Sabre Lawn Tractor

38–Inch and 46–Inch (96 cm and 117 cm)

Models:

1338 Gear	1546 Gear
1538 Gear	1638 Hydro
1538 Hydro	1646 Gear
15538 Gear	1646 Hydro
15538 Hydro	

Technical Manual

John Deere Consumer Products Group

TM–GX10131 (Mar–97)

LITHO IN U.S.A. (New)

Traction Drive Belt:

Gear—
- New Belt Length . . . . . 2660±8 mm (104.7±0.3 in.)
- Minimum Effective Length . . . . . 2631 mm (103.6 in.)
- Maximum Effective Length . . . . . 2710 mm (106.7 in.)

Hydro—K55 Transmission
- New Belt Length . . . . . 2485±8 mm (97.8±0.3 in.)
- Minimum Effective Length . . . . . 2477 mm (97.5 in.)
- Maximum Effective Length . . . . . 2530 mm (99.6 in.)

Hydro—K51 Transmission
- New Belt Length . . . . . 2400±8 mm (94.5±0.3 in.)
- Minimum Effective Length . . . . . 2392 mm (94.2 in.)
- Maximum Effective Length . . . . . 2424 mm (94.9 in.)

Mower Deck Drive Belt

38-Inch Deck—
- Actual effective length . . . . . 2425±10 mm (95.5±0.4 in.)

46-Inch Deck—
- Actual effective length . . . . . 3492±10 mm (137.5±0.4 in.)

Mower Deck:

38-Inch Mower Deck—
- Type . . . . . Rotary—Dual Spindles (Non-Serviceable)
- Material Type . . . . . Stamped 2.5 mm (0.098 in.) Nominal Gauge Steel
- Cutting Blade . . . . . Two—76 x 5 x 496 mm (3 x 0.2 x 19.5 in.)
- Blade Cutting Edge . . . . . 30±5° Angle
- Blade Wing Lift/Height . . . . . 40±3 mm (1.57±0.12 in.)
- Overall Cutting Width . . . . . 965 mm (38 in.)
- Overall Width (w/o discharge chute) . . . . . 1026 mm (40.4 in.)
- Drive Type . . . . . Single V-Belt (With Spring Tension Idler)
- Spindle Lubrication . . . . . None—Sealed Bearings
- Lift Type . . . . . Manual—Operator's Station
- Cutting Settings . . . . . Seven: 31.8—89 mm (1.25—3.5 in.)

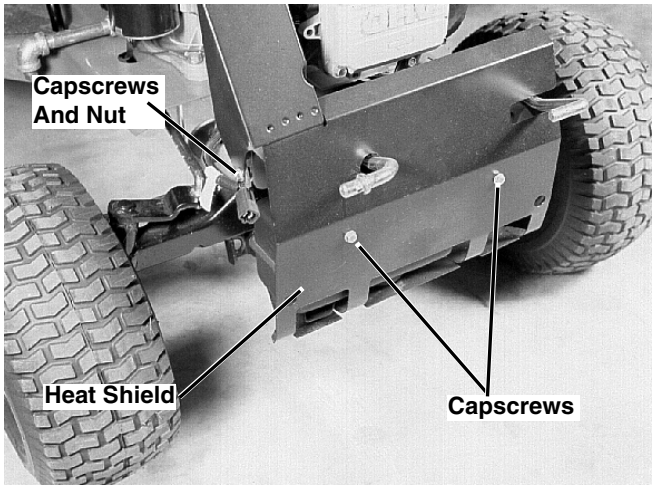
46-Inch Mower Deck—
- Type . . . . . Rotary—Triple Spindles (Non-Serviceable)
- Material Type . . . . . Stamped 2.5 mm (0.098 in.) Nominal Gauge Steel
- Cutting Blade . . . . . Three—50.8 x 5 x 407.4 mm (2 x 0.2 x 16 in.)
- Blade Cutting Edge . . . . . 30±5° Angle
- Blade Wing Lift/Height . . . . . 20.3±3 mm (0.8±0.12 in.)
- Overall Cutting Width . . . . . 1168.4 mm (46 in.)
- Overall Width (W/O Discharge Chute) . . . . . 1308 mm (51.5 in.)
- Drive Type . . . . . Single V-Belt (With Spring Tension Idler)
- Spindle Lubrication . . . . . None—Sealed Bearings
- Lift Type . . . . . Manual—Operator's Station
- Cutting Settings . . . . . Seven: 31.75 mm—89 mm (1.25—3.5 in.)

Chassis:
- Wheelbase . . . . . 1135 mm (44.69 in.)
- Overall Length . . . . . 1524 mm (60 in.)
- Overall Width (W/O Mower Deck) . . . . . 908 mm (35.75 in.)
- Height . . . . . 980 mm (38.6 in.)
- Average Overall Weight 38 inch (With Mower Deck, No Fuel) . . . . . 195.05 kg (430 lbs)

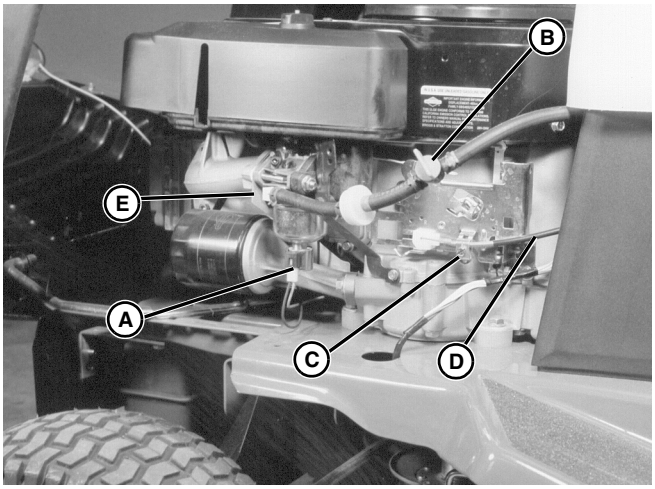
REPAIR

ENGINE REMOVAL

1. Turn all switches OFF and disconnect battery negative (-) cable.
2. Raise hood. Disconnect light harness on right side of hood. Lower hood to approximately 3/4 open and slide off bracket.



3. Remove two capscrews securing heat shield to frame. Remove capscrew and nut on side of heat shield. Remove heat shield.

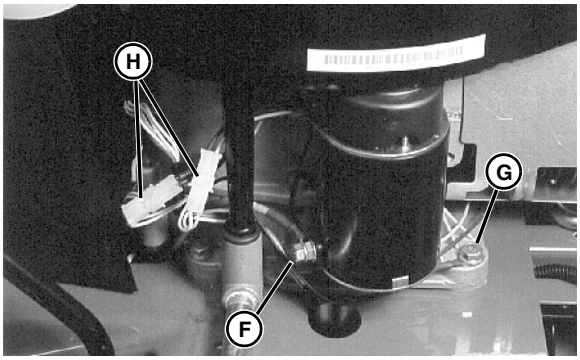


4. Disconnect fuel shutoff solenoid wire (A)(16 horsepower only).
5. Turn fuel shutoff valve (B) (early models only) to OFF position or pinch closed fuel hose to carburetor.
6. Loosen clamp (C) to disconnect throttle cable (D).

CAUTION

Gasoline is explosive. Do not expose to flame or spark. Serious injury can result. Store in a properly marked, safe container. Wipe-up any spills IMMEDIATELY.

7. Disconnect hose clamp (E) and slide fuel line off of hose barb on carburetor.



8. Disconnect wires from starter terminal (F).

NOTE: Ground terminal (G) will be disconnected when engine mounting bolt is removed.

9. Disconnect two (2) harness connectors (H).

10. Remove traction drive belt and mower drive belt.
11. Remove capscrew securing pulley assembly to engine output shaft. Remove pulley assembly.

TROUBLESHOOTING

Problem or Symptom / Check or Solution	Engine will not crank.	Engine cranks—will not start.	Engine starts hard or will not stay running.	Engine misses or runs rough.	Weak or no spark.	Engine will not shut off.	Battery goes dead, discharges or overcharges.	Headlights do not light or will not shut off.	Fuel shut-off solenoid will not open (16 hp only)	Fuel shut-off solenoid will not close (16 hp only)	Engine dies when brake lever is released.	Engine dies when blade lever is engaged.
See Cranking Circuit Diagnosis	●						●		●	●		
See Ground Circuit Tests	●	●		●	●	●	●	●	●		●	●
Test battery and connections.	●						●	●	●			
See Ignition Circuit Tests		●	●	●	●	●					●	●
See Charging Circuit Tests	●		●				●	●				
See Starter Solenoid Test	●											
See Seat Switch Tests		●	●								●	●
See headlight circuit test points.								●				
See fuel shut-off solenoid circuit test points (16 hp only)		●	●						●	●		
Check for short circuit.	●	●	●		●	●	●	●	●	●	●	●
Check for high resistance or open circuit.	●	●	●		●	●	●	●	●	●	●	●
Check for correct spark plug and spark plug gap.		●	●	●	●							
Check strength of flywheel ignition module magnet and/or flywheel stator magnets.		●	●	●	●		●					
See fuel and air system tests and adjustments.		●	●	●								
Check for stator shorted to ground					●		●					
Check seat switch connector is plugged in and interlock spring inside connector is good											●	●

HEADLIGHTS CIRCUIT DIAGNOSIS

Test Conditions:

• Park brake engaged, blade drive disengaged	• Engine running at fast idle
• Meter negative (—) lead on battery negative (—) terminal	• Meter positive (+) lead on numbered test point

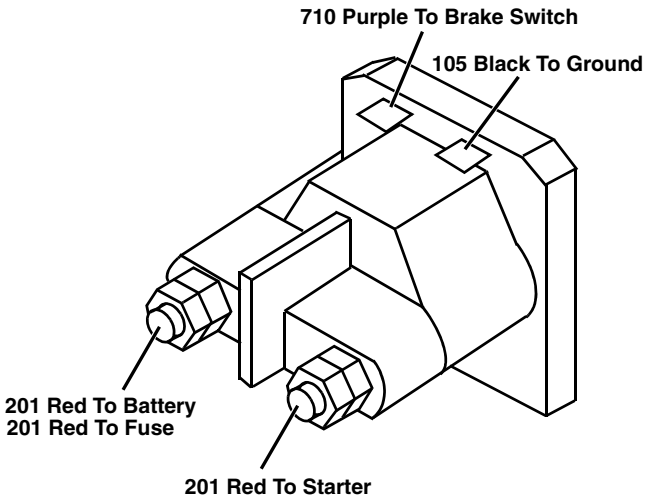
NOTE: But sure to set multi-meter to measure AC or DC voltage or amperage as required by test:

Test/Check Point	Normal	If Not Normal
1. Headlamps	Bulbs are lit whenever engine is running	Check for burned out bulbs
2. Yellow/White wire at headlamp socket connector	12—14 Volts AC. Test ground circuit	Go to step 3
3. Yellow/White wire at connector at engine cover hinge.	12—14 Volts AC. Replace headlamp harness under engine cover	Go to step 4
Test Conditions:		
• Stop engine		
Test/Check Point		
4. Remove engine connector and test for voltage at Red wire from engine. See Charging Circuit Diagnosis Section in this manual	12—14 Volts AC	See Briggs & Stratton engine manual for service and repair

STARTER SOLENOID REMOVAL & INSTALLATION

Procedure:

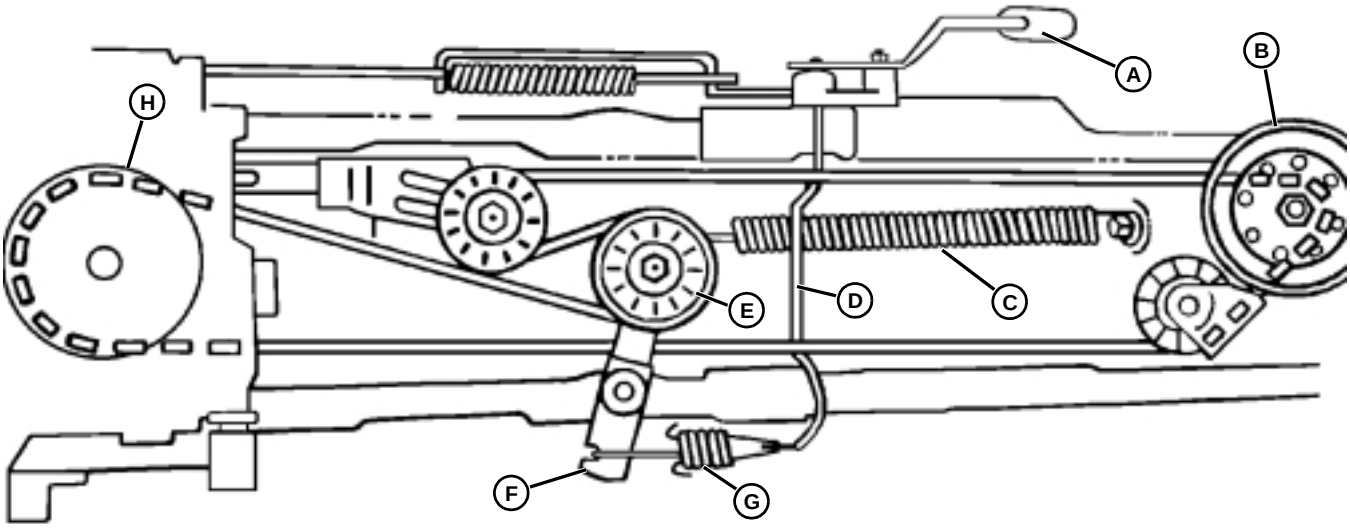
1. Park machine on level surface, park brake ON, engine OFF.
2. Lift seat and remove negative battery cable from battery terminal.
3. Remove positive battery cable from battery terminal.
4. Remove battery hold-down (rubber strap) from frame, and lift battery from tractor.
5. Starter solenoid is located under operator's seat in front of battery.



6. Follow wiring above to remove and replace solenoid from frame.
7. When connecting battery, always connect positive cable to battery terminal first, and negative cable last.

THEORY OF OPERATION

TRACTION DRIVE SYSTEM OPERATION



A. Clutch Pedal
B. Engine Drive Sheave
C. Tensioning Spring
D. Clutch Shaft
E. Tensioning Sheave
F. Bellcrank Assembly
G. Actuating Spring Assembly
H. Transaxle Drive Sheave

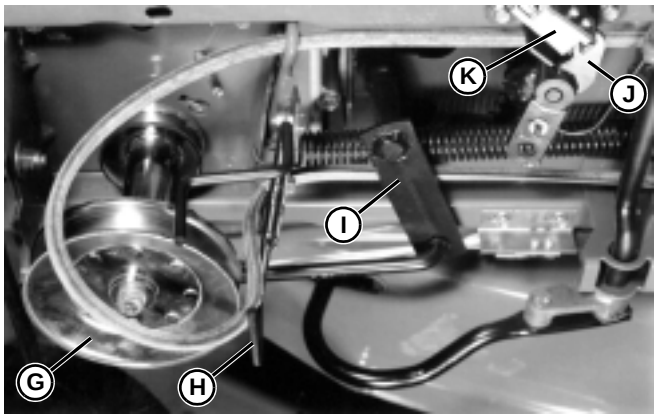
Function:

The belt traction drive transfers power from the engine to the 5-speed transaxle. The clutch pedal controls the belt traction drive, and allows the transaxle to be shifted through it's five speed range.

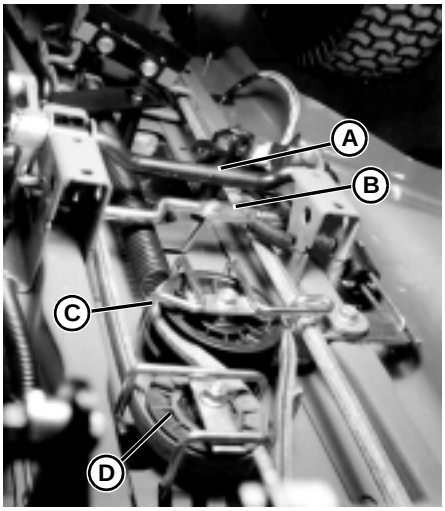
With engine running and clutch engaged (clutch pedal (A) released), the engine drive sheave (B) pulls the drive belt and transmits power to the transaxle drive sheave (H). As clutch/brake pedal (A) is depressed by the operator, clutch shaft (D) pulls the clutch actuating spring assembly (G) forward. Initial movement of the pedal compresses the spring in the actuating spring assembly (G) and, once compressed, pivots the bellcrank assembly (F). As the bellcrank assembly pivots, the tensioning sheave (E) moves rearward, releasing drive belt tension. This allows the engine drive sheave to rotate without transferring any power through the slackened drive belt.

As the bellcrank pivots rearward, belt tensioning spring (C) is stretched, building additional tension in the spring. As the operator begins to ease-up on the clutch/brake pedal (A), tensioning spring (C) pulls the bellcrank tensioning sheave (E) into the drive belt, causing the belt to tighten and seat in the grooves of the transaxle drive sheave (H) and the engine drive sheave (B). This interaction of components results in turning the transaxle drive sheave rapidly in a clockwise direction, transferring power from the engine to the 5-speed transaxle.

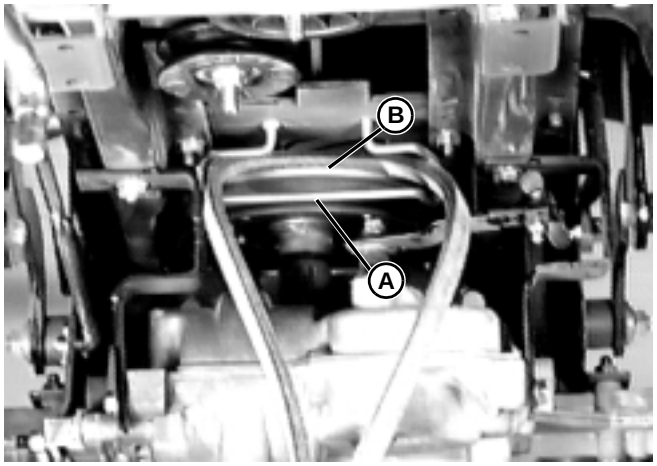
TRACTION DRIVE BELT INSTALLATION



1. Install end of drive belt under belt guide (H), and pull belt up between guide (H) and sheave (G). Pull belt over large sheave (G) and down into small sheave.
2. Route belt between mower drive lever (J) and switch (K), and around steering arm (I).



3. Route drive belt over the top of clutch cross shaft (A) and park brake locking rod (B).
4. Route through clutch sheave (C) and adjustable idler (D) as shown

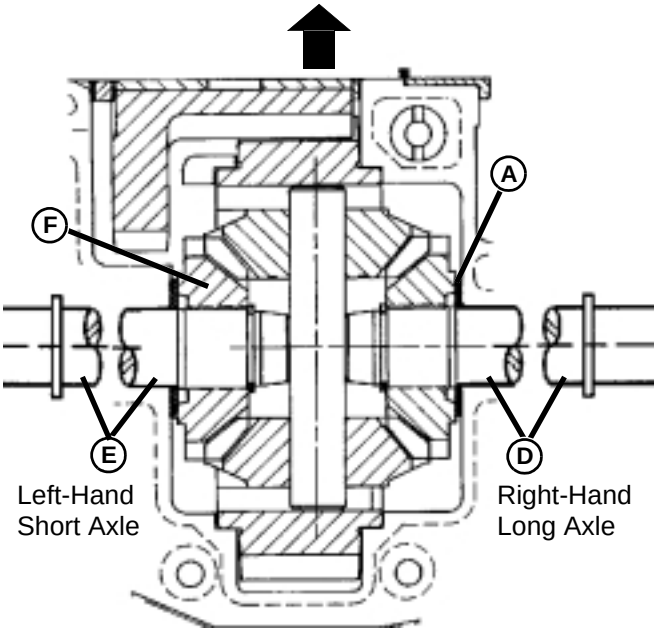


5. Install drive belt through rear belt guide (A) and over transaxle drive sheave (B).
6. Install belt guides on clutch sheave and adjustable idler.
7. Install park brake lever and mower drive lever return spring.
8. Release park brake and check that belt is seated in grooves of all sheaves and idlers.
9. Perform Clutch/Brake Pedal Linkage Adjustments, shown earlier in this section.

TRACTION DRIVE SYSTEM REMOVAL

1. Remove mower deck.
2. Block mower wheels securely at front and rear.
3. Engage park brake.
4. Remove traction drive belt from transaxle sheave.
5. Disengage park brake.

Differential/Axle Shaft Inspection:

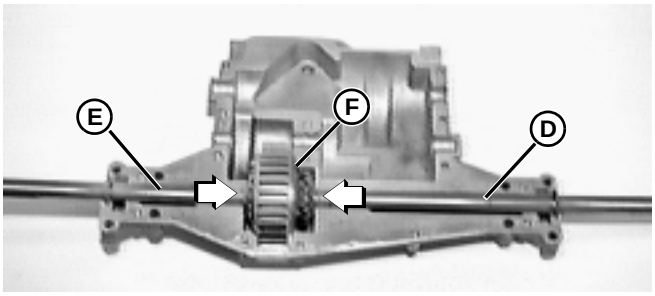


1. Visually check overall condition of assembly.
2. Use a feeler gauge to measure clearance (A) between side surface of shim washer and side surface of lower case:

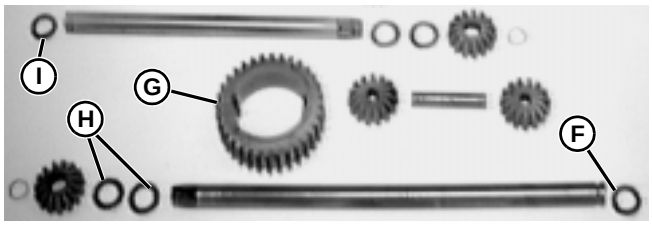
Clearance . . . . . 0.18—0.38 mm (0.007—0.015 in.),

3. If clearance is excessive, worn or damaged components must be replaced.

Differential/Axle Shafts Disassembly:



1. Put inward pressure on both axles (D and E) as you lift differential assembly (F) from lower case.



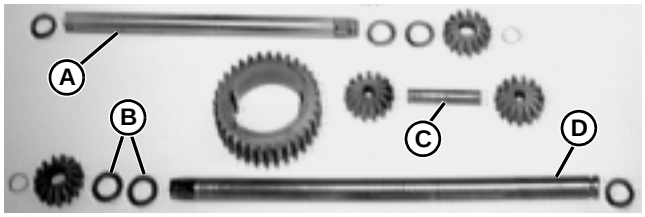
2. Carefully remove axle shaft assembly components from ring gear (G). Be sure to remember each components orientation to its neighbor and to the ring gear (G). Mark the same side of each component to aid reassembly.
3. Clean components individually once disassembled, be sure to remove all sealant material from upper and lower case halves.
4. Inspect each component (especially both upper and lower case halves) closely for wear, scoring, cracks, chips, or discoloration (burnt). Replace components as necessary.
5. Replace seals (I and F) **every time** transaxle housing has been separated.

TRANSAXLE ASSEMBLY

IMPORTANT: Maintain absolute cleanliness when working on transaxle. The close tolerances in this unit will not tolerate ANY dirt. Use only clean fresh multipurpose EP grease during assembly.

IMPORTANT: Coat all mating surfaces, except seal surfaces, with SAE 30 weight oil before assembly. Pay close attention to proper order and orientation of all components. Use a calliper to identify the correct shim, spacer, or washers are installed correctly.

Differential/Axle Shaft Assembly:



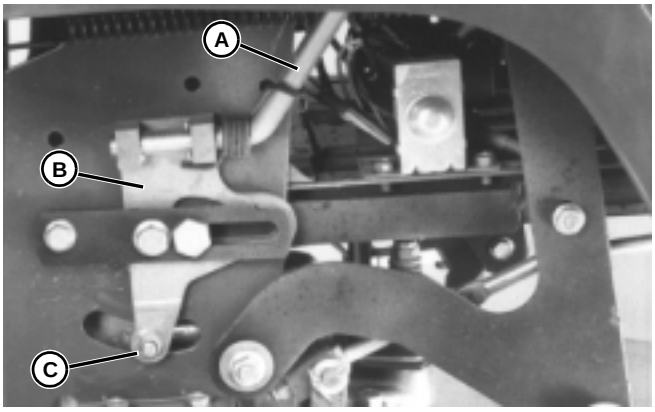
1. Assemble left-hand, short axle (A) as shown with splined, beveled gear facing the ring gear.
2. Assemble right-hand, long axle (D) as shown with splined, beveled gear facing the ring gear and shim washers (B) assembled in combination of thicknesses to obtain specified air gap (see Inspect Differential/Axle Shafts Assembly).
3. Assemble internal shaft (C) as shown with beveled gears facing each other.
4. Install internal shaft assembly in slots of ring gear and push beveled gears away from each other so they are ready to mesh with both axle beveled gears.

COMPONENT LOCATION

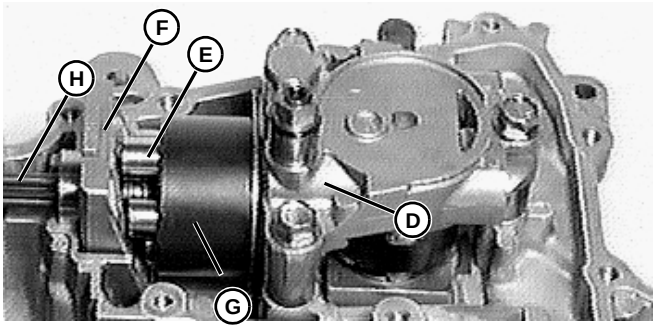
COMPONENT LOCATION—K55

1. Axle Shaft/Wheel Key (2 used)
2. Left Axle Shaft
3. Left Axle Shaft Seal
4. Left Axle Shaft Bushing
5. Upper Case Housing
6. O-Ring
7. Fill Cap
8. Snap Ring
9. Input Shaft Seal
10. Snap Ring
11. Ball Bearing
12. Snap Ring
13. Cap Screw (M8x20) (4 used)
14. Vent Valve Cap
15. Vent Valve
16. Reservoir Cover
17. Brake Friction Puck Shims
18. Brake Friction Puck
19. Brake Disc (splined)
20. Brake Lever
21. Cap Screw (M10x45) (2 used)
22. Brake Lever Mounting Bracket
23. Right Axle Shaft Bushing
24. Right Axle Shaft Seal
25. Right Axle Shaft
26. Shifter Shaft O-Ring
27. Shift Block (2 used)
28. Shifter Shaft
29. Left Axle Shaft Thrust Washer
30. Left Axle Shaft C-Ring Retainer
31. Left Axle Shaft Differential Bevel Pinion Gear (16 teeth)
32. Differential Ring Gear (98 teeth)
33. Differential Cross Shaft Block
34. Differential Cross Shaft Bevel Gear (10 teeth)
35. Right Axle Shaft Differential Bevel Pinion Gear (16 teeth)
36. Right Axle Shaft C-Ring Retainer
37. Right Axle Shaft Thrust Washer
38. Differential Cross Shaft Bevel Gear (10 teeth)
39. Pump Swashplate Upper Case Thrust Bushing (2 used)
40. Pump Swashplate
41. Pump Swashplate Bushing
42. Pump Swashplate Bearing
43. Pump Input Shaft
44. Pump Piston (5 used)
45. Pump Piston Washer (5 used)
46. Pump Piston Spring (5 used)
47. Pump Cylinder Block
48. Pump Plate Dowel Pin (2 used)
49. Spacer (M10x20x20)
50. Cap Screw (M10x60) (3 used)
51. Pump Filter
52. Motor Plate Dowel Pin (2 used)
53. Pump Plate
54. Rolled Pins (M12x22) (2 used)
55. Pump and Motor Center Block
56. Motor Plate
57. Motor Cylinder Block
58. Motor Piston Spring (5 used)
59. Motor Piston Washer (5 used)
60. Motor Piston (5 used)
61. Motor Swashplate Bearing
62. Motor Fixed Swashplate Housing
63. Spring
64. Snap Ring
65. Ball Bearing
66. Motor Output Shaft (6 teeth)
67. Ball Bearing
68. Silicone Sealant
69. Debris Magnet
70. Magnet Seal
71. Motor Output Shaft Seal
72. RH Axle Bushing
73. LH Axle Bushing
74. Lower Case Housing
75. O-Ring
76. Drain Plug
77. Cap Screw (Self-Tapping) (M8x30) (17 used)
78. O-Ring
79. Bleed Port Connector
80. Pipe Plug
81. O-Ring
82. O-Ring
83. Pump Port Plug
84. O-Ring
85. Transport Bypass Valve Actuating Pin
86. Transport Bypass Valve Actuating Bracket
87. E-Ring
88. Transport Bypass Valve Push Pin (2 used)
89. Transport Bypass Valve Spring (2 used)
90. Transport Bypass Valve Push Pin Guide (2 used)
91. Transport Bypass Valve Body (2 used)
92. O-Ring (2 used)
93. Ball (2 used)
94. Ball Holder (2 used)
95. Spring (2 used)
96. Spring Holder (2 used)

Forward:



When the shift lever (A) is moved into forward position, the shift bracket (B) pivots, pulling the turnbuckle link (C) rearward. The transmission linkage turns the shifter shaft, and through it, the variable-angle pump swashplate into forward position.



K55

With the pump swashplate angled in forward position, the pump cylinder block pistons are pumping oil through one side of the center block (D) into the pistons (E) of the motor, forcing the pistons out against the fixed-angle swashplate (F) and causing the motor cylinder (G), motor (output) shaft (H), differential assembly, and drive axles to turn in the forward direction.

Reverse:

When the shift lever (A) is moved into reverse position, the shift bracket (B) pivots in the opposite direction, pushing the turnbuckle link (C) foreward. The transmission linkage turns the shifter shaft, and through it, the variable-angle pump swashplate into reverse position.

With the pump swashplate angled in the opposite direction from the forward position, the pump cylinder block pistons are pumping oil through the other side of the center block (D) into the pistons (E) of the motor, forcing the pistons out (on the opposite side) against the fixed-angle swashplate (F) and causing the motor cylinder (G), motor (output) shaft (H), differential assembly, and drive axles to turn in the reverse direction.

BRAKE/NEUTRAL RETURN PEDAL COMPONENT LOCATION & OPERATION

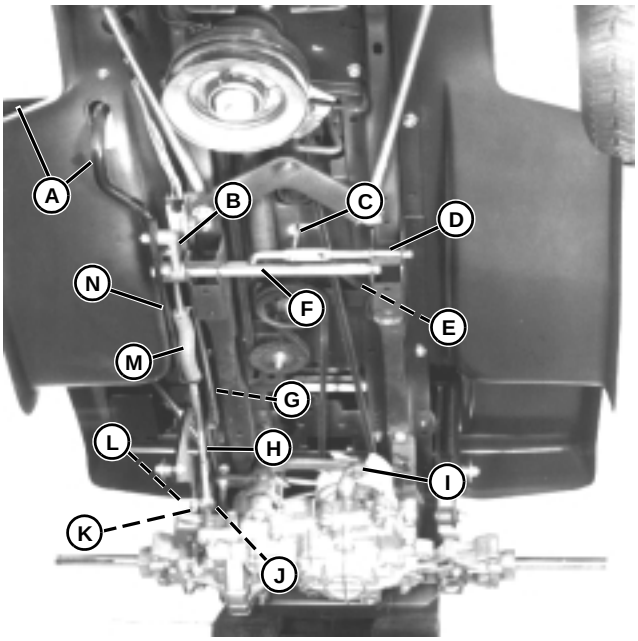
Function:

The brake system allows the operator to slow down or stop the tractor, return the shift linkage to neutral, and lock the brake into park.

Major Components:

- Foot pedal
- Frame cross rod and bellcrank
- Brake rod, compress spring, and strap
- Brake rod return spring
- Brake rod adjustment coupler
- Transaxle brake assembly and return spring
- Shift linkage
- Shift/return-to-neutral bracket
- Shift bracket return-to-neutral strap and bushing
- Shift bracket support strap
- Park locking rod
- Park locking lever
- Park locking spring

Theory of Operation — K55



DIAGNOSIS—K55

Test Conditions:

• Tractor operated in test area.	• Tests run at engine slow idle and fast idle.
• Engine at operating temperature.	• Hydro run through full range of speeds in both directions.

Test/Check Point	Normal	If Not Normal
1. Shift linkage	Shift linkage adjusted properly and working smoothly.	Repair or replace as needed.
2. Brake linkage and assembly	Brake and brake linkage adjusted properly and working smoothly.	Adjust as needed. See “BRAKE SPRING ADJUSTMENT—K55” on page 33. Repair or replace as needed.
	Brake components not worn or damaged.	Repair or replace as needed.
3. Neutral return linkage	Neutral return linkage adjusted properly and working smoothly.	Adjust as needed. Repair or replace as needed.

Test Conditions:

• Tractor on level surface.	• Front wheels blocked.
• Engine OFF.	• Rear wheels raised off surface with axle housings on jack stands.

Test/Check Point	Normal	If Not Normal
4. Hydro housing exterior	No cracks, leaks, or loose hardware.	Tighten hardware. Repair or replace transaxle housing. Replace any damaged components.
5. Transport (free wheeling) valve and linkage	Transport linkage engaging and disengaging properly.	Adjust. Repair or replace as needed.
6. Internal hydro components	No worn, scored or scratched components.	Repair or replace as needed. See “TRANSAXLE REMOVAL AND INSTALLATION—K55” on page 41.
	Correct type and quality of oil. Oil not dirty or burnt.	Fill to proper level. Replace with correct or unburned oil.
	Retaining snap rings in good shape and seated correctly.	Repair or replace as needed.

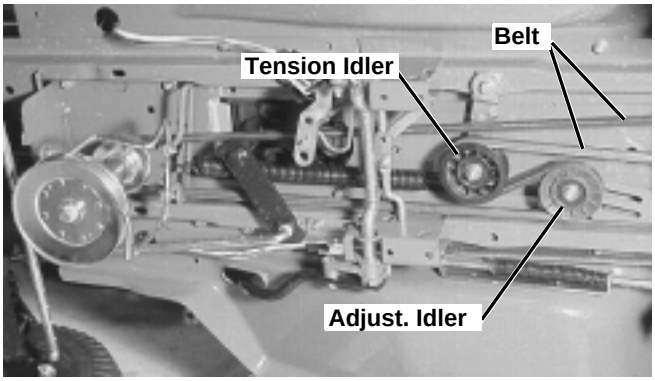
REPAIR

TRACTION DRIVE BELT REMOVAL—K55

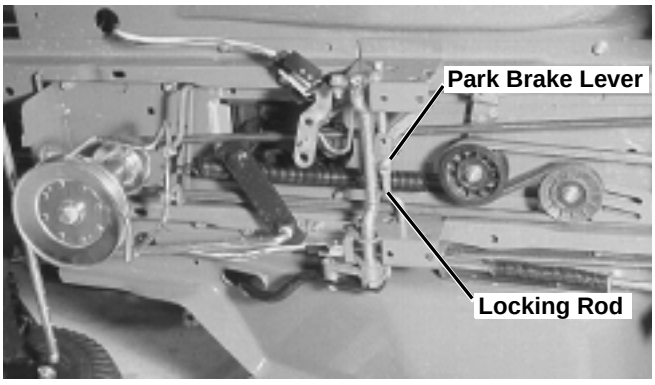
1. Park tractor on level surface and remove battery.
2. Disconnect spark plug.
3. Remove mower deck.
4. Safely raise and block tractor to gain easy access to underside of frame.

CAUTION

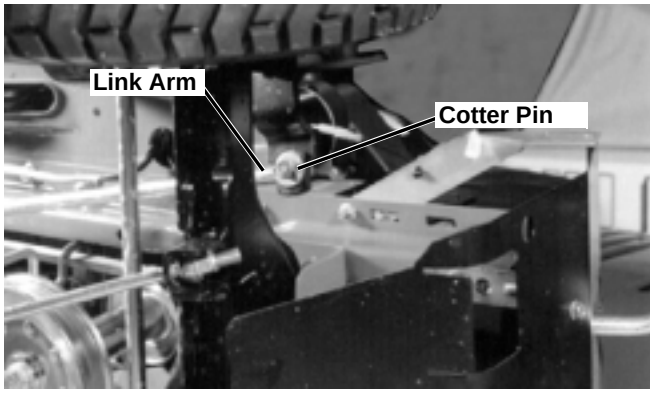
Tensioning spring is under high tension. Wear gloves and use a firm grip when stretching spring.



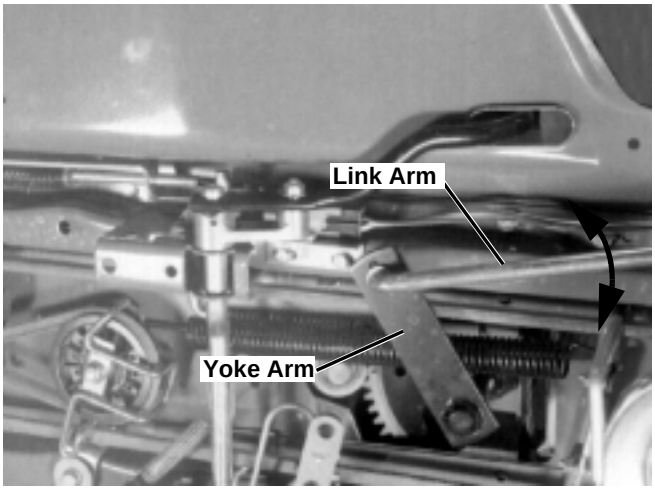
5. Pull tensioning idler rearward until belt can be removed from adjustable idler. Release tensioning idler and remove belt from tensioning idler, and transaxle drive sheave (Not Shown).

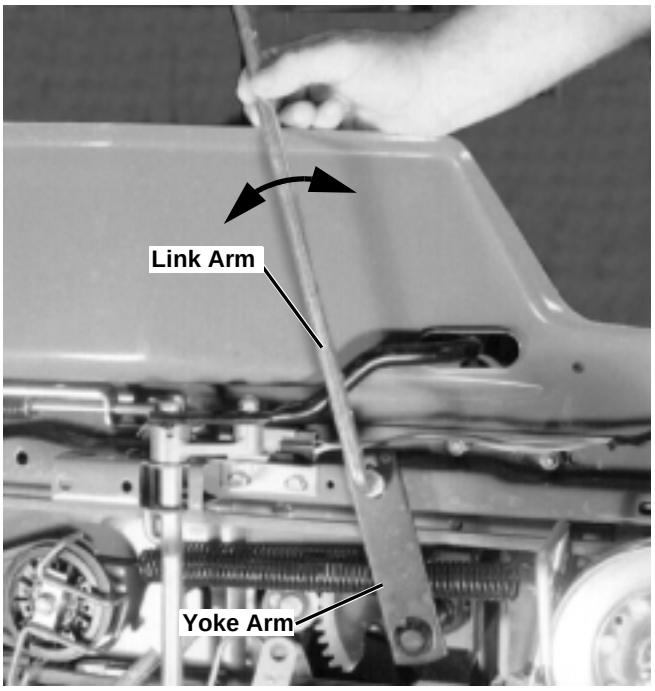


6. Remove park brake lever from locking rod.

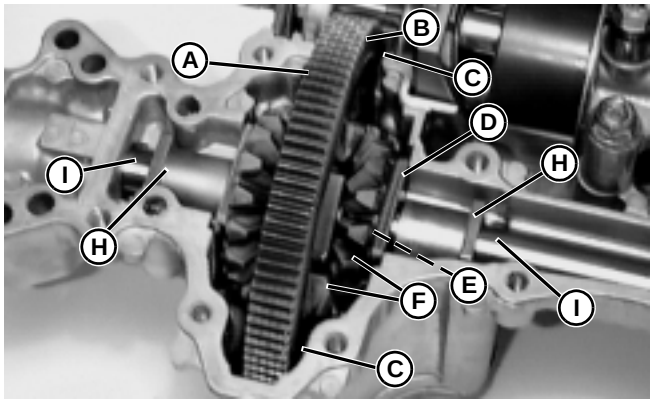


7. Remove cotter pin and washer from end of steering link arm.



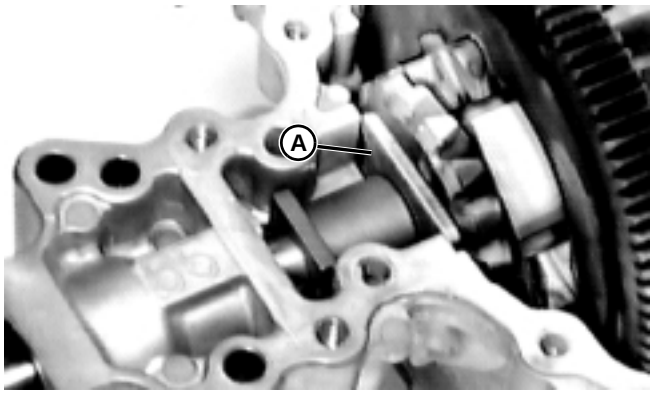


Inspect Differential Axle Assembly—



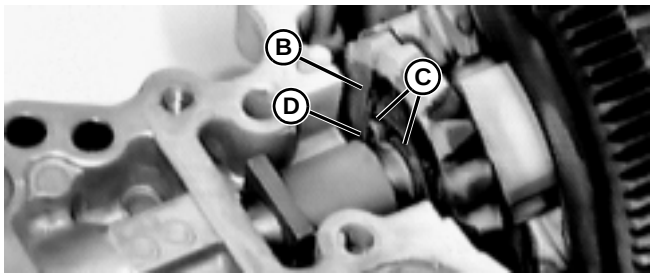
1. Visually inspect assembly:
   - ring gear teeth (A) are all in good condition;
   - sides of ring gear (B) are not contacting walls of case half (C);
   - thrust plates (D) are holding assembly in proper alignment;
   - axle shafts and bevel gear splines (E) instantly and smoothly turn differential bevel gears;
   - bevel gears (F) are all in good condition;
   - axle shaft bushings (H) are both in good condition;
   - axle shafts (I) are both in good condition;
   - area is free of metal chips or shavings.

Disassemble Differential Axle Assembly—



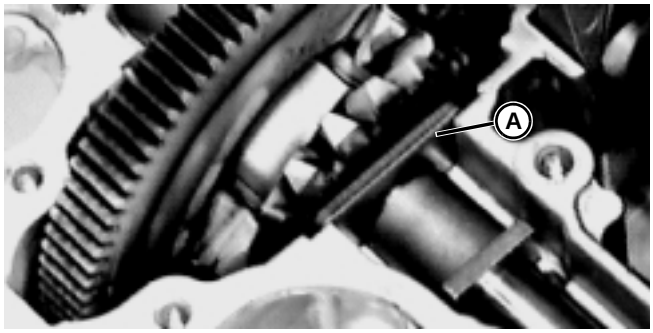
Short Axle Side

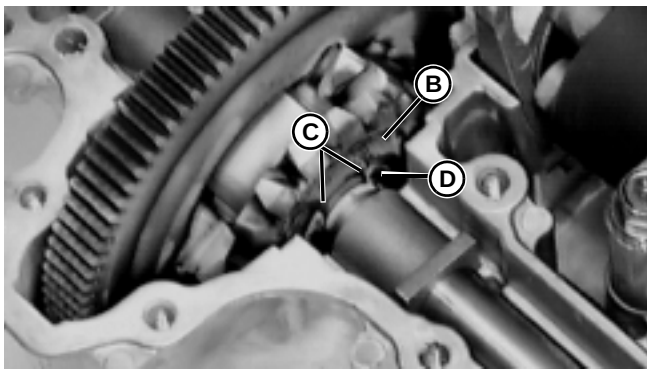
1. Remove short axle side thrust washer (A).



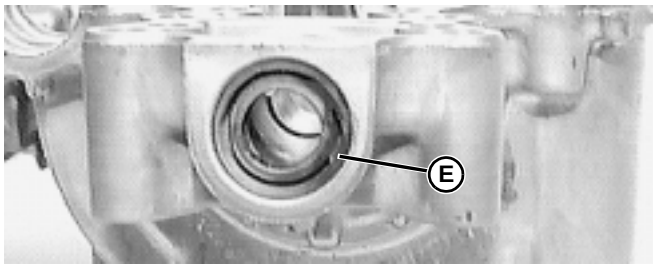
Short Axle Side

2. Turn c-ring (D) in its groove so gap (C) faces down to keep c-ring from falling down inside case.
3. Carefully slide short axle outward slightly while holding axle bevel gear (B) stationary, just enough to expose c-ring (D).
4. Carefully lift c-ring (D) from axle. **DO NOT** remove axle, this will hold bevel gear (B) in place while long axle side is disassembled.





5. Repeat Steps 1—4 for long axle side.
6. Grab entire differential gear assembly by both axle bevel gears (B) and slide each axle clear to remove gear assembly.
7. Remove both axles and axle bushings.



8. Remove and discard axle seals (E) from both sides. Replace with new seals every time axles are removed.

TRACTION DRIVE BELT TENSIONING SYSTEM REMOVAL/ INSPECTION/INSTALLATION—K51

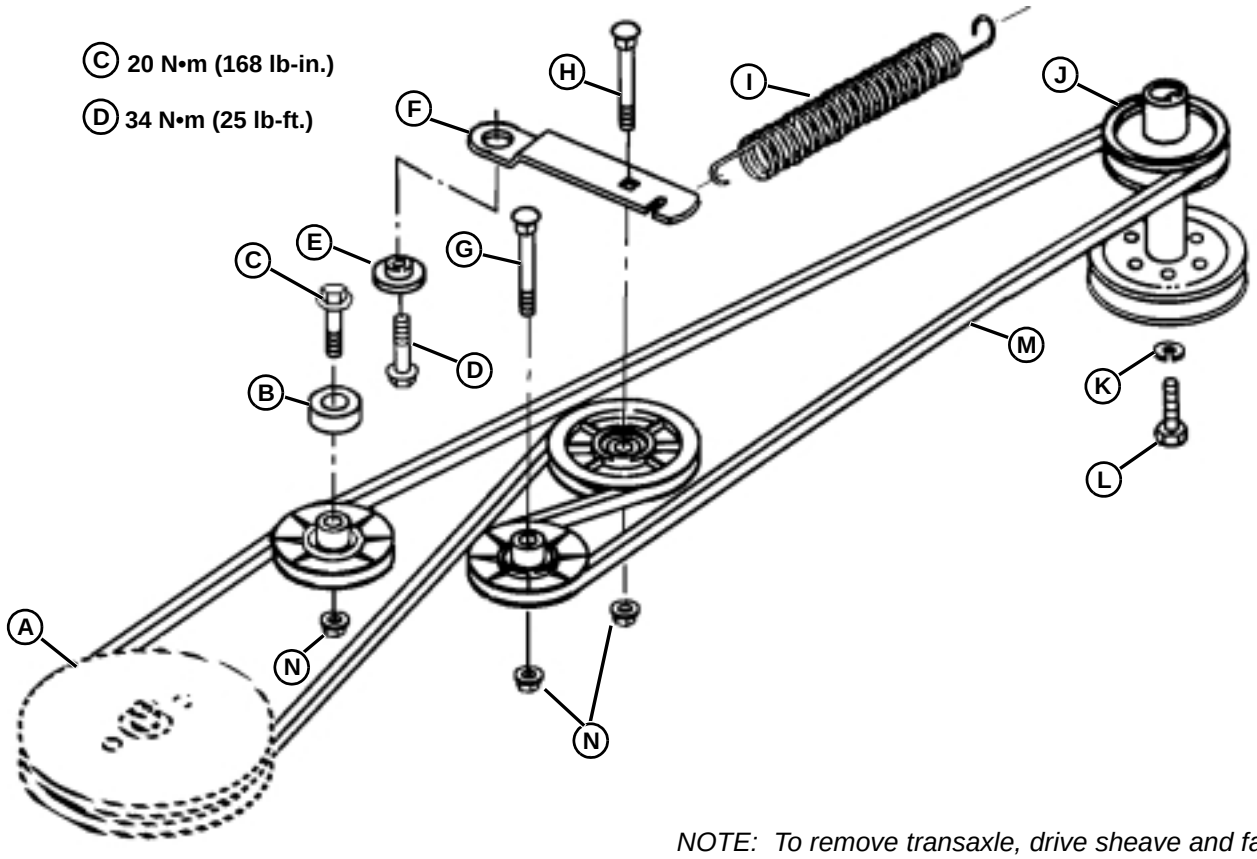
1. Remove mower deck.

CAUTION

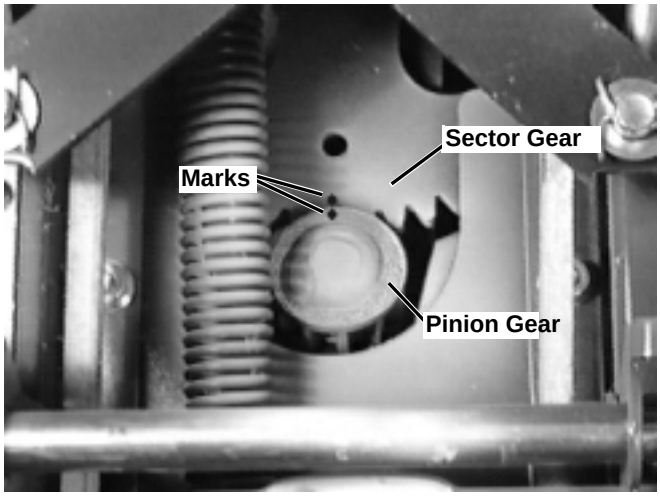
Bellcrank tensioning spring is under high tension. Wear safety glasses and gloves when removing or installing spring from frame.

2. Remove Traction Drive Belt (See "TRACTION DRIVE BELT REMOVAL—K51" on page 37)
3. Thread one end of a three foot long piece of starter rope under the front hook of bellcrank tension spring (J). Pull rope half way through spring until ends meet, and wrap ends around a bar several times to make a temporary handle. Pull handle until spring hook is free from frame, and release tension from spring. Tension is now off traction drive system and it may be worked on safely.
4. Use this drawing for complete repair of system.

A. Transaxle Drive Sheave
B. Spacer
C. Cap Screw
D. Cap Screw (M8x20)
E. Bushing
F. Bellcrank
G. Bolt (M8x45)
H. Bolt (M8x45)
I. Tensioning Spring
J. Engine Pulley
K. Lock Washer
L. Cap Screw
M. Drive Belt
N. Flange Nuts (M8)

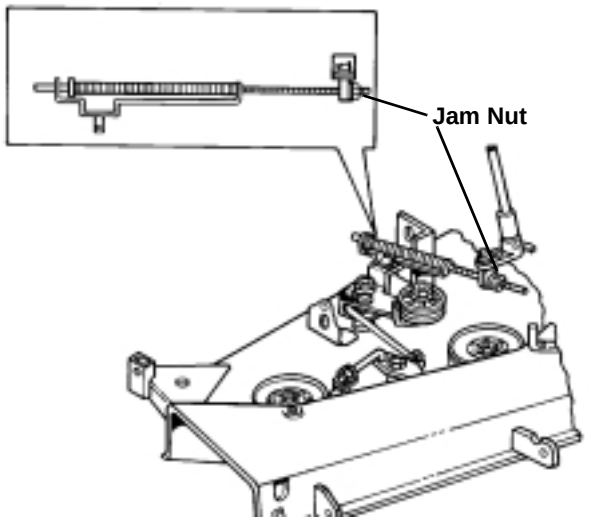


NOTE: To remove transaxle, drive sheave and fan assembly (A) transaxle must be lowered or completely removed from tractor.

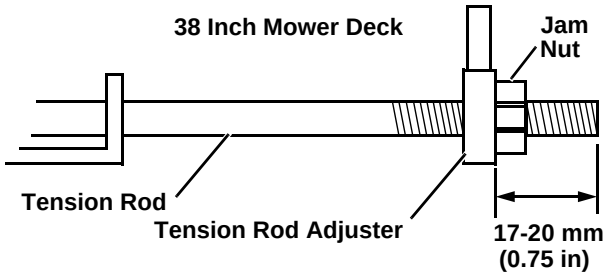


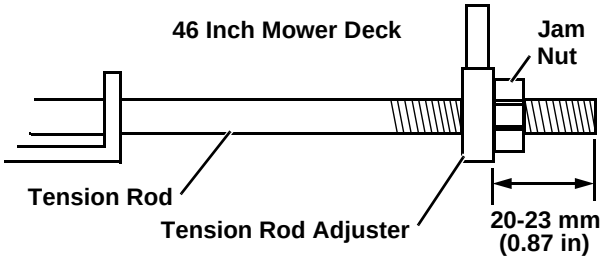
4. Align marks on sector gear and pinion gear as steering pinion shaft (D) is installed from the bottom of the tractor.
5. Install washers (E) and cotter pin (C).
6. Install and fasten tie rods (Long leg of tie rod is installed in axle spindle).
7. Install steering wheel on top of steering shaft (D) and fasten with mounting hardware.
8. Turn steering left-to-right several times to test steering response and feel.
9. Repeat adjustment procedure until minimum backlash without binding is achieved.

IMPORTANT: Do not attempt to loosen jam nut on tension rod without using a suitable wrench to support fitting.



- Loosen jam nut.
- Turn fitting on tension rod in proper direction to lengthen or shorten effective rod length.





- Tighten jam nut to **27 N•m (20 lb-ft.)**
- Assemble tension rod to tractor blade drive arm.
- Recheck dimension from bracket to washer. Readjust if necessary.

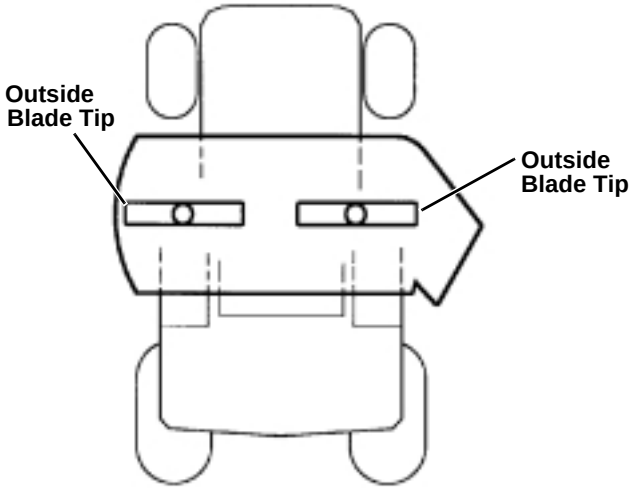
6. Check brake clearance. See “SPINDLE BRAKE ADJUSTMENT” on page 8.
7. Reconnect spark plug.

DECK LEVELING (SIDE-TO-SIDE)

1. Park tractor on a hard, level surface.
2. Stop engine and remove key. Disengage blade drive.
3. Check tire pressure. (**14 PSI** – Front Tire; **10 PSI** – Rear Tire)
4. Adjust cutting height to middle position.

CAUTION

Blades are sharp and could cause personal injury. Wear gloves or wrap blades with shop cloths to remove and install blades. DO NOT hold blade with bare hand. Use a block of wood wedged between deck and blade to keep spindle from turning.



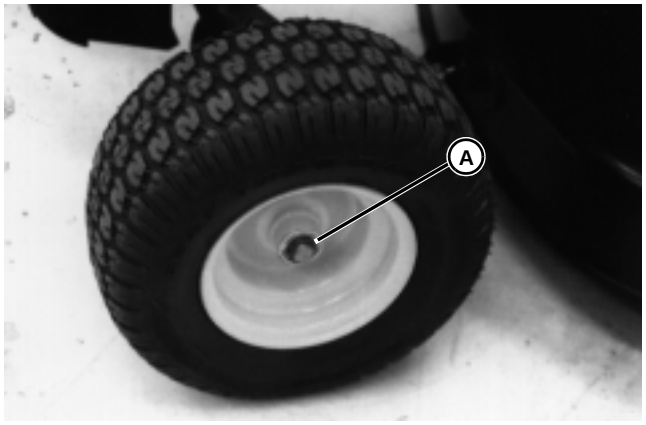
5. Turn left blade by hand parallel to mower axle. Hold left blade with glove and turn right blade parallel to axle.
6. Measure height from level surface to outside blade tip on left and right blades. (See Fig. 43) Difference between measurements should not exceed **1/4 in. (6 mm)**.
7. Turn blades 180° and measure again to ensure blades are not bent.

NOTE: Adjusting “J” bolt on left-hand rear side of rear draft arm, shown below.

REPAIR

FRONT WHEELS REMOVAL & INSTALLATION

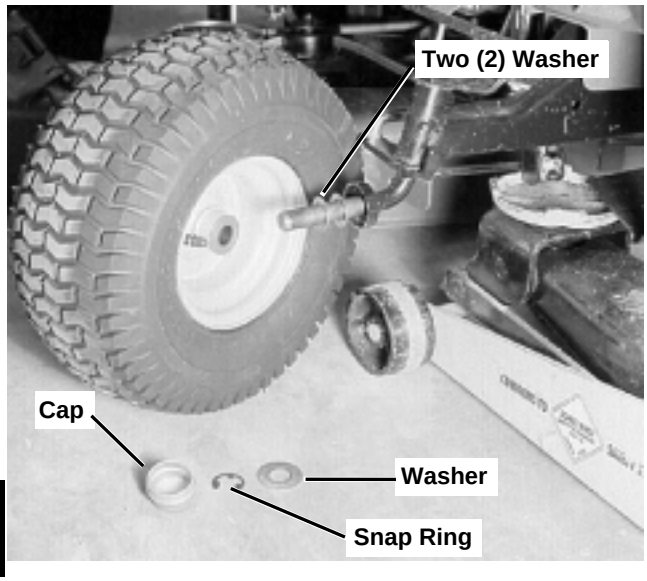
1. Safely lift and support tractor.
2. Remove plastic cap.



3. Remove snap ring (A) and wheel.
4. Clean axle, washers, and bearings of old grease.
5. Inspect bearings for excessive wear. Replace if necessary.

NOTE: Front wheels are installed with valves to the inside.

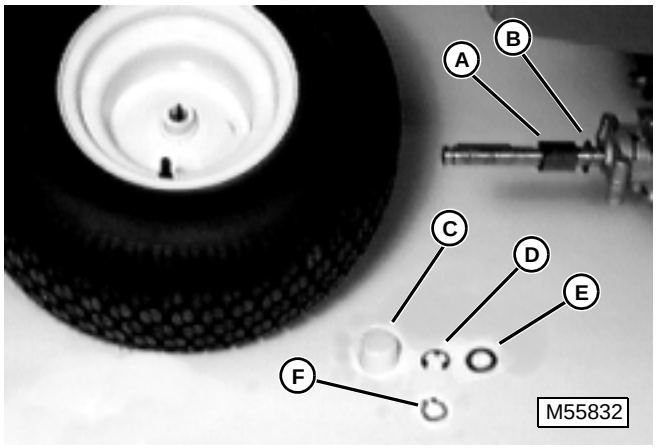
6. Grease spindles with specified grease.



7. Install two washers on axle.
8. Install wheel on axle.
9. Place large washer on axle and install snap ring.
10. Install plastic cap.

REAR WHEELS REMOVAL & INSTALLATION

1. Safely lift and support tractor.



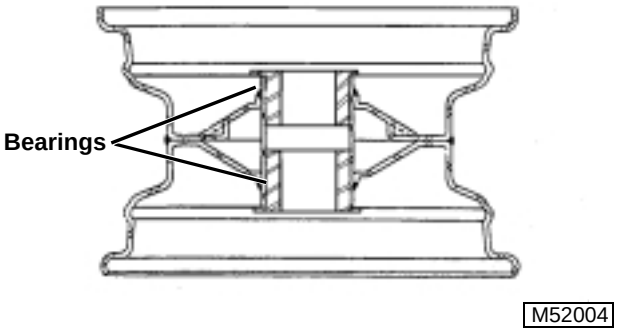
2. Remove plastic cap (C), E-ring (D) (gear) or snap ring (F) (hydro), and outer washer (E).
3. Remove wheel.

NOTE: Rear wheels are installed with valves to the outside.

4. Apply grease to axle shaft and key.
5. Install wheel on axle.
6. Install outer washer (E), E-ring (D) or snap ring (F), and plastic cap (C).

FRONT WHEEL BEARING REPAIR

1. Remove bearings (A) using slide hammer puller.



2. Install new bearings using suitable driver on outside race of bearing.

Service Information Bulletin

No. 96-008

October 15, 1996

SUBJECT: MOWER DRIVE BELT SMOKING WHEN PTO (BLADE DRIVE) LEVER IS DISENGAGED - MAY BE ACCOMPANIED BY A "SQUELING" NOISE (ADDENDUM TO SIB 96-004, MAY 14, 1996)

AFFECTS: SABRE Lawn Tractors

Complaint or Symptom:

1) Mower drive belt smokes when PTO (blade drive) lever is dis-engaged.
2) May be accompanied by a "squealing" noise at higher engine speeds.

Situation: Several items can contribute to this problem:
- Deck idler arm tension rod not adjusted properly (set too tight)
- Spindle brake pad clearance too wide
- Bent or deformed engine sheave belt guide or bracket (46-inch deck only)
- Belt keepers or guides not oriented properly
- Belt not routed properly
- Deck improperly leveled

Solution:
- Check tension rod setting per Fig. 1 & 2. Readjust to correct preset dimensions.
- Check and adjust all spindle brake clearances. Clearance should be 2-3mm (0.078"-0.118") with the PTO (blade drive) lever in the engaged position.
- Check for bent or deformed engine sheave belt guide and/or bracket (46-inch only). See Fig. 3.
- Check and readjust belt guides on mower deck. See Fig. 4 & 5.
- Ensure deck belt is routed properly around all pulleys, sheaves and guides. See Figure 4 & 5.
- Check deck leveling. Deck should be level side-to-side (within 1/4") and be 1/8"-3/8" lower in the front than in the rear. NOTE: Deck leveling measurements should be made at blade tips, not from the surface of the deck shell. Use John Deere Deck Leveling Gauge P/N TY15272 as an aid in leveling deck.

Additional Information:
- Anytime the tension rod is adjusted, it is important that the spindle brake clearances be checked to ensure proper clearances in the engaged position and proper contact of the pad to the spindle in the disengaged position.
- Incorrect spindle brake pad adjustments can result in the brake pad pulling away too far from the spindle, not allowing the idler arm to return completely to the "at rest" position when the PTO (blade drive) lever is pulled back. The mower drive belt continues to rotate and not release fully from the engine sheave even though the PTO lever has been disengaged.
- A bent or deformed engine sheave belt guide or ground drive keeper can prevent the belt from "blossoming" off the sheave and releasing fully when the PTO lever is disengaged. Fig.3 shows the correct clearances for the 46-inch deck. If the clearances cannot be obtained without deforming the welded ground drive keeper bracket, remove the belt guide and re-install it on the front side of the bracket. This should achieve the specified clearances to ensure the mower drive belt "blossoms" properly off of the engine sheave.
- Mower deck leveling should be checked anytime belt problems occur. All measurements should be made from blade tips. There should be no more than **1/4" difference** in the **side-to-side** measurements. Use J-bolt on left side of deck to make side-to-side adjustments. The **front** of the deck should be **1/8"-3/8" lower** than the rear of the deck. Adjust front draft rods equally to make front-to-rear (rake) adjustments.