

PATENT NO. US 7,513,514 B1

**TOYOTA ADJUSTABLE CAMBER/CASTER UPPER ARMS**

Toyota Land Cruiser 200 • Lexus LX570

**This part should only be installed by personnel who have the necessary skill, training and tools to do the job correctly and safely. Incorrect installation can result in personal injury, vehicle damage and / or loss of vehicle control.**

**Plan Ahead - Read All Instructions BEFORE installing part.**

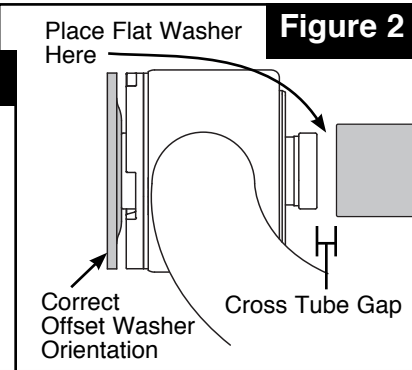
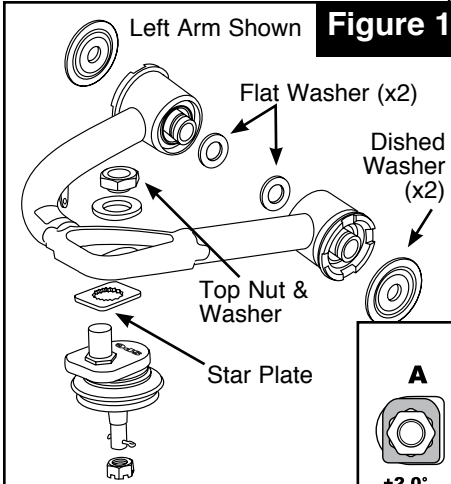
Check for loose or worn parts, proper tire pressure, and odd tire wear patterns before beginning alignment.

1. If your vehicle is equipped with ride height sensors first measure front ride height.
2. Raise vehicle by frame and support with jack stands. Remove front tire and wheel assemblies.
3. Loosen nut on the upper arm-to-frame mounting bolt and remove bolt holding ABS wiring from upper arm. Remove ride height sensor from arm if equipped.
4. Remove cotter pin and nut holding OEM ball joint to knuckle. Break taper between ball joint stud and knuckle and remove ball joint from knuckle. **Support knuckle so no strain is applied to ABS wiring or brake lines.**
5. Remove nut and washer from long arm-to-frame mounting bolt and remove bolt and arm.  
**NOTE: To provide clearance, additional components in the engine compartment may need to be removed.**
6. Install SPC control arm on vehicle. Place one large SPC offset washer on bolt before insertion, and second large SPC offset washer just before the nut. Orient SPC offset washers as shown in (Figure 1 and 2), allowing free space between bushing bumpers and SPC offset washers. Before tightening nut, check for a gap between bushings and shock tower cross tube as shown in (Figure 2). If space is present, insert one provided flat washer between REAR bushing and shock tower cross tube, check gap again. If free space is still present and another flat washer can be inserted, insert additional provided flat washer between FRONT bushing and shock tower cross tube. If additional flat washer cannot be inserted easily, do not insert second flat washer. Torque upper control arm nut to manufacturer's specifications.

- NOTES: 1) The OE offset washers are not re-used.**  
**2) Unlike OE rubber bushings, xAxis™ bushings pivot freely and can be torqued without applying vehicle weight.**
7. Install star plate over hex on ball joint per chart below to achieve desired caster change relative to stock arm. (For most trucks with 2-3" of lift, setting "D" should return caster to manufacturers specifications, but it may be necessary to use different positions on each side to achieve desired cross-caster setting.) Insert ball joint up through bottom of arm, indexing star plate in the machined slot, and then install top washer and nut. Position in middle of slot and tighten nut for initial alignment readings.
  8. Insert ball joint stud into knuckle, install supplied castle nut and torque to 45 ft-lb [61Nm]. Tighten further until supplied cotter can be installed.
  9. Re-attach ABS wiring bracket to SPC arm using supplied bolt. If equipped, re-attach ride height sensor to arm bracket.
  10. Re-install tire and wheel assembly. Lower vehicle.  
**NOTE: On vehicles with ride height sensors it may be necessary to adjust sensor linkage to achieve desired ride height after adjustable arm is installed.**
  11. Take alignment readings. Adjust camber by loosening top nut and sliding ball joint in control arm slot. Adjust caster by loosening top nut and repositioning star plate to rotate ball joint relative to arm. (It will be necessary to raise vehicle to make these adjustments.)
  12. When final caster/camber settings are achieved, torque top ball joint nut to 200 ft-lb [271Nm]. Adjust toe and road test vehicle.

**Always check for proper clearance between suspension components and other components of the vehicle. Camber and caster can be set with the SPC upper control arm, as well as the OEM lower control arm eccentric bolts. In most cases, it is recommended that lower eccentric bolts be set to their neutral position. This way they**

**can be used to fine-tune caster. However, to maximize tire clearance at rear of wheel opening set caster for maximum with the OEM lower cams and fine tune alignment setting with SPC upper control arm.**



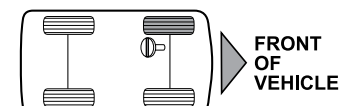
**Check out how to move tire forward in wheel well:**



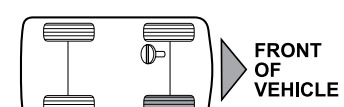
**Maintenance:**  
 This ball joint is fully sealed and features a lifetime grease. No maintenance is required after installation.

**Note: With flat face of ball joint facing the tire (Position D) this arm will give +1° additional caster. Using star plate, caster change can be adjusted from -1.0° to +3.0°.**

LEFT FRONT CASTER CHANGE						
A	B	C	D	E	F	G
+2.0°	+1.75°	+1.0°	0°	-1.0°	-1.75°	-2.0°
<b>+3.0°</b>	<b>+2.75°</b>	<b>+2.0°</b>	<b>+1.0°</b>	<b>0.0°</b>	<b>-.75°</b>	<b>-1.0°</b>
RIGHT FRONT CASTER CHANGE						
A	B	C	D	E	F	G
+2.0°	+1.75°	+1.0°	0°	-1.0°	-1.75°	-2.0°
<b>+3.0°</b>	<b>+2.75°</b>	<b>+2.0°</b>	<b>+1.0°</b>	<b>0.0°</b>	<b>-.75°</b>	<b>-1.0°</b>



**Ball Joint Setting**  
**Total Arm + Ball Joint Caster Change**



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