FORD MODULAR STEERING COLUMN

All Models

DESCRIPTION

Ford modular steering columns are availabe in both fixed and tilt configurations. The steering column can be supplied with or without a column shifter (for automatic transmissions). The modular design of these columns allows many of the same parts and procedures to be used on both standard and tilt columns. The only differences in the 2 types of columns exists in the parts between the steering lock and the steering wheel. The steering lock on tilt columns is cast with an integral pivot yoke.

This yoke supports the tilt housing and related components. Standard column steering locks are cast without the yoke and are machined to hold the column upper bearing with a retaining ring and plate. All columns are designed with impact absorbing features to allow the steering shaft and housing to collapse and deform in the event of a head-on collision.

ADJUSTMENT

SHIFT CANE SPACER CLIP GAP

1) Place selector lever in "Park" position with lever fully engaged against "Park" detent. Rotate lock cylinder to "Lock" position and remove key. Disconnect negative battery cable.

2) Remove instrument panel and steering column trim shrouds. Apply 3-5 lb. load to shift lever in downward direction, forcing lever against "Park" detent stop. Measure clearance between shift cane stop and lock actuator with feeler gauge.

3) If clearance is less than .016", spacer clip is okay. Reinstall trim shrouds and reconnect battery cable. If clearance is more than .016", or if there is no clearance, replace spacer clip as follows:

4) Wedge small screwdriver between spacer clip and shift tube and pry down on clip to remove. Use a new spacer clip which is the next smaller size down than the total feeler gauge thickness.

5) Place ignition in run position. Install spacer clip onto shift tube over shift tube stop. Clip must be positioned so tab is located between stop and actuator.

6) Rotate ignition to "Lock" position, then run position, and back to "Lock" position. No binding should exist of the switch and cylinder system.

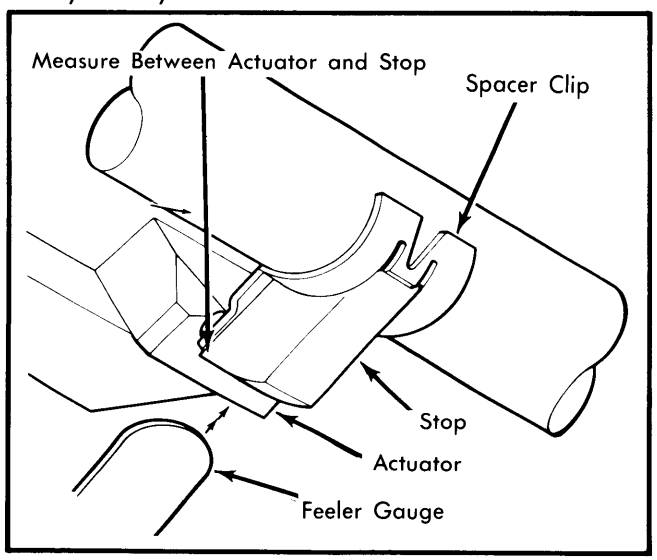

Fig. 1 Checking Spacer Clip Gap

7) If binding occurs, check for actuator boss hitting spacer. If binding persists, remove spacer clip and check for proper sizing. Replace if necessary.

8) Reinstall instrument panel and column trim shrouds. Reconnect battery cable.

REMOVAL & INSTALLATION

STEERING COLUMN

Removal – 1) Disconnect negative battery cable. On Ford, Mercury, Lincoln and Mark VI models, remove column steering shaft-to lower steering shaft assembly bolt. Disengage "U" joint stub shaft from column shaft by collapsing intermediate shaft assembly.

2) On all other models, remove 2 nuts attaching flexible coupling to flange on steering input shaft. Disengage safety strap and bolt assembly from flexible coupling.

3) On automatic transmission models, disconnect transmission shift rod at selector lever. Using tool (T67P-7341-A), remove and replace shift linkage grommet. Remove steering wheel.

4) On all models, remove column trim shrouds, steering column cover and hood release mechanism, if equipped. Disconnect all electrical connections to column switches. Remove screws attaching dust boot to dash panel.

5) Loosen nuts attaching column to brake pedal support. On automatic transmission models, lower column and reach behind column and instrument panel and lift shift indicator cable off cleat on indicator lever. Remove indicator cable clamp from column tube.

6) On all models, remove 4 nuts holding column to brake pedal support and lower column to clear mounting bolts. Pull column out so "U" joint assembly passes through clearance hole in dash panel.

Installation – 1) Insert column through opening in dash panel. Align bolt holes in brake pedal support and mounting bracket and install bolts. Install nuts loosely on automatic transmission models. Tighten nuts on all others.

2) On automatic transmission models, loosely install shift indicator cable clamp to column outer tube. Reach behind column and attach indicator cable to shift lever by slipping cable loop over lever cleat. Tighten nuts attaching column to brake pedal support.

3) Move shift lever into "D" position against drive stop on insert plate. Rotate indicator bracket, located midway on column tube, clockwise or counterclockwise until pointer aligns with "D" mark. Tighten nut on bracket.

4) Connect electrical connections to column switches. On Ford, Mercury, Lincoln and Mark VI models, slide lower steering shaft assembly into column shaft and tighten nut. Pry lower shaft fore or aft to achieve an 1/8" coupling insulator flatness. Stone shield must be removed for access to coupling insulator.

5) On all other models, engage safety strap and bolt assembly to flange on input shaft. Install nut attaching column lower shaft and "U" joint assembly to flange on input shaft and tighten. Position safety strap so no metal-to-metal contact exists after tightening nut. Pry steering shaft up or down to achieve an 1/8" coupling insulator flatness.

6) On automatic transmission models, connect shift rod to shift lever on lower end of column. Raise vehicle and loosen adjust-

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ment nut on transmission shift rod. Rotate transmission lever toward front of vehicle until it stops, then move back 2 detents. Shift pointer should be in "D" position. Suspend weight on shift lever to assure lever is firmly against Drive detent. Tighten adjustment nut on shift rod. Lower vehicle.

7) On all models, engage dust boot to dash panel opening and tighten screws. Attach trim shrouds. Install hood release mechanism and lower column cover. Install steering wheel. Connect negative battery cable and check steering column operation.

DISASSEMBLY & REASSEMBLY

CAUTION – *Components and fasteners used in steering column design are important in that they can affect vehicle safety and the performance of vital systems if not serviced properly. All replacement parts must be of same part number or equivalent quality. DO NOT use a part of lesser quality or substitute design. Torque all fasteners as specified during reassembly.*

UPPER SHAFT BEARING

Disassembly (Standard Column) – 1) Remove steering wheel. Remove upper and lower trim shrouds. Remove upper bearing retainer plate. From under the hood, remove bolts holding flexible coupling to steering gear.

2) Remove snap ring securing upper bearing to steering shaft. Pull on upper end of steering shaft. Insert 2 screwdrivers into slots in bearing bore and pry bearing out of housing. Gently pry bearing off of steering shaft.

Reassembly – 1) Using a punch, rough up the area on steering shaft where upper bearing is to be installed. Press bearing and insulator onto shaft only as far as hand pressure will allow.

NOTE – *DO NOT pound or hammer on bearing as this will collapse steering shaft.*

2) Install section of 3/4" I.D. pipe, short enough to allow steering wheel nut to be threaded onto steering shaft, over steering shaft. Tighten steering wheel nut onto shaft until pipe seats bearing in housing. Remove nut and pipe.

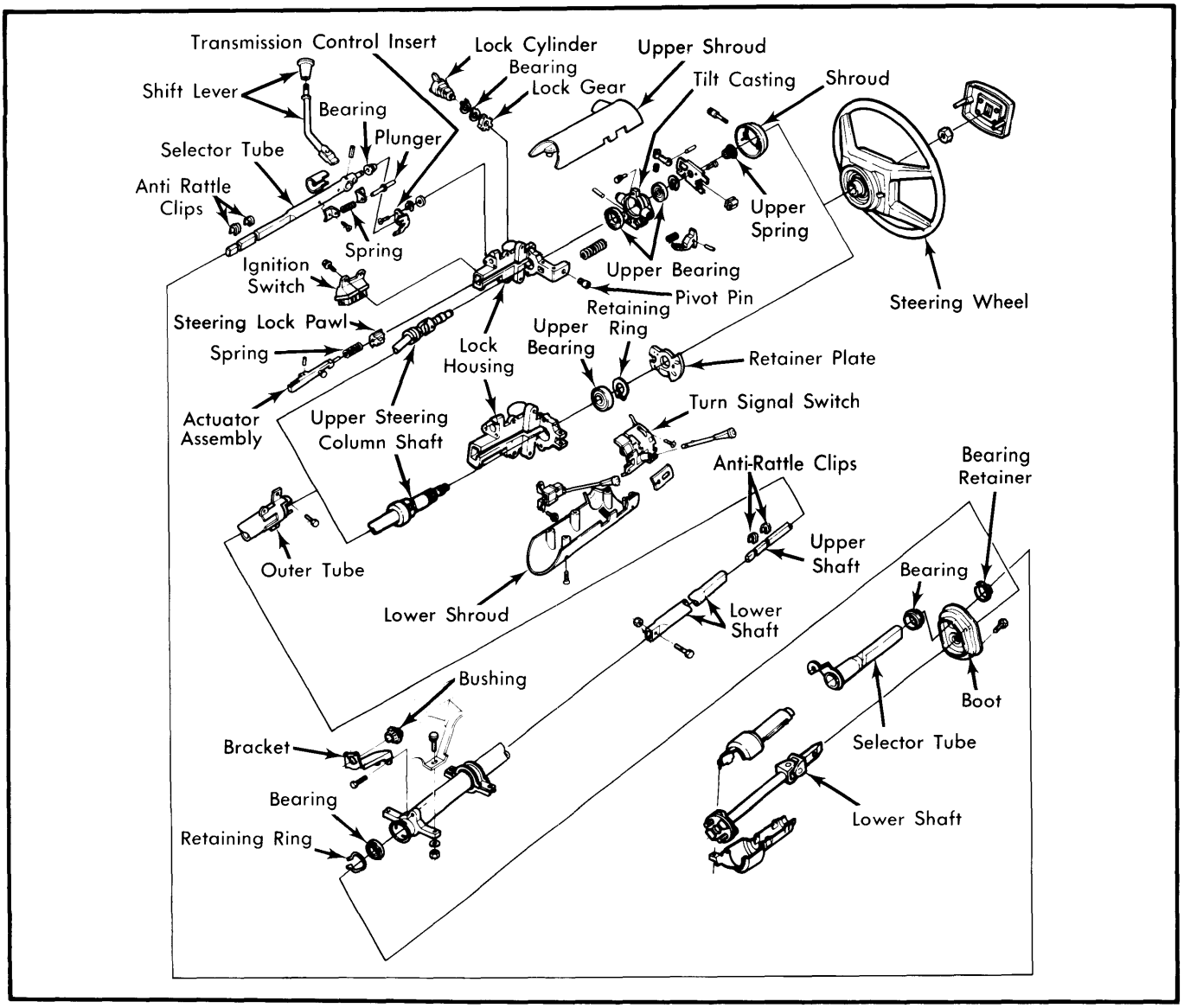

Fig. 2 Exploded View of Ford Motor Co. Modular Steering Column

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3) Reverse remainder of disassembly procedure to complete assembly.

Disassembly (Tilt Column) – 1) Remove steering wheel. Remove upper extension shroud from tilt housing. Remove conical coil spring and upper bearing plate. Remove "C" clip from end of shaft.

2) Move tilt casting to upper position. Using tool (T67P-3D739-B), remove pivot pins. Lift off tilt casting, which contains 2 bearings, tilt release lever and lock lever, from column. Remove tilt spring.

3) From bottom side, use drift punch to remove upper bearing. Working from top in 2 casting relief areas, remove large lower bearing with drift punch.

Reassembly – 1) Install bearings into tilt casting using care not to press on inner race. Install tilt spring between upper and lower tilt castings, and latch tilt release lever in upper position.

2) Align 2 castings and insert new pivot pins using "C" clamp. Pins must be flush with casting surface. Assemble upper bearing snap ring, retainer plate and conical coil spring, so spring snaps into upper groove in steering shaft.

3) Install shroud and tighten screws. Install upper extension shroud by snapping legs into plastic clip. Install steering wheel and check column operation.

FLEXIBLE COUPLING

Disassembly – Remove lower steering shaft assembly. Drill out 2 rivets attaching flange, insulator assembly and reinforcement to "U" joint and shaft assembly. Separate insulator assembly and reinforcement from "U" joint and shaft assembly.

Reassembly – Attach insulator assembly and reinforcement to "U" joint and shaft assembly with 2 service nuts and bolts. Install lower steering shaft assembly.

STEERING COLUMN SHIFT CANE ASSEMBLY

Disassembly – 1) Disconnect negative battery cable and remove steering column. Remove 2 bolts attaching shift cane support bracket-to-steering column collar.

2) Remove "C" clip retainer at upper end of shift cane assembly. Pull assembly down, and out of bearing and washer located in lock cylinder housing and detent plate. Inspect bearing and replace if damaged or worn.

3) Pull plastic trim cover from upper shaft and allow it to hang on selector lever. Remove roll pin connecting selector lever to shift cane upper shaft. Remove selector lever spring and plunger assembly. Replace if worn or damaged.

4) Remove selector lever. Slide shift cane lower support bracket off lower shaft. Replace bushing if worn or damaged. Remove metal spacer clip from shift cane stop.

5) Measure and record the entire length of shift cane. Mark one side of both upper and lower shafts so they can be reassembled in proper position. Separate shafts.

Reassembly – 1) Install lower shift cane support bracket with bushing on lower shaft. Install 2 new anti-rattle clips in grooves on upper shift cane shaft, with both clips installed in same direction. Lubricate lower 6" of shaft with chassis lubricant.

2) Place lower shaft in vise and install upper shaft on lower shaft. Ensure length is same as that recorded during disassembly, and that marks line up on same side.

3) Install selector lever opening cover loosely on shift lever. Insert selector lever through slot in upper shaft and install new roll pin. Install selector lever opening cover on upper shaft.

4) Insert upper end of shift cane into bearing and washer in lock cylinder housing. Install "C" clip retainer. Make sure selector lever mates correctly with detent plate on lock cylinder housing.

5) Align lower support bracket with bolt holes on steering column collar and tighten nuts. Check shift cane for smooth rotational action. Lubricate selector lever, plunger, spring and detent plate with chassis lubricant.

6) Install steering column assembly. Check shift cane spacer clip gap and replace clip if required.

IGNITION SWITCH LOCK CYLINDER

Removal – Remove all column trim shrouds. Remove electrical connector from key warning switch. Place gearshift in "P", and place ignition in "RUN" position. Insert a 1/8" wire pin into hole in casting surrounding lock cylinder. Remove lock cylinder.

Installation – To install, reverse removal procedure and note the following: Ensure lock cylinder is fully seated and aligned with interlocking washer before turning ignition off. Rotate cylinder to all positions and check for proper operation. Check for proper start in "N" and "P" position.

IGNITION SWITCH LOCK DRIVE GEAR

Disassembly – Remove lock cylinder assembly. Remove snap ring and washer on silver colored housings or bearing and retainer on gold colored housings. Remove lock drive gear, noting position for reassembly.

Reassembly – Replace lock gear in housing by aligning last tooth of lock gear with last tooth of rack. Reinstall washer and retaining ring or bearing and retainer in housing. Line up flats of gear with other components by pulling down on column lock actuator. Reinstall lock cylinder and check for proper operation of ignition switch.

STEERING SHAFT & HOUSING

Disassembly – 1) With steering column removed from vehicle, remove upper shaft bearing as previously described. On tilt columns, do not remove bearings from tilt casting unless replacement is necessary.

2) On all columns, remove turn signal switch and wiper switch. Remove shift cane assembly. Remove bolt attaching "U" joint shaft to steering shaft.

3) On standard columns, remove 2 bolts attaching lock housing to column tube. Rotate lock cylinder to "START" position. Pull actuator interlock out of hole in tube and lift lock housing off of column.

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4) On all columns, pull steering shaft out of top of column. Scribe reference marks on shaft at joint where 2 halves meet and on 1 side of both halves. Separate upper and lower shaft halves. Remove and discard anti-rattle clips. Remove steering shaft lower bearing retaining ring and bearing.

5) On tilt columns, remove lock housing as previously described for standard columns.

Reassembly – 1) Place upper half of steering shaft in a vise. Install both new anti-rattle clips facing in same direction. Lubricate lower 6" of upper shaft half with chassis grease. Press lower half onto upper half until reference mark at joint lines up. Check to make sure that mark on side of shaft halves lines up so that shaft is not 180° out of alignment.

2) Reverse remainder of disassembly procedure to complete assembly.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N·m)
Steering Wheel Nut	30-40 (41-54)
Column-to-Brake Pedal Support	20-37 (27-50)
Lock Housing-to-Column	12-21 (16-29)
Lower Support-to-Column Collar Bolt	14-22 (19-30)
Coupling Flange-to-Steering Gear	20-30 (27-41)
Lower Column Shaft-to-Flange	20-37 (27-50)
Lower Column Shaft-to-Intermediate Shaft	35-45 (48-61)