TORO®

MODEL NO. 41089

SET-UP AND PARTS MANUAL

# SONIC BOOM™
for the WORKMAN® and MULTI PRO® SPRAYERS

This manual includes set-up instructions for the MULTI PRO® 1100, MULTI PRO® 1200, MULTI PRO® 1250, MULTI PRO® 5500, MULTI PRO® 5600 and WORKMAN® Vehicles. Refer to the sections that contain information pertaining to the set-up for your Vehicle or Sprayer. This kit will install on only MULTI PRO® 1100 Vehicles are those with serial number of 30000 and up. Refer to the illustrated Parts List for the details of parts used in assembling the Sonic Boom™ Kit.

NOTE: In order to use a Sonic Boom™ Kit your sprayer must first be equipped with an Electric Boom Lift Kit. The Harness included with the Electric Boom Lift Kit will not be used with the Sonic Boom™ accessory and may be discarded.

NOTE: "Right" and "Left" as used in the following instructions, refer to the operator's right and left when seated in the normal operating position. Likewise, "Front" and "Rear" as seen from the operator's position.

SONAR SENSOR INSTALLATION:

1. Mount the Sensor Bracket to the Boom Pipes between the Vertical Support and the last Nozzle, using two (2) "U" Bolts, (4) locknuts, and flat washers. The Brackets should be tilted up 10°. Right side is shown in FIG. 1.
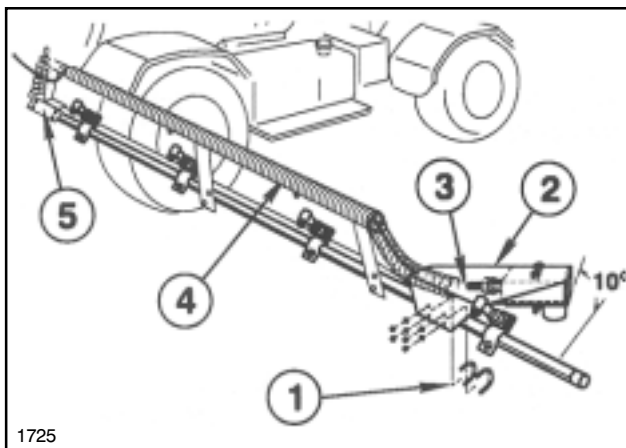
FIG. 1

1. "U" Bolts
2. Sensor Bracket
3. Sonar Cord
4. Corrugated Split Tubing
5. Boom Hinge

2. Attach the left Sensor Bracket in the same manner on the left Boom Pipe.

3. Route the Sonar Cord along the top of the Boom Support and toward the center of the Vehicle. Install Corrugated Split Tubing over Sonar Cable and Boom Support. Use Tie Straps to secure the Sonar Cords and Corrugated Tubing to the Boom Support at each end and at the center. Allow sufficient slack in the Sonar Cord at the Boom Hinge to permit the Boom to pivot freely. See FIG. 1.

NOTE: Be sure that no obstructions (hoses or nozzles are in the path of the Sonar signal as it travels from the Sonar Head to the ground surface.

Refer to the following section that contains information pertaining to the set-up for your Vehicle or Sprayer.

NOTE: Due to the commonality of the Sonic Boom™ Kit there will be extra length of Harness in some areas. This extra length should be doubled over and tied using the Tie Straps included with the Kit.

IMPORTANT: DO NOT ROUTE HARNESS NEAR MOVING PARTS!

SET-UP INSTRUCTIONS

MULTI PRO® 5500 & 5600 VEHICLE:

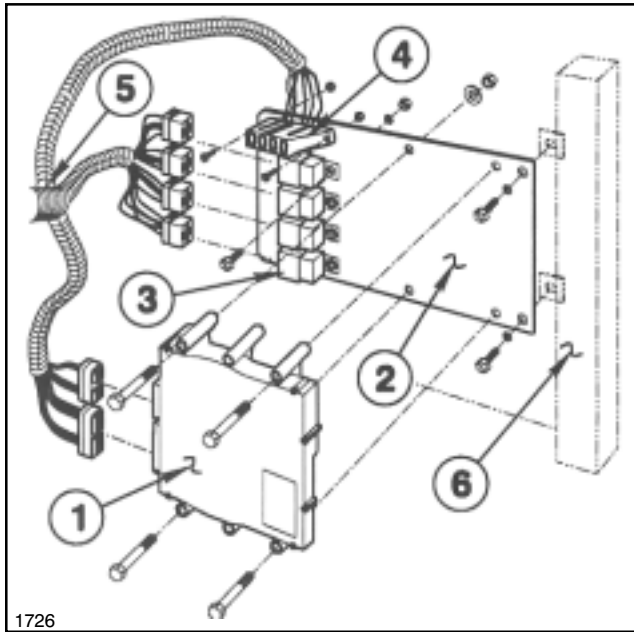**1.** Mount ECU to Plate using four (4) 1/4 NC x 2-1/2" hex hd cap screws, lock washers and hex nuts. See FIG. 2.

FIG. 2

1. ECU	**4. Fuse Block**
2. Plate	**5. Wiring Harness**
3. 4 Relays	**6. Mounting Post**

2. Mount four (4) Relays to Plate using 1/4 NC x 5/8" hex hd cap screws, lock washers and hex nuts.

3. Mount Fuse Block to Plate using two (2) # 10 NCx5/8" rec. rd. hd. mach. screws and hex nuts.

4. Connect Wiring Harness to ECU and Relays. Tighten ECU and Connector screws.

5. Mount ECU plate to Vehicle post on right side under Dash, using two (2) 5/16 NC x 3/4" cap screws and lock washers. See FIG. 2.

6. Install Sonic Boom™ Decal and Indicator Light on Dash, and connect Harness Leads to Light. See FIG. 3.

7. Route Wiring Harness through floor along side the Vehicle Harness and Hydraulic Lines. Route under floor toward the right side of the vehicle, through harness guides, and to front right corner of the Seat Box.

8. Install "R" clamps provided in place of existing "R" clamps located under both Passenger and Operator Seats.
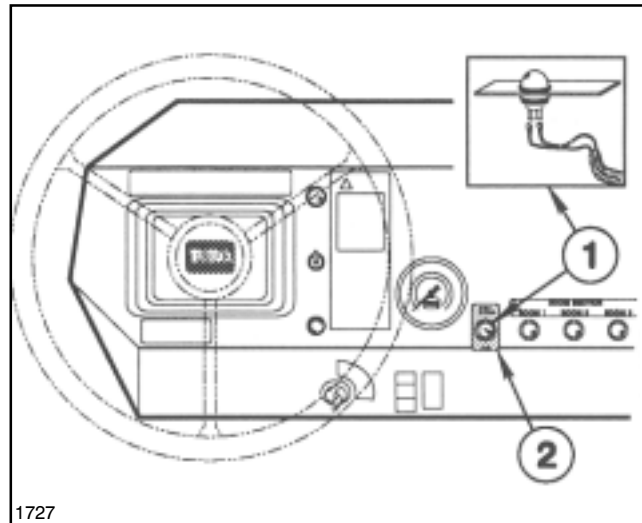

FIG. 3

1. Indicator Light	**2. Sonic Boom™ Decal**

9. Route Harness through new "R" clamps with existing Harness. Identify Harness lead with 3 clear 6-pin connectors. Route that portion through the bottom of the Center Console.

10. Route Harness to Fuse Block under Operator Seat. Connect power and ground wires as shown in FIG. 4.
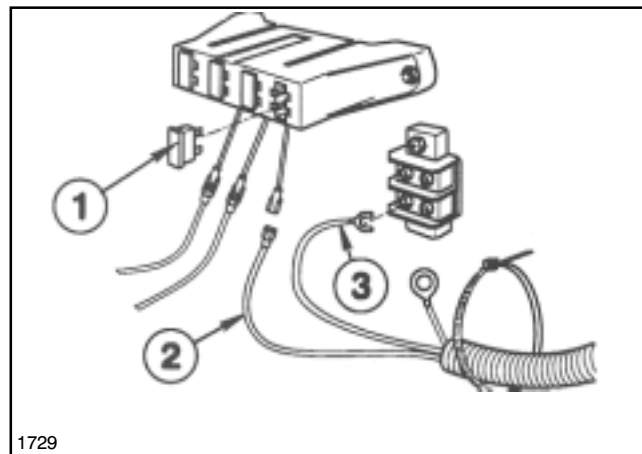

FIG. 4

1. Fuse	**3. Ground Wire**
2. Power Wire	

11. Route remaining Harness along right side of Vehicle to the Boom, following the Vehicle Harness through the Harness Guides.

NOTE: Use Tie Straps provided to attach Harness to existing Harness or to tie up extra Sonic Boom™ Harness whenever Necessary.

SET-UP INSTRUCTIONS

MULTI PRO® 5500 VEHICLE ONLY:

12. Install two (2) Boom Switches (included in Boom Lift Kit) and Sonic Boom™ Mode Switch. Connect Wiring Harness as shown in FIG. 5.
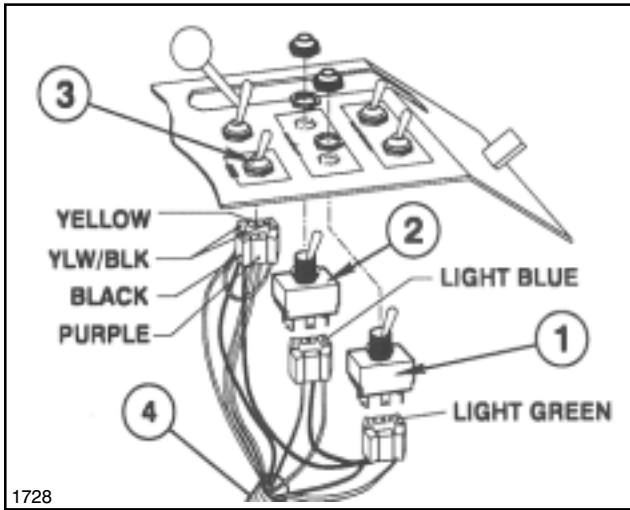

FIG. 5

1. **Right Boom Switch**
2. **Left Boom Switch**
3. **Sonic Boom™ Mode**
4. **Wiring Harness**

MULTI PRO® 5600 VEHICLE ONLY:

12. To use the standard harness for the Sonic Boom Kit on the Multi Pro® 5600, the harness must be modified to mate with the three Rocker Switches provided. Refer to steps **a** thru **d** and illustrations for this procedure.

a. Place a piece of tape around each group of wires going to the three 6-pin connectors to keep the three groups separated.

b. Remove the wires/terminals from the 6-pin connectors using a small flat tip screw driver. Insert the tip of the screwdriver into a socket of the Connector from the side opposite of where the wires go in and on the side where the metal Tang of terminal locks into the connector. See FIG 6. Press the Tang back completely and pull the wire/terminal from the socket.

c. Repeat the removal of wires/terminals from the other sockets and from the other 6-pin connectors. After removing the terminals, lift the Tangs back up to their original height.

d. Install the terminals/wires into the sockets of the new Connector Housings, provided, as shown in FIG. 7. Places all the wires from each group into a single Connector Housing. Orientate the terminals as shown in FIG. 7, with the Tangs facing in the direction of the Locking Arm. Firmly press the terminals into the sockets.
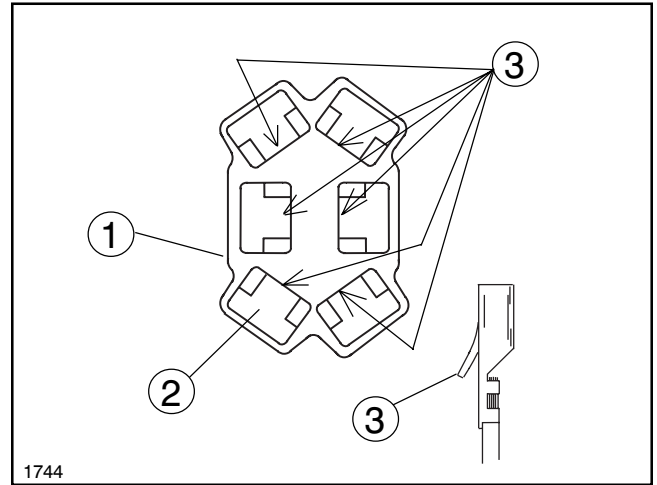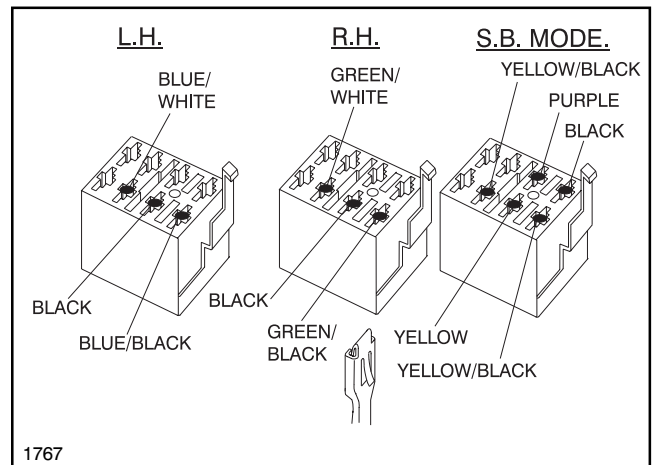

FIG. 6

1. **Connector**
2. **Socket**
3. **Tang**

FIG. 7

1. **Connector Housing**
2. **Locking Arm**
3. **Tang**

13. Lift and remove the three plugs from the Center Console Panel and install the three Rocker Switches provided in the location shown in Fig. 8, page 4. Insure their orientation matches the orientation shown in FIG. 8, page 4, with the cutout notch to the rear of the vehicle. This notch indicates the end of the switch to which the locking Arm (Connector Housing) will mate.

14. Unscrew and remove the Throttle Knob. Release the Draw Latch and remove the Center Console Panel.

15. Plug the Connector Housings onto their respective switches in the Center Console Panel (Blue to LS Switch, Green to RS Switch, and Yellow and Purple to Sonic Boom Switch.
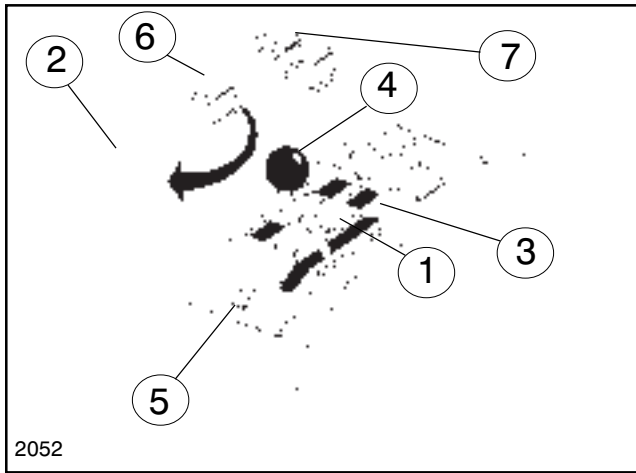
SET-UP INSTRUCTIONS

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FIG. 8

1. Plug
2. Notch
3. Center Console Panel
4. Throttle Knob
5. Draw Latch
6. Sonic Boom Switch
7. Boom Lift Switches

16. Replace Center Console Panel and Throttle Knob.

NOTE: Use Tie Straps provided to attach Harness to existing Harness or to tie up extra Sonic Boom™ Harness wherever necessary.

NOTES:

SET-UP INSTRUCTIONS

MULTI PRO® 1100 VEHICLE:

NOTE: Vehicles with serial numbers preceding 60231 will require the drilling of holes for ECU, Relays, Fuse Block, Indicator Light, and Sonic Boom™ Switch. See FIG. 9, 11, and 12.
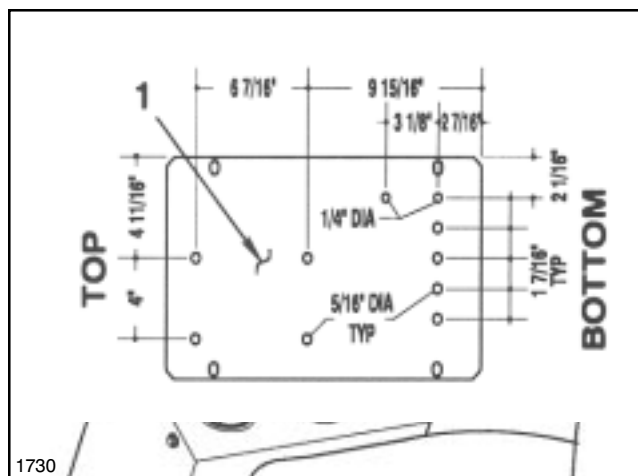

FIG. 9
1. **Visible side of console cover**

1. Remove Console Cover.

2. Mount ECU to Console Cover using four (4) 1/4 NC x 2-1/2" hex hd cap screws, lock washers and hex nuts. See FIG. 10.

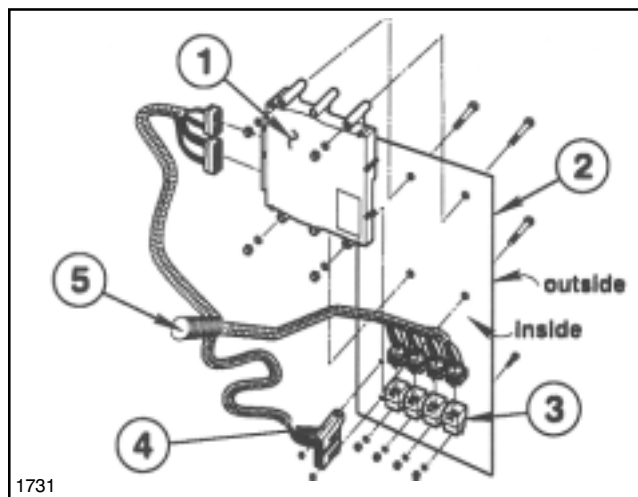3. Mount four (4) Relays using 1/4 NC x 5/8" hex hd cap screws, lock washers and hex nuts.

FIG. 10

1. **ECU**	4. **Fuse Block**
2. **Console Cover**	5. **Wiring Harness**
3. **4 Relays**	

4. Mount Fuse Block to Cover using two (2) #10 NC x 5/8" rec. rd. head machine screws and hex nuts.

5. Connect Wiring Harness to ECU and Relays.

6. Route Wiring Harness through floor and back through axle mounting bracket. Route the harness section with three (3) clear 6-pin connectors back along left side of Vehicle to behind engine. Then guide up, into the Seat Box.

7. Install Sonic Boom™ Decal and Indicator Light on Dash (11/16" DIA. hole required.) Connect Harness Leads to Light. Reinstall the Console Cover. See FIG. 11.
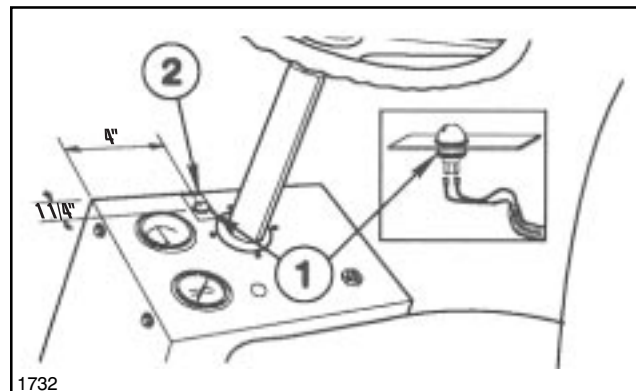

FIG. 11

1. **Indicator Light**	2. **Sonic Boom™ Decal**

8. Install two (2) Boom Switches (included in Boom Lift Kit) and Sonic Boom™ Mode Switch (1/2" DIA. hole required). Install Decals, and connect Wiring Harness. See FIG. 12.

NOTE: It may be necessary to temporarily remove the Air Cleaner to make connection to Switches.
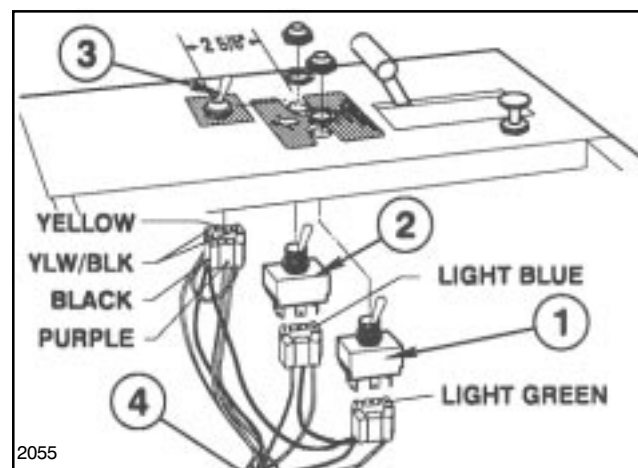

FIG. 12

1. **Right Boom Switch**	3. **Sonic Boom™ Mode**
2. **Left Boom Switch**	4. **Wiring Harness**

SET-UP INSTRUCTIONS

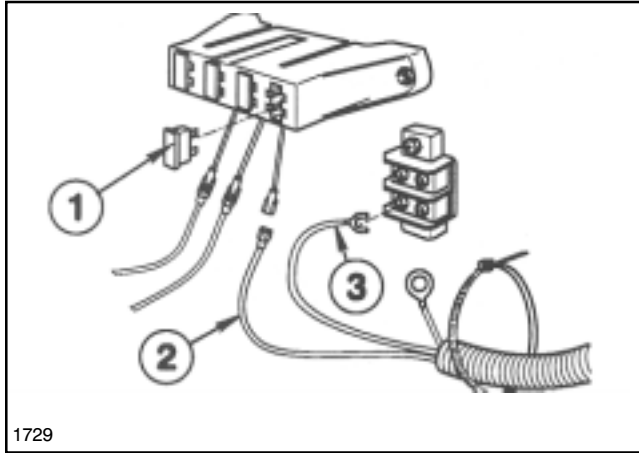**9.** Route Harness to Fuse Block under Operator Seat. Connect power and ground wires as shown in FIG. 13.

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FIG. 13

1. **Fuse**
2. **Power Wire**
3. **Ground Wire**

10. Route remaining Harness along right side of Vehicle to the Boom, following the Vehicle Harness through the Harness Guides.

NOTE: Use Tie Straps provided to attach Harness to existing Harness or to tie up extra Sonic Boom™ Harness whenever Necessary.

MULTI PRO® 1250 VEHICLE:

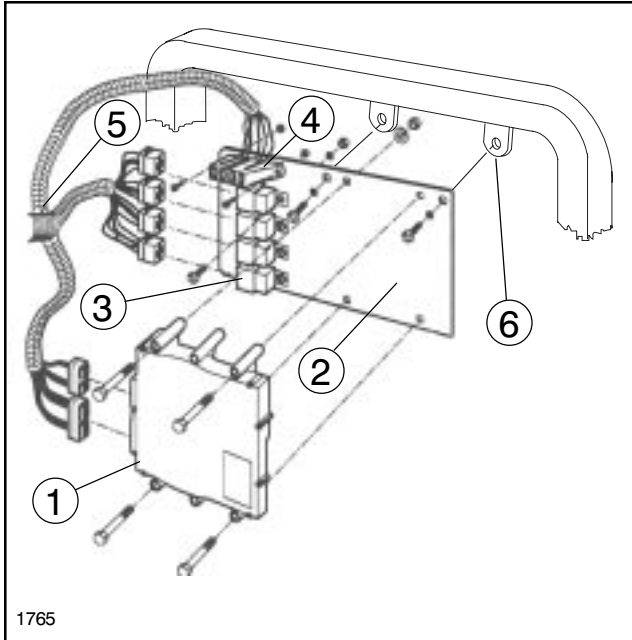**1.** Mount ECU to Plate using four (4) 1/4 NC x 2-1/2" hex hd cap screws, lock washers and hex nuts. See FIG. 14.

FIG. 14

1. ECU	**4. Fuse Block**
2. Plate	**5. Wiring Harness**
3. 4 Relays	**6. Mouting Bracket**

2. Mount four (4) Relays to Plate using 1/4 NC x 5/8" hex hd cap screws, lock washers and hex nuts.

3. Mount Fuse Block to Plate using two (2) # 10 NCx5/8" rec. hex hd. mach. screws and hex nuts.

4. Connect Wiring Harness to ECU and Relays. Tighten ECU Connector screws.

5. Mount ECU plate to Vehicle post on left side under Dash, using two (2) 5/16 NC x 3/4" cap screws and lock washers. See FIG. 14.

6. Remove Hole Plug and install Sonic Boom™ Decal and Indicator Light on Dash, and connect Harness Leads to Light. See FIG. 15.

7. Route Wiring Harness through floor along side the Vehicle Harness and Hydraulic Lines. Route under floor along the left side of the vehicle, through harness guides, and up through hole in frame crossmember.
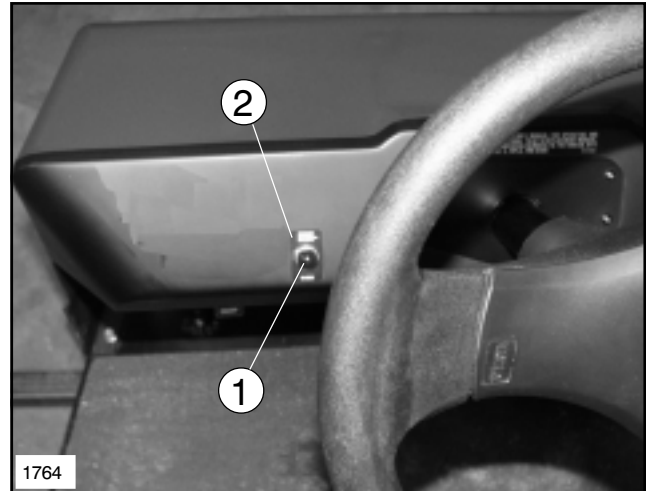

FIG. 15

1. Indicator Light	**2. Sonic Boom™ Decal**

8. Route Harness to Fuse Block under Operator Seat. Connect power and ground wires as shown in Fig. 16.
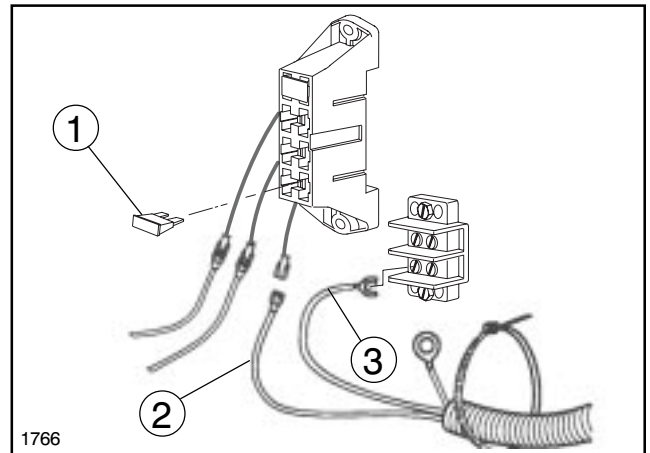
FIG. 16

1. Fuse	**3. Ground Wire**
2. Power Wire	

9. Route remaining Harness along right side of Vehicle to the Boom, following the Vehicle Harness.

10. Identify Harness lead with three clear 6-pin connectors. Route that portion to the Spray Control Panel.

11. To use the standard harness for the Sonic Boom Kit on the Multi Pro® 1250 the harness must be modified to mate with the three (3) Rocker Switches provided. Refer to steps **a** thru **d** and illustrations for this procedure.

a. Place a piece of tape around each group of wires going to the three 6-pin connectors to keep the three groups separated.

b. Remove the wires/terminals from the 6-pin connectors using a small flat tip screw driver. Insert the tip of the screwdriver into a socket of the Connector from the side opposite of where the wires go in and on the side where the metal Tang of terminal locks into the connector. See FIG 17. Press the Tang back completely and pull the wire/terminal from the socket.
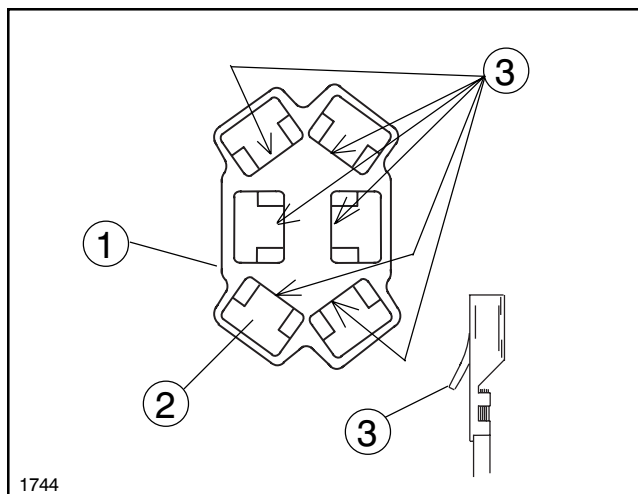

FIG. 17

1. Connector   3. Tang
2. Socket

c. Repeat the removal of wires/terminals from the other sockets and from the other 6-pin connectors. After removing the terminals, lift the Tangs back up to their original height.

d. Install the terminals/wires into the sockets of the new Connector Housings, provided, as shown in FIG. 18. Places all the wires from each group into a single Connector Housing. Orientate the terminals as shown in FIG. 18, with the Tangs facing in the direction of the Locking Arm. Firmly press the terminals into the sockets.

12. Lift and remove the three plugs from the Center Console Panel and install the three Rocker Switches provided in the location shown in Fig. 19. Insure their orientation matches the orientation shown in FIG. 19, with the cutout notch to the rear of the vehicle. This notch indicates the end of the switch to which the locking Arm (Connector Housing) will mate.

13. Remove the five (5) screws and lift the Spray Control Panel to expose the bottom side.

14. From within the Seat Base compartment, route the Connector Housings through the two (2) holes in the Right Hand Inner Fender Panel and up into the Console area.
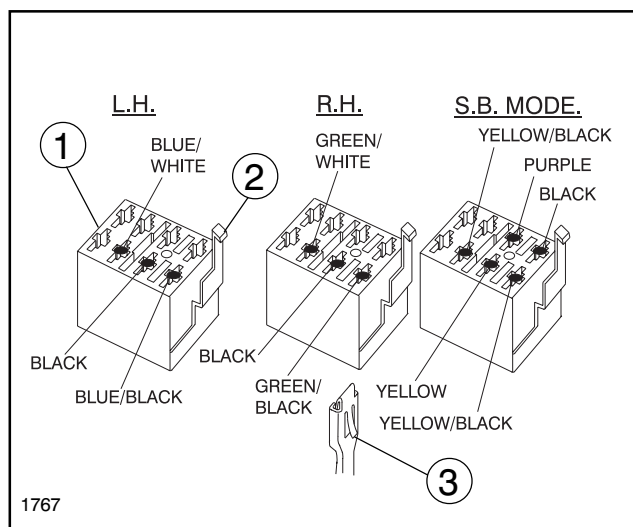

FIG. 18

1. Connector Housing   3. Tang
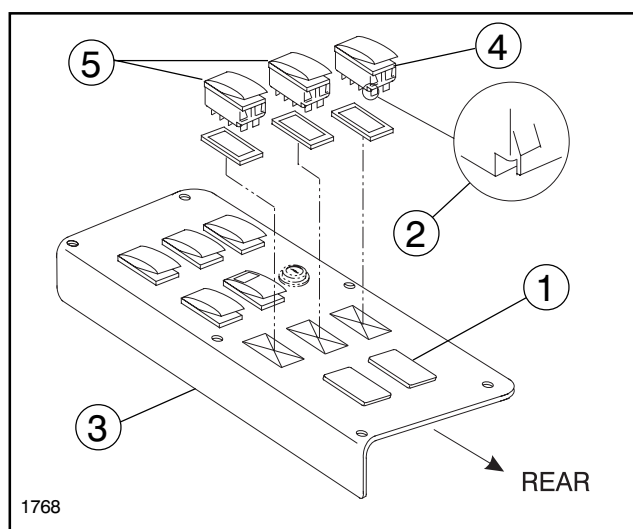2. Locking Arm

FIG. 19

1. Plug   4. Sonic Boom Mode Switch
2. Notch (at back)   5. Boom Lift Switch
3. Spray Control Panel

15. Connect the Connector Housings to their respective switches in the Spray Control Panel (Blue to L.H. Switch, Green to R.H. Switch and Yellow & Purple to Sonic Boom Mode Switch).

16. Reinstall the Spray Control Panel to the Seat Base and secure with the five (5) screws removed earlier.

NOTE: Use Tie Straps provided to attach Harness to existing Harness or to tie up extra Sonic Boom™ Harness wherever necessary.

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SET-UP INSTRUCTIONS

WORKMAN® VEHICLE:

1. Remove fifteen (15) screws and washers securing the Front Panel to Vehicle frame and remove Front Panel.

2. Locate and drill two (2) 3/8" holes in right Upright Post. See FIG. 20.
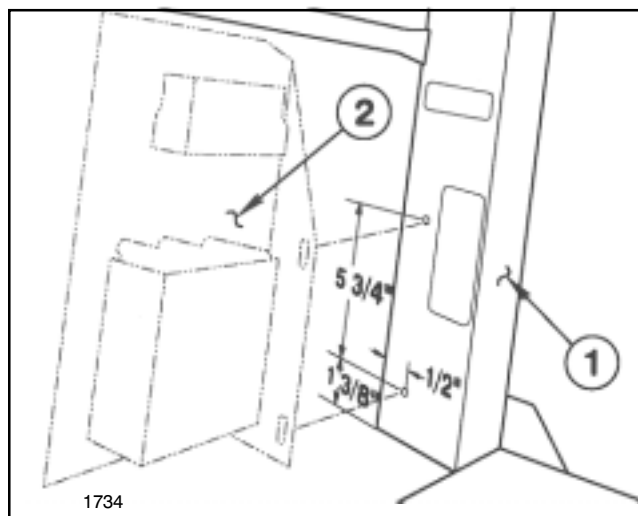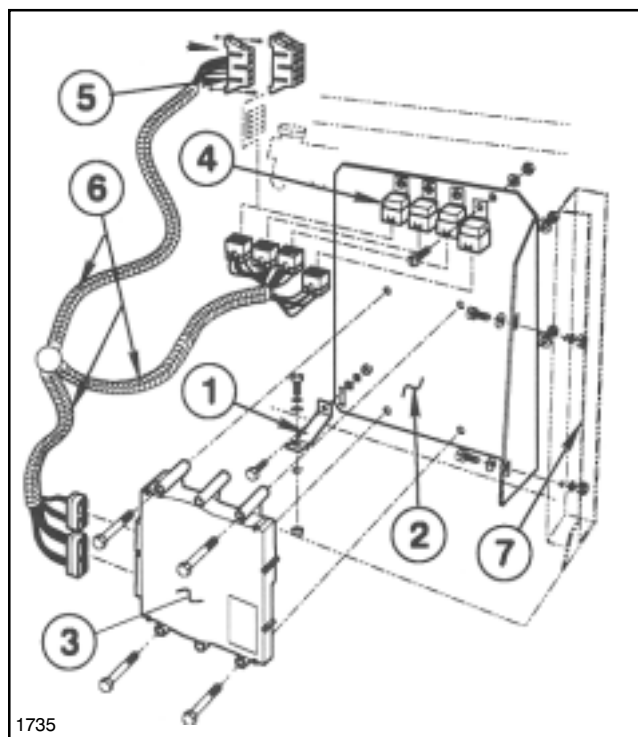

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FIG. 20

1. Upright Post   2. ECU Bracket

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FIG. 21

1. **Support Bracket**	4. **Four Relays**
2. **ECU Bracket**	5. **Fuse Blocks**
3. **ECU**	6. **Wiring Harness**
	7. **Upright Post**

3. Mount the Support Bracket to the ECU Bracket using (1) 5/16 NC x 3/4" cap screw, flat washer, lock washer, and hex nut. See FIG. 21.

4. Mount ECU to Bracket using four (4) 1/4 NC x 2-1/2" hex hd cap screws, lock washers and hex nuts. See FIG. 21.

5. Mount ECU to Bracket using four (4) 1/4 NC x 5/8" hex hd cap screws, lock washers and hex nuts. See FIG. 21.

6. Remove fasteners securing Vehicle Fuse Block(s). Slide Sonic Boom™ Fuse Block together with Vehicle Fuse Block(s) and remount all Fuse Blocks to Vehicle using fasteners previously removed. See FIG. 21.

7. Connect Wiring Harness to ECU and Relays.

8. Mount ECU Bracket to Upright Post, using two (2) 5/16 NC x 3/4" cap screws, flat washers, lock washers, and hex nuts. See FIG. 21.

9. Drill 3/8" hole in floor using the Support Bracket as a template for hole location.

10. Secure Support Bracket to floor, using a 5/16 NC x 3/4" cap screw, flat washer, lock washers, and hex nut. See FIG. 21.

11. Install Switch Bracket to dash using four (4) 1/4 NC x 5/8" hex hd cap screws, lock washers, and hex nuts as shown in FIG. 22.
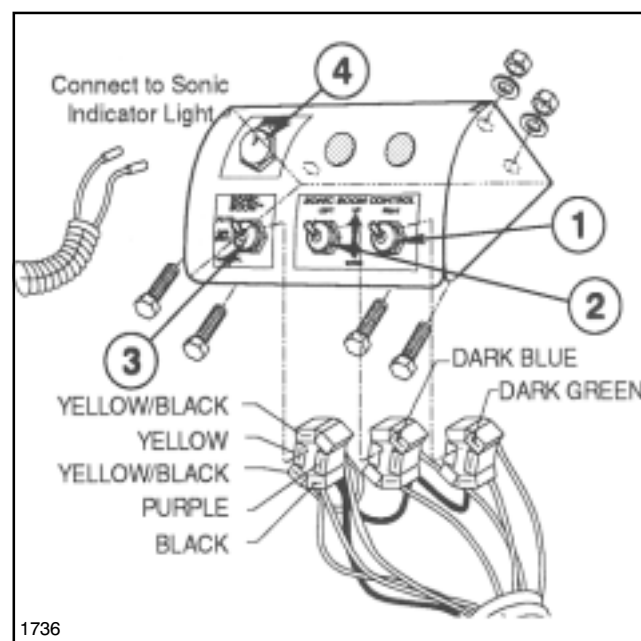

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FIG. 22

1. **Right Boom Switch**	3. **Sonic Boom™ Mode Switch**
2. **Left Boom Switch**	4. **Sonic Indicator Light**

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SET-UP INSTRUCTIONS

12. Install two (2) Boom Switches (included in Boom Lift Kit), Sonic Boom™ Mode Switch, Sonic Boom™ Indicator Light, and Decals. Connect Wiring Harness as shown in FIG. 22, page 9.

13. Install five (5) Fuse Decals. Connect power wire to available Vehicle Fuse Block lead, and connect ground wire to ground bolt as shown in FIG. 23.
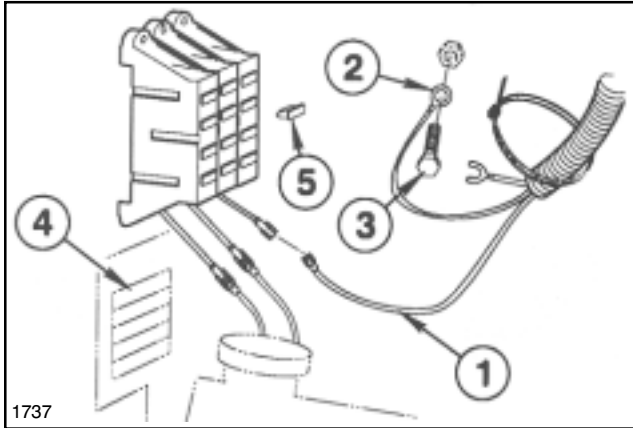

FIG. 23

1. **Power Wire**	3. **Ground Bolt**
2. **Ground Wire**	4. **Five Fuse Decals**
	5. **30 amp Fuse**

14. Install 30 amp Fuse to the Bay matching Power Wire Connection.

15. Route Harness to Boom Following the Vehicle Brake Lines. Secure Harness to Vehicle using Tie Straps provided. Route Harness away from any moving parts.

16. Reattach Front Panel.

BOOM CONNECTIONS:
(Applicable to all Sprayer Vehicles)

1. Connect Wiring Harness to Sonar Sensor cable. The connector with black/orange stripe wire in center terminal mates to left Sensor cable. The connector with the black/blue stripe wire mates to right Sensor cable.

2. Connect Wiring Harness to Actuators. The connector with solid red and black wires mates to Left Actuator. The connector with striped red and black wire mates to Right Actuator.

BOOM HEIGHT ADJUSTMENT:

1. Tighten the adjustable clevis jam nut as close against the clevis as far as it will go. See FIG. 24.

2. Securely tighten the adjustable clevis end nut against the boom frame support member.

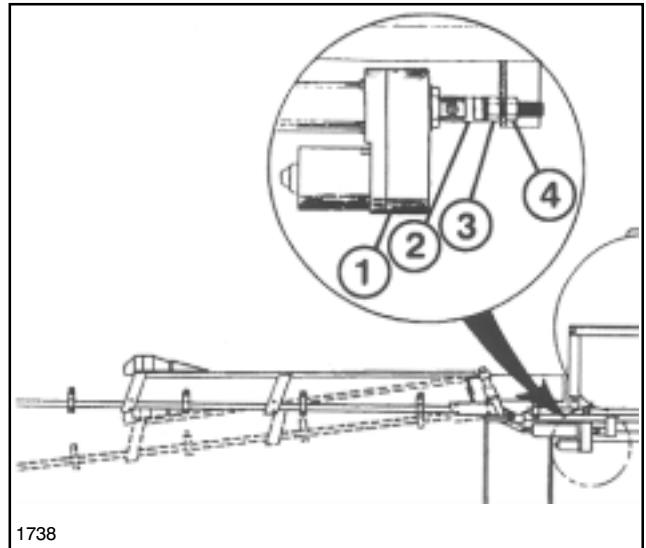**3.** Repeat this procedure for the boom on opposite side.

FIG. 24

|	
1. **Actuator**	3. **Jam Nut**
2. **Adjustable Clevis**	4. **End Nut**

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⚠ SAFETY AND INSTRUCTION DECALS

The following safety and instruction decals are installed on the vehicle. If any become damaged or illegible, replace them. Decal part numbers are listed below and in the Operator's Manual. Order replacements from your Authorized TORO Distributor.
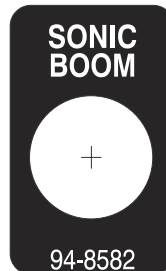

Part No. 94-8576; Located on the Sensor Bracket on Workman® and MULTI PRO® Sprayers

Part No. 92-2660; Located on the Dash Bracket of Workman® Sprayers
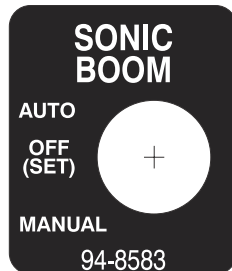
Part No. 94-8583; Located on Switch Mounting Bracket of Workman® and on Console Control Panel on MULTI PRO® 1100 Sprayers

Part No. 94-8582; Located on Dash of Workman® and MULTIPRO® Sprayers

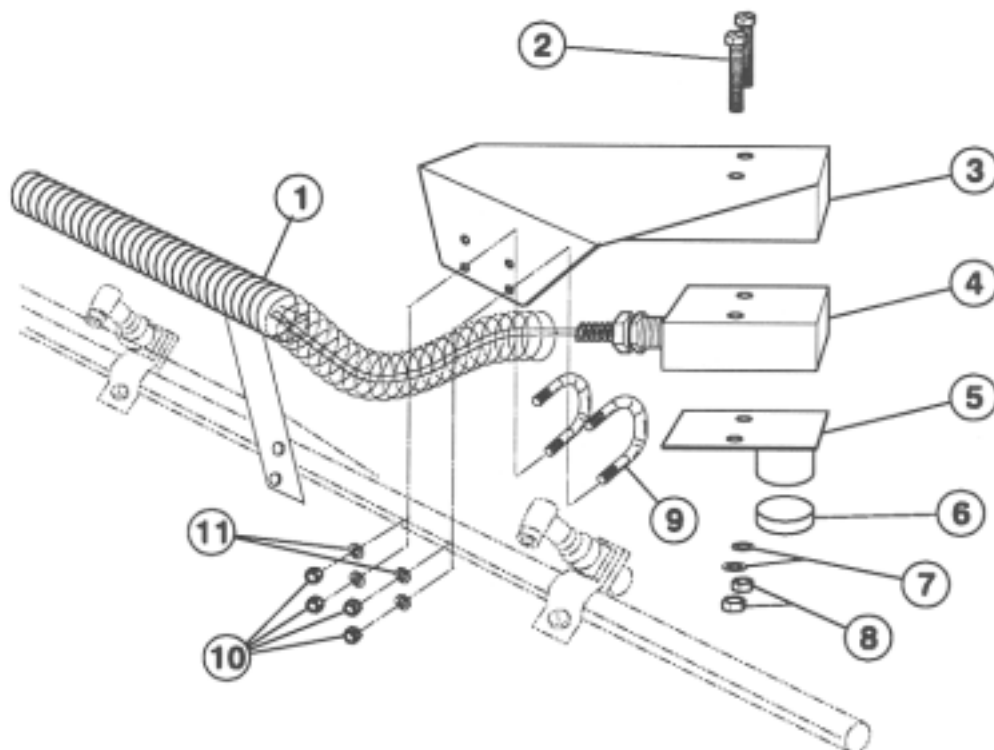Part No. 87-0610; Located on Left Control Panel of MULTI PRO® 1100 Sprayers

Part No. 94-8584; Located at the Aux. Fuse Block of Workman® and MULTI PRO® Sprayers

Part No. 94-8585; Located at the Aux. Fuse Block of Workman® and MULTI PRO® Sprayers

Part No. 87-0570; Located on Both Corners of Rear Tank Band on Workman® and MULTI PRO® Sprayers

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SENSOR AND BRACKET ASM 95-8567 (LH)
(RIGHT SIDE SHOWN)

Ref.	Part No.	Description	Qty.
1	94-8586	Sonar Wire Conduit	2
2	32105-30	#10 NC x 2 1/2" Machine Screw	4
3	95-2249	Sensor Bracket (right side)	1
*	95-2248	Sensor Bracket (left side)	1
4	94-6869	Ultrasonic Sensor	2
5	95-2245	Sensor Shield	2

Ref.	Part No.	Description	Qty.
6	95-2247	Foam Sensor Shield	2
7	3253-17	3/16" Lockwasher	4
8	3217-26	#10 NC Hex. Nut	4
9	92-0010	1/4" NC U-Bolt	4
10	32146-17	1/4" Locknut	8
11	3256-2	1/4" USS Flat Washer	8

* Not Illustrated

LOCATION FOR MULTI PRO 1250

LOCATION FOR
MULTI PRO 5500 & 5600
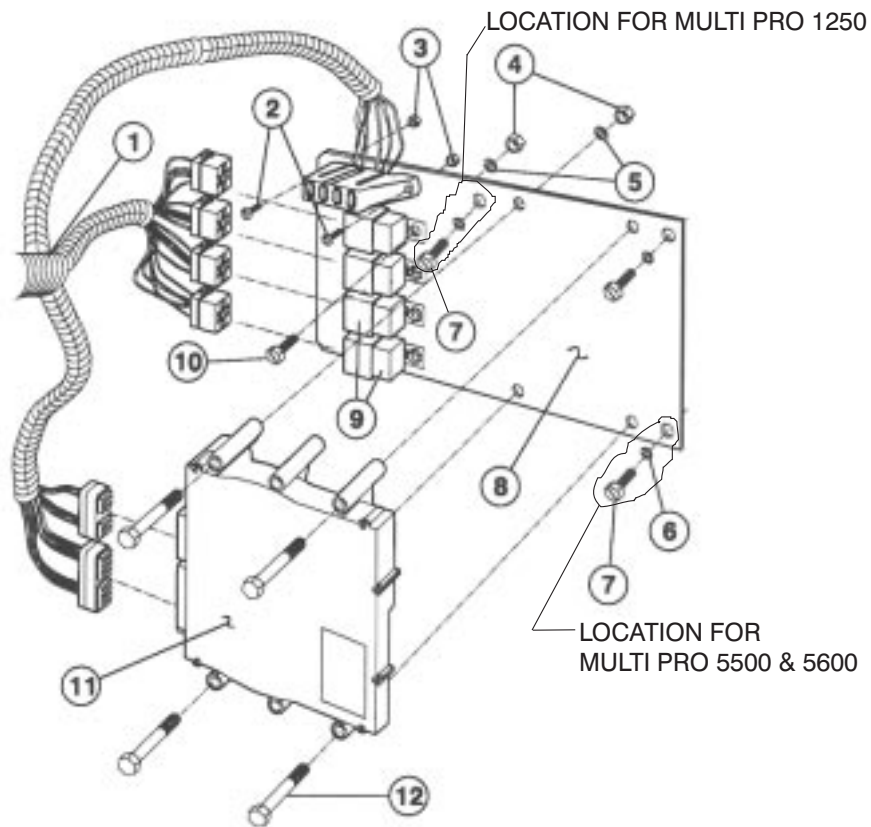
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ECU MOUNTING ASS'Y
(5500, 5600 & 1250 SHOWN)

Ref.	Part No.	Description	Qty.
1	94-8519	Wire Harness	1
2	3251-3	#10 NCx5/8" Machine Screw	2
3	3217-26	#10 NC Hex Nut	2
4	3217-5	1/4" NC Hex Nut	8
5	3253-3	1/4" Lockwasher	8
6	3253-4	5/16" Lockwasher	2
7	322-3	5/16 NC x 3/4" Hex Cap Screw	2
8	94-8564	5500 ECU Mount Plate	1

Ref.	Part No.	Description	Qty.
9	70-1480	Relay	4
10	321-3	1/4 NC x 5/8" Hex Cap Screw	4
11	92-5720	ECU (Coumputer)	1
12	321-15	1/4 NC x 2 1/2" Hex Cap Screw	4
*	42765	30 Amp Fuse	1
*	95-2438	10 Amp Fuse	1
*	95-2439	5 Amp Fuse	1

* Not Illustrated

13
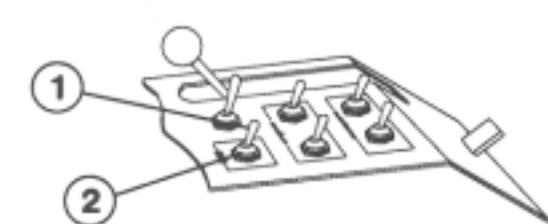
1741A **MULTI PRO® 5500**
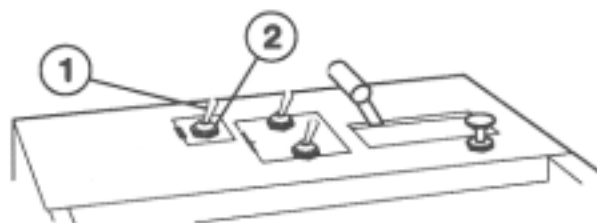
1741 **MULTI PRO® 1100**
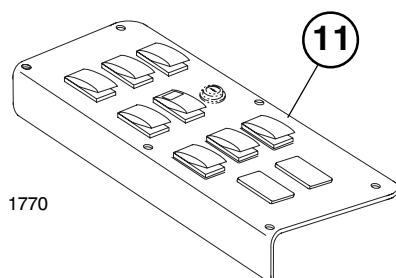
1770

MULTI PRO® 1250
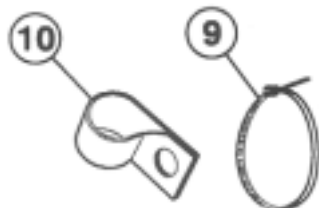
1741B

2051

MULTI PRO® 5600
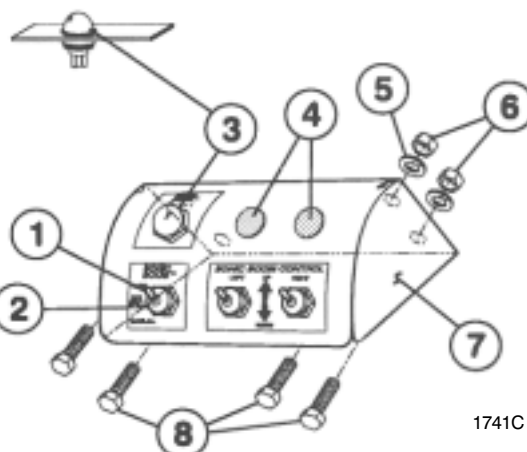
1741C

WORKMAN®

SWITCH PANEL ASM &
HARNESS RESTRAINT

Ref.	Part No.	Description	Qty.
1	92-0250	Toggle Switch	1
2	92-8531	Switch Boot	1
3	40-6410	Warning Light	1
4	92-2662	Plug	2
5	3253-3	1/4" Lockwasher	4
*	100-8591	Connector Body (For MP 1250)	3

Ref.	Part No.	Description	Qty.
6	3217-5	1/4" NC Hex Nut	4
7	94-8598	Switch Mount Bracket	1
8	321-3	1/4 NC x 5/8" Hex Cap Screw	4
9	095672	Tie Strap	16
10	2412-104	"R" Clamp	2
11	100-8590	Rocker Switch	1

* Not Illustrated
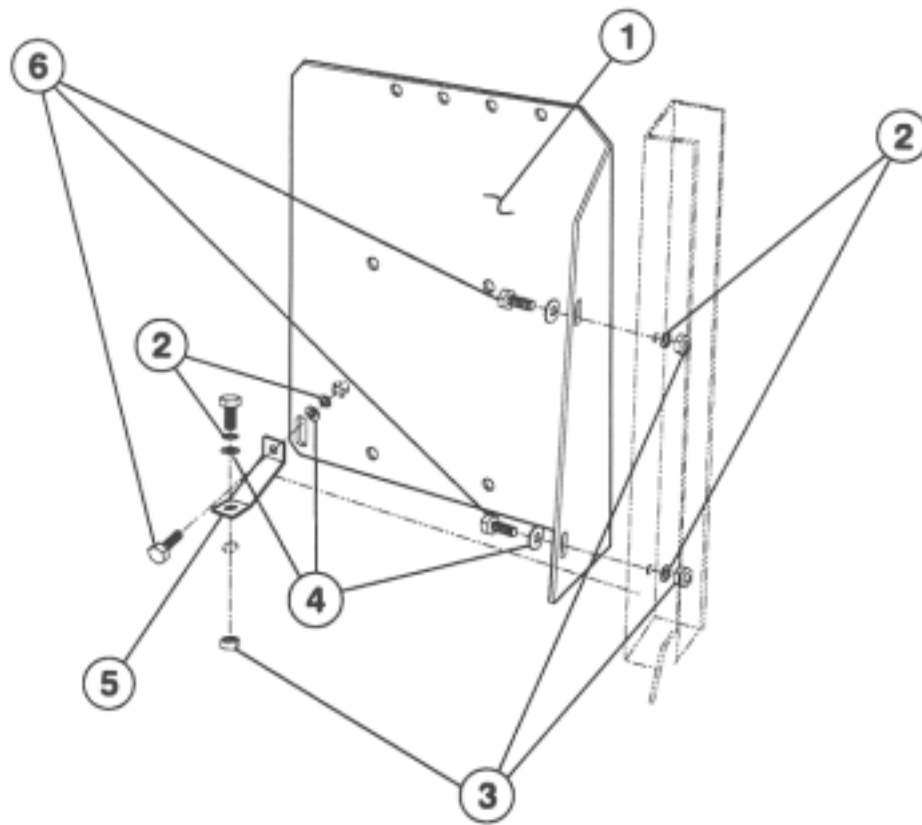
1742

WORKMAN® ECU BRACKET ASM

Ref.	Part No.	Description	Qty.
1	94-8565	ECU Mount Bracket (Workman)	1
2	3253-4	5/16" Lockwasher	4
3	3217-6	5/16 NC Hex Nut	4

Ref.	Part No.	Description	Qty.
4	3256-3	5/16" USS Flat Washer	4
5	94-8588	Support Bracket (Workman)	1
6	322-3	5/16" NC x 3/4" Hex Cap Screw	4

TORO

Helping you put quality into play.[R]