

1963-73 TRIUMPH, EXC. STAG

All Models, Exc. Stag (1963-73)

NOTE — Triumph Stag models use rack and pinion power steering. See appropriate article in this section.

DESCRIPTION**STEERING GEARS**

All Models (Except TR3) — Steering gears are of rack and pinion type. Gearbox is coupled to steering shaft by a flexible coupling.

TR3 Models — Steering gear is of cam and lever design. Cam is attached permanently to steering column shaft.

STEERING LINKAGE

All Models (Exc. TR3) — Tie rods are connected directly between ends of rack assembly and steering knuckles. Ball joints connect tie rods to steering knuckles.

TR3 Models — Steering linkage is connected to pitman arm with a center link, which is attached to steering idler arm. Tie rods, with ball joints, are connected to center link at one end, and to steering knuckles at other end.

ADJUSTMENT

All Models (Exc. TR3) — Adjustment of these steering units is required only when reassembling steering gear box. For adjustment procedure, see *Steering Box Overhaul* in this article.

TR3 Models — Two adjustments may be made to the TR3 steering gear box with steering system in place. First adjustment is to preload steering shaft, and is accomplished by adding to, or taking from, shim pack located between end cover and steering box. When adjusting this shim pack, a slight amount of preload is permissible, however, in no circumstances must there be any end float. Next, rocker shaft of steering gear box may be adjusted by means of set screw and lock nut, located on top cover plate of gear box. Rocker shaft is adjusted correctly when steering wheel may be turned from lock to lock with a slight resistance at center of travel, which should correspond to straight ahead position of steering. *NOTE* — Adjustment of rocker shaft should only be made after ensuring that no end float exists in steering column.

LUBRICATION

All Models (Exc. TR3) — Grease steering gear box every 6,000 miles with five strokes from hand grease gun.

TR3 Models — Fill with 90 weight hypoid oil when necessary.

REMOVAL & INSTALLATION**STEERING GEARS**

All Models (Exc. TR3) — Raise vehicle and support on safety stands, remove wheels. If necessary for access, drain cooling system and remove lower radiator hose. On GT6 models, remove left hand side engine compartment panel. Disconnect steering column from steering gear box and remove ground strap (if equipped). Remove lock nuts and disconnect tie rod ends from steering knuckle. Remove bolts and nuts securing steering unit to frame. On Sports 6 models, loosen front engine mounts and raise engine about ¼" (19 mm). On GT6 models, loosen left hand engine mount and raise left side of engine 1½" (114 mm), taking care not to damage upper

radiator hose. Remove steering unit from vehicle. To install, reverse removal procedure. Check wheel alignment.

TR3 Models — Steering gears are removed with steering column. For removal procedure of steering column, see *Triumph Steering Columns* in this section.

STEERING LINKAGE

All Models (Exc. TR3) — Steering linkage is removed when steering gear box is removed, see *Steering Gear Removal & Installation* in this article. Steering linkage disassembly is covered in overhaul of steering gear, see *Steering Gear Overhaul* in this article.

TR3 Models — Raise vehicle and support on safety stands. Remove wheel nearest idler arm. Remove lock nut and washer, and using a suitable tool, disconnect idler arm from center link. Remove bolts securing idler arm to frame and remove arm. Remove center link and tie rods by removing lock nuts and prying components loose. To install, reverse removal procedure.

OVERHAUL**STEERING GEAR (EXC. TR3 & STAG MODELS)**

Disassembly — 1) Release clips securing bellows and slide bellows toward outer ends of steering assembly. Unscrew lock nuts and unscrew both outer tie rod assemblies from rack, remove springs.

2) Release tab washer, unscrew sleeve nut and remove washer, shims and thrust pad. Loosen lock nuts and unscrew outer ball joint assemblies from tie rods. Remove lock nut, bellows, clips and cup nut from each outer tie rod.

3) Remove lock nuts from ends of rack, unscrew cap and remove shims, spring and pressure pad from pinion housing. Remove circlip and withdraw pinion assembly, taking care not to lose dowel peg.

4) Remove retaining ring, shims, bushing and thrust washer. Detach rubber "O" ring from annular groove in retaining ring. Withdraw rack from tube and remove thrust washer and bushing from gear housing.

5) Clean and examine all components for wear and damage, replacing parts as required. If necessary, replace rack tube bushings. To replace bushing, remove by using a suitable drift and install new bushing by pressing bushing into rack tube.

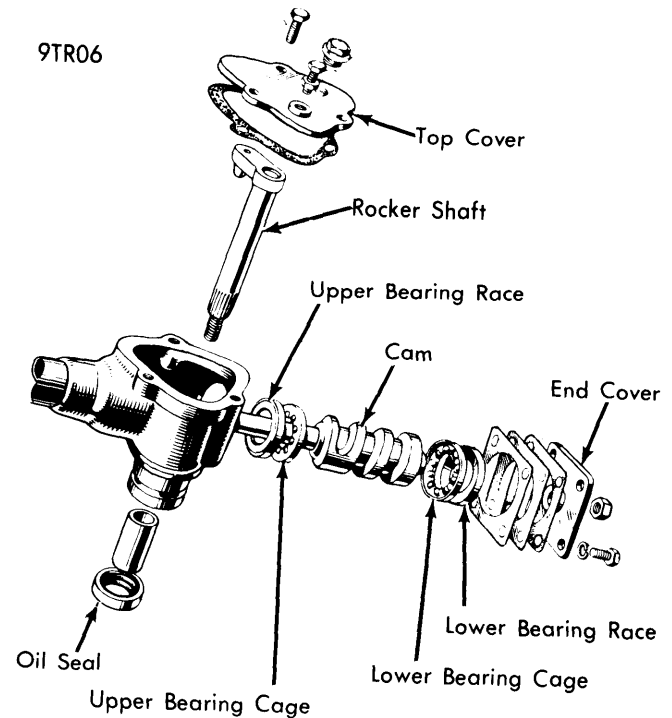
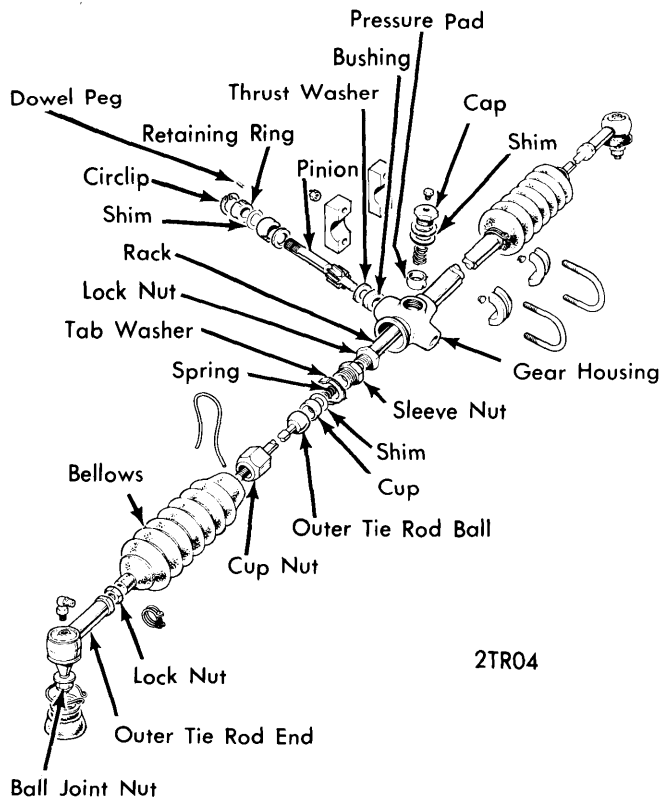
Reassembly — 1) Insert rack into gear housing and place bushing and thrust washer into housing. Assemble thrust washer, bushing and retaining ring to pinion, insert in housing and secure with circlip.

2) Check end play of pinion shaft and adjust shim pack as necessary to obtain a maximum end play of .010" (.254 mm). Re-insert assembly into housing and secure with dowel peg and circlip.

3) Install pressure pad and cap nut to housing. Tighten plug to eliminate all end float and measure clearance between plug and housing face. Make up a shim pack equal to cap-to-housing clearance plus .004" (.1 mm). Pack unit with grease and reassemble cap nut, shim pack, spring and plunger to housing, and tighten cap nut. Unit is correctly adjusted when a force of 2 lb. (.91 kg) is required to rotate pinion shaft at a radius of 8" (20.3 cm). Adjust unit by adding or subtracting shims from beneath cap nut.

1963-73 TRIUMPH, EXC. STAG (Cont.)

4) Remainder of reassembly is the reverse of disassembly procedure.



STEERING UNIT DETAILS (TR3 MODELS)

STEERING UNIT DETAILS (EXC. TR3 MODELS)

STEERING GEAR (TR3 MODELS)

Disassembly — Remove pitman arm using suitable puller (Churchill M.91). Loosen bolts securing steering box bracket to steering box and remove bracket. Remove steering box top cover and rocker shaft. *NOTE* — *Protect rocker shaft oil seal with a thin cylinder of shim steel during rocker shaft removal.* Remove end cover to steering box, then remove lower bearing race and ball cage. Remove cam, together with upper ball cage and rubber rings. Remove felt bushing from top of outer case. Using a suitable drift, remove upper bearing race from steering box and bearing bushing and oil seal from rocker shaft.

Reassembly — To reassemble, reverse disassembly procedure and perform all adjustments as outlined previously.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Steering Linkage Nuts (TR3) ①	27 (3.7)
Steering Unit-to-Frame	
TR4	13 (1.8)
All Others	15 (2.1)
Steering Column-to-Steering Box	
TR6, GT6 & Sports 6	19 (2.6)
All Others	13 (1.8)
Tie Rod-to-Knuckle	
TR6	34 (4.8)
All Others	27 (3.7)
Tie Rod Lock Nuts	33 (4.6)

① — No other specifications in this table apply to TR3 models.