

## SUSPENSION - FRONT (2WD)

### Article Text

1991 Volkswagen Vanagon  
For Volkswagen Technical Site  
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Saturday, March 18, 2000 09:49PM

### ARTICLE BEGINNING

1991 SUSPENSION  
Front - Vanagon 2WD

### DESCRIPTION

Vehicles have independent front suspension. Major components are upper and lower control arms, coil springs, and shock absorbers. A stabilizer bar is attached to the body by brackets, and to lower control arms by links. See Fig. 1.

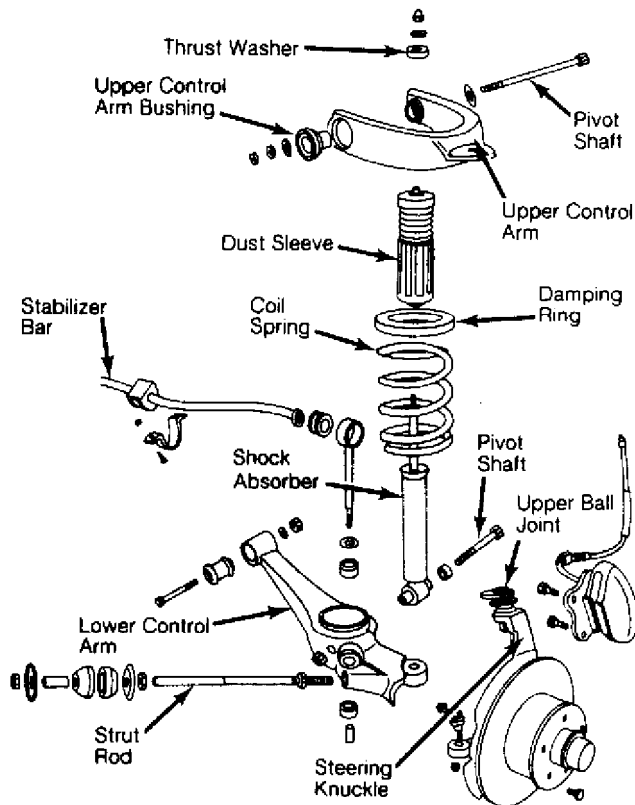


Fig. 1: Identifying Front Suspension Components  
Courtesy of Volkswagen United States, Inc.

### ADJUSTMENTS & INSPECTION

#### WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

NOTE: See ALIGNMENT SPECIFICATIONS article in the WHEEL ALIGNMENT Section.

#### WHEEL BEARING

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Tighten hub nut firmly while rotating brake disc by hand. Insert tip of screwdriver between thrust washer and hub. Adjustment is correct when light finger pressure against screwdriver moves thrust washer. Turn hub nut to adjust. Install and peen NEW hub nut.

### BALL JOINT CHECKING

Raise and support vehicle. Inspect ball joints for excessive play and damaged rubber boots. Maximum tolerance for ball joint play is not available from manufacturer.

### REMOVAL & INSTALLATION

#### BALL JOINT

##### Removal

Remove steering knuckle. See LOWER CONTROL ARM, STEERING KNUCKLE & COIL SPRING under REMOVAL & INSTALLATION. To remove ball joint, remove circlip or retaining bolts, and then press ball joint from steering knuckle.

##### Installation

Reverse removal procedure to install ball joint. Tighten bolts and nuts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Check wheel alignment. See ALIGNMENT SPECIFICATIONS article in the WHEEL ALIGNMENT Section.

#### LOWER CONTROL ARM, STEERING KNUCKLE & COIL SPRING

##### Removal

1) Raise and support vehicle. Remove wheel. Detach stabilizer link from control arm. Measure and record dimension "A" from end of threads to rear nut. See Fig. 2. Back off rear nut to permit removal of strut rod from control arm.

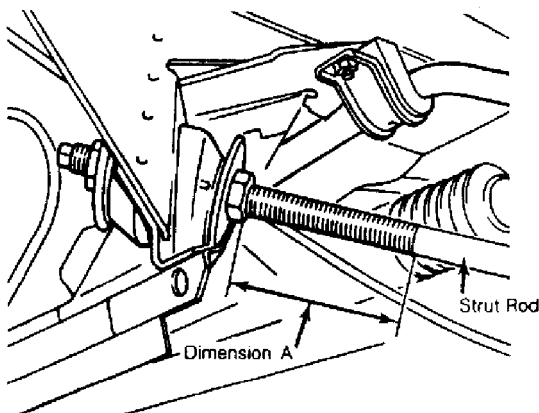


Fig. 2: Measuring Strut Rod  
Courtesy of Volkswagen United States, Inc.

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**NOTE:** Length of strut rod determines caster angle. If setting at body mounting is changed, caster must be readjusted. See ALIGNMENT SPECIFICATIONS article in the WHEEL ALIGNMENT Section.

2) Remove caliper assembly and brake hose bracket. Support caliper out of work area. Separate tie rod end from steering knuckle. Using Ball Joint Remover (VW 267a), separate ball joints from steering knuckle. Remove steering knuckle.

3) Loosen lower shock absorber mounting bolt. Support lower control arm using floor jack. Remove lower shock absorber bolt. Lower jack slowly. Remove coil spring. Remove control arm pivot bolt and control arm.

**NOTE:** Replacement steering knuckle may contact brake disc in area indicated by arrow in illustration. See Fig. 3. Grind down steering knuckle casting 5/16-3/8" (8-10 mm) to provide clearance.

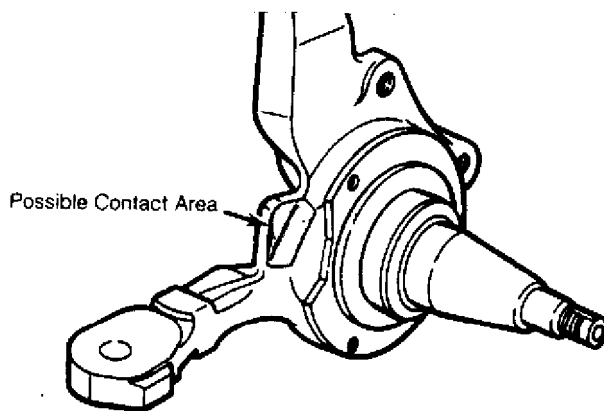


Fig. 3: Grinding Steering Knuckle  
Courtesy of Volkswagen United States, Inc.

#### Installation

1) Position coil spring so straight end is at bottom. Tape damping ring to spring. Ensure spring fits into control arm depression. Reverse removal procedure to complete installation. Tighten bolts and nuts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

2) Check wheel alignment. See ALIGNMENT SPECIFICATIONS article in the WHEEL ALIGNMENT Section. Turn wheel to lock position. Ensure brake hose is 1" (25 mm) from wheel. Bend bracket as necessary to adjust.

## SHOCK ABSORBER

#### Removal & Installation

1) Raise and support vehicle. Loosen lower shock absorber mounting bolt. Lower vehicle to floor. Remove lower mounting bolt.

2) Again raise and support vehicle. Avoid damaging upper ball

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joint when raising vehicle while shock absorber is disconnected.  
Remove upper shock absorber mounting hardware and shock absorber.

3) Reverse removal procedure to install. Tighten bolts and nuts to specification. See TORQUE SPECIFICATIONS TABLE at end of article.

### **UPPER CONTROL ARM**

#### **Removal**

Raise and support vehicle. Remove wheel. Remove upper ball joint retaining bolts. Carefully swing steering knuckle to one side. Note position of upper control arm pivot shaft. Remove pivot shaft and control arm.

#### **Bushing Replacement**

Note locations of spot welds. Grind off welds. Using Adapters (VW 401, VW 412, VW 431, VW 439 and VW 459), press out bushing. Pressing in new bushing using same equipment. Spot-weld new bushing at same locations. Clean and paint welds to prevent rust.

#### **Installation**

Grease pivot shaft. Install pivot shaft in original position. To complete installation, reverse removal procedure. Tighten bolts and nuts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Check wheel alignment. See ALIGNMENT SPECIFICATIONS article in the WHEEL ALIGNMENT Section.

### **STABILIZER BAR**

#### **Removal & Installation**

Disconnect stabilizer bar from lower control arms. Remove bracket retaining bolts. Remove stabilizer bar. To install, reverse removal procedure.

### **STRUT ROD**

#### **Removal**

Measure and record dimension "A" from end of threads to rear nut. See Fig. 2. Note how spacers and bushings are installed. Remove retaining nuts and bolts. Remove strut rod.

#### **Installation**

To install, reverse removal procedure. Tighten bolts and nuts to specification. See TORQUE SPECIFICATIONS TABLE at end of article. Check wheel alignment. See ALIGNMENT SPECIFICATIONS article in the WHEEL ALIGNMENT Section.

### **WHEEL BEARING**

#### **Removal**

Raise and support vehicle. Remove wheel assembly. Remove caliper assembly and support it out of work area. Remove dust cap, hub

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nut and thrust washer. Remove brake disc. Using a long drift, tap bearings, races and grease seal from disc hub.

#### Installation

1) Clean hub cavity thoroughly. Using Bearing Race Installer (VW 401, VW 407, and 30-205), press inner bearing race into bore. Using Bearing Race Installer (VW 407 and VW 447h), press outer bearing race into bore. Lubricate and install inner bearing. Using Seal Installer (VW 407 and 2051), tap grease seal into bore.

2) Install brake disc, outer bearing, thrust washer, and NEW hub nut. Reverse removal procedure to complete installation. Adjust wheel bearing. See WHEEL BEARING under ADJUSTMENTS & INSPECTION. Peen NEW nut.

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS TABLE

AA

Application	Ft. Lbs. (N.m)
Ball Joint Self-Locking Nut (1)	80 (108)
Brake Caliper Bolt	118 (160)
Caliper Pin Bolt	26 (35)
Lower Control Arm Pivot	66 (89)
Shock Absorber Mounting Bolt	
Lower	110 (150)
Upper	22 (30)
Strut Rod-To-Chassis Nut	74 (100)
Strut Rod-To-Control Arm Nut	133 (180)
Tie Rod-To-Steering Knuckle Nut	22 (30)
Upper Ball Joint-To-Control Arm Nut	43 (58)
Upper Control Arm Pivot Shaft	54 (73)
Wheel Lug Bolt	180 (133)

(1) - Always use new self-locking nuts.

AA

END OF ARTICLE