

## Wil-Rich Soil Pro 513 Disc Ripper



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# 1 Introduction

## Wil-Rich Soil Pro 513

Congratulations on the choice of a Wil-Rich Soil Pro 513 Disk Ripper to complement the farming operation. These implements are versatile tools designed to break up compaction layers while thoroughly mixing residue in a variety of soil conditions with ease. The Soil Pro 513 leaves the field ready to retain moisture, break down residue and be easily prepped for planting in the next growing season.

All persons authorized to operate this implement are responsible for reading and understanding the contents of this Operator's Manual, especially the Safety Section. The owner or operator (user) should seek assistance from the dealer, distributor or manufacturer for any information not fully understood regarding the safe operation adjustment, maintenance, or repair of this implement.

The user is responsible for inspecting the machine and for having components repaired or replaced when continued use of this product would cause damage or excessive wear to other components.

Keep this Operator's Manual in a clean, dry place that is easily accessible for reference when more detailed information is required to perform tasks related to the operation, adjustment, maintenance, or repair of this implement. It is further recommended that the contents of this Operator's Manual be reviewed at least annually by persons operating, adjusting, maintaining, or repairing this implement, and any time a new person is assigned to any of the above mentioned tasks.

Any information in this Operator's Manual that is not fully understood should be clarified by contacting the dealer, distributor, or manufacturer and requesting assistance.

The contents of this Operator's Manual are accurate up to the time of printing.

It is the policy of Väderstad Inc. to improve its products whenever possible and practical to do so. Väderstad Inc. reserves the right to make changes, improvements and modifications at any time without incurring obligation to make such changes, improvements on any equipment sold previously.

*Address inquiries to:*

- Väderstad Inc. PO Box 1030, Wahpeton, ND 58074
- PH (701) 642-2621

## 1.1 Description of the Machine

The Soil Pro 513 is available in cutting widths from 12.5 – 26 ft (3.8 — 7.9 m). The Soil Pro 513 has industry leading, large diameter 28 in (71 cm) disc blades on two-rank individual C-spring disc blade mounting to bury and mix residue for quick decomposition. The 3,500 lb (1,588 kg) trip pressure ripper shanks penetrate even the toughest soil.

A heavy duty 4 x 8 in (10 x 20 cm) frame adds additional weight to keep the tool in the ground and ripping through even the heaviest residue.

Two ranks of shanks are 55 in (145 cm) apart; the closest shanks are 48 in (122 cm) apart on the rank, promoting excellent crop residue flow.

Individually mounted C-spring, 28 in (71 cm) disc blades have an effective spacing of 19 in (48 cm).

## 1.2 Intended Use

Your Wil-Rich Soil Pro 513 Disc Ripper was designed to give you years of satisfactory performance. As with any tillage unit this machine was designed to operate within defined capabilities. For the best performance and reliability an understanding of this range of operation is important.



All references to "LEFT" and "RIGHT", as used throughout this manual, are determined by facing the direction of the machine's normal forward travel when in use.



Some images in this Operator's Manual may show the machine with shields removed to better show the subject of the picture. The implement must NEVER be operated with any of the shields either opened or removed. Ensure that ALL shields are attached, closed and in good working condition prior to operating the Wil-Rich implement.

### 1.3 Illustrations of the Machine



*Figure 1.1 Wil-Rich Soil Pro 513-5-30F (Front)*





*Figure 1.2 Wil-Rich Soil Pro 513-5-30F (Rear)*

# Introduction

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## 1.4 Machine Serial Number

[Refer to Section “2.13.1 Location of Safety Signs on page 13” for more information on the location of the safety decals and the serial number plate.](#)

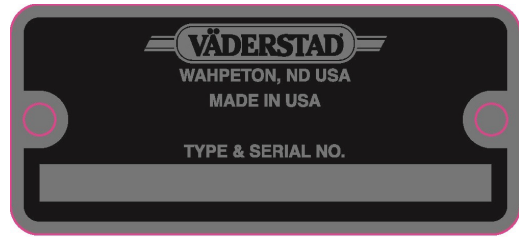


Figure 1.3 Serial No. Decal

### 1.4.1 Serial Number Data Sheet

Record the machine model and serial number in the spaces provided below. Use these numbers when contacting the dealer for repair parts, warranty or service assistance.

#### Serial Number(s)

**Implement(s) Serial Range: 456654 - Current**

Implement	Model	Serial Number(s)
Ripper		
Other		

## 1.5 Technical Data Sheet

\*Approximate weight: base weight + tire group.

\*\*Adding harrows to a unit may increase the transport width and/or height of the unit.

Table 1.1 Technical Data Sheet: 2025 Soil Pro 513 (Rigid Models)

Models	5–30 SP 513	7–24 SP 513	9–24 SP 513
<b>Dimensions</b>			
Working Width, ft (m)	12.5 (3.8)	14 (4.3)	18 (5.5)
Shank Spacing, in (cm)	30 (76)	24 (60)	24 (60)
Transport Width, ft (m)	16.2 (4.9)	16.2 (4.9)	21.25 (6.5)
Transport Height, ft (m)	7 (2.1)	7 (2.1)	7 (2.1)
Transport Length, ft (m)	33.4 (10.2)	33.4 (10.2)	33.4 (10.2)
Weight, lbs (kg)	17,180 (7,793)	18,061 (8,192)	21,143 (9,590)
<b>Specifications</b>			
Number of Shanks	5	7	9
Number of Blades	18	18	24
Horsepower Requirement	300 — 400	300 — 450	350 — 450

Table 1.2 Technical Data Sheet: 2025 Soil Pro 513 (Folding Models)

Models	9–24 SP 513	11–24 SP 513	13–24 SP 513
<b>Dimensions</b>			
Working Width, ft (m)	18 (5.5)	22 (6.7)	26 (7.9)
Shank Spacing, in (cm)	24 (60)	24 (60)	24 (60)
Transport Width, ft (m)	15.75 (4.8)	19.25 (5.9)	15.75 (4.8)
Transport Height, ft (m)	11.8 (3.6)	13.7 (4.2)	19.25 (5.9)
Transport Length, ft (m)	33.4 (10.2)	33.4 (10.2)	33.4 (10.2)
Weight, lbs (kg)	22,567 (10,236)	32,280 (14,642)	33,688 (15,281)
<b>Specifications</b>			
Number of Shanks	9	11	13
Number of Blades	24	30	34
Horsepower Requirement	350 — 450	450 — 550	500+



## 2 Safety

### 2.1 Safety Alert Symbols

#### 2.1.1 Safety Information

The Safety Alert Symbol(s) are intended to direct the attention of the machine user to important safety information both published in the Operator's Manual and applied to the machine. Any time Safety Alert Symbol(s) are seen, it means that associated information is provided for recognizing, appropriately responding to and avoiding potentially hazardous situation(s).

A triangle shape surrounding an exclamation point indicates a potentially hazardous situation. Information included in a safety sign or printed in the Operator's Manual describes the hazardous situation and indicates appropriate response(s) and / or avoidance procedures.

**This Safety Alert Symbol means:**



### Attention Be Alert!



**DANGER!** Indicates an imminently hazardous situation that, if not avoided, **WILL** result in death or serious injury if the proper precautions are not taken.



**WARNING!** Indicates a potentially hazardous situation that, if not avoided, **COULD** result in death or serious injury if the proper precautions are not taken.



**CAUTION!** Indicates a potentially hazardous situation that, if not avoided, **MAY** result in minor or moderate injury if the proper practices are not taken, or, serves as a reminder to follow appropriate safety practices.



**NOTE!** Used to clarify information.



**IMPORTANT!** The information next to this symbol may be worth noting since it is a hint containing particularly useful information on how to handle the machine. Failure to follow these notices may result in damage to the machine.

### 2.2 Safety Sign Information

**Safety Sign Legibility:** All safety signs applied to the implement must be visible and legible. Keep dust and dirt cleared from safety signs and ensure that visibility is not obscured.

**Safety Sign Replacement:** Safety signs may be ordered through the dealer or distributor. Contact Väderstad Inc. if unable to obtain replacement safety signs from a dealer or distributor.

**Damaged or Deteriorated Safety Signs:** Remove and replace any safety signs that have either been damaged or show signs of deterioration.

**Safety Signs on Replacement Parts:** Ensure that parts or components that are replaced on the implement that had a safety sign attached originally include a safety sign.



For parts and decal replacement, contact your local dealer parts department.

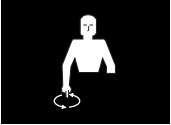



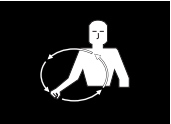
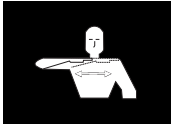
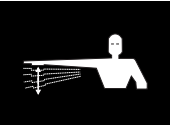
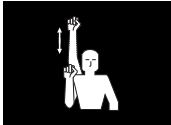




#### *Affixing Safety Signs to the Implement*

1. Ensure proper position and orientation before installing.
2. Ensure installation area is clean and dry.
3. Ensure ambient temperature is above 50°F (10°C).
4. Remove backing material to expose label adhesive.
5. Place one edge of label to machine surface.
6. Slowly press the label onto the surface.
7. Ensure no air pockets are present or become trapped under surface or label. To remove air pocket, pierce the bubble in the label with a pin, this will let the trapped air out, and then press the label down.

### 2.3 Hand Signals

Hand signals are an important means of communication on farms where noise levels and distance can hinder regular communication between workers. These 11 hand signals were created so that two or more persons can communicate effectively and safely.

Table 2.1 Hand Signals

	Lower Equipment: Make a circular motion with either hand pointing to the ground.		Raise Equipment: Make a circular motion with either hand at head level.
	Come to me: Raise the arm vertically overhead, the palm to the front, and rotate in large horizontal circles.		This far to go: Place palms at ear level facing the head and move laterally inward to indicate remaining distance to go.
	START THE ENGINE: Simulate cranking of vehicles by moving arm in a circular motion at waist level.		STOP THE ENGINE: Draw right hand, palm down, across the neck in a "throat cutting" motion from left to right.
	Slow it down / decrease speed: Extend the arm horizontally to the side, palm down, and wave arm downward 45 degree minimum, repeat.		Speed it up / increase speed: Raise the hand to the shoulder, fist closed, thrust the fist upward to the full extent of the arm and back to the shoulder rapidly, repeat several times.
	Move-Out: Face the desired direction of movement, hold the arm extended to the rear; swing it overhead, forward in the direction of the desired movement until it is horizontal, palm down.		Move toward me / follow me: Point toward person(s), vehicle(s), or unit(s) beckon by holding the arm horizontally to the front, palm up, and motioning toward the body.
	Stop: Raise hand upward to the full extent of the arm, palm to the front. Hold that position until the signal is understood.		To perform any / or all of these signals, stand out of the pathway of the moving implement.

## 2.4 Operator Responsibilities

Responsibility for the safe operation, adjustment, maintenance and repair of this machine falls to the main user. It is the responsibility of the owner, or authorized person in charge, to ensure all persons who operate, adjust, maintain and/or repair this implement be familiar with the information provided in this Operator's Manual before performing any other tasks listed above.

A safe user is the key to safety. Good safety practices not only protect the user, but also persons who may be in the vicinity of the implement. Make good safety practices a part of the farming operation. Ensure that all persons operating, adjusting, maintaining and/or repairing this implement are familiar with the procedures recommended in this manual.

Always read safety warnings and follow recommended safety precautions to avoid hazardous situations. DO NOT risk personal injury or death by ignoring safety warning and safety precautions.

### 2.4.1 Key Safety Reminders

The most important safety device is a safe and qualified user.

A safe and qualified user is one who has read and understands the contents of the Operator's Manual prior to performing any tasks related to the machine. Owners have a responsibility to provide training to persons who may operate, adjust, maintain and/ or repair the implement prior to performing any of these tasks.

DO NOT perform any unauthorized modifications to the implement or use the implement for any purpose other than what is described in the contents of this Operator's Manual.

Owners must give operating instructions to operators and employees before allowing them to operate the implement, and at least annually thereafter per OSHA regulation 1928.57.

## 2.5 General Safety

Read and understand the contents of this Operator's Manual prior to operating, adjusting, maintaining and/or repairing the implement. Review at least annually thereafter.

Locate, read and understand all safety signs applied to the implement before performing any tasks.

Review the contents of this Operator's Manual at least annually, and, any time a new person is assigned to perform any tasks with the implement.

Ensure that all bystanders, especially small children, and pets/animals are kept at a safe distance while performing any tasks with the implement. Keep all personnel away from moving parts.

Do not stand between the tractor and implement to install the hitch pin while the tractor engine is running.



DO NOT allow riders on any part of the implement.

When parking, park the machine and the tractor on a solid level surface. Put all controls in neutral and apply the tractor park brake. Stop the tractor engine and take the key with you.

Always lower the machine when not in use and relieve the pressure in the hoses and cylinders.

Ensure all guards and shields are intact and in place prior to operating the implement.

Keep hands, feet, hair and loose clothing away from moving and/or rotating parts.

Stop the engine, lower the implement, set the parking brake, remove the ignition key, and allow time for moving parts to stop prior to adjusting, maintaining, and/or repairing the implement.

Ensure that all implement lighting and marking is intact, secure, clean and operating properly prior to traveling on public roads. Check with local highway authorities to confirm implement is properly equipped for highway travel.

Provide a fully stocked First-Aid Kit in a highly visible and easily accessible location.

Ensure a fire extinguisher is available for use should the need arise and that the operator is familiar with its proper use.

Clear the implement of any and all foreign objects before beginning operation.

Ensure that the implement is securely blocked and supported prior to working underneath.

Do not work with the machine during thunderstorms and when there is a risk of lightning strikes. Do not stand on or next to the machine.

Always wear suitable ear protection for prolonged exposure to excessive noise.

Use caution when working around high pressure hydraulic systems.

Reduce speed when cornering on field ends and when operating on or across dead furrows.

Do not attempt to remove any obstruction while the machine is in motion.

Use extreme caution when operating close to ditches, fences or on hillsides.

No one other than the operator should ride on the tractor.

In the event of a fire in a crop / field setting, use a water type fire extinguisher or other water source. For fires involving anything other than crop, such as oil or electrical components. Use a dry chemical fire extinguisher with an ABC rating.

### 2.6 Maintenance Safety

Read and understand all information provided in the Operator's Manual covering operation, adjustment, maintenance and repair prior to performing any of these tasks. Plan work to ensure proper tools, equipment, and personal protective equipment is available prior to working on implement.

Wear appropriate clothing when performing tasks around implement. Ill-fitting and/or frayed clothing as well as loose or dangling items should not be worn when working near the implement.

Stop the engine, lower the implement, set the parking brake, remove the ignition key, and allow time for moving parts to stop prior to adjusting, maintaining, and/or repairing the implement.

Ensure that all moving parts have come to a complete stop before performing adjustments, maintenance and/or repairs.

Ensure that hydraulic oil pressure in hoses, lines, and components is fully relieved prior to performing any maintenance, and/or repairs.

Ensure that wings are either fully lowered or fully raised and secured using transport/cylinder locks (if equipped) or securely block the wings if raised to perform adjustments, maintenance and/or repairs as needed.

Securely block main frame and/or wings (any raised components) if adjustments, maintenance, and/or repairs are required.

Wear personal protective equipment, such as gloves, eye protection, etc. when inspecting the hydraulic system for leaks. Use a small piece of cardboard or wood to detect leaks.

Ensure that all guards and shields are intact and in place after performing adjustments, maintenance and/or repairs prior to operating implement.

Store flammable fluids in approved containers and store out of access by unauthorized persons, especially children.

Replace the safety chain if one or more links or end fittings are broken, stretched or otherwise damaged or deformed.

Do not allow children or other unauthorized persons within the implement operational area.

Do not modify the equipment or substitute parts in any way. Unauthorized modification may impair the function and / or safety of the machine.

Use a suitable lifting device for components which could cause personal injury by pinching, crushing or weight. Be sure lifting device is rated to handle the weight.

Always inspect lifting chains and slings for damage or wear.

Ensure all hydraulic connectors are cleaned of any dirt or debris regularly to ensure proper connection to tractor.

### 2.7 Hydraulic Safety

Always place all tractor hydraulic controls in neutral before dismounting.

Ensure that all hydraulic system components are kept clean and in proper working condition.

Relieve pressure before working on hydraulic system.

Use a piece of cardboard or wood to check for hydraulic leaks.

Wear personal protective equipment, such as gloves, eye protection, etc. if unsure if residual pressure may exist in hydraulic components during troubleshooting and/or making repairs.

If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.

Check hydraulic hoses regularly for wear and tighten/replace as needed. Contact your local Dealer parts department to purchase replacement hoses specifically designed for Wil-Rich machines.

When connecting the hoses to the cylinders, tubings or fittings; always use one wrench to prevent the hose from twisting and another wrench to tighten the union. Excessive twisting will shorten hose life and loosen hose fittings.

DO NOT attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

Do not over-tighten hydraulic fittings, excessive torque may cause them to crack.

Always contact the nearest Wil-Rich dealer or service professional when replacing hydraulic hoses.

When replacing hoses always route hoses the same as the one being replaced to ensure that the part is not subjected to wear, rubbing, kinking, etc. Make repairs following instructions provided by the manufacturer.

Ensure all fittings, couplings, and other hydraulic connections are intact and properly tightened before operating implement hydraulic system.



**DO NOT touch pressurized hose assemblies with any part of the body. If fluid punctures the skin, seek immediate medical attention.**

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Hydraulic fluids are highly flammable. Always keep open flames and ignition sources away from hydraulic fluids.



## 2.8 Electrical Safety

Ensure that the machinery is shut off and all electrical components are disconnected before doing any work on the machine. Ensure all live connections are not receiving power.

Check electrical wires regularly for wear related to usage and weathering. Replace any damaged wires or components immediately.

Use insulated tools whenever performing service to any electrical system or components and always wear proper protective equipment.

## 2.9 Transport & Towing Safety

Read and understand ALL the information in the Operator's Manual regarding procedures and SAFETY when moving the implement in the field / yard or on the road.



DO NOT allow riders on any part of the implement.

Ensure that implements are attached to the tractor properly.

Ensure transport cylinder locks are in place and functioning properly (if equipped).

Ensure safety tow chain is securely attached and retaining clip is securely locked in place.

Ensure all lighting and implement marking devices are intact and visible.

Ensure implement is properly marked according to local road regulations.

**Read and follow all local road traffic regulations.**



DO NOT exceed recommended transport speeds (*Maximum: 20 mile/hr / 32 km/hr for wheel-driven machines, 15 mile/hr / 24 km/hr for track-driven machines*). The implements are not designed for high speed use. Ensure all local traffic rules/regulations are followed. Reduce speed and use caution when making corners and meeting traffic.

Make sure you understand the speed, steering, stability and load characteristics of this machine before you travel on public roads. Use good judgement when traveling on public roads. Maintain complete control of the machine at all times. Never coast down hills.

Be aware that the implement is wider than the tractor when transporting. Always have the wings completely folded (if equipped) when transporting on public roads.

Watch for overhead wires and other obstructions. Avoid contact with electrical power lines. Contact with electrical power lines can cause electrical shock, resulting in very serious injury or death.

Make sure SMV (Slow Moving Vehicle) emblem and all lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.

Keep to the right and yield the right-of-way to allow faster traffic to pass. Drive on the road shoulder, if permitted by law.

Always use hazard warning flashers on tractor when transporting unless prohibited by law.

Frequently check for traffic, especially during turns.



Always bring the machine to a complete stop before folding/unfolding. Switching between transport and working positions while in motion may result in damage to the implement.



When in working position, ensure wing fold cylinders are fully extended prior to field operation.

## 2.10 Storage Safety

Store the implement away from areas of human activity.



DO NOT allow children to play on or around the implement(s).

Store the implement on a dry, stable, and level surface away from areas of human activity. Support with planks if required.

## 2.11 Tire Safety

Ensure tire inflation pressure is maintained per specifications.

Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

Follow proper procedures for tire repairs, especially when mounting tire to the rim.

Seek assistance from a trained person for tire repairs or mounting, especially if specialized equipment is required.

### 2.12 Hazards

The key is to recognize hazards while working or living on a farm; avoid dangerous situations or at least minimize the exposure to them.

This section deals with danger points on agricultural equipment; those areas which can entangle, pinch, crush, or shear clothing and limbs. Possible danger points could be wing fold points, hydraulic cylinders and hydraulic lines on many types of equipment.

A slow-moving hydraulic arm can be as hazardous as a rapidly rotating power take-off shaft.

#### Recognize the dangers!

The first step to avoiding danger is to recognize that hazards exist. Identify the specific hazards associated with the equipment.

The next step is to consider how to use the equipment. Using it for tasks it was meant to perform? Following all safety precautions recommended by the manufacturer?

Most machinery accidents result from human error. The operator either forgot something, took a shortcut, ignored a warning, wasn't paying close attention, or failed to follow safety rules. Be familiar with the operator manual, know the limitations of the equipment, and follow safety measures automatically.

Carefully evaluate the operation of each implement for safety before starting work.

#### Check equipment guards.

Check guards on all equipment as part of a routine maintenance schedule. During seasons when equipment is used heavily, check guards more often.

Equipment guards cannot eliminate all injuries.

A transport lock will only work if it is engaged prior to road transport, and will not prevent accidents if it is not engaged.

#### Recognize secondary hazards.

Many farm injury victims recognize hazardous situations, but they misjudge the seriousness of the hazard because of secondary factors.

For example, spilled grain or debris in an unloading area could cause someone to slip and fall into the intake auger. Icy, muddy, or manure-covered surfaces make the work area slick and increase the risk of injury. Bystanders or children in the work area can distract the operator, or limit operator vision.

Never stand near the machine during operation. Debris can be thrown from the machine during operation possibly resulting in injury.



Be careful when operating along the side of a road or building. Rocks or other debris can be thrown from the machine during operation possibly resulting in injury.

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High pressure hydraulic oil is a major hazard. Any leaks in the hydraulic system must be treated as a dangerous situation and should be dealt with accordingly.

#### Consider human factors.

Farm operators can overestimate their ability to stop or avoid a dangerous situation. This is common when operators work around powerful equipment every day and become comfortable with their ability to control the machinery.

Operators are also limited by their reaction time. Human reaction time is not quick enough to avoid an injury with machinery.

Gravity as well is faster than human reaction. For example, it is very dangerous to reach underneath the wing of a machine if the transport/safety locks are not correctly in place. If a hydraulic line breaks, gravity could pull the machine wings to the ground very quickly, crushing the operator.

Manufacturers have built safeguards into equipment but all hazards cannot be removed. Take a realistic approach to equipment safety and think about these principles for the operation of all machinery.

- Be aware of the dangers. Read the operator manuals and think about how to use the equipment.
- Regularly repair and replace protective guards or shields on all implements.
- Look for and remove secondary hazards, such as spilled grain or debris.
- Recognize the limitations of the user and the equipment.

#### *Farm Machinery Safety: What to do?*

- A few simple actions can reduce the risk of danger around farm machinery.
- Collect operator manuals for all farm equipment and place in a central location. Read the safety section in each manual.
- Evaluate how to anticipate using each implement and identify potential safety hazards not mentioned in the manual.
- Check condition of intake guards and shields on grain augers and other implements.
- Remove debris from grain unloading areas. Shut down equipment when other people enter the area.

## 2.13 Safety Signs

### 2.13.1 Location of Safety Signs

The types of safety decals and locations on the equipment are shown below. Safety requires that you familiarize yourself with the various safety decals, the type of warning and the area or particular function related to that area, that requires your safety awareness.



If Safety Decals have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

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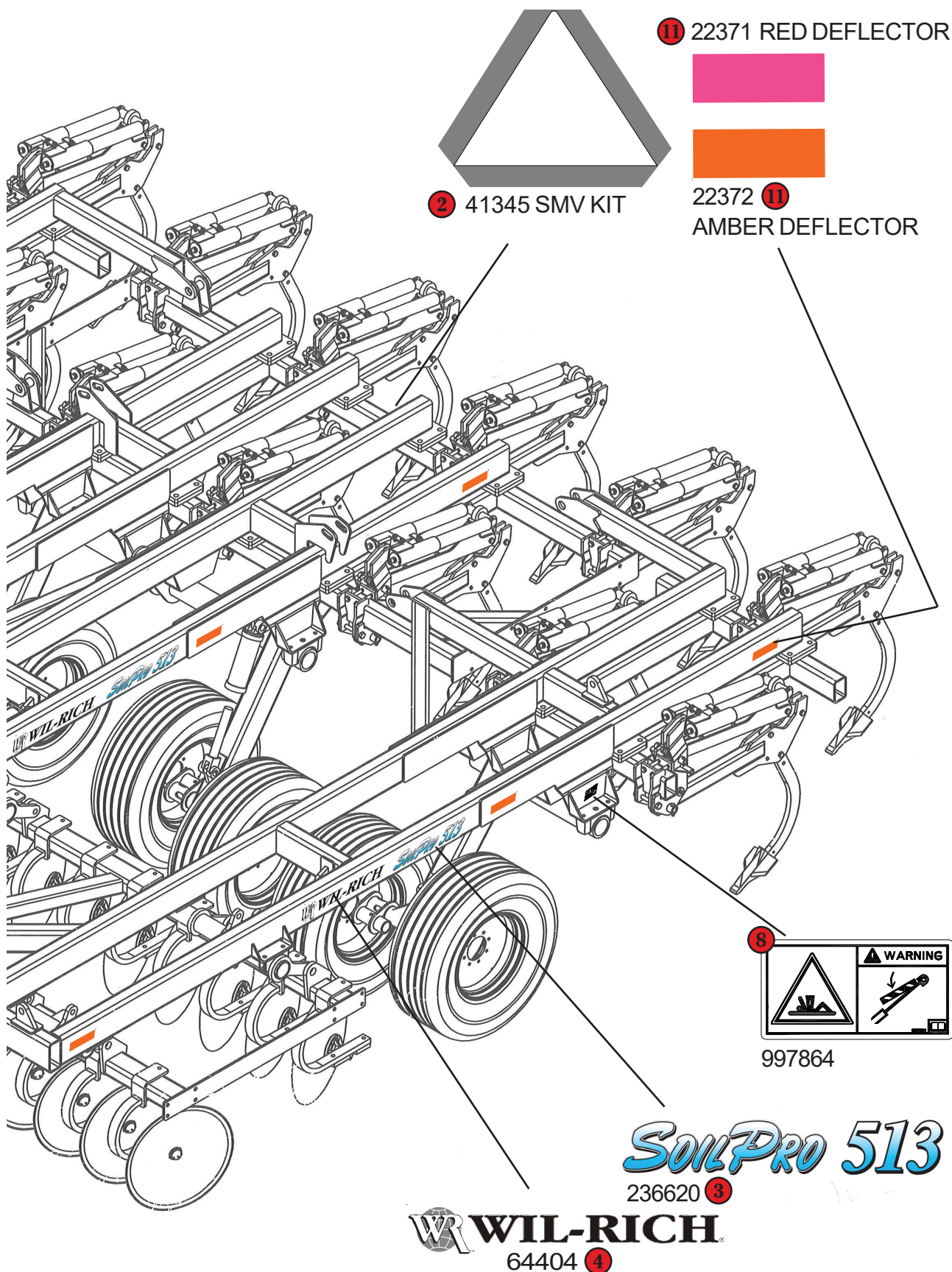
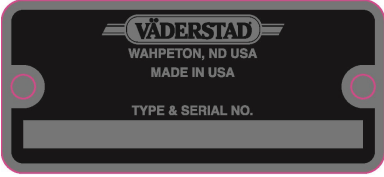



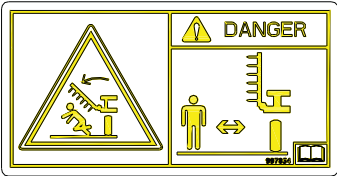
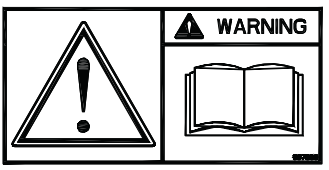


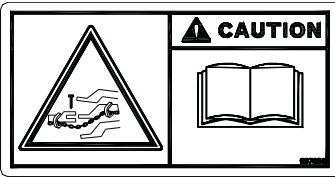
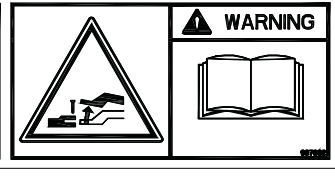
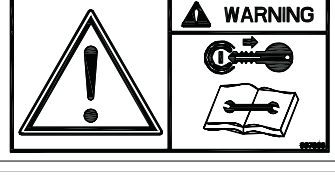

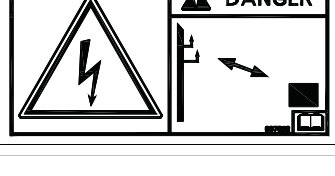
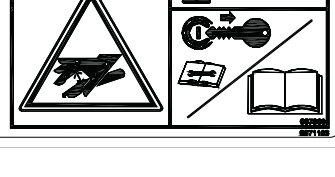

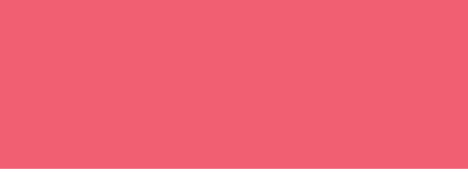



Figure 2.2 SP 513 Safety Decals II

## Safety

### 2.13.2 Decals

Decal Image	Decal Name	Pin	Description
	Serial No. Plate	(1)	N/A
	SMV Slow Moving Vehicle Indicator	(2)	Identifies machines as a slow moving vehicle during transport.
	Spoil Pro 513 Decal	(3)	Branding decal.
	Wil—Rich Decal	(4)	Branding decal.
	<b>DANGER</b> Falling Wing Hazard	(5)	Never walk in the path of the wings.
	<b>WARNING</b> Read to Operators Manual	(6)	Heed all instructions before operating machine.
	U.S.A Tillage Promotion Decal	(7)	N/A
	<b>WARNING</b> Crushing Hazard	(8)	Cylinder locks must be used.

Decal Image	Decal Name	Pin	Description
	<p><b>CAUTION</b> Read Manual before Connecting</p>	(9)	<p>Heed all instructions before connecting the implement to the tractor.</p>
	<p><b>WARNING</b> Read Manual before Disconnecting</p>	(9)	<p>Heed all instructions before disconnecting the implement from the tractor.</p>
	<p><b>WARNING</b> Shut Engine Off</p>	(9)	<p>Read manual before maintenance.</p>
	<p><b>WARNING</b> Read Manual before Connecting</p>	(9)	<p>Heed all instructions before connecting the implement to the tractor.</p>
	<p><b>DANGER</b> Electrocution Hazard</p>	(9)	<p>Stay away from power lines when transporting extending or folding implement. Electrocution can occur without contacting power lines.</p>
	<p><b>WARNING</b> Hydraulic Hazard</p>	(9)	<p>Relieve pressure on hydraulic system before disconnecting, repairing or adjusting. Wear proper hand and eye protection when searching for leaks. Keep all components in good repair.</p>
	<p>SIS Decal</p>	(10)	<p>Maximum safe travel speed.</p>
	<p>Red Reflector</p>	(11)	<p><b>Variations:</b> </p>

## 2.13.3 SMV & Mounting Bracket

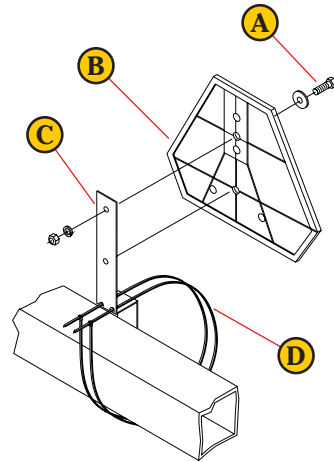
The SMV emblem is to be secured as near to the rear and centered, or as near to the left center of the implement as possible.

The bracket provided is designed to mount to numerous frame sizes and can be oriented in numerous positions to avoid interference with implement components.

Emblem is to be 2 to 3 feet above the ground measured from the bottom edge of the emblem.

### *SMV & Mounting Bracket Legend*

- **(A)** 3/16 NC x 5/8 Bolt
- **(B)** SMV Emblem
- **(C)** SMV Mounting Bracket
- **(D)** U-Bolt (P/N: 89406)



*Figure 2.3 SMV & Mounting Bracket*

Keep safety decals clean. Replace any safety decals that are damaged, destroyed, missing, painted over or can no longer be read. Replacement safety decals are available through your dealer.





## 3 Operation

### 3.1 Hydraulic Connections

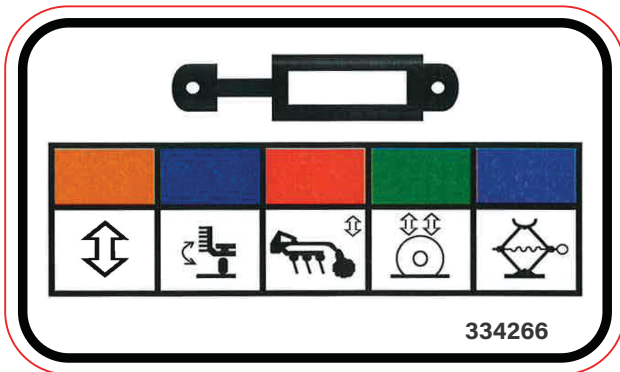


Figure 3.1 Tillage Hydraulic Connections Decal

### 3.2 Preparation

#### 3.2.1 Torque Check

Before using the implement a careful inspection must become routine.

Check to be sure that all hardware is securely tightened and moving parts properly lubricated.

It is recommended that all wheel bolts be checked for tightness before and after use. Paint or dirt can work out causing the wheel to become loose. Check periodically to be sure the wheel bolts are tight.

[Refer to Section “6.2 Standard Bolt Torques on page 45” for torque specifications.](#)

#### 3.2.2 Hydraulics

On all new machines check the hydraulic system to be sure all fittings are tight.

[Refer to Section “6.3 Hydraulic Connection Torques” for hydraulic fitting torque specifications.](#)

#### 3.2.3 Lubrication

Verify that implement lubrication has been kept up according to the information provided in the maintenance section of this manual.

[Refer to Section “5.2 Lubrication Points on page 40” for specific information on machine lubrication.](#)

#### 3.2.4 Wheel Preparation

The use of proper air pressure is the most important factor in satisfactory performance and maintenance of the implement tire.

[Refer to Section “6.1.1 Wheels on page 44” for tire pressure specifications.](#)

Check the air pressure every two or three weeks and do not allow the pressure to drop to a point where buckling or wrinkling of the tire may be possible.



**DO NOT** inflate tires beyond the specified tire pressure.

It is recommended that all wheel bolts be checked for tightness before using and again after one day of use. Check periodically to be sure the wheel bolts are tight.

[Refer to Section “6.2 Standard Bolt Torques on page 45” for torque specifications.](#)

#### 3.2.5 Tractor Preparation

[Refer to the operator’s manual furnished with your tractor for recommended adjustments and weight distribution.](#)

### 3.3 Tractor Requirements

The Wil-Rich Soil Pro 513 requires approximately 22 — 26 hp / ft. Three remote cylinder outlets and controls are required.

#### 3.3.1 Wheels & Tires

Dual tractor rear wheels are recommended for use with the Soil Pro 513.

[Refer to the operator’s manual furnished with your tractor for tire inflation and instructions for wheel ballast where required.](#)

### 3.3.2 Metering Valves

The metering valve may be set to provide varying amounts of hydraulic oil flow to the cylinders. [\(Refer to the Tractor Operator's Manual\)](#)

It is recommended the wing lift cylinders run as slow as possible to prevent damage to the implement, persons and property. Turn wing lift hydraulics metering values to slow position.

### 3.3.3 Front Ballast

Tractor front end stability is necessary for safe and efficient operation. Therefore, it is important that the proper amount of weight be installed on the front of the tractor as recommended in your tractor operator's manual.



Ballast recommendations provide for adequate transport stability at recommended speeds. Additional front ballast may be required for satisfactory field operation due to sudden or extreme forces on the Soil Pro 513. These forces may occur when removing the Soil Pro 513 from the ground and turning at rows end, or during field transport over very rough ground.

### 3.3.4 Transporting

A SMV (Slow Moving Vehicle) emblem must be used at all times while traveling on public roads.

The implement must always be placed in transport position and the cylinder channel locks used when traveling on public roads. Never depend on your tractor's hydraulic system to carry the weight while transporting.



Use extreme caution when working around overhead power transmission lines.



Always install lock channels in the main lift cylinders for road transport.

Reduce speed when cornering and when traveling over rough and/or uneven ground. Drive at a reasonable speed to maintain complete control of the machine at all times.

Comply with your state and local laws governing highway safety when moving machinery on a highway.

### 3.3.5 Bearing Assemblies



The spindle nuts on the wheel assemblies are preset at the factory.

Road transport and field working will seat the bearings and will require additional adjustment. After 20 hours of machine operation remove the grease cap and check the bearing tightness.

Remove the cotter pin and rotate the tire while tightening the spindle nut. Tighten until the drag on the tire stops the rotation. Locate the cotter pin hole in the spindle and loosen the spindle nut just enough to allow the insertion of the cotter pin. Replace the cotter pin and grease cap.

### 3.4 Connecting the Implement



Never allow anyone between the tractor and implement when connecting or disconnecting until the implement is completely supported on the 3-point hitch, the engine is stopped and the park brake is applied.

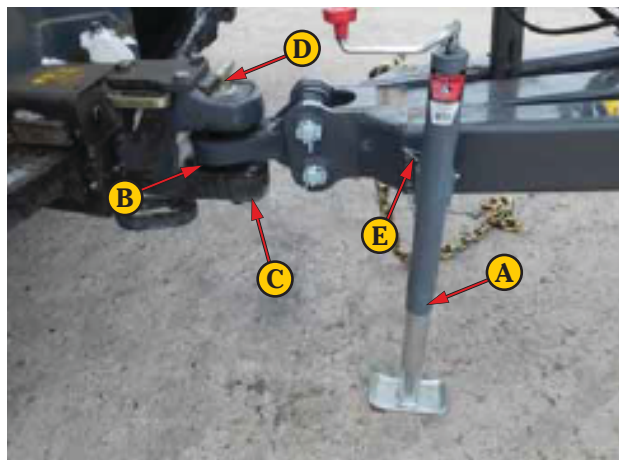


Figure 3.2 Connecting the Implement I

1. Use the hitch jack (A) on the front hitch of the machine to adjust the height of the hitch.
2. Slowly reverse the tractor toward the hitch of the machine. Align the hitch on the tractor with the hitch on the machine (B) when reversing.
3. Stop the tractor when the hole of the tractor draw-bar aligns with the hole in the machine hitch.
4. Stop the engine, apply the park brake and take the key with you.
5. Install the hitch pin through the holes in the tractor draw-bar and the machine hitch (B). Install the keeper pin in the hitch pin.
6. Connect the safety chain (C) from the front hitch of the machine to the tractor.

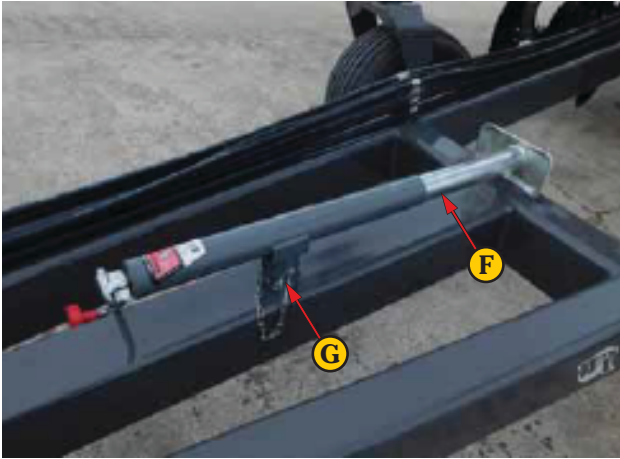


Figure 3.3 Connecting the Implement II

7. Retract the hitch jack. Move the hitch jack to the storage position (D) and fasten with pin.



The location and position of the storage location of the hitch jack can vary.

8. Clean the ends of the hydraulic connections on the machine and the tractor.
9. Install the wing lift, shank lift, wheel lift, hydraulic jack and rolling basket cylinder hoses on the tractor. Be sure the hose couplers are secured in the tractor couplers. [Refer to “Figure 3.1 Tillage Hydraulic Connections Decal on page 20”.](#)



Figure 3.4 Connecting the Implement IV

10. Install the safety light connector (E) on the tractor.



Figure 3.5 Connecting the Implement V

## 3.5 Transporting

1. A Slow Moving Vehicle (S.M.V.) emblem must be used at all times while traveling on public roads.

Be sure all safety lights are working. Obey all local, state and federal laws for lighting requirements.

2. Always fold the wings up before transporting (if equipped)



If the implement has been stored or out of operation for months or if hydraulic wing cylinders have recently been replaced perform the following procedure.

Fold and unfold the wings several times and hold the hydraulic lever in the extended position for 30 seconds each time to purge air from the system.

3. Be sure the wings are resting securely on the wing supports (if equipped).
4. Raise the implement. Shut off the engine, apply the park brake and remove the key from the tractor. Install the cylinder locks and pins (if equipped).
5. Start the engine and lower the main frame onto the cylinder locks (if equipped).



Always bring the machine to a complete stop before folding/unfolding. Switching between transport and working positions while in motion may result in damage to the implement.



When in working position, ensure wing fold cylinders are fully extended prior to field operation.

### 3.6 Operational Adjustments

The preliminary operational setting of the unit can be completed in the yard or a level area of a field. Final front to rear and side to side adjustments must be made at operational depth.

#### 3.6.1 Preliminary Settings

Proper preliminary and field settings will require the use of a measuring device. Once the unit has been properly assembled and hitched to the tractor that will be powering the unit, **make certain all hydraulic circuits have been charged and cycled a number of times.**

Position the unit on a level surface and unfold the wing, **checking to ensure that there are no obstructions or personnel in the path of the wings.**



Cycle the main lift hydraulic circuit a number of times to purge air from the circuit. Hold the hydraulic control lever in the “RAISE” position for a 1 — 3 minute period to clear air from the circuit.

Remove the stop collars from all main lift cylinders and turn the screw stop collars up to the clevis end of the cylinders. Lower the unit so that the front shovels or spikes are 1” — 2” (2.5 — 5.0 cm) above the ground. Measure the frame height at the front corners from the ground to the top of the frame tube. Compare this to the distance from the ground to the top of the frame tube at the rear of the unit. (*Refer to “Figure 3.6 Main Frame Leveling on page 23”*)

#### 3.6.2 Main Frame Leveling — Front to Rear

Front to rear leveling of the main frame is controlled by the screw jack located at the front hitch. If the front of the unit is higher than the rear you need to lower the front by adjusting the screw jack to a shorter length, lengthen the screw jack to raise the front of the frame. Adjust jack as required, measure and compare the front and rear frame heights and re-adjust the jack as needed.

##### Main Frame Leveling Legend

- (A) Hitch Screw Jack
- (B) Front Measurement
- (C) Rear Measurement

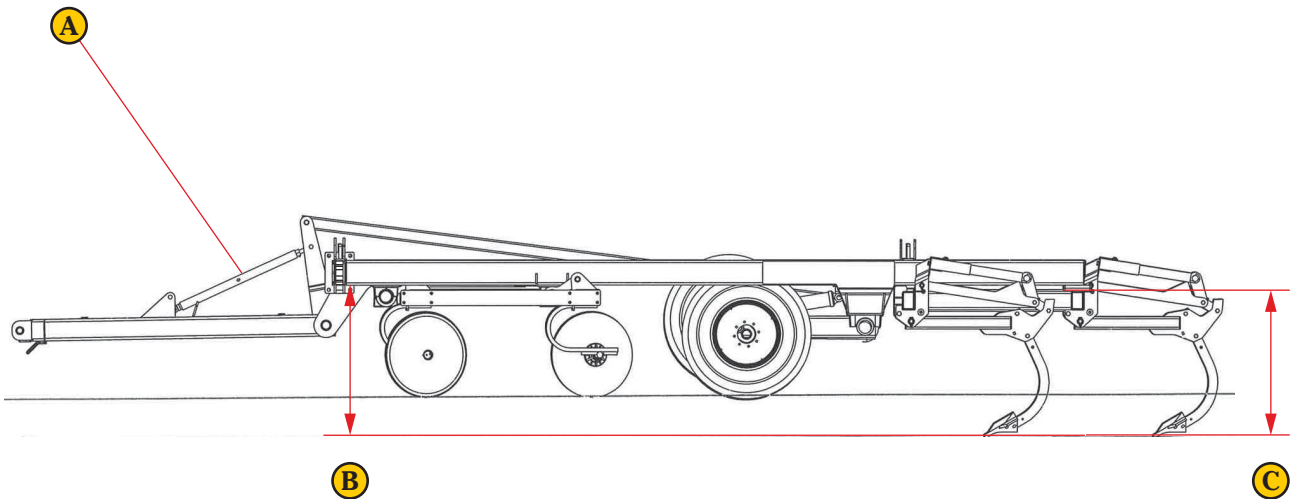


Figure 3.6 Main Frame Leveling

## Operation

### 3.6.3 Wing Leveling — Front to Rear & Side to Side

There is limited front to rear leveling that needs to be done at this point. The only adjustments that need to be made are to adjust the depth of the wing relative to the main frame, referred to as “Side to Side” leveling. With the main frame set level, measure from the ground to the top of the wing frame tubes on the front and rear of the wing. Compare to the measurements set for the main frame, if the distance is greater you need to lower the wing.

Adjust bolt out to lower the wing. Conversely if the wing needs to be raised to match the main frame, adjust bolt in. Re-measure and adjust as required. Repeat procedure to level the remaining wing.

#### Wing Leveling Legend

- (A) Slave Cylinder
- (B) Adjust Bolt
- (C) \*Tire Removed for Clarity

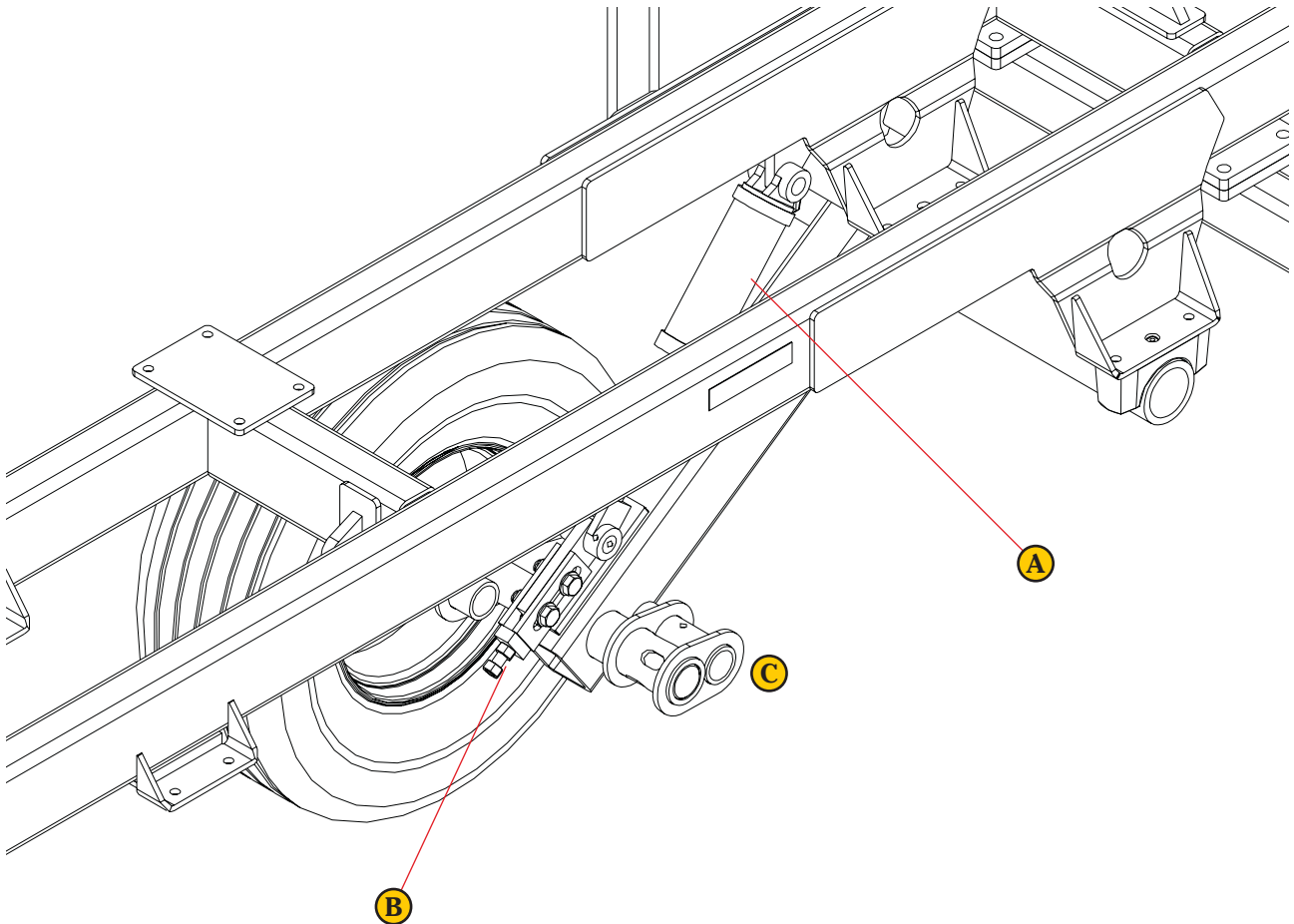


Figure 3.7 Wing Leveling — Front to Rear & Side to Side

### 3.6.4 Field Settings

Even if the unit has been leveled in the yard, it should never be assumed that the unit would operate level in the field without checking or adjustments. Changing field conditions, loading of the shank and attachments will impact the functional level and working in the field.

Move to the field and stop the unit in a level area. Unfold the wings; making certain that there is adequate room, with no person or obstruction in the wing fold area. Activate the main lift hydraulics and remove the transport channel locks from the main lift cylinders. Make a visual inspection of the unit to ensure that all hardware is properly tightened, hoses are clear and that the unit is ready for field operation. Stop collars should have been removed for yard adjustment and all screw collars should be turned to the clevis end. Cycle the main lift hydraulics a few times to purge any air from the system.

#### Shank Settings I Legend

- (A) Overall Height
- (B) Frame Height
- (C) Working Depth

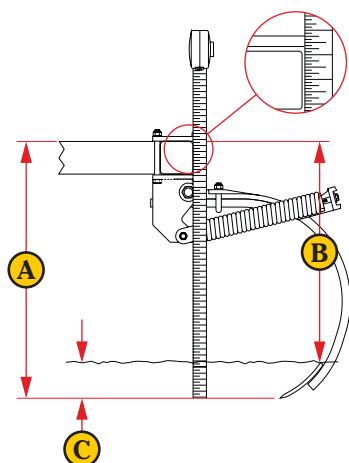


Figure 3.8 Shank Settings I

Raise disc frame to the up position. Move forward in the field at a moderate speed and lower the unit into the ground. Stop and measure the frame height at the rear of the main frame. As noted in [“Figure 3.8 Shank Settings I”](#), the working depth is equal to the overall height minus the frame height.

By pin adjustment on the main frame lift cylinders set the desired working depth. You may need to set a depth, pull forward through the field, stop, check the depth and adjust the depth a number of times. Once the rear shanks are at the required depth measure the frame height at the front of the main frame. By adjusting the front hitch screw jack the hitch can be raised or lowered to adjust the depth of the front of the main frame and level the unit.

Once the main frame has been leveled by adjusting the screw stop and hitch screw jack move into the field at operational depth and stop the unit. Measure the frame height of the wing at the rear of the wing and compare to the frame height at the main frame. Adjust the adjustment bolt to level the wing to the main frame. Repeat the same procedure for the opposite wing.

Once the depth of the shanks have been set, lower the disc frame assemblies until the desired work depth is achieved. Then add the proper amount of stop collars to the main frame disc lift main cylinders to maintain the proper working depth. No collars are used on the wing disc lift cylinders.

#### Shank Settings II Legend

- (A) Adjust Pin
- (B) Axle Flag

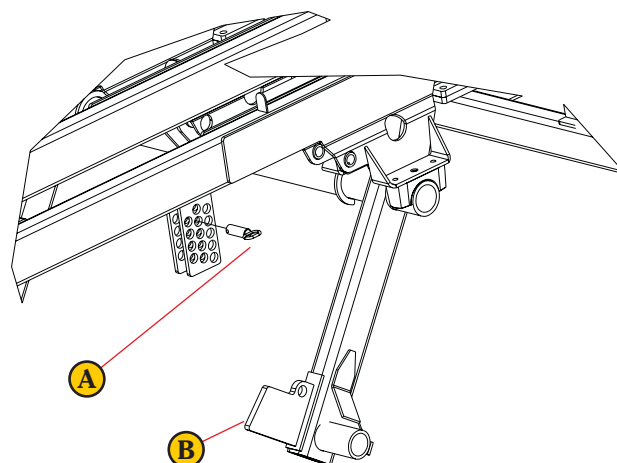


Figure 3.9 Shank Settings II

## 3.7 Harrow Operation

To set the harrow working depth, first set the Soil Pro 513 to it's working position. Remove the 5/8 NC x 5 GR5 bolt and relocate as required. The section should be set to run 3" to 5" (7.6 to 12.7 cm) deep in the working position.

### Harrow Legend

- (A) Pivot Bracket
- (B) Mount Bracket
- (C) Depth Adjustment Bolt
- (D) Down Pressure

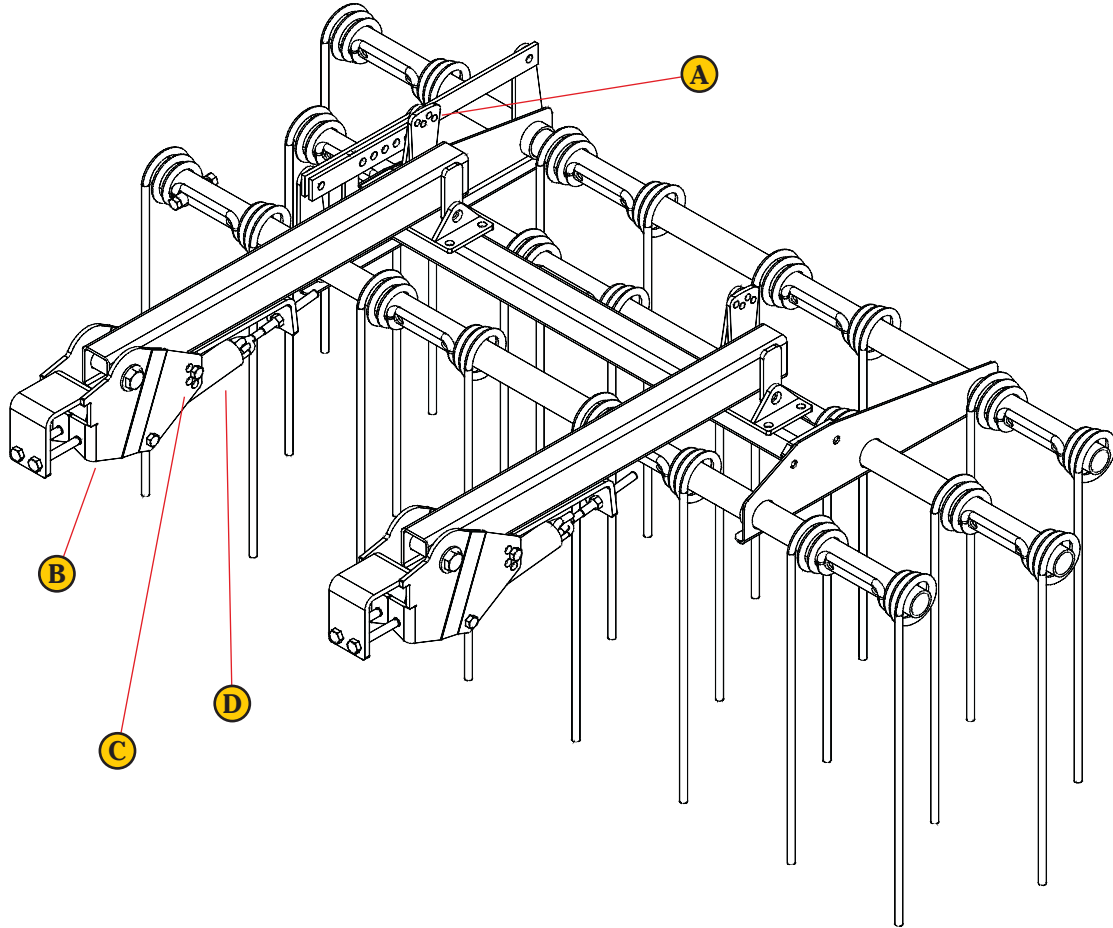
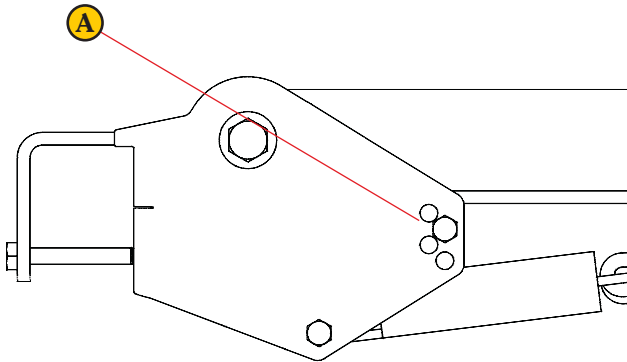


Figure 3.10 Harrow Assembly



*Mount Bracket Legend*

- (A) Depth Adjustment Bolt

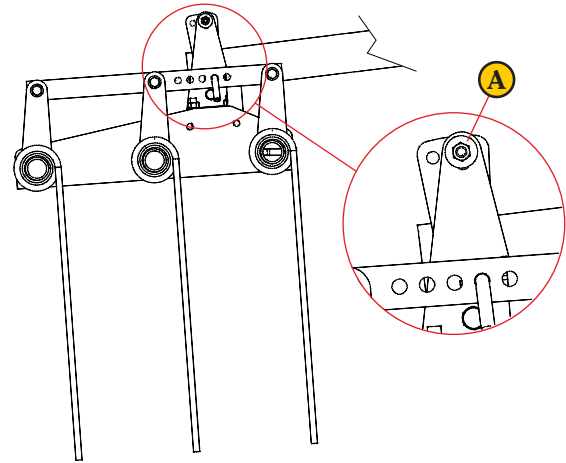


*Figure 3.11 Depth Adjustment Bolt*

To set the front to rear level of the section adjust the pivot brackets as shown below. Remove the 1/2 NC x 1-1/2 GR5 bolts and rotate the section until the section is level. Reinstall bolts and re-tighten to specified torque.

*Pivot Bracket Legend*

- (A) 1/2 NC x 1-1/2 GR5 Bolt



*Figure 3.12 Pivot Bracket*

## 3.8 Harrow Basket Operation

### Section Level Adjustment

To set the harrow working depth, first set the chisel plow to its working position. Remove the 5/8 NC x 5 GR5 bolt and relocate as required. The section should be set to run 3" to 5" (7.6 to 12.7 cm) deep in the working position.

### Harrow Legend (Basket) I

- (A) Pivot Bracket
- (B) Mount Bracket
- (C) Depth Adjustment Bolt
- (D) Down Pressure Spring

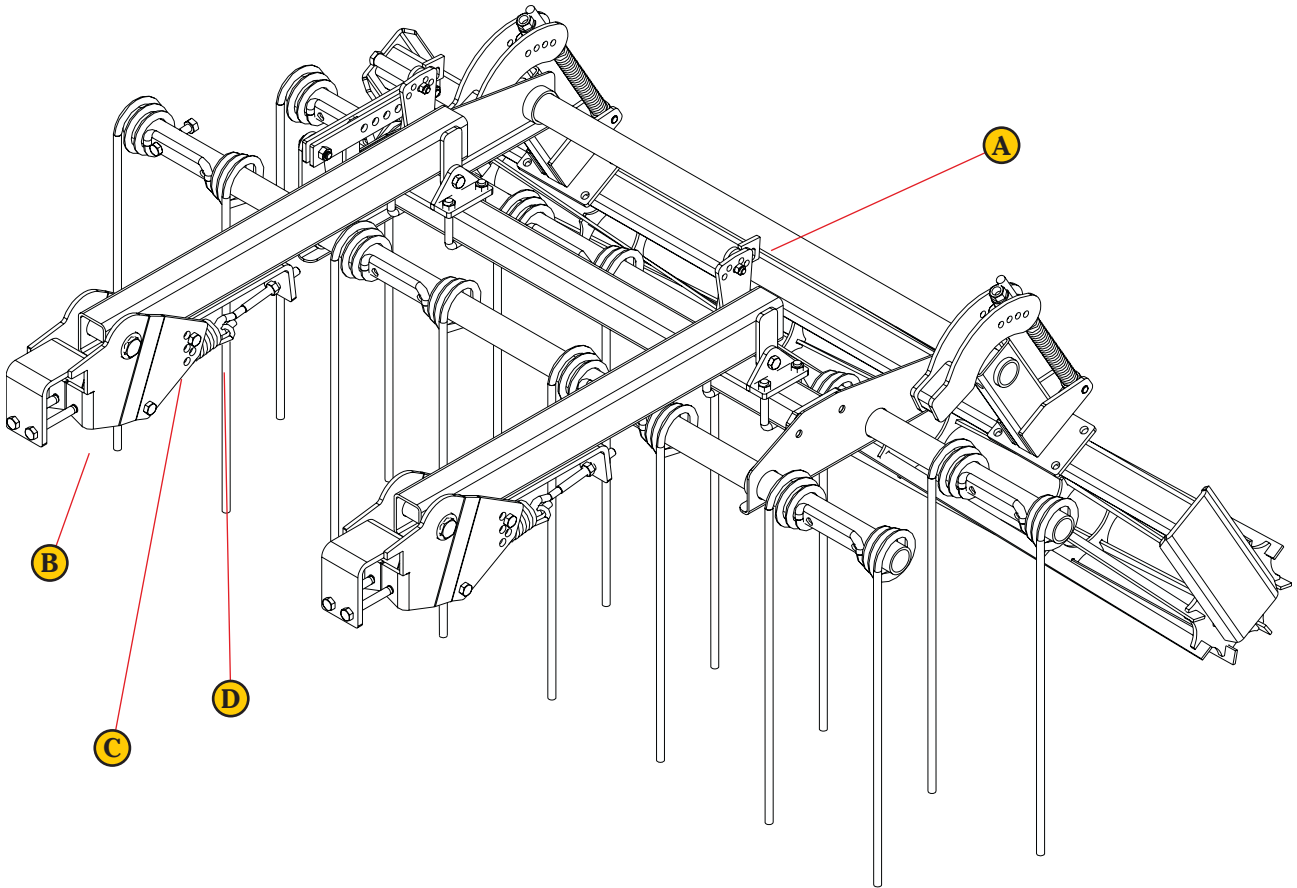
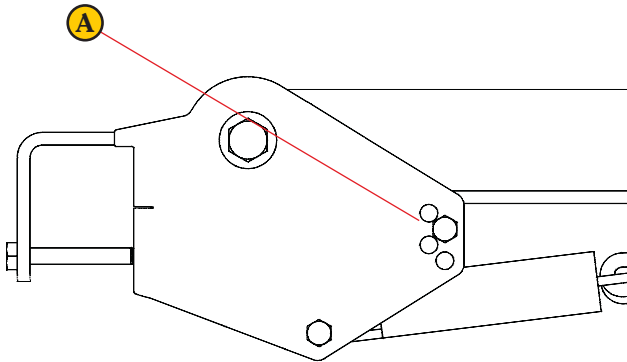


Figure 3.13 Harrow (Basket) Assembly I

*Mount Bracket Legend*

- (A) Depth Adjustment Bolt



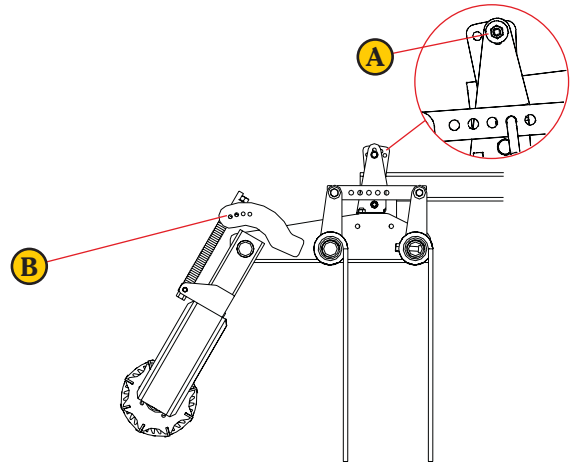
*Figure 3.14 Depth Adjustment Bolt*

To set the front to rear level of the section adjust the pivot bracket as shown below. Remove the 1/2 NC x 1-1/2 GR5 bolts and rotate the section until the section is level. Reinstall bolts and tighten to specified torque.

To adjust basket pressure move remove 1/2 NC x 3 GR5 bolts and move casting forward to decrease pressure and backward to increase pressure. Reinstall bolts and tighten.

*Harrow Legend (Basket) II*

- (A) 1/2 NC x 1-1/2 GR5 Bolt
- (B) 1/2 NC x 3 GR5 Bolt



*Figure 3.15 Harrow (Basket) Assembly II*



Do not over tighten, casting must be free to pivot.

# Operation

## 3.9 Hydraulic Basket Operation

### 3.9.1 Overview

The hydraulic basket has 3 field operating positions; float, active-down pressure and raised position. These 3 operating positions allow the rolling basket to function in varying soil conditions.

### 3.9.2 Float

When the valve is in float, the ball valve handle should be in the upright vertical position. This allows the oil to flow freely in the circuit and apply just the weight of the basket onto the ground.

#### *Pilot Operated Check Valve (Float Position)*

- (A) Ball Valve Handle (Vertical Position)
- (B) Threaded Jam Washer
- (C) Pressure Adjustment Screw

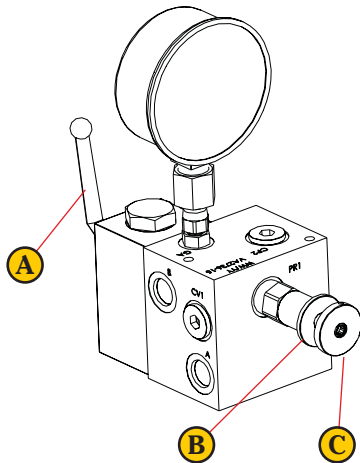


Figure 3.16 Pilot Operated Check Valve (Float Position)

### 3.9.3 Active-Down Pressure

To achieve this setting the ball valve handle should be in the horizontal position. This will allow you to turn the pressure screw to adjust the pressure. (Clockwise — raises pressure; Counter clockwise — lowers pressure) When operating in the field, set the tractor hydraulics to constant pressure. (Only run 30 — 40% of constant flow; enough to have adequate reaction speed)



Do not have tractor hydraulics on max flow (100%). This may cause valve malfunction.

#### *Pilot Operated Check Valve (Active-Down Pressure & Raised Position)*

- (A) Ball Valve Handle (Horizontal Position)
- (B) Threaded Jam Washer
- (C) Pressure Adjustment Screw

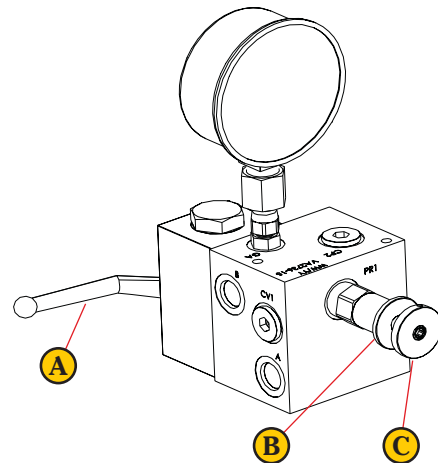


Figure 3.17 Pilot Operated Check Valve (Active-Down Pressure & Raised Position)

### 3.9.4 Raised Position

To activate the raised position, leave the ball valve handle in the horizontal position (See [“Figure 3.17 Pilot Operated Check Valve \(Active-Down Pressure & Raised Position\)”](#)) and raise cylinders like normal operational use. This will raise the basket off of the ground and allow the machine to just use the 2 bar coil tine drag.

### 3.9.5 Field Conditions

With the hydraulic rolling basket option, there are several adjustments to utilize to achieve the best residue management. Depending on field conditions, adjustments can be made to bust dirt clump, pin residue and create an even, level surface finish.

### 3.9.6 Dry Field Conditions

During dry field conditions, the active-down pressure operation can be utilized. A good point to start is the 1000 psi (6894.76 kPa) setting. If more basket crumbling action and residue pinning is required, increase the down pressure applied to the baskets (raise gauge pressure). Be careful not to set the pressure to high, or the basket will lift the ripper out of the ground.

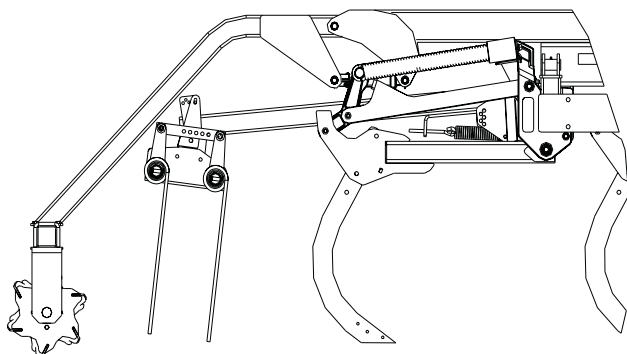


Figure 3.18 Rolling Basket — Lowered Position (Active-Down Pressure or Float)

### 3.9.7 Normal Field Conditions

During normal field conditions the active-down pressure operation can be utilized as well. The 1000 psi (6894.76 kPa) setting is a good place to begin. Depending on residue and soil surface finish, pressure can either be lowered or raised to achieve optimal soil finish. If less soil crumbling and residue pinning is desired the psi can be reduced. (Refer to [“Figure 3.18 Rolling Basket — Lowered Position \(Active-Down Pressure or Float\)”](#))

### 3.9.8 Wet Field Conditions

During wet field conditions the float condition may be utilized. (Refer to [Section “3.9.2 Float on page 30”](#)) This operation may be useful when basket begins to acquire soil. Float will allow basket to lightly float over the soil while still pinning residue and busting soil clumps without acquiring soil on the baskets. If the baskets begin to acquire too much soil, they can be raised (Refer to the [Section “3.9.4 Raised Position on page 31”](#)) to just allow the 2 bar coil tine harrow to level the soil and residue.

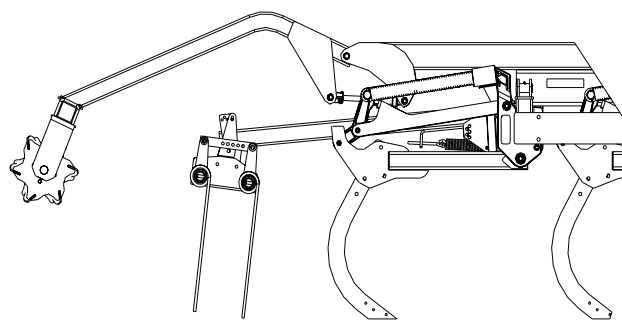


Figure 3.19 Rolling Basket in Raised Position

## 3.10 Wing Lift Circuitry

Wil-Rich Soil Pro 513 equipped with folding wings have hydraulic wing lift cylinders to fold the implement for road transport.

Wing lift cylinders are equipped with an integral safety restrictor on the rod end cylinder port. This allows the wings to lower at a slower rate and prevents the wings from falling too fast should there be some type of hydraulic failure.

### Wing Lift Cylinder Legend

- (A) 1/16" Hole (restricts the flow of oil)
- (B) Wing Lift Cylinder

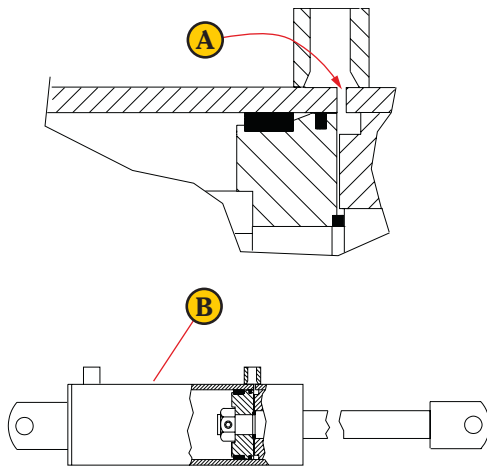


Figure 3.20 Wing Lift Cylinder



Figure 3.21 Wing Lift Cylinder Decal

The figure below shows a simple (4) cylinder circuit used to fold a pair of wings. This system is used on Wil-Rich Soil Pro 513 machines with a single pair of 9'4" (2.84 m) or 11'8" (3.56 m) folding wings.

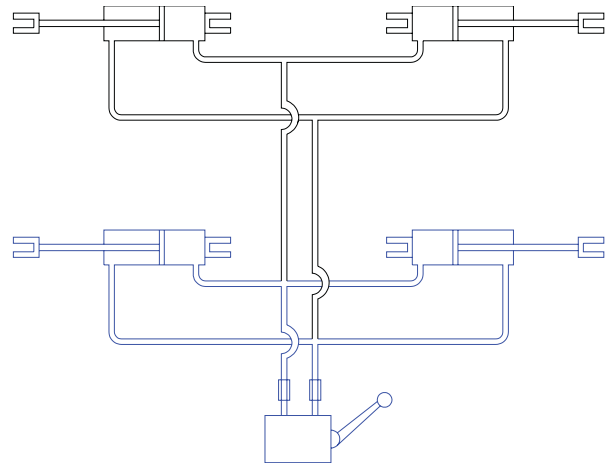


Figure 3.22 Four Cylinder Wing Lift Circuit

When lowering the wings, hold the tractor control lever until all cylinders are completely extended. Fully extending the cylinders allows the wings to flex properly in the field.

When raising the wings be sure the wing rest is properly positioned to allow the wings to fold. Fold the main wings until they contact the wing rest.

### 3.11 Depth Control Circuitry

The depth control cylinders are hooked in series. Each cylinder is a top bypass cylinder and when fully extended will pass oil by the piston into the next cylinder charging the system.

Top bypass cylinders will bypass oil when the cylinder is fully extended. This bypass condition will exist when the implement is raised to maximum ground clearance. At this time oil will pass through a 1/16" (0.16 cm) diameter hole and go on to the next cylinder.

#### Top Bypass Cylinder Legend

- (A) 3/8" (0.95 cm) Hole
- (B) 1/16" (0.16 cm) Bypass Hole
- (C) Top Bypass Cylinder

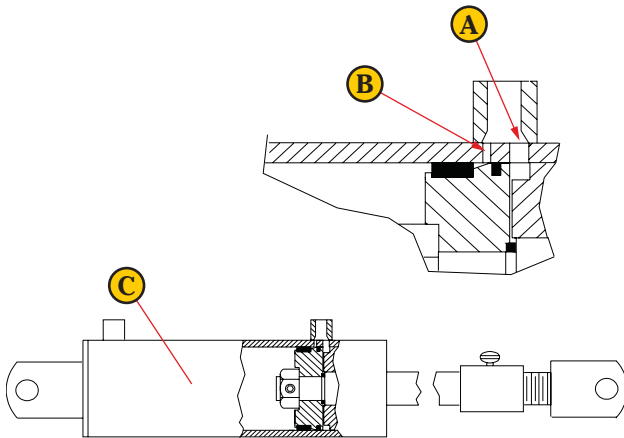


Figure 3.23 Top Bypass Cylinder



This system requires periodic raising of the unit and holding of the tractor valve to expel air or contaminants.



To synchronize or re-synchronize the bypass system, the tractor control valve must be held in the raised position until the entire implement is raised and any air that may be in the lines has been expelled.

#### Lift Hydraulic Circuit Legend

- (A) 5" x 12" (12.7 x 30.5 cm) Top Bypass Main Frame Depth Control Cylinders
- (B) 4-1/2" x 12" (11.4 x 30.5 cm) Top Bypass Wing Frame Depth Control Cylinders

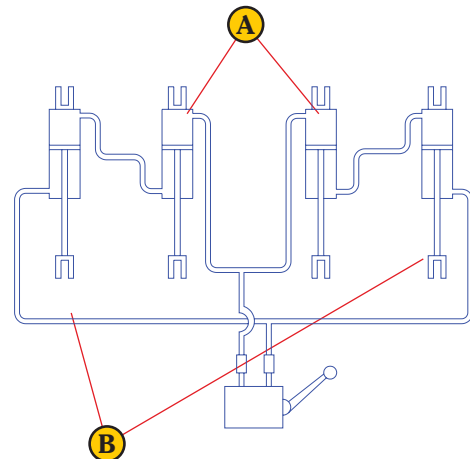


Figure 3.24 Lift Hydraulic Circuit

## 3.12 Sequence Cylinder Operation

This unit is equipped with a lift system that utilizes sequencing cylinders. In a sequencing system the cylinders are sized to operate in series and provide a level lift to the unit. The sequencing system utilizes 12" (30.5 cm) stroke cylinders with varying bore diameters. On this unit the main lift cylinders have a 5" (12.7 cm) diameter bore with a 4-1/2" (11.4 cm) diameter bore wing cylinder.

The cylinders are connected in series with hydraulic hoses. The rod end of the main (Master) cylinders are connected to the base end of the wing cylinders. Because of the rod in the main cylinder there is less volume in the rod end versus the base end. The next cylinder in the series (Slave) needs to be smaller because of the less volume, hence the 4-1/2" (11.4 cm) bore.

### Sequencing Lift Hydraulic System Legend

- (A) 5 x 12 (12.7 x 30.5 cm) Top Bypass Main Frame Depth Control Cylinders
- (B) 4-1/2 x 12 (11.4 x 30.5 cm) Top Bypass Wing Frame Depth Control Cylinders

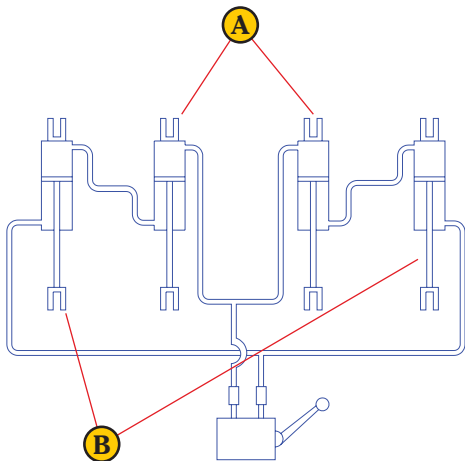


Figure 3.25 Sequencing Lift Hydraulic System

As the main cylinder extends the oil is forced out of the rod end and into the base end of the wing cylinder.

### Top Bypass Cylinder Legend

- (A) 3/8" (0.95 cm) Hole
- (B) 1/16" (0.16 cm) Bypass Hole
- (C) Top Bypass Cylinder

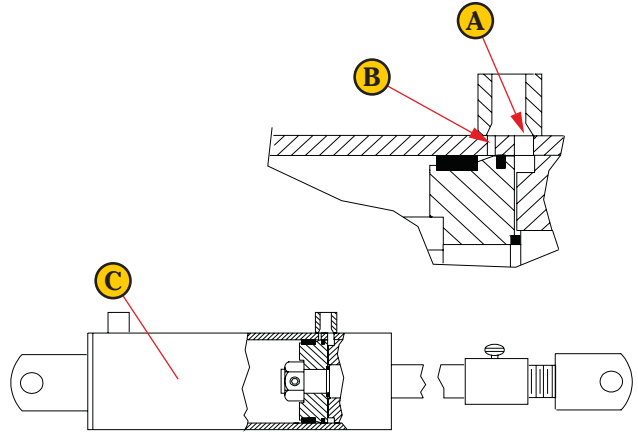


Figure 3.26 Top Bypass Cylinder

As hydraulic oil is pumped into the base end of the master cylinders, oil is forced out of the rod ends of these cylinders to the base ends of the first slave cylinder. The oil forced out of the rod ends of the first slave cylinder goes to the base ends of the next slave cylinder or back to the tractor.

As the machine is raised and the cylinders are completely extended, the slave cylinders will become sequenced with the master cylinder. Because of the varying stroke lengths the cylinder anchor positions on the lift mast and axles is designed to provide even rotation of the axle and a level lift.



Synchronization is accomplished by allowing oil to pass from the base end of the cylinder to the rod end through a small orifice at the rod end of each cylinder. When the piston seal passes by the orifice (cylinder fully extended) oil passes from the base of the BASE end of the master cylinder to the base end of the slave cylinders. When the slave cylinder rods are fully extended, oil passes from the BASE end of the slave cylinders back to the tractor.

For synchronization to be accomplished, depth control must be held for a few seconds with the cylinders fully extended, to allow passage of oil through the system.

After oil has “rephrased” the system, leave depth control in neutral position at least three seconds to allow cylinders far enough to close the rephrase passages and completely synchronize the system.



The depth of the unit is controlled pin stop adjustment of the main lift cylinders.

---

Depth will be reached when the axle flag contacts the axle pin stop. Each hole movement is  $\frac{2}{3}$  of an inch (1.7 cm) of depth on the shanks. Follow the main frame setting instructions noted above to set the operational depth and level.

Do not use the wing cylinder stops collars to control the overall depth of the unit. For example, if a wing is low, you cannot add stop collars on that wing cylinder to hold the wing; you will need to adjust the adjust bolt to raise the wing. With a sequencing lift system, the first cylinder to be stopped will stop the movement of all cylinders in the system. If a wing needs to be adjusted side to side to be level with the main frame, the adjustment must be made at the adjust bolt on the wing axle.

Each shank comes fully assembled from the factory. Install the shanks in their proper location and securely tighten u-bolt nuts.

The mounting bolts, and shank bolts must all be checked after a few days work and kept tight.

[Refer to “Figure 3.9 Shank Settings II on page 25”.](#)

## Operation

### 3.13 Miscellaneous

#### 3.13.1 Safety Chains

The purpose of the safety chain is to provide an auxiliary attaching system to retain the connection between towing and towed machine in the event of separation of the primary attaching system.

##### *Safety Chain Legend*

- (A) Safety Chain Mount
- (B) Safety Chain
- (C) Clevis End to Tractor

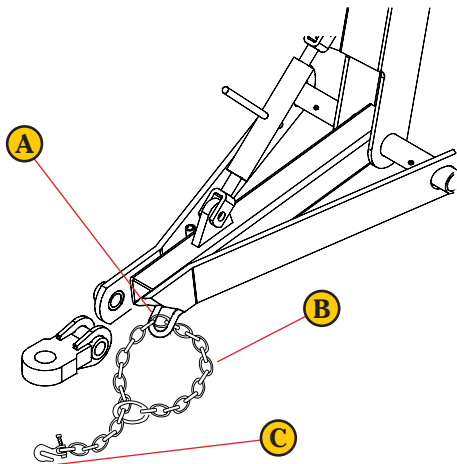


Figure 3.27 Safety Chain

The safety chain should be hooked long enough to permit full turns. Unnecessary slack should be taken up.

The intermediate support is to be used if there is more than 6" (15.25 cm) of unsupported chain on either side of the primary attaching point.

##### *Safety Chain Support Legend*

- (A) Primary Attaching Point
- (B) Intermediate Support

The intermediate support must not be mounted more than 6" (15.25 cm) from the primary attaching point.

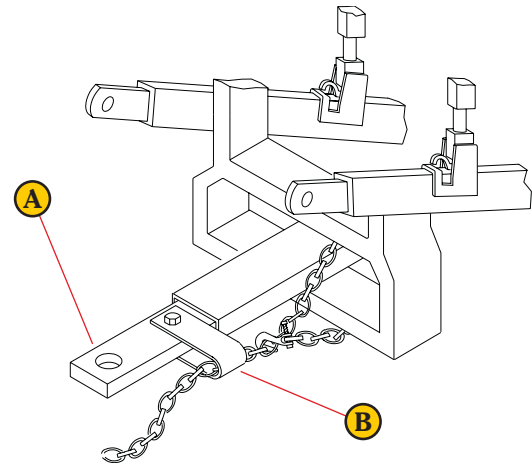


Figure 3.28 Safety Chain Support

#### 3.13.2 Storage



If possible store your Soil Pro 513 inside.

At the end of a season, clean the implement thoroughly to remove any trash, soil or dirty grease which could hold moisture and cause premature rusting. Repaint any chipped, bare or rusted areas to prevent any further deterioration. Inspect the machine for any worn or broken parts and adjust or replace as required.



See your local Väderstad dealer for any parts and/or service which may be needed.

Thoroughly lubricate all grease fittings at the end of the season's use and again before the first operation of the next season.

It is advisable, if possible to store a larger Soil Pro 513 with the wings down. With the wings completely lowered, the rod end cylinder pins of the wing lift cylinders should be removed and cylinders carefully retracted.

Avoid possible damage to the hydraulic system by lowering the machine onto the shanks and relieve the pressure on the system. Doing this will also prevent damage to the tires by removing the disc rippers weight.

Coat the shovels with grease and place boards under the points to prevent the shovels from settling into the ground.



## 4 Troubleshooting

### 4.1 Troubleshooting the Soil Pro 513

Table 4.1 Troubleshooting the SP 513

Possible Cause	Solution
<b>Machine will not pull straight (skewing or dog tracking)</b>	
Soil Pro 513 not level.	<a href="#">Refer to “3.6.2 Main Frame Leveling — Front to Rear on page 23” and “3.6.3 Wing Leveling — Front to Rear &amp; Side to Side on page 24”.</a>
Incorrect shank placement.	Check shanks for proper location, <a href="#">refer to Soil Pro 513 assembly manual for proper shank placement.</a>
Tires not equally inflated.	<a href="#">Refer to Section “6.1.1 Wheels on page 44”.</a>
<b>Settling of entire implement from raised position</b>	
Leaking cylinder.	Replace cylinder seals. Contact your local Väderstad Service Representative.
Leaking tractor hydraulic control valve.	<a href="#">Refer to Tractor’s Operator Manual.</a>
<b>Wings lowering too rapidly</b>	
Incorrect cylinder installed, should have 1/16” (0.16 cm) diameter integral restrictor cylinder.	<a href="#">See Section “3.10 Wing Lift Circuitry on page 32” and install the correct cylinder.</a>
<b>Poor or uneven penetration / Cylinders are getting out of sync</b>	
Incorrect leveling adjustments on main frame or wings.	<a href="#">Refer to “3.6.2 Main Frame Leveling — Front to Rear on page 23” and “3.6.3 Wing Leveling — Front to Rear &amp; Side to Side on page 24”.</a> Make sure wing fold cylinders are fully extended.
Hydraulic malfunction — air in lines, cylinders or hoses leaking, or hydraulic cylinders and hoses are not installed properly.	Check for oil leakage in cylinders, hoses and fittings. Make sure all hydraulic cylinders and hoses are properly connected. Re—synchronize cylinders.
Worn shovel points.	Adjust stop collar of main lift cylinder(s) to compensate for wear. Replace shovels if wear is severe.
Tires not equally inflated.	<a href="#">Refer to Section “6.1.1 Wheels on page 44”.</a>



## 5 Maintenance



Grease fitting decals are included in the hardware kit. Locate grease fitting points and place decals in position to indicate a grease fitting.

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### 5.1 Maintenance Schedules

Periodic checks must be made to assure that all nuts and bolts remain securely tightened. Loose hardware is easily bent or lost and can cause excessive wear on parts. Replace any bent or broken bolts as soon as they are discovered.

Clean off any dirt or grease that may accumulate on moving parts at regular intervals. This will prevent any abrasive action which could cause excess or premature wear. Thoroughly inspect the implement for loose or broken parts and adjust or replace as necessary.

It is important that the implement be regularly lubricated operation. Proper lubrication helps prevent down time due to excessive wear and increase machine life.

#### 5.1.1 Ripper Shank Maintenance

The pivots on the ripper shanks utilize nylon bushings, no greasing or other periodic maintenance is required.

Clean off any dirt or grease that may accumulate on moving parts at regular intervals. This will prevent any abrasive action which could cause excess or premature wear. Thoroughly inspect the shank assembly for loose or broken parts and adjust or replace as necessary.



A 3/4 NF x 3-1/2 GR8 Fine Thread Bolt is used to attach shank to frame in the upper attaching position and a 3/4 NC x 3-1/2 GR5 Coarse Thread Tap Bolt is used in the lower attaching position. **DO NOT INTERCHANGE!** The 3/4 NC x 3-1/2 GR5 Bolt is used as a shear bolt.

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#### 5.1.2 Cylinder Shafts

If the cylinder shafts are left exposed for any extended period of time, they should be coated with grease to protect them from rust and corrosion.

#### 5.1.3 Axle Caps

All axle caps must be greased every 40 hours with a good quality grease. Lower machine onto the shovel points to relieve pressure on the caps which will make greasing easier.

#### 5.1.4 Hub & Spindle Assemblies

Each hub and spindle assembly comes with a grease fitting installed in the hub.

Tighten spindle nut so that there is a slight drag on the wheel when turned by hand.



Transport wheel hubs are not fully filled with grease when assembled. Though these hubs are usually equipped with grease fittings, pumping a few shots of grease on a regular interval into these hubs will not ensure that the grease enters or flushes the bearings. It is essential that bearing assemblies be repacked at the end of the season, or before the next season.

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#### 5.1.5 Walking Tandem Assemblies

The pivots on the walking tandems utilize nylon bushings, no greasing or other periodic maintenance is required.

#### 5.1.6 Hydraulics

Inspect all hydraulic hoses and fittings for cracks and abrasion at least once a year. Tighten or replace as needed.

When connecting the hoses to the cylinders, tubing, or fittings; always use one wrench to prevent the hose from twisting and another wrench to tighten the union. Excessive twisting will shorten the hose life.

Do not overtighten hydraulic fittings, excessive torque cause them to crack.

Care must be taken to prevent twisting when tightening hose connections. Straighten any hose that appears twisted immediately. A twisted hose can burst under operating pressure.

### 5.2 Lubrication Points

Make sure the Soil Pro 513 is properly lubricated. It is recommended to use Wil-Rich 460 ep Tillage Lubricant in your Soil Pro 513. It is specifically designed for the loads and conditions encountered in heavy tillage.

#### *Lubrication (Frequency) Legend*

- **(A)** Gang Mounts (40 Hours) (x32)
- **(B)** Pivot Tube (40 Hours) (x2)
- **(C)** Hitch (10 Hours) (x1)
- **(D)** Concave Coulters (Seasonal)
- **(E)** Hinges (40 Hours) (x6)
- **(F)** Axle Caps (40 Hours) (x24)
- **(G)** Hubs (Seasonal) (x8)

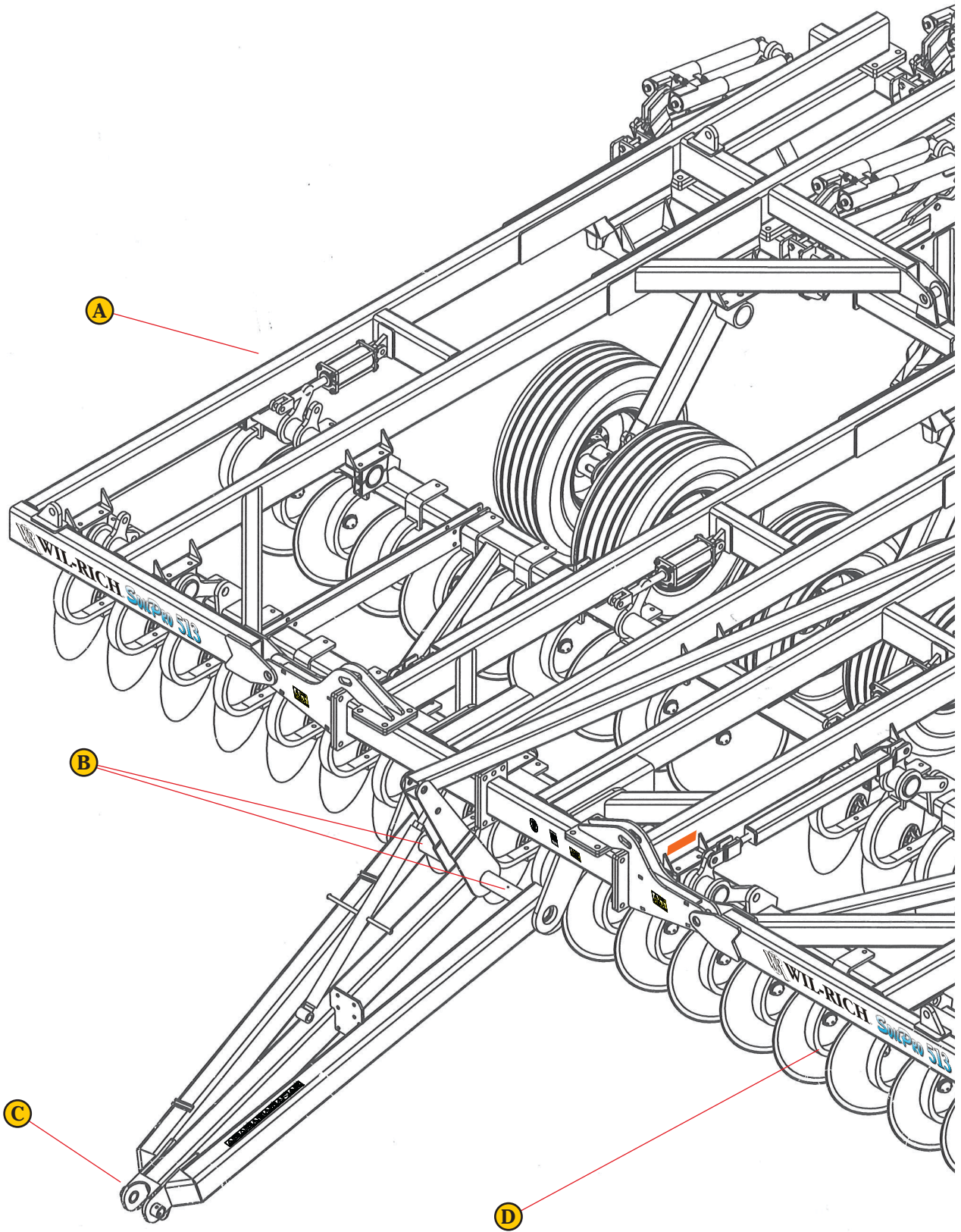


Figure 5.1 Soil Pro 513 Lubrication Points I

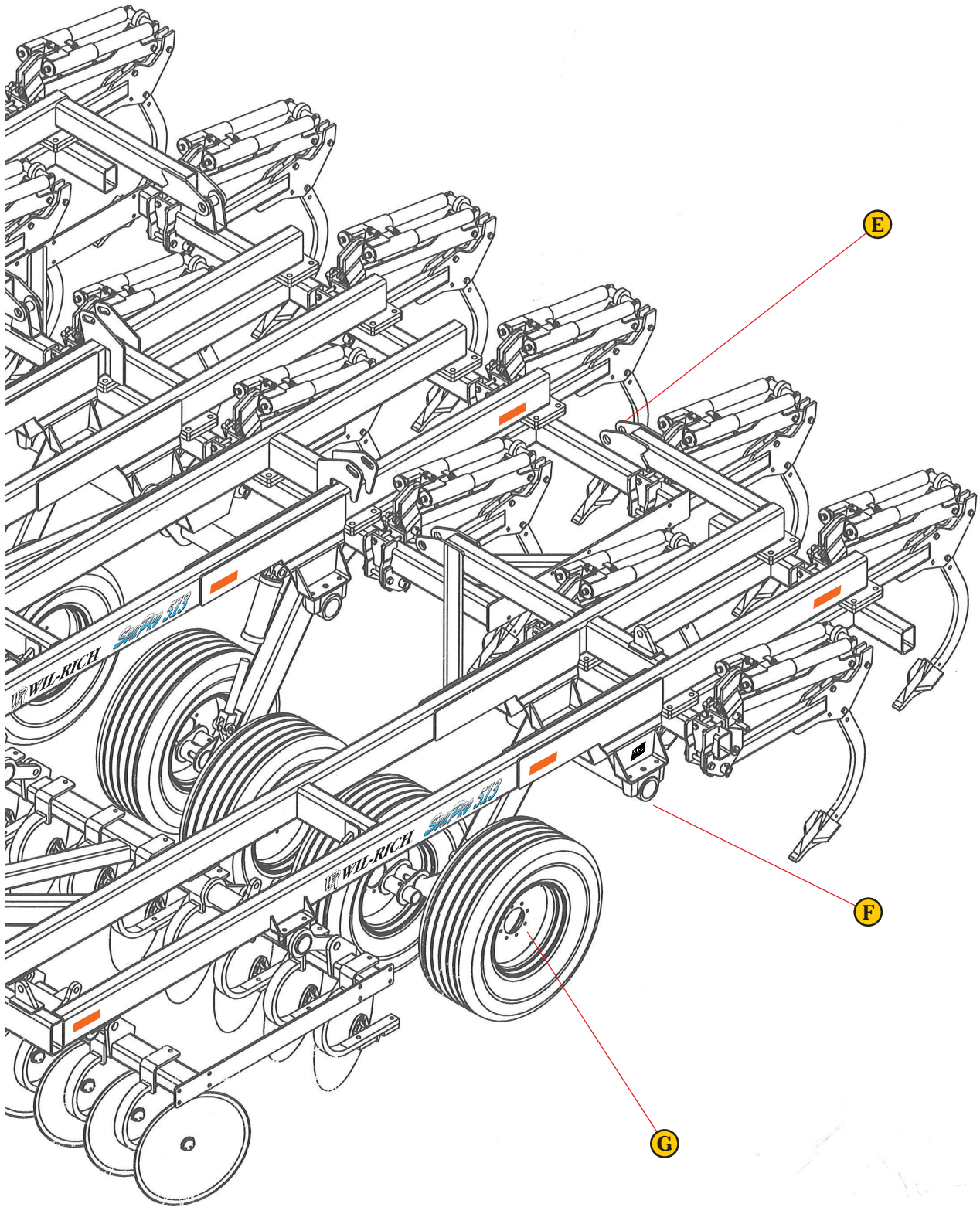


Figure 5.2 Soil Pro 513 Lubrication Points II





## 6 Specifications

### 6.1 Implement Specifications

\*\*Adding harrows to a unit may increase the transport width and/or height of the unit.

\*Approximate weight: base weight + tire group.

Table 6.1 Technical Data Sheet: 2025 Soil Pro 513 (Rigid Models)

Models	5–30 SP 513	7–24 SP 513	9–24 SP 513
<b>Dimensions</b>			
Working Width, ft (m)	12.5 (3.8)	14 (4.3)	18 (5.5)
Shank Spacing, in (cm)	30 (76)	24 (60)	24 (60)
Transport Width, ft (m)	16.2 (4.9)	16.2 (4.9)	21.25 (6.5)
Transport Height, ft (m)	7 (2.1)	7 (2.1)	7 (2.1)
Transport Length, ft (m)	33.4 (10.2)	33.4 (10.2)	33.4 (10.2)
Weight, lbs (kg)	17,180 (7,793)	18,061 (8,192)	21,143 (9,590)
<b>Specifications</b>			
Number of Shanks	5	7	9
Number of Blades	18	18	24
Horsepower Requirement	300 — 400	300 — 450	350 — 450

Table 6.2 Technical Data Sheet: 2025 Soil Pro 513 (Folding Models)

Models	9–24 SP 513	11–24 SP 513	13–24 SP 513
<b>Dimensions</b>			
Working Width, ft (m)	18 (5.5)	22 (6.7)	26 (7.9)
Shank Spacing, in (cm)	24 (60)	24 (60)	24 (60)
Transport Width, ft (m)	15.75 (4.8)	19.25 (5.9)	15.75 (4.8)
Transport Height, ft (m)	11.8 (3.6)	13.7 (4.2)	19.25 (5.9)
Transport Length, ft (m)	33.4 (10.2)	33.4 (10.2)	33.4 (10.2)
Weight, lbs (kg)	22,567 (10,236)	32,280 (14,642)	33,688 (15,281)
<b>Specifications</b>			
Number of Shanks	9	11	13
Number of Blades	24	30	34
Horsepower Requirement	350 — 450	450 — 550	500+

#### 6.1.1 Wheels

Table 6.3 Tire Pressure

Unit	VF385/65R22.5 (Implement Tire)	385/65R22.5 (Used Truck Tire)
All Models	58 psi (400 kPa)	90 psi (620.5 kPa)

## 6.2 Standard Bolt Torques



Failure to follow these instructions may result in personal injury and/or equipment damage.

- Just before and during operation be sure no one is on or around the implement.
- Before activating the hydraulic system, check hoses for proper connections.
- Before lowering the wings for the first time, make sure the entire system has been charged with oil.
- With wings down always install hydraulic cylinder channel lock(s) for transporting.

When tightening bolts, they must be torqued to the proper number (ft-lbs) as indicated in the table unless specified. It is important that all bolts be kept tight.

On new machines, all nuts and bolts must be rechecked after a few hours of operation.

Table 6.4 Bolt Torques

Bolt Diameter	3/8"	1/2"	5/8"	3/4"	7/8"	1"
	(9.53 mm)	(12.7 mm)	(15.88 mm)	(19.05 mm)	(22.23 mm)	(25.4 mm)
Hex Head	9/16"	3/4"	15/16"	1-1/8"	1-5/16"	1-1/2"
	(14.3 mm)	(19.05 mm)	(23.83 mm)	(28.58 mm)	(33.34 mm)	(38.1 mm)
Torque   ft/lbs (N.m)						
UNC GR2	18 (24.40)	45 (61.01)	89 (120.67)	160 (216.93)	252 (341.67)	320 (433.86)
UNC GR5	30 (40.67)	68 (92.19)	140 (189.81)	240 (325.39)	360 (488.09)	544 (737.56)
UNC GR8	40 (54.23)	100 (135.58)	196 (165.74)	340 (460.98)	528 (715.87)	792 (1073.81)
UNF GR2	21 (28.47)	51 (69.15)	102 (138.29)	178 (241.34)	272 (368.78)	368 (498.94)
UNF GR5	32 (43.39)	70 (94.91)	168 (227.78)	264 (357.94)	392 (531.48)	572 (775.53)
UNF GR8	48 (65.08)	112 (151.85)	216 (292.86)	368 (498.94)	792 (1073.81)	840 (1138.89)

When replacing a bolt, use only a bolt of the same grade or higher. Except in shear bolt applications, where you must use the same grade bolt.

### Bolt Grades

- (A) Bolts with no marking are grade 2.
- (B) Grade 5 bolts furnished with the machine are identified by three radial lines on the head.
  - All U-bolts are grade 5.
- (C) Grade 8 bolts furnished with the machine are identified by six radial lines on the head.

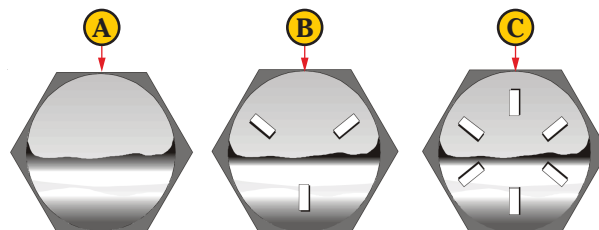


Figure 6.1 Bolt Grades

### 6.3 Hydraulic Connection Torques

*Hydraulic Connection Torques Legend*

- **(1)** Straight Thread O-ring Boss (ORB)
  - Example: 12MB — 12MJ is —12 male ORB to —12 male JIC
- **(2)** SAE 37°C (JIC)
  - Example: 8FJ — 8FJ is —08 female JIC

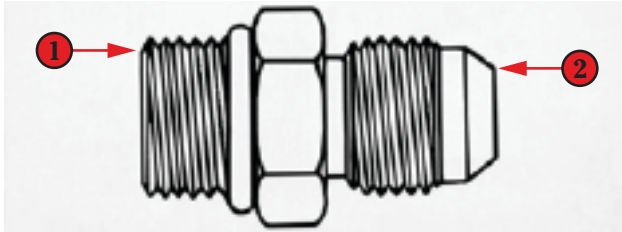


Figure 6.2 Hydraulic Connection Torques



SAE 37° fittings can be damaged if over torqued. Use caution when tightening these fittings.

Table 6.5 Straight Thread O-ring Boss (ORB)

Dash Size	Jam Nut or Straight Fitting Torque	
	ft/lbs	Newton Meters
-04	13 — 15	18 — 20
-05	14 — 15	19 — 21
-06	23 — 24	32 — 33
-08	40 — 43	55 — 57
-10	43 — 48	59 — 64
-12	68 — 75	93 — 101

Table 6.6 SAE 37°C (JIC)

Dash Size	Jam Nut or Straight Fitting Torque	
	ft/lbs	Newton Meters
-04	11 — 12	15 — 16
-05	15 — 16	20 — 22
-06	18 — 20	24 — 28
-08	38 — 42	52 — 58
-10	57 — 62	77 — 85
-12	79 — 87	108 — 119



## 7 Aftermarket

### 7.1 Warranty



Väderstad Inc. Limited Warranty Terms and Conditions — United States and Canada, Effective for Equipment Retailed and Delivered after May 21, 2021.

#### 7.1.1 What is Warranted

Väderstad Inc. warrants its new equipment to be free of defects in material and workmanship at time of delivery to the first retail purchaser, renter or lessee. These terms apply to all 10K, Amity, Concord, Wil-Rich and Wishek brands of new equipment originally marketed in the United States and Canada.

#### 7.1.2 Warranty Period

- 12 months from the date of delivery to the first retail purchaser, renter or lessee.
- **483 Disk Chisel, Field Cultivator and Disk Cultivators:** 3 years on main frames, wing frames and shank assemblies.

#### 7.1.3 Exceptions from this Warranty

- **Freight Charges:** This warranty does not cover freight charges.
- **Improvements, Changes, or Discontinuance:** Väderstad Inc. reserves the right to make changes and improvements in design or changes in specifications at any time to any product without incurring any obligations to owners of products previously sold.
- **Satellite Outages:** Interruptions in satellite interfaces and satellite communications are outside the control of this product and are not covered by this warranty. The company is not responsible for issues or degradation of system performance resulting from such interruptions in satellite interfaces and satellite communications where the issues are not related to defects in this product.
- **Repairs and Maintenance Not Covered Under Warranty:** This warranty does not cover conditions resulting from misuse, natural calamities, use of non-Väderstad Inc. parts, negligence, alteration, accident, use of unapproved attachments, usage which is contrary to the intended purposes, or conditions caused by failure to perform required maintenance. Replacement of wear or maintenance items (unless defective) such as but not limited to, filters, hoses, belts, lubricants, light bulbs, wheel alignment, tightening of nuts, belts, bolts and fittings, service tune-up, computer parameter adjustments and general adjustments which may from time to time be required are not covered.

- **Rubber Tire Warranty:** Rubber tires are warranted directly by the respective manufacturer only and not by Väderstad Inc.

#### 7.1.4 Owners Obligation

It is the responsibility of the owner to transport the equipment or parts to the service shop of an authorized Väderstad Inc. dealer or alternatively to reimburse the dealer for any travel or transportation expense involved in fulfilling this warranty. This warranty does NOT cover rental of replacement equipment during the repair period, damage to products which have been declared a total loss and subsequently salvaged, overtime labor charges, freight charges for replacement parts, or special handling requirements (such as, but not limited to, the use of cranes).

#### 7.1.5 Exclusive Effect of Warranty and Limitation of Liability



This warranty is in lieu of all warranties of merchantability, fitness for a purpose or other representations, warranties or conditions, expressed or implied.

The remedies of the owner set forth herein are exclusive. The company neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale of covered machines. Correction of defects, in the manner and for applicable period of time provided above, shall constitute fulfillment of all responsibilities of Väderstad Inc. to the owner, and Väderstad Inc. shall not be liable for negligence under contract or in any manner with respect to such machines.



In no event shall the owner be entitled to recover for incidental, special or consequential damages such as but not limited to, loss of crops, loss of profits or revenue, other commercial losses, inconvenience or cost of rental or replacement equipment.



Some states or provinces do not permit limitations or exclusions of implied warranties or incidental or consequential damages, so the limitations or exclusions in this warranty may not apply.

## Väderstad Inc. as referred to herein with respect to sales in:

### *United States & Canada:*

- Väderstad Inc.
- PO Box 1030
- Wahpeton, ND 58074

## 7.1.6 Additional Warranty Information

### New Equipment Warranty

Equipment is eligible for warranty service only if it qualifies under the provisions of the new equipment warranty. The selling dealer will deliver this warranty to the original retail purchaser at the time of sale, and the dealer will register the sale and warranty with Väderstad Inc.

### Subsequent Owners

This warranty covers the first retail purchaser and all subsequent owners of the equipment during the specified warranty period.

Should the Väderstad Inc. dealer sell this equipment to a subsequent owner, the dealer must deliver the warranty document to the subsequent owner so the subsequent owner can register ownership with Väderstad Inc. and obtain the remaining warranty benefits, if available, with no intermission in the warranty period. Subsequent owner procedure will apply. It is the responsibility of the subsequent owner to transport the equipment to the service shop of an authorized Väderstad Inc. dealer or alternatively to reimburse the dealer for any travel or transportation expense involved in fulfilling this warranty. This warranty does NOT cover charges for rental or replacement equipment during the repair period, products which have been declared a total loss and subsequently salvaged, overtime labor charges, freight charges for replacement parts, or units sold at auction.

### Warranty Service

To be covered by warranty, service must be performed by an authorized Väderstad Inc. It is recommended that you obtain warranty service from the dealer who sold you the equipment because of that dealer's continued interest in you as a valued customer. In the event this is not possible, warranty service may be performed by any other authorized Väderstad Inc. dealers in the United States or Canada. It is the responsibility of the owner to transport the equipment to the service shop of an authorized Väderstad Inc. dealer or alternatively to reimburse the dealer for any travel or transportation expense involved in fulfilling this warranty.

## Maintenance Service

The owner's manual furnished to you with the equipment at the time of delivery contains important maintenance and service information. You must read the manual carefully and follow all the maintenance and service recommendations. Doing so will result in greater satisfaction with your equipment and help avoid service and warranty problems. Please remember that failures due to improper maintenance of your equipment are not covered by warranty.

## Maintenance Inspections

To insure the continued best performance from your agricultural equipment, we recommend that you arrange to make your equipment available to your selling dealer for a maintenance inspection 30 days prior to warranty expiration.

## 7.2 Aftermarket Options

### 7.2.1 2 Bar Coil Tine Harrow with Rolling Basket

The 2 — bar coil tine harrow with flat bar rolling basket is designed with 12" (30 cm) between tooth bars. A harrow and rolling basket work together to create a desirable field finish. The aggressiveness of the tines is adjustable. The basket has eight blades with 0.25" x 1.25" (0.6 cm x 3 cm) wide steel. The basket is 13" (33 cm) in diameter.



Figure 7.1 Bar Coil Tine Harrow with Rolling Basket

### 7.2.2 3 & 4 Bar Coil Tine Harrow

The 3 or 4 bar tubular harrow features five adjustments for tooth angle. These angle adjustments allow the user to set the aggressiveness of the harrow to the ground conditions and amount of residue on the soil surface. The tines are 5/8" (1.6 cm) in diameter and 26" or 30" (66 cm or 76 cm) long, depending on the tool they are attached to.



Figure 7.2 3 & 4 Bar Coil Tine Harrow





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