

BOSS PRODUCTS
A Division of Northern Star Industries, Inc.
P.O. Box 787 Iron Mountain MI 49801-0787
www.bossplov.com

RT3 TRIPEDGE SNOWPLOW INSTALLATION MANUAL

TABLE OF CONTENTS

WARNINGS.....	2
SNOWPLOW MOUNTING & REMOVAL PROCEDURE.....	3
SNOWPLOW ASSEMBLY PROCEDURE.....	4
ELECTRICAL SYSTEM WIRING PROCEDURE.....	8
HEADLIGHT ADAPTER INSTALLATION PROCEDURE.....	13
ELECTRICAL SYSTEM WIRING SCHEMATIC (PLOW SIDE).....	14
ELECTRICAL SYSTEM WIRING SCHEMATIC (TRUCK SIDE).....	15
ELECTRICAL SYSTEM WIRING DIAGRAM.....	16
RT3 STRAIGHT BLADE MANIFOLD WIRING DIAGRAMS.....	17
HYDRAULIC POWER UNIT FILL PROCEDURE.....	18
HEADLIGHT AIMING PROCEDURE.....	19
HYDRAULIC VALVE ASSEMBLY PARTS LIST.....	20
STRAIGHT BLADE CONTROLLERS.....	21
TROUBLESHOOTING GUIDE.....	25
RECOMMENDED PUSH BEAM HEIGHT.....	30
RECOMMENDED BOLT TORQUE.....	30

BOSS PRODUCTS / Northern Star Industries, Inc. reserves the right under its continuous product improvement policy to change construction or design details and furnish equipment when so altered without reference to illustrations or specifications used herein.

This product is covered under one or more of the following patents:
5568694, 6108946, 6170178, 6134814, 6035944, 2137853, 7437839, 6467199
Other Patents Pending

PUSHING THE EDGE

TRP07882-15

WARNING

Serious injury or death can result if you do not follow these instructions and procedures which are outlined further within your owner's manual

- Read this manual carefully before operating this snowplow.
- Many newer trucks are equipped with air bags. DO NOT under any circumstances disable, remove or relocate any sensors or other components related to the operation of the air bags.
- Always follow the vehicle manufacturer's recommendations relating to snowplow installation. For recommended vehicle models refer to the BOSS Snowplow Application Chart and Selection Guide.
- Vehicles equipped with air bags are designed such that the air bags will be activated in a frontal collision equivalent to hitting a solid barrier (such as a wall) at approximately 14 mph or more, or, roughly speaking, a frontal perpendicular collision with a parked car or truck of similar size at approximately 28 mph or more. Careless or high speed driving while plowing snow, which results in vehicle decelerations equivalent to or greater than the air bag deployment threshold described above, would deploy the air bag.
- When transporting, position plow so as not to block vision or plow headlights.
- DO NOT change blade position when traveling.
- DO NOT exceed 40 mph when transporting plow.
- DO NOT exceed 14 mph when plowing.
- Always lower blade when vehicle is not in use.
- Make sure plow is properly attached before moving vehicle.
- To comply with Federal Regulations and to assure a safe vehicle, the Front Gross Axle Weight Rating (FGAWR), Rear Gross Axle Weight Rating (RGAWR), and the Gross Vehicle Weight Rating (GAWR) must not be exceeded at any time.
- Due to the variety of equipment that can be installed on this vehicle, it is necessary to verify that the Front Gross Axle Weight Rating (FGAWR), Rear Gross Axle Weight Rating (RGAWR), and the Gross Vehicle Weight Rating (GAWR) are not exceeded at any time. This may require weighing the vehicle and adding ballast as necessary. It may also limit payload capacity of the vehicle. It is the operator's responsibility to verify that these ratings are not exceeded.

BOSS

SNOWPLOW

RT3 STRAIGHT BLADE

MOUNTING INSTRUCTIONS

SNOWPLOW MOUNTING

STEP 1

- Place the snowplow control in the FLOAT position.
- Line up the vehicle with the snowplow and drive straight in until the lower pin contacts the push beam pin receiver.
- Remove the electrical plug dust covers. Connect the electrical plugs, turn levers to the ON position.

STEP 2

- Push the SmartHitch2 switch upward to raise the coupler tower until the spring pins snap in. (For plows without SmartHitch2, manually push the coupler tower forward until the spring pins snap in.)
- Check that both spring pins have fully engaged the coupler. **SEE CAUTION INSERT.** Move the coupler tower to align spring pins with the pin receiver holes until both pins engage completely.
- Release the SmartHitch2 switch to stop movement of the coupler tower. Pull the kickstand spring pin outward and raise the kickstand. Release the kickstand spring pin to secure in the raised position.
- Turn truck/plow toggle switch to plow position.

SNOWPLOW REMOVAL

STEP 1

- Turn truck/plow toggle switch to truck position.
- Place the snowplow control in the FLOAT position. Pull the kickstand spring pin to release and lower the kickstand.
- Turn the levers to the OFF position.
- Push the SmartHitch2 switch upward to raise the coupler tower and release the coupler spring pins. (For plows without SmartHitch2, manually push the coupler tower forward until the spring pins release.)

STEP 2

- Push the SmartHitch2 switch downward until the coupler tower completely lowers to the plow. (For plows without SmartHitch2, manually pull the coupler tower forward until the lower pins clear the push beam receiver hooks.)
- Disconnect the electrical plugs and install the electrical plug dust covers.
- Back the vehicle away from the snowplow slowly.

CAUTION

BOTH COUPLER SPRING PINS MUST BE FULLY ENGAGED. FAILURE TO COMPLETELY ENGAGE BOTH SPRING PINS MAY RESULT IN PERSONAL INJURY AND PROPERTY DAMAGE.

Figure 1. Mounting Procedures

Snowplow Assembly Procedure

Note: This manual is used for the assembly of all BOSS Trip-Edge Plows. Part numbers and illustrations may vary.

1. Place Plow Blade on the ground face down.

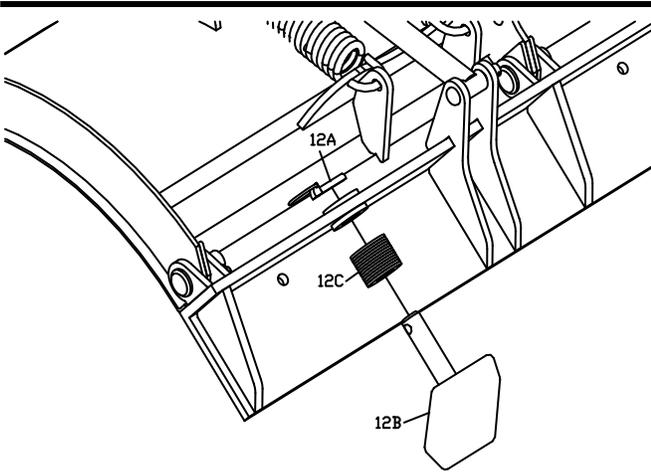


Figure 2. Install Shoe Assembly G10084

2. Install **TRP07880** Plow Shoe Assembly (12). Mount Plow Shoes (12B) on Blade Assembly (4) using 1" Flat Washers (12C) above and below the base angle. Secure with 7/16" Quick Pins (12A)

Note: Adjustment of Plow Shoe (12B) may be necessary after mounting the plow on to the vehicle.

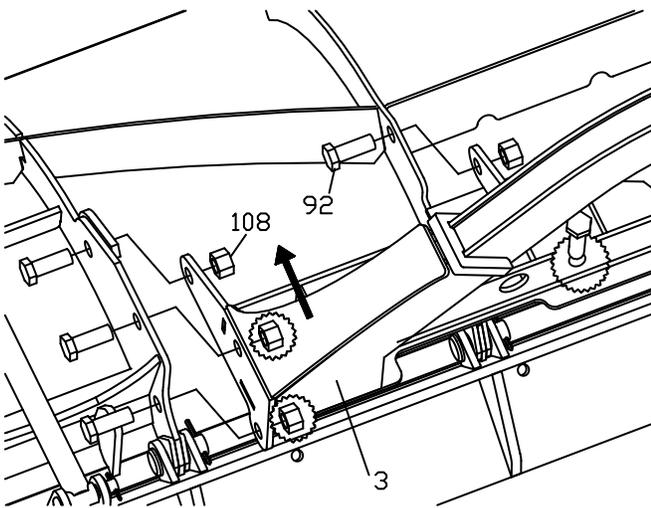


Figure 3. Install Pushframe Attachment Bar G10085

3. Install Pushframe Attachment Bar (3) into the pockets on Blade Assembly (4) using ten 3/4"-10x2" Hex Head Cap Screws (92) and ten 3/4" Locking Nuts (108).

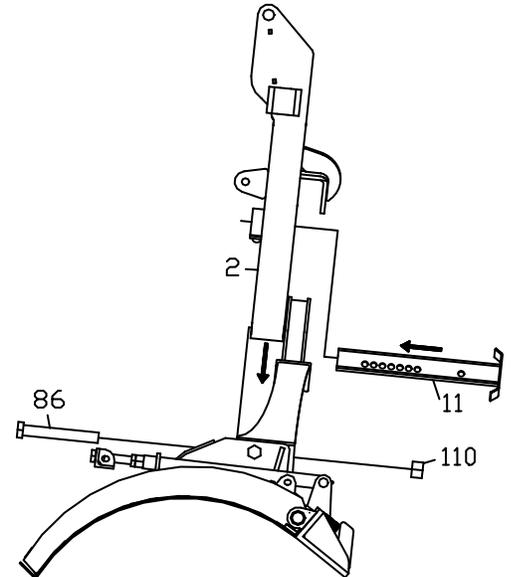


Figure 4. Install Pushframe and Kickstand. G10086

4. Install Pushframe (2) into Pushframe Attachment Bar (3) using 1"-8x7" Hex Head Cap Screw (86) and 1"-8 Locking Nut (110).
5. Pull the Kickstand Spring Pin (102B) outward then insert STB03220 Kickstand Leg (11) through the kickstand mount bracket. Release the Kickstand Spring Pin (102B) to lock Kickstand Leg (11) in place.

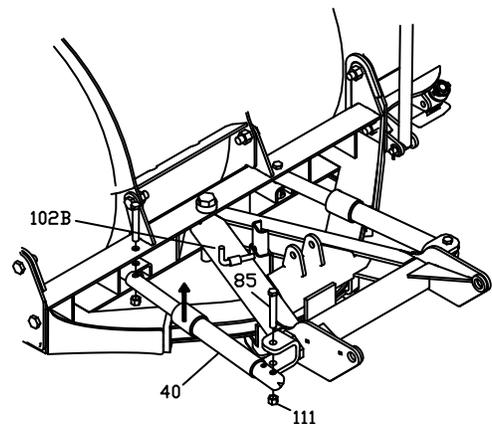


Figure 5. Install Angle Cylinders G10087

6. Install both Angle Cylinders (40) using the 5/8"-11x4" Hex Head Cap Screw (85) and 5/8"-11 Locking Nuts (111). Make sure the hydraulic inlet port is facing upward.

Snowplow Assembly Procedure

Note: Do not over tighten angle cylinder mounting bolts. Mounting bolts should allow angle cylinder to move vertically in mounting bracket.

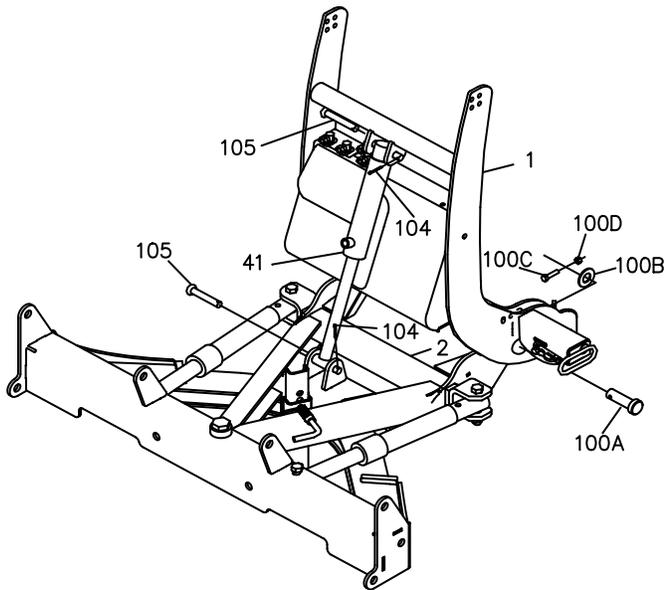


Figure 6. Lift Cylinder Installation G10110

7. Position the rod end of HYD07013 Lift Cylinder (41) between the cylinder mounts of Push Frame Assembly (2). Insert **MSC05563** Clevis Pin (105) through the cylinder mounts and secure with **HDW05544** Hairpin Cotter (104).
8. Align the pivot holes of Coupler Assembly (1) with the pivot holes of Push Frame Assembly (2).
9. Insert 1" X 3" **CPA04431** Pivot Pin (100A) through Coupler Assembly (1) and Push Frame (3). Secure with **HDW01721** 1" Flat Washer (100B), **HDW01719** 3/8"-16X1-1/2" Hex Head Cap Screw (100C) and **HDW01720** 3/8"-16 Nyl Lock Nut (100D).
10. Rotate Lift Cylinder (41) up to the cylinder mounts located on Coupler Tower Assembly (1). Insert Clevis Pin (105) through the cylinder mounts and secure with Hair Pin Cotter (104).

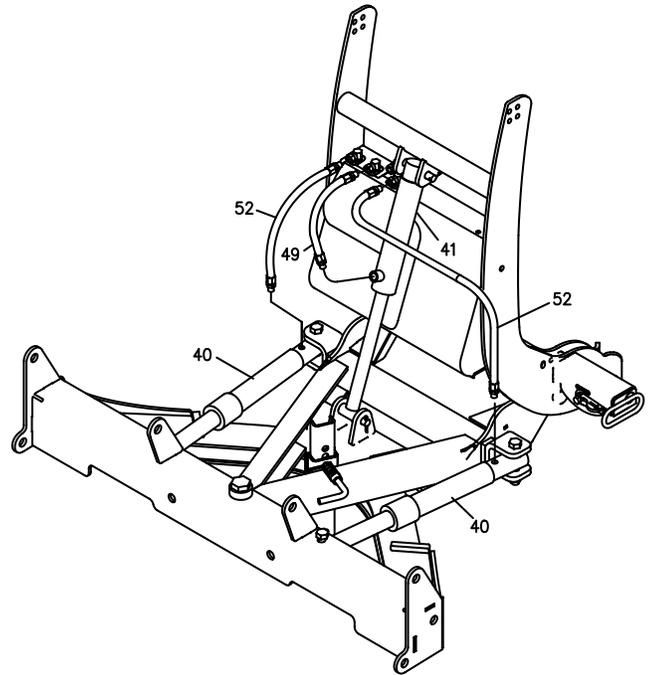


Figure 7. Hydraulic Connections G10111

11. Install **HYD09922** Hydraulic Hose (49) between the middle fitting on the hydraulic shelf and the port of the Lift Cylinder (41). Tighten both ends securely.
12. Install **HYD01810** Hydraulic Hose (52) between the left fitting on the hydraulic shelf and the port of the Left Angle Cylinder (40). Apply thread compound at the hose to cylinder connection. Tighten both ends of the hose securely.
13. Repeat step 12 for the Right Angle Cylinder Hose.

Snowplow Assembly Procedure

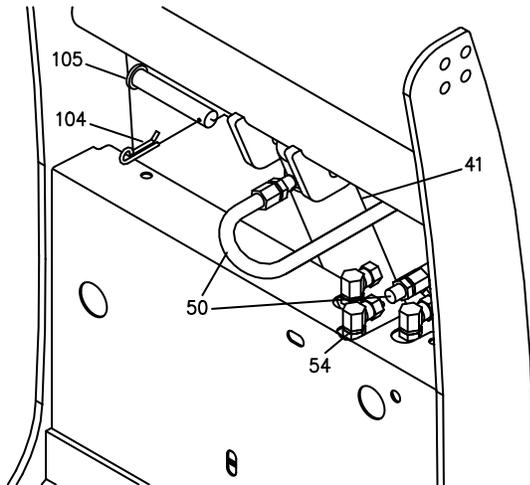


Figure 8. Connecting Hose G10120

16. Remove the plug from the top end of Lift Cylinder (41).
17. Attach one end of Hydraulic Hose (50) to Lift Cylinder (41). Thread compound should be used at this connection. Tighten connection securely.
18. Route Hydraulic Hose (50) in "S" shape and connect the loose end to the rear Hydraulic Fitting (54). Tighten connection securely.

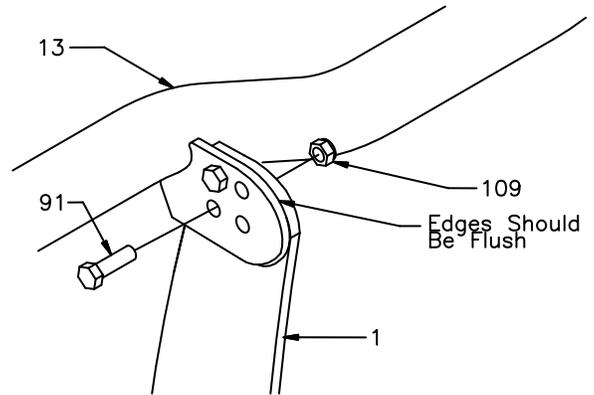


Figure 9. Light Bar Assembly. (Standard) G10132

19. Attach Light Bar (13) to the top of Coupler Assembly (1) using two Hex Head Cap Screws (91) and Hex Head Self Locking Nuts (109).

Note: The Light Bar should be positioned as close to the Coupler Tower as possible. Only two holes will be aligned for normal installations. Only two bolts per side are needed to secure the Light Bar.

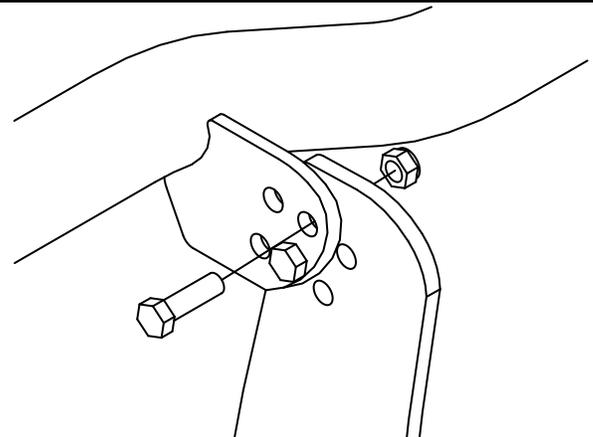


Figure 10. Light Bar Assembly Adjustment. G10131

Note: Figure 10 illustrates that the Coupler Assembly and Light Bar have two sets of 1 inch adjustment holes for mounting on different vehicles. These adjustment holes may be needed in order to move the Light Bar away from the vehicle's hood.

Snowplow Assembly Procedure

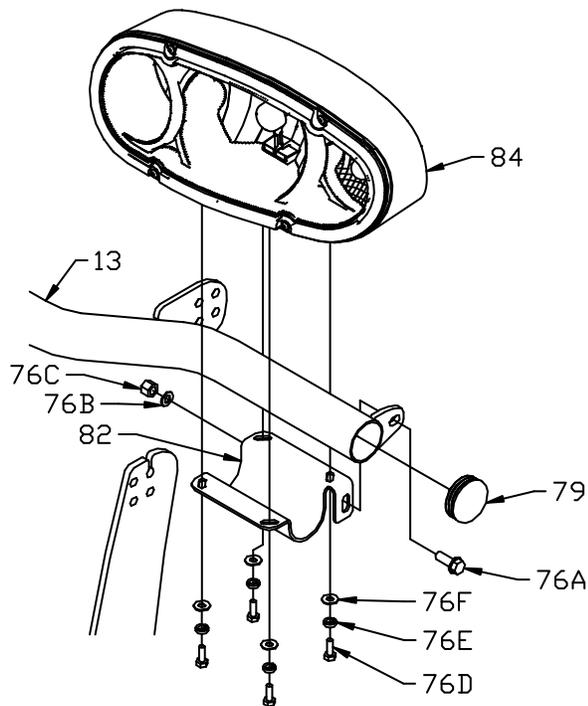


Figure 11. Headlight Mounting Assembly G10115

20. Check that **MSC09058** End Cap (79) is properly inserted into **LBA11117** Light Bar (13).
21. Place **MSC11109** Driver Side Headlight Bracket (82) below Light Bar (13) and secure with one **HDW02019** 3/8"-16 X 1" Hex Head Shoulder Bolt (76A), one **HDW01733** 3/8" Flat Washer (76B), and one **HDW01720** 3/8" Nylon Lock Nut (76C).
22. Fasten **MSC11120** Driver Side Headlight (84) to Driver Side Headlight Bracket (82) using four **HDW02020** 1/4"-20 X 3/4" Hex Head Bolts (76D), four **HDW02018** 1/4" Split Lock Washers (76E), and four **HDW01750** 1/4" Flat Washers (76F). Leave fasteners finger tight until Headlight orientation has been completed. See Figure 10 for proper fastener placement.
23. Repeat Steps 20 through 22 for **MSC11110** Passenger Side Headlight Bracket (83) and **MSC11130** Passenger Side Headlight (85).

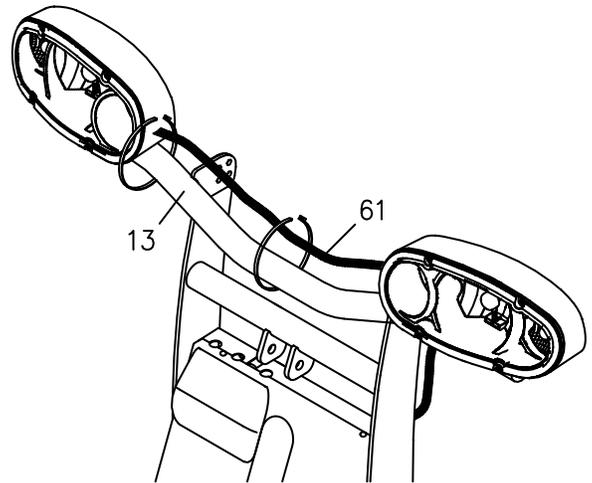


Figure 12. Securing Wiring Harness G10126

24. Secure Wiring Harness (61) to Light Bar (13) using wire ties as shown above.
25. Attach headlight connectors to headlight bulbs by inserting the connectors up through the bottom of the headlight housings.

Note: See Headlight Aiming Procedure within this manual for proper adjustment of the headlights.

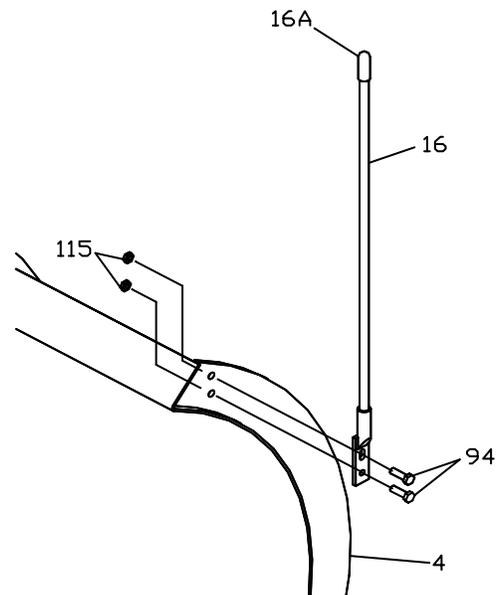


Figure 13. Assembly of Blade Guides. G10071

28. Attach Blade Guides (16) to Blade Assembly (4) using Hex Head Cap Screws (94) and Self Locking Nuts (115).

Electrical System Wiring Procedure

! WARNING

Before starting any Electrical Wiring Procedure make sure that the engine is not running and that the engine has had sufficient time to cool down. Failure to do so may result in serious bodily injury or death.

! WARNING

Before starting any Electrical Wiring Procedure make sure to disconnect the battery. Failure to do so may result in serious bodily injury or death.

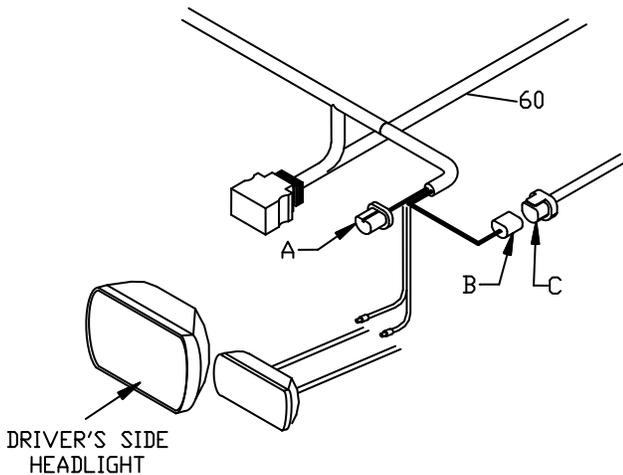


Figure 17. Driver Side Headlight

G10140

Note: Dielectric grease should be applied to all electrical connections.

1. Disconnect the driver side headlight connector plug (C) from the back of the driver side vehicle headlight.
2. Connect the Blue Sealed Beam Connector (A) from Wiring Harness (60) into the back of the driver side vehicle headlight.
3. Connect the Black Rubber Connector (B) from Wiring Harness (60) into the OEM Wiring Harness (C). OEM Wiring Harness (C) is the vehicle connector that was unplugged from the back of the headlight in Step 1.

Note: If your connectors do not match the connectors on the wiring harness or you have a four-headlight system a Headlight Adapter Kit will be needed. If you are installing a Headlight Adapter Kit, see "Headlight Adapter Installation Procedure" located in this manual.

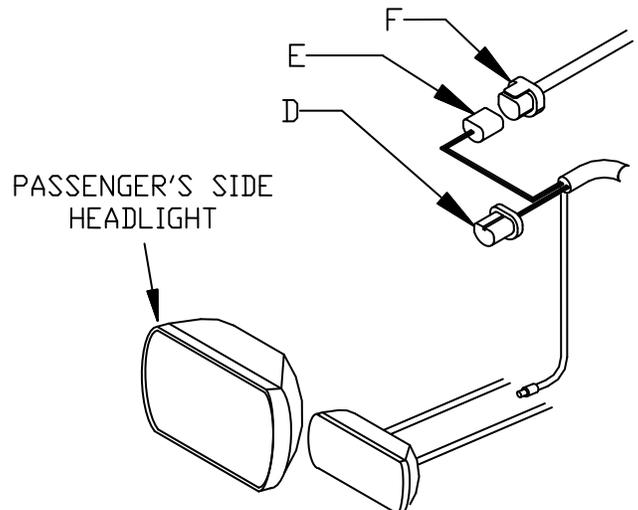


Figure 18. Passenger Side Headlight

G10141

4. Disconnect the passenger side OEM Wiring Harness (F) from the back of the passenger side vehicle headlight.
5. Connect the Blue Sealed Beam Connector (D) from Wiring Harness (60) into the back of the passenger side vehicle headlight.
6. Connect the Black Rubber Connector (E) from Wiring Harness (60) into the OEM Wiring Harness (F). OEM Wiring Harness (F) is the vehicle connector that was unplugged from the back of the headlight in Step 4.

Electrical System Wiring Procedure

NOTICE

Before splicing into any electrical circuit, identify the circuit with a test lamp. Failure to test circuits may result in vehicle damage.

Be sure the wire loom does not interfere with the operation of the vehicle's pedals.

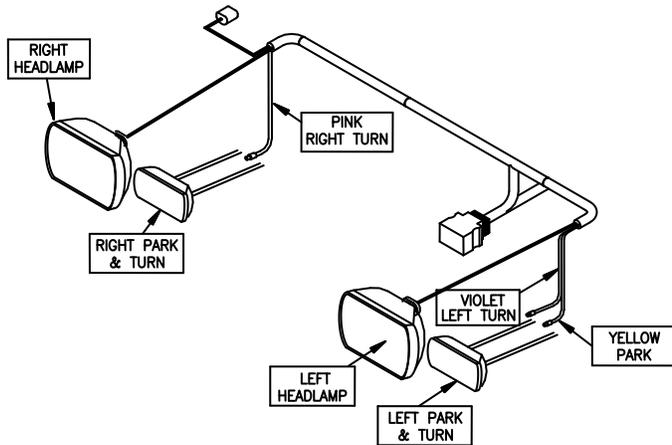


Figure 19. Connecting Park and Turn G10143

Note: Some trucks require a turn signal relay kit.

7. Connect the PINK wire from Wiring Harness (60) to the passenger side turn signal wire. Use the splice connector provided to you in the hardware kit.
8. Connect the VIOLET wire from Wiring Harness (60) to the driver side turn signal wire. Use the splice connector provided to you in the hardware kit.
9. Connect the YELLOW wire from Wiring Harness (60) to the driver side park light wire. Use the splice connector provided to you in the hardware kit.

Note: Be sure that the firewall is clear of obstructions before drilling in Step 10.

10. Drill a 1-1/4" diameter hole through the firewall. The hole should be located on the driver side, in an easily accessible area.

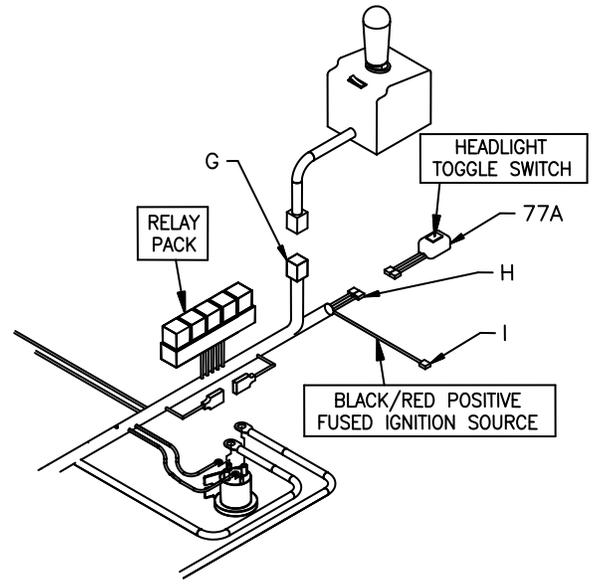


Figure 20. Internal Cab Wires G10144

11. Pull the two BLACK wires (H), BLACK/RED wire (I), and the 9 Pin Molex connector (G) from the engine compartment into the cab through the 1-1/4" diameter hole in the firewall.
12. Install **MSC03761** Split Rubber Grommet (Not Shown) into the hole that was cut in the firewall.
13. Connect the Two Tab Connectors (H) to **MSC04747** Headlight Toggle Switch (77A) as illustrated in the figure above.

NOTICE

All plow wiring should be secured under the hood in a position that provides sufficient room so that hot or moving parts will not be contacted. Vehicle damage could occur if wires are not properly secured.

14. Choose an area of the vehicle's dashboard for the light Toggle Switch to be mounted. Clean the area thoroughly. Allow the area to dry completely.
15. Remove the adhesive backing and apply the switch to the clean area of the dashboard. Apply pressure for 30 seconds.

Electrical System Wiring Procedure

Secure the 9 Pin Molex Connector (G) and wire loom underneath the dashboard.

16. Plug the controller into the 9 Pin Molex Connector (G).
17. Mount the plow control in a location that is comfortable for the operator to reach, and where the operator will not contact the control in the event of a crash. (See "Straight Blade Controller Mounting Instructions" located in this manual.)
18. Connect the BLACK/RED wire (I) to a "keyed" 12V+ ignition source.

Note: This 12V+ source should only be active when the key is in the ON position. Failure to wire to a "keyed" source can allow a condition to occur causing the battery to drain.

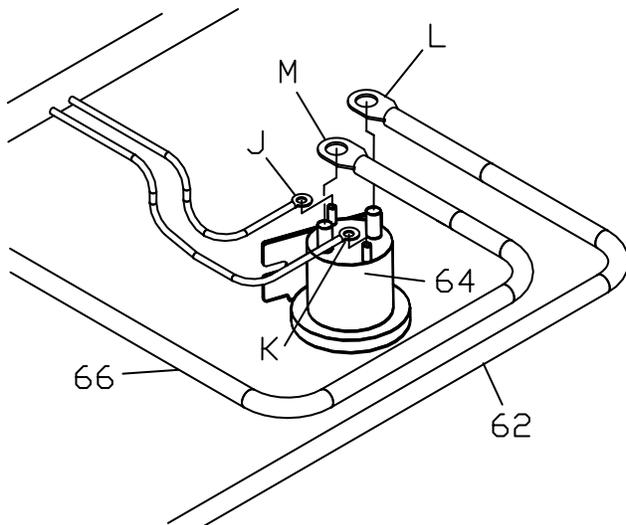


Figure 21. Solenoid Connections. G10145

19. Connect the WHITE/BLACK wire (J) of Wiring Harness (60) to the small terminal on Pump Solenoid (64).
20. Connect the BROWN wire (K) of Wiring Harness (60) to the small terminal on Pump Solenoid (64).

Note: Location of the wires on the small terminals does not matter but the wires should not be on the same terminal.

21. Attach Power Unit Solenoid (64) securely inside the engine compartment. The Power Unit Solenoid should be mounted in the upright position as illustrated in Figure 21.

Note: The solenoid must be installed so that the solenoid posts do not contact the body, hood, or any other conductive material on the vehicle.

22. Attach the eyelet end (L) of RED Power/Ground Cable (62) to the top of Pump Solenoid (64).
23. Connect the eyelet end (M) of Battery Cable (66) to the top post of Pump Solenoid (64).

Note: Location of the wires on the small terminals does not matter but the wires should not be on the same terminal.

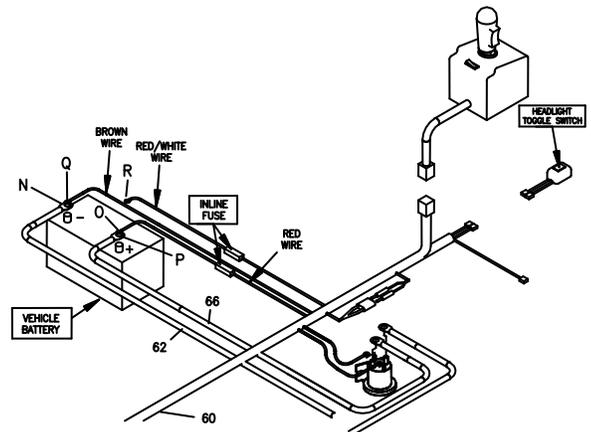


Figure 22. Battery Connections G10146

24. Attach the eyelet end (N) of BLACK Power/Ground Cable (62) to the negative battery terminal.
25. Connect the BROWN wire (Q) to the negative battery terminal.
26. Connect the unattached end (P) of Battery Cable (66) to the positive battery terminal.
27. Connect the RED Fused wire (O) to the positive battery terminal.

Electrical System Wiring Procedure

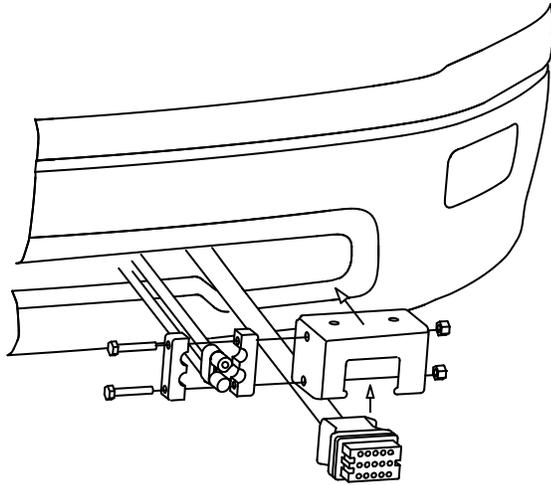


Figure 23. Vehicle Connections G10148

28. Mount the Black 15 Pin Control Harness Connector to the lower area of the bumper using **MSC03813** Control Harness Mounting Bracket
29. Mount the BLACK and RED 2 Pin Power Ground Connector to the lower area of the bumper using **MSC03491** Power Ground Mounting Bracket.

Note: Installation location will vary depending on truck.

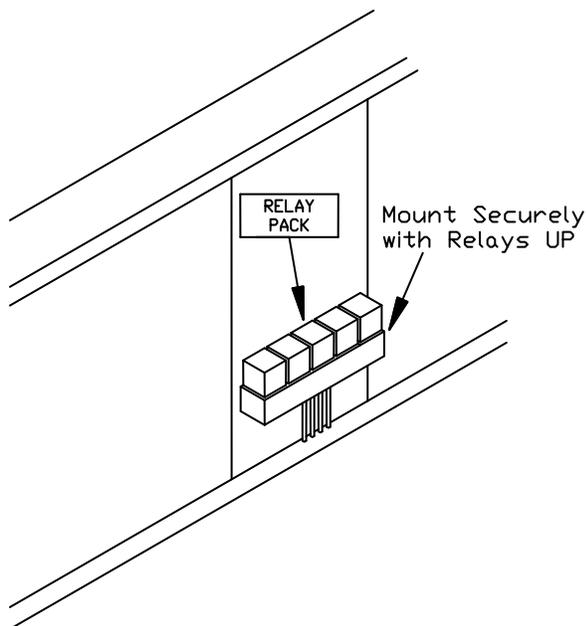


Figure 24. Relay Mounting. G10152

30. Attach the Relay Pack securely to the inside of the engine compartment using four **HDW01766** Sheet Metal Screws. The relays should be positioned upright as illustrated above.

Electrical System Wiring Procedure

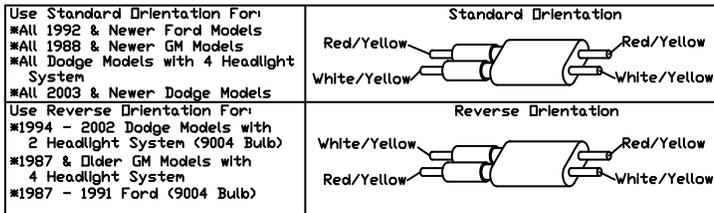


Figure 25. Vehicle Option Connector

G10202

31. Locate vehicle option connector. Align the connector so that the arrow on the Vehicle Option Connector is positioned to match the vehicle it is installed on. This is illustrated in Figure 24.

Note: If your vehicle is not listed in the above figure use the Standard Orientation. If the Vehicle Option Connector is not properly connected the lights on the plow will not function correctly.

"DUAL BURN" WIRE PLACEMENT
<p>THIS WIRE SHOULD BE PLACED ON THE (-) NEGATIVE BATTERY TERMINAL FOR THE VEHICLES LISTED:</p> <ul style="list-style-type: none"> CHEVROLET/GMC 1999-2002 DODGE 1999-2002 TOYOTA 2000-2006
<p>FOR ALL OTHER VEHICLES THIS WIRE SHOULD BE PLACED ON THE (+) POSITIVE BATTERY TERMINAL</p>

Figure 26. RED/WHITE Wire Placement

G10522

Note: Connection of RED/WHITE wire (R) is dependent on the grounding system of the vehicle that it is installed on. If the placement of RED/WHITE wire (R) is not correct the Low Beam bulb will not be illuminated when Plow Lights are on High Beam.

32. Connect RED/WHITE wire (R) to the correct battery terminal for your vehicle. See Figure 26 for proper placement for your vehicle.
33. Secure all plow harness wiring.
34. Attach the snowplow to the vehicle. Use the "Snowplow Mounting Procedure" that is located in this manual to properly attach the snowplow to the vehicle.
35. Test for the proper operation of the Headlight Wiring Harness. Follow the procedures below.

Note: To test plow lights, the **IGNITION** must be in the **ON** position.

- *LOW BEAM (Truck Lights)*
 - ◆ Vehicle Headlight Switch – ON
 - ◆ Low Beam Lights on Truck Indicator
 - ◆ Plow Headlight Toggle Switch –TRUCK

RESULTS - Only vehicle low beam headlights should be illuminated.

- *HIGH BEAM (Truck Lights)*
 - ◆ Vehicle Headlight Switch – ON
 - ◆ High Beam Indicator Light – ON
 - ◆ Plow Headlight Toggle Switch –TRUCK

RESULTS - Only vehicle high beam headlights should be illuminated.

- *LOW BEAM (Plow Lights)*
 - ◆ Vehicle Headlight Switch – ON
 - ◆ Low Beam Lights on Truck Indicator
 - ◆ Plow Headlight Toggle Switch - PLOW

RESULTS - Only plow low beam headlights should be illuminated.

- *HIGH BEAM (Plow Lights)*
 - ◆ Vehicle Headlight Switch – ON
 - ◆ High Beam Indicator Light – ON
 - ◆ Plow Headlight Toggle Switch – PLOW

RESULTS - Both plow high beam and low beam headlights should be illuminated.

- *TURN SIGNALS (Plow and Truck)*
 - ◆ Left Turn Signal Indicator – ON

RESULTS - Both Left Plow and Left Truck turn signal bulbs should be flashing.

- ◆ Right Turn Signal Indicator – ON

RESULTS - Both Right Plow and Right Truck turn signal bulbs should be flashing.

- *PARK LIGHTS (Plow and Truck)*
 - ◆ Park Lights on Vehicle – ON

RESULTS - All Four, Left Plow, Right Plow, Left Truck, and Right Truck Park Lights should be on.

Note: If any of the lights are not working properly, re-check the wiring against the "Electrical Wiring Diagram" located in this manual and make any necessary corrections.

Headlight Adapter Installation Procedure

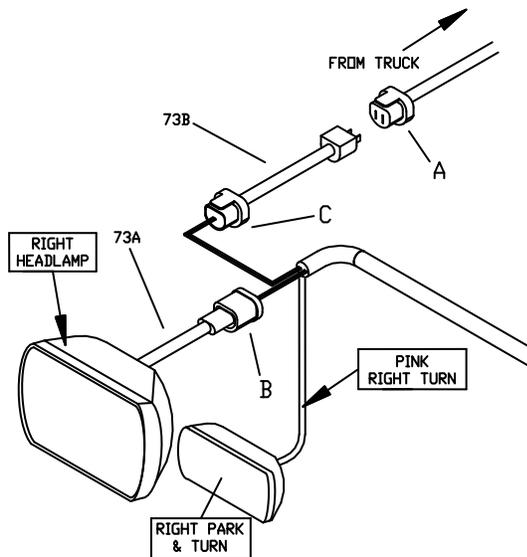


Figure 27. Single Headlight Adapter Connections G10149

Note: This is a general diagram for most 2-headlight vehicles. All vehicles and headlight adapters may not be identical. Installation will be very similar.

1. Disconnect the OEM Headlight Connector Plug (A) from the back of the vehicle headlight.
2. Connect one end of Headlight Adapter (73A) into the back of the vehicle headlight.
3. Connect the Black Rubber Female Socket (B) of Headlight Adapter (73A) into the plow wiring harness.
4. Connect the Blue Sealed Beam Connector (C) of Headlight Adapter (73B) into the plow wiring harness.
5. Connect the opposite end of Headlight Adapter (73B) into the OEM Headlight Connector Plug (A).
6. Repeat Steps 1 through 5 for the opposite side headlight.

Note: In some older vehicles it is not necessary to pull power from both sides of the headlights. In this case only three adapters will be needed. Follow the Headlight Adapter Installation Instructions that are packaged with the Headlight Adapter Kit.

7. Continue with the Step 7 of "Electrical System Wiring Procedure" located in this manual.

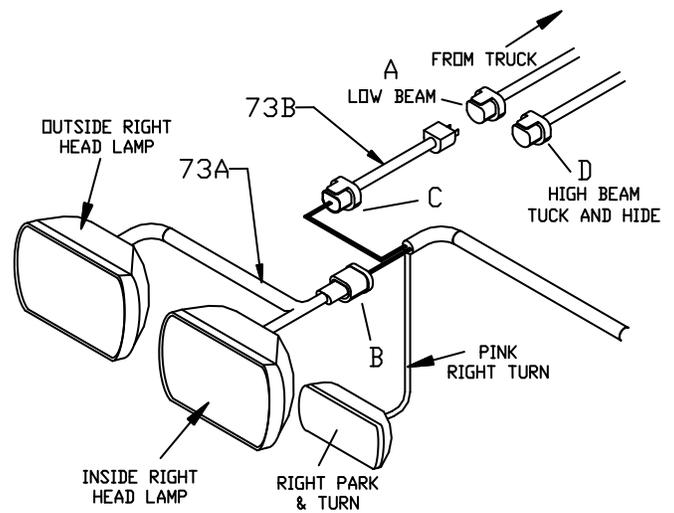


Figure 28. Dual Headlight Adapter Connections G10151

Note: This is a general diagram for most 4-headlight vehicles. All vehicles and headlight adapters may not be identical. Installation will be very similar.

1. Disconnect OEM Headlight Connector Plugs (A and D) from the back of the vehicle headlight.
2. Connect two ends of Headlight Adapter (73A) into the back of the vehicle headlights.
3. Connect the Black Rubber Female Socket (B) of Headlight Adapter (73A) into the plow wiring harness.
4. Connect the Blue Sealed Beam Connector (C) of Headlight Adapter (73B) into the plow wiring harness.
5. Connect the opposite end of Headlight Adapter (73B) into the OEM Wiring Harness (A).
6. Grease, tuck, and secure OEM Connector Plug (D). This connector is not used.
7. Repeat Steps 1 through 6 for the opposite side headlight.
8. Continue with the Step 7 of "Electrical System Wiring Procedure" located in this manual.

Electrical System Wiring Schematic (Plow Side)

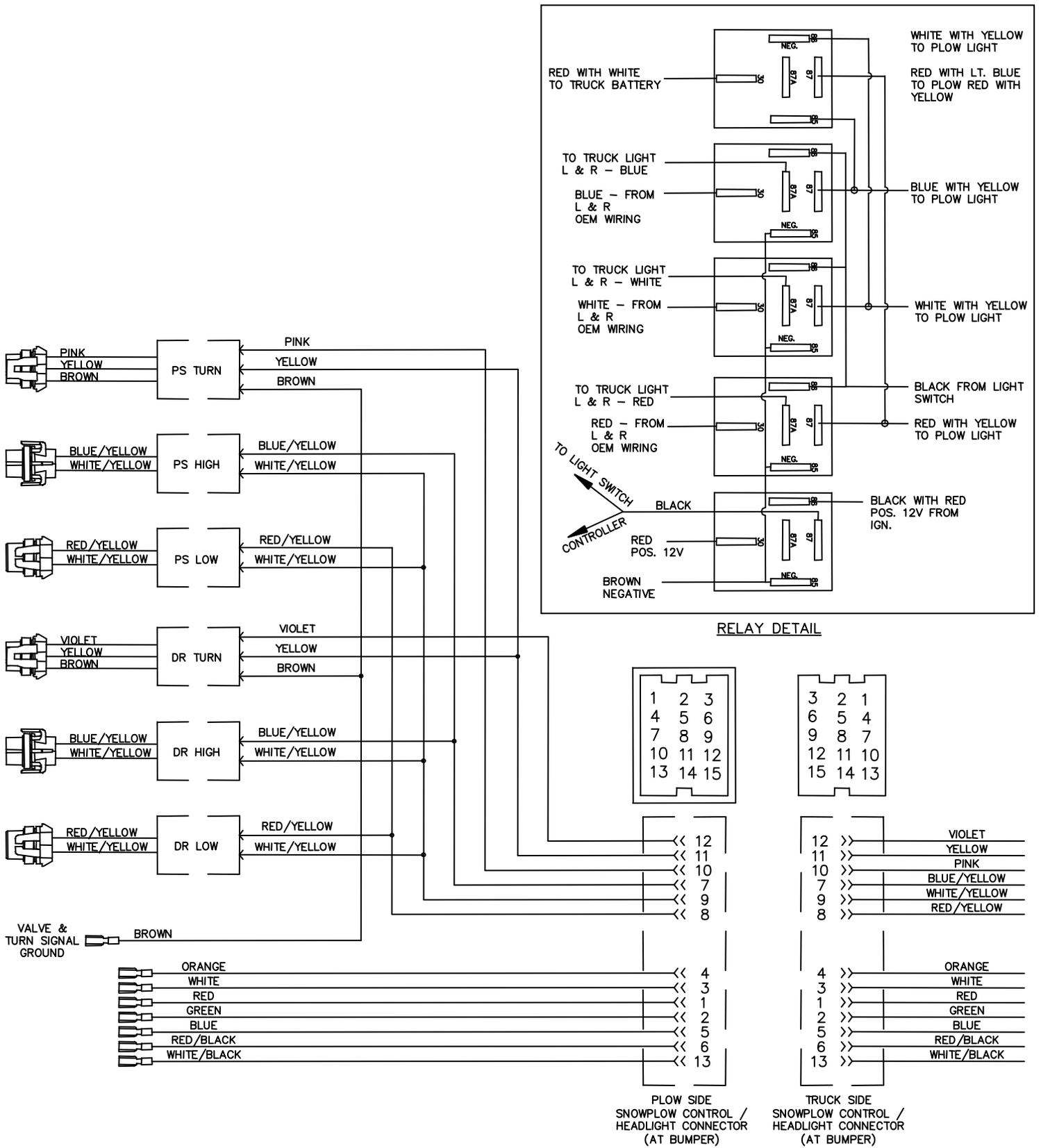


Figure 29. Electrical System Wiring Schematic (Plow Side)

G10271

Electrical System Wiring Schematic (Truck Side)

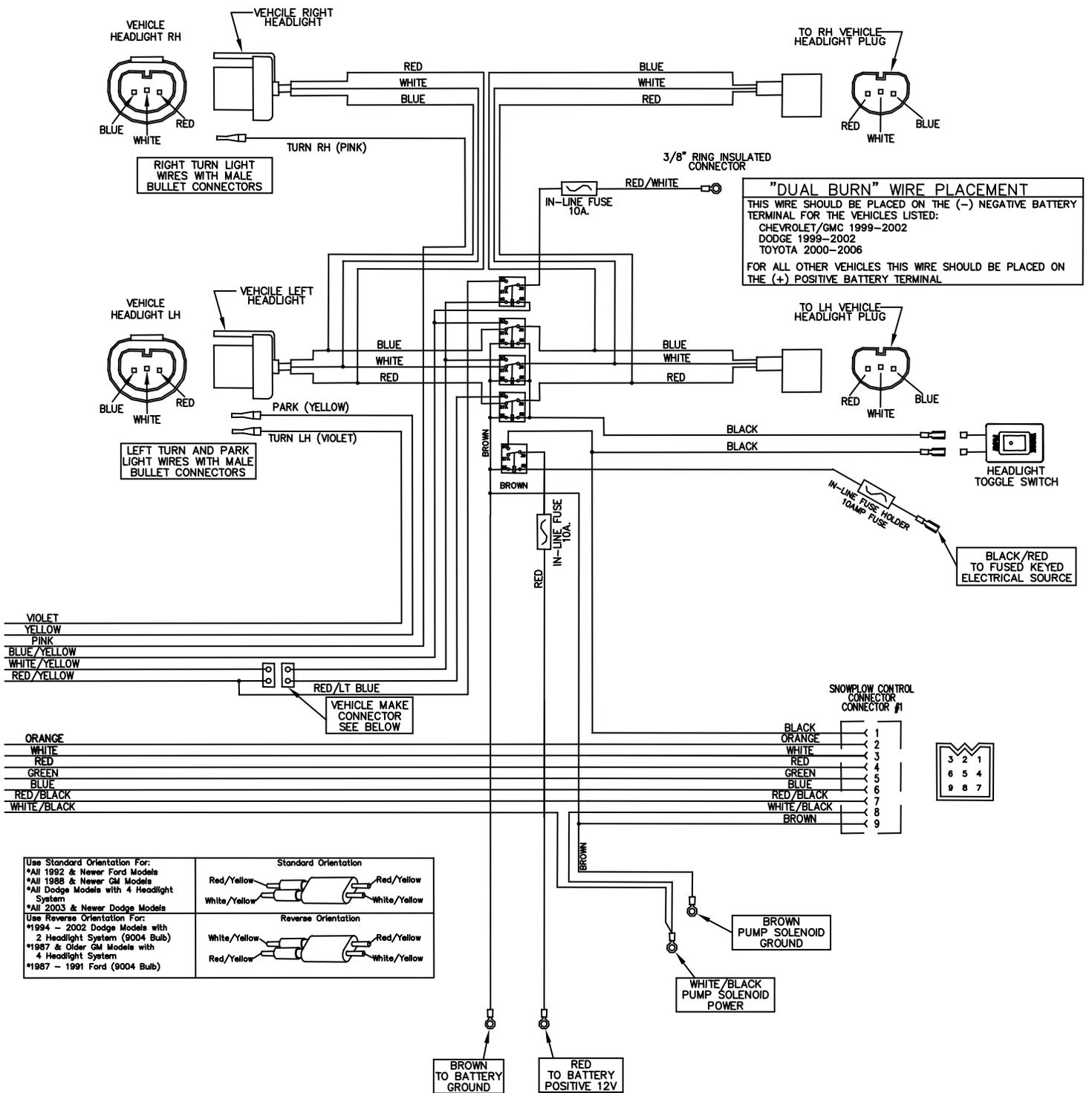


Figure 30. Electrical System Wiring Schematic (Truck Side)

G10272

Electrical System Wiring Diagram

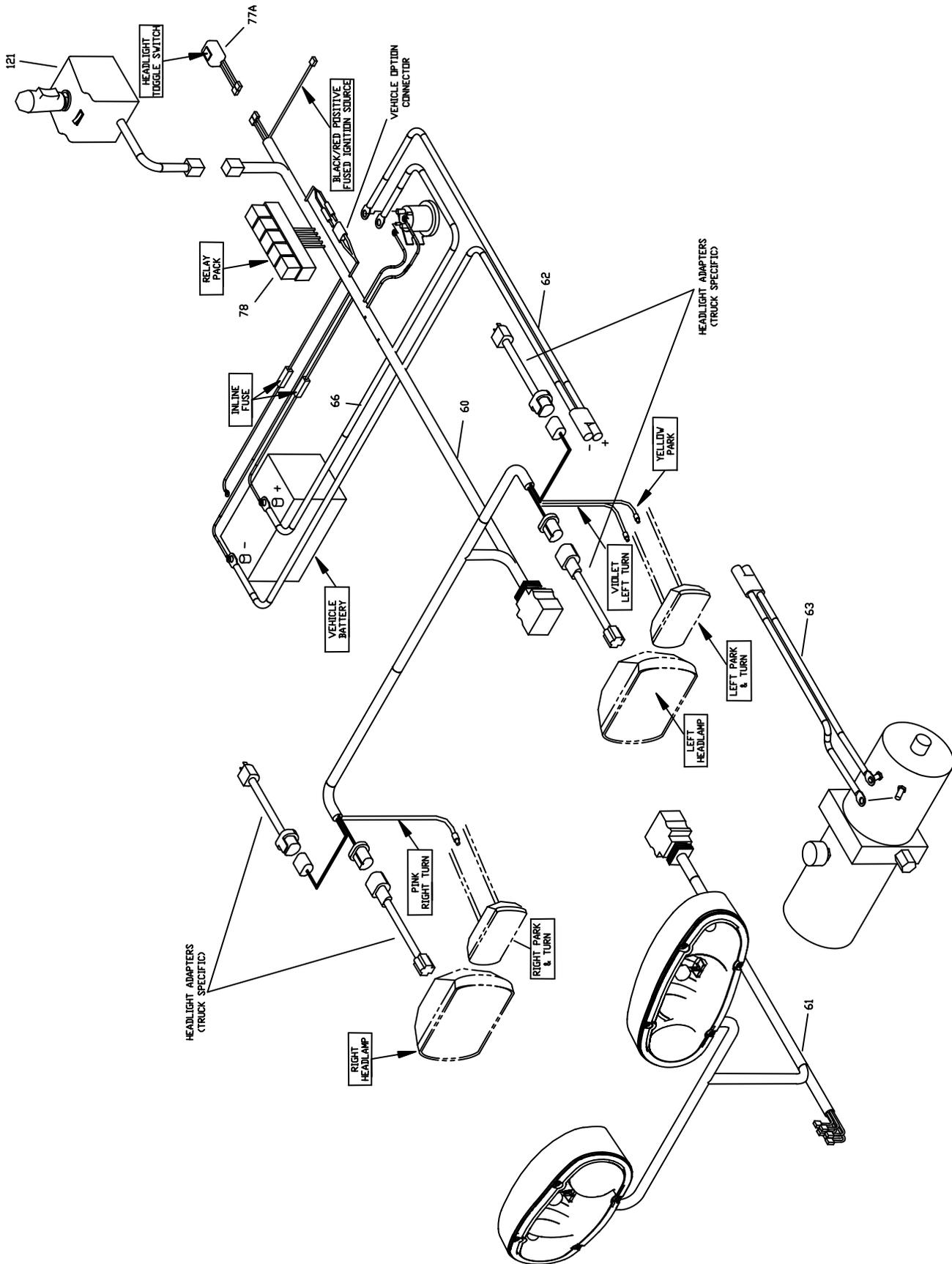


Figure 31. Electrical System Wiring Diagram

RT3 Straight Blade Manifold Wiring Diagrams

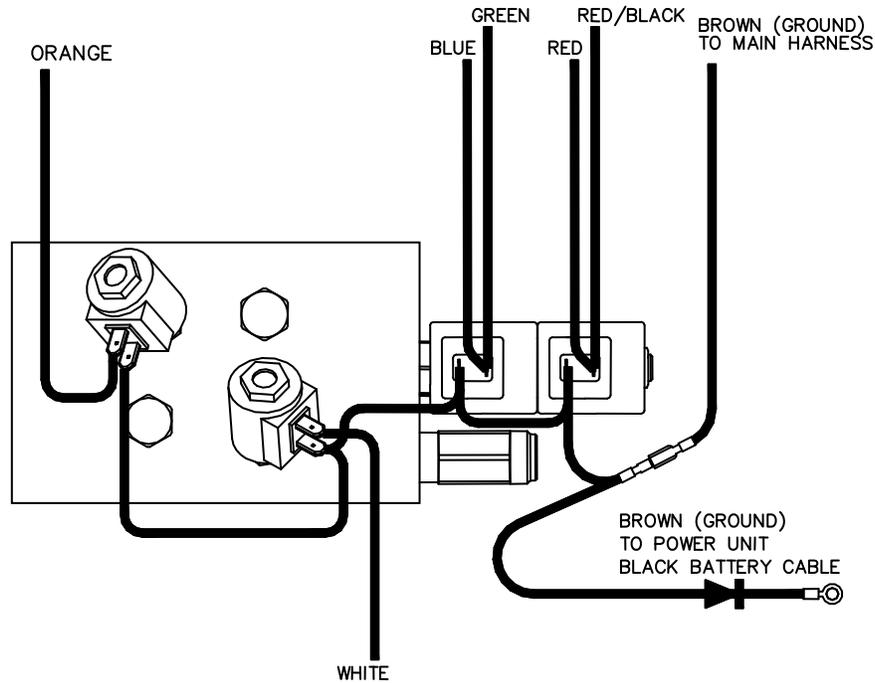


Figure 32. HYD07090 Standard Duty Manifold Wiring Diagram

G10446

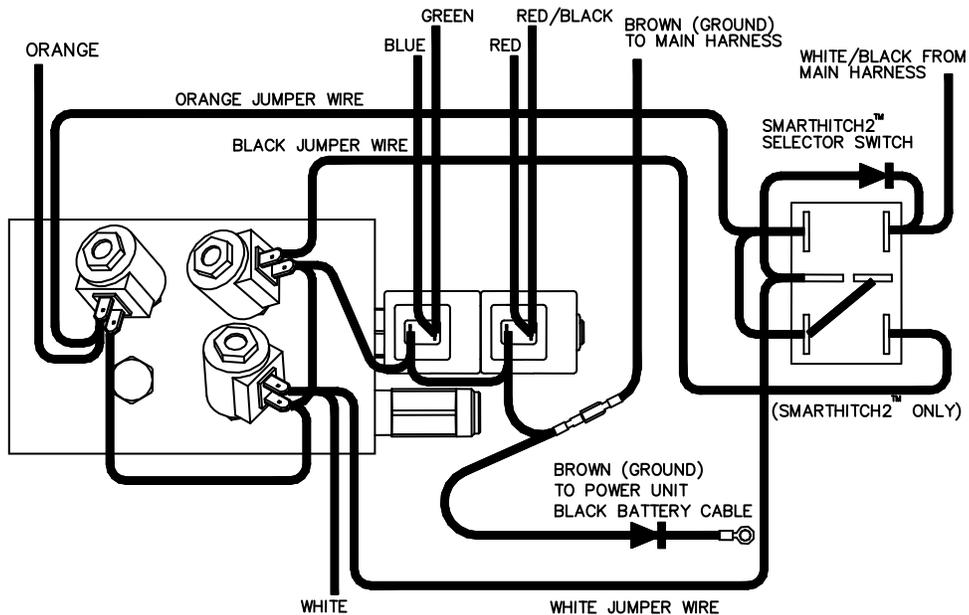


Figure 33. HYD07091 Super Duty Manifold Wiring Diagram

G10447

Wire Color	Wire Function
Green	Blade Left
Red	Blade Right
White	Lift
Orange	Lower
Red/Black	Blade Right
Blue	Blade Left
Black	SmartHitch2™ (12V)
White/Black	Pump Solenoid
Brown	Ground

Hydraulic Power Unit Fill Procedure

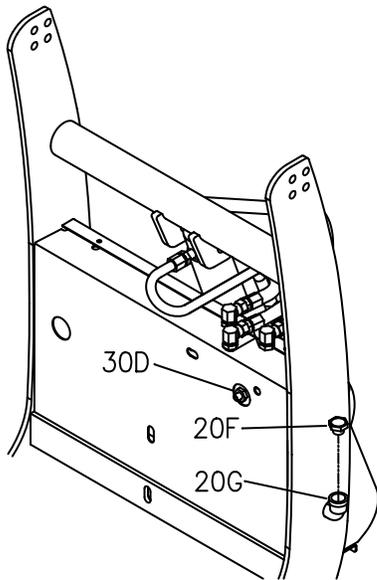


Figure 34. External Fill – Backside View G10124

Step 1 of the following fill procedure is intended for a new plow with an empty hydraulic system.

Initial Plow Position: Start with the plow unattached from the vehicle and the lift cylinder completely collapsed. The light tower will be tilted forward.

1. Remove **HYD04810** Fill Cap (20F) from **HYD04809** Street Elbow (20G) and fill with BOSS High Performance Hydraulic Fluid. Continue to fill Street Elbow (20G) until no more fluid will be accepted. (Approx. 2 quarts.)
2. Attach the plow to the vehicle.

Note: If your plow is equipped with SmartHitch2™ you must hydraulically power the light tower up. Do not manually push the tower up. Failure to hydraulically power the light tower up will create an air pocket in the hydraulic system. Oil will spill out of your internal filler cap.

3. Raise the plow.
4. With the plow in the raised position, cycle through both angle functions several times.
5. Lower the plow to the ground.

Note: If your plow will not lower, Flow Control Valve (30D) is completely closed. Refer to Step 7 to adjust Flow Control Valve (30D).

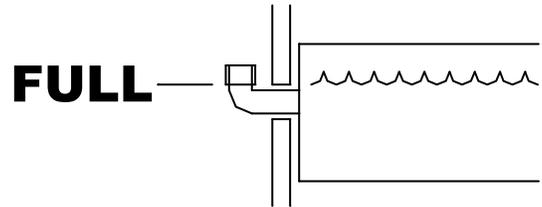


Figure 35. Oil Full Level

G10411

Plow Position to Check Oil: The plow should be attached to the truck, sitting flat on the ground, with the blade in the straight position.

6. With the blade in the straight position and the plow lowered to the ground, check the fluid level. Fluid should be visible in the external fill port. If fluid is not visible, fill until visible. Your reservoir should now be properly filled.

Note: Hydraulic fluid should be replaced annually with BOSS Snowplow High Performance Hydraulic Fluid.

Note: If your plow is equipped with SmartHitch2™ you must hydraulically power the light tower down. Do not manually pull the light tower down. Failure to hydraulically power the light tower down will create an air pocket in the hydraulic system. Oil will spill out of your internal filler cap.

WARNING

When adjusting Flow Control Valve (31C) make sure all appendages are clear of the plow blade and observers are standing a safe distance away from the plow blade. The plow may drop if your controller is in the FLOAT position. Make sure your controller is in the OFF position before attempting to adjust the plow. Failure to follow this warning could result in bodily harm.

Note: Flow Control Valve (31C) is not available on Green colored Hydraulic Manifolds used on Standard Duty and Sport Duty snowplows.

7. Adjust Flow Control Valve (30D) to obtain the speed desired for lowering the plow by loosening the jam nut, then adjusting the set screw. Counter-clockwise adjustment will increase the speed the plow descends. Retighten the jam nut when the desired speed is obtained.

Headlight Aiming Procedure

NOTICE

The installer of these snowplow lights must certify that installation conforms to applicable Federal Motor Vehicle Safety Standards.

1. Place the vehicle on a level surface 25 feet in front of a matte-white screen, such as a garage door. The screen should be perpendicular to both the ground and the vehicle.
2. The vehicle should be equipped for normal operation. The snowplow blade should be in place and in the raised position.
3. Below are some points listed by the Society of Automotive engineers (SAE) pertinent to headlight aiming. These points can be found in publication #SAEJ5991D.

Preparation for Headlight Aim or Inspection

Before checking beam aim, the inspector shall:

- Remove ice or mud from under fenders.
- See that no tire is noticeably deflated.
- Check vehicle springs for sag or broken leaves.
- See that there is no load in the vehicle other than the driver.
- Check functioning of any "level-ride" controls.
- Clean lenses and aiming pads.
- Check for bulb burnout, broken mechanical aiming pads, and proper beam switching.
- Stabilize suspension by rocking vehicle sideways.

4. Mark (or tape) the vehicle centerline of the headlights and the vehicle itself on the screen. Mark the horizontal centerline of the headlights on the screen (distance from ground to headlight centers).

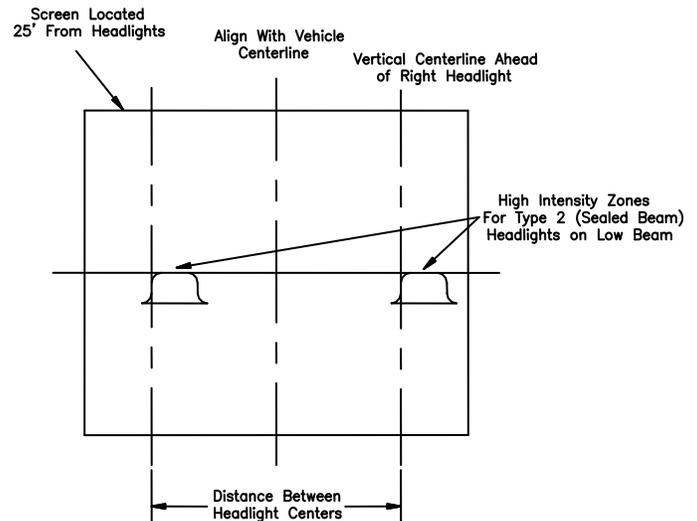


Figure 30. Headlight Aiming Procedure

G10153

5. The correct visual aim for Type 2 headlights is with the top edge of the high intensity zone of the lower beam below the horizontal centerline and the left edge of the high intensity zone on the vertical centerline. See diagram above.

Hydraulic Valve Assembly Parts List

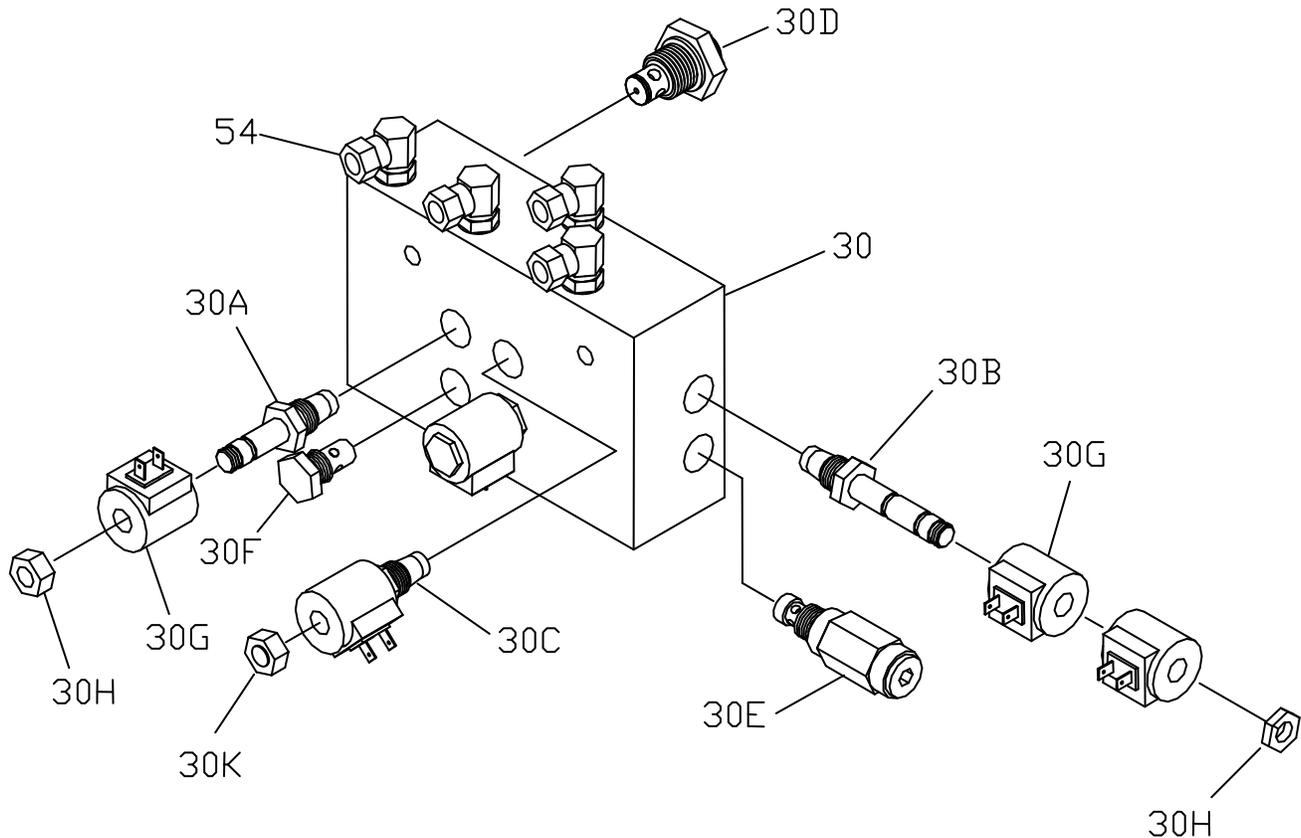


Figure 37. Straight Blade Manifold with SmartHitch2™ Parts Diagram

G10072

Ref.	Description	Part Number	Qty
30	Hydraulic Valve Assembly with SmartHitch2™ (Red)	HYD07091	1
30A	Hydraulic Valve, Lift/Lower Cartridge	HYD01637	2
30B	Hydraulic Valve, Angle Cartridge (3 Position - 4 Way Spool)	HYD07100	1
30C	Hydraulic Valve, SmartHitch2™ Attach (HYD07091 only)	HYD07047	1
30D	Hydraulic Valve, Flow Control Cartridge (HYD07091 only)	HYD07048	1
30E	Relief Valve, Hydraulic Crossover (3,800 PSI)	HYD07027	1
30F	Check Valve	HYD01640	1
30G	Coil, Hydraulic Valve	HYD01638	5
30H	Nut, Coil - used with valve HYD01637 & HYD07100	HYD07059	2
30K	Nut, Coil - used with valve HYD07047	HYD07060	1

Joystick Control Operating Instructions

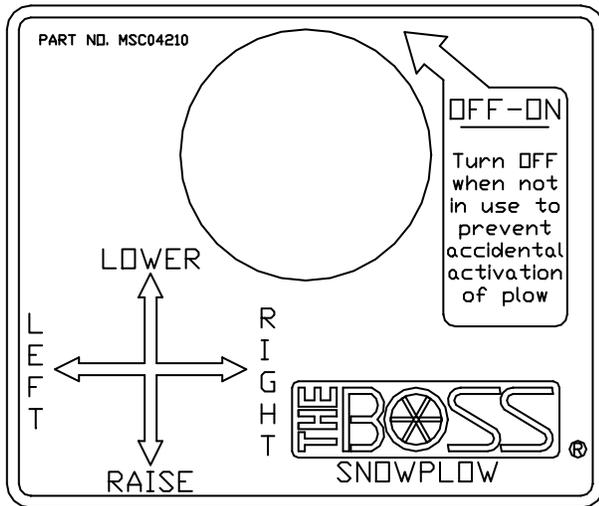


Figure 38. Straight Blade Control Operation G10154

1. Toggle the ON/OFF switch to the ON position. A red indicator light will illuminate on the switch. The joystick is now active.
2. To RAISE the blade of the plow, pull the control stick towards you.
3. To LOWER the blade of the plow, push the control stick away from you.
4. To FLOAT the blade along the contour of the plowing surface, push the controller away from you until the stick reaches the detent position. (You will feel the stick click into the detent position.) The joystick will stay in the FLOAT position until it is physically re-centered on the control box.
5. To ANGLE the blade RIGHT, push the controller stick to the right.
6. To ANGLE the blade LEFT, push the controller stick to the left.
7. The control should be turned off when not in use. It can then be unplugged and stored.

JOYSTICK CONTROL UNIVERSAL MOUNTING KIT MSC04026

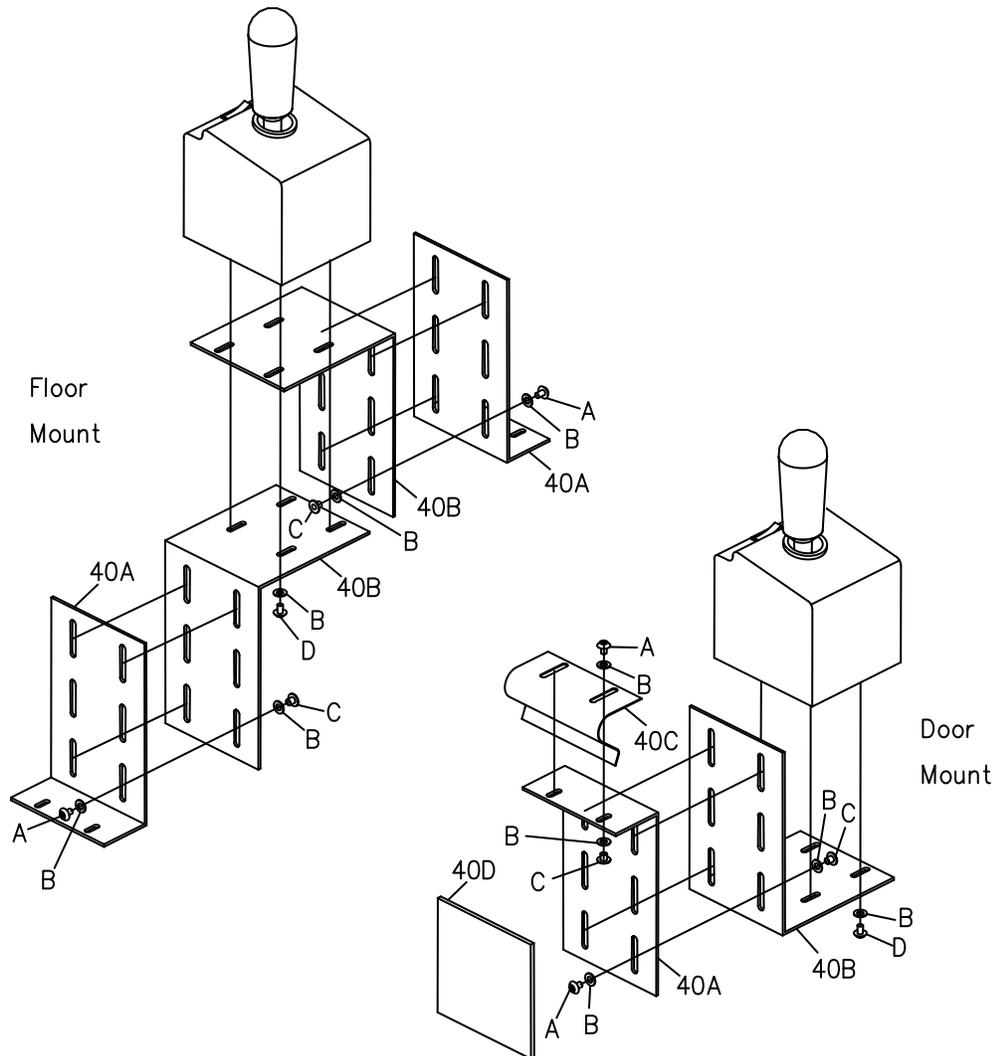


Figure 39. Joystick Control Universal Mounting Kit Components

G10109

Reference	Description	Part Number
40A	Joystick, Intermediate Mounting Bracket	MSC04028
40B	Joystick, Mounting Bracket	MSC04029
40C	Joystick, Spring Clip	MSC04027
40D	Pad, Foam	MSC04038
A	Screw, #8-32 X 1/4 Machine Black	HDW05591
B	Washer, #10 Flat Washer Black	HDW05592
C	Nut, #8-32 X 3/16 Alum Binding Post	HDW05593

SmartTouch² Control
Operating Instructions

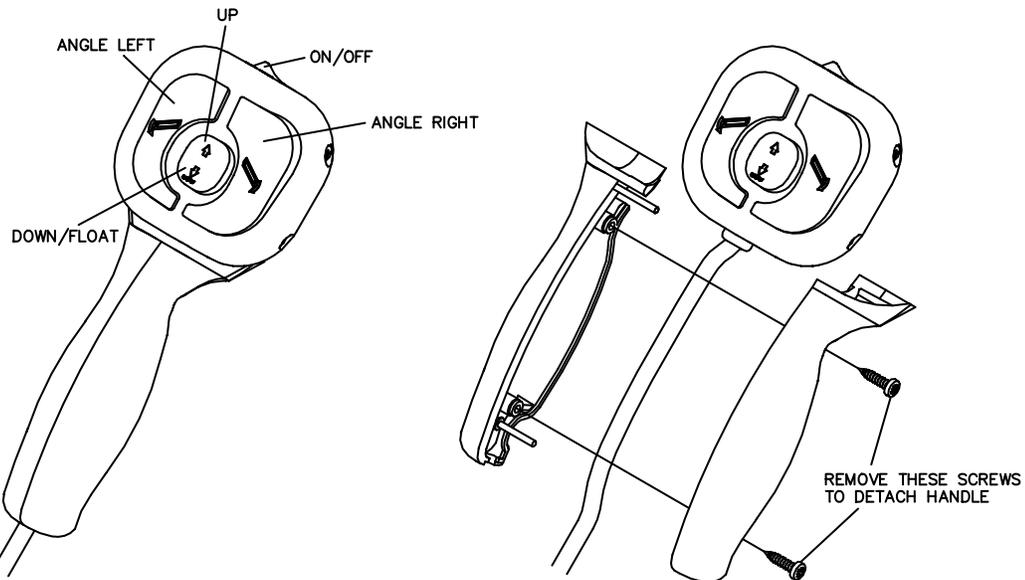


Figure 40. Straight Blade Control Instructions

G10366

ON/OFF: Push the ON/OFF switch to the left ON position to turn the control on. Green LED indicators will light up on the control. Push the ON/OFF switch to the right OFF position to turn the control off.

RAISE: To raise the blade of the plow, quickly press the center button upward twice. You can also press and hold the center button upward until the blade is fully raised.

LOWER: To lower the blade of the plow, quickly push the center button downward twice. You can also press and hold the center button downward until the blade is fully lowered.

FLOAT: The plow will automatically activate the FLOAT feature when the center button is quickly pressed downward twice. (The center LED indicator will turn RED). You can also press and hold the center button downward for 2 seconds to activate the FLOAT feature. (The center LED indicator will turn RED).

“What is FLOAT?”: The FLOAT feature allows the plow blade to mirror the contour of the ground. Press the raise button to turn the FLOAT function off.

ANGLE LEFT: To angle the blade to the left, press and hold the angle left button until the blade is fully angled.

ANGLE RIGHT: To angle the blade to the right, press and hold the angle right button until the blade is fully angled.

Note: The control should be turned off when not in use. It can then be unplugged and stored.

SLEEP mode: If the controller is ON but not used for 20 minutes, the automatic SLEEP mode will be activated. The controller LED lights will flash green and red when the controller is in SLEEP mode.

BOSS SmartTouch2 Control Mounting Instructions

9. Place SmartTouch2™ Control on the Swivel Mount.

Note: Other mounting options are available. Contact your BOSS Snowplow dealer for more information.

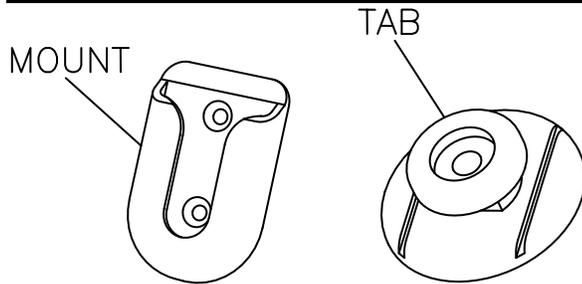


Figure 41. SmartTouch2™ Mounting Hardware G10311

1. Remove the Swivel Mount and Tab from the **MSC05058** Swivel Mount Kit.
2. Use the enclosed alcohol wipe to clean a spot on the vehicle interior where you want to place the SmartTouch2™ Control. Wipe dry immediately with a cloth or paper towel.
3. Do not apply when the surface temperatures are lower than +60°F (Working temperature range of the adhesive is -40°F to +200°F).
4. Peel off the paper backing on one side of the adhesive and apply to Swivel Mount. Apply maximum pressure to all areas.
5. Apply the Swivel Mount onto the spot of the interior that was just cleaned. **MAKE SURE IT IS IN THE CORRECT PLACE.** Once it is placed it cannot be removed without destroying the adhesive.
6. Clean the back of the SmartTouch2™ Control with the alcohol wipe.
7. Peel off adhesive backing of tape, apply to Tab, and press firmly.
8. Remove remaining backing and apply the Tab to the back of the SmartTouch2™ Control. Apply pressure for 30 seconds.

NOTICE

After attaching the Swivel Mount, let it sit unused for 72 hours before attaching the SmartTouch2™ Control to allow the adhesive to bond to the surface and ensure secure mounting.

Troubleshooting Guide

Glossary of Problems:

1. Pump motor does not run.
2. Pump continues to run with switch in neutral.
3. Plow will not lower.
4. Plow will not raise or raises slowly, motor runs.
5. Blade angles while plowing snow.
6. Plow lowers too fast.
7. Blade will not angle, but motor runs.
8. Blade angles too easily while plowing.
9. Oil leaks from cylinders.
10. Battery goes dead with all switches in neutral.
11. Plow lights are dim, will not come on or flicker.
12. Turn signals flash at a rapid rate.
13. High beam indicator light not functioning properly.
14. Plow does not clean-up snow from low areas.
15. Oil runs out of fill cap of hydraulic pump.
16. Pump chatters when raising the plow or angling blade.
17. SmartHitch2™ will not attach plow.
18. Plow lights and truck lights are on at the same time.
19. Plow and truck High and Low beam lights are on at the same time.
20. Plow High beam turns off Plow Low beam bulbs.

PROBLEM	DIAGNOSTIC CHECK	RESULT
1. Pump motor does not run.	Check power/ground cables and control cables are connected properly.	Connect.
	Check for voltage at pump motor while ignition switch is on and LIFT control button is pushed.	If voltage is present, pump motor has failed or pump has seized. Motor brushes may be replaced, otherwise replace pump/motor assembly.
	Check for power to the solenoid by testing for voltage between both large terminals and ground.	If voltage is not present between one large terminal and ground, the cable between the battery and solenoid is disconnected or broken.
	Check for voltage between the other large terminal of the solenoid and ground while jumping power to the small terminals with the white wire.	If NO voltage is present, solenoid has failed and must be replaced. If voltage is present, wire from small terminal of solenoid to ground may be disconnected or broken.

Troubleshooting Guide

PROBLEM	DIAGNOSTIC CHECK	RESULT
	Test power to the control box by checking voltage between black wire and ground at the white 9-pin connector.	If NO voltage is present, power from fuse box has become disconnected. If voltage is present check wiring and control box switch.
2. Pump continues to run with switch in neutral.	Disconnect controller, ignition ON.	If pump continues to run, solenoid has failed in the closed position. Quickly remove power to the pump by disconnecting the power/ground cables to the plow. Replace solenoid.
		If pump stops running, check wiring of switch box for short between black and white/black wire in control box, or failed switch.
3. Plow will not lower.	Check power/ground cables and control cables are connected properly.	Connect.
	Check flow control valve.	If flow control valve is completely closed, place RAISE/LOWER switch on controller in NEUTRAL, then open the flow control valve.
	Check wiring on valve manifold for proper connections.	Refer to the Manifold Wiring Diagram in this manual.
	Check for voltage between solenoid valve terminal and ground with ignition switch on and control switch in FLOAT position.	If voltage is present solenoid valve or valve coil has failed. Replace valve.
	Test power to the control box by checking voltage between black wire and ground at the white 9-pin connector.	If NO voltage is present, power from fuse box has become disconnected. If voltage is present, check wiring and switch of control box.
4. Plow will not raise or raises slowly (pump motor runs).	Check hydraulic fluid level.	Hydraulic fluid level should be within $\frac{3}{4}$ " from top of reservoir when lowered. See Hydraulic Fluid Fill Procedure located in this manual.

Troubleshooting Guide

PROBLEM	DIAGNOSTIC CHECK	RESULT
	Check that power/ground cables and control cable are connected properly.	Connect.
	Check wiring on valve manifold for proper connections.	Refer to the Manifold Wiring Diagram in this manual.
	Load test battery.	Replace battery if weak or defective.
	Check pressure at pressure port of pump.	If pressure is less than 2500 psi (at end of lift) motor brushes may be defective, pump pressure relief valve may be contaminated, damaged, or set less than 2500 psi, pump may be worn.
	Check LIFT solenoid valve	Lift solenoid valve not opening completely. Replace.
		Check wiring and controller.
5. Blade angles while plowing snow.	Check angle solenoid valve on manifold Check pressure	If solenoid valve is contaminated, clean or replace. If pressure relief valve is contaminated, clean or replace.
6. Plow lowers too fast.	Check flow control valve.	Close flow control valve to desired drop speed.
7. Blade will not angle or angles slowly, motor runs.	Check hydraulic fluid level.	Hydraulic fluid level should be within $\frac{3}{4}$ " from top of reservoir when lowered. See Hydraulic Fluid Fill Procedure located in this manual.
	Check power/ground cables and control cable are connected properly.	Connect.
	Check wiring on valve manifold for proper connections.	Refer to the Manifold Wiring Diagram in this manual.
	Load test battery.	Replace battery if weak or defective.
	Check angle solenoid valve.	Angle solenoid valve not opening completely. Replace.
		Check wiring and controller.

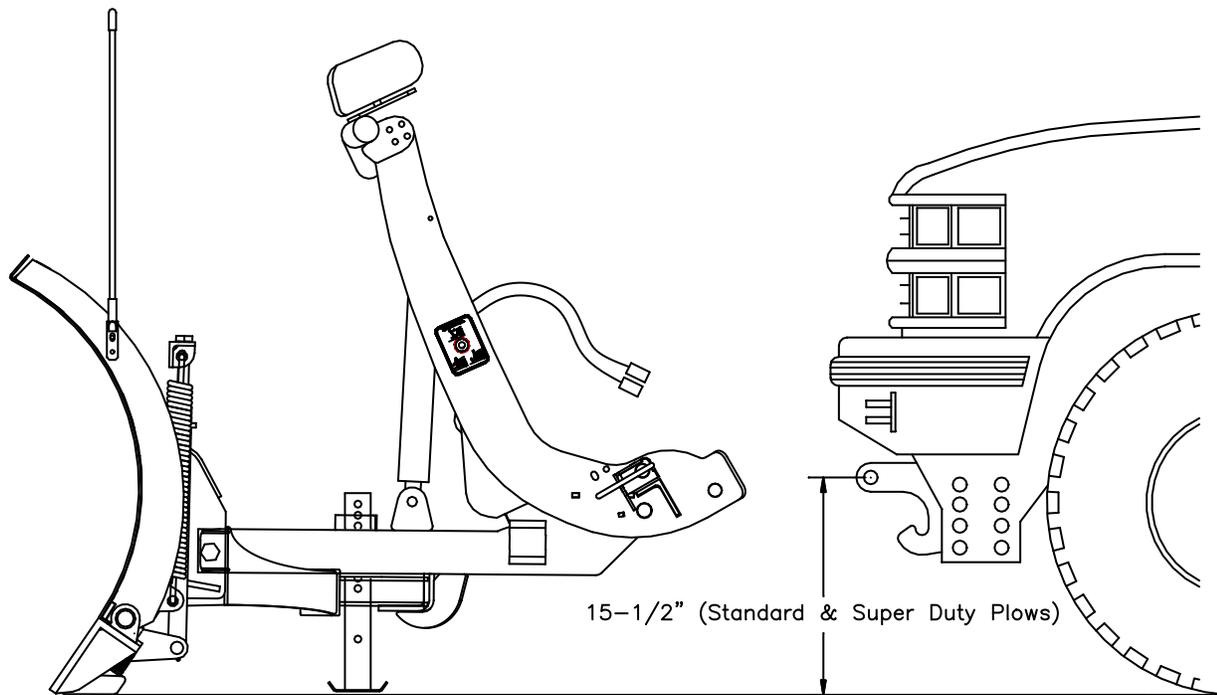
Troubleshooting Guide

PROBLEM	DIAGNOSTIC CHECK	RESULT
8. Blade angles too easily while plowing.	Pressure relief valve pressure set too low.	See an Authorized BOSS Dealer for pressure relief valve adjustment.
9. Oil leaks from cylinders.	Loose packing.	Tighten packing 1/8-turn increments until leak stops.
	Check rod condition.	If rods are pitted or rough, polish with copus cloth or extra fine steel wool.
10. Battery goes dead with all switches in neutral.	Possible short in switches.	Inspect wiring of controller.
	Possible short in wiring harness.	Repair damaged wire.
	Possible short in valve coils.	Replace coils.
11. Plow lights are dim, will not come on or flicker.	Check electrical connections.	Clean and repair any corroded or damaged terminals.
	Check headlight adapter wires.	Verify proper headlight adapters are being used and are correctly installed.
	Check relay. Relay should click when activated.	Replace relay.
12. Turn signals flash at a rapid rate.	Check flasher.	Replace original vehicle flasher with heavy-duty six-lamp flasher provided.
13. High beam indicator does not function properly.	Check headlight adapters.	Verify proper headlight adapters are being used and are correctly installed.
	Check electrical connections to plow lights/truck lights toggle switch.	Refer to the Electrical Wiring Diagram in this manual.
14. Plow does not clean-up snow from low areas.	UP/DOWN switch not in FLOAT.	Place switch in FLOAT position.
15. Oil running out of fill cap of hydraulic pump.	Watch customer mount and dismount plow for proper procedure.	Power SmartHitch2™ functions if installed. See Mounting instructions.
	Pump reservoir over filled.	Reservoir should be filled to 3/4" from top.
	Hitting snow banks too hard.	Do not plow recklessly.
16. Pump chatters when raising plow or angling blade.	Hydraulic fluid low.	Add hydraulic fluid. Reservoir should be filled to 3/4" from top.
17. SmartHitch2™ will not attach plow.	Make sure key is on and controller is in FLOAT.	Turn key on and put controller in FLOAT.

Troubleshooting Guide

PROBLEM	DIAGNOSTIC CHECK	RESULT
	Make sure controller is staying in the FLOAT position.	If controller comes out of FLOAT when using the SmartHitch2™ switch, replace the controller.
	Check valve block and SmartHitch2™ switch for proper connections.	Refer to manifold wiring diagram located within this manual.
18. Plow lights and truck lights are on at the same time.	Check vehicle harness wiring to truck headlights.	Refer to electrical system wiring instructions located within this manual. Ensure OEM is not plugged into truck headlight.
19. Plow and truck High beam and Low beam are on at the same time.	Check headlight adapters for correct connections.	Light adapters for GM trucks can be plugged in two ways. Make sure all four adapters are in the proper orientation for your vehicle.
20. Plow High beam turns off Plow Low beam bulbs.	Check vehicle option connector and RED/WHITE wire.	Refer to electrical system wiring instructions located within this manual. RED/WHITE wire may need to be placed on opposite battery terminal.

Recommended Pushbeam Height



15-1/2" (Standard & Super Duty Plows)

Figure 42. Recommended Pushbeam Height

G10436

Recommended Bolt Torque



DIAMETER / PITCH	GRADE 5	GRADE 8	GRADE 8.8	GRADE 10.9
1/4-20	6	9		
5/16-18	14	19		
3/8-16	23	33		
7/16-14	38	53		
1/2-13	56	80		
9/16-12	82	116		
5/8-11	113	159		
3/4-10	201	283		
M10 X 1.25			36	
M10 X 1.5				49
M12 X 1.75				71
M14 X 2.0				80

ALL TORQUE VALUES ARE IN FOOT-POUNDS (FT.-LB.)

Figure 43. Recommended Bolt Torque

G10410

NOTE: The torque values listed above are based on dry, coated bolts, variables such as oil, or other lubrications may appreciably alter these values and must be taken into consideration.

NOTICE: IT IS IMPORTANT THAT ALL FASTENERS BE PROPERLY TORQUED TO ASSURE A SAFE OPERATING PLOW. RE-TIGHTEN ALL FASTENERS AFTER 2 HOURS OF PLOWING.