

ALFA ROMEO

ALL MODELS (1963-73)

Check working surfaces of ball pins and their seats, and ball joint studs for damage or wear. Axial play should not exceed specifications .04" (1.016 mm). Replace complete ball joint unit when indicated.

BMW

ALL MODELS (1972 & EARLIER)

Check for damaged ball joint studs or excessive axial play. Axial play is not to exceed .04" (1.016 mm). Replace as necessary.

ALL MODELS (1973)

With lower control arm removed, measure axial (up and down) movement of ball joint stud. If movement exceeds .0945" (2.40 mm), replace ball joint. See *BMW in SUSPENSION Section*.

CAPRI

ALL MODELS (1970-73)

To check ball joint wear, raise vehicle and attach a dial indicator to a suitable fixed pivot, with stem on ball joint cap. Raise wheel independently of vehicle and note maximum dial gauge reading. If gauge reading is in excess of .098" (2.489 mm), ball joint should be replaced.

COLT

ALL MODELS (1971-73)

With components removed from control arm and ball joint still installed, check the following: Horizontal and vertical free play (0"), and ball joint rotation starting torque 2.6 ft. lbs. (.359 mkg). Replace ball joints if correct specifications are not obtained.

DATSUN

240Z, 510 & 1200 (1972 & EARLIER)

The ball joint cannot be disassembled and if not within specifications must be replaced. Check for standard end play (axial direction) of .0012-.0136" (.030-.345 mm) on 240Z & 510 and .0118-.0394" (.299-1.0 mm) on 1200. Check for shaking torque of .28-1.25 INCH lbs. (.003-.014 mkg) (240Z & 510) and 30.4-52.1 INCH lbs. (.350-.600 mkg) (1200).

310, 311, 312, 410 & 412 (1972 & EARLIER)

Jack front of vehicle up so front wheels just leave the ground and rock wheel by grasping wheel at opposite points in a horizontal plane. If any movement is detected between upper and lower swivel joints and swivel axle assembly, then ball joints must be removed for inspection.

ALL MODELS EXC. 620 (1973)

Remove lower control arm. See *Datsun in SUSPENSION Section*. Measure axial movement by lifting and depressing ball joint stud. Difference between these two measurements is axial play. Using suitable spring tension scale attached to top of ball joint stud, measure force required to move ball joint stud laterally. If either measurement is not within specifications, replace ball joint.

Ball Joint Specifications (1973)

Application	Axial in. (mm)	Lateral ft. lbs. (mkg)
510 & 240Z001-.023	
	(.025-.584).....	
610.....	.003-.019.....	3.62
	(.076-.482).....	(.500)
1200.....	.011-.039.....	14.6-24.9
	(.279-.990).....	(2.017-3.441)

FIAT

ALL MODELS (1963-73)

With vehicle raised and supported under lower control arms, grasp wheel at top and bottom and try to shake wheel. If any movement is noted, control arm must be removed for further inspection. See *Fiat in SUSPENSION Section*.

HONDA

ALL MODELS (1971-73)

Raise and support front of vehicle. Attach a dial indicator onto lower control arm with indicator tip on steering knuckle near ball joint. Place a pry bar between lower control arm and steering knuckle. *NOTE* — Take care not to damage ball joint rubber boot. Push on pry bar and observe movement of dial indicator. If any movement is noted on dial indicator, ball joint must be replaced. See *Honda in SUSPENSION Section*.

JAGUAR

ALL MODELS EXC. XKE SERIES (1963-73)

The upper ball joint must be replaced if signs of wear or play are evident. Lower ball joint is adjustable with shims if axial play exceeds .004-.006" (.101-.152 mm). Shims must not be removed to take up excessive wear in the ball pin and socket. If parts are badly worn, replacement is necessary.

XKE MODELS (1963-73)

Upper and lower ball joints are adjustable by means of shims to set play within limits. Lower ball joint should have .004-.006" (.101-.152 mm) and upper ball joint .004" (.101 mm) axial play. Shims should not be removed to take up excessive wear in the ball pin and socket. If parts are badly worn, replacement is necessary.

JENSEN-HEALEY

ALL MODELS (1973)

Raise front of vehicle and support under each lower control arm. Grasp wheel at top and bottom and try to shake wheel. *NOTE* — Do not confuse axial play of wheel bearing with worn ball joints. If any looseness is observed, ball joints should be replaced. See *Jensen-Healey in SUSPENSION Section*.

LUV

ALL MODELS (1972-73)

When checking ball joints no visible play should exist in joints. With vehicle raised and supported under lower control arms, grasp wheel at top and bottom. Try to shake wheel and if any movement is noted, inspect front suspension for wear or damage.

Ball Joint Checking

MAZDA

R100 & 1200 (1971-72)

Check ball joint at ball joint stud with a spring scale. The revolving torque should be 30 ft. lbs. (4.146 mkg). If not within specifications, replace unit.

RX2 & 616 (1971-72)

Check ball joint for end play and roughness. End play should be a maximum of .02" (.508 mm). Replace ball joint if end play is excessive or roughness is evident.

RX3 & 808 (1971-72)

Check ball joint at ball joint stud with a spring scale. The revolving torque should be 13.2-24.2 ft. lbs. (1.824-3.344 mkg). If less than 13.2 ft. lbs. (1.824 mkg), replace unit.

B1600 (1971-72)

Check ball joint for any wear or roughness and replace if necessary.

ALL MODELS (1973)

Check ball joint rubber boot for cracks and tears and if necessary, replace boot. Check ball joint for wear or looseness by disconnecting each tie rod and attaching a spring tension scale to tie rod hole in spindle arm. Measure amount of force required to rotate each spindle. If this measurement is not within 13-22 ft. lbs. (1.796-3.040 mkg), it will be necessary to replace ball joint. See *Mazda* in *SUSPENSION* Section.

OPEL

ALL MODELS (1966-73)

Raise and support front of vehicle. Inspect ball joint rubber boots for damage and replace as necessary. Using a suitable tool (J-23402 for GT or J23745 for 1900 and Manta) measure height of ball joint. Deviation permitted is up to .080" (2.032 mm).

PEUGEOT

ALL MODELS EXC. 404 (1963-73)

Inspect ball joints for roughness or excessive wear. If present, replace ball joint.

PORSCHE

ALL MODELS (1963-73)

When moving ball pin some friction torque should be felt. If ball pin can be moved without resistance and end play is felt, replace ball joint.

RENAULT

ALL MODELS (1963-73)

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

ROVER

ALL MODELS (1966-71)

Check ball joints for roughness or excessive wear. If present, replace ball joint.

SAAB

ALL MODELS (1963-73)

If ball joints exhibit excessive play, replace as a complete unit. On models using adjustable ball joint, adjust as follows:

1) Detach ball joint from steering knuckle. See *appropriate story* in *SUSPENSION* Section.

2) Remove rubber dust cover from ball joint and release securing flange on tightening cap using an arbor press. Turn cap with suitable tool until ball joint ball joint begins to tighten. Ball joint should move in all directions by hand.

3) Secure tightening cap by bending down flange into grooves on both sides using an arbor press. Lubricate ball joint and install new rubber dust cover. Install ball joint in vehicle.

SUBARU

ALL MODELS (1970-71)

If noticeable play in lower ball joint is found, replace unit. To check upper ball joint, jack up front of vehicle and shake wheel in horizontal and vertical directions. If there is excessive movement in either direction, replace upper ball joint.

ALL MODELS (1972-73)

Check for looseness of ball joint by pushing or pulling ball joint stud. Allowable looseness is less than .012" (.304 mm).

SUNBEAM

ALL MODELS (1963-70)

Inspect ball joints for excessive wear or damage to dust cover. Any axial play indicates replacement is necessary.

TOYOTA

NOTE — Abnormal pressure or considerable time required for lubrication indicates defective lower ball joint.

LITE STOUT (1965-67)

Disconnect steering knuckle and attach nut to upper ball joint stud. Tighten nut and rotate stud with torque wrench. If torque is less than 2 ft. lbs. (.276 mkg), replace upper and lower ball joints as an assembly.

CORONA & MARK II (1966-73)

Jack up lower suspension arm and check tire bottom end movement. If movement in and out exceeds .08" (2.032 mm) on Mark II or .24" (6.096 mm) on Corona, replace lower ball joint. If movement up and down exceeds .04" (1.016 mm) on Mark II or .10" (2.54 mm) on Corona, replace lower ball joint.

NOTE — Ensure other suspension parts are tight to specifications before measuring. Disconnect upper suspension arm from steering knuckle. Turn ball stud and check for looseness in vertical and lateral directions. Replace ball joint if loose.

ALL OTHERS (1965-73)

Check for excessive looseness, proper operation and damaged ball stud. Replace as necessary.

TRIUMPH

ALL MODELS (1963-73)

Check for damaged ball stud and replace as necessary. Ball joint should move freely in joint and if tight at any spot should be adjusted with shims to eliminate tight spot.

VOLKSWAGEN

ALL MODELS (1963-73)

Using suitable tool (VW 281a) in position, move lever to produce play. Using vernier caliper measure amount of play. If not within specifications, remove for inspection, replace as necessary.

Ball Joint Specifications

Application	Lower in. (mm)	Upper in. (mm)
Type 1 (Exc. Super Beetle)	.04 (1.016)	.08 (2.032)
Type 2	.08 (2.032)	.08 (2.032)
Type 3	.08 (2.032)	.10 (2.54)
Super Beetle & 411	.10 (2.54)

VOLVO

ALL MODELS (1963-71)

Inspect ball joints for excessive wear or damaged ball studs. Replace ball joints as necessary.

ALL MODELS (1972-73)

Check upper ball joint for radial clearance by shaking wheel. If play is evident, replace ball joint. Check lower ball joint with vehicle under normal load. Place suitable gauge (2967 or 2968) over ball joint. If length of ball joint is greater than the tool span, ball joint should be replaced.