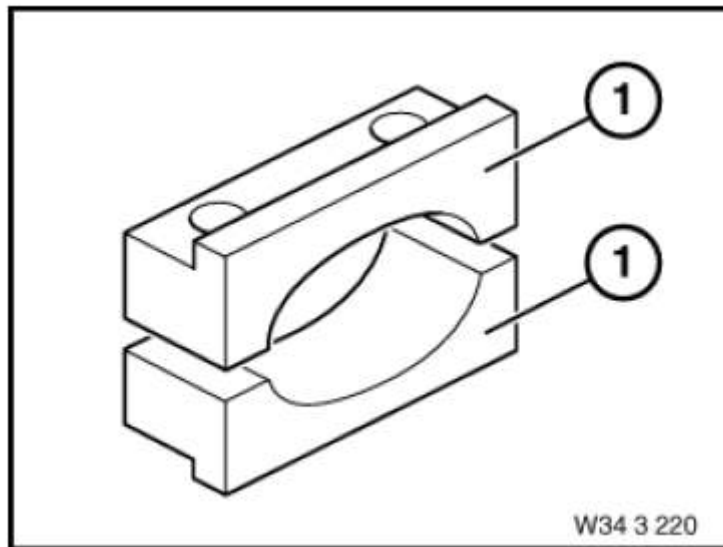


Fig. 38: Identifying Shell (0492487)

Courtesy of BMW OF NORTH AMERICA, INC.

0493326 SOCKET

0493326 345160 Socket Mechanical tool

NOTE: For installing the DSC 3 pressure sensor - from 9/98

Storage Location

A11

SI number

01 14 98 (343)

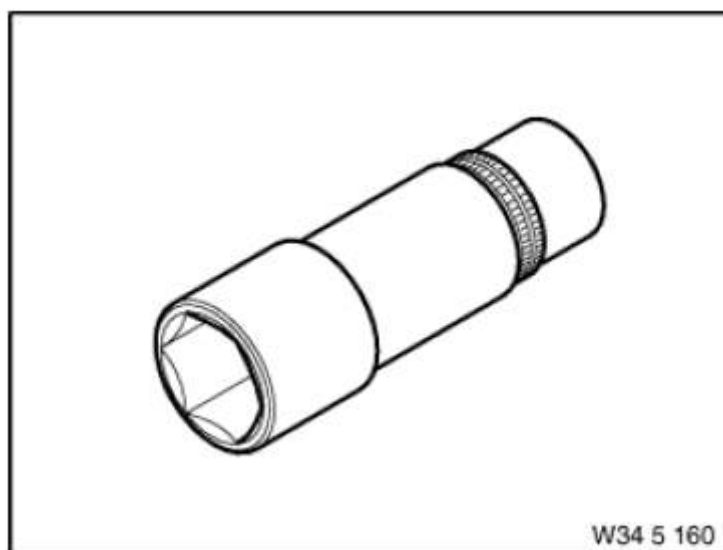


Fig. 39: Identifying Socket (0493326)

Courtesy of BMW OF NORTH AMERICA, INC.

0492464 SOCKET WRENCH INSERT

0492464 341190 Socket wrench insert Mechanical tool

NOTE: (Screwdriver insert) For front brake calipers - Deletion since June 85

0492452 SOCKET WRENCH INSERT

0492452 341020 Socket wrench insert Mechanical tool

NOTE: Hexagon socket WAF 7, connection 1/2" for replacing the brake pads

Storage Location

X3

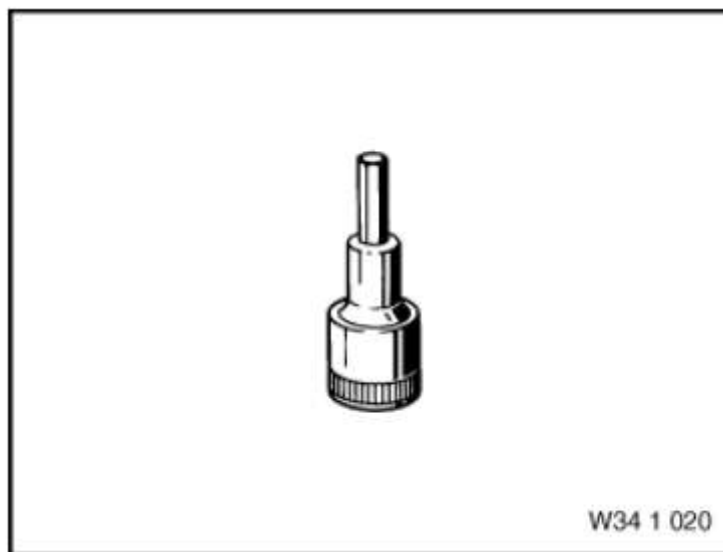


Fig. 40: Identifying Socket Wrench Insert (0492452)

Courtesy of BMW OF NORTH AMERICA, INC.

0492465 SOCKET WRENCH INSERT

0492465 341200 Socket wrench insert Mechanical tool

NOTE: (Screwdriver insert) For releasing and tightening the spline socket screws on the fixed brake yoke at the front and rear

Storage Location

C7

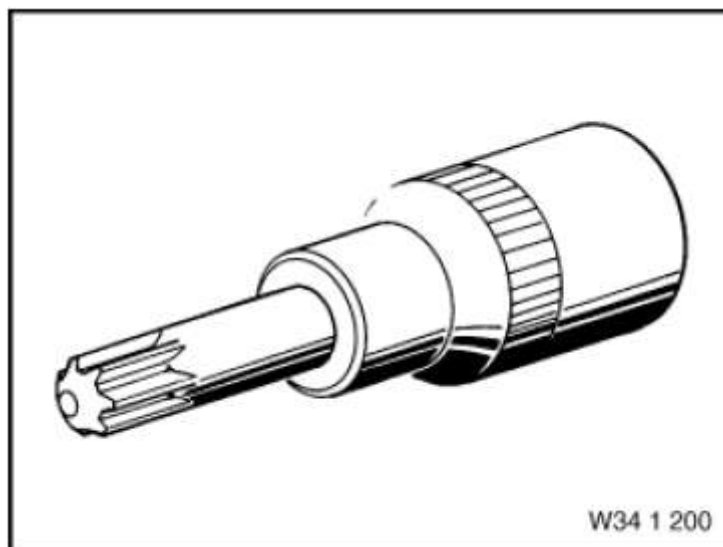


Fig. 41: Identifying Socket Wrench Insert (0492465)

Courtesy of BMW OF NORTH AMERICA, INC.

2320300 SPINDLE

2320300 Spindle Minimum set: Mechanical tools AM

NOTE: Spindle is an integral part of resetter 83 30 2 320 871 with identification B.

SI number

01 11 12 (807)

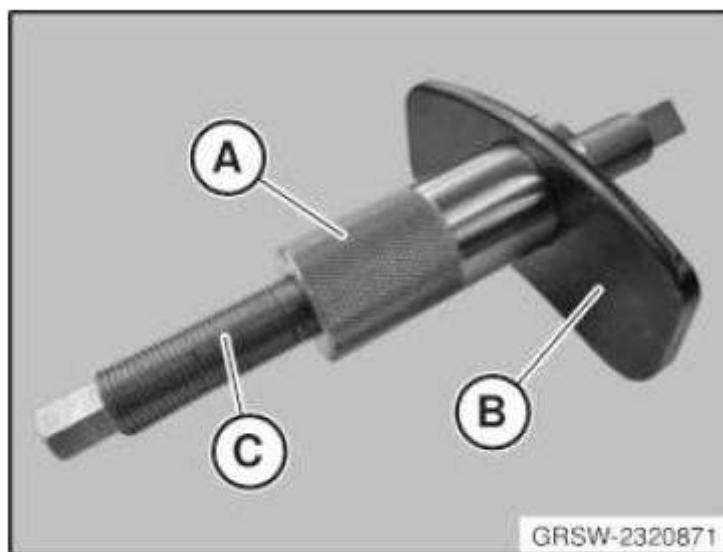


Fig. 42: Identifying Spindle (2320300)

Courtesy of BMW OF NORTH AMERICA, INC.

0492486 TENSIONING STRAP

0492486 343210 Tensioning strap Mechanical tool

NOTE: To change the knock sensor controller on the H31 brake system

Storage Location

Z10

Z9

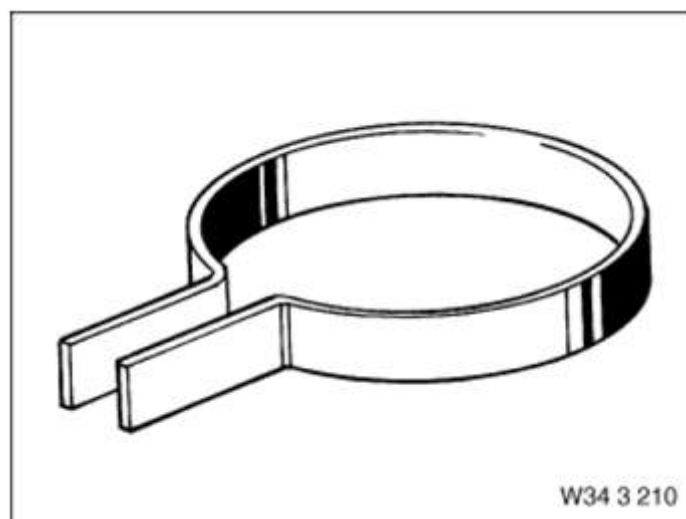


Fig. 43: Identifying Tensioning Strap (0492486)
Courtesy of BMW OF NORTH AMERICA, INC.

0492499 TESTER

0492499 345110 Tester AM

NOTE: (Tester) Tester for Anti-lock Brake System with Automatic Stability Control

Storage Location

K 105

SI number

02 05 92 (534)

Consisting of:

1 = **0492500** Tester

NOTE: (Tester) Control unit test

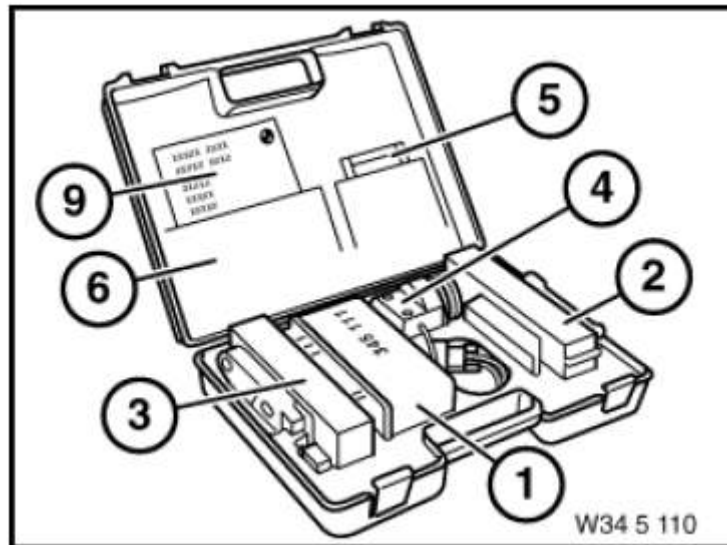


Fig. 44: Identifying Tester (0492499)
Courtesy of BMW OF NORTH AMERICA, INC.

2 = **0492501** Adapter

NOTE: (Test adapter 35/35- pin)

3 = **0492502** Adapter

NOTE: (Test adapter 35/55- pin)

4 = **0492503** Adapter cable

NOTE: (Adapter cable) Connecting line diagnosis

5 = **0492504** Disk

NOTE: (Disk) Test disk 3 1/2"

6 = **0492505** Case

NOTE: Not for individual order

9 = **0492506** Operating instructions

0492500 TESTER

0492500 345111 Tester AM

NOTE: (Tester) Control unit test

Storage Location

K 105

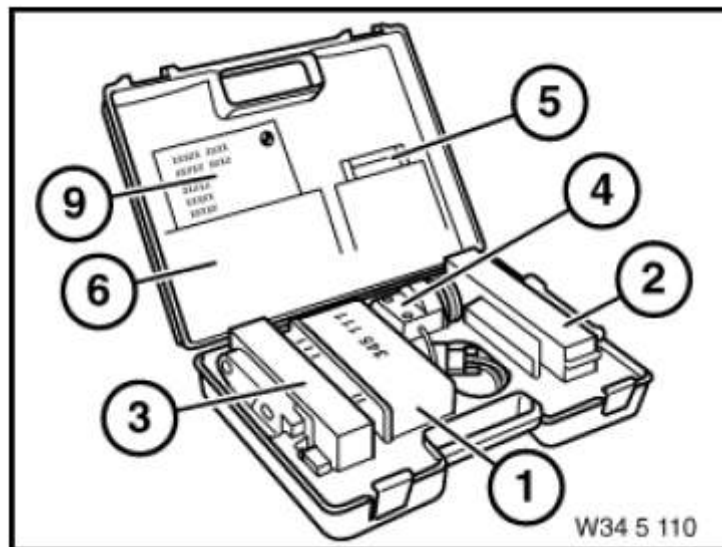


Fig. 45: Identifying Tester (0492500)

Courtesy of BMW OF NORTH AMERICA, INC.

0492463 TOOL

0492463 341170 Tool Mechanical tool

NOTE: (Pressing-in tool) for pressing in the shielding caps on both sides in the fixed calliper shafts - brake piston diameter 54 - 57 mm/single-circuit brake system

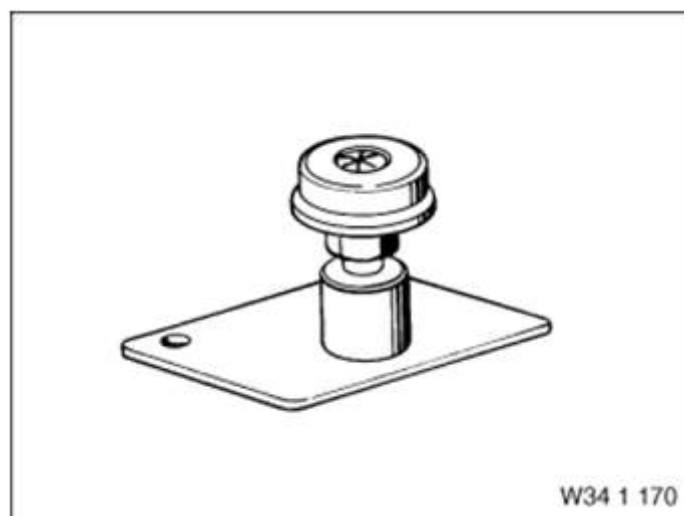


Fig. 46: Identifying Tool (0492463)

Courtesy of BMW OF NORTH AMERICA, INC.

0492489 TOOL

0492489 344010 Tool Mechanical tool

NOTE: For resetting the drum brake

Storage Location

B10

SI number

01 10 90 (288)

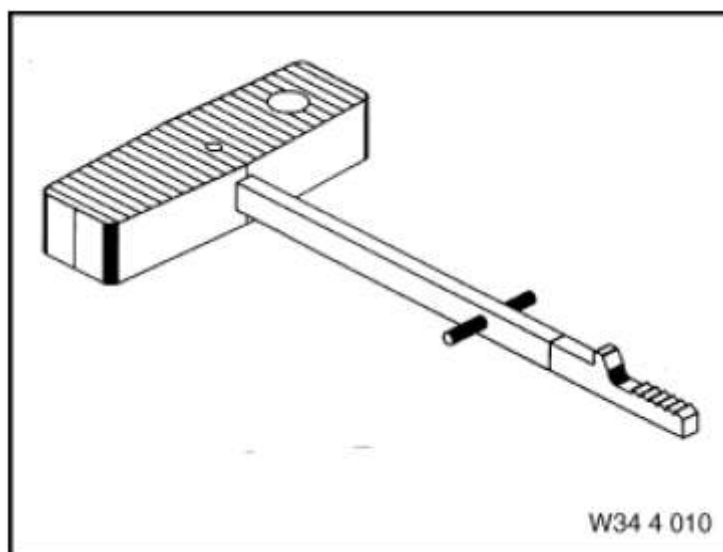


Fig. 47: Identifying Tool (0492489)

Courtesy of BMW OF NORTH AMERICA, INC.

0492462 TOOL

0492462 341150 Tool Mechanical tool

NOTE: (Pressing-in tool) for pressing in the shielding caps on both sides in the fixed calliper shafts - brake piston diameter 44 - 48 mm/single-circuit brake system

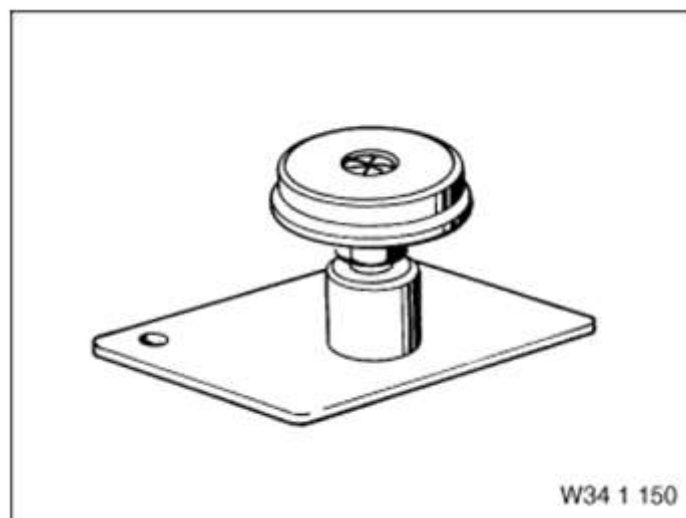


Fig. 48: Identifying Tool (0492462)

Courtesy of BMW OF NORTH AMERICA, INC.

0492468 WASHER

0492468 341270 Washer Mechanical tool

NOTE: (Brake disc comparison segment) Other: USA only

0492475 WRENCH

0492475 343110 Wrench Mechanical tool

NOTE: (Key) Breather key for ASC+Traction

Storage Location

A3

B3

SI number

01 06 89 (106)

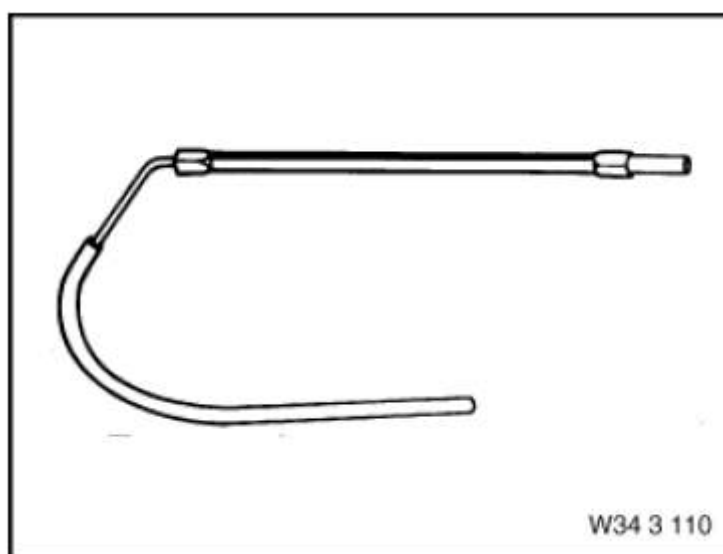


Fig. 49: Identifying Wrench (0492475)

Courtesy of BMW OF NORTH AMERICA, INC.

0492453 WRENCH

0492453 341030 Wrench Mechanical tool

NOTE: (Spanner) For adjusting handbrake cables on handbrake lever

Storage Location

X4

Y4

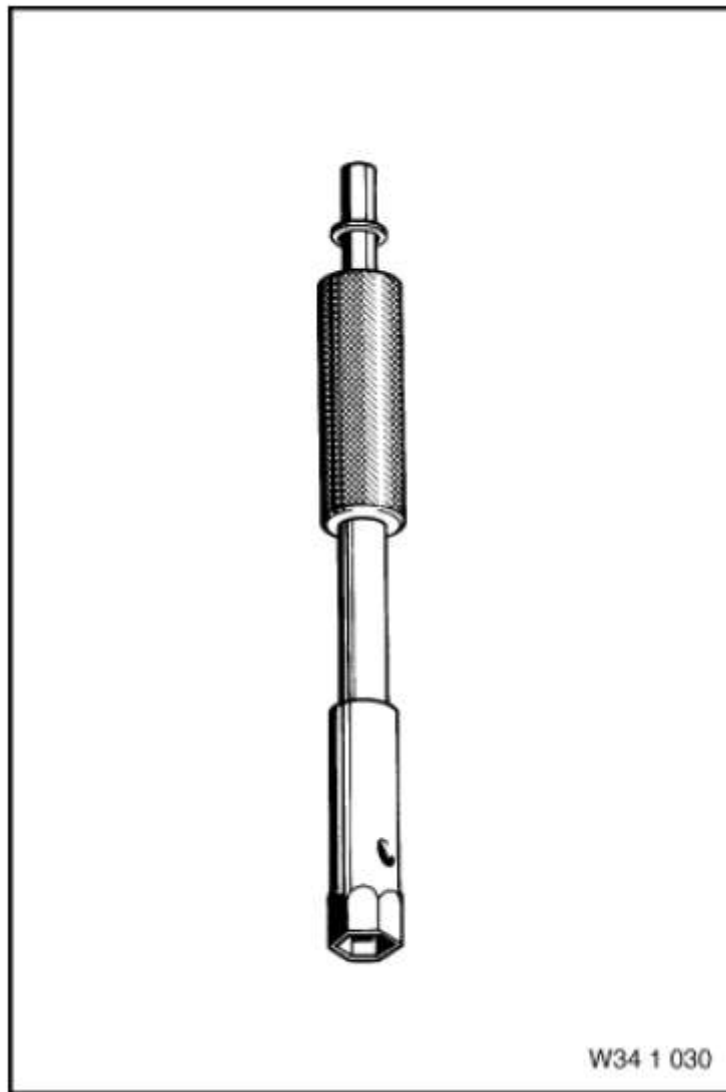


Fig. 50: Identifying Wrench (0492453)

Courtesy of BMW OF NORTH AMERICA, INC.

0492470 WRENCH

0492470 342000 Wrench AM

NOTE: For adjusting the eccentric brake pad on the rear drum brakes

Storage Location

X3

Y3

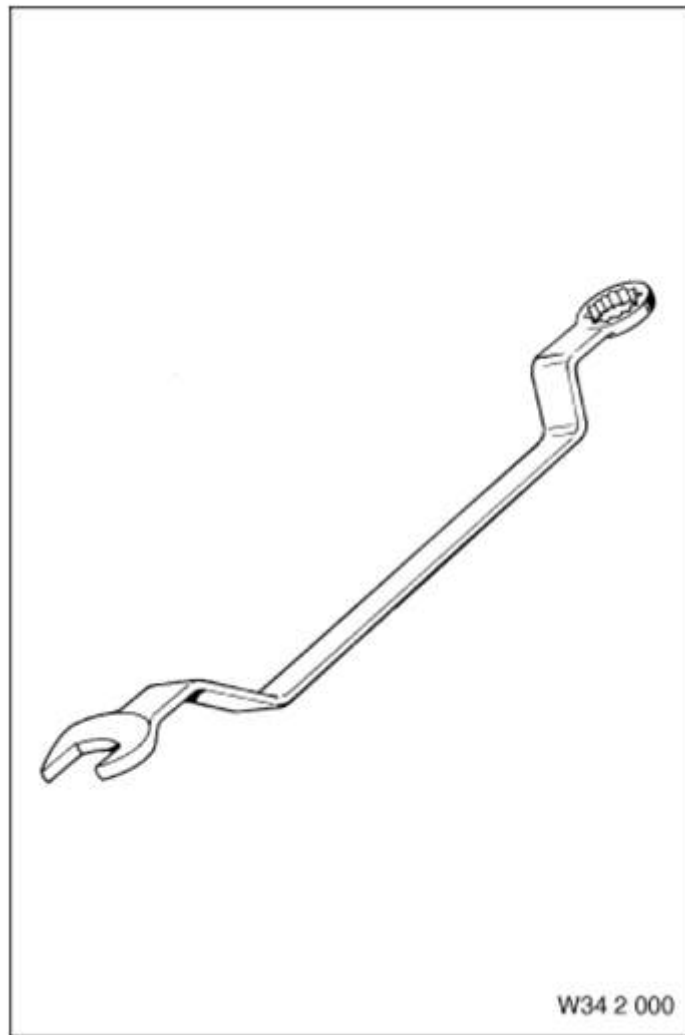


Fig. 51: Identifying Wrench (0492470)

Courtesy of BMW OF NORTH AMERICA, INC.

0492497 CONNECTOR

0492497 345050 connector Mechanical tool

Replaced by: 83300492499

NOTE: (Connector) For connecting line - Replaced by 34 5 110. (0 492 499)

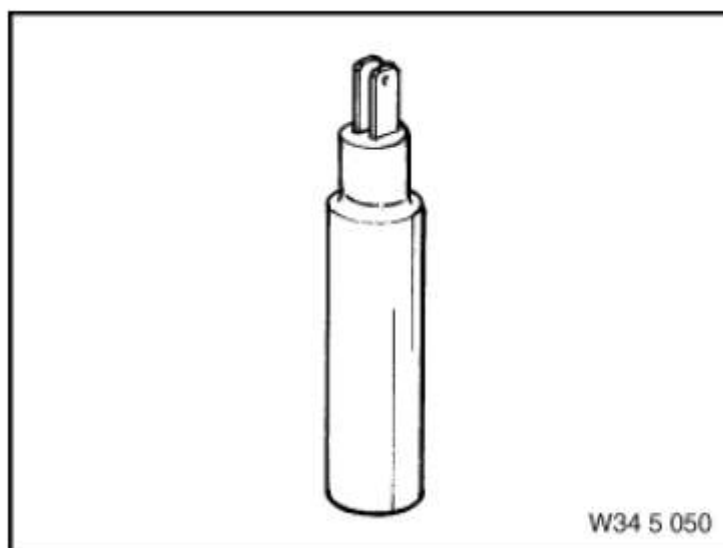


Fig. 52: Identifying Connector (0492497)

Courtesy of BMW OF NORTH AMERICA, INC.

0492496 CONNECTOR

0492496 345040 connector Mechanical tool

Replaced by: 83300492499

NOTE: (Connector) For connecting line - Replaced by 34 5 110. (0 492 499)

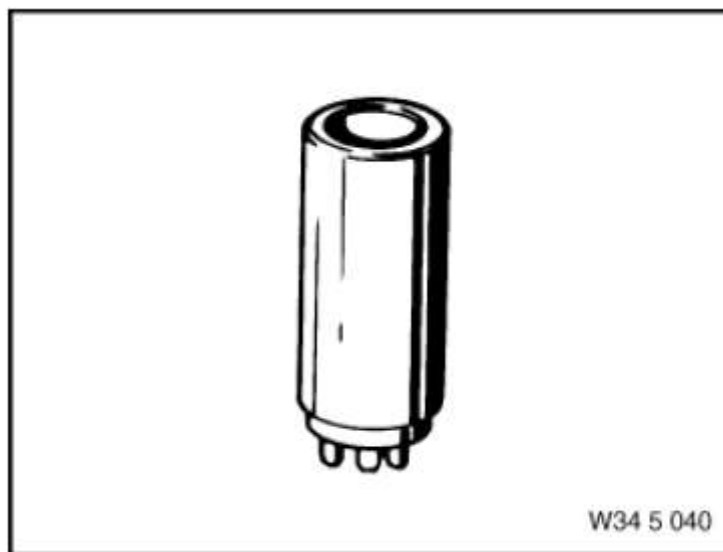


Fig. 53: Identifying Connector (0492496)

Courtesy of BMW OF NORTH AMERICA, INC.

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Article GUID: A00702126

BRAKES

Brakes - Technical Data - X3 Utility

FRONT BRAKE

34 11 FRONT BRAKE

FRONT BRAKE SPECIFICATION

IMPORTANT:

Installation of new brake pads is approved only provided that the brake disc thickness exceeds the specified dimension for "MIN TH" (see table).

Brake discs must be replaced when they reach the nominal thickness (see table) minus 2.4 mm! (Not applicable to perforated brake discs and M vehicles). Applies only to M vehicles and perforated ventilated brake discs: The brake discs must be replaced once they wear to the nominal specified thickness (see table) minus 1.6 mm!. Depending on:

- Engine type
- Transmission version
- Equipment specification (e.g. maximum load increase, chassis official-use, national version, etc.)

different brake discs can be fitted The brake discs must always be assigned by way of the relevant vehicle identification number and the Electronic Parts Catalogue! Â Â

Different thicknesses on brake linings	Max. mm	0, 01
Nominal size (diameter x thickness)	mm	328x28
(MIN TH) is stamped in brake disc chamber	mm	26, 4
Wear warning from residual lining thickness	mm	3, 7

REAR BRAKE

34 21 REAR BRAKE DISCS

REAR BRAKE DISCS SPECIFICATION

IMPORTANT:

Installation of new brake pads is approved only provided that the brake disc thickness exceeds the specified dimension for "MIN TH" (see table).

Brake discs must be replaced when they reach the nominal thickness (see table) minus 2.4 mm! (Not applicable to perforated brake discs and M vehicles). Applies only to M vehicles and perforated ventilated brake discs: The brake discs must be replaced once they wear to the nominal specified thickness (see table) minus 1.6 mm!. Depending on:

- Engine type
- Transmission version
- Equipment specification (e.g. maximum load increase, chassis official-use, national version, etc.)

different brake discs can be fitted The brake discs must always be assigned by way of the relevant vehicle identification number and the Electronic Parts Catalogue! Â Â

Different thicknesses on brake linings	Max. mm	0, 01
Nominal size (diameter x thickness)	mm	330x20
(MIN TH) is stamped in brake disc chamber	mm	18, 4
Wear warning from residual lining thickness	mm	3, 7

SPECIFICATIONS FOR BRAKE PERFORMANCE TESTING AS PRESCRIBED IN GERMAN MOTOR VEHICLE SAFETY STANDARDS

34.. REGULAR PERIODIC VEHICLE INSPECTIONS AS PRESCRIBED IN GERMAN MOTOR VEHICLE SAFETY STANDARDS

BRAKE PERFORMANCE TESTING SPECIFICATION

Model series	F25
Base model	sDrive 2.3i
Remarks	X3
Approved gross vehicle weight (kg)	2275 kg
Maximum brake pedal force to achieve a deceleration rate of 58 % in (N)	200 N
Minimum front axle braking force in %	51, 3 %
Minimum proportion of rear axle braking force in %	21, 6 %
Test area for brake pedal force (N)	70 - 150 N

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BRAKES

Brakes - Tightening Torques - X3 Utility

BRAKE LINES

34 32 BRAKE LINES

TIGHTENING TORQUE SPECIFICATION - BRAKE LINES

Â	Type	Thread	Tightening specifications	Value
Brake line 1AZ screws/retaining screws	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18	M12 x 1	Â	14 Nm
	F01/F02/F03/F04/F06/F07/F10/F11/F13/F12/F18/F25/F26	M12 x 1	Blue union screw connection in steel e.g. brake hose	16 Nm
	F01/F02/F03/F04/F06/F07/F11/F10/F12/F13/F18/F25/F26	M12 x 1	Blue union screw connection in aluminium e.g. hydraulic control unit	17 Nm
	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18	M10 x 1	Â	14 Nm
	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M10 x 1	Blue union screw connection in steel e.g. brake hose	16 Nm
	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M10 x 1	Blue union screw connection in aluminium e.g. hydraulic control unit	17 Nm
Brake hose to 2AZ brake caliper, front	F01/F02/F03/F04/F03/F06/F07/F10/F11/F12/F13/F18/F25/F26	Â	Cap screw	17 Nm
Brake hose to 3AZ brake caliper, rear	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	Â	Â	24 Nm
	F10/F12/F13/M5/M6	M10x1	Banjo bolt (renew seals)	40 Nm

BRAKE SERVO

34 33 BRAKE SERVO

TIGHTENING TORQUE SPECIFICATION - BRAKE SERVO

Â	Type	Thread	Tightening specifications	Dimension
Brake booster 1AZ to pedal assembly console	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M8	Replace self-locking nut. Retighten on brake booster after 10 min.	24 Nm

2AZ	Electric vacuum pump holder to oil sump	F01h/F02h/F10h	M10	Â	38 Nm
3AZ	Electric vacuum pump to bracket	F01h/F02h/F10h/F18PHEV	M6	Â	9 Nm

FRONT BRAKE

34 11 FRONT BRAKE

TIGHTENING TORQUE SPECIFICATION - FRONT BRAKE

Â	Type	Thread	Tightening specifications	Value
1AZ	Brake disc to wheel hub	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26 M8	Replace screws.	16 Nm
2AZ	Brake anchor plate to swivel bearing	F01, F02, F04, F06, F07, F10, F11, F12, F13, F18 M12x1.5	Â	110 Nm
		F03 M14x1,5	Replace screws. IMPORTANT: Observe 4 phase tightening!	Â
			Jointing torque	150 Nm
			Release Jointing torque	min.90 Â° 150 Nm
			Angle of rotation	180Â° Â± 15Â°
		F25/F26 M12x1.5	Replace screws. Jointing torque Angle of rotation	Â 75 Nm 45Â° 10Â°
3AZ	Guard plate to swivel bearing	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26 M6	Replace screws.	12 Nm
4AZ	Guide bolt (brake caliper to brake anchor plate)	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26 SW9	Â	55 Nm
		F07/F06/F10/F11/F12/F13/F18/F25/F26 SW7	Â	30-5 Nm
Â		F25/F26 SW8	Â	28 Nm
	Brake caliper at	M12x1.5 Hexagon		

5AZ swivel bearing	F06/F10/F12/F13/M models only	nut	Â	95 Nm
Stud bolt (for brake 6AZ caliper) in wheel carrier	F06/F10/F12/F13, M models only	Â	Clean the thread in the wheel carrier and renew the stud bolt	20 Nm

MASTER BRAKE CYLINDER

34 31 MASTER BRAKE CYLINDER

TIGHTENING TORQUE SPECIFICATION - MASTER BRAKE CYLINDER

Â	Type	Thread	Tightening specifications	Dimension
1AZ Brake master cylinder to brake booster (vacuum)	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M8	Replace self-locking nuts.	23Â±2 Nm
2AZ Distance sensor to brake master cylinder	F04	M4	Replace screws.	3, 5 Nm
3AZ Retaining screw, expansion tank to brake master cylinder	F25/F26	Â	Â	8 Nm

PARKING BRAKE

34 41 PARKING BRAKE

TIGHTENING TORQUE SPECIFICATION - PARKING BRAKE

Â	Type	Thread	Tightening specifications	Value
1AZ Spring clip to wheel carrier	F01/F02/F03/F04/F07	M6	Â	8 Nm
2AZ Support Duo-Servo to wheel carrier, rear	F01/F02	M10	Â	60 Nm
	F03/F04/F07	M8	Â	28 Nm
3AZ Bracket, parking brake, to rear axle support	F01/F02/F03/F04/F07	M8	Â	19 Nm
4AZ Parking brake actuator unit to bracket	F01/F02/F03/F04/F07	Â	self-tapping screw	4 Nm
5AZ Union nut, parking brake Bowden cables, to actuator unit	F01/F02/F03/F04/F07	Â	WAF 27	6 Nm
6AZ EMF actuator to brake caliper	F06/F10/F11/F12/F13/F18/F25/F26	Â	Replace screws	12 Nm
7AZ Parking brake control unit to body	F06/F10/F11/F12/F13/F18	Â	Replace plastic nuts	2, 5 Nm

REAR BRAKE

34 21 REAR BRAKE

TIGHTENING TORQUE SPECIFICATION - REAR BRAKE

Â	Type	Thread	Tightening specifications	Dimension
Brake disc 1AZ to wheel hub	F01/F02/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M8	Replace screw	16 Nm
Brake anchor 2AZ plate to wheel carrier	F01/F02/F04/F06/F07/F10/F11/F12/F13/F18	M12x1.5	Â	110 Nm
	F03	M14x1,5	Replace screws. IMPORTANT: Observe 4 phase tightening! Jointing torque Release Jointing torque Angle of rotation	Â Â 150 Nm min.90 Â° 150 Nm 180Â°Â±15Â°
	F25/F26	M12x1.5	Replace screws. Jointing torque Angle of rotation	Â 75 Nm 45Â°10Â°
Protective plate to wheel carrier 3AZ	F01/F02/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M6	Replace screws	12 Nm
Guide screw (brake caliper to brake anchor plate) 4AZ	F01, F02, F03, F04, F07	WAF 7	Â	30-5 Nm
Guide screw (brake caliper to brake anchor plate) 5AZ	F06/F10/F12/F11/F13/F18/F25/F26	WAF 13	Replace screws	35 Nm

SLIP CONTROL SYSTEM (DSC)

34 51 SLIP CONTROL SYSTEM (DSC)

TIGHTENING TORQUE SPECIFICATION - SLIP CONTROL SYSTEM (DSC)

Â	Type	Thread	Tightening specifications	Value
Control unit to			Initial torque	2Â±0, 5

1AZ hydraulic control unit	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18	Â	Final torque	Nm 4, 3+0, 5 Nm
2AZ ICM control unit to body	F01/F02/F03/F06/F07/F07/F10/F11/F12/F18/F13/F25/F26	Â	Replace screws.	8 Nm
3AZ Pulse sensor to swivel bearing/wheel carrier	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M6x16	Â	8 Nm
Pulse sensor to swivel bearing, front, all-wheel drive vehicles	F01, F02, F04, F06, F07, F10, F11, F12	M6x16	Hexagon screw AF 10 Replace screw	12 Nm
4AZ Hydraulic control unit to holder	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M8	Â	8 Nm
5AZ Holder, hydraulic control unit, to body	F01/F02/F03/F04/F06/F07/F10/F12/F13/F11/F18	Â	Â	19 Nm
	F25/F26	M6	Â	8 Nm
6AZ Pulse sensor adapter to swivel bearing	F03	M6	Â	8 Nm

TESTING AND BLEEDING BRAKES

34 00 TESTING AND BLEEDING BRAKES

TIGHTENING TORQUE SPECIFICATION - TESTING AND BLEEDING BRAKES

Â	Type	Thread	Tightening specifications	Dimension
1AZ Vent valve	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	WAF 11	Â	12-18 Nm
	F06/F10/F11/F12/F13/F18/F25/F26	wrench size 9 mm	Â	9-11 Nm

BRAKES

Pedals - Repair Instructions - X3 Utility

PEDAL MOUNTING BLOCK

35 11 000 REMOVING AND INSTALLING (REPLACING) COMPLETE BEARING SUPPORT FOR FOOT PEDAL

When the repair work is complete, please pay attention to the following:

- IMPORTANT:
- Bleed clutch hydraulic system.
 - Carry out functional check.

Necessary preliminary work:

- Remove left **footwell trim** . See [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(ECE ONLY\)](#) or [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(US ONLY\)](#)

Remove sensor opening (1).

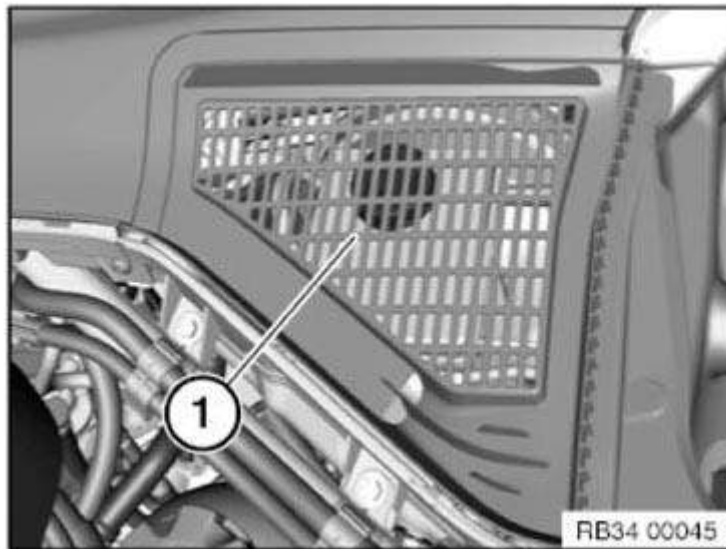


Fig. 1: Identifying Sensor Opening

Courtesy of BMW OF NORTH AMERICA, INC.

Lower the level in the expansion tank below the output to the clutch master cylinder.

Detach hose (1) from expansion tank in direction of arrow.

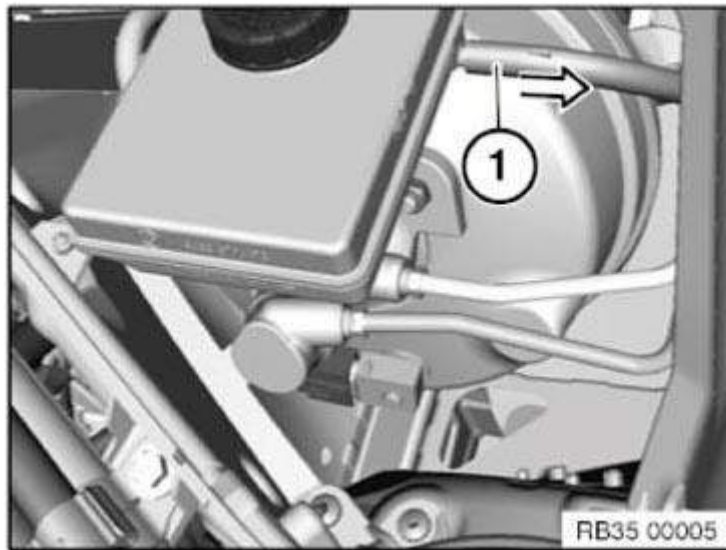


Fig. 2: Detaching Hose From Expansion Tank
 Courtesy of BMW OF NORTH AMERICA, INC.

Press out plastic pin (1).

Press plastic pin (2) together and press out.

Installation note:

Replace plastic pins (1 and 2).

Remove clutch master cylinder from the bearing support. Feed hose through the bearing support out of the expansion tank.

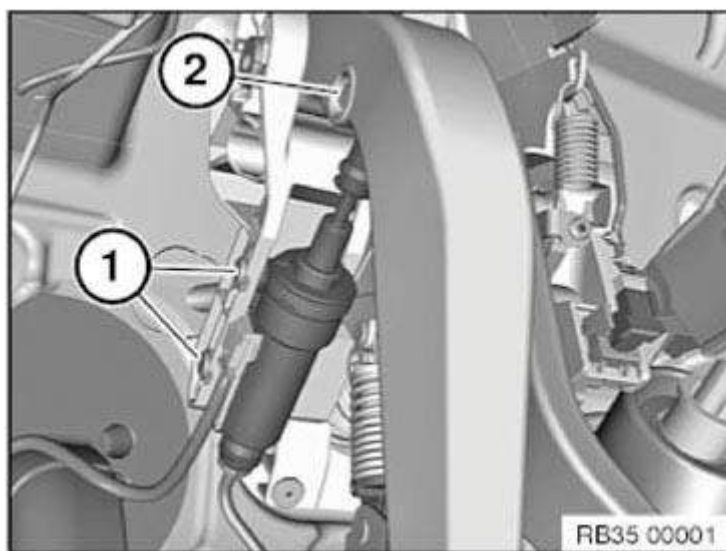


Fig. 3: Identifying Plastic Pins
 Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Note draining brake fluid and catch in a suitable collecting vessel, if applicable.

Remove retaining clip (1) and press out pin.

Unscrew nuts (2).

Installation note:

Make sure the retaining clip is fitted correctly in the groove!

Check retaining clip and replace if necessary.

Replace self-locking nut.

Tightening torque **35 11 2AZ** .

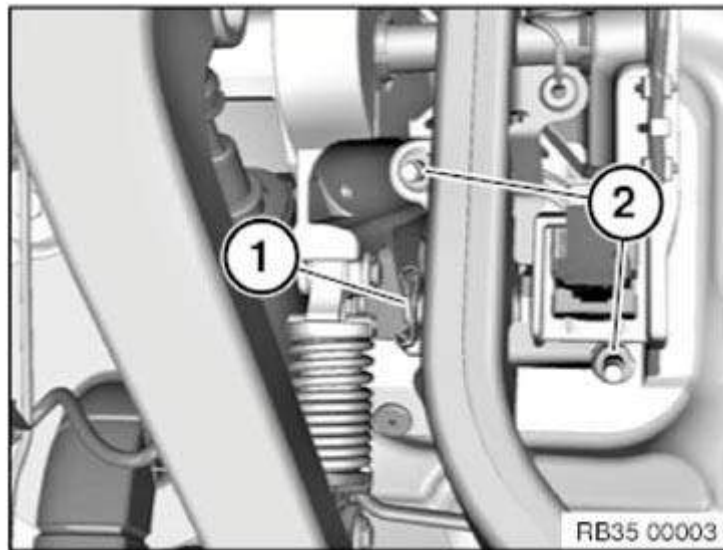


Fig. 4: Identifying Retaining Clip And Nut

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Remove line clip (2).

Undo nut (3) and remove bearing support.

Installation note:

Replace self-locking nut.

Tightening torque **35 11 2AZ** .

Replacement:

- Modify **BRAKE LIGHT SWITCH** .
- Modify clutch pedal.

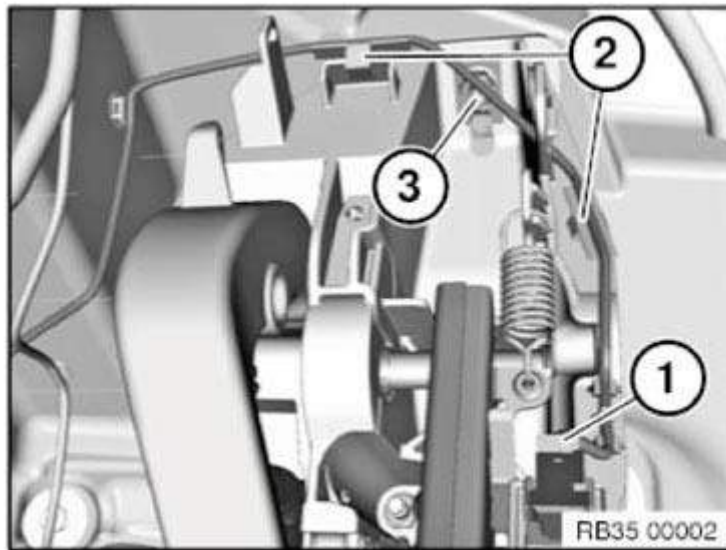


Fig. 5: Identifying Bearing Support Nut And Line Clip

Courtesy of BMW OF NORTH AMERICA, INC.

35 21 041 REPLACING SPRING FOR BRAKE PEDAL

NOTE: See [35 21 041 Replacing spring for brake pedal.](#)

35 31 041 REPLACING SPRING FOR CLUTCH PEDAL

NOTE: See [35 31 041 Replacing spring for clutch pedal.](#)

BRAKE PEDAL WITH LINKAGE

35 21 041 REPLACING SPRING FOR BRAKE PEDAL

Necessary preliminary work:

- Remove trim panel for pedal mechanism . See [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(ECE ONLY\)](#) or [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(US ONLY\)](#) .

Disconnect return spring (1).

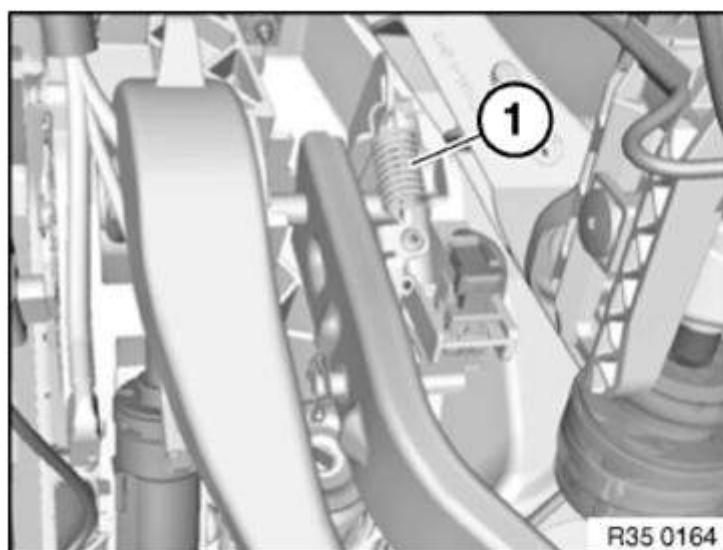


Fig. 6: Identifying Return Spring

Courtesy of BMW OF NORTH AMERICA, INC.

35 31 041 REPLACING SPRING FOR CLUTCH PEDAL

Necessary preliminary work:

- Remove trim panel for pedal mechanism . See [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(ECE ONLY\)](#) or [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(US ONLY\)](#) .

Disconnect return spring (1).

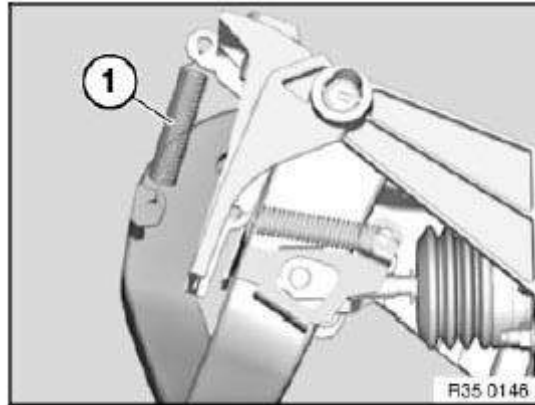


Fig. 7: Identifying Return Spring

Courtesy of BMW OF NORTH AMERICA, INC.

CLUTCH PEDAL WITH LINKAGE

35 31 000 REMOVING AND INSTALLING OR REPLACING CLUTCH PEDAL

IMPORTANT: After completion of work, perform a functional check.

Necessary preliminary work:

- Remove left footwell trim . See [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(ECE ONLY\)](#) or [51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(US ONLY\)](#) .

Press plastic pin (1) together and press out.

Press out plastic pin (2).

If necessary, disconnect over-center helper spring.

Clutch hydraulic system remains connected!

Remove clutch pedal.

Installation note:

Replace plastic pins (1 and 2).

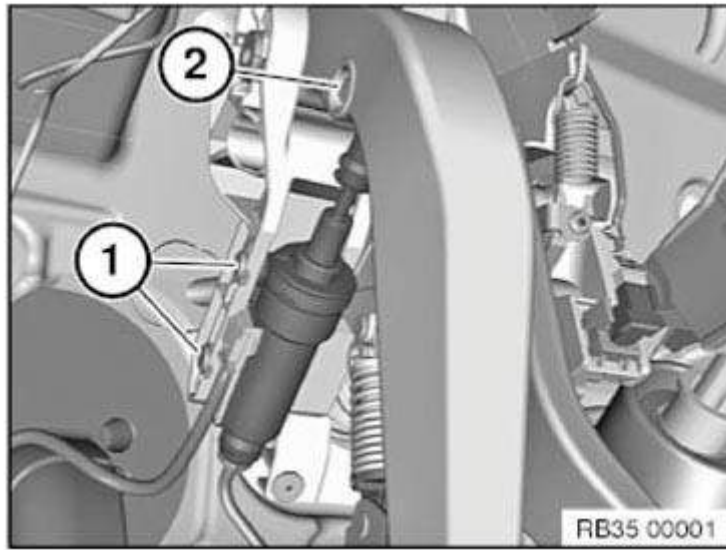


Fig. 8: Identifying Plastic Pins

Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Check bearing bushings (1) and replace if necessary.

Lightly grease bearing bushings (1).

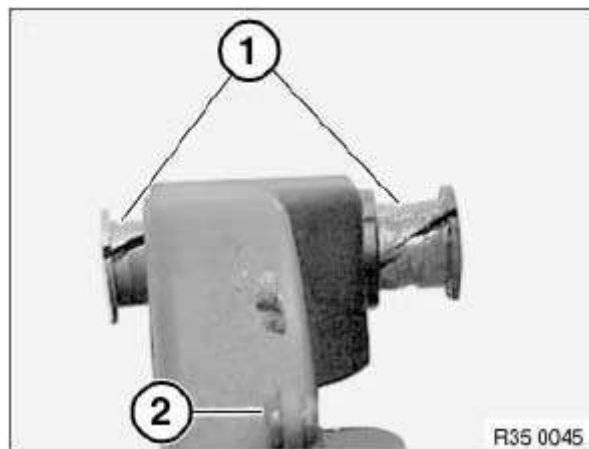


Fig. 9: Identifying Bearing Bushes

Courtesy of BMW OF NORTH AMERICA, INC.

35 31 050 REMOVING AND INSTALLING/REPLACING OVER-CENTER HELPER SPRING

Necessary preliminary work:

- Remove pedal trim . See [**51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(ECE ONLY\)**](#) or [**51 45 184 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR PEDAL ASSEMBLY \(US ONLY\)**](#) .

Press end of pin (1) together with offset pliers and press out pin.

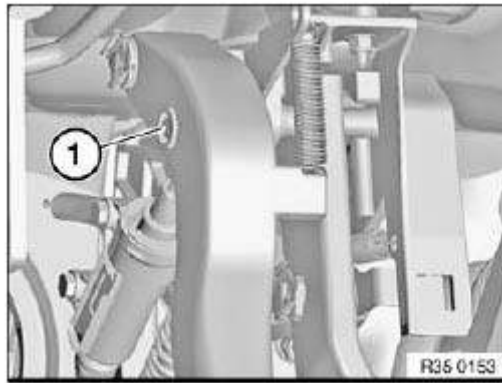


Fig. 10: Identifying Pedal Trim End Of Pin
 Courtesy of BMW OF NORTH AMERICA, INC.

Push in pin (1) fully in direction of arrow.

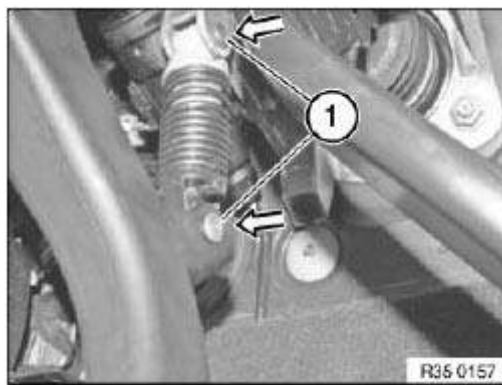


Fig. 11: Pushing Pins
 Courtesy of BMW OF NORTH AMERICA, INC.

Detach retainers (1).

Installation note:

Check retainers, replace if necessary.

Retainers must lie with both legs in the groove and snap audibly into place.

Slide out pin (2).

Installation note:

Lightly grease pin.

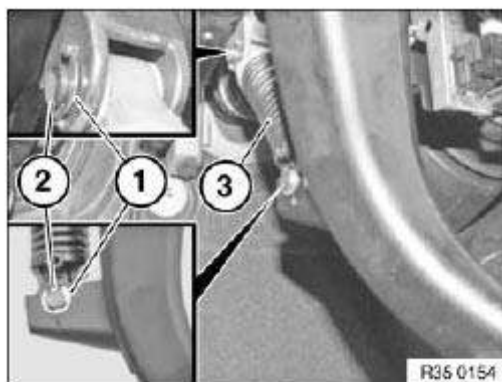


Fig. 12: Identifying Retainers

Courtesy of BMW OF NORTH AMERICA, INC.

Remove over-centre helper spring (3).

There are two versions:

- (A) Over-centre helper spring
- (B) Reinforced over-centre helper spring

Assembly of over-centre helper spring:

- Secure black holder (1) to clutch pedal
- Smaller coil spacing of spring (2) points to black holder (1)
- Secure grey holder (3) to bearing block

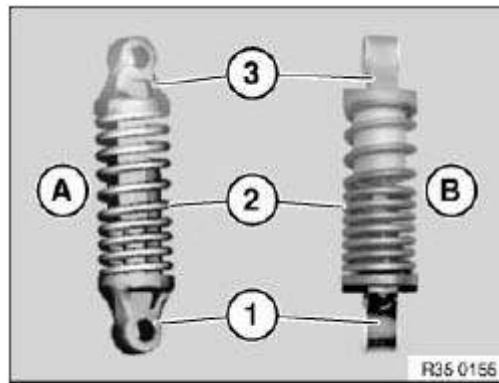


Fig. 13: Identifying Over-Centre Helper Spring, Black And Grey Holder

Courtesy of BMW OF NORTH AMERICA, INC.

Lightly grease holder and spring contact surfaces.

Installation note:

Secure over-centre helper spring first with black holder to clutch pedal.

Gently press over-centre helper spring together and secure with grey holder to bearing block.

Connect clutch pedal to clutch master cylinder.

When replacing reinforced over-centre helper spring:

Remove locking clamp (1).

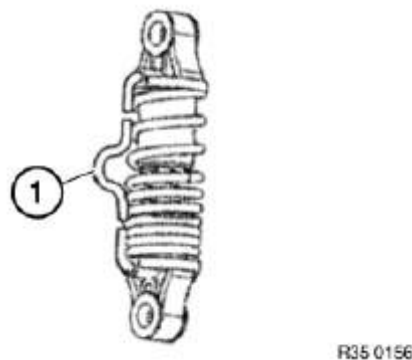


Fig. 14: Identifying Locking Clamp

Courtesy of BMW OF NORTH AMERICA, INC.

35 31 011 REPLACING BEARING BUSHES FOR CLUTCH PEDAL

Operation is described in:

REMOVING AND INSTALLING CLUTCH PEDAL.

35 31 041 REPLACING SPRING FOR CLUTCH PEDAL

NOTE: See 35 31 041 Replacing spring for clutch pedal.

ACCELERATOR PEDAL ACTUATION

35 40 001 REMOVING AND INSTALLING OR REPLACING ACCELERATOR PEDAL MODULE

Take off cap.

Release screw.

Pull accelerator pedal module upwards out of fixture.

Installation note:

Tightening torque 35 40 1AZ .

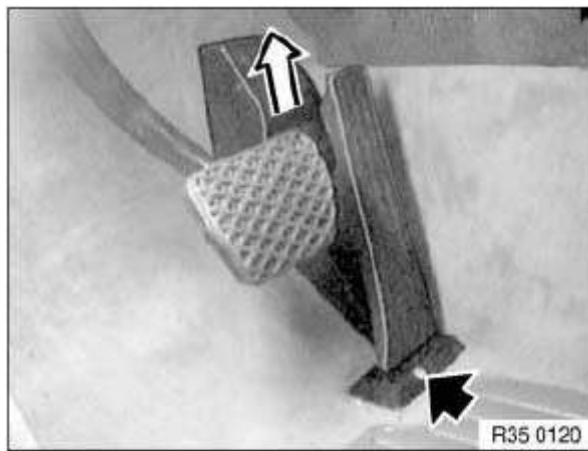


Fig. 15: Pulling Accelerator Pedal Module Upwards

Courtesy of BMW OF NORTH AMERICA, INC.

Pull off connector (1).

Remove accelerator pedal module.

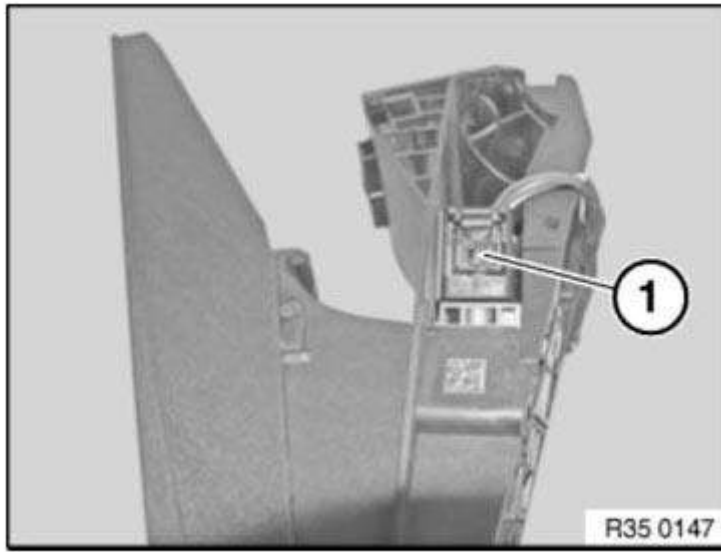


Fig. 16: Identifying Accelerator Pedal Module Connector

Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Accelerator pedal module can only be replaced completely with adapter plate.

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BRAKES

Pedals - Special Tools - X3 Utility

PEDALS

0495298 DEVICE

0495298 350110 Device AM

NOTE: (Drilling device) For brake pedal, additional locking pin.

Consisting of:

1. [0495299](#) Template

NOTE: (Drilling template, left-hand drive vehicle)

2. [0495300](#) Drill bit

NOTE: (Steel drill bit) ~ 3 mm

3. [0495301](#) Holding sleeve

NOTE: (Clamping sleeve $\sim 3 \times 30$ 1 set (10 units))

4. [0495302](#) Template

NOTE: (Drilling template, right-hand drive vehicle)

0492511 DEVICE

0492511 353000 Device Mechanical tool

NOTE: (Tensioning device) for torsion spring of clutch pedal

0495300 DRILL BIT

0495300 350112 Drill bit AM

NOTE: (Steel drill bit) ~ 3 mm

0492509 GAUGE

0492509 350010 Gauge Minimum set: Mechanical tools AM

Replaced by: 83300493311

NOTE: (Adjusting gauge) For adjusting the full load stop (kickdown switch) on the accelerator. Replaced by 35 0 012. (0 493 311)

Storage Location

C32

SI number

01 11 94 (858)

Consisting of:

4 = 0493311 Gauge

NOTE: (Adjusting gauge) From model year 8/97 and retroactively

4 = 0493312 Gauge

NOTE: (Adjusting gauge) Replaced by 35 0 012 (0 493 311)

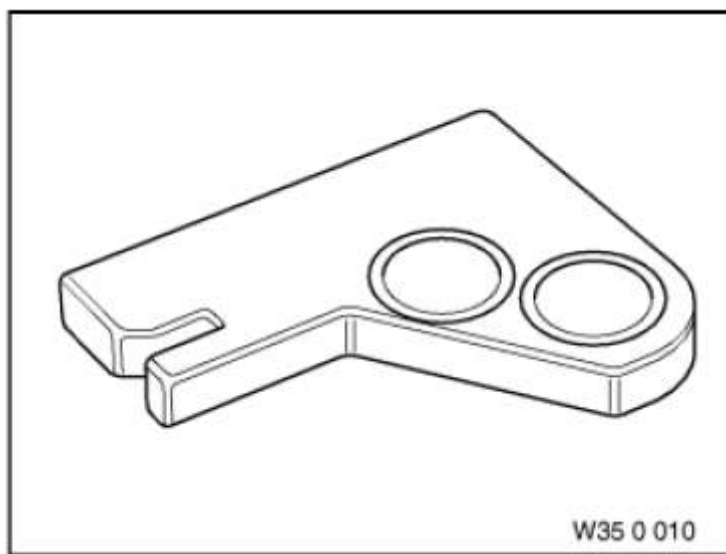


Fig. 1: Identifying Gauge (0492509)

Courtesy of BMW OF NORTH AMERICA, INC.

0492510 GAUGE

0492510 350020 Gauge Mechanical tool

NOTE: (Adjusting gauge) For adjusting the full load stop on the accelerator

Storage Location

Y3

SI number

01 11 94 (858)

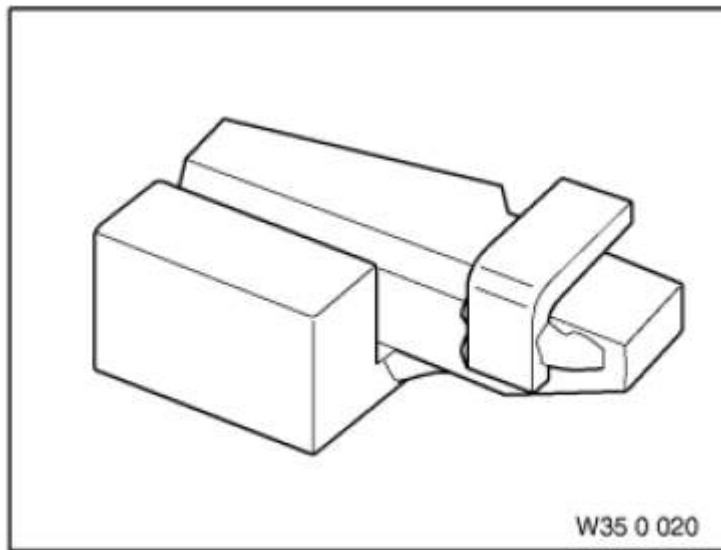


Fig. 2: Identifying Gauge (0492510)

Courtesy of BMW OF NORTH AMERICA, INC.

0493311 GAUGE

0493311 350012 Gauge Minimum set: Mechanical tools AM

NOTE: (Adjusting gauge) From model year 8/97 and retroactively

Storage Location

B4

C4

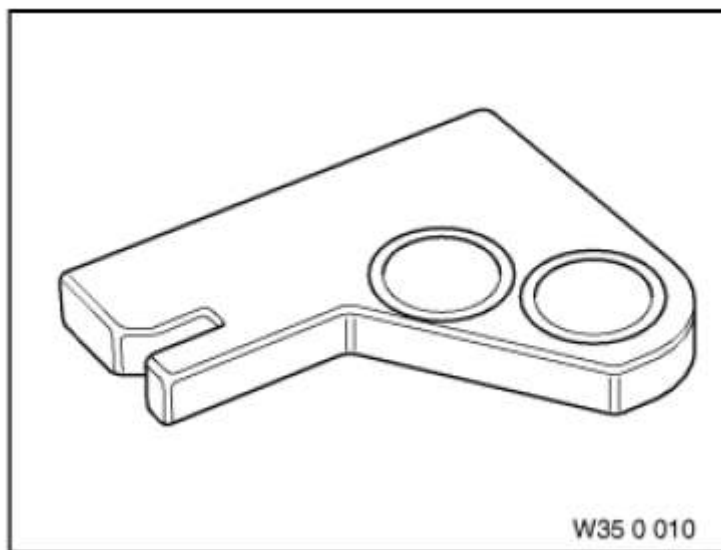


Fig. 3: Identifying Gauge (0493311)

Courtesy of BMW OF NORTH AMERICA, INC.

0493312 GAUGE

0493312 350011 Gauge Minimum set: Mechanical tools AM

Replaced by: 83300493311

NOTE: (Adjusting gauge) Replaced by 35 0 012 (0 493 311)

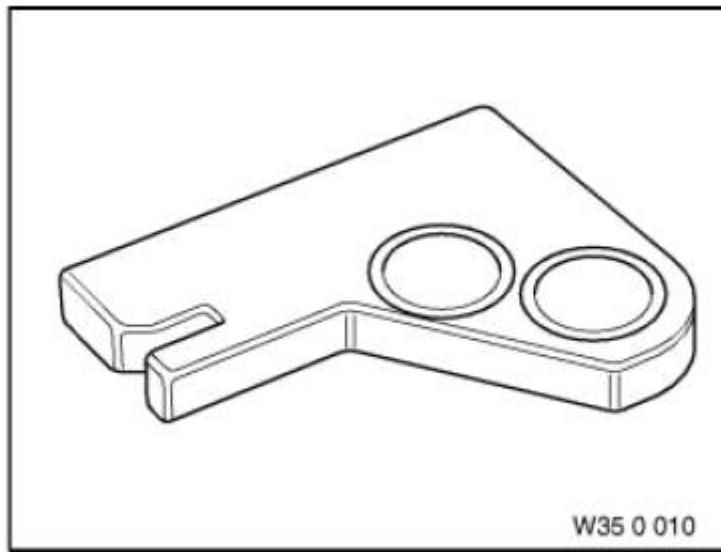


Fig. 4: Identifying Gauge (0493312)

Courtesy of BMW OF NORTH AMERICA, INC.

0495301 HOLDING SLEEVE

0495301 350113 Holding sleeve AM

NOTE: (Clamping sleeve Ã~ 3x30 1 set (10 units))

0495302 TEMPLATE

0495302 350114 Template AM

NOTE: (Drilling template, right-hand drive vehicle)

0495299 TEMPLATE

0495299 350111 Template AM

NOTE: (Drilling template, left-hand drive vehicle)

BRAKES

Pedals - Tightening Torques - X3 Utility

PARKING BRAKE

34 41 PARKING BRAKE

TIGHTENING TORQUE SPECIFICATION - PARKING BRAKE

Â	Type	Thread	Tightening specifications	Value
1AZ	Spring clip to wheel carrier	F01/F02/F03/F04/F07	M6	8 Nm
2AZ	Support Duo-Servo to wheel carrier, rear	F01/F02	M10	60 Nm
		F03/F04/F07	M8	28 Nm
3AZ	Bracket, parking brake, to rear axle support	F01/F02/F03/F04/F07	M8	19 Nm
4AZ	Parking brake actuator unit to bracket	F01/F02/F03/F04/F07	Â	self-tapping screw 4 Nm
5AZ	Union nut, parking brake Bowden cables, to actuator unit	F01/F02/F03/F04/F07	Â	WAF 27 6 Nm
6AZ	EMF actuator to brake caliper	F06/F10/F11/F12/F13/F18/F25/F26	Â	Replace screws 12 Nm
7AZ	Parking brake control unit to body	F06/F10/F11/F12/F13/F18	Â	Replace plastic nuts 2, 5 Nm

PEDAL ASSEMBLY CONSOLE

35 11 PEDAL ASSEMBLY CONSOLE

TIGHTENING TORQUE SPECIFICATION - PEDAL ASSEMBLY CONSOLE

Â	Type	Thread	Tightening specifications	Value
1AZ	Bearing pedestal to brake assembly and body	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F25/F18/F26	M8	Replace self-locking nut. Retighten on brake booster after 10 min. 24 Nm
2AZ	Bearing support to bracket, top	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	M8	Replace self-locking nut. 24 Nm

PEDALS

35 40 PEDALS

TIGHTENING TORQUE SPECIFICATION - PEDALS

Â	Type	Thread	Tightening specifications	Value
1AZ	Accelerator pedal module to body	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F18/F25/F26	Â	8 Nm

