STEERING LINKAGE

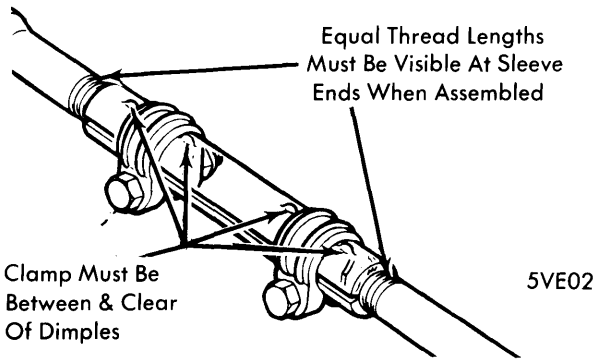
GENERAL INFORMATION

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

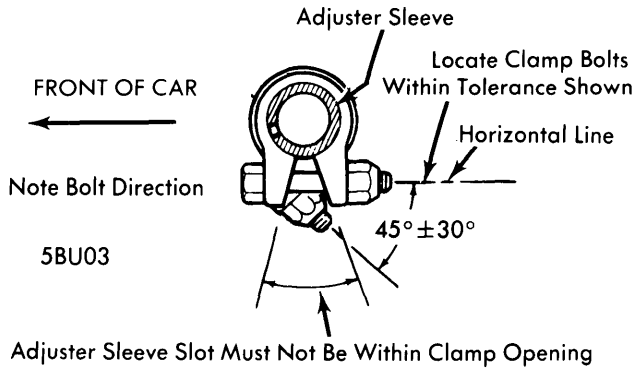
TIE RODS

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.*



TIE ROD CLAMPS BETWEEN DIMPLES (TYPICAL)
(GENERAL MOTOR'S 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 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.*

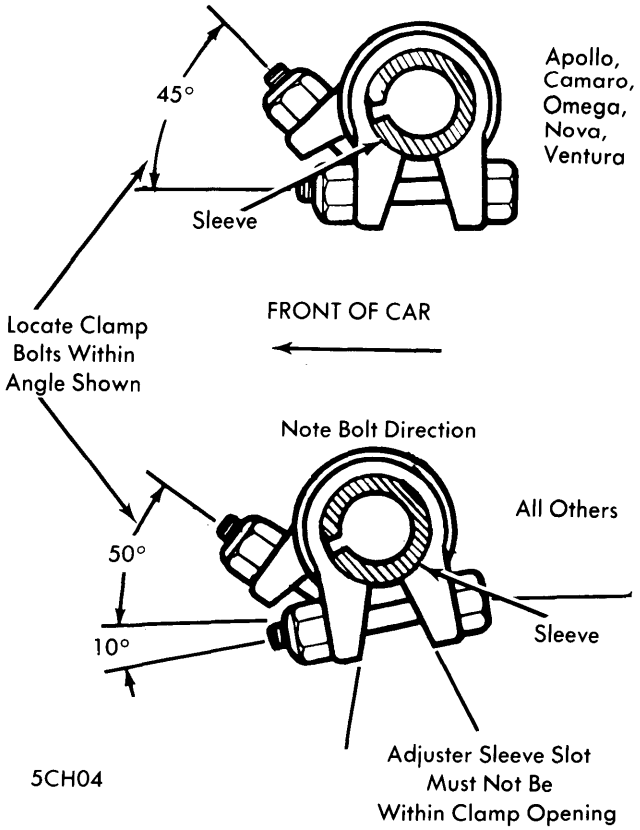


TIE ROD CLAMP POSITIONING ("H" SERIES)
(ASTRE, MONZA, SKYHAWK, STARFIRE & VEGA)

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.*

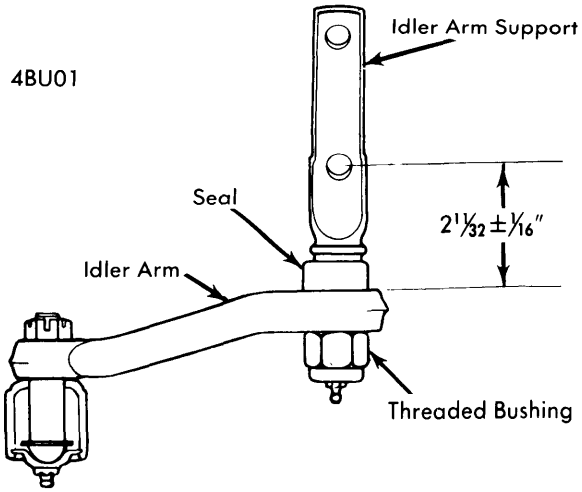


TIE ROD CLAMP POSITIONING (GENERAL MOTORS)
(EXC. "H" SERIES, ELDORADO & TORONADO)

IDLER ARM

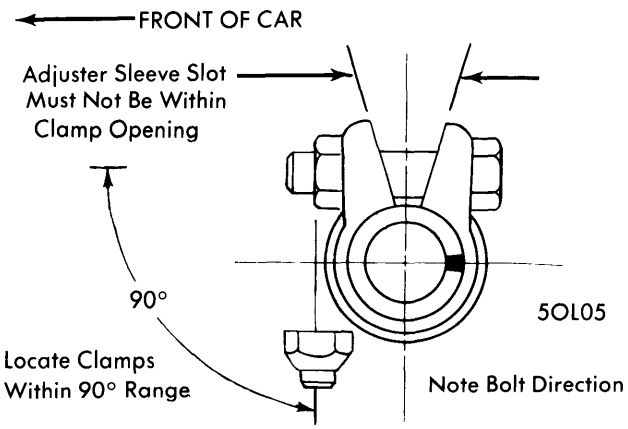
Removal – Raise vehicle and disconnect center link from idler arm. Remove two bolts attaching idler arm support to frame (note bolt direction). *NOTE – If idler arm support is disconnected from frame for other work, wire support to idler arm to prevent rotation if equipped with a threaded bushing (G.M. Saginaw linkage types).* Maximum allowable lash or vertical deflection of relay rod end of idler lever is ⅛" when a 25 lb. load is applied at that point. Replace assembly if deflection is more than ⅛".

STEERING LINKAGE (Cont.)

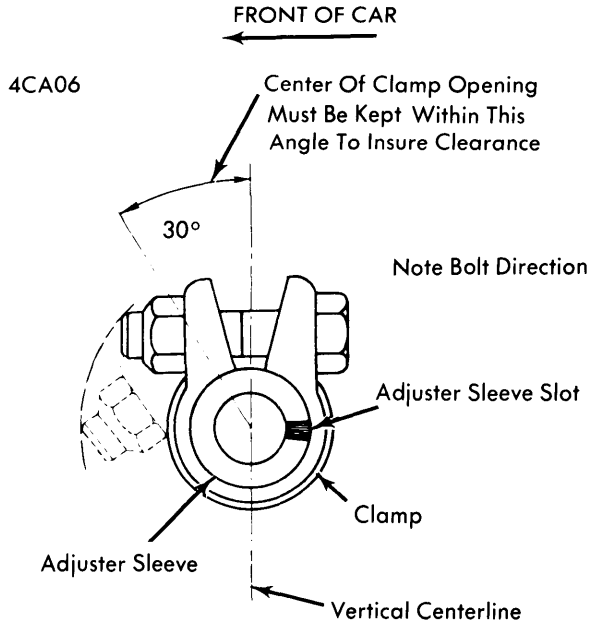


IDLER ARM LOCATION (GENERAL MOTORS WITH THREADED BUSHING)

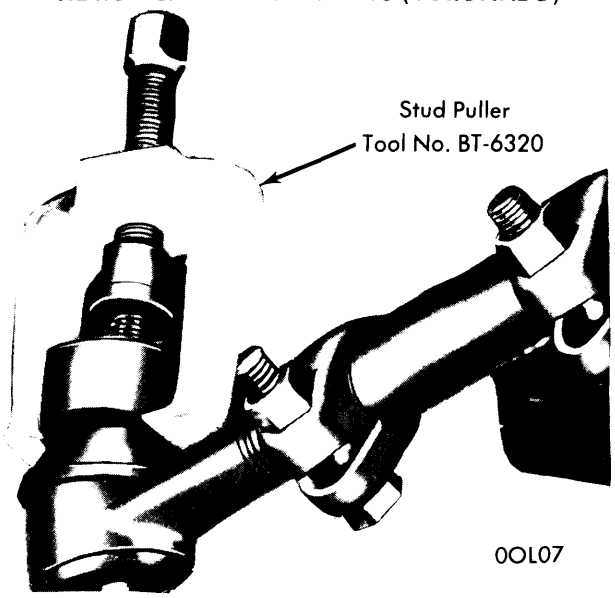
Installation – To install idler arm, reverse removal procedure and note following: With General Motors Saginaw linkage with threaded bushing idler arm, an adjustment is required for proper location of idler arm on its support so idler arm ball socket will be level with pitman arm ball socket. The support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



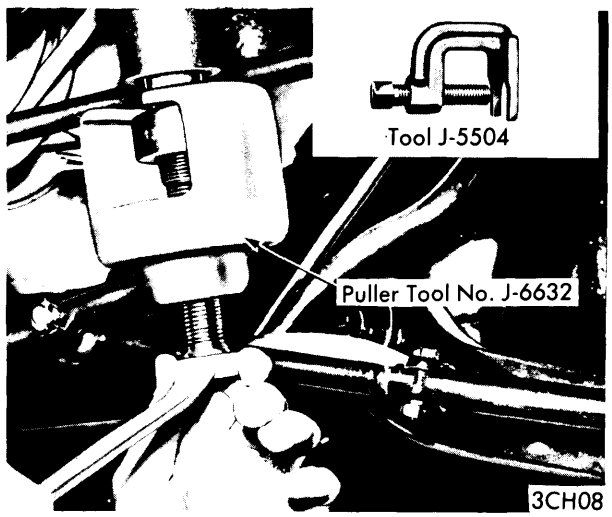
TIE ROD CLAMP POSITIONING (TORONADO)



TIE ROD CLAMP POSITIONING (ELDORADO)



STEERING LINKAGE BALL STUD REMOVAL



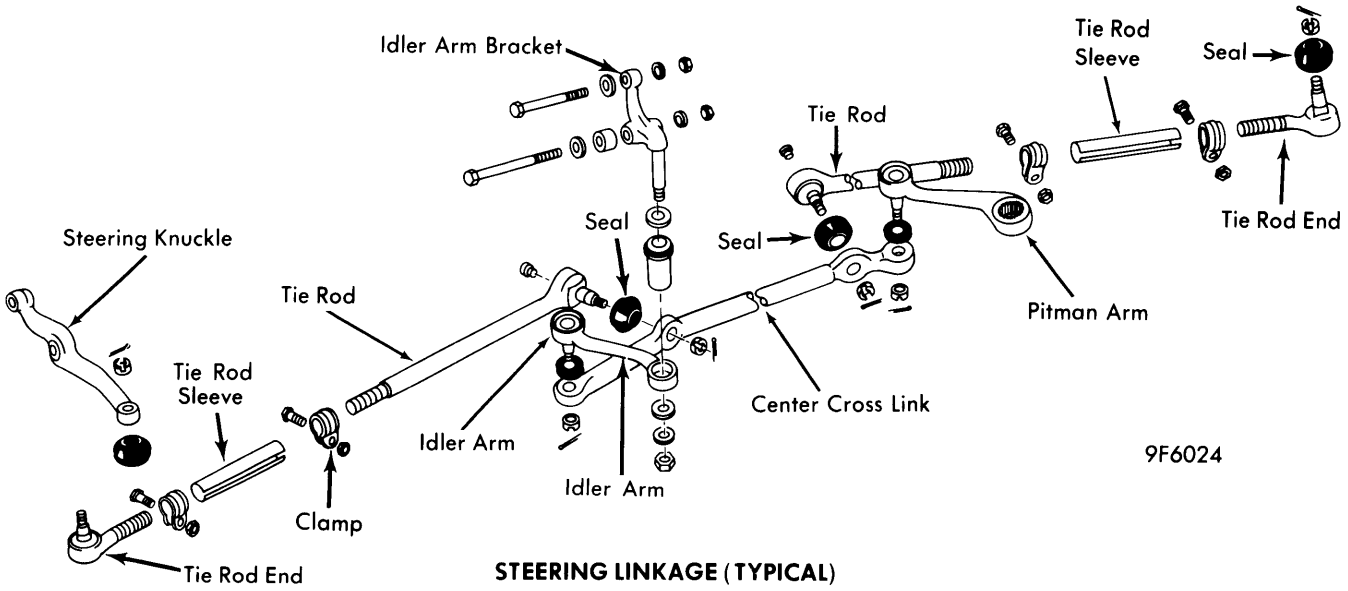
STEERING GEAR PITMAN ARM REMOVAL

STEERING LINKAGE (Cont.)

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 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 or damage to steering gear components may result.*

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



STEERING LINKAGE (TYPICAL)

TIGHTENING SPECIFICATIONS

AMERICAN MOTORS

Application	Ft. Lbs.
Pitman Arm-to-Steering Gear	115
Idler Arm-to-Support	50
Pitman Arm-to-Cross Link	35
Idler Arm-to-Cross Link	55
Tie Rod-to-Steering Knuckle	35
Tie Rod-to-Cross Link	35
Tie Rod Clamps	12

CHRYSLER CORP.

Application	Ft. Lbs.
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	
Dart & Valiant	132 INCH Lbs.
All Others	150 INCH Lbs.

FORD MOTOR CO.

Application	Ft. Lbs.
Pitman Arm-to-Steering Gear	150-225
Idler Arm-to-Support	
Comet, Granada, Maverick & Monarch	50-65
Cougar	30-40
All Others	35-50
Pitman Arm-to-Cross Link	① 35-47
Idler Arm-to-Cross Link	① 50-70
Tie Rod-to-Steering Knuckle	① 35-47
Tie Rod-to-Cross Link	
Comet, Granada, Maverick & Monarch	① 30-40
All Others	① 35-47
Tie Rod Clamps	15-20

① – Torque to low limit, then tighten nut to nearest cotter pin hole.

STEERING LINKAGE (Cont.)

TIGHTENING SPECIFICATIONS

GENERAL MOTORS

Application	Ft. Lbs.
Pitman Arm-to-Steering Gear	
Buick	
Skyhawk With Manual Steering	80-105
Skyhawk With Power Steering	120-160
All Others	160-210
Cadillac	185
Chevrolet	
Monza & Vega With Manual Steering	93
Monza & Vega With Power Steering	140
All Others	185
Oldsmobile	
Starfire With Manual Steering	105
Starfire With Power Steering	160
All Others	210
Pontiac	
Astre With Manual Steering	93
Astre With Power Steering	140
All Others	180
Idler Arm-to-Support	
Buick	
Skyhawk	25-35
All Others	45-55
Cadillac	
Eldorado	95
All Others	35
Chevrolet	
Corvette, Monza & Vega	30
All Others	50
Oldsmobile	
Toronado	110
All Others	45-55
Pontiac	
Astre	30
All Others	40
Pitman Arm-to-Cross Link	
Buick	② 40-45
Cadillac	
Eldorado	③ 60
All Others	② 45
Chevrolet	
Monza & Vega	① 35
All Others	② 45
Oldsmobile	
Toronado	85
All Others	45-55

Application	Ft. Lbs.
Pitman Arm-to-Cross Link	
Pontiac	
Astre	① 35
All Others	② 45
Idler Arm-to-Cross Link	
Buick	② 35-45
Cadillac	
Eldorado	③ 60
All Others	② 40
Chevrolet	① 35
Oldsmobile	45
Pontiac	② 35-40
Tie Rod-to-Steering Knuckle	
Buick	② 30-40
Cadillac	37
Chevrolet	① 35
Oldsmobile	② 40
Pontiac	① 35
Tie Rod-to-Cross Link	
Buick	
Apollo, Century	② 30-50
All Others	③ 50-70
Cadillac	③ 60
Chevrolet	① 35
Oldsmobile	
Starfire	60
All Others	85
Pontiac	
Astre, LeMans, Grand Am & Grand Prix	② 35-40
All Others	③ 60
Tie Rod Clamps	
Buick	
Skyhawk	9-14
All Others	19-24
Cadillac	22
Chevrolet	
Corvette, Monza & Vega	11
All Others	22
Oldsmobile	24
Pontiac	
Astre	11
All Others	22

① — Plus additional torque required to align nut slot with cotter pin hole (not to exceed 50 ft. lbs.).

② — Plus additional torque required to align nut slot with cotter pin hole (not to exceed 55 ft. lbs.).

③ — Plus additional torque required to align nut slot with cotter pin hole (not to exceed 85 ft. lbs.).