

STEERING COLUMN - TILT

1993 Toyota Celica

1993 STEERING

Toyota - Steering Columns - Tilt Wheel

Celica

DESCRIPTION & OPERATION

Tilt steering wheels incorporate an upper steering shaft, attached by a "U" joint to an intermediate steering shaft. These shafts are held in place by upper and lower brackets. Brackets are pinned together so upper bracket can move up or down. Upper bracket is locked in place by pawl attached to lever. Steering columns are collapsible.

Celica All-Trac models use an automatic tilt steering column. See STEERING COLUMN - AUTOMATIC TILT WHEEL article in this section for trouble-shooting and diagnosis.

DISABLING & ACTIVATING AIR BAG SYSTEM

WARNING: All models are equipped with a driver-side air bag; use extreme caution while servicing steering column. Air bag system retains enough voltage to deploy air bag for a short time after disconnecting power. Proceeding too quickly may cause accidental deployment and possible personal injury. Always wait at least 90 seconds after disconnecting battery before starting work.

To disable air bag system, ensure ignition switch is in LOCK position and negative battery terminal is disconnected for at least 90 seconds before attempting any repair. DO NOT apply electrical power to any component on steering column without disconnecting air bag control unit. Information labels are attached to air bag components. Follow all notices on labels.

ADJUSTMENTS

SPIRAL CABLE

Make sure front wheels are in a straight-ahead position. Turn spiral cable COUNTERCLOCKWISE by hand until it becomes hard to turn cable. Turn spiral cable CLOCKWISE 2 1/2-3 turns and ensure Red marks align and are visible through inspection hole. See Fig. 1.

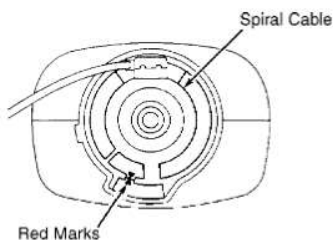


Fig. 1: Adjusting Air Bag Spiral Cable
Courtesy of Toyota Motor Sales, U.S.A., Inc.

REMOVAL & INSTALLATION

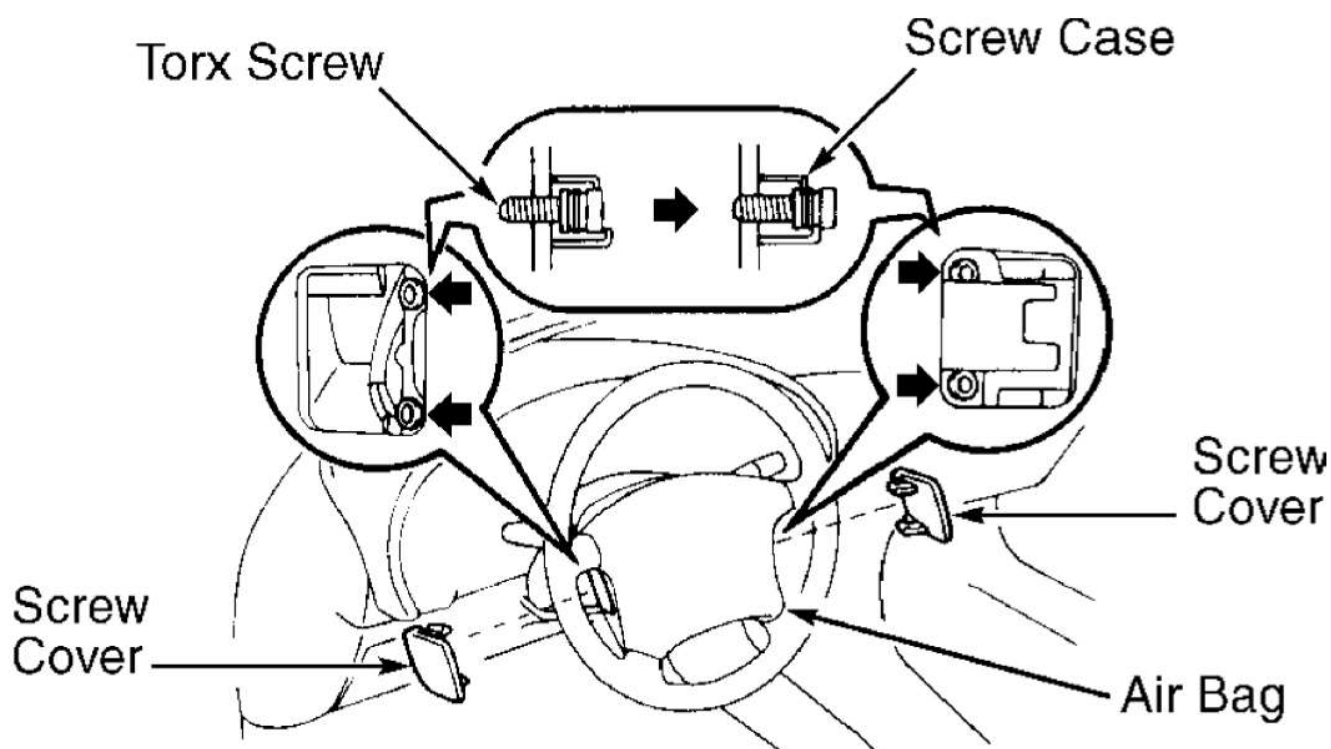
STEERING WHEEL PAD & SPIRAL CABLE

NOTE: See DISABLING & ACTIVATING AIR BAG SYSTEM.

Removal

1) Make sure front wheels are in a straight-ahead position. Turn ignition off. Disconnect negative battery cable.

2) Remove engine hood release lever. Remove screw covers, screws and lower instrument cluster trim panel(s). Loosen steering wheel pad Torx screws until groove along screw circumference catches on screw case. See Fig. 2.



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Fig. 2: Removing Steering Wheel Pad
Courtesy of Toyota Motor Sales, U.S.A., Inc.

3) Pull steering wheel pad from steering wheel and disconnect air bag. Remove steering wheel pad assembly. Place steering wheel pad assembly on a flat surface with pad cover facing upward.

WARNING: Place steering wheel pad assembly on workbench. Pad surface MUST face up. If assembly is stored face down, accidental air bag deployment could propel assembly and cause serious bodily injury.

4) Place a mark on steering wheel and main shaft for installation reference. Using steering wheel puller, remove steering wheel. Remove 4 screws from upper and lower steering column covers. Remove spiral cable-to-combination (headlight/turn signal/wiper) switch screws. Disconnect spiral cable and remove from vehicle.

Installation

1) To install, reverse removal procedure. Before installing

spiral cable, ensure spiral cable is properly aligned. See SPIRAL CABLE under ADJUSTMENTS.

2) After steering wheel pad and spiral cable are installed, ensure proper operation of air bag system by turning ignition switch to ACC or ON position. AIR BAG warning light should come on and go out after about 6 seconds.

3) If AIR BAG warning light stays on for more than 6 seconds, air bag system is malfunctioning and needs repair. If AIR BAG warning light comes on with ignition off, a short circuit may be present in AIR BAG warning light circuit.

COMBINATION SWITCH

Removal & Installation

1) Remove steering wheel. See STEERING WHEEL PAD & SPIRAL CABLE or STEERING WHEEL & HORN PAD under REMOVAL & INSTALLATION. Remove instrument panel lower finish panel. Remove upper and lower steering column covers. Locate and disconnect combination switch electrical connector(s).

2) On models equipped with cruise control switches on steering wheel, disconnect cruise control electrical connector(s) from slip ring. Remove slip ring from combination switch.

3) On all models, remove wire ties securing combination switch wiring harness to column. Remove screws securing combination switch to steering column. Remove combination switch. To install, reverse removal procedure.

IGNITION SWITCH

Removal

1) Remove steering wheel and combination switch (if necessary). See STEERING WHEEL PAD & SPIRAL CABLE and/or COMBINATION SWITCH under REMOVAL & INSTALLATION. Disconnect ignition switch harness connectors. If shear bolt studs are accessible, use a hacksaw to cut a slot into exposed studs.

2) Remove studs using a screwdriver. If shear bolt studs are recessed or hard to reach with a hacksaw, use a center punch on studs. Using drill bit and screw extractor, remove studs. Place key in ACC position and remove steering lock and ignition switch.

Installation

To install, reverse removal procedure. Install new shear bolts. Tighten shear bolts finger tight. Ensure proper operation of steering lock and ignition switch. Tighten shear bolts until heads break off. Install combination switch, upper and lower steering column covers and steering wheel (if removed).

STEERING COLUMN

Removal & Installation

1) Disconnect negative battery cable. Wait for at least 90 seconds before starting work to prevent air bag deployment. Remove steering wheel pad. Mark steering shaft and wheel for installation reference. Remove steering wheel.

2) Remove instrument cluster lower trim panel. Remove air duct from under steering column (if equipped). Remove steering column upper and lower covers. Remove combination (headlight/turn signal/wiper) switch.

3) Mark "U" joint and shaft for installation reference. Remove bolt(s) and disconnect "U" joint from bottom of steering column shaft. Remove steering column bolts and steering column. To install, reverse removal procedure.

OVERHAUL

STEERING COLUMN

NOTE: See DISABLING & ACTIVATING AIR BAG SYSTEM.

Disassembly

- 1) Drill out shear bolt studs. Using a screw extractor, remove column bracket bolts. Remove upper (key cylinder) bracket. See Figs. 4 and 5. Remove compression spring bolt. Remove compression spring.
- 2) Remove bushings from compression spring. Remove 3 tension springs. On all models except Celica All-Trac, remove 2 tilt lever "E" rings from tilt lever lock shaft. Remove tilt lever spacer. Remove 2 nuts from tilt steering bolts. Remove 2 tilt lever retainers and 2 pawl stoppers.
- 3) Remove tilt pawl nut and washers. Pull out tilt pawl bolt. Remove tilt lever assembly installation bolt. Remove 2 tilt pawls. Remove tilt lever, tilt sub lever and tilt lever assembly from tilt lever lock shaft.
- 4) On Celica All-Trac, remove tilt steering gear with motor. Remove E-ring and collar. Remove nut and 2 washers and remove tilt memory lever, torsion spring and spacer. Remove 3 nuts and 2 washers, and remove spacer, torsion spring, 2 memory plates and 2 collars. Remove 4 nuts and 3 washers and remove tilt release lever and lever retainer.
- 5) Remove E-rings, bolt, 2 tilt lever retainers and tilt steering stopper. Remove tilt lever and tilt sub lever from retainer. Remove spacer and pawl stoppers. Remove tilt lever bracket and tilt pawls. Remove tilt lever, tilt sub lever and release lever. Pull out tilt lever lock shaft.
- 6) On all models, install nut (10 mm x 1.25 mm), washer (36-mm outside diameter), and bolt (10 mm x 1.25 mm x 50 mm) to upper column tube tilt steering bolt. Using a slide hammer, remove steering column tube tilt bolts. Remove upper column tube from lower column tube. See Fig. 3. Remove collar from main shaft.
- 7) Using a press, compress spring on main shaft. Remove snap ring. Remove main shaft from column tube. Remove spring, thrust collar and bearing. On Celica All-Trac, remove nut and collar and using a hex wrench, remove tilt memory bolt and square nut.

Inspection

Ensure lock mechanism operates properly. Check upper bracket for damage and upper bearing for rotating smoothness. Check steering shafts for bending, damaged splines, or damaged "U" joints. Check column tube for bending or other damage. Repair or replace components as necessary.

Reassembly

- 1) Reassemble in reverse order of disassembly procedure. Apply molybdenum disulfide lithium base grease to tilt lever assembly, lock bolt, main shaft, and steering bolt pivot points. Install steering column tube tilt bolts.
- 2) If upper column tube mark is "1", install hollow tipped thread bolt. If upper column tube mark is "2", install plain thread bolt. With tilt pawl and ratchet engaged, install 2 pawl stoppers. Ensure alignment marks on tilt pawl and stopper align when stopper is rotated to pawl side. If alignment marks do not align, select a different size pawl stopper. See TILT PAWL STOPPER SIZE table.

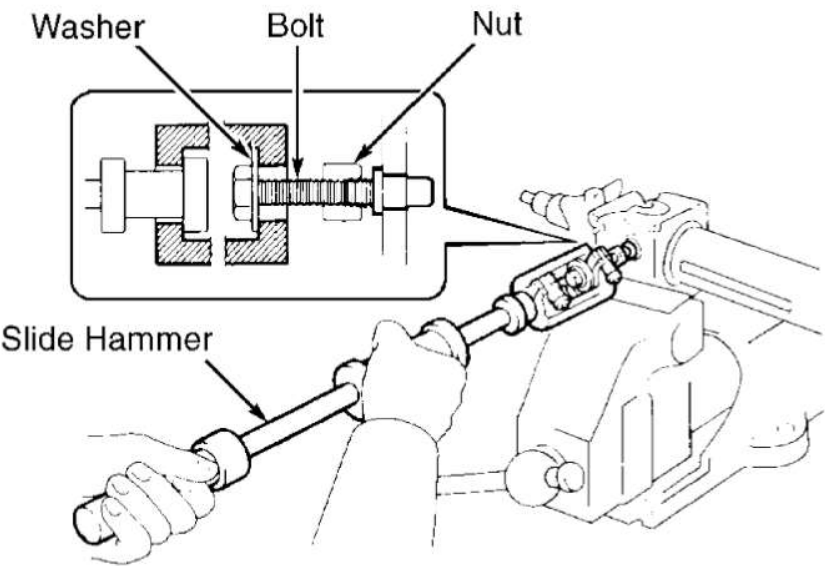
TILT PAWL STOPPER SIZE TABLE

Mark		Mark		
Tilt Lever Side		Tilt Sub Lever Side		In. (mm)
Celica FWD & 4WD				
1	.....	A	.....	.4992-.5016 (12.68-12.74)
2	.....	B	.....	.4965-.4988 (12.61-12.67)
3	.....	C	.....	.4937-.4961 (12.54-12.60)
4	.....	D	.....	.4909-.4933 (12.47-12.53)
5	.....	E	.....	.4882-.4906 (12.40-12.46)
6	.....	F	.....	.4854-.4878 (12.33-12.39)
7	.....	G	.....	.4827-.4850 (12.26-12.32)

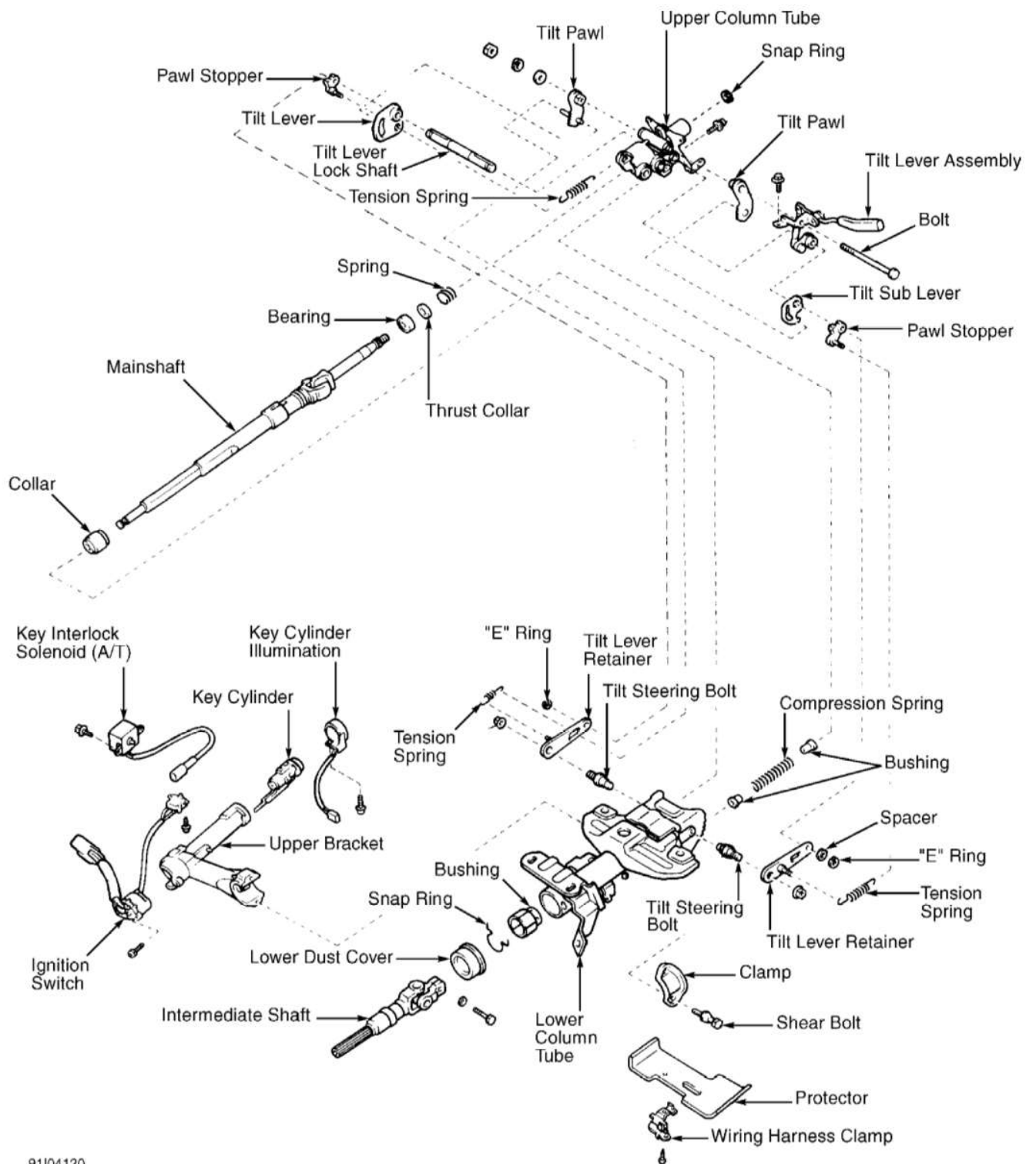
3) On Celica All-Trac, after installing the tilt memory lever, place the steering column in tilt-away position. Push the upper column tube downward and install a collar between the tilt memory bolt and lever retainer. Select a collar with an outer diameter 1 rank below the collar that fits most tightly. See TILT LEVER RETAINER COLLAR SIZE table. When installing steering gear and motor, tilt release lever pin goes into long hole of steering gear lever.

TILT LEVER RETAINER COLLAR SIZE TABLE (CELICA ALL-TRAC)

Color		Outside Diameter In. (mm)
Blue	.....	.5020-.5059 (12.75-12.85)
Yellow	.....	.4941-.4980 (12.55-12.65)
Pink	.....	.4862-.4902 (12.35-12.45)
None	.....	.4783-.4823 (12.15-12.25)
Black		.4705-.4744 (11.95-12.05)
Red		.4610-.4665 (11.75-11.85)
Green		.4547-.4587 (11.55-11.65)
Red		.4429-.4468 (11.25-11.35)



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Fig. 3: Removing Upper Column Tube Tilt Steering Bolts
Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 4: Exploded View Of Steering Column (FWD)
Courtesy of Toyota Motor Sales, U.S.A., Inc.



Fig. 5: Exploded View Of Steering Column (All-Trac W/Auto Tilt)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Tilt Lever Retainer Nut	11 (15)
Steering Wheel Nut	26 (35)
Tilt Sub Lever Retainer Nut	11 (15)
"U" Joint Clamp Bolt	26 (35)
	INCH Lbs. (N.m)
Compression Spring Bolt	69 (8)
Steering Wheel Pad Bolts	65 (7.5)
Tilt Lever Nut	52 (6)
Tilt Lever Bracket Bolt (All-Trac)	26 (2.9)
Tilt Memory Bolt (All-Trac)	56 (6.4)