

ALL MODELS

GENERAL INFORMATION

All steering component fasteners are made of special quality materials. Replacement fasteners must be of same part number or equivalent. Do not weld, heat or bend steering linkage to repair or straighten. Torque all fasteners to specification and install new cotter pins. When installing cotter pins, do not back off castellated nuts to align cotter pin hole, tighten nut to lower specified torque; then tighten nut to next slot that lines up with stud hole. Do not hammer on ball studs or damage to threads may result. Threads should be clean and lightly lubricated with oil before being tightened.

REMOVAL & INSTALLATION

TIE RODS

Removal — Raise vehicle and remove cotter pins and nuts from ball studs. Use a suitable puller to separate ball studs from steering knuckle and center cross link. To remove tie rod ends from adjuster sleeve, remove clamp bolts and unscrew end assemblies.

NOTE — If sleeve adjuster clamp bolts are rusted, it is recommended that if torque required to remove nut from bolt after breakaway exceeds 7 ft. lbs., discard nuts and bolts.

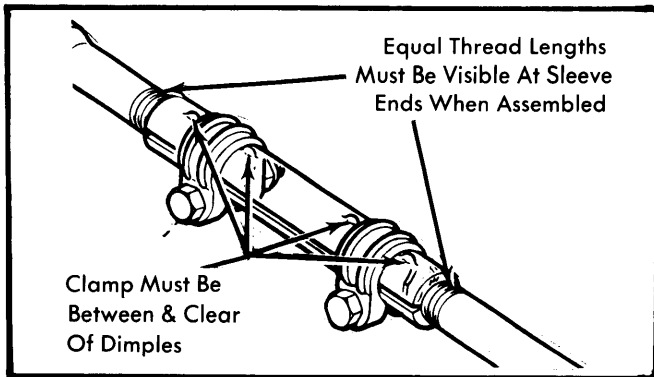


Fig. 1 Tie Rod Clamps Between Dimples (General Motors Shown).

Installation — If tie rod ends were removed, apply penetrating oil to clamps, tie rod threads and sleeve. Wipe threads clean and lubricate with EP chassis lube. Place sleeve clamps in position and thread tie rod ends an equal distance into sleeve. Install tie rod assembly, castellated nuts and new

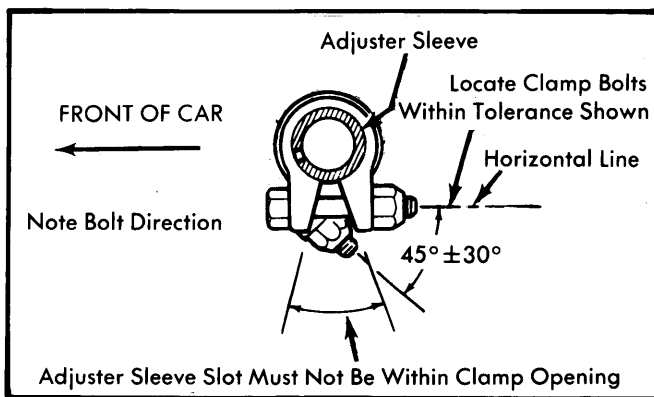


Fig. 2 Tie Rod Clamp Positioning (Monza, Skyhawk, Starfire)

cotter pins. Rotate tie rod ends rearward to limit of ball stud travel, then position sleeve clamps and tighten bolts. Lower vehicle and adjust toe-in. See *Wheel Alignment Specifications & Procedures* in WHEEL ALIGNMENT Section.

CENTER LINK

Removal — Raise vehicle and disconnect inner tie rod ends using a suitable puller. Disconnect center link ball studs from pitman arm and idler arm using suitable puller and remove center link.

Installation — Connect center link to idler arm, making certain idler stud seal is in place, then tighten nut. Install end of rod in pitman arm, and tighten nut. Install tie rod ends, tighten nuts and install new cotter pins. Lower vehicle and adjust toe-in. See *Wheel Alignment Specifications & Procedures* in WHEEL ALIGNMENT Section.

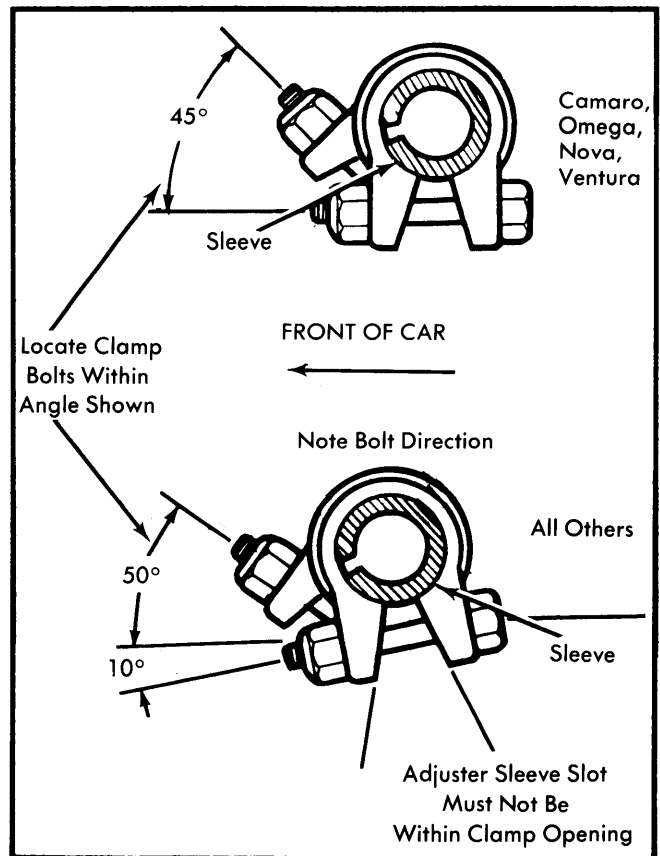


Fig. 3 Tie Rod Clamp Positioning (Buick, Pontiac, Chevrolet)

IDLER ARM

Removal — 1) Raise vehicle and disconnect center link from idler arm. Remove two bolts attaching idler arm support to frame (note bolt direction).

NOTE — If idler arm support is disconnected from frame for other work, wire support to idler arm to prevent rotation if equipped with a threaded bushing (G.M. Saginaw linkage types).

2) Maximum allowable lash or vertical deflection of relay rod end of idler lever is $\frac{1}{8}$ " when a 25 lb. load is applied at that point. Replace assembly if deflection is more than $\frac{1}{8}$ ".

ALL MODELS (Cont.)

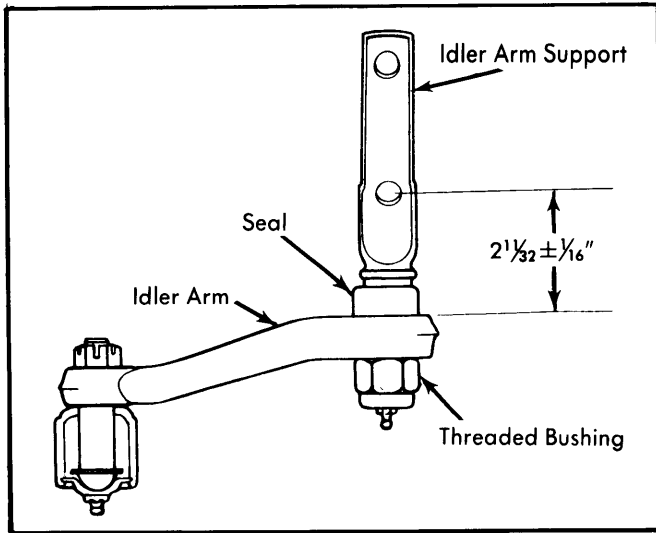


Fig. 4 Idler Arm Location
(General Motors with Threaded Bushing)

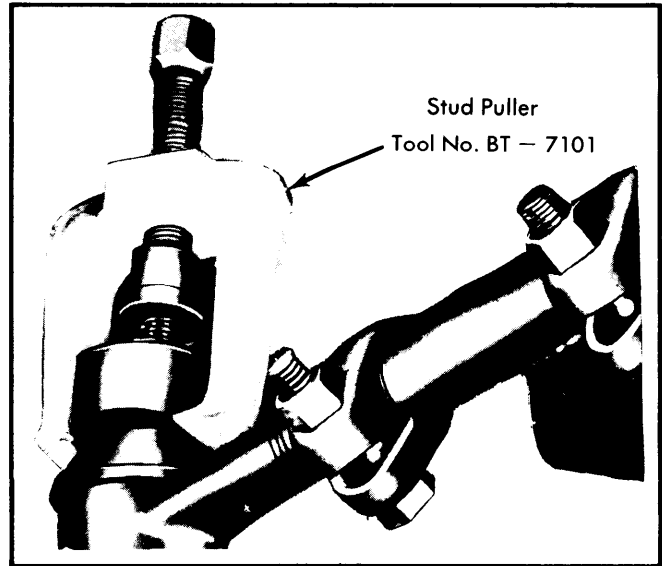


Fig. 6 Steering Linkage Ball Stud Removal

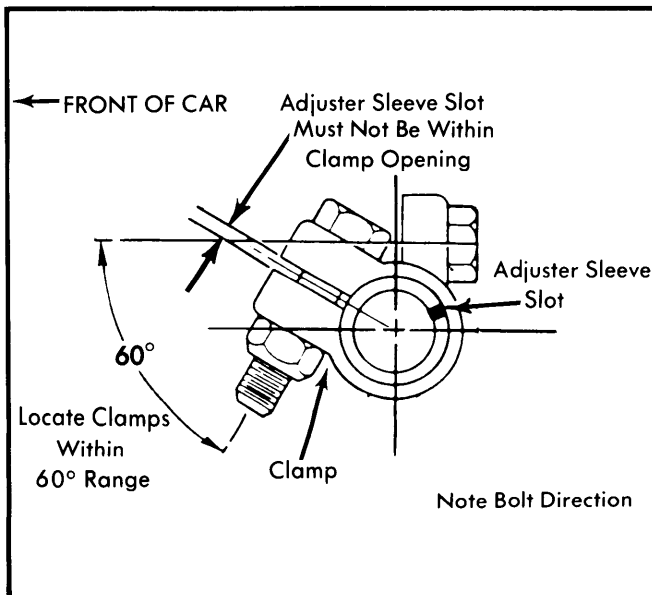


Fig. 5 Tie Rod Clamp Positioning
Eldorado, Riviera, Toronado

Installation — To install idler arm, reverse removal procedure and note the following: With General Motors Saginaw Linkage with threaded bushing idler arm, an adjustment is required for proper location of idler arm on its support. Idler arm ball socket will be level with pitman arm ball socket. The support must be threaded into idler arm bushing until distance from center of bolt hole to top of idler arm boss is as shown in Fig. 4. When idler arm is installed on support, it must be free to rotate a minimum of 90° in both directions from straight ahead.

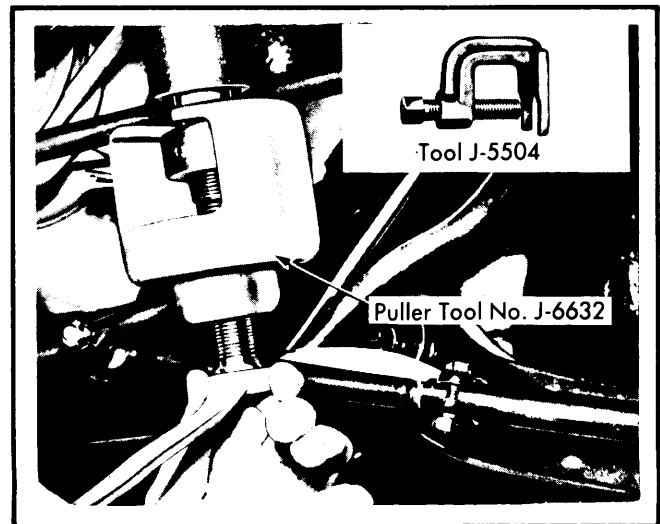


Fig. 7 Steering Gear Pitman Arm Removal

PITMAN ARM

Removal — Raise vehicle and mark position of pitman arm to steering shaft relationship. Remove cross link ball stud cotter pin and nut. Using suitable puller, disconnect cross link from pitman arm. With Eldorado, Riviera and Toronado front wheel drive models, it is necessary to disconnect and/or remove steering gear from its mounting before removing pitman arm. Remove pitman arm retaining nut and lock washer. Install suitable puller and remove pitman arm.

NOTE — DO NOT hammer on end of puller as damage to steering gear components may result.

Installation — To install pitman arm, reverse removal procedure and tighten nuts as required.

Steering Linkage

ALL MODELS (Cont.)

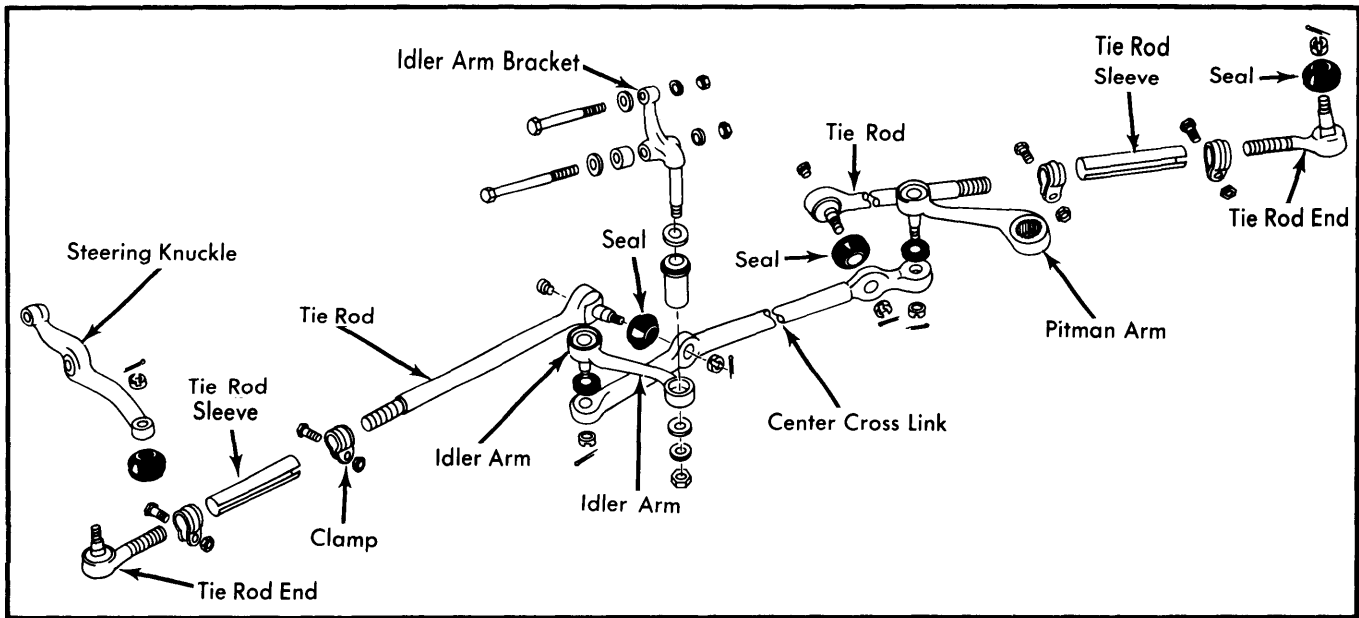


Fig. 8 Exploded View of Steering Linkage

TIGHTENING SPECIFICATIONS

Application

Ft. Lbs.

AMERICAN MOTORS

| | |
|------------------------------------|-----|
| Pitman Arm-to-Steering Gear | 115 |
| Idler Arm-to-Support | 50 |
| Pitman Arm-to-Cross Link | 40 |
| Idler Arm-to-Cross Link | 40 |
| Tie Rod-to-Steering Knuckle | |
| Pacer | 50 |
| All Others | 35 |
| Tie Rod-to-Cross Link | 40 |
| Tie Rod Clamps | |
| Pacer | 20 |
| All Others | 14 |

CHRYSLER CORP.

| | |
|-----------------------------------|-------|
| Pitman Arm-to-Steering Gear | 175 |
| Idler Arm-to-Support | 65-70 |
| Pitman Arm-to-Cross Link | 40 |
| Idler Arm-to-Cross Link | 40 |
| Tie Rod-to-Steering Knuckle | 40 |
| Tie Rod-to-Cross Link | 40 |
| Tie Rod Clamps | 13 |

FORD MOTOR CO.

| | |
|------------------------------------|-----------|
| Pitman Arm-to-Steering Gear | |
| Granada, Monarch, Versailles | ③ 200-225 |
| Others | 236-250 |
| Idler Arm-to-Support | |
| Granada, Monarch, Versailles | 60-65 |
| Others | 45-50 |
| Pitman Arm-to-Cross Link | ③ 43-47 |
| Idler Arm-to-Cross Link | |
| Granada, Monarch, Versailles | ③ 77-85 |
| Others | ③ 53-70 |

Application

Ft. Lbs.

FORD MOTOR CO. (Cont.)

| | |
|-----------------------------------|---------|
| Tie Rod-to-Steering Knuckle | ③ 43-47 |
| Tie Rod-to-Cross Link | ③ 43-47 |
| Tie Rod Clamps | 20-22 |

GENERAL MOTORS

Pitman Arm-to-Steering Gear

| | |
|--------------------------------|-------|
| Buick | |
| Skyhawk (Manual) | ① 140 |
| All Others | ① 185 |
| Cadillac | |
| All | ② 180 |
| Chevrolet | |
| Monza | ① 168 |
| All Others | ① 185 |
| Oldsmobile | |
| Omega, Starfire (Manual) | ② 180 |
| All Others | ② 180 |
| Pontiac | |
| Sunbird | 184 |
| All Others | 140 |

Idler Arm-to-Support

| | |
|---------------------------------|------|
| Buick | |
| Electra, LeSabre, Century | ② 61 |
| Skylark | ② 50 |
| Skyhawk | ② 30 |

- ① — Align castellated nut with hole without loosening nut. Do not exceed 50 ft. lbs.
- ② — Do not loosen nut to install cotter pin, turn to next hole.
- ③ — Torque to low limit, then tighten nut to nearest cotter pin hole.

ALL MODELS (Cont.)

TIGHTENING SPECIFICATIONS (Cont.)

| Application | Ft. Lbs. | Application | Ft. Lbs. |
|---------------------------------|----------|---|----------|
| GENERAL MOTORS (Cont.) | | GENERAL MOTORS (Cont.) | |
| Cadillac | | Oldsmobile | |
| Eldorado | ②60 | Toronado | ②70 |
| Seville | ②40 | All Others | ②50 |
| All Others | ②50 | Pontiac | |
| Chevrolet | | All | ③35 |
| Corvette, Monza | 30 | Tie Rod-to-Cross Link | |
| All Others | 50 | Buick | |
| Oldsmobile | | All | ②40 |
| Starfire | ②30 | Cadillac | |
| Cutlass, Omega, Delta 88 | | All | ②35 |
| Ninety-eight | ②50 | Chevrolet | |
| Toronado | ②80 | All | ①40 |
| Pontiac | | Oldsmobile | |
| LeMans, Firebird, Phoenix | 50 | Toronado | ②40 |
| Sunbird | 30 | All Others | ②40 |
| Bonneville | 61 | Pontiac | |
| Pitman Arm-to-Cross Link | | Sunbird, LeMans, Grand Prix | ③40 |
| Buick | | All Others | ③60 |
| All | 45 | Tie Rod Clamps | |
| Cadillac | | Buick | |
| Eldorado | ②60 | Skyhawk | 11 |
| All Others | ②45 | All Others | 14 |
| Chevrolet | | Cadillac | |
| Monza | ①35 | Eldorado | 22 |
| All Others | ①45 | All Others | 14 |
| Oldsmobile | | Chevrolet | |
| All (Exc. Toronado) | 60 | Corvette | 11 |
| Toronado | 80 | All Others | 14 |
| Pontiac | | Oldsmobile | 14 |
| All | ③45 | Pontiac | |
| Idler Arm-to-Cross Link | | Sunbird | 11 |
| Buick | | All Others | 14 |
| All | ②35 | | |
| Cadillac | | ① — Align castellated nut with hole without loosening nut. Do not exceed 50 ft. lbs. | |
| Eldorado | ②60 | ② — Do not loosen nut to install cotter pin, turn to next hole. | |
| Seville | ②40 | ③ — Maximum of 1/6 turn to align cotter pin hole. Do not back off nut to insert cotter pin. | |
| All Others | ②35 | | |
| Chevrolet | | | |
| All | ①35 | | |