

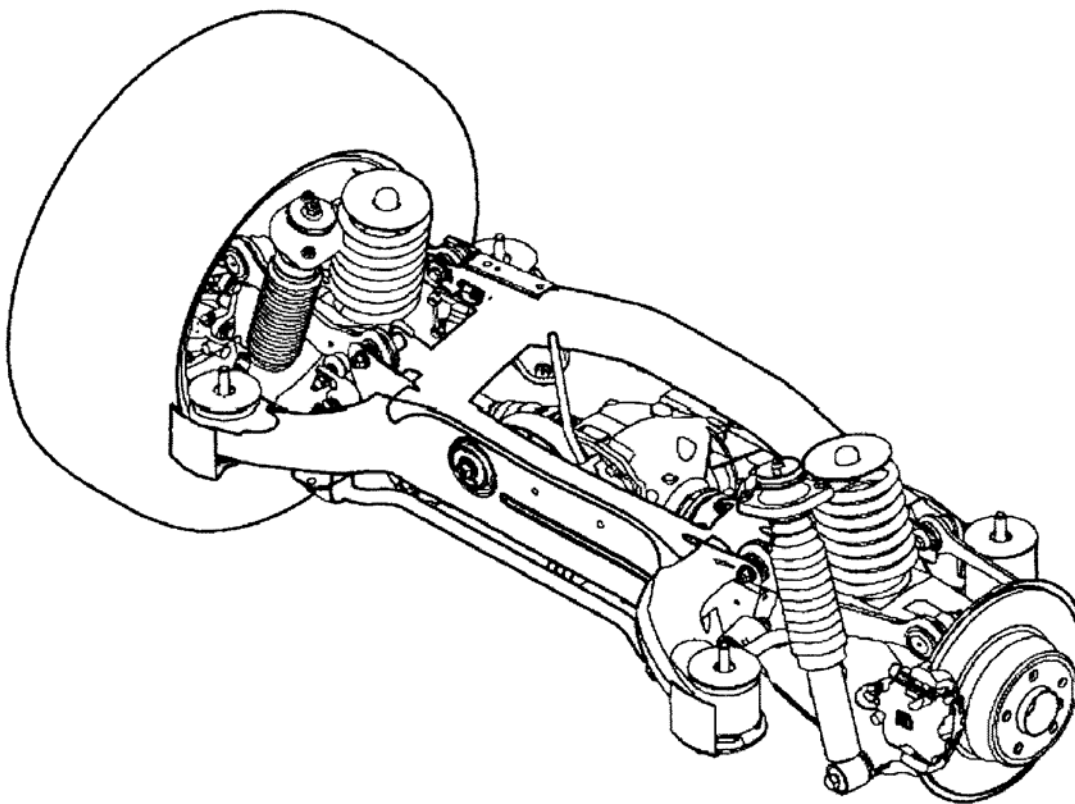
2000-04 SUSPENSION

Rear - X5

DESCRIPTION

The X5 (E53) uses independent rear suspension. The differential is mounted to the rear axle carrier with rubber mounts. The shock absorber and coil springs are installed separately. See **Fig. 1**.

For information on electronic air suspension system, see **ELECTRONIC - X5** article.



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Fig. 1: Identifying Rear Axle Assembly
Courtesy of BMW OF NORTH AMERICA, INC.

ADJUSTMENTS

RIDE HEIGHT

Place 150 lbs. (68 kg) in each front seat and in the middle of the back seat. Place 46 lbs. (21 kg) in the trunk and ensure the fuel tank is full. Ensure correct tire pressure and that rims and tires are correct as specified by manufacturer. On vehicles with air springs, pull fuse of air supply system so that there is no regulation. Measure

2001 BMW X5

2000-04 SUSPENSION Rear - X5

ride height from lower edge of wheel arch to bottom edge of wheel rim. Determine average value of each wheel after lifting and lowering vehicle body and then average each axle. If ride height is not within specification or deviates more than .4" (10 mm) between wheels, coil springs must be replaced. Replacement spring can be determined from parts microfiche, parts supplier, or on old spring at one end. On vehicles with air suspension, perform height setting offset (refer to BMW Diagnosis System). For correct ride height see **RIDE HEIGHT SPECIFICATIONS** table.

RIDE HEIGHT SPECIFICATIONS

Application	In. (mm)
Steel Spring	
17" Rim	27.0 (687)
18" Rim	27.6 (700)
19" Rim	28.0 (713)
20" Rim	28.6 (726)
Air Spring	
17" Rim	27.4 (695)
19" Rim	27.9 (708)
20" Rim	28.4 (721)
18" Rim	28.9 (734)
2 Axle Air Spring	
17" Rim	27.0 (687)
18" Rim	27.6 (700)
19" Rim	28.0 (713)
20" Rim	28.6 (726)

WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

NOTE: See appropriate **SPECIFICATIONS & PROCEDURES** article in **WHEEL ALIGNMENT**.

TROUBLE SHOOTING

To trouble shoot most symptoms, see **TROUBLE SHOOTING** table.

Whether a spring strut shock absorber has to be replaced can only be ascertained by checking while it is installed with a shock absorber tester or while it is removed with a shock absorber test machine.

TROUBLE SHOOTING

Fault	Cause	Remedy
Drumming Noise	Rubber Mount Of Rear Axle Carrier Faulty	Replace Rubber Mount
Drumming Noise	Rubber Mount On Final Drive Suspension Faulty	Replace Rubber Mount

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2001 BMW X5

2000-04 SUSPENSION Rear - X5

Drumming Noise	Rubber Mount Of Control Arm Faulty	Replace Control Arm
Drumming Noise	Rubber Mount On Traction Strut Faulty	Replace Traction Strut
Drumming Noise	Rubber Mounts Of Swinging Arms Faulty	Replace Swinging Arm
Grinding Noise Only When Driving In Curves	Wheel Bearings Faulty	Replace Wheel Bearing
Poor Handling Or Direction Stability	Rubber Mount Of Control Arm/Traction Strut Unserviceable	Replace Control Arm/Traction Strut
Poor Handling Or Direction Stability	Rubber Mount Of Rear Axle Carrier Faulty	Replace Rubber Mount
Poor Handling Or Direction Stability	Rear Axle Geometry Not OK	Perform Chassis alignment check
Excessive Tire Wear	Rear Axle Geometry Not OK	Perform Chassis alignment check
Rattling Noise	Rubber Mount On Rear Axle Carrier Faulty	Replace Rubber Mount
Rattling Noise	Ball Joint In Wheel Carrier Faulty	Replace Ball Joint In Wheel Carrier
Unsteady Taking Of Curves Due To Self-Steering Or Poor Rear End Track Stability	Rubber Mount On Rear Axle Carrier Faulty	Replace Rubber Mount
Unsteady Taking Of Curves Due To Self-Steering Or Poor Rear End Track Stability	Rubber Mount Of Final Drive Suspension Faulty	Replace Rubber Mount
Unsteady Taking Of Curves Due To Self-Steering Or Poor Rear End Track Stability	Shock Absorber Action Inadequate	Replace Shock Absorbers
Vibration	Wheels Unbalanced	Balance Wheels
Vibration	Rims Have Lateral/Radial Runout	Replace Rims If Necessary
Vibration	Tires Have Radial Runout	Match Or Replace Tires

REMOVAL & INSTALLATION**AXLE CARRIER****NOTE:** Numbers in text refer to numbers in figures.**Removal**

1. Raise and support vehicle. Remove rear wheels.
2. Remove drive shaft. See appropriate DRIVE SHAFTS & UNIVERSAL JOINTS article in DRIVE AXLES.
3. Remove line holder on control arm. See **UPPER CONTROL ARM**.

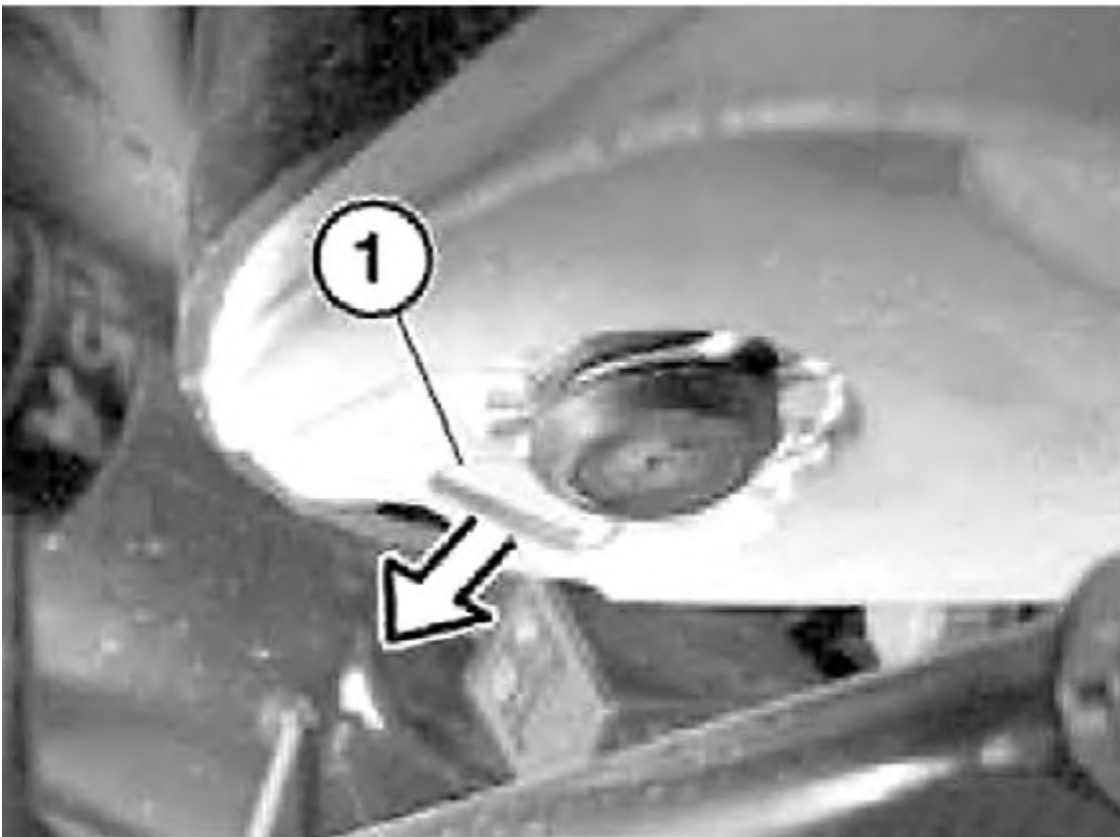
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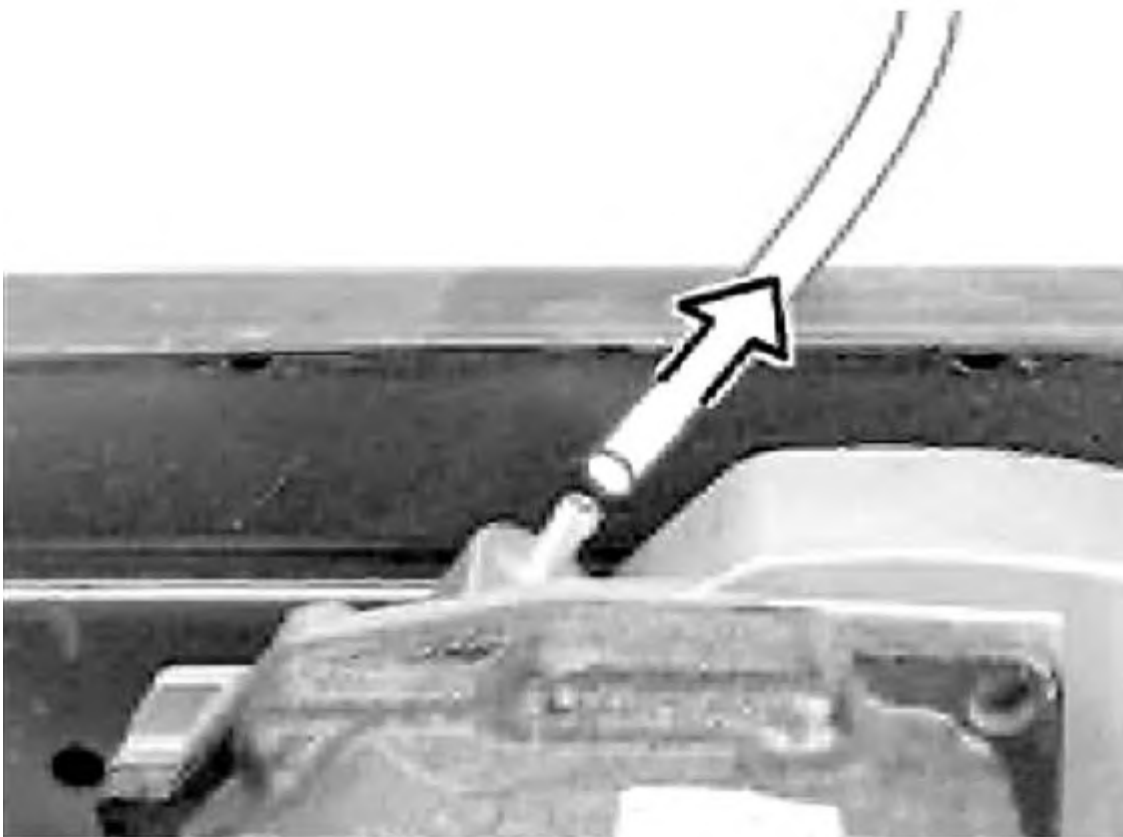
4. Remove brake calipers on left and right and tie back to body. See appropriate article in BRAKES.
5. Remove ABS speed sensors.
6. Remove handbrake cables on handbrake lever.
7. Remove heat shield from above drive shaft.
8. Remove connector from ride height sensor if necessary.
9. On vehicle with air suspension, disconnect fuse on air supply system so that there is no unintentional system regulation. Loosen pipes on distributor block to release system pressure.
10. Release locking clip (1). See **Fig. 2** .
11. Detach vent line from differential. See **Fig. 3** .
12. Remove shock absorber from swinging arms. See **SPRING STRUT SHOCK ABSORBER** .
13. Support rear axle carrier with special tool (00 2 030/040) and (33 4 221/226). See **Fig. 4** .
14. Unfasten left and right screws and lower axle carrier. See **Fig. 5** .
15. Remove coil springs on vehicles with coil springs. See **COIL SPRING** .



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Fig. 2: Releasing Locking Clip

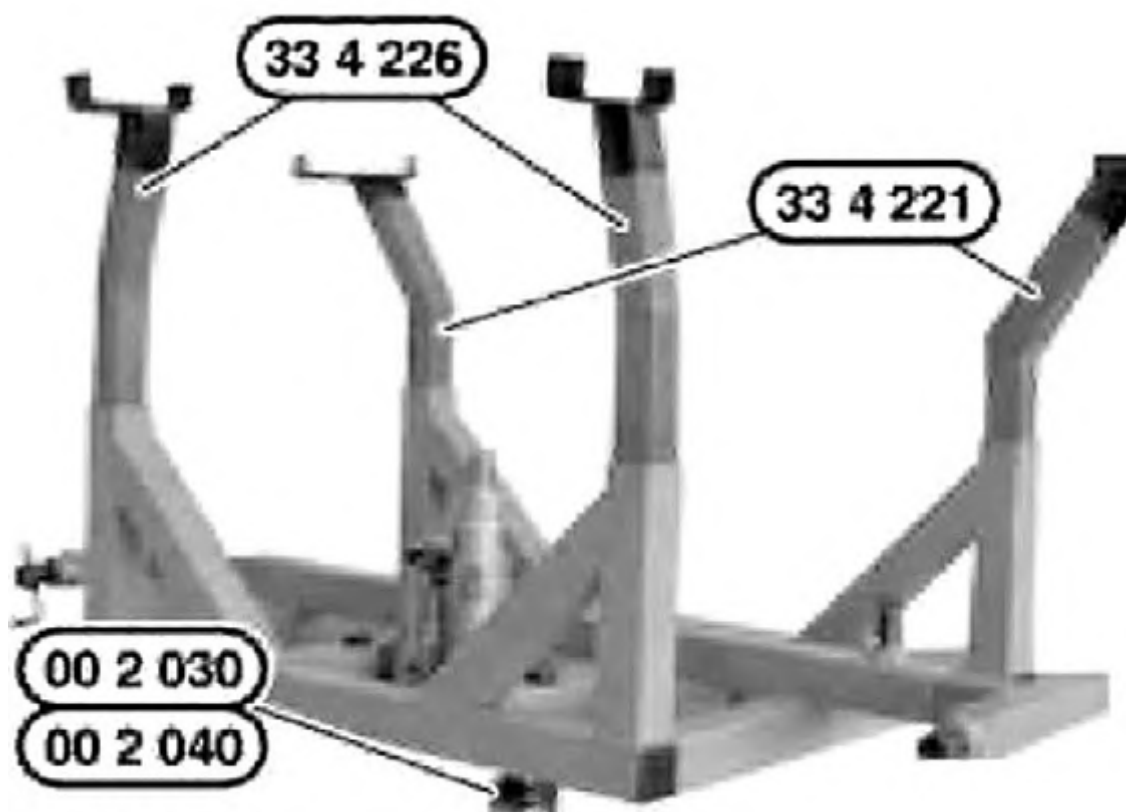
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 3: Detaching Vent Line

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 4: Identifying Rear Axle Support

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Fig. 5: Locating Rear Axle Screws

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Installation

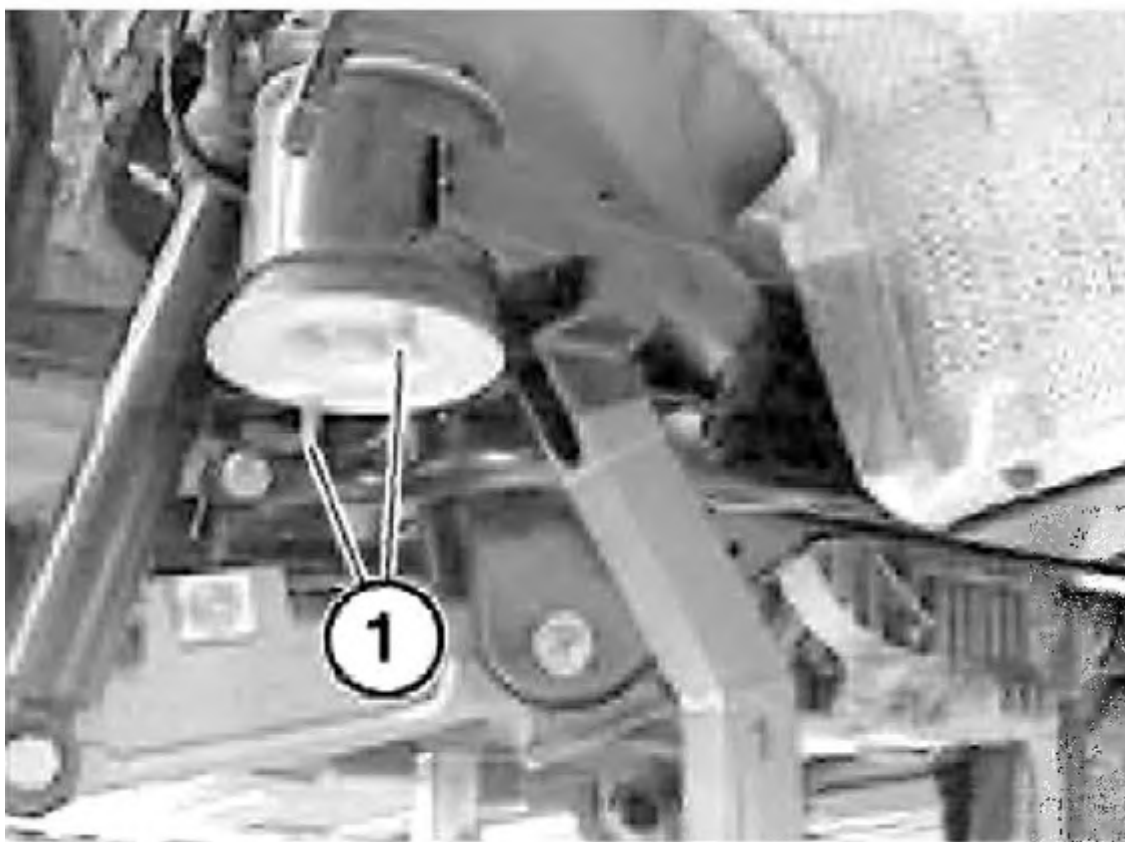
1. To install, reverse removal procedure. Position stop plates (1) on 4 rubber mounts. See **Fig. 6** .
2. Stop plates with threaded pins (1) must be installed in rear direction of travel. Threaded pins must be aligned in vehicle longitudinal direction. Damaged threads in body-side bushes can be repaired with Helicoil- 12 x 14 x 18 mm thread inserts. Thread inserts must be installed so that they are flush with original thread. See **Fig. 7** .
3. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** .
4. The lug (1) must lie in the recess of the wheel carrier hole. See **Fig. 8** .



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Fig. 6: Positioning Stop Plates

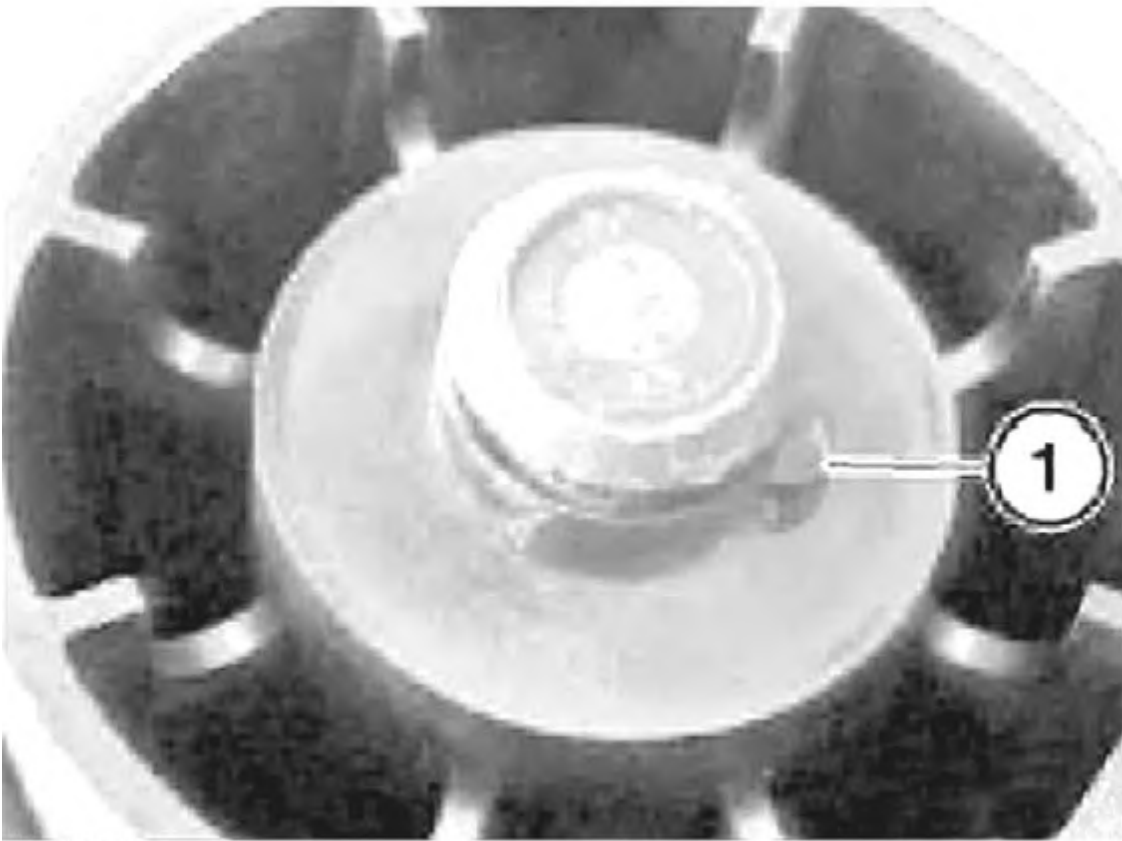
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Fig. 7: Installing Stop Plates

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 8: Locating Air Spring Lug

Courtesy of BMW OF NORTH AMERICA, INC.

AXLE CARRIER RUBBER MOUNTS**NOTE:** Numbers in text refer to numbers in figures.

CAUTION: On vehicle with air suspension, disconnect fuse on air supply system so that there is no unintentional system regulation. Loosen pipes on distributor block to release system pressure.

Removal

1. Remove final muffler.
2. Release heat shield in rear area.
3. Unfasten handbrake Bowden cable from brackets. See appropriate article in BRAKES.
4. Remove shock absorber from swinging arm.
5. Support rear axle with special tool (00 2 030/040 and 33 4 221/226) See **Fig. 4**.
6. Completely remove left and right screws and screw in again 4 turns. Remove screw of rubber mount that has to be replaced. See **Fig. 5**.

7. Lower workshop hoist.
8. Assemble special tool (33 4 140) with (33 4 148/149). Mount special tool (33 4 149) according to the diameter of the rubber mount. Letter "A" diameter is 3.1 inches (80 mm) and letter "B" diameter is 3.7 inches (95 mm). Figure shows letter "A". See **Fig. 9**.
9. Unscrew feed handle (1). Mount extension piece (3) on special tool (33 4 145) with new screw (2) if necessary. See **Fig. 10**.
10. Fit special tool (33 4 140/155/156/158) to recesses in rubber mount. Ensure it is correctly supported on bush of rear axle support. See **Fig. 11**.
11. Heat axle carrier with an industrial hot air blower with maximum outlet temperature of 1112° F (600° C). Heat bearing bush for approximately 2 minutes. Pull out rubber mount.

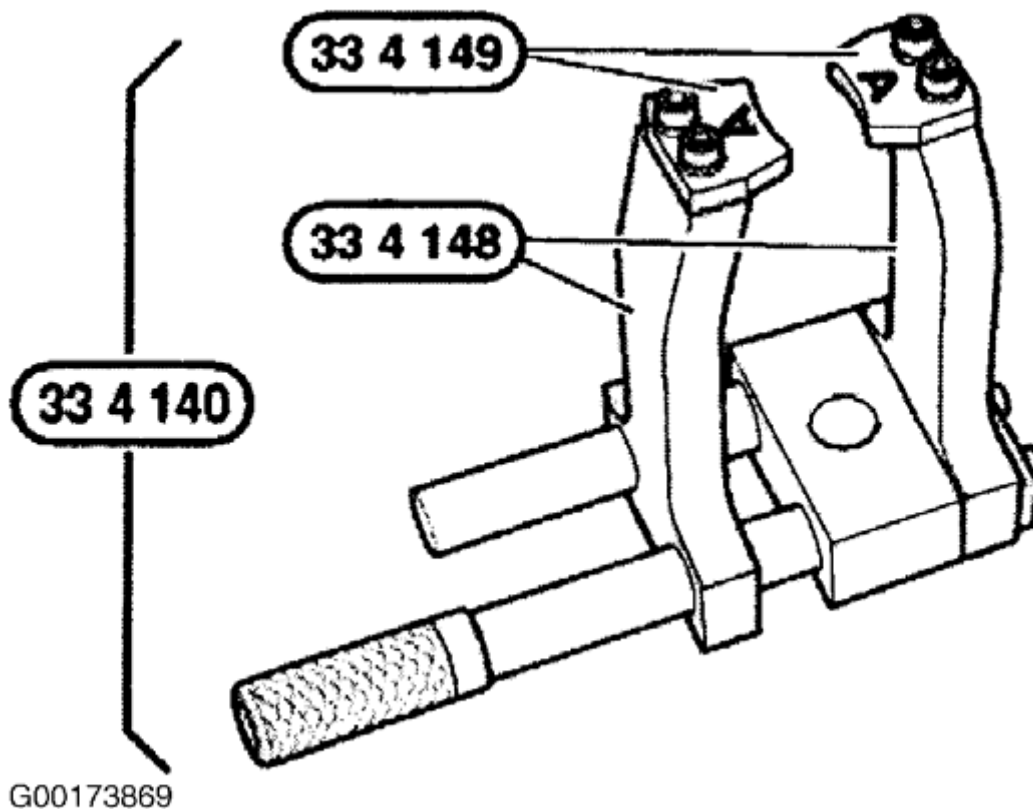


Fig. 9: Assembling Special Tool (33 4 140)
Courtesy of BMW OF NORTH AMERICA, INC.

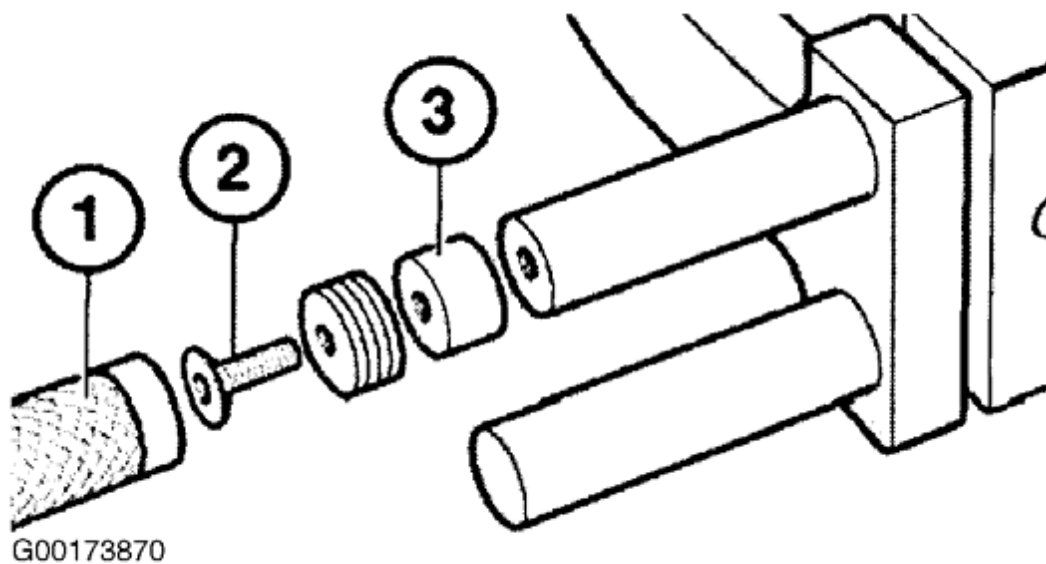
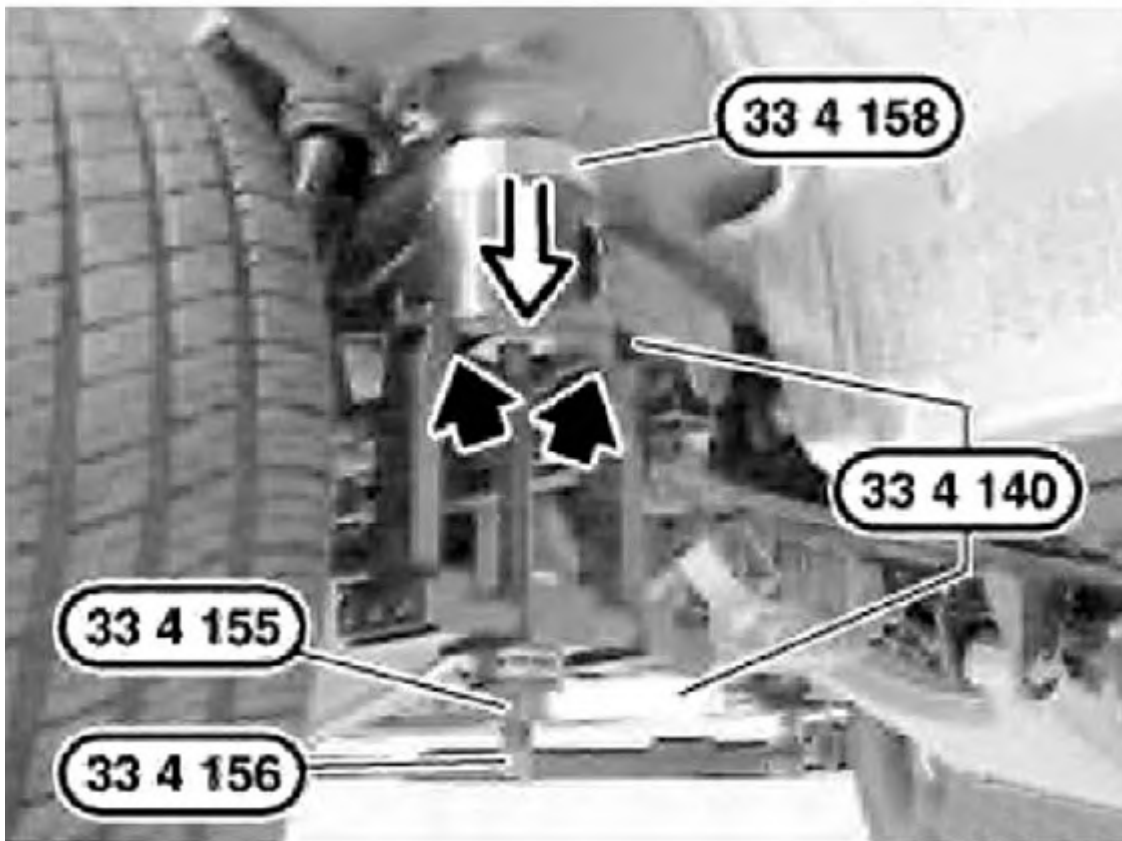


Fig. 10: Mounting Extension Piece

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 11: Fitting Special Tool (33 4 140)

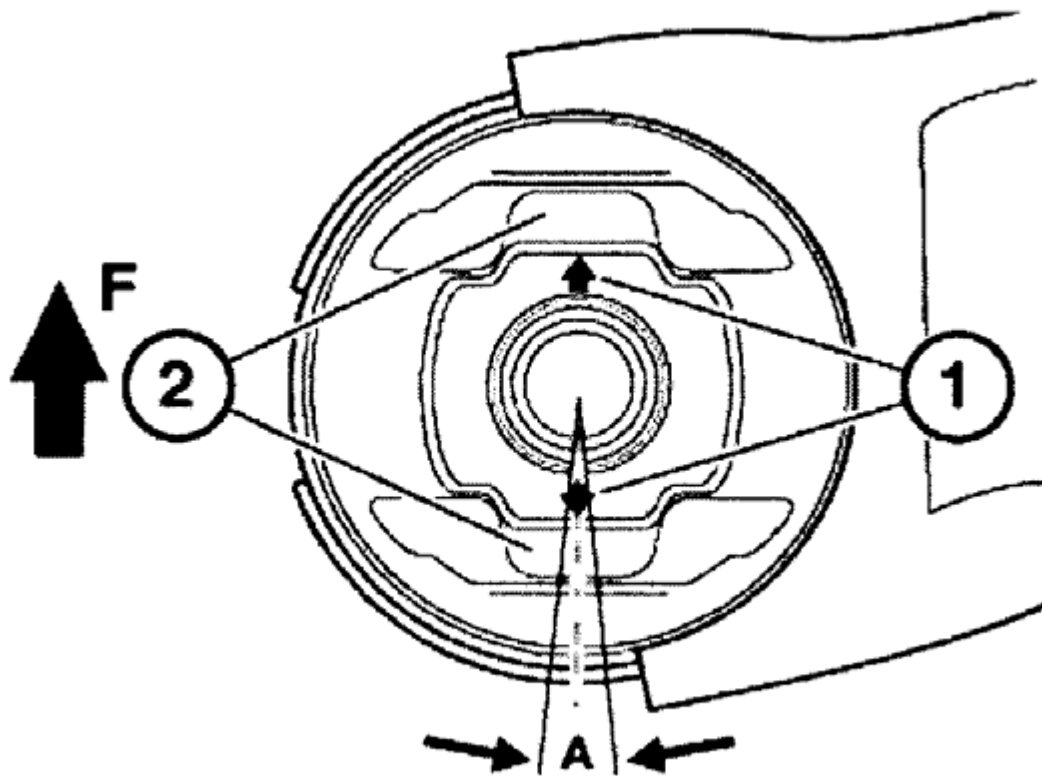
Courtesy of BMW OF NORTH AMERICA, INC.

Installation

1. Coat rubber mount with Circolight anti-friction agent. Arrows (1) and stops (2) of center sleeve must point in longitudinal direction (F) of vehicle when rubber mount is installed. See **Fig. 12** .
2. Draw in rubber with special tool (33 4 155/156/157/159) as far as it will go. See **Fig. 13** .
3. Position stop plate (1) on rubber mount. See **Fig. 6** .

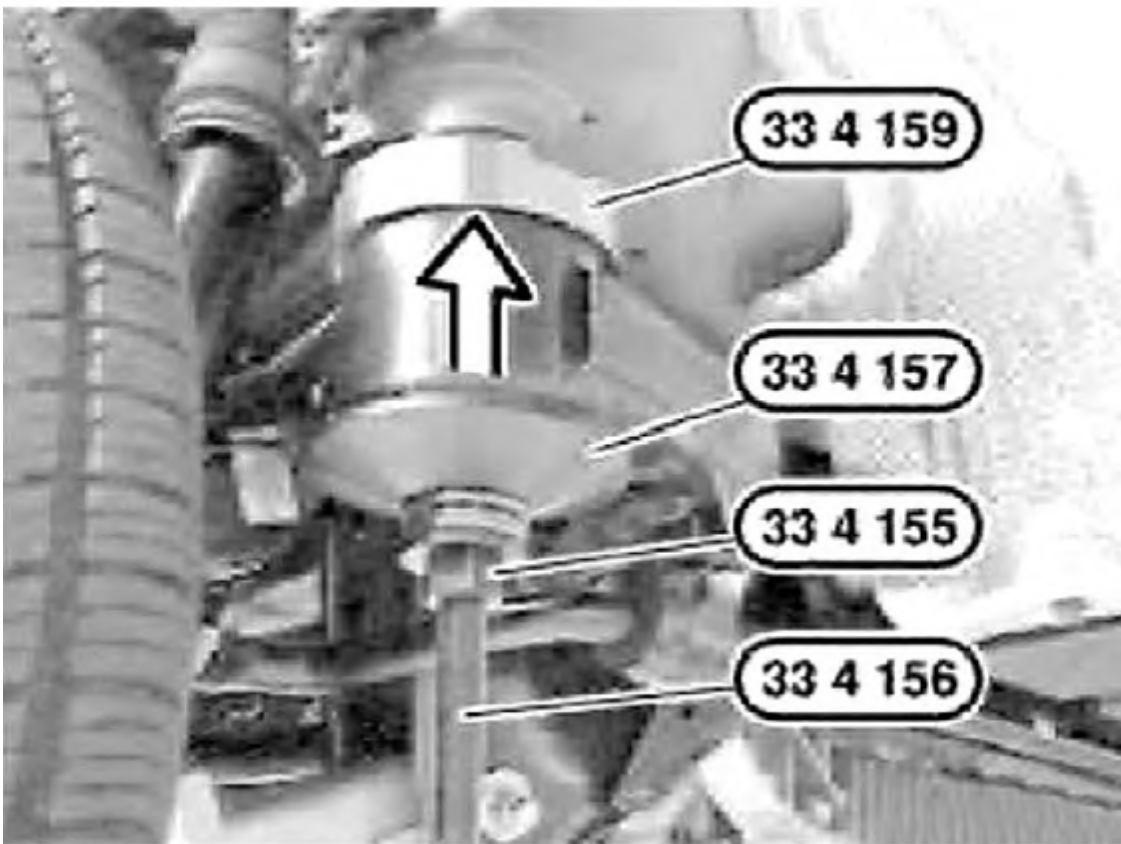
NOTE: Damaged threads in bushings on body side can be repaired with Helicoil 14 x 1.5 x 18 mm thread inserts. Thread inserts must be installed so that they are flush with original thread.

4. Stop plates with threaded pins must be installed in rear direction of travel. Threaded pins must be aligned in longitudinal direction of vehicle. See **Fig. 7** . Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .
5. Raise rear axle carrier into place.
6. To complete installation, reverse removal procedure.



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Fig. 12: Identifying Installation Position Of Rubber Mount
Courtesy of BMW OF NORTH AMERICA, INC.



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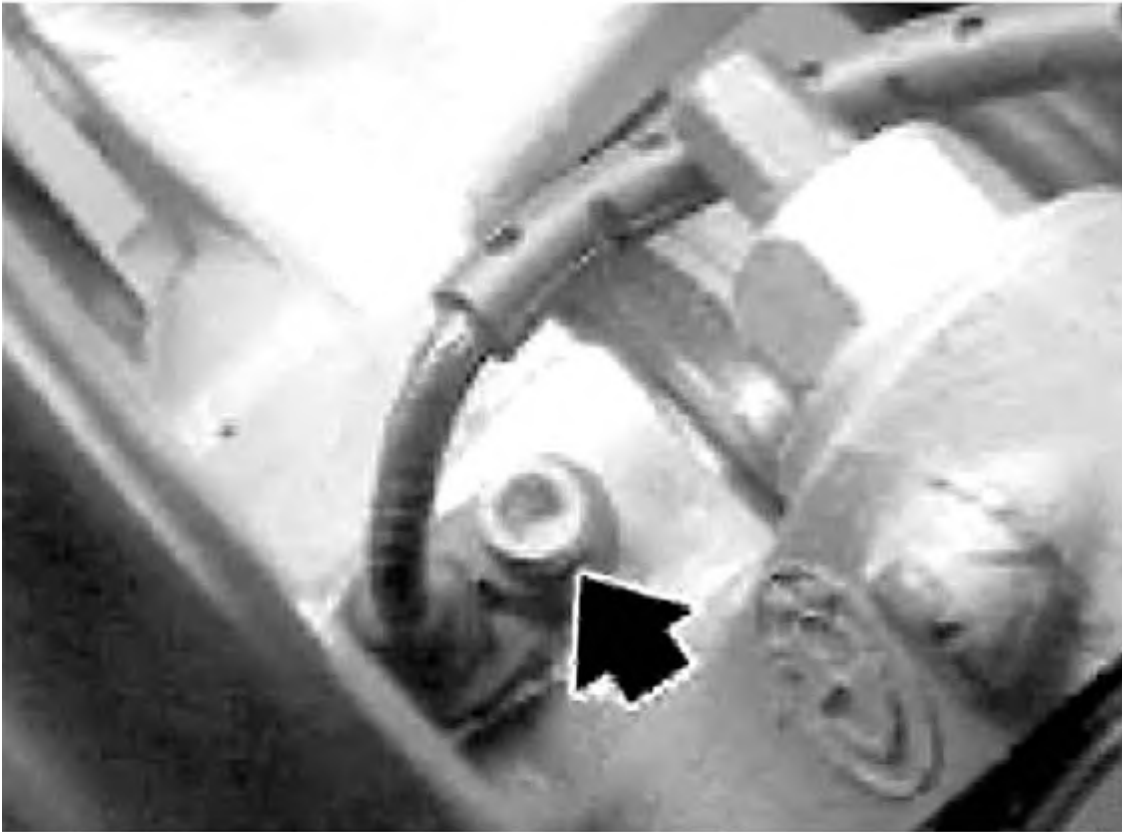
Fig. 13: Drawing In Rubber Mount

Courtesy of BMW OF NORTH AMERICA, INC.

COIL SPRING**NOTE:** Numbers in text refer to numbers in figures.**Removal**

1. Remove wheel.
2. Remove wheel speed sensor. See **Fig. 14**.
3. Remove brake caliper from wheel carrier and hang up. The brake hose must not be exposed to traction loads.
4. Support swinging arm with workshop hoist. Detach shock absorber from swinging arm. See **Fig. 15**.
5. Detach radius arm from wheel carrier. See **Fig. 16**. Also see **UPPER CONTROL ARM** and **TRACTION STRUT**.
6. Detach control arm from wheel carrier. See **Fig. 17**. Also See **UPPER CONTROL ARM**.
7. Detach integral link from wheel carrier. See **Fig. 18**. Also see **INTEGRAL LINK**.
8. Detach integral link from swinging arm. See **Fig. 19**. Also see **INTEGRAL LINK**.

9. Detach stabilizer link from swinging arm. See **Fig. 20** .
10. Detach swinging arm from rear axle carrier at front. See **Fig. 21** . Also see **SWINGING ARM** .
11. Press wheel suspension downwards and remove coil spring to side. Check spring pad (1) and replace if necessary. See **Fig. 22** .



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Fig. 14: Removing Wheel Speed Sensor
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 15: Detaching Shock Absorber
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 16: Detaching Radius Arm

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 17: Detaching Control Arm

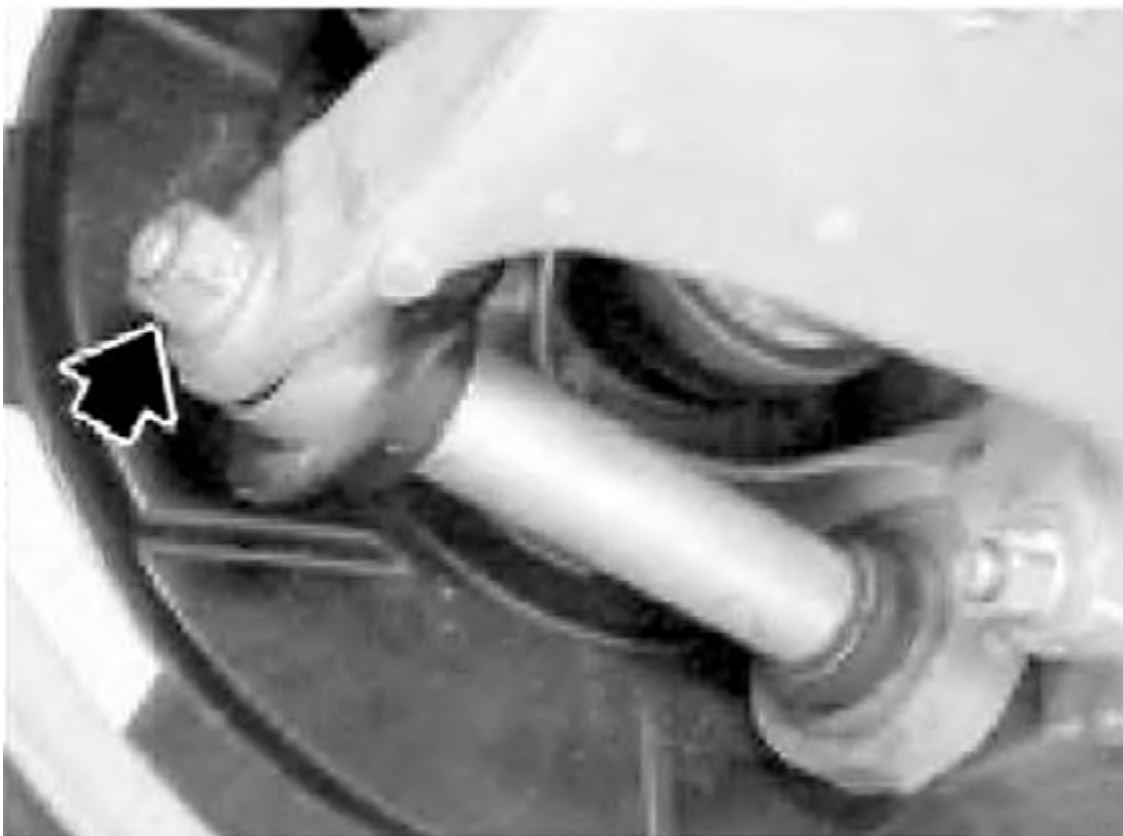
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Fig. 18: Detaching Integral Link

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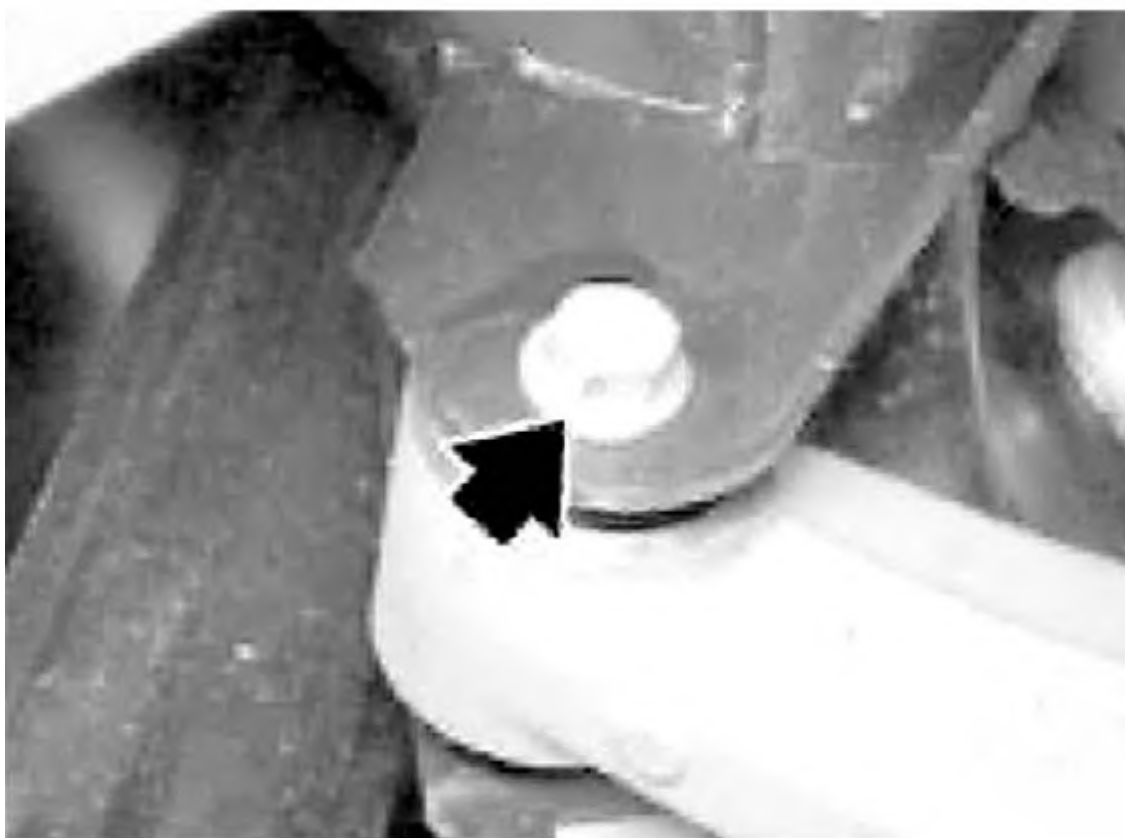
Fig. 19: Detaching Integral Link From Swinging Arm
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 20: Detaching Stabilizer Link

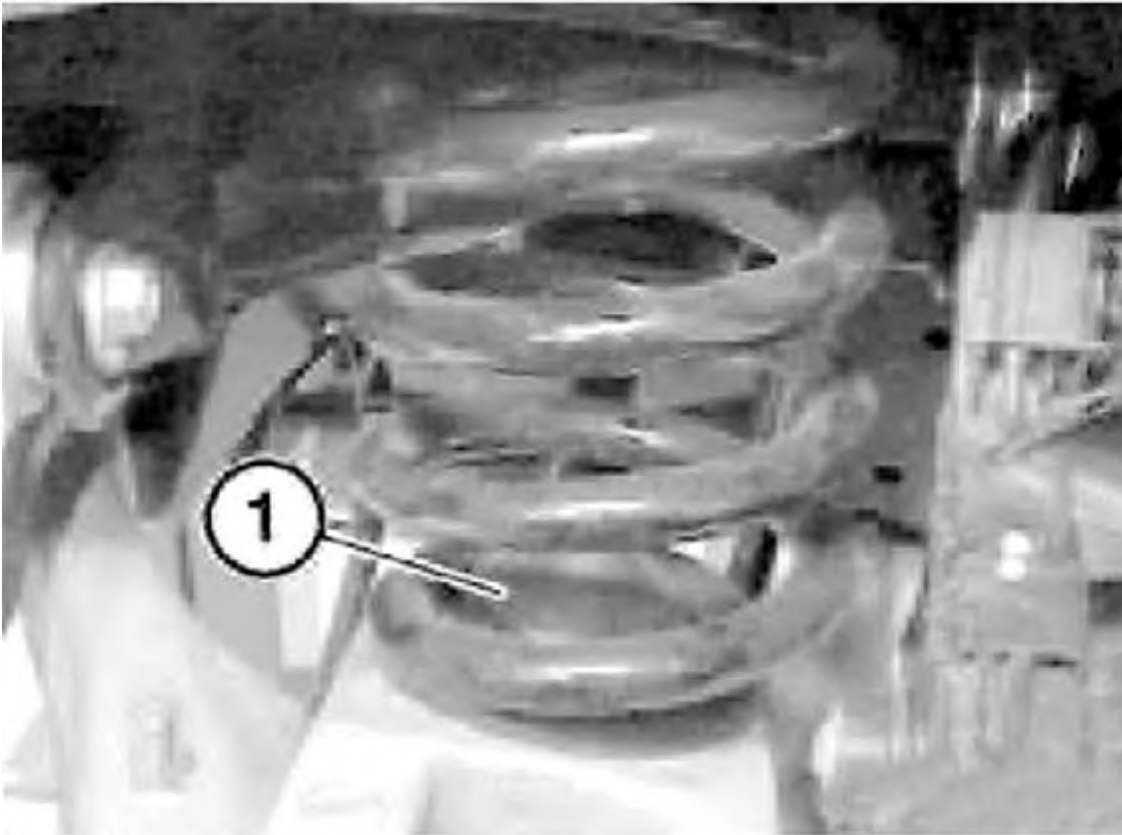
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Fig. 21: Detaching Swinging Arm

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 22: Locating Spring Pad

Courtesy of BMW OF NORTH AMERICA, INC.

Installation

CAUTION: Spring pad must be positively seated in its take up mount. If not, there is danger that the coil spring will spring out of the centering mount. This will cause noises or impaired functions with changes to driving performance.

1. To install, reverse removal procedure. Coat spring pad with anitseize agent.
2. When attaching stabilizer link to swinging arm, tighten fastener to specification. See **TORQUE SPECIFICATIONS** .
3. When attaching shock absorber to swinging arm, insert bush into swinging arm bore. Tighten to specification. See **TORQUE SPECIFICATIONS** .

INTEGRAL LINK

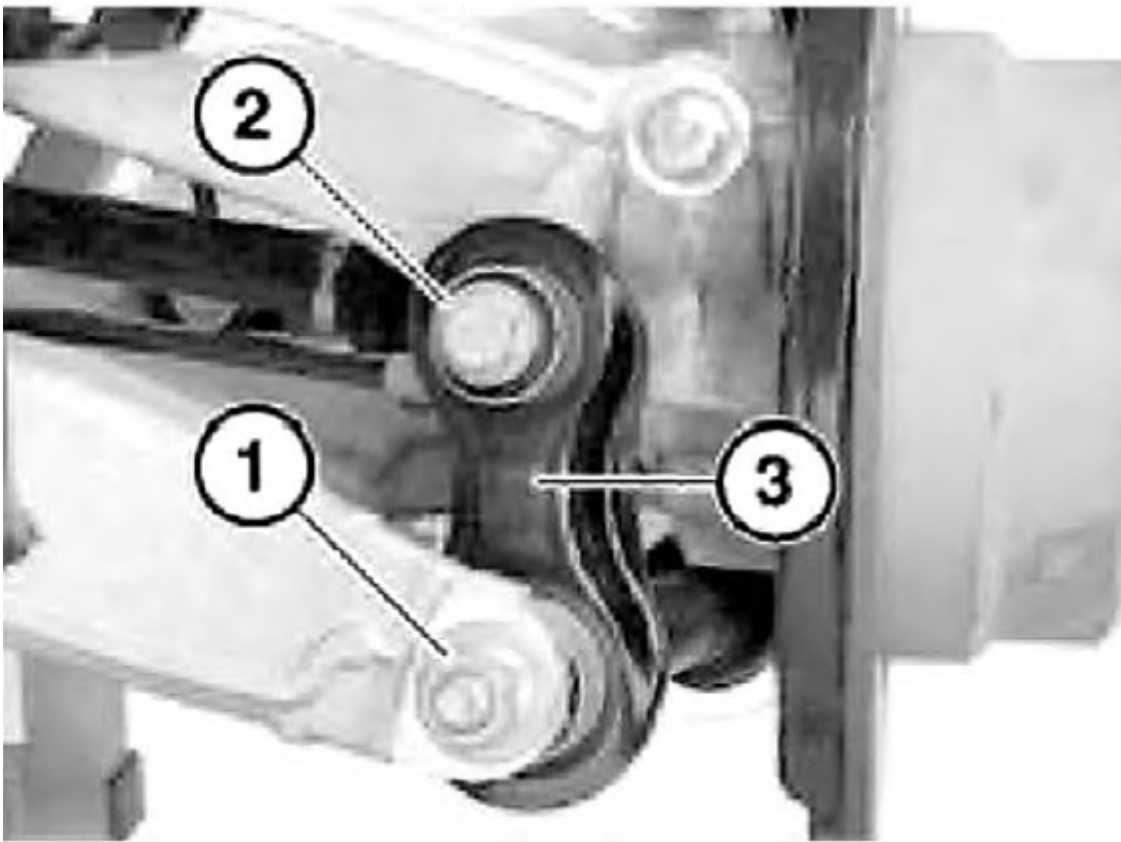
NOTE: Numbers in text refer to numbers in figures.

CAUTION: On vehicle with air suspension, disconnect fuse on air supply system so

that there is no unintentional system regulation.

Removal & Installation (Vehicles With Air Suspension)

1. Remove wheel.
2. Support wheel carrier with workshop hoist.
3. Release nut (1), remove screw and press swinging arm downwards. Release screw (2). Remove integral link (3). See **Fig. 23** .
4. To install, reverse removal procedure. First install swinging arm hand tight, then tighten down screw (2). Replace nut. See **Fig. 23** . Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .



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Fig. 23: Removing Integral Link

Courtesy of BMW OF NORTH AMERICA, INC.

Removal & Installation (Vehicles With Coil Springs)

1. Remove brake caliper and tie back to body. Remove ABS speed sensor. See appropriate article in BRAKES.
2. Remove stabilizer link from swinging arm. See **SWINGING ARM** .
3. Remove shock absorber from swinging arm. See **SHOCK ABSORBER** .

4. Remove traction strut from wheel carrier. See **TRACTION STRUT** .
5. Remove control arm from wheel carrier. See **UPPER CONTROL ARM** .
6. Support wheel carrier with workshop hoist. Release nut (1), remove screw and press swinging arm downwards. Release screw (2). Remove integral link (3). See **Fig. 23** .
7. To install, reverse removal procedure. First install swinging arm hand tight, then tighten down screw (2). Replace nut. See **Fig. 23** . Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .

SHOCK ABSORBER

NOTE: Numbers in text refer to numbers in figures.

CAUTION: On vehicle with air suspension, disconnect fuse on air supply system so that there is no unintentional system regulation.

Removal & Installation

1. Release nuts and expansion rivets. Remove luggage compartment trim. For left side, see **Fig. 24** . For right side, see **Fig. 25** .
2. Support wheel carrier with workshop hoist. The brake hose must not be exposed to traction loads. Unscrew nuts for shock absorber support on body. See **Fig. 26** .
3. Release shock absorber from swinging arm. If necessary, force off swinging arm with wooden wedge and remove. See **Fig. 27** .
4. Brace piston rod with ring spanner and unfasten nut. Remove thrust bearing.
5. To install, reverse removal procedure. Replace self-locking nuts and tighten to specification. See **TORQUE SPECIFICATIONS** .
6. When installing shock absorber to swinging arm, insert bush into bore of swinging arm. Tighten to specification. See **TORQUE SPECIFICATIONS** .
7. Replace self-locking nuts for shock absorber support on body and tighten to specification. See **TORQUE SPECIFICATIONS** .
8. Replace expansion rivets for luggage compartment trim.



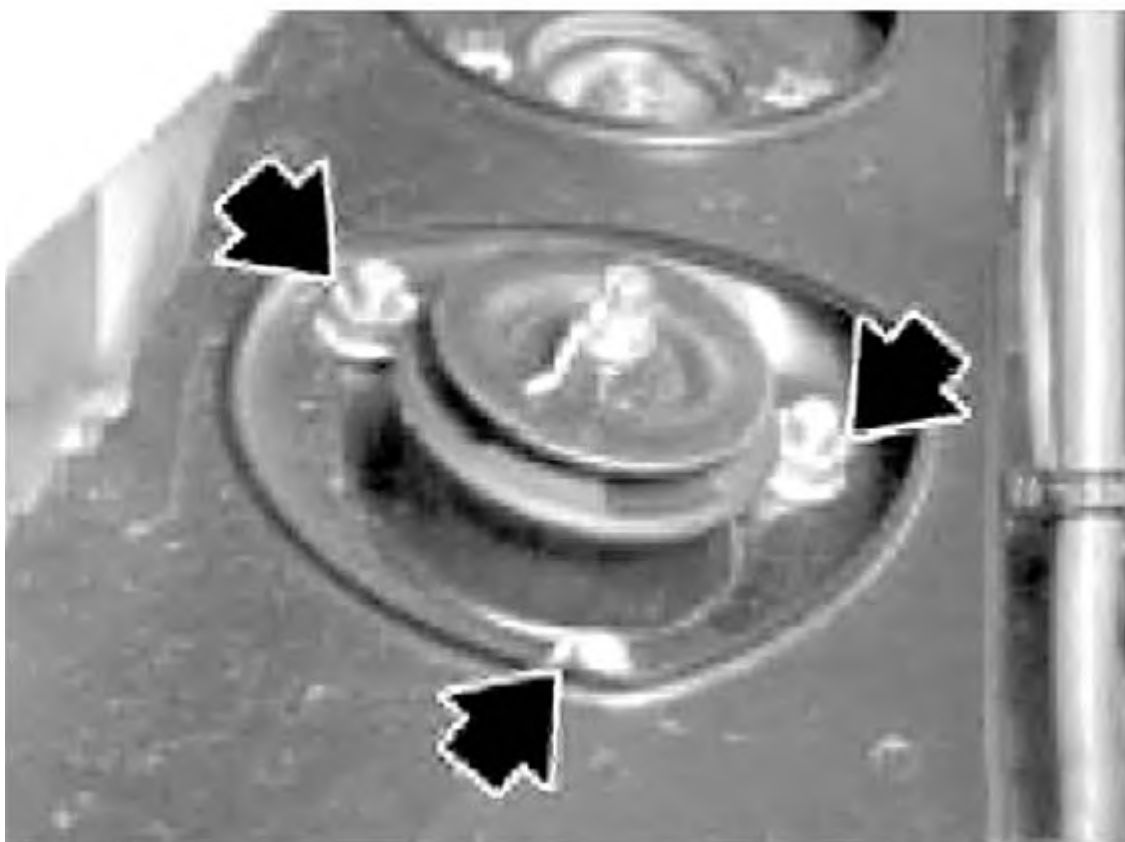
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Fig. 24: Removing Luggage Compartment Trim On Left
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 25: Removing Luggage Compartment Trim On Right
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 26: Locating Shock Absorber Support Nuts
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 27: Releasing Shock Absorber
Courtesy of BMW OF NORTH AMERICA, INC.

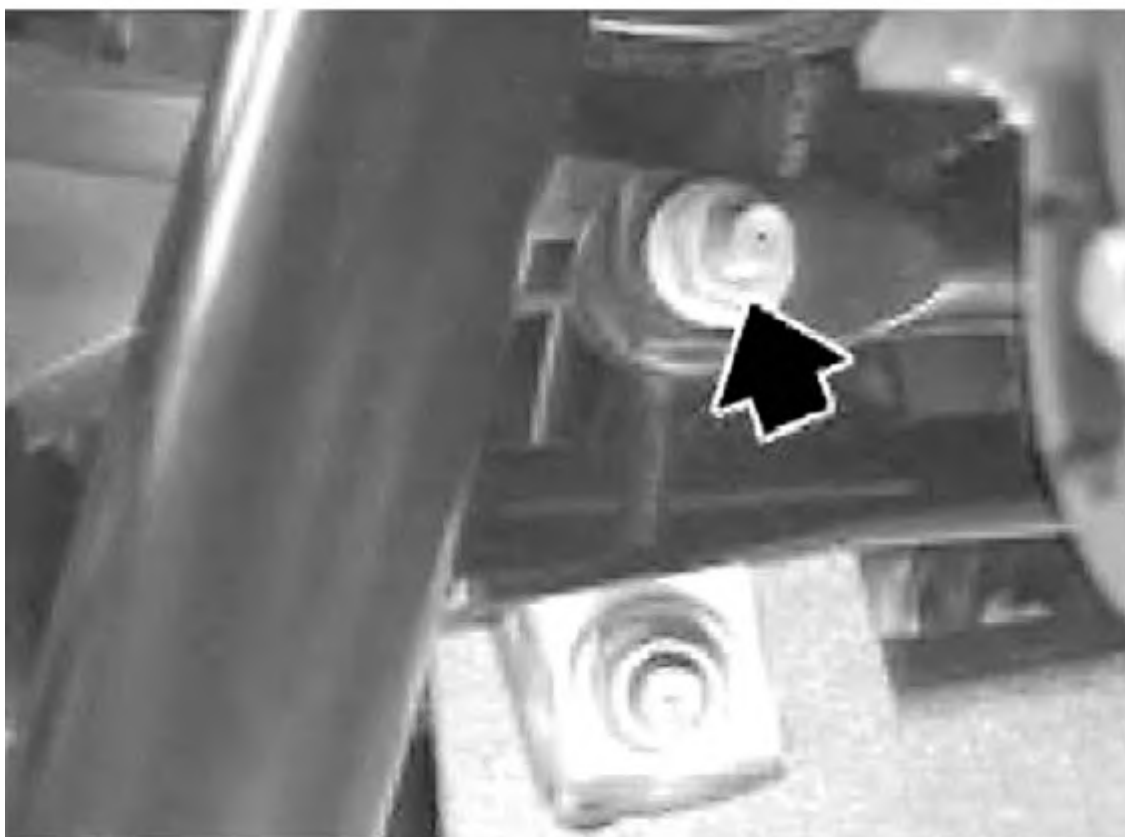
SHOCK ABSORBER SUPPORT BEARING

Procedure is identical to replacing shock absorber. See **SHOCK ABSORBER** .

STABILIZER BAR

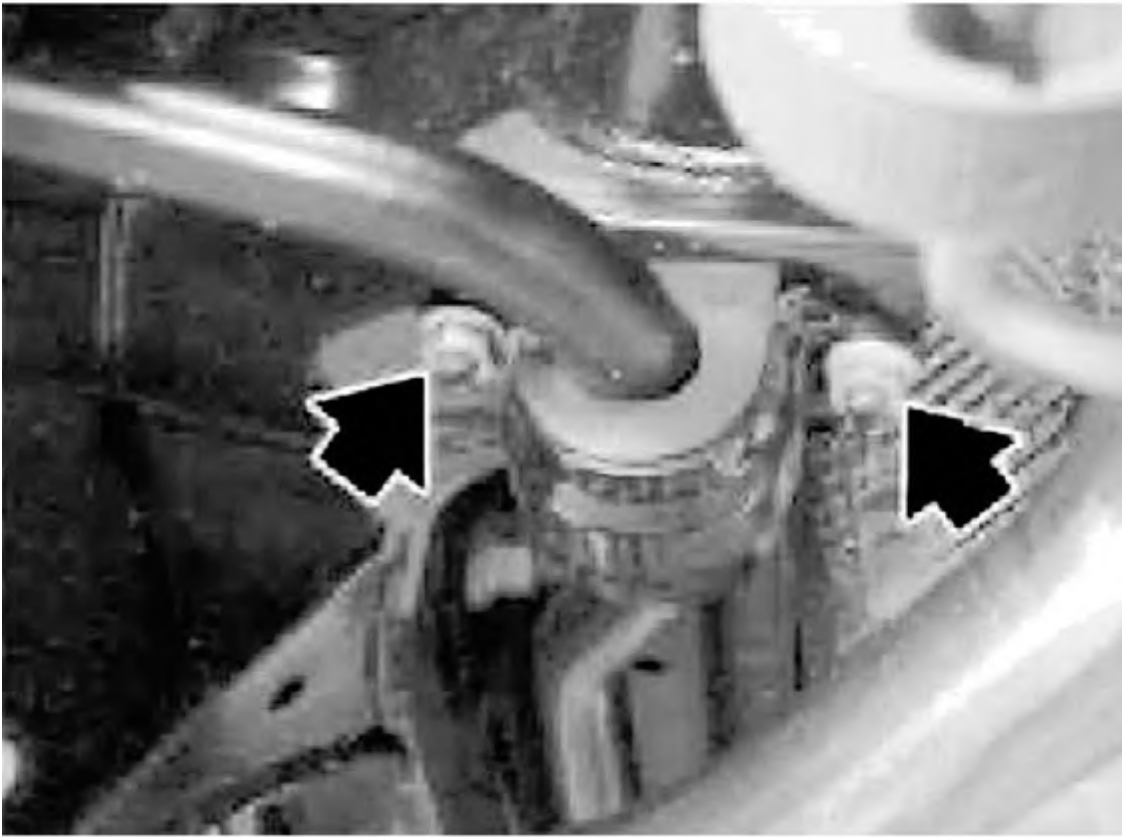
Removal & Installation

1. Remove wheel.
2. Unfasten left and right stabilizer link from stabilizer bar. See **Fig. 28** .
3. Identify stabilizer bar on left side of car with a colored mark.
4. Unfasten stabilizer bar from rear axle carrier and remove. See **Fig. 29** .
5. To install, reverse removal procedure. Check rubber mounts and replace if necessary. Insert stabilizer bar in correct position. Color marking or stamped BMW part number on stabilizer bar must be on left side of car. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .



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Fig. 28: Locating Stabilizer Link To Stabilizer Bar Fastener
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 29: Removing Stabilizer Bar

Courtesy of BMW OF NORTH AMERICA, INC.

STABILIZER LINK FOR STABILIZER BAR**NOTE:** Numbers in text refer to numbers in figures.**Removal & Installation**

1. Unfasten stabilizer link from stabilizer. See **Fig. 30** .
2. Release stabilizer link on swinging arm. Remove stabilizer link. See **Fig. 31** .
3. To install, reverse installation procedure. Replace nut (2). Fit washers (1). See **Fig. 31** . Tighten nut to specification. See **TORQUE SPECIFICATIONS** .
4. Replace nut on stabilizer link to stabilizer bar. Tighten to specification. See **TORQUE SPECIFICATIONS** .

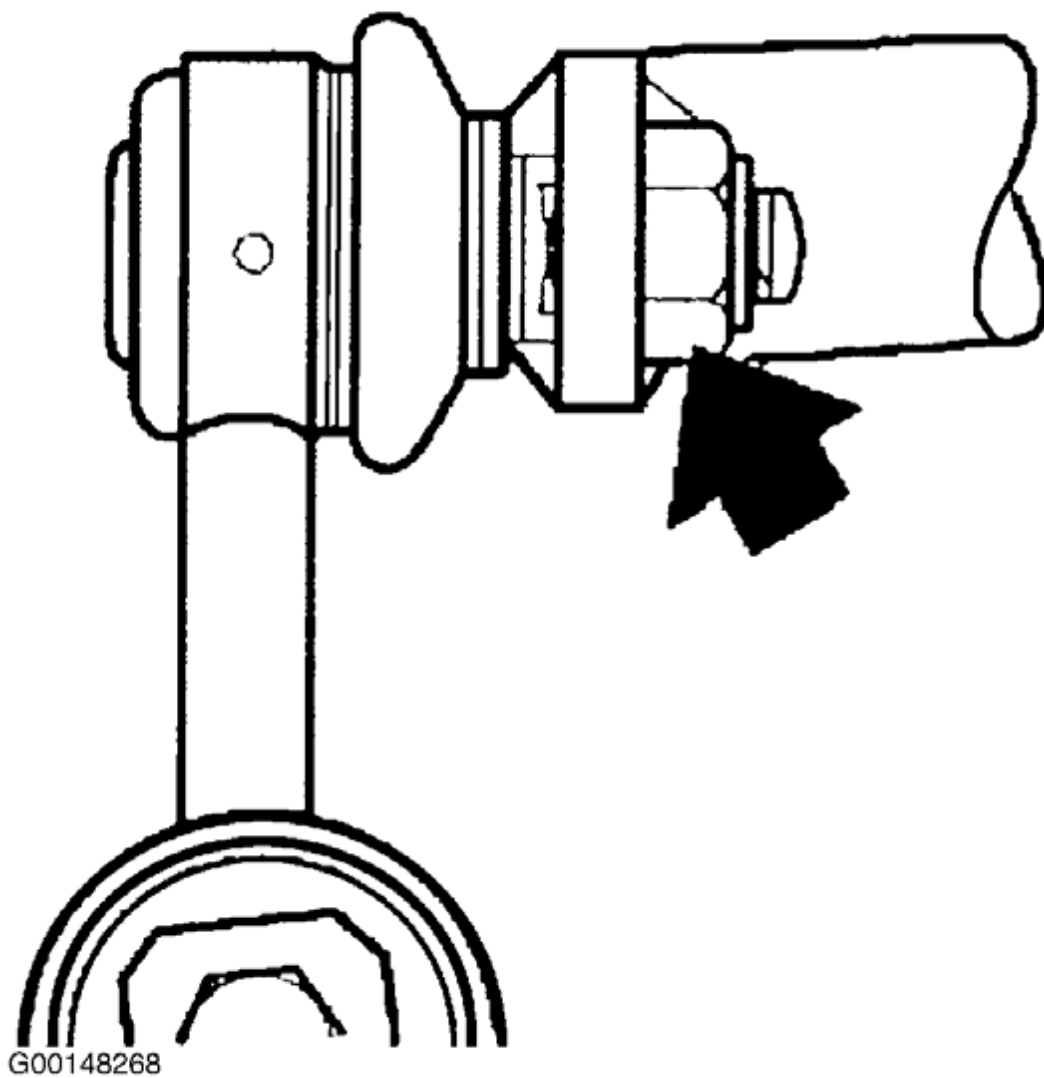
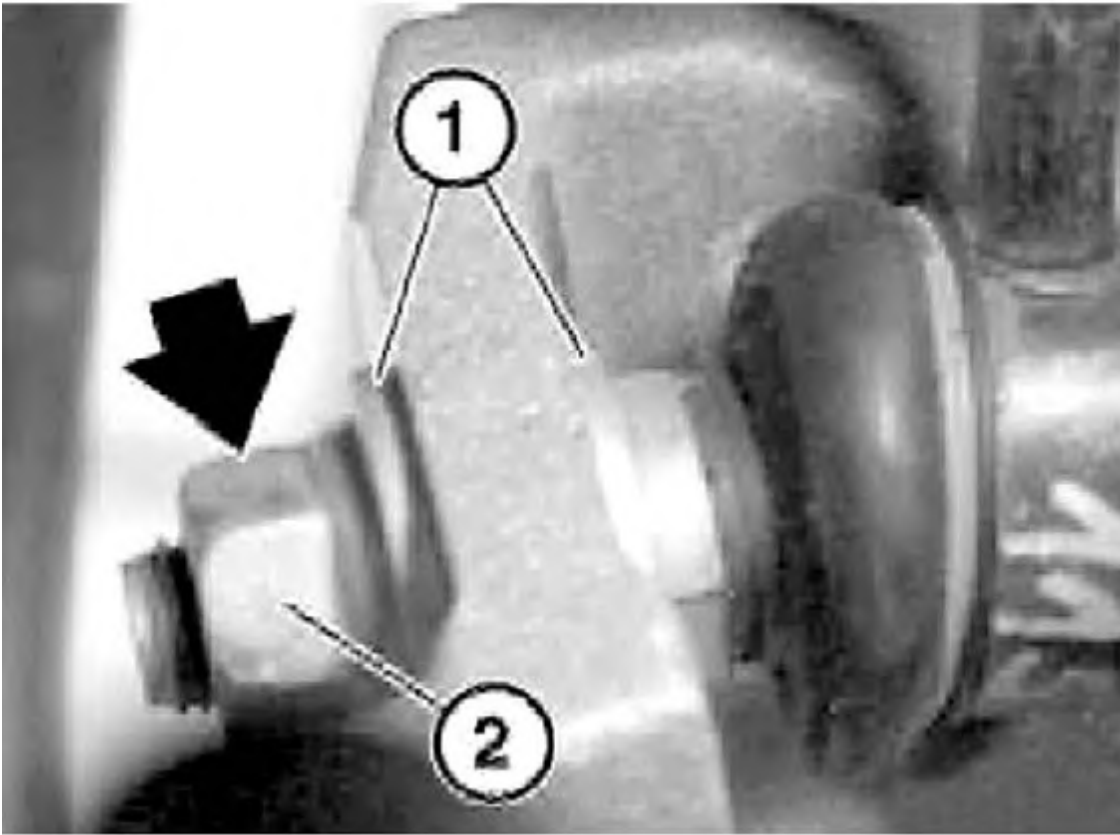


Fig. 30: Identifying Stabilizer Link

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 31: Removing Stabilizer Link

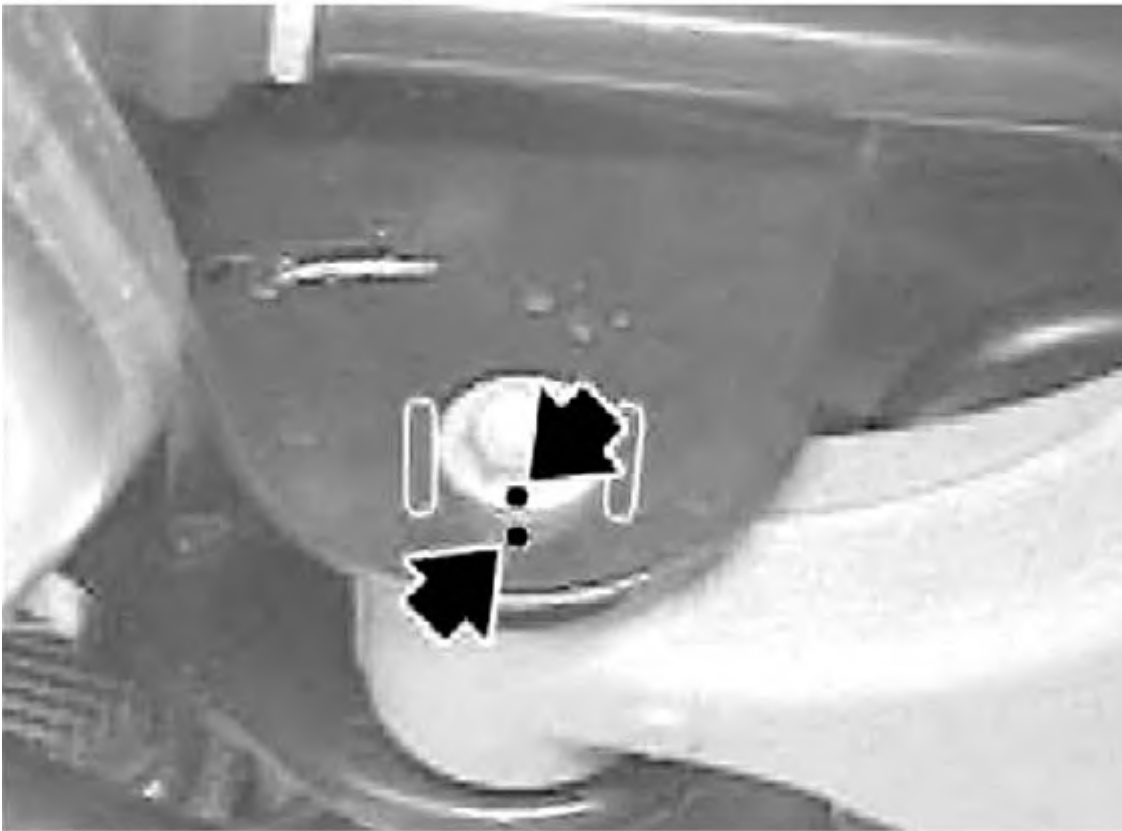
Courtesy of BMW OF NORTH AMERICA, INC.

SWINGING ARM**NOTE:** Numbers in text refer to numbers in figures.**Removal & Installation (Air Suspension)**

1. Remove wheel.
2. Unfasten control rod for level control system on the swinging arm if necessary.
3. Disconnect fuse on air supply system so that there is no unintentional system regulation. Slacken pipes on distributor block so as to reduce system pressure.
4. Remove shock absorber from swinging arm. See **SHOCK ABSORBER** .
5. Remove stabilizer link from swinging arm. See **STABILIZER BAR** .
6. Mark position of eccentric screw on rear axle carrier with colored spots. This makes the subsequent camber adjustment easier when reinstalling the previous swinging arm. See **Fig. 32** .
7. Unfasten disc collar nut (1) and pull out eccentric bolt. See **Fig. 33** .
8. Unfasten screw for swinging arm to rear axle support and remove. See **Fig. 34** .
9. Support wheel carrier with workshop hoist. Unfasten nut, unfasten screw and remove swinging arm. See

Fig. 35 .

10. To install, reverse removal procedure.
11. Replace nuts and tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .
12. Inset locking nut (1) in recess on rear axle carrier and tighten down screw for swinging arm to rear axle support. See **Fig. 34** .
13. Replace disc collar nut (1) and install eccentric washer (2). See **Fig. 33** . Tighten to specification. See **TORQUE SPECIFICATIONS** .
14. Adjust rear axle after assembly.



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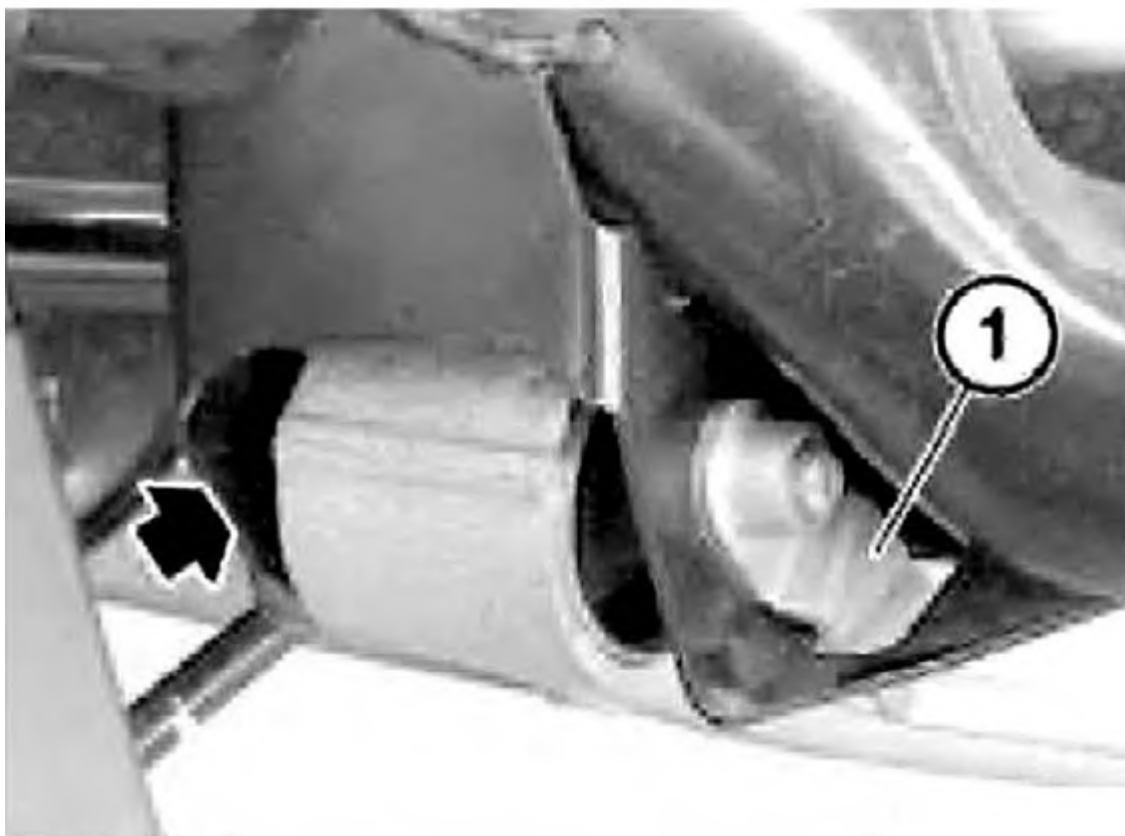
Fig. 32: Marking Position Of Eccentric Screw
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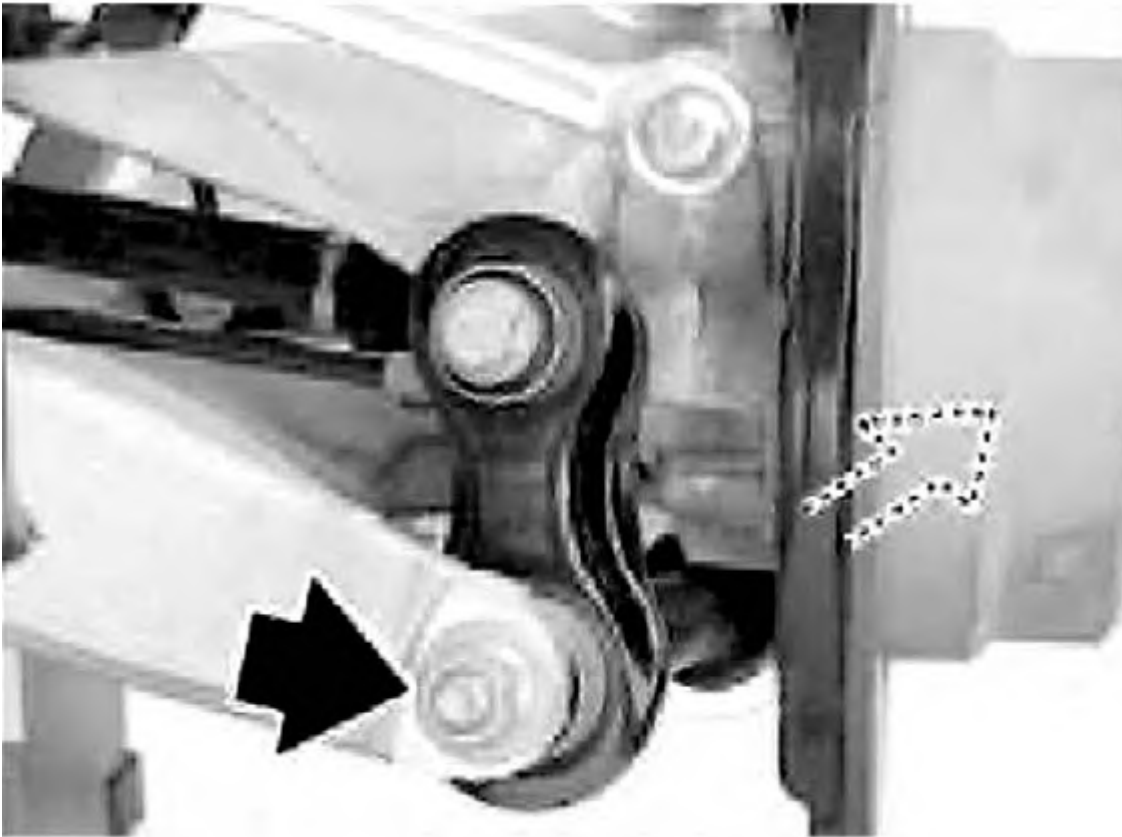
Fig. 33: Locating Disc Collar Nut

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 34: Locating Screw To Rear Axle Support
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 35: Removing Swinging Arm

Courtesy of BMW OF NORTH AMERICA, INC.

Removal & Installation (Coil Springs)

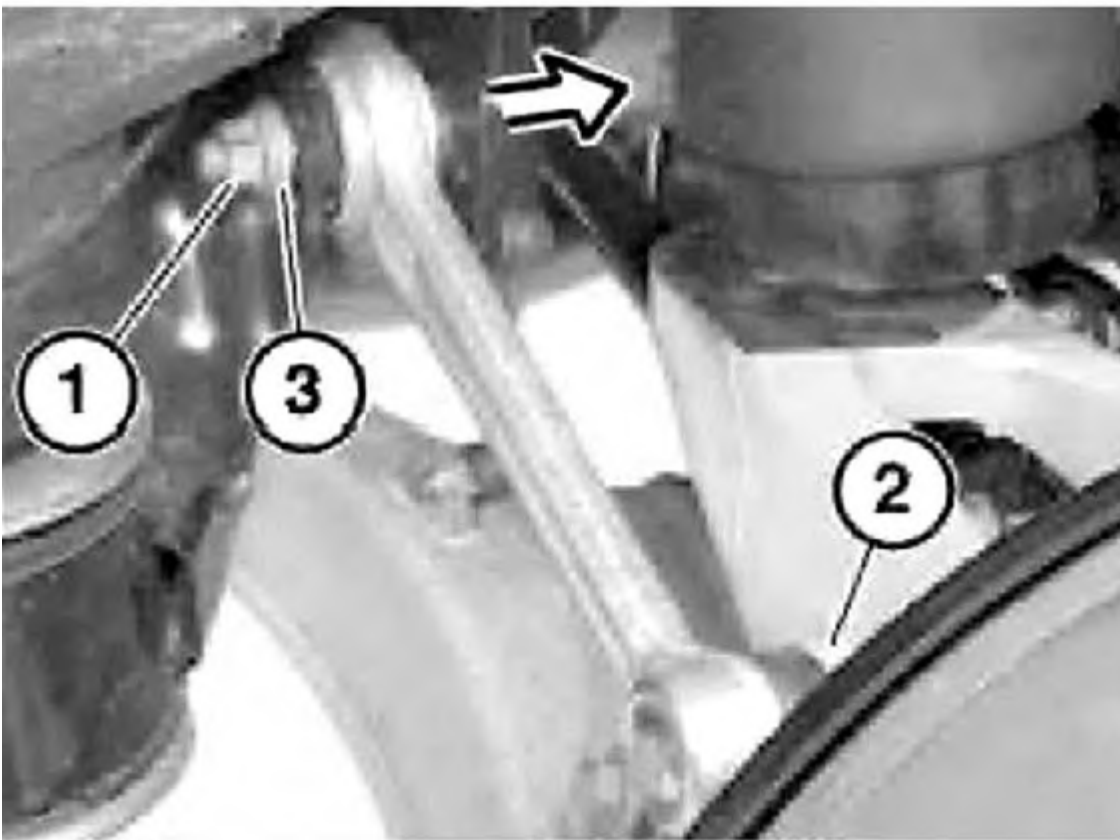
1. Remove integral link. See **INTEGRAL LINK** .
2. Mark position of eccentric screw on rear axle carrier with colored spots. This makes the subsequent camber adjustment easier when reinstalling the previous swinging arm. See **Fig. 32** .
3. Unfasten disc collar nut (1) and pull out eccentric bolt. See **Fig. 33** .
4. Unfasten screw for swinging arm to rear axle support and remove. See **Fig. 34** .
5. Remove swinging arm.
6. To install, reverse removal procedure.
7. Inset locking nut (1) in recess on rear axle carrier and tighten down screw for swinging arm to rear axle support. See **Fig. 34** .
8. Replace disc collar nut (1) and install eccentric washer (2). See **Fig. 33** . Tighten to specification. See **TORQUE SPECIFICATIONS** .
9. Adjust rear axle after assembly.

TRACTION STRUT

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation

1. On car with coil spring, remove shock absorber from swinging arm. See **SHOCK ABSORBER** .
2. Remove wheel.
3. Release nuts (1 and 2). Grip hexagon head if necessary. See **Fig. 36** .
4. To install, reverse removal procedure. Ensure tapered pin and bore are free of grease. Fit eccentric washer (3). See **Fig. 36** . Replace nuts and tighten to specification. See **TORQUE SPECIFICATIONS** .
5. Adjust rear axle after assembly.



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Fig. 36: Releasing Traction Strut

Courtesy of BMW OF NORTH AMERICA, INC.

UPPER CONTROL ARM

NOTE: Numbers in text refer to numbers in figures.

Removal & Installation (Air Suspension)

1. Disconnect fuse on air supply system so that there is no unintentional system regulation. Slacken pipes on

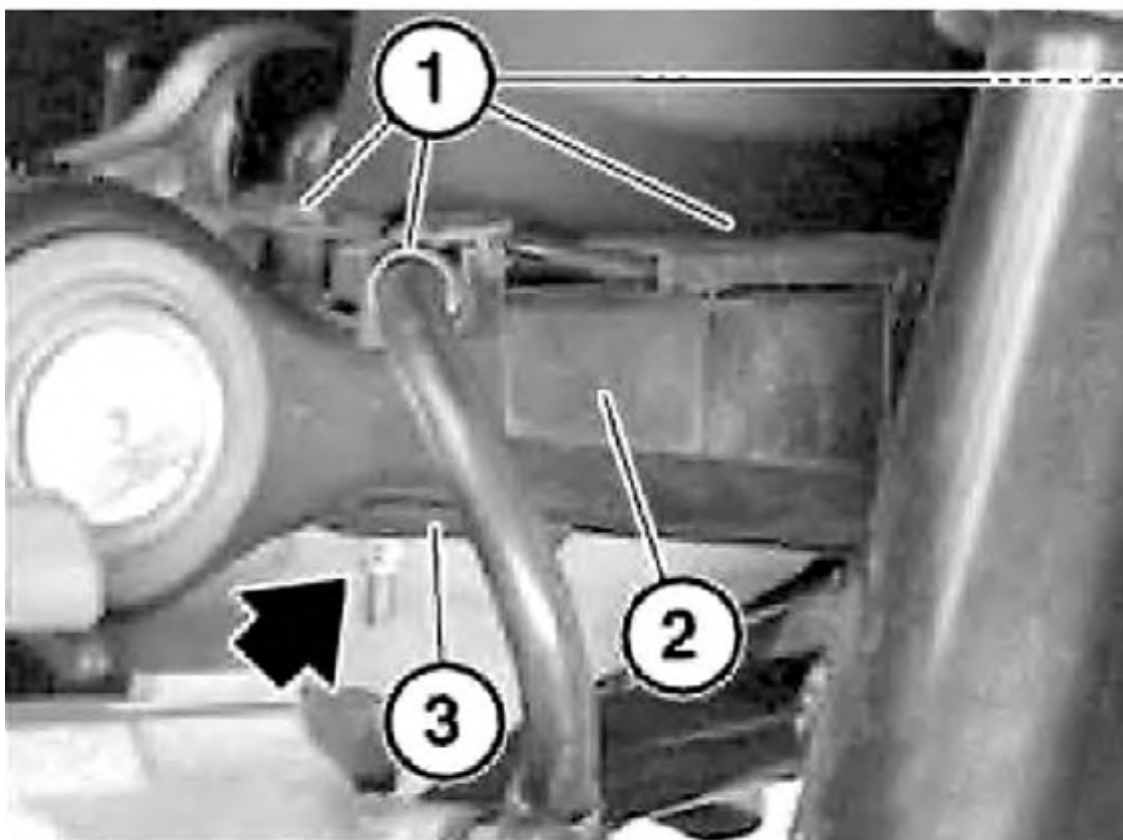
distributor block so as to reduce system pressure.

2. Remove wheel.
3. Unfasten nut for upper control arm to wheel carrier. Brace on hex head if necessary. See **Fig. 37** .
4. Open flaps (1) on line holder (2). Unhook lines. Release nut and remove plastic shim (3). See **Fig. 38** .
5. Release nut (1) and remove screw. Take off control arm. See **Fig. 39** .
6. To install, reverse removal procedure. Note insertion direction of bolt. Replace nut. See **Fig. 39** . Tighten to specification. See **TORQUE SPECIFICATIONS** .
7. When installing line holder it must be replaced. Pay attention to routing of lines.
8. When installing upper control arm to wheel carrier, ensure tapered pin and bore are free of grease. Replace nut and tighten to specification. See **TORQUE SPECIFICATIONS** .



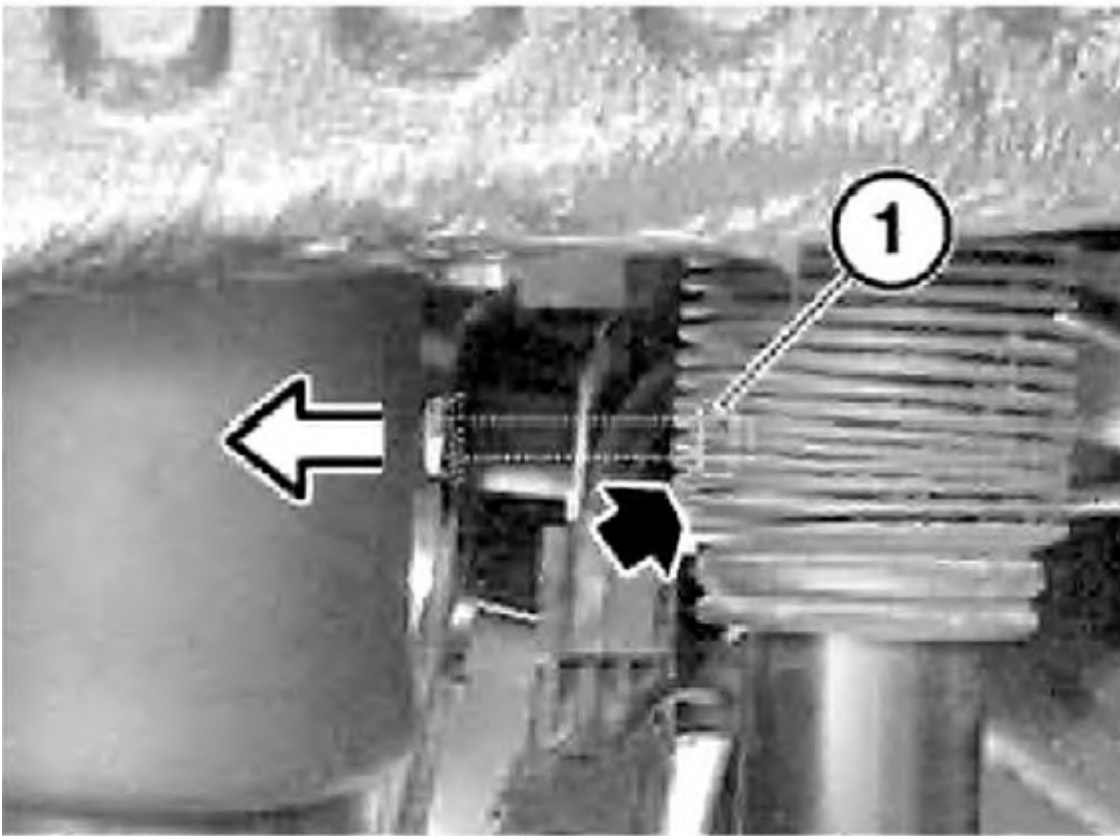
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Fig. 37: Locating Nut For Upper Control Arm To Wheel Carrier
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 38: Opening Flaps On Line Holder
Courtesy of BMW OF NORTH AMERICA, INC.



G00173897

Fig. 39: Removing Control Arm

Courtesy of BMW OF NORTH AMERICA, INC.

Removal & Installation (Coil Springs)

1. Remove brake caliper and tie back to body. Remove ABS speed sensor. See appropriate article in BRAKES.
2. Position workshop hoist under wheel carrier.
3. Remove shock absorber from swinging arm. See **SHOCK ABSORBER** .
4. Unfasten nut for upper control arm to wheel carrier. Brace on hex head if necessary. See **Fig. 37** .
5. Open flaps (1) on line holder (2). Unhook lines. Release nut and remove plastic shim (3). See **Fig. 38** .
6. Release nut (1) and remove screw. Take off control arm. See **Fig. 39** .
7. To install, reverse removal procedure. Note insertion direction of bolt. Replace nut. See **Fig. 39** . Tighten to specification. See **TORQUE SPECIFICATIONS** .
8. When installing line holder it must be replaced. Pay attention to routing of lines.
9. When installing upper control arm to wheel carrier, Ensure tapered pin and bore are free of grease. Replace nut and tighten to specification. See **TORQUE SPECIFICATIONS** .

WHEEL BEARINGS

For removal and installation of wheel bearings, see appropriate article in BRAKES.

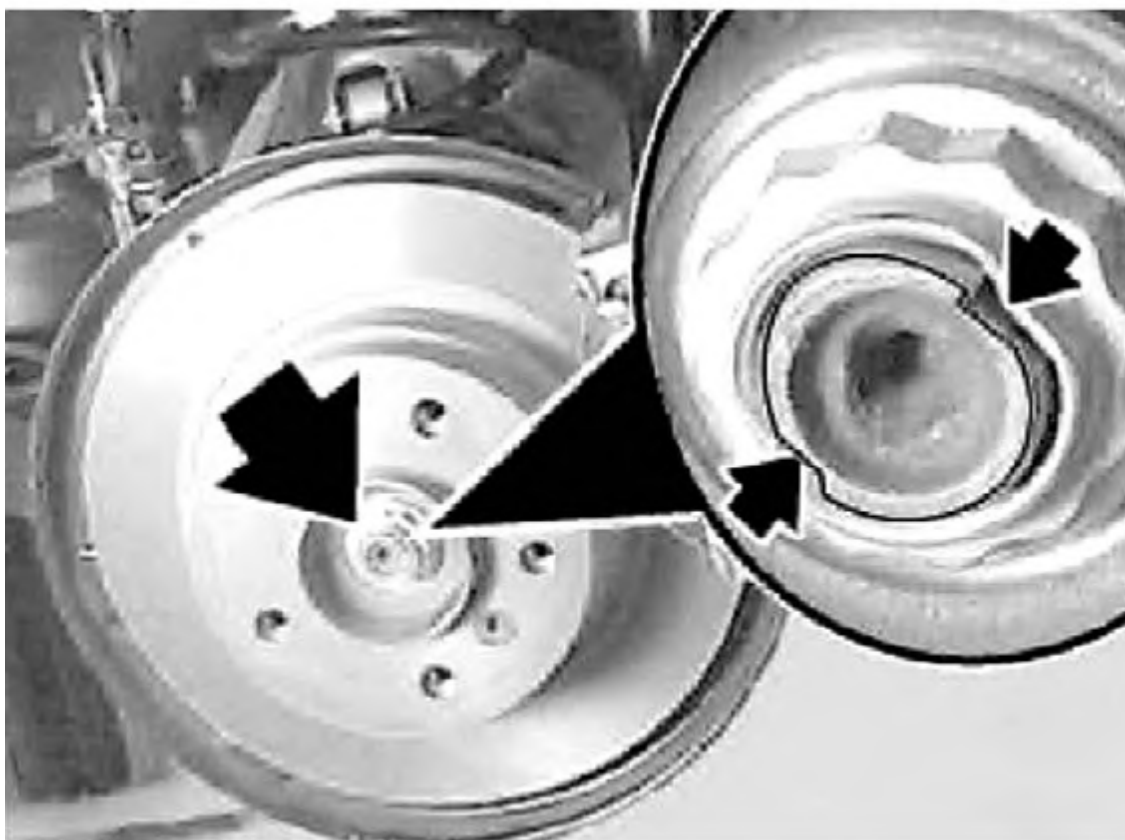
WHEEL CARRIER

NOTE: Numbers in text refer to numbers in figures.

NOTE: It may be necessary to convert the brake console, support for brake shoes and ball joint, and replace wheel bearing.

Removal (Air Suspension)

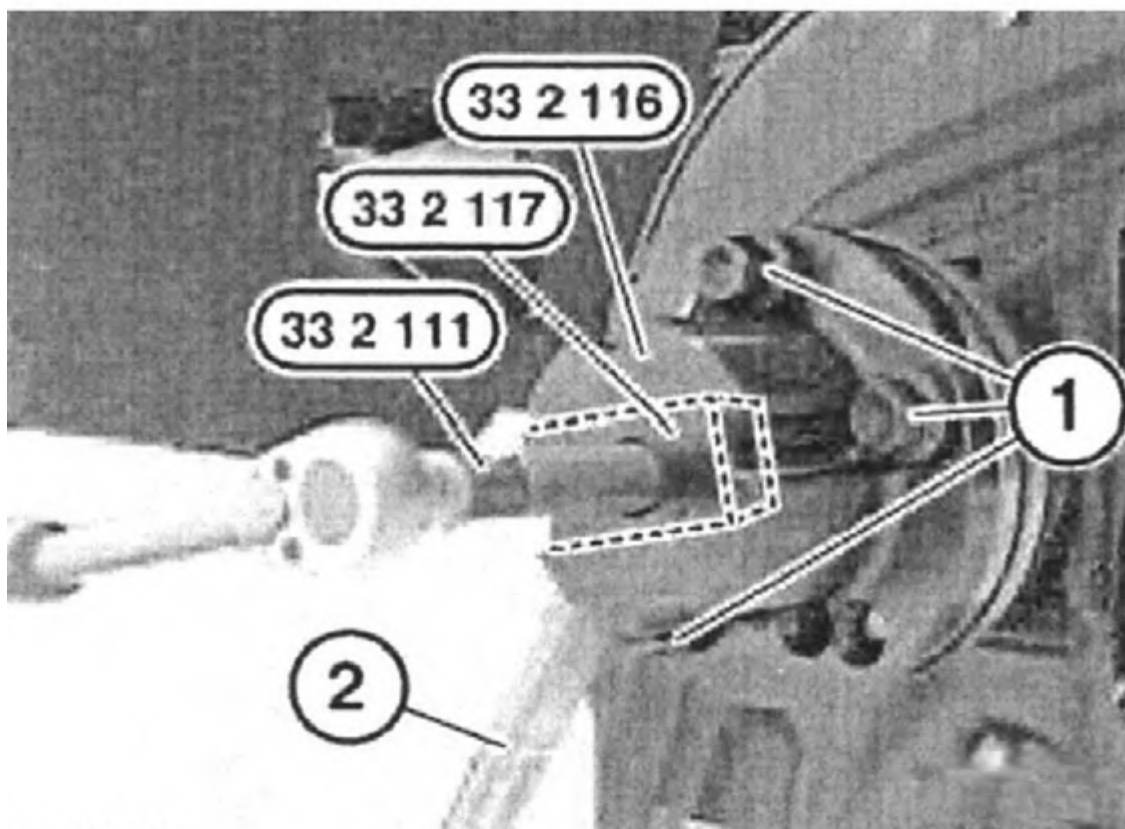
1. Disconnect fuse on air supply system so that there is no unintentional system regulation. Slacken pipes on distributor block so as to reduce system pressure.
2. Raise wheel carrier with workshop. Release locking clip (1). See **Fig. 2**.
3. Remove wheel.
4. Remove collar nut. See **Fig. 40**.
5. Press out axle shaft with special tool (33 2 111/116/117) with 5 wheel studs (1). Grip with tire iron (2) in so doing. See **Fig. 41**.
6. Remove handbrake shoes with brake shoe expander. Remove ABS speed sensor. See appropriate article in BRAKES.
7. Remove nut and screw for swinging arm. See **Fig. 35**.
8. Unfasten nut from traction strut (1) and control arm (2) on wheel carrier. Brace on hexagon if necessary. See **Fig. 42**.
9. Remove wheel carrier.
10. To install, reverse removal procedure. Ensure tapered pins and holes are free of grease. Replace nuts. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS**.
11. When pulling in axle shaft, lightly oil axle shaft splines and insert into drive flange splines. Screw special tool (33 2 118) onto axle shaft. Screw on special tool (33 2 116) with 5 wheel studs (1). Install axle shaft with special tool (33 2 115). See **Fig. 43**.
12. Replace collar nut and tighten to specification. See **TORQUE SPECIFICATIONS**. Secure collar nut by calking it at flat area of shaft. See **Fig. 40**.
13. The lug (1) must lie in the recess of the wheel carrier hole. See **Fig. 8**.



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Fig. 40: Removing Collar Nut

Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 41: Using Special Tool (33 2 111)
Courtesy of BMW OF NORTH AMERICA, INC.

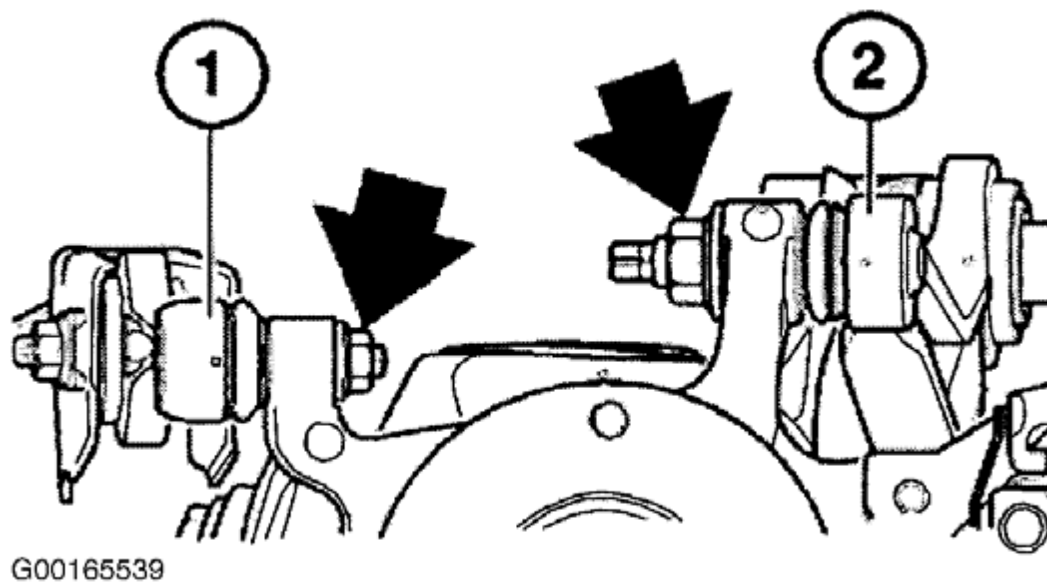
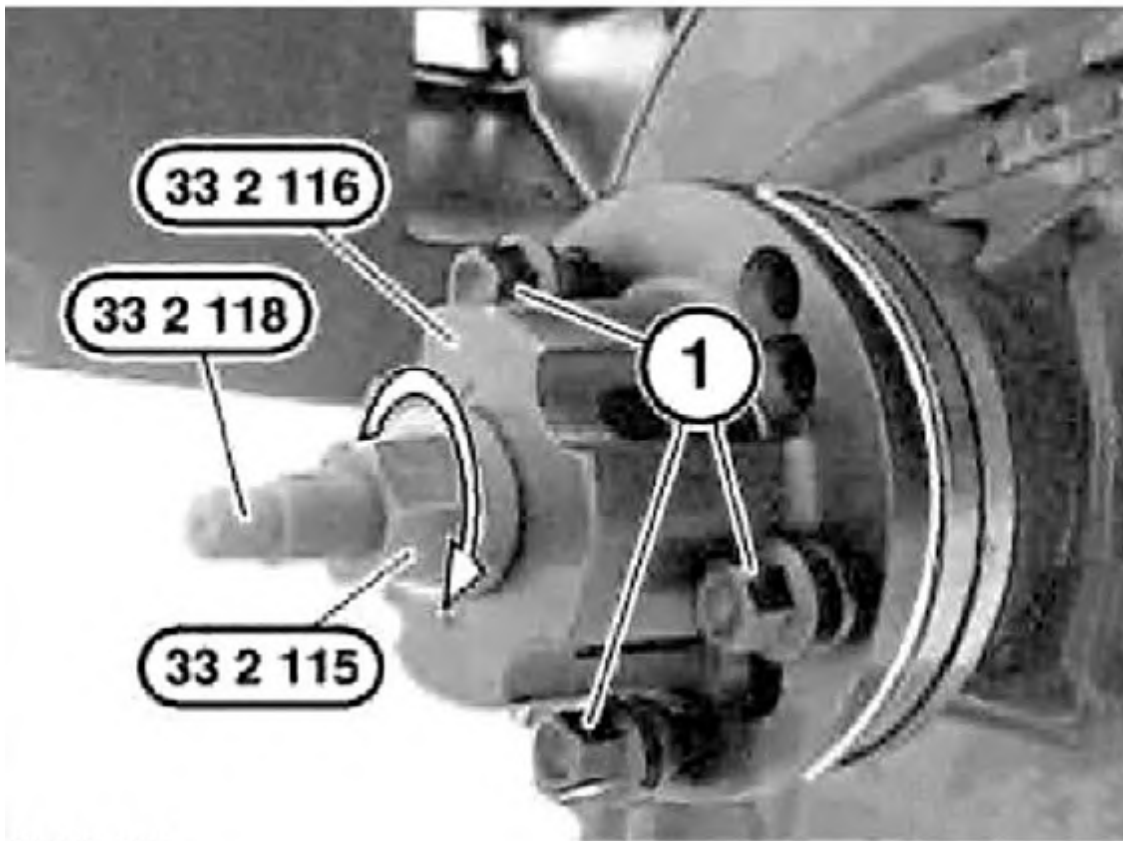


Fig. 42: Releasing Nuts Of Traction Strut & Control Arm
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 43: Installing Axle Shaft

Courtesy of BMW OF NORTH AMERICA, INC.

Removal & Installation (Coil Springs)

1. Remove integral link. See **INTEGRAL LINK** .
2. Remove wheel.
3. Unscrew collar nut. See **Fig. 40** .
4. Press out axle shaft with special tool (33 2 111/116/117) with 5 wheel studs (1). Grip with tire iron (2) in so doing. See **Fig. 41** .
5. Lightly oil axle shaft splines and insert into drive flange splines. Screw special tool (33 2 118) onto axle shaft. Screw on special tool (33 2 116) with 5 wheel studs (1). Install axle shaft with special tool (33 2 115). See **Fig. 43** .
6. Replace collar nut and tighten to specification. See **TORQUE SPECIFICATIONS** . Secure collar nut by calking it at flat area of shaft. See **Fig. 40** .
7. Install integral link. See **INTEGRAL LINK** .

WHEEL CARRIER BALL JOINT**NOTE:** Numbers in text refer to numbers in figures.

Removal & Installation

1. Remove integral link. See **INTEGRAL LINK** .
2. Support wheel carrier with workshop hoist.
3. Remove shock absorber from swinging arm. See **SHOCK ABSORBER** .
4. Lift out circlip (1). Pull out ball joint with special tool (33 4 191/192/193 and 33 3 333). See **Fig. 44** .
5. Pull in new ball joint (1) up to stop with special tool (33 4 191/192/194 and 33 3 333). See **Fig. 45** .
6. Install new circlip (1). See **Fig. 44** .
7. To install, reverse removal procedure.

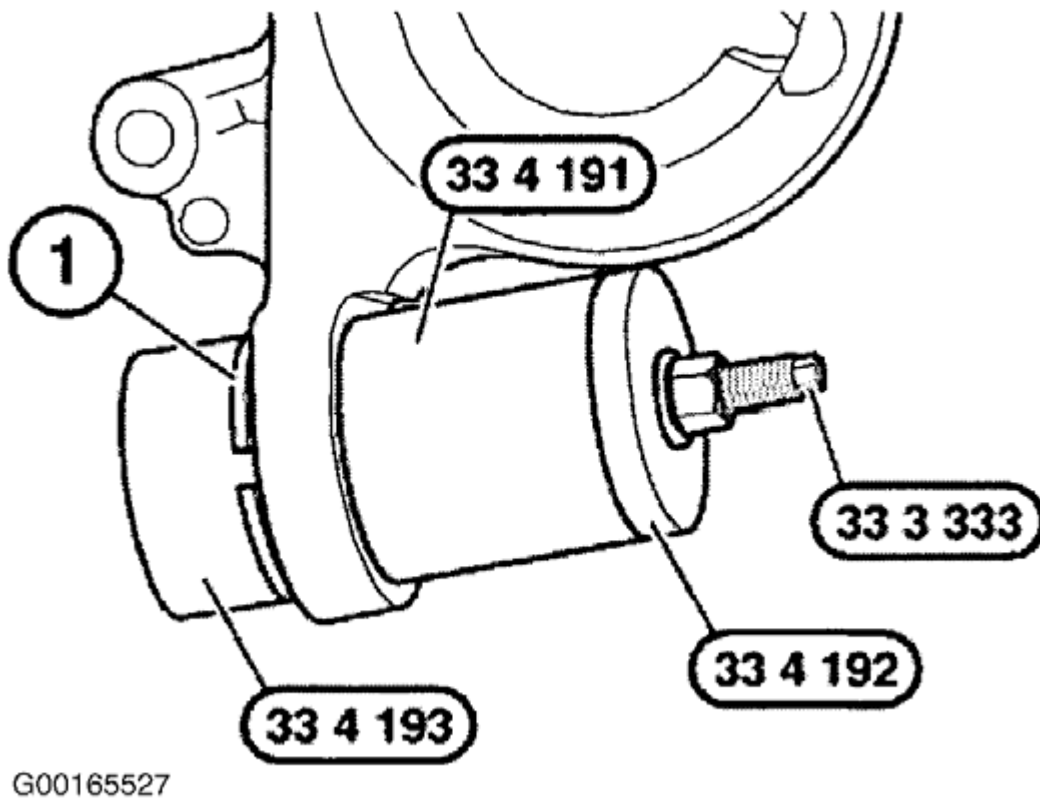
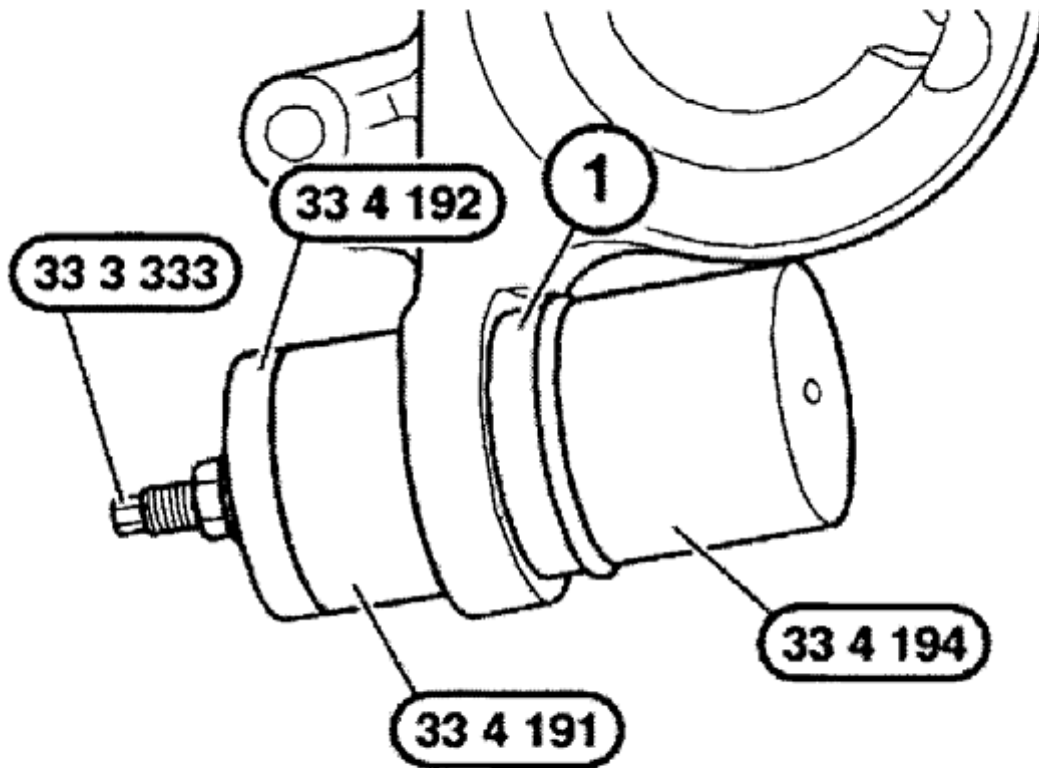


Fig. 44: Removing Wheel Carrier Ball Joint
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 45: Installing New Ball Joint For Wheel Carrier
 Courtesy of BMW OF NORTH AMERICA, INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

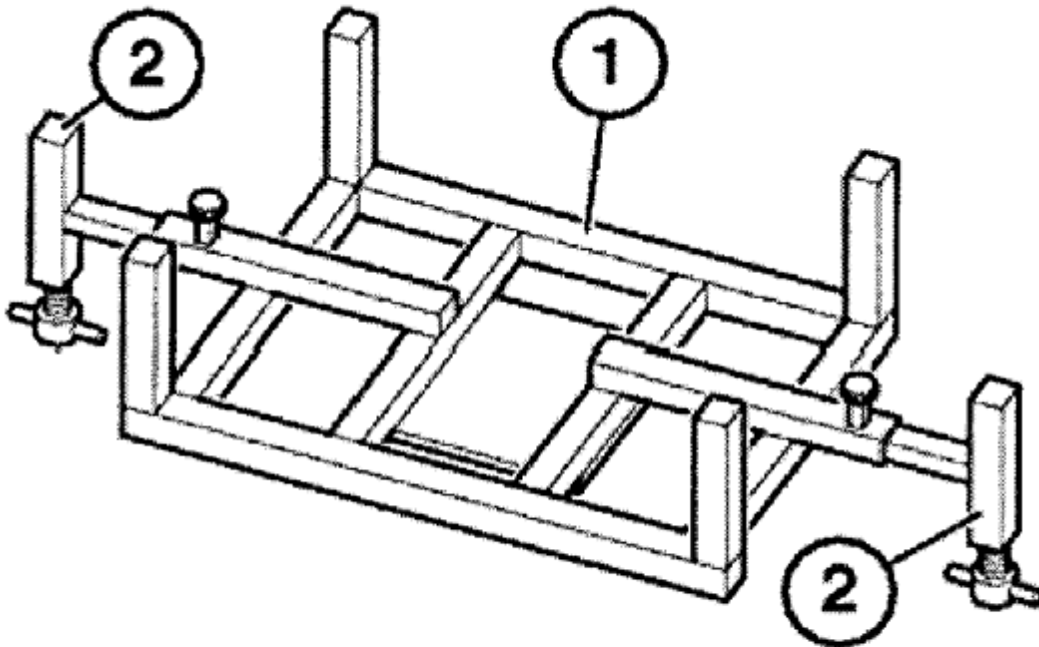
Application	Ft. Lbs. (N.m)
Collar Nut	310 (420)
Control Arm To Rear Axle Support	44 (59)
Integral Link On Front Wheel Carrier	77 (105)
Rear Axle Carrier To Body	141 (163)
Shock Absorber Piston Rod On Thrust Bearing	20 (27)
Shock Absorber Support On Body	41 (56)
Stabilizer Bar Retaining Bracket	14 (19)
Stabilizer Link To Swinging Arm	74 (100)
Swinging Arm Screw Connection	184 (250)
Swinging Arm To Rear Axle Support	
Front	74 (100)

2001 BMW X5

2000-04 SUSPENSION Rear - X5

Rear	122 (165)
Traction Strut To Wheel Carrier	48 (65)
Upper Control Arm To Axle Carrier	74 (100)
Upper Control Arm To Wheel Carrier	122 (165)
Wheel Lug Bolt	96-103 (130-150)

SPECIAL TOOLS

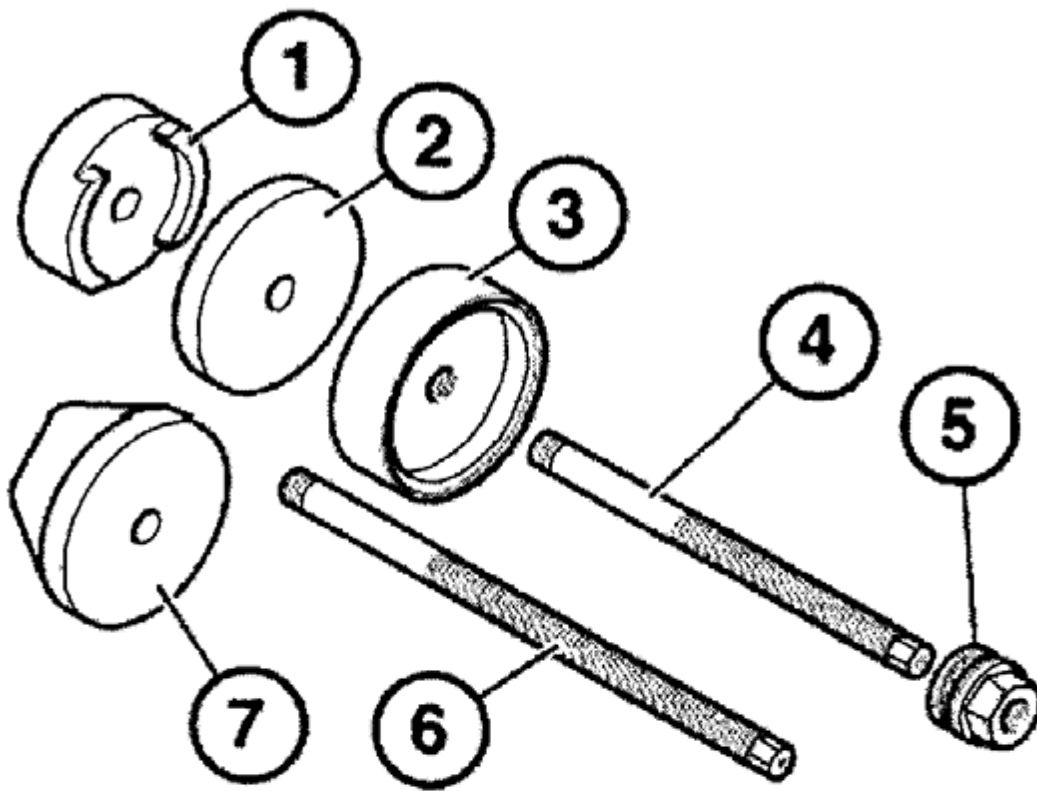


- 1 = 00 2 041 Base frame
2 = 00 2 042 Lateral supports

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Fig. 46: Identifying Basic Take-Up Fixture (00 2 040)

Courtesy of BMW OF NORTH AMERICA, INC.

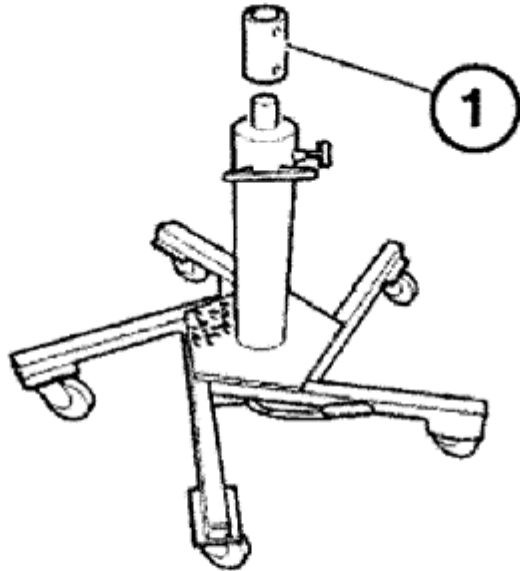


- 1 = 33 4 151 Pressure plate
- 2 = 33 4 152 Pressure plate
- 3 = 33 4 153 Support plate
- 4 = 33 4 154 Spindle with lock nut
- 5 = 33 4 155 Nut with bearing
- 6 = 33 4 156 Spindle, long
- 7 = 33 4 157 Pressure plate
- 8 = 33 4 158 Pressure plate
- 9 = 33 4 159 Support disc

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Fig. 47: Identifying Fixture (33 4 150)

Courtesy of BMW OF NORTH AMERICA, INC.



1 = 00 2 031 Adapter for transmission brackets
Note: Model series: E30, E31, E32, E34,
E36
In conjunction with: 23 0 000, 24 0 130

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Fig. 48: Identifying Hydro-Lifter Basic Unit (00 2 030)
Courtesy of BMW OF NORTH AMERICA, INC.

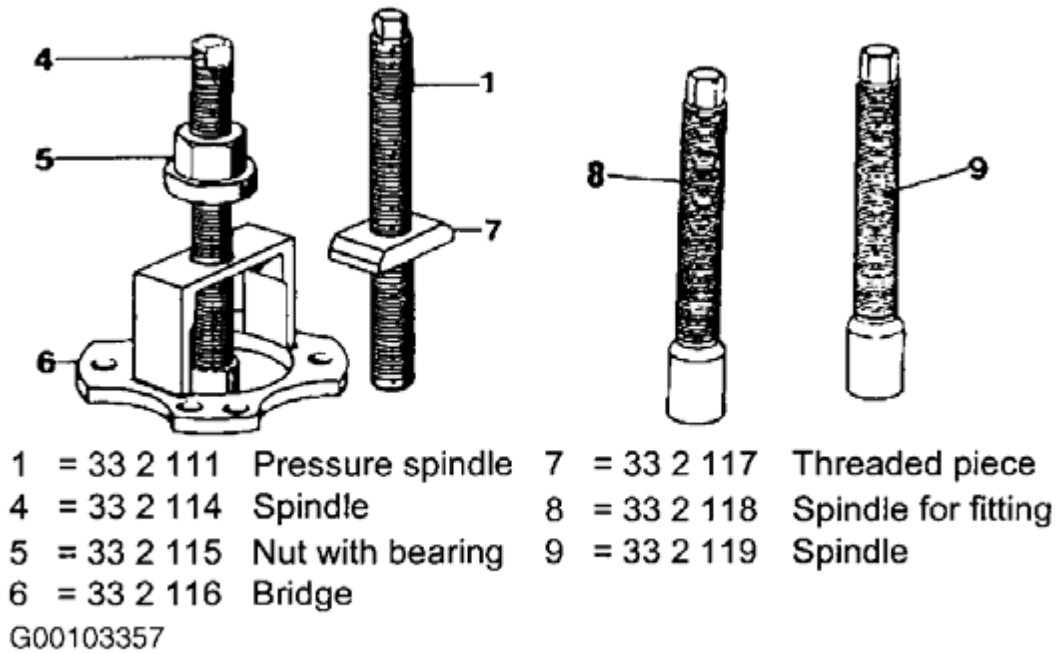
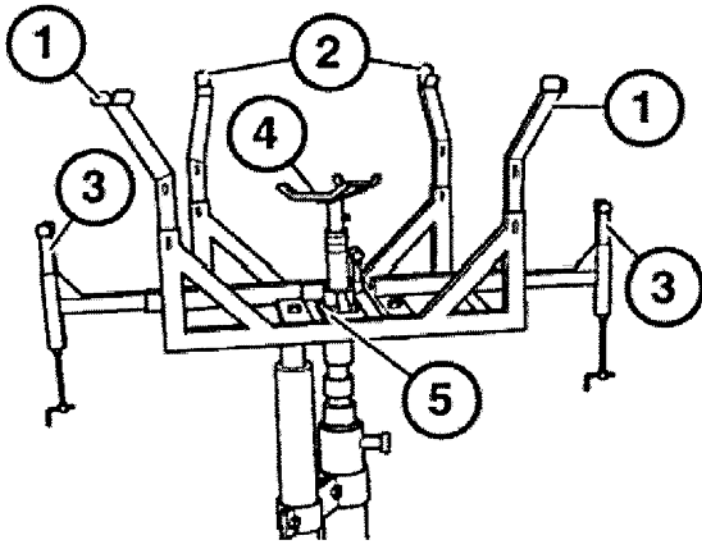


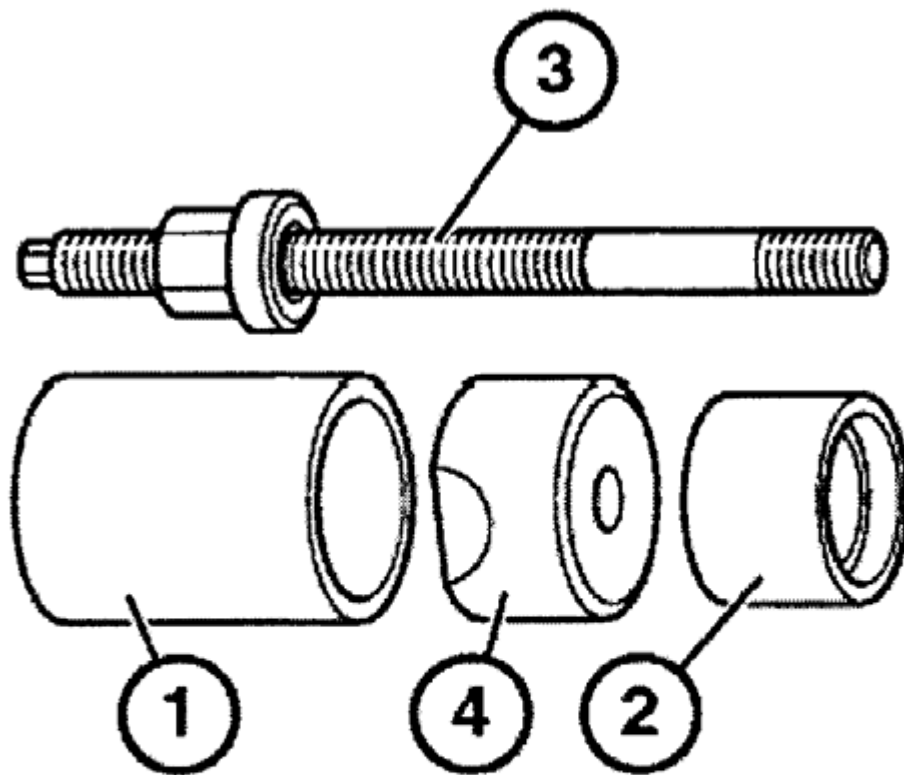
Fig. 49: Identifying Removal & Installation Tool (33 2 110)
 Courtesy of BMW OF NORTH AMERICA, INC.



- 1 = 33 4 221 Axle body support
Note: Support arm No. 1 and 2 - Model series: E38, E52
- 2 = 33 4 222 Axle body support
Note: Support arm No. 3 and 4 - Model series: E38
- 3 = 33 4 223 Control arm support
Note: Support arm No. 5 and 6 - Model series: E38, E52
- 4 = 33 4 224 Rear axle differential support
Note: Model series: E38
- 5 = 33 4 225 Adapter plate
Note: Model series: E38
In conjunction with: 00 2 040
- 6 = 33 4 226 Axle support
Note: Support arm No. 3 and 4 - Model series: E52
- 7 = 33 4 227 Axle support 1 + 2
Note: For rear axle - Model series: E65
In conjunction with: 00 2 030, 00 2 040
- 8 = 33 4 228 Axle support 3 + 4
Note: For rear axle - Model series: E65

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Fig. 50: Identifying Set Of Supports (33 4 220)
Courtesy of BMW OF NORTH AMERICA, INC.

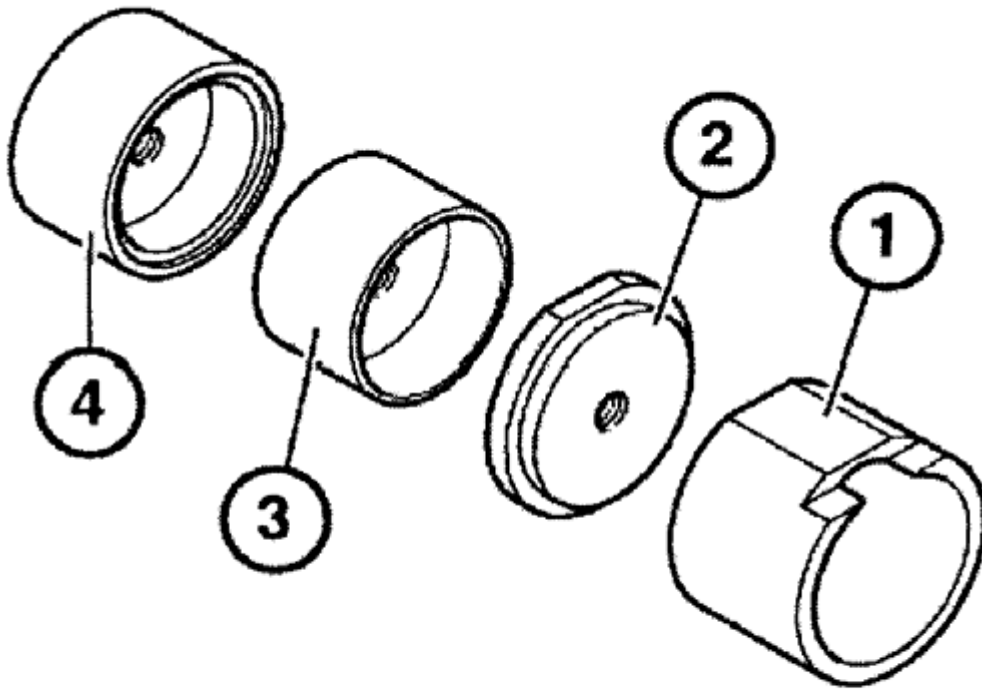


- 1 = 33 3 331 Spacer sleeve
2 = 33 3 332 Extractor sleeve
3 = 33 3 333 Spindle with pressure nut
4 = 33 3 334 Spacer sleeve

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Fig. 51: Identifying Set Of Tools (33 3 330)

Courtesy of BMW OF NORTH AMERICA, INC.



1 = 33 4 191 Support tube

Note: For removal and installation operations

2 = 33 4 192 Support plate

Note: For removal and installation operations

3 = 33 4 193 Thrust piece

Note: For removal operations

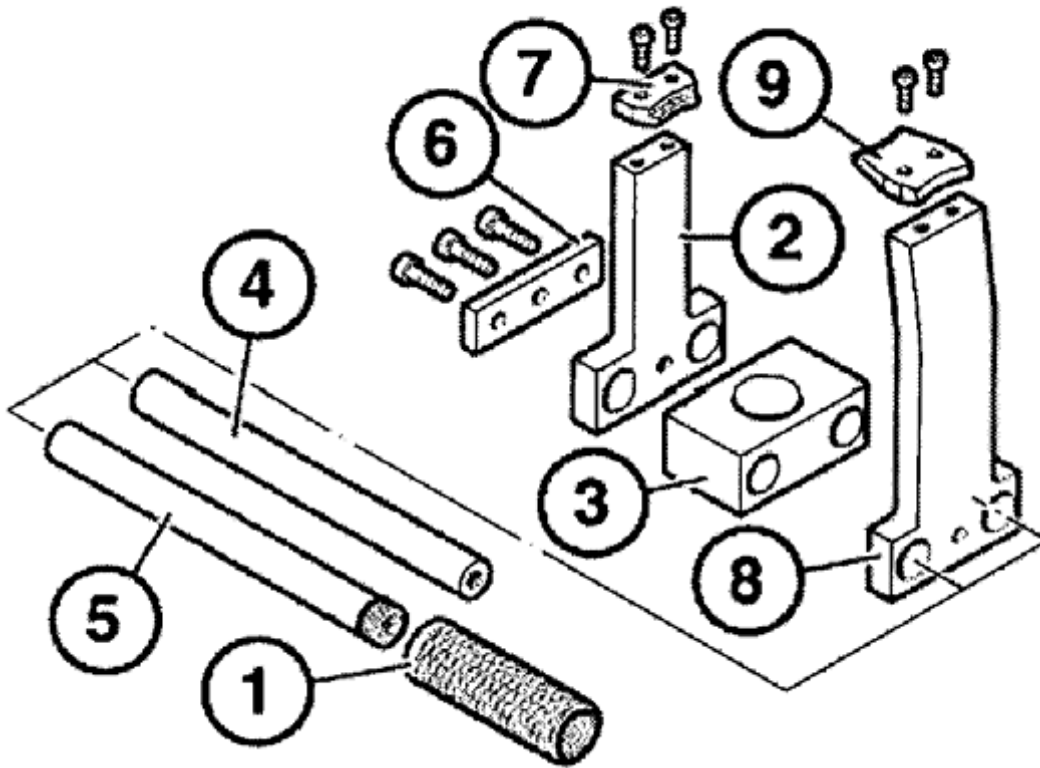
4 = 33 4 194 Thrust piece

Note: For fitting operations

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Fig. 52: Identifying Set Of Tools (33 4 190)

Courtesy of BMW OF NORTH AMERICA, INC.



- | | |
|--------------|-----------------------|
| 1 = 33 4 141 | Threaded tube |
| 2 = 33 4 142 | Support foot (2) |
| 4 = 33 4 144 | Guide rod |
| 5 = 33 4 145 | Guide rod |
| 7 = 33 4 147 | Thrust piece (2) |
| 8 = 33 4 148 | Support foot long (2) |
| 9 = 33 4 149 | Thrust piece (2) |

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Fig. 53: Identifying Universal Support (33 4 140)
 Courtesy of BMW OF NORTH AMERICA, INC.