

## VOLKSWAGEN VANAGON

### DESCRIPTION

Front suspension consists of upper and lower control arms and ball joints, shock absorbers surrounded by coil springs, and steering knuckles. Strut rods attach to chassis and lower control arms, and stabilizer bar attaches to chassis and strut rod.

### ADJUSTMENT

#### WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

See *Wheel Alignment Specifications and Procedures* in *WHEEL ALIGNMENT* Section.

#### WHEEL BEARING ADJUSTMENT

Tighten spindle nut firmly to seat bearing while turning hub. Wheel bearing is correctly adjusted when thrust washer can be moved slightly with a screwdriver and finger pressure. After adjustment, peen flange of spindle nut over spindle.

#### BALL JOINT CHECKING

Inspect ball joint for wear or excessive play. Replace ball joints as necessary.

## REMOVAL & INSTALLATION

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

**Removal** — 1) Raise and support front of vehicle. Remove tire and wheel. Detach stabilizer bar from strut rod.

2) Remove 3 nuts holding strut rod, steering knuckle, and lower control arm together. Remove brake caliper and brake hose bracket.

**NOTE** — *Strut rod length determines caster angle. If setting at body mounting is changed, caster must be readjusted.*

3) Hang caliper from body with wire hook. Using suitable pressing tool, detach tie rod end from steering knuckle.

4) Remove upper ball joint from upper control arm. Detach steering knuckle from upper and lower control arms.

5) Loosen shock absorber lower mounting on lower control arm. Support lower control arm with a jack, and pull out shock absorber bolt from lower control arm.

6) Lower jack slowly and remove coil spring. Remove lower control arm pivot bolt and remove control arm from vehicle.

**Bushing Replacement** — Using suitable press and adapters, press out old bushings and press in replacements.

**Installation** — 1) Install lower control arm to vehicle with pivot bolt. Position coil spring so straight end is at bottom.

2) Attach damping ring to spring with tape. Install spring in control arm spring depression.

3) Lift control arm with a jack and attach shock absorber lower mount. Attach steering knuckle to control arm.

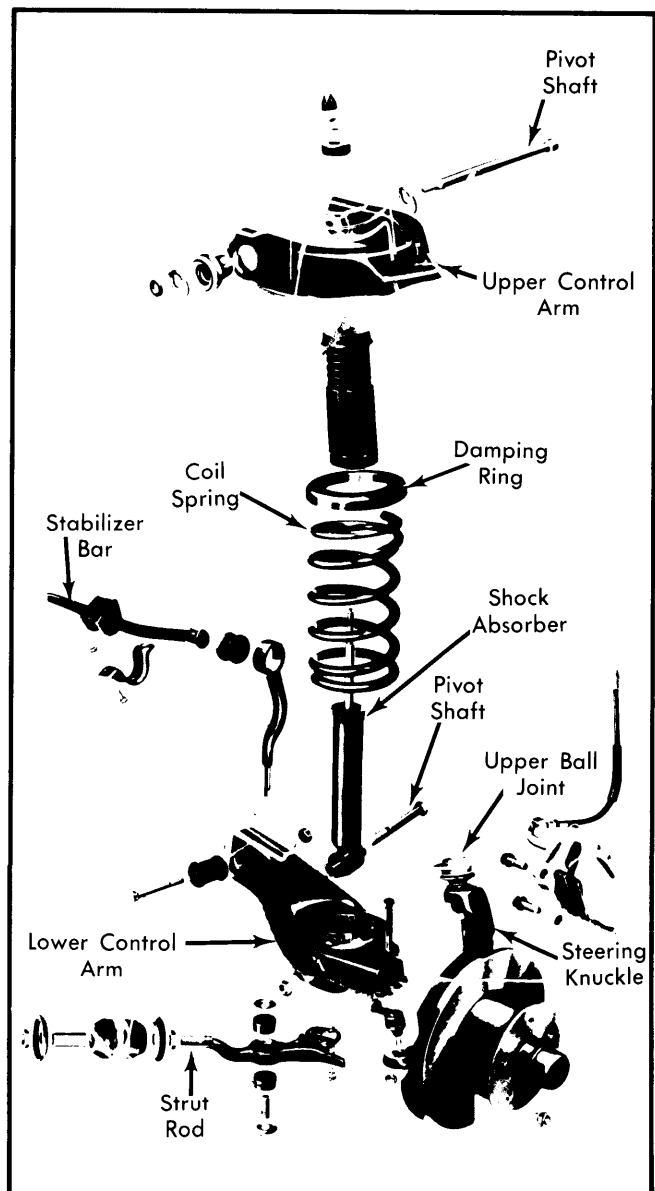
4) Attach strut rod to steering knuckle and control arm lower connection. Install stabilizer bar, tie rod end, and brake caliper.

**NOTE** — *When installing strut rod bolts, spring washers go under bolt heads. Always use new self-locking nuts.*

5) Install wheel and tire. Lower vehicle. Turn wheel to full-lock position and check distance between wheel and brake hose. Bend bracket as necessary to adjust distance to 1" (25 mm).

### SHOCK ABSORBER

**Removal** — 1) Raise and support front of vehicle. Loosen shock absorber lower mounting bolt.



**Fig. 1 Exploded View of Vanagon Front Suspension**

## VOLKSWAGEN VANAGON (Cont.)

**2)** Lower vehicle to ground and remove mounting bolt. Raise vehicle and remove shock absorber upper mounting hardware and remove shock absorber from vehicle.

**Installation** — With vehicle raised off ground, install shock absorber to upper mounting. Lower vehicle and attach shock absorber to lower control arm.

**NOTE** — When lifting vehicle with shock absorber disconnected, avoid damaging upper ball joint.

### UPPER CONTROL ARM

**Removal** — **1)** Raise and support vehicle. Remove tire and wheel. Remove bolts holding upper ball joint to upper control arm.

**2)** Swing steering knuckle carefully to one side. Note the position of upper control arm pivot shaft and remove from control arm. Remove control arm from vehicle.

**Bushing Replacement** — Note the position of and grind off spot welds holding in bushings. Using suitable press and adapters, press out old bushing and press in replacements. Secure bushing with spot welds in noted locations. Clean up welds and paint surface.

**Installation** — Lubricate pivot shaft with multi-purpose grease. Install upper control arm to body and position pivot shaft as noted during removal. Install ball joint to upper control arm. Install tire and wheel and lower vehicle.

**NOTE** — Flat on pivot shaft must be vertical and face center of vehicle. Larger side of eccentric washer faces down.

### STABILIZER BAR

**Removal & Installation** — Disconnect stabilizer bar from strut rod. Remove bolts holding mounting bracket to chassis and remove stabilizer bar. To install, reverse removal procedure.

### STRUT ROD

**Removal & Installation** — Disconnect stabilizer bar from strut rod. Remove 3 nuts holding strut rod, steering knuckle and lower control arm together. Remove hardware mounting strut rod to chassis and remove strut rod from vehicle. To install, reverse removal procedure and adjust caster.

**NOTE** — When attaching strut rod, steering knuckle, and lower control arm, spring washers are to be installed under bolt heads. Always use new self-locking nuts.

### WHEEL BEARINGS

**Removal** — **1)** Raise vehicle and support with stands. Remove wheel and grease cap. Remove cotter pin and loosen outer bearing nut.

**2)** Remove caliper mounting bolts and remove caliper. Remove outer bearing nut, washer, outer bearing and disc. Remove seal from disc and remove inner bearing.

**Installation** — To install, reverse removal procedure.

### BALL JOINTS

**Removal** — Remove steering knuckle from vehicle. Using ball joint adapter tool (VW 267a), remove ball joint adapter from lower ball joint. Remove nuts securing ball joints to steering knuckle and using same tool, press out upper ball joint. Remove circlip from lower ball joint and use suitable press to press ball joint from steering knuckle.

**Installation** — **1)** Press in ball joints with flat side of shoulder facing spindle. Attach adapter loosely to lower ball joint.

**NOTE** — Do not tighten adapter fully. Adapter must be aligned with control arm when steering knuckle is installed or rubber boot will tear.

**2)** Install steering knuckle to vehicle and tighten ball joints and adapter with new self-locking nuts.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N·m)
Ball Joint Locking Nuts <sup>Ⓢ</sup> .....	80 (109)
Brake Caliper-to-Mounting .....	115 (156)
Shock Absorber Top Nut .....	22 (30)
Stabilizer Bracket-to-Chassis .....	14 (19)
Stabilizer-to-Strut Rod .....	22 (30)
Strut Rod-to-Chassis .....	72 (98)
Strut Rod-to-Lower Control Arm <sup>Ⓢ</sup>	
1st Tightening .....	47 (64)
2nd Tightening .....	51 (69)
Lower Control Arm Pivot Bolt .....	65 (88)
Tie Rod End-to-Steering Knuckle .....	22 (30)
Upper Ball Joint-to-Control Arm .....	43 (58)
Upper Control Arm Pivot Bolt .....	54 (73)

<sup>Ⓢ</sup> — Always use new locking nuts.