TRIUMPH RACK & PINION

TR6
Spitfire

DESCRIPTION

Steering gear is a rack and pinion type with direct linkage (tie rods) to steering arms. Gear housing is mounted by "U" bolts to chassis and connected to steering shaft by a flexible coupling.

ADJUSTMENTS

Rack and pinion free play are adjusted through the use of shims on the rack damper and pinion shaft. These adjustments are performed as part of overhaul procedure. *See Overhaul below.*

REMOVAL & INSTALLATION

Removal – 1) Raise and support front of vehicle. Remove front wheels. Remove pinch bolt from coupling at pinion splines. Disconnect gear housing-to-engine ground strap. Separate tie rod ends from steering arms.

2) Remove gear attaching "U" bolts, pull steering gear forward to free it from the coupling, then remove assembly from driver's side of engine compartment.

Installation – 1) Centralize rack: Turn pinion from stop to stop, count number of turns, determine half this number, and then use this figure to determine mid-point. Position steering wheel in straight-ahead position.

2) Maneuver steering gear into place and engage pinion splines in column clamp. Fit mounting bracket rubber bushings and attach clamps and "U" bolts, loosely securing them with Nyloc nuts.

3) Push "U" bolt assemblies outward until ⅛" (3.175 mm) clearance exists between flange plates on rack tube and retainers welded to "U" bolts. Hold this position and have assistant slide mounting plates inward to abut flanged side against chassis frame flange. Tighten Nyloc nuts securely.

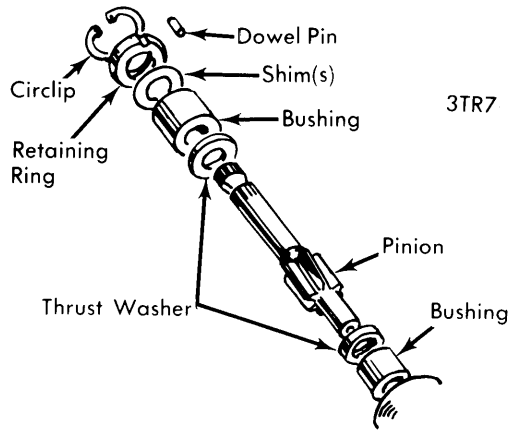
4) Replace pinch bolt and nut to coupling clamp. Reconnect ground strap, reattach tie rod ends, and check front wheel alignment. *See Triumph in WHEEL ALIGNMENT section.*

OVERHAUL

Disassembly – 1) Release clip and slide bellows toward outer ball joint. Slacken inner lock nut and unscrew tie rod assembly from rack. Withdraw spring from rack end. Straighten tab washer, unscrew sleeve nut, and remove tab washer, shims, and cup.

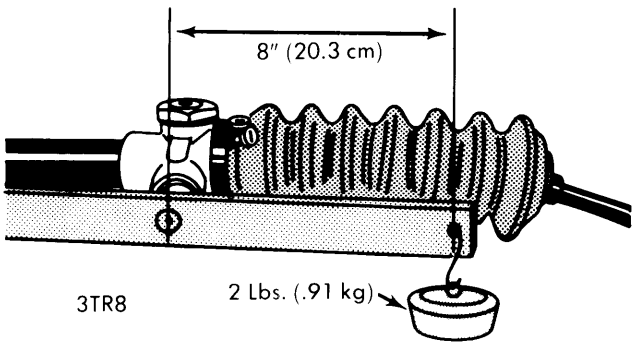
2) Slacken outer lock nut and unscrew tie rod end from tie rod. Remove outer lock nut, bellows, and cup nut. Remove inner lock nut from rack. Repeat on other end.

3) From gear housing, remove cap of rack damper assembly. Withdraw shims, spring, and damper. Then, remove circlip from top end of pinion and pull out pinion (take care not to lose dowel pin). Remove retaining ring, shims, bushing, and thrust washer. Extract "O" ring from groove in retaining ring. Pull rack from tube and remove pinion lower thrust washer and bushing (from housing). If required, bushings may be removed from rack tube.



PINION & COMPONENTS

Assembly – 1) Place rack into tube and replace pinion lower thrust washer and bushing. Assemble pinion and components into housing without shims. Mount dial gauge such that pinion end play may be measured. Push pinion down to limit and zero the gauge. Lift pinion until stop is felt and record reading. Remove circlip and withdraw pinion assembly. Remove retaining ring and install new "O" ring.



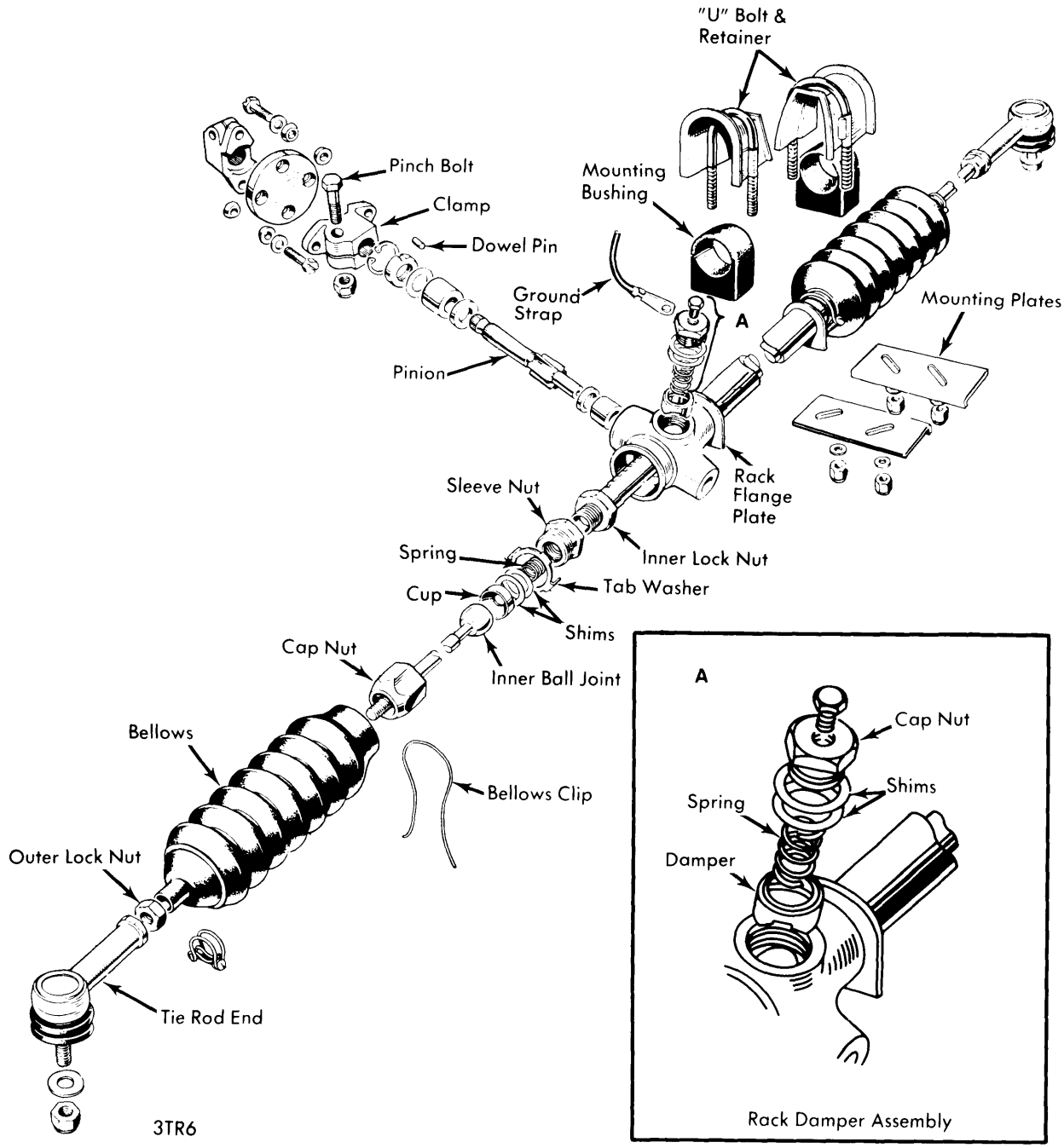
MEASURING PINION ROTATION FORCE

TRIUMPH RACK & PINION (Cont.)

2) Make up a shim pack to give minimum end play but with free rotation. Assemble shim pack and retainer ring to pinion. Reinsert assembly into housing and finally secure it with dowel pin and circlip.

3) Insert rack damper and cap nut into pinion housing. Tighten cap nut until all end play is eliminated. With a feeler gauge, measure clearance between cap head and housing flat. Remove cap nut and damper.

4) Make up a shim pack equal to cap nut-to-housing clearance plus .004" (.1 mm). Pack unit with grease and assemble all rack damper components with shim pack. Tighten cap nut until a force of 2 lbs. (.91 kg) is required to rotate pinion shaft at a radius of 8" (20.3 cm). See *illustration*. Make shim adjustments, if necessary, to obtain this setting.



TRIUMPH RACK & PINION GEAR