

SNOWPLOW

***POWER-V
(WITH RAPID-TACH II™)***

OWNER'S MANUAL

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

BOSS PRODUCTS

M.J. ELECTRIC, INC.

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MSC03911 Rev. 0
1999 - 2000

TABLE OF CONTENTS

WARNINGS.....	1
INTRODUCTION.....	2
OPERATION	3
TIPS ON PLOWING SNOW.....	4
SNOWPLOW MOUNTING PROCEDURE.....	5
SNOWPLOW REMOVAL PROCEDURE	5
MAINTENANCE	6
PUTTING PLOW INTO STORAGE.....	6
TAKING PLOW OUT OF STORAGE.....	7
HYDRAULICS AND ELECTRICAL SYSTEM.....	11
PARTS LIST	16
TROUBLESHOOTING GUIDE.....	18
TORQUE CHART.....	INSIDE COVER
WARRANTY	21 & 22

GUIDE TO RECOMMENDED ASSEMBLY TORQUE

All Torque Values Are In Foot-Pounds (Ft. - Lb.)



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

* 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.

NOTE: IT IS IMPORTANT THAT ALL FASTENERS BE PROPERLY TORQUED TO ASSURE A SAFE OPERATING PLOW.

Figure 13



COMMERCIAL WARRANTY

What the warranty covers:

This warranty covers defects in material and workmanship except as set forth below.

Who is covered:

The original purchaser from an authorized dealer.

For how long:

Parts: One year from the date of purchase.

Labor: One year from the date of purchase.

What BOSS PRODUCTS will do:

BOSS PRODUCTS will, at its sole option, repair or replace defective parts at no charge.

What you must do for warranty service:

To obtain warranty service, you must return the defective snowplow to any authorized BOSS PRODUCTS dealer (preferably the one from whom the snowplow was purchased) within the warranty period. Purchaser must be able to verify the original purchase date. All transportation costs to and from the dealer will be the responsibility of the purchaser. To locate the authorized BOSS dealer nearest to you, call toll free: (800) 286-4155.

What is not covered:

This warranty does not cover:

1. Expendable parts such as hoses, plow shoes, cutting edges, pins, nuts, bolts, blade guides, etc.
2. Snowplows or parts repaired or altered by anyone other than an authorized BOSS PRODUCTS dealer.
3. Snowplows or parts which have been subject to misuse; negligence; accident; or improper installation, maintenance, care or storage.
4. Snowplows mounted on vehicles other than those listed in the BOSS SNOWPLOW APPLICATION CHART AND SELECTION GUIDE.
5. BOSS PRODUCTS does not assume any liability for damage to your motor vehicle resulting from the attachment or use of a BOSS PRODUCTS snowplow. Vehicle risk is the sole responsibility of the purchaser.

Limits of Boss Products Liability are:

BOSS PRODUCT'S LIABILITY IS EXPRESSLY LIMITED TO REPAIR OR REPLACEMENT OF DEFECTIVE PARTS. BOSS PRODUCTS SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL OR CONTINGENT DAMAGES WHATSOEVER. EVEN IF DAMAGES ARE CAUSED BY THE NEGLIGENCE OR FAULT OF BOSS PRODUCTS.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

This warranty does not apply if you purchased your snowplow for personal, family, or household use. In this case, refer to the BOSS Snowplow Limited Consumer Warranty.

BOSS PRODUCTS is a division of

M.J. Electric, Inc.
P.O. Box 686
North U.S. Hwy 2
Iron Mountain, MI 49801



ALWAYS FOLLOW THE VEHICLE MANUFACTURERS RECOMMENDATIONS RELATING TO SNOWPLOW INSTALLATION. FOR RECOMMENDED VEHICLE MODELS, REFER TO THE BOSS SNOWPLOW APPLICATION CHART AND SELECTION GUIDE.

WARNING

Many newer model trucks are now equipped with airbags. DO NOT under any circumstances disable, remove or relocate any sensors or other components related to the operation of the air bags.

WARNING

Vehicles equipped with air bags are designed such that 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.

WARNING

Make sure plow is properly attached before moving vehicle.

WARNING

Be sure blades are in the Vee Position with both wings back before performing maintenance work on plow or disconnecting plow from truck. Springs could snap wings back if Hydraulic Valve fails, resulting in serious injury. Also, Extended Cylinder Rods are subject to corrosion.

WARNING

DO NOT exceed 40 MPH when transporting plow.

WARNING

DO NOT exceed 14 MPH when plowing.

WARNING

Always lower blade when vehicle is not in use.

WARNING

Read this manual carefully before operating this snowplow.



A REVOLUTION AGAINST SNOW

Congratulations for selecting the BOSS SNOWPLOW. Each BOSS SNOWPLOW sports unique features that will save you time and money. You can be assured that you will enjoy a return on your investment each time you plow snow.

Your BOSS SNOWPLOW is intended to be mounted on a properly equipped 4-wheel drive vehicle. Consult your dealer or vehicle manufacturer for their recommendations as to vehicle specifications and options.

The BOSS SNOWPLOW has been carefully designed and built for years of carefree performance. With its remote controlled disconnect feature the BOSS can be attached or removed in seconds. For safety, the BOSS includes automatic cylinder pressure relief to prevent damage by overstress. Where A-Frame and moldboard fatigue are a common problem on conventional plows, the BOSS PLOW's heavy duty T-Frame, along with its high strength Boxed Section Moldboard, will stand up to the most severe plowing conditions.

To keep your BOSS PLOW in top shape, take a few minutes to study this manual. It will show you how to use and service the BOSS, familiarize you with all of its parts, and give you helpful tips on plowing snow.

If you have further questions, your local BOSS PLOW DEALER is the person to talk to. They know your plow well and want your complete satisfaction.

OPERATION

After a few minutes of practice, you will be operating the controls without a second thought. You can adjust the hinged blade of the BOSS PLOW to any of the positions shown below or any degree of these positions. When will you want to use each of these positions? Here are some guidelines:

- VEE:** For making a first pass through heavy snow or large drifts. Ideal for slicing a lane through long driveways or punching through banks left by city or county plows. Because the snow load is equally distributed on both sides of the vee, your truck is not pushed or pulled sideways as with conventional blades.
- ANGLE:** For widening roads and driveways where you want to push the snow off to the side. This and the straight position are not effective for carrying large amounts of snow forward, as the snow tends to dribble off in windrows.
- STRAIGHT:** Used for back blading. Example, you can remove snow from the edge of a building by raising the blade, driving up to the building, dropping the blade and then backing up.
- SCOOP:** For clearing parking lots or large areas where snow must be carried away, not merely pushed aside. Snow piles up in the center so that the plow can carry up to three times the volume of snow as it can in the straight position.

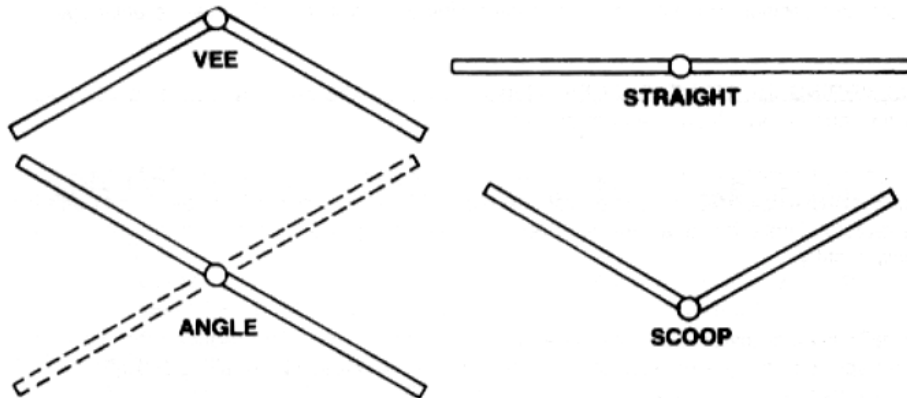


Figure 1

TIPS ON PLOWING SNOW

With little experience, you will develop your own methods for plowing snow and know exactly which plow position to use for each pass. Here are some things to keep in mind.

OBSTRUCTIONS: Make sure you know where bumper stops, curbs, fire hydrants, fences, pipes, etc. are hidden. If necessary, mark them with flags to avoid possible damage to your plow or vehicle.

HEAVY SNOW: Use the vee position to make your first cut through heavy drifts or banks. Thereafter, use the scoop or angle positions to widen the cut, shearing off as much as you can handle on each pass. In very deep snow, you may have to raise the blade slightly and shear off the top layer first.

WET SNOW: Once you've begun, finish the job. Wet snow left in windrows overnight can freeze into tank traps by morning.

PARKING LOTS: Depending on snow depth, you may choose to make several sweeps with the blade angled and then pick up the windrow with the blade in the scoop position, or do the entire job with the blade in the scoop position.


AROUND BUILDINGS: Where necessary, back blade snow away from buildings. Put the blade in the straight position, raise it and drive to the building, then drop the blade and back up.

MANEUVERING IN TIGHT PLACES: Raise the blade and put it into the vee position. This gives you much more clearance to maneuver.

ENGINE OVERHEATING: Occasionally, the plow may be in a position where it cuts off air flow to the radiator. While this is a rare occurrence, it can usually be corrected by raising or lowering the plow slightly.

PARKING: Always lower the blade when parking your vehicle. This reduces the load on your vehicle's springs and guards against any potential mishap caused by a falling snowplow.

SNOWPLOW MOUNTING PROCEDURE


-  **STEP 1**
- Remove the electrical dust covers.
 - Level the coupler mounting jaws so they are parallel with the ground (see note 1 below).
 - Adjust the kickstand so that the top of the coupler jaw is approximately 1/2" higher than the bottom of the pushbeam rod. (See Figure 2)
 - Line up your vehicle and drive slowly straight in until the pushbeam has fully engaged the coupler.
- STEP 2**
- Push the latch handle to the locked position and secure with the safety snap pin provided. If the latch handle does not easily move into position, the push beam has not fully engaged the coupler.
 - Connect the electrical plugs.
- STEP 3**
- Raise the plow.
 - Pull the kickstand spring pin, rotate the kickstand to the up position, then release the spring pin to lock the stand in the up position.

NOTE 1: If you have difficulty adjusting the coupler mounting jaws so they are parallel with the ground, do the following:

- Drive up close to the snowplow.
- Connect the electrical plugs.
- Put the up/down control switch in the down (float) position with the ignition switch on.
- Push on the light bracket to level the coupler mounting jaws.

NOTE 2: Do not force the coupler latch handle into the locked position. If the handle does not lock easily, the push beam rod is not all the way into the coupler.

SNOWPLOW REMOVAL PROCEDURE

- STEP 1**
- Raise the plow.
 - Pull the kickstand spring pin, rotate the kickstand to the down position, then release the spring pin to lock the kickstand in the down position.
- STEP 2**
- Put the plow in the V Position.
 - Place the snowplow control button in the float position and drive forward slightly.
 - Push the light bracket towards the vehicle grill to level the coupler mounting jaws.
 - Disconnect the electrical plugs and install the electrical dust covers.
 - Remove the safety snap pin and pull the latch handle to the unlock position.
-  **STEP 3**
- Carefully back out of the snowplow.

MAINTENANCE

Your BOSS PLOW is designed for heavy-duty, rugged service with minimal maintenance. To ensure that it gives you the same high performance year after year, use it properly and observe the following maintenance precautions.

INSPECTION

Inspect the following on a regular basis:

- All fasteners, pins, retainers, nuts and bolts for tightness. See Torque Chart (inside front cover).
- All hydraulic lines and connections for wear and leakage.
- Hydraulic cylinders for leakage, rods for rust or pitting.
- Center hinge pin retaining bolt for tightness. (Item 70, Fig. 4)
- Cutting edge wear.
- Plow shoe wear.
- Hydraulic oil level (CAUTION: DO NOT OVERFILL). Fill hydraulic pump reservoir to within 3/4" from top using BOSS High Performance Hydraulic Fluid or equivalent.
- Change the Hydraulic Fluid at least once each year.

LUBRICATION

Lubricate the hinge pin with grease when taking the plow out of storage and once a month during the season. (See Fig. 5)

Drain the hydraulic reservoir after each season and refill with BOSS High Performance Hydraulic Fluid or equivalent.

Clean the pump switch cable connector and apply dielectric grease at 1 month intervals during the plowing season.

PUTTING PLOW INTO STORAGE

1. Drive the snowplow to a storage site. Draw the wings back to their maximum V-position so that the hydraulic cylinders are fully retracted. Follow the normal procedure for dismounting from the plow, being sure to fully level the coupler by pushing the lift tower toward the grill of the vehicle.

IMPORTANT

Make sure that the blade cylinders remain fully retracted during the removal operation. An exposed rod is subject to rust and corrosion.

2. Disconnect all electrical plugs and coat each connection with dielectric grease. Install all dust caps and plugs provided.
3. Place the Rapid-Tach II™ latch handle in the unlocked position then carefully back out of the snowplow.
4. Touch-up any rust spots or chipped paint.
5. Loosen the return springs.

6. Lubricate the vertical hinge pin and coupler mounting jaws (Fig. 2 & 5).
7. Push the lift tower forward until the lift cylinders are completely compressed. This will protect the lift cylinders from corrosion.

TAKING PLOW OUT OF STORAGE

1. Check all fasteners for tightness. See torque chart (inside front cover).
 2. Push the lift tower away from the blades to prepare the plow for mounting to the vehicle.
 3. Check hydraulic hoses for cracks and leaks.
 4. Check hydraulic oil level (CAUTION: DO NOT OVERFILL). Fill hydraulic pump reservoir to within 3/4" from top using BOSS High Performance Hydraulic Fluid or equivalent.
 5. Tighten springs.
 6. Coat each electrical connection with dielectric grease (lights, valve assembly, pump, pump solenoid and battery).
- NOTE:** *Dielectric grease should be applied at the beginning and end of each season and every month during the season.*
7. Lubricate the hinge pin (Fig. 5) and the coupler mounting jaws (Fig. 2).

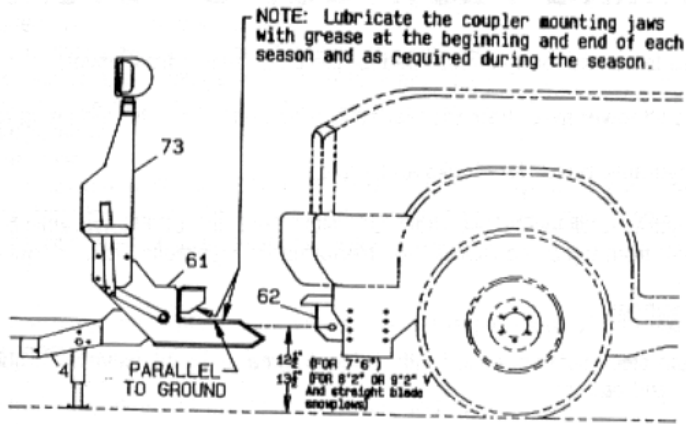


Figure 2

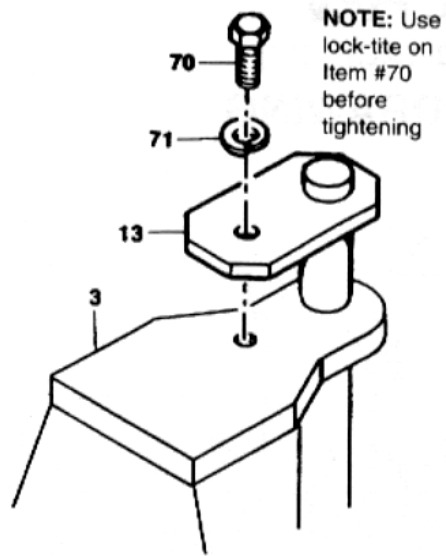


Figure 4

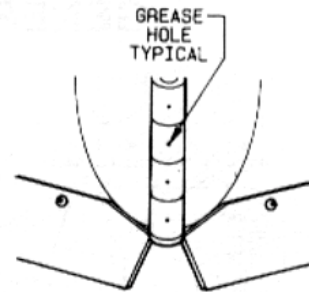


Figure 5

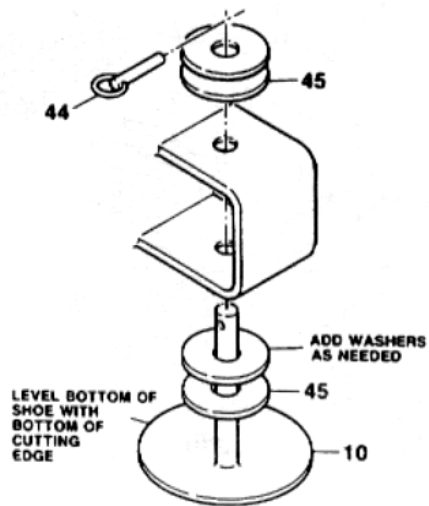


Figure 6

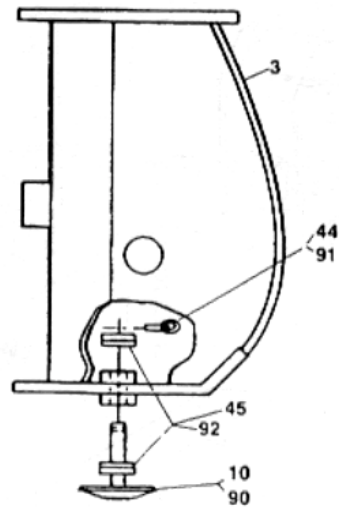


Figure 7

HYDRAULIC SYSTEM GENERAL SCHEMATIC (RAPID-TACH II, V-PLOW)

REF. NO.	DESCRIPTION	PART NO.	QTY.
14	Hydraulic Power Unit	HYD1710	1
15	Hydraulic Valve Assembly	HYD1602	1
17	Hydraulic Cylinder, Angle (V)	HYD1603	2
18	Hydraulic Hose (1/4" X 18")	HYD1606	2
18 A	Hydraulic Hose (1/4" X 12")	HYD1696	1
18 B	Hydraulic Hose (1/4" X 15 1/2")	HYD1695	2
22	Hydraulic Hose (3/8" X 48")	HYD1707	2
25	Hydraulic Cylinder, Lift	HYD1680	2
25 A	Hydraulic Fitting (Tee)	HYD1682	1
29	Straight Swivel, 3/8" Male, 3/8" Female	HYD1711	2
32	90 Degree Swivel "O" Ring	HYD1620	4
52	Flow Control Valve	HYD1624	1

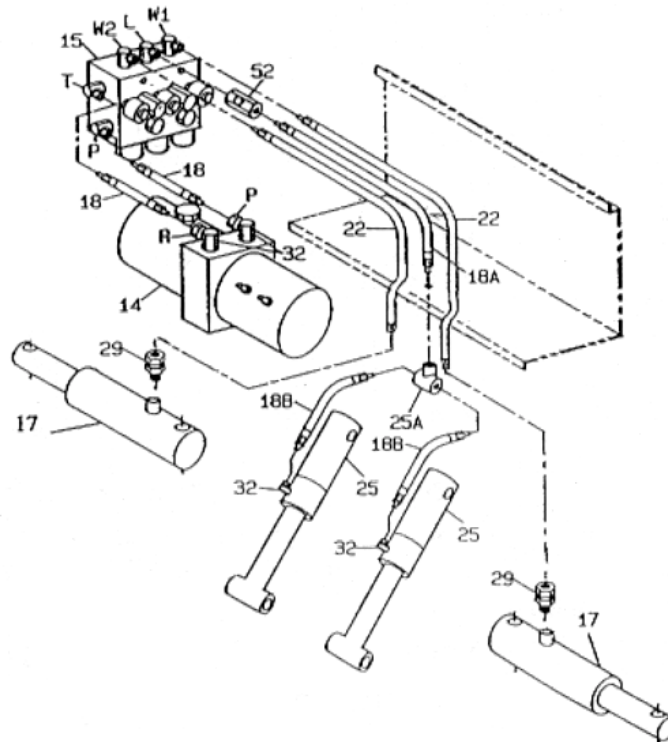


Figure 8
11

HYDRAULIC VALVE ASSEMBLY PARTS LIST

REF. NO.	DESCRIPTION	PART NO.	QTY.
15	Hydraulic Valve Assembly (V)	HYD1602	1
15 A	Valve	HYD1637	6
15 B	Coil	HYD1638	6
15 C	Relief Valve (V) 2800 PSI	HYD1639	2
15 D	Check Valve	HYD1640	3
15 E	Screen Cartridge	HYD1641	1
15 F	Ground Strap	HYD1647	6

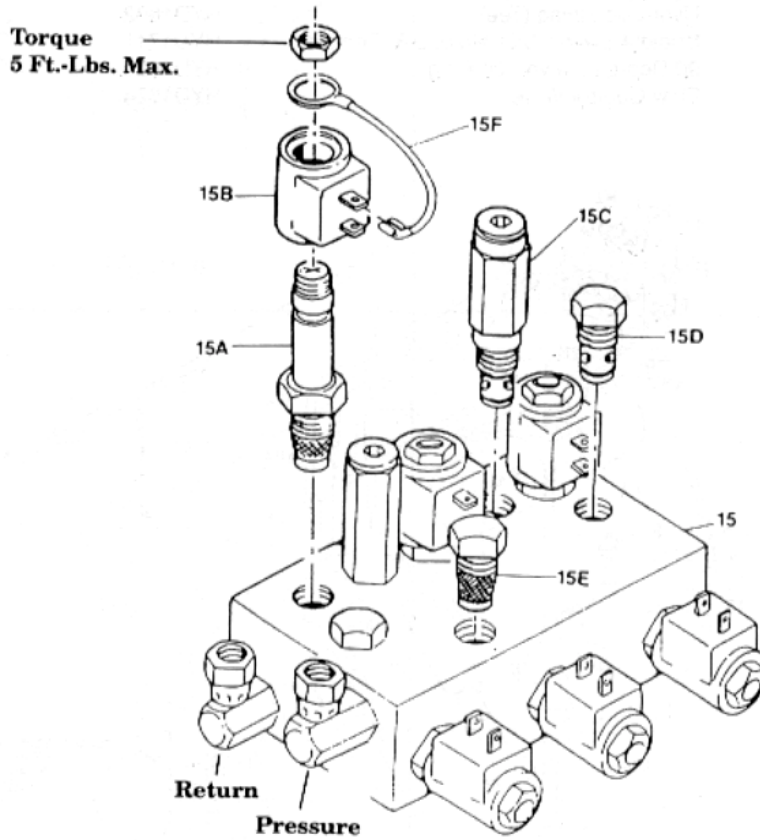


Figure 9

RAPID-TACH II

PLUG-IN HARNESS FOR LIGHTS AND CONTROL
Installation and Parts Diagram

Adapter Kits Available For:
Four Headlamp Vehicles
Four Halogen Headlamps
Composite Halogen Headlamps
UF/LF Headlamps

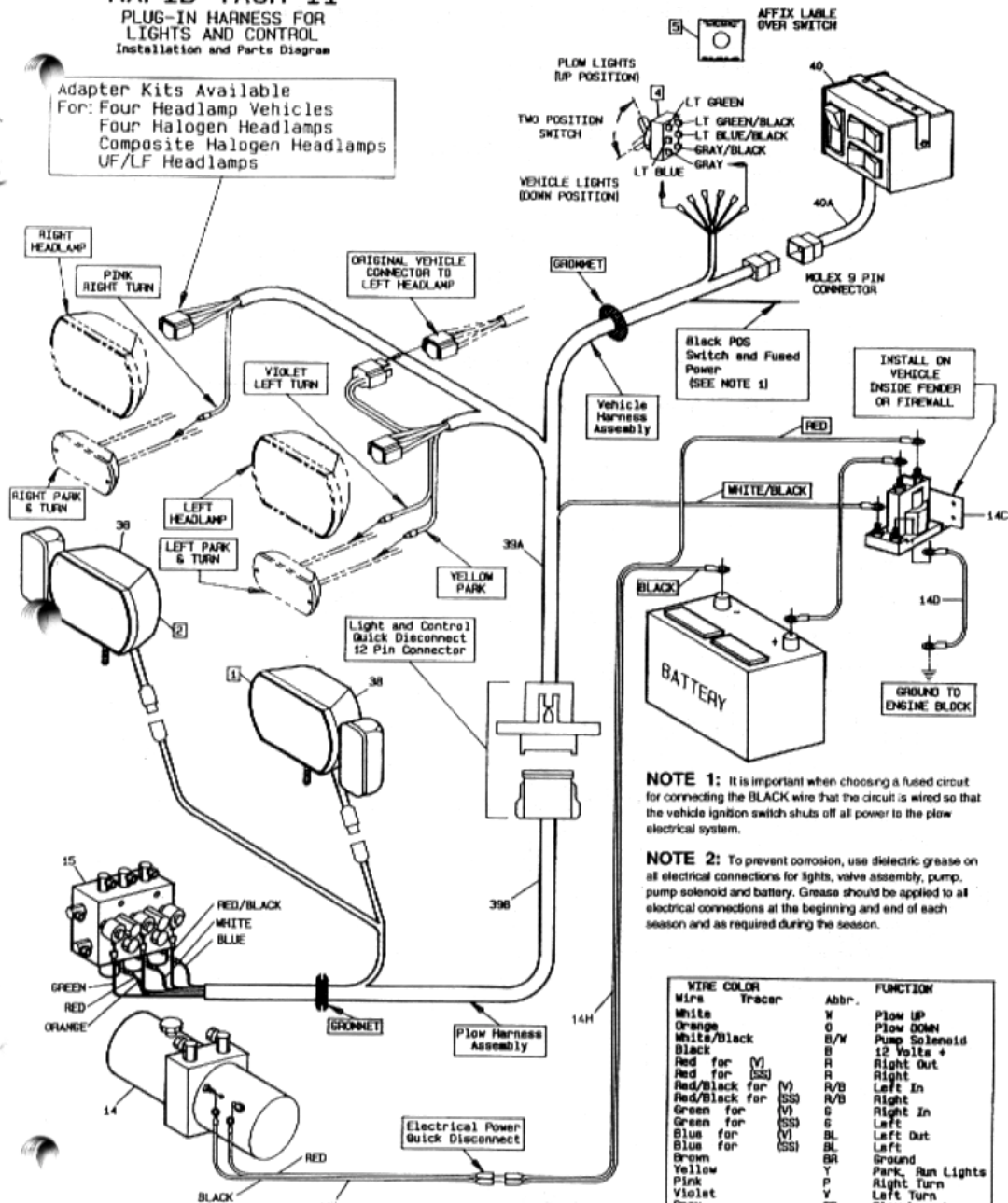


Figure 10

13

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. Grease should be applied to all electrical connections at the beginning and end of each season and as required during the season.

WIRE COLOR	Tracer	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 In
Red/Black for (V)		R/B	Right In
Red/Black for (SS)		R/B	Right In
Green for (V)		G	Left In
Green for (SS)		G	Left Out
Blue for (V)		BL	Left In
Blue for (SS)		BL	Left Out
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		LB	Lo Headlamp IN
LT Blue/Black		LB/B	HI Headlamp IN

POWER-V HYDRAULIC PUMP SWITCH ASSEMBLY WIRING DIAGRAM

COLOR	FUNCTION	PIN
BLACK	12 VOLTS +	1
ORANGE	PLOW DOWN	2
WHITE	PLOW UP	3
RED	RIGHT OUT	4
GREEN	RIGHT IN	5
BLUE	LEFT OUT	6
RED/BLACK	LEFT IN	7
WHITE/BLACK	PUMP SOLENOID	8

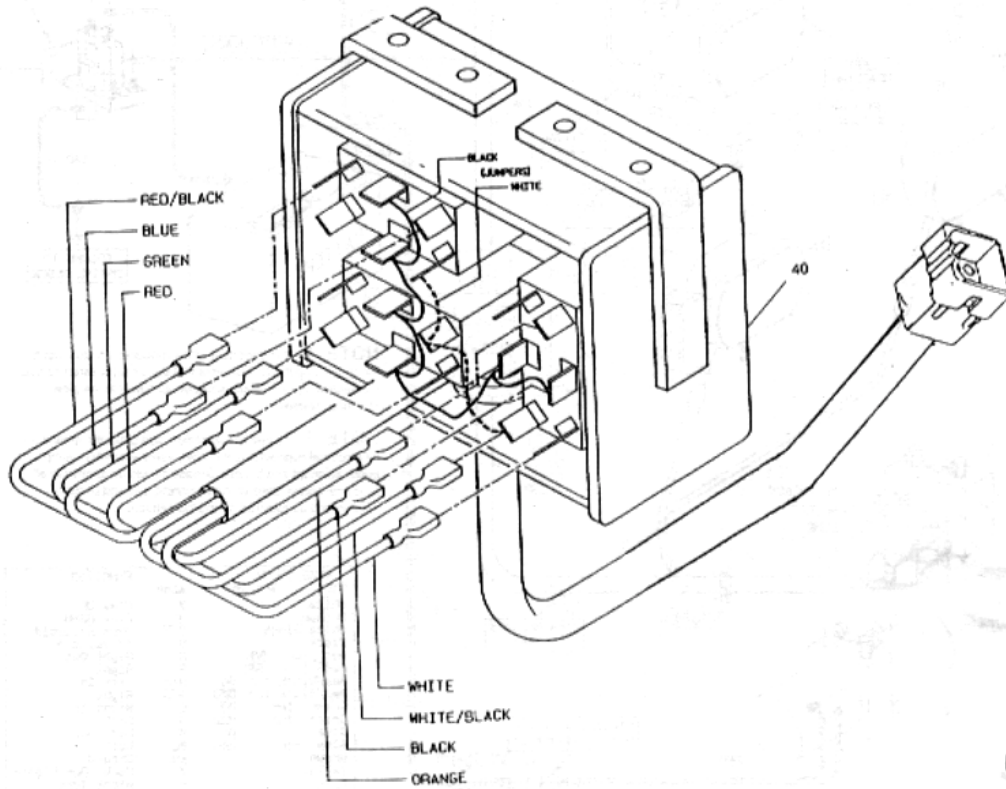


Figure 11

RAPID-TACH II WIRING SCHEMATIC

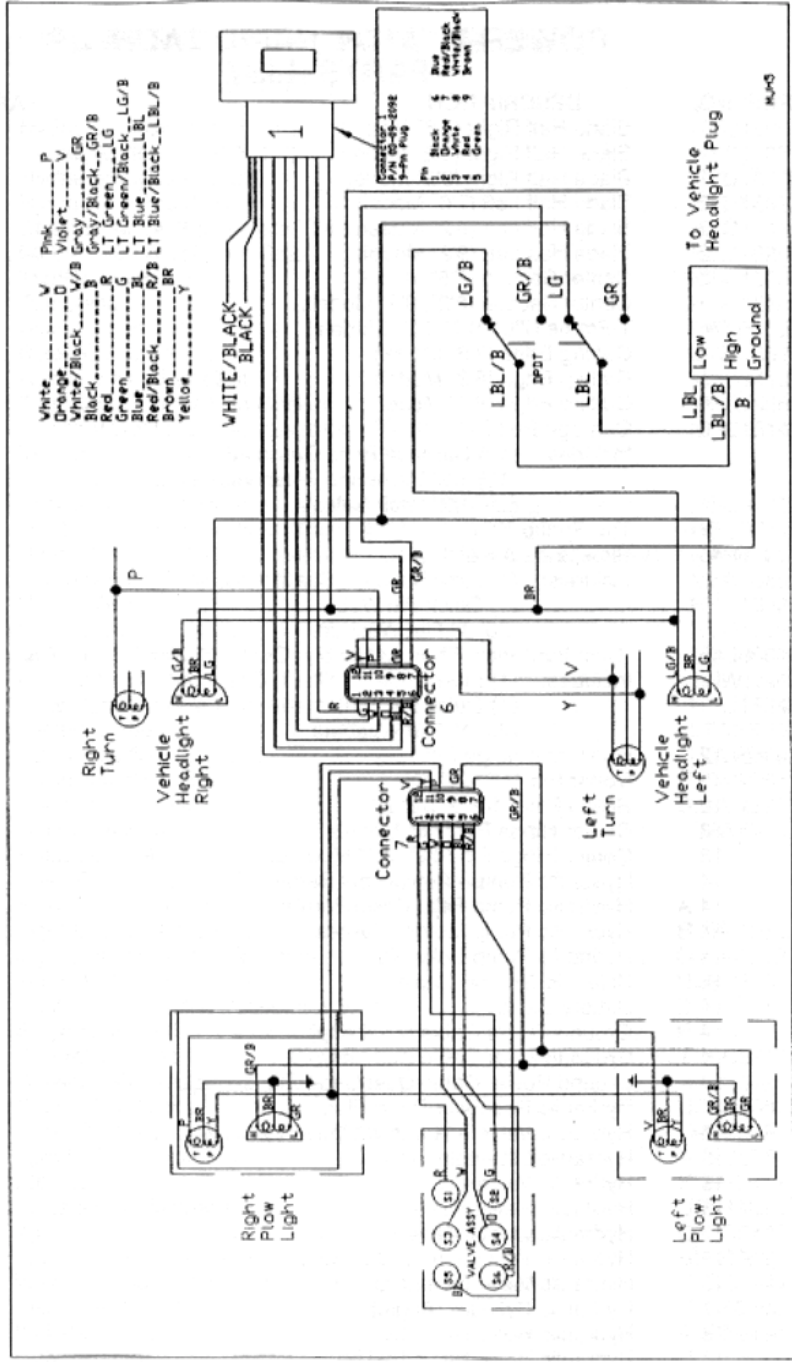


Figure 12

POWER-V WITH RAPID-TACH II™ PARTS LIST

REF. NO.	DESCRIPTION	PART NUMBER
1	Blade Half Right (7'6" Model)	BAR0200
1	Blade Half Right (8'2" Model)	BAR0300
1	Blade Half Right (9'2" Model)	BAR0400
2	Blade Half Left (7'6" Model)	BAL0600
2	Blade Half Left (8'2" Model)	BAL0700
2	Blade Half Left (9'2" Model)	BAL0800
3	Center Section (7'6" Model)	CHA1200
3	Center Section (8'2", 9'2" Models)	CHA1000
4	T-Frame (7'6", 8'2", 9'2" Models)	TFR4350
5	Cutting Edge (7'6" Model)	BAX0002
5	Cutting Edge (8'2" Model)	BAX0003
5	Cutting Edge (9'2" Model)	BAX0004
6	Carriage Bolt Set	BAX0034
	Includes: (10) Carriage Bolts Grade #8 (10) 1/2" Hardened Washers (10) 1/2" Lock Nuts	
9	Trip Spring Yoke	MSC3422
10-44-45	Plow Shoe Assembly	MSC1501
	Includes: (1) Plow Shoe (1" Shaft) (1) Quick Pin 7/16" (20) 1" Flat Washers	
10-44-45	"Cast Iron" Plow Shoe Assembly (Center Section)	MSC1570
	Includes: (1) Plow Shoe (1" Shaft) Cast Iron (1) Quick Pin 7/16" (20) 1" Flat Washers	
12	Horizontal Hinge Pin	MSC1508
12 A	Cotter Pin 1/8" x 3" ZN	HDW5559
12 B	Rolled Pin 1 1/2" x 1/4" ZN	HDW5558
13	Center Hinge Pin (7'6" Model)	MSC1550
13	Center Hinge Pin (8'2", 9'2" Models)	MSC1507
14	Hydraulic Pump - Power Unit Barnes	HYD1710
14 A	Hydraulic Pump Filler Cap - Barnes	HYD1636
14 B	Hydraulic Pump Motor - Barnes	MSC1563
14 C	Hydraulic Pump Solenoid	HYD1633
14 D	Solenoid Ground Cable	MSC1595
14 E	Battery Cable	MSC1515
14 H	Ground/Power Cable (78" Long)	HYD1684
14 J	Ground/Power Cable (36" Long)	HYD1690
14 K	Ground/Power Cable Dust Cap/Plug (1-Req'd)	MSC3721
14 L	Hydraulic Reservoir Drain Plug	HYD1712
15	Hydraulic Valve Assembly (Power V)	HYD1602
15 A	Hydraulic Lift/Angle Valve	HYD1637
15 B	Hydraulic Valve Coil	HYD1638
15 C	Hydraulic Relief Valve	HYD1639
15 D	Hydraulic Check Valve	HYD1640
15 E	Hydraulic Valve Screen Cartridge	HYD1641
15 F	Hydraulic Valve Ground Strap	HYD1647
17	Hydraulic Cylinder (Angle)	HYD1603
18 A	Hydraulic Hose 1/4" x 12"	HYD1696
18 B	Hydraulic Hose 1/4" x 15-1/2"	HYD1695

POWER-V WITH RAPID-TACH II™ PARTS LIST

18	Hydraulic Hose (1/4" X 18")	HYD1606
22	Hydraulic Hose (3/8" X 48")	HYD1707
25	Hydraulic Cylinder (Lift)	HYD1680
25 A	Hydraulic - Tee (Lift)	HYD1682
29	Straight Swivel 3/8 Female - 3/8 Male	HYD1711
32	90 Degree Swivel - "O" Ring	HYD1620
33	Trip/Return Spring	MSC1509
34	Tumbuckle	MSC1510
37	Blade Guide Set	BAX0005
37 A	Blade Guide Tip	MSC1562
38	Auxiliary Headlight Set	MSC3410
38 A	Turn Signal Lense with Gasket	MSC1555
39	Auxiliary Light Harness Assembly (RT II)	MSC1514
	Includes: Toggle Switch	
	Connectors	
39 A	Light and Control Harness (Vehicle Only) 116" Long	MSC3742
39 B	Light and Control Harness (Plow) 48" Long	MSC3741
40	Hydraulic Pump Switch Assembly - Control Box Only (Power-V)	HYD1691
40 E	Pump Switch Cable Dust Cap	MSC3489
41	Rocker Switch - Lift	HYD1622
42	Rocker Switch - Angle	HYD1623
44	Quick Pin - 7/16"	MSC1503
47	Eye Bolt	HDW1744
52	Flow Control Valve With Adapter	HYD1624
57	Latch Handle	LTA3555
58	Latch Handle Safety Pin	HDW5509
59	Latch Handle Guide	LTA3566
60	Coupler Latch Pin	LTA3573
61	Coupler Assembly	CPA4340
62	Push Beam Assembly	
62 A	Push Beam Support Plate (RH) Passenger Side	
62 B	Push Beam Support Plate (LH) Driver Side	
73	Light Bracket Assembly	LBA4360
73 A	Light Bracket Hydraulic Cover	LBA4712
73 B	1-1/8" Rubber Grommet	MSC3456
75 A	Angle Bracket (RH) Passenger Side	
75 B	Angle Bracket (LH) Passenger Side	
80	Control Harness Mounting Bracket	MSC3813
81	Dielectric Grease (2 Oz. Tube)	MSC3423
82	Plastic End Cap	MSC3481
101	Power/Ground Cable Mounting Bracket	MSC3491
102	Split Rubber Grommet	MSC3761
103	Kickstand	TFR3691
103 A	Kickstand Adjustment Pad	TFR3633
104	Weather Cap for Light and Control Harness (Vehicle Only)	MSC3743
105	Kickstand Mounting Pin	TFR3697
106	Weather Cap for Light and Control Harness (Plow Side)	MSC3744
107	Kickstand Handle	TFR3693
107 A	Kickstand Spring	CPA4430
108	Light Adapter	

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. While trying to raise the plow, wing(s) extend prior to raising plow and will not retract.
6. Wing(s) drift back when extended.
7. Plow lowers too fast.
8. Wing(s) will not extend, motor runs.
9. Wing(s) extend, but will not retract or retract slowly.
10. Wing(s) retract too easily while plowing.
11. Oil leaks from cylinders.
12. Battery goes dead with all switches in neutral.
13. Plow lights are dim, will not come on or flicker.
14. Turn signals flash at a rapid rate.
15. No high beam indicator when using plow lights.
16. Blade digs into the ground in the vee position.
17. Blade does not lay flat against the ground in the scoop position.
18. Blade trips too easily.
19. Plow does not clean-up snow from low areas.
20. In extremely cold temperatures, the oil in the hydraulic system is thickened, causing slow functioning of the plow.
21. Vehicle overheats with the plow on.
22. Oil running out of fill cap on hydraulic pump.
23. Pump chatters when raising plow or extending wing(s).

1.	PROBLEM	CAUSE	REMEDY
	Pump Motor Does Not Run	A. Defective Solenoid B. Defective Pump Motor C. Weak Or Defective Battery D. Bad Electrical Connections E. Defective Up/Down Switch	A. Replace Solenoid B. Replace Pump Motor C. Charge Or Replace Battery D. Tighten Nuts At Connections E. Replace Switch
2.	PROBLEM	CAUSE	REMEDY
	Pump Continues To Run With Switch In Neutral	A. Defective Solenoid B. Defective Switch C. Wiring Short	A. Replace Solenoid B. Replace Switch C. Locate And Repair
3.	PROBLEM	CAUSE	REMEDY
	Plow Will Not Lower	A. Flow Control Valve Closed B. Flow Control Valve Not Installed Properly C. Check Wiring On Valve Block D. Check Wiring On Up/Down Switch E. Defective Up/Down Switch F. Defective Lift Return valve G. Defective Lift Return Coil	A. Open Flow Control Valve B. Arrow On Flow Control Valve Must Point Toward Valve Block C. Wires May Be Reversed D. Wire(s) May Have Come Loose E. Replace Switch F. Replace Valve G. Replace Coil

4.	PROBLEM Plow Will Not Raise Or Raises Slowly, Motor Runs	CAUSE A. Weak Or Defective Battery B. Oil Level Low C. Flow Control Valve Not Installed Properly D. Hydraulic Connection Leak E. Lift Valve Not Opening Properly F. Defective Lift Valve Coil G. Screen Cartridge On Valve Body Plugged	REMEDY A. Charge Or Replace Battery B. Add Oil (Do Not Overfill) C. Arrow On Flow Control Valve Must Point Toward Valve Block D. Tighten Or Redo Connection E. Replace Valve F. Replace Coil G. Clean Or Replace Screen Cartridge
5.	PROBLEM While Trying To Raise Plow, Wing(s) Extend Prior To Raising Plow And Will Not Retract	CAUSE A. The Pressure And Return Lines From The Valve Block To The Pump Are Reversed.	REMEDY A. Install Lines Properly
6.	PROBLEM Wing(s) Drift Back When Extended	CAUSE A. Defective Relief Valve B. Defective Wing(s) Return Valve C. Hydraulic Connection Leak	REMEDY A. Replace Relief Valve B. Replace Valve C. Tighten Or Redo Connection
7.	PROBLEM Plow Lowers Too Fast	CAUSE A. Flow Control Valve Not Installed B. Flow Control Valve Fully Open	REMEDY A. Install Flow Control Valve B. Close Valve To Desired Drop Speed
8.	PROBLEM Wing(s) Will Not Extend, Motor Runs	CAUSE A. Weak or Defective Battery B. Oil Level Low C. Hydraulic Connection Leak D. Defective Quick Coupler E. Defective Wing(s) Power Valve F. Defective Wing(s) Check Valve G. Defective Wing(s) Coil H. Defective Wing(s) Switch I. Defective Hydraulic Angle Cylinder	REMEDY A. Charge Or Replace Battery B. Add Oil (Do Not Overfill) C. Tighten Or Redo Connection D. Replace Quick Coupler E. Replace Valve F. Replace Valve G. Replace Coil H. Replace Switch I. Rebuild Or Replace Cylinder
9.	PROBLEM Wing(s) Extend, But Will Not Retract Or Retract Slowly	CAUSE A. Defective Wing(s) Return Valve B. Defective Wing(s) Return Valve Coil C. Defective Wing(s) Switch	REMEDY A. Replace Valve B. Replace Coil C. Replace Switch
10.	PROBLEM Wing(s) Retract Too Easily While Plowing	CAUSE A. Relief Valve Pressure Set Too Low	REMEDY A. See Your BOSS Dealer For Any Pressure Adjustments Required
11.	PROBLEM Oil Leaks From Cylinder(s)	CAUSE A. Loose Packing B. Defective Cylinder	REMEDY A. Tighten Packing 1/5 Turn B. Repack Or Replace Cylinder
12.	PROBLEM Battery Goes Dead With All Switches In Neutral	CAUSE A. Possible Short In Switch(es) B. Possible Short In Wiring C. Possible Short In Valve Coil(s)	REMEDY A. Replace Switch(es) B. Repair Damaged Wire C. Replace Coil(s)

13.	PROBLEM	CAUSE	REMEDY
	Plow Lights Are Dim, Will Not Come On Or Flicker	A. Bad Connection(s) B. Lights Not Properly Grounded	A. Repair Connection B. Properly Ground
14.	PROBLEM	CAUSE	REMEDY
	Turn Signals Flash At A Rapid Rate	A. Improper Flasher	A. Replace Original Vehicle Flasher With The Heavy Duty Six Lamp Flasher Provided
15.	PROBLEM	CAUSE	REMEDY
	No High Beam Indicator When Using Plow Lights	A. Light Connections Have Been Made Under The Dashboard	A. Light Connections Should Be Made In The Engine Compartment
16.	PROBLEM	CAUSE	REMEDY
	Blade Digs Into The Ground In The Vee Position	A. Center Shoe Not Adjust Properly B. Push Beam Installed Too High	A. Lower Center Shoe B. Lower Push Beam
17.	PROBLEM	CAUSE	REMEDY
	Blade Does Not Lay Flat Against The Ground In The Scoop Position	A. Push Beam Installed Too Low	A. Raise Push Beam
18.	PROBLEM	CAUSE	REMEDY
	Blade Trips Too Easily	A. Not Enough Tension On Trip Springs	A. Add Tension To Trip Springs By Adjusting The Tumbuckle
19.	PROBLEM	CAUSE	REMEDY
	Plow Does Not Clean-Up Snow From Low Areas	A. Up/Down Switch Not In Neutral	A. Up/Down Switch Should Be In The Down Position (Float)
20.	PROBLEM	CAUSE	REMEDY
	In Extremely Cold Temperatures The Oil In The Hydraulic System Is Thickened, Causing Slow Functioning Of The Plow	A. Cold Temperatures NOTE: For Extreme Cold Weather Applications, An Aircraft Hydraulic Oil, Mil. Spec. No. 5606 Is Recommended. Do Not Use Synthetic Oils. They Are Not Compatible With The Seals In The Cylinders, Pump Or Valves.	A. As The System Warms, The Oil Will Thin Out
21.	PROBLEM	CAUSE	REMEDY
	Vehicle Overheats With The Plow On	A. Vehicle Coolant Level Low B. Ice And Snow Buildup In Grille C. Defective Radiator Hose(s) D. Insufficient Cooling Fan	A. Add Coolant B. Remove Ice And Snow C. Replace Defective Hose(s) D. Install Heavy Duty, Non-Clutch Type Fan
22.	PROBLEM	CAUSE	REMEDY
	Oil Running Out Of Fill Cap On Hydraulic Pump	A. Plowing On Steeply Inclined Terrain B. Too Much Oil C. Hydraulic Pump Not Level	A. Avoid Excessive Inclines Or Change Direction Of Plowing B. Remove Excess Oil C. Level Hydraulic Pump
23.	PROBLEM	CAUSE	REMEDY
	Pump Chatters When Raising Plow Or Extending Wing(s)	A. Hydraulic Oil Low	A. Add Hydraulic Oil Until Chattering Stops. Caution: Only Add Enough Oil To Stop The Chattering - Do Not Overfill



LIMITED CONSUMER WARRANTY

What the warranty covers:

BOSS PRODUCTS warrants to the original retail purchaser of a BOSS snowplow who purchases it for personal, family or household use, that the snowplow will be free from defects in material and workmanship except as set forth below.

Warranty period:

Parts: One year from the date of purchase. **Labor:** One year from the date of purchase.

What BOSS PRODUCTS will do:

If, within the warranty period, the snowplow is found to be defective, BOSS PRODUCTS will repair or replace, at its sole option, the defective parts at no charge to the original purchaser.

What you must do for warranty service:

To obtain service under this warranty, purchaser must return the defective snowplow to an authorized BOSS PRODUCTS dealer (preferably the one from whom the snowplow was purchased.) The purchaser must establish the warranty period by verifying the original purchased date. All transportation costs to and from the dealer will be the responsibility of the purchaser. To locate the authorized BOSS dealer nearest to you, call toll free: (800) 286-4155.

What is not covered:

This limited warranty does not cover the following:

1. Expendable parts such as hoses, plow shoes, cutting edges, pins, nuts, bolts, blade guides, etc.
2. Snowplows or parts repaired or altered by anyone other than an authorized BOSS PRODUCTS dealer.
3. Snowplows or parts which have been subject to misuse or service; negligence; accident; or improper installation, maintenance, care or storage.
4. Snowplows mounted on vehicles other than those listed in the BOSS SNOWPLOW APPLICATION CHART AND SELECTION GUIDE.
5. BOSS PRODUCTS does not assume any liability for motor vehicle damage resulting from the attachment or use of a BOSS PRODUCTS snowplow. Vehicle risk is the sole responsibility of the purchaser.

Warranty limitations:

THIS WARRANTY IS OFFERED IN LIEU OF ANY OTHER EXPRESS WARRANTY.

THE DURATION OF ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS WARRANTY.

BOSS PRODUCT'S LIABILITY IS EXPRESSLY LIMITED TO THE REPAIR OF THE SNOWPLOW, INCLUDING LABOR AND REPLACEMENT OF DEFECTIVE PARTS. BOSS PRODUCTS SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR CONTINGENT DAMAGES WHATSOEVER, EVEN IF DAMAGES ARE CAUSED BY BOSS PRODUCT'S NEGLIGENCE OR FAULT.

State laws:

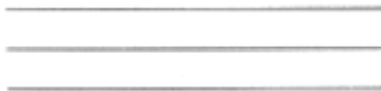
Some states do not allow exclusion of incidental or consequential damages or the limitations on how long an implied warranty lasts, so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have the other rights which vary from state to state.

This warranty does not apply if you purchased your snowplow for other than personal, family, or household use. If so, refer to the BOSS Snowplow Commercial Warranty.

BOSS PRODUCTS is a division of

M.J. Electric, Inc.
P.O. Box 686
North U.S. Hwy 2
Iron Mountain, MI 49801

5/96



PLACE
STAMP
HERE

BOSS PRODUCTS

M.J. ELECTRIC, INC.
P.O. Box 788
Iron Mountain, MI 49801

BOSS PRODUCTS

M.J. ELECTRIC, INC.
P.O. Box 788
Iron Mountain, MI 49801

*It is important that you send in this
warranty registration card.*

Please take time now to fill out this card.

*This card must be on file within
30 days of purchase for warranty to be valid.*

IMPORTANT

Keep this section for your record.



Date Purchased: _____

Serial Number: _____

PURCHASED FROM

Name: _____

Address: _____

CUT AND RETURN IMMEDIATELY

IMPORTANT

Warranty Registration - Mail-In This Section

Date Purchased: _____

Dealer: _____

Address: _____

City: _____ State: _____ Zip: _____

Customer: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ County: _____

Vehicle Make: _____ Model: _____ Year: _____

Serial Number/Plow: _____

APPLICATION

- | | | |
|---|---------------------------------------|--------------------------------------|
| <input type="checkbox"/> Home Owner | <input type="checkbox"/> Municipality | <input type="checkbox"/> Institution |
| <input type="checkbox"/> Plowing Contractor | <input type="checkbox"/> Business | <input type="checkbox"/> Other |