



**OWNER'S / PARTS MANUAL  
FOR  
SKID STEER  
V- PLOWS**

**VSKD SERIES SNOW PLOW  
FOR PLOW SERIAL NUMBERS AFTER  
VSKD100000**



# TABLE OF CONTENTS

	Page
INTRODUCTION .....	2
SAFETY .....	3
THEORY OF OPERATION.....	4
General .....	4
Plow Operational Limits.....	4
Skid Steer Power Unit.....	4
Skid Steer V-Plow Hydraulic System .....	4
Hydraulic Valve Block Assembly.....	4
Wing Angling Mode of Operation .....	4
Controls .....	4
PLOWING OPERATION.....	5
Before the Season Begins .....	5
Transporting Vehicle With Plow Attached .....	5
Plowing Like a Pro .....	5
Plow Storage .....	5
TROUBLE SHOOTING GUIDE .....	6
Introduction .....	6
Trouble Shooting - Quick Reference - General .....	6
TROUBLE SHOOTING CHART .....	6
MAINTENANCE .....	7
General .....	7
Periodic Inspection.....	7
Special Fasteners, Torques and Requirements .....	7
Hydraulic Cylinders .....	8
Fluid Compatibility .....	8
Electrical Quick-Disconnect Plugs.....	8
INSTALLATION .....	9
Control Wiring Installation .....	9
Mounting Snow Plow To Vehicle .....	9
Removing Snow Plow From Vehicle .....	9
Disk Shoe Adjustment.....	9
Trip Spring Adjustment .....	11
Float Limiter Adjustment .....	12
TORQUE SPECIFICATIONS.....	13
HYDRAULIC SCHEMATIC .....	14
WIRING SCHEMATIC .....	15
PARTS LIST INTRODUCTION.....	16
DEFLECTORS.....	17
VSKD FRAME .....	18
BLADES .....	20
ANGLE CYLINDERS .....	22
HYDRAULIC SYSTEM .....	23
HYDRAULIC VALVE BLOCK ASSEMBLY .....	24
CONTROL SYSTEM WIRING .....	25
NUMERICAL INDEX .....	26
PRE-DELIVERY AND DELIVERY CHECKLIST .....	BACK COVER

# INTRODUCTION

This manual was written for the assembly, installation and maintenance of your new Sno-Way Skid Steer V-Snow Plow. Most importantly, this manual provides an operating plan for safe use. Refer to the Table of Contents for an outline of this manual.

Please keep this manual with your machine at all times as reference material and so it can be passed on to the next owner if the machine is sold.

We require that you read and understand the contents of this manual COMPLETELY, especially the chapter on SAFETY, before attempting any procedure contained in this manual.



The Society of Automotive Engineers has adopted this SAFETY ALERT SYMBOL to pinpoint characteristics that, if NOT carefully followed, can create a safety hazard. When you see this symbol in this manual or on the machine itself, BE ALERT!, your personal safety and the safety of others, is involved.

• Defined in the next column, are the SAFETY ALERT messages and how they will appear in this manual.

	<b>WARNING</b>
<b>FAILURE TO HEED CAN RESULT IN INJURY OR DEATH.</b>	

	<b>CAUTION</b>
<b>Information, that if not carefully followed, can cause minor injury or damage to equipment!</b>	

*NOTE: Additional information concerning the equipment or the procedure that may or may not be contained elsewhere in this manual.*

**BE AWARE! It is illegal to remove, deface or otherwise alter the safety decals mounted on this equipment.**

Record the Skid Steer V-Plow Serial Number, Blade Model Number and Blade Serial Numbers in the space provided below as a handy record for quick reference. The Skid Steer V-Plow Serial Number is located on the main frame. The Blade Serial Numbers are located on one of the middle ribs of each wing. The Blade Model Number should be recorded from your sales invoice. These plates contain information that your Dealer needs to answer questions or to order replacement parts, if needed, for your unit.

<b>NAME PLATE DATA</b>	
SKID STEER V-PLOW SERIAL NUMBER _____ <small>(Back of A-Frame)</small>	
BLADE MODEL NUMBER _____	
RIGHT WING SERIAL NUMBER _____ <small>(Located on Blade Frame)</small>	
LEFT WING SERIAL NUMBER _____ <small>(Located on Blade Frame)</small>	
(FILL IN)	

<b>DEALER</b>	
NAME _____	
ADDRESS _____	
CITY _____ STATE _____ ZIP _____	
PHONE ( ) - _____	
(FILL IN)	

<b>ORIGINAL PURCHASER</b>	
NAME _____	
ADDRESS _____	
CITY _____ STATE _____ ZIP _____	
PHONE ( ) - _____	
(FILL IN)	

We reserve the right to make changes or improve the design or construction of any part(s) without incurring the obligation to install such parts or make any changes on any unit previously delivered.



## SAFETY



**BEFORE ATTEMPTING ANY PROCEDURE IN THIS BOOK, READ AND UNDERSTAND ALL THE SAFETY INFORMATION CONTAINED IN THIS SECTION. IN ADDITION, ENSURE ALL INDIVIDUALS WORKING WITH YOU ARE ALSO FAMILIAR WITH THESE SAFETY PRECAUTIONS.**

**For your safety Warning and Information decals have been placed on this product to remind the operator to take safety precautions. It is important that these decals are in place and are legible before operation begins. New decals can be obtained from Sno-Way or your local dealer.**

**REMEMBER The careful operator is the best operator. Most accidents are caused by human error. Certain precautions must be observed to prevent the possibility of injury to operator or bystanders and/or damage to equipment.**

**NEVER** operate plow when under the influence of alcohol, drugs or other medications that could hamper your judgement and reactions. An accident may result in serious injury or death to other persons or yourself.

**ALWAYS** operate vehicle in a well-ventilated area. The carbon monoxide in exhaust gas is highly toxic and can cause serious injury or death.

**NEVER** allow hands, hair or clothing to get near any moving parts such as fan blades, belts and pulleys. Never wear neckties or loose clothing when working on the vehicle.

**NEVER** wear wrist watches, rings or other jewelry when working on the vehicle or individual equipment. These things can catch on moving parts or cause an electrical short circuit that could result in serious personal injury.

**ALWAYS** wear safety goggles when working on the vehicle to protect your eyes from battery acid, gasoline, and dust or dirt from flying off of moving engine parts.

**ALWAYS** be aware of and avoid contact with hot surfaces such as engine, radiator, and hoses.

**ALWAYS** wear safety glasses with side shields when striking metal against metal! In addition, it is recommended that a softer (non-chipable) metal material be used to cushion the blow. Failure to heed could result in serious injury to the eye(s) or other parts of the body.

**NEVER** allow children or unauthorized person to operate this unit.

**ALWAYS** lock the vehicle when unattended to prevent unauthorized operation of the plow.

**ALWAYS** check the job site for terrain hazards, obstructions and people.

**NEVER** exceed 10 m.p.h. when plowing. Excessive speed may cause serious injury and damage of equipment and property if an unseen obstacle is encountered while plowing.

**ALWAYS** position blade so it does not block path of headlamps beam. Do not change blade positions while traveling. An incorrect plow position blocking headlamp beam may result in an accident.

**ALWAYS** check surrounding area for hazardous obstacles before operating this unit.

**ALWAYS** inspect the unit periodically for defects. Parts that are broken, missing or plainly worn must be replaced immediately. The unit, or any part of it should not be altered without prior written approval of the manufacturer.

**ALWAYS** shut off the vehicle engine, place the transmission in Neutral or Park, turn the ignition switch to the "OFF" position and firmly apply the parking brake of the vehicle before attaching or detaching the blade from the vehicle or when making adjustments to the blade.

**ALWAYS** inspect lift system bolts and pins whenever attaching or detaching the plow, and before traveling. Worn or damaged components could result in the plow dropping to the pavement while driving, causing an accident.

**ALWAYS** keep hands and feet clear of blade and A-Frame when attaching or detaching plow.

**NEVER** place fingers in A-frame or mount lug holes to check alignment when attaching snow plow. Sudden motion of the plow could severely injure a finger.

**NEVER** stand between the vehicle and blade or directly in front of blade when it is being raised, lowered or angled. Clearance between vehicle and blade decreases as blade is operated and serious injury or death can result from blade striking a body or dropping on hands or feet.

**NEVER** work on the vehicle without having a fully serviced fire extinguisher available. A 5 lb or larger CO<sup>2</sup> or dry chemical unit specified for gasoline, chemical or electrical fires, is recommended.

**NEVER** smoke while working on the vehicle. Gasoline and battery acid vapors are extremely flammable and explosive.

**NEVER** use your hands to search for hydraulic fluid leaks; escaping fluid under pressure can be invisible and can penetrate the skin and cause a serious injury! If any fluid is injected into the skin, see a doctor at once! Injected fluid **MUST BE** surgically removed by a doctor familiar with this type of injury or gangrene may result.

**REMEMBER it is the owner's responsibility for communicating information on the safe use and proper maintenance of this machine.**

# THEORY OF OPERATION

## General

The Sno-Way Skid Loader V-Plow is mounted using a universal mounting plate. The V-Plow pressure and return lines are connected to the auxiliary hydraulic quick couplers. Blade extend and retract functions are operated by using the skid loader auxiliary hydraulics. Reversing the flow changes the wing directions. The rocker switch controls which blade is functioned.

## Plow Operational Limits

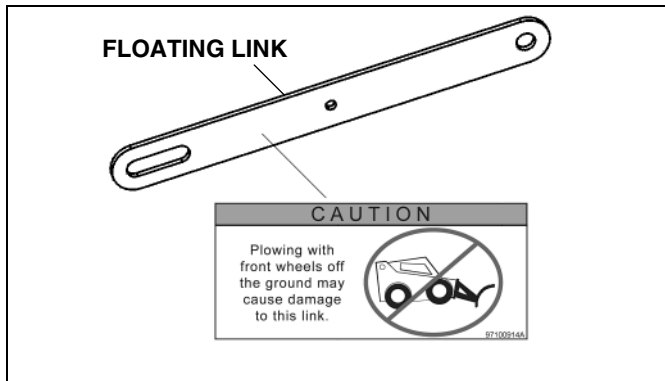


Figure 1-1

The Sno-Way Skid Steer Plows are designed to plow snow within certain operational limits. A pair of floating links enable the plow to "float" over the contours of an uneven grade during operation. In addition, these links are designed to be the "weakest link" of the plow system. If excessive loading is encountered the links will collapse, requiring replacement. Plowing with all four skid steer wheels "on the ground" is recommended for optimum plowing performance and reduced loading on plow components.

## Skid Steer Power Unit

### Features

- 18-30 gpm (gallons per minute)
- 3000 psi max. operating pressure
- 3000 psi relief
- Auxiliary hydraulic lines

The skid steer is the primary hydraulic source to the V-Plow. A typical system operates at a maximum pressure of 3000 psi and maximum flow rate of 30 gpm. The hydraulic system has a 3000 psi relief that dumps all excess hydraulic fluid to the tank when the system is loaded beyond 3000 psi. The auxiliary hydraulic circuit consists of two lines that come directly from the skid steer hydraulic pump and are actuated by an auxiliary control in the cab. The lines are connected to the V-Plow Valve Block Assembly so that one line feeds pressure and the other dumps to the tank.

## Skid Steer V-Plow Hydraulic System

The auxiliary hydraulics are routed to the valve block where the hydraulic fluid is diverted for wing functions. To activate the wing function, diverter valves are actuated for right wing functions and deactivated for left wing functions. To change the direction of the wing motion, the direction of the auxiliary hydraulics is reversed.



## CAUTION

There are no pressure relief valves in the hydraulic wing circuit. If an excessive impact is encountered, damage may occur to the hydraulic system or the plow system.

## Hydraulic Valve Block Assembly

The Hydraulic Valve Block Assembly consists of a Valve Body containing two (2) Flow Control Valves and two (2) Check Valves.

The Valve Body directs hydraulic fluid to operate two (2) hydraulic circuits; angle left side and angle right side. The angle circuits receive fluid under pressure.

**IMPORTANT: The Electric Coils, which operate the Solenoid Valves, require a minimum of 9-1/2 volts DC for proper operation. Lower voltage will cause erratic operation, or failure to operate.**

## Wing Angling Mode Of Operation

Each Wing can be angled forward or rearward independently by operating the Wing Angle Switch for either the right or the left Wing. Operating the Wing Angle Switch energizes the Solenoid Valve. Depending on the auxiliary hydraulics flow direction, this directs hydraulic fluid, under pressure, to either the base end (extend) or rod end (retract) of the Wing Cylinder, which then moves the Wing forward or rearward.

## Controls

### Left Wing Angle Switch:

Used to angle the Left Wing forward and rearward.

### Right Wing Angle Switch:

Used to angle the Right Wing forward and rearward.

# PLOWING OPERATION

## Before The Season Begins

1. Inspect vehicle safety equipment for proper operation; brakes, headlights, plowing lights, windshield wipers, flashers, etc.
2. Inspect the Plow, Plow Frame and all attaching hardware for wear and corrosion. Replace worn or damaged parts and clean and repaint exposed metal parts with a high quality, corrosion resistant enamel.
3. Inspect all fasteners to insure that they are properly tightened. If any fasteners are loose, re-tighten to the proper torque (refer to the Torque Specification Chart in this manual) and carefully inspect the adjacent area for damage or wear as well as carefully inspecting all adjacent fasteners for proper torque.
4. Apply a small amount of light oil to the Hitch Pins and pivots, to Pivot Pins between the A-Frame and Center Blade Assembly, between Swing Cylinder Pivot Pins and the Lift Linkage.
5. Check the Wing Pivots for free movement of the wings on the Pivot Shafts. Lubricate the Wing Pivot Shafts with a good quality light weight HP Lithium based grease.
6. For extremely cold weather plowing, continuous sub-zero operation, an alternative is to remove the grease fittings and fill the grease cavity with SAE 140 Gear Oil, and then replace the grease fitting.
7. Check the reservoir oil level (see maintenance instructions) and repair any oil leaks and worn hoses.
8. Install auxiliary and flashing lights (if not equipped).

## Transporting Vehicle With Plow Attached

1. Position the Blade out of the beam path of the headlights before driving.
2. Inspect Plow and Plow attaching hardware for wear or damage before transporting and beginning Plow operations.

## Plowing Like A Pro



### WARNING

- **Never exceed 10 mph when plowing! Serious personal injury can result, as well as damage to equipment and property, if an unseen obstruction is encountered while plowing.**

- **Wear your seat belt! Contact with a hidden obstruction can cause serious personal injury from bodily contact within the vehicle cab or whiplash from sudden stops.**

**FAILURE TO HEED CAN RESULT IN INJURY OR DEATH.**

1. Become familiar with the area to be plowed and mark potential hazards before the snow falls. Many immovable objects cannot be seen when covered with snow. Developing a plan early can save valuable time and equipment damage. Allow sufficient room to pile snow, out of the traffic area, with enough space for snow when the next storm comes.

2. Plow with the storm. The “Pros” are out early removing only several inches of snow at a time. Allowing snow to accumulate to unmanageable levels can cause difficult removal problems and can be costly in terms of “wear and tear” on equipment. The plow is not a “Ram or Bulldozer”. If used properly, it will give you many years of safe and reliable service.

3. Research municipal ordinances for restrictions on the disposal of snow. Many municipalities do not allow snow to be placed in roads or throughways.

## Plow Storage

1. To avoid corrosion during storage, coat the exposed (chrome) portion of the Angle Cylinders with a light grease.
2. Grease all pivot points.
3. Make sure that protective caps are on all electrical connections. A small amount of dielectric grease may be used to insure a moisture proof seal on the caps.
4. Check and replace any worn and/or damaged component, such as Cutting Edges or Deflectors. Performing preventative maintenance tasks in the spring when Plow is stored will ensure that you will be ready to plow in the fall.

# TROUBLE SHOOTING GUIDE

## Introduction

Whenever service is necessary, your local Dealer knows your Plow best and is interested in your complete satisfaction. Return your V-Plow to your local Dealer for maintenance service or any other assistance you may require. If you are unable to do so, this Troubleshooting Guide should help you determine the problem. Before attempting the servicing of your Plow, you should possess good mechanical abilities and a total understanding of the mechanism.

PLEASE: Before calling parts and service personnel be certain that:

1. You have read this manual carefully and are certain that all of the suggestions pertaining to your problem have been attempted.
2. You should have the following information available.
  - A. Date Snow Plow was originally installed.
  - B. Main Frame Serial Number.
  - C. Blade Model Number.
  - D. Blade Serial Number.

This information should be recorded on page 2 of this Owners Manual.


CAUTION

**First read all warning instruction, the safety messages, and directions before attempting any adjustments or repairs to your unit!**

## Trouble Shooting Quick Reference General

1. Check oil level in hydraulic system reservoir.
2. Check for external leakage at cylinders, hoses and power unit.

# TROUBLE SHOOTING

PROBLEM	PROBABLE CAUSE
<b>No Functions</b>	Auxiliary Hydraulics not connected.
	Auxiliary Hydraulics not activated.
	Check connections on solenoids.
<b>Left Wing Operates, Right Wing Does Not</b>	Check for power to solenoids.
	Check for connections at both solenoids.
<b>FOR ALL OTHER ISSUES, CHECK WITH YOUR SNO-WAY DEALER</b>	



# MAINTENANCE

## General

- Before operating, perform a thorough visual inspection of the equipment. Look for fluid leaks, cracked, bent or broken components, loose nuts, bolts or attachments and proper fluid levels.
- A clean hydraulic system is essential to long pump life and proper performance.
- When adding oil to the reservoir, wipe the area around the filler port clean before removing the breather cap. Use clean oil and a clean funnel, (DO NOT use a cloth or rag to strain the oil).
- The operational environment for snow plows is an extremely harsh and corrosive one.
- Ensure all electrical connections are clean and tight.
- To prevent rust from forming, clean and repaint exposed metal surfaces.
- NEVER operate the equipment with the protective covers or guards removed.

## Periodic Inspection

After approximately every 20 hours of operation perform the following inspections procedures:

1. Inspect the Plow assembly for any damage or excessive wear. Also inspect all fasteners to insure that they are properly tightened. If any fasteners are loose re-tighten to the proper torque (Refer to the Torque Specification Chart in this manual). Also carefully inspect adjacent area for damage or wear as well as carefully inspecting all adjacent fasteners for proper torque.
2. Apply a small amount of light oil to the Hitch Pins and pivots, to Pivot Pins between the Center Blade Assembly and the Intermediate Pivot Assembly, between Swing Cylinder Pivot Pins and the Lift Linkage.
3. Lubricate the Wing Pivot Shafts with a good quality HP Lithium based grease.

*NOTE: For extremely cold weather plowing, continuous sub-zero operation, an alternative is to remove the grease fittings and fill the grease cavity with SAE 140 Gear Oil, and then replace the grease fitting.*

## Special Fasteners Torques and Requirements

**IMPORTANT:** Incorrectly securing fasteners may result in incorrect operation, excessive wear, and early failure of Plow components. It may also void your warranty.

- ALWAYS check to make sure you are using the correct torque specification for the fastener you are using.
- DO NOT use any lubricants on the threads of any fastener unless specifically called for in the assembly or maintenance story for that component.
- NEVER use liquid locking materials, such as Loctite™ or Threadmaker™, on any fasteners unless specifically called for in an assembly or maintenance story for that component.

### Standard Fasteners:

The Torque Specifications Chart on page 15 of this manual should be used as the guide for fastener torque requirements for most standard fasteners used on the plow.

Standard fasteners with special torque requirements will be noted in assembly or service stories pertaining to the specific piece of equipment.

### Hydraulic Fittings:

Hydraulic fittings with lock nuts should be assembled with at least three full turns of the fitting in the port and then the lock nut should be tightened to 27 lb.-ft.

### Wing Cylinder Attaching Fasteners:

Base end and Rod end attachment Cap Screws are always assembled with the Cap Screw head UP.

Always use a Nylock Nut and only torque the Nut to 25 to 30 lb.-ft. DO NOT overtighten these fasteners. Overtightening of Wing Cylinder attachment fasteners may bind Cylinder and cause excessive Cylinder wear and/or restrict Wing movement.

### Pivot Frame Assembly:

Install the 1" Slotted Nut on the threaded end of the Special Screw and tighten finger tight. Then tighten the Nut another 2/3 to 1 full turn and line up a slot in the Nut with the cross hole in the Special Screw. Install the 3/16"x2" Cotter Pin in the Special Screw and spread the ends of the Cotter Pin.

## **Hydraulic Cylinders**

To avoid corrosion during storage, coat the exposed (chrome) portion of the Angle Cylinders with a light grease

## **Fluid Compatibility**

Hydraulic fluid used in skid steers is compatible with the Plow system.

## **Electrical Quick Disconnect Plugs**

Install protective caps on quick disconnect ends to prevent corrosion from forming on terminal ends during storage or when Plow is disconnected from vehicle.

# INSTALLATION

## Control Wiring Installation

1. Locate Control Box in cab. Mount Control Box using Hook and Loop Fastener provided.
2. Route the Power Harness Lead to the battery (See Figure 2-2). Connect the YELLOW wire to the negative (-) battery terminal and the WHITE wire to the positive (+) battery terminal.
3. Route the Control Harness Lead around the pivot point on the loader arms on the back of the Skid Steer and down the top of the loader arms to the front. Allow enough slack when routing wire so that wiring is not put in tension when the loader arms are moved. Position the wiring to prevent pinching when loader arms pivot, and secure with cable ties. (See Figure 2-1) and (See Figure 2-2).

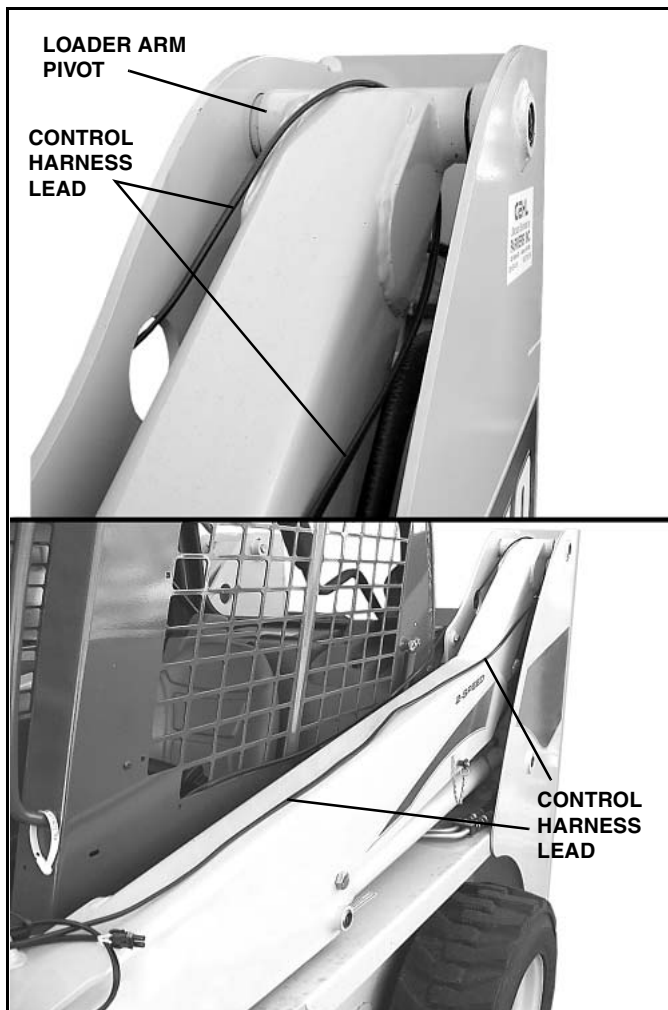


Figure 2-1

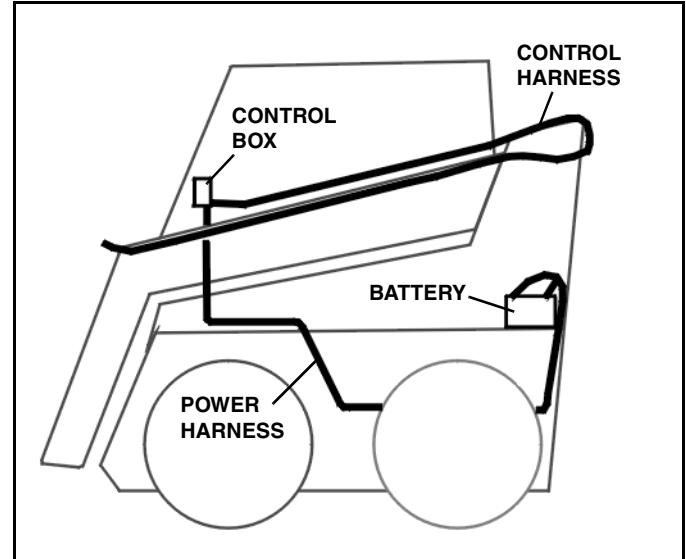


Figure 2-2

## Mounting Snow Plow To Vehicle

1. Drive up to the Snow Plow and tilt the universal mount slightly forward.
2. Hook the top of the universal mount under the lip on the Skid Steer Adapter Plate of the Snow Plow.
3. Position the Snow Plow so that it rests flush against the universal mount and lock the Snow Plow in place.
4. Connect the Hydraulic Hoses to the auxiliary hydraulic connectors on the vehicle.

## Removing Snow Plow From Vehicle

1. Lower the Snow Plow to the ground.
2. Disconnect the Hydraulic Hoses from the vehicle.
3. Unlock the universal mount from the Snow Plow and slowly back away from the Snow Plow, while tilting the universal mount slightly forward.

## Disk Shoe Adjustment

*NOTE: The V-Plow Frame height should be adjusted relative to the optimum resting position of the loader arms. To adjust, remove the Clevis Pins that secure the rear of the Main Frame to the mounting lugs of the universal adapter, move the Frame to a higher or lower position and re-install the Clevis Pins to secure.*

**IMPORTANT:** This Plow is equipped with three (3) Disk Shoes. To ensure the best function of this Snow Plow, it is a requirement that all three Disk Shoes be used at ALL times. Two Disk Shoes are located at the outboard end of each Wing. The third Disk Shoe is

located under the Trip Springs on the Center Plow Assembly. All three Disk Shoes must be adjusted equally.

1. Drive the vehicle, with Snow Plow mounted, onto a smooth, level surface. Park the vehicle, move the Plow Wings until the Wings are straight out on each side and lower the Plow to the optimum position.

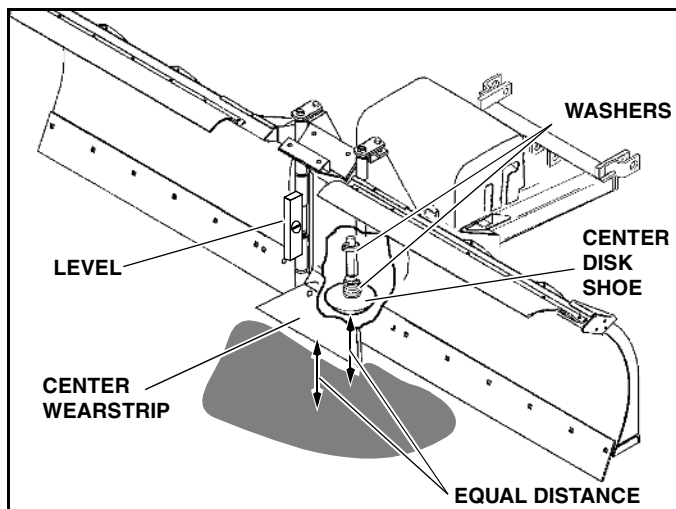
2. Turn ignition switch OFF and apply the emergency brake. Disconnect controller from V-Plow Main Harness on the control arm.

3. Inspect both Float Limiter Screws and be sure that the hex head of the Screws are not contacting the Wear Plate underneath the hex head of the Screw. If necessary, adjust each Screw upward so that the Screw head is not contacting the Wear Plate when the pivot tubes are vertical.

*NOTE: After Disk Shoe adjustment is completed, the Float Limiter adjustment must be made. See "Float Limiter Adjustment" on page 12*

4. Place a level against the front of the Wing pivot tubes and pull or push the top of the Center Section until the level indicates that the pivot tubes are vertical (Not tipped either forward or rearward).

5. Determine whether the center Disk Shoe or the center Wearstrip is off the ground and measure the amount that it is off the ground. (See Figure 2-3)



**Figure 2-3**


*NOTE: Gap may be measured by sliding Shims or Washers between the ground and/or the center Disk Shoe or the center Wearstrip, then measuring the Shim/Washer stack. The center Disk Shoe will need to be adjusted until the Disk Shoe and center Wearstrip both contact the ground at the same time.*

- If the center Disk Shoe was off the ground - Washers must be ADDED below the Disk Shoe Mounting Tube.
- If the center Wearstrip was off the ground - Washers must be REMOVED from below the Disk Shoe Mounting Tube.

**IMPORTANT:** If Washers must be added, add one Washer LESS than the amount the Disk Shoe was off the ground. If Washers must be removed, remove one Washer MORE than the amount the Wearstrip was off the ground.

6. Raise Plow and place suitable blocking under the Plow to allow at least eight inches (8") of clearance from the bottom of the center Disk Shoe to the ground.

7. Lower Plow onto blocking.


WARNING

**Keep hands and feet clear of Wings and Center Section when setting blocking and lowering Plow. Moving or falling assemblies could result in injury.**

**FAILURE TO HEED CAN RESULT IN INJURY OR DEATH.**

8. Adjust center Disk Shoe Assembly by removing the Disk Shoe Mounting Pin and adding or subtracting Washers on the top or bottom of the Disk Shoe Mounting Bracket as required according to measurements taken in step #5.

9. After the center Disk Shoe position is properly adjusted, place Washers on the Disk Shoe stem - above the Disk Shoe Mounting Bracket, and below the Retaining Pin - to remove all up and down movement of the Disk Shoe in the Bracket. Failure to do this will result in excessive wear of the holes in the Disk Shoe Mounting Bracket and will also result in bending the Disk Shoe stem.

10. After the center Disk Shoe adjustment is completed, lower the Plow to the ground. If this Disk Shoe adjustment is correct, the center Disk Shoe and the Center Wearstrip will both be on the ground and the wing tubes will be vertical (Recheck the wing tubes with a level). If wing tubes are not vertical, repeat steps #3 to #9 until wing tubes are vertical.

*NOTE: If assembling and mounting a Snow Plow for the first time, the adjustment of the center Disk Shoe can be done with just the Center Section mounted on the vehicle, prior to assembling the Wings onto the Center Section of the Plow.*

11. With each Wing extended straight out to the side, measure the amount the Wing Shoes are off the ground, or if they are on the ground, measure the amount that the Wearstrip is off the ground (measured in front of the Disk Shoe Bracket).

12. Raise Plow and place suitable blocking under the Plow to allow at least six inches (6") of clearance from the bottom of the Wing Disk Shoes to the ground.

13. Lower Plow onto blocking.



## WARNING

**Keep hands and feet clear of Wings and Center Section when setting blocking and lowering Plow. Moving or falling assemblies could result in injury.**

**FAILURE TO HEED CAN RESULT IN INJURY OR DEATH.**

14. Adjust each Disk Shoe Assembly by removing Disk Shoe Mounting Pin and adding or subtracting Washers on the top or bottom of the Disk Shoe Mounting Bracket as required according to measurements taken in step #11 (See Figure 2-4)

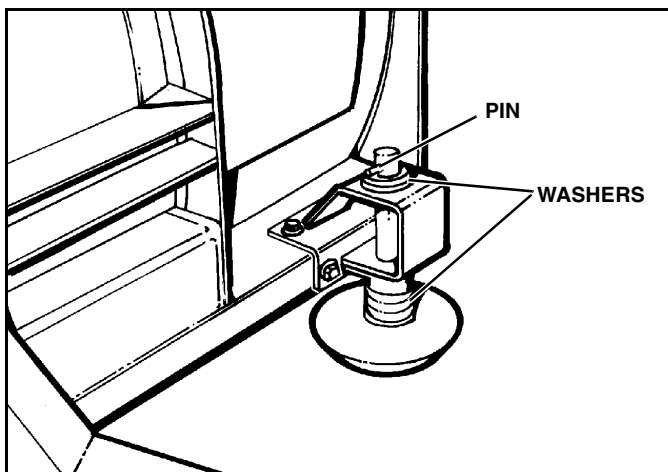


Figure 2-4

15. After the Disk Shoe position is properly adjusted, place Washers on the Disk Shoe stem - above the Disk Shoe Mounting Bracket, and below the Retaining Pin - to remove all up and down movement of the Disk Shoe in the Bracket. Failure to do this will result in excessive wear of the holes in the Disk Shoe Mounting Bracket and will also result in bending the stem of the Disk Shoe.

16. After the Wing Disk Shoe adjustment is complete, lower the Plow to the ground. If this Disk Shoe adjustment is correct, the Shoes and the Wearstrips will all be on the ground at the same time, if not, repeat steps #11 to #15.

17. Move the Wings forward and rearward. If the Wing Wearstrips and the Center Wearstrips are not on the ground at all times recheck the position of the Wing pivot tubes. The tubes must be vertical, if they are not vertical, the center Disk Shoe will need to be adjusted.

## Trip Spring Adjustment

*NOTE: The Trip Springs are factory installed and adjusted, but adjustment should be checked during Plow set-up and installation.*

Springs are properly adjusted when two or more coils

allow a 0.010" feeler gauge to just pass between the separated coils. (A 3 x 5 post card is approximately the same thickness.)

If re-adjustment is required:

1. Raise the Plow to transport position and install Transport Lock under the Plow to prevent the Plow from inadvertently dropping.

2. Turn off the vehicle ignition, apply the parking brake and remove the vehicle ignition key. Turn Hand-Held Controller off.

3. Check to make sure that the Spring is installed as illustrated with open end of top loop facing vehicle. (See Figure 2-5)

4. Using a 15/16" socket wrench through the holes in the bottom plate of the Main Frame, loosen the two (2) 5/8" Nuts on the Trip Spring Eyebolts. (See Figure 2-5)



## CAUTION

• Do not overtighten Springs. If more than 0.015" (1/64") gap appears between coil with Plow at rest, damage could occur to equipment during plowing.

• Spring must be installed with open end of top loop facing vehicle. Bottom loop position will vary.

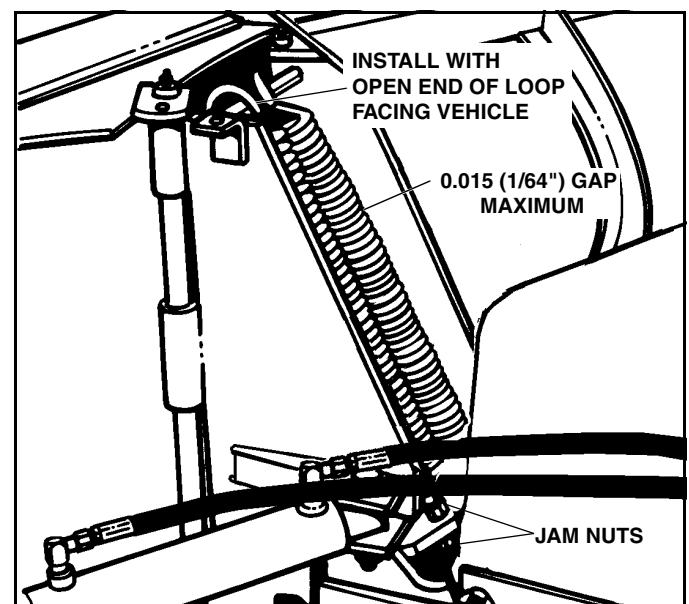


Figure 2-5

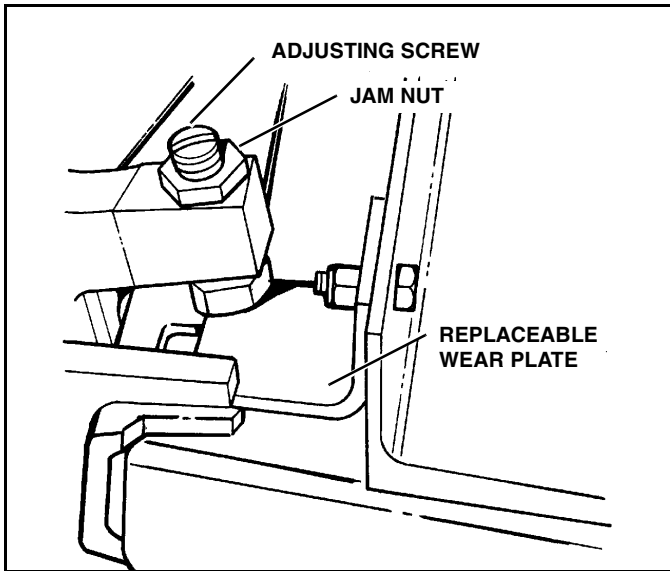
5. After the two lower Nuts have been loosened, the two upper Nuts can be rotated on the Eye Bolts to allow the Trip Springs to be shortened or lengthened.

6. While holding the two upper Nuts, re-tighten the two lower Nuts and then re-check the Spring adjustment.

## Float Limiter Adjustment

**IMPORTANT:** The Disk Shoes must be properly adjusted prior to adjusting the Float Limiter. If the Shoes are not properly adjusted, the Float Limiter adjustment cannot be properly made.

1. With the vehicle and Snow Plow on a smooth, level surface move the Wings forward into the "Scoop" position and lower the Plow to the ground.



**Figure 2-6**

2. Loosen the 5/8" Jam Nut on the top of the Float Limiter Adjusting Screw.

3. Using the screwdriver slot in the top of the Float Limiter Adjusting Screw, turn the Adjusting Screw down until the hex head of the Adjusting Screw touches the surface of the replaceable Wear Plate.







4. Turn the Adjusting Screw up two turns to provide a gap between the Wear Plate and the head of the Adjusting Screw for proper float allowance.

5. While holding the Adjusting Screw driver slot, to prevent turning of the Adjusting Screw, tighten the 5/8" Jam nut to lock the Adjusting Screw and prevent turning of the Adjusting Screw during operation.

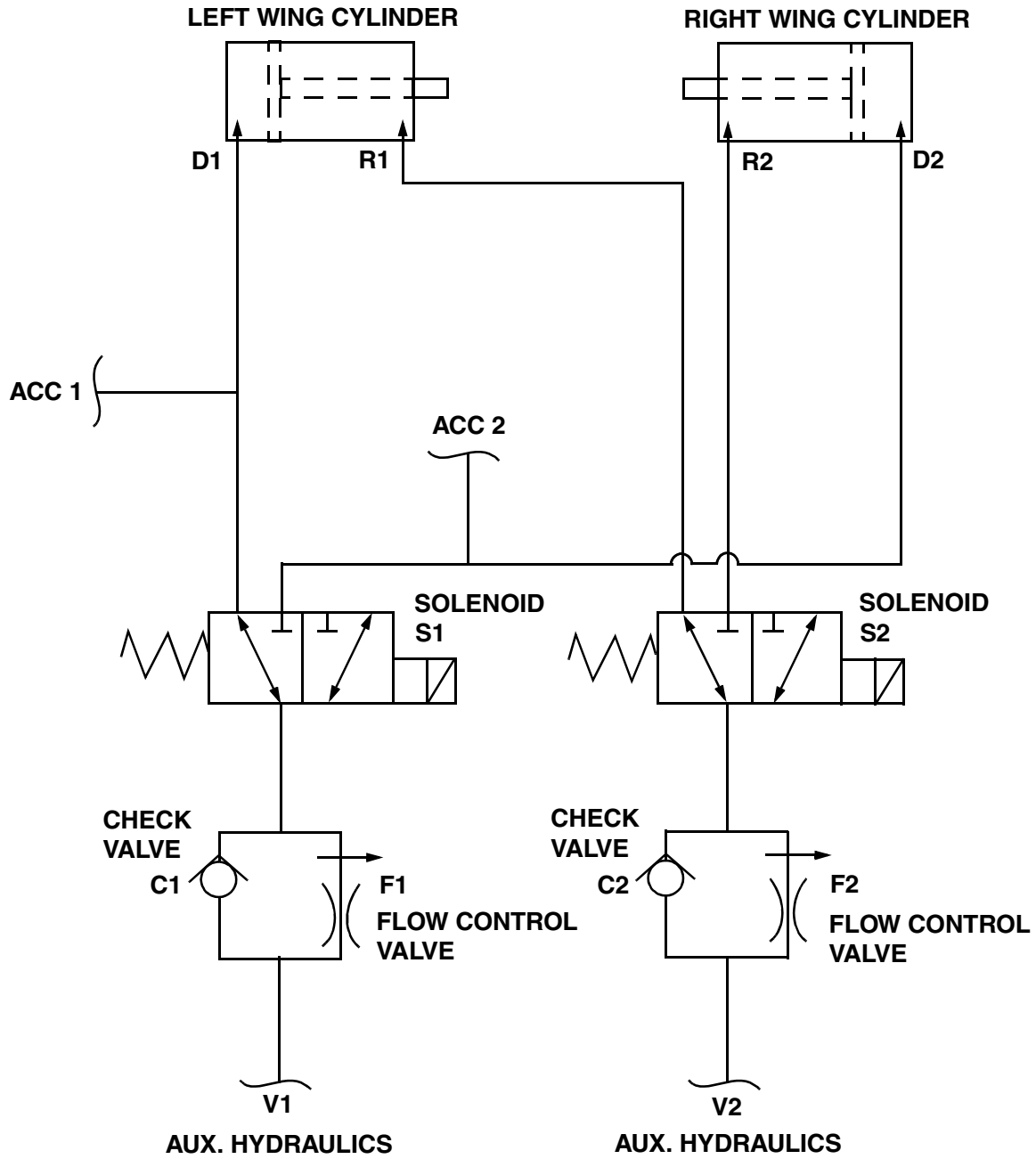
# TORQUE SPECIFICATIONS

NOTE: Use these torque values when tightening Sno-Way hardware (excluding: Locknuts and Self-tapping, Thread Forming and Sheet Metal Screws) unless specified otherwise.

All torque values are in Lb-Ft except those marked with an \* which are Lb-In  
(For metric torque value Nm, multiply Lb-Ft value by 1.355 or Lb-In value by 0.113)

Unified National Thread	Grade 2 		Grade 5 		Grade 8 	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
8-32	19*	14*	30*	22*	41*	31*
8-36	20*	15*	31*	23*	43*	32*
10-24	27*	21*	43*	32*	60*	45*
10-32	31*	23*	49*	36*	68*	51*
1/4-20	66*	50*	9	75*	12	9
1/4-28	76*	56*	10	86*	14	10
5/16-18	11	9	17	13	25	18
5/16-24	12		19	14		20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	
7/16-14	32	24	50	35	70	55
7/16-20	36	27	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	180	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	200	150	300	220	420	320
7/8-9	170	125	430	320	600	460
7/8-14	180	140	470	360	660	500
1-8	250	190	640	480	900	680
1-14	270	210	710	530	1000	740
Metric Course Thread	Grade 8.8 		Grade 10.9 		Grade 12.9 	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
M6-1	8	6	11	8	13.5	10
M8-1.25	19	14	27	20	32.5	24
M10-1.5	37.5	28	53	39	64	47
M12-1.75	65	48	91.5	67.5	111.5	82
M14-2	103.5	76.5	145.5	108	176.5	131
M16-2	158.5	117.5	223.5	165.5	271	200

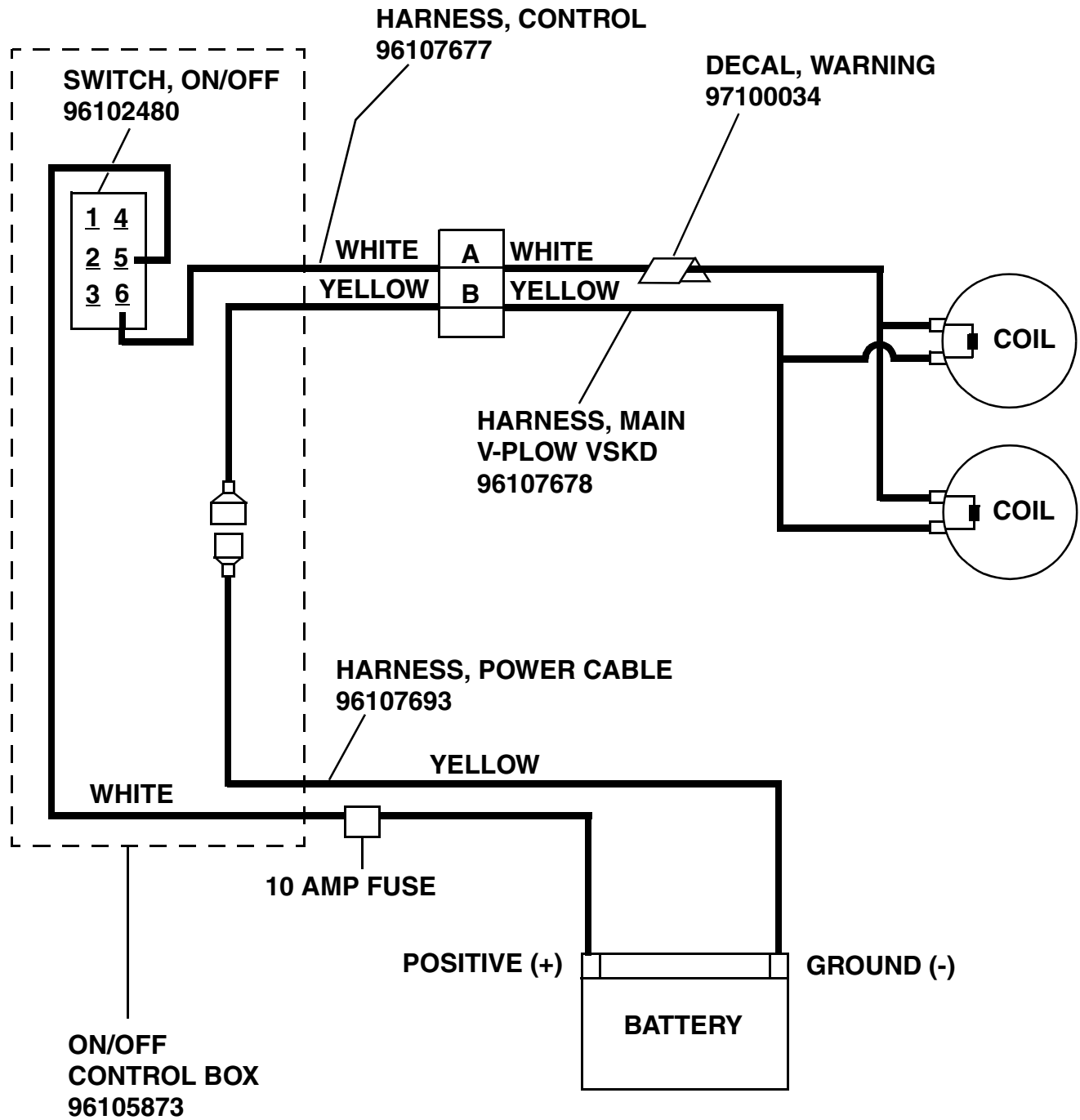
# HYDRAULIC SCHEMATIC



FLOW FUNCTION	PRESSURIZED PORT	SOLENOID S1	SOLENOID S2	FLOW IN	FLOW TO TANK
LEFT EXTEND	D1	OFF	OFF	V1	V2
LEFT RETRACT	R1	OFF	OFF	V2	V1
RIGHT EXTEND	D2	ON	ON	V1	V2
RIGHT RETRACT	R2	ON	ON	V2	V1



# WIRING SCHEMATIC



# PARTS LIST INTRODUCTION

Our dealership network stands by to provide you with any assistance you may require, including genuine Sno-Way service parts. All parts should be obtained from or ordered through your Dealer. Give complete information about the part as well as the Model Number and Serial Number of your machine.

Record the Serial Number in the space provided in your Owner's Manual for quick reference.

"Right" and "Left" are determined from a position sitting on the Operator's Seat of the vehicle.

We reserve the right to make changes or improvements in the design or construction of any part without incurring the obligation to install such changes in any unit previously delivered.

## USING THIS PARTS LIST

Below is parts listing with four columns. The first column is the "ITEM", the second is the "PART NUMBER", The third is the "DESCRIPTION" and the fourth is the "QUANTITY".

The "**ITEM**" is the number used in the corresponding illustration.

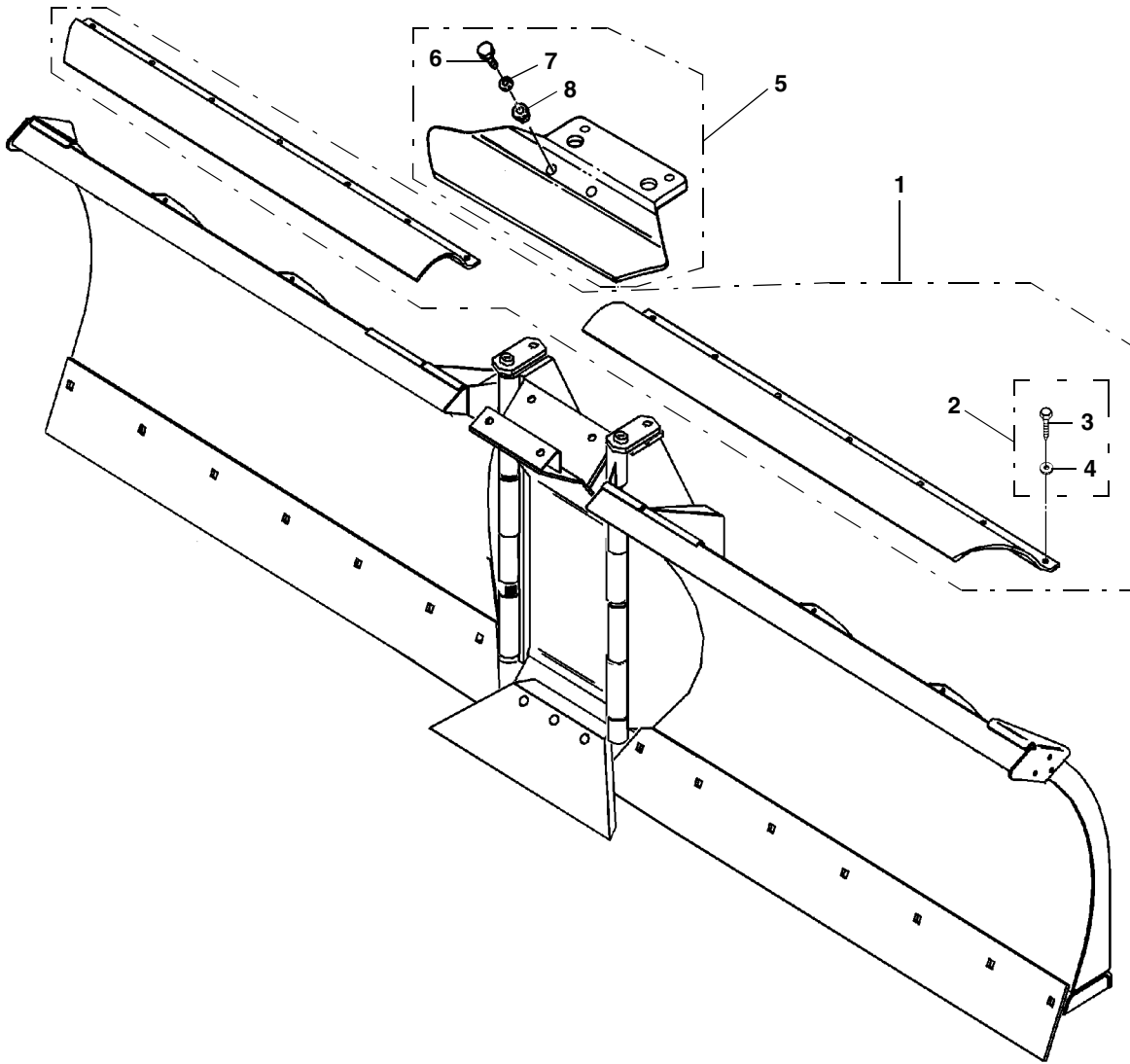
The "**PART NO.**" Is the number used to order replacement parts. If a number does not appear in the column the part is only available by ordering the complete assembly.

The "**DESCRIPTION**" is the name of the replacement part. At times the name may be indented, this means that the indented parts are part of the preceding assembly.

The "**QTY.**" Is the quantity needed to service the assembly illustrated, not the complete product.

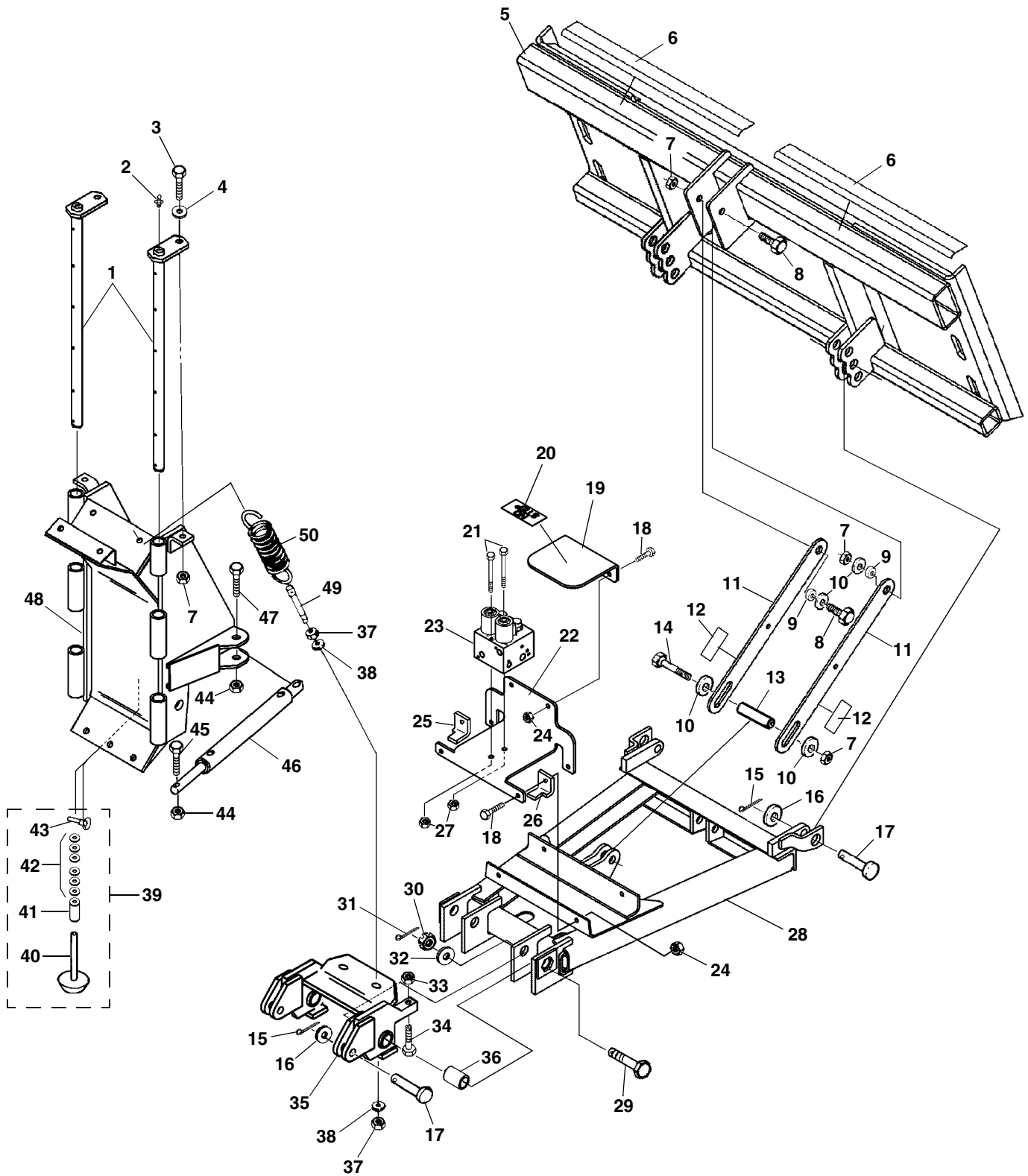
ITEM	PART NO.	DESCRIPTION	QTY.
1	96101833	Pin, Pivot	2
2	98100098	Zerk, 1/8" NPT	2
3	98100010	Cap Screw, Hex, 1/2"-13 x 2"	3

# DEFLECTORS



ITEM	PART NO.	DESCRIPTION	QTY
1	96102605	Wing Deflector Kit (99" Plow) (Includes Mtg. Hdwr.).....	1
	96102606	Wing Deflector Kit(109" Plow) (Includes Mtg. Hdwr.).....	1
2	96102482	HARDWARE KIT (Wing Deflectors).....	1
3	98019176	Screw, Self Tapping, 5/16" x 1".....	14
4	98019230	Washer, Plain, 5/16".....	14
5	96102604	Deflector, Center, (Includes Mtg. Hdwr.).....	1
6	98100167	Cap Screw, Hex, 5/16"-18NC x 2".....	2
7	98019230	Washer, Plain 5/16".....	2
8	96102938	Spacer.....	2

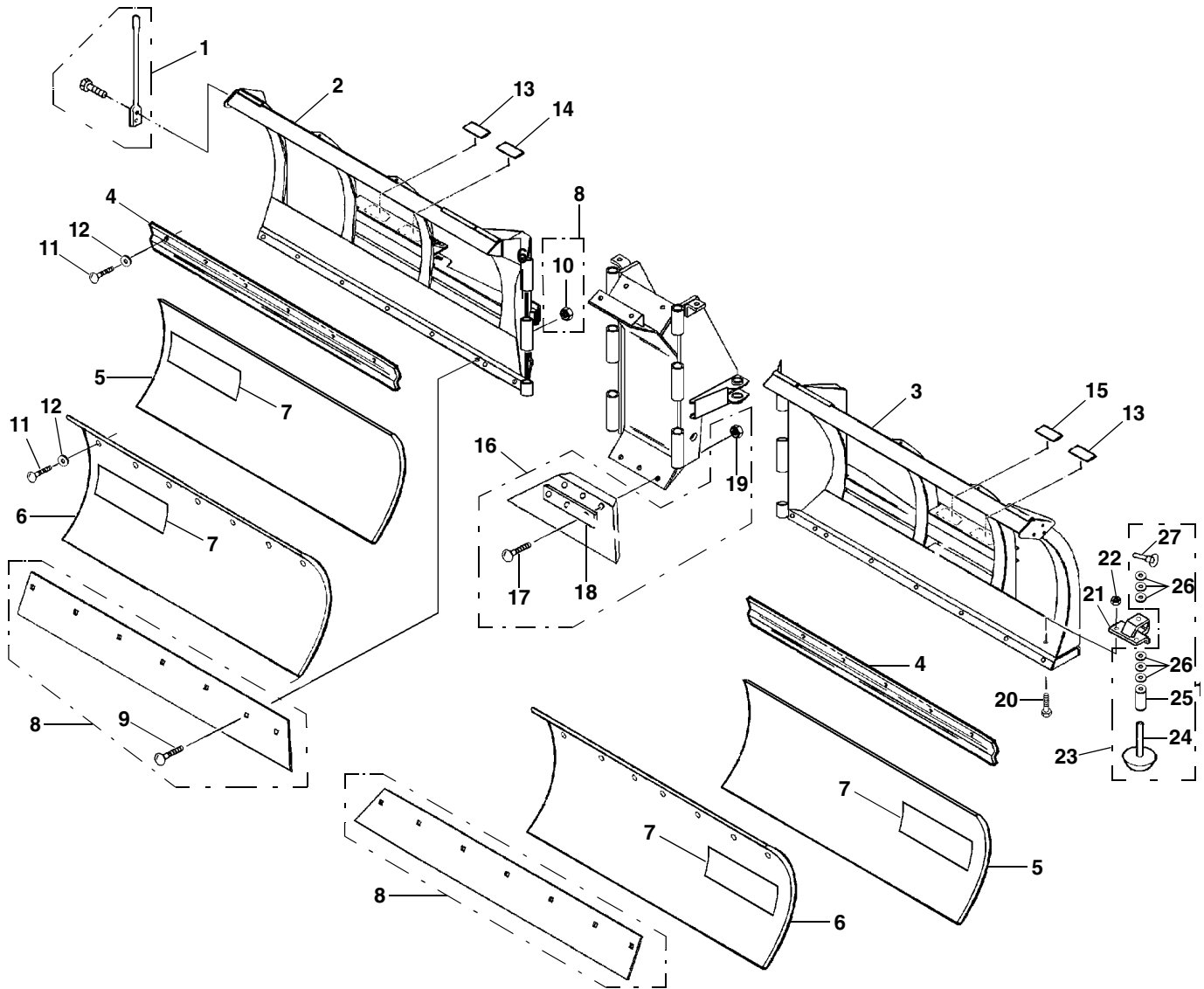
# VSKD FRAME



# VSKD FRAME

ITEM	PART NO.	DESCRIPTION	QTY
1	96101833	Pin, Pivot.....	2
2	98100098	Zerk, 1/8"NPT .....	2
3	98100010	Cap Screw, Hex, 1/2"-13 x 2".....	3
4	98009011	Washer, Flat, 1/2".....	2
5	96106295	Adapter, Skid Steer.....	1
6	96106279	Roughing Strip, Anti-Slip.....	2
7	98009013	Nut, Hex Nylock, 1/2"-13.....	5
8	98009010	Bolt, Hex, 1/2"-13 x 1-1/2".....	2
9	96100082	Spacer, Upper Link .....	2
10	98100176	Washer, Special Hardened .....	4
11	96106194	Link, Lift.....	2
12	97100914	Decal, Floating Link Caution.....	2
13	96100081	Spacer, Lower Link .....	1
14	98009036	Bolt, Hex, 1/2"-13 x 3-1/2".....	1
15	98009085	Pin, Cotter, 5/32" x 1-1/2".....	4
16	98009030	Washer, Flat, 3/4".....	4
17	98100165	Pin, Clevis.....	4
18	98009034	Cap Screw, Hex, 3/8"-16 x 1-1/4".....	6
19	96107676	Guard, Valve Block.....	1
20	97101063	Decal, NO STEP .....	1
21	98100327	Bolt, Hex, 5/16"-18 x 4".....	2
22	96107688	Bracket, Valve Mount .....	1
23	96107679	Assembly, Valve Block (see page 24 for details).....	1
24	98009009	Nut, Hex, 3/8"-16.....	6
25	96102915	Plate, Wear, RH .....	1
26	96102916	Plate, Wear, LH.....	1
27	98009150	Nut, Hex Nylock, 5/16"-18.....	2
28	96106204	Frame, Main, V-Plow.....	1
29	98100169	Screw, Special Pivot.....	2
30	98009068	Nut, Slotted, 1"-14.....	2
31	98009069	Pin, Cotter, 5/32" x 2".....	2
32	98100170	Washer, Special .....	2
33	98100157	Nut, Hex Jam, 5/8"-11 .....	2
34	98100164	Screw, Special .....	2
35	96103000	Frame, Pivot, w/ Bushings .....	1
36	96102832	Bushing.....	2
37	98009078	Nut, 5/8"-11 .....	4
38	98009039	Washer, Flat, 5/8".....	4
39	96102542	Assembly, Shoe .....	1
40		Shoe, Cast, 1" Shaft.....	1
41		Spacer, 1" .....	1
42	98009005	Washer, Flat, 1".....	14
43	98009169	Pin, Lynch, 1/4" x 1-9/16".....	1
44	98009038	Nut, Nylock, 5/8"-11 .....	4
45	98009194	Cap Screw, Hex, 5/8"-11 x 4".....	2
46	96101977	Cylinder, Angle (see page 22 for details) .....	2
47	98009042	Cap Screw, Hex, 5/8"-11 x 3-1/2".....	2
48	96105260	Frame, Blade Center.....	1
49	96102781	Eyebolt .....	2
50	96001392	Spring, Trip.....	2

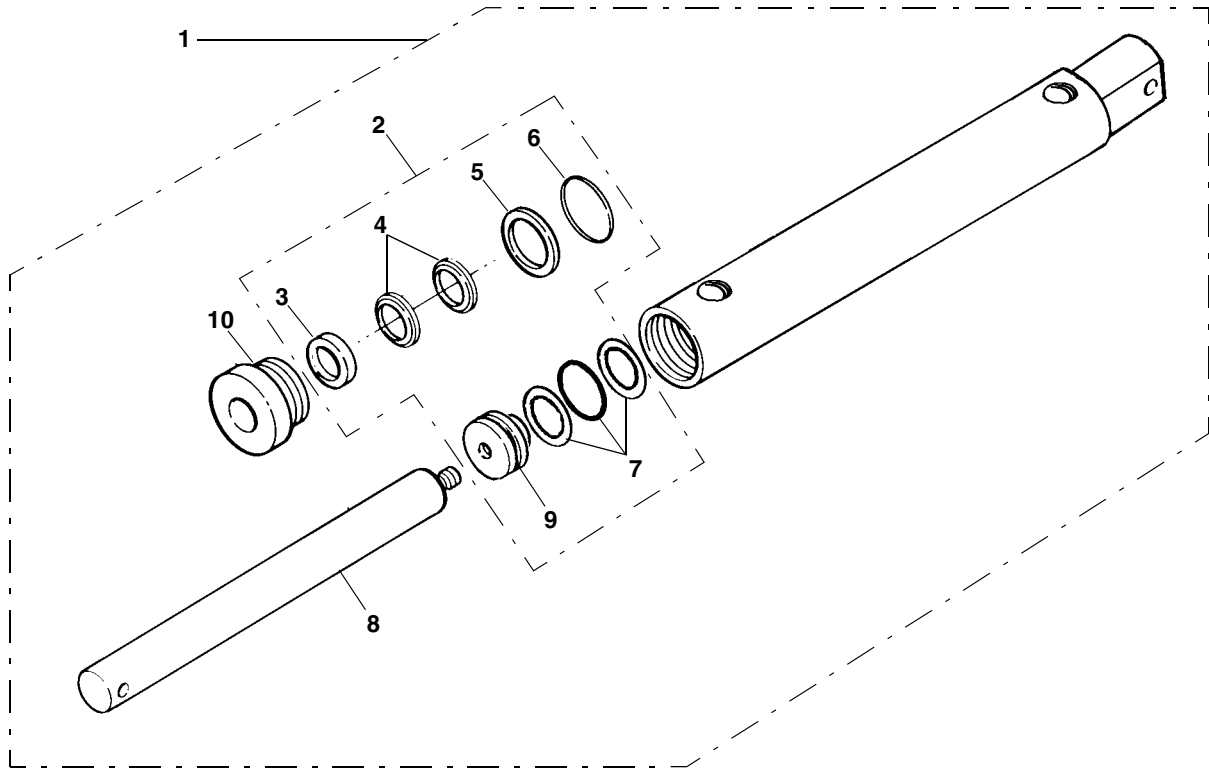
# BLADES



# BLADES

ITEM	PART NO.	DESCRIPTION	QTY
1	96006002	Kit, Guide, Blade (Includes 2 Guides And Mtg. Hdw.) .....	1
2		Frame, 99", RH .....	1
		Frame, 109", RH.....	1
3		Frame, 99", LH .....	1
		Frame, 109", LH .....	1
4	96105978	Retainer, Blade, 99" .....	2
	96105979	Retainer, Blade, 109" .....	2
5	96105976	Blade, Polycarbonate, 99" .....	2
	96105977	Blade, Polycarbonate, 109" .....	2
6	96102474	Blade, Steel, 99" (Bolt On Style) .....	2
	96101844	Blade, Steel, 109" (Bolt On Style) .....	2
7	97100911	Decal, Sno-Way, Steel.....	2
	97100733	Decal, Sno-Way, Polycarbonate .....	2
8	96103891	Wearstrip Kit, Steel, 99" (Includes Mtg. Hdw.) .....	2
	96103892	Wearstrip Kit, Steel, 109" (Includes Mtg. Hdw.) .....	2
		NOTE: Each Wearstrip Kit will replace Wearstrip on one Wing only. To replace Wearstrips on both Wings, two Kits are required.	
9	98100171	Bolt, Carriage, Gr. 5, 1/2"-13 NC x 1-3/4" .....	16
10	98009013	Nut, Nylock, 1/2" - 13 NC .....	16
11	98019176	Screw, Self Tapping.....	10
12	98019230	Washer, Flat, 5/16" .....	10
13	97100018	Decal, Warning.....	2
14	97100006	Decal, Important.....	1
15	97100001	Decal, Warning.....	1
16	96106033	Wearstrip Kit, Center, Urethane (includes Mtg. Hdw.) .....	1
17	98009151	Bolt, Carriage, Gr. 5, 7/16"-14 NC x 2".....	3
18		Strip, Mounting .....	1
19	98009050	Nut, Nylock 7/16"-14 NC .....	3
20	98009034	Cap Screw, Hex., 3/8"-16 NC x 1-1/4".....	8
21	96101401	Bracket, Shoe.....	2
22	98009009	Nut, Nylock, 3/8"-16 NC .....	8
23	96102542	SHOE ASSEMBLY .....	2
24		Shoe, Cast, 1" Shaft.....	1
25		Spacer, 1" .....	1
26		Washer, Flat, 1" .....	14
27		Pin, Lynch, 1/4" x 1-9/16" .....	1

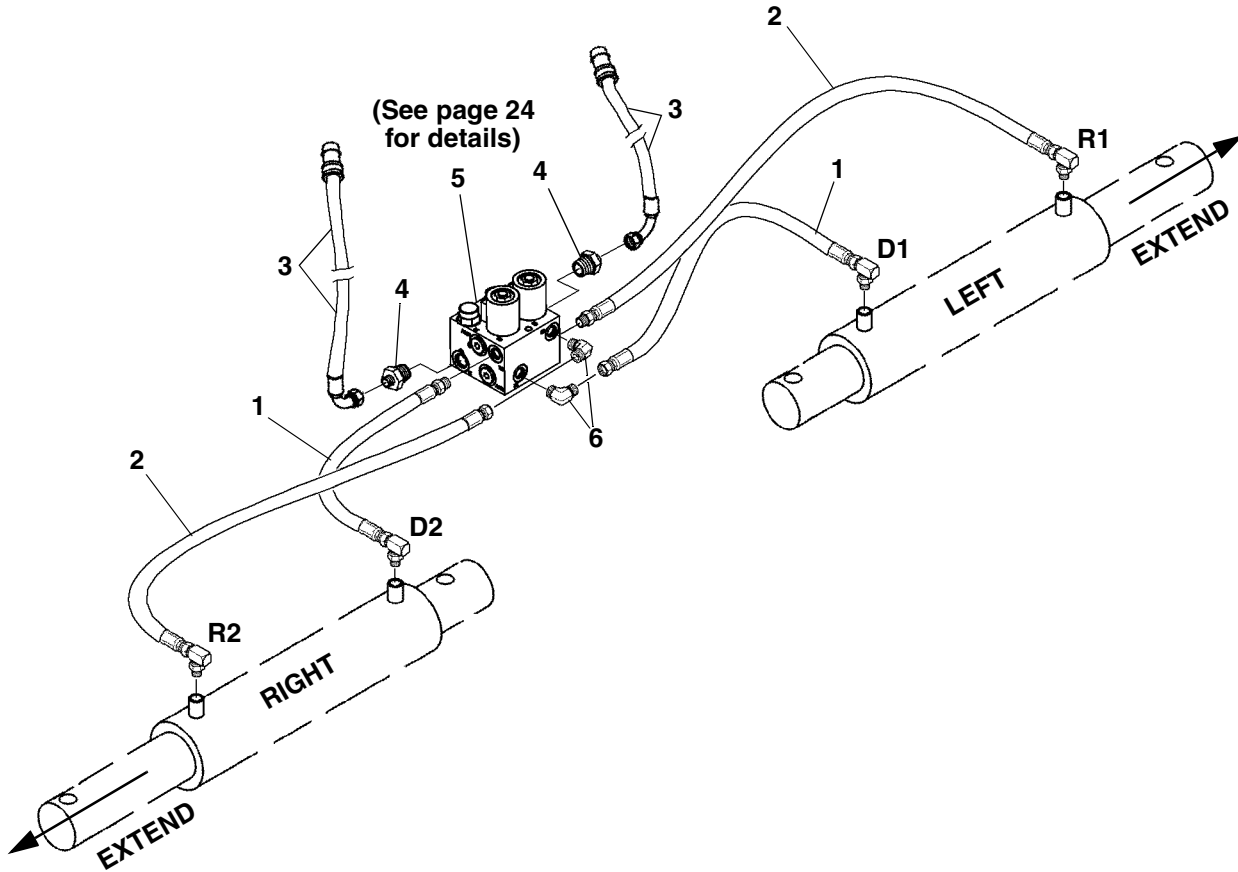
# ANGLE CYLINDERS



ITEM	PART NO.	DESCRIPTION	QTY
1	96101977	Cylinder, Angle, 2-1/4" .....	1
2	96102537	Kit, Seal 2-1/4" .....	1
3		Wiper, Rod .....	1
4		Seal, Rod .....	1
5		Ring, Back Up .....	1
6		O-Ring .....	1
7		Seal, Piston .....	1
8		Rod, Cylinder .....	1
9		Piston .....	1
10	96102536	Nut, Gland 2-1/4" .....	1

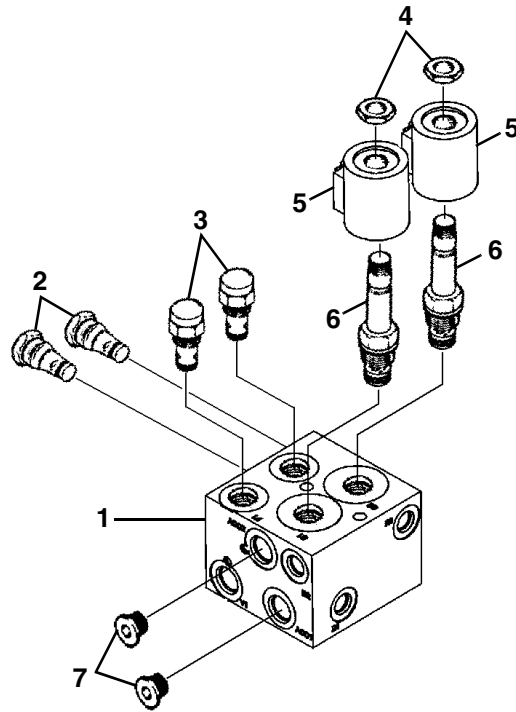


# HYDRAULIC SYSTEM



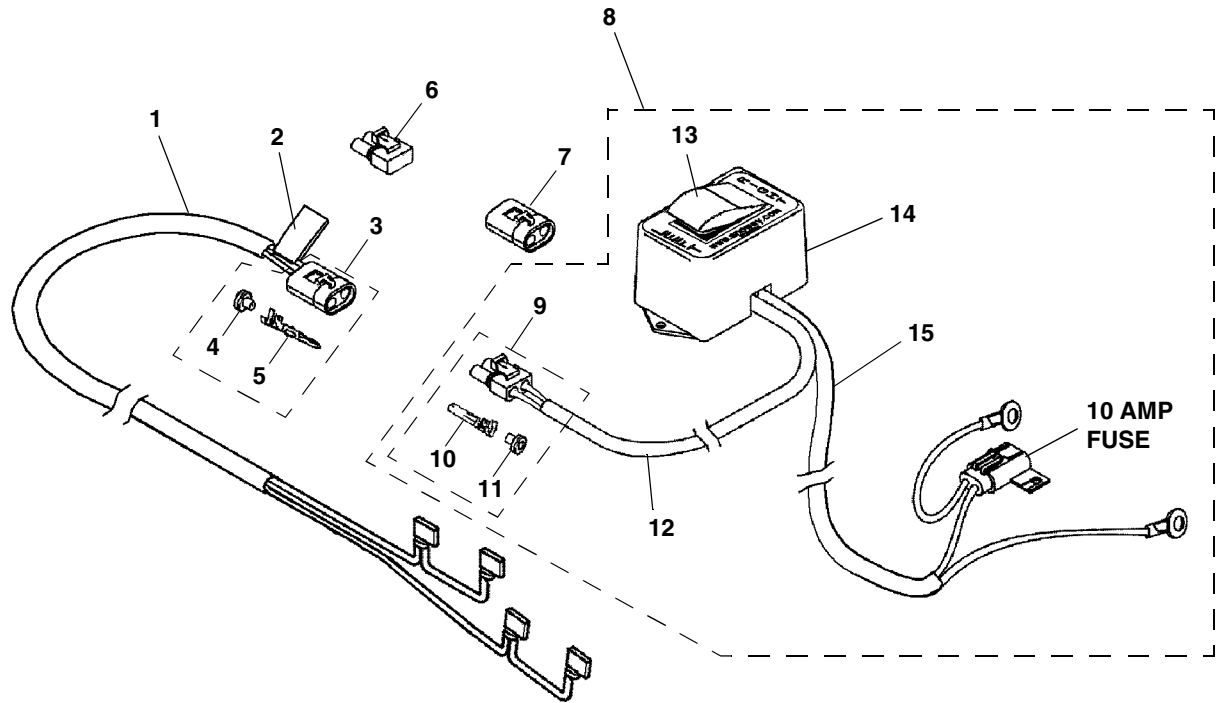
ITEM	PART NO.	DESCRIPTION	QTY
1	96104247	Hose, Hydraulic, 28.50" .....	2
2	96104243	Hose, Hydraulic, 29.50" .....	2
3	96105513	Hose, Hydraulic, 69" .....	2
4	96107721	Fitting, Adapter .....	2
5	96107679	Assembly, Valve, 12 VDC (See page 24 for details) .....	1
6	96100001	Elbow, 90 DEG .....	2

# HYDRAULIC VALVE BLOCK ASSEMBLY



ITEM	PART NO.	DESCRIPTION	QTY
1	96107691	Housing, Valve Block .....	1
2	96107717	Valve, Check .....	2
3	96107690	Valve, Flow Control .....	2
4	96105275	Nut, Coil Retaining.....	2
5	96107718	Coil .....	2
6	96107689	Cartridge, Solenoid Valve .....	2
7	96107719	Fitting, Plug, 3/4"-16 .....	2

# CONTROL SYSTEM WIRING



ITEM	PART NO.	DESCRIPTION	QTY
1	96107678	Harness, Main VSKD SSA .....	1
2	97100034	Decal, Warning.....	1
3	96106301	Connector, Packard, Male.....	1
4	96106305	Seal, Cable.....	2
5	96106303	Terminal, Male.....	1
6	96107741	Storage Plug, Female .....	1
7	96107740	Storage Plug, Male .....	1
8	96107675	Assy., SSA V-Plow Control.....	1
9	96106302	Connector, Packard, Female.....	2
10	96106304	Terminal, Female.....	2
11	96106305	Seal, Cable.....	2
12	96107677	Harness, Control.....	1
13	96102480	Switch, ON/OFF .....	1
14	96105873	Control Box, ON/OFF.....	1
15	96107693	Harness, Power Cable .....	1

# NUMERICAL INDEX

PART NO.	PAGE	ITEM	PART NO.	PAGE	ITEM	PART NO.	PAGE	ITEM
96001392	19	50	96106302	25	9	98009068	19	30
96006002	21	1	96106303	25	5	98009069	19	31
96100001	23	6	96106304	25	10	98009078	19	37
96100081	19	13	96106305	25	4	98009085	19	15
96100082	19	9		25	11	98009150	19	27
96101401	21	21	96107675	25	8	98009151	21	17
96101833	19	1	96107676	19	19	98009169	19	43
96101844	21	6	96107677	25	12	98009194	19	45
96101977	19	46	96107678	25	1	98019176	17	3
	22	1	96107679	19	23		21	11
96102474	21	6		23	5	98019230	17	4
96102480	25	13	96107688	19	22		17	7
96102482	17	2	96107689	24	6	98019230	21	12
96102536	22	10	96107690	24	3	98100010	19	3
96102537	22	2	96107691	24	1	98100098	19	2
96102542	19	39	96107693	25	15	98100157	19	33
	21	23	96107717	24	2	98100164	19	34
96102604	17	5	96107718	24	5	98100165	19	17
96102605	17	1	96107719	24	7	98100167	17	6
96102606	17	1	96107721	23	4	98100169	19	29
96102781	19	49	96107740	25	7	98100170	19	32
96102832	19	36	96107741	25	6	98100171	21	9
96102915	19	25	97100001	21	15	98100176	19	10
96102916	19	26	97100006	21	14	98100327	19	21
96102938	17	8	97100018	21	13			
96103000	19	35	97100034	25	2			
96103891	21	8	97100733	21	7			
96103892	21	8	97100911	21	7			
96104243	23	2	97100914	19	12			
96104246	23	1	97101063	19	20			
96104247	23	1	98009004	19	15			
96105260	19	48	98009005	19	42			
96105275	24	4	98009009	19	24			
96105513	23	3		21	22			
96105873	25	14	98009010	19	8			
96105976	21	5	98009011	19	4			
96105977	21	5	98009013	19	7			
96105978	21	4		21	10			
96105979	21	4	98009030	19	16			
96106033	21	16	98009034	21	20			
96106194	19	11	98009036	19	14			
96106204	19	28	98009038	19	44			
96106279	19	6	98009039	19	38			
96106295	19	5	98009042	19	47			
96106301	25	3	98009050	21	19			



# NOTES



# DEALER PRE DELIVERY CHECKLIST

The following inspections **MUST** be accomplished prior to delivering the snowplow to the customer. Place an X  in the box after accomplishing each item on the checklist.

## CHECK THAT

- Parts have not been damaged in shipment. Repair or replace items that are loose, dented or missing.
- All decals are in place.
- All pivot pins and cotters are installed and secure.
- Trip springs are adjusted.
- Disk Shoe assemblies are installed and adjusted.

Start the vehicle engine and place an X  in the box after accomplishing each item on the checklist.

## CHECK THAT

- Blades swing.
- Cylinders, hoses and fittings **DO NOT** leak.
- No abnormal noises or vibrations are present; Repair or replace as necessary.

# DELIVERY CHECKLIST

The following checklist is to be accomplished with the customer present, Place an X  in the box after accomplishing each item on the checklist.

- After giving the Customer his Owner's Manual, instruct him to read it **PRIOR** to operating the Snow Plow. If he has any questions or does not understand part(s) of the Manual, ask him to contact the Dealer for answers or explanations **BEFORE** operating the unit.
- Record the Serial Numbers, Date of Purchase, Purchaser's Name and Address, and the Dealers Name, Address and Phone Number in the space provided on Page 1 of the Owner's Manual.
- Explain connect and disconnect procedures.
- Explain the necessity of Disk Shoe usage at all times to ensure optimum plow performance.
- Fill out Warranty Registration Card and mail COPY 1 to the factory to validate Warranty. NO Warranty claims can be honored if the Warranty Card is not on file at the factory.**

---

SNO-WAY® INTERNATIONAL, INC.



Hartford, WI 53027 USA  
Website: [www.snoway.com](http://www.snoway.com)  
©2009 Sno-Way® International