

TORO®

LCE Products

Fixed Deck Mid-Size Service Manual



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General Information



This symbol means WARNING or PERSONAL SAFETY INSTRUCTION - read the instruction because it has to do with your safety. Failure to comply with the instruction may result in personal injury or even death.

This manual is intended as a service and repair manual only. The safety instructions provided herein are for troubleshooting, service, and repair of the Mid-Size Walk Behind mower. The Mid-Size Walk Behind

Mower and attachment operator's manuals contain safety information and operating tips for safe operating practices. Operator's manuals are available through your Toro parts source or:

**The Toro Company
Publications Department
8111 Lyndale Avenue South
Bloomington, MN 55420**

Think Safety First

Avoid unexpected starting of engine...

Always turn off the engine and disconnect the spark plug wire(s) before cleaning, adjusting, or repair.

Avoid lacerations and amputations...

Stay clear of all moving parts whenever the engine is running. Treat all normally moving parts as if they were moving whenever the engine is running or has the potential to start.

Avoid burns...

Do not touch the engine, muffler, or other components which may increase in temperature during operation, while the unit is running or shortly after it has been running.

Avoid fires and explosions...

Avoid spilling fuel and never smoke while working with any type of fuel or lubricant. Wipe up any spilled fuel or oil immediately. Never remove the fuel cap or add fuel when the engine is running. Always use approved, labeled containers for storing or transporting fuel and lubricants.

Avoid asphyxiation...

Never operate an engine in a confined area without proper ventilation.

Avoid injury from batteries...

Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes, and clothing. Battery gases can explode. Keep cigarettes, sparks, and flames away from the battery.

Avoid injury due to inferior parts...

Use only original equipment parts to ensure that important safety criteria are met.

Avoid injury to bystanders...

Always clear the area of bystanders before starting or testing powered equipment.

Avoid injury due to projectiles...

Always clear the area of sticks, rocks, or any other debris that could be picked up and thrown by the powered equipment.

Avoid modifications...

Never alter or modify any part unless it is a factory approved procedure.

Avoid unsafe operation...

Always test the safety interlock system after making adjustments or repairs on the machine. Refer to the Electrical section in this manual for more information.

SAFETY INFORMATION

1

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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

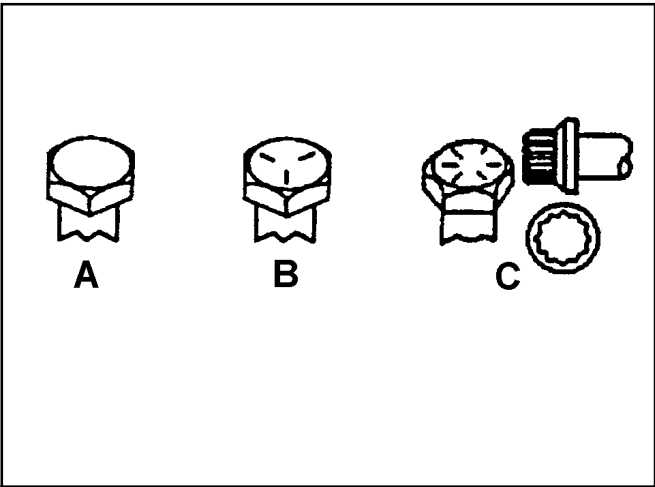


Figure 1

Inch Series Bolts and Screws	
(A) Grade 1 & 2 (B) Grade 5	(C) Grade 8

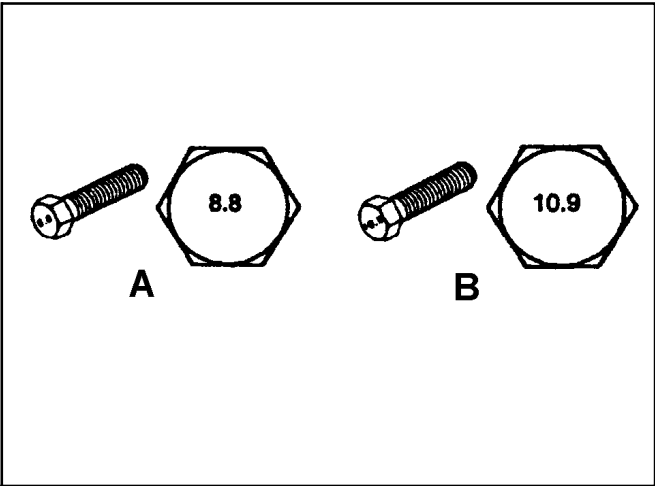


Figure 2

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	169 ± 23	23 ± 2	260 ± 34
# 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 ± 15	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	644 ± 68 N-cm	78 ± 8 in-lb	881 ± 90 N-cm
M6 X 1.0	96 ± 10 in-lb	1085 ± 113 N-cm	133 ± 14 in-lb	1503 ± 158 N-cm
M8 X 1.25	19 ± 2 ft-lb	26 ± 3 N-m	28 ± 3 ft-lb	38 ± 4 N-m
M10 X 1.5	38 ± 4 ft-lb	52 ± 5 N-m	54 ± 6 ft-lb	73 ± 8 N-m
M12 X 1.75	66 ± 7 ft-lb	90 ± 10 N-m	93 ± 10 ft-lb	126 ± 14 N-m
M16 X 2.0	166 ± 15 ft-lb	225 ± 23 N-m	229 ± 23 ft-lb	310 ± 31 N-m
M20 X 2.5	325 ± 33 ft-lb	440 ± 45 N-m	450 ± 36 ft-lb	610 ± 62 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: Torque values may have to be reduced when installing fasteners into threaded aluminum or brass. The specific torque value should be determined based on the fastener size, the aluminum or base material strength, length of thread engagement, etc.

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

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

$$\begin{aligned} \text{in-lb} \times 11.2985 &= \text{N-cm} \\ \text{ft-lb} \times 1.3558 &= \text{N-m} \end{aligned}$$

$$\begin{aligned} \text{N-cm} \times 0.08851 &= \text{in-lb} \\ \text{N-m} \times 0.73776 &= \text{ft-lb} \end{aligned}$$

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	16/32	0.53125	13.484
3/64	0.046875	1.191	35/64	0.546875	13.891
1/16	0.0625	1.588	9/16	0.5625	14.288
5/64	0.078125	1.984	37/64	0.578125	14.684
3/32	0.9375	2.381	19/32	0.59375	15.081
1/8	0.1250	3.175	5/8	0.6250	15.875
9/64	0.140625	3.572	41/64	0.640625	16.272
5/32	0.15625	3.969	21/32	0.65625	16.669
11/64	0.171875	4.366	43/64	0.671875	17.066
3/16	0.1875	4.762	11/16	0.6875	17.462
13/64	0.203125	5.159	45/64	0.703125	17.859
7/32	0.21875	5.556	23/32	0.71875	18.256
15/64	0.234375	5.953	47/64	0.734375	18.653
1/4	0.2500	6.350	3/4	0.7500	19.050
17/64	0.265625	6.747	49/64	0.765625	19.447
9/32	0.28125	7.144	25/32	0.78125	19.844
19/64	0.296875	7.541	51/64	0.796875	20.241
5/16	0.3125	7.938	13/16	0.8125	20.638
21/64	0.328125	8.334	53/64	0.828125	21.034
11/32	0.34375	8.731	27/32	0.84375	21.431
23/64	0.359375	9.128	55/64	0.859375	21.828
3/8	0.3750	9.525	7/8	0.8750	22.225
25/64	0.390625	9.922	57/64	0.890625	22.622
13/32	0.40625	10.319	29/32	0.90625	23.019
27/64	0.421875	10.716	59/64	0.921875	23.416
7/16	0.4375	11.112	15/16	0.9375	23.812
29/64	0.453125	11.509	61/64	0.953125	24.209
15/32	0.46875	11.906	31/32	0.96875	24.606
31/64	0.484375	12.303	63/64	0.984375	25.003
1/2	0.5000	12.700	1	1.000	25.400
1 mm = 0.03937 in.			0.001 in. = 0.0254 mm		

SPECIFICATIONS

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	2.59
	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	0.9078
	Pounds	Kilograms	0.4536
	Ounces	Grams	28.3495
Pressure	Pounds/Sq. In.	Kilopascal	6.895
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 Flows	Gallons/Minute	Liters/Minute	3.785
Temperature	Fahrenheit	Celsius	1. Subtract 32°
			2. Multiply by 5/9

SPECIFICATIONS

Product Specifications

Model	Engine Make	Horse Power (kW)	Oil Capacity with filter change	Hydro Oil Type	Hydro Oil Capacity
30682	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a
30684	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a
30686	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a
30688	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a
30984	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	15W50 Synthetic Engine Oil	2.1 Qt (1.98L)
30986	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	15W50 Synthetic Engine Oil	2.1 Qt (1.98L)
30988	Kawasaki	17 (12.7)	3.8 Pint (1.8 L)	15W50 Synthetic Engine Oil	2.1 Qt (1.98L)
30989	Kawasaki	17 (12.7)	3.8 Pint (1.8 L)	15W50 Synthetic Engine Oil	2.1 Qt (1.98L)
30692	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a
30694	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a
30696	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a
30698	Kawasaki	15 (11.2)	3.8 Pint (1.8 L)	n/a	n/a

Model	RPM High Speed	RPM Low Speed	Deck Size*	Gear Drive	Hydro Drive	Pistol Grip	T-Bar
30682	3600 \pm 100	1550	32" SD	X		X	
30684	3600 \pm 100	1550	36" TF	X		X	
30686	3600 \pm 100	1550	40" TF	X		X	
30688	3600 \pm 100	1550	48" TF	X		X	
30984	3600 \pm 100	1550	36" TF		X	X	
30986	3600 \pm 100	1550	40" TF		X	X	
30988	3600 \pm 100	1550	48" TF		X	X	
30989	3600 \pm 100	1550	52" TF		X	X	
30692	3600 \pm 100	1550	32" SD	X			X
30694	3600 \pm 100	1550	36" TF	X			X
30696	3600 \pm 100	1550	40" TF	X			X
30698	3600 \pm 100	1550	48" TF	X			X

* SD = Side Discharge
TF = TurboForce, Side Discharge

SPECIFICATIONS

Product Specifications

Model	Width		Height	Length	Weight	Tire Dimensions	
	Deflector Down	Deflector Up				Front	Rear
30682	45.8" (116.3cm)	32.8" (83.3cm)	41.0" (104.1cm)	78.0" (198.1cm)	402 lbs. (182kg)	9x3.5" - 4	13x5.0" - 6
30684	46.6" (118.4cm)	37.1" (94.2cm)	41.0" (104.1cm)	80.0" (203.2cm)	462 lbs. (210kg)	9x3.5" - 4	13x6.5" - 6
30686	55.5" (140.9cm)	41.6" (105.7cm)	41.0" (104.1cm)	75.3" (191.3cm)	477 lbs. (216kg)	9x3.5" - 4	13x6.5" - 6
30688	63.5" (161.3cm)	49.6" (126.0cm)	41.0" (104.1cm)	78.3" (198.9cm)	500 lbs. (227kg)	9x3.5" - 4	13x6.5" - 6
30984	46.6" (118.4cm)	37.1" (94.2cm)	44.0" (111.8cm)	80.0" (203.2cm)	532 lbs. (241kg)	9x3.5" - 4	16x6.5" - 8
30986	55.5" (140.9cm)	41.6" (105.7cm)	44.0" (111.8cm)	75.3" (191.3cm)	547 lbs. (248kg)	9x3.5" - 4	16x6.5" - 8
30988	63.5" (161.3cm)	49.6" (126.0cm)	44.0" (111.8cm)	78.3" (198.9cm)	570 lbs. (259kg)	9x3.5" - 4	16x7.5" - 8
30989	67.6" (171.7cm)	53.8" (136.7cm)	44.0" (111.8cm)	79.3" (201.4cm)	593 lbs. (269kg)	9x3.5" - 4	16x7.5" - 8
30692	45.8" (116.3cm)	32.8" (83.3cm)	41.0" (104.1cm)	72.0" (182.9cm)	400 lbs. (181kg)	9x3.5" - 4	13x5.0" - 6
30694	46.6" (118.4cm)	37.1" (94.2cm)	41.0" (104.1cm)	74.0" (187.9cm)	460 lbs. (209kg)	9x3.5" - 4	13x6.5" - 6
30696	55.5" (140.9cm)	41.6" (105.7cm)	41.0" (104.1cm)	69.3" (176.0cm)	475 lbs. (215kg)	9x3.5" - 4	13x6.5" - 6
30698	63.5" (161.3cm)	49.6" (126.0cm)	41.0" (104.1cm)	72.3" (183.6cm)	498 lbs. (226kg)	9x3.5" - 4	13x6.5" - 6

Tire Pressure	2006 models	2007 models
Castor Tire Pressure:	25-30 psi (172-207 kPa)	Semi-pneumatic
Rear Tire Pressure:	15 psi (103 kPa)	15 psi (103 kPa)

Mid-Size Fixed Deck Engine Removal (Gear Drive)

1. Turn the fuel valve to the off position (Fig. 001).



Fig 001

PICT-0002

2. Remove the fuel line by sliding the clamp down away from the fuel pump (Fig. 002).



Fig 002

PICT-0004

3. Remove the fuel line from the fuel pump. Drain the fuel into a suitable container (Fig. 003).



Fig 003

PICT-0006

4. Attach the oil drain hose to the oil drain valve (Fig. 004).



Fig 004

PICT-0013

ENGINE

5. Place a drain pan below the drain hose (Fig. 005).

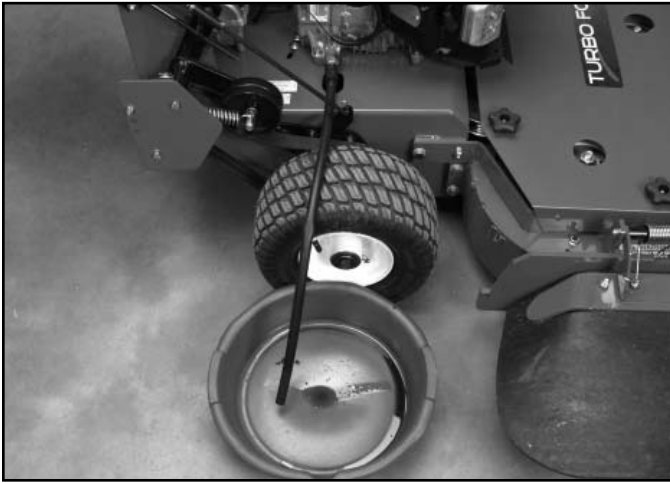


Fig 005

PICT-0009

6. Rotate the oil drain valve to allow the oil to drain from the engine (Fig. 006).



Fig 006

PICT-0015

7. When the oil has drained completely, close the drain valve and remove the drain hose.
8. Remove the cable tie from the wire harness on the right side of the engine (Fig. 007).

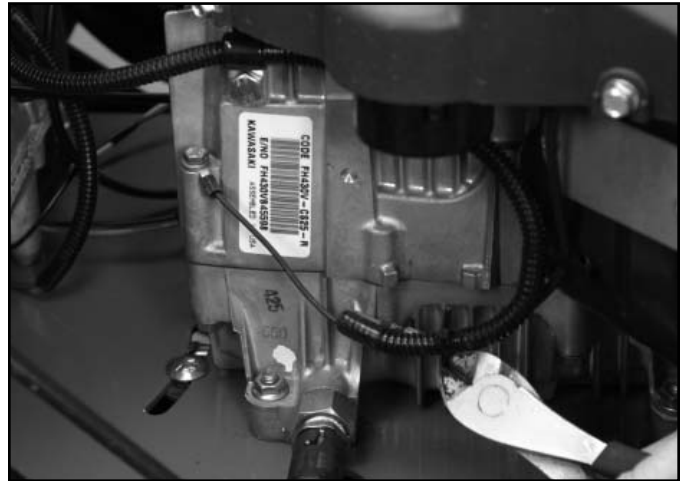


Fig 007

PICT-0017

9. Disconnect the magneto wire bullet connector (red from black) (Fig. 008).



Fig 008

PICT-0019

10. Remove the bolts attaching the ground wire and the wire harness R-clamp to the engine block (Fig. 009).

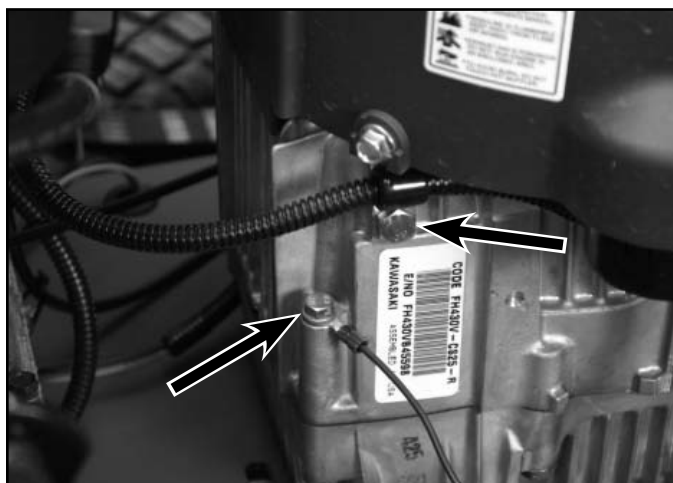


Fig 009

PICT-0023

13. Remove the throttle and choke cables from the clamps and disconnect them from the control linkage (Fig. 011).

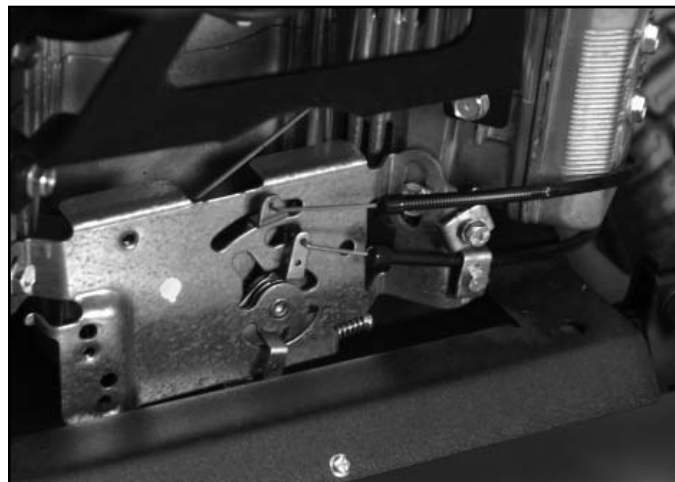


Fig 011

PICT-0028

11. Pull the harness out from behind the oil fill tube and move it away from the engine to prevent damage.
12. Loosen the clamps holding the throttle and choke (top) cables to the engine (Fig. 010).

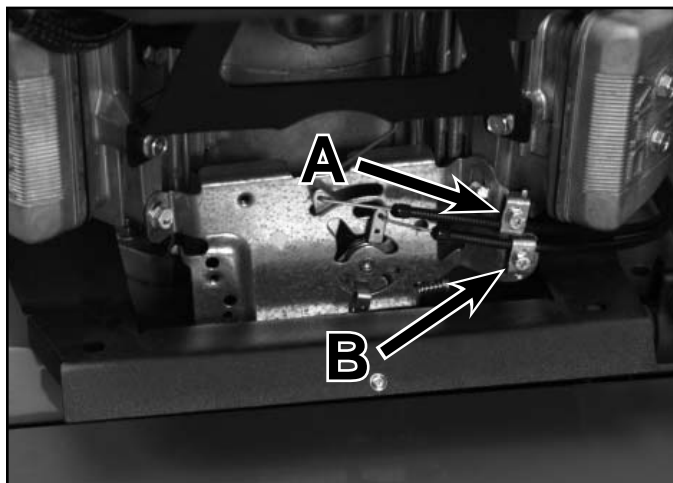


Fig 010

PICT-0025

A. Choke

B. Throttle

14. Pull the throttle and choke cables from behind the muffler and move them away from the engine to prevent damage.
15. Remove the deck cover knobs and then remove the deck cover from the mower (Fig. 012).



Fig 012

PICT-0029

ENGINE

16. Raise the machine to access the drive pulley and belt.

17. Remove the deck drive belt from the mower drive pulley (Fig. 013).



Fig 013

PICT-0032

18. Remove the drive pulley bolt from the engine crankshaft (Fig. 014).

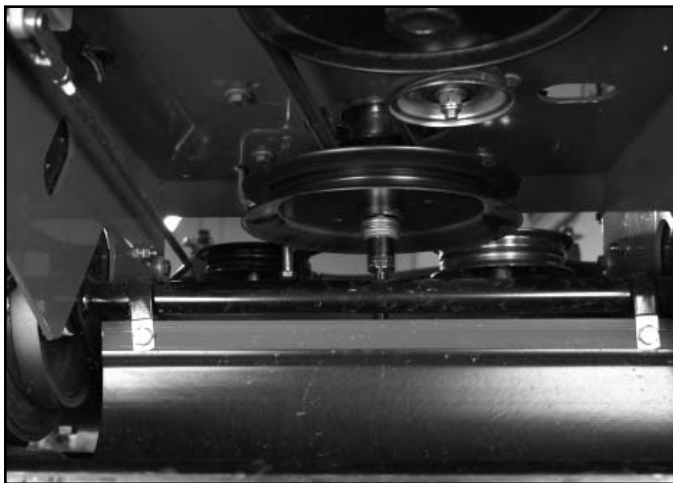


Fig 014

PICT-0034

19. Loosen the nut on the traction idler pulley (Fig. 015).

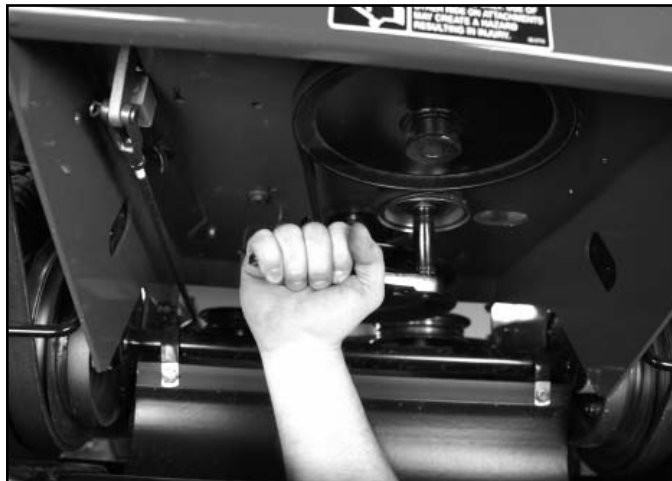


Fig 015

PICT-0038

20. Slide the traction belt off the idler pulley and then remove the belt (Fig. 016).



Fig 016

PICT-0040

21. Install a two bolt puller onto the drive pulley and remove the drive pulley from the engine crankshaft (Fig. 017).



Fig 017

PICT-0043

22. Loosen and remove the 4 nuts, bolts and washers that secure the engine to the chassis and then remove the engine (Fig. 018).

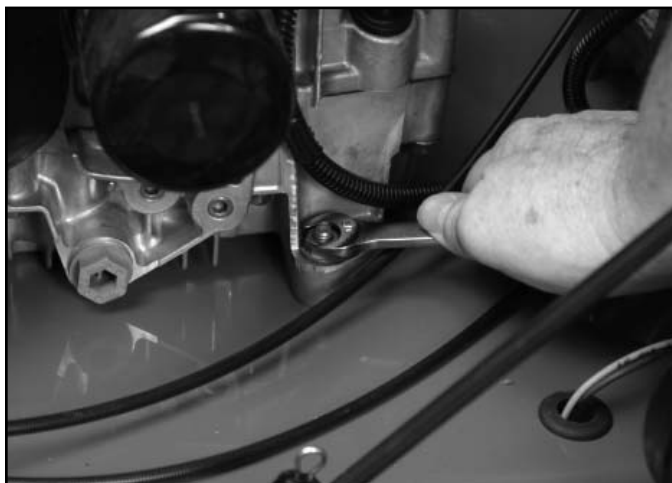


Fig 018

PICT-4761

Mid-Size Fixed Deck Engine Installation (Gear Drive)

1. Position the engine onto the chassis.
2. Apply thread locking compound onto the threads of all 4 engine mounting bolts.
3. Install the 4 engine mounting bolts, nuts and washers that secure the engine to the chassis. Torque the 4 engine mounting bolts to 15-20 ft-lbs. (20-27Nm).
4. Install the traction control belt onto the crankshaft pulley and idler (Fig. 019).

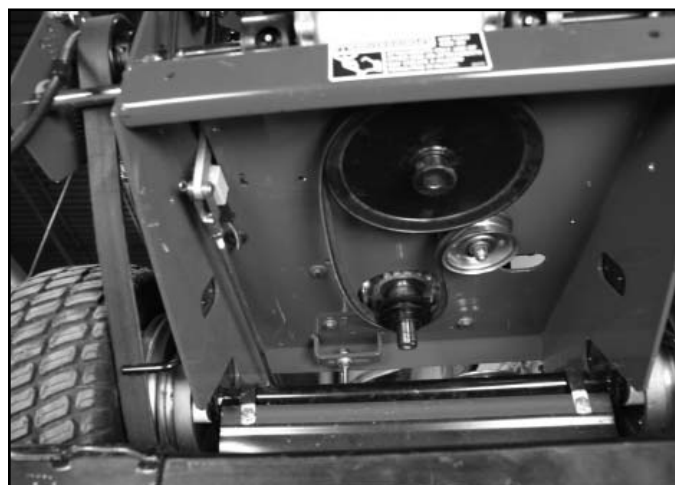


Fig 019

PICT-0053

ENGINE

5. Position the idler to tension the traction control belt and then tighten the nut to secure the idler position (Fig. 020).



Fig 020

PICT-0055a

7. Position the mower belt pulley onto the crankshaft (Fig. 022).



Fig 022

PICT-0058

6. Apply anti-seize compound to the engine crankshaft (Fig. 021).



Fig 021

PICT-0058

Note: The belt should have 1/2" of deflection with 3 lbs. of pressure on the belt midway between the transmission and engine pulley (Fig. 023).



Fig 023

PICT-4982

8. Apply thread locking compound to the threads of the crankshaft bolt (Fig. 024).



Fig 024

PICT-4775a

10. Install the mower deck belt onto the drive pulley (Fig. 026).



Fig 026

PICT-0062

9. Install the crankshaft bolt and washers and torque to 55 ± 5 ft-lbs. (75 ± 7 Nm) (Fig. 025).

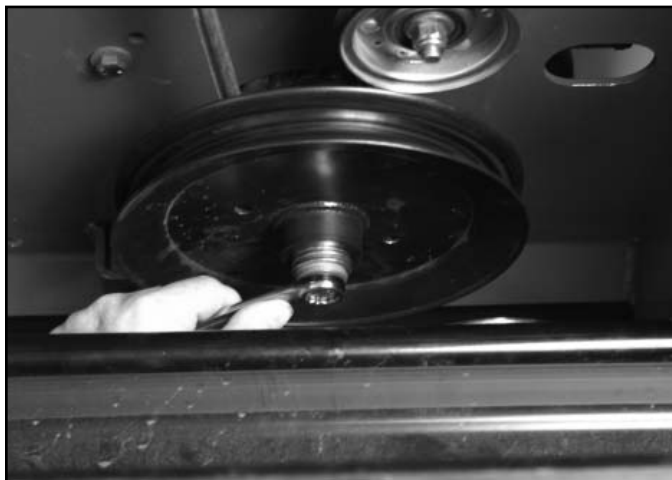


Fig 025

PICT-7042

Note: The mower belt should be installed so that it is routed on the inside of the belt guide (Fig. 027).

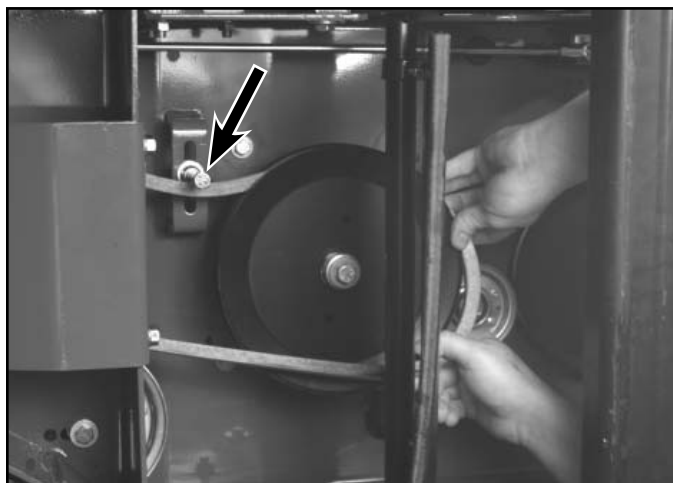


Fig 027

PICT-4985

ENGINE

11. Check the belt guide under the engine frame for proper adjustment. The distance between the belt guide and mower belt should be $\frac{3}{4}$ " (19mm) when the mower belt is engaged. Adjust the belt if necessary. The disengaged belt should not drag or fall off the pulley when the guides are properly adjusted (Fig. 028).

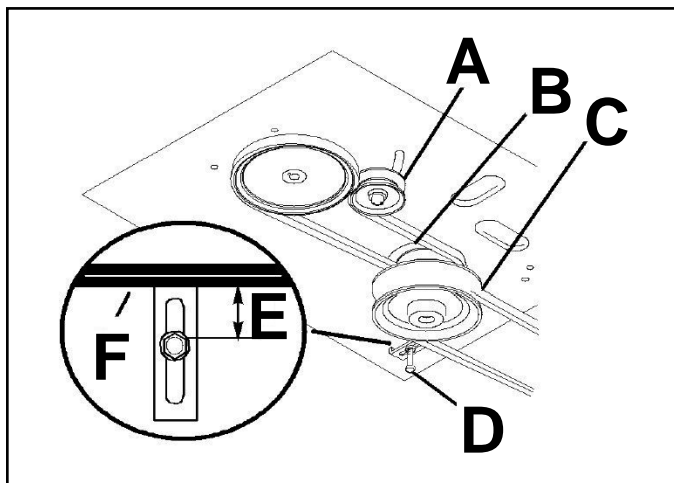


Fig 028

fig. 37 G001475

- | | |
|-------------------------|---------------------------|
| A. Idler pulley in slot | D. Belt Guide |
| B. Traction belt | E. $\frac{3}{4}$ " (19mm) |
| C. Mower belt | F. Mower belt |

12. Position the belt cover onto the mower deck and secure in place using knobs (Fig. 029).



Fig 029

PICT-0065

13. Route the wire harness through the opening between the oil filler tube and the engine and then around to the right side of the engine (Fig. 030).



Fig 030

PICT-0068

14. Plug the mag wire (red and black) bullet connector into the wire harness (Fig. 031).



Fig 031

PICT-0069

15. Install the wire harness with an R-clamp to the right side of the engine and the groundwire to the engine block (Fig. 032).

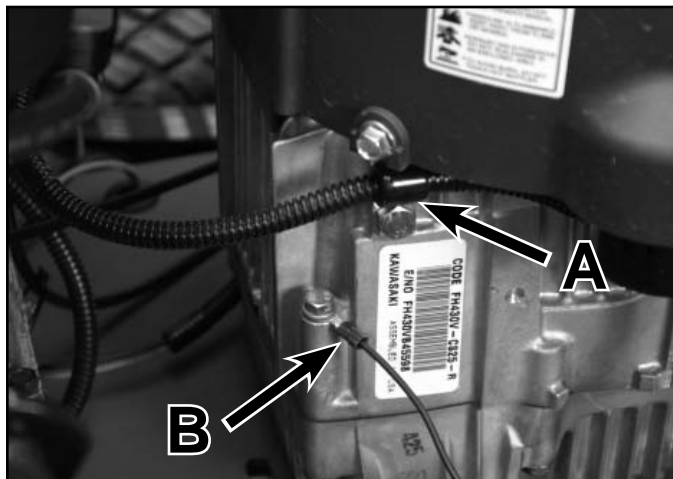


Fig 032

PICT-0023

A. R-clamp

B. Ground wire

16. Install cable tie securing the wire harness to the magneto wire (Fig. 033).



Fig 033

PICT-0073

17. Slide the fuel line onto the fuel pump (Fig. 034).



Fig 034

PICT-0075

18. Slide the hose clamp into place near the end of the fuel hose to secure it to the fuel pump (Fig. 035).



Fig 035

PICT-0078

ENGINE

19. Turn the fuel valve to the on position. Check for leaks (Fig. 036).



Fig 036

PICT-0002

22. Slide the throttle cable into the lower cable clamp and loosely clamp the outer cable housing (Fig. 038).

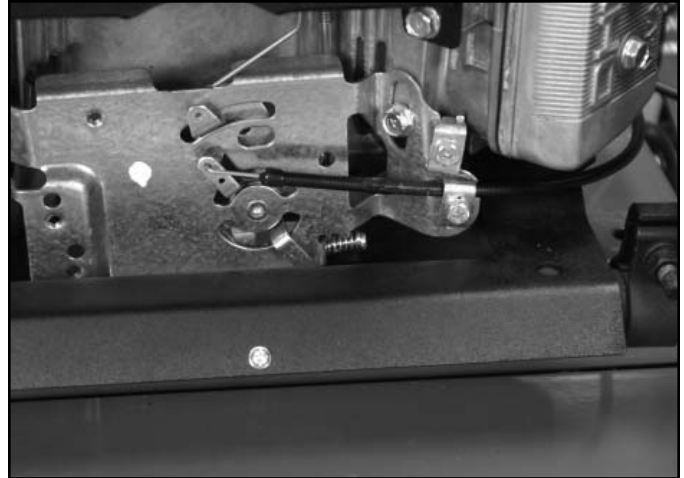


Fig 038

PICT-0084

20. Route the throttle cable around the left side of the engine and behind the muffler to the front of the engine.

21. Hook the Z-bend of the throttle cable into the upper hole of the speed control lever (Fig. 037).

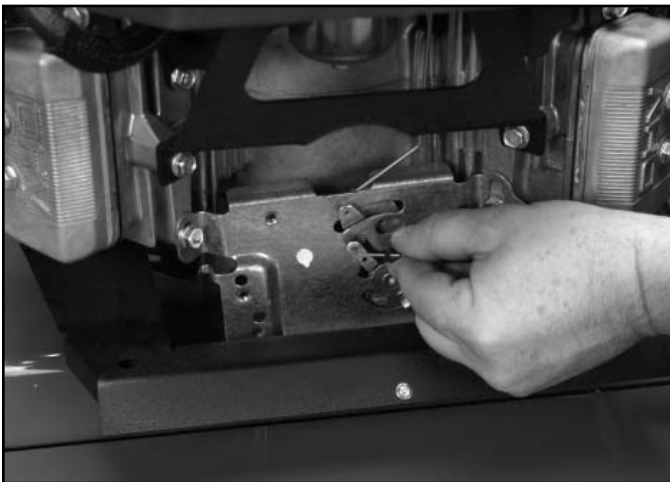


Fig 037

PICT-0082

23. Move the throttle lever to Fast position (Fig. 039).



Fig 039

PICT-0087a

T-Bar models only: “Fast” is at the detent position. Do not push the handle all the way forward in the throttle control slot (Fig. 040).



Fig 040

PICT-5443

25. Move the throttle lever to the Slow position. Ensure the carburetor throttle valve moves smoothly (Pistol Grip model shown) (Fig. 042).



Fig 042

PICT-0093

24. Pull on the throttle cable housing until the inner wire has almost no slack and then tighten the cable clamp bolt (Fig. 041).



Fig 041

PICT-0090

26. Route the choke cable around the left side of the engine and behind the muffler to the front of the engine.

27. Hook the Z-bend of the choke cable into the choke control lever (Fig. 043).

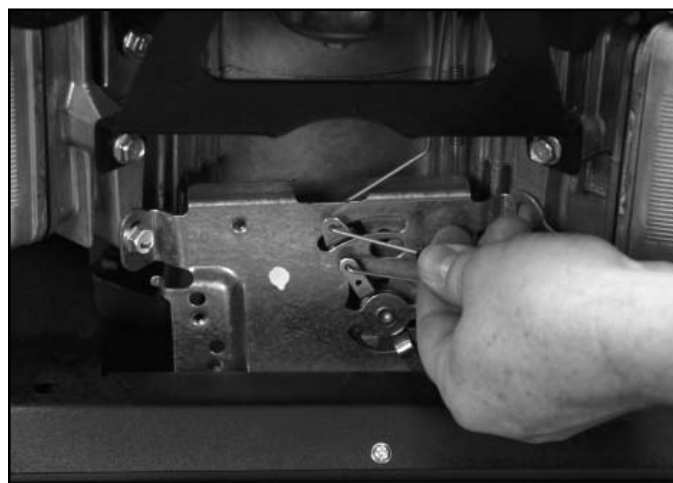


Fig 043

PICT-0096

ENGINE

28. Slide the choke cable into the upper cable clamp and loosely clamp the outer cable housing (Fig. 044).

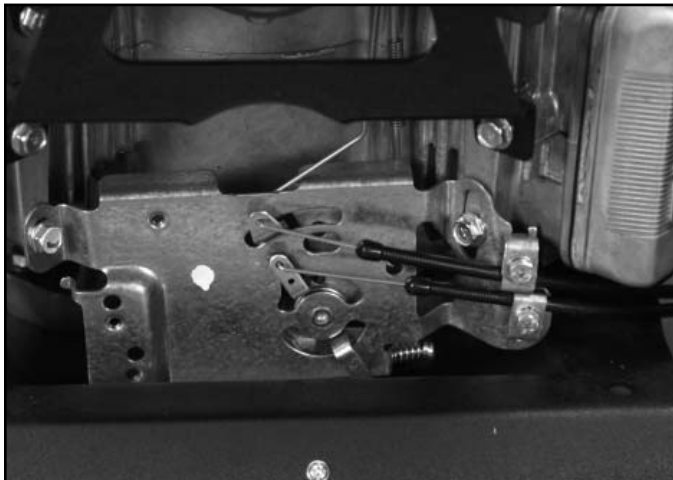


Fig 044

PICT-4683

30. Make sure that the carburetor choke valve is fully open (Fig. 046).

Note: The air filter has been removed to show the carburetor choke valve.

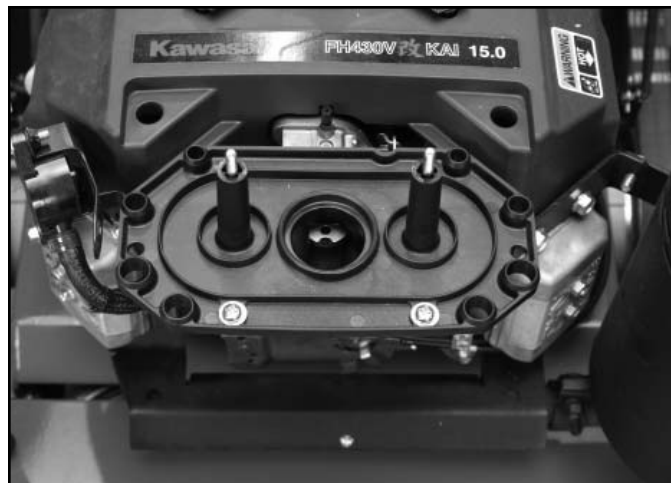


Fig 046

PICT-4690

29. Move the choke control to the Open position (Pistol Grip model shown) (Fig. 045).

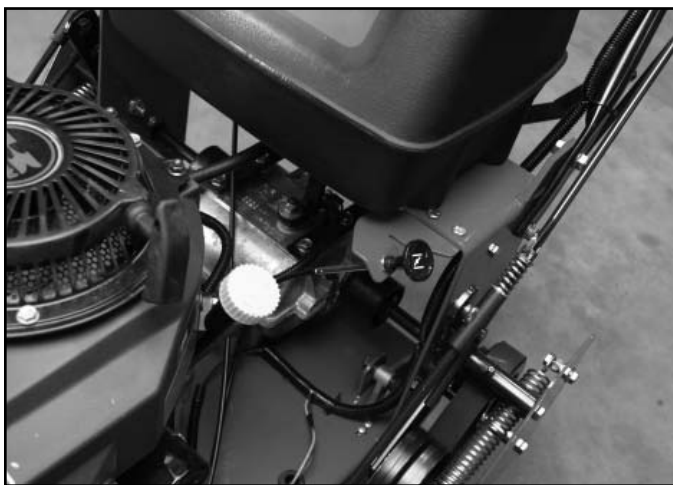


Fig 045

PICT-4688

31. Hold the choke control lever to maintain the full open position of the choke valve and pull on the outer choke cable housing until the inner wire has almost no slack. Tighten the cable clamp bolt (Pistol Grip model shown) (Fig. 047).



Fig 047

PICT-4694

32. Move the choke control to the Choke position (Fig. 048).



Fig 048

PICT-4699

33. Make sure that the carburetor choke valve is completely closed (Fig. 049).

Note: The air filter has been removed to show the carburetor choke valve.

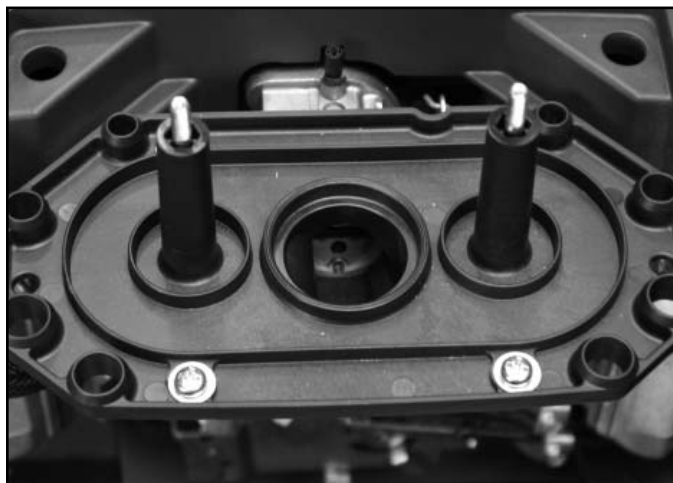


Fig 049

PICT-4702

34. Make sure that the choke valve turns from the fully closed position to the fully opened position when actuating the equipment choke control.

35. Fill the crankcase with oil per the engine specifications.

Mid-Size Fixed Deck Engine Removal (Hydro)

1. Turn the fuel valve to the off position (Fig. 050).



Fig 050

PICT-4705

ENGINE

2. Slide the hose clamp off of the fuel line connected to the fuel pump flange (Fig. 051).



Fig 051

PICT-4706

4. Attach the oil drain hose to the oil drain valve (Fig. 053).



Fig 053

PICT-4714

3. Remove the fuel line from the fuel pump. Drain the fuel into a suitable container (Fig. 052).



Fig 052

PICT-4709

5. Place a drain pan below the drain hose (Fig. 054).



Fig 054

PICT-4718

6. Rotate the oil drain valve to allow the oil to drain (Fig. 055).



Fig 055

PICT-4722

9. Disconnect the magneto wire bullet connector (red from black) (Fig. 057).



Fig 057

PICT-0019

7. When the oil has drained completely, close the drain valve and remove the drain hose.
8. Remove the cable tie from the wire harness on the right side of the engine (Fig. 056).



Fig 056

PICT-4724

10. Remove the bolts attaching the ground wire and the wire harness R-clamp to the engine block (Fig. 058).

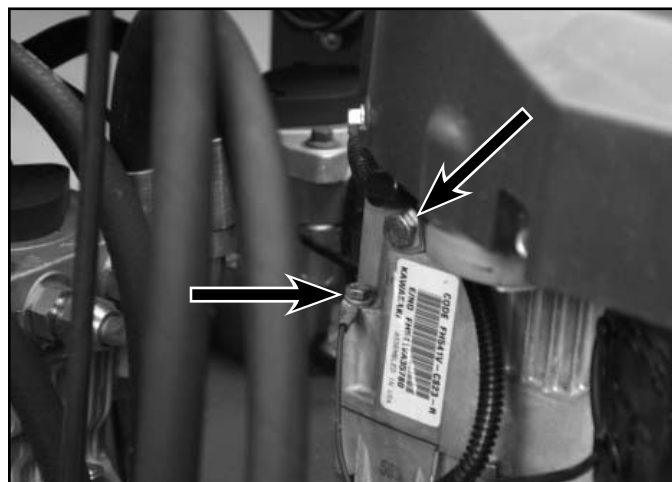


Fig 058

PICT-4727

ENGINE

11. Pull the harness out from behind the oil fill tube and move it away from the engine to prevent damage.
12. Loosen the clamps holding the throttle (bottom) and choke (top) cables to the engine (Fig. 059).

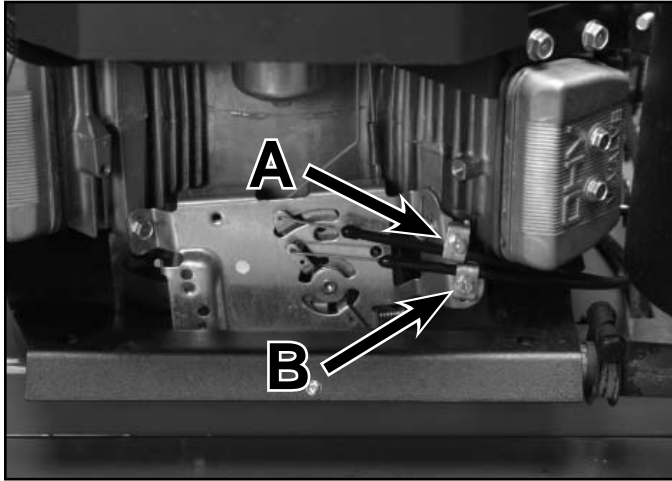


Fig 059

PICT-4729

A. Choke

B. Throttle

14. Pull the throttle and choke cables from behind the muffler and move it away from the engine to prevent damage.

15. Remove the deck cover knobs and then remove the deck cover from the mower (Fig. 061).



Fig 061

PICT-4736a

13. Remove the throttle and choke cables from the cable clamps and disconnect them from the control linkage (Fig. 060).

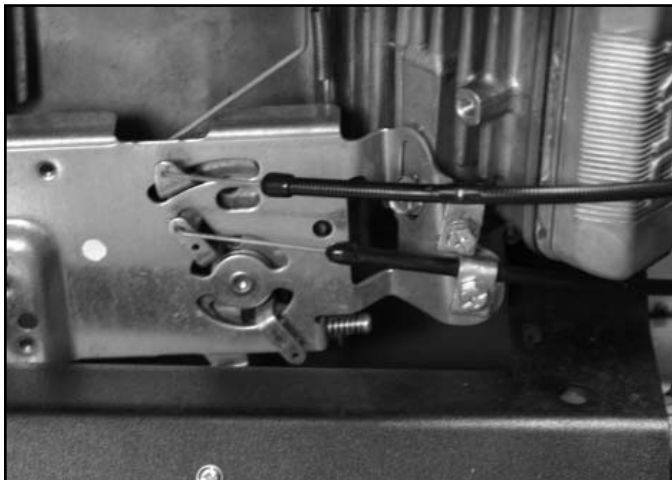


Fig 060

PICT-4731

16. Raise the machine to access the drive pulley and belt.

17. Remove the deck drive belt from the drive pulley (Fig. 062).

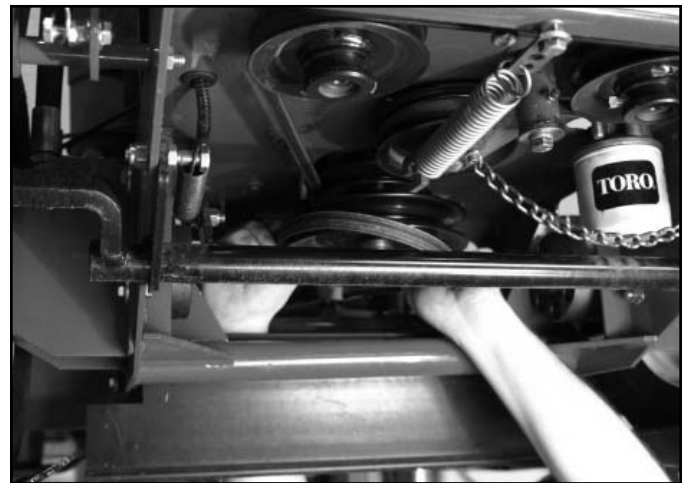


Fig 062

PICT-4741

18. Remove the crankshaft bolt from the crankshaft (Fig. 063).

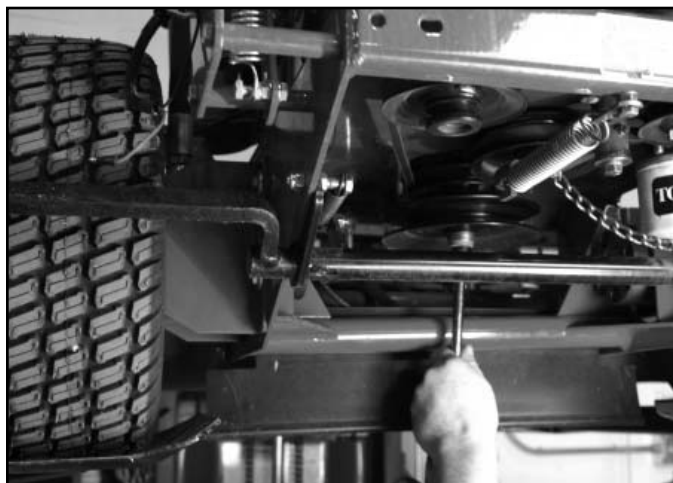


Fig 063

PICT-4742

20. Remove tension on the idler arm assembly by pulling on the split ring/chain (Fig. 065).



Fig 065

PICT-4744

19. Remove the drive pulley from the crankshaft (Fig. 064).

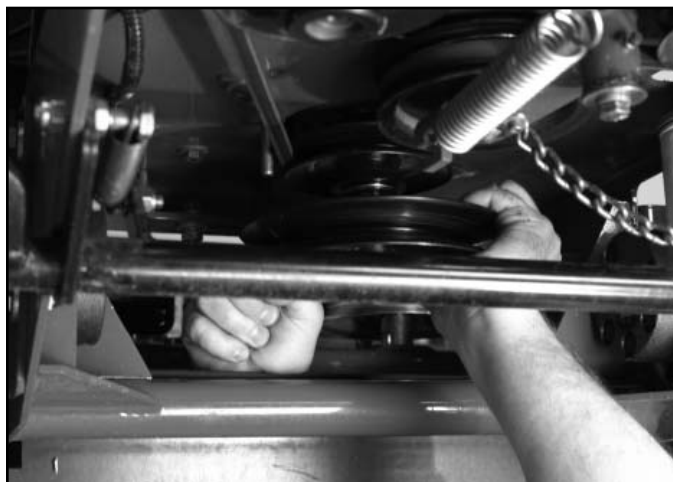


Fig 064

PICT-4743

21. While holding tension off the idler arm assembly, slide the traction belt off the traction drive pulley (Fig. 066).

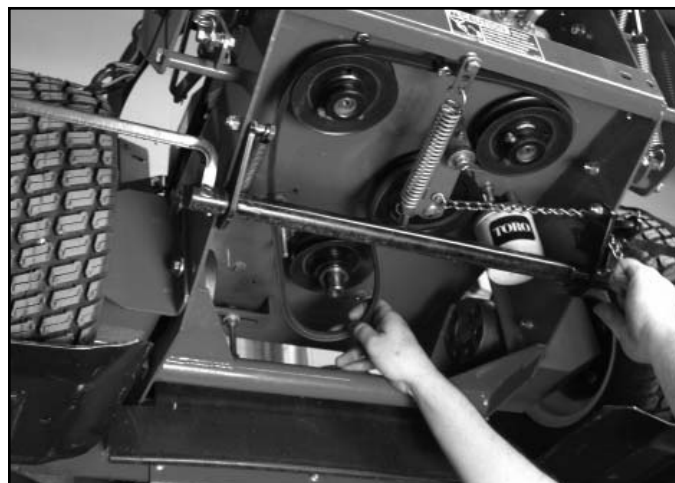


Fig 066

PICT-4747

ENGINE

22. Loosen and remove the 4 nuts, bolts and washers that secure the engine to the chassis and then remove the engine (Fig. 067).



Fig 067

PICT-6828

4. Pull on the split ring and chain assembly to reduce tension on the idler assembly. While pulling on the split ring/chain assembly, route the traction control belt around the pulleys (Fig. 068).

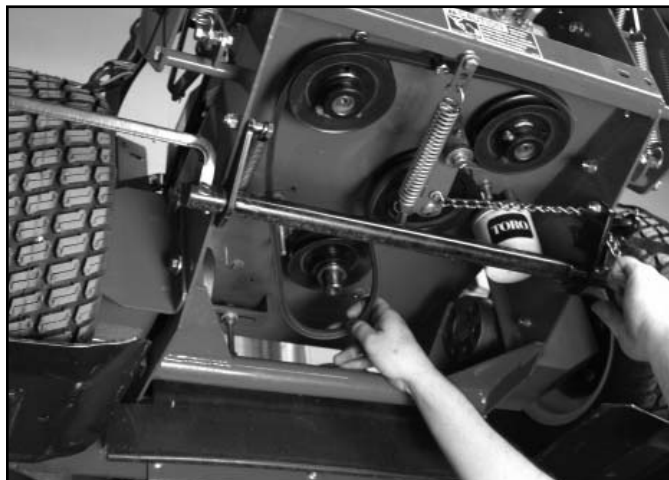


Fig 068

PICT-4747

Mid-Size Fixed Deck Engine Installation (Hydro)

1. Position the engine onto the chassis.
2. Apply thread locking compound to the threads of all 4 engine mounting bolts.
3. Install the 4 engine mounting bolts, nuts and washers that secure the engine to the chassis. Torque the 4 engine mounting bolts to 15-20 ft-lbs. (20-27Nm).

5. Release the split ring/chain assembly. If necessary, adjust the traction control belt guide so that the distance between the belt guide and belt is 1/8" (.31cm) (Fig. 069).



Fig 069

PICT-4766

6. Apply anti-seize compound to the OD of the crankshaft (Fig. 070).



Fig 070

PICT-4770

8. Apply thread locking compound to the threads of the crankshaft bolt (Fig. 072).



Fig 072

PICT-4775

7. Position the mower belt pulley onto the crankshaft (Fig. 071).



Fig 071

PICT-4767

9. Install the crankshaft bolt and washers and torque to 55 ± 5 ft-lbs. (75 ± 7 Nm) (Fig. 073).



Fig 073

PICT-4773

ENGINE

10. Install the mower deck belt onto the drive pulley (Fig. 074).



Fig 074

PICT-4780

12. Position the belt cover onto the mower deck and secure in place using knobs (Fig. 076).



Fig 076

PICT-4736a

11. Check the belt guide under the engine frame for the proper adjustment. The distance between the belt guide and mower belt should be $\frac{3}{4}$ " (19mm) when the mower belt is engaged. Adjust the belt if necessary. The disengaged belt should not drag or fall off the pulley when the guides are properly adjusted (Fig. 075).

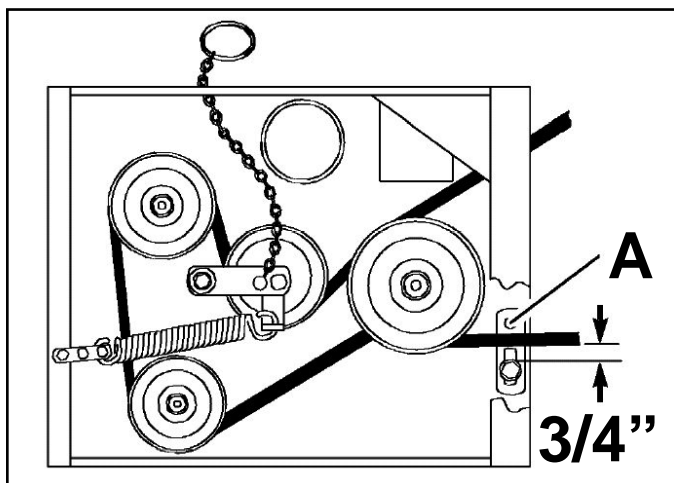


Fig 075

fig. 50 G001525

A. Belt guide

13. Route the wire harness through the opening between the oil filler tube and the engine and then around to the right side of the engine (Fig. 077).



Fig 077

PICT-4781

14. Plug the magneto wire bullet connector into the wire harness (red and black) (Fig. 078).



Fig 078

PICT-4785

16. Install a cable tie to secure the wire harness to the magneto wire (Fig. 080).

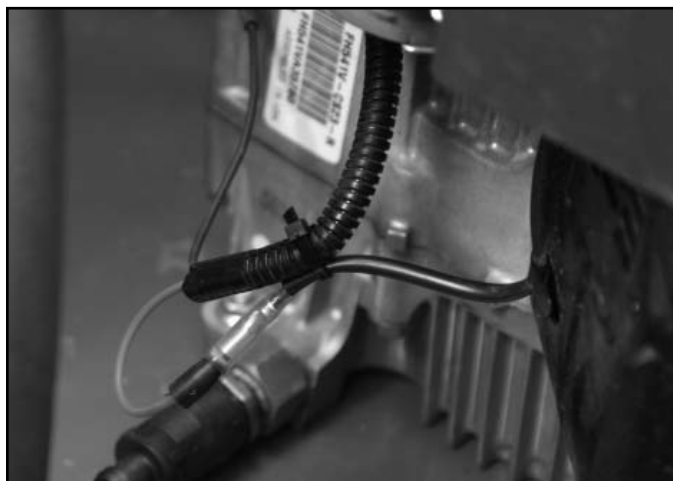


Fig 080

PICT-4790

15. Install the wire harness with an R-clamp to the right side of the engine and the groundwire to the engine block (Fig. 079).

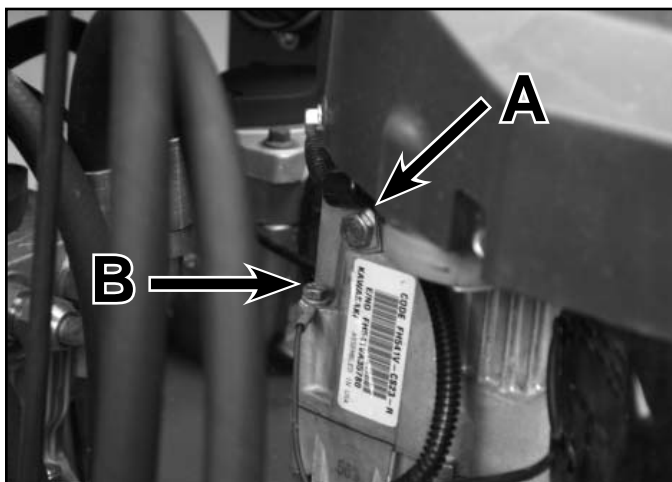


Fig 079

PICT-4727

A. R-clamp

B. Ground wire

17. Slide the fuel line onto the fuel pump (Fig. 081).



Fig 081

PICT-4794

ENGINE

18. Slide the hose clamp up the fuel line and into place to secure the hose to the fuel pump (Fig. 082).



Fig 082

PICT-4795

19. Turn the fuel valve to the on position. Check for leaks (Fig. 083).



Fig 083

PICT-4705

20. Route the throttle cable around the left side of the engine, behind the muffler and around to the front of the engine.

21. Hook the Z-bend of the throttle cable into the lower hole of the speed control lever (Fig. 084).

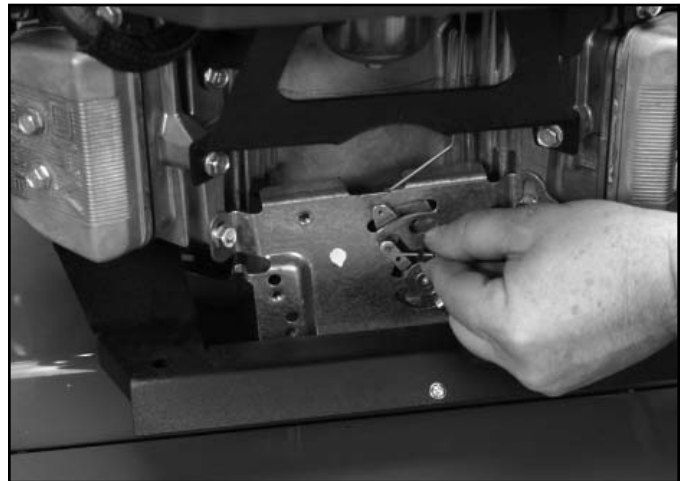


Fig 084

PICT-0082

22. Slide the throttle cable into the lower cable clamp and loosely clamp the outer cable housing (Fig. 085).

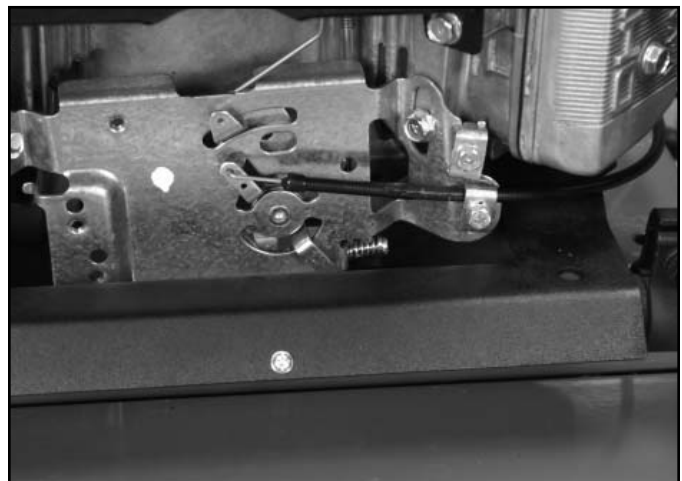


Fig 085

PICT-0084

23. Move the throttle lever to the Fast position (Fig. 086).



Fig 086

PICT-4799

25. Move the throttle lever to the Slow position. Make sure that the carburetor throttle valve moves smoothly (Fig. 088).



Fig 088

PICT-4801

24. Pull on the throttle cable housing until the inner wire has almost no slack and then tighten the cable clamp bolt (Fig. 087).



Fig 087

PICT-0090

26. Route the choke cable around the left side of the engine, behind the muffler and around to the front of the engine.

27. Hook the Z-bend of the choke cable into the choke control lever (Fig. 089).

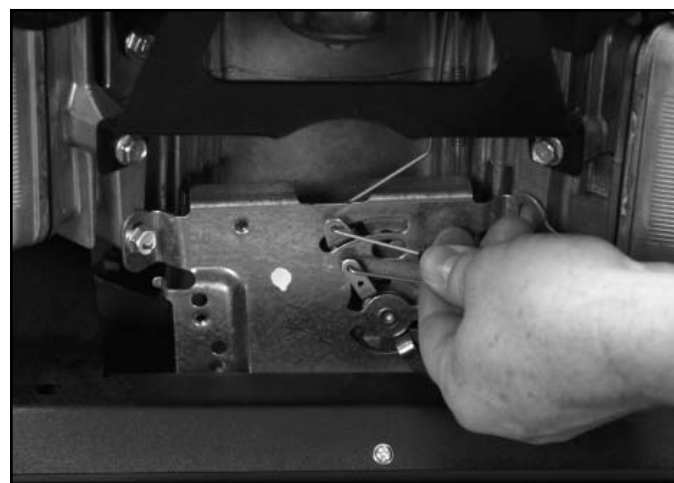


Fig 089

PICT-0096

ENGINE

28. Slide the choke cable into the upper cable clamp and loosely clamp the outer cable housing (Fig. 090).

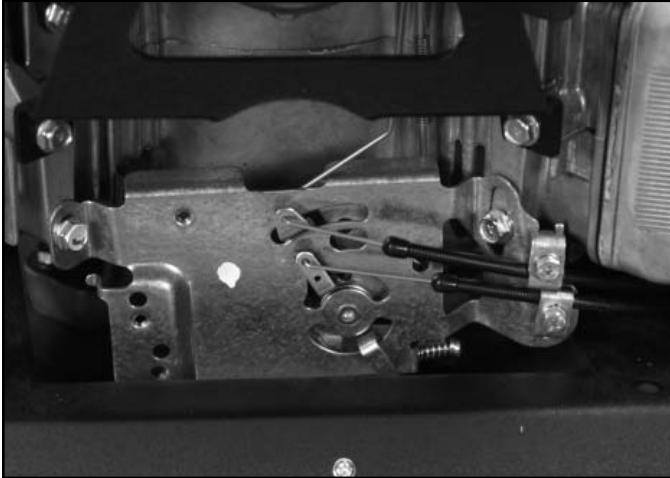


Fig 090

PICT-4683

30. Make sure that the carburetor choke valve is fully open (Fig. 092).

Note: The air filter has been removed to show the carburetor choke valve.

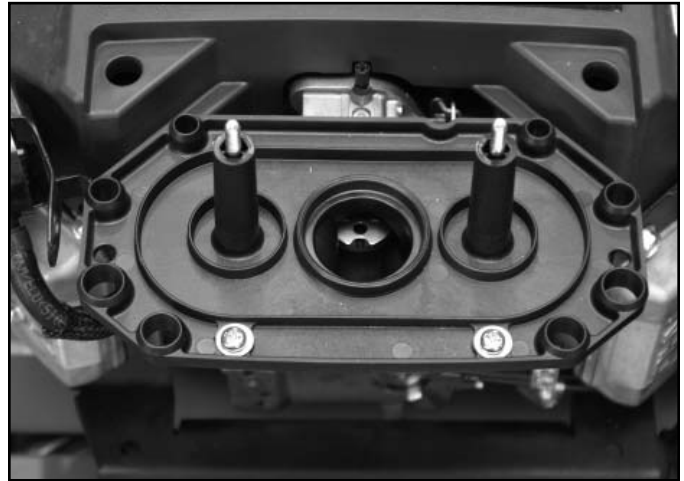


Fig 092

PICT-4689

29. Move the choke control to the open position (Fig. 091).



Fig 091

PICT-4804

31. Hold the choke control lever to hold the choke valve fully open. Pull on the outer housing of the choke cable until the inner wire has almost no slack. Tighten the cable clamp bolt (Fig. 093).

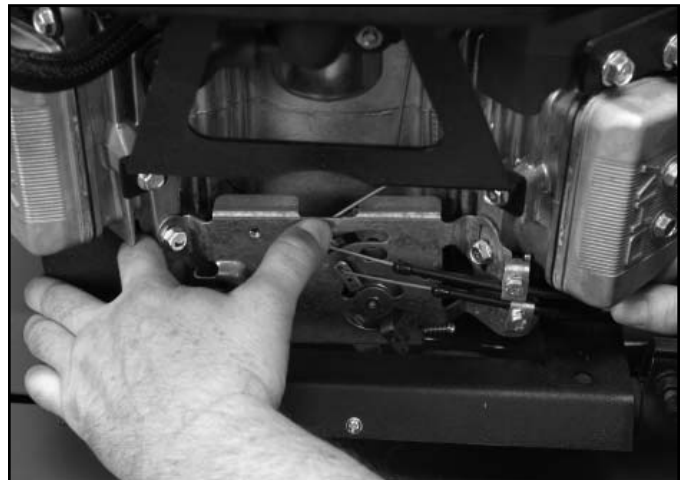


Fig 093

PICT-4693

32. Move the equipment choke control to choke position (Fig. 094).



Fig 094

PICT-5408

34. Make sure that the choke valve moves from fully closed position to fully opened position when actuating the choke control.
35. Fill the crankcase with oil per engine specifications.

33. Make sure that the carburetor choke valve is completely closed (Fig .095).

Note: The air filter has been removed to show the carburetor choke valve.

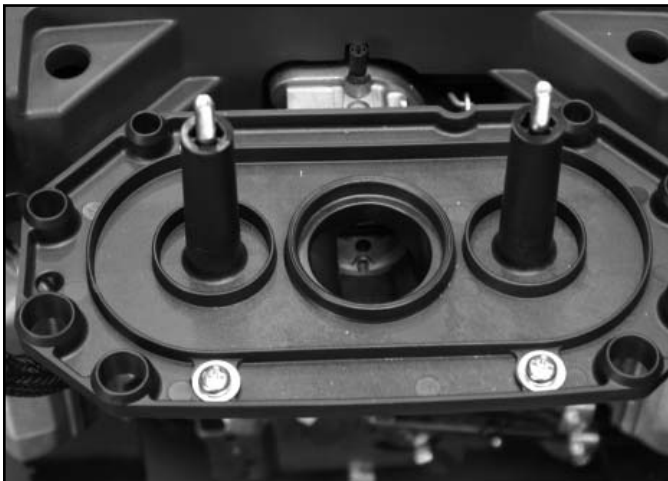


Fig 095

PICT-4702

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PTO Lever Replacement - Gear Drive

Removal

1. Park the machine on a level surface.
2. Stop the engine and wait for all moving parts to stop.
3. Remove the upper hairpin cotter from the blade drive linkage rod (Fig. 096).



Fig 096

PICT-5746

4. Remove the lower hairpin cotter from the blade drive linkage rod (Fig. 097).



Fig 097

PICT-5749

5. Remove the blade drive linkage rod (Fig. 098).



Fig 098

PICT-5751

Note: The handle must be set up in the lowest handle height position. In the 2 highest positions, the fuel tank blocks the removal of the lever, bolt, spacer and washer. See the Operator's Manual for handle height adjustment procedures.

T-Bar Gear only (steps 6-9):

6. Loosen and remove the nut securing the blade engagement lever to the handle (Fig. 099).

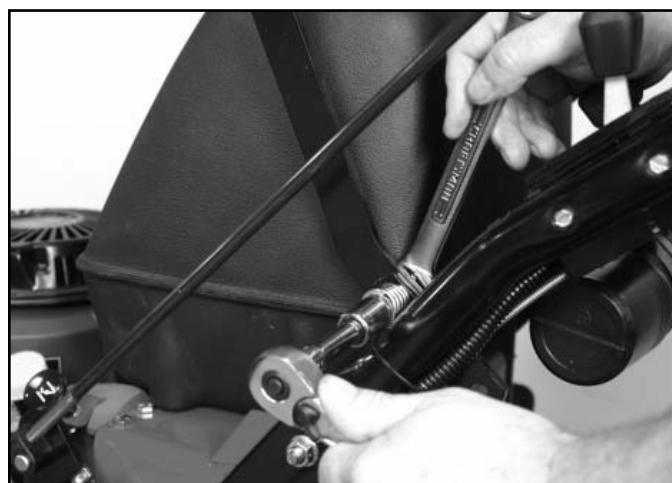


Fig 099

PICT-5753

LINKAGE

7. Remove the washer (Fig. 100).

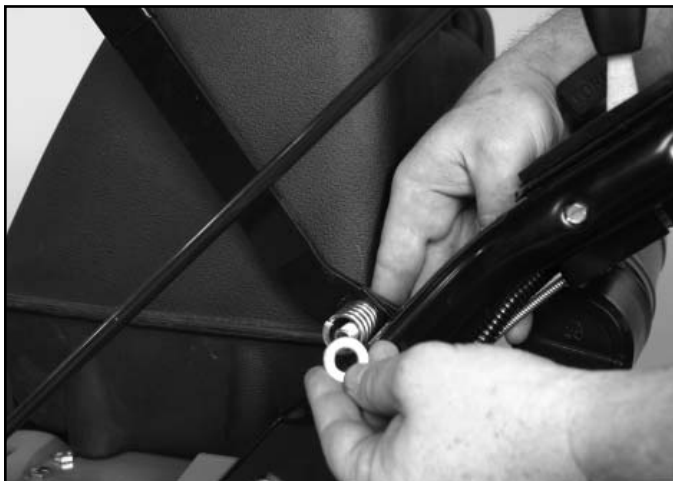


Fig 100

PICT-5756

9. Remove the lever, bolt, spacer and washer (Fig. 102).



Fig 102

PICT-5760

8. Remove the spring (Fig. 101).



Fig 101

PICT-5758

Pistol Grip Gear only (steps 10-13):

10. Loosen and remove the nut securing the blade engagement lever to the handle (Fig. 103).



Fig 103

PICT-8568

11. Remove the washer (Fig. 104).



Fig 104

PICT-8569

13. Remove the lever, bolt, spacer and washer (Fig. 106).



Fig 106

PICT-8571

12. Remove the spring (Fig. 105).



Fig 105

PICT-8570

T-Bar Gear & Pistol Grip Gear

14. Remove the mower deck cover (Fig. 107).



Fig 107

PICT-5763

LINKAGE

15. Remove the hairpin cotter from the PTO linkage rod at the assist arm (Fig. 108).

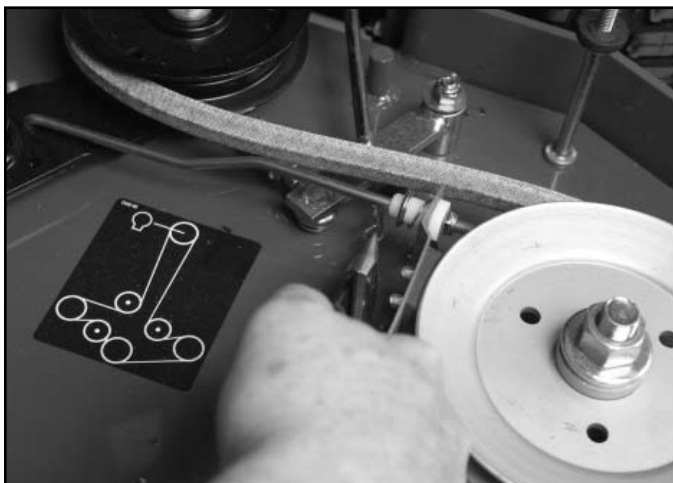


Fig 108

PICT-5767a

17. Remove the hairpin cotter from the clevis pin securing the adjustable yoke on the PTO linkage rod to the bellcrank (Fig. 110).



Fig 110

PICT-5770a

16. Remove the PTO linkage rod from the assist arm (Fig. 109).

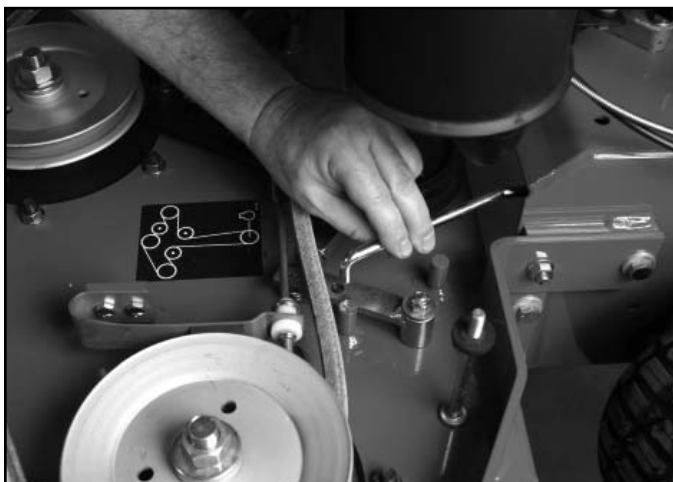


Fig 109

PICT-5769

18. Remove the clevis pin (Fig. 111).



Fig 111

PICT-5772

19. Remove the PTO linkage rod from the bellcrank (Fig. 112).



Fig 112

PICT-5776

21. Remove the shoulder bolt and bellcrank from the bracket on the chassis (Fig. 114).



Fig 114

PICT-5781

20. Loosen and remove the nut from the shoulder bolt that secures the bellcrank to the chassis (Fig. 113).

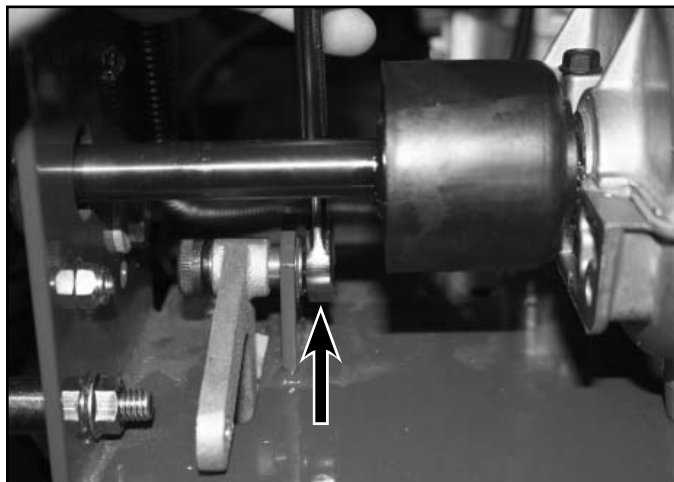


Fig 113

IMG-6012a

Installation - T-Bar Gear & Pistol Grip Gear

1. Install the shoulder bolt and bellcrank to the bracket on the frame (Fig. 115).



Fig 115

PICT-5781

LINKAGE

2. Install the nut to the shoulder bolt securing the bellcrank to the chassis (Fig. 116).

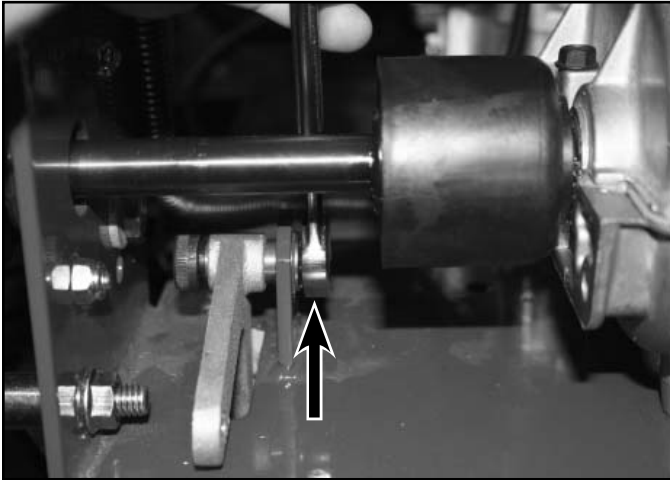


Fig 116

IMG-6012a

4. Install the clevis pin securing the yoke to the bellcrank (Fig. 118).

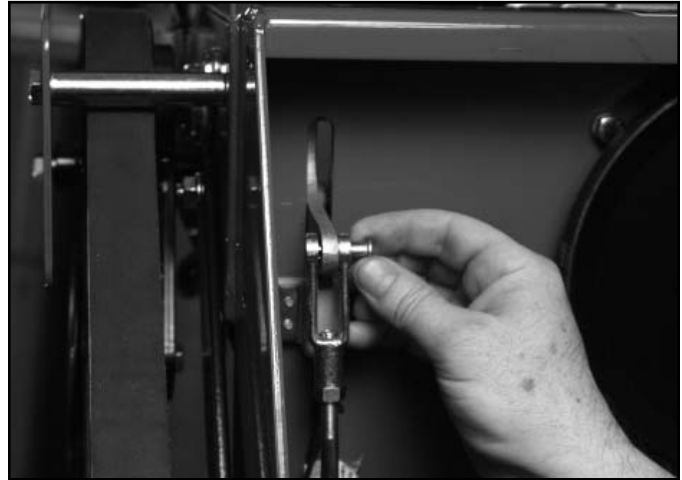


Fig 118

PICT-5772

3. Install the PTO linkage rod yoke to the bellcrank (Fig. 117).



Fig 117

PICT-5776

5. Install the hairpin cotter into the clevis pin (Fig. 119).

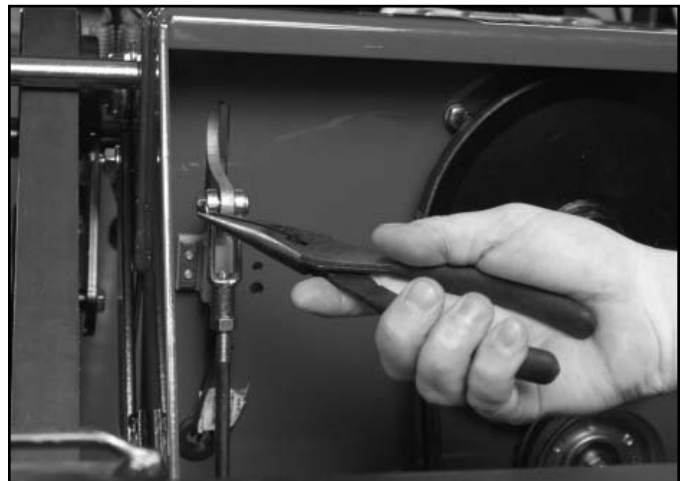


Fig 119

PICT-5770a

6. Install the PTO linkage rod into the assist arm (Fig. 120).

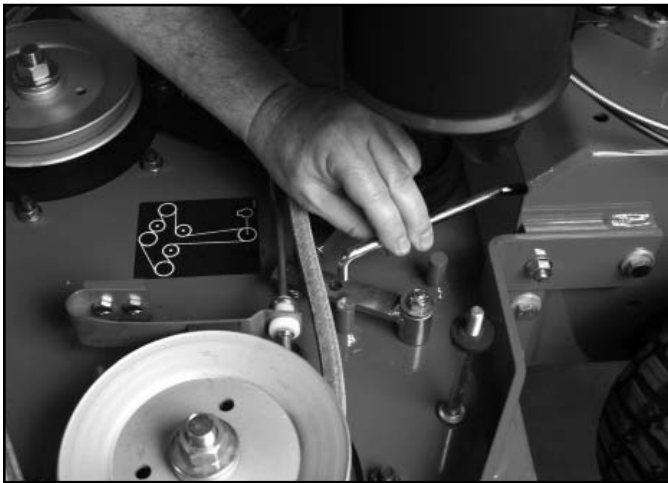


Fig 120

PICT-5769

8. Install the mower deck cover (Fig. 122).



Fig 122

PICT-5763

7. Install the hairpin cotter securing the PTO linkage rod to the assist arm (Fig. 121).

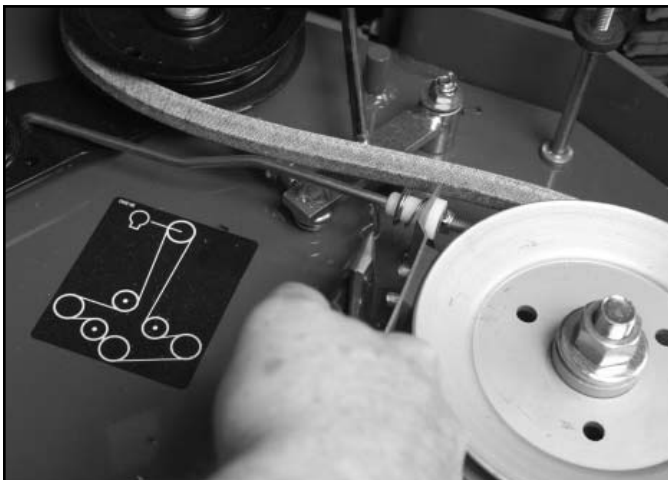


Fig 121

PICT-5767a

9. Install the spacer into the upper hole of the handle, place the washer on the bolt and insert the bolt through the spacer (Fig. 123):

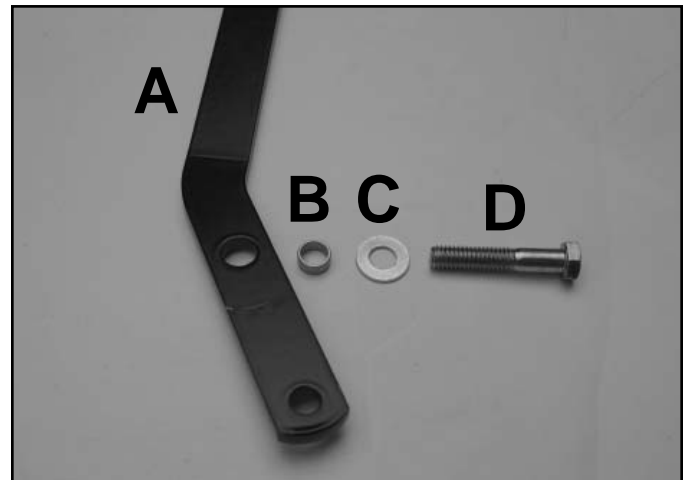


Fig 123

PICT-5784a

- | | |
|-----------|-----------|
| A. Lever | C. Washer |
| B. Spacer | D. Bolt |

LINKAGE

T-Bar Gear only (steps 10-13):

10. Install the lever, bolt, spacer and washer into the handle (Fig. 124).



Fig 124

PICT-5760

11. Install the spring onto the bolt (Fig. 125).

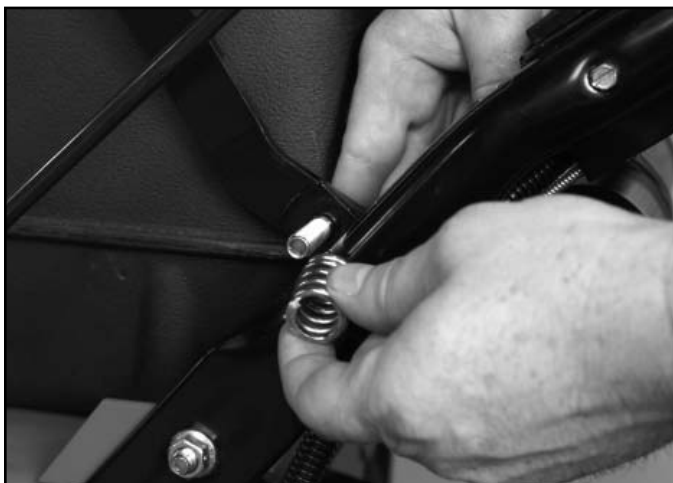


Fig 125

PICT-5758

12. Install the washer onto the bolt (Fig. 126).

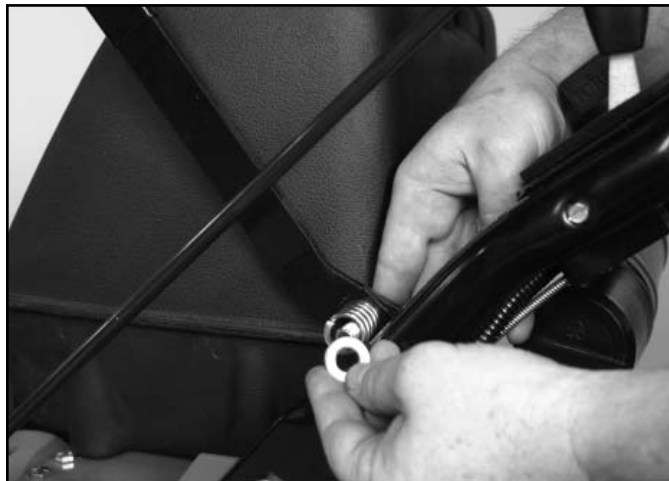


Fig 126

PICT-5756

13. Install the nut that secures the blade engagement lever to the handle (Fig. 127).

Note: Do not over-tighten the spring mounting nuts. 1 to 2 bolt threads should protrude past the nut.

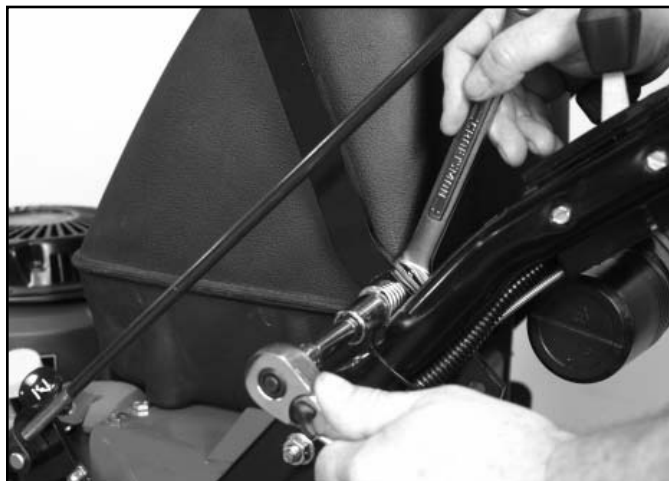


Fig 127

PICT-5753

Pistol Grip Gear only (steps 14-17):

14. Install the lever, bolt, spacer and washer into the handle (Fig. 128).



Fig 128

PICT-8571

15. Install the spring onto the bolt (Fig. 129).

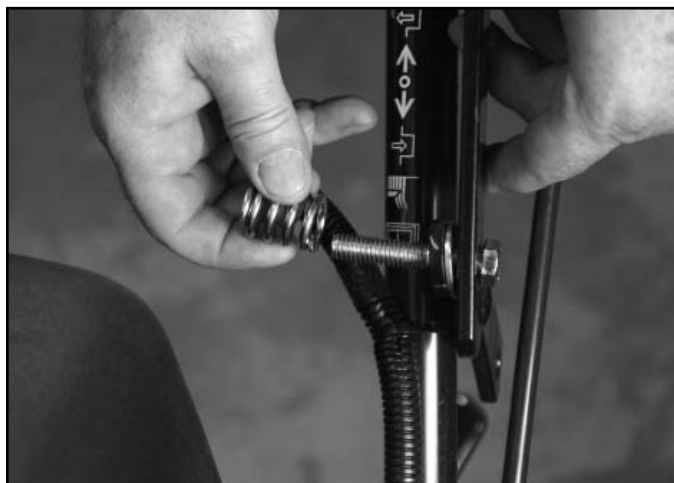


Fig 129

PICT-8570

16. Install the washer onto the bolt (Fig. 130).



Fig 130

PICT-8569

17. Install the nut that secures the blade engagement lever to the handle (Fig. 131).

Note: Do not over-tighten the spring mounting nuts. 1 to 2 bolt threads should protrude past the nut.



Fig 131

PICT-8568

LINKAGE

T-Bar Gear & Pistol Grip Gear

18. Install the blade drive linkage rod into the bellcrank and the lower hole on the blade engagement lever (Fig. 132).

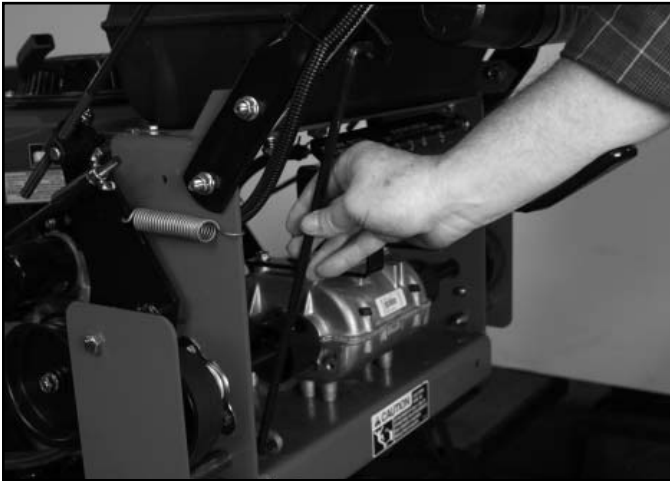


Fig 132

PICT-5751

19. Install the hairpin cotter into the lower end of the blade drive linkage rod (Fig. 133).

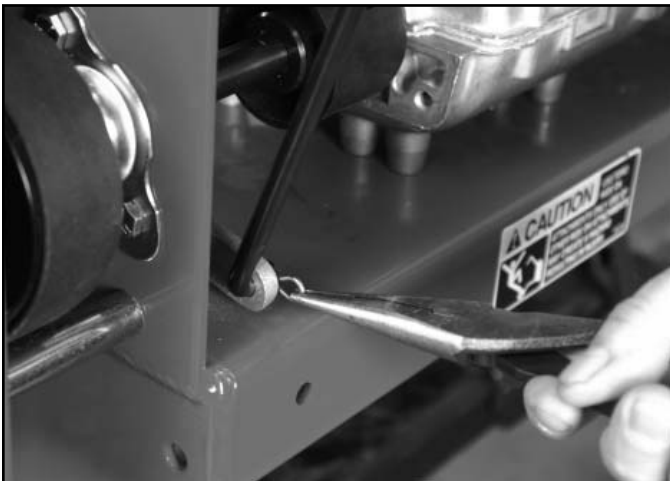


Fig 133

PICT-5749

20. Install the hairpin cotter into the upper end of the blade drive linkage rod (Fig. 134).

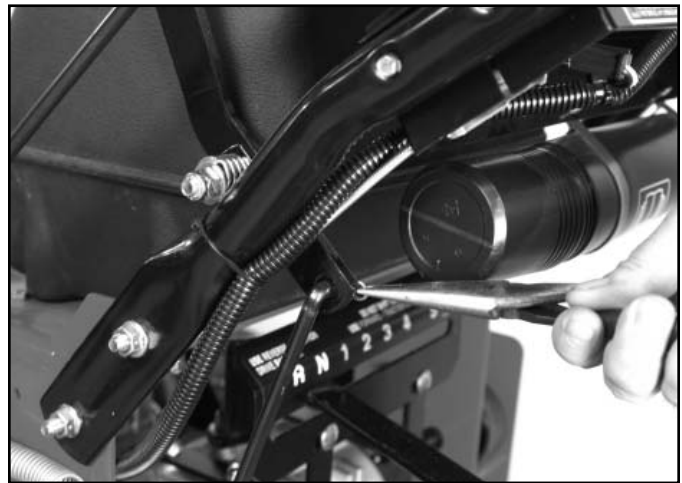


Fig 134

PICT-5746

PTO Lever Adjustment

1. Engage the PTO (lever pushed forward) (Fig. 135).



Fig 135

PICT-5787a

2. Adjust the assist arm linkage length so that there is 1/16" to 1/8" (1.58 to 3.17mm) clearance between the bellcrank and the transmission output shaft (Fig. 136).

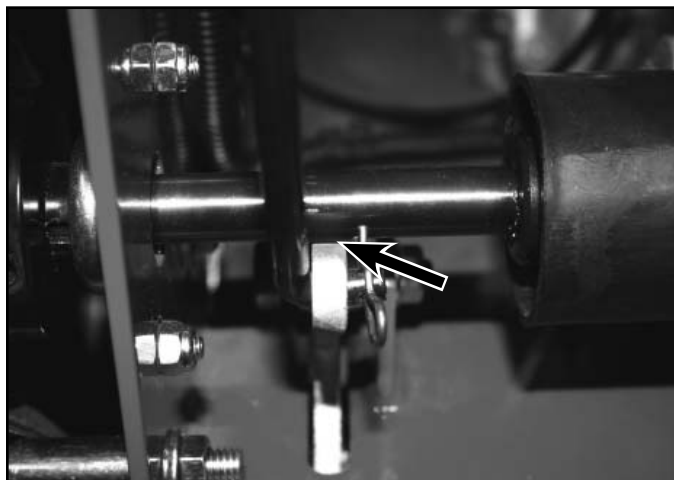


Fig 136

IMG-6022

3. Make sure the assist arm is against the rear assist arm stop on the deck (Fig. 137).



Fig 137

PICT-5791

4. Disengage the PTO (lever pulled back) (Fig. 138).



Fig 138

PICT-5792

5. The assist arm should contact the front assist arm stop on the deck. If it does not contact, readjust so that the bellcrank is closer to the transmission output shaft (Fig. 139).

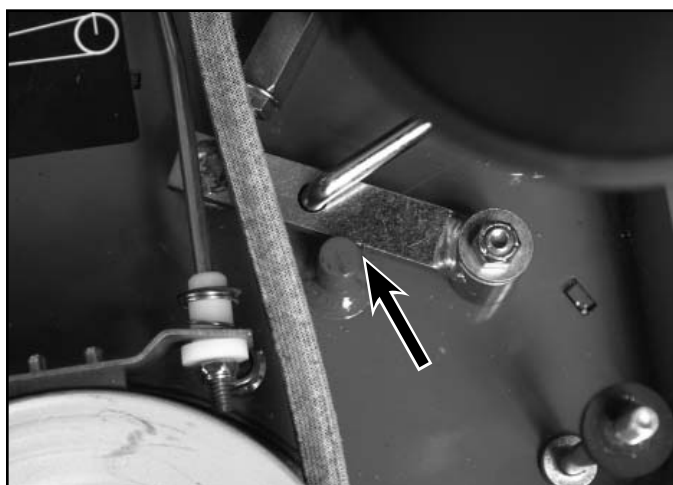


Fig 139

PICT-5794

LINKAGE

PTO Switch Adjustment

1. Disengage the PTO (lever pulled back) (Fig. 140).



Fig 140

PICT-5792

2. Make sure the bellcrank is touching the engine deck (Fig. 141).



Fig 141

IMG-6017

3. Adjust the PTO safety switch until the bellcrank depresses the plunger by 1/4" (6.35mm) (Fig. 142).



Fig 142

PICT-5803a

If adjustment is required:

- a. Loosen the switch mounting screws (Fig. 143).

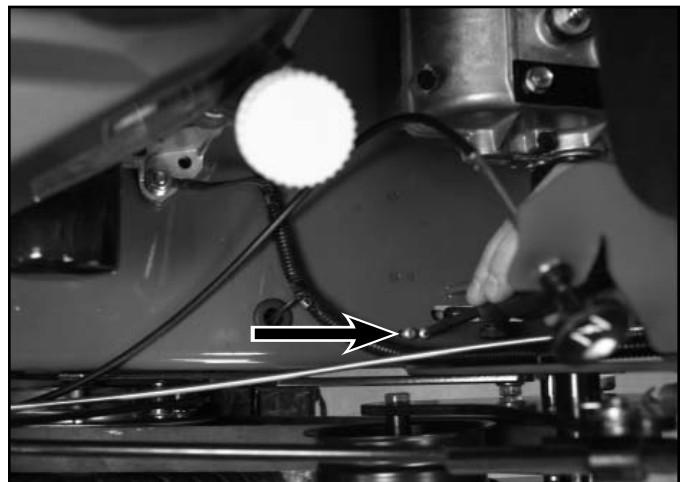


Fig 143

PICT-5798

- b. Position the switch front to back until the 1/4" (6.35mm) measurement is achieved (Fig. 144).



Fig 144

PICT-5802

4. Tighten the 2 switch mounting screws to secure the switch position (Fig. 145).

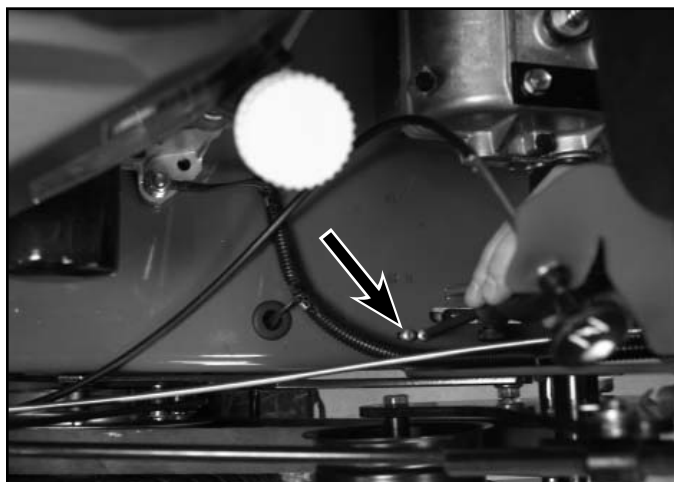


Fig 145

PICT-5798

PTO Linkage Replacement - Hydro Drive

Removal

1. Loosen the jam nut located directly below the PTO push/pull knob (Fig. 146).



Fig 146

PICT-6502

2. Remove the PTO push/pull knob and jam nut from the PTO linkage rod (Fig. 147).



Fig 147

PICT-6503

LINKAGE

3. Remove the hairpin cotter from the lower end of the PTO linkage rod (Fig. 148).



Fig 148

PICT-6506

5. Remove the two hairpin cotters from the lower PTO linkage Rod (Fig. 150).



Fig 150

PICT-8582

4. Remove the PTO linkage rod from the control panel bracket (Fig. 149).



Fig 149

PICT-6507

6. Remove the lower PTO linkage Rod (Fig. 151).



Fig 151

PICT-6514

7. Loosen the nut securing the PTO bellcrank to the chassis (Fig. 152).



Fig 152

PICT-6515

9. Remove the bolt, bellcrank and washer (Fig. 154).

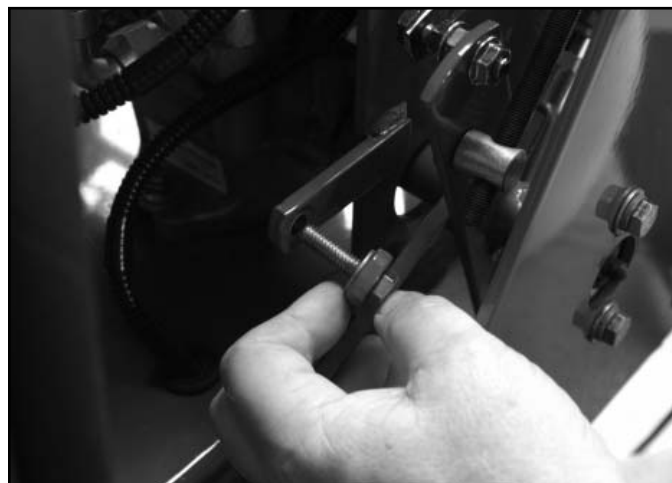


Fig 154

PICT-6519

8. Remove the nut and washer (Fig. 153).



Fig 153

PICT-6517

10. Remove the mower deck cover (Fig. 155).



Fig 155

PICT-4736a

LINKAGE

11. Remove the hairpin cotter from the PTO rod attached to the assist arm (Fig. 156).



Fig 156

PICT-6525

13. Raise the machine to access the underside of the frame.

14. Remove the cotter pin from the clevis pin connecting the PTO yoke connected to the bellcrank (Fig. 158).

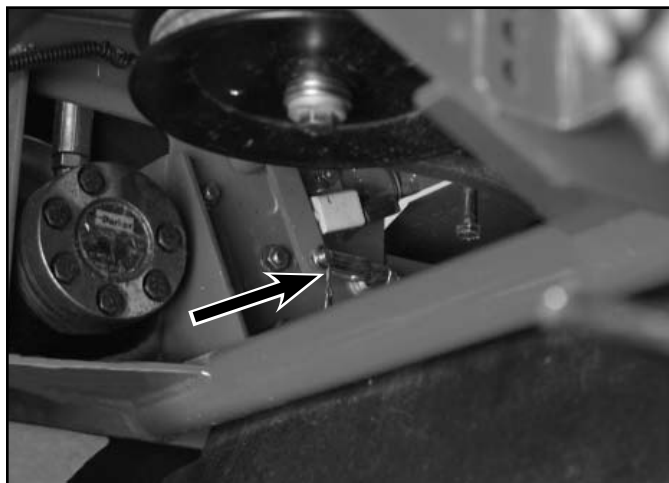


Fig 158

PICT-6523a

12. Remove the PTO rod from the assist arm (Fig. 157).



Fig 157

PICT-6528

15. Remove the clevis pin and PTO yoke/rod assembly (Fig. 159).



Fig 159

PICT-6529

16. Remove the nut from the bolt securing the PTO linkage bellcrank assembly to the frame (Fig. 160).

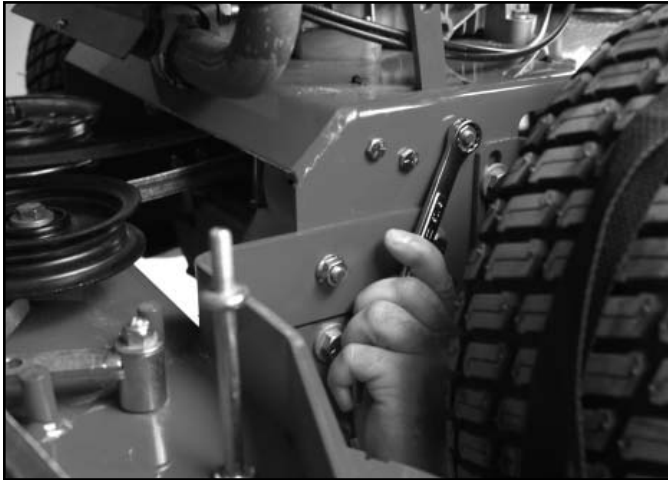


Fig 160

PICT-6533

18. Remove the grease fitting from the PTO linkage bellcrank (Fig. 162).



Fig 162

PICT-6541a

17. Remove the bolt and the PTO linkage bellcrank from the chassis (Fig. 161).

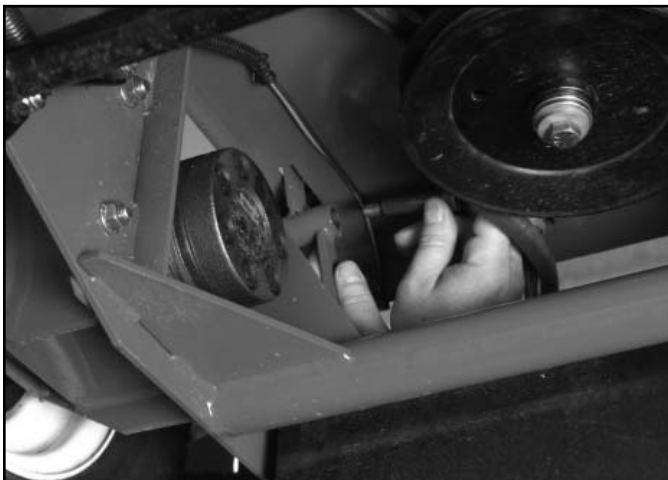


Fig 161

PICT-6535

Installation

1. Install a grease fitting into the PTO bellcrank. Ensure the 90 degree fitting is oriented as shown (Fig. 163):



Fig 163

PICT-6544a

LINKAGE

2. Position the shoulder bolt into the PTO bellcrank (Fig. 164).

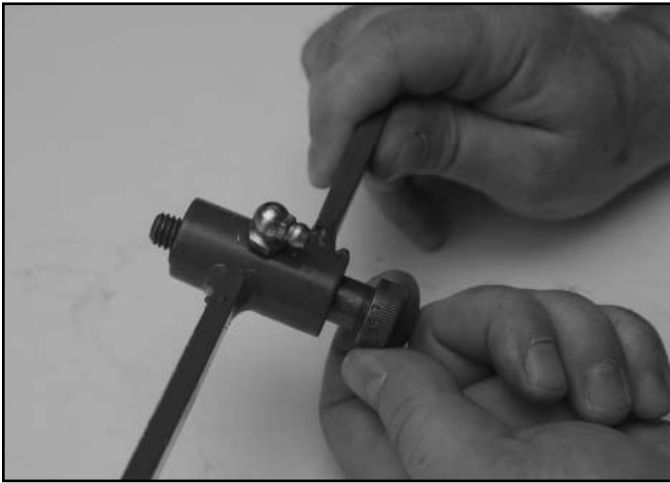


Fig 164

PICT-6546a

- b. Insert the bolt through the hole in the chassis (Fig. 166).



Fig 166

PICT-6550

3. Position the bellcrank/bolt assembly into the chassis:

- a. Insert the upper bellcrank arm through the slot in the chassis (Fig. 165).



Fig 165

PICT-6548

4. Secure the PTO bellcrank/bolt assembly to the chassis with a nut (Fig. 167).

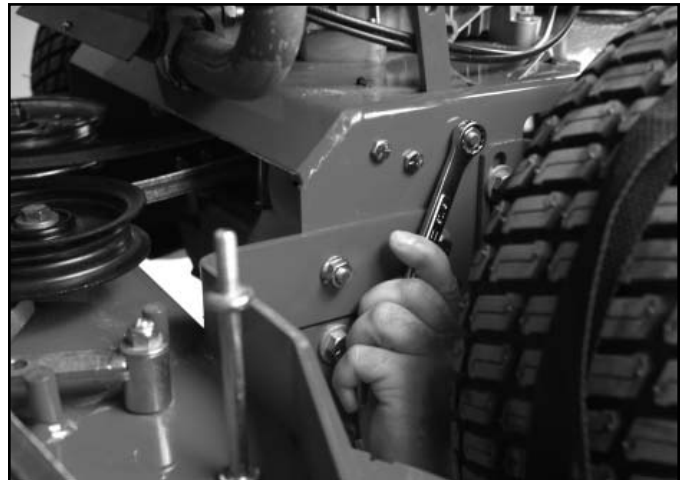


Fig 167

PICT-6533

5. Position the linkage rod/yoke assembly onto the lower arm of the PTO bellcrank and insert a clevis pin (Fig. 168).



Fig 168

PICT-6529

7. Lubricate PTO bellcrank with general purpose #2 grease (Fig. 170).



Fig 170

PICT-9820

6. Install the hairpin cotter into the linkage rod (Fig. 169).



Fig 169

PICT-6523a

8. Insert the PTO linkage rod into the assist arm (Fig. 171).



Fig 171

PICT-6528

LINKAGE

9. Install the hairpin cotter to secure the PTO (Fig. 172).



Fig 172

PICT-6525

11. Insert a bolt into the upper bellcrank and then slide a washer onto the bolt (Fig. 174).



Fig 174

PICT-6553a

10. Install the mower deck cover (Fig. 173).



Fig 173

PICT-4736a

12. Install the bellcrank, bolt and washer assembly (Fig. 175).

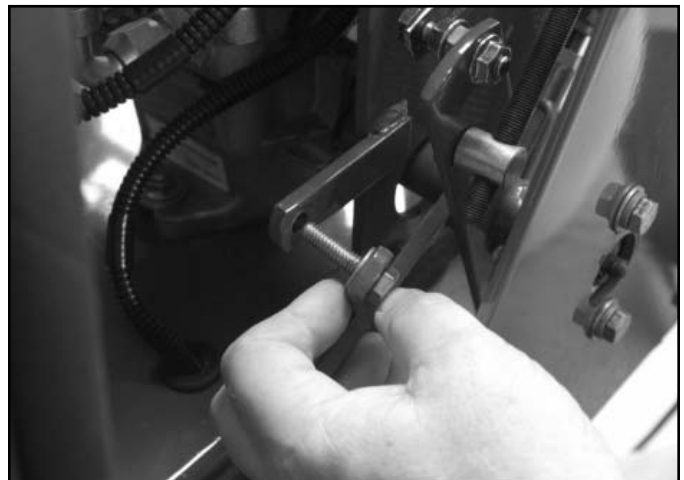


Fig 175

PICT-6519a

13. Install a washer and a nut onto the bolt (Fig. 176).



Fig 176

PICT-6517

14. Secure the nut so that the PTO bellcrank can pivot freely (Fig. 177).



Fig 177

PICT-6515

15. Position the lower PTO linkage rod so each end is installed into one of the bellcranks (Fig. 178).

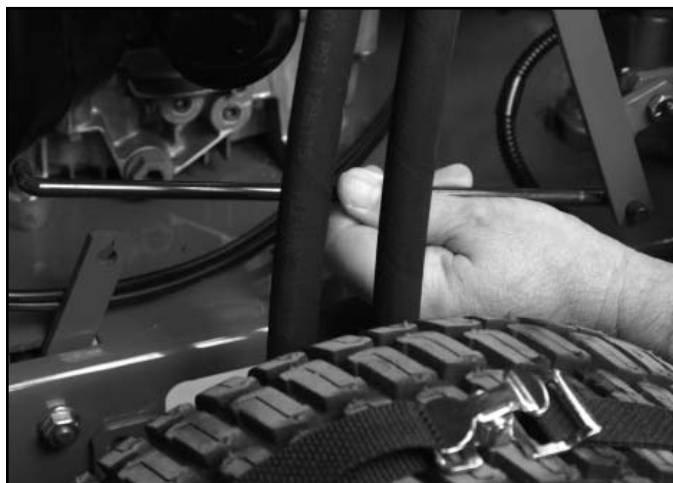


Fig 178

PICT-6514

16. Install the two hairpin cotter pins to secure the PTO rod to the two bellcranks (Fig. 179).



Fig 179

PICT-8582

LINKAGE

17. Install the threaded end of the upper PTO linkage rod into the control panel bracket through the nylon bearing (Fig. 180).



Fig 180

PICT-6554

19. Install a jam nut onto the threaded end of the upper linkage rod. Thread the nut to the bottom of the threads (Fig. 182).



Fig 182

PICT-6558a

18. Position the lower end of the PTO linkage rod into the bellcrank and install a hairpin cotter to secure it (Fig. 181).



Fig 181

PICT-6506

20. Install the PTO push/pull knob onto the PTO linkage rod (Fig. 183).



Fig 183

PICT-6503

21. Secure the jam nut against the bottom of the PTO push/pull knob (Fig. 184).



Fig 184

PICT-6502

2. Remove the choke cable from the clamp (Fig. 186).



Fig 186

PICT-5378

Choke Cable Replacement

Choke Cable Removal

1. Loosen the clamp that secures the choke cable to the engine (Fig. 185).

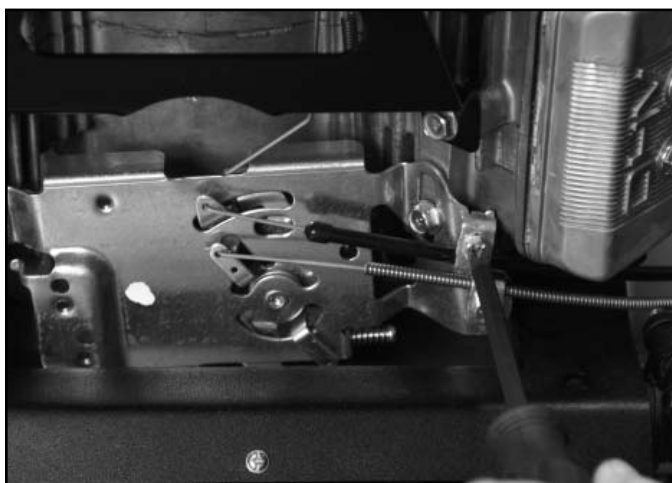


Fig 185

PICT-5376

3. Remove the Z-bend of the choke cable from the choke control lever (Fig. 187).

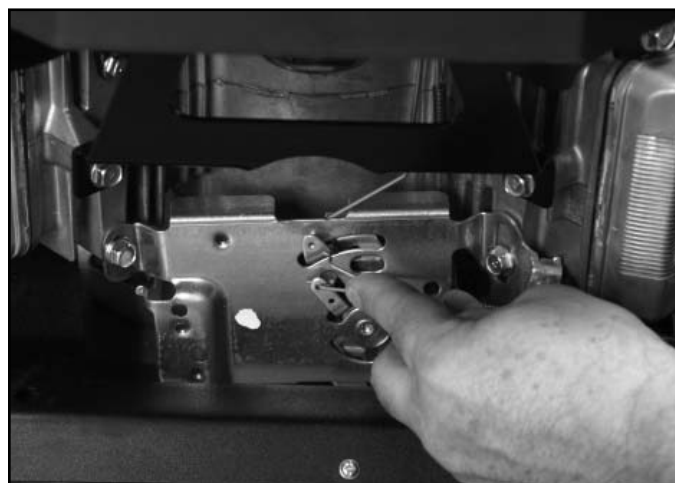


Fig 187

PICT-5381

LINKAGE

4. Loosen the double nut configuration that secures the choke handle to the chassis (Fig. 188).



Fig 188

PICT-5384

5. While holding the lower nut, slide the choke cable assembly out of the choke cable bracket that is bolted to the chassis (Fig. 189).



Fig 189

PICT-5389

Choke Cable Installation

1. Slide the choke cable through the hole of the choke cable bracket on the chassis. Feed the lower nut onto the choke cable (Fig. 190).



Fig 190

PICT-5390

2. Feed the choke cable down along the left side of the engine and route it behind the muffler and up to the front of the engine (Fig. 191).

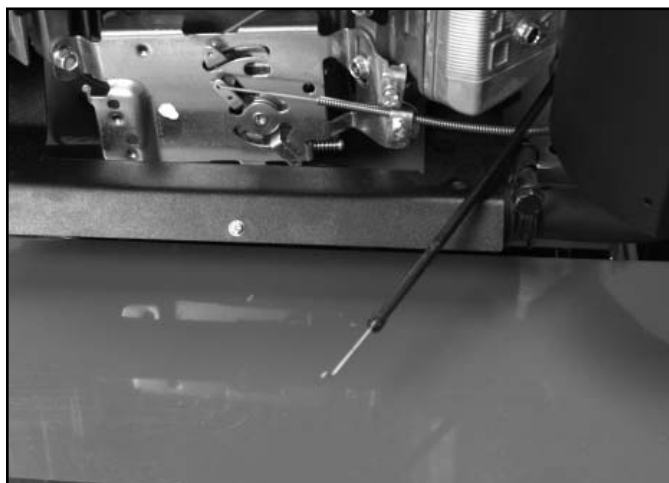


Fig 191

PICT-5393

3. Install the lower nut onto to the choke handle assembly and tighten it, securing the choke handle to the choke cable bracket (Fig. 192).



Fig 192

PICT-5397

5. Slide the choke cable into the upper cable clamp and loosely clamp the outer cable housing (Fig. 194).



Fig 194

PICT-5400

4. Hook the Z-bend of the choke cable into the choke control lever (Fig. 193).

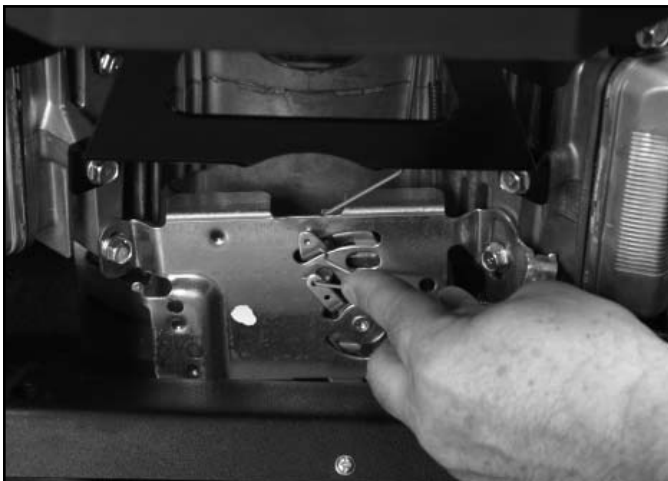


Fig 193

PICT-5381

6. Move the choke control to the open position (Fig. 195).



Fig 195

PICT-5402

LINKAGE

7. Make sure that the carburetor choke valve is fully open (Fig. 196).

Note: The air filter has been removed to show the carburetor choke valve.

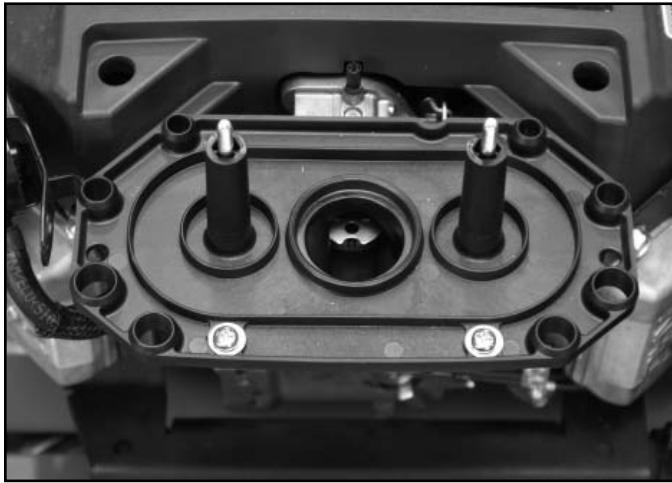


Fig 196

PICT-4689

8. Hold the choke control lever to maintain the “open” position of the choke. Pull on the outer choke cable housing until the inner wire has almost no slack. Tighten the cable clamp bolt (Fig. 197).

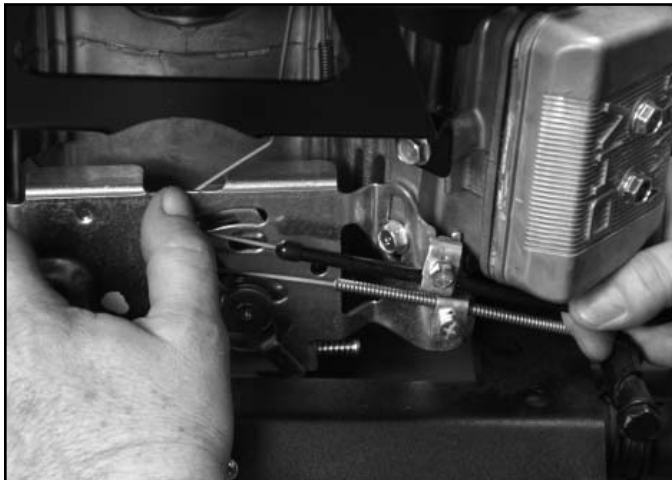


Fig 197

PICT-5405

9. Move the choke control to “choke” position (Fig. 198).



Fig 198

PICT-5411

10. Make sure that the carburetor choke valve is completely closed (Fig. 199).

Note: The air filter has been removed to show the carburetor choke valve.

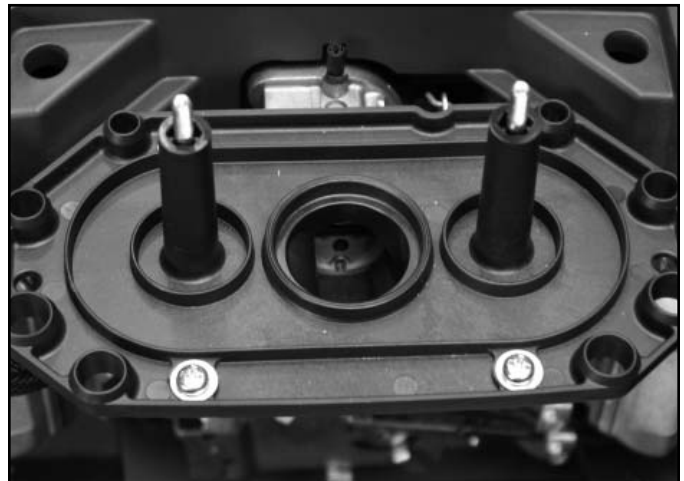


Fig 199

PICT-4702

11. Make sure that the choke valve turns from the fully closed position to the fully opened position when actuating the choke control handle.

Throttle Control Replacement - T-Bar

Throttle Control Removal

1. Loosen the cable clamp that secures the throttle cable to the engine (Fig. 200).

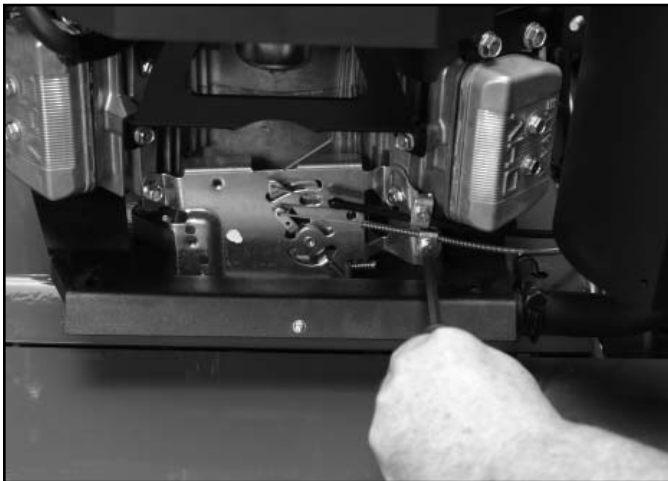


Fig 200

PICT-5424

2. Remove the throttle cable Z-bend from the speed control lever on the engine (Fig. 201).

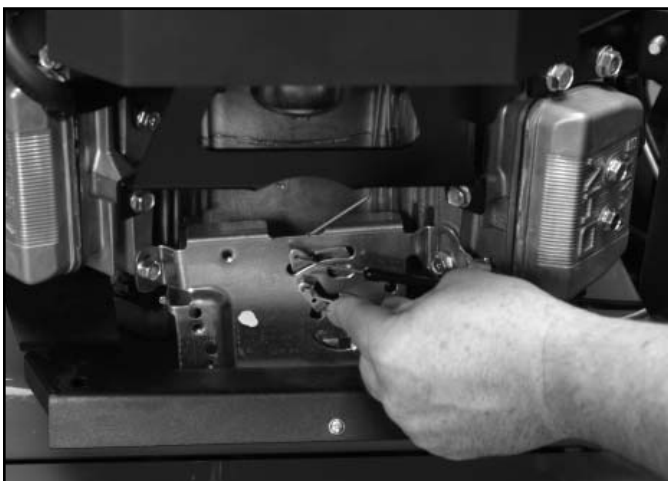


Fig 201

PICT-5429

3. Remove the two bolts and nuts that secure the control panel and throttle control to the handle (Fig. 202).



Fig 202

PICT-5433

4. Slide the throttle control assembly out of the control panel and pull the throttle cable out through the control panel opening (Fig. 203).



Fig 203

PICT-5435

4

LINKAGE

Throttle Control Installation

1. Slide the throttle control cable assembly, cable first, down through the opening in the control panel (Fig. 204).



Fig 204

PICT-5435

3. Route the throttle cable forward along the right side, between the muffler and the engine, up to the engine control linkage (Fig. 206).

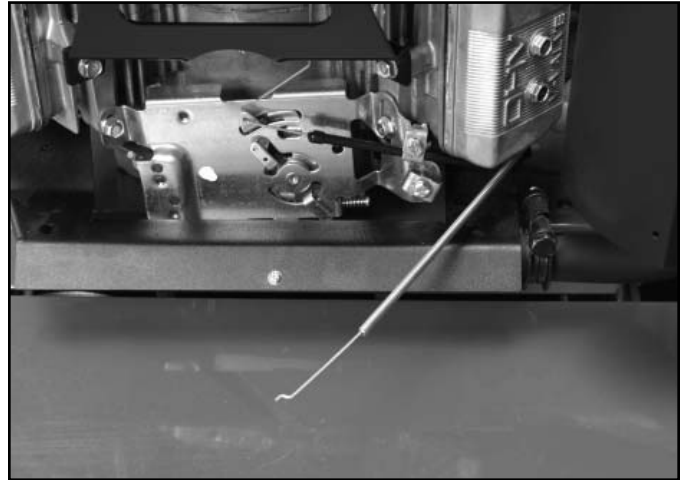


Fig 206

PICT-5440

2. Install the control handle into the opening on the control panel and secure it to the control panel through the handle with two bolts and nuts (Fig. 205).



Fig 205

PICT-5433

4. Hook the Z-bend of the throttle cable into the upper hole of the speed control lever (Fig. 207).

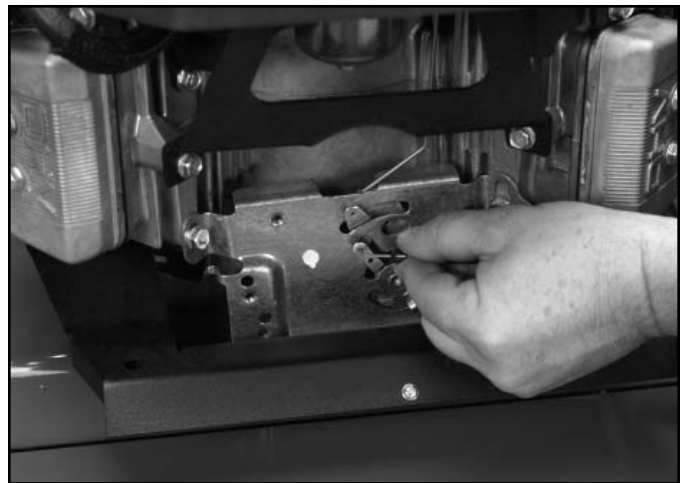


Fig 207

PICT-0082

5. Slide the throttle cable into the lower cable clamp and loosely clamp the outer cable housing (Fig. 208).

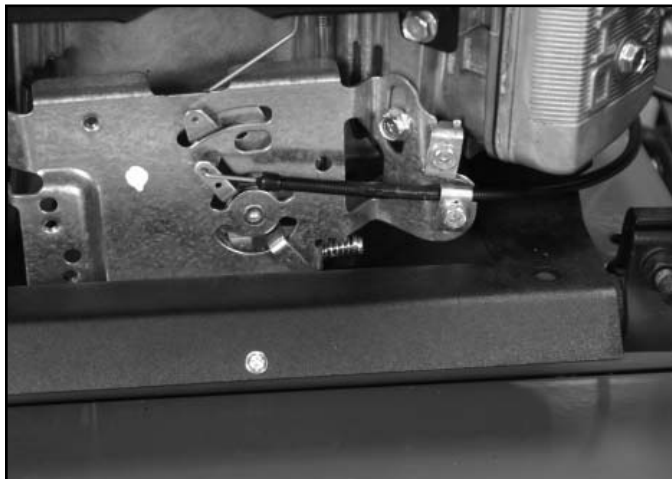


Fig 208

PICT-0084

7. Pull on the throttle cable housing until the inner wire has almost no slack and then tighten the cable clamp bolt (Fig. 210).

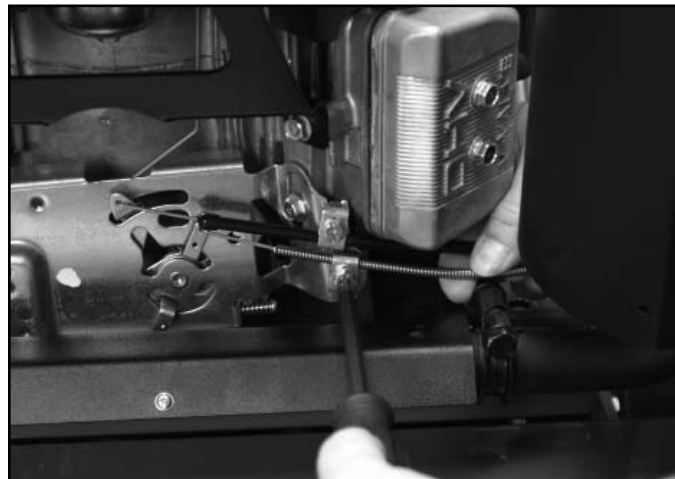


Fig 210

PICT-5445

6. Move the throttle lever to “Fast” position.

Note: “Fast” is at the detent position. Do not push the handle all the way forward in the throttle control slot (Fig. 209).



Fig 209

PICT-5443

8. Move the throttle lever to the “Slow” position. Make sure that the carburetor throttle valve moves smoothly to the closed position (Fig. 211).



Fig 211

PICT-5450

LINKAGE

Throttle Control Replacement - Pistol Grip

Removal

1. Loosen the clamp holding the throttle cable to the engine (Fig. 212).



Fig 212

PICT-5452

2. Remove the throttle cable from the clamp (Fig. 213).



Fig 213

PICT-5455

3. Remove the throttle Z-bend from the speed control lever (Fig. 214).

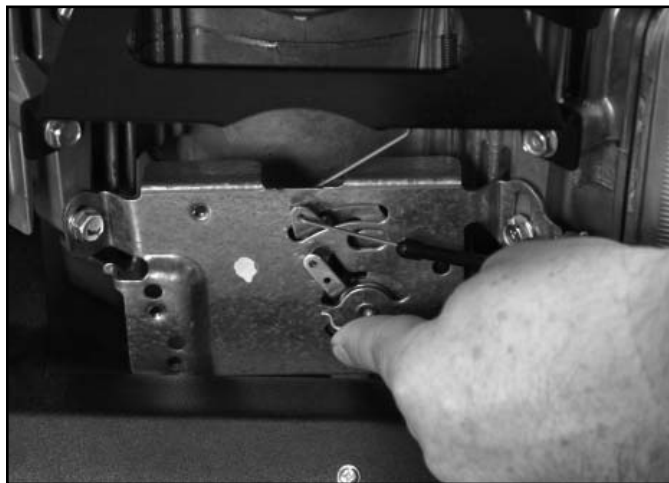


Fig 214

PICT-5456

4. Remove the metal spring clamp securing the throttle cable to the right side of the handle (Fig. 215).



Fig 215

PICT-5458

5. Pull the knob off the throttle handle (Fig. 216).



Fig 216

PICT-5460

6. Remove the 2 nuts and carriage bolts securing the throttle cable assembly to the control panel (Fig. 217).

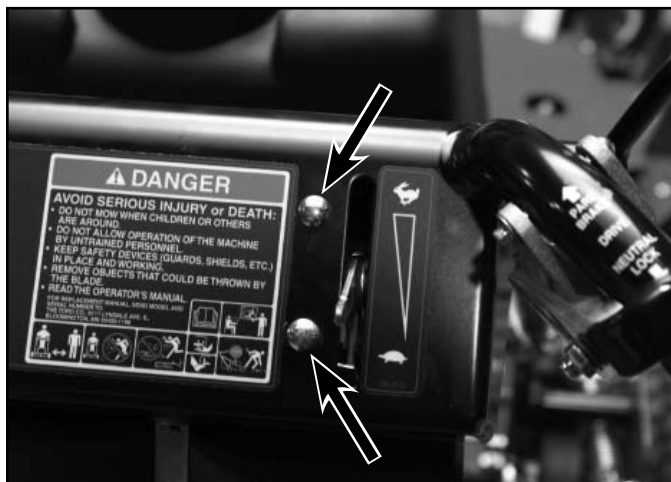


Fig 217

PICT-5464

7. Remove the throttle cable assembly from behind the control panel and carefully feed the cable out from around the engine (Fig. 218).



Fig 218

PICT-5466

Installation

1. Install the throttle control assembly into the slot in the control panel (Fig. 219).



Fig 219

PICT-5466

LINKAGE

2. Install the two carriage bolts and nuts to secure the throttle control handle assembly to the control panel (Fig. 220).

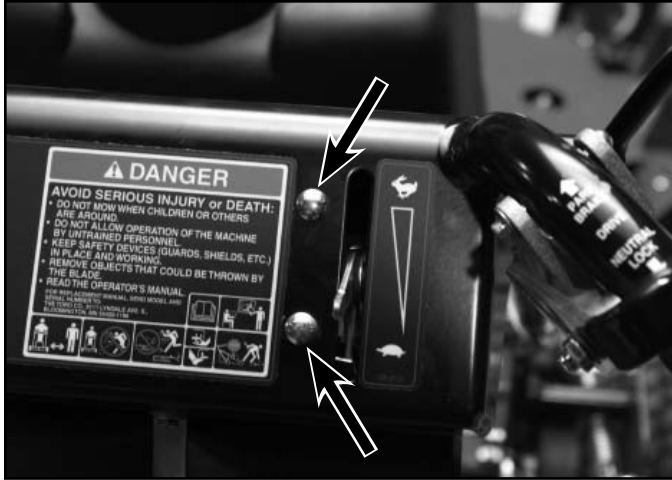


Fig 220

PICT-5464

4. Continue routing the cable around the left side, in between the muffler and the engine, up to the engine control linkage (Fig. 222).

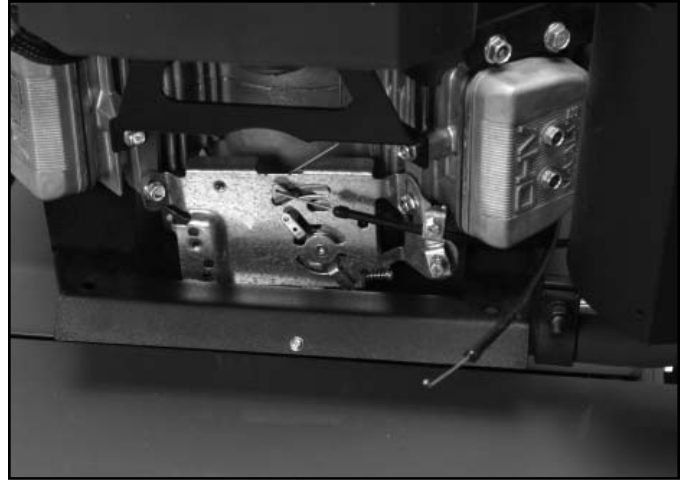


Fig 222

PICT-5471

3. Route the cable down the right handle and install the metal spring clip to secure the cable to the handle. Route the cable down over the top of the transmission (Fig. 221).

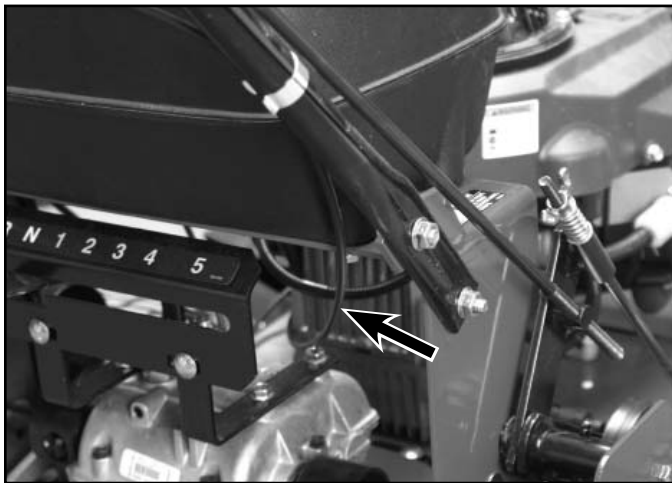


Fig 221

PICT-5470

5. Hook the Z-bend of the throttle cable into the upper hole of the speed control lever (Fig. 223).

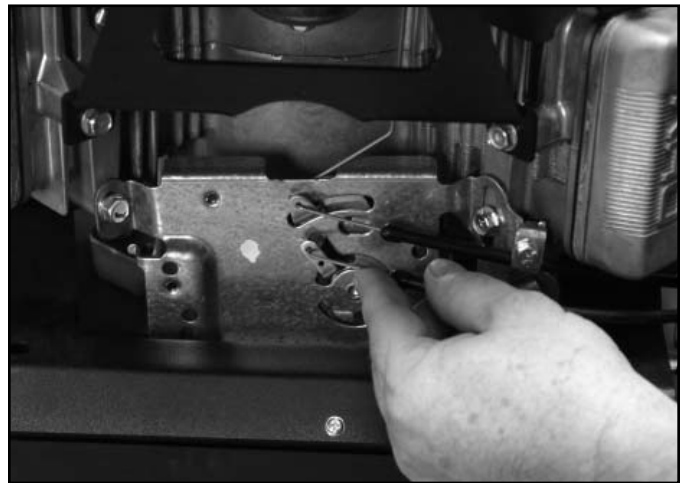


Fig 223

PICT-5475

6. Slide the throttle cable into the lower cable clamp and loosely clamp the outer cable housing (Fig. 224).

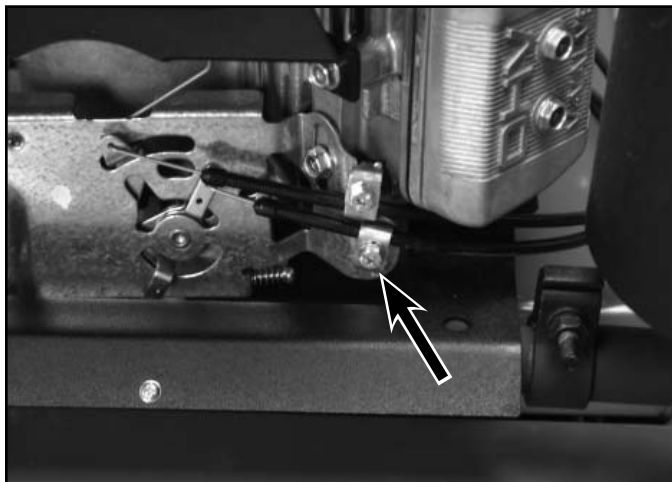


Fig 224

PICT-5477

8. Pull on the throttle cable housing until the inner wire has almost no slack and then tighten the cable clamp bolt (Fig. 226).

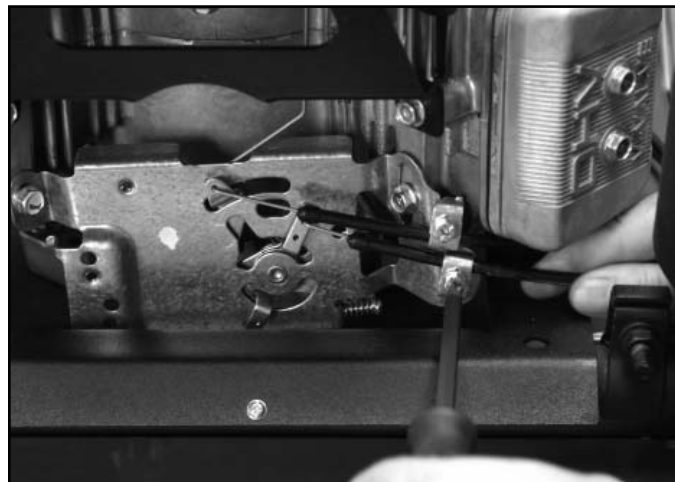


Fig 226

PICT-5480

7. Move the throttle lever to "Fast" position (Fig. 225).



Fig 225

PICT-0087a

9. Move the throttle lever to the "Slow" position. Make sure that the carburetor throttle valve moves smoothly to the closed position (Fig. 227).



Fig 227

PICT-5460

LINKAGE

Control Linkage & Thumb Latch Replacement - Pistol Grip

This procedure is the same for both the right side and left side handle controls.

This procedure was done on a pistol grip – gear. The same steps can be followed for a pistol grip – hydro machine.

Removal

1. Remove the e-clip from the back side of the trunnion on the lower end of the control rod (Fig. 228).



Fig 228

PICT-5566

2. Slide the trunnion out of the idler arm (Fig. 229).



Fig 229

PICT-5569

3. Remove the hairpin cotter from the clevis pin retaining the upper end of the control linkage to the drive lever assembly (Fig. 230).

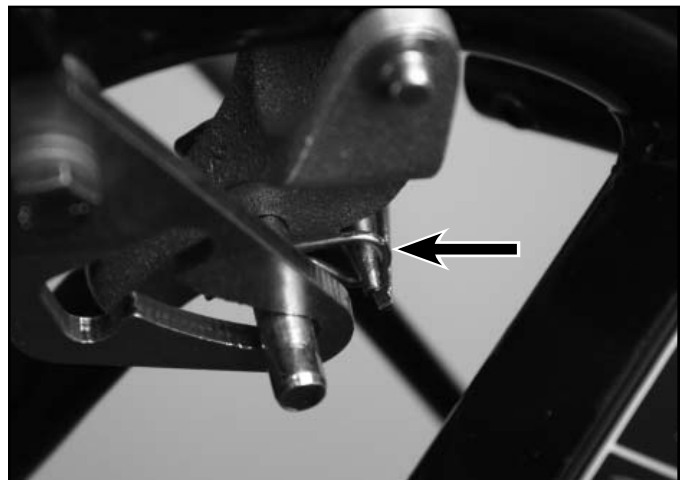


Fig 230

PICT-5571

4. Remove the clevis pin and control linkage rod from the drive lever assembly (Fig. 231).



Fig 231

PICT-5573

6. Remove the bolt, spacer, washers and the thumb latch assembly from the handle bar (Fig. 233).



Fig 233

PICT-5579

5. Loosen and remove the nut from the bolt securing the thumb latch assembly to the handle bar (Fig. 232).



Fig 232

PICT-5577

7. Disassemble the thumb latch/bolt assembly (Fig. 234):

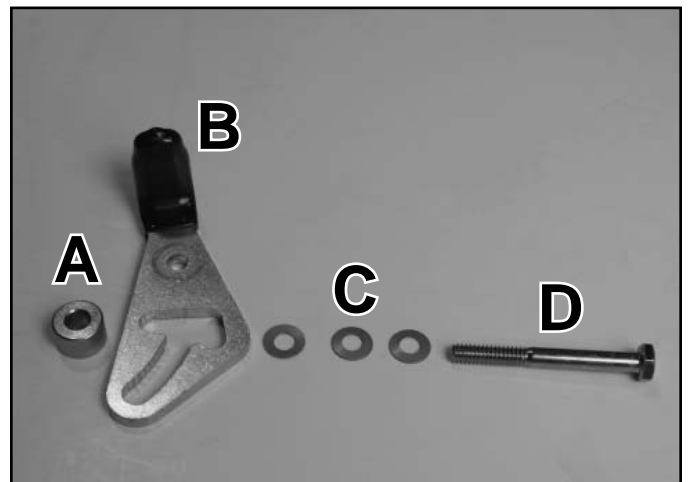


Fig 234

PICT-5580a

- | | |
|----------------|---------------------------|
| A. Spacer | C. Belleville Washers (3) |
| B. Thumb latch | D. Bolt |

LINKAGE

8. Remove the push nut securing the drive lever assembly to the handle bar (Fig. 235).



Fig 235

PICT-5584

10. Drive the roll pin out of the opening in the handle bar (Fig. 237).



Fig 237

PICT-5590

9. Remove the pin securing the drive lever assembly to the handle bar (Fig. 236).



Fig 236

PICT-5587

Installation

1. Drive a roll pin into the upper-most opening on the handle bar (Fig. 238).



Fig 238

PICT-5593

2. Position the drive lever onto the handle and slide the pin through to secure the drive lever to the handle (Fig. 239).



Fig 239

PICT-5596

3. Install the push nut onto the drive lever pin (Fig. 240).



Fig 240

PICT-5599

4. Assemble the thumb latch, bolt, washers and spacers as shown (Fig. 241):

Note: The Belleville washers should be assembled onto the bolt in an alternating fashion (i.e. crown out, crown in, crown out).

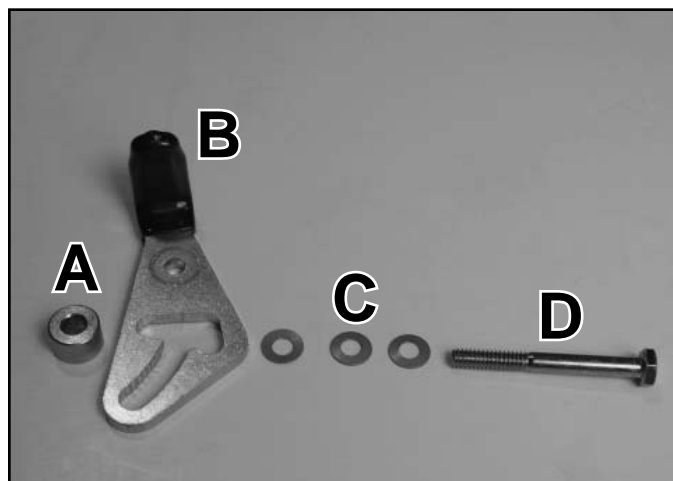


Fig 241

PICT-5580a

- | | |
|----------------|---------------------------|
| A. Spacer | C. Belleville Washers (3) |
| B. Thumb latch | D. Bolt |

5. Slide the thumb latch assembly into the hole on the handle bar (Fig. 242).



Fig 242

PICT-5579

LINKAGE

6. Install the nut onto the bolt securing the thumb latch assembly to the handle bar (Fig. 243).

Note: When tightening the nut, do not over-tighten. The thumb latch must move freely, but without the assembly rattling.



Fig 243

PICT-5577

7. Install the trunnion on the lower end of the control rod into the idler arm (Fig. 244).

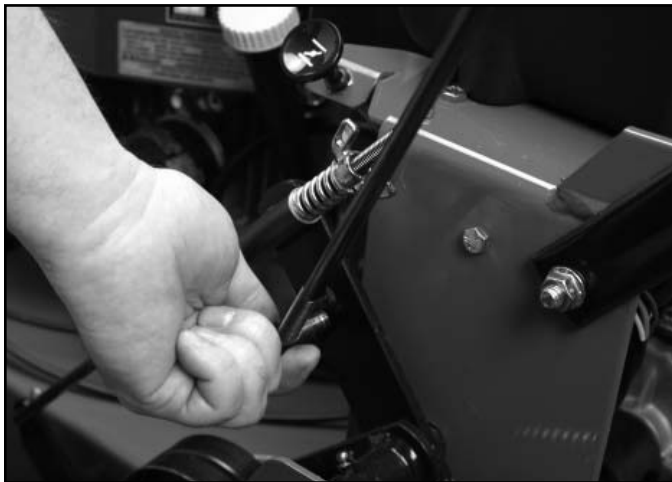


Fig 244

PICT-5602

8. Install an e-clip onto the back side of the trunnion to secure the control rod to the idler arm (Fig. 245).

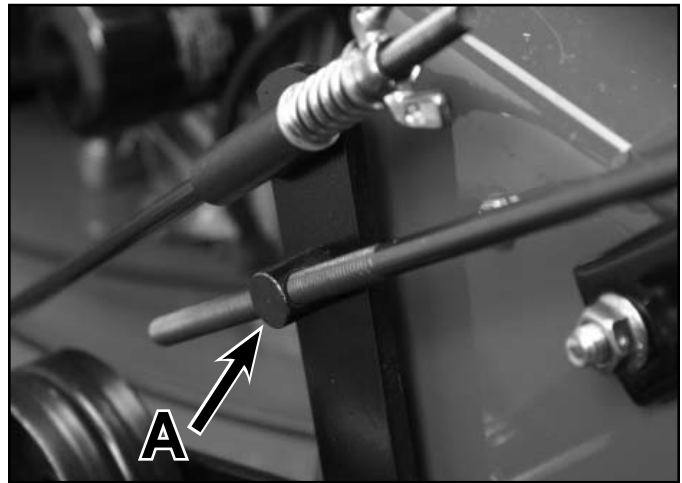


Fig 245

PICT-5566

A. Trunnion

9. Adjust the control rod so that 2.62" (6.65cm) of thread extends past the trunnion (Fig. 246).

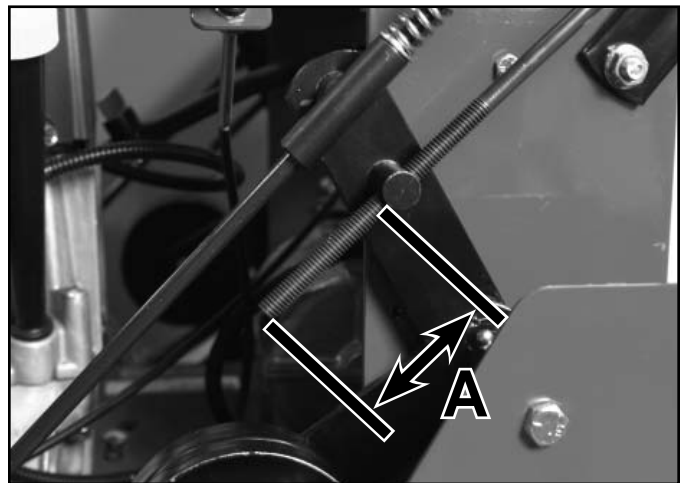


Fig 246

PICT-7060

A. 2.62" (6.65cm)

10. Insert a clevis pin through the upper hole in the control rod and drive lever assembly (Fig. 247).



Fig 247

PICT-5607

12. Install a hairpin cotter into the clevis pin to secure the control rod to the thumb latch assembly (Fig. 249).



Fig 249

PICT-5610

11. Adjust the control rod so there is a .19" to .25" (4.8 to 6.4mm) space between the control rod clevis pin and the bottom of the thumb latch slot (Fig. 248).

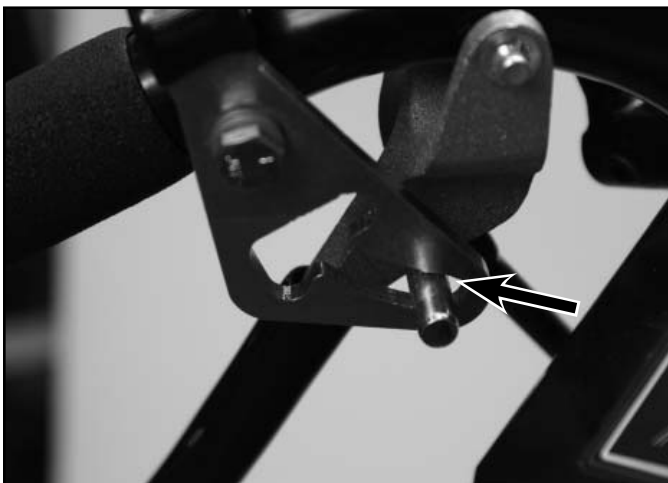


Fig 248

PICT-5608

13. Start the machine and operate the controls to ensure proper operation. Adjust as necessary.

LINKAGE

Control Linkage Replacement - T-Bar

Removal

1. Open the locking tab on the front of the operator presence control (OPC) switch (Fig. 250).



Fig 250

PICT-5165

2. Disconnect the plug from the OPC switch (Fig. 251).



Fig 251

PICT-5167

3. Depress the connector lock with a small flat screwdriver (Fig. 252).



Fig 252

PICT-5169

4. While holding the lock down, draw the wire and spade terminal out of the connector (Fig. 253).



Fig 253

PICT-5172

5. Repeat step 3 and 4 for the second wire/spade terminal.
6. Pull the wire harness from the tube in the T-Bar (Fig. 254).



Fig 254

PICT-5179

7. Remove the hairpin cotter connecting the link to the T-Bar (Fig. 255).



Fig 255

PICT-5185a

8. Remove the hairpin cotter and washer securing the trunnion to the idler bracket (Fig. 256).



Fig 256

PICT-5187

9. Remove the pin from the traction idler plate and trunnion (Fig. 257).



Fig 257

PICT-5192

LINKAGE

10. Repeat steps 7, 8 and 9 for the opposite side.
11. Remove the link from one side of the T-Bar (Fig. 258).



Fig 258

PICT-5200

12. While holding the T-Bar and the OPC bar, remove the link on the other side (Fig. 259).



Fig 259

PICT-5203

13. Slide the OPC bar downward and off the switch assembly (Fig. 260).



Fig 260

PICT-5208a

14. Compress the tabs on the sides of the switch (Fig. 261).



Fig 261

PICT-5210

15. Draw the switch out to the rear (Fig. 262).



Fig 262

PICT-5212

17. Lift the T-Bar off of the reverse traction drive handle (Fig. 264).



Fig 264

PICT-5222a

16. Remove the parking brake lever (Fig. 263).



Fig 263

PICT-5215

18. Remove the cotter pins from the reverse traction drive handle (Fig. 265).



Fig 265

PICT-5225

LINKAGE

19. Remove the pivot pin from one side (Fig. 266).



Fig 266

PICT-5229

Installation

1. Align the reverse traction drive handle with the holes in the upper handle. Insert the pivot pins (Fig. 268).



Fig 268

PICT-5234a

20. Support the reverse traction drive handle and remove the pivot pin from the other side. The handle is now free (Fig. 267).



Fig 267

PICT-5234a

2. Align the holes in the reverse traction handle with the holes in the pivot pins. Insert the cotter pin (Fig. 269).



Fig 269

PICT-5239

3. Secure both cotter pins (Fig. 270).



Fig 270

PICT-5240

5. Align the holes in the parking brake latch with the hole in the handle (Fig. 272).



Fig 272

PICT-5246

4. Install the T-Bar onto the reverse traction drive handle (Fig. 271).



Fig 271

PICT-5245

6. Secure the parking brake latch with a bolt and lock nut (Fig. 273).

Note: The parking brake latch must rotate freely but be tight enough so it doesn't rattle.



Fig 273

PICT-5249

4

LINKAGE

7. Insert the OPC switch into the hole in the handle until it has snapped into place (Fig. 274).



Fig 274

PICT-5251

9. Secure the OPC handle with the linkage rods on both sides (Fig. 276).



Fig 276

PICT-5261

8. Install the OPC handle so that the hoop slides onto the switch housing (Fig. 275).



Fig 275

PICT-5254

10. Insert the hairpin cotters securing the linkage rods to the handle on both sides (Fig. 277).



Fig 277

PICT-5264

11. Insert a clevis pin through the trunnion (Fig. 278).



Fig 278

PICT-5268

13. Install a washer on the clevis pin (Fig. 280).



Fig 280

PICT-5273

12. Insert the clevis pin with trunnion to the traction idler arm (Fig. 279).



Fig 279

PICT-5269

14. Secure the clevis pin and washer with a hairpin cotter (Fig. 281).

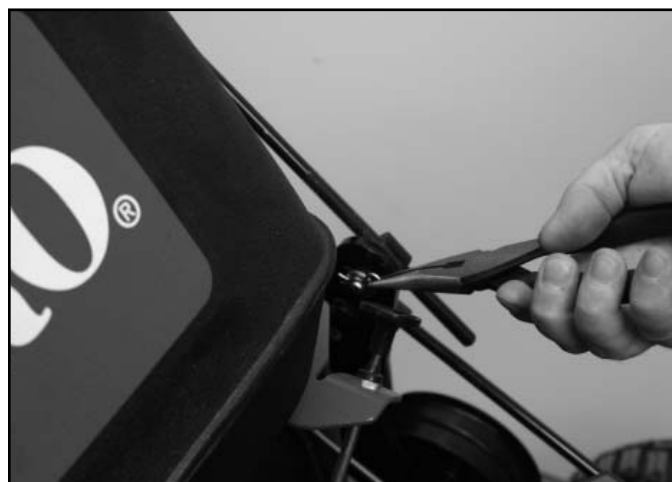


Fig 281

PICT-5275

LINKAGE

15. Repeat steps 11 through 14 to secure the control rod on the other side.

16. Attach a 6" (15.24cm) long piece of wire or string to the end of the wire harness (Fig. 282).



Fig 282

PICT-5278

17. Feed the end of the wire or string up through the tube in the handle (Fig. 283).



Fig 283

PICT-5280

18. Use the wire or string to draw the wire harness through the tube (Fig. 284).



Fig 284

PICT-5284

19. Hold the plug so the tab faces forward. Hold the blue wire with the tab in the spade connector facing to the right. Insert the spade connector into the right slot in the plug. Pull back slightly to ensure the tab is latched (Fig. 285).



Fig 285

PICT-5285

20. Insert the white wire into the opposite side of the plug. The tab in the spade connector must face outward. Pull back slightly to ensure tab is latched (Fig. 286).



Fig 286

PICT-5289

Control Linkage Adjustment - T-Bar

1. Initially adjust the control rods so that 2 1/4" (5.715cm) of thread extends beyond the trunnion fittings (Fig. 288).



Fig 288

PICT-5303

21. Plug the connector into the OPC switch (Fig. 287).



Fig 287

PICT-5296a

2. The control bar and upper handle must be parallel when in the relaxed drive and brake positions (Fig. 289).



Fig 289

PICT-5332

LINKAGE

- Engage the control bar (Fig. 290).



Fig 290

PICT-5314

- Using a ruler, measure the travel distance of the pulley while releasing and engaging the control bar. The travel distance should be approximately 3/4" (19mm) (Fig. 291).

Note: If the pulley travel is more the 3/4" (19mm), the brakes must be adjusted. Refer to "Checking the Brake", page 5-9.

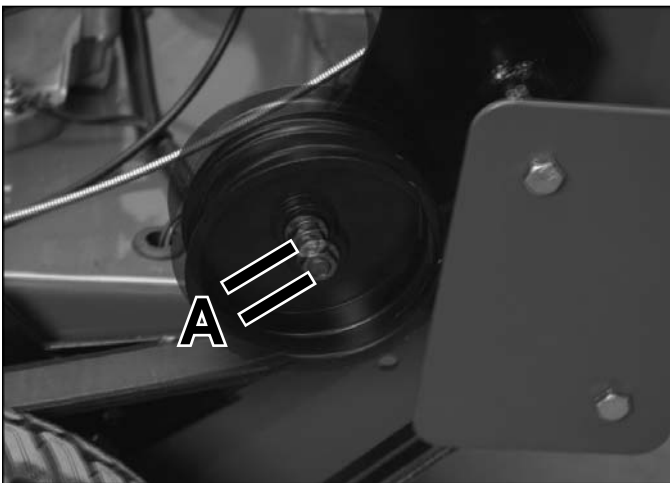


Fig 291

PICT-5324a & 5326a

- A. 3/4" (19mm)

- Engage the Parking Brake (Fig. 292).

Note: The parking brake lever should swing into a snug position against the upper handle while pulling back on the upper control bar.



Fig 292

PICT-5311

- If adjustment is required, refer to "Adjusting the Brake", page 5-10.
- Adjust the control rods so there is a 1" to 1 1/4" (2.54 to 3.175cm) gap between the upper control bar and the fixed bar with the wheel drive fully engaged (Fig. 293).



Fig 293

PICT-5333

- A. 1" to 1-1/4"

Operator Presence Control Lever Replacement - Pistol Grip

Removal

Note: The operator's manual tube has been removed for photo purposes.

1. Loosen and remove the set screw that retains the left side operator presence control (OPC) lever to the operator presence control rod (Fig. 294).

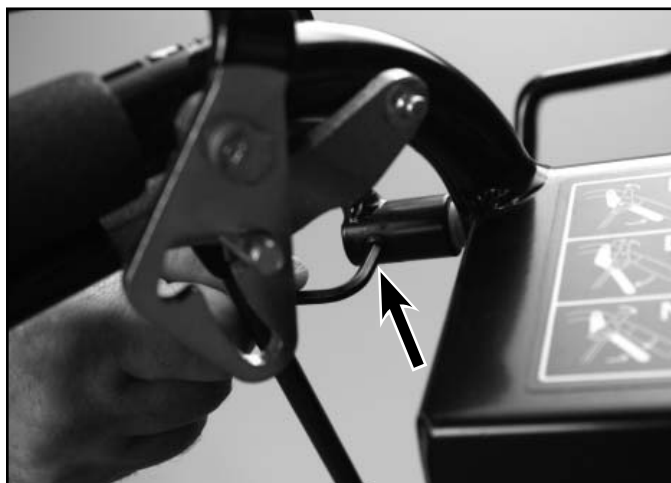


Fig 294

PICT-5543

2. Remove the left operator presence control lever from the operator presence control rod (Fig. 295).

Note: The set screw and lever may need to be heated up to release thread locking compound.



Fig 295

PICT-5548

3. Remove the nylon bushing from the left side of the OPC rod (Fig. 296).



Fig 296

PICT-5549

4

LINKAGE

4. Repeat steps 1 thru 3 to remove the right side OPC lever.
5. Remove the extension spring located under the control panel (Fig. 297).

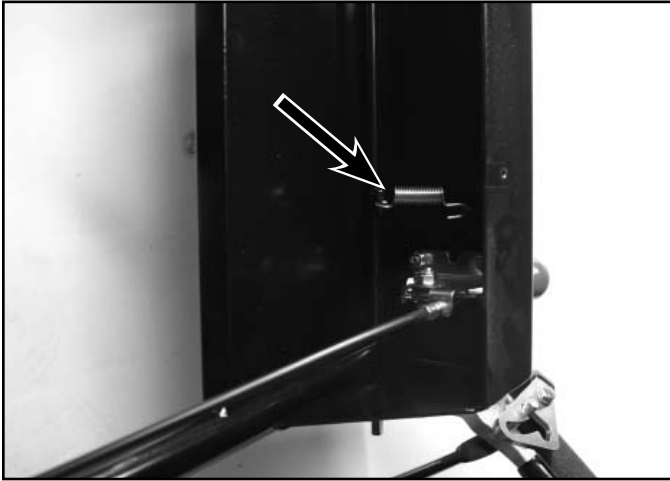


Fig 297

PICT-5554

6. Remove the OPC rod by sliding it to the far right, dropping the left side of the rod, and then remove the rod through the left side opening of the control panel (Fig. 298).



Fig 298

PICT-5556

Installation

1. Slide the spring tab end of the operator presence control (OPC) rod through the left side opening of the control panel. Install the right end of the rod into the opening on the right side handle bar. Slide the rod through the right side handle bar opening until the left end of the rod can be inserted through the left handle bar opening (Fig. 299).



Fig 299

PICT-5556

2. Install the extension spring onto the OPC rod and the underside of the control panel (Fig. 300).

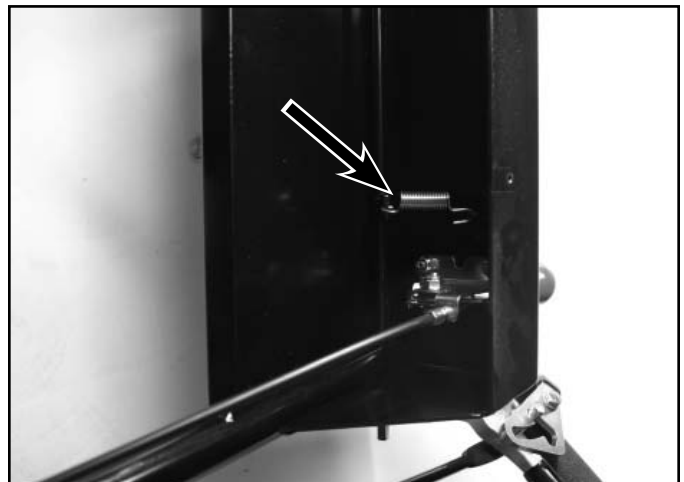


Fig 300

PICT-5554

3. Install the nylon bushings onto each end of the OPC rod (Fig. 301).



Fig 301

PICT-5549

5. Align the setscrew with the flat side of the rod and install the OPC levers onto the ends of the OPC rod (Fig. 303).



Fig 303

PICT-5548

4. Apply high strength thread locking compound (Loctite 609 or equivalent) onto both ends of the OPC rod (Fig. 302).



Fig 302

PICT-5559

6. Apply thread locking compound to the set screws (Fig. 304).



Fig 304

PICT-5562a

4

LINKAGE

7. Install one set screw into each OPC lever to secure the levers onto the OPC rod (Fig. 305).

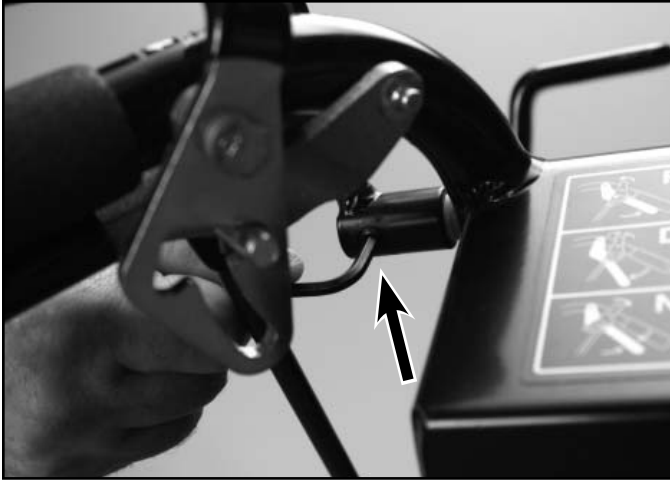


Fig 305

PICT-5543

2. Remove the upper hairpin cotter from the speed control rod (Fig. 307).



Fig 307

PICT-6332

Speed Control Service - Pistol Grip - Hydro Drive

Removal

Note: The operator's manual tube was removed and the ignition switch and OPC switch were disconnected for photo purposes.

1. Remove the knob from the speed control lever (Fig. 306).



Fig 306

PICT-6475

3. Remove the hairpin cotter from the clevis pin on the lower end of the speed control rod (Fig. 308).



Fig 308

PICT-6336

4. Remove the clevis pin from the lower end of the speed control rod (Fig. 309).

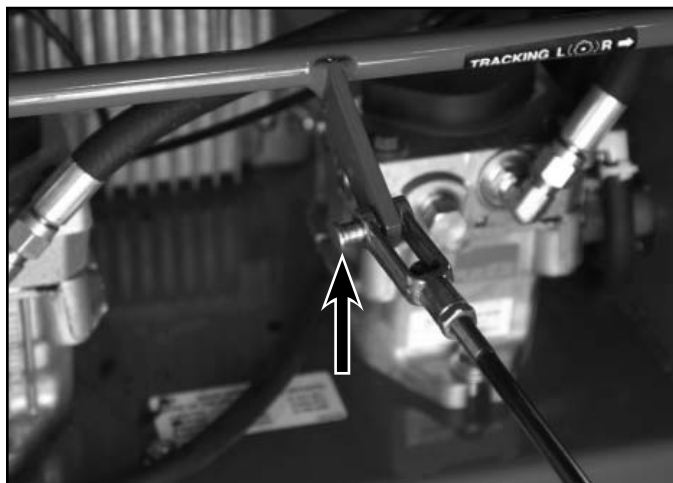


Fig 309

PICT-6338

6. Remove the lower bolt and nut securing the speed control handle to the control panel (Fig. 311).



Fig 311

PICT-6346

5. Remove the speed control rod (Fig. 310).

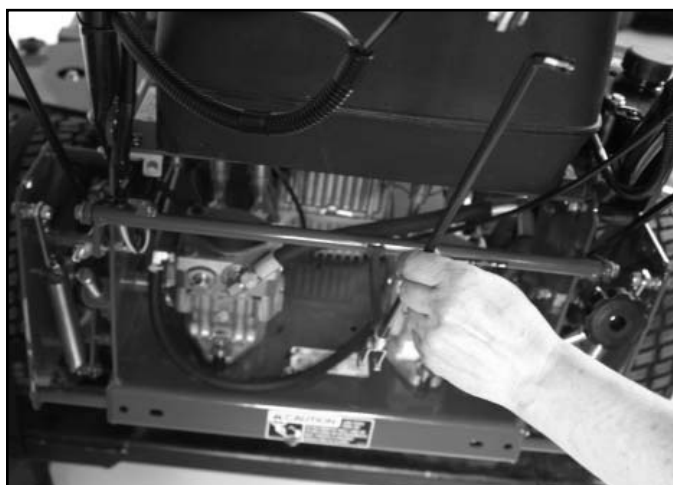


Fig 310

PICT-6343

7. Remove the middle bolt, nut and spring assembly securing the speed control handle to the control panel (Fig. 312).



Fig 312

PICT-6347

LINKAGE

8. Remove the upper bolt and nut (Fig. 313).



Fig 313

PICT-6354a

10. Remove the remaining nut, bolt, washers and spring from the speed control lever assembly (Fig. 315).

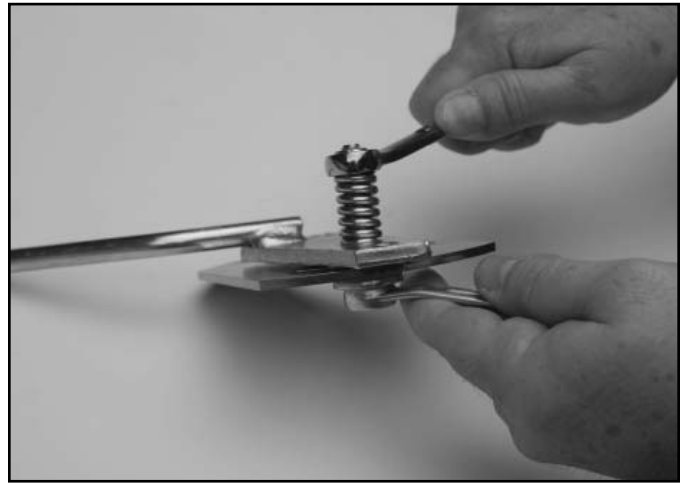


Fig 315

PICT-6359a

9. Remove the speed control handle (Fig. 314).



Fig 314

PICT-6358

Note: There are 2 washers between the shift lever and shift lever plate (Fig. 316).

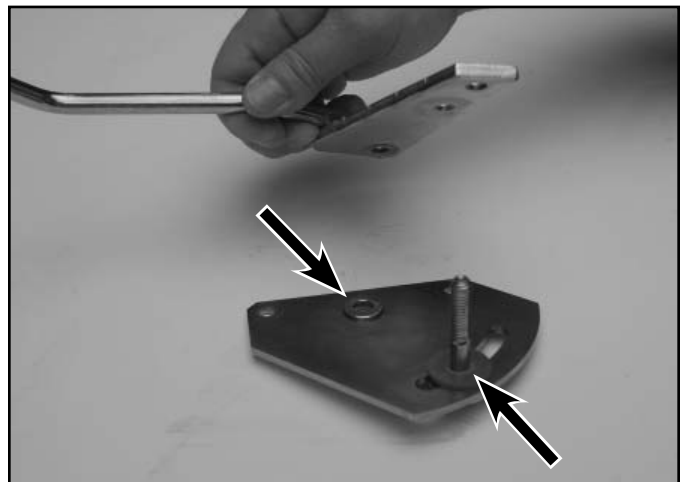


Fig 316

PICT-6362a

11. Release the pistol grip from neutral lock and place it in the drive position (Fig. 317).



Fig 317

PICT-6366

13. Remove the cotter pin from the trunnions installed in the tab on both ends of the speed control crank (Fig. 319).

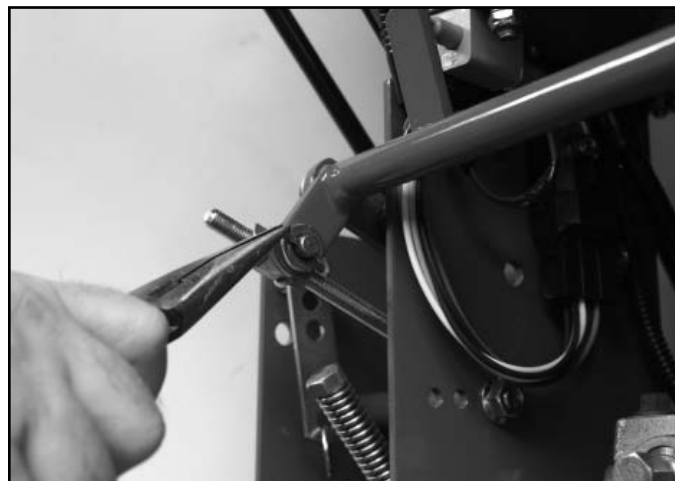


Fig 319

PICT-6377

12. Remove the outside nut from both of the 2 speed control link bolt assemblies (Fig. 318).



Fig 318

PICT-6372

14. Remove the washer from the trunnions installed in the tab on both ends of the speed control crank (Fig. 320).



Fig 320

PICT-6379

4

LINKAGE

15. Remove the left hand and right hand speed control links and bolt assemblies (Fig. 321).

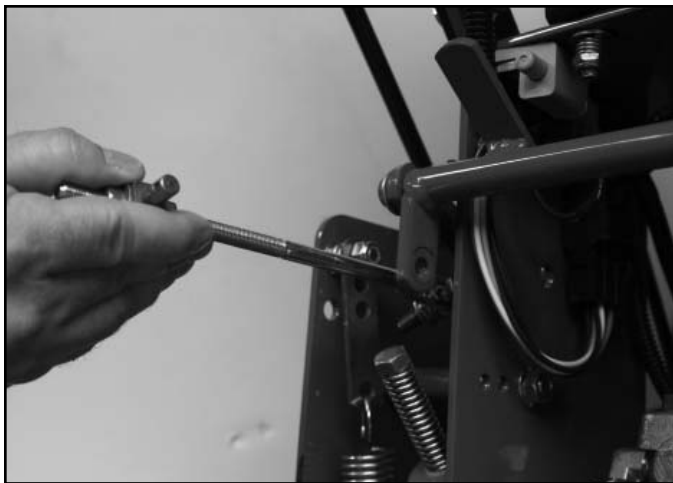


Fig 321

PICT-6381

17. Remove the speed control crank (Fig. 323).

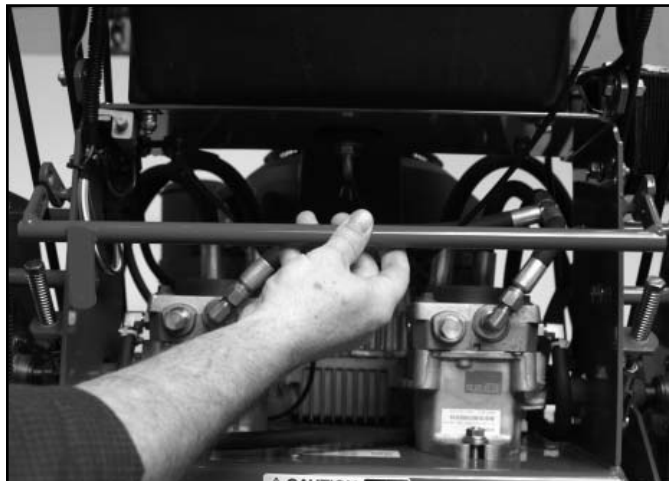


Fig 323

PICT-6384

16. While supporting the speed control crank, remove the bolt and washer located on each end (Fig. 322).

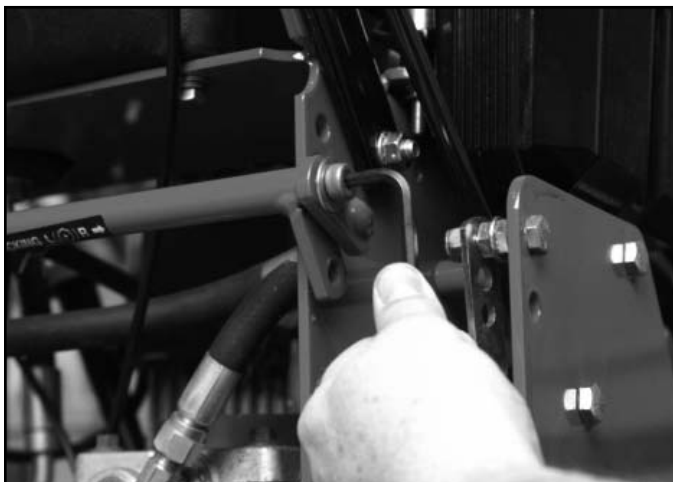


Fig 322

PICT-6383

18. On the right hand and left hand speed control links, mark the location of the nut/swivel assembly on the threads of the link (Fig. 324).

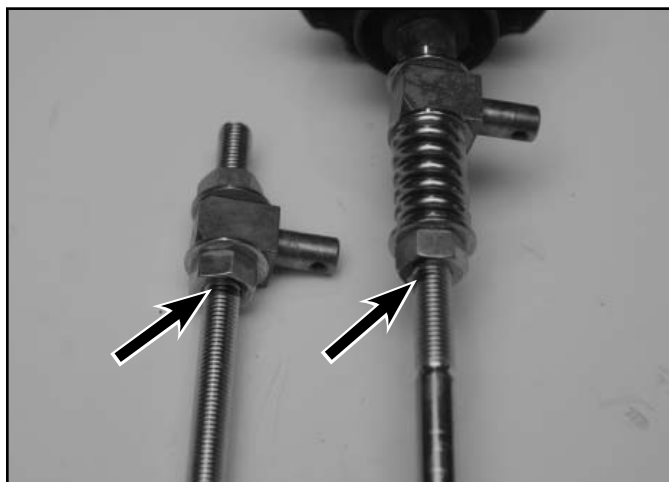


Fig 324

PICT-6394a

19. On the left hand speed control link, loosen and remove the end nut (Fig. 325).



Fig 325

PICT-6389a

21. Remove the second nut from the threads of the control link (Fig. 327).



Fig 327

PICT-6398a

20. Remove the washers and the trunnion from the control link (Fig. 326).



Fig 326

PICT-6396a

22. Remove the two nuts and the bolt from the slotted end of both control links (Fig. 328).



Fig 328

PICT-6400a

LINKAGE

23. Remove the knob from the right side control link assembly (Fig. 329).

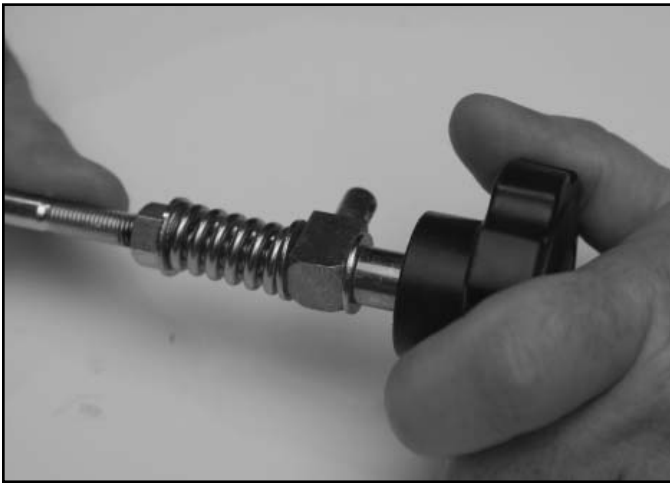


Fig 329

PICT-6403a

25. Remove the second nut from the threads of the control link (Fig. 331).

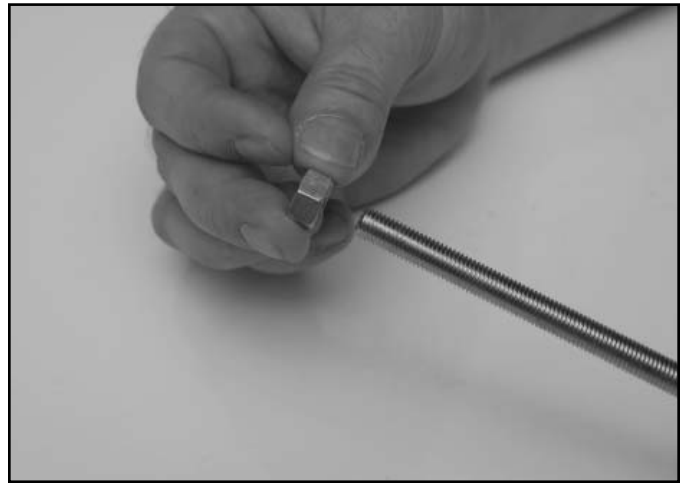


Fig 331

PICT-6408a

24. Slide the spacer, washers, trunnion, and spring off the control link (Fig. 330).



Fig 330

PICT-6406a

Installation

1. Apply thread locking compound to the threads of the speed control crank bolts (Fig. 332).

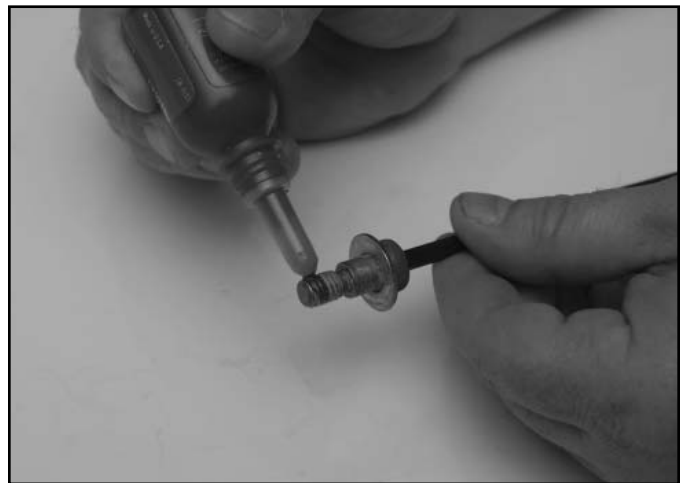


Fig 332

PICT-6388a

2. Position the speed control crank (Fig. 333).

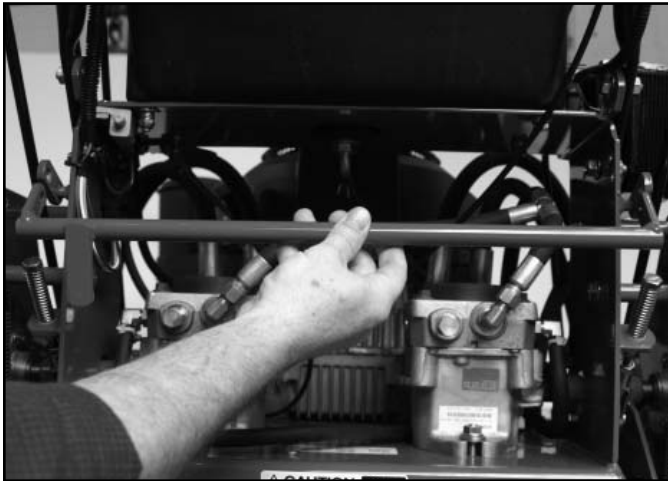


Fig 333

PICT-6384

3. Install a bolt and washer on each end of the speed control crank (Fig. 334).

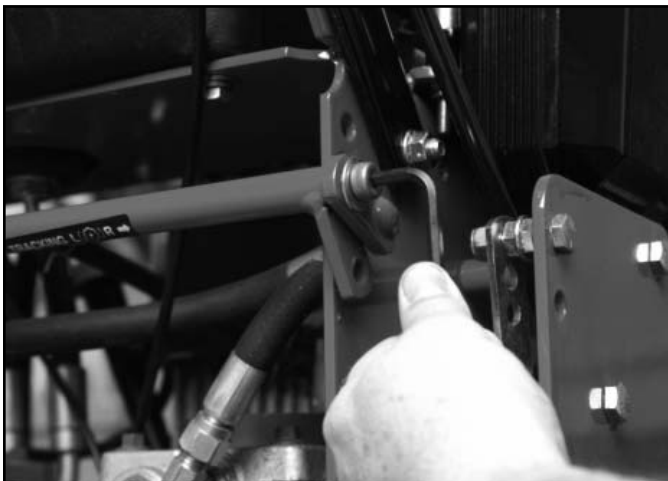


Fig 334

PICT-6383

Right hand control link assembly:

4. Install one nut onto the control link, threading it down to the mark (Fig. 335).

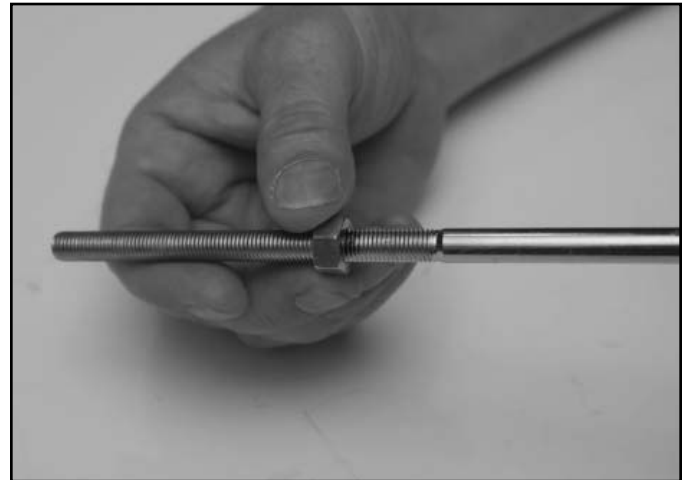


Fig 335

PICT-6409a

5. Install a spacer, 3 washers, a trunnion, and a spring onto control link (Fig. 336).



Fig 336

PICT-6406a

LINKAGE

6. Install the knob onto the control link assembly (Fig. 337).

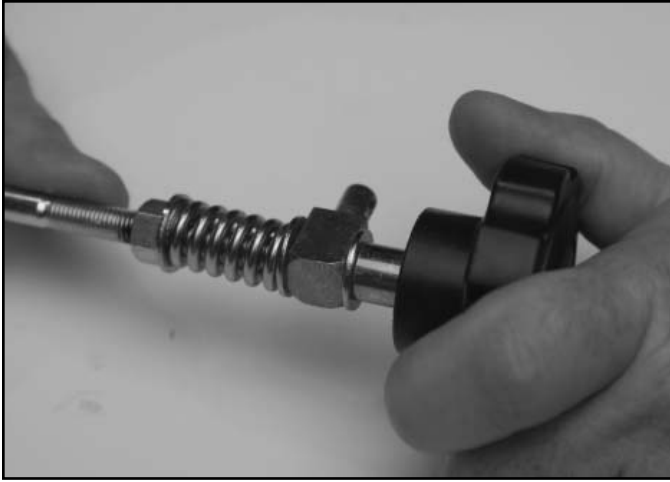


Fig 337

PICT-6403a

8. Install two nuts onto the bolt (flange side away from control link) so that there is 1/2" (1.27cm) of thread beyond the two nuts as shown (Fig. 339):

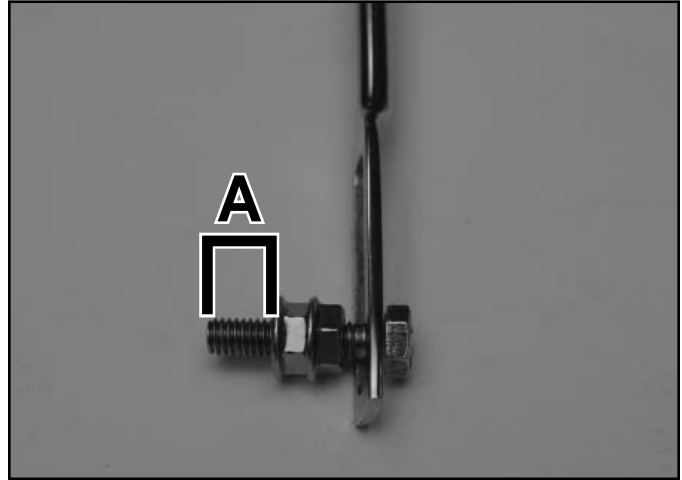


Fig 339

PICT-6414a

7. Install the bolt into the slot of the control link.

Note: The slotted portion of the control link is offset and the bolt needs to be oriented as shown (Fig. 338).

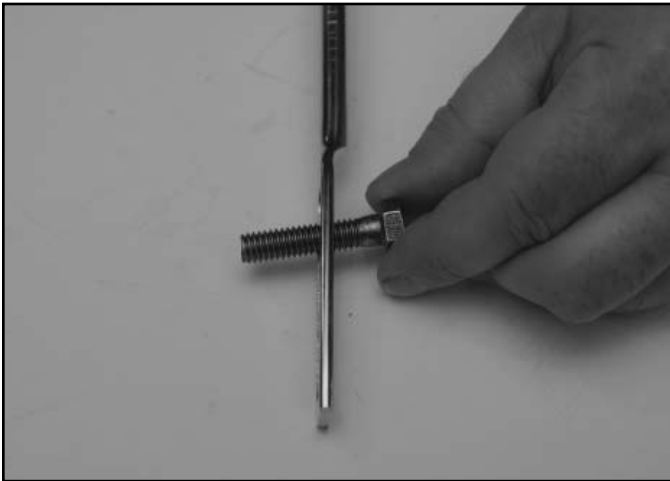


Fig 338

PICT-6411a

- A. 1/2" (1.27cm)

Left Hand control link assembly:

9. Install the bolt into the slot of the control link.

Note: The slotted portion of the control link is offset and the bolt needs to be oriented as shown (Fig. 340).

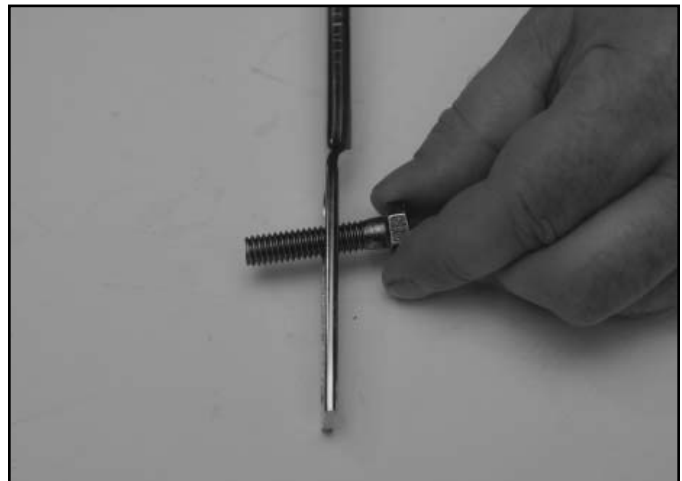


Fig 340

PICT-6411a

10. Install two nuts onto the bolt (flange side away from control link) so that there is 1/2" (1.27cm) of thread beyond the two nuts as shown (Fig. 341):

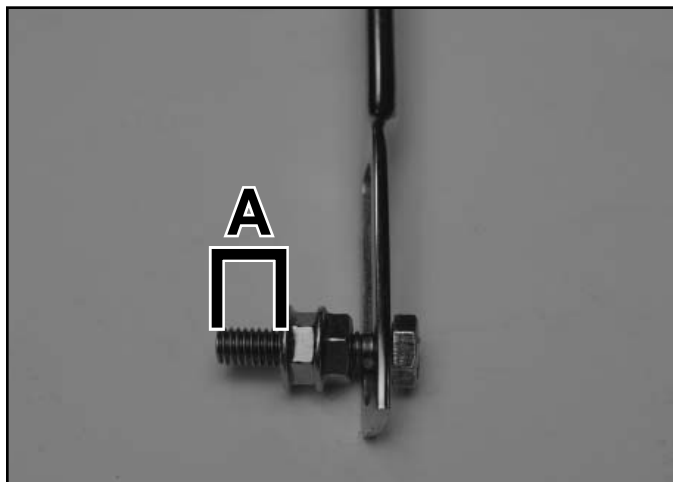


Fig 341

PICT-6414a

A. 1/2" (1.27cm)

11. Install one nut onto the control link, threading it down to the mark (Fig. 342).

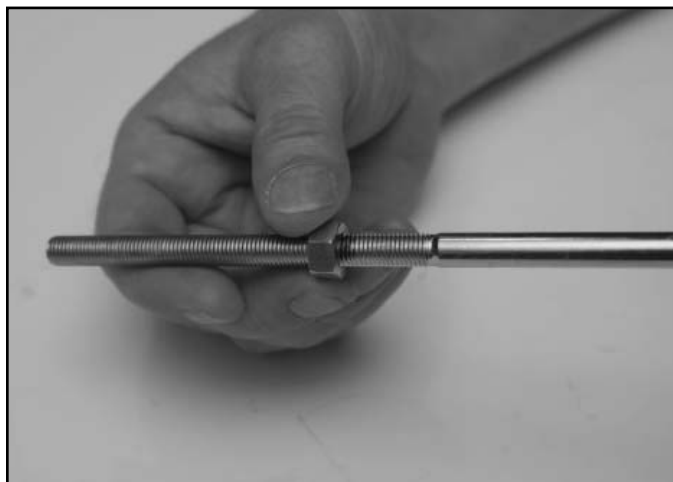


Fig 342

PICT-6409a

12. Install 2 washers and the trunnion onto the control link (Fig. 343).



Fig 343

PICT-6396a

13. Thread the second nut onto the control link. Snug fit the nut down to the washer and trunnion assembly (Fig. 344).



Fig 344

PICT-6389a

LINKAGE

14. Position the left hand speed control link and bolt assembly (Fig. 345).

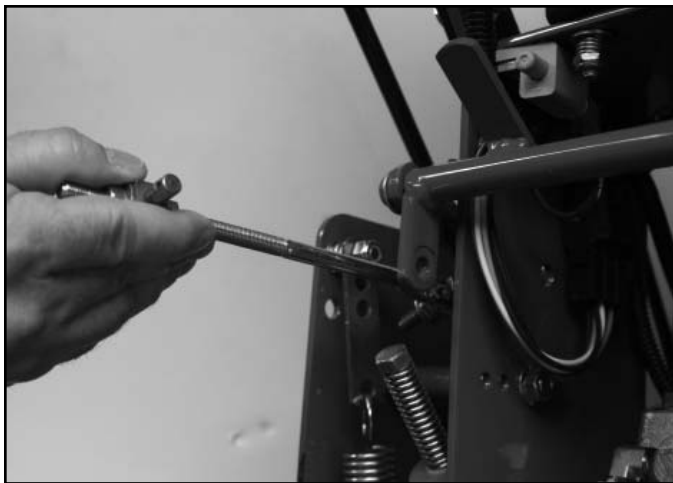


Fig 345

PICT-6381

16. Install the trunnion into the left hand tab of the speed control crank. Slide the washer onto the trunnion (Fig. 347).



Fig 347

PICT-6379

15. Insert the lower bolt into the upper tab of the control shaft and install a nut onto the bolt (Fig. 346).



Fig 346

PICT-6372

17. Install the cotter pin onto the trunnion (Fig. 348).

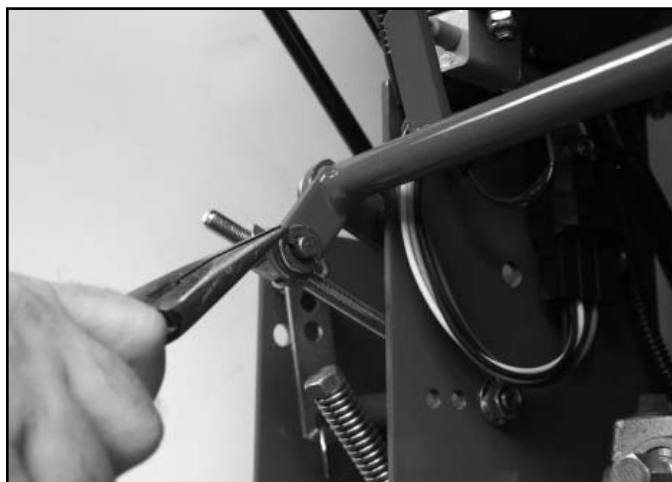


Fig 348

PICT-6377

18. Tighten the 2 nuts on either side of the trunnion on the upper end of the left hand control link (Fig. 349).



Fig 349

PICT-6418

21. Insert the bolt/washer assembly into the slotted opening of the shifter lever plate (Fig. 351).

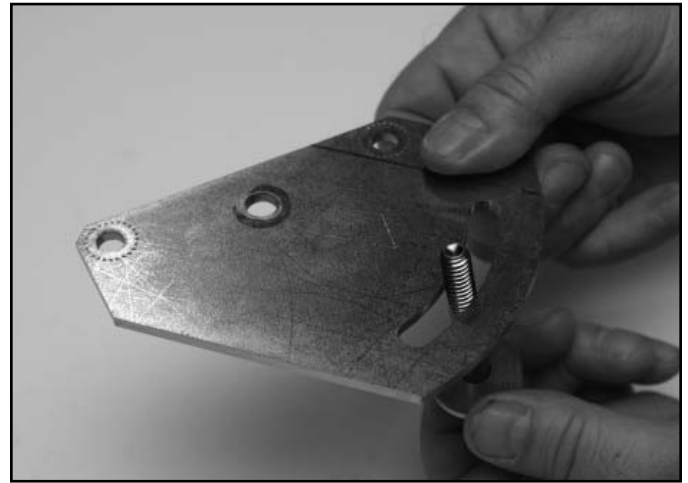


Fig 351

PICT-6423

19. Repeat steps 14 thru 18 to install the right hand control and bolt assembly into the right hand control shaft and right hand tab of the speed control crank.
20. Install a washer and a friction washer onto the shifter lever plate bolt (Fig. 350).



Fig 350

PICT-6420a

22. Install a second friction washer onto the bolt (Fig. 352).



Fig 352

PICT-6425

LINKAGE

23. Position the shift lever onto the shifter lever plate (Fig. 353).

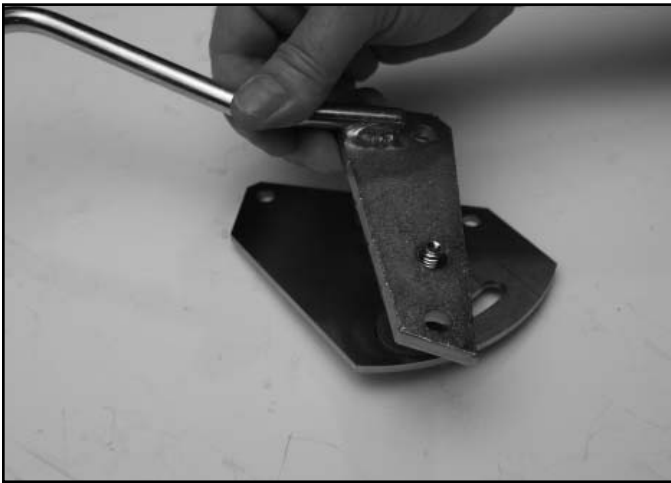


Fig 353

PICT-6437

25. Install a lock nut onto the bolt (Fig. 355).



Fig 355

PICT-6442

24. Position a spring onto the bolt assembly (Fig. 354).



Fig 354

PICT-6439

26. Tighten the nut until approximately 3 threads stick out past the nut (Fig. 356).

Note: Do not collapse the spring.



Fig 356

PICT-6445

27. Position a washer in between the two plates and line the ID of the washer up with the center hole in the lever plates (Fig. 357).



Fig 357

PICT-6447a

29. Loosely install the upper and lower bolts and nuts (Fig. 359).



Fig 359

PICT-6454

28. Position the speed control handle (Fig. 358).



Fig 358

PICT-6452

30. Loosely install the middle bolt, spring and nut (Fig. 360).



Fig 360

PICT-6456

LINKAGE

31. Tighten the middle nut until approximately 3 threads stick out past the nut (Fig. 361).

Note: Do not collapse the spring.



Fig 361

PICT-6459

33. Position the speed control rod so that the upper end is installed in the forward-most hole of the speed control lever (Fig. 363).

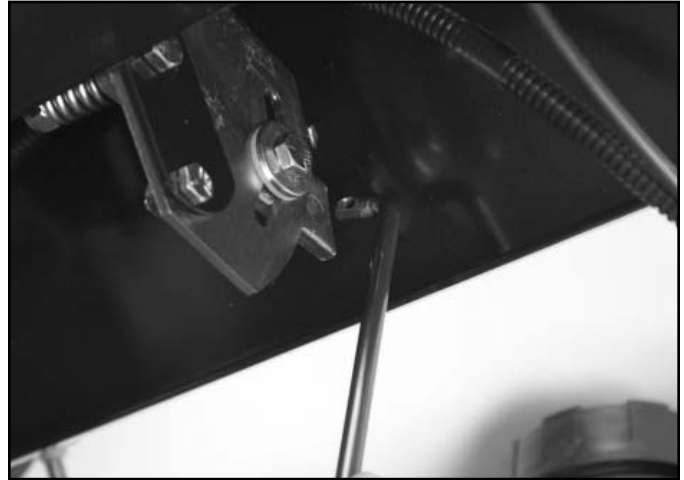


Fig 363

PICT-6465a

32. Tighten the upper and lower bolts and nuts (Fig. 362).

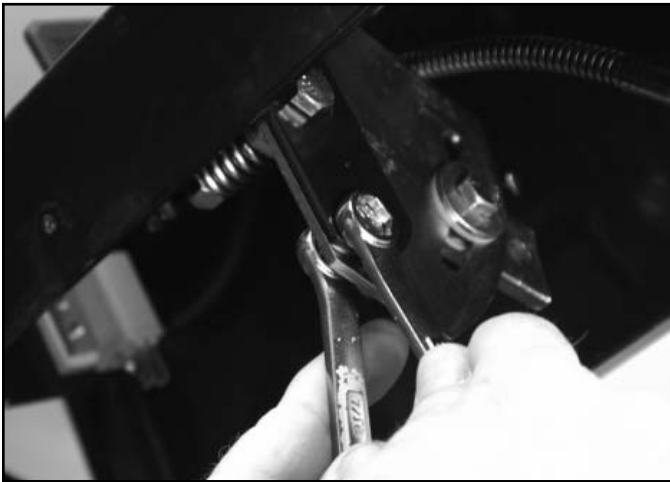


Fig 362

PICT-6461

34. Install the hairpin cotter into the speed control rod securing it to the speed control lever (Fig. 364).



Fig 364

PICT-6467

35. Position the speed control rod to the center tab on the speed control crank and install the clevis pin (Fig. 365).



Fig 365

PICT-6468

36. Install the hairpin cotter into the clevis pin securing the lower end of the speed control rod to the speed control crank (Fig. 366).



Fig 366

PICT-6470

37. Apply thread locking compound to the threads of the speed control lever (Fig. 367).



Fig 367

PICT-6473a

4

38. Install the knob onto the speed control lever (Fig. 368).



Fig 368

PICT-6475

LINKAGE

Speed Control and Neutral Switch Adjustment - Pistol Grip - Hydro Drive

1. Move the operator's speed control lever to the full forward position (Fig. 369).



Fig 369

PICT-6479

2. Check the orientation of the tabs on the ends of the speed control crank. These tabs should be pointing straight down or slightly forward (Fig. 370).

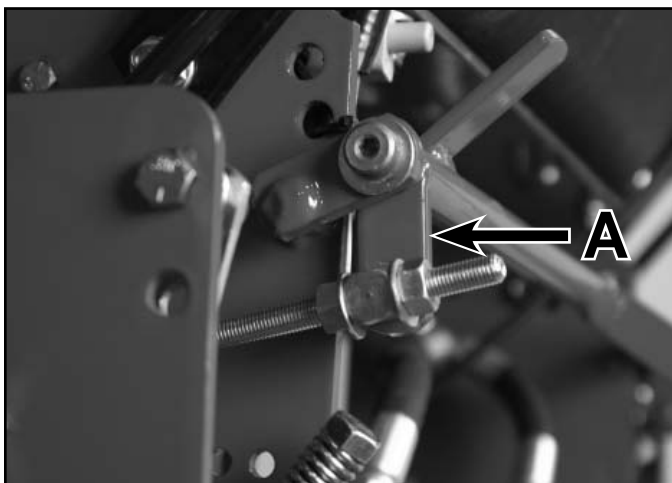


Fig 370

PICT-6481

A. Tab

3. Adjust the threaded yoke at the bottom of the speed control linkage until the tabs are positioned correctly (Fig. 371).



Fig 371

PICT-6482

4. Pull the operator's speed control lever back to the neutral position (Fig. 372).



Fig 372

PICT-6488

5. Check that the neutral safety switch actuating tab has depressed the plunger of the safety switch so that there is about 5/16" (7.9mm) between the tab and the switch. If necessary, move the switch forward or back to obtain the correct measurement (Fig. 373).



Fig 373

PICT-6486a

2. Slide the shift lever to the far left position (reverse) (Fig. 375).

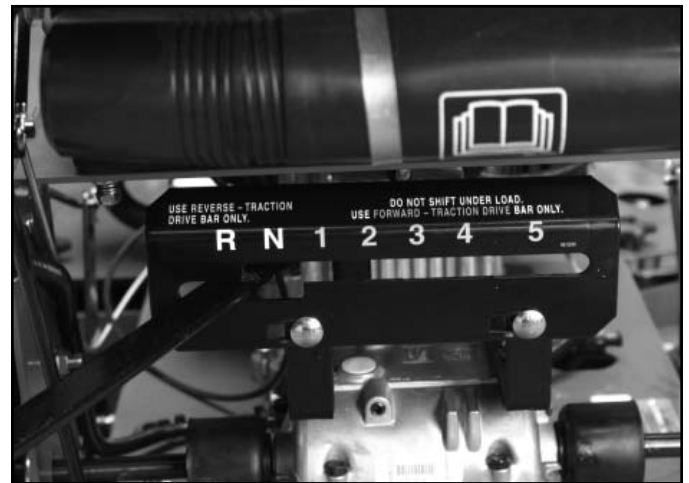


Fig 375

PICT-5415

4

Shift Plate Neutral Adjustment - Gear Drive

1. Loosen the two bolts and nuts securing the shift plate to the shift plate brackets (Fig. 374).

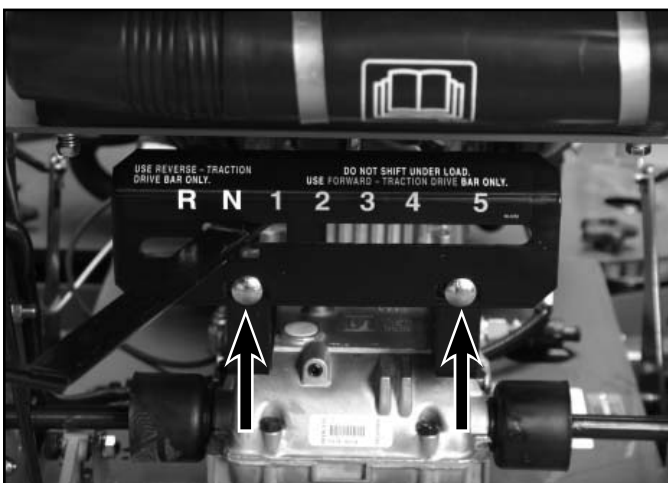


Fig 374

PICT-5412

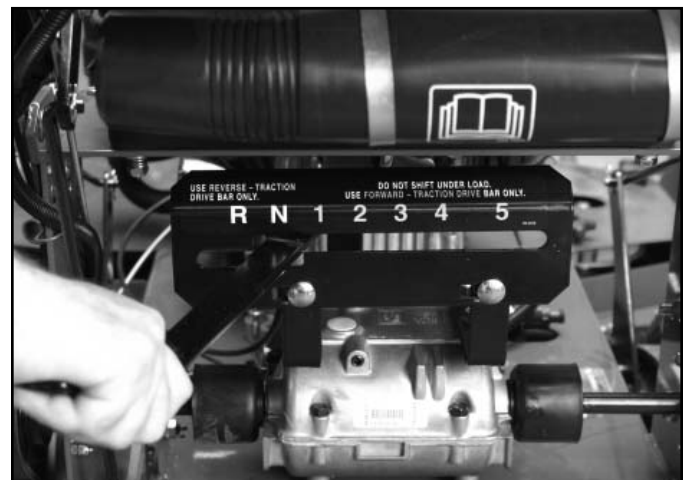


Fig 376

PICT-5417

LINKAGE

4. Adjust the shift plate so that the neutral gate is centered over the shift lever (Fig. 377).



Fig 377

PICT-5419

5. Tighten the 2 bolts and nuts to secure the shift plate in position (Fig. 378).



Fig 378

PICT-5412

6. Start the machine and run it in each transmission position to verify proper plate position. If further adjustment is required, start over at step 1.

Fuel Tank Replacement

DANGER

In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- Drain gasoline from the fuel tank when the engine is cold. Do this outdoors in an open area. Wipe up any gasoline that spills.
- Never smoke when draining gasoline, and stay away from an open flame or where a spark may ignite the gasoline fumes.

Removal

1. Park the machine on a level surface.
2. Disengage the power take off (PTO).
3. Set the parking brake.
4. Turn the ignition key to Off and remove the key.
5. Turn the fuel valve to the Off position (Fig. 379).



Fig 379

PICT-0001

6. Slide the hose clamp down the fuel line (Fig. 380).



Fig 380

PICT-0004

7. Remove the fuel line from the fuel pump and drain the fuel into a suitable container (Fig. 381).



Fig 381

PICT-0006

CHASSIS

8. Remove the two nuts, springs and washers from the left side of the bottom of the fuel tank (Fig. 382).

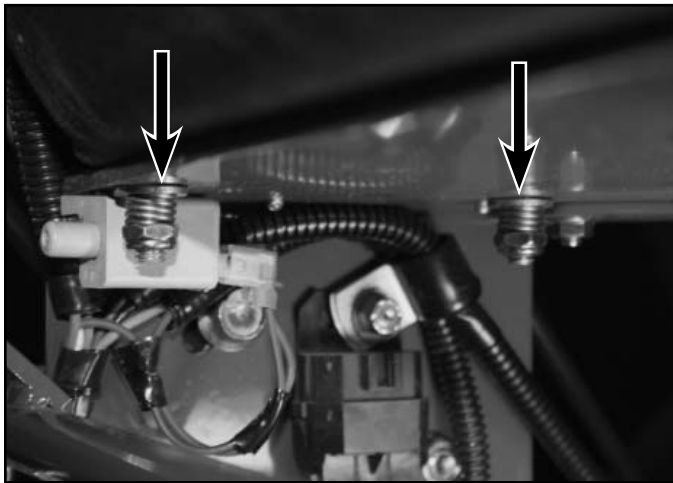


Fig 382

IMG-6003a

10. Lift the fuel tank assembly up and out of the frame. Take care as the tank fitting, fuel line and filter come through the frame opening (Fig. 384).



Fig 384

PICT-5343

9. Remove the two bolts, lock washers and washers from the right side of the bottom of the fuel tank (Fig. 383).

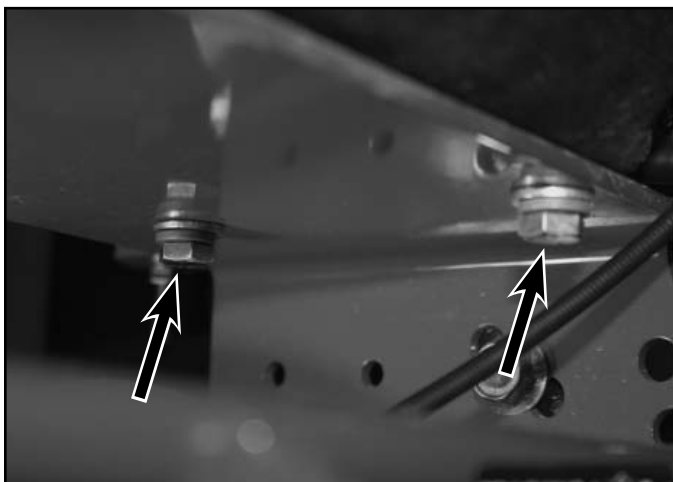


Fig 383

IMG-6005a

11. Remove the clamp securing the fuel line to the fuel tank bulkhead fitting (Fig. 385).



Fig 385

PICT-5345

12. Remove the fuel line from the bulkhead fuel fitting (Fig. 386).



Fig 386

PICT-5349

14. Remove the fuel cap assembly from the fuel tank (Fig. 388).



Fig 388

PICT-5355

13. Loosen and remove the nut and washer securing the bulkhead fuel fitting to the bottom of the fuel tank (Fig. 387).



Fig 387

PICT-5353

15. Remove the bulkhead fuel fitting from the tank through the fuel cap opening (Fig. 389).



Fig 389

PICT-5356

CHASSIS

16. Inspect the filter screen on the bulkhead fuel fitting. Clean or replace the filter screen if it is clogged or damage (Fig. 390).

Note: If fuel is leaking from the bulkhead fuel fitting area of the tank, the seal on the fitting has been compromised and the whole fitting must be replaced.



Fig 390

PICT-5360a

Installation

1. Install the bulkhead fuel fitting into the tank through the fuel cap opening (Fig. 391).

Note: The fitting should be installed so that the 90° bend points toward the front of the fuel tank.



Fig 391

PICT-5356

A. Flexible magnet tool used to aid assembly.

2. Install the washer and nut onto the bulkhead fuel fitting (Fig. 392).



Fig 392

PICT-5363

3. Tighten the nut to secure the fitting to the fuel tank (Fig. 393).

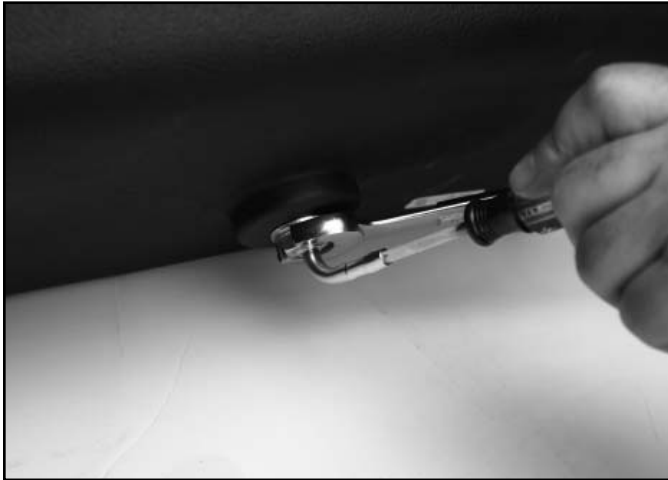


Fig 393

PICT-5353

5. Slide the hose clamp up and install it to secure the fuel line to the bulkhead fitting (Fig. 395).



Fig 395

PICT-5345

4. Install the fuel line onto the bulkhead fitting (Fig. 394).



Fig 394

PICT-5349a

6. Carefully feed the fuel line assembly through the frame opening and position the tank on the frame.
7. Secure the fuel tank to the chassis by installing the bolts, washers and springs as shown (Fig. 396):

Note: The springs on the LH side should not be fully compressed. Do not over-tighten the RH side mounting bolts.

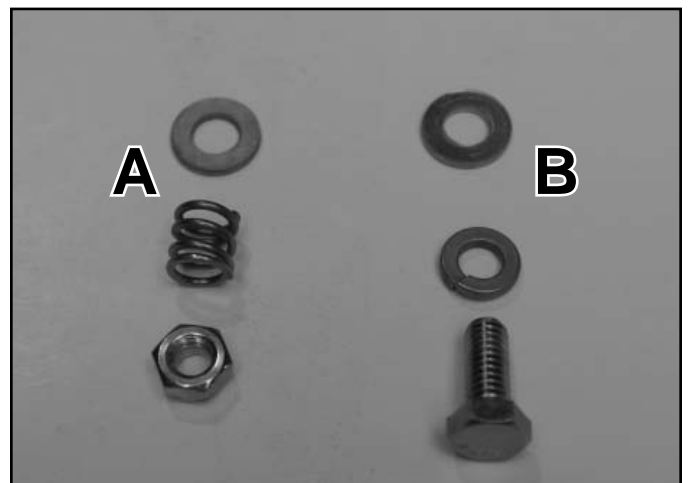


Fig 396

PICT-5374a

A. Left side of tank

B. Right side of tank

CHASSIS

8. Install the fuel line to the fuel pump (Fig. 397).



Fig 397

PICT-0006

10. Fill the fuel tank with fuel and open the fuel valve (Fig. 399).



Fig 399

PICT-0001

9. Slide the hose clamp up and install it to secure the fuel line to the fuel pump (Fig. 398).



Fig 398

PICT-0004

11. Check for leaks.

Brake Service

Before each use, check the brakes for proper operation.

Always set the parking brake when you stop the machine or leave it unattended. If the parking brake does not hold securely, an adjustment is required.

Pistol Grip - Gear Drive

Checking the Brake

1. Park the machine on a level surface.
2. Disengage the blade control (PTO) (Fig. 400).



Fig 400

PICT-4821

3. Push both the neutral/brake locks forward to set the brake (Fig. 401).

Note: Rear wheels must lock when you try to push the machine forward or backward. Adjustment is required if the wheels turn and do not lock. Refer to “Adjusting the Brake”, following.



Fig 401

PICT-4829

4. Release the brake and move the neutral/brake lock to neutral (Fig. 402).



Fig 402

PICT-4828

CHASSIS

5. Move the machine slightly, approximately 1/2" (13mm). Wheels should rotate freely.
6. If both conditions are met, no adjustment is required.

Adjusting the Brake

1. Check the brake before you adjust it. Refer to Pistol Grip – Gear Drive, "Checking the Brake" preceding.
2. Release the parking brake and place it in the neutral lock position (Fig. 403).



Fig 403

PICT-4828

3. Rotate the wing nuts on the brake rods (Fig. 404) as follows:
 - Clockwise to tighten the brake
 - Counterclockwise to loosen the brake

Note: The right and left brake rods are adjusted independently of each other.



Fig 404

PICT-4832

4. Position the wing nuts so the brakes engage with the neutral/brake lock in the park brake position (Fig. 405).



Fig 405

PICT-4829

5. Recheck the brake operation. Refer to Pistol Grip – Gear Drive, “Checking the Brake” above.

Important: With the parking brake released, the rear wheels must rotate freely when you push the mower. If brake action and free wheel rotation cannot be achieved, examine the brake system components for wear or damage.

T-Bar - Gear Drive

Checking the Brake

1. Park the machine on a level surface.
2. Disengage the Power Take Off (PTO) (Fig. 406).



Fig 406

PICT-4834

3. Set the parking brake (Fig. 407).



Fig 407

PICT-4840

4. The rear wheels must lock when you try to push the machine forward or backward. Adjustment is required if the wheels do not lock. Refer to “Adjusting the Brake”, following.
5. Release the parking brake (Fig. 408).



Fig 408

PICT-4844

CHASSIS

6. Move the upper control bar forward, approximately 1/2" (13mm) (Fig. 409).



Fig 409

PICT-4848

7. The wheels should rotate freely.
8. If the above conditions are met, no adjustment is required. If adjustments are required, see "Adjusting the Brake", following.

3. Rotate the wing nuts on the brake rods (Fig. 411) as follows:
 - Clockwise to tighten the brake
 - Counterclockwise to loosen the brake

Note: The right and left brake rods are adjusted independently of each other.

Note: The control bar should be parallel with reference bar when properly adjusted.

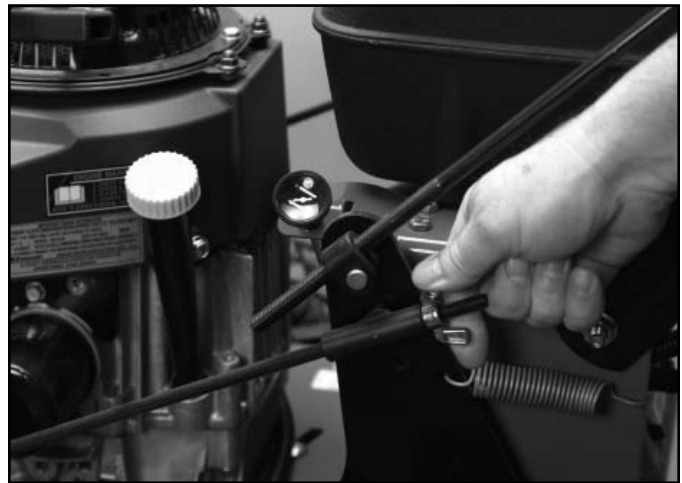


Fig 411

PICT-4853

Adjusting the Brake

1. Check the brake before you adjust it. Refer to "Checking the Brake", preceding.
2. Set the park brake latch (Fig. 410).



Fig 410

PICT-4840

4. Check the brake operation again. Refer to "Checking the Brake" preceding.

Important: With the parking brake released, the rear wheels must rotate freely when you push the mower. If brake action and free wheel rotation cannot be achieved, examine the brake system components for wear or damage.

Pistol Grip - Hydro

Checking the Parking Brake

1. Move the machine to a level surface.
2. Disengage the power take off (PTO) and stop the engine (Fig. 412).



Fig 412

PICT-4859

4. Set the parking brake (Fig. 413).

Note: Setting the parking brake should take a reasonable amount of force. If it engages too hard or too easily, adjustment is required. Refer to “Adjusting the Parking Brake”, following.



Fig 413

PICT-4870

3. Check and adjust the tire pressure per specifications.

Adjusting the Parking Brake

1. Check the parking brake before you adjust it, refer to “Checking the Parking Brake”, preceding.
2. Release the parking brake.

CHASSIS

3. Remove the hairpin cotter from the lower brake linkage (Fig. 414).

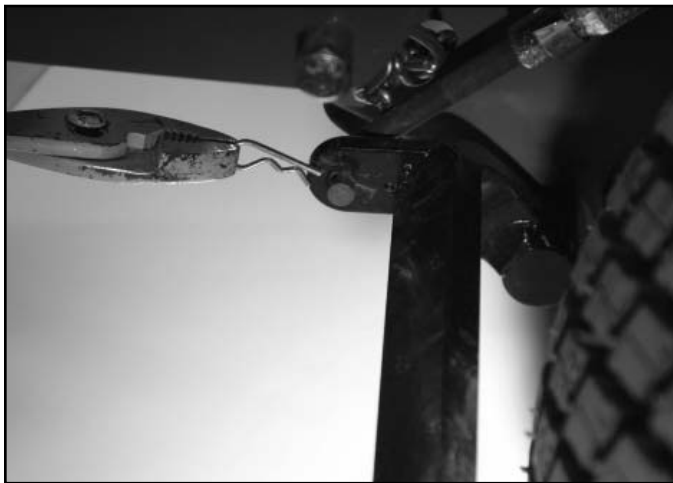


Fig 414

PICT-4880a

Note: There should be approximately 1/4" (6.3mm) clearance between the tire and the flat bar when the parking brake is in the released position (Fig. 416).

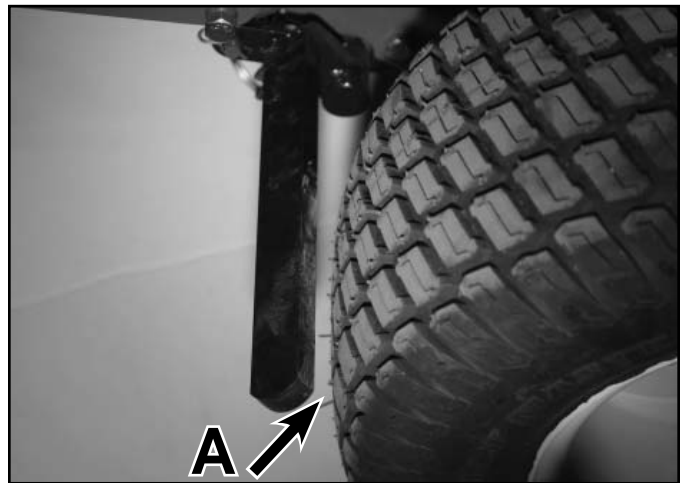


Fig 416

PICT-4889a

4. Rotate the lower brake linkage as follows (Fig. 415):
 - Clockwise to tighten the parking brake
 - Counterclockwise to loosen the parking brake



Fig 415

PICT-4886

- A. 1/4" (6.3mm)

5. Insert the lower brake linkage into the hole on the brake and secure it with a hair pin cotter (Fig. 417).



Fig 417

PICT-4880a

6. Check the brake operation again. Refer to "Checking the Parking Brake", preceding.

T-Bar - Gear Drive

Brake Band & Drum Replacement

Removal

1. Turn the engine off.
2. Remove the spark plug wire from the spark plug (Fig. 418).

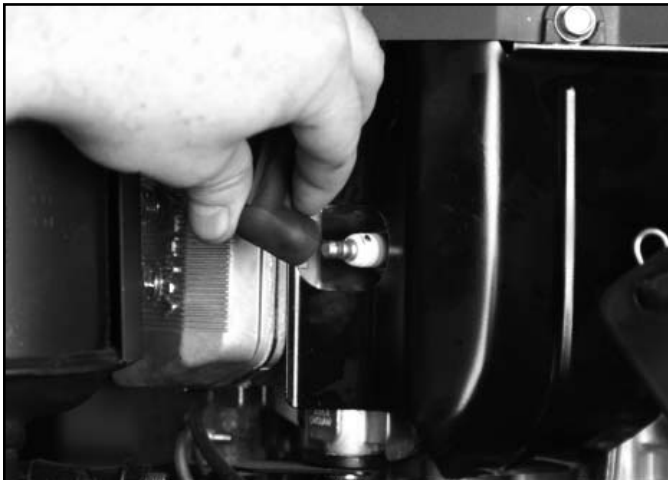


Fig 418

PICT-4894

3. Raise the machine until the tires are off the floor. Support the machine with jack stands or blocks to prevent it from falling.

4. Remove the E-ring and washers from the axle (Fig. 419).



Fig 419

PICT-4896a

5. Remove the hairpin cotter from the brake linkage rod (Fig. 420).



Fig 420

PICT-4901

CHASSIS

6. Remove the brake linkage rod from the idler arm (Fig. 421).

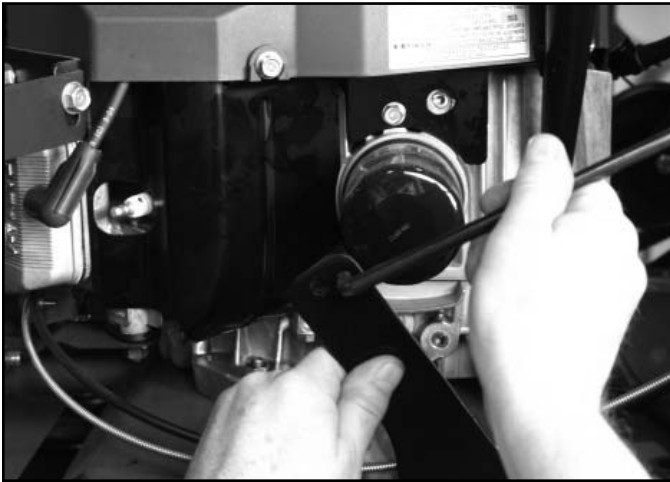


Fig 421

PICT-4956

8. Slide the wheel assembly off the axle and move the belt from around the axle so it is out of the way of the brake band (Fig. 423).



Fig 423

PICT-4906

7. Rotate the wheel assembly to remove the belt from the wheel pulley (Fig. 422).



Fig 422

PICT-4903

9. Remove the E-ring securing the brake band assembly to the frame (Fig. 424).



Fig 424

PICT-4910

10. Slide the brake band assembly off the pivot (Fig. 425).



Fig 425

PICT-4912

12. Remove the 2 pins securing the brake band to the brake arm (Fig. 427).



Fig 427

PICT-5725a

11. Remove the 2 push nuts from the 2 pins (Fig. 426).

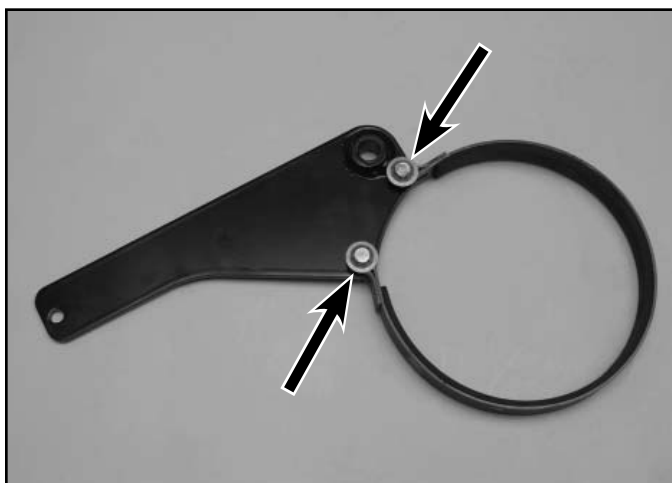


Fig 426

PICT-4914a

13. Remove the brake band from the brake arm (Fig. 428).



Fig 428

PICT-5726a

CHASSIS

14. Inspect the brake band and replace it if it is damaged or worn (Fig. 429).



Fig 429

PICT-5729a

16. Remove the 4 bolts that secure the brake drum to the wheel pulley (Fig. 431).



Fig 431

PICT-4923a

15. Inspect the brake drum. Replace it if it is damaged or worn (Fig. 430).



Fig 430

PICT-4917a

17. Remove the brake drum from the wheel pulley (Fig. 432).



Fig 432

PICT-4926

Installation

1. Position the brake drum onto the wheel pulley (Fig. 433).



Fig 433

PICT-4928

2. Install 4 bolts to secure the drum to the wheel pulley and tighten (Fig. 434).



Fig 434

PICT-4930

3. Slide the brake band onto the brake arm.

Left side brake band (Fig. 435).



Fig 435

PICT-5737a

Right side brake band (Fig. 436).



Fig 436

PICT-5740a

CHASSIS

4. Install 2 pins into each end of the brake band to secure it to the brake arm (Fig. 437).



Fig 437

PICT-5742a

6. Slide the brake band assembly onto the pivot (Fig. 439).



Fig 439

PICT-4933

5. Install a new push nut on each of the pins to secure the brake band to the brake arm (Fig. 438).

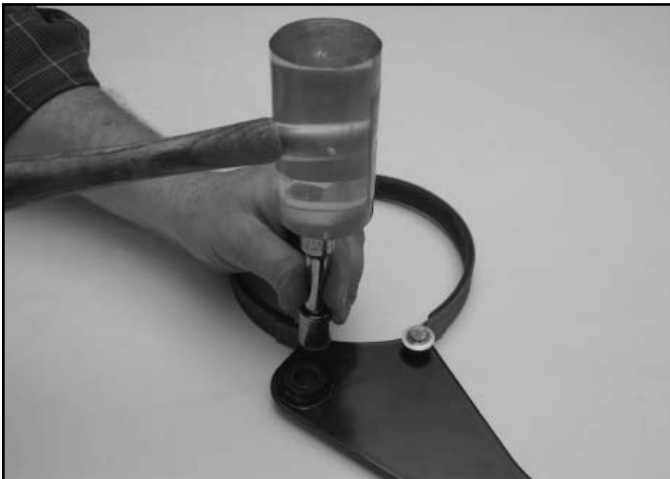


Fig 438

PICT-5744a

7. Install an e-ring to secure the brake band assembly (Fig. 440).



Fig 440

PICT-4935

8. Apply a thin coat of anti-seize compound to axle shaft as a rust preventative. Do Not get any on brake or belt. Position the belt around the axle and begin sliding the wheel assembly onto the axle (Fig. 441).



Fig 441

PICT-4941

9. Rotate the wheel to install the belt onto the wheel pulley (Fig. 442).



Fig 442

PICT-4943

10. Continue sliding the wheel onto the axle until the brake band is installed onto the brake drum (Fig. 443).



Fig 443

PICT-4946

11. Slide the washer(s) onto the axle (Fig. 444).



Fig 444

PICT-4950a

CHASSIS

12. Install an e-ring onto the axle (Fig. 445).



Fig 445

PICT-4953a

14. Install the hairpin cotter into the brake linkage rod to secure the rod to the brake arm (Fig. 447).



Fig 447

PICT-4960

13. Install the brake linkage rod into the upper hole on the brake arm (Fig. 446).



Fig 446

PICT-4956

15. Reinstall the spark plug wire onto the park plug.

16. Lower the machine to a level surface.

17. Check the brake operation again. Refer to "Checking the Brake" on page 5-9.

Pistol Grip - Gear Drive

Brake Band & Drum Replacement

Removal

1. Turn the engine off.
2. Remove the spark plug wire from the spark plug.
3. Raise the machine until the tires are off the floor. Support the machine with jack stands or blocks to prevent it from falling.
4. Remove the brake band idler spring from the drive wheel shield bolt (Fig. 448).

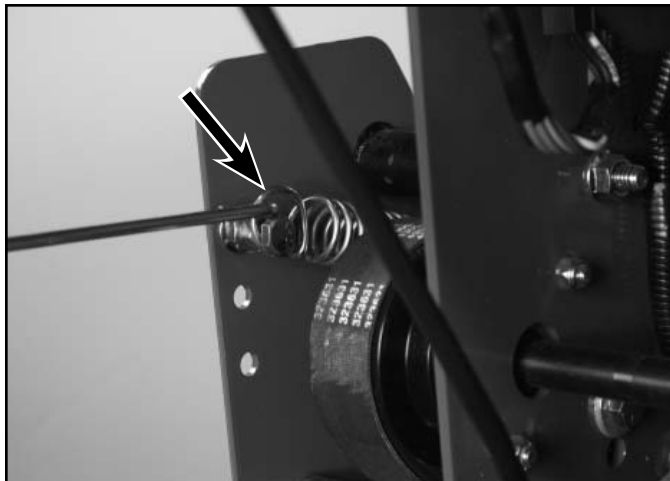


Fig 448

PICT-6900

5. Remove the spring from the idler pulley (Fig. 449).



Fig 449

PICT-6901

6. Remove the hairpin cotter from the brake linkage rod (Fig. 450).



Fig 450

PICT-6902

CHASSIS

7. Remove the brake linkage rod from the idler arm (Fig. 451).



Fig 451

PICT-6903

9. Rotate the wheel assembly to remove the belt from the wheel pulley (Fig. 453).



Fig 453

PICT-6905

8. Remove the E-ring and washers from the axle (Fig. 452).



Fig 452

PICT-4896a

10. Slide the wheel assembly off of the axle (Fig. 454).



Fig 454

PICT-6906

11. Remove the belt from around the axle (Fig. 455).

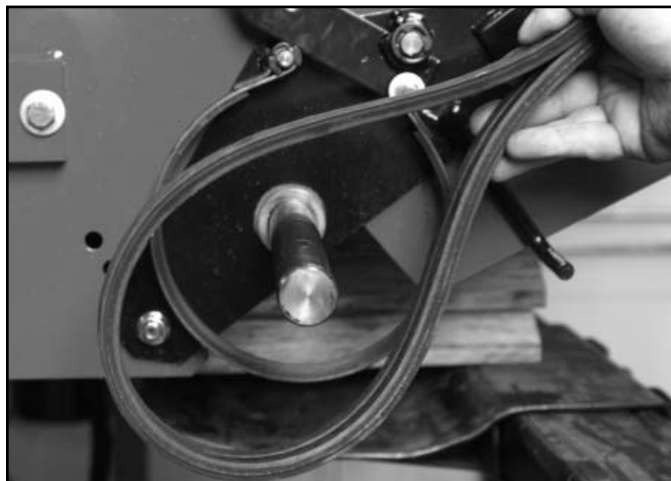


Fig 455

PICT-6946

13. Remove the e-ring securing the brake arm to the frame (Fig. 457).

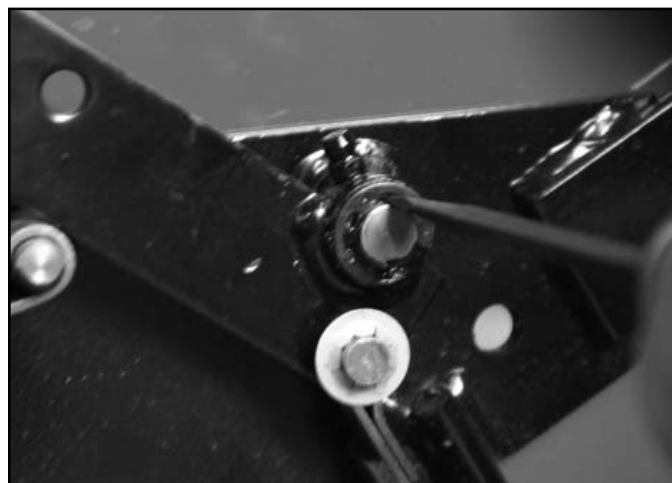


Fig 457

PICT-6911

12. Remove the E-ring securing the brake band assembly to the frame (Fig. 456).



Fig 456

PICT-6909

14. Slide the brake band assembly off the pivot (Fig. 458).

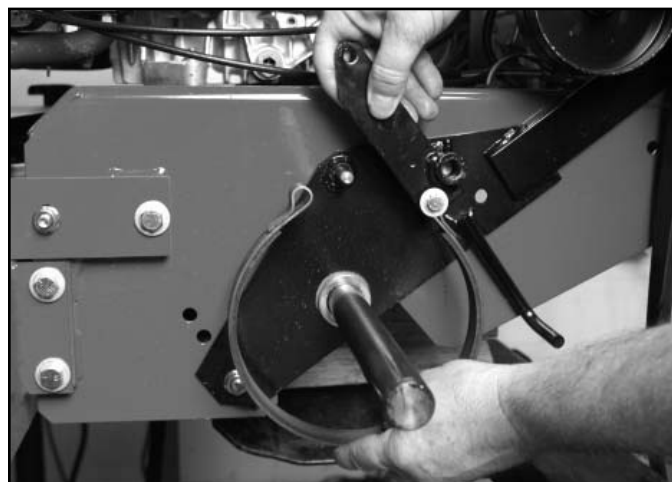


Fig 458

PICT-6916

5

CHASSIS

15. Remove the push nut from the brake band pin (Fig. 459).



Fig 459

PICT-6919a

17. Inspect the brake band and replace it if it is damaged or worn (Fig. 461).



Fig 461

PICT-6924a

16. Remove the pin securing the brake band to the brake arm (Fig. 460).



Fig 460

PICT-6922a

18. Inspect the brake drum. Replace it if it is damaged or worn (Fig. 462).



Fig 462

PICT-4917a

19. Remove the 4 bolts that secure the brake drum to the wheel pulley (Fig. 463).



Fig 463

PICT-4923a

20. Remove the brake drum from the wheel pulley (Fig. 464).



Fig 464

PICT-4926

Installation

1. Position the brake drum onto the wheel pulley (Fig. 465).



Fig 465

PICT-4928

2. Install the 4 bolts to secure the drum to the wheel pulley and tighten (Fig. 466).



Fig 466

PICT-4930

CHASSIS

3. Slide the brake band onto the brake arm (Fig. 467).

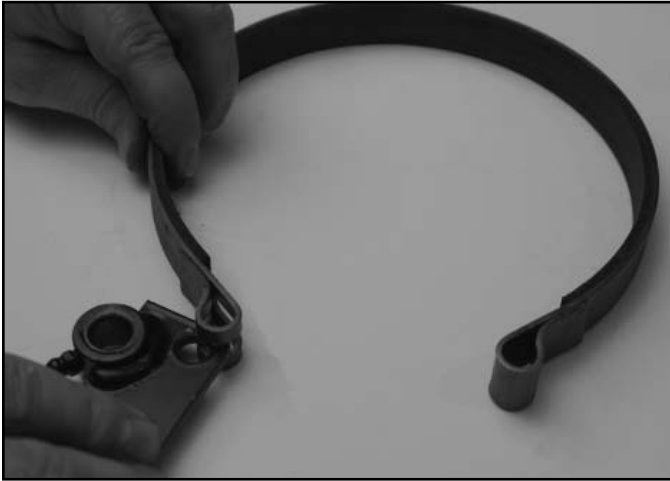


Fig 467

PICT-6925a

- Right side brake band (Fig. 469).



Fig 469

PICT-6934a

4. Install a pin to secure the brake band to the brake arm:

Left side brake band (Fig. 468).

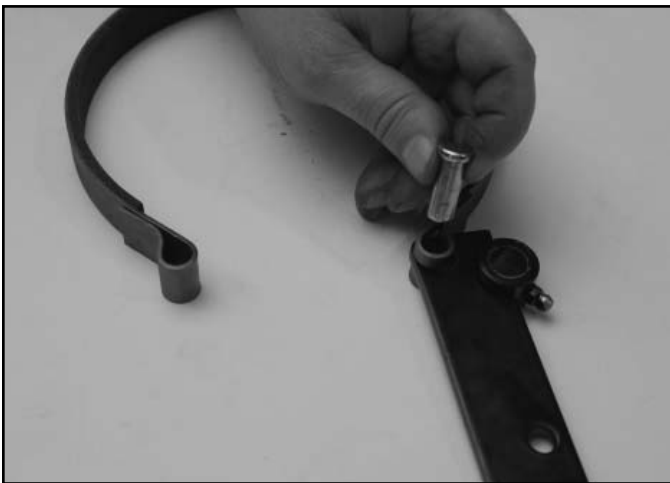


Fig 468

PICT-6928a

5. Install a new push nut onto the pin securing the brake band to the brake arm (Fig. 470).



Fig 470

PICT-6935a

6. Slide the brake band assembly onto the 2 pivot pins (Fig. 471).



Fig 471

PICT-6939

8. Install the e-ring securing the brake arm to the pivot (Fig. 473).

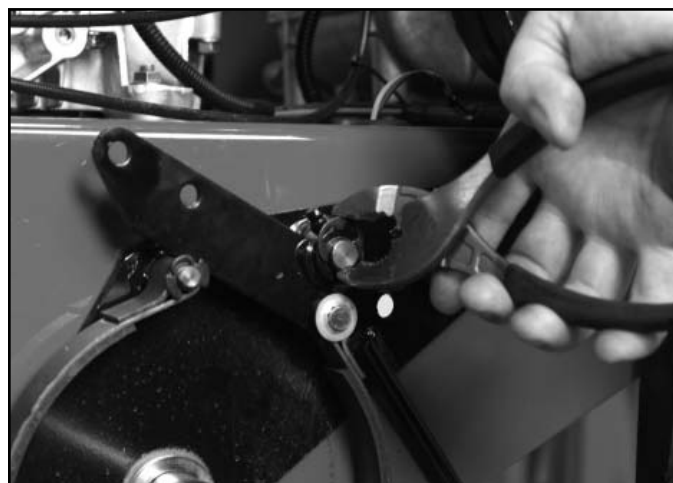


Fig 473

PICT-6945

7. Install the e-ring securing the brake band to the pivot (Fig. 472).



Fig 472

PICT-6943

9. Position the belt around the axle (Fig. 474).

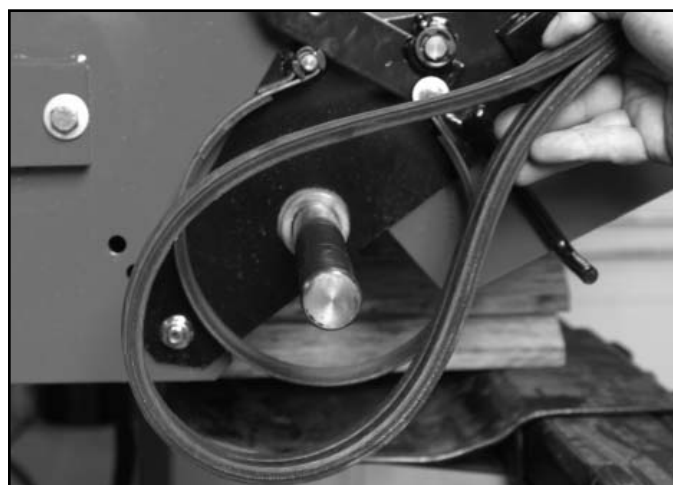


Fig 474

PICT-6946

5

CHASSIS

10. Slide the wheel assembly onto the axle (Fig. 475).



Fig 475

PICT-6949a

12. Continue sliding the wheel onto the axle until the brake band is installed onto the brake drum (Fig. 477).



Fig 477

PICT-6953

11. Rotate the wheel to install the belt onto the wheel pulley (Fig. 476).



Fig 476

PICT-6951

13. Slide the washer(s) onto the axle (Fig. 478).



Fig 478

PICT-6955a

14. Install the e-ring onto the axle (Fig. 479).



Fig 479

PICT-6958a

16. Install the hairpin cotter into the brake linkage rod to secure the rod to the brake arm (Fig. 481).



Fig 481

PICT-6961

15. Install the brake linkage rod into the upper hole on the brake arm (Fig. 480).



Fig 480

PICT-6959

17. Hook the spring onto the idler pulley (Fig. 482).



Fig 482

PICT-6901

5

CHASSIS

18. Hook the other end of the spring onto the bolt located on the drive wheel shield (Fig. 483).

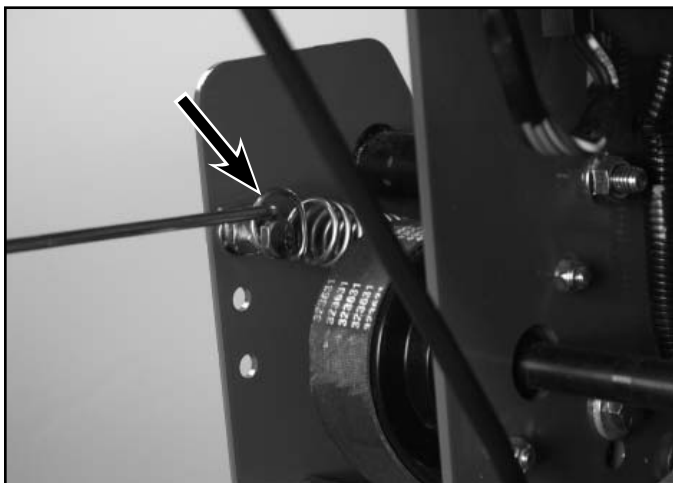


Fig 483

PICT-6900

19. Install the spark plug wire onto the park plug (Fig. 484).

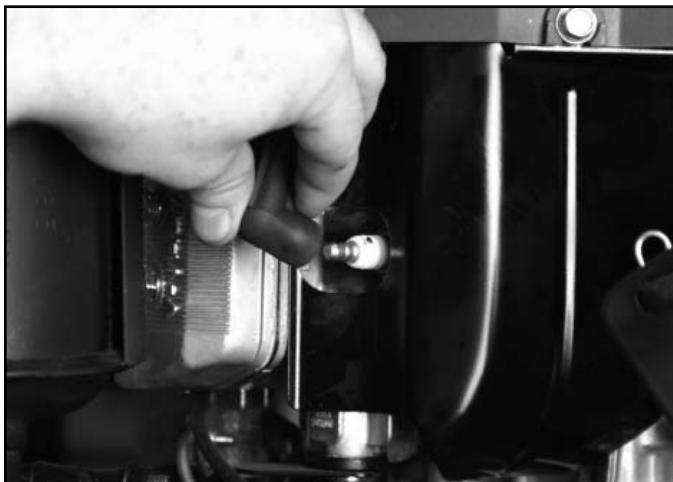


Fig 484

PICT-4894

20. Lower the machine to a level surface.
21. Check the brake operation. Refer to "Checking the Brake" on page 5-7.

Parking Brake Service

Removal

1. Remove the hairpin cotter from the top end of the upper linkage rod (Fig. 485).



Fig 485

PICT-6219

2. Remove the hairpin cotter from the bottom end of the upper linkage rod (Fig. 486).



Fig 486

PICT-6221

3. Remove the upper linkage rod from the handle and bellcrank assemblies (Fig. 487).

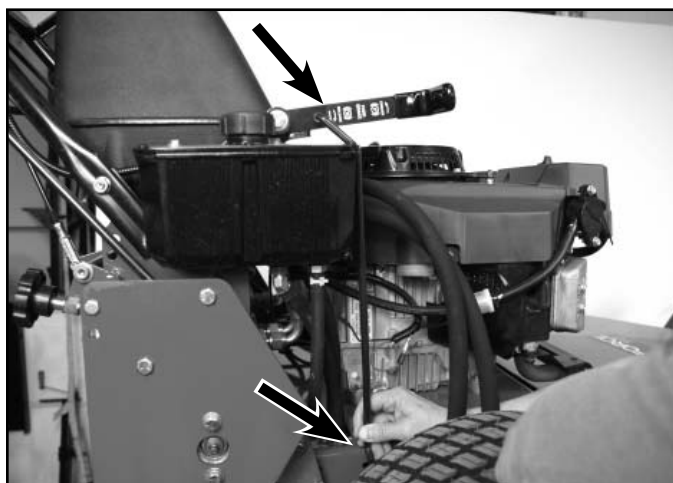


Fig 487

PICT-6225

5. Remove the handle assembly, bolt, washer and spacer (Fig. 489).



Fig 489

PICT-6228

4. Remove the nut from the parking brake handle assembly (Fig. 488).

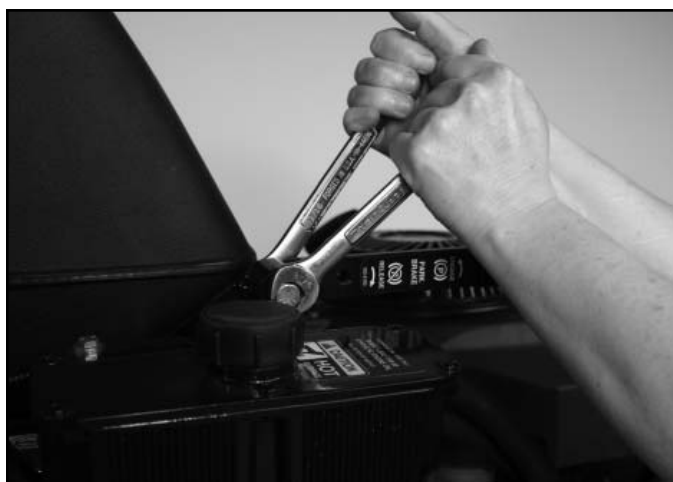


Fig 488

PICT-6227

6. Unplug the brake switch from the harness (Fig. 490).



Fig 490

PICT-7646

CHASSIS

7. Remove the nuts from the bolts that secure the hydraulic tank to the frame (Fig. 491).

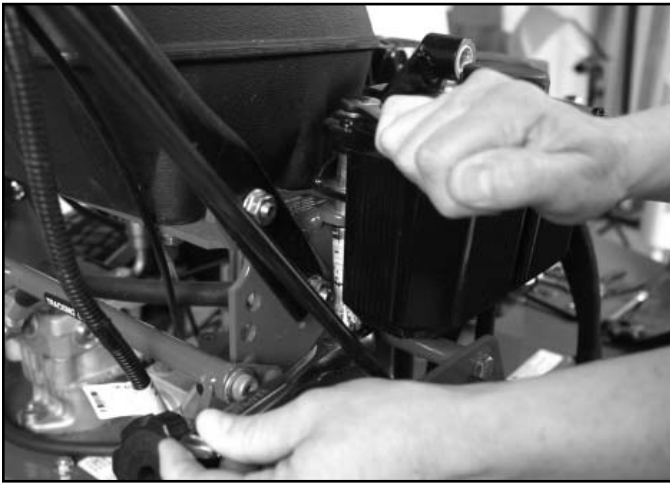


Fig 491

PICT-6233

9. Remove the parking brake bracket assembly and gently lay the hydraulic tank on the tire (Fig. 493).



Fig 493

PICT-6238

8. Remove the bolts and washers securing the hydraulic tank to the frame. The spacers will fall out (Fig. 492).

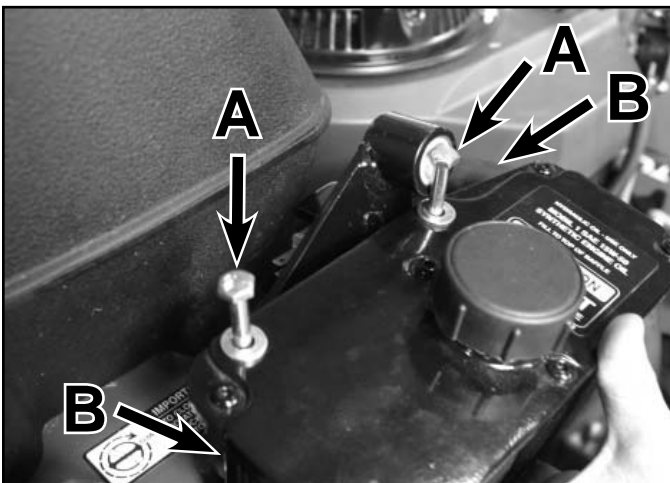


Fig 492

PICT-6320

10. Remove the 2 screws securing the parking brake switch to the parking brake bracket assembly (Fig. 494).



Fig 494

PICT-6242a

A. Bolts

B. Spacers (two long and two short)

11. Remove the tapped plate and switch from the parking brake bracket assembly (Fig. 495).

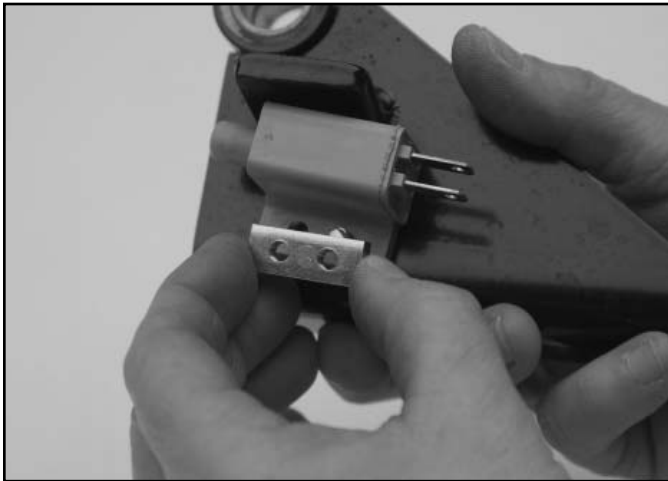


Fig 495

PICT-6244a

12. Press the 2 bushings out of the parking brake handle bracket (Fig. 497).

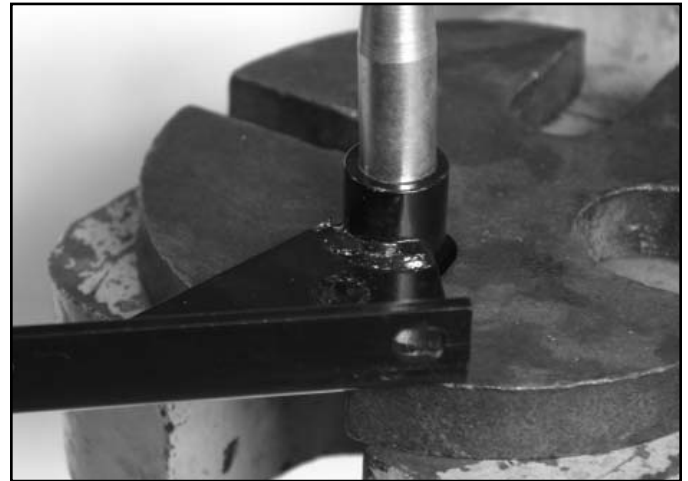


Fig 497

PICT-6245

Parking Brake Bracket Assembly (Fig. 496)

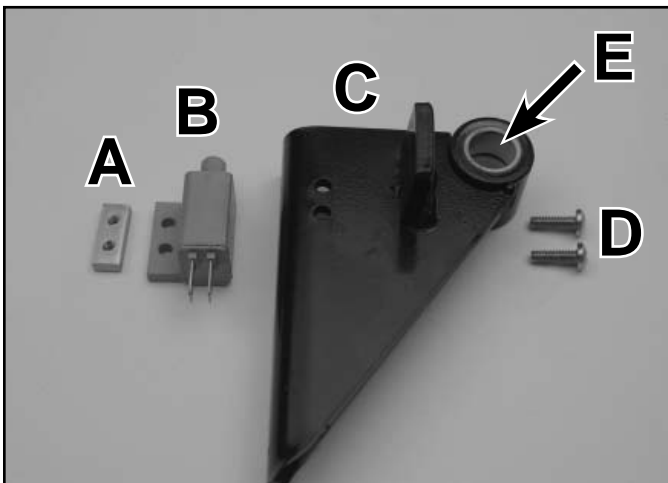


Fig 496

PICT-6249a

- A. Tapped plate
- B. Switch
- C. Bracket
- D. Screws
- E. Bushings

13. Remove the hairpin cotter from the lower linkage rod (Fig. 498).



Fig 498

PICT-7651

CHASSIS

14. Unhook the lower linkage rod from the brake (Fig. 499).

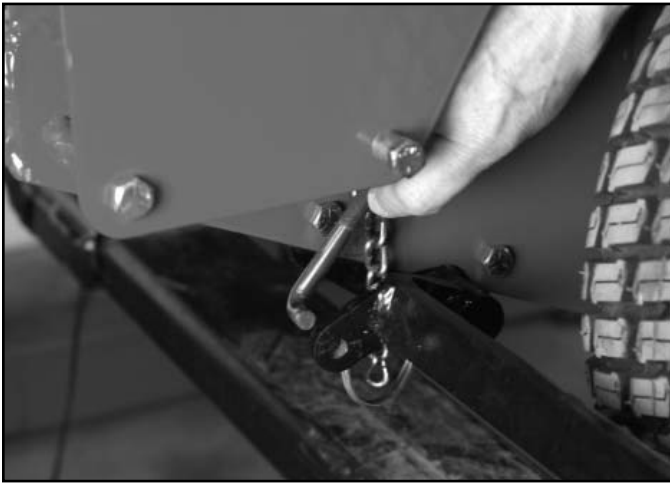


Fig 499

PICT-6255

16. Remove the bellcrank assembly (Fig. 501).



Fig 501

PICT-6263

15. Remove the nut from the bolt securing the bellcrank assembly to the bellcrank plate (Fig. 500).



Fig 500

PICT-6258

17. Loosen and remove the nut from the bellcrank assembly. (Fig. 502).



Fig 502

PICT-6264a

18. Remove the bolt and washer from the bellcrank assembly (Fig. 503).



Fig 503

PICT-6266a

20. Remove the yoke from the bellcrank assembly (Fig. 505).



Fig 505

PICT-6273a

19. Unclip and remove the clevis spring pin from the brake link yoke (Fig. 504).



Fig 504

PICT-6268a

21. Remove the 2 nuts from the bolts securing the bellcrank plate to the frame (Fig. 506).

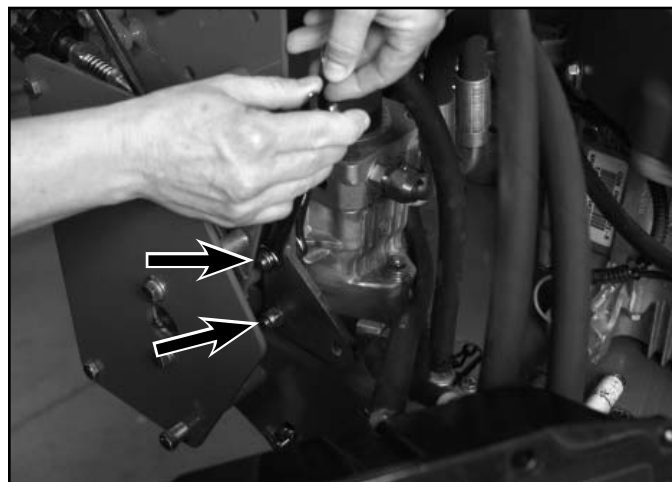


Fig 506

PICT-6276

CHASSIS

22. Remove the bolts and the bellcrank plate from the frame (Fig. 507).



Fig 507

PICT-6278

24. Loosen the inside jam nut on the screw with the parking brake spring still hooked on it (Fig. 509).



Fig 509

PICT-6286

23. While supporting the brake, remove the end of the spring hooked to the bolt on the brake (Fig. 508).

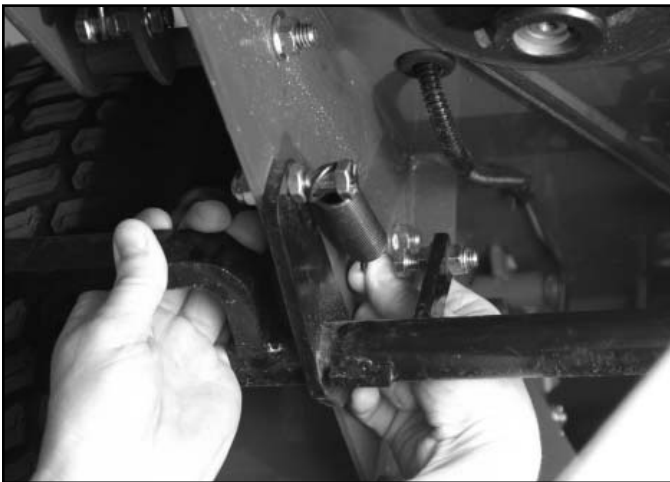


Fig 508

PICT-6282

25. Loosen and remove the outside jam nut from the screw with the spring still hooked on it (Fig. 510).



Fig 510

PICT-6288

26. Remove the bolt, spring and jam nut (Fig. 511).



Fig 511

PICT-6292

28. While supporting the brake, remove the 3 bolts and then remove the brake from the frame (Fig. 513).

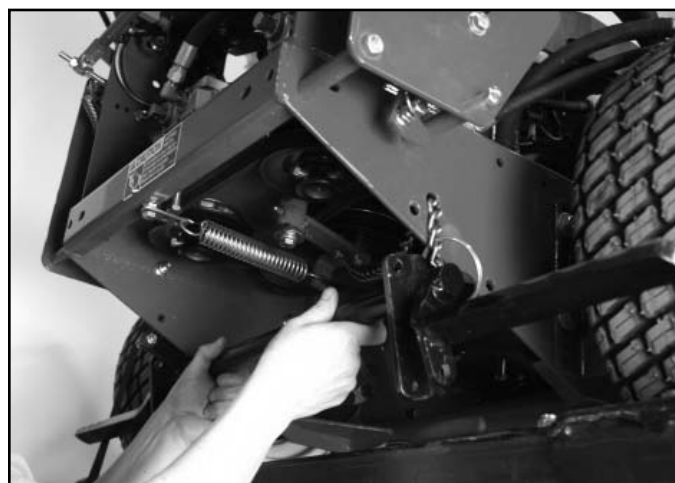


Fig 513

PICT-6297

27. Remove the remaining 3 nuts from the bolts that secure the brake to the frame (Fig. 512).



Fig 512

PICT-6296a

Installation

1. Position the brake into the frame (Fig. 514).

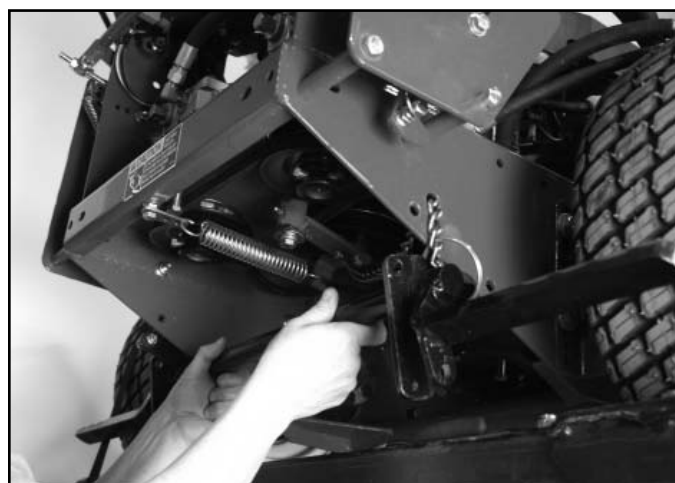


Fig 514

PICT-6297

CHASSIS

2. Loosely install 3 bolts and nuts securing the brake to the frame (Fig. 515).



Fig 515

PICT-6296a

4. Loosely install the lock nut onto the bolt so that there are 3 to 4 threads protruding beyond the lock nut (Fig. 517).



Fig 517

PICT-6288

3. Install the bolt, spring and jam nut (Fig. 516).



Fig 516

PICT-6292

5. Hook the free end of the spring onto the brake arm bolt (Fig. 518).

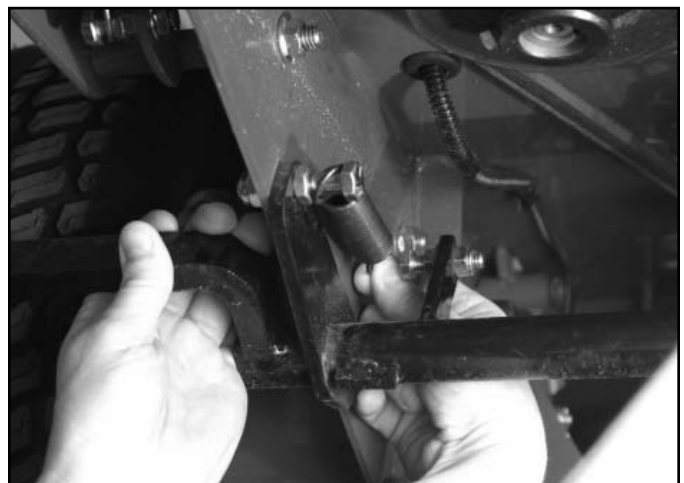


Fig 518

PICT-6282

6. Tighten the 3 nuts and bolts to secure the brake to the frame (Fig. 519).



Fig 519

PICT-6296a

8. Swivel the brake to ensure free movement.
9. Install the bellcrank plate and two bolts to the frame (Fig. 521).



Fig 521

PICT-6278

7. Tighten the jam nut to secure the bolt with the spring hooked on it (Fig. 520).



Fig 520

PICT-6302

Note: Ensure the bellcrank plate is oriented as shown (Fig. 522):



Fig 522

PICT-6306

CHASSIS

10. Install 2 nuts to secure the bellcrank plate to the frame (Fig. 523).

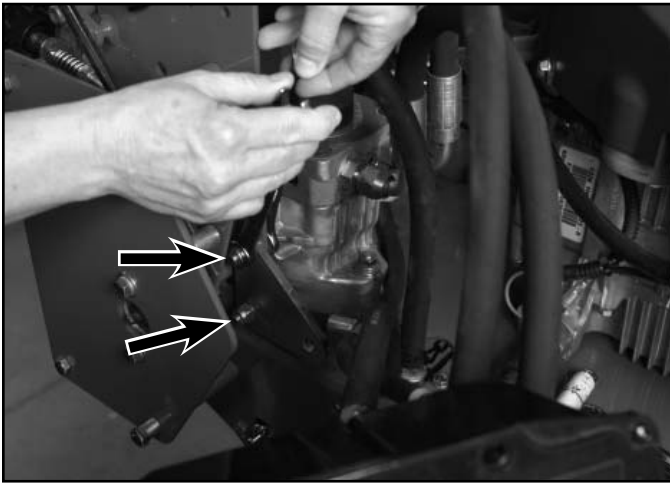


Fig 523

PICT-6276

12. Install the clevis spring pin to secure the yoke to the bellcrank assembly and clip the clevis spring to the link yoke (Fig. 525).



Fig 525

PICT-6268a

11. Position the yoke onto the bellcrank assembly (Fig. 524).



Fig 524

PICT-6273a

13. Install the bolt and washer into the bellcrank assembly (Fig. 526).



Fig 526

PICT-6266a

14. Position the bolt and washer into the bellcrank and install a nut onto the bolt (Fig. 527).

Note: The flange side of the nut faces toward the bolt head.

Note: Tighten the nut, then loosen it slightly to allow the bolt assembly to swivel freely.



Fig 527

PICT-6264a

15. Apply thread locking compound to the threads on the bolt installed in the bellcrank assembly (Fig. 528).



Fig 528

PICT-6308a

16. Position the bellcrank assembly into the bellcrank plate (Fig. 529).



Fig 529

PICT-6263

17. Install a nut onto the bellcrank bolt to secure the bellcrank assembly to the bellcrank plate (Fig. 530).

Note: The flange side of the nut faces the bellcrank.

Note: Ensure that the bellcrank swivels.



Fig 530

PICT-6258

5

CHASSIS

18. Hook the linkage rod into the brake (Fig. 531).



Fig 531

PICT-6255

20. Install two new bushings into the parking brake handle bracket (Fig. 533).

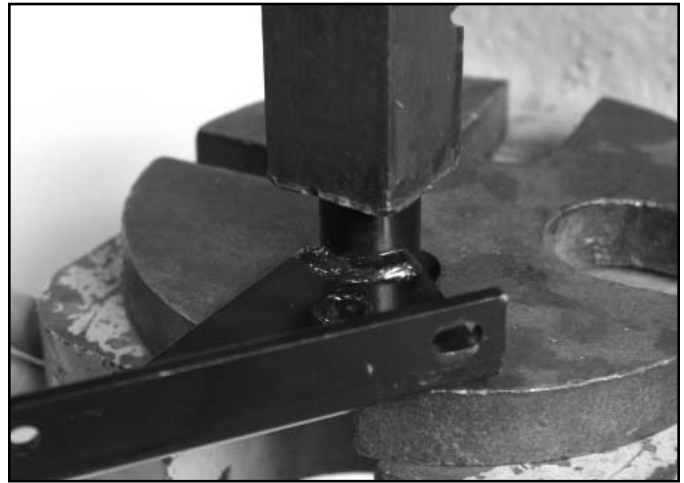


Fig 533

PICT-6248

19. Install a hairpin cotter to secure the lower linkage rod to the brake (Fig. 532).



Fig 532

PICT-6251

21. Position the switch and tapped plate onto the parking brake bracket assembly (Fig. 534).

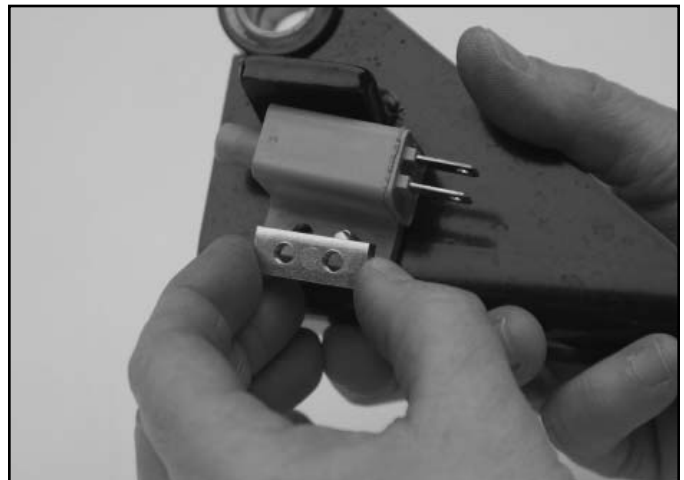


Fig 534

PICT-6244a

22. Secure the switch to the parking brake handle bracket assembly by installing 2 screws (Fig. 535).



Fig 535

PICT-6242a

24. Install one long spacer onto each of the bolts (Fig. 537).



Fig 537

PICT-6311

23. Install two bolts and washers into the hydraulic tank bracket (Fig. 536).



Fig 536

PICT-6310

25. Install the parking brake bracket assembly onto the bolts (Fig. 538).



Fig 538

PICT-6314

CHASSIS

26. Install one short spacer onto each of the bolts (Fig. 539).

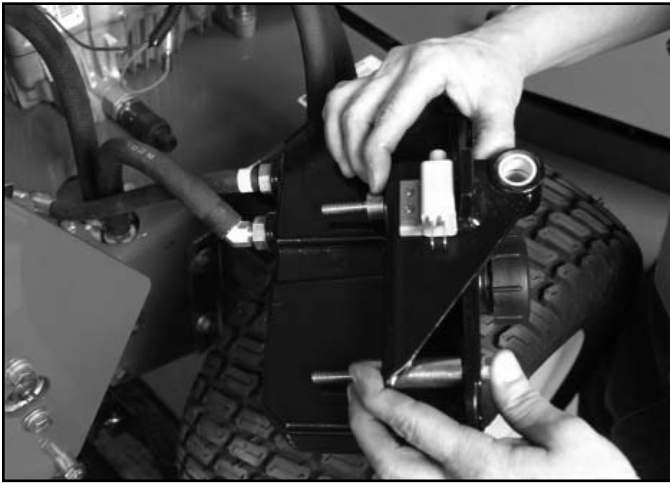


Fig 539

PICT-6317

28. Plug the brake switch into the harness (Fig. 541).



Fig 541

PICT-7646

27. Position the hydraulic tank and bolt/spacer assembly onto the frame bracket (Fig. 540):

- Both the bolts will have to be pushed up slightly to set the tank on the frame bracket.
- Work the front bolt down through the frame bracket and install the nut.
- Work the second bolt down through the frame bracket and install the nut.



Fig 540

PICT-6319

29. Install the handle assembly, bolt, washer and spacer (Fig. 542).



Fig 542

PICT-6228

30. Install and tighten the nut securing the parking brake handle assembly (Fig. 543).



Fig 543

PICT-6227

32. Install a hairpin cotter into the bottom end of the upper linkage rod (Fig. 545).



Fig 545

PICT-6221

31. Install the upper linkage rod into the handle and the bellcrank assemblies (Fig. 544).

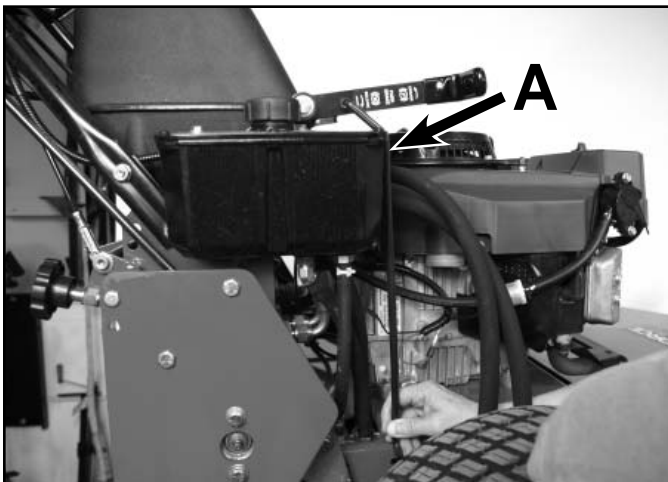


Fig 544

PICT-6225

33. Install a hairpin cotter into the top end of the upper linkage rod (Fig. 546).



Fig 546

PICT-6219

A. Linkage rod

CHASSIS

Adjusting the Parking Brake

1. Check and adjust the tire pressure to the proper specifications.
2. Disengage the parking brake by moving the park brake lever to the forward position.
3. Remove the hairpin cotter from the lower brake link in the lower parking brake linkage (Fig. 547).



Fig 547

PICT-7651

4. Turn the brake link into or out of the yoke (Fig. 548) until there is 1/8" to 1/4" (.31cm - .63cm) clearance between the parking brake tire bars and the tires while the parking brake is disengaged (Fig. 549).

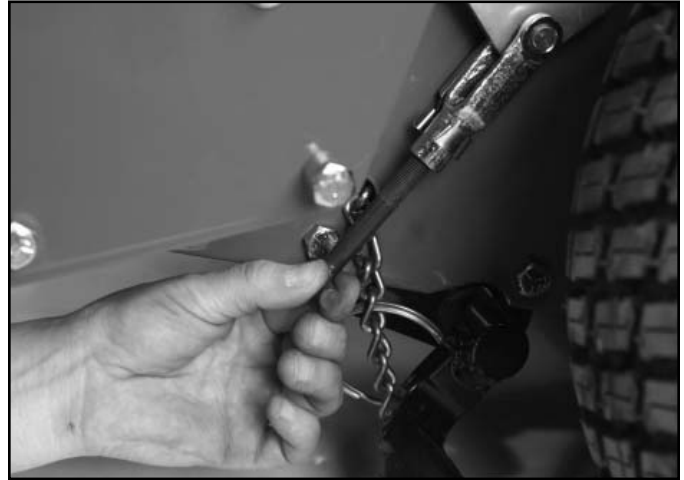


Fig 548

PICT-6321

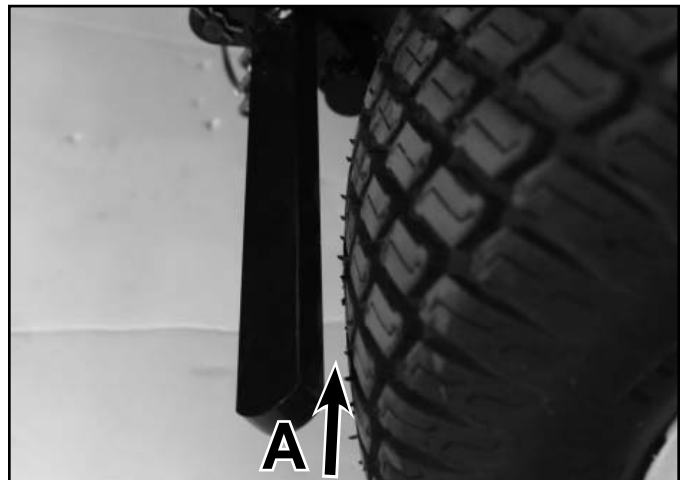


Fig 549

PICT-6325

- A. 1/8" - 1/4" (.31cm - .63cm)

5. Install the hairpin cotter (Fig. 550).



Fig 550

PICT-7651

2. Remove the 4 nuts from the bolts securing the hydro control shield to the chassis (Fig. 552).



Fig 552

PICT-6725

Control Shaft Bearing Replacement

Removal

1. Remove the neutral return spring from the control shaft (Fig. 551).

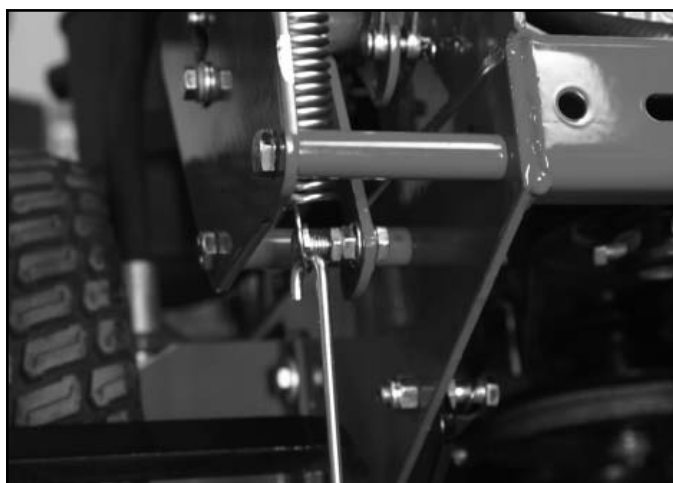


Fig 551

PICT-6723

3. Remove the control shield assembly, 4 bolts and 4 spacers from the chassis (Fig. 553).

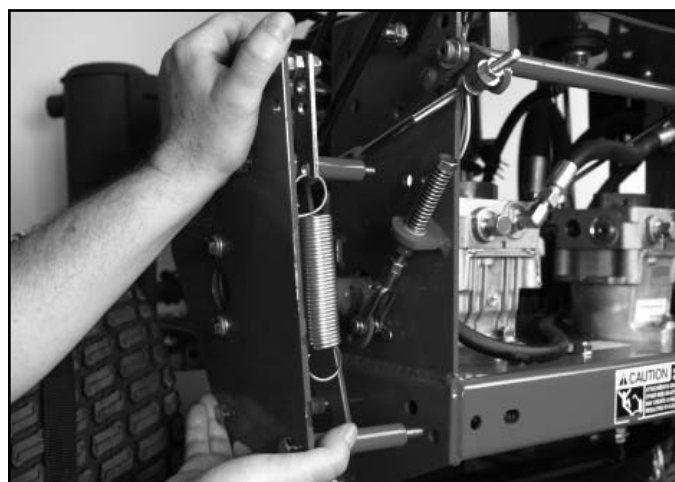


Fig 553

PICT-6728

CHASSIS

4. Remove the 4 bolts and spacers from the shield assembly (Fig. 554).

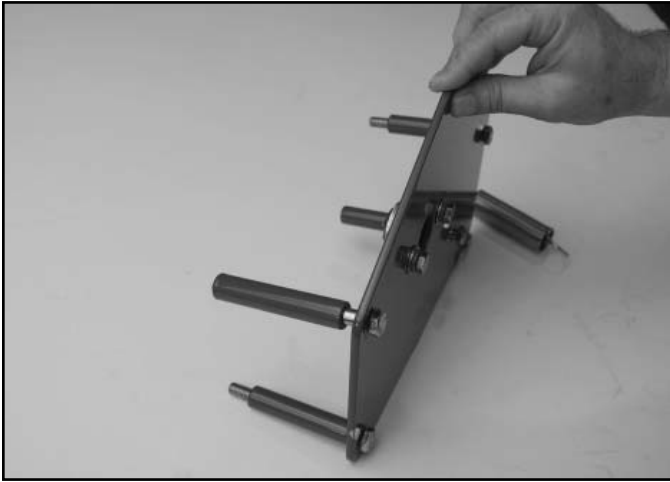


Fig 554

PICT-6729a

6. Remove the bolts, washers and side flange bearing from the hydro control shield (Fig. 556).



Fig 556

PICT-6740

5. Remove the nuts from the 2 bolts securing the side flange bearing to the hydro control shield (Fig. 555).



Fig 555

PICT-6732

Installation

1. Install the lock washer onto the 2 bolts and then the flat washer onto the 2 bolts (Fig. 557).



Fig 557

PICT-6744a

2. Insert the 2 bolt assemblies into the hydro control shield and position the side flange bearing (Fig. 558).



Fig 558

PICT-6748

3. Loosely install 2 nuts onto the 2 bolts securing the side flange bearing to the hydro control shield (Fig. 559).



Fig 559

PICT-6750

4. Position the hydro control shield so the bearing is installed on the control shaft (Fig. 560).



Fig 560

PICT-6752

5. Install 4 bolts and spacers through the hydro control shield and into the chassis; secure with 4 nuts (Fig. 561).

Note: The two bottom spacers are approximately 3/8" (.95cm) shorter than the upper spacers.



Fig 561

PICT-6754

5

CHASSIS

6. Tighten the nuts securing the side flange bearing in place on the hydro control shield (Fig. 562).



Fig 562

PICT-6758

8. Apply grease to the side flange bearing (Fig. 564).



Fig 564

PICT-6761

7. Install the spring onto the control shaft (Fig. 563).

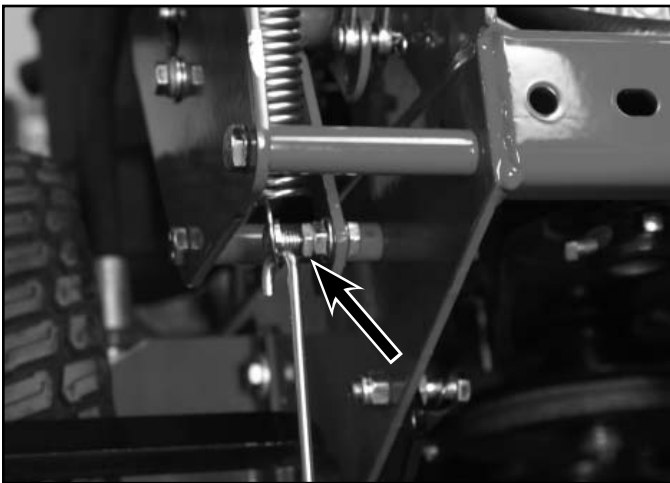


Fig 563

PICT-6723

Gear Drive Transmission Traction Belt Replacement

Removal

1. Disengage the blade control (PTO) lever and set the parking brake.
2. Stop the engine and wait for all moving parts to stop.
3. Raise the rear of the machine and secure it with jack stands.

4. Remove the mower belt from the engine belt drive pulley (Fig. 565).



Fig 565

PICT-4964

6. Slide the idler pulley in the slot to relieve tension on the traction belt (Fig. 567).



Fig 567

PICT-4968

5. Loosen the idler bolt (Fig. 566).



Fig 566

PICT-4965

7. Remove the traction belt from the engine belt drive pulley (Fig. 568).



Fig 568

PICT-4972

5

CHASSIS

Installation

1. Install the new traction belt over the engine belt drive pulley and then route it around the traction idler and pulleys (Fig. 569).



Fig 569

PICT-4974

Note: Belt should have 1/2" (1.27cm) of deflection with 3 lbs. (1.36kg) of pressure on the belt midway between the transmission and engine pulley (Fig. 571).



Fig 571

PICT-4983

2. Position the idler so that there is tension on the traction control belt and then tighten the nut to secure the idler position (Fig. 570).



Fig 570

PICT-4980

3. Install the mower belt onto the engine belt drive pulley.

Note: The mower belt should be installed so that it is routed to the inside of the belt guide (Fig. 572).

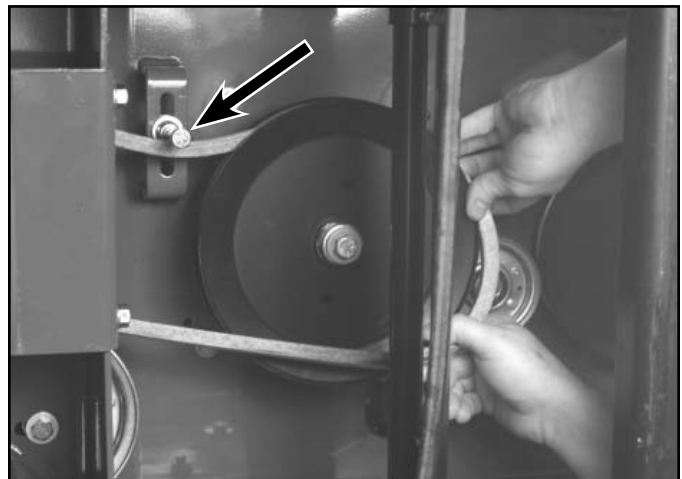


Fig 572

PICT-4987

5

4. Check the belt guide under the engine frame for the proper adjustment. The distance between the belt guide and mower belt should be $\frac{3}{4}$ " (1.9cm) when the mower belt is engaged. Adjust the belt guide if necessary. The disengaged belt should not drag or fall off the pulley when the guide is properly adjusted (Fig. 573).

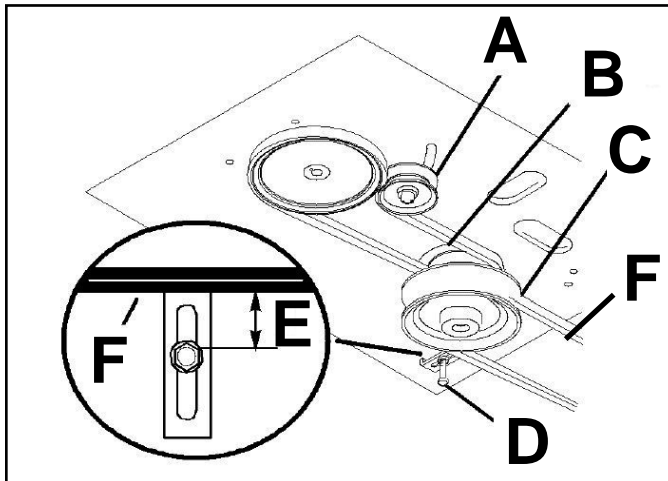


Fig 573

fig. 37 G001475

- | | |
|-------------------------|---------------------------|
| A. Idler pulley in slot | D. Belt guide |
| B. Traction belt | E. $\frac{3}{4}$ " (19mm) |
| C. Mower belt | F. Mower belt |

Hydro Drive Transmission Traction Belt Replacement

Removal

1. Remove the mower belt from the engine belt drive pulley (Fig. 574).



Fig 574

PICT-4740

5

2. Pull the on the split ring/chain assembly to release tension from the idler (Fig. 575).



Fig 575

PICT-6584

CHASSIS

3. Remove the belt from the hydro pump pulleys (Fig. 576).

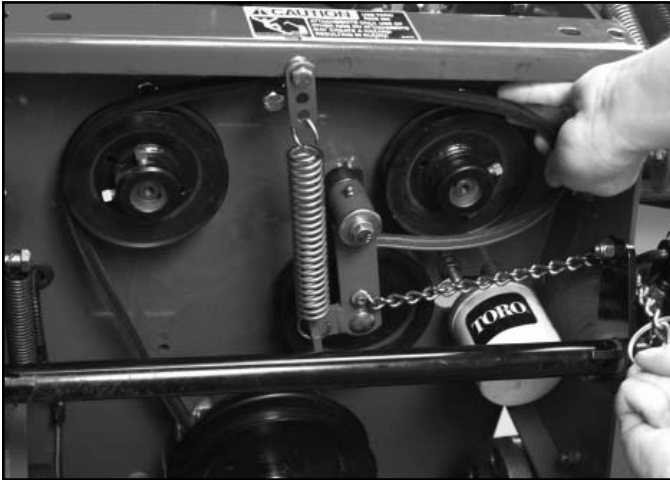


Fig 576

PICT-6592

5. Remove the idler bolt (Fig. 578).

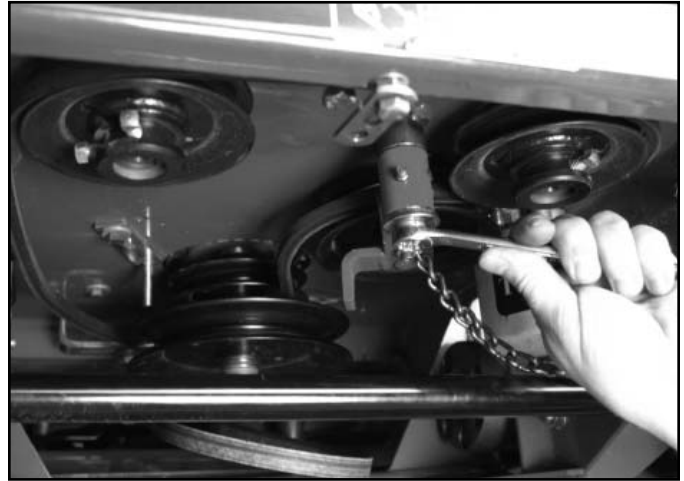


Fig 578

PICT-6565

4. Remove the idler spring (Fig. 577).



Fig 577

PICT-6562

6. Lower the idler pulley assembly (Fig. 579).



Fig 579

PICT-6568

7. Remove the traction belt from the other pulleys (Fig. 580).

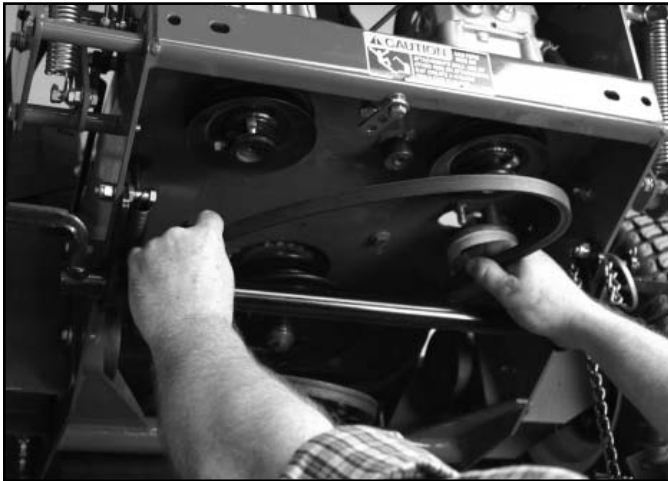


Fig 580

PICT-6571

2. Position the idler assembly so the belt is routed around the left side of the idler pulley (Fig. 582).



Fig 582

PICT-6578

Installation

1. Route the traction belt around the engine pulley. Ensure the belt is located between the pulley and the belt guide (Fig. 581).

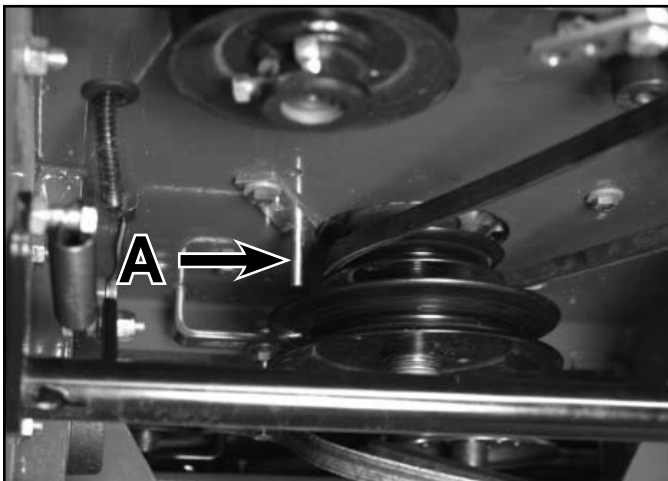


Fig 581

PICT-6573

A. Belt guide

3. Insert the idler assembly bolt up into the chassis and tighten (Fig. 583).

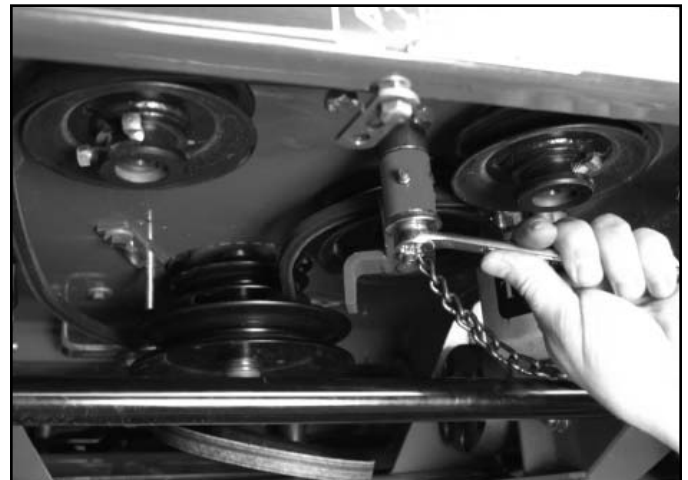


Fig 583

PICT-6565

CHASSIS

Note: For a heavier drive setting, relocate the idler spring anchor link so the bolt is installed in either the medium or heavy duty positions (Fig. 584).

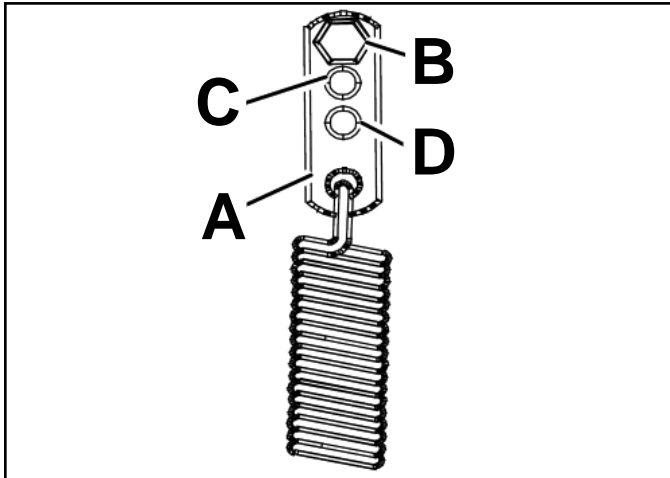


Fig 584

fig. 43 G001524

- A. Spring anchor
- B. Standard setting
- C. Medium setting
- D. Heavy duty setting

4. Install the idler spring onto the idler arm (Fig. 585).

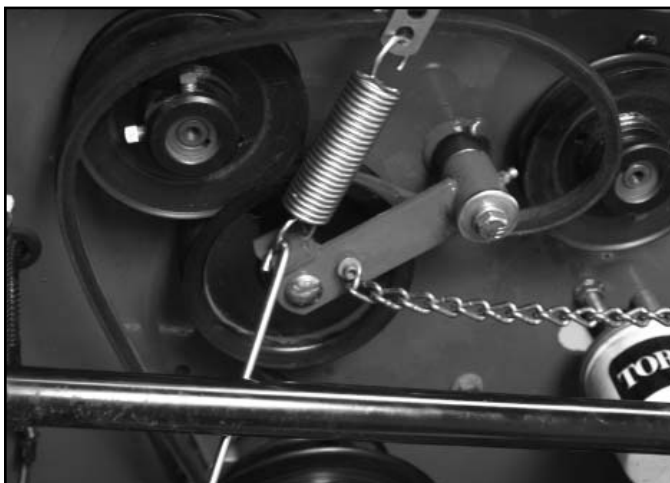


Fig 585

PICT-6591

5. Pull the split ring/chain assembly and route the transmission drive belt around the 2 pump pulleys (Fig. 586).

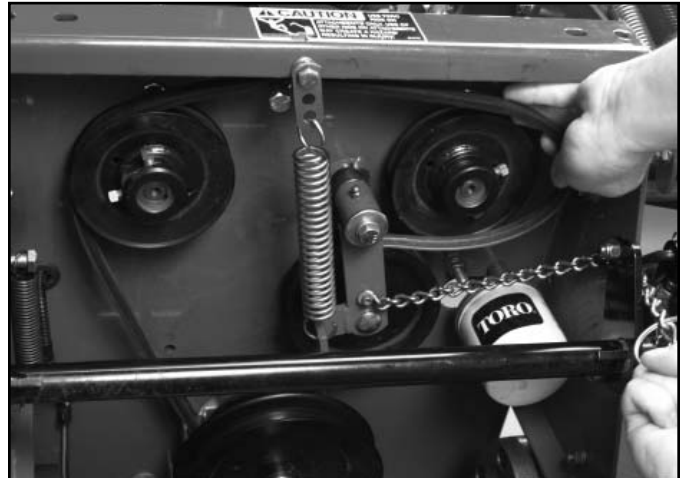


Fig 586

PICT-6592

6. Position the mower belt onto the engine belt drive pulley (Fig. 587).



Fig 587

PICT-4740

7. Check the spacing between the belt and the belt guide. The distance between should be $\frac{1}{16}$ " to $\frac{1}{8}$ " (.15cm - .31cm). Adjust if necessary (Fig. 588).

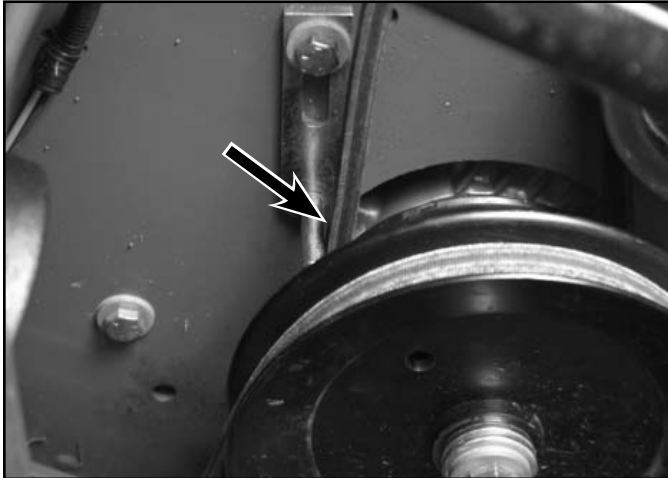


Fig 588

PICT-6597

- A belt contacting the bottom of the pulley "V" indicates worn belt or pulleys. The belt will slip no matter how tight you adjust it.
- Belt glazed, shiny or burnt on the sides of the "V" indicates slipping. Belt must be replaced and the cause identified and corrected.
- The sides of each pulley sheave should be straight and flat. If the sides of the "V" have "opened up" or appear to bulge the pulley is worn and must be replaced.
- If the belt is riding too deep in one or both pulley grooves the center flange will begin to cut the belt into 2 single belts. This indicates a badly worn belt or pulley. The parts must be replaced.

1. Raise the machine so the rear tire is off the ground.
2. Remove the idler arm spring from the frame (Fig. 589).

T-Bar - Gear Drive

Wheel Drive Belt and Pulley Replacement

The following inspections should be made when disassembling the drive system, particularly if the reason for service is inability to adjust belt tension or "loss of drive". Be sure to inspect all components; there may be more than one item needing replacement.

- Pulley flanges bent or damaged. They can pinch or cut the belt.
- Idler arm bent - this will push the belt to one side and can induce belt jumping in reverse.
- Idler pulley bearing worn out, resulting in inconsistent tension on the belt. Can cause slippage or jumping.



Fig 589

PICT-5804

CHASSIS

3. Remove the hairpin cotter from the lower end of the brake rod (Fig. 590).



Fig 590

PICT-5807

5. Remove the nut from the lower bolt securing the drive wheel shield to the frame (Fig. 592).

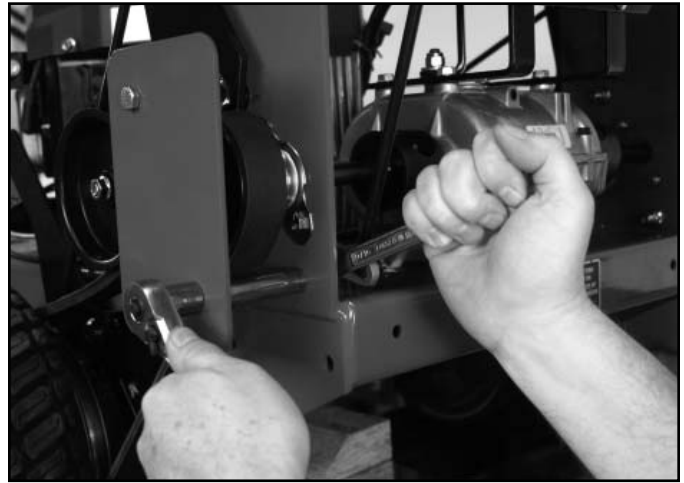


Fig 592

PICT-5812

4. Remove the brake rod from the brake arm (Fig. 591).



Fig 591

PICT-5811a

6. Remove the lower bolt and spacer from the drive wheel shield (Fig. 593).



Fig 593

PICT-5816

7. Remove the nut from the upper bolt securing the drive wheel shield to the frame (Fig. 594).



Fig 594

PICT-5820

9. Position the idler so that it is out of the way (Fig. 596).



Fig 596

PICT-5823

8. While supporting the idler, remove the upper bolt and drive wheel shield (Fig. 595).



Fig 595

PICT-5822

10. Remove the belt from the drive pulley (Fig. 597).



Fig 597

PICT-5825

5

CHASSIS

11. Remove the belt from the machine by sliding it over the tire (Fig. 598).



Fig 598

PICT-5827

14. Slide the drive pulley off the transmission drive shaft (Fig. 600).

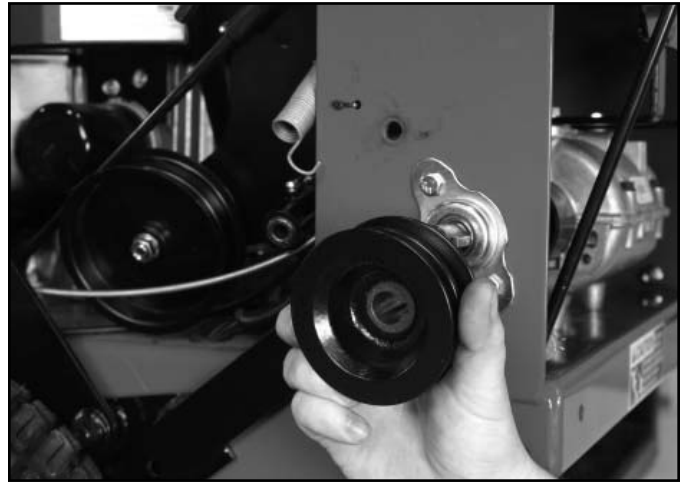


Fig 600

PICT-5834

12. Inspect the pulleys for wear and damage. Replace as necessary. If pulley replacement is required continue on. For belt replacement only, go to step 49.

13. Loosen the set screw securing the drive pulley to the transmission drive shaft (Fig. 599).



Fig 599

PICT-5830

15. Remove the key from the drive shaft keyway (Fig. 601).



Fig 601

PICT-5836

16. Inspect the key and replace if worn or damaged.

17. Install the woodruff key (Fig. 602).



Fig 602

PICT-5838

18. Apply anti-seize compound to the transmission drive shaft (Fig. 603).



Fig 603

PICT-5841

19. Position the drive pulley onto the transmission drive shaft (Fig. 604).



Fig 604

PICT-5843

20. Apply thread locking compound to the drive pulley set screw (Fig. 605).



Fig 605

PICT-5844a

CHASSIS

21. Install the set screw into the drive pulley, securing it to the transmission drive shaft (Fig. 606).

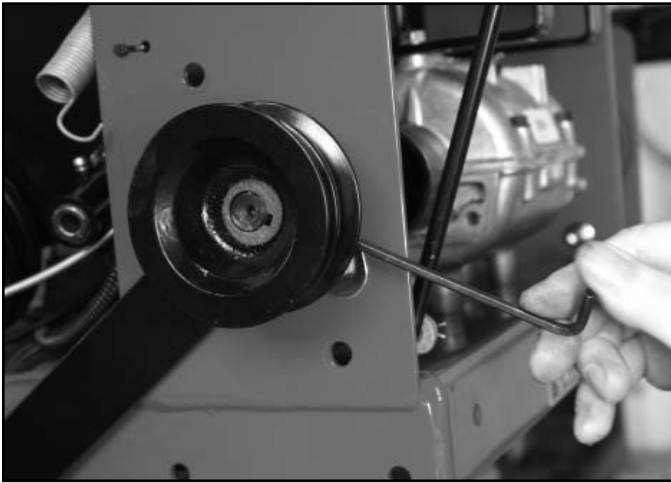


Fig 606

PICT-5847

23. Remove the 2 washers from the wheel axle (Fig. 608).



Fig 608

PICT-5852a

22. Remove the e-ring from the wheel axle (Fig. 607).



Fig 607

PICT-5849a

24. Remove the wheel and tire assembly from the axle (Fig. 609).



Fig 609

PICT-5854

25. Remove the 4 bolts that secure the brake drum and wheel pulleys to the wheel and tire assembly (Fig. 610).



Fig 610

PICT-5855

26. Remove the brake drum from the wheel and tire assembly (Fig. 611).



Fig 611

PICT-5859a

27. Remove the first pulley (Fig. 612).



Fig 612

PICT-5861a

28. Remove the 4 spacers (Fig. 613).



Fig 613

PICT-5864a

CHASSIS

29. Remove the second pulley (Fig. 614).



Fig 614

PICT-5867a

31. Position 4 spacers by aligning them with the 4 holes in the first pulley (Fig. 616).



Fig 616

PICT-5864a

30. Position the first pulley by aligning it with the holes on the wheel hub (Fig. 615).



Fig 615

PICT-5861a

32. Position the second pulley on top of the spacers ensuring the 4 holes align with the 4 spacers (Fig. 617).



Fig 617

PICT-5861a

33. Position the brake drum onto the second pulley by aligning the 4 holes with the holes on the pulley (Fig. 618).



Fig 618

PICT-5859a

35. Apply a light coat of anti-sieze compound to the axle. Do not get any on the brake or belt. Slide the wheel and tire assembly onto the axle (Fig. 620).



Fig 620

PICT-5854

34. Install the 4 bolts into the 4 holes making sure that each bolt is securing the brake drum, both pulleys and a spacer to the wheel hub (Fig. 619).



Fig 619

PICT-5872a

36. Install 2 washers onto the axle (Fig. 621).



Fig 621

PICT-5852a

CHASSIS

37. Install the e-clip onto the axle securing the wheel and tire assembly (Fig. 622).



Fig 622

PICT-5875

39. Remove the washer from the clevis pin (Fig. 624).



Fig 624

PICT-5881

38. Remove the hairpin cotter from the clevis pin that secures the control rod to the idler arm (Fig. 623).



Fig 623

PICT-5879

40. Remove the clevis pin from the trunnion and idler arm (Fig. 625).



Fig 625

PICT-5885

41. Remove the idler and brake rod assembly from the machine (Fig. 626).

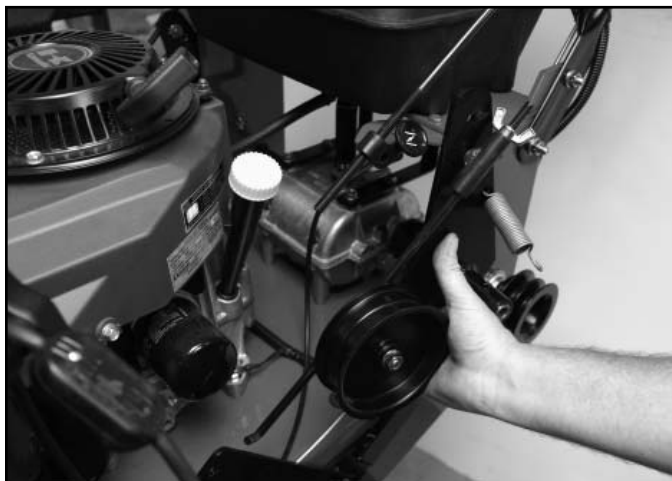


Fig 626

PICT-5888

43. Remove the pulley from the idler arm bolt (Fig. 628).

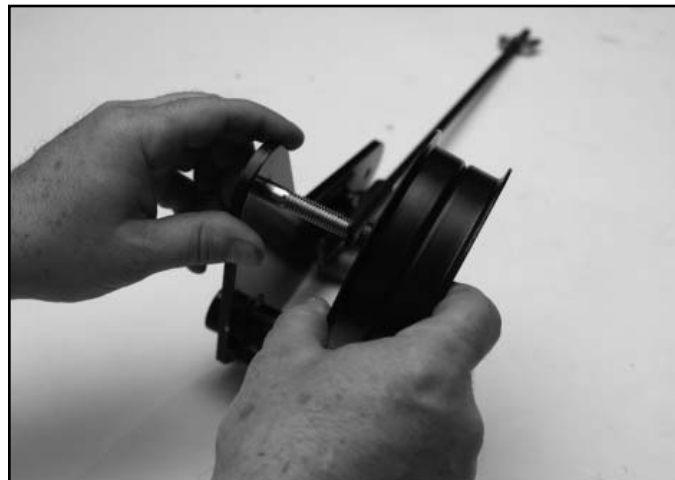


Fig 628

PICT-5892

42. Remove the nut that secures the idler pulley to the idler arm (Fig. 627).



Fig 627

PICT-5890a

44. Install the idler pulley so that the long hub side slides onto the idler arm bolt first (Fig. 629).



Fig 629

PICT-5897a

CHASSIS

45. Install the nut onto the idler arm bolt (Fig.630).



Fig 630

PICT-5890a

47. Install the washer onto the clevis pin (Fig. 632).



Fig 632

PICT-5881

46. Position the idler arm assembly and install the clevis pin securing the idler arm to the control rod (Fig. 631).



Fig 631

PICT-5885

48. Install the hairpin cotter into the clevis pin (Fig. 633).



Fig 633

PICT-5879

49. Install the wheel drive belt over the tire, positioning it between the belt guide and the tire (Fig. 634).

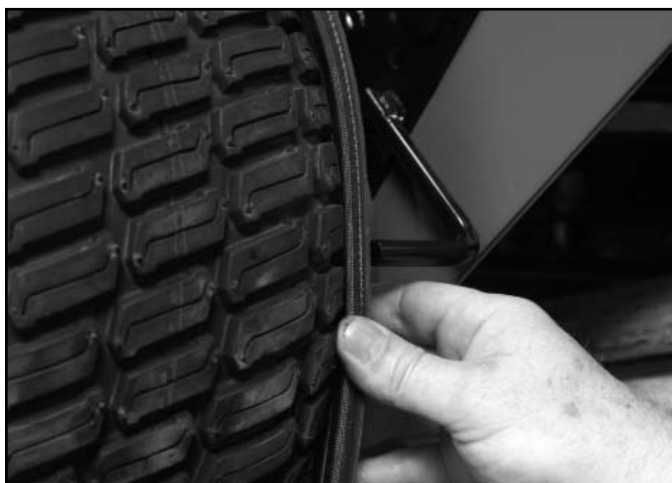


Fig 634

PICT-5898

50. Position the belt onto the wheel pulleys and drive pulley (Fig. 635).



Fig 635

PICT-5907

51. Install the brake rod into the brake arm (Fig. 636).



Fig 636

PICT-5909

52. Install hairpin cotter to secure the brake rod to the brake arm (Fig. 637).



Fig 637

PICT-5910

CHASSIS

53. Position the drive wheel shield and, while supporting the idler, install the upper bolt through the drive wheel shield and the bushing on the idler arm (Fig. 638).



Fig 638

PICT-5912

55. Install a bolt through the lower hole of the drive wheel shield, through a spacer and into the frame (Fig. 640).

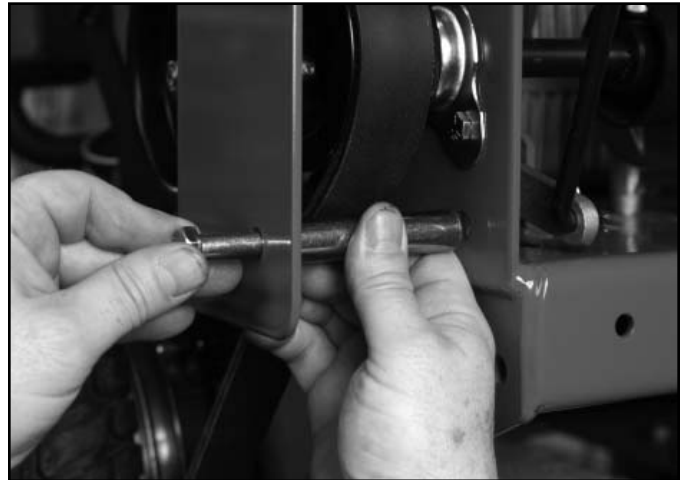


Fig 640

PICT-5917

5

54. Loosely install a nut onto the upper bolt securing the drive wheel shield to the frame (Fig. 639).



Fig 639

PICT-5914

56. Install a nut onto the lower bolt securing the drive wheel shield to the frame and then tighten the upper nut (Fig. 641).



Fig 641

PICT-5918

57. Hook the idler arm spring to the frame (Fig. 642).

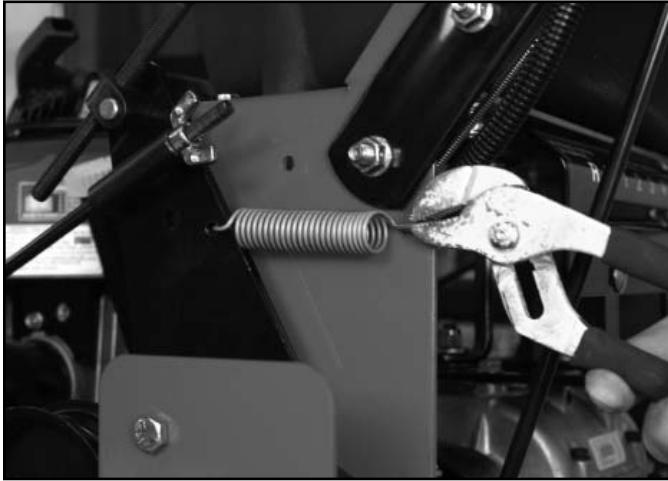


Fig 642

PICT-5921

58. Visually inspect the alignment of the pulleys. As you look straight down at the three pulleys (transmission, idler, and wheel) they should all be in line. The transmission pulley can be adjusted slightly either inward or outward.

Additionally, the idler pulley should be pushed straight down onto the belt (Fig. 643).

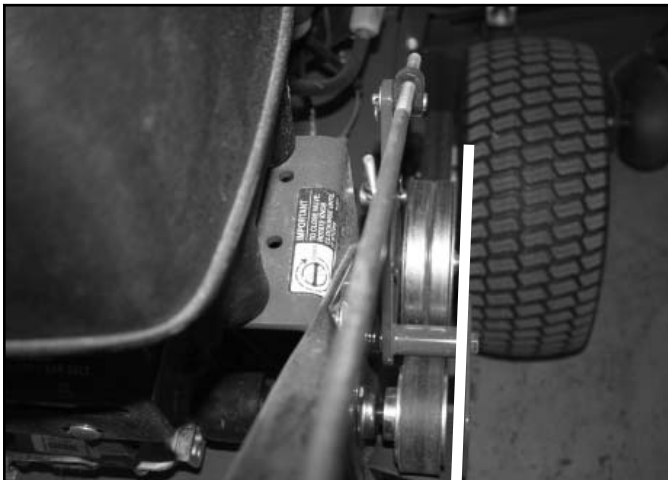


Fig 643

IMG-6220a

Pistol Grip - Gear Drive

Wheel Drive Belt and Pulley Replacement

The following inspections should be made when disassembling the drive system, particularly if the reason for service is inability to adjust belt tension or "loss of drive". Be sure to inspect all components; there may be more than one item needing replacement.

- Pulley flanges bent or damaged. They can pinch or cut the belt.
- Idler arm bent - this will push the belt to one side and can induce belt jumping in reverse.
- Idler pulley bearing worn out, resulting in inconsistent tension on the belt. Can cause slippage or jumping.
- A belt contacting the bottom of the pulley "V" indicates worn belt or pulleys. The belt will slip no matter how tight you adjust it.
- Belt glazed, shiny or burnt on the sides of the "V" indicates slipping. Belt must be replaced and the cause identified and corrected.
- The sides of each pulley sheave should be straight and flat. If the sides of the "V" have "opened up" or appear to bulge the pulley is worn and must be replaced.
- If the belt is riding too deep in one or both pulley grooves the center flange will begin to cut the belt into 2 single belts. This indicates a badly worn belt or pulley. The parts must be replaced.

CHASSIS

1. Raise the machine so the rear tire is off the ground.
2. Remove the brake band idler spring from the drive wheel shield bolt (Fig. 644).



Fig 644

PICT-6900

4. Remove the hairpin cotter from the brake linkage rod (Fig. 646).



Fig 646

PICT-6902

- 5**
3. Remove the traction belt idler spring from the idler pulley (Fig. 645).



Fig 645

PICT-6901

5. Remove the brake linkage rod from the idler arm (Fig. 647).



Fig 647

PICT-6903

6. Remove the nut from the lower bolt securing the drive wheel shield to the frame (Fig. 648).

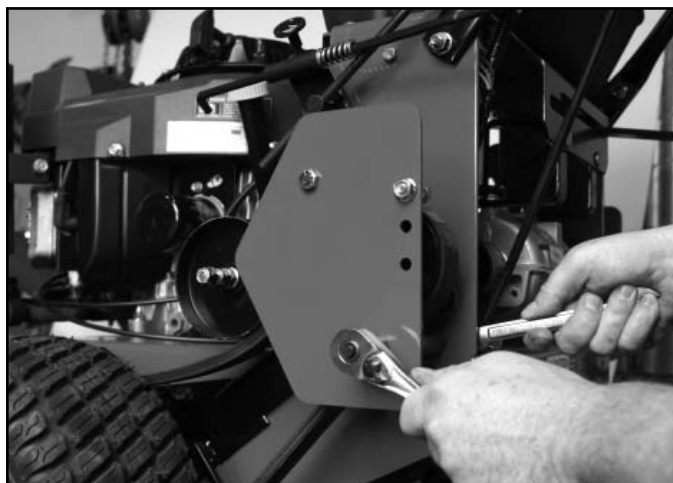


Fig 648

PICT-6964

8. Remove the nut from the upper bolt securing the drive wheel shield and idler pulley to the frame (Fig. 650).



Fig 650

PICT-6971

7. Remove the lower bolt and spacer from the drive wheel shield (Fig. 649).

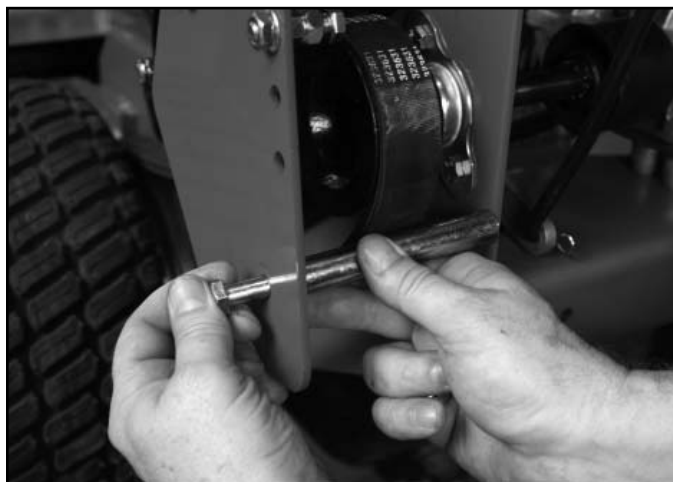


Fig 649

PICT-6965

9. While supporting the idler, remove the upper bolt and drive wheel shield (Fig. 651).



Fig 651

PICT-6969

5

CHASSIS

10. Position the idler so that it is out of the way (Fig. 652).



Fig 652

PICT-6975

12. Remove the belt from the machine by sliding it over the tire (Fig. 654).



Fig 654

PICT-6978

11. Remove the belt from the drive pulley (Fig. 653).



Fig 653

PICT-6977

13. Inspect the pulleys for wear and damage. Replace as necessary. If pulley replacement is required continue on. For belt replacement only, go to step 52.

14. Loosen the set screw securing the drive pulley to the transmission drive shaft (Fig. 655).



Fig 655

PICT-6981

15. Slide the drive pulley off the transmission drive shaft (Fig. 656).



Fig 656

PICT-6983

16. Remove the woodruff key from the drive shaft keyway (Fig. 657).

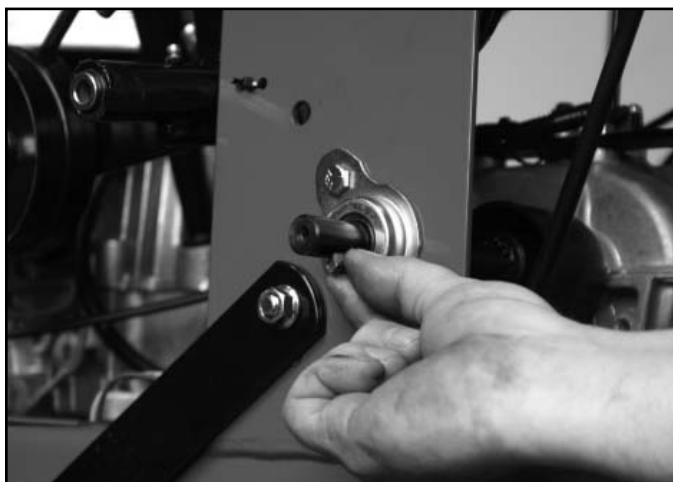


Fig 657

PICT-6985

17. Inspect the woodruff key and replace if worn or damaged.

18. Install the woodruff key (Fig. 658).



Fig 658

PICT-6985

19. Apply anti-seize compound to the transmission drive shaft (Fig. 659).

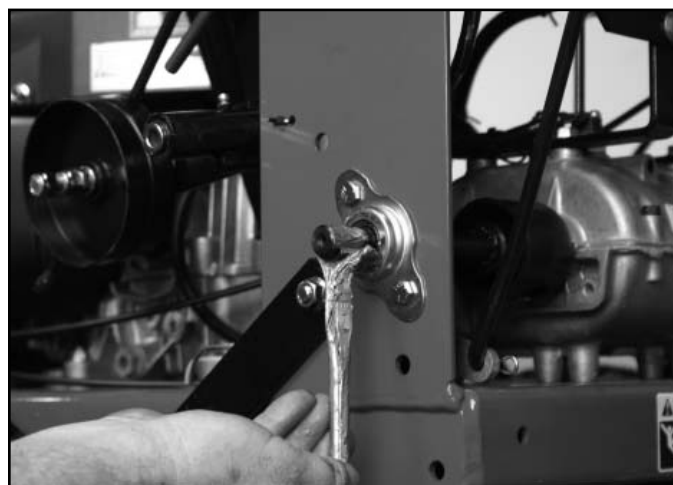


Fig 659

PICT-6987

CHASSIS

20. Position the drive pulley onto the transmission drive shaft (Fig. 660).



Fig 660

PICT-6983

22. Install the set screw into the drive pulley, securing it to the transmission drive shaft (Fig. 662).

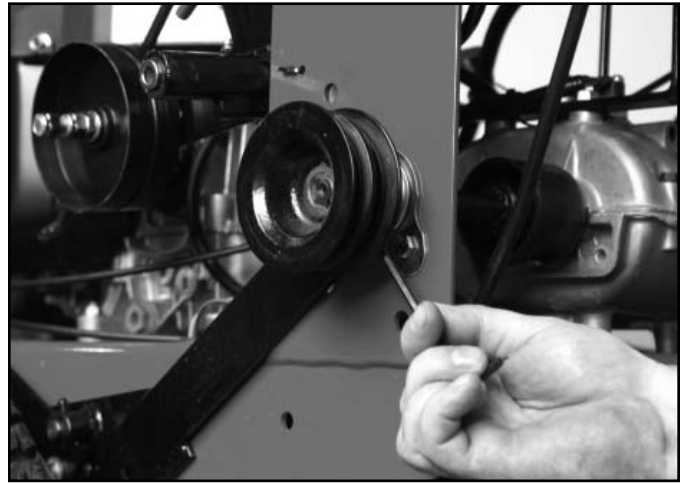


Fig 662

PICT-6981

21. Apply thread locking compound to the drive pulley set screw (Fig. 661).



Fig 661

PICT-5844a

23. Remove the e-ring from the wheel axle (Fig. 663).



Fig 663

PICT-5849a

24. Remove the 2 washers from the wheel axle (Fig. 664).



Fig 664

PICT-5852a

26. Remove the 4 bolts that secure the brake drum and wheel pulleys to the wheel and tire assembly (Fig. 666).



Fig 666

PICT-5855

25. Remove the wheel and tire assembly from the axle (Fig. 665).



Fig 665

PICT-5854

27. Remove the brake drum from the wheel and tire assembly (Fig. 667).



Fig 667

PICT-5859a

CHASSIS

28. Remove the first pulley (Fig. 668).



Fig 668

PICT-5861a

30. Remove the second pulley (Fig. 670).



Fig 670

PICT-5867a

29. Remove the 4 spacers (Fig. 669).



Fig 669

PICT-5864a

31. Position the first pulley by aligning it with the holes on the wheel hub (Fig. 671).



Fig 671

PICT-5861a

32. Position 4 spacers by aligning them with the 4 holes in the first pulley (Fig. 672).



Fig 672

PICT-5864a

34. Position the brake drum onto the second pulley by aligning the 4 holes with the holes on the pulley (Fig. 674).



Fig 674

PICT-5859a

33. Position the second pulley on top of the spacers ensuring the 4 holes align with the 4 spacers (Fig. 673).



Fig 673

PICT-5861a

35. Install 4 bolts into the 4 brake drum holes making sure that each bolt is securing the brake drum, both pulleys and a spacer to the wheel hub (Fig. 675).



Fig 675

PICT-5872a

5

CHASSIS

36. Apply a light coat of anti-sieze compound to the axle. Do not get any on the belt or brake. Slide the wheel and tire assembly onto the axle (Fig. 676).



Fig 676

PICT-5854

38. Install the e-clip onto the axle, securing the wheel and tire assembly (Fig. 678).



Fig 678

PICT-5875

37. Install 2 washers onto the axle (Fig. 677).



Fig 677

PICT-5852a

39. Rotate the idler arm to access the e-clip on the control rod swivel (Fig. 679).



Fig 679

PICT-6993

40. Remove the e-clip from the control rod swivel (Fig. 680).



Fig 680

PICT-6989

42. Remove the three nuts from the idler pulley bolt (Fig. 682).



Fig 682

PICT-6997

41. Remove the idler and brake rod assembly (Fig. 681).

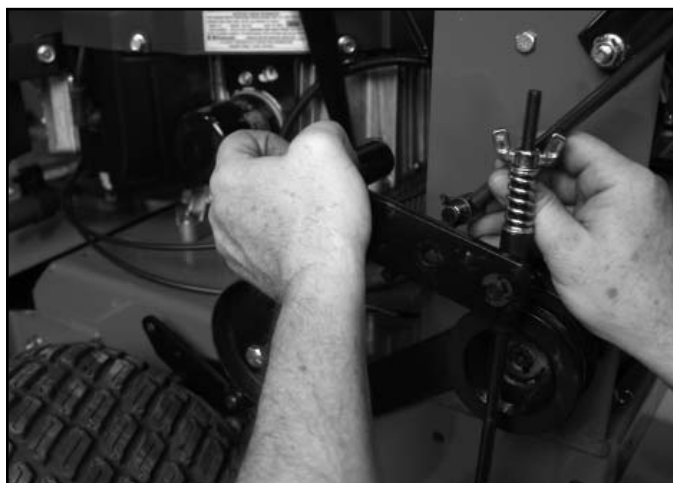


Fig 681

PICT-6996

43. Remove the bolt and idler pulley from the idler arm (Fig. 683).



Fig 683

PICT-6999

CHASSIS

44. Install the idler pulley bolt into the idler arm (Fig. 684).



Fig 684

PICT-7002

46. Install a flange nut onto the idler bolt (Fig. 686).



Fig 686

PICT-7006

45. Install the idler pulley so that the long hub side slides onto the idler arm bolt first (Fig. 685).



Fig 685

PICT-7003

47. Install a lock nut onto the idler bolt so that it is tight against the flange nut (Fig. 687).



Fig 687

PICT-7007

48. Install a second lock nut so that 2 or 3 bolt threads protrude past the nut (Fig. 688).



Fig 688

PICT-7009a

50. Install an e-clip onto the swivel (Fig. 690).



Fig 690

PICT-7013

49. Position the idler arm assembly onto the control linkage rod swivel (Fig. 689).



Fig 689

PICT-7012

51. Rotate the idler arm back and position it out of the way of the drive belt pulleys (Fig. 691).

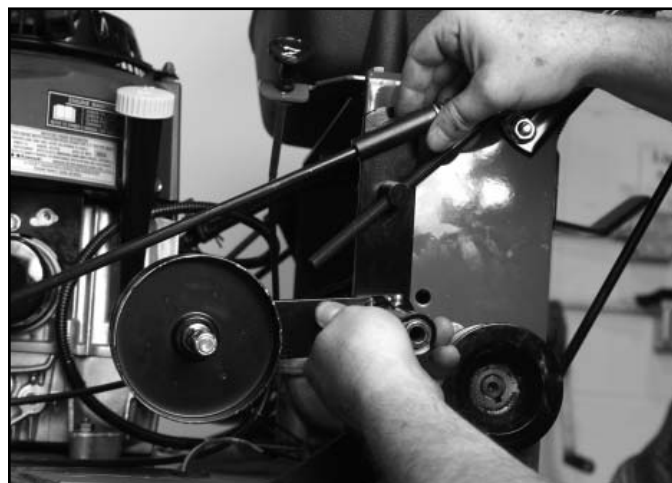


Fig 691

PICT-7015

5

CHASSIS

52. Install the wheel drive belt over the tire and position it between the belt guide and the wheel pulleys (Fig. 692).



Fig 692

PICT-7021

54. Position the idler pulley so the idler hub rests on the drive belt (Fig. 694).



Fig 694

PICT-7026

53. Position the belt onto the wheel pulleys and drive pulley (Fig. 693).



Fig 693

PICT-7025

55. Install a bolt into the upper hole of the drive wheel shield (Fig. 695).



Fig 695

PICT-7030

56. Insert the bolt through the idler hub and into the hole in the frame (Fig. 696).



Fig 696

PICT-7034

58. Insert a bolt through the lower hole of the drive wheel shield, through a spacer and into the frame (Fig. 698).



Fig 698

PICT-6965

57. Loosely install a nut onto the upper drive wheel shield bolt (Fig. 697).



Fig 697

PICT-7035

59. Install a nut onto the lower bolt and tighten both nuts (Fig. 699).

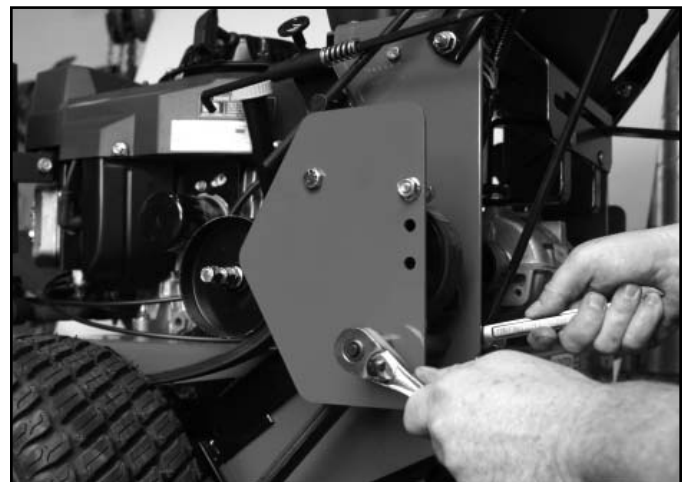


Fig 699

PICT-6964

5

CHASSIS

60. Install the brake rod into the brake arm (Fig. 700).



Fig 700

PICT-6959

62. Install the idler spring onto the idler pulley bolt (Fig. 702).



Fig 702

PICT-6901

61. Install a hairpin cotter to secure the brake rod to the brake arm (Fig. 701).



Fig 701

PICT-6961

63. Install the idler spring onto the drive wheel shield bolt (Fig. 703).



Fig 703

PICT-6900

64. Check the brake operation. Refer to “Checking the Brake” on page 5-7.
65. Check Neutral adjustment. Refer to “Shift Plate Neutral Adjustment - Gear Drive” on page 4-71.
66. Visually inspect the alignment of the pulleys. As you look straight down at the three pulleys (transmission, idler, and wheel) they should all be in line. The transmission pulley can be adjusted slightly either inward or outward.

Additionally, the idler pulley should be pushed straight down onto the belt (Fig. 704).

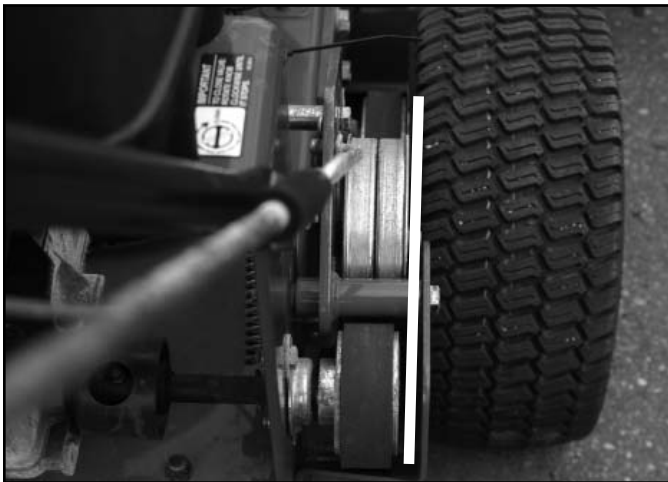


Fig 704

PICT-8562

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HYDROSTATIC DRIVE SYSTEM

Hydraulic Testing

Note: Cleanliness is a key factor in a successful repair of any hydraulic system. Thoroughly clean all exposed surfaces. As with any precision equipment, all parts must be kept free of foreign material and chemicals. Protect all exposed sealing areas and open cavities from damage and foreign material.

This procedure is performed on the left wheel motor hydraulic hoses. It can be performed from several other locations on the machine.

For complete service and repair information on the BDP-10A pump, refer to Hydro-Gear BDP Service and Repair Manual, Toro P/N 492-4789.

2. Loosen the 4 wheel lug nuts on the side being tested (Fig. 705).



Fig 705

PICT-6830a

Flow Tester Installation & Testing Procedure

When using a Bi-Directional Flow Tester, determining directional flow is not necessary. The flow meter may be connected in either direction into the forward and reverse high pressure system lines.

Caution: Ensure all fittings and hoses are attached securely. This test is performed on the machine's high pressure system. Failure to comply could result in serious injury.

1. Apply the parking brake.

3. Raise the rear of the machine and secure with jack stands.
4. Release the parking brake.
5. Remove the 4 lug nuts and the wheel and tire assembly (Fig. 706).



Fig 706

PICT-6837

HYDROSTATIC DRIVE SYSTEM

6. Thoroughly clean the area around the hydraulic fittings to prevent debris from entering the system.
7. Mark the hoses and corresponding wheel motor fitting ports so the hoses get connected in their original locations (Fig. 707).

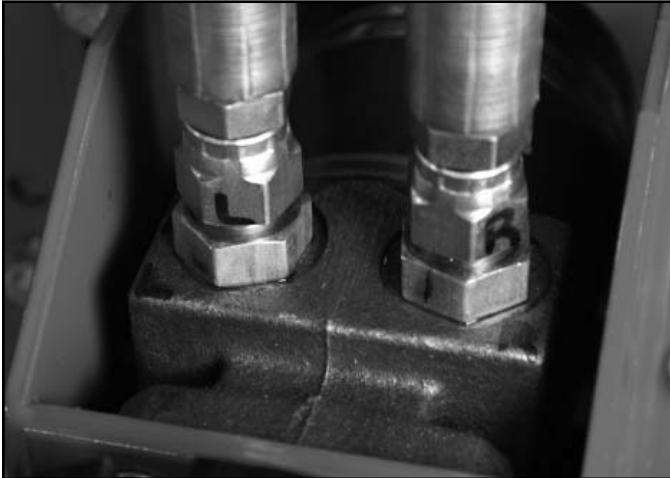


Fig 707

PICT-6878

10. Cap the wheel motor fittings so debris does not enter the system.
11. Attach the hydraulic hoses to the flow test gauge (Fig. 709).

Note: When using a flow test gauge that is not bi-directional, damage to the flow tester could occur if the machine is operated in reverse.



Fig 709

PICT-6885

8. Position a drain pan under the wheel motor.
9. Disconnect both hydraulic hoses from the wheel motor (Fig. 708).

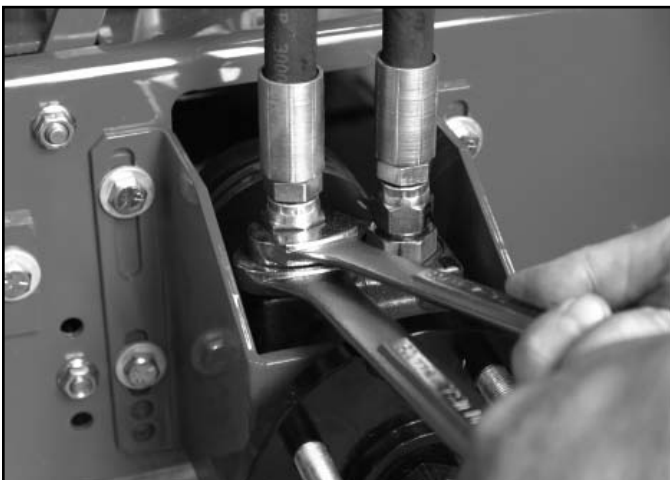


Fig 708

PICT-6879

12. Open the restriction valve all the way (counterclockwise) (Fig. 710).



Fig 710

PICT-6886a

HYDROSTATIC DRIVE SYSTEM

13. Run the machine for 2 minutes in forward (no load) to purge air from the system.

Note: For accurate test readings, oil must be at normal operating temperature.

14. Run the machine at full throttle (no load). Verify the RPM with a tachometer: 3200 ± 150 RPM. **Do not exceed 3600 RPM.**
15. With the drive control fully forward, slowly tighten the restriction valve until the gauge indicates 300 PSI (21 bar).
16. Record the flow reading from the bi-directional flow meter. Make a second flow reading at 1100 PSI and record that reading. Subtract the first reading from the second reading and determine if it is an acceptable GPM.

Example:

1st Reading: 300 psi (21 bar) reading 7 gpm (26 l/m).
2nd Reading: 1100 psi (76 bar) reading 3 gpm (11 l/m).

$$\begin{array}{r} 7 \text{ gpm (1st reading)} \\ - 3 \text{ gpm (2nd reading)} \\ \hline 4 \text{ gpm (the difference)} \end{array}$$

The acceptable maximum “flow droop” or difference is 1.5 gpm (5.6 l/m).

If the difference exceeds these values, the hydrostatic pump droop is not acceptable.

If the values have been met, the issue would be in the wheel motor. Refer to “Wheel Motor Replacement” on page 6-24.

17. Disconnect the flow tester and reconnect the hydraulic lines when test is completed.

Note: Before reconnecting the hydraulic lines, install new o-rings in the fittings.

18. Retest the pump after repairs. Re-connect the hydraulic hoses to the wheel motor fittings. Torque the hose fittings to 85-95 ft-lbs. (115-128 Nm).

19. Slide the wheel and tire assembly onto the hub (Fig. 711).



Fig 711

PICT-6866

20. Snug fit the 4 lug nuts on the wheel hub studs (Fig. 712).



Fig 712

PICT-6869a

HYDROSTATIC DRIVE SYSTEM

21. Lower the machine so the rear tires are resting on the ground.
22. Apply the parking brake.
23. Tighten and torque the 4 lug nuts to 90–95 ft-lbs. (122-129 Nm) (Fig. 713).



Fig 713

PICT-6873a

25. Release the parking brake.
26. Bleed the hydraulic system. Refer to “Bleeding the Hydraulic System” on page 6-31.

Hydraulic Reservoir Replacement

Removal

1. Remove the hairpin cotter from the top end of the parking brake upper linkage rod (Fig. 715).



Fig 715

PICT-6765

24. Fill the reservoir with hydraulic fluid 15W-50 synthetic engine oil as specified. Note that there are fill level lines inside of the reservoir (Fig. 714).



Fig 714

PICT-6826a

HYDROSTATIC DRIVE SYSTEM

2. Remove the parking brake upper linkage rod from the parking brake handle assembly (Fig. 716).



Fig 716

PICT-6767

4. Remove the bolts and washers securing the hydraulic reservoir to the frame. The spacers may fall out (Fig. 718).



Fig 718

PICT-6774

3. Remove the nuts from the bolts that secure the hydraulic reservoir to the chassis (Fig. 717).



Fig 717

PICT-6769

5. Gently lay the hydraulic reservoir upside down on the tire. Remove the cap and drain the fluid from the reservoir into a drain pan (Fig. 719).

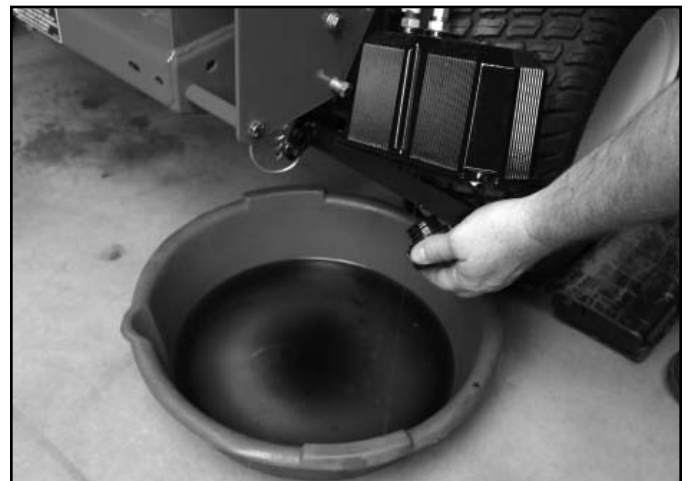


Fig 719

PICT-6776

6

HYDROSTATIC DRIVE SYSTEM

6. Remove the hose clamps from the two hydraulic lines coming off the bottom of the hydraulic reservoir (Fig. 720).

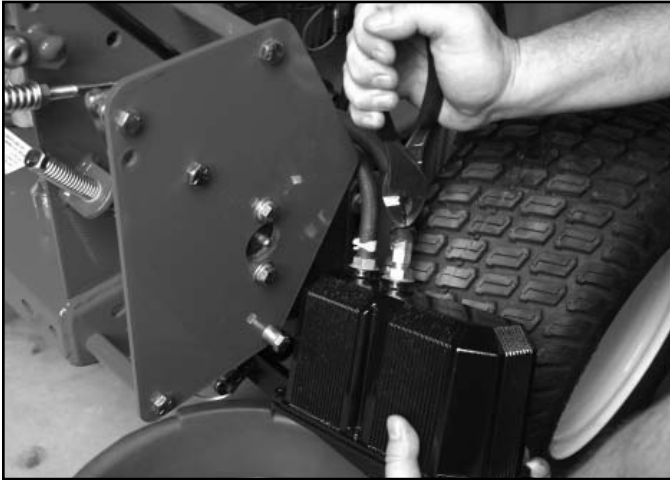


Fig 720

PICT-6779

8. Remove the two hydraulic fittings from the bottom of the reservoir (Fig. 722).



Fig 722

PICT-6783a

7. Pull the hydraulic hoses off the 2 reservoir fittings (Fig. 721).

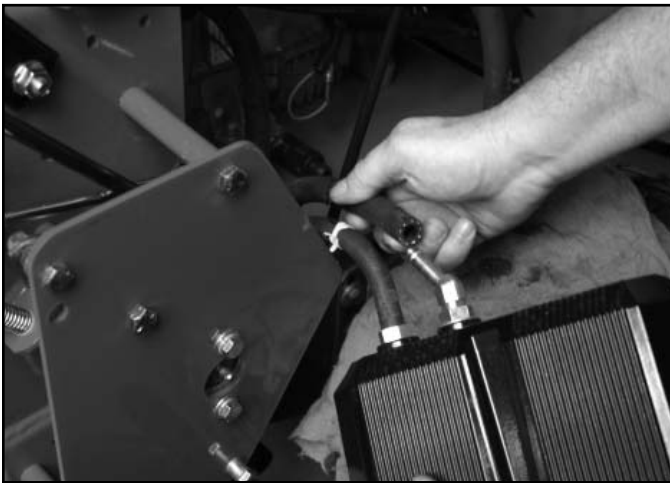


Fig 721

PICT-6782

Installation

1. Install the hydraulic cap assembly onto the reservoir tank (Fig. 723).



Fig 723

PICT-6798

HYDROSTATIC DRIVE SYSTEM

2. Install two hydraulic fittings into the bottom of the reservoir. Position as shown (Fig. 724):

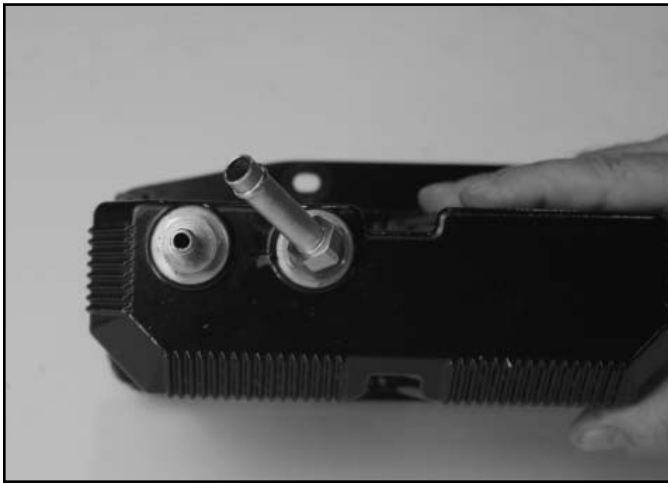


Fig 724

PICT-6786a

4. Install a bolt and washer into the forward-most mounting hole of the reservoir (Fig. 726).

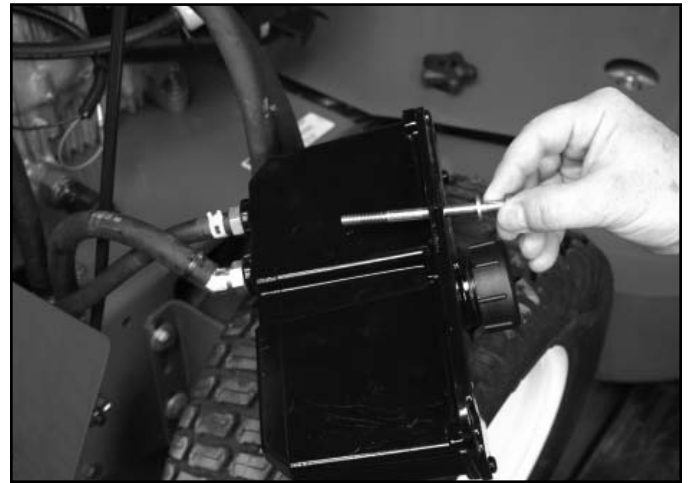


Fig 726

PICT-6790

3. Slide the 2 hydraulic hoses onto the reservoir fittings. Install the two hose clamps to secure the hoses in place (Fig. 725).



Fig 725

PICT-6789

5. Slide a long spacer onto the bolt (Fig. 727).

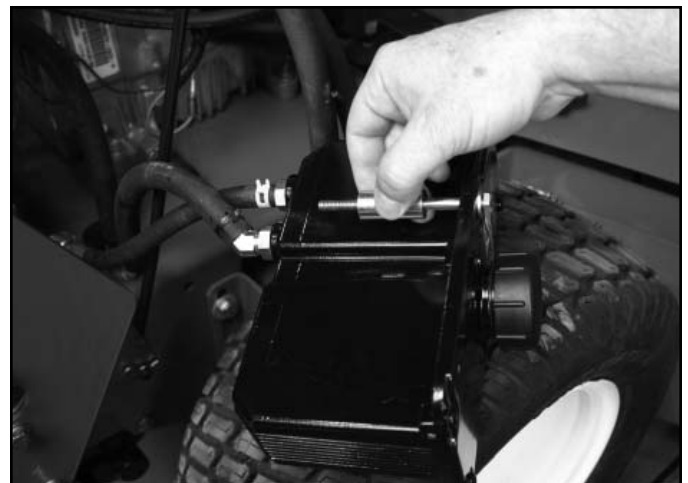


Fig 727

PICT-6795

HYDROSTATIC DRIVE SYSTEM

6. Slide the brake lever bracket assembly onto the bolt (Fig. 728).



Fig 728

PICT-6799

8. Position the reservoir assembly so the bolt is inserted into the frame bracket. Install a nut onto the bolt to secure the reservoir assembly to the frame (Fig. 730).



Fig 730

PICT-6811

7. Slide a short spacer onto the bolt (Fig. 729).

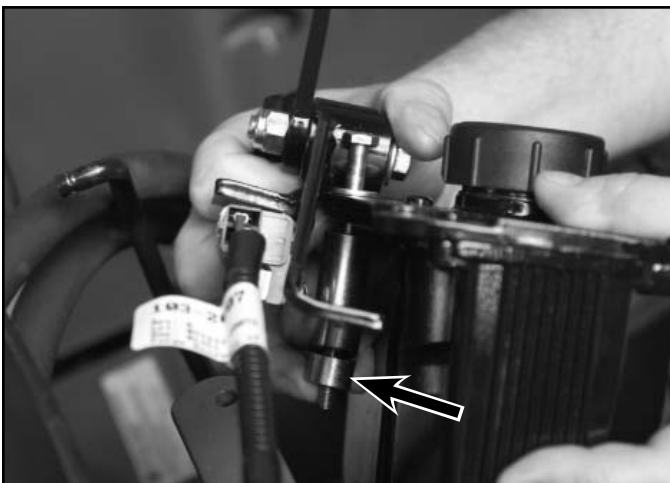


Fig 729

PICT-6806a

9. Position a long spacer under the reservoir tank bracket. Insert the bolt and washer through the reservoir tank bracket and down through the spacer (Fig. 731).



Fig 731

PICT-6812

HYDROSTATIC DRIVE SYSTEM

10. Continue sliding the bolt through the parking brake bracket (Fig. 732).

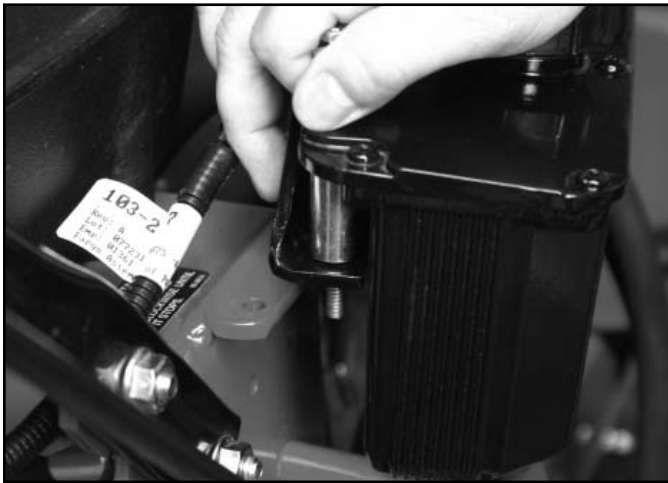


Fig 732

PICT-6815

12. Continue sliding the bolt through the hole in the frame and then install a nut onto the bolt to secure the reservoir assembly to the frame (Fig. 734).



Fig 734

PICT-6819

11. Slide a short spacer onto the bolt (Fig. 733).



Fig 733

PICT-6817

13. Insert the parking brake linkage rod into the parking brake bracket (Fig. 735).



Fig 735

PICT-6821

HYDROSTATIC DRIVE SYSTEM

14. Install a hairpin cotter into the parking brake linkage rod (Fig. 736).



Fig 736

PICT-6822

15. Fill the reservoir with 15W-50 synthetic engine oil as specified. Note that there are fill level lines inside of the reservoir (Fig. 737).



Fig 737

PICT-6826a

16. Bleed the hydraulic system. Refer to "Bleeding the Hydraulic System" on page 6-31.

Hydraulic Pump Replacement

Note: Cleanliness is a key factor in a successful repair of any hydraulic system. Thoroughly clean all exposed surfaces prior to any type of maintenance. Cleaning all parts by using a solvent wash and air drying is usually adequate. As with any precision equipment, all parts must be kept free of foreign material and chemicals. Protect all exposed sealing areas and open cavities from damage and foreign material.

Upon removal, all seals, o-rings, and gaskets should be replaced. During installation, lightly lubricate all seals, o-rings, and gaskets with clean petroleum jelly prior to assembly.

The following procedure is the same for the right or left hydraulic pump removal.

Removal

1. Clean the area around the pump and hydraulic fittings to prevent dirt and debris from entering the system.
2. Pull the split ring/chain assembly and hook it onto the control shield bolt to relieve tension from the drive belt (Fig. 738).



Fig 738

PICT-6604

HYDROSTATIC DRIVE SYSTEM

3. Slip the drive belt off the pulley (Fig. 739).



Fig 739

PICT-6606

5. Slide the pulley off the hydraulic pump shaft (Fig. 741).

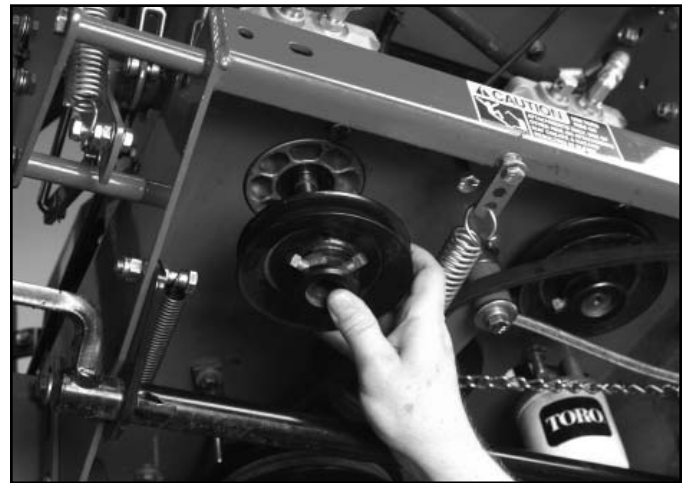


Fig 741

PICT-6608

4. Loosen the two pulley hub set screws (Fig. 740).



Fig 740

PICT-6602

6. Remove the pulley key if it did not fall out on it's own (Fig. 742).



Fig 742

PICT-6609

HYDROSTATIC DRIVE SYSTEM

7. Inspect the key and replace it if worn or damaged.
8. Remove the hose clamp from the return line (Fig. 743).



Fig 743

PICT-6612

9. Pull the return line hose from the fitting and drain the hydraulic fluid into a drain pan (Fig. 744).

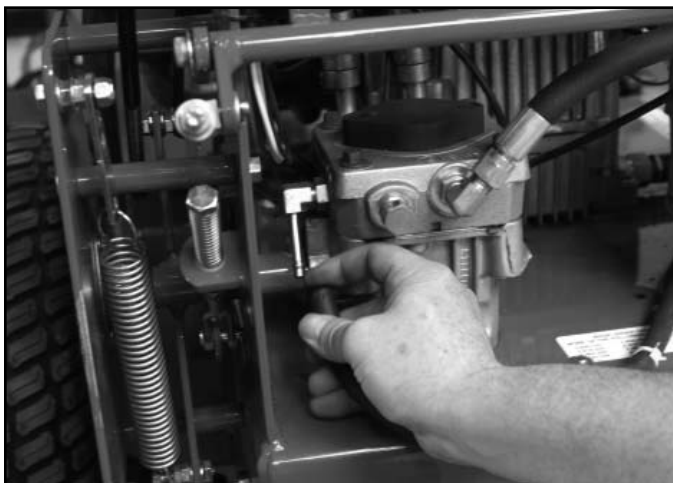


Fig 744

PICT-6613

10. Remove the charge hose from the hydraulic pump fitting (Fig. 745). Cap the hydraulic hose and fitting to prevent debris from entering the system.

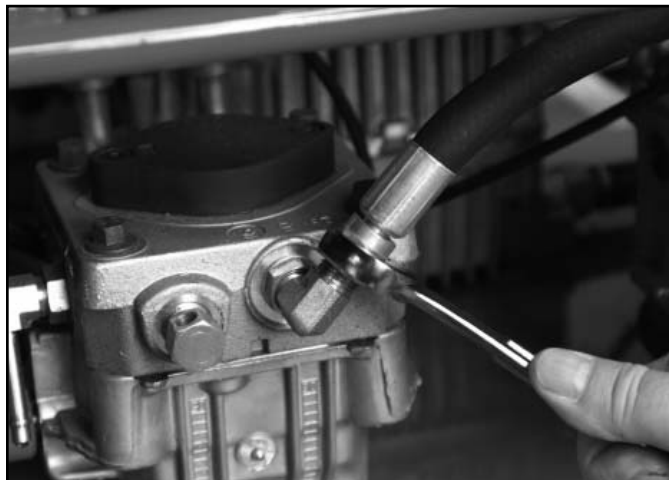


Fig 745

PICT-6616

11. To aid in the access of the hydraulic pump high pressure hoses, the fuel tank can be removed. Refer to "Fuel Tank Replacement" on page 5-1.
12. Mark one of the high pressure hoses and the corresponding port location on the pump (Fig. 746).

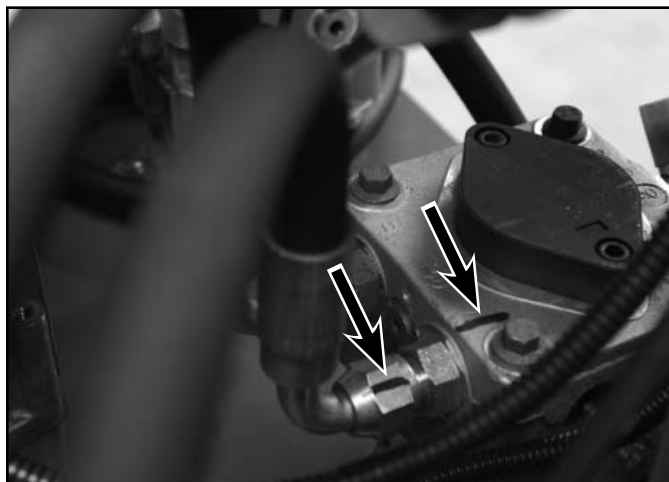


Fig 746

PICT-6619

HYDROSTATIC DRIVE SYSTEM

13. Remove both of the high pressure hoses from the fittings on the pump (Fig. 747). Cap the hydraulic hoses and fittings to prevent debris from entering the system.



Fig 747

PICT-6621

14. Remove the two mounting bolts, washers and nuts securing the hydraulic pump to the frame (Fig. 748).

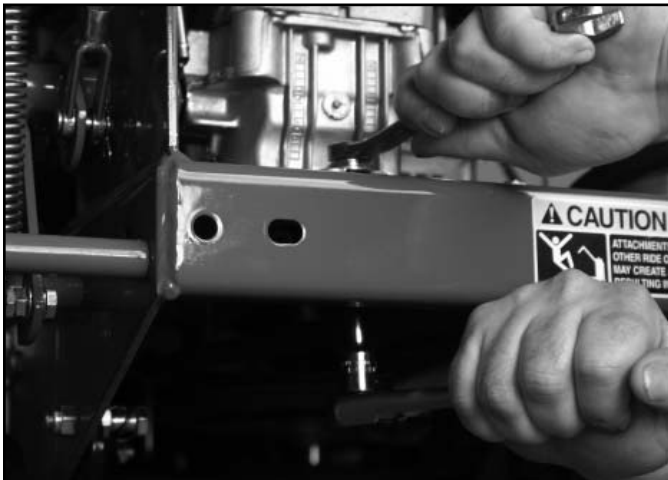


Fig 748

PICT-6622

15. Unhook the lower end of the extension spring from the control shaft (Fig. 749).



Fig 749

PICT-6625

16. Remove the hairpin cotter from the clevis pin securing the neutral return spring assembly to the control shaft (Fig. 750).

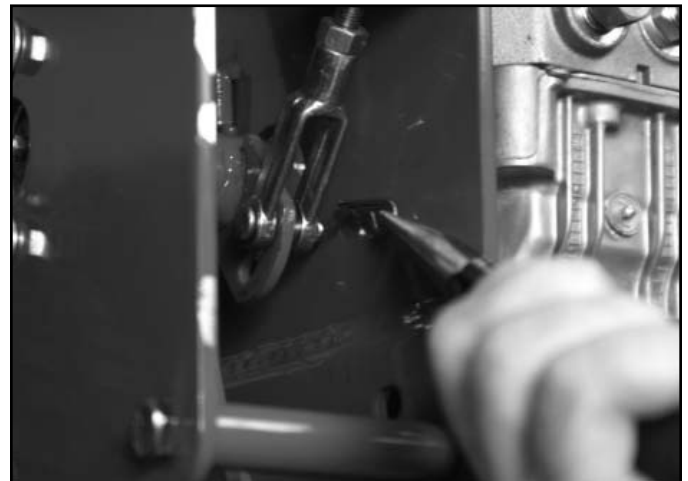


Fig 750

PICT-6629

HYDROSTATIC DRIVE SYSTEM

17. Remove the clevis pin (Fig. 751).

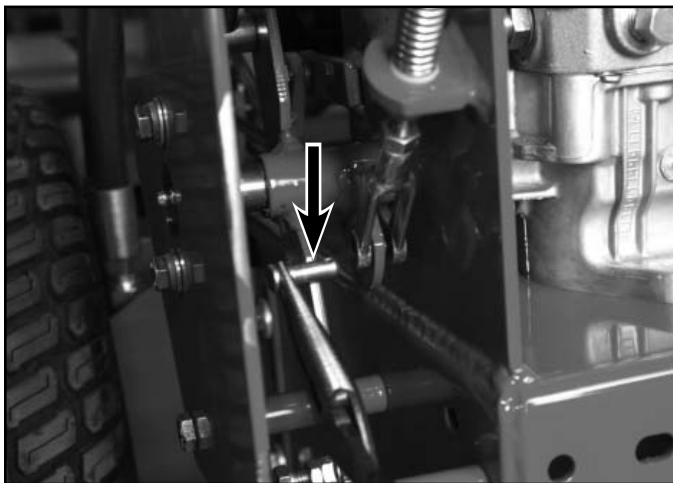


Fig 751

PICT-6632

19. Remove the drive rod trunnion from the control shaft (Fig. 753).



Fig 753

PICT-6638

18. Remove the e-ring from the trunnion on the lower end of the drive lever rod (Fig. 752).

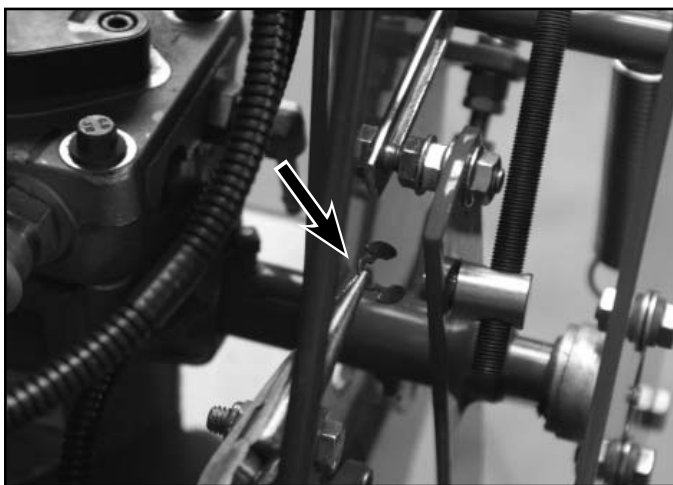


Fig 752

PICT-6636a

20. Remove the outside nut from the lower end of the speed control linkage and remove the linkage/bolt assembly from the control shaft (Fig. 754).

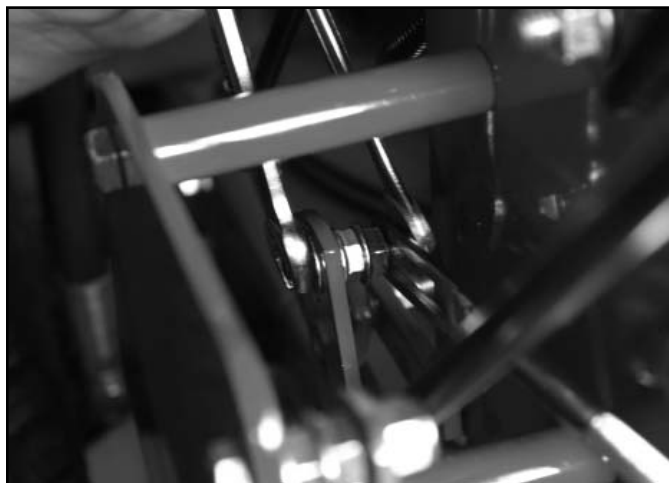


Fig 754

PICT-6641

HYDROSTATIC DRIVE SYSTEM

21. Remove the 4 nuts from the bolts securing the hydro control shield to the frame (Fig. 755).



Fig 755

PICT-6642

23. Rotate the case drain hose fitting to gain access to the set screw on the control shaft (Fig. 757).

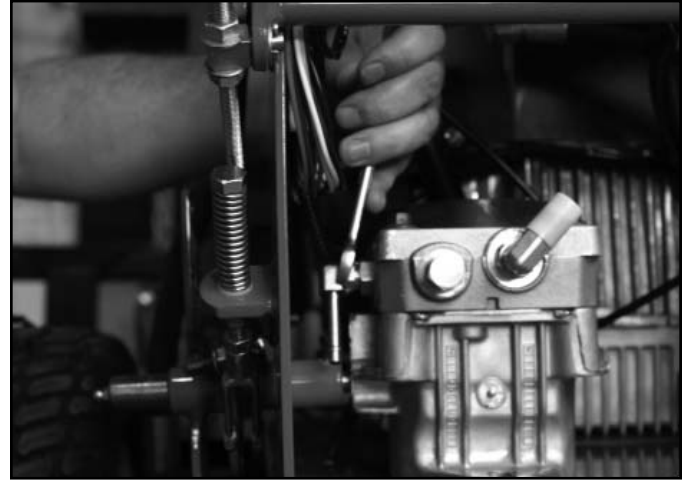


Fig 757

PICT-6649

22. Remove the 4 bolts, spacers and the hydro control shield from the frame (Fig. 756).



Fig 756

PICT-6644

24. To access the control shaft set screw, maneuver the shaft side of the pump out of the hole in the frame and tilt it toward the front of the machine. Loosen the set screw by inserting a wrench through the opening in the side of the chassis (Fig. 758).

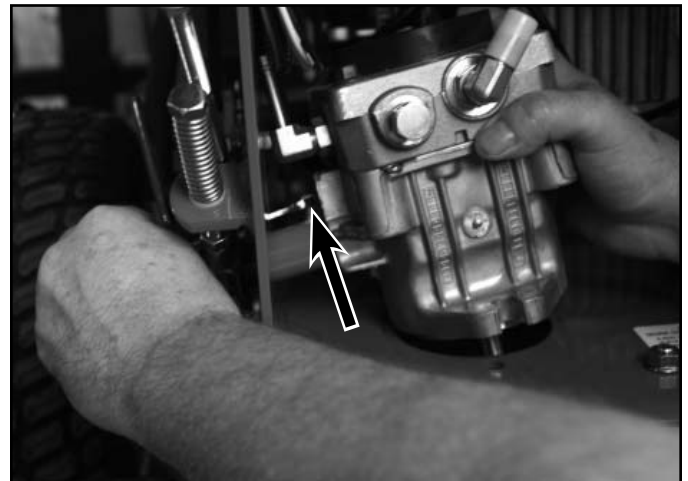


Fig 758

PICT-6652

HYDROSTATIC DRIVE SYSTEM

25. Remove the control shaft from the pump (Fig. 759).



Fig 759

PICT-6655

27. Transfer all 4 fittings to the new pump as well as the mark indicating the location of one of the high pressure hydraulic hoses (Fig. 761). Torque each fitting as noted:

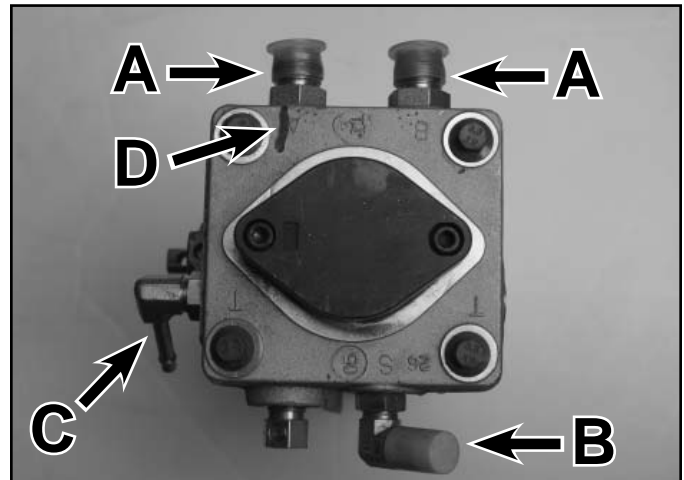


Fig 761

PICT-6664a

26. Remove the pump (Fig. 760).



Fig 760

PICT-6660a

- A. High pressure hose (2) Torque: 34-38 ft-lbs. (46.09-51.52 Nm)
- B. Charge hose fitting Torque: 7-10 ft-lbs. (9.49-13.55 Nm) (brass), 15-21 ft-lbs. (20.33-28.47 Nm) (steel)
- C. Drain fitting Torque: 25-29 ft-lbs. (33.89-39.31 Nm)
- D. Mark the same fitting as original pump

HYDROSTATIC DRIVE SYSTEM

Installation

1. Position the pump into the chassis (Fig. 762).

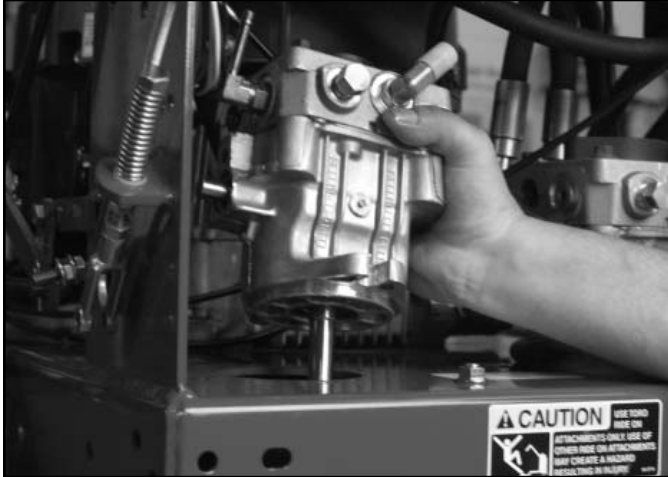


Fig 762

PICT-6660a

2. Slide the control shaft in through the side of the chassis. Position the short tab on the control shaft inside the neutral return spring yoke (Fig. 763).

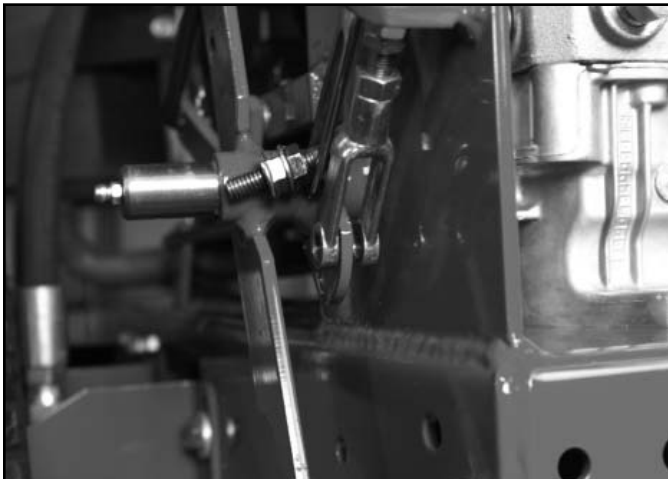


Fig 763

PICT-6666

3. Apply thread-locking compound to set screw and start set screw into pump shaft. (Fig. 764).



Fig 764

PICT-6759a

4. Slide the pump shaft into the control shaft. Align the set screw with the hole in the control shaft. (Fig. 765).

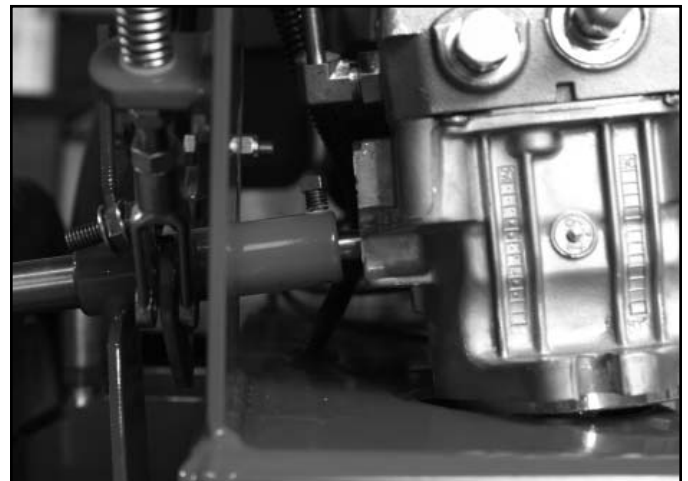


Fig 765

PICT-6667

HYDROSTATIC DRIVE SYSTEM

5. Secure the set screw (Fig. 766).

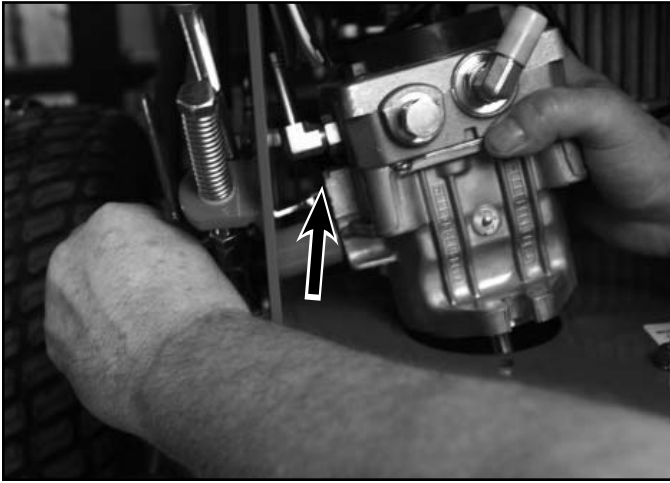


Fig 766

PICT-6652

7. Install the hairpin cotter into the clevis pin (Fig. 768).

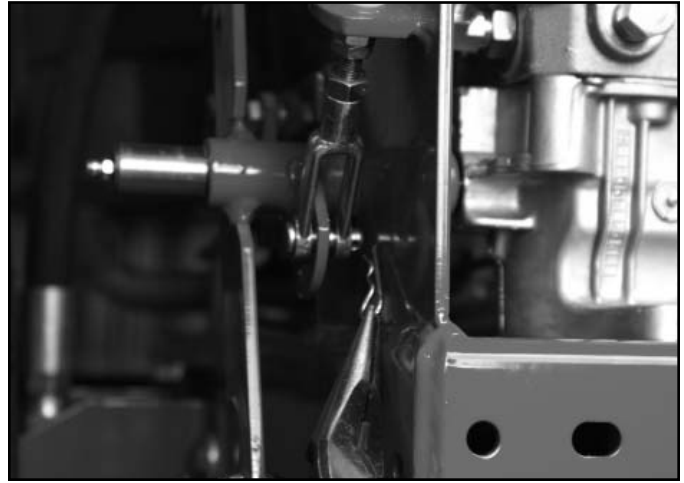


Fig 768

PICT-6673

6. Install the clevis pin securing the neutral return spring yoke to the control shaft (Fig. 767).



Fig 767

PICT-6671

8. Insert the drive rod trunnion into the control shaft (Fig. 769).



Fig 769

PICT-6676

HYDROSTATIC DRIVE SYSTEM

9. Install an e-ring onto the drive rod trunnion (Fig. 770).

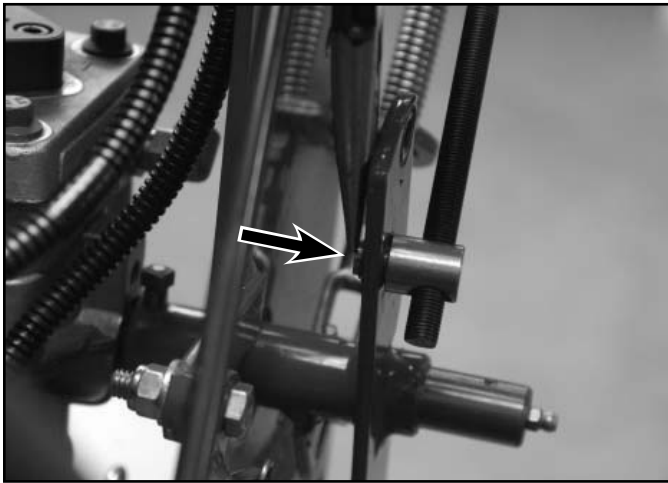


Fig 770

PICT-6680a

11. Install a nut onto the speed control link bolt (Fig. 772).

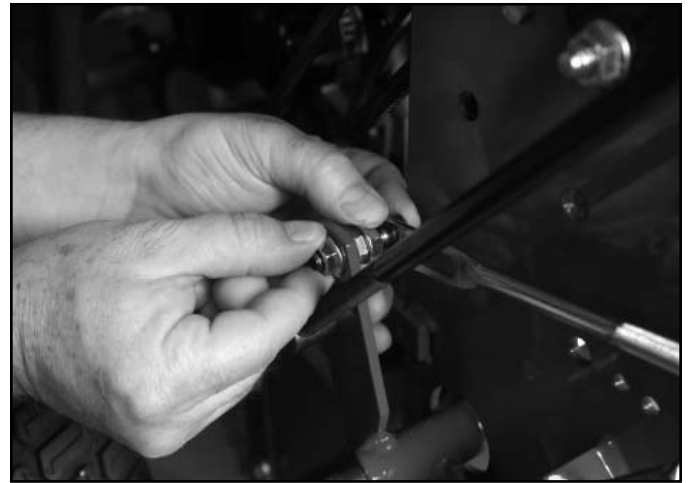


Fig 772

PICT-6684

10. Insert the bolt on the lower end of the speed control link into the control shaft (Fig. 771).



Fig 771

PICT-6681

12. Position the 4 bolts, spacers and the hydro control shield assembly onto the frame (Fig. 773).

Note: The two bottom spacers are approximately 3/8" (.95cm) shorter than the upper spacers.

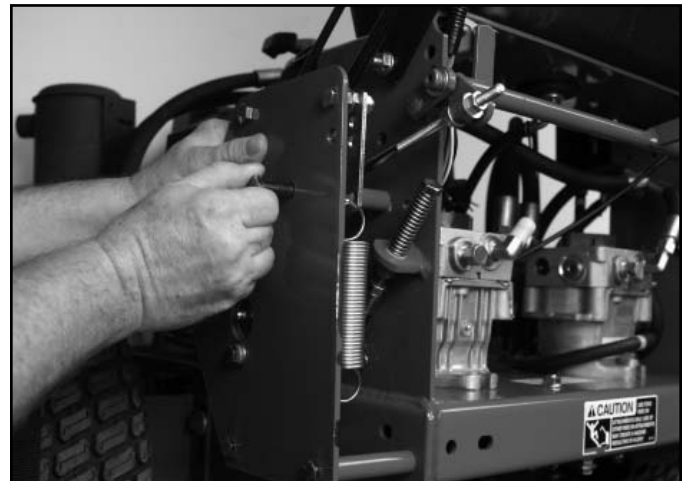


Fig 773

PICT-6688

HYDROSTATIC DRIVE SYSTEM

13. Install 4 nuts securing the hydro control shield assembly to the chassis (Fig. 774).



Fig 774

PICT-6690

- Note:** The other end of the spring is attached through the hole on the spring anchor (Fig. 776).

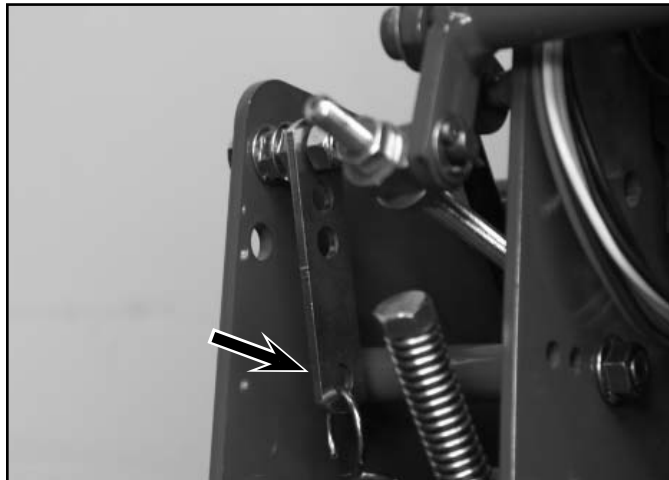


Fig 776

PICT-6694

14. Hook the hydro pump spring to the bolt on the control shaft (Fig. 775).



Fig 775

PICT-6625

15. Install 2 bolts, washers and nuts securing the pump to the chassis (Fig. 777).



Fig 777

PICT-6697

HYDROSTATIC DRIVE SYSTEM

16. Tighten the case drain fitting (Fig. 778).

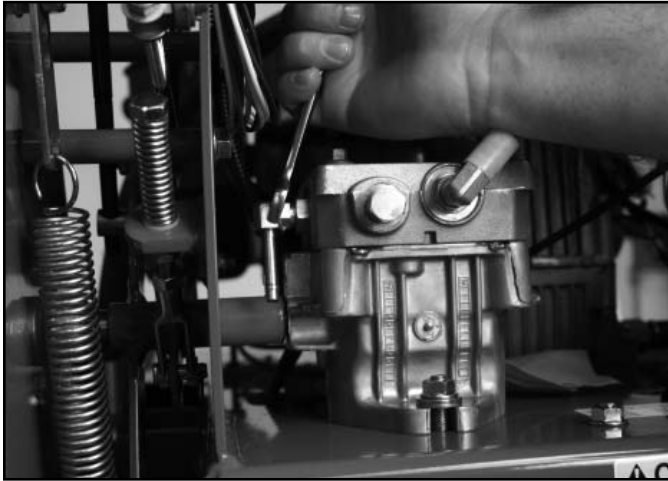


Fig 778

PICT-6701

18. Secure the hose with the hose clamp by sliding the clamp up onto the case drain fitting (Fig. 780).

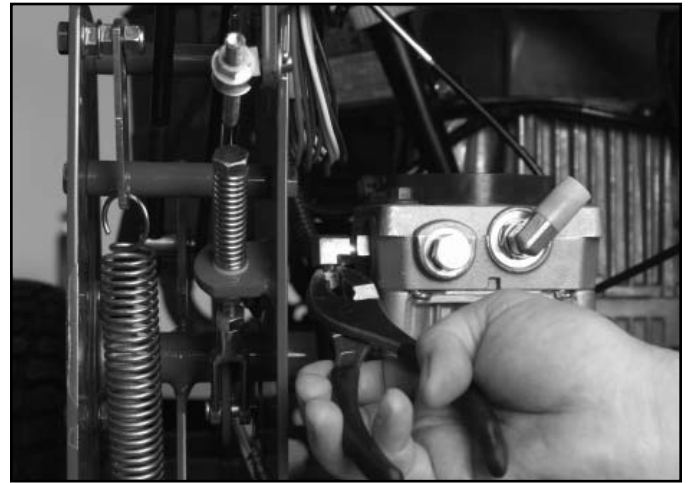


Fig 780

PICT-6704a

17. Install the case drain hose to the case drain fitting (Fig. 779).

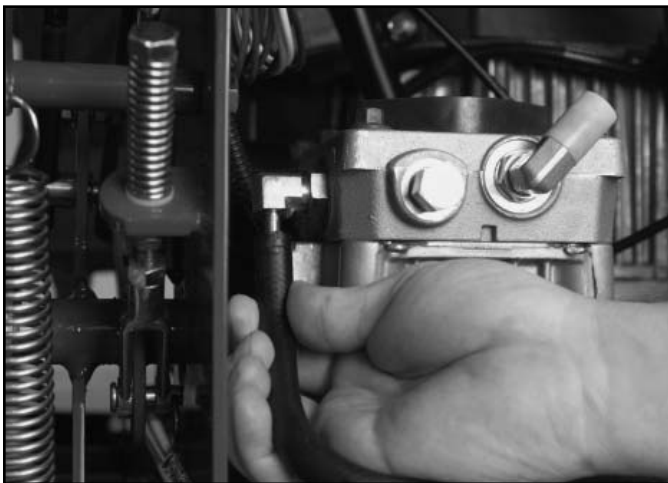


Fig 779

PICT-6703a

19. Install the charge hose to the charge hose fitting (Fig. 781).

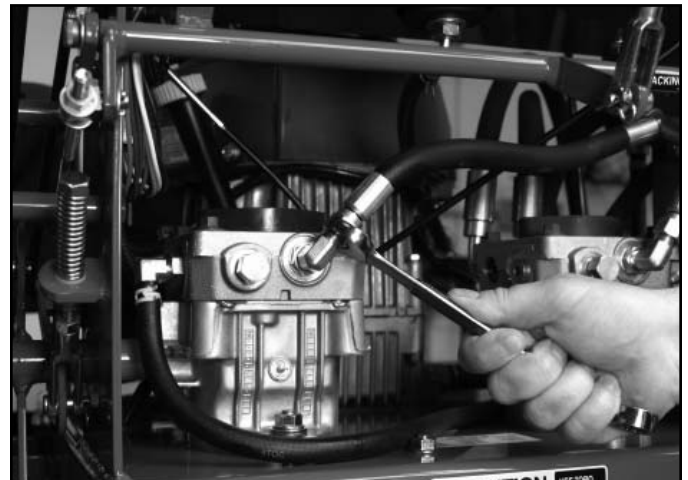


Fig 781

PICT-6709

HYDROSTATIC DRIVE SYSTEM

20. Install the 2 high pressure hoses to the fittings on the pump (Fig. 782).

Note: Ensure that the marked hose is connected to the marked port on the pump.

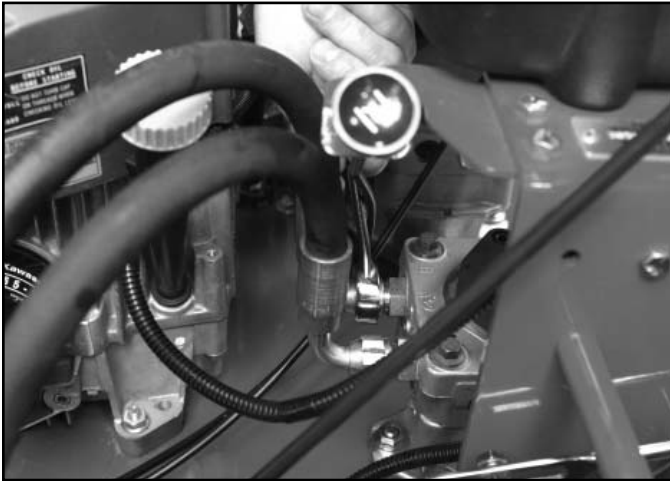


Fig 782

PICT-6712

22. Install the key into the pump shaft keyway (Fig. 784).



Fig 784

PICT-6714

21. Apply anti-seize compound to the pump shaft (Fig. 783).

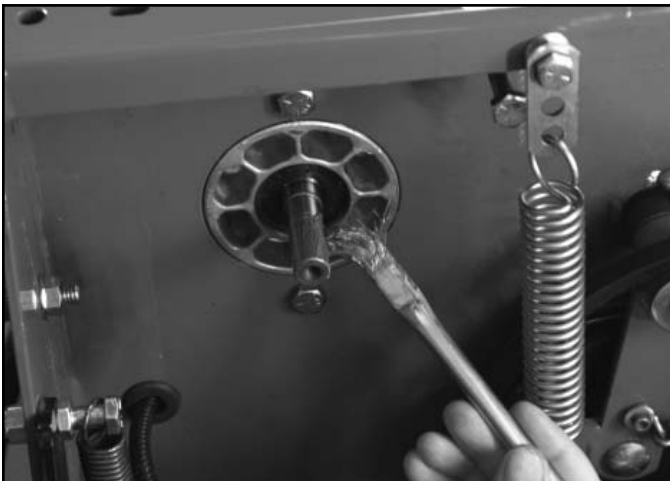


Fig 783

PICT-6713

23. Install the pump pulley onto the pump shaft (Fig. 785).



Fig 785

PICT-6715a

HYDROSTATIC DRIVE SYSTEM

24. Apply thread locking compound onto the 2 hydro pump pulley set screws (Fig. 786).

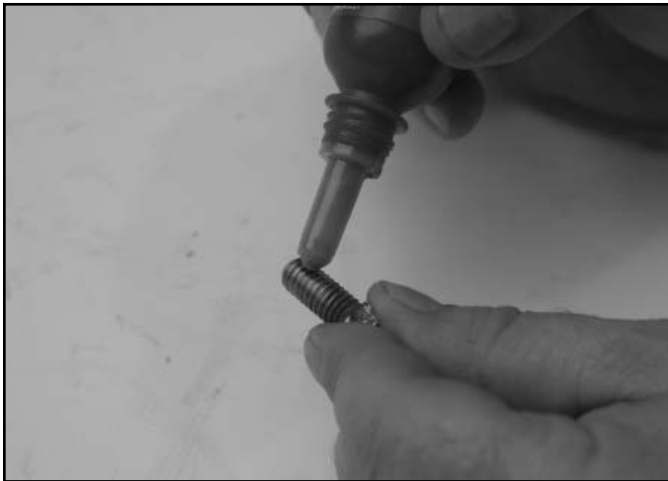


Fig 786

PICT-6759a

26. Slip the drive belt onto the pulley (Fig. 788).



Fig 788

PICT-6719

25. Install and tighten the 2 set screws securing the pulley to the shaft (Fig. 787).

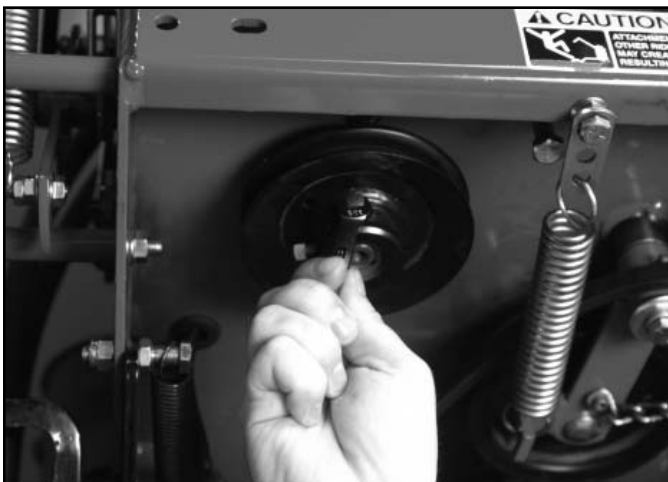


Fig 787

PICT-6718

27. Release the split ring/chain assembly to restore tension to the belt (Fig. 789).



Fig 789

PICT-6721

HYDROSTATIC DRIVE SYSTEM

28. Apply grease to the control shaft (Fig. 790).

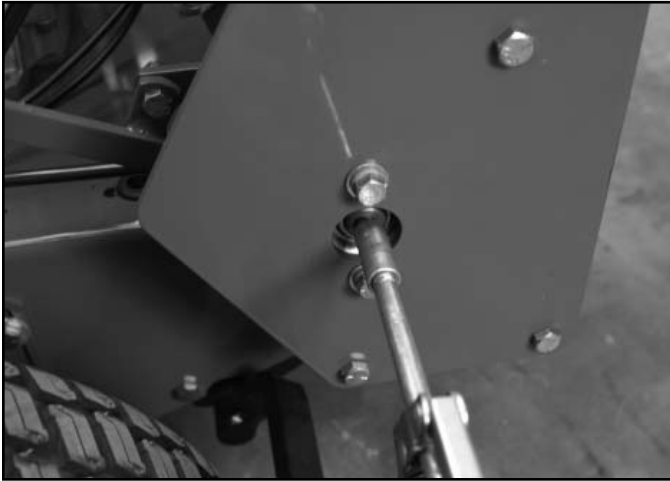


Fig 790

PICT-8678

30. Check the oil level in the hydraulic reservoir and fill as necessary.

31. Remove air from the hydraulic system. Refer to "Bleeding Hydraulic System" on page 6-31.

Removal

1. Apply the parking brake.
2. Loosen the 4 lug nuts (Fig. 791).



Fig 791

PICT-6830a

3. Remove the cotter pin from the wheel motor shaft (Fig. 792).



Fig 792

PICT-6831a

6 Wheel Motor Replacement

Note: Cleanliness is a key factor in a successful repair of any hydraulic system. Thoroughly clean all exposed surfaces prior to any type of maintenance. Cleaning all parts by using a solvent wash and air drying is usually adequate. As with any precision equipment, all parts must be kept free of foreign material and chemicals. Protect all exposed sealing areas and open cavities from damage and foreign material.

Upon removal, all seals, o-rings, and gaskets should be replaced. During installation, lightly lubricate all seals, o-rings, and gaskets with clean petroleum jelly prior to assembly.

Note: This procedure can be followed for both the right and the left wheel motor.

HYDROSTATIC DRIVE SYSTEM

4. Remove the slotted hub nut from the wheel motor shaft (Fig. 793).



Fig 793

PICT-6833a

7. Release the parking brake.

8. Remove the wheel and tire assembly (Fig. 795).



Fig 795

PICT-6837

5. Raise the rear of the machine and secure with jack stands.

6. Remove the 4 lug nuts (Fig. 794).



Fig 794

PICT-6835a

9. Install a hub puller on the wheel studs (Toro special service tool TOR4097) (Fig. 796).

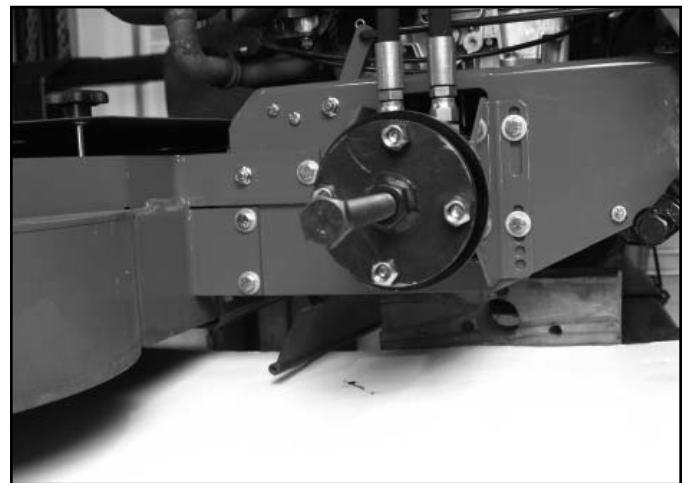


Fig 796

PICT-6840

6

HYDROSTATIC DRIVE SYSTEM

10. Stabilize the wheel hub using a bar in the notch on the hub. Tighten the forcing screw to free the wheel hub from the tapered wheel motor shaft (Fig. 797).

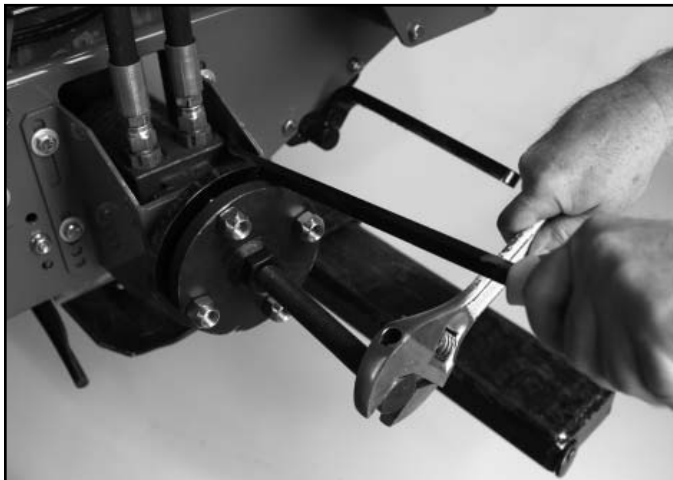


Fig 797

PICT-6843

12. Remove the woodruff key from the shaft keyway (Fig. 799).

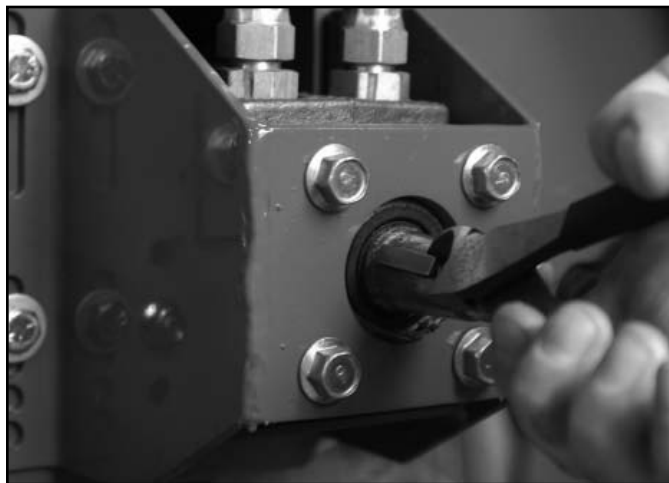


Fig 799

PICT-6849

11. Remove the hub from the wheel motor shaft (Fig. 798).



Fig 798

PICT-6846

13. Thoroughly clean the area around the hydraulic fittings to prevent debris from entering the system.
14. Mark the hoses and corresponding wheel motor fitting ports so the hoses are reconnected in their original locations (Fig. 800).



Fig 800

PICT-6851

HYDROSTATIC DRIVE SYSTEM

15. Position a drain pan under the wheel motor.
16. Disconnect both hydraulic hoses from the wheel motor (Fig. 801).



Fig 801

PICT-6853

17. Cap the hoses and wheel motor fittings so that debris does not enter the system. Position the hose ends out of the way of the wheel motor.
18. Remove the 4 bolts securing the wheel motor to the motor mount (Fig. 802).



Fig 802

PICT-6855

19. Remove the wheel motor (Fig. 803).

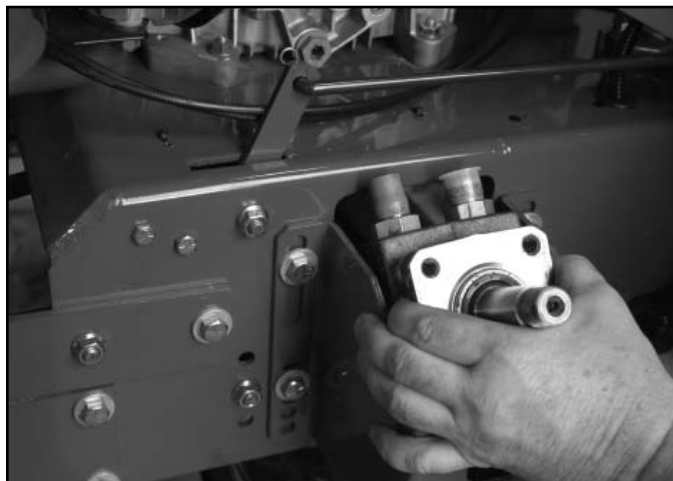


Fig 803

PICT-6858a

20. Remove the 2 fittings from the wheel motor (Fig. 804).



Fig 804

PICT-6859

To service the wheel motor:

Replace the fitting o-rings. Lightly lubricate all o-rings with clean petroleum jelly before transferring, or replacing them, in the wheel motor.

For wheel motor service information, refer to the Parker/Ross Wheel Motor Service Manual, Toro P/N 492-4753.

HYDROSTATIC DRIVE SYSTEM

Installation

1. Transfer the fittings and all markings to the replacement wheel motor. Torque fittings to 85-95 ft-lbs. (115-129 Nm) (Fig. 805).



Fig 805

PICT-6859

3. Install 4 bolts securing the wheel motor to the motor mount (Fig. 807).

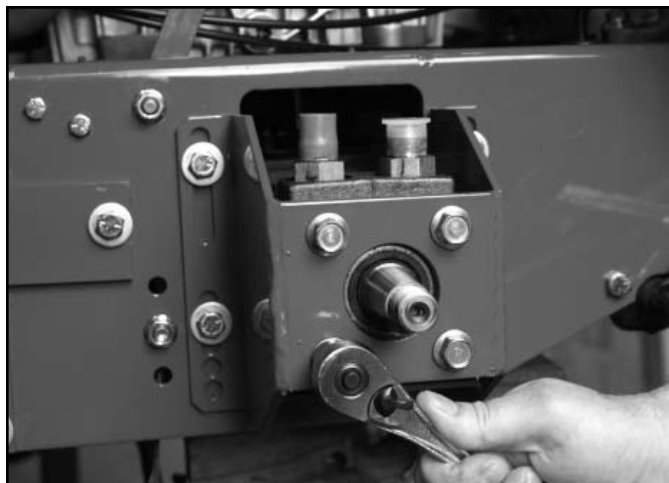


Fig 807

PICT-6855

2. Position the wheel motor into the frame (Fig. 806).

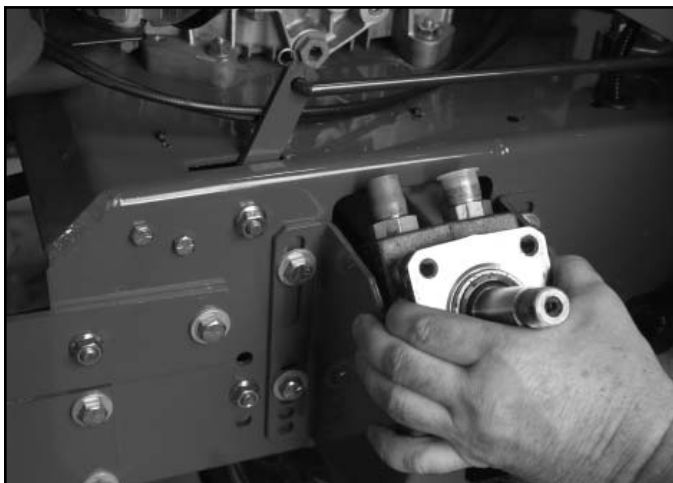


Fig 806

PICT-6858a

4. Uncap the hoses and fittings and connect both hydraulic hoses to the wheel motor. The markings on the hose fittings and pump indicate which hose connects to which fitting. Torque the hose fittings to 34-38 ft-lbs. (46-52 Nm) (Fig. 808).



Fig 808

PICT-6853

HYDROSTATIC DRIVE SYSTEM

5. Install the woodruff key into the keyway on the wheel motor shaft (Fig. 809).



Fig 809

PICT-6863

7. Loosely install the slotted hub nut onto the wheel motor shaft (Fig. 811).

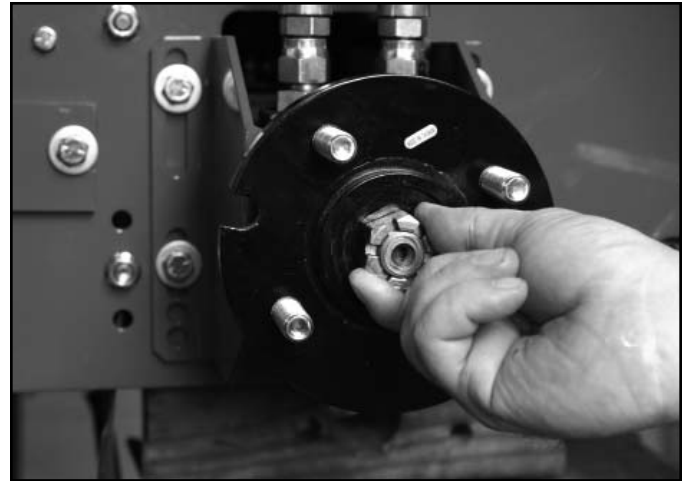


Fig 811

PICT-6865

6. Slide the hub onto the wheel motor shaft (Fig. 810).



Fig 810

PICT-6846

8. Slide the wheel and tire assembly onto the hub (Fig. 812).



Fig 812

PICT-6866

HYDROSTATIC DRIVE SYSTEM

9. Snug fit the 4 lug nuts on the wheel hub studs (Fig. 813).



Fig 813

PICT-6869a

13. Tighten and torque the slotted hub nut to 100 ft-lbs. (136 Nm) (Fig. 815).

Note: Torque to 100 ft-lbs. (136 Nm), then tighten to the next slot so the cotter pin can be installed.



Fig 815

PICT-6871a

10. Lower the machine so the rear tires are resting on the ground.

11. Apply the parking brake.

12. Tighten and torque the 4 lug nuts to 90–95 ft-lbs. (122-129 Nm) (Fig. 814).



Fig 814

PICT-6873a

14. Install the cotter pin into the wheel motor shaft (Fig. 816).



Fig 816

PICT-6875

HYDROSTATIC DRIVE SYSTEM

15. Fill the reservoir with 15W-50 synthetic engine oil as specified. Note that there are fill level lines inside of the reservoir (Fig. 817).



Fig 817

PICT-6826a

16. Bleed the hydraulic system. Refer to “Bleeding the Hydraulic System” following.

Bleeding the System

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

These bleeding procedures should be implemented anytime the hydrostatic system has been opened to facilitate maintenance or if the reservoir has been run empty.

Air creates inefficiency because it has compression and expansion rates that are higher than that of oil.

Entrained air in the oil may cause the following symptoms:

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 reservoir is at the proper hydraulic oil level. If it is not, fill to the proper level.

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

WARNING:

POTENTIAL FOR SERIOUS INJURY

Certain procedures require the vehicle engine to be operated and the vehicle to be raised off of the ground. To prevent possible injury to the servicing technician and/or bystanders, ensure the vehicle is properly secured.

1. Raise the rear of the machine so the wheels are off the ground. Support the machine with jack stands.
2. Open the bypass valves and start the engine.
3. Slowly move the directional control in both forward and reverse directions (5 to 6 times). As air is purged from the unit, the hydraulic oil level will drop.
4. Stop the engine and check the hydraulic oil level. Add hydraulic oil as required.
5. Close the bypass valves.
6. Start the engine and slowly move the directional control in both forward and reverse directions (5 to 6 times).
7. Stop the engine and check the hydraulic oil level. Add hydraulic oil as required.
8. It may be necessary to repeat steps 1 through 7 until all the air is completely purged from the system.

When the wheels move both forward and reverse at normal speed, bleeding is complete.

HYDROSTATIC DRIVE SYSTEM

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GEAR DRIVE SYSTEM

Transmission Replacement

Removal

1. Raise and secure the rear of the machine.
2. Loosen the idler bolt (Fig. 818).



Fig 818

PICT-4989

3. Slide the idler in the slot to remove tension from the traction belt (Fig. 819).



Fig 819

PICT-4990

4. Remove the traction belt from the traction drive pulley (Fig. 820).



Fig 820

PICT-4992

5. Loosen the set screws securing the transmission drive pulley to the transmission drive shaft (Fig. 821).



Fig 821

PICT-4995

GEAR DRIVE SYSTEM

6. Remove the pulley from the transmission drive shaft (Fig. 822).



Fig 822

PICT-4997

8. Remove the neutral return spring from the traction idler arm assembly (Fig. 824).

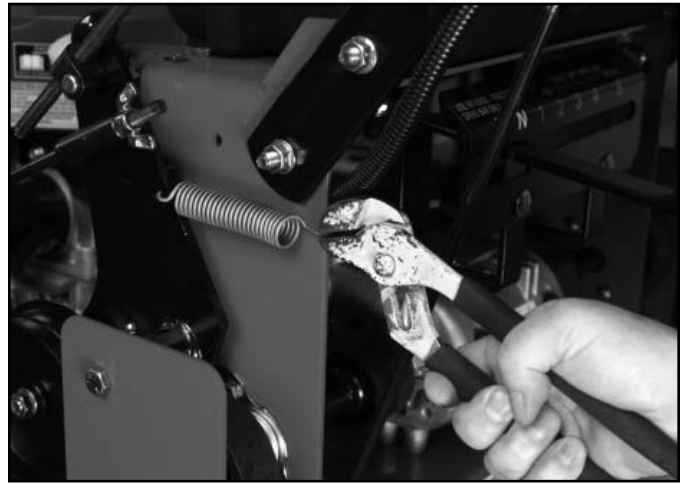


Fig 824

PICT-5005

7. Remove the key from the transmission drive shaft (Fig. 823).



Fig 823

PICT-5002

9. Remove the bottom bolt, spacer and nut from the drive wheel shield assembly (Fig. 825).

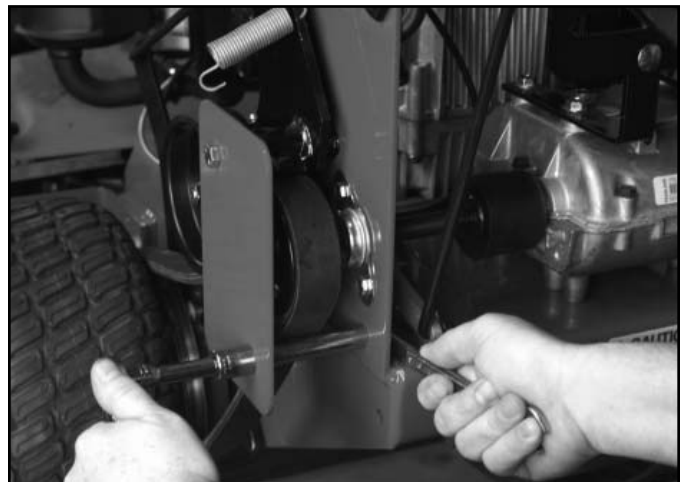


Fig 825

PICT-5009

GEAR DRIVE SYSTEM

10. Loosen the upper bolt and nut from the drive wheel shield. Support the shield and traction idler and remove the upper nut (Fig. 826).



Fig 826

PICT-5013

12. Position the wheel drive idler assembly so that it is out of the way of the drive pulley and belt (Fig. 828).



Fig 828

PICT-5019

11. While supporting the idler, remove the drive wheel shield and bolt (Fig. 827).

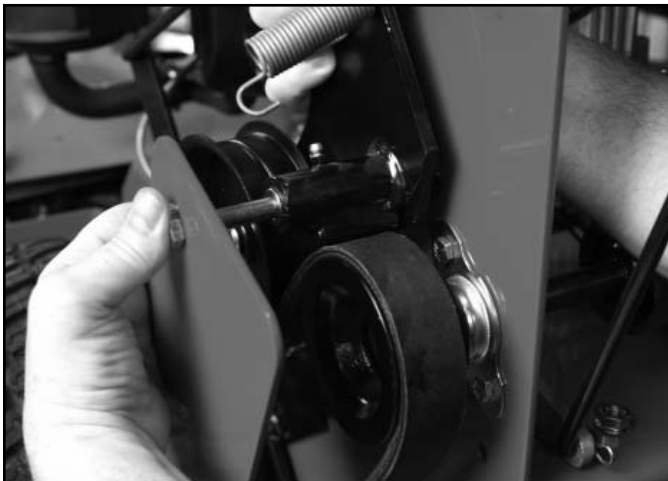


Fig 827

PICT-5016

13. Remove the wheel drive belt from the drive pulley (Fig. 829).



Fig 829

PICT-5021

GEAR DRIVE SYSTEM

14. Remove the two bolts and nuts that secure the transmission axle flange bearing to the chassis (Fig. 830).

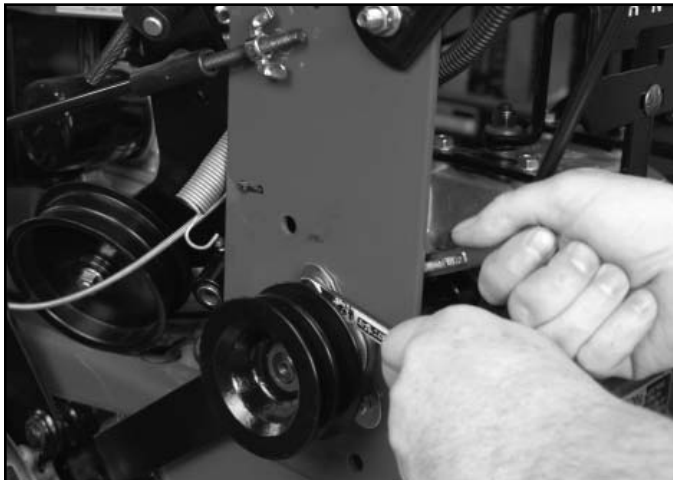


Fig 830

PICT-5024a

16. Remove the coupler/coupler guard from the transmission shaft (Fig. 832).



Fig 832

PICT-5031

15. Slide the transmission axle out of the transmission coupler and chassis (Fig. 831).

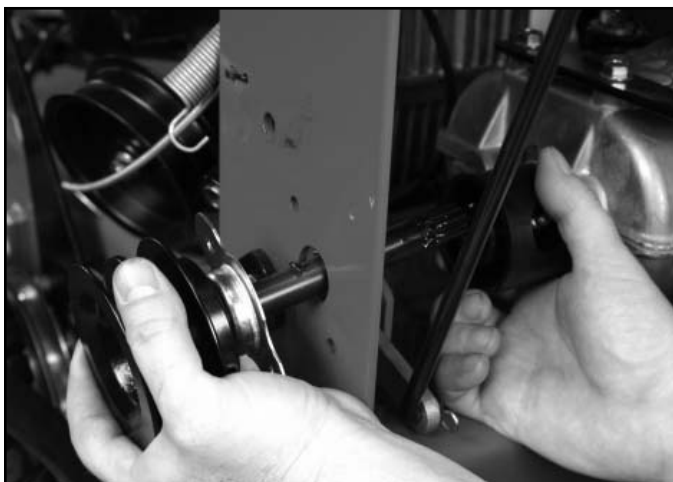


Fig 831

PICT-5028

17. Remove the cable tie that secures the choke cable to the mounting leg of the transmission (Fig. 833).



Fig 833

PICT-5033

GEAR DRIVE SYSTEM

18. **Pistol Grip – Gear only:** Remove the two screws and lock washers securing the wires to the top of the neutral start switch (Fig. 834).



Fig 834

PICT-5536a

20. **Pistol Grip – Gear only:** Remove the cable tie that secures the wire harness to the shift lever plate bracket (Fig. 836).



Fig 836

PICT-5539a

19. **Pistol Grip – Gear only:** Remove the neutral start switch from the transmission (Fig. 835).



Fig 835

PICT-5537a

21. Remove the 4 mounting bolts and lock washers that secure the transmission to the chassis (Fig. 837).



Fig 837

PICT-5036

GEAR DRIVE SYSTEM

22. Remove the 2 bolts and nuts securing the opposite transmission axle flange bearing to the chassis (Fig. 838).



Fig 838

PICT-5099

23. Carefully maneuver the transmission out of the chassis by tilting it back and lifting up (Fig. 839).

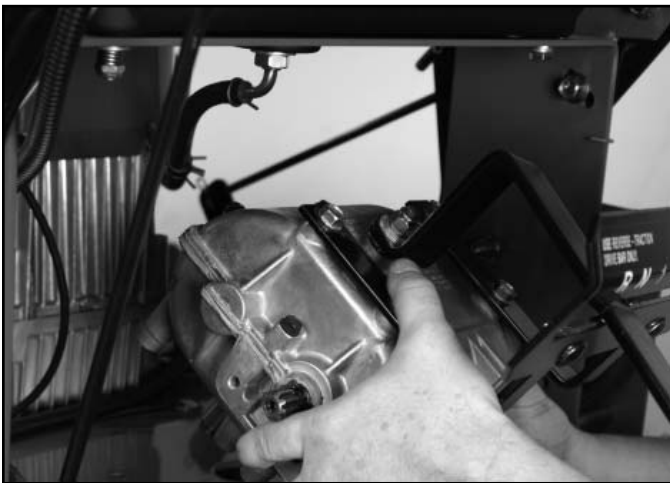


Fig 839

PICT-5041

24. Slide the transmission off the opposite axle and away from the couple/coupler guard. Remove it from the chassis (Fig. 840).

Note: The coupler may come off the axle with the transmission; if so, remove it from the transmission.

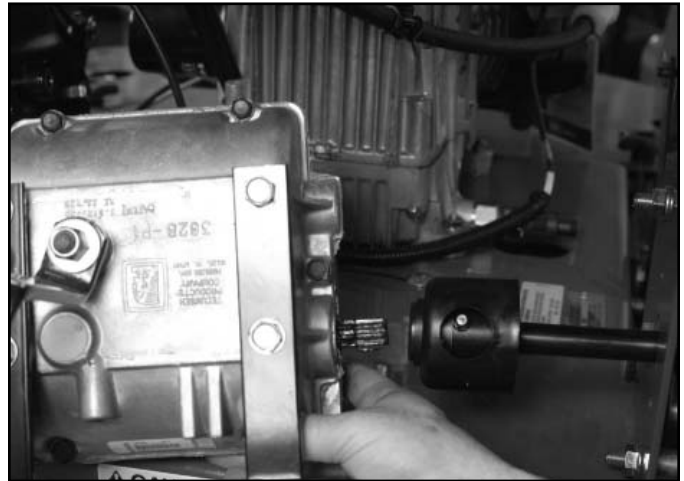


Fig 840

PICT-5051a

25. Remove the 4 bolts securing the shift plate to the transmission (Fig. 841).

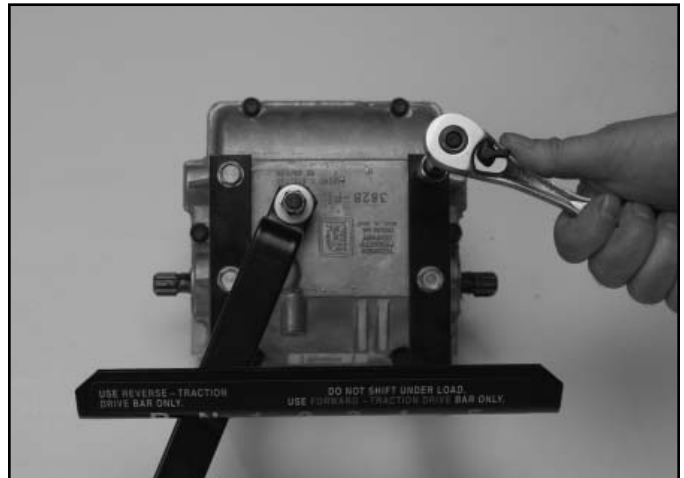


Fig 841

PICT-5056a

GEAR DRIVE SYSTEM

26. Remove the shift plate assembly from the transmission (Fig. 842).



Fig 842

PICT-5060

27. Remove the bolt and Belleville washer securing the shift lever to the transmission (Fig. 843).

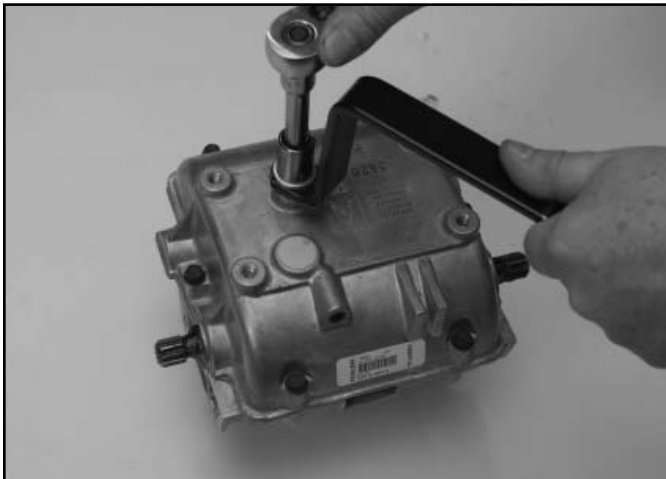


Fig 843

PICT-5067a

28. Remove the shift lever and washer from the transmission shifter shaft (Fig. 844).

Note: For transmission service procedures, refer to the appropriate Tecumseh Peerless Service Manual.

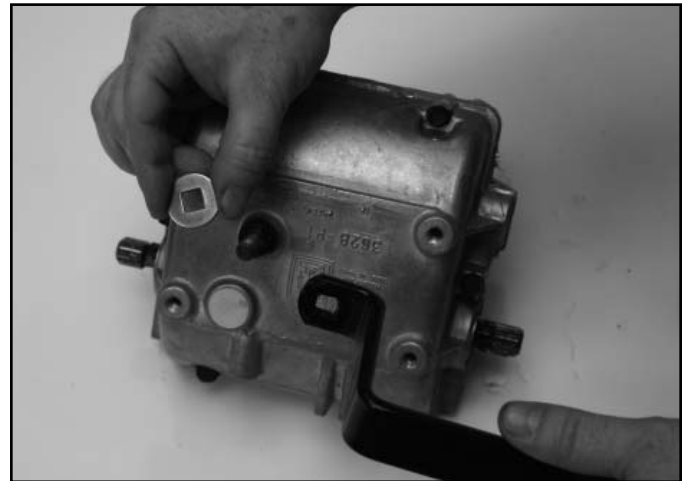


Fig 844

PICT-5070

Installation

1. Install the square ID washer and shift lever onto the transmission shifter shaft (Fig. 845).

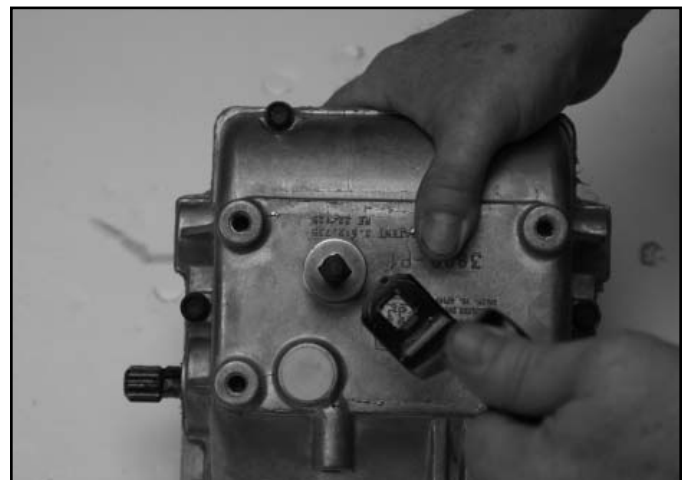


Fig 845

PICT-5072

GEAR DRIVE SYSTEM

2. Install the Belleville washer oriented with the crown up (Fig. 846).

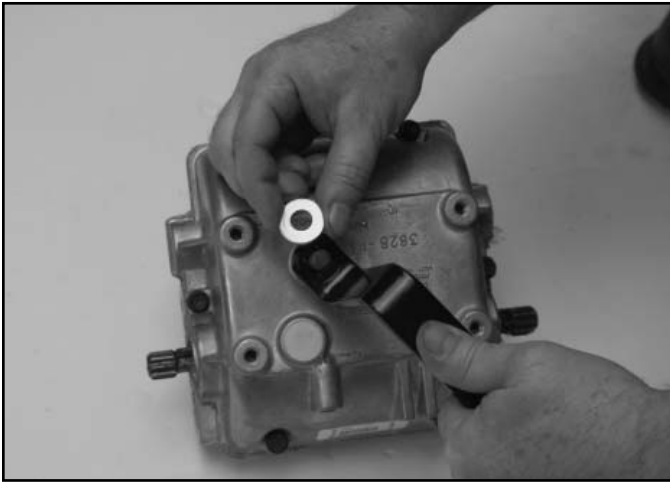


Fig 846

PICT-5077a

4. Position the shift plate assembly over the shift lever and onto the transmission (Fig. 848).

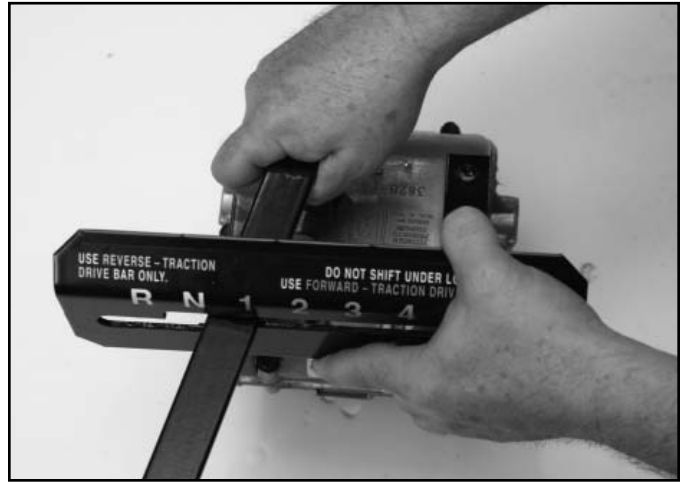


Fig 848

PICT-5081

3. Install the nut to secure the shift lever and washers to the transmission shifter post. Torque the nut to 30 – 35 ft-lbs. (40.67 – 47.45 Nm) (Fig. 847).

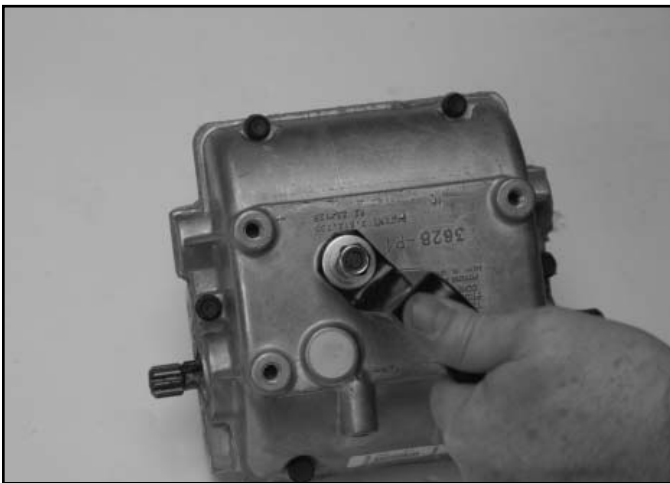


Fig 847

PICT-5080a

5. Install 4 bolts to secure the shift plate to the transmission (Fig. 849).

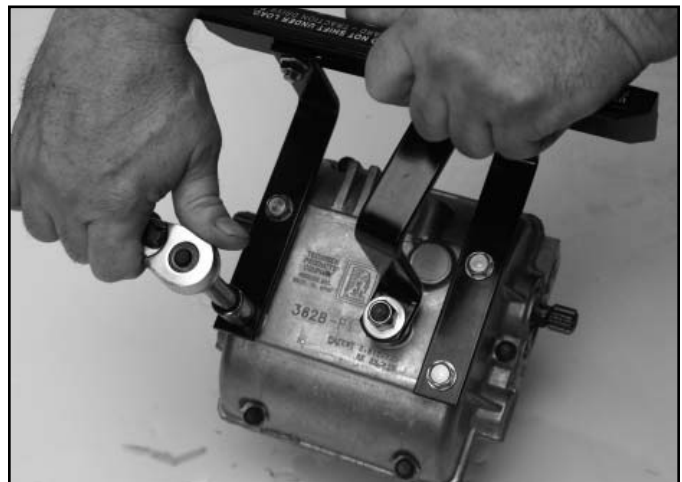


Fig 849

PICT-5087

GEAR DRIVE SYSTEM

- Slide the transmission spline shaft into the RH coupler (Fig. 850).



Fig 850

PICT-5091

- Install 2 bolts and nuts to secure the flange bearing to the chassis (Fig. 852).



Fig 852

PICT-5099

- Position the transmission so that the output shaft drops through the opening in the chassis (Fig. 851).

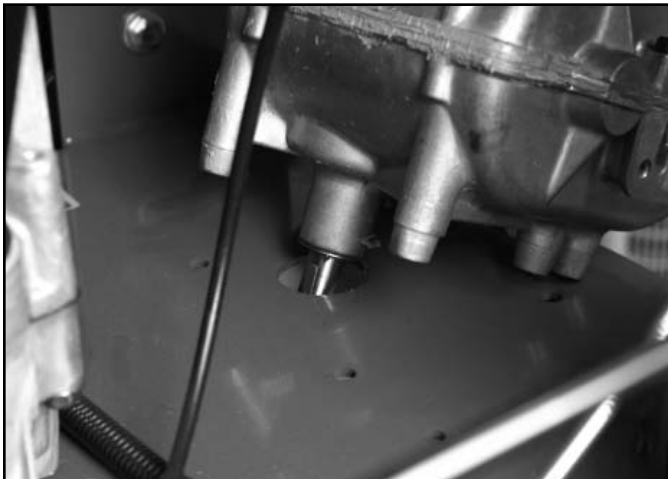


Fig 851

PICT-5093

- Install the coupler and coupler shield to the left transmission output shaft (Fig. 853).

Note: Align the 2 grease fittings.

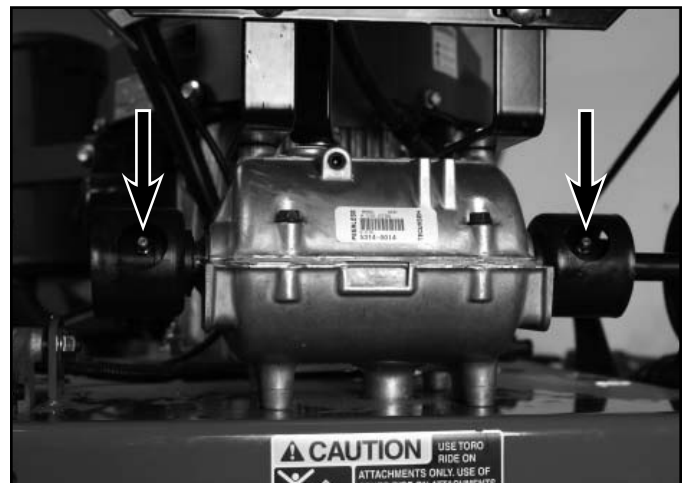


Fig 853

PICT-5104

7

GEAR DRIVE SYSTEM

10. Install the left transmission output shaft assembly through the chassis and into the coupler (Fig. 854).

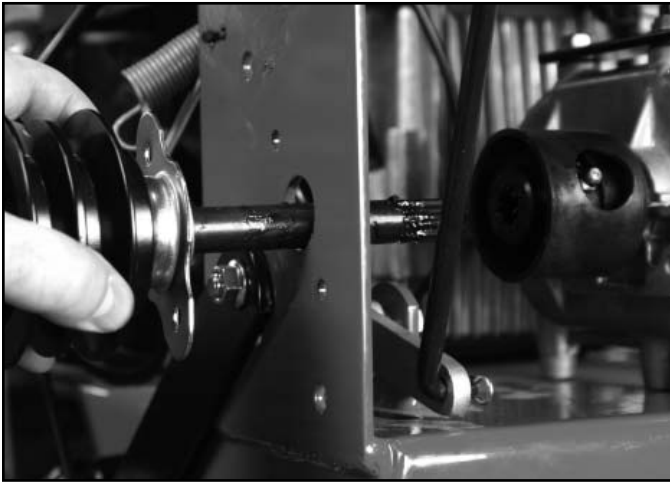


Fig 854

PICT-5107

12. Install the 4 bolts and lock washers to secure the transmission to the chassis (Fig. 856).



Fig 856

PICT-5113

11. Install the 2 bolts and nuts securing the left flange bearing to the chassis (Fig. 855).



Fig 855

PICT-5109

13. **Pistol Grip – Gear only:** Install the neutral start switch into the transmission (Fig. 857).



Fig 857

PICT-5537a

GEAR DRIVE SYSTEM

14. **Pistol Grip – Gear only:** Connect the wire harness to the neutral start switch with two screws and lock washers (Fig. 858).



Fig 858

PICT-5536a

15. **Pistol Grip – Gear only:** Install a cable tie to secure the wire harness to the shift lever plate bracket (Fig. 859).



Fig 859

PICT-5541

16. Install the woodruff key into the transmission input shaft (Fig. 860).

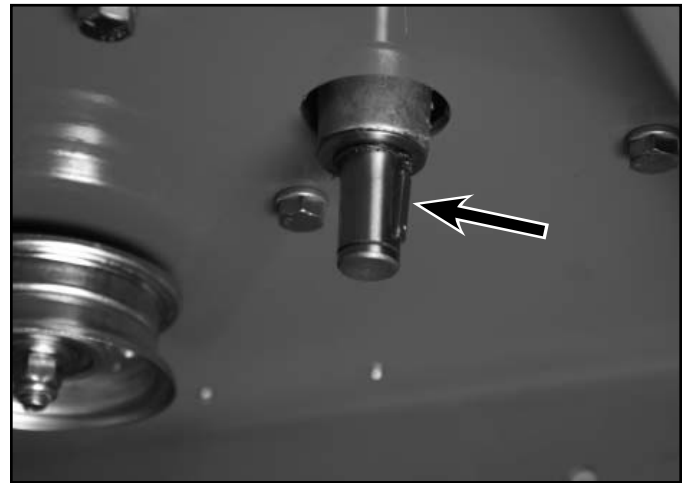


Fig 860

PICT-5117

17. Apply anti-seize compound to the transmission input shaft (Fig. 861).



Fig 861

PICT-9823

GEAR DRIVE SYSTEM

18. Install the transmission drive pulley (Fig. 862).



Fig 862

PICT-5119

20. Install the belt around the idler and over the transmission pulley. (Fig. 864).



Fig 864

PICT-5123

19. Secure the pulley with 2 set screws (Fig. 863).



Fig 863

PICT-5121a

21. Position the idler to tension the traction control belt. Tighten the nut to secure the idler position (Fig. 865).



Fig 865

PICT-5126

GEAR DRIVE SYSTEM

Note: The belt should have 1/2" (1.27cm) of deflection with 3 lbs. (1.36kg) of pressure on the belt midway between the transmission and engine pulley (Fig. 866).



Fig 866

PICT-5127

22. Install the wheel drive belt (Fig. 867).



Fig 867

PICT-5132

23. Install a bolt through the upper hole in the drive wheel shield (Fig. 868).



Fig 868

PICT-5136a

24. Install the bolt through the traction idler (Fig. 869).



Fig 869

PICT-5140

GEAR DRIVE SYSTEM

25. Install the traction idler/shield assembly to the frame and loosely install a nut on the bolt (Fig. 870).

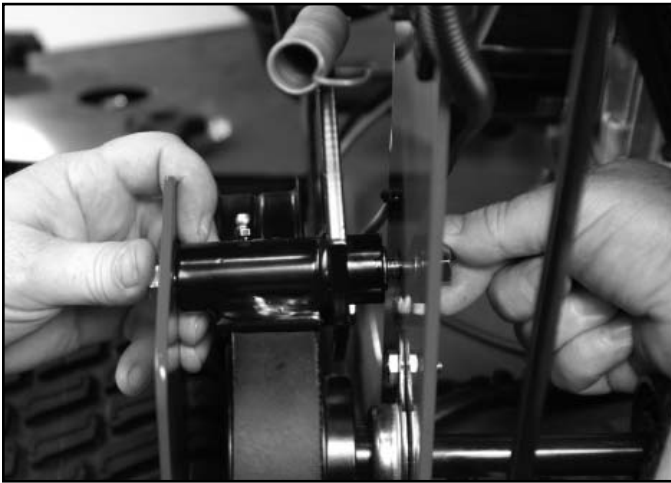


Fig 870

PICT-5143

27. Install a spacer onto the bolt (Fig. 872).



Fig 872

PICT-6965

26. Install a bolt through the lower hole in the drive wheel shield (Fig. 871).

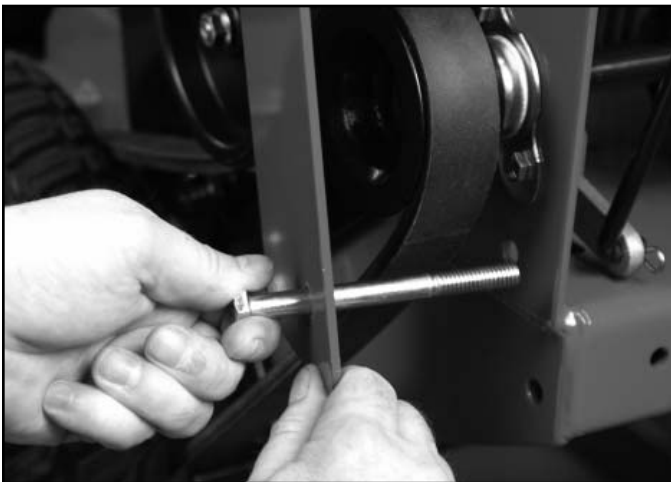


Fig 871

PICT-5146

28. Install the drive wheel shield assembly to the frame and loosely install a nut on the bolt (Fig. 873).



Fig 873

PICT-5151

GEAR DRIVE SYSTEM

29. Tighten both the upper and lower bolts (Fig. 874).



Fig 874

PICT-5153

30. Hook the spring over the rear edge of the frame (Fig. 875).

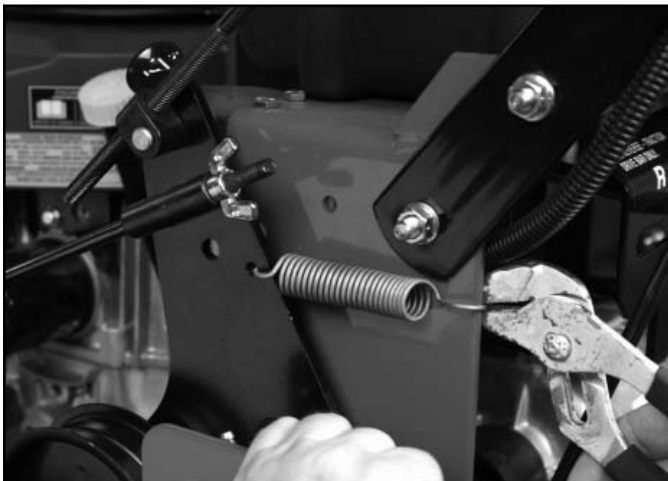


Fig 875

PICT-5158

GEAR DRIVE SYSTEM

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Mower Belt Replacement

This procedure was performed on a T-Bar Gear, 40" Mower Deck.

Removal

1. Disengage the blade control (PTO) lever and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Remove the mower deck cover (Fig. 876).



Fig 876

PICT-5923

4. Remove the belt from the left side spindle pulley (Fig. 877).

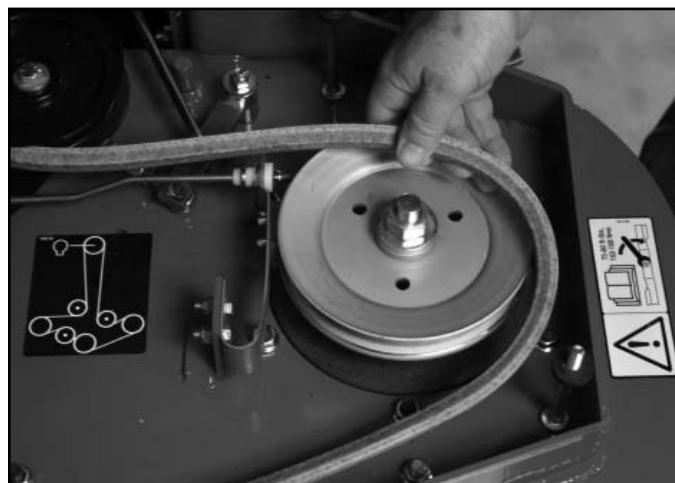


Fig 877

PICT-5925

5. Loosen the idler pulley bolt (Fig. 878).



Fig 878

PICT-6022

MOWER DECK

6. Remove the bolt and washer from the idler pulley (Fig. 879).



Fig 879

PICT-6024

8. Remove the engagement bushing (Fig. 881).



Fig 881

PICT-6030

7. Remove the idler pulley (Fig. 880).



Fig 880

PICT-6029

9. Using a spring removal tool (Toro p/n: 92-5771) remove the idler spring (Fig. 882).



Fig 882

PICT-6034

MOWER DECK

10. Loosen the belt guide nut (Fig. 883).



Fig 883

PICT-6037

12. Remove the belt from the engine pulley (Fig. 885).



Fig 885

PICT-6040

11. Slip the belt off the remaining mower deck pulleys (Fig. 884).



Fig 884

PICT-6038

13. Remove the mower deck belt from the machine (Fig. 886).



Fig 886

PICT-6042

MOWER DECK

Installation

1. 40", 48" and 52" mower decks only:

Position the front and rear idler pulleys and belt guide into their original hole positions (Fig. 887).

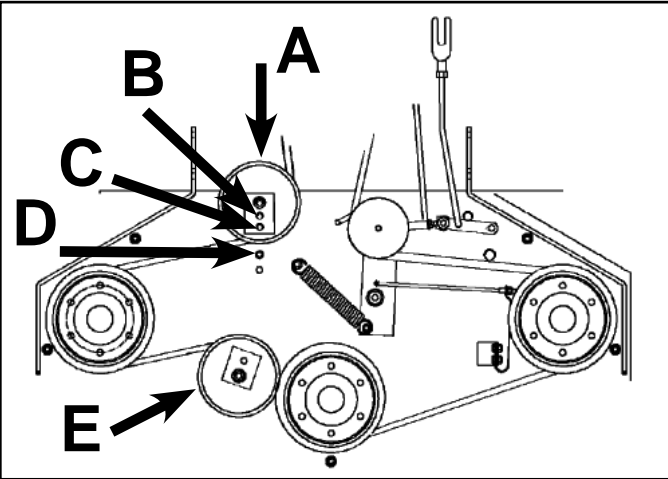


Fig 887 fig. 40 G001848

- A. Rear idler pulley

B. Middle hole

C. Front hole
- D. Belt guide in back position

E. Front idler pulley

Pistol Grip and T-Bar – Gear Mower Decks	Rear Idler Location	Front Idler Location
32" Mower Deck	n/a	n/a
36" Turbo Force Mower Deck	n/a	n/a
40" Turbo Force Mower Deck	Rear	Rear
48" Turbo Force Mower Deck	Rear	Rear
Pistol Grip – Hydro Mower Decks	Rear Idler Location	Front Idler Location
36" Turbo Force Mower Deck	n/a	n/a
40" Turbo Force Mower Deck	Rear	Front
48" Turbo Force Mower Deck	Rear	Middle
52" Turbo Force Mower Deck	Rear	Front

2. Feed the mower deck belt down through the chassis opening and place it around the engine drive pulley. Ensure the belt is installed between the pulley and the belt guide (Fig. 888).



Fig 888 PICT-6049

3. Tighten the belt guide nut to secure the belt guide to the mower deck (Fig. 889).



Fig 889 PICT-6037

4. Continue routing the belt as shown on the belt routing decal (Fig. 890 and Fig. 891).

Belt routing for 32" and 36" mower decks:

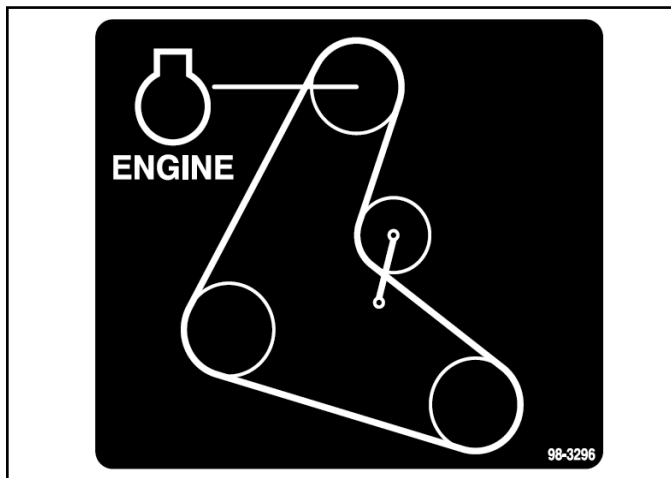


Fig 890

fig. 1 98-3296

Belt routing for 40", 48" and 52" mower decks:

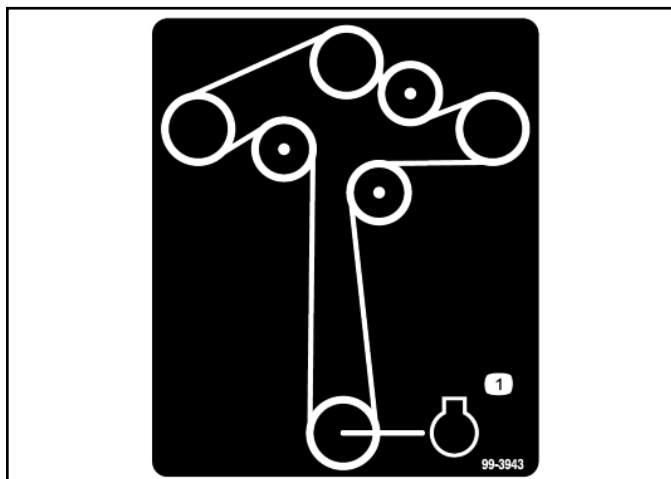


Fig 891

fig. 2 99-3943

5. Insert the engagement bushing into the idler pulley (Fig. 892).



Fig 892

PICT-6053

6. Insert the bolt and washer into the idler pulley (Fig. 893).

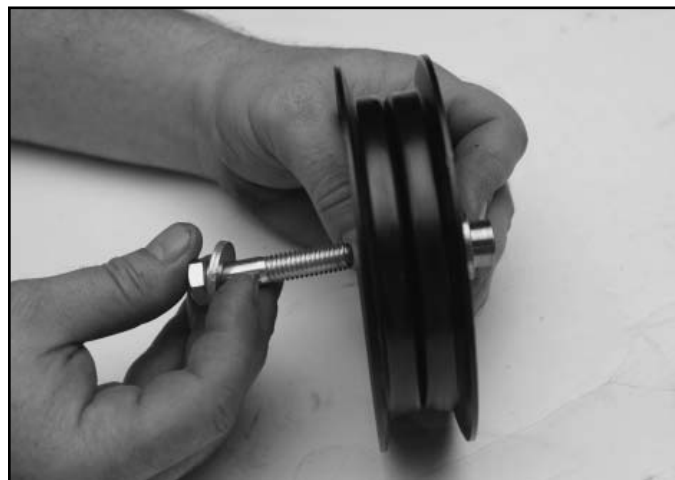


Fig 893

PICT-6055a

MOWER DECK

7. Position the turn buckle over the hole in the idler arm (Fig. 894).

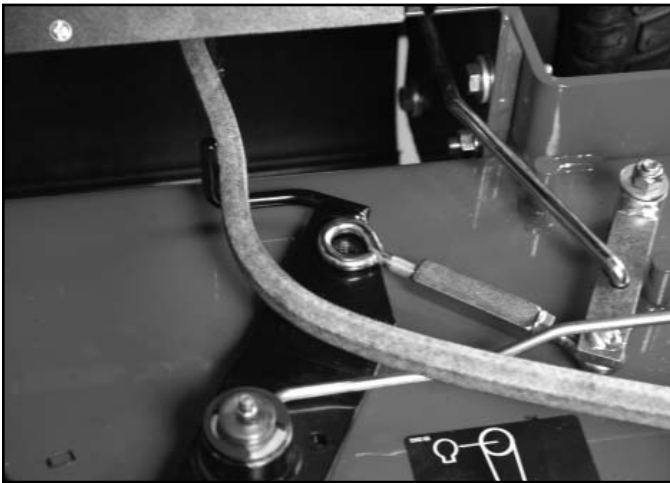


Fig 894

PICT-6057

9. Tighten the idler bolt (Fig. 896).



Fig 896

PICT-6063

8. Position the belt onto the idler pulley and install the idler pulley into the idler arm (Fig. 895).

Note: Ensure the belt is routed between idler pulley and belt guide.



Fig 895

PICT-6059

10. Install the idler spring from the stud on the mower deck to the stud on the idler arm (Fig. 897).



Fig 897

PICT-6065

11. Check mower belt tension (Fig. 898).

Note: If adjustment is required see “Adjusting Mower Belt Tension” below.

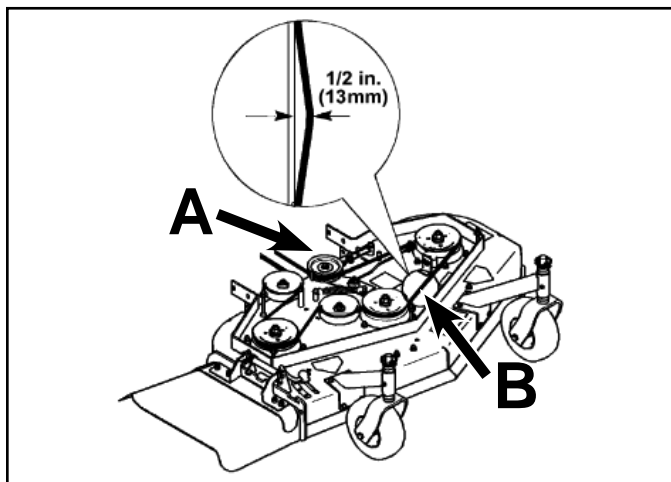


Fig 898

fig. 47 G001565

A. Mower belt with 1/2" (13mm) deflection B. Idler pulley

Adjusting Mower Belt Tension

1. Loosen the locknut on the turnbuckle (Fig. 899).

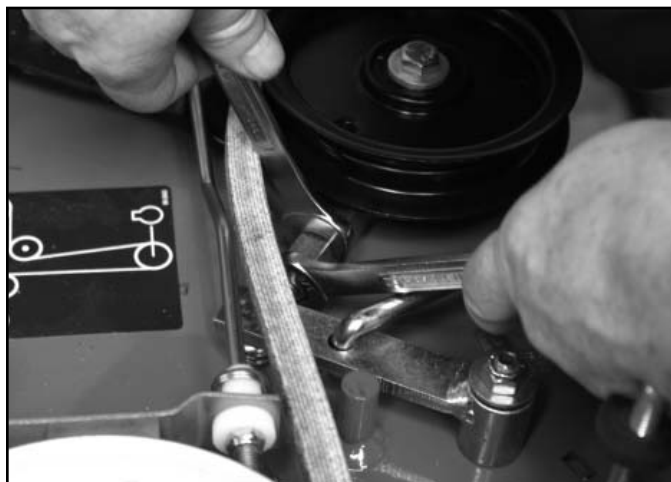


Fig 899

PICT-6068

2. Rotate the turnbuckle as follows:
 - A. Increase tension: rotate the turnbuckle toward the rear of the mower.
 - B. Decrease tension: rotate the turnbuckle toward the front of the mower.

Note: The eyebolt threads on both ends of the turnbuckle should be engaged a minimum of 5/16" (8mm).

3. Engage the blade control lever (PTO) and check the belt tension.

Note: The proper mower belt tension is 10-15 ft-lbs. (44-67 Nm) with the belt deflected 1/2" (13mm) halfway between the pulleys (Fig. 900).

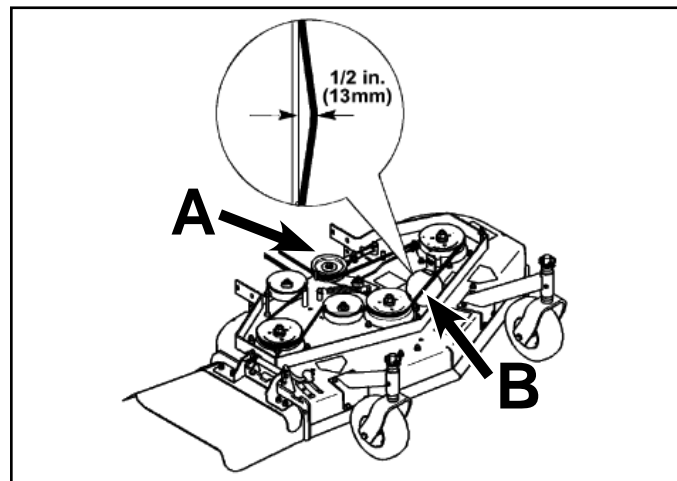


Fig 900

fig. 47 G001565

A. Mower belt with 1/2" (13mm) deflection B. Idler pulley

MOWER DECK

4. 40", 48" and 52" mower decks only:

If there is no adjustment left in the turnbuckle and the belt is still loose, the front and rear idler pulleys and the belt guide can be positioned into the inner adjustment holes located on the mower deck (Fig. 901).

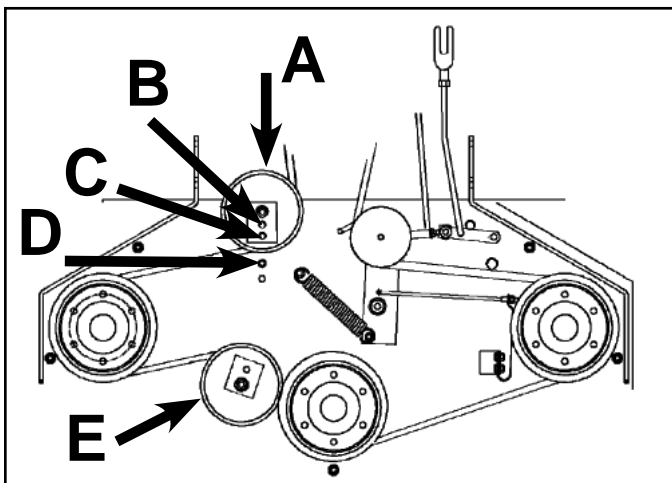


Fig 901

fig. 40 G001848

- | | |
|----------------------|--------------------------------|
| A. Rear idler pulley | D. Belt guide in back position |
| B. Middle hole | E. Front idler pulley |
| C. Front hole | |

Note: When the idler pulley is moved, the belt guide must be moved to the coordinating hole (Fig. 902).

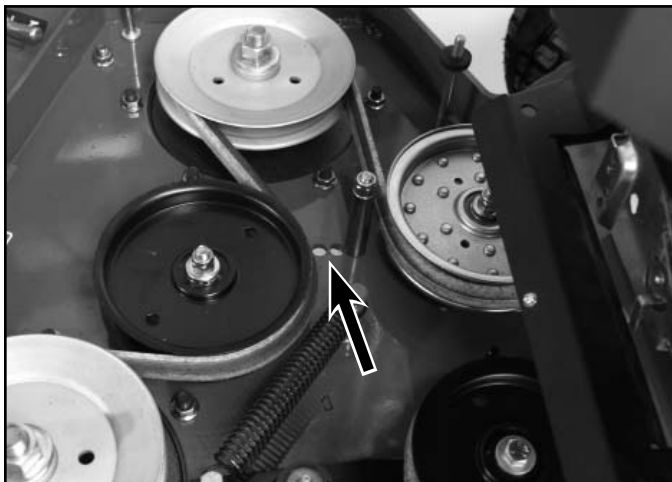


Fig 902

PICT-6070

Castor Wheel Assembly Service

Removal

1. Raise and support the machine so the castor wheels are off the floor.
2. While supporting the castor assembly, remove the locking pin from the top of the castor assembly (Fig. 903).



Fig 903

PICT-5481

3. Remove the castor assembly and washer from the castor support (Fig. 904).

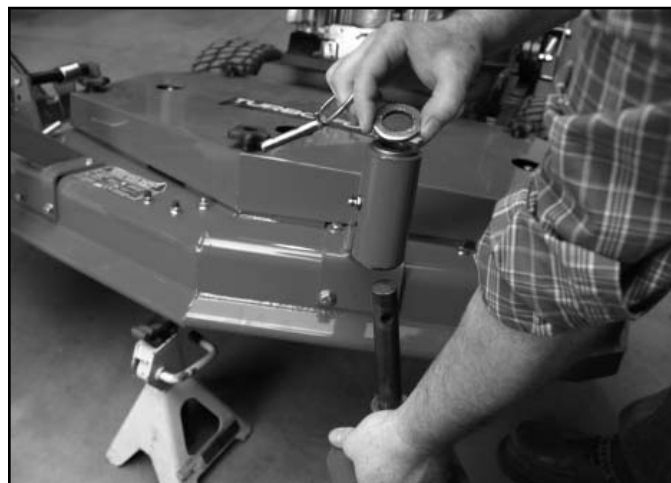


Fig 904

PICT-5486

MOWER DECK

4. Remove the spacers from the fork (Fig. 905).

Note: Make note of the spacer location on each fork to maintain original deck height setting.



Fig 905

PICT-5499a

5. Remove the nut and lock washer securing the wheel and tire assembly to the fork (Fig. 906).



Fig 906

PICT-5501

6. Remove the axle bolt and the wheel and tire assembly from the fork (Fig. 907).



Fig 907

PICT-5505

7. Remove the spacer from the wheel assembly (Fig. 908).



Fig 908

PICT-5514

MOWER DECK

8. Remove one of the bushings from the wheel assembly (Fig. 909).



Fig 909

PICT-5516

10. Remove the second bushing from the wheel assembly (Fig. 911).



Fig 911

PICT-5519

9. Remove the needle bearing from the wheel assembly (Fig. 910).



Fig 910

PICT-5517

11. Remove the grease zerk from the wheel assembly (Fig. 912).



Fig 912

PICT-5523

12. Thoroughly clean the wheel and tire assembly. Inspect the wheel and bearings for damage and replace as necessary.

Installation

1. Install a bushing into one side of the wheel (Fig. 913).



Fig 913

PICT-5678

2. Apply grease to the needle bearing (Fig. 914).



Fig 914

PICT-5684a

3. Install the greased needle bearing into the wheel (Fig. 915).



Fig 915

PICT-5685a

4. Install a second bushing into the other side of the wheel (Fig. 916).



Fig 916

PICT-5688

MOWER DECK

5. Install the spacer into the wheel (Fig. 917).



Fig 917

PICT-5694a

7. Position the wheel and tire assembly in the fork (Fig. 919).



Fig 919

PICT-5700a

6. Install the grease zerk into the wheel assembly (Fig. 918).



Fig 918

PICT-5696a

8. Install the wheel axle bolt (Fig. 920).



Fig 920

PICT-5702a

MOWER DECK

9. Install and tighten the lock washer and nut to secure the wheel to the fork (Fig. 921).



Fig 921

PICT-5704a

11. Apply grease to the fork shaft (Fig. 923).



Fig 923

PICT-5707a

10. Fill the wheel assembly with grease until it begins to flow out of the bushings (Fig. 922).



Fig 922

PICT-5706a

12. Install spacers onto the fork as previously noted to restore original deck height (Fig. 924).



Fig 924

PICT-5709a

MOWER DECK

13. Install the castor assembly into the castor support arm (Fig. 925).



Fig 925

PICT-5714

15. Install a lock pin into the fork shaft (Fig. 927).



Fig 927

PICT-5717

14. Install a washer onto the fork shaft (Fig. 926).



Fig 926

PICT-5716

16. Fill the castor support arm with grease until it begins to flow out of the support bushings (Fig. 928).



Fig 928

PICT-5723

17. Lower the machine to the floor.

Castor Support Arm Bushing Service

1. Raise the machine so the castor wheels are off the floor, then block up the front of the mower.
2. While supporting the castor assembly, remove the locking pin from the top of the castor assembly (Fig. 929).



Fig 929

PICT-5481

4. Remove the grease zerk from the castor support arm (Fig. 931).



Fig 931

PICT-5529

5. Remove the 2 flange bushings from the support arm assembly (Fig. 932).



Fig 932

PICT-5492

3. Remove the castor assembly from the castor support. Replace the locking pin (Fig. 930).



Fig 930

PICT-5486

MOWER DECK

6. Inspect the castor support arm for damage. Replace if necessary.
7. Install 2 flange bushings into the support arm (Fig. 933).



Fig 933

PICT-5497

9. Remove the locking pin from the castor assembly and install the castor assembly into the support arm assembly (Fig. 935).



Fig 935

PICT-5714

8. Install a grease zerk into the support arm assembly (Fig. 934).



Fig 934

PICT-5529



Fig 936

PICT-5716

11. Install the locking pin into the castor fork assembly (Fig. 937).



Fig 937

PICT-5717

12. Fill the castor support arm with grease until it begins to flow out of the support bushings (Fig. 938).



Fig 938

PICT-5723

13. Lower the machine to the floor.

Castor Support Arm Replacement

Removal

1. Raise the machine so the castor wheels are off the floor, then block up the front of the mower.
2. While supporting the castor assembly, remove the locking pin from the top of the castor assembly (Fig. 939).



Fig 939

PICT-5481

3. Remove the castor assembly from the castor support. Replace the locking pin (Fig. 940).



Fig 940

PICT-5486

MOWER DECK

4. Remove the 4 bolts, washers and nuts securing the support arm to the mower deck (Fig. 941).

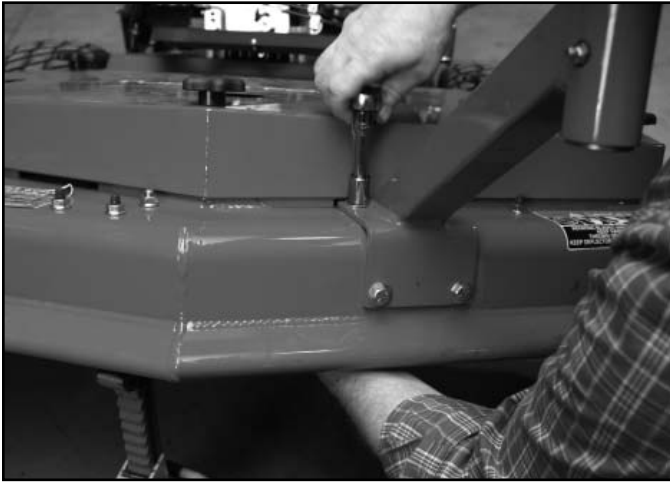


Fig 941

PICT-5530

Replacement

1. Position the castor support arm assembly onto the mower deck (Fig. 943).



Fig 943

PICT-5533

5. Remove the castor support arm from the mower deck (Fig. 942).



Fig 942

PICT-5533

2. Install 4 bolts, washers and nuts to secure the support arm assembly to the mower deck (Fig. 944).

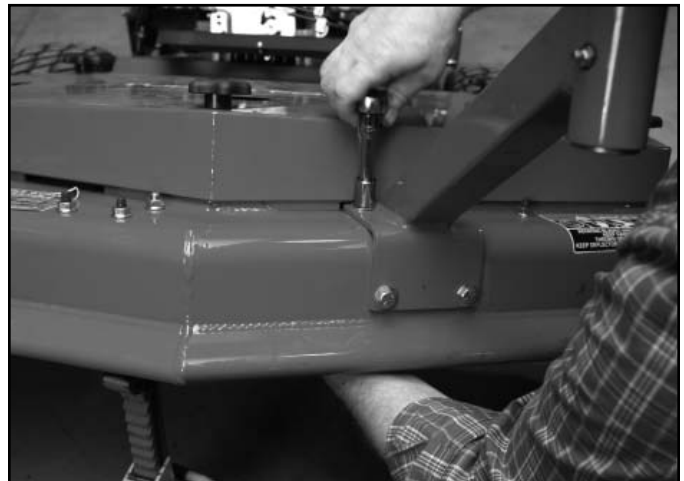


Fig 944

PICT-5530

MOWER DECK

3. Remove the locking pin from the castor assembly and install the castor assembly into the support arm assembly (Fig. 945).



Fig 945

PICT-5714

5. Install the locking pin into the castor fork assembly (Fig. 947).



Fig 947

PICT-5717

4. Install a washer onto the castor fork (Fig. 946).



Fig 946

PICT-5716

6. Fill the castor support arm with grease until it begins to flow out of the support bushings (Fig. 948).



Fig 948

PICT-5723

7. Lower the machine to the floor.

MOWER DECK

Deflector Service

Deflector Removal

1. Carefully unhook the spring from the deflector assembly (Fig. 949).



Fig 949

PICT-5614

3. Remove the pivot bolt from the deflector assembly (Fig. 951).



Fig 951

PICT-5619

2. Remove the deflector assembly pivot bolt and nut (Fig. 950).

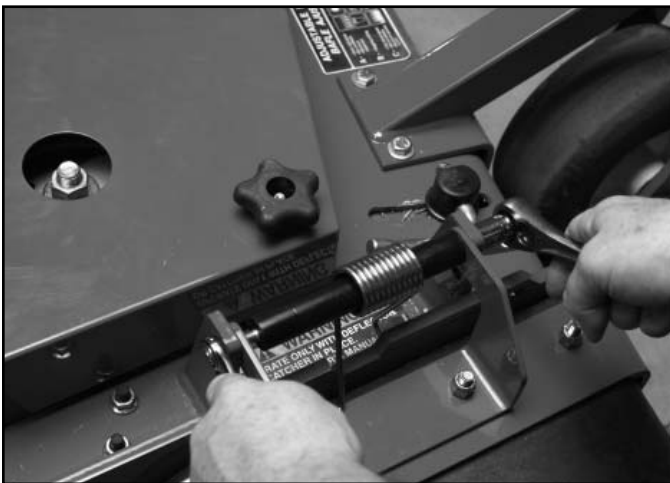


Fig 950

PICT-5615

4. Remove the deflector assembly, spacer and spring from the mower deck (Fig. 952).



Fig 952

PICT-5628

Deflector Disassembly

1. Remove the center carriage bolts and nuts from the deflector assembly (Fig. 953).



Fig 953

PICT-5633

2. Remove the deflector mounting bracket from the chute assembly (Fig. 954).

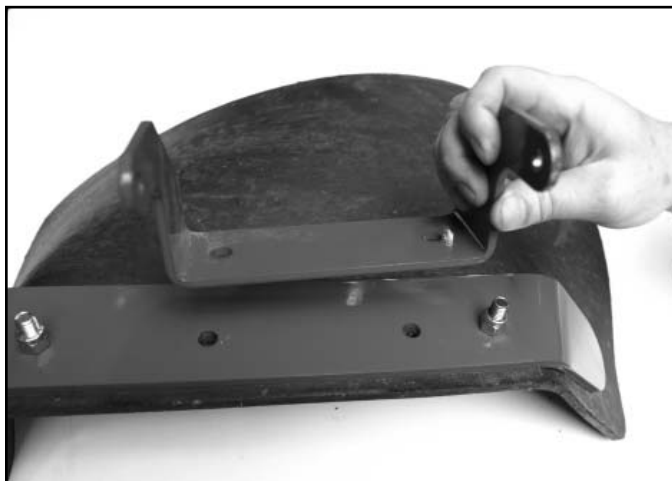


Fig 954

PICT-5636

3. Remove the remaining carriage bolts and nuts from the deflector assembly (Fig. 955).

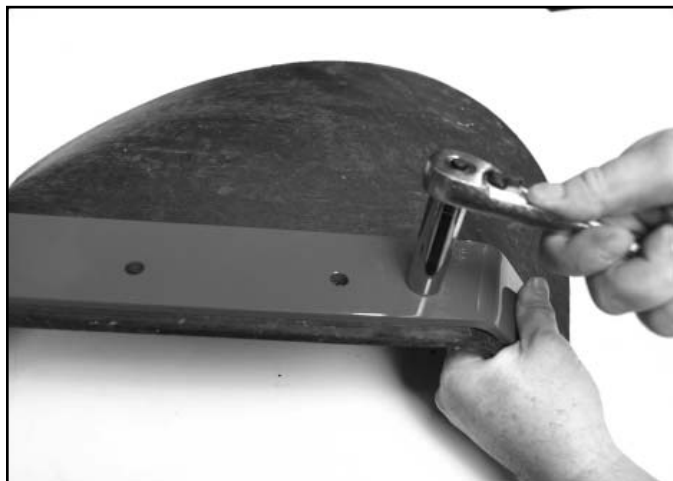


Fig 955

PICT-5637

4. Remove the discharge strap and metal deflector from the rubber deflector (Fig. 956).



Fig 956

PICT-5640

MOWER DECK

Deflector Assembly

1. Insert the 4 carriage bolts into the discharge strap (Fig. 957).

Note: The bolt pattern is oriented so the 2 bolt holes that are closer together are on the right.



Fig 957

PICT-5641a

3. Install the metal deflector onto the 4 carriage bolts (Fig. 959).



Fig 959

PICT-5652

2. Position and press the rubber deflector onto the 4 carriage bolts (Fig. 958).



Fig 958

PICT-5649

4. Install 2 nuts onto the 2 outermost carriage bolts (Fig. 960).



Fig 960

PICT-5655

5. Position the deflector mounting bracket onto the deflector assembly (Fig. 961).



Fig 961

PICT-5658

6. Install 2 nuts securing the deflector mounting bracket to the deflector assembly (Fig. 962).



Fig 962

PICT-5661

Deflector Installation

1. Slide the spring onto the spacer (Fig. 963).



Fig 963

PICT-5665a

2. Orient the spring/spacer assembly so the end of the spring with the hook is pointing to the rear (Fig. 964).

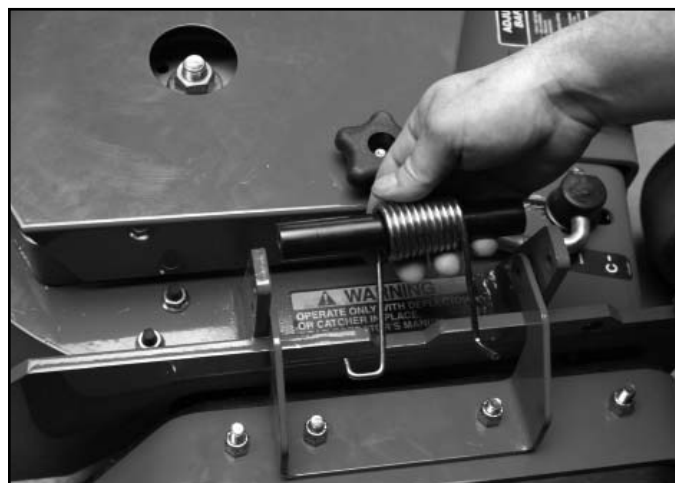


Fig 964

PICT-5666

MOWER DECK

3. Install the spring/spacer, using the pivot bolt, so that the hook end of the spring is on the deflector side of the mounting plate and the "L" end of the spring is on the mower deck side of the mounting plate (Fig. 965).

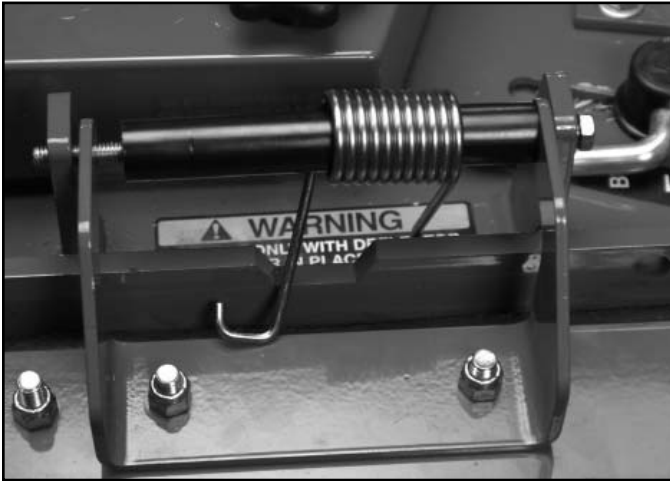


Fig 965

PICT-5668

4. Install a nut onto the pivot bolt (Fig. 966).



Fig 966

PICT-5615

5. Install the hook end of the spring onto the deflector mounting bracket (Fig. 967).



Fig 967

PICT-5614

Adjustable Baffle Service

Removal

1. Remove the nut that secures the lock lever to the lock cap (Fig. 968).



Fig 968

PICT-6194

MOWER DECK

2. Slide the lock lever out of the lock cap (Fig. 969).



Fig 969

PICT-6199

4. Remove the lock screw by unthreading it from the adjustable baffle assembly (Fig. 971).



Fig 971

PICT-6202

3. Remove the lock cap (Fig. 970).



Fig 970

PICT-6200a

5. Remove the nut from the bolt securing the adjustable baffle to the underside of the mower deck (Fig. 972).



Fig 972

PICT-6204

8

MOWER DECK

6. Remove the self-tapping screw that secures the adjustable baffle to the underside of the mower deck (Fig. 973).



Fig 973

PICT-6209

Installation

1. Position the adjustable baffle on the underside of the mower deck (Fig. 975).



Fig 975

PICT-6211

7. Remove the adjustable baffle from the mower deck (Fig. 974).



Fig 974

PICT-6211

2. Install a self-tapping screw to secure the adjustable baffle to the underside of the mower deck (Fig. 976).



Fig 976

PICT-6209

MOWER DECK

3. Install a nut onto the self tapping bolt that secures the adjustable baffle to the underside of the mower deck (Fig. 977).



Fig 977

PICT-6204

5. Thread the lock screw into the bushing of the adjustable baffle assembly (Fig. 979).



Fig 979

PICT-6202

4. Apply anti-locking compound onto the lock screw threads (Fig. 978).



Fig 978

PICT-6212a

6. Position the lock cap onto the lock screw (Fig. 980).



Fig 980

PICT-6200a

MOWER DECK

7. Slide the lock lever into the lock cap (Fig. 981).



Fig 981

PICT-6199

8. Install a nut to secure the lock lever to the lock cap and screw (Fig. 982).



Fig 982

PICT-6194

Fixed Baffle Replacement 40", 48" & 52" Mower Deck

Removal

1. Remove the nut and carriage bolt securing the left end of the fixed baffle to the mower deck (Fig. 983).



Fig 983

PICT-6149

2. Remove the nut from the bolt securing the right end of the fixed baffle to the mower deck (Fig. 984).



Fig 984

PICT-6151

MOWER DECK

3. Remove the bolt securing the right end of the fixed baffle to the mower deck (Fig. 985).



Fig 985

PICT-6154

5. Remove the bolt that secures the center of the fixed baffle to the mower deck (Fig. 987).



Fig 987

PICT-6159

4. Remove the nut from the bolt that secures the center of the fixed baffle to the mower deck (Fig. 986).



Fig 986

PICT-6156

6. Remove the fixed baffle from the mower deck (Fig. 988).



Fig 988

PICT-6161

MOWER DECK

Installation

1. Position the fixed baffle into the mower deck (Fig. 989).



Fig 989

PICT-6161

2. Loosely install 2 bolts through the center and right end holes of the fixed baffle and into the mower deck (Fig. 990).



Fig 990

PICT-6162

3. Install and tighten a carriage bolt and nut to secure the left end of the fixed baffle to the mower deck (Fig. 991).



Fig 991

PICT-6149

4. Tighten the center and right side bolts securing the fixed baffle to the mower deck (Fig. 992).



Fig 992

PICT-6159

5. Install and tighten 2 nuts to the center and right side bolts securing the fixed baffle to the mower deck (Fig. 993).



Fig 993

PICT-6166

3. Remove the front carriage bolt from the skid plate (Fig. 995).



Fig 995

PICT-6135

Skid Plate Replacement 36", 40", 48" & 52" Mower Deck

Removal

1. Raise the machine to access the under side of the mower deck.
2. Remove the nut from the carriage bolt on the front side of the skid plate (Fig. 994).



Fig 994

PICT-6131

4. Remove the 2 nuts and carriage bolts securing the rear side of the skid plate to the mower deck (Fig. 996).



Fig 996

PICT-6136

MOWER DECK

5. Remove the skid plate from the mower deck (Fig. 997).



Fig 997

PICT-6141

2. Loosely install all three bolts and nuts securing the skid plate to the mower deck (Fig. 999).



Fig 999

PICT-6145

Installation

1. Position the skid plate on the mower deck so that the rear lip of the skid plate is positioned on the outside of the rear of the mower deck housing (Fig. 998).



Fig 998

PICT-6143

3. Tighten all three nuts and bolts (Fig. 1000).



Fig 1000

PICT-6147

4. Lower the machine.

Blade Brake Replacement

Removal

1. Remove the mower deck cover (Fig. 1001).

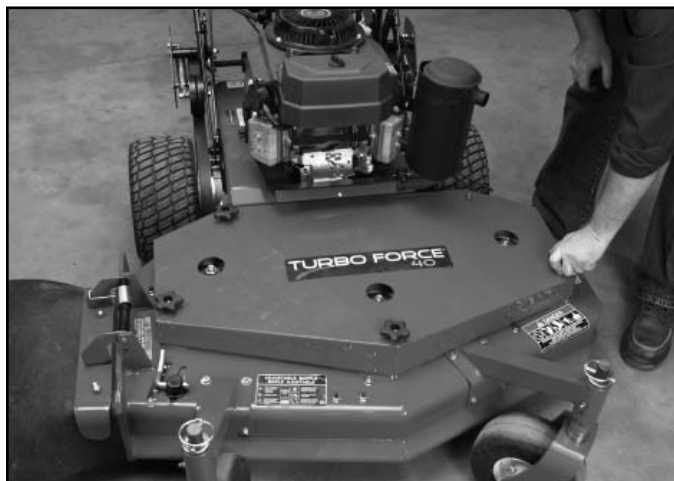


Fig 1001

PICT-0029

2. Remove the hairpin cotter from the blade brake rod (Fig. 1002).



Fig 1002

PICT-6105

3. Remove the blade brake rod from the idler arm (Fig. 1003).

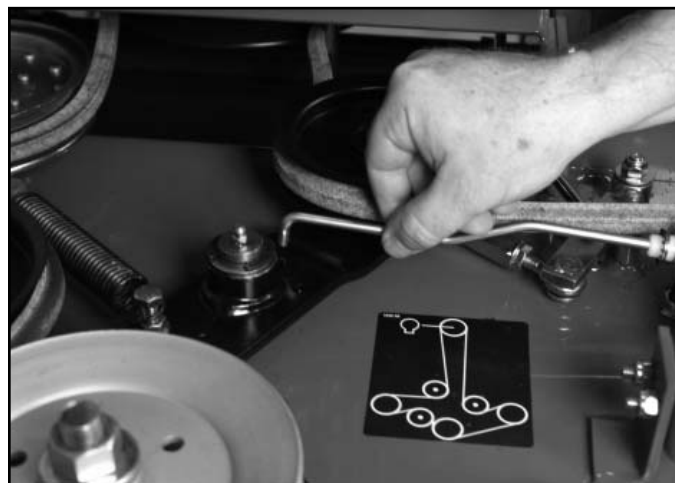


Fig 1003

PICT-6108

4. Remove the two nuts and bolts from the blade brake assembly (Fig. 1004).

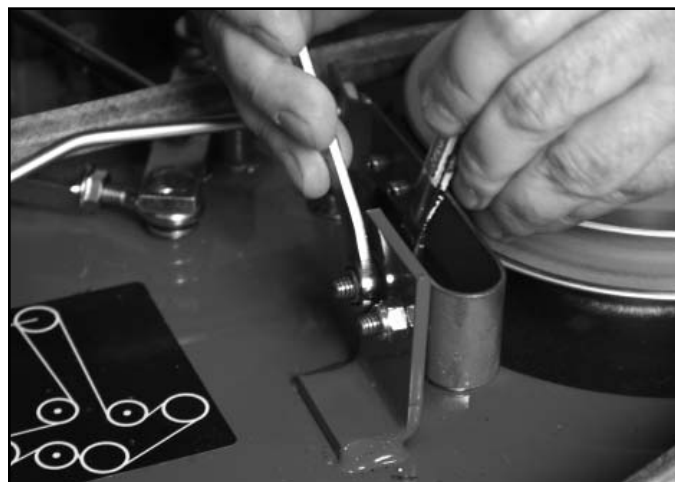


Fig 1004

PICT-6110

MOWER DECK

5. Remove the blade brake assembly from the mower deck (Fig. 1005).



Fig 1005

PICT-6113

7. Remove the push nut from the flanged spacer (Fig. 1007).



Fig 1007

PICT-6120a

6. Remove the nut and blade brake rod from the blade brake assembly (Fig. 1006).

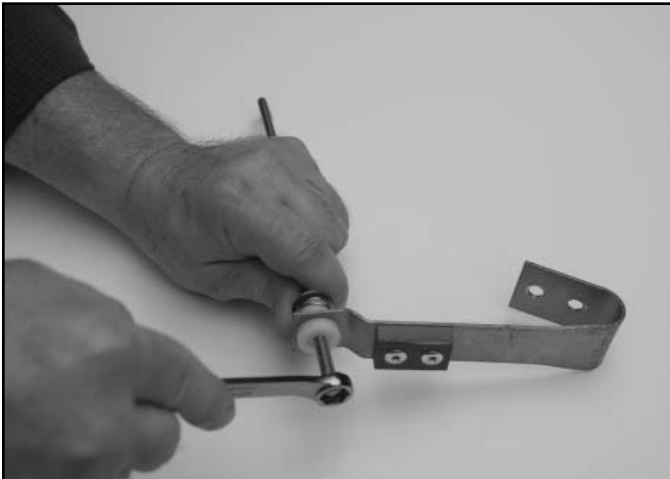


Fig 1006

PICT-6117a

8. Remove the spring from the flanged spacer (Fig. 1008).



Fig 1008

PICT-6124a

MOWER DECK

9. Remove the flanged spacer from the blade brake (Fig. 1009).



Fig 1009

PICT-6127a

2. Install the spring onto the plastic flanged spacer (Fig. 1011).



Fig 1011

PICT-6175a

Installation

1. Install the flanged spacer into the blade brake (Fig. 1010).



Fig 1010

PICT-6172a

3. Install a push nut onto the flanged spacer (Fig. 1012).



Fig 000

PICT-6176a

MOWER DECK

4. Install the blade brake rod into the flanged spacer (Fig. 1013).

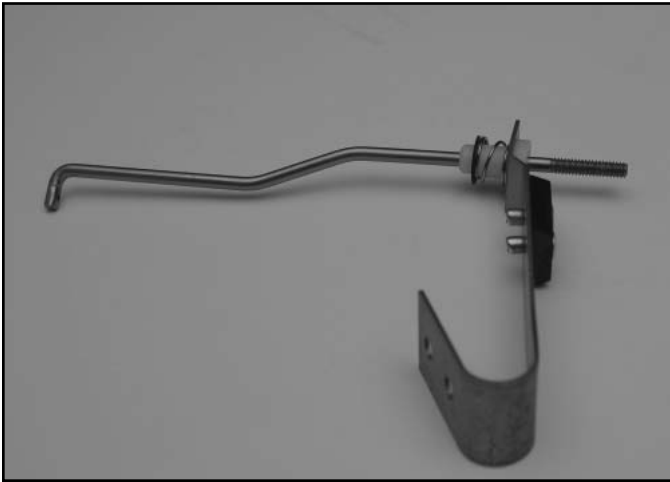


Fig 1013

PICT-6179a

6. Position the blade brake assembly into the mower deck so the 2 holes on the blade brake align with the 2 holes on the tab in the mower deck (Fig. 1015).



Fig 1015

PICT-6183

5. Install a nut onto the blade brake rod (Fig. 1014).

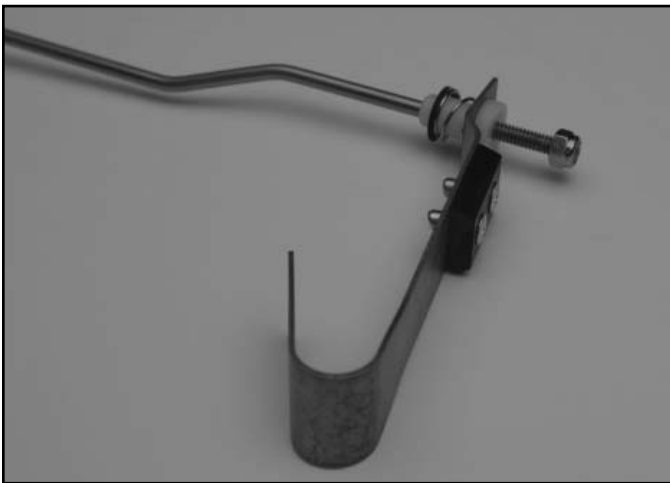


Fig 1014

PICT-6180a

7. Install 2 bolts and nuts to secure the blade brake to the tab on the mower deck (Fig. 1016).



Fig 1016

PICT-6188

MOWER DECK

8. Install the blade brake rod into the idler arm assembly (Fig. 1017).

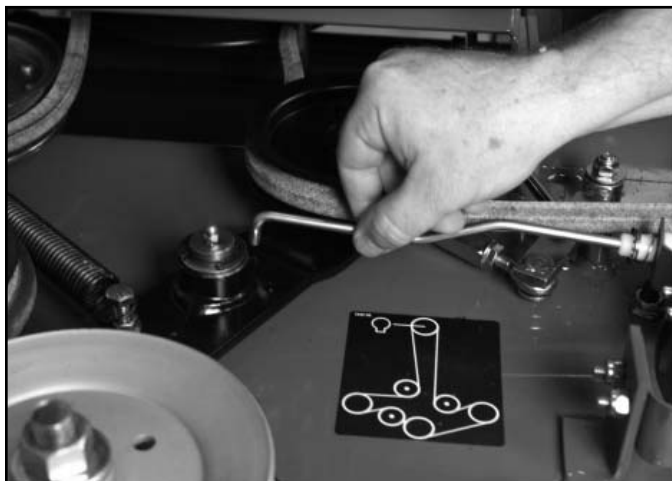


Fig 1017

PICT-6108

9. Install the hairpin cotter into the blade brake rod to secure it to the idler arm (Fig. 1018).



Fig 1018

PICT-6105

10. Tighten the nut on the end of the brake rod until there is a gap between the nut and the flanged spacer from 1/8" to 3/16" (3 to 5mm) (Fig. 1019 and Fig. 1020).



Fig 1019

PICT-6189a

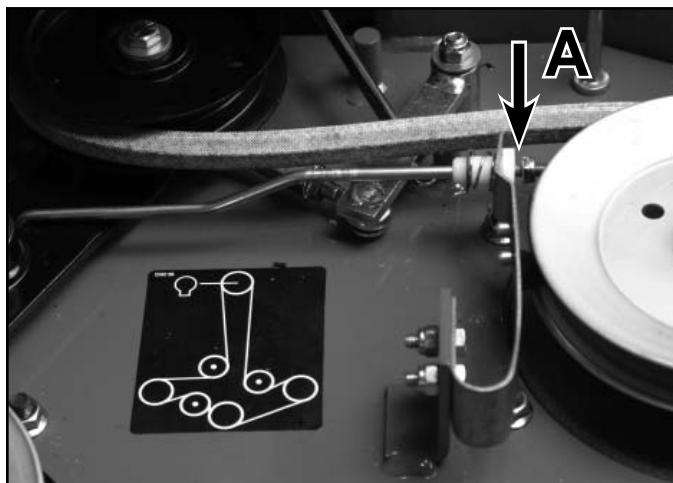


Fig 1020

PICT-6193

- A. 1/8" to 3/16" (3 - 5mm) gap

MOWER DECK

11. Adjust the blade brake. Refer to "Adjusting the Blade Brake" following.
12. Install the mower deck cover (Fig. 1021).

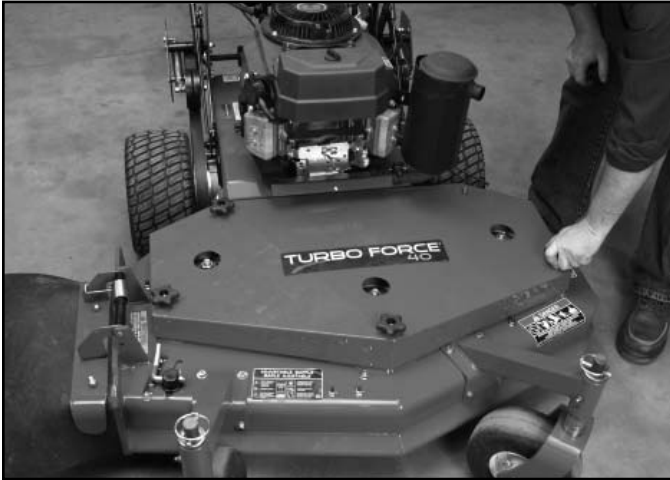


Fig 1021

PICT-0029

Adjusting the Blade Brake

1. Disengage the PTO and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operators position.
3. If necessary, adjust the spring mounting bolts so that the brake pad rubs against the pulley.
4. Adjust the nut at the end of the blade brake rod until there is a $\frac{1}{8}$ " to $\frac{3}{16}$ " (3 to 5mm) between the nut and the spacer (Fig. 1022).
5. Engage the blades, and ensure that the blade brake pad no longer contacts the pulley.

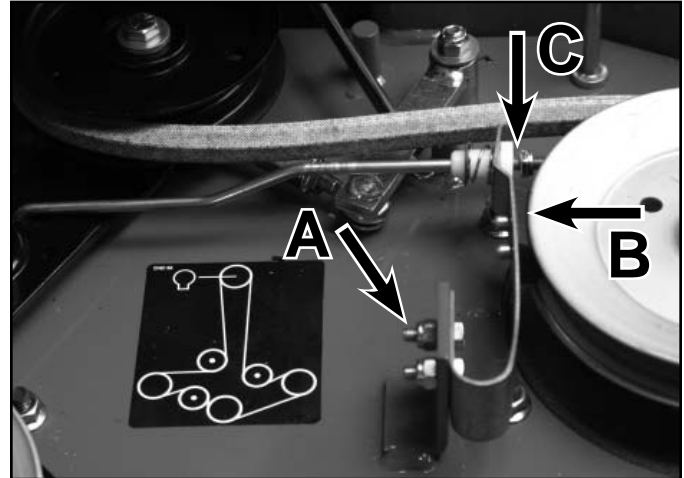


Fig 1022

PICT-6193

- A. Spring mounting bolt/nut (2)
- B. Blade brake pad
- C. $\frac{1}{8}$ " - $\frac{3}{16}$ " (3 - 5mm)

Idler (PTO Engagement) Pulley/Idler Arm Replacement

Removal

1. Remove the mower deck cover (Fig. 1023).



Fig 1023

PICT-5923

2. Remove the mower belt from the spindle pulley (Fig. 1024).



Fig 1024

PICT-5925

3. Raise the machine to access the underside of the mower deck.
4. Remove the hairpin cotter from the PTO linkage arm (Fig. 1025).



Fig 1025

IMG-5671

5. Remove the PTO linkage arm from the assist arm (Fig. 1026).



Fig 1026

IMG-5672

MOWER DECK

6. Remove the bolt and washer from the idler pulley (Fig. 1027).



Fig 1027

PICT-6022

8. Remove the engagement bushing (Fig. 1029).



Fig 1029

PICT-6030

7. Remove the idler pulley (Fig. 1028).



Fig 1028

PICT-6029

9. Using a spring removal tool (Toro p/n: 92-5771) remove the idler spring (Fig. 1030).



Fig 1030

PICT-6034

MOWER DECK

10. Remove the nut and washer from the assist arm (Fig. 1031).

Note: When the nut and washer are removed the bolt will drop out the bottom of the housing.



Fig 1031

IMG-5675

11. Remove the assist arm and pivot tube from the mower deck (Fig. 1032).

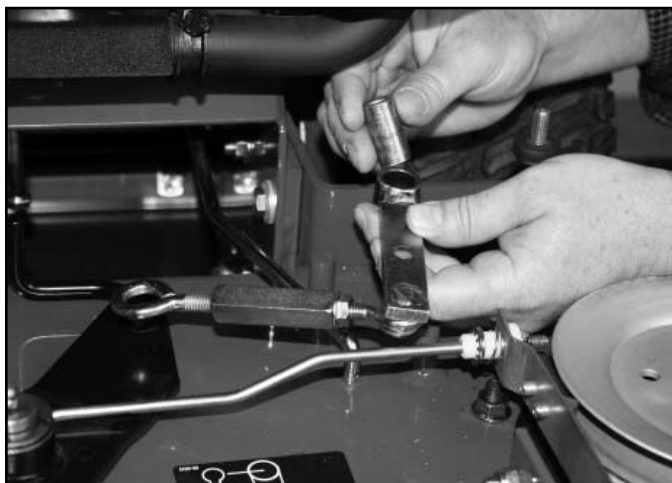


Fig 1032

IMG-5679

12. Remove the retaining ring and washer from the assist arm (Fig. 1033).

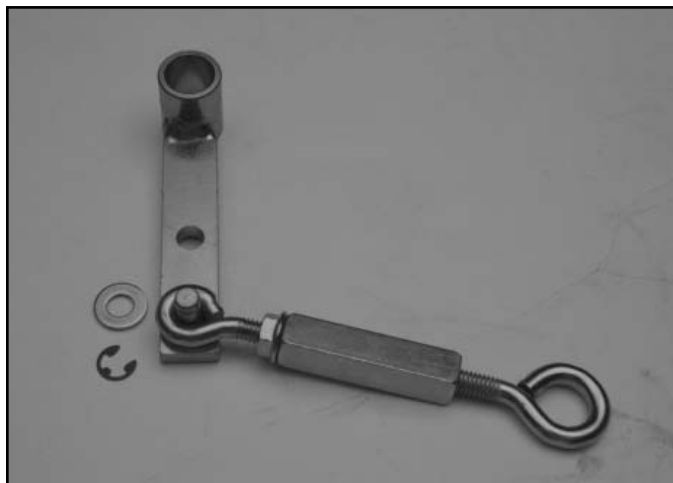


Fig 1033

IMG-5680a

13. Remove the eyebolt from the assist arm (Fig. 1034).



Fig 1034

IMG-5683a

MOWER DECK

14. Remove the hair pin cotter from the brake rod (Fig. 1035).



Fig 1035

IMG-5684

16. Remove the e-ring from the idler assembly (Fig. 1037).

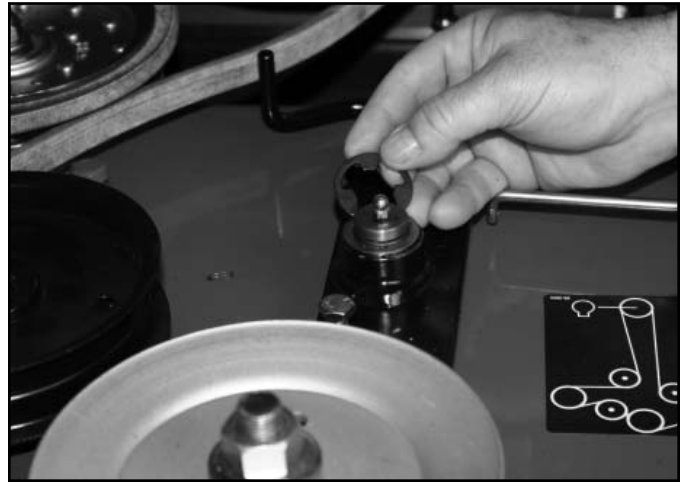


Fig 1037

IMG-5688

15. Remove the brake rod from the idler assembly (Fig. 1036).



Fig 1036

IMG-5687

17. Remove the washer from the idler assembly (Fig. 1038).



Fig 1038

IMG-5691

MOWER DECK

18. Remove the idler arm from the mower deck (Fig. 1039).



Fig 1039

IMG-5693

Note: If the idler assembly is being replaced, the new part comes with bushings installed (Fig. 1041).



Fig 1041

IMG-5697a

19. Remove the cap screw and 2 nuts from the idler assembly (Fig. 1040).

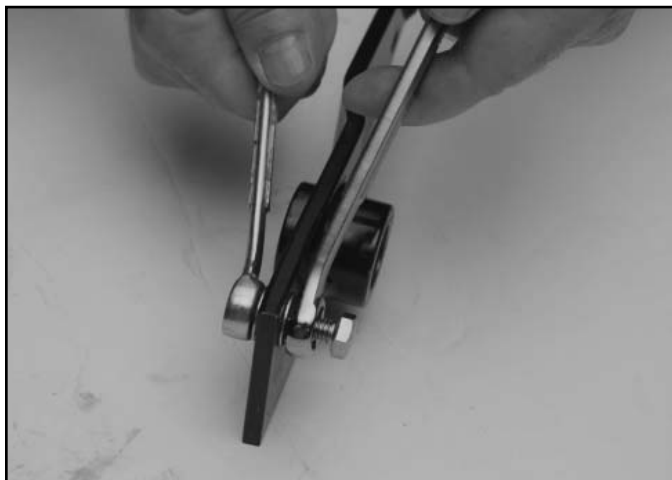


Fig 1040

IMG-5695a

20. Press the bushings out of the idler assembly (Fig. 1042).



Fig 1042

IMG-5698

MOWER DECK

21. Press new bushings into the idler assembly (Fig. 1043).



Fig 1043

IMG-5700

22. Remove the grease fitting from the idler arm pivot post housing (Fig. 1044).



Fig 1044

IMG-5703

Installation

Note: If a new mower belt is being installed, refer to “Mower Belt Replacement - Installation” on page 8-4 for front and rear fixed idler pulley placement.

1. Install a grease fitting in the idler arm pivot post housing (Fig. 1045).



Fig 1045

IMG-5703

MOWER DECK

2. Install a capscrew with two nuts into the Idler assembly.

Note: The head of the capscrew must be on the same side of the idler assembly as the welded-on rod. Secure the 2 nuts (Fig. 1046).

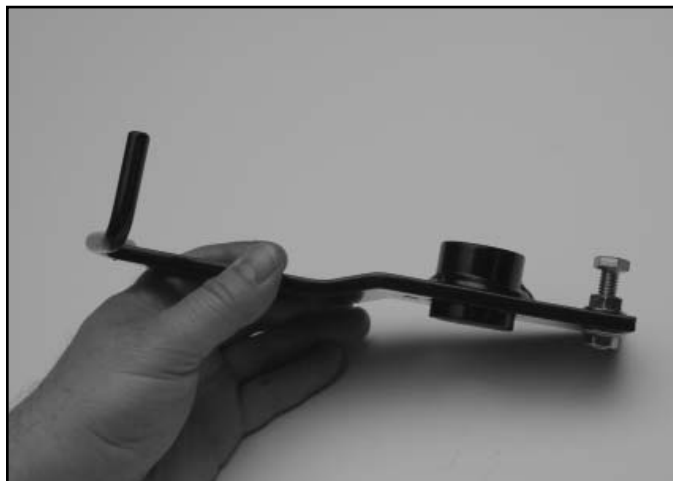


Fig 1046

IMG-5706a

3. Install the idler arm onto the mower deck pivot pin (Fig. 1047).



Fig 1047

IMG-5693

4. Install a washer onto the idler assembly (Fig. 1048).



Fig 1048

PICT-5691

5. Install a snap ring onto the idler assembly (Fig. 1049).



Fig 1049

IMG-5688

MOWER DECK

6. Insert the brake rod into the idler assembly (Fig. 1050).



Fig 1050

IMG-5687

8. Place the eyebolt onto the post of the assist arm (Fig. 1052).

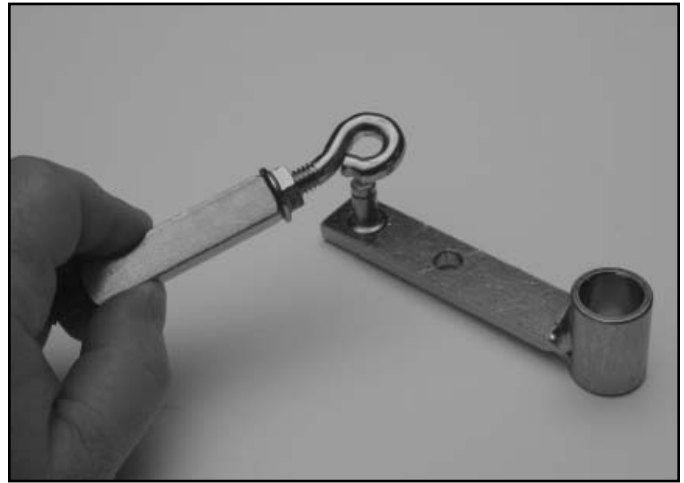


Fig 1052

IMG-5707a

7. Install a hairpin cotter into the brake rod securing it to the idler assembly (Fig. 1051).



Fig 1051

IMG-5684

9. Secure the eyebolt to the assist arm with a washer and retaining ring (Fig. 1053).



Fig 1053

IMG-5709a

MOWER DECK

10. Install the assist arm bolt and washer up through the bottom of the mower deck (Fig. 1054).



Fig 1054

PICT-8565

12. Position the assist arm onto the pivot tube (Fig. 1056).



Fig 1056

IMG-5716

11. Install the pivot tube onto the bolt (Fig. 1055).



Fig 1055

IMG-5713

13. Install a nut and washer to secure assist arm (Fig. 1057).



Fig 1057

IMG-5718

MOWER DECK

14. Insert the engagement bushing into the idler pulley (Fig. 1058).



Fig 1058

PICT-6053

16. Position the turn buckle over the hole in the idler arm (Fig. 1060).

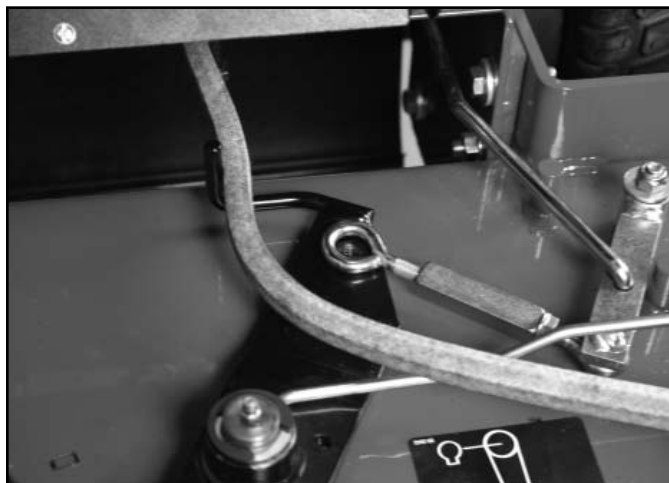


Fig 1060

PICT-6057

15. Insert the bolt and washer into the idler pulley (Fig. 1059).

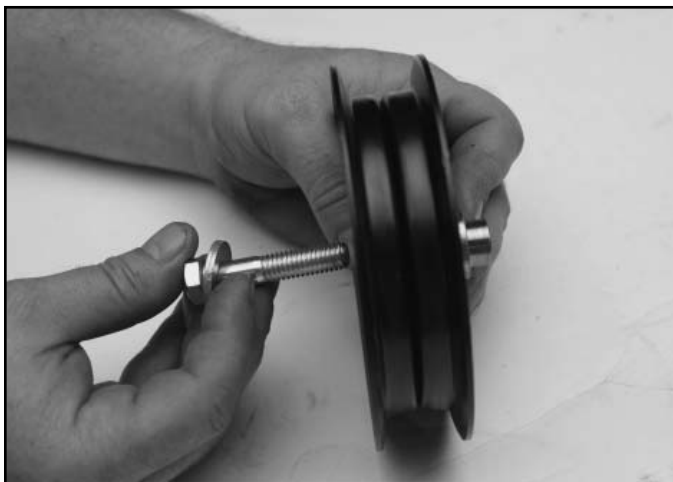


Fig 1059

PICT-6055a

17. Position the belt onto the idler pulley and install the idler pulley bolt into the idler arm (Fig. 1061).

Note: Ensure the belt is routed between idler pulley and belt guide.



Fig 1061

PICT-6060a

MOWER DECK

18. Tighten the idler bolt (Fig. 1062).



Fig 1062

PICT-6063

20. Install the PTO linkage arm into the hole in brake assist arm (Fig. 1064).

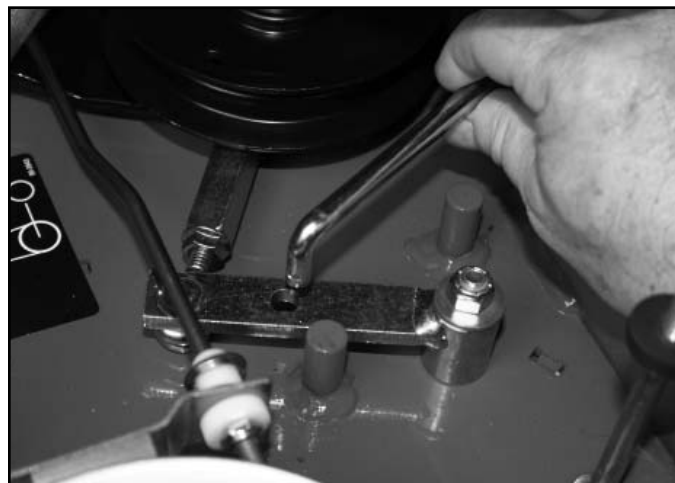


Fig 1064

IMG-5723

19. Install the idler spring from the stud on the mower deck to the stud on the idler arm (Fig. 1063).



Fig 1063

PICT-6065

21. Install the hairpin cotter into the PTO linkage arm (Fig. 1065).



Fig 1065

IMG-5671

MOWER DECK

22. Route the mower deck belt around the pulleys (Fig. 1066).

Note: There is a belt routing decal on the mower deck to be used for reference in re-routing the mower belt.

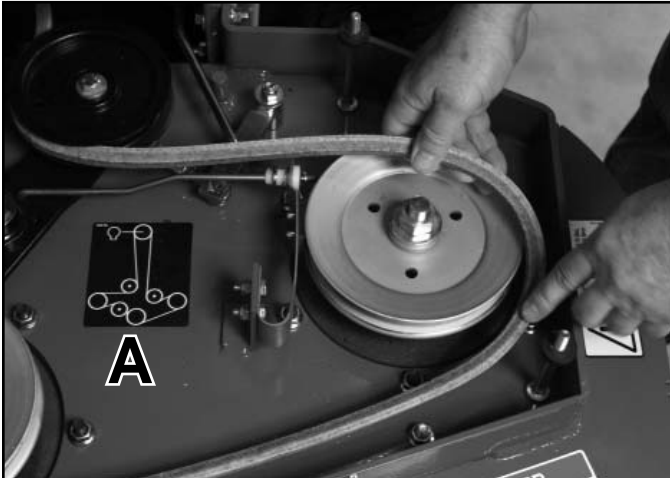


Fig 1066

PICT-5924

- A. Belt routing decal

23. Apply grease to the fitting on the idler arm assembly (Fig. 1067).



Fig 1067

IMG-5754

24. Install the mower deck cover (Fig. 1068).



Fig 1068

PICT-5923

Front Idler Pulley Replacement

Removal

1. Remove the mower deck cover (Fig. 1069).



Fig 1069

PICT-5923

MOWER DECK

2. Remove the mower belt from the front idler pulley (Fig. 1070).



Fig 1070

IMG-5726

4. When the nut and washer are removed, the cap screw and washer will drop out. (Fig. 1072).



Fig 1072

IMG-5733

3. Remove the nut and washer from the pulley (Fig. 1071).



Fig 1071

IMG-5729

5. Remove the idler pulley (Fig. 1073).



Fig 1073

IMG-5737

MOWER DECK

6. Remove the idler bushing (Fig. 1074).



Fig 1074

IMG-5739

2. Install an idler bushing onto the bolt shoulder up (Fig. 1076).



Fig 1076

IMG-5747

Installation

Note: If a new mower belt is being installed, refer to “Mower Belt Replacement - Installation” on page 8-4 for front and rear fixed idler pulley placement.

1. Place a cap screw into the proper hole in the mower deck (see table following) (Fig. 1075).

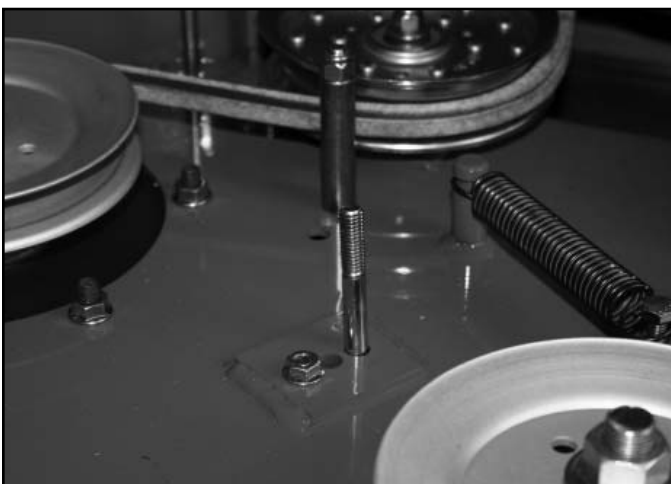


Fig 1075

IMG-5744

3. Install the pulley onto the bushing (Fig. 1077).



Fig 1077

IMG-5749

MOWER DECK

4. Install a washer (Fig. 1078).



Fig 1078

IMG-5751

5. Install a nut (Fig. 1079).



Fig 1079

IMG-5753

6. Route the mower deck belt around the pulleys. Refer to the belt routing decal located on the mower deck for reference in re-routing the mower belt (Fig. 1080).

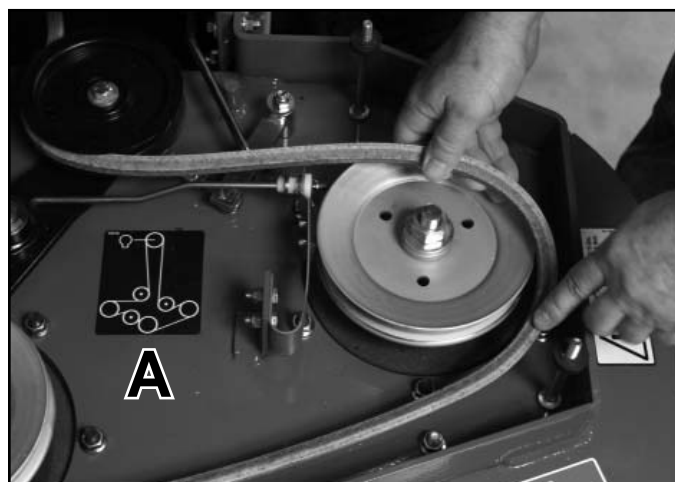


Fig 1080

PICT-5924

- A. Belt routing decal

Rear Idler Pulley Replacement

Removal

1. Remove the mower deck cover (Fig. 1081).



Fig 1081

PICT-5923

MOWER DECK

2. Remove the mower deck belt from the spindle pulley (Fig. 1082).

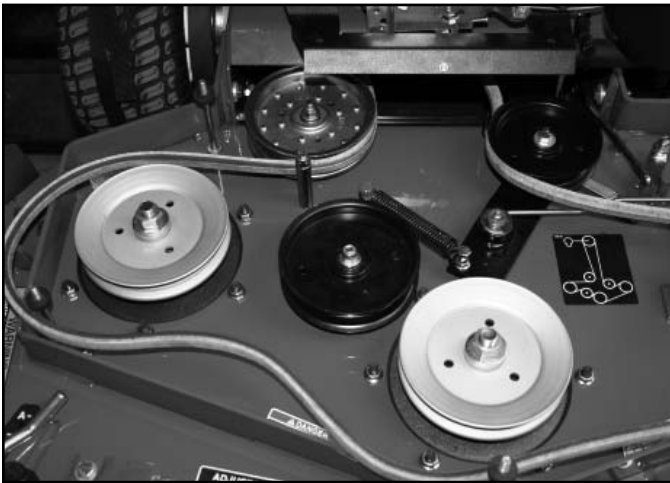


Fig 1082

IMG-5726

4. Remove the mower deck belt from the rear idler pulley (Fig. 1084).



Fig 1084

PICT-6075

3. Loosen the nut on top of the mower deck belt guide (Fig. 1083).



Fig 1083

PICT-6072

5. Remove the nut and washer from the pulley (Fig. 1085).



Fig 1085

PICT-6079a

MOWER DECK

Note: When the nut and washer are removed, the cap screw will drop out (Fig. 1086).



Fig 1086

PICT-6081

7. Remove the idler bushing (Fig. 1088).



Fig 1088

PICT-6088

6. Remove the idler pulley (Fig. 1087).



Fig 1087

PICT-6083

Installation

1. Install the rear idler pulley bolt into the proper hole on the mower deck (see table below) (Fig. 1089).

Note: If a new mower belt is being installed, refer to "Mower Belt Replacement - Installation" on page 8-4 for front and rear fixed idler pulley locations.

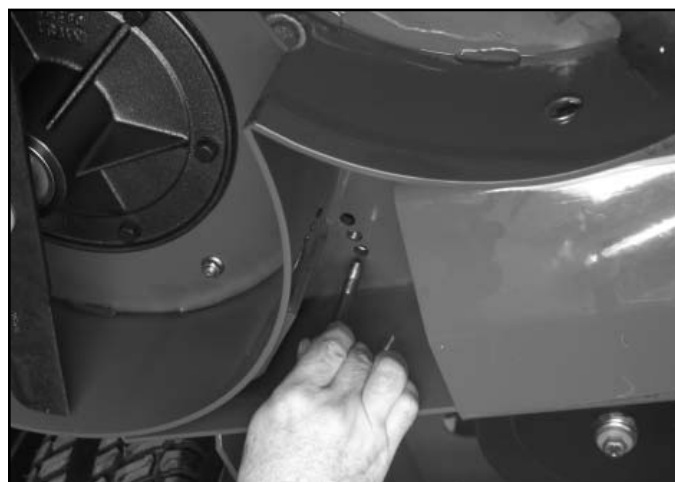


Fig 1089

PICT-6081

MOWER DECK

2. Install the idler bushing onto the bolt (Fig. 1090).



Fig 1090

PICT-6089

4. Install a washer (Fig. 1092).



Fig 1092

PICT-6094

3. Install the idler pulley onto the bolt (Fig. 1091).



Fig 1091

PICT-6093

5. Install a nut (Fig. 1093).



Fig 1093

PICT-6099

6. Route the mower deck belt around the pulleys. Refer to the belt routing decal located on the mower deck for reference in re-routing the mower belt (Fig. 1094).

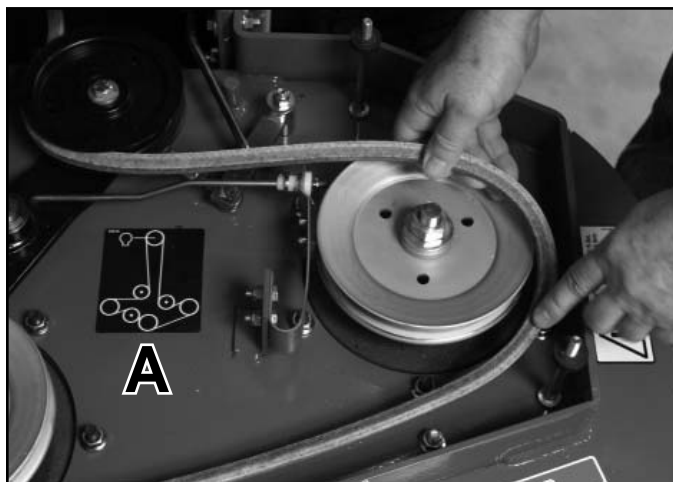


Fig 1094

PICT-5924

- A. Belt routing decal

7. Tighten the nut on top of the mower deck belt guide (Fig. 1095).



Fig 1095

PICT-6072

8. Install the mower deck cover (Fig. 1096).



Fig 1096

PICT-5923

Spindle Replacement

Spindle Removal

1. Remove the mower deck cover (Fig. 1097).



Fig 1097

PICT-5923

MOWER DECK

2. Remove the mower belt from the spindle pulley (Fig. 1098).



Fig 1098

PICT-5925

4. Raise the machine to access the underside of the mower deck.
5. Install a blade stop to secure the blade (Fig. 1100).



Fig 1100

PICT-5938

3. Engage the PTO lever if spindle replacement is being done on the spindle with the blade brake (Fig. 1099).

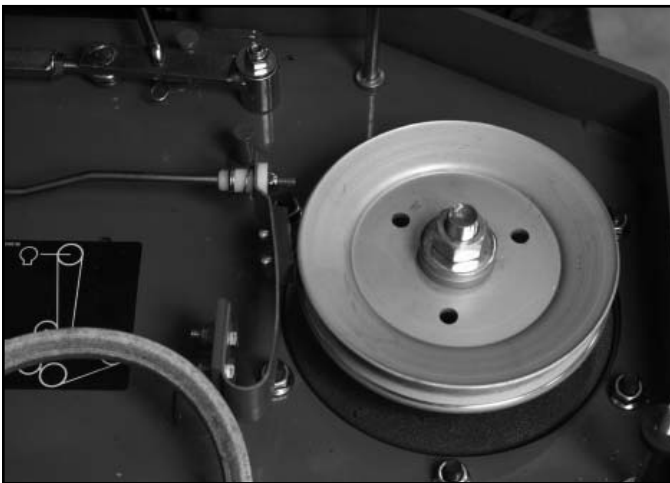


Fig 1099

PICT-5927

6. Loosen the spindle nut (Fig. 1101).



Fig 1101

PICT-5941

MOWER DECK

7. Remove the spindle nut from the spindle bolt (Fig. 1102).



Fig 1102

PICT-5945

9. Lower the blade, blade bolt and height-of-cut spacers out of the spindle assembly (Fig. 1104).



Fig 1104

PICT-5949

8. Remove the washer. There may also be one or more height-of-cut spacers present (Fig. 1103).

Note: Each spindle has 4 spacers for adjusting height-of-cut, which can be located at the top or bottom of the spindle.



Fig 1103

PICT-5947

10. Remove the spacers from the blade bolt (Fig. 1105).

Note: Each spindle has 4 spacers for adjusting height-of-cut, which can be located at the top or bottom of the spindle.



Fig 1105

PICT-6010a

MOWER DECK

11. Remove the blade and spring washer from the blade bolt (Fig. 1106).



Fig 1106

PICT-6014a

13. Remove the 6 bolts that secure the spindle housing to the mower deck (Fig. 1108).



Fig 1108

PICT-5955

12. Remove the 6 nuts securing the spindle housing to the mower deck (Fig. 1107).



Fig 1107

PICT-5952

Note: 40" mower decks have a washer installed on one of the spindle housing mounting bolts (Fig. 1109).



Fig 1109

PICT-6020

MOWER DECK

14. Lower the spindle and pulley assembly out of the mower deck (Fig. 1110).



Fig 1110

PICT-5956

16. Remove the pulley from the spindle assembly (Fig. 1112).



Fig 1112

PICT-5961

15. Remove the set screw from the pulley (Fig. 1111).



Fig 1111

PICT-5958a

17. Remove the key from either the pulley or the shaft (Fig. 1113).

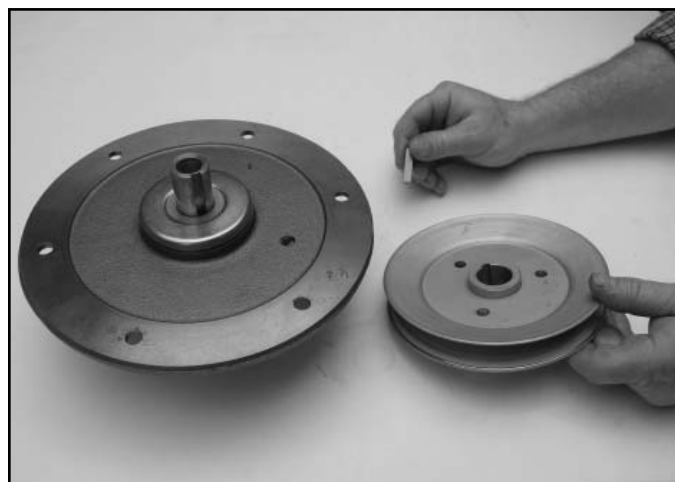


Fig 1113

PICT-5964a

MOWER DECK

18. Remove the top bearing guard (Fig. 1114).

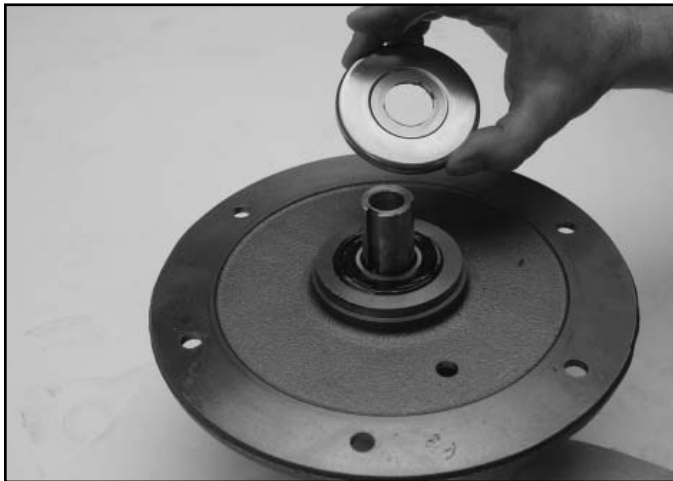


Fig 1114

PICT-5965a

20. Remove the washer and bottom guard spacer from the spindle shaft (Fig. 1116).

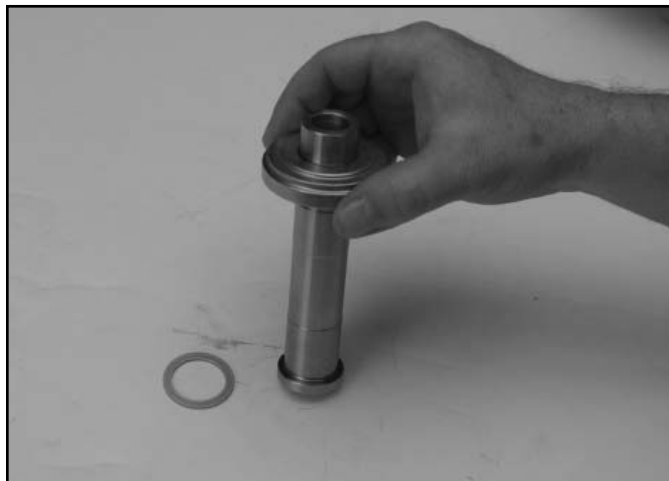


Fig 1116

PICT-5970a

19. Remove the spindle shaft, bottom guard spacer and washer (Fig. 1115).



Fig 1115

PICT-5969a

Spindle Housing Disassembly

1. Remove the upper bearing from the spindle housing (Fig. 1117).



Fig 1117

PICT-5973

MOWER DECK

2. Remove the spacer from the housing (Fig. 1118).



Fig 1118

PICT-5975

4. Remove the lower bearing from the spindle housing (Fig. 1120).



Fig 1120

PICT-5979a

3. Remove the snap ring from the spindle housing (Fig. 1119).



Fig 1119

PICT-5977a

5. Clean the spindle housing. Inspect the housing, bearings and spacer for wear and damage. Replace as necessary.

MOWER DECK

Spindle Housing Assembly

Assembly the spindle housing in the reverse order of disassembly (Fig. 1121):

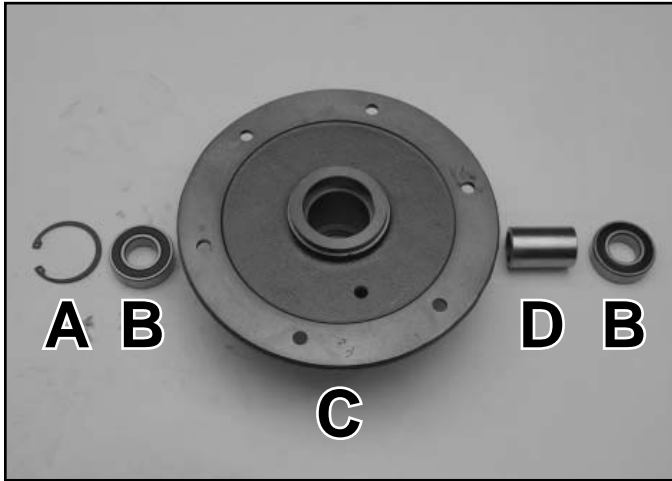


Fig 1121

PICT-5981a

- A. Snap ring
- B. Bearing (2)
- C. Spindle housing
- D. Spacer

2. Slide the spindle shaft assembly into the spindle housing assembly (Fig. 1123).



Fig 1123

PICT-5985a

3. Apply grease to the top bearing and the housing (Fig. 1124).



Fig 1124

PICT-5987

Spindle Installation

1. Install the bottom guard spacer and washer onto the spindle shaft (Fig. 1122).



Fig 1122

PICT-5983a

MOWER DECK

4. Install the top bearing guard (Fig. 1125).

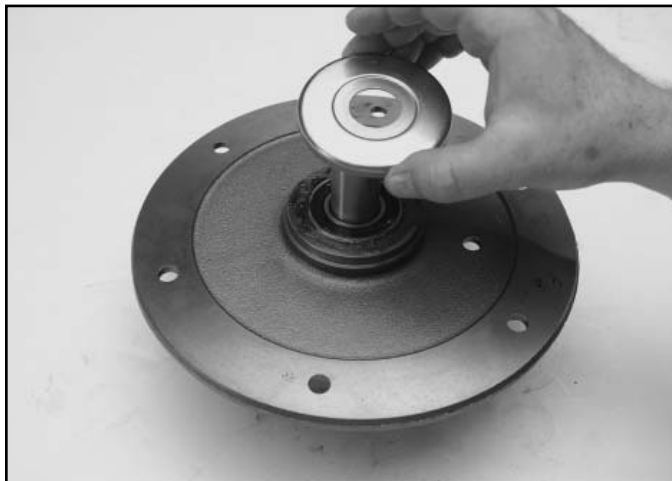


Fig 1125

PICT-5991a

6. Position the pulley onto the spindle shaft (Fig. 1127).

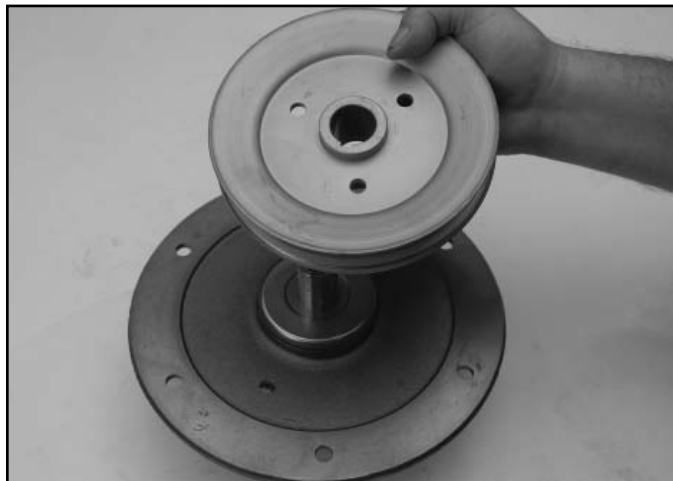


Fig 1127

PICT-6000a

5. Install the key into the spindle shaft (Fig. 1126).



Fig 1126

PICT-5994

7. Apply thread locking compound to the threads of the pulley set screw (Fig. 1128).

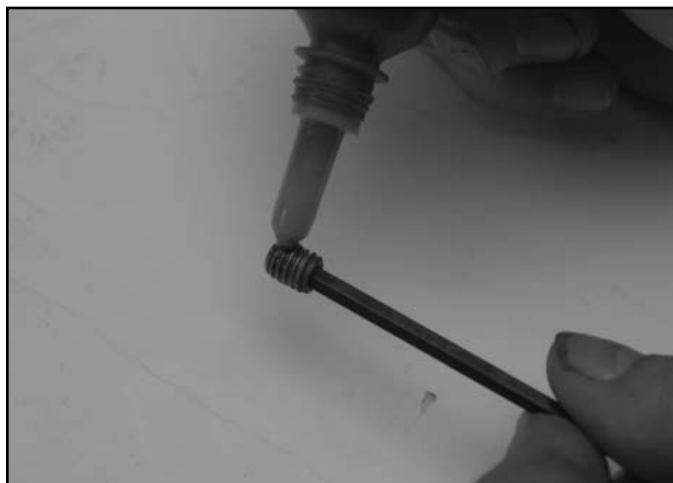


Fig 1128

PICT-6003a

MOWER DECK

8. Install the set screw, securing the pulley to the spindle shaft (Fig. 1129).



Fig 1129

PICT-5958a

Note: The 40", 48" and 52" mower decks have a washer installed on the center spindle housing mounting bolt located under the PTO lever (Fig. 1131).



Fig 1131

PICT-6020

9. Install 6 spindle mounting bolts to secure the spindle housing to the mower deck (Fig. 1130).



Fig 1130

PICT-5955

10. Install a nut on each of the spindle mounting bolts (Fig. 1132).



Fig 1132

PICT-6004

MOWER DECK

11. While securely holding the nuts, torque each of the spindle mounting bolts to 20-25 ft-lbs (27-33.89 Nm) (Fig. 1133).

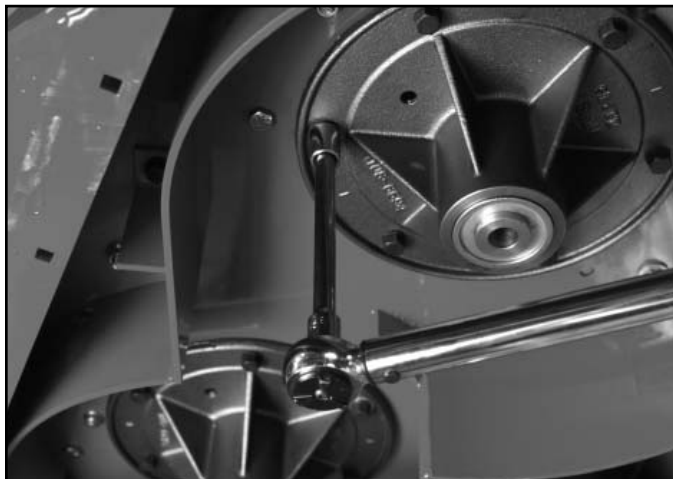


Fig 1133

PICT-6007

12. Install the washer (crown side facing down) and blade onto the blade bolt (Fig. 1134).



Fig 1134

PICT-6014a

13. Install the height-of-cut spacers onto the blade bolt (Fig. 1135).

Note: Ensure the height-of-cut spacers are installed onto the blade bolt to maintain the same blade height as the other spindles.



Fig 1135

PICT-6011a

14. Position the blade, blade bolt and height-of-cut spacers up into the spindle housing assembly (Fig. 1136).



Fig 1136

PICT-6008

MOWER DECK

15. Install the washer and height-of-cut spacers, as applicable (Fig. 1137).



Fig 1137

PICT-6015

17. Torque the blade bolt nut to 75-80 ft-lbs. (101.68-108.46 Nm) (Fig. 1139).



Fig 1139

PICT-6018

16. Install the spindle nut onto the spindle bolt (Fig. 1138).



Fig 1138

PICT-6016

18. Remove the blade stop.

19. Lower the machine.

20. Disengage the PTO lever if spindle replacement was done on the spindle with the blade brake to ensure pulley is properly aligned (Fig. 1140).

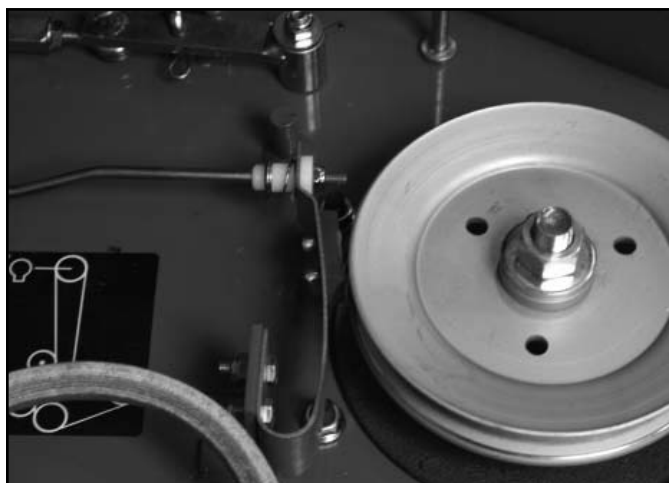


Fig 1140

PICT-5926

MOWER DECK

21. Replace the mower deck belt onto the pulleys (Fig. 1141).

Note: There is a belt routing decal on the mower deck to be used for reference in re-routing the mower belt.

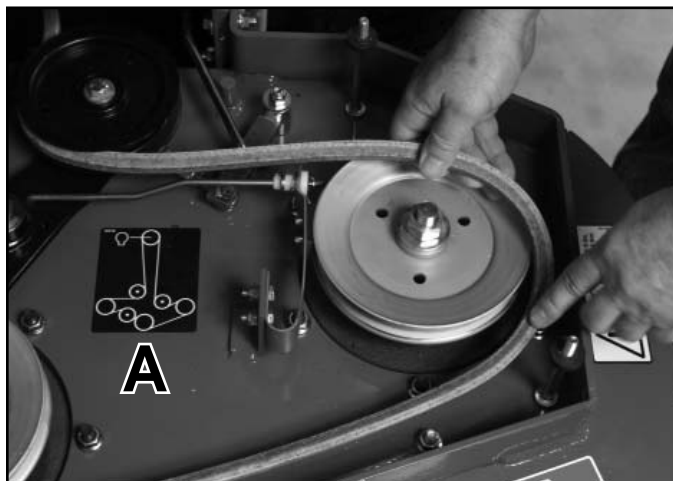


Fig 1141

PICT-5924

- A. Belt routing decal

22. Install the mower deck cover (Fig. 1142).



Fig 1142

PICT-5923

Mower Deck Removal

1. Remove the mower deck cover (Fig. 1143).

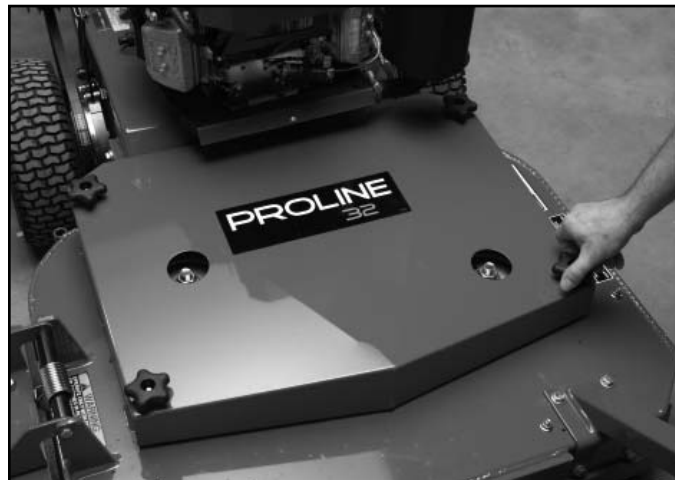


Fig 1143

PICT-7043

2. Remove the deck drive belt from the drive pulley (Fig. 1144).

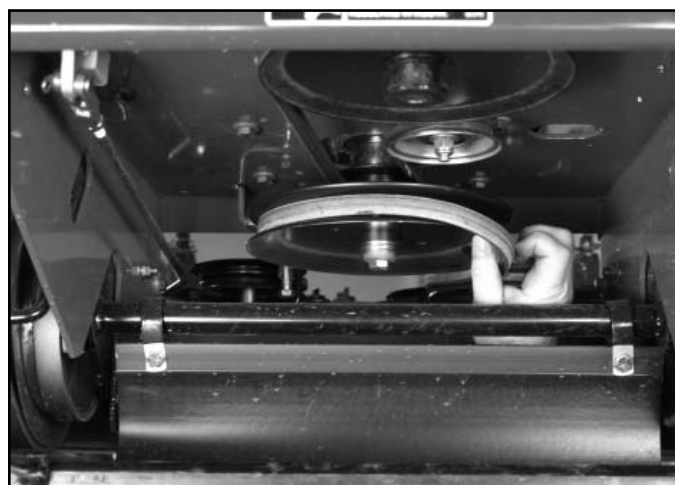


Fig 1144

PICT-0032

MOWER DECK

3. Remove the hairpin cotter from the PTO linkage rod (Fig. 1145).



Fig 1145

PICT-7045

4. Remove the PTO linkage rod from the assist arm (Fig. 1146).



Fig 1146

PICT-7046

5. Support the rear of the chassis to prevent the machine from tipping backward when the deck is removed.

6. Block the trailing edge of the deck (Fig. 1147).



Fig 1147

PICT-7048

7. Remove the 2 lower bolts, Belleville washers and nuts securing the mower deck to the chassis. Repeat on opposite side of the mower (Fig. 1148).

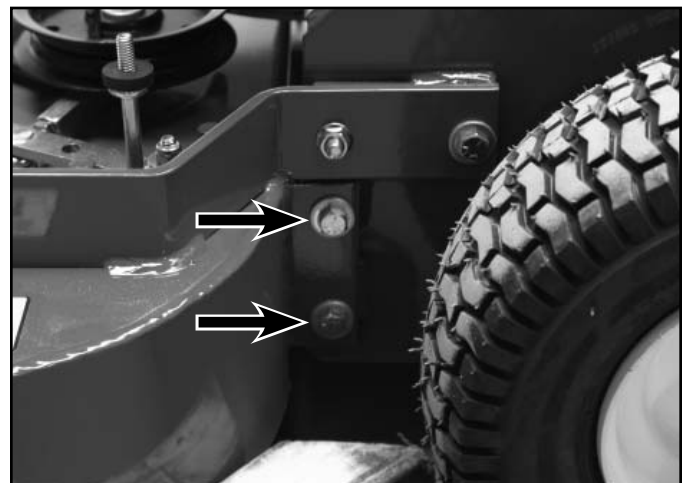


Fig 1148

PICT-7051

MOWER DECK

8. Remove the rearmost bolt, Belleville washer and nut securing the mower deck to the chassis. Repeat on the opposite side of the mower (Fig. 1149).



Fig 1149

PICT-7052

10. Remove the chassis from the mower deck (Fig. 1151).



Fig 1152

PICT-7054

9. Remove the remaining bolt, Belleville washer and nut securing the mower deck to the chassis. Repeat on the opposite side of the mower (Fig. 1150).

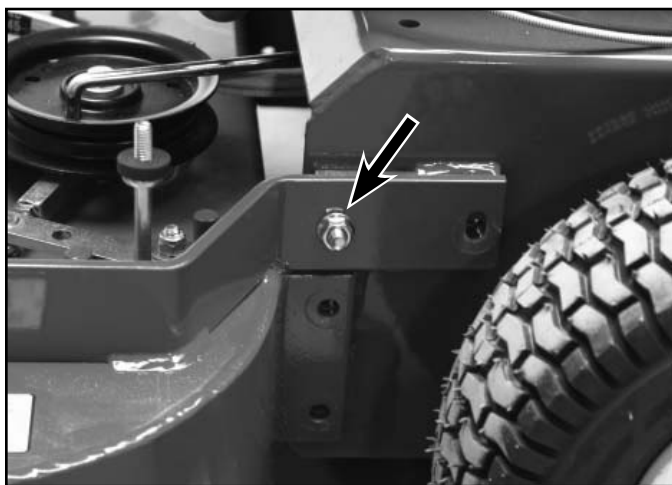


Fig 1150

PICT-7053

Mower Deck Installation

1. Block the trailing edge of the deck (Fig. 1152).

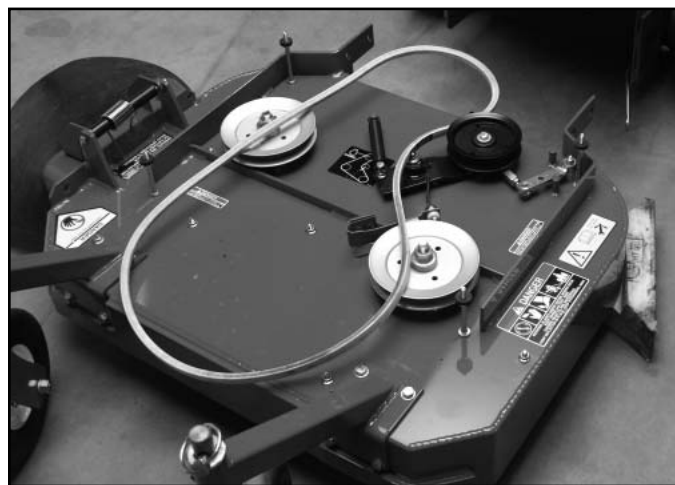


Fig 1152

PICT-7054

MOWER DECK

2. Position the chassis up to the mower deck, lining up the holes on the side of the chassis with the holes in the mower deck mounting brackets (Fig. 1153).



Fig 1153

PICT-7055

3. Support the rear of the chassis to prevent the machine from tipping backward.
4. Install a bolt and Belleville washer (crown toward bolt head) into the forwardmost top hole. Ensure the bolt is installed from the inside of the chassis and the nut is installed onto the bolt from outside the chassis. Repeat on the opposite side of the mower (Fig. 1154).

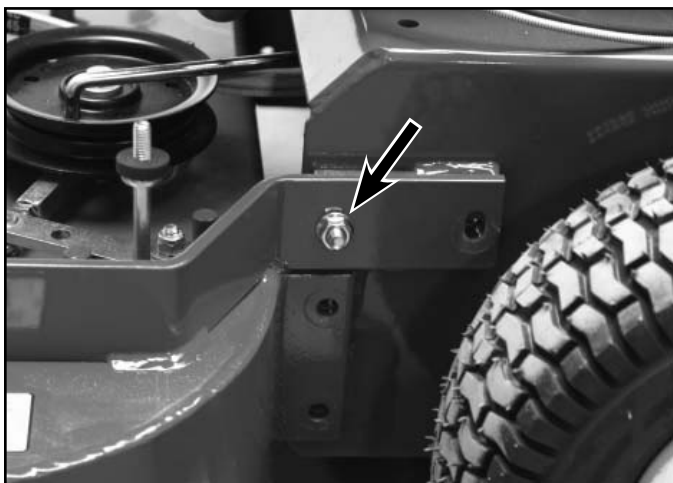


Fig 1154

PICT-7053

5. Install the remaining 6 bolts, Belleville washers (crown toward bolt head) and nuts to secure the mower deck to the chassis. Note that the bolts get installed from the outside of the chassis and the nuts get installed onto the bolts from inside the chassis. Torque all 8 sets of fasteners to 30-35 ft-lbs. (41-47 Nm) (Fig. 1155).

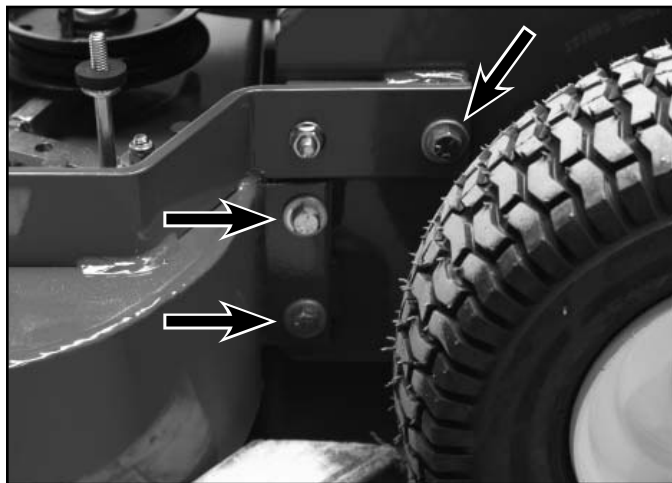


Fig 1155

PICT-7051

6. Install the PTO linkage rod into the assist arm (Fig. 1156).



Fig 1156

PICT-7046

MOWER DECK

7. Install a hairpin cotter securing the PTO linkage rod to the assist arm (Fig. 1157).



Fig 1157

PICT-7045

9. Route the deck drive belt around the pulleys and idler. Refer to the belt routing decal on the mower deck (Fig. 1159).



Fig 1159

PICT-7057

8. Install the deck drive belt onto the drive pulley (Fig. 1158).

Note: The belt gets installed between the belt guide and pulley.

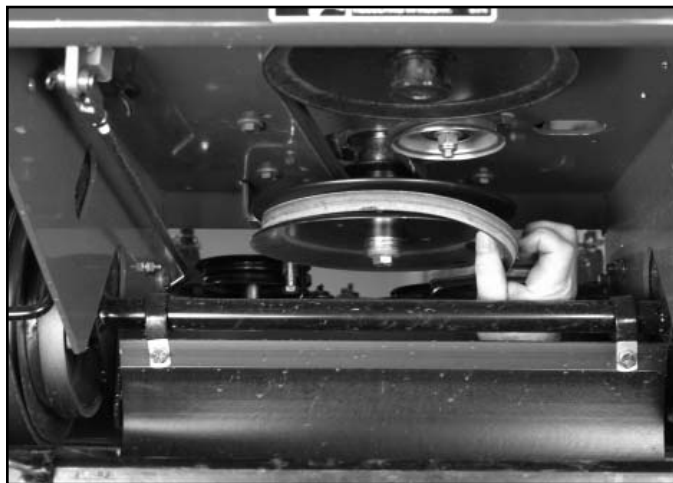


Fig 1158

PICT-0032

- A. Belt routing decal

10. The proper mower belt tension is 10-15 ft-lbs. (44-67 Nm) with the belt deflected 1/2" (13mm) halfway between the pulleys (Fig. 1160). If adjustment is necessary, refer to "Adjusting Mower Belt Tension" on page 8-7.

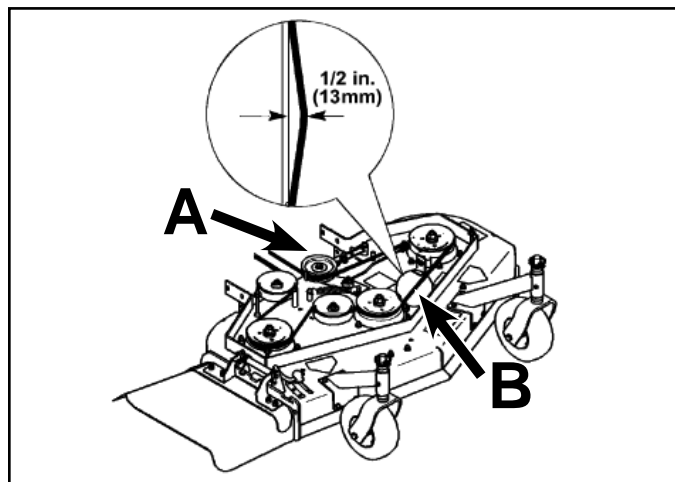


Fig 1160

fig. 47 G001565

- A. Mower belt with 1/2" (13mm) deflection
- B. Idler pulley

MOWER DECK

11. Install the mower deck cover (Fig. 1161).



Fig 1161

PICT-7043

Tools

- Volt Ohm meter
- Flat and Phillips screwdrivers
- Box and open end wrenches of various sizes

Additional information can be found in the LCE Electrical Troubleshooting DVD # 492-9171, available through your Toro parts supplier.

Caution

Before performing any tests with a continuity light or ohmmeter, disconnect the component from the wire harness. This ensures you are testing the component, not some other circuit.

Interlock modules **MUST** be removed from the circuit before performing any tests with an ohmmeter or continuity light. Battery voltage can damage these modules if applied to the wrong terminals.

Components

Interlock Module (Fig. 1162)

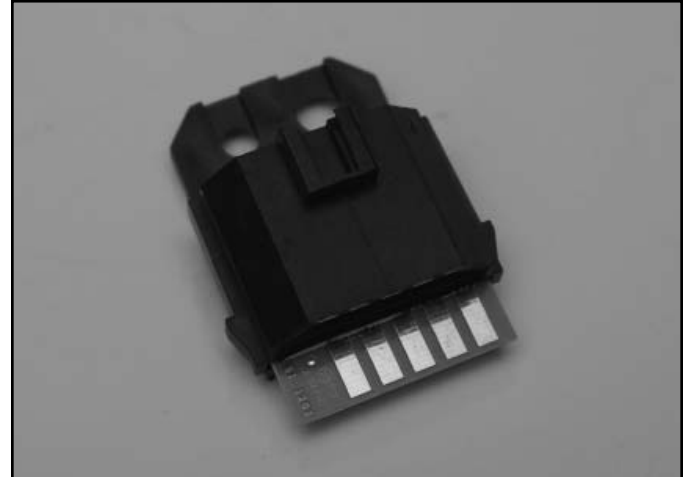


Fig 1162

PICT-6489a

The interlock module senses the position of the safety switches and reacts accordingly. When at rest the module will be in the off position and will ground the engine magneto to prevent the ignition from firing. When the starter rope is pulled, the module takes a small amount of current from the magneto and sends it out to the safety switches. If the signal returns to the module, the connection to ground opens and allows the ignition to fire.

Do not attach a continuity light or ohmmeter to the interlock module or to wires connected to the module. Current from a battery connected to the wrong terminal can damage the module. Always unplug the module before testing any circuits. To trouble shoot the module, test the switches and wires. If they are good and a problem exists, then replace the module.

ELECTRICAL

On/off switch (ignition) (Fig. 1163)

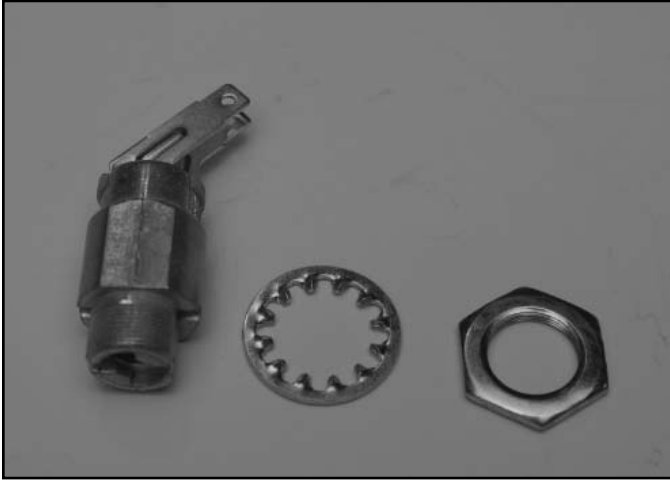


Fig 1163

PICT-6492a

Switch NO or NC (Fig. 1164)



Fig 1164

PICT-6498a

The ignition switch is a basic on/off switch. There should be continuity when the switch is in the off position. No continuity when the switch is turned on.

Note: Switch manufacturers commonly make different types of switches from the same body. Normally open and normally closed switches work opposite but may look identical. Ensure you have the correct part by comparing it to the function above.

A normally open (NO) switch is one that **MAKES** electric contact when the plunger is depressed.

Note: A normally closed switch **BREAKS** electric contact when the plunger is depressed.

One of the terminals may be stamped NC or NO to indicate switch operation. Ensure you use the correct replacement switch.

Neutral Switch (Fig. 1165)



Fig 1165

PICT-6495a

Normally closed. Contacts will open when the ball is depressed. This switch is used in the transmission on gear drive units.

Seat Switch (operator presence) (Fig. 1166)



Fig 1166

PICT-6499a

This is the switch in the T-bar on the handle. This is a normally closed switch. The contacts open when the plunger is depressed.

ELECTRICAL

Electrical Systems

The fixed deck midsize mowers use three different electrical systems. All are intended to ensure a safe condition when starting and prevent the operator from leaving the operator zone with the machine in an unsafe condition. The difference in the systems is due to the type of controls on each model.

Gear Drive T-Bar

This is the most basic system. It grounds the magneto through two circuits.

PTO Switch	Operator Presence Switch	Ignition Switch	Engine
Open	Open	Open	has spark
Closed	Open	Open	has spark
Closed	Closed	Open	no spark
Open	Open	Closed	no spark
Open	Closed	Open	has spark

One circuit is the ignition switch and the other contains the PTO and Operator Presence switch. Both circuits must be open for the engine to start or run.

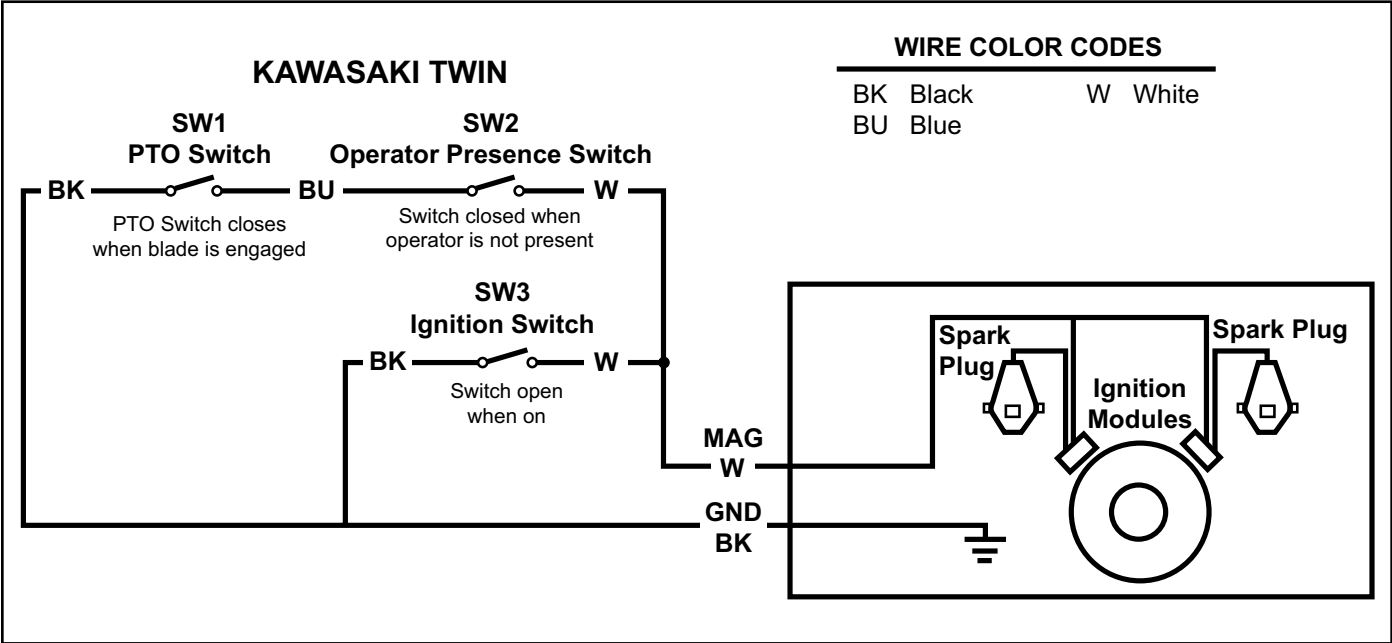


Fig 1167

diag 1

Gear Drive Pistol Grip

This system uses an interlock module, an ignition switch and three safety switches. The interlock module is connected to the engine magneto and to ground. When at rest, the module closes the connection between the magneto and ground. The ignition cannot fire.

When in the off position the ignition switch also grounds the magneto. To start, turn the ignition switch to on, which will open the contacts. When the recoil is pulled a small amount of the current from the magneto is taken by the interlock module and sent out to the switch circuit. This current must go through the blade switch and neutral switch and return to the module. This current then activates the module and it will open the magneto ground.

Once started, the operator will engage either the blade, transmission or both. When either is engaged the blade/transmission circuit opens. To prevent the module from stopping the engine, the operator must be holding the operator presence levers on the handles. This closes the operator presence switch and maintains that signal to the module.

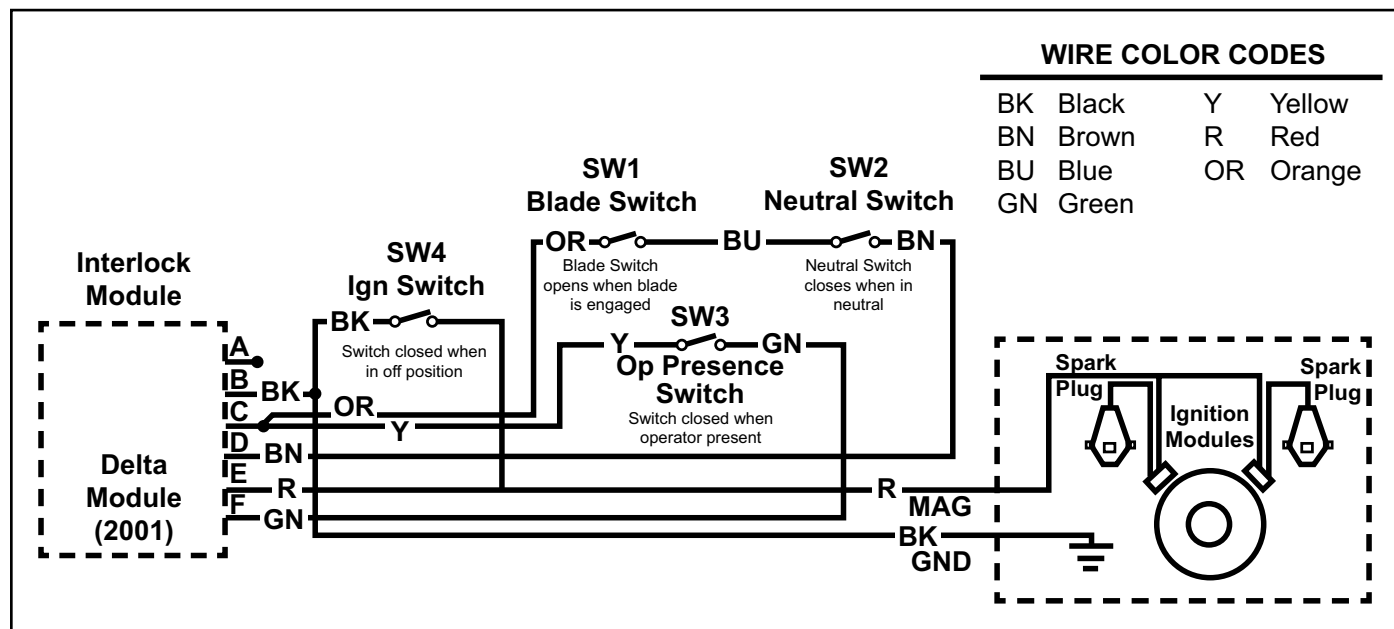


Fig 1168

diag 2

ELECTRICAL

Hydro Drive Pistol Grip

This system uses an interlock module, an ignition switch and four safety switches. The interlock module is connected to the magneto and to ground. When at rest the module closes the connection between the magneto and ground. The engine cannot fire.

When in the off position the ignition switch also grounds the magneto. To start, turn the ignition switch to on, which will open the contacts. When the recoil is pulled a small amount of the current from the magneto is taken by the interlock module and sent out to the switch circuit. This current must go through the blade switch and transmission switch and return to the module. This current then activates the module and it will open the magneto ground.

Once started, the operator will engage the blade, transmission or both. When either is engaged the blade/transmission circuit opens. To prevent the module from stopping the engine the parking brake must be disengaged and the operator presence control levers on the handles must be held down.

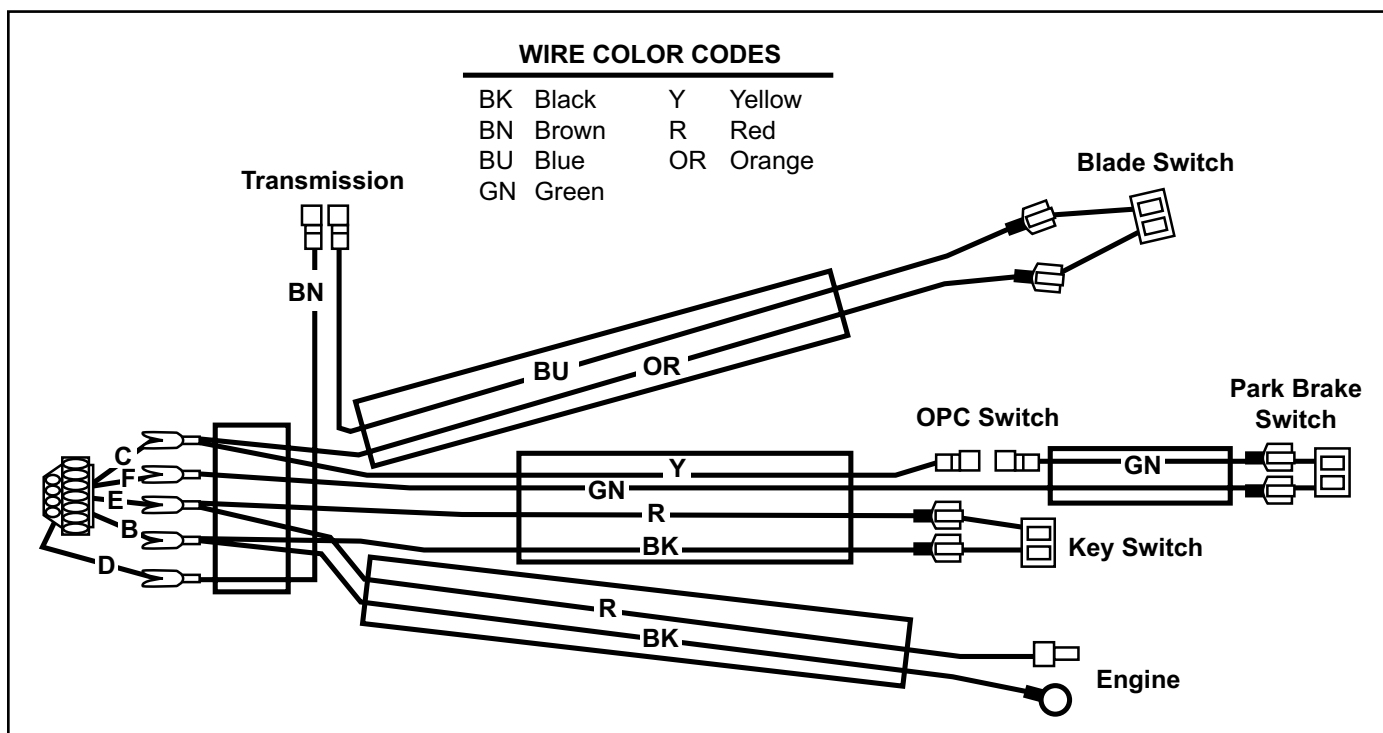


Fig 1169

diag 3



Fixed Deck Mid-Size Service Manual