Form No. 3351-930

Brake and Tail Light Kit

Workman® 1100/2100 and Twister™ Utility Vehicles

Part No. 104–6697

Installation Instructions

Important Before installing this kit, you must have Wiring kit number 99–7924 installed on the unit. This kit upgrades the wiring on the vehicle so that it will accept the several optional kits that require connections to the electrical system.

Note: If you will be installing the horn kit or the signal light kit, obtain them before installing this kit. It is much easier to install the three kits together, than to install them separately.

Loose Parts

Description	Qty.	Use
Screw, 1/2 x 1/2 inch[1]	1	Install the brake switch
Lock washer, 1/2 inch[1]	1	
Cotter pin[1]	1	
Brake switch	1	
Brake switch bracket[1]	1	
Bolt, #6	2	
Locknut, #6	2	
Dash harness	1	Install the dash harness
Flasher	1	
Relay	1	
Timer	1	
Bolt, 1/4 x 1-3/8 inch	1	
Bolt, 1/4 x 3/4 inch	2	
Locknut, 1/4 inch	3	
R-clamp, large	1	
R-clamp, small	1	
Wire tie	2	

PROTOTYPE

[1]Not used to install brake switch on models with serial numbers 230000001 or higher.

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Description	Qty.	Use
Tail light	1	Install the tail lights and rear harness
Silicone sealant (not supplied, purchase before installing)	0	
Rear harness	1	
R-clamp, small	3	
Screw, 1/4 x 0.82 inch	3	
Adapter harness	1	
Wire tie	2	
Fuse	1	
Front reflector	2	Install the reflectors
Bolt, #10	2	
Locknut, #10	2	
Rear reflector	2	
Screw, #10	4	

PROTOTYPE

Preparing the Vehicle

1. Position the machine on a level surface, stop the engine, and remove the key.

Caution

If you leave the key in the ignition switch, someone could accidently start the engine and seriously injure you or other bystanders.

Remove the key from the ignition switch before you do any maintenance.

2. Remove the hood from the vehicle by removing the 2 screws on top of the hood, the 2 bolts on each fender, and the 4 bolts from the bottom of the hood.

(Workman 2100, 1100, or Twister 1400 with Serial Numbers 229999999 or Lower)

3. Drill a hole (7/8 in. dia.) in the floor of the vehicle in front of the brake pedal in the location shown in Figure 1.

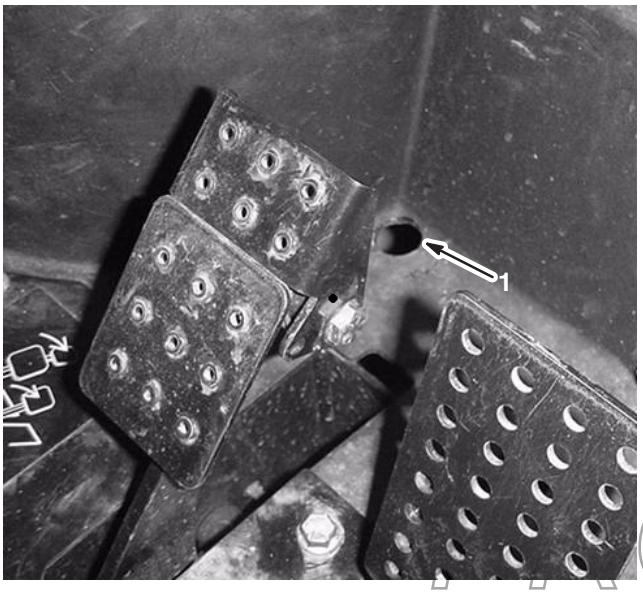


Figure 1

1. Hole, 7/8 in.

Note: If you are installing the horn kit, install the horn at this time, but do not connect any of the wires to the horn yet.

Installing the Brake Switch

(Workman 2110, Twister1600, or any model with Serial Number of 230000001 or Higher)

1. Install brake switch to pedal assembly using #6 bolts and lock nuts (Fig. 2).

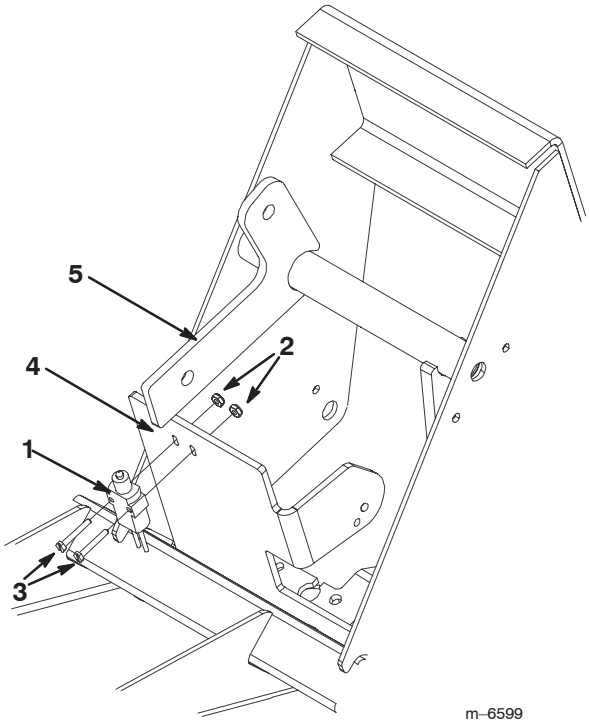


Figure 2

1. Brake switch
2. Bolts, #6
3. Lock nuts, #6
4. Pedal assembly
5. Brake pedal arm

2. Make sure brake pedal arm is aligned and makes contact with brake switch button when pedal is released.

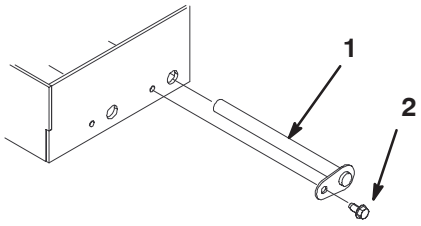
3. Check the depth of brake switch button while of brake switch is engaged. Switch should be adjusted to allow the button to be depressed but not bottomed out when brake pedal is released and button should be extended with clearance when brake is applied.

4. Verify the alignment and actuation of switch by applying and releasing brake.

PROTOTYPE

(Workman 2100, 1100 or Twister 1400 with Serial Numbers 229999999 or Lower)

1. If you have a floor mat, remove it from around the accelerator and brake pedals.
2. Remove the metal plate on the floor surrounding the pedals.
3. Disconnect the brake rod from the brake pedal.
4. Remove the bolt securing the brake pedal pivot rod (Fig. 3).

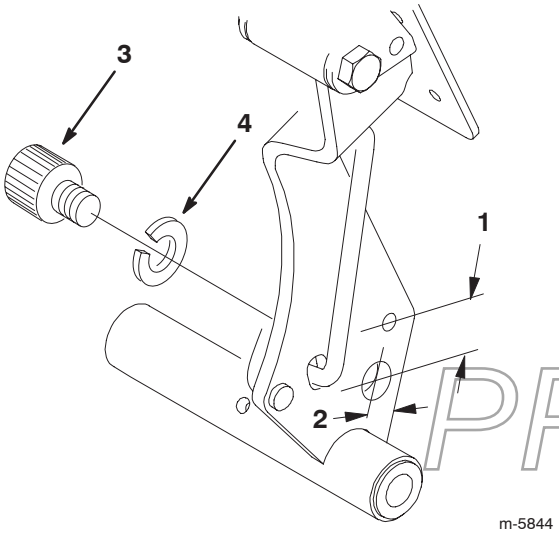


m-5780

Figure 3

1. Pivot rod
2. Bolt

5. Pull out the pivot rod, removing the brake pedal (Fig. 3).
6. Drill a hole (27/64 in. dia.) through the brake pedal in the location illustrated in Figure 4.



m-5844

Figure 4

1. 3/4 in.
2. 5/16 in.
3. Screw, 1/2 x 1/2 in.
4. Lock washer, 1/2 in.

7. Tap the hole with a 1/2–13 in. tap.
8. From the right side of the pedal, install a screw (1/2 x 1/2 in.) and lock washer (1/2 in.) into the hole (Fig. 4).
9. Insert the brake pedal assembly into the pedal box and secure it into the rear position using the pivot rod removed previously.
10. Secure the pivot rod with the bolt removed previously.
11. Connect the brake rod to the brake pedal using a new cotter pin.
12. Loosely mount the brake switch onto the brake switch bracket (Fig. 5) using 2 bolts (#6) and 2 locknuts (#6).

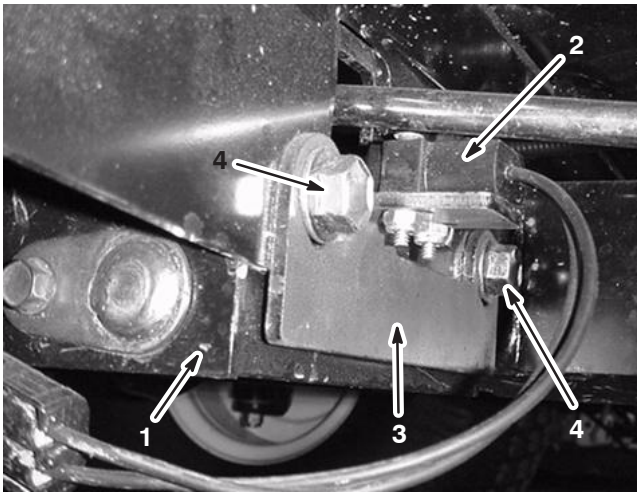


Figure 5

1. Pedal box
2. Brake switch
3. Brake switch bracket
4. Existing bolts

13. Bolt the bracket to the back of the pedal box using the two bolts on the back of the box (Fig. 5). Secure the bracket so that the button on the switch comes to the center of the screw head you installed on the brake pedal.
14. Adjust the switch so that the button is pressed in by the pedal when the pedal is at rest. The pedal should not touch the body of the switch. Tighten the bolts and nuts securing the switch once you have it in the correct position.

PROTOTYPE

Installing the Dash Harness and Components

Figure 6 illustrates the dash wiring harness. Refer to it throughout this procedure.

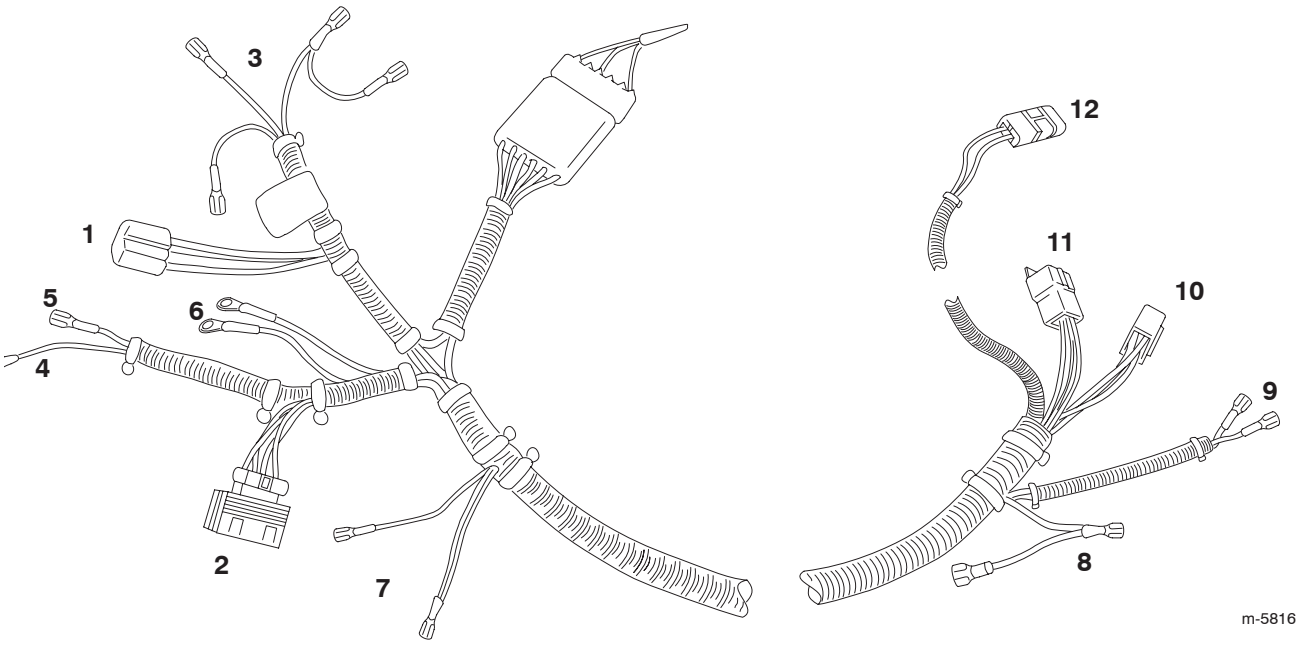


Figure 6

1. To flasher
2. To relay
3. To timer
4. To ground stud
5. To white wire on the fuse block
6. To horn button (if installed)
7. To light switch
8. To ignition switch
9. To horn (if installed)
10. Not used
11. To main wire harness
12. To brake switch

Installing the Flasher, Relay, and Timer

1. Connect the flasher to the dash harness (Fig. 6 and 7).

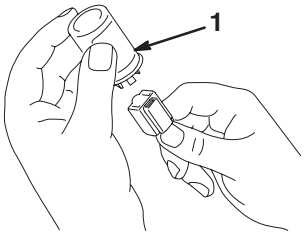


Figure 7

1. Flasher

2. Connect the relay to the dash harness (Fig. 6 and 8).

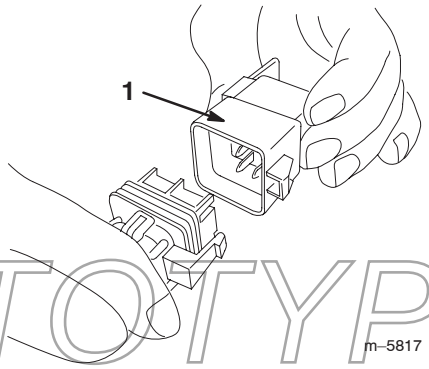


Figure 8

1. Relay

3. Connect the timer to the dash harness as illustrated in Figure 6 and 9.

PROTOTYPE

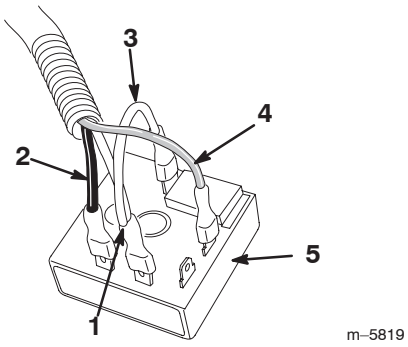


Figure 9

1. White wire to terminal 1
2. Black wire to terminal 2
3. White wire pigtail to terminal C
4. Green wire to N.O. terminal
5. Timer

4. Connect the timer to the front side (under the hood) of the dash plate using a bolt (1/4 x 1-3/8 in.) and locknut (1/4 in.) in the location illustrated in Figures 10 and 11.

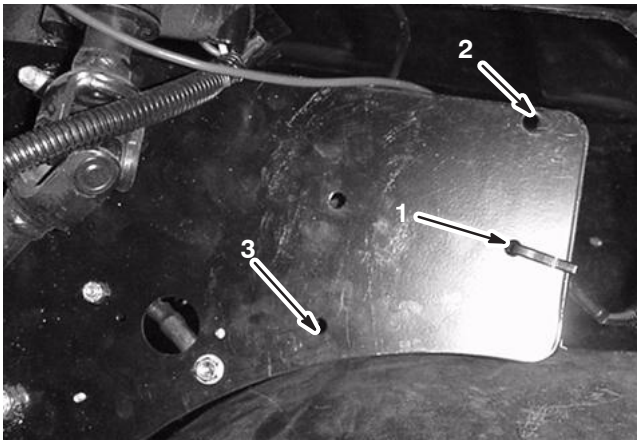


Figure 10

Viewed from the Front of the Vehicle

1. Hole for the timer (cut and remove the cable tie if necessary)
2. Hole for the flasher
3. Hole for the relay

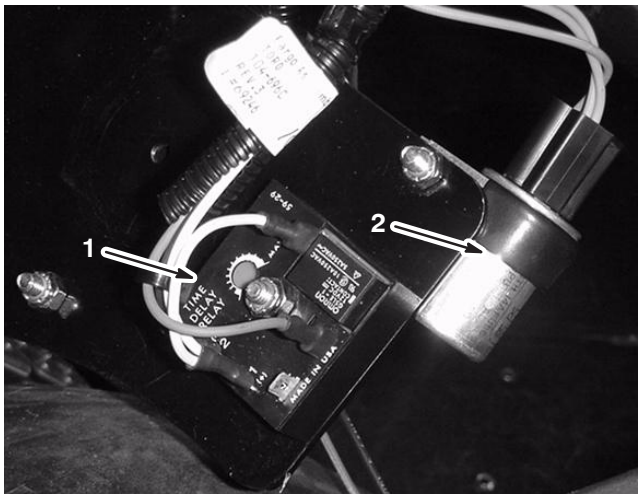


Figure 11

Viewed from the Front of the Vehicle

1. Timer
2. Flasher

5. Connect the flasher to the back side (under the dash) of the dash plate using a large R-clamp, a bolt (1/4 x 3/4 in.), and a locknut (1/4 in.) in the location illustrated in Figures 10 and 12.

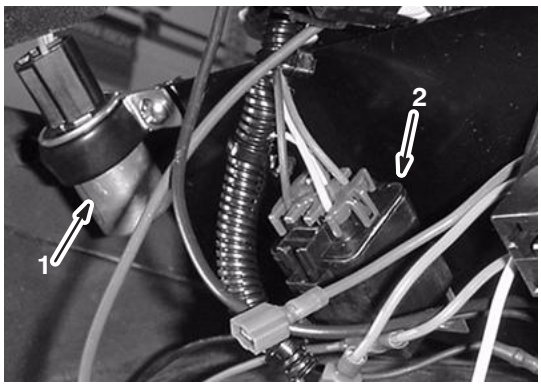


Figure 12

Viewed from the Under the Dash

1. Flasher
2. Relay

PROTOTYPE

6. Connect the relay to the back side (under the dash) of the dash plate using a bolt (1/4 x 3/4 in.) and locknut (1/4 in.) in the location illustrated in Figures 10 and 12.

Note: If you had previously installed the Horn Kit, disconnect the wires from the horn button. Connect the two eye connectors on the dash harness to the horn button

(Fig. 6). If you are installing the horn kit, refer to the Horn Kit Installation Instructions for information on instaling the horn button.

Connecting the Dash Harness to the Fuse Block and the Light Switch

1. Attach the ground lug on the harness to the ground stud on the dash plate (Fig. 6 and 13).

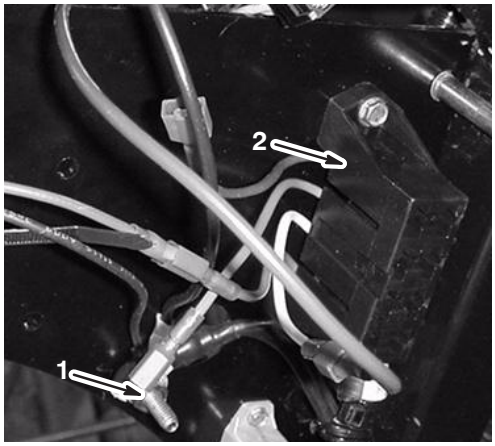


Figure 13

Viewed from the Under the Dash

1. Ground stud
2. Fuse block

2. Plug the power lead on the harness into the white connector on the fuse block (Fig. 6 and 13).

Note: If the Horn Kit was previously installed, remove all wires from the horn.

3. Unplug the light switch harness from the back of the light switch (Fig. 14).

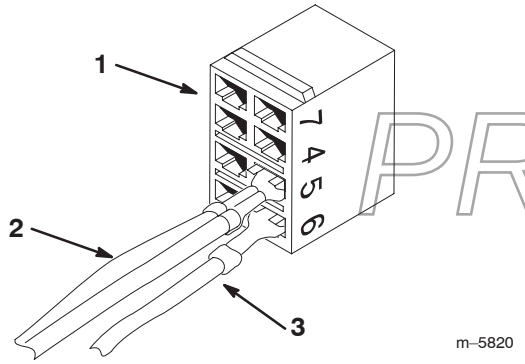


Figure 14

1. Light switch harness
2. Double pink wire
3. Purple wire

4. Insert the connector on the pink double wire from the dash harness into the number 5 slot on the light switch harness as shown in Figure 6 and 14.

5. Insert the connector on the purple wire from the dash harness into the number 6 slot on the light switch harness as shown in Figure 6 and 14.

6. Plug the light switch harness into the back of the light switch.

Connecting the Dash Harness to the Ignition Switch (Models with Serial Numbers 220000001 or Lower)

1. Look at the back of the ignition switch.

2. Connect the harness to the ignition switch as follows:

   - If you have 5 connection pins on the back of the ignition switch, remove the red or yellow wire and plug the violet wire (Fig. 6) on the harness into its spot.
   - If you have 4 connection pins on the back of the ignition switch, remove the violet wire and plug the violet wire (Fig. 6) on the harness into its spot.

3. Plug the wire you removed from the ignition switch into the wire coming out of the connector on the violet wire that you plugged into the ignition switch.

Connecting the Dash Harness to the Ignition Switch (Models with a Serial Numbers of 220000001 or Higher)

1. Look at the back of the ignition switch.

2. Connect the harness to the ignition switch as follows:

   - If you have 5 connection pins on the back of the ignition switch, connect the violet wire (Fig. 6) on the harness to the violet pigtail wire on the back of the switch.
   - If you have 4 connection pins on the back of the ignition switch, connect the violet wire (Fig. 6) on the harness to the violet wire on the back of the switch.

PROTOTYPE

Connecting the Dash Harness to the Main Harness and the Brake Switch (Models with Serial Numbers 229999999 or Lower)

Note: If you are also installing or have already installed the Horn Kit, connect the horn leads of the dash harness to the horn (Fig. 6).

1. Locate the plug on the main wire harness of the vehicle that is not currently connected to anything.

2. Connect the female connector on the dash harness (Fig. 6) to the empty male connector on the main harness.

Note: The male connector next to the female connector on the dash harness will not be used to install this kit. It is used to connect other kits to the vehicle.

3. Route the long end of the dash harness with the terminal connector (Fig. 6) along the vehicle support and through the hole you drilled in the floor of the vehicle.

4. Slide an R-clamp over the harness near the end (Fig. 15).

5. Connect the terminal connector on the dash harness to the connector on the brake switch harness under the vehicle (Fig. 15).

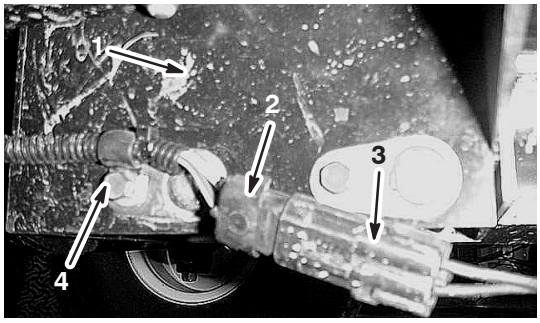


Figure 15

1. Pedal box
2. Terminal connector
3. Brake switch harness connector
4. R-clamp

6. Use a wire tie to secure the brake switch harness to the brake switch bracket.

7. Attach the R-clamp to side of the pedal box with the bolt that secures the accelerator pedal pivot rod to the brake box (Fig. 15).

8. Remove all slack from harness under the vehicle.

9. Seat the grommet on the harness in the hole you drilled in the floor.

10. Use 2 wire ties to secure the cable to the vehicle support.

11. Install the hood.

Connecting the Dash Harness to the Main Harness and the Brake Switch (Models with Serial Numbers 230000001 or Higher)

Note: If you are also installing or have already installed the Horn Kit, connect the horn leads of the dash harness to the horn (Fig. 6).

1. Locate the plug on the main wire harness of the vehicle that is not currently connected to anything.

2. Connect the female connector on the dash harness (Fig. 6) to the empty male connector on the main harness.

Note: The male connector next to the female connector on the dash harness will not be used to install this kit. It is used to connect other kits to the vehicle.

3. Route the long end of the dash harness with the terminal connector (Fig. 6) to the brake switch.

4. Connect the terminal connector on the dash harness to the connector on the brake switch.

5. Use a wire tie to secure the brake switch harness to the brake switch bracket.

6. Bundle excess wiring and use 2 wire ties to secure the cable to the vehicle support.

7. Install the hood.

Installing the Taillights

1. Drill 2 holes (1/4 in. dia.) in each taillight location in the back of the bed. The location of these holes is molded into the box.

2. Drill a hole (1-1/2 in. dia.) in each taillight location in the back of the bed as shown in Figure 16.

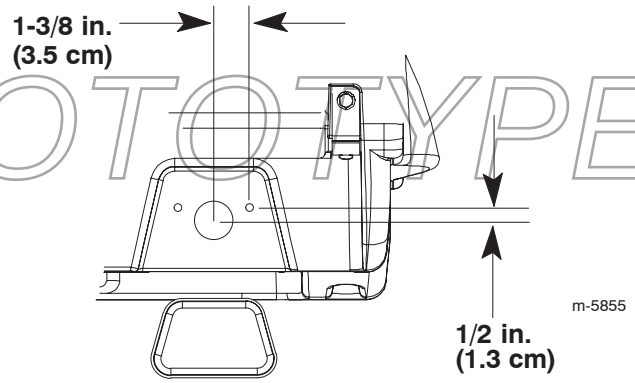


Figure 16

3. Raise the bed.

PROTOTYPE

4. Through the right side, inside surface of the box toward the rear, drill a hole (1-1/2 in. dia.) through the inner wall of the box in the location shown in Figure 17.



Figure 17

1. Right hole

Important Some older boxes are configured differently on the right side. Figure 18 illustrates the hole location on one of these boxes.



Figure 18

1. Right hole

5. Through the left side, inside surface of the box toward the rear, drill a hole (1-1/2 in. dia.) through the inner wall of the box in the location shown in Figure 19.



Figure 19

1. Left hole

6. Route the harnesses on the back of the taillights through the holes you drilled in step 1 and through the holes you drilled in step 4 and 5.

Note: To ease installation, use a stiff wire hook to pull the wire harnesses though the holes.

7. Apply a bead of silicone sealant around the back of each taillight about 1/2 in. from the edge and install each taillight onto the bed.

8. Route the rear wire harness from the left taillight harness, across the back, and over to the right side, securing it with 3 R-clamps and 3 screws (1/4 x 0.82 in.) (Fig. 20).

Note: You will need to drill 3 holes (13/64 in. dia.) in the bed in which to install the R-clamps.

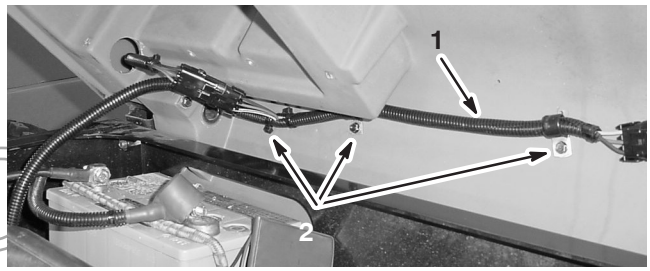


Figure 20

1. Rear harness
2. R-clamps

9. Route the harness around the battery.

10. Connect the connector in the center of the rear harness to the connector on the main wire harness located near the battery.

Note: On Workman 2100 Vehicles serial number 22000000101 and lower, use adapter harness number 104–6958 between the rear harness and the main wire harness (Fig. 21).

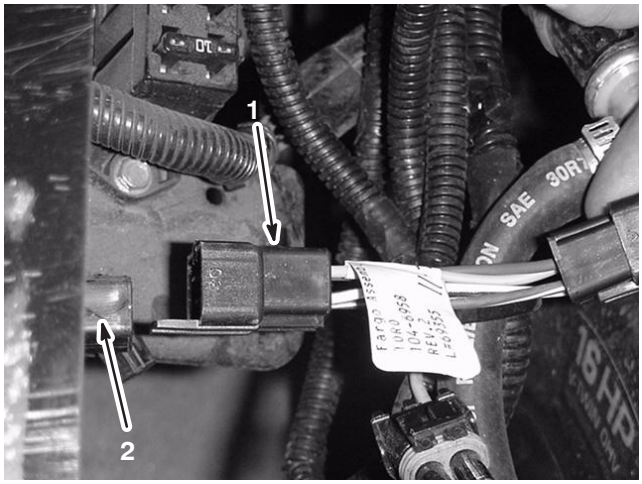


Figure 21

1. Adapter harness
2. Main wire harness connector

11. Route the remaining rear harness forward between the frame and the air cleaner.

12. Connect the ring terminal on the rear harness to the ground stud on the front right skid pan, near the base of the engine (Fig. 22).

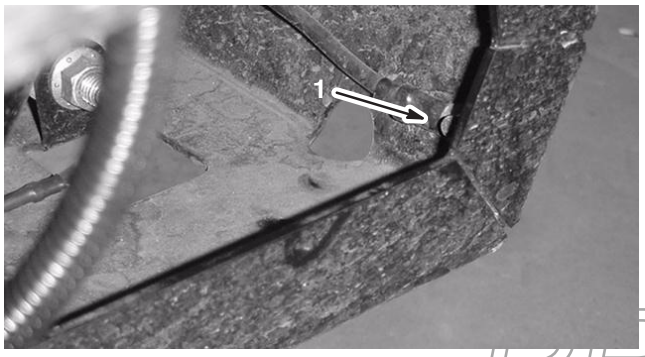


Figure 22

1. Ground stud

13. Secure the harness to the frame with wire ties.

14. Install the fuse in the fuse block in the position corresponding to the white wire.

Installing the Reflectors

1. Drill a hole (#10 drill bit) on each side of the hood in the location shown in Figure 23.

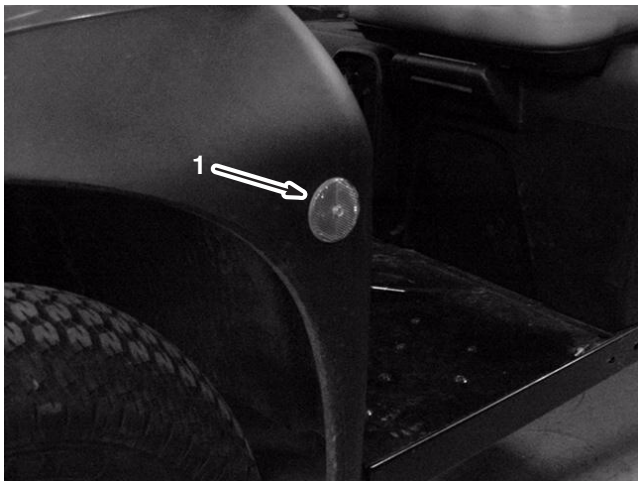


Figure 23

1. Front reflector

2. Install the front reflectors, using 2 bolts (#10) and 2 locknuts (#10) (Fig. 23).

3. Drill 2 holes (13/64 in. dia.) on each side of the box in the location shown in Figure 24, using the reflector as a template to mark the hole locations.



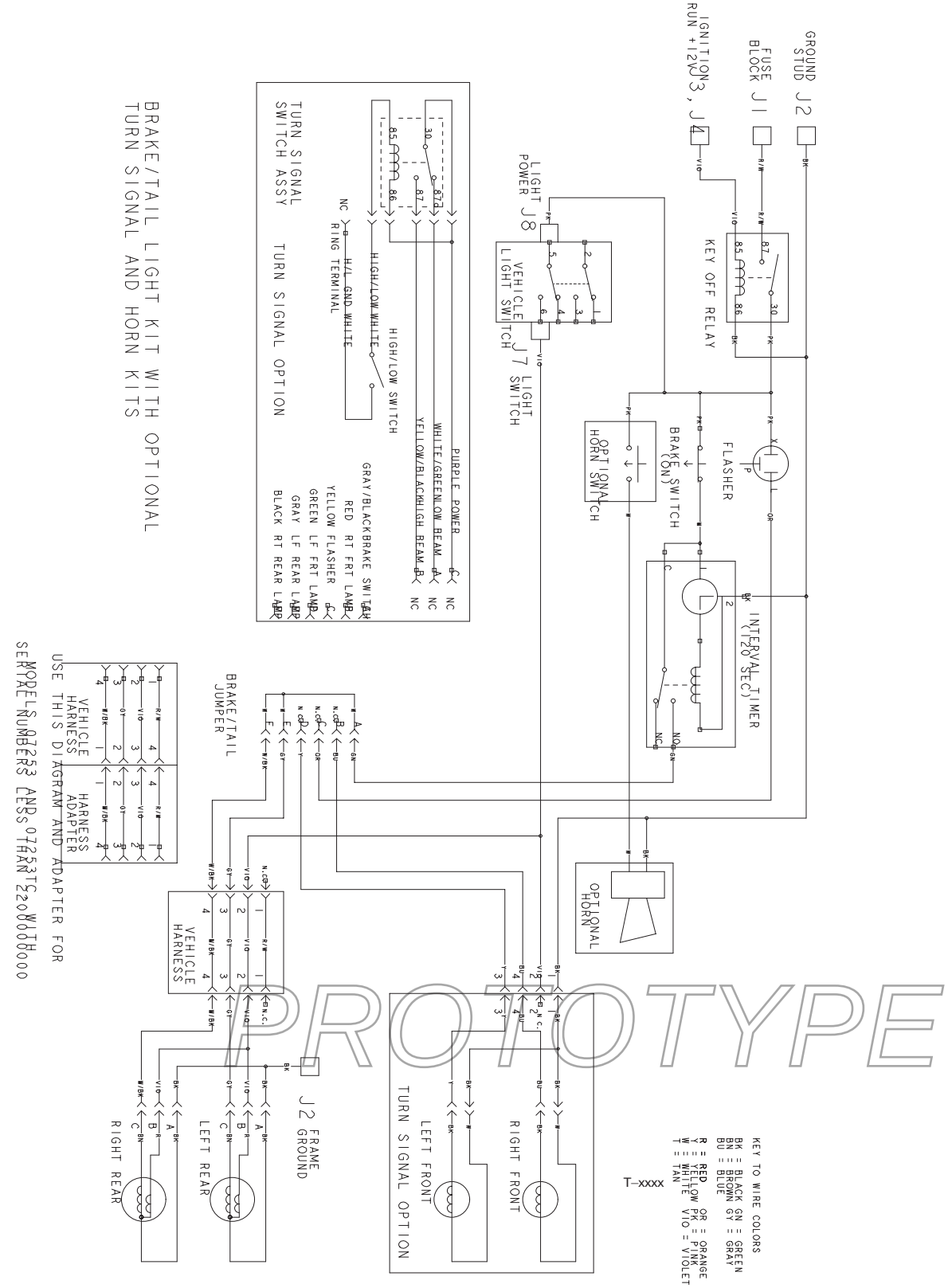
Figure 24

1. Rear reflector

4. Install the rear reflectors, using 4 screws (#10) (Fig. 24).

PRO E

Electrical Schematic



PROTOTYPE



PROTOTYPE