

## RT3 POWER-V BLADE

## WITH SMARTHITCH™

# SNOWPLOW ASSEMBLY INSTALLATION PROCEDURE

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### PATENTS

1. U.S. Patent No. 4,074,448
2. U.S. Patent No. 4,658,519
3. U.S. Patent No. 5,568,694
4. Other Patents Pending

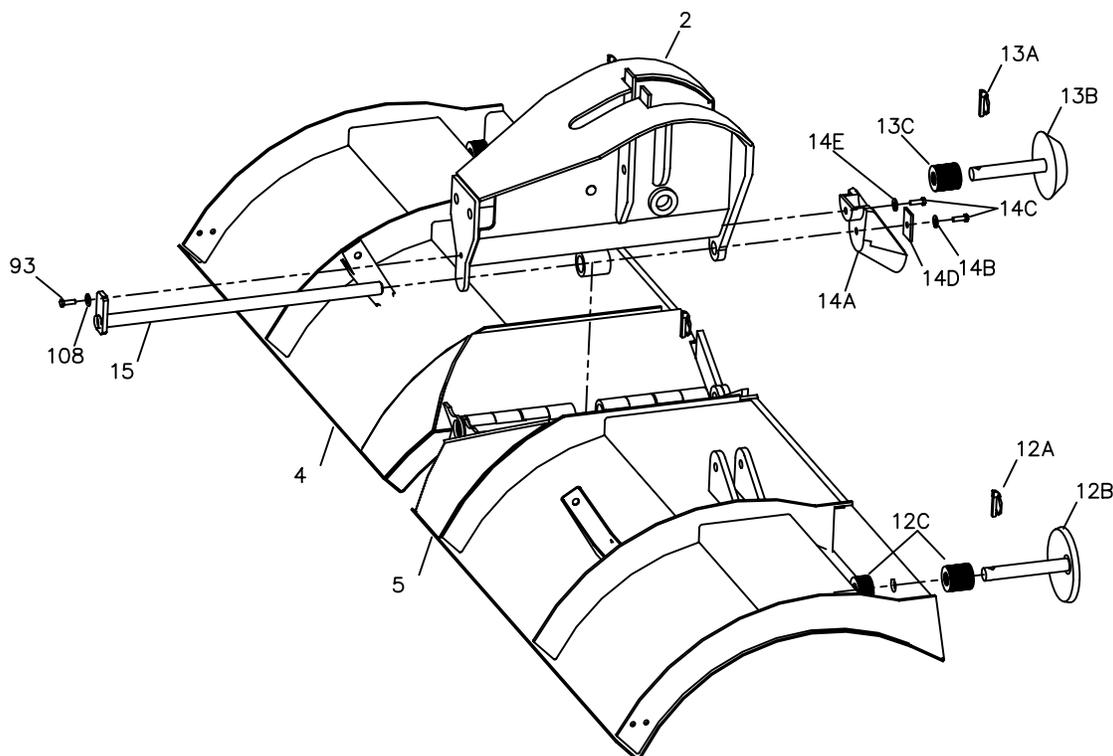
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***PUTS SNOW IN ITS PLACE***

## Snowplow Assembly Installation Procedure

**Note to Installers:** This manual is used for the installation of all V-Plows. The general process for all V-Plow installation is identical however there are hardware differences when installing a 10' V-plow. All hardware differences for 10' V-Plows are listed on Page 16.

1. Begin the assembly procedure by cutting down each corner of the plow box so that each wall of the box will lie flat on the floor. Lay the top of the box flat on the floor. The top of the box can be used as a mat and will help prevent scratching the blade halves during installation.
2. Remove Left Blade Half (5) and Right Blade Half (4) from the crate. Lay each blade half flat on the box top, face down.



**Figure 1.** Blade Assembly Procedure.

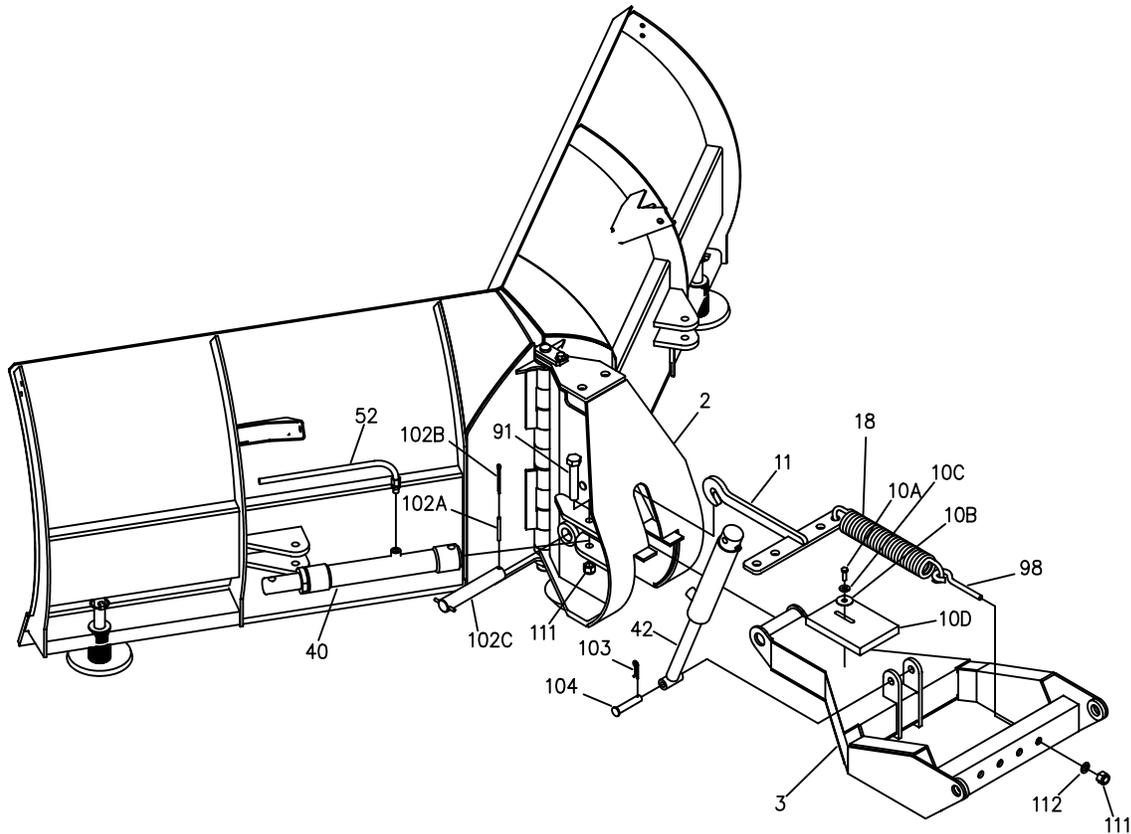
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3. Align the center bushings on Left Blade Half (5) with the center bushings on Right Blade Half (4). Position **CHA01019** Center Section (2) on top of both blades so that all bushings align.
4. Insert **MSC01507** Center Hinge Pin (15) through Left Blade Half (5), Right Blade Half (4) and Center Section (2). Secure Center Hinge Pin (15) to the top of Center Section (2) using one **HDW01771** 3/8"-16 X 1 1/4" Hex Head Cap Screw (93), and one **HDW01718** 3/8" Split Lock Washer (108).
5. Attach **MSC04253** Snow Catcher Assembly (14) to Center Hinge Pin (15) using 3/8" –16 X 1 1/4" Hex Head Cap Screw (14C), Snow Catcher Mounting Plate (14D), and 3/8" Split Lock Washer (14B). Attach the rear mounting hole of Snow Catcher (14A) to the base of Center Section (2) using 3/8" – 16 X 1 1/4" Hex Head Cap Screw (14C), and 3/8" Flat Washer (14E).
6. Place approximately fourteen – 1" Flat Washers (13C) on Cast Iron Plow Shoe (13B). Insert the shaft of Cast Iron Plow Shoe (13B) into Center Section (2). Add ten 1" Flat Washers (13C) to the top of Cast Iron Plow Shoe (13B) and secure Cast Iron Plow Shoe (13B) with 7/16" Quick Pin (13A).

## Snowplow Assembly Installation Procedure

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- Place approximately eighteen – 1" Flat Washers (12C) on Steel Plow Shoe (12B). Insert the shaft of Steel Plow Shoe (12B) into the outer edge of each blade half. Add ten 1" Flat Washers (12C) to the top of Steel Plow Shoe (12B) and secure Steel Plow Shoe (12B) with 7/16" Quick Pin (12A).
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**Figure 2.** Push Frame Assembly Procedure.

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- Stand Blade Assembly and Center Section (2) on the Cutting Edges with both wings forward in the scoop position.
- Remove Horizontal Hinge Pin (102C) from Center Section (2) by cutting the zip tie retainer.
- Slide **TFR01311** Push Frame (3) into Center Section (2). Re-insert Horizontal Hinge Pin (102C) through Center Section (2) and Push Frame (3) then secure with Rolled Pin (102A).
- Install Cotter Pin (102B) through Roll Pin (102A) on both sides of Horizontal Hinge Pin (102C).
- Remove **HYD07013** Lift Cylinder (42) from Coupler Assembly (1).
- Attach Lift Cylinder (42) to Push Frame (3) with **HDW05563** Clevis Pin (104) and **HDW05544** Hairpin Cotter (103).
- Hook **MSC04200** Spring Yoke (11) to the cross rod inside Center Section (2).

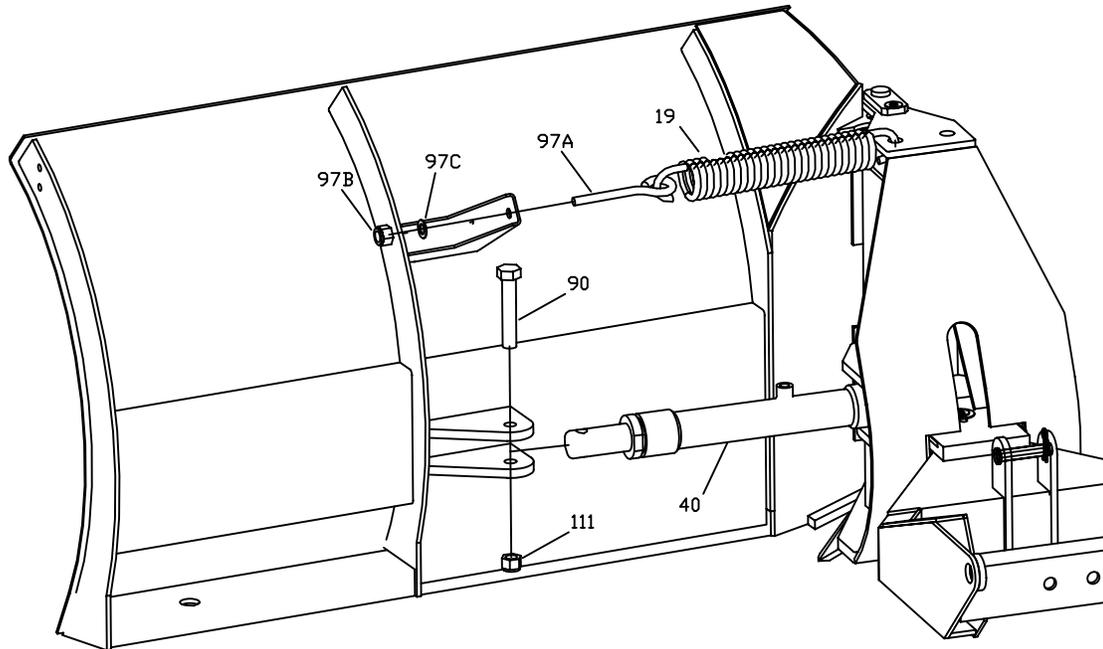
## Snowplow Assembly Installation Procedure

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- Hook one end of **MSC01509** Trip/Return Spring (18) to Spring Yoke (11). Attach the opposite end of Trip/Return Spring (18) to the rear angle of Push Frame (3) using **HDW05601** Eyebolts (98), 5/8" Flat Washers (112) and 5/8" Self-Locking Nuts (111) . Tighten Self-Locking Nuts (111) finger tight.
- Attach **HYD01603** Angle Cylinders (40) to Center Section (2) using **HDW05534** 5/8"-11 X 5" Hex Head Cap Screw (91) and **HDW01709** 5/8"-11 Self Locking Nuts (111). DO NOT over-tighten the nuts.

**Note:** You should be able to slightly slide the cylinder up and down on the bolt after it has been tightened.

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**Figure 3.** Return Spring and Angle Cylinder Installation.

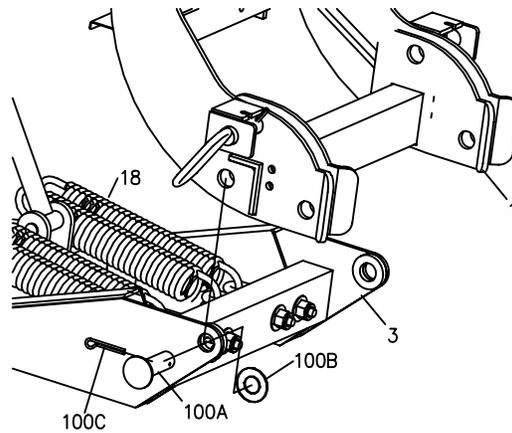
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- Pull both wings back into the 'V' position.
- Hook one end of Trip/Return Spring (19) to the top hole on Center Section (2). Hook the opposite end of Trip/Return spring (19) to the blade spring mounting bracket using 1/2" Eyebolt (97A), Flat Washer (97C), and 1/2" Self-Locking Nut (97B). Tighten Spring (19) until there is a 1/32" space between spring coils. Repeat this process for Trip Return Spring (19) on the opposite side of the plow.
- Bolt the rod end of Angle Cylinder (40) to each blade half using 5/8"-11 X 4" Hex Head Bolt (90) and 5/8"-11 Self Locking Nuts (111). Do not over tighten bolts. Repeat this process for Angle Cylinder (40) on the opposite side of the plow.

**Note:** You should be able to slightly slide the cylinder up and down on the bolt after it has been tightened.

## Snowplow Assembly Installation Procedure

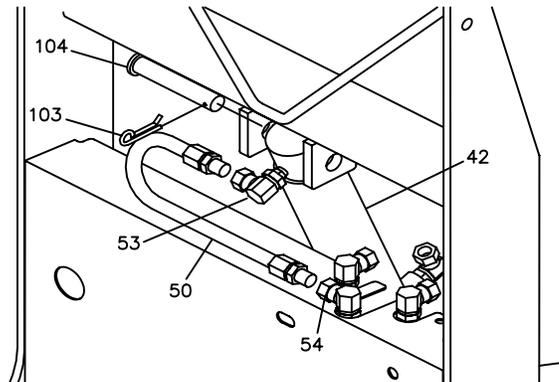
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**Figure 4.** Attaching Coupler Assembly (1) with Push Frame (3).

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20. Align pivot holes of Coupler Assembly (1) and pivot holes of Push Frame (3).
  21. Insert 1" X 2 ½" Pivot Pin (100A) through Coupler Assembly (1) and Push Frame (3). Secure with 1" Flat Washer (100B) and 3/16" Cotter Pin (100C).
- Note:** The 10' V-Blade plow uses a 5/16" x 2" Bolt and a 5/16" Locknut in place of 3/16" Cotter Pin (100C).
22. Tighten the four Trip/Return Springs (18) on Push Frame (3) until there is a 1/32" space between each spring coil.



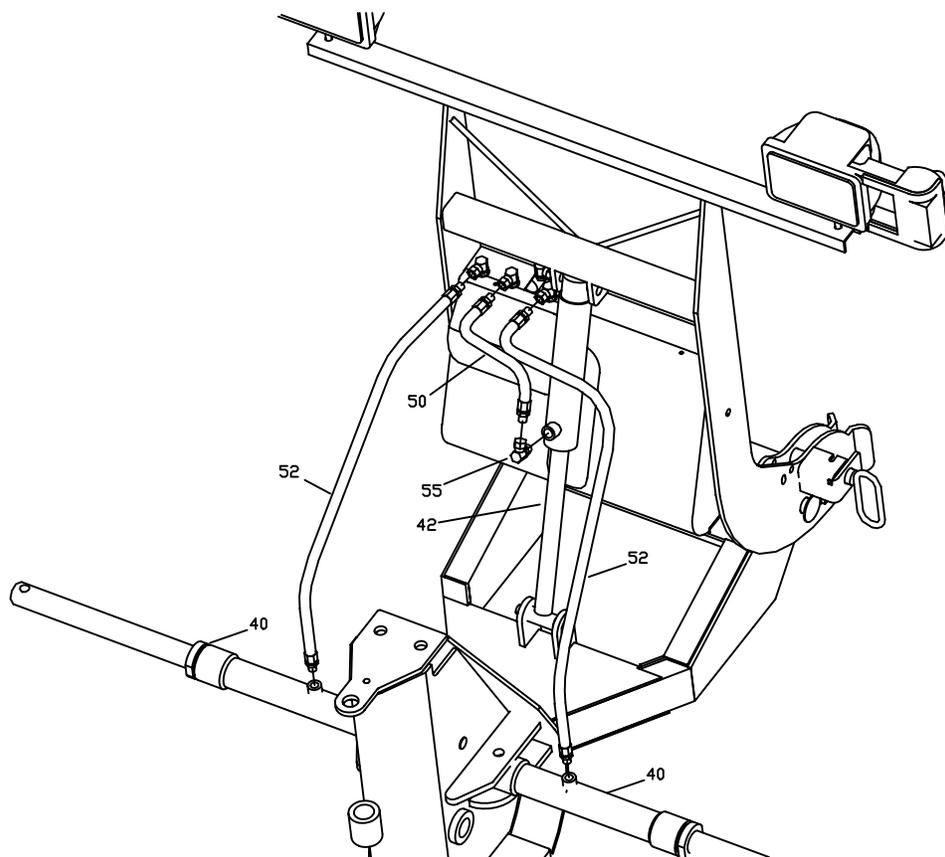
**Figure 5.** Assembly of Lift Cylinder Hydraulics.

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23. Remove the plug from the top end of Lift Cylinder (42).
24. Install **HYD07046** Hydraulic Fitting (53). Apply thread sealant compound to the pipe threads on Hydraulic Fitting (53). Tighten fitting securely.
25. Remove **HYD01695** Hydraulic Hose (50) from the rear **HYD01620** Hydraulic Fitting (54).
26. Attach one end of Hydraulic Hose (50) to Hydraulic Fitting (53). Tighten connection securely.
27. Attach the top end of Lift Cylinder (42) to Coupler Assembly (1) using **HDW05563** Clevis Pin (104) and **HDW05544** Hairpin Cotter (103).
28. Connect the loose end of Hydraulic Hose (50) to the rear Hydraulic Fitting (54). Tighten connection securely.

## Snowplow Assembly Installation Procedure

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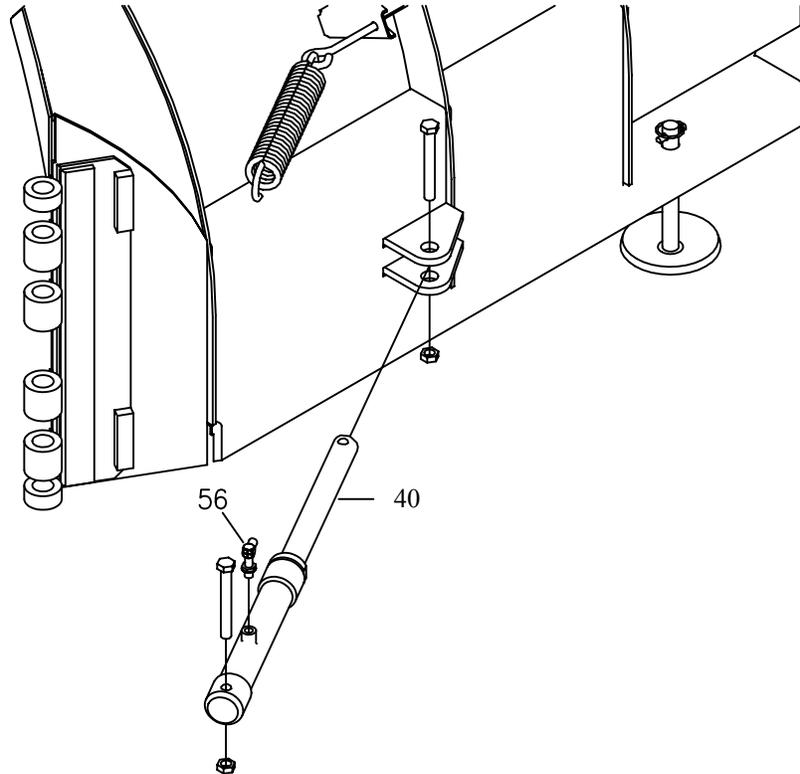
**Figure 6.** Assembly of Hydraulic Connections.

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29. Remove **HYD01620** Hydraulic Fitting (55) from the loose end of **HYD01695** Hydraulic Hose (50).
30. Install **HYD01620** Hydraulic Fitting (55) into the lower port of Lift Cylinder (42).
31. Attach one end of Hydraulic Hose (50) to Hydraulic Fitting (55) located in the lower port of Lift Cylinder (42). Attach the opposite end of Hydraulic Hose (50) to the center Hydraulic Fitting (54). Tighten connection securely.
32. Apply thread sealant compound (do not use Teflon Tape) to the threads of the 3/8" MNPT end of **HYD07042** 3/8" X 42" Hydraulic Hose (52). Thread the hose into the port on Angle Cylinder (40) and tighten securely.  
**Note:** Do not apply thread compound to the 1/4" end of the hose.  
**Note:** Do not get thread compound on the end of the hose since the compound will contaminate the hydraulic system.
33. Attach the loose end of **HYD07042** Hydraulic Angle Hose (52) to the corresponding fitting on the hydraulic manifold. Tighten all hydraulic connections securely.

## Snowplow Assembly Installation Procedure

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**Figure 7.** 10°V Plow Angle Cylinder Assembly.

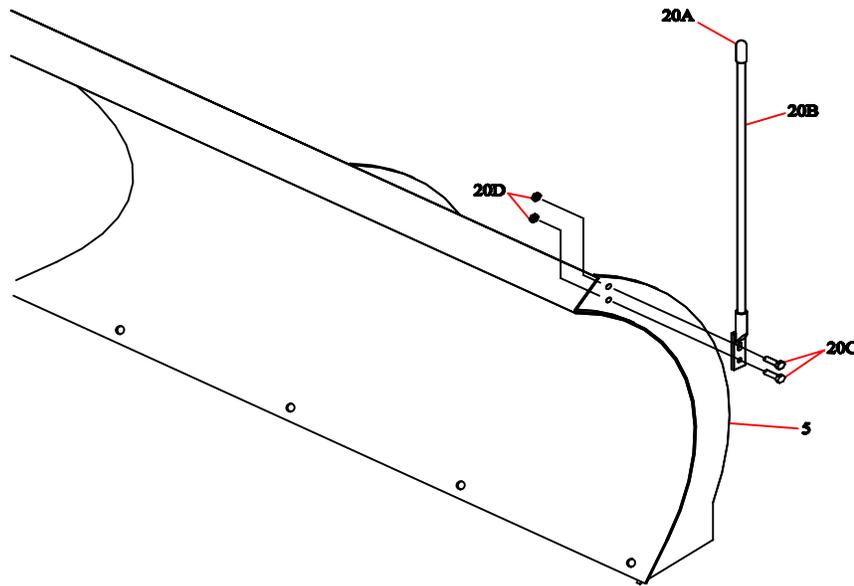
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**Note:** When assembling a 10' V-PLOW, **HYD07713** Long 90° Fitting (56) must be installed in the port on Angle Cylinder (40). The fitting must be positioned so that it points toward the rod end of Cylinder (40). This will allow clearance between Hydraulic Hose (52) and Center Section (2). This is illustrated above in Figure 7.

**Note:** Do **NOT** apply thread compound to Long 90° Fitting (56).

## Snowplow Assembly Installation Procedure

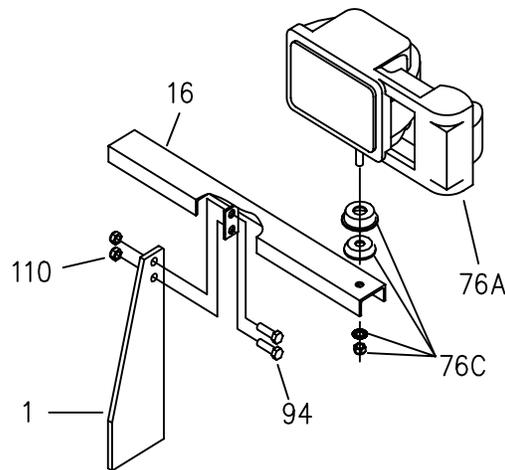
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**Figure 8.** Assembly of Blade Guides.

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34. Bolt Blade Guide (20B) to the end of each Blade Half using two 5/16"x1" Hex Head Bolts (20C) and two 5/8" Self-Locking Nuts (20D).
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**Figure 9.** Light Bar Assembly.

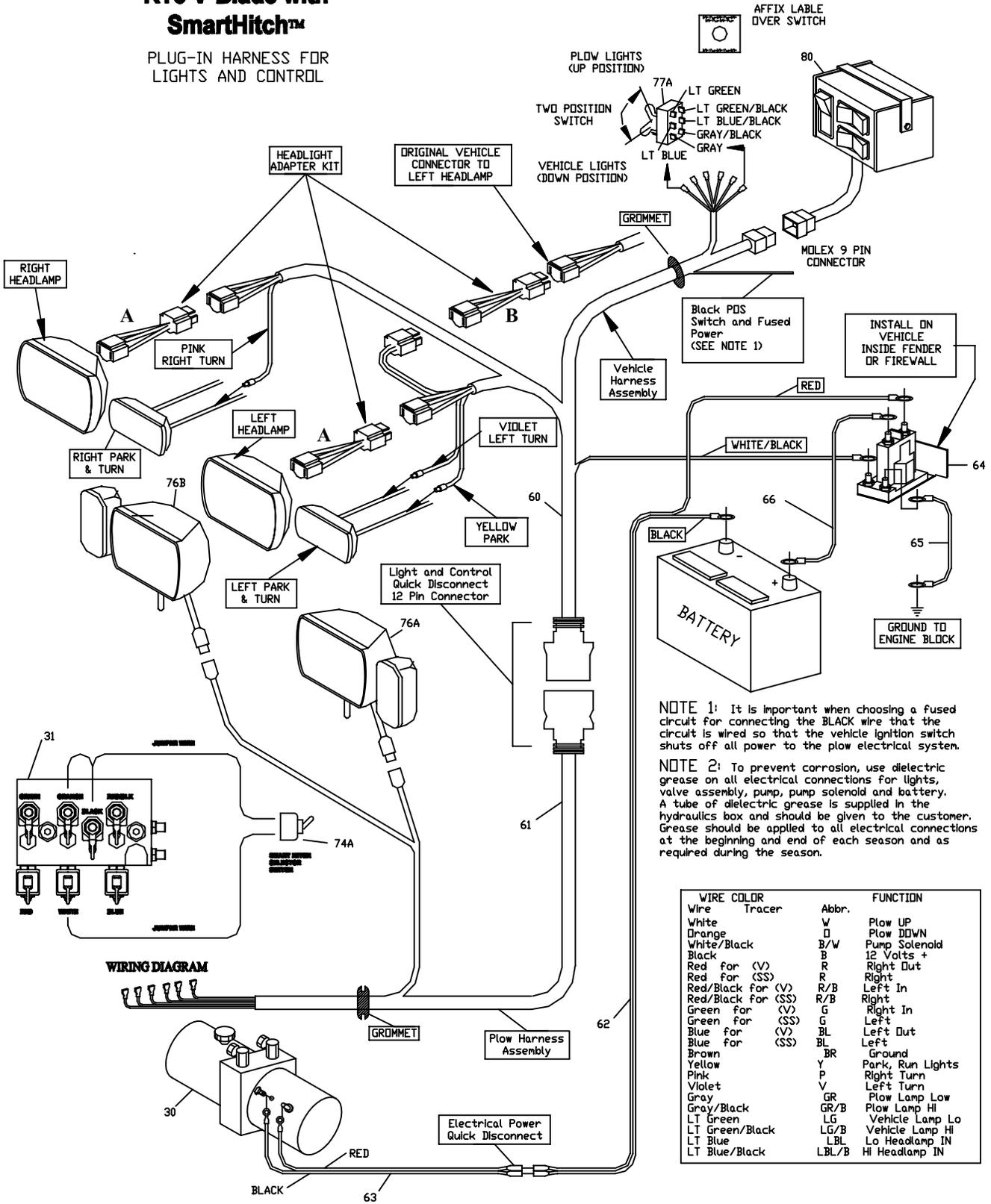
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35. Bolt **LBA04439** Light Bar (16) to the top of the Coupler Assembly (1) using two 3/8"-16 X 1 1/4" Hex Head Cap Screws (94) and two 3/8"-16 Self Locking Nuts (110). Repeat this process for the opposite side of Light Bar (16).
36. Bolt Left Headlight (76A) to the left end of Light Bar (16). Coat the headlight pigtail connector with dielectric grease and plug into the plow wiring harness connector marked 'Left Headlight'. Repeat for the Right Headlight.

# RT3 Power-V Blade with SmartHitch™ Wiring Diagram

## RT3 V-Blade with SmartHitch™

PLUG-IN HARNESS FOR LIGHTS AND CONTROL



NOTE 1: It is important when choosing a fused circuit for connecting the BLACK wire that the circuit is wired so that the vehicle ignition switch shuts off all power to the plow electrical system.

NOTE 2: To prevent corrosion, use dielectric grease on all electrical connections for lights, valve assembly, pump, pump solenoid and battery. A tube of dielectric grease is supplied in the hydraulics box and should be given to the customer. Grease should be applied to all electrical connections at the beginning and end of each season and as required during the season.

WIRE COLOR	Abbr.	FUNCTION
White	W	Plow UP
Orange	O	Plow DOWN
White/Black	B/W	Pump Solenoid
Black	B	12 Volts +
Red for (V)	R	Right Out
Red for (SS)	R	Right
Red/Black for (V)	R/B	Left In
Red/Black for (SS)	R/B	Right
Green for (V)	G	Right In
Green for (SS)	G	Left
Blue for (V)	BL	Left Out
Blue for (SS)	BL	Left
Brown	BR	Ground
Yellow	Y	Park, Run Lights
Pink	P	Right Turn
Violet	V	Left Turn
Gray	GR	Plow Lamp Low
Gray/Black	GR/B	Plow Lamp HI
LT Green	LG	Vehicle Lamp Lo
LT Green/Black	LG/B	Vehicle Lamp HI
LT Blue	LBL	Lo Headlamp IN
LT Blue/Black	LBL/B	Hi Headlamp IN

Figure 10. RT3 Wiring Diagram.

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## ***RT3 Power-V Blade with SmartHitch™ Wiring Procedure***

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**Note:** All Instructions below are illustrated in Figure 10.

1. Disconnect the left and right headlight connector plugs from the left and right vehicle headlights.
2. Connect both Sealed Beam Connectors (A) from the Headlight Adapter Kit into the vehicle headlights. Connect the opposite ends of Sealed Beam Connectors (A) to Wiring Harness (60).
3. Connect the 3 prong male plug on Wiring Harness (60) into Harness (B) of the Headlight Adapter Kit.
4. Connect the 3 prong male plug on Harness (B) into the Left Original Vehicle Connector.

**Note:** The Left Original Vehicle Connector is the connector that was disconnected from the left-hand vehicle headlight in Step 1.

5. Tape and secure the Right Original Vehicle Connector, which was removed from the right hand vehicle headlight. This connector is not used.
6. Referring to the wiring diagram, complete the wiring connections of the turn signals and parking lights to the vehicle electrical system using splice connectors. Identify all circuits with a test lamp.
7. Drill a 1-1/4" diameter hole in the firewall at the most convenient location and pull Wiring Harness (60) through the firewall from the engine compartment into the cab. Install the split rubber grommet in the hole cut into the firewall.
8. Connect the 6 female tab connectors to Toggle Switch (77A) as shown in Figure 10.
9. Select a suitable location in the dash to mount the toggle switch. Do not locate the switch in an area that may be hazardous to the occupant in the event of a crash. Drill a 1/2" diameter hole through the dashboard of the truck. Apply the switch identification label to the dash by removing the protective packing from the label and pressing the label over the switch hole. Make sure the switch is positioned with respect to the label so that the snowplow lamps are on when the toggle switch is in the upper position. Remove the knurled nut from the toggle switch. Insert the switch through the drilled hole and re-install the knurled nut and tighten securely.
10. Connect the BLACK wire in Wiring Harness (60) to an ignition switched circuit. When the vehicle ignition switch shuts off all power to the plow electrical system should also be shut off.
11. 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.
12. Connect the WHITE/BLACK wire in Wiring Harness (60) to the small terminal on Pump Solenoid (64).
13. Connect one end of Solenoid Ground Cable (65) to Pump Solenoid (64). Connect the opposite end of Solenoid Ground Cable (65) to a ground source on the vehicle. This is illustrated in Figure 10.
14. Attach the RED end of Power/Ground Cable (62) to Pump Solenoid (64).
15. Attach the BLACK end of Power/Ground Cable (62) to the negative battery terminal as shown in Figure 10.
16. Connect Battery Cable (66) from Pump Solenoid (64) to the positive battery terminal as shown in Figure 10.
17. Mount the Control Harness and the Power/Ground Cable to the lower area of the bumper using the mounting brackets provided. All wiring should be neatly secured to avoid any hot or moving parts.

18. Attach the snowplow to the vehicle. Check the AUXILLIARY PLOW LIGHTS for proper operation:
  - A. With the vehicle headlight switch in the ON position and the toggle switch in the lower position, only the vehicle headlights should be illuminated. With the toggle switch in the upper position, only the snowplow lights should be illuminated.
  - B. The foot dimmer switch or hand dimmer switch should select high and low beams on both the vehicle and plow headlights.
  - C. Turn signal lights should be on in the same sequence and at the same time as the vehicle turn signal lights.
  - D. Parking lights should be on at the same time as the vehicle parking lights. If any light does not operate correctly, re-check the wiring against the wiring diagram and make any necessary corrections in the wiring hookup.

### ***Hydraulic Power Unit Fill Procedure***

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1. Remove the clevis pin mounting the top end of the Lift Cylinder to the Coupler Assembly. Swing the Lift Cylinder forward, then remove the plastic Hydraulic Enclosure Cover. Re-attach the Lift Cylinder to the Coupler Assembly.
2. Manually attach the plow to the truck by pushing the Coupler Assembly towards the truck and engaging the Coupler Spring Pins.
3. Remove the Filler Cap from the Hydraulic Power Unit and fill with Boss High Performance Hydraulic Fluid. When filling the Hydraulic Power Unit for the first time start by pouring two quarts in the reservoir. (10'V Power Units start with 2 ½ quarts)
4. Raise and lower the plow 3 times.  
  
**Note:** If your plow will not lower, Flow Control Valve (31C) is completely closed. Refer to Step 8 to adjust Flow Control Valve (31C).
5. Extend and retract the right wing 3 times. Extend and retract the left wing 3 times.
6. Check the fluid level.
7. With both wings retracted and the plow lowered, add fluid until fluid registers on the filler cap dipstick. Add fluid to within ¾" from the top of the reservoir.

**WARNING: When adjusting Flow Control Valve (31) 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.**

8. Adjust **HYD07048** Flow Control Valve (31C) to obtain the speed desired for lowering the plow by loosening the jam nut, then adjusting the setscrew. Counter-clockwise adjustment will increase the speed the plow descends. Retighten the jam nut when the desired speed is obtained.
9. Remove the clevis pin mounting the top end of the Lift Cylinder to the Coupler Assembly. Swing the Lift Cylinder forward, then replace the plastic Hydraulic Enclosure Cover. Re-attach the Lift Cylinder to the Coupler Assembly.

## **Snowplow Headlight Alignment Procedure**

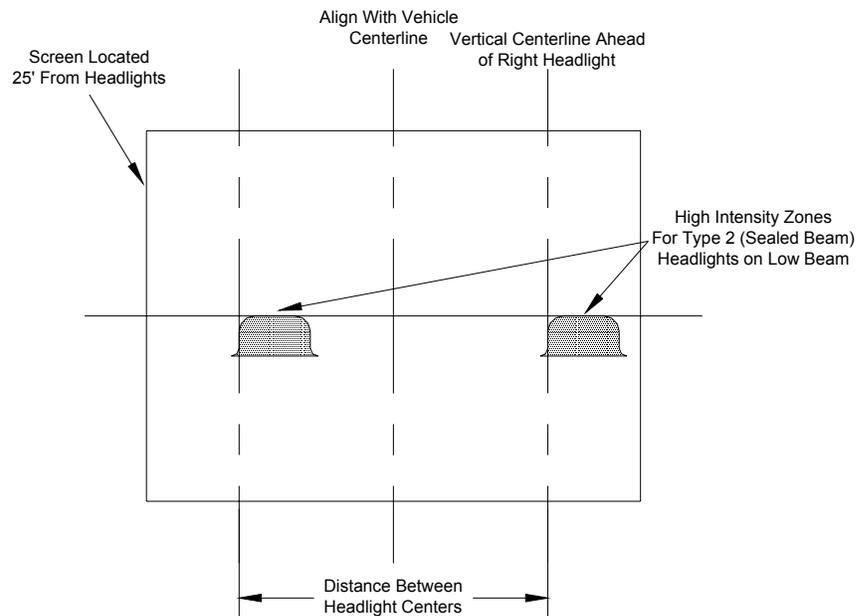
1. Place the vehicle on a level surface 25 feet in front of a matte-white screen, such as a garage door. The screen should be perpendicular to both the ground and the vehicle.
2. The vehicle should be equipped for normal operation. The snowplow blade should be in place and in the raised position. Below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

### Preparation for Headlight Aim or Inspection.

#### Before checking beam aim, the inspector shall:

1. Remove ice or mud from under fenders.
  2. See that no tire is noticeably deflated.
  3. Check vehicle springs for sag or broken leaves.
  4. See that there is no load in the vehicle other than the driver.
  5. Check functioning of any "level-ride" controls.
  6. Clean lenses and aiming pads.
  7. Check for bulb burnout, broken mechanical aiming pads, and proper beam switching.
  8. Stabilize suspension by rocking vehicle sideways.
3. 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).
  4. 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.

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



## Hydraulic Valve Manifold Parts List

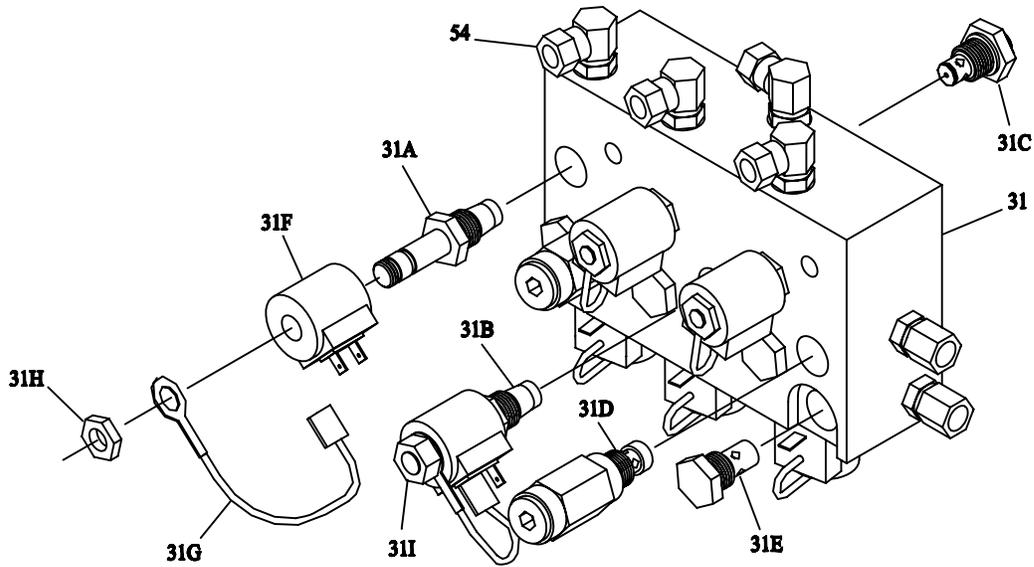


Figure 11. Hydraulic Valve Manifold Assembly.

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Ref.	Description	Part Number	Qty
31	Valve Manifold, RT3 V-Blade w/ SmartHitch	HYD07044	1
31A	Valve, Lift / Angle	HYD01637	6
31B	Valve, SmartHitch Attach	HYD07047	1
31C	Valve, Flow Control	HYD07048	1
31D	Valve, Relief V-Blade (2800psi)	HYD01639	2
31E	Valve, Check	HYD01640	4
31F	Valve Coil	HYD01638	7
31G	Valve Ground Strap	HYD01647	7
31H	Coil Nut	HYD07059	6
31I	Coil Nut (SmartHitch Valve)	HYD07060	1
54	Hydraulic Swivel Fitting	HYD01620	4

# RT3 Power-V Blade with SmartHitch™ Wiring Schematic

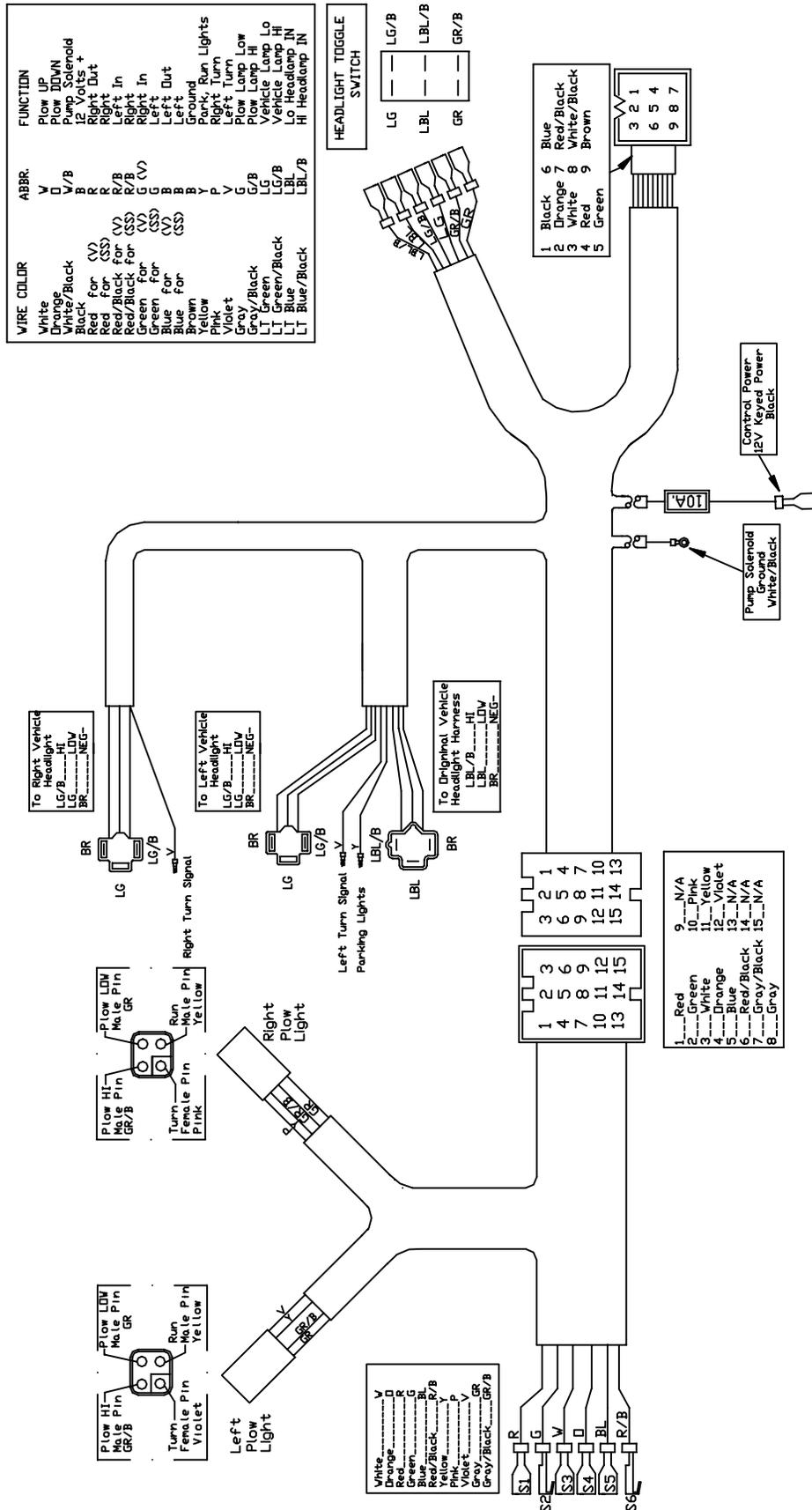


Figure 12. RT3 Wiring Schematic.

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# RT3 Power-V Blade with SmartHitch™ Assembly Drawing

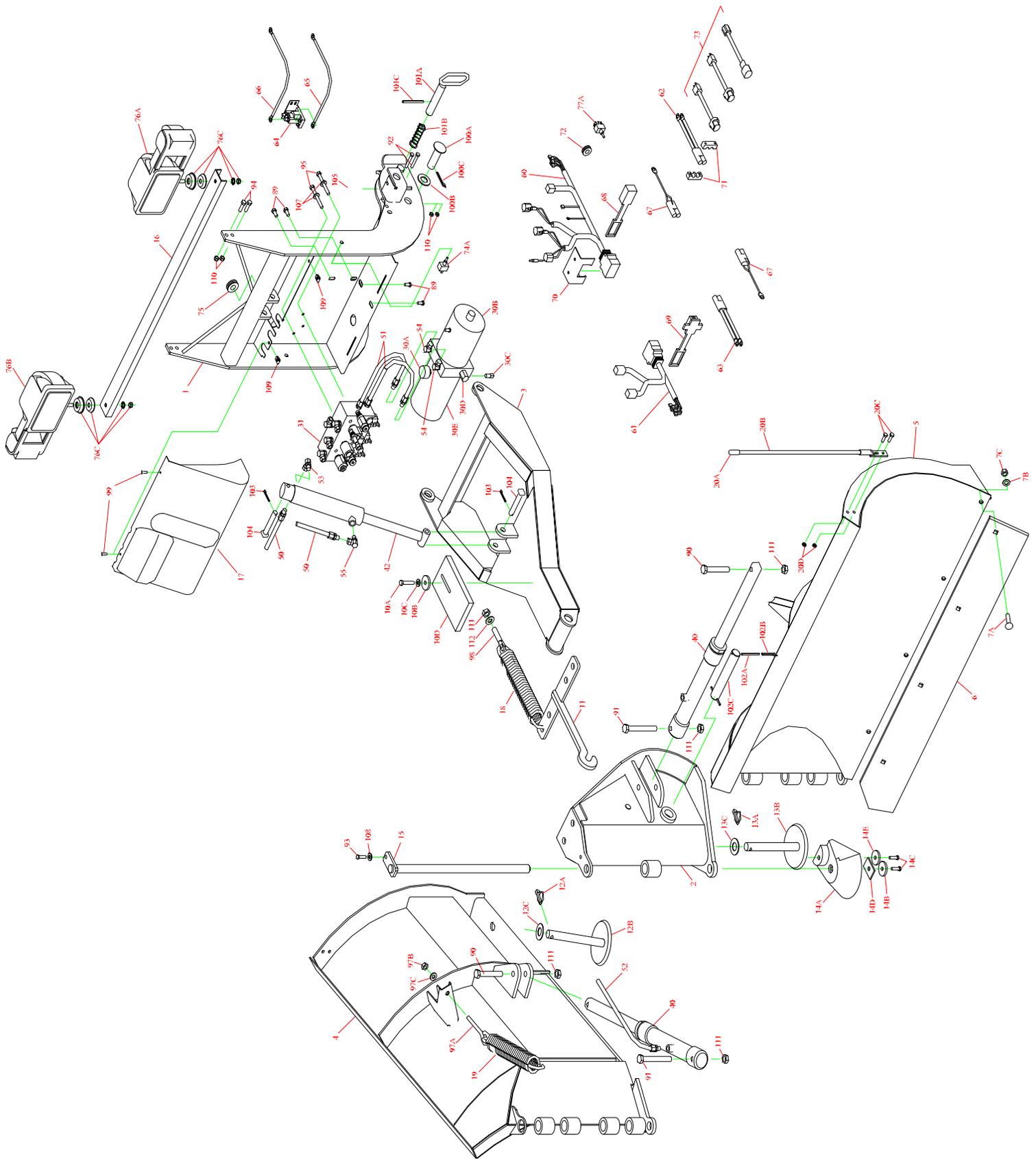


Figure 13. Power V-Blade Assembly Drawing.

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## RT3 Power-V Blade with SmartHitch™ Parts List

Reference Number	DESCRIPTION	PART NUMBER
<b>WELDMENTS</b>		
1	Coupler Assembly (7'6", 8'2", 9'2" RT3 V-Blade) Coupler Assembly (10' RT3 V-Blade)	CPA04437 CPA07698
2	Center Section (7'6", 8'2", 9'2" RT3 V-Blade) Center Section (10' RT3 V-Blade)	CHA01019 CHA07693
3	Push Frame (7'6", 8'2", 9'2" RT3 V-Blade) Push Frame (10' RT3 V-Blade)	TFR01311 PFR07678
<b>BLADES</b>		
4	Blade Half Right, 7'6" RT3 V-Blade Blade Half Right, 8'2" RT3 V-Blade Blade Half Right, 8'2" Poly RT3 V-Blade Blade Half Right, 9'2" RT3 V-Blade Blade Half Right, 10' RT3 V-Blade	BAR00204 BAR00302 BAR07533 BAR00404 BAR07691
5	Blade Half Left, 7'6" RT3 V-Blade Blade Half Left, 8'2" RT3 V-Blade Blade Half Left, 8'2" Poly RT3 V-Blade Blade Half Left, 9'2" RT3 V-Blade Blade Half Left, 10' RT3 V-Blade	BAL00604 BAL00702 BAL07500 BAL00804 BAL07692
<b>CUTTING EDGES</b>		
6	Cutting Edge, 7'6" V-Blade RT3 5/8" Holes Cutting Edge, 8'2" V-Blade RT3 5/8" Holes Cutting Edge, 9'2" V-Blade RT3 5/8" Holes Cutting Edge, 10' V-Blade RT3 5/8" Holes	BAX00097 BAX00098 BAX00099 BAX07627
7	Carriage Bolt Set	BAX00096
7A	Includes: (10) Carriage Bolts 5/8" – 11 X 2" Grade #5 ZN	
7B	(10) 5/8" Hardened Washers	
7C	(10) 5/8" Lock Nuts	
<b>PLOW COMPONENTS</b>		
10	Bumper Stop, with Mounting Hardware	MSC04254
10A	Includes: (1) Self-Tapping Bolt (3/8" – 16 X 2" Hex Washer Head ZN)	HDW05568
10B	(1) Fender Washer, 3/8" ID X 1-1/2" OD ZN	
10C	(1) Split Lock Washer, 3/8"	
10D	(1) Bumper Stop, Ctr Section RT3	
11	Spring Yoke (7'6", 8'2", 9'2" RT3 V-Blade) Spring Yoke (10' RT3 V-Blade)	MSC04200 MSC07679
12	Plow Shoe Assembly, Steel (Outer Shoe)	MSC01501
12A	Includes: (1) Quick Pin, 7/16"	MSC01503
12B	(1) Plow Shoe, (1" Shaft)	
12C	(20) Washers, 1" PLT	
13	Plow Shoe, Cast Iron (Center Shoe)	MSC01570
13A	Includes: (1) Quick Pin, 7/16"	MSC01503
13B	(1) Plow Shoe (1" Shaft), Cast Iron	
13C	(20) Washers, 1" PLT	
14	Snow Catcher w/ Mounting Hardware (7'6", 8'2", 9'2" RT3 V-Blade)	MSC04253
14A	Includes: (1) Snow Catcher (7'6", 8'2", 9'2" RT3 V-Blade)	
14B	(1) Washer, 3/8 Split Lock ZN	
14C	(2) Hex Head Cap Screws, 3/8" – 16 X 1-1/4" NC	
14D	(1) Snow Catcher Mounting Plate	
14E	(1) Washer, 3/8 Flat Plt	

## **RT3 Power-V Blade with SmartHitch™ Parts List**

### **PLOW COMPONENTS Cont.**

	Snow Catcher w/ Mounting Hardware (10' RT3 V-Blade)	MSC07657
	Includes: (1) Snow Catcher, 10' V, Low Profile	
	(1) Snow Catcher Mounting Plate	
	(1) Hex Head Cap Screw, 3/8" - 16 X 1-1/4" GR5	
	(1) Washer, 3/8 Flat PLT	
	(1) Washer, 1/2 Split Lock PLT	
	(1) Hex Head Cap Screw, 1/2" - 13 X 1-1/4" GR5	
15	Center Hinge Pin (7'6", 8'2", 9'2" RT3 V-Blade)	MSC01507
	Center Hinge Pin (10' RT3 V-Blade)	MSC07637
16	Light Bar Assembly (7'6", 8'2", 9'2" RT3 V-Blade)	LBA04439
	Light Bar Assembly (10' RT3 V-Blade)	LBA07665
17	Hydraulic Enclosure Cover (7'6", 8'2", 9'2" RT3 V-Blade)	CPA04423
	Hydraulic Enclosure Cover (10' RT3 V-Blade)	CPA07668
18	Spring, Trip (7'6", 8'2", 9'2" RT3 V-Blade)	MSC01509
	Spring, Trip (10' RT3 V-Blade)	MSC07705
19	Spring, Wing Return (7'6", 8'2", 9'2", 10' RT3 V-Blade)	MSC01509
20	Blade Guide Set	BAX00005
20A	Includes: (2) Blade Guide Tip	MSC01562
20B	(2) Blade Guides	
20C	(4) Hex Head Bolt, 5/16" X 1"	
20D	(4) Self Locking Nut, 5/16"	

### **HYDRAULIC POWER UNIT**

30	Hydraulic Pump – Power Unit Barnes (7'6", 8'2", 9'2" RT3 V-Blade)	HYD01710
	Hydraulic Pump – Power Unit Barnes (10' RT3 V-Blade)	HYD07695
	Includes the Following Commonly Ordered Parts	
30A	(1) Hydraulic Pump Filler Cap	HYD01636
30B	(1) Hydraulic Pump Motor – Barnes	MSC01563
30C	(1) Hydraulic Reservoir Drain Plug	HYD01712
30D	(1) Relief Valve	HYD01693
30E	(1) Hydraulic Reservoir, 2 quart (7'6", 8'2", 9'2" RT3 V-Blade)	HYD01731
	(1) Hydraulic Reservoir, 3 quart (10' RT3 V-Blade)	HYD07727
	(1) Seal Kit, Power Unit	HYD01670

### **HYDRAULIC VALVE ASSEMBLY**

31	Hydraulic Valve Assembly with SmartHitch	HYD07044
	Includes the Following Commonly Ordered Parts	
31A	Hydraulic Valve, Lift/Angle Cartridge	HYD01637
31B	Hydraulic Valve, SmartHitch Attach	HYD07047
31C	Hydraulic Valve, Flow Control Cartridge	HYD07048
31D	Relief Valve, V-Plow (2800 PSI)	HYD01639
31E	Check Valve	HYD01640
31F	Coil, Hydraulic Valve	HYD01638
31G	Ground Strap, Hydraulic Valve	HYD01647
31H	Nut, Coil	HYD07059
31I	Nut, Coil (SmartHitch Valve)	HYD07060

### **CYLINDERS & CYLINDER SEAL KITS**

40	Hydraulic Angle Cylinder (7'6", 8'2", 9'2" RT3 V-Blade)	HYD01603
	Seal Kit for Hydraulic Angle Cylinder HYD01603	HYD01659
	Hydraulic SmartLock Angle Cylinder (7'6", 8'2", 9'2" RT3 V-Blade)	HYD07034
	Seal Kit for Hydraulic SmartLock Angle Cylinder HYD07034	HYD07035
	Hydraulic Angle Cylinder (10' RT3 V-Blade)	HYD07610
	Seal Kit for Hydraulic Angle Cylinder HYD07610	HYD07688

## **RT3 Power-V Blade with SmartHitch™ Parts List**

### **CYLINDERS & CYLINDER SEAL KITS Cont.**

42	Hydraulic Lift Cylinder (7'6", 8'2", 9'2" RT3 V-Blade)	HYD07013
	Seal Kit for Hydraulic Lift Cylinder HYD07013	HYD07025
	Hydraulic Lift Cylinder (10' RT3 V-Blade)	HYD07649
	Seal Kit for Hydraulic Lift Cylinder HYD07649	HYD07686

### **HOSES & FITTINGS**

50	Hydraulic Hose (Lift & SmartHitch) 1/4" X 15-1/2" (1/4" MNPT X 1/4" MNPT) (7'6", 8'2", 9'2", 10' RT3 V-Blade)	HYD01695
51	Hydraulic Hose (Power Unit to Manifold) 1/4" X 15" (1/4" ORB X 1/4" MNPT) (7'6", 8'2", 9'2", 10' RT3 V-Blade)	HYD07020
52	Hydraulic Hose (Angle) 3/8" X 42" (1/4" MNPT X 3/8" MNPT) (7'6", 8'2", 9'2" V-Blade)	HYD07042
	Hydraulic Hose (Angle) 3/8" X 44" (1/4" MNPT X 3/8" FJIC) (10' RT3 V-Blade)	HYD07714
53	Hydraulic 90 Deg. Fitting (SmartHitch) (1/8" MNPT X 1/4" FNPT) (7'6", 8'2", 9'2" RT3 V-Blade)	HYD07046
	Hydraulic Swivel Fitting, 90 Deg. (SmartHitch) (1/4" ORS X 1/4" FPS) (10' RT3 V-Blade)	HYD01620
54	Hydraulic Swivel Fitting, 90 Deg. (Manifold) (1/4" ORS X 1/4" FPS) (7'6", 8'2", 9'2", 10' RT3 V-Blade)	HYD01620
	Hydraulic Long 90 Deg. Fitting (Angle Cylinder) (3/8" JIC X 3/8" O-Ring) (10' RT3 V-Blade)	HYD07713
55	Hydraulic Swivel Fitting, 90 Deg. (Lift Cylinder) (1/4" ORS X 1/4" FPS) (7'6", 8'2", 9'2", 10' RT3 V-Blade)	HYD01620

### **ELECTRICAL**

60	Light and Control Harness 116" (Vehicle Side)	MSC03742
61	Light and Control Harness 48" (Plow Side)	MSC03741
62	Power/Ground Cable 60" (Vehicle Side)	HYD01684
63	Power/Ground Cable 36" (Plow Side)	HYD01690
64	Solenoid, Hydraulic Pump	HYD01633
65	Ground Cable, Hydraulic Pump Solenoid	MSC01595
66	Battery cable, 66"	MSC01515
67	Power/Ground Cable Dust Cap/Plug (Vehicle & Plow)	MSC03721
68	Weather Cap for Light & Control Harness (Vehicle Side)	MSC03743
69	Weather Cap for Light & Control Harness (Plow Side)	MSC03744
70	Control Harness Mounting Bracket	MSC03813
71	Power Ground Cable Mounting Bracket	MSC03491
72	Rubber Split Grommet, 1-1/8"	MSC03761
73	Headlight Adapter Kit	
74	SmartHitch Toggle Switch Kit (Includes Switch and Jumpers)	MSC04252
74A	Includes: (1) Switch, SmartHitch Toggle	MSC04218
74B	(1) Wiring Harness, SmartHitch 2 Connector	
74C	(1) Wiring Harness, SmartHitch 3 Connector	
74D	(1) Switch Boot, SmartHitch	
75	Rubber Grommet - for control harness in coupler tower	MSC03456
76	Auxiliary Headlight Set, Low Profile Plastic with Hardware	MSC03747
76A	Includes: (1) Auxiliary Headlight, Left, Low Profile Plastic	MSC04233
76B	(1) Auxiliary Headlight, Right, Low Profile Plastic	MSC04234
76C	(2) Headlight Mounting Hardware	HDW05590
	Other Commonly Ordered Headlight Parts	
	(1) Turn Signal Cover, Low Profile Plastic	MSC04255
	(1) Headlight Bezel	MSC04541
	(1) Headlight Bulb	MSC04289
77	Light Switch Connector Pack	MSC04053
77A	Includes: (1) Switch, Aux Light Toggle	MSC03740
	(3) Scotch Lock, 16GA with Female Socket	
	(1) Flasher, Heavy Duty Vehicle	

## **RT3 Power-V Blade with SmartHitch™ Parts List**

### **CONTROLLERS**

80	Switch Box Control, V-Blade	HYD01691
80A	Includes: Rocker Switch – Lift	HYD01622
80B	Rocker Switch – Angle	HYD01623
81	Joystick Control, V-Blade	MSC03809
82	SmartTouch, Hand Held Control, V-Blade	MSC04544

### **BOLTS**

90	Hex Head Cap Screw, 5/8" – 11 X 4-1/2" GR5 ZN (7'6", 8'2", 9'2" RT3 V-Blade) (Cylinder Mount)	HDW01705
	Hex Head Bolt, 1" – 8 X 4" GR8 ZN (10' RT3 V-Blade) (Cylinder Mount)	HDW07703
91	Hex Head Cap Screw, 5/8" – 11 x 5-1/2" GR5 ZN (7'6", 8'2", 9'2" RT3 V-Blade) (Cylinder Mount)	HDW05534
	Hex Head Bolt, 1" – 8 X 4" GR8 ZN (10' RT3 V-Blade) (Cylinder Mount)	HDW07703
92	Hex Head Cap Screw, 3/8" – 16 X 2-1/4" (7'6", 8'2", 9'2" RT3 V-Blade) (Torsion Spring)	HDW05521
	Hex Head Cap Screw, 3/8" – 16 X 3-1/4" (10' RT3 V-Blade) (Torsion Spring)	HDW05573
93	Hex Head Cap Screw, 3/8" – 16 X 1-1/4" (7'6", 8'2", 9'2" RT3 V-Blade) (Center Hinge Pin)	HDW01771
	Hex Head Cap Screw, 1/2" – 13 X 1" (10' RT3 V-Blade) (Center Hinge Pin)	HDW01781
94	Hex Head Cap Screw, 3/8" – 16 X 1-1/4" (7'6", 8'2", 9'2", 10' RT3 V-Blade) (Light Bar Assembly)	HDW01771
95	Hex Head Cap Screw, 3/8" – 16 X 3-1/4" (10' RT3 V-Blade) (Manifold Mount)	HDW05573
97	Eye Bolt Set, 1/2" X 6" with Nuts and Washers (Wing Return Spring) (7'6", 8'2", 9'2", 10' RT3 V-Blade)	HDW01744
97A	Includes: (2) Eye Bolt, 1/2" X 6" PLT	HDW01700
97B	(2) Nuts 1/2"	
97C	(2) Washers 1/2"	
98	Eye Bolt, 5/8" X 4" (7'6", 8'2", 9'2" RT3 V-Blade) (Trip Spring)	HDW05601
	Eye Bolt, 1/2" X 6" PLT (10' RT3 V-Blade) (Trip Spring)	HDW01700
99	Thumb Screw, 10 – 24 X 1/2"	HDW05574

### **PINS, NUTS, CLAMPS, WASHERS, and SPRINGS**

100	Pivot Pin, Kit (7'6", 8'2", 9'2" RT3 V-Blade)	MSC04251
100A	Includes: (1) Pivot Pin RT3 1" X 2-1/2"	CPA04431
100B	(1) Washer, 1" PLT	
100C	(1) Cotter Pin, 3/16 X 2-1/2 PLT	
	Pivot Pin, Kit (10' RT3 V-Blade)	MSC07697
	Includes: (1) Pivot Pin RT3 1-1/2" X 3-5/8" (1) Hex Head Cap Screw 5/16"-18 x 2" GR5 ZN (1) Nut, 5/16"-18 NY/INS Lock ZN	
101	Coupler Spring Pin Kit (7'6", 8'2", 9'2" RT3 V-Blade)	MSC03808
101A	Includes: (1) Coupler Spring Pin	CPA04436
101B	(1) Coupler Spring Pin Spring	CPA04430
101C	(1) Rolled Pin	HDW05538
	Coupler Spring Pin Kit (10' RT3 V-Blade)	MSC07699
	Includes: (1) Coupler Spring Pin (1) Coupler Spring Pin Spring (1) Rolled Pin	CPA07639 CPA07674 HDW05538
102	Horizontal Hinge Pin Kit (7'6", 8'2", 9'2" RT3 V-Blade)	MSC04250
102A	Includes: (2) Roll Pin, 1/4" X 2-1/2" PLT	
102B	(2) Cotter Pin, 1/8" X 3" ZN	
102C	(1) Pin, Horizontal Hinge, 1-1/4" X 7"	

## RT3 Power-V Blade with SmartHitch™ Parts List

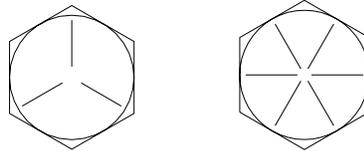
### PINS, NUTS, CLAMPS, WASHERS, and SPRINGS Cont.

	Horizontal Hinge Pin Kit (10' RT3 V-Blade)	MSC07694
	Includes: (2) Roll Pin, 1/4" X 2-1/2" PLT	
	(2) Cotter Pin, 1/8" X 3" ZN	
	(1) Pin, Horizontal Hinge, 1-1/2" X 7"	
103	Hairpin Cotter, #16	HDW05544
104	Clevis Pin, 5/8" X 3-1/2" (7'6", 8'2", 9'2" RT3 V-Blade)	HDW05563
	Clevis Pin, 3/4" X 3-3/4" (10' RT3 V-Blade)	HDW07682
105	Spring, SmartHitch Torsion (7'6", 8'2", 9'2" RT3 V-Blade)	MSC04227
	Spring, SmartHitch Torsion (10' RT3 V-Blade)	MSC07673
107	Washer, 3/8" Split Lock	HDW01718
108	Washer, 3/8" Split Lock (7'6", 8'2", 9'2" RT3 V-Blade) (Center Hinge Pin)	HDW01718
	Washer, 1/2" Split Lock, (10' RT3 V-Blade) (Center Hinge Pin)	HDW01732
109	Nut, Cage 10-24 PLT Black	HDW05546
110	Nut, Self Locking 3/8" – 16	HDW01720
111	Nut, Self-Locking 5/8" (7'6", 8'2", 9'2" RT3 V-Blade) (Cylinder Mount)	HDW01709
	Nut, Self-Locking 1" – 8 (10' RT3 V-Blade) (Cylinder Mount)	HDW07704
112	Washer, 5/8" Flat PLT. (7'6", 8'2", 9'2" RT3 V-Blade) (Trip Springs)	HDW05556
	Washer, 1/2" Flat PLT. (10' RT3 V-Blade) (Trip Springs)	HDW01729
111	Nut, Self-Locking 5/8" (7'6", 8'2", 9'2" RT3 V-Blade) (Trip Springs)	HDW01709
	Nut, Self-Locking 1/2" – 8 (10' RT3 V-Blade) (Trip Springs)	HDW01748

### OPTIONS & ACCESSORIES

115	Snow Deflector (all models)	MSC01565
116	Boss High Performance Hydraulic Fluid – Case (12 per)	HYD01704
117	Red Touch-Up Spray Paint (12oz.)	MSC04098
118	Dielectric Grease (2 oz.)	MSC03423

## Recommended Bolt Torque



Dia. / Pitch	Grade 5	Grade 8
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