

# **SNO-WAY<sup>®</sup>**

**SNOW & ICE CONTROL EQUIPMENT**

## **OWNER'S, INSTALLATION & PARTS MANUAL**

**29VSKD SERIES SKID STEER  
SNOW PLOW (99101105)**

WITH SERIAL NUMBERS AFTER:  
29VSKD100000

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# 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.

NAME PLATE DATA	
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)	

DEALER	
NAME _____	
ADDRESS _____	
CITY _____ STATE _____ ZIP _____	
PHONE ( ) - _____	
(FILL IN)	

ORIGINAL PURCHASER	
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.

**NEVER** exceed 45 m.p.h. when snow plow is attached to vehicle. Braking distances may be increased and handling characteristics may be impaired at speeds above 45 m.p.h.

**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** 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

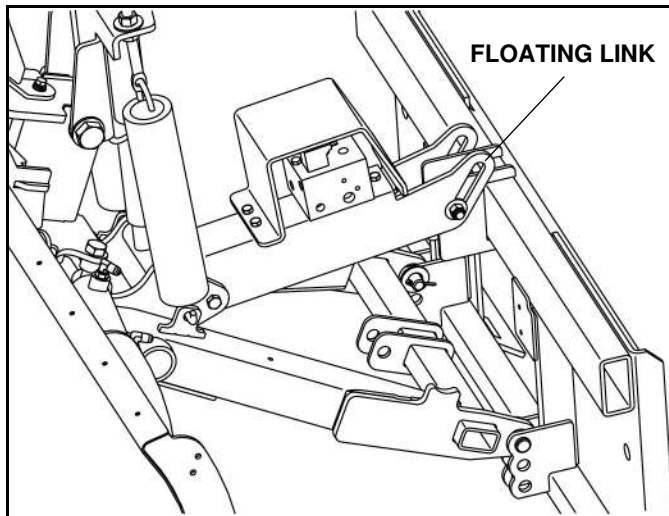


Figure 1-1

The Sno-Way Skid Steer Plows are designed to plow snow within certain operational limits. A floating link enables the plow to "float" over the contours of an uneven grade during operation. 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 tower assembly, between wing cylinder pivot pins and the lift linkage.

5. Apply oil or grease to the wing pivot pin through two lubrication holes provided in the pin housing. (See Figure 1-2)

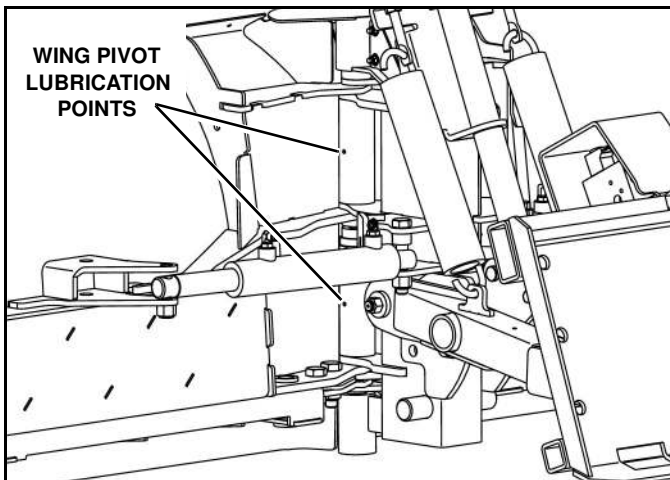


Figure 1-2

6. Check the reservoir oil level (see maintenance instructions) and repair any oil leaks and worn hoses.

7. Install auxiliary and flashing lights (if not equipped).

## Transporting Vehicle With Plow Attached

1. Position the blade out of the beam path of the vehicle work lights before operating.

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 wing cylinders with a light grease.

2. Lubricate 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 wearstrips, shoes or deflectors. Performing preventative maintenance tasks in the spring when the plow is stored will ensure that you will be ready to plow in the fall.

# TROUBLESHOOTING GUIDE

## Introduction

Whenever service is necessary, your local Sno-Way 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.



## CAUTION

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

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 Manual.

## Trouble Shooting General Quick Reference

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

## Troubleshooting Chart

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 retighten 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, between wing cylinder pivot pins and the lift linkage.

## 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.

## 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.

## 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 11 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.



# INSTALLATION

## Control Wiring Installation

1. Position the control box in cab. Secure the control box using hook and loop fastener provided.
2. Route the power harness lead to the battery (See Figure 1-4). 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 1-3) and (See Figure 1-4).

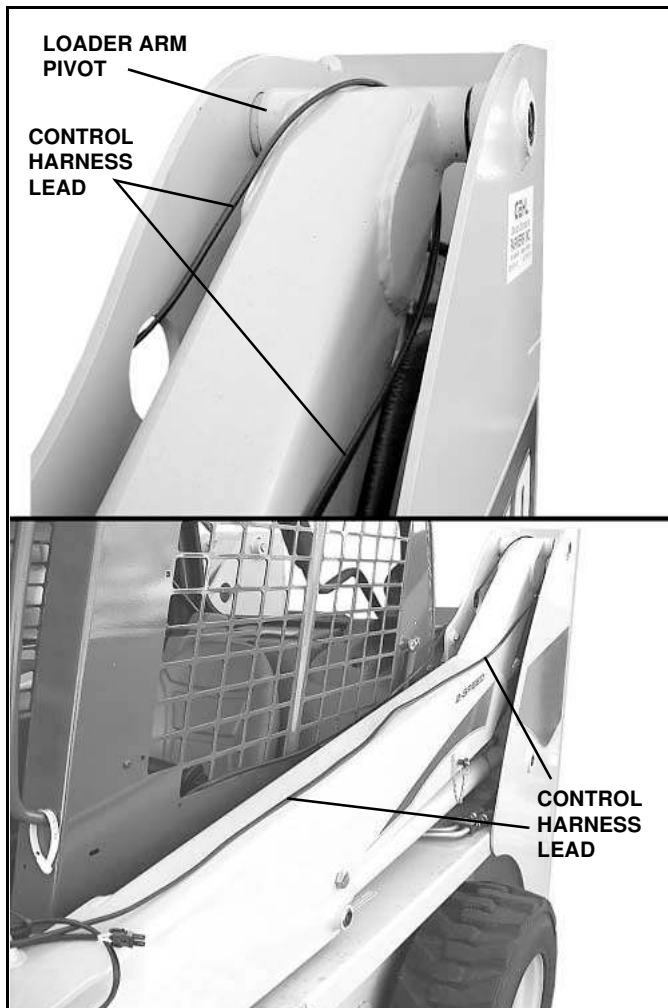


Figure 1-3

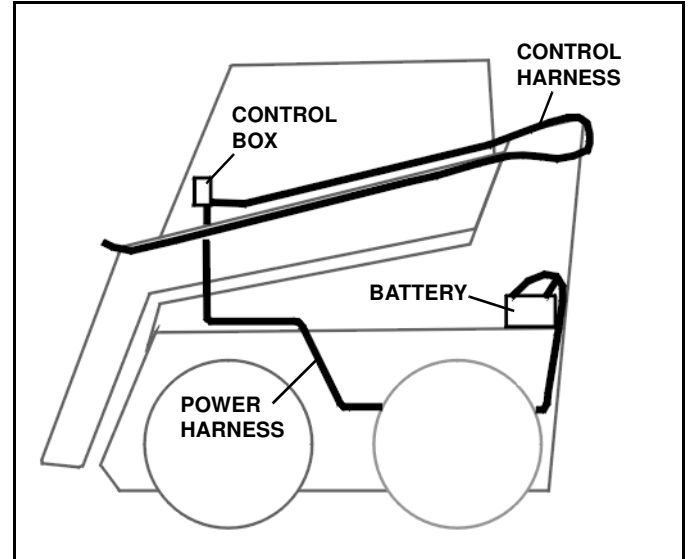


Figure 1-4

## 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.
5. Connect the electrical connector to the vehicle.

## Removing Snow Plow From Vehicle

1. Lower the snow plow to the ground.
2. Disconnect the hydraulic hoses and electric connector from the vehicle.
3. Unlock the universal mount from the snow plow and slowly back the vehicle away, while tilting the universal mount slightly forward.

## Plow Adjustment

1. The plow frame height should be adjusted relative to the optimum resting position of the loader arms. To adjust, remove the locknuts and hex head cap screws that secure the rear of the A-frame to the mounting lugs of the universal adapter. Move the A-frame to a higher or lower position as required and re-install the capscrews and locknuts. Tighten securely.

2. This plow is equipped with the MaxAdjust™ System (Patent pending). Adjust capscrew as required to position center of moldboard at a 90° angle to the ground. (See Figure 1-5).

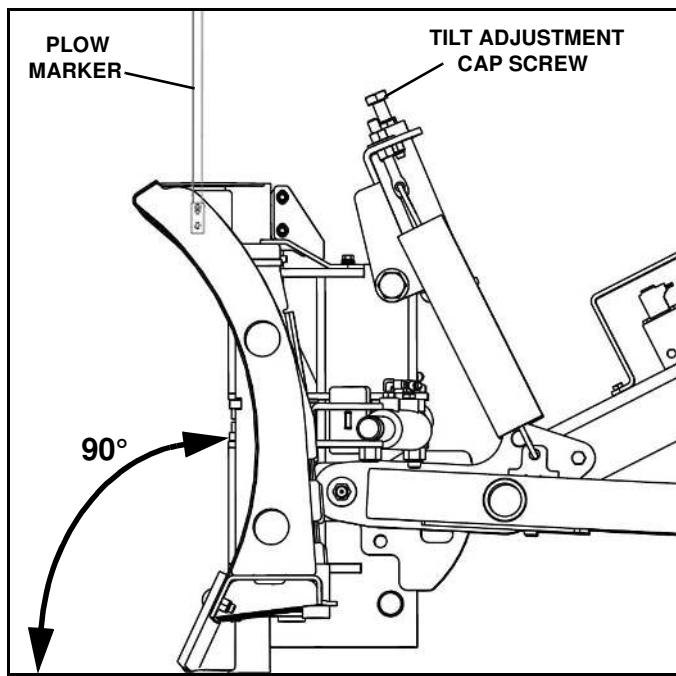


Figure 1-5

3. This plow as an option has 4 shoes that may be installed to help with gravel plowing and aid in over all cutting edge wear. Two plow shoes are located at the outboard end of each wing. The two inner plow shoes are located inboard on the wing underneath the cylinder mounting area.

**IMPORTANT: To ensure the best function of this Snow Plow, it is a requirement that all four plow shoes be adjusted equally.**

Adjust the plow shoes as follows:

- Park the vehicle on a smooth level surface. Adjust the wings straight out on each side and lower the plow to the ground.
- When properly adjusted, the plow shoes and wearstrips contact the ground at the same time. Determine whether the plow shoes or wearstrips are off the ground.
  - If the plow shoe(s) were off the ground - washers must be moved from the top to the bottom of the shoe stem.

- If the wearstrips are off the ground - washers must be moved from the bottom to the top of the shoe stem.



## WARNING

**Keep hands and feet clear of wings and center section when setting blocking and lowering plow. Moving or falling assemblies could result in serious injury.**

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

- Raise the plow and place suitable blocking under the plow to allow at least six inches (6") of clearance from the bottom of the plow shoes to the ground.
- Lower plow onto blocking. Turn ignition switch OFF and apply the emergency brake.
- Adjust shoe assemblies by removing shoe mounting lynch pin and adding or subtracting washers on the top or bottom of the shoe mounting location. (See Figure 1-6).

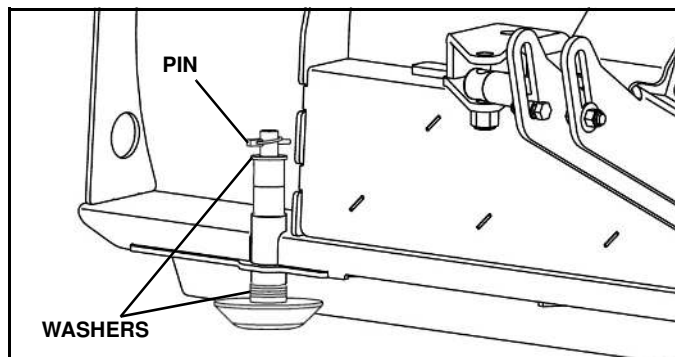


Figure 1-6

- After the disk shoe position is properly adjusted place washers on the shoe stem - above the plow frame and below the retaining lynch pin - to remove all up and down movement of the disk shoe in the frame. Failure to do so will result in excessive wear of the holes in the frame or bending of the shoe stem.

**IMPORTANT: Snap lynch pin ring over so that it contacts the pin. If ring does not contact lynch pin, rotate the pin and reverse the direction of the ring. If the ring does not contact the pin it is not locked and could fall out.**

- Lower the plow to the ground and check adjustment. Repeat adjustment if required.

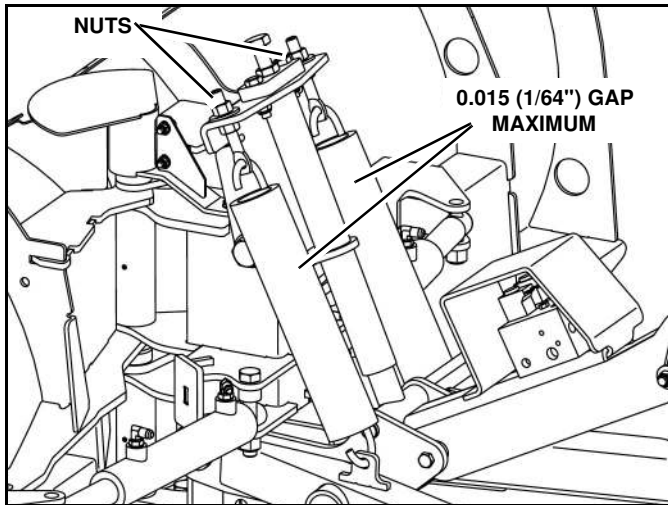
## Trip Spring Adjustment

*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 the full UP position and support the blade with suitable blocking.
2. Turn the vehicle OFF, apply the parking brake and remove the ignition key.
3. Check to make sure that the springs are installed as illustrated. (See Figure 1-7).



**Figure 1-7**

4. Loosen the lower jam nut on each eyebolt. (See Figure 1-7).









## 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.**

5. Tighten the upper retaining nut until a 0.010" feeler gauge can pass between two or more coils on each spring.

6. Hold the upper nut and tighten the lower nut securely on each spring.

# TORQUE SPECIFICATIONS

SAE Grade and Head Markings	1 or 2 No Marks 	5 5.1 5.2 	8 8.2 
SAE Grade and Nut Markings	2 No Marks 	5 	8 

SIZE	Grade 1		Grade 2		Grade 5, 5.1 or 5.2		Grade 8 or 8.2	
	Lubricated <sup>a</sup>	Dry <sup>b</sup>	Lubricated <sup>a</sup>	Dry <sup>b</sup>	Lubricated <sup>a</sup>	Dry <sup>b</sup>	Lubricated <sup>a</sup>	Dry <sup>b</sup>
	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft
8-32			14*	19*	22*	30*	31*	42*
10-24			21*	27*	32*	43*	45*	60*
1/4	2.8	3.5	4.5	5.5	7	9	10	12.5
5/16	5.5	7	9	11	15	18	21	26
3/8	10	13	16	20	26	33	36	46
7/16	16	20	26	32	41	52	58	75
1/2	25	31	39	50	63	80	90	115
9/16	36	45	56	70	90	115	130	160
5/8	50	62	78	100	125	160	160	225
3/4	87	110	140	175	225	280	310	400
7/8	140	175	140	175	360	450	500	650
1	210	270	210	270	540	675	750	975
METRIC COARSE THREAD			Grade 8.8		Grade 10.9		Grade 12.9	
Grade 8.8			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

DO NOT use these values if a different torque value or tightening procedure is given for a specific application.

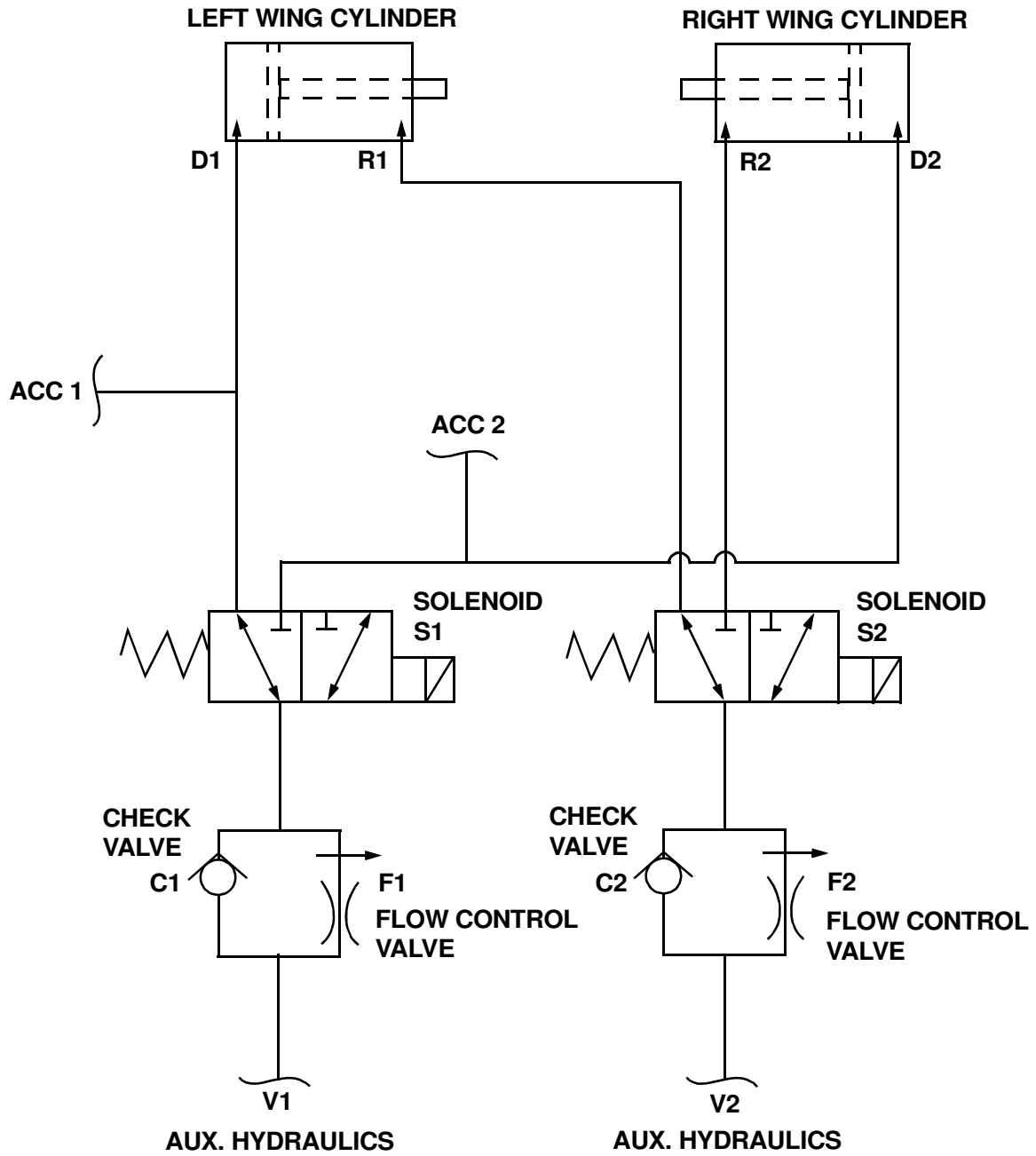
Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

<sup>a</sup> "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.

<sup>b</sup> "Dry" means plain or zinc plated without any lubrication

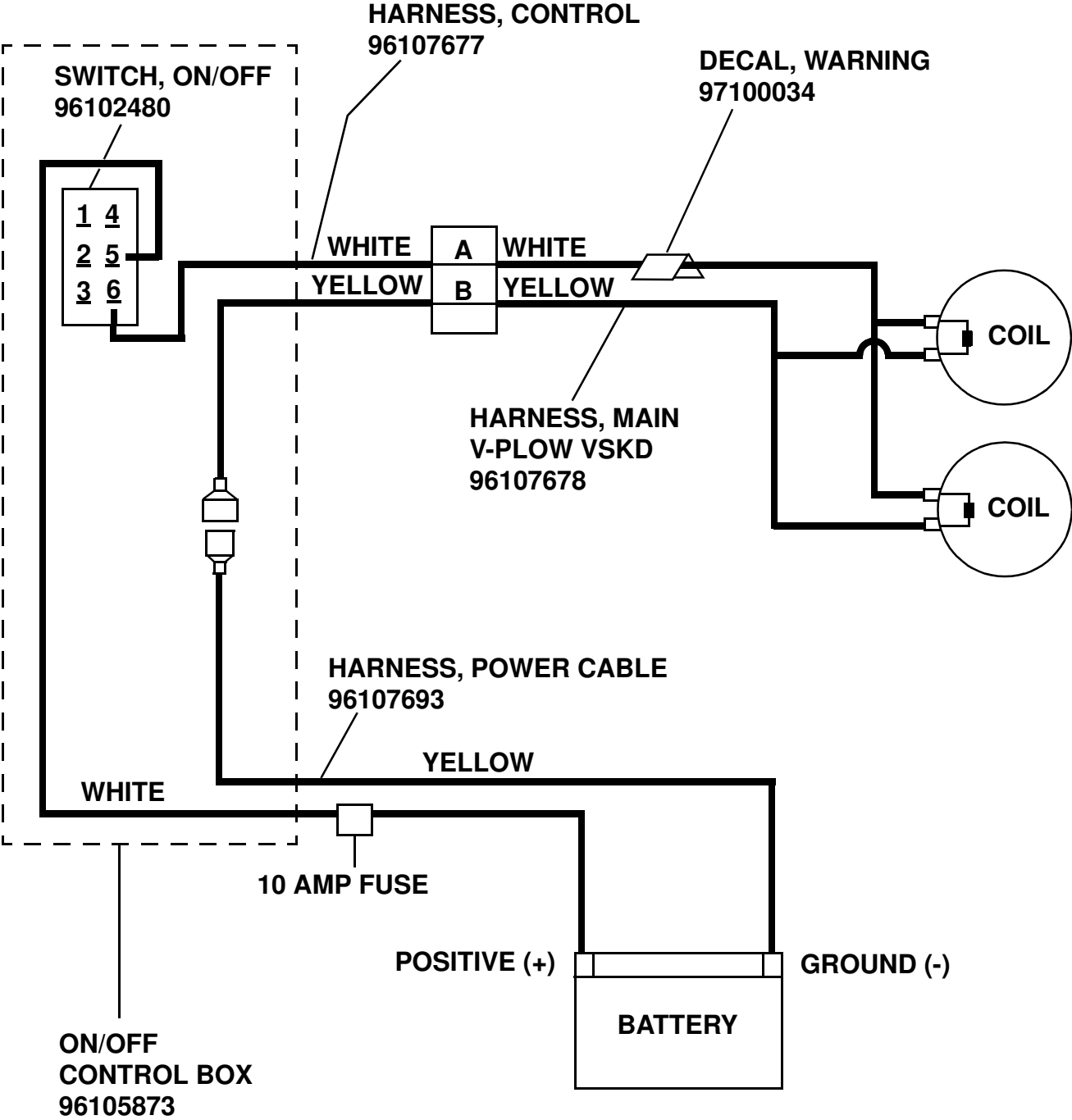
\* Values with asterisk are in lb-in.

# 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

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(s) at time of order, and include the Model and applicable Serial Numbers of your machine.

*NOTE: The Model and all Serial number information should be recorded on page two of your Installation and Owner's Manual for ease of reference. The location of these numbers on the machine is detailed in the manual as well. "Right" and "Left" are determined from a position sitting on the Operators 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

A sample parts listing is shown below:

- The "**ITEM**" in column one is the number used in the corresponding illustration.
- The "**PART NO.**" in column two 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**" in column three 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.**" in column four is the quantity needed to service the assembly illustrated, not the complete product.

ITEM	PART NO.	DESCRIPTION	QTY.
1	96100083	O-ring	1
2	96001529	Elbow	3
3	98100036	Capscrew, Hex.,3/8"-16NC x 7/8"	9

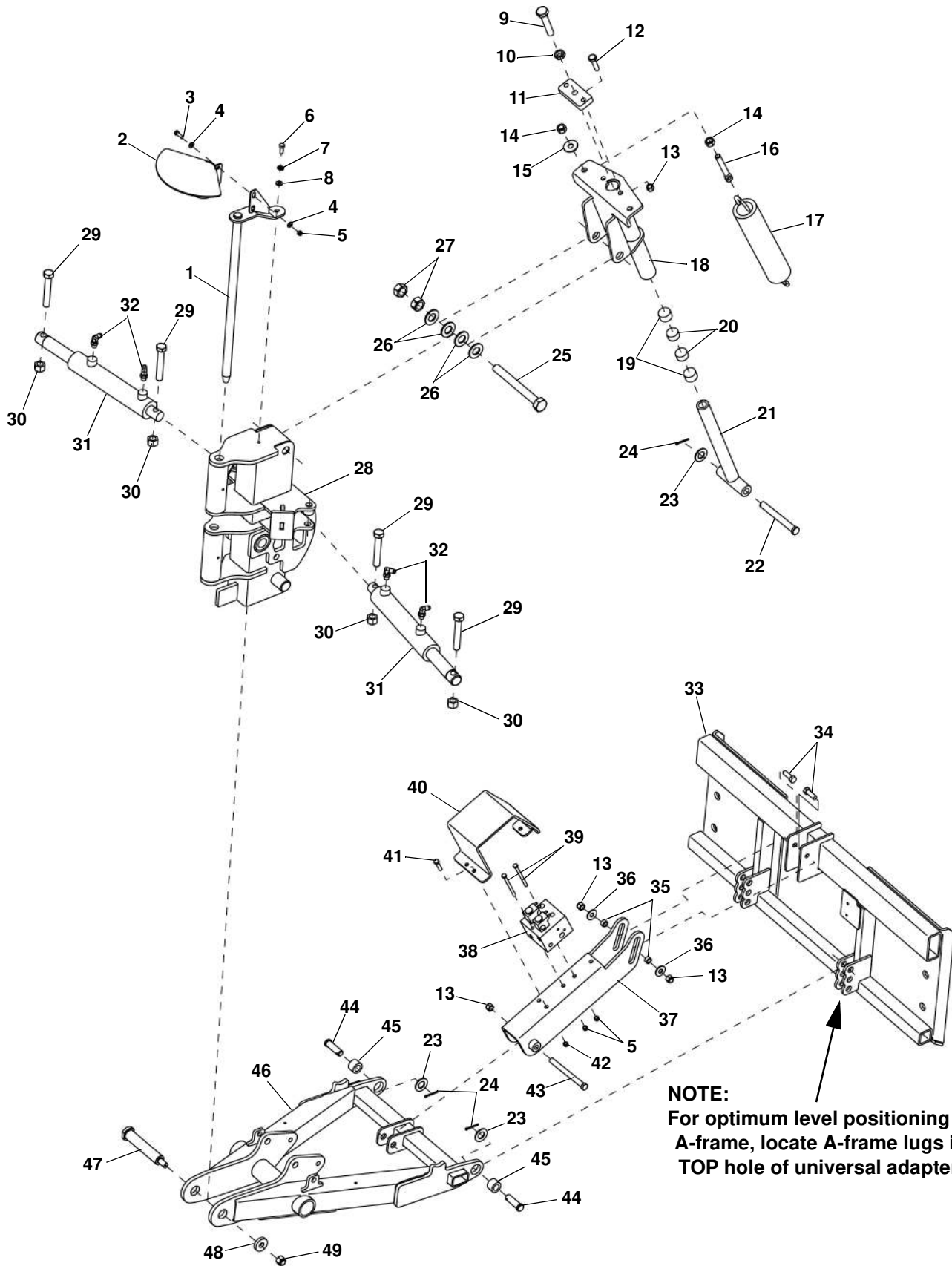
## PART DESCRIPTION ABBREVIATIONS

Our Part Descriptions use common industry standard abbreviations in the naming conventions for many individual items. The list below details the abbreviations commonly used throughout this manual. If a specific abbreviation is not listed, contact any Sno-Way Dealer for clarification.

ABBREV.	DESCRIPTION
BRKT	BRACKET
CB	CARRIAGE BOLT
CLP	CLEVIS PIN
COTP	COTTER PIN
DP	DOWN PRESSURE
DS	DRIVER SIDE
EB	EYE BOLT
GR	GRADE
HDWE	HARDWARE
HHCS	HEX HEAD CAP SCREW
HN	HEX NUT
HNILN	HEX NYLON INSERT LOCKNUT

ABBREV.	DESCRIPTION
HW	HARD WIRED
HWH	HEX WASHER HEAD
LN	LOCK NUT
LW	HELICAL LOCK WASHER
PS	PASSENGER SIDE
PW	PLAIN FLAT WASHER
SHCS	SOCKET HEAD CAP SCREW
SLT	SLOTTED
SS	STAINLESS STEEL
ST	SELF-THREADING
UB	U-BOLT
WL	WIRELESS

# FRAME ASSEMBLY



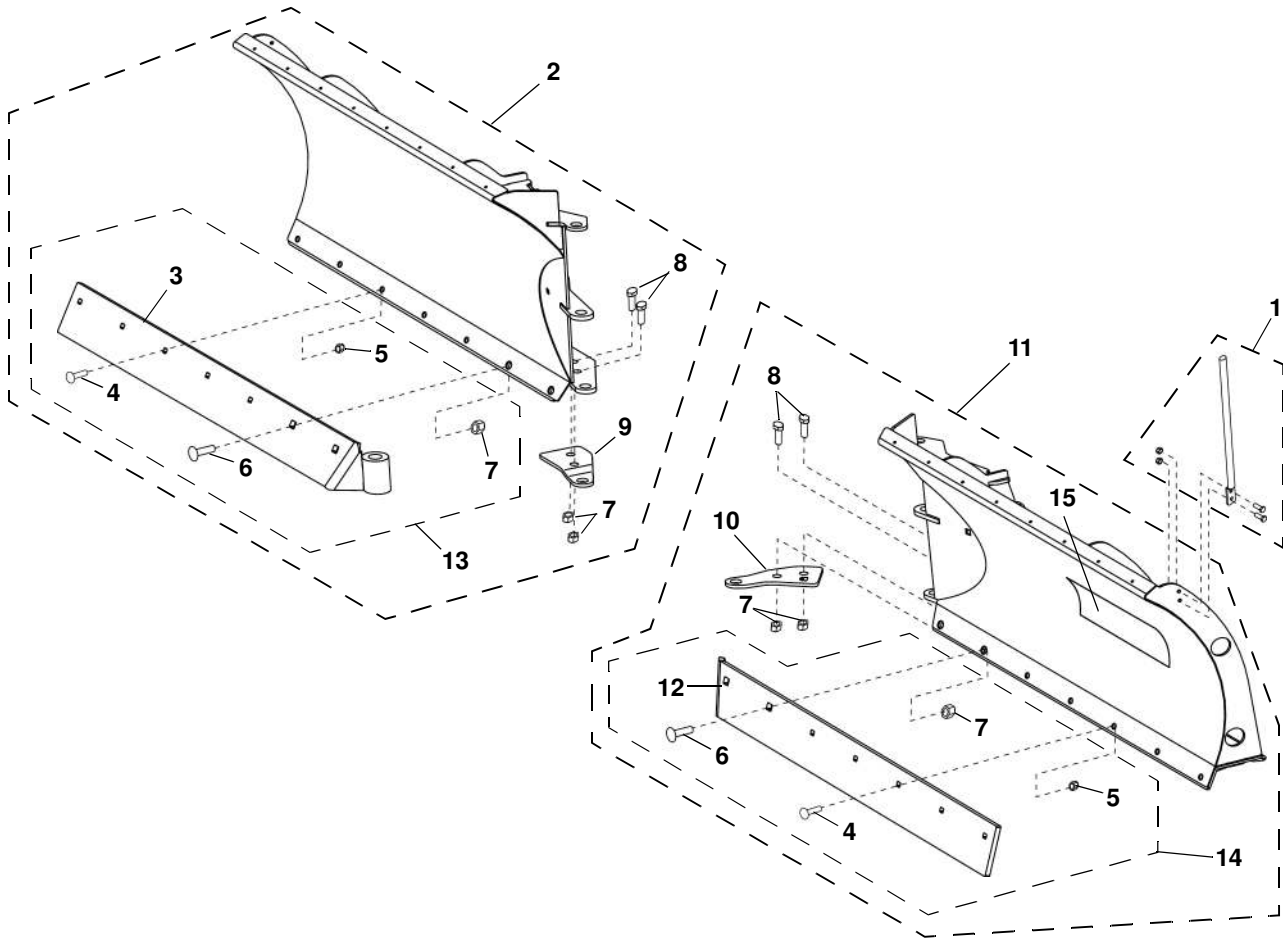


# FRAME ASSEMBLY

ITEM	PART NO.	DESCRIPTION	QTY
1	96111951	WELDMENT, PIN, MBV .....	1
2	96112220	WELDMENT, CENTER DEFLECTOR .....	1
3	98009149	HHCS, 5/16"-18 X 1.0" GR. 8, ZP/DT .....	2
4	98009024	PW, 5/16" HARD, ZINC .....	4
5	98009150	LN, 5/16"-18,NYLON INSERT, ZP/DT .....	4
6	98009022	HHCS, 3/8"-16 X 1", GR. 5, ZINC.....	1
7	98009008	LW, 3/8", MED. SPLIT, ZP/DT.....	1
8	98009032	PW, 3/8" A NARROW, ZP/DT .....	1
9	98100455	TAP BOLT, 3/4"-10 X 4", UNC, FULL THREAD, ZP/DT .....	1
10	98100473	HN, 3/4"-10, JAM, ZP/DT.....	1
11	96112894	PLATE, ADJUSTMENT.....	1
12	98100010	HHCS. 1/2"-13 X 2", GR 5, ZP/DT.....	2
13	98009013	LN, 1/2"-13, NYLON INSERT, ZP/DT .....	5
14	98009078	HN, 5/8"-11, ZINC .....	4
15	98009039	PW, 5/8" TYPE B REGULAR.....	2
16	96102781	BOLT, SPADE, 5/8"-11 X 5", ZP/DT .....	2
17	96112891	SPRING, TRIP, MBV .....	2
18		WELDMENT, SPRING HOLDER, TOP.....	1
19	96114392	PLATE, STOP .....	2
20	96111065	STOP .....	2
21		WELDMENT, SPRING HOLDER, BOTTOM.....	1
22	98100499	CLP, 3/4" X 6.5", GR 5, YLLW ZNC .....	1
23	98009030	PW, 3/4" A NARROW, ZP/DT .....	2
24	98009085	COTP, 5/32" X 1-1/2", ZP.....	3
25	98100510	HHCS, 1"-8 X 8".....	1
26	98009005	PW, 1", A NARROW, ZP/DT .....	4
27	98100511	HN, 1"-8, NYLON INSERT.....	1
28		TUBE TOWER .....	1
29	98009084	HHCS, 3/4"-10 X 4-1/2", GR 8, ZP/DT.....	4
30	98009003	LN, 3/4"-10, NYLON INSERT, ZP/DT .....	4
31	96111453	CYLINDER, SWING, DA 2" X 9-1/2", MBV .....	2
32	96100001	FITTING, ELBOW 90° .....	4
33	96109850	UNIVERSAL ADAPTER, VSKD .....	1
34	98100390	HHCS, 1/2"-13 X 1-3/4", GR 8, ZP/DT.....	2
35	96114794	BUSHING, LINK, 29VSKD .....	2
36	98100176	PW, 1/2", A WIDE, HARDENED, ZP/DT.....	2
37	96114715	BRKT, LINK, VSKD .....	1
38		VALVE BLOCK ASSY, VSKD SSA .....	1
39	98100327	HHCS, 5/16"-18 X 4.0", GR 5 .....	2
40	96112402	BRKT, COVER, VSKD .....	1
41	98009256	HHCS, 3/8"-16 X 1-1/2" .....	3
42	98009009	LN, 3/8"-16, NYLON INSERT, ZINC .....	3
43	98009040	HHCS, 1/2"-13 X 7".....	1
44	98100165	CLP, 3/4" X 2-1/2", GR 5.....	2
45	96114716	BUSHING, A_FRAME 29VSKD .....	2
46		A-FRAME, MBV, MEGA TO LEGA .....	1
47	96112733	PIN, TOWER PIVOT .....	1
48	98100469	WASHER, SPECIAL, MBV .....	1
49	98009038	LN, 5/8"-11, NYLON INSERT, ZP/DT.....	1

NOTE: Reference "PART DESCRIPTION ABBREVIATIONS" on page 15 for a list of abbreviations used in the descriptions in this manual.

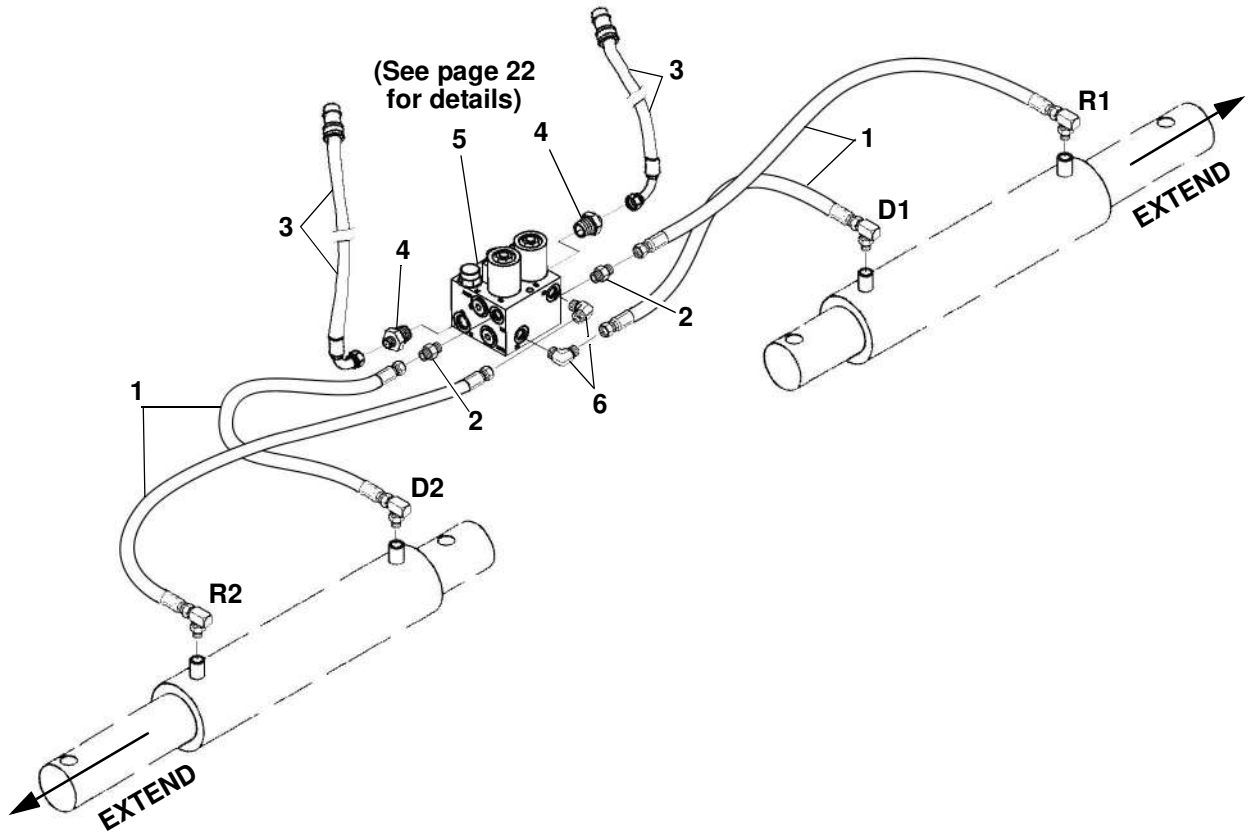
# V-WING™ BLADE



ITEM	PART NO.	DESCRIPTION	QTY
1	96112352	KIT, BLADE GUIDE-YELLOW.....	2
		HHCS, 5/16"-18 X1" SS (INCLUDED WITH ITEM #1).....	4
		LN, 5/16"-18, SS (INCLUDED WITH ITEM #1).....	4
2	96113820	PKG WING 29VHD, PS .....	1
3		WEARSTRIP, 29VHD, PS .....	1
4	98100481	CB, 1/2"-13 X 1-3/4" .....	10
5	98009013	LN, 1/2-13, NYLON INSERT .....	10
6	98100482	CB, 3/4"-10 X 2" .....	4
7	98009003	LN, 3/4"-10, NYLON INSERT.....	8
8	98009001	HHCS, 3/4"-10 X 2.50" .....	4
9	96113365	SUPPORT PLATE, LOWER HINGE, PS .....	1
10	96113364	SUPPORT PLATE, LOWER HINGE, DS .....	1
11	96113818	PKG WING 29VHD, DS (INCLUDES ITEM 15) .....	1
12		WEARSTRIP, 29VHD, DS.....	1
13	96113318	WEARSTRIP KIT, 29VHD PS (INCLUDES ITEM 3 AND HARDWARE).....	1
14	96113319	WEARSTRIP KIT, 29VHD DS (INCLUDES ITEM 12 AND HARDWARE) .....	1
15	97101835	DECAL, SNOWAY .....	1

NOTE: Reference "PART DESCRIPTION ABBREVIATIONS" on page 15 for a list of abbreviations used in the descriptions in this manual.

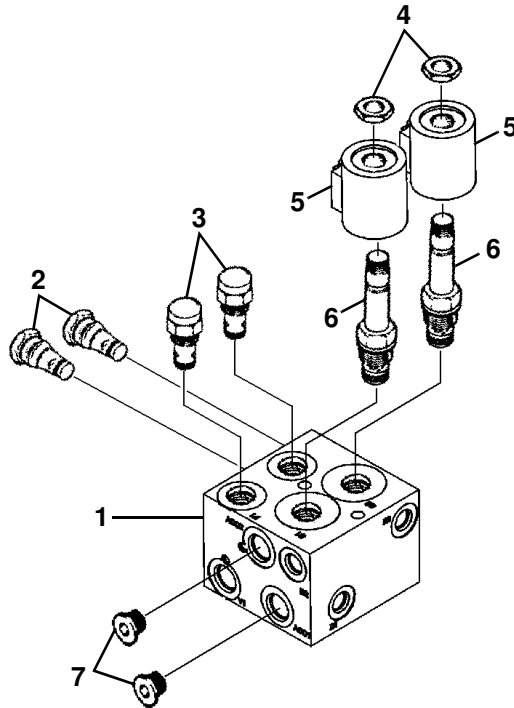
# HYDRAULIC SYSTEM



ITEM	PART NO.	DESCRIPTION	QTY
1	96112917	HOSE, HYDRAULIC, 62" .....	4
2	96100000	FITTING, STRAIGHT .....	2
3	96105513	HOSE, HYDRAULIC, 69" .....	2
4	96107721	FITTING, ADAPTER .....	2
5		ASSEMBLY, VALVE, 12 VDC (See page 19 for components) .....	1
6	96100001	ELBOW, 90 DEG .....	6

NOTE: Reference "PART DESCRIPTION ABBREVIATIONS" on page 15 for a list of abbreviations used in the descriptions in this manual.

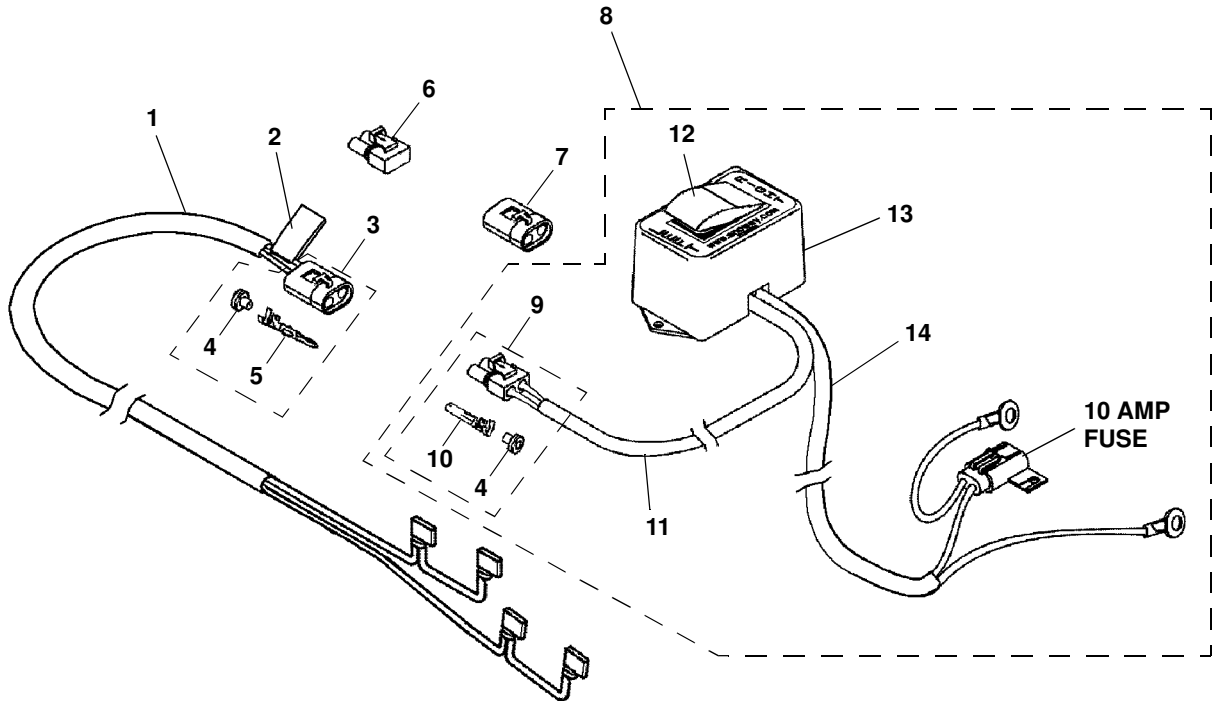
# HYDRAULIC VALVE BLOCK ASSEMBLY



ITEM	PART NO.	DESCRIPTION	QTY
1		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

NOTE: Reference "PART DESCRIPTION ABBREVIATIONS" on page 15 for a list of abbreviations used in the descriptions in this manual.

# CONTROL SYSTEM WIRING



ITEM	PART NO.	DESCRIPTION	QTY
1	96107678	HARNESS, MAIN VSKD SSA .....	1
2		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	96107677	HARNESS, CONTROL.....	1
12	96102480	SWITCH, ON/OFF .....	1
13	96105873	CONTROL BOX, ON/OFF .....	1
14	96107693	HARNESS, POWER CABLE.....	1

NOTE: Reference "PART DESCRIPTION ABBREVIATIONS" on page 15 for a list of abbreviations used in the descriptions in this manual.

# NUMERICAL INDEX

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96100001	16	32	97101835	15	17			
	18	6	98009001	17	8			
96102480	20	12	98009003	16	30			
96102781	16	16		17	7			
96105275	19	4	98009005	16	26			
96105513	18	3	98009008	16	7			
96105873	20	13	98009009	16	42			
96106301	20	3	98009013	16	13			
96106302	20	9		17	5			
96106303	20	5	98009022	16	6			
96106304	20	10	98009024	16	4			
96106305	20	4	98009030	16	23			
96107675	20	8	98009032	16	8			
96107677	20	11	98009038	16	49			
96107678	20	1	98009039	16	15			
96107689	19	6	98009040	16	43			
96107690	19	3	98009078	16	14			
96107693	20	14	98009084	16	29			
96107717	19	2	98009085	16	24			
96107718	19	5	98009149	16	3			
96107719	19	7	98009150	16	5			
96107721	18	4	98009256	16	41			
96107740	20	7	98100010	16	12			
96107741	20	6	98100165	16	44			
96109850	16	33	98100176	16	36			
96111065	16	20	98100327	16	39			
96111453	16	31	98100390	16	34			
96111951	16	1	98100455	16	9			
96112220	16	2	98100469	16	48			
96112352	17	1	98100473	16	10			
96112402	16	40	98100481	17	4			
96112733	16	47	98100482	17	6			
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96114716	16	45						

# 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.
- Plow 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 their Owner's Manual, instruct them to read it **PRIOR** to operating the Snow Plow. If they have any questions or do not understand any part(s) of the Manual, ask them 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 plow 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.**

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SNO-WAY® INTERNATIONAL, INC.

**SNO-WAY**  
SNOW & ICE CONTROL EQUIPMENT

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