

1965-73 VOLKSWAGEN TYPE 3 SEDAN

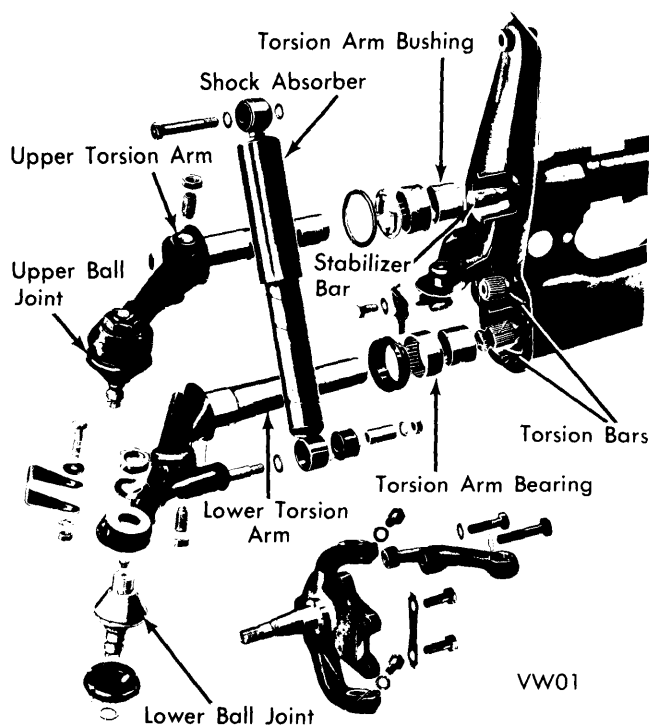
Type 3 Fastback Sedan (1965-73)
Type 3 Squareback Sedan (1965-73)

► CHANGES, CAUTIONS, CORRECTIONS

► 1972-73 VOLKSWAGEN TYPE 3 — FRONT END NOISE — Replacing ball joints to eliminate front end noise does not usually solve the noise problem. Manufacturer's examinations have proven that ball joints are not usually the cause of front end noise, but rather the shock absorber, stabilizer, and their mounting parts are generally the cause of these noises. Carefully examine all front end components before replacing ball joints in an attempt to stop front end noise.

DESCRIPTION

Independent ball joint type suspension with torsion bars. Front axle beam consists of two horizontal tubes held together at ends by endplates welded to tubes. Torsion bars are mounted inside bottom axle tube. One end of torsion bar is secured to torsion arm and opposite end is secured to axle tube. Upper axle tube contains stabilizer bar connected at both ends to upper torsion arms. Torsion arms are connected to steering knuckles by means of ball joints. Hydraulic shock absorbers are mounted between lower torsion arms at bottom and mount integral with axle tubes at top.



FRONT SUSPENSION COMPONENTS

ADJUSTMENT

WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

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

WHEEL BEARING ADJUSTMENT

See *Wheel Bearing Adjustment* in *WHEEL ALIGNMENT* Section.

BALL JOINT CHECKING

See *Ball Joint Checking* in *WHEEL ALIGNMENT* Section.

REMOVAL & INSTALLATION

FRONT AXLE ASSEMBLY

Removal — Most repairs to front suspension components can be accomplished with axle in vehicle, but complete front suspension assembly can be removed. Raise vehicle, position safety stands under chassis and remove both front wheels. Disconnect and plug fuel line from fuel tank and remove fuel tank. Remove both front brake calipers and tie to brake line bracket with a piece of wire, do not let caliper hang from brake line. Disconnect speedometer cable from left steering knuckle. Disconnect tie rods from steering arms and pitman arm with a suitable puller (VW 266h). Remove bolts and separate coupling at steering gear. Position a floor jack with a suitable axle holding fixture (VW 613) attached to jack on front axle assembly. Remove bolts from both axle clamps and remove axle assembly.

Installation — Position axle assembly on floor jack with a suitable axle holding fixture (VW 613) attached. Install clamp collars on axle with shoulders of collars toward outside of axle. Raise floor jack and position axle assembly in vehicle. Install clamps making sure steering gear ground wire is secured to one bolt. Tighten clamp bolt to specifications. To complete installation, reverse removal procedure. Check wheel alignment.

STEERING KNUCKLE

NOTE — Disc brake rotor and splash shield need only be removed if steering knuckle is being replaced.

Removal — Raise front of vehicle and position safety stands under chassis. Remove brake caliper and attach to brake line bracket with a piece of wire, do not let caliper hang from line. Disconnect tie rod from steering knuckle with a suitable puller (VW 266h). If steering knuckle is being replaced, remove rotor and splash shield. Install a suitable torsion bar tensioner (VW 655/3) on upper and lower torsion arms and tension torsion bar slightly. Remove pinch bolts securing ball joint studs in steering knuckle and remove steering knuckle.

Installation — To install steering knuckle, reverse removal procedure. Before tightening ball joint pinch bolts in steering knuckle, position notch on bottom of ball joint stud facing forward. Adjust wheel bearing if brake rotor was removed. Check and adjust wheel alignment as necessary.

BALL JOINT REPLACEMENT

Removal — Remove steering knuckle as previously outlined. Remove ball joint retaining nuts, remove spring washers and ball joints.

Installation — Position ball joints in torsion arms. Install spring washers and tighten nuts to specification. Install steering knuckle as previously outlined.

TORSION BARS & LOWER TORSION ARM

Removal — Remove steering knuckle as previously outlined. Remove shock absorber. Remove lock nut from set screw securing torsion arm to torsion bar and remove set screw. Using a suitable puller, extract torsion arm from torsion bar (VW 276a). Remove bolt securing torsion bar retaining lock plate to axle. Using a punch drive torsion bar from lower axle tube.

Front Suspension

1965-73 VOLKSWAGEN TYPE 3 SEDAN (Cont.)

Installation — Note that torsion bars are identified as to right and left by a "R" and "L" stamped in end of bar. Inspect torsion arm seals for wear or damage. Install torsion arms and torsion bars at correct angle. See *Torsion Arm Angle Setting*. Install steering knuckle as previously outlined. Check wheel alignment.

TORSION ARM ANGLE SETTING

Torsion bars and arms must be positioned at correct angle before installing steering knuckle and remaining components. To install bars and arms correctly, front bumper must be loosened and positioned out of way. Place a suitable protractor (VW 261) on front face of axle endplate, making sure large end of protractor is positioned on shoulder of bearing for upper torsion arm. Turn level carrier of protractor so that bubble of level marked "Achskorper" is in center. With torsion bar inserted in axle tube, partially install torsion arm. Install protractor with pin installed in splined portion of arm. Swivel large end of protractor against shock absorber mounting pin on lower torsion arm. Torsion bar and arm are correctly installed when bubble in level marked "Traghebel" is in center. The smallest adjustment that can be made is 50'. This is accomplished by turning arm on bar one spline and turning bar in axle tube one spline in the opposite direction.

NOTE — It is important that both bars be set as close as possible. Neither bar should be below the setting of 39°10'.

UPPER TORSION ARM & STABILIZER BAR

Removal — Raise vehicle, position safety stands under chassis and remove both front wheels. Remove both steering knuckles as previously outlined. Remove right side torsion arm retaining bolt, bend over lock tab and remove adjustment bolt. Turn torsion arm and remove from stabilizer bar. Turn left side torsion arm and remove with stabilizer bar. Loosen left torsion arm lock screw, remove set screw and remove stabilizer bar from torsion arm.

Installation — Check torsion arm thrust rings and seals and replace as necessary. Install torsion arms and stabilizer bar by reversing removal procedure. Before installing remaining components, back off adjustment screws until torsion arms fall under their own weight onto rubber bumpers. Bend over lock tab on adjustment screw and pull sealing rings onto torsion arms. Install steering knuckle as previously outlined. Check wheel alignment.

TORSION ARM BEARINGS & BUSHINGS

Removal — Remove steering knuckle, torsion arms, stabilizer bar and torsion bars as previously outlined. Using a suitable puller (VW 771) and suitable mandrels (21/9, 21/7, 21/11 and 21/10), pull upper and lower bearing and bushings from axle tubes. Inspect upper and lower bearing bores for wear or damage. Measure inside diameter of upper and lower bearing bores as oversize bearings are frequently installed at factory. If measurement exceeds specifications, front axle tube assembly must be replaced.

Torsion Arm Bearing Specifications	
Application	In. (mm)
Upper	
Standard	1.7310-1.7320 (43.967-43.992)
Oversize	1.7389-1.7398 (44.167-44.192)
Lower	
Standard	1.9672-1.9682 (49.967-49.992)
Oversize	1.9751-1.9761 (50.167-50.192)

Installation — Using a suitable driver (VW 757) carefully drive in bushings to avoid damaging plastic seals. Bearings must be completely clean before installing in axle tube. Use a suitable driver (VW 756) drive in bearings making sure that side of bearing with markings is facing out. Check axle tube seals and torsion arm thrust rings for damage and replace as necessary. Install remaining components as previously outlined. Check wheel alignment.

TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs. (mkg)
Axle Clamp Bolts	
Upper	22 (3)
Lower	29 (4)
Lower Torsion Arm-to-Torsion Bar	22 (3)
Upper Torsion Arm-to-Stabilizer Bar	36 (5)
Set Screw Lock Nuts	29 (4)
Torsion Bar-to-Axle Tube	29 (4)
Stabilizer Bar Clamp Bolt	29 (4)
Shock Absorber Mounts	24 (3.3)
Brake Caliper-to-Steering Knuckle	36 (5)
Ball Joint Nuts	80 (11)
Ball Joint Pinch Bolts	40 (5.5)