SHOP MANUAL

FORD

MODELS

1120—1220—1320—1520—1720—1920—2120

The tractor model number, serial number and engine number are stamped on an identification plate located on left side of transmission housing.

INDEX (By Starting Paragraph)

INDEX (CONT.)

INDEX (CONT.)

DUAL DIMENSIONS

This service manual provides specifications in both the Metric (SI) and U.S. Customary systems of measurement. The first specification is given in the measuring system used during manufacture, while the second specification (given in parenthesis) is the converted measurement. For instance, a specification of "0.28 mm (0.011 inch)" would indicate that the equipment was manufactured using the metric system of measurement and the U.S. Customary equivalent of 0.28 mm is 0.011 inch.

CONDENSED SERVICE DATA

	Models 1120	1220	1320
GENERAL			
Engine Make	Shibaura		
Engine Model	S723	S753	J823
Number of Cylinders	3		
Bore	72 mm (2.83 in.)	75 mm (2.95 in.)	82 mm (3.22 in.)
Stroke	72 mm (2.83 in.)	72 mm (2.83 in.)	80 mm (3.15 in.)
Displacement	879 cc (53.6 cu. in.)	954 cc (58.2 cu. in.)	1267 cc (77.3 cu. in.)
Compression Ratio	23:1	23:1	22:1
Electrical System			
Alternator	12 Volts, 35 Amps		
Regulator	Mechanical	Mechanical	Solid State
Battery Ground Polarity	Negative		
TUNE-UP			
Firing Order	1-2-3		
Valve Clearance—Cold			
Intake	0.20 mm (0.008 in.)		
Exhaust	0.20 mm (0.008 in.)		
Valve Face Angle	45°		
Valve Seat Angle	45°		
Injection Timing—			
Static, BTDC	23°-24°	23°-24°	20°-21°
Timing Mark Location	Crankshaft Pulley		
Injector Opening Pressure	11760 kPa (1705 psi)		
Governed Speeds—Engine Rpm			
Low Idle	800-900		
High Idle (No-Load)	2650-2700		
Rated (Full Load)	2500		
Rated Power at Pto	9.3 kW (12.5 hp)	10.8 kW (14.5 hp)	12.7 kW (17.0 hp)
SIZES—CLEARANCES			
Crankshaft Main Journal			
Diameter	45.964-45.975 mm (1.8096-1.810 in.)		57.957-57.97 mm (2.281-2.282 in.)

CONDENSED SERVICE DATA (CONT.)

	Models 1120	1220	1320
SIZES—CLEARANCES (Cont.)			
Main Bearing Radial Clearance	0.039-0.106 mm (0.0015-0.004 in.)		0.044-0.116 mm (0.0017-0.0045 in.)
Crankshaft End Play	0.05-0.30 mm (0.002-0.011 in.)		0.10-0.40 mm (0.004-0.016 in.)
Crankpin Diameter	38.964-38.975 mm (1.5340-1.5344 in.)		43.964-43.975 mm (1.730-1.731 in.)
Rod Bearing Radial Clearance	0.035-0.083 mm (0.001-0.003 in.)		0.035-0.083 mm (0.001-0.003 in.)
Connecting Rod Side Clearance	0.10-0.30 mm (0.004-0.012 in.)		0.10-0.30 mm (0.004-0.012 in)
Piston-to-Cylinder Bore Clearance	0.0575-0.0875 mm (0.0022-0.0034 in.)	0.0425-0.0765 mm (0.0016-0.0030 in.)	0.088-0.106 mm (0.0034-0.0041 in.)
SPECIAL TORQUES			
Connecting Rod Caps	24-27 N·m (17-20 ft.-lbs.)		49-54 N·m (36-40 ft.-lbs.)
Crankshaft Main Bearing Holders	25-29 N·m (18-22 ft.-lbs.)		49-54 N·m (36-40 ft.-lbs.)
Main Bearing Holder Retaining Bolts	25-29 N·m (18-22 ft.-lbs.)		49-54 N·m (36-40 ft.-lbs.)
Crankshaft Pulley Retaining Nut	48-58 N·m (36-43 ft.-lbs.)		275-333 N·m (203-245 ft.-lbs.)
Flywheel Bolts	59-69 N·m (44-50 ft.-lbs.)		59-69 N·m (44-50 ft.-lbs.)
Cylinder Head Bolts	44-49 N·m (33-36 ft.-lbs.)		88-93 N·m (65-68 ft.-lbs.)
CAPACITIES			
Cooling System	3.5 liters (3.7 U.S. qts.)		Note 1
Crankcase with Filter Change	3.3 liters (3.5 U.S. qts.)		4.5 liters (4.8 U.S. qts.)
Fuel Tank	18 liters (4.8 U.S. gals.)		27 liters (7.1 U.S. gals.)
Rear Axle and Transmission	16 liters (16.9 U.S. qts.)		22 liters (23.3 U.S. qts.)
Power Steering	1.8 liters (1.9 U.S. qts.)		
Front Wheel Drive Axle	1.8 liters (1.9 U.S. qts.)		2.8 liters (3 U.S. qts.)

Note 1: Model 1320 cooling system capacity is 4 liters (4.2 U.S. qts.) with gear transmission and 5 liters (5.3 U.S. qts.) with hydrostatic transmission.

CONDENSED SERVICE DATA

	Models			
	1520	**1720**	**1920**	**2120**
GENERAL				
Engine Make	Shibaura			
Engine Model	J843	N843	N844	T854 B
Number of Cylinders	3		4	
Bore	84 mm (3.307 in.)		84 mm (3.307 in.)	85 mm (3.346 in.)
Stroke	80 mm (3.150 in.)	90 mm (3.543 in.)	90 mm (3.543 in.)	100 mm (3.937 in.)
Displacement	1330 cc (81.1 cu. in.)	1496 cc (91.3 cu. in.)	1995 cc (121.7 cu. in.)	2268 cc (138.4 cu. in.)
Compression Ratio	22:1	22.5:1	19:1	18:1
Electrical System				
Alternator	12 Volt, 35 Amps			
Regulator	Solid State, Integral			
Battery Ground Polarity	Negative			
TUNE-UP				
Firing Order	1-2-3		1-3-4-2	
Valve Clearance—Cold				
Intake	0.2 mm (0.008 in.)			0.3 mm (0.012 in.)
Exhaust	0.2 mm (0.008 in.)			0.3 mm (0.012 in.)
Valve Face Angle	45°			
Valve Seat Angle	45°			
Injection Timing-Static, BTDC	20°-21°	22°-23°	18°-19°	19.5°-20.5°
Timing Mark Location	Crankshaft Pulley			
Injector Opening Pressure	11760 kPa (1705 psi)	14825 kPa (2150 psi)	20590 kPa (2985 psi)	19615 kPa (2845 psi)
Governed Speeds-Engine Rpm				
Low Idle	800-900		900-1000	
High Idle (No-Load)	2650-2700		2650-2700	
Rated (Full Load)	2500		2500	
Rated Power at Pto	14.5 kW (19.5 hp)	17.5 kW (23.5 hp)	21.25 kW (28.5 hp)	25.75 kW (34.5 hp)
SIZES—CLEARANCES				
Crankshaft Main Journal Diameter	57.957-57.97 mm (2.281-2.282 in.)	67.951-67.97 mm (2.6750-2.6759 in.)	67.957-67.97 mm (2.6755-2.6759 in.)	
Main Bearing Radial Clearance	0.044-0.116 mm (0.0017-0.0045 in.)		0.056-0.131 mm (0.002-0.005 in.)	
Crankshaft End Play	0.10-0.40 mm (0.004-0.016 in.)		0.10-0.45 mm (0.004-0.018 in.)	
Crankpin Diameter	43.96-43.97 mm (1.730-1.731 in.)	51.964-51.975 mm (2.0458-0.0025 in.)	59.95-59.97 mm (2.0458-2.0463 in.)	
Rod Bearing Radial Clearance	0.035-0.083 mm (0.001-0.003 in.)		0.040-0.104 mm (0.002-0.004 in.)	

CONDENSED SERVICE DATA (CONT.)

	Models			
	1520	1720	1920	2120
SIZES—CLEARANCES (Cont.)				
Connecting Rod Side Clearance	0.10-0.30 mm (0.004-0.012 in.)			
Piston-to-Cylinder Bore Clearance	0.088-0.106 mm (0.0034-0.0041 in.)	0.038-0.064 mm (0.0015-0.0025 in.)	0.042-0.076 mm (0.0017-0.0030 in.)	0.087-0.139 mm (0.0034-0.0050 in.)
SPECIAL TORQUES				
Connecting Rod Caps	49-54 N·m (36-40 ft.-lbs.)			78-83 N·m (58-62 ft.-lbs.)
Crankshaft Main Bearing Holders	49-54 N·m (36-40 ft.-lbs.)			71-81 N·m (51-58 ft.-lbs.)
Main Bearing Holder Retaining Bolts	49-54 N·m (36-40 ft.-lbs.)			71-81 N·m (51-58 ft.-lbs.)
Crankshaft Pulley Retaining Nut	274-333 N·m (203-246 ft.-lbs.)			
Flywheel Bolts	59-69 N·m (44-51 ft.-lbs.)			
Cylinder Head Bolts	88-93 N·m (65-69 ft.-lbs.)			
CAPACITIES				
Cooling System	Note 2	5.6 liters (5.9 U.S. qts.)	5.6 liters (5.9 U.S. qts.)	8 liters (8.5 U.S. qts.)
Crankcase with Filter Change	4.5 liters (4.8 U.S. qts.)	4.5 liters (4.8 U.S. qts.)	6 liters (6.3 U.S. qts.)	8 liters (8.5 U.S. qts.)
Fuel Tank	27 liters (7.1 U.S. gals.)	32 liters (8.5 U.S. gals.)	39 liters (10.3 U.S. gals.)	42 liters (11.1 U.S. gals.)
Rear Axle and Transmission	22 liters (23.3 U.S. qts.)	27 liters (28.5 U.S. qts.)	29 liters (30.6 U.S. qts.)	33 liters (34.9 U.S. qts.)
Power Steering	1.8 liters (1.9 U.S. qts.)			
Front Wheel Drive Axle Housing	2.8 liters (3 U.S. qts.)	5 liters (5.3 U.S. qts.)	5 liters (5.3 U.S. qts.)	4.4 liters (4.6 U.S. qts.)

Note 2: Model 1520 cooling system capacity is 4 liters (4.2 U.S. qts.) with gear transmission and 5 liters (5.3 U.S. qts.) with hydrostatic transmission.

FRONT SYSTEM (Two Wheel Drive)

AXLE ASSEMBLY

Models 1120-1220

1. REMOVE AND REINSTALL. Models 1120 and 1220 may be equipped with either fixed tread width type axle or adjustable tread width axle.

To remove front axle assembly, support tractor behind the axle and remove front wheels. On models equipped with mechanical steering, disconnect steering drag link from steering arm. On models equipped with power steering, disconnect hoses from steering cylinder and plug all openings. On all models, remove nut (22—Fig. 1 or 2) from axle pivot shaft (24). Drive pivot shaft out of front axle and axle support, then lower axle assembly from tractor.

Inspect thrust washers (26), pivot bushings (27), pivot shaft (24) and axle main member (28) for excessive wear or damage. Clearance between pivot shaft and bushings should be 0.02-0.15 mm (0.001-0.006 inch) and wear limit is 0.3 mm (0.012 inch). Maximum allowable axle end play in support housing is 0.5 mm (0.020 inch).

To reinstall axle assembly, reverse the removal procedure. Install shims (25) as necessary to obtain desired axle end play of 0.3 mm (0.012 inch).

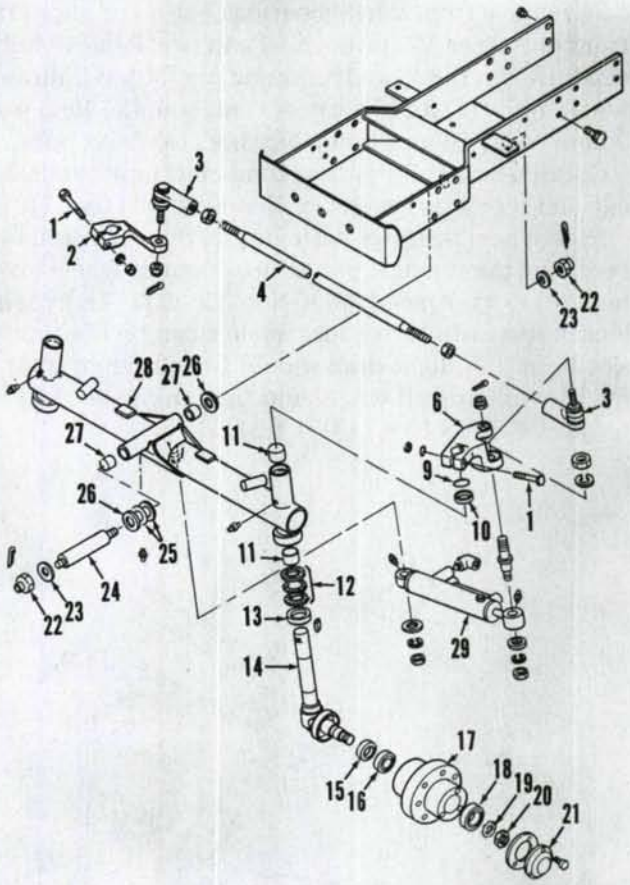

Fig. 1—Exploded view of fixed tread width front axle assembly used on Models 1120 and 1220 equipped with power steering.

1. Clamp bolt
2. Steering arm
3. Tie rod end
4. Tie rod
6. Steering arm
9. "O" ring
10. Spacer
11. Bushings
12. Thrust bearing
13. Seal
14. Spindle
15. Seal
16. Bearing
17. Wheel hub
18. Bearing
19. Lockwasher
20. Nut
21. Hub cap
22. Nuts
23. Washers
24. Pivot shaft
25. Shims
26. Thrust washers
27. Bushings
28. Axle main member
29. Power steering cylinder

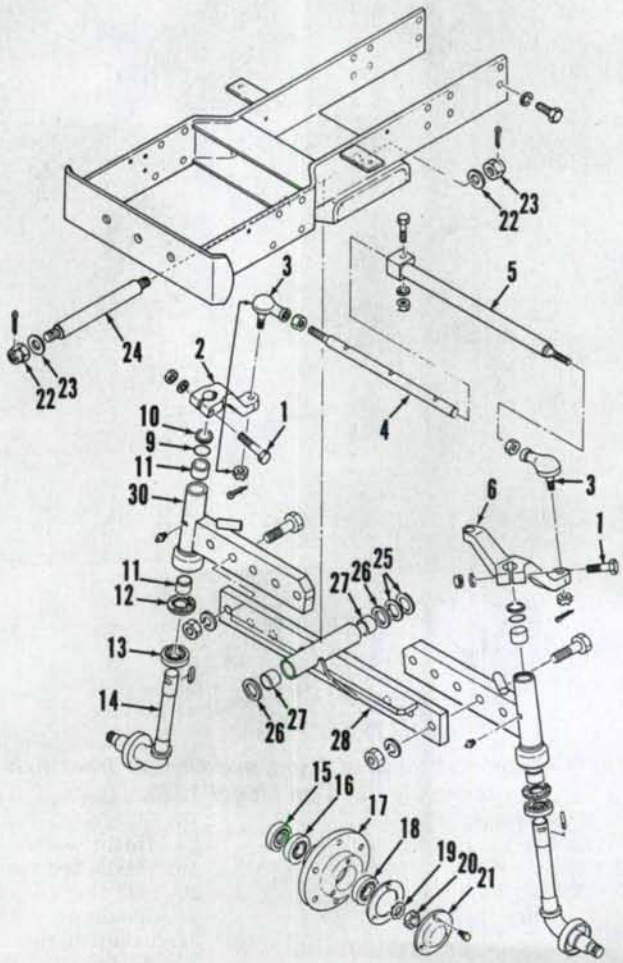

Fig. 2—Exploded view of adjustable tread width front axle assembly used on Models 1120 and 1220 equipped with mechanical steering. Refer to Fig. 1 for legend except for the following:

4. Tie rod link
5. Tie rod tube
30. Axle extension

Models 1320-1520-1720-1920-2120

2. REMOVE AND REINSTALL. Model 1320 is equipped with a fixed tread width front axle. An adjustable tread width front axle is standard equipment on Models 1520, 1720, 1920 and 2120.

To remove front axle assembly, support tractor behind the axle and remove front wheels. Disconnect hoses from power steering cylinder and plug all openings. Unbolt and remove axle pivot front bearing retainer (1—Fig. 3, 4 or 5). Remove retaining cap screws from rear bearing support (6), then move axle rearward from front bearing support and lower axle from tractor.

Inspect thrust washers (3), pivot bushings (4) and axle main member (10) for excessive wear or damage. Renew seals (5) if necessary. Clearance between axle pivot shafts and bushings should be 0.02-0.15 mm (0.001-0.006 inch) and wear limit is 0.30 mm (0.012 inch). Front axle end play in bearing supports should not exceed 0.20 mm (0.008 inch).

To reinstall axle assembly, reverse the removal procedure. Install shims (2) as necessary to obtain desired axle end play.

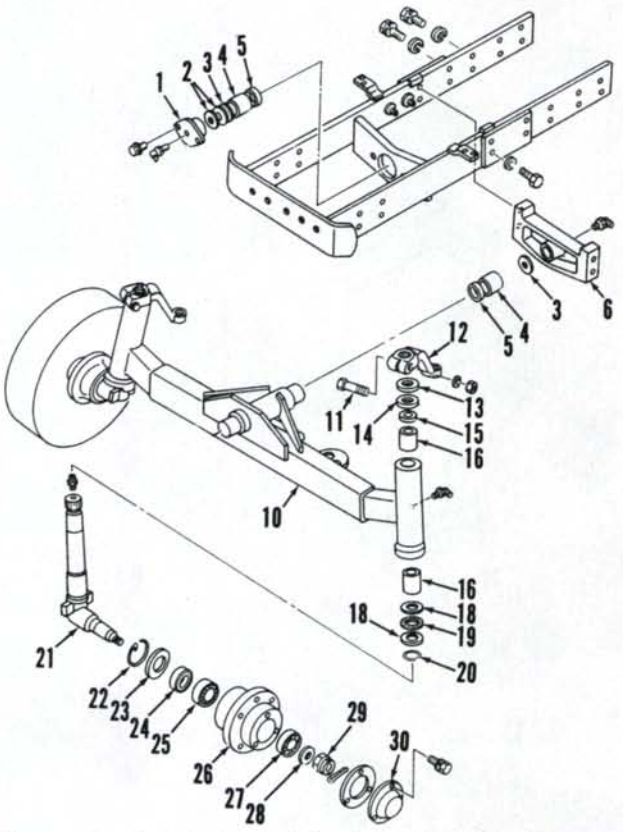

Fig. 3—Exploded view of fixed tread width front axle assembly used on Model 1320.

1. Pivot bearing retainer
2. Shims
3. Thrust washers
4. Bushings
5. Seal
6. Axle rear support
10. Axle main member
11. Clamp bolt
12. Steering arm
13. Shim
14. Spacer
15. Seal
16. Bushings
18. Thrust washers
19. Needle bearing
20. "O" ring
21. Spindle
22. Retaining ring
23. Washer
24. Seal
25. Bearing
26. Wheel hub
27. Bearing
28. Washer
29. Nut
30. Hub cap

FRONT WHEEL BEARINGS

Models 1120-1220

3. REMOVE AND REINSTALL. It is recommended that front wheel bearings be removed, cleaned and repacked with grease after every 600 hours of operation.

To remove front wheel bearings, raise and support front of tractor. Remove wheel and tire. Remove hub cap (21—Fig. 1 or 2) and retaining nut (20). Withdraw wheel hub (17) and bearings from spindle. Remove wheel seal (15) and inner bearing (16) from hub.

Check bearings for pitting, roughness or other damage and renew as necessary. Renew wheel seals (15).

Pack wheel bearings with grease, then reinstall by reversing the removal procedure. Tighten wheel hub nut (20) to a torque of 30-35 N·m (22-26 ft.-lbs.), then loosen nut until tab of lockwasher can be bent into slot in nut. A slight drag should be felt when rotating the hub. Install wheel and tighten lug bolts to a torque of 58-73 N·m (43-54 ft.-lbs.).

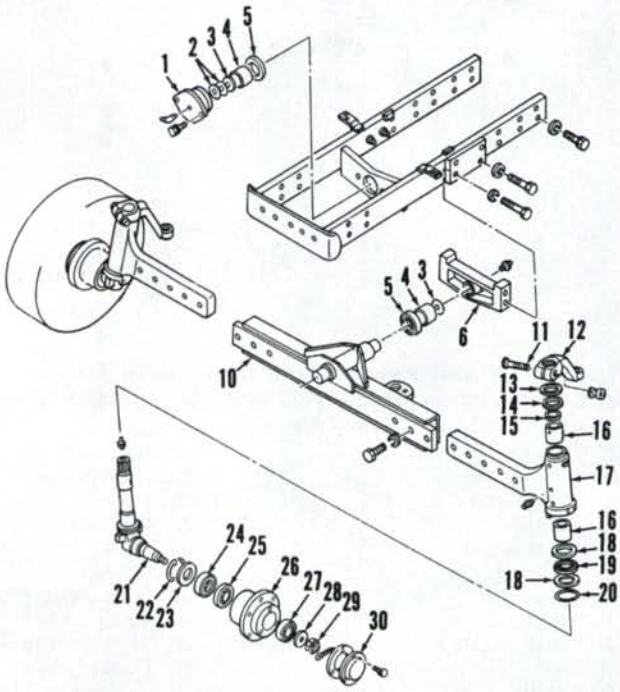

Fig. 4—Exploded view of adjustable tread width front axle assembly used on Model 1520. Refer to Fig. 3 for legend except for axle extension (17).

Models 1320-1520-1720-1920-2120

4. REMOVE AND REINSTALL. It is recommended that front wheel bearings be removed, cleaned and repacked with grease after every 600 hours of operation.

To remove front wheel bearings, raise and support front of tractor. Remove wheel and tire. Remove hub cap (30—Fig. 3, 4 or 5) and retaining nut (29). Withdraw wheel hub (26) and bearings from spindle. On Models 1320 and 1520, remove retaining ring (22) and washer (23). On all models, remove wheel seal (24) and inner bearing (25) from wheel hub.

Check bearings for pitting, roughness or other damage and renew as necessary. Renew wheel seals (24).

Pack wheel bearings with grease, then reinstall by reversing the removal procedure. Tighten wheel hub nut (29) while rotating hub until a drag is felt, then loosen nut to first castellation and install cotter pin.

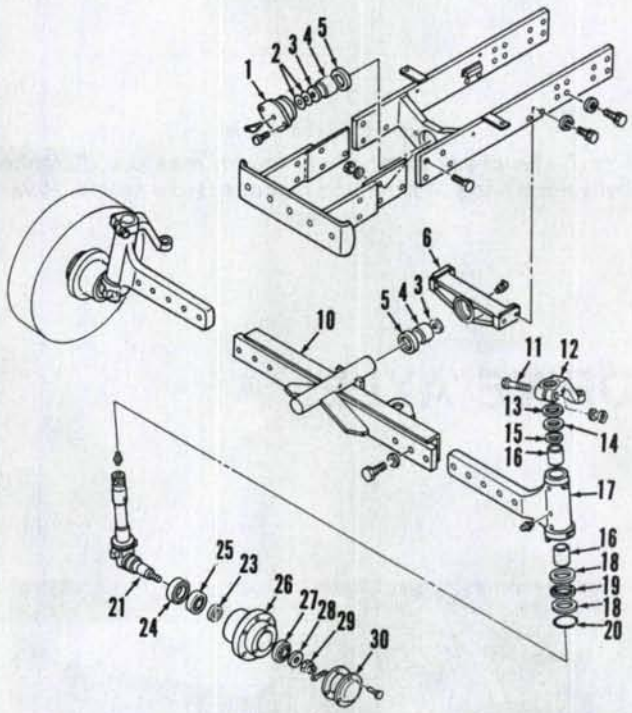

Fig. 5—Exploded view of adjustable tread width front axle assembly used on Model 1720. Axle assembly used on Models 1920 and 2120 is similar except that spacer (23) is not used on Model 2120.

1. Pivot bearing retainer
2. Shims
3. Thrust washers
4. Bushings
5. Seals
6. Axle rear support
10. Axle main member
11. Clamp bolt
12. Steering arm
13. Shims
14. Spacer
15. Seal
16. Bushings
17. Axle extension
18. Thrust washers
19. Needle bearing
20. "O" ring
21. Spindle
23. Spacer
24. Seal
25. Bearing
26. Wheel hub
27. Bearing
28. Washer
29. Nut
30. Hub cap

Install wheel and tighten lug bolts to a torque of 58-73 N·m (43-54 ft.-lbs.) on Model 1520, 66-83 N·m (48-61 ft.-lbs.) on Models 1720 and 1920 and 93-117 N·m (69-87 ft.-lbs.) on Model 2120.

SPINDLES AND BUSHINGS

Models 1120-1220

5. REMOVE AND REINSTALL. To remove spindles (14—Fig. 1 or 2), support front end of tractor with suitable stand and remove front wheels and wheel hub as outlined in paragraph 3. Remove clamp bolts (1) from steering arms (2 and 6), then tap spindles out of the steering arms and remove spindles from axle. Drive spindle bushings (11) out of axle if necessary.

Inspect all parts for excessive wear and renew as necessary. Use a suitable bushing driver to install new spindle bushings (11). Drive bushings in until they bottom against counterbore shoulder in axle. Renew seal (13) and "O" ring (9).

Lubricate spindle and bushings with grease, then reinstall spindle, steering arm and clamp bolts.

Models 1320-1520-1720-1920-2120

6. REMOVE AND REINSTALL. To remove spindles (21—Fig. 3, 4 or 5), raise and support front of tractor. Remove front wheels and wheel hub as outlined in paragraph 4. Remove clamp bolt (11) from steering arms (12), then tap spindle downward out of steering arm and axle. Drive bushings (16) out of axle if necessary.

Inspect all parts for excessive wear and renew as necessary. Use a suitable bushing driver to install new spindle bushings (16). Upper bushing should be recessed (R—Fig. 6) below upper surface of axle as follows: 5 mm (0.197 inch) on Models 1320 and 1520; 7 mm (0.275 inch) on Models 1720 and 1920; 8 mm (0.315 inch) on Model 2120. Lower bushing should be bottomed against counterbore shoulder. Renew "O" ring (20) and seal (15).

Lubricate spindle and bushings with grease. Reinstall spindle and steering arm, using shims (13) as necessary to remove end play from spindle. Install clamp bolt (11) and tighten securely.

TIE RODS AND TOE-IN

All Models

7. Nonadjustable automotive type tie rod ends are used on all tractors. Tie rod ends must be renewed if excessively worn.

Recommended front wheel toe-in is 0-5 mm (0-3/16 inch), measured at front and rear of wheels at wheel spindle height. To check toe-in, mark front of the