Form No. 3355-944 Rev A

Shifter Update Kit

For 2000 to 2004 Multi-Pro 1200 and 1250 Turf Sprayer

Model No. 110-5191

Installation Instructions

Important: The installation of this kit will require cutting a portion of the metal frame to adapt it to the new shift selector bracket. At no time should cutting torches, grinders or any other cutting tool that will produce sparks or an open flame be used. The close proximity of the gas tank, fuel lines and engine to the working area prohibits the use of these tools.

In certain conditions a spark can ignite the gasoline vapors. A fire or explosion from gasoline can burn you and others and can damage property. Take precautions when performing maintenance on gas operated machines, fuel tanks and fuel lines.

- Drain the fuel tank when necessary before performing any maintenance.
- Do not use tools that can produce sparks or an open flame when working with machines with fuel in the machine tank, lines, or engine system.

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Installation

Loose Parts

Use the chart below to verify that all parts have been shipped.

Step	Description	Qty.	Use
1	No parts required	–	Preparing the machine.
2	No parts required	–	Remove the splash guard and selector assembly.
3	No parts required	–	Prepare the frame.
4	No parts required	–	Drilling shift lock out cable holes.
5	Selector mounting bracket Bolt (5/16 x 1 inch) Lock nut, serrate flange(5/16 inch) Shift selector assembly Bolt (5/16 x 2-1/2 inch) Spacer Flat washer Lock nut, nylon (5/16 inch) Clevis pin (3/8 x 1-1/8 inch) Cotter pin R-clamp Rubber grommet (1-1/2 inch) Rubber grommet (3/4 inch) Rubber sleeve	1 2 2 1 2 2 2 2 1 1 2 1 1 1	Mount the shift selector assembly.
6	No parts required	–	Install the belt kit (Part of Second Kit).
7	No parts required	–	Install the splash guard.
8	Bracket, offset Bolt (1/4 x 5/8 inch) Lock nut, serrated flange (5/8 inch)	1 3 3	Install the shift selector cables.
9	No parts required	–	Adjust the lock out cable.
10	No parts required	–	Adjust the shift selector cables.
11	No parts required	–	Finish the installation.

Tools Required

- Sheet metal guard (10 x 24 inch)
- Reciprocating saw
- Metal 1/8–3/16 (inch) 18T Blade
- 3/4 inch Drill bit
- 5/16 Transfer punch
- C-clamps
- Hand file

Note: The installation of this kit can be aided by referencing the *Parts Catalog* and *Service Manual.*

Step 1

Preparing the Machine

No Parts Required

Procedure

Note: The following procedure, at times, will require two people to perform.

Use the *Service Manual* and *Parts Catalog*to help prepare the machine for the installation of this kit as follows:

1. Disconnect the negative battery cable.
2. Drain and rinse the main tank assembly to prepare it for removal. Flush the system thoroughly to eliminate direct contact with chemicals while working on the machine.

Chemicals are hazardous and can cause personal injury.

- **Read the directions on the chemical labels before handling the chemicals and follow all manufacturer recommendations and precautions.**
- **Keep chemicals away from your skin. Should contact occur, wash the affected area thoroughly with soap and clean water.**
- **Wear goggles and any other protective equipment recommended by the chemical manufacturer.**

3. Remove the main spray tank assembly and connecting hoses:
   A. Remove the long bolts and fasteners securing the tank straps to the tank saddles.
   B. Inventory the hoses attached to the main tank assembly. Disconnect and label each hose taking care to note routing orientations for future assembly.
   C. Using an overhead lift, secure the main tank assembly and raise it off the frame.
   D. Remove the fasteners securing the front and rear tank saddles to the frame. Remove the saddles.
   E. Retain all parts and fasteners.
4. Remove the seat assembly and console assembly. Refer to the *Service Manual* for additional information.

   Note: When removing the console assembly, keep the control panels and electrical wiring harness connections intact.

   A. Remove the shift selector knob, jam nut and screws securing the shift boot assembly to the fenders. Remove the shift boot assembly.
   B. Remove the fasteners securing the control panel to the fender assembly.
   C. Do not disconnect the wiring connections from the control panel components.
   D. Drop the panel through the openings in the console assembly when removing it.

E. Lift seat base from machine.

5. Retain all parts and fasteners for later installation.

Step 2

Removing the Splash Guard and Selector Assembly

No Parts Required

Procedure

1. Locate the metal splash guard to the left of the operating position.
2. Remove the 4 bolts retaining the splash guard and bracket to the frame and existing shift selector assembly (Figure 1). There are two short bolts in the front and two longer bolts to the rear securing the bracket and guard. Retain the bracket and fasteners for later use.

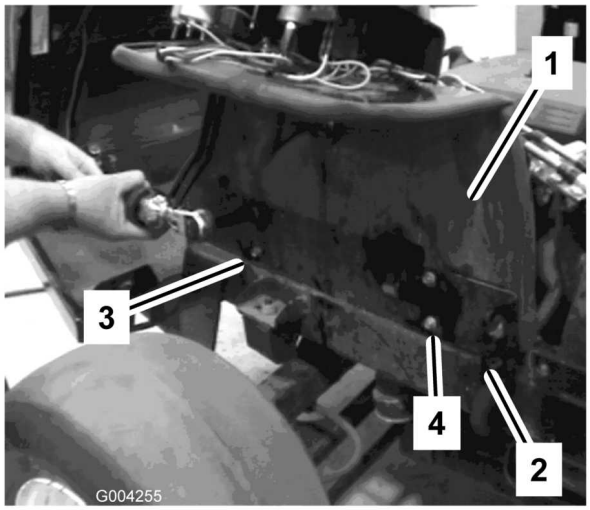

Figure 1

1. Splash guard
2. Bracket
3. Short bolts
4. Long bolts

3. Pivot the entire splash guard and console assemble forward, around the operating position so that it is out of the way, on the floorboard.
4. The left console wiring harness bundle has leads connected to the engine and another connected to the shift solenoid. Detach and label these leads at the connectors.
5. At the shift selector, remove clevis and cotter pins securing the shift cable linkage (Figure 2). Keep the clevis and cotter pins in the cable linkages.

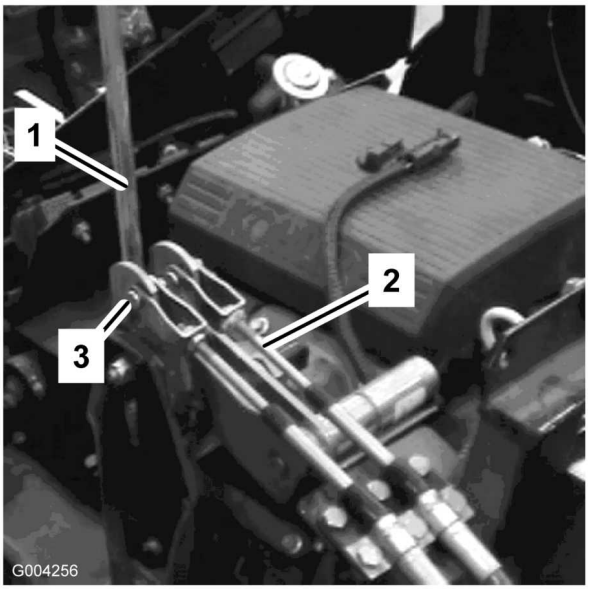

Figure 2

1. Shift selector
2. Shift cable linkage
3. Clevis and cotter pin

6. Remove the bolts securing the shift cables and clamps to the machine and move the shift cable assembly rearward, out of the way (Figure 3). Retain all fasteners and clamps.

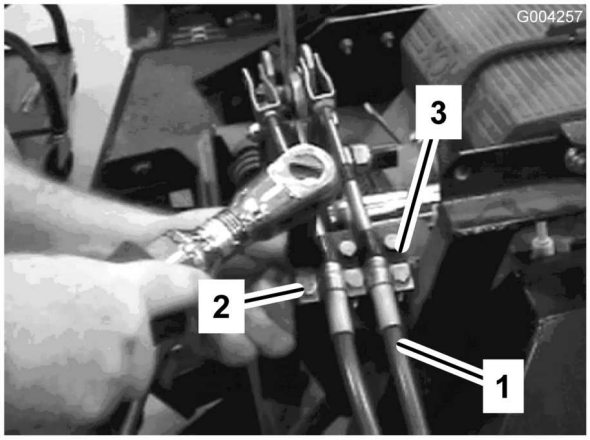

Figure 3

1. Shift cables
2. Fasteners
3. Adapter bracket (not on all machines)

Note: If an adapter bracket is between the cables and the machine frame disassemble the cables and clamps from the bracket.

7. Remove the bolt securing the selector assembly to the frame (Figure 4).

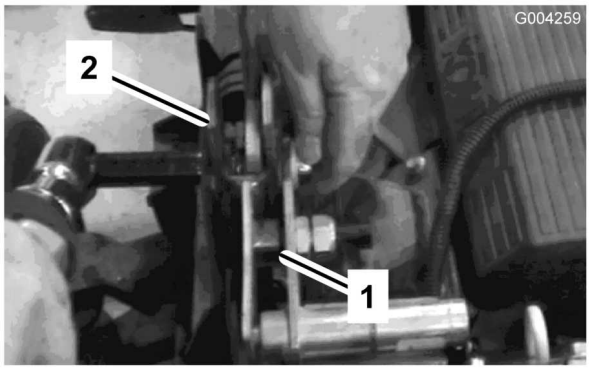

Figure 4

1. Shift selector
2. Frame

8. Remove the shift selector assembly and discard.
9. Locate the negative ground cable bolted to the frame at the base of the shift selector mounting bracket. Remove the bolt and lock washer then disconnect the cable (Figure 5). Retain all fastener(s).

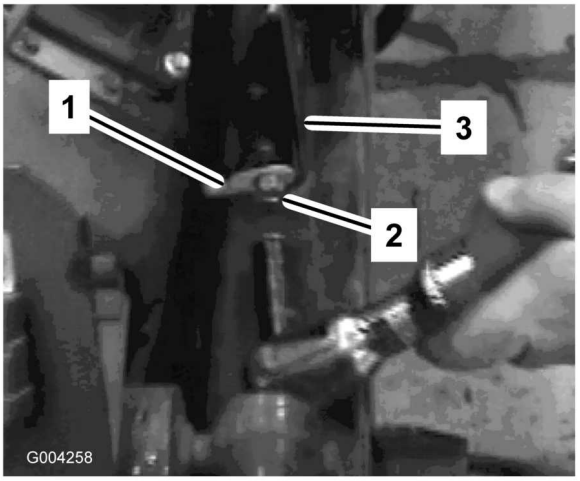

Figure 5

1. Negative ground cable
2. Bolt, ring lock washer
3. Shift selector bracket

Step 3

Preparing the Frame

No Parts Required

Procedure

1. Measure 3-1/4 inch down from the top of the shift selector bracket and score a mark (Figure 6).

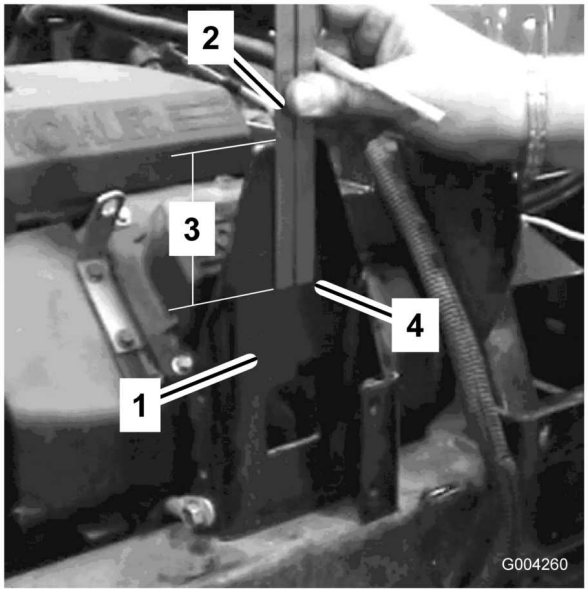

Figure 6

1. Frame
2. Square
3. 3-1/4 inch
4. Mark here

2. Use a square and scribe to extend the score mark to a horizontal line across the selector bracket (Figure 7).

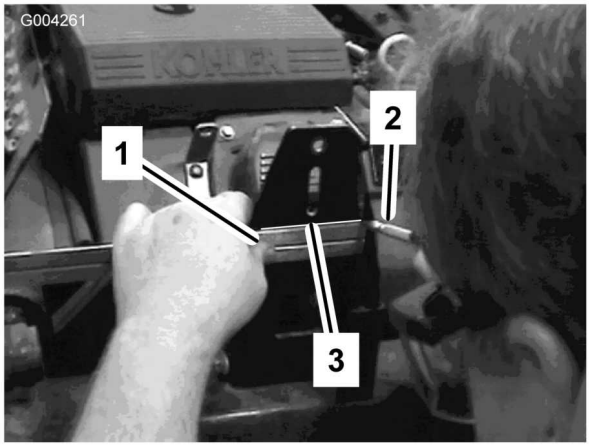

Figure 7

1. Square
2. Scribe
3. Scored horizontal line

3. Place a metal sheet between the engine valve cover and the selector bracket. The sheet will shield the engine from the saw blade during the cutting (Figure 8).

Important: Failure to shield the engine will result in engine damage that may require extensive repairs.

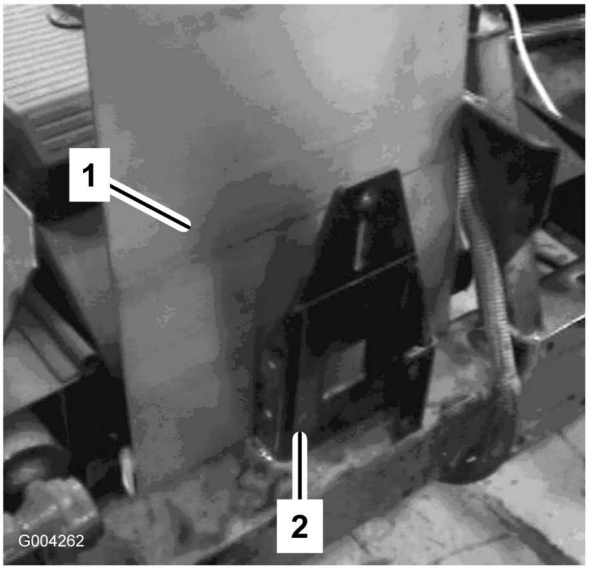

Figure 8

1. Sheet metal guard
2. Selector bracket

4. Use reciprocating saw with a new, fine tooth (18T) saw blade to cut the bracket at the line. Extend the saw guide to the outer most position. Hold the saw at an angle to minimize the saws plunge depth and to avoid making contact with the sheet metal guard (Figure 9). Grip the saw firmly and hold it steady to cut straight.

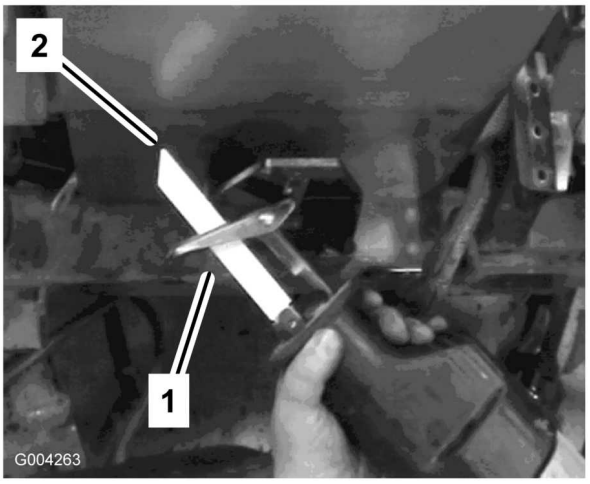

Figure 9

1. 18T blade, full plunge depth
2. Reciprocating saw, held at angle.

5. Stop cutting the bracket 3/4 of the way through and finish by cutting into the bracket from the opposing side. Cut until the bracket is removed (Figure 10).

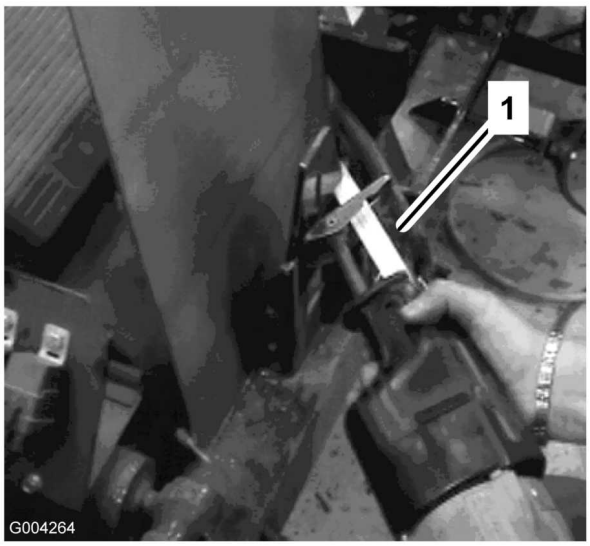

Figure 10

1. Cutting from the other direction to finish

6. Use a hand file to smooth all rough surfaces at the cut area.
7. Locate the new selector bracket and line up the base of the bracket with the rounded square cut out in the frame bracket. Use a clamp(s) to temporarily hold the new bracket in place (Figure 11).

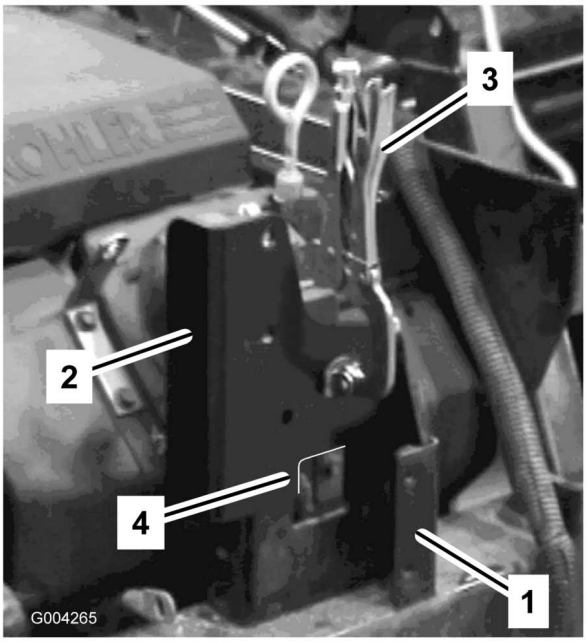

Figure 11

1. Cut frame
2. New selector bracket
3. Clamp
4. Line up position

8. Use the two lower holes on the selector bracket as a template and a .320 diameter transfer punch to mark the location for holes to be drilled on the frame (Figure 12).

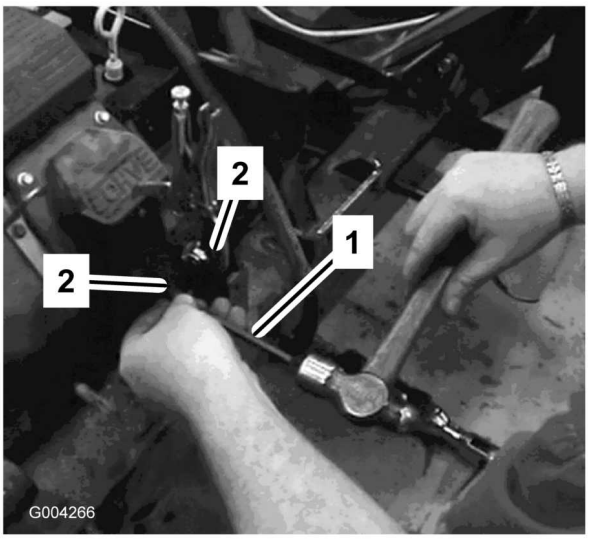

Figure 12

1. Transfer punch (.320 inch)
2. Lower holes in the selector bracket

9. Remove the bracket and clamp(s).
10. Drill **pilot** holes at the marks to verify accuracy (Figure 13).

Important: Inaccurately drilling these holes can prevent the proper placement of the shift selector bracket and new selector assembly.

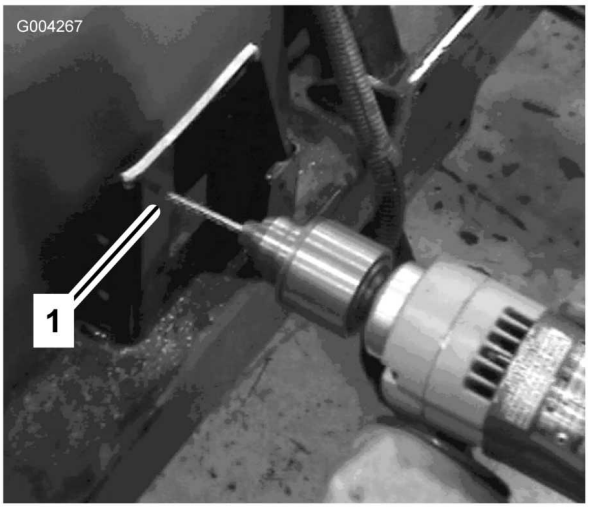

Figure 13

1. Pilot hole being drilled.

11. Finish drilling the holes with a 21/64 inch bore bit (Figure 14).

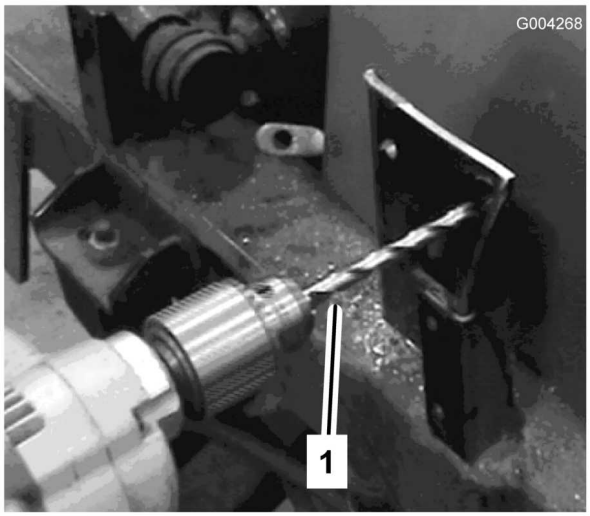

Figure 14

1. 21/64 inch bore bit

12. Remove any burrs around the holes and clean the entire area of all metal shavings and debris.
13. Prep the surfaces by cleaning all exposed metal with acetate or acetone.
14. Paint all exposed metal surfaces with black touch-up spray paint (Figure 15). Toro Part No. 361–8 Black Touch-Up Spray Paint is available at your authorized Toro Service Distributor. Allow to dry.

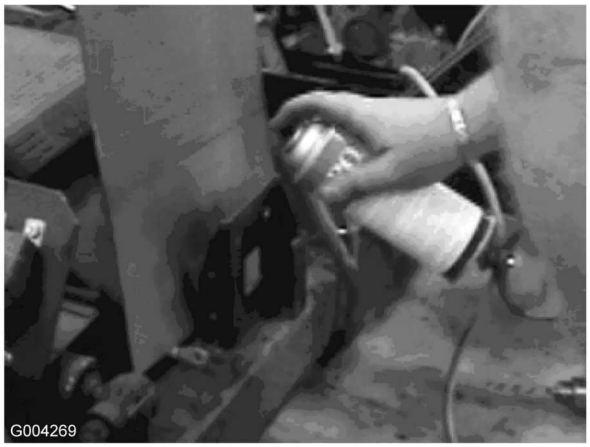

Figure 15

Step 4

Drilling Lock Out Cable Holes

No Parts Required

Procedure

1. From the operating position, locate the master cylinder brake fluid reservoir on the floor to the right. Locate the existing hole in the frame behind the reservoir.
2. Measure 1-1/2 inches from the center of that hole to the left on the frame (Figure 16). Mark the position with a punch.

   Important: Make sure the area directly below the marked spot is free and clear of any components that could be damaged while the hole is drilled.

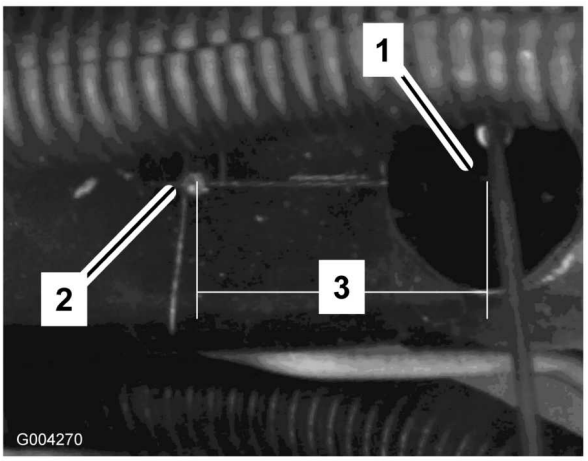

Figure 16

1. Existing hole, to the rear and right of the master brake cylinder resevoir
2. Mark here
3. 1-1/2 inch from the center of the existing hole.

3. Pilot drill smaller holes at the location marked, gradually increasing the hole size and then finish with a 3/4 inch drill bit (Figure 17).

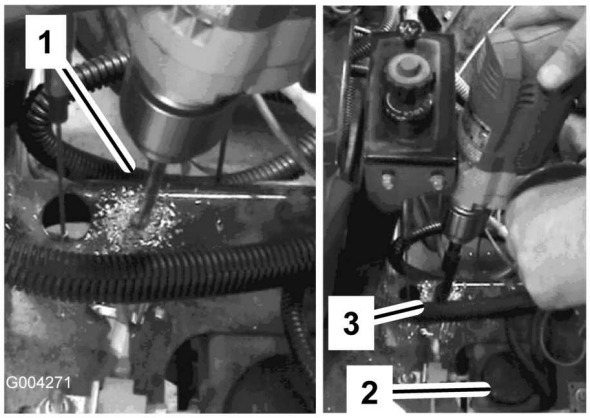

Figure 17

1. Pilot hole being drilled
2. Brake reservoir
3. 3/4 inch Bit

4. Remove any burrs around the hole and clean the entire area of all metal shavings and debris.
5. Prep the surfaces by cleaning all exposed metal with acetate or acetone.
6. Paint all exposed metal surfaces with black touch-up spray paint. Allow to dry.

Step 5

Mounting the Shift Selector Assembly

Parts needed for this step:

1	Selector mounting bracket
2	Bolt (5/16 x 1 inch)
2	Lock nut, serrate flange(5/16 inch)
1	Shift selector assembly
2	Bolt (5/16 x 2-1/2 inch)
2	Spacer
2	Flat washer
2	Lock nut, nylon (5/16 inch)
1	Clevis pin (3/8 x 1-1/8 inch)
1	Cotter pin
2	R-clamp
1	Rubber grommet (1-1/2 inch)
1	Rubber grommet (3/4 inch)
1	Rubber sleeve

Procedure

1. Remove the metal shield protecting the engine and install the negative ground cable removed previously using the existing fasteners (Figure 5).
2. Install the new shift selector mounting bracket to the frame at the location previously prepared. Align the holes in the bracket with the previously drilled holes in the frame (Figure 18). The rounded square cutout in the frame should be flush with the selector bracket indent.

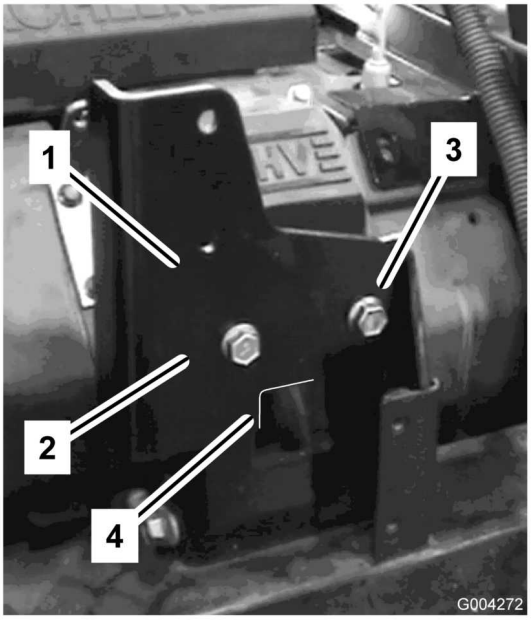

Figure 18

1. New selector frame
2. Frame
3. Bolt and lock washer
4. Line up position

3. Use two bolts (5/16 x 1 inch) and two lock nuts (5/16 inch) to secure the bracket to the frame (Figure 18). Torque the fasteners to 9 ft-lb (13 N·m)
4. Install the shift selector to the bracket using two bolts (5/16 x 2-1/2 inch), 1 shim, two spacers, two washers and two lock nuts (5/16 inch) (Figure 19).

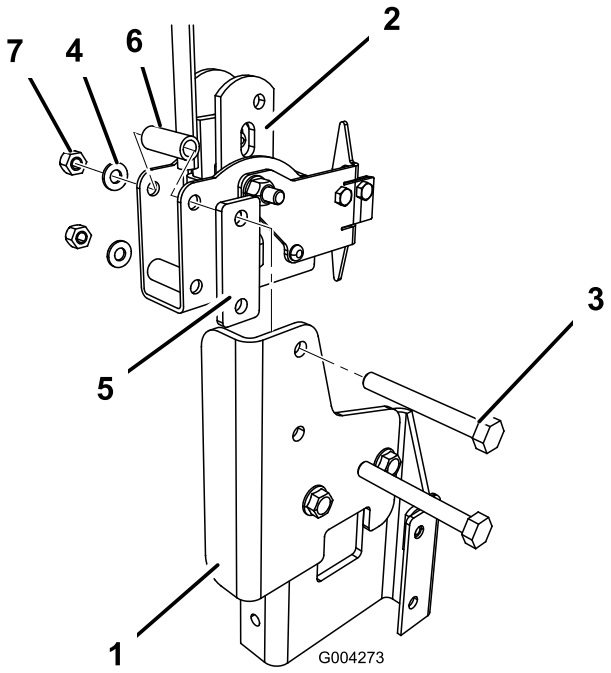

Figure 19

1. Selector bracket
2. Selector assembly
3. Bolt
4. Washer
5. Shim
6. Spacer
7. Lock nut

5. Torque the bolts to 16 ft-lb (22 N·m).
6. Route the lock out cable along the frame, behind the operator's position, with the existing wiring. Do not secure the cable at this time.
7. Route the cable through the 3/4 inch hole previously drilled in the floor frame (Figure 20).

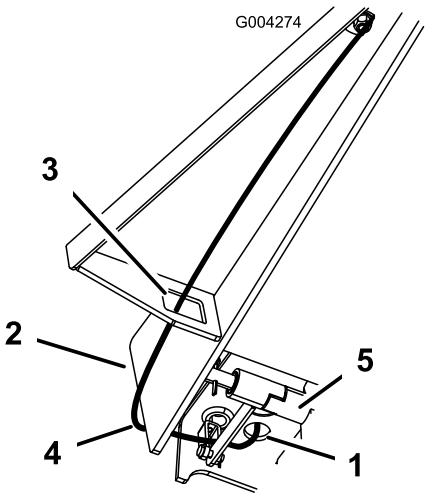

Figure 20

1. 3/4 inch drilled hole
2. Frame
3. Opening in the frame
4. Lock out cable
5. Speed limiter linkage

8. Route cable **through** the speed limiter linkage if the machine is equipped (Figure 20).
9. Feed the cable out from under the frame, toward the front of the vehicle, under the floor board, via the opening in frame (Figure 20).
10. Route the cable to the front of the machine along the frame, under the floor board, and begin to steer it back toward the brake pedal and linkage assembly.
11. Prop the brake pedal by placing a block behind the pedal arm on the floor board.
12. Remove the cotter and clevis pin securing the master cylinder linkage to the brake pedal arm (Figure 21).

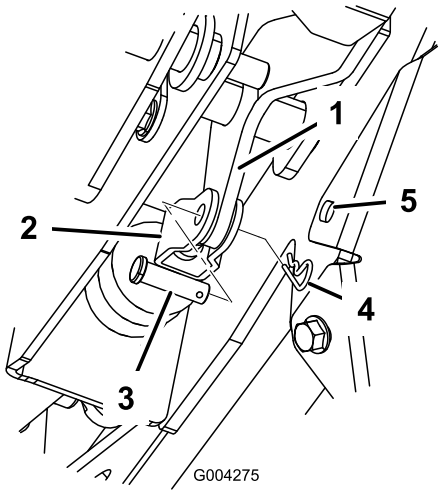

Figure 21

1. Brake pedal arm
2. Brake master cylinder linkage
3. Clevis pin
4. Cotter pin
5. Location for bracket mounting.

13. If a brake switch exists it can be removed now as follows:
    A. Remove the fasteners securing the switch to the bracket welded to the brake pedal arm.
    B. Disconnect the connector between the brake switch and the wiring harness.
    C. Discard the switch
    D. Tie back the wiring and connector on the main wiring harness. Use a plastic tie to secure it to the frame, away from the moving components of pedal assemblies.
14. Mount the lockout cable bracket to the frame at the weld nut using the existing bolt. Hand tighten the fastener to allow for adjustment (Figure 22).
15. Slide the rubber cowl on the lock out cable toward the ring linkage to expose the adjustment nuts (Figure 22).

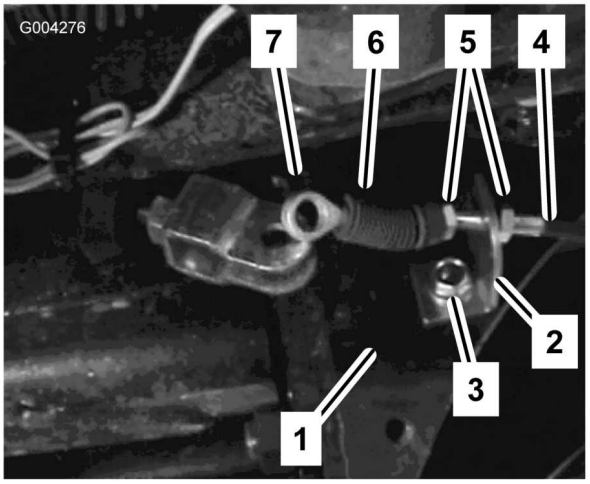

Figure 22

1. Frame
2. Bracket
3. Bolt
4. Lock out cable
5. Adjustment nut
6. Rubber cowl
7. Ring linkage

16. Loosen the adjustment nuts on the lock out cable to separate them and slip the cable into the bracket groove (Figure 22).
17. Secure the cable, master brake cylinder linkage and brake pedal arm with the longer clevis pin (3/8 x 1-1/8 inch) and cotter pin provided. Bend the cotter pin ends outward to secure the linkage (Figure 23).

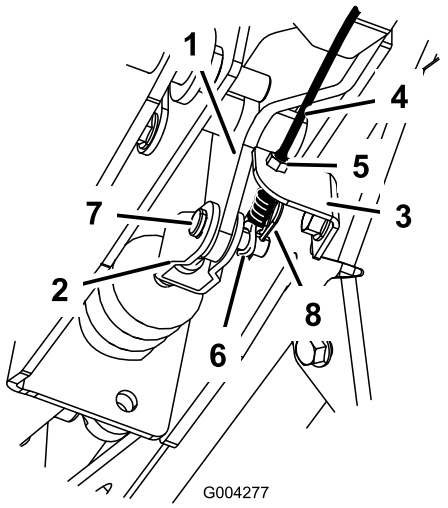

Figure 23

1. Brake pedal arm
2. Master cylinder linkage
3. Bracket
4. Cable
5. Adjustment nut, seated around bracket
6. Ring linkage
7. Clevis pin (3/8 x 1-1/8 inch)
8. Cotter pin, new

18. Move the lock out cable adjustment nuts so that slack in the cable between the brake pedal pin and the bracket is removed. Tighten the adjustment nuts to seat the cable in the bracket (Figure 23).
19. Tighten the fastener to secure the bracket in place. The block behind the brake pedal can now be removed.
20. Secure the routed cable loop to the front of the frame at existing weld nuts in the frame using two R-clamps and bolt (Figure 24).

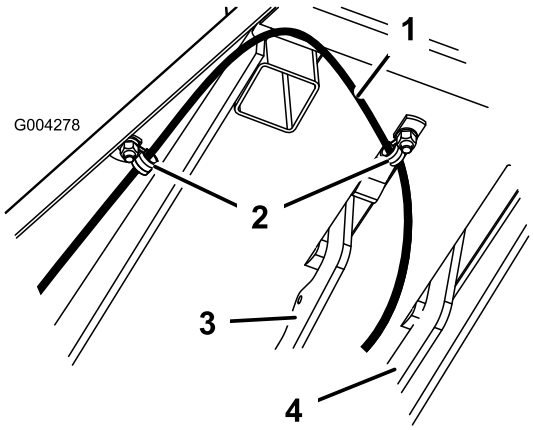

Figure 24

1. Cable
2. R-clamp
3. Accelerator pedal arm
4. Brake pedal arm

Important: Do not allow the cable to kink or fold when securing it to the frame.

21. Install the large grommet at the outer window in the frame. Cut the grommet and install it to the sides and bottom of the cut out protecting the cable from areas of the frame it is most likely to wear against (Figure 25).

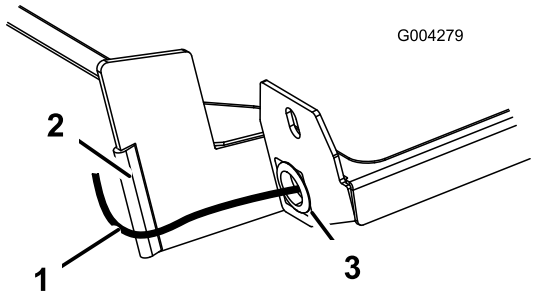

Figure 25

1. Cable
2. Rubber sleeve
3. Large grommet

22. Install rubber sleeve to the vertical face of the frame the cable is routed around. Start the sleeve at the bottom and slide upward into place (Figure 25).
23. Cut the 3/4 inch grommet as necessary and install it into the hole drilled in the frame.
24. Use plastic ties to secure the lock out cable to the frame, behind the operator's position, with the existing wiring harness.

Step 6

Installing the Belt Kit (Part Second Kit)

No Parts Required

Procedure

At this time it recommended to complete the Belt Kit installation if necessary.

Note: The Belt Kit instructions describe the installation with the main tank assembly installed on the machine. With the removal of the tank recommended in this installation instructions, installing the new belt is eased by the available access from above. Use the instructions as a guide to complete all the necessary steps in the belt replacement; however, you may choose to augment the steps by approaching the installation from above.

To access the drive belt remove all the fasteners securing the heat shield to the machine. Remove the shield and retain all the fasteners for installation.

Step 7

Installing the Splash Guard

No Parts Required

Procedure

1. Locate the wiring connector coming from the shift selector solenoid and verify the adapter cable is attached. If necessary, locate the adapter cable and connect it to the end of the solenoid connector. Connect the other end to the wiring harness coming from the engine.
2. Pivot the entire splash guard and console assembly to its original position.
3. Install the 4 bolts retaining the splash guard to the frame and existing shift selector assembly. There are two small and two large bolts (Figure 1).

Step 8

Install the Shift Selector Cables

Parts needed for this step:

1	Bracket, offset
3	Bolt (1/4 x 5/8 inch)
3	Lock nut, serrated flange (5/8 inch)

Procedure

1. Locate the shift selector cables removed earlier. Retain any fasteners or clamps used to hold the cables to the frame or bracket.
2. Install the new offset bracket to the frame using the three bolts (1/4 x 5/8 inch) and three locknuts(1/4 x 5/8 inch) provided (Figure 26).

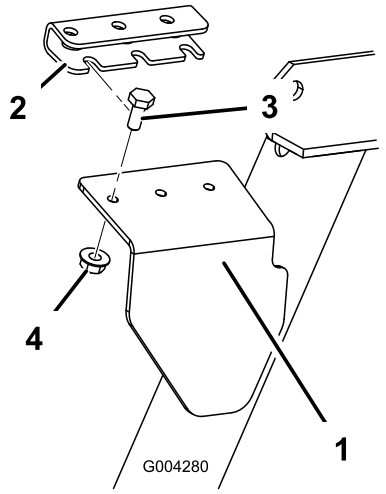

Figure 26

1. Frame
2. Offset bracket
3. Bolt (1/4 x 5/8 inch)
4. Lock nut (1/4 x 5/8 inch)

Note: If an existing adapter plate is bolted to the frame, the offset bracket should be installed to the openings on the plate.

3. Line up the shift selector cables in the new bracket. Make sure the cables are in line with the shift selector linkages.

4. Secure the cable linkages to the new shift selector using the existing clevis and cotter pins.
5. Install the shift selector cables using all existing fasteners and clamps to the new bracket (Figure 27).

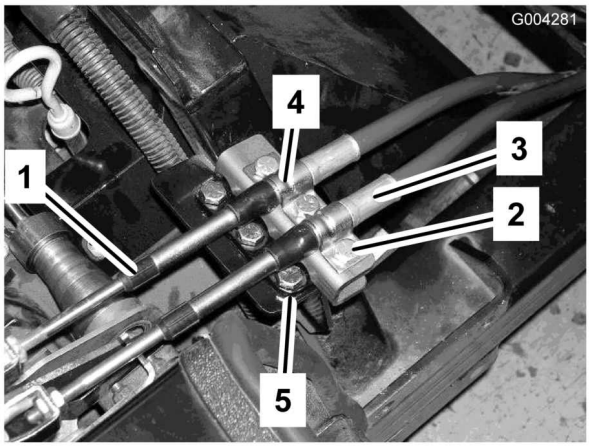

Figure 27

1. Shift cable arms, in line with selector
2. Cable fasteners, existing
3. Shift cable
4. Clamps, existing
5. Existing adapter plate (not on all machines)

Step 9

Adjusting the Lock Out Cable

No Parts Required

Procedure

The new shift selector position may require the adjustment of the selector cables and the lock out cable. Use the following procedures test and adjust the cables.

1. With the shift selector installed, stand over the assembly and apply light force (approximately 5 lbs) on shift lever toward the right side of the vehicle (Figure 28).

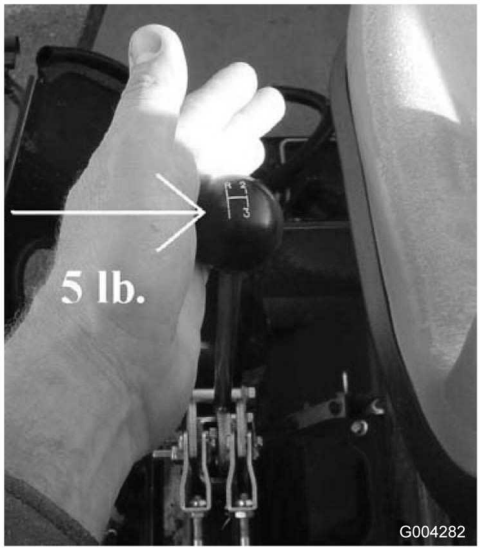

Figure 28

2. The solenoid pin should be just flush with the outer face of the selector linkage it rests in. If not, adjust as follows:
   A. Use the swivel fitting adjuster to set solenoid pin depth flush with the shift selector bracket surface shown in Figure 29.

      Note: If necessary, remove the engine air filter cover to access the cable adjustment nuts.

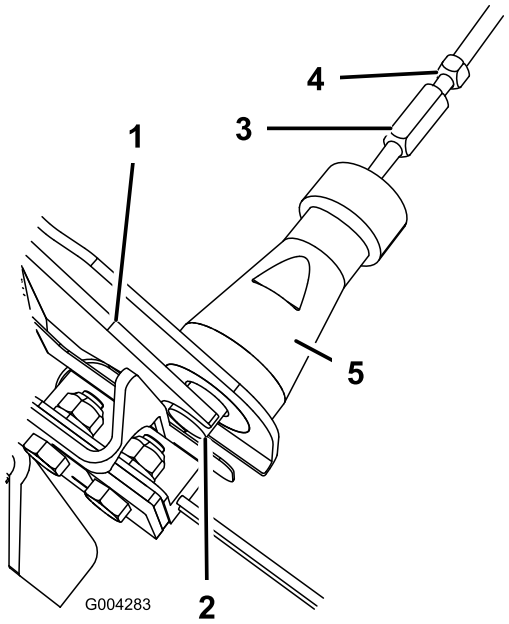

Figure 29

1. Shift selector bracket
2. Solenoid pin
3. Adjustment fitting
4. Jam nut
5. Solenoid

B. After the depth is set release force on shift lever. Lock adjustment into place with the jam nut.

3. Test the lock out cable. Verify the pin is fully retracted with the brake is pressed.

Step 10

Adjust the Shift Selector Cables.

No Parts Required

Procedure

1. At the transaxle, remove cotter pins and clevis pins that secure cable clevis to shift levers (Figure 30).

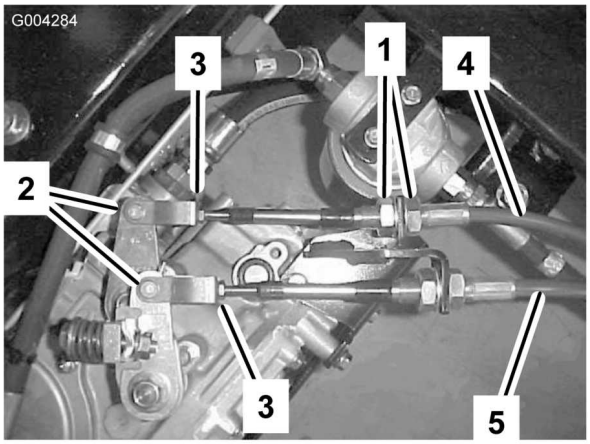

Figure 30

1. Shift cable jam nut
2. Clevis pin
3. Clevis Jam nut
4. Shift cable 1/reverse
5. Shift cable (2/3)

2. Check that the threads of the shift cables are centered in the mounting brackets. If needed, readjust shift cable jam nuts.
3. Adjust cable clevis with clevis jam nuts so that forward and backward free play of clevis is equal relative to the hole in the transaxle shift lever. Tighten clevis jam nuts.
4. Secure cable clevis to shift levers with clevis pins and cotter pins.
5. Check shift lever for proper operation.

Step 11

Finishing the Installation

No Parts Required

Procedure

1. Replace the components removed:
   A. Spray tank saddles and assembly
   B. Fenders and Seat
2. Refer to the *Service Manual* and *Parts Catalog* for additional information.

Count on it.