RT3 SPORT DUTY
STRAIGHT BLADE
INSTALLATION MANUAL

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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
• 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.
**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 OFF position.

**STEP 2**
- Push the SmartHitch2 switch upward to raise the coupler tower 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.

**CAUTION**

Both coupler spring pins must be fully engaged. Failure to completely engage both spring pins may result in personal injury and property damage.

**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 toward the truck 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.
Snowplow Assembly Procedure

Note: This manual is used for the assembly of all BOSS Sport Duty Straight Blade Plows. Part numbers and illustrations may vary.

Figure 2. Push Frame Attachment  G10298

1. Attach Push Frame Attachment Bar (3) to Plow Blade (4) using two HDW01706 5/8”-11 x 4” Hex Head Cap Screws (86) and two HDW01709 5/8”-11 Self-Locking Nuts (114).

Figure 3. Trip Spring Assembly  G10300

2. Insert MSC01509 Trip Spring (15) through the holes provided on Push Frame Attachment Bar (3).

3. Attach HDW02004 Spade Bolt (93) around the loose end of Trip Spring (15).

4. Insert the threaded end of Spade Bolt (93) through the hole in the spring mounting brackets on the back of Blade Assembly (4). Secure each Spade Bolt (93) with one HDW01729 ½” flat washer (107) and one HDW01748 Self Locking Nut (113). Tighten Self-Locking Nuts (113) until the coils on Trip Springs (15) are approximately 1/32” apart.

Figure 4. Lift Cylinder Installation  G10301

5. Position the rod end of HYD07022 Lift Cylinder (41) between the cylinder mounts of Push Frame Assembly (2). Insert HDW05563 5/8” x 3 ½” Clevis Pin (105) through the cylinder mounts and secure with HDW05544 #16 Hairpin Cotter (104).

6. Align the pivot holes of Coupler Assembly (1) with the pivot holes of Push Frame Assembly (2).

7. Insert 3/4” x 2” Pivot Pins (99A) through Coupler Assembly (1) and Push Frame Assembly (2). Place a 3/4” Flat Washer (99B) on 3/4” x 2” Pivot Pin (99A) then insert 3/16” x 2 ½” Cotter Pin (99C) through 3/4” x 2” Pivot Pin (99A). Spread the ends of 3/16” x 2 ½” Cotter Pin (99C).

8. Rotate Lift Cylinder (41) up to the cylinder mounts located on Coupler Tower Assembly (1). Insert 5/8” x 3 ½” Clevis Pin (105) through the cylinder mounts and secure with #16 Hair Pin Cotter (104).
9. Install **HYD09922** Hydraulic Hose (49) between the middle fitting on the hydraulic shelf and the lower port of Lift Cylinder (41). Tighten both ends of the hose securely.

10. Install **HYD07018** 90° Fitting (55) into left Angle Cylinder (40). 90° Fitting (55) should be installed at a 45° angle forward. Thread compound should be used at this connection.

11. Install Hydraulic Hose (52) between the left fitting on the hydraulic shelf and 90° Fitting (55) installed in the previous step. Tighten both ends of the hose securely.

12. Repeat steps 10-11 for the Right Angle Cylinder Hose.

13. Attach Light Bar (13) to the top of Coupler Assembly (1) using two Hex Head Cap Screws (87) and Hex Head Self Locking Nuts (112).

**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.
14. Check that MSC09058 End Cap (79) is properly inserted into LBA11117 Light Bar (13).

15. 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).

16. Fasten MSC11120 Driver Side Headlight (84) to Driver Side Headlight Bracket (82) using four HDW02020 ¼"-20 X ¾" Hex Head Bolts (76D), four HDW02018 ¼" Split Lock Washers (76E), and four HDW01750 ¼" Flat Washers (76F). Leave fasteners finger tight until Headlight orientation has been completed. See Figure 14 for proper fastener placement.

17. Repeat Steps 14 through 16 for MSC11110 Passenger Side Headlight Bracket (83) and MSC11130 Passenger Side Headlight (85).

18. Secure Wiring Harness (61) to Light Bar (13) using wire ties as shown in Figure 9.

19. 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.

20. Attach Blade Guides (16) to Blade Assembly (4) using Hex Head Cap Screws (91), Self Locking Nuts (116), and Self-Tapping Hex Head Cap Screws (92).
SmartHitch2™ Installation Procedure

**Note:** This installation procedure is used for installing the SmartHitch2™ option.

1. Remove Hydraulic Cover (14) to expose Hydraulic Valve Manifold (30).

2. Remove the plug from the face of Hydraulic Valve Manifold (30).

3. Install HYD07047 SmartHitch2™ Attachment Valve (30C).

4. Place HYD01638 Valve Coil (30G) on the stem of the Valve (30C).

5. Connect extra brown Ground Strap to HYD01638 Valve Coil (30G).

**Notice:** DO NOT OVER-TIGHTEN coil nut. The valve will be damaged if the coil nut is over-tightened.


7. Remove the plug from the top of Hydraulic Valve Manifold (30).

8. Install 90° O-Ring Swivel Fitting (54) into the Hydraulic Valve Manifold (30). The fitting should be positioned so the open end of the fitting is facing towards the lift cylinder.

9. Remove the breather vent from the top of the hydraulic lift cylinder.

10. Connect one end of ¼ x 15 ½” Hose (50) to the back of the Lift Cylinder (41).

11. Connect the opposite end of Hose (50) to the 90° Swivel Fitting (54) located in the manifold.

12. Insert the SmartHitch2™ Toggle Switch through the side hole of the coupler.

13. Tighten the switch with the jam nut provided.

14. Secure the Switch Boot onto the end of the switch.
15. Connect **MSC04672** Orange SmartHitch2™ Wiring Harness to the switch and manifold as shown above.

16. Connect **MSC09867** White and **MSC09866** Black SmartHitch2™ Wiring Harnesses to the switch and manifold as shown above.

17. Connect the White/Black Wire from the main wiring harness to the switch as shown above.
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.

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: Dielectric grease should be applied to all electrical connections.

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 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 14. Driver Side Headlight

Figure 15. Passenger Side Headlight

G10140

G10141
**NOTIXEA**

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.

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**Figure 16. Connecting Park and Turn**

**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.

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

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**Figure 17. Internal Cab Wires**

**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 Figure 17.

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**NOTIXEA**

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.

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

17. Plug the controller into the 9 Pin Molex Connector (G).

18. 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.)

19. 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.

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

21. Connect the BROWN wire (K) of Wiring Harness (60) to the other 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.

---

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

23. Attach the eyelet end (L) of RED Power/Ground Cable (62) to the large post of Pump Solenoid (64).

24. Connect the eyelet end (M) of Battery Cable (66) to the other large post of Pump Solenoid (64).

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

---

25. Attach the eyelet end (N) of BLACK Power/Ground Cable (62) to the negative battery terminal.

26. Connect the BROWN wire (Q) to the negative battery terminal.

27. Connect the unattached end (P) of Battery Cable (66) to the positive battery terminal.

28. Connect the RED Fused wire (O) to the positive battery terminal.
29. Mount the Black 13 Pin Control Harness Connector to the lower area of the bumper using MSC03813 Control Harness Mounting Bracket.

30. 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.

31. 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

32. 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 22.

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.

33. Connect RED/WHITE wire (R) to the correct battery terminal for your vehicle. See Figure 23 for proper placement for your vehicle.

34. Secure all plow harness wiring.

35. 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.

36. 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
  - Right Turn Signal Indicator – ON

**RESULTS** - Both Left Plow and Left 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

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 on page 10 in this manual.

Figure 24. 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 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 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 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.

Figure 25. 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 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 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.
Figure 26. Electrical System Wiring Schematic (Plow Side)
Figure 27. Electrical System Wiring Schematic (Truck Side)
**Figure 29. HYD07090 Sport Duty Manifold Wiring Diagram**

**Figure 30. HYD07090 Sport Duty Manifold with SmartHitch2™ Wiring Diagram**

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Wire Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Blade Left</td>
</tr>
<tr>
<td>Red</td>
<td>Blade Right</td>
</tr>
<tr>
<td>White</td>
<td>Lift</td>
</tr>
<tr>
<td>Orange</td>
<td>Lower</td>
</tr>
<tr>
<td>Red/Black</td>
<td>Blade Right</td>
</tr>
<tr>
<td>Blue</td>
<td>Blade Left</td>
</tr>
<tr>
<td>Black</td>
<td>SmartHitch2™ (12V)</td>
</tr>
<tr>
<td>Brown</td>
<td>Ground</td>
</tr>
</tbody>
</table>
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 un-attached from the vehicle and the lift cylinder completely collapsed. The light tower will be tilted forwarded.

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.

**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.
Headlight Aiming Procedure

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).

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.

\[
\text{NOTICE}\]

The installer of these snowplow lights must certify that installation conforms to applicable Federal Motor Vehicle Safety Standards.
Hydraulic Valve Assembly Parts List

Figure 34. Straight Blade (Sport) Manifold with SmartHitch2™ Parts Diagram

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
<th>Part Number</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Hydraulic Valve Assembly (SmartHitch2™ Ready) (Green)</td>
<td>HYD07090</td>
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<td>30A</td>
<td>Hydraulic Valve, Lift/Lower Cartridge</td>
<td>HYD01637</td>
<td>2</td>
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<tr>
<td>30B</td>
<td>Hydraulic Valve, Angle Cartridge (3 Position - 4 Way Spool)</td>
<td>HYD07100</td>
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<td>30C</td>
<td>Hydraulic Valve, SmartHitch2™ Attach (Optional)</td>
<td>HYD07047</td>
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</tr>
<tr>
<td>30E</td>
<td>Relief Valve, Hydraulic Crossover (3,800 PSI)</td>
<td>HYD07027</td>
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</tr>
<tr>
<td>30F</td>
<td>Check Valve</td>
<td>HYD01640</td>
<td>1</td>
</tr>
<tr>
<td>30G</td>
<td>Coil, Hydraulic Valve</td>
<td>HYD01638</td>
<td>5</td>
</tr>
<tr>
<td>30H</td>
<td>Nut, Coil - used with valve HYD01637 &amp; HYD07100</td>
<td>HYD07059</td>
<td>2</td>
</tr>
<tr>
<td>30K</td>
<td>Nut, Coil - used with valve HYD07047 (Optional)</td>
<td>HYD07060</td>
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<tr>
<td>30L</td>
<td>Orifice Plug, 0.12” ID (Fixed)</td>
<td>HYD07120</td>
<td>1</td>
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</table>
Straight Blade Controllers

Joystick Control Operating Instructions

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 36. Joystick Control Universal Mounting Kit Component

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

9. Place *SmartTouch2™* Control on the Swivel Mount.

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

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**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
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. Oil runs out of fill cap of hydraulic pump.
15. Pump chatters when raising the plow or angling blade.
16. Pump chatters when raising the plow or angling blade.
17. SmartHitch™ 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.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>DIAGNOSTIC CHECK</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.  Pump motor does not run.</td>
<td>Check power/ground cables and control cables are connected properly.</td>
<td>Connect.</td>
</tr>
<tr>
<td></td>
<td>Check for voltage at pump motor while ignition switch is on and LIFT control button is pushed.</td>
<td>If voltage is present, pump motor has failed or pump has seized. Motor brushes may be replaced, otherwise replace pump/motor assembly.</td>
</tr>
<tr>
<td></td>
<td>Check for power to the solenoid by testing for voltage between both large terminals and ground.</td>
<td>If voltage is not present between one large terminal and ground, the cable between the battery and solenoid is disconnected or broken.</td>
</tr>
<tr>
<td></td>
<td>Check for voltage between the other large terminal of the solenoid and ground while jumping power to the small terminals with the white wire.</td>
<td>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.</td>
</tr>
<tr>
<td>PROBLEM</td>
<td>DIAGNOSTIC CHECK</td>
<td>RESULT</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td>Test power to the control box by checking voltage between black wire and ground at the white 9-pin connector.</td>
<td>If NO voltage is present, power from fuse box has become disconnected. If voltage is present check wiring and controller switch.</td>
<td></td>
</tr>
<tr>
<td>2. Pump continues to run with switch in neutral.</td>
<td>Disconnect controller, ignition ON.</td>
<td>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.</td>
</tr>
<tr>
<td>3. Plow will not lower.</td>
<td>Check power/ground cables and control cables are connected properly. Connect.</td>
<td>If pump stops running, check wiring of switch box for short between black and white/black wire in controller, or failed switch.</td>
</tr>
<tr>
<td>Check the lowering orifice on backside of manifold is not plugged (Sport Only).</td>
<td>If orifice is plugged, clean and re-install.</td>
<td>Refer to the Manifold Wiring Diagram in this manual.</td>
</tr>
<tr>
<td>Check wiring on valve manifold for proper connections.</td>
<td>Check for voltage between solenoid valve terminal and ground with ignition switch on and controller in FLOAT position.</td>
<td>If voltage is present solenoid valve or valve coil has failed. Replace valve.</td>
</tr>
<tr>
<td>Test power to the control box by checking voltage between black wire and ground at the white 9-pin connector.</td>
<td>If NO voltage is present, power from fuse box has become disconnected. If voltage is present, check wiring and switch of controller.</td>
<td>Check hydraulic fluid level.</td>
</tr>
<tr>
<td>4. Plow will not raise or raises slowly (pump motor runs).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROBLEM</td>
<td>DIAGNOSTIC CHECK</td>
<td>RESULT</td>
</tr>
<tr>
<td>---------</td>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Check that power/ground cables and control cable are connected properly.</td>
<td>Connect.</td>
<td></td>
</tr>
<tr>
<td>Check wiring on valve manifold for proper connections.</td>
<td>Refer to the Manifold Wiring Diagram in this manual.</td>
<td></td>
</tr>
<tr>
<td>Load test battery.</td>
<td>Replace battery if weak or defective.</td>
<td></td>
</tr>
<tr>
<td>Check pressure at pressure port of pump.</td>
<td>If pressure is less than 2000 psi (at end of lift) motor brushes may be defective, pump pressure relief valve may be contaminated, damaged, or set less than 2000 psi, pump may be worn.</td>
<td></td>
</tr>
<tr>
<td>Check LIFT Solenoid Valve</td>
<td>Lift solenoid valve not opening completely. Replace.</td>
<td></td>
</tr>
<tr>
<td>Check Lower Solenoid Valve</td>
<td>Lower solenoid valve not opening completely. Replace.</td>
<td></td>
</tr>
<tr>
<td>5. Blade angles while plowing snow.</td>
<td>Check angle solenoid valve on manifold Check pressure</td>
<td>If solenoid valve is contaminated, clean or replace. If pressure relief valve is contaminated, clean or replace.</td>
</tr>
<tr>
<td>6. Plow lowers too fast.</td>
<td>Check lowering orifice on backside of manifold has proper ID (Sport Only).</td>
<td>Only one lowering speed for the Sport Duty– the ID of the orifice should be .12”</td>
</tr>
<tr>
<td>7. Blade will not angle or angles slowly, motor runs.</td>
<td>Check hydraulic fluid level.</td>
<td>Hydraulic fluid level should be within ¾” from top of reservoir when lowered. See Hydraulic Fluid Fill Procedure located in this manual.</td>
</tr>
<tr>
<td>Check power/ground cables and control cable are connected properly.</td>
<td>Connect.</td>
<td></td>
</tr>
<tr>
<td>Check wiring on valve manifold for proper connections.</td>
<td>Refer to the Manifold Wiring Diagram in this manual.</td>
<td></td>
</tr>
<tr>
<td>Load test battery.</td>
<td>Replace battery if weak or defective.</td>
<td></td>
</tr>
<tr>
<td>Check Angle solenoid valve.</td>
<td>Angle solenoid valve not opening completely. Replace.</td>
<td></td>
</tr>
</tbody>
</table>
### Troubleshooting Guide

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>DIAGNOSTIC CHECK</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Blade angles too easily while plowing.</td>
<td>Pressure relief valve pressure set too low.</td>
<td>See an Authorized BOSS Dealer for pressure relief valve adjustment.</td>
</tr>
<tr>
<td>9. Oil leaks from cylinders.</td>
<td>Inspect fittings and O-rings.</td>
<td>Tighten fittings if loose. See BOSS dealer for seal kit.</td>
</tr>
<tr>
<td></td>
<td>Check rod condition.</td>
<td>If rods are pitted or rough, polish with copper cloth or extra fine steel wool.</td>
</tr>
<tr>
<td></td>
<td>Possible short in wiring harness.</td>
<td>Repair damaged wire.</td>
</tr>
<tr>
<td></td>
<td>Possible short in valve coils.</td>
<td>Replace coils.</td>
</tr>
<tr>
<td>11. Plow lights are dim, will not come on or flicker.</td>
<td>Check electrical connections.</td>
<td>Clean and repair any corroded or damaged terminals.</td>
</tr>
<tr>
<td></td>
<td>Check headlight adapter wires.</td>
<td>Verify proper headlight adapters are being used and are correctly installed.</td>
</tr>
<tr>
<td></td>
<td>Check Relay. Relay should click when activated.</td>
<td>Replace Relay.</td>
</tr>
<tr>
<td>12. Turn signals flash at a rapid rate.</td>
<td>Check flasher.</td>
<td>Replace original vehicle flasher with heavy-duty six-lamp flasher provided.</td>
</tr>
<tr>
<td>13. High beam indicator does not function properly.</td>
<td>Check headlight adapters.</td>
<td>Verify proper headlight adapters are being used and are correctly installed.</td>
</tr>
<tr>
<td></td>
<td>Check electrical connections to plow lights/truck lights toggle switch.</td>
<td>Refer to the Electrical Wiring Diagram in this manual.</td>
</tr>
<tr>
<td>14. Plow does not clean-up snow from low areas.</td>
<td>UP/DOWN switch not in neutral.</td>
<td>Place switch in FLOAT position.</td>
</tr>
<tr>
<td></td>
<td>Pump reservoir over filled.</td>
<td>Reservoir should be filled to ¾” from top.</td>
</tr>
<tr>
<td></td>
<td>Hitting snow banks too hard.</td>
<td>Do not plow recklessly.</td>
</tr>
<tr>
<td>16. Pump chatters when raising plow or angling blade.</td>
<td>Hydraulic fluid low.</td>
<td>Add hydraulic fluid. Reservoir should be filled to ¾” from top.</td>
</tr>
<tr>
<td>17. SmartHitch® will not attach plow.</td>
<td>Make sure key is on and controller is in FLOAT.</td>
<td>Turn key on and put controller in FLOAT.</td>
</tr>
</tbody>
</table>
## Troubleshooting Guide

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>DIAGNOSTIC CHECK</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure controller is staying in the FLOAT</td>
<td>If controller comes out of FLOAT when using the SmartHitch 2™ switch, replace the controller.</td>
<td></td>
</tr>
<tr>
<td>position.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check valve block and SmartHitch 2™ switch for</td>
<td>Refer to manifold wiring diagram located within this manual.</td>
<td></td>
</tr>
<tr>
<td>proper connections.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Plow lights and truck lights are on at the</td>
<td>Check vehicle harness wiring to truck headlights.</td>
<td>Refer to electrical system wiring instructions located within this manual. Ensure OEM is not plugged into truck headlight.</td>
</tr>
<tr>
<td>same time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Plow and truck High beam and Low beam are</td>
<td>Check headlight adapters for correct connections.</td>
<td>Light adapters for GM trucks can be plugged in two ways. Make sure all four adapters are in the proper orientation for your vehicle.</td>
</tr>
<tr>
<td>on at the same time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Plow High beam turns off Plow Low beam</td>
<td>Check vehicle option connector and RED/WHITE wire.</td>
<td>Refer to electrical system wiring instructions located within this manual. RED/WHITE wire may need to be placed on opposite battery terminal.</td>
</tr>
<tr>
<td>bulbs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Recommended Push Beam Height**

![Diagram of Recommended Push Beam Height]

Figure 39. Recommended Push Beam Height - Sport Duty

**Recommended Bolt Torque**

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

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

Figure 40. Recommended Bolt Torque

**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.