Wheel Bearing Adjustment

ALFA ROMEO

GIULIETTA

Tighten nut while rotating hub and eliminate all play (with hub rotating freely). Attach suitable lever (6123.15.0007) to wheel set screws and apply weight of 24.7 oz. (700.23 g) to end of lever. If lever resists movement or rotates rapidly, adjust by tightening or loosening nut. When preload is correct, loosen nut one notch and install cotter pin.

ALL OTHERS (1963-73)

While rotating hub, torque spindle nut to 18 ft. lbs. (2.487 mkg). Loosen nut ½ of a turn while tapping gently on stub axle to ensure proper seating of outboard bearing. Retorque nut to 10.8 ft. lbs. (1.492 mkg) and loosen ¼ of a turn. Install cotter pin, tightening nut to install if necessary. End play of hub is checked with a suitable dial indicator and should be .0008-.0047" (.020-.119 mm).

AUDI

ALL MODELS EXC. FOX REAR (1970-73)

Raise rear of vehicle so wheels are just off the ground. Remove grease cap and one wheel bolt. Attach a suitable dial indicator to check wheel bearing play from wheel bolt hole to stub axle. Rock wheel along horizontal axis. If not within .0007-.0015" (.02-.04) mm), remove cotter pin and tighten axle nut until play is within limits. Install cotter pin.

NOTE — The following procedure should be performed using special tools indicated.

MODEL 100 FRONT (1973)

1) Raise and support front of vehicle. Remove lower wheel bolt and replace with special wheel bolt adapter (V-104) and special dial indicator (G043). By means of retaining screw on tool (V-104), adjust dial indicator to pretensioned position of 1 mm (.040").

2) Grasp wheel at front and rear. First push inward on front while pulling outward on rear of wheel, record dial indicator reading. Reverse this procedure and record dial indicator reading. Difference between these two readings is wheel bearing play. If play exceeds .04-.07 mm (.0015- .0027"), adjustment will be necessary.

3) Remove cotter pin and castle nut. If there was too much play, tighten spindle nut until play is within specifications. If there was insufficient play, remove wheel, spindle nut and its shim. Replace and tighten spindle nut. Using a 1 mm (.040") feeler gauge, loosen spindle nut until it is possible to insert feeler gauge between spindle nut and wheel hub. Attach special hub puller (V-26) and withdraw hub until it is firmly in contact with spindle nut. Remove puller and retighten spindle nut until play is within specifications.

NOTE — Fox front wheel bearing is not adjustable. Torque stub axle nut to 13 ft. lbs. (1.796 mkg).

FOX REAR (1973)

Remove grease cap, cotter pin and castle nut. Tighten spindle nut and loosen for adjustment. Adjust by lightly tightening spindle nut until plain washer (under spindle nut) can just be moved from side to side, using a screwdriver. This adjustment will correspond to .0012-.0027" (.03-.06 mm) wheel bearing play.

AUSTIN

AUSTIN AMERICA REAR (1968-70)

Install washer (chamfered edge towards bearing) and stub axle nut. Torque nut 60 ft. lbs. (8.292 mkg) and align cotter pin hole. Install cotter pin.

AUSTIN MARINA (1973)

Raise and support wheel so that front wheel is not touching the ground. Remove grease cap and attach suitable magnetic base dial indicator with base on brake drum and actuating foot touching spindle. Bearing play should be from .001-.005" (.0254-.127 mm). If adjustment is required, remove cotter pin and loosen castle nut. Torque castle nut to 5 ft. lbs. (.691 mkg), while spinning wheel. Stop wheel, loosen castle nut and retighten castle nut (finger tight only). Reinstall cotter pin. *NOTE — At minimum end-float figure given, a considerable amount of movement will be felt in the front wheel. Do not reduce end-float below .001" (.0254 mm).*

AUSTIN HEALEY

SPRITE ALL MODELS (1963-70)

Install washer and nut to front hub. Torque nut to 25-65 ft. lbs. (3.455-8.983 mkg) (Mk II) or 40-45 ft. lbs. (5.528-6.219 mkg) (all others), to allign cotter pin tighten as necessary. Install cotter pin.

3000 MK II & III (1963-67)

Raise front of vehicle so front wheels clear ground and shake wheel along vertical axis. Movement between brake disc and steering arm indicates wear of hub bearings or incorrect adjustment. To adjust, measure end-float of hub using suitable dial indicator. Remove stub axle nut, washer and center of outer bearing. Remove enough shims to eliminate end-float while still allowing hub to rotate freely when bearing center, washer and stub axle nut have been installed. Torque nut 40-70 ft. lbs. (5.528-9.674 mkg) and install cotter pin.

BMW

ALL MODELS (1966-73)

While rotating hub, torque castle nut to 7.2 ft. lbs. (.995 mkg). Loosen nut a ⅓ of a turn. Place a screwdriver in recess of washer. Washer must move from left to right easily. Screw suitable gauge holder (BMW 5104) to wheel hub and install dial indicator with tip touching front axle stub. Shake wheel hub and read dial indicator. Adjust castle nut so wheel play is .0008-.003" (.020-.076 mm) (6 hole castle nuts) or .0008-.0024" (.020-.060 mm) (10 hole castle nuts). Play should be set at a minimum of .0008" (.020 mm). Install cotter pin.

CAPRI

ALL MODELS (1970-73)

Rotate wheel, hub and drum assembly while turning adjusting nut to 17-25 ft. lbs. (2.349-3.445 mkg). Back off nut ½ of a turn. Retighten adjusting nut to 10-15 INCH lbs. (.115-.172 mkg). Install cotter pin and check front wheel rotation.

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COLT

ALL MODELS (1971-73)

Tighten adjusting nut to 14.5 ft. lbs. (2.003 mkg). After seating bearing components, loosen nut to 0 ft. lbs. Now make final adjustment to 3.6 ft. lbs. (.497 mkg). Install lock cap and cotter pin. *NOTE — Do not loosen adjusting nut more than 15° to align spindle holes.*

CORTINA

ALL MODELS (1967-70)

While rotating hub, torque nut to 27 ft. lbs. (3.731 mkg). Loosen nut 90° or 2 castellation slots and install cotter pin.

COURIER

ALL MODELS (1972-73)

Rotate wheel, hub and drum assembly, torque adjusting nut to 15-20 ft. lbs. (2.073-2.764 mkg). Back off nut ½ of a turn. Retighten adjusting nut to 10-15 INCH lbs. (.115-.172 mkg). Reinstall cotter pin and check front wheel rotation.

CRICKET

ALL MODELS (1971-72)

While rotating wheel and hub assembly, torque adjusting nut to 15-20 ft. lbs. (2.073-2.764 mkg). Back off nut 1/6 of a turn. Check end play using suitable dial indicator .002-.004" (.050-.101 mm). Install lock cap and cotter pin.

DATSUN

240Z, 510, 521, 610, 620 & 1200 (1963-73)

Tighten spindle nut to torque specifications in following table. Spin wheel. Retorque spindle nut. Back off according to specifications in following table and then tighten to align cotter pin hole. Install cotter pin.

Wheel Bearing Adjustment

Application	Torque Ft. Lbs. (mkg)	Loosen
240Z	22-25 (3.04-3.45)	60°
510 & 610	22-25 (3.04-3.45)	90°
521 & 620	23-25 (3.17-3.45)	40-70°
1200	15.9-17.4 (2.19-2.40)	40-70°

310, 320 & 520 (1963-72)

Torque spindle nut to 30 ft. lbs. (4.146 mkg) and spin wheel. Back nut off ⅛ of a turn and align cotter pin.

311, 312, 410 & 411 (1963-72)

Tighten nut finger tight. Spin wheel and examine resistance. Tighten nut to align cotter pin. A slightly increased resistance should be noticed. Insert cotter pin.

FIAT

124, 850 & 1100R FRONT (1963-73)

While rotating hub, torque nut 14.5 ft. lbs. (2.00 mkg). Completely loosen nut and retorque to 5.1 ft. lbs. (.704 mkg). Loosen nut 30° and stake collar into groove machined in steering knuckle end using suitable pliers (A.74129). Hub end play should be .001-.0039" (.0254-.099 mm).

600D FRONT (1963-67)

Torque nut 21.7 ft. lbs. (2.998 mkg) and loosen nut to 60°. Install cotter pin.

128 REAR (1971-73)

Torque nut to 101 ft. lbs. (13.958 mkg) and stake collar of nut using suitable pliers (A.74140/1 with A.74140/3 heads).

HONDA

ALL MODELS (1971-72)

To check bearing adjustment shake wheel up and down. There should be no visible play. Tighten wheel hub nut to 101-144 ft. lbs. (13.958-19.900 mkg).

CIVIC (1973)

Wheel bearings are nonadjustable. Inspect for proper operation and smoothness of rotation. Torque spindle nuts to 87-130 ft. lbs. (12.023-17.966 mkg) front and 72-94 ft. lbs. (9.95-12.99 mkg) rear.

JAGUAR

ALL MODELS (1963-73)

While rotating hub, tighten nut until no end play is evident. Loosen nut one to two flats to line up cotter pin and install cotter pin. End float should be measured with suitable dial indicator and must be .003-.005" (.076-.127 mm) except XKE III V12 which is .002-.006" (.050-.152 mm). If not within specifications, adjust stud axle nut to correct end float.

JENSEN-HEALEY

ALL MODELS (1973)

While rotating wheel, tighten spindle nut until wheel turns with resistance. Back off spindle nut and using socket only, tighten spindle nut by hand. Align slots in spindle nut with hole in spindle and install cotter pin.

LUV

ALL MODELS (1972-73)

While rotating wheel, tighten spindle nut to 22 ft. lbs. (.276 mkg). Turn hub through two or three turns and loosen nut so it is finger tight. Check free play. Using a pull scale, measure starting torque. Adjust spindle nut so pull scale reads 1.1-2.6 ft. lbs. (.152-.359 mkg) when wheel begins to rotate.

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Wheel Bearing Adjustment

MAZDA

ALL MODELS (1971-72)

While rotating hub and rotor assembly, tighten nut to seat bearing. Back off 1/6 of a turn. Install lock nut and cotter pin.

ALL MODELS (1973)

With vehicle raised and supported under lower control arms, measure amount of bearing preload. If preload is not within .9-2.0 ft. lbs. (.1243-.2764 mkg) adjustment will be necessary. Adjust by tightening spindle nut until nut correct bearing preload is obtained. Align slot of spindle nut with hole in spindle and install cotter pin.

MERCEDES BENZ

300SL & 450SL (1972-73)

While rotating hub, tighter nut to 36 ft. lbs. (4.975 mkg). Loosen nut and strike steering knuckle spindle with a plastic hammer to release bearing tension. Adjust end play to 0-.0002" (.005 mm) by adjusting spindle nut. Secure nut.

ALL OTHERS (1963-73)

While rotating hub, tighten clamping nut until hub can just be turned. Loosen clamping nut and release bearing tension by striking steering knuckle spindle with plastic hammer. Using suitable dial indicator, check for end play of .078" (1.981 mm). Adjust clamping nut until end play is within limits. Tighten socket bolt of clamping nut. Washer between outer bearing and clamping nut should rotate with light pressure applied to it.

MG

MGB, MGB/GT, MGC & MGC/GT (1963-73)

Using a dial indicator measure end float of bearings at hub. Correct end float is .002-.004" (.050-.101 mm). If not within specifications remove nut, washer and outer bearing. Add or reduce shims to produce correct end play. Replace outer bearing and washer, then torque nut to 40-70 ft. lbs. (5.528-9.674 mkg). Install cotter pin.

MIDGET I, II, III & IV (1963-73)

Install washer and nut to front spindle. Torque nut to 40-45 ft. lbs. (5.528-6.219 mkg) on 1972 and earlier models and 40-70 ft. lbs. (5.528-9.674 mkg) on 1973 models.

1100 & 1300 REAR (1963-67)

Place washer with chamfered edge towards bearings. Install nut and torque to 60 ft. lbs. (8.292 mkg). Align cotter pin hole in spindle with slot in nut. Install cotter pin.

OPEL

ALL MODELS (1966-67)

Torque spindle nut to 25 ft. lbs. (3.455 mkg) while rotating wheel to settle bearings. Back off nut until some play is felt between wheel and spindle nut. Tighten nut until play can no longer be felt. Install cotter pin.

ALL MODELS (1968-73)

Torque spindle nut to 18 ft. lbs. (2.487 mkg) while rotating wheel to settle bearings. Back nut off 1/4 of a turn. If slot and cotter pin hole are not aligned, back nut off until cotter pin installation is possible. Properly adjusted wheel will have small amount of end play and a loose spindle nut when adjusted in this manner.

PANTERA

ALL MODELS (1973)

NOTE — It is possible that some vehicles will not have a hole drilled through the spindle or castellated nut. It is necessary to remedy this situation by drilling a .156" (3.969 mm) hole exactly .344" (8.731 mm) from outer end of spindle.

Raise and support vehicle. Torque castellated spindle nut to 17-25 ft. lbs. (2.349-3.455 mkg). Back off spindle nut 1/2 of a turn and retorque nut to 10-15 INCH lbs. (.1151-.1727 mkg). Install cotter pin.

PEUGEOT

ALL MODELS EXC. 304 (1963-73)

While rotating hub torque nut to 22 ft. lbs. (3.040 mkg). Loosen nut and retorque to 7.2 ft. lbs. (.995 mkg). Lock nut using punch in two grooves provided in lock nut.

PORSCHE

ALL MODELS (1963-73)

Turn wheel and tighten clamping nut just enough to seat roller bearings. Loosen until tab washer can be easily moved in a lateral direction (by means of a screwdriver) and no perceptible bearing play is felt when hub is moved axially. Tighten screw on clamping nut and recheck adjustment.

RENAULT

R-8 (1963-65) & DAUPHINE (1963-67)

While rotating hub, tighten nut until hub begins to drag. Loosen nut 1/16 of a turn. Check bearing play with suitable dial indicator at a point 7.875" (200 mm) from stub axle centerline. Maximum play allowable is .014" (.355 mm). Adjust nut if necessary to set play within limits and install cotter pin.

R-10 (1967-71) & CARAVELLE (1963-67)

While rotating hub, torque nut to 20 ft. lbs. (2.764 mkg). Loosen nut 1/2 to 1 1/2 flats and check bearing play with a suitable dial indicator at a point 7.875" (200 mm) from stub axle centerline. Maximum play allowable is .014" (.355 mm). Adjust nut if necessary to set play within limits and install cotter pin.

R-16 (1969-72)

While rotating hub, torque nut to 25 ft. lbs. (3.455 mkg). Loosen nut 1/4 of a turn. Using a suitable dial indicator, check that bearing play is .002-.004" (.05-.101 mm). Adjust nut if necessary until bearing play is within limits and install cotter pin.

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R-12, R-15 & R-17 REAR (1971-73)

While rotating hub, torque nut to 25 ft. lbs. (3.455 mkg). Loosen ¼ of a turn and check end play. End play must be .001-.004" (.025-.101 mm). Adjust nut to set end play to limits and install cotter pin.

R-12, R-15 & R-17 FRONT (1973)

Front wheel bearings are nonadjustable. Torque spindle nut to 115 ft. lbs. (15.893 mkg).

ROVER

3500 S (1966-71)

While rotating hub, adjust nut to give zero end float. Install cotter pin.

2000 SC & TC (1966-70)

While rotating hub, adjust nut to give zero end float. Loosen nut and using suitable dial indicator adjust end float to specifications .003-.007" (.076-.177 mm). Install cotter pin.

SAAB

ALL MODELS REAR (1963-73)

Install washer and castle nut. Torque nut to 65 ft. lbs. (8.983 mkg) and align cotter pin hole. Install cotter pin. Shake wheel in vertical direction and check end play. If end play exceeds .08" (2.032 mm) and torque on hub nut is correct, replace bearings.

ALL MODELS FRONT (1973)

Front wheel bearings are nonadjustable. Torque spindle nut to 115 ft. lbs. (15.893 mkg).

SIMCA

1000 UP TO CHASIS NO. E19.321

Tighten nut while rotating wheel until rolling friction becomes perceptible. Loosen nut $^1/_6$ of a turn and align cotter pin hole. Install cotter pin. Wheel should turn freely with a small amount of play.

1000 FROM CHASSIS NO. E19.322 & 1118

Tighten nut to 10.84 ft. lbs. (1.498 mkg) and loosen 180°. Tighten nut by hand. Loosen slightly so that wheel rotates freely with a minimum of looseness. Crimp the nut into spindle groove using a punch.

ALL MODELS REAR (1963-70)

Tighten lock nut and fit torque gauge bar onto brake drum. Rotate hub and progressively tighten lock nut until drive torque of hub is .43-.72 ft. lbs. (.059-.099 mkg).

SUBARU

ALL MODELS REAR (1970-73)

Install washer, lock washer and nut. Torque nut to 80-145 ft. lbs. (11.056-20.039 mkg) and bend lock washer or install cotter pin (station wagon). To check end play, remove wheel. Fix the stand of a dial indicator on the trailing arm and measure the play at a point 3.5" (88.9 mm) from center of drum, maximum .016" (.406 mm) end play and play at center of drum, maximum .012" (.304 mm) end play. If not within specifications, check torque of nut, bearing fitting surface of drum and bearing for wear. Adjust or replace as necessary.

ALL MODELS FRONT (1973)

Front wheel bearing is nonadjustable. Torque spindle nut to 145-181 ft. lbs. (20.039-25.014 mkg).

SUNBEAM

ALL MODELS (1963-70)

While rotating wheel, torque hub nut to 15-20 ft. lbs. (2.073-2.764 mkg). Loosen hub nut 1 to 1½ flats. Using a dial indicator, check end float of front hub. Arrow and Alpine GT should have .002-.004" (.050-.101 mm) end float and all other Alpine models .002-.007" (.050-.177 mm). If not within specifications, hub nut must be adjusted. Install lock cap and cotter pin.

TOYOTA

HI-LUX (1969-73), STOUT & LITE STOUT (1965-67)

Tighten the bearing retainer nut to 36 ft. lbs. (4.975 mkg) and turn hub back and forth to seat bearings. Retorque to 36 ft. lbs. (4.975 mkg) and loosen nut $^1/_6$ to $^1/_3$ of a turn to align cotter pin hole. Install cotter pin. Check bearing play by moving wheel axially. Play should be 0-.015" (0-.381 mm).

CROWN (1965-72)

Tighten the bearing retainer nut to 22 ft. lbs. (3.040 mkg) and turn hub back and forth to seat bearings. Loosen nut until nut can be turned with fingers. Tighten nut to finger tight using a socket without the handle. If not aligned for cotter pin installation tighten until cotter pin installation is possible. Preload at hub (with hub rotating) should be within specifications.

LAND CRUISER (1965-73)

Install claw washer and tighten front wheel adjusting nut with suitable tool (09607-60010). Rotate drum to seat bearings. Loosen nut ⅛ to $^1/_6$ of a turn. If brake drum rotates properly, install lock washer and tighten lock nut with suitable tool (09607-60010).

ALL OTHER MODELS (1965-73)

Tighten castle nut bearing retainer nut to 18.8-23.2 ft. lbs. (2.598-3.206 mkg) and turn brake drum back and forth to seat bearing. Loosen nut until it can be turned with fingers. Tighten nut to finger tight using a socket without the handle. If not aligned for cotter pin installation, tighten until installation is possible. Preload at hub (hub rotating) should be within specifications.

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Wheel Bearing Adjustment

Bearing Preload Specifications

Model Application	Preload oz.	Preload (g)
Crown	12-30	(340-850)
Carina & Celica	9.6-22.5	(272-637)
Corolla	5.6-13.1	(158-371)
Corona & Mark II	10.6-24.6	(300-697)

TRIUMPH

TR3 (1963)

Torque spindle nut to 10 ft. lbs. (1.382 mkg) and back off 1 ½ to 2 flats to line up cotter pin hole. Install cotter pin.

STAG (1973)

Raise and support front of vehicle. Remove front wheel and spring pins retaining brake pads. Attach suitable dial indicator and measure bearing end play. If end play exceeds .003-.005" (.0762-.127 mm), remove cotter pin and torque spindle nut to 5 ft. lbs. (.691 mkg). *NOTE — Do not exceed this torque as bearing damage may result.* If cotter pin cannot be inserted, loosen spindle nut until it is possible to insert cotter pin.

ALL OTHERS (1963-73)

While rotating hub, tighten slotted nut only enough to remove hub end play. *NOTE — Do not exceed 5 ft. lbs. (.691 mkg) torque.* Loosen nut to align cotter pin hole and install cotter pin.

VOLKSWAGEN

ALL MODELS EXC. TYPE 1 (1963-65) & TYPE 2 (1963-67)

While turning wheel, tighten clamp nut so tapered rollers seat against shoulder of inner race. Loosen clamp until axial play is .001-.005" (.025-.127 mm) when the wheel is moved firmly in and out. Tighten clamp nut.

TYPE 1 (1963-65)

Tighten inner nut to 28 ft. lbs. (3.869 mkg) while turning wheel and install new lock washer. Screw outer nut on loosely. Loosen inner nut to 72°. Tighten outer nut to 50 ft. lbs. (6.91 mkg) while holding inner nut from turning. Bend lock washer tab.

TYPE 2 (1963-67)

Tighten inner nut to 25 ft. lbs. (3.455 mkg) while turning wheel. Install lock washer and outer nut. Loosen inner nut until axial play is .001-.005" (.025-.127 mkg) when the wheel is moved firmly in and out. Tighten outer nut to 50 ft. lbs. (6.91 mkg) while holding inner nut from turning. Bend lock washer tab.

ALL MODELS (1968-73)

Raise and support front of vehicle. While turning wheel, tighten spindle clamp nut, so tapered rollers seat against shoulder of inner race. Loosen clamp nut until axial play is .001-.005" (.025-.127 mm), when wheel is moved. Tighten clamp nut.

VOLVO

While rotating hub, torque nut to 50 ft. lbs. (6.91 mkg). Loosen nut ⅓ of a turn and check for hub rotating freely with no end play. If necessary to align cotter pin holes loosen nut and install cotter pin.

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