

SNO-WAY®

SNOW & ICE CONTROL EQUIPMENT

INSTALLATION & OWNER'S MANUAL

**29VSKD SERIES
SKID STEER SNOW PLOW
99101237 & 99101220**

**WITH SERIAL NUMBERS AFTER:
29VSKD200000**

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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
PLOWING OPERATION.....	5
Before The Season Begins	5
Transporting Vehicle With Plow Attached	5
Plowing Like A Pro	5
Plow Storage	5
TROUBLESHOOTING GUIDE.....	6
Introduction	6
Trouble Shooting General Quick Reference.....	6
Troubleshooting Chart	6
MAINTENANCE	7
General	7
Periodic Inspection.....	7
Electrical Quick Disconnect Plugs.....	7
Hydraulic Cylinders	7
Fluid Compatibility	7
Special Fasteners Torques and Requirements	7
INSTALLATION.....	8
Control Wiring Installation	8
Mounting Snow Plow To Vehicle	10
Removing Snow Plow From Vehicle	11
Plow Adjustment.....	11
Trip Spring Adjustment	12
WIRING SCHEMATIC	13
HYDRAULIC SCHEMATIC.....	14
TORQUE SPECIFICATIONS.....	15
DEALER CHECKLISTS.....	Rear 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.

	WARNING
FAILURE TO HEED CAN RESULT IN INJURY OR DEATH.	

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

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 CO² 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

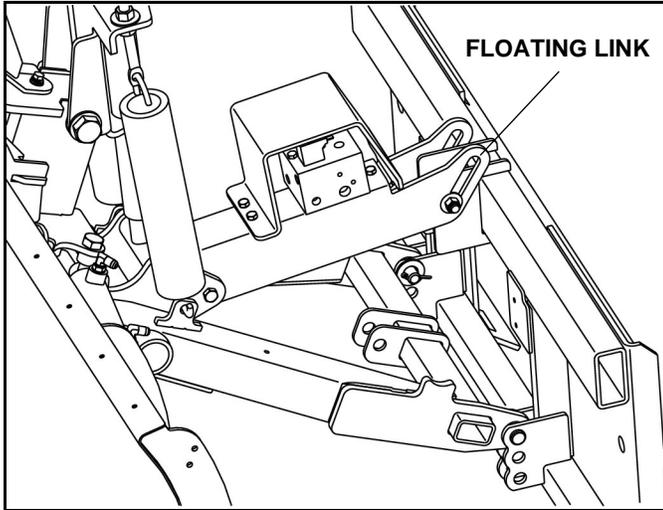


Figure 1-1

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.

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)

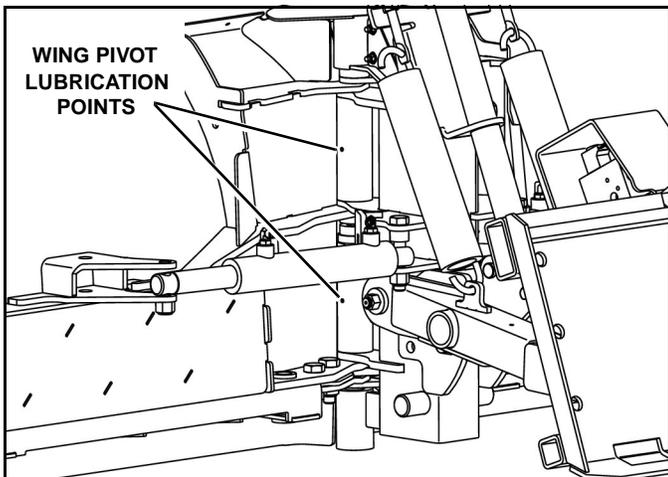


Figure 1-2

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.

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.

 CAUTION
<p>First read all warning instruction, the safety messages, and directions before attempting any adjustments or repairs to your unit!</p>

General Quick Reference

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

TROUBLESHOOTING CHART

NOTE: Make sure all electrical connections are correct, that wires are not frayed or corroded before consulting the following chart:

PROBLEM	PROBABLE CAUSE
Left wing extends and retracts, Right wing does not move as intended.	The valve S1 is stuck open
	Check switch for electrical shorts. Switch may be stuck "On" for the S1 valve
Right wing extends and retracts, Left wing does not move as intended	The valve S2 is stuck shut
	Check switch for electrical shorts. Switch may be stuck "On" for the S2 valve
Wings do not move	Both coils are "ON" (or both valves are internally stuck shut)
Both wings extend together, but individual left and right functions are not possible	No power going to the valves. <ul style="list-style-type: none"> • The electrical connection to the remote switch is not connected • The valves coils have become disconnected
Both wings retract together, but individual left and right functions are not possible only	No power going to the valves <ul style="list-style-type: none"> • The electrical connection to the remote switch is not connected • The valves coils have become disconnected
Retract rate is slower than extend rate	Flow to block is not very high: Increase the engine speed
Wings will not retract - Extend only, but not retract	One of the auxilliary power lines is disconnected
Wings will not collaspe when hitting an object	Case drain line disconnected
When wings hits an object the other wing extends	Case drain line disconnected

FOR ANY OTHER ISSUE, CHECK WITH YOUR SNO-WAY DEALER

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, 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 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.

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).

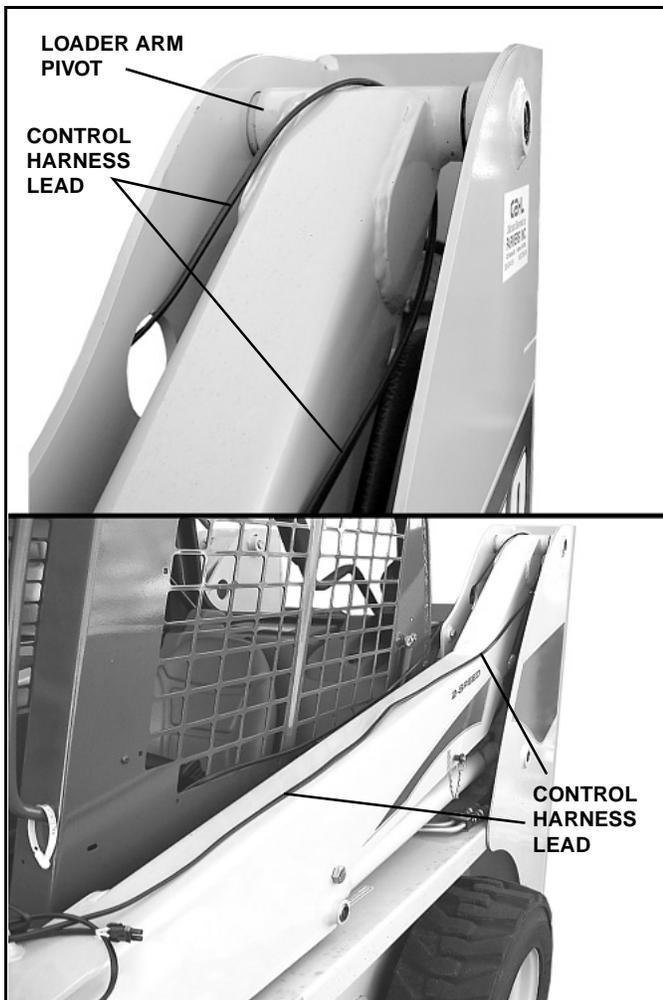


Figure 1-3

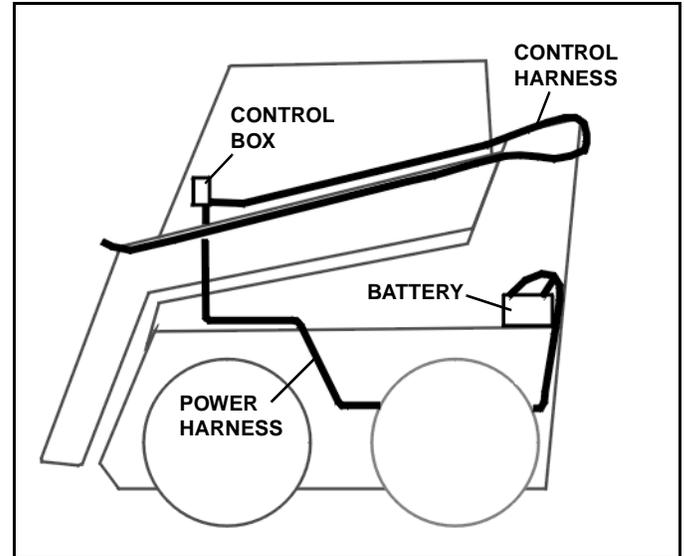


Figure 1-4

Mechanical Installation

Final Installation

1. Remove the A-frame/tower assembly from the box.
2. Remove power unit.
3. To aid in the pin installation as the blades are installed, loosen two nuts securing each lower support plate to the DS and PS wings. (See Figure 1-5)

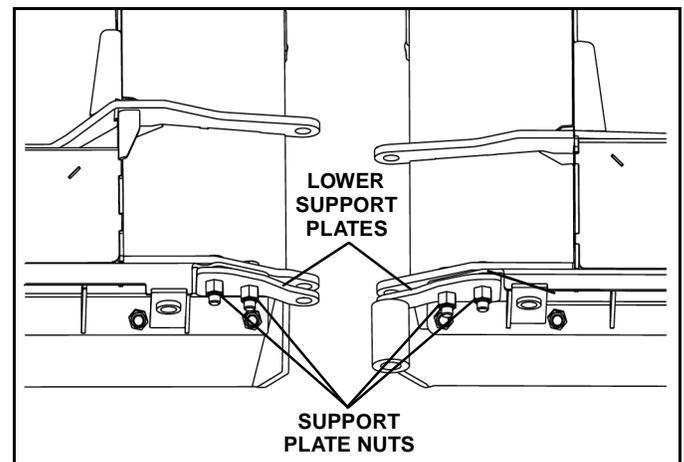


Figure 1-5

4. Position the drivers side (DS) and passenger side (PS) wings in front of the A-frame/tower assembly. (See Figure 1-6)

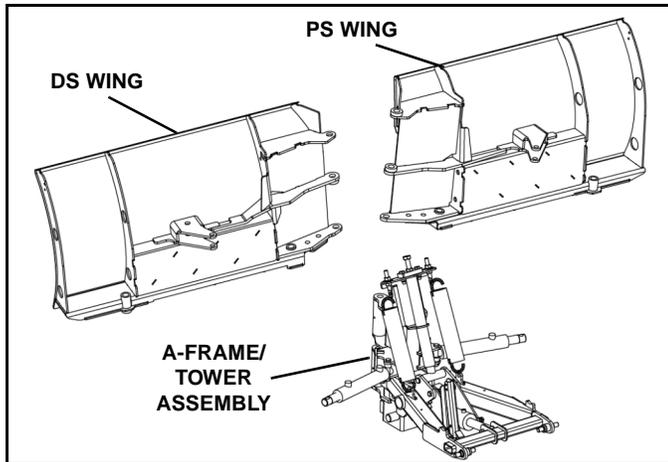


Figure 1-6

5. Coat main wing pivot pin with grease and insert completely through the tower, blade section pin holes, and support plate holes. (See Figure 1-7)

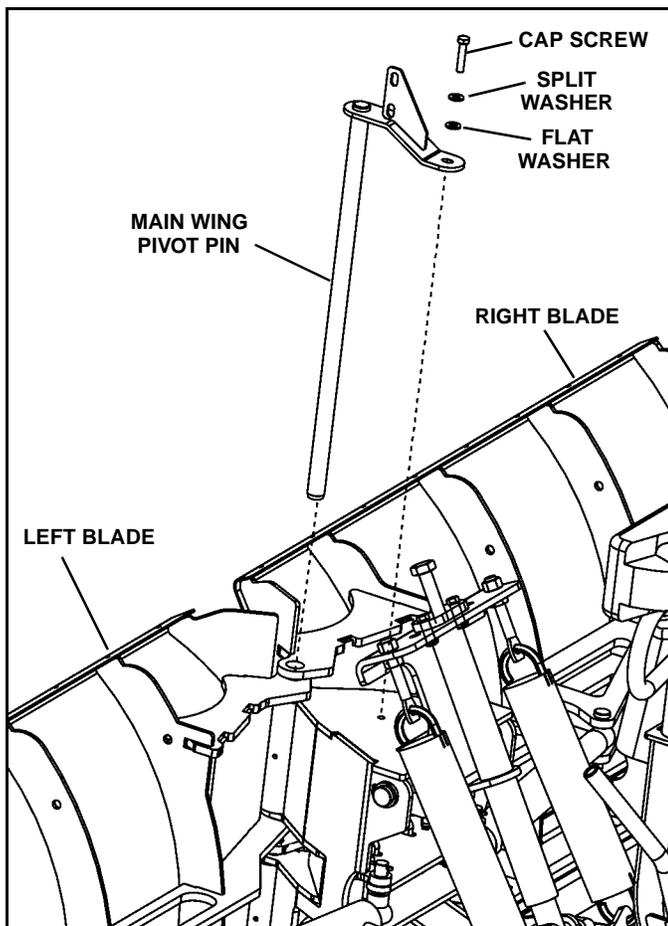


Figure 1-7

6. Secure the main wing pivot pin to the tower assembly with one 5/16-18 x 1" hex head cap screw (p/n 98009149), 5/16" split lock washer (p/n 98009025) and 5/16" flat washer (p/n 98009024).

7. After installation of the pin, tighten nuts on the lower hinge support plates securely if loosened earlier.

8. Install the center shield on the clevis pin retainer bracket, and secure with two 5/16-18 x 1" hex head cap screws (p/n 98009149), four 5/16" flat washers (p/n 98009024) and two 5/16" lock nuts (p/n 98009150). (See Figure 1-8)

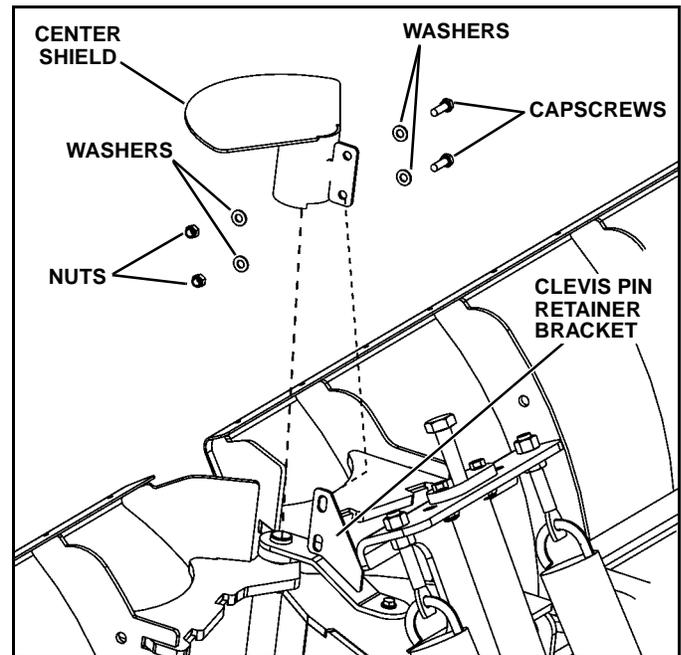


Figure 1-8

9. Attach angle cylinder base to tower with a 3/4" x 4-1/2" capscrew and 3/4" locknut. Attach angle cylinder rod to blade with a 3/4" x 4" capscrew and 3/4" locknut. (See Figure 1-9) Repeat for opposite angle cylinder.

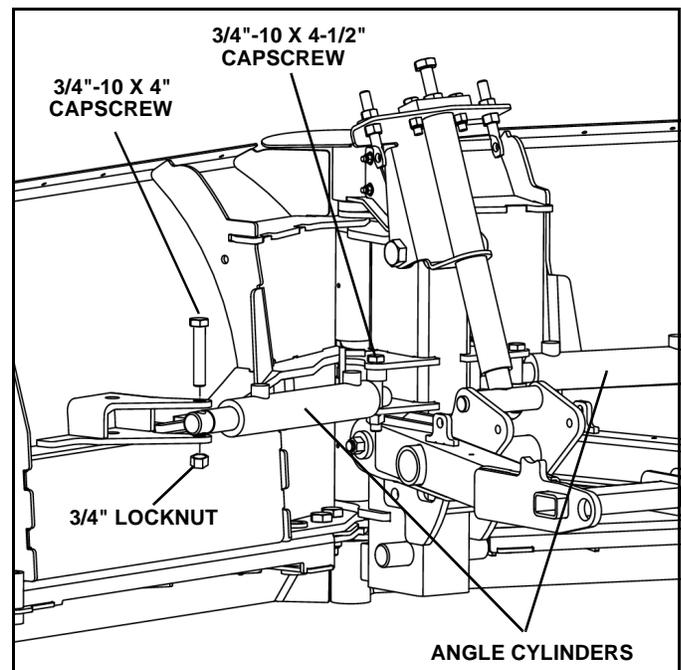


Figure 1-9

10. Attach a plow marker to each wing as shown and secure using 5/16" x 1" cap screws and locknuts. (See Figure 1-10)

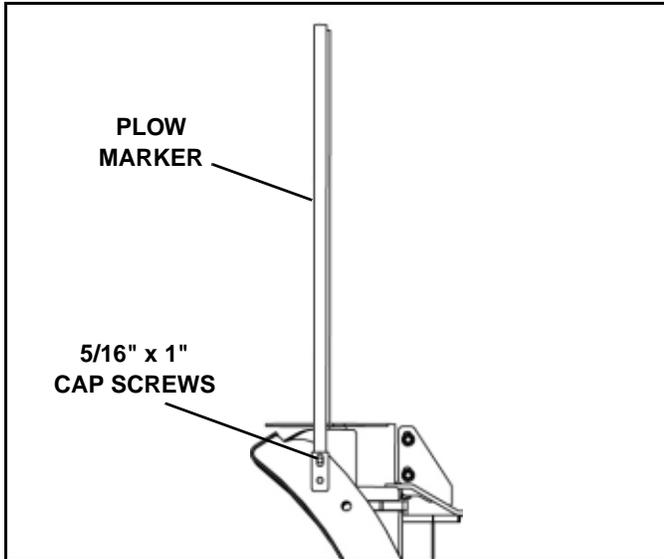


Figure 1-10

11. Loosely connect hydraulic hoses to the wing cylinders. (See Figure 1-11).

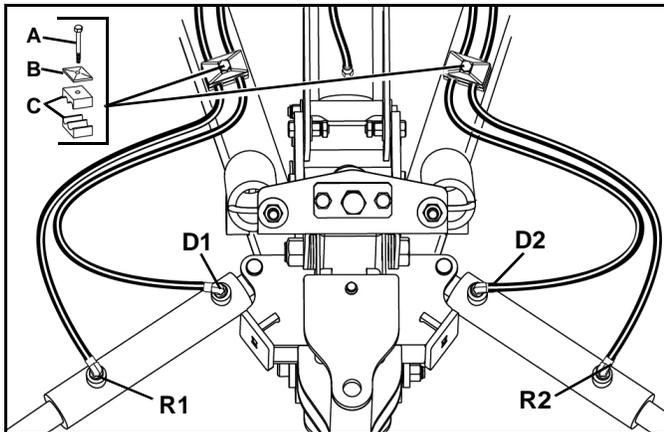


Figure 1-11

12. Loosely position hydraulic hoses in hose clamps (A - 5/16" X 2" self-tapping screw, B - plate, C - clamp blocks) on each side of the A-frame.

13. Adjust each hose length from clamps to hose end fittings to 33 in. and tighten both clamp screws. (See Figure 1-12)

NOTE: If installing screw with an impact wrench, ensure that the wrench is adjusted to its lowest torque setting to avoid fastener damage.

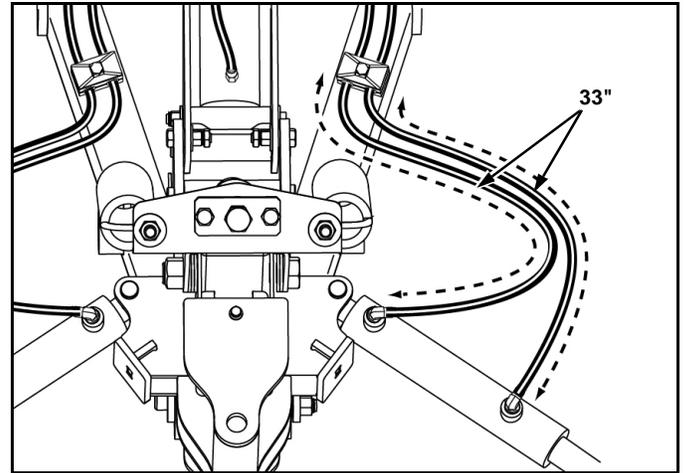


Figure 1-12

14. Tighten all hydraulic hose fittings securely.

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 (V1, V2 and CD) to the auxiliary hydraulic connectors on the vehicle. Refer to figure below and the hydraulic schematic on page 14.

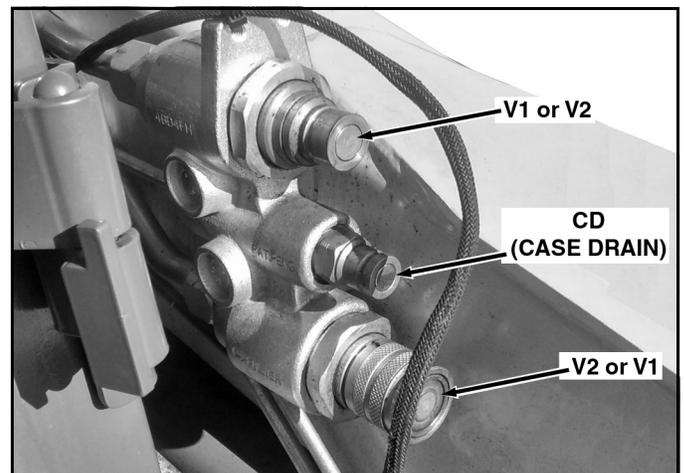


Figure 1-13

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 1-14).

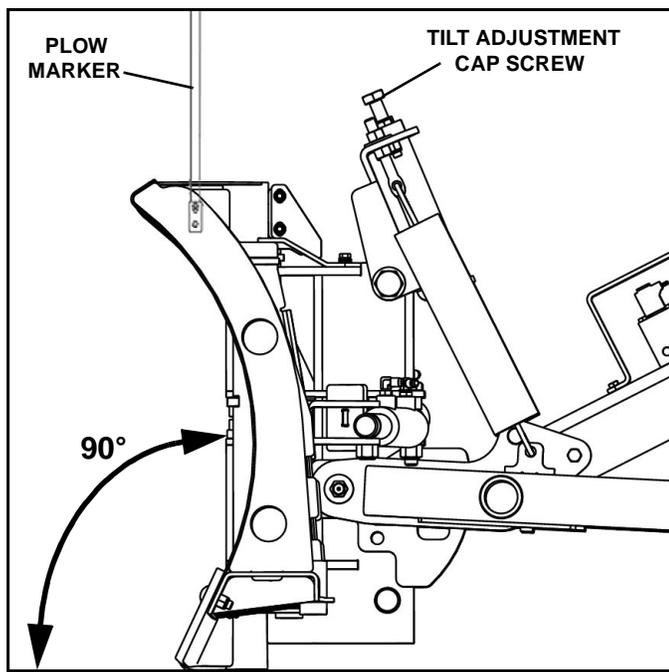


Figure 1-14

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:

- a. Park the vehicle on a smooth level surface. Adjust the wings straight out on each side and lower the plow to the ground.
- b. 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.

- c. 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.
- d. Lower plow onto blocking. Turn ignition switch OFF and apply the emergency brake.
- e. 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 1-15).

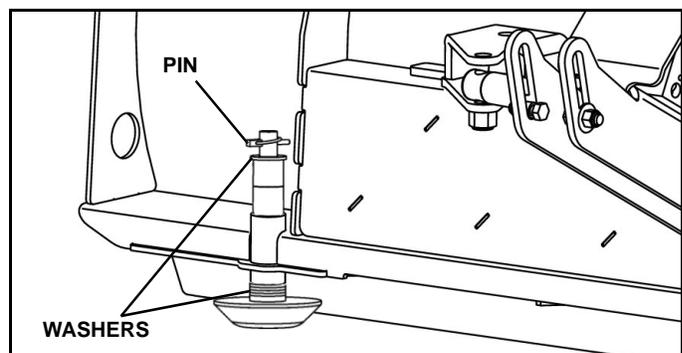


Figure 1-15

- f. 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.

- g. 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 1-16).

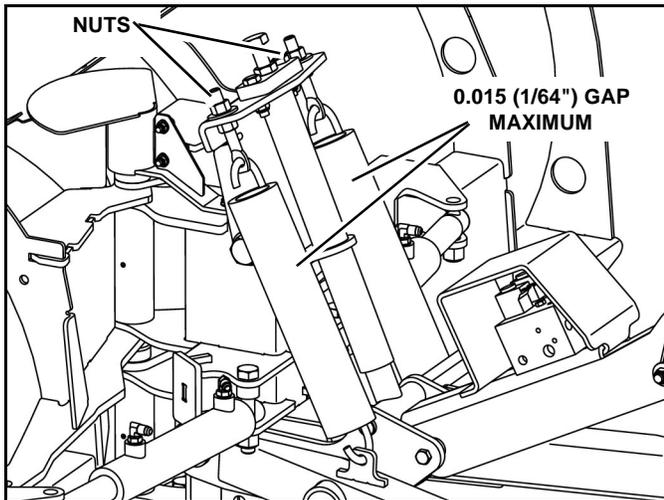


Figure 1-16

4. Loosen the lower jam nut on each eyebolt. (See Figure 1-16).



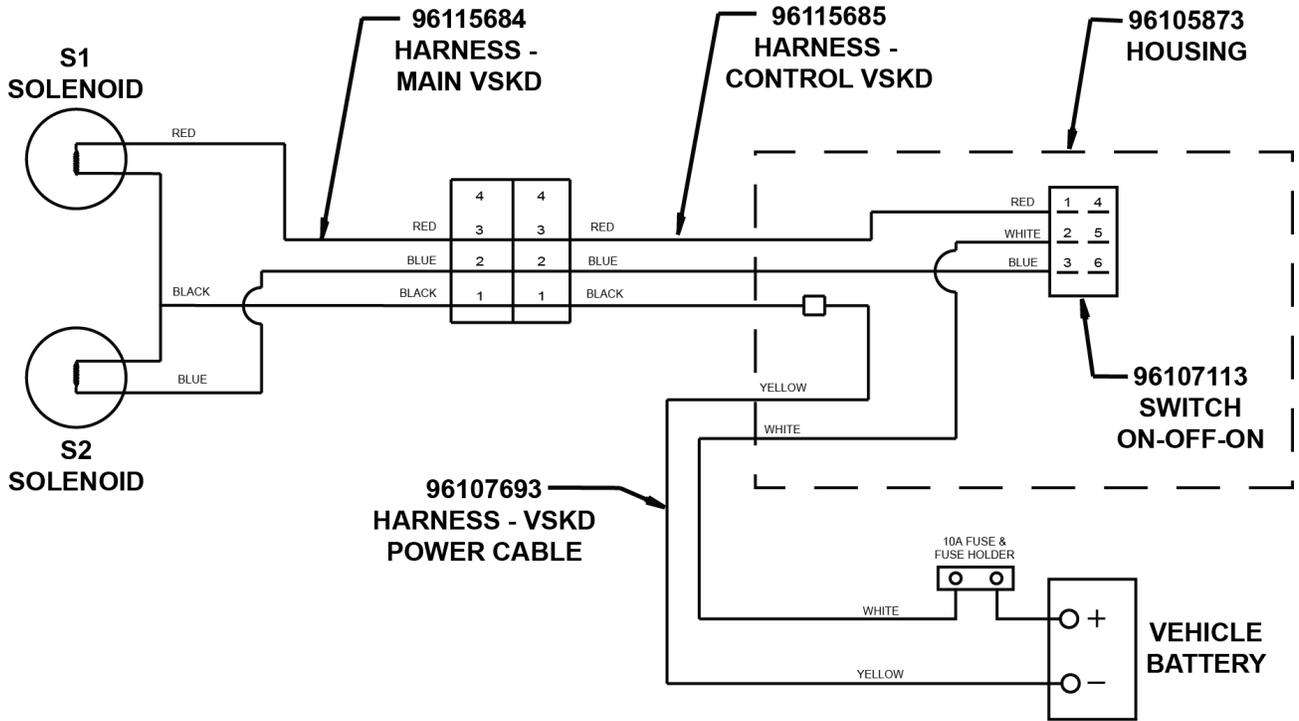
CAUTION

- 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.

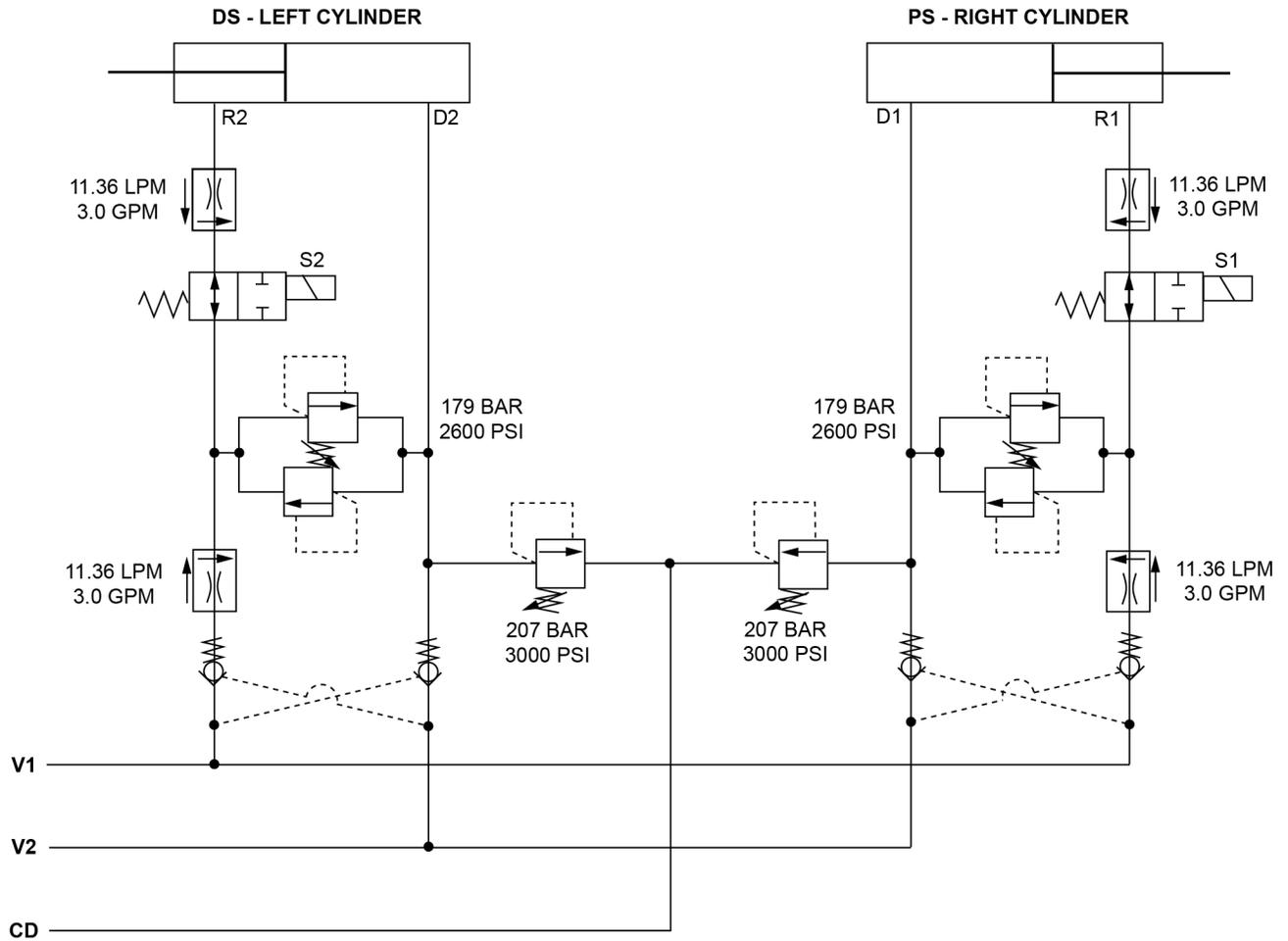
5. Tighten the upper retaining nut until a 0.010" feeler gauge can pass between two or more coils on each spring.

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

WIRING SCHEMATIC



HYDRAULIC SCHEMATIC



FLOW FUNCTION	SWITCH POSITION	CYLINDER PRESSURIZED PORT	S1 SOLENOID STATUS	S2 SOLENOID STATUS	FLOW INLET	FLOW TO TANK
NEUTRAL	MIDDLE - OFF	N/A	OFF	OFF	V1	V2
LEFT EXTEND	LEFT	D2	ON	OFF	V2	V1
LEFT RETRACT	LEFT	R2	ON	OFF	V1	V2
RIGHT EXTEND	RIGHT	D1	OFF	ON	V2	V1
RIGHT RETRACT	RIGHT	R1	OFF	ON	V1	V2

TORQUE SPECIFICATIONS

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

SIZE	Grade 1		Grade 2		Grade 5, 5.1 or 5.2		Grade 8 or 8.2	
	Lubricated ^a	Dry ^b						
	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 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

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.

^a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.

^b "Dry" means plain or zinc plated without any lubrication

* Values with asterisk are in lb-in.

NOTES

SNO-WAY® INTERNATIONAL, INC.

SNO-WAY
SNOW & ICE CONTROL EQUIPMENT

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Website: www.snoway.com
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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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