Operator’s Manual

Chisel Plow

2500 Series

30012174-en-us; 16.12.2024 02

Operator’s Manual

WIL-RICH®

VÄDERSTAD

30012174-en-us; 16.12.2024

Sign Off Form

Wil-Rich follows the general standard specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the QX2 Field Cultivator must read and understand ALL Safety, Operation, and Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information is reviewed. Annually review this information before the season start-up.

Make periodic reviews of SAFETY and OPERATION a standard practice for all your equipment. We feel that an untrained operator is unqualified to operate this machine.

A sign-off sheet is provided for all personnel who will be working with equipment have read and understood the information in the operators Manual and have been instructed in the operation of the equipment.

Date	**Employee's Signature**	**Employee's Signature**

Contents

1 Introduction

2500 Series Chisel Plow

Congratulations on the choice of a Wil-Rich 2500 Series Chisel Plow to complement the farming operation. These implements are ideal for heavy residue conditions associated with high yielding crops, featuring a long frame designed to improve trash flow.

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 2500 Series Chisel Plow is available with both *Level Lift* and *Floating Hitch* options. Level lift hitches allow the implement to remain level during field operation and transport and allow the operator to change the working depth while remaining consistent from the front to the rear of the unit. The floating hitch pivots between the tractor and the main frame allowing the unit to follow the contour of the ground. The front gauge wheels are mechanically synchronized with the rear axle, allowing the unit to maintain level working depth from front to rear.

Hydraulic caster gauge wheels are standard on floating hitch models and ratchet adjust caster gauge wheels are standard on 31' (9.45 m) and larger wings. 12.5R x 22.5 tires on 8–bolt hubs are used on all in-frame walking tandems to aid in wet working conditions and for increased reliability during transport.

The 2500 Series Chisel Plow is available in both rigid and folding models. Folding models allow for a compact transport package to easily move to the next field. The hydraulics on the Chisel Plow are a 10" (25.4 cm) stroke Prince wing fold cylinder that varies the bore size to accommodate lift circuit phasing.

1.2 Intended Use

Your Chisel Plow 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 2550–55–59F Chisel Plow (Front)

Figure 1.2 2550–55–59F Chisel Plow (Rear)

1.4 Machine Serial Number

Refer to Section "2.14.1 Location Of Safety Signs on page 14" for more information on the location of the safety decals and the serial number plate.

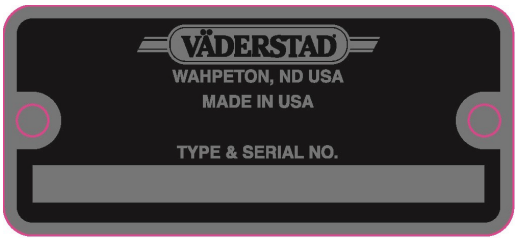


Figure 1.3 Serial No. Decal

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: 0000000000 - 0000000000		
Implement	**Model**	**Serial Number(s)**
Ripper		
Other		

1.5 Technical Data Sheet

Table 1.1 Chisel Plow 2500 Series Specifications I

Model	Working Width 12” (30.5 cm)	Working Width 15” (38.1 cm)	No. of Shanks (12” / 15”)	Inner Wing	Approx. Transport Width	Approx. Transport Height	Approx. Weight
2530 Series — Folding Model with 3’ (0.9 m) Wings— Tandem Axle (Level Lift Hitch)							
2530 CPW 19	25’ (7.6 m)	N/A	19/-	3’ (0.9 m)	14’1” (4.3 m)	9’9” (3 m)	8,566 lbs (3,885 kg)
2530 CPW 19 — 23	23’ (7 m)	22’6” (6.9 m)	23/18	3’ (0.9 m)	14’1” (4.3 m)	10’1” (3.1 m)	9,313 lbs (4,224 kg)
2530 Series — Folding Model with 6’ (2 m) Wings— Tandem Axle (Level Lift Hitch)							
2530 CPW 25	25’ (7.6 m)	25’ (7.6 m)	25/20	6’ (1.8 m)	14’1” (4.3 m)	11’1” (3.4 m)	11,271 lbs (5,112 kg)
2530 CPW 25 — 27	27’ (8.2 m)	27’6” (8.4 m)	27/22	6’ (1.8 m)	14’1” (4.3 m)	11’5” (3.5 m)	11,593 lbs (5,258 kg)
2530 CPW 25 — 29	29’ (8.8 m)	30’ (9.1 m)	29/24	6’ (1.8 m)	14’1” (4.3 m)	11’8” (3.6 m)	12,017 lbs (5,451 kg)

Table 1.2 Chisel Plow 2500 Series Specifications II

Model	Working Width 12” (30.5 cm)	Working Width 15” (38.1 cm)	No. of Shanks (12” / 15”)	Inner Wing	Approx. Transport Width	Approx. Transport Height	Approx. Weight	
							Level Lift Hitch	Floating Lift Hitch
2530 Series — Folding Model with 9’ (3 m) Wings – Tandem Axle (Level Lift or Floating Hitch)								
2530 CPW 31	31’ (9.4 m)	30’ (9.1 m)	31/24	9’/0’ (2.7 m / 0 m)	19’2” (5.8 m)	12’6” (3.8 m)	15,016 lbs (6,811 kg)	16,390 lbs (7,434 kg)
2530 CPW 31 — 35	35’ (11 m)	35’ (11 m)	35/28	9’/0’ (2.7 m / 0 m)	19’2” (5.8 m)	14’6” (4.4 m)	15,872 lbs (7,199 kg)	17,246 lbs (7,823 kg)
2530 CPW 31 — 37	37’ (11.3 m)	37’6” (11.4 m)	37/30	9’/3’ (2.7 m / 0.9 m)	19’2” (5.8 m)	12’6” (3.8 m)	17,178 lbs (7,199 kg)	18,552 lbs (8,415 kg)
2530 CPW 31 — 41	41’ (12.5 m)	42’6” (13 m)	41/34	9’/3’ (2.7 m / 0.9 m)	19’2” (5.8 m)	12’6” (3.8 m)	17,940 lbs (8,137 kg)	19,314 lbs (8,761 kg)
2530 Series — Folding Model with 12’ (4 m) Wings – Tandem Axle (Level Lift or Floating Hitch)								
2530 CPW 37	37’ (11.3 m)	37’6” (11.4 m)	37/30	12’/0’ (3.7 m / 0 m)	19’2” (5.8 m)	15’6” (4.7 m)	16,550 lbs (7,507 kg)	17,924 lbs (8,130 kg)
2530 CPW 37 — 43	43’ (13.1 m)	42’6” (13 m)	43/34	12’/3’ (3.7 m / 0.9 m)	19’2” (5.8 m)	16’6” (5 m)	18,668 lbs (8,468 kg)	20,042 lbs (9,091 kg)
2530 CPW 37 — 47	47’ (14.3 m)	47’6” (14.5 m)	47/38	12’/0’ (3.7 m / 0.9 m)	19’2” (5.8 m)	16’6” (5 m)	19,431 lbs (8,814 kg)	20,805 lbs (9,437 kg)

Table 1.3 Chisel Plow 2500 Series Specifications III

Model	Working Width 12” (30.5 cm)	Working Width 15” (38.1 cm)	No. of Shanks (12” / 15”)	Inner Wing	Approx. Transport Width	Approx. Transport Height	Approx. Weight
2550 Series — Folding Model with 9’ (3 m) Wings – Tandem Axle (Floating Hitch)							
2550 CPW 55	55’ (16.8 m)	55’ (16.8 m)	55/44	12’/9’ (3.7 m / 2.7 m)	19’2” (5.8 m)	17’4” (5.3 m)	29,055 lbs (13,179 kg)
2550 CPW 55–59	59’ (18 m)	59’ (18 m)	59/48	12’/9’ (3.7 m / 2.7 m)	19’2” (5.8 m)	17’4” (5.3 m)	29,804 lbs (13,519 kg

1.6 Notes

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.

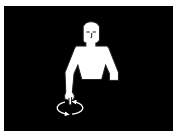
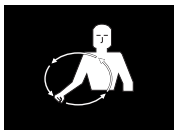
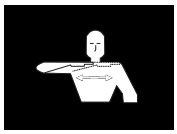
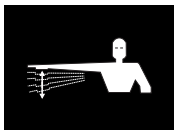
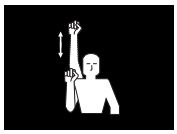
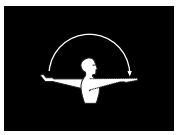
Affixing Safety Signs to the Implement

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 assembles with any part of the body. If fluid punctures the skin, seek immediate medical attention.

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 *(Refer to Section "6.4 Maximum Transport Speed on page 41").* 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.

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 Proper Disposal of Waste

Improper disposal of waste can pollute the environment and ecology. A few examples of potentially harmful equipment waste can include, but not limited to, items such as oil, fuel, coolant, brake fluid, filters, battery chemicals, tires, etc.

Use leak proof containers when draining fluids. Do not use food or beverage containers to collect waste fluids, as food or beverage container(s) may mislead someone into drinking from them.

Do not pour or spill waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth’s atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire with local environmental or recycling center on the proper way to recycle or dispose waste.

2.14 Safety Signs

2.14.1 Location Of Safety Signs

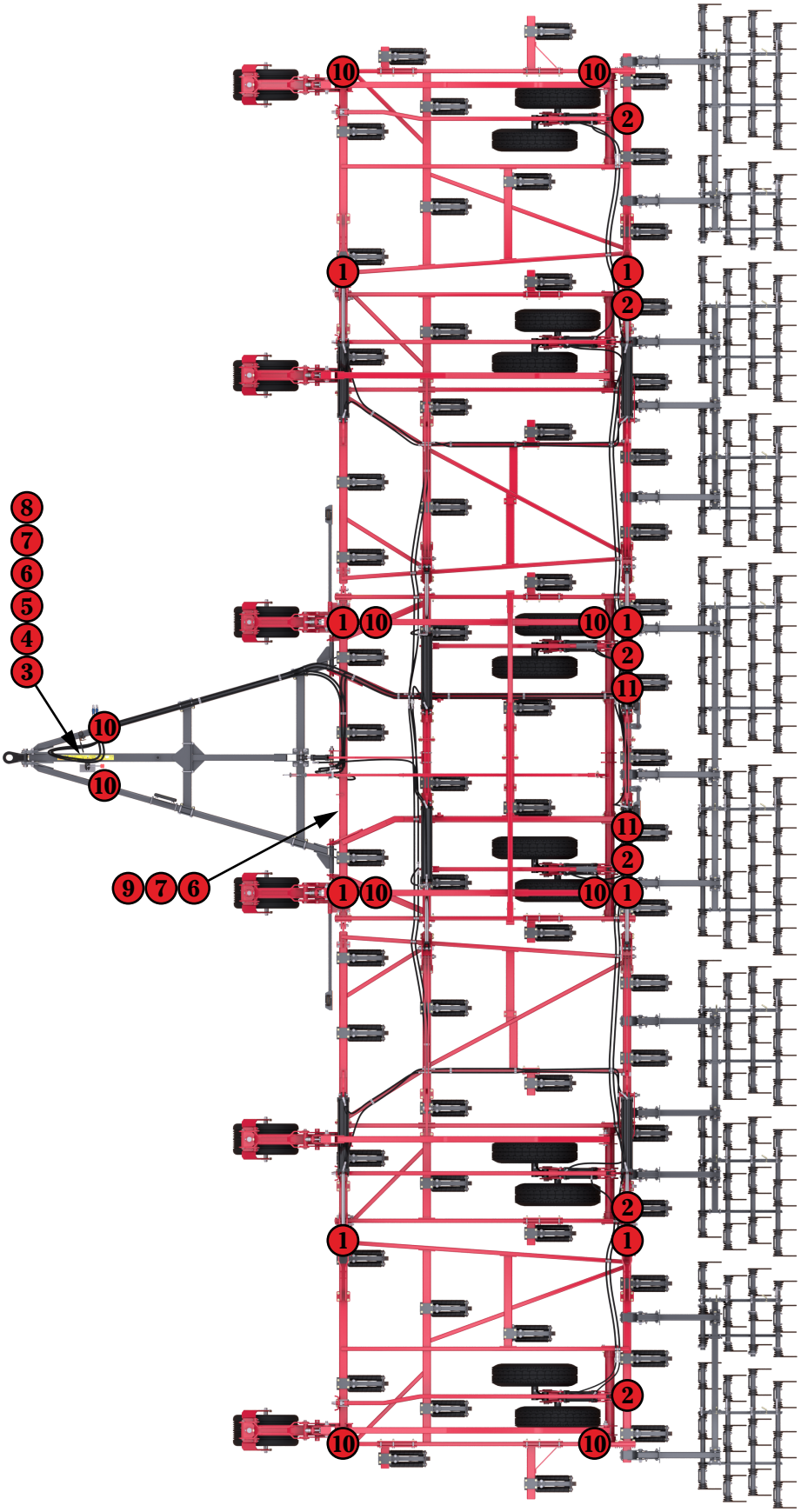
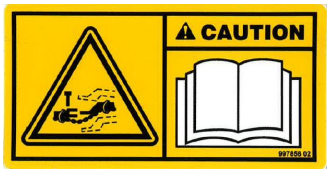
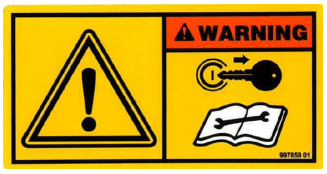
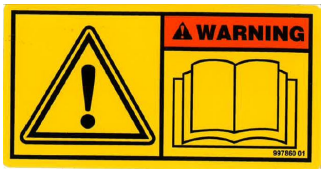


Figure 2.1 Safety Sign Locations (2550–55–59F Shown)

2.14.2 Decals

Decal Image	Decal Name	Pin	Description
	**DANGER** Folding Wings	**(1)**	Overhead crushing hazard from lowering or falling wing. Stay clear of this area while engine and machine are operating. For service work, install the wing lock pins before getting under the wing.
	**WARNING** Lockout	**(2)**	Crushing hazard. Stay clear of this area while engine and machine are operating. For service work, install the wing lock pins before getting under the wing.
	**CAUTION** Safety Chains	**(3)**	Loss of machine control. Install the safety chains when connecting the machine to the tractor. Read the operators manual for safety information and the operating instruction before operating the machine.
	**WARNING** Negative Tongue Weight	**(4)**	Negative tongue weight will cause the tongue to rise immediately when disconnecting the machine. Stay clear of the tongue when disconnecting the machine from the tractor. Read the operators manual for safety information and operating the instructions before operating the machine.
	**WARNING** Remove Key	**(5)**	General safety alert. Turn off the machine and remove the key before maintenance or repair.
	**WARNING** Read Operators Manual	**(6)**	General safety alert. Read and understand the operators manual before operating the machine.
	**DANGER** High Line	**(7)**	Electrical shock hazard — risk of personal injury and component damage. Keep the correct distance away from electrical power lines.

Decal Image	Decal Name	Pin	Description
	**WARNING** Hydraulic Fluid Hazard	**(8)**	Injection hazard into skin — escaping fluid under high pressure. Turn off the engine, remove the key, relieve the pressure before maintenance or repair. Refer to the operator manual for the correct service procedures.
	Maximum Speed (25 mph)	**(9)**	The maximum speed safety sign displays the maximum speed to transport the machine. **Variations:** 40 km/h
	Red Reflector	**(10)**	**Variations:** Yellow Reflector

2.14.3 Marker Lamps

The machine has marker lamps that must be used when moving the machine in the folded position on roads.

The machine is equipped with two red lamps **(1)** located toward the rear center of the machine.

The machine is equipped with two amber lamps **(1)** located at the front outside edges of the folded machine.

The machine is equipped with two amber lamps **(2)** located at the rear outside edges of the folded machine.

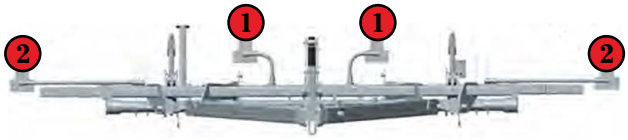


Figure 2.2 Marker Lamps

2.15 Notes

3 Operation

3.1 Major Components

Legend

- **(A)** Right-hand outer wing
- **(B)** Right-hand wing frame
- **(C)** Tongue
- **(D)** Wing rest
- **(E)** Wing point depth control
- **(F)** Center Frame
- **(G)** Left-hand wing frame
- **(H)** Gauge wheel
- **(I)** Left-hand outer wing
- **(J)** Fold anchor
- **(K)** Operator manual storage

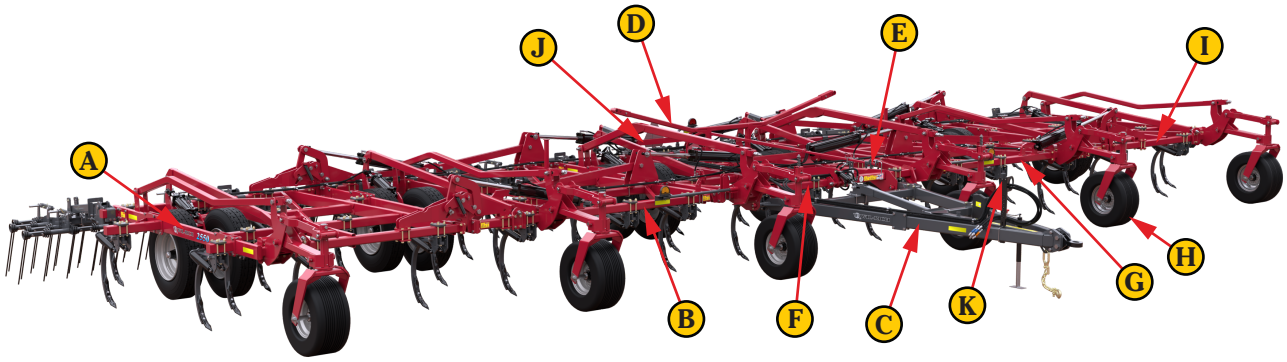


Figure 3.1 Overview

3.2 Prepare for Operation

Read and understand all operating instructions and precautions in this manual before operating or servicing the machine.

Make sure you know and understand the positions and operations of all controls. Make certain all controls are in neutral and the park brake is applied before starting the machine.

Make certain all people are well away from your area of work before starting and operating the machine. Check and learn all controls in an area clear of people and obstacles before starting your work. Be aware of the machine size and have enough space available to allow for operation. Never operate the machine at high speeds in crowded places.

Emphasize the importance of using correct procedures when working around and operating the machine. Do not let children or unqualified persons operate the machine. Keep others, especially children, away from your area of work. Do not permit others to ride on the machine.

Make sure the machine is in the proper operating condition as stated in the Operator Manual. Make sure the machine has the correct equipment required by local regulations.

3.3 General Information

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.

Make sure the tractor and implement are in the proper operating condition according to the operator manuals. Make sure the tractor brakes and the machine brakes are adjusted correctly.

The tractor must have enough weight and braking capacity, especially when operating on roads and terrain that is not even. *Refer to Section "6.2 Power Requirements on page 40".*

Tractor must be equipped with rollover protective structure (ROPS) and a seat belt. Use seat belt during operation.

Do not dismount from moving machinery.

Always operate the machine with the terminal turned on. Never start the tractor with the PTO engaged or terminal turned on.

Stay off slopes too steep for operation.

Where possible avoid operating the machine near ditches, embankments and holes. Reduce ground speed when operating on rough, slippery or muddy surfaces and when turning or crossing slopes.

Be aware of the size of the machine and have enough space available to allow for operation.

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

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

Avoid contact with electrical power lines. Contact with electrical power lines can cause electrical shock, resulting in very serious injury or death.

3.4 Transport Locks

The machine is equipped with transport locks. Use the transport locks in the operating position **(1)** when moving the machine on roads. When not in use, keep the transport locks in the storage position **(2)**.

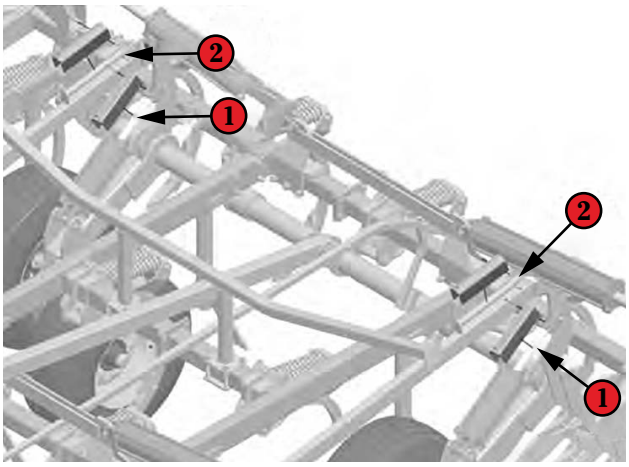


Figure 3.2 Transport Locks

3.5 Hitching / Unhitching

3.5.1 Hitching

Procedure

1. Make sure there are no persons, or obstructions between the tractor and the machine.
2. Use the hitch jack **(1)** on the front hitch of the machine to adjust the height of the hitch **(2)**.

The location of the hitch jack can vary.

3. Slowly reverse the tractor toward the hitch of the machine. Align the hitch on the tractor with the hitch on the machine when backing.
4. Stop the tractor when the hole of the tractor drawbar aligns with the hole in the machine hitch.
5. Stop the engine, apply the park brake and take the key with you.
6. Install the hitch pin **(1)** through the holes in the tractor draw bar **(2)** and the machine hitch. Install the keeper pin **(3)** in the hitch pin.
7. Connect the safety chains **(4)** from the front hitch of the machine to the tractor.

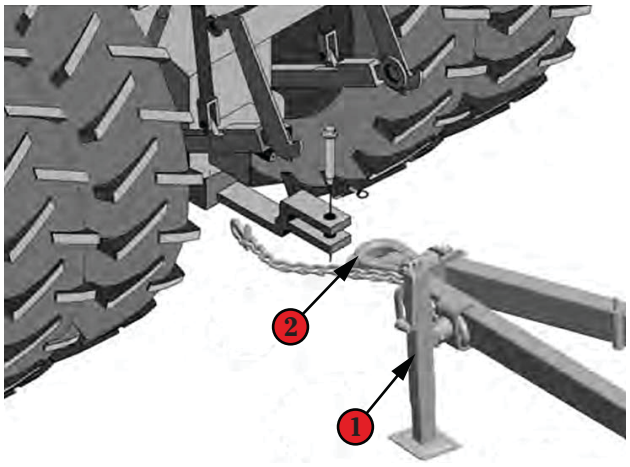


Figure 3.3 Connecting the Implement I

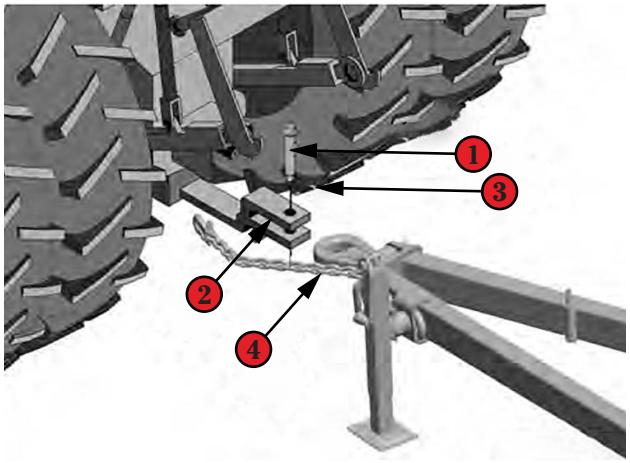


Figure 3.4 Connecting the Implement II

8. Retract the hitch jack. Move the hitch jack to the storage position **(1)** and fasten with pin.

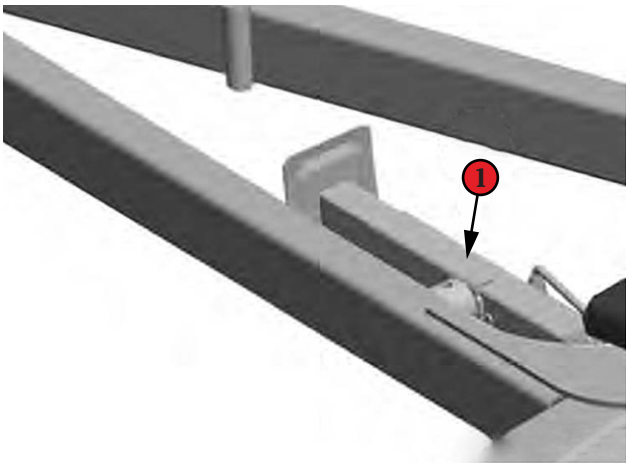


Figure 3.5 Connecting the Implement III

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

9. Clean the ends of the hydraulic connections on the machine and the tractor.
10. Make the following connections between the tractor and the machine.
    - Lift cylinder hydraulic hoses.
    - Wing fold cylinder hydraulic hoses.
    - Marker lamp harness.
11. Start the tractor. Use the tractor hydraulics to lift the machine to the highest position.
12. If the wing frames were down during storage, connect the wing cylinders to the wing frames.
13. Use the tractor hydraulics to fully lift the wing frames.
14. Stop the engine, apply the park brake and take the key with you.
15. Remove the wheel chocks or blocks from in front of and behind the support tires.
16. Make sure all persons and obstructions are clear before moving the tractor and machine.

3.5.2 Unhitching

Lower the wing frames for storage when possible.

Procedure

1. Park the tractor and the machine on a solid level surface.
2. Use the tractor hydraulics to lower the wings to the ground if possible.
3. Stop the engine, apply the park brake and take the key with you.
4. Install wheel chocks or block in front of and behind the support wheels.
5. Move the hitch jack to the operating position **(1)** on the front hitch. Use the hitch jack to support the front hitch of the machine.

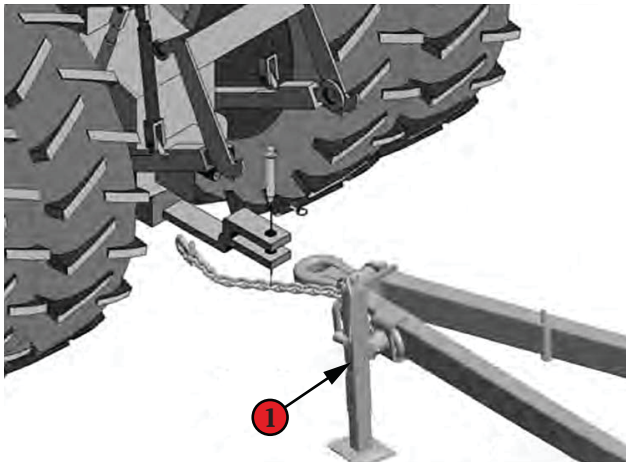


Figure 3.6 Disconnecting the Implement I

The location of the hitch jack can vary.

6. Disconnect the following connections from the tractor:
   - Lift cylinder hydraulic hoses.
   - Wing fold cylinder hydraulic hoses.
   - Marker lamp harness.
7. Clean the hydraulic connections between the machine and the tractor.
8. Install each of the hydraulic hose connections in the hose holder.
9. Install the connector for the marker lamp harness in the plug holder.
10. Remove the safety chains **(4)** from the tractor.
11. Remove the keeper pin **(3)** from the hitch pin **(1)**. Remove the hitch pin from the hitch and drawbar **(2)**.

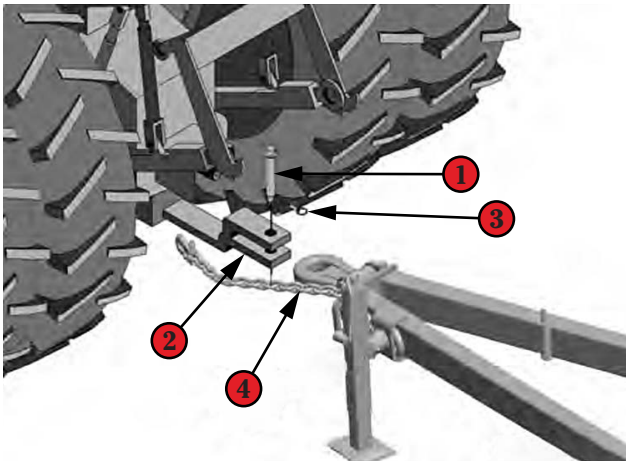


Figure 3.7 Disconnecting the Implement II

Make sure there are no connections between the tractor and the machine.

12. Make sure all persons and obstructions are clear of the tractor and machine.
13. Move the tractor away from the machine.

3.6 Bleeding Air from the Hydraulic Lift System

Leaking fluid under pressure can enter the skin causing serious injury. Release pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Wear correct hand and correct eye protection when looking for leaks. Use a piece of cardboard or paper instead of your hand. Any fluid injected into the skin can cause gangrene. The fluid must be removed by a doctor familiar with this type of injury.

Be careful of sweeps or blades when folded to prevent serious injury. Never keep the machine with the wings in the folded position.

To bleed the air from the hydraulic lift system, connect the machine to a tractor that is the correct size to operate the machine.

Completely bleed the hydraulic system of air when:

- The lift system is filled with hydraulic oil for the first time.
- Air has entered the hydraulic system through a leak or through repair of the hydraulic system.

Procedure

1. Park the machine on a flat, level surface that is large enough for the machine when unfolded.
2. Set the tractor hydraulic flow to less than 75.7 L/min (20 gal/min).

If the hydraulic flow is set to more than 75.7 L/min (20 gal/min) the hydraulics will not operate correctly.

3. Connect the lift system hoses to the tractor
4. Make sure the tractor reservoir is full of the hydraulic oil required by the manufacturer.

Do not loosen any hydraulic fittings to bleed air from the system.

5. Raise the machine. Continue to hold the tractor lever to let oil bypass and fill each wing lift cylinder.
6. Engage the hydraulics to remove any hydraulic transport locks if equipped.
7. Stop the engine, apply the park brake and take the key with you.
8. Remove the transport locks when all lift cylinders are fully extended.
9. Lower the unit. Make sure the cylinders move at the same time through the cycle.
10. Hold the hydraulic lever with the cylinders fully extended.
11. If the cylinders are not operating together, cycle the cylinders to remove the remaining air.

Do not loosen any hydraulic fittings to bleed air from the system.

12. Stop the engine, apply the park brake and take the key with you.
13. Check the tractor hydraulic oil reservoir to make sure the hydraulic oil is still within operating limits.
14. Make sure all lift cylinders are operating together before starting any field operation.
15. Fully raise the machine when making turns during field operation.
16. Fully raise the machine when making turns during field operation. This will make sure that the cylinders are operating together and keep the machine level during operation.

3.7 Bleeding Air from the Hydraulic Fold System

Leaking fluid under pressure can enter the skin causing serious injury. Release pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Wear correct hand and correct eye protection when looking for leaks. Use a piece of cardboard or paper instead of your hand. Any fluid injected into the skin can cause gangrene. The fluid must be removed by a doctor familiar with this type of injury.

Be careful of sweeps or blades when folded to prevent serious injury. Never keep the machine with the wings in the folded position.

Do not fold or unfold the fold system before bleeding air from the fold system.

To bleed the air from the hydraulic fold system, connect the machine to a tractor that is the correct size to operate the machine.

Procedure

1. Set the tractor hydraulic flow to less than 75.7 L/min (20 gal/min).

If the hydraulic flow is set to more than 75.7 L/min (20 gal/min), the hydraulics will not operate correctly.

Restrictors are installed in the fold cylinders to prevent falling of the wings. Never remove the restrictors, or the machine will not fold correctly.

2. Stop the engine, apply the park brake and take the key with you.
3. Connect the fold system hoses to the tractor.
4. Make sure the tractor reservoir is full of the hydraulic oil required by the manufacturer.

Do not loosen any hydraulic fittings to bleed air from the system.

5. Remove the pins from the rod ends of the fold cylinders.
6. Make sure the rod ends of the fold cylinders will not come into contact with any obstructions. If a blockage is present, lift the rod ends of the fold cylinders.
7. Use the remote lever in the tractor to fully extend and retract the fold cylinders. Extend and retract multiple times.
8. If the fold cylinders are not operating together, cycle the fold cylinders to remove the remaining air.

Do not loosen any hydraulic fittings to bleed air from the system.

9. Stop the engine, apply the park brake and take the key with you.
10. Check the tractor hydraulic oil reservoir to make sure the hydraulic oil reservoir is still within operating limits.
11. Connect the rod ends of the fold cylinders to the machine.
12. Find an area large enough for the machine when unfolded.
13. Park the machine on a solid, level surface. Stop the engine, apply the park brake and take the key with you.
14. With the tractor at a low idle, slowly engage the hydraulics to fold and unfold the machine.
15. Fully extend the fold cylinders to let the wings flex freely.

3.8 Preparing to Road the Machine

Before starting the Procedure

- Stop the tractor before preparing the machine for transport.

Secure the transport locks and pins in the correct position on the center frame lift cylinders before transporting the machine in the field.

Ensure weight transfer kit (if equipped) is engaged prior to roading the machine.

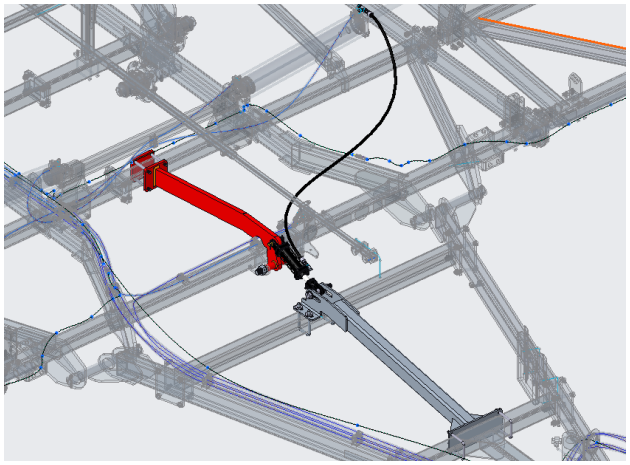


Figure 3.8 Weight Transfer Kit

Procedure

1. Use the tractor hydraulics to lift the frame of the machine to the highest position.
2. Use the tractor hydraulics to completely fold the machine into the transport position.
3. Stop the engine, apply the park brake and take the key with you.
4. Remove the transport locks **(1)** and pins **(2)** from the storage position.

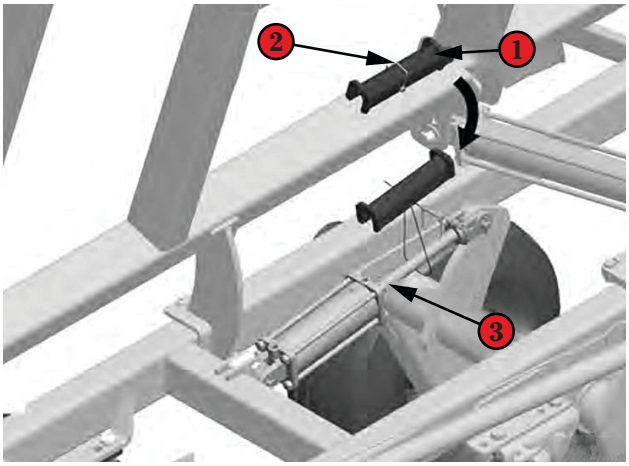


Figure 3.9 Road the Machine

The typical storage location is shown. *Refer to Section "3.4 Transport Locks on page 19" for correct locations.*

5. Put the transport locks on the center frame lift cylinders **(3)** and fasten with pins.
6. Lower the machine down on the locks.
7. Make sure the SMV emblem is installed and can be seen from the rear of the machine.
8. Make sure the rear facing lamps and reflectors are free of dust and are operating correctly.

3.9 Preparing for Field Operation

Adjust the machine according to field conditions, before taking the machine to the field.

Avoidance hazard. Clearance. Serious personal injury can occur. Make sure all persons are clear of the area before operating the machine.

Remove and put the transport locks and pins in the storage position before operating the machine in the field.

The machine must be connected to a tractor that is the correct size for operation. Make sure there is enough area around the machine to completely lower the wings.

1. Follow all safety instructions.
2. Set the tractor hydraulic flow to less than 75.7 L/min (20 gal/min).

If the hydraulic flow is set to more than 75.7 L/min (20 gal/min) the hydraulics will not operate correctly.

3. Make sure the area below the machine is clear of persons and obstructions.
4. Use the tractor hydraulics to lift the frame of the machine to the highest position.
5. Stop the engine, apply the park brake and take the key with you.
6. Remove the transport locks **(1)** and pins **(2)** from the center frame cylinders.
7. Put the transport locks in the storage location **(3)** and fasten with pins.

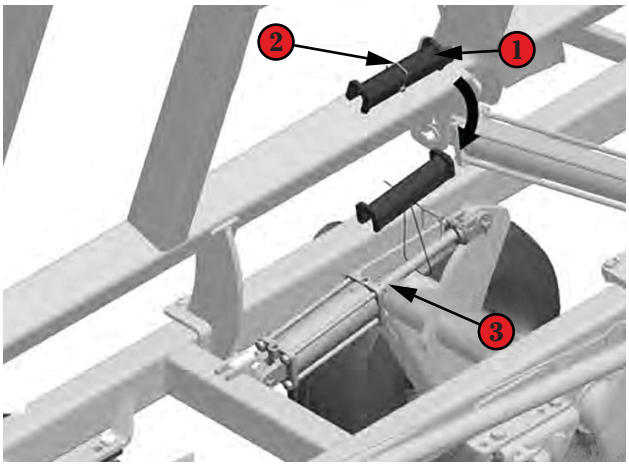


Figure 3.10 Field Operation

The typical storage location is shown. *Refer to Section "3.4 Transport Locks on page 19" for correct locations.*

8. Use the tractor hydraulics to completely unfold the machine.
9. Bleed any air from the lift and the fold cylinders.
10. Lubricate the machine at all points shown in the *maintenance section*.
11. Check tires for correct air pressure.
12. Make adjustments and service the machine according to the *Operation Section of this manual.*
13. Adjust the finishing attachment if necessary.
14. Level the machine from front to rear by adjusting the self-leveler. Level at or near ground height.
15. Lower the machine to the desired operating depth.
16. Adjust the stroke control for machine depth.
17. Level the wings to the center frame.
18. Adjust the gauge wheel to correct depth.

3.10 Beginning Field Operation

Procedure

1. Operate at a slight angle to the crop rows. This will let the machine operate level and give better residue clearance.
2. Raise the unit completely when making turns.

Failure to raise the unit when turning will cause increased side loads on the machine.

3. Monitor the ground worked by the machine and make sure the machine is operating level.
4. Adjust the machine as required.

3.10.1 Items to Check After First Operation

- Check all nuts and bolts, tighten if necessary.
- Check the lug nuts, tighten if necessary.
- Make sure the nuts on the hubs and spindles have the correct torque.
- Make sure all grease fittings are lubricated.
- Make sure the tire pressure is correct.

3.11 Leveling the Machine

3.11.1 Front to Rear (Floating Hitch)

Before starting the procedure:

- The machine must be connected to a tractor that is the correct size for operation. *Refer to Section "6.2 Power Requirements on page 40".*

Procedure

1. Find a solid, level surface large enough for the machine when unfolded.
2. Unfold the machine and fully raise the machine. Continue holding the hydraulic lever to let the oil cycle through the lift system.
3. Hold the lift cylinder hydraulic lever in the raised position for one to five minutes to make sure all cylinders are bled of air and fully extended.
4. Stop the tractor engine, apply the park brake and take the key with you.
5. Remove the transport locks and pins from the center frame cylinders.
6. Put the transport locks in the storage location and fasten with pins.
7. Remove the stop collars from all of the main lift cylinders and turn the screw stop collars up to the clevis end of the cylinders.
8. Use the tractor hydraulics to lower the machine so the front shovels or the spikes are 25 to 51 mm (1" to 2") above the ground.
9. Measure and record the frame height at the front corners from the ground to the bottom of the frame tube.
10. Measure and record the frame height at the rear corners from the ground to the bottom of the frame tube.
11. Compare the front and rear measurements.
12. Set front frame height to the same as the rear frame height.
    a. If the front of the machine is higher than the rear, turn the adjusting screw **(1)** counterclockwise.
    b. If the front of the machine is lower than the rear, turn the adjusting screw clockwise.
    c. Make sure both front adjusting screws are set to the same length.
    d. The gauge wheels will carry the weight of the machine.

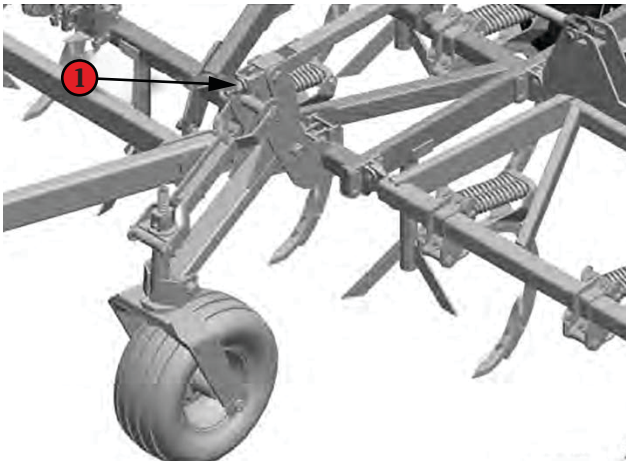


Figure 3.11 Leveling Front to Rear (Floating Hitch)

13. Check the measurements again and adjust as necessary.
14. Tighten the jam nut.
15. Check the machine level in the operating position and adjusted as necessary.

3.11.2 Leveling the Wings to the Center Frame

Before starting the procedure:

- The machine must be connected to a tractor that is the correct size for operation. *Refer to Section "6.2 Power Requirements on page 40".*
- The wheels of the machine must always be in contact with the ground during field operation to operate correctly.

Procedure

1. Find a solid, level surface large enough for the machine when unfolded.
2. Unfold the machine and fully raise the machine. Continue holding the hydraulic lever to let the oil cycle through the lift system.
3. Hold the lift cylinder hydraulic lever in the raised position for one to five minutes to make sure all cylinders are bled of air and fully extended.
4. Stop the tractor engine, apply the park brake and take the key with you.
5. Remove the transport locks.
6. Measure and record the height from the ground to the bottom of the wing frame tubes on the front and rear of the wing.
7. Compare the measurements of wing to the main frame. If the measurement for the wing is:
   - More than the main frame measurement, lower the wing.
   - Less then the main frame measurement, raise the wing.
8. Adjust the adjusting screw **(1)** to raise or lower the wing.
   a. To raise the wing, loosen the jam nut **(2)** and turn the adjusting screw clockwise.
   b. To lower the wing, loosen the jam nut and turn the adjusting screw counterclockwise.

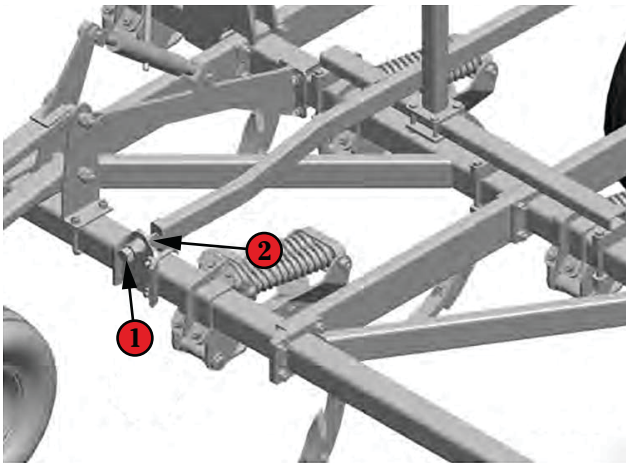


Figure 3.12 Leveling Wing to Center Frame

9. Tighten the jam nut.
10. Follow the same procedure for the wing on the other side.

3.12 Adjusting the Gauge Wheels

3.12.1 Hydraulic Gauge Wheels

The hydraulic gauge wheel adjustment is part of the leveling of a machine with the floating hitch.

If the hydraulic gauge wheels are not level, see the information from leveling the machine with a floating hitch front to rear.

3.13 Operating Depth

Adjust the adjustment crank on the single point depth control to adjust the operating depth.

3.13.1 Single Point Depth Control

On machines equipped with a single point depth control **(1)**, the stroke control valve **(2)** is used to control the depth of the unit. This stroke control valve controls the amount of oil in the main lift cylinders. The stop collars on all cylinders can be put as close as possible to the clevis end of the cylinder. To set a maximum depth of the unit, adjust the stop collars to the maximum depth setting to function as a backup for a possible single point depth control malfunction.

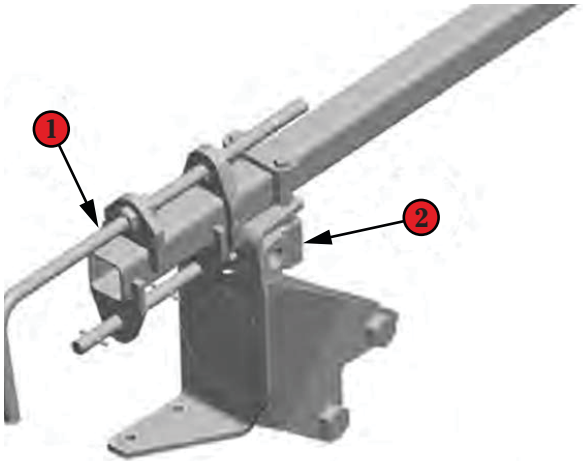


Figure 3.13 Single Point Depth Control

3.14 Spring Shanks

Two sizes of shank assemblies are available:

- 454 kg (1000 lbs) compression spring edge-on shank.
- 395 kg (650 lbs) extension spring shank.

Each shank assembly uses a spring **(1)** to keep forward pressure against the soil while letting the shank rotate to the rear when touching a solid object.

The mounting bolts **(2)** and shank bolts **(3)** must be kept tight.

The mounting bolts must be kept tight and still let the shank move.

For the 395 kg (650 lbs) shank assemblies only, the spring adjust bolt **(4)** must be tightened just enough to crack the paint between the spring coils. If more pressure is required the spring adjust bolt can be tightened.

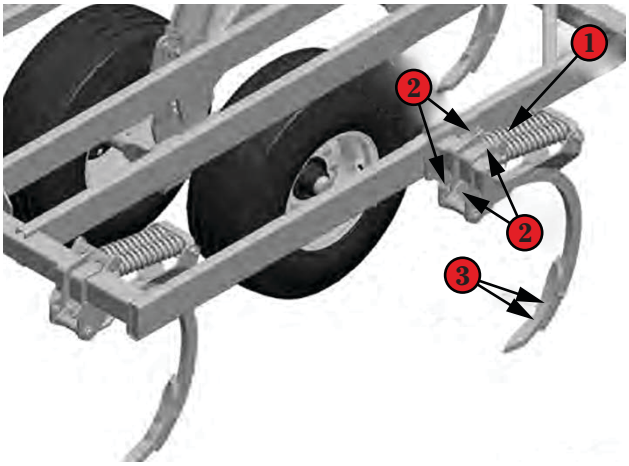


Figure 3.14 454 kg (1000 lbs) Compression Spring Edge-on Shank

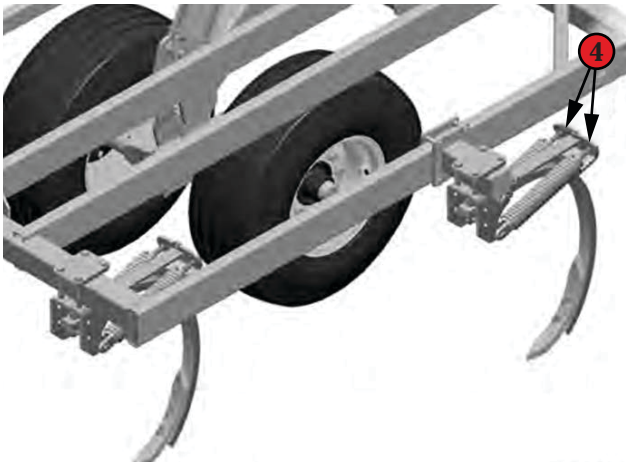


Figure 3.15 395 kg (650 lbs) Extension Spring Shank

3.15 Notes

4 Troubleshooting

4.1 Troubleshooting the Implement

Table 4.1 Troubleshooting the Chisel Plow

Possible Cause(s)	Solution(s)
The lift cylinders are not in phase	
They system is not bled of air.	Bleed the system of air.
The cylinders are not installed correctly.	The wing cylinders must be smaller than the center frame cylinders. The cylinders must be connected in series. Start with the largest and reduce in diameter. The cylinders must point up so the air can release through the ports.
Hydraulic hoses are not installed correctly.	Correctly install the hydraulic hoses.
The wing lift cylinders are losing pressure and permitting the wings to lower	
Pressure is flowing past the pistons in the cylinder.	Install a new seal kit in the leaking cylinder.
The lift cylinders are losing pressure and permitting the wings to lower	
The depth valve is leaking.	Install a cartridge assembly in the depth control valve.
The wings are raising or the center is losing pressure permitting the center to lower	
Pressure is flowing past the piston in the master cylinder.	Install a new seal kit in the master cylinder.
The machine is not pulling evenly	
The depth is not even.	Level the wings to the center frame.
Shank location is not correct.	Check the shanks for correct location.
The depth is not even	
The machine is not level when under power in the field.	Level the machine from front to rear.
The wing(s) are bouncing	
The machine is operating too fast.	Reduce speed.
The outer end of the wing is operating too deep.	Adjust the wing wheels to reduce depth.
The gauge wheel is not supporting the wing.	Lower the gauge wheel.
The machine is not cutting into the soil	
The machine is not level.	Level the machine front to rear and side to side.
The wheels are not in contact with the ground.	Level the disc and/or set the depth adjustment.
The gauge wheels are adjusted too deep.	Adjust the gauge wheels.
Shovel points are worn.	Adjust stop collar of the main lift cylinder(s) for wear. Replace shovels if wear is severe.
Sweep stem angle is not correct.	Use 50° sweeps.
Leveling adjustments are not correct on the main frame or the wings.	*Refer to Section "3.11 Leveling the Machine on page 26".* Make sure the wing fold cylinders are fully extended.
Hydraulic malfunction — air in the lines, cylinder or hoses leaking or not installed correctly.	Check for leaks in the cylinders, hoses, and fittings. Make sure all cylinders and hoses are correctly installed.

4.2 Notes

5 Maintenance

5.1 Maintenance Schedule

The following maintenance chart will list standard checks for maintenance, how often these checks should be performed, and any pertinent information regarding the procedures for facilitating repairs.

Table 5.1 Maintenance: Toolbar

Component	Fix	Freq. (Hrs)	Procedure
Gauge Wheel Hubs	💧	10	Lubricate the gauge wheel hubs. *(Refer to Section "5.2 Lubrication Points on page 33")*
Gauge Wheel Pivots	💧	10	Lubricate the gauge wheel pivots. One lubrication fitting is standard on each ratchet gauge wheel. Five lubrication fittings are standard on the hydraulic gauge wheel.. *(Refer to Section "5.2 Lubrication Points on page 33")*
Wheel Hub Bearings	💧	50	Lubricate the wheel hub bearings, one lubrication fitting per hub. *(Refer to Section "5.2 Lubrication Points on page 33")*
Machine Fasteners	✓	50	Inspect all hardware installed on the machine for the correct torque.
Wheel Lug Bolts	✓	50	Inspect all wheel lug bolts and nuts for the correct torque.
Tires	✓	50	Check air pressure of all tires. Inflate tire to correct pressure.
Full Machine	◇	50	Clean any dirt or grease from moving parts.
Wheel Hubs	💧 ◇	1000	Remove and clean the bearings from each hub assembly. Fill the bearings and hubs with new grease.*(Refer to Section "5.2 Lubrication Points on page 33")*
Walking Tandems	💧 ◇	1000	Remove and clean the bearings from each walking tandem. Fill the bearings with new grease. *(Refer to Section "5.2 Lubrication Points on page 33")*
Hydraulic Hoses	✓ **A/R**	1000	Inspect all hydraulic hoses and fittings for cracks or leaks. Replace any hoses or fittings as necessary.

Legend Service Type: ✓ Check | ◇ Clean | 💧 Lube | **A/R** Replace as Required

5.2 Lubrication Points

- See the machine specification for the correct lubricant.
- Do not let grease build up on or around parts, especially when operating in sandy soil.
- Make sure to clean the lubrication fittings fully before connecting the grease gun.
- Watch each lubrication point while lubricating to make sure the lubricant applies correctly.
- Check for any loose, missing or worn parts when lubricating the machine.
- Check the lubrication service schedule for the correct lubrication interval.

Ensure *No. 2 multi-purpose lithium grease* is used on all lubrication points regardless of model.

5.2.1 Lubrication Fitting Locations

Hydraulic Gauge Wheel

- Find the lubrication fittings **(1)** on each hydraulic gauge wheel.

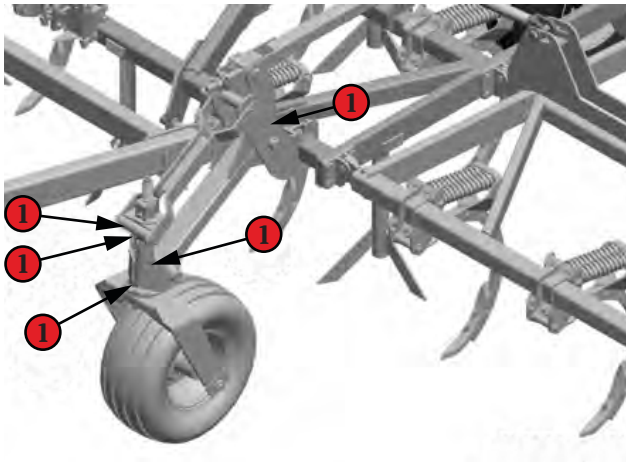


Figure 5.1 Hydraulic Gauge Wheel

Gauge Wheel Hub

- Find the lubrication fittings **(2)** on each gauge wheel hub.

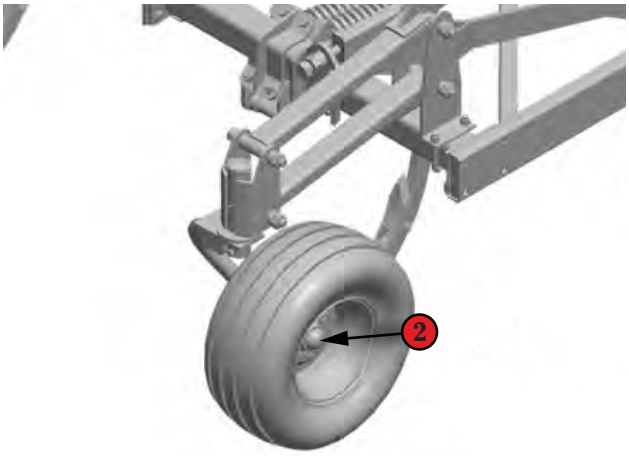


Figure 5.2 Gauge Wheel Hub

Wheel Hub

- Find the lubrication fittings **(3)** on each hub.

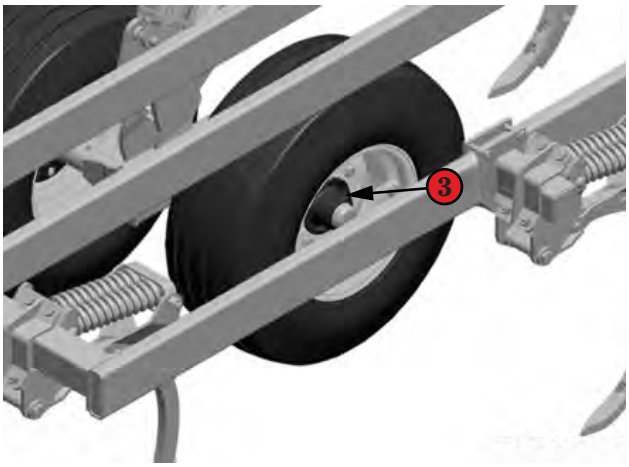


Figure 5.3 Wheel Hub

5.3 Servicing the Wheel Bearings

Each wheel hub is equipped with a grease fitting and must be lubricated every 50 hours of use. Apply grease to the hubs until grease pushes through the seal. The triple lip seal lets the grease through without damaging the seal.

Clean and fill the wheel hubs yearly. Cleaning and filling the hubs removes all dirt and supplies fresh grease. The following procedure is necessary to correctly install the triple lip seal. The seal lips must be showing away from the hub if dirt is to be kept out.

Procedure

1. Remove the dust cap, cotter pin, nut and washer.
2. Remove the hub and clean the bearing and bearing cavity.
3. Replace any damaged or worn parts.
4. Fill the hubs with grease.
5. Install the seal on the spindle shaft.

   Do not try to put the hub on the spindle with the seal in the hub.
6. Replace the hubs with inner bearings in position.
7. Replace the outer bearing, washer and nut on the wheel spindle.
8. Adjust the bearings by tightening the nut until there is a resistance to turning.
9. Loosen the nut until the hub can turn freely by hand without end play.
10. Put the cotter pin through the spindle and nut and replace the dust cap.
11. Slide the seal **(1)** down the spindle. Turn the seal on the spindle so the seal lips will point away from the hub.
12. Install the seal in the hub.

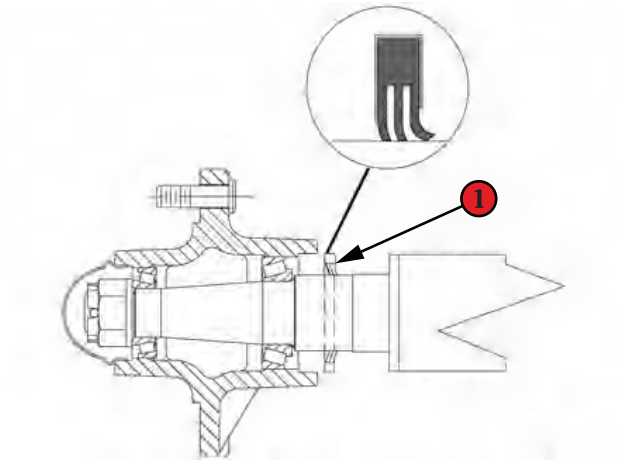


Figure 5.4 Servicing the Wheel Bearings

5.4 Servicing the Tandem Pivot Bearings

Clean and fill pivot bearings yearly. Cleaning and filling the bearings removes all dirt and supplies fresh grease. The following procedure is necessary to correctly fill the bearings.

Procedure

1. Remove the wheels and the tandem axle spindles.
2. Remove the seals and bearings from the pivot hub.
3. Clean the parts and hub cavity to remove all dirt.
4. Fill the bearings with a good grade wheel bearing grease.
5. Replace the bearings in the hubs in the correct sequence.
6. Apply grease around the outside of the inner bearings.

   Apply enough quantity to fill the space between the inner bearings and the grease seals after assembly.
7. Install seals in the hubs.

   The metal side must be on the outside of the hub.
8. Install the tandem axle spindle and replace the pivot.
9. Tighten the nuts until there is medium to heavy drag to still rotate under load. Loosen the nuts until the cotter pins can be installed.
10. Replace the wheels.

5.5 Storage

5.5.1 Preparing the Machine for Storage

Prepare the machine for storage at the end of each season. When possible, store the machine in a covered location with the wings lowered. Preventing rust will lengthen the life and assist in performance.

Procedure

1. Park the machine on a solid, level surface, away from other machines.
2. Use the tractor hydraulics to lower the wings of the machine.
3. Clean the machine of any dirt, grease, or other materials.
4. Put a protective layer of heavy oil or grease on all earth engaging parts to prevent rust.
5. Paint any damaged surfaces, surfaces with paint removed, or surfaces with rust.
6. Inspect the machine for any loose parts or hardware.
   a. Replace any worn parts.
   b. Tighten any loose hardware.
7. Lubricate all components of the machine.
8. Raise the machine and transport to the area where the machine is to be kept. The area must be level and away from other machines.
   - Ensure transport locks are used when transporting the machine. *(Refer to Section "3.4 Transport Locks on page 19")*
9. Use the tractor hydraulics to lower the wings of the machine.
10. Stop the engine, apply the park brake, and take the key with you.
11. Remove the hardware that fastens the cylinder rod **(1)** of the wing lift cylinders to the wing frame. If equipped with folding wing extensions, remove the pins fastening the rod end of the wing lift cylinders to the wing extension frame.

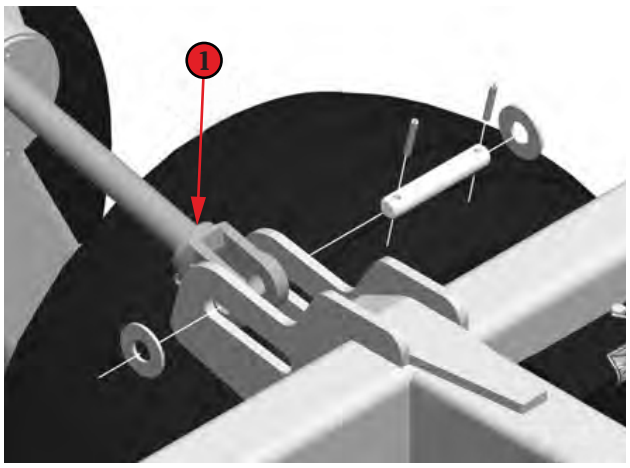


Figure 5.5 Cylinder Rod

12. Put boards under the gangs or shanks.
13. Start the tractor. Use the tractor hydraulics to retract the wing lift cylinders.
14. Stop the engine, apply the park brake, and take the ignition key with you.
15. Block up the machine to remove the weight from the tires.
16. Use the front hitch jack **(2)** to support the front hitch of the machine.

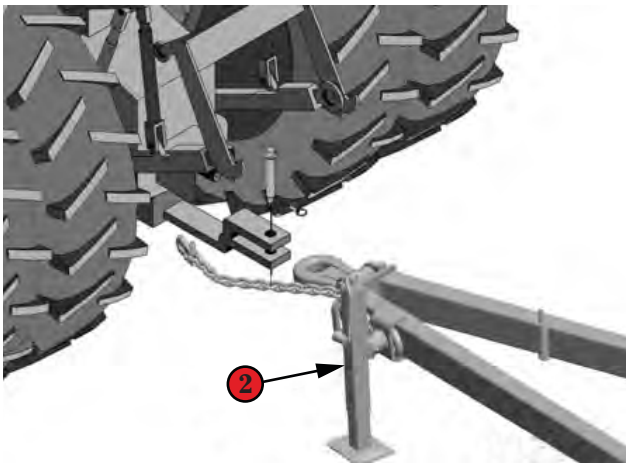


Figure 5.6 Front Hitch Jack

17. Disconnect the machine from the tractor. See the information for disconnecting the machine from the tractor.
18. Apply grease to the surfaces of the cylinders rods that are still showing.

5.5.2 Preventing Corrosion of Extended Hydraulic Cylinders

Store the machine with the cylinders in the retracted position. If the machine is stored with cylinders in the extended position, periodically cycle the cylinder. If a cylinder. If a cylinder must be stored in the extended position without being cycled, the following corrosion prevention must be done.

Procedure

1. Use a dry cloth or cloth with solvent to clean any dirt from the cylinder shaft.
2. Prepare a mixture of 60 percent oil based rust inhibitor and 40 percent Kerosene.
3. Use a cloth to apply a thin layer of this mixture to the surface of the chrome plated shaft.

   Number one fuel oil can be replaced with Kerosene. A good grade purpose made product can be used for this procedure.
4. Follow manufacturer instructions for applying purpose made products.
5. Inspect and apply the mixture again at three to six month intervals.

5.5.3 Removing the Machine from Storage

Complete the following steps to remove the machine from storage.

Procedure

1. Connect the machine to the tractor.
2. Use the tractor hydraulics to extend the wing fold cylinders. Extend the wing fold cylinders until the holes in the end of the wing fold cylinders align with the holes in the mounts.
3. Stop the engine, apply the tractor park brake, and take the key with you.
4. Install the cylinder rod **(1)** of the wing fold cylinders to the mount on the wing frames. Use the existing hardware to fasten the wing fold cylinders.
5. Check the air pressure in all the tires.
6. Inspect all the hydraulic hoses and the connections for leaks and repair as necessary.
7. Make sure the safety signs are visible and not damaged.

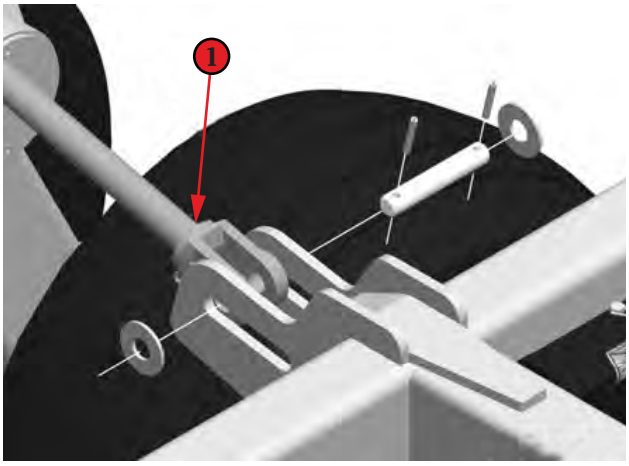


Figure 5.7 Removing from Storage

5.6 Notes

6 Specifications

6.1 Implement Specifications

Table 6.1 Chisel Plow 2500 Series Specifications I

Model	Working Width 12” (30.5 cm)	Working Width 15” (38.1 cm)	No. of Shanks (12” / 15”)	Inner Wing	Approx. Transport Width	Approx. Transport Height	Approx. Weight
2530 Series — Folding Model with 3’ (0.9 m) Wings— Tandem Axle (Level Lift Hitch)							
2530 CPW 19	25’ (7.6 m)	N/A	19/-	3’ (0.9 m)	14’1” (4.3 m)	9’9” (3 m)	8,566 lbs (3,885 kg)
2530 CPW 19 — 23	23’ (7 m)	22’6” (6.9 m)	23/18	3’ (0.9 m)	14’1” (4.3 m)	10’1” (3.1 m)	9,313 lbs (4,224 kg)
2530 Series — Folding Model with 6’ (2 m) Wings— Tandem Axle (Level Lift Hitch)							
2530 CPW 25	25’ (7.6 m)	25’ (7.6 m)	25/20	6’ (1.8 m)	14’1” (4.3 m)	11’1” (3.4 m)	11,271 lbs (5,112 kg)
2530 CPW 25 — 27	27’ (8.2 m)	27’6” (8.4 m)	27/22	6’ (1.8 m)	14’1” (4.3 m)	11’5” (3.5 m)	11,593 lbs (5,258 kg)
2530 CPW 25 — 29	29’ (8.8 m)	30’ (9.1 m)	29/24	6’ (1.8 m)	14’1” (4.3 m)	11’8” (3.6 m)	12,017 lbs (5,451 kg)

Table 6.2 Chisel Plow 2500 Series Specifications II

Model	Working Width 12” (30.5 cm)	Working Width 15” (38.1 cm)	No. of Shanks (12” / 15”)	Inner Wing	Approx. Transport Width	Approx. Transport Height	Approx. Weight	
							Level Lift Hitch	Floating Lift Hitch
2530 Series — Folding Model with 9’ (3 m) Wings – Tandem Axle (Level Lift or Floating Hitch)								
2530 CPW 31	31’ (9.4 m)	30’ (9.1 m)	31/24	9’/0’ (2.7 m / 0 m)	19’2” (5.8 m)	12’6” (3.8 m)	15,016 lbs (6,811 kg)	16,390 lbs (7,434 kg)
2530 CPW 31 — 35	35’ (11 m)	35’ (11 m)	35/28	9’/0’ (2.7 m / 0 m)	19’2” (5.8 m)	14’6” (4.4 m)	15,872 lbs (7,199 kg)	17,246 lbs (7,823 kg)
2530 CPW 31 — 37	37’ (11.3 m)	37’6” (11.4 m)	37/30	9’/3’ (2.7 m / 0.9 m)	19’2” (5.8 m)	12’6” (3.8 m)	17,178 lbs (7,199 kg)	18,552 lbs (8,415 kg)
2530 CPW 31 — 41	41’ (12.5 m)	42’6” (13 m)	41/34	9’/3’ (2.7 m / 0.9 m)	19’2” (5.8 m)	12’6” (3.8 m)	17,940 lbs (8,137 kg)	19,314 lbs (8,761 kg)
2530 Series — Folding Model with 12’ (4 m) Wings – Tandem Axle (Level Lift or Floating Hitch)								
2530 CPW 37	37’ (11.3 m)	37’6” (11.4 m)	37/30	12’/0’ (3.7 m / 0 m)	19’2” (5.8 m)	15’6” (4.7 m)	16,550 lbs (7,507 kg)	17,924 lbs (8,130 kg)
2530 CPW 37 — 43	43’ (13.1 m)	42’6” (13 m)	43/34	12’/3’ (3.7 m / 0.9 m)	19’2” (5.8 m)	16’6” (5 m)	18,668 lbs (8,468 kg)	20,042 lbs (9,091 kg)
2530 CPW 37 — 47	47’ (14.3 m)	47’6” (14.5 m)	47/38	12’/0’ (3.7 m / 0.9 m)	19’2” (5.8 m)	16’6” (5 m)	19,431 lbs (8,814 kg)	20,805 lbs (9,437 kg)

Table 6.3 Chisel Plow 2500 Series Specifications III

Model	Working Width 12” (30.5 cm)	Working Width 15” (38.1 cm)	No. of Shanks (12” / 15”)	Inner Wing	Approx. Transport Width	Approx. Transport Height	Approx. Weight
2550 Series — Folding Model with 9’ (3 m) Wings – Tandem Axle (Floating Hitch)							
2550 CPW 55	55’ (16.8 m)	55’ (16.8 m)	55/44	12’/9’ (3.7 m / 2.7 m)	19’2” (5.8 m)	17’4” (5.3 m)	29,055 lbs (13,179 kg)
2550 CPW 55–59	59’ (18 m)	59’ (18 m)	59/48	12’/9’ (3.7 m / 2.7 m)	19’2” (5.8 m)	17’4” (5.3 m)	29,804 lbs (13,519 kg

6.2 Power Requirements

Table 6.4 Min/Max Power Requirements

Machine	Min. Power Requirement	Max. Power Recommended
19	180 hp	228 hp
19 — 23	190 hp	276 hp
25	200 hp	300 hp
25 — 29	240 hp	348 hp
31	240 hp	372 hp
31 — 35	280 hp	420 hp
31 — 37	300 hp	444 hp
31 — 41	340 hp	492 hp
37	300 hp	444 hp
37 — 43	340 hp	516 hp
37 — 47	380 hp	564 hp
55	400 hp	600+ hp
55 — 59	480 hp	600+ hp

6.3 Tire Pressure

Table 6.5 Tire Pressure Specifications

Tire Size	Ply / Load Rating	Maximum Air Pressure
16.5 x 6.50 x 8	6 (C)	70 psi (483 kPa)
20.5 x 8.00 x 10	4 (E)	90 psi (621 kPa)
6.70 x 15	6 (C)	44 psi (303 kPa)
7.60 x 15	6 (C)	40 psi (276 kPa)
9.5L x 15	8 (D)	44 psi (303 kPa)
9.5L x 15	12 (F)	64 psi (441 kPa)
11L x 15	8 (D)	36 psi (248 kPa)
11L x 15	12 (F)	52 psi (359 kPa)
11L x 15 FI*	12 (F)	90 psi (621 kPa)
11L x 15	18	76 psi (524 kPa)
12.5 x 15	10 (E)	44 psi (303 kPa)
12.5 x 15	12 (F)	52 psi (359 kPa)
12.5 x 15 FI*	12 (F)	90 psi (621 kPa)
12.5 x 15	16	70 psi (483 kPa)
12.5 x 15*	20	90 psi (621 kPa)
380 / 55R x 16.5	150 A8/B	73 psi (503 kPa)
12R22.5 x 8.25	H	90 psi (621 kPa)
VF295 x 75R22.5	145D	52 psi (359 kPa)
13.5 x 15	F	75 psi (517 kPa)

*Use with special heavy duty rim only

6.4 Maximum Transport Speed

The maximum recommended safe transport speed for this machine is *25 mile/hr (40 km/hr)*.

6.5 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.

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.

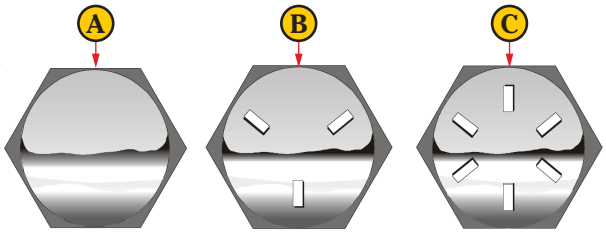


Figure 6.1 Bolt Grades

Table 6.6 Bolt Torques

Bolt Diameter	**3/8” (9.53 mm)**	**1/2” (12.7 mm)**	**5/8” (15.88 mm)**	**3/4” (19.05 mm)**	**7/8” (22.23 mm)**	**1” (25.4 mm)**
Hex Head	**9/16” (14.3 mm)**	**3/4” (19.05 mm)**	**15/16” (23.83 mm)**	**1–1/8” (28.58 mm)**	**1–5/16” (33.34 mm)**	**1–1/2” (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)

6.6 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

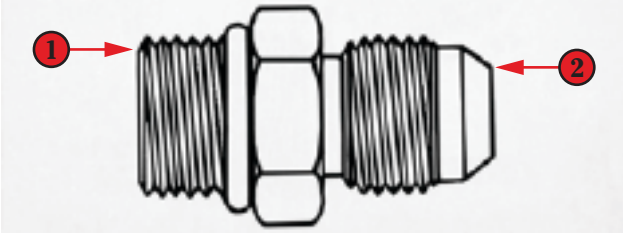


Figure 6.2 Hydraulic Connection Torques

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

Table 6.7 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 6.8 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

6.7 Notes

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 it's 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 Replacement Parts

To receive prompt efficient service, remember to have the following information:

- Correct part description and part number.
  - Always use Original Equipment Manufacturer (OEM) part number whenever possible.
- Model number of the machine.
- Serial number of the machine.

7.3 Aftermarket Options

7.3.1 Vertical Tillage Attachment

The Vertical Tillage attachment allows you to convert your Wil-Rich chisel plow into a more effective tool for heavy residue situations and wet ground. The vertical tillage attachment sizes residue and opens up wet ground to reduce drying time in the spring.

Specifications

- Sizes
  - 10’ — 59’ (3 — 18 m)
  - Dual-mounted 17” (43 cm) diameter blades
- Blades
  - 1–3/4” (4 cm) wave (8 waves)
  - Heavy-duty bearings with triple lip seals
- Spacing
  - 6” (15 cm) spacing between blades — fits most shanks on 12” (30 cm) shank spacing
- Power Requirements
  - 7 — 10 horsepower per foot (17 — 24 kW per meter) speeds of 8 — 12 mph (13 — 19 km/h) for best results

Figure 7.1 Vertical Tillage Attachment

7.3.2 Rolling Packer

The Rolling Packer finishing attachments leave your field firm and smooth. Available in both solid round and flat bar configurations, these attachments combine field cultivation and soil packing in one pass. This one-pass solution works well in dry conditions, and the option of using this as a separate pull-behind tool makes the Wil-Rich Rolling Packer a great solution for preparing an ideal seedbed.

Figure 7.2 Rolling Packer

Table 7.1 Rolling Packer Specifications

Model	Working Width	Transport Width	Approx. Weight
Rigid — Flat Bar Only			
RPFB 15	15’ 6” (4.7 m)	15’ 6” (4.7 m)	2,195 lbs (996 kg)
Single Fold — Flat or Round Bar			
RPFB 23 (Flat Bar Only)	23’ 6” (7.2 m)	16’ 0” (4.9 m)	3,119 lbs (1,415 kg)
RP 26	26’ 0” (7.9 m)	17’ 6” (5.3 m)	4,569 lbs (2,073 kg)
RP 31	31’ 6” (9.6 m)	17’ 6” (5.3 m)	5,252 lbs (2,382 kg)
RP 35.5	35’ 6” (10.8 m)	22’ 0” (6.7 m)	6,002 lbs (2,723 kg)
Double Fold — Flat or Round Bar			
RP 36	36’ 0” (11 m)	17’ 6” (5.3 m)	5,940 lbs (2,694 kg)
RP 41	41’ 0” (12.5 m)	22’ 0” (6.7 m)	6,716 lbs (3,046 kg)
RP 45.5	45’ 6” (13.9 m)	22’ 0” (6.7 m)	7,626 lbs (3,459 kg)
RP 51.5	51’ 6” (15.7 m)	22’ 0” (6.7 m)	8,084 lbs (3,667 kg)
RP 57.5	57’ 6” (17.5 m)	22’ 0” (6.7 m)	8,403 lbs (3,812 kg)

7.3.3 Primary Tillage Attachments

Wil-Rich offers a variety of finishing attachments for our full line of primary tillage tools. These attachments are not an afterthought; they are designed to work with the primary tool to leave the desired field finish.

2–Bar Coil Tine Harrow w/ Rolling Basket

The 2–Bar Coil Tine Harrow with flat bar rolling basket is designed with 12 inches (30 cm) between tooth bars. This attachment has five adjustments for tooth angle. The double tine tooth bar is 5/8” (0.2 cm) in diameter with 26” long (66 cm) teeth. The basket has eight blades with 1/4” x 1–1/4” wide (0.6 x 3 cm) steel. The basket is 13” (33 cm) in diameter.

3 or 4–Bar Coil Tine Harrow

Another optional finishing attachment is the 3 or 4–Bar tubular harrow. It 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” (0.2 cm) in diameter and 26” or 30” (66 or 76 cm) long, depending on the tool they are attached to.

5–Bar Spike Tooth Harrow

Five bars of 3/4” square (0.2 cm) x 11” (28 cm) long teeth level residue and reduce clod size.

Figure 7.3 2–Bar Coil Tine Harrow w/ Rolling Basket

7.4 Notes

TABLES

Appendix

FIGURE

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PO Box 1030
Wahpeton, ND
58075, USA

WIL-RICH®

VÄDERSTAD

Where farming starts