SHOP MANUAL

FORD

SERIES

501-600-601-700-701-800-801-900-901-1801-2000-4000

The Tractor Model and Serial Numbers are stamped on the top of the transmission housing at the left front corner. A different model number is assigned each major product option. Early agricultural and industrial model number consists of three digits, followed in some cases by a suffix consisting of a number and/or letter. The first digit designates the engine size and tractor type, the second digit the transmission type and the third digit the year range of the series. The following table lists the product options indicated by the model number:

5**—One-row, 8" offset design equipped with 134 cu. in. gasoline or LP-Gas or 144 cu. in. diesel engine.

6**—Four-wheel, adjustable axle design equipped with 134 cu. in. gasoline or LP-Gas or 144 cu. in. diesel engine.

7**—High clearance row-crop type equipped with 134 cu. in. gasoline or LP-Gas or 144 cu. in. diesel engine.

8**—Four-wheel adjustable axle design equipped with 172 cu. in. engine.

9**—High clearance row-crop type equipped with 172 cu. in. engine.

18**—Four-wheel, axle type, industrial tractor equipped with 172 cu. in. engine.

1—"Select-O-Speed" transmission without pto.

2—Four-speed transmission without pto or hydraulic lift.

3—Four-speed transmission without pto.

4—Four-speed transmission.

5—Five-speed transmission with transmission pto

6—Five-speed transmission with live pto.

7—"Select-O-Speed" transmission with single speed pto.

8—"Select-O-Speed" transmission with two-speed and ground drive pto.

**0—Series designation built 1955 to 1958.

**1—Series designation built 1958 to 1962.

***-1—Tricycle type with single front wheel.

***-4—High clearance, four-wheel, adjustable axle type.

***-D—Diesel engine.

***-L—LP-Gas engine.

***-37—Equipped with Reversing transmission.

***-21—Equipped with Combination transmission.

Late agricultural and industrial model number consists of five digits, followed in some cases by a suffix consisting of a number and/or letter. The first digit designates engine size; the second digit, successive models; the third and fourth digits, tractor type; and the fifth digit, product options including transmission type. (NOTE: Options indicated by fifth digit varies with successive models.) Suffix letters and numbers are similar to those used for early agricultural and industrial types. The following table lists product options indicated by the model number:

2****—Indicates 134 cu. in. gasoline or 144 cu. in. diesel engine.

4****—Indicates 172 cu. in. gasoline or diesel engine.

*0***—Indicates industrial models produced prior to 1963.

*1***—Indicates agricultural and industrial models produced in 1963 and later.

**10*—High clearance agricultural Row Crop type, with single or dual tricycle front wheels or wide adjustable front axle.

**11*—Offset four-wheel agricultural type for one-row cultivation.

**20*—Four-wheel All-Purpose type with adjustable front axle.

**21*—Four-wheel orchard and grove type with non-adjustable front axle.

**30*—Four-wheel utility type industrial with non-adjustable front axle.

**31*—Four-wheel low center of gravity type with adjustable front axle.

**41*—Heavy duty industrial type with sub frame and cast grille, extra heavy front axle & steering.

*1**0—Four-speed transmission without pto.

*0**1—Four-speed transmission without pto or hydraulic system.

*1**1—Four-speed transmission with pto.

*0**2—Four-speed transmission and hydraulic system, without pto.

*1**2—Five-speed transmission with live pto.

*0**3—Four-speed transmission, hydraulic system and pto.

*0**4—Select-O-Speed transmission without hydraulic system or pto.

*1**4—Select-O-Speed transmission without pto.

*0**5—Select-O-Speed transmission, hydraulic system and 540 rpm pto.

*1**5—Select-O-Speed transmission with 540 rpm independent pto.

*0**6—Select-O-Speed transmission, hydraulic system and 540-1000 rpm and ground speed pto.

*1**6—Select-O-Speed transmission with 540 and 1000 rpm independent pto.

*1**7—Select-O-Speed transmission with 540 and 1000 rpm independent and ground speed pto.

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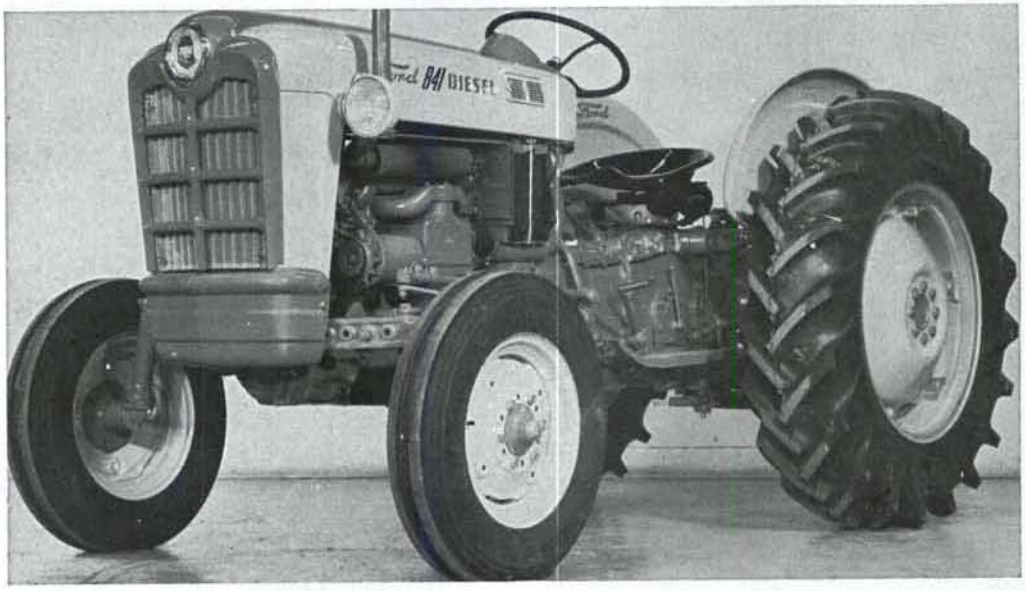

CONDENSED SERVICE DATA

TRACTOR MODELS	600, 700	501, 601, 701, 2030, 2031, 2110, 2120, 2130, 2131	800, 900	801, 901, 1801, 4030, 4040, 4110, 4120, 4121, 4130, 4131	501D, 601D, 701D, 2030D, 2031D, 2110D, 2120D, 2130D, 2131D	801D, 901D, 1801D, 4030D, 4040D, 4110D, 4120D, 4121D, 4130D, 4131D
GENERAL						
Engine Make	Own	Own	Own	Own	Own	Own
Cylinders	4	4	4	4	4	4
Bore—Inches	3.44	3.44	3.90	3.90	3.56	3.90
Stroke—Inches	3.60	3.60	3.60	3.60	3.60	3.60
Displacement—Cubic Inches	134	134	172	172	144	172
Compression Ratio	6.6	7.5	6.75	(1)	16.0	16.0
Pistons Removed From:	Above	Above	Above	Above	Above	Above
Main & Rod Bearings Adjustable?	No	No	No	No	No	No
Generator & Starter Make	Ford					
Carburetor Make (Gasoline)	Marvel-Schebler TSX				....	....
Carburetor Make (LP-Gas)	Zenith				....	....
Distributor Make	Ford				....	....
TUNE-UP						
Compression, Gage Lbs.	120-130	130-140	120-130	130-140 (2)	365-400	365-400
Firing Order	1-2-4-3	1-2-4-3	1-2-4-3	1-2-4-3	1-2-4-3	1-2-4-3
Valve Tappet Gap—Intake & Exhaust	0.015	0.015	0.015	0.015	0.015	0.015
Valve Face Angle—Degrees	43½	43½	43½	43½	43½	43½
Valve Seat Angle—Degrees	45	45	45	45	45	45
Ignition Timing	See Paragraph 159				....	....
Injection Timing	....	....	....	....	See Paragraph 139	
Spark Plug Make	Autolite				....	....
Spark Plug Model (Gasoline)	AL7T	AL7T	AL7T	AL7T	....	....
(LP-Gas)	ATL3A	ATL3A	ATL3A	ATL3A	....	....
Engine Low Idle—RPM	475	475	475	475	675	675
Engine High Idle—RPM (4-Speed)	2250	2250	2250	2250	2250	2250
(5-Speed or "Select-O-Speed")	2450	2450	2450	2450	2450	2450
Battery Terminal Grounded	Positive	Positive	Positive	Positive	Negative	Negative
SIZES—CAPACITIES—CLEARANCES						
Crankshaft Journal Diameter	2.4981	2.4981	2.4981	2.4981	2.4973	2.4973
Crankpin Diameter	2.2985	2.2985	2.2985	2.2985	2.2985	2.2985
Camshaft Journals Diameter	1.9255	1.9255	1.9255	1.9255	1.9255	1.9255
Piston Pin Diameter	0.9122	0.9122	0.9122	0.9122	1.1242	1.2492
Valve Stem Diameter, Intake	0.342	0.342	0.342	0.342	0.342	0.342
Valve Stem Diameter, Exhaust	0.341	0.341	0.341	0.341	0.341	0.341
Main Bearings Running Clearance	Refer to Paragraph 109					
Rod Bearings Running Clearance	Refer to Paragraph 108					
Piston Skirt Clearance	Refer to Paragraphs 104 and 105					
Crankshaft End Play	0.004	0.004	0.004	0.004	0.004	0.004
Camshaft Bearing Running Clearance	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Cooling System—Gallons	3.75	3.75	3.75	3.75	3.75	3.75
Crankcase—Quarts (with Filter)	5	5	5	5	5	5
Transmission—Quarts (4-Speed)	6.5	6.5	6.5	6.5	6.5	6.5
(5-Speed)	8	8	8	8	8	8
"Select-O-Speed"		12		12	12	12
Differential—Quarts	8	8	(3)	(3)	8	(3)
Final Drive Housings, Each—Qts. (Row-Crop)	1.5	1.5	1.5	1.5	1.5	1.5
Hydraulic Reservoir—Quarts	8(4)	8(4)	8(4)	8(4)	8(4)	8(4)
Steering Gear Housing	1.5 lbs.	1.5 lbs.	1.5 lbs.	1.5 lbs.	1.5 lbs.	1.5 lbs.
Power Steering System	Fill to Proper Level — See Paragraph 37, 49, 60 or 68					

(1) 7.5:1 gasoline; 8.64:1 LP-Gas.

(2) For gasoline; 150-160 for LPG.

(3) Row Crop Models Only, 8 Quarts — All Other Models, 11½ Quarts.

(4) On models without both hydraulic system and PTO, leave hydraulic reservoir empty. On models without hydraulic system, but equipped with PTO, add six (6) quarts of oil to hydraulic reservoir.

FRONT SYSTEM AND MANUAL STEERING ALL-PURPOSE TYPE

(LCG Type Front System and Manual Steering are Similar)

SPINDLE BUSHINGS

1. Refer to Fig FO1. To renew the spindle bushings, support front of tractor and disconnect the steering arms from the wheel spindles. Slide spindle and wheel assemblies out of axle extensions. Drive old bushings from axle extensions and install new ones using a piloted drift. New bushings will require no final sizing if not distorted during installation. Renew thrust bearing if unduly noisy.

AXLE CENTER MEMBER AND PIVOT PIN BUSHING

2. To remove the axle center member (18—Fig. FO1), support front of tractor, remove grille and unbolt radius rods and axle extensions from axle center member. Swing the axle extension and wheel assemblies away from tractor. On early models with non-threaded pivot pins, remove the cap screw retaining the axle pivot pin to the front end support and, using a slide hammer, remove the pivot pin. On models with threaded pivot pin, remove the cap screw (23—Fig. FO1) and locking flange (22) and unscrew the threaded pin by turning it counter-clockwise. Loosen radiator retaining nuts at bottom if necessary, to provide removal clearance and withdraw axle center member from either side of tractor.

The axle pivot pin bushing (17) can be renewed at this time. Make certain that pivot pin (20) has a free fit in the bushing before reinstalling the axle center member.

Install snap ring (21) on the late production threaded pin (20) on standard models, turn pin in until snap ring is tight against front support and then back pin out so that retainer (22) can be installed. On "heavy duty" axles with hex head pivot pin, tighten pin to a torque of 200 Ft.-Lbs. On all models, tighten radius rod to center axle bolts (16) to a torque of 75-135 Ft.-Lbs.

FRONT SUPPORT

3. To remove front support, remove grille on all models. Remove lower front panel and hood to front support bolts on 801 and 4000 Series. Unbolt radiator from front support. Place floor jack under front end of transmission, then remove axle pivot pin as in Paragraph 2. Remove nuts from front support to engine studs. Remove studs or pry front support forward to clear studs, then remove front support from below. Lower hood side panels will spring out far enough to clear lower part of radiator when moving front support forward.

When installing, tighten the retaining stud nuts to a torque of 135-150 Ft. Lbs.

DRAG LINKS AND TOE-IN

4. Drag link ends are of the non-adjustable automotive type. The procedure for renewing the drag link ends is evident. Vary the length of each drag link an equal amount to provide a front wheel toe-in of ¼ to ½ inch.

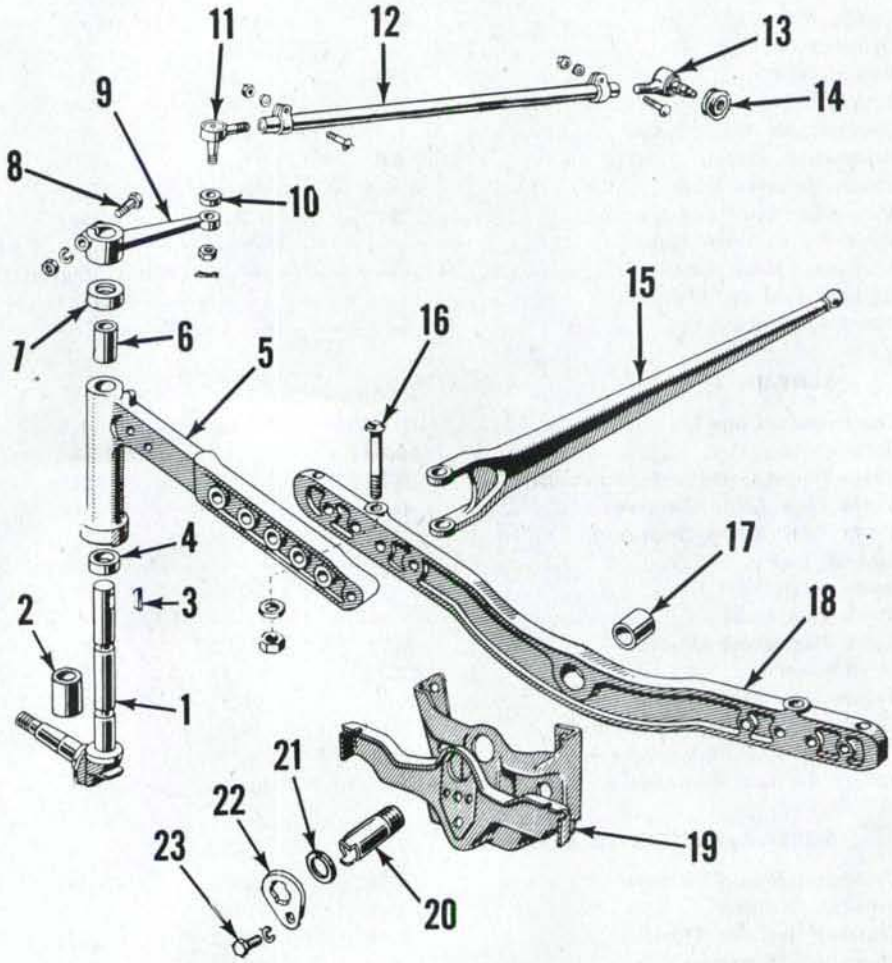

Fig. FO1 — Exploded view of All-Purpose type front axle and related parts. Optional "heavy duty" front axle is similarly constructed except that pivot pin (20) has hex head, snap ring (21) is not used and retainer (22) has hex opening for pivot pin head. A flat washer (not shown) is used on cap screw (23) between retainer (22) and front support (19) on "heavy duty" assemblies to prevent retainer from being cocked. Early production pivot pin was not threaded and pivot pin (20) and retainer (22) were integral welded assembly.

1. Spindle (R.H.)
2. Lower spindle bushing
3. Woodruff key
4. Thrust bearing
5. Axle extension (R.H.)
6. Upper spindle bushing
7. Dust seal
8. Clamp bolt
9. Steering arm (R.H.)
10. Dust seal
11. Drag link end
12. Drag link
13. Drag link end
14. Dust cover
15. Radius rod
16. Radius rod bolt
17. Bushing
18. Axle center member
19. Front support
20. Pivot pin
21. Snap ring
22. Retainer
23. Cap screw

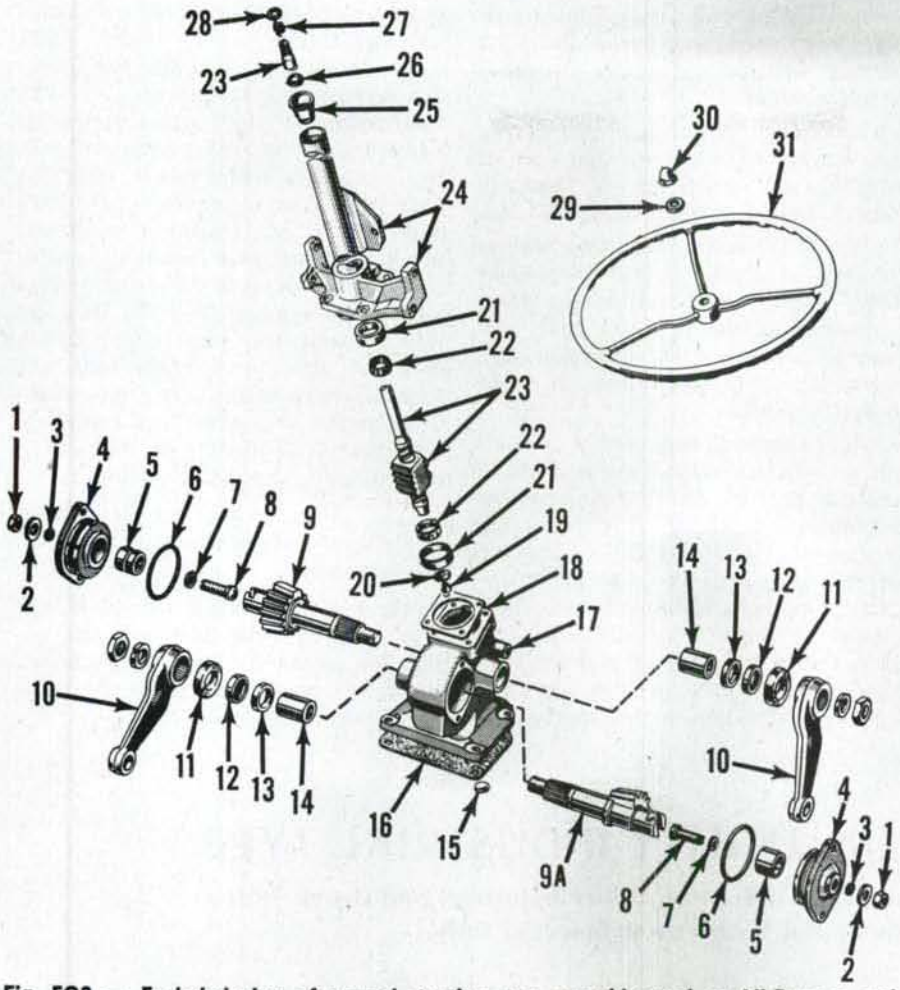

Fig. FO2 — Exploded view of manual steering gear assembly used on All-Purpose and LCG tractors. Wormshaft bearing end play is adjusted by varying the thickness of the shim stack (18); shims are available in thicknesses of 0.002, 0.005, 0.010 and 0.030. Sector end play is adjusted with adjusting screws (8). Use thickness of shim (7) that will provide zero to 0.002 clearance of adjusting screw head in slot of sector gear (9 or 9A).

1. Lock nuts
2. Flat washers
3. Packing
4. End covers
5. Bushings
6. "O" ring
7. Shim (0.063, 0.065, 0.067 or 0.069)
8. Adjusting screw
9. Sector gear (double)
9A. Sector gear (single)
10. Pitman arms
11. Dust seals
12. Packing retainers
13. Packing
14. Bushings
15. Expansion or Hex plug
16. Gasket (Select-O-Speed only)
17. Gear housing
18. Shims
19. Eyelet
20. Bearing retainer
21. Bearing cups
22. Thrust bearings
23. Wormshaft assembly
24. Wormshaft housing
25. Bearing
26. Spring seat
27. Coil spring
28. Dust seal

STEERING GEAR

NOTE: Late production industrial models are equipped with heavy duty steering sector gears (9 and 9A—Fig. FO2). Only the heavy duty sector gears will be available for servicing all models when current stocks of standard sector gears are exhausted. If necessary to renew a standard sector gear using a heavy duty gear, both sector gears must be renewed. Gears may be identified as follows: Standard sector gear (9A) has 7 full teeth; heavy duty sector gear (9A) has 5 full teeth. Standard sector gear (9) has 6 full teeth and 3 rack teeth; heavy duty sector gear (9) has 4 full teeth and 3 rack teeth. Service procedures remain unchanged.

5. **ADJUSTMENT.** To adjust the steering gear, first make certain that gear housing is properly filled with lubricant, discnonect both drag links from steering gear arms to remove load from the gear unit and proceed as follows:

6. WORMSHAFT END PLAY. To check wormshaft end play, first loosen the lock nuts (1—Fig. FO2) on the sector shaft adjusting screws (8) and back the screws out at least two full turns. If the end play of the wormshaft (steering wheel shaft) is not within the desired limits of 0.006-0.010, adjust the end play by varying the thickness of the shim stack (18) between the steering shaft tube and the steering gear housing. Shims are available in thickneses of 0.002, 0.005, 0.010 and 0.030. Ford recommends a minimum shim stack installation of not less than three 0.002 shims or not less than two 0.005 shims. Tighten the steering shaft cover retaining cap screws to a torque of 25-30 Ft.-Lbs. Renew wormshaft bearings as outlined in paragraph 10 if end play is over 0.010 with minimum recommended shim stack thickness.

After checking or adjusting wormshaft end play, readjust sector shaft end play as follows:

7. SECTOR SHAFT END PLAY. Before adjusting sector shaft end play, be sure that wormshaft end play is correctly adjusted as outlined in paragraphs 5 and 6, then proceed as follows: Turn the steering wheel to the mid or straight ahead position. With the lock nuts on both sector shaft adjusting screws loosened and the adjusting screw on the **right** hand side (as viewed from rear of tractor) backed out several turns, turn the adjusting screw on **left** side of steering housing in (clockwise) until there is no perceptible end play in the sector shaft to which the **right** steering arm is attached. While holding the adjusting screw in this position, tighten the lock nut. Then, turn the adjusting screw on **right** side of housing in until there is no perceptible end play in the sector shaft to which the **left** steering arm is attached, hold the adjusting screw in this position and tighten the lock nut.

Reconnect the drag links to the steering arms.

8. **REMOVE AND REINSTALL.** To remove the steering gear and housing assembly, first remove steering wheel, then withdraw the spring, felt packing and spring seat from top of steering column. On "Select-O-Speed" transmission models, remove PTO control and gear selector as outlined in paragraph 234. Remove hood. Disconnect throttle rod from bell crank and unbolt throttle rod bracket from transmission. Disconnect the Proof-Meter cable, ammeter lead wire and oil pressure gage line at instrument panel. Disconnect the battery ground cable from steering gear housing and wires from junction block on steering column.

Remove the generator regulator from bracket on steering column and disconnect the temperature gage wire from fuel tank frame. Unbolt instrument panel, slide the panel over top of steering column and lay it on top of fuel tank. Unbolt battery carrier from steering gear housing. Disconnect head light switch and ignition switch from the hood rear lower panel; then, unbolt and remove the hood rear lower panel from tractor. Unclip tail light wire from steering gear housing and disconnect drag links from pitman arms. Remove the cap screws retaining steering gear housing to transmission case and lift the steering gear assembly from tractor. NOTE: On "Select-O-Speed"

transmission models, a gasket is used between steering gear and transmission housings. Gasket should be left in place or opening in transmission covered when steering gear housing is removed. Be sure that gasket is in good condition before reinstalling steering gear assembly.

9. **OVERHAUL.** Major overhaul of the steering gear unit necessitates the removal of the unit from tractor as outlined in paragraph 8. Remove the pitman arm retaining nuts and pull pitman arms from sector shafts. Unbolt the sector shaft side covers and remove the adjusting screw lock nuts (1—Fig. FO2). Using a screwdriver, turn the adjusting screws in and remove the side covers and sector shafts. Unbolt steering housing upper cover from housing and remove cover, shaft and ball nut assembly. Do not disassemble the ball nut and steering shaft assembly (23) as component replacement parts are not available. If the steering shaft and/or ball nut are damaged, renew the complete assembly. The need and procedure for further disassembly and/or overhaul is self-evident.

The renewable bushings in steering gear covers have a bore diameter of 1.1255-1.1260; bushings in housing have a bore diameter of 1.245-1.250.

Shims (7) on the adjusting screws (8) are available in thicknesses of 0.063, 0.065, 0.067 and 0.069. When reassembling, use a shim that will provide zero to 0.002 clearance between adjusting screw head and slot in sector shafts.

When reassembling, center the ball nut on wormshaft and insert shaft in housing. Bolt the housing upper cover assembly in position, using the necessary number of shims (18) to provide an end play of 0.006-0.010 of wormshaft in bearing. Minimum shim stack should be three 0.002 shims or two 0.005 shims. If end play is more than 0.010 with minimum recommended thickness of shims, renew the wormshaft bearings. Shims (18) are available in thicknesses of 0.002, 0.005, 0.010 and 0.030. Tighten the cover cap screws to a torque of 25-30 Ft.-Lbs. Assemble the sectors and their adjusting screws (8) to their covers. Hold the left sector shaft (the one with the greater number of teeth) and side cover assembly with the block tooth up, and install the sector so that middle tooth on sector meshes with middle groove on the ball nut rack. Install the right sector shaft, meshing the fourth tooth with the fourth groove of the left sector shaft. Tighten the side cover cap screws to a torque of 25-30 Ft.-Lbs. and install the adjusting screw lock nuts.

Turn steering gear to its mid or straight ahead position and install pitman arms.

When installation is complete, fill gear housing with lubricant and adjust the sector shaft end play as outlined in paragraph 7. Reconnect the drag link.

FRONT SYSTEM, UTILITY INDUSTRIAL TYPE

(Front System of Grove Type is Similar. Utility Industrial and Grove Types Are Equipped With Power Steering Only.)

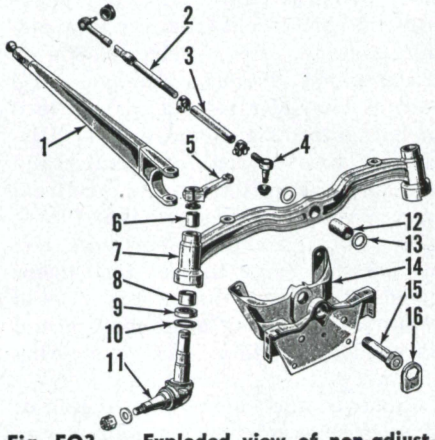

Fig. FO3 — Exploded view of non-adjustable front axle and associated parts used on Utility Industrial and Grove tractors.

1. Radius rod
2. Drag link
3. Adjusting sleeve
4. Tie rod end
5. Steering arm
6. Upper bushing
7. Axle
8. Lower bushing
9. Bearing
10. Washer
11. Spindle
12. Bushing
13. Washer
14. Front support
15. Pivot pin
16. Locking flange

SPINDLE BUSHINGS

10. Refer to Fig. FO3. To renew the spindle bushings (6 and 8), support front of tractor, disconnect steering arms (5) from wheel spindles (11) and slide wheel and spindle assemblies out of axle (7). Drive old bushings from axle and install new bushings using a piloted drift. New bushings will not require final sizing if not distorted during installation. Renew thrust bearings (9) if rough or worn.

FRONT AXLE AND PIVOT PIN

11. To remove the front axle, remove hood and radiator; then support front of tractor. Refer to Fig. FO3. If front axle is to be renewed, disconnect steering arms (5) from spindles (11) and withdraw spindles downward out of axle assembly.

Remove the locking flange (16), and unscrew the threaded pin (15). Remove the radius rods (1) and lift front axle (7) from front support.

Pivot bushing (12) can be installed without removing axle, by removing pivot pin (15) and allowing tractor to drop until axle clears front support. Bushing is not a tight fit in axle.

When reassembling, tighten the pivot pin (15) to a torque of 200 Ft.-Lbs.; and the radius rod to axle bolts to a torque of 75-135 Ft.-Lbs.

FRONT SUPPORT

12. To remove front support, remove radiator grille on all models. Remove lower front panel on 4000 Series. Unbolt radiator from front support. Place floor jack under front edge of transmission; then, remove pivot pin as in paragraph 11. Remove nuts from front support to engine studs. Remove studs or pry front support forward to clear studs, then remove front support from below. Lower hood side panels will spring out far enough to clear lower part of radiator when moving front support forward.

When installing, tighten the front support retaining stud nuts to a torque of 135-150 Ft.-Lbs.

DRAG LINKS AND TOE-IN

13. Drag link ends are of the non-adjustable automotive type. The procedure for renewing the drag link ends is evident. Vary the length of each drag link an equal amount to provide a front wheel toe-in of ¼ to ½-inch.

STEERING GEAR

All Utility Industrial models and Grove type tractors are equipped with power steering. The steering gear is an integral part of the power steering unit. Refer to paragraph 40.

FRONT SYSTEM, H. D. INDUSTRIAL TYPE

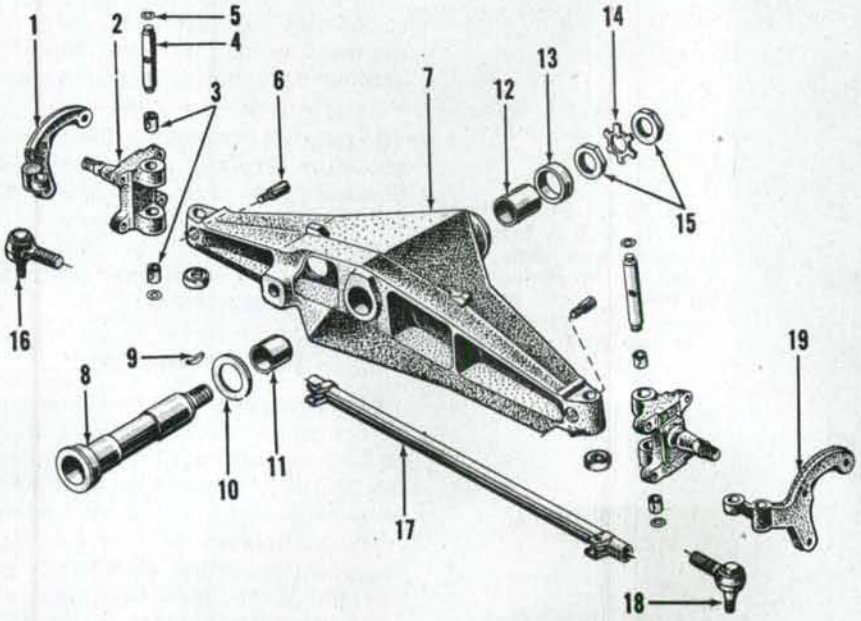

Fig. FO4 — Exploded view (from rear) of front axle assembly used on early Heavy Duty Industrial tractor with full power steering.

1. Left steering arm
2. Spindle
3. Spindle bushing
4. Spindle pin
5. Pin seal
6. Tapered retaining pin
7. Axle member
8. Pivot pin
9. Woodruff key
10. Thrust washer
11. Rear pivot bushing
12. Front pivot bushing
13. Thrust bearing
14. Tab washer
15. Jam nut
16. Tie rod end
17. Tie rod
18. Tie rod end
19. Right steering arm

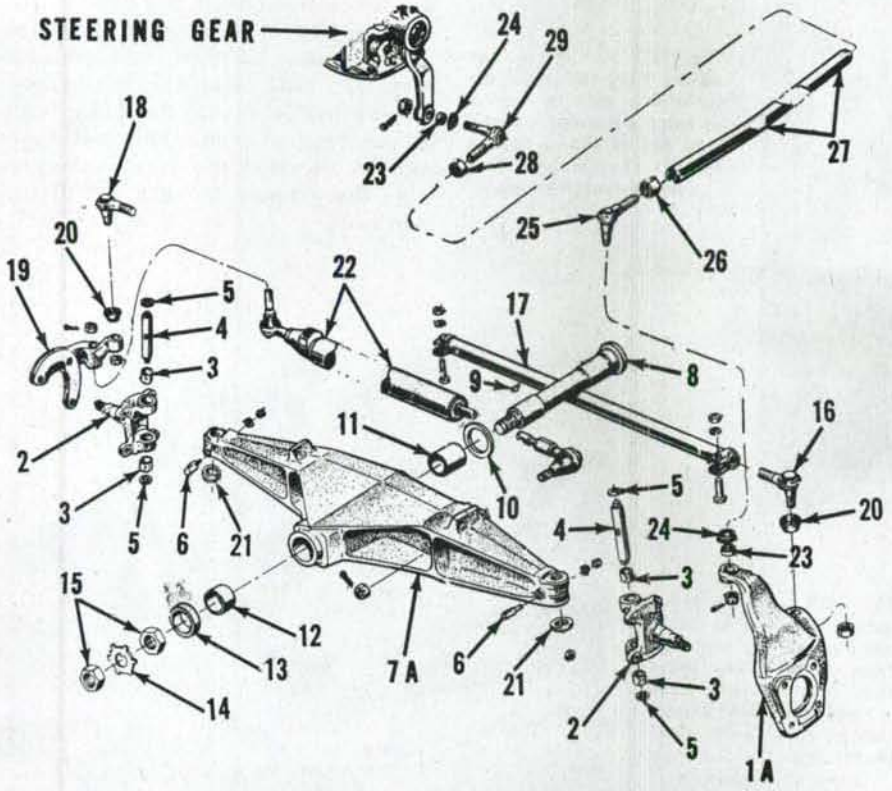

Fig. FO5 — Exploded view of late production Heavy Duty Industrial axle assembly with drag link (power assist) steering. View is from front of unit.

1A. Left steering arm
2. Spindles
3. Spindle bushings
4. Spindle pins
5. Spindle pin seals
6. Tapered retaining pins
7A. Front axle
8. Pivot pin
9. Woodruff key
10. Thrust washer
11. Rear pivot bushing
12. Front pivot bushing
13. Thrust spacer
14. Tab washer
15. Jam nuts
16. Tie rod end
17. Tie rod
18. Tie rod end
19. Right steering arm
20. Dust cover
21. Thrust bearings
22. Power steering cylinder
23. Dust cover
24. Retainer
25. Drag link end
26. Lock nut
27. Drag link
28. Lock nut
29. Drag link end

SPINDLE BUSHINGS

All Models

14. To renew spindle bushings, jack up the front axle and remove wheel and hub assembly. Cut lock wire or bend locking tabs down and unbolt steering arm from spindle. Tie-rod and/or power steering cylinder need not be disconnected from steering arm. Remove nut and lock washer from tapered lock pin (6—Fig. FO4 or Fig. FO5) and drive out tapered pin. Drive spindle pin upward enough to relieve the pressure on upper spindle pin seal, remove upper seal, then drive spindle pin downward out of axle.

Spindle bushings are pre-sized and will require no final sizing if carefully installed. Renew thrust bearing if unduly noisy. Thrust bearing is installed with the indentation up as shown in Fig. FO7. The detent in the spindle pin is off center. Install spindle pin with stamped "T" mark facing upward so that spindle pin will be properly located in axle. Torque steering arm bolts to 100 Ft.-Lbs., and secure with safety wire or locking tabs.

FRONT AXLE AND PIVOT PIN

15. To remove the front axle (7—Fig. FO4 or 7A—Fig. FO5), first disconnect the tie rod from either steering arm and swing tie rod rearward. Disconnect power cylinder pressure and return lines at cylinder; then, disconnect the power cylinder from the axle and lower the cylinder assembly to the floor. Remove the radiator grille door, pass a chain loop through hole of front axle support and secure chain with a bolt or short rod as shown in Fig. FO6. Attach a hoist to chain and tighten enough to take up slack. Place a rolling floor jack under center of front axle and raise jack just enough to take the axle weight off of pivot pin. Straighten tabs on keyed lock washer at front end of pivot pin and remove jam nut, keyed washer and lock nut as

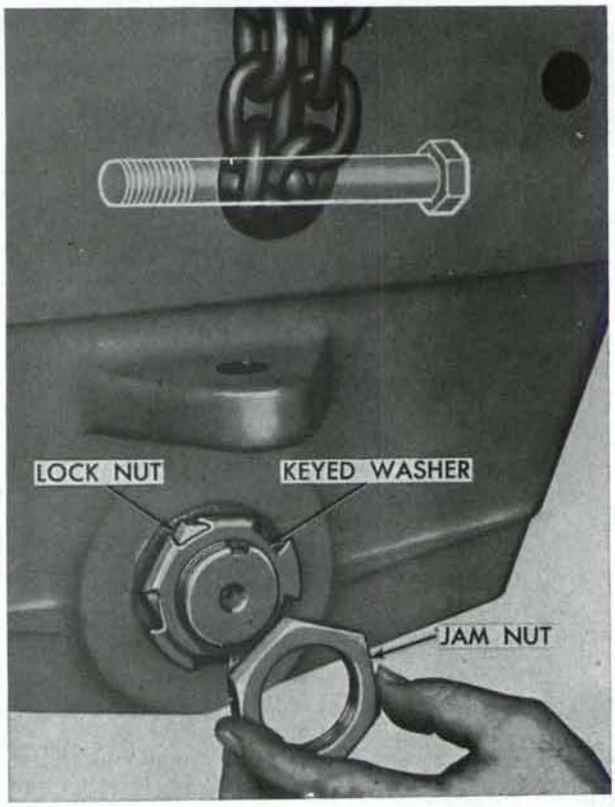

Fig. FO6 — Support front of Heavy Duty Industrial tractor with chain loop and bolt, as shown, when removing front axle or pivot pin. Note method of locking front end of axle pivot pin.

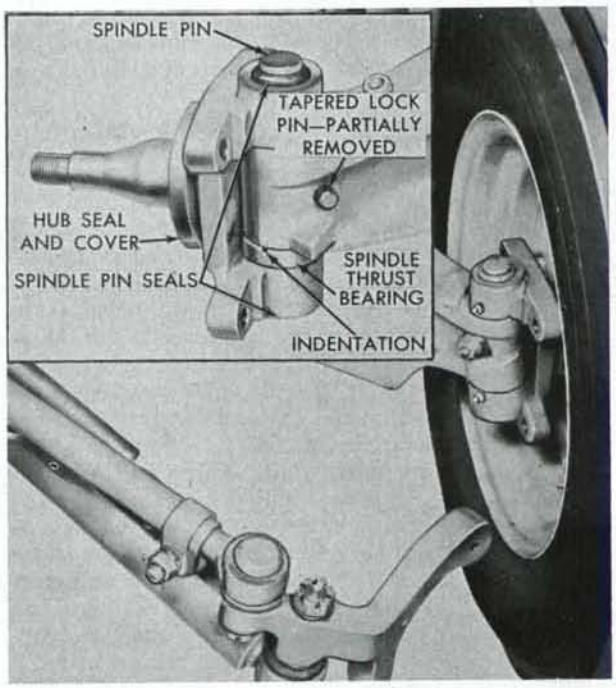

Fig. FO7 — Spindle on Heavy Duty Industrial attaches to axle by means of spindle pin and tapered lock pin as shown. Install spindle thrust bearing with indentation up.

shown. With all tension removed from pivot pin, drift pin rearward until it clears front yoke of the axle support, then remove front thrust bearing. Reposition floor jack to tilt axle rearward as shown in Fig. FO8 enough to allow pivot pin, rear thrust bearing and Woodruff key to be removed from the rear. Raise front of tractor with hoist enough to clear axle assembly and move axle forward away from tractor as shown in Fig. FO9.

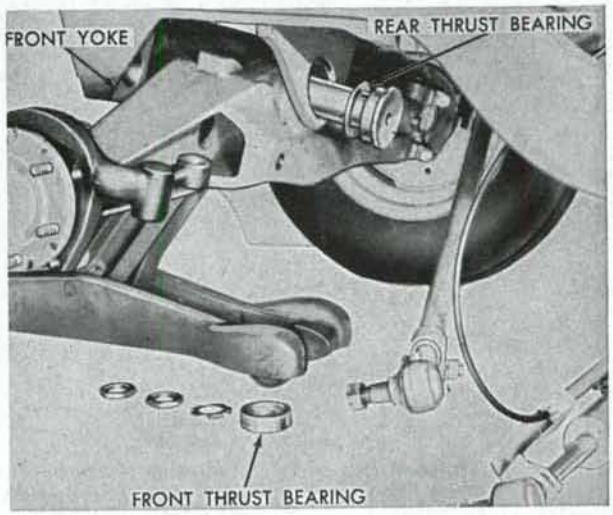

Fig. FO8 — Tilt front axle to the rear as shown, when removing pivot pin from Heavy Duty Industrial tractor. Left wheel is removed for illustration purposes only. (Early model with full power steering is shown.)

Renew the two bushings in the front axle as required. The diameter of the two bushings is the same but the front bushing is longer. Drive the bushings into the axle member until ends are flush with axle.

Reinstall by reversing the removal procedure, keeping in mind that the Woodruff key must be aligned with the keyway in the front bore of the support. Tighten pivot pin lock nut to 50 Ft.-Lbs. and secure with tab washer and jam nut.

FRONT SUPPORT

16. To remove the front axle support, first remove the radiator as described in paragraph 152. Disconnect the hydraulic lines from the power package pump and cap all exposed openings. Remove the four nuts from the pump mounting plate studs and pull the pump, mounting plate and universal drive shaft as a unit from the tractor. Place a floor jack under the transmission case and support the weight of the tractor. Position a second jack under the center of the front axle to stabilize the axle. Remove the bolts securing the support to the side members and the two bolts securing the support to the front of the engine. Disconnect the power steering cylinder hoses and unbolt and remove the cylinder. Slide the support and front axle assembly forward until the axle pivot pin will clear the engine and remove the pivot pin. Raise the front of the tractor enough for the front support to clear the front axle and slide the support forward out of the side rails.

DRAG LINK, TIE ROD AND TOE-IN

17. On models with power assist steering, the installed length of the drag link should be adjusted to $46\frac{7}{16}$ to 46½ inches, measured between centers of sockets at each end of the drag link. The offset (elbow) in the drag link must be towards the front end of the tractor, and point 15 to 20 degrees below horizontal and away from the engine. If tractor is equipped with loader, check clearance between drag link and left-hand cylinder on loader in all positions of front axle, loader and drag link. If interference exists, loosen lock nuts at each end of drag link, rotate sleeve slightly to provide clearance and retighten lock nuts.

18. The tie rod ends (and drag link ends on power-assist steering models) are of the non-adjustable automotive type. Renewal procedure is evident. Adjust the tie rod to provide ¼ to ½-inch toe-in by loosening the clamp on each end and rotating the tube until the toe-in is correct. Refer to paragraph 17 for adjustment of drag link.

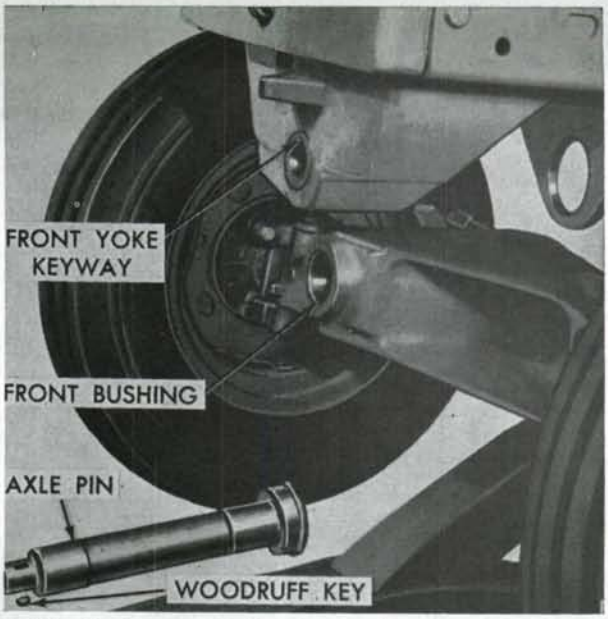

Fig. FO9 — Raise front of Heavy Duty Industrial tractor with a hoist and roll front axle and wheels assembly forward away from tractor.

FRONT SYSTEM AND STEERING GEAR, ROW CROP

PEDESTAL AND COMPONENTS Early Series 700-900

19. **REMOVE AND REINSTALL.** To remove the pedestal, proceed as follows: Provide support for the front of the tractor and drain the radiator. Remove the bolts retaining hood to pedestal and the nuts from the radiator retaining studs. Disconnect drag link from front steering arm. Support pedestal in a suitable manner, unbolt pedestal from engine and side rails and move the pedestal and wheels assembly away from the tractor. The radiator will be supported by the radiator hoses and the fan after the pedestal is removed. See Fig. FO10.

Note: It may be necessary to loosen the generator adjusting bracket and the lower radiator hose to gain access to one of the pedestal lower retaining bolts.

Replacement pedestals are factory fitted with bushings, bearing cup and seals.

20. **OVERHAUL.** Normal overhaul of the pedestal can be accomplished without removing the pedestal from the tractor as follows:

Remove grille, drain the pedestal oil reservoir and remove the reservoir cover. Raise the front of the tractor until the bottom of the pedestal is approximately 18 inches from the floor and remove the front wheel and hub assemblies. Remove the front steering arm (4—Fig. FO10), thrust cap (5) and shim stack being careful not to damage or lose the shims. Support the vertical spindle (18), remove nut from top of spindle shaft and bump the vertical spindle down and out of pedestal. Turn steering sector arm shaft (7) until the bevel gears unmesh and withdraw gear (11). Pull steering sector arm shaft (7) and gear unit out through top opening in pedestal. The need and procedure for further disassembly is self-evident.

Bushings (1) for sector arm shaft and bushing (10) at top of spindle are renewable and require no final sizing if carefully installed using a suitable piloted driver. Renewal of

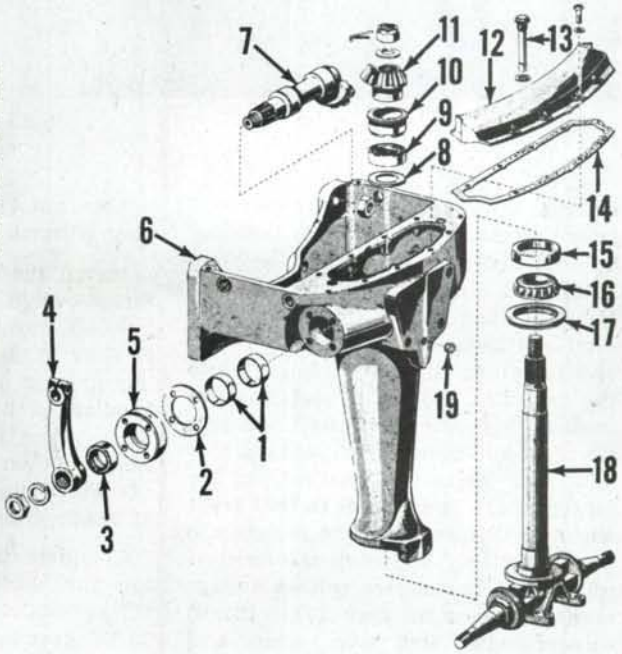

Fig. FO10 — Exploded view of early 700 and 900 Series Row Crop pedestal. Design of pedestal was changed in 1957 production to that shown in Fig. FO11 to allow installation of single front wheel or wide adjustable front axle.

1. Bushings
2. Shims
3. Oil seal
4. Steering arm
5. Thrust cap
6. Pedestal
7. Sector shaft
8. Oil seal spacer
9. Oil seal
10. Bushing
11. Sector gear
12. Cover
13. Oil dipstick
14. Gasket
15. Bearing cup
16. Cone & roller assy.
17. Dust seal
18. Spindle
19. Drain plug