

Manual Steering Gears

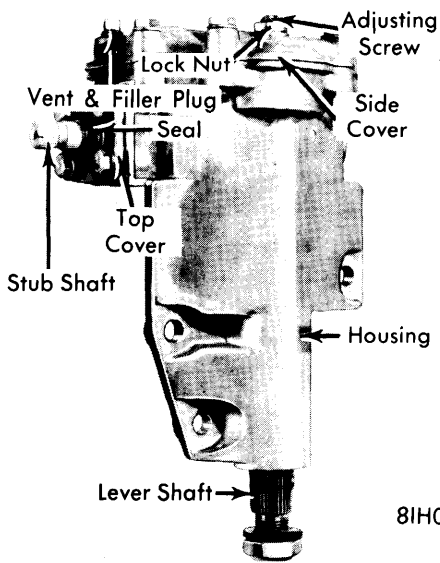
IHC (GEMMER/ROSS) CAM & LEVER

International Harvester (1965-73)

NOTE - Some models may use other units. See IHC (Gemmer/Ross) Worm & Roller or IHC (Saginaw) Recirculating Ball in this Section.

DESCRIPTION

International Harvester uses two types of cam and lever steering gear assemblies. One assembly has a single cam follower mounted in lever shaft and other assembly has twin cam followers mounted in lever shaft. Lever shaft is adjustable for end play and is supported by the housing and side cover. Cam is preloaded by shims between top cover and housing. The cam is supported at both ends by ball bearings.



8IH02
STEERING GEAR

ADJUSTMENT

CAM BEARING PRELOAD

Before making adjustment, disconnect drag link from pitman arm. Loosen instrument panel bracket clamp on steering gear jacket tube. Proceed with adjustment as follows:

1) Loosen lever shaft adjusting screw in side cover to allow cam follower(s) to be free from cam groove. Adjustment should be made so there is a very slight drag and still allow steering wheel to be turned from extreme right or left through complete circle by lightly gripping steering wheel rim with thumb and forefinger.

2) Remove top cover attaching screws and top cover to gain access to shims. Shims are available in thicknesses of .002", .003" and .010". Add or remove shims as required. Install top cover and tighten attaching screws. Recheck adjustment.

LEVER SHAFT

Before making adjustment, disconnect drag link from pitman arm. Loosen instrument panel bracket clamp on steering gear jacket tube. If cam bearing preload adjustment is required, it must be adjusted before proceeding as follows:

Unlock adjusting screw and turn it in until a slight drag is felt through the mid-position when turning steering wheel slowly from one extreme position to the other. Backlash of cam follower(s) in cam grooves may show up as end play of lever shaft or as backlash of pitman arm. **CAUTION** - Adjustment should be made only at mid-position and there must not be any binding at any point of travel. Tighten lock nut and recheck adjustment.

REMOVAL & INSTALLATION

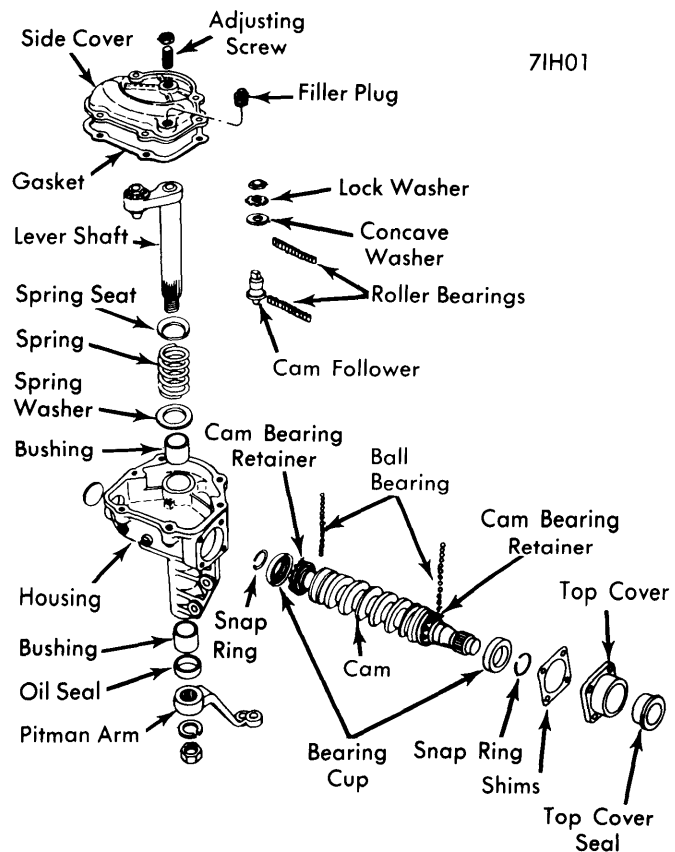
STEERING GEAR

All Models - On vehicles with solid column, remove horn button, horn cable and steering wheel. On vehicles with jointed column, disconnect universal joint at steering gear assembly. Disconnect drag link from pitman arm. Remove steering gear-to-frame attaching bolts and remove steering gear assembly from vehicle. To install, reverse removal procedure.

OVERHAUL

DISASSEMBLY

1) Remove pitman arm-to-lever shaft nut and using a suitable puller, remove pitman arm. Loosen lever shaft adjusting screw and remove side cover attaching bolts. Remove side cover and gasket. **CAUTION** - On steering gear assemblies with single cam follower, release cover slowly to prevent lever shaft from being pushed out by lever shaft spring pressure.



7IH01
STEERING GEAR ASSEMBLY (TYPICAL)

IHC (GEMMER/ROSS) CAM & LEVER (Cont.)

2) Remove lever shaft from housing. Slide spring washer, spring and spring seat from lever shaft on assemblies with single cam follower. On vehicles with solid column, loosen clamp collar and remove jacket tube. Remove top cover attaching bolts, top cover and shims from housing. **NOTE** — *Do not discard shim pack.*

3) Pull cam assembly from housing through top cover opening. Use a suitable puller to remove oil seal(s) from housing. Remove snap rings and bearings from cam assembly. Remove nut, lock washer and concave washer from lever shaft cam follower. Remove top row of tapered roller bearings, pull cam follower from lever shaft and lower row of bearings will be released.

INSPECTION

Use cleaning solvent to clean parts and dry parts with compressed air taking care not to spin bearings. Inspect cam groove for chipping, scoring or binelling and condition of splines and threads. Check all bearings and bearing surfaces on all parts for wear. Check lever shaft for burrs on splines, twisted splines and wear on bearing surfaces. Check cam follower(s) for nicks, flat spots or spalling. Inspect cam follower roller bearings for wear. Check housing for strain at mounting flanges, bushings for wear or out-of-round and oil seals for nicks.

REASSEMBLY

1) Install oil seal(s) making sure seal rests squarely on counterbore. Install bearings and snap rings on cam assembly. Install cam assembly in housing taking care not to damage seal. Install top cover and shim pack. Check cam bearing preload and adjust as necessary. *See Adjustments.*

2) Lubricate cam follower and roller bearings. Place cam follower in lever shaft and insert bearings (lower row first). Install concave washer (dished side next to bearings), new external lock washer and nut. Tighten nut so rolling torque is 2.5-3.5 INCH pounds and bend one tang of lock washer against nut. On single cam follower assemblies, slide spring seat (with flanged side against casting), spring and washer on lever shaft.

3) Lubricate lever shaft and install into housing taking care not to damage seal. Loosen lever shaft adjusting screw and install side cover and gasket to housing. Turn lever shaft adjusting screw in while checking for backlash. *See Adjustments.* Tighten adjusting screw lock nut. On vehicles with solid column, assemble jacket tube with clamp collar and tighten clamp. Install pitman arm to lever shaft.