

SUSPENSION - FRONT

Article Text

1993 Volkswagen EuroVan
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Saturday, March 18, 2000 10:37PM

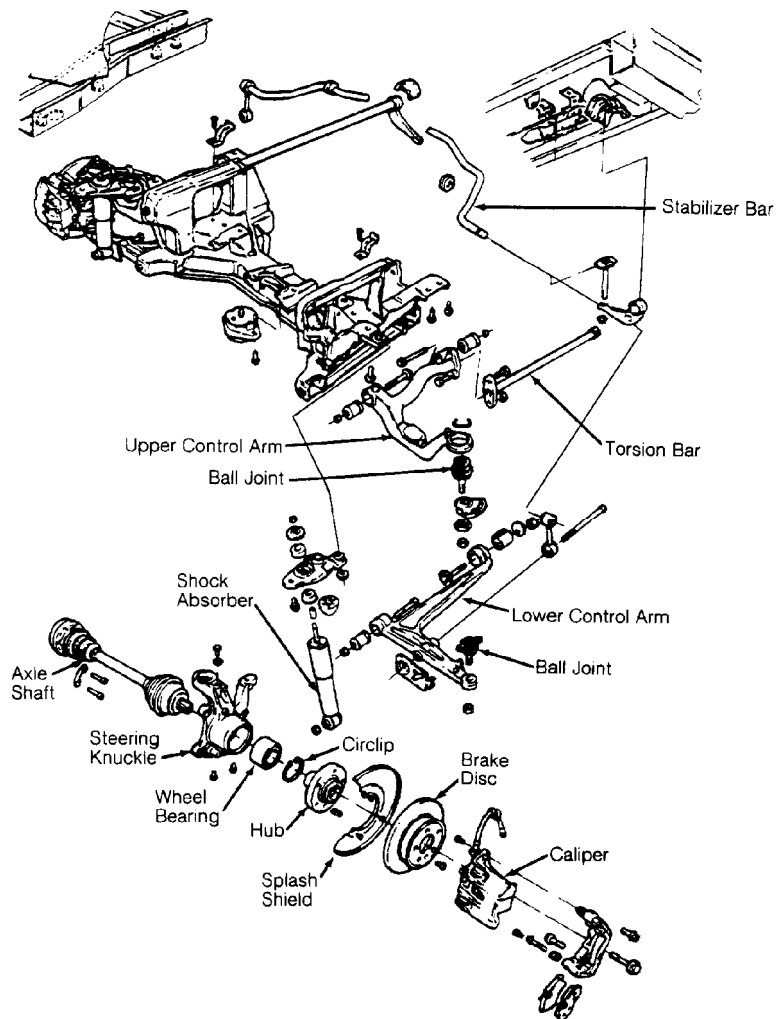
ARTICLE BEGINNING

1993 SUSPENSION
Volkswagen Front

EuroVan

DESCRIPTION

FWD independent suspension is an double-wishbone type with torsion bars mounted on upper control arm. Wheel is supported by a steering knuckle mounted between the upper and lower control arms. Torsion bars are mounted between the upper control arms and vehicle frame. Shock absorbers are mounted between the lower control arm and frame. See Fig. 1.



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Fig. 1: Exploded View Of Front Suspension

ADJUSTMENTS & INSPECTION

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WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

NOTE: See WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES article in the WHEEL ALIGNMENT section.

WHEEL BEARING

No adjustment is required.

RIDING HEIGHT

Measure the distance between bolt head of upper shock absorber mounting and center of bolt head of lower shock absorber mounting. If distance measured is not 10.9-11.1" (278-280 mm) turn torsion bar adjustment bolt until correct riding height is obtained.

BALL JOINT CHECKING

Raise and support vehicle. Inspect ball joints for excessive play and damaged rubber boots. There should be no vertical or horizontal ball joint play. Replace ball joint if any play is present.

REMOVAL & INSTALLATION

BALL JOINTS

Removal (Lower Ball Joint)

1) Install Control Arm Support (3250) between upper control arm and subframe. See Fig. 5. If control arm support is not available, release tension from torsion bar. Raise and support vehicle.

2) Remove steering knuckle. See STEERING KNUCKLE under REMOVAL & INSTALLATION. Using puller, remove lower ball joint from lower control arm. See Fig. 2.

Installation (Lower Ball Joint)

To install, reverse removal procedure. Ensure all nuts and bolts are tightened to specification. See TORQUE SPECIFICATIONS table at end of article.

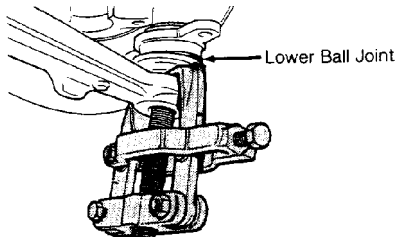


Fig. 2: Removing Lower Ball Joint

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Removal (Upper Ball Joint)

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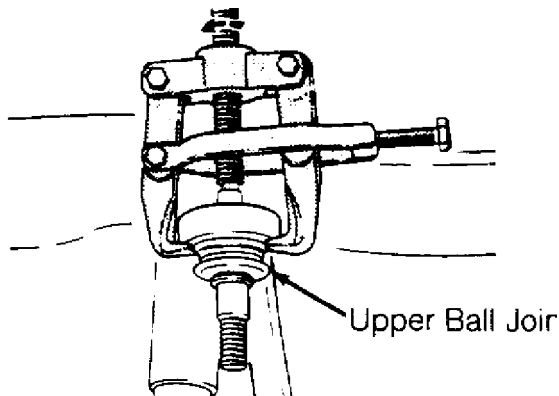
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1) Install Control Arm Support (3250) between upper control arm and subframe. See Fig. 5. If control arm support is not available, release tension from torsion bar. Raise and support vehicle.

2) Remove steering knuckle. See STEERING KNUCKLE under REMOVAL & INSTALLATION. Remove eccentric bushing See Fig. 7. Using puller, remove upper ball joint from upper control arm. See Fig. 3.

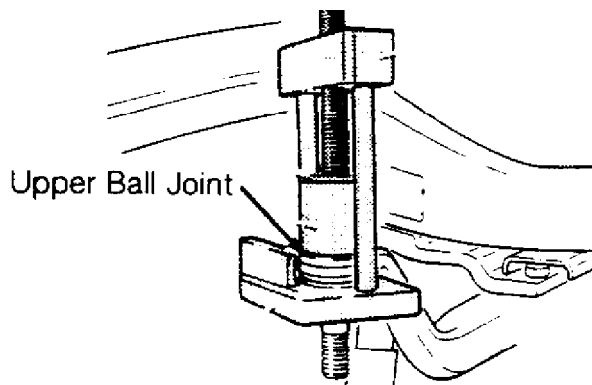
Installation (Upper Ball Joint)

Using Press (3111), install upper ball joint into upper control arm. See Fig. 4. Reverse removal procedure to complete installation. Ensure all nuts and bolts are tightened to specification. See TORQUE SPECIFICATIONS table at end of article.



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Fig. 3: Removing Upper Ball Joint



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Fig. 4: Installing Upper Ball Joint

HUB & KNUCKLE ASSEMBLY

Use exploded view illustration when removing or installing hub and knuckle assembly. See Fig. 1.

LOWER CONTROL ARM

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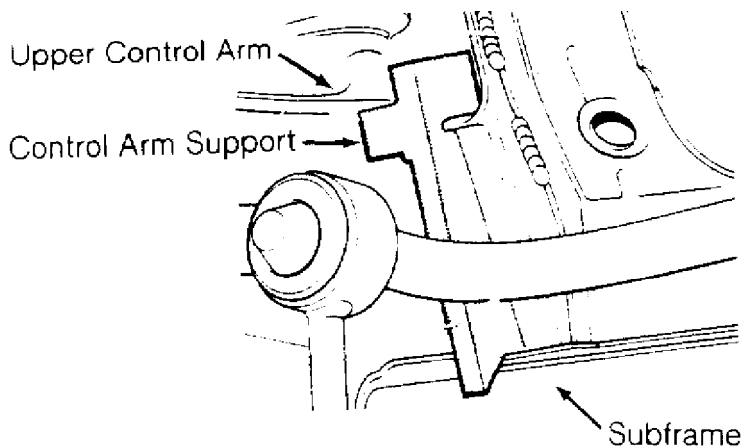
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Removal

1) Install Control Arm Support (3250) between upper control arm and subframe. See Fig. 5. If control arm support is not available, release tension from torsion bar. Raise and support vehicle.

2) Remove bolt retaining ball joint at steering knuckle. Separate ball joint from housing. Leave control arm hanging in mounts at subframe. If control arm is not to be removed and ball joint is riveted to control arm, drill out ball joint rivets using a 9/32" (7 mm) drill. If ball joint is bolted to control arm, remove bolts. Remove ball joint.

3) If control arm is to be removed from vehicle, remove stabilizer bar link rod nut, washers, and bushings. Remove pivot bolt and bracket housing inner pivot pin. Slide out control arm.



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Fig. 5: Supporting Upper Control Arm & Torsion Bar

Inspection

Check lower control arm bushings for excessive wear, cracks or contamination. Replace bushings if necessary. To replace bushings, press out worn bushing. Select new bushing and press into position. Ensure bushing does not twist when seating into place.

Installation

1) Slide new ball joint into slot in control arm. Install and tighten ball joint retaining bolts. Install lower control arm to subframe. Install ball joint into steering knuckle. To complete installation, reverse removal procedure.

2) Tighten control arm bolts with vehicle on ground. Tighten all bolts and nuts to specification. See TORQUE SPECIFICATIONS table at end of article. Check wheel alignment. See WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES article in the WHEEL ALIGNMENT section.

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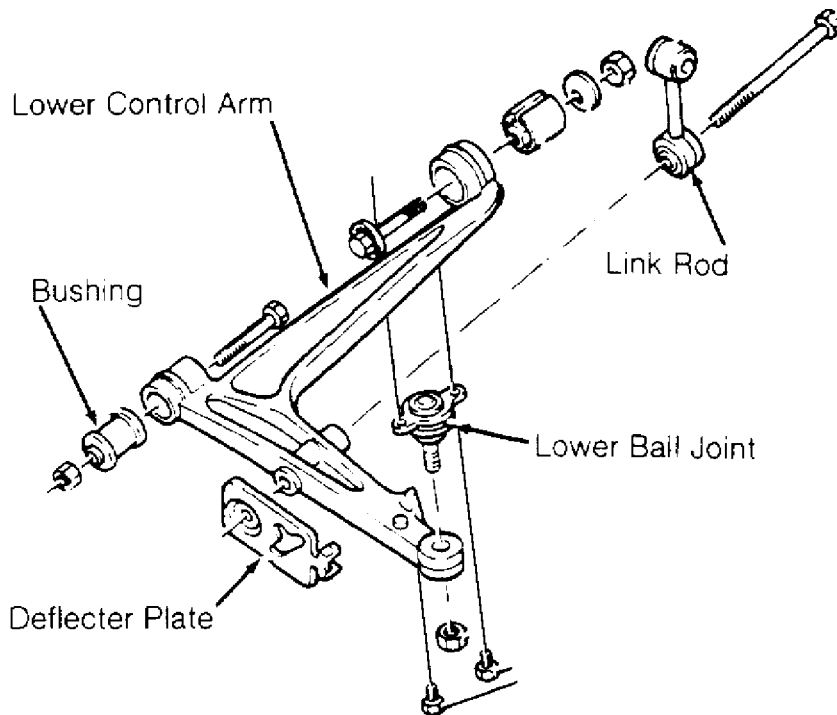
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Fig. 6: Exploded View Of Lower Control Arm Assembly

SHOCK ABSORBER

Removal & Installation

1) Raise and support vehicle. Remove wheel assembly. Remove nuts retaining shock absorber to bracket. Remove washers and cushions from shaft of shock absorber.

2) Remove nuts and bolts securing shock absorber to lower control arm. Compress shock absorber and remove from vehicle. To install, reverse removal procedure.

TORSION BAR

Removal

Remove fuel tank. Remove exhaust system heat shield. Measure length of torsion bar stud thread below adjustment nut for installation reference. Loosen adjusting nut. Remove bolts attaching torsion bar to upper control arm. Remove torsion bar.

Installation

To install, reverse removal procedure. Tighten adjusting nut so stud protrusion is equal to original measurement.

UPPER CONTROL ARM

Removal

1) Remove torsion bar. See TORSION BAR under REMOVAL & INSTALLATION. Remove cotter pin and nut. Disconnect upper ball joint

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from steering knuckle. Remove nut, cushion and retainer.

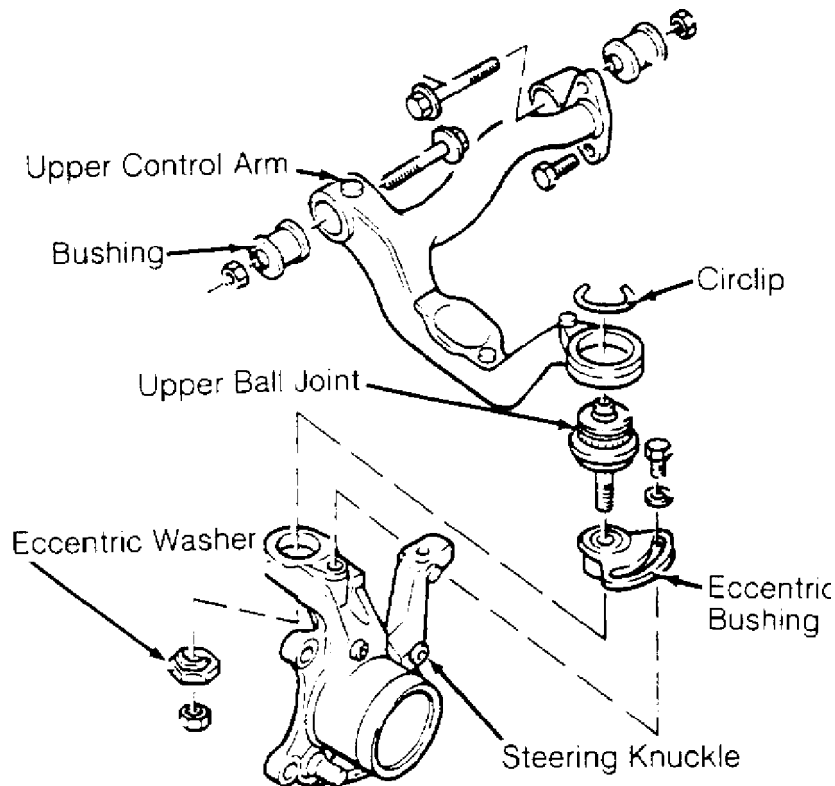
2) Disconnect shock absorber from frame. Do not disconnect shock absorber from lower control arm. Remove upper control arm shaft bolts and remove upper control arm from frame.

Bushing Replacement

Using Adapter (VW 519) and a press, remove bushings. Press in new bushing using Adapter (VW 454). Install upper control arm shaft. Press in new front bushing.

Installation

To install, reverse removal procedure. Tighten shaft nuts to specification with on ground. Tighten all nuts and bolts to specification. See TORQUE SPECIFICATIONS table at end of article.



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Fig. 7: Exploded View Of Upper Control Arm Assembly

WHEEL BEARING

Removal

1) Remove axle shaft nut with front wheels on ground. Install Control Arm Support between upper control arm and subframe. See Fig. 5. If control arm support is not available, release tension from torsion bar. Raise and support vehicle.

2) Remove wheel assembly. Remove brake caliper attaching bolts. Remove caliper and wire aside. Remove brake disc retaining

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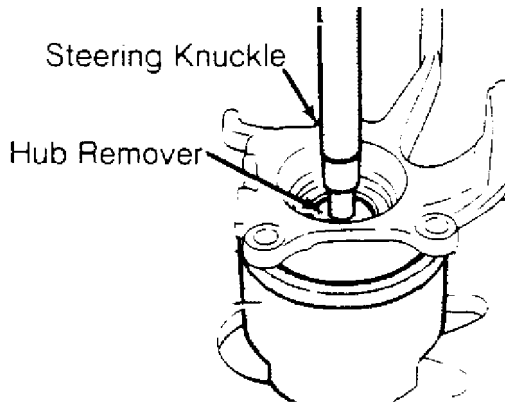
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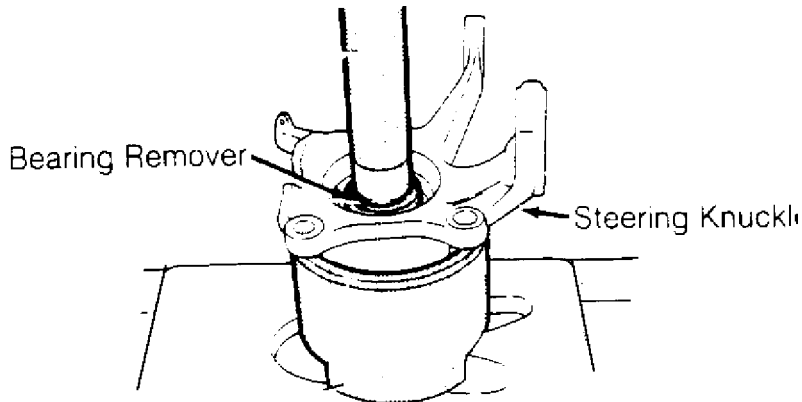
screw and remove disc. Disconnect tie rod ball joint from steering knuckle. Remove control arm ball joint clamp nut and bolt. Disconnect control arm ball joint from steering knuckle. Remove steering knuckle.

3) Remove wheel bearing circlip. Using Hub Remover (40-105), press wheel hub assembly out of steering knuckle. See Fig. 8. Using Bearing Remover (VW 442), press wheel bearing out of steering knuckle. See Fig. 9. Using a bearing puller, remove wheel bearing inner race from hub assembly. See Fig. 10.



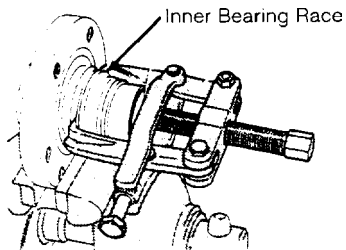
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Fig. 8: Pressing Hub Assembly Out Of Steering Knuckle



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Fig. 9: Pressing Wheel Bearing Out Of Steering Knuckle



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Fig. 10: Removing Wheel Bearing Inner Race

NOTE: When installing hub, ensure press adapter contacts inner

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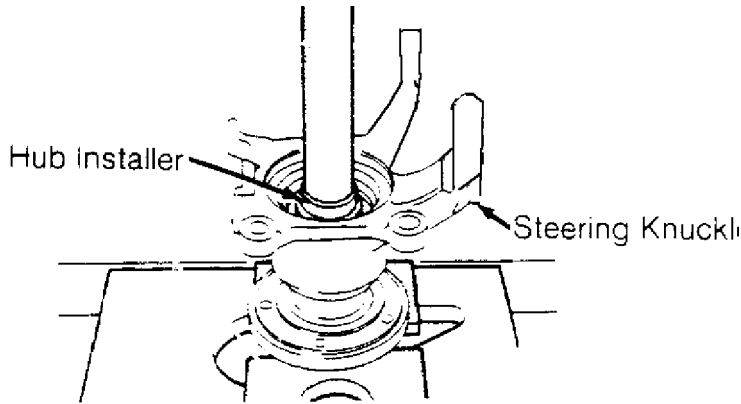
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bearing race only.

Installation

1) Press new wheel bearing race onto hub. Using Bearing Installer (3253/7), press new bearing into steering knuckle from outboard side. Using Hub Installer (3074), press new bearing into steering knuckle. See Fig. 11.

2) To complete installation, reverse removal procedure. Always replace self-locking axle shaft bolt. Tighten bolts and nuts to specification. See TORQUE SPECIFICATIONS table. Check wheel alignment. See WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES article in the WHEEL ALIGNMENT section.



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Fig. 11: Pressing Wheel Hub Into Steering Knuckle

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Axle Nut	195 (265)
Axle Shaft-To-Transaxle Bolt	33 (45)
Ball Joint Clamp Bolt	37 (50)
Ball Joint-To-Control Arm Bolt	18 (24)
Caliper Pin Bolt	18 (24)
Control Arm Pivot Bolt	
Lower	118 (160)
Upper	74 (116)
Ball Joint-To-Steering Knuckle Bolt	81 (110)
Tie Rod Castle Nut	26 (35)
Wheel Lug Bolt	81 (110)

END OF ARTICLE