

Every Single Torque Setting for Every Single Bolt on your Aircooled VW

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Limebug technical reference

This reference consolidates Volkswagen dealer data, workshop/manual information and specialist hardware records into one torque guide. All torque values are shown in both ft-lb and Nm. Nm figures are calculated at $1 \text{ ft-lb} = 1.355817948 \text{ Nm}$ and rounded to one decimal place.

Aircooled VW coverage through 1979

This guide is organised by Volkswagen model family first, then by mechanical system. Where different models share the same factory engine, gearbox or fastener, the shared specification is stated once and the model section points to it. Market-specific body hardware should always be matched by part and year.

Worldwide derivatives: Brazilian and other market-built aircooled Volkswagens through 1979 are best matched by the exact drivetrain and fastener fitted. Shared Type 1/Type 2/Type 3 hardware is covered here; market-only body and chassis fasteners should not be inferred solely from model appearance.

General fastener dimensions & hardware details

Where a property class, head style, seat, shoulder or exact length is known for the specific VW fastener it is shown here. A dash means the detail is not needed to apply the torque figure safely or varies by exact production hardware; it is not a recommendation to substitute any grade.

VW workshop torque tables often identify diameter and pitch but not bolt length or wrench size. The following physical details are from current specialist hardware listings or VW dealer data and are therefore kept separate from generic assumptions.

All torque grids use the same field order: component first, then model / years, then fastener details where they are known, followed by ft-lb and Nm. A fastener column is omitted entirely when the section has no verified fastener data, rather than filling it with empty values.

Model-specific torque sections

Type 1 Beetle & Cabriolet through 1979 / Karmann Ghia Type 14 1955–74

Early Type 1 engine — 30 bhp and 34/42 bhp factory reference

Type 1 king & link-pin front axle — through 1965

The broad system tables later in this guide are the main reference for Beetle and Type 14 Karmann Ghia mechanical torque. Match the year and front-suspension type before use: standard Beetles and Ghias use the torsion-beam data, while 1302/1303 Super Beetles use the separate MacPherson-strut table.

Split Screen Type 2 1950–67 (German-built)

These are Split-specific values and hardware details that could be verified cleanly from VW dealer references and specialist replacement hardware records. This section is intentionally narrower than the Beetle master table rather than filling gaps with assumptions.

Type 2 Bay Window 1968–79 (German-built)

Bay Window running gear changed substantially across production. Use this section for Bus-specific chassis, steering and suspension values, and identify the engine/gearbox family before using engine or transmission torque data.

Type 2 Bay Window chassis, steering & suspension

Type 3 1961–73 & Type 34 1961–69 (German-built)

This table comes from Volkswagen's January 1964 Without Guesswork Type 3 dealer reference. Type 34 Karmann-Ghia Coupé is explicitly included within the Type 3 model family in that publication.

Type 3 / Type 34 chassis, brakes & front axle

Fridolin Type 147 1964–74

Period Type 147 literature identifies a 1192 cc / 34 PS engine, four-speed fully synchronised transaxle, swing axles, torsion-bar independent suspension and a front anti-roll bar. That makes many components recognisably Volkswagen, but there is not enough model-specific torque material in the accessible Type 147 owner literature to publish a fully independent Fridolin torque chart without cross-identifying each part number. For Fridolin work, use the matching Type 1/Type 2 torque only where the actual component and thread are confirmed.

Type 181 / Thing / Trekker 1969–79 reference

The Type 181 uses the Type 1 engine family but its suspension and rear drivetrain are not simply a Beetle copy. Early vehicles use a swing-axle/reduction-box rear arrangement; later vehicles use IRS. The upper front ball joint/eccentric hardware is also Type 181-specific.

Type 181 commonly serviced torque settings

Type 4 411 / 412 1968–74 (German-built)

Type 4 cars use a distinct engine, transmission and independent rear suspension. Their engine torque figures also apply to the corresponding Type 4 engine family used in 1972–79 German-built Bay Windows when the same fastener and engine version are fitted.

Worldwide aircooled Volkswagen derivatives through 1979

Regional Volkswagen models are included by mechanical family and fitted hardware. A shared German torque value is only applicable when the engine, gearbox, suspension, brake or fastener is the same specification. This avoids creating false certainty simply because two cars share a Volkswagen badge or aircooled engine layout.

Brazilian-built aircooled Volkswagens through 1979

Mexican-built Type 1 / Sedan through 1979

Mexican Beetle production continued with Type 1 mechanical architecture but did not always follow German year changes at the same time. Use the Type 1 engine, torsion-beam, brake and transaxle tables by the actual fitted hardware and engine generation, not the German model year alone.

Regional model-to-system map

System-specific torque tables

These tables are arranged by assembly rather than model. Use them after identifying the vehicle and year in the model sections above.

Engine — Type 1 workshop reference (primarily 1966–79)

Type 4 engine — 411 / 412 and 1972–79 Bay Window

Front axle & steering — Type 1 torsion-beam

MacPherson strut — 1302 / 1303 Super Beetle

Brakes — Type 1 workshop reference

Wheels — Type 1 workshop reference

Pedal assembly — Type 1 workshop reference

Manual transaxle / gearbox — Type 1 workshop reference

Type 4 411 / 412 manual transmission

Type 4 411 / 412 rear axle & suspension

Rear suspension — Type 1 workshop reference

Automatic Stick Shift — Type 1

Torque sequences & special procedures

Some Volkswagen specifications are not a simple “tighten once to X”. The procedure is part of the specification. Where a row is marked as an adjustment, staged sequence or alignment operation, follow that procedure rather than treating the number as a final clamp torque.

Type 1 crankcase halves

Tighten the case progressively in sequence. As the main case fasteners are brought up, rotate the crankshaft by hand and stop if binding appears.

Type 1 cylinder heads

Tighten progressively in stages rather than taking one nut directly to final torque.

Initial pattern:

Final pattern:

Type 4 cylinder heads

Use the prescribed Type 4 head sequence and staged tightening for the exact engine. Do not substitute the Type 1 pattern or Type 1 final torque simply because both engines are aircooled flat-fours.

Front wheel bearings — adjustment, not final torque

Type 1 front tapered-roller bearings are set by axial play. A commonly specified workshop method is to seat the bearing while rotating the wheel, then back the adjusting nut off and set approximately 0.03–0.12 mm (0.001–0.005 in) axial play before tightening the clamp-nut socket screw. The clamp screw torque is a locking torque; the bearing itself must not be left preloaded as though the adjusting nut were an ordinary structural fastener.

Castellated nuts and split pins

Where a castellated nut uses a split pin, reach the specified minimum torque first and then continue tightening only as required by the applicable procedure to align the next pin hole. Do not back off a correctly torqued rear hub/axle nut just to align the split pin.

Pinion / transmission staged operations

Some pinion and bearing-retainer specifications include an explicit tighten–loosen–retighten operation. If the row or workshop procedure gives that sequence, the intermediate torque is a setup step rather than an alternative final value.

Replacement fasteners

Where the workshop data specifies use new bolts or a new self-locking fastener, that instruction is part of the repair procedure. Do not treat the torque value alone as permission to reuse a fastener that the procedure calls for replacing.

Low-torque sealing fasteners

Oil-strainer, sump-cover and small sealing fasteners are intentionally low torque. In particular, the Type 4 oil-strainer / sump-cover sealing nut is only 9 ft-lb / 12.2 Nm. More torque is not better and can damage the case or sealing surface.

Quick torque answers

These short answers repeat high-demand values in plain language so a single extracted answer still carries the model and fastener context.

Important application notes

Some historical torque lists combine different years, thread diameters or models under similar component names. A conflict is only resolved when the physical fastener/application can be identified. This is why the guide preserves year and thread information rather than presenting a single universal number.

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