

SHOP MANUAL

CASE/INTERNATIONAL

MODELS

1896-2096

IDENTIFICATION

Tractor model number and identification serial number are located on a plate on right fender of tractors not equipped with a cab, or on a plate on upper right of cab interior on tractors so equipped. Cab serial number is located on a plate on upper right of cab interior. Engine serial number is located on a plate on left side of timing gear housing. Transmission serial number is on left side of transmission housing. On models so equipped, front-wheel drive serial number is located on a plate on rear of front drive axle housing.

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DUAL DIMENSIONS

This service manual provides specifications in both the U.S. Customary and Metric (SI) system of measurements. The first specification is given in the measuring system used during manufacture, while the second specifications (given in parenthesis) is the converted measurement. For instance, a specification of "0.011 inch (0.279 mm)" would indicate that the equipment was manufactured using the U.S. system of measurement and the metric equivalent of 0.011 inch is 0.279 mm.

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CONDENSED SERVICE DATA

	Models	
	1896	2096
GENERAL		
Engine Make	Consolidated	Diesel
Engine Model	6T-590	6TA-590
Cylinders, No. of	6	6
Bore	4.016 in. (102 mm)	4.016 in. (102 mm)
Stroke	4.724 in. (120 mm)	4.724 in. (120 mm)
Displacement	359 cu. in. (5.9 L)	359 cu. in. (5.9 L)
Compression Ratio	17.5:1	17:1
Main Bearings, No. of	7	7
Cylinder Sleeves	None	None
Forward Speeds	12	12
TUNE-UP		
Firing Order	1-5-3-6-2-4	
Valve Tappet Gap, Cold—		
Intake	0.010 in. (0.254 mm)	0.010 in. (0.254 mm)
Exhaust	0.020 in. (0.508 mm)	0.020 in. (0.508 mm)
Injection Pump—		
Make	Robert Bosch	
Model	VE	
Timing	TDC	
Injection Nozzles—		
Make	Robert Bosch 117 mm	
Opening Pressure,		
New	3550-3670 psi (24476-25303 kPa)	3190-3310 psi (21994-22821 kPa)
Used	3200-3625 psi (22063-24994 kPa)	3120-3260 psi (21511-22476 kPa)
Turbocharger—		
Make	Holset	
Engine Governed Speeds (Rpm)—		
Low Idle	750-850	
High Idle	2210-2290	
Rated Load	2100	
Battery Terminal Grounded	Negative	
CAPACITIES		
Cooling System	22 U.S. qts. (20.8 L)	
Crankcase (w/filters)	16 U.S. qts. (15.1 L)	
Transmission & Hydraulic System	100 U.S. qts. (94.6 L)	
Oil Type	Hy-Tran Plus	

CONDENSED SERVICE DATA (CONT.)

	Models	
	1896	2096
CAPACITIES (Cont.)		
Fuel Tank	_____ 65 U.S. gal. _____	_____ (246 L) _____
Front Drive Axle—		
Differential (Axle) Housing	_____ 9 U.S. qts. _____	_____ (8.5 L) _____
Oil Type	_____ 85/140 EP _____	
Planetary (Each Side)	_____ 1.5 U.S. qts. _____	_____ (1.4 L) _____
Oil Type	_____ 85/140 EP _____	

FRONT AXLE (TWO WHEEL DRIVE)

FRONT WHEEL BEARINGS

All Models

1. Refer to Fig. 1 for typical wheel hub and bearing assembly.

The tapered inner and outer roller bearings are not interchangeable. Clean and inspect bearing cups and cones and renew as necessary. Install inner seal (10) with lip facing spindle flange. Install outer seal (9) with lip facing away from bearing (8). Fill hub cavity and pack bearings with No. 2 lithium grease. Coat surface of seal lips with grease.

When adjusting wheel bearings, tighten nut (2) until drag on hub is felt, then back nut off 1/4 turn or until next pin hole lines up. Bearings should have zero end play. Install cotter pin.

SPINDLES

All Models

2. **R&R SPINDLES.** To remove spindle, lift and support front of tractor and remove wheel. Disconnect tie rod ball joint from steering arm (3—Fig. 2). Remove bolt (1) and washer (2) from arm (3). Note index punch marks on arm and shaft indicating location of tapered splines for left or right steering arm, then remove steering arm. Support spindle and remove snap ring (4) and washer (5), then remove spindle (8) from axle extension (7).

3. **SPINDLE BUSHINGS.** With spindles removed, spindle bushings (6—Fig. 2) can be removed using a suitable drift punch. New bushings are presized and should not require reaming if carefully installed.

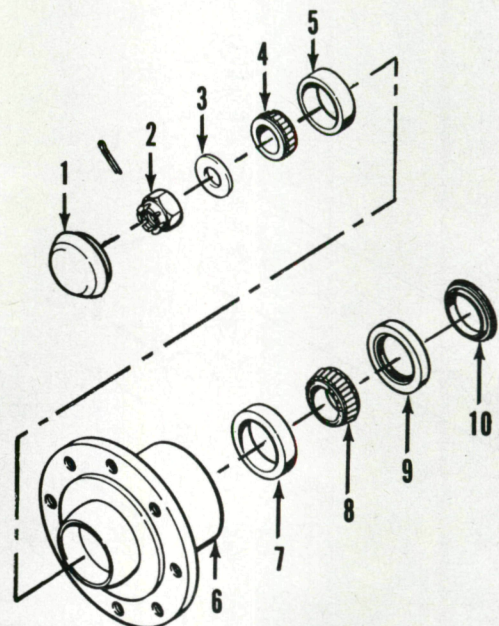


Fig. 1—Exploded view of wheel hub and bearing assembly used on all two-wheel drive tractors.

- | | |
|-----------------|------------------|
| 1. Cap | 6. Hub |
| 2. Nut | 7. Bearing cup |
| 3. Washer | 8. Bearing cone |
| 4. Bearing cone | 9. Seal (outer) |
| 5. Bearing cup | 10. Seal (inner) |

Paragraphs 4-5

Press new bushings into axle ends until bushing flange seats against surface of axle ends.

Assemble by reversing disassembly procedure making sure punch marks on shaft and steering arm align. Tighten bolt (1) to 200-250 ft.-lbs. (271-339 N·m) torque. Lubricate through grease fitting with No. 2 lithium grease. Tighten tie rod slotted nut to 100-125 ft.-lbs. (136-168 N·m) torque and install new cotter pin.

4. TIE RODS AND TOE-IN. Disassembly of tie rod assembly is obvious after examination of unit and reference to Fig. 3. However, upon reassembly make sure clamp bolts (5) are installed in same number hole as axle extension.

Tighten tie rod slotted nuts to a torque of 100-125 ft.-lbs. (136-169 N·m). Install new cotter pins. Tighten clamp bolt (5) nuts to a torque of 45-54 ft.-lbs. (61-73 N·m).

Front wheel toe-in must be 1/8-1/2 inch (3.1-12.7 mm). To adjust toe-in, remove clamp bolt (5) from left

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tie rod extension. Loosen jam nut (8), then turn extension (9) in or out until desired toe-in is obtained. Install clamp bolt (5) and tighten nut to a torque of 45-54 ft.-lbs. (61-73 N·m). Tighten jam nut (8) against tie rod extension (9).

AXLE MAIN MEMBER AND PIVOT PIN

All Models

5. To remove axle main member, first raise and support tractor under engine side rails with suitable jack stands. Disconnect tie rods from steering arms, then refer to Fig. 3 and disconnect power steering cylinder (10) from axle main member and tie rod lug. Secure steering cylinder up and out of the way. Be careful not to damage hydraulic lines to cylinder.

Refer to Fig. 4 and remove bolt (3), washer and spacer. Remove front grease fitting and install a slide hammer to pivot shaft (2). Support axle main member with a rolling floor jack, then pull pivot shaft out front of front support (1). Catch thrust washers (4 and 5) as shaft is removed. Lower axle main member enough to clear front support and roll forward from tractor.

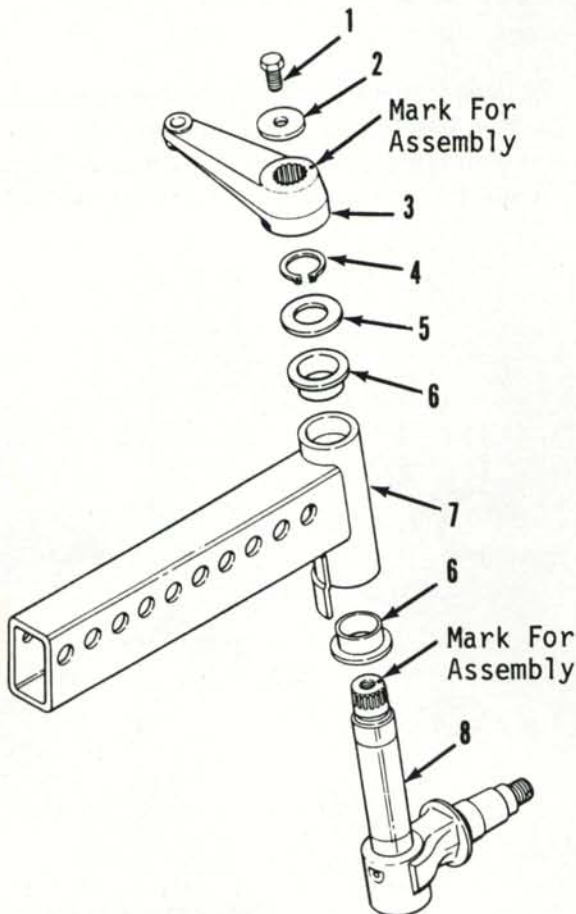


Fig. 2—Exploded view of steering spindle used on all two-wheel drive tractors. Note assembly marks.

- | | |
|-----------------|-------------------|
| 1. Cap screw | 5. Washer |
| 2. Washer | 6. Bushings |
| 3. Steering arm | 7. Axle extension |
| 4. Snap ring | 8. Spindle |

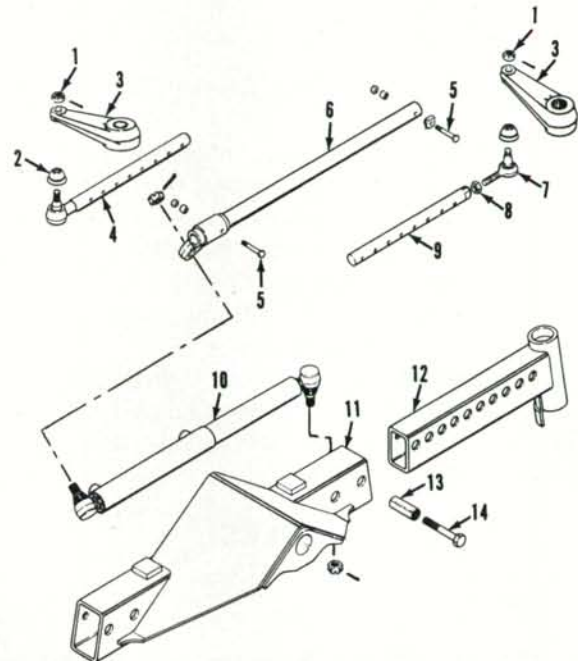


Fig. 3—Exploded view of steering tie rod, cylinder, arms and related parts used on two-wheel drive tractors.

- | | |
|---------------------------|---------------------------|
| 1. Slotted nuts | 9. Tie rod extension L.H. |
| 2. Dust covers | 10. Steering cylinder |
| 3. Steering arms | 11. Axle main member |
| 4. Tie rod extension R.H. | 12. Axle extension |
| 5. Clamp bolts | 13. Spacer |
| 6. Tie rod tube | 14. Locater bolt |
| 7. Tie rod end | |
| 8. Jam nut | |

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Paragraphs 6-7

Bushings (6) can now be removed using a suitable drift punch. Drive new bushings into bore of axle main member until flush to 1/16 inch (1.6 mm) below outer surface.

When reassembling, coat pivot shaft and bushings with antiseize compound. Install steel washer (4), nylon washer (5), then second steel washer (4) at front and rear of axle main member. When axle main member and pivot shaft are installed, install and tighten spacer, washer and bolt (3) to a torque of 93-112 ft.-lbs. (126-152 N·m).

If axle extensions (12—Fig. 3) have been removed, reinstall and insert spacers (13—Fig. 4) and locator bolts (14). Install and tighten nuts (15) to a torque of 400-480 ft.-lbs. (542-651 N·m).

FRONT SUPPORT

All Models

6. To remove front support (1—Fig. 4), first disconnect headlight wiring, then remove grille, hood and side panels. Drain coolant from radiator and disconnect upper and lower radiator hoses. Disconnect air intake tube, oil cooler lines and air conditioner lines at quick couplers. Attach a hoist to the radiator, condenser and oil cooler assembly support brackets, remove two rear bolts and three front bolts, then lift off the assembly. Remove front axle assembly as out-

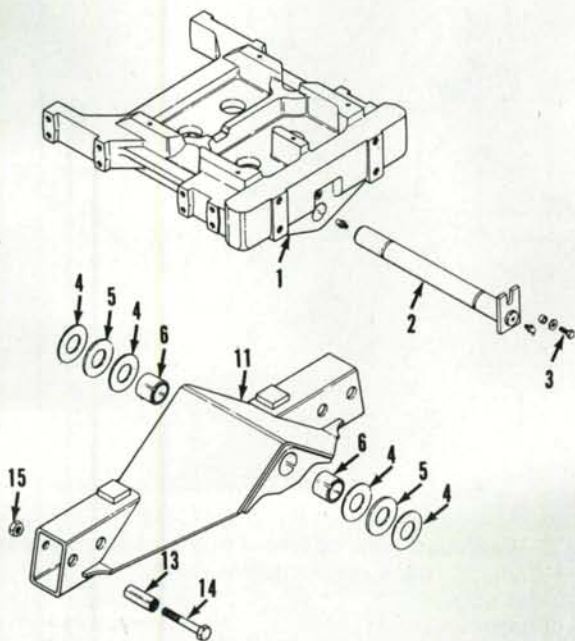


Fig. 4—Exploded view of front axle and support used on two-wheel drive models.

- | | |
|------------------|----------------------|
| 1. Front support | 11. Axle main member |
| 2. Pivot shaft | 13. Spacer |
| 3. Bolt | 14. Locator bolt |
| 4. Steel washers | 15. Nut |
| 5. Nylon washers | |
| 6. Bushings | |

lined in paragraph 5. Attach a hoist to front support, then unbolt and remove.

Reinstall by reversing removal procedure. Tighten side rail to front support bolts to a torque of 380-450 ft.-lbs. (515-610 N·m). Tighten the five cap screws securing the radiator, condenser and oil cooler support bracket to front support to a torque of 35-42 ft.-lbs. (48-57 N·m).

FRONT DRIVE AXLE

Models 1896 and 2096 tractors are available with a ZF front drive axle.

DRIVE AXLE ASSEMBLY AND SUPPORT

Models So Equipped

7. **REMOVE AND REINSTALL.** To remove the front drive axle assembly, place transmission in PARK and securely block rear wheels. Unbolt and remove drive shaft shield and the front drive shaft assembly. Disconnect steering cylinder lines and cap or plug all openings. Loosen front wheel to hub nuts on both front wheels. Install a side frame jack CAS-10500-1 or front split stand CAS-10749 on each side of tractor. Raise front of tractor until front wheels are off the ground. Remove wheel nuts and using a hoist, remove front wheels. Place a floor jack or special axle carrier CAS-10500-4 under front axle. Remove cap screw (5—Fig. 5), washer (4) and spacer (3). Then, remove pivot shaft (2) and thrust washers (6 and 9). Lower axle (floor jack) or raise tractor (axle carrier) and roll assembly forward from tractor. Inspect bushings (7) and renew as necessary. When installing new bushings, apply a coat of Loctite Anti-Seize to bore in axle housing. Freeze bushings in dry ice and carefully install flush to 1/16 inch (1.6 mm) below the face of axle housing.

To remove front support (1—Fig. 5), disconnect headlight wires, then remove grille, hood and side panels. Drain cooling system, then disconnect upper and lower radiator hoses. Disconnect air intake tube, oil cooler lines and air conditioner lines at quick couplers. Attach a hoist to the radiator, condenser and oil cooler assembly support brackets, remove two rear bolts and three front bolts, then lift off the assembly. Attach a hoist to the front support, then unbolt and remove.

Reinstall by reversing removal procedure. Tighten side rail to front support bolts to a torque of 380-450 ft.-lbs. (515-610 N·m). Tighten the five cap screws securing the radiator, condenser and oil cooler support bracket to front support to a torque of 35-42 ft.-lbs. (48-57 N·m).

Inspect thrust washers (6 and 9) for excessive wear and renew as necessary. Reinstall axle assembly to

Paragraph 8

front support. Make sure nylon thrust washer (9) is installed between steel thrust washers (6). Use as many additional steel washers as possible at rear side of axle housing (8) to shim axle housing forward. Secure pivot shaft (2) in place with spacer (3), washer (4) and cap screw (5), tightened to a torque of 93-112 ft.-lbs. (126-152 N·m). Connect steering cylinder lines and reinstall drive shaft. Tighten drive shaft bolts and nuts to a torque of 45-54 ft.-lbs. (61-73 N·m). Install drive shaft shield. Install front wheels and remove jacks. Tighten front wheel to hub nuts to a torque of 115-130 ft.-lbs. (156-176 N·m).

WHEEL HUB AND PLANETARY

Models So Equipped

8. R&R AND OVERHAUL. To remove the wheel hub and planetary, support axle housing and remove wheel and tire assembly. Rotate wheel hub until drain plug (9—Fig. 6) is at bottom, remove plug and drain oil. Remove the two socket head screws (8), then remove planetary carrier (10). Unbolt and re-

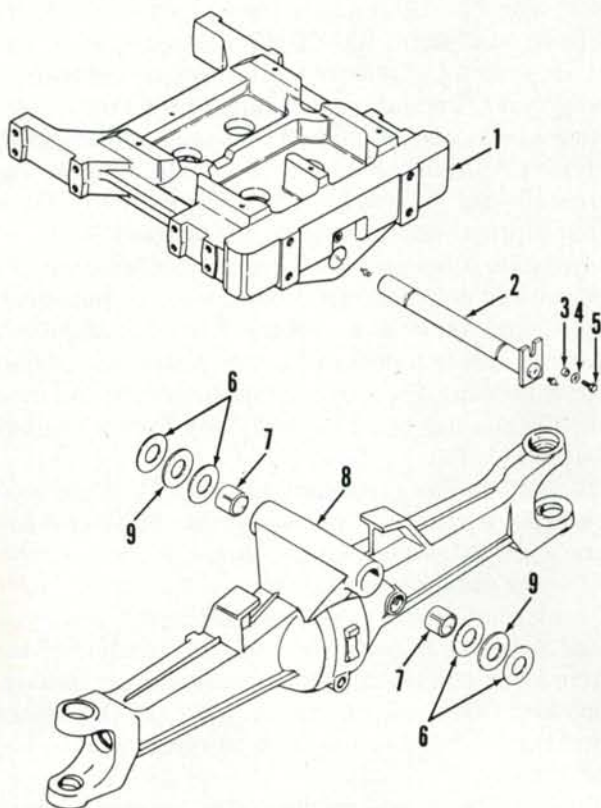


Fig. 5—Front support and axle housing used on models equipped with front drive axle.

- | | |
|---------------------------|---------------------------|
| 1. Front support | 7. Bushings |
| 2. Pivot shaft | 8. Axle housing |
| 3. Spacer | 9. Thrust washers (nylon) |
| 4. Washer | |
| 5. Cap screw | |
| 6. Thrust washers (steel) | |

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move lockplate (2). Using a spanner wrench CAS-1762 or equivalent, remove slotted nut (1). Remove ring gear (3), outer bearing cone (5), hub (6) and inner bearing cone (7). If necessary, remove bearing cups (5 and 7), oil seal (1—Fig. 7) and dust seal (2) from hub. Sun gear (17—Fig. 6) is secured to axle shaft “U” joint (11—Fig. 7) with a snap ring (10). If necessary to remove sun gear, remove pivot housing (5) as outlined in paragraph 9.

To remove planetary gears (12—Fig. 6), remove snap rings (14) and slide gear and bearing assemblies from carrier (10). Remove tapered retaining ring (11) and slide bearing (13) from gear (12). Repeat operation for other two gears. Remove thrust washer (15) from center of carrier.

Clean and inspect all parts and renew any showing excessive wear or other damage. Remove snap ring (16) and check condition of splined thrust washer (18) and thrust washer (19). Renew as necessary and reassemble on sun gear. Reinstall bearings (13) in planetary gears (12) and install retaining ring (11) with wide side of ring toward bearing. Install gear assemblies and secure with snap rings (14).

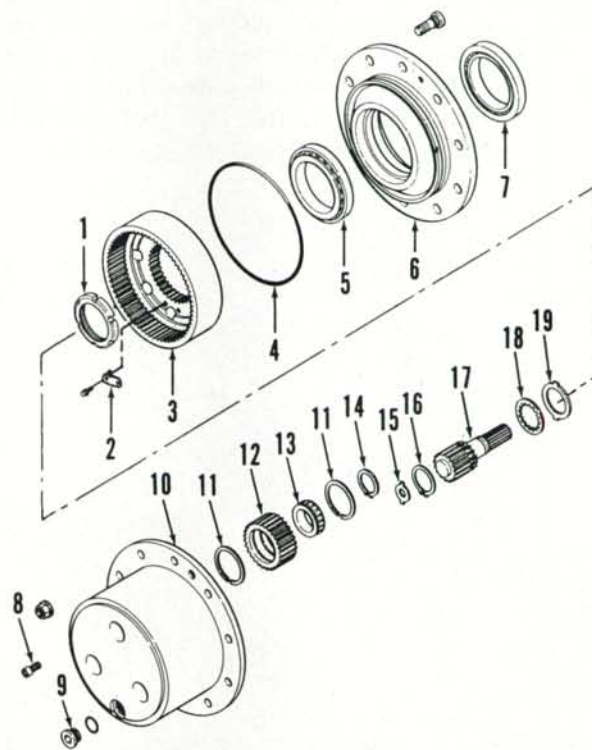


Fig. 6—Exploded view of wheel hub and planetary unit used on front drive axle.

- | | |
|-------------------------------|---------------------------|
| 1. Slotted nut | 9. Drain plug |
| 2. Lockplate | 10. Planetary carrier |
| 3. Ring gear | 11. Retaining rings |
| 4. “O” ring | 12. Planetary gear |
| 5. Bearing cup & cone (outer) | 13. Roller bearing |
| 6. Hub | 14. Snap ring |
| 7. Bearing cup & cone (inner) | 15. Thrust washer |
| 8. Socket head screw | 16. Snap ring |
| | 17. Sun gear & shaft |
| | 18. Splined thrust washer |
| | 19. Thrust washer |

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To adjust end play of axle shaft and sun gear, make sure thrust washer (15) is removed from carrier (10). To determine dimension (A—Fig. 8) which is the distance from thrust washer seat to mounting flange of planetary carrier, install special tool CAS-1764 on thrust washer seat. The length of this tool (dimension B) is stamped in mm on tool. Place special tool CAS-1765 across mounting flange of planetary carrier. Using a depth gage through hole in tool CAS-1765, measure distance (C) to end of tool CAS-1764. Measure diameter of tool CAS-1765 (dimension D). Subtract dimension (D) from dimension (C) to obtain dimension (E). Add dimension (E) to dimension (B) to obtain dimension (A). Record this dimension. To determine dimension (F—Fig. 9) which is the distance from the end of the sun gear shaft to the face of the mounting flange of the planetary hub, push sun gear inward as far as possible. Assemble special tool legs CAS-1763 to tool CAS-1765 and hold against mounting flange of planetary hub. The length of this special tool assembly (dimension G) is stamped in mm on the legs. Using a depth gage through hole in tool CAS-1765, measure distance (H) to end of sun gear.

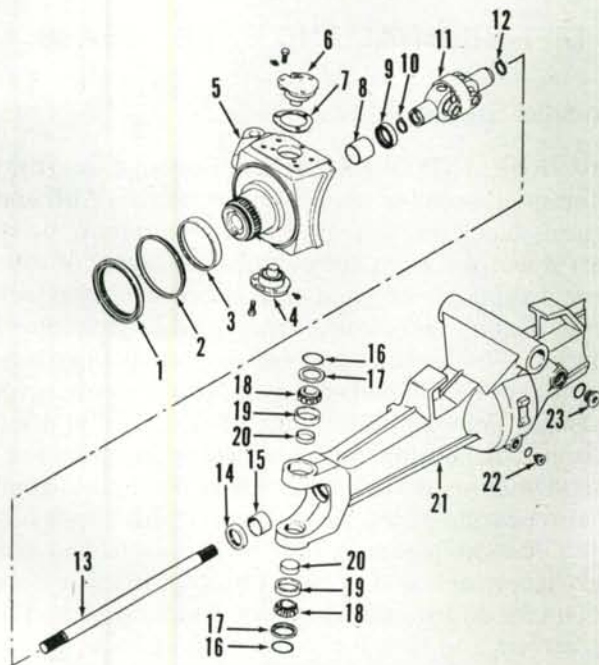


Fig. 7—Exploded view of pivot housing and components used on front drive axle.

- | | |
|----------------------|-----------------------|
| 1. Oil seal | 13. Axle shaft |
| 2. Dust seal | 14. Oil seal |
| 3. Wear ring | 15. Sleeve bearing |
| 4. Pivot pin (lower) | 16. "O" ring |
| 5. Pivot housing | 17. Seal cap |
| 6. Pivot pin (upper) | 18. Bearing cone |
| 7. Shim | 19. Bearing cup |
| 8. Sleeve bearing | 20. Cup plug |
| 9. Oil seal | 21. Axle housing |
| 10. Snap ring | 22. Drain plug |
| 11. "U" joint assy. | 23. Fill & level plug |
| 12. Snap ring | |

Paragraph 8 (Cont.)

Subtract dimension (H) from dimension (G) to obtain dimension (F). Then, subtract dimension (F) from dimension (A—Fig. 8) to obtain the total distance axle and sun gear is free to travel. Correct end play of axle shaft and sun gear is 0.012-0.024 inch (0.3-0.6 mm).

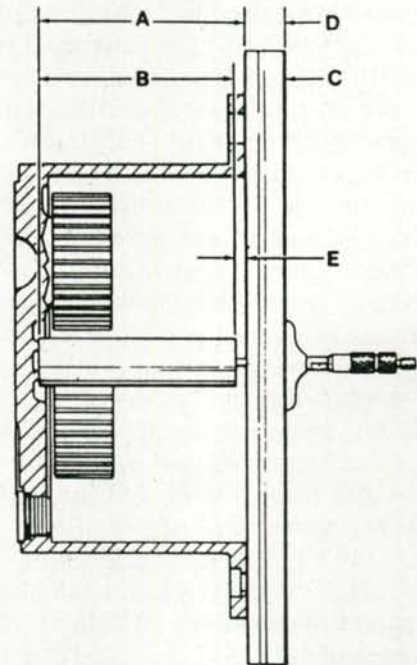


Fig. 8—View of special tools used to determine dimension (A) from mounting flange of planetary carrier to seat of thrust washer. Refer to text for procedure.

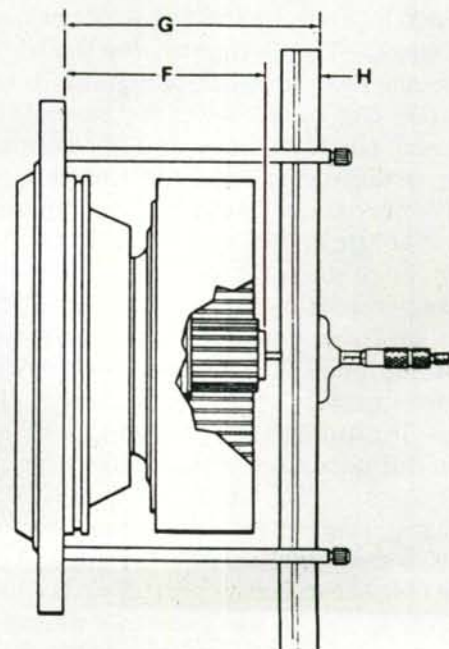


Fig. 9—View of special tools used to determine dimension (F) from flange of hub to end of sun gear shaft. Refer to text for procedure.

Paragraphs 9-10

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Subtract correct end play from the predetermined distance axle shaft and sun gear is free to travel to determine correct thickness of thrust washer (15—Fig. 6) to be installed. Thrust washers are available in thicknesses of 0.059, 0.067, 0.079, 0.087, 0.098 and 0.118 inch (1.5, 1.7, 2.0, 2.2, 2.5 and 3.0 mm).

When reassembling, install new wear ring (3—Fig. 7) and bearing cone (7—Fig. 6) on pivot housing. If removed, install bearing cups (5 and 7) in hub (6). Install new oil seal (1—Fig. 7) and dust seal (2) in hub. Lubricate seal and install hub and outer bearing cone (5—Fig. 6). Install ring gear (3) and slotted nut (1). Using a spanner wrench CAS-1762, tighten slotted nut until a rolling torque of 8.9-13.3 ft.-lbs. (12-18 N·m) with new bearings or 6.7-8.9 ft.-lbs. (9-12 N·m) with used bearings, is required to rotate hub. Use special tool CAS-1768 to check rolling torque. When rolling torque is correct, secure with lockplate (2) and cap screws tightened to a torque of 70 ft.-lbs. (96 N·m). Install new "O" ring (4) on hub (6). Use grease to stick predetermined thrust washer (15) in place in carrier (10), then install carrier on hub. Install the two socket head cap screws (8) and tighten to a torque of 70 ft.-lbs. (96 N·m). Rotate hub until the filler (drain) hole is horizontal to center of hub. Fill hub with GL5 85/140 EP gear oil to filler plug opening. Capacity is 1.5 U.S. quarts (1.4 L). Install plug (9). Install wheel and tire assembly and tighten wheel hub nuts to a torque of 115-130 ft.-lbs. (156-176 N·m). Lower tractor to the ground.

PIVOT HOUSING AND AXLE SHAFT

Models So Equipped

9. REMOVE AND REINSTALL. To remove the pivot housing (5—Fig. 7), first remove the wheel hub and planetary as outlined in paragraph 8. Remove snap ring (16—Fig. 6), splined thrust washer (18) and thrust washer (19) from sun gear (17). Disconnect tie rod end from arm on pivot housing. Unbolt upper and lower pivot pins (6 and 4—Fig. 7), then remove pivot pins with "O" rings (16), seal caps (17) and bearing cones (18). Keep shims (7) with upper pivot pin. Remove pivot housing (5), then withdraw sun gear, "U" joint and axle shaft assembly from axle housing. Drive out cup plugs (20) and remove bearing cups (19). Remove bearing cones (18), seal caps (17) and "O" rings (16) from pivot pins. Remove oil seals (9 and 14) and if necessary, remove sleeve bearings (8 and 15).

Loosen snap ring (10) in "U" joint and remove sun gear. Loosen snap ring (12) in "U" joint and remove axle shaft (13). Clean and inspect all parts and renew any showing excessive wear or other damage. "U" joint (11) is available only as an assembly. Reassemble sun gear and axle shaft to "U" joint by reversing disassembly procedure.

If removed, install sleeve bearings (8 and 15). Install new oil seals (9 and 14) with lips of seals toward sleeve bearings. Install cup plugs (20) and bearing cups (19) in axle housing. Lubricate lips of seals (9 and 14), then insert axle shaft into axle housing. Make certain axle shaft splines engage splines in differential side gears. Install new "O" rings (16), seal caps (17) and bearing cones (18) on pivot pins and lubricate bearing cones with lithium grease. Carefully install pivot housing (5) over sun gear and axle housing. Install lower pivot pin assembly with original shim (7) and cap screws tightened finger tight. Torque bottom cap screws first, then the upper cap screws to 140 ft.-lbs. (190 N·m.). Check swing resistance with a torque wrench which should be 16-21 ft.-lbs. (21-28 N·m) with new bearings or 8-10.5 ft.-lbs. (10.5-14 N·m) for used bearings. Adjust swing resistance by using alternate shim thickness. Shims are available in thicknesses of 0.024, 0.039, 0.055, 0.063, 0.071 and 0.079 inch (0.6, 1.0, 1.4, 1.6, 1.8 and 2.0 mm).

Install thrust washer (19—Fig. 6), splined thrust washer (18) and snap ring (16). Reinstall wheel hub and planetary as outlined in paragraph 8. Connect tie rod end to steering arm on pivot housing and tighten nut to 100-125 ft.-lbs. (136-169 N·m) torque.

DIFFERENTIAL AND BEVEL GEARS

Models So Equipped

10. R&R AND OVERHAUL. To remove the front differential assembly, place transmission in PARK and securely block rear wheels. Unbolt and remove drive shaft shield and front drive shaft. Raise front of tractor and support each end of axle housing with jack stands. Unbolt and remove front wheels. Disconnect steering cylinder lines and cap or plug all openings. Disconnect tie rod ends from steering arms on pivot housings. Remove drain plug (22—Fig. 7) and drain oil from axle housing. Attach a hoist to planetary hub. Unbolt and remove upper and lower pivot pins (6 and 4) with bearing cones. Keep shim (7) with upper pivot pin. Remove planetary hub, pivot housing and axle shaft from each end of axle housing. Place a floor jack under differential assembly, remove differential cap screws and install a guide stud at each side of differential housing. Separate differential housing from axle housing and using the floor jack, remove assembly from tractor.

To disassemble, remove lock pins (16—Fig. 10) from adjusting nuts (9 and 15). Remove the adjusting nuts and bearing cups (10 and 14). Using a suitable puller, remove bearing cones (11 and 13). Remove cotter pins (21), then pry off lockplates (26). Remove cap screws (22 and 25) and separate differential case halves (28 and 40). Remove differential pinions (34), cross pins (35) and thrust washers (33). Remove ring gear (27)

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Paragraph 10 (Cont.)

and differential case half (28) assembly first, then remove differential case half (40) assembly. Remove side gear (36), thrust disc (37), friction discs (38) and friction plates (39) from differential case half (40). Remove side gear (32), thrust disc (31), friction discs (29) and friction plates (30) from differential case half (28). Ring gear (27) is secured to differential case half (28) by four sets of double spring pins (23 and 24). Use a press to remove case half from ring gear.

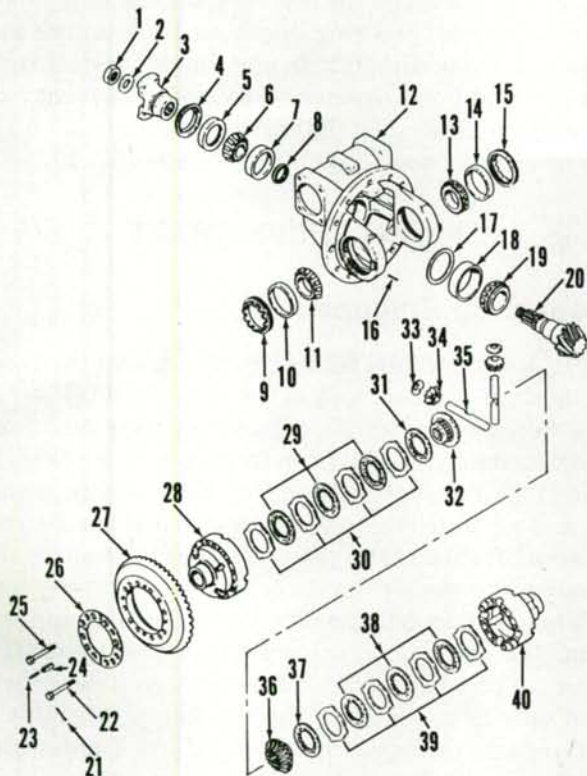


Fig. 10—Exploded view of limited slip differential and bevel drive gears assembly used on front drive axle. Note steering cylinder is removed from differential housing.

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|------------------------------|--------------------------------------|
| 1. Nut | 23. Spring pin |
| 2. Washer | 24. Spring pin |
| 3. Drive yoke | 25. Cap screw |
| 4. Seal cover | 26. Lockplate |
| 5. Oil seal | 27. Ring gear |
| 6. Bearing cone | 28. Differential case half |
| 7. Bearing cup | 29. Friction discs (internal teeth) |
| 8. Spacer | 30. Friction plates (external tangs) |
| 9. Adjusting nut | 31. Thrust disc |
| 10. Bearing cup | 32. Side gear |
| 11. Bearing cone | 33. Thrust washer (4) |
| 12. Differential housing | 34. Differential pinion (4) |
| 13. Bearing cone | 35. Cross pins |
| 14. Bearing cup | 36. Side gear |
| 15. Adjusting nut | 37. Thrust disc |
| 16. Lock pin | 38. Friction discs (internal teeth) |
| 17. Shim | 39. Friction plates (external tangs) |
| 18. Bearing cup | 40. Differential case half |
| 19. Bearing cone | |
| 20. Bevel drive pinion | |
| 21. Cotter pin | |
| 22. Cap screw (drilled head) | |

Remove nut (1), washer (2) and drive yoke (3) with seal cover (4). Drive bevel pinion shaft (20) out of bearing cone (6) and remove pinion with spacer (8) and bearing cone (19). Remove oil seal (5) and bearing cone (6) from differential housing (12). Using a press, remove bearing cone (19) and spacer (8) from bevel pinion shaft. Drive bearing cups (7 and 18) from differential housing, then remove shims (17).

Clean and inspect all parts and renew any showing excessive wear or other damage. Bevel drive pinion (20) and ring gear (27) are available only as a matched set as are the differential case halves (28 and 40).

To install and adjust bevel drive pinion position, proceed as follows: Install bearing cups (7 and 18) without shims (17) in differential housing (12). Install bearing cone (19) over rod end of special tool CAS-1770 and install in differential housing. Install bearing cone (6) on other half of special tool and install in housing. Tighten tool by hand until bearing cones are seated in bearing cups (all end play removed). Install pilot discs CAS-1771 in carrier bearing bores in differential housing. Insert special tool CAS-1765 through the pilot discs. Using a feeler gage, measure the distance between end of tool CAS-1770 and tool CAS-1765. Add this distance to the metric dimension stamped on tool CAS-1770, then add $\frac{1}{2}$ the diameter of tool CAS-1765. Subtract the metric dimension on end of bevel drive pinion from the previously determined sum to obtain thickness of shim (17) to be installed behind bearing cup (18). Shims are available in thicknesses of 0.004, 0.008, 0.012 and 0.020 inch (0.1, 0.2, 0.3 and 0.5 mm). Remove special tools and bearing cones, then remove bearing cup (18). Install the previously determined shim pack (17) and reinstall bearing cup (18). Heat bearing cone (19) to 250° F (120° C) and install on bevel drive pinion (20) until seated. Install bevel drive pinion and bearing cone in differential housing and install new spacer (8). Heat bearing cone (6) to 250° F (120° C) and install on bevel drive pinion. Install new oil seal (5) with lip toward bearing cone (6). If bearing cover (4) is damaged, press old cover off and a new cover on drive yoke (3). Install drive yoke and washer (2) on bevel drive pinion. Apply Loctite to threads of nut (1), then install and tighten nut until a rolling torque of 1.5-2.2 ft.-lbs. (2.0-3.0 N·m) is required to rotate bevel drive pinion.

To reassemble the ring gear and differential, proceed as follows: If spring pins (23 and 24) have been removed or if new differential case is being installed, refer to Fig. 11 and install spring pins as shown. Install large spring pins (24—Fig. 10) until seated with slot in pins aligned with bolt circle. Then, install small spring pins (23) until flush with top of large pins with slots 180 degrees from slots in large pins. Heat ring gear (27) to 400-450° F (204-232° C) and install on