Introduction

This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury & carefully read the message that follows.

“Right-hand” & “left-hand” sides are determined by facing in the direction the machinery will travel.

Record your product’s serial number in the space provided below:

S.N. _____ Purchase Date _____

Please review the warranty for this equipment which appears on the sales order that was signed when the sales order was placed. This warranty provides you the assurance that Pik Rite will back its products where defects appear within the warranty period. Pik Rite also provides field improvements, in some circumstances without charge to the customer, even if the product’s warranty is expired.

Warranty & field improvements are a part of Pik Rite’s product support program for customers who operate & maintain their equipment as described in this manual. If the equipment is abused or modified causing a change in its performance beyond the original factory specifications, the warranty will become void & field improvements may be denied.

For information and service call or write to:

Pik Rite Inc.
101 Fairfield Rd.
Lewisburg PA 17837
800-326-9763

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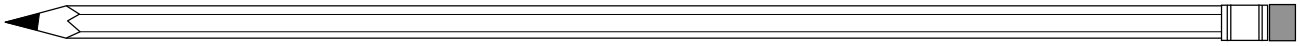
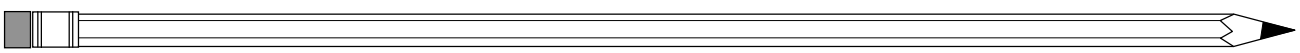
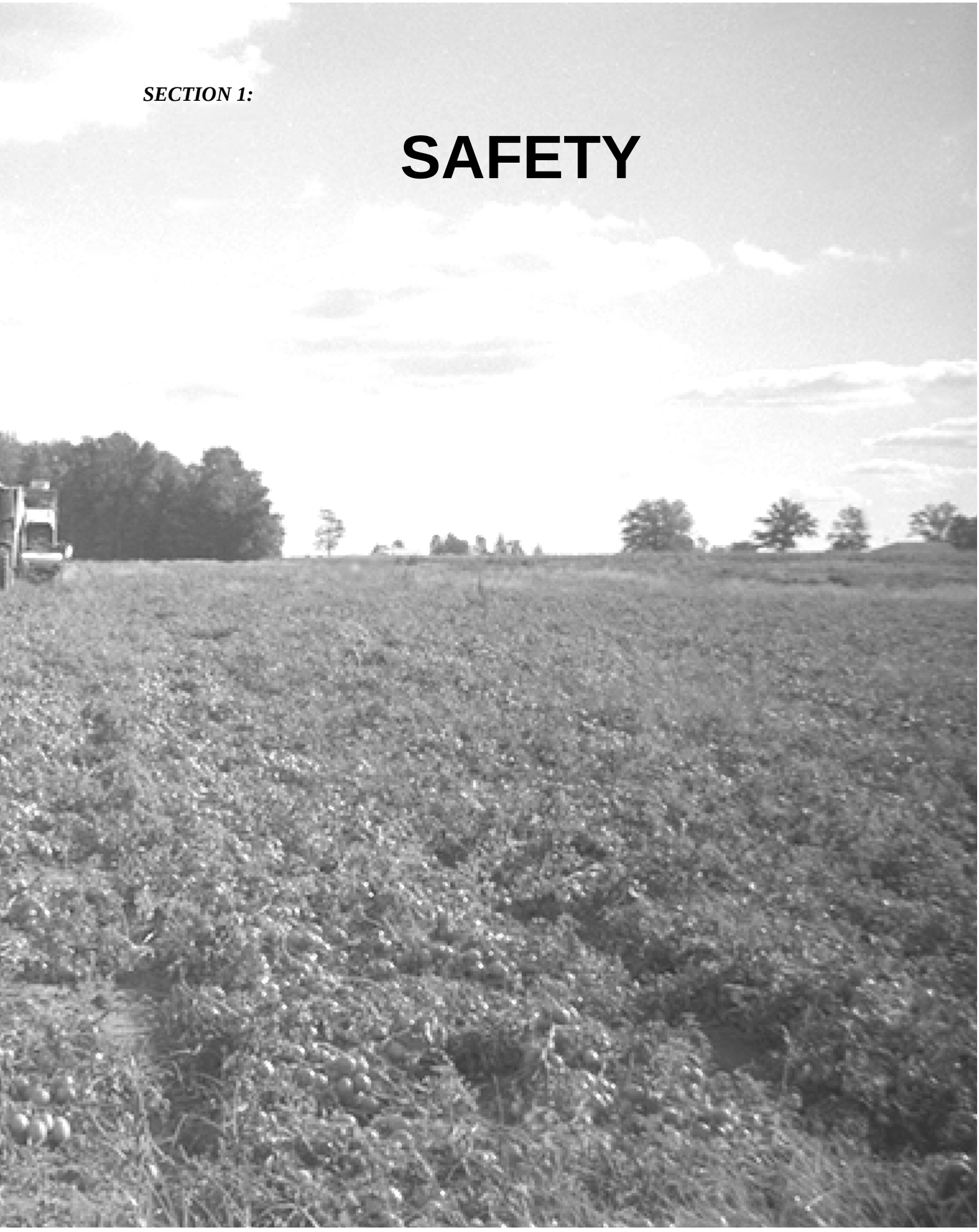
NOTES



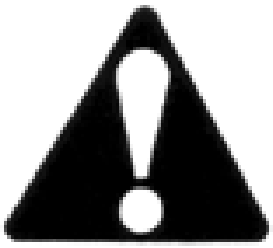


SECTION 1:

SAFETY



The operator's safety was one of the prime considerations in the minds of Pik Rite engineers when designing Pik Rite equipment. Shielding, simple adjustments & other safety features were built into the equipment wherever possible. Modifications to the equipment may impair the function &/or safety & affect machine life.



Recognize Safety Information

This is the safety-alert symbol. When you see this symbol on your equipment or in this manual, be aware of the potential for personal injury.

Follow recommended precautions & safe operating practices.

SAFE0103/ASAE SAFETY-ALERT SYMBOL

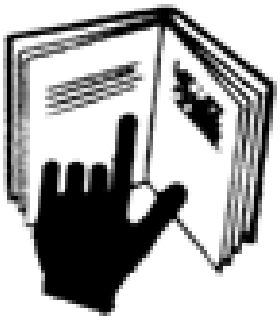
Understand Signal Words

A signal word—DANGER, WARNING or CAUTION—is used with the safety-alert symbol.

DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs.

SAFE0001/DANGER, SAFE0002/WARNING, SAFE0003/CAUTION



Follow Safety Instructions

Carefully read all safety messages in this manual & on your equipment's safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure that all new equipment components & repair parts include the current safety signs. Replacement safety signs are available from Pik Rite.

Learn how to operate the equipment & how to use controls properly. Do not allow anyone to operate without instruction.

Keep your equipment in proper working condition. Unauthorized modifications to the equipment may impair function &/or safety and affect equipment life.

If you do not understand any part of this manual & need assistance, please contact your Pik Rite representative.

SAFE0104/READ OPERATOR'S MANUAL

Operate Equipment Safely

All equipment must be operated by responsible persons who have been properly instructed & delegated to do so.

The equipment may move suddenly or fall while detaching. Use blocks under the wheels & release all stored energy from pickup float system before detaching equipment.

To avoid injury or death:

Disengage drives, shut off engine, & make sure electrical power is off before servicing or unplugging the equipment.

Do not stand between equipment & tractor when detaching equipment.

This equipment is intended for mobile field operation only. Never use equipment in a stationary position or modify it to be used in one.

Tomato Harvester & Cucumber Harvester
Do not stand or work under discharge conveyor or header while harvester is operating.

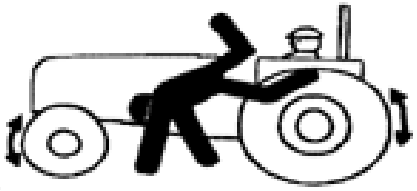
Do not stand between harvester & tongue while positioning tongue.

Do not put hands or feet between tongue & frame opening while positioning tongue.

Always operate machine at rated PTO speed.

Do not use your hands or feet to feed plants into the harvester. Disks & chains can feed plants faster than you can release your grip on the plants.

SAFE0087/8.1 LARGE THROWN OR FLYING OBJECT



Keep Riders Off Equipment & Tractor

Only allow the operator on the tractor & laborers in the places designed for them. Keep riders off.

Workstations are built into the Pik Rite tomato & cucumber harvesters to ensure that laborers can safely stand while doing grading. Riders on equipment are subject to injury such as being struck by foreign objects & being thrown off of the equipment. Riders also obstruct the operator's view resulting in the equipment being operated in an unsafe manner.

SAFE0105

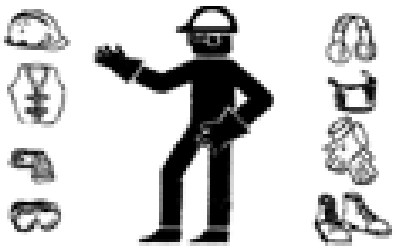
Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit & fire extinguisher handy.

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

SAFE0106



Wear Protective Clothing

Wear close fitting clothing & safety equipment appropriate to the job.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating equipment.

SAFE0107

Protect Against Noise

Prolonged exposure to loud noise can cause impairment or loss of hearing.

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

SAFE0095/9.1 LOUD NOISE--HEARING PROTECTION REQUIRED

Handle Chemical Products Safely

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used in conjunction with Pik Rite equipment include such items as lubricants & paints.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical & health hazards, safety procedures & 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 & how to do the job safely. Then follow the advised procedures & make use of the recommended equipment.

(Contact the Pik Rite Lewisburg, PA office for MSDS's on chemical products used with Pik Rite equipment.)

SAFE0108

Stay Clear of Rotating Drive lines

Entanglement in rotating driveline can cause serious injury or death.

Keep the tractor master shield & drive line shields in place at all times. Make certain that rotating shields turn freely.

Wear close fitting clothing. Stop the engine & be sure the PTO driveline is stopped before making adjustments, connections or cleaning out the PTO driven equipment.

SAFE0070/7.9 WHOLE BODY ENTANGLEMENT--IMPLEMENT INPUT DRIVELINE

Use Safety Lights & Devices

Slow moving tractors & towed implements carry the potential to create a hazard when driven on public roads. They are difficult to see, especially at night. Avoid personal injury or death resulting from collision with a vehicle.

Flashing warning lights & turn signals are recommended whenever driving on public roads. To increase visibility, use the lights provided with your equipment.

SAFE0109

Use a Safety Chain

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

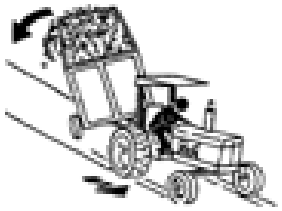
Use a chain with a strength rating equal to or greater than the gross weight of the equipment *(Weights listed below)*. Do not use safety chain for towing.

Tomato Harvester & Cucumber Harvester
Attach the chain to the harvester main frame & the tractor drawbar support or another specified anchor location. Provide only enough slack in the chain to permit turning.

Gross Weights

Tomato Harvester:	15,000 lbs.
Cucumber Harvester:	20,000 lbs.
Plastic Wrapper:	2,500 lbs.

SAFE0110



Reduce Speed When Towing Loads

Braking to stop towed loads from transport speeds can cause the towed load to swerve & upset. Reduce speed if towed load weighs more than the tractor &/or if the tractor is not equipped with brakes.

Follow recommended speed-weight ratio guidelines:

- Maximum speed is 20 mph (32 km/h) when towing a load equal to or less in weight than the tractor.
- Reduce speed to 10 mph (16 km/h) when towing a load up to double the tractor weight.
- Do not tow loads exceeding double the tractor weight.

Use additional caution when towing loads under adverse surface conditions, when turning & on inclines.

SAFE0111

Practice Safe Maintenance

Understand service procedure before doing work. Maintain cleanliness & dryness in work area.

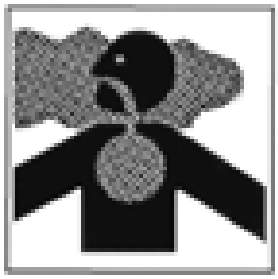
Never lubricate or service equipment while it is in motion. Be sure to keep hands, feet & clothing away from power-driven parts. Disengage all power & manipulate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow equipment to cool.

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

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

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on equipment.

SAFE0019/3.6 FALLING OR SLIPPING ON WET AREA



Remove Paint Before Welding or Heating

Avoid potentially toxic fumes & dust.

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

Do all work outside or in a well-ventilated area. Dispose of paint & solvent properly.

Remove paint before welding or heating:

· 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 & water before welding. Remove solvent or paint stripper containers & other flammable material from the area. Allow fumes to disperse at least 15 minutes before welding or heating.

SAFE0005/1.2 POISONOUS FUMES OR TOXIC GASES--ASPHYXIATION

Avoid Heating Near Pressurized Fluid Lines

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

SAFE0112

Avoid High-Pressure Fluids

Fluid escaping under pressure carries the potential to penetrate the skin resulting in serious injury.

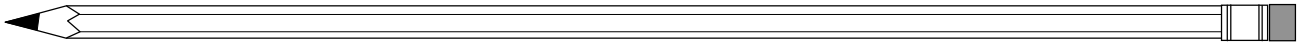
Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

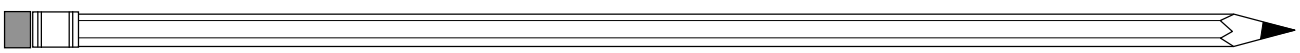
Search for leaks with a piece of cardboard. Protect hands & body from high-pressure fluids.

If an accident occurs, see a doctor 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.

SAFE0022/4.1 HIGH PRESSURE FLUID--INJECTION INTO BODY

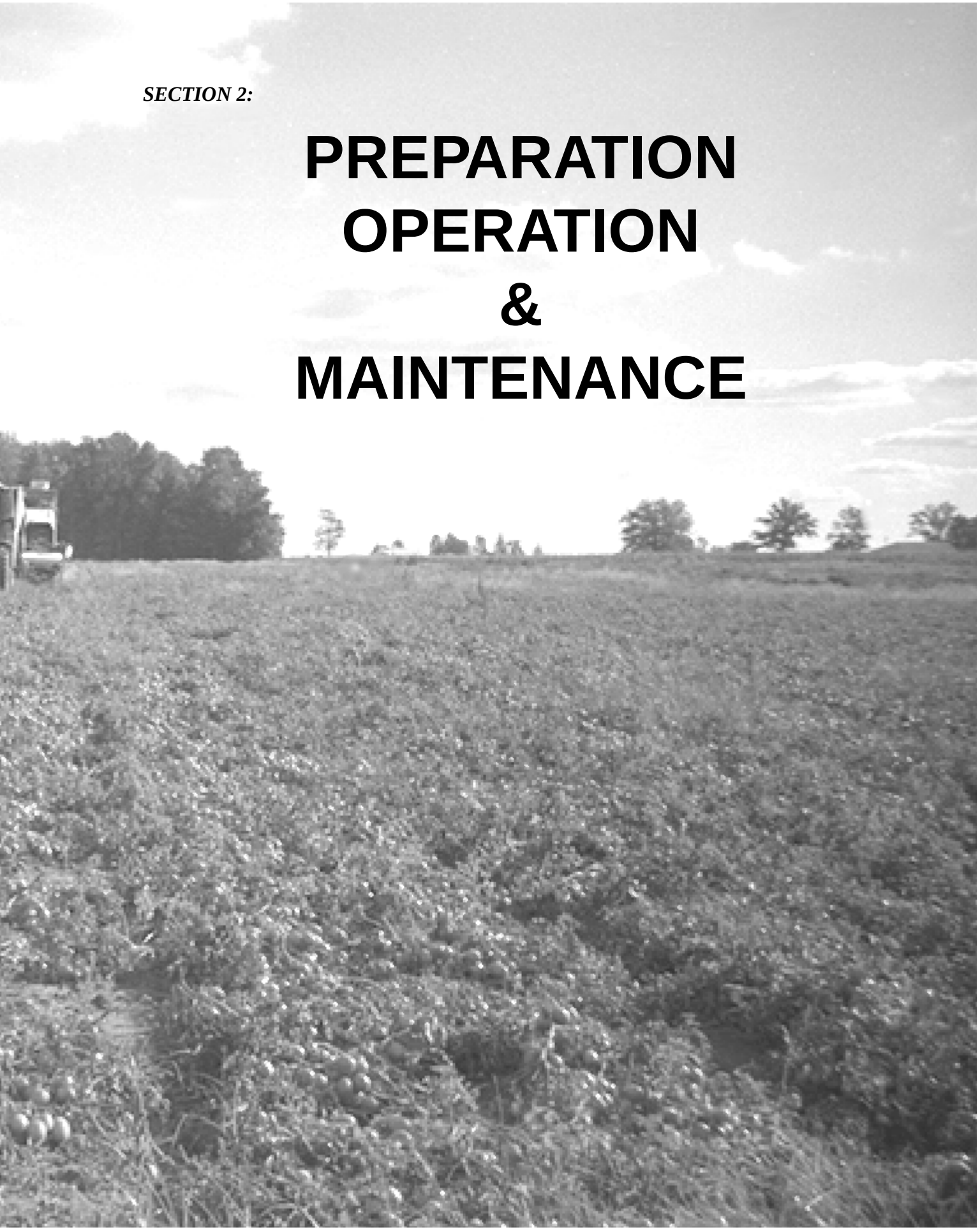
NOTES





SECTION 2:

PREPARATION OPERATION & MAINTENANCE



PREPARING THE TRACTOR

2 - 1: Tractor Drawbar

The drawbar should be set in the REGULAR setting as defined by the A.S.A.E. (American Society of Agricultural Engineers), which regulates the measurements as follows: 16" from center of drawbar pin hole to end of 1 3/8" tractor PTO shaft and/or 20" from center of drawbar pin hole to end of 1 3/4" tractor PTO shaft.

Caution: Failure to set proper drawbar setting may result in a broken PTO shaft.

With proper drawbar placement and inspection of drawbar bolts, attach the tractor to the tongue of the Pik Rite Harvester. Use an approved 1" diameter or larger drawbar pin with a safety clip.

2 - 2: Power Take off Shaft

Caution: The 1 3/4" - 20 spline PTO shaft is a different length than the 1 3/8" - 21 spline. Changing the end yoke only is not recommended. The entire half of the PTO should be changed.

If you will be using more than one tractor throughout the harvest season, purchase two tractor halves of the PTO shaft. The 1 3/4" will be a different length than the 1 3/8".

The cucumber harvester requires 800 to 1000 PTO RPM. Either the 1 3/8" - 21 spline or the 1 3/4" - 20 spline tractor shafts will supply this. Before attaching the PTO to the tractor, be sure that the slider tube is greased properly and slides freely. When attaching to the tractor, double check to be sure that the lock pin latches onto the tractor shaft.

2 - 3: Hydraulic Power

Two tractor valve banks are required for the cucumber harvester. One bank drives the harvester bin conveyor, and the other drives the control valve located on the harvester. The

tractor that is used MUST be a CLOSED CENTER tractor. The automatic height control will only function with a closed center system. Attach the two harvester hydraulic hoses to the tractor outlet. Note: Some tractor manufacturers have the first bank set up as a priority valve or a load sensing valve. Refer to the tractor owner's manual for proper hook ups. Refer to the section in your owner's manual listed: CONNECTING AN ORBITAL HYDRAULIC MOTOR or CONNECTING AN AUXILIARY VALVE BANK.

2 - 4: Electrical

The Pik Rite harvester utilizes the tractor's electrical power to energize the electrical needs of the lighting and electrohydraulic valve and automatic height control valves. Attach the supplied 7-prong-plug to the tractor's 7-prong-plug supply.

Caution: 12 V DC current is required.

Place the Velcro straps or adhesive-backed Velcro onto the tractor seat's armrest or another comfortable location for the electrohydraulic control box. Place the box and connect the power cord. The power light should come on when the power switch is turned on and remain on. The function switches should now be operable.

PREPARING THE HARVESTER

3 - 1: Field Preparation of Harvester

A. Upon completing the requirements described in Part I, **Preparing the Tractor**, move to the following step.

B. Raise elevation conveyor cylinder completely. This will position the elevation conveyor boom straight up. Be careful to prevent the elevation conveyor from hitting the bin sides.

Caution: Be sure that the boom is extended all of the way up, or major damage will occur from the following step.

C. Extend the bin fold up / main boom cylinders. These cylinders serve as the bin fold up cylinder and the main boom height control while in field operations.

Caution: Have a second person in place to watch that the cylinders and hoses do not bind or snag.

D. Fit the metal panels into the bin sides and install the bin support arms.

E. Remove the two cylinders from the bin-fold-up position and remove the bin-fold-up brackets. Install the cylinders in the main boom position. When refolding the bin for storage, the fold-up brackets must be positioned properly. When looking at the machine from the tractor, the T-shaped fold-up bracket must be in the following position:

BOLT _____ BOLT
|
CYLINDER

F. Cycle the bin booms and elevation conveyor boom slowly as a second person observes for any collisions or snags. Particularly pay attention to the clearance of the elevation conveyor boom when the bin box booms are all of the way up and in. Cylinder clevis may need to be adjusted to prevent collisions, or cylinder rod stops may need to be installed.

G. Remove the sliding hitch cylinder clevis pin and drive the tractor in such a way as to swing the tongue straight. Reconnect the clevis pin in the field setting. The tongue can now be placed in such a position that the towing of the harvester will be to the side of the tractor tires.

H. Adjust axle to desired setting while the harvester is moving.

Caution: Do not adjust the axle setting while sitting still. Damage to wheels and tires may occur.

This adjustment is for opening fields to match tractor wheel settings. Also, the weight distribution on the harvester wheels can be adjusted. This is especially critical in muddy conditions with a bin full of cucumbers.

Note: When the harvester is empty and the tongue is in field position, the weight distribution is nearly even with the axle all of the way in.

I. With all of the flow controls set at 0 and the oil reservoir level verified full, start the PTO slowly. The cooling fan should be the only motor rotating. Check for any oil leaks.

J. Increase the PTO speed to 1000 RPM. Open the flow control on each component or conveyor slowly. Check to be sure that it is running freely and smoothly. Adjust the flow controls to the desired speed of component and conveyors. Observe the pressures of the gauges on the Information Center. See field operations for more data.

Caution: Always have someone on the tractor ready to disengage the PTO in case of emergency shutdown requirements.

Remember, when setting the speeds of conveyors and components, the faster it is running, the sooner it will wear out. Match speeds with the requirements. Set speeds with tractor at 1000 RPM. After they are set, the tractor operator may operate the PTO shaft at lower RPM to match the oil requirements to the motors with the pump output. If the conveyor motors are requesting 10 gallons per minute to do the task and the PTO pump is pumping 15 G.P.M., there is a waste of energy and additional heat build-up, i.e. when the flow control is set to supply 10 G.P.M. to the motors, 10 G.P.M. will be all that the motor will get, regardless of whether the pump is pumping 10 or 15 G.P.M.

OPERATOR'S INSTRUCTIONS

Operating the Pik Rite Harvester requires much attention to detail. The operator must remain attentive to avoid injury to the crew or damage to the machine!

Caution: The tractor operator must always give some type of start-up warning for the benefit of the people on or near the machine before engaging the PTO. This warning needs to be established & understood by all crewmembers. It will greatly reduce the danger to life or limb of a crewmember cleaning the machine.

4 - 1: Starting Speed Settings

The speeds of conveyors & components will vary a great deal with field conditions. There is no prescribed speed at which to set the flow controls. However, there is an approximate start-up setting, & the operator needs to adjust as necessary for conditions.

Caution: Never leave the machine running while getting off of the tractor & adjusting the speed setting. Unless a technician on the machine is prepared to make the adjustment while running, always stop the PTO while making adjustments.

The Pik Rite Harvester may be operated at a maximum speed of 1000 PTO RPM or a minimum of 600 PTO RPM.

Caution: Idle the tractor down to engage & disengage the PTO. If the PTO is engaged or disengaged at high RPM, the pressure spikes may cause unnecessary wear to the Hydraulic Pump.

Speed control valves control all of the hydraulic motors, except the cooling fan motor. These valves control speed by monitoring the amount of oil that is allowed to pass through the motor.

The unused oil is passed around the motor. Both the bypassed oil & the oil that has passed through the motor flow together down line to the next flow control valve where the process is repeated.

There are four pump sections: hence, there are four hydraulic circuits. Each circuit has three to five motors running in series.

The pump is a constant displacement pump, which means that when the PTO is engaged, each section is pumping approximately 15 or 20 G.P.M., depending on the gear width & PTO RPM. It pumps the same amount of oil whether at high or low pressures. Consequently, the pumped oil must always have a channel to return to the reservoir, because it is constantly moving through the circuit.

Three of the four circuits empty into the oil cooler (mounted on top of the machine) & are cooled & sent through the filter back to the oil reservoir. The remaining circuit empties into the return line just before the filter & then flows into the oil reservoir.

Because the hydraulic motors are controlled by flow control valves, operating the tractor at higher RPM speeds will not necessarily result in faster operation of the harvester. Higher operating speed is obtained by setting the flow control lever to a higher number.

Ideally, the operator should both set the flow controls to the desired speed & match the tractor RPM to the amount of oil required. Any higher engine speed only causes more oil to bypass the motor, resulting in a waste of energy, more heat in the system, more wear and general inefficiency.

Flow control setting should be approximately:

Cutting Disk /Vibrating Blade	6
Header	8
Transfer / Conveyors	5
Dirt Vibrator	5
Primary Shaker Rotation	1
Primary Shaker Weights	6
Sizing Chain	2
Debris Fan	5.5

Note: Set fan's speed only fast enough to remove debris; over speeding causes wasted energy. The angle of the fan is adjustable. Adjust this so that the air stream is not blasting into any obstructions, i.e. the sizing chain or debris hood.

Elevation Conveyor	5
Vine Chain	5
Cross Conveyor	5
Reel	3
Hedge Hog Chain	5
Hedge Hog Fan	4

4 - 2: Disk Pickup Header (Optional)

Flow control is wide open; as a result, the disks & gathering chains will vary with the tractor PTO speed. It is important to keep a steady to thin flow of cucumber plants through the header. The Disk Pickup Header is to skim the ground just under the cucumber plants. Each gathering disk is independently controlled & thus the header flexes from side to side controlling the depth of each disk independently. The operator must watch closely & control both the right & left gathering disks.

4 - 3: Vibrating Cutter (Optional)

Adjust the blade to optimum depth and distance from header chain.

4 - 4: Header Chain

Normally, the flow setting is wide open. This keeps a thinner flow of vines & dirt running over the vibrator, & also helps to eliminate the dirt. If fruit loss occurs under the header sprockets at the feeder roller, slowing the header chain down will help. There are also other conditions when it's best to slow the header down. Pay attention to the shaker feed and the plants as they travel up the conveyor. Often a heavy vine mass will result in less damage to the fruit. On the other hand, a slower header speed is recommended when working with a thinly vine crop.

4 - 5: Transfer Conveyor

Set to optimum speed.

4 - 6: Powered Dirt Vibrator

As the vines & cucumbers travel up the header chain, they travel over the dirt vibrator. Field conditions will vary as to how fast to operate the vibrator. Over speeding it will cause excessive wear to the header chain & vibrator rollers. Some conditions require little or no vibration. Maximum speed depends on the amount of vine mass traveling over the vibrator. Heavy vines will allow higher vibrator speeds, while speed may be decreased when working in thin vines. The operator must prevent rollback or bunching of the vines. Bunching of vines results in inefficiency & fruit loss while it passes through the harvester.

4 - 7: Primary Shaker Rotation and Weights

The Pik Rite Harvester is designed to allow the operator to observe the rotation & movement of the primary shaker from the tractor seat. There are two points of control on the shaker: Weight speed & Rotation speed. The weight speed controls the intensity of the shaker (more RPM = more vigorous shake). Rotation speed controls the rotation speed of the entire shaker drum, thus controlling the time period vines remain on the shaker. Slower rotation speeds mean the cucumber vines take longer to ride over & out of the shaker. Slow the shaker rotation in viny weed condition, i.e. morning glory. Increase the primary shaker rotation speed in heavy cucumber vines, resulting in a thinner layer of vines on the shaker. Conditions vary drastically from field to field, day to day & among different varieties of cucumber plants. By keenly observing the shaker & outflow of vines, the operator will learn very quickly how & when to make minor adjustments.

To avoid undesirable damage to the cucumbers, a canopy of vine mass should be fed into the shaker to keep loose cucumbers from being flung and tossed about in the shaker chamber. Varying the speed of the header conveyor can help regulate this canopy of vines.

Primary Shaker Hood: Generally, the hood must be very close (½" to 1") to the shaker tines; some conditions require it to be lifted 3 to 4 inches higher.

Caution: Never allow the hood to operate while touching the tines. This will wear both the tines & hood prematurely.

Regularly clean the dirt build-up on the shaker drum & side panels.

4 - 8: Sizing Conveyor

Set to optimum speed.

4 - 9: Elevation Conveyor

As cucumbers fall from hedge hog chain onto elevation conveyor the conveyor inclines at two different angles to help prevent roll back. Run chain as slow as possible in order to fill all paddles evenly. As bin starts to fill, the elevation conveyor can be raised to throw cucumbers to the front side of the bin. (NOTE: Make sure to never run chain when top link of elevation cylinder is fully extended.)

4 - 10: Vine Chain

Cucumbers and plants will fall from the shaker onto the vine chain. The chain needs to run fast enough that a thin blanket of vines is constant at all times. (NOTE: Debris Drum under sizing chain is run by this circuit. Drum hoses can be switched in field to allow some oversized cucumbers back in machine.)

Caution: Only switch hose on motor after cleaning motor of all dirt and debris and oil has been cooled to a safe temperature.

4 - 11: Cross Conveyor

Chain needs to run fast enough to throw cucumbers on upper 3/4 of hedge hog chain.

4 - 12: Reel (Pick-Up or Feeder)

Needs to run at ground speed or faster.

4 - 13: Hedge Hog Chain

Needs to run faster than cross conveyor to empty debris. Chain speed and angle will need to be adjusted for different field conditions.

4 - 14: Hedge Hog Fan

This fan is used to apply pressure to hedge hog belt to hold dirt and debris to belt. Fan speed will need adjusted depending on field conditions.

4 - 15: Hydraulic Control Valve (located on harvester)

A. This valve is equipped with adjustable spool stops on each section, which operate in both directions. These stops control the travel of the internal metering spool. Turning the stop counterclockwise will allow the spool to travel further causing the cylinder that it controls to rotate faster; on the other hand, turning the stop clockwise slows the cylinder movement speed.

Caution: The adjustable stop can restrict the spool to the point that a cylinder function will be halted.

B. The top section is known as the unload section. It contains either the poppet for an open center operation or the plug for a closed center. It also contains a pilot-operated relief valve.

Caution: While operating in a closed center mode, be sure that the relief valve is set higher than the tractor pressure; otherwise, the tractor's hydraulic oil may overheat.

For more clarification on the hydraulic control valve, refer to ***figure 30099-10-2*** *located in your* ***Parts Manual****.*

4 - 16: Bin Box

Fill only the bin box vault while harvesting. Do not advance the bin box chain before starting the unloading process. Advancing the bin box chain to carry a load on the outer booms can enlarge the capacity, but this creates an unbalanced and potentially dangerous situation.

Caution: Do <u>not</u> drive the harvester with a load on the outer booms. The only exception is when unloading on the move in straight level terrain.

MAINTENANCE OPERATIONS

5 - 1: Oils and Lubrication

1. Chain lube for the roller chains. Any good quality lube is acceptable.
2. Air compressor oil: 30# Non Detergent
3. Use good quality machinery / bearing grease.
   Grease Fitting Location:
   - (2) Hinge (Outer Discharge) / (2) Hinge (Main Discharge)
   - (1) Axle pivot / (4) Axle Rockers [(2) on each side]
   - (4) Primary Weight Shafts
   - (2) Primary Shaft (Shaker)
   - (2) Header Pivot Point
   - (2) Header Chain Drive Shaft / (2) Header Chain Drive Shaft [Dirt Belt Optional]
   - (4) Cutter Disk Shafts (Optional Disk Header)
   - (3) PTO Main Shaft Joints & Slider
4. Machine Hydraulic Oil and Maintenance

5 - 2: Hydraulic System

- The operator must listen for any high pitched squeals or hissing sounds which may indicate that a relief valve in the hydraulic system is opening because a conveyor or other compo nent has stalled out. By installing a pressure gauge at the hydraulic pump & by using the process of elimination, it can be determined which component is the problem. It is wise to periodically observe the normal running pressures of the hydraulic pumps as you go down the row. This is a good indicator of any conveyor not functioning properly; the motors require more power in a jam-up, thus the pressure gauge registers more pressure.
- Keep oil cooler fans clean. Check weekly.
- Hydraulic oil temperature should operate at 150-160 degrees.
- Keep hydraulic oil level within 10" of the top of reservoir.
- Change hydraulic oil filters each season. Check for water in oil by removing magnetic plug at bottom of reservoir. Also check for wear metals.
- Analyze oil for particle count and viscosity at 300 hours of operation or change the hydrau lic oil at 300 hours of use.

Oil Specification

Pik Rite recommends *Hydrocarbon based oils which will maintain a viscosity of 80-100 SUS (20 CST) at operating temperatures. Start-up viscosity must not exceed 7500 SUS (1600 CST) and also must maintain *ISO cleanliness levels of 19/17/14 or better. Viscosity and cleanliness are the most important items to consider in order to maintain long life in the hydraulic system.

1. Viscosity Requirements

Viscosity is the measure of how a fluid resists flow. When viscosity increases, fluid becomes thicker; as temperature increases, fluid becomes thinner. This may cause problems. A viscosity must be selected that will flow freely and yet be thick enough to lubricate the moving parts in the pump and motors. Therefore, the temperature at which oil does its work is most important, thus referred to as operating temperature viscosity.

Pik Rite Harvesters are shipped with an all-seasonal ISO grade 46 hydraulic fluid. This is a good grade oil for average daytime temperatures at harvest time. Any good quality ISO grade 46 oil or SAE 10 motor oil is acceptable, providing the viscosity is within specification at operating temperatures and start-up temperature. If average daytime temperatures are above 95 degrees F and the machine's hydraulic oil temperature rises to 180 degrees F, Grade #46 viscosity may be too low. If this oil is too thin (viscosity too low), oil with ISO grade of 68 or SAE 15 may need to be installed. Mixing thicker oil (higher viscosity) such as SAE 30 or ISO 100 is a means of increasing the operating viscosity. After this is done, an oil sample should be sent to a lab for testing to insure proper viscosity.

Note #1: ISO standards allow up to 10% variation from a specification. An ISO grade 46 hydraulic oil can be actually 42 or 50 and be considered a grade 46.

Note #2: When using motor oils, non-detergent is preferred, however, detergent oil is not harmful. The detergents will tend to hold or suspend any moisture in the oil. Many hydraulic oils include in the additives a demulsifier, which will encourage the water to separate and be drained off of the bottom of the reservoir.

2. Cleanliness Requirements

The components on the harvester must have an ISO cleanliness level of 19/17/14. This means that there must be less than 150 parts per milliliter in the 5 micron or greater size and less than 200 parts per milliliter in the 15 micron or greater size (a human hair is approximately 70 microns in diameter and talcum powder is 10 microns). Oil samples must be sent to a lab to obtain these facts; it is a common analysis procedure. Filters must maintain this level of cleanliness. Any filter may be used provided the above results are achieved. The hydraulic oil must be "clear" and not "milky". A "milky" looking oil is a good indication that excessive water is present.

*International Standards Organization

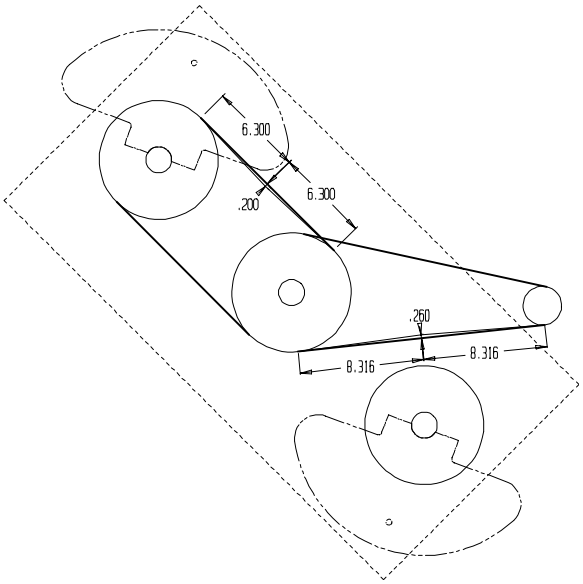
The most accepted fluid system contamination level designation in use today is the ISO "Solid Contamination Code" (ISO #4406). This format plots cleanliness levels (ISO Codes) based on particle counts at 5 and 15 micrometers per 100 ml of fluid under evaluation. An additional count at 2 microns is under review by ISO and likely to be adopted soon. Pik Rite has accepted this as a standard as of 4/15/95.

*Hydrocarbon based

Hydrocarbon (petroleum) based hydraulic fluids and straight oils are the most common fluids for hydraulic systems. The difference between a hydrocarbon based hydraulic fluid and straight oil is generally the additive. Some automotive or crankcase motor oils with the proper additives can be acceptable.

5 -3: Shaker Belt Tensioning Procedure

Note: this procedure is for determining the proper belt tension for belts labeled (RPP Plus), with a width of 30mm or 1-3/16”.

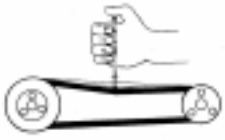


When belt replacement is necessary, refer to the Pik Rite service video for belt installation and weight timing procedures. Note that pulleys must be parallel. Misalignment causes uneven pressure on the teeth of the belt, uneven loading of the tensile member and extreme edge wear on the belt which can result in premature belt failure. Never pry or otherwise force belts onto pulleys as this can result in permanent damage to the belt.

Proper belt tension is chosen so as to avoid possible problems.

1. (Tooth Jump) assure that the belt is tensioned adequately to prevent tooth jump under the most severe load conditions that the drive will encounter.
2. (Extremely High Belt Tension) avoid extremely high tension which results in elevated noise levels and reduced belt and bearing life.

Getting started you will need a belt tension spring scale (Pik Rite Part # TL-470), a tape measure and a straight edge. Starting with one of the weight pulleys, position the weight in the box as to apply pressure to the belt and simulate belt load. At the center of the belt span use your spring scale and measure the force to deflect the belt 3/16". The recommended settings for the weight belts are (3/16 deflection @ 8‰ to 10‰ pounds)



The drive belt should be measured on the bottom side of the belt. This is the torque side of the belt if the weights are spinning counterclockwise looking at the box. At the center of the belt span use your spring scale and measure the force to deflect the belt … . The recommended setting for the drive belt is (… deflection @ 12 to 14 pounds).

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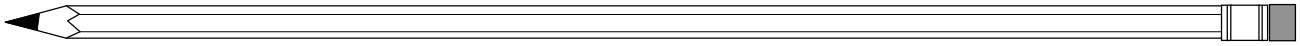

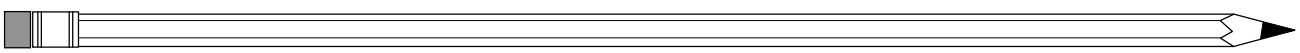

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