

Front Suspension

VOLKSWAGEN — EXCEPT VANAGON

DESCRIPTION

Vehicles are equipped with front wheel drive and MacPherson strut type independent front suspension. Axles are supported by lower control arms and vertically-mounted strut assemblies.

Strut assemblies consist of double action shock absorbers mounted inside strut tubes. With coil springs mounted over the outside of the tube.

The top portion of strut is attached to inner fender panel and lower portion is attached directly to steering knuckle. Tie rods are connected to steering knuckle.

ADJUSTMENT

WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

See *Wheel Alignment Specifications & Procedures* in **WHEEL ALIGNMENT** section.

WHEEL BEARING

Wheel bearings are pressed into bearing housing and no adjustment is required.

BALL JOINT CHECKING

1) Raise vehicle and support with safety stands. Turn steering wheel to one side. Install lever so that ball joint spring may be compressed.

2) With spring compressed, position a vernier caliper with lower jaw on ball joint stud and upper jaw on top of clamping bolt for ball joint stud. Note reading.

3) Slowly release tension from spring and note travel of caliper. This reading indicates ball joint play. If play exceeds .040" (1 mm) for new ball joints or .100" (2.5 mm) for used ball joints, replace ball joints.

REMOVAL & INSTALLATION

WHEEL BEARING

Removal

1) Remove strut assembly from vehicle as described in **Strut Assembly**. Press bearings out of hub.

NOTE: The wheel bearing is destroyed when pressed out of the hub. Once either the wheel hub or bearing has been removed from suspension strut, a new bearing must be installed.

2) Remove circlips inside bearing housing (one at each end of bearing). Using a press sleeve, apply pressure to bearing outer race. Press out bearing toward outboard end of bearing housing.

Installation

To install, reverse removal procedure.

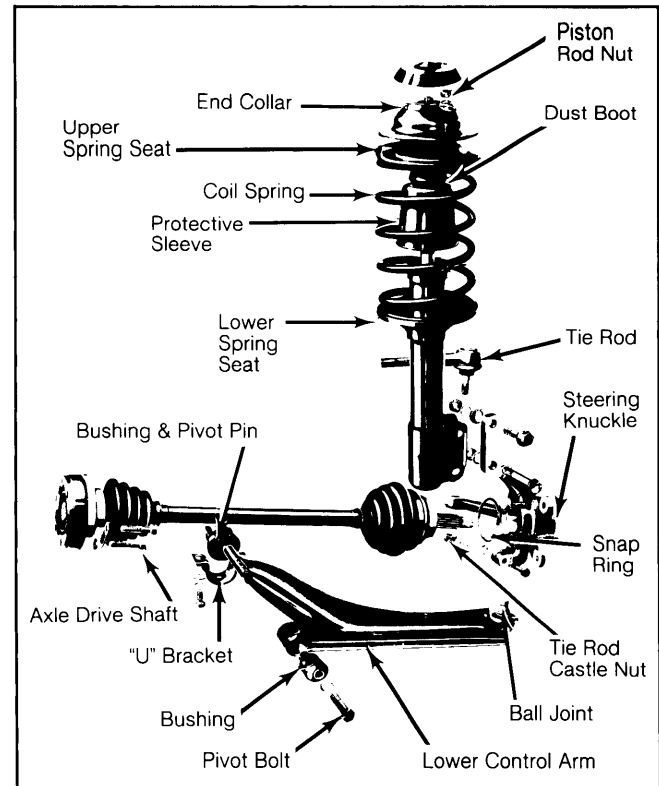
LOWER CONTROL ARM & BALL JOINT

Removal

1) Raise vehicle and support with safety stands, under vehicle body. Remove nut and clamp bolt retaining ball joint in bottom of steering knuckle.

2) Force ball joint out of steering knuckle, (ball joint can be replaced while control arm is in vehicle). Leave control arm hanging in mounts at subframe.

Fig. 1: Exploded View of Suspension Components

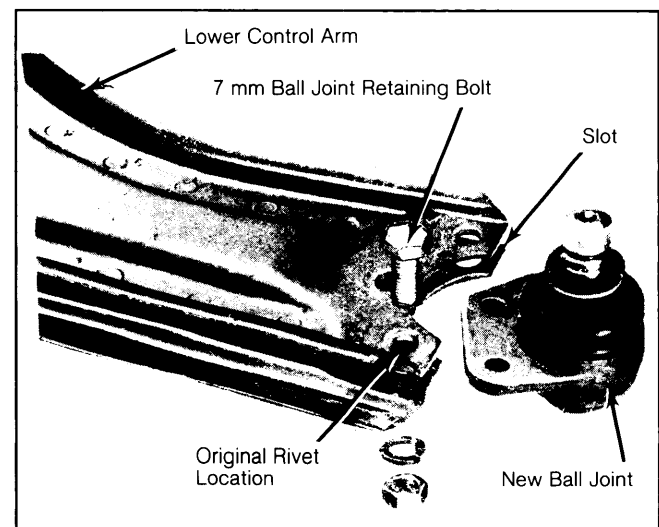


3) If control arm is not being removed, drill out ball joint rivets with a 9/32" (7 mm) drill. After drilling rivets it still may be necessary to chisel off rivet heads. Remove ball joint.

4) If control arm is being removed, take out pivot bolt and "U" bracket housing inner pivot pin. Slide out control arm.

NOTE: On vehicles equipped with automatic transmissions, engine may have to be slightly raised to gain access to pivot bolts.

Fig. 2: New Ball Joint Installation on Lower Control Arm



VOLKSWAGEN — EXCEPT VANAGON (Cont.)

Inspection

Check lower control arm bushings, replace if necessary. To replace bushings, press out worn bushing. Select new bushing and press into position. Make sure bushing does not twist when seating into place.

Installation

Slide new ball joint into slot in control arm. Tighten ball joint retaining bolts. Refit lower control arm to subframe. Install ball joint into lower section of suspension strut.

STRUT ASSEMBLY

Removal

1) Raise vehicle and support with safety stands, under vehicle body. Remove bolts retaining suspension strut to steering knuckle. Note that top bolt is one used to adjust front wheel camber.

2) Remove caliper assembly and support out of the way. Pry or force suspension strut out of steering knuckle. Support front suspension by hand. Also, support lower control arm and related components.

3) Working inside engine compartment, remove upper strut retaining nuts. Remove strut assembly.

Disassembly

Fit strut to spring compressor. Slightly collapse coil spring. Remove shock absorber piston rod nut. Slowly release spring pressure. Remove upper retaining hardware and coil spring.

Reassembly

1) Fit protective sleeve and buffer over piston rod. Both coil springs must be of same class. If set cannot be matched, both springs will have to be replaced. Springs are color coded.

2) Position coil spring into lower spring seat. Install the upper spring retainer. Fit entire assembly into spring compressor and collapse coil gradually until all the threaded portion of piston rod is exposed.

3) Install bearing, rubber bumper and remaining upper retaining components. Hold piston rod and tighten piston and lock nut.

Installation

To install, reverse removal procedures. Check wheel alignment.

FRONT SUSPENSION ASSEMBLY

Removal

1) Raise vehicle and support with safety stands, under vehicle body. Disconnect brake line, leave flex line in place, and plug openings.

2) Remove tie rod castle nut. Separate tie rod from steering knuckle. Remove bolts retaining inner portion of constant velocity joint to transaxle drive flange.

3) Remove lower control arm front pivot bolt. Remove bolts retaining "U" shaped bracket holding control arm rear pivot.

NOTE: On vehicles equipped with automatic transmissions, engine may have to be slightly raised to gain access to pivot bolts.

4) Support suspension assembly. Remove upper strut retaining nuts, (located in engine compartment). Remove assembly from vehicle.

Installation

To install, reverse removal procedures. Make sure convex side of thrust washer faces pivot bolt head.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Axle Nut	173 (235)
Axle Drive Shaft-to-Transaxle	32 (44)
Ball Joint Clamp Bolt-to Steering Knuckle	36 (49)
Control Arm-to-Subframe	50 (68)
New Ball Joint-to-Control Arm	18 (24)
Piston Rod Nut	58 (79)
Pivot Pin "U" Bracket	32 (44)
Suspension Strut-to-Steering Knuckle	58 (79)
Suspension Strut-to-Inner Fender	14 (19)
Tie Rod Castle Nut	22 (30)