

# SHOP MANUAL JOHN DEERE

SERIES 4055—4255—4455—4555—4755—4955

The basic tractor serial number plate is located at the rear of the transmission case. The engine serial number plate is located on right side of engine block behind the injection pump. The transmission serial number plate is located on the left side of transmission case. The front-wheel drive serial number plate is located on the right rear of axle housing. The hydraulic pump serial number plate is located on the top right side of pump housing. The Sound-Gard body serial number plate is located on the windshield wiper motor access door header.

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## DUAL DIMENSIONS

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

## CONDENSED SERVICE DATA

	4055	4255	4455	4555	4755	4955
<b>GENERAL</b>						
Engine Make .....	OWN _____					
Engine Model .....	6076T		6		6076A	
Number of Cylinders .....	6					
Aspiration .....	Turbo			Turbo & After Cooled		
Bore .....	4.56 in. (115.8 mm)					
Stroke .....	4.75 in. (120.7 mm)					
Displacement .....	466 cu. in. (7.6 L)					
Compression Ratio .....	16.0:1					
Cylinder Sleeves .....	WET					
Speeds Forward/Reverse—						
Power Shift .....	15/4					
Quad-Range .....	16/6					...

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## CONDENSED SERVICE DATA

	4055	4255	4455	4555	4755	4955
<b>GENERAL</b>						
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Engine Model .....	6076T		_____		6076A	
Number of Cylinders .....	6					_____
Aspiration .....	Turbo			Turbo & After Cooled		
Bore .....	4.56 in.					_____
	(115.8 mm)					_____
Stroke .....	4.75 in.					_____
	(120.7 mm)					_____
Displacement .....	466 cu. in.					_____
	(7.6 L)					_____
Compression Ratio .....	16.0:1					_____
Cylinder Sleeves .....	WET					_____
Speeds Forward/Reverse—						
Power Shift .....	15/4					_____
Quad-Range .....	16/6					...

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Valve Clearance—						
Intake . . . . .	0.015 in. (0.038 mm)					
Exhaust . . . . .	0.020 in. (0.051 mm)					
Fuel Injection Pump—						
Make . . . . .	Robert Bosch or Nippondenso					
Injection Timing-Static . . . . .	TDC					
Governed Engine Rpm—						
Low Idle . . . . .	850					
High Idle . . . . .	2400					
Full Load . . . . .	2200					
Engine Power at Pto . . . . .	105HP (78.3kW)	120HP (89.5kW)	140HP (104.4kW)	155HP (115.6kW)	175HP (130.5kW)	200HP (149.2kW)
Battery—						
Volts . . . . .	12					
Ground Polarity . . . . .	Negative					

## SIZES-CLEARANCES

Crankshaft Main Journal Diameter . . . . .	3.372-3.373 in. (85.65-85.67 mm)
Main Bearing Clearance . . . . .	0.0012-0.0042 in. (0.03-0.10 mm)
Crankpin Diameter . . . . .	2.998-2.999 in. (76.15-76.18 mm)
Rod Bearing Clearance . . . . .	0.0012-0.0044 in. (0.03-0.11 mm)
Crankshaft End Play . . . . .	0.0015-0.015 in. (0.038-0.38 mm)
Camshaft Journal Clearance . . . . .	0.0025-0.0045 in. (0.0635-0.1143 mm)
Camshaft End Play . . . . .	0.0045-0.0095 in. (0.11-0.24 mm)
Piston Skirt Clearance . . . . .	See Paragraph 40

## CAPACITIES

Cooling System . . . . .	27 U.S. qts. (25.6 L)	32 U.S. qts. (30.3 L)	
Fuel Tank . . . . .	65 U.S. gals. (246 L)	102 U.S. gals. (386 L)	
Crankcase with Filter* . . . . .	18 U.S. qts. (17.0 L)	22 U.S. qts. (21.0 L)	
Transmission-Hydraulic System**—			
Power Shift . . . . .	13.5 U.S. gals. (51.0 L)	18.5 U.S. gals. (70.5 L)	
Power Shift with FWD . . . . .	15.9 U.S. gals. (60.0 L)	20 U.S. gals. (75.0 L)	
Quad-Range . . . . .	16 U.S. gals. (60.5 L)	26.9 U.S. gals. (101.8 L)	....
Quad-Range with FWD . . . . .	17.2 U.S. gals. (65.1 L)	....	....



# CONDENSED SERVICE DATA (CONT.)

4055      4255      4455      4555      4755      4955

## CAPACITIES (CONT.)

Front-Wheel Drive\*\*\*—

Axle Housing .....	_____	12.0 U.S. qts. _____	_____	12.0 U.S. qts. _____
		(11.4 L)		(11.4 L)
Wheel Hub .....	_____	3.0 U.S. qts. _____	_____	3.0 U.S. qts. _____
		(2.8 L)		(2.8 L)

\*John Deere Torq-Gard Supreme +50 oil or equivalent is recommended for use in all models.  
 \*\*John Deere Hy-Gard transmission and hydraulic oil or equivalent is recommended for use in all models.  
 \*\*\*SAE 85W-140, GL5 gear lubricant is recommended for use in all models.



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# FRONT SYSTEM (TWO-WHEEL DRIVE)

## WHEEL BEARINGS

### All Models So Equipped

**1. REMOVE AND REINSTALL.** To remove front wheel hub and bearings, remove cap (14—Fig. 1). Raise and support under axle extension. Remove cotter pin (11), slotted nut (13), washer (12) and bearing cone (8). Remove wheel and hub assembly, bearing cone (3) and oil seal (1) from spindle. Clean and inspect all parts. If wear ring (2) is scored, drive ring from hub and install new ring. Hub is slotted to aid in removal of bearing cups (4 and 7).

Install new oil seal (1) on spindle with numbered side of seal outward against driving tool. Fill space between seal lips with EP multipurpose grease. Pack bearings liberally with wheel bearing grease. Reassemble by reversing disassembly procedure. Tighten slotted nut to 35 ft.-lbs. (47 N·m) while rotating hub. Back nut off to nearest slot and install cotter pin. Install cap (14).

## SPINDLES AND BUSHINGS

### All Models So Equipped

**2. REMOVE AND REINSTALL.** To remove spindle (11—Fig. 2), first remove wheel and hub as outlined in paragraph 1. Disconnect tie rod end (14—Fig. 3) from steering arm (8). Remove cap screw (6) and washer (7) from top of spindle, then remove steering arm (8) and shim (7—Fig. 2). Lower spindle (11) out of axle extension (6). Thrust washers (13 and 14) will be removed with spindle. Clean and inspect all parts

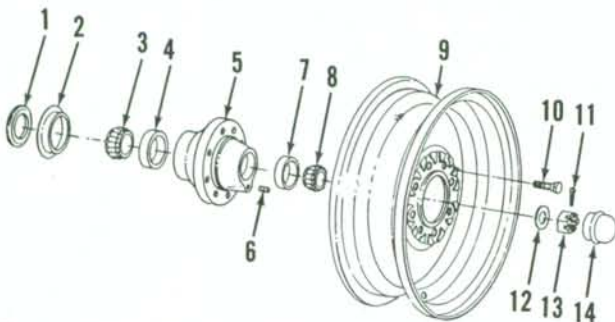


Fig. 1—Exploded view of front wheel hub, bearings and relative components.

- |                 |                 |
|-----------------|-----------------|
| 1. Oil seal     | 8. Bearing cone |
| 2. Wear ring    | 9. Front wheel  |
| 3. Bearing cone | 10. Lug bolt    |
| 4. Bearing cup  | 11. Cotter pin  |
| 5. Hub          | 12. Washer      |
| 6. Plug         | 13. Nut         |
| 7. Bearing cup  | 14. Cap         |

for excessive wear or other damage and renew as necessary.

Install new bushings (8 and 15) until flush with bottom of chamfer in bores, aligning lube holes in bushings with lube fittings in axle extension. Bushings are presized and should require no final sizing if carefully installed. Use grease to stick thrust washers (13 and 14) in position on roll pins (12). Install spindle and original shim (7). Install steering arm and tighten retaining cap screw to a torque of 170 ft.-lbs. (230 N·m). Using a dial indicator, check up and down end play of spindle in axle extension. Add or remove shims (7) to obtain an end play of 0.010-0.040 inch (0.3-1.0 mm). Balance of reassembly is the reverse of disassembly. Lubricate spindle and bushings with multipurpose grease.

## TIE RODS AND TOE-IN

### All Models So Equipped

**3. R&R AND ADJUST.** All models are equipped with two adjustable tie rods extending from left and right steering arms to center steering arm. Removal

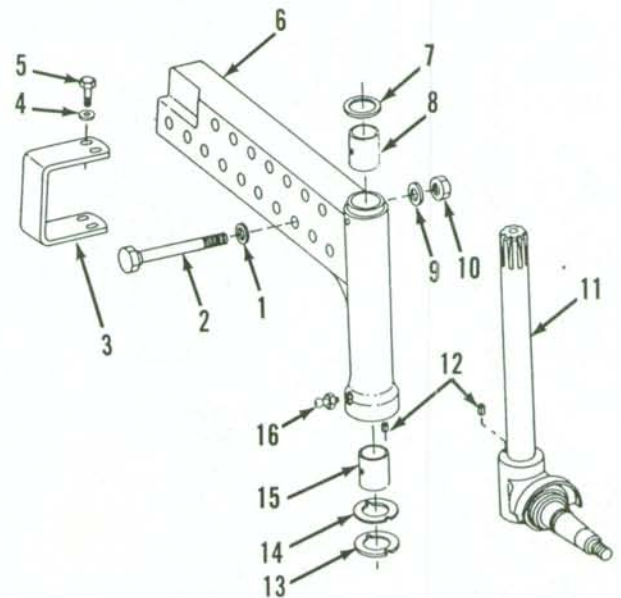


Fig. 2—Exploded view of axle extension, spindle and relative components.

- |                   |                   |
|-------------------|-------------------|
| 1. Washer         | 9. Washer         |
| 2. Bolt           | 10. Nut           |
| 3. Clamp          | 11. Spindle       |
| 4. Washer         | 12. Roll pins     |
| 5. Cap screw      | 13. Thrust washer |
| 6. Axle extension | 14. Thrust washer |
| 7. Shim           | 15. Bushing       |
| 8. Bushing        | 16. Lube fitting  |



of tie rods is obvious after examination of the units and reference to Fig. 3.

Recommended toe-in is  $\frac{1}{8}$ - $\frac{3}{8}$  inch (3.0-9.0 mm) for all models. To adjust toe-in, remove bolts (10) and loosen clamp bolt (20). Turn tie rod tubes (16) an equal amount for each side to obtain correct toe-in. Tighten bolts (10) and clamp bolt (20) to a torque of 35 ft.-lbs. (47 N·m).

### AXLE MAIN MEMBER

#### All Models So Equipped

**4. REMOVE AND REINSTALL.** To remove front axle main member (7—Fig. 4), first attach medium-duty front split stand JT05724 to tractor side rails. Attach a dial indicator base to front axle support and position indicator probe on bottom of pivot bolt washer (12). Set indicator on zero. Use split stand to raise front wheels off the floor. Read indicator to determine amount of pivot wear. If wear exceeds 0.080 inch (2.0 mm), pivot bushings and pivot pins should be renewed.

Remove front wheels and tires, then disconnect tie rods from steering arms. Unbolt and remove axle extensions from axle main member.

**NOTE:** On 4255 Hi-Crop models, disconnect radius rods (Fig. 5) from axle extensions.

If so equipped, remove front weights. Place a floor jack under axle main member. Remove nuts (5 and 8—Fig. 4) and washers (4 and 9). Remove pivot bolt (1) and washer (2). Remove pivot bolt (14), washer (12) and shims (11). Move axle rearward to clear pivot pins, then lower axle from tractor.

Renew pivot pins and bushings as required, then reinstall axle main member by reversing removal

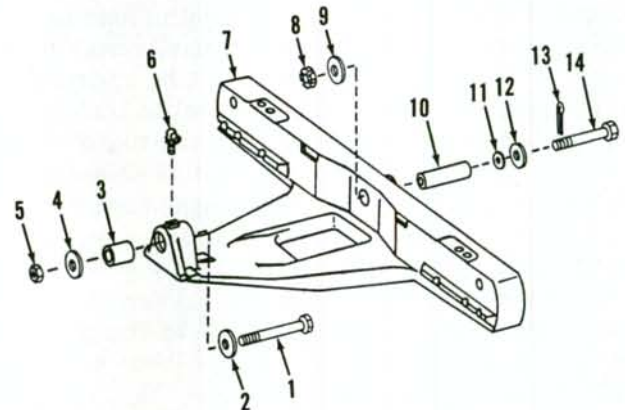


Fig. 4—Front axle main member used on two-wheel drive models. Refer to Fig. 2 for axle extensions.

- |                     |                |
|---------------------|----------------|
| 1. Pivot bolt       | 8. Nut         |
| 2. Washer           | 9. Washer      |
| 3. Bushing          | 10. Pivot pin  |
| 4. Washer           | 11. Shim       |
| 5. Nut              | 12. Washer     |
| 6. Lube fitting     | 13. Cotter pin |
| 7. Axle main member | 14. Pivot bolt |

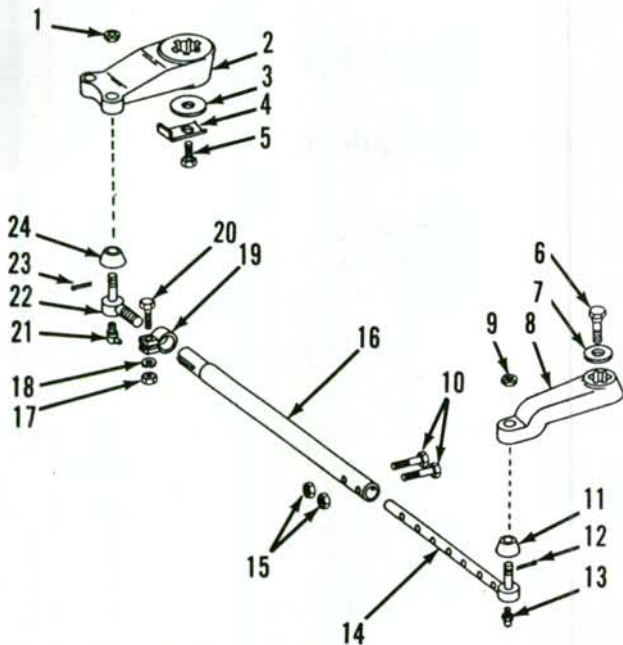


Fig. 3—Exploded view of right tie rod assembly and relative components. Left tie rod is identical.

- |                        |                  |
|------------------------|------------------|
| 1. Nut                 | 13. Lube fitting |
| 2. Center steering arm | 14. Tie rod end  |
| 3. Washer              | 15. Nuts         |
| 4. Lockplate           | 16. Tube         |
| 5. Cap screw           | 17. Nut          |
| 6. Cap screw           | 18. Lockwasher   |
| 7. Washer              | 19. Clamp        |
| 8. Right steering arm  | 20. Cap screw    |
| 9. Nut                 | 21. Lube fitting |
| 10. Cap screws         | 22. Tie rod end  |
| 11. Dust cover         | 23. Cotter pin   |
| 12. Cotter pin         | 24. Dust cover   |

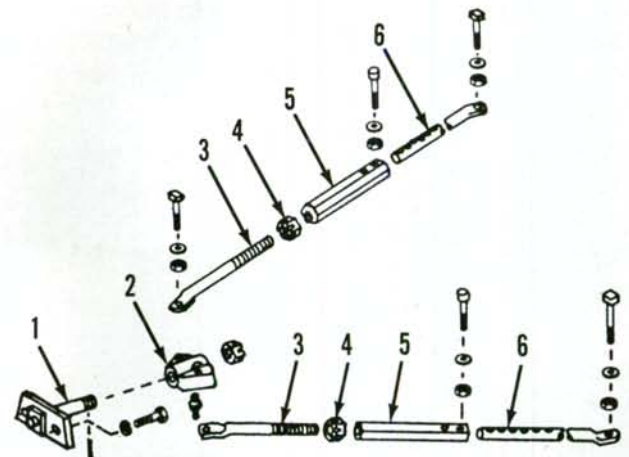


Fig. 5—Exploded view of radius rods used on 4255 Hi-Crop models.

- |                     |                |
|---------------------|----------------|
| 1. Mounting bracket | 4. Locknut     |
| 2. Pivot            | 5. Coupler     |
| 3. Threaded rod     | 6. Drilled rod |



procedure. Add or remove shims (11) as necessary to provide a clearance of 0.001-0.015 inch (0.03-0.38 mm) between front support and front axle. Shims are available in thickness of 0.015 inch (0.38 mm).

Tighten front axle to front support bolts to a torque of 220 ft.-lbs. (298 N·m). Tighten axle extension to axle main member bolts to a torque of 445 ft.-lbs. (600 N·m) on 4255 Hi-Crop models, or 370 ft.-lbs. (500 N·m) on all other models.

## FRONT-WHEEL DRIVE SYSTEM

### OPERATION

#### All Models So Equipped

5. All Power Shift models except 4255 Hi-Crop and Models 4555 and 4755 equipped with Quad-Range transmission are available with a mechanical front-wheel drive. Front-wheel drive can be engaged or disengaged in all gears during operation and under full load. The front-wheel drive is controlled by an electric solenoid/hydraulic valve that operates a multiple disc clutch. The clutch is engaged mechanically by preloaded Belleville springs and is disengaged hydraulically. The control switch (A—Fig. 6) is a three position rocker switch located on right side of instrument panel. Depress top of switch to center "ON" position to engage front-wheel drive. Switch will be lighted showing engagement. Depress top of switch again to "AUTO" position. Switch will be lighted showing "AUTO" engagement. When switch is in this mode, front-wheel drive will automatically disengage during turning with either brake applied and at speeds above 8.5 mph (14 kph). Front-wheel drive will automatically engage when both brake pedals are depressed, to improve braking. Depress bottom of switch to disengage front-wheel drive. When in this mode, front-wheel drive will come on during speeds above 8.5 mph (14 kph) when both brake pedals are applied and stays on as long as both brake pedals remain applied, even when speed drops below 8.5

mph (14 kph). Front-wheel drive is "OFF" when both brake pedals are applied below 8.5 mph (14 kph). The front drive axle is equipped with a limited slip differential to keep both front wheels pulling in poor traction conditions.

**CAUTION:** When servicing front-wheel drive equipped tractor with rear wheels supported off the ground, engine running and transmission in gear, always support front wheels off the ground too. Loss of electric power or hydraulic system pressure will engage front driving wheels. Rear wheels will be pulled off support if front wheels are not raised.

### TROUBLE-SHOOTING

#### All Models So Equipped

6. Some problems that may occur with front-wheel drive and their possible causes are as follows:

1. Front-wheel drive not engaging. Could be caused by:
  - a. Disc clutch pack worn.
  - b. Solenoid defective.
  - c. Hydraulic valve spool worn or sticking open.
  - d. Mechanical failure in front drive axle.
2. Front-wheel drive not disengaging. Could be caused by:
  - a. Electrical fault (switch, relay, fuse or wiring).
  - b. Defective solenoid.
  - c. Hydraulic pressure too low.
  - d. Faulty piston seal rings.
3. Excessive front tire wear. Could be caused by:
  - a. Toe-in incorrect.
  - b. Front-rear tire combination not as specified.
  - c. Incorrect tire inflation.



Fig. 6—The three-position rocker switch (A) for front-wheel drive is located on right side of instrument panel.

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procedure. Add or remove shims (11) as necessary to provide a clearance of 0.001-0.015 inch (0.03-0.38 mm) between front support and front axle. Shims are available in thickness of 0.015 inch (0.38 mm).

Tighten front axle to front support bolts to a torque of 220 ft.-lbs. (298 N·m). Tighten axle extension to axle main member bolts to a torque of 445 ft.-lbs. (600 N·m) on 4255 Hi-Crop models, or 370 ft.-lbs. (500 N·m) on all other models.

## FRONT-WHEEL DRIVE SYSTEM

### OPERATION

#### All Models So Equipped

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mph (14 kph). Front-wheel drive is "OFF" when both brake pedals are applied below 8.5 mph (14 kph). The front drive axle is equipped with a limited slip differential to keep both front wheels pulling in poor traction conditions.

**CAUTION:** When servicing front-wheel drive equipped tractor with rear wheels supported off the ground, engine running and transmission in gear, always support front wheels off the ground too. Loss of electric power or hydraulic system pressure will engage front driving wheels. Rear wheels will be pulled off support if front wheels are not raised.

### TROUBLE-SHOOTING

#### All Models So Equipped

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  - a. Disc clutch pack worn.
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  - d. Mechanical failure in front drive axle.
2. Front-wheel drive not disengaging. Could be caused by:
  - a. Electrical fault (switch, relay, fuse or wiring).
  - b. Defective solenoid.
  - c. Hydraulic pressure too low.
  - d. Faulty piston seal rings.
3. Excessive front tire wear. Could be caused by:
  - a. Toe-in incorrect.
  - b. Front-rear tire combination not as specified.
  - c. Incorrect tire inflation.

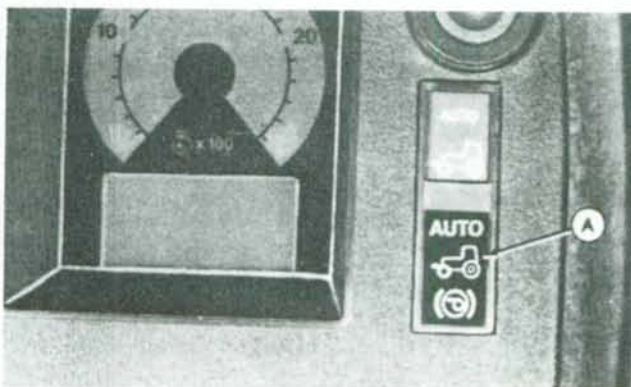


Fig. 6—The three-position rocker switch (A) for front-wheel drive is located on right side of instrument panel.



TIE RODS AND TOE-IN

All Models So Equipped

7. Tie rod ends are not adjustable for wear and faulty units must be renewed. Removal of tie rods is obvious after examination of unit and reference to Fig. 7.

To check toe-in, first turn steering wheel so that front wheels are in straight-ahead position. Measure distance from front and rear of front wheels from rim flange to rim flange at hub height. Toe-in should be 0-1/8 inch (0-3.0 mm). If necessary to adjust toe-in, loosen locknuts (10 and 12) on each tie rod. Turn tubes as required to obtain correct toe-in. Tighten locknuts to a torque of 120-180 ft.-lbs. (160-240 N.m). Length of tie rods should be equal as nearly as possible.

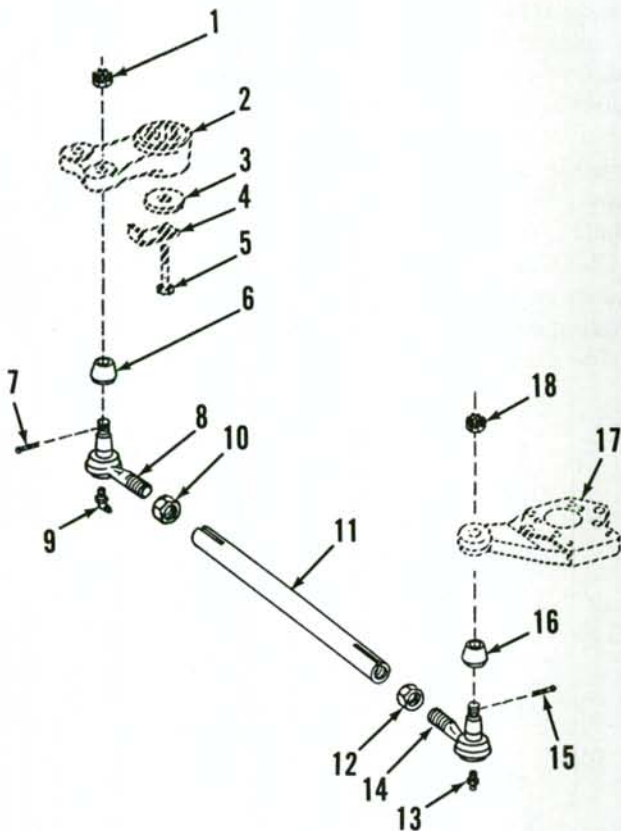


Fig. 7—Exploded view of right tie rod assembly and relative components used on models equipped with front-wheel drive. Left tie rod is similar.

- |                        |                        |
|------------------------|------------------------|
| 1. Nut                 | 10. Locknut            |
| 2. Center steering arm | 11. Tube               |
| 3. Washer              | 12. Locknut            |
| 4. Lockplate           | 13. Lube fitting       |
| 5. Cap screw           | 14. Tie rod end        |
| 6. Dust cover          | 15. Cotter pin         |
| 7. Cotter pin          | 16. Dust cover         |
| 8. Tie rod end         | 17. Right steering arm |
| 9. Lube fitting        | 18. Nut                |

DRIVE SHAFT AND SHIELD

All Models So Equipped

8. To remove the front drive shaft and shield, first unbolt front and rear shields (6 and 7—Fig. 8). Slide shields together, then unbolt front “U” joint clamps (4—Fig. 9). Remove shield and drive shaft assembly. “U” joint kits (2) are available and renewal procedures are conventional.

Reinstall drive shaft assembly and shield by reversing removal procedure. Tighten “U” joint clamp self-locking screws (5) to a torque of 50 ft.-lbs. (68 N.m).

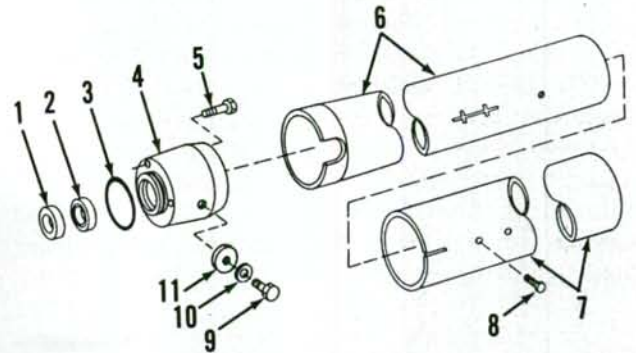


Fig. 8—Exploded view of typical front drive shaft shield assembly and relative components.

- |                  |                           |
|------------------|---------------------------|
| 1. Oil seal      | 7. Front shield           |
| 2. Oil seal      | 8. Self-locking screw (2) |
| 3. “O” ring      | 9. Cap screw              |
| 4. Quill         | 10. Washer                |
| 5. Cap screw (3) | 11. Spacer                |
| 6. Rear shield   |                           |

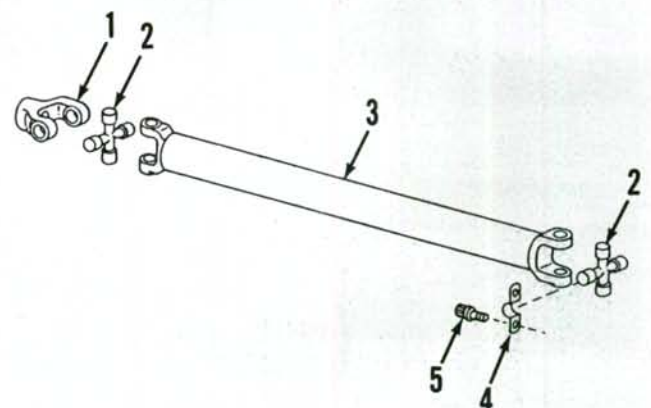


Fig. 9—Exploded view of front drive shaft.

- |                       |
|-----------------------|
| 1. Rear yoke          |
| 2. “U” joint kit      |
| 3. Drive shaft        |
| 4. Clamp (2)          |
| 5. Self-locking screw |



## FRONT DRIVE AXLE

### All Models So Equipped

**9. REMOVE AND REINSTALL.** To remove front drive axle assembly, unbolt and remove front weights, if so equipped. Unbolt and remove shield and front drive shaft as outlined in paragraph 8. Install split stand JT05724 to side frame rails and support front of tractor. Install axle support stand D05007ST under front axle assembly. Remove front wheels and fenders, if so equipped. Disconnect tie rods from left and right steering arms. Refer to Fig. 10 and remove front pivot bolt (A) and rear pivot bolt (B). Take care not to lose shims on front pivot bolt. Move axle assembly rearward off the pivot pins, then lower axle and remove from under tractor.

Inspect pivot pins and bushings for excessive wear or other damage and renew as required. Reinstall axle assembly by reversing removal procedure. Install original shims between front pivot bolt washer and front support. Tighten pivot bolts to a torque of 220 ft.-lbs. (298 N·m). Force axle forward as far as possible. Using a feeler gage, measure clearance between front pivot bolt washer and front support. Add or remove shims as necessary to obtain a clearance of 0.001-0.015 inch (0.03-0.38 mm). Shims are available in thickness of 0.015 inch (0.38 mm). Tighten tie rod nuts to a torque of 100 ft.-lbs. (135 N·m). Tighten front wheel to hub nuts to a torque of 406 ft.-lbs. (550 N·m).

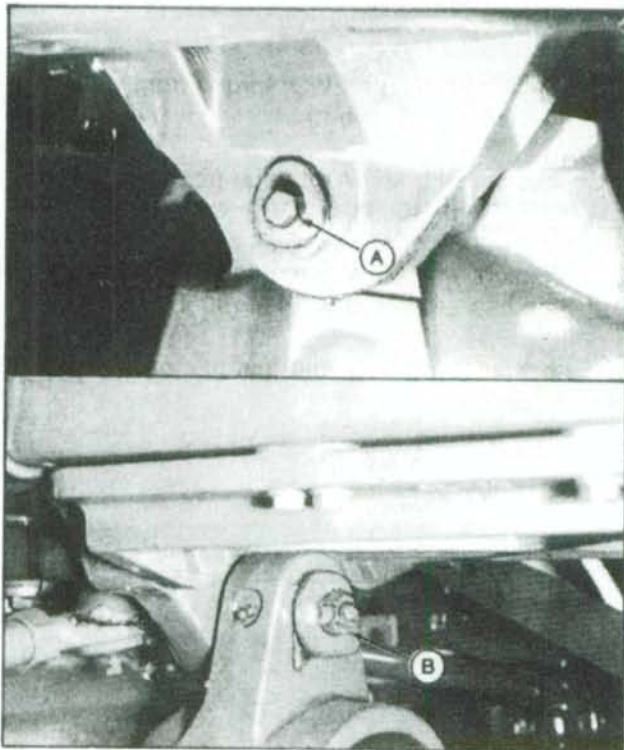


Fig. 10—Views showing front drive axle pivot bolts. Upper view shows front pivot bolt (A); lower view shows rear pivot bolt (B).

## PLANETARY, WHEEL HUB AND BEARINGS

### All Models So Equipped

**10. R&R AND OVERHAUL.** To remove planetary and wheel hub from either end of front drive axle, support end of axle housing and remove tire and wheel. Remove oil plug (1—Fig. 12) and drain oil. Unbolt planet carrier (3) from wheel hub, then remove planet carrier assembly. Mark planet gears (8), retainers (9) and carrier (3) so parts can be returned to original location. Remove cap screws (10), retainers (9), planet gears (8), needle rollers (5) and washers (4 and 6). If necessary, use a suitable puller and remove bearing inner race (7).

To remove ring gear (11), pry snap ring (13) from rear of ring gear. To remove wheel hub (19—Fig. 14), first remove sun gear shaft (2—Fig. 13) and thrust washer (1). Remove Allen screw (9) and unscrew ring gear hub retainer (3). Place match marks on knuckle housing (14—Fig. 14) and ring gear hub (12—Fig. 12) at splined area. Attach a hoist to wheel hub stud. Remove ring gear hub with bearing cone (14) from knuckle spindle. Remove oil seal (15—Fig. 14) and inner bearing cone (16) from wheel hub (19) or knuckle spindle (14). If necessary, remove bearing cups from wheel hub. Remove "O" ring (20) from wheel hub.

Clean and inspect all parts and renew any showing excessive wear or other damage. If removed, install bearing cups in wheel hub. Apply a light film of oil to inside diameter of hub oil seal (15—Fig. 14). Install

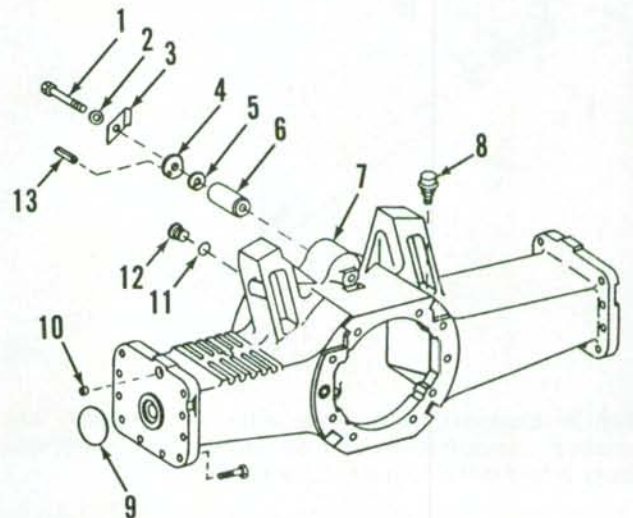


Fig. 11—View of front drive axle housing.

- |                     |                    |
|---------------------|--------------------|
| 1. Front pivot bolt | 7. Axle housing    |
| 2. Washer           | 8. Breather        |
| 3. Lockplate        | 9. "O" ring        |
| 4. Washer           | 10. Hollow dowel   |
| 5. Shim             | 11. "O" ring       |
| 6. Pivot pin        | 12. Oil level plug |



oil seal by hand until bottomed on knuckle spindle. Install inner bearing cone (16) in position on knuckle spindle. Install ring gear (11—Fig. 12) on ring gear hub (12) and secure with snap ring (13). Install ring gear hub assembly and outer bearing cone (14) on wheel hub. Using a fabricated clamping tool as shown in Fig. 15, clamp ring gear to wheel hub squarely. Support wheel hub assembly with a hoist. Apply a thin film of oil on outside diameter of hub seal and to

bore of wheel hub. Aligning match marks, install wheel hub assembly on steering knuckle spindle. Keeping ring gear and hub clamped together, remove hoist from hub. Install ring gear hub retainer (3—Fig. 13) and tighten until gap between wheel hub and knuckle is 1/8 inch (3.0 mm). Remove clamping tool and rotate hub to seat bearings. Strike ring gear with a hammer two or three times, then tighten retainer to remove all end play. Tighten retainer one more notch to preload bearings and install Allen screw. Tighten Allen screw to a torque of 37 ft.-lbs. (50 N·m).

If removed, install the bearing inner races (7—Fig. 12) in planet carrier (3). Install thrust washers (4), needle rollers (5), washers (6) and planet gears (8) in their marked original locations. Lubricate needle rollers, then install retainers (9) and cap screws (10). Tighten cap screws to a torque of 229 ft.-lbs. (310 N·m). Use sun gear shaft (2—Fig. 13) to align oil seal sleeve (5) and double “U” joint (8). Withdraw sun gear shaft and use grease to stick thrust washer (1) in place on end of sun gear shaft. Install sun gear shaft

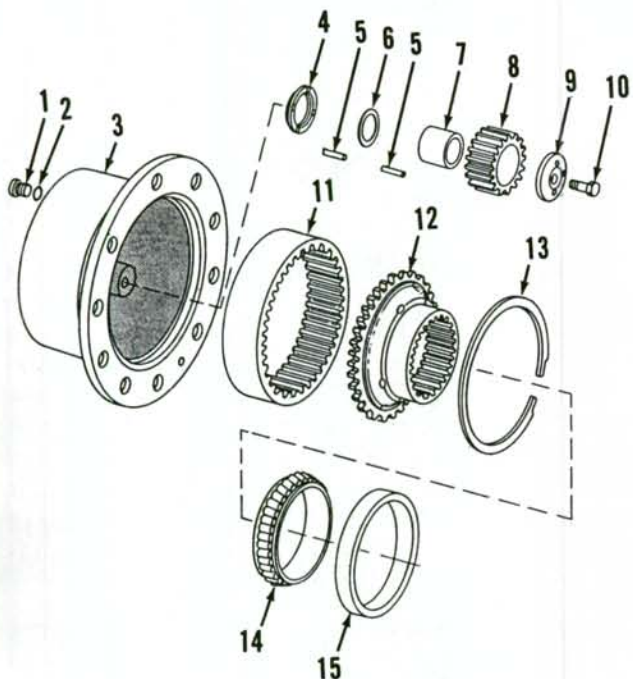


Fig. 12—Exploded view of planetary carrier and relative components.

- |                       |                          |
|-----------------------|--------------------------|
| 1. Oil plug           | 9. Retainer              |
| 2. “O”ring            | 10. Cap screw            |
| 3. Planet carrier     | 11. Ring gear            |
| 4. Thrust washer      | 12. Ring gear hub        |
| 5. Needle rollers     | 13. Snap ring            |
| 6. Washer             | 14. Bearing cone (outer) |
| 7. Bearing inner race | 15. Bearing cup          |
| 8. Planet gear        |                          |

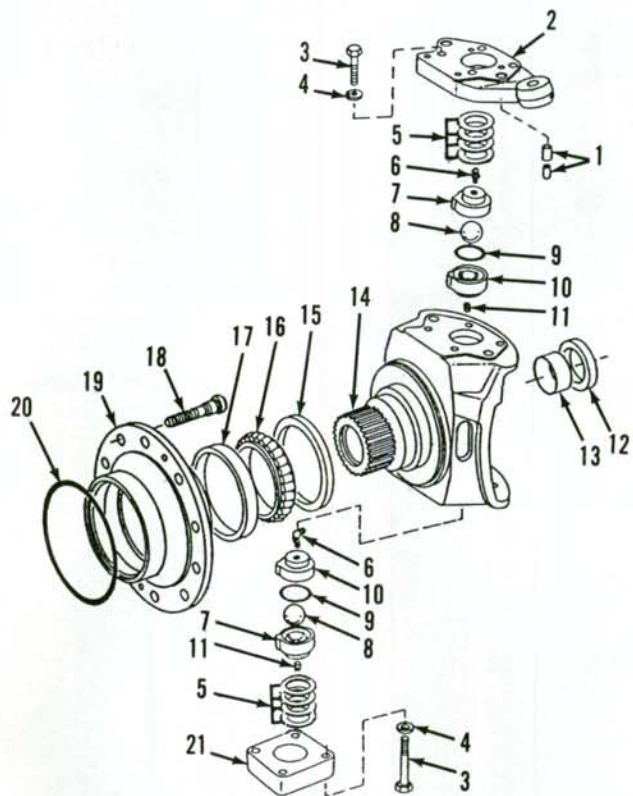


Fig. 14—Exploded view of wheel hub and steering knuckle housing.

- |                 |                              |
|-----------------|------------------------------|
| 1. Roll pins    | 12. Oil seal                 |
| 2. Steering arm | 13. Bushing                  |
| 3. Cap screw    | 14. Steering knuckle housing |
| 4. Washer       | 15. Oil seal                 |
| 5. Shims        | 16. Bearing cone (inner)     |
| 6. Lube fitting | 17. Bearing cup              |
| 7. Ball insert  | 18. Lug bolt                 |
| 8. Ball         | 19. Wheel hub                |
| 9. “O” ring     | 20. “O” ring                 |
| 10. Ball insert | 21. Lower cap                |
| 11. Orifice     |                              |

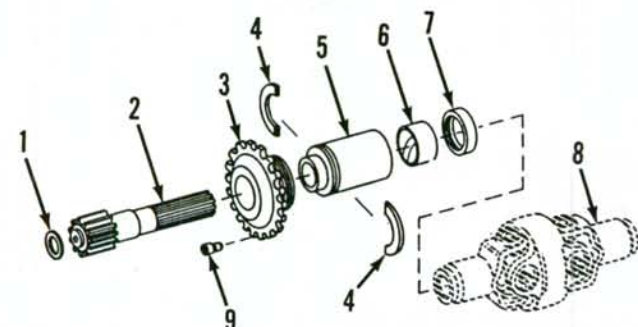


Fig. 13—View of planetary sun gear shaft, ring gear hub retainer and shaft sleeve.

- |                           |                     |
|---------------------------|---------------------|
| 1. Thrust washer          | 6. Bushing          |
| 2. Sun gear shaft         | 7. Oil seal         |
| 3. Ring gear hub retainer | 8. Double “U” joint |
| 4. Split washer           | 9. Allen screw      |
| 5. Shaft sleeve           |                     |



into planet gears in carrier. Install new "O" ring (20—Fig. 14) in wheel hub. Install planet carrier on wheel hub and tighten the two retaining cap screws to a torque of 92 ft.-lbs. (125 N.m).

Rotate wheel hub until oil level plug line on planet carrier is in horizontal position. Fill planet carrier to level plug opening with SAE 85W-140 GL5 gear oil. Tighten plug to a torque of 52 ft.-lbs. (70 N.m). Capacity is 3 U.S. quarts (2.8 L). Reinstall wheel and tire and tighten nuts to a torque of 406 ft.-lbs. (550 N.m).

### STEERING KNUCKLE HOUSING AND AXLE SHAFT

#### All Models So Equipped

**11. R&R AND OVERHAUL.** To remove either steering knuckle housing, first remove planetary and wheel hub as outlined in paragraph 10. Then, disconnect tie rod from steering knuckle arm. Unbolt steer-

ing yoke (10—Fig. 16) from axle housing and remove steering knuckle assembly and axle housing and remove steering knuckle assembly and axle shaft. Drive double roll pins in flush with bottom of steering arm, then unbolt and remove steering arm (2—Fig. 14) and lower cap (21). Remove shims (5), ball inserts (7), balls (8), "O" rings (9) and ball inserts (10). Remove steering yoke with double "U" joint and axle assembly from steering knuckle housing. Remove sleeve (5—Fig. 13) with oil seal (7), bushing (6), and split washer (4) from steering knuckle housing. Remove oil seal (7) and measure inside diameter of bushing (6). Bushing should measure 2.205-2.209 inches (56.003-56.121 mm). If not, renew bushing in sleeve. Remove oil seal (12—Fig. 14) and measure inside diameter of bushing (13). Bushing should measure 2.957-2.961 inches (75.105-75.205 mm). If not, renew bushing in steering knuckle spindle (14).

Pry snap ring (6—Fig. 16) open and remove axle shaft (9), spacer (7) and split washer (8) from double "U" joint. Remove oil seal (1) and measure inside diameter of bushing (2). Bushing should measure 2.205-2.209 inches (56.003-56.121 mm). If not, renew bushing in steering yoke (10). Inspect double "U" joint for excessive wear. Disassembly and reassembly of double "U" joint is obvious after examination of unit and reference to Fig. 17. Repair kits consisting of items (2, 3 and 4) are available as well as yokes (1) and complete double "U" joints.

Clean and inspect all parts and renew any showing excessive wear or other damage. Use all new oil seals when reassembling. Fill space between seal lips about 50 percent with grease and apply a light coat of grease to entire surface of wiper lip. Reassemble by reversing disassembly procedure.

When assembling steering knuckle housing to steering yoke, install ball inserts (10—Fig. 14) into position in yoke (10—Fig. 16). Slide knuckle housing (14—Fig. 14) over the yoke. Install lower ball (8) and lower insert (7) without "O" ring (9) or shims (5). Install cap (21) and secure with two cap screws placed

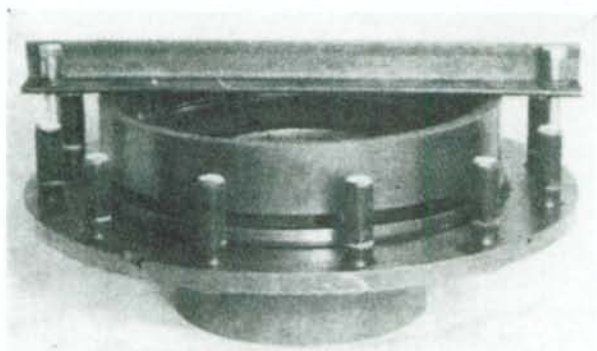


Fig. 15—Fabricated tool used to clamp ring gear to wheel hub.

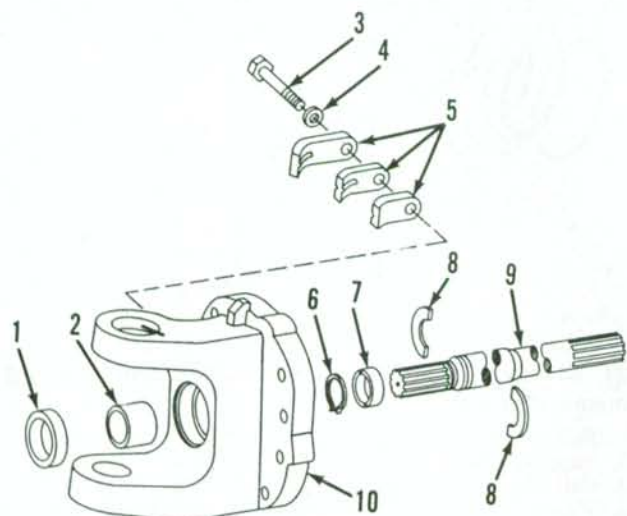


Fig. 16—Steering knuckle yoke and relative components.

- |                   |                           |
|-------------------|---------------------------|
| 1. Oil seal       | 6. Snap ring              |
| 2. Bushing        | 7. Spacer                 |
| 3. Cap screw      | 8. Split washer           |
| 4. Washer         | 9. Axle shaft             |
| 5. Steering stops | 10. Steering knuckle yoke |

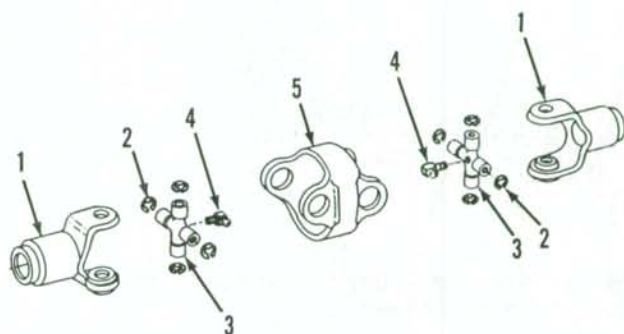


Fig. 17—Exploded view of double "U" joint assembly.

- |                     |                 |
|---------------------|-----------------|
| 1. Yokes            | 4. Lube fitting |
| 2. Snap rings       | 5. Double yoke  |
| 3. Cross & bearings |                 |



diagonally and tightened. Install upper ball (8) and upper ball insert (7) without "O" ring (9) or shims (5).

Install special tool JDG623 in place of steering arm (Fig. 18) and secure with two cap screws tightened to a torque of 66 ft.-lbs. (90 N.m). Use a depth micrometer to measure distance between steering arm mounting surface on steering knuckle housing and top of large-diameter surface of ball insert. Divide this measurement by two. This will be the correct shim pack (5—Fig. 14) thickness to be installed at upper and lower positions. Shims are available in thicknesses of 0.005, 0.010 and 0.040 inch (0.012, 0.254 and 1.016 mm). Install "O" rings (9) and equal shim packs (5) at upper and lower positions. Install lower cap (21) and tighten cap screws (3) to a torque of 229 ft.-lbs. (310 N.m). Install steering arm (2) and finger tighten cap screws (3). Drive double roll pins (1) in steering arm and knuckle housing until flush. Tighten steering arm cap screws to a torque of 229 ft.-lbs. (310 N.m). Lubricate upper and lower ball pivots until grease appears at orifices (11).

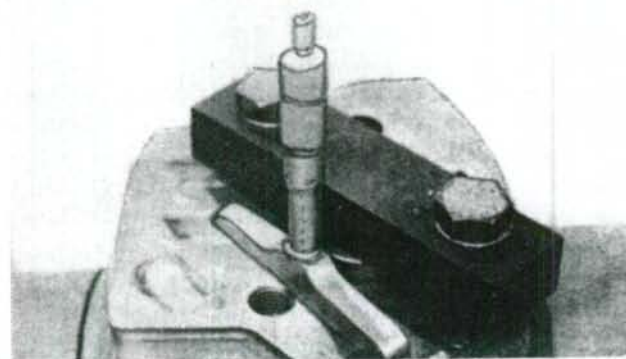
Using a new "O" ring (9—Fig. 11), install steering knuckle and steering yoke with axle assembly onto axle housing. Tighten retaining cap screws to a torque of 229 ft.-lbs. (310 N.m).

Refer to paragraph 10 when reassembling hub and planetary.

## DIFFERENTIAL

### All Models So Equipped

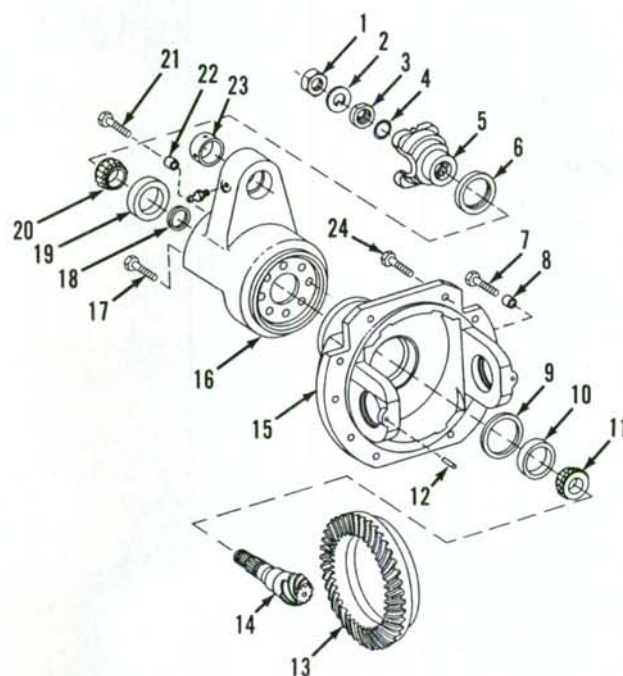
**12. R&R AND OVERHAUL.** To remove the front drive axle differential assembly, unbolt and remove front weights, if so equipped. Remove drain plug and drain oil from axle housing. Unbolt and remove shield and front drive shaft as outlined in paragraph 8. Install split stand JT05724 to side frame rails and support front of tractor. Install axle support stand D05007ST under front axle assembly. Remove front wheels and fenders, if so equipped. Disconnect tie



**Fig. 18—Use depth micrometer and special tool JDG623 to measure distance between steering arm mounting surface on steering knuckle housing and top of large diameter surface of ball insert.**

rods from left and right steering arms. Attach a hoist to planetary, hub and steering knuckle assembly. Unbolt steering yoke from axle housing, then remove the assembly from axle housing. Remove opposite planetary, hub and steering knuckle using same procedure. Refer to Fig. 10 and remove front pivot bolt (A) and rear pivot bolt (B). Take care not to lose shims on front pivot bolt. Move axle assembly rearward off the pivot pins, then lower axle and remove from under tractor.

Remove nine cap screws (24—Fig. 19) and long cap screw (7) with hollow dowel (8), then remove differential assembly from axle housing. Drive roll pins (12) out until adjusting quills (4 and 27—Fig. 20) can be turned. Remove adjusting quills and remove differential assembly from carrier. Place match marks on differential case halves (7 and 24). Remove cap screws (3) with washers and separate case halves. Unbolt and remove ring gear (8) if desired. Remove cross shafts (17), pinions (16) and thrust washers (15). Remove side gears (14 and 18), friction discs (13 and 19), separator plates (12 and 20), friction discs



**Fig. 19—Exploded view of oscillating housing, differential carrier and bevel gears used on front drive axle. Ring gear (13) and drive pinion (14) are available only as a matched set.**

- |                          |                          |
|--------------------------|--------------------------|
| 1. Nut                   | 13. Bevel ring gear      |
| 2. Lockplate             | 14. Bevel drive pinion   |
| 3. Spacer                | 15. Differential carrier |
| 4. "O" ring              | 16. Pivot housing        |
| 5. Yoke                  | 17. Cap screw (7)        |
| 6. Oil seal              | 18. Crush ring           |
| 7. Cap screw (1)         | 19. Bearing cup          |
| 8. Hollow dowel          | 20. Bearing cone (rear)  |
| 9. Shim                  | 21. Cap screw (1)        |
| 10. Bearing cup          | 22. Hollow dowel         |
| 11. Bearing cone (front) | 23. Pivot bushing        |
| 12. Roll pin             | 24. Cap screw (9)        |