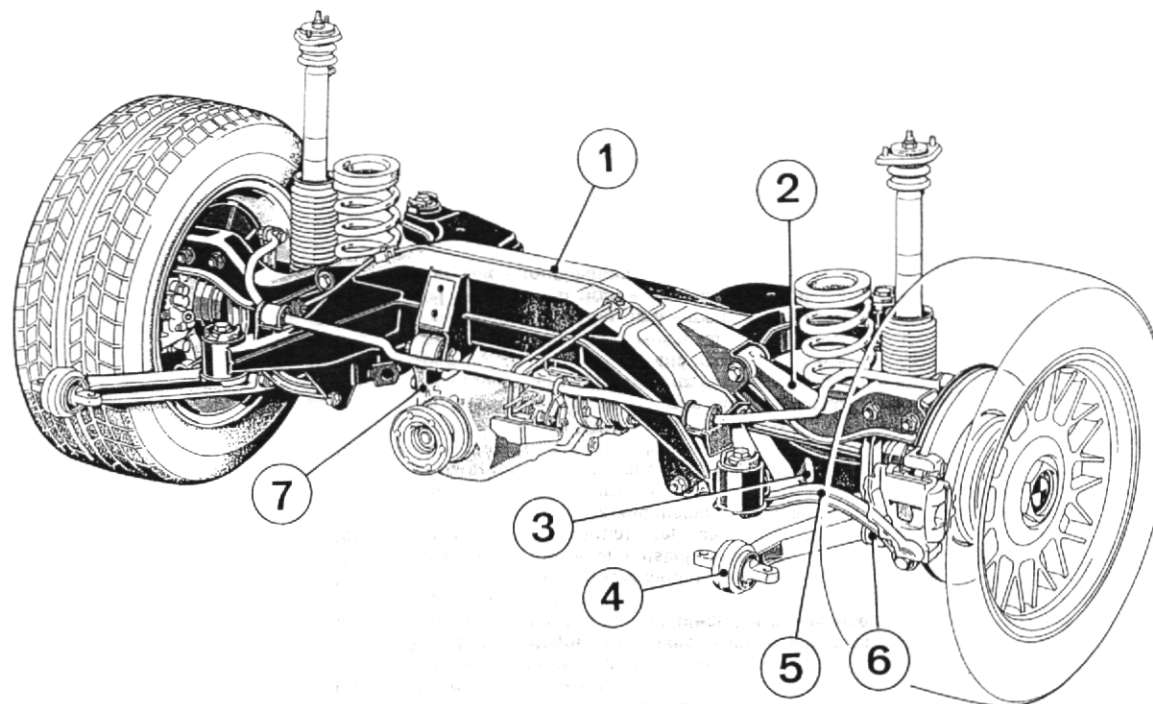


33 Rear Axle

	Rear axle layout	33-00/1
	Rear axle component layout	33-00/2
33 10 010	Final drive – remove and install or replace	33-10/1
33 11 151	Shaft seal for drive flange – replace	33-11/1
33 17 503	Final drive rubber mounts – replace	33-17/1
010	Final drive bracket – replace	33-17/2
510	Final drive bracket rubber mount – replace	33-17/2
33 21 000	Output shaft – remove and install or replace	33-21/1
031	Dust cover – replace	33-21/2
33 31 000	Rear axle carrier assembly – remove and install	33-31/1
33 32 021	Trailing arm – replace	33-32/1
551	Trailing arm rubber mount – replace	33-32/2
051	Thrust strut integral arm – remove and install or replace	33-32/3
651	Rubber mount in thrust strut integral arm – replace	33-32/3
071	Upper control arm – replace	33-32/4
671	Upper control arm rubber mount – replace	33-32/4
091	Guide arm – remove and install or replace	33-32/5
691	Guide arm rubber mount – replace	33-32/5
111	Support arm – remove and install or replace	33-32/6
711	Ball joint in support arm – replace	33-32/6
131	Wheel carrier – remove and install or replace	33-32/7
719	Ball joint in wheel carrier, lower – replace	33-32/7
725	Ball joint in wheel carrier, upper – replace	33-32/8
33 33 101	Two rubber mounts for rear axle carrier – replace	33-33/1
515	Two (additional) rubber mounts for rear axle carrier – replace	33-33/1
33 41 000	Drive flange hub – remove and install or replace	33-41/1
180	Angular roller bearing in wheel carrier – replace	33-41/1
33 52 000	Shock absorber, left or right – remove and install or replace	33-52/1
33 53 000	Coil spring, left or right – remove and install	33-53/1
	Rear axle – troubleshoot	33-90/1

33-00/1

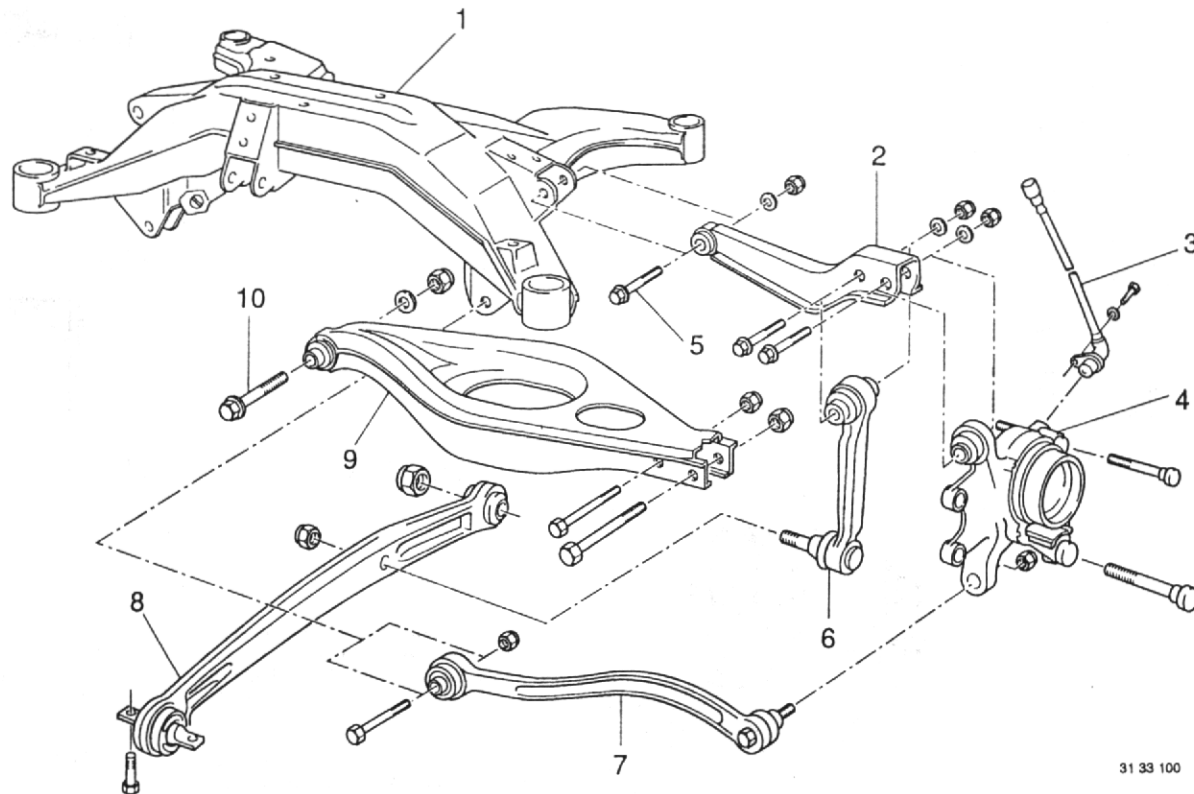
REAR AXLE ASSEMBLY DRAWING



330301

- 1 = Rear axle carrier
- 2 = Upper control arm / camber adjustment
- 3 = Lower support arm / toe adjustment
- 4 = Trailing arm
- 5 = Front control arm / guide arm
- 6 = Push rod / Integral arm
- 7 = Final drive holder

REAR AXLE COMPONENTS



31 33 100

1 = Rear axle carrier

2 = Upper control arm

3 = ABS sensor

4 = Wheel carrier

5 = Camber adjusting bolt

6 = Push rod / Integral

7 = Guide arm

8 = Trailing arm

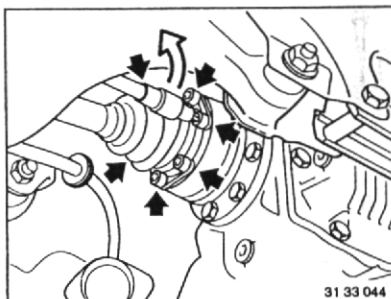
9 = Lower support arm

10 = Toe adjusting bolt

33-10/1

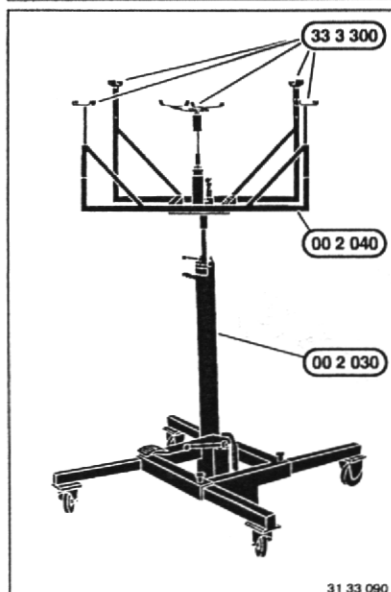
33 10 010 REMOVING AND INSTALLING OR REPLACING FINAL DRIVE

Remove both final mufflers – see Group 18.
Unscrew propeller shaft on final drive – see Group 26.



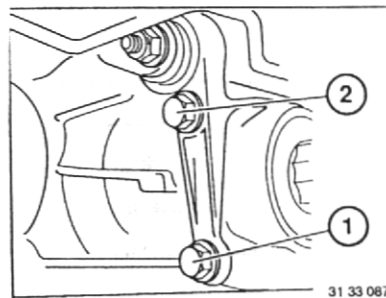
Unscrew and suspend output shafts from the car.

Installation:
Tightening torque*.
Lift wheel carrier with Special Tool 00 2 020 to have sufficient space to guide in the output shafts.



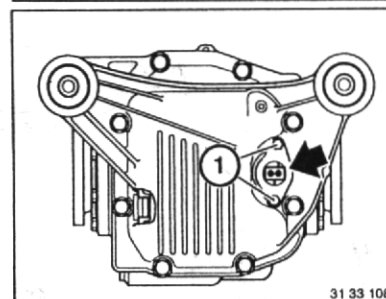
Support final drive with Special Tools 33 3 300 and 00 2 040 / 030.

* See Specifications



Unscrew bolts (1 and 2).

Installation:
Tightening torque*.



Pull off plug.

Installation:
Tightening torque*.

Important!
Check ratio stamped on data plate when replacing a final drive.
Check and correct oil level only with approved gear lube**.

Replacing oil – see 00 11 259.

BREAKING IN PROCEDURES AFTER REPLACING/REPAIRING FINAL DRIVE

Strict conformance with these breaking-in procedures is required for pre-loading the tapered roller bearing.

During the first 1,000 km (600 miles) the car must be driven at different engine speeds and road speeds, but never faster than 2/3rds of the max. permissible speed.

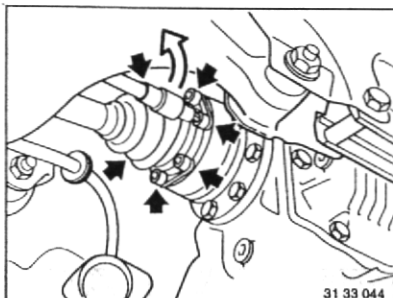
If there is no conformance with these breaking in procedures there could be seizure between the tapered rollers and inner race guide band, which in turn will continuously cause noise, overheating and oil leakage.

Install a tag or label to remind the driver of the next oil change.

* See Specifications

** Source of Supply: HWB

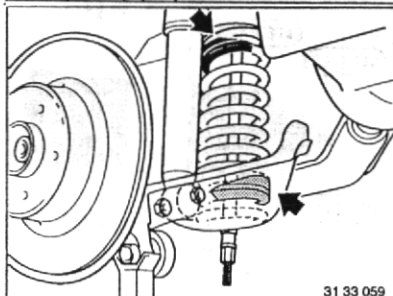
33-11/1



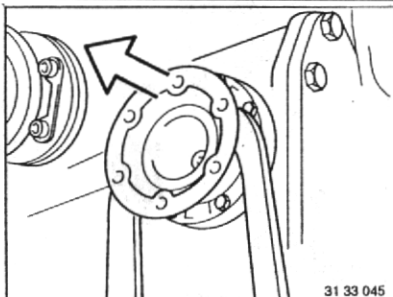
33 11 151 REPLACING SHAFT SEAL FOR DRIVE FLANGE

Unscrew output shaft on drive flange.

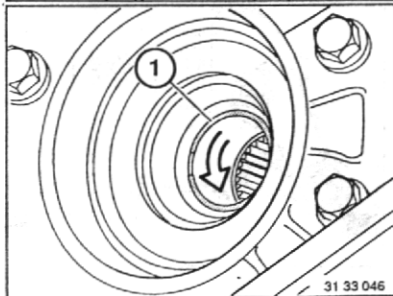
Installation:
Use washers.
Tightening torque*.



Compress rear spring with Special Tool 33 2 300 and support trailing arm with Special Tool 00 2 020.



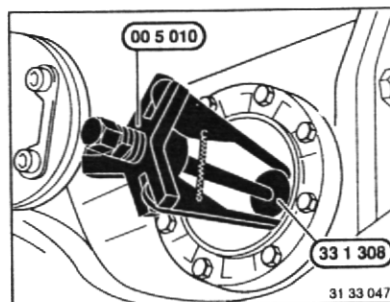
Pry off drive flange with a tire iron.



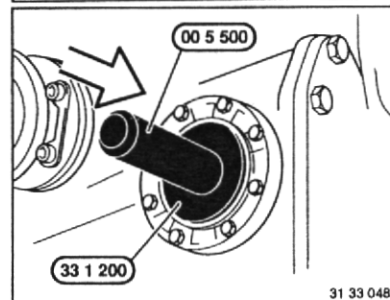
Installation:
Place round wire snap ring (1) in groove of differential case that both ends of snap ring are recessed in the groove prior to installation. This will prevent lateral bending of the ring. Press in drive flange by hand and turn slightly until round wire snap ring is heard to engage.

Important!
Replace stretched snap rings.

* See Specifications

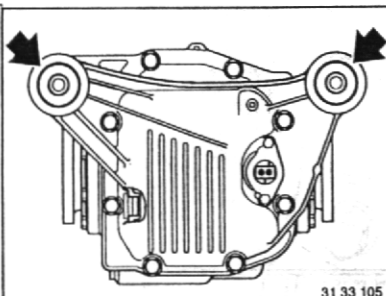


Pull out shaft seal with Special Tools 00 5 000 and 33 1 308.



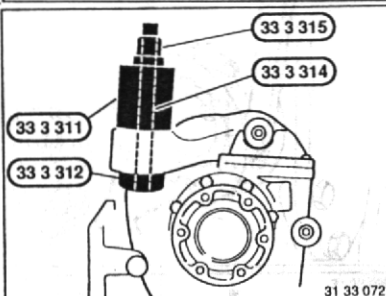
Installation:
Dip shaft seal in final drive oil. Knock in shaft seal against the stop with Special Tools 33 1 200 and 00 5 500. Replace drive flange when bearing surface has extreme scoring.

33-17/1



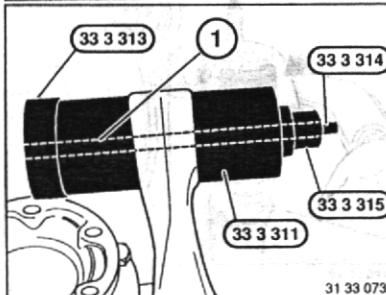
31 33 105

33 17 503 REPLACING ALL RUBBER MOUNTS FOR FINAL DRIVE AT REAR - Final Drive Removed -



31 33 072

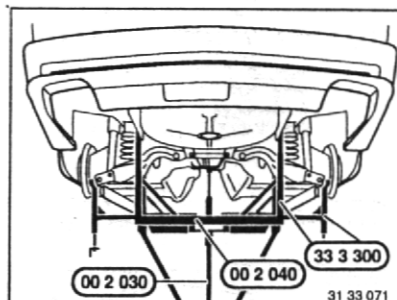
Pull out rubber mount (1) with Special Tools 33 3 311, 312, 314 and 315.



31 33 073

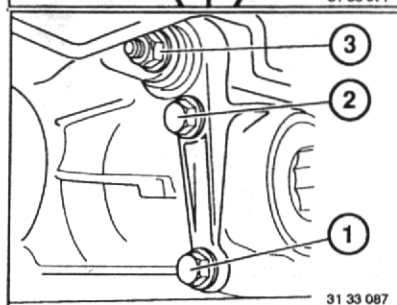
Pull In rubber mount (1) with Special Tools 33 3 311, 313, 314 and 315.

33-17/2



33 17 010 REPLACING FINAL DRIVE HOLDER

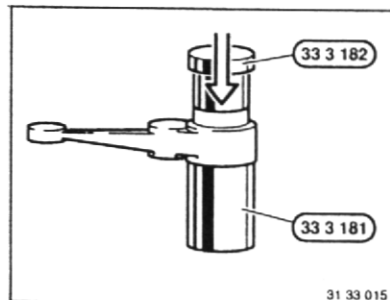
Support final drive with Special Tools 33 3 300 and 00 2 040 / 030.



Unscrew mounting bolts (1 ... 3).

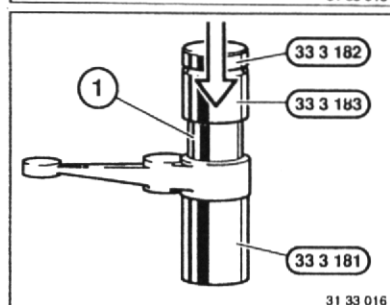
Installation:
Tightening torque*.

* See Specifications



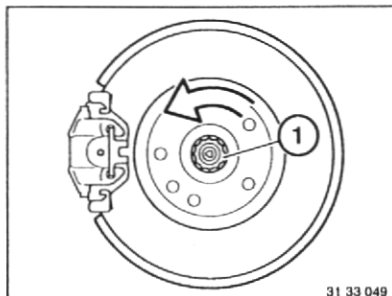
33 17 510 REPLACING FINAL DRIVE HOLDER RUBBER MOUNT – Holder Removed –

Press out rubber mount with Special Tools 33 3 181 and 33 3 182.



Press in new rubber mount (1) from the chamfered side of the final drive holder with Special Tools 33 3 181, 33 3 182 and 33 3 183.

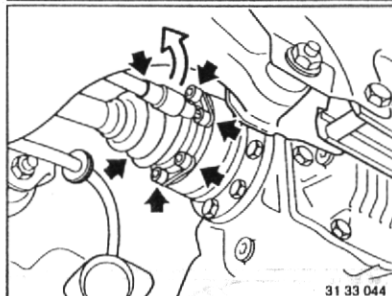
33-21/1



33 21 000 REMOVING AND INSTALLING OR REPLACING OUTPUT SHAFT

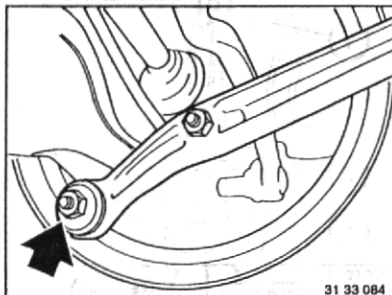
Unscrew collar nut (1).
Remove rear wheel – see Group 36.
Remove final muffler – see Group 18.
Compress rear spring – see 33 53 000.

Installation:
Replace collar nut.
Tightening torque*.
Lock collar nut.



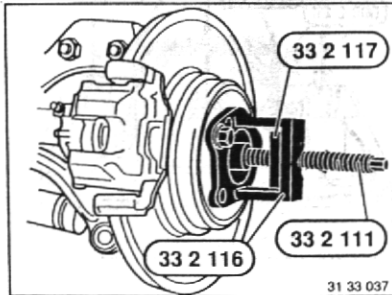
Unscrew output shaft on the final drive output flange.

Installation:
Tightening torque*.



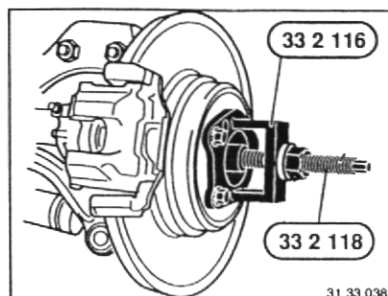
Unscrew and move in trailing arm far enough to have sufficient space for pressing out the output shaft.
Support wheel carrier with Special Tool 00 2 020 in such a manner as to have sufficient space to lift out the output shaft on the final drive end.

Installation:
Replace self-locking nuts.
Tightening torque*.



Press output shaft out of the drive flange hub with Special Tools 33 2 111, 116 and 117.

* See Specifications

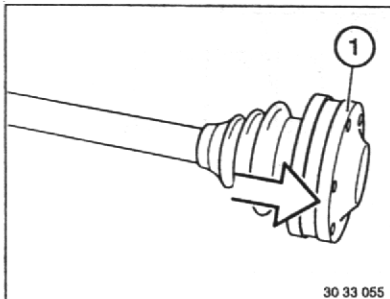


Pull in output shaft with Special Tools 33 2 116 and 118.

Installation:
Tightening torque*.

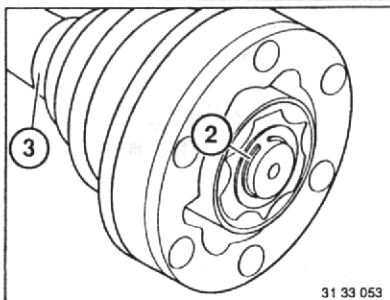
* See Specifications

33-21/2

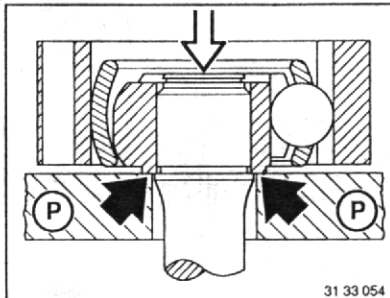


33 21 031 REPLACING DUST COVER

Remove output shaft – see 33 21 000.
Pry off sealing cover (1).

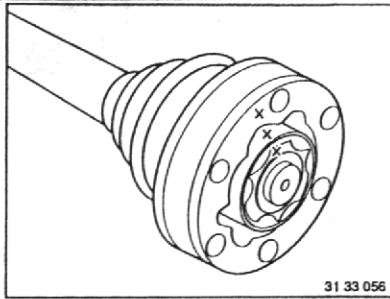


Loosen clamp on dust cover.
Remove circlip (2).
Press off cap (3) with dust cover.

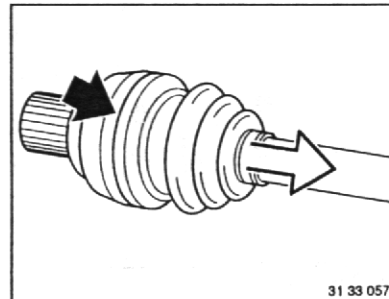


Press output shaft out of the constant velocity joint.

Important!
Bearing inner race must bear on the counterpressure plate (P).
Don't disassemble the joint.
Check joint for dirt or damage.

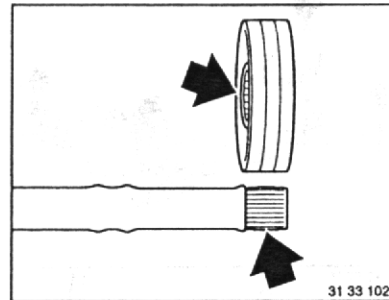


If the joint has to be disassembled (dirt), mark the position of the ball hub, ball cage and joint to each other on the face with an electric scriber.
Check for cleanliness when assembling.



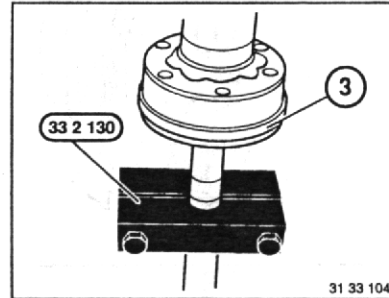
Pull off wheel end dust cover over the output shaft.
Slide final drive end dust cover over the splined shaft.

Important!
Protect new dust cover against the sharp edges of the splined shaft with a suitable sleeve.
Use repair kit.

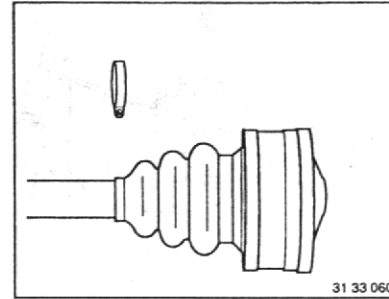


Remove grease from splines of joint.
Coat splines with Loctite No. 270.

Important!
Keep Loctite out of ball grooves.



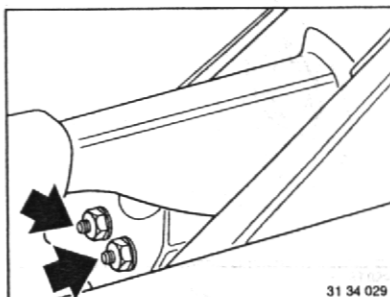
Press on joint with cap (3), clamping the output shaft with Special Tool 33 2 130 for this purpose.
Insert circlip.



Fill joint with grease*.
Remove grease from sealing surfaces for the dust cover.
Coat large diameter of cap with cement* and install with a new clamp.
Coat sealing cover with Curil** and install.

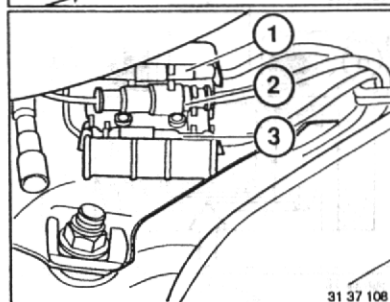
* See Specifications
** Source of Supply: HWB

33-31/1

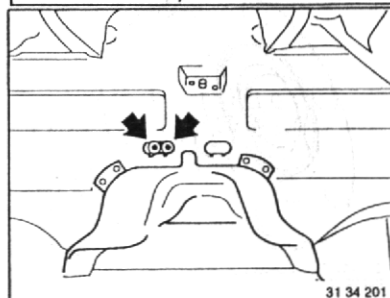


33 31 000 REMOVING AND INSTALLING REAR AXLE CARRIER

Remove both final muffers – see Group 18.
Unscrew propeller shaft on final drive – see Group 26.
Disconnect brake cables and unscrew parking brake lever – see Group 34.

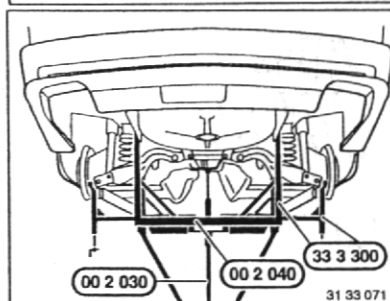


Disconnect brake pad wear indicator and ABS sensor left and right. Location: protection box on rear axle carrier.
Disconnect plug on pulse sender for speedometer.

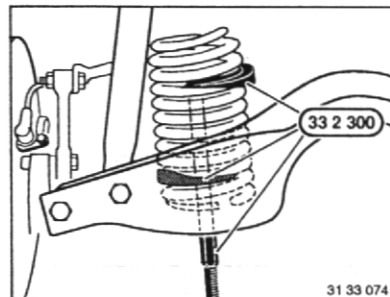


Pull brake cables out of guides. Unscrew and suspend brake calipers from the car.

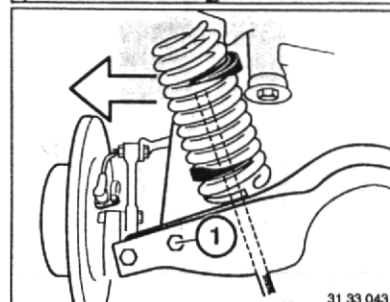
Installation:
Loosen heat protecting sheet and guide in brake cables.



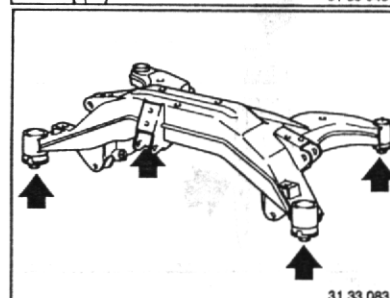
Support rear axle with Special Tools 33 3 300 and 00 2 030 / 040.



Tension rear springs with Special Tool 33 2 300.

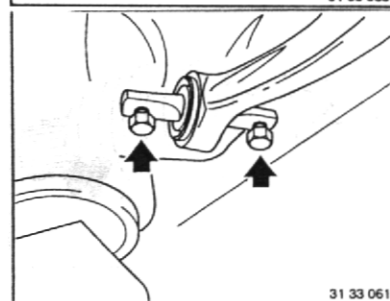


Unscrew bolts. Adjust adapters 5 and 6 of Special Tool 33 3 300 in such a manner that the bolts can be pulled out by hand. Remove rear springs.



Unscrew bolts.

Installation:
Tightening torque*.

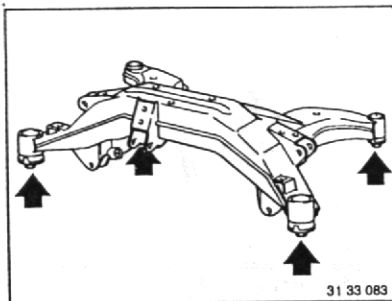


Unscrew front bolts.

Installation:
Tightening torque* with car loaded down to normal position*.

* See Specifications

33-31/2



Unscrew bolts.

Installation:

Tightening torque*.

Check that rubber liners for rear springs are positioned correctly.

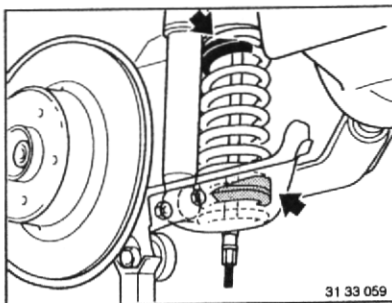
Lower rear axle.

* See Specifications

33-32/1

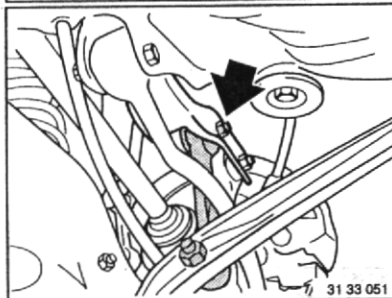
33 32 021 REPLACING TRAILING ARM

Remove rear wheel – see Group 36.



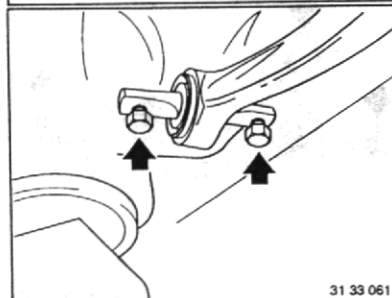
Tension rear spring with Special Tool 33 2 300.
Support wheel carrier with Special Tool 00 2 020 to take tension off of the trailing arm.

Installation:
Check wheel alignment after Installation – see Group 32.



Unscrew integral arm at top.

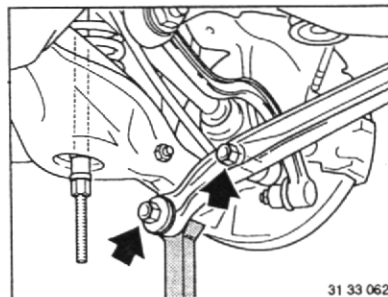
Installation:
Tightening torque* with car loaded down to normal position*.



Unscrew front bolts.

Installation:
Tightening torque*.

* See Specifications



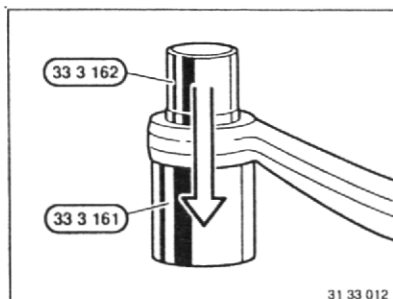
Unscrew rear nuts.

Installation:
Tightening torque* with car loaded down to normal position*.

Press integral arm out of trailing arm in a press.

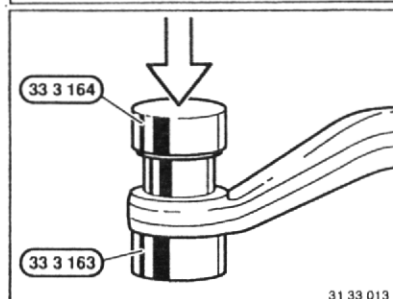
* See Specifications

33-32/2

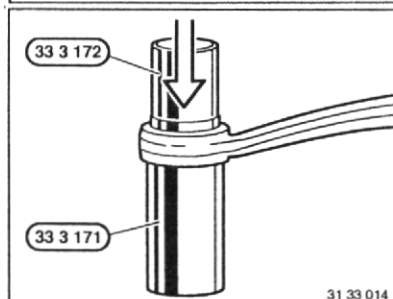


33 32 551 REPLACING RUBBER MOUNTS FOR TRAILING ARM - Trailing Arm Removed -

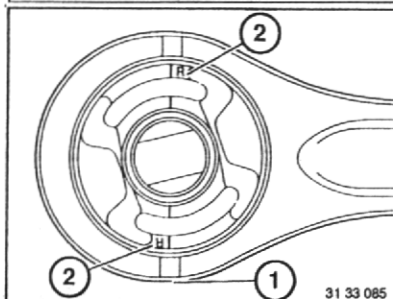
Press out rear rubber mount with Special Tools 33 3 161 and 162.



Press in new rear rubber mount from the chamfered end with Special Tools 33 3 164 and 163.



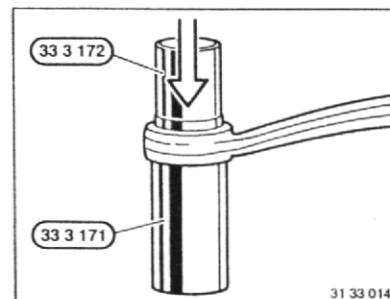
Press out front rubber mount with Special Tools 33 3 172 and 171 without guide sleeve.



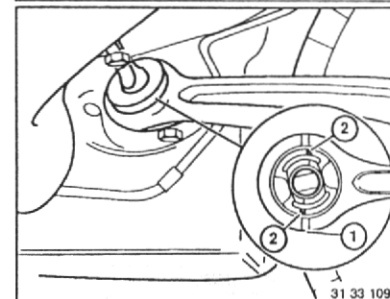
Installation:

Align line (2) on rubber mount, marked with "R" for right trailing arm, with notch (1).

Align line (2) on rubber mount, marked with "L" for left trailing arm, with notch (1).



Press in front rubber mount with Special Tools 33 3 171, 172 and 173 with guide sleeve.

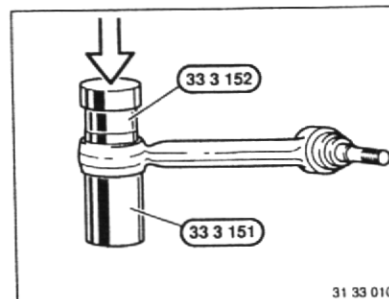


Correct installed position of right trailing arm mount in forward direction (as seen from inside to outside).

33-32/3

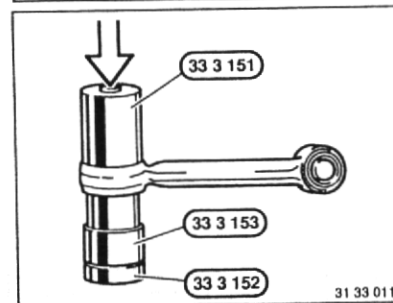
33 32 051 REMOVING AND INSTALLING OR REPLACING INTEGRAL ARM THRUST STRUT

Remove trailing arm – see 33 32 021.
Procedures are identical with those for
"Replacing Trailing Arm" in 33 32 021.



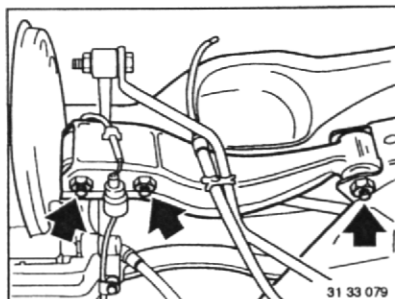
33 32 651 REPLACING RUBBER MOUNT IN INTEGRAL ARM THRUST STRUT – Trailing Arm Removed –

Remove trailing arm – see 33 32 021.
Press out rubber mount with Special
Tools 33 3 152 and 151.



Press in new rubber mount with
Special Tools 33 3 153, 152 and 151.

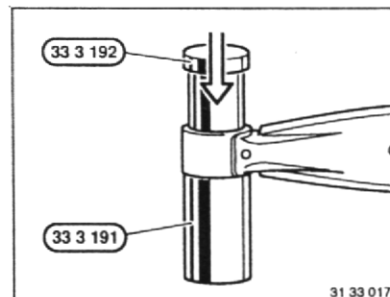
33-32/4



33 32 071 REPLACING UPPER CONTROL ARM

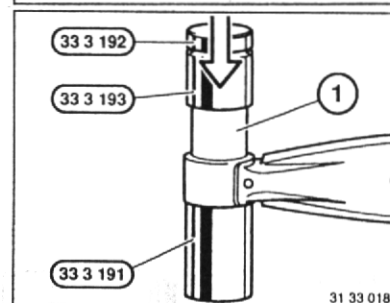
Unscrew bolts.
Unclip ABS sensor wire.

Installation:
Tightening torque*.



33 32 671 REPLACING UPPER CONTROL ARM RUBBER MOUNT – Control Arm Removed –

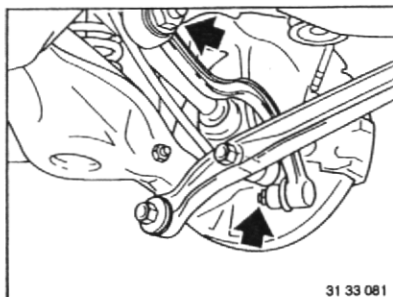
Remove control arm – see 33 32 071.
Press out rubber mount with Special Tools 33 3 192 and 191.



Press in new rubber mount (1) from the machined end with Special Tools 33 3 191, 192 and 193.

* See Specifications

33-32/5

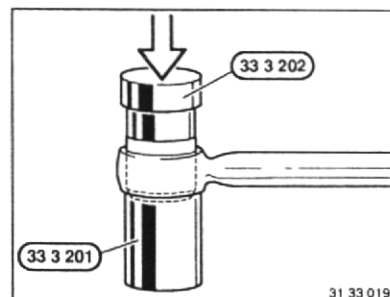


31 33 081

33 32 091 REMOVING AND INSTALLING OR REPLACING GUIDE ARM

Unscrew bolts.
Remove guide arm.

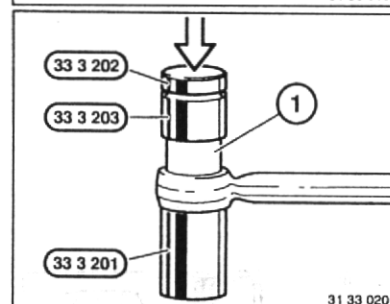
Installation:
Tightening torque* with car loaded
down to normal position*.
Check wheel alignment after installa-
tion – see Group 32.



31 33 019

33 32 691 REPLACING GUIDE ARM RUBBER MOUNT – Guide Arm Removed –

Remove guide arm – see 33 32 091.
Press out rubber mount with Special
Tools 33 3 202 and 201.

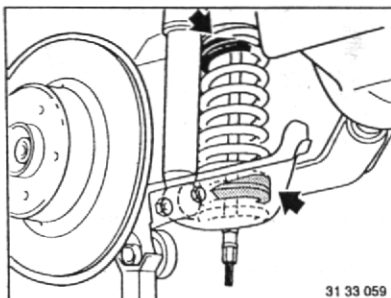


31 33 020

Press in new rubber mount (1) with
Special Tools 33 3 202, 203 and 201.

* See Specifications

33-32/6

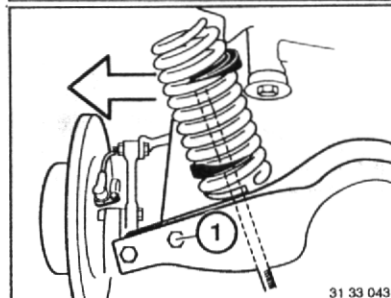


33 32 111 REMOVING AND INSTALLING OR REPLACING SUPPORT ARM

Compress and remove coil spring – see 33 53 000.

Unscrew bottom shock absorber bolts.

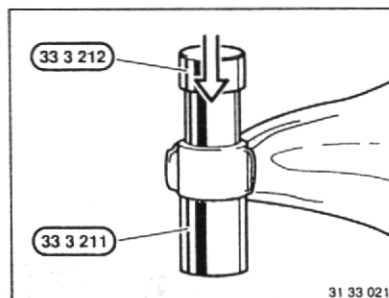
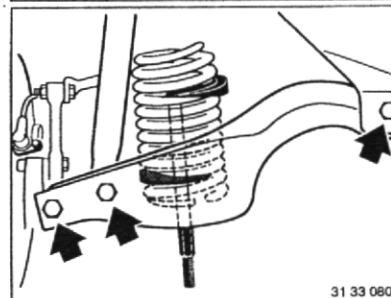
Installation:
Tightening torque*.



Unscrew bottom support arm bolts.

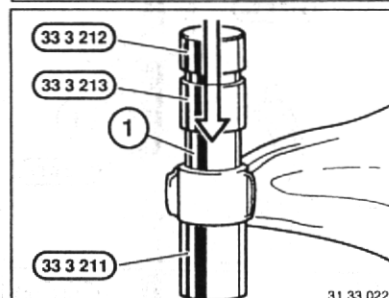
Installation:
Tightening torque*.

Important!
Check wheel alignment after installation – see Group 32.



33 32 711 REPLACING BALL JOINT IN SUPPORT ARM – Support Arm Removed –

Remove support arm – see 33 32 111. Press out ball joint with Special Tools 33 3 212 and 211.



Press in new ball joint (1) with Special Tools 33 3 211, 212 and 213.

* See Specifications

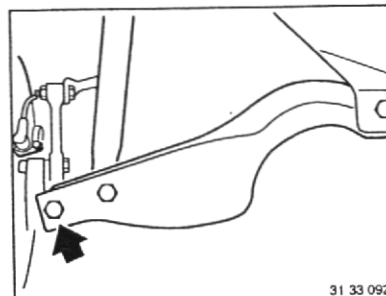
33-32/7

33 32 131 REMOVING AND INSTALLING 1 OR REPLACING WHEEL CARRIER

Important!

Check wheel alignment after installation – see Group 32.

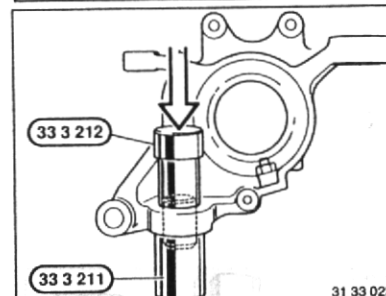
Remove rear wheel – see Group 36.
Remove output shaft – see 33 21 000.
Remove brake calliper – see 34 21 745.
Remove ABS sensor – see 61 12 522.
Loosen parking brake cables – see Group 34.
Remove brake disc – see Group 34.
Remove expander lock – see 34 41 220.
Remove guide arm – see 33 32 091.



Unscrew lower control arm bolts on outside.
Unscrew guide arm bolt on outside.

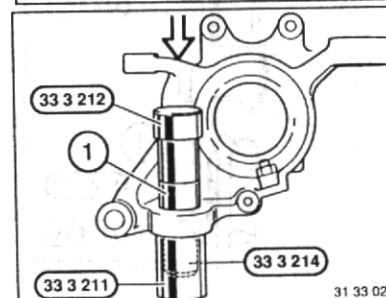
Installation:

Tightening torque* with car loaded down to normal position.

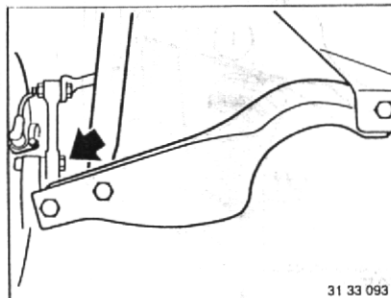


33 32 719 REPLACING LOWER BALL JOINT IN WHEEL CARRIER – Wheel Carrier Removed –

Remove wheel carrier – see 33 32 131.
Press out lower ball joint with Special Tools 33 3 212 and 211.



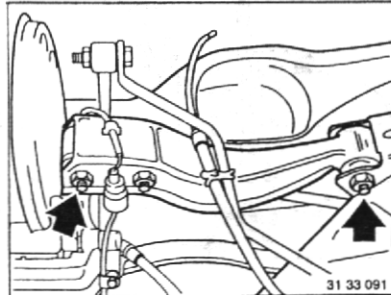
Press in new ball joint with Special Tools 33 3 212, 211 and 214.



Unscrew stabilizer.

Installation:

Tightening torque* with car loaded down to normal position*.



Unscrew upper control arm bolts.

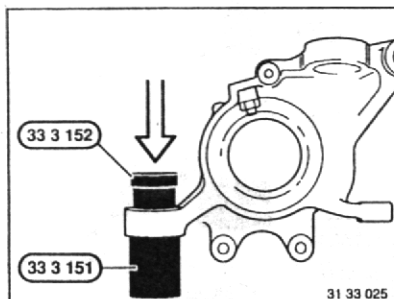
Installation:

Tightening torque* with car loaded down to normal position*.

* See Specifications

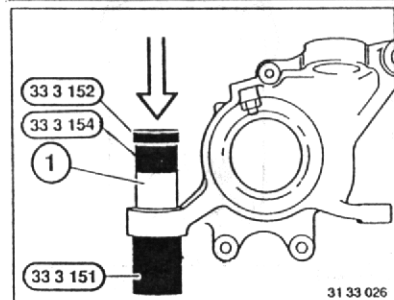
** See Specifications

33-32/8



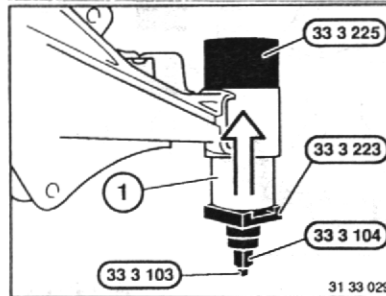
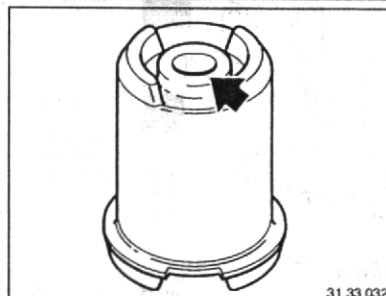
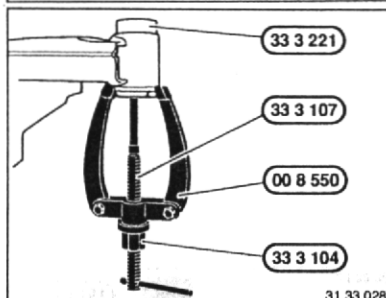
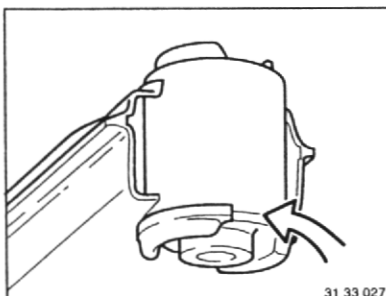
33 32 725 REPLACING UPPER BALL JOINT IN WHEEL CARRIER – Wheel Carrier Removed –

Press out upper ball joint bearing with
Special Tools 33 3 152 and 151.



Press new ball joint bearing (1) into
wheel carrier with Special Tools
33 3 151, 152 and 154.

33-33/1



33 33 101 REPLACING TWO RUBBER MOUNTS FOR REAR AXLE CARRIER (Front Rubber Mounts)

Remove both final mufflers – see Group 18.
Unscrew propeller shaft on final drive – see Group 26.
Unscrew rear axle carrier mounting bolts.
Lower rear axle carrier / rear axle about 100 mm (4").
Also refer to "Removing Rear Axle Carrier" in 33 31 000.
Knock in edge of mount to have a better bearing surface for Special Tool 00 8 550.

Pull out rubber mount with Special Tools 33 3 221, 00 8 550, 33 3 107 and 104.

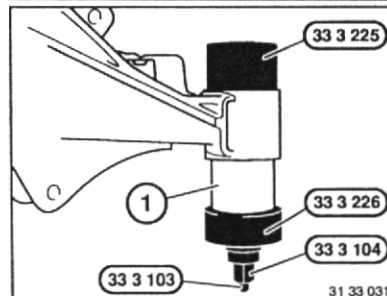
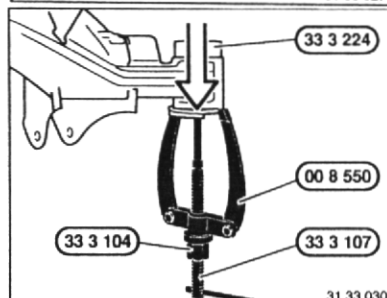
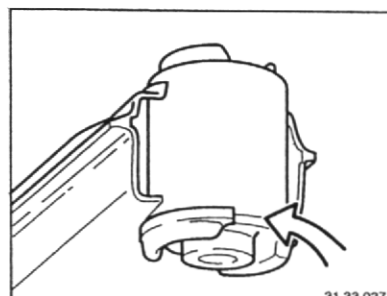
Important!
Heat sleeve with a standard hot air blower.

Installation:
Check installed position – slot must transverse to forward direction.

Coat new rubber mount (1) with a lubricant and pull in with Special Tools 33 3 222, 223, 103 and 104.

Installation:
Tightening torque:

* See Specifications



33 33 515 REPLACING TWO RUBBER MOUNTS FOR REAR AXLE CARRIER (Rear Rubber Mounts)

Remove both final mufflers – see Group 18.
Unscrew propeller shaft on final drive – see Group 26.
Unscrew rear axle carrier mounting bolts.
Lower rear axle carrier / rear axle about 100 mm (4").
Also refer to "Removing Rear Axle Carrier" in 33 31 000.
Knock in edge of mount to have a better bearing surface for Special Tool 00 8 550.

Pull out rubber mount with Special Tools 33 3 224, 00 8 550, 33 3 107 and 104.

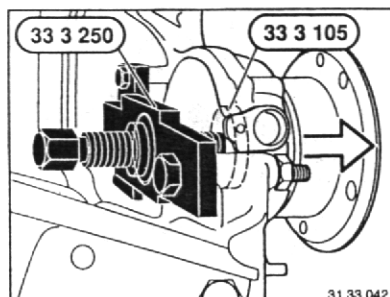
Important!
Heat sleeve with a standard hot air blower.

Coat new rubber mount (1) with a lubricant and pull in with Special Tools 33 3 225, 226, 103 and 104.

Installation:
Tightening torque*.

* See Specifications

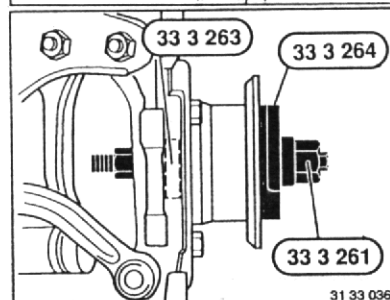
33-41/1



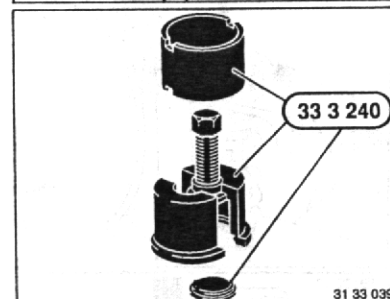
33 41 000 REMOVING AND INSTALLING OR REPLACING DRIVE FLANGE HUB

Remove rear wheel – see Group 36.
Remove output shaft – see 33 21 000.
Remove ABS sensor – see Group 34.
Press out drive flange hub with Special Tools 33 3 250, 33 3 261 and 33 3 105.

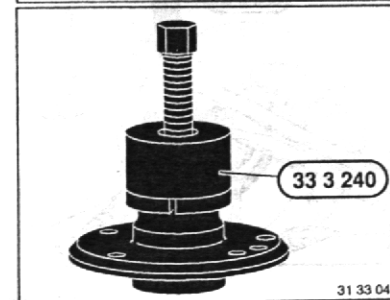
Important!
Lift out circlip as soon as it is accessible.



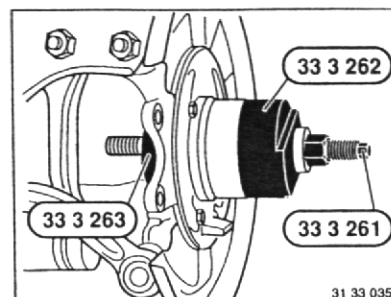
Pull in drive flange hub with Special Tools 33 3 261, 262 and 264.



Pull bearing inner race off of drive flange hub with Special Tool 33 3 240.



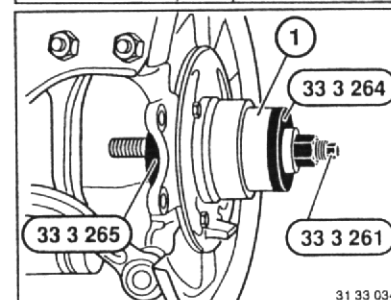
Assembled state of Special Tool 33 3 240



33 41 180 REPLACING ANGULAR ROLLER BEARING IN WHEEL CARRIER – Drive Flange Hub Removed –

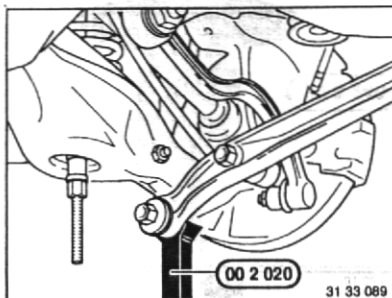
Pull out angular roller bearing with Special Tools 33 3 261, 262 and 263.

Important!
Lift out circlip as soon as it is accessible.



Pull in angular roller bearing (1) with Special Tools 33 3 261, 264 and 265.
Install circlip.

33-52/1



33 52 000 REMOVING AND INSTALLING OR REPLACING REAR SHOCK ABSORBERS

Wheel suspension must be unloaded
for removal and installation.

Note:

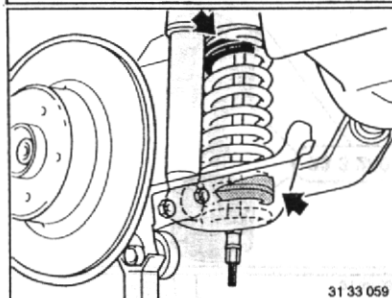
Rear springs do not have to be com-
pressed when wheel suspension is
loaded for removal and installation.

Lift car and support trailing arms with
Special Tool 00 2 020.

Compress rear springs with Special
Tool 33 2 300.

Caution!

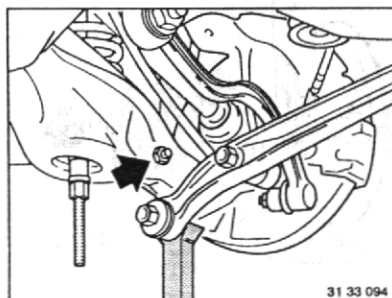
Shock absorbers have the same effect
as elastic straps.



Take mats out of trunk.
Unscrew shock absorber bolt at top.

Installation:

Tightening torque*.



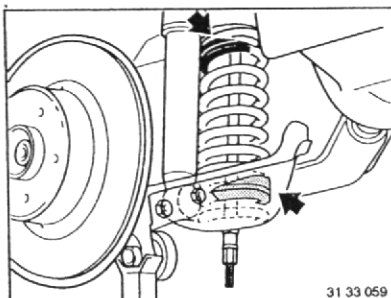
Unscrew shock absorber bolt at bot-
tom.

Installation:

Replace self-locking nuts.
Tightening torque* with car loaded
down to normal position.

* See Specifications

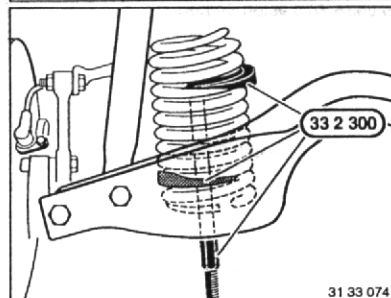
33-53/1



31 33 059

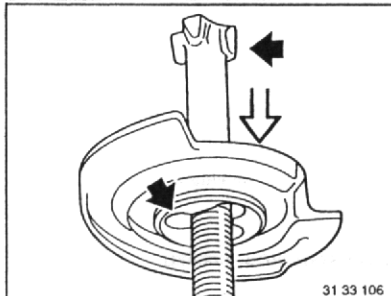
33 53 000 REMOVING AND INSTALLING LEFT OR RIGHT COIL SPRING

Compress rear spring with Special Tool 33 2 300.



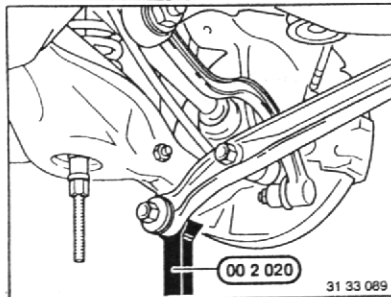
31 33 074

Place spring tensoning plate in the middle of the coil spring. Turn up upper spring tensoning plate completely; turn down lower spring tensoning plate completely.



31 33 106

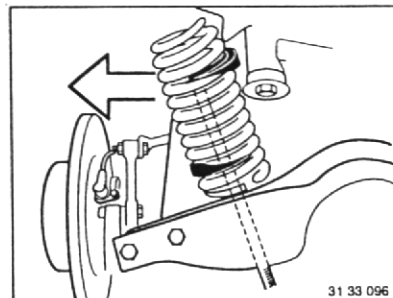
Slide in and turn the tensoning shaft until crosshead (1) is inserted perfectly in the openings of the upper spring retainer. Compress spring.



31 33 089

Support trailing arm with Special Tool 00 2 020, lifting slightly if the coil spring is turned while compressing.

Installation:
Check for correct position of the rubber liners.



31 33 096

Lift out rear spring.

Important!
Only replace coil springs in pairs. Check code*.

Note:
Always store shock absorbers standing upright. If shock absorbers have been stored laying down and with the piston rod run in, this could lead to a knocking noise when used in car again.

TROUBLESHOOTING REAR AXLE

Condition	Cause	Correction
Load change knock	Backlash excessive Output shaft faulty Play in propeller shaft slide	Adjust backlash – see 33 12 551 Replace output shaft – see 33 21 000
Traction or compression noise	Backlash excessive or insufficient	Adjust backlash – see 33 12 551
Drumming	Propeller shaft Rubber mounts on rear axle carrier faulty	See "Troubleshooting Propeller Shaft" Replace rubber mounts – see 33 33 ...
Oil loss	Radial oil seals leak Vent clogged Wrong oil grade*	Replace radial oil seals Clean vent Replace final drive oil
Vibration	Imbalance of wheels Output shaft faulty Propeller shaft	Balance wheels or replace rims Replace output shaft – 33 21 000 See "Troubleshooting Propeller Shaft"
Rattling noise	Shock absorbers installed loose Upper shock absorber rubber ring faulty Lower shock absorber rubber ring faulty Rubber mounts on rear axle carrier faulty	Tighten shock absorbers Replace rubber ring Replace shock absorber – see 33 52 ... Replace rubber mounts – see 33 33 ...
Grinding noise only when driving in curves	Wheel bearings faulty	Replace wheel bearings – see 33 41 ...

* See Operating Fluids