TORO XL LAWN TRACTOR SERVICE MANUAL

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SIDE-TO-SIDE MOWER LEVELING
FRONT-TO-REAR BLADE SLOPE
XL Lawn Tractor

Service Manual
This service manual was written expressly for Toro service technicians. The Toro Company has made every effort to make the information in this manual complete and correct.

Basic mechanical/electrical skills are assumed. The Table of Contents lists the systems and the related topics covered in this manual.

For additional information on the electrical system, please refer to the Toro Electrical Demystification Guide (492-4404). For information specific to the engines used on this unit, refer to the appropriate engine manufacturer’s service and repair instructions.

We are hopeful that you will find this manual a valuable addition to your service shop. If you have any questions or comments regarding this manual, please contact us at the following address:

The Toro Company
Consumer Service Training Department
8111 Lyndale Avenue South
Bloomington, MN 55420

The Toro Company reserves the right to change product specifications or this manual without notice.

The hydrostatic transaxle is a sophisticated piece of machinery. Maintain strict cleanliness control during all stages of service and repair. Cover or cap all hose ends and fittings whenever they are exposed. Even a small amount of dirt or other contamination can severely damage the system.
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  Removing 38" Mower with Electric PTO Clutch ................. A6-2
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  Installing 44" Mower with Electric PTO Clutch ............. A6-12
  Replacing the Blade Drive Belt, 44" Mower with Electric PTO Clutch .......................... A6-15
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  Adjusting 44" Mower Front-to-Rear Blade Slope ............ A6-17
### Specifications

<table>
<thead>
<tr>
<th>Engines</th>
<th>Fuel Capacity</th>
<th>Steering</th>
</tr>
</thead>
<tbody>
<tr>
<td>All tractors since 1993 were manufactured with Briggs &amp; Stratton engines ranging from 10 to 17 Horsepower. For more information on servicing the engines, please contact Briggs &amp; Stratton.</td>
<td>7 qts (6.65l)</td>
<td>Sector and Pinion</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>32” (81.3cm) XL Lawn Tractors</th>
<th>38” (96.5cm) XL and HXL Lawn Tractors</th>
<th>44” (111.8cm) HXL Lawn Tractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel Base:</td>
<td>48.5” (123.2cm)</td>
<td>47” (119.4cm)</td>
</tr>
<tr>
<td>Length:</td>
<td>66.5” (168.9cm)</td>
<td>66.5” (168.9cm)</td>
</tr>
<tr>
<td>Height:</td>
<td>39.3” (99.8cm)</td>
<td>40” (101.6cm)</td>
</tr>
<tr>
<td>Width (includes mower):</td>
<td>39.3” (99.8cm)</td>
<td>45” (114.3cm)</td>
</tr>
<tr>
<td>Weight:</td>
<td>375 lbs. Net (168.9kg)</td>
<td>412 lbs. Net (185.6kg)</td>
</tr>
</tbody>
</table>

### Hydro-Gear Hydrostatic Transaxle Usage

<table>
<thead>
<tr>
<th>Year</th>
<th>12-38 XHL - 16-38 HXL</th>
<th>15-44 XHL, 16-44HXL, and 17-44 HXL</th>
<th>16-38 HXL and 17-44 HXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>316-0500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>316-0500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>321-0500</td>
<td>316-0750</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>323-0500</td>
<td>316-0750</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>323-0500</td>
<td>326-0750</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>323-0500</td>
<td>326-0750</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>323-0500</td>
<td>326-0750</td>
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</tr>
<tr>
<td>2000</td>
<td>323-0500</td>
<td>326-0750</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>323-0500</td>
<td>326-0750</td>
<td>318-0510</td>
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SPECIFICATIONS

Turning Radius

<table>
<thead>
<tr>
<th>Model</th>
<th>Turning Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>32” (81.3cm) XL</td>
<td>21.5” (54.6cm) - Left</td>
</tr>
<tr>
<td></td>
<td>22” (55.8cm) - Right</td>
</tr>
<tr>
<td>38” (96.5cm) HXL and XL</td>
<td>20” (50.8cm) - Left</td>
</tr>
<tr>
<td></td>
<td>22” (55.8cm) - Right</td>
</tr>
<tr>
<td>44” (111.8cm) HXL</td>
<td>20” (50.8cm) - Left</td>
</tr>
<tr>
<td></td>
<td>22” (55.8cm) - Right</td>
</tr>
</tbody>
</table>

Electrical System

<table>
<thead>
<tr>
<th>Engine</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 amp unregulated / 80 watt A.C. Alternator</td>
<td>12 volt - 160 CCA</td>
</tr>
</tbody>
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Tecumseh Peerless Transaxles

<table>
<thead>
<tr>
<th>1993 - 1995</th>
<th>1996 - Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tecumseh Peerless</td>
<td>Tecumseh Peerless</td>
</tr>
<tr>
<td>Model: 915-020</td>
<td>Model: MST-205</td>
</tr>
<tr>
<td>Lubrication: Bentonite grease (available through Tecumseh)</td>
<td>Lubrication: 80W90 gear lube</td>
</tr>
</tbody>
</table>

NOTE: Tractor may have been converted to current MST-205 transaxle.

For further information on servicing Peerless transaxles, contact Tecumseh Products.
Torque Specifications

Recommended fastener torque values are listed in the following tables. For critical applications, as determined by Toro, either the recommended torque or a torque that is unique to the application is clearly identified and specified in the service manual.

These torque specifications for the installation and tightening of fasteners shall apply to all fasteners which do not have a specific requirement identified in the service manual. The following factors shall be considered when applying torque: cleanliness of the fastener, use of a thread sealant (Loctite), degree of lubrication on the fastener, presence of a prevailing torque feature, hardness of the surface underneath of the fastener’s head, or similar condition which affects the installation.

As noted in the following tables, torque values should be reduced by 25% for lubricated fasteners to achieve the similar stress as a dry fastener. Torque values may also have to be reduced when the fastener is threaded into aluminum or brass. The specific torque value should be determined based on the aluminum or brass material strength, fastener size, length of thread engagement, etc.

The standard method of verifying torque shall be performed by marking a line on the fastener (head or nut) and mating part, then back off fastener 1/4 of a turn. Measure the torque required to tighten the fastener until the lines match up.

**Fastener Identification**

**Figure 1**

<table>
<thead>
<tr>
<th>Inch Series Bolts and Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Grade 1</td>
</tr>
<tr>
<td>(B) Grade 5</td>
</tr>
<tr>
<td>(C) Grade 8</td>
</tr>
</tbody>
</table>

**Figure 2**

<table>
<thead>
<tr>
<th>Metric Bolts and Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Class 8.8</td>
</tr>
<tr>
<td>(B) Class 10.9</td>
</tr>
</tbody>
</table>
### Standard Torque for Dry, Zinc Plated, and Steel Fasteners (Inch Series)

<table>
<thead>
<tr>
<th>Thread Size</th>
<th>Grade 1, 5, &amp; 8 with Thin Height Nuts</th>
<th>SAE Grade 1 Bolts, Screws, Studs, &amp; Sems with Regular Height Nuts (SAE J995 Grade 2 or Stronger Nuts)</th>
<th>SAE Grade 5 Bolts, Screws, Studs, &amp; Sems with Regular Height Nuts (SAE J995 Grade 2 or Stronger Nuts)</th>
<th>SAE Grade 8 Bolts, Screws, Studs, &amp; Sems with Regular Height Nuts (SAE J995 Grade 2 or Stronger Nuts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-lb</td>
<td>In-lb</td>
<td>N-cm</td>
<td>In-lb</td>
<td>N-cm</td>
</tr>
<tr>
<td># 6 - 32 UNC</td>
<td>10 ± 2</td>
<td>13 ± 2</td>
<td>147 ± 2</td>
<td>15 ± 2</td>
</tr>
<tr>
<td># 6 - 40 UNF</td>
<td>17 ± 2</td>
<td>19 ± 2</td>
<td>20 ± 2</td>
<td>20 ± 2</td>
</tr>
<tr>
<td># 8 - 32 UNC</td>
<td>13 ± 2</td>
<td>25 ± 5</td>
<td>282 ± 30</td>
<td>29 ± 3</td>
</tr>
<tr>
<td># 8 - 36 UNF</td>
<td>31 ± 3</td>
<td>350 ± 30</td>
<td>31 ± 3</td>
<td>41 ± 4</td>
</tr>
<tr>
<td># 10 - 24 UNC</td>
<td>18 ± 2</td>
<td>30 ± 5</td>
<td>339 ± 56</td>
<td>42 ± 4</td>
</tr>
<tr>
<td># 10 - 32 UNF</td>
<td>48 ± 4</td>
<td>540 ± 45</td>
<td>60 ± 6</td>
<td>674 ± 70</td>
</tr>
<tr>
<td>1/4 - 20 UNC</td>
<td>48 ± 7</td>
<td>53 ± 7</td>
<td>599 ± 79</td>
<td>100 ± 10</td>
</tr>
<tr>
<td>1/4 - 28 UNF</td>
<td>53 ± 7</td>
<td>65 ± 10</td>
<td>734 ± 113</td>
<td>115 ± 10</td>
</tr>
<tr>
<td>5/16 - 18 UNC</td>
<td>115 ± 15</td>
<td>105 ± 17</td>
<td>1186 ± 169</td>
<td>200 ± 15</td>
</tr>
<tr>
<td>5/16 - 24 UNF</td>
<td>138 ± 17</td>
<td>128 ± 17</td>
<td>1446 ± 192</td>
<td>225 ± 25</td>
</tr>
<tr>
<td>3/8 - 16 UNC</td>
<td>16 ± 2</td>
<td>16 ± 2</td>
<td>22 ± 3</td>
<td>30 ± 3</td>
</tr>
<tr>
<td>3/8 - 24 UNF</td>
<td>17 ± 2</td>
<td>18 ± 3</td>
<td>24 ± 3</td>
<td>35 ± 3</td>
</tr>
<tr>
<td>7/16 - 18 UNC</td>
<td>27 ± 3</td>
<td>27 ± 3</td>
<td>37 ± 4</td>
<td>50 ± 5</td>
</tr>
<tr>
<td>7/16 - 20 UNF</td>
<td>29 ± 3</td>
<td>29 ± 3</td>
<td>39 ± 4</td>
<td>55 ± 5</td>
</tr>
<tr>
<td>1/2 - 13 UNC</td>
<td>30 ± 3</td>
<td>48 ± 7</td>
<td>65 ± 9</td>
<td>75 ± 8</td>
</tr>
<tr>
<td>1/2 - 20 UNF</td>
<td>32 ± 3</td>
<td>53 ± 7</td>
<td>72 ± 9</td>
<td>85 ± 8</td>
</tr>
<tr>
<td>5/8 - 11 UNC</td>
<td>65 ± 10</td>
<td>88 ± 12</td>
<td>119 ± 16</td>
<td>150 ± 15</td>
</tr>
<tr>
<td>5/8 - 18 UNF</td>
<td>75 ± 10</td>
<td>95 ± 15</td>
<td>129 ± 20</td>
<td>170 ± 15</td>
</tr>
<tr>
<td>3/4 - 10 UNC</td>
<td>93 ± 12</td>
<td>140 ± 20</td>
<td>190 ± 27</td>
<td>265 ± 25</td>
</tr>
<tr>
<td>3/4 - 16 UNF</td>
<td>115 ± 15</td>
<td>165 ± 25</td>
<td>224 ± 34</td>
<td>300 ± 25</td>
</tr>
<tr>
<td>7/8 - 9 UNC</td>
<td>140 ± 20</td>
<td>225 ± 25</td>
<td>305 ± 34</td>
<td>430 ± 45</td>
</tr>
<tr>
<td>7/8 - 14 UNF</td>
<td>155 ± 25</td>
<td>260 ± 30</td>
<td>353 ± 41</td>
<td>475 ± 45</td>
</tr>
</tbody>
</table>

**Note:** Reduce torque values listed in the table above by 25% for lubricated fasteners. Lubricated fasteners are defined as threads coated with a lubricant such as oil, graphite, or thread sealant such as Loctite.

**Note:** Torque values may have to be reduced when installing fasteners into threaded aluminum or brass. The specific torque value should be determined based on the fastener size, the aluminum or base material strength, length of thread engagement, etc.

**Note:** The nominal torque values listed above for Grade 5 and 8 fasteners are based on 75% of the minimum proof load specified in SAE J429. The tolerance is approximately ±10% of the nominal torque value. Thin height nuts include jam nuts.
### Standard Torque for Dry, Zinc, and Steel Fasteners (Metric Fasteners)

<table>
<thead>
<tr>
<th>Thread Size</th>
<th>Class 8.8 Bolts, Screws, and Studs with Regular Height Nuts (Class 8 or Strong Nuts)</th>
<th>Class 10.9 Bolts, Screws, and Studs with Regular Height Nuts (Class 10 or Strong Nuts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5 X 0.8</td>
<td>57 ± 5 in-lb</td>
<td>78 ± 7 in-lb</td>
</tr>
<tr>
<td>M6 X 1.0</td>
<td>96 ± 9 in-lb</td>
<td>133 ± 13 in-lb</td>
</tr>
<tr>
<td>M8 X 1.25</td>
<td>19 ± 2 ft-lb</td>
<td>27 ± 2 ft-lb</td>
</tr>
<tr>
<td>M10 X 1.5</td>
<td>38 ± 4 ft-lb</td>
<td>53 ± 5 ft-lb</td>
</tr>
<tr>
<td>M12 X 1.75</td>
<td>66 ± 7 ft-lb</td>
<td>92 ± 9 ft-lb</td>
</tr>
<tr>
<td>M16 X 2.0</td>
<td>166 ± 15 ft-lb</td>
<td>225 ± 20 ft-lb</td>
</tr>
<tr>
<td>M20 X 2.5</td>
<td>325 ± 33 ft-lb</td>
<td>450 ± 37 ft-lb</td>
</tr>
</tbody>
</table>

**Note:** Reduce torque values listed in the table above by 25% for lubricated fasteners. Lubricated fasteners are defined as threads coated with a lubricant such as oil, graphite, or thread sealant such as Loctite.

**Note:** Torque values may have to be reduced when installing fasteners into threaded aluminum or brass. The specific torque value should be determined based on the fastener size, the aluminum or base material strength, length of thread engagement, etc.

**Note:** The nominal torque values listed above are based on 75% of the minimum proof load specified in SAE J1199. The tolerance is approximately ± 10% of the nominal torque value. Thin height nuts include jam nuts.
Other Torque Specifications

SAE Grade 8 Steel Set Screws

<table>
<thead>
<tr>
<th>Thread Size</th>
<th>Square Head</th>
<th>Hex Socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 - 20 UNC</td>
<td>140 ± 20 in-lb</td>
<td>73 ± 12 in-lb</td>
</tr>
<tr>
<td>5/16 - 18 UNC</td>
<td>215 ± 35 in-lb</td>
<td>145 ± 20 in-lb</td>
</tr>
<tr>
<td>3/8 - 16 UNC</td>
<td>35 ± 10 ft-lb</td>
<td>18 ± 3 ft-lb</td>
</tr>
<tr>
<td>1/2 - 13 UNC</td>
<td>75 ± 15 ft-lb</td>
<td>50 ± 10 ft-lb</td>
</tr>
</tbody>
</table>

Wheel Bolts and Lug Nuts

<table>
<thead>
<tr>
<th>Thread Size</th>
<th>Recommended Torque**</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/16 - 20 UNF Grade 5</td>
<td>65 ± 10 ft-lb, 88 ± 14 N-m</td>
</tr>
<tr>
<td>1/2 - 20 UNF Grade 5</td>
<td>80 ± 10 ft-lb, 108 ± 14 N-m</td>
</tr>
<tr>
<td>M12 X 1.25 Class 8.8</td>
<td>80 ± 10 ft-lb, 108 ± 14 N-m</td>
</tr>
<tr>
<td>M12 X 1.5 Class 8.8</td>
<td>80 ± 10 ft-lb, 108 ± 14 N-m</td>
</tr>
</tbody>
</table>

** For steel wheels and non-lubricated fasteners.

Thread Cutting Screws

(type Zinc Plated Steel)

<table>
<thead>
<tr>
<th>Type 1, Type 23, or Type F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread Size</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>No. 6 - 32 UNC</td>
</tr>
<tr>
<td>No. 8 - 32 UNC</td>
</tr>
<tr>
<td>No. 10 - 24 UNC</td>
</tr>
<tr>
<td>1/4 - 20 UNC</td>
</tr>
<tr>
<td>5/16 - 18 UNC</td>
</tr>
<tr>
<td>3/8 - 16 UNC</td>
</tr>
</tbody>
</table>

Conversion Factors

\[
\begin{align*}
\text{in-lb} \times 11.2985 &= \text{N-cm} \\
\text{ft-lb} \times 1.3558 &= \text{N-m}
\end{align*}
\]

\[
\begin{align*}
\text{N-cm} \times 0.08851 &= \text{in-lb} \\
\text{N-cm} \times 0.73776 &= \text{ft-lb}
\end{align*}
\]
## SPECIFICATIONS

### Equivalents and Conversions

#### Decimal and Millimeter Equivalents

<table>
<thead>
<tr>
<th>Inches</th>
<th>Decimal</th>
<th>mm</th>
<th>Inches</th>
<th>Decimal</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/32</td>
<td>0.03125</td>
<td>0.806</td>
<td>13/32</td>
<td>0.40625</td>
<td>1.032</td>
</tr>
<tr>
<td>1/16</td>
<td>0.0625</td>
<td>1.588</td>
<td>15/32</td>
<td>0.46875</td>
<td>1.191</td>
</tr>
<tr>
<td>5/64</td>
<td>0.078125</td>
<td>1.984</td>
<td>17/32</td>
<td>0.53125</td>
<td>1.349</td>
</tr>
<tr>
<td>3/32</td>
<td>0.09375</td>
<td>2.373</td>
<td>19/32</td>
<td>0.59375</td>
<td>1.508</td>
</tr>
<tr>
<td>7/64</td>
<td>0.109375</td>
<td>2.780</td>
<td>21/32</td>
<td>0.65625</td>
<td>1.666</td>
</tr>
<tr>
<td>9/64</td>
<td>0.1375</td>
<td>3.493</td>
<td>23/32</td>
<td>0.71875</td>
<td>1.826</td>
</tr>
<tr>
<td>5/32</td>
<td>0.15625</td>
<td>3.962</td>
<td>25/32</td>
<td>0.78125</td>
<td>1.984</td>
</tr>
<tr>
<td>11/64</td>
<td>0.177775</td>
<td>4.517</td>
<td>1/2</td>
<td>0.50000</td>
<td>12.700</td>
</tr>
<tr>
<td>69/128</td>
<td>0.1875</td>
<td>4.763</td>
<td>27/32</td>
<td>0.84375</td>
<td>21.063</td>
</tr>
<tr>
<td>7/16</td>
<td>0.4375</td>
<td>11.176</td>
<td>11/8</td>
<td>1.12500</td>
<td>28.571</td>
</tr>
<tr>
<td>11/32</td>
<td>0.34375</td>
<td>8.739</td>
<td>29/32</td>
<td>0.90625</td>
<td>23.175</td>
</tr>
<tr>
<td>13/32</td>
<td>0.40625</td>
<td>10.297</td>
<td>31/32</td>
<td>0.96875</td>
<td>24.804</td>
</tr>
<tr>
<td>7/8</td>
<td>0.8750</td>
<td>22.225</td>
<td>33/32</td>
<td>1.03125</td>
<td>26.410</td>
</tr>
<tr>
<td>15/16</td>
<td>0.96875</td>
<td>24.508</td>
<td>1</td>
<td>25.40000</td>
<td>640.000</td>
</tr>
</tbody>
</table>

1 in. = 0.0254 cm

### U.S. to Metric Conversions

<table>
<thead>
<tr>
<th>Linear Measurement</th>
<th>To Convert To</th>
<th>Multiply By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles</td>
<td>Kilometers</td>
<td>1.609</td>
</tr>
<tr>
<td>Yards</td>
<td>Meters</td>
<td>0.9144</td>
</tr>
<tr>
<td>Feet</td>
<td>Meters</td>
<td>0.3048</td>
</tr>
<tr>
<td>Inches</td>
<td>Centimeters</td>
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</tr>
<tr>
<td>Feet</td>
<td>Centimeters</td>
<td>30.48</td>
</tr>
<tr>
<td>Inches</td>
<td>Millimeters</td>
<td>25.4</td>
</tr>
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XL Gear Drive Transaxle Removal - 915 Transaxle

1. Disconnect battery cables and remove the battery and battery tray. Remove the mower deck (refer to “Mower” section on page 6-1).

2. Raise the rear of the tractor and remove the right and left rear tires. Put jack-stands under the frame, just in front of the transaxle (Figure 3).

3. Remove the rear hitch panel. There are 2 bolts and nuts holding the seat springs and 2 bolts and nuts on each side of the rear panel (Figure 4).

4. Loosen the left transaxle belt guide and move it away from the belt. The right transaxle belt guide needs to be removed (Figure 5).

5. Unhook the idler spring from the idler assembly (Figure 6).
6. Remove the nut on the shift tie rod (Figure 7).

7. Remove the bolt and nut on the left side shift pivot clamp and slide the shift pivot rod so you can remove the shift tie rod (Figure 8).

8. Remove the nut and washer holding the left side torque strap leaving the torque strap bolted to the frame (Figure 9).

9. Remove both the top and bottom washer and nut from the right side torque strap (Figure 10).
10. Remove the brake return spring (Figure 11).

11. Unhook the brake spring from the clutch/brake rod (Figure 12).

12. Before removing the 4 transaxle bolts, put a floor jack under the transaxle so you can lower it from the frame. Remove the 4 bolts, washers, and nuts (Figure 13).

13. Lower the transaxle slightly so you can free it from the two front torque straps. Unhook the brake spring from the transaxle brake arm (Figure 14).
14. The transaxle should be free from the frame now (Figure 15).

2. Install the right and left torque straps to the frame and the transaxle, do not tighten. Install the 4 axle bolts, washers, and nuts and tighten first. Then tighten the torque straps (Figure 17).

XL Gear Drive Transaxle Installation - 915 Transaxle

1. Raise the transaxle to the frame making sure the brake lever fits through the slot in the frame. Reinstall the brake spring on the brake lever (Figure 14 and Figure 16).

3. Install the left side shift pivot clamp on the shift pivot rod before securing the clamp to the frame. Make sure the shift tie rod is reinstalled in the hole in the shift pivot rod. Tighten the shift pivot clamp and the shift tie rod (Figure 18).
4. Install brake spring to the clutch/brake rod (Figure 19).

5. Install belt around the transaxle pulley. Reinstall the idler spring to the idler assembly (Figure 20).

6. Install the right and left belt guides and adjust so they are within 1/8" (3mm) of the transaxle pulley and drive belt (Figure 21). Note direction of belt guide installation, right hand points forward, left hand points rearward.

7. Connect the brake return spring to the brake lever (Figure 22).
8. Install the rear hitch panel. There are two bolts, washers, and nuts on each side of the plate and 2 bolts, washers, and nuts for the seat springs (Figure 23).

9. Install the right and left rear tires. Install the battery and battery box. Note: Make sure the battery drain tube is installed through the rear hole of the frame (Figure 24; rear hitch panel removed for clarity).

10. Check the following items:
   
   A. The Shift-On-The-Go for proper adjustment. If adjustment is needed, (refer to “Cable Adjustment, Shift-On-The-Go, 915 and MST-205 Transaxle” on page 2 - 19).
   
   B. Brake Adjustment. If adjustment is needed, (refer to “XL Gear Drive Brake Adjustment -915 Transaxle” on page 2 - 11).
   
   C. Shift Lever Adjustment. If adjustment is needed, (Refer to “XL Gear Drive Shift Lever Adjustment - 915 Transaxle” on page 2 - 9).

11. Install mower deck; see instructions in the Mower section.

12. Check all safety switches to make sure they are operating properly.

XL Gear Drive Traction Drive Belt Replacement Procedure - 915 Transaxle

1. Disconnect battery and remove battery and battery tray. Remove mower deck. (Refer to Mower section.)

2. Remove the rear hitch panel. There are 2 bolts and nuts holding the seat springs and 2 bolts and nuts on each side of the rear panel (Figure 25).
3. Loosen and move the right and left engine belt guides (Figure 26).

4. Loosen the left side transaxle belt guide. Remove the right side transaxle belt guide (Figure 27).

5. Remove the idler spring on the idler assembly. Remove the idler pulley and belt guide (Figure 28). Remove the drive belt.

6. Install new belt around the engine drive pulley (Figure 29).
7. Route belt back over the pedal pivot rod, the idler pivot bracket, and around the transaxle pulley (Figure 30).

8. Install the idler pulley to the idler bracket. Note the correct hole location of the bolt and nut retaining the pulley and belt guide bracket (Figure 31).

9. Hook the idler spring to the idler bracket (Figure 32).

10. Install the right side belt guide and adjust to within 1/8” (3mm) of the transaxle pulley and belt. Adjust and tighten the left belt guide so it is within 1/8” (3mm) of the transaxle pulley and belt (Figure 21 and Figure 33).
11. Recheck the routing of the belt (Figure 34).

12. Install the mower deck. (Refer to Mower Deck section). Make sure the engine belt guides are adjusted so they are within 1/8” (3mm) of both the engine and mower drive pulley.

13. Install battery and battery tray making sure the battery drain tube is installed in the rear hole of the frame (Figure 35). Install the rear hitch panel (Figure 25).

14. Check the following:
   A. The Shift-On-The-Go for proper adjustment. If adjustment is needed, (refer to “Cable Adjustment, Shift-On-The-Go, 915 and MST-205 Transaxle” on page 2 - 19).
   B. Brake Adjustment. If adjustment is needed, (refer to “XL Gear Drive Brake Adjustment -915 Transaxle” on page 2 - 11).
   C. Shift Lever Adjustment. If adjustment is needed, (refer to “XL Gear Drive Shift Lever Adjustment - 915 Transaxle” on page 2 - 9).

15. Check all safety switches to make sure they are operating properly.

**XL Gear Drive Shift Lever Adjustment - 915 Transaxle**

It is **VERY** important the shift lever is properly aligned with the shift gates.

If the gear shift lever and shift gates do not properly align, you may encounter the following symptoms:

1. No reverse.
2. No fifth gear.

If the misalignment is ignored for a period of time, severe transaxle damage will result.

Adjust using the following procedure:

1. Disconnect the battery cables and remove the battery and battery tray.
2. Remove the rear hitch panel by removing the two bolts and nuts holding the seat springs and two bolts and nuts located on each side of the hitch panel. Loosen the fastener securing the front cable guide to remove tension from the shift cable (Figure 36).

3. Remove the rubber shift gate cover (Figure 37).

4. Shift the transaxle through each gear to verify the gear shift lever centers in each gate as the internal transaxle detents are felt. The lever should also “detent” into 5th gear and reverse (Figure 38). That is, the shift lever should not contact the side of the metal “fingers” of each gate as the lever enters the gate.

5. If the shifter does not align with the gates, loosen the bolt and nut between the shift pivot and the shift pivot lever and adjust (Figure 39).
6. If the shifter still does not go into 5th gear, loosen the jam nut on the tie rod end of the shift arm and remove the nut. Rotate the tie rod end until the gear shift lever is centered in the 5th gear gate. Place the shift arm on the gear selector shaft and verify that neutral, reverse, and fifth gears properly align. Reinstall the shift arm fastener and tighten the jam nut (Figure 40).

7. Reassembly:

   A. Ensure the transaxle and engine pulley belt guides are positioned 1/8" (3mm) away from the drive belt.
   B. Adjust the transaxle shift cable (refer to "Cable Adjustment, Shift-On-The-Go, 915 and MST-205 Transaxle" on page 2 - 19.)
   C. Reinstall the shift gate cover, rear hitch panel, battery, and battery tray. **Note:** Make sure the battery drain tube is installed in rear hole of the frame (Figure 35). Reconnect the battery cables.
   D. Test drive the tractor and verify all adjustments and safety switches are operating properly.

**XL Gear Drive Brake Adjustment - 915 Transaxle**

The brake is located on the right side of the rear axle, inside the rear tire. If the brake does not hold securely or stopping power is insufficient, an adjustment is required (Figure 41).

1. Park the machine on a level surface, disengage the blade control (PTO), shift into neutral, set the parking brake, and turn the ignition key to “OFF” to stop the engine.
2. If the rear wheels lock and skid when you push the tractor forward, no adjustment is required. An adjustment is required if the wheels turn and do not lock.
3. To increase braking resistance, tighten the brake adjusting nut (Figure 41) 1/8 turn clockwise; then check the brake again. Continue this adjusting and checking process until the brake is set properly.

   If the brake system does not respond to adjustment, the brake pads and possibly the brake disc, require replacement.
4. Push down on the clutch/brake pedal to release the parking brake.

**IMPORTANT:** With the parking brake released, the rear wheels must rotate freely when you push the tractor. If the brake seems to “drag”, loosen the adjusting nut slightly until the wheels rotate freely.
XL Gear Drive MST-205 Transaxle Removal

1. Disconnect battery cables and remove battery and battery tray. Remove mower deck (refer to “Mower” section on page 6 - 1). Lift the rear of the tractor and remove both the right and left rear tires (Figure 42).

2. Remove the rear hitch panel, removing the two bolts and nuts holding the seat springs and two bolts and nuts located on each side of the hitch panel (Figure 43).

3. Remove the right and left transaxle belt guides. Put the park brake on and then slip the traction drive belt off the transaxle pulley (Figure 44).

4. Release the park brake and disconnect the brake spring (A) at the idler arm assembly. Remove the brake return spring (B) (Figure 45).
5. Disconnect the shift link at the transaxle shift lever (Figure 46).

6. Use a floor jack to support and lower the transaxle from the frame. Unbolt and remove the two torque strap bolts located in the front of the transaxle. Remove the 4 axle bolts holding the transaxle to the frame (Figure 47).

XL Gear Drive MST-205 Transaxle Installation

1. Raise the transaxle up to the frame and install the 4 axle bolts and 2 torque strap bolts. Tighten all 6 bolts (Figure 48).

2. Connect the brake spring between the clutch/brake rod and the transaxle brake lever. Install the brake return spring, located between the transaxle brake lever and the axle frame bracket.
3. Place the traction drive belt around the transaxle input pulley. Install the right and left belt guides.

4. Install battery and battery tray. **Note:** If the battery uses a battery drain tube, make sure the tube is reinstalled through the rear hole in the frame (Figure 51). Connect the battery cables. Start the tractor and check the shift linkage and the brakes to make sure they are operating properly. If adjustment is needed, refer to “Adjusting the Brake” on page 2 - 15 or “XL Gear Drive Shift Lever Adjustments, MST-205 Transaxle” on page 2 - 14. Test and operate the safety interlock system.

5. Install the rear hitch panel (Figure 52).

6. Re-install the mower deck (“Mower” section on page 6 - 1).

### XL Gear Drive Shift Lever Adjustments, MST-205 Transaxle

It is **VERY** important the shift lever is properly aligned with the shift gates. If misalignment is ignored for a period of time, severe transaxle damage will result.

After any transmission or shift linkage repair, or if you experience difficulty shifting the linkage from 1st through 5th or in reverse gear, adjust using the following procedure:

1. Place the gear shift lever in 5th gear (Figure 53).
2. Loosen the bolt between the shift pivot and the shift pivot lever (Figure 54).

![Figure 54](mvc-644)

3. Make sure the shift lever is in the center of the shift gate (Figure 55).

![Figure 55](mvc-645)

4. Tighten bolt and retest the shifting; make sure the gear shift lever is centered in each gate for each gear.

### XL Gear Drive Brake Adjustment, MST-205 Transaxle

The brake is located on the right side of the rear axle, inside the rear tire. If the brake does not hold securely or stopping power is insufficient, an adjustment is required (Figure 56).

![Figure 56](mvc-648)

#### Checking the Brake

1. Park the machine on level surface, disengage the PTO, shift into neutral, set the parking brake, stop the engine, remove the ignition key.

2. If the rear wheels lock and skid when you push the tractor forward, no adjustment is required. An adjustment is required if the wheels turn and do not lock; refer to Adjusting the Brake (below).

#### Adjusting the Brake

1. Check the brake before you make any adjustments; refer to Checking the Brake (above).

2. To increase braking resistance, tighten the brake adjusting nut 1/8 turn clockwise; then check the brake again. Continue this adjusting and checking process until the brake is set properly.

If the brake system does not respond to adjustment, the brake pads and possibly the brake disc, require replacement.

3. Push down on the clutch/brake pedal to release the parking brake.
**Important:** With the parking brake released, the rear wheels must rotate freely when you push the tractor. If the brake seems to drag, loosen the adjusting nut slightly until the wheels rotate freely.

**XL Gear Drive Traction Drive Belt Replacement Procedure, MST-205 Transaxle**

1. Remove mower deck from tractor (refer to "Mower" section on page 6 - 1).
2. Disconnect the battery cables and remove the battery and battery tray.
3. Disconnect the rear hitch plate. Remove the two seat spring bolts and 2 bolts and nuts located on each side of the rear hitch plate (Figure 57).
4. Remove the right and left belt guides located on each side of the transaxle pulley (Figure 58).
5. Unhook idler spring and unbolt the idler pulley from the idler bracket (Figure 59).

![Figure 57](mvc-0037)

![Figure 58](mvc-0002)

(A) Belt Guides

![Figure 59](mvc-0010)
6. Loosen the right and left belt guides located on each side of the engine drive pulley (Figure 60). Remove the drive belt.

7. Install new belt around the engine drive pulley and route it back to the transaxle pulley (Figure 61).

8. Install belt on the idler pulley and tighten the pulley bolt (Figure 62).

9. Install the right and left transaxle belt guides (Figure 63).
10. Reinstall the idler spring on bolt holding the idler pulley to the idler assembly (Figure 64).

11. Adjust both the right and left engine belt guides so they are within 1/8” (3mm) of the engine pulley (Figure 65).

12. Install rear hitch plate and seat springs (Figure 66).

13. Install battery and battery tray. **Note: If battery uses a battery drain tube, make sure the tube is reinstalled through the rear hole in the frame** (Figure 67). Connect the battery cables.

14. Reinstall the mower deck (refer to “Mower” section on page 6 - 1).

15. Test operate the tractor to make sure the unit shifts, brakes, and shifts on-the-go properly. Test the safety interlock system.
Cable Adjustment, Shift-On-The-Go, 915 and MST-205 Transaxle

1. Adjustment is required if the gearshift lever is not pulled firmly under spring tension toward the numbers on the shift plate or if it is difficult to shift on-the-go (Figure 68). If either of these problems present themselves, check the following:

- Verify that the idler pulley is not damaged.
- Verify that the belt guides are within 1/8" (3mm) of the engine and transaxle pulleys.
- Check proper cable tension. When properly adjusted, the cable is under light tension. Approximately 1/2" (13mm) deflection should be noticed when light side pressure is applied (Figure 69). To adjust:

A. Loosen the fastener securing the forward cable guide. It is located just above and behind the mower deck pulley (Figure 70).

B. Slide the guide left or right as necessary to remove all slack, but do not tighten so much as to move the idler arm. Retighten the fastener once adjustment is complete.

C. Verify that the adjustment is correct by checking that the gearshift lever snaps crisply toward the numbers on the shift plate. Also make sure that the unit shifts easily on-the-go (In other words, the drive belt is fully declutched when shifting) (Figure 71).
Identification

Hydro-Gear 0500/0750 Transaxle

Used: 1993 - 2000
Models: 316-0500, 321-0500, 323-0500, 316-0750, and 326-0750

Lubrication: 20W50 Motor Oil
Oil Level: Oil level should be at 1.75" to 2.0" (4.39cm - 5.08cm) from the top of the housing.

Hydro-Gear 0510 Transaxle

Used: 2001 and later
Model: 318-0510

Lubrication: 20W50 Motor Oil
Oil Level: Oil level should not be more than 1¼" (3.17cm) below the top fill port.
Internal Service

The Hydro-Gear 310-0500/0700 Service Manual is available from Toro under Form #492-4712.

The Hydro-Gear 310-0510 Service Manual is available from Toro under Form #492-4735.

Refer to the Tractor Parts Catalog for available transaxle service parts.

For 1993 - 1995 model year tractors, refer to the comparable 1996 model, as spare parts were not shown in earlier parts catalogs.

Troubleshooting Chart

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<th>Corrective Action</th>
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<td>Inspect control linkage</td>
<td>**Repair or replace</td>
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<tr>
<td></td>
<td>Inspect drive belt and pulleys</td>
<td>Repair or replace</td>
</tr>
<tr>
<td>Noisy</td>
<td>Check oil level and condition</td>
<td>Fill to proper level or change oil</td>
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<td></td>
<td>Check for excessive loading</td>
<td>Reduce vehicle loading</td>
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<tr>
<td></td>
<td>Check brake setting</td>
<td>*Adjust brake to proper setting</td>
</tr>
<tr>
<td></td>
<td>Check for loose parts</td>
<td>Repair or replace loose parts</td>
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<tr>
<td></td>
<td>Check bypass valve linkage operation</td>
<td>Repair or replace linkage</td>
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<td>Check frame mount</td>
<td>Tighten to frame</td>
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<td>Low Power</td>
<td>Check engine RPM</td>
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<td>Check drive belt and pulleys</td>
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<td>Tighten linkage or replace</td>
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<tr>
<td></td>
<td>Check fan condition</td>
<td>Replace if needed</td>
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</table>

*Make sure brake isn’t stuck in “on” position. Remove brake parts as necessary to test.

**If installing new transaxle, be sure bolt securing linkage in neutral position is removed and discarded.
Purging Procedures

Due to the effects air has on efficiency in hydrostatic drive applications, it is critical that it be purged from the system.

These purge procedures should be implemented any time a hydrostatic system has been opened to facilitate maintenance or any additional oil has been added to the system.

Air creates inefficiency because its compression and expansion rate is higher than that of the oil normally approved for use in hydrostatic drive systems.

The resulting symptoms in hydrostatic systems may be:

1. Noisy operation.
2. Lack of power or drive after short term operation.
3. High operation temperature and excessive expansion of oil.

Before starting, make sure the transaxle is at the specified oil level, page 3 - 1.

The following procedures should be performed with the vehicle drive wheels off the ground, then repeated under normal operating conditions.

1. With the bypass valve open and the engine running, slowly move the directional control (foot control) in both forward and reverse directions 5 to 6 times; as air is purged from the unit, the oil level will drop.

2. With the bypass valve in the closed position and the engine running, slowly move the directional control valve (foot control) in both forward and reverse directions 5 to 6 times. After stopping the engine, check the oil level and add oil as required.

3. It may be necessary to repeat Steps 1 and 2 until all the air is completely purged from the system. When the transaxle moves forward and reverse at normal speed purging is complete.

Fluid Change

The Hydro-Gear transaxle is factory filled, sealed and does not require oil maintenance. However, in the event of oil contamination or degradation, oil replacement may correct certain performance problems.

Remove the transaxle from the vehicle and drain the oil from the top fluid fill port. Fill unit as near the top of fill port as is practical. Tipping the unit forward, backward and from side to side will allow air to escape. The tipping and filling activity may need to be repeated several times. Refer to the oil fill range for the Hydro-Gear model transaxle. Reinstall transaxle and perform purging procedures.

If the oil drained from the transaxle is severely contaminated or overheated, the transaxle should be disassembled for inspection, cleaning, and repair, as needed.

HXL Hydro Transaxle Removal - 2000 and Prior

1. Disconnect battery cables and remove the battery and battery tray. Remove the mower deck (refer to "Mower" section on page 6 - 1).

2. Raise the rear of the tractor and remove the right and left rear tires. Put jack stands under the frame, just in front of the transaxle (Figure 72).
3. Remove the rear hitch panel. There are 2 bolts and nuts holding the seat springs and 2 bolts and nuts on each side of the rear panel (Figure 73).

4. Loosen the left and right rear transaxle belt guides and move them away from the belt (Figure 74).

5. Loosen the right and left belt guides located on each side of the engine drive pulley (Figure 75).

6. Unhook the idler spring from the idler assembly (Figure 76).
7. Slip the traction belt down off the engine pulley and move the slack of the belt back toward the rear of the tractor. You should now be able to slip the traction belt up off the transaxle drive pulley. The fan is flexible enough to allow you to remove the belt (Figure 77).

8. Remove the hairpin and washer on the speed control rod (Figure 78).

9. Remove the hairpin and washer on the bypass lever rod (Figure 79).

10. Remove the small brake return spring from the brake lever (Figure 80).
11. Unhook the brake spring from the clutch/brake rod.

12. Unbolt the torque strap (Figure 82).

13. Support the transaxle with a jack. Remove the 4 bolts, washers, and nuts holding the transaxle to the frame (Figure 83).

14. Lower the transaxle from the frame (Figure 84).
HXL Hydro Lawn Tractor Transaxle Installation – 2000 and Prior

1. Raise the transaxle to the frame and install the 4 axle bolts, washers, and nuts (Figure 85).

2. Install the washer and nut to the torque strap and tighten (Figure 86).

3. Reconnect the brake spring to the clutch/brake rod (Figure 87).

4. Hook the small brake return spring to the brake arm (Figure 88).
5. Install the washer and hairpin on the speed control rod (Figure 89).

6. Install the washer and hairpin that holds the bypass lever (Figure 90).

7. Install the traction drive belt around the transaxle input pulley (Figure 91).

8. Install the traction drive belt around the engine drive pulley (Figure 92).
9. Reconnect the idler spring to the idler bracket assembly (Figure 93).

10. Adjust and tighten the right and left engine belt guides so the guides are within 1/8” (3mm) of the belt and pulley (Figure 94).

11. Adjust and tighten the right and left rear transaxle belt guides. Adjust the guides so they are within 1/8” (3mm) of the belt and pulley (Figure 95).

12. Install the rear hitch plate. There are 2 bolts, washers, and nuts on each side of the plate and 2 bolts, washers, and nuts for the seat springs (Figure 96).
13. Install the battery and battery tray. **Note:** If the battery uses a drain tube, make sure the tube is reinstalled through the rear hole in the frame (Figure 97).

14. Install the left rear tire only and lower the tractor so the left rear tire touches the ground (Figure 98).

15. If a new transaxle was installed or any work was performed internally on the transaxle, follow the "Purging Procedures" on page 3 - 3.

16. Check the neutral adjustment. If the unit needs to be neutralized, follow the procedures in the "Neutral Adjustment - HXL Hydro- 2000 and Prior" on page 3 - 10.

17. Install the right rear tire and check the brake adjustments. If adjustment is needed, follow the procedures in the "Brake Adjustment - HXL Hydro - 2000 and Prior" on page 3 - 11.

18. Test operate the tractor, making sure the unit operates properly and the safety circuits are operating.

**Neutral Adjustment - HXL Hydro- 2000 and Prior**

Before making a neutral adjustment, the transaxle must be warmed up for at least 10 minutes. Steps to perform neutral adjustment:

1. Jack-up and support the right rear end of the tractor, allowing enough clearance to remove the right rear tire. Make sure the left rear tire stays on the ground (Figure 99).
2. Loosen the locknut (Figure 100).

3. Move the peg up or down until the wheel creep is minimized. There may still be a slight creep with the wheel off the ground (Figure 101).

4. Tighten the locknut. Move the motion control pedal forward and reverse and allow it to recenter. Verify that there is still no creep with the wheels on the ground.

When operating the foot control, if you find too much ground speed in forward and not enough in reverse or too much ground speed in reverse and not enough in forward, the pivot block which the speed control pedal is mounted on is adjustable. To adjust, loosen the two bolts, which are in two slots in the foot rest, and move the pivot block either forward or back to alter the maximum ground speed in either forward or reverse (Figure 102).

Brake Adjustment - HXL Hydro - 2000 and Prior

1. Park the machine on a level surface, disengage the blade control (PTO). Set the parking brake, and turn the ignition key to “OFF” to stop the engine.

2. Move the bypass lever to the push mode position.

3. If the rear wheels lock and skid when you push the tractor forward, no adjustment is required. An adjustment is required if the wheels turn and do not lock.

4. Release the parking brake.
5. To adjust the brake, loosen the brake adjusting nut slightly (Figure 103).

6. Insert a 0.020" (.5mm) feeler gauge between the outer discs, if the clearance is not correct make the necessary change with the brake adjusting nut (Figure 104).

7. Tighten the brake adjusting nut until slight resistance is felt on the feeler gauge when sliding it in and out.

8. Check the brake operation again.

**Important:** With the parking brake released and the bypass lever in the push mode, the rear wheels must rotate freely when you push the unit. If they do not rotate freely, perform the following procedure:

1. Check to see if the brake lever returns to the "OFF" position when the pedal is released (Figure 105).

2. If the brake lever is not returning to the "OFF" position, it may be necessary to install a shorter spring. The spring on the left is a shorter spring P/N 26-6700. The shorter spring is installed on all the 2000 model year Lawn Tractors. The spring on the right is the longer spring P/N 26-6701 (Figure 106).

3. Next, check the actuating pins for any corrosion, dirt, or residue build-up. Remove the brake lever and pins and clean with a cleaning solvent. WD-40 can be applied to the pins as a lubricant.
If the battery drain tube is installed improperly through the frame, the battery will drain in this area and corrode the pins and linkage (Figure 107).

**Figure 107**

4. Check the brake rotors for dirt or debris. Clean and flush out the brake rotors using either WD-40 or a brake cleaner. After cleaning, check the brake adjustments (Figure 108).

**Figure 108**

**NOTE:** Transaxle shown bottom side up.

**Traction Drive Belt Replacement On HXL Hydro - 2000 and Prior**

1. Remove the mower deck from the tractor, refer to "Mower" section on page 6 - 1.

2. Disconnect the battery cables and remove the battery and battery tray.

3. Loosen the right and left rear transaxle belt guides and swing them away from the transaxle input pulley (Figure 109).

**Figure 109**

4. Loosen the right and left belt guides located on each side of the engine pulley. Swing the belts guides away from the pulley (Figure 110).

**Figure 110**
5. Unhook the idler spring on the idler spring bracket (Figure 111).

6. Unbolt the idler pulley assembly with belt guide and remove assembly (Figure 112).

7. Install belt around the engine drive pulley and feed the drive belt up over the pedal pivot rod (Figure 113).

8. Continue feeding the belt back up over the idler pivot bracket and around the transaxle drive pulley (Figure 114).
9. Install the belt around the flat idler pulley assembly with the belt guide and tighten the bolt and nut (Figure 115).

10. Reconnect the idler spring to the idler bracket (Figure 116).

11. Adjust and tighten both the right and left engine belt guides. They should be adjusted so they are within 1/8” (3mm) of the engine pulley (Figure 117).

12. Adjust and tighten both the right and left transaxle belt guides. Make sure they are adjusted to within 1/8” (3mm) of the transaxle pulley (Figure 118).
13. Before installing the mower deck on the tractor, check the routing of the drive belt (Figure 119).

14. Install mower deck, refer to the "Mower" section on page 6-1.

15. Install battery and battery tray. Note: If the battery uses a drain tube, make sure the tube is reinstalled through the rear hole in the frame. Reconnect the battery cables and test the tractor, making sure all safety devices are operating (Figure 120).

HXL Hydro Transaxle Removal - 2001 and Later

1. Disconnect the battery cables and remove the battery and battery tray. Remove the mower deck (refer to the "Mower" section on page 6-1).

2. Raise the rear of the tractor and remove the right and left rear tires. Put jack stands under the frame, just in front of the transaxle (Figure 121).

3. Loosen the left transaxle belt guide (Figure 122).
4. Loosen the right and left belt guides located around the engine pulley and slip the belt down off the engine drive pulley (Figure 123).

5. Unhook the idler spring from the idler assembly (Figure 124).

6. Move the slack of the traction drive belt to the rear of the tractor and slip the belt off the transaxle drive pulley. The fan is flexible enough to allow you to remove the belt (Figure 125).

7. Disconnect the hairpins on both the speed control link and the speed control rod (Figure 126).
8. Unhook the small spring on the brake arm. Pull the cotter pin out of the crown nut on the brakes and remove nut to disconnect the brake arm from the transaxle (Figure 127).

9. Support the transaxle with a jack. Unbolt the front torque strap and remove the 4 bolts holding the transaxle to the frame. Lower the transaxle out of the frame (Figure 128).

HXL Hydro Transaxle Installation - 2001 and Later

1. Raise the transaxle to the frame and install the 4 axle bolts, washers, and nuts. Install the torque strap nut (Figure 129).

2. Install brake arm and castle nut. Adjust the brake (page 3 - 21) (Figure 130).
3. Reconnect the speed control link and the speed control rod with washers and hairpins (Figure 131).

4. Install the drive belt around the transaxle pulley and around the engine pulley. Reconnect the idler spring to the idler bracket assembly (Figure 132).

5. Adjust and tighten both the right and left engine belt guides. They should be adjusted so they are within 1/8” (3mm) of the engine pulley (Figure 133).

6. Adjust and tighten the transaxle belt guide. Make sure it is adjusted so it is within 1/8” (3mm) of the transaxle pulley (Figure 134).
7. Install the left rear tire only and lower the unit until the tire just touches the ground. Install the battery and the battery tray and reconnect the battery cables (Figure 135).

NOTE: When installing a new transaxle in the machine, or if any work was performed internally on the transaxle, make sure the system is purged prior to doing any neutral adjustment. Refer to “Purging Procedures” on page 3 - 3.

8. Check the neutral adjustment. If adjustment is needed, follow the “Neutral Adjustment - HXL Hydro - 2001 and Later” on page 3 - 20.

9. Reinstall the right tire.

10. Install mower deck (refer to the "Mower" section on page 6 - 1).

11. Operate the tractor and make sure all safety features are working.

Neutral Adjustment - HXL Hydro - 2001 and Later

Before making a neutral adjustment, the transaxle must be warmed up for at least 10 minutes. Steps to perform neutral adjustment:

1. Jack-up and support the right rear end of the tractor, allowing enough clearance to remove the right rear tire. Make sure the left rear tire stays on the ground (Figure 136).

2. Locate the adjusting puck and loosen the Allen head bolt. If difficult to loosen, heat the aluminum case near the bolt with a propane torch (Figure 137).

3. Start the engine and run at full throttle.

4. Rotate the adjusting puck in both directions and watch the axle direction. You want to adjust the puck so it is set at the midpoint between forward and reverse axle rotation. Make sure the axle is not moving (Figure 137).
5. Once you are in neutral, hold the puck with an adjustable wrench so it won’t move when you retighten the Allen bolt (Figure 138).

6. Operate the foot control in forward and reverse and allow pedal to return to the neutral position to test the adjustment.

Brake Adjustment - HXL Hydro - 2001 and Later

To check the brakes, park the machine on a level surface and set the parking brake. Move the bypass valve assembly to the push position. Push the unit by hand; and if the rear wheels lock and skid when you push the tractor forward, no adjustment is required. An adjustment is required if the wheels turn and do not lock (Figure 139).

Adjusting the Brake:

1. Jack-up and support the right rear end of the tractor.

2. Remove the right rear tire.

3. Remove the brake return spring (Figure 140).

4. Remove the cotter pin securing the brake adjusting nut and slightly loosen the nut (Figure 140).

5. Insert a 0.015 in. (.38mm) feeler gauge between the brake disc and brake puck. Tighten the nut until slight resistance is felt on the feeler gauge when sliding it in and out (Figure 141).

6. Install a new cotter pin and reattach the brake arm spring.
7. Install tire and check the brake operation again. If satisfactory brake adjustment/operation cannot be attained, the brake pads or disc require service.

3. Loosen the transaxle belt guide located on the left side of the transaxle pulley and swing the guide away from the pulley (Figure 142).

8. With the parking brake released and the bypass lever in push mode, the rear wheels must rotate freely when you push the unit. If they do not rotate freely, check the brake adjustment.

4. Loosen the right and left engine belt guides and swing both the guides away from the engine pulley (Figure 143).

**Traction Drive Belt Replacement - HXL Hydro - 2001 and Later**

1. Remove the mower deck from tractor (Refer to the "Mower" section on page 6 - 1).

2. Disconnect the battery cables and remove the battery and battery tray.
5. Unhook the idler spring on the idler spring bracket (Figure 144).

6. Unbolt the idler pulley assembly with belt guide and remove assembly (Figure 145).

7. Loosen the left side idler pulley and slide the assembly toward the center of the tractor away from the frame (Figure 146). Remove the belt from the engine and transaxle pulleys.

8. Install belt around the engine drive pulley and feed the drive belt up over the pedal pivot rod (Figure 147).
9. Continue feeding the belt back up over the idler pivot bracket and around the transaxle drive pulley (Figure 148).

10. Install the belt around the flat idler pulley assembly with the belt guide and tighten the bolt and nut (Figure 149).

11. Reconnect the idler spring to the idler bracket (Figure 150).

12. On the other side of the idler pivot, is a V-idler pulley. Install the V-section of the belt around the pulley and adjust the pulley up to the two belt guides located on the tractor frame. Adjust the pulley so there is 1/8" (3mm) gap between the pulley and belt guides (Figure 151).
13. Adjust and tighten both the right and left engine belt guides. They should be adjusted so they are within 1/8” (3mm) of the engine pulley (Figure 152).

14. Adjust and tighten the transaxle belt guide. Make sure it is adjusted so it is within 1/8” (3mm) of the transaxle pulley (Figure 153).

15. Before installing the mower deck on the tractor, check the routing of the drive belt (Figure 154).

16. Install mower deck (refer to the "Mower" section on page 6 - 1).

17. Install battery and battery tray. Reconnect the battery cables and test the tractor, making sure all safety devices are operating.
Front Axle Removal

1. If the tractor is equipped with headlights, disconnect the wiring to the headlights.

2. Unbolt the 2 shoulder bolts, located on the right and left side, bottom of the hood and carefully remove the hood (Figure 155).

3. Remove front mower pivot bracket from the front axle, (refer to Mower Decks).

4. Remove the drag link (4) in Figure 156 from the left spindle by removing the cotter pin and washers.

5. Raise the front of the tractor and place jack-stands behind the front axle.

6. Remove both the right and left front tires.

7. Remove the tie rod steering (3) in Figure 156 by removing the washers and cotter pins.

8. Remove the right spindle (5) and left spindle (17) by removing the E-Ring (2) in Figure 156.

9. Remove the 2 screws (18), front axle spacers (11), washers (12), and nuts (13) in Figure 156.

10. Remove the two screws (39), washers, and nuts from the front axle support (34) in Figure 156.

11. The axle should slide down and out of the frame.

12. Installation; reverse the order of axle removal.

Upper Steering Shaft Removal

(No Tilt Steering)

1. Follow steps #1 and #2 in the procedure for Steering Tower Removal, (refer to “Steering Tower Removal” on page 4 - 4).

2. The mower deck will have to be removed, (refer to the Mower section).

3. Remove the E-Ring (38) in Figure 156.

4. The upper steering shaft (35) in Figure 156 should slide out from the bottom of the frame.

5. Installation; reverse the order of steering shaft removal.

Steering Rack Removal

1. Remove the mower deck from the tractor (refer to the Mower section).

2. Drain the gas tank, and remove the gas tank from the unit (refer to “Steering Tower Removal” on page 4 - 4, steps 1 and 2).

3. Remove the cotter pin (29), steering link bushing (27), and flat washers (28) from the drag link (4) in Figure 156.

4. Remove screws (19) and (20) from the steering rack (26) in Figure 156.

5. The steering rack can now be removed.

6. Installation; reverse the order of steering rack removal.

Note: Before tightening the lock nut (31), make sure the bushing eccentric (24) is turned so the steering rack (26) is up against the steering shaft pinion (35) in Figure 156. The zerk (23) is used to hold the bushing eccentric and then tighten locknut (31) in Figure 156. Add a small amount of grease through the zerk. It is suggested a little grease should be added between the steering shaft pinion (35) in and the steering rack (26) in Figure 156).
Steering Assembly

(1) Front Axle  (15) Flat Washer  (29) Cotter Pin
(2) E-Ring  (16) Cotter Pin  (30) Bearing Washer
(3) Tie Rod Steering  (17) LH Spindle  (31) Lock Nut
(4) Drag Link  (18) Screw  (32) Pivot Washer
(5) RH Spindle  (19) Screw  (33) Lock Nut
(6) Wheel and Tire Assembly  (20) Screw  (34) Front Axle Support
(7) Washer  (21) Steering Rack Bracket  (35) Long Steering Shaft
(8) Cotter Pin  (22) Screw  (36) Flange Bearing
(9) Hub Cap  (23) Zerk  (37) Thrust Washer
(10) Thrust Washer  (24) Bushing Eccentric  (38) E-Ring
(11) Front Axle Spacer  (25) Steering Rack Spacer
(12) Flat Washer  (26) Steering Rack
(13) Lock Nut  (27) Steering Link Bushing
(14) Thrust Washer  (28) Flat Washer
Tilt Steering

Figure 157

(1) Steering Short Shaft  (9) Curved Washer  (17) Roll Pin
(2) Flange Bushing  (10) Thrust Washer  (18) Sliding Bushing
(3) Thrust Washer  (11) Steering Upper Shaft  (19) Release Button
(4) Plastite Screw  (12) Lock Nut  (20) Flat Washer
(5) E-Ring  (13) Leaf Spring  (21) Head Head Cap Screw
(6) Stationary Bushing  (14) Backup Bracket  (22) Retaining Ring
(7) Steering Coupling  (15) Steering Cover
(8) Hex Head Cap Screw  (16) Steering Wheel
Steering Shaft Removal (Tilt Steering)

1. Disconnect the battery cables.
2. Remove mower deck (refer to the Mower section).
3. Drain the gas tank and remove the tank by removing the left screw that holds the support bracket in and swing the bracket so you can remove the gas tank (Figure 158).
4. Remove the steering wheel by using a drift punch and remove the roll pin (17) in Figure 157.
5. Remove the E-Ring (5) in Figure 157.
6. Remove the 2 screws holding the stationary bushing (6) in Figure 157.
7. Remove the retaining ring (22) Figure 157, located at the top of the shaft.
8. To remove the steering shaft from the unit, the 2 screws (8), need to be removed and the upper steering shaft (11), separated from the short steering shaft (1) in Figure 157.
9. Steering short shaft (1) in Figure 157 should slide out from bottom of frame.
10. Reverse the order when installing the steering shaft.

Steering Tower Removal

1. Using a drift punch and hammer, drive the steering wheel roll pin out and remove the steering wheel (Figure 159).
2. Drain gas tank and remove the left side gas tank support rod bolt. Swing the gas tank support rod up and remove the gas tank (Figure 160).
3. Unplug the ignition switch, PTO safety switch, light switch, and Key Choice™ Reverse Operating System light (Figure 161), if so equipped. Disconnect the throttle cable at the engine. Disconnect the PTO mower cable at the deck engagement lever.

4. Remove the 2 bolts and nuts that secure the front of the steering tower to the right and left frame rails (Figure 162).

5. Remove the two bolts that are located on the underside of the tractor that hold the rear portion of the steering tower (Figure 163).

6. Slide the steering tower upward along the upper steering shaft and off the frame.

**Steering Tower Installation**

Reverse the order of steering tower removal.
Rear Body/Fender Assembly Removal

1. Remove the steering tower, refer to "Steering Tower Removal" on page 4 - 4.

2. Remove the rear hitch panel and seat springs (Figure 164).

3. Disconnect the battery and remove the battery and battery tray.

4. Lift seat assembly and unplug the seat switch; unplug the Key Choice™ Reverse Operating System switch, if so equipped (Figure 165).

5. Remove the 2 bolts and nuts holding the seat to the right and left pivot brackets. Unscrew the Height-of Cut knob (Figure 166). On gear shift models, unscrew the knob.

6. On hydrostatic models, remove the hairpin from the motion control rod and unbolt the pivot block that holds the forward/reverse motion control pedal to the rear body assembly (Figure 167).
7. Remove the upper steering shaft by removing the E-ring around the bottom of the shaft and slide the shaft out the bottom of the frame (Figure 168).

8. Unbolt the solenoid from the frame (Figure 169).

9. Remove the mower engagement cable from the brake lever bracket (Figure 170).

10. Remove the cotter pin connecting the drag link to the fan gear (Figure 171).
11. Remove the rubber grip from the brake pedal (Figure 172).

![Figure 172](image)

Figure 172  MVC-0030

12. Carefully lift the rear body off the frame of the tractor (Figure 173).

![Figure 173](image)

Figure 173  MVC-0034

**Installation Of The Rear Body**

Reverse the order of rear body removal.
Electric PTO Clutch Removal

1. Disconnect the positive battery cable from the battery.

2. Remove the mower from the tractor (follow the procedure in Section 6).

3. Remove the gas tank from the dash (Fig. A4 001).

4. Cut the wire tie around the clutch wire and the clutch switch located under the frame next to the electric PTO clutch (Fig. A4 002).

5. Disconnect and remove the electrical plug to the electric PTO clutch (Fig. A4 003).

6. With a 1-3/8" open end wrench or adjustable wrench and a 5/8" socket wrench remove the bolt from the crankshaft (Fig. A4 004).
7. Remove the electric PTO clutch from the crankshaft (Fig. A4 005).

2. Install the electric PTO clutch on the crankshaft, making sure the key on the clutch aligns with the keyway on the crankshaft. Also, make sure the slot on the electric PTO clutch slides onto the clutch stop bracket (Fig. A4 007).

Electric PTO Clutch Installation

1. Before installing the electric PTO clutch, note the clutch stop bracket (Ref. A) and the crankshaft keyway (Ref. B) (Fig. A4 006).

3. Install the bolt and washer onto the crankshaft and torque the bolt retaining the electric PTO clutch to 65 ft-lbs. (88.3 Nm) (Fig. A4 008).

A. Clutch stop bracket  B. Crankshaft keyway
4. Route the electric PTO clutch wire through the frame and reconnect the plug connector to the wiring harness (Fig. A4 009).

5. Install the gas tank (Fig. A4 010).

6. Install the mower deck and mower drive belt, (refer to Mower Installation in Section 6).
Electrical System

The electrical systems in all the XL Lawn Tractors are similar when starting the tractor. Two things happen when turning the ignition switch to the “START” position. (1) Current will flow from the ignition switch through the PTO (Power Take Off) switch, the clutch/brake switch and to the coil of the starter solenoid. The solenoid is actuated by the coil, connecting the starter motor to the battery. To have this circuit completed, the mower deck must be disengaged (PTO switch) and the clutch/brake pedal must be depressed. (2) At the same time, with the ignition switch in the “START” position, current will flow to the relay, which activates and takes the engine magneto ground wire off of ground to allow the engine to have spark.

Once you have the tractor running, you can now engage the mower deck only if you are in the seat, activating the seat switch. Anytime you vacate the seat with the mower engaged (or the brake pedal released), the seat switch will open and cut off voltage to the relay, which will deactivate and ground the engine magneto and stop the engine. If you vacate the seat with the PTO disengaged and the park brake engaged, the engine will continue to run.

The following electrical section covers most of the electrical components used on the XL Lawn Tractors. It covers each electrical component’s purpose, how it works, testing procedures, and location on the tractor. To help you further to troubleshoot electrical problems, the Riding Products Electrical Demystification Guide, Form # 492-4509, is available with complete wiring and circuit diagrams to help diagnose electrical problems.

Relay

Purpose

The relay (or kill relay) is in the safety circuit and the Key Choice™ Reverse Operating System. When applying current to this relay, it will keep the engine magneto wire off of ground, which will allow the engine to run. When the safety circuit or the Reverse Operating System interrupts the current to the relay, the engine magneto wire will ground and stop the engine.

Location

The relay is located under the gas tank (Figure 174).

How It Works

A relay is an electrically actuated switch.

1. Coil: Terminals 85 and 86 are connected to a coil. Applying 12 volts to these terminals energizes the coil turning into an electromagnet.
2. Switch: Terminals 30, 87, and 87a are actually part of a single pole, double throw (SPDT) switch. Terminal 30 is the common lead. The switch is spring loaded so that 30 and 87a are connected when the coil is not energized. When the coil is energized, the switch is “thrown” and 30 and 87 are connected (Figure 175).

3. Connect multimeter (ohms setting) leads to relay terminals 30 and 87. Ground terminal 86 and apply +12 VDC to terminal 85. The relay should make and break continuity between terminals 30 and 87 as 12 VDC is applied and removed from terminal 85.

4. Connect multimeter (ohms setting) leads to relay terminals 30 and 87a. Apply +12 VDC to terminal 85. With terminal 86 still grounded, the relay should break and make continuity between terminals 30 and 87a as 12 VDC is applied and removed from terminal.

5. Disconnect voltage and multimeter leads from relay terminals.

Testing

1. Disconnect the relay from the harness.

2. Verify the coil resistance between terminals 85 and 86 with a multimeter (ohms setting). Resistance should be from 80 to 90 ohms. There should be continuity between terminals 87a and 30.

### Solenoid

#### Purpose

The solenoid’s purpose is simply to connect the battery to the starter motor when the ignition switch is turned to Start. The solenoid is used to protect the ignition switch from the high current drawn by the starter motor.
How It Works

The solenoid has two primary parts. One is a coil of wire wrapped around an iron core. Whenever 12 volts is applied to the coil, it becomes a magnet. The other part is a bar type switch. Because it has a large contact area with the contact terminals it can easily handle the high current loads required by the starter motor.

When 12 volts is applied to the coil, it becomes an electromagnet. This quickly pulls the bar toward the contacts and closes the switch. When power is removed from the coil, the spring loaded bar returns to its "normally open" position. The solenoid closes and opens the switch very quickly. This minimizes the "arching" that can damage other type switches.

The ignition switch is protected because only a small amount of current is needed to activate the coil.

Testing

1. Disconnect the solenoid from the wiring harness.
2. With a multimeter (ohms setting), check to ensure that terminals “c” and “d” are open (no continuity).
3. Apply +12 VDC to terminal “a” and ground terminal “b”. Terminals “c” and “d” should now be closed (continuity).
4. You should be able to hear the solenoid switch “click” when you make the connection.

Location

The solenoid is located under the gas tank (Figure 179).
Neutral Switch (Used on 1999 and Prior Lawn Tractors)

Purpose

Used to ensure the transmission is in neutral when starting the unit. It is actuated when the clutch/brake pedal is depressed.

Location

The neutral switch is under the tractor, in the channel of the frame, under the clutch/brake pedal (Figure 180).

How It Works

This SPDT micro switch has three terminals. The lever is spring loaded in the “up” position. When the button is pushed down, continuity switches from COM and NC to COM and NO.

Testing

1. Disconnect the switch from the harness.
2. Verify the conditions from the table.

<table>
<thead>
<tr>
<th>Button</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up</td>
<td>Com + NC</td>
</tr>
<tr>
<td>Down</td>
<td>Com + NO</td>
</tr>
</tbody>
</table>

PTO Switch

Purpose

Used as part of the safety interlock circuit, it is typically used to monitor the position of the PTO lever.
Location

The PTO switch is located under the gas tank, inside of the steering tower, below the PTO lever (Figure 182).

How It Works

Operates the same as the Neutral Switch (used on 1999 and prior model lawn tractors).

Testing

Follow the same procedure as the Neutral Switch (used on 1999 and prior lawn tractors) (Figure 183).

Neutral Switch (Used on 2000 and Later Lawn Tractors)

Purpose

Used to ensure the transmission is in neutral when starting the unit. It is activated when the clutch/brake pedal is depressed.

Location

Under the tractor, in the channel of the frame, under the clutch/brake pedal (Figure 184).
How It Works

This single pole plunger type switch has two terminals. When the clutch/brake pedal is depressed, it pushes on the plunger, closing the contact, and connecting the two terminals (Figure 185).

Testing

1. Disconnect the switch from the wiring harness.
2. Check first to ensure that there is NO continuity between either terminal. Foot OFF the pedal.
3. With the clutch/brake pedal depressed there should be continuity between the terminals.

Seat Switch

Purpose

This switch is in the safety circuit. If the engine is running and the operator vacates the seat with either the PTO engaged or the parking brake off, the engine will shut down.

Test

1. Disconnect the plug and jack connection on the seat switch.
2. With a multimeter check the continuity between the two terminals. There should be NO continuity.

Location

The seat switch is located in the bottom of the seat between the seat cushion and the seat plate (Figure 186).

Figure 185

Figure 186

How It Works

When the seat is vacated, the switch is open and NO continuity between the two terminals. When the seat is occupied the switch closes and there should be continuity between the two terminals (Figure 187).

Figure 187
3. With weight or pressure on the seat, check the continuity again on the two terminals. There should be continuity.

**KeyChoice™ Reverse Operating System – Used on 1999 and Later XL Lawn Tractors**

This interlock feature is provided to prevent unintentional engine-powered attachment operation in reverse. If the tractor is shifted into reverse while the mower blade or other Power Take Off (PTO) driven attachment is engaged, the engine will stop. **DO NOT MOW WHILE BACKING UP UNLESS ABSOLUTELY NECESSARY.** If you need to mow while in reverse gear or use other PTO drive attachments (such as a snowthrower), this interlock feature may be temporarily deactivated.

Before deactivating this feature, be sure there are no children present on or near the property where you are using the tractor and that are likely to appear while you are mowing or operating an attachment. Be extra observant after you have chosen to deactivate the interlock feature because the sound of the tractor’s engine might prevent you from being aware that a child or a bystander has entered the area where you are operating the tractor.

Once you are sure you can safely mow in reverse or operate an attachment, deactivate the no-mow-in-reverse interlock system by turning the KeyChoice™ switch, located in front of seat, after engaging the blade (PTO). A red light will illuminate on the dash as a reminder that the no-mow-in-reverse interlock has been deactivated. Once the interlock is deactivated, it stays in this mode **WITH YOUR MOWER BLADE OR ATTACHMENT OPERATING WHENEVER YOU BACK-UP**, and the dash light stays on until either the blade (PTO) is disengaged, or the engine is turned off.

**Testing The Key Choice™ Reverse Operating System**

1. Move the Power Take Off (PTO) lever to the “disengage” position and move the gear shift lever to neutral on the gear shift model tractors. Depress the clutch/brake pedal.

2. Now start the engine.

3. While the engine is running, move the PTO lever to the “engage” position, on gear shift models, move the gear shift lever in reverse and on Hydro models move the forward/reverse pedal to reverse.

4. The engine should stop.

**Checking the KeyChoice™ System**

1. Move the PTO lever to the “disengage” position and move the gear shift lever to neutral on the gear shift model tractors. Depress the clutch/brake pedal.

2. Now start the engine.

3. Move the PTO lever to the “engage” position and turn the KeyChoice™ key and release (Figure 188).
4. A red light on the front console turns on, indicating that the interlock (No-Mow-In-Reverse) is disabled (Figure 189).

5. You should be able to operate the machine in reverse and the engine/mower will continue to run.

6. Move the PTO lever to the "disengage" position and the red light should turn off on the front console.

KeyChoice™ Reverse Operating System Switch

**Purpose**

This switch is used in the Key Choice™ Reverse Operating System circuit. When turned to the on position, it allows the operator to mow in reverse.

**How It Works**

The switch is basically an on/off switch spring-loaded to return to the off position. When turned to the On position with the PTO engaged, it activates circuits in the Key Choice™ Reverse Operating System reverse module and allows the operator to mow in reverse (Figure 190).

**Testing**

1. Disconnect the switch from the circuit.

2. With a multimeter, check the continuity across the two terminals.

3. Turn the key to the on position and hold, since the switch is spring loaded. There should be continuity across the two terminals.

Reverse Switch

**Purpose**

This switch works in the Key Choice™ Reverse Operating System circuit when the mower (PTO) is engaged.
**ELECTRICAL SYSTEM**

**Location**

The switch is located under the tractor, near the traction idler (Figure 191).

**How It Works**

This single pole plunger type switch has two terminals. When the unit is shifted in reverse while the mower blade (PTO engagement lever) is engaged, the reverse switch opens and will stop the engine, unless the KeyChoice switch has been operated.

**Testing**

1. Disconnect the switch from the wiring circuit.

2. With a multimeter, check the continuity across the terminals. There should be continuity.

3. Depress the plunger on the switch and check the continuity across the terminals, there should be NO continuity (Figure 192).

**KeyChoice™ Reverse Operating System Module**

**Purpose**

The Key Choice™ Reverse Operating System module works with the KeyChoice™ switch, PTO switch, and the reverse switch. It responds to the reverse switch; if the override switch (KeyChoice™ switch) is not activated and the PTO is engaged, it will stop the engine (Figure 193).
Location

The Key Choice™ Reverse Operating System module is located under the gas tank (Figure 194).

How it Works

The Key Choice™ Reverse Operating System is made up of several components, such as diodes and relays. When it is connected in the circuit, voltage is applied to certain terminals of the Key Choice™ Reverse Operating System module from the PTO switch, reverse switch, and the override switch, which energizes certain relays in the module. If voltage is not applied to the proper terminals on the Key Choice™ Reverse Operating System module, the engine will stop.

Testing

The Key Choice™ Reverse Operating System module must be removed from the circuit. Using a multimeter check the following:

* NOTE: If multimeter does not have a diode scale, this test can not be done. This is not a problem if powered tests are done. Powered test must be done to check out relays (Figure 195).

Powered circuit test (with module out of circuit). A 12 volt battery is needed for this test. NOTE: USE CAUTION WHEN MEASURING RESISTANCE WITH A POWERED CIRCUIT. CONTACTING A VOLTAGE SOURCE WITH METER IN OHMS POSITION CAN SERIOUSLY DAMAGE THE METER.

** NOTE: Actual reading should be same as B+ applied to Pin 2.
Electric PTO Switch

Purpose

The PTO (Power Take Off) switch is typically used to turn on the Electric PTO Clutch and to function as part of the safety interlock system.

Location

The PTO switch is located on the steering tower, below the steering wheel (Fig. A5 001).

How It Works

When the PTO switch is pulled to the “ON” position, contacts inside the switch electrically connects various terminals. One terminal is connected to the wire that goes directly to the electric clutch. When the PTO is pulled out to the “ON” position, current flows to the electric clutch and it engages.

Testing

1. Disengage the PTO, set the parking brake, turn the ignition to the “OFF” position and remove the key.
2. Remove the gas tank from the steering tower.
3. Disconnect the wiring harness from the PTO switch.
4. Press in on the locking tabs, on each side of the switch, and pull the switch out of the steering tower.
5. Verify that there is continuity between the appropriate terminals in the ON and OFF positions (Fig. A5 002).
6. Replace the switch if your test results do not correspond with those given in Fig. A5 002.
7. Mount the PTO switch back into the steering tower, reinstall the wiring harness, and install the gas tank.
ELECTRICAL SYSTEM

Electric PTO Clutch

Purpose

This clutch electrically controls the engagement and disengagement of the Power Take Off (PTO) pulley.

Location

The electric clutch is located on the PTO end of the engine crankshaft (Fig. A5 003).

How It Works

The PTO clutch is composed of three major components; the field, the clutch plate, and the friction plate. The clutch plate always turns with the engine. The field is a coil of wire on an iron core, which becomes an electromagnet when power is applied.

The friction plate is the only piece that can slide up and down on the crankshaft axis. It is normally spring loaded so that it is not in contact with the clutch plate and is pressed against the brake material opposite the clutch. When power is applied, the friction plate is drawn toward the clutch plate and the two rotate as one.

Testing

If the electric PTO clutch is not engaging or is suspected as a cause of electrical problems, use the following troubleshooting steps. These procedures will help you determine if the clutch has failed or is the cause of the electrical problem.

Coil Resistance Measurement

1. Disengage the PTO, set the parking brake, turn the ignition to OFF, and remove the key.
2. Disconnect the clutch wire connector.
3. Set the multimeter or volt/ohm meter to check resistance (ohms).
4. Connect the meter lead wires to the wires in the clutch connector (Fig. A5 004).
5. The meter should read 2.84 ohms ± 0.14 ohms. If the reading is above or below these readings, the field has failed and needs to be replaced. If the reading is between these two limits, measure the clutch current draw.
Measuring Clutch Current Draw

1. Disengage the PTO, set the parking brake, turn the ignition key to OFF, and remove the key.

2. Disconnect the clutch wire connector.

3. Set the multimeter to check amps (10 amp scale).

4. Connect the positive meter lead to the tractor terminal (1) of the clutch wire (Fig. A5 005).

5. Connect the negative meter lead to the corresponding wire terminal (3) (Fig. A5 005).

6. Connect a short jumper lead from terminal (2) to terminal (4) (Fig. A5 005).

7. Turn the ignition key in the switch to the “RUN” position and the PTO switch to the “ON” position.

8. If the meter is 4.23 amps or above, the system is functioning properly. If the meter reading is below 4.23 amps, check the electrical system for problems.
32" Mower

Removing 32" Mower

1. Park the machine on a level surface, disengage the PTO, shift into neutral, set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off of the spark plug.

3. Move the height-of-cut lever (deck lift) into the “D” notch.

4. Remove the height-of-cut lift assist spring from the retaining bolt (Figure 196), using the spring tool provided with the machine. The spring is between the frame and the right rear wheel.

5. Move the height-of-cut lever into the “A” notch.

6. Remove the hairpin cotter and washer from the blade control arm on the left side of the mower (Figure 197). Slide the rod off of the arm.

7. Remove the bolts and locknuts and pull the two mower pivot mount brackets down from the front axle (Figure 198).

CAUTION

When the mower is being removed, the spring-tensioned height-of-cut lever (deck lift) could suddenly release and injure you or someone else.

Move the height-of-cut lever to the “D” position and remove the height-of-cut assist spring to release the spring tension.

5. Move the height-of-cut lever into the “A” notch.
8. Remove the hairpin cotter and washer at the top of the mower leveling bracket (Figure 199). Slide the bracket off of the mounting pin. Repeat this step on the opposite side of the mower.

9. Remove the hairpin cotter and washer from the end of the long rod (Figure 199). Slide the rod out of the mower mount. Repeat this step on the opposite side of the mower.

**Important:** Tape or tie the long rods against the chassis to protect them from damage when you remove the mower.

10. Remove the mower belt from the lower engine pulley (Figure 200). If you are careful, you can flex the belt guide(s) just far enough away from the pulley to remove the belt. If it is too difficult to remove the belt, loosen the bolts and nuts securing the belt guides.

**Important:** Do not bend the belt guide(s) away from the pulley because the belt will not operate properly when the mower is installed later.

11. Turn the front wheels fully to the left. Slide the mower out to the right to complete the removal process.

**Installing 32" Mower**

1. Park the machine on a level surface, disengage the PTO, shift into neutral, set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off of the spark plug.

3. Turn the front wheels fully to the left. Slide the mower under the chassis from the right side.

4. Install the mower belt onto the lower engine pulley (Figure 200). If you are careful, you can flex the belt guide(s) just far enough away from the pulley to install the belt. If it is too difficult to install the belt, loosen the bolts and nuts securing the belt guides.
**Important:** Do not bend the belt guide(s) away from the pulley. There must be a maximum 1/8" (3mm) between the belt guide(s) and the edge of the pulley to keep the belt on the pulley during operation. If the space is more than 1/8" (3mm), adjust the belt guide(s) and tighten them securely. The belt guide(s) must not contact the pulley.

5. Install the mower pivot mount brackets to the front axle with bolts and locknuts (Figure 201).


7. Slide the end of the long rod through the hole in the mower mount (Figure 202). Install the washer and hairpin cotter to secure the rod in place. Repeat this step on the opposite side of the mower.

8. Mount the slotted mower leveling bracket onto the pin on the height-of-cut arm (Figure 202). Install the washer and hairpin cotter to secure the mower. Repeat this step on the opposite side of the mower.
9. Install the blade control rod onto the blade control arm and secure it with the washer and hairpin cotter (Figure 203).

10. Move the height-of-cut lever into the “D” notch to make it easier to install the height-of-cut lift assist spring.

11. Hook the height-of-cut lift assist spring onto the retaining bolt (Figure 204), using the spring tool provided with the machine.

12. Check the side-to-side blade level; refer to “Side-to-Side Mower Leveling” on page 6 - 5.

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**Blade Drive Belt**

**Removing the Blade Drive Belt**

1. Remove the mower; refer to “32” Mower” on page 6 - 1.

2. Loosen the belt guide mounting bolts and move the belt guides away from the pulley.

3. Remove the belt from the pulley.

**Installing the Blade Drive Belt**

1. Install the new belt around the blade pulley and inside both of the belt guides.

2. Adjust the belt guides so they are 1/8” (3mm) away from the pulley. Tighten the mounting bolts.

**Important:** Make certain the left side belt guide is very tight so it does not move when the brake spring pulls against it.

3. Install the mower; refer to “Installing 32” Mower” on page 6 - 2.
Side-to-Side Mower Leveling

The mower blades must be level from side to side. Check the side-to-side level any time you install the mower or when you see an uneven cut on your lawn. Before you level the mower, set the air pressure in the front and rear tires to the recommended inflation.

1. Park the machine on a level surface, disengage the PTO, shift into neutral, set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off of the spark plug.

3. Move the height-of-cut lever into the “C” notch.

4. Carefully rotate the blade(s) side to side (Figure 206). Measure between the outside cutting edges and the flat surface (Figure 206). If both measurements are not within 3/16 in. (5mm), an adjustment is required; refer to steps 5 and 6.

5. Remove the hairpin cotter and washer from the leveling bracket (Figure 207). To level the blade(s), reposition the leveling bracket in a different hole and install the washer and hairpin cotter. (Figure 207). A front hole lowers the blade height and a rear hole raises its height. Repeat this procedure on the opposite side of the mower.

6. Check the front-to-rear blade slope; refer to "Front-to-Rear Blade Slope" on page 6 - 5.

Front-to-Rear Blade Slope

Check the front-to-rear blade slope any time you install the mower. Before you check the slope, set the air pressure in the front and rear tires to the recommended inflation. If the front of the mower is more than 5/8 in. (16mm) lower than the rear of the mower, adjust the blade slope using the following instructions:

1. Park the machine on a level surface, disengage the PTO, shift into neutral, set the parking brake, stop the engine, and remove the ignition key.
2. Pull the wire off of the spark plug.

3. Check and adjust side-to-side blade level if you have not checked the setting; refer to “Side-to-Side Mower Leveling” on page 6 - 5.

4. Move the height-of-cut lever into the “C” notch.

5. Check the front-to-rear blade slope by measuring between the bottom of the mower (front center and rear center) and the flat surface (Figure 208). If the front of the mower is more than 5/8 in. (16mm) lower than the rear of the mower, an adjustment is required; refer to steps 6-10.

6. Measure the length of the rod extending out of the front of the adjusting block on the sides of the chassis (Figure 209). If the rod length is not 5/8 in. (16mm), remove the hairpin cotter and washer from the end of the rod (Figure 209), and turn the rod until the 5/8 in. (16mm) dimension is obtained. Then install the end of the rod into the hole in the mower mount and secure it in place with the washer and hairpin cotter. Repeat this procedure on the opposite side of the mower.

7. Check the front-to-rear slope again. If the front of the mower is more than 5/8 in. (16mm) lower than the rear of the mower, an adjustment is required; proceed to step 8 for the adjusting instructions. Otherwise, recheck the side-to-side level to ensure it did not change.

8. Adjust the front-to-rear slope by rotating the special slope adjusting nuts on both sides of the mower pivot mount (Figure 210).

9. Using a 1 in. wrench or socket, slowly rotate the left side slope adjusting nut down to raise the front of the mower and up to lower it (Figure 210). Rotate the slope adjusting nut until the front of the mower is 1/4 to 5/8 in. (6 to 16mm) lower than the rear of the mower.
10. Slowly rotate the right side slope adjusting nut until both adjusting nuts are in the same position.

**Important:** If the slope adjustment does not stay in position after you adjust it, tighten the center bolt and locknut and repeat step 9.

11. If the 1/4 to 5/8 in. (6 to 16mm) front slope cannot be achieved by rotating the slope adjusting nut, move the mower pivot mount at the mower (Figure 211).

12. Remove the shoulder bolts and locknuts from the mower (Figure 211).

13. Lower the mower pivot one hole and install the shoulder bolts and locknuts (Figure 211).

14. Repeat front-to-rear blade slope adjustment; refer to steps 8-10.

15. Recheck the front-to-rear slope again; refer to step 5.

16. When the front-to-rear blade slope is correct, recheck the side-to-side level of the mower; refer to "Side-to-Side Mower Leveling" on page 6 - 5.

17. Push the wire onto the spark plug.

**38” Mower**

**Removing 38” Mower**

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Move the height-of-cut lever (deck lift) into the "D" notch.
4. Remove the height-of-cut lift assist spring from the retaining bolt (Figure 212), using the spring tool provided with the machine. The spring is between the frame and the right rear wheel.

5. Move the height-of-cut lever (deck lift) into the “A” notch.

6. Unhook the blade control (PTO) cable ring end from the idler spring (Figure 213).

7. Remove rubber wiper and jam nut from blade control (PTO) cable at mounting bracket. Slide the cable from the bracket (Figure 213).

8. Move the cable out of the way and lay inside frame rail so it cannot get caught in drive belts or pulleys.

**CAUTION**

POTENTIAL HAZARD

- The height-of-cut lever (deck lift) is spring-tensioned.

WHAT CAN HAPPEN

- When the mower is being removed, this spring-loaded mechanism could suddenly release and injure you or someone else.

HOW TO AVOID THE HAZARD

- Move the height-of-cut lever (deck lift) to the “D” position and remove the height-of-cut lift assist spring to release the spring tension.
9. Remove the bolts and lock nuts and pull the two mower pivot mount brackets down from the front axle (Figure 214).

10. Remove the hairpin cotter and washer from the end of the long rod (Figure 215). Slide the rod out of the mower mount. Repeat this step on the opposite side of the mower.

11. Remove the hairpin cotter and washer at the mower leveling bracket (Figure 215). Slide the bracket off the mounting pin. Reinstall the washer and hairpin cotter for storage.

12. Rotate the leveling bracket up, toward the frame, and hook the long rod into one of the holes to store. Secure long rod with washer and hairpin cotter. Repeat for opposite side of the mower.

13. Move the height-of-cut lever (deck lift) into the “D” notch. Hook lift assist spring onto retaining bolt for storage (Figure 212).

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**Figure 214**

| (A) Pivot Mount Bracket | (B) Bolt 5/16-17 x 2-1/2” | (C) Lock Nut |

**Figure 215**

| (A) Hairpin Cotter & Washer | (B) Long Rod |
| (C) Leveling Bracket | (D) Mower Mount |
14. Remove the mower belt from the lower engine pulley (Figure 216). If you are careful, you can flex the belt guide(s) just far enough away from the pulley to remove the belt. If it is too difficult to remove the belt, loosen the bolts and nuts securing the belt guides.

**IMPORTANT:** Do not bend the belt guide(s) away from the pulley because the belt will not operate properly when the mower is installed later.

15. Turn the front wheels fully to the left. Slide the mower out to the right to complete removal.

**Installing 38” Mower**

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Turn the front wheels fully to the left. Slide the mower under the chassis from the right side.

4. Install mower belt onto the lower engine pulley (Figure 216). If you are careful, you can flex the belt guide(s) just far enough away from the pulley to install the belt. If it is too difficult to install the belt, loosen the bolts and nuts securing the belt guides.

**IMPORTANT:** Do not bend the belt guide(s) away from the pulley. There must be a maximum 1/8” (3mm) between the belt guide(s) and the edge of the pulley to keep the belt on the pulley during operation. If the space is more than 1/8” (3mm), adjust the belt guide(s) and tighten them securely. The belt guide(s) must not contact the pulley.

5. Install the mower pivot mount brackets to the front axle with bolts and lock nuts (Figure 217).

6. Move the height-of-cut lever (deck lift) into the “A” notch.
7. Slide the end of the long rod through the hole in the mower mount (Figure 218). Install the washer and hairpin cotter to secure the rod in place. Repeat this step on the opposite side of the mower.

8. Mount the slotted mower leveling bracket onto the pin on the height-of-cut arm (Figure 218). Install the washer and hairpin cotter to secure the mower. Repeat this step on the opposite side of the mower.

9. Look under tractor and take down blade control (PTO) cable nested inside frame rail.

10. Remove the rubber wiper and first jam nut. Thread second jam nut onto the blade control (PTO) cable all the way. Route cable through slot in deck bracket and thread second jam nut onto cable (Figure 219).

11. Hook end of blade control (PTO) cable onto idler spring (Figure 219).

12. Engage blade control (PTO) lever on dash. Measure distance between hook ends of idler spring (Figure 220). Adjust jam nuts so 6" (150mm) dimension is obtained (Figure 220).

13. Tighten jam nuts securely, replace rubber wiper and disengage blade control (PTO).
14. Move the height-of-cut lever (deck lift) into the “D” notch to make it easier to install the height-of-cut lift assist spring.

15. Hook the height-of-cut lift assist spring onto the retaining bolt (Figure 212), using the spring tool provided with the machine.


Blade Drive Belt

Removing the Blade Drive Belt

1. Remove the mower; refer to "Removing 38” Mower” on page 6 - 7.

2. Remove the pulley cover mounting screws and pulley covers from both blade pulleys (Figure 221).

3. Loosen, but do not remove the bolt and nut securing the idler pulley and belt guide (Figure 221).

4. Remove the belt from the pulleys.

Installing the Blade Drive Belt

1. Install the new belt around the blade pulleys and under the belt guide on the idler pulley.

2. Position the idler pulley belt guide so it points toward the left, 90° to the idler arm (Figure 221). Tighten the mounting bolt and lock nut securing the idler pulley and belt guide.

3. Install the left and right pulley covers with the mounting screws (Figure 221).

4. Install the mower; refer to “Installing 38” Mower” on page 6 - 10.

Side-to-Side Mower Leveling

The mower blades must be level from side to side. Check the side-to-side level any time you install the mower or when you see an uneven cut on your lawn. Before you level the mower, set the air pressure in the front and rear tires to the recommended inflation.

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Move the height-of-cut lever (deck lift) into the “C” notch.
4. Carefully rotate blade(s) side to side (Figure 222). Measure between the outside cutting edges and the flat surface (Figure 222). If both measurements are not within 3/16" (5mm), an adjustment is required; refer to steps 5 and 6.

5. Remove the hairpin cotter and washer from the leveling bracket (Figure 223). To level the blade(s), reposition the leveling bracket in a different hole and install the washer and hairpin cotter (Figure 223). A front hole lowers the blade height and a rear hole raises its height. Repeat this procedure on the opposite side.

6. Check the front-to-rear blade slope; refer to "Front-to-Rear Blade Slope" on page 6 - 13.

**Front-to-Rear Blade Slope**

Check the front-to-rear blade slope any time you install the mower. Before you check the slope, set the air pressure in the front and rear tires to the recommended inflation. If the front of the mower is not within a range of 1/8" - 3/8" (3mm - 9mm) lower than the rear of the mower, adjust the blade slope using the following instructions:

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Check and adjust side-to-side blade level if you have not checked the setting; refer to "Side-to-Side Mower Leveling" on page 6 - 12.
4. Move the height-of-cut lever (deck lift) into the “C” notch.

5. Measure the length of the rod extending out the front of the adjusting block on the sides of the chassis (Figure 224). If the rod length is not 5/8” (16mm), remove the hairpin cotter and washer from the end of the rod (Figure 224), and turn the rod until the 5/8” (16mm) dimension is obtained. Then install the end of the rod into the hole in the mower mount and secure in place with washer and hairpin cotter. Repeat this procedure on the opposite side of the mower.

6. Check the front to rear slope by measuring between the bottom of the mower (front center and rear center) and the flat surface (Figure 225). If the front is not within a range of 1/8” - 3/8” (3mm - 9mm) lower than the rear, an adjustment is required.

7. To adjust front-to-rear blade slope loosen front pivot plate mounting bolts slightly (Figure 226).

8. Rotate lock nuts on eyebolts to change adjustment (Figure 226). To raise the front of the mower, tighten the eyebolt lock nuts. To lower the front of the mower, loosen the eyebolt lock nuts.

9. After adjusting both eyebolt lock nuts evenly, check the front-to-rear slope again. Continue adjusting eyebolts until the front blade tip is 1/8” - 3/8” (3 - 9mm) lower than the rear blade tip (Figure 226).
10. When front-to-rear slope is correct, tighten the pivot plate mounting bolts (Figure 226).

![Figure 226](image1)

(A) Pivot Mounting Bolt  (B) Eyebolt Locknut

11. When front-to-rear slope is correct, recheck the side-to-side level of the mower; refer to "Side-to-Side Mower Leveling" on page 6-12.

44" Mower

Removing 44" Mower

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Move the height-of-cut lever (deck lift) into the “D” notch.

4. Remove the height-of-cut lift assist spring from the retaining bolt (Figure 227), using the spring tool provided with the machine. The spring is between the frame and the right rear wheel.

![Figure 227](image2)

(A) Spring  (B) Bolt  (C) Spring Tool

CAUTION

POTENTIAL HAZARD
- The height-of-cut lever (deck lift) is spring-tensioned.

WHAT CAN HAPPEN
- When the mower is being removed, this spring-loaded mechanism could suddenly release and injure you or someone else.

HOW TO AVOID THE HAZARD
- Move the height-of-cut lever (deck lift) to the “D” position and remove the height-of-cut lift assist spring to release the spring tension.

5. Move the height-of-cut lever (deck lift) into the “A” notch.

6. Unhook the blade control (PTO) cable Z end from the idler arm on the mower (Figure 228).

7. Remove rubber wiper and jam nut from blade control (PTO) at mounting bracket. Slide the cable from the bracket and re-install jam nut for safekeeping (Figure 228).
8. Move the cable out of the way and lay inside frame rail so it can not get caught in drive belts or pulleys.

9. Remove the bolts and lock nuts and pull the two mower pivot mount brackets down from the front axle (Figure 229).

10. Remove the hairpin cotter and washer from the end of the long rod (Figure 230). Slide the rod out of the mower mount.

11. Remove the hairpin cotter and washer at the mower leveling bracket (Figure 230). Slide the bracket off the mounting pin. Re-install the washer and hairpin cotter for storage.

12. Rotate the leveling bracket up, toward the frame, and hook the long rod into one of the holes to store. Secure long rod with washer and hairpin cotter.

13. Repeat steps 10-12 on the opposite side of the mower.

14. Move the height-of-cut lever (deck lift) into the “D” notch. Hook lift assist spring onto retaining bolt for storage (Figure 227).

**Note:** Do not install lift assist spring if rear tire chains are to be installed.
15. Remove the mower belt from the engine pulley (Figure 231). If you are careful, you can flex the belt guide(s) just far enough away from the pulley to remove the belt. If it is too difficult to remove the belt, loosen the bolts and nuts securing the belt guides. Tighten bolts.

**IMPORTANT:** Do not bend the belt guide(s) away from the pulley because the belt will not operate properly when the mower is installed later.

**Figure 231**

![Diagram of mower belt and engine pulley](image)

(A) Mower Belt       (C) Belt Guides
(B) Engine Pulley

16. Turn the front wheels fully to the left. Slide the mower out to the right to complete removal.

### Installing 44” Mower

**DANGER**

**POTENTIAL HAZARD**
- Without the grass deflector, mulch baffle, or complete grass catcher assembly mounted in place, you and others are exposed to blade contact and thrown debris.

**WHAT CAN HAPPEN**
- Contact with rotating mower blade(s) and thrown debris will cause injury or death.

**HOW TO AVOID THE HAZARD**
- NEVER remove the grass deflector from the mower because the grass deflector routes material down toward the turf. If the grass deflector is ever damaged, replace it immediately.
- Never put your hands or feet under the mower.
- Never try to clear discharge area or mower blades unless you move the power take off (PTO) to “OFF” and rotate the ignition key to “OFF.” Also remove the key and pull the wire off the spark plug(s).

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Turn the front wheels fully to the left. Slide the mower under the chassis from the right side.
4. Install mower belt onto the lower engine pulley (Figure 232). If you are careful, you can flex the belt guide(s) just far enough away from the pulley to install the belt. If it is too difficult to install the belt, loosen the bolts and nuts securing the belt guides.

**IMPORTANT:** Do not bend the belt guides away from the pulley. There must be a maximum 1/8” (3mm) between the belt guide and the edge of the pulley to keep the belt on the pulley during operation. If the space is more than 1/8” (3mm), adjust the belt guide(s) and tighten them securely. The belt guide must not contact the pulley.

5. Install the mower pivot mount brackets onto the front axle with bolts and lock nuts (Figure 233). Tighten fasteners.

6. Move the height-of-cut lever (deck lift) into the “D” notch.

7. Hook the lift assist spring between the mower right side lift bracket and the retaining bolt (Figure 234). Use the spring tool provided with the machine.
8. Move the height-of-cut lever (deck lift) into the “A” notch.

9. Check that both rods extend 5/8” (16mm) beyond adjustment block (Figure 235).

10. Slide the end of the long rod through the hole in the mower mount (Figure 235). Install the thin washer and hairpin cotter to secure the rod in place. Repeat this step on the opposite side of the mower.

11. Mount the slotted mower leveling bracket onto the pin on the mower mount (Figure 235). Install the thick washer and hairpin cotter to secure the mower. Repeat this step on the opposite side of the mower.

12. Look under tractor and take down blade control (PTO) cable nested inside frame rail.

13. Thread first jam nut onto the blade control (PTO) cable all the way. Rout cable through slot in deck bracket and thread second jam nut onto cable (Figure 236).

14. Hook Z end of blade control (PTO) cable into bellcrank arm (Figure 236).

15. Engage blade control (PTO) lever on dash. Measure distance between Z end of cable and mounting bracket (Figure 237). Adjust jam nuts so 3-1/2” (89mm) dimension is obtained (Figure 236).

16. Tighten jam nuts securely, replace the rubber boot, and disengage blade control (PTO).
17. Check that blade brake pads contact pulleys and actuating rods are loose when blade control (PTO) is disengaged, and that brake pads are away from pulleys when blade control (PTO) is engaged; refer to "Adjusting Blade Brakes" on page 6 - 22.

18. Move the height-of-cut lever (deck lift) into the “D” notch to make it easier to install the height-of-cut lift assist spring.

19. Hook the lift assist spring between the mower right side lift bracket and the retaining bolt (Figure 237) Use the spring tool provided with the machine.

20. Check mower level; refer to "Side-to-Side Mower Leveling" on page 6 - 22, and "Front-to-Rear Blade Slope" on page 6 - 23.

**Installing 44” Recycler Baffle**

1. Thoroughly clean the mower. All debris must be removed to ensure baffle will fit properly against cutting chamber.

2. Place the left side baffle inside cutting chamber. Secure the baffle to mower with 1-1/4” bolts through baffle and outside of deck (Figure 238). Secure with 5/16” lock nuts.

3. Tighten all mounting hardware securely.
4. Rotate blades to assure there is at least 1/8" (3mm) clearance between blades and baffle.


![Diagram of mower parts]

(A) Baffle Left Side  (D) Belleville Washer
(B) Baffle Right Side  (E) Lock Nut 5/16"
(C) Bolt 5/16-18 x 1-1/4"

Removing 44" Recycler Baffle

1. Thoroughly clean the mower.

2. Remove lock nuts from right side baffle (Figure 238). Lift baffle and slide out of interlock with left side baffle to remove.

   **Note:** Only the right side baffle need be removed for side discharge mowing.

   **Note:** Save hardware for use when installing baffle.

Blade Drive Belt

Removing the Blade Drive Belt

1. Remove the mower; refer to "Removing 44" Mower" on page 6 - 15.

2. Remove the pulley cover mounting screws and pulley covers from blade pulleys (Figure 239).

3. Loosen idler pulley mounting bolts to move belt guides (Figure 239).

4. Remove the belt from the pulleys (Figure 239).

Installing the Blade Drive Belt

1. Install the new belt around the blade pulleys and the idler pulleys.

2. Adjust belt guide on idler pulley as shown and tighten mounting bolt (Figure 239).

3. Install the left and right pulley covers with the mounting screws (Figure 239).
4. Install the mower; refer to "Installing 44" Mower" on page 6 - 17.

Adjusting Blade Brakes

1. Engage blade control (PTO) lever.

2. Adjust blade control cable to the correct engaged dimension; refer to "Installing 44" Mower" on page 6 - 17.

3. Using a feeler gage, measure between the bottom flange of each blade pulley and brake pad (Figure 240). Adjust lock nut on brake rods to obtain proper clearance .020-.060 inch (.5-1.5mm) (Figure 240).

4. Disengage blade control (PTO) lever, check that blade brake pads contact pulleys and actuating rods are loose when blade control (PTO) is disengaged, and that brake pads are away from pulleys when blade control (PTO) is engaged.

Side-to-Side Mower Leveling

The mower blades must be level from side to side. Check the side-to-side level any time you install the mower or when you see an uneven cut on your lawn. Before you level the mower, set the air pressure in the front and rear tires to the recommended inflation.

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Move the height-of-cut lever (deck lift) into the "C" notch.
4. Carefully rotate blade(s) side to side (Figure 241). Measure between the outside cutting edges and the flat surface (Figure 241). If both measurements are not within 3/16” (5mm), an adjustment is required; refer to steps 5 and 6.

5. Remove the hairpin cotter and washer from the leveling bracket (Figure 242). To level the blade(s), reposition the leveling bracket(s) in a different hole and install the washer and hairpin cotter (Figure 242). A front hole lowers the blade height and a rear hole raises its height. Adjust both sides as required.

6. Check the front-to-rear blade slope; refer to "Front-to-Rear Blade Slope" on page 6 - 23.

**Front-to-Rear Blade Slope**

Check the front-to-rear blade slope any time you install the mower. Before you check the slope, set the air pressure in the front and rear tires to the recommended inflation. If the front of the mower is more than 3/16” (5mm) lower than the rear of the mower, adjust the blade slope using the following instructions:

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.

2. Pull the wire off the spark plug.

3. Check and adjust side-to-side blade level if you have not checked the setting; refer to "Side-to-Side Mower Leveling" on page 6 - 22.
4. Measure the length of the rod extending out the front of the adjusting block on the sides of the chassis (Figure 243). If the rod length is not 5/8" (16mm), remove the hairpin cotter and washer from the end of the rod (Figure 243), and turn the rod until the 5/8" (16mm) dimension is obtained. Then install the end of the rod into the hole in the mower mount and secure in place with washer and hairpin cotter. Repeat this procedure on the opposite side of the mower.

5. Move the height-of-cut lever (deck lift) into the "C" notch and carefully rotate the blades so they are facing front to rear (Figure 244).

6. Measure between the tip of the front blade (Figure 244) and the tip of the rear blade to the flat surface. If the front blade tip is not 0-5/16" (0-8mm) lower than the rear blade tip an adjustment is needed (Figure 244).

7. To adjust front-to-rear blade slope loosen front pivot plate mounting bolts slightly (Figure 245).

8. Rotate lock nuts on eyebolts to change adjustment (Figure 245). To raise the front of the mower tighten the eyebolt lock nuts. To lower the front of the mower loosen the eyebolt lock nuts.

9. After adjusting both eyebolt lock nuts evenly, check the front-to-rear slope again. Continue adjusting eyebolts until the front blade tip is 0-5/16" (0-8mm) lower than the rear blade tip (Figure 245).
10. When front-to-rear slope is correct, tighten the pivot plate mounting bolts (Figure 245).

11. When front-to-rear blade slope is correct, recheck the side-to-side level of the mower; refer to "Side-to-Side Mower Leveling" on page 6 - 22.

12. Check gage wheel height.
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32” Mower

32” Mower Brake Adjustment

1. Lower the mower to the lowest height of cut position.
2. With the engine OFF, engage the mower (PTO) lever.
3. Check the clearance between the brake pad on the brake arm assembly and the mower drive pulley. It should be set at .015” (.38mm) gap (Fig. A6 001).

4. If adjustment is needed, turn the adjustment nut located on the brake rod to achieve .015” (.38 mm) gap (Fig. A6 001).

38” Mower with Manual PTO Clutch

38” Mower Brake Adjustment

1. Lower the mower to the lowest height of cut position.
2. With the engine OFF, engage the mower (PTO) lever.
3. Check the clearance between the brake pad on the brake arm assembly and the mower drive pulley. It should be set between .06” – .12” (1.5mm – 3.0mm) away from the deck pulley (Fig. A6 002).

4. If adjustment is needed, turn the adjustment nut located on the brake rod to achieve .06” – .12” (1.5mm – 3.0mm) gap.
44” Mower with Manual PTO Clutch

44” Mower Brake Adjustment

1. Lower the mower to the lowest height of cut position.
2. With the engine OFF, engage the mower (PTO) lever.
3. Check the clearance between the brake pads on the brake arm assemblies on the right and left mower drive pulleys. They should be set between .06” – .12” (1.5mm – 3.0mm) away from the deck pulleys (Fig. A6 003).
4. If adjustment is needed, turn the adjustment nut located on each end of the brake rods to achieve .06” – .12” (1.5mm – 3.0mm) gap.

![Diagram of 44” Mower with Manual PTO Clutch](image)

- A. Mower pulleys
- B. Adjustment nuts
- C. Brake rods
- D. Brake pad gap .06” – .12” (1.5mm – 3.0mm)

38” Mower with Electric PTO Clutch

Removing 38” Mower with Electric PTO Clutch

1. Park the tractor on a level surface.
2. Disengage the PTO and set the parking brake.
3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
5. Remove the height-of-cut lift assist spring from the retaining bolt. The spring is between the frame and the right rear wheel (Fig. A6 004).

Note: Use the spring tool provided with the machine.

![Diagram of 38” Mower with Electric PTO Clutch](image)

- A. Spring
- B. Bolt
- C. Spring tool

**CAUTION**

When you remove the mower, the spring-tensioned height-of-cut lever could suddenly release and injure you or someone else.

Move the height-of-cut lever to the “D” position and remove the height-of-cut assist spring to release the spring tension.

7. Unhook the spring on the idler pulley arm from the bracket on the mower (Fig. A6 005).

8. Remove the bolts and lock nuts and pull the two mower pivot mount brackets down from the front axle (Fig. A6 006).

9. Remove the hairpin cotter and washer from the end of the long rod (Fig. A6 007). Slide the rod out of the mower mount.

10. Remove the hairpin cotter and washer at the mower leveling bracket (Fig. A6 007). Slide the bracket off of the mounting pin. Install the washer and hairpin cotter for storage.

11. Rotate the leveling bracket up toward the frame, and hook the long rod into one of the holes to store. Secure the long rod with the washer and hairpin cotter.

12. Repeat steps 9 through 11 on the opposite side of the mower.

13. Move the height-of-cut lever into the “D” notch. Hook the lift assist spring onto the retaining bolt for storage (Fig. A6 004).
14. Remove the mower belt from the electric clutch pulley (Fig. A6 008).

15. Turn the front wheels fully to the left. Slide the mower out to the right to complete removal.

Installing 38” Mower with Electric PTO Clutch

**DANGER**

Without the grass deflector, discharge cover, or complete grass catcher assembly mounted in place, you and others are exposed to blade contact and thrown debris. Contact with the rotating mower blade(s) and thrown debris will cause injury or death.

- Never remove the grass deflector from the mower because the grass deflector routes material down toward the turf. If the grass deflector is ever damaged, replace it immediately.

- Never put your hands or feet under the mower.

- Never try to clear the discharge area or mower blades unless you move the power take off (PTO) to Off and rotate the ignition key to Off. Also remove the key and pull the wire off of the spark plug(s).

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, and turn the ignition key to Off to stop the engine. Remove the key.

2. Turn the front wheels fully to the left. Slide the mower under the chassis from the right side.

3. Install the mower belt onto the lower engine pulley (Fig. A6 008).
4. Install the mower pivot mount brackets onto the front axle with the bolts and locknuts (Fig. A6 009).

5. Move the height-of-cut lever into the D notch.

6. Remove the lift assist spring between the mower right side lift bracket and the retaining bolt (Fig. A6 010).

**Note:** Use the spring tool provided with the machine.

7. Move the height-of-cut lever into the A notch.

8. Slide the end of the long rod through the hole in the mower mount (Fig. A6 011).

9. Install the thin washer and hairpin cotter to secure the rod in place (Fig. A6 011).

10. Mount the slotted mower leveling bracket onto the pin on the mower mount (Fig. A6 011).

11. Install the thick washer and hairpin cotter to secure the mower (Fig. A6 011).

12. Repeat steps 8 through 11 on the opposite side of the mower.
13. Hook the idler spring from the idler pulley arm to the eyebolt on the mower (Fig. A6 012).

14. Move the height-of-cut lever into the D notch to make it easier to install the height-of-cut lift assist spring.

15. Hook the lift assist spring between the mower right side lift bracket and the retaining bolt (Fig. A6 013).

Note: Use the spring tool provided with the machine.

16. Check the mower level; refer to Leveling the Mower from Side-to-Side on page A6-7 and Front-to-Rear Blade Slope on page A6-9.
Replacing the Blade Drive Belt

Removing the Blade Drive Belt, 38” Mower with Electric PTO Clutch

1. Remove the mower; refer to Removing the Mower on page A6-2.

2. Remove the pulley cover mounting screws and pulley covers from both blade pulleys (Fig. A6 014 top view).

3. Loosen, but do not remove, the bolt and nut securing the idler pulley and belt guide (Fig. A6 014).

4. Remove the belt from the pulleys.

Installing the Blade Drive Belt, 38” Mower with Electric PTO Clutch

1. Install the new belt around the blade pulleys and under the belt guide on the idler pulley.

2. Position the idler pulley belt guide so it points toward the left, 90° to the idler arm (Fig. A6 014). Tighten the mounting bolt and lock nut securing the idler pulley and belt guide.

3. Install the left and right pulley covers with the mounting screws (Fig. A6 014).

4. Install the mower; refer to Installing the Mower on page A6-4.

Leveling 38” Mower from Side-to-Side

The mower blades must be level from side to side. Check the side-to-side level any time you install the mower or when you see an uneven cut on your lawn. Before you level the mower, set the air pressure in the front and rear tires to the recommended inflation.

1. Park the tractor on a level surface.

2. Disengage the PTO and set the parking brake.

3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

4. Move the height-of-cut lever into the C notch.
5. Carefully rotate the blades side to side (Fig. A6 015). Measure between the outside cutting edges and the flat surface. If both measurements are not within 3/16" (5mm), an adjustment is required; refer to steps 6 and 7.

6. Remove the hairpin cotter and washer from the leveling bracket. To level the blades, reposition the leveling bracket in a different hole and install the washer and hairpin cotter. A front hole lowers the blade height and a rear hole raises its height. Repeat this procedure on the opposite side of the mower (Fig. A6 016).

7. Check the front-to-rear blade slope; refer to Adjusting the Front-to-Rear Blade Slope on page A6-9.
Adjusting 38” Mower Front-to-Rear Blade Slope

Check the front-to-rear blade slope any time you install the mower. Before you check the slope, set the air pressure in the front and rear tires to the recommended inflation; refer to Specifications, Section 1. If the front of the mower is not within a range of 1/8” to 3/8” (4 to 11mm) lower than the rear of the mower, adjust the blade slope using the following instructions:

1. Park the tractor on a level surface.

2. Disengage the PTO and set the parking brake.

3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

4. Check and adjust the side-to-side blade level if you have not checked the setting; refer to Leveling the Mower from Side-to-Side on page A6-7.

5. Measure the length of the rod extending out of the front of the adjusting block on the sides of the chassis (Fig. A6 017).

6. Install the end of the rod into the hole in the mower mount and secure it with the washer and hairpin cotter. Repeat this procedure on the opposite side of the mower.

7. Check the front-to-rear slope by measuring between the bottom of the mower (front center and rear center) and the flat surface. If the front is not within a range of 1/8” to 3/8” (4 to 11mm) lower than the rear, an adjustment is required (Fig. A6 018).

Note: If the rod length is not 5/8” (16mm), remove the hairpin cotter and washer from the end of the rod (Fig. 48) and turn the rod until you obtain the 5/8” (16mm) dimension.
8. To adjust the front-to-rear blade slope, loosen the front pivot plate mounting bolts slightly (Fig. A6 019).

9. Rotate the locknuts on the eyebolts to change the adjustment (Fig. A6 019). To raise the front of the mower, tighten the eye bolt locknuts. To lower the front of the mower, loosen the eye bolt locknuts.

10. After adjusting both eyebolt locknuts evenly, check the front-to-rear slope again. Continue adjusting the eye bolts until the front blade tip is 0 to 3/8” (0 - 9mm) lower than the rear blade tip (Fig. A6 018).

11. When the front-to-rear slope is correct, tighten the pivot plate mounting bolts (Fig. A6 019).

12. When the front-to-rear blade slope is correct, recheck the side-to-side level of the mower; refer to Leveling the Mower from Side-to-Side on page A6-7.

**44” Mower with Electric PTO Clutch**

**Removing 44” Mower with Electric PTO Clutch**

1. Park the machine on a level surface, disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.


3. Remove the lift assist spring between the mower right side lift bracket and the retaining bolt (Fig. A6 020).

**Note:** Use the spring tool provided with the machine.

4. Move the height-of-cut lever into the A notch.
5. Unhook the spring on the idler pulley arm from the bracket on the mower (Fig. A6 021 viewed from the left side).

6. Remove the bolts and lock nuts and pull the two mower pivot mount brackets down from the front axle (Fig. A6 022).

7. Remove the hairpin cotter and washer from the end of the long rod (Fig. A6 023). Slide the rod out of the mower mount.

8. Remove the hairpin cotter and washer at the mower leveling bracket (Fig. A6 023). Slide the bracket off of the mounting pin. Install the washer and hairpin cotter for storage.

9. Rotate the leveling bracket up toward the frame, and hook the long rod into one of the holes to store. Secure the long rod with the washer and hairpin cotter.

10. Repeat steps 7 through 9 on the opposite side of the mower.

11. Move the height-of-cut lever into the D notch and hook the lift assist spring onto the retaining bolt for storage (Fig. A6 020).

**Note:** Do not install the lift assist spring if the rear tire chains are to be installed.
12. Remove the mower belt from the electric clutch pulley (Fig. A6 024 top view).

![Diagram](image)

**A**. Electric clutch pulley  **B**. Mower belt

13. Turn the front wheels fully to the left. Slide the mower out to the right to complete removal.

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**Installing 44” Mower with Electric PTO Clutch**

**DANGER**

Without the grass deflector, discharge cover, or complete grass catcher assembly mounted in place, you and others are exposed to blade contact and thrown debris. Contact with the rotating mower blade(s) and thrown debris will cause injury or death.

- Never remove the grass deflector from the mower because the grass deflector routes material down toward the turf. If the grass deflector is ever damaged, replace it immediately.

- Never put your hands or feet under the mower.

- Never try to clear the discharge area or mower blades unless you move the power take off (PTO) to Off and rotate the ignition key to Off. Also remove the key and pull the wire off of the spark plug(s).

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, and turn the ignition key to Off to stop the engine. Remove the key.

2. Turn the front wheels fully to the left. Slide the mower under the chassis from the right side.
3. Install the mower belt onto the electric clutch pulley (Fig. A6 025 top view).

4. Install the mower pivot mount brackets onto the front axle with the bolts and locknuts (Fig. A6 026).

5. Move the height-of-cut lever into the D notch.

6. Remove the lift assist spring between the mower right side lift bracket and the retaining bolt (Fig. A6 027).

Note: Use the spring tool provided with the machine.

7. Move the height-of-cut lever into the A notch.
8. Ensure that both rods extend 5/8" (16mm) beyond the adjustment block (Fig. A6 028).

9. Slide the end of the long rod through the hole in the mower mount (Fig. A6 028).

10. Install the thin washer and hairpin cotter to secure the rod in place (Fig. A6 028).

11. Mount the slotted mower leveling bracket onto the pinion on the mower mount (Fig. A6 028).

12. Install the thick washer and hairpin cotter to secure the mower (Fig. A6 028).

13. Repeat steps 9 through 12 on the opposite side of the mower.

14. Hook the spring from the idler pulley arm to the bracket on the mower (Fig. A6 029 viewed from the left side).

15. Move the height-of-cut lever into the D notch to make it easier to install the height-of-cut lift assist spring.

Fig A6 028

Fig A6 029

A. Adjusting block  C. Hairpin cotter and washer
B. Adjusting rod  D. Mower mount

A. Bracket  C. Idler pulley arm
B. Spring
16. Hook the lift assist spring between the mower right side lift bracket and the retaining bolt (Fig. A6 030).

Note: Use the spring tool provided with the machine.

17. Check the mower level; refer to Leveling the Mower from Side-to-Side on page A6-16 and Front-to-Rear Blade Slope on page A6-17.

Replacing the Blade Drive Belt, 44” Mower with Electric PTO Clutch

Removing the Blade Drive Belt, 44” Mower with Electric PTO Clutch

1. Remove the mower; refer to Removing the Mower on page A6-10.

2. Remove the pulley cover mounting screws and pulley covers from both blade pulleys (Fig. A6 031 top view).

3. Loosen the pivoting idler pulley mounting bolt to allow the belt past the belt guide (Fig. A6 031).

4. Remove the belt from the pulleys (Fig. A6 031).
Installing the Blade Drive Belt, 44” Mower with Electric PTO Clutch

1. Install the new belt around the blade pulleys and the idler pulleys.
2. Tighten the idler pulley mounting bolt (Fig. A6 031).
3. Install the left and right pulley covers with the mounting screws (Fig. A6 031).
4. Install the mower; refer to Installing the Mower on page A6-12.

Leveling 44” Mower from Side-to-Side

The mower blades must be level from side to side. Check the side-to-side level any time you install the mower or when you see an uneven cut on your lawn. Before you level the mower, set the air pressure in the front and rear tires to the recommended inflation.

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, and turn the ignition key to Off to stop the engine. Remove the key.
2. Disconnect the wire from the spark plug.
3. Move the height-of-cut lever into the C notch.
4. Carefully rotate the blades side to side. Measure between the outside cutting edges and the flat surface. If both measurements are not within 3/16” (5mm), an adjustment is required; refer to steps 5 and 8 (Fig. A6 032).

5. Remove the hairpin cotter and washer from the leveling bracket (Fig. A6 033).
6. To level the blades, reposition the leveling bracket in a different hole and install the washer and hairpin cotter (Fig. A6 033). A front hole lowers the blade height and a rear hole raises its height.

7. Repeat steps 5 and 6 on the opposite side of the mower.

8. Check the front-to-rear blade slope; refer to Adjusting the Front-to-Rear Blade Slope on page A6-17.

Adjusting 44” Mower Front-to-Rear Blade Slope

Check the front-to-rear blade slope any time you install the mower. Before you check the slope, set the air pressure in the front and rear tires to the recommended inflation; refer to Specifications, Section 1.

1. Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, and turn the ignition key to Off to stop the engine. Remove the key.

2. Disconnect the wire from the spark plug.

3. Check and adjust the side-to-side blade level if you have not checked the setting; refer to Leveling the Mower from Side-to-Side on page A6-16.

4. Measure the length of the rod extending out of the front of the adjusting block on the sides of the chassis (Fig. A6 034).

Note: If the rod length is not 5/8” (16mm), remove the hairpin cotter and washer from the end of the rod and turn the rod until you obtain the 5/8” (16mm) dimension.

5. Install the end of the rod into the hole in the mower mount and secure it with the washer and hairpin cotter.

6. Repeat steps 4 and 5 on the opposite side of the mower.

7. Move the height-of-cut lever into position C.

8. Carefully rotate the blades so that they are facing front to rear.
9. Check the front-to-rear slope by measuring between the bottom of the mower (front center and rear center) and the flat surface (Fig. A6 035).

If the front blade tip is not within a range of 0 to 5/16" (0 to 8mm) lower than the rear, adjust the front-to-rear blade slope (steps 10 through 13); otherwise, skip to step 14.

10. To adjust the front-to-rear blade slope, loosen the front pivot plate mounting bolts slightly (Fig. A6 036).

11. Rotate the locknuts on the eyebolts to change the adjustment (Fig. A6 036). To raise the front of the mower, tighten the eyebolt locknuts. To lower the front of the mower, loosen the eyebolt locknuts.

12. After adjusting both eyebolt locknuts evenly, check the front-to-rear slope again. Continue adjusting the eyebolts until the front blade tip is 0 to 5/16" (0 to 8mm) lower than the rear blade tip.

13. When the front-to-rear slope is correct, tighten the pivot plate mounting bolts (Fig. A6 036).

14. When the front-to-rear blade slope is correct, check the side-to-side level of the mower; refer to Leveling the Mower from Side-to-Side on page A6-16.