SHOP MANUAL

KUBOTA

Models L175-L210-L225-L225DT-L260

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CONDENSED SERVICE DATA, CONT.

TUNE-UP, Cont.	L175	L210	L225	L225DT	L260
Battery –					
Volts	12	12	12	12	12
Capacity Amp/hr	65	....	80	80	110
Ground Polarity	Negative	Negative	Negative	Negative	Negative
Slow Idle Speed (RPM)	600-650	600-650	600-650	600-650	600-650
High Idle Speed (RPM)	2950	2850	2850	2850	2750
Rated Speed (RPM)	2800	2700	2700	2700	2600
Horsepower at pto Shaft	15*	19.10	20.86	20.86	24.11
Hydraulic System –					
Maximum Pressure (MPa)	11.73	9.8	11.73	11.73	13.731
(PSI)	1700	1420	1700	1700	1990
Rated Delivery (Liters/min.)	14.06	10.8	14.06	14.06	17.86
(GPM)	3.7	2.85	3.7	3.7	4.7

*Manufacturer's Rating – Others are Official Nebraska Test.

SIZES – CAPACITIES – CLEARANCES	L175	L210	L225	L225DT	L260
Crankshaft Main Journal –					
Diameter (mm)	51.99-52.01	See Para. 39	51.99-52.01	51.99-52.01	62.93-62.94
(Inches)	2.0469-2.0476	See Para. 39	2.0469-2.0476	2.0469-2.0476	2.4789-2.4802
Bearing Clearance (mm)	0.04-0.1	....	0.04-0.1	0.04-0.1	See Para. 40
(Inch)	0.0015-0.004	....	0.0015-0.004	0.0015-0.004	See Para. 40
Crankshaft Crankpin Journal –					
Diameter (mm)	43.88-43.90	53.951-53.970	43.88-43.90	43.88-43.90	58.76-58.80
(Inches)	1.7284-1.729	2.1240-2.1248	1.7284-1.729	1.7284-1.729	2.3135-2.3150
Bearing Clearance (mm)	0.025-0.1	0.02-0.08	0.025-0.1	0.025-0.1	0.02-0.08
(Inch)	0.001-0.004	0.0008-0.003	0.001-0.004	0.001-0.004	0.0008-0.003
Side Clearance (mm)	0.4-0.6	0.4-0.6	0.4-0.6	0.4-0.6	0.4-0.6
(Inch)	0.016-0.024	0.016-0.024	0.016-0.024	0.016-0.024	0.016-0.024
Crankshaft End Play (mm)	0.15-0.3	0.1	0.15-0.3	0.15-0.3	0.2-0.36
(Inch)	0.006-0.012	0.004	0.006-0.012	0.006-0.012	0.008-0.014
Camshaft Journal –					
Diameter (mm)	39.935-39.95	See Para. 28	39.935-39.95	39.935-39.95	See Para. 29
(Inches)	1.572-1.573	See Para. 28	1.572-1.573	1.572-1.573	See Para. 29
Bearing Clearance (mm)	0.05-0.1	....	0.05-0.1	0.05-0.1	See Para. 29
(Inch)	0.002-0.004	....	0.002-0.004	0.002-0.004	See Para. 29
Camshaft End Play (mm)	0.07-0.21	....	0.07-0.21	0.07-0.21	0.07-0.132
(Inch)	0.003-0.009	....	0.003-0.009	0.003-0.009	0.0035-0.005
Valve Stem Diameter –					
Intake and Exhaust (mm)	7.95-7.975	8.96-8.975	7.95-7.975	7.95-7.975	8.96-8.975
(Inch)	0.313-0.314	0.3527-0.3533	0.313-0.314	0.313-0.314	0.3527-0.3533
Valve Face Angle	45°	45°	45°	45°	45°
Valve Seat Angle	45°	45°	45°	45°	45°
Piston Pin –					
Diameter (mm)	23.1	28	23.1	23.1	28
(Inch)	0.911	1.102	0.911	0.911	1.102
Clearance (mm)	0.014-0.04	0.029-0.053	0.014-0.04	0.014-0.04	0.029-0.053
(Inch)	0.0005-0.0015	0.0011-0.002	0.0005-0.0015	0.0005-0.0015	0.0011-0.002
Piston Skirt-to-Cylinder Clearance –					
(mm)	0.08-0.016	0.08-0.12	0.08-0.16	0.08-0.16	0.08-0.12
(Inch)	0.003-0.006	0.003-0.0048	0.003-0.006	0.003-0.006	0.003-0.0048
Crankcase (Liters)	3.5	5.0	5.3	5.3	4.8
(U.S. Quarts)	3.7	5.3	5.6	5.6	5.1
Lubricant Type	DS or DM	DS or DM	DS or DM	DS or DM	DS or DM
Cooling System (Liters)	5.32	6.84	6.84	6.84	6.84
(U.S. Gallons)	1.4	1.8	1.8	1.8	1.8
Transmission (Liters)	22.04	12.16	22.04	22	17.1
(U.S. Gallons)	5.8	3.2	5.8	5.75	4.5
Lubricant Type	SAE 80 Gear Lube	SAE 80 Gear Lube	SAE 80 Gear Lube	SAE 80 Gear Lube	SAE 80 Gear Lube

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Steering wheel and pitman arm can be removed with suitable pullers. Remove pitman arm, then remove any existing paint, rust or burrs from arm end of pitman shaft. Remove cap screws retaining right side cover and remove cover along with pitman shaft and gear. Steering wheel shaft end play is controlled by thickness of shim pack (9). Add or remove shims as required to limit end play to 0.2mm (0.008 inch). Shaft and ball nut is available only as an assembled unit and disassembly is not recommended.

End clearance of adjusting screw (21) in slot of pitman shaft (20) is controlled by selective thickness shim (22) which is available in five thicknesses. Use thickest shim which can be installed, when unit is assembled. Make sure center tooth on shaft gear enters center tooth space on ball nut as shown in inset. Align marked splines on pitman arm (16) and shaft (20). With unit completely assembled and pitman arm (16) pointing straight down, turn adjusting screw (21) clockwise until all backlash is removed from pitman arm shaft and a very slight resistance is felt as pitman arm passes center position. Fill steering gear housing, using 300mL (⅔ pint) SAE 90 gear oil. Complete tractor assembly by reversing disassembly procedure.

FRONT-WHEEL DRIVE (Model L225DT)

Front-wheel drive assembly includes transfer case, drive shaft, front axle, differential, axle shafts and axle hub assemblies. The transfer case bolts to the left side of transmission housing. Transmission oil lubricates transfer case assembly.

TIE RODS AND TOE-IN

4A. Tie rod drag link ends are automotive type. Adjust toe-in to 2-8 mm (1/8-5/16 inch) by shortening or lengthening tie rod. Steering drag link can be adjusted if necessary, to permit a full turn in either direction.

FRONT AXLE

5. **REMOVE AND REINSTALL.** Support tractor behind front axle and detach front of drag link from steering arm. Support axle level with floor to prevent tipping and move transfer case lever to "disengaged" position. Remove front support center pin, then carefully lower axle assembly until it can be withdrawn from drive shaft splines.

Reinstall in reverse order of removal. Tighten drag link end nut to 29.5-49.2 N·m (21.7-36.2 ft.-lbs.) torque.

NOTE: Add 0.19 liter (0.2 quart) of SAE 90 gear lube to differential case to replace gear lube lost when drive shaft yoke was withdrawn from pinion shaft.

OUTER DRIVE ASSEMBLY

6. **R&R AND OVERHAUL.** To disassemble outer drive assembly, first remove wheel from side to be serviced. Remove cap screws securing outer cover (69–Fig. 5) to housing (58), then withdraw cover with components (59, 60, 61, 62, 70 and 71) and allow oil to drain into a suitable container. Remove nut (59) from wheel axle (71) to separate components.

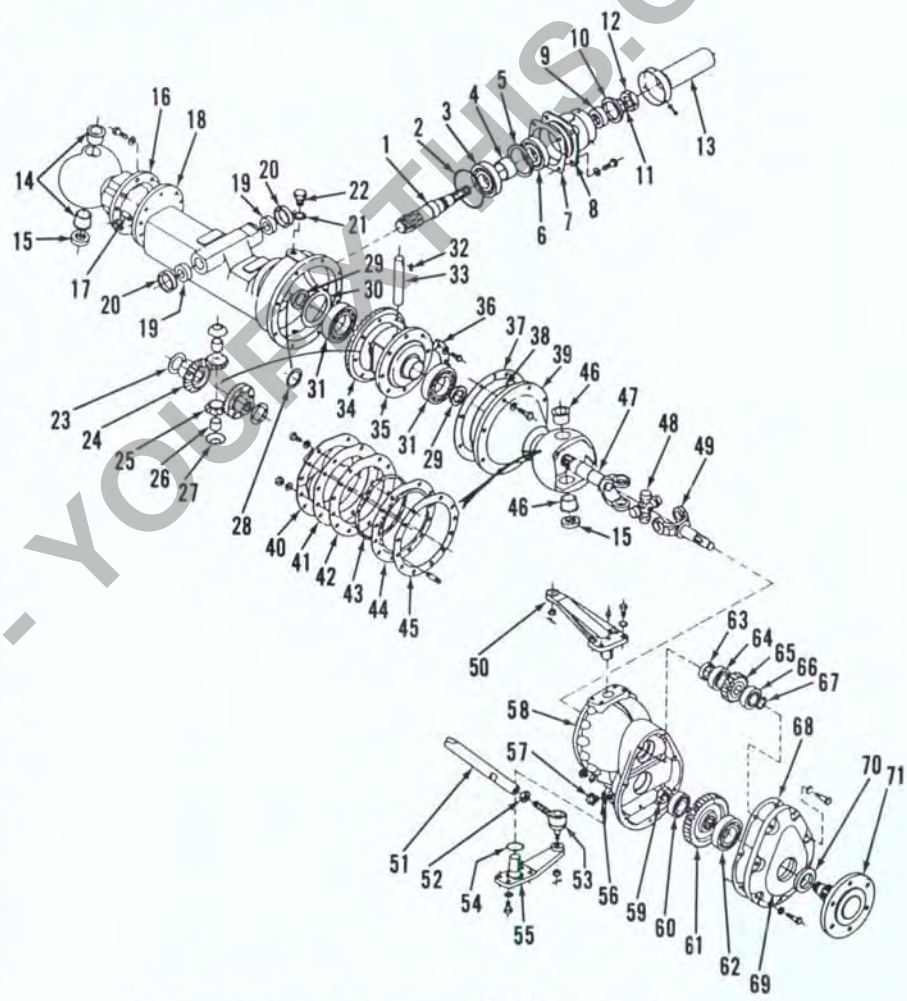


Fig. 5—Exploded view of front-wheel drive axle used on Model L225DT.

1. Bevel pinion
2. "O" ring
3. Bearing
4. Spacer
5. Snap ring
6. Bearing
7. Shim
8. Bearing case
9. Collar
10. Oil seal
11. "O" ring
12. Nut
13. Cover
14. Bushing
15. Bearing
16. Spindle housing
17. Pin
18. Front axle housing
19. Bearing
20. Dust seal
21. Gasket
22. Plug
23. Thrust washer
24. Side gear
25. Spider gear
26. Bushing
27. Thrust washer
28. Guide plate
29. Oil seal
30. Shim
31. Bearing
32. Key
33. Cross shaft
34. Bevel ring gear
35. Differential case
36. Lock plate
37. Shim
38. "O" ring
39. Spindle housing
40. Plate
41. Felt seal
42. Plate
43. Dust seal
44. Dust seal holder
45. Gasket
46. Bushing
47. Yoke shaft
48. Universal joint
49. Yoke shaft
50. Pin & steering arm
51. Tie rod
52. Locknut
53. Tie rod end
54. "O" ring
55. Pin & steering arm
56. Gasket
57. Plug
58. Outer drive housing
59. Nut
60. Bearing
61. Gear
62. Bearing
63. Oil seal
64. Bearing
65. Gear
66. Bearing
67. Snap ring
68. Gasket
69. Outer cover
70. Oil seal
71. Wheel axle

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Shim (7) is used to adjust gear mesh position. Recommended gear tooth mesh is more than ⅔ of entire tooth face.

To separate differential and bevel ring gear assembly, first remove cap screws securing bevel ring gear (34) to differential case (35). Use a suitable mallet and tap bevel ring gear (34) from differential case (35). Withdraw key (32) and cross shaft (33) from differential case (35), then separate components (23 through 27) from case (35).

Use a suitable puller and withdraw bearings (31) from case (35). Inspect bearings (31) for roughness, corrosion, cracks, excessive wear or any other damage.

Inspect all gears for missing, cracked, chipped or excessively worn teeth. Examine bushings, thrust washers and differential case for cracks, excessive wear or any other damage. Renew all components as needed.

NOTE: Bevel ring gear (34) and bevel pinion (1) must be renewed as a matched set.

Reassembly is reverse order of disassembly. Lubricate components with a light film of SAE 90 gear lube prior to installation. Shims (30 and 37) are used to adjust bevel ring gear backlash. Recommended backlash is 0.20-0.25 mm (0.0079-0.0098 inch). Reassemble outer drive housing, kingpins, axle shafts and left-hand spindle housing as outlined in paragraph 7. Reassemble outer drive assembly as outlined in paragraph 6.

TRANSFER CASE

9. **R&R AND OVERHAUL.** Drain oil from transmission case. Raise left rear tire off ground, then remove wheel and tire assembly and left fender. Remove all other components that will obstruct the removal of the transfer case, then remove cap screws securing transfer case and remove transfer case.

Check gear backlash; recommended backlash is 0.10-0.20 mm (0.004-0.008 inch). Disassemble transfer case with reference to Fig. 6. Inspect bearings for roughness, corrosion, cracks, excessive wear or any other damage. Inspect all shafts for excessive wear or any other damage. Examine all gears and splines for chipped, cracked, missing or excessively worn teeth. Inspect housing (22) for cracks, excessive wear or any other damage. Renew all parts as needed.

Reassembly is reverse order of disassembly. Renew all "O" rings and oil seals during reassembly. Lubricate components with a light film of SAE 80 gear lube prior to installation. Reinstall transfer case, transmission drain plug and refill transmission reservoir with SAE 80 gear lube. Capacity of transmission reservoir is 22 liters (5.75 gallons).

STEERING GEAR

10. The steering system is the same as used on two-wheel drive models. Refer to paragraph 4 for service procedures.

ENGINE AND COMPONENTS

R&R ENGINE WITH CLUTCH

All Models

11. To remove engine and clutch as a unit, first drain cooling system and if engine is to be disassembled, drain oil pan. Drain hydraulic system, transmission, and final drive by removing plugs located under transmission and final drive center housings.

Remove hood. Disconnect battery cables, headlight wires, radiator hoses and air cleaner hose. Disconnect drag link at either end. Solidly support tractor underneath clutch housing, support front end unit from top of radiator, unbolt and remove front axle front support, battery, air cleaner and radiator as a unit. On Model L225DT, place transfer case lever in "disengaged" position, then slide front drive shaft yoke from pinion shaft as assembly is being rolled clear.

Disconnect fuel supply line, bleed line, throttle linkage, tractor meter cable, engine wiring harness and decompression linkage. Unbolt and remove exhaust pipe and muffler. Suitably attach a lifting chain and swing engine from an overhead hoist. Remove cap screws securing flywheel housing to clutch housing and lift off engine. Install by reversing removal procedure.

NOTE: On Model L225DT, add 0.19 liter (0.2 quart) of SAE 90 gear lube to differential case to replace gear lube lost when drive shaft yoke was withdrawn from pinion shaft.

CYLINDER HEAD

All Models

12. To remove cylinder head, drain cooling system and open or remove hood. Disconnect upper coolant hose. Disconnect decompressor linkage and remove rocker arm cover. Disconnect exhaust pipe and inlet manifold hose. Remove injector lines, capping all exposed fittings to prevent dirt entry. Remove rocker arms assembly and push rods. Remove retaining cap screws or stud nuts and lift off cylinder head assembly.

One or more 0.2 mm (0.008 inch) thick shims may be installed with cylinder head gasket. Identify and count shims when cylinder head is removed, then install an equal number of shims when head is reinstalled. Shims should be placed on top of gasket, between gasket and cylinder head. If valves, valve seats, rocker arms or head are renewed or if cylinder head is planed, refer to paragraph 13 or 14 for compression release adjustment.

Cylinder head tightening sequence for Model L175 is shown in Fig. 7 and both the cap screws and stud nuts should be

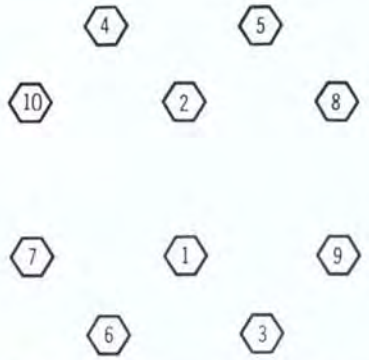


Fig. 7—On Model L175, tighten cylinder head cap screws and stud nuts to a torque of 75-82 N·m (55-60 ft.-lbs.) using sequence shown.



Fig. 8—Cylinder head tightening sequence to be used on Model L210. Refer to paragraph 12 for tightening torques.

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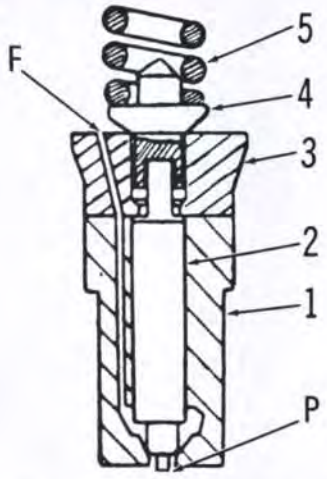


Fig. 62—Cross-sectional view of pintle nozzle showing component parts.

1. Nozzle body
2. Nozzle valve
3. Spacer
4. Pressure pin
5. Spring
F. Fuel passage
P. Pintle

64. **TESTING AND LOCATING A FAULTY NOZZLE.** If engine is missing and fuel system is suspected as being the cause of trouble, system can be checked by loosening each injector line connection in turn, while engine is running at slow idle speed. If engine operation is not materially affected when injector line is loosened, that cylinder is missing. Remove and test (or install a new or reconditioned unit) as outlined in appropriate following paragraphs.

65. **REMOVE AND REINSTALL.** Before removing an injector or loosening injector lines, thoroughly clean injector, lines and surrounding area using compressed air and a suitable solvent.

66. MODELS L175, L225 AND L225DT. To remove injector unit, first remove high pressure line leading from injection pump to injector. Disconnect bleed line by removing nut and banjo fitting, or by pulling line(s) from banjo nipple fitting (12–Fig. 64). With pressure and bleed-back lines removed, unscrew injector from its mounting position on cylinder head.

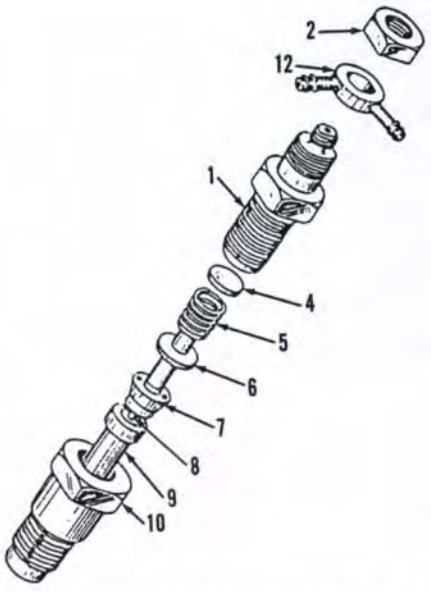


Fig. 64—Exploded view of injector unit used on Models L175, L225 and L225DT.

1. Body
2. Nut
4. Shim
5. Spring
6. Pressure pin
7. Spacer
8. Nozzle valve
9. Nozzle body
10. Nozzle nut
12. Bleed fitting

When installing injector, make sure that machined seating surface in cylinder head is completely clean and free from carbon build-up. Use a new copper washer underneath injector nozzle and tighten injector carefully.

67. MODEL L210. To remove injector unit, first remove high pressure line leading from pump to injector. Disconnect bleed line by removing banjo bolt or by pulling line from banjo nipple fitting (12–Fig. 65). Remove two stud nuts securing ears of injector body to left side of cylinder head and withdraw injector unit.

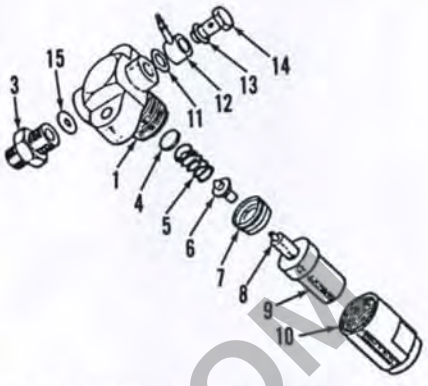


Fig. 65—Exploded view of injector unit used on Model L210. Refer to Fig. 64 for parts identification except for the following.

3. Fitting
11. Washer
13. Washer
14. Fitting screw
15. Washer

When installing injector, make sure machined seating surface in cylinder head bore is completely clean and free from carbon build-up. Use a new copper washer underneath injector nozzle. Turn retaining stud nuts both finger tight, then tighten alternately and evenly one-sixth turn at a time to a torque of 20 N·m (15 ft.-lbs.). Start and run engine, listening for pressure leaks around nozzle seating washer. Correct for pressure leaks by checking to be sure stud nuts are tightened evenly and injector unit is not cocked.

68. MODEL L260. To remove injector unit, first remove high pressure line leading from injection pump to injector.

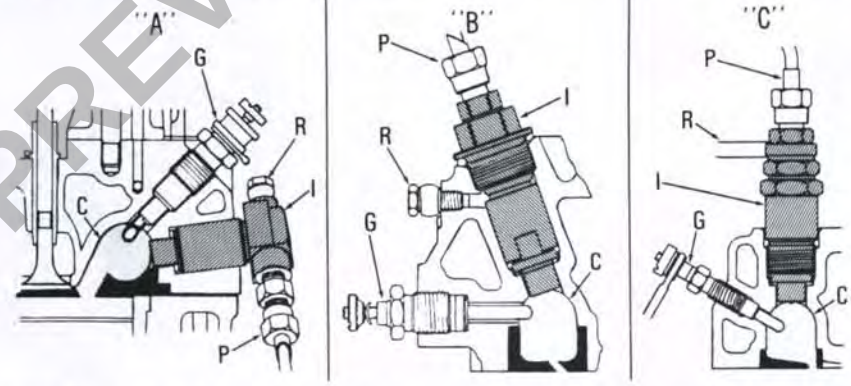


Fig. 63—Cross-sectional views of installed injector and associated parts on "A" Model L210; "B" Model L260 and "C" Models L175, L225 and L225DT.

C. Precombustion chamber
G. Glow plug
I. Injector
P. Pressure line
R. Bleed (return) line

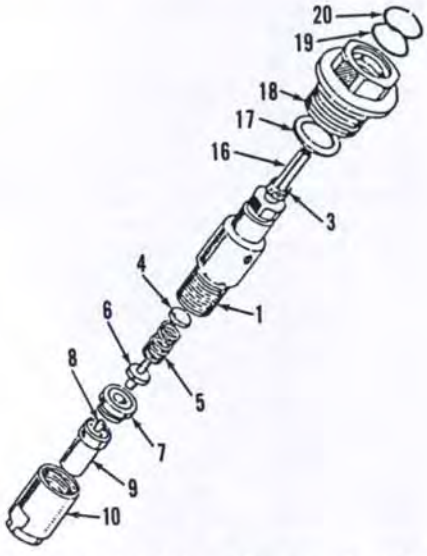


Fig. 66—Exploded view of injector unit used on Model L260. Refer to Fig. 64 for parts identification except for the following:

16. Edge filter
17. Washer
18. Nut
19. "O" ring
20. Circlip

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CONDENSED SERVICE DATA, CONT.

	L175	L210	L225	L225DT	L260
SIZES – CAPACITIES – CLEARANCES, CONT.					
Hydraulic System (Liters)	Trans. Reservoir	7.03	Trans. Reservoir	Trans. Reservoir	6
(U.S. Quarts)	Trans. Reservoir	7.4	Trans. Reservoir	Trans. Reservoir	6.3
Fluid Type	SAE 80 Gear Lube	#140 Turbine Oil	SAE 80 Gear Lube	SAE 80 Gear Lube	#140 Turbine Oil
Front Axle Differential Case –					
(Liters)	.....	.....	.....	1.05	.....
(U.S. Quarts)	.....	.....	.....	1.1	.....
Fluid Type	.....	.....	.....	SAE 90 Gear Lube	.....
Front Axle Gearcase (Liters)	.....	.....	.....	0.85	.....
(U.S. Quarts)	.....	.....	.....	0.9	.....
Fluid Type	.....	.....	.....	SAE 90 Gear Lube	.....

FRONT AXLE AND STEERING SYSTEM (Models L175-L210-L225-L260)

FRONT AXLE

All Models

1. Figure 1 shows an exploded view of fixed tread axle type used on Models L175 and L225. Figure 2 is the adjustable axle used on Model L260, with Model L210 being basically similar. On all models, front axle pivot pin (2) is retained in support housing by set screw (4). When assembling, make sure tapered point of set screw enters locking counterbore in pivot pin, and that locknut (3) is securely tightened to prevent set screw from loosening.

Renew pivot pin and/or axle pivot bushings whenever diametral clearance exceeds 0.5mm (0.020 inch) for Models L175 and L225, or 0.45mm (0.018 inch) for Models L210 and L260. Provisions are not made for axle pivot end play adjustment; renew thrust washers (6) or install a thin shim washer in FRONT of axle, if end clearance is excessive.

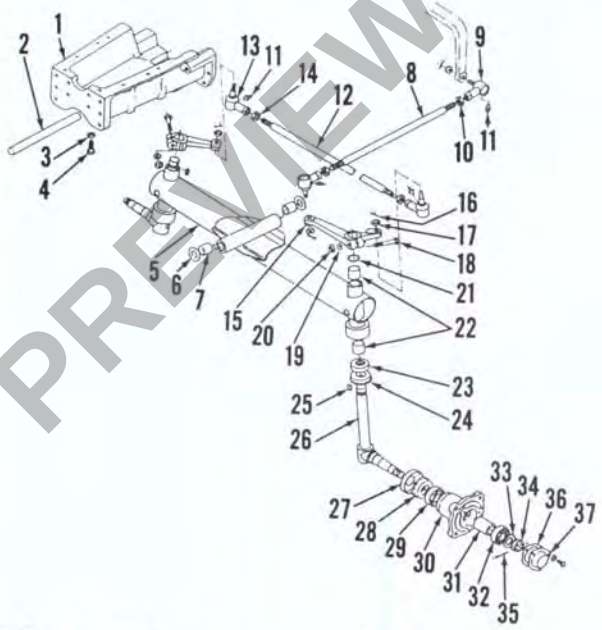


Fig. 1 – Exploded view of fixed tread front axle used on Models L175 and L225.

1. Front axle support
2. Pivot pin
3. Locknut
4. Set screw
5. Front axle
6. Thrust washers
7. Bushing
8. Drag link
9. Drag link end
10. Locknut
11. Grease fitting
12. Tie rod
13. Tie rod end
14. Locknut
15. Steering arm
16. Cotter key
17. Castle nut
18. Bolt
19. Lockwasher
20. Nut
21. "O" ring
22. Bushing
23. Bearing
24. Grease seal
25. Key
26. Spindle
27. Dust cover
28. Grease seal
29. Bearing
30. Hub
31. Spacer
32. Bearing
33. Washer
34. Castle nut
35. Cotter key
36. Gasket
37. Cap

TIE RODS AND TOE-IN

All Models

2. Tie rod and drag link ends are automotive type. Adjust toe-in to 2-8 mm (1/8-5/16 inch) by shortening or lengthening tie rod. Steering drag link can be adjusted if necessary, to permit a full turn in either direction.

STEERING SPINDLE

All Models

3. Refer to Fig. 1 for exploded view of front axle and associated parts of the type used on Models L175 and L225, and to Fig. 2 for view of front axle used on Model L260. Refer to Fig. 3 for an exploded view of spindle and hub com-

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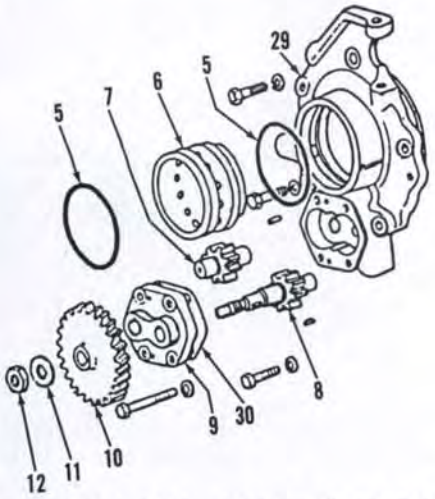


Fig. 43—Exploded view of engine oil pump and associated parts used on Model L210. Oil distributor ring (6) floats in housing and is sealed by "O" rings (5) at front and rear.

5. "O" rings
6. Oil distributor ring
7. Driven gear
8. Drive gear
9. Cover
10. Gear
11. Washer
12. Nut
29. Housing & support plate
30. Gasket

they are used in pairs, with upper and lower washer being the same thickness.

When assembling main bearing halves, tighten retaining bolts (6) to a torque of 64-68 N·m (47-50 ft.-lbs.).

CRANKSHAFT REAR OIL SEAL

All Models

41. The lip type crankshaft rear oil seal is contained in rear bearing case cover and can be renewed after splitting tractor between engine and clutch housing and removing clutch and flywheel. Coat outer surface of new seal and install with lip toward inside. Refer to following paragraphs when installing flywheel.

FLYWHEEL

Models L175-L225-L225DT

42. Flywheel is retained to crankshaft flange by six evenly spaced cap screws and can be installed in any of six positions. To be sure flywheel is correctly installed when removed for minor repairs, remove one of the retaining cap screws and spray flywheel and exposed cap screw hole with one shot of quick-drying paint, then reinstall flywheel with paint marks in register. Punch mark parts before cleaning if cleaning will endanger paint marks.

Flywheel ring gear is a shrink fit on front of flywheel. Heat gear evenly and install with beveled end of gear teeth facing toward front of tractor when flywheel is installed.

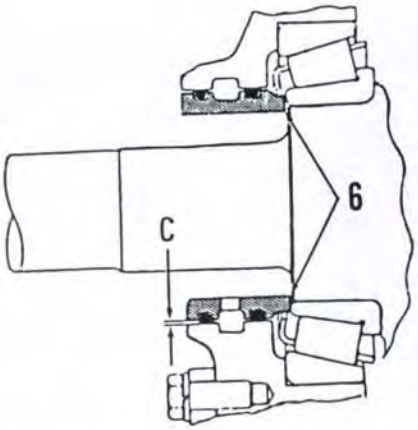


Fig. 44—Installed view of oil distributor ring (6). Clearance (C) should be 0.3-0.5 mm (0.012-0.020 in.). Refer to paragraph 46.

Make sure mating surfaces of flywheel and crankshaft flange are clean and free of dirt, rust or burrs, and lubricate lightly with engine oil. Tighten retaining cap screws evenly to a torque of 54-58 N·m (40-43 ft.-lbs.) and secure cap screws by bending retainer against flats of cap screw heads.

Models L210-L260

43. Flywheel is positively located on crankshaft flange by a dowel pin and retained by four cap screws. Make sure mating surfaces of flywheel and shaft are clean and free of dirt, rust or burrs, and lubricate lightly with engine oil. Tighten retaining cap screws evenly to a torque of 109-116 N·m (80-85 ft.-lbs.) and secure by bending retainer against flats of cap screw heads.

Flywheel ring gear is a shrink fit on front of flywheel. Heat gear evenly and install with beveled end of gear teeth facing toward front of tractor when flywheel is installed.

OIL PUMP

Models L175-L225-L225DT

44. The rotary type engine oil pump mounts on front face of engine block and is gear driven by crankshaft timing gear.

Specified pump volume at operating speed and temperature is 16 L/min (4.23 gpm) and regulated pressure is 441.6 kPa (64 psi).

Oil pump is available only as an assembled unit. If pump delivery is not as specified, renew pump assembly.

Model L210

45. The gear-type engine oil pump is built into crankcase front cover as shown in Fig. 43, and is driven by crankshaft timing gear.

Pressurized oil from pump flows through internal passages and full flow filter to floating oil ring (6), where it is distributed to drilled crankshaft and connecting rod bearings; and to main oil gallery leading to valve train. Main crankshaft bearings and camshaft bearings are splash lubricated as are cylinder walls and camshaft.

Regulated oil pressure at operating speed and temperature is 490.6-540.3 kPa (71.1-78.3 psi) for early models with renewable element filter, or 441.6 kPa (64 psi) for late models with spin-on filter. Warning light switch is designed to open at a pressure of 147.7 kPa (21.4 psi).

Pump gear teeth should have a radial clearance of 0.025-0.075 mm (0.001-0.003 inch) and an end clearance of 0.046-0.092 mm (0.0018-0.0036 inch) in pump body.

46. **OIL DISTRIBUTOR RING.** Floating oil ring (6—Fig. 43) should have 0.3-0.5 mm (0.012-0.020 inch) RADIAL clearance in end plate housing bore as shown in Fig. 44. Sealing "O" rings must be soft and in good condition as must mating surfaces of oil ring and crankshaft gear hub. Renew "O" rings whenever engine is disassembled and other parts if their condition is questionable.

Model L260

47. The gear-type engine oil pump mounts on front face of engine block and is gear driven by crankshaft timing gear.

Specified pump volume at operating speed and temperature is 30 L/min (8 gpm) and regulated pressure is 441.6 kPa (64 psi). Oil pressure warning lamp sending unit switch is designed to open at 147.7 kPa (21.4 psi).

Pump gear teeth should have a radial clearance of 0.25-0.75 mm (0.001-0.003 inch) and an end clearance of 0.046-0.092 mm (0.0018-0.0036 inch) in pump body.



Fig. 45—View of installed relief valve and filter housing of type used on most units.

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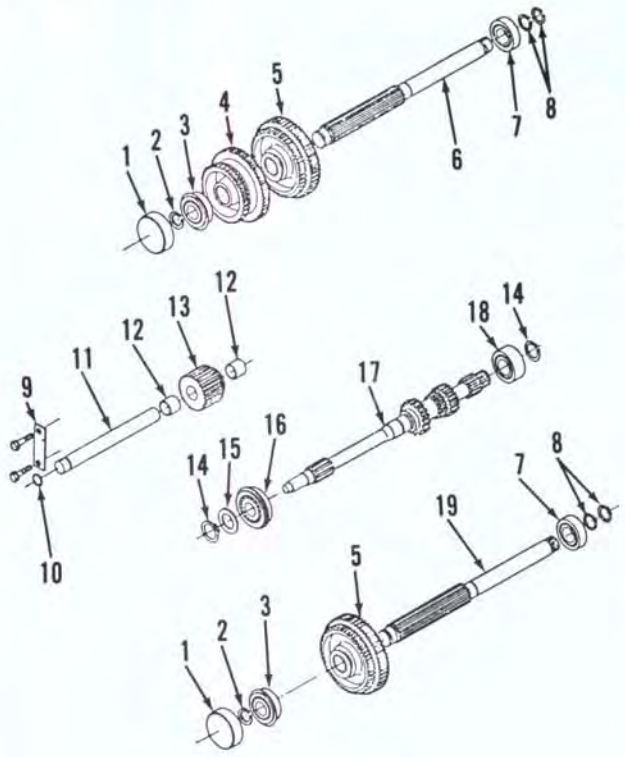


Fig. 96—Exploded view of transmission gears and shafts located in front transmission housing on Models L175, L225 and L225DT.

1. Cover
2. Snap ring
3. Bearing
4. Gear
5. Gear
6. Transmission countershaft
7. Bearing
8. Snap ring
9. Plate
10. "O" ring
11. Reverse idler shaft
12. Bushing
13. Reverse idler gear
14. Snap ring
15. Spacer
16. Bearing
17. Input shaft
18. Bearing
19. Pto countershaft

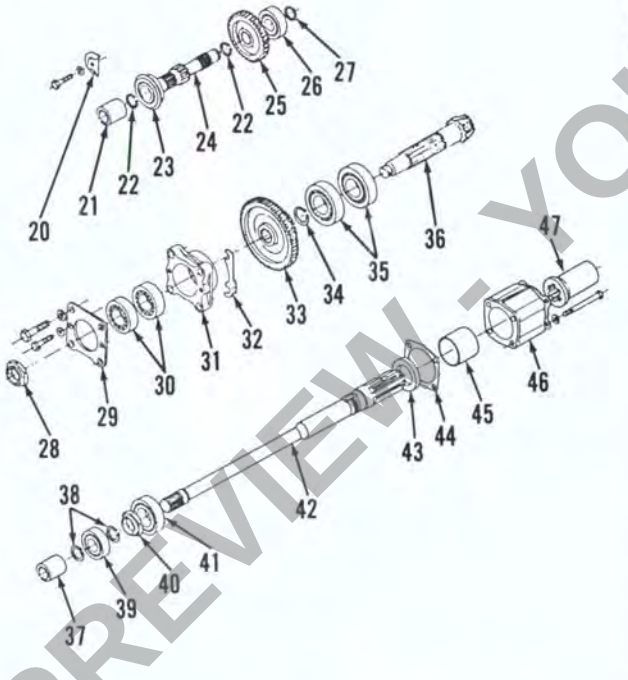


Fig. 97—Exploded view of transmission gears and shafts located in rear axle center housing on Models L175, L225 and L225DT. Components (1 through 5—Fig. 6) are used on Model L225DT.

20. Retainer
21. Coupler
22. Snap ring
23. Bearing
24. Rear countershaft
25. Gear
26. Bearing
27. Snap ring
28. Nut
29. Cover
30. Bearings
31. Bearing housing
32. Adjusting shims
33. Gear
34. Snap ring
35. Bearings
36. Bevel pinion
37. Coupler
38. Snap ring
39. Bearing
40. Nut
41. Bearing
42. Pto output shaft
43. Seal
44. Gasket
45. Collar
46. Bearing housing
47. Shaft cover

shaft as in paragraph 100. Remove front bearing cover and shaft snap ring; then using a brass or aluminum drift, bump shaft rearward out of front bearing. Lift out sliding gears through top opening while shaft is being withdrawn from rear.

Procedure for removing pto countershaft (19) is identical to removal of transmission countershaft except that pto shift fork and rail should first be removed.

Pto sliding gear is identical to rear sliding gear on transmission countershaft. Install either shaft by reversing removal procedure, making sure that smaller gear on each sliding cluster is installed to front as shown in Fig. 96.

102. **REVERSE IDLER.** Reverse idler shaft (11—Fig. 96) can be removed after removing transmission input shaft as outlined in parargraph 100. Remove retaining plate and push shaft forward out of housing while withdrawing gear out input shaft opening.

Maximum allowable clearance between reverse idler gear and shaft is 0.3 mm (0.012 inch). Renew bushings and/or shaft if clearance is excessive.

103. **RANGE COUNTERSHAFT.** To remove range countershaft (24—Fig. 97), first split tractor between front transmission and rear axle center housing using general procedure outlined in paragraph 97.

Remove bearing retainer clip at front end of shaft and snap ring at rear end. Using a brass or aluminum drift, bump shaft forward out of rear bearing, lifting large gear out top opening as shaft is removed from front. Install by reversing removal procedure, using Fig. 97 as a guide.

104. **OUTPUT (BEVEL PINION) SHAFT.** To remove output (bevel pinion) shaft (36—Fig. 97), first remove rear axle center housing (rear transmission) as outlined in paragraph 98 and differential assembly as in paragraph 119. Remove clip retaining range shift rail and push rail forward out of housing, catching detent ball as rail leaves shift fork. Lift out range shift fork. Remove range countershaft as in paragraph 103. Hold pinion shaft from turning and remove self-locking nut from front of shaft; then bump shaft and rear bearings rearward out of front bearings and housing. Lift range sliding gear out top opening as pinion shaft is withdrawn.

If front bearing retainer is removed, identify and save shim pack (32) as unit is disassembled. Shim pack adjusts mesh position of main drive bevel gears and a shim pack of identical thickness must be reinstalled or mesh position checked as outlined in paragraph 125.

Output (bevel pinion) shaft is only available in a matched set with bevel ring gear. If parts are renewed, backlash and mesh position must be checked and adjusted when reassembling. Refer to paragraphs 120 and 125 for procedure.

105. **PTO OUTPUT SHAFT.** To remove pto output shaft (42—Fig. 97), split tractor between transmission and rear axle center housing following general procedure outlined in paragraph 97. If only pto shaft is to be removed, shift range transmission into High Range. Remove four cap screws securing output shaft housing at rear of tractor and bump pto shaft rearward using a brass or aluminum drift.

Output shaft oil seal is located in rear bearing housing and should be installed with sealing lip forward. A pipe spacer (not shown) holds rear bearing bottomed in bearing housing when unit is installed.

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