John Deere

MODEL:

650 & 750 2 & 4 Wheel Drive

Volume 1 of 2
### Make: John Deere

#### Model: 650

**Years Made:** 1981-1989

<table>
<thead>
<tr>
<th>HP-PTO: 14</th>
<th>HP-Engine:</th>
<th>HP-Drawbar:</th>
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<tbody>
<tr>
<td>HP-Range: 14</td>
<td>Engine-Make:</td>
<td>Engine-Fuel: DIESEL</td>
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<tr>
<td>Engine-Cyl(s)-CID: 7/8</td>
<td>Transmission-STD:</td>
<td>Optional:</td>
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<tr>
<td>Tires-Std Front: 9.5-16</td>
<td>Tires-Std Rear: 5.00-12</td>
<td>Wheelbase-Inch:</td>
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<tr>
<td>Pto Type:</td>
<td>Pto Speed: 540</td>
<td>CAT 1-3pt Hitch: True</td>
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<tr>
<td>CAT II-3pt Hitch: False</td>
<td>CAT III-3pt Hitch: False</td>
<td>Hitch Lift:</td>
</tr>
<tr>
<td>Hydraulics-Type:</td>
<td>Hyd-Cap:</td>
<td>Hyd-Flow:</td>
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<tr>
<td>Hyd Std Outlets:</td>
<td>Cooling Capacity:</td>
<td>Fuel Tank Capacity:</td>
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<tr>
<td>Cab-Stdm A/C; Rops:</td>
<td>Weight: 1858</td>
<td>New Price: 8408</td>
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#### Make: John Deere

#### Model: 750

**Years Made:** 1981-1989

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<th>HP-PTO: 15</th>
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<tr>
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<td>Engine-Fuel: DIESEL</td>
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<td>Engine-Cyl(s)-CID: 3/78.2</td>
<td>Transmission-STD:</td>
<td>Optional:</td>
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<td>Tires-Std Front: 9.5-24</td>
<td>Tires-Std Rear: 4.00-15</td>
<td>Wheelbase-Inch:</td>
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<tr>
<td>Pto Type:</td>
<td>Pto Speed: 540</td>
<td>CAT 1-3pt Hitch: True</td>
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<tr>
<td>CAT II-3pt Hitch: False</td>
<td>CAT III-3pt Hitch: False</td>
<td>Hitch Lift:</td>
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<tr>
<td>Hydraulics-Type:</td>
<td>Hyd-Cap:</td>
<td>Hyd-Flow:</td>
</tr>
<tr>
<td>Hyd Std Outlets:</td>
<td>Cooling Capacity:</td>
<td>Fuel Tank Capacity:</td>
</tr>
<tr>
<td>Cab-Stdm A/C; Rops:</td>
<td>Weight: 2766</td>
<td>New Price: 9424</td>
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### REAR OF TRANS CASE BELOW PTO

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<th>Year</th>
<th>Beginning Serial Number</th>
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<td>1000</td>
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<tr>
<td>1982</td>
<td>3533</td>
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<td>1983</td>
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<tr>
<td>1988</td>
<td>24298</td>
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<tr>
<td>1989</td>
<td>153587</td>
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### Paint Codes

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<th>Location</th>
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<td>WHEELS &amp; TRIM</td>
<td>CLASSIC YELLOW</td>
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<tr>
<td>RIMS &amp; WHEELS</td>
<td>NEW AG YELLOW</td>
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<tr>
<td>BODY &amp; HOODS</td>
<td>NEW AG GREEN</td>
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<tr>
<td>BODY</td>
<td>NEW AG GREEN</td>
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</tbody>
</table>
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Group 05—Predelivery, Delivery and After-Sale Services
Group 10—Tune-Up
Group 15—Lubrication
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Group 10—Pistons, Rods, and Cylinder Blocks
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CLICK ANYWHERE FOR MORE DETAILS

Litho in U.S.A. 10-2 TM-1242 (Mar-81)
## GENERAL TRACTOR SPECIFICATIONS—Continued

### HYDRAULIC SYSTEM:

<table>
<thead>
<tr>
<th>Tractor Type</th>
<th>650 TRACTOR</th>
<th>750 TRACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>open center, constant flow</td>
<td>open center, constant flow</td>
</tr>
<tr>
<td>Working pressure</td>
<td>13790 kPa (138 bar) (2000 psi)</td>
<td>13790 kPa (138 bar) (2000 psi)</td>
</tr>
<tr>
<td>Pump</td>
<td>gear pump, driven by engine</td>
<td>gear pump, driven by engine</td>
</tr>
</tbody>
</table>

### BRAKES:

<table>
<thead>
<tr>
<th>Tractor Type</th>
<th>650 TRACTOR</th>
<th>750 TRACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>mechanical dry, internal expanding shoe</td>
<td>mechanical dry, internal expanding shoe</td>
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### ELECTRICAL SYSTEM:

<table>
<thead>
<tr>
<th>Tractor Type</th>
<th>650 TRACTOR</th>
<th>750 TRACTOR</th>
</tr>
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<tbody>
<tr>
<td>Type</td>
<td>12-volt, negative ground</td>
<td>12-volt, negative ground</td>
</tr>
<tr>
<td>Battery</td>
<td>one, 12-volt, BCI group, 24</td>
<td>one, 12-volt, BCI group, 24</td>
</tr>
<tr>
<td>Alternator</td>
<td>15-amp</td>
<td>15-amp</td>
</tr>
<tr>
<td>Battery</td>
<td>one, 12-volt, BCI group, 24</td>
<td>one, 12-volt, BCI group, 24</td>
</tr>
<tr>
<td>Alternator</td>
<td>15-amp</td>
<td>15-amp</td>
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### TIRES AND TREADS:

<table>
<thead>
<tr>
<th>Tractor Type</th>
<th>650 TRACTOR</th>
<th>750 TRACTOR</th>
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<tbody>
<tr>
<td>Dimensions</td>
<td>See page 10-05-5</td>
<td>See page 10-05-5</td>
</tr>
<tr>
<td>Wheelbase</td>
<td>1425 mm (56 in.)</td>
<td>1550 mm (61 in.)</td>
</tr>
<tr>
<td>Overall length</td>
<td>2606 mm (102.5 in.)</td>
<td>2845 mm (112.0 in.)</td>
</tr>
<tr>
<td>Height to muffler top</td>
<td>1965 mm (77.4 in.)</td>
<td>2004 mm (78.9 in.)</td>
</tr>
<tr>
<td>Height to top of ROLL-GARD frame</td>
<td>1865 mm (73.4 in.)</td>
<td>1904 mm (75.0 in.)</td>
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<tr>
<td>Overall width</td>
<td>1041 mm (41.0 in.)</td>
<td>1132 mm (44.6 in.)</td>
</tr>
<tr>
<td>Turning radius with brakes</td>
<td>1.9 m (6.2 ft.)</td>
<td>2.2 m (7.2 ft.)</td>
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### SHIPPING WEIGHT**

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<tr>
<th>Tractor Type</th>
<th>650 TRACTOR</th>
<th>750 TRACTOR</th>
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<tbody>
<tr>
<td>Weight</td>
<td>645 kg (1450 lbs.)</td>
<td>770 kg (1700 lbs.)</td>
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<tr>
<td>Weight</td>
<td>695 kg (1530 lbs.)</td>
<td>860 kg (1896 lbs.)</td>
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*650 Tractor equipped with 9.5-16 rear tires and 5.00-12 front tires, 750 Tractor equipped with 9.5-24 rear tires and 4.00-15 front tires.

**Equipped for average field service, without fuel and ballast.

### DETERMINING 650 TRACTOR TRAVEL SPEED

<table>
<thead>
<tr>
<th>Range</th>
<th>Gear</th>
<th>Lowest Working Speed (1825 rpm)</th>
<th>Standard PTO Speed (2350 rpm)</th>
<th>Rated Engine Speed (2600 rpm)</th>
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<tr>
<td></td>
<td></td>
<td>km/h (mph)</td>
<td>km/h (mph)</td>
<td>km/h (mph)</td>
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<tr>
<td>1</td>
<td></td>
<td>0.9 (0.6)</td>
<td>1.1 (0.7)</td>
<td>1.1 (0.7)</td>
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<tr>
<td>2</td>
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<td>1.1 (0.7)</td>
<td>1.4 (0.9)</td>
<td>1.6 (1.0)</td>
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<td>3</td>
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<td>1.6 (1.0)</td>
<td>2.1 (1.3)</td>
<td>2.3 (1.4)</td>
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<tr>
<td>4</td>
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<td>2.6 (1.6)</td>
<td>3.4 (2.1)</td>
<td>3.8 (2.3)</td>
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<td>5</td>
<td></td>
<td>3.6 (2.2)</td>
<td>4.7 (2.9)</td>
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<td>6.5 (4.0)</td>
<td>7.2 (4.5)</td>
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<td>7</td>
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<td>7.1 (4.4)</td>
<td>8.1 (5.7)</td>
<td>10.1 (6.3)</td>
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<td>8</td>
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<td>11.6 (7.2)</td>
<td>15.0 (9.3)</td>
<td>16.6 (10.3)</td>
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<td>R1</td>
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<td>0.8 (0.5)</td>
<td>1.0 (0.6)</td>
<td>1.1 (0.7)</td>
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<td>R2</td>
<td></td>
<td>1.1 (0.7)</td>
<td>1.4 (2.7)</td>
<td>4.9 (3.1)</td>
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</table>

*Due to difference in tire radius, all speeds would be six percent faster with 31/15.50-15 rear tires.
**REMOVE AXLE**

If right axle housing needs to be removed, the left axle housing and the rockshaft housing must also be removed:

1. Insert block between axle and side frame on right and left side front axle.

2. (Not illustrated). Drain transmission oil.

3. Disconnect lift links from rockshaft lift arms.

4. Disconnect draft links from draft link support shaft.

5. Disconnect sway chains from sway chain brackets.

6. Remove draft link support shaft brackets.

**NOTE:** If right axle housing is not to be removed, do not remove right shaft bracket.

7. Disconnect electrical hook-ups at right and left fenders.

8. Disconnect electrical connector from PTO neutral start switch and pull harness forward.
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*Litho in U.S.A.*

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*tm-1242 (Mar-81)*
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Litho in U.S.A. 30-1 TM-1242 (Mar-81)
REPLACE FUEL FILTER ELEMENT

1. Move fuel shut-off lever (A) up to the closed position.

2. Unscrew retaining nut (A) and remove bowl (B) from housing.

3. Pull old filter from housing and replace with new.

4. When reinstalling bowl, be sure O-ring (C) is in good condition and is positioned properly on bowl.

5. Reinstall bowl assembly and tighten retaining nut securely.

6. Turn fuel supply on by moving lever down to open position.

7. Loosen both bleed screws (A). Tighten screws when fuel flows free of bubbles.

REMOVE INJECTION PUMP

1. Clean the injection pump, pipes, and area around the pump with cleaning solvent or a steam cleaner.

   IMPORTANT: Never steam clean or pour cold water on an injection pump while the pump is running or while it is warm. To do so may cause seizure of pump parts.

2. Close fuel shut-off valve at filter.
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ELECTRICAL REPAIR

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Litho in U.S.A. 250-1

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The steering system consists of: steering wheel (A), steering gear (B), pitman arm (C), drag link (D), steering arm (E), tie rod (F), front axle and wheel assemblies (G).

As the steering wheel is turned, the steering motion is transmitted through the steering gear (B) to the pitman arm (C), which moves the drag link (D). The drag link connected to the steering arm (E), turns the left front tire. The tie rod (F) connects the two front wheels to make a right or left turn.
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