

Kwik-Till

OPERATOR'S MANUAL

3 SECTION MODELS 2600-4600

Disclaimer

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Read and Understand



Read and follow all instructions and safety precautions in this manual and all other manuals for products associated with this machine as well as in all on-product warning decals. Failure to do so could result in death or serious injury, or property damage. Contact your Norwood dealer if any of your manuals are missing or illegible or you have questions.

Preface

This manual is intended for use with the following Kwik-Till 3-Section Drawn High Speed Disk models:

HSD2600, HSD2900, HSD3250, HSD3600, HSD3900, HSD4250, & HSD4600

Revision History

Issue	Date	Reasons for Change
55-5-00319	March 30th 2024	Initial Release

Contents

1.0 - GENERAL INFORMATION

Note to the Owner.....	1-1
A Message to Our Customers.....	1-1
Kwik-Till Operator's Manual Location.....	1-2
Kwik-Till Model / Serial Number Location	1-2
Determining Left and Right Side of the Machine.....	1-3
Determining Orientation Using Directional Arrows.....	1-3

2.0 - SAFETY INFORMATION

Safety Rules And Signal Word Definitions.....	2-1
Personal Safety	2-1
Machine Safety.....	2-1
Safety Rules.....	2-2
General Safety	2-2
General Safety Cont'd.	2-3
Hydraulic Safety	2-3
Operating Safety	2-4
Prepare for Emergencies	2-4
Personal Protective Equipment (PPE)	2-4
Lock-Out Tag-Out Safety	2-5
Non-Permissible Use	2-5
General Maintenance Safety	2-5
Wheel and Tire Safety	2-6
Remove Paint Before Welding or Heating	2-6
Avoid Heating Near Pressurized Fluid Lines	2-6
Avoid Overhead Power Lines	2-7
Use a Signal Person	2-7
Electrical Storm Safety	2-7
Working at Heights (If Applicable)	2-7
Workplace Hazard Areas	2-7
Noise Level Safety	2-11
Chemical Safety and the Environment	2-11
Handle Chemical Products Safely	2-11
Decommissioning: Proper Recycling and Disposal of Fluids and Components	2-12
Use Safety Lights and Devices	2-12
Observe Maximum Transport Speed	2-12
Attaching and Detaching Kwik-Till To / From Tractor Safety	2-13
Use a Safety Chain	2-14
Tow Loads Safely	2-14
Keep Riders Off Machine	2-14
Preparing For Transport	2-15
Safety Decals.....	2-17
Safety Decal Locations Cont'd.....	2-18
Safety Decal Locations Cont'd.....	2-19
Safety Decal Locations Cont'd.....	2-20
Safety Decal Locations Cont'd.....	2-21
Important, Notice & Informational Decal Locations	2-29
Safety Features.....	2-36
Safety Features Cont'd... ..	2-37

3.0 TRANSPORT OPERATIONS

Preparing The Tractor.....	3-2
Use Tractor Operator's Manual.....	3-2
Determine Tractor Requirements.....	3-2
Hydraulic Requirements.....	3-2
Drawbar Requirements.....	3-3
Secure Three-Point Hitch.....	3-3
Position Drawbar.....	3-3

Prepare Hydraulic System.....	3-4
Preparing Kwik-Till	3-5
Drawbar Requirements.....	3-5
Check Tire Pressure.....	3-7
Check Wheel Hardware	3-7
Use Your Tractor and Tillage Equipment Operator's Manuals.....	3-8
Attaching Kwik-Till To Tractor	3-9
Using The Seven-Terminal Outlet.....	3-15
Kwik-Till Lighting.....	3-16
Detaching Kwik-Till From Tractor	3-17

4.0 - WORKING OPERATIONS

Operating Safety.....	4-1
Hydraulic Hitch Jack Ball Valve	4-2
Single Point Depth Control (SPDC).....	4-3
Understanding Depth Control Components	4-3
SPDC Adjustment Procedure	4-3
Transport Locks.....	4-5
Folding & Unfolding Safety	4-6
Kwik-Till Unfolding	4-7
Kwik-Till Folding	4-11
Tighten Hardware.....	4-14
Leveling the Hitch.....	4-14
Adjusting The Hitch Link.....	4-16
In-Field Operation.....	4-17
Headland Turns & Skipped Passes	4-18
Adjusting Soil Deflector.....	4-19
Adjusting Rear Roller Deflector	4-20

5.0 MAINTENANCE

General Maintenance Safety	5-1
Hydraulic Safety	5-1
Replace Hydraulic Hoses	5-2
Practice Safe Maintenance	5-2
Work in Clean Area.....	5-2
Use Safe Service Procedures	5-2
Service Machine Safely.....	5-3
Support Machine Properly.....	5-3
Avoid Sharp Disks.....	5-3
FLUIDS AND LUBRICANTS.....	5-3
Hydraulic Oil:	5-3
Grease:.....	5-4
Greasing.....	5-4
SERVICING INTERVALS.....	5-4
Lubrication Symbols.....	5-4
MAINTENANCE CHART.....	5-5
Re-Torque Wheel Flange Nuts.....	5-6
Check Tightness Of All Bolts, & Cap Screws	5-7
Cast Pivot locations.....	5-8
Check For Damaged Hydraulic Hoses, Adapters, Crossovers, Junctions, & Hydraulic Cylinders	5-9
Check Tire Pressures	5-11
DAILY	5-11
Checking / Adjusting Scraper Alignment.....	5-12
Scraper Blade Replacement & Alignment.....	5-13
Re-Torque Wheel Flange Nuts.....	5-14
Check Tightness Of All Bolts, & Cap Screws	5-15
Grease Hitch Link Articulating Ball (If Equipped)	5-16
Check Disk Hub Nuts (Re-Torque If Needed)	5-17
Check Disk Shank Cord Alignment	5-18

Adjusting Disk Shank Cords.....	5-19
Lubricate Wheel Hubs.....	5-20
Check Disks For Damage And / Or Excessive Wear.....	5-21
Check Wheel Bearings.....	5-22
Check Disk Hubs For Excessive Wear.....	5-23
Check Accumulator.....	5-25
Check Rear Roller Hubs For Wear.....	5-26
Clean And Wash The Machine.....	5-27
Repack Wheel Bearings.....	5-28
Replace Rear Roller Hubs.....	5-31
STORAGE.....	5-35

6.0 - TROUBLESHOOTING

Troubleshooting Field Problems.....	6-1
-------------------------------------	-----

7.0 - SPECIFICATIONS

Kwik-Till Specifications:.....	7-1
Tractor power requirements are shown in the following.....	7-1
charts for each specific model of machine and working.....	7-1
Tractor Engine Power Requirements.....	7-1
Downward Force on Tractor Drawbar.....	7-1
Machine Weight.....	7-1
Transport Width and Height.....	7-1
Ground Engaging.....	7-2
Disk Blades.....	7-2
Rear Attachments.....	7-3
Tire Specifications.....	7-3
Torque – Hydraulic Tubes and Fittings.....	7-4
Torque – Fasteners.....	7-5

8 - FORMS AND DECLARATIONS

1.0 - GENERAL INFORMATION

Note to the Owner

This manual contains important information about the safe operation, adjustment, and maintenance of your Kwik-Till 3-Section Drawn High Speed Disk. This manual should be considered a permanent part of your machine and should remain with the machine if you sell it.

Refer to the table of contents at the beginning or the Index at the end of this manual for locating specific items about your machine.

DO NOT operate or permit anyone to operate or service this machine until you or the other persons have read this manual. Use only trained operators who have demonstrated the ability to operate and service this machine correctly and safely.

All persons who will be operating this machine shall possess applicable local age work permits.

This Kwik-Till, with standard equipment and authorized options, is intended to be used in customary agricultural or similar operations for the purpose of tilling ground soil for seed bed preparation and residue incorporation ("INTENDED USE"). Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from this misuse, and these risks

must be borne solely by the user. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

DO NOT use this machine for any purpose or in any manner other than as described in the manual, decals, or other product safety information provided with the machine. These materials define the machine's intended use.

Use only approved accessories and attachments designed for your machine.

Consult your dealer on changes, additions or modifications that may be required for your machine.

DO NOT make any unauthorized modifications to your machine. Any arbitrary modifications carried out on this machine will relieve the manufacturer of all liability for any resulting damage or injury.

A Message to Our Customers

We appreciate the confidence placed in us by the purchase of this machine. To ensure that the machine performs at the highest level, countless hours were spent designing and testing, before this machine was produced. To achieve the maximum performance, it is imperative that this machine is operated in accordance with the procedures outlined in this manual.

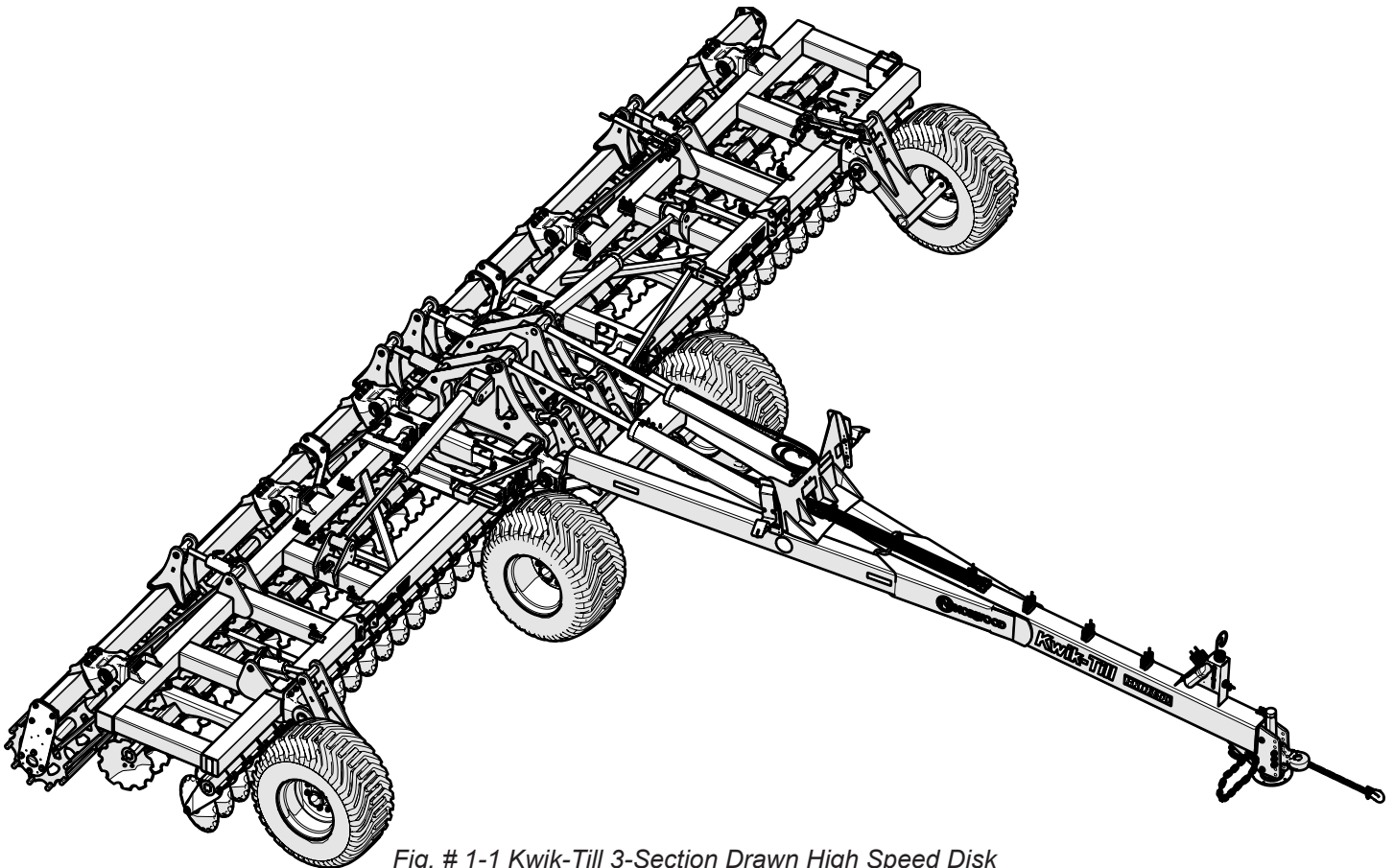


Fig. # 1-1 Kwik-Till 3-Section Drawn High Speed Disk

KWIK-TILL OPERATOR'S MANUAL LOCATION

This Operator's manual is to be stored in the "Operator's Manual Canister" on the right side of the machine on the hose holder bracket for reference during field operation. (See Fig. # 1-2) Make sure this manual is complete and in good condition. Contact your dealer to obtain additional manuals and approved service parts. Your dealer has technicians with special training that know the best methods of repair and maintenance for your Kwik-Till.

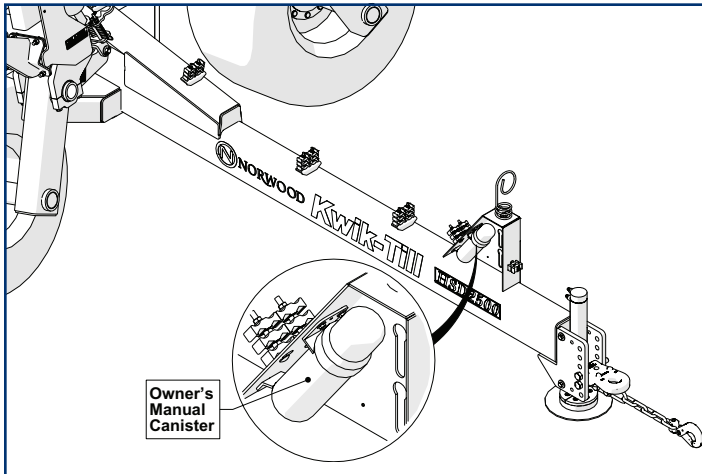


Fig. # 1-2 Locating The Operator's Manual Canister

KWIK-TILL MODEL / SERIAL NUMBER LOCATION

Always give your authorized Kwik-Till dealer the **Model Number**, and **Serial Number** of your Kwik-Till product when ordering parts, requesting service, or any other information to provide the most efficient service.

The **Serial Number** location is identified below. (See Fig. # 1-3)

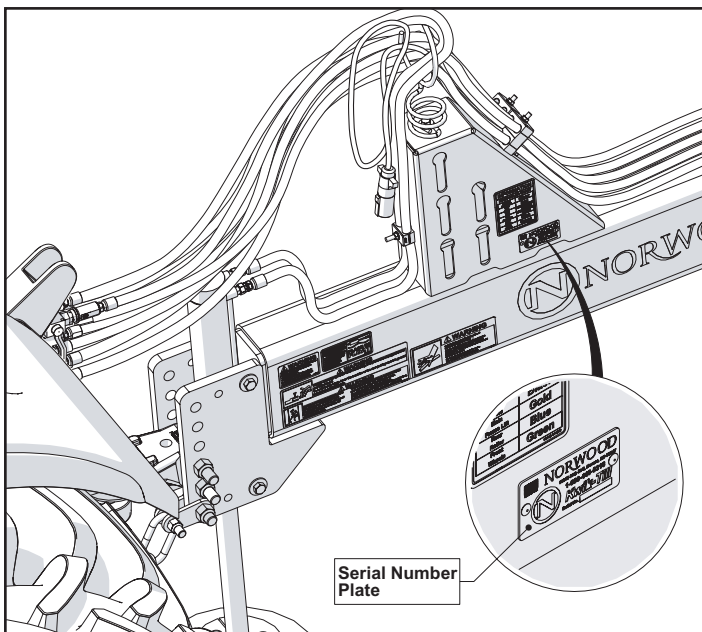


Fig. # 1-3 Locating The Serial Number Plate

The **Model Number** location is indicated below. (See Fig. # 1-4)

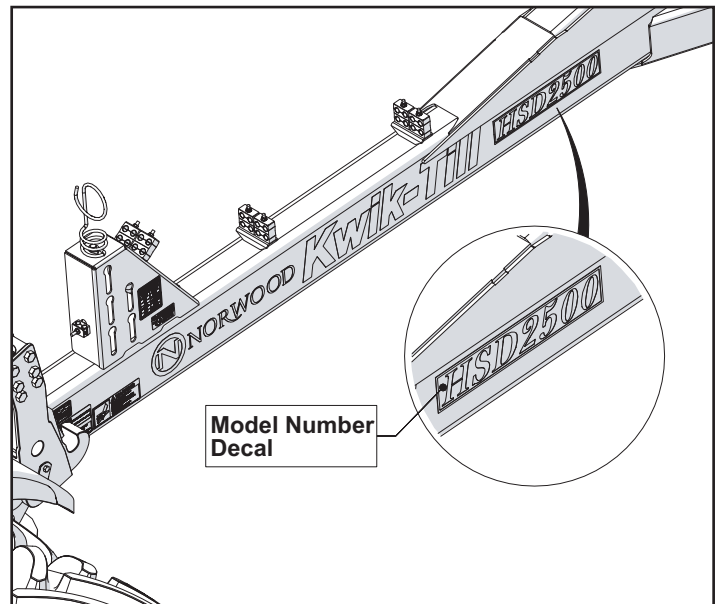


Fig. # 1-4 Locating Model Number Decal

Make a copy of the number below and keep in a safe place. If the machine is stolen, report the numbers to your local law enforcement agency.

Write the **Model Number**, **Serial Number**, & **Date Of Purchase** on the lines provided.

Model Number: _____

Serial Number: _____

Date Of Purchase: _____

DETERMINING LEFT AND RIGHT SIDE OF THE MACHINE

Operator Orientation - The directions **Front** ①, **Back** ②, **Left** ③, and **Right** ④ as mentioned throughout the manual, are determined when standing at the rear of the tractor and looking toward the forward direction of travel.

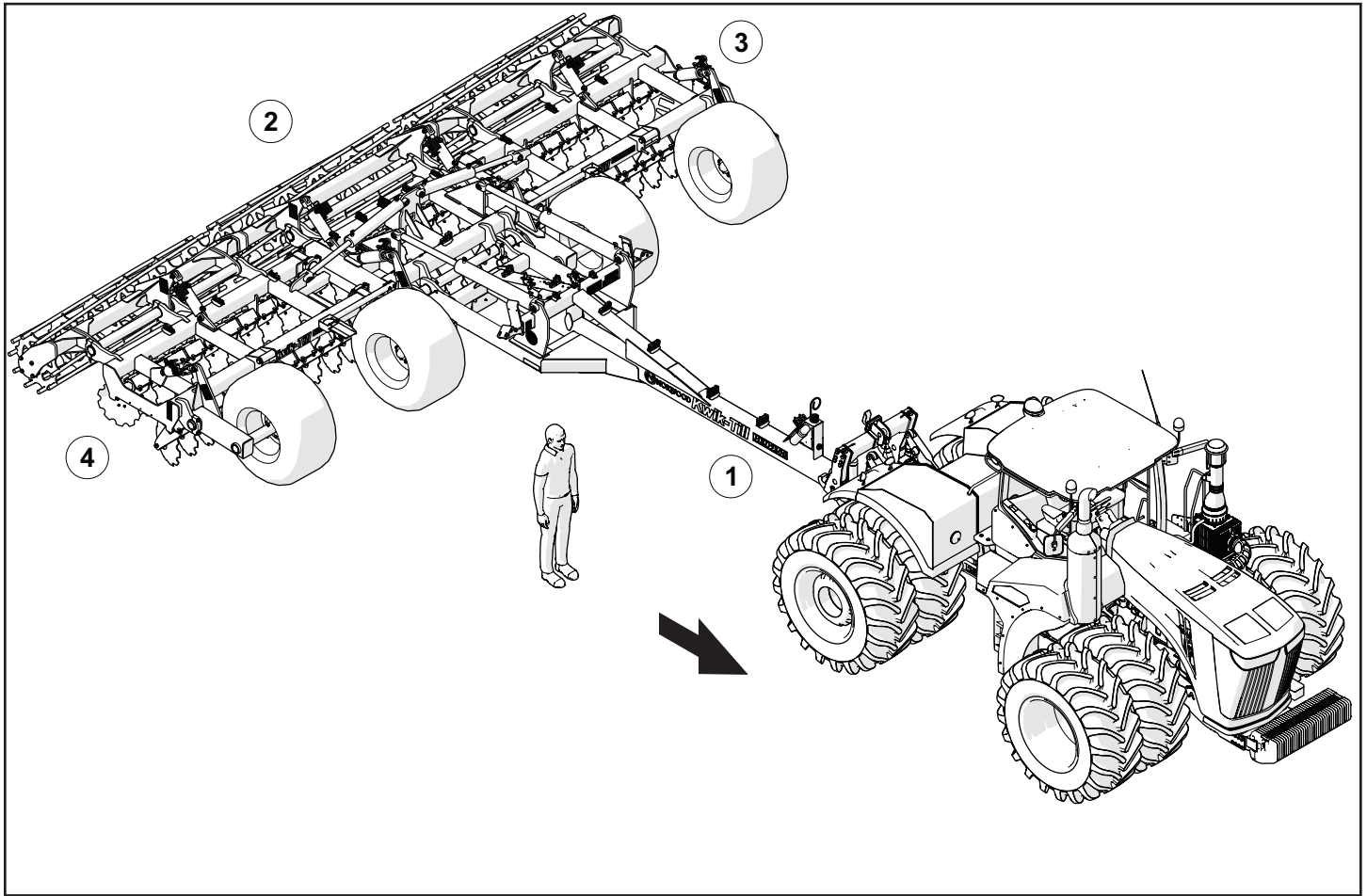
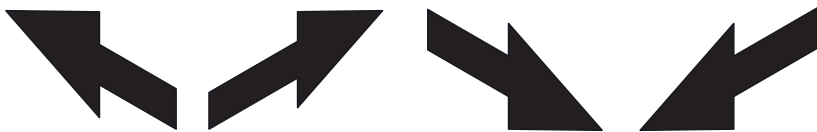


Fig. # 1-5 Determining Left and Right Side of the Machine

Determining Orientation Using Directional Arrows

The symbols shown below, may be illustrated on certain pages in this manual, and where indicated, determine the front of the machine.



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2.0 - SAFETY INFORMATION

SAFETY RULES AND SIGNAL WORD DEFINITIONS

Personal Safety



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Read and understand all the safety messages in this manual and associated equipment manuals before you operate or service the machine. Obey all safety messages that follow this symbol to avoid possible death or serious injury.

Throughout this manual and on machine decals, you will find the signal words **DANGER**, **WARNING**, and **CAUTION** followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

DANGER

DANGER; Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The color associated with **DANGER** on the machine decals is **RED**.

WARNING

WARNING; Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The color associated with **WARNING** on the machine decals is **ORANGE**.

CAUTION

CAUTION; Used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. **CAUTION** may also be used to alert against unsafe practices associated with events which could lead to personal injury. The color associated with **CAUTION** on the machine decals is **YELLOW**.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine Safety

NOTICE

Notice indicates a situation which, if not avoided, could result in machine or property damage. The color associated with Notice on the machine decals is BLUE.

IMPORTANT

Important indicates a situation which, if not avoided, could result in machine or property damage. The color associated with Important on the machine decals is WHITE.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE

Note indicates additional information which clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

SAFETY RULES

Read Entire Section Before Use.

Understand that your safety and the safety of other persons is measured by how you service and operate this machine. Know the positions and operations of all controls before you try to operate. **MAKE SURE YOU CHECK ALL CONTROLS IN A SAFE AREA BEFORE STARTING YOUR WORK.**

READ THIS MANUAL COMPLETELY AND MAKE SURE YOU UNDERSTAND THE CONTROLS. All equipment has a limit. Make sure you understand the stability and load characteristics of this machine before you start to operate.

NOTE: Safety messages in this section point out specific safety hazards which can be encountered during the normal operation and maintenance of your machine. These safety messages also give possible ways of dealing with these conditions.

The safety information given in this manual does not replace safety codes, insurance needs, federal, state and local laws. Make sure your machine has the equipment required by the local laws and regulations.

Owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.

The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow them. All accidents can be avoided.

A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.

Additional safety messages are used in the text of the manual to indicate specific safety hazards. See your dealer for more information if you have any questions.

Use caution when operating the machine on slopes. Raised equipment, will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Travel speed must be such that complete control and machine stability is maintained at all times. Reduce speed when turning, crossing slopes and when on rough, slick or muddy surfaces.

Never permit anyone to ride on any part of the machine.

Some illustrations in this manual will show shields or cover panels removed for purposes of clarity. **DO NOT** operate this

machine with any of the shields or cover panels removed.

Never operate the machine under the influence of alcohol, drugs or while otherwise impaired.

Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

GENERAL SAFETY

Read and understand the Operator's Manual and all safety decals before operating, maintaining, adjusting or unplugging.

Have a first-aid kit available for use should the need arise and know how to use it.



Only trained persons shall operate the machine. An untrained operator is not qualified to operate the machine.



Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.



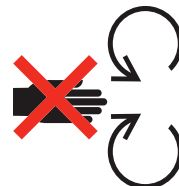
Do not allow children, spectators or bystanders within hazard area of machine.



Keep clear of moving parts. Loose clothing, jewelry, watches, long hair and other loose or hanging items should be avoided as they can become entangled in moving parts.



Wear personal protective equipment when appropriate.



DO NOT attempt to remove material from any part of the machine while it is being operated or components are in motion.

Make sure all guards and shields are in good condition and properly installed before operating the machine. Never operate the machine with shields removed. Always close access doors or panels before operating the machine.



GENERAL SAFETY CONT'D.

Dirty or slippery steps, ladders, walkways and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.



A person or pet within the operating area of a machine can be struck or crushed by the machine or its equipment. **DO NOT** allow anyone to enter the work area.

Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment at any time. Always use a safety support when working on, under, or around machine. Transport/Service locks can be used for this purpose. Shut off tractor engine and remove key when working on machine. If air has been allowed to enter hydraulic hoses or cylinders, bleed hydraulic system before use. If there is a failure in hydraulic system, unsupported raised equipment could suddenly lower, causing serious personal injury or death. If support is not available, completely lower wings and frame, relieve hydraulic pressure and disconnect hoses from tractor.



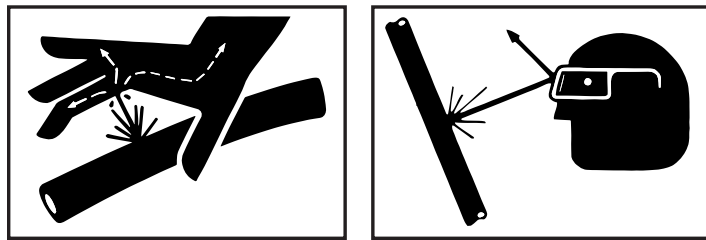
Review this manual and any other associated manuals before each season of use.

Use extreme care when cleaning, or servicing the machine.

Keep riders off. Riders on the implement or tractor are subject to injury such as being struck by foreign objects and being thrown off of the machine.

**HYDRAULIC SAFETY**

Hydraulic oil leaking under pressure can penetrate the skin, causing death or serious injury, or infection.



DO NOT use your hand to check for leaks. Use a piece of cardboard or plywood.

Stop engine, remove key and relieve the pressure before connecting or disconnecting fluid lines.

Make sure all components are in good condition and tighten all connections before starting the engine or pressurizing the system.

Do not attempt any makeshift repairs to the hydraulic 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.

Replace any worn, cut, abraded, flattened or crimped hoses.

If hydraulic fluid penetrates the skin, seek medical attention immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

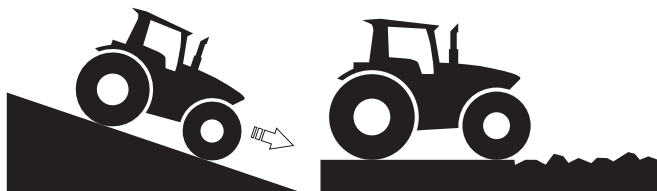
Avoid serious injury or death while working under a raised implement. Hydraulic hoses between the lift cylinders and hydraulic lockup valves should be inspected frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid, or any other signs of wear or damage. Worn or damaged hose assemblies can malfunction during use and should be replaced immediately.



See your Kwik-Till dealer for replacement hoses.

OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety decals before using.
2. Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving tractor cab.
3. Clear the area of bystanders, especially children, before starting.
4. Be familiar with the machine hazard area. If anyone enters hazard area, shut down machine immediately. Clear the area before restarting.
5. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
6. Keep riders off. Riders on the implement are subject to injury such as being struck by foreign objects and being thrown off of the machine.
7. Stay away from overhead obstructions and power lines during operation and transporting. Electrocutation can occur without direct contact.
8. Be sure that area around machine is clear before raising or lowering machine frame or wings.
9. **Do not** operate with wings partially folded.
10. **Do not** operate close to the edge of a ditch, creek, gully, or steep embankment.
11. Avoid holes, ditches, and obstructions which can cause tractor, machine, or towed equipment to roll over, especially on hillsides.
12. Avoid sharp turns on hillsides.
13. Slow down when turning, traveling down a slope, traveling over rough ground and when turning on inclines.



14. Always shut off tractor and shift to park or set brakes when leaving tractor. Remove key when leaving tractor unattended.
15. Always have tractor stopped on level ground when raising or lowering wings.
16. Operate machine from tractor seat only.
17. If chemicals are used, follow manufacturer's recommendations for their handling and storage.
18. Tow machine behind a properly equipped tractor only.

PREPARE FOR EMERGENCIES



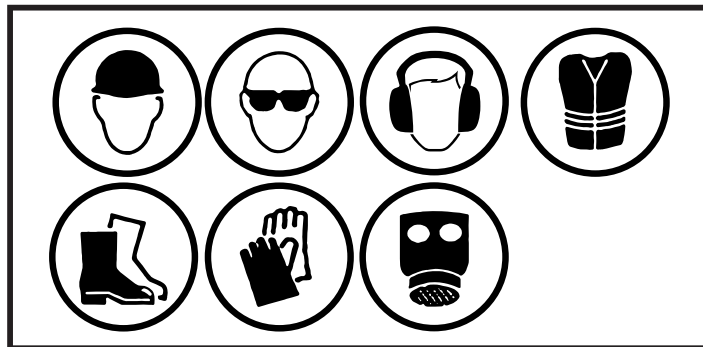
Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Wear personal protective equipment. This list includes, but is not limited to:



- A hard hat
- Protective shoes with slip resistant shoes
- Safety glasses or goggles
- Heavy gloves
- Hearing protection
- Respirator or filter mask
- Protective clothing
- A face shield (when grinding)

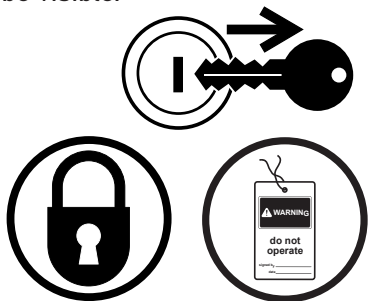
LOCK-OUT TAG-OUT SAFETY

Before you start servicing the machine:

If machine is connected to a tractor, Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving tractor cab.

If machine is detached from tractor, block wheels and use safety stands to prevent movement.

Attach a **"Do Not Operate"** warning tag to the machine in an area that will be visible.



1. Establish a formal Lock-Out Tag-Out program for your operation.
2. Train all operators and service personnel before allowing them to work around the area.
3. Provide tags on the machine and a sign-up sheet to record tag out details.

NON-PERMISSIBLE USE

⚠ CAUTION

Working on an uncleaned and non-maintained machine poses unnecessary danger and is therefore forbidden.

Pay attention to the following applications for which the machine is not suitable:

Machine usage in non-customary tillable agricultural fields, such as forests, dirt, gravel, or other roads.

Machine usage to move large rocks from fields.

GENERAL MAINTENANCE SAFETY

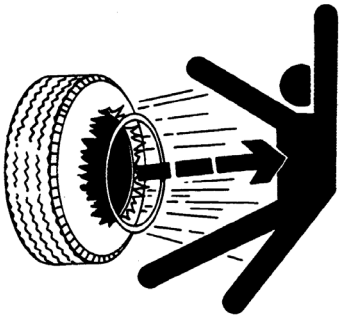
1. Review the Operator's Manual and all safety items before working with, maintaining or operating the Kwik-Till.
2. If machine is connected to a tractor, Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving tractor cab.

If machine is detached from tractor, block wheels and use safety stands to prevent movement.
3. Do not attempt to clean, lubricate, clear obstructions or make adjustments to the machine while it is in motion or while the engine is running.
4. Follow good shop practices:
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
5. Before applying pressure to a hydraulic system, make sure all components are tight and that hoses and couplings are in good condition.
6. Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.
7. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.
8. Place stands or blocks under the frame before working beneath the machine.
9. Before resuming work, install and secure all guards when maintenance work is completed.
10. Keep safety decals clean. Replace any decal that is damaged or not clearly visible.
11. Always make sure working area is clear of tools, parts, other persons and pets before you start operating the machine.
12. Chock wheels.
13. On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

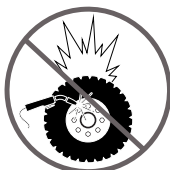
WHEEL AND TIRE SAFETY

Make sure tires are correctly inflated. Do not exceed recommended load or pressure. Follow instructions in the manual for proper tire inflation.

Always have a qualified tire technician service the tires and rims. If a tire has lost all pressure, take the tire and rim to a tire shop or your dealer for service. Explosive separation of the tire can cause death or serious injury.



- **DO NOT** attempt to mount a tire unless you have the proper equipment and experience to do the job. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosive separation, which may result in serious injury or death.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never undersize the replacement tire.
- **DO NOT** weld on the tire rim with the tire mounted on the rim. The heat can cause an increase in air pressure, resulting in a tire explosion which could result in serious injury or death. Also welding can structurally weaken or deform the wheel.
- Inflate tires to the manufacturer's recommended pressure.



- Tires should not be operated at speeds higher than their rated speed.
- Keep wheel lug nuts tightened to manufacturer's recommendations.
- Never reinflate a tire that has been run flat or seriously under-inflated without removing the tire from the wheel. Have the tire and wheel closely inspected for damage before remounting.



REMOVE PAINT BEFORE WELDING OR HEATING



Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.
- **Do Not** use a chlorinated solvent in areas where welding will take place.
- **Do** all work in an area that is well ventilated to carry toxic fumes and dust away.
- Dispose of paint and solvent properly.

AVOID HEATING NEAR PRESSURIZED FLUID LINES



Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when heat goes beyond the immediate flame area.

AVOID OVERHEAD POWER LINES**⚠ CAUTION**

Keep away from overhead power lines. Serious injury or death can result. Proceed cautiously under overhead power lines and around utility poles. Know the transport height of your machine. Electrocution can occur without direct contact with overhead electrical lines.

USE A SIGNAL PERSON

Use a signal person to direct movement of the tractor/implement combination whenever the tractor operator's view is obstructed.

Designate one individual as the signal person. Always have signal person stand in clear view. Be sure that signal person stays a safe distance away from the machine when it is moving.

Before starting the tractor, discuss hand signals and what each signal means to avoid misunderstandings and confusion, which could result in a serious injury or fatal accident for someone.

Keep all bystanders away whenever the machine is moved.

ELECTRICAL STORM SAFETY

Do not operate machine during an electrical storm.

If you are on the ground during an electrical storm, stay away from machinery and equipment. Seek shelter in a permanent, protected structure.

If an electrical storm should strike during operation, remain in the cab. Do not leave the cab. Do not make contact with the ground or objects outside the machine.

WORKING AT HEIGHTS (IF APPLICABLE)

Do not stand on surfaces which are not designed as steps or platforms.

Do not use the machine as a lift, ladder or platform for working at heights.

Workplace Hazard Areas

1. Review the following pages illustrating **"Workplace hazards"** before working with, maintaining or operating the Kwik-Till.

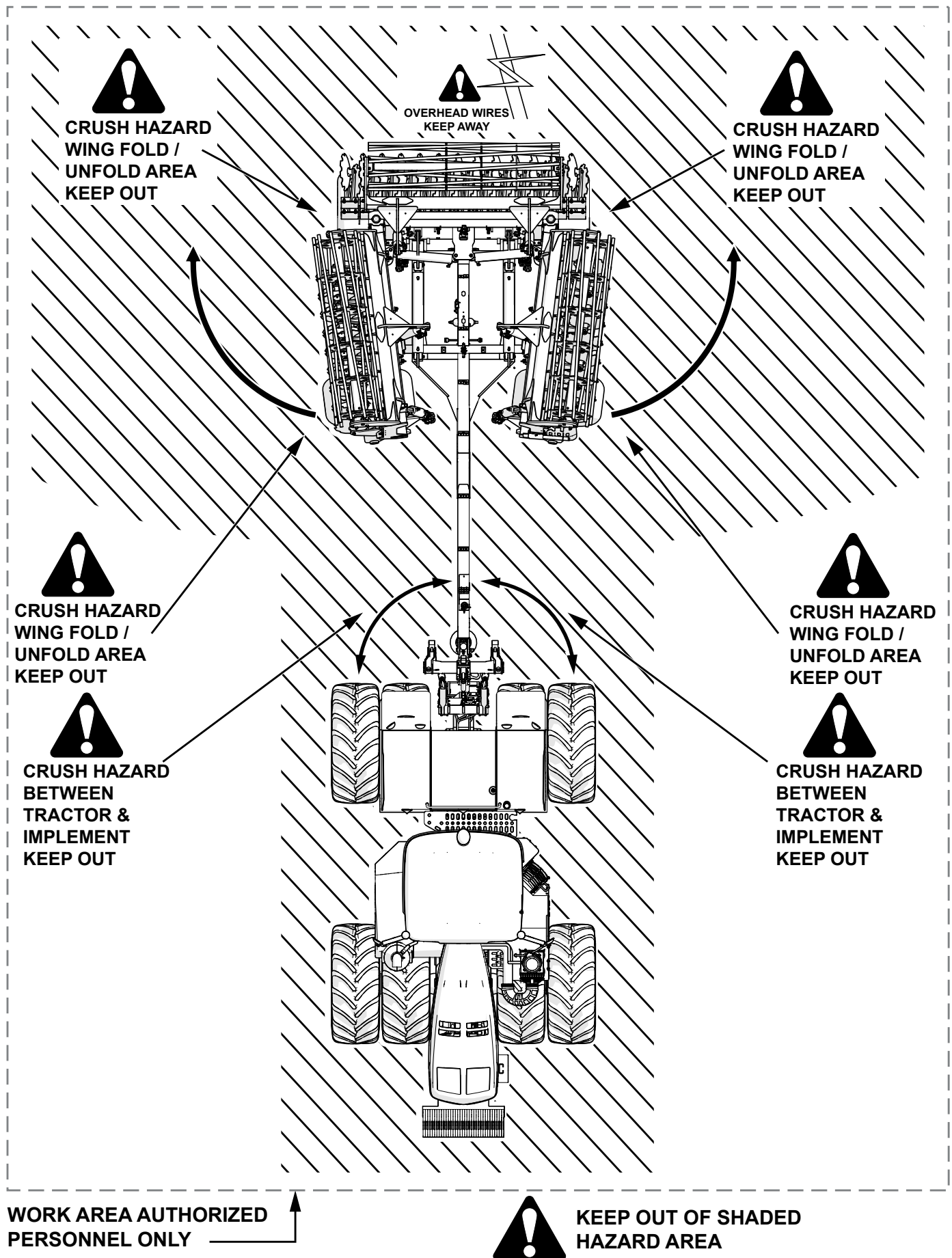


Fig. # 2-1 Workplace Hazard Area (Wing Fold / Unfold)

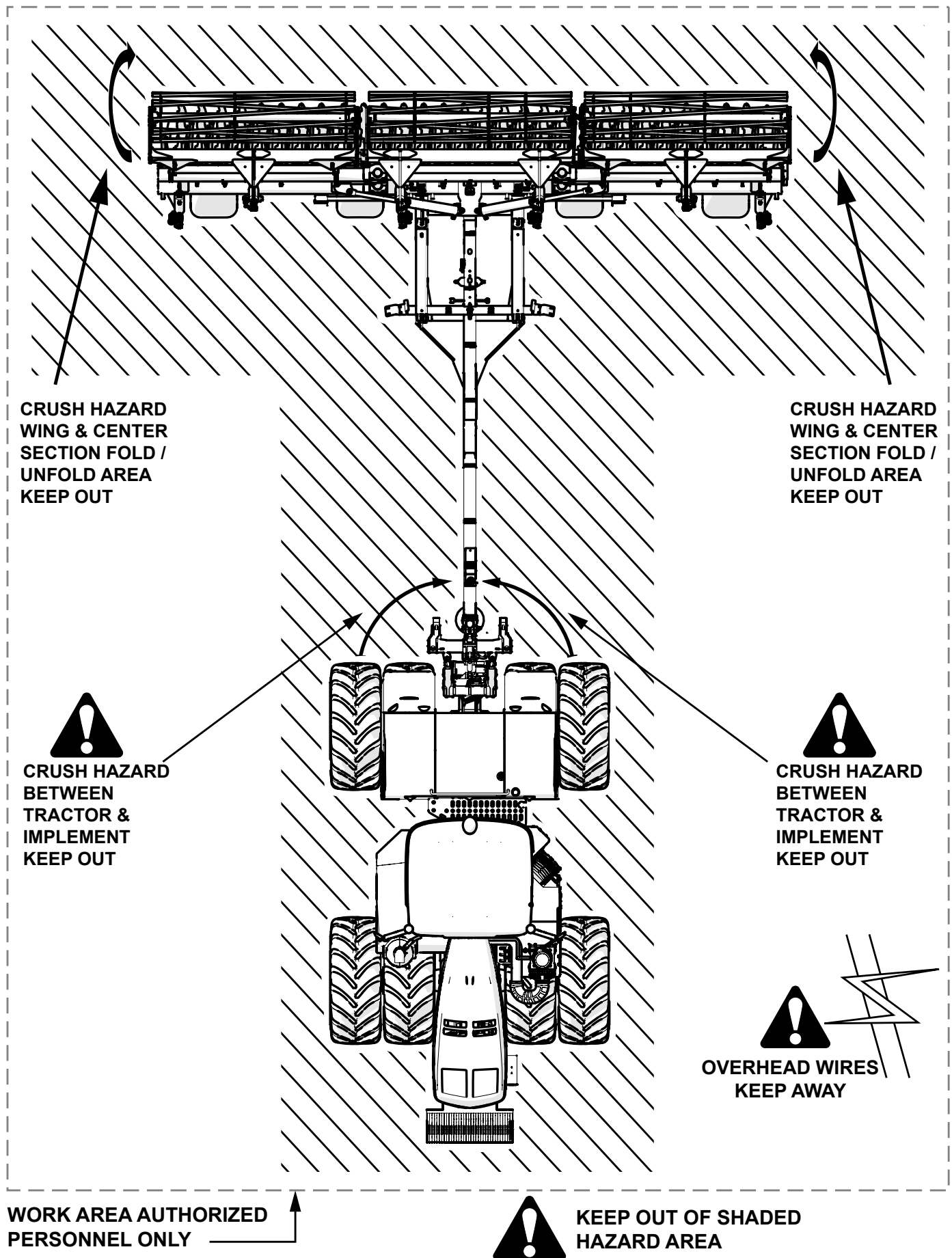


Fig. # 2-2 Workplace Hazard Area (Fig 2-2 Workplace Hazard Area LH, RH Wing, & Center Section Fold, Unfold)

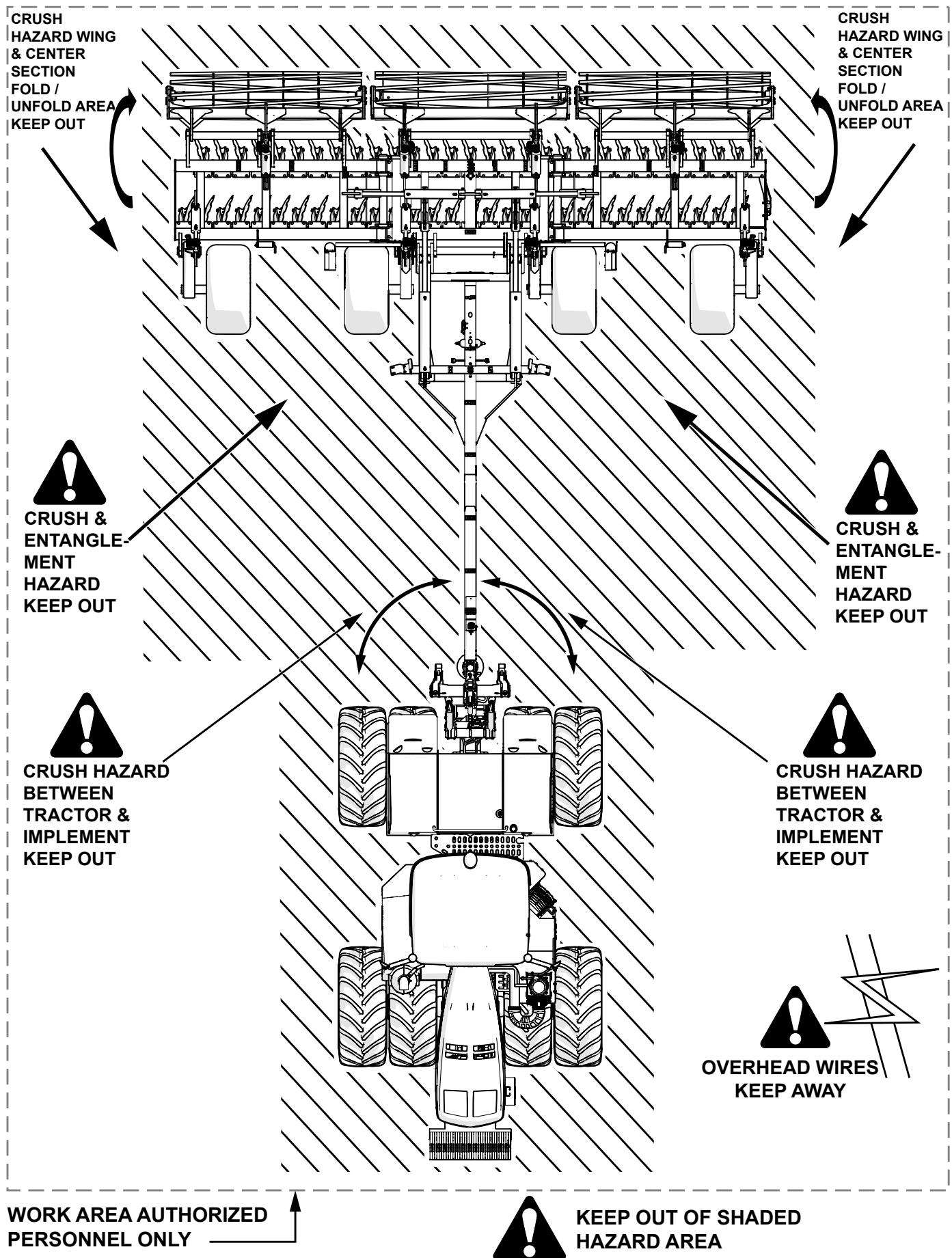


Fig. # 2-3 Workplace Hazard Area Field Position

NOISE LEVEL SAFETY



There are many variables that affect the sound level range, including machine configuration, condition and maintenance level of the machine, ground surface, operating environmental, duty cycles, ambient noise, and attachments.

Exposure to loud noise can cause impairment or loss of hearing.

Always wear hearing protection. Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

CHEMICAL SAFETY AND THE ENVIRONMENT



Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances which are required by advanced technology, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

NOTICE: The following are recommendations which may be of assistance:

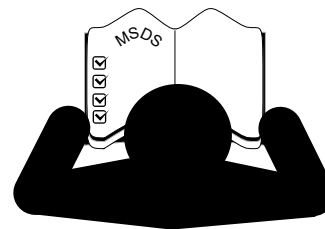
- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use and dispose of these substances.
- Agricultural consultants will, in many cases, be able to help you as well.

Helpful Hints

- Avoid filling tanks using cans which may cause considerable spillage.

- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances which may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when draining off used gearbox and hydraulic oils, etc. Do not mix drained fluids with lubricants. Store drained fluids safely until they can be disposed of properly to comply with local legislation and available resources.
- Repair any leaks or defects in the hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of hydraulic fluid.

HANDLE CHEMICAL PRODUCTS SAFELY



Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with Kwik-Till equipment include such items as lubricants, fluids, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

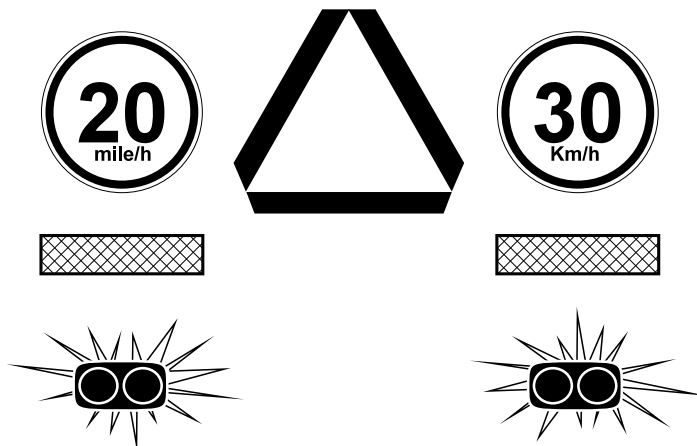
(See your Kwik-Till dealer for MSDS's on chemical products used with Kwik-Till equipment.)

DECOMMISSIONING: PROPER RECYCLING AND DISPOSAL OF FLUIDS AND COMPONENTS

Safety and environmental stewardship measures must be taken into account when decommissioning a machine and/or component. These measures include the following:

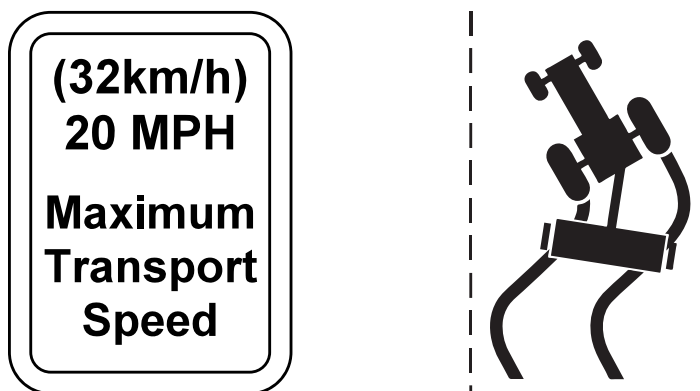
- Use appropriate tools and personal protective equipment such as clothing, gloves, face shields or glasses, during the removal or handling of objects and materials.
- Follow instructions for specialized components.
- Release stored energy by lowering suspended machine elements, relaxing springs, disconnecting the battery or other electrical power, and releasing pressure in hydraulic components, accumulators, and other similar systems.
- Minimize exposure to components which may have residue from agricultural chemicals, such as fertilizers and pesticides. Handle and dispose of these components appropriately.
- Carefully drain engines, fuel tanks, radiators, hydraulic cylinders, reservoirs, and lines before recycling components. Use leak-proof containers when draining fluids. Do not use food or beverage containers.
- Do not pour waste fluids onto the ground, down a drain, or into any water source.
- Observe all national, state, and local laws, regulations, or ordinances governing the handling or disposal of waste fluids (example: oil, fuel, coolant, brake fluid); filters; batteries; and, other substances or parts. Burning of flammable fluids or components in other than specially designed incinerators may be prohibited by law and could result in exposure to harmful fumes or ashes.
- Service and dispose of air conditioning systems appropriately. Government regulations may require a certified service center to recover and recycle air conditioning refrigerants which could damage the atmosphere if allowed to escape.
- Evaluate recycling options for tires, metal, plastic, glass, rubber, and electronic components which may be recyclable, in part or completely.
- Contact your local environmental or recycling center, or your Kwik-Till dealer for information on the proper way to recycle or dispose of waste.

USE SAFETY LIGHTS AND DEVICES



Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn signal lights. Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your Kwik-Till dealer.

OBSERVE MAXIMUM TRANSPORT SPEED



The maximum transport speed for this implement is 20 mph (32 km/h).

Some tractors are capable of operating at speeds that exceed the maximum transport speed of this implement. Regardless of the maximum speed capability of the tractor being used to tow this implement, do not exceed the implement's maximum transport speed.

Exceeding the implement's maximum transport speed can result in:

- Loss of control of the tractor/implement combination.
- Reduced or no ability to stop during braking.

- Implement tire failure.
- Damage to the implement structure or its components. Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines.

Do Not attempt transport if the implement weighs more than 1.5 t (3,300 lb) and more than 1.5 times the weight of the tractor.

⚠ CAUTION

Never tow this implement with a motor vehicle. Tow only with a properly sized and ballasted tractor.

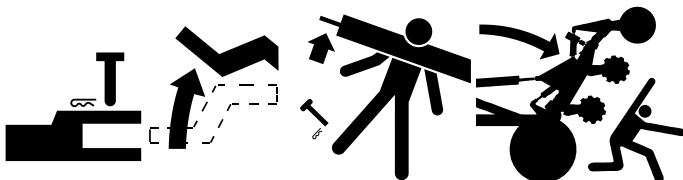
ATTACHING AND DETACHING KWIK-TILL TO / FROM TRACTOR SAFETY

Never let another person stand between the tractor and the implement during hitching. Too fast of an approach or the operator's foot slipping from the clutch can lead to injury or death to the person standing nearby.

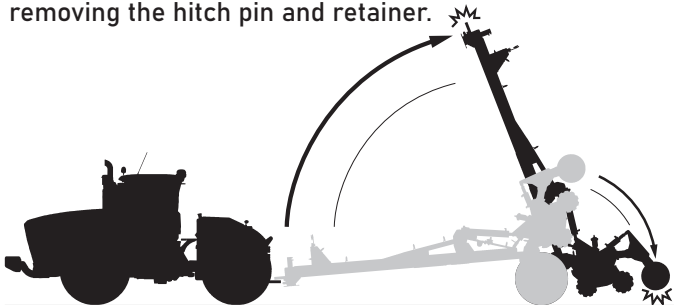
⚠ DANGER

UPENDING HAZARD

TONGUE CAN WHIP UPWARDS WHEN UNHITCHING



The tractor **MUST** be equipped with a clevis hitch to prevent the Kwik-Till from tipping upward while unfolding from transport position, and folding into transport position. To avoid bodily injury, lower the machine before removing the hitch pin and retainer.



If negative tongue weight exists, the hitch tongue may suddenly raise, and the rear section would come crashing down. Only disconnect when the jack is lowered, there is positive tongue weight, the unit is on level ground, and in the proper transport or field position. Never disconnect the Kwik-Till from the tractor if the rear sections of the machine are partially raised. Keep others away.

⚠ DANGER

CRUSH HAZARD

Stand clear when raising or lowering the Kwik-Till.

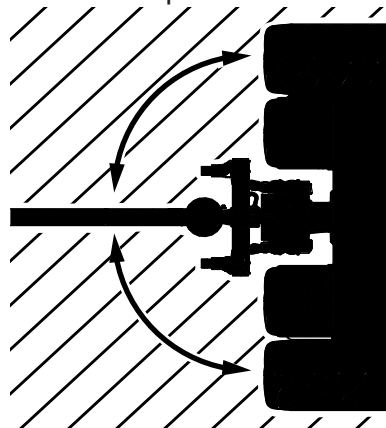


Keep feet, legs, and body clear when raising and lowering the Kwik-Till. Keep others away.

⚠ DANGER

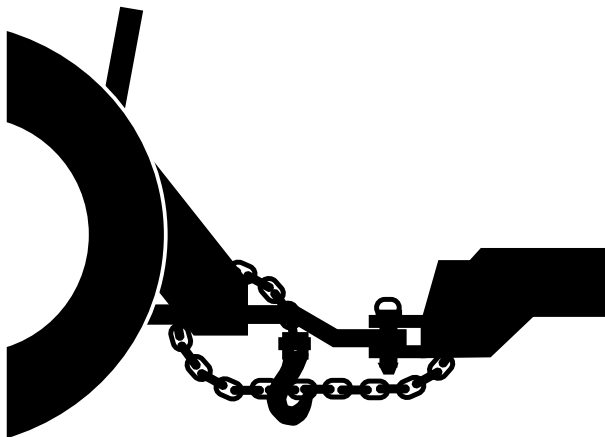
CRUSH HAZARD

Avoid being crushed in between the tractor and the implement.



When working in the danger area between the Kwik-Till and the tractor always ensure that the Tractor engine is turned off and the Key removed. Keep others away.

USE A SAFETY CHAIN



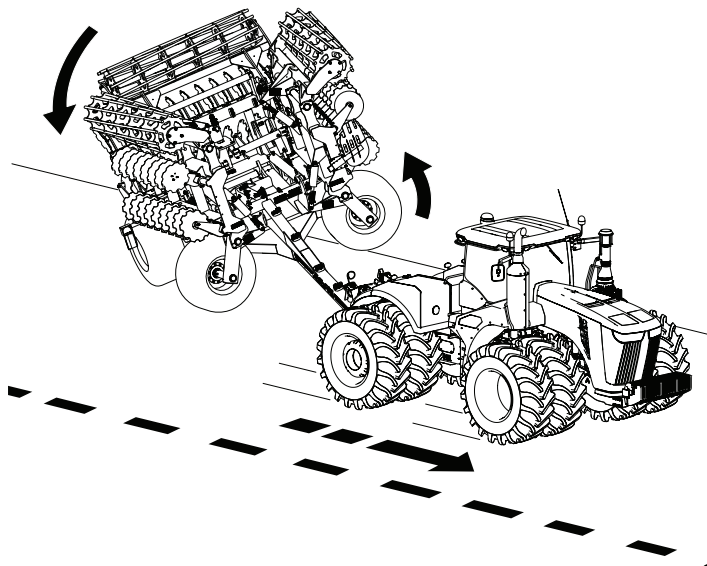
A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your Kwik-Till dealer if a replacement chain is needed. Your Kwik-Till safety chain has a strength rating equal to or greater than the gross weight of the towed machine.

Do Not use the safety chain for towing.

Tow Loads Safely



Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control. Consider the total weight of the equipment and its load.

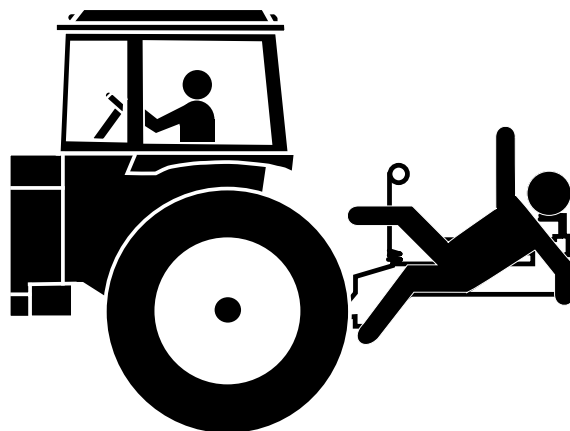
Observe these recommended maximum road speeds, or local

speed limits which may be lower:

- If towed equipment does not have brakes, do not travel more than 20 mph (32 km/h) and do not tow loads more than 1.5 times the tractor weight.
- If towed equipment has brakes, do not travel more than 25 mph (40 km/h) and do not tow loads more than 4.5 times the tractor weight.

Ensure the load does not exceed the recommended weight ratio. Add ballast to recommended maximum for tractor, lighten the load, or get a heavier towing unit. The tractor must be heavy and powerful enough with adequate braking power for the towed load. Use additional caution when towing loads under adverse surface conditions, when turning, and on inclines.

KEEP RIDERS OFF MACHINE



Keep riders off. Riders on the implement or tractor are subject to injury such as being struck by foreign objects and being thrown off of the machine.

PREPARING FOR TRANSPORT

CAUTION

Avoid serious injury or death. Never tow machine behind a truck or other motor vehicle. This machine is designed only to be towed with a properly sized and ballasted tractor.

- Use a tractor large enough to maintain control. Properly ballast tractor for towing your machine. Refer to the tractor Operator's Manual and this manual to ensure that machine can be safely transported with your tractor.
- Be aware of height and width restrictions to avoid collision with overpasses or other road users.
- Always fold wings fully. If wing-fold cylinders are removed, chain the wings together to prevent accidental lowering.
- Fully raise the frame, close the hydraulic lockup valve, and install the transport/service locks before transporting.
- Latch the tractor brakes together.
- Attach a proper size safety chain for load being towed. See Use a Safety Chain in this section.
- Always follow local and national regulations for equipment size, lighting, and marking before driving on public roadways. You are responsible for understanding and complying with all requirements regarding roadway transport. See Use Safety Lights and Devices in this section.

TRANSPORT SAFETY



IMPORTANT

Transport the machine at a reasonable and safe speed, which permits adequate control of steering and stopping. Reduce speed considerably when traveling over rough ground. Be certain everyone is clear of machine.

1. Read and understand ALL the information in the Operator's Manual regarding procedures and SAFETY when moving or transporting the machine.
2. Check with local authorities regarding machine transport on public roads. Obey all applicable laws and regulations.
3. Always travel at a safe speed. Use caution when making corners or meeting traffic. Travel speed should be such that complete control and machine stability is maintained at all times.
4. Make sure the SMV (Slow Moving Vehicle) emblem and all the 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.
5. Do not allow riders on the Kwik-Till or the tractor.
6. Attach Kwik-Till hitch link to tractor drawbar, verify that the hitch pin and retainer is used. Always attach the safety chain.
7. 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.
8. Do not exceed the maximum transport speed for this implement of 20 mph (32 km/h). Reduce speed on rough roads and surfaces.
9. Stay away from overhead obstructions and power lines when transporting. Electrocutation can occur without direct contact. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines. Should a contact between the machine and an electric power source occur, the following precautions must be taken: Stop the machine movement immediately. Apply the park brake, stop the engine. Check if you can safely leave the cab or your actual position without contacting the electrical wires. If not, stay in your position and call for help. If you can leave your position without touching lines, jump clear of the machine to make sure

you do not make contact with the ground and the machine at the same time. Do not permit anyone to touch the machine until power has been shut off to the power lines.

10. Always use hazard warning flashers on tractor when transporting unless prohibited by law.
11. Slow down and signal before turning.
12. Follow correct towing procedure for equipment with or without brakes.
13. To improve stability when traveling through the field, wings should be unfolded from transport position as soon as possible after leaving the roadway.
14. Towed loads can swerve, upset, or cause loss of control. Refer to Tow Loads Safely in this section.

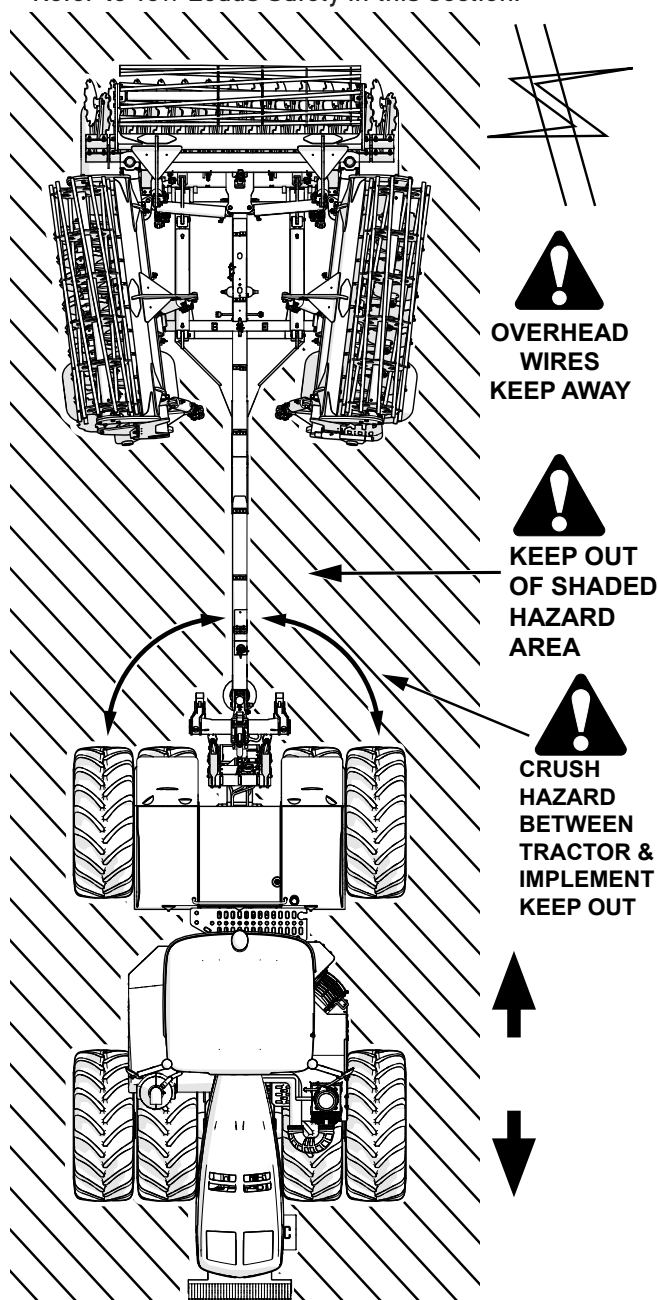


Fig. # 2-4 Transport Hazard Area

SAFETY DECALS

The following safety decals are placed on your machine as a guide for your safety and for those working with you. Walk around the machine and note the content and location of these safety decals before operating your machine.



Keep safety decals clean and legible. Clean safety decals with a soft cloth, water, and a gentle detergent. Do not use solvent, gasoline, or other harsh chemicals. Solvents, gasoline, and other harsh chemicals may damage or remove safety decals.

Replace all safety decals that are damaged, missing, painted over, or illegible. If a safety decal is on a part that is replaced, make sure the safety decal is installed on the new part. See your dealer for replacement safety decals.



Safety decals that display the "Read Operator's Manual" symbol are intended to direct the operator to the operator's manual for further information regarding maintenance, adjustments, or procedures for particular areas of the machine. When a safety decal displays this symbol, refer to the appropriate page of the operators manual.

Safety Decal Locations

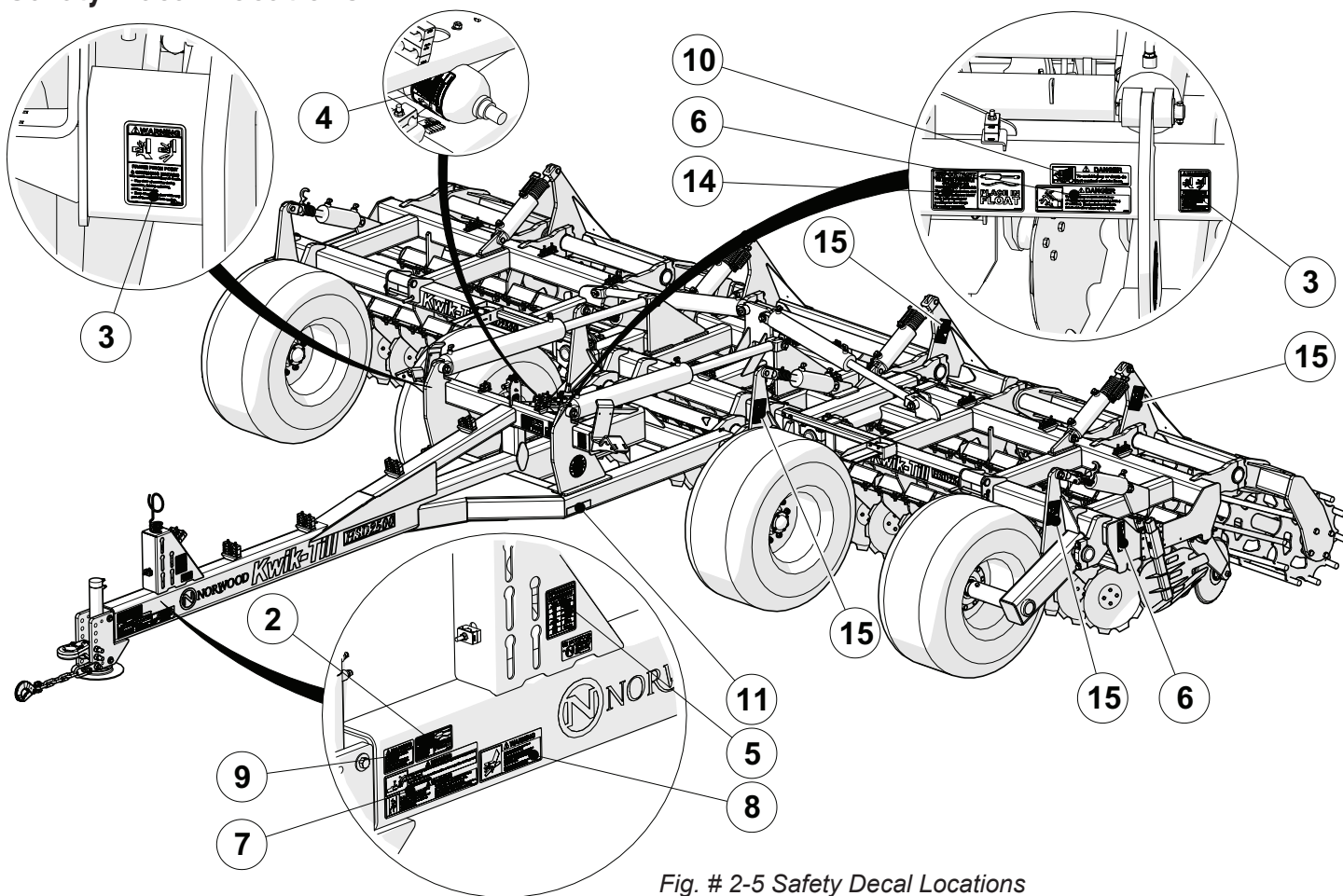


Fig. # 2-5 Safety Decal Locations

Item	Part Number	Description	Qty.	Item	Part Number	Description	Qty.
1*	90-44-0181	SMV SIGN	1	11	90-44-0410	Decal, Yellow Retroreflective	6
2	90-44-0192	Decal, Place in Float-Small	1	12*	90-44-0411	Decal, Red Retroreflective	2
3	90-44-0255	Decal, Warning Pinch & Crushing Hazard	2	13*	90-44-0412	Decal, Orange Fluorescent	2
4	90-44-0508	Decal, Warning-Accumulator Pressurized Hazard	1	14	90-44-0449	Decal, Place in Float-Large	1
5	90-44-0392	Decal, Information - Hose Color Chart	1	15	90-44-0455	Decal, Depth Stop Instructional	8
6	90-44-0394	Decal, Danger To Avoid Injury Stand Clear	3	16*	90-44-0560	Decal, Speed Identification Symbol (SIS) 20 mph	1
7	90-44-0395	Decal, Warning Tongue & Transport Speed	1	17*	90-44-0448	Decal, Single Point Depth Control Adjustment	2
8	90-44-0396	Decal, Warning Hydraulic Hazard	1	18*	90-44-0613	Decal, Depth Control Indexing Position	2
9	90-44-0398	Decal, Warning Fully Charged System	1	19*	90-44-0589	Decal, Adjustable Depth	2
10	90-44-0399	Decal, Danger Do Not Contact Electric Lines	1				

* Not shown in this view

Safety Decal Locations Cont'd.

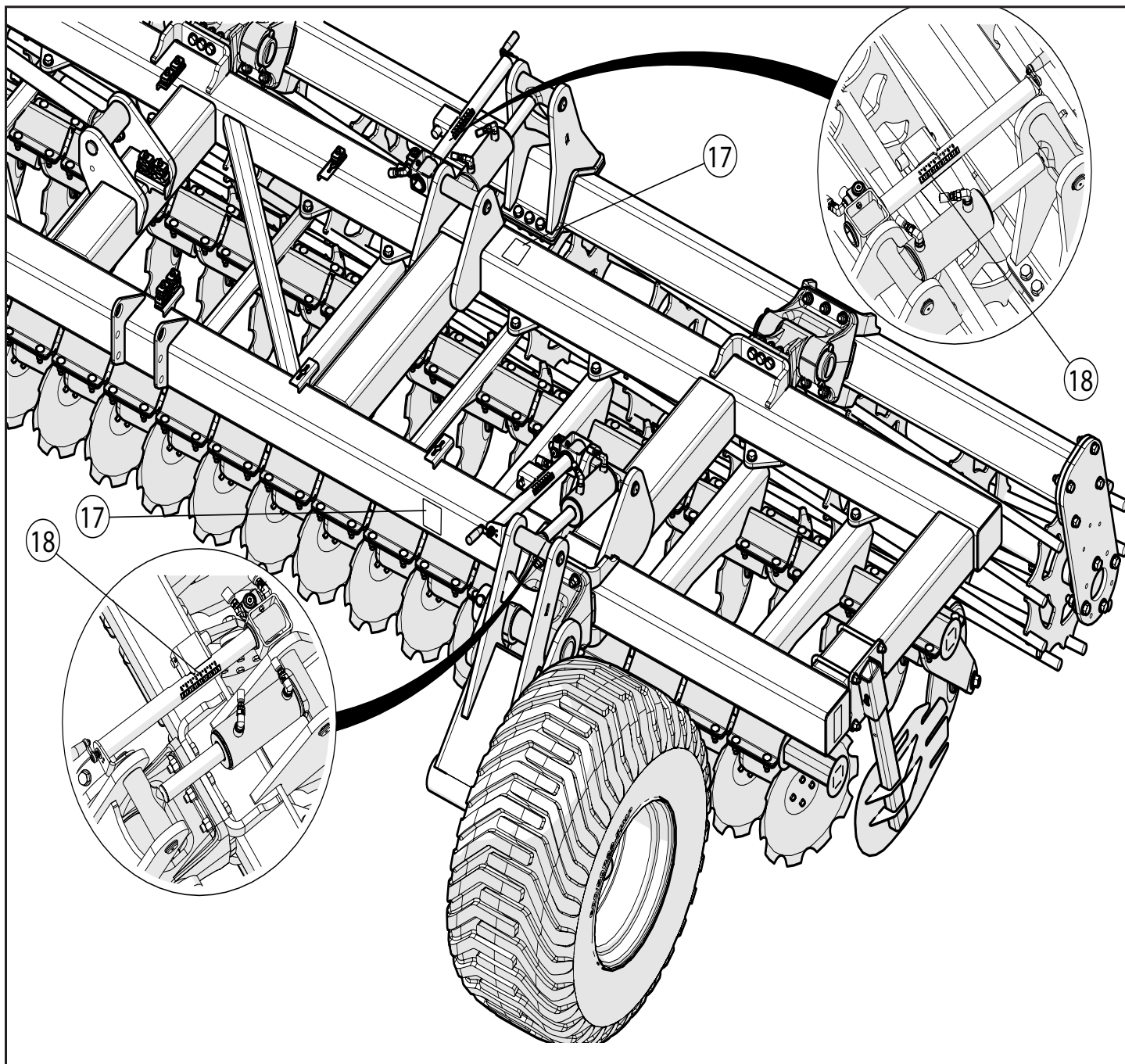


Fig. # 2-6 Safety Decal Locations

Item	Part Number	Description	Qty.
17	90-44-0448	Decal, Single Point Depth Control Adjustment	2
19	90-44-0589	Decal, Adjustable Depth	2

Safety Decal Locations Cont'd.

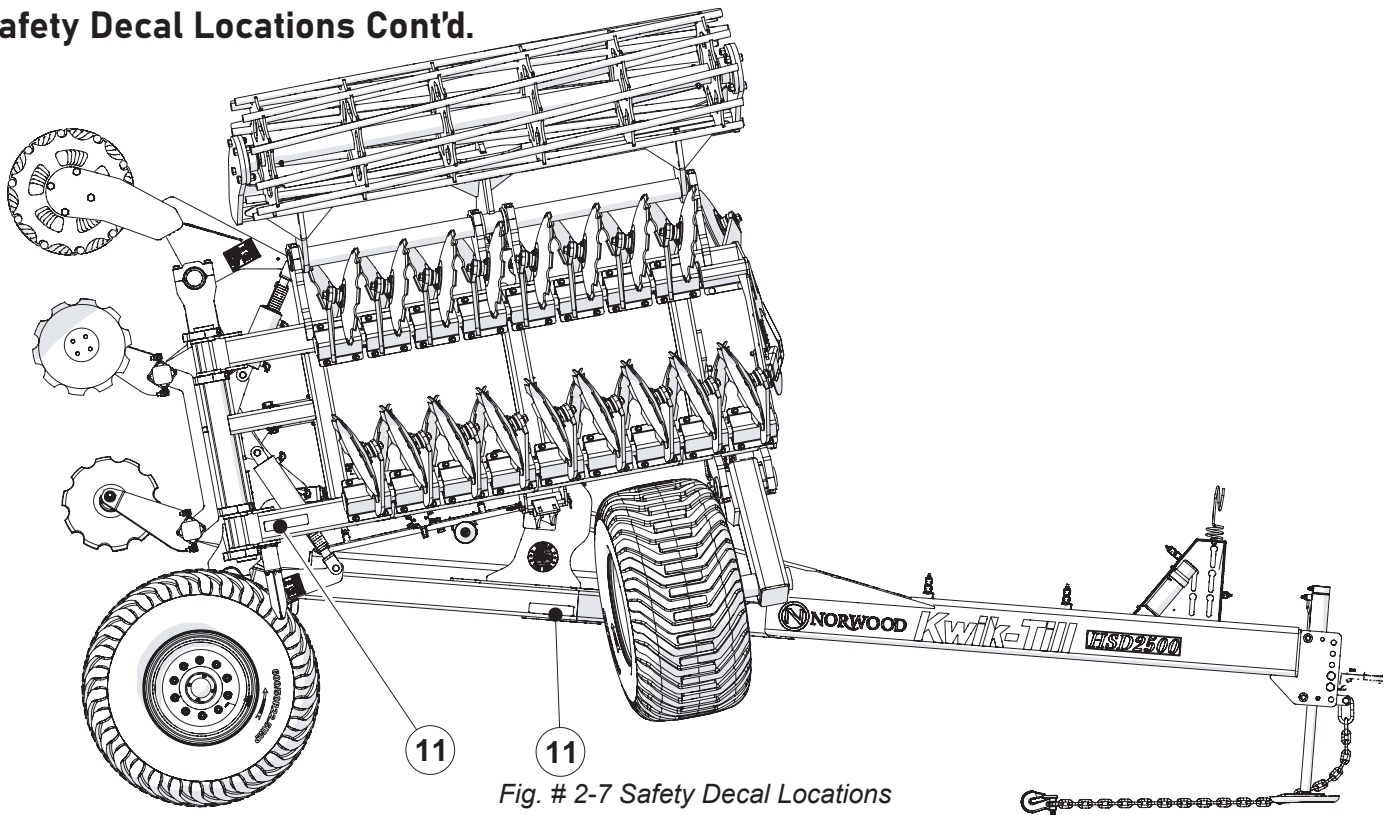


Fig. # 2-7 Safety Decal Locations

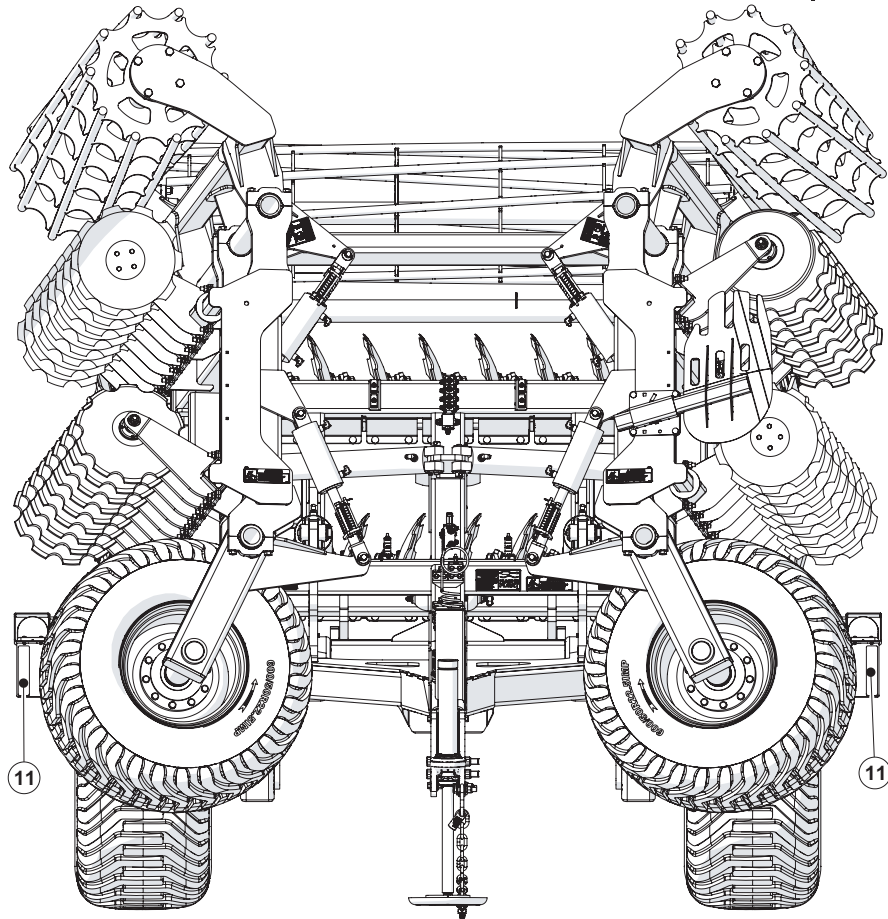


Fig. # 2-8 Safety Decal Locations

Item	Part Number	Description	Qty.
11	90-44-0410	Decal, Yellow Retroreflective	6

Safety Decal Locations Cont'd.

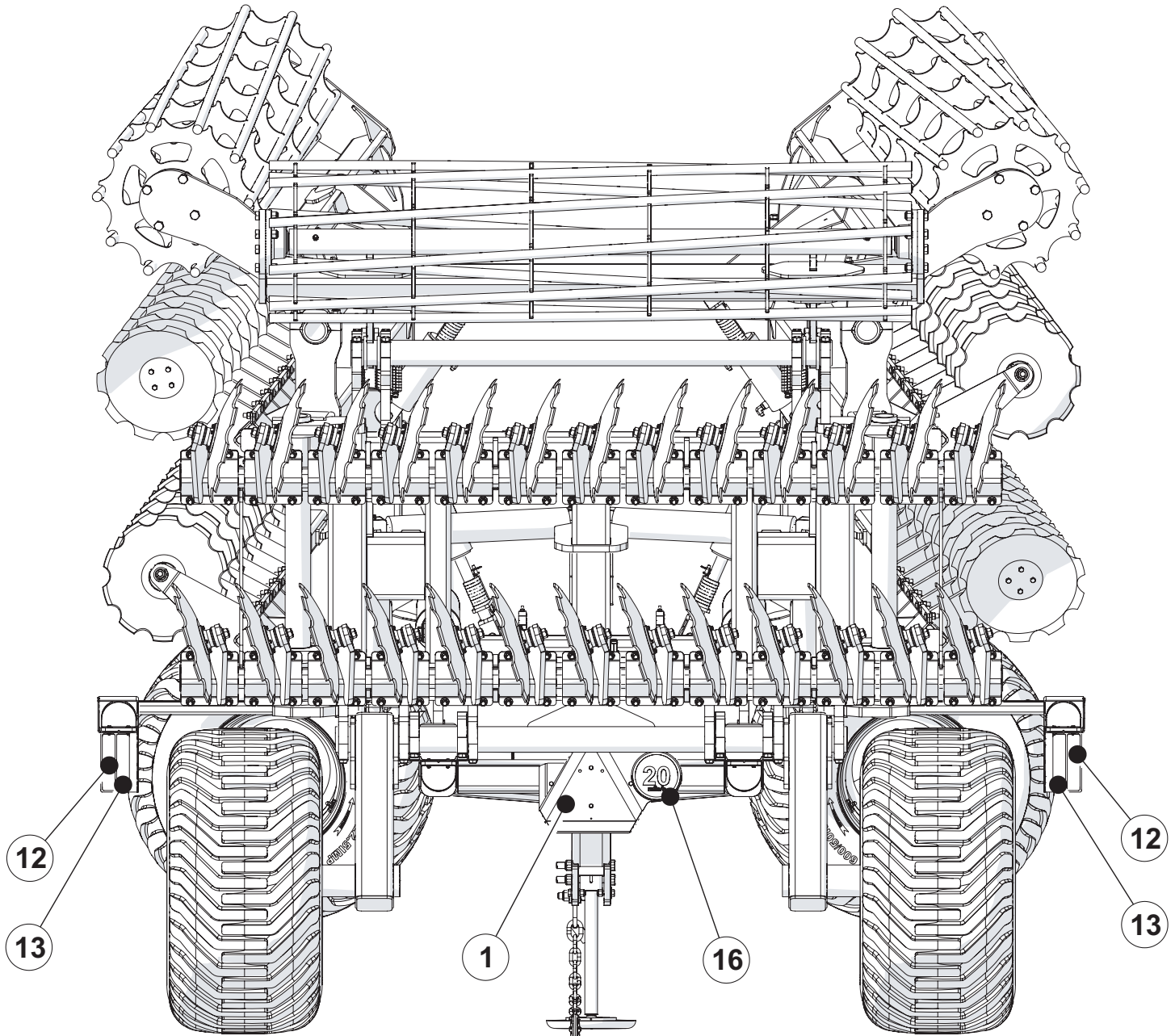


Fig. # 2-9 Safety Decal Locations

Item	Part Number	Description	Qty.	Item	Part Number	Description	Qty.
1*	90-44-0181	SMV SIGN	1	12	90-44-0411	Decal, Red Retroreflective	2
13	90-44-0412	Decal, Orange Fluorescent	2	16	90-44-0560	Decal, Speed Identification Symbol (SIS) 20 mph	1

NOTE

Kwik-Till models HSD2500, & HSD3000 have (Qty. 2) Red Retroreflective and Orange Fluorescent decals, where models HSD3500, HSD4000, & HSD4500 have (Qty. 4)

Safety Decal Locations Cont'd.

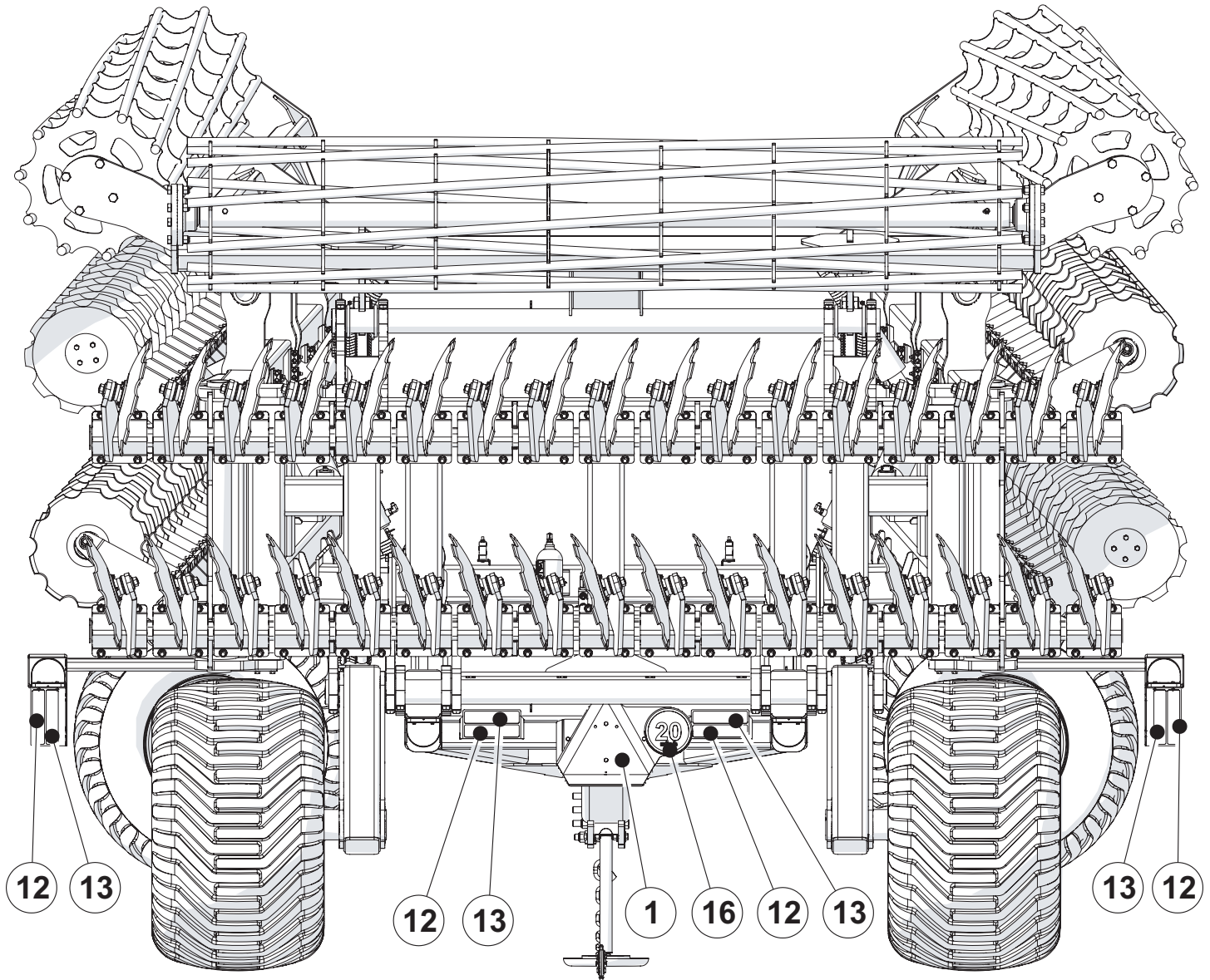
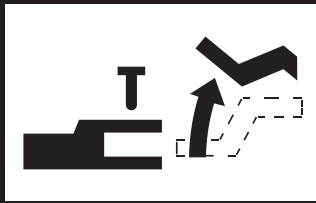


Fig. # 2-10 Safety Decal Locations

Item	Part Number	Description	Qty.	Item	Part Number	Description	Qty.
1*	90-44-0181	SMV SIGN	1	12	90-44-0411	Decal, Red Retroreflective	4
13	90-44-0412	Decal, Orange Fluorescent	4	16	90-44-0560	Decal, Speed Identification Symbol (SIS) 20 mph	1

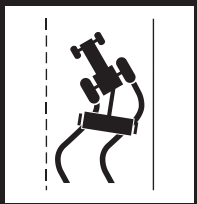
NOTE

Kwik-Till models HSD2500, & HSD3000 have (Qty. 2) Red Retroreflective and Orange Fluorescent decals, where models HSD3500, HSD4000, & HSD4500 have (Qty. 4)



⚠ WARNING

Tongue can whip upwards when unhitching, if implement is equipped with a rear attachment.
To avoid bodily injury, lower the machine or the rear parking stand to ground before removing hitch pin.



⚠ WARNING

Do not exceed this implement's maximum transport speed of 32 km/h (20 mph). Exceeding this speed may result in loss of control during transport or braking and serious injury or death.

Transport only with a properly ballasted tractor and a properly attached safety tow chain. Do not transport with a motor vehicle. Reduce speed and use additional caution when on inclines, towing under adverse surface conditions, and turning.

N238742 S

Fig. # 2-11 Warning Decal P/N 90-44-0395

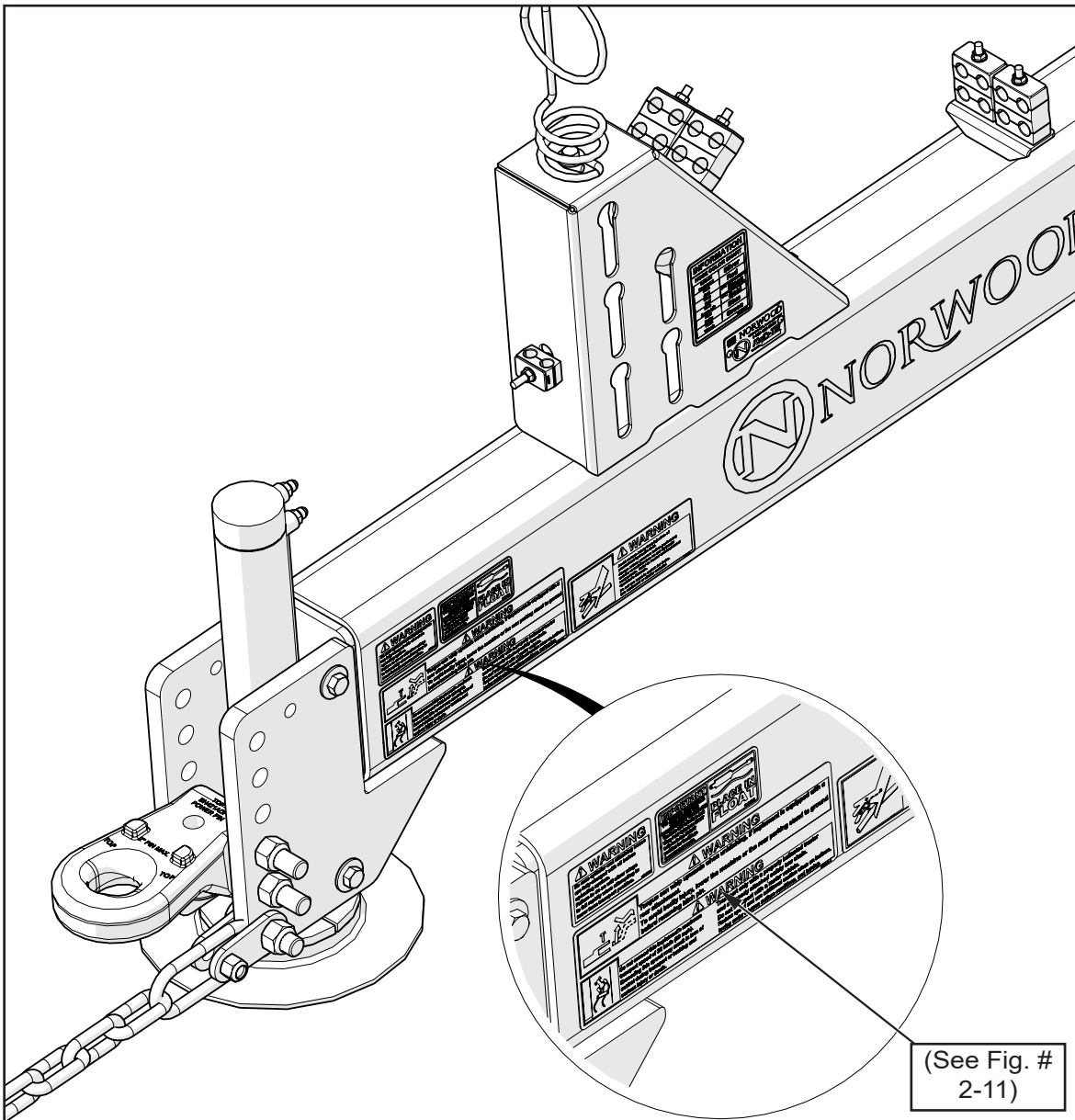


Fig. # 2-12 Safety Decal Location

! WARNING

Be sure cylinder and attaching hoses are fully charged with oil before operating system.

Failure to do so will allow wings to fall rapidly when attempting to lower from transport position.

N232773 S

Fig. # 2-13 Warning Decal P/N 90-44-0398

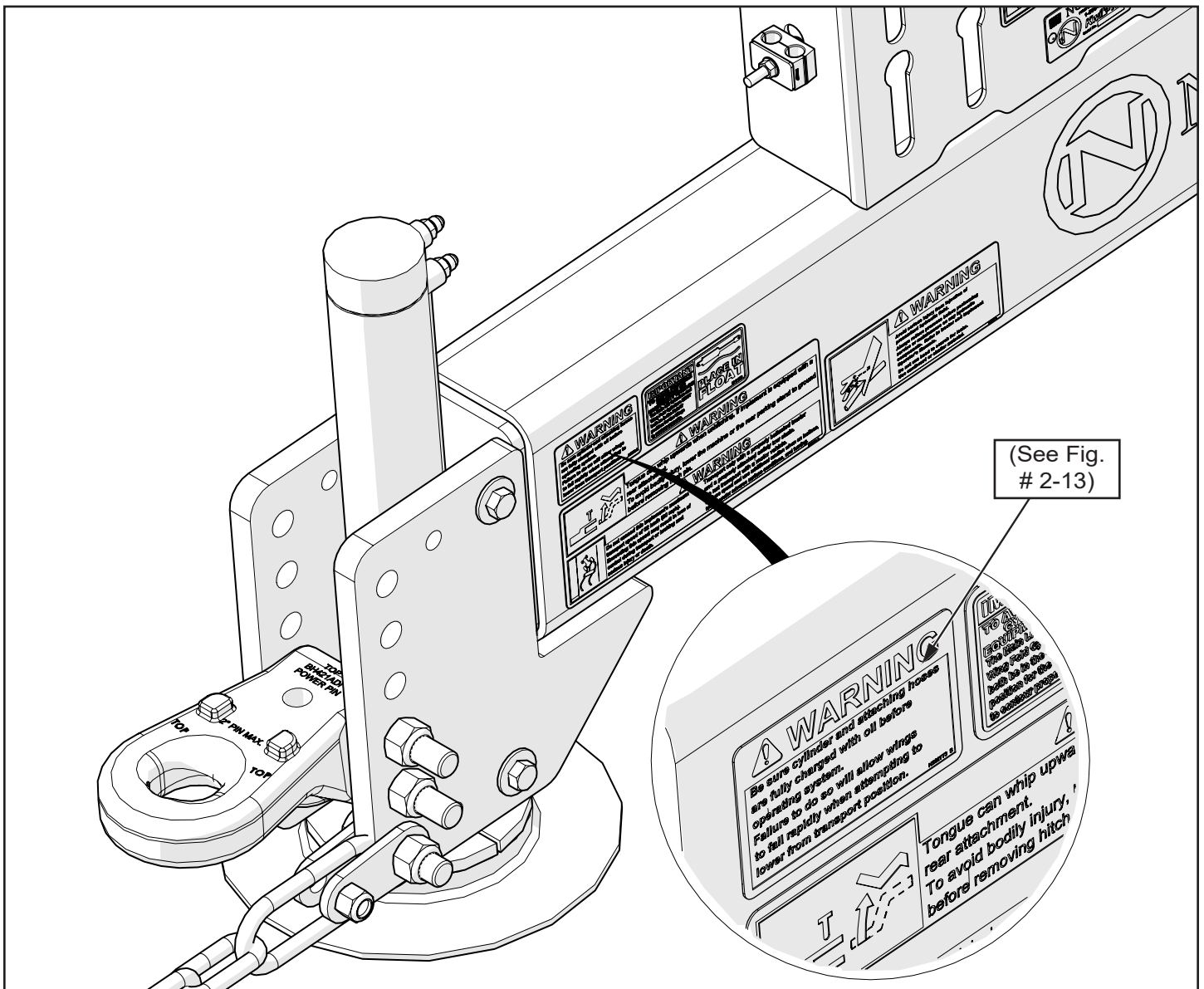


Fig. # 2-14 Safety Decal Location



⚠ WARNING

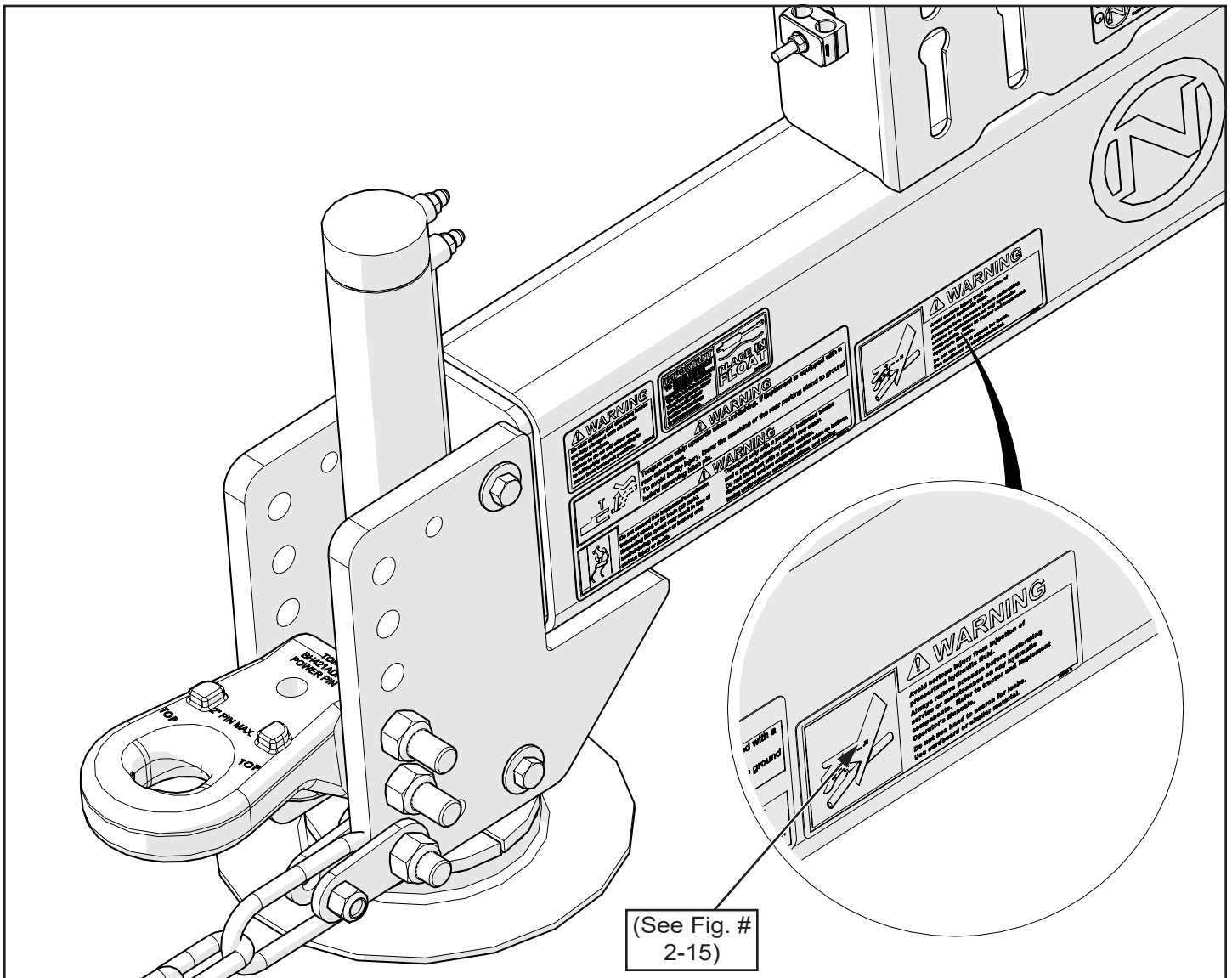
Avoid serious injury from injection of pressurized hydraulic fluid.

Always relieve pressure before performing service or maintenance on any hydraulic components. Refer to tractor and implement Operator's Manuals.

Do not use hand to search for leaks. Use cardboard or similar material.

A80683 S

Fig. # 2-15 Warning Decal P/N 90-44-0396



(See Fig. # 2-15)

Fig. # 2-16 Safety Decal Location

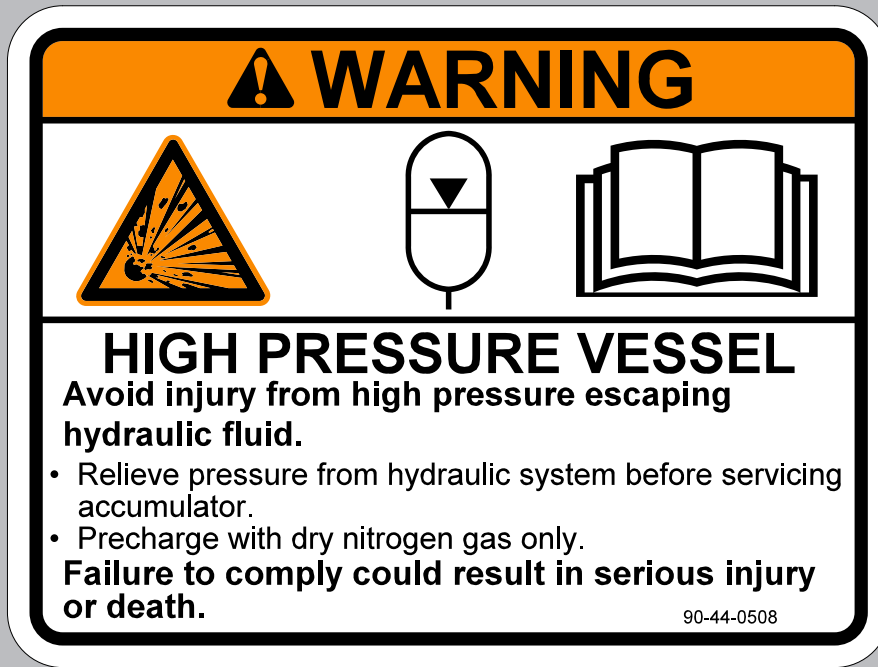


Fig. # 2-17 Warning Decal P/N 90-44-0508

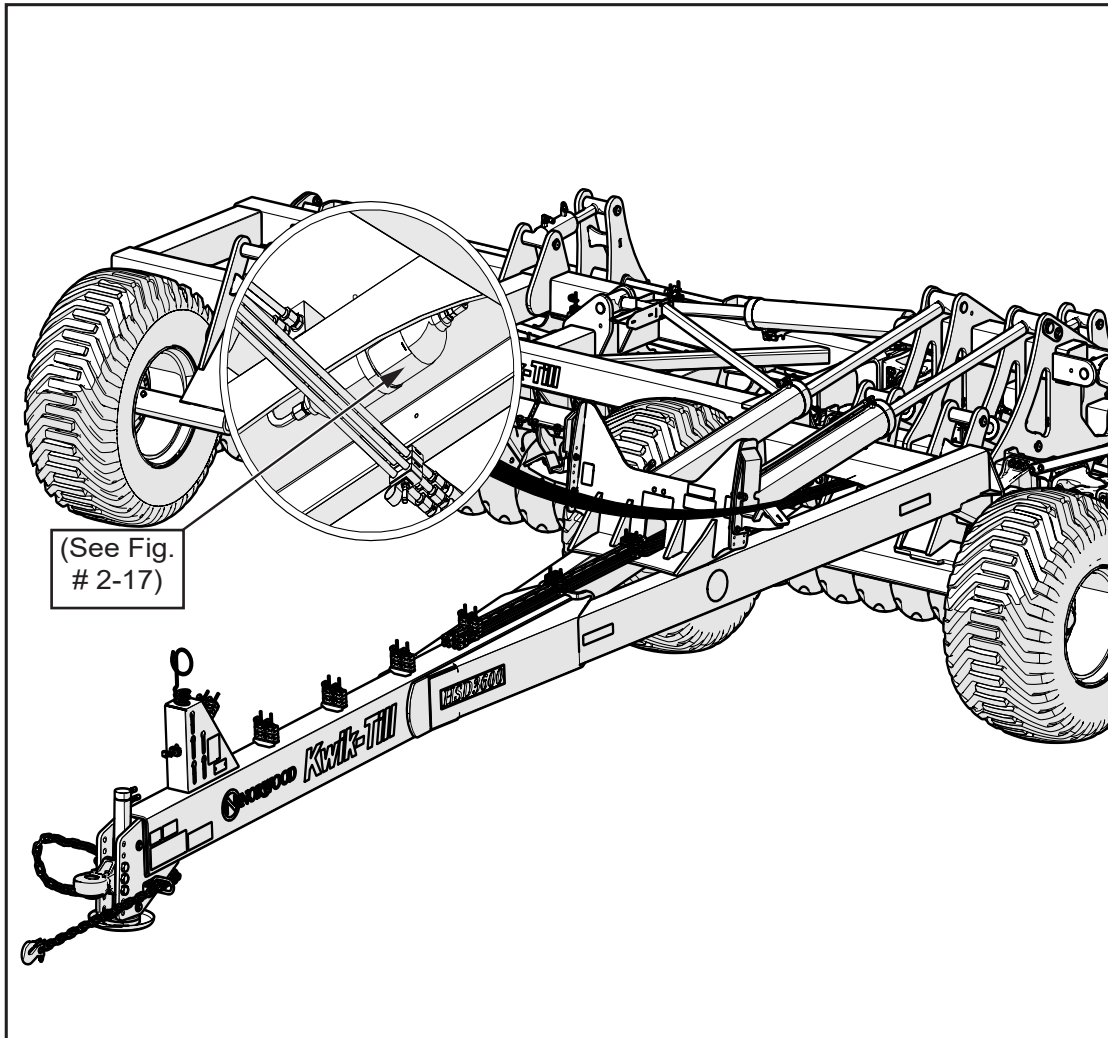


Fig. # 2-18 Safety Decal Location



⚠ DANGER

To avoid injury or death stand clear of machine when wings are being folded or unfolded. Mechanical or hydraulic failure can allow wings to fall rapidly.

N232774 S

Fig. # 2-19 Danger Decal P/N 90-44-0394

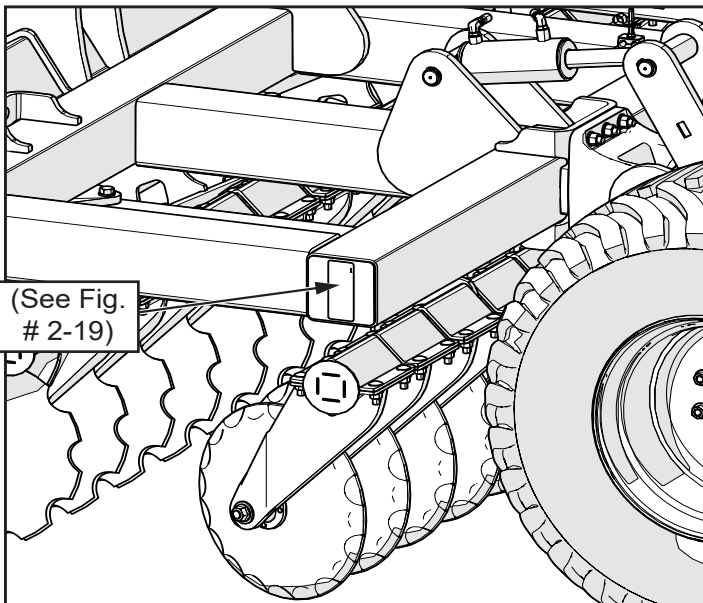


Fig. # 2-20 Safety Decal Location (Left Side of Machine)

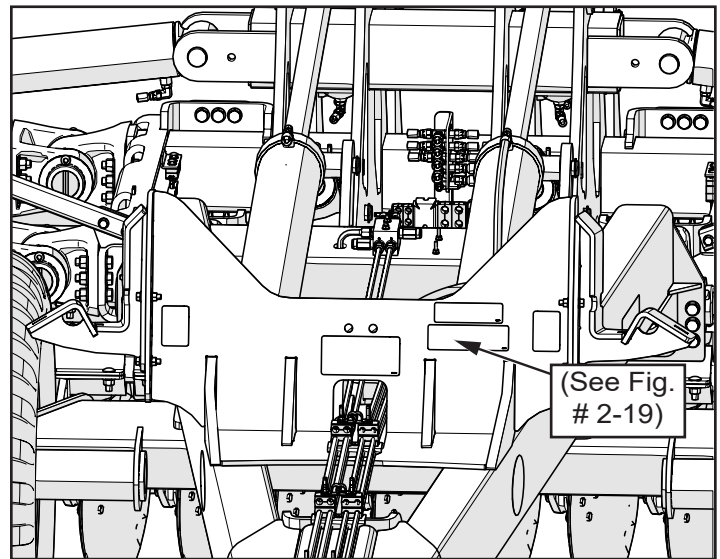


Fig. # 2-22 Safety Decal Location

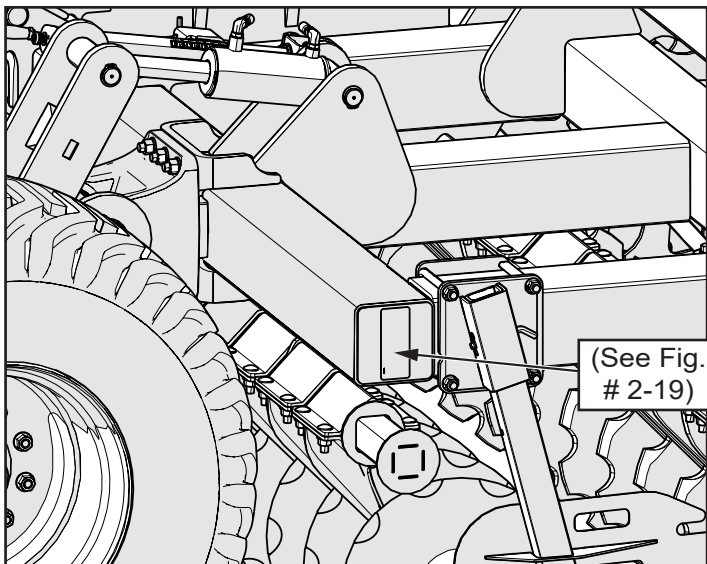
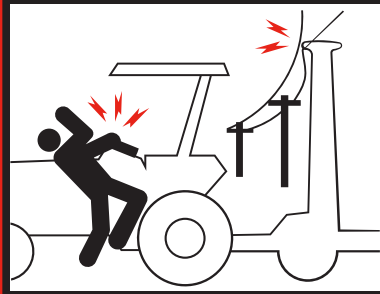


Fig. # 2-21 Safety Decal Location (Right Side of Machine)



DANGER

To avoid injury or death do not contact electric lines

N232772 S

Fig. # 2-23 Danger Decal P/N 90-44-0399

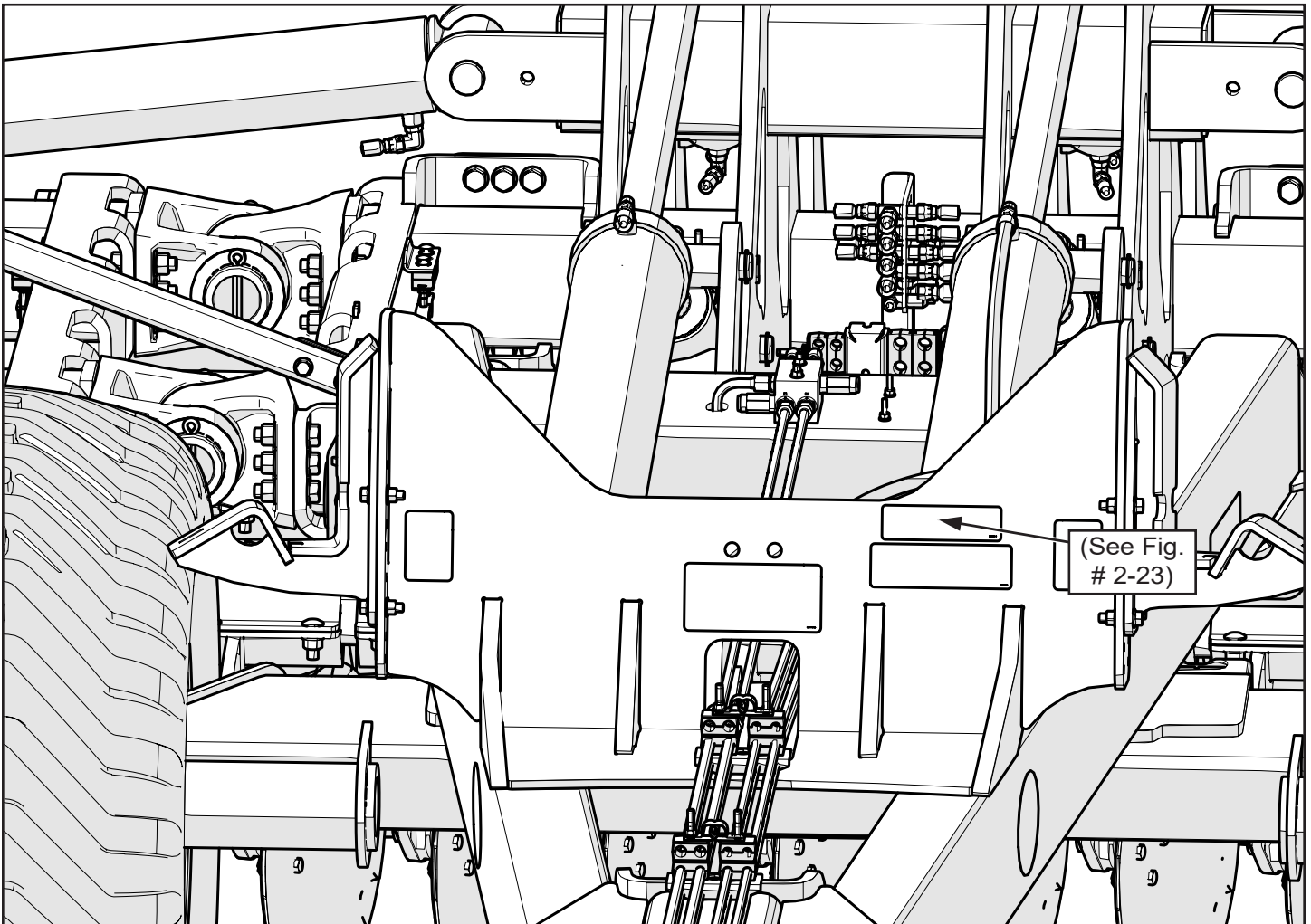


Fig. # 2-24 Safety Decal Location



Fig. # 2-25 Warning Decal P/N 90-44-0255

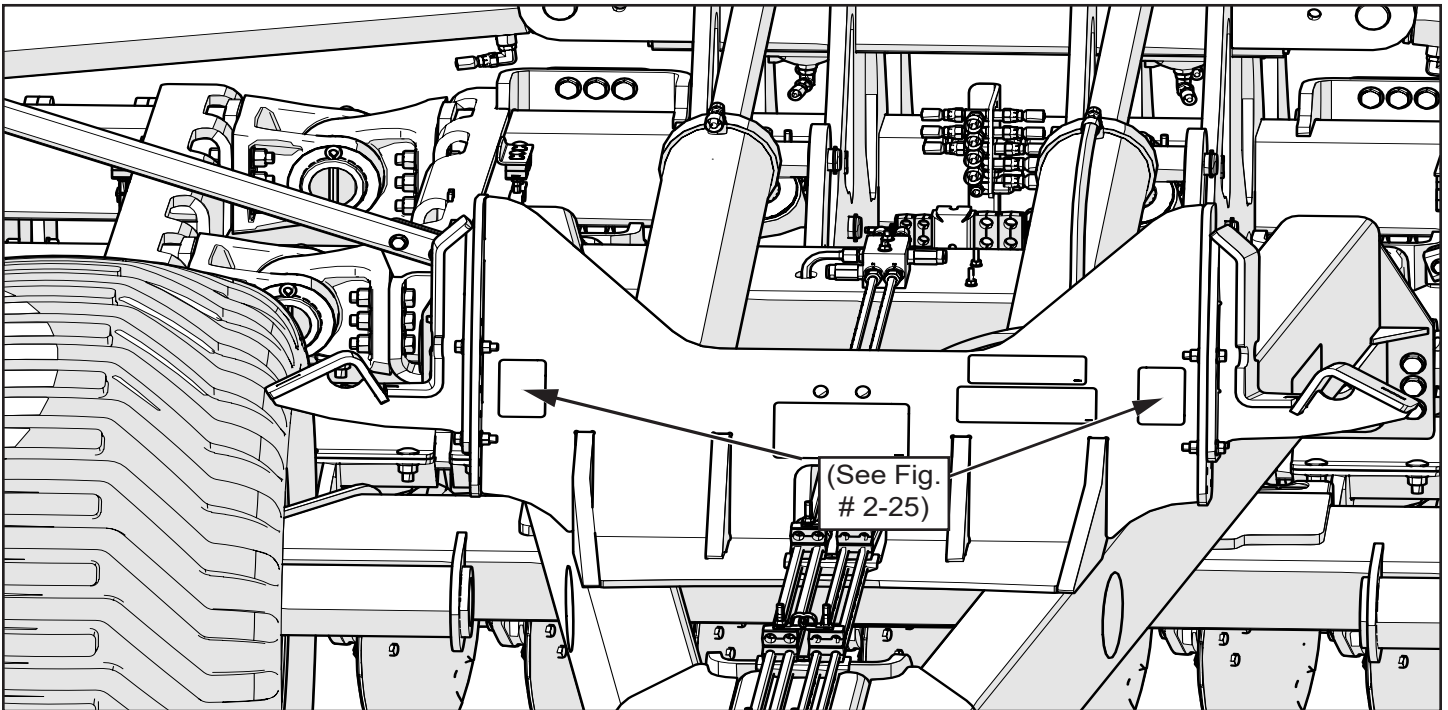


Fig. # 2-26 Safety Decal Location

INFORMATION	
HOSE COLOR CHART	
Optional Equipment	Silver
Hitch Jack	Red
Wing Fold	Black <small>Float During Operation</small>
Main Frame Lift	Gold <small>Float During Operation</small>
Rear Roller	Blue
Front Wheels	Green

P/N 90-44-0392

Fig. # 2-27 Informational Decal P/N 90-44-0392

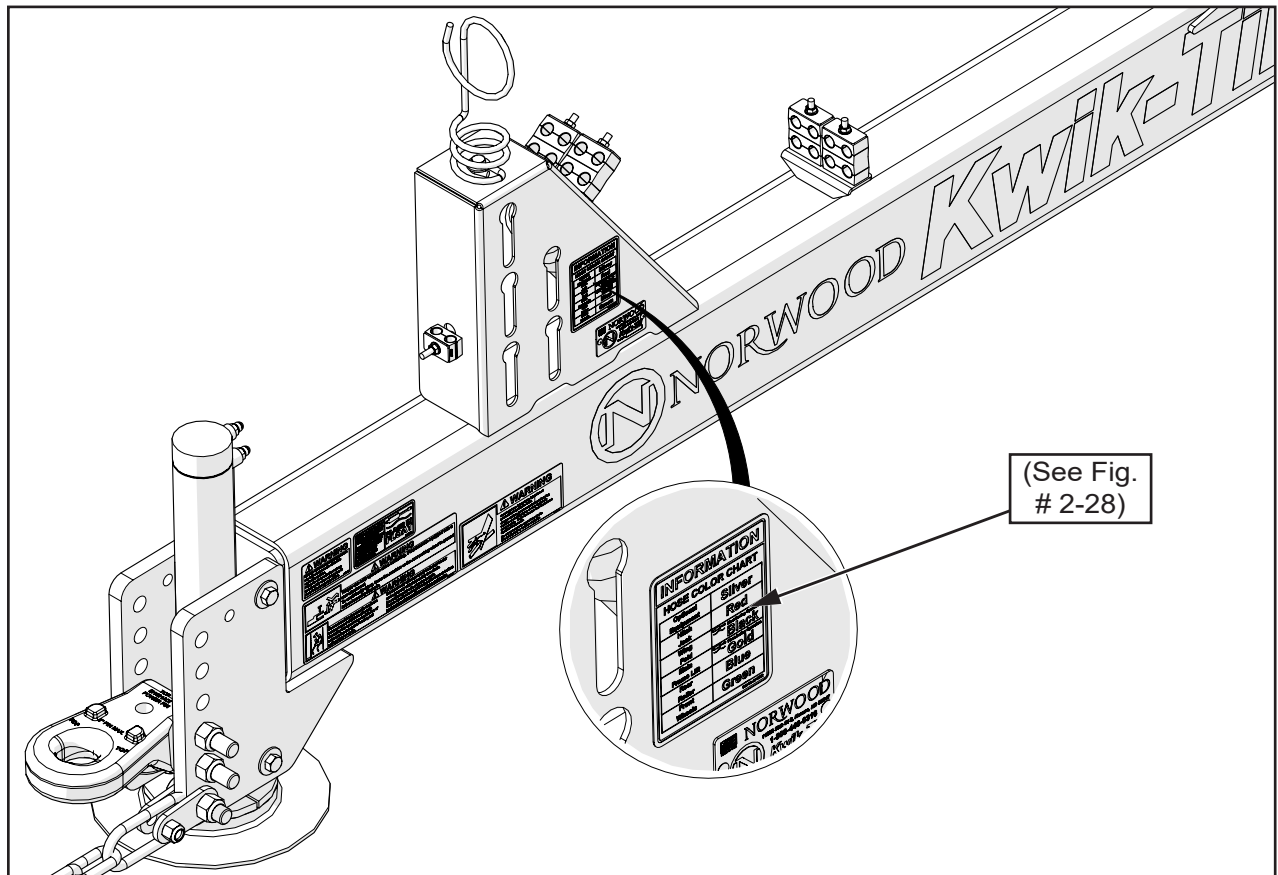


Fig. # 2-28 Informational Decal Location

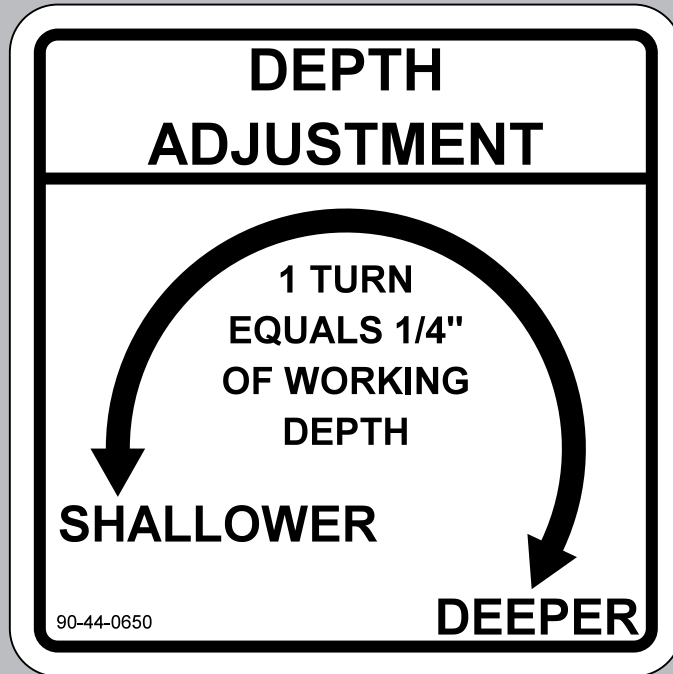


Fig. # 2-29 Instructional Decal (2 Locations) P/N 90-44-0650

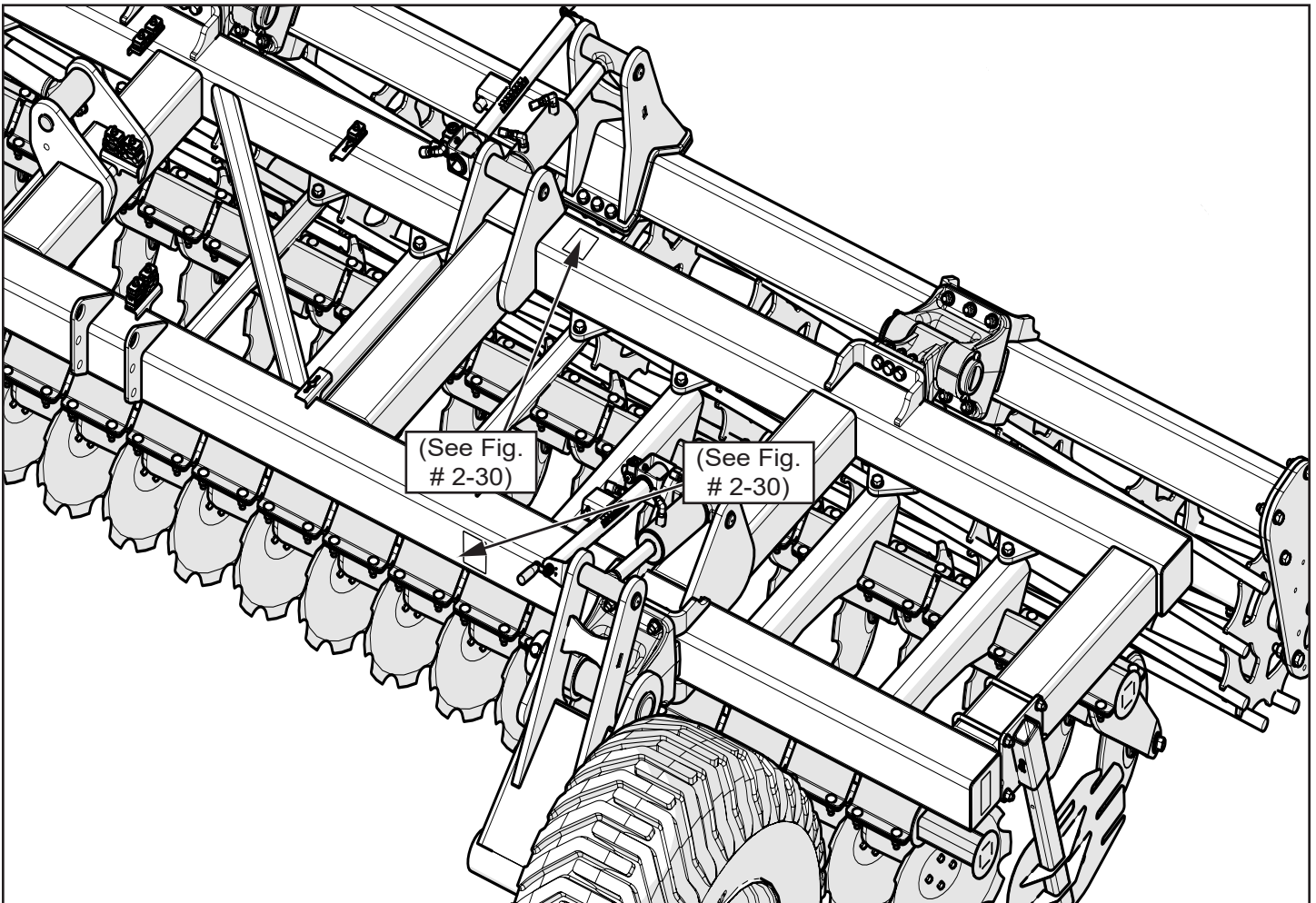


Fig. # 2-30 Instructional Decal Locations (Located on Left Wing)

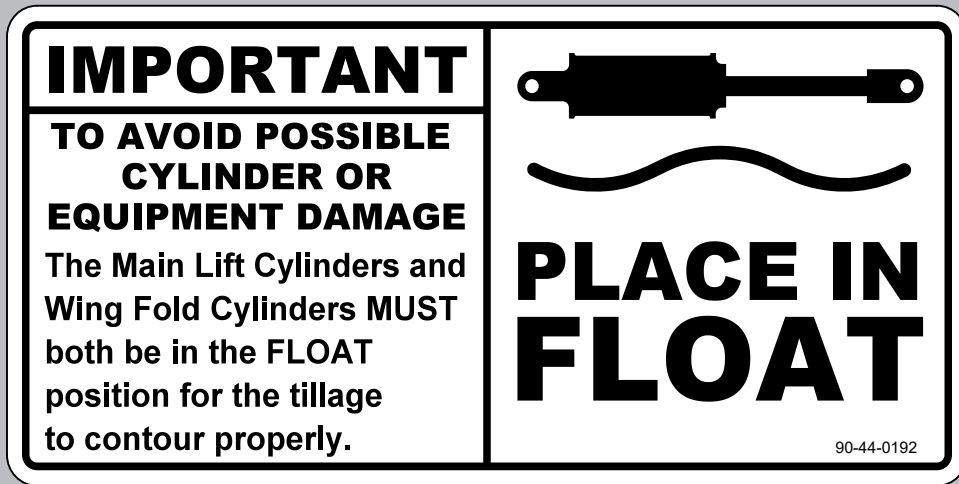


Fig. # 2-31 Important Decal (Small) P/N 90-44-0192

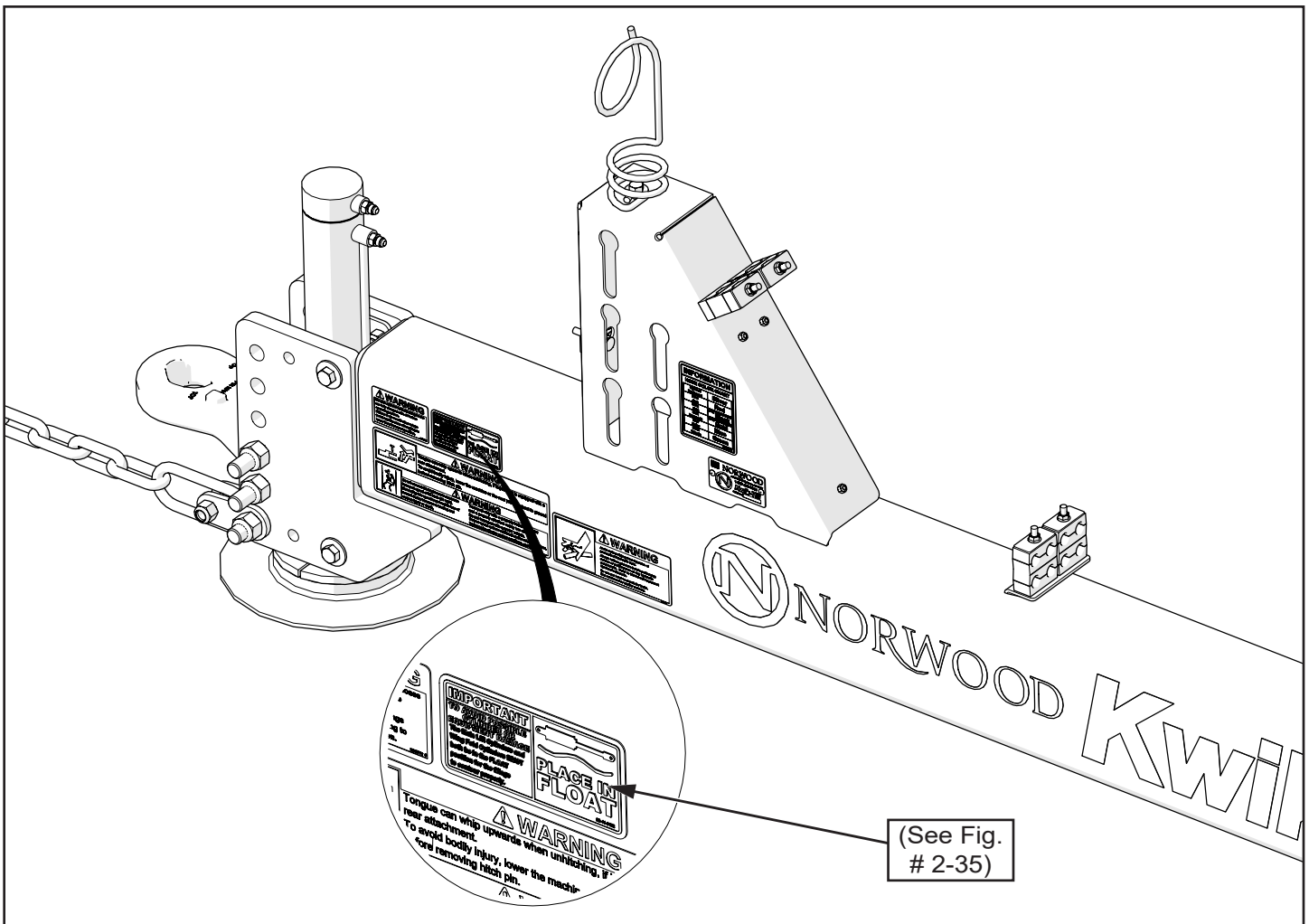


Fig. # 2-32 Important Decal Location

IMPORTANT

TO AVOID POSSIBLE CYLINDER OR EQUIPMENT DAMAGE

The Main Lift Cylinders and Wing Fold Cylinders **MUST** both be in the **FLOAT** position for the tillage to contour properly.



PLACE IN FLOAT

90-44-0449

Fig. # 2-33 Important Decal (Large) P/N 90-44-0449

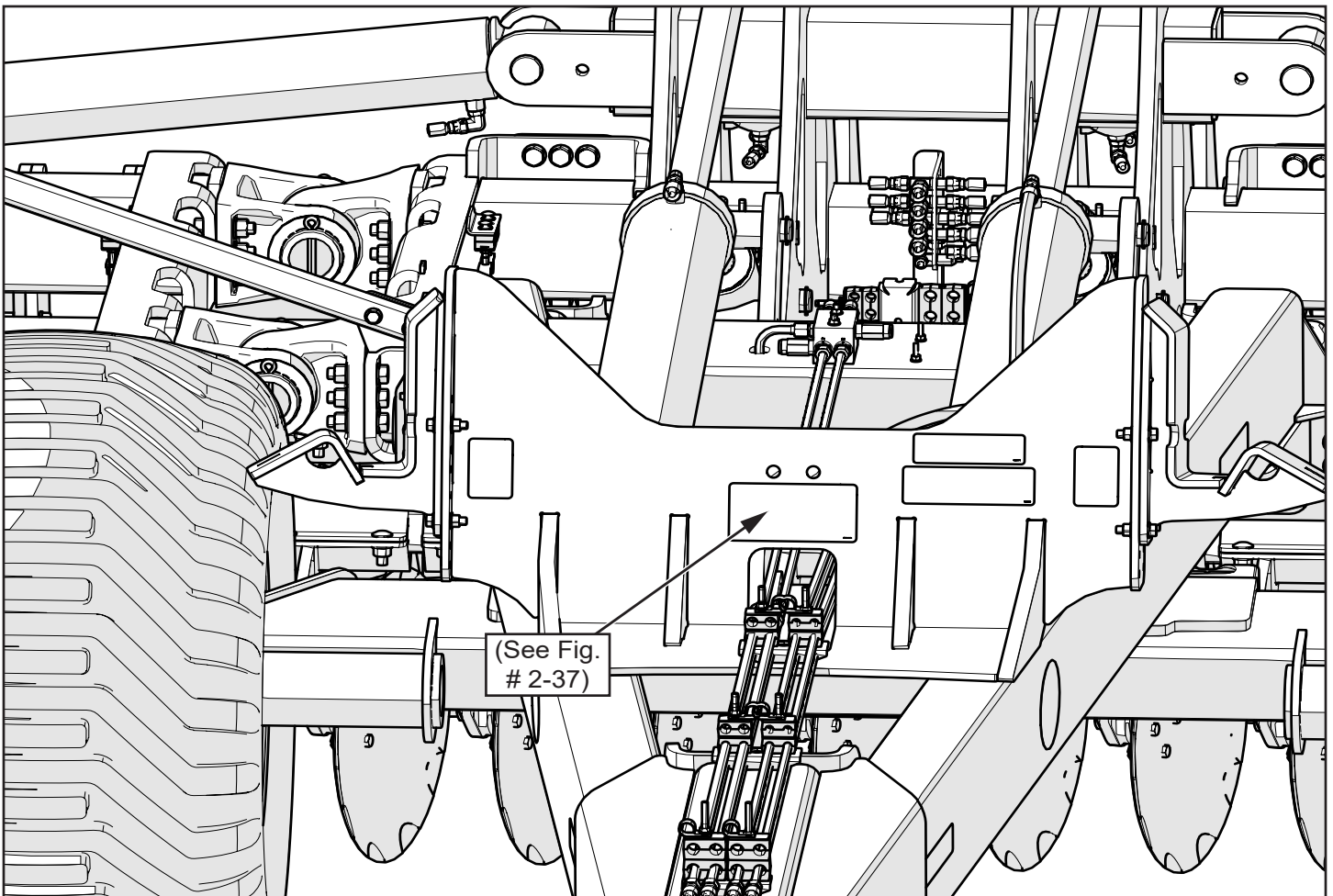


Fig. # 2-34 Important Decal Location



Fig. # 2-35 Instructional Decal P/N 90-44-0560



Fig. # 2-36 Instructional Decal P/N 90-44-0561

NOTE

The 20 mile/h SIS decal is installed at the factory. You may install the 30 Km/h SIS decal over the existing 20 mile/h SIS decal if you operate this equipment in a country that uses the metric system. If you are unsure which decal to use, check with local authorities regarding machine transport on public roads. The extra 30 Km/h SIS decal is located in the operator's manual canister attached to the front hitch of the machine.

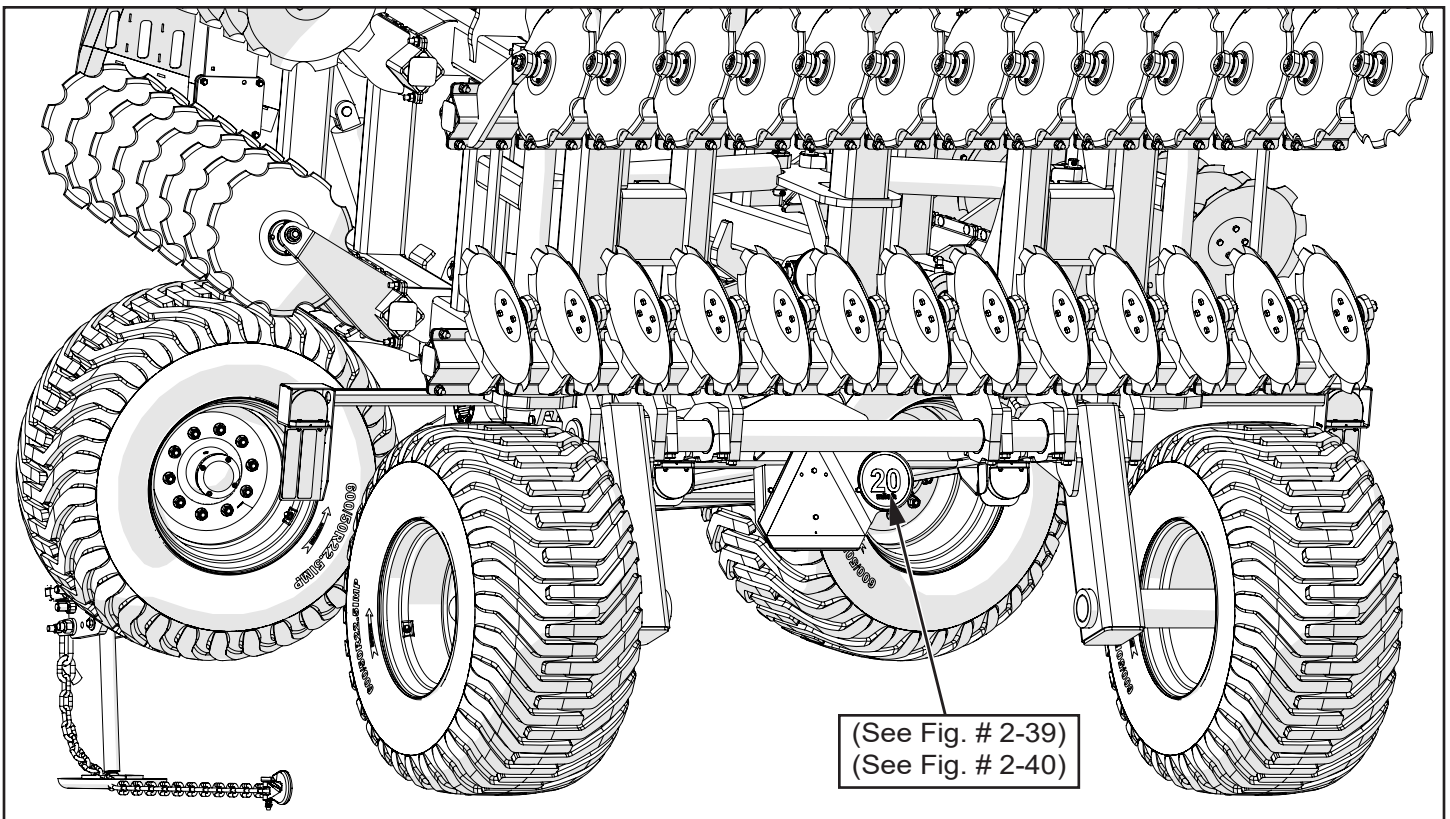


Fig. # 2-37 Instructional Decal Location

SAFETY FEATURES

In addition to safety features shown here, other components, systems, safety decals on the machine, safety messages, and instructions in the Operator's manual contribute to the safe operation of this machine when combined with the care and concern of a capable operator.

The construction of this implement may not meet all local or national requirements for transport on a public roadway. In regions or countries that have national certification requirements for roadway transport it may be impossible for this implement to be approved for such roadway transport. The customer is responsible for understanding and complying with all local, regional, and national requirements regarding roadway transport.

(A) YELLOW RETRO REFLECTIVE DECALS: Are used during times of insufficient light, adverse weather, smoke, or fog. Yellow reflectors reflect a yellow light when illuminated by headlights thereby alerting other drivers to the presence and width of machinery on roadways.

(B) RED RETRO REFLECTIVE DECALS: Are used during times of insufficient light, adverse weather, smoke, or fog. Red reflectors reflect a red light when illuminated by headlights thereby alerting other drivers to the presence and width of machinery on roadways.

(C) RED-ORANGE FLUORESCENT DECALS: Are a highly visible material, and alert other drivers to the presence and width of machinery on roadways.

(D) AMBER FLASHING WARNING/TURN SIGNAL LIGHTS: Are a highly visible day and night, and alert other drivers to a slow moving vehicle ahead, warns road users of an obstruction to the free flow of traffic, alerts that a wider than normal load exists ahead, signaling for a turn, and the presence and width of machinery on roadways. (See "Kwik-Till Lighting" on page 3-15)

(E) RED TAIL/SIGNAL/BRAKE LIGHTS: Are a highly visible day and night, and alert other drivers to braking, signaling for a turn and the presence and width of machinery on roadways. (See "Kwik-Till Lighting" on page 3-15)

(F) SMV (SLOW MOVING VEHICLE) EMBLEM: Identifies slow-moving equipment and alerts traffic approaching from rear.

(G) SAFETY CHAIN Helps control machine should it accidentally separate from tractor drawbar while transporting.

(H) JACKSTAND Is used for raising and lowering the implement and makes the attaching and detaching from tractor easier.

(I) Speed Identification Symbol (SIS) Decal is used for identifying agricultural implements traveling at a speed of 20 mph (30 kph) which alerts traffic approaching from rear.

The SIS decal also identifies the maximum equipment ground speed based on the ground speed design capability of the specified piece of equipment.

Safety Features Cont'd...

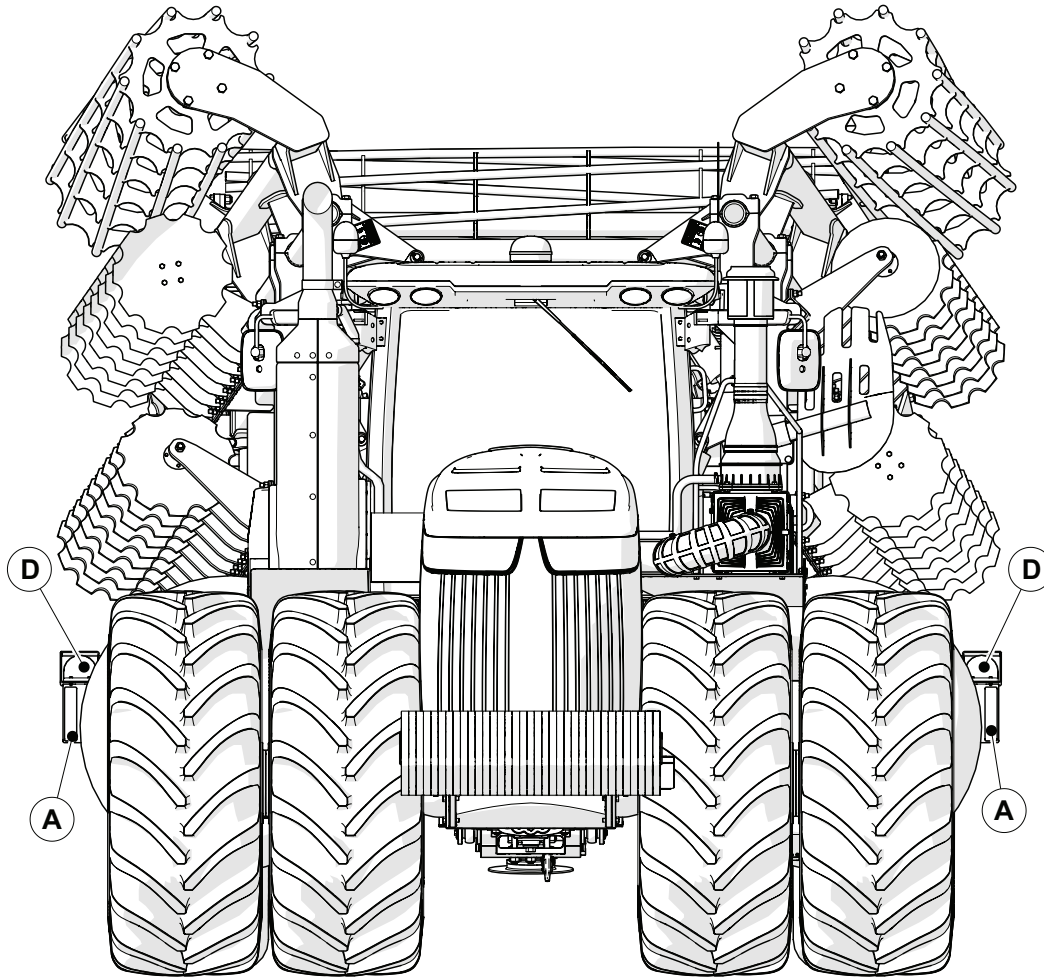


Fig. # 2-38 Safety Features Kwik-Till Front View

- (A) Yellow Retro Reflective Decals
- (B) Red Retro Reflective Decals
- (C) Red-Orange Fluorescent Decals
- (D) Amber Flashing Warning/Turn Signal Light
- (E) Red Tail/Signal/Brake Lights
- (F) SMV Emblem
- (G) Safety Chain
- (H) Jackstand

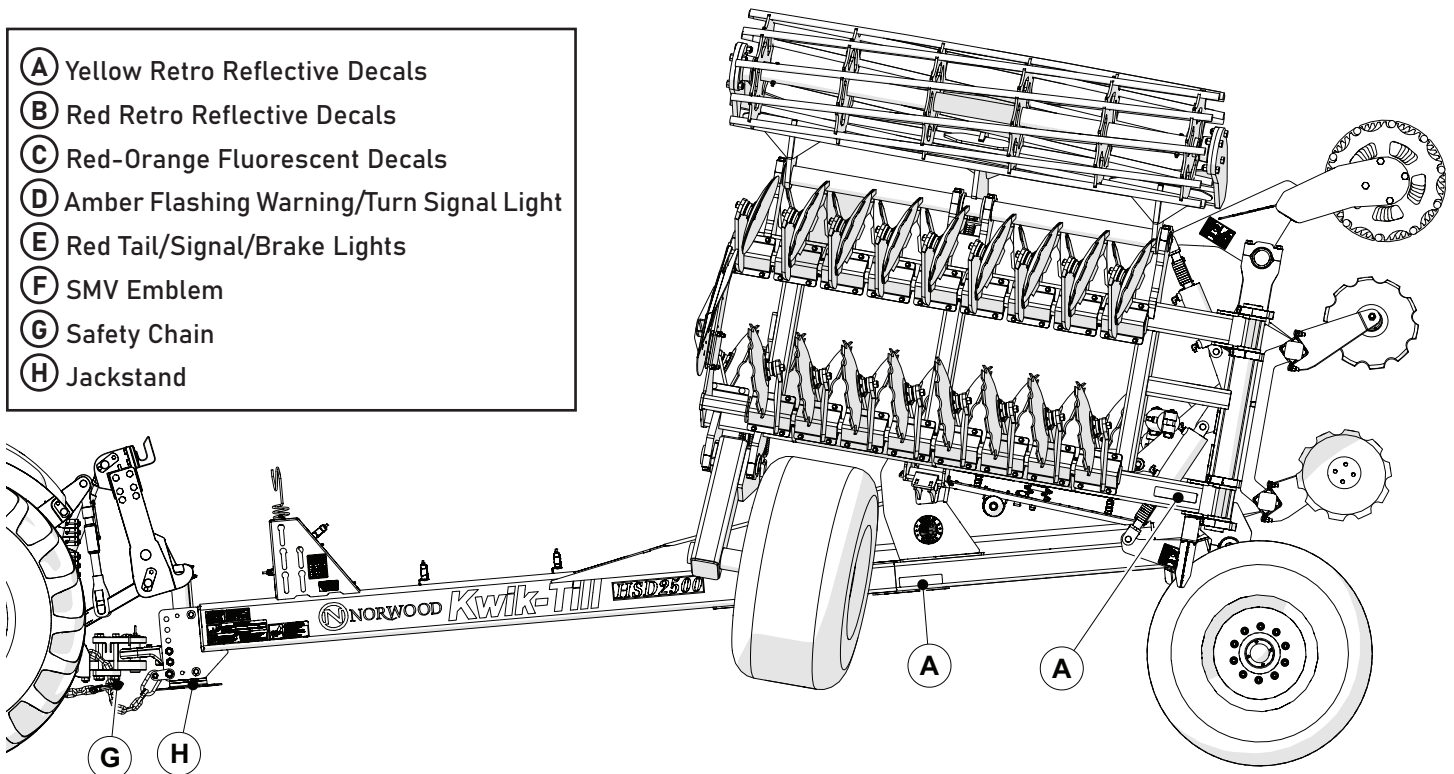


Fig. # 2-39 Safety Features Kwik-Till Side View

Safety Features Cont'd...

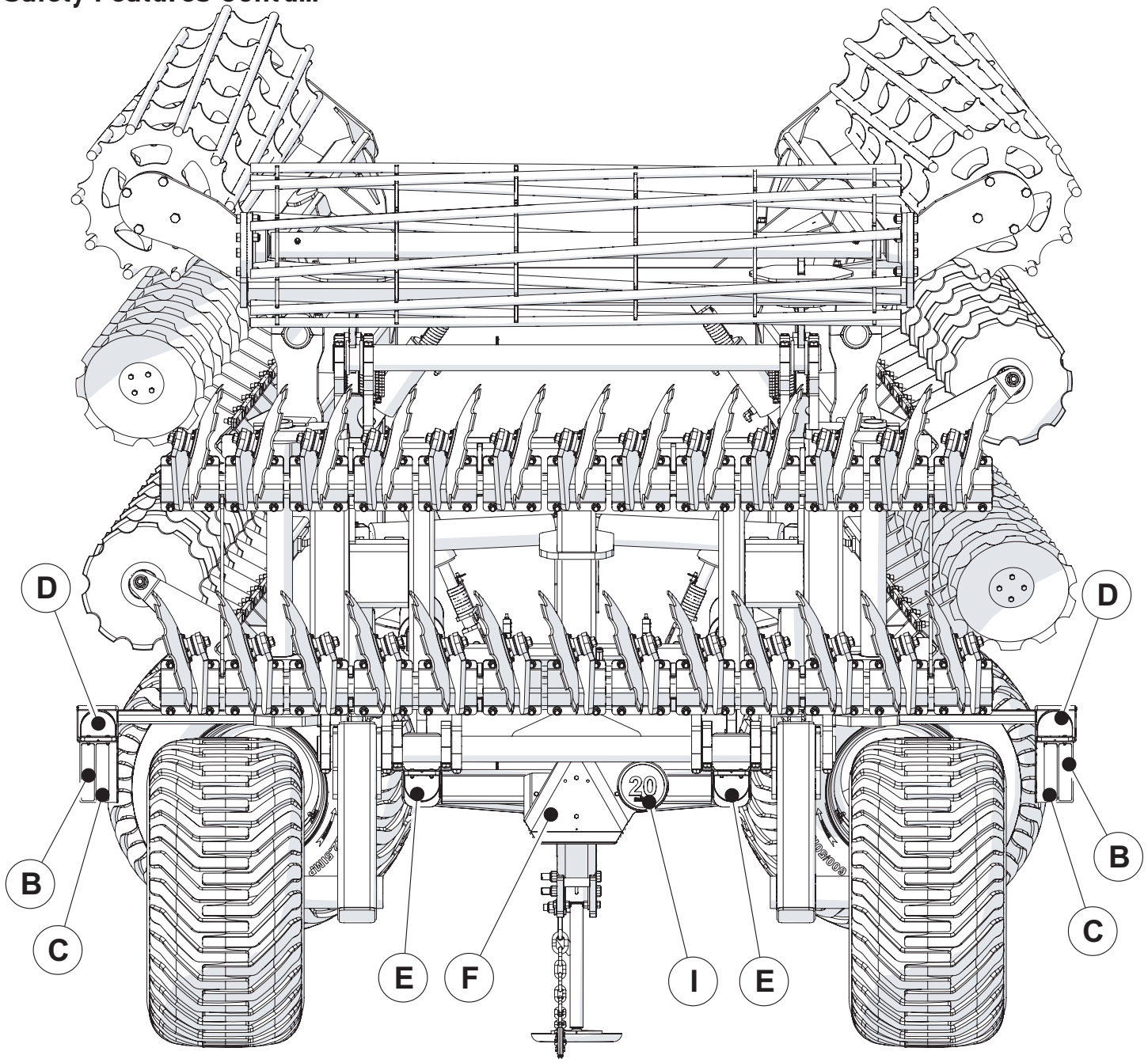


Fig. # 2-40 Safety Features Kwik-Till Rear View

- (A) Yellow Retro Reflective Decals
- (B) Red Retro Reflective Decals
- (C) Red-Orange Fluorescent Decals
- (D) Amber Flashing Warning/Turn Signal Light
- (E) Red Tail/Signal/Brake Lights
- (F) SMV Emblem
- (G) Safety Chain
- (H) Jackstand
- (I) Speed Identification Symbol (SIS) Decal

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3.0 - TRANSPORT OPERATIONS

TRANSPORT SAFETY



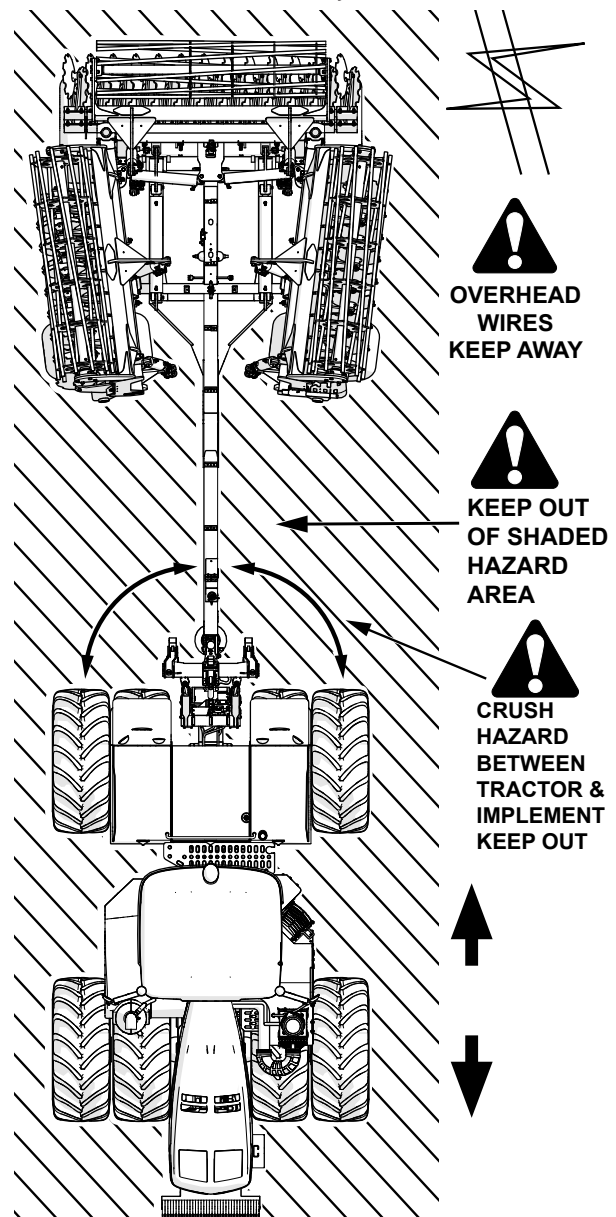
IMPORTANT

Transport the machine at a reasonable and safe speed, which permits adequate control of steering and stopping. Reduce speed considerably when traveling over rough ground. Be certain everyone is clear of machine.

1. Read and understand ALL the information in the Operator's Manual regarding procedures and SAFETY when moving or transporting the machine.
2. Check with local authorities regarding transporting on public roads. Obey all applicable laws and regulations.
3. Always travel at a safe speed. Use caution when making corners or meeting traffic. Travel speed should be such that complete control and machine stability is maintained at all times.
4. Make sure the SMV (Slow Moving Vehicle) emblem and all the 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.
5. Do not allow riders on the Kwik-Till or the tractor.
6. Attach Kwik-Till hitch link to tractor drawbar, verify that the hitch pin and retainer is used. Always attach the safety chain.
7. 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.
8. Do not exceed the maximum transport speed for this implement of 20 mph (32 km/h). Reduce speed on rough roads and surfaces.
9. Stay away from overhead obstructions and power lines when transporting. Electrocutation can occur without direct contact. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines. Should a contact between the machine and an electric power source occur, the following precautions must be taken: Stop the machine movement immediately. Apply the park brake, stop the engine. Check if you can safely leave the cab or your actual position without contacting the electrical wires. If not, stay in your position and call for help. If you can leave your position without

touching lines, jump clear of the machine to make sure you do not make contact with the ground and the machine at the same time. Do not permit anyone to touch the machine until power has been shut off to the power lines.

10. Always use hazard warning flashers on tractor & Kwik-Till when transporting unless prohibited by law.
11. Slow down and signal before turning.
12. Follow correct towing procedure for equipment without brakes.
13. To improve stability when traveling through the field, wings should be unfolded from transport position as soon as possible after leaving the roadway.
14. Towed loads can swerve, upset, or cause loss of control. Refer to Tow Loads Safely in this section.



PREPARING THE TRACTOR

USE TRACTOR OPERATOR'S MANUAL

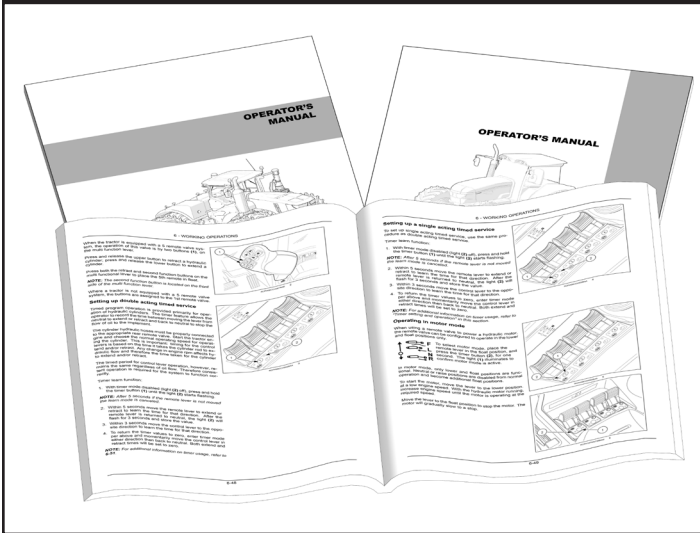


Fig. # 3-41 Use Tractor Operator's Manual

Always refer to tractor Operator's Manual for specific, detailed information regarding operation of equipment. Use the tractor Operator's Manual for detailed information as procedures vary by equipment.

DETERMINE TRACTOR REQUIREMENTS

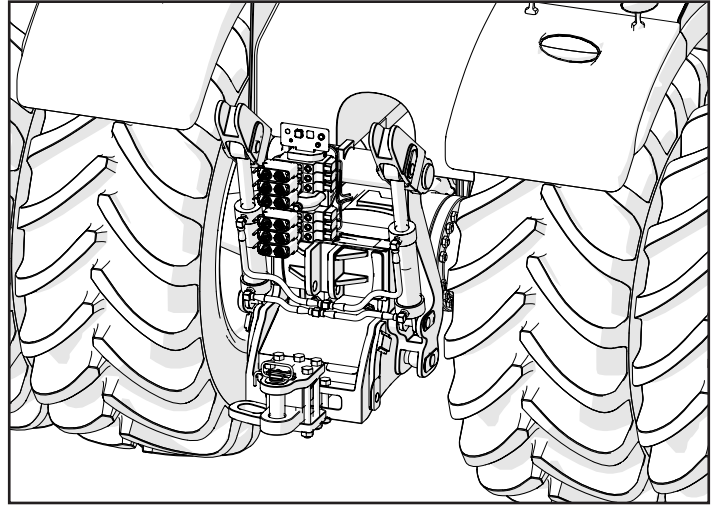


Fig. # 3-42 Determine Tractor Requirements

For optimum performance, see "Tractor Engine Power Requirements" in the Specifications section. (See Fig. # 7-1 on page 7-1)

Install adapters if the tractor does not have ISO hydraulic couplers. See your tractor dealer or qualified service provider.

HYDRAULIC REQUIREMENTS

2900 psi (183 bar) (18 271 kPa) tractor hydraulic system with ISO hydraulic couplers is required.

5 tractor control valves are preferred for operating the Kwik-Till, 4 Minimum. 6 tractor control valves are required if equipped with the rubber roller scrapers.

DRAWBAR REQUIREMENTS

See Drawbar Requirements in Preparing Machine section. (See "Drawbar Requirements" on page 3-5)

SECURE THREE-POINT HITCH

If equipped with a quick coupler **(A)**, raise the 3-point hitch fully.

If not equipped with quick coupler, secure lift links **(B)** and center link **(C)** so they do not swing into the tractor tires or hoses. (See Fig. # 3-4)

- (A)** - Quick Coupler
- (B)** - Lift Link (2 used)
- (C)** - Center Link

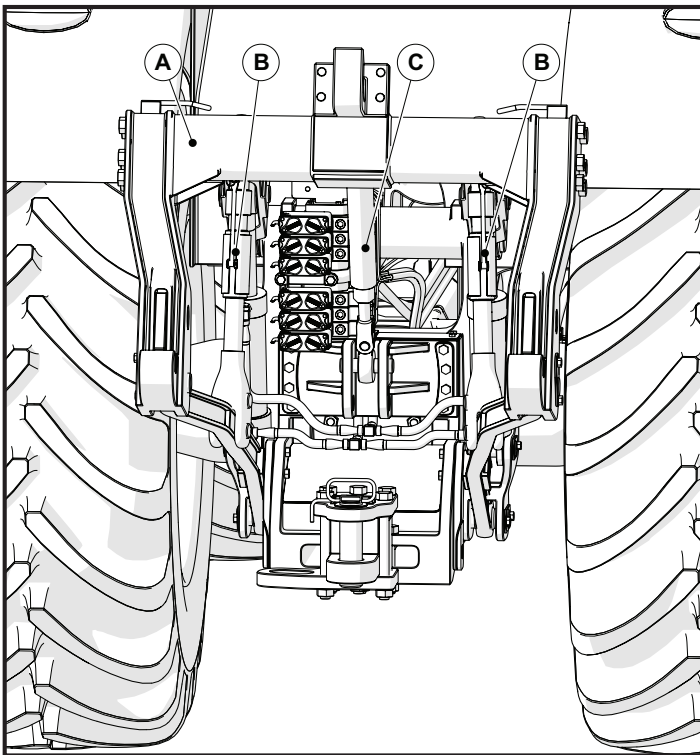


Fig. # 3-43 Secure Three-Point Hitch

POSITION DRAWBAR

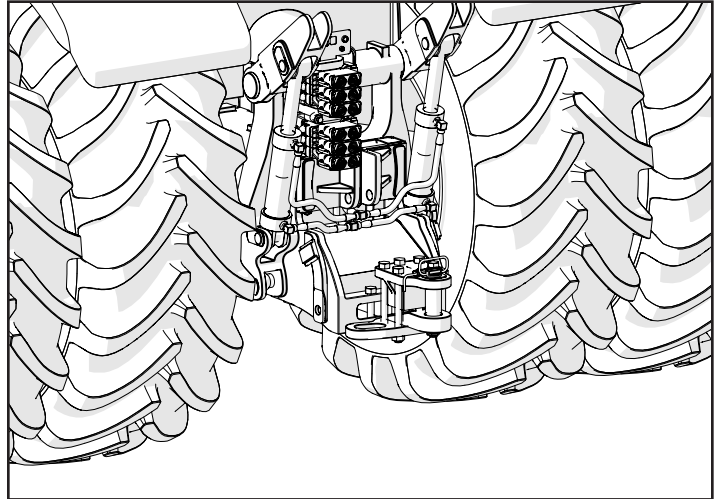


Fig. # 3-44 Standard Drawbar in Transport Position

⚠ CAUTION

Avoid personal injury or death to you or others due to lost machine steering control. Always pin the drawbar in the center position for all tractors when transporting machine.

1. Two-Wheel Drive Tractors: Place drawbar in fixed, centered, and down position.
2. Four-Wheel Drive and Tracked Tractors: Place drawbar in fixed, center position for transport. Leave one hole clearance on each side of drawbar for field operation only.
3. Wide-Swing Drawbar: Place drawbar in fixed, center position for transport. Place the stop blocks on storage brackets for field operation.

PREPARE HYDRAULIC SYSTEM

IMPORTANT

Refer to tractor Operator's Manual for specific, detailed information regarding hydraulic flow.

To prevent damage to relief valves, do not exceed 30 gal/min (113 L/min) on main lift cylinders.

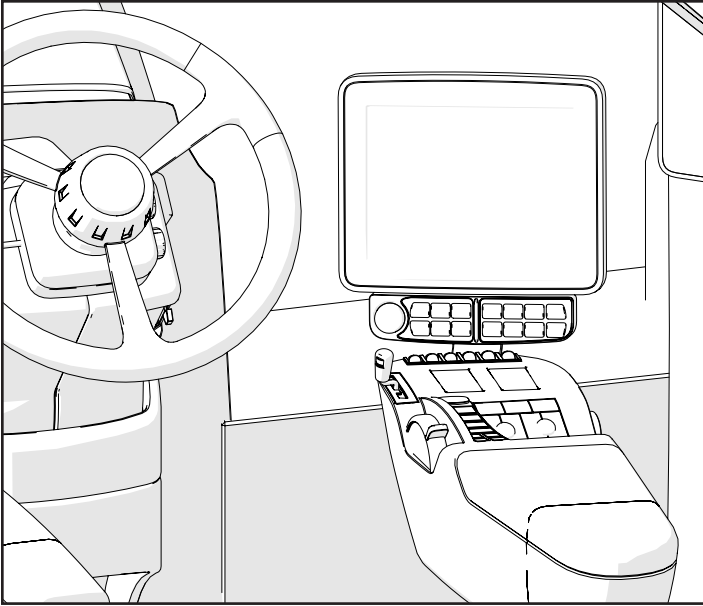


Fig. # 3-45 Adjust The Tractor Hydraulic Flow Settings

1. Check hydraulic oil level. Fill if necessary.
2. Use the chart below as a starting point to set tractor hydraulic flow and detent times. Adjust as desired.

Tractor Hydraulic Flow Settings			
SCV	Function	Flow	Detent Time
I	Front Wheels	25 gal/min (95 L/min)	7 s
II	Rear Roller	25 gal/min (95 L/min)	7 s
III	Main Frame Lift	30 gal/min (113 L/min)	Float
IV	Wing Fold	8 gal/min (30 L/min)	Float
V	Hitch Jack	5 gal/min (19 L/min)	5 s
VI	Optional Equipment	15 gal/min (57 L/min)	5 s

Fig. # 3-46 Tractor Hydraulic Flow Settings

PREPARING KWIK-TILL

DRAWBAR REQUIREMENTS

IMPORTANT

Tractor drawbars must be compatible with the Kwik-Till hitch links or damage to machine and/or tractor can occur. Refer to the tractor Operator's Manual for specific drawbar requirements. For ordering hitch links see your Kwik-Till dealer, for hitch pins, see your tractor dealer or qualified service provider. Do not exceed static vertical load capacity of tractor drawbar. See Specifications section (See "Downward Force on Tractor Drawbar" on page 7-1) for vertical load and see tractor operator's manual for drawbar limits and heavy-duty supports.

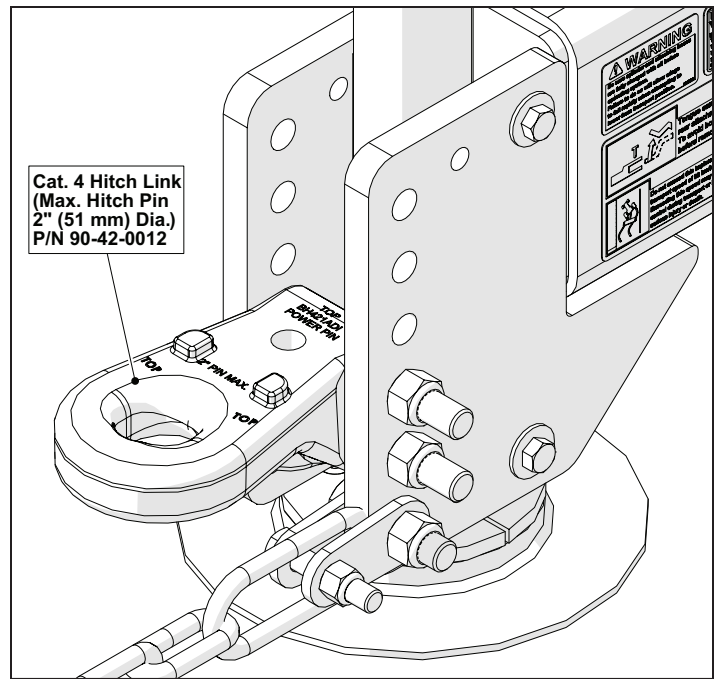


Fig. # 3-49 Cat. 4 Hitch Link, Non Articulating Ball, Standard For HSD2500, & HSD3000 (Max Dia. Hitch Pin Ø2.0 (51 mm))

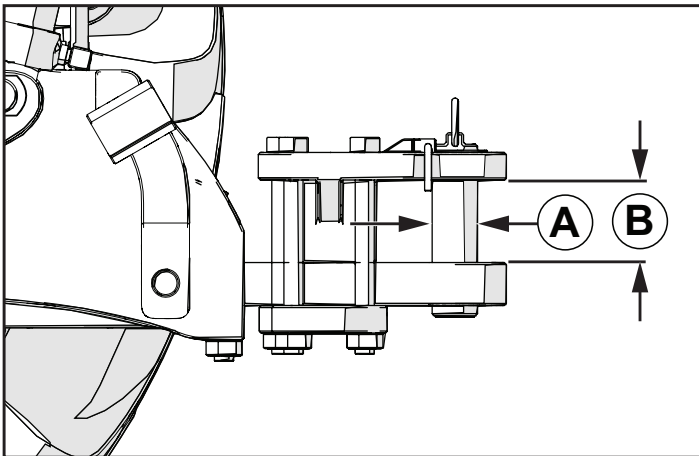


Fig. # 3-47 Determining Drawbar Hitch Link Size

Hitch Category	Tractor Drawbar	
	Hitch Pin Diameter (A)	Drawbar Opening Height (B)
4	2.0 in (51 mm)	3.54 in (90 mm)
5	2.75 in (71 mm)	3.94 in (100 mm)

Fig. # 3-48 Table: Determining Drawbar Hitch Link Size (Non-Articulating Ball)

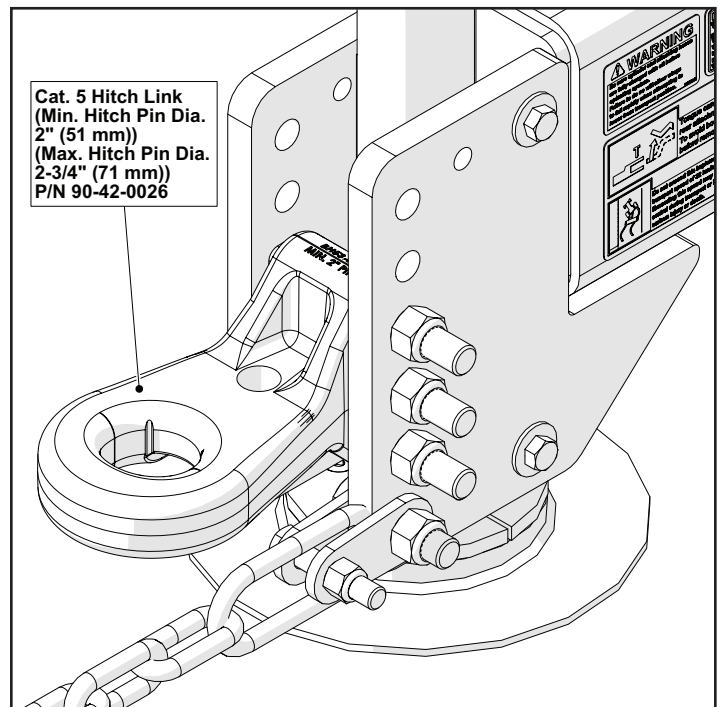


Fig. # 3-50 Cat. 5 Hitch Link, Non Articulating Ball, Standard For HSD3500, HSD4000, & HSD4500 (Min. Hitch Pin Dia. Ø2.0" (51 mm)) (Max. Hitch Pin Dia. Ø2.75" (71 mm)) P/N 90-42-0026

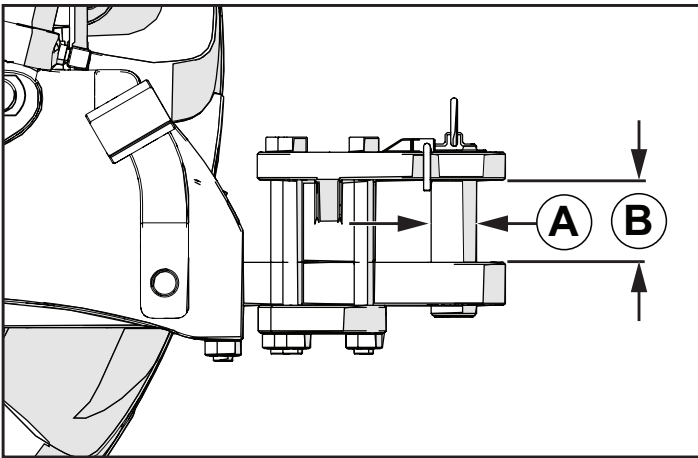


Fig. # 3-51 Determining Drawbar Hitch Link Size

Hitch Category	Tractor Drawbar	
	Hitch Pin Diameter (A)	Drawbar Opening Height (B)
4	1.5 in (39 mm)	3.54 in (90 mm)
4	2.0 in (51 mm)	3.54 in (90 mm)
5	2.0 in (51 mm)	3.94 in (100 mm)
5	2.75 in (71 mm)	3.94 in (100 mm)

Fig. # 3-52 Table: Determining Drawbar Hitch Link Size (Articulating Ball)

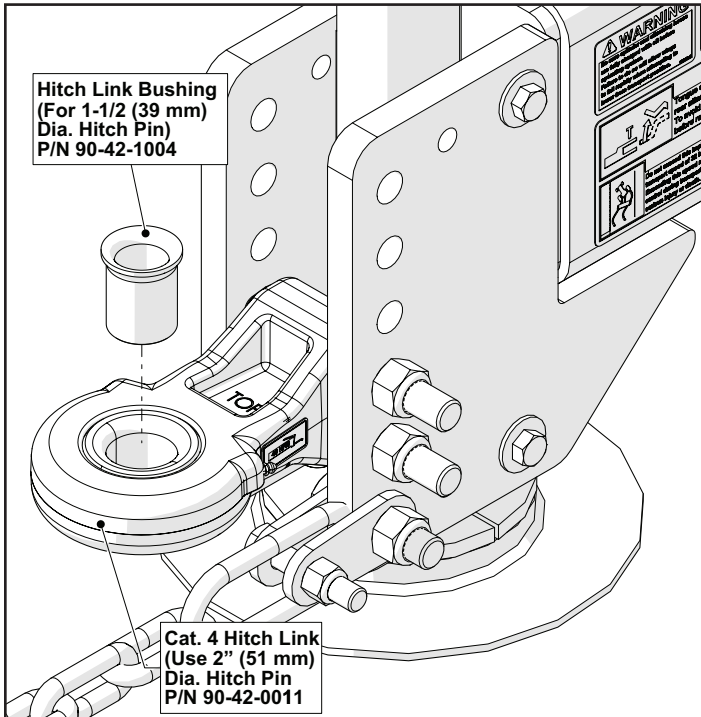


Fig. # 3-53 Cat. 4 Hitch Link With Articulating Ball, Optional For HSD2500, HSD3000, HSD3500, HSD4000, & HSD4500

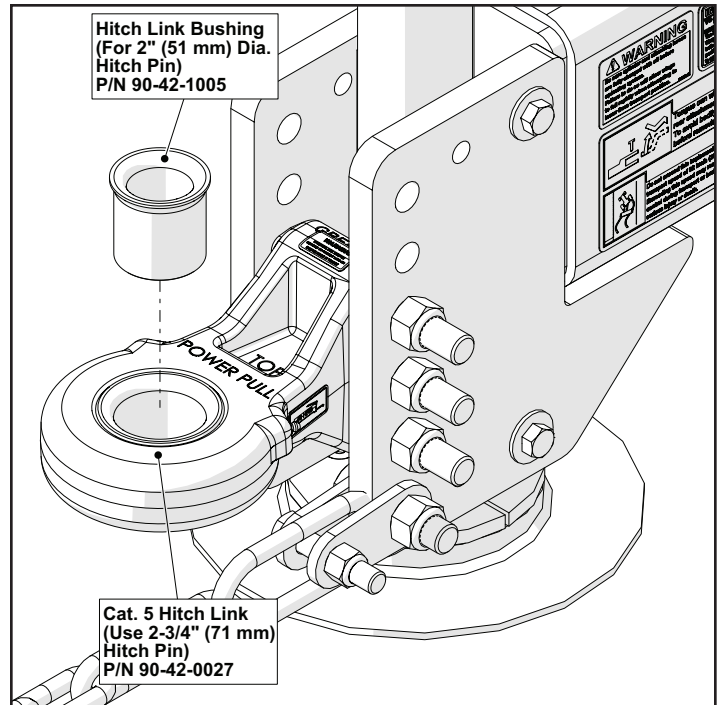


Fig. # 3-54 Cat. 5 Hitch Link With Articulating Ball, Optional For HSD2500, HSD3000, HSD3500, HSD4000 & HSD4500

CHECK TIRE PRESSURE

Tire Size	Load/Speed Index	Pressure		
		psi	kPa	bar
600/50R22.5	168B	46	317	3.1
710/40R22.5	170B	46	317	3.1
710/40R22.5	165B	73	503	5.0
710/45R22.5	170B	58	400	4.0
800/40R22.5	176B	46	317	3.1

Fig. # 3-55 Table: Tire Pressures

CAUTION

Tire failure due to overloading can cause loss of vehicle control during transport resulting in serious injury or death to you or others. Prevent tire failure by using only tires specified for your machine and inflating them to correct pressures.

IMPORTANT

Chart shown is for tire reference only. Ensure machine performance by using only tires specified for your machine and inflating them to correct pressures.

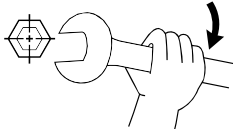
For the even working depth of attachments in the ground, tires must be inflated to specification. A low tire causes

deeper penetration on one side than the other. Deeper penetration on one side can cause the machine to side draft. Inflate all tires to correct pressures.

CHECK WHEEL HARDWARE

- Re-torque wheel flange nuts **(A)** (In A Diagonal Pattern) after the first 1 hour of use, then at 10 hour intervals or (daily). If bolt torque is stable, check at 50 hour intervals or (weekly).

100 500



350 ft-lbs (475 N-m)

Tighten all wheel lug nuts to specification.

Specification		
Wheel Lug Nuts	Torque	Qty.
	350 lb-ft (475 N-m)	40

Fig. # 3-56 Table: Wheel Lug Nut Torque



Fig. # 3-57 Wheel Flange Nut Tightening Sequence (Diagonal Pattern)

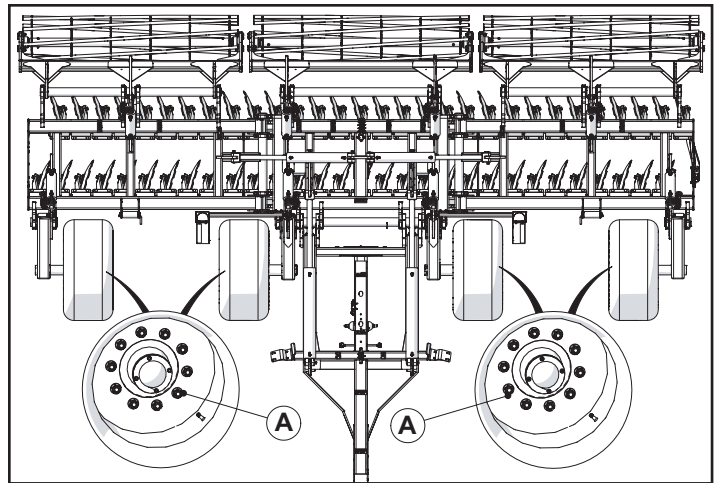


Fig. # 3-58 Wheel Flange Nut Locations 25', 30', 35', 40', & 45'

ATTACHING AND DETACHING KWIK-TILL TO/FROM TRACTOR

USE YOUR TRACTOR AND TILLAGE EQUIPMENT OPERATOR'S MANUALS

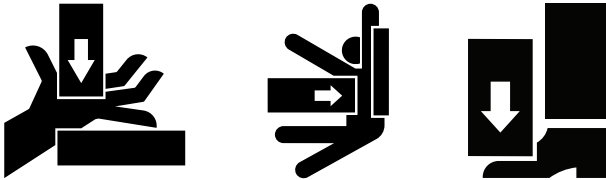
Always see your tractor and Kwik-Till equipment Operator's Manual for specific, detailed information regarding equipment operation. Operation and adjustment procedures vary by equipment.

ATTACHING AND DETACHING KWIK-TILL TO / FROM TRACTOR SAFETY

Never let another person stand between the tractor and the implement during hitching. Too fast of an approach or the operator's foot slipping from the clutch can lead to injury or death to the person standing nearby.

⚠ DANGER CRUSH HAZARD

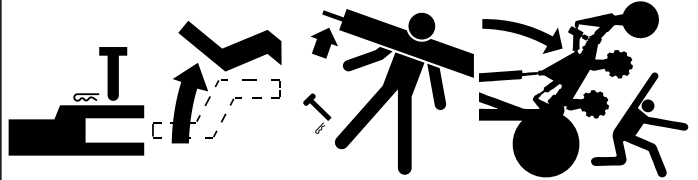
Stand clear when raising or lowering the Kwik-Till.



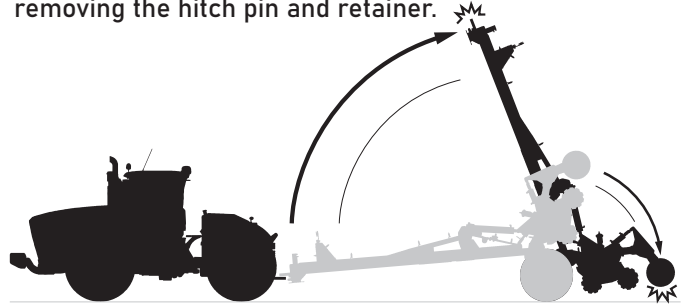
Keep feet, legs, and body clear when raising and lowering the Kwik-Till. Keep others away.

⚠ DANGER UPENDING HAZARD

TONGUE CAN WHIP UPWARDS WHEN UNHITCHING



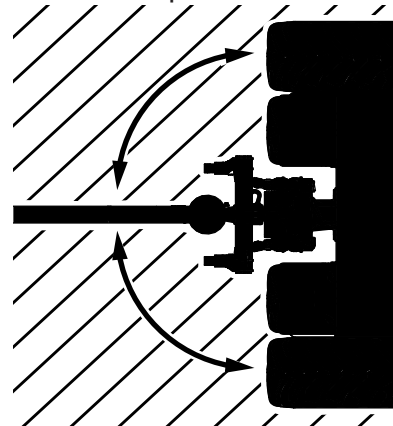
The tractor **MUST** be equipped with a clevis hitch to prevent the Kwik-Till from tipping upward while unfolding from transport position, and folding into transport position. To avoid bodily injury, lower the machine before removing the hitch pin and retainer.



If negative tongue weight exists, the hitch tongue may suddenly raise, and the rear section would come crashing down. Only disconnect when the jack is lowered, there is positive tongue weight, the unit is on level ground, and in the proper transport or field position. Never disconnect the Kwik-Till from the tractor if the rear sections of the machine are partially raised. Keep others away.

⚠ DANGER CRUSH HAZARD

Avoid being crushed in between the tractor and the implement.



When working in the danger area between the Kwik-Till and the tractor always ensure that the Tractor engine is turned off and the Key removed. Keep others away.

ATTACHING KWIK-TILL TO TRACTOR

1. Clear the area of bystanders and remove foreign objects from the Kwik-Till and working area.
2. Make sure there is enough room to back the tractor up to the Kwik-Till hitch.
3. Start the tractor and slowly back it up to align the hitch point. (See Fig. # 3-20)

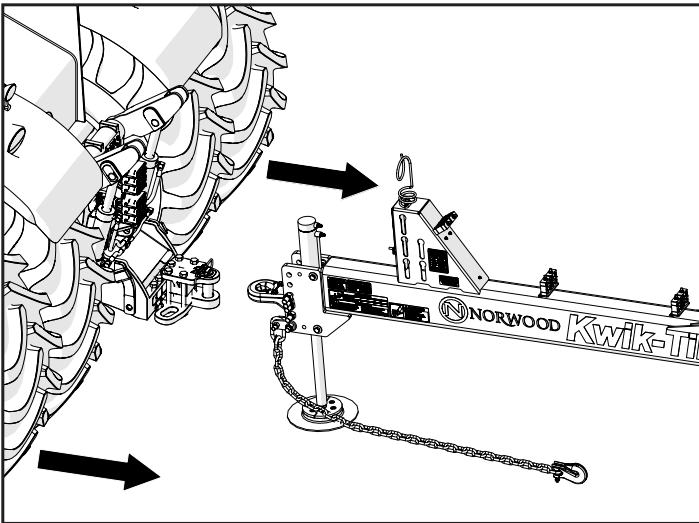


Fig. # 3-59 Back Tractor To Align Hitch Point

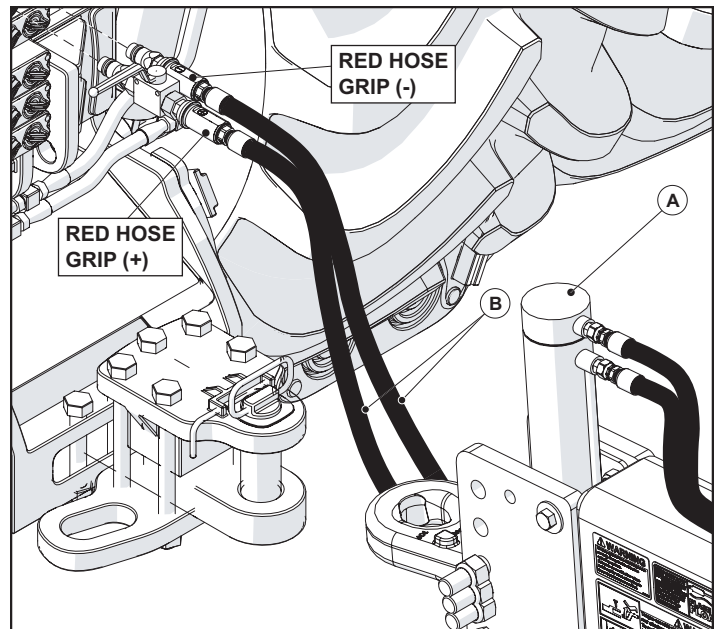


Fig. # 3-60 Locate The Hitch Jack Hydraulic Hoses

5. Make sure that the Hitch Jack hydraulic hose ball valve is in the "CLOSED" position. (See Fig. # 3-22)

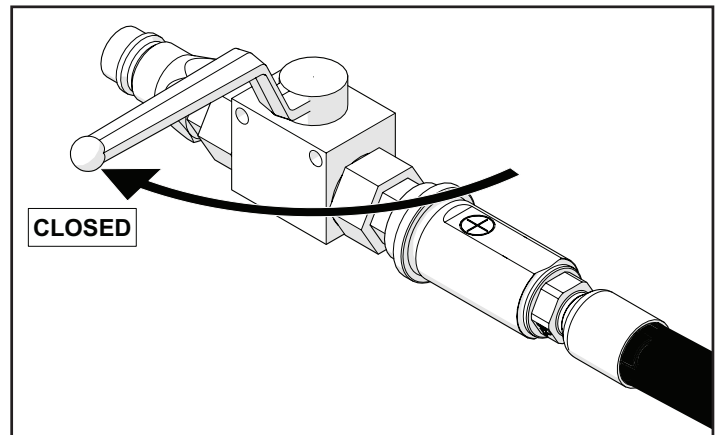
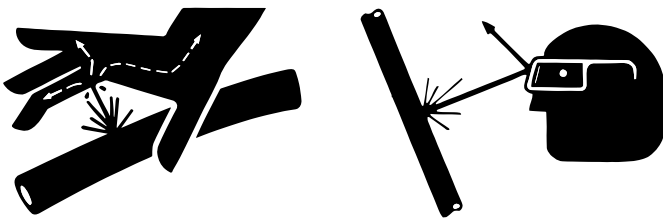


Fig. # 3-61 Make Sure The Ball Valve Is "CLOSED"
(Shown in the "CLOSED" Position)

⚠ WARNING



Avoid hazards due to escaping fluid under pressure. See the Hydraulic Safety section in this manual. Hydraulic hoses can fail due to physical damage, kinks, age, and exposure. Check hoses regularly. Replace damaged hoses.

IMPORTANT

All hydraulic couplers must be clear of debris, dust, and sand. Foreign material can damage hydraulic system.

4. Locate the "Hitch Jack Hydraulic Hoses" (B) attached to the "Hitch Jack" (A). (See Fig. # 3-21)

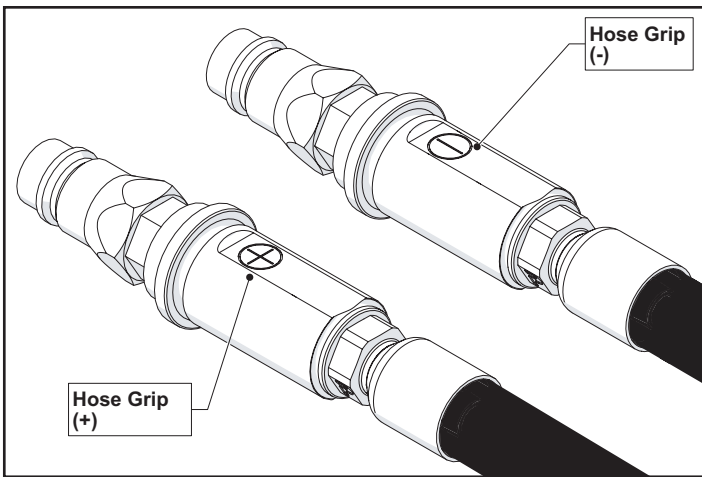


Fig. # 3-62 Determine Hydraulic Hose (+) Or (-)

6. Use a clean cloth or paper towel to clean the couplers on the ends of the hoses. Also clean the area around the couplers on the tractor.
7. Connect the **"Hitch Jack"** hydraulic hoses at this time. Refer to the following figures. (See Fig. # 3-24) (See Fig. # 3-25)(See Fig. # 3-26)

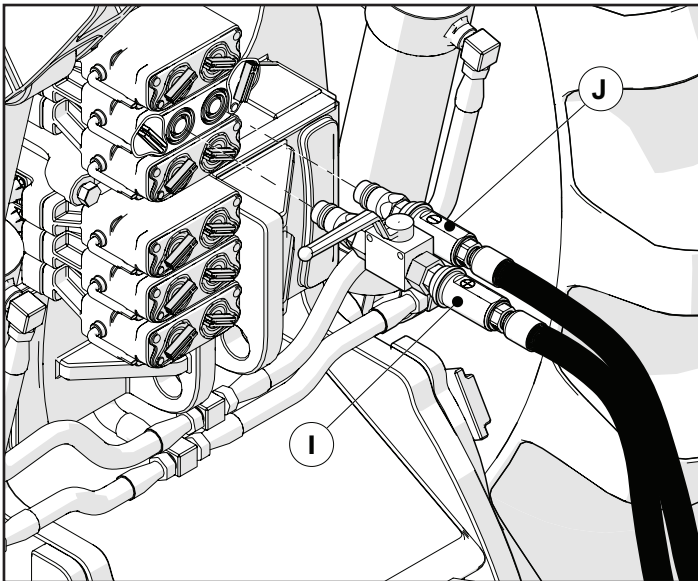


Fig. # 3-63 Connect **"Hitch Jack"** Hydraulic Hoses To Tractor

Item	Type	Color	SCV Usage
I	Extend	Red	Hitch Jack Pressure (+)
J	Retract	Red	Hitch Jack Return (-)

Fig. # 3-64 Table: SCV Identification

INFORMATION

HOSE COLOR CHART

Optional Equipment	Silver
Hitch Jack	Red
Wing Fold	Black <small>Float During Operation</small>
Main Frame Lift	Gold <small>Float During Operation</small>
Rear Roller	Blue
Front Wheels	Green

P/N 90-44-0392

Fig. # 3-65 Hydraulic Hose To SCV Decal

8. Turn the Ball Valve to the **"OPEN"** position. (See Fig. # 3-27)

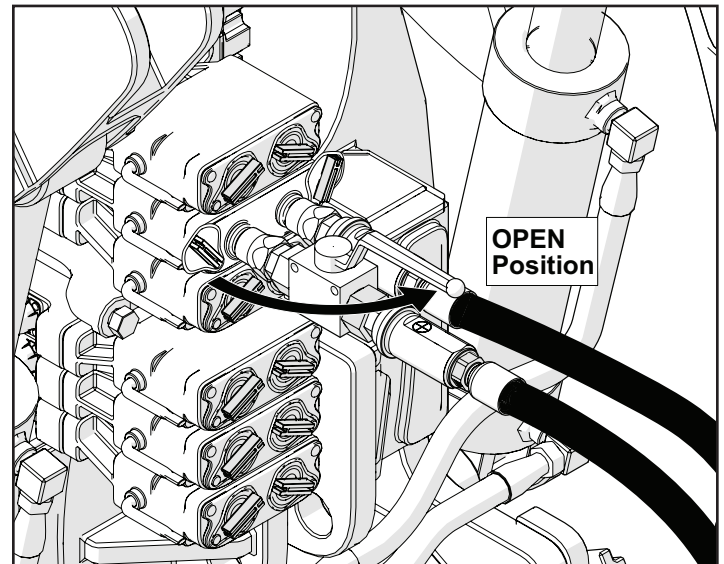


Fig. # 3-66 Turn the Ball Valve to the **"OPEN"** Position (Shown in the **"OPEN"** Position)

9. Start the tractor and use the tractor remote valve levers to raise or lower the hitch to align it with the tractor drawbar. Extending the Hitch Jack raises the hitch, while retracting the Hitch Jack lowers the Hitch. (See Fig. # 3-28) (See Fig. # 3-29)

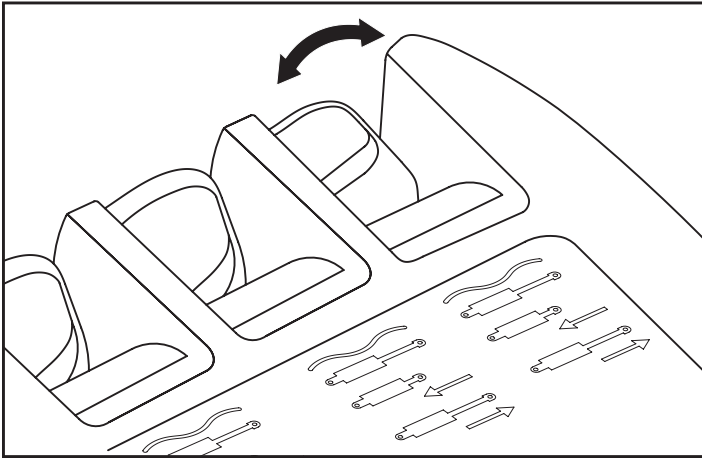


Fig. # 3-67 Tractor Remote Valve Levers

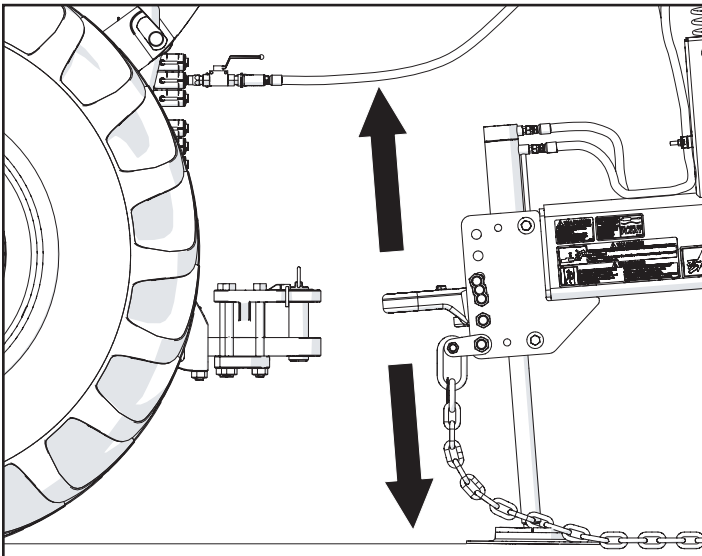
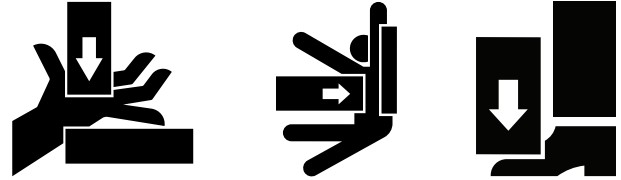


Fig. # 3-68 Raise Or Lower The Hitch

10. Slowly back tractor up to align the hitch.

⚠ DANGER CRUSH HAZARD

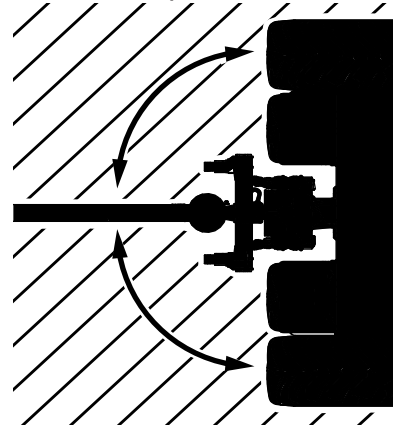
Stand clear when raising or lowering the Kwik-Till.



Keep feet, legs, and body clear when raising and lowering the Kwik-Till. Keep others away.

⚠ DANGER CRUSH HAZARD

Avoid being crushed in between the tractor and the implement.



When working in the danger area between the Kwik-Till and the tractor always ensure that the Tractor engine is turned off and the Key removed. Keep others away.

11. Install drawbar pin **(A)** as required. See your tractor operator's manual for a proper connection. (See Fig. # 3-30)

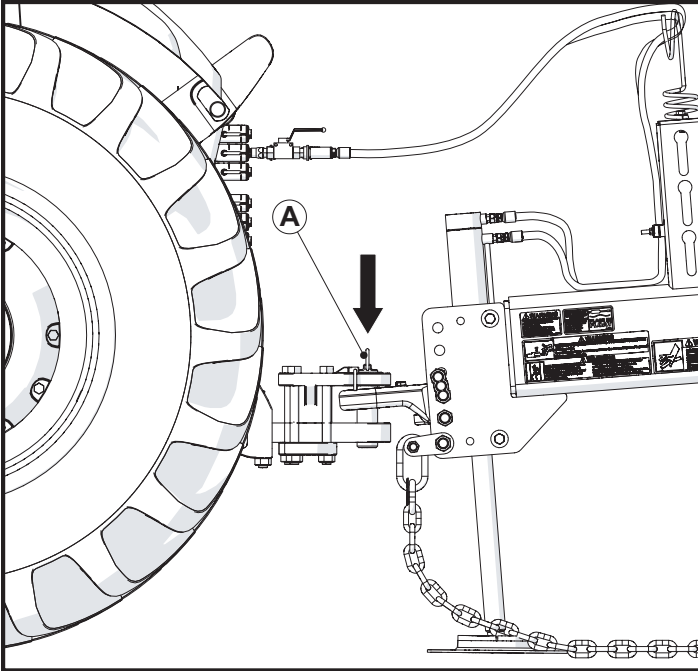


Fig. # 3-69 Kwik-Till Connected To Tractor

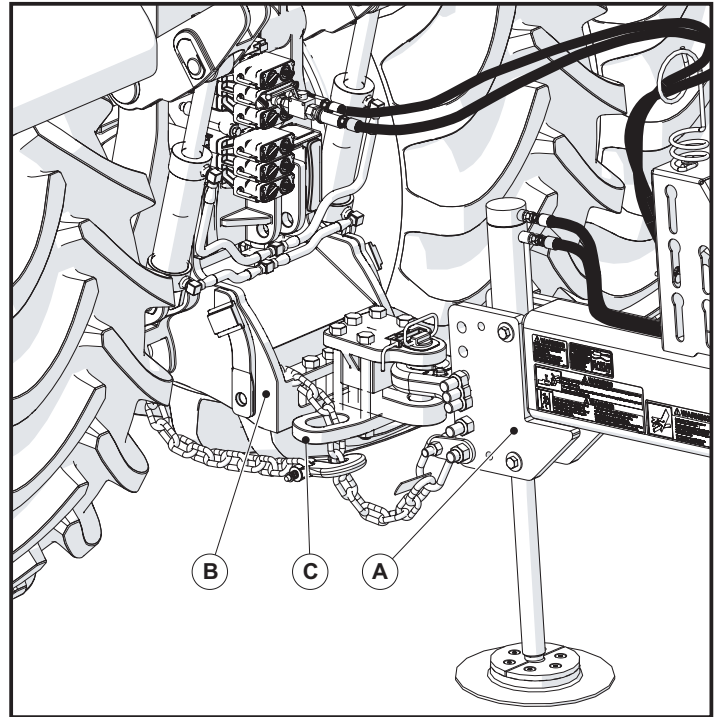


Fig. # 3-70 Install Safety Chain

(A)	Kwik-Till
(B)	Drawbar
(C)	Intermediate Support

12. Install the safety chain between the tractor and the hitch. (See Fig. # 3-31)

⚠ WARNING

A safety chain helps control the Kwik-Till **(A)** should it accidentally separate from the drawbar **(B)** while transporting.

A runaway machine can cause serious injury or death to you or others. Using appropriate adapter parts, attach chain to tractor drawbar support. Provide only enough slack in the chain to permit turning.

Do not attach chain to intermediate support **(C)**. Chain must only loop through intermediate support.

13. Raise the hitch jack until it fully retracts. (See Fig. # 3-32)

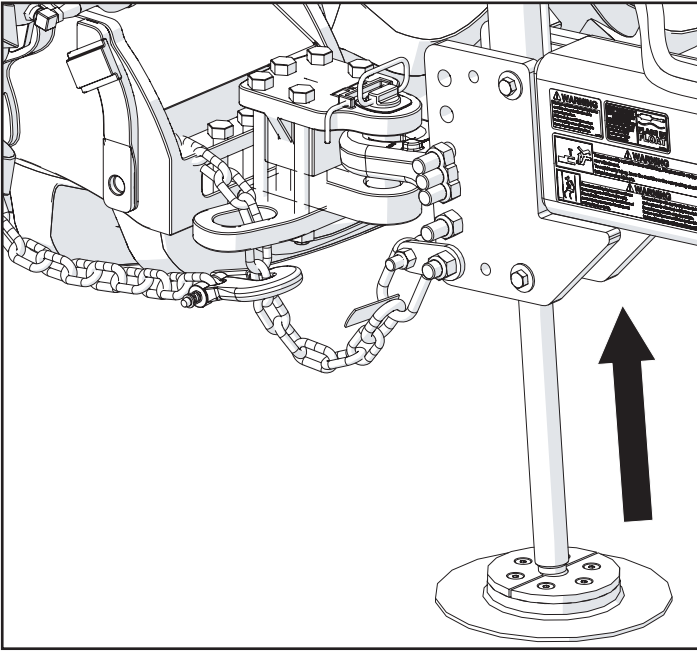


Fig. # 3-71 Raise the Hitch Jack

14. Close the hydraulic hitch jack ball valve. (See Fig. # 3-33)

IMPORTANT

Close the hydraulic hitch jack ball valve to prevent accidental operation of this circuit. Ensure ball valve handle remains in closed position when not in use.

- Failure to close the ball valve during operation may cause the hitch jack to extend causing damage to the hitch jack and machine by accidental activation of the hitch jack SCV.

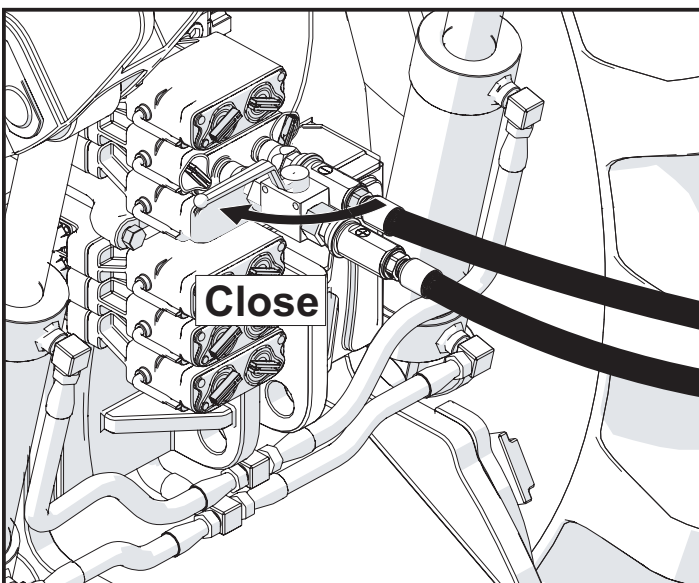



Fig. # 3-72 Close the Ball Valve (Shown in the "CLOSED" Position)

NOTE

At this time, the hitch jack hydraulic hoses can be unhooked and stowed if the tractor does not have enough SCV valves. If your tractor does not have enough SCV valves proceed to the next step, otherwise, skip the next step. (See Fig. # 3-35)

15. Relieve pressure in the "Hitch Jack" circuit by placing the tractor remote valve lever in the "FLOAT POSITION"  position temporarily with engine running. (See Fig. # 3-34)

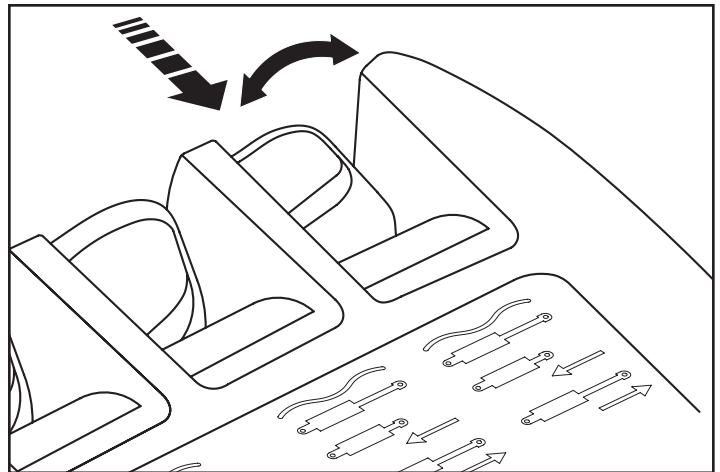


Fig. # 3-73 Tractor Remote Valve Levers

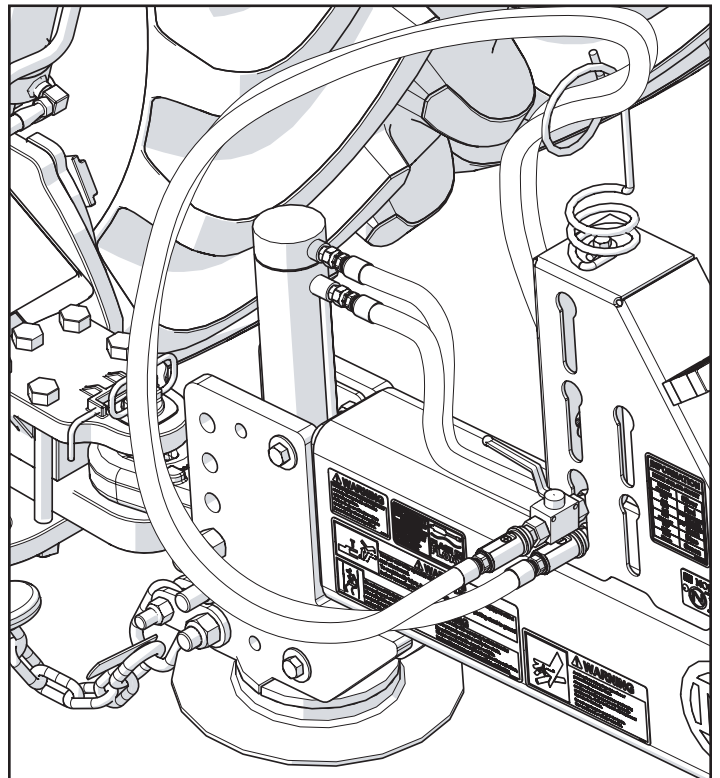


Fig. # 3-74 Hitch Jack Hoses Stowed In The Hydraulic Hose Storage Slots

16. Connect the remainder of the Kwik-Till hydraulic hoses to the tractor SCV's at this time. Refer to the following figures. (See Fig. # 3-36) (See Fig. # 3-37) (See Fig. # 3-38)

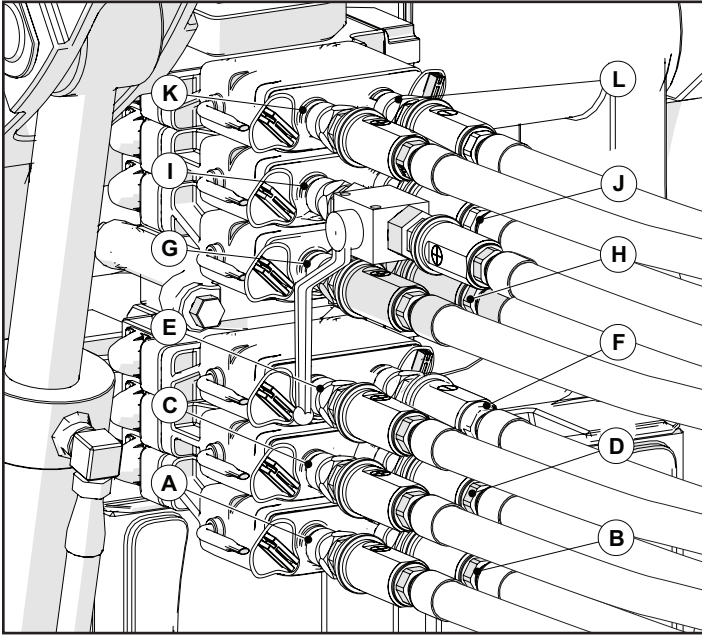


Fig. # 3-75 Connect the Remaining Hydraulic Hoses to the Tractor SCV

Item	Type	Color	SCV Usage
A	Pressure	Green	Front Wheels Pressure (+)
B	Return	Green	Front Wheels Return (-)
C	Pressure	Blue	Rear Rollers Pressure (+)
D	Return	Blue	Rear Rollers Return (-)
E	Pressure	Gold	Main Frame Lift Pressure (+)
F	Return	Gold	Main Frame Lift Return (-)
G	Pressure	Black	Wing Fold Pressure (+)
H	Return	Black	Wing Fold Return (-)
I	Pressure	Red	Hitch Jack Pressure (+)
J	Return	Red	Hitch Jack Return (-)
K	Return	Silver	Optional Equipment (+)
L	Pressure	Silver	Optional Equipment (-)

Fig. # 3-76 Table: SCV Identification

INFORMATION

HOSE COLOR CHART

Optional Equipment	Silver
Hitch Jack	Red
Wing Fold	 Float During Operation Black
Main Frame Lift	 Float During Operation Gold
Rear Roller	Blue
Front Wheels	Green

P/N 90-44-0392

Fig. # 3-77 Hydraulic Hose To SCV Decal

⚠ CAUTION

When transporting the Kwik-Till on a road or highway at night or during the day, use lights and devices to properly warn the operators of other vehicles.

Follow local regulations for equipment lighting and marking.

Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost.

Replacement lights and devices are available from your Kwik-Till dealer.

17. Connect the **Warning Light Plug** (A) to the **Seven-Terminal Outlet** (B) on the tractor. (See Fig. # 3-39)
18. Verify correct operation of all warning lights.
19. To obtain maximum warning, be sure that warning lights, reflectors, and SMV emblem are clean.

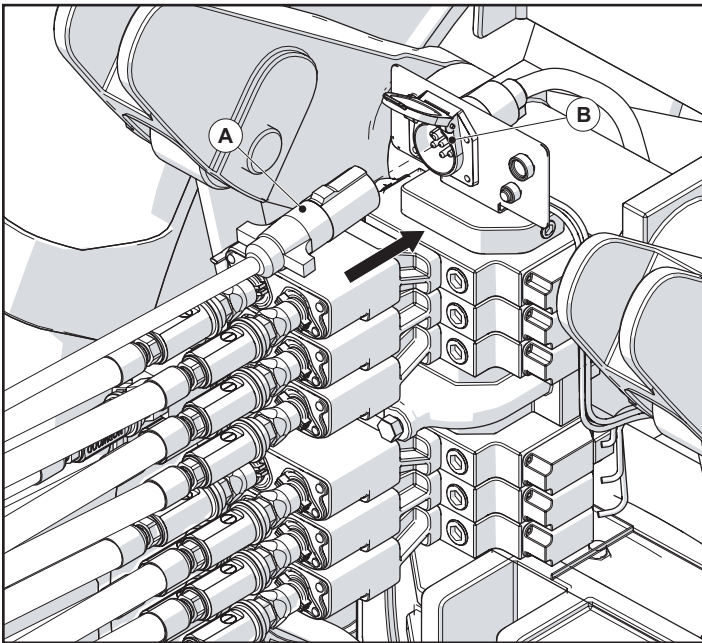


Fig. # 3-78 Connect Warning Light Plug

USING THE SEVEN-TERMINAL OUTLET

A **Seven Terminal Outlet** (B) is used to connect road lights, turn signals, brake lights, & hazard lights. (See Fig. # 3-40)

Always use auxiliary lights on towed implement when tractor rear signals and other lights are obscured.

Refer to the following table for the **Terminal Number** (A) definitions and their functions. (See Fig. # 3-41)

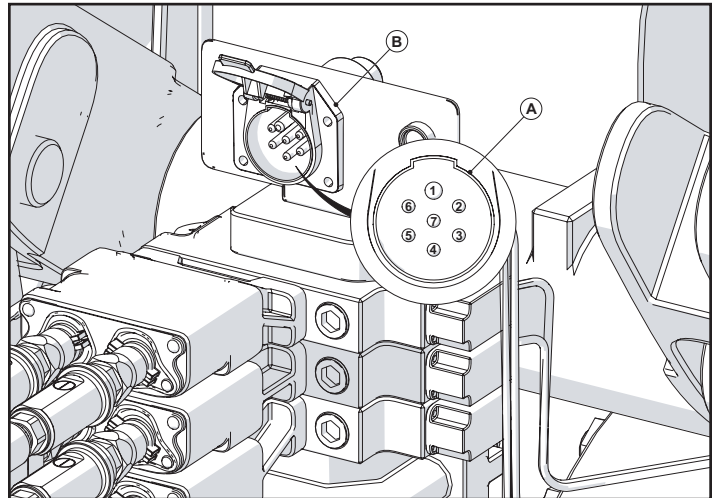


Fig. # 3-79 Seven-Terminal Outlet Terminal Numbers

Terminal Numbers (A)	Function	Wire Color
1	Ground	White
2	Flood Light	Black (Not Used)
3	Left Turn Signal & Hazard Signal Lamps	Yellow
4	Brake Lights	Red
5	Right Turn Signal & Hazard Signal Lamps	Green
6	Tail Light	Brown
7	Accessory	Blue (Not Used)

Fig. # 3-80 Table: Seven-Terminal Outlet Terminal Numbers

KWIK-TILL LIGHTING

The Kwik-Till's turn signal, brake, and warning lamp system is compatible with enhanced tractor brake lighting. When the tractor brake pedal is depressed, the Kwik-Till's brake lamps illuminate along with the tractor's brake lamps.

Your Kwik-Till lighting should follow the pattern indicated in the table below. (See Fig. # 3-42) The Kwik-Till features a combined tail light and brake light with two filaments: the bright light is the brake, the normal light is the tail light. If your Kwik-Till lighting does not follow the pattern from the

table below, (See Fig. # 3-42) contact your Kwik-Till dealer.

IMPORTANT

If you have an older model tractor, it may be possible that your **Seven-Terminal Outlet Terminal Numbers** Ⓐ does not match that of the table in (See Fig. # 3-41) If this is true, then your Kwik-Till brake light function will be always **"ON"**. Consult your tractor operator's manual or tractor dealer to see if brake functionality can be added to **Terminal Number 4**.

Tractor Function	Lights OFF	Road Lights ON							
		None	Left Turn		Brakes Only	Right Turn		Warning Lights	
Brake Lamps		None	No Brakes	With Brakes		No Brakes	With Brakes	No Brakes	With Brakes
Left amber	OFF	Pulse	Pulse	Pulse	Pulse	ON	ON	Pulse	Pulse
Left tail light	OFF	ON	ON	ON	ON	ON	ON	ON	ON
Left red signal/ brake (*)	OFF	OFF	OFF (^)	ON (^)	ON	OFF	ON	OFF	ON
Right amber	OFF	Pulse	ON	ON	Pulse	Pulse	Pulse	Pulse	Pulse
Right Tail Light	OFF	ON	ON	ON	ON	ON	ON	ON	ON
Red Right Signal/ Brake (*)	OFF	OFF	OFF	ON	ON	OFF (^)	ON (^)	OFF	ON

Fig. # 3-81 Table: Kwik-Till Lighting Behaviors

NOTE: * The brake lamp is the bright filament, the tail light is the normal filament within the same red lens.

NOTE: (^) For use with some older model tractors, your machine may require the installation of a lighting module which will enable the tail/brake lamps to pulse along with the turn lamps when the turn signal is activated. Refer to the chart above, local laws and regulations, as well the latest version of the ANSI/ASAE S279 "Lighting and Marking of Agricultural Equipment on Highways" standard to ensure the compliance of your transport lighting system. See your Kwik-Till dealer for further information on the optional lighting module.

DETACHING KWIK-TILL FROM TRACTOR

1. Clear the area of bystanders and remove foreign objects from the Kwik-Till and working area.

⚠ WARNING

Before disconnecting equipment, servicing, adjusting, or repairing:

Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.

2. Locate the "Hitch Jack Hydraulic Hoses" (B) attached to the "Hitch Jack" (A). (See Fig. # 3-43)

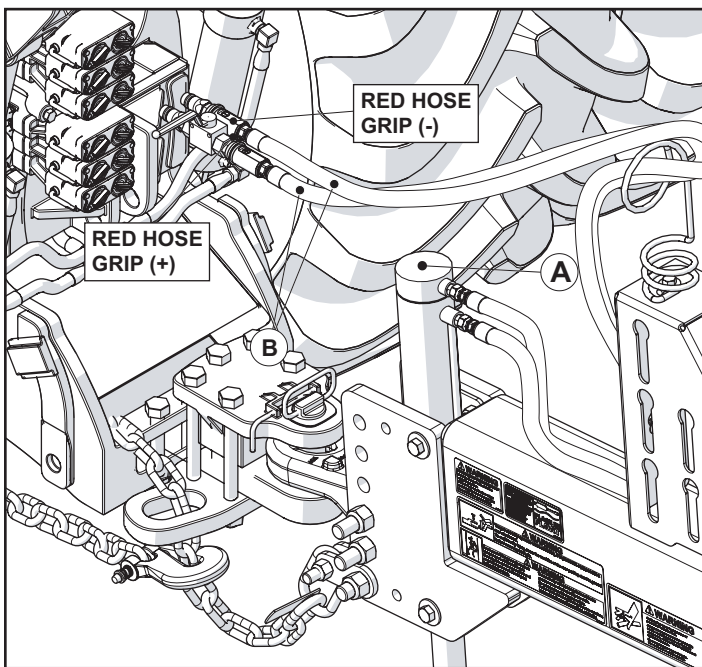


Fig. # 3-82 Locate The Hitch Jack Hydraulic Hoses

3. Make sure that the Hitch Jack hydraulic hose ball valve is in the "CLOSED" position. (See Fig. # 3-44)

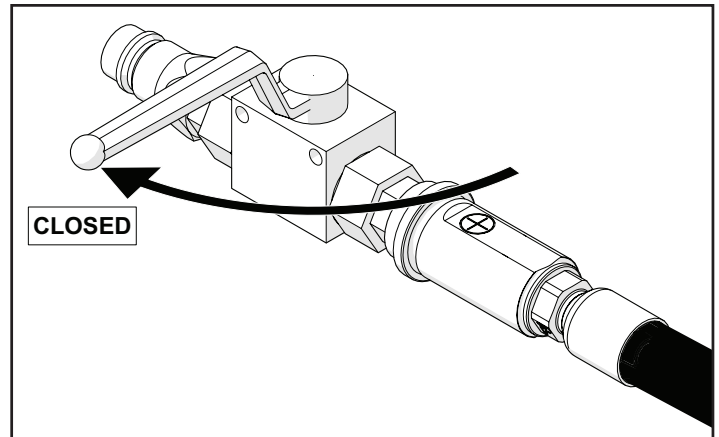


Fig. # 3-83 Make Sure The Ball Valve Is **CLOSED** (Shown in the "CLOSED" Position)

IMPORTANT

Note the polarity on each hose grip, Plus (+) is for pressure side hydraulic hose, and Minus (-) is for return side hydraulic hose. (See Fig. # 3-45)

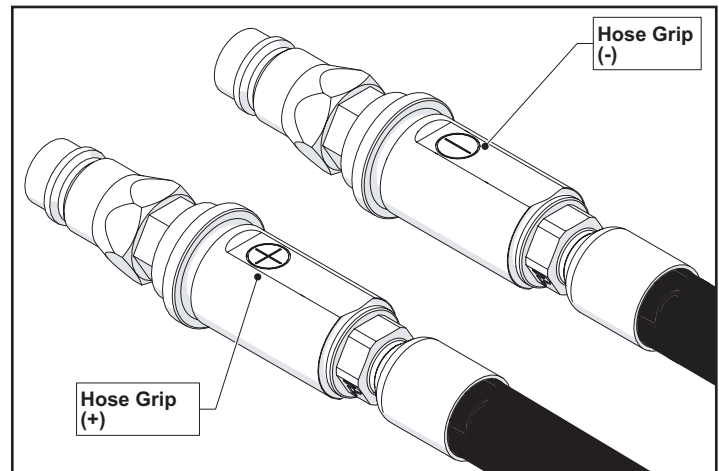


Fig. # 3-84 Determine Hydraulic Hose Is Pressure (+) Or Return (-)

4. Use a clean cloth or paper towel to clean the couplers on the ends of the hoses. Also clean the area around the couplers on the tractor.
5. Connect the "Hitch Jack" hydraulic hoses at this time. Refer to the following figures. (See Fig. # 3-46) (See Fig. # 3-47) (See Fig. # 3-48)

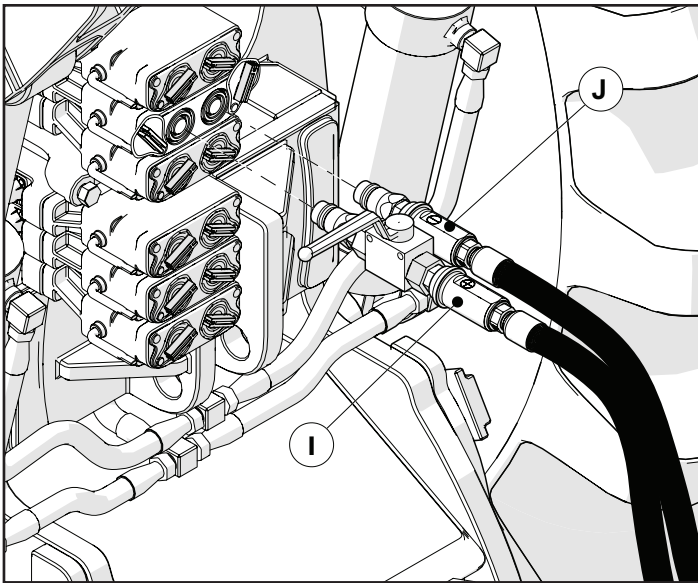


Fig. # 3-85 Connect "Hitch Jack" Hydraulic Hoses To Tractor

Item	Type	Color	SCV Usage
I	Pressure	Red	Hitch Jack Pressure (+)
J	Return	Red	Hitch Jack Return (-)

Fig. # 3-86 Table: SCV Identification

3-49)

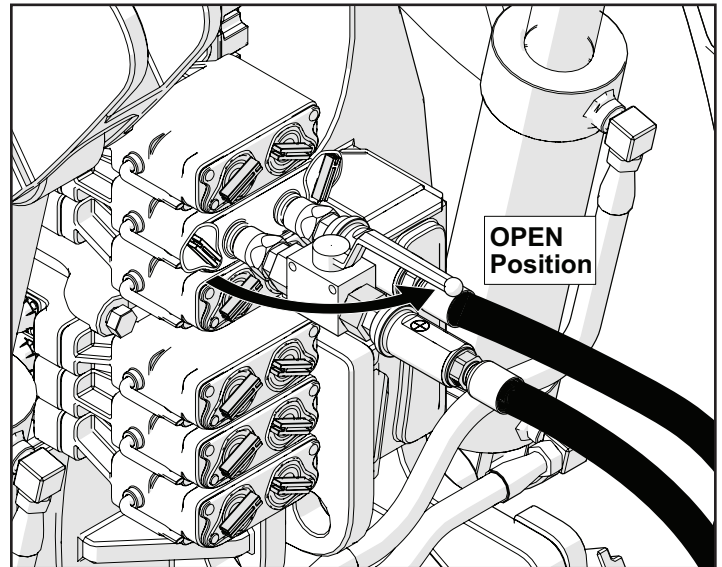


Fig. # 3-88 Turn the Ball Valve to the "OPEN" Position (Shown in the "OPEN" Position)

INFORMATION

HOSE COLOR CHART

Optional Equipment	Silver
Hitch Jack	Red
Wing Fold	Black <small>Float During Operation</small>
Main Frame Lift	Gold <small>Float During Operation</small>
Rear Roller	Blue
Front Wheels	Green

P/N 90-44-0392

Fig. # 3-87 Hydraulic Hose To SCV Decal

⚠ DANGER

UPENDING HAZARD

TONGUE CAN WHIP UPWARDS WHEN UNHITCHING

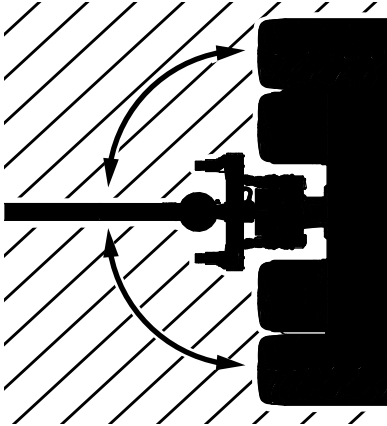
The tractor **MUST** be equipped with a clevis hitch to prevent the Kwik-Till from tipping upward while unfolding from transport position, and folding into transport position. To avoid bodily injury, lower the machine before removing the hitch pin and retainer..

If negative tongue weight exists, the hitch tongue may suddenly raise, and the rear section would come crashing down. Only disconnect when the jack is lowered, there is positive tongue weight, the unit is on level ground, and in the proper transport or field position. Never disconnect the Kwik-Till from the tractor if the rear sections of the machine are partially raised. Keep others away.

6. Turn the Ball Valve to the "OPEN" position. (See Fig. #

⚠ DANGER **CRUSH HAZARD**

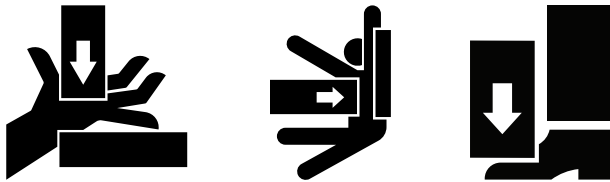
Avoid being crushed in between the tractor and the implement.



When working in the danger area between the Kwik-Till and the tractor always ensure that the Tractor engine is turned off and the Key removed. Keep others away.

⚠ DANGER **CRUSH HAZARD**

Stand clear when raising or lowering the Kwik-Till.



Keep feet, legs, and body clear when raising and lowering the Kwik-Till. Keep others away.

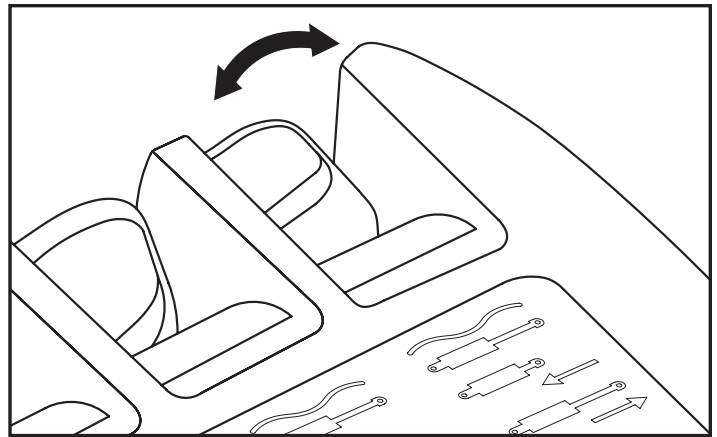


Fig. # 3-89 Tractor Remote Valve Levers

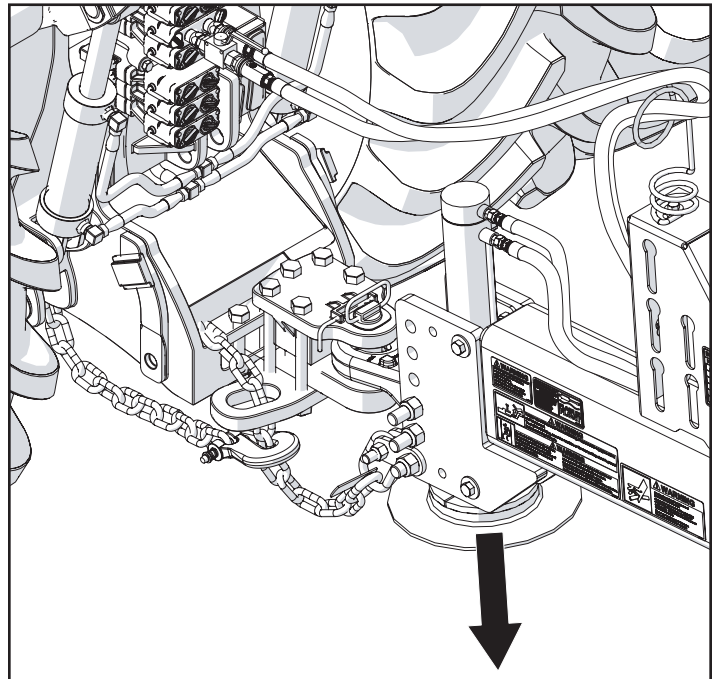


Fig. # 3-90 Lower The Hitch Jack

7. Before unhitching from tractor, start the tractor and use the tractor remote valve levers to lower the hitch jack completely to the ground. If machine is to be unhitched in the transport position, be sure that transport locks (See "Transport Locks" on page 4-5) are installed and machine is on a firm and level surface. (See Fig. # 3-50) (See Fig. # 3-51)

8. Remove remaining weight from drawbar using tractor remote valve levers and hitch jack.
9. Be sure that no negative tongue weight exists.

⚠ WARNING

Before disconnecting equipment, servicing, adjusting, or repairing:

Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.

The Kwik-Till can be attached and detached from the tractor from three different positions:

- Transport Position (See Fig. # 3-52)
- Field Raised Position (See Fig. # 3-53)
- Field Lowered Position (See Fig. # 3-54)

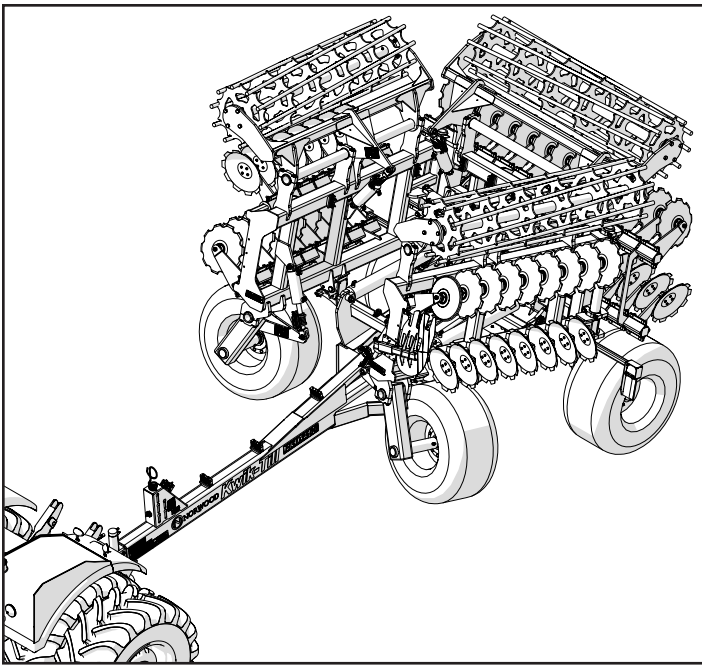


Fig. # 3-91 Transport Position

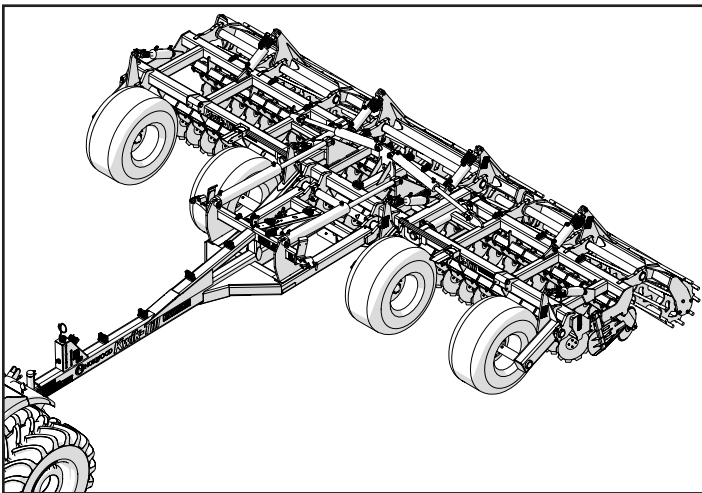


Fig. # 3-92 Field Raised Position

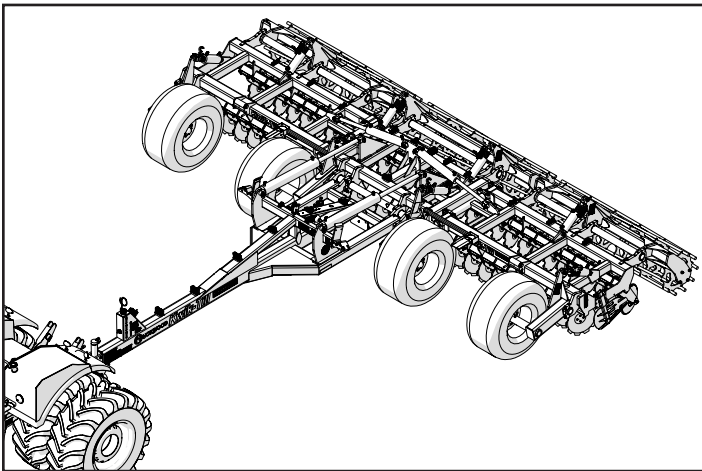


Fig. # 3-93 Field Lowered Position

en-Terminal Outlet **B** on the tractor. (See Fig. # 3-55)

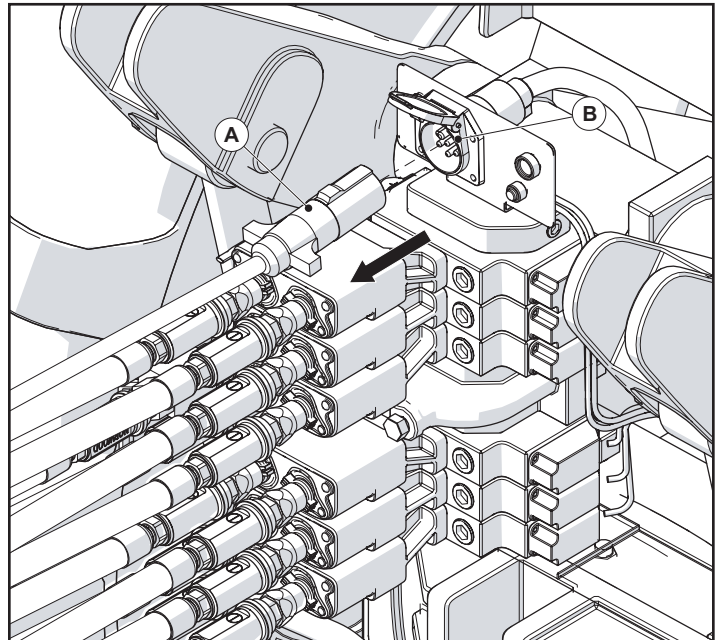


Fig. # 3-94 Disconnect Warning Light Plug

11. Secure the **Warning Light Plug A** in the **Hose Holder Spring B** located on the hitch of the Kwik-Till. (See Fig. # 3-56)

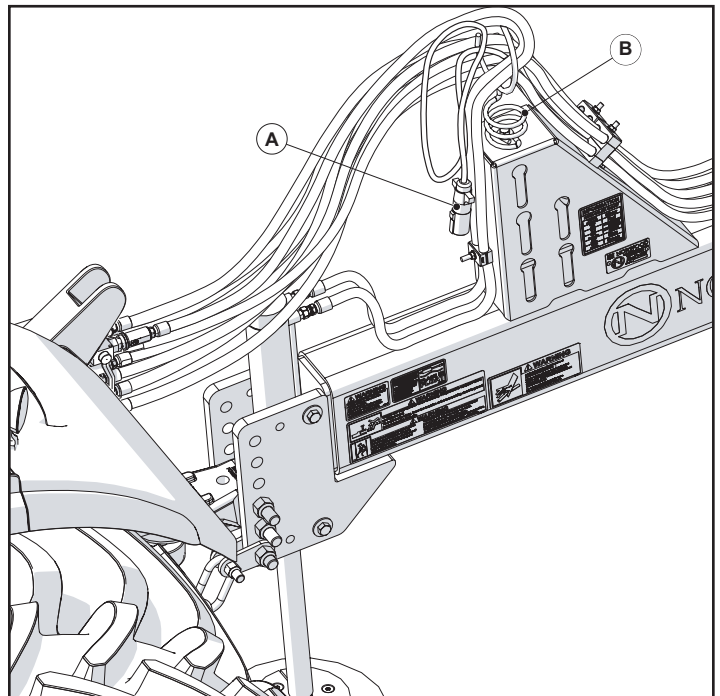


Fig. # 3-95 Securing the Warning Light Plug

12. Close the hydraulic hitch jack ball valve. (See Fig. # 3-57)

10. Disconnect the **Warning Light Plug A** from the Sev-

IMPORTANT

Close the hydraulic hitch jack ball valve to prevent accidental operation of this circuit. Ensure ball valve handle is in closed position when not in use.

- Failure to close the ball valve during storage will cause the machine to slowly settle causing the hitch to lower to the ground.

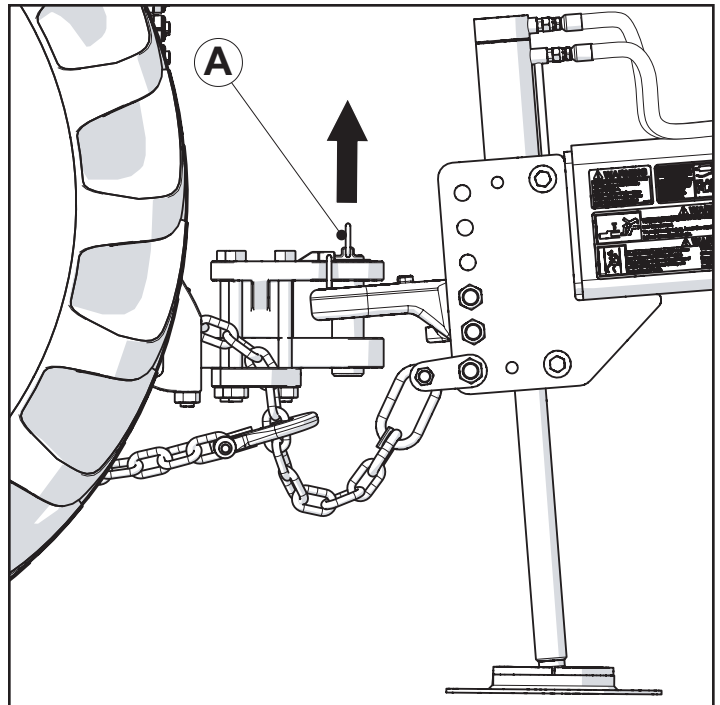


Fig. # 3-98 Remove Drawbar Pin

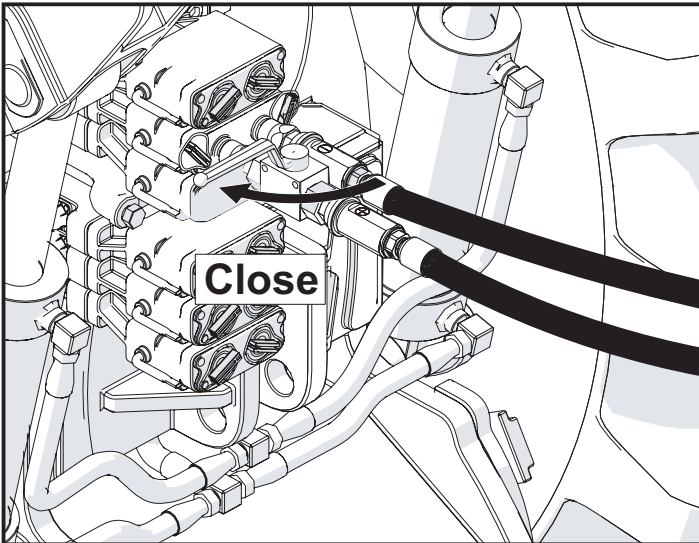

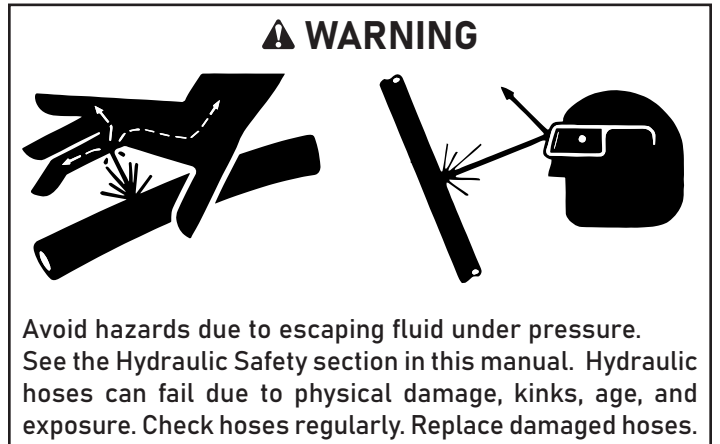


Fig. # 3-96 Close the Ball Valve (Shown in the "CLOSED" Position)

13. Relieve pressure in the "Hitch Jack" circuit by placing the tractor remote valve lever in the "FLOAT POSITION"  position with engine running. (See Fig. # 3-58)



15. Disconnect the hydraulic hoses from the tractor. (See Fig. # 3-60)

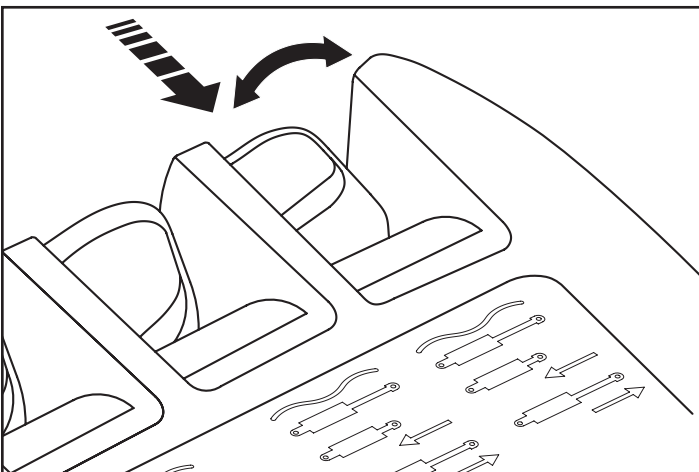



Fig. # 3-97 Tractor Remote Valve Levers

14. Remove drawbar pin  as required. See your tractor operator's manual for a proper disconnection. (See Fig. # 3-59)

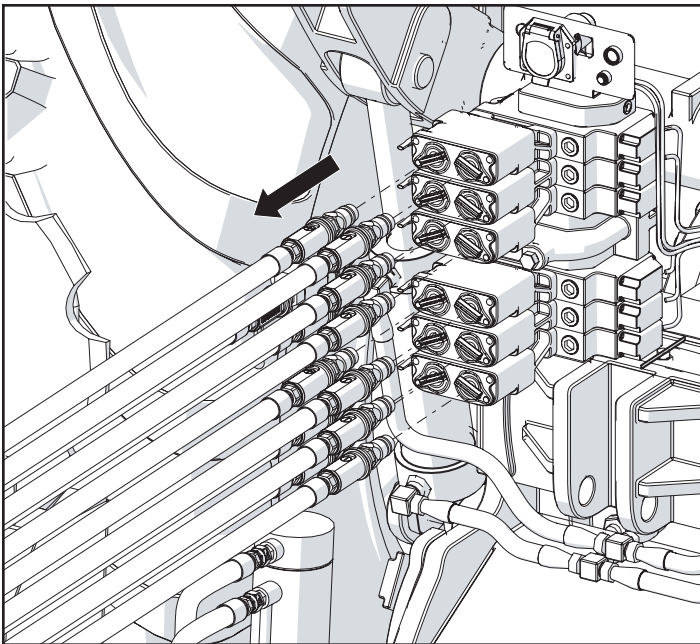


Fig. # 3-99 Disconnect Hydraulic Hoses

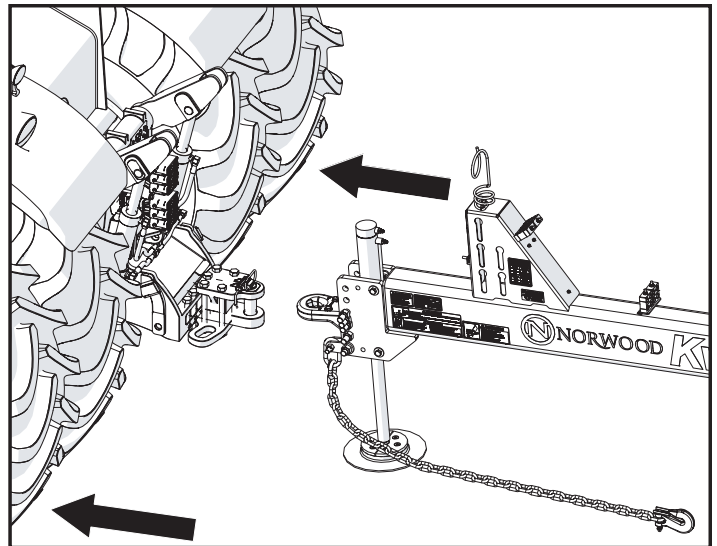


Fig. # 3-101 Pull the Tractor Forward To Disconnect

16. Place the hydraulic hoses in the storage slots (C). (See Fig. # 3-61)

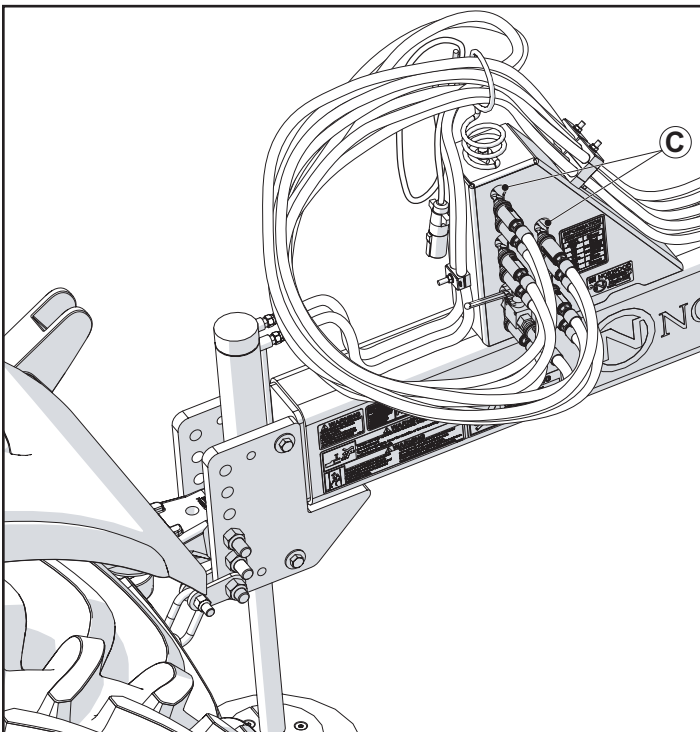


Fig. # 3-100 Place Hydraulic Hoses In The Storage Slots

17. Remove safety chain from tractor.
18. Start the tractor and slowly pull forward to disconnect.
(See Fig. # 3-62)

4.0 - WORKING OPERATIONS

Operating Safety

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Read and understand the Operator's Manual and all safety decals before using. 2. Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving tractor cab. 3. Clear the area of bystanders, especially children, before starting. 4. Be familiar with the machine hazard area. If anyone enters hazard area, shut down machine immediately. Clear the area before restarting. 5. Keep hands, feet, hair and clothing away from all moving and/or rotating parts. 6. Keep riders off. Riders on the implement are subject to injury such as being struck by foreign objects and being thrown off of the machine. 7. Stay away from overhead obstructions and power lines during operation and transporting. Electrocution can occur without direct contact. 8. Be sure that area around machine is clear before raising or lowering machine frame or wings. | <ol style="list-style-type: none"> 9. Do not operate with wings partially folded. 10. Do not operate close to the edge of a ditch, creek, gully, or steep embankment. 11. Avoid holes, ditches, and obstructions which can cause tractor, machine, or towed equipment to roll over, especially on hillsides. 12. Avoid sharp turns on hillsides. 13. Slow down when turning, traveling down a slope, traveling over rough ground and when turning on inclines. 14. Always shut off tractor and shift to park or set brakes when leaving tractor. Remove key when leaving tractor unattended. 15. Always have tractor stopped on level ground when raising or lowering wings. 16. Operate machine from tractor seat only. 17. If chemicals are used, follow manufacturer's recommendations for their handling and storage. 18. Tow machine behind a properly equipped tractor only. |
|---|--|

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the Kwik-Till.

Follow all safety instructions exactly. It is everyone's business. By following recommended procedure, a safe working environment is provided for the operator, bystanders and the area around the work site.

The design and configuration of this machine includes safety decals and equipment. Hazard controls and accident prevention are dependent upon the personnel operating and maintaining it. Their awareness, concern, prudence and proper training are crucial.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely, and to provide maximum efficiency.

By following the operating instructions, in conjunction with a good maintenance program, your Kwik-Till will provide many years of trouble free service.

CONTROLS

Before starting to work, all operators should familiarize themselves with the location and function of the controls.

HYDRAULIC HITCH JACK BALL VALVE

The hydraulic hitch jack ball valve prevents accidental flow of hydraulic fluid into the hitch jack causing it to extend while in operation thereby causing damage to the hitch jack and the machine. The hydraulic hitch jack ball valve also keeps pressure from dropping in the hitch jack cylinder to avoid the hitch from settling.

IMPORTANT

Close the hydraulic hitch jack ball valve to prevent accidental operation of this circuit. Ensure ball valve handle is in closed position when not in use.

- Failure to close the ball valve during operation may cause the hitch jack to extend causing damage to the hitch jack and machine by accidental activation of the hitch jack SCV.
- Failure to close the ball valve during storage will cause the machine to slowly settle causing the hitch to lower to the ground.

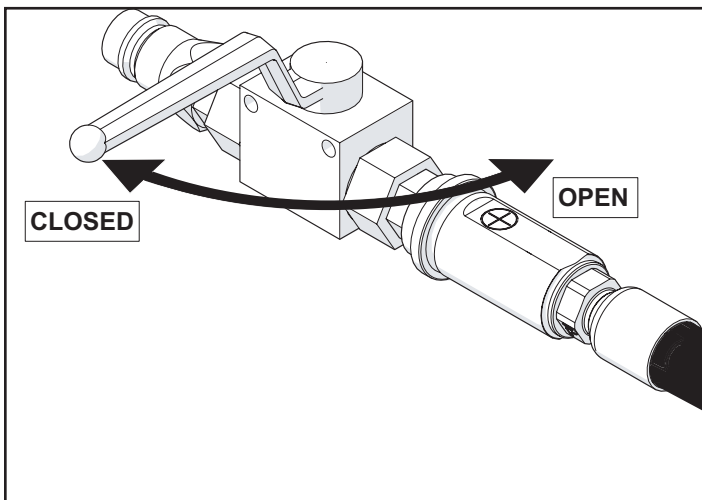


Fig. # 4-1 Hydraulic Hitch Jack Ball Valve (Shown in the "CLOSED" Position)

- A. Close the hydraulic hitch jack ball valve while in operation to keep the hitch jack from extending and potentially causing damage to the hitch jack and machine. (See Fig. # 4-7)

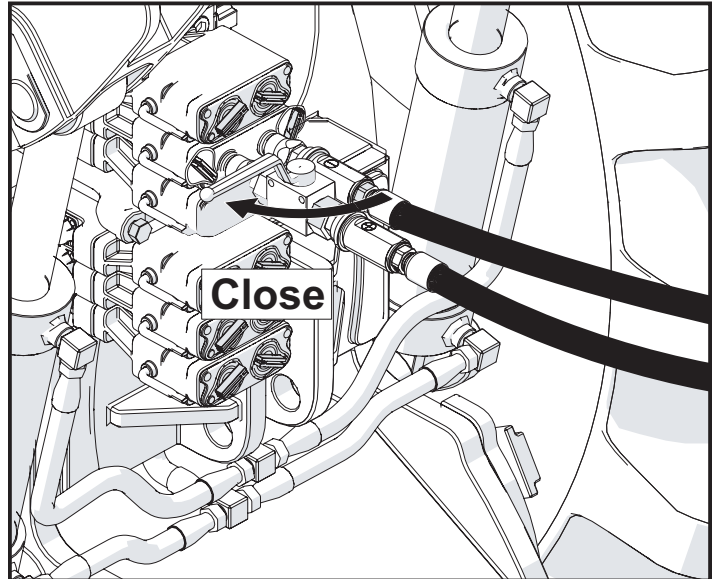


Fig. # 4-2 Close the Ball Valve When In Operation (Shown in the "CLOSED" Position)

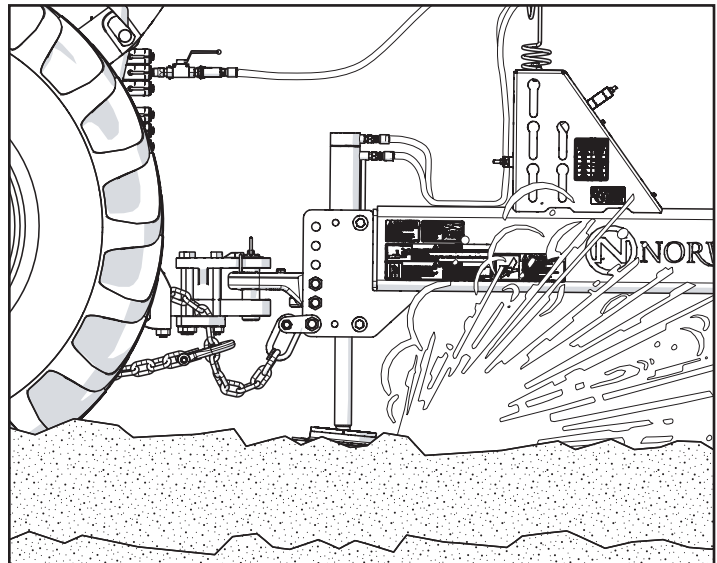


Fig. # 4-3 Close the Ball Valve When In Operation Or Damage may Result

SINGLE POINT DEPTH CONTROL (SPDC)

The Single Point Depth Control is a crank adjustable depth control for setting the depth of the Kwik-Till disc engagement into the soil.

The SPDC valve and linkages are mounted directly to the cylinder pins for accurate, repeatable depth control.

Once the depth is set with the SPDC, the operator can repeat the set depth from the tractor cab by lowering the implement.

Kwik-Till machines employ two cylinders on the left half of the machine, and 2 cylinders on the right half, forming a series type hydraulic circuit which allows the adjustment to made on the left side and the right side will imitate the depth setting.

SPDC Features:

- Cranking the handle 1 Turns is equal to approximately 1/4" working depth.
- Adjustment range is from approximately 2.0" to 6.0" deep.
- Centralized controls on the left wing allow depth adjustment for the entire machine.
- Accurate, repeatable depth changes for seedbed preparation.

Before you start work in a field you may need to adjust the depth depending on the type of crop residue or soil conditions.

A typical recommended penetration depth of 2.0" - 3.0" (51 mm - 76 mm) is suggested for both front and rear disk shanks. This depth, however, can be adjusted to the operators needs and preferences or based on different crop varieties and soil conditions.

UNDERSTANDING DEPTH CONTROL COMPONENTS

⚠ WARNING

Before disconnecting equipment, servicing, adjusting, or repairing:

Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.

- A** Depth Control Crank
- B** Depth Index
- C** Index Indicator

The Single-Point Depth Control as shown below is what allows for easy adjustment of the disc implements, simply by turning the crank handle clockwise you set the disc deeper and clockwise sets them higher. There is a front and rear Controller both located on the left wing

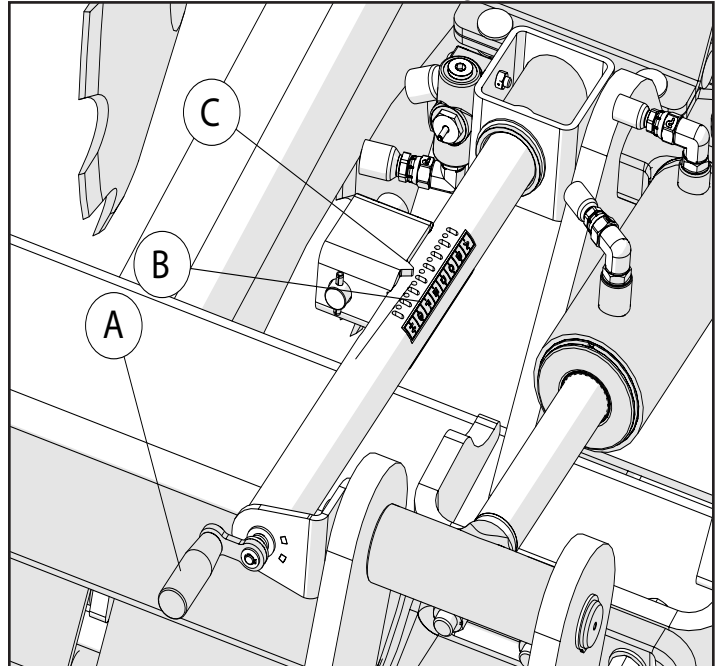
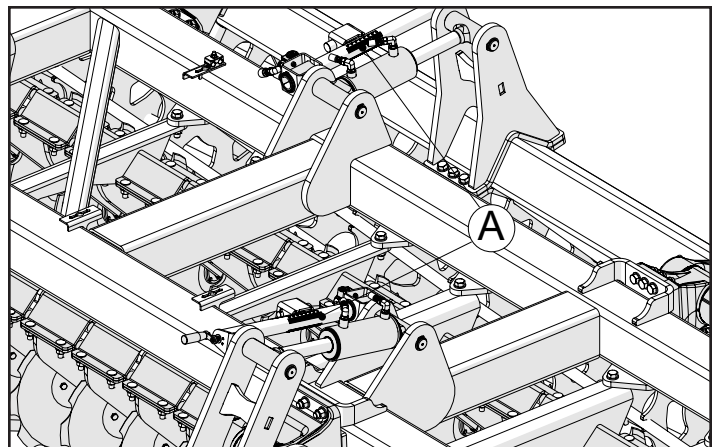


Fig. # 4-4 Understanding Depth Control Components



SPDC ADJUSTMENT PROCEDURE

1. Transport the Kwik-Till onto level ground.
2. Unfold the Kwik-Till to the "Field Raised Position". (See "Kwik-Till Folding & Unfolding" on page 4-6)
3. Make sure that the "Rear Roller" (A) and "Front Wheel Cylinders" (B) are fully extended. When these cylinders are extended, the disks will be completely off the ground. (See Fig. # 4-10)

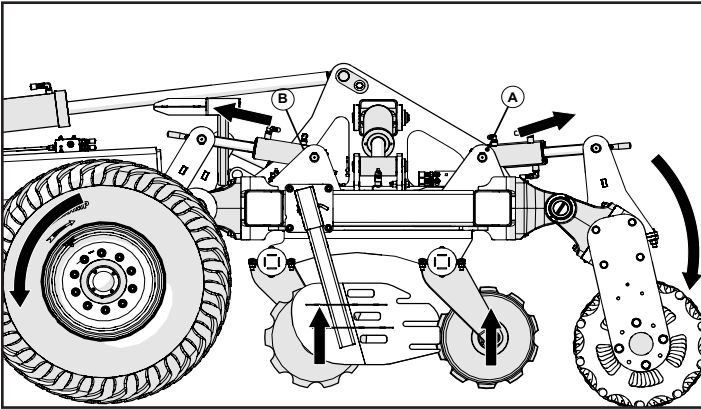


Fig. # 4-5 "Field Raised Position"

4. Make the necessary adjustments by turning the "Single-Point Depth Control Cranks" (F) & (R) clockwise to "RAISE" the discs and reduce the working depth, and counterclockwise to "LOWER" the discs and increase the working depth. (See Fig. # 4-11)

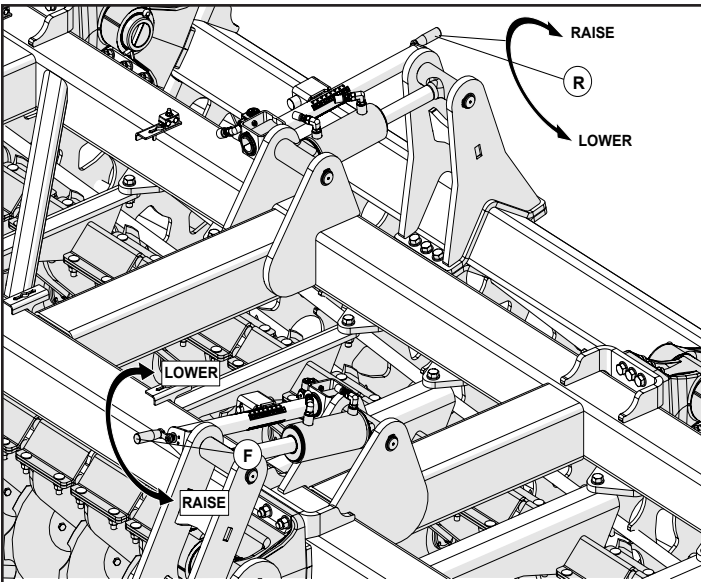


Fig. # 4-6 Adjusting SPDC

NOTE

A good starting setting is to a depth of 2.0" - 3.0" (51 mm - 76 mm) in spring and 3.5" - 4.5" (89 mm - 114 mm) in fall.

IMPORTANT

If you want to keep the front disc depth relative to the rear disc depth, the "Front Single-Point Depth Control Crank" (F) and "Rear Single-Point Depth Control Crank" (R) must be adjusted the same amount when adjusting the working depth. Reference the decal "A" Thru "L" when adjusting the depth "A" is a shallow cutting depth, where "L" is a deeper cutting depth.

5. Operate the Kwik-Till and fully retract the "Rear Roller" (A) and "Front Wheel Cylinders" (B). The "SPDC Depth Control Plunger" (C), will come in contact with the "SPDC Valve" (D) stopping the flow of hydraulic fluid which sets the disk depth. (See Fig. # 4-12)

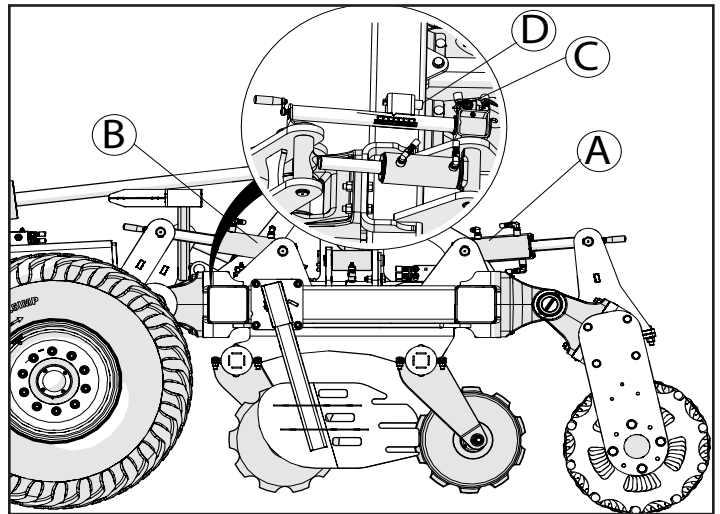


Fig. # 4-7 Fully Retract the Rear Roller & Front Wheel Cylinders

6. Check the "Penetration Depth" (D) of the "Front Row Disks" (A) & the "Rear Row Disks" (B). Take note of how much you would like to raise or lower both the front and rear disk rows - round to the nearest 1/2". (See Fig. # 4-13)

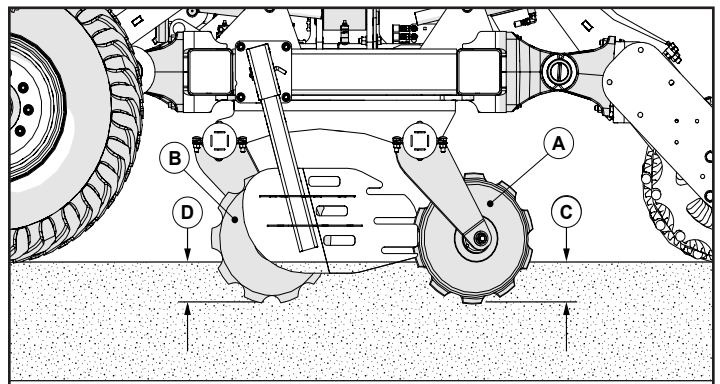


Fig. # 4-8 Check the Penetration Depth

7. If you are satisfied with this setting proceed with field operation, if not proceed to step # 8.
8. Repeat steps # 4 thru. # 7 until the proper depth is achieved.

TRANSPORT LOCKS

The Kwik-Till has two **Transport Locks** (A) to keep the wings locked to the hitch during transport, service and storage. The transport locks are located on the left and right **Transport Rests** (D). The transport locks **MUST** be installed on the transport rests securing the wings in the **Locked Position** (B) whenever the Kwik-Till is transported, serviced, or stored to avoid the wings breaking free from the transport rests.

The transport locks have a designated **Stowed Position** (C) on the transport rests. The transport locks **MUST** be returned in the Stowed Position before the Kwik-Till is unfolded.

- Remove the **Transport Locks** (A) from the **Locked Position** (B) and install into the **Stowed Position** (C) when unfolding. (See Fig. # 4-14)

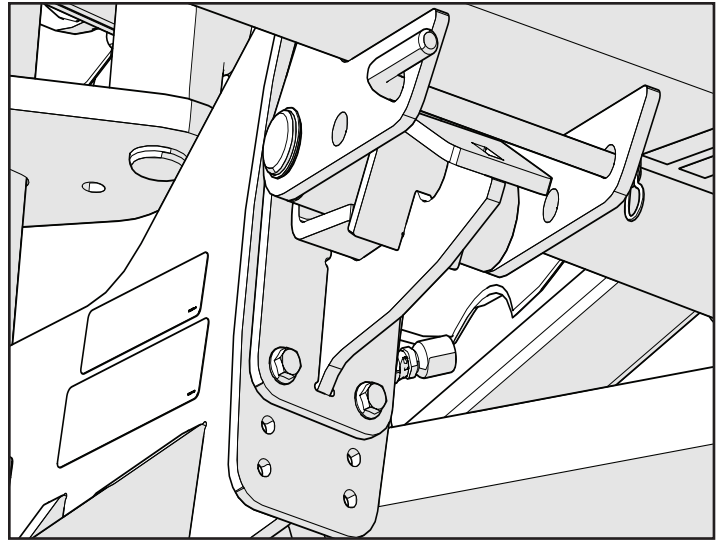


Fig. # 4-10 Transports Lock Shown In Stowed Position

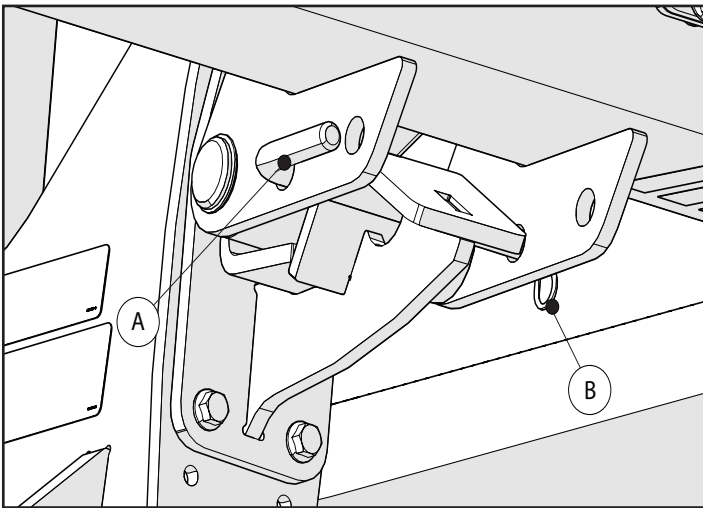


Fig. # 4-9 Transports Lock Shown In Locked Position

- Remove the **Transport Locks** (A) from the **Stowed Position** (C) and install into the **Locked Position** (B) before transport, service and storage. (See Fig. # 4-15)

KWIK-TILL FOLDING & UNFOLDING

Follow the steps in **Kwik-Till Unfolding** (See *Below*) & **Kwik-Till Folding** (See “” on page 4-10) to properly unfold the Kwik-Till from the transport position, and fold the Kwik-Till from the field position.

Folding & Unfolding Safety

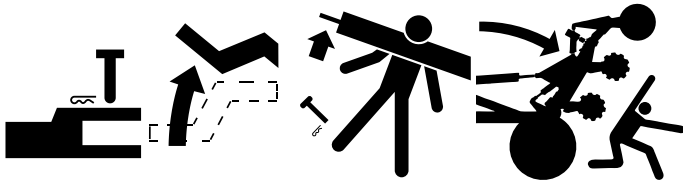
Review the “**Workplace Hazard Areas**” in section “**2.0 – SAFETY INFORMATION**” (See “Workplace Hazard Areas” on page 2-7)

- Avoid the crush hazard in the wing fold / unfold area.
- Avoid the crush hazard between the tractor & implement.
- Avoid the Crush hazard between the wing & center section fold / unfold area.

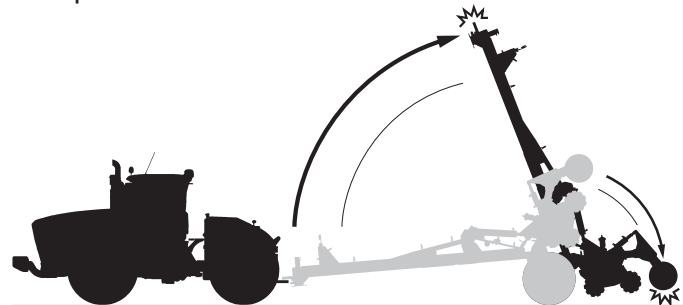
⚠ DANGER

UPENDING HAZARD

TONGUE CAN WHIP UPWARDS IF NOT PROPERLY SECURED



The tractor **MUST** be equipped with a clevis hitch to prevent the Kwik-Till from tipping upward while unfolding from transport position, and folding into transport position. To avoid bodily injury, lower the machine before removing the hitch pin and retainer.

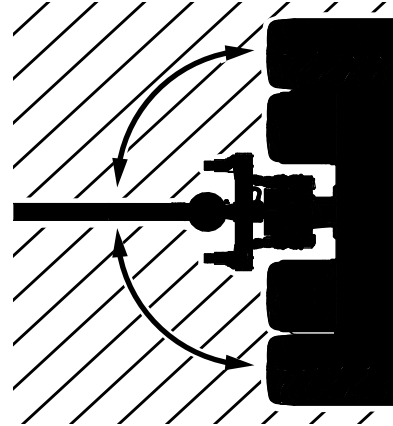


If negative tongue weight exists, the hitch tongue may suddenly raise, and the rear section would come crashing down. Only disconnect when the jack is lowered, there is positive tongue weight, the unit is on level ground, and in the proper transport or field position. Never disconnect the Kwik-Till from the tractor if the rear sections of the machine are partially raised. Keep others away.

⚠ DANGER

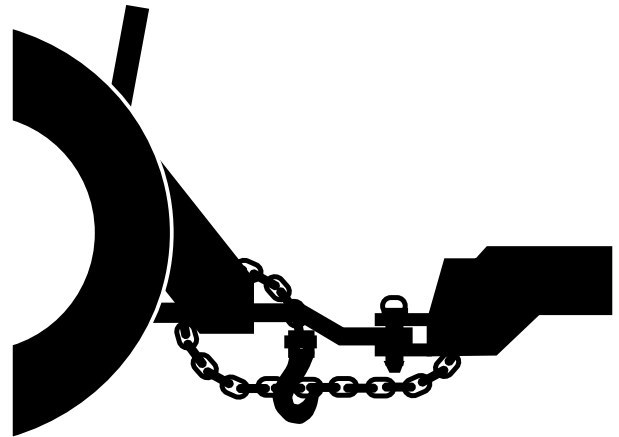
CRUSH HAZARD

Avoid being crushed in between the tractor and the implement.



When working in the danger area between the Kwik-Till and the tractor always ensure that the Tractor engine is turned off and the Key removed. Keep others away.

USE A SAFETY CHAIN



A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your Kwik-Till dealer if a replacement chain is needed. Your Kwik-Till safety chain has a strength rating equal to or greater than the gross weight of the towed machine.

Do Not use the safety chain for towing.

KWIK-TILL UNFOLDING

1. If the Kwik-Till is already attached to the tractor, proceed to step # 2, if not already attached to tractor. (See "Attaching Kwik-Till To Tractor" on page 3-9)
2. Transport the Kwik-Till onto level ground. (See Fig. # 4-16)

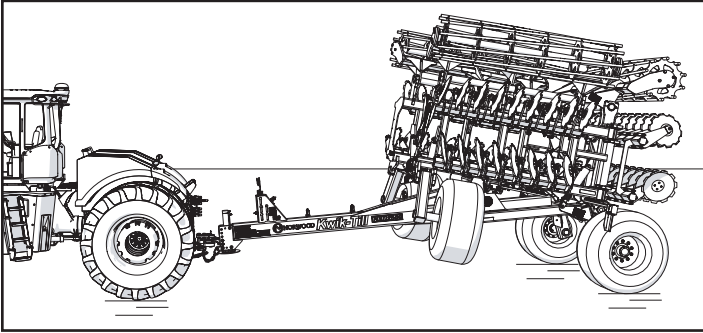


Fig. # 4-11 Kwik-Till Shown In The Transport Position

⚠ WARNING

Before disconnecting equipment, servicing, adjusting, or repairing:

Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.

IMPORTANT

Always return the transport locks in the stowed position on the Kwik-Till when not in use.

3. Remove the **Transport Locks** from the **Locked Position** and install into the **Stowed Position** . (See Fig. # 4-17)

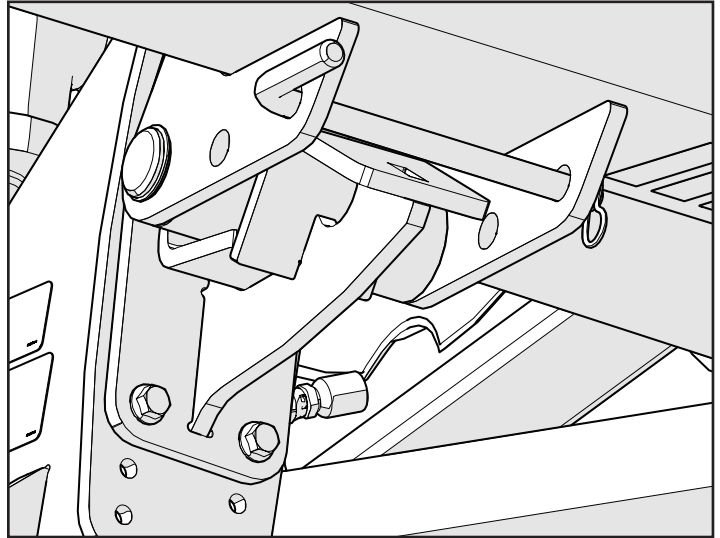


Fig. # 4-13 Transports Lock Shown In Stowed Position

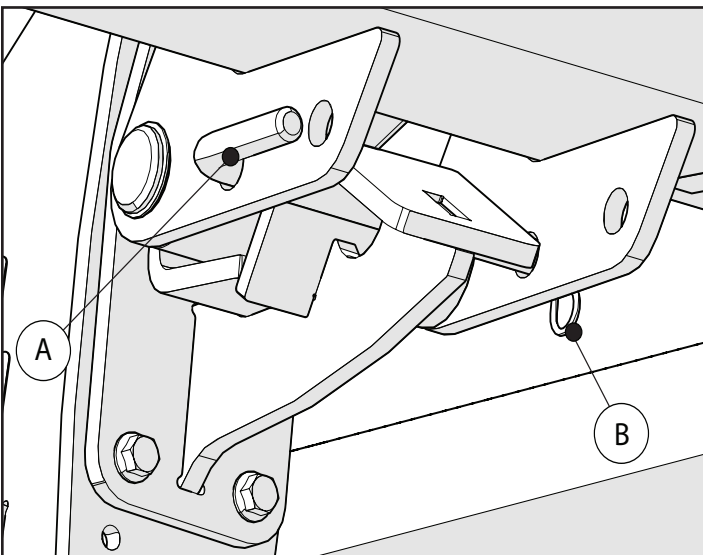


Fig. # 4-12 Transports Lock Shown In Locked Position

4. Refer to the following 2 figures when unfolding/folding your Kwik-Till. **Hose Color Chart** decal (See Fig. # 4-19) & Using the **Tractor Remote Valve Lever's**. (See Fig. # 4-20)

INFORMATION	
HOSE COLOR CHART	
Optional Equipment	Silver
Hitch Jack	Red
Wing Fold	Float During Operation Black
Main Frame Lift	Float During Operation Gold
Rear Roller	Blue
Front Wheels	Green

P/N 90-44-0392

Fig. # 4-14 Hydraulic Hose To SCV Decal

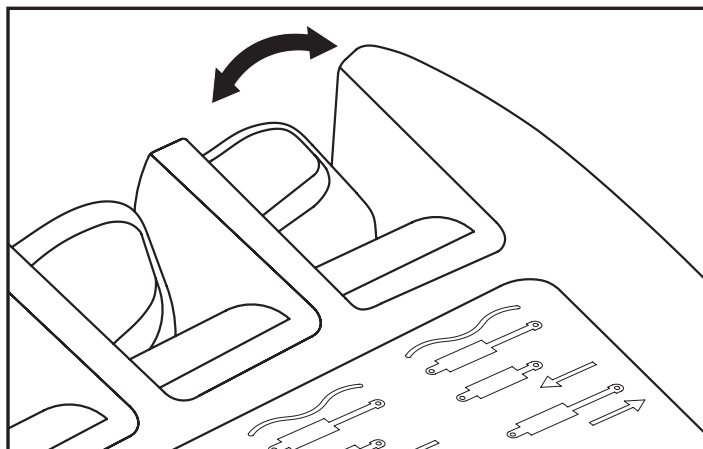



Fig. # 4-15 Tractor Remote Valve Levers

5. Start the tractor and set to high idle and remove the **Main Frame Lift & Wing Fold** cylinders from **FLOAT POSITION** .

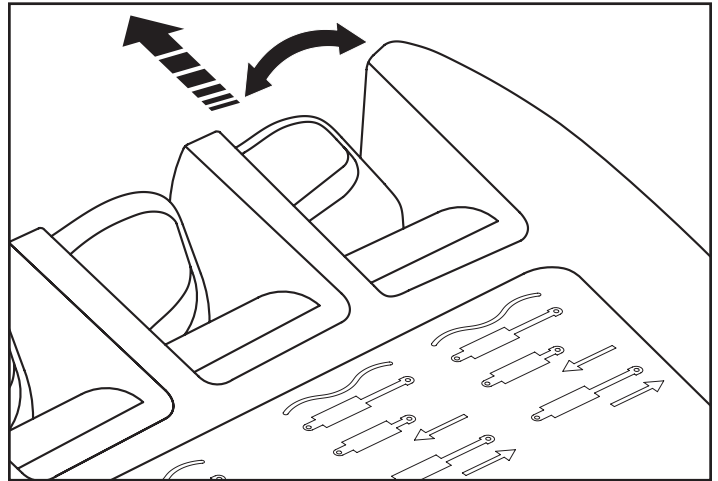


Fig. # 4-16 Tractor Remote Valve Levers Removing SCV From Float Position

IMPORTANT

Do not fully extend cylinders in the next step.

6. Use the tractor remote valve lever to extend the **Main Frame Lift** cylinders until the **Wing Transport Rollers** (A) can clear the **Transport Rests** (B). (See Fig. # 4-22)

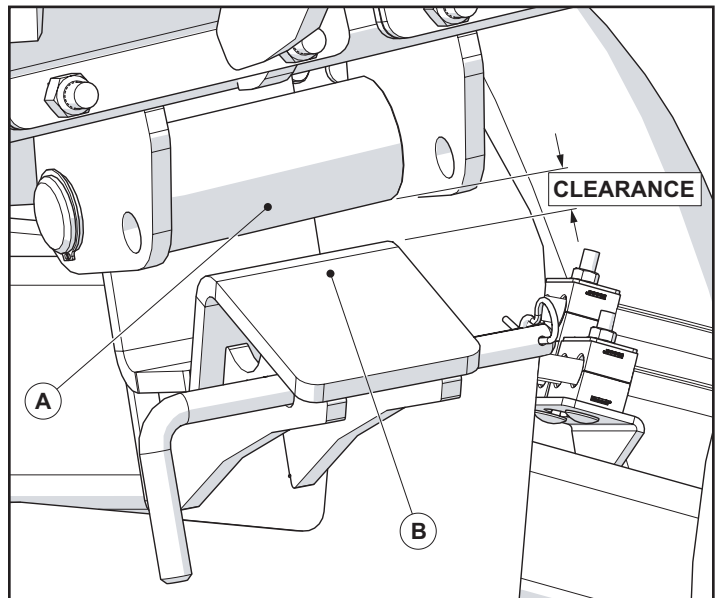


Fig. # 4-17 Unfold Step # 2 - Unfolding, Check For Clearance

7. Use the tractor remote valve lever to extend the **Wing Fold** cylinders (A) until the **Wings** (B) are aligned with the **Center Section** (C). (See Fig. # 4-23)

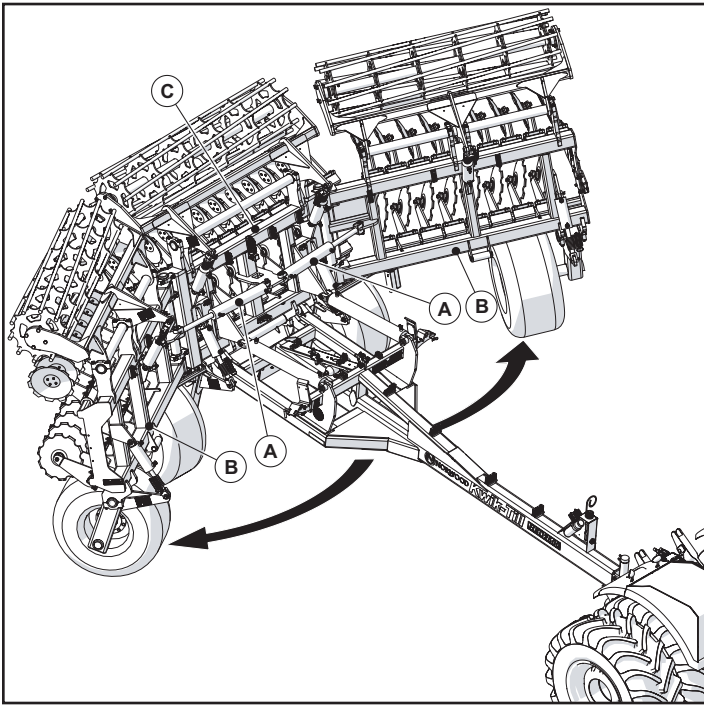


Fig. # 4-18 Unfold Step # 3 - Unfolding Wings

8. The Kwik-Till should now be in the position shown in the following figure. (See Fig. # 4-24)

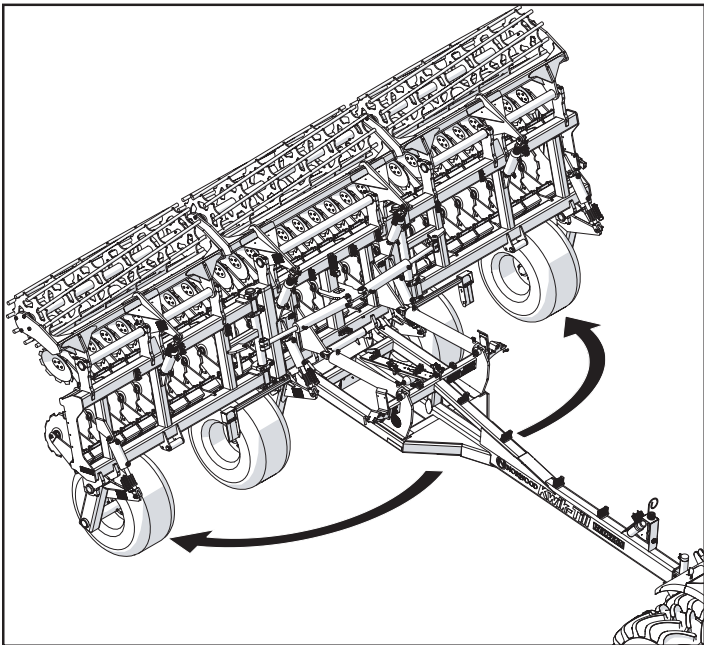


Fig. # 4-19 Unfold Step # 3 - Wings Unfolded

9. Use the tractor remote valve levers to extend the **Main Frame Lift** (A) cylinders until the **Rear Rollers** (B) contact the ground. (See Fig. # 4-25)

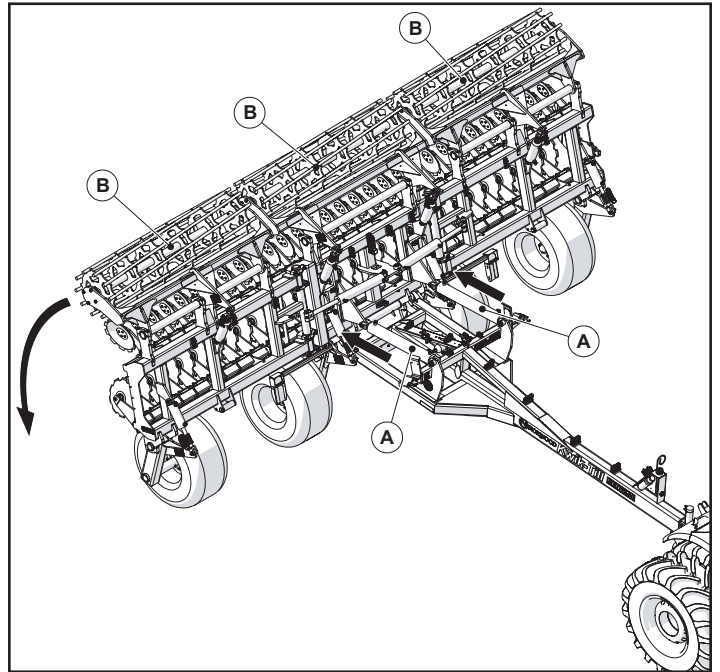


Fig. # 4-20 Unfold Step # 4 - Unfolding Center Section & Wings

10. The Kwik-Till should now be in the **Field Raised Position** as shown in the following figure. (See Fig. # 4-26)

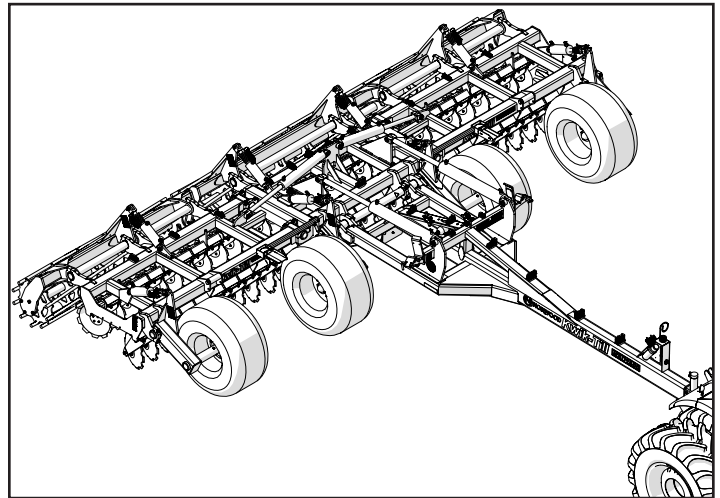



Fig. # 4-21 Unfold Step # 5 - Field Raised Position (Shown)

11. Set the **Main Frame Lift & Wing Fold** cylinders to **FLOAT POSITION** . (See Fig. # 4-27)

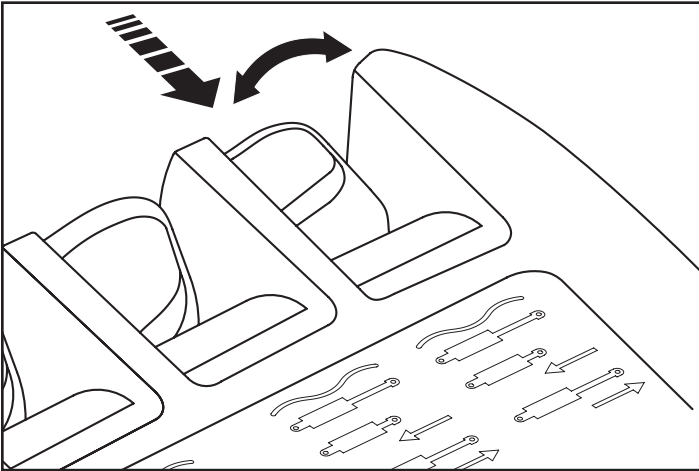


Fig. # 4-22 Tractor Remote Valve Levers Setting SCV To Float Position

12. To set the disk cutting depth, proceed to the following section in this manual. (See “Single Point Depth Control (SPDC)” on page 4-3)
13. Proceed with **Field Operation**. (See “Field Operation” on page 4-14)

KWIK-TILL FOLDING

1. If the Kwik-Till is already attached to the tractor, proceed to step # 2, if not already attached to the tractor. (See "Attaching and Detaching Kwik-Till To/From Tractor" on page 3-7)
2. Transport the Kwik-Till onto level ground. (See Fig. # 4-16)

⚠ WARNING

Before disconnecting equipment, servicing, adjusting, or repairing:

Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.

3. If the Kwik-Till is in the "Field Raised Position" (See Fig. # 4-28), proceed to step # 5, if not proceed to the next step.

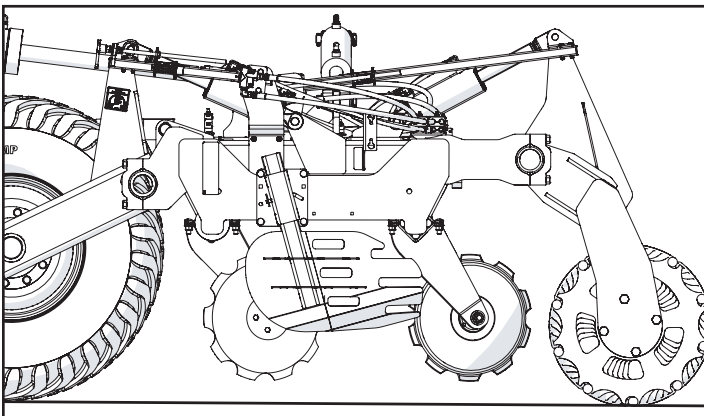


Fig. # 4-23 "Field Raised Position"

4. Start the tractor and set to high idle, position the Kwik-Till into the "Field Raised Position" make sure that the "Rear Roller" (A) and "Front Wheel Cylinders" (B) are fully extended. When these cylinders are extended, the disks will be completely off the ground. (See Fig. # 4-29)

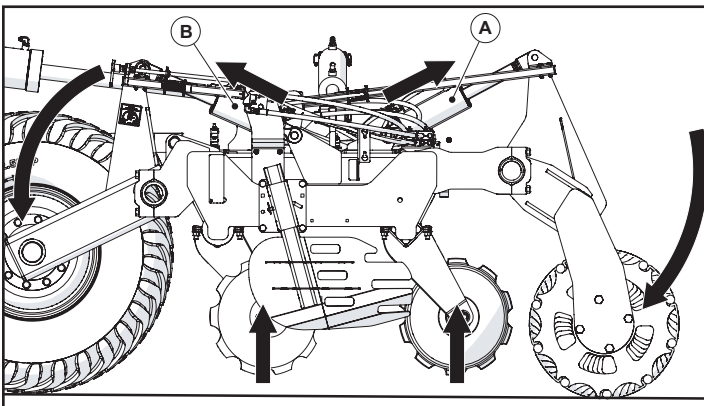


Fig. # 4-24 "Field Raised Position"

IMPORTANT

If transport width is an issue, retract the rear roller cylinders and set the SPDC to the letter "A" setting. This will make the transport width narrower, but will increase the transport height.

5. Remove the "Main Frame Lift & Wing Fold" cylinders from **FLOAT POSITION** (See Fig. # 4-30)

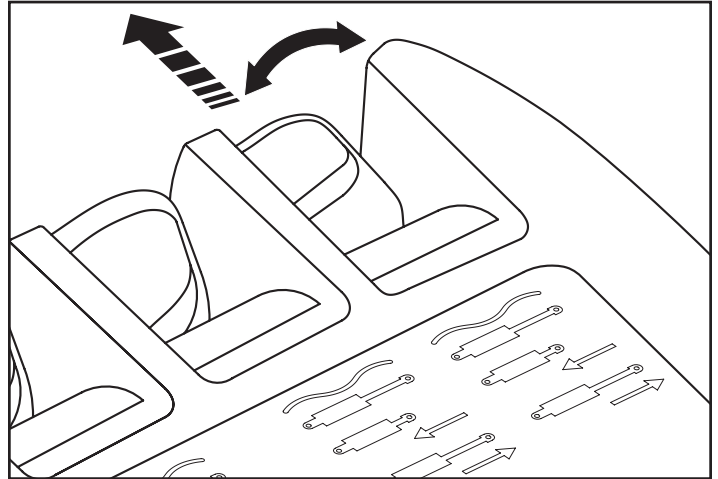


Fig. # 4-25 Tractor Remote Valve Levers Removing SCV From Float Position

6. Use the tractor remote valve lever to retract the "Main Frame Lift" (A) cylinders to raise "Center Section" (B) "Left Wing" (C), & "Right Wing" (D) from the ground. (See Fig. # 4-31)

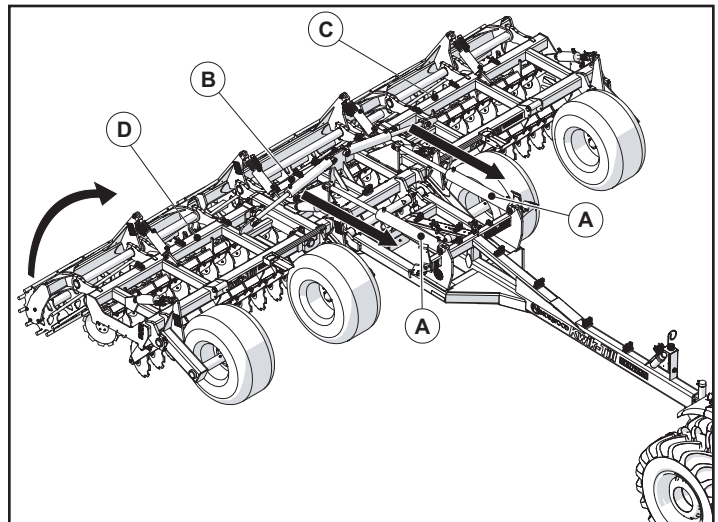


Fig. # 4-26 Fold Step # 1 - Raising Rear Sections (Field Raised Position Shown)

7. The Kwik-Till should now be in the partially folded position shown in the following figure. (See Fig. # 4-32)

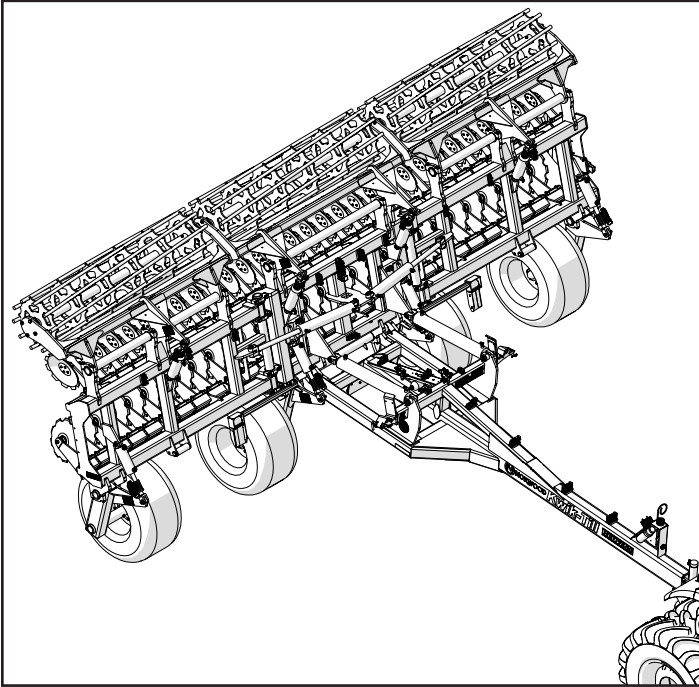


Fig. # 4-27 Fold Step # 2 - Rear Sections Raised

8. Use the tractor remote valve lever to retract the "Wing Fold" cylinders (A) to fold the "Wings" (B) inward towards the "Transport Rests" (C). (See Fig. # 4-33)

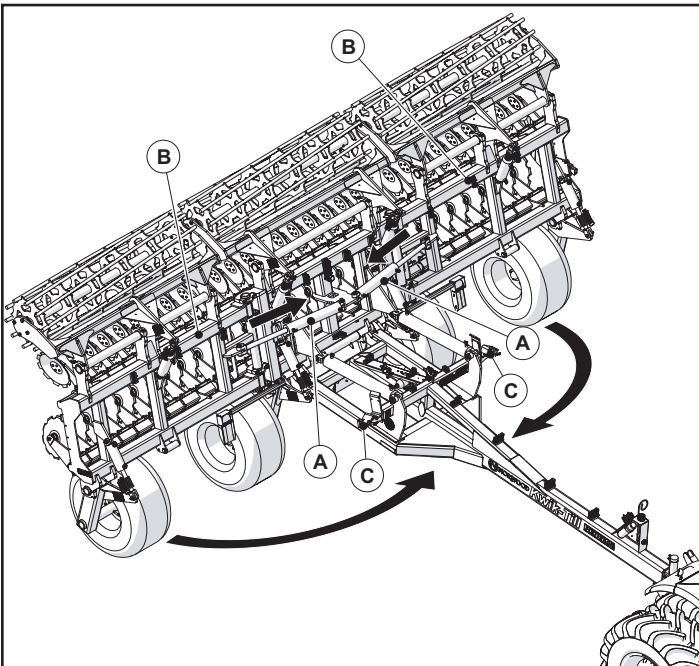


Fig. # 4-28 Fold Step # 3

9. While folding the wings inward ensure that the "Wing Transport Rollers" (A) can clear the "Transport Rests" (B). (See Fig. # 4-34)

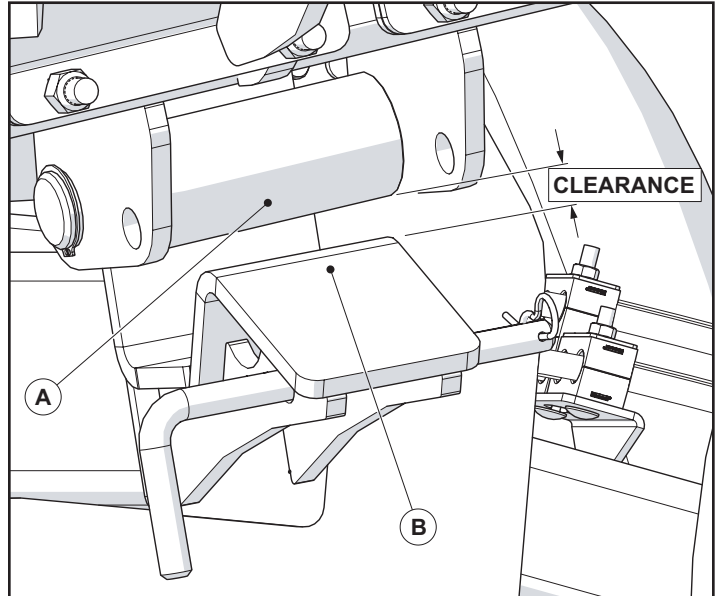


Fig. # 4-29 Unfold Step # 3 Folding, Check For Clearance

10. The Kwik-Till should now be in the "Transport Position" shown in the following figure. (See Fig. # 4-35)

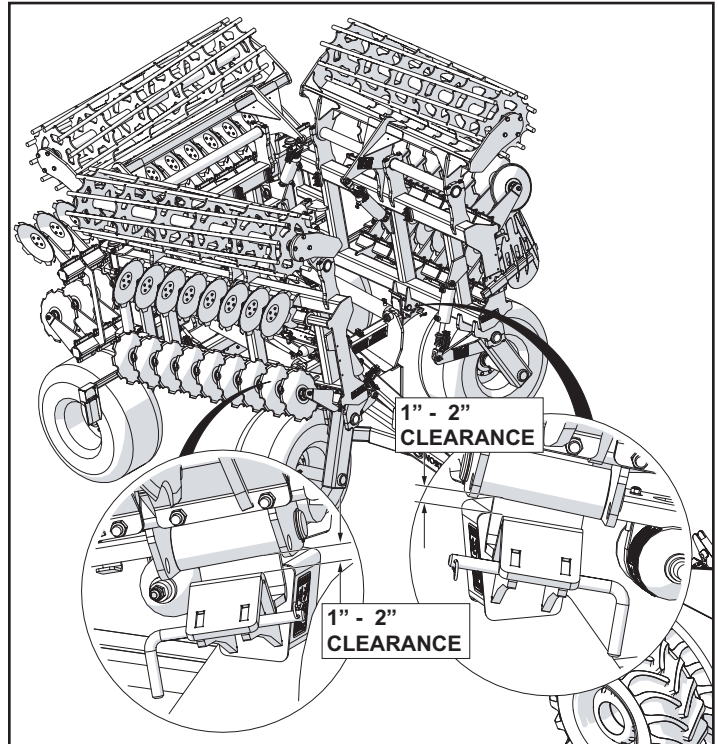


Fig. # 4-30 Unfold Step # 3 Folding, Check For Clearance

11. Use the tractor remote valve lever to retract the “Main Frame Lift” (A) cylinders until the “Wing Transport Rollers” (B), can rest in the “Transport Rests” (C). (See Fig. # 4-36)

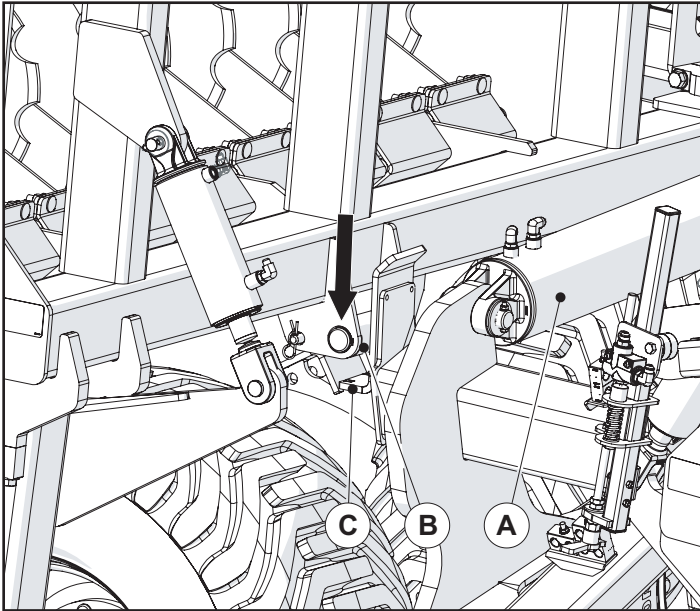



Fig. # 4-31 Lower Wings To The Transport Rests

12. Set the “Main Frame Lift & Wing Fold” cylinders to **FLOAT POSITION**  temporarily to relieve the downward pressure against the transport rests. (See Fig. # 4-37)

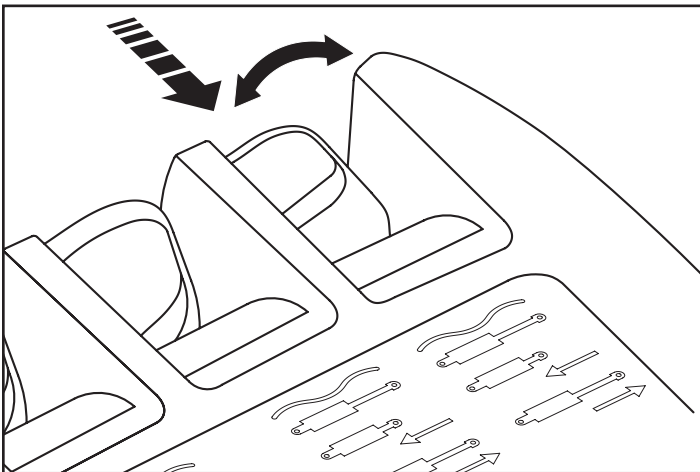


Fig. # 4-32 Tractor Remote Valve Levers Setting SCV To Float Position

13. Remove the “Transport Locks” from the “Stowed Position” , and install into the “Locked Position” . (See Fig. # 4-38) (See Fig. # 4-39)

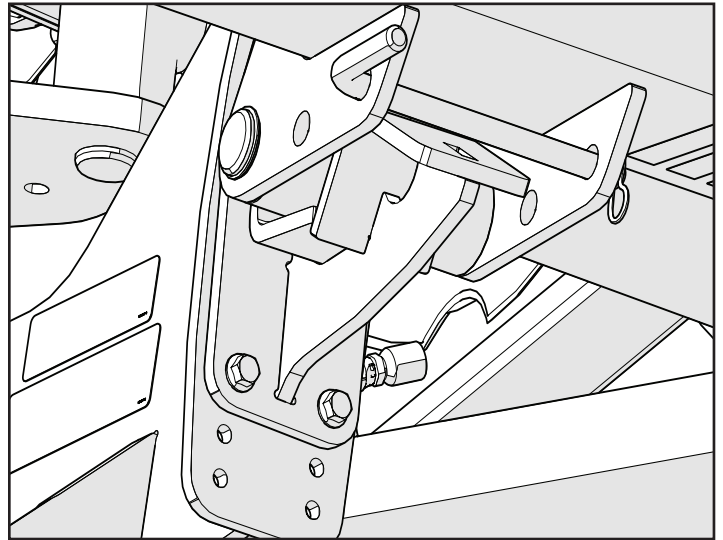


Fig. # 4-33 Transports Lock Shown In Stowed Position

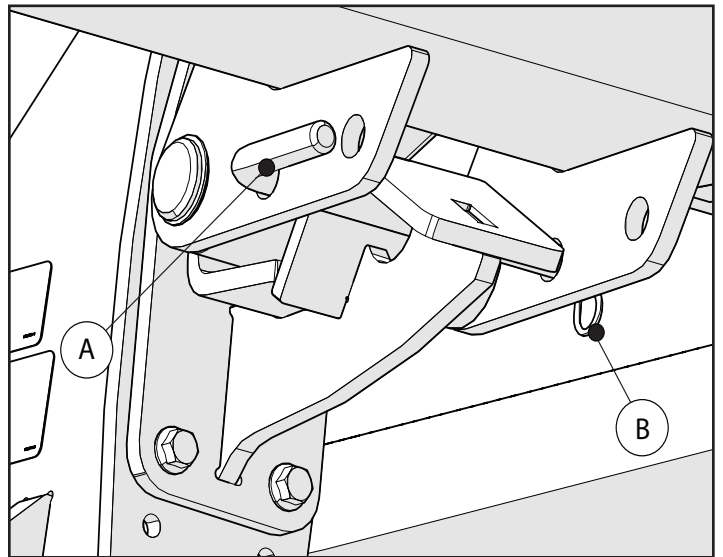


Fig. # 4-34 Transports Lock Shown In Locked Position

14. Proceed with “Transport Operations”. (See “” on page 5-23)

FIELD OPERATION

Before Entering Field Guidelines

1. Read the Operator's Manual before operating.
2. Check all lubrication points and grease as instructed in the maintenance section. (See "5.0 MAINTENANCE" on page 5-1)
3. Use recommended size tractor. (See "Tractor Engine Power Requirements" on page 7-1)
4. Be sure that tractor and machine have been properly prepared. Check that the unit is properly attached to the tractor. On pull-type unit, be sure there is a mechanical retainer through the draw-bar pin and the safety chain is installed. (See "Attaching Kwik-Till To Tractor" on page 3-9)
5. Check tire pressure. (See "Tire Specifications" on page 7-4)
6. Inspect all hydraulic lines, hoses, couplers, and fittings. Tighten, repair, or replace any leaking or damaged components.
7. Inspect, or torque all specified hardware. (See "5.0 MAINTENANCE" on page 5-1)
8. Fully charge hydraulic system.

TIGHTEN HARDWARE



Check tightness of all bolts after first 10 hours of then every 50 hours thereafter. Tighten all bolts to torques specified in the Maintenance Section unless otherwise noted. (See "5.0 MAINTENANCE" on page 5-1)

LEVELING THE HITCH

The Kwik-Till must be parallel to the ground when the Kwik-Till is operating in the field. A level hitch will reduce issues in the field.

Attach the Kwik-Till to the tractor. Set tractor hitch sway limiters for 'No Sway' operation. Check the tractor and Kwik-Till for correct tire pressure and adjust as necessary.

1. Operate the Kwik-Till and fully retract the **"Rear Roller"** **(A)** and **"Front Wheel Cylinders"** **(B)**. The cylinders will bottom out on the **"SPDC Plunger"** **(C)**, and the disks will engage the soil at the set depth. (See Fig. # 4-40)

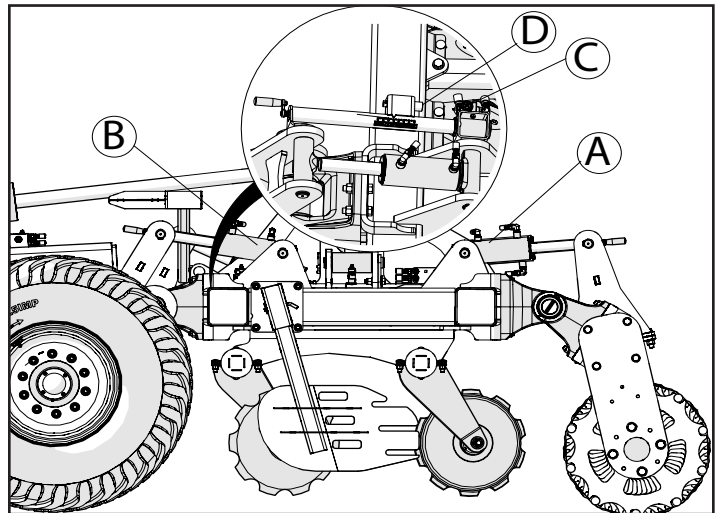


Fig. # 4-35 Fully Retract the Rear Roller & Front Wheel Cylinders

2. If the hitch is not level as shown (See Fig. # 4-41) & (See Fig. # 4-42), then adjust the Hitch Link position on the hitch tongue. (See Fig. # 4-43) & (See Fig. # 4-44) on the following pages to adjust the hitch link.

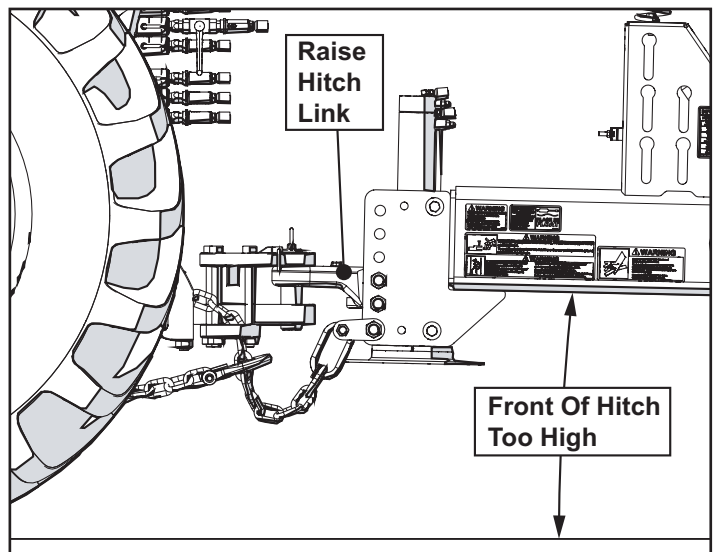


Fig. # 4-36 Kwik-Till Not Level - Raise Hitch Link (Downward Angle)

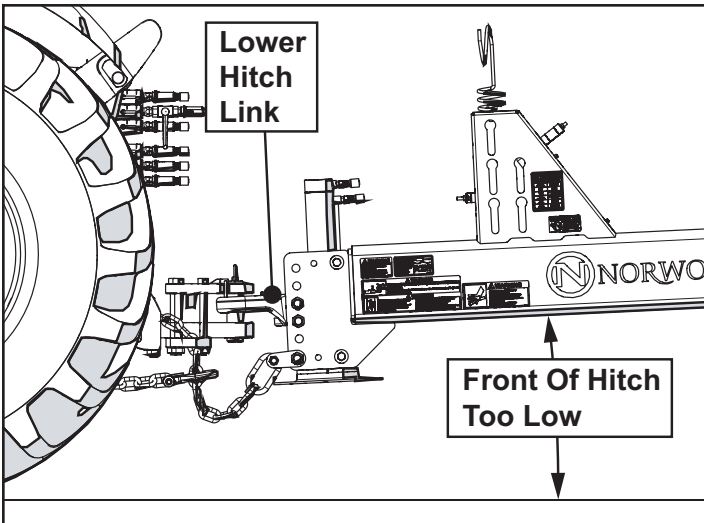


Fig. # 4-37 Kwik-Till Not Level - Lower Hitch Link (Upward Angle)

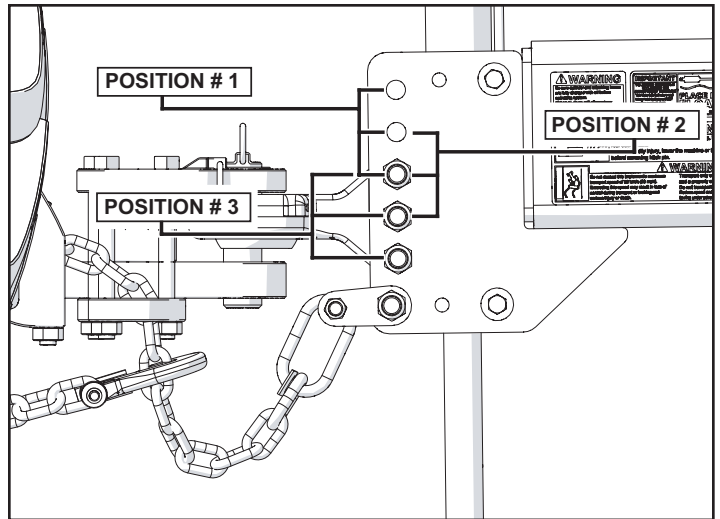


Fig. # 4-39 Leveling The Hitch: Cat. V Hitch Link Positions

3. The Kwik-Till hitch is equipped with a hitch link which can be adjusted as needed to level the hitch. The Cat. IV hitch link can be installed on the hitch tongue in four different positions. (See Fig. # 4-45) The Cat. V hitch link can be installed on the hitch tongue in three different positions.

NOTE

The Kwik-Till was leveled at the factory at "Position 4" for Cat. IV Hitch links, and "Position 3" for Cat. V Hitch links.

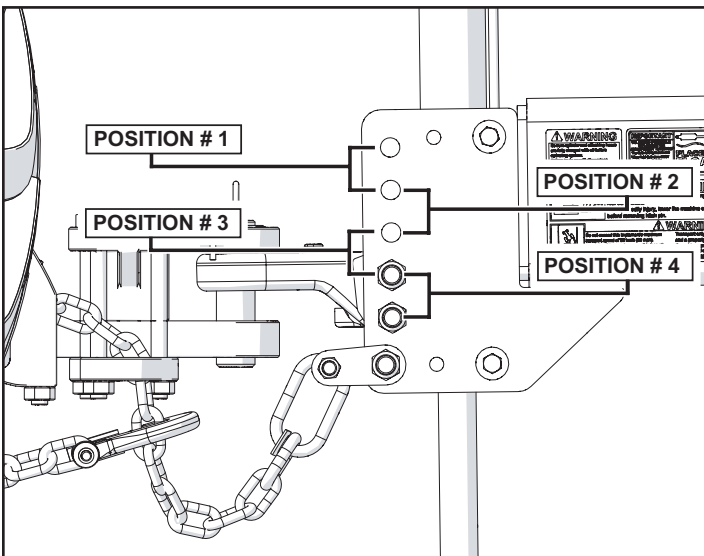


Fig. # 4-38 Leveling The Hitch: Cat. IV Hitch Link Positions

NOTE

NOTE: Rear Roller and Front Wheel depth stops may affect hitch leveling. Recheck Rear Roller and Front Wheel settings after changing hitch link positions.

ADJUSTING THE HITCH LINK

1. Remove the hitch link bolts (B), & Nuts (C). (See Fig. # 4-45)

NOTE

Cat. IV Hitch links use (Qty. 2) Hex Head Bolts & Nuts, and
Cat. V Hitch links use (Qty. 3) Hex Head Bolts & Nuts.

2. Determine the new location of the "Hitch Link" (A). (Example, Position # 1, Position # 2, Position # 3, or Position # 4. (See Fig. # 4-43) (See Fig. # 4-44)
3. If the hitch end of the Kwik-Till is too high, then move the "Hitch Link" (A) to a higher position. (See Fig. # 4-41)
4. If the hitch end of the machine is too low, then move the "Hitch Link" (A) to a lower position. (See Fig. # 4-42)
5. Once the hitch is level, tighten the hardware securing the "Hitch Link" (A) to the "Hitch Tongue" (D).

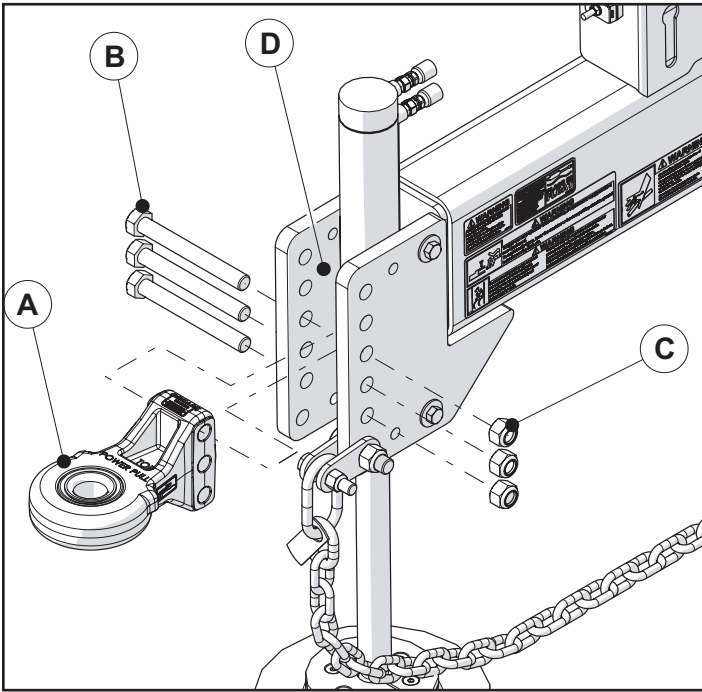


Fig. # 4-40 Adjusting The Hitch Link

IN-FIELD OPERATION

IMPORTANT

Ensure that **Main Frame Lift SCV** and **Wing Fold SCV** are placed in the **FLOAT POSITION**  before operating the machine in field to prevent damage to cylinders.

IMPORTANT

Never use **Main Frame Lift SCV** during headland turns.

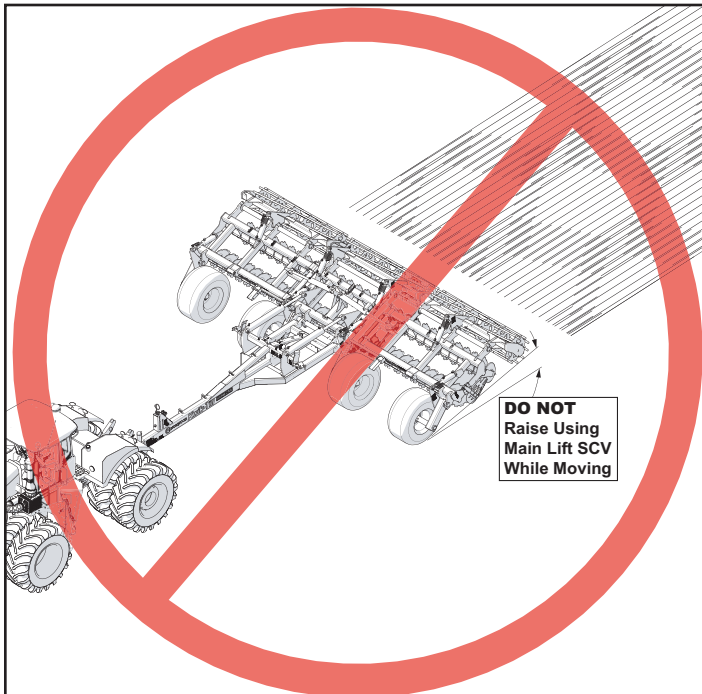


Fig. # 4-41 Do Not Use Main Frame Lift SCV To Raise Rear Sections During Headland Passes

- When lifting the toolbar on pass to pass turns, use the **"Front Wheel SCV"** and the **"Rear Roller SCV"** to raise the toolbar to the **"Field Raised Position"**. (See Fig. # 4-47)

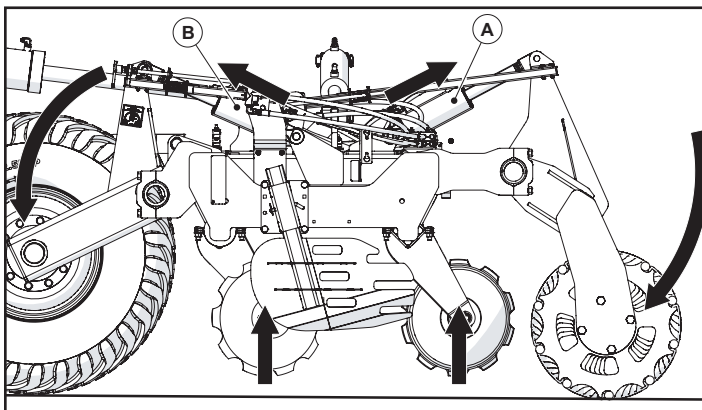


Fig. # 4-42 "Field Raised Position"

- When turning, using skip passes is recommended with the toolbar in the ground and operating speeds of 7 mph (11 km/h).
- When backing up the toolbar, always raise **Front Wheels**

SCV and Rear Roller SCV to raise the toolbar to the **"Field Raised Position"**. (See Fig. # 4-48)

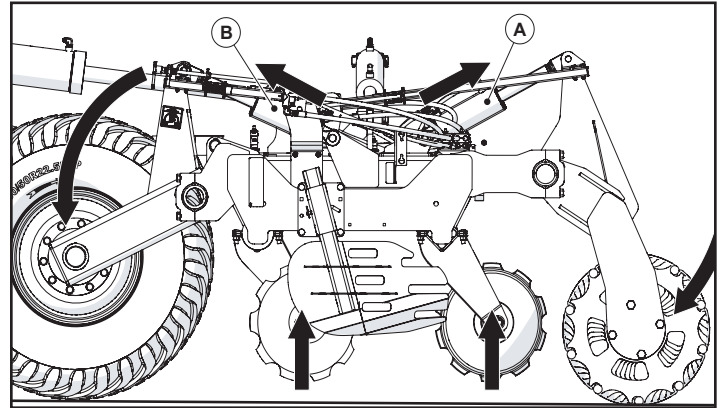


Fig. # 4-43 "Field Raised Position"

- When backing up the toolbar with the rubber roller option, retract the **Optional Equipment SCV** which is the SCV for **Rubber Roller Scrapers**.

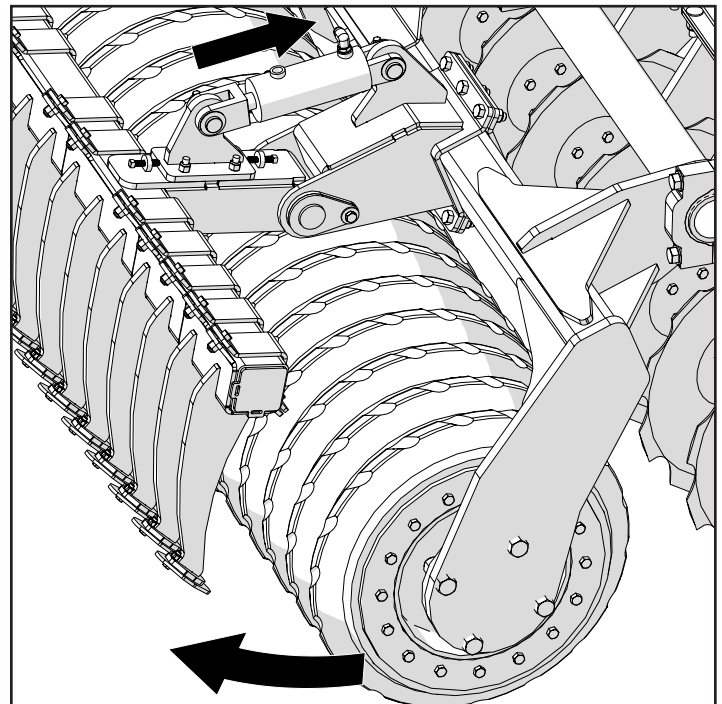


Fig. # 4-44 Retract The Rubber Roller Scraper Cylinders

- Adjust machine to a depth of **2 in - 3 in (51 mm - 76 mm)** in spring and **3.5 in - 4.5 in (89 mm - 114 mm)** in fall.
- Operate the tillage unit at speeds of 10-15 mph. Adjust your speed within the range best suited for your field conditions.
- When the rubber roller option is used, and the **Rubber Roller Scrapers** are not being used, retract the **Optional Equipment SCV** which is the SCV for the **Rubber Roller Scrapers**.
- Operate the tillage in the field at a 7-12 degree angle from the previous planted crop to reduce wear on the machine.

HEADLAND TURNS & SKIPPED PASSES

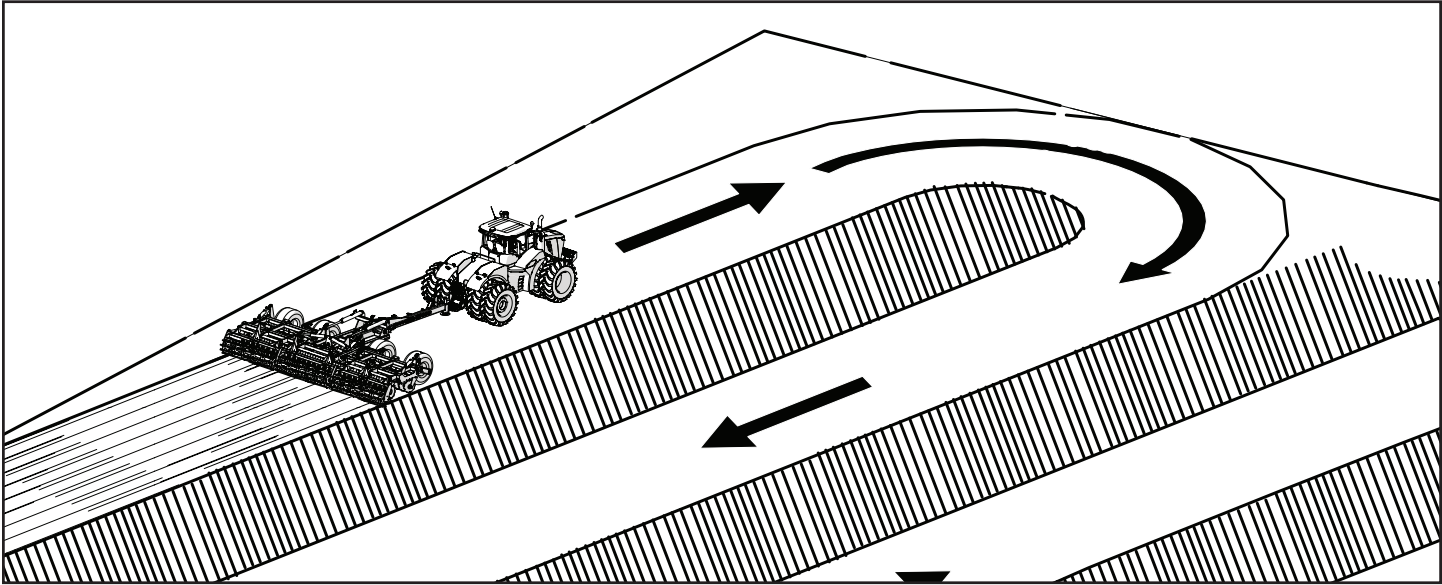


Fig. # 4-45 Headland Turns, First Pass

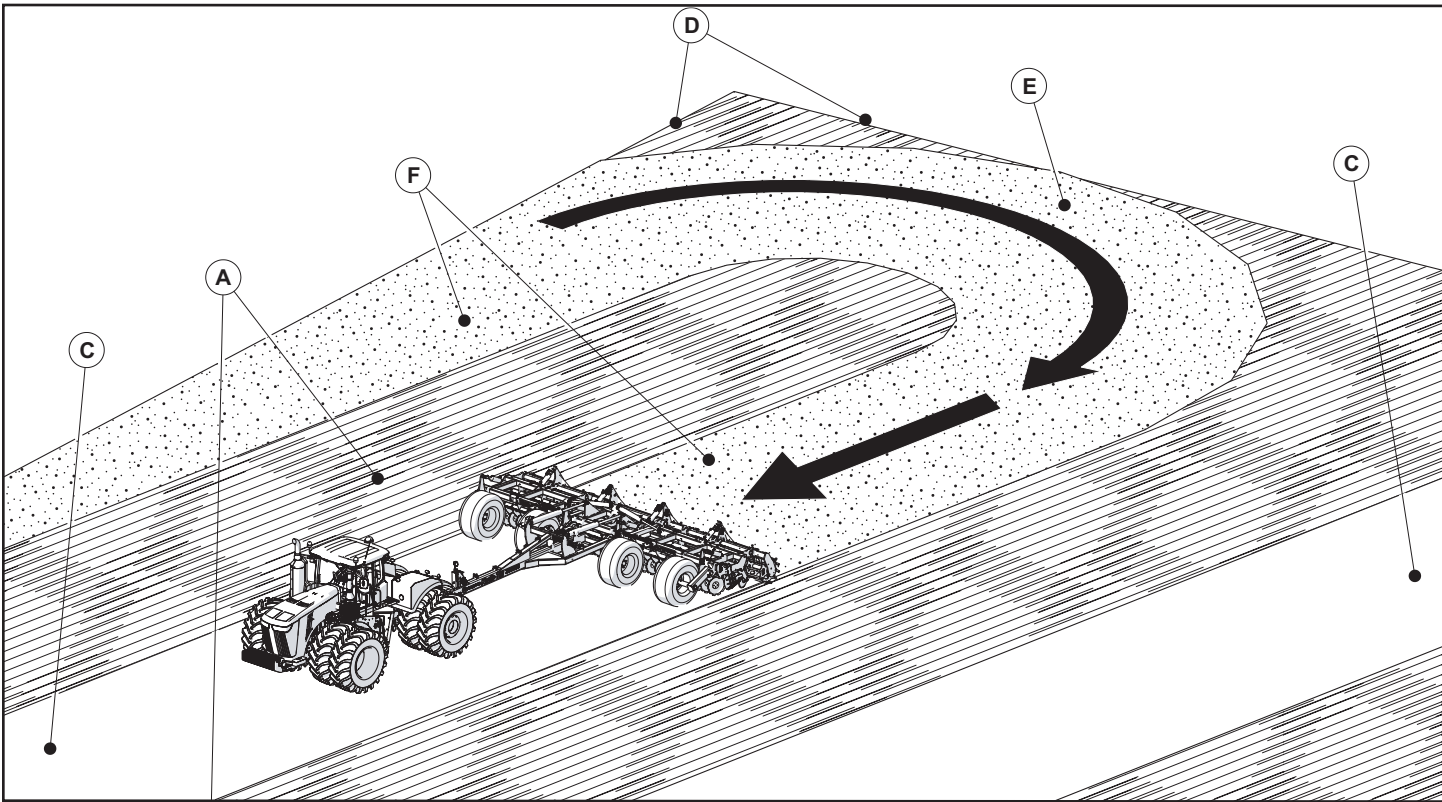


Fig. # 4-46 Headland Turns, Second Pass

Anatomy Of Headland Turns			
A	Tilled 1st Pass	D	Edge Of Field
B	Untilled 1st Pass	E	Headland Turn
C	Untilled 2nd Pass	F	Tilled 2nd Pass

Fig. # 4-47 Table: Anatomy Of Headland Turns

ADJUSTING SOIL DEFLECTOR

For spring tillage, set the soil **"Soil Deflector" (A)** as far rearward as possible to allow residue to pass without causing ridging. If a furrow is noticed, adjust the operating speed to 10.5 mph (17 km/h) and adjust the **"Soil Deflector" (A)** towards the **"Rear Shank Tube" (C)**.

1. To adjust the **"Soil Deflector" (A)** forward or rearward, loosen (Qty. 4) **"1/2" Nylock Nuts" (D)**. (See Fig. # 4-53)

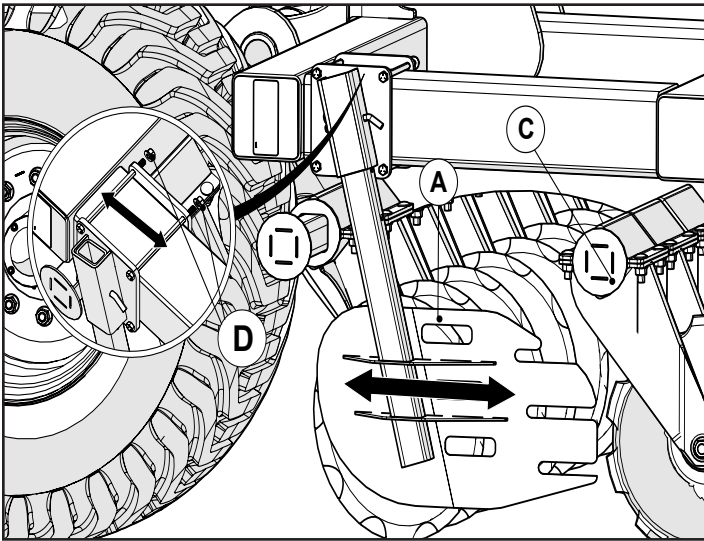


Fig. # 4-48 Adjusting The Soil Deflector Forward or Rearward

NOTE

To prevent furrowing, avoid running the soil deflector **(A)** too deep into the soil.

2. To adjust the **"Soil Deflector" (A)** depth, remove **"Pin" (B)** and adjust up or down. The soil deflector has 5 height settings. (See Fig. # 4-54)

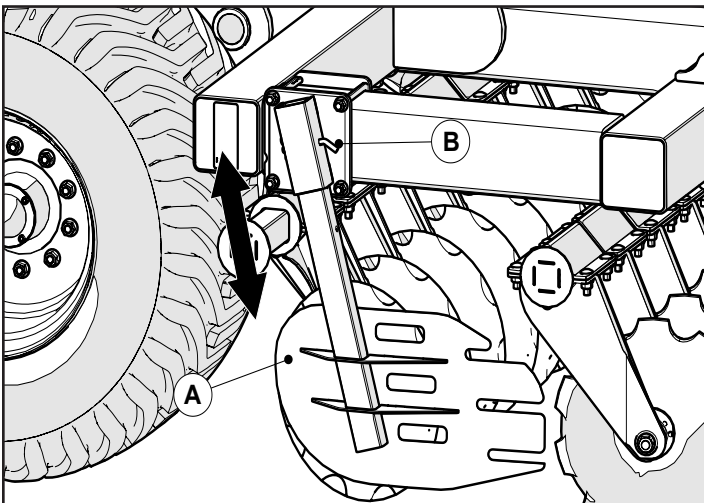


Fig. # 4-49 Adjusting The Soil Deflector Up Or Down

NOTE

For fall or heavy residue tillage, place the soil deflector in the storage position.

3. To disengage the soil deflector, remove it and place it into the storage position. (See Fig. # 4-55)

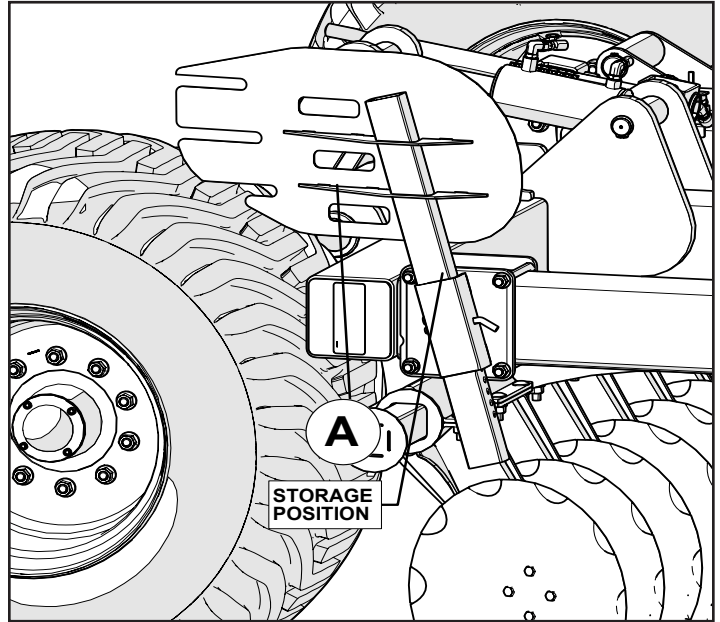


Fig. # 4-50 Placing The Soil Deflector Into The Storage Position.

ADJUSTING REAR ROLLER DEFLECTOR

The following instructions are for adjusting the "Rear Roller Deflector" for the "Kwik-Till tillage equipment. To start this process, proceed as follows:

1. Determine the Rear Roller Deflector installed locations. The Rear Roller Deflectors are installed in these locations. (See Fig. # 4-60)
2. The "Rear Roller Deflector" **A** is set at the factory to the highest position. It is the operator's responsibility to adjust to the working depth for the soil conditions. (See Fig. # 4-56)

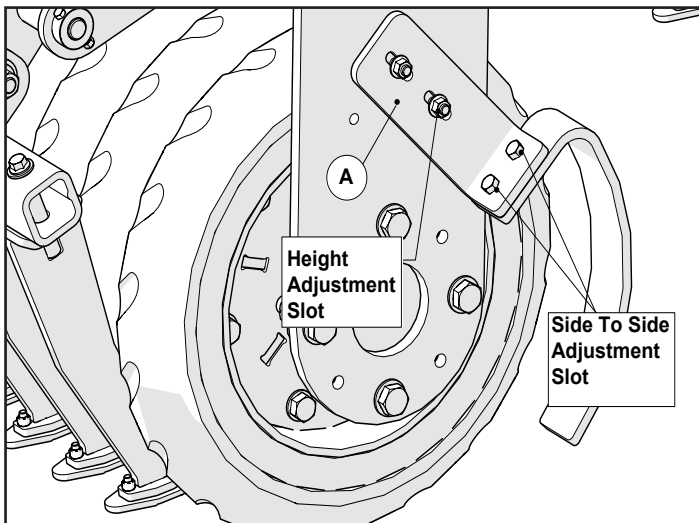


Fig. # 4-51 Rear Roller Deflector

3. To adjust the "Rear Roller Deflector" **A**, loosen the adjustment bolts, & nuts. (See Fig. # 4-57)

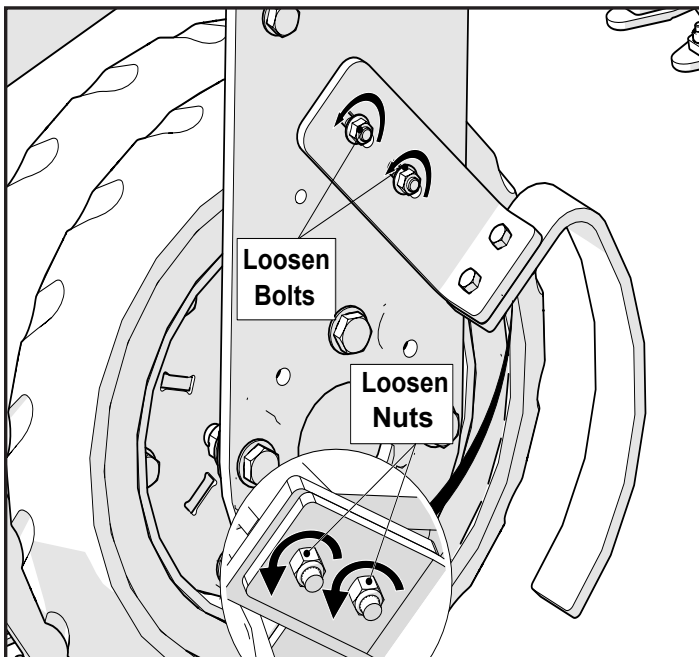


Fig. # 4-52 Loosen Adjustment Bolts & Nuts

4. Adjust to desired position. The "Rear Roller Deflector" **A** has 20° of vertical adjustment. The "Spring Packer" **B** has 1.72" of side to side adjustment. (See Fig. # 4-58)

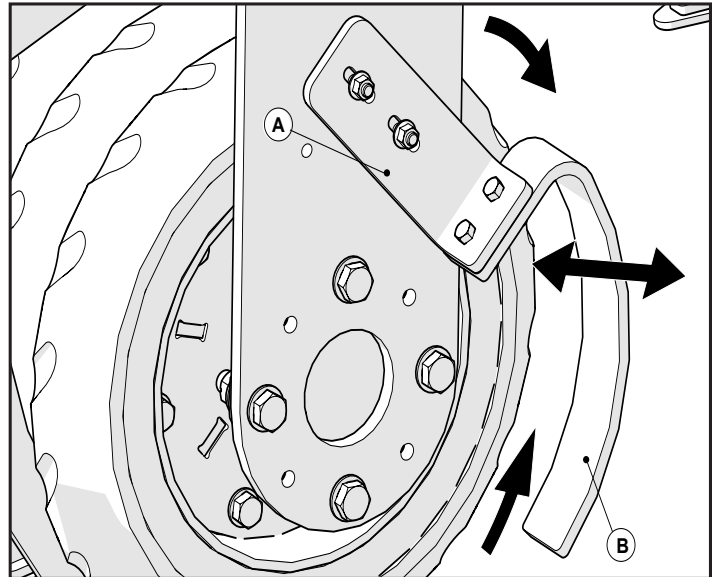


Fig. # 4-53 Adjust To Desired Position

NOTE

Setting the Rear Roller Deflector too low can result in a trench or possibly cause plugging.

Rear Roller Deflector Troubleshooting:

- Adjust Rear Roller Deflector down slightly to remove ridge.
 - Adjust Rear Roller Deflector up slightly to eliminate groove.
5. Tighten the bolts, & nuts. (See Fig. # 4-59)

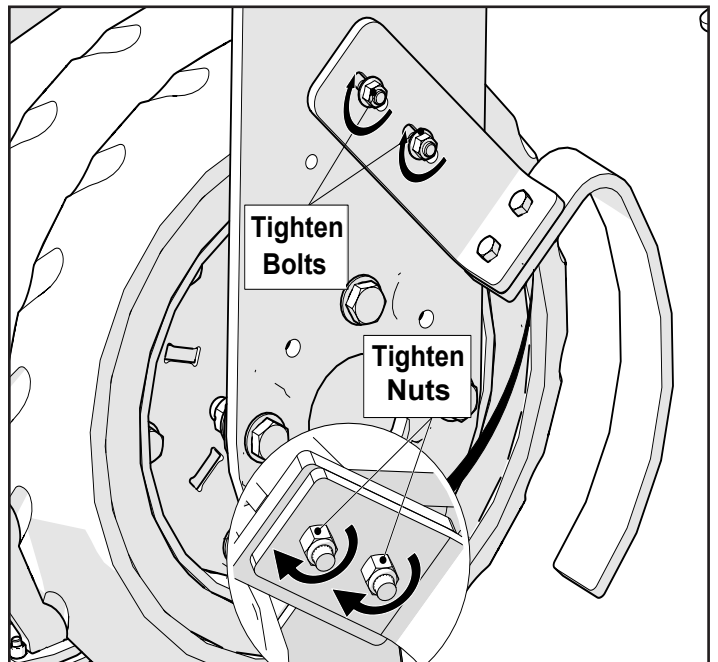


Fig. # 4-54 Tighten Adjustment Bolts

6. Repeat Steps 1-5 for second location of your machine.

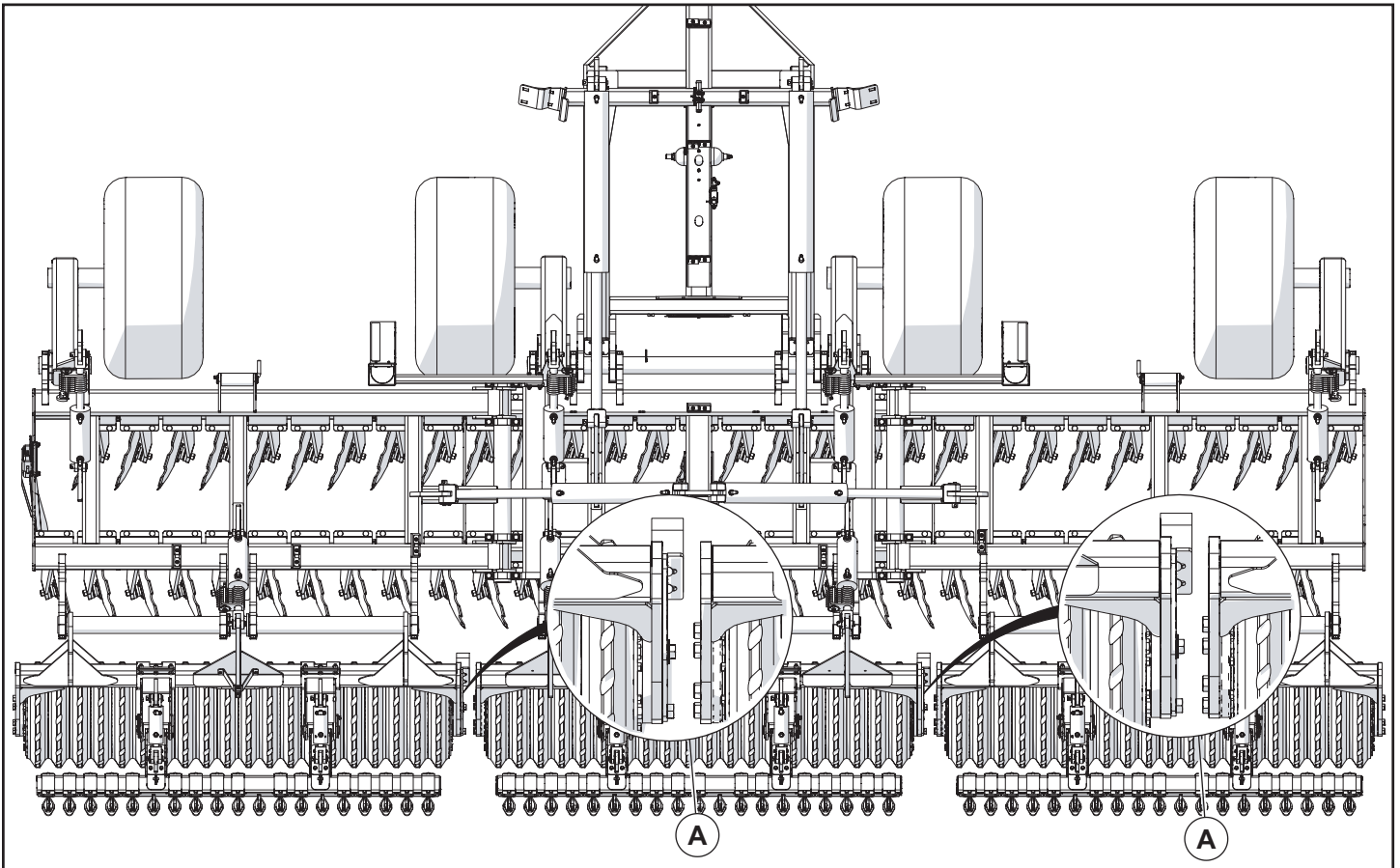


Fig. # 4-55 Rear Roller Deflector Locations

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5.0 - MAINTENANCE

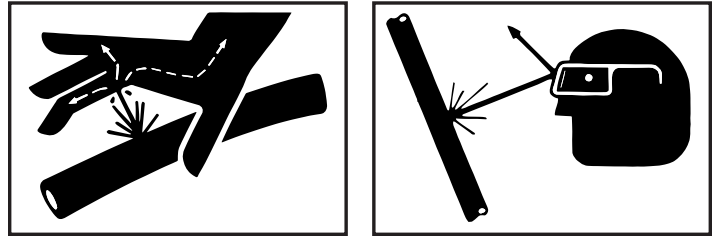
General Maintenance Safety

1. Review the Operator's Manual and all safety items before working with, maintaining or operating the Kwik-Till.
2. If machine is connected to a tractor, Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving tractor cab.

If machine is detached from tractor, block wheels and use safety stands to prevent movement.
3. Do not attempt to clean, lubricate, clear obstructions or make adjustments to the machine while it is in motion or while the engine is running.
4. Follow good shop practices:
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
5. Before applying pressure to a hydraulic system, make sure all components are tight and that hoses and couplings are in good condition.
6. Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.
7. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.
8. Place stands or blocks under the frame before working beneath the machine.
9. Before resuming work, install and secure all guards when maintenance work is completed.
10. Keep safety decals clean. Replace any decal that is damaged or not clearly visible.
11. Always make sure working area is clear of tools, parts, other persons and pets before you start operating the machine.
12. Chock wheels.
13. On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

HYDRAULIC SAFETY

Hydraulic oil leaking under pressure can penetrate the skin, causing death or serious injury, or infection.



DO NOT use your hand to check for leaks. Use a piece of cardboard or plywood.

Stop engine, remove key and relieve the pressure before connecting or disconnecting fluid lines.

Make sure all components are in good condition and tighten all connections before starting the engine or pressurizing the system.

Do not attempt any makeshift repairs to the hydraulic 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.

Replace any worn, cut, abraded, flattened or crimped hoses.

If hydraulic fluid penetrates the skin, seek medical attention immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

Avoid serious injury or death while working under a raised implement. Hydraulic hoses between the lift cylinders and hydraulic lockup valves should be inspected frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid, or any other signs of wear or damage. Worn or damaged hose assemblies can malfunction during use and should be replaced immediately.



See your Kwik-Till dealer for replacement hoses.

REPLACE HYDRAULIC HOSES

⚠ WARNING

Avoid hazards due to escaping fluid under pressure.
See Avoid High-Pressure Fluids in the Safety section.

Inspect hydraulic hoses between the lift cylinders and hydraulic lockup valve frequently for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid, or any other signs of wear or damage. Replace worn or damaged hose assemblies immediately. See your Kwik-Till dealer for replacement hoses.

⚠ WARNING

If an incorrectly rated hose is used, injury or death could occur due to uncontrolled machine movement.

IMPORTANT

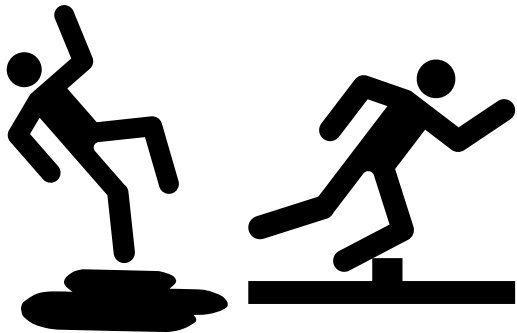
If an incorrectly rated hose is used, machine damage could occur due to uncontrolled machine movement.

If hoses are to be fabricated, ensure that hoses are rated at no less than 82 737 kPa (827 bar) (12 000 psi) burst pressure according to SAE standard J517, 100R17 hose specification.

Incorrect hose length or routing can increase chance of hose wear or damage. Use old hose as a guide for length and hose routing.

Incorrect fittings can damage mating parts or cause leaks. Make sure to use steel fittings approved for use with the hose manufacturer. When replacing hoses, use fittings of the correct size and thread to prevent leaks.

PRACTICE SAFE MAINTENANCE



Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing away from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

Falling while cleaning or working at height can cause serious injury. Use a ladder or platform to easily reach each location. Use sturdy and secure footholds and handholds.

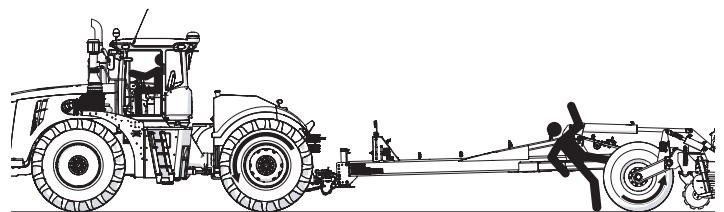


WORK IN CLEAN AREA

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.

USE SAFE SERVICE PROCEDURES

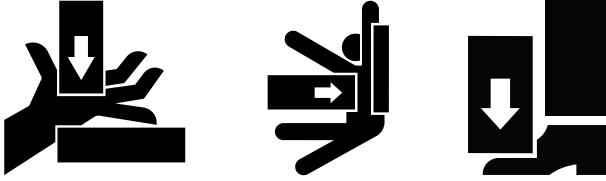


⚠ WARNING

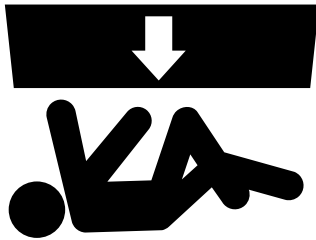
To help prevent personal injury or death caused by unexpected movement, be sure to service machine on a level surface. If machine is connected to tractor, engage park brake and place transmission in PARK, shut off engine, and remove key. If machine is detached from tractor, block wheels and use safety stands to prevent movement.

SERVICE MACHINE SAFELY**⚠ DANGER****CRUSH HAZARD**

Stand clear when raising or lowering the Kwik-Till.



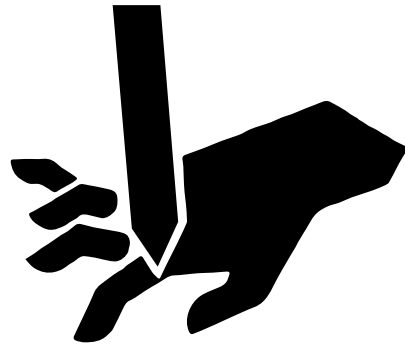
Keep feet, legs, and body clear when raising and lowering the Kwik-Till. Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result. Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts. Keep others away.

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.

Avoid Sharp Disks**⚠ WARNING**

Disks are sharp and can cause serious injury to you or others. To avoid being cut, wear gloves when handling disks.

FLUIDS AND LUBRICANTS**Hydraulic Oil:**

Consult your tractor equipment Operator's Manual for information regarding which hydraulic oil is recommended for use. Hydraulic oil requirements vary by equipment.

The Kwik-Till is compatible with petroleum based hydraulic oil with a minimum ISO Grade of 32 and contains anti-rust, anti-foam and oxidation inhibitors.

Storing Lubricants:

Your machine can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

Make certain that all containers are properly marked to identify their contents.



GREASE

Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable, SAE multipurpose lithium based grease.

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB
- ISO-L-X-BDHB 2 or DIN KP 2 N-10 Lithium Complex-Non-Synthetic Base Oil (100 to 220 mm²/s @ 40°C)

Greasing

Use the **Maintenance Chart** provided on page (See "MAINTENANCE CHART" on page 5-5) to keep a record of all scheduled maintenance.

1. Use only a hand-held grease gun for all greasing. An air-powered greasing system can damage the seals on bearings and lead to early failures.



2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. All roller bearings are sealed and not greasable, only the wheel hubs are greasable. They require minimal lubricant. Recommended greasing is 1 small stroke every 2 weeks. Be careful not to over-grease, as this may push the seal out.
4. Replace and repair broken fittings immediately.
5. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

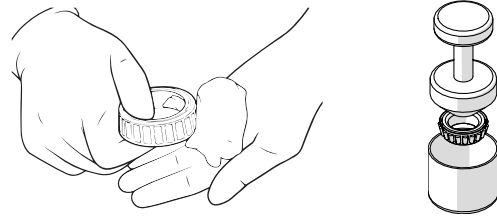
Schedules may vary depending on equipment options contained in the present unit.

Lubrication Symbols

Lubricate at the hourly interval indicated on symbol. Use SAE multi-purpose high-temperature grease with extreme pressure (EP) performance. SAE multi-purpose lithium-based grease is also acceptable.



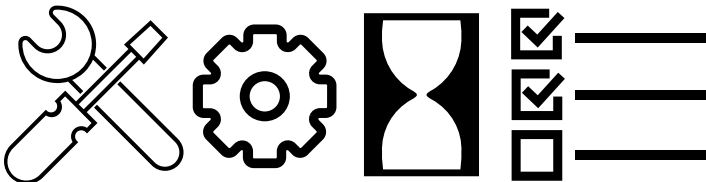
Repack bearings at the hourly interval indicated on symbol. Use SAE multi-purpose high-temperature grease with extreme pressure (EP) performance. SAE multi-purpose lithium-based grease is also acceptable.



Pack bearings by hand or with a bearing packer machine

SERVICING INTERVALS

Make sure your Kwik-Till is ready to go to the field when you are. Perform the service and maintenance procedures that are recommended in this section to prepare for the next season. Careful maintenance preparation will save time and expense as you enter the busy season.



The periods recommended on page (See "MAINTENANCE CHART" on page 5-5) are based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication and oil changes.

MAINTENANCE CHART

										Replace
										Cleaning
										Change Fluid / Repack
										Adjust
										Drain Fluid
										Check
										Grease
Interval	Page #	Maintenance Action	# of Pts.							
First 1 Hour and First 10 Hours Of Operation	5-6	Re-Torque Wheel Flange Nuts	40				X			
	5-6	Re-Torque Wheel Flange Nuts	40				X			
	5-7	Check Tightness Of All Bolts, & Cap Screws			X					
DAILY	5-9	Check For Hydraulic Leaks			X					
	5-10	Check For Damaged Hydraulic Hoses, Adapters, Crossovers, Junctions, & Hydraulic Cylinders			X					
	5-11	Check Tire Pressure	4		X					
	5-12	Check Rubber Roller Scraper Alignment If Equipped With The Rubber Roller Basket			X		X			X
WEEKLY	5-14	Re-Torque Wheel Flange Nuts			X					
	5-15	Check Tightness Of All Bolts, & Cap Screws			X					
	5-16	Grease Hitch Link Articulating Ball	2	X						
MONTHLY	5-17	Check Disk Hub Nuts (Re-Torque If Needed)			X		X			
	5-18	Check Disk Shank Cord Alignment			X		X			
	5-20	Lubricate Wheel Hubs		X						
ANNUALLY	5-21	Check Disks For Damage And / Or Excessive Wear		X						
	5-22	Check Wheel Bearings			X					
	5-23	Check Disk Hubs For Excessive Wear			X					
	5-25	Check Accumulator			X					
	5-26	Check Rear Roller Hubs For Wear			X					
AS REQUIRED	5-27	Clean and Wash the Machine							X	

FIRST 1 HOUR & FIRST 10 HOURS OF OPERATION**RE-TORQUE WHEEL FLANGE NUTS**

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-1)

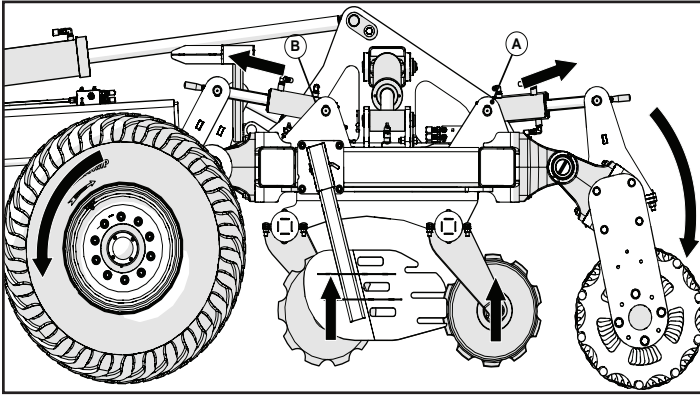


Fig. # 5-1 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION** with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the “**Field Lowered Position**” (See Fig. # 5-2).

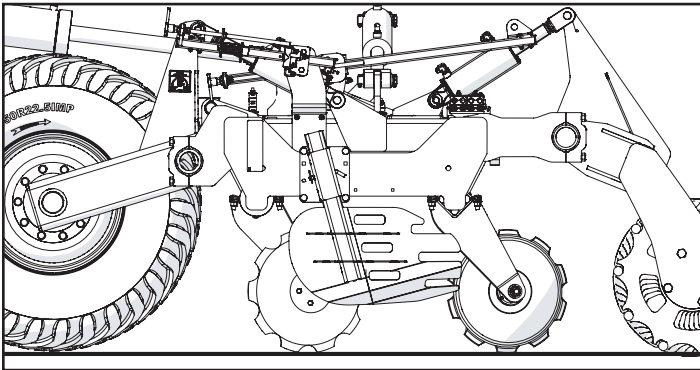


Fig. # 5-2 “Field Lowered Position”

5. Re-torque wheel flange nuts (A) (See Fig. # 5-5) (In A Diagonal Pattern) (See Fig. # 5-4) after the first 1 hour of use, then at 10 hour intervals or (daily). If bolt torque is stable, check at 50 hour intervals or (weekly).

**350 ft-lbs (475 N-m)**

Tighten all wheel lug nuts to specification.

Specification

Wheel Lug Nuts	Torque	Qty.
	350 lb·ft (475 N·m)	40

Fig. # 5-3 Table: Wheel Lug Nut Torque



Fig. # 5-4 Wheel Flange Nut Tightening Sequence (Diagonal Pattern)

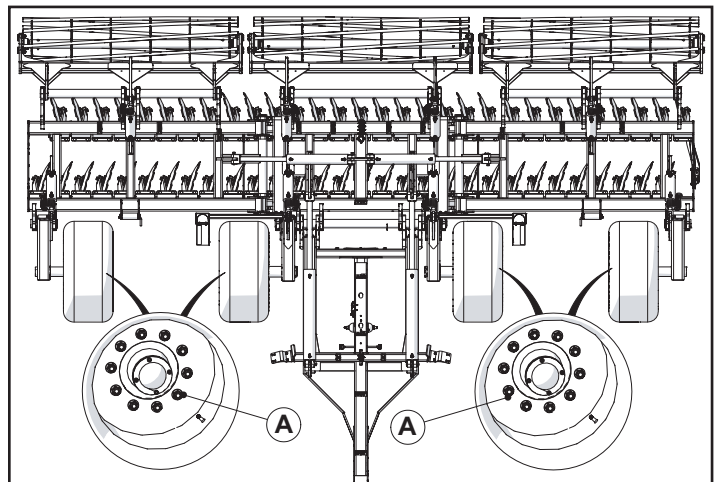


Fig. # 5-5 Wheel Flange Nut Locations 25', 30', 35', 40', & 45'

FIRST 10 HOURS OF OPERATION

CHECK TIGHTNESS OF ALL BOLTS, & CAP SCREWS

1. Unfold the machine into the **Field Position**. (See "Kwik-Till Folding & Unfolding" on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-6)

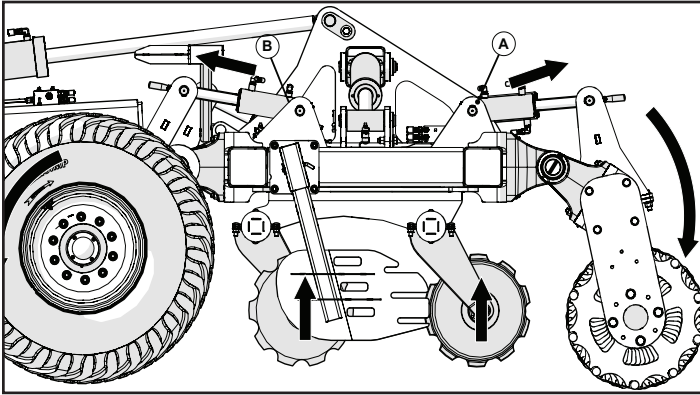



Fig. # 5-6 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION**  with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the "Field Lowered Position" (See Fig. # 5-7).

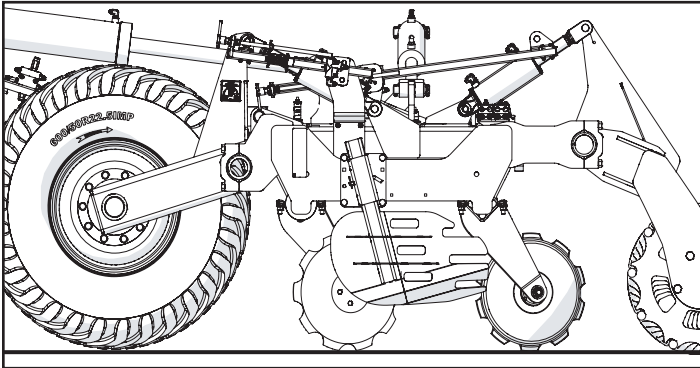
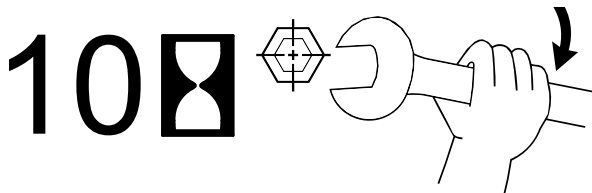


Fig. # 5-7 "Field Lowered Position"

5. Check tightness of all bolts, & cap screws.



6. Use the torque charts at the back of this manual for proper torque, unless otherwise specified in this manual. (See "Torque – Fasteners" on page 7-6)

CAST PIVOT JOINT TORQUE SPEC AND PATTERN

1. Use the following guide for the torque pattern for cast pivot joints

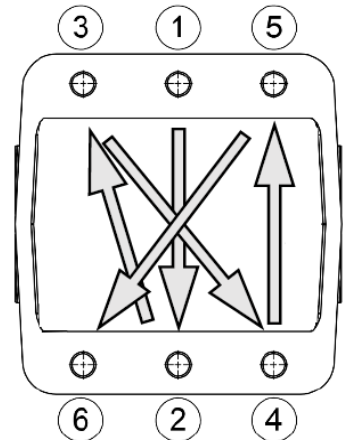
-TORQUE ALL 3/4"-10 X 3-1/4" BOLTS TO 350 FT-lbs (474 N-m)

-TIGHTEN BOLT HEADS ONLY, DO NOT TORQUE NUTS AS DAMAGE MAY OCCUR!

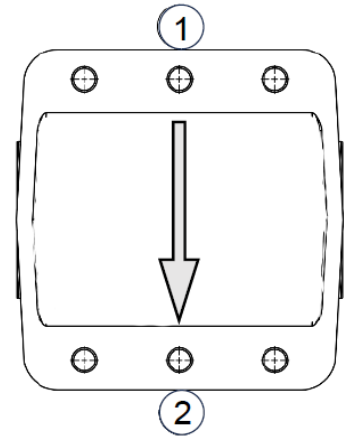
-TIGHTEN BOLTS IN SEQUENCE SHOWN BELOW

-USE HARDENED WASHERS PROVIDED

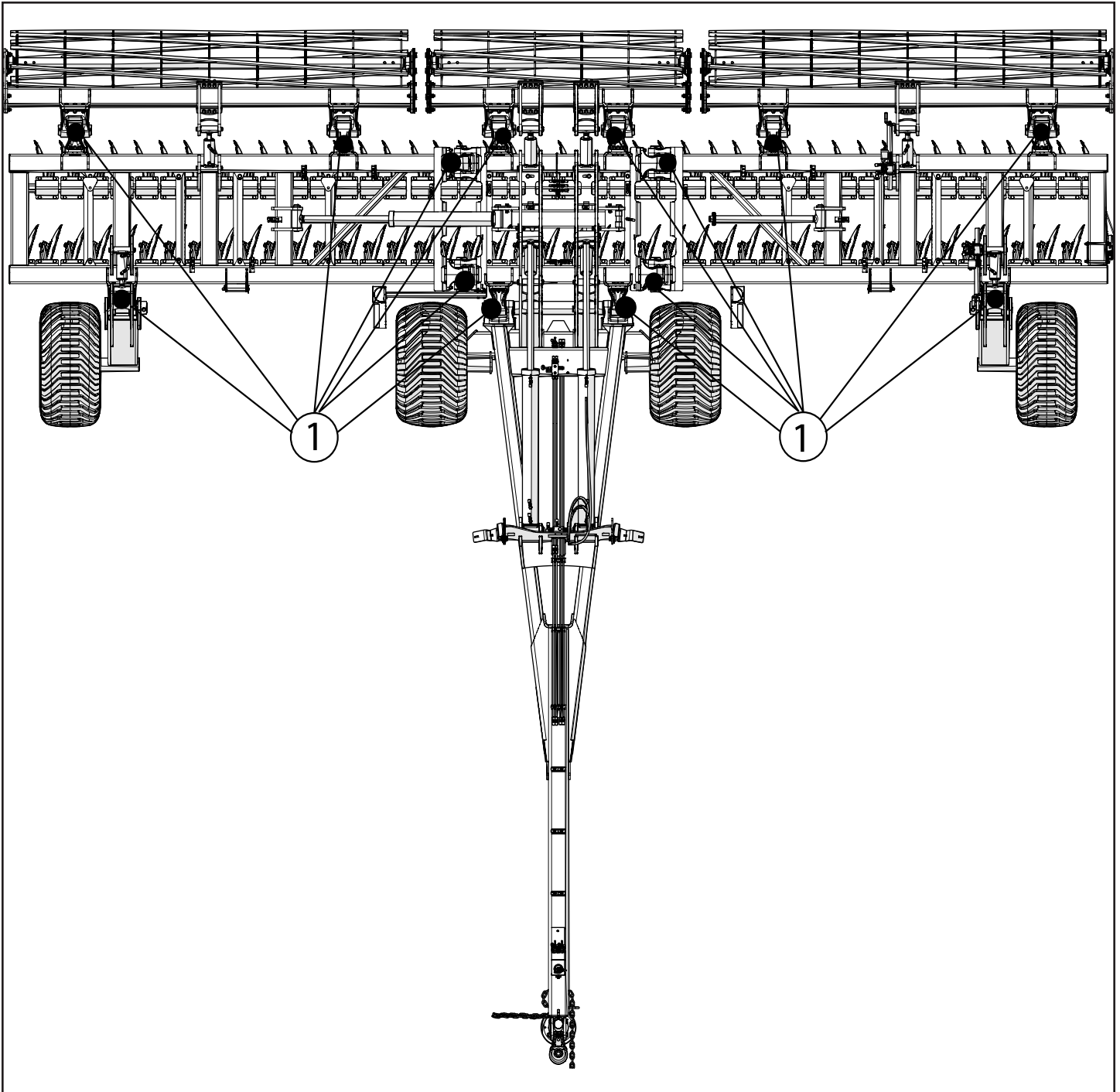
INITIAL TIGHTENING SEQUENCE



REPEAT TIGHTENING POSITIONS 1 AND 2



2. Use the following diagram on page 5-8 to locate the pivot joints



DAILY**CHECK FOR HYDRAULIC LEAKS**

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-8)

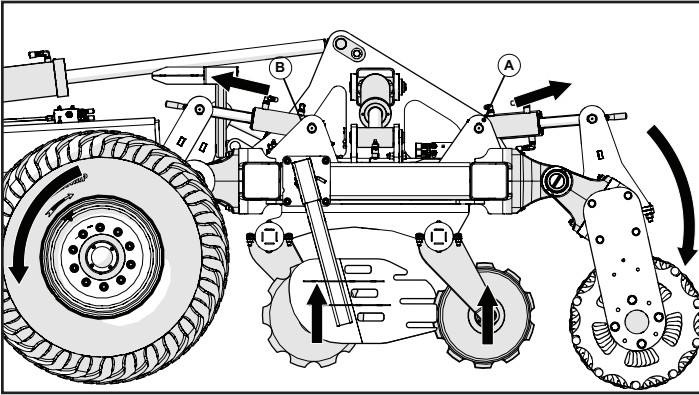



Fig. # 5-8 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION**  with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the “Field Lowered Position” (See Fig. # 5-7).

⚠ WARNING

Hydraulic oil leaking under pressure can penetrate the skin,



causing death or serious injury, or infection.

DO NOT use your hand to check for leaks. Use a piece of cardboard or plywood.

5. Check all **Hydraulic Hoses (A)**, **Adapters (B)**, **Crossovers (C)**, **Junctions (D)**, & **Hydraulic Cylinders (E)** for leaks. (See Fig. # 5-9) (See Fig. # 5-10) (See Fig. # 5-11)

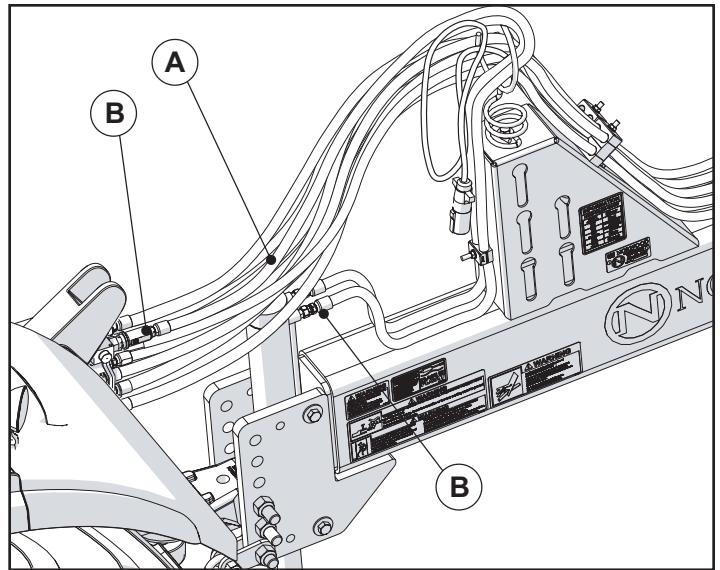


Fig. # 5-9 Check For Hydraulic Leaks

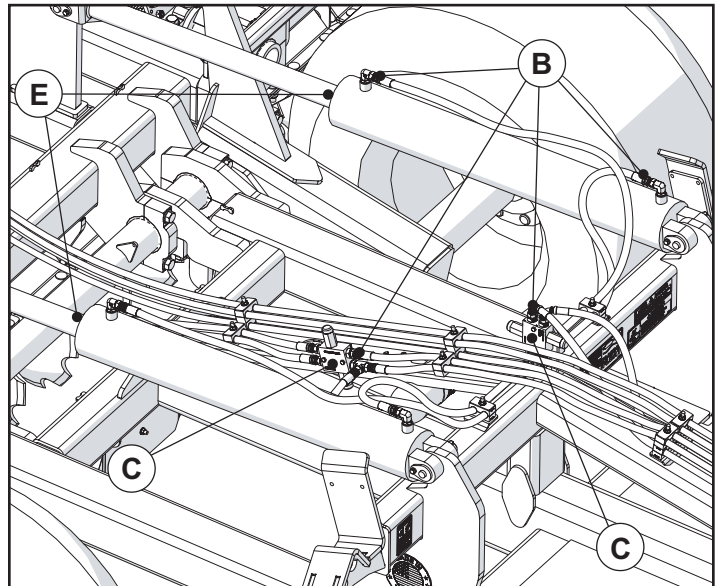


Fig. # 5-10 Check For Hydraulic Leaks

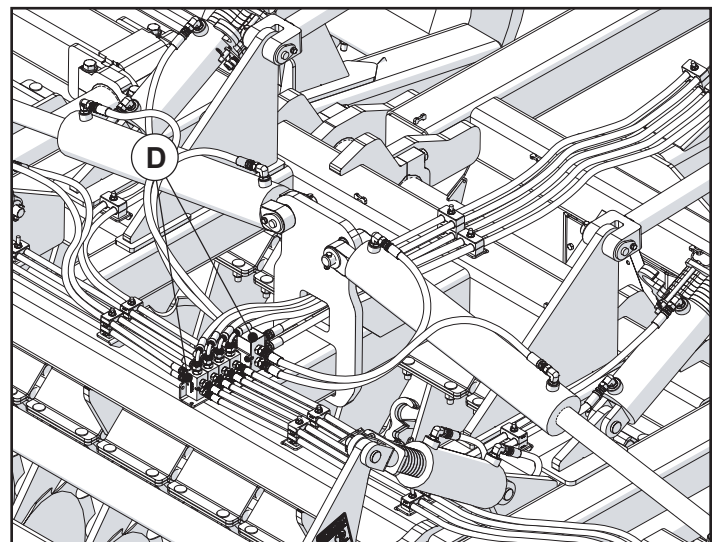


Fig. # 5-11 Check For Hydraulic Leaks

DAILY

CHECK FOR DAMAGED HYDRAULIC HOSES, ADAPTERS, CROSSOVERS, JUNCTIONS, & HYDRAULIC CYLINDERS

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-12)

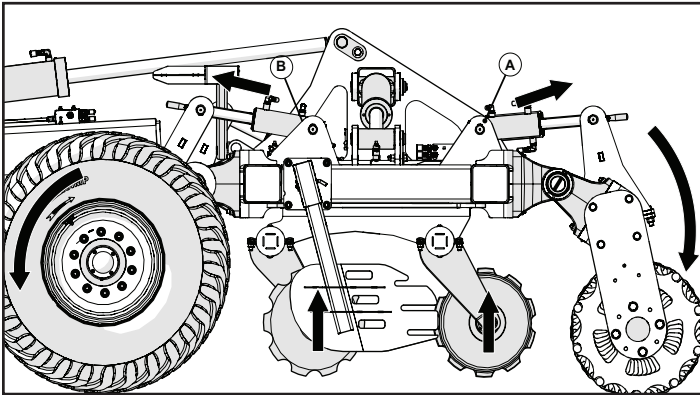



Fig. # 5-12 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION**  with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the “**Field Lowered Position**” (See Fig. # 5-7).
5. Visually check for damaged **Hydraulic Hoses (A)**, **Adapters (B)**, **Crossovers (C)**, **Junctions (D)**, & **Hydraulic Cylinders (E)**. (See Fig. # 5-13) (See Fig. # 5-14) (See Fig. # 5-15)

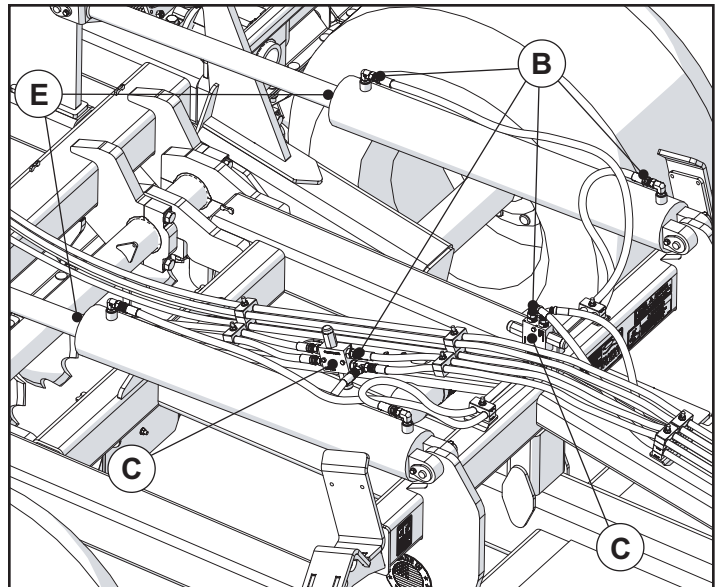


Fig. # 5-14 Check For Damaged Adapters, Crossovers, & Hydraulic Cylinders

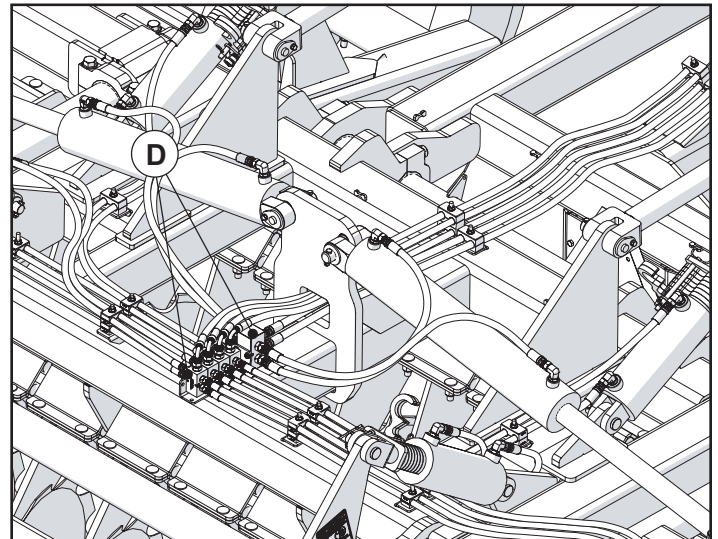


Fig. # 5-15 Check For Damaged Junctions

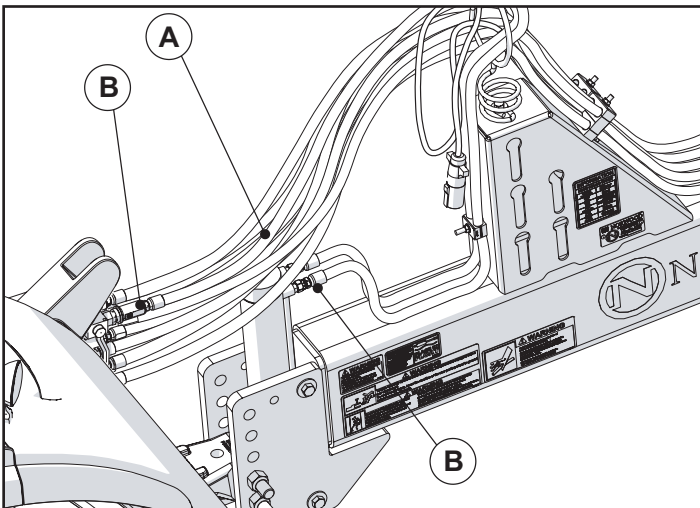


Fig. # 5-13 Check For Damaged Hydraulic Hoses, & Adapters

DAILY**CHECK TIRE PRESSURES**

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and **NOT** in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

⚠ CAUTION

Tire failure due to overloading can cause loss of vehicle control during transport resulting in serious injury or death to you or others. Prevent tire failure by using only tires specified for your machine and inflating them to correct pressures.

IMPORTANT

Tire pressure chart shown (See Fig. # 5-18) is for tire reference only. Ensure machine performance by using only tires specified for your machine and inflating them to correct pressures.

For the even working depth of attachments in the ground, tires must be inflated to specification. A low tire causes deeper penetration on one side than the other. Deeper penetration on one side can cause the machine to side draft. Inflate all tires to correct pressures.

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders** (B) and **Rear Roller Cylinders** (A). (See Fig. # 5-16)

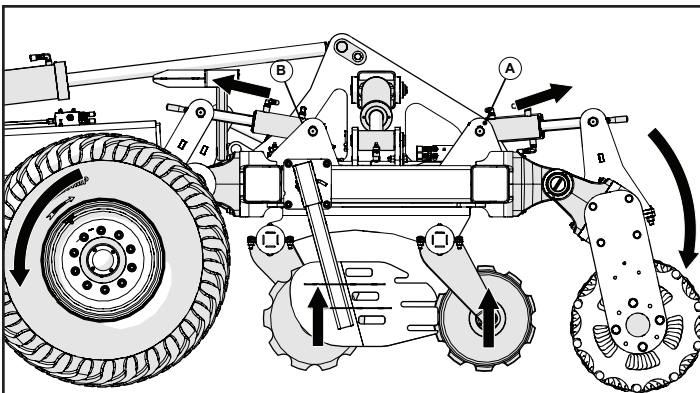


Fig. # 5-16 Lower Disks to the Ground

SCV levers to the **FLOAT POSITION**  with engine running for the Main Frame Lift & Wing Fold cylinders.

4. The machine should now be in the “Field Lowered Position” (See Fig. # 5-7).
5. Check the tire pressures (A) at the specified locations. (See Fig. # 5-17)

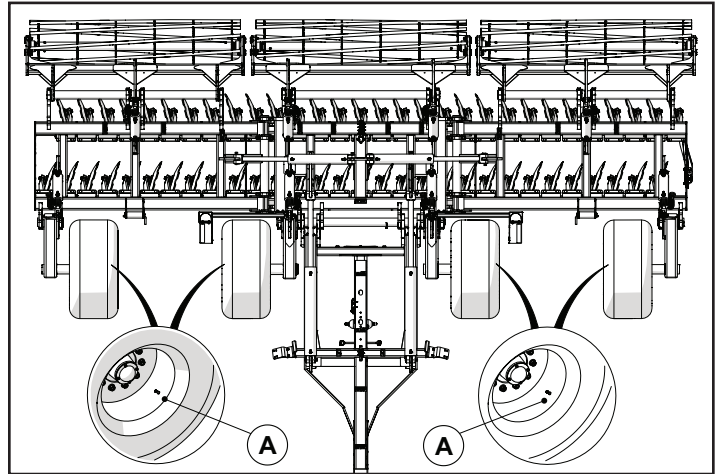


Fig. # 5-17 Tire Valve Locations 25', 30', 35', 35', 40', & 45'

Tire Size	Load/Speed Index	Pressure		
		psi	kPa	bar
600/50R22.5	168B	46	317	3.1
710/40R22.5	170B	50	344	3.4
710/45R22.5	170B	58	400	4.0
800/40R22.5	176B	46	317	3.1

Fig. # 5-18 Table: Tire Pressure Chart

3. Relieve all the hydraulic pressure by placing the tractor

DAILY

CHECKING / ADJUSTING SCRAPER ALIGNMENT

1. Fully extend the scraper hydraulic cylinders. (See Fig. # 5-19)

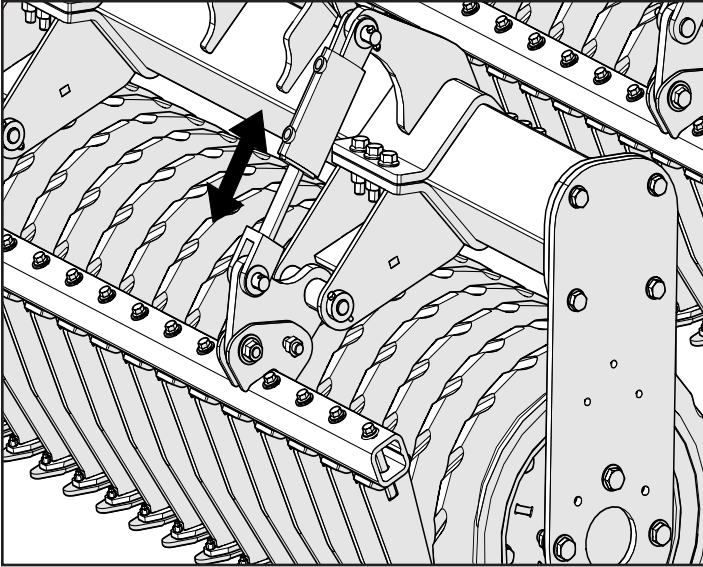


Fig. # 5-19 Fully Extend Scraper Hydraulic Cylinders

2. With the hydraulic cylinders fully extended, check the gap between the scraper plates and the tire valley's. Desired Gap is 3/8". (See Fig. # 5-20) (Note: Shank is removed for illustrative purposes)

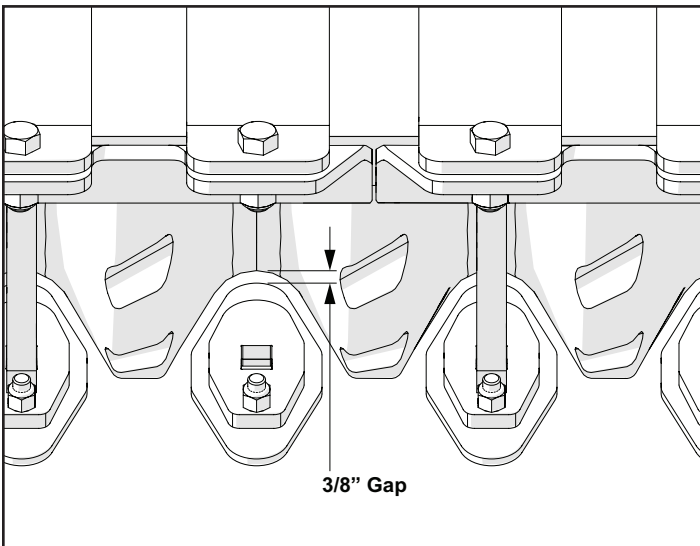


Fig. # 5-20 Check Gap

3. Check to see if the Shank Scraper Assemblies (A) are centered in the valley of the Rubber Tires (B). (See Fig. # 5-21)

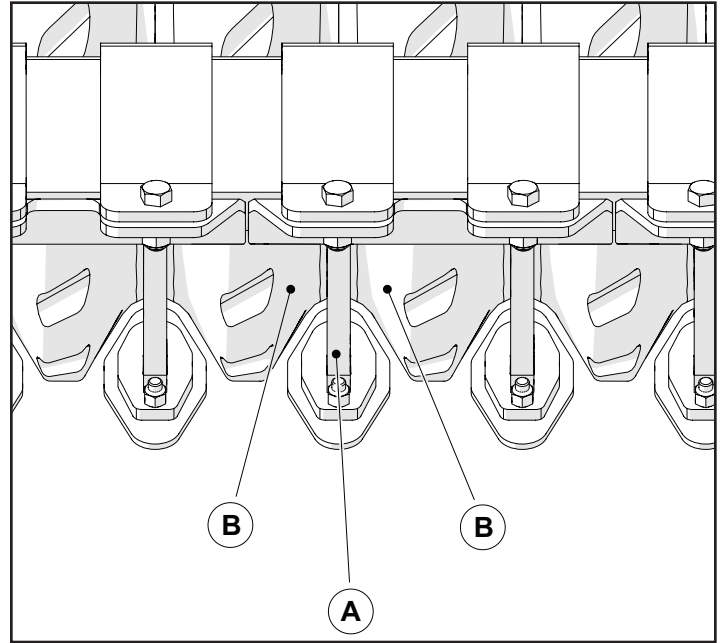


Fig. # 5-21 Center Scraper Assemblies

4. If the shank scraper assemblies are not centered, loosen the Bolts (A) securing the Scraper Base Pivot Weldments (B). Adjust left or right until centered. (See Fig. # 5-22)

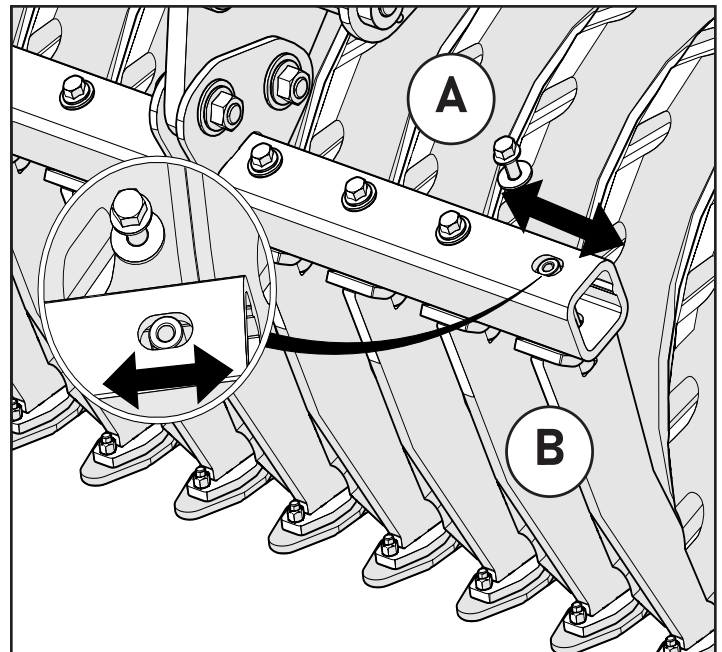


Fig. # 5-22 Adjusting Alignment

5. Loosen the Bolts (A) and adjust the Adjustable Scraper Arms (B) pitch back and forward until the gap between the blade and the roller are correct (See Fig. # 5-23)

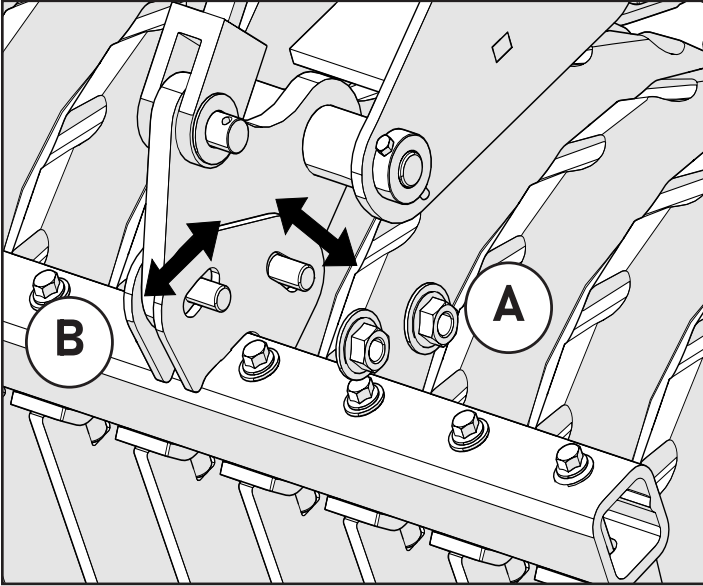


Fig. # 5-23 Tighten Set Screws

Scraper And Hardware Quantities			
Model	Scrapers	Bolts	Nuts
HSD2600 NT	57	57	57
HSD2900 NT	65	65	65
HSD3250 NT	73	73	73
HSD3600 NT	81	81	81
HSD3600	81	81	81
HSD3900 NT	89	89	89
HSD3900	89	89	89
HSD4250	97	97	97
HSD4600	105	105	105

Fig. # 5-24 Scraper Quantity Hardware Chart

WEEKLY

RE-TORQUE WHEEL FLANGE NUTS

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-32)

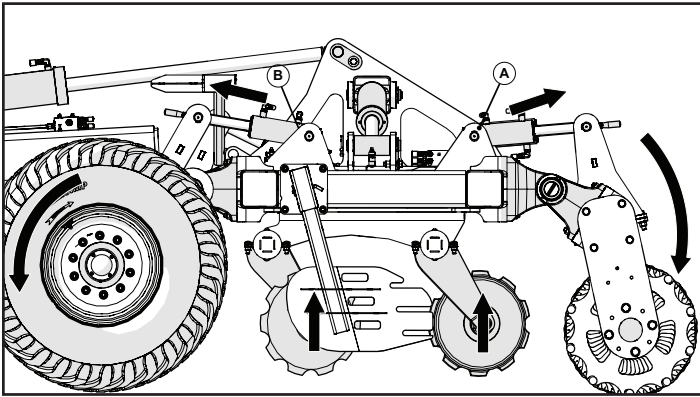

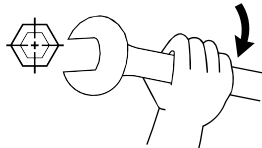


Fig. # 5-25 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION**  with engine running for the Main Frame Lift & Wing Fold cylinders.
4. The machine should now be in the “Field Lowered Position” (See Fig. # 5-7).
5. Re-torque wheel flange nuts (A) (See Fig. # 5-35) (In A Diagonal Pattern) (See Fig. # 5-34) after the first 1 hour of use, then at 10 hour intervals or (daily). If bolt torque is stable, check at 50 hour intervals or (weekly).

10 10 50 

350 ft-lbs (475 N-m)

Tighten all wheel lug nuts to specification.

Specification		
Wheel Lug Nuts	Torque	Qty.
	350 lb-ft (475 N-m)	40

Fig. # 5-26 Table: Wheel Lug Nut Torque



Fig. # 5-27 Wheel Flange Nut Tightening Sequence (Diagonal Pattern)

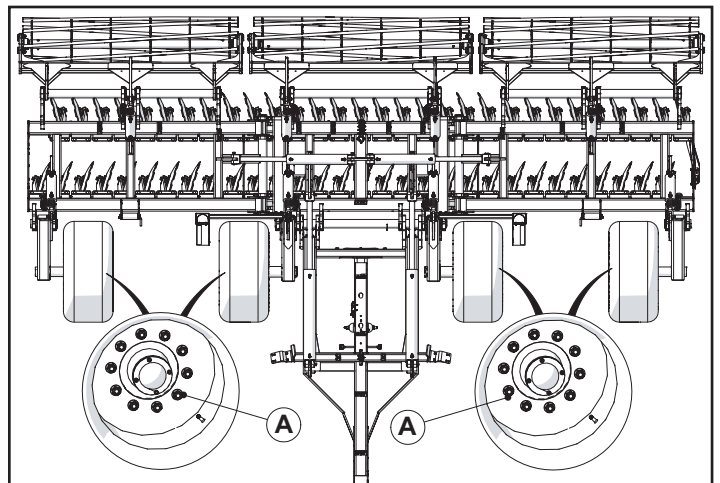


Fig. # 5-28 Wheel Flange Nut Locations 25', 30', 35', 40', & 45'

WEEKLY

CHECK TIGHTNESS OF ALL BOLTS, & CAP SCREWS

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-36)

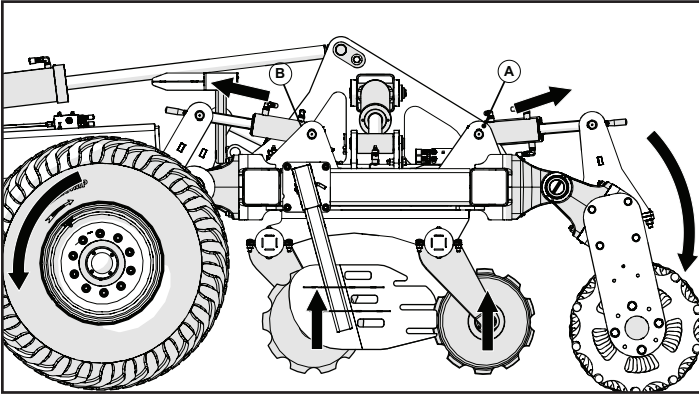



Fig. # 5-29 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION**  with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the “**Field Lowered Position**” (See Fig. # 5-37).

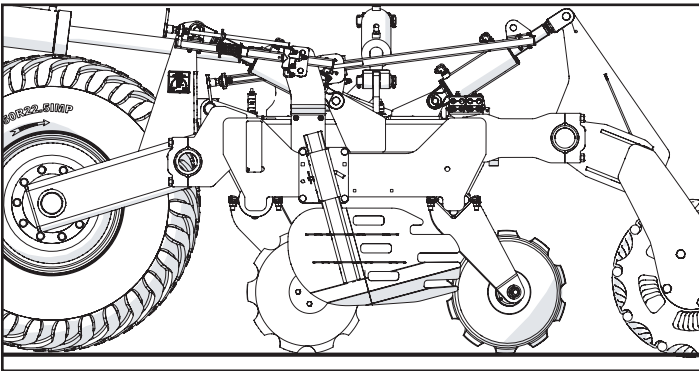
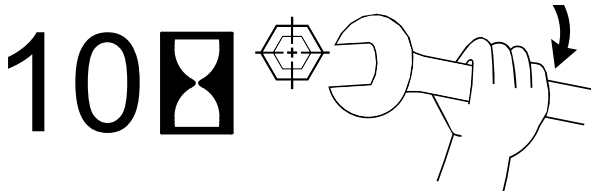


Fig. # 5-30 “Field Lowered Position”


5. Check tightness of all bolts, & cap screws.



6. Use the torque charts at the back of this manual for proper torque, unless otherwise specified in this manual. (See “Torque – Fasteners” on page 7-6)

WEEKLY

GREASE HITCH LINK ARTICULATING BALL (IF EQUIPPED)

1. Grease 2 points as indicated by the following symbol  for the articulating ball type CAT 3, CAT 4, & CAT 5 Hitch Links located on the front of the hitch every Week or (40 hours) of use. (See Fig. # 5-46)

Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable, SAE multipurpose lithium based grease.

Pump until the grease becomes visible.

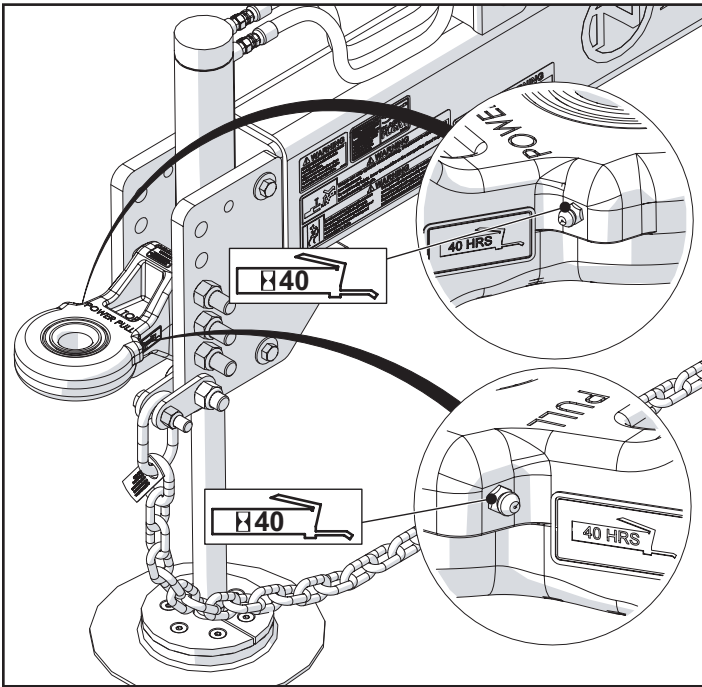


Fig. # 5-31 Grease Articulating Ball

MONTHLY**CHECK DISK HUB NUTS (RE-TORQUE IF NEEDED)**

1. Fold the machine into the **Transport Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)

⚠ WARNING

When servicing the machine in the transport position, the wings must be secured with the transport locks.

2. Make sure the **Transport Locks** are moved from the **Stowed Position**, and installed into the **Locked Position**. (See Fig. # 5-47)

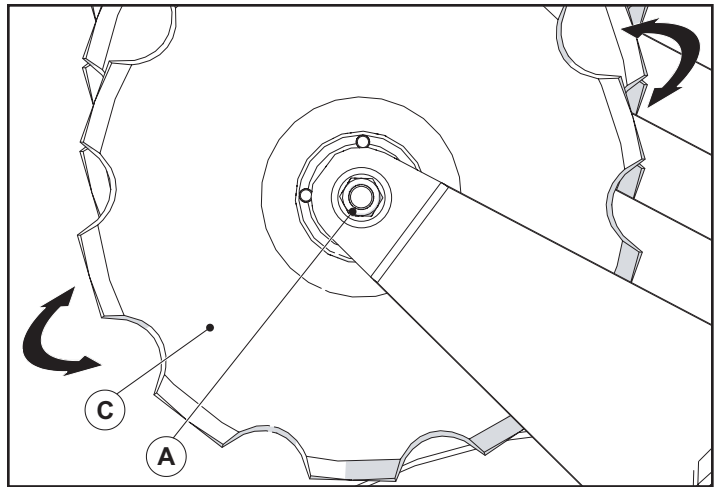


Fig. # 5-34 Check The Disk Hub Nuts For Correct Torque

5. If endplay exists, remove the “Disk Hub Nut” (A), “7/8” Flat Washer” (B), and Disk Assembly (C) from the Shank (E). Discard the old nut. (See Fig. # 5-50)

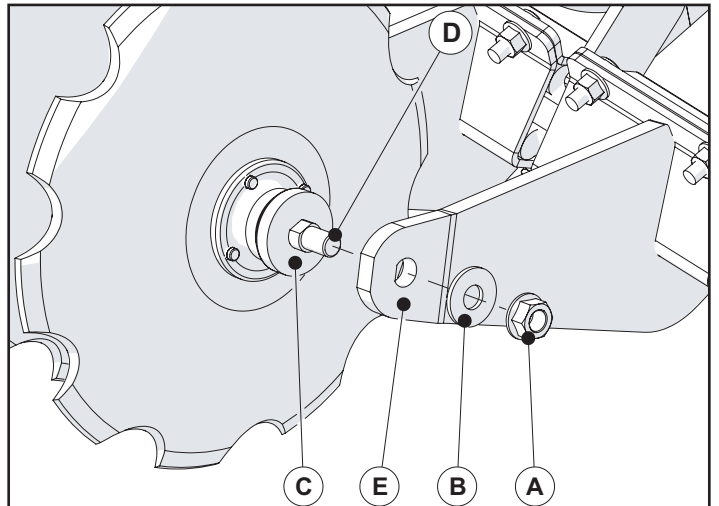


Fig. # 5-35 Remove, Dis-Assemble, Clean, Re-Assemble

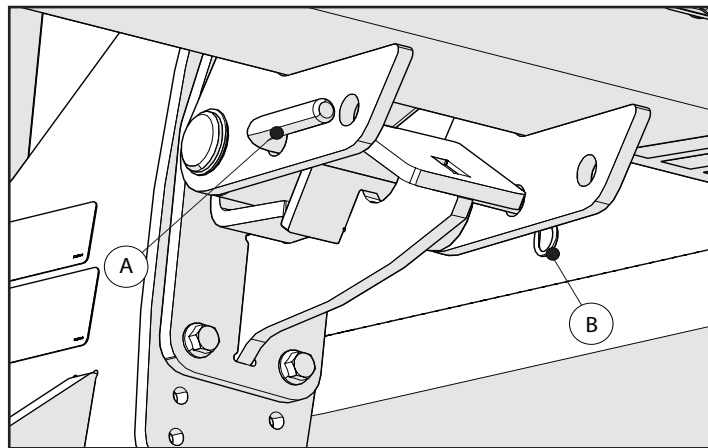


Fig. # 5-32 Transports Lock Shown In Locked Position

3. Check “Disk Hub Nuts” (A) for correct torque. (See Fig. # 5-48)

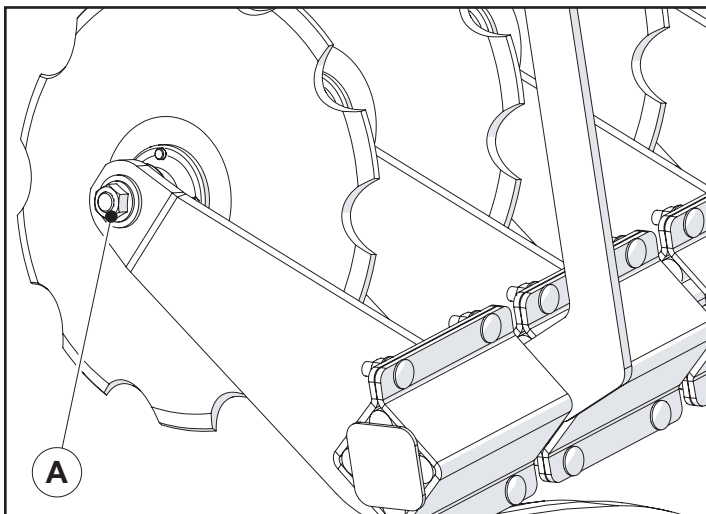


Fig. # 5-33 Check Disk Hub Nuts For Correct Torque

4. Check the “Disk Hub Nuts” (A) for correct torque by moving the “Disk” (C) side to side. (See Fig. # 5-49)

6. With the “Disk Assembly” (C) on a sturdy surface, clean the “Hub Stud” (D) from debris, use a cleaner/degreaser to promote thread-locker adhesion.
7. Replace the “Disk Hub Nut” (A) with a new nut and reassemble in reverse order of disassembly.
8. Tighten the “Disk Hub Nut” (A) to specification.

30 D \times 
300 ft-lbs (407 N-m)

IMPORTANT

Over torquing “Disk Hub Nuts” will damage the bearing.

9. Repeat procedure for other locations.

MONTHLY

CHECK DISK SHANK CORD ALIGNMENT

1. Fold the machine into the **Transport Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)

⚠ WARNING

When servicing the machine in the transport position, the wings must be secured with the transport locks.

2. Make sure the **Transport Locks** are moved from the **Stowed Position**, and installed into the **Locked Position**. (See Fig. # 5-51)

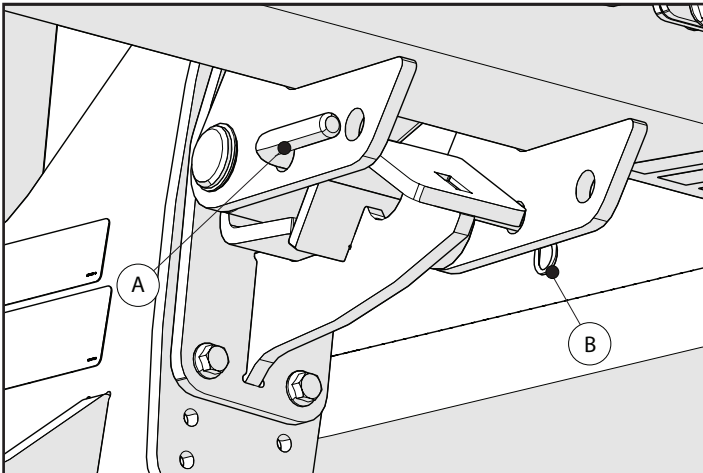


Fig. # 5-36 Transports Lock Shown In Locked Position

3. Check **Disk Shank Cord** (E) alignment. (Qty. 4 Per Disk Shank) (See Fig. # 5-52)
4. The **Cords** (E) should not extend more than 3/4" from the **Tube Caps** (F). (See Fig. # 5-53)

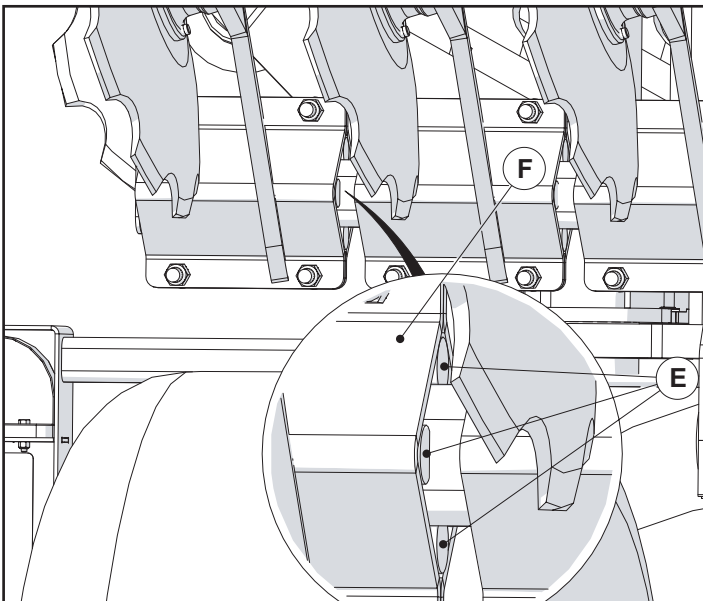


Fig. # 5-37 Check Disk Shank Cord Alignment

5. If **Cords** (E) extend greater than 3/4" from the **Tube Caps** (F), the **Cords** (E) should be readjusted.

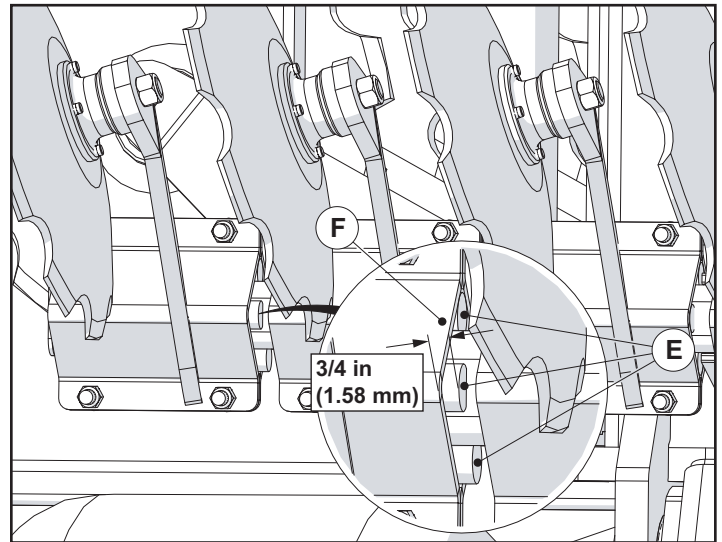


Fig. # 5-38 Check Disk Shank Cord Alignment

ADJUSTING DISK SHANK CORDS

1. Loosen (**Qty. 4**) Nuts **(G)**. Only loosen the Nylock Nuts enough to allow movement of Disk Shank Cords **(E)**. Do not completely loosen the Nylock Nuts. (See Fig. # 5-54)

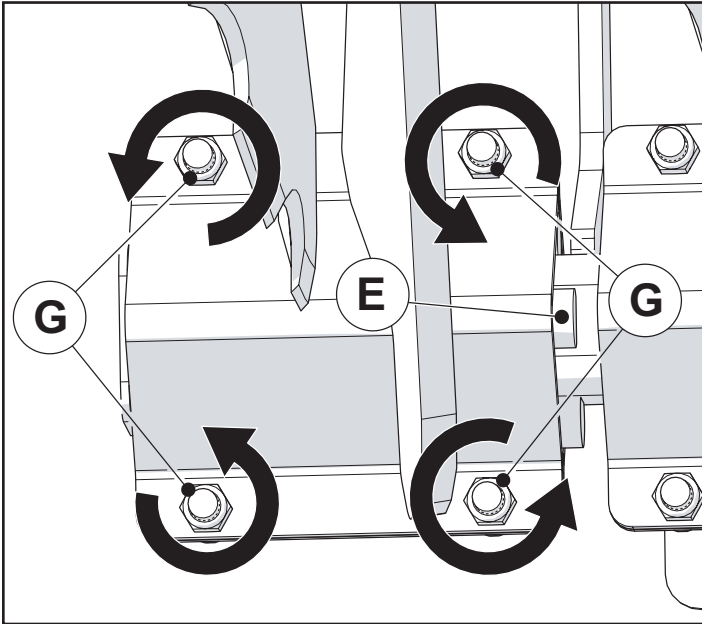


Fig. # 5-39 Loosen (Qty. 4) 5/8" Nylock Nuts

2. Some upward pressure on the Shank **(H)** may be required to reduce pressure against the Cords **(E)**. (See Fig. # 5-55)

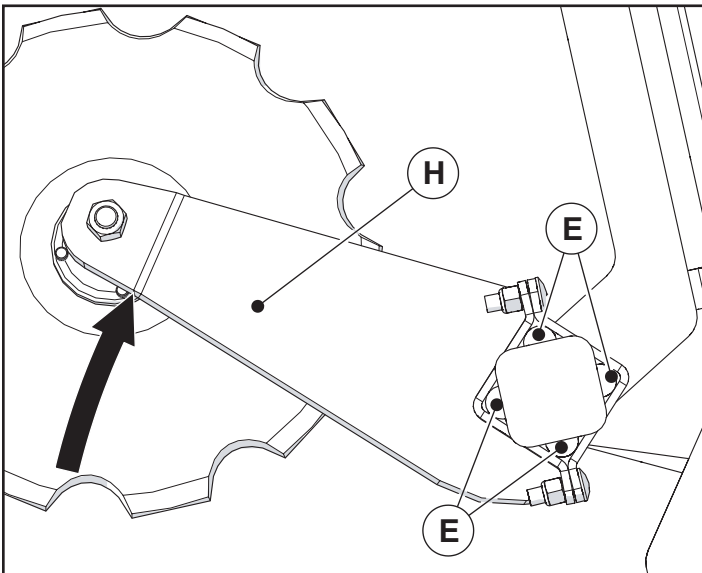


Fig. # 5-40 Adjusting Disk Shank Cords

3. Slide Cords **(E)** into place. The Cords **(E)** should be centered with the Tube Caps **(F)**.

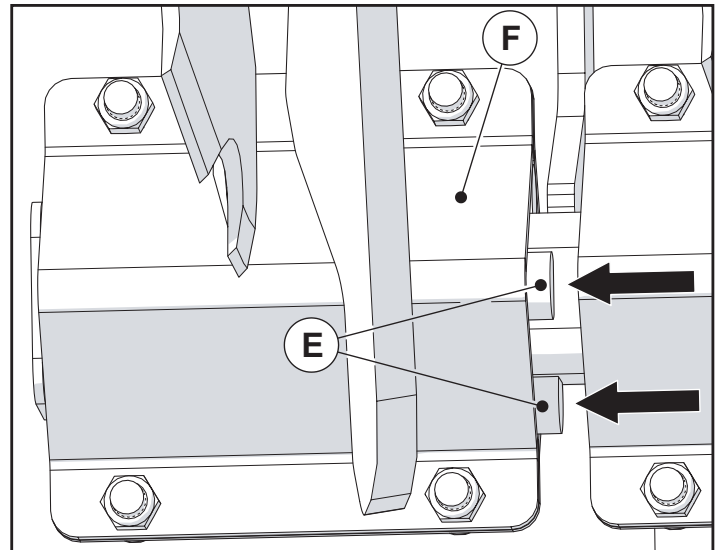


Fig. # 5-41 Adjusting Disk Shank Cords

4. Tighten the (**Qty. 4**) Nuts **(G)** in a criss-cross square pattern. (See Fig. # 5-57)

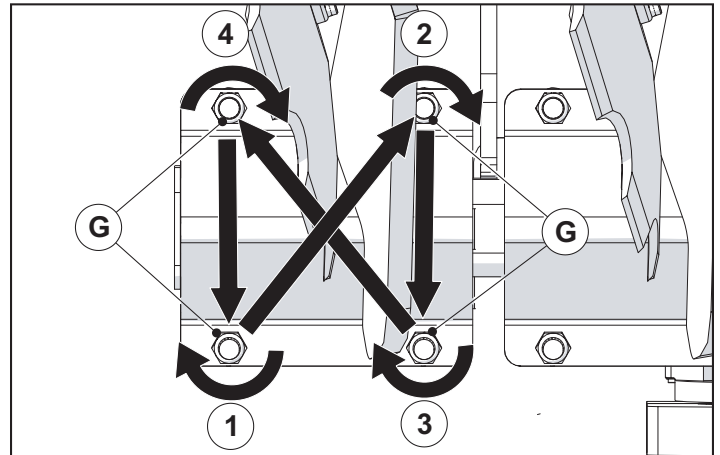


Fig. # 5-42 Adjusting Disk Shank Cords

5. Torque the (**Qty. 4**) Nuts **(G)** until the Gaps **(H)** in the Tube Caps **(F)** are flush.

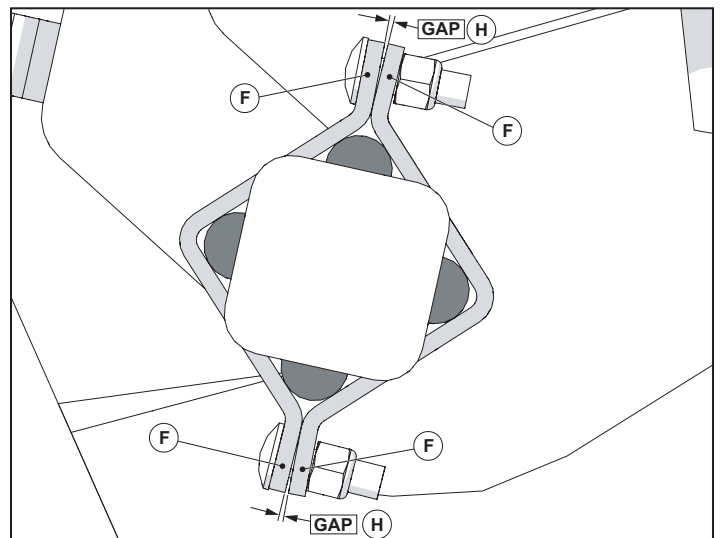


Fig. # 5-43 Torquing Tube Caps

MONTHLY

LUBRICATE WHEEL HUBS

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See [Fig. # 5-59](#))

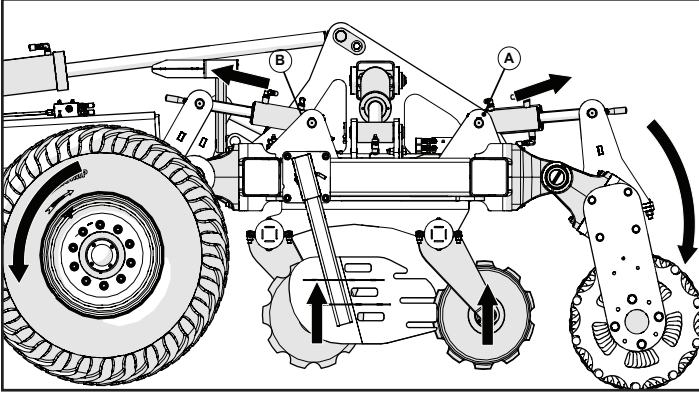




Fig. # 5-44 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION**  with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the “**Field Lowered Position**” (See [Fig. # 5-7](#)).
5. Apply 3-4 pumps of grease  to the hubs monthly. (See [Fig. # 5-60](#))

IMPORTANT

If grease is visible on the back side of the hub, reduce the amount of grease added by 50%.

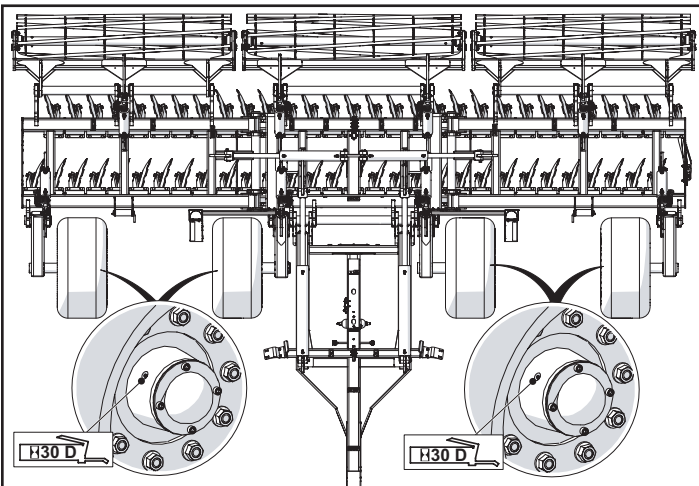


Fig. # 5-45 Grease Zerk Locations 25', 30' 35', 40', & 45'

ANNUALLY**CHECK DISKS FOR DAMAGE AND / OR EXCESSIVE WEAR**

1. Fold the machine into the **Transport Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)

⚠ WARNING

When servicing the machine in the transport position, the wings must be secured with the transport locks.

2. Make sure the **Transport Locks** are moved from the **Stowed Position**, and installed into the **Locked Position**. (See Fig. # 5-61)

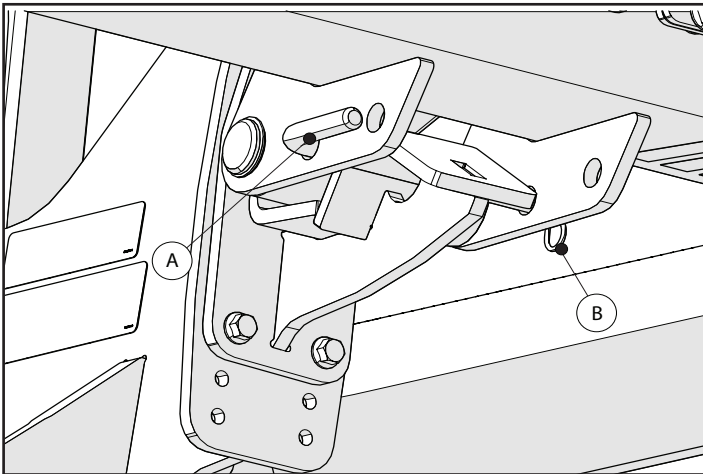


Fig. # 5-46 Transports Lock Shown In Locked Position

3. Check all disks on the machine. (See Fig. # 5-62)

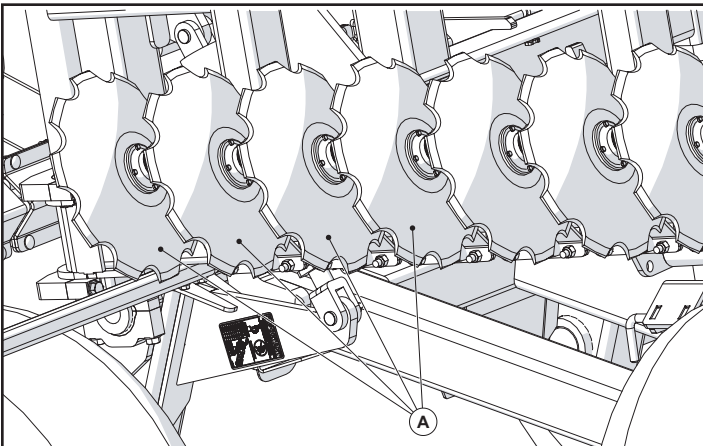


Fig. # 5-47 Check All Disks On The Machine

4. Replace damaged disks or disks that are worn 2.0 in (50.8 mm) smaller than their original diameter. (**Note:** Norwood recommends replacing at 2.0 in (50.8 mm) wear for optimum performance.)

NOTE

Blades wear differently depending on conditions and proper operation.

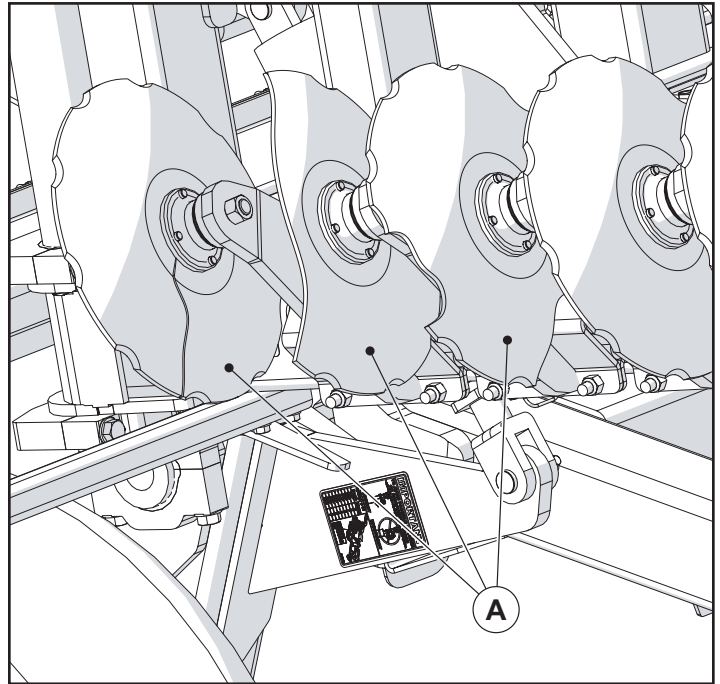


Fig. # 5-48 Replace Damaged Disks Or Disks That Are Worn

ANNUALLY

CHECK WHEEL BEARINGS

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-64)

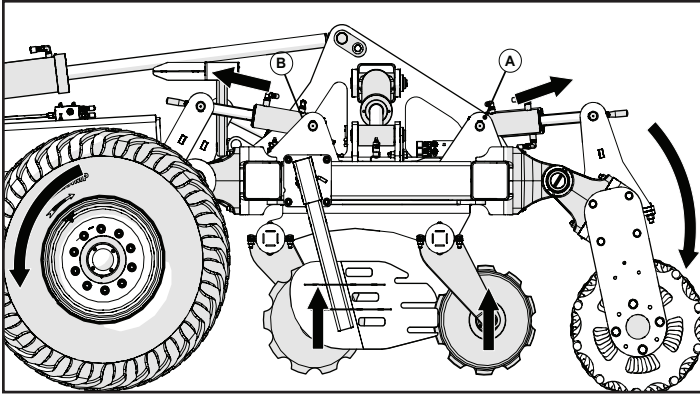



Fig. # 5-49 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION**  with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the “**Field Lowered Position**” (See Fig. # 5-65).

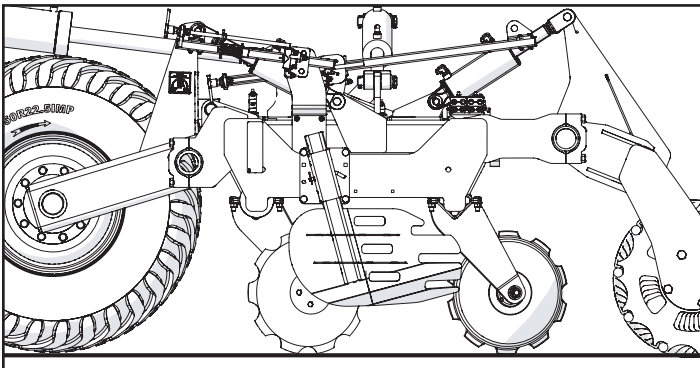


Fig. # 5-50 “Field Lowered Position”

5. Raise the wheels by retracting the **Front Wheel Cylinders (B)**. (See Fig. # 5-66)

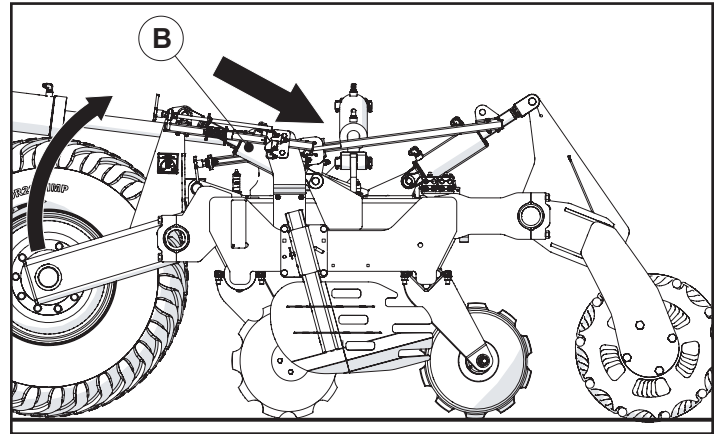


Fig. # 5-51 “Field Lowered Position”

6. All 4 wheels should now be raised off the ground.
7. Check for bearing endplay by moving wheel side to side. (See Fig. # 5-65)
8. Rotate wheel to check for bearing roughness. (See Fig. # 5-67)

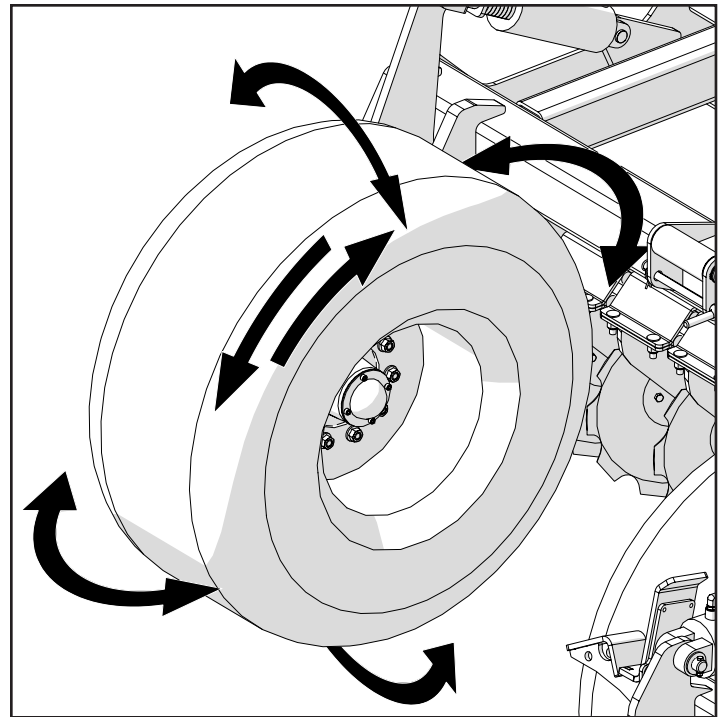


Fig. # 5-52 Check For Bearing Endplay Roughness

9. If endplay exists, the bearings could be out of adjustment or worn. (See “” on page 5-28)
10. If bearings sound or feel rough. (See “” on page 5-28)

ANNUALLY**CHECK DISK HUBS FOR EXCESSIVE WEAR**

1. Fold the machine into the **Transport Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)

⚠ WARNING

When servicing the machine in the transport position, the wings must be secured with the transport locks.

2. Make sure the **Transport Locks** are moved from the **Stowed Position**, and installed into the **Locked Position**. (See Fig. # 5-68)

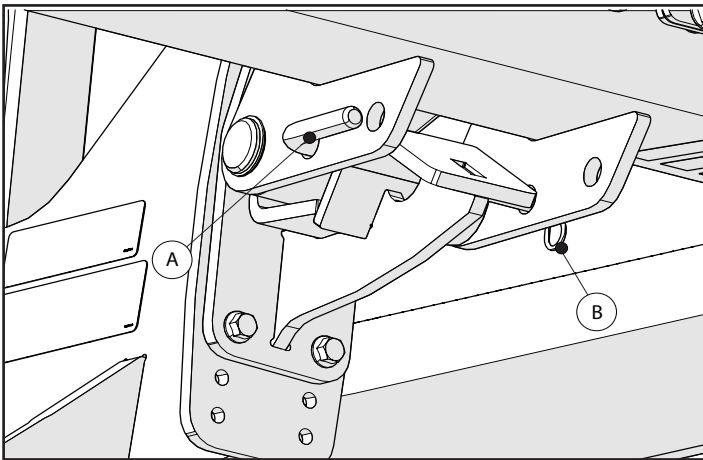


Fig. # 5-53 Transports Lock Shown In Locked Position

3. Check all Disk Hubs (A) on the machine. (See Fig. # 5-69)
4. Rotate Disks (B) CW (Clockwise) and CCW (Counter-Clockwise) to check for bearing roughness. (See Fig. # 5-69)

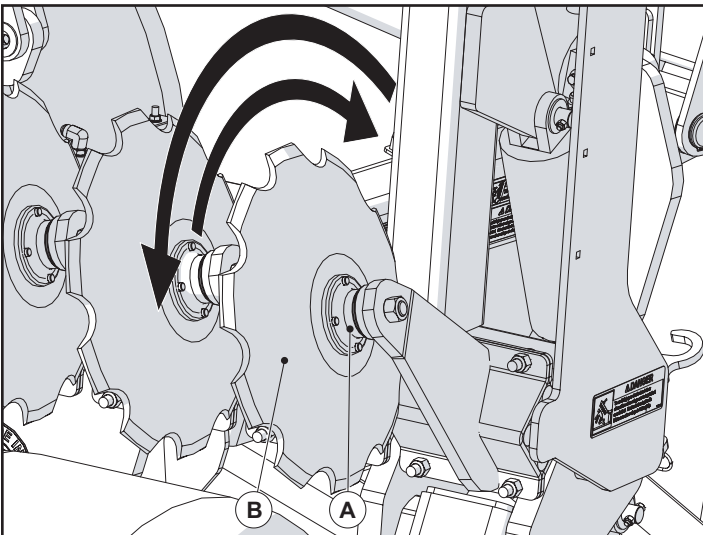


Fig. # 5-54 Check For Bearing Roughness

5. If bearings sound or feel rough, replace the hub.

IMPORTANT

The “Disk Hubs” (C) are not serviceable, and must be replaced as a unit. (See Fig. # 5-35)

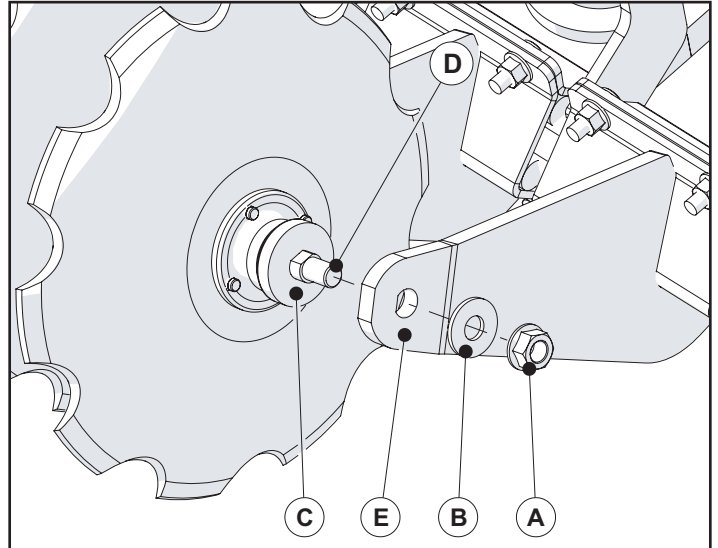


Fig. # 5-55 Remove Disk Assembly From Shank

6. Remove the “Disk Hub Nut” (A), Flat Washer (B), and Disk Assembly (D) from the Shank (E). Discard the old nut. The “Disk Hub” (C) can now be removed from the disk. (See Fig. # 5-70)
7. Support the Disk Assembly (D) on a sturdy surface with (Qty. 2) 6” X 6” X 8” Wood Blocks (F). (See Fig. # 5-71)

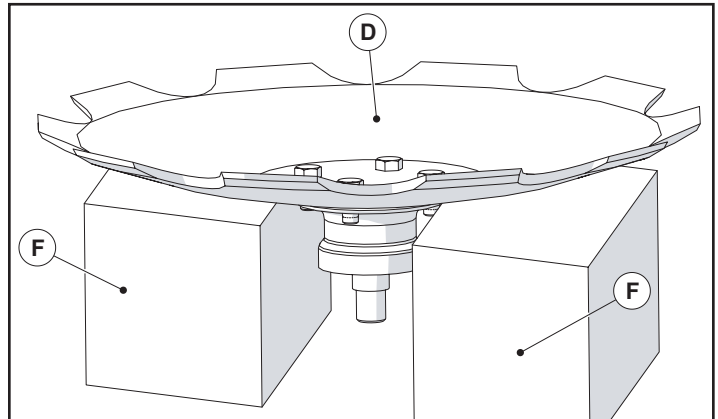


Fig. # 5-56 Support The Disk Assembly To Remove The Hub

8. Remove the "Disk Hub" **(H)** to be replaced, by removing the (Qty. 4) "Bolts" **(G)**. Discard the old hub and bolts. (See Fig. # 5-72)

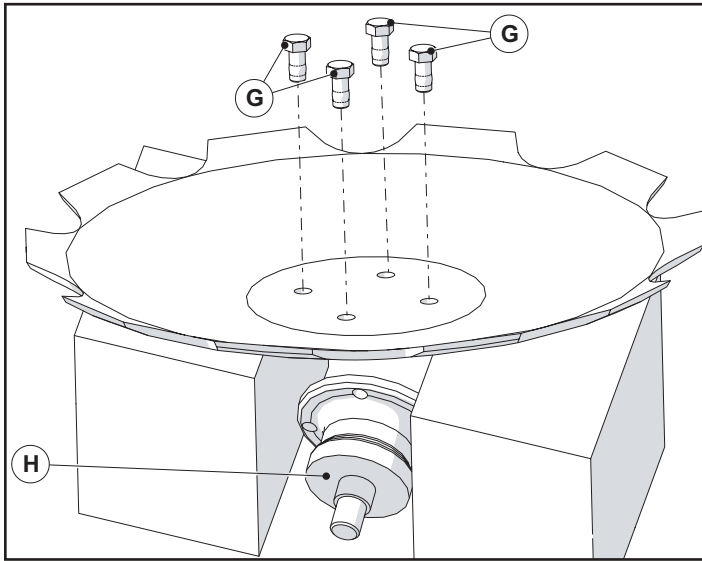


Fig. # 5-57 Unbolt The Disk From The Hub

9. Install the new "Disk Hub" **(H)** and secure with new (Qty. 4) "Bolts" **(G)**.

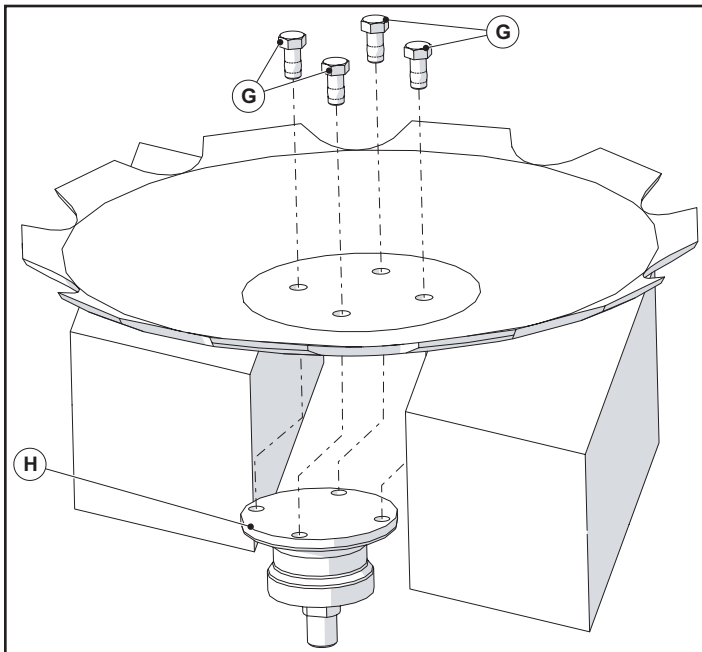


Fig. # 5-58 Install New Disk Hub

10. Tighten the "Bolts" **(G)** to specification.

93 ft-lbs
126 N-m



11. Reassemble the "Disk Assembly" **(D)** to the "Shank" **(E)** by aligning the flat part of the "Disk Hub Stud" **(I)** to the flat part of the "Shank Hole" **(J)**. (See Fig. # 5-74)

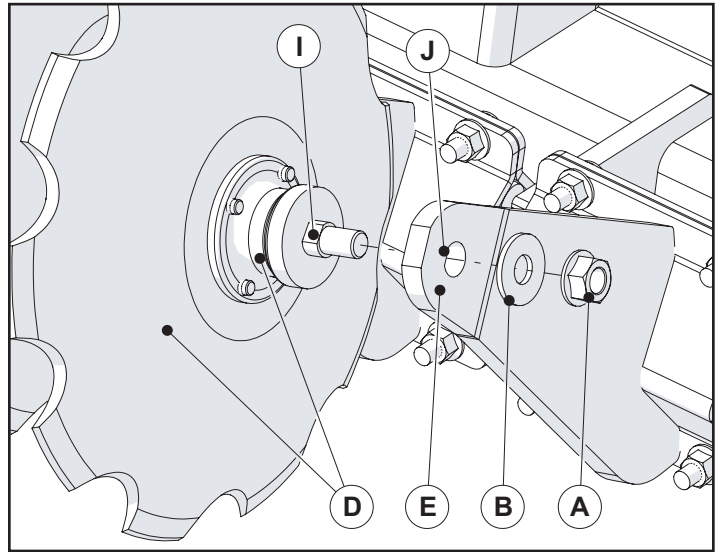
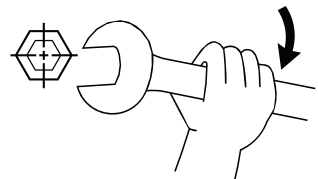


Fig. # 5-59 Reassemble The Disk Assembly To The Shank

12. Secure "Disk Assembly" **(D)** to the "Shank" **(E)** with a new "Flat Washer" **(B)**, & "Disk Hub Nut" **(C)**. (See Fig. # 5-74)
13. Tighten the "Disk Hub Nut" **(C)** to specification.

300 ft-lbs
407 N-m



IMPORTANT

Over torquing "Disk Hub Nuts" will damage the bearing.

14. Repeat procedure for other locations.

ANNUALLY**CHECK ACCUMULATOR**

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-75)

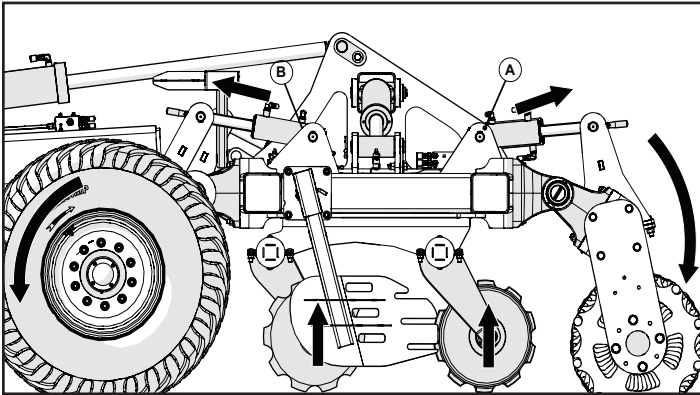


Fig. # 5-60 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION** with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the “**Field Lowered Position**” (See Fig. # 5-7).

⚠ WARNING

Only qualified and trained personnel should perform this procedure. Always wear personal protective equipment.

5. The accumulator pressure should be checked annually.
6. Operational dry nitrogen pressure levels are between 700-800 psi (4826-5516 kPa) (48.3-55.2 bar). If levels are below this range, recharge the accumulator with dry nitrogen.
7. If pressure is 0 psi (0 kPa) (0 bar), replace the accumulator due to an internal bladder rupture.

⚠ WARNING

Always use dry inert gas (Dry Nitrogen - N₂) for pre-charging.

NEVER USE AIR OR OXYGEN, DUE TO THE DANGER OF COMBUSTION / EXPLOSION

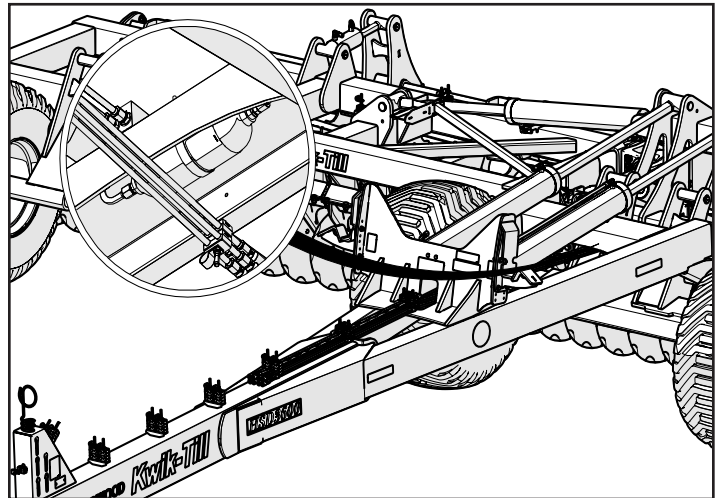
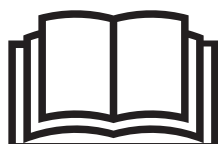


Fig. # 5-61 Nitrogen Check Port Location

⚠ WARNING**HIGH PRESSURE VESSEL**

Avoid injury from high pressure escaping hydraulic fluid.

- Relieve pressure from hydraulic system before servicing
- Precharge with dry nitrogen gas only.

Failure to comply could result in serious injury or death.

ANNUALLY

CHECK REAR ROLLER HUBS FOR WEAR

1. Unfold the machine into the **Field Position**. (See “Kwik-Till Folding & Unfolding” on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders** (B) and **Rear Roller Cylinders** (A). (See Fig. # 5-77)

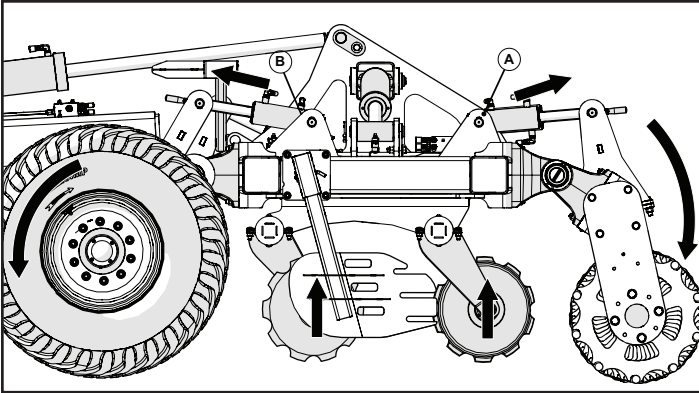


Fig. # 5-62 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION** with engine running for the **Main Frame Lift & Wing Fold** cylinders.
4. The machine should now be in the “**Field Lowered Position**” (See Fig. # 5-7).
5. Retract the **Rear Roller** (A) cylinder to raise the “**Rear Roller**” (D) will raise off the ground. (See Fig. # 5-78)

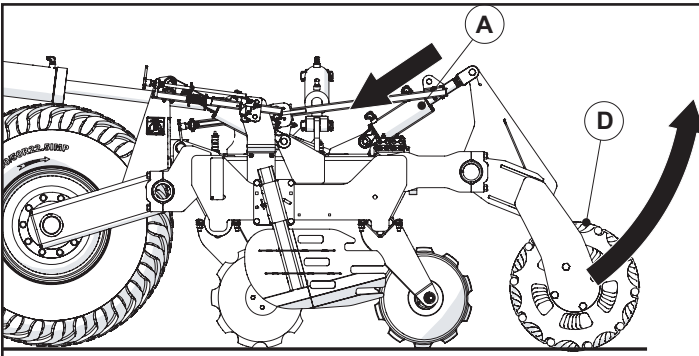


Fig. # 5-63 Field Lowered Position With Rear Roller Raised For Service

NOTE

Checking the rear roller hubs is identical where applicable for the Rolling Spiral Basket, Spring Cage Roller, & Rubber Wheel Roller. Therefore only the Rolling Spiral Basket rear attachment will be covered in the instructions.

6. With the rear roller off the ground, rotate the cage roller to check for bearing roughness.

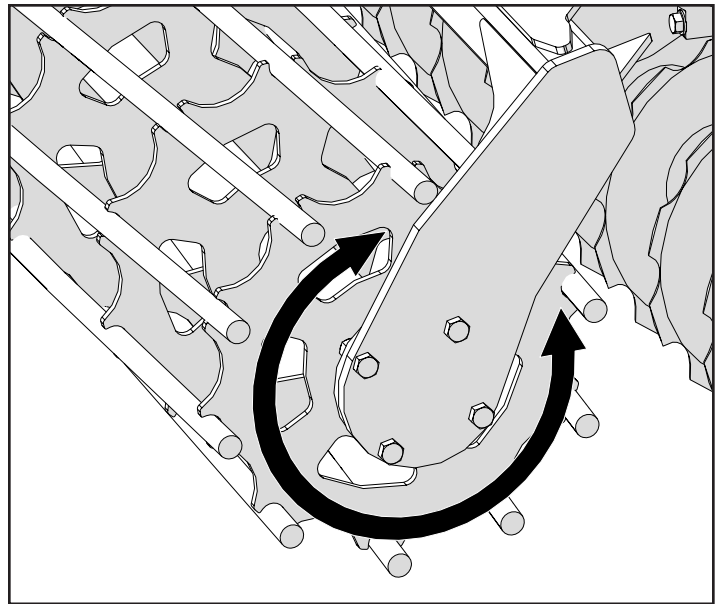


Fig. # 5-64 Rotate Rear Roller To Check For Bearing Roughness (Rolling Spiral Basket Shown)

7. When rotating the rubber wheel roller, retract the rubber roller scraper cylinders

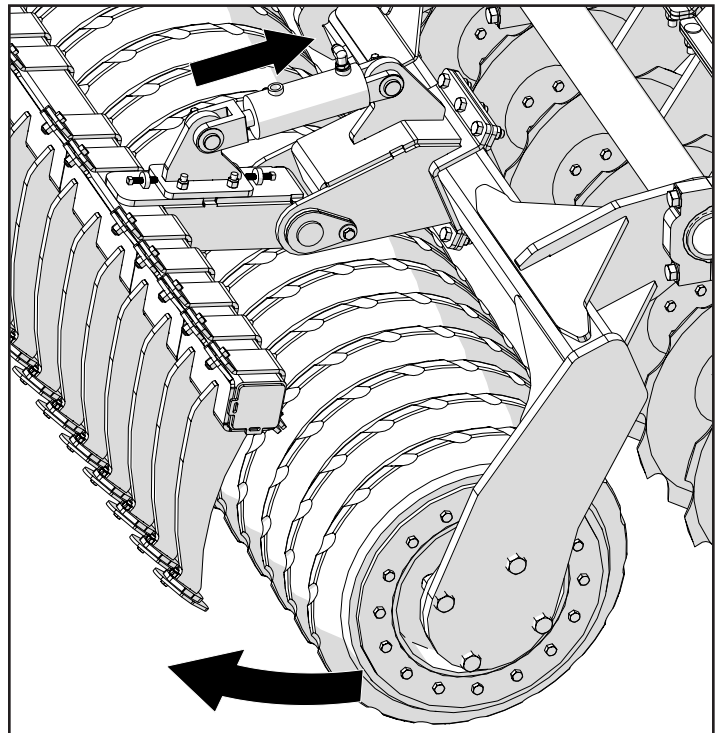


Fig. # 5-65 Retract The Rubber Roller Scraper Cylinders

8. If bearings sound or feel rough, or rear rollers are difficult to turn. It is possible that the rear rollers hubs need replacement, see (See “Replace Rear Roller Hubs” on page 5-31)

AS REQUIRED

CLEAN AND WASH THE MACHINE

1. Clean out excess material from all areas of the Kwik-Till.
2. Clean the Kwik-Till on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair
3. The hydraulic cylinders and bearings should not be cleaned with a high- pressure cleaner or direct water jet. The seals and bearings are not waterproof under high pressure.
4. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions

AS REQUIRED**REPACK WHEEL BEARINGS**

A grease change in hub bearings is recommended **Every 3,000 working hours or every 3,107 mi (50,000 km) traveled**.

1. Unfold the machine into the **"Field Position"**. (See "Kwik-Till Folding & Unfolding" on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders (B)** and **Rear Roller Cylinders (A)**. (See Fig. # 5-83)

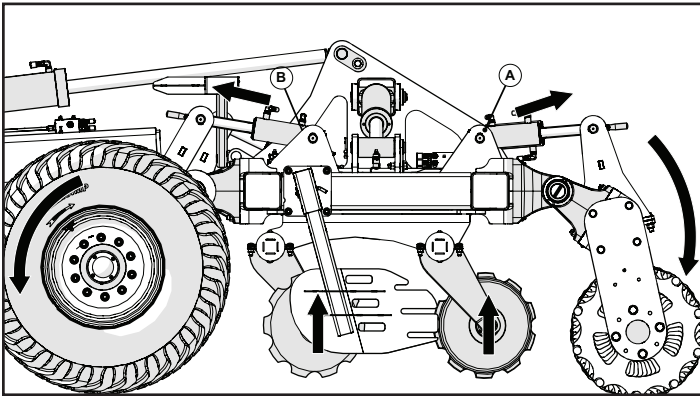


Fig. # 5-66 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION** with engine running for the **Main Frame Lift & Wing Fold cylinders**.
4. The machine should now be in the **"Field Lowered Position"** (See Fig. # 5-7).
5. Raise the wheels by retracting the **Front Wheel Cylinders (B)**. (See Fig. # 5-84)

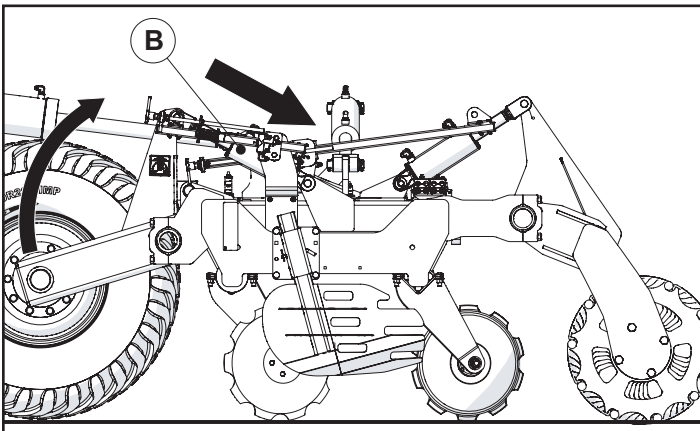


Fig. # 5-67 "Field Lowered Position"

6. All 4 wheels should now be raised off the ground.

7. Remove the **Wheel Flange Nuts (A)** and the **Wheel**. (See Fig. # 5-85)

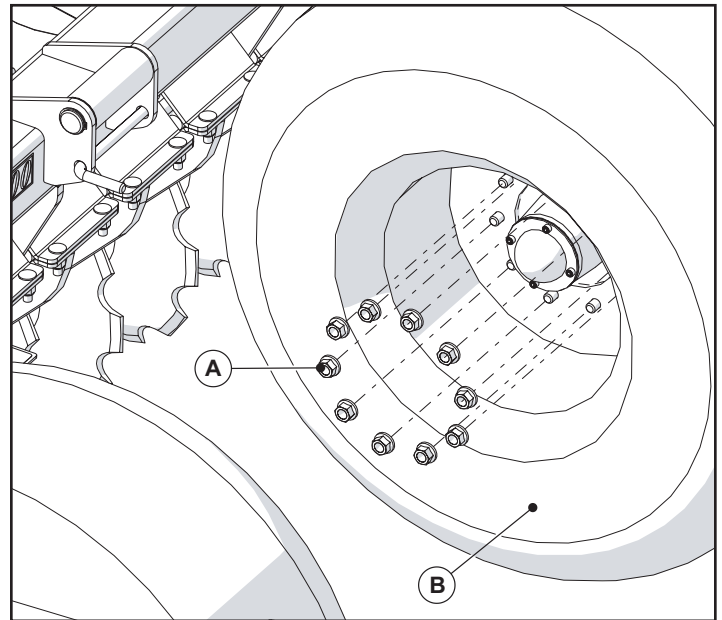


Fig. # 5-68 Remove Wheel Flange Nuts & Wheel

8. Remove (Qty. 4) **"Socket Bolts" (D)**, the **"Dust Cap" (C)**, and the **"Dust Cap Gasket" (G)**. (See Fig. # 5-86)

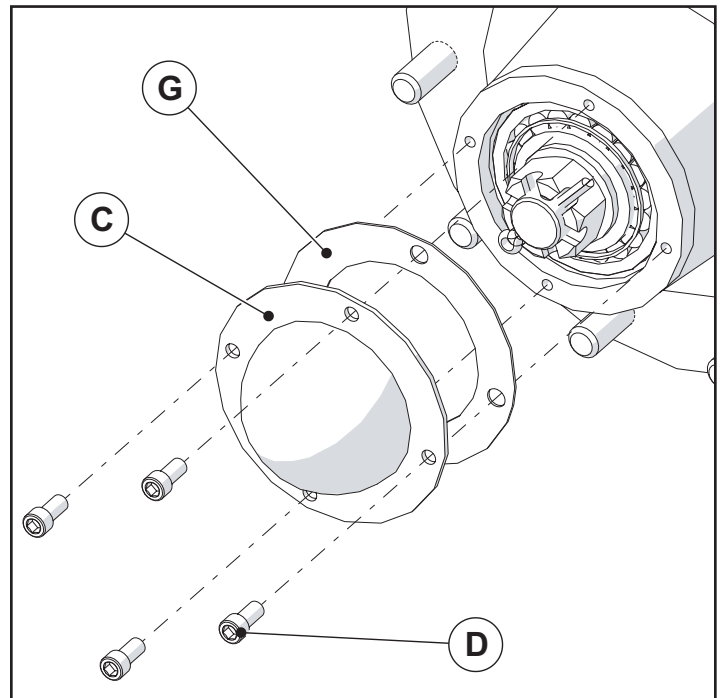


Fig. # 5-69 Remove Socket Bolts & Dust Cap

9. Remove "Cotter Pin" (E), & the "Slotted Nut" (F). (See Fig. # 5-87)

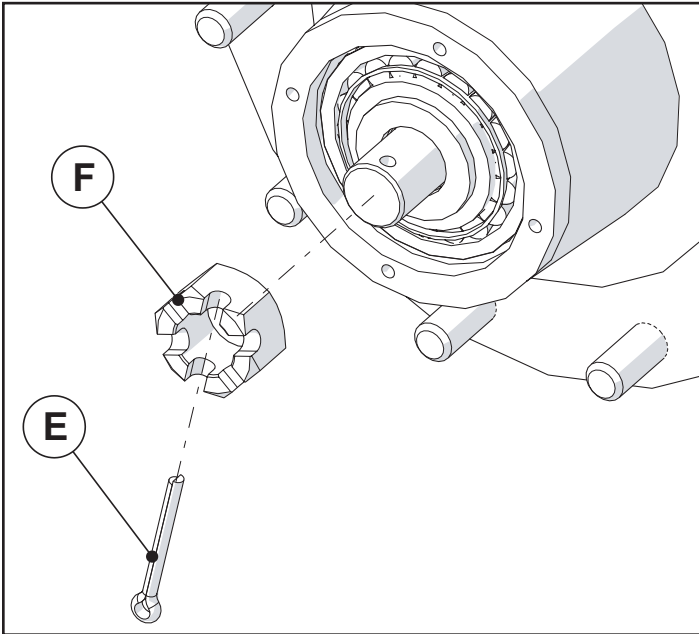


Fig. # 5-70 Remove Cotter Pin & Slotted Nut

10. Remove the "Thick Washer" (H). (See Fig. # 5-88)

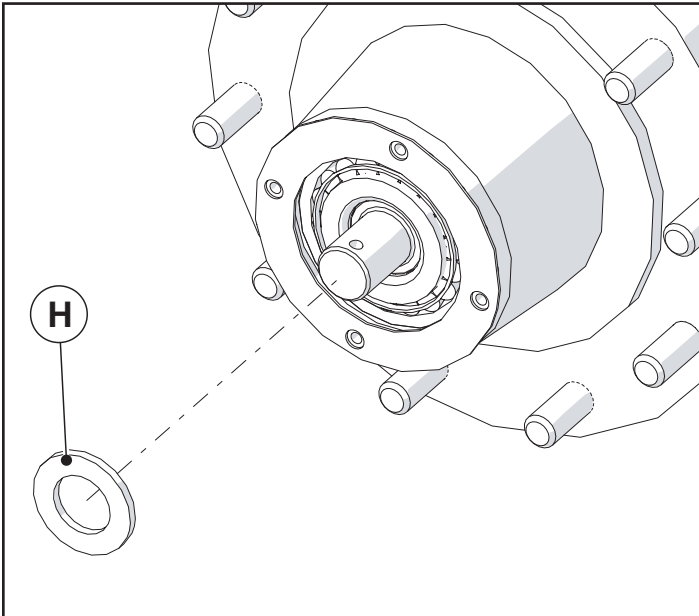


Fig. # 5-71 Remove The Washer & Outer Bearing

11. Slide the Hub (J) off the Spindle (K) along with the Outer Cone Bearing (I), Inner Cone Bearing (L), & Seal (M).

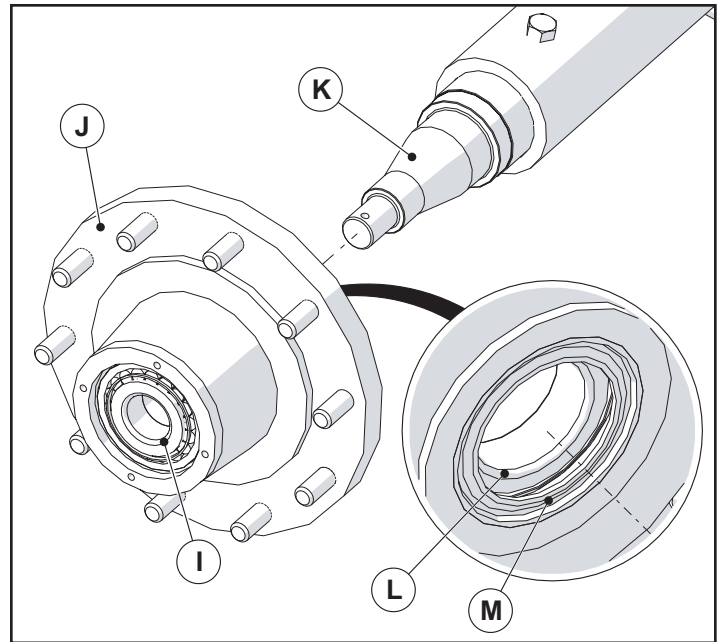


Fig. # 5-72 Slide The Hub Off The Spindle

12. Only replace Seal (M) if damaged.
13. Clean the wheel bearings and pack with grease. Use SAE multi-purpose high-temperature grease with extreme pressure (EP) performance. SAE multi-purpose lithium-based grease is also acceptable.
14. Inspect the Inner Cone Bearing (L), Outer Cone Bearing (I), Inner Bearing Race (O), & Outer Bearing Race (N) for wear, replace as a set if needed.
15. Clean wheel and hub mounting surfaces to ensure there is no rust or debris.
16. Reverse disassembly procedure.

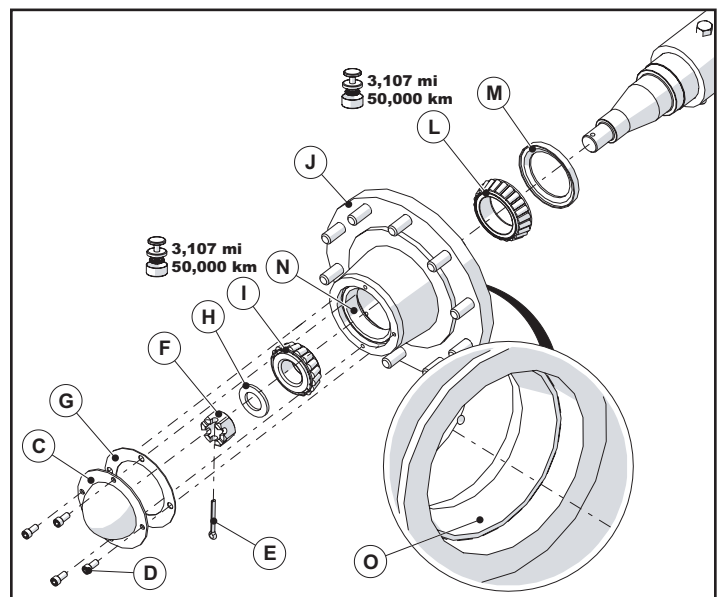
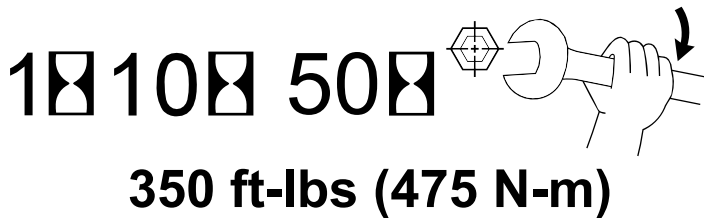


Fig. # 5-73 Repack Wheel Bearings

17. Torque wheel flange nuts **(A)** (See Fig. # 5-93) (In A Diagonal Pattern) (See Fig. # 5-92) after the first 1 hour of use, then at 10 hour intervals or (daily). If bolt torque is stable, check at 50 hour intervals or (weekly).



Tighten all wheel lug nuts to specification.

Specification		
Wheel Lug Nuts	Torque	Qty.
	350 lb-ft (475 N-m)	40

Fig. # 5-74 Table: Wheel Lug Nut Torque

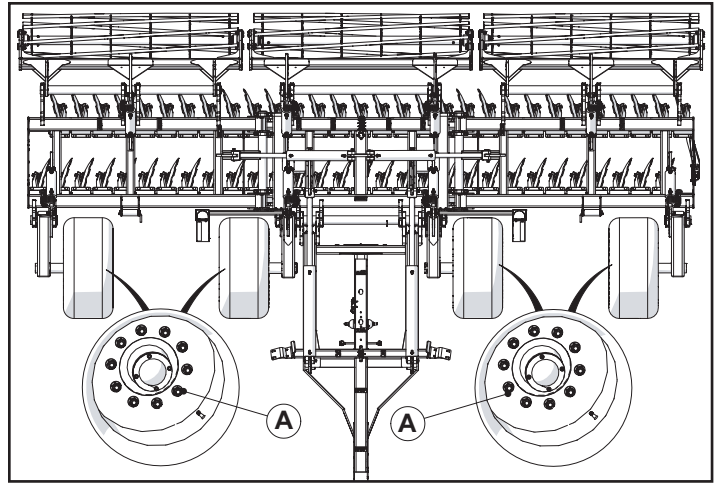


Fig. # 5-76 Wheel Flange Nut Locations 25', 30', 35', 40', & 45'



Fig. # 5-75 Wheel Flange Nut Tightening Sequence (Diagonal Pattern)

AS REQUIRED**REPLACE REAR ROLLER HUBS**

1. Unfold the machine into the **Field Position**. (See "Kwik-Till Folding & Unfolding" on page 4-6)
2. Lower the disks to the ground by retracting the **Front Wheel Cylinders** (B) and **Rear Roller Cylinders** (A). (See Fig. # 5-94)

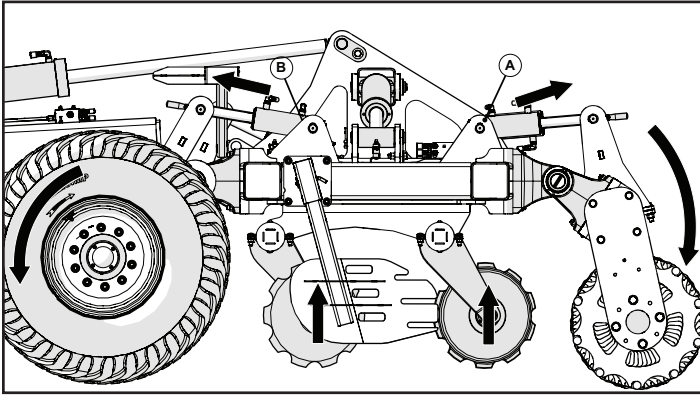


Fig. # 5-77 Lower Disks to the Ground

3. Relieve all the hydraulic pressure by placing the tractor SCV levers to the **FLOAT POSITION** with engine running for the **Main Frame Lift & Wing Fold** cylinders.
4. The machine should now be in the "Field Lowered Position" (See Fig. # 5-7).

SERVICE PROCEDURE:
Dis-Assembly (Rolling Spiral Basket, Spring Cage Roller and the Rubber Wheel Roller):

1. Use an impact wrench, 1-5/16" Impact Socket, and 1-5/16" wrench to loosen and remove the (Qty. 8) "Bolts" (A) and "Nuts" (B). (See Fig. # 5-95)

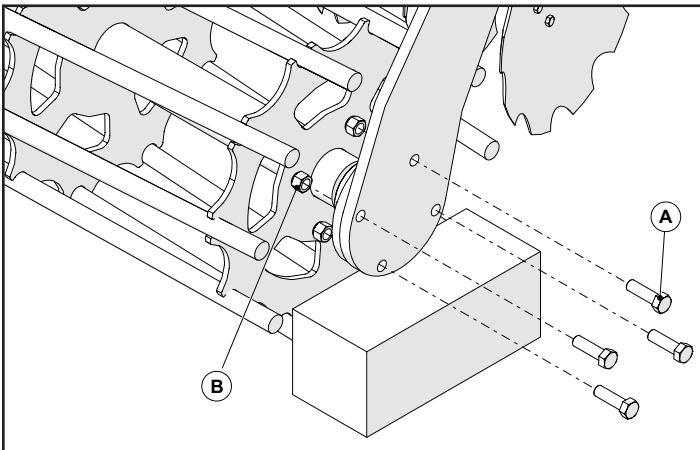


Fig. # 5-78 Remove the Hardware

NOTE

The installation and dis-assembly is identical where applicable for the Rolling Spiral Basket, Spring Cage Roller, & Rubber Wheel Roller. Therefore only the Rolling Spiral Basket rear attachment will be covered in the instructions. The Rubber Wheel Roller will be covered where it differs in installation and dis-assembly separately.

2. If necessary, you may need to use a pry bar as shown. (See Fig. # 5-96)

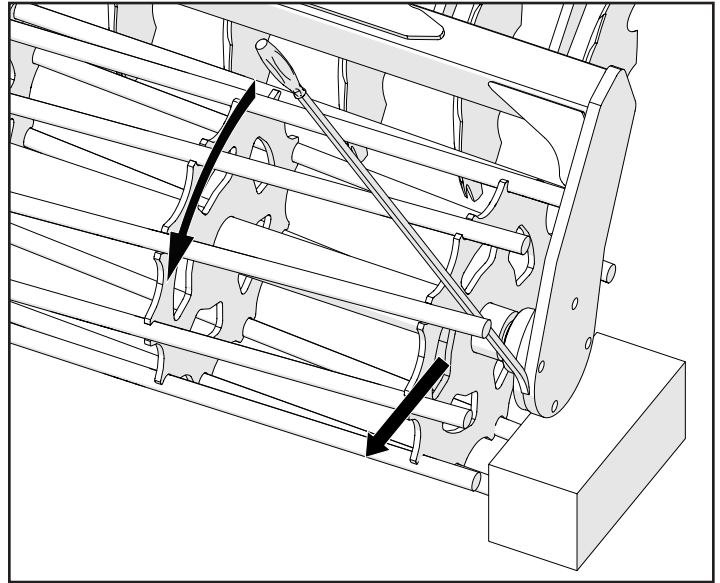


Fig. # 5-79 Using Pry Bar To Loosen Rear Attachment

3. Use a lifting device such as an overhead hoist, crane or forklift with a lifting strap to remove the rear attachment. (See Fig. # 5-97)

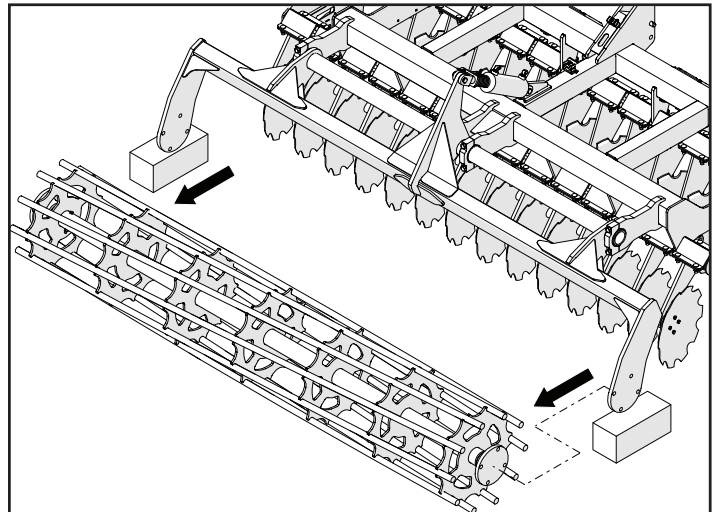


Fig. # 5-80 Remove The Rear Attachment

4. If you have an extra set of hubs, P/N 90-34-0010, ([See Fig. # 5-98](#)) then proceed to (See "SERVICE PROCEDURE: Assembly (Rolling Spiral Basket, Spring Cage Roller, or Rubber Wheel Roller)" on page 5-32). If you do not have an extra set of hubs, then you will need to remove the hubs from the rear attachment you just removed. Proceed to the next step to remove the hubs.

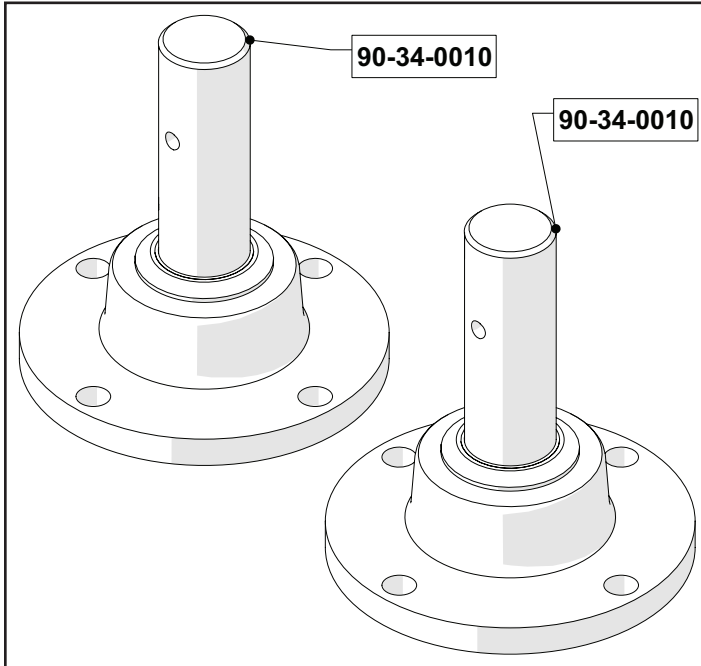


Fig. # 5-81 Set Of Hubs

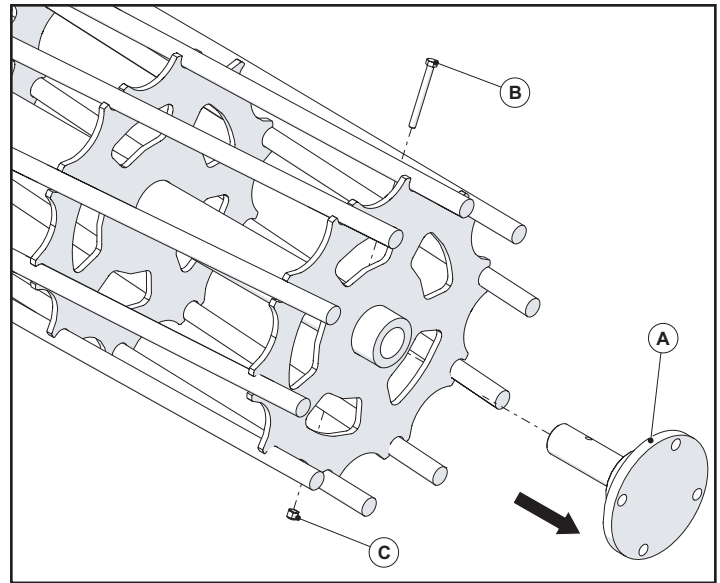


Fig. # 5-82 Removing Hubs

5. Remove (Qty. 2) "Bolts" (B), (Qty. 2) "Nuts" (C), and (Qty. 2) "Hub Roller Assemblies" (C). ([See Fig. # 5-99](#))

6. Now that the Rolling Spiral Basket rear attachment has been removed, you can either assemble the Spring Cage Roller rear attachment, or the Rubber Wheel Roller rear attachment. If installing the Spring Cage Roller, or the Rolling Spiral Basket rear attachment, proceed to the next step.

(ROLLING SPIRAL BASKET & SPRING CAGE ROLLER):

1. Although the rear attachment differs from one to the other, the installation in the following steps are the same with the exception of the length of the bolt.
2. Apply grease to the Hub (A) spindle with multi purpose grease before assembling the Hub (A) to the Spring Roller Weldment (D) and secure with the "Bolt" (B) and "Nut" (C). Repeat for the other side. (See Fig. # 5-100)

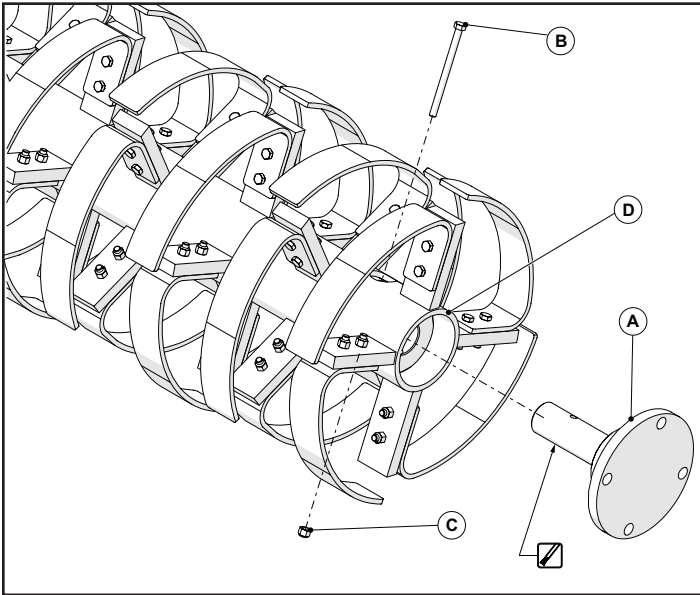


Fig. # 5-83 Install Hub To Spring Roller

3. Position Spring Roller assembly parallel to machine as shown. (See Fig. # 5-101)

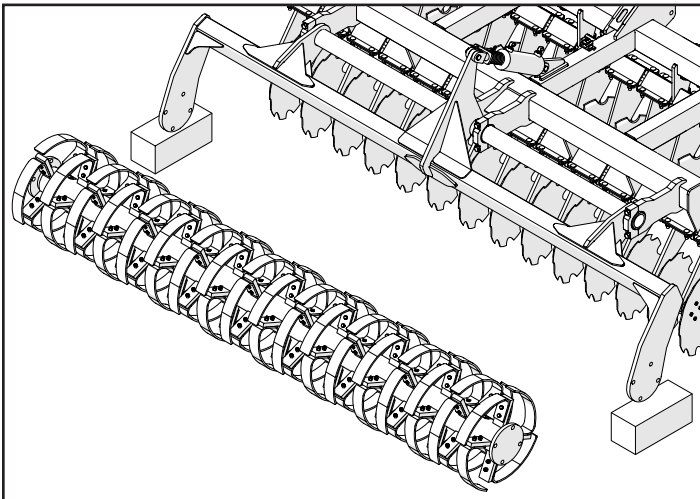


Fig. # 5-84 Installing Spring Roller

4. Install rear attachment, by spreading the side roller plate with a pry bar as shown. (See Fig. # 5-102)

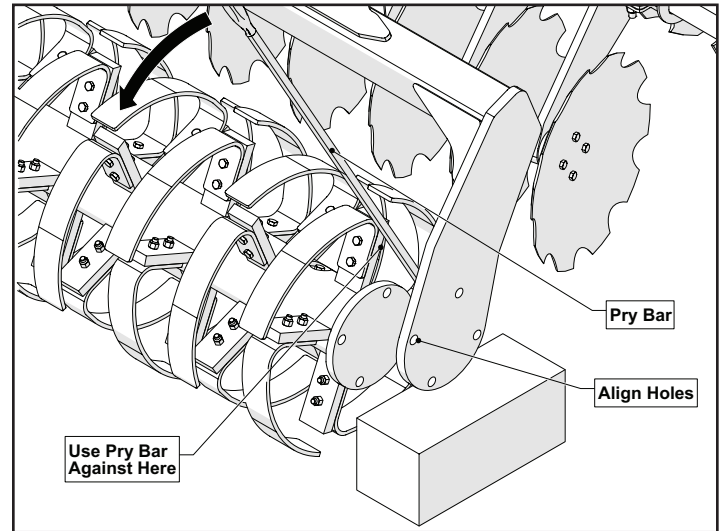


Fig. # 5-85 Prying Spring Roller Into Position

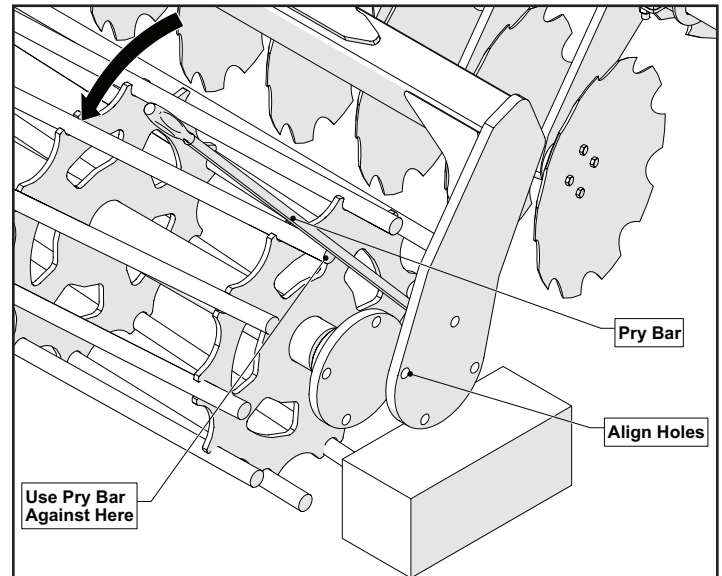


Fig. # 5-86 Prying Rolling Spiral Basket Into Position

NOTE

The following steps may not need to be performed if the rear attachment has sufficient clearance.

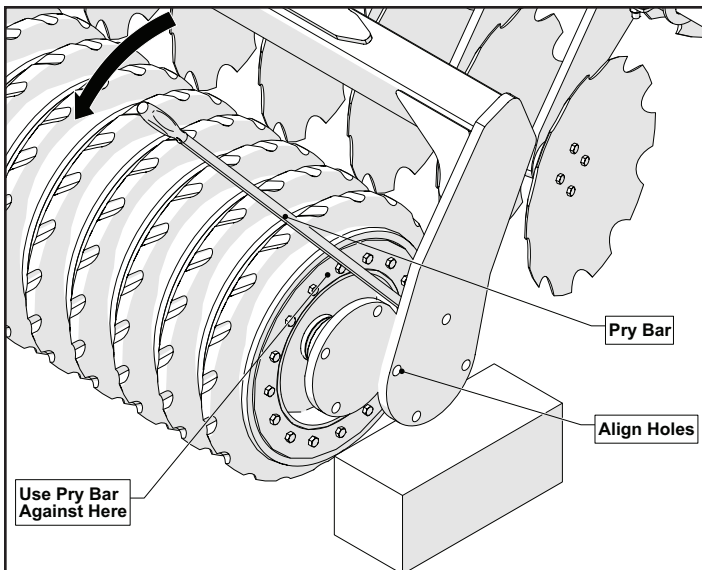


Fig. # 5-87 Prying Rubber Wheel Roller Into Position

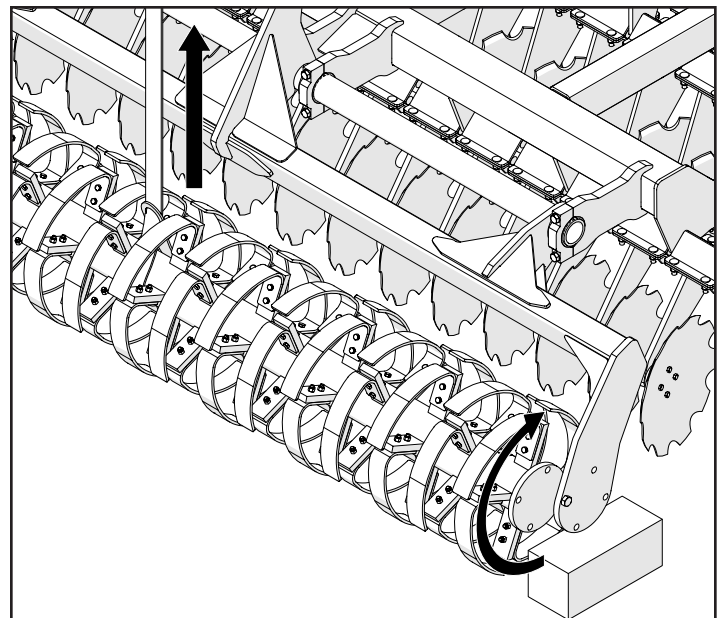


Fig. # 5-89 Rotate Rear Attachment Into Position

5. Align bolt hole and install (Qty. 1) "Bolt" (A) and (Qty. 1) "Nut". (See Fig. # 5-105)

7. Install remaining bolts and nylock nuts.

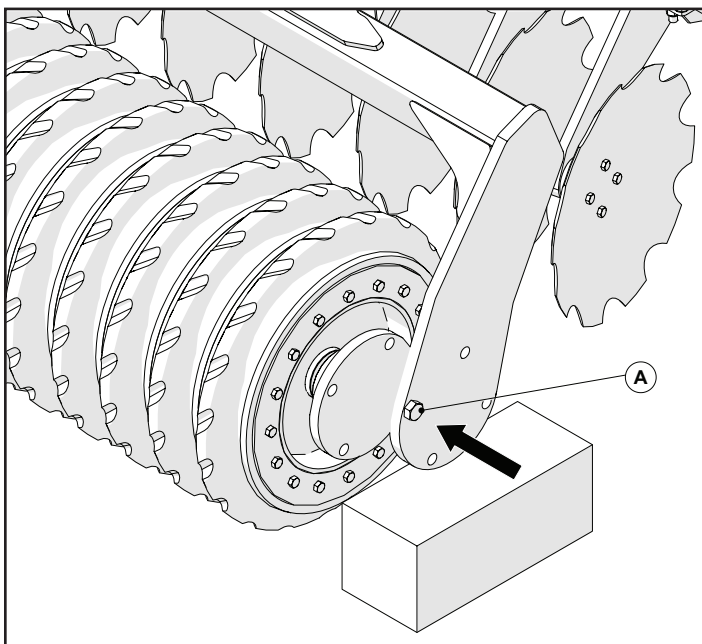


Fig. # 5-88 Align Bolt Hole and Install One Bolt

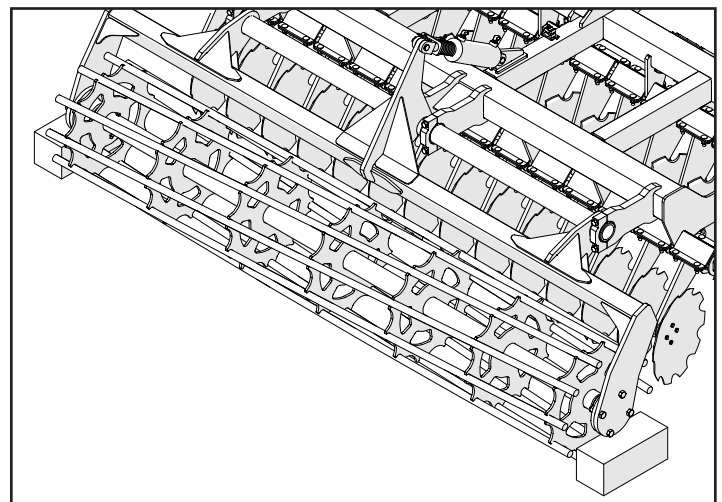


Fig. # 5-90 Install Remaining Bolts & Nuts

6. Use lifting device and lifting strap to rotate the rear attachment into position. (See Fig. # 5-106)

STORAGE

PREPARING FOR STORAGE

After the season's use or when the Kwik-Till will not be used for a period of time, completely inspect all major systems of the Kwik-Till.

Replace or repair any worn or damaged components to prevent any unnecessary down time at the beginning of the next season.

Follow these procedures before storing:

⚠ WARNING

Before disconnecting equipment, servicing, adjusting, or repairing:

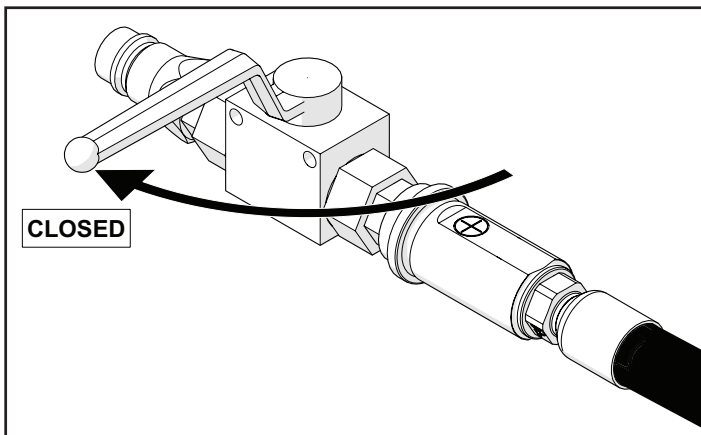
Park on a level surface, engage park brake, place transmission in PARK, shut off engine, remove key, and wait for all moving parts to stop before leaving the tractor cab.

1. Store in either Transport or Field position.
2. Make sure that the Hitch Jack hydraulic hose ball valve is in the "CLOSED" position. (See Fig. # 5-98)

IMPORTANT

Close the hydraulic hitch jack ball valve to prevent accidental operation of this circuit. Ensure ball valve handle is in closed position when not in use.

• Failure to close the ball valve during storage will cause the machine to slowly settle causing the hitch to lower to the ground.



*Fig. # 5-91 Make Sure The Ball Valve Is **CLOSED** (Shown in the "CLOSED" Position)*

3. Inspect all rotating parts for entanglements. Remove anything caught in the mechanisms.
4. Thoroughly wash the unit to remove all dirt, mud and debris.

5. Check the condition of the components in the hydraulic system. Repair, replace or adjust as required. Tighten any loose fittings. Replace any hose that is badly cut, nicked or abraded or is separating from the crimped end of the fitting.
6. Lubricate all fittings and fill grease cavities to remove moisture.
7. Grease any exposed chrome shafts on the hydraulic cylinders to prevent rusting.
8. Touch up all paint nicks and scratches to prevent rusting.
9. Store the Kwik-Till inside for protection from the weather. If the Kwik-Till must be stored outside, cover with a waterproof tarpaulin and tie down securely, place boards under the wheels and parking stands to prevent sinking into the soil.
10. Check tire pressure and inflate according to tire side-wall recommendations.
11. Chock wheels.

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6.0 - TROUBLESHOOTING

TROUBLESHOOTING FIELD PROBLEMS

Problem	Possible Cause	Solution
Machine does not track straight.	Machine not level from front to back.	Adjust hitch link height to the tractor drawbar
		Add a depth stop to rear attachment cylinders
		Reduce machine tracking spacing for more overlap
		Adjust AutoTrac to the left
		Adjust AutoTrac to the right
		Add a depth stop to wheel strut cylinders
Full machine plugs.	Ground speed too low.	Increase speed as specified in operations.
	Working depth too deep.	Set for (2-3 in) in spring and (3.5-4.5) in for fall
Wings Plug.	Wings not level.	Verify that main and wing cylinders are in float.
		Verify that cylinder stops are consistent with the main frame
		Reduce digging depth.
		Reduce speed to 10.5 mph (17 km/h).
Furrow on the left side.	Soil not filling cut.	Increase machine speed to 10.5 mph (17 km/h).
		Adjust deflector towards the rear rank.
		Make certain that deflector is not running in the soil.
Surface finish unsatisfactory.	Speed too low.	Increase machine speed to 10.5 mph (17 km/h).
Subsurface ridges.	Machine unlevel.	Verify that depth stops and hitch link are adjusted properly.
Deflector plugging.	Too much residue.	During Fall tillage or high residue flip deflector up.
Residue flow unsatisfactory.	Adjust front rank.	In high residue, it may be necessary to raise front rank.

TROUBLESHOOTING MACHINE OPERATION

Problem	Possible Cause	Solution
Slow folding sequence.	Low hydraulic pressure/flow from tractor.	Verify SCV settings and fluid levels.
Machine not folding at all.	Hydraulic connection issue.	Verify that all hoses are connected properly. (See Make Proper Hose Connections in the Attaching and Detaching section.)
		Verify that hose pairs are mated properly.
		Refer to the hose chart on the machine.
		Hydraulic fluid bypassing piston seals in one or both hydraulic cylinders. (Replace cylinder or re-build with new seals).

7.0 - SPECIFICATIONS

KWIK-TILL SPECIFICATIONS:

Tractor power requirements are shown in the following charts for each specific model of machine and working width.

IMPORTANT

Recommended operating speed is between 9-14 mph (14.5-22.5 km/h). In certain hilly, soft, or wet conditions it may require an additional 25% engine hp to maintain operating speeds at working depth.

Tractor Engine Power Requirements

Kwik-Till Model	Recommended Tractor Engine Power hp (kW)
HSD2600 NT	390 (291)
HSD2900 NT	435 (324)
HSD3250 NT	488 (363)
HSD3600 NT	540 (403)
HSD3600	540 (403)
HSD3900 NT	585 (436)
HSD3900	585 (436)
HSD4250	637 (475)
HSD4600	690 (514)

Downward Force on Tractor Drawbar

Kwik-Till Model	Maximum Tongue Weight lb (kg)
HSD2600 NT	5,195 (2,356)
HSD2900 NT	6,124 (2,777)
HSD3250 NT	7,114 (3,226)
HSD3600 NT	8,056 (3,654)
HSD3600	7,134 (3,236)
HSD3900 NT	8,973 (4,070)
HSD3900	8,080 (3,666)
HSD4250	9,055 (4,107)
HSD4600	10,008 (4,539)

Machine Weights & Working Widths

Kwik-Till Model	Working Width ft-in (m)	Total Weight * lb (kg)	Number Of Disks
HSD2600 NT	26' 0"	27,530	58
HSD2900 NT	29' 0"	29,279	66
HSD3250 NT	32' 6"	31,490	74
HSD3600 NT	36' 0"	33,310	82
HSD3600	36' 0"	34,496	82
HSD3900 NT	39' 0"	35,296	90
HSD3900	39' 0"	36,139	90
HSD4250	42' 6"	38,205	98
HSD4600	46' 0"	40,017	106

Transport Width and Height

Kwik-Till Model	Transport Width ft-in (m)	Transport Height ft-in (m)
HSD2600 NT	12' 6"	13' 6"
HSD2900 NT	12' 6"	13' 6"
HSD3250 NT	12' 6"	13' 6"
HSD3600 NT	12' 6"	13' 6"
HSD3600	15' 11"	13' 6"
HSD3900 NT	12' 6"	13' 6"
HSD3900	15' 11"	13' 6"
HSD4250	15' 11"	13' 6"
HSD4600	15' 11"	13' 6"

7.0 - SPECIFICATIONS Cont'd.

Ground Engaging

Machine Model	HSD2600	HSD2900	HSD3250	HSD3600	HSD3900	HSD4250	HSD4600
Disc Spacing	10 in (254 mm)						
Number of Discs	58	66	74	82	90	98	106
Estimated Weight per Blade	474 lb	443 lb	425 lb	406 lb	392 lb	389 lb	377 lb
Working Depth	2 in (51 mm) to 6 in (152 mm)						
Standards	Independent Disc Arms						
Arm Suspension	Compressed Rubber Elements						
Arm Travel	9 in (228 mm)						
Front Rank Angle	17°						
Front Rank Tilt	0						
Rear Rank Angle	14°						
Rear Rank Tilt	0						

Fig. # 7-6 Table: Ground Engaging

Disk Blades

Solid-Spherical Blade	
Diameter	20 in (508 mm)
Thickness	0.25 in (6.5 mm)
Concavity	1.84 in (47 mm)
Application	Soil control at higher speeds
Soil Type	Medium Soils
Penetration	High
Cutout or Notched-Spherical Blade	
Diameter	20 in (508 mm)
Thickness	0.25 in (6.5 mm)
Concavity	1.84 in (47 mm)
Application	Chopping or trapping residue
Soil Type	Medium to Heavy Soils
Penetration	Excellent

Fig. # 7-7 Table: Disk Blades

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Rear Attachments

Machines With Spiral Cage Rolling Basket	
Rear Attach Bearing	Maintenance Free Roller Hub with 2.5 in (64 mm) shaft
Diameter	25.5 in (647 mm)
Application	Even seedbed setup with clump removal
Compaction	Moderate
Soil Type	Light to Medium Heavy
Machines With Rubber Rolling Wheel	
Rear Attach Bearing	Maintenance Free Roller Hub with 2.5 in (64 mm) shaft
Diameter	25 in (635 mm)
Application	Excellent seedbed and moisture barrier
Compaction	High
Soil Type	Light to Heavy
Machines With Spring Tine Basket	
Rear Attach Bearing	Maintenance Free Roller Hub with 2.5 in (64 mm) shaft
Diameter	24.5 in (622 mm)
Application	Level seedbed setup
Compaction	Medium to High
Soil Type	Light to Medium

*Fig. # 7-7 Table: Rear Attachments***Tire Specifications**

Tire Size	Load/Speed Index	Tire Pressures		
		psi	kPa	bar
600/50R22.5	168B	46	317	3.1
710/40R22.5	170B	50	344	3.4
710/45R22.5	170B	58	400	4.0
800/40R22.5	176B	46	317	3.1

Fig. # 7-9 Table: Tire Specifications

HYDRUALIC SPECIFICATIONS

Standard torque data for hydraulic tubes and fittings

Tube Nuts for 37° Flared Fittings								O-Ring Boss Plugs, Adjustable Fitting Lock Nuts, Swivel JIC - 37 ° Seats			
Size	Tubing OD		Thread Size	ft-lbs		Nm		ft-lbs		Nm	
	Inches	mm		Min	Max	Min	Max	Min	Max	Min	Max
4	1/4	6.4	7/16-20	9	12	12	16	6	10	8	14
5	5/16	7.9	1/2-20	12	15	16	20	10	15	14	20
6	3/8	9.5	9/16-18	21	24	29	33	15	20	20	27
8	1/2	12.7	3/4-18	35	40	47	54	25	30	34	41
10	5/8	15.9	7/8-14	53	58	72	79	35	40	47	54
12	3/4	19.1	1-1/6-12	77	82	104	111	60	70	81	95
14	7/8	22.2	1-3/16-12	90	100	122	136	70	80	95	109
16	1	25.4	1-5/16-12	110	120	149	163	80	90	108	122
20	1-1/4	31.8	1-5/8-12	140	150	190	204	95	115	129	156
24	1-1/2	38.1	1-7/8-12	160	175	217	237	120	140	163	190
32	2	50.8	2-1/2-12	225	240	305	325	250	300	339	407

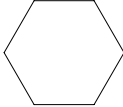
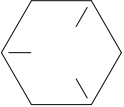
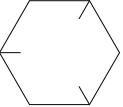
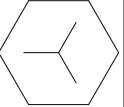
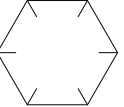
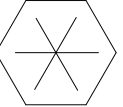
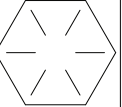
The above torque figures are recommended for plain, cadmium or zinc plated fittings, dry or wet installations and swivel nuts either swagged or brazed. These torques are not recommended for tubes 12.7 mm (0.5 in) OD and thicker with wall thickness of 0.889 mm (0.035 in) or less. The torque is specified for 0.889 mm (0.035 in) wall tubes on each application individually.

TORQUE — FASTENERS

Society of Automotive Engineers (SAE) Fastener Torque

Use these torques, unless special torques are specified. Values are for Unified Coarse (UNC) and Unified Fine (UNF) thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, molydisulphide or other extreme pressure lubricant is used.

* Use the torque values as shown, unless specified otherwise. Torque values specified as lubricated, are fasteners that are to be assembled with threadlocker.

SAE Grade No.	Grade 2		Grade 5		Grade 8 (See Note Below)	
Bolt Head Identification (See Note Below.)			  		  	
Bolt Size	ft-lbs	ft-lbs (Lubricated)*	ft-lbs	ft-lbs (Lubricated)*	ft-lbs	ft-lbs (Lubricated)*
1/4	3.6	2.7	8.5	6.3	11.9	8.9
5/16	7.4	5.5	17.4	13.1	24.6	18.4
3/8	13.1	9.8	30.9	23.2	43.6	32.7
7/16	20.9	15.7	49.4	37.1	69.8	52.3
1/2	31.9	23.9	75.4	56.5	106.4	79.8
9/16	46.1	34.5	108.7	81.6	153.5	115.1
5/8	63.6	47.7	150.1	112.6	211.9	158.9
3/4	113	85	267	200	376	282
7/8	182	136	429	322	606	455
1	273	204	644	483	909	681
1-1/8	386	290	794	596	1288	966
1-1/4	409	545	1121	840	1817	1363
1-3/8	536	715	1469	1102	2382	1786
1-1/2	949	711	1950	1462	3162	2371

NOTE: Bolt head identification marks as per grade. Manufacturing marks will vary.




NOTE: Thick nuts must be used with Grade 8 bolts.

7 - SPECIFICATIONS

Metric International Standards Organization (ISO) Fastener Torque

Use these torques, unless special torques are specified. Values are for coarse thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, molydisulphide or other extreme pressure lubricant is used.

* Use the torque values as shown, unless specified otherwise. Torque values specified as lubricated, are fasteners that are to be assembled with threadlocker.

ISO Class No.	8.8		10.9		12.9	
Bolt Head Identification (See Note below.)						
Bolt Size	ft-lbs	ft-lbs (Lubricated)*	ft-lbs	ft-lbs (Lubricated)*	ft-lbs	ft-lbs (Lubricated)*
M5	4.6	3.4	6.5	4.9	7.6	5.7
M6	7.7	5.8	11.1	8.3	12.9	9.7
M8	18.8	14.1	26.9	20.2	31.4	23.6
M10	37.2	27.9	53.3	39.9	62.2	46.7
M12	64.9	48.7	92.9	69.7	109	81.4
M14	103	77.5	148	111	173	130
M16	161	121	231	173	270	202
M18	229	172	317	238	371	278
M20	325	244	450	337	526	394
M22	443	332	612	459	715	537
M24	562	422	778	583	909	682
M27	823	617	1138	854	1330	998
M30	1117	838	1546	1159	1806	1355
M33	1520	1140	2103	1577	2458	1843
M36	1952	1464	2701	2026	3157	2367
M39	2527	1895	3495	2622	4085	3064

NOTE: Bolt head identification marks as per grade. Manufacturing marks will vary.

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8 - FORMS AND DECLARATIONS

Norwood follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE), and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the equipment must read and clearly understand all Safety, Operating and Maintenance information presented in this manual.

Do not operate, or allow anyone else to operate, this equipment until this document has been read. Review this information annually, before the season start-up.

Make periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment.

The following Sign-Off Form is provided for your record keeping. Use it to show that all personnel who will be working with the equipment have read and understand the provided information. Also, they have been instructed in the operation of the equipment. Copy this page to continue the record.

SIGN - OFF FORM

DATE	EMPLOYEES SIGNATURE	EMPLOYERS SIGNATURE

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Warranty



Warranty Registration

Customer's Name _____

Dealer's Name _____

Street Address _____

Street Address _____

City _____

State _____

Zip Code _____

City _____

State _____

Zip Code _____

Phone Number _____

Phone Number _____

Model _____

Serial Number _____

Delivery Date _____

Check One Below:

Commercial Use _____

Farm Use _____

Dealer Inspection Report

_____ Wheel Nuts Tight

_____ Tire Pressure

_____ Fasteners Tight

_____ All Decals Installed

_____ Signal Lights Work Properly

_____ Safety Chain Installed

_____ Review Operating & Safety Instructions

_____ Operator Manual Supplied

I have thoroughly instructed the buyer on the above described equipment including a review of the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

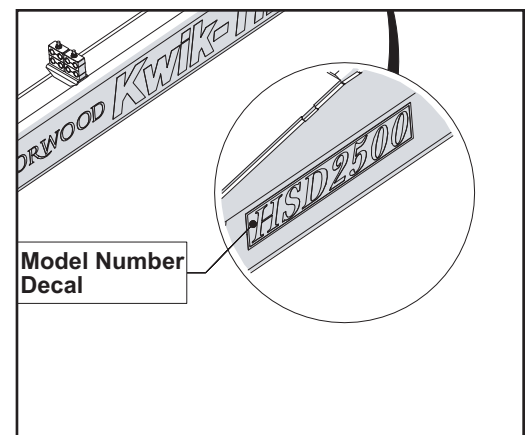
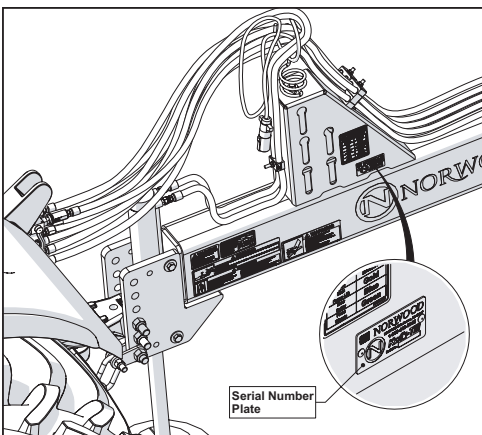
Date _____

Dealer's Signature _____

I have received the above equipment and Operator's Manual and I have been thoroughly instructed on its care, adjustments, safe operation and applicable warranty policy.

Date _____

Owner's Signature _____



Warranty

Limited Warranty Policy

Norwood Sales Inc. warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warrant is only effective on new machinery, which has not been altered, changed or repaired since its delivery to the buyer.

Norwood Sales Inc. shall only be liable for defects in materials or workmanship and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with **Norwood Sales Inc.** operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to **Norwood Sales Inc.** within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows: **Norwood Sales Inc., 11202 38th Street South, Horace, ND 58047.**

A Warranty Registration Form and Dealer Inspection Report must be completed at the time of delivery and returned to **Norwood Sales Inc., 11202 38th Street South, Horace, ND 58047** within thirty (30) days.

Warranty Period

Private Farm Use	One (1) year from date of purchase.
Commercial, Custom, or Rental Use	Ninety (90) days from date of purchase.
Replacement Parts	Ninety (90) days from date of replacement

If these conditions are fulfilled, **Norwood Sales Inc.** at its option will either repair or replace any defect. The buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless **Norwood Sales Inc.** authorizes such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by **Norwood Sales Inc.** or its authorized dealers.

This warranty extends only to the original owner of the new equipment.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether expressed or implied, and without limiting the generality of the foregoing, excluded all warranties, expressed or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. **Norwood Sales Inc.** disclaims all liability for incidental or consequential damages.

This machine is subject to design changes and **Norwood Sales Inc.** shall not be required to retro-fit or exchange items on previously sold units except at its own option.

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Index

Symbols

1 - GENERAL INFORMATION	1-1
& Cap Screws	5-7, 5-16
& Cap Screws	5-5
& Hydraulic Cylinders	5-9
& Hydraulic Cylinders	5-5
(PPE), Personal Protective Equipment	2-4

A

Accumulator	4-2
Adapters	5-5, 5-9
Adjusting Disk Shank Cords	5-23
Adjusting Rear Roller Deflector	4-23
Adjusting The Hitch Link	4-19
Amber Flashing Warning/Turn Signal Light	4-2, 4-3
A Message to Our Customers	1-1
Anatomy Of Headland Turns	4-21
ANNUALLY	5-25, 5-26, 5-27, 5-29, 5-30
AS REQUIRED	5-31, 5-32, 5-33
Assembly (Rolling Spiral Basket)	5-38
Attaching and Detaching Kwik-Till To/From Tractor	3-8
Attaching and Detaching Kwik-Till To / From Tractor Safety	2-13, 3-8, 4-9
Attaching Kwik-Till To Tractor	3-9
Attachments, Rear	7-3
Avoid Heating Near Pressurized Fluid Lines	2-6
Avoid Overhead Power Lines	2-7
Avoid Sharp Disks	5-3

B

Before Entering Field Guidelines	4-17
--	------

C

Center Section	4-2
Center Strut	4-2
Center Strut Wheels	4-2
Check Accumulator	5-5, 5-29
Check Disk Hub Nuts (Re-Torque If Needed)	5-5, 5-21
Check Disk Hubs For Excessive Wear	5-5, 5-27
Check Disk Hubs For Excessive Wear	5-5
Check Disks For Damage And / Or Excessive Wear	5-5, 5-25
Check Disk Shank Cord Alignment	5-5, 5-22
Check For Damaged Hydraulic Hoses	5-5, 5-9
Check For Gap At Pivot Bushing Caps	5-19
Check For Gap At Pivot Bushing Caps	5-5
Check For Hydraulic Leaks	5-8
Check For Hydraulic Leaks	5-5
Checking / Adjusting Scraper Alignment	5-11
Check Pivot Bushings For Wear	5-17
Check Pivot Bushings For Wear	5-5
Check Rear Roller Hubs For Wear	5-5, 5-30
Check Rubber Roller Scraper Alignment If Equipped With The Rubber Roller Basket	5-5
Check Tightness Of All Bolts	5-5, 5-7, 5-16
Check Tire Pressure	3-7
Check Tire Pressure	5-5
Check Tire Pressures	5-10
Check Wheel Bearings	5-5, 5-26
Check Wheel Bearings	5-5
Check Wheel Hardware	3-7

Chemical Safety and the Environment.....	2-11
Clean and Wash the Machine	5-5
Clean And Wash The Machine	5-31
Close the hydraulic hitch jack ball valve.....	3-13
Connect the Warning Light Plug	3-15
CONTROLS.....	4-5
Crossovers.....	5-5, 5-9
Customers, A Message to Our	1-1

D

DAILY	5-8, 5-9, 5-10
Date Of Purchase:	1-2
DECLARATIONS, FORMS AND	8-1
Decommissioning: Proper Recycling and Disposal of Fluids and Components.....	2-12
Definitions, Safety Rules And Signal Word	2-1
Detaching Kwik-Till From Tractor	3-17
Determine Tractor Requirements.....	3-2
Determining left and right side of the machine	1-3
Determining Left and Right Side of the Machine.....	1-3
Dis-Assembly (Rolling Spiral Basket.....	5-36
Disk Blades	7-2
Do Not Operate Tag	2-5
Downward Force on Tractor Drawbar	7-1
Drawbar, Downward Force on Tractor.....	7-1
Drawbar Requirements.....	3-3, 3-5

E

Edge Of Field.....	4-21
Electrical Storm Safety.....	2-7
Emergencies, Prepare for	2-4

F

Field Operation	4-17
First 10 Hours Of Operation	5-6, 5-7
FLUIDS AND LUBRICANTS.....	5-3
FORMS AND DECLARATIONS.....	8-1
Front Disk Shank.....	4-2
Front Wheel Hydraulic Cylinder	4-2

G

GENERAL INFORMATION	1-1
General Maintenance Safety	2-5, 5-1
General Safety.....	2-2
Grease.....	5-4
Grease Hitch Link Articulating Ball.....	5-5, 5-20
Greasing.....	5-4
Ground	7-2

H

Handle Chemical Products Safely	2-11
Headland Turn	4-21
Headland Turns & Skipped Passes	4-21
Helpful Hints.....	2-11
Hitch Jack Hydraulic Cylinder.....	4-2
Hitch Jack Pivoting Foot	4-2
Hitch Link.....	4-2
Hitch Section.....	4-2
Hose Holder Bracket	4-2
Hose Holder Slots.....	4-2
Hose Holder Spring.....	4-2

Hydraulic Hitch Jack Ball Valve	4-5
Hydraulic Hitch Jack Ball Valve (Not Shown).....	4-2
Hydraulic Oil	5-3
Hydraulic Requirements	3-2
Hydraulic Safety	2-3

I

In-Field Operation.....	4-20
-------------------------	------

J

Junctions.....	5-5, 5-9
----------------	----------

K

Keep Riders Off Machine	2-14
Kwik-Till Folding	4-14
Kwik-Till Folding & Unfolding	4-9
Kwik-Till Lighting	3-15
Kwik-Till Model / Serial Number Location	1-2
Kwik-Till Operator's Manual Location.....	1-2
Kwik-Till Specifications:	7-1
Kwik-Till Unfolding	4-10

L

Left Wing	4-2
Left Wing Strut.....	4-2
Lines, Avoid Heating Near Pressurized Fluid.....	2-6
Lines, Avoid Overhead Power	2-7
Location, Kwik-Till Model / Serial Number	1-2
Location, Kwik-Till Operator's Manual.....	1-2
Lock-Out Tag-Out Safety	2-5
Lubricate Wheel Hubs	5-5, 5-24
Lubricate Wheel Hubs.	5-5
Lubrication Symbols	5-4

M

Machine Components	4-2, 4-3, 4-4
Machine Components (Page 1 of 3)	4-2
Machine, Determining Left and Right Side of the.....	1-3
Machine safety	2-1
Machine Weight.....	7-1
Main Frame Lift Hydraulic Cylinder	4-2
MAINTENANCE.....	5-1
MAINTENANCE CHART	5-5
Manual Depth Control.....	4-6
Model Number:.....	1-2
MONTHLY	5-21, 5-22, 5-24

N

Noise Level Safety	2-11
Non-Permissible Use	2-5
Note to the owner	1-1
Note to the Owner.....	1-1

O

Observe Maximum Transport Speed	2-12
Operator Orientation	1-3
Operator's Manual Tube	4-2

P

Personal Protective Equipment (PPE)	2-4
Personal safety.....	2-1
Personal Safety	2-1

Position Drawbar.....	3-3
Practice Safe Maintenance	5-2
Prepare for Emergencies.....	2-4
Prepare Hydraulic System.....	3-3
Preparing For Storage	5-42
Preparing For Transport Safety	2-15
Preparing Kwik-Till	3-5
Preparing The Tractor.....	3-2

R

Raise the hitch jack.....	3-13
Rear Cage Roller (Option)	4-4
Rear Cage Roller (Option) (Cage Shown).....	4-2
Rear Disk Shank.....	4-2
Rear Roller (Basket) Hydraulic Cylinder.....	4-2
Rear Roller Deflector.....	4-4
Rear Roller Deflector (Option) (Not Shown)	4-2
Rear Roller Hanger	4-2
Red Tail/Signal/Brake Lights	4-3
Red Tail/Signal/Brake Lights (Not Shown).....	4-2
Remove Paint Before Welding or Heating.....	2-6
Repack Wheel Bearings.....	5-5, 5-33
Replace Hydraulic Hoses	5-2
Replace Pivot Bushings	5-5, 5-32
Replace Rear Roller Hubs.....	5-5, 5-36
Requirements, Tractor Engine Power	7-1
Re-Torque Wheel Flange Nuts.....	5-5, 5-6, 5-15
Right Wing	4-2
Right Wing Strut	4-2
Rubber Roller (Option)	4-4
Rubber Roller (Option) (Not Shown).....	4-2
Rubber Roller Scrapers (Option) (Not Shown)	4-2, 4-3, 4-4

S

Safety Chain.....	4-2
SAFETY CHAIN	2-36
Safety Decal Locations.....	2-17
Safety Decals.....	2-17
Safety Features.....	2-36
SAFETY INFORMATION	2-1, 4-9
Safety rules.....	2-2
Safety Rules And Signal Word Definitions.....	2-1
Safety Sign Locations	2-17, 2-36
Safety Signs	2-17, 2-36, 2-37, 2-38
Scraper Blade Replacement	5-12
Scraper Blade Replacement & Alignment.....	4-24
SCV Usage	3-14
Secure Three-Point Hitch.....	3-3
Serial Number:.....	1-2
Serial Number location.....	1-2
Service Machine Safely.....	5-3
SERVICE PROCEDURE:	5-38, 5-39
SERVICING INTERVALS	5-4
Seven-Terminal Outlet	3-15
SIGN - OFF FORM.....	8-1
SMV Emblem	4-3
SMV Emblem (Not Shown).....	4-2
SMV (SLOW MOVING VEHICLE) EMBLEM:	2-36
SPECIFICATIONS.....	7-1, 7-2

Spring Cage Roller	5-38
Spring Cage Roller and the Rubber Wheel Roller):	5-36
Spring Roller (Option).....	4-4
Spring Roller (Option) (Not Shown)	4-2
STORAGE	5-42
Storing Lubricants.....	5-3
Support Machine Properly	5-3

T

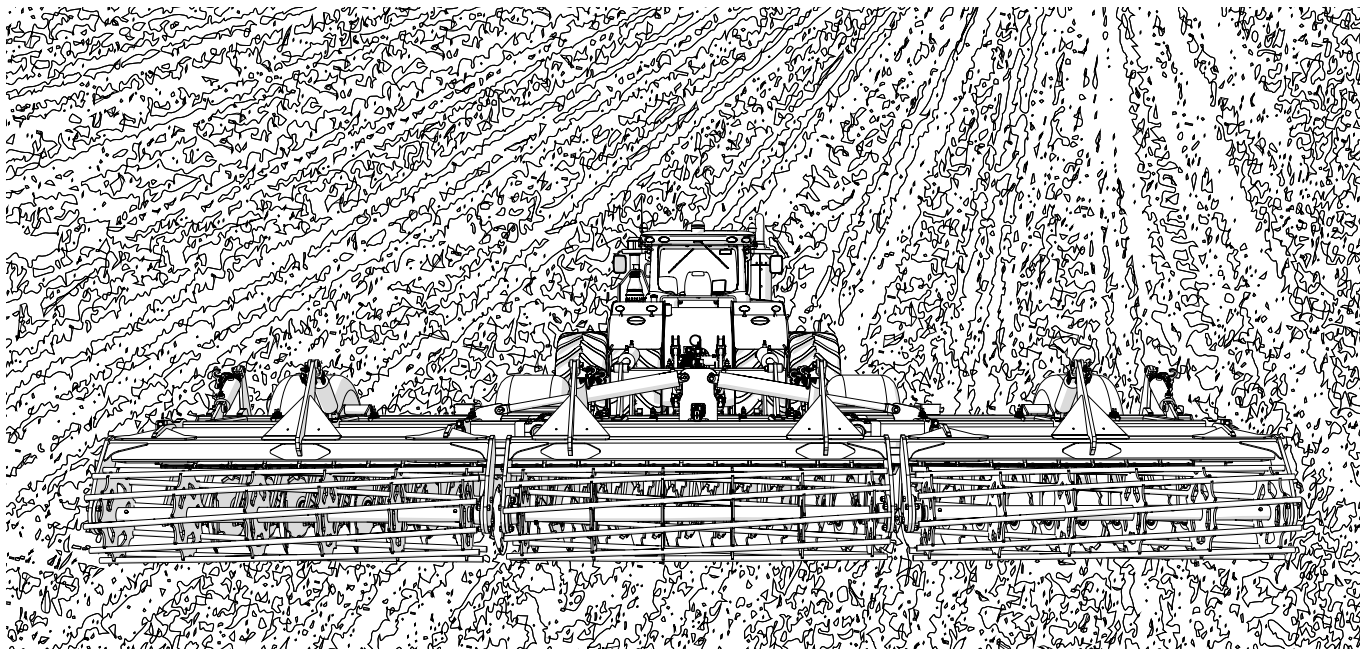
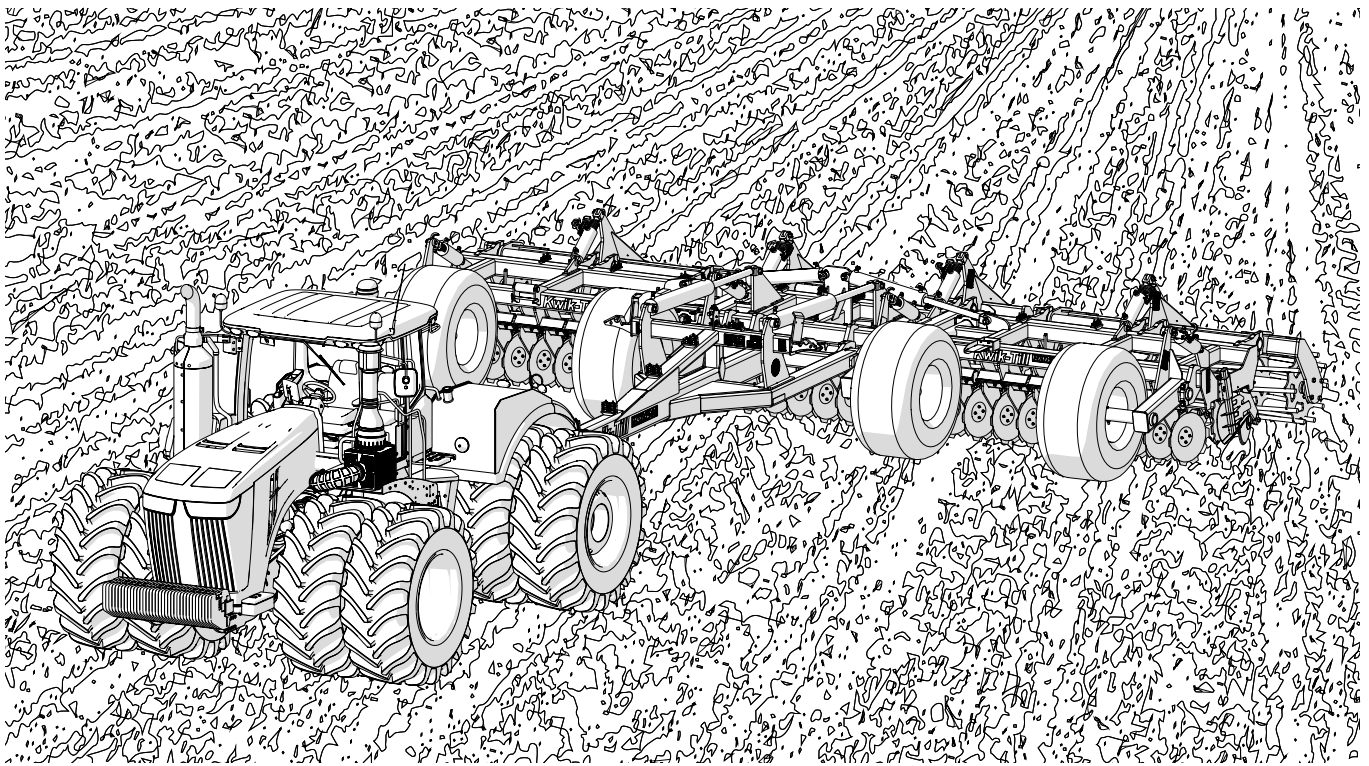
Tighten Hardware.....	4-17
Tillage Deflector	4-2
Tilled 1st Pass.....	4-21
Tilled 2nd Pass	4-21
Torque, Metric International Standards Organization (ISO) Fastener	7-6
Torque, Society of Automotive Engineers (SAE) Fastener	7-5
Tow Loads Safely	2-14
Tractor Engine Power Requirements	7-1
Transport Lock Pin	4-2
Transport Locks.....	4-8
TRANSPORT OPERATIONS.....	3-1
Transport Rests	4-2
Transport Safety.....	2-16
Transport Width and Height.....	7-1
TROUBLESHOOTING	6-1
Troubleshooting Field Problems.....	6-1
Troubleshooting Machine Operation.....	6-2

U

Understanding Manual Depth Control.....	4-6
Untilled 1st Pass	4-21
Untilled 2nd Pass	4-21
Use a Safety Chain.....	2-14, 4-9
Use a Signal Person.....	2-7
Use Safe Service Procedures	5-2
Use Safety Lights and Devices	2-12
Use Tractor Operator's Manual.....	3-2
Use Your Tractor and Tillage Equipment Operator's Manuals.....	3-8
Using The Seven-Terminal Outlet.....	3-15

W

Warranty	8-3, 8-4
WEEKLY	5-14, 5-16, 5-17, 5-19, 5-20
Weight, Machine.....	7-1
Wheel and Tire Safety.....	2-6
Wheels and Tires.....	2-6
Wing Fold Hydraulic Cylinder.....	4-2
Wing Strut Wheels	4-2
Wing Transport Roller	4-2
Work in Clean Area.....	5-2
Working at Heights	2-7
Working at Heights (If Applicable).....	2-7
WORKING OPERATIONS	4-1



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Norwood Sales Inc. Union, NE	☎ 402-263-2100	☎ 402-263-2104