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XL Lawn Tractor

Service Manual



PREFACE

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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SPECIFICATIONS

Specifications

Engines	Fuel Capacity	Steering
All tractors since 1993 were manufactured with Briggs & Stratton engines ranging from 10 to 17 Horsepower. For more information on servicing the engines, please contact Briggs & Stratton.	7 qts (6.65l)	Sector and Pinion

Dimensions

	32" (81.3cm) XL Lawn Tractors	38" (96.5cm) XL and HXL Lawn Tractors	44" (111.8cm) HXL Lawn Tractors
Wheel Base:	48.5" (123.2cm)	47" (119.4cm)	47.5" (120.7cm)
Length:	66.5" (168.9cm)	66.5" (168.9cm)	68" (172.7cm)
Height:	39.3" (99.8cm)	40" (101.6cm)	42" (106.7cm)
Width (includes mower):	39.3" (99.8cm)	45" (114.3cm)	55" (139.7cm)
Weight:	375 lbs. Net (168.9kg)	412 lbs. Net (185.6kg)	468 lbs. Net (210.8kg)

Hydro-Gear Hydrostatic Transaxle Usage

Year	12-38 XHL - 16-38 HXL	15-44 XHL, 16-44HXL, and 17-44 HXL	16-38 HXL and 17-44 HXL
1993	316-0500		
1994	316-0500		
1995	321-0500	316-0750	
1996	323-0500	316-0750	
1997	323-0500	326-0750	
1998	323-0500	326-0750	
1999	323-0500	326-0750	
2000	323-0500	326-0750	
2001			318-0510

SPECIFICATIONS

Turning Radius

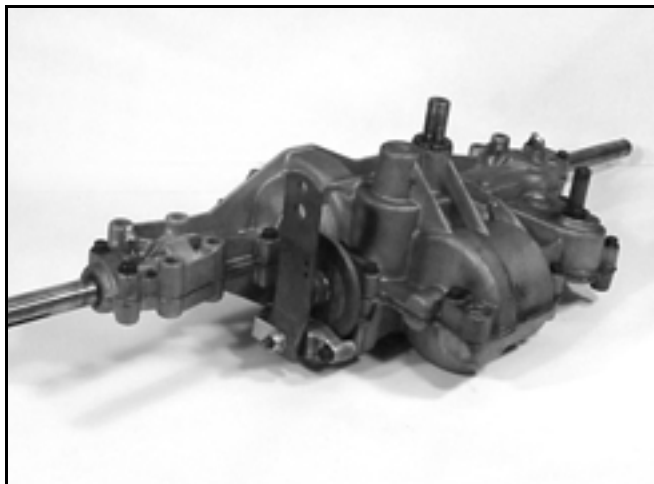
Model	Turning Radius
32" (81.3cm) XL	21.5" (54.6cm) - Left 22" (55.8cm) - Right
38" (96.5cm) HXL and XL	20" (50.8cm) - Left 22" (55.8cm) - Right
44" (111.8cm) HXL	20" (50.8cm) - Left 22" (55.8cm) - Right

Electrical System

Engine	Battery
3 amp unregulated / 80 watt A.C. Alternator	12 volt - 160 CCA

Tecumseh Peerless Transaxles

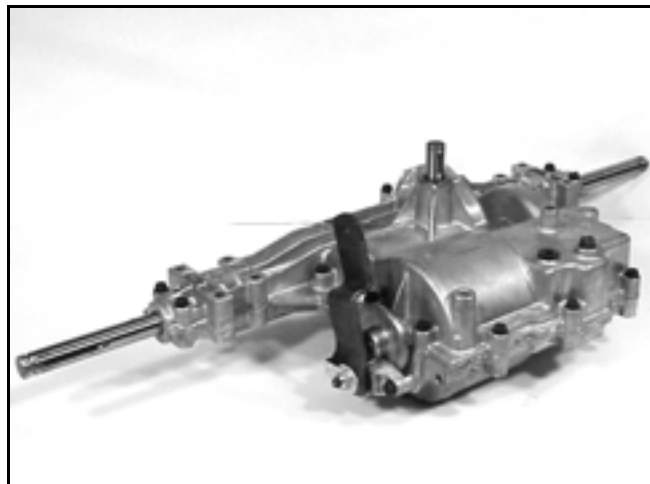
1993 - 1995



mvc-667

Tecumseh Peerless
 Model: 915-020
 Lubrication: Bentonite grease (available through Tecumseh)

1996 - Present



mvc-668

Tecumseh Peerless
 Model: MST-205
 Lubrication: 80W90 gear lube

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

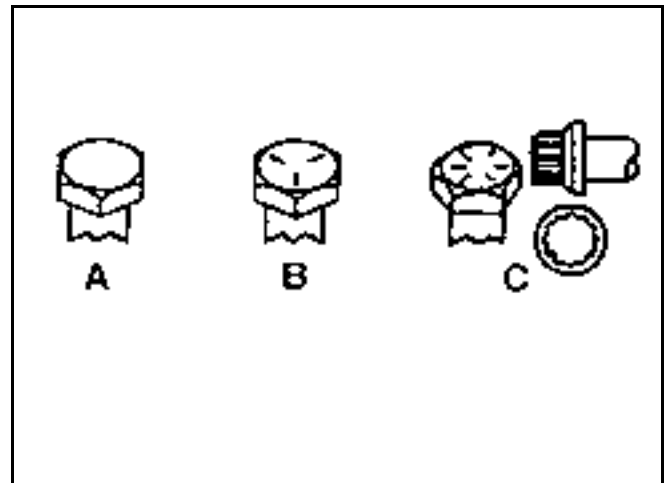


Figure 1

Inch Series Bolts and Screws	
(A) Grade 1 (B) Grade 5	(C) Grade 8

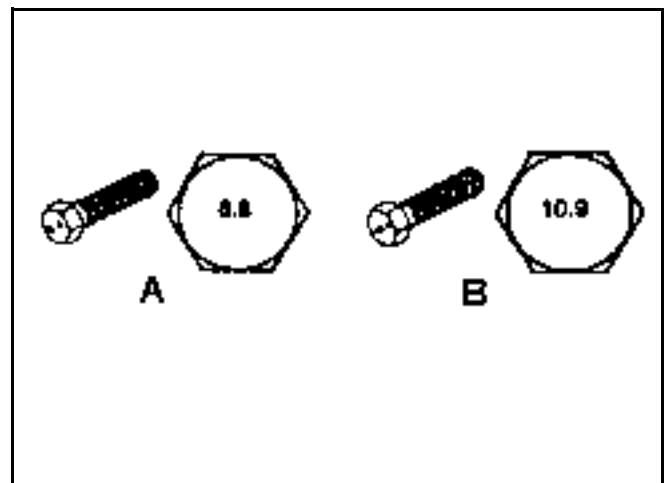


Figure 2

Metric Bolts and Screws	
(A) Class 8.8	(B) Class 10.9

SPECIFICATIONS

Standard Torque for Dry, Zinc Plated, and Steel Fasteners (Inch Series)

Thread Size	Grade 1, 5, & 8 with Thin Height Nuts	SAE Grade 1 Bolts, Screws, Studs, & Sems with Regular Height Nuts (SAE J995 Grade 2 or Stronger Nuts)		SAE Grade 5 Bolts, Screws, Studs, & Sems with Regular Height Nuts (SAE J995 Grade 2 or Stronger Nuts)		SAE Grade 8 Bolts, Screws, Studs, & Sems with Regular Height Nuts (SAE J995 Grade 2 or Stronger Nuts)	
	In-lb	In-lb	N-cm	In-lb	N-cm	In-lb	N-cm
# 6 - 32 UNC	10 ± 2	13 ± 2	147 ± 23	15 ± 2	170 ± 20	23 ± 2	260 ± 20
# 6 - 40 UNF				17 ± 2	190 ± 20	25 ± 2	280 ± 20
# 8 - 32 UNC	13 ± 2	25 ± 5	282 ± 30	29 ± 3	330 ± 30	41 ± 4	460 ± 45
# 8 - 36 UNF				31 ± 3	350 ± 30	43 ± 4	31 ± 3
# 10 - 24 UNC	18 ± 2	30 ± 5	339 ± 56	42 ± 4	475 ± 45	60 ± 6	674 ± 70
#10 - 32 UNF				48 ± 4	540 ± 45	68 ± 6	765 ± 70
1/4 - 20 UNC	48 ± 7	53 ± 7	599 ± 79	100 ± 10	1125 ± 100	140 ± 15	1580 ± 170
1/4 - 28 UNF	53 ± 7	65 ± 10	734 ± 113	115 ± 10	1300 ± 100	160 ± 15	1800 ± 170
5/16 - 18 UNC	115 ± 15	105 ± 17	1186 ± 169	200 ± 25	2250 ± 280	300 ± 30	3390 ± 340
5/16 - 24 UNF	138 ± 17	128 ± 17	1446 ± 192	225 ± 25	2540 ± 280	325 ± 30	3670 ± 340
	ft-lb	ft-lb	N-m	ft-lb	N-m	ft-lb	N-m
3/8 - 16 UNC	16 ± 2	16 ± 2	22 ± 3	30 ± 3	41 ± 4	43 ± 4	58 ± 5
3/8 - 24 UNF	17 ± 2	18 ± 2	24 ± 3	35 ± 3	47 ± 4	50 ± 4	68 ± 5
7/16 - 14 UNC	27 ± 3	27 ± 3	37 ± 4	50 ± 5	68 ± 7	70 ± 7	68 ± 9
7/16 - 20 UNF	29 ± 3	29 ± 3	39 ± 4	55 ± 5	75 ± 7	77 ± 7	104 ± 9
1/2 - 13 UNC	30 ± 3	48 ± 7	65 ± 9	75 ± 8	102 ± 11	105 ± 10	142 ± 14
1/2 - 20 UNF	32 ± 3	53 ± 7	72 ± 9	85 ± 8	115 ± 11	120 ± 10	163 ± 14
5/8 - 11 UNC	65 ± 10	88 ± 12	119 ± 16	150 ± 15	203 ± 20	210 ± 20	285 ± 27
5/8 - 18 UNF	75 ± 10	95 ± 15	129 ± 20	170 ± 15	230 ± 20	240 ± 20	325 ± 27
3/4 - 10 UNC	93 ± 12	140 ± 20	190 ± 27	265 ± 25	359 ± 34	374 ± 35	508 ± 47
3/4 - 16 UNF	115 ± 15	165 ± 25	224 ± 34	300 ± 25	407 ± 34	420 ± 35	569 ± 47
7/8 - 9 UNC	140 ± 20	225 ± 25	305 ± 34	430 ± 45	583 ± 61	600 ± 60	813 ± 81
7/8 - 14 UNF	155 ± 25	260 ± 30	353 ± 41	475 ± 45	644 ± 61	660 ± 60	895 ± 81

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)

Thread Size	Class 8.8 Bolts, Screws, and Studs with Regular Height Nuts (Class 8 or Strong Nuts)		Class 10.9 Bolts, Screws, and Studs with Regular Height Nuts (Class 10 or Strong Nuts)	
M5 X 0.8	57 ± 5 in-lb	640 ± 60 N-cm	78 ± 7 in-lb	885 ± 80 N-cm
M6 X 1.0	96 ± 9 in-lb	1018 ± 100 N-cm	133 ± 13 in-lb	1500 ± 150 N-cm
M8 X 1.25	19 ± 2 ft-lb	26 ± 3 N-m	27 ± 2 ft-lb	36 ± 3 N-m
M10 X 1.5	38 ± 4 ft-lb	52 ± 5 N-m	53 ± 5 ft-lb	72 ± 7 N-m
M12 X 1.75	66 ± 7 ft-lb	90 ± 10 N-m	92 ± 9 ft-lb	125 ± 12 N-m
M16 X 2.0	166 ± 15 ft-lb	225 ± 20 N-m	229 ± 22 ft-lb	310 ± 30 N-m
M20 X 2.5	325 ± 33 ft-lb	440 ± 45 N-m	450 ± 37 ft-lb	610 ± 50 N-m

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: 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.

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.

SPECIFICATIONS

Other Torque Specifications

SAE Grade 8 Steel Set Screws

Thread Size	Recommended Torque	
	Square Head	Hex Socket
1/4 - 20 UNC	140 ± 20 in-lb	73 ± 12 in-lb
5/16 - 18 UNC	215 ± 35 in-lb	145 ± 20 in-lb
3/8 - 16 UNC	35 ± 10 ft-lb	18 ± 3 ft-lb
1/2 - 13 UNC	75 ± 15 ft-lb	50 ± 10 ft-lb

Wheel Bolts and Lug Nuts

Thread Size	Recommended Torque**	
7/16 - 20 UNF Grade 5	65 ± 10 ft-lb	88 ± 14 N-m
1/2 - 20 UNF Grade 5	80 ± 10 ft-lb	108 ± 14 N-m
M12 X 1.25 Class 8.8	80 ± 10 ft-lb	108 ± 14 N-m
M12 X 1.5 Class 8.8	80 ± 10 ft-lb	108 ± 14 N-m

** For steel wheels and non-lubricated fasteners.

Thread Cutting Screws (Zinc Plated Steel)

Type 1, Type 23, or Type F	
Thread Size	Baseline Torque*
No. 6 - 32 UNC	20 ± 5 in-lb
No. 8 - 32 UNC	30 ± 5 in-lb
No.10 - 24 UNC	38 ± 7 in-lb
1/4 - 20 UNC	85 ± 15 in-lb
5/16 - 18 UNC	110 ± 20 in-lb
3/8 - 16 UNC	200 ± 100 in-lb

Thread Cutting Screws (Zinc Plated Steel)

Thread Size	Threads per Inch		Baseline Torque*
	Type A	Type B	
No. 6	18	20	20 ± 5 in-lb
No. 8	15	18	30 ± 5 in-lb
No. 10	12	16	38 ± 7 in-lb
No. 12	11	14	85 ± 15 in-lb

* Hole size, material strength, material thickness and finish must be considered when determining specific torque values. All torque values are based on non-lubricated fasteners.

Conversion Factors

in-lb X 11.2985 = N-cm
ft-lb X 1.3558 = N-m

N-cm X 0.08851 = in-lb
N-cm X 0.73776 = ft-lb

Equivalents and Conversions

Decimal and Millimeter Equivalents

Fractions	Decimals	mm	Fractions	Decimals	mm
1/64	0.015625	0.397	33/64	0.515625	13.097
1/32	0.03125	0.794	17/32	0.53125	13.494
	0.046875	1.191	30/64	0.46875	11.891
1/16	0.0625	1.588	5/16	0.3125	7.925
	0.078125	1.984	37/64	0.578125	14.684
	0.109375	2.778	19/32	0.59375	15.081
	0.1250	3.175	39/64	0.609375	15.478
1/8	0.140625	3.572	5/8	0.6250	15.875
	0.15625	3.968	47/64	0.734375	18.658
	0.171875	4.365	21/32	0.65625	16.668
	0.1875	4.762	43/64	0.671875	17.065
3/16	0.203125	5.158	11/16	0.6875	17.462
	0.21875	5.555	45/64	0.703125	17.859
	0.234375	5.952	23/32	0.71875	18.256
	0.2500	6.350	47/64	0.734375	18.653
1/4	0.265625	6.747	3/4	0.7500	19.050
	0.28125	7.144	49/64	0.765625	19.447
	0.296875	7.541	25/32	0.78125	19.844
5/16	0.3125	7.938	51/64	0.796875	20.241
	0.328125	8.334	13/16	0.8125	20.638
	0.34375	8.731	33/64	0.828125	21.034
	0.359375	9.128	27/32	0.84375	21.431
3/8	0.3750	9.525	55/64	0.859375	21.828
	0.390625	9.922	7/8	0.8750	22.225
	0.40625	10.319	57/64	0.890625	22.622
	0.421875	10.716	29/32	0.90625	23.019
7/16	0.4375	11.112	59/64	0.921875	23.416
	0.453125	11.509	15/16	0.9375	23.812
	0.46875	11.906	31/32	0.953125	24.209
	0.484375	12.303	63/64	0.96875	24.606
1/2	0.5000	12.700	1	1.000	25.000

1 mm = 0.03937 in. 0.001 in. = 0.0254 mm

U.S. to Metric Conversions

	To Convert	Into	Multiply By
Linear Measurement	Miles	Kilometers	1.609
	Yards	Meters	0.9144
	Feet	Meters	0.3048
	Feet	Centimeters	30.48
	Inches	Meters	0.0254
	Inches	Centimeters	2.54
	Inches	Millimeters	25.4
Area	Square Miles	Square Kilometers	2.58
	Square Feet	Square Meters	0.0929
	Square Inches	Square Centimeters	6.452
	Acre	Hectare	0.4047
Volume	Cubic Yards	Cubic Meters	0.7646
	Cubic Feet	Cubic Meters	0.02832
	Cubic Inches	Cubic Centimeters	16.39
Weight	Tons (Short)	Metric Tons	0.9072
	Pounds	Kilograms	0.4536
	Ounces (Avoirdupois)	Grams	28.3496
Pressure	Pounds/Sq. In.	Kilopascal	6.895
	Pounds/Sq. In.	Bar	0.069
Work	Foot-pounds	Newton-Meters	1.356
	Foot-pounds	Kilogram-Meters	0.1383
	Inch-pounds	Kilogram-Centimeters	1.152144
Liquid Volume	Quarts	Liters	0.9463
	Gallons	Liters	3.785
Liquid Flow	Gallons/Minute	Liters/Minute	3.785
Temperature	Fahrenheit	Celsius	1. Subtract 32°
			2. Multiply by 5/9

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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).



Figure 3

mvc-794

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).



Figure 4

mvc-795

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).

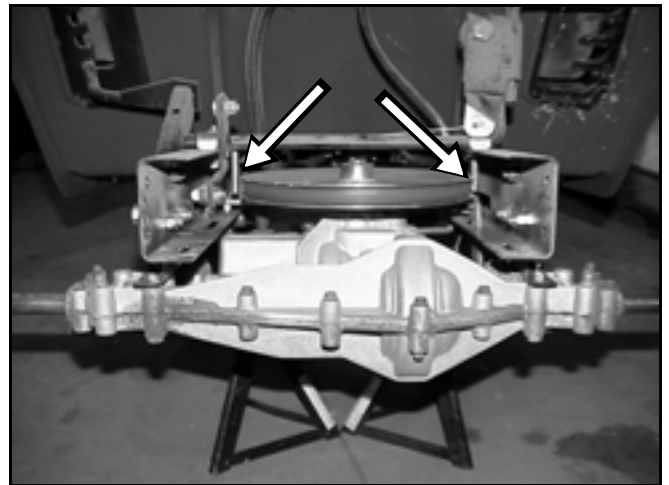


Figure 5

mvc-796

5. Unhook the idler spring from the idler assembly (Figure 6).



Figure 6

mvc-798

XL GEAR DRIVE

6. Remove the nut on the shift tie rod (Figure 7).

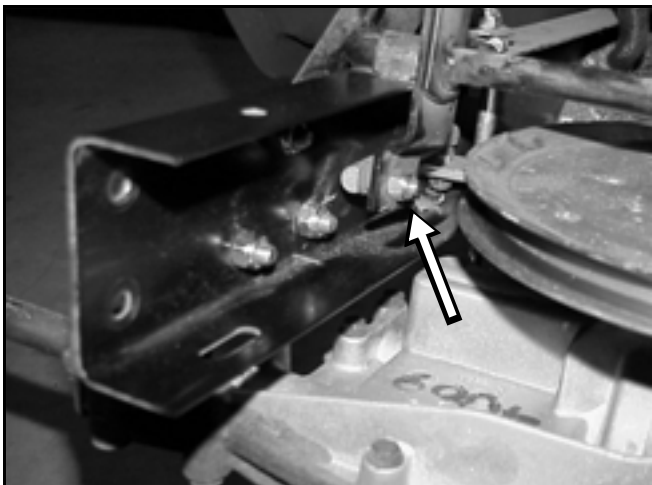


Figure 7

mvc-800

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).

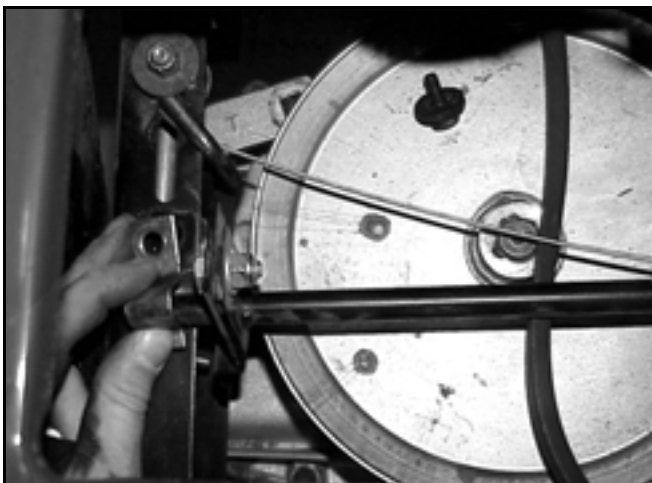


Figure 8

mvc-802

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

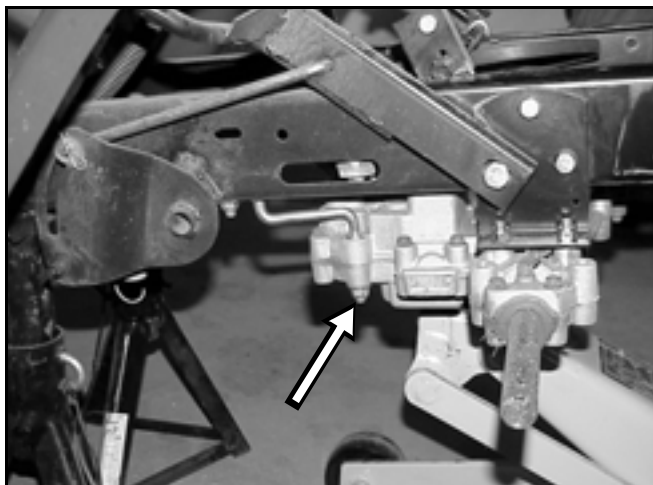


Figure 9

mvc-803

9. Remove **both** the top and bottom washer and nut from the right side torque strap (Figure 10).

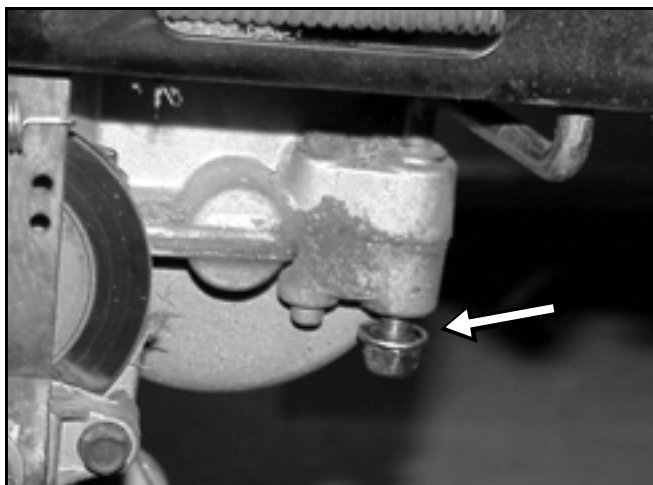


Figure 10

mvc-806

10. Remove the brake return spring (Figure 11).

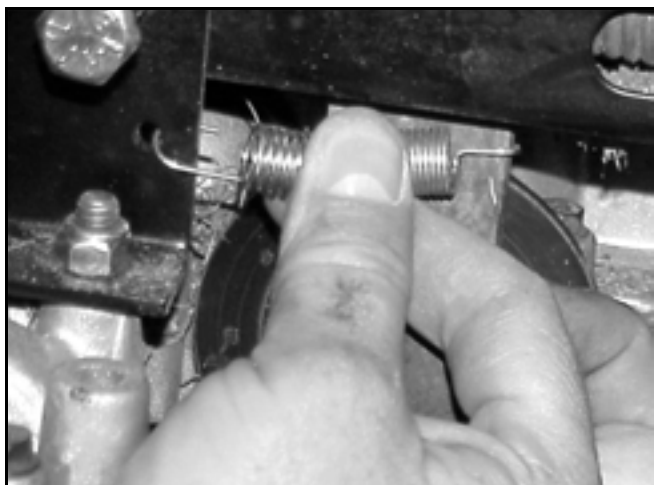


Figure 11 mvc-808

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

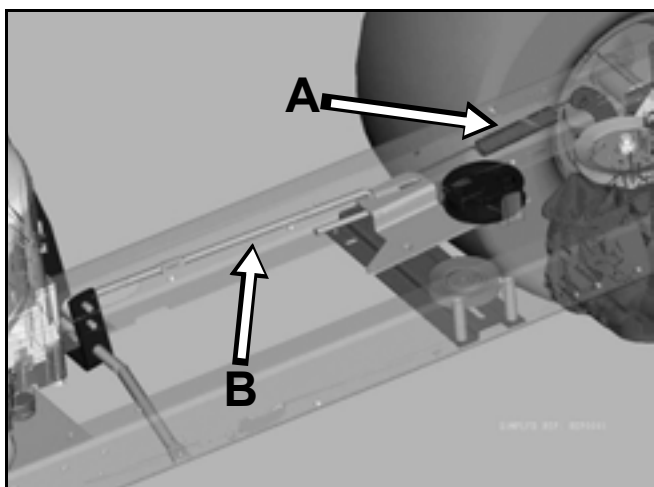


Figure 12 iso3

(A) Spring

(B) Clutch/brake rod

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).

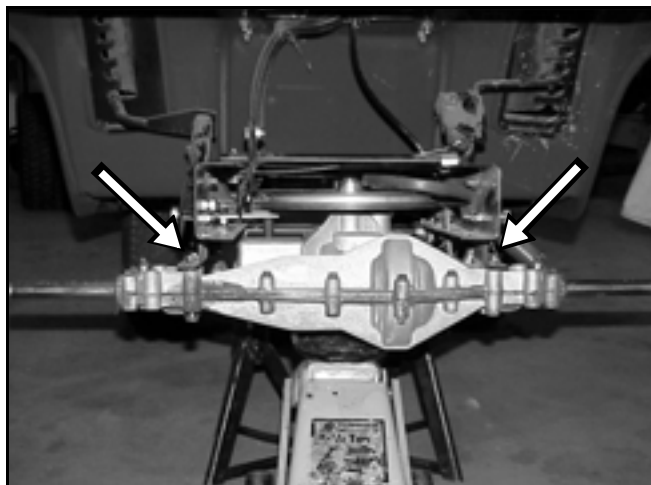


Figure 13 mvc-810

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).

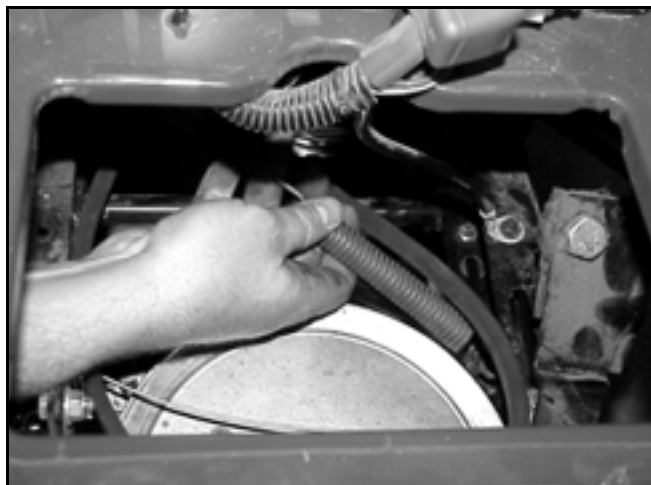


Figure 14 mvc-811

XL GEAR DRIVE

14. The transaxle should be free from the frame now (Figure 15).



Figure 15 mvc-813

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).
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).
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).

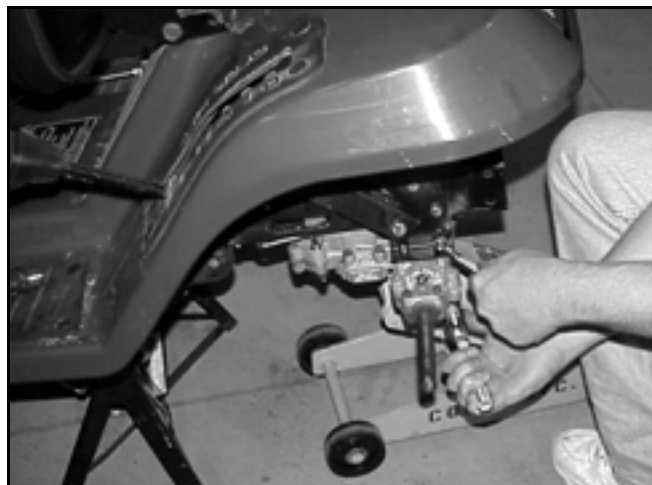


Figure 17 mvc-816



Figure 16 mvc-814



Figure 18 mvc-817

4. Install brake spring to the clutch/brake rod (Figure 19).

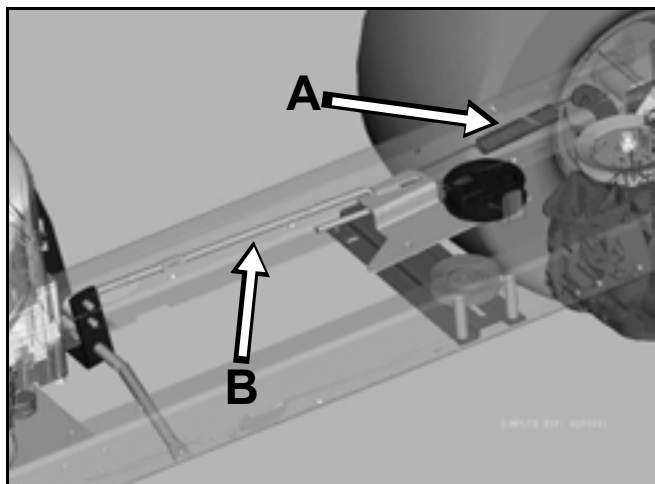


Figure 19

iso3

(A) Spring

(B) Clutch/brake rod

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



Figure 20

mvc-798

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.

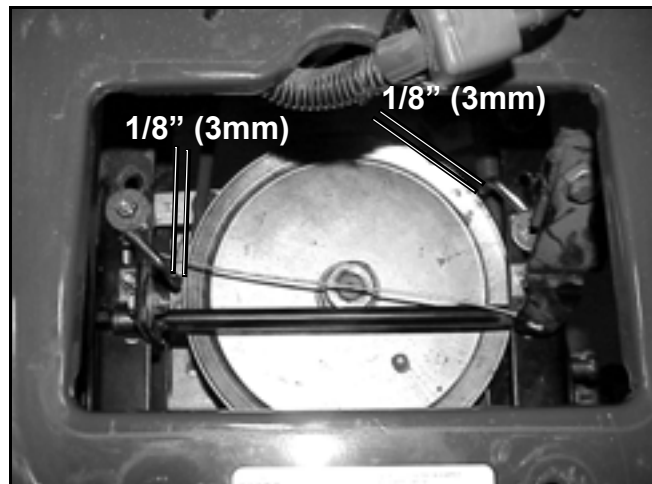


Figure 21

mvc-818

7. Connect the brake return spring to the brake lever (Figure 22).

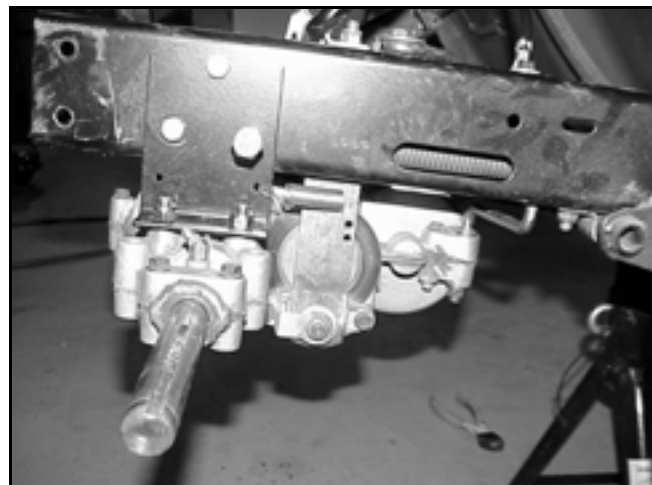


Figure 22

mvc-819

XL GEAR DRIVE

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).



Figure 23

mvc-795

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).

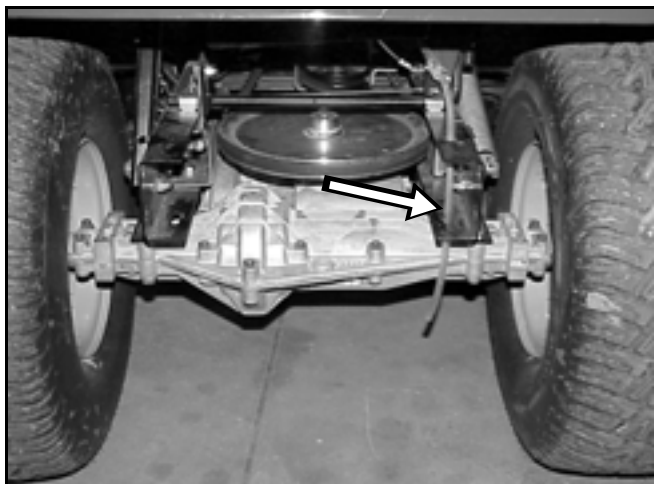


Figure 24

mvc-639

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).



Figure 25

mvc-795

3. Loosen and move the right and left engine belt guides (Figure 26).

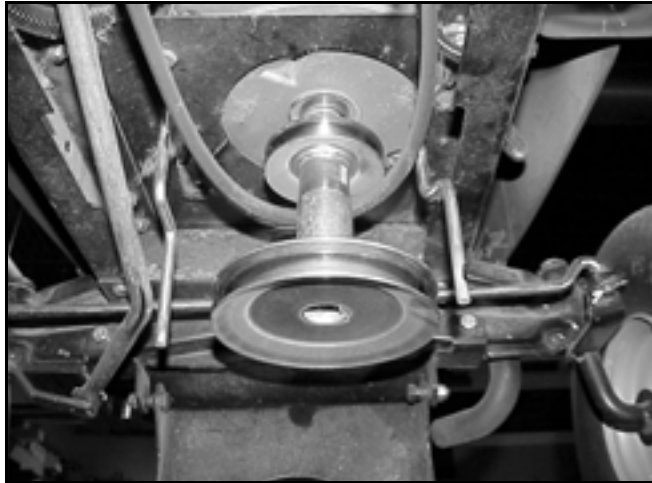


Figure 26

mvc-821

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

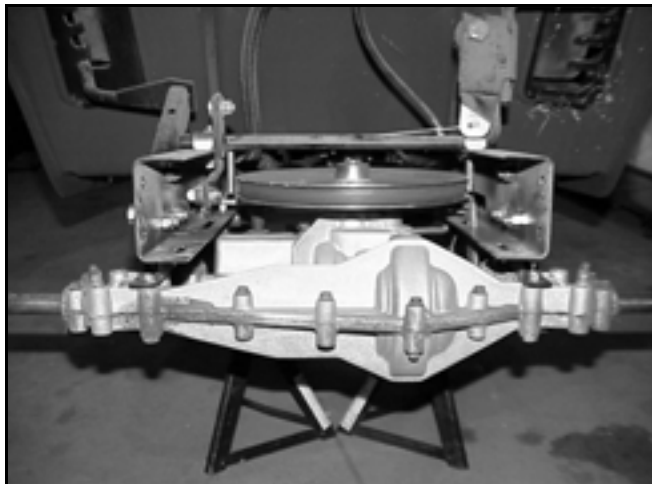


Figure 27

mvc-796

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



Figure 28

mvc-824

6. Install new belt around the engine drive pulley (Figure 29).

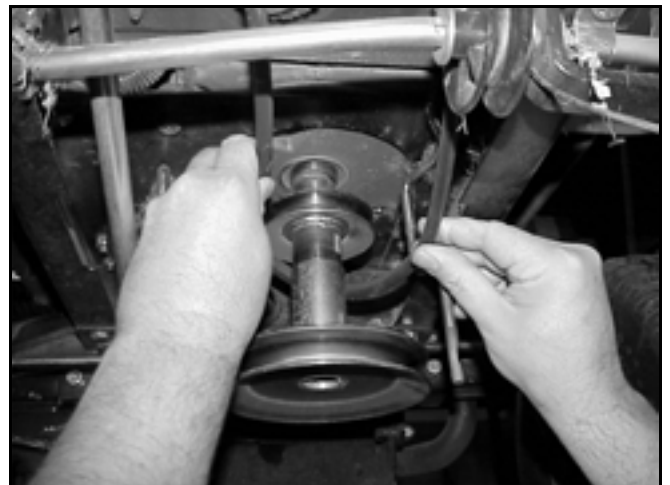


Figure 29

mvc-825

XL GEAR DRIVE

7. Route belt back over the pedal pivot rod, the idler pivot bracket, and around the transaxle pulley (Figure 30).

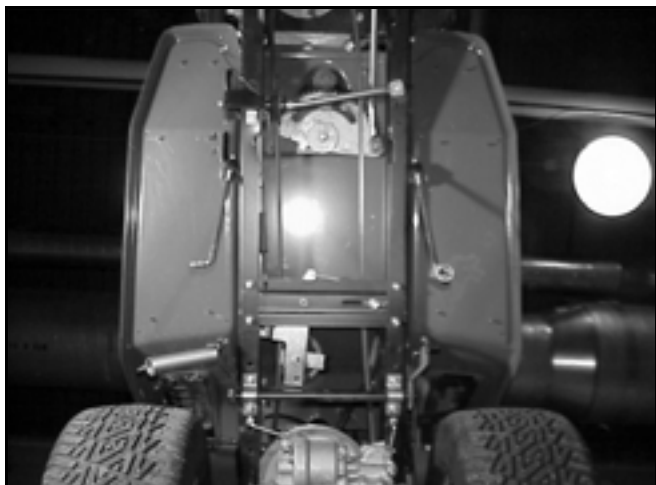


Figure 30

mvc-826

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).

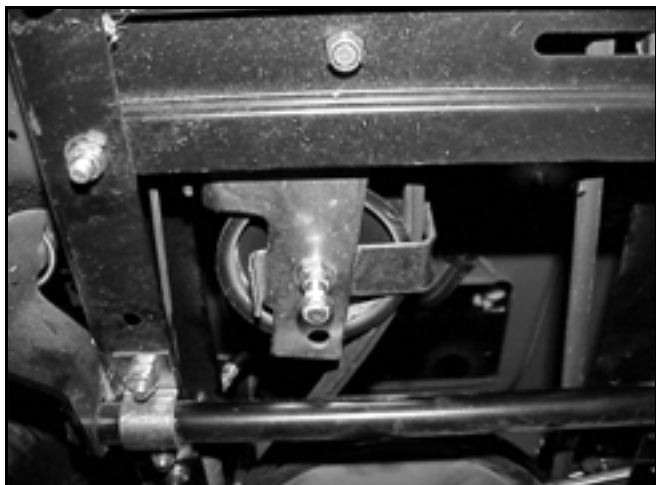


Figure 31

mvc-828

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

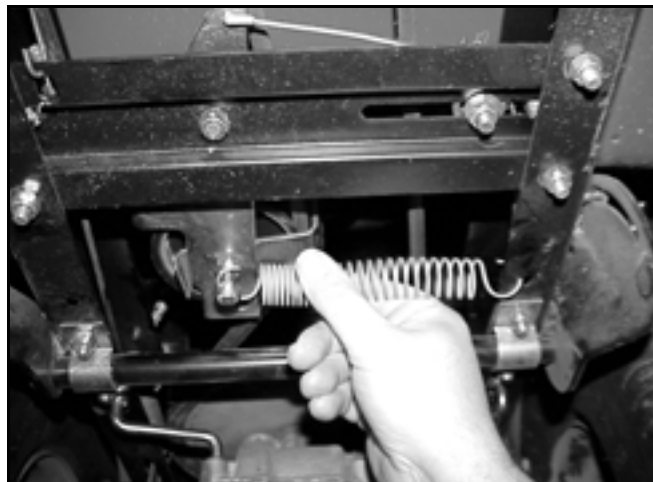


Figure 32

mvc-829

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).

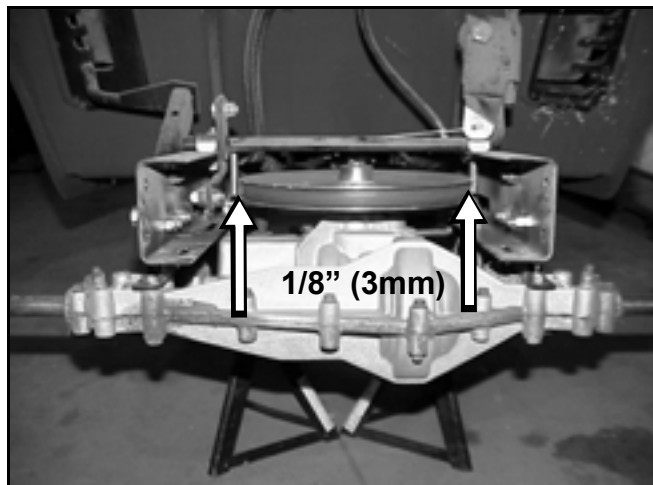


Figure 33

mvc-796

11. Recheck the routing of the belt (Figure 34).

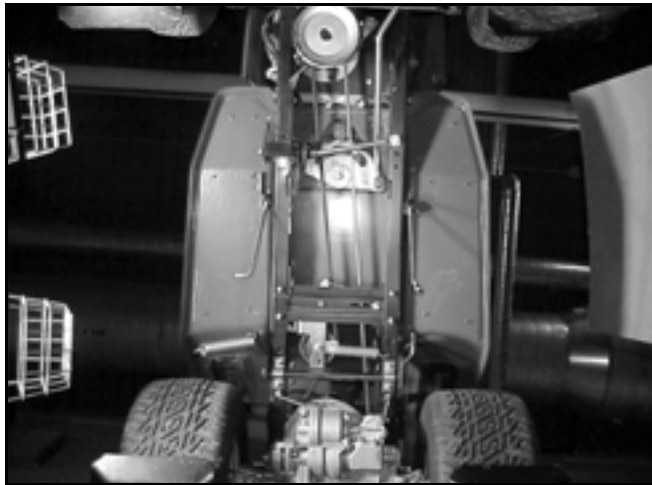


Figure 34

mvc-833

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).

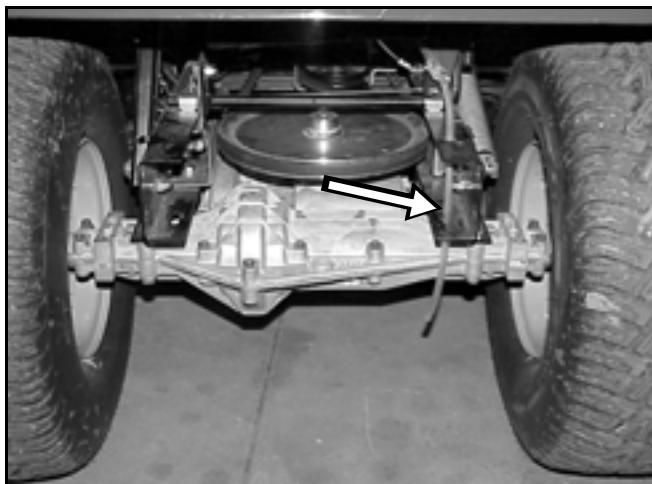


Figure 35

mvc-639

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.
3. Jumping out of 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.

XL GEAR DRIVE

- 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).

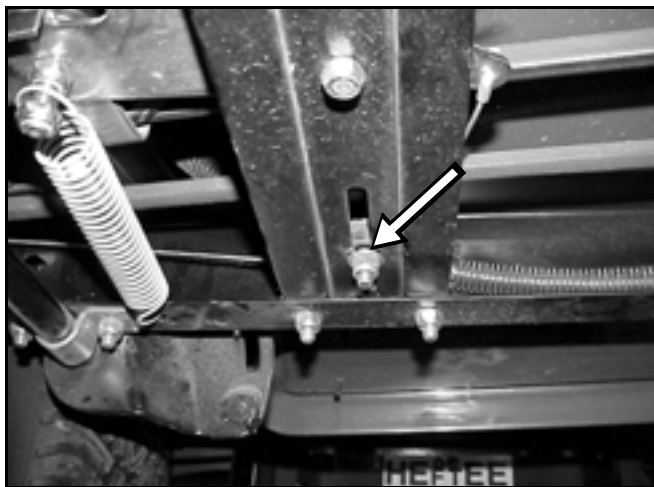


Figure 36

mvc-834

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



Figure 37

mvc-835

- 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.



Figure 38

mvc-836

- 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).

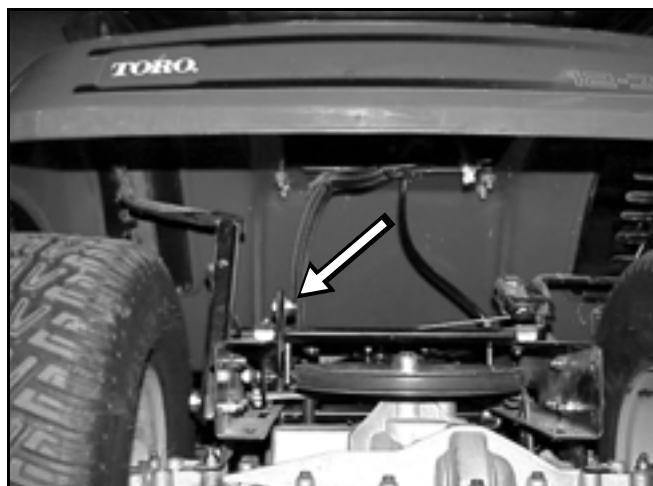


Figure 39

mvc-840

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).

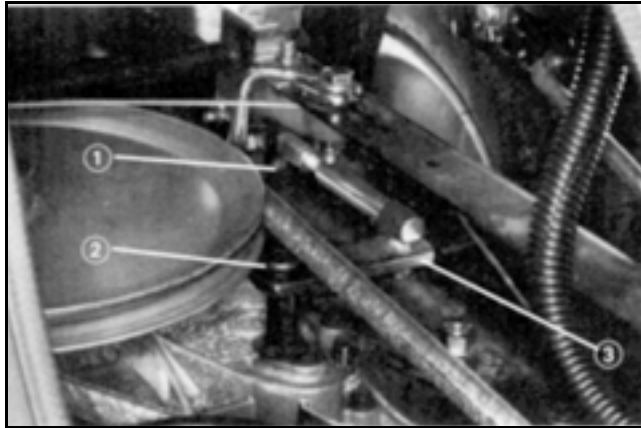


Figure 40

HL11014

- | | |
|--------------|---------------|
| (1) Jam Nut | (3) Shift Arm |
| (2) Fastener | |

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).

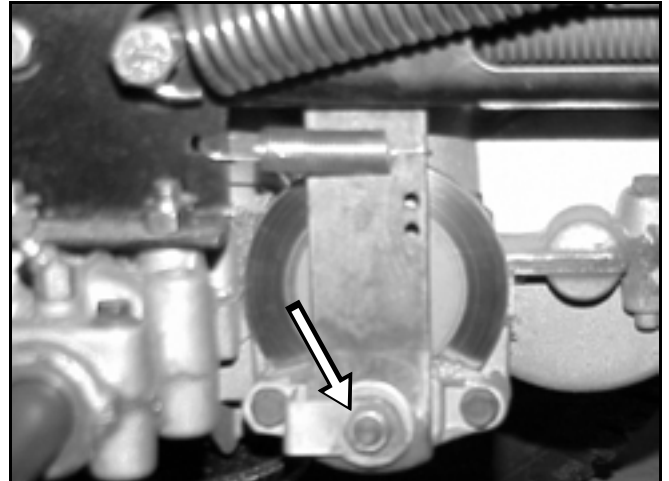


Figure 41

mvc-847

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

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).

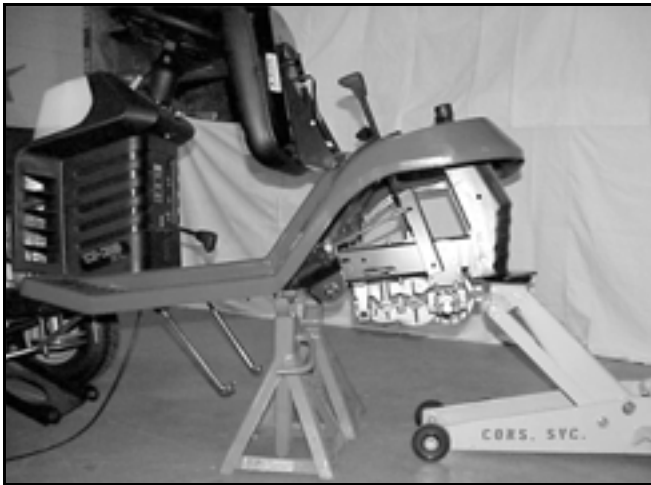


Figure 42 mvc-0001

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).



Figure 43 mvc-0037

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).

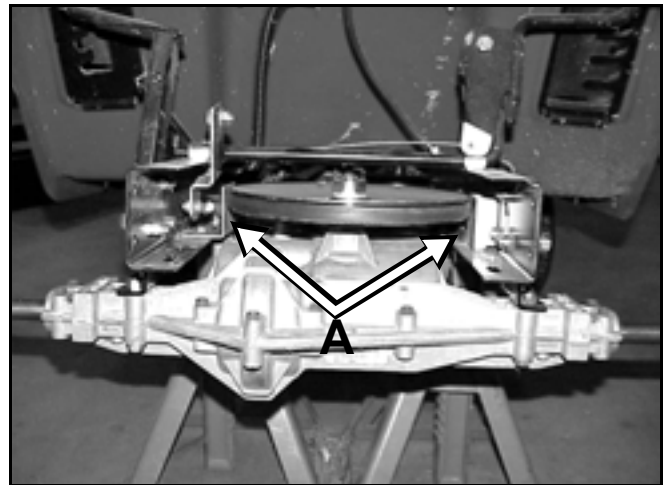


Figure 44 mvc-0002

(A) Belt Guides

4. Release the park brake and disconnect the brake spring (A) at the idler arm assembly. Remove the brake return spring (B) (Figure 45).

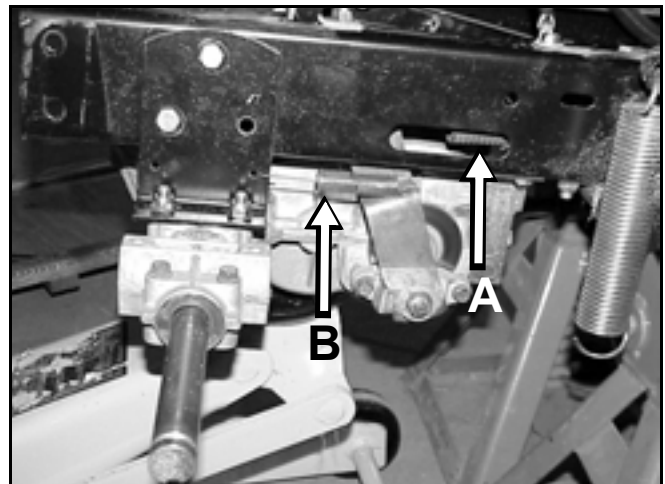


Figure 45 mvc-0005

(A) Brake Spring

(B) Brake Return Spring

5. Disconnect the shift link at the transaxle shift lever (Figure 46).

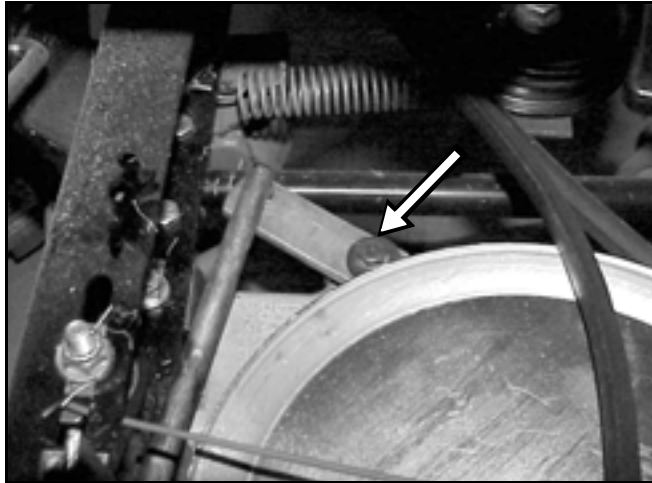


Figure 46

mvc-0003

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).

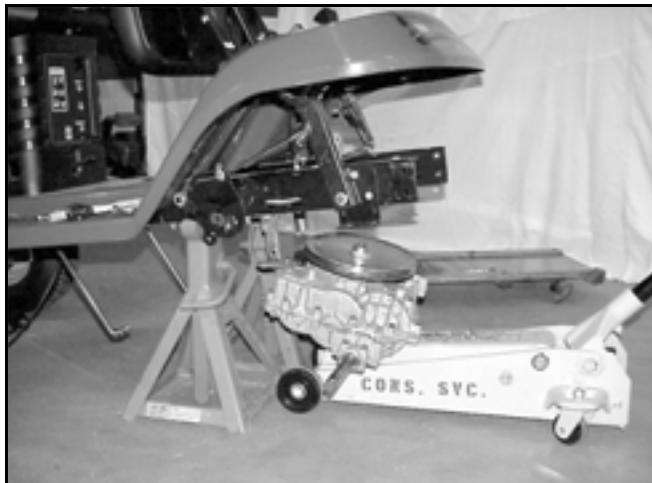


Figure 47

mvc-0004

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).

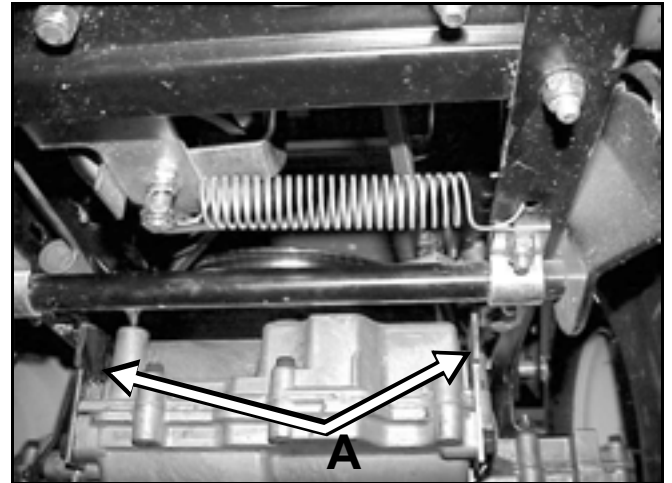


Figure 48

mvc-0011

(A) Torque Straps

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.

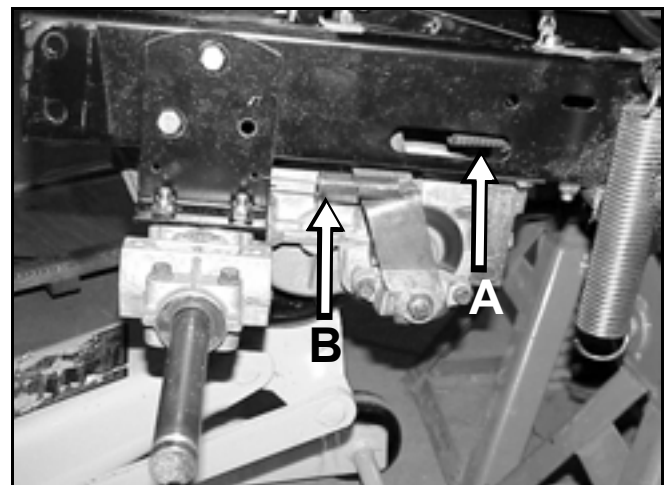


Figure 49

mvc-0005

(A) Brake Spring

(B) Brake Return Spring

XL GEAR DRIVE

- Place the traction drive belt around the transaxle input pulley. Install the right and left belt guides.

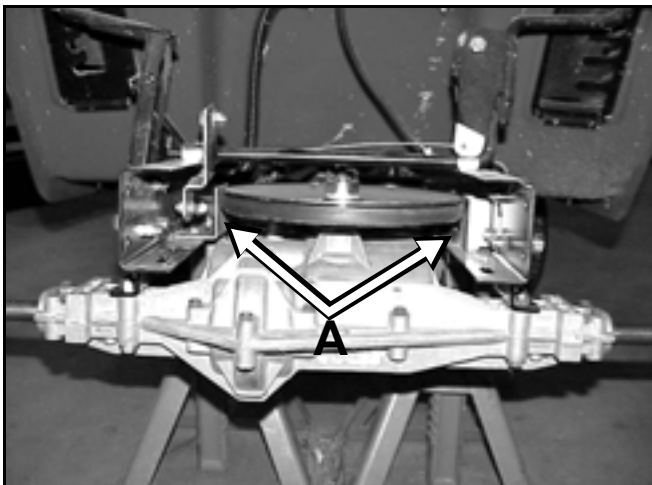


Figure 50

mvc-0002

(A) Belt Guides

- 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.

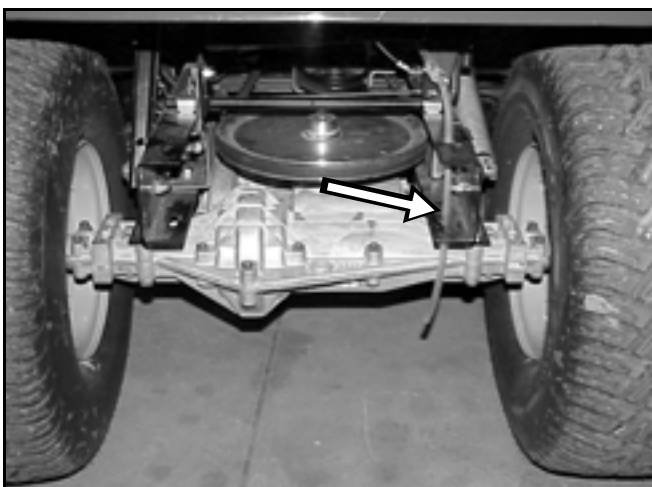


Figure 51

mvc-639

- Install the rear hitch panel (Figure 52).



Figure 52

mvc-0037

- 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:

- Place the gear shift lever in 5th gear (Figure 53).



Figure 53

mvc-640

2. Loosen the bolt between the shift pivot and the shift pivot lever (Figure 54).

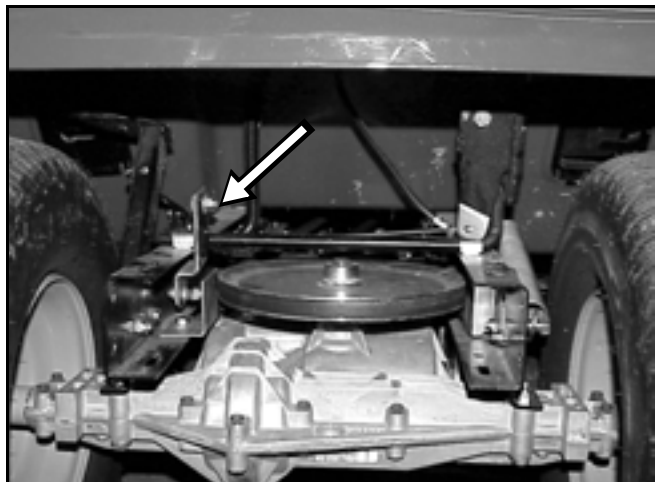


Figure 54

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).

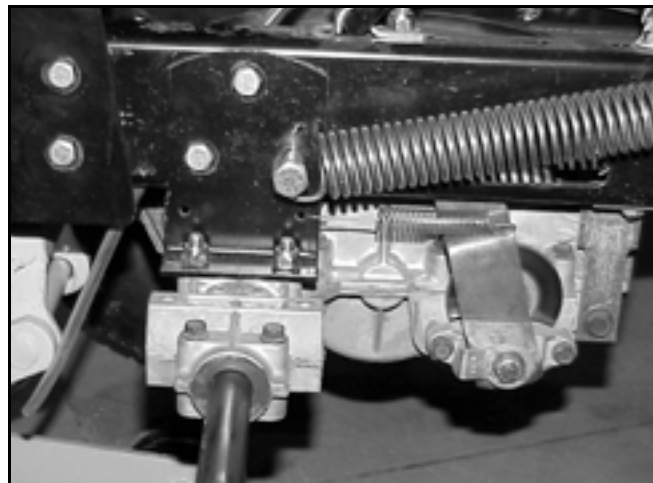


Figure 56

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.

XL GEAR DRIVE

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).



Figure 57

mvc-0037

4. Remove the right and left belt guides located on each side of the transaxle pulley (Figure 58).

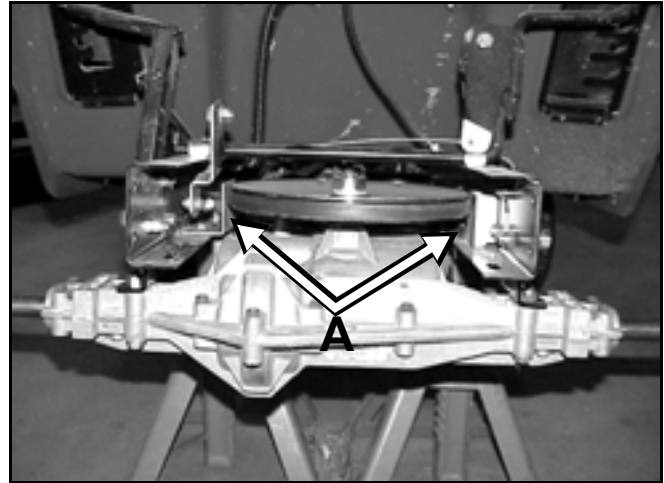


Figure 58

mvc-0002

(A) Belt Guides

5. Unhook idler spring and unbolt the idler pulley from the idler bracket (Figure 59).



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.

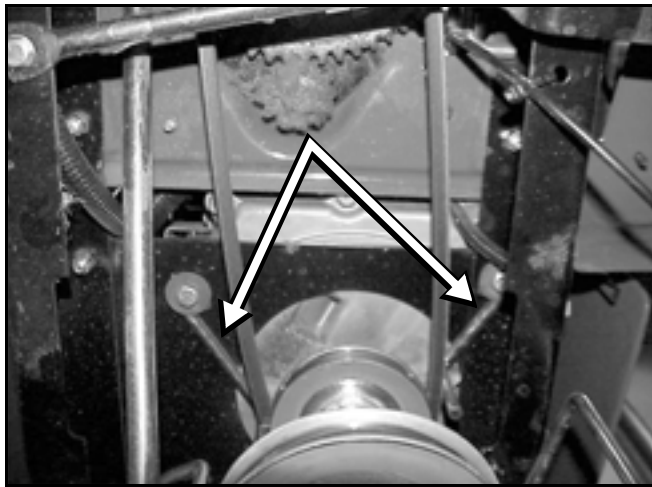


Figure 60

mvc-000D

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

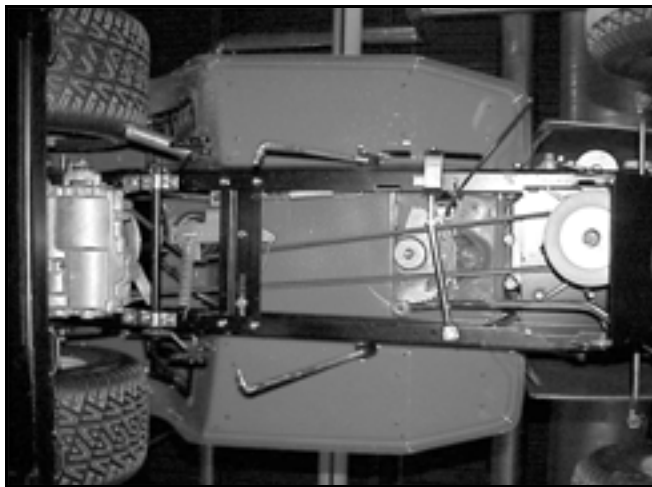


Figure 61

mvc-000B

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



Figure 62

mvc-0010

9. Install the right and left transaxle belt guides (Figure 63).

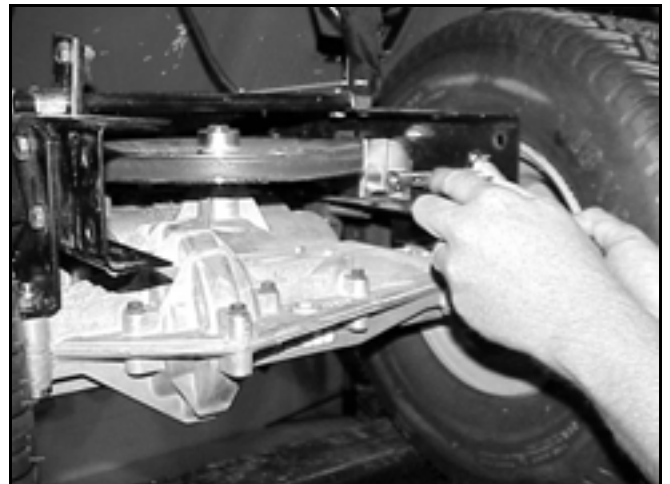


Figure 63

mvc-000F

XL GEAR DRIVE

10. Reinstall the idler spring on bolt holding the idler pulley to the idler assembly (Figure 64).

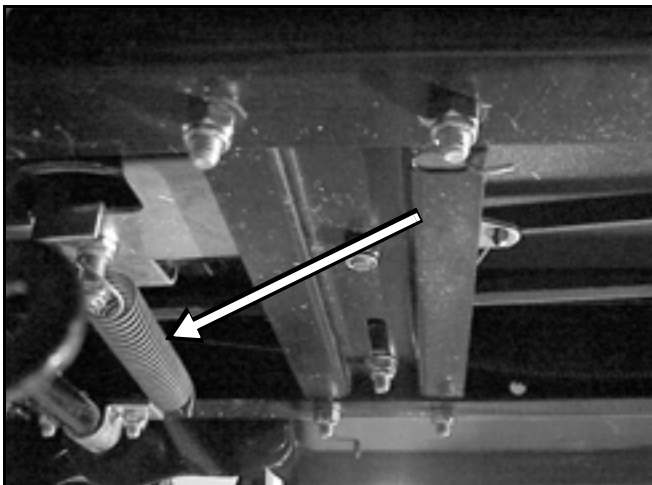


Figure 64

mvc-000a

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



Figure 66

mvc-0037

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

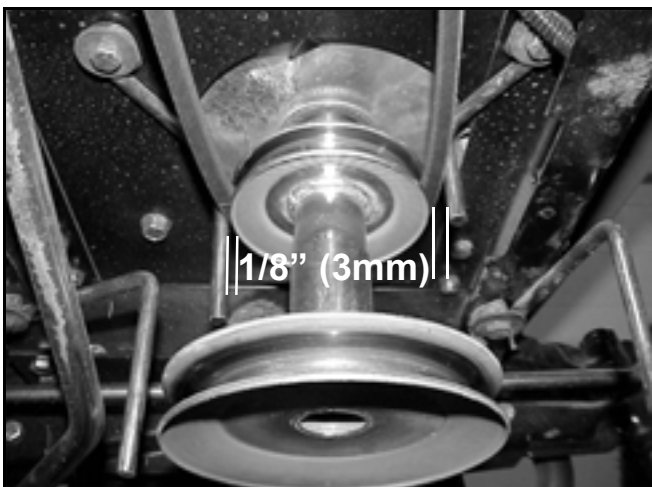


Figure 65

mvc-000E

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.

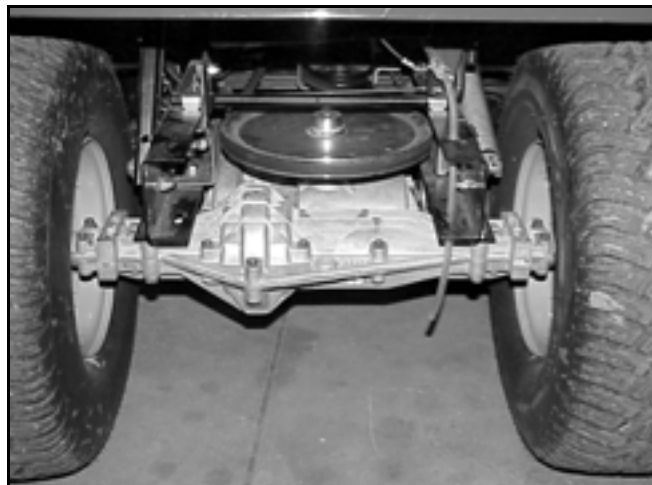


Figure 67

mvc-639

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:



Figure 68

mvc-0009

- 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:



Figure 69

mvc-0007

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

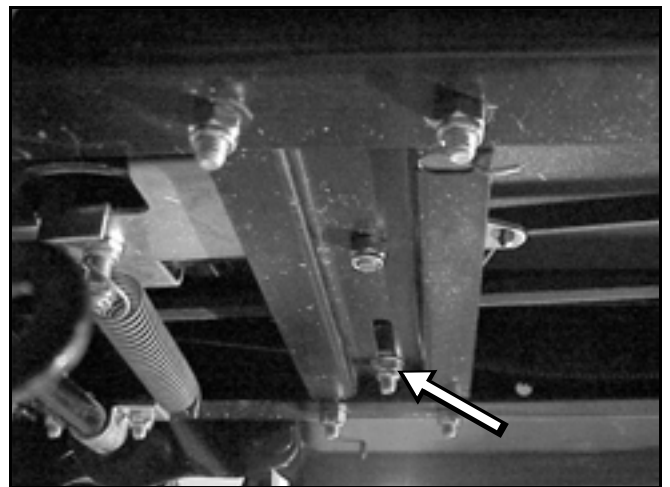


Figure 70

mvc-000A

- 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).



Figure 71

mvc-0009

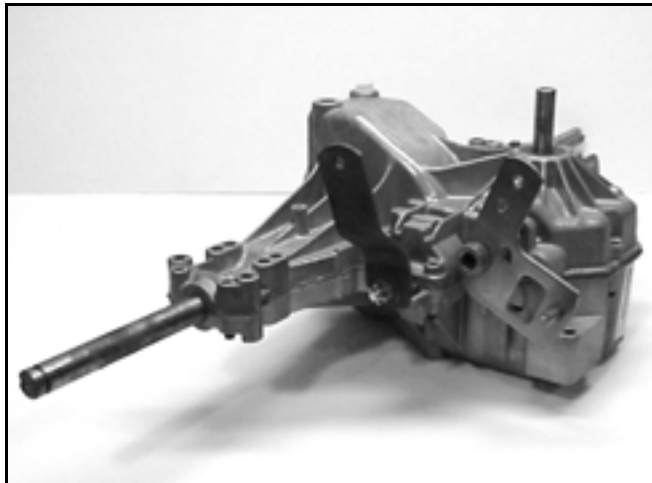
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XL HYDROSTATIC TRANSAXLES

Identification

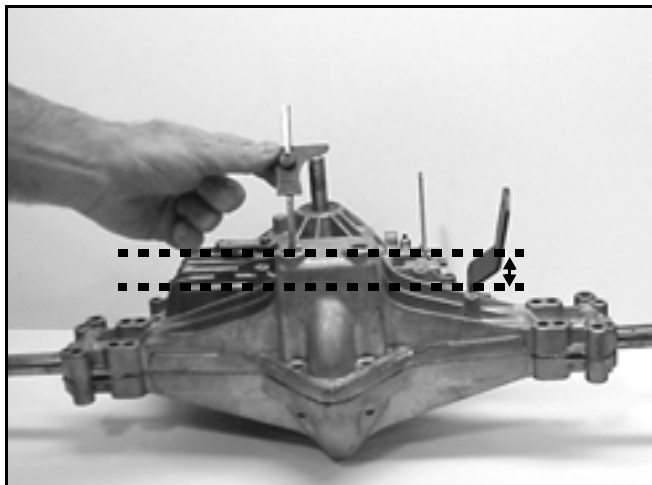
Hydro-Gear 0500/0750 Transaxle

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



mvc-658

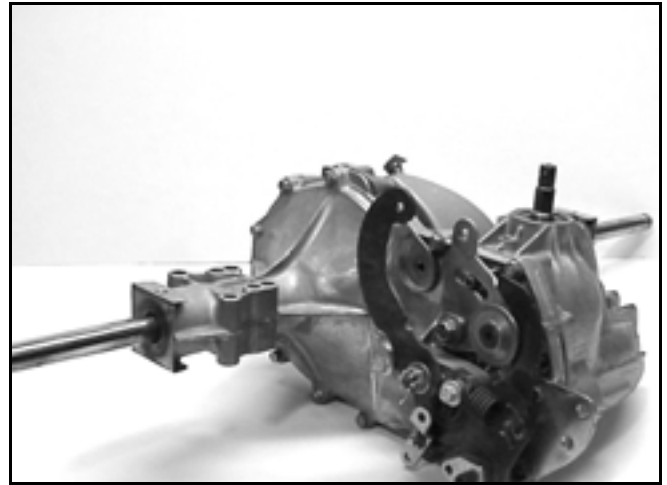
Lubrication: 20W50 Motor Oil
Oil Level: Oil level should be at 1.75" to 2.0" (4.39cm - 5.08cm) from the top of the housing.



mvc-659

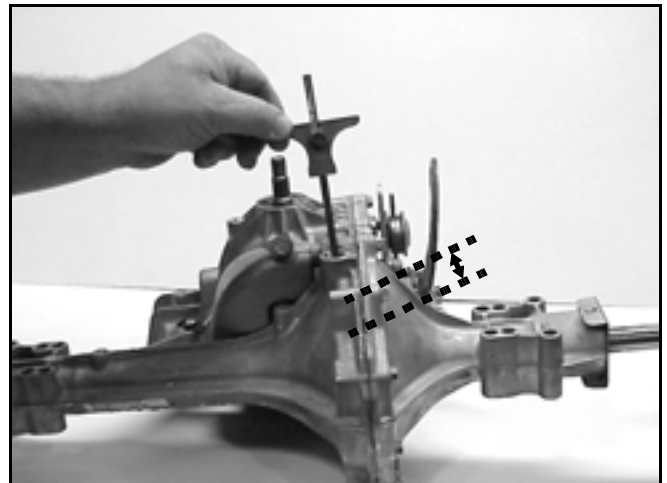
Hydro-Gear 0510 Transaxle

Used: 2001 and later
Model: 318-0510



mvc-660

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



mvc-661

XL HYDROSTATIC TRANSAXLES

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

Symptom	Possible Cause	Corrective Action
Operates in one direction only	Inspect control linkage	**Repair or replace
	Inspect drive belt and pulleys	Repair or replace
Noisy	Check oil level and condition	Fill to proper level or change oil
	Check for excessive loading	Reduce vehicle loading
	Check brake setting	*Adjust brake or proper setting
	Check for loose parts	Repair or replace loose parts
	Check bypass valve linkage operation	Repair or replace linkage
	Check frame mount	Tighten to frame
Low Power	Check engine RPM	Adjust to correct setting
	Check drive belt and pulleys	Repair or replace
	Check oil level and condition	Fill to proper level or change oil
	Check for excessive loading	Reduce vehicle load
	Check brake setting	*Adjust brake to proper setting
	Check for loose parts	Repair or replace loose parts
	Check bypass valve linkage operation	Repair or replace linkage
	Check for loose or improper linkage	Tighten linkage or replace
Operating Hot	Check for debris build up	Clean off debris
	Check oil level and condition	Fill to proper level or change oil
	Check for excessive loading	Reduce vehicle loading
	Check brake setting	*Adjust brake to proper setting
	Check fan condition	Replace if needed

*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 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).



Figure 72

MVC-0038

XL HYDROSTATIC TRANSAXLES

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).



Figure 73

MVC-0037

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

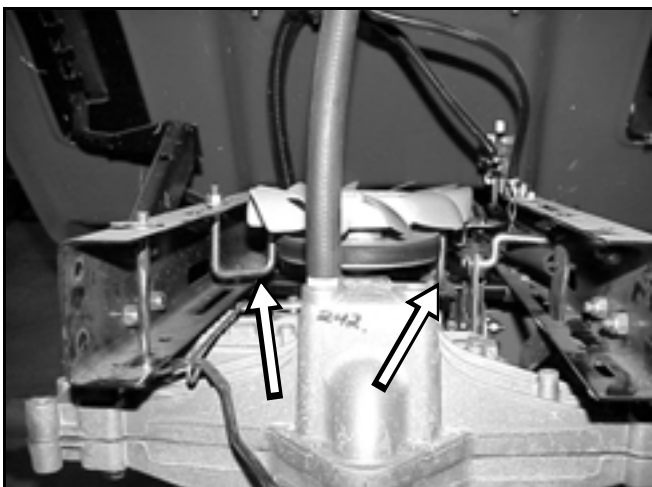


Figure 74

MVC-0039

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

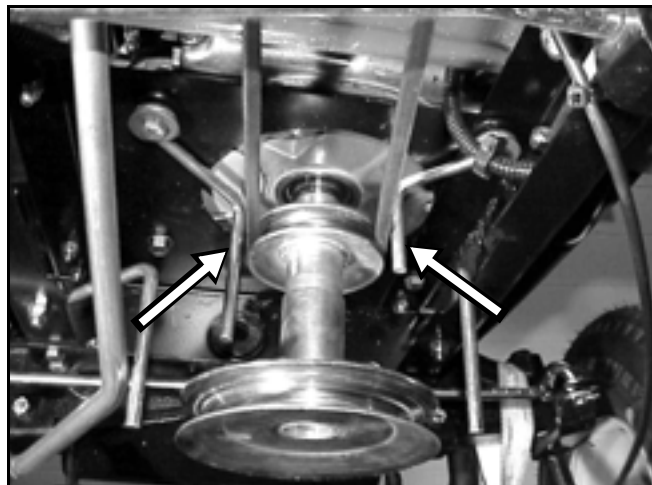


Figure 75

MVC-0045

6. Unhook the idler spring from the idler assembly (Figure 76).



Figure 76

MVC-001C

XL HYDROSTATIC TRANSAXLES

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).

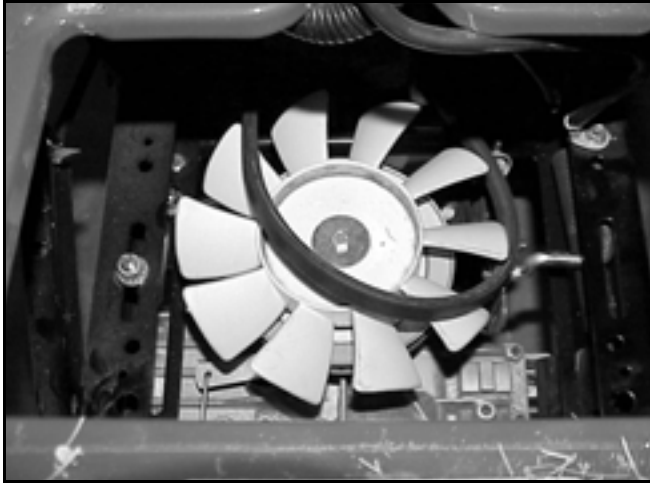


Figure 77 MVC-003A

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

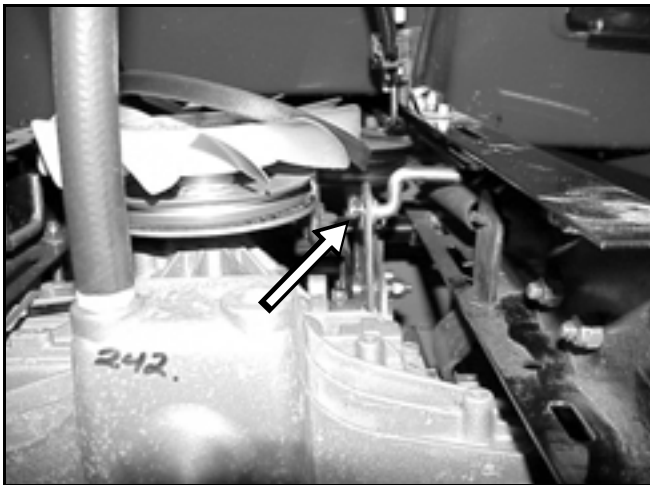


Figure 78 MVC-003B

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



Figure 79 MVC-0041

10. Remove the small brake return spring from the brake lever (Figure 80).



Figure 80 MVC-003D

XL HYDROSTATIC TRANSAXLES

11. Unhook the brake spring from the clutch/brake rod.

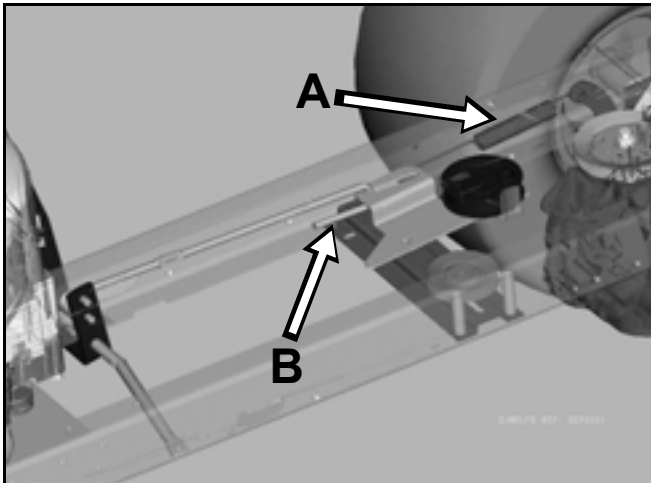


Figure 81

iso3

(A) Brake Spring

(B) Unhook from clutch/
brake rod

12. Unbolt the torque strap (Figure 82).

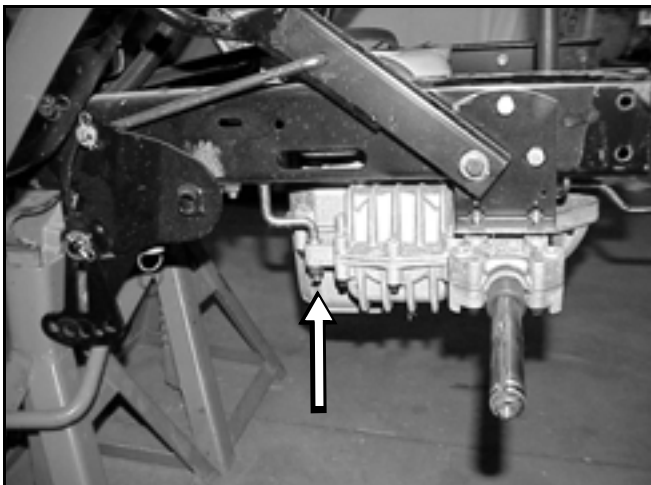


Figure 82

MVC-003E

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

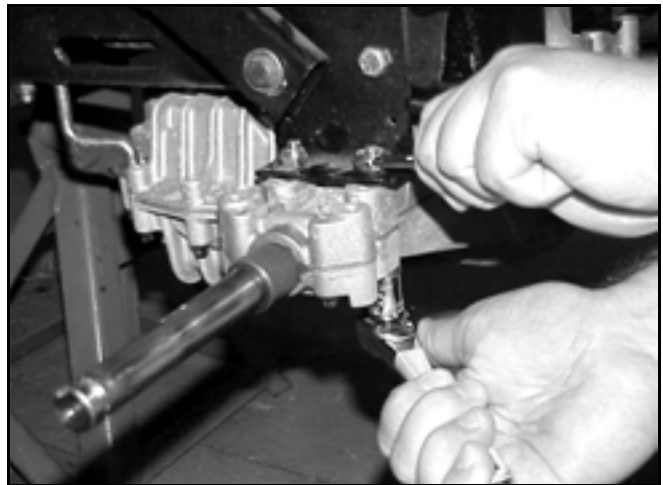


Figure 83

MVC-0042

14. Lower the transaxle from the frame (Figure 84).



Figure 84

MVC-0040

XL HYDROSTATIC TRANSAXLES

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).



Figure 85 MVC-0042

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

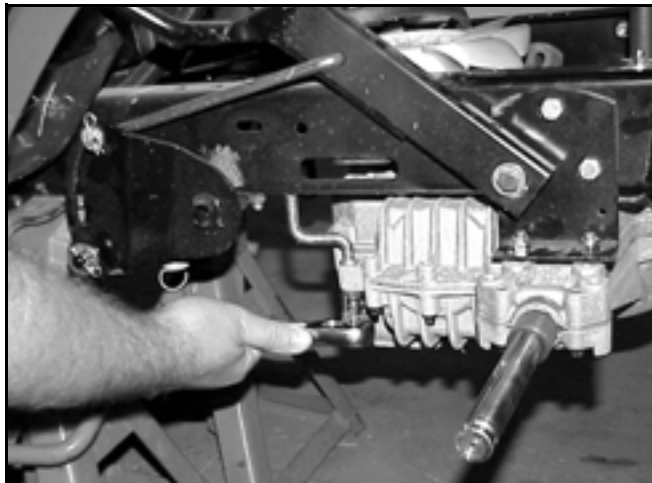


Figure 86 MVC-0043

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

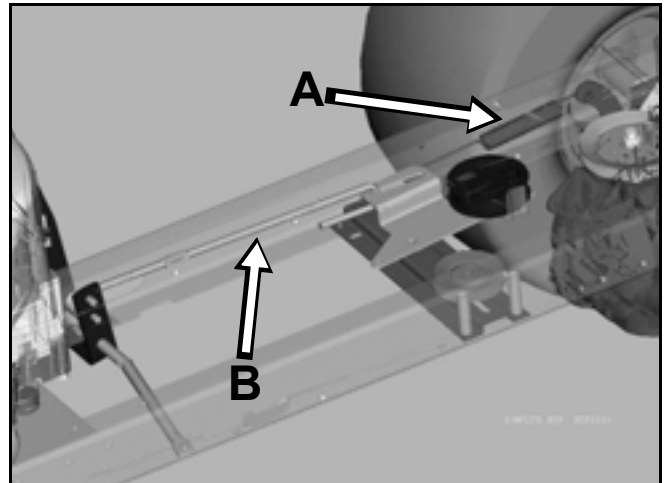


Figure 87 iso3

(A) Spring (B) Clutch/brake rod

4. Hook the small brake return spring to the brake arm (Figure 88).



Figure 88 MVC-003D

XL HYDROSTATIC TRANSAXLES

5. Install the washer and hairpin on the speed control rod (Figure 89).

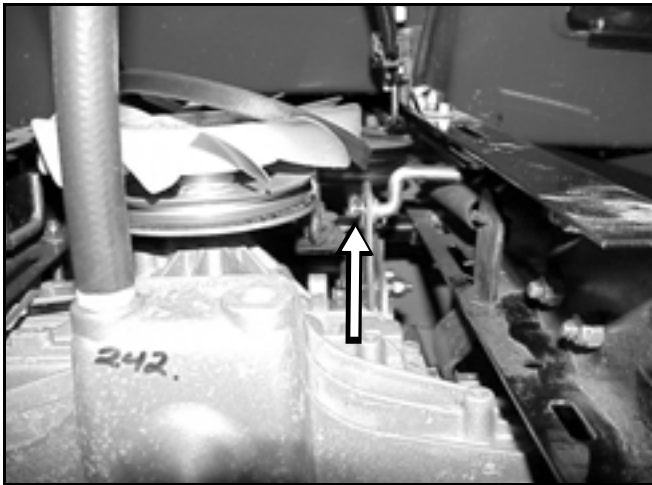


Figure 89

MVC-003B

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

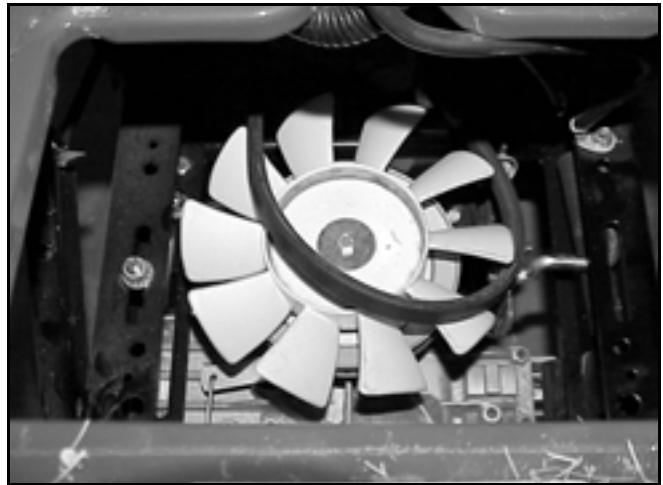


Figure 91

MVC-003A

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



Figure 90

MVC-0041

8. Install the traction drive belt around the engine drive pulley (Figure 92).



Figure 92

MVC-0045

XL HYDROSTATIC TRANSAXLES

9. Reconnect the idler spring to the idler bracket assembly (Figure 93).



Figure 93

MVC-001C

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).

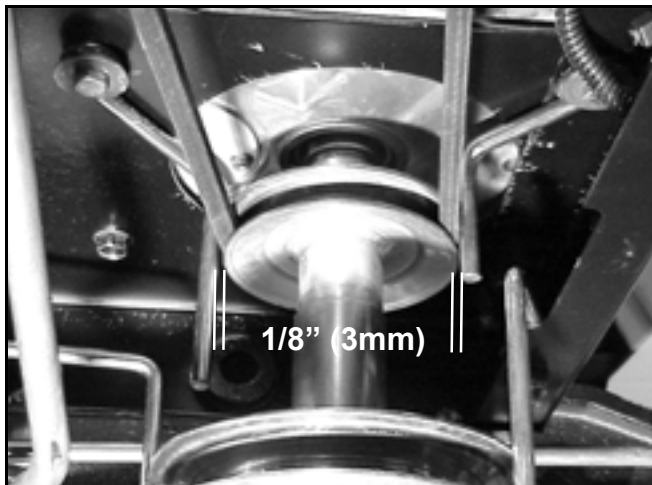


Figure 94

MVC-001F

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).

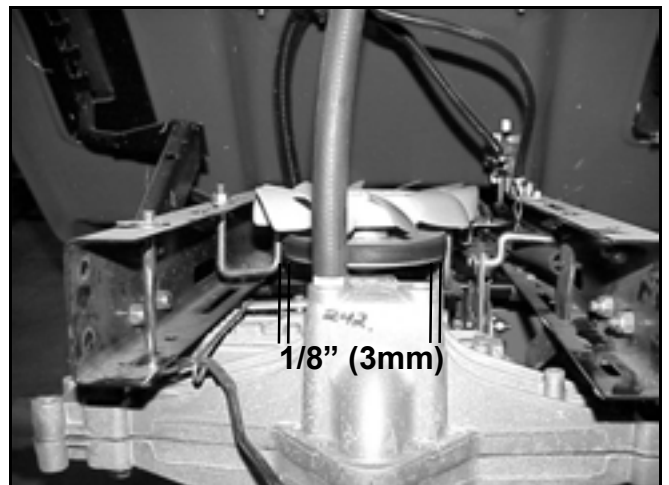


Figure 95

MVC-0039

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).

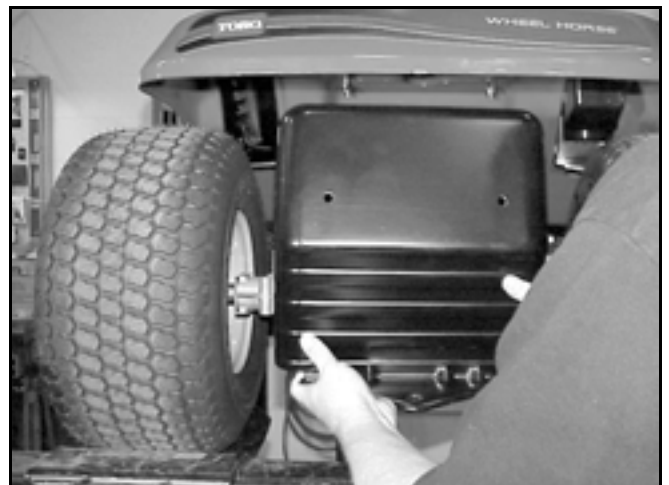


Figure 96

MVC-0037

XL HYDROSTATIC TRANSAXLES

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).

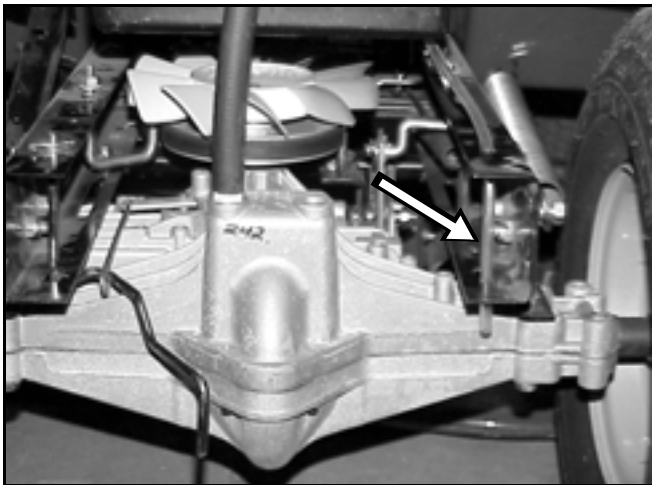


Figure 97

mvc-647

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



Figure 98

mvc-0044

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).



Figure 99

mvc-649

XL HYDROSTATIC TRANSAXLES

2. Loosen the locknut (Figure 100).

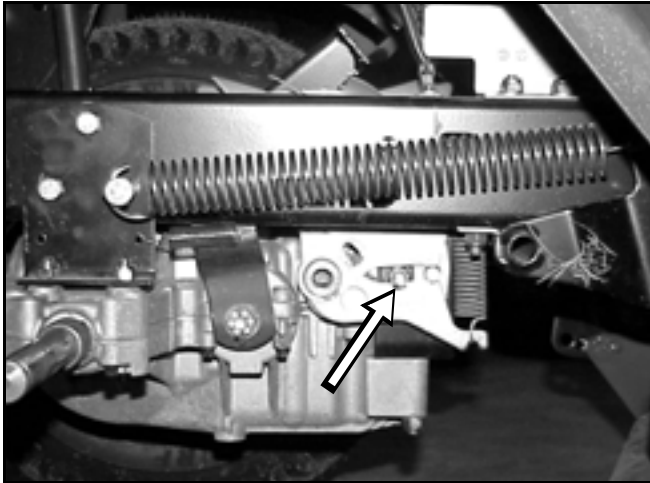


Figure 100

mvc-651

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).

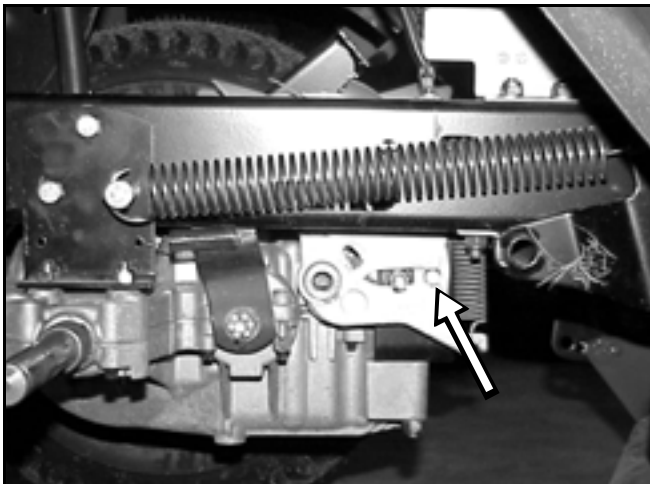


Figure 101

mvc-651

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).

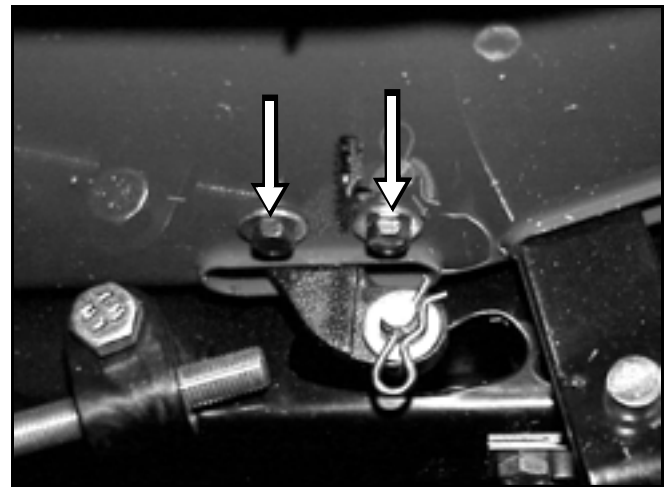


Figure 102

mvc-653

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.

XL HYDROSTATIC TRANSAXLES

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

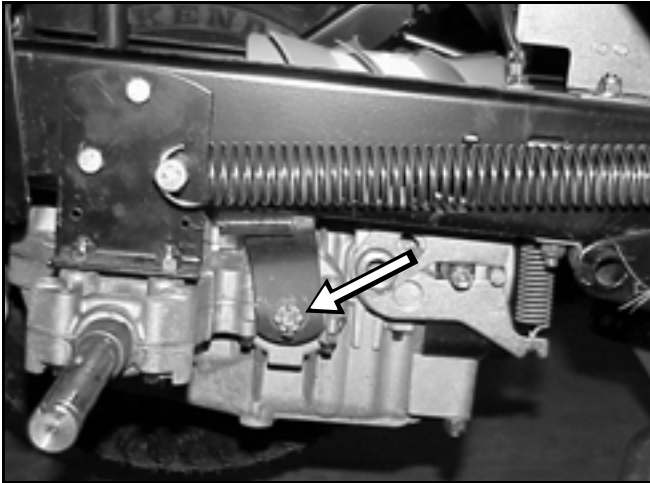


Figure 103 mvc-654

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).

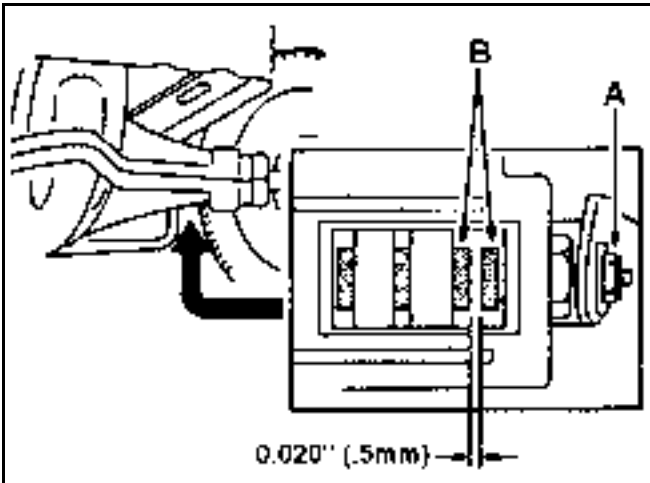


Figure 104 L11051

(A) Adjusting Nut (B) Outer Brake Discs

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).

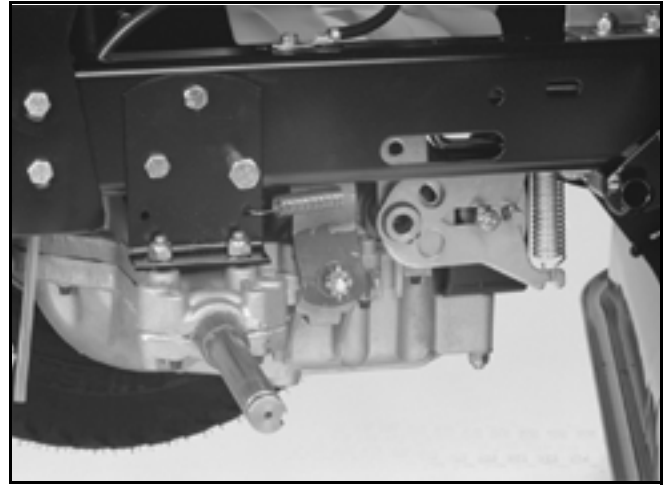


Figure 105 4017-09

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).

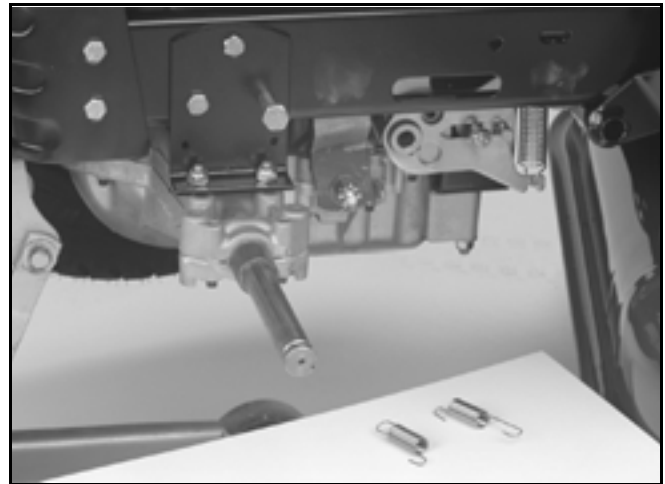


Figure 106 4017-10

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.

XL HYDROSTATIC TRANSAXLES

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).

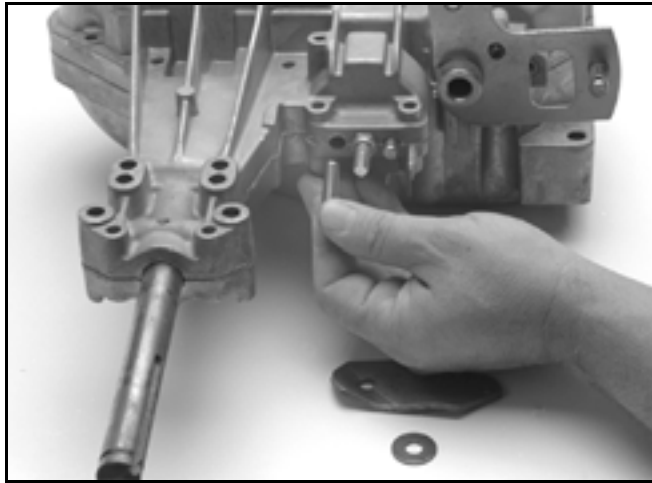


Figure 107

4017-18

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).

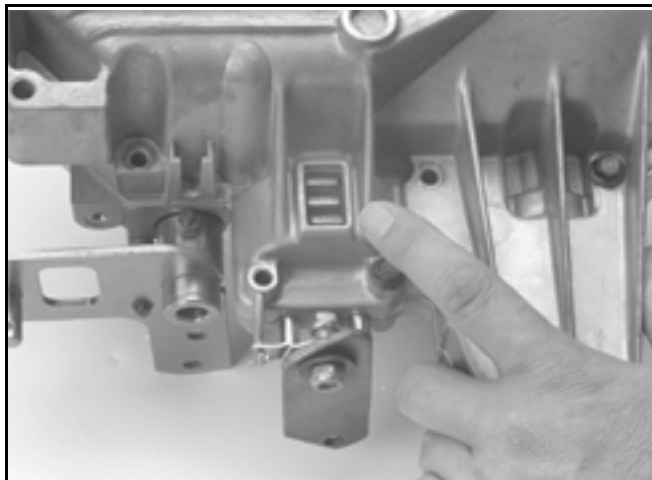


Figure 108

4017-19

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).

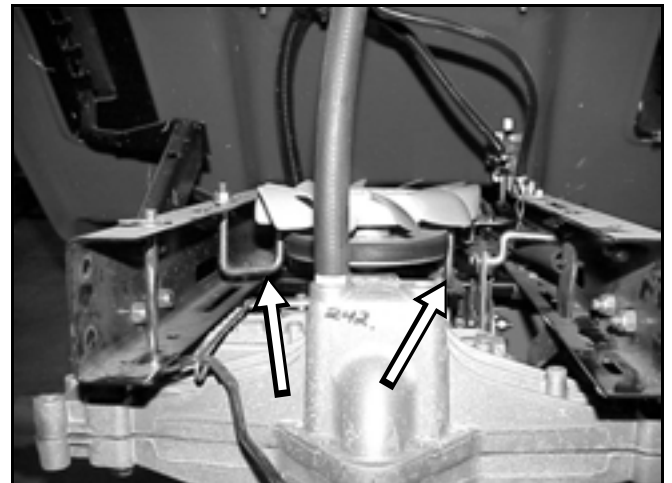


Figure 109

mvc-0039

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).

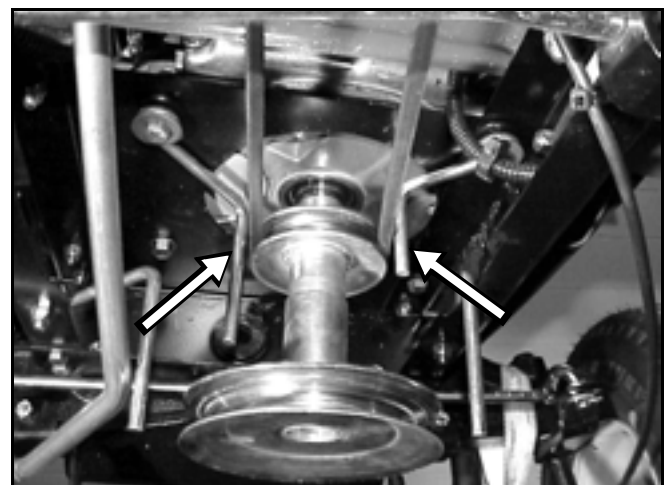


Figure 110

mvc-0045

XL HYDROSTATIC TRANSAXLES

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



Figure 111

mvc-001C

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



Figure 113

mvc-0021

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



Figure 112

mvc-0010

8. Continue feeding the belt back up over the idler pivot bracket and around the transaxle drive pulley (Figure 114).



Figure 114

mvc-0022

XL HYDROSTATIC TRANSAXLES

9. Install the belt around the flat idler pulley assembly with the belt guide and tighten the bolt and nut (Figure 115).



Figure 115

mvc-0010

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



Figure 116

mvc-001c

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).

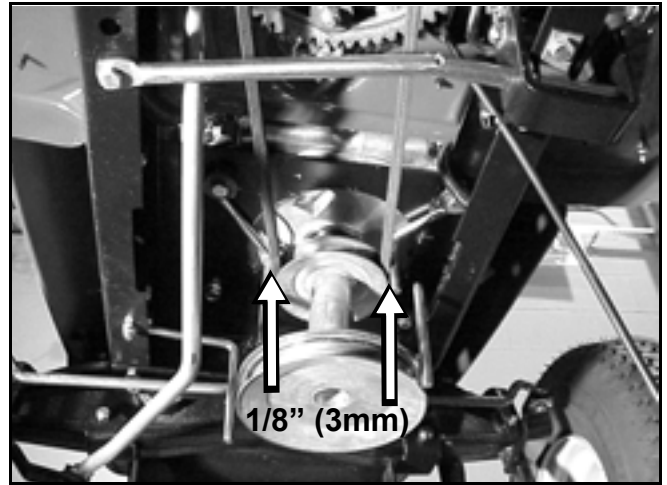


Figure 117

mvc-001b

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).

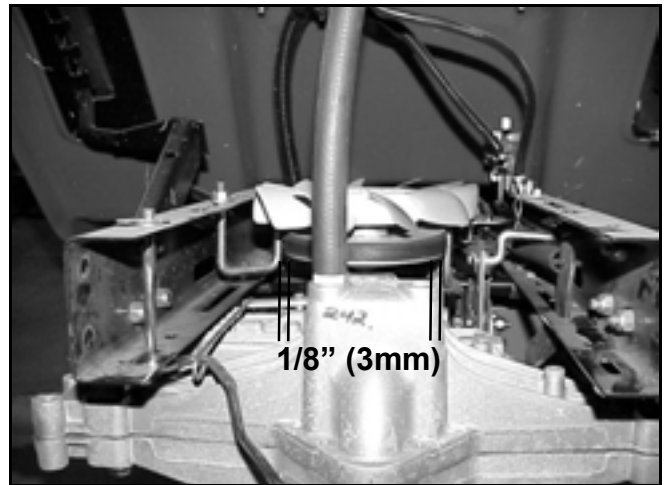


Figure 118

mvc-0039

XL HYDROSTATIC TRANSAXLES

13. Before installing the mower deck on the tractor, check the routing of the drive belt (Figure 119).

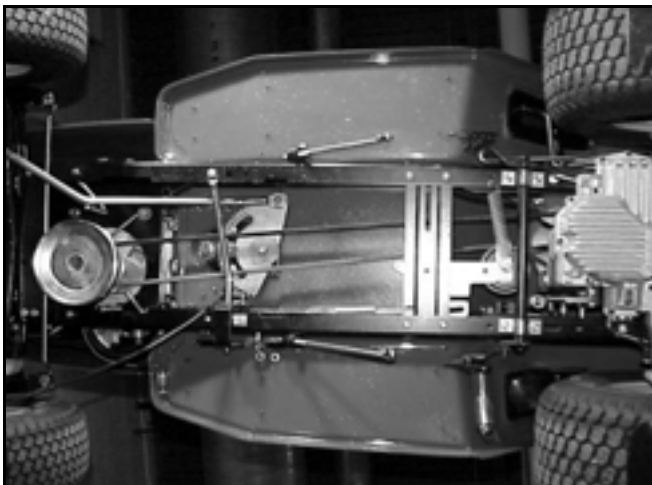


Figure 119

mvc-0047

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).

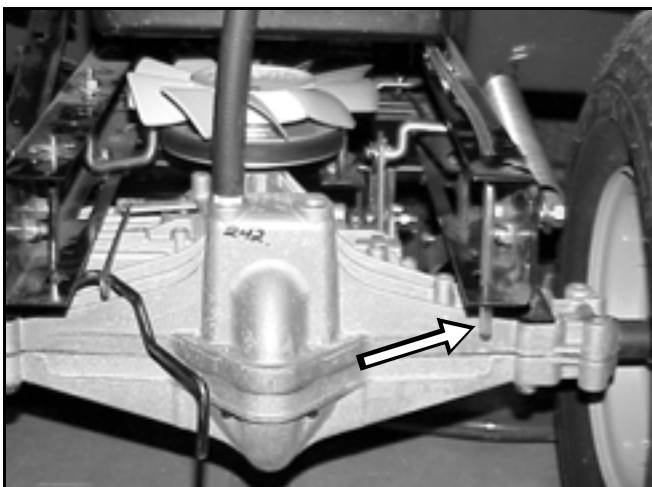


Figure 120

mvc-647

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).

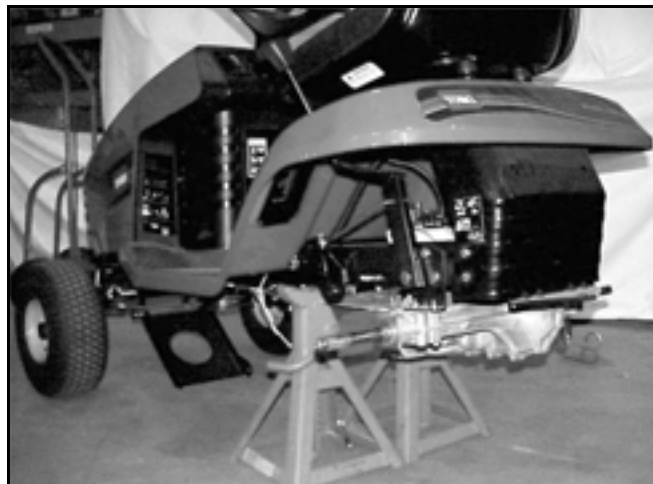


Figure 121

MVC-0014

3. Loosen the left transaxle belt guide (Figure 122).

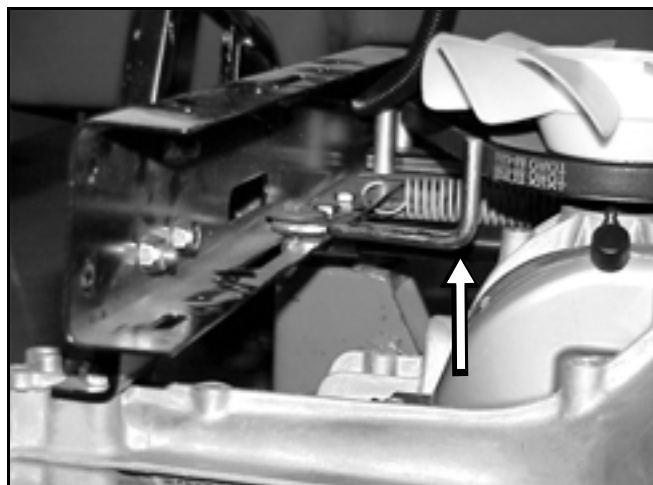


Figure 122

MVC-0016

XL HYDROSTATIC TRANSAXLES

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).

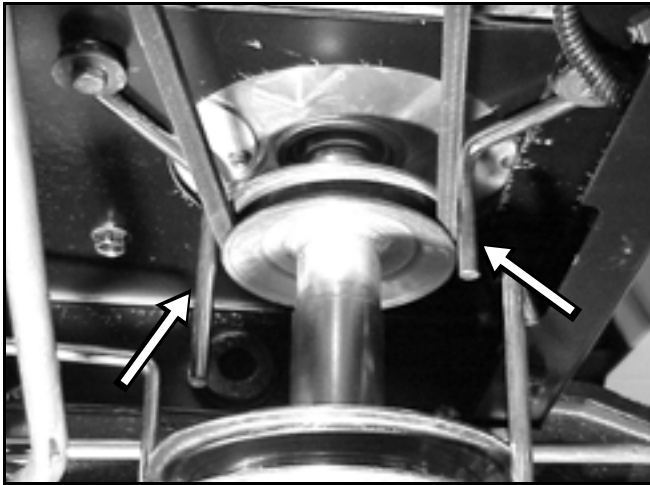


Figure 123

MVC-001F

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



Figure 124

MVC-001C

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).

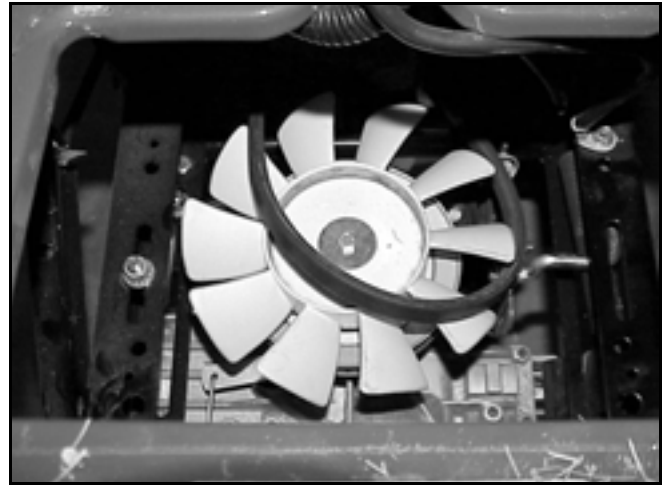


Figure 125

MVC-003A

7. Disconnect the hairpins on both the speed control link and the speed control rod (Figure 126).

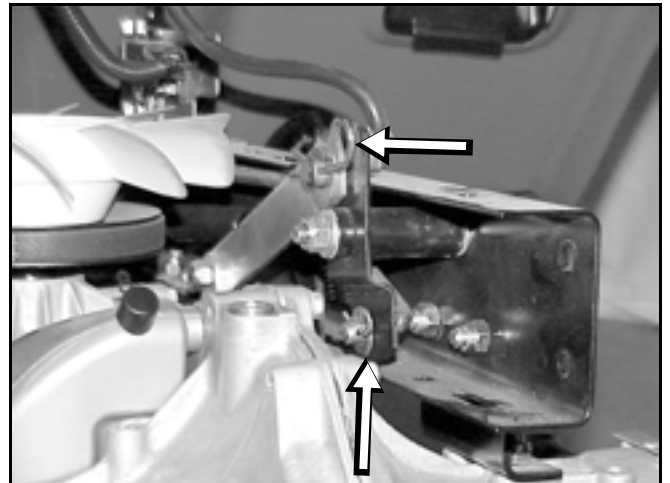


Figure 126

MVC-0015

XL HYDROSTATIC TRANSAXLES

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).

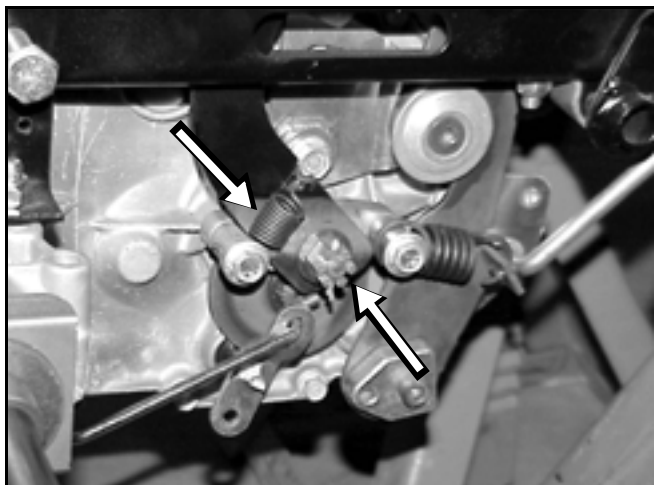


Figure 127

MVC-0017

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).



Figure 128

MVC-0018

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).

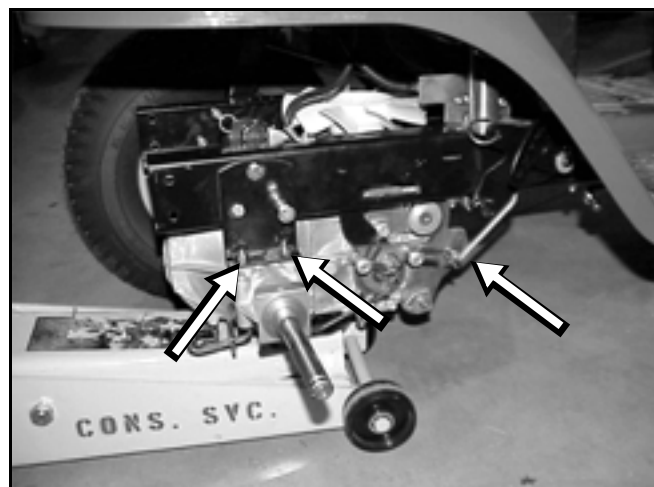


Figure 129

MVC-001a

2. Install brake arm and castle nut. Adjust the brake (page 3 - 21) (Figure 130).

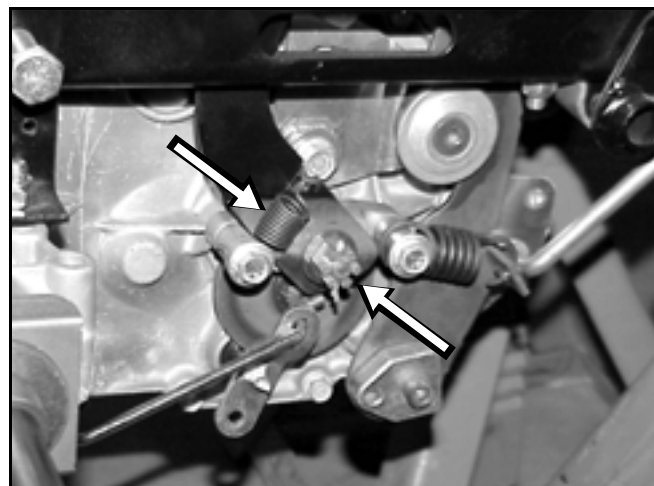


Figure 130

MVC-0017

XL HYDROSTATIC TRANSAXLES

3. Reconnect the speed control link and the speed control rod with washers and hairpins (Figure 131).

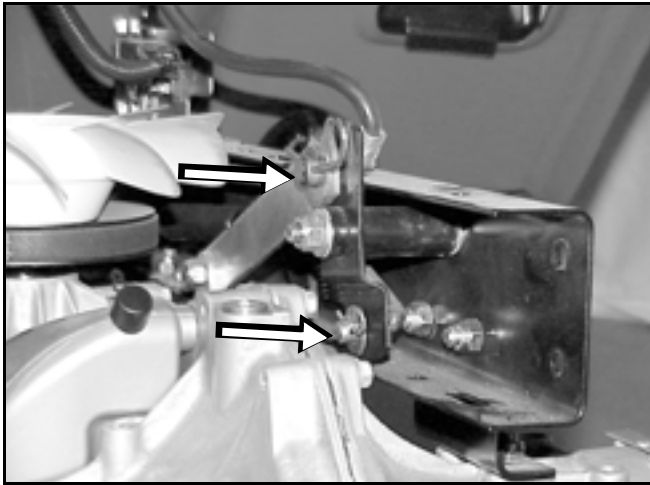


Figure 131

MVC-0015

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).



Figure 132

MVC-001C

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).

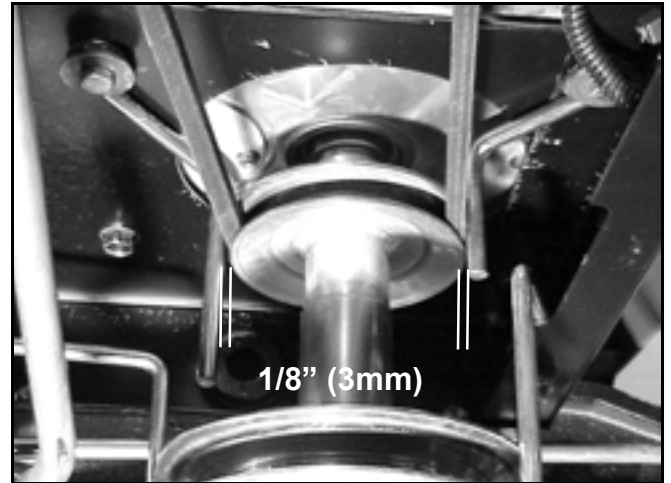


Figure 133

MVC-001F

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).

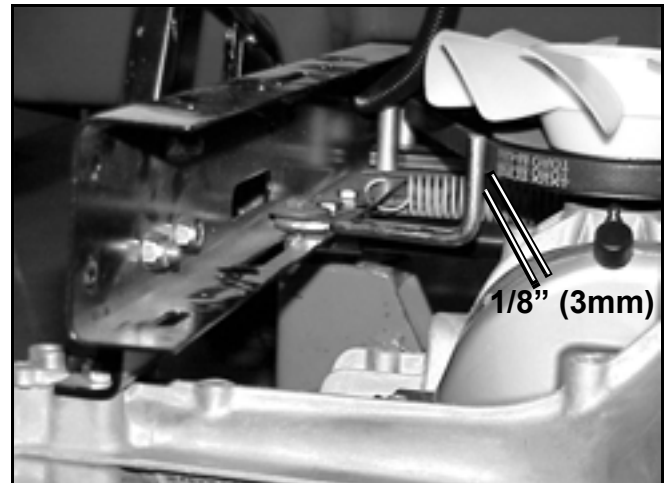


Figure 134

MVC-0016

XL HYDROSTATIC TRANSAXLES

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).

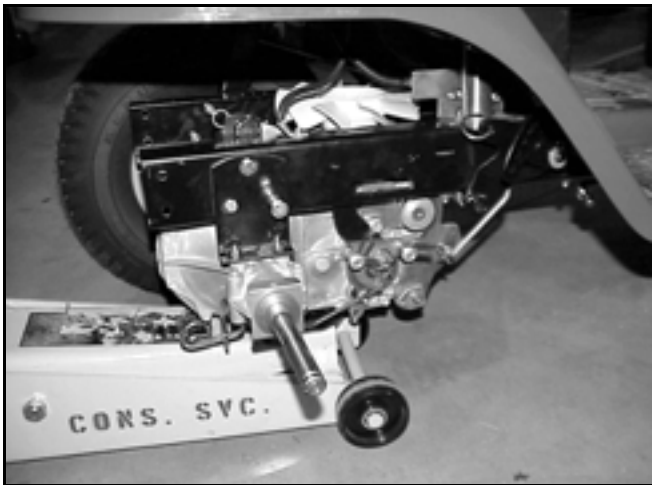


Figure 135

MVC-001A

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).



Figure 136

2001-020

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:

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).

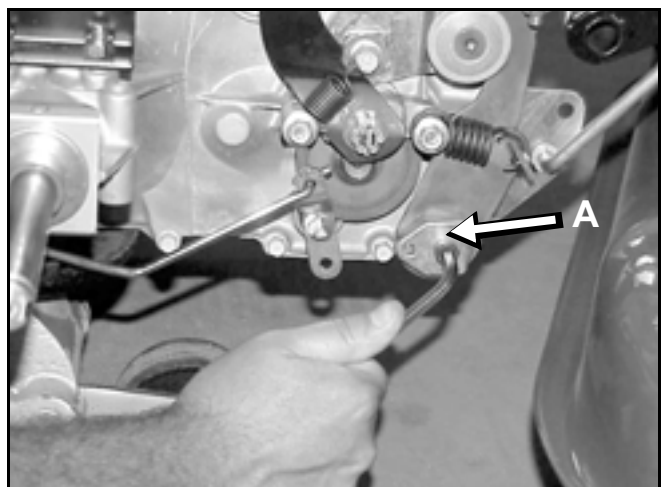


Figure 137

2001-023

(A) Adjusting Puck

XL HYDROSTATIC TRANSAXLES

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.

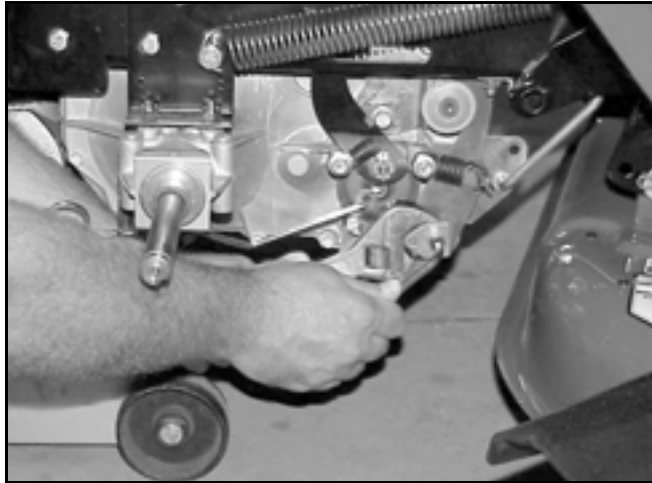


Figure 138 2001-021

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).



Figure 139 2001-017

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).

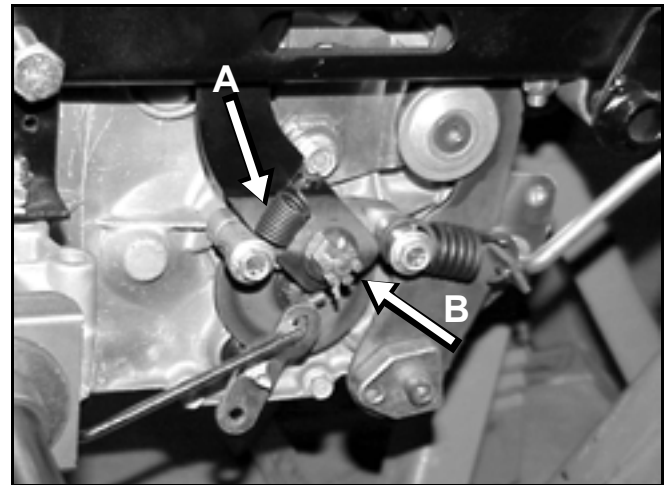


Figure 140 MVC-0017

(A) Brake Return Spring (B) Cotter Pin and Nut

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.

XL HYDROSTATIC TRANSAXLES

7. Install tire and check the brake operation again. If satisfactory brake adjustment/operation cannot be attained, the brake pads or disc require service.

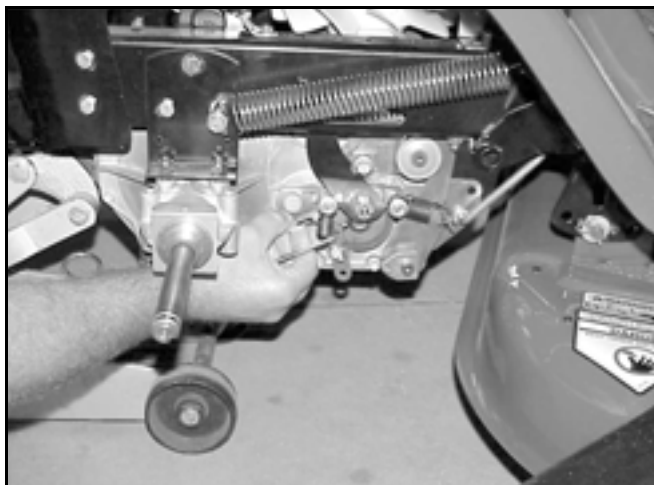


Figure 141

2001-019

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).

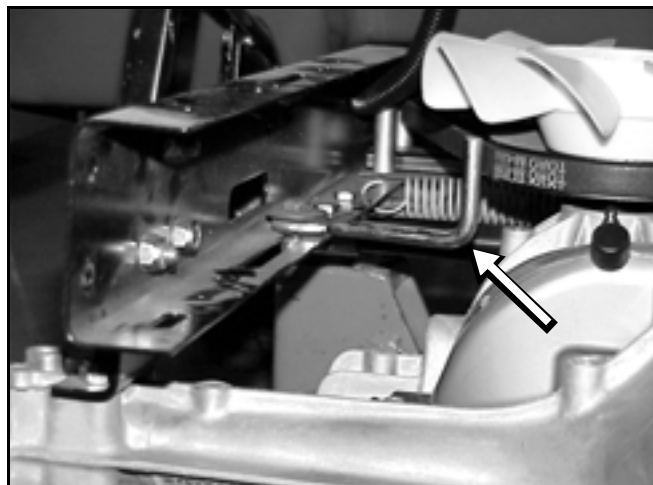


Figure 142

MVC-0016

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

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.

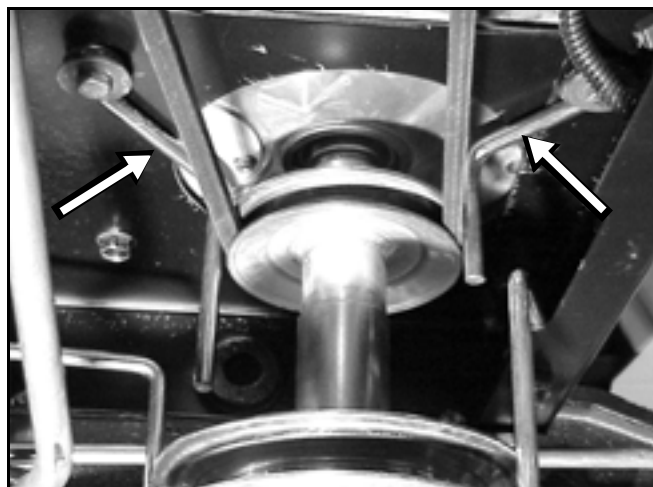


Figure 143

MVC-001F

XL HYDROSTATIC TRANSAXLES

5. Unhook the idler spring on the idler spring bracket (Figure 144).



Figure 144

MVC-001C

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



Figure 145

MVC-0010

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.

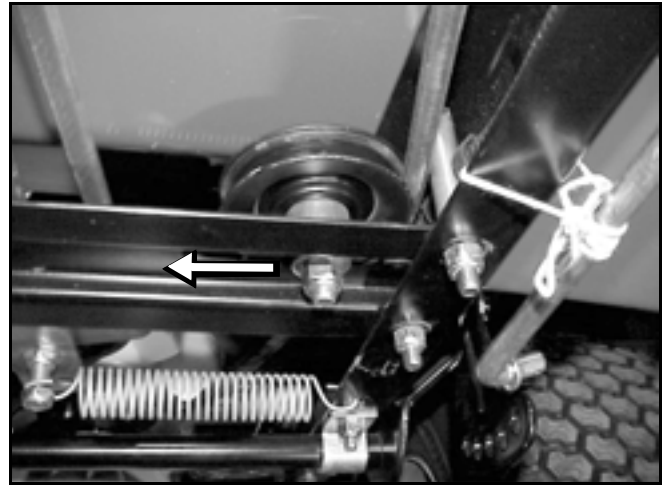


Figure 146

MVC-0020

8. Install belt around the engine drive pulley and feed the drive belt up over the pedal pivot rod (Figure 147).



Figure 147

MVC-0021

XL HYDROSTATIC TRANSAXLES

9. Continue feeding the belt back up over the idler pivot bracket and around the transaxle drive pulley (Figure 148).



Figure 148

MVC-0022

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



Figure 149

MVC-0010

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



Figure 150

MVC-001c

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).

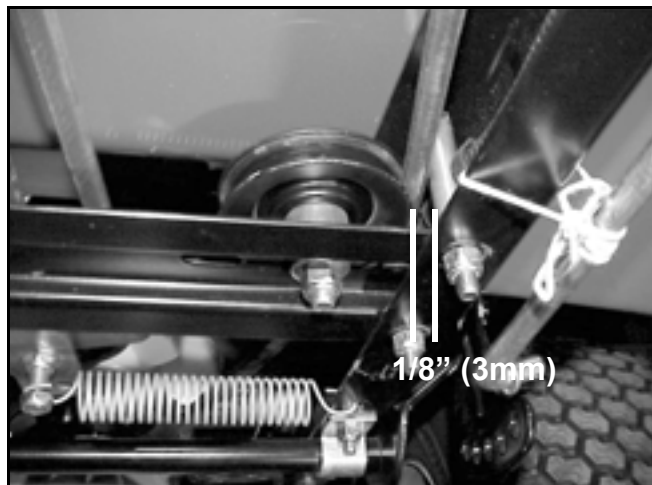


Figure 151

MVC-0020

XL HYDROSTATIC TRANSAXLES

- 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).

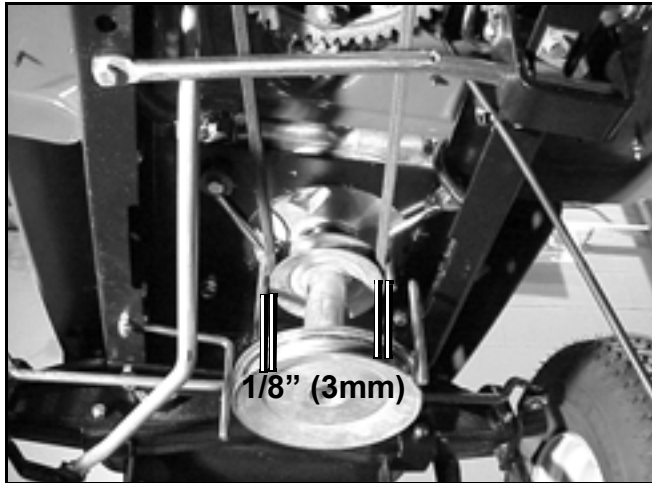


Figure 152

MVC-001b

- 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).



Figure 153

MVC-001e

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

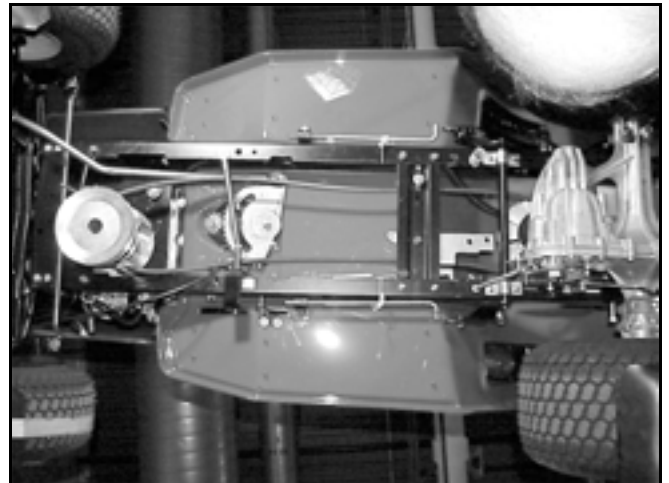


Figure 154

MVC-0023

- Install mower deck (refer to the "Mower" section on page 6 - 1).
- Install battery and battery tray. Reconnect the battery cables and test the tractor, making sure all safety devices are operating.

CHASSIS

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).

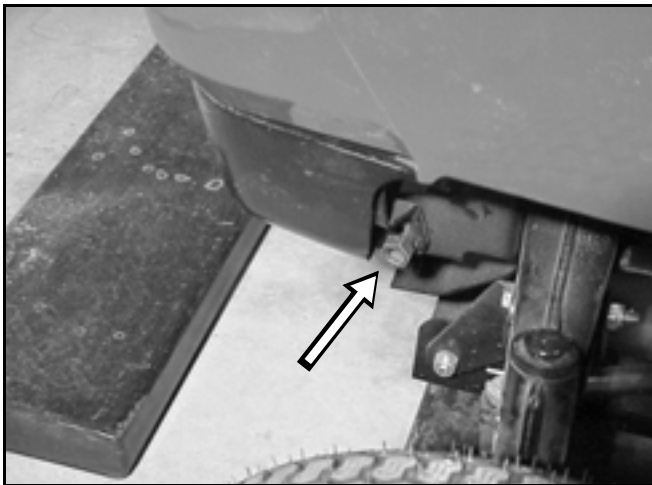


Figure 155

mvc-857

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

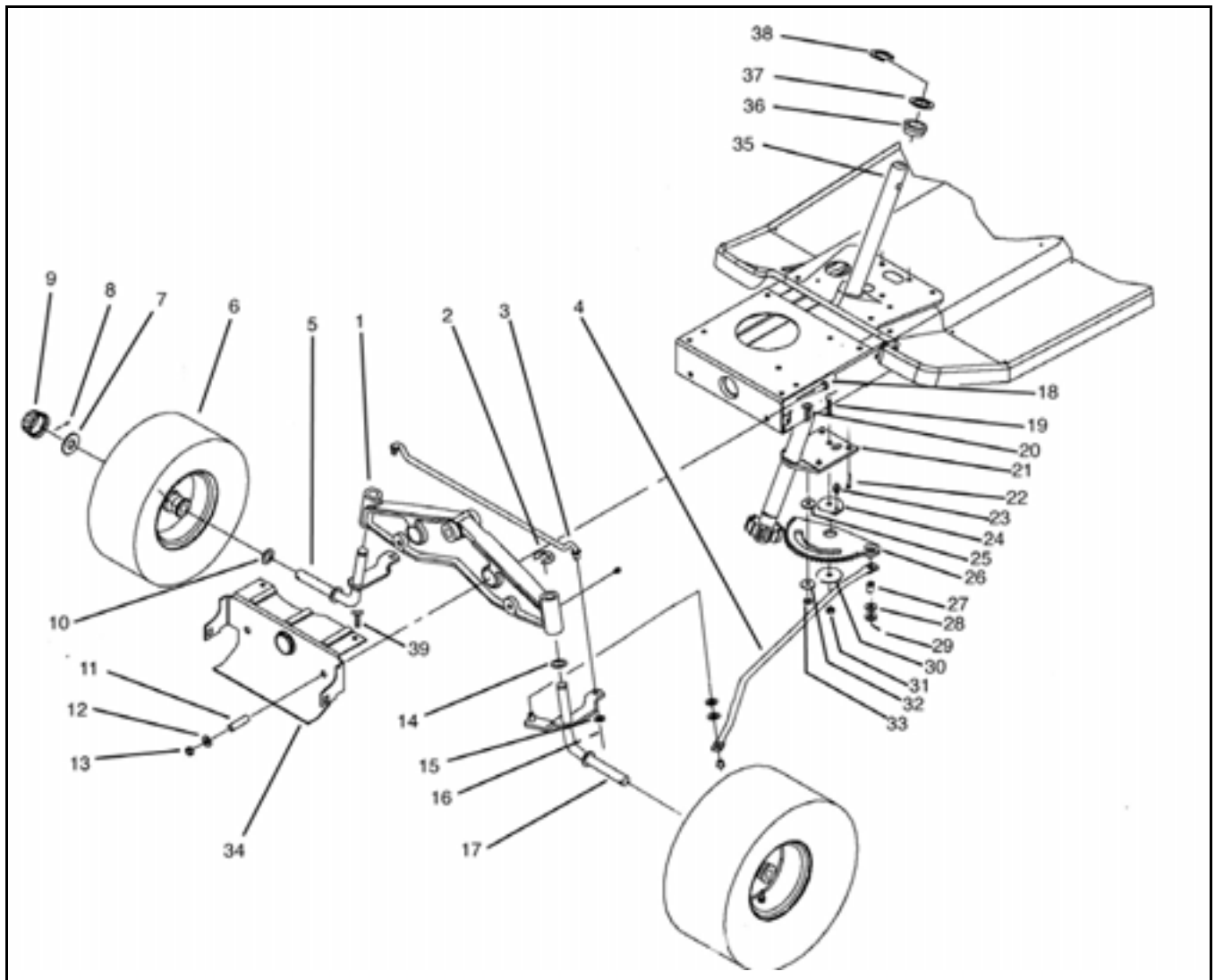


Figure 156

- | | | |
|-----------------------------|----------------------------|--------------------------|
| (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 | (39) Screw |
| (12) Flat Washer | (26) Steering Rack | |
| (13) Lock Nut | (27) Steering Link Bushing | |
| (14) Thrust Washer | (28) Flat Washer | |

CHASSIS

Tilt Steering

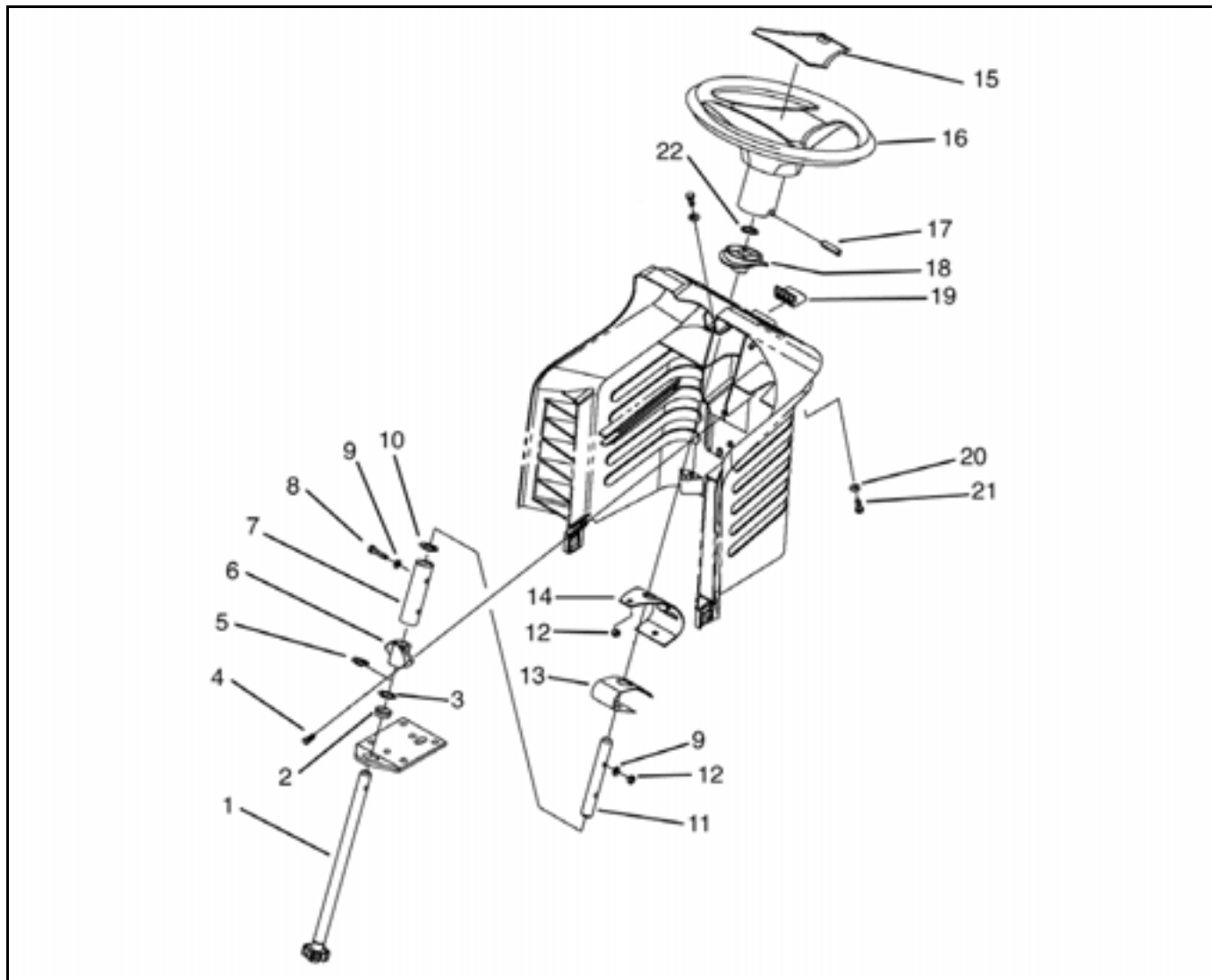


Figure 157

- | | | |
|--------------------------|---------------------------|--------------------------|
| (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).



Figure 158 mvc-0026

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).



Figure 159 MVC-0027

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).



Figure 160 MVC-0026

CHASSIS

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 .

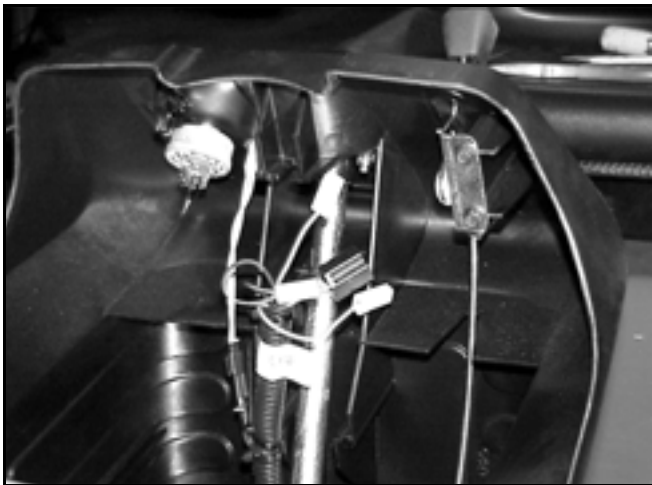


Figure 161 MVC-002a

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



Figure 162 MVC-0035

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).

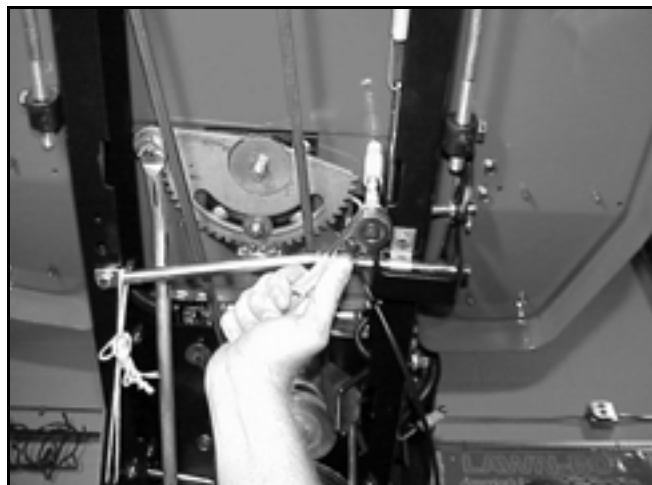


Figure 163 MVC-0036

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).



Figure 164 MVC-0037

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).



Figure 165 MVC-002b

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.



Figure 166 MVC-002d

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).



Figure 167 MVC-002e

CHASSIS

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).



Figure 168

MVC-0028

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



Figure 169

MVC-002f

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



Figure 170

MVC-0032

10. Remove the cotter pin connecting the drag link to the fan gear (Figure 171).



Figure 171

MVC-0033

11. Remove the rubber grip from the brake pedal (Figure 172).

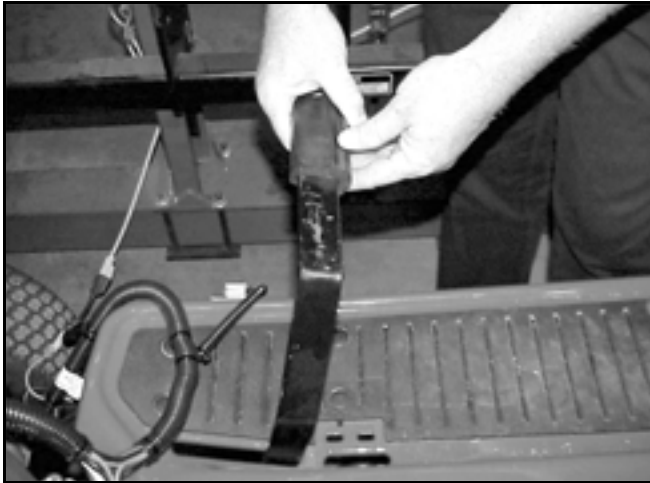


Figure 172

MVC-0030

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



Figure 173

MVC-0034

Installation Of The Rear Body

Reverse the order of rear body removal.

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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).



Fig A4 001

PICT-4449

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).



Fig A4 002

PICT-4448

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



Fig A4 003

PICT-4452

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).



Fig A4 004

PICT-4457

CHASSIS

7. Remove the electric PTO clutch from the crankshaft (Fig. A4 005).



Fig A4 005

PICT-4458

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).

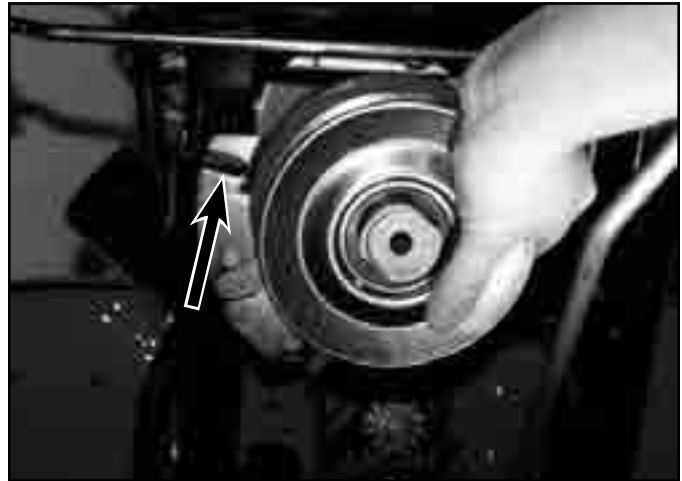


Fig A4 007

PICT-4465

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).

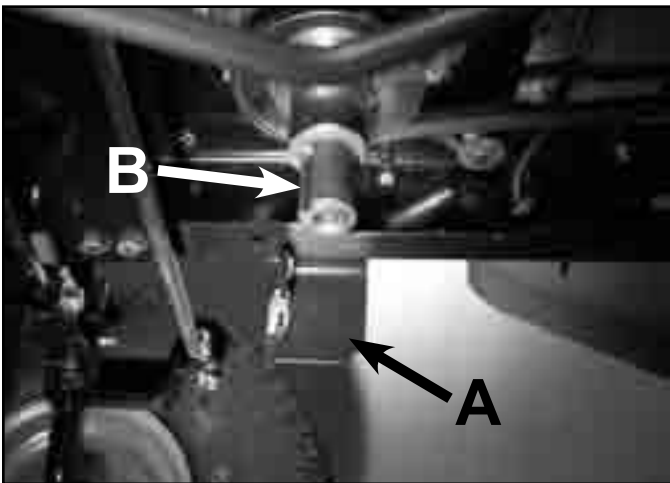


Fig A4 006

PICT-4463

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).



Fig A4 008

PICT-4472

- 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).



Fig A4 009

PICT-4452

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



Fig A4 010

PICT-4449

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

CHASSIS

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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).

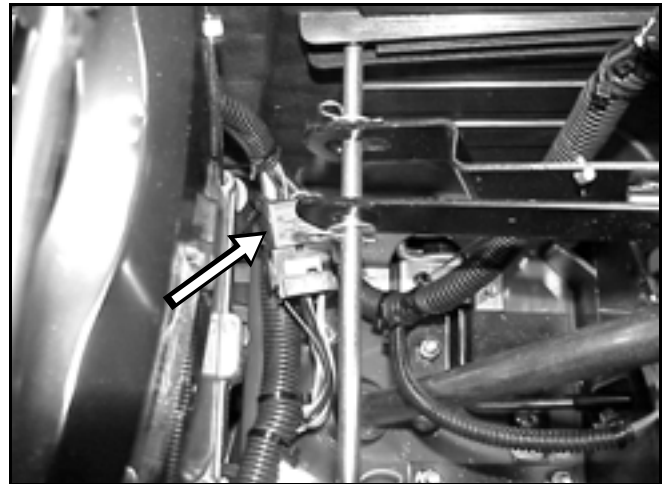


Figure 174

mvc-672

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.

ELECTRICAL SYSTEM

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).

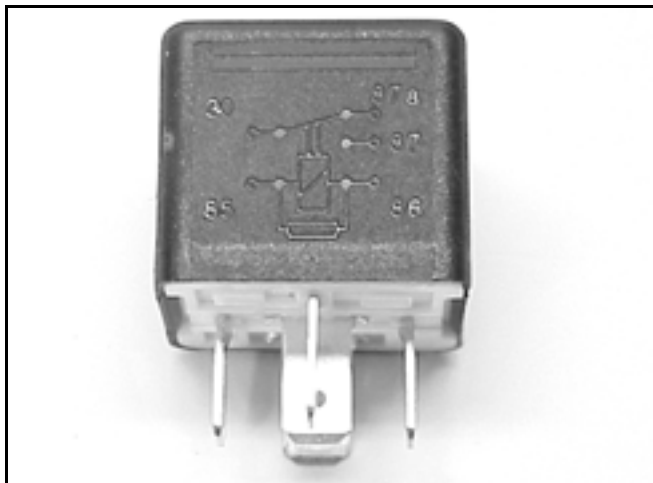


Figure 175

mvc-671

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.

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 85.
5. Disconnect voltage and multimeter leads from relay terminals.

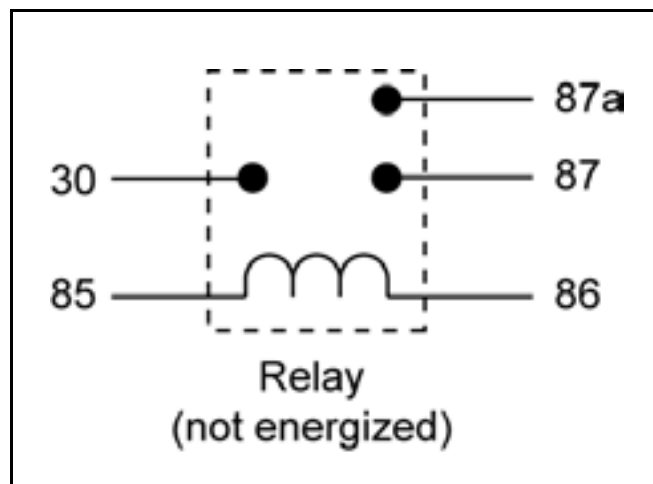


Figure 176

Coil	Terminals 30 + 87	Terminals 30 + 87a
Not Energized	Open	Closed
Energized	Closed	Open

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 “arcing” that can damage other type switches.

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

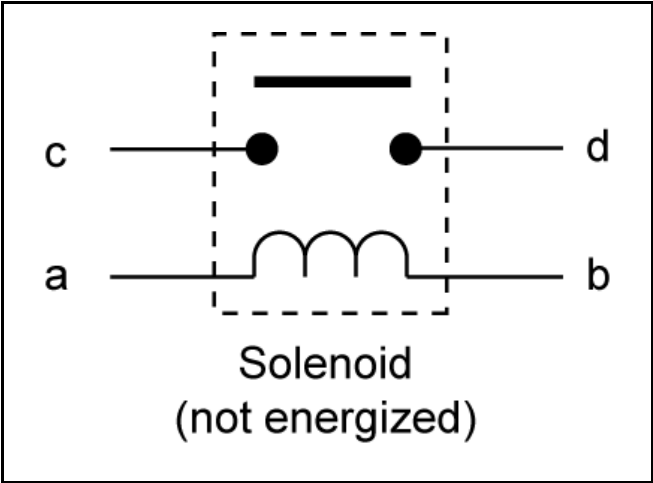


Figure 177

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.

(1) 1999 & prior models (2) 2000 & later models

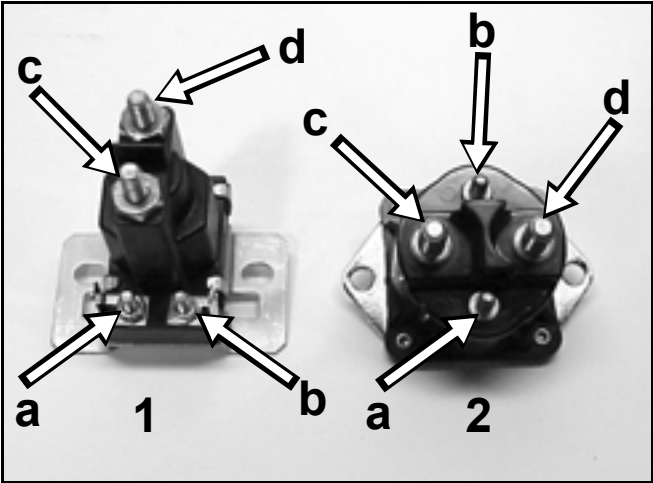


Figure 178

mvc-675

(a) & (b) Coil Terminals (c) & (d) Contact Terminals

Location

The solenoid is located under the gas tank (Figure 179).

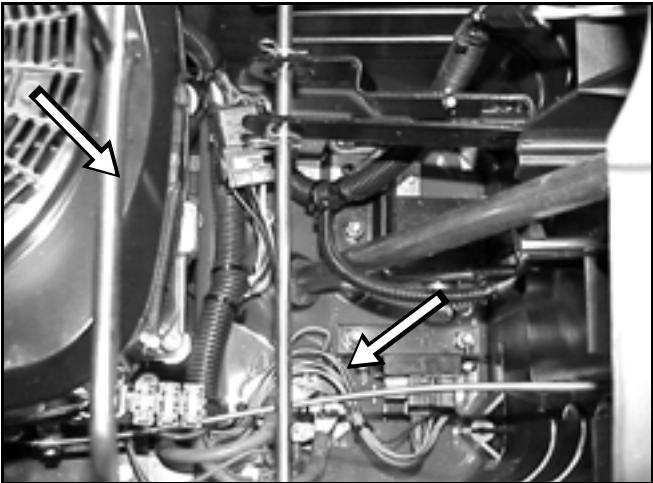


Figure 179

mvc-676

ELECTRICAL SYSTEM

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).

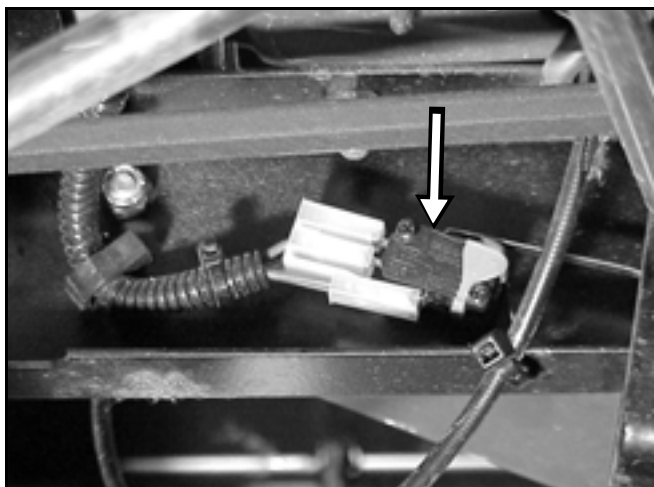


Figure 180

mvc-268

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.

Button	Condition
Up	Com + NC
Down	Com + NO

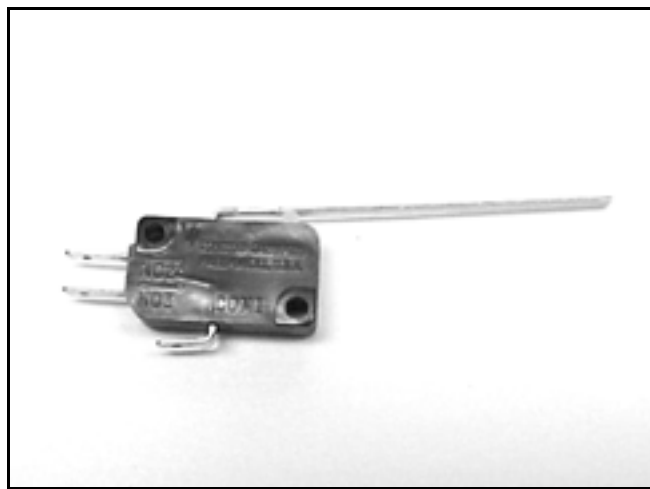


Figure 181

mvc-677

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).

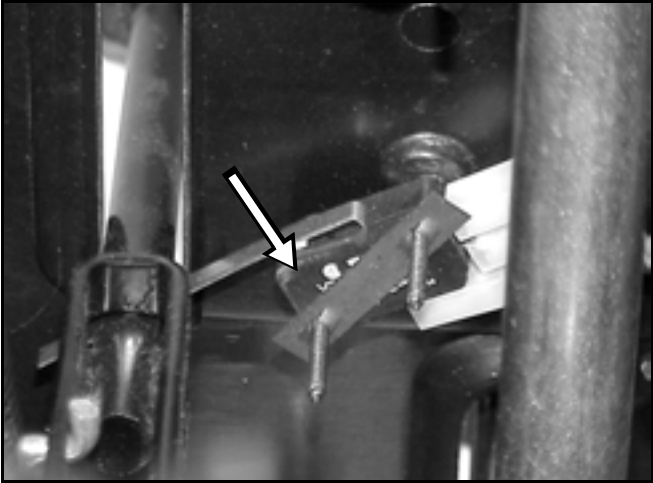


Figure 182 mvc-679

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).

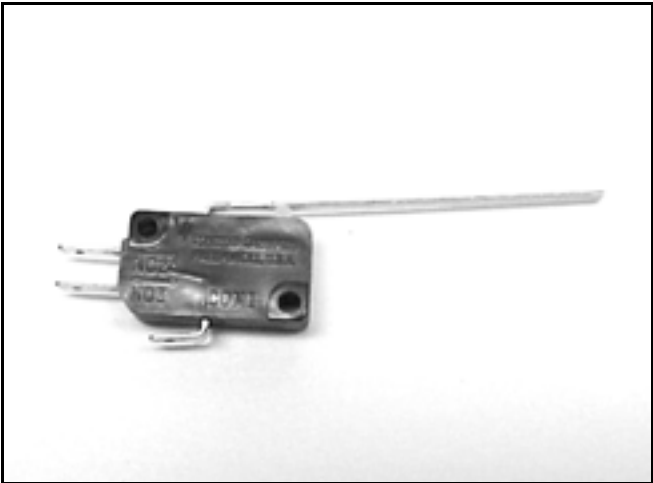


Figure 183 mvc-677

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).

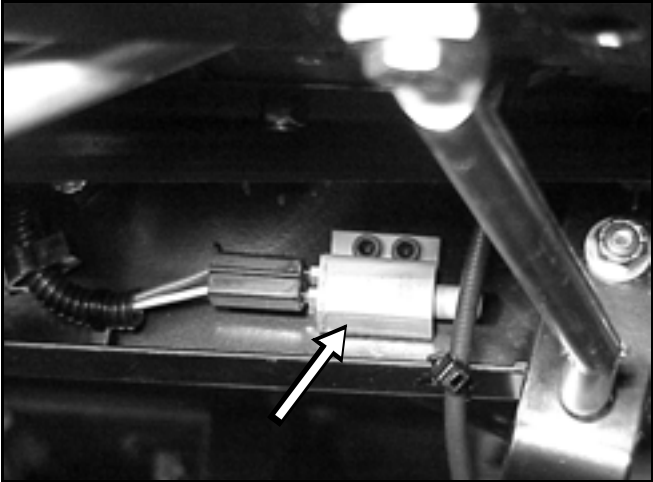


Figure 184 mvc-681

ELECTRICAL SYSTEM

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).

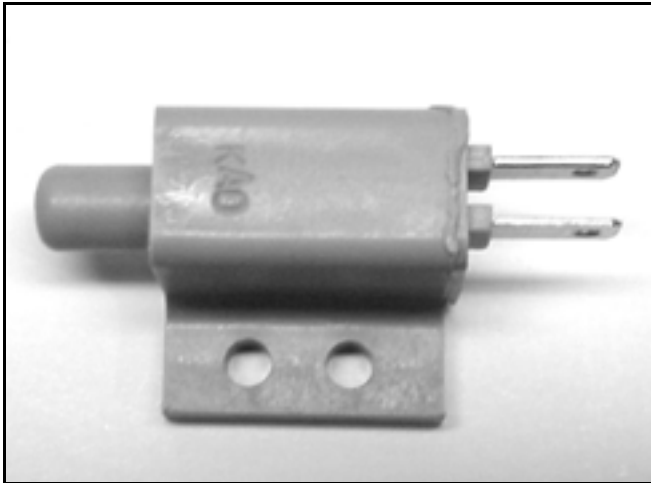


Figure 185

mvc-680

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.

Location

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

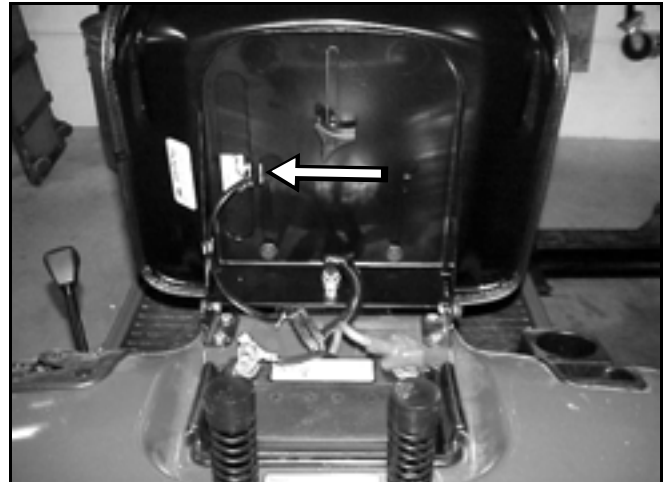


Figure 186

mvc-684

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

mvc-684

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.

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).



Figure 188

3678-01

ELECTRICAL SYSTEM

4. A red light on the front console turns on, indicating that the interlock (No-Mow-In-Reverse) is disabled (Figure 189).



Figure 189

3678-03

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).



Figure 190

mvc-691

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.

Location

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

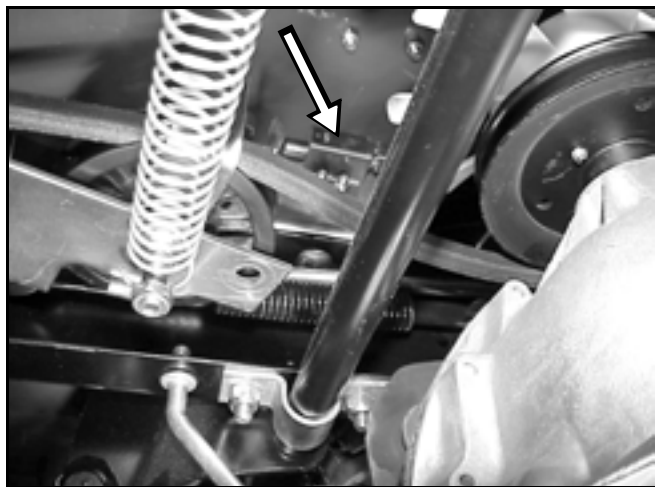


Figure 191

mvc-686

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).

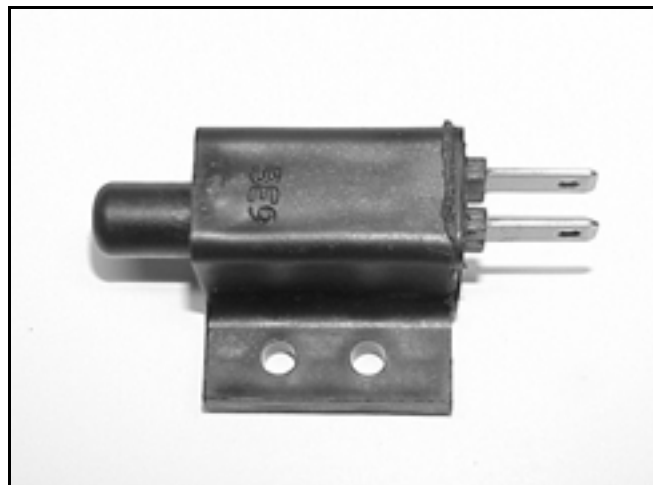


Figure 192

mvc-685

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).

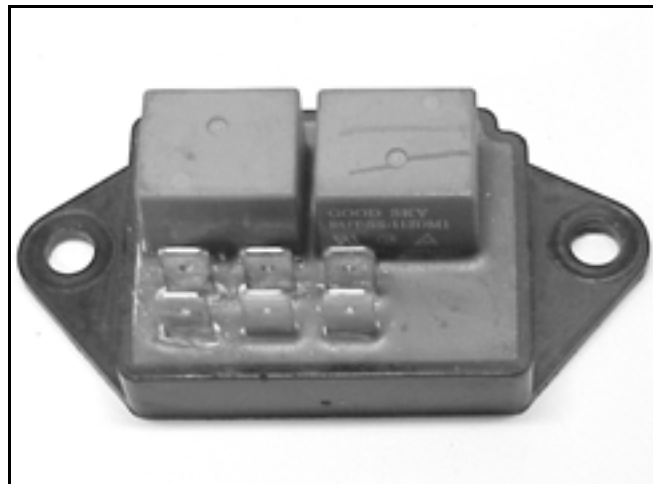


Figure 193

mvc-692

ELECTRICAL SYSTEM

Location

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

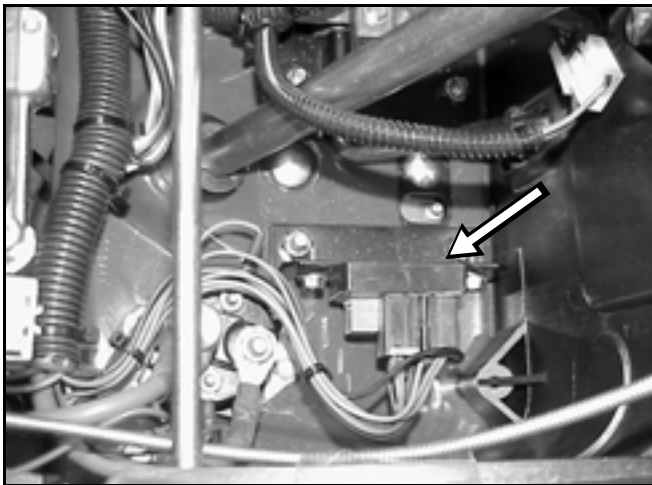


Figure 194

mvc-694

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:

Meter Scale	Meter Probe Negative	Meter Probe Positive	Meter Reading
Ohms	Pin 3	Pin 1	Open (more than 100k ohm)
Ohms	Pin 3	Pin 2	350 to 450 ohms
Diode	Pin 3	Pin 4	0.7V to 1.0V *
Diode	Pin 3	Pin 5	0.7V to 1.0V *
Ohms	Pin 3	Pin 6	Open (more than 100k ohms)

* **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).

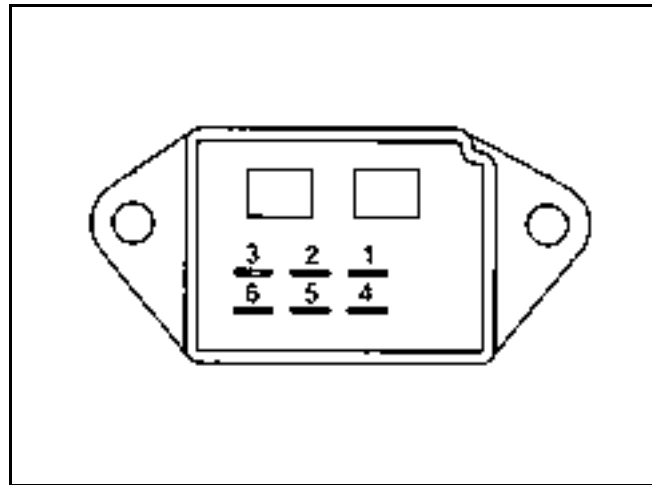


Figure 195

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.

Ground	B+ (12V)	Meter Probe Neg.	Meter Probe Pos.	Meter Scale	Meter Reading
Pin 3	Pin 4	Pin 3	Pin 1	Ohms	<2 ohms
Pin 3	Pin 5	Pin 3	Pin 1	Ohms	<2 ohms
Pin 3	Pin 2	Pin 3	Pin 1	Ohms	<2 ohms
Pin 3	Pin 2	Pin 3	Pin 6	Volts	12 V **

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

ELECTRICAL SYSTEM

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).



Fig A5 001

PICT-4439

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).

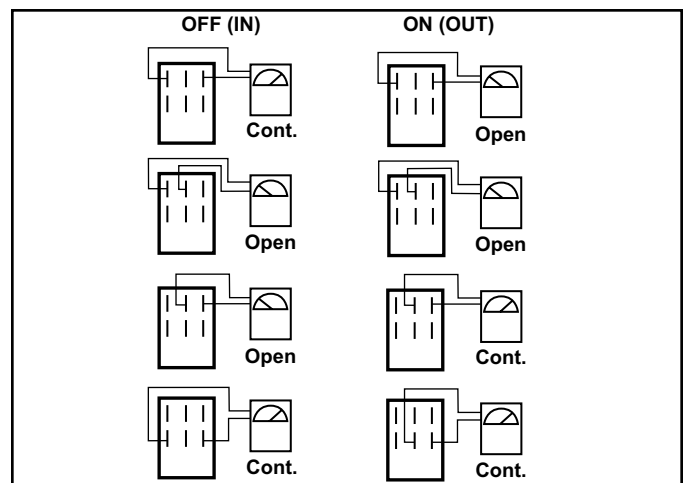


Fig A5 002

PTO switch test a

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.

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).



Fig A5 003

PICT-4476

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).

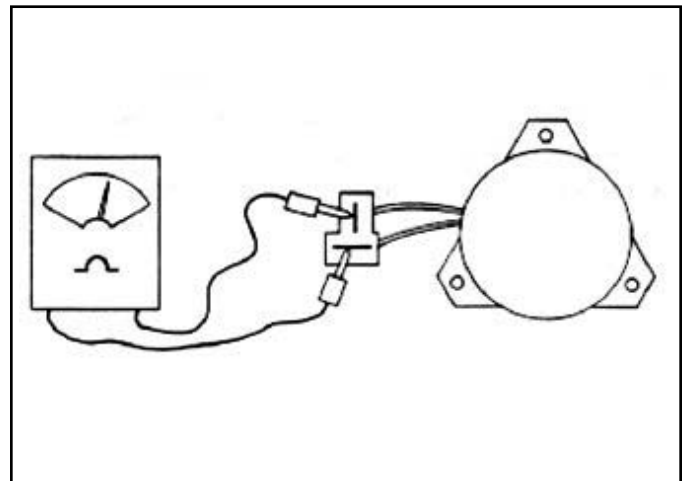


Fig A5 004

fig. 88

5. The meter should read 2.84 ohms \pm 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).

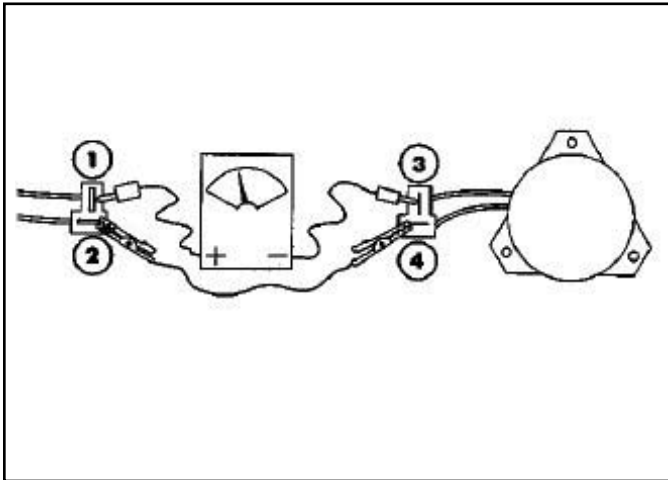


Fig A5 005

fig. 89

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.

ELECTRICAL SYSTEM

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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.

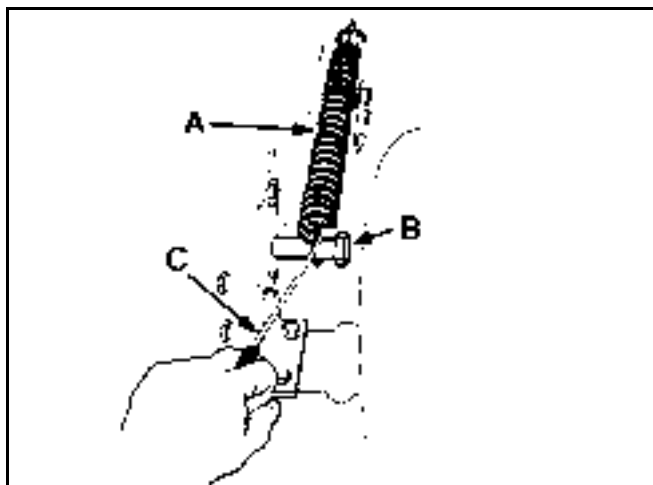


Figure 196 m-1851

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



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.

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.

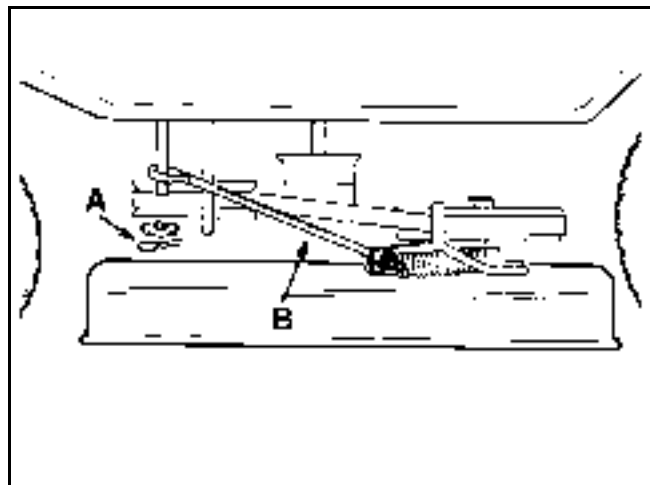


Figure 197 m-1897

- (A) Hairpin cotter and washer (B) Rod

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

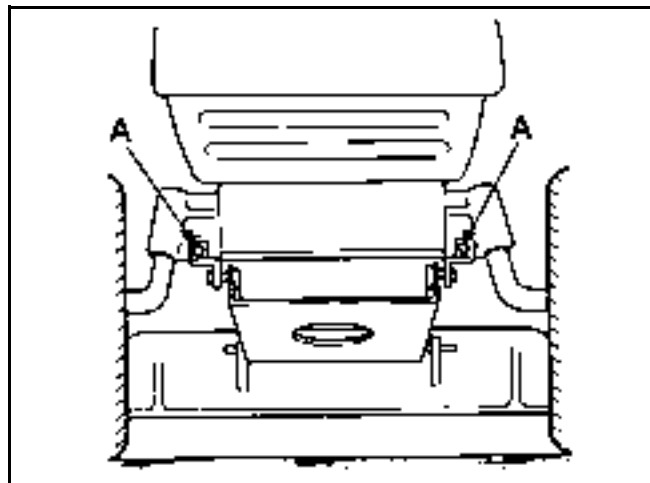


Figure 198 m-1888

- (A) Pivot Mount Brackets

MOWER

- 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.

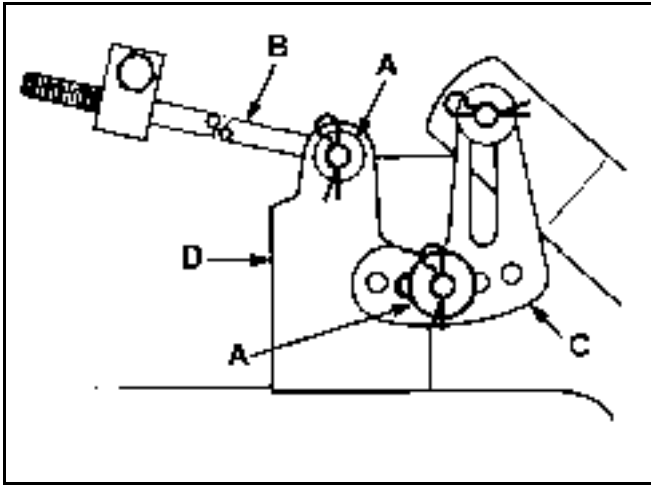


Figure 199

m-1805

- | | |
|-----------------------------|----------------------|
| (A) Hairpin Cotter & Washer | (C) Leveling Bracket |
| (B) Long Rod | (D) Mower Mount |

- 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.

- 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.

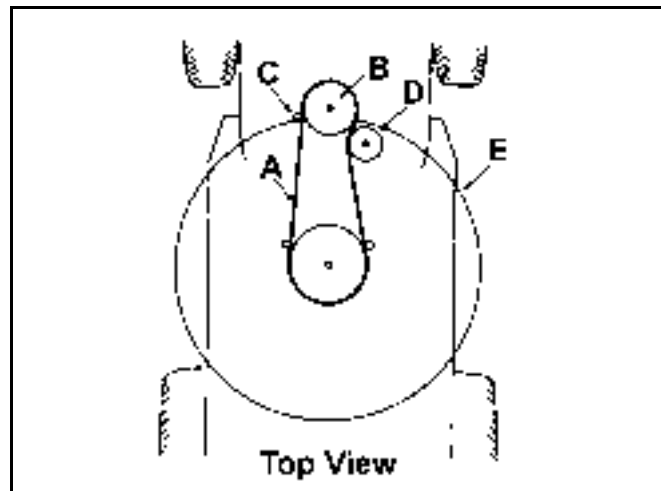


Figure 200

m-1898

- | | |
|-------------------|------------------|
| (A) Mower Belt | (D) Idler Pulley |
| (B) Engine Pulley | (E) 32" Mower |
| (C) Belt Guide | |

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

Installing 32" Mower

- 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.
- Pull the wire off of the spark plug.
- Turn the front wheels fully to the left. Slide the mower under the chassis from the right side.
- 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).

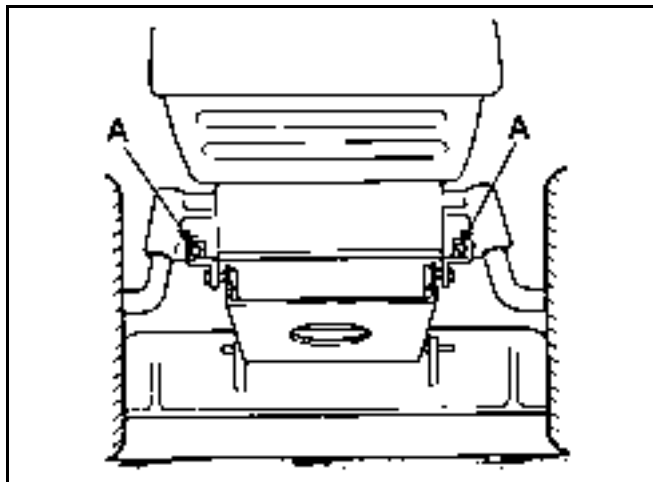


Figure 201

m-1888

(A) Pivot Mount Brackets

6. Move the height-of-cut lever into the "A" notch.

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.

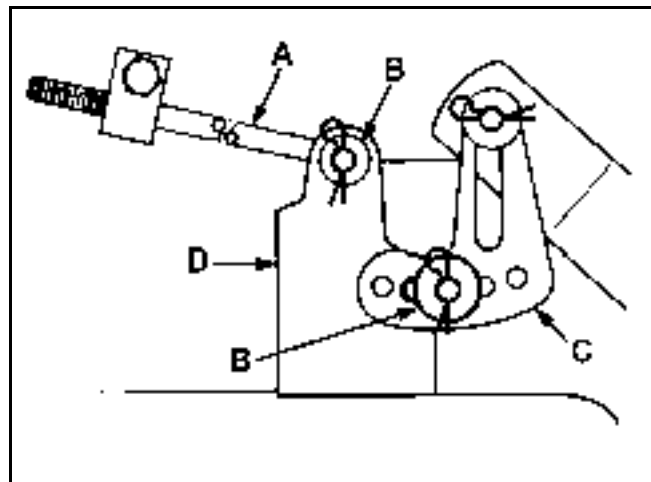


Figure 202

m-1851

(A) Rod (C) Leveling Bracket
(B) Hairpin Cotter & Washer (D) Mower Mount

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.

MOWER

9. Install the blade control rod onto the blade control arm and secure it with the washer and hairpin cotter (Figure 203).

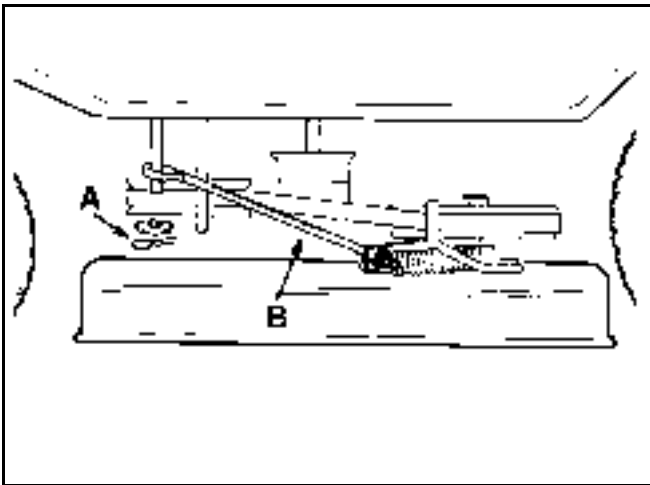


Figure 203

m-1897

(A) Hairpin Cotter & Washer (B) Rod

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.

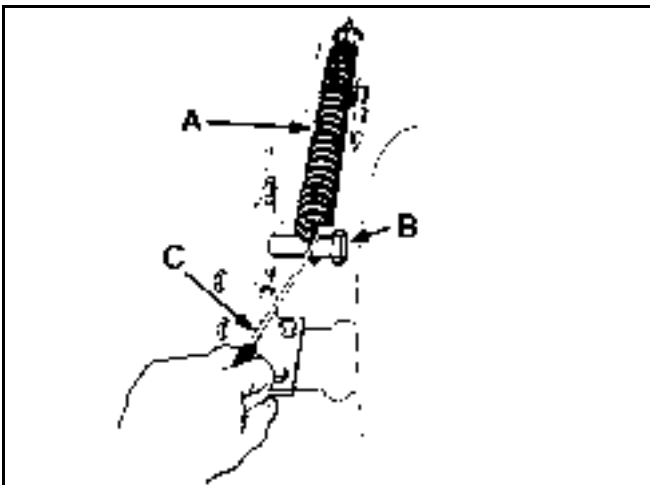


Figure 204

m-1851

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

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

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.

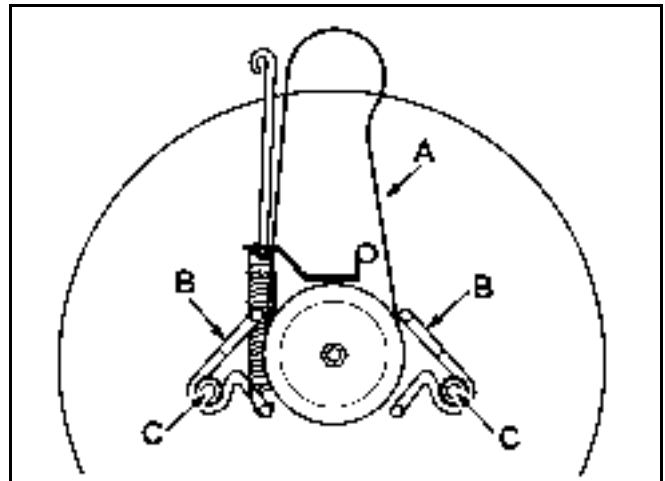


Figure 205

fig43

(A) Mower Belt (C) Mounting Bolt
(B) Belt Guide

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.

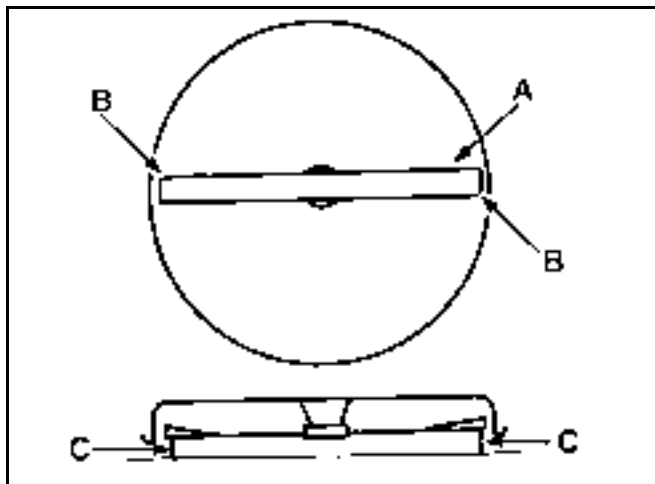


Figure 206

m-1900

- | | |
|---------------------------|------------------|
| (A) Blade Side to Side | (C) Measure Here |
| (B) Outside Cutting Edges | |

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.

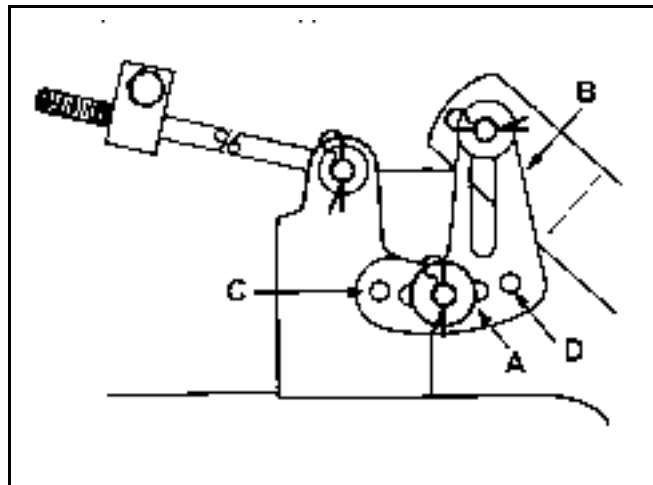


Figure 207

m-1805

- | | |
|-----------------------------|----------------|
| (A) Hairpin Cotter & Washer | (C) Front Hole |
| (B) Leveling Bracket | (D) Rear Hole |

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.

MOWER

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.

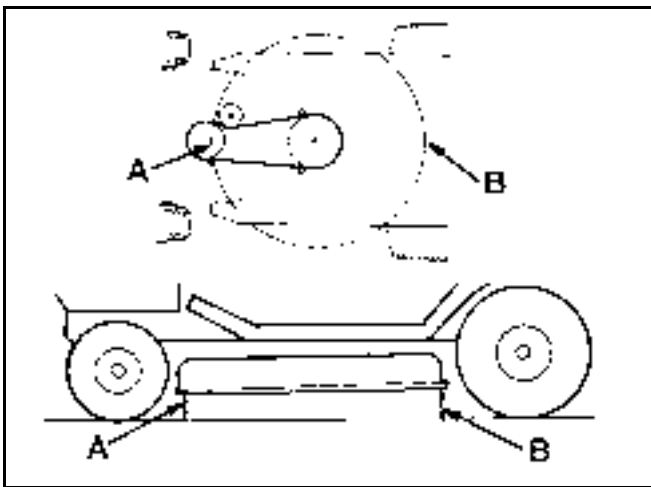


Figure 208

m-1801

- | | |
|--------------------------|-------------------------|
| (A) Measure Front Center | (B) Measure Rear Center |
|--------------------------|-------------------------|

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.

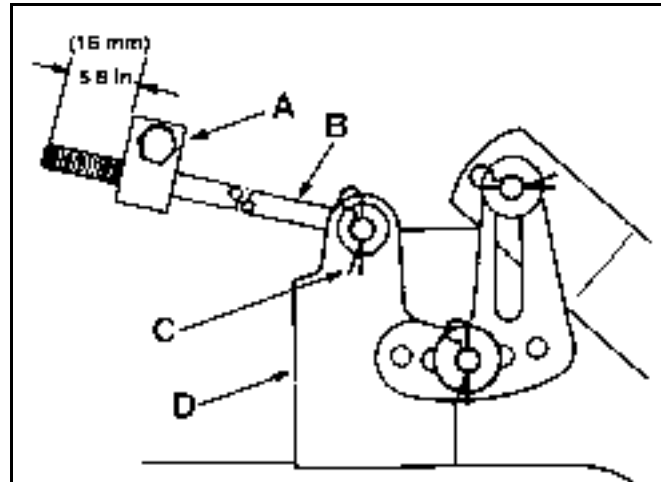


Figure 209

m-1805-3

- | | |
|---------------------|-----------------------------|
| (A) Adjusting Block | (C) Hairpin Cotter & Washer |
| (B) Long Rod | (D) Mower Mount |

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.

- 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.

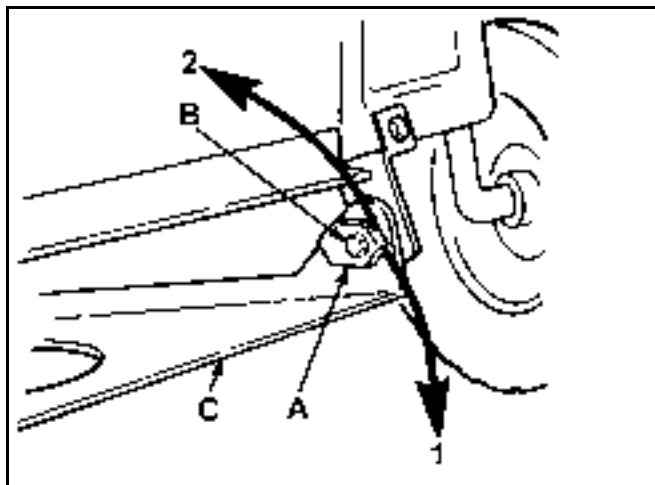


Figure 210

m-1902

- | | |
|--------------------------------|-----------------------|
| (A) Slope Adjusting Nut (Left) | (B) Bolt and Locknut |
| 1 = Down to raise mower | (C) Mower Pivot Mount |
| 2 = Up to lower mower | |

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

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

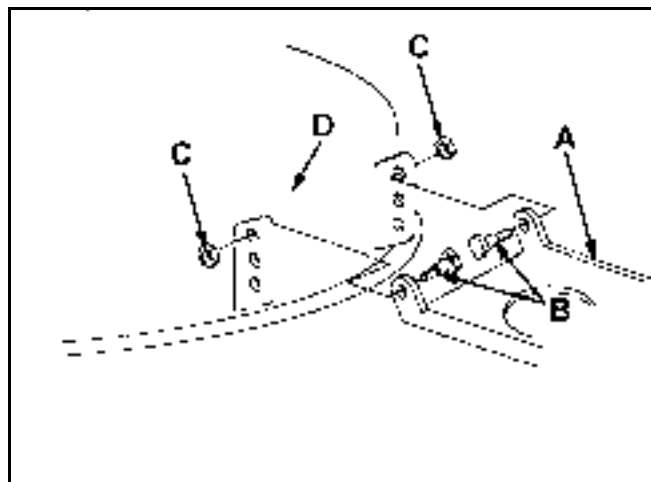


Figure 211

m-1903

- | | |
|-------------------|-------------|
| (A) Mower Pivot | (C) Locknut |
| (B) Shoulder Bolt | (D) Mower |

- Recheck the front-to-rear slope again; refer to step 5.
- 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.
- Push the wire onto the spark plug.

38" Mower

Removing 38" Mower

- Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.
- Pull the wire off the spark plug.
- Move the height-of-cut lever (deck lift) into the "D" notch.

MOWER

- 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.

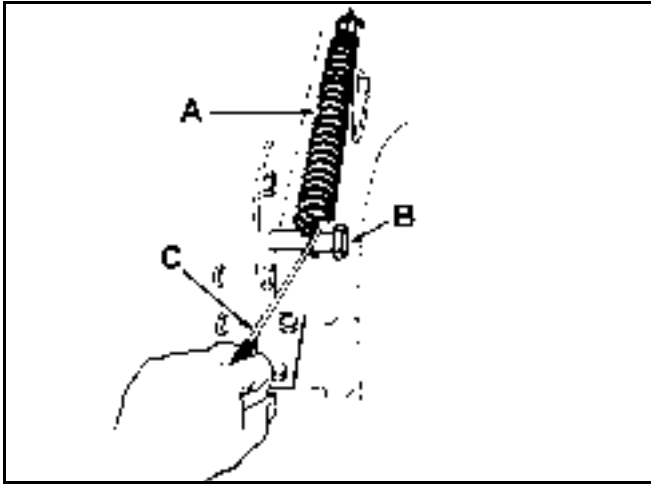


Figure 212

1851

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

- Unhook the blade control (PTO) cable ring end from the idler spring (Figure 213).
- Remove rubber wiper and jam nut from blade control (PTO) cable at mounting bracket. Slide the cable from the bracket (Figure 213).
- Move the cable out of the way and lay inside frame rail so it cannot get caught in drive belts or pulleys.

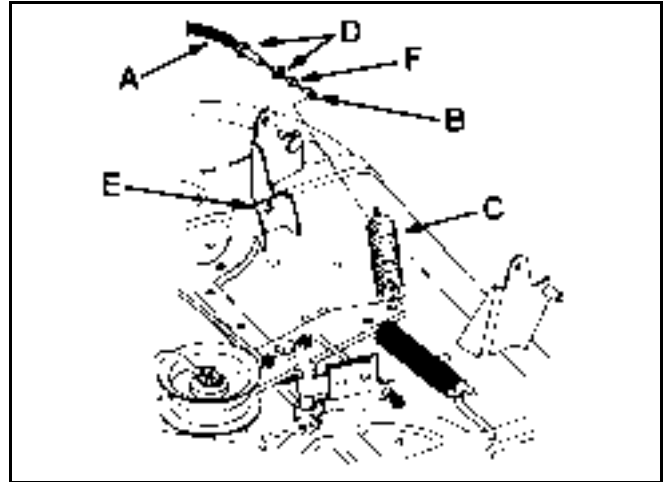


Figure 213

m-2384

- | | |
|-------------------------------|----------------------|
| (A) Blade Control (PTO) Cable | (D) Jam Nut |
| (B) Ring End | (E) Mounting Bracket |
| (C) Idler Spring | (F) Rubber Wiper |



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.

- Move the height-of-cut lever (deck lift) into the "A" notch.

- Remove the bolts and lock nuts and pull the two mower pivot mount brackets down from the front axle (Figure 214).

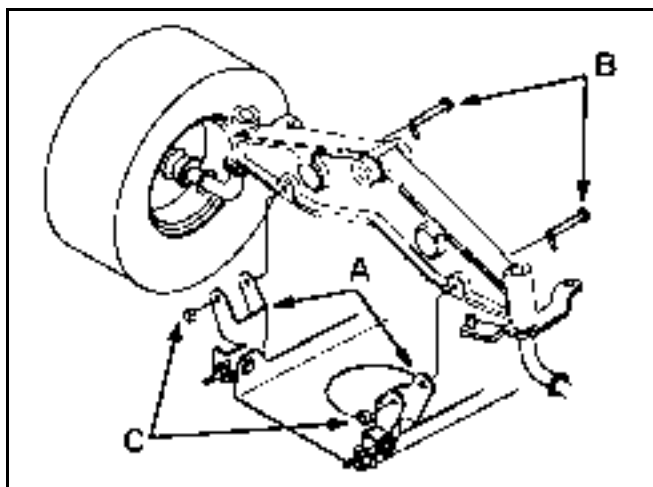


Figure 214

m-4630

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

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

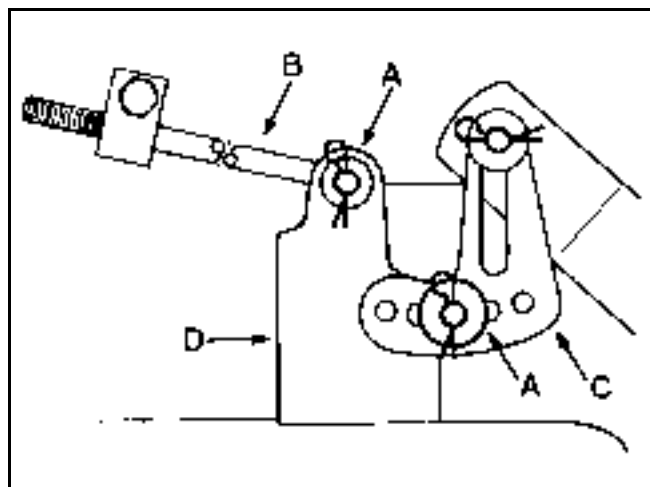


Figure 215

1805

- | | |
|-----------------------------|----------------------|
| (A) Hairpin Cotter & Washer | (C) Leveling Bracket |
| (B) Long Rod | (D) Mower Mount |

- 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.
- 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.
- 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.

MOWER

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.

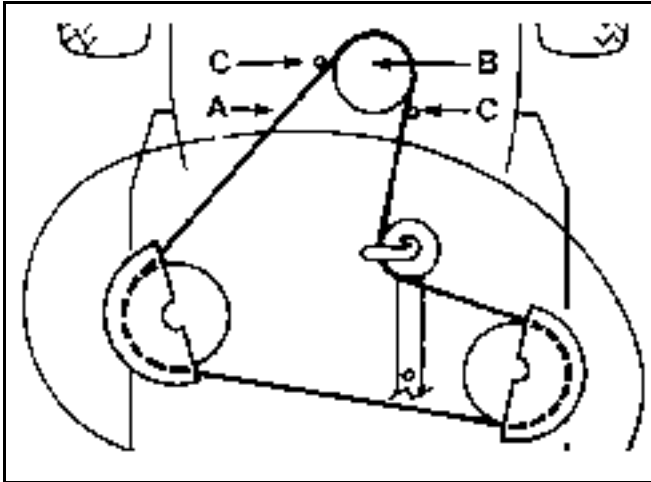


Figure 216

1890

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

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).

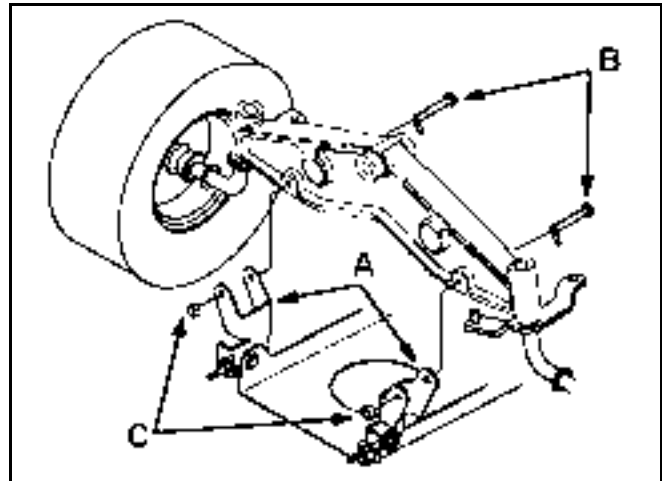


Figure 217

m-4630

- | | |
|---------------------------|--------------|
| (A) Pivot Mount Bracket | (C) Lock Nut |
| (B) Bolt 5/16-18 x 2-1/2" | |

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.

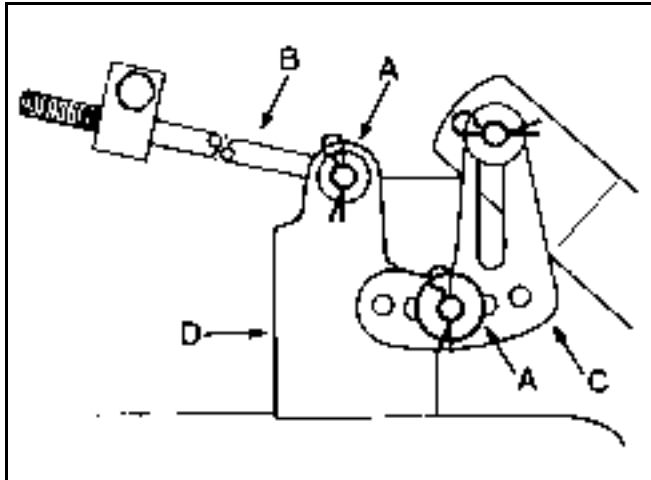


Figure 218

1805

- | | |
|-----------------------------|----------------------|
| (A) Hairpin Cotter & Washer | (C) Leveling Bracket |
| (B) Long Rod | (D) Mower Mount |

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).

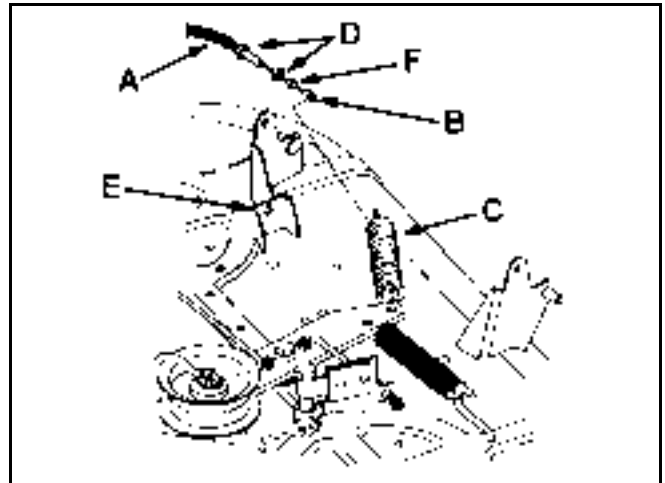


Figure 219

m-2384

- | | |
|-------------------------------|----------------------|
| (A) Blade control (PTO) Cable | (D) Jam Nut |
| (B) Ring End | (E) Mounting Bracket |
| (C) Idler Spring | (F) Rubber Wiper |

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).

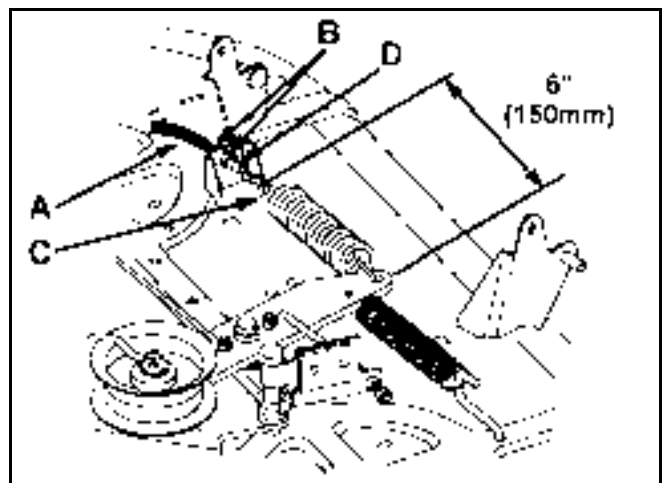


Figure 220

m-2385

- | | |
|-------------------------------|------------------|
| (A) Blade Control (PTO) Cable | (C) Idler Spring |
| (B) Jam Nut | (D) Rubber Wiper |

MOWER

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.
16. Check side-to-side blade level; "Side-to-Side Mower Leveling" on page 6 - 12.

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.

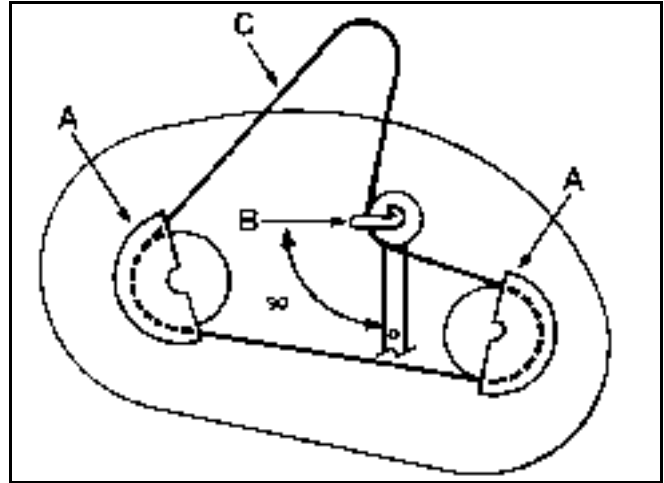


Figure 221

1890

- | | |
|-----------------------------|----------------|
| (A) Pulley Cover | (C) Mower Belt |
| (B) Idler Pulley Belt Guide | |

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.

- 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.

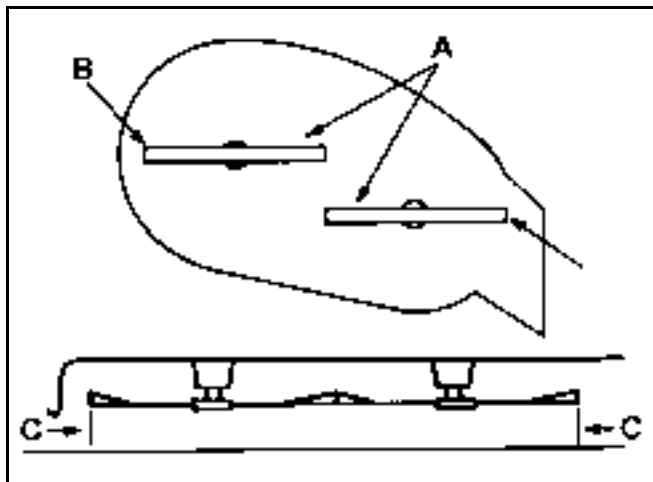


Figure 222

1891

(A) Blades Side to Side (C) Measure Here
(B) Outside Cutting Edges

- 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.

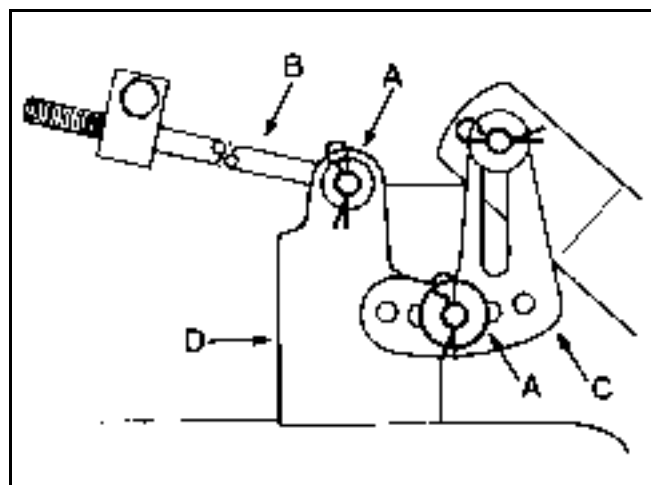


Figure 223

1805

(A) Hairpin Cotter & Washer (C) Leveling Bracket
(B) Long Rod (D) Mower Mount

- 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:

- Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.
- Pull the wire off the spark plug.
- 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.

MOWER

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.

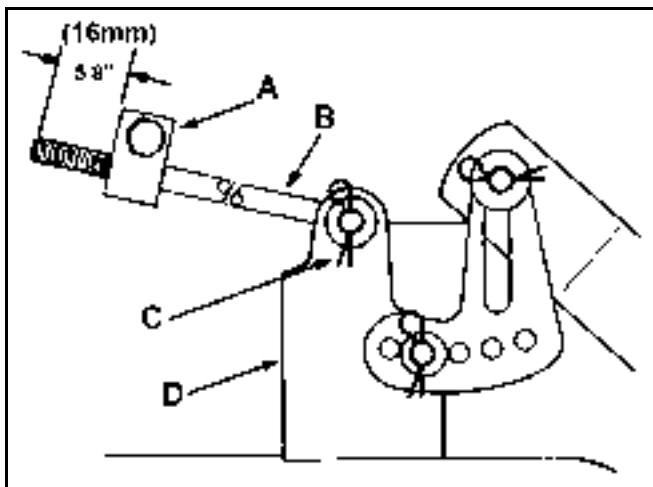


Figure 224

1889

- | | |
|---------------------|-----------------------------|
| (A) Adjusting Block | (C) Hairpin Cotter & Washer |
| (B) Long Rod | (D) Mower Mount |

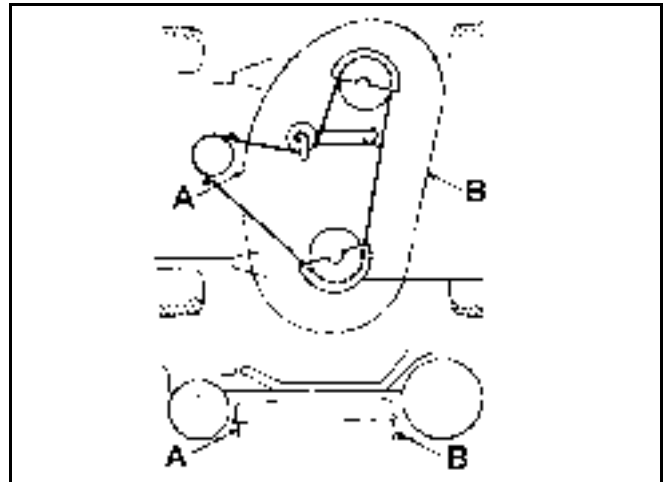


Figure 225

1892

- | | |
|--------------------------|-------------------------|
| (A) Measure Front Center | (B) Measure Rear Center |
|--------------------------|-------------------------|

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).

- When front-to-rear slope is correct, tighten the pivot plate mounting bolts (Figure 226).

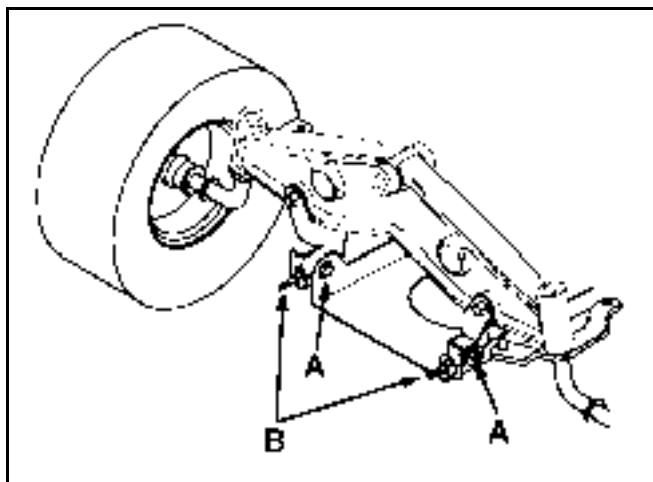


Figure 226

m-4634

(A) Pivot Mounting Bolt (B) Eyebolt Locknut

- 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

- Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.
- Pull the wire off the spark plug.
- Move the height-of-cut lever (deck lift) into the "D" notch.

- 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.

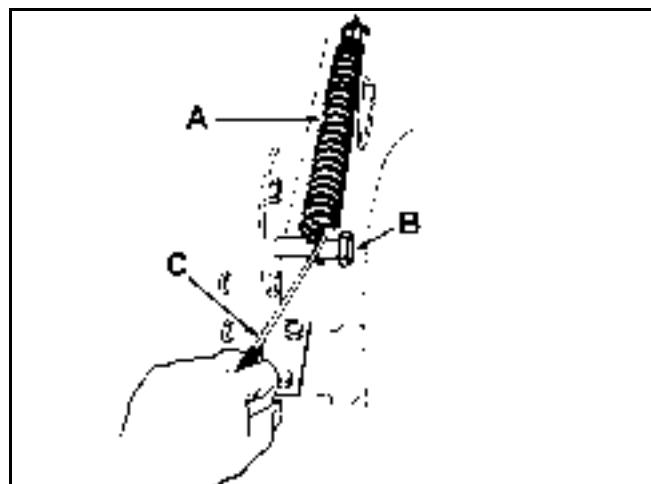


Figure 227

1851

(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.

- Move the height-of-cut lever (deck lift) into the "A" notch.
- Unhook the blade control (PTO) cable Z end from the idler arm on the mower (Figure 228).
- 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).

MOWER

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

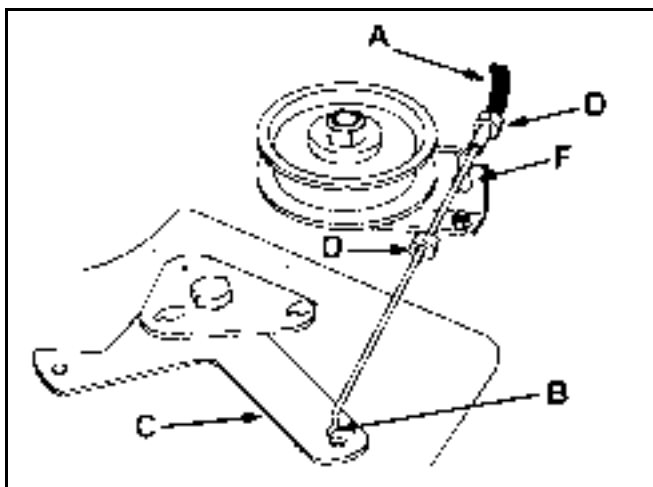


Figure 228

1801

- | | |
|-------------------------------|----------------------|
| (A) Blade Control (PTO Cable) | (D) Jam Nut |
| (B) Z End | (E) Mounting Bracket |
| (C) Idler Arm | |

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

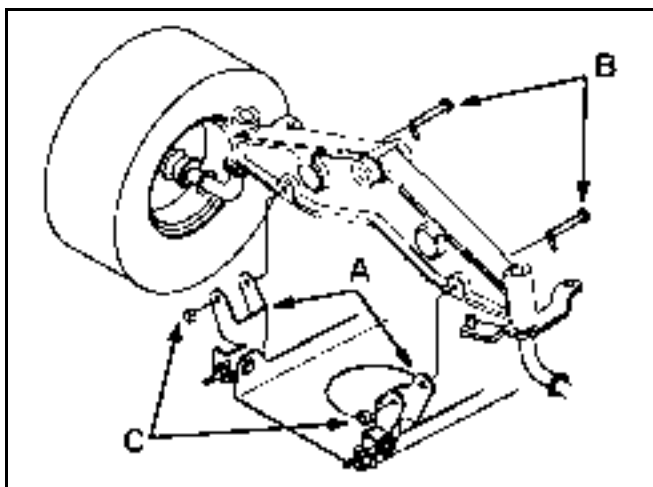


Figure 229

m-4630

- | | |
|---------------------------|--------------|
| (A) Pivot Mount Bracket | (C) Lock Nut |
| (B) Bolt 5/16-18 x 2-1/2" | |

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.

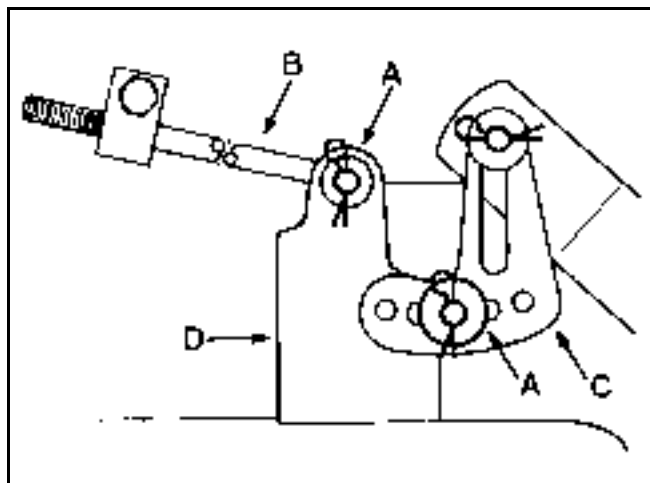


Figure 230

1805

- | | |
|-----------------------------|----------------------|
| (A) Hairpin Cotter & Washer | (C) Leveling Bracket |
| (B) Long Rod | (D) Mower Mount |

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.

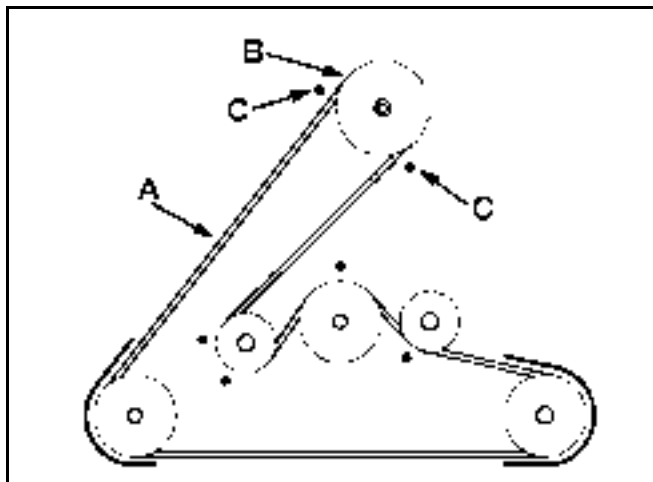


Figure 231

1850

- | | |
|-------------------|-----------------|
| (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).

- Park the machine on a level surface, disengage the blade control (PTO), set the parking brake, stop the engine, and remove the ignition key.
- Pull the wire off the spark plug.
- Turn the front wheels fully to the left. Slide the mower under the chassis from the right side.

MOWER

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.

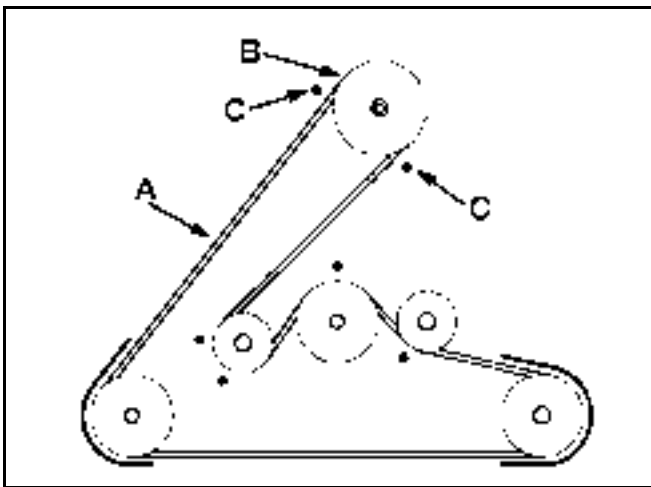


Figure 232

1850

- | | |
|-------------------|----------------|
| (A) Mower Belt | (C) Belt Guide |
| (B) Engine Pulley | |

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

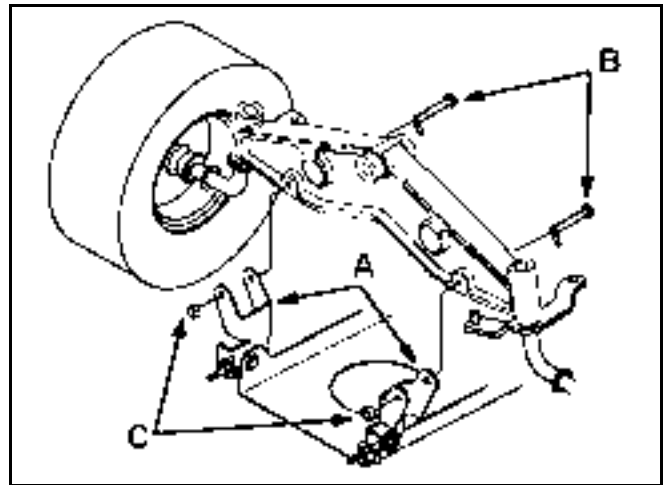


Figure 233

M-4630

- | | |
|---------------------------|--------------|
| (A) Pivot Mount Bracket | (C) Lock Nut |
| (B) Bolt 5/16-18 x 2-1/2" | |

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.

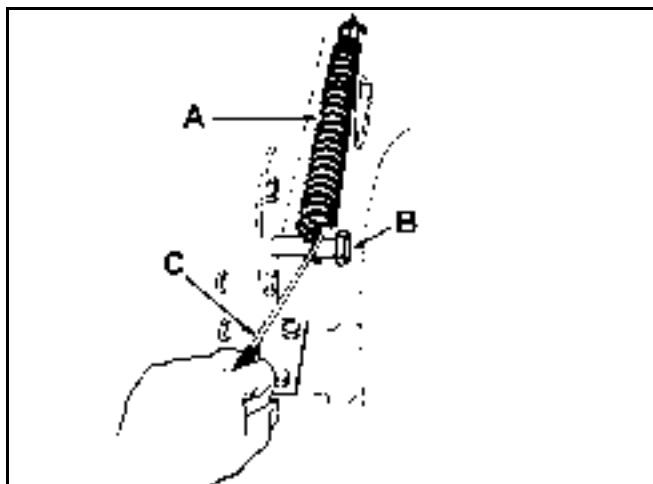


Figure 234

1851

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

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.

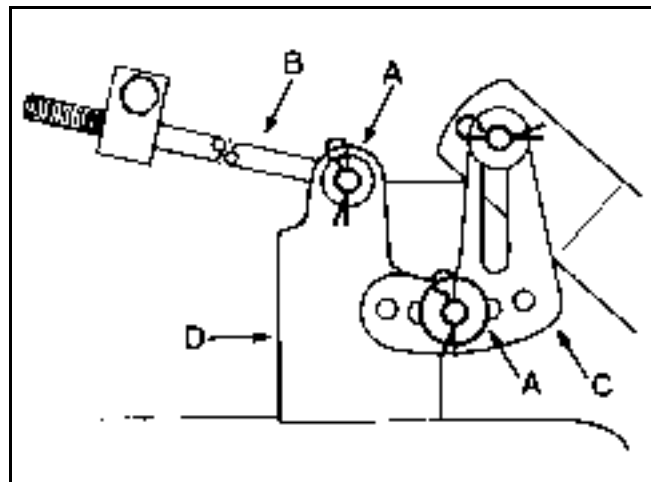


Figure 235

1805

- | | |
|-----------------------------------|------------------------------------|
| (A) Rod | (D) Leveling Bracket |
| (B) Adjusting Block | (E) Mower Mount |
| (C) Hairpin Cotter & Thick Washer | (F) Hairpin Cotter and Thin Washer |

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).

MOWER

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.

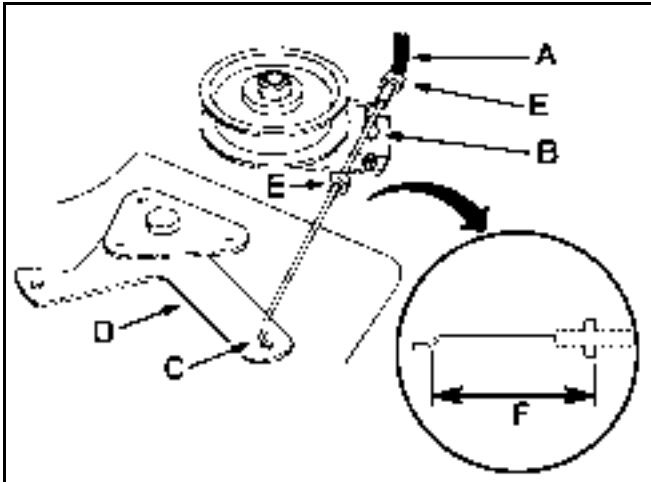


Figure 236

1801-2

- | | |
|---------------------------|---------------------------|
| (A) Blade Control Cable | (D) Idler Arm |
| (B) Mounting Bracket Slot | (E) Jam Nut |
| (C) Cable Z End | (F) 3-1/2" (89mm) Engaged |

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.

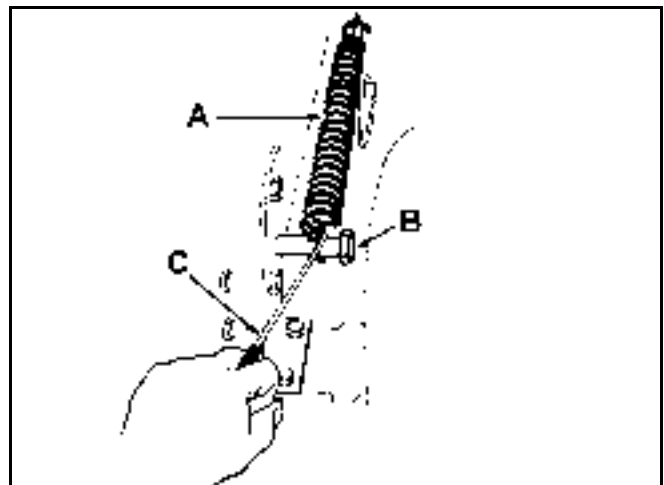


Figure 237

1851

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

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.

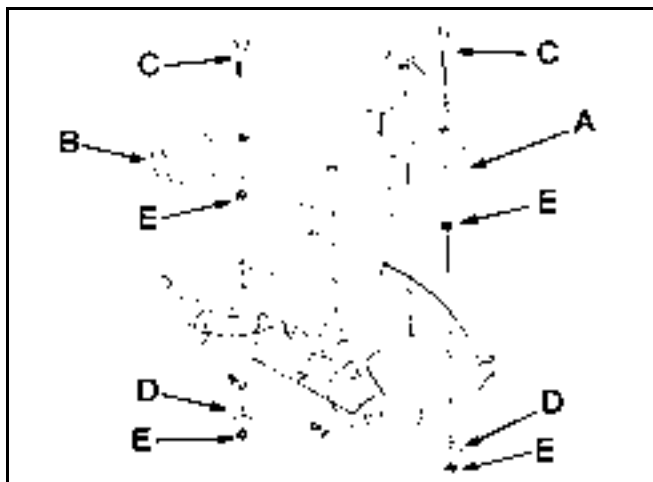


Figure 238

2031

- | | |
|---------------------------|-----------------------|
| (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.

3. Install 3/8-16 x 3/4" carriage bolts, 3/8" washer and 3/8" lock nuts, from loose parts package, in open holes of mower for safety.



DANGER



POTENTIAL HAZARD

- Open holes in the mower expose you and others to thrown debris.

WHAT CAN HAPPEN

- Debris thrown out of holes in the mower can cause injury.

HOW TO AVOID THE HAZARD

- Never operate mower without hardware mounted in all holes in mower.
- Install hardware in mounting holes when recycle baffle is removed.

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).

MOWER

4. Install the mower; refer to "Installing 44" Mower" on page 6 - 17.

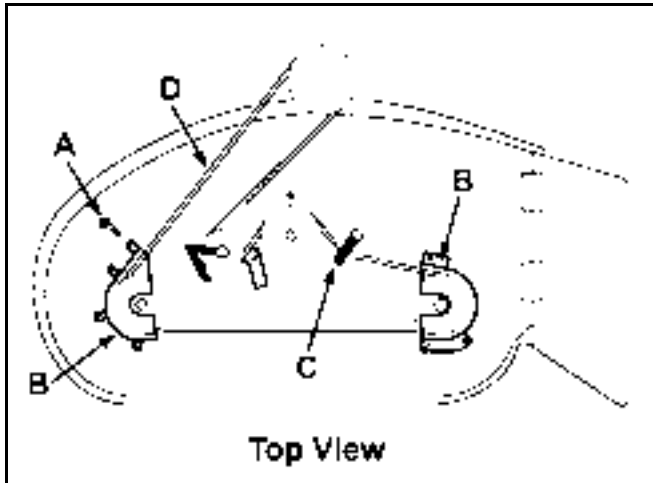


Figure 239

1803

- | | |
|------------------------|-----------------|
| (A) Pulley Cover Screw | (C) Belt Guides |
| (B) Pulley Cover | (D) Mower Belt |

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.

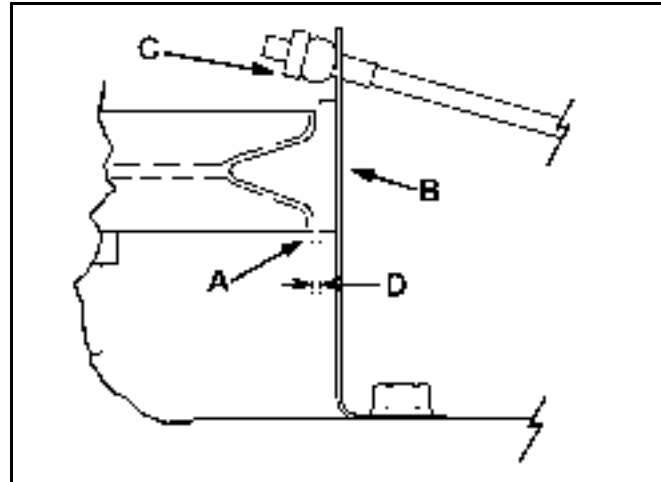


Figure 240

2270

- | | |
|-------------------|--------------------------------|
| (A) Bottom Flange | (D) Clearance .020 - .060 inch |
| (B) Brake Pad | (.5 - 1.5mm) |
| (C) Lock Nut | |

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

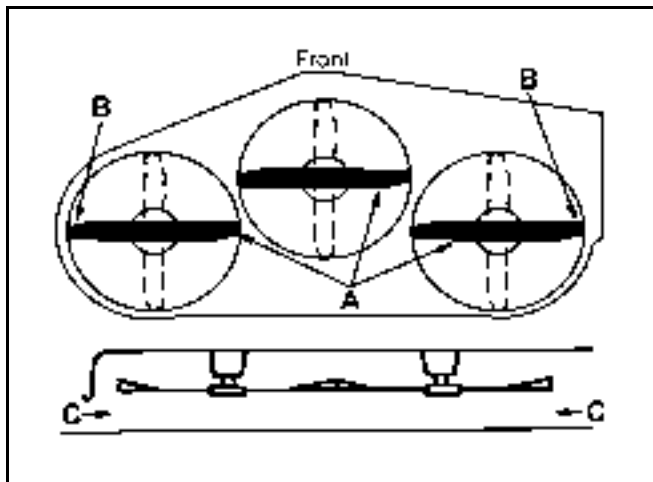


Figure 241 1078-1

(A) Blades Side to Side	(C) Measure Here
(B) Outside Cutting Edges	

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.

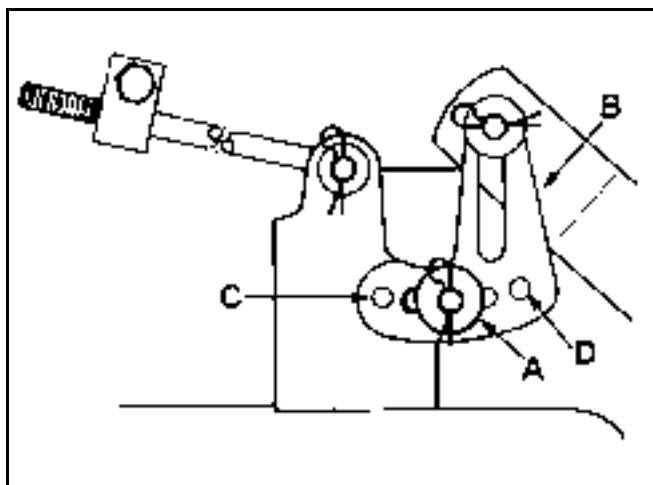


Figure 242 1805-2

(A) Hairpin Cotter & Washer	(C) Front Hole
(B) Leveling Bracket	(D) Rear Hole

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.

MOWER

- 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.

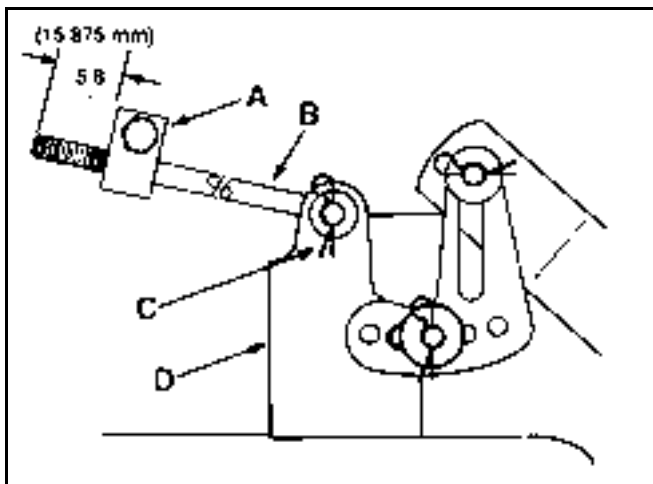


Figure 243

1805-3

- | | |
|---------------------|-----------------------------|
| (A) Adjusting Block | (C) Hairpin Cotter & Washer |
| (B) Rod | (D) Mower Mount |

- 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).

- 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).

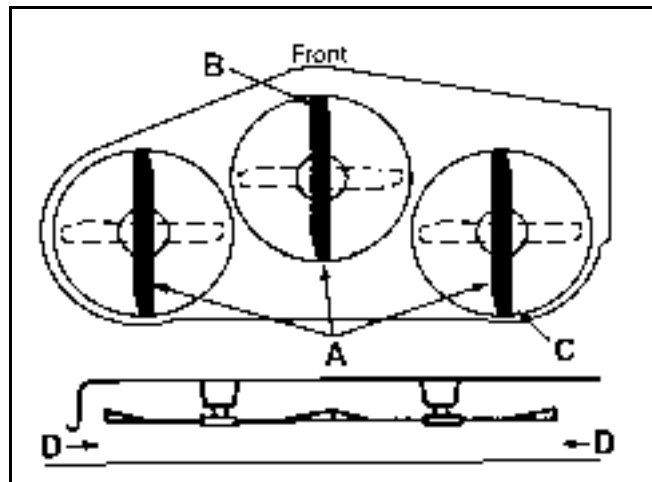


Figure 244

1078

- | | |
|-------------------------|------------------|
| (A) Blade Front to Rear | (C) Measure Rear |
| (B) Measure Front | Blade Tip |
| Blade Tip | (D) Measure Here |

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

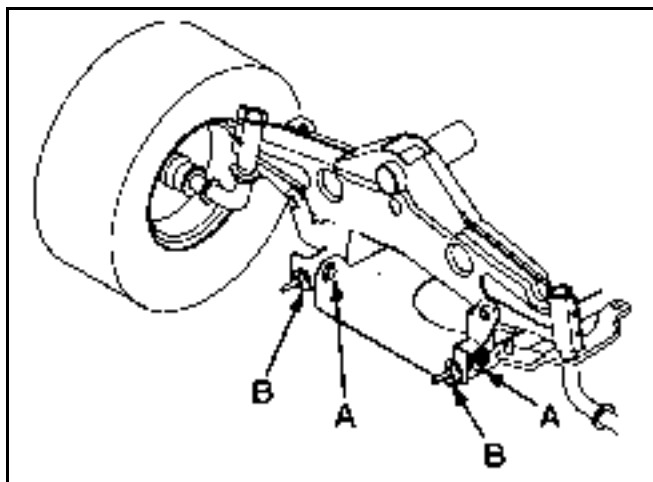


Figure 245

1792

(A) Pivot Mounting Bolt (B) Eyebolt Lock Nut

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).

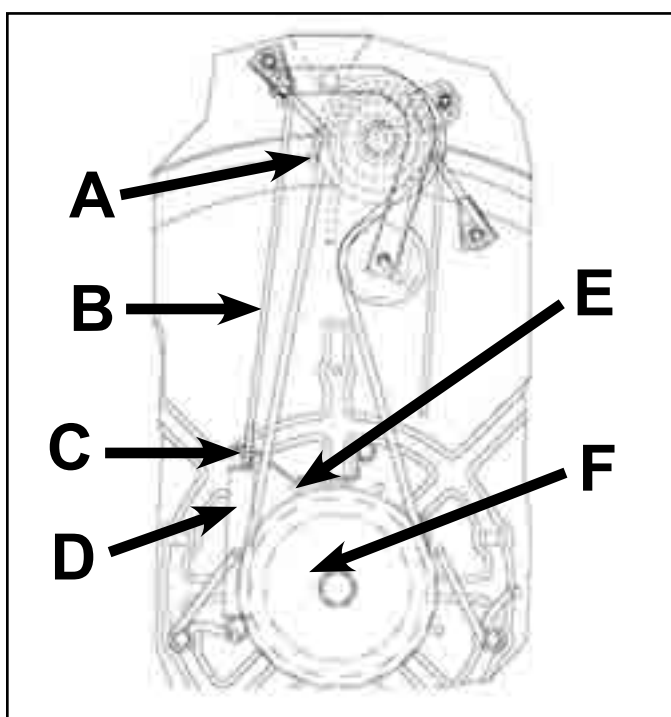


Fig A6 001 belt guide

- | | |
|-------------------|--------------------------|
| A. Engine pulley | E. Brake pad gap – .015" |
| B. Brake rod | (.38mm) |
| C. Adjustment nut | F. Mower pulley |
| D. Spring | |

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).

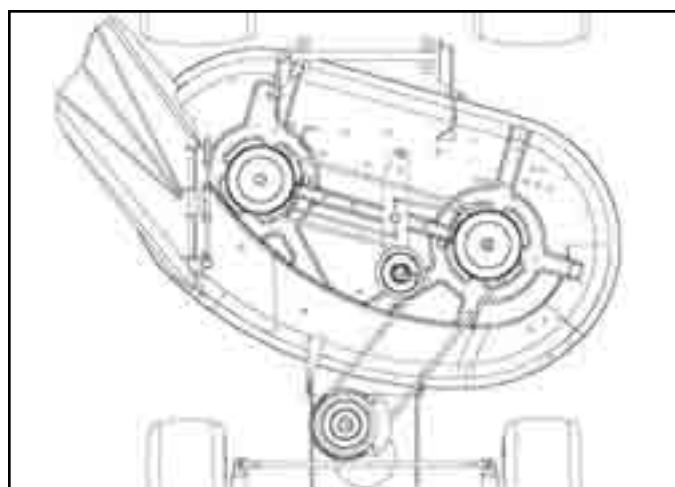


Fig A6 002 38in deck

4. If adjustment is needed, turn the adjustment nut located on the brake rod to achieve .06" – .12" (1.5mm – 3.0mm) gap.

MOWER

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).

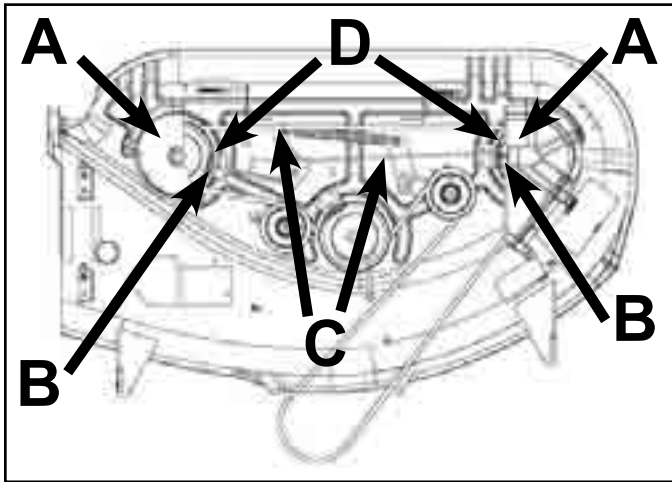


Fig A6 003

94-2888-5

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

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.

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

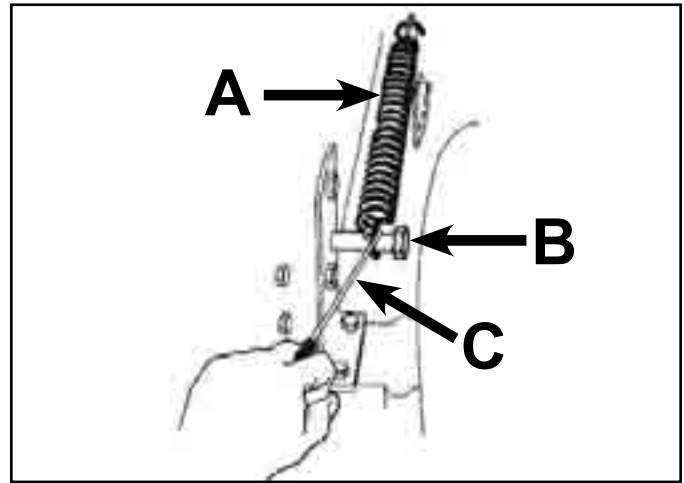


Fig A6 004

fig. 35 m-1851

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



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.

6. Move the height-of-cut lever into the A notch.
7. Unhook the spring on the idler pulley arm from the bracket on the mower (Fig. A6 005).

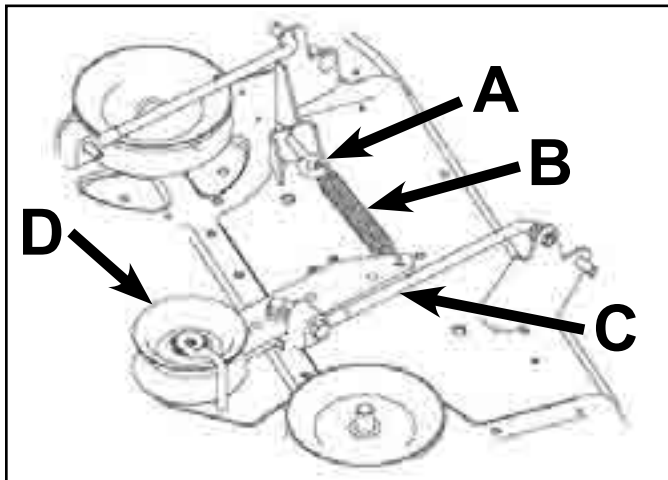


Fig A6 005 fig. 36 m-8207

- | | |
|-----------------|-----------------|
| A. Eye-bolt | C. Idler arm |
| B. Idler spring | D. Idler pulley |

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

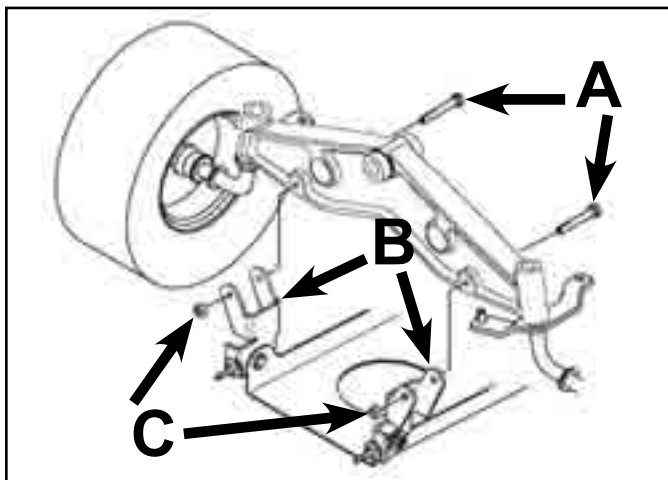


Fig A6 006 fig. 37 m-4630

- | | |
|-------------------------|-------------|
| A. Bolts 5/16" x 2-1/2" | C. Locknuts |
| B. Pivot mount brackets | |

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.

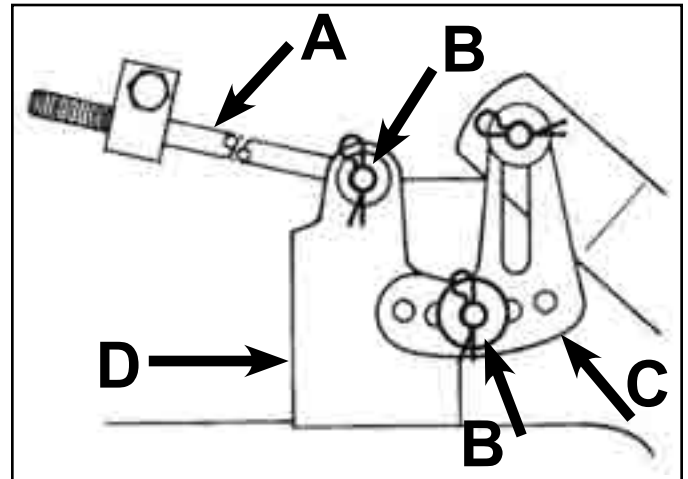


Fig A6 007 fig. 38 1805

- | | |
|------------------------------|---------------------|
| A. Long rod | C. Leveling bracket |
| B. Hairpin cotter and washer | D. 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).

MOWER

14. Remove the mower belt from the electric clutch pulley (Fig. A6 008).

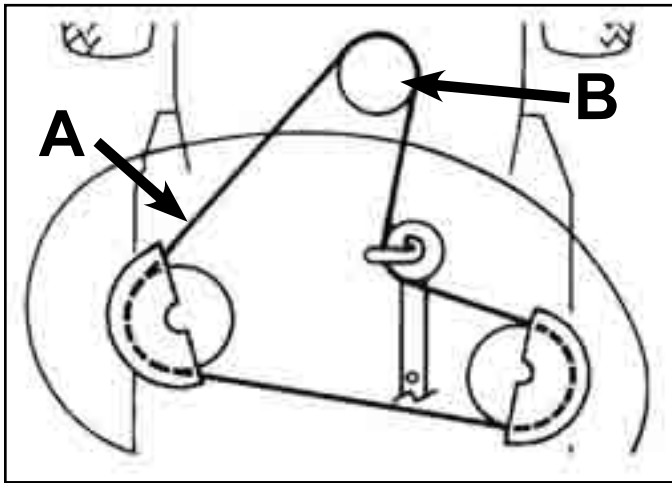


Fig A6 008

fig. 39 1890

- A. Mower belt B. Electric clutch pulley

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).

- Install the mower pivot mount brackets onto the front axle with the bolts and locknuts (Fig. A6 009).

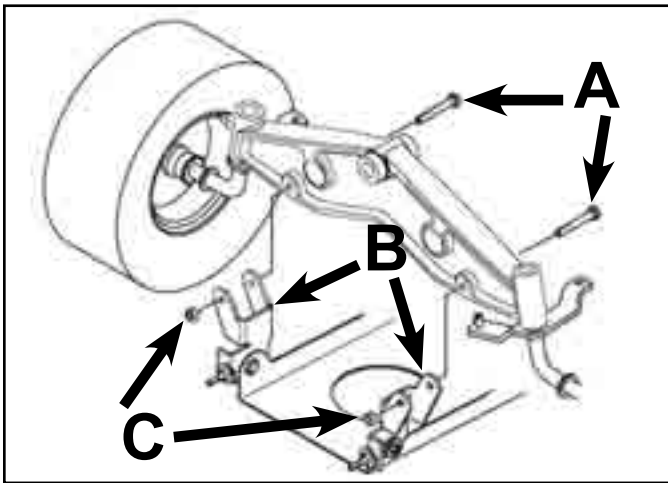


Fig A6 009 fig. 37 m-4630

- A. Bolts 5/16" x 2-1/2" C. Locknuts
- B. Pivot mount brackets

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

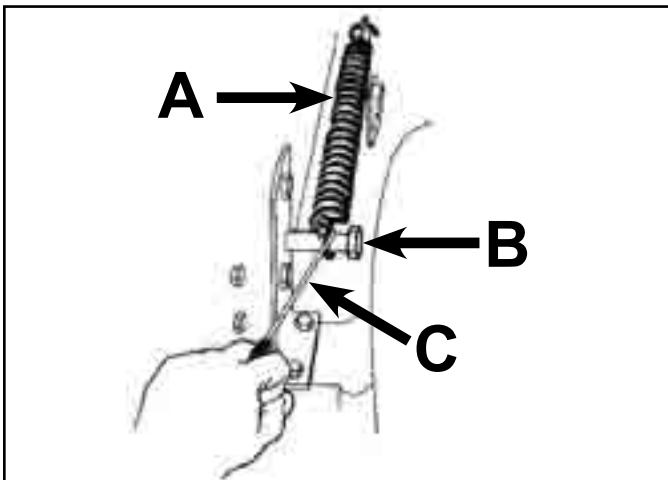


Fig A6 010 fig. 35 m-1851

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

- Move the height-of-cut lever into the A notch.
- Slide the end of the long rod through the hole in the mower mount (Fig. A6 011).

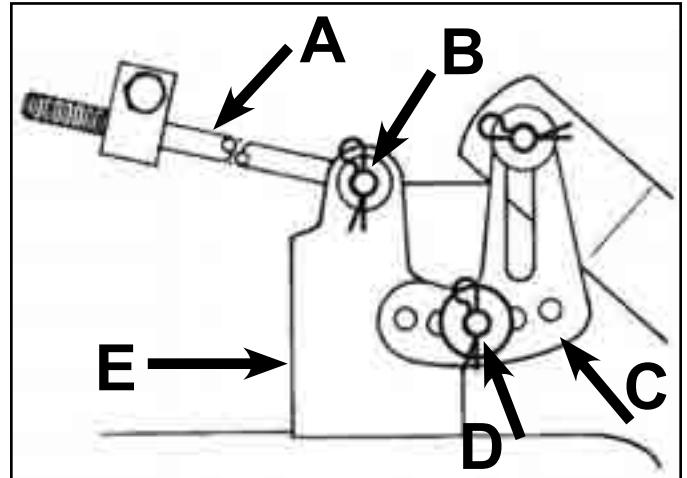


Fig A6 011 fig. 38 1805

- A. Long rod D. Hairpin cotter and thick washer
 - B. Hairpin cotter and thin washer E. Mower mount
 - C. Leveling bracket
- Install the thin washer and hairpin cotter to secure the rod in place (Fig. A6 011).
 - Mount the slotted mower leveling bracket onto the pin on the mower mount (Fig. A6 011).
 - Install the thick washer and hairpin cotter to secure the mower (Fig. A6 011).
 - Repeat steps 8 through 11 on the opposite side of the mower.

MOWER

13. Hook the idler spring from the idler pulley arm to the eyebolt on the mower (Fig. A6 012).

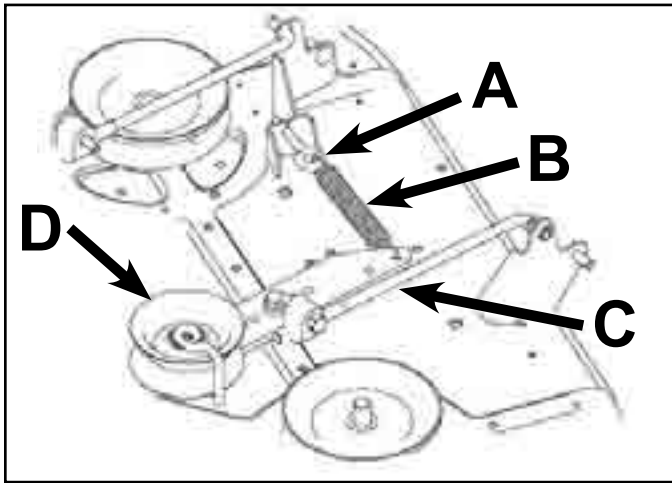


Fig A6 012

fig. 36 m-8207

- A. Eyebolt
B. Idler spring
C. Idler arm
D. Idler pulley

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.

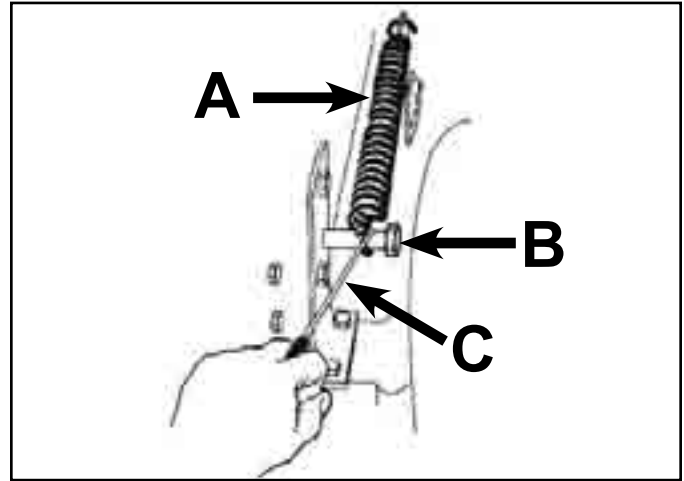


Fig A6 013

fig. 35 m-1851

- A. Spring
B. Bolt
C. Spring tool

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).

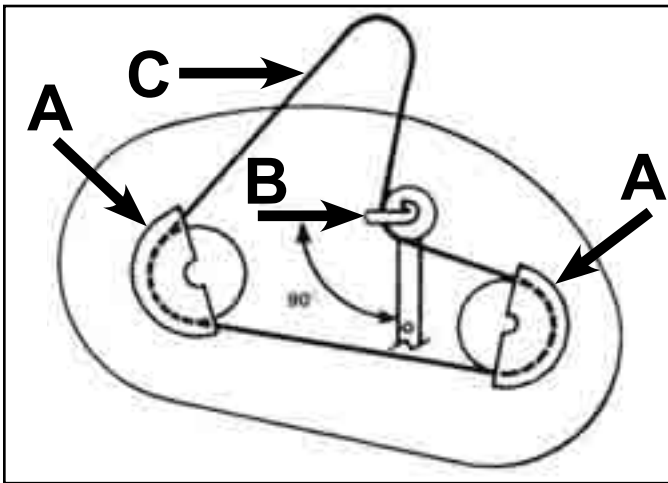


Fig A6 014

fig. 45 m-1890

- A. Pulley cover
B. Idler pulley belt guide position
- C. Mower belt
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.

MOWER

- 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 $\frac{3}{16}$ " (5mm), an adjustment is required; refer to steps 6 and 7.

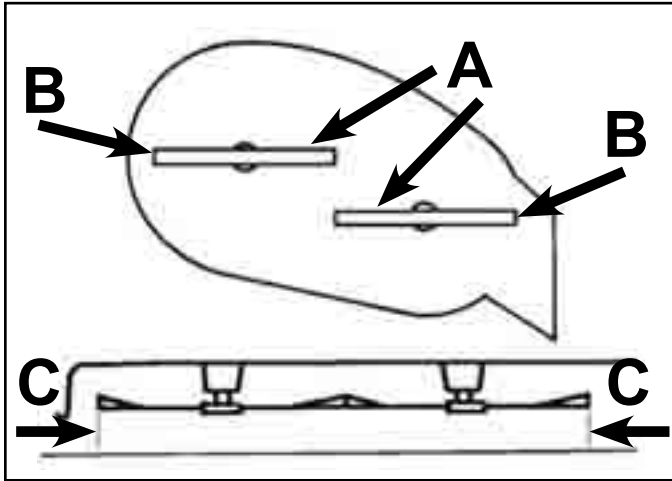


Fig A6 015 fig. 46 m-1891

- A. Blades side to side
- B. Outside cutting edges
- C. Measure here

- 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).

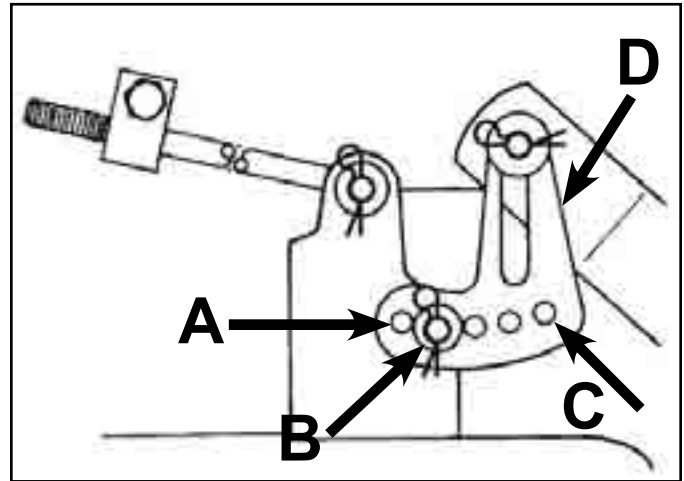


Fig A6 016 fig. 47 m-1889

- A. Front hole
- B. Hairpin cotter & washer
- C. Rear hole
- D. Leveling bracket

- 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).

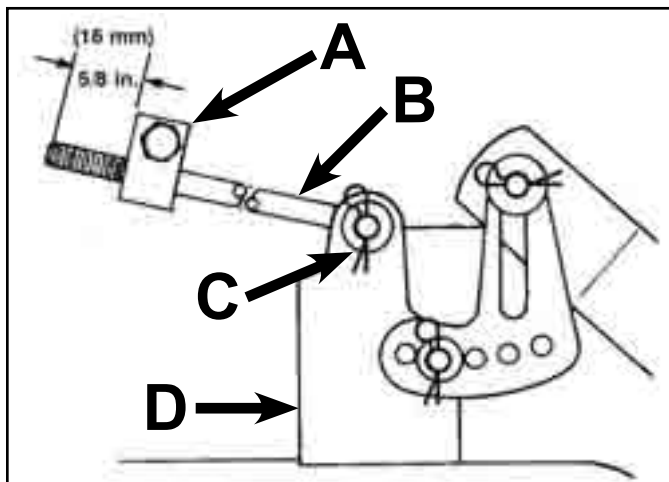


Fig A6 017

fig. 48 1805

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

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.

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).

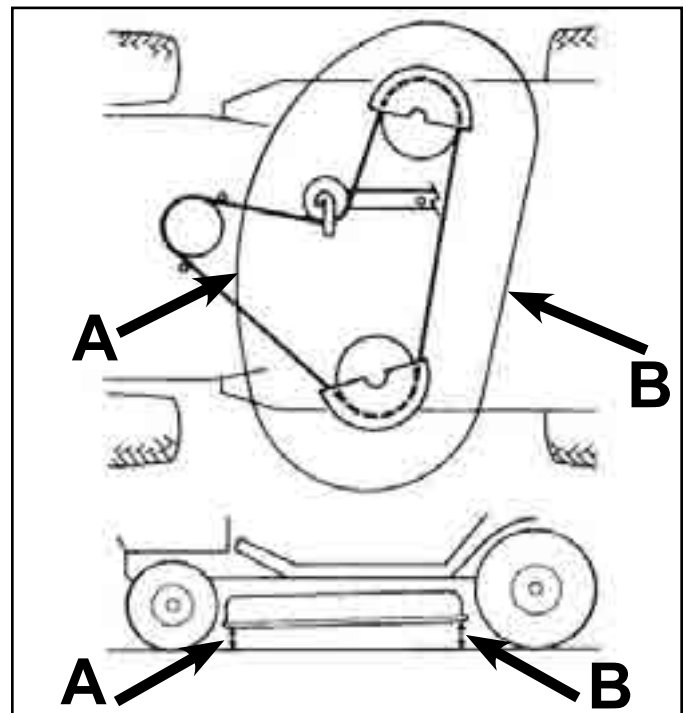


Fig A6 018

fig. 49 m-1892

- | | |
|-------------------------|------------------------|
| A. Measure front center | B. Measure rear center |
|-------------------------|------------------------|

MOWER

8. To adjust the front-to-rear blade slope, loosen the front pivot plate mounting bolts slightly (Fig. A6 019).

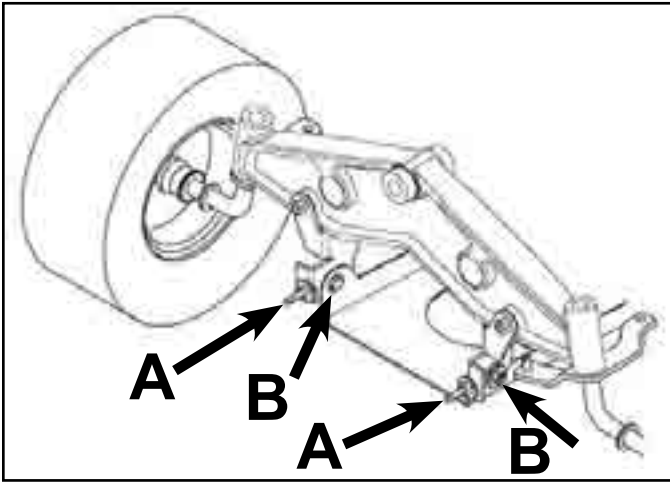


Fig A6 019 fig. 50 m-4634

- A. Pivot mounting bolt B. Eyebolt locknut

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

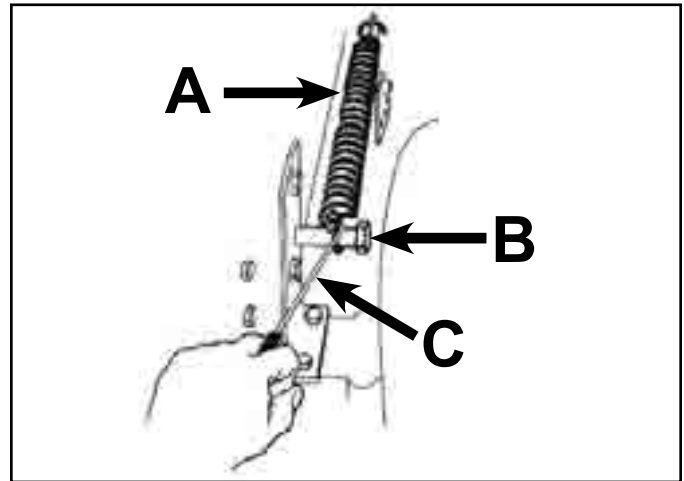


Fig A6 020 fig. 35 m-1851

- A. Spring C. Spring tool
B. Bolt

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

- Unhook the spring on the idler pulley arm from the bracket on the mower (Fig. A6 021 viewed from the left side).

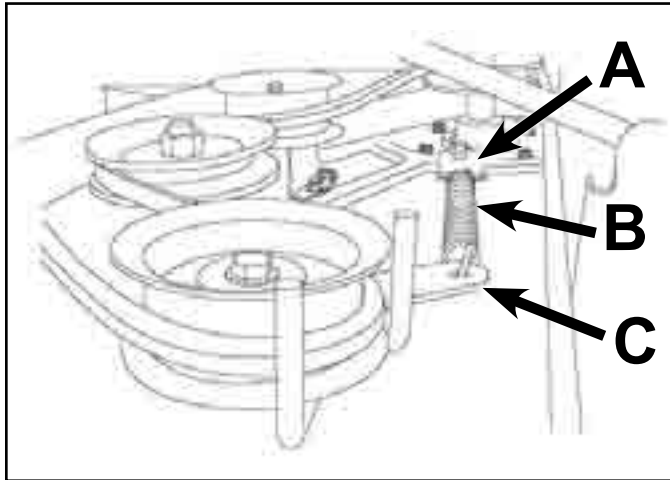


Fig A6 021

fig. 38 71429

- | | |
|------------|---------------------|
| A. Bracket | C. Idler pulley arm |
| B. Spring | |

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

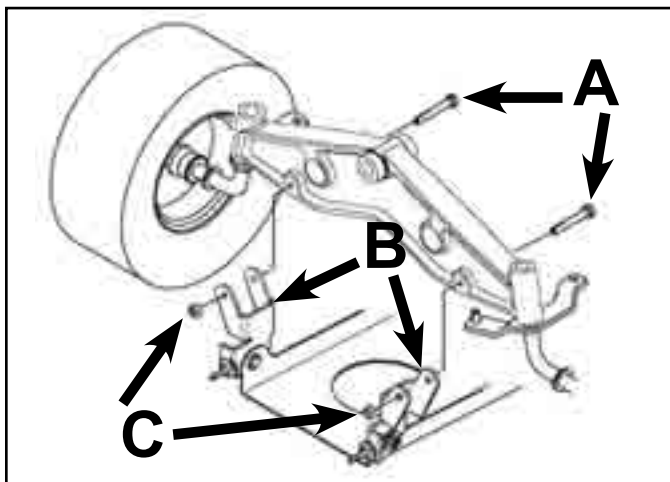


Fig A6 022

fig. 37 m-4630

- | | |
|-------------------------|-------------|
| A. Bolts 5/16" x 2-1/2" | C. Locknuts |
| B. Pivot mount brackets | |

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

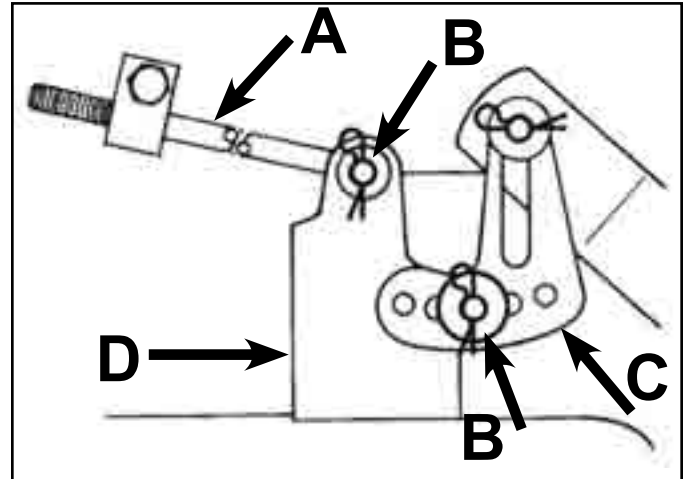


Fig A6 023

fig. 38 1805

- | | |
|------------------------------|---------------------|
| A. Long rod | C. Leveling bracket |
| B. Hairpin cotter and washer | D. Mower mount |

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

MOWER

12. Remove the mower belt from the electric clutch pulley (Fig. A6 024 top view).

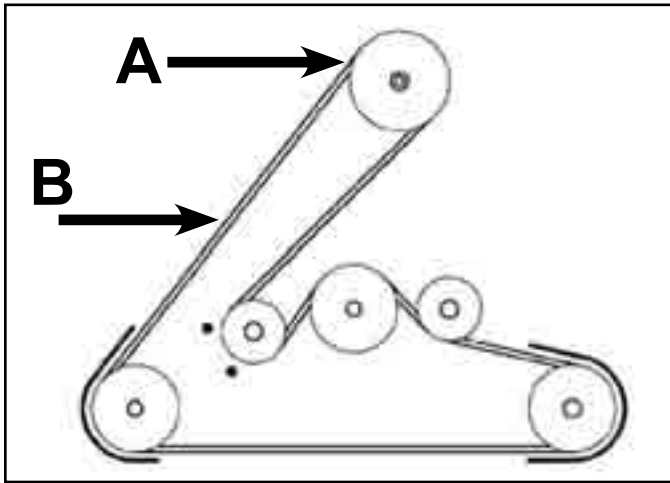


Fig A6 024

fig. 41 71429

- 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.

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).

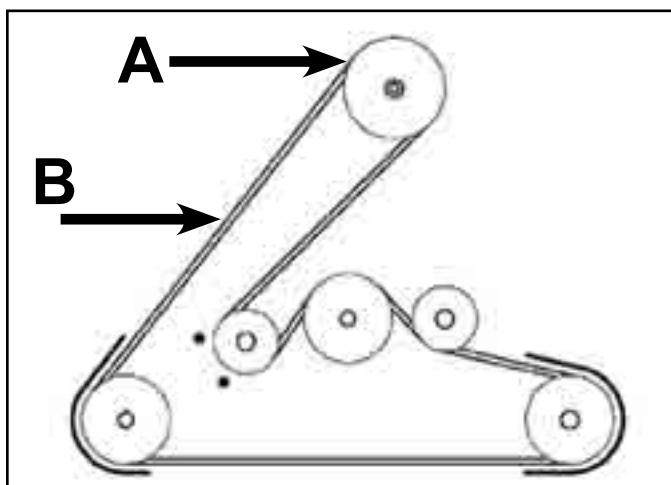


Fig A6 025

fig. 41 71429

- A. Electric clutch pulley B. Mower belt

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

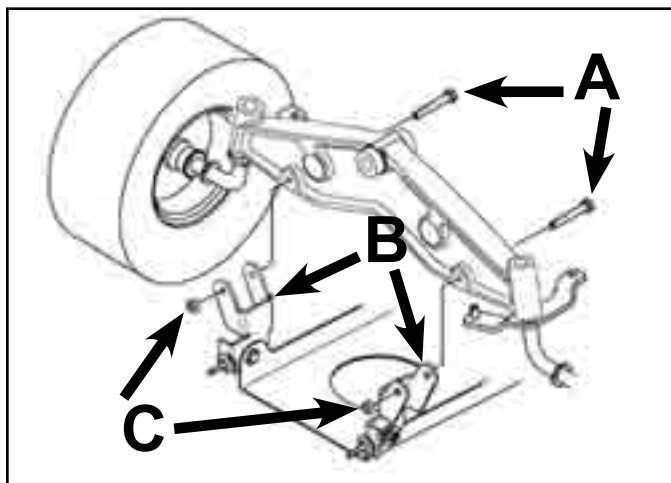


Fig A6 026

fig. 37 m-4630

- A. Bolts 5/16" x 2-1/2" C. Locknuts
B. Pivot mount brackets

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.

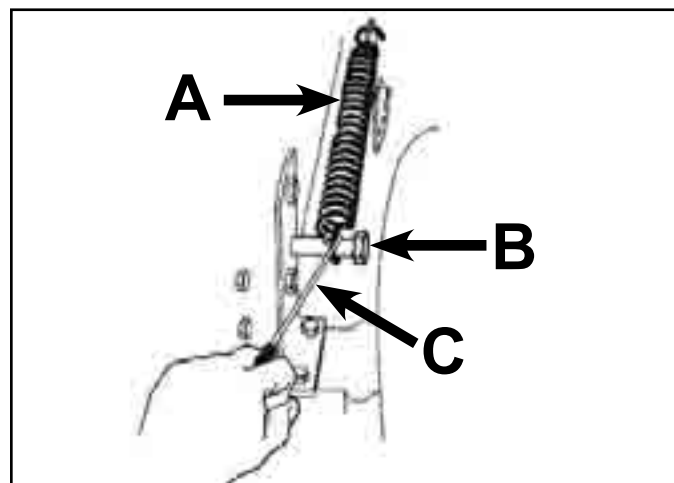


Fig A6 027

fig. 35 m-1851

- A. Spring C. Spring tool
B. Bolt

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

MOWER

8. Ensure that both rods extend 5/8" (16mm) beyond the adjustment block (Fig. A6 028).

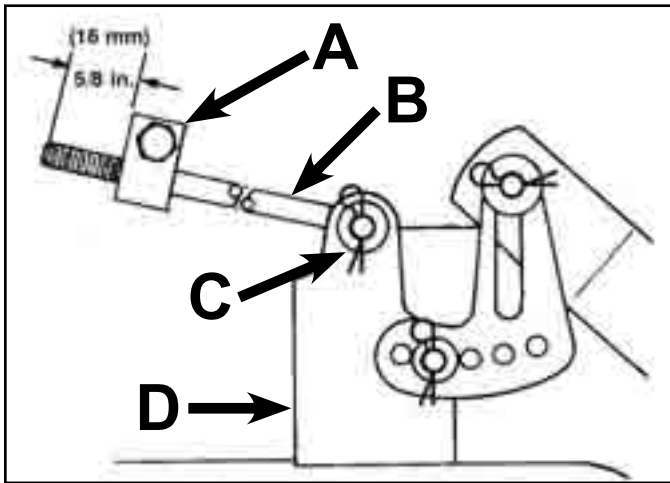


Fig A6 028

fig. 48 1805

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

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 pinon 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).

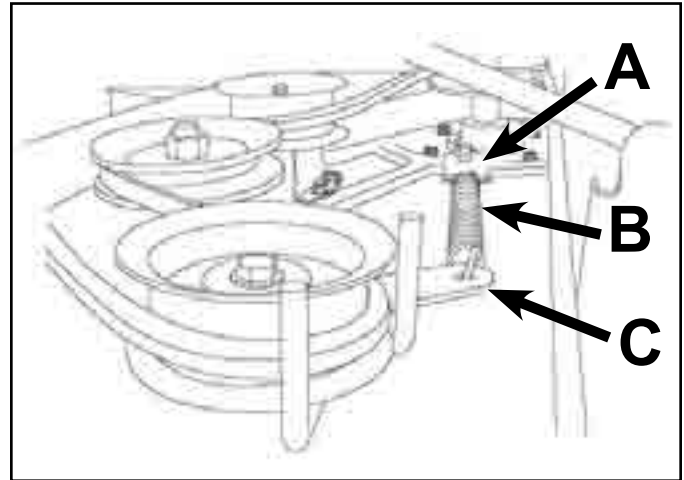


Fig A6 029

fig. 38 71429

- A. Bracket
B. Spring
C. Idler pulley arm

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

- 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.

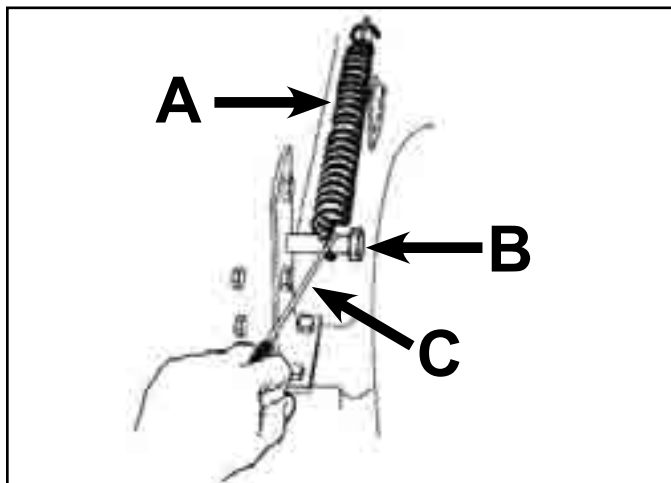


Fig A6 030

fig. 35 m-1851

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

- 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

- Remove the mower; refer to Removing the Mower on page A6-10.
- Remove the pulley cover mounting screws and pulley covers from both blade pulleys (Fig. A6 031 top view).

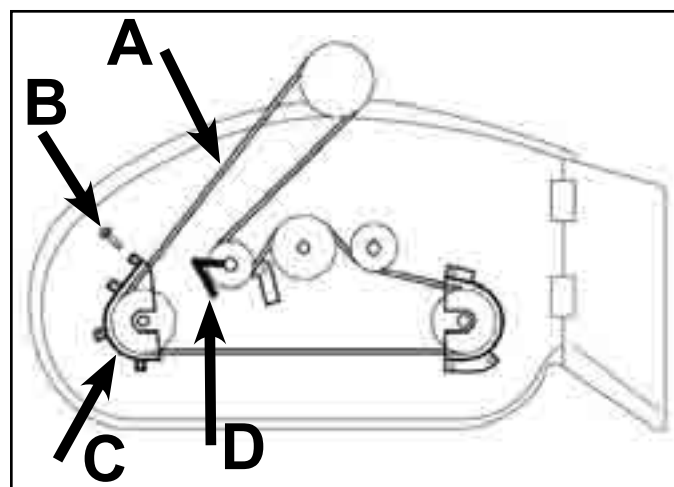


Fig A6 031

fig. 48 1803

- | | |
|-----------------------|-----------------|
| A. Mower belt | C. Pulley cover |
| B. Pulley cover screw | D. Belt Guide |

- Loosen the pivoting idler pulley mounting bolt to allow the belt past the belt guide (Fig. A6 031).
- Remove the belt from the pulleys (Fig. A6 031).

MOWER

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).

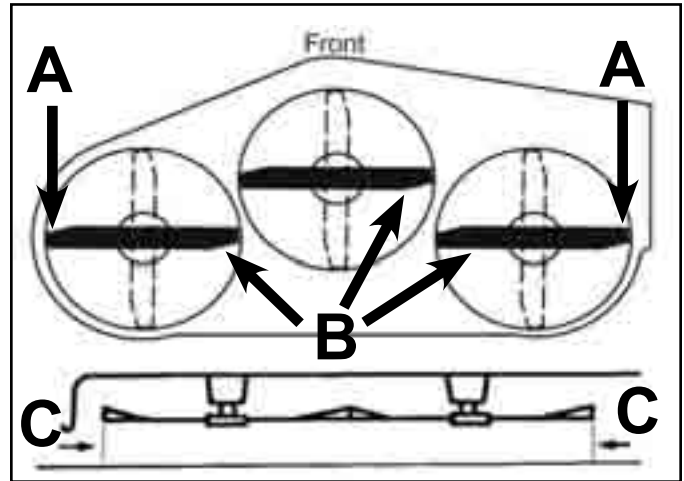


Fig A6 032

fig. 49 1078

- A. Outside cutting edges C. Measure here
B. Blades side-to-side

5. Remove the hairpin cotter and washer from the leveling bracket (Fig. A6 033).

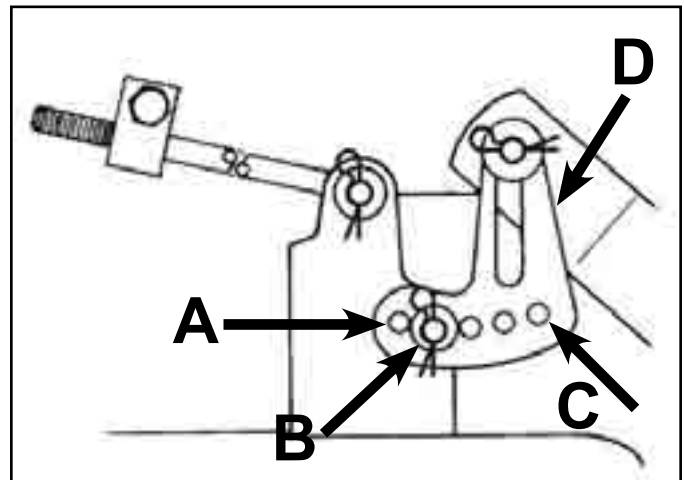


Fig A6 033

fig. 47 m-1889

- A. Front hole C. Rear hole
B. Hairpin cotter & washer D. Leveling bracket

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.

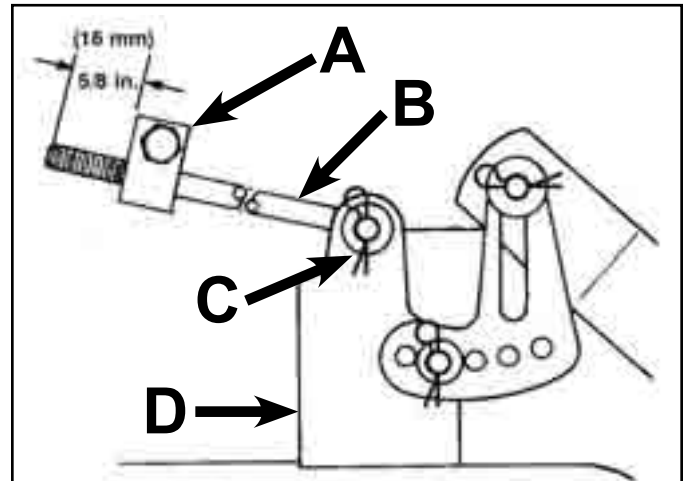


Fig A6 034

fig. 48 1805

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

MOWER

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.

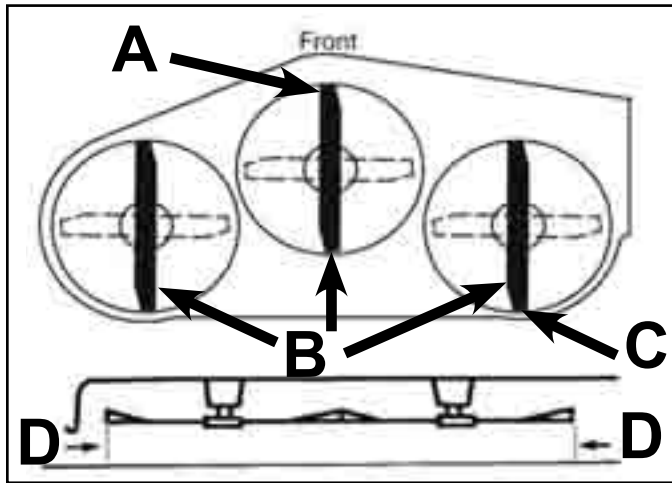


Fig A6 035 fig. 52 1078

- | | |
|----------------------------|---------------------------|
| A. Measure front blade tip | C. Measure rear blade tip |
| B. Blade front to rear | D. Measure here |

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

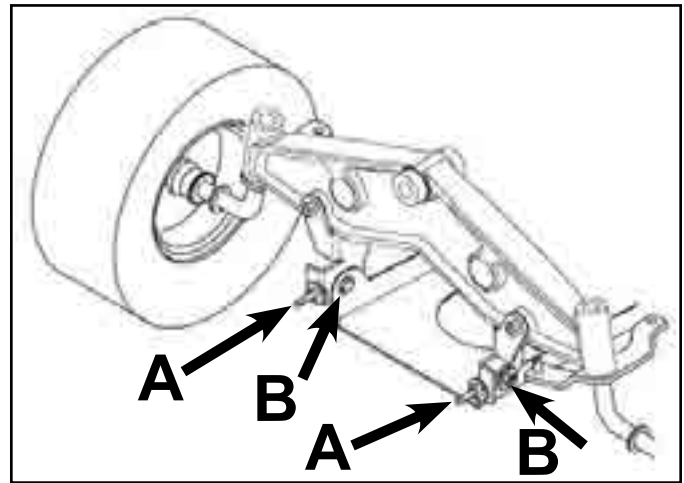


Fig A6 036 fig. 50 m-4634

- | | |
|------------------------|--------------------|
| A. Pivot mounting bolt | B. Eyebolt locknut |
|------------------------|--------------------|

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.

