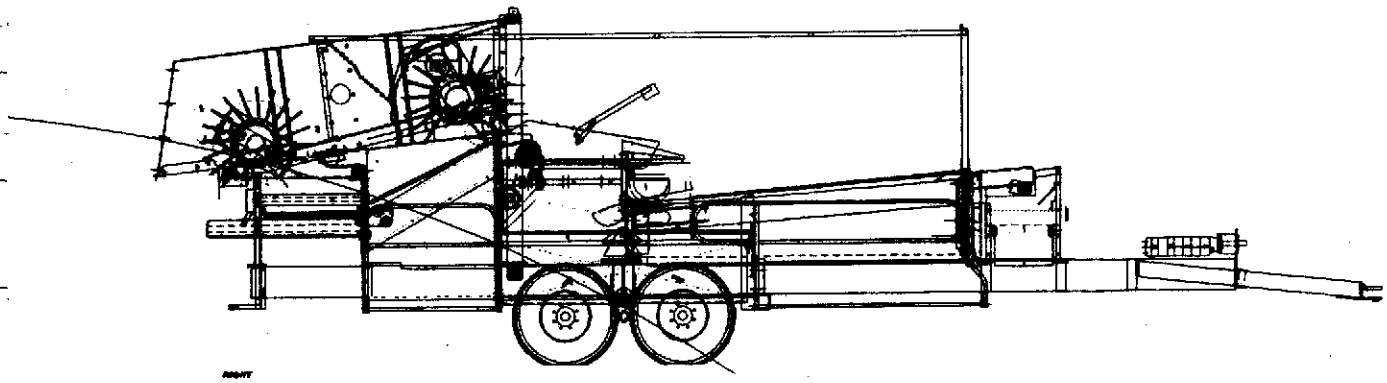
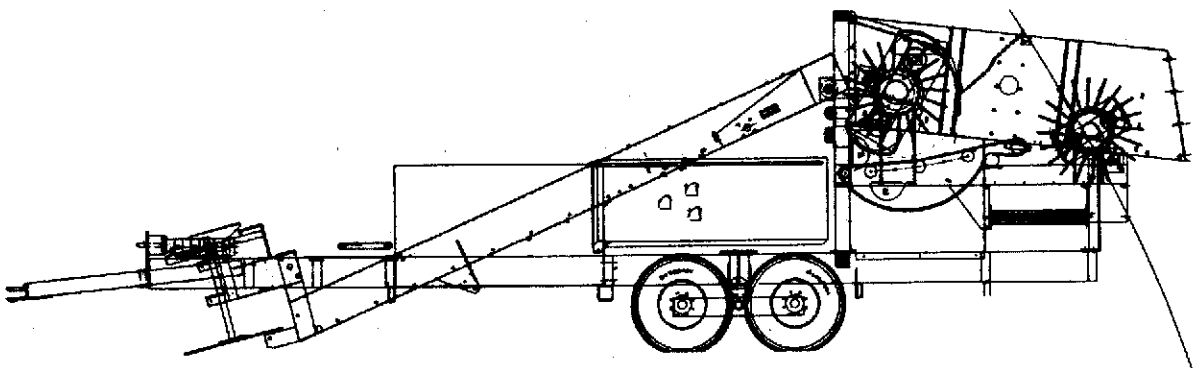


Operator's and Parts Manual

PIK RITE TOMATO HARVESTER



COMPANY HISTORY

Pik Rite, Inc. is a manufacturer of Tomato Harvesting Equipment. Born in a small welding shop out of the need of a local farmer, the company today is still privately held by the same two families. The welder, Joseph Yoder, is the president of Pik Rite, Inc, and the farmer, Elvin Stoltzfus, is the vice president and sales manager.

In the early 1970's, the Pik Rite founders were involved in growing tomatoes commercially and experienced much time on mechanical alterations and repairs to their existing "tomato harvester". By the early 1980's, Joe and Elvin had grown weary of the constant maintenance needed on these machines and a Tomato Harvester was built in 1983. The name of this machine was PIK RITE, being derived from and meaning it picks(harvests) right(correctly).

There were great expectations of this machine, but there were to be many disappointments for its' designers. The basic concept was very good, but there were some glaring problems that needed to be worked out. After three years of testing, renovating, and retesting, three Pik Rite Tomato Harvesters were built in 1986. Four Pik Rite harvesters were produced in the next two years, two in 1987 and two in 1988. Pik Rite, Inc. was void of any production in 1989, however, much concentration was devoted to a new shaker system. This design and development resulted in the Double Brush Shaker System, which was patented by Pik Rite, Inc.

The early 1990's are evidence of this success, as Pik Rite sales increased. Demand for this harvester grew fast, despite the 1991-92 world tomato paste price plummet and the cut back on production. This was due to the efficiency and performance of the Pik Rite Harvester. Tomato growers found operating and maintenance costs were far below tomato machines which cost two to three times more.

Pik Rite, Inc. has basically captured and dominated the new tomato harvester sales market share in the East including Ontario, Canada. Consequently, new territories are being pursued, Currently, Pik Rite machines are used in an area extending from southern New Jersey to western Indiana, and from north of Wallaceburg, Ontario, Canada to Los Mochis, Mexico. We are presently reaching into South America, Russia and California testing markets and equipment.

Research and development is ongoing at Pik Rite, Inc., both upgrading our present machines and developing new ideas to machine harvest pickles, peppers, beets and other vegetables.

One of Pik Rites' primary objectives, has been and will continue to be, to provide farmers with machines that recover 100% of the crop, at faster rates, with lower operation and maintenance costs, and provide fast service and parts availability during the high stress harvesting days.

- 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 directions the tomato harvester will travel.

Record your tomato harvester serial number in the space provided below:

S.N._____ Purchase Date_____

The warranty on this tomato harvester appears on your copy of the purchase order which you should have received from your sales representative when making your purchase. This warranty provides you the assurance that Pik Rite will back its products where defects appear within the warranty period. In some circumstances, Pik Rite also provides field improvements, often without charge to the customer, even if the product is out of warranty.

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. Should the equipment be abused, or modified to change 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

Notes

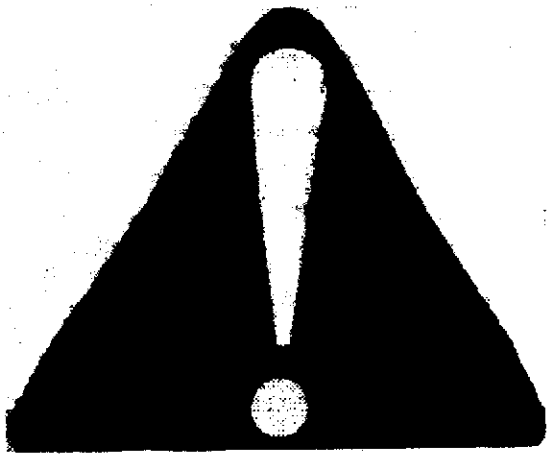
Table of Contents

SAFETY

Safety of the operator was one of the prime considerations in the mind of Pik Rite engineers when this tomato harvester was designed. Shielding, simple adjustments, & other safety features were built into the tomato harvester wherever possible. Modifications to the tomato harvester may impair the function &/or safety & affect machine life.

Recognize Safety Information

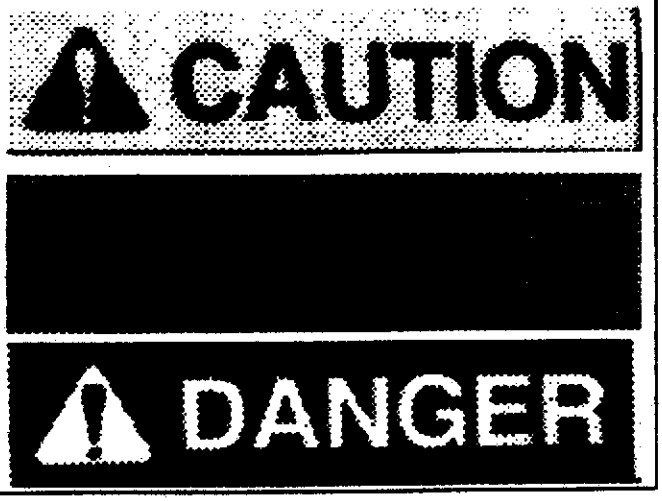
This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be aware of the potential for personal injury.
Follow recommended precautions & safe operating practices.



Understand Signal Words

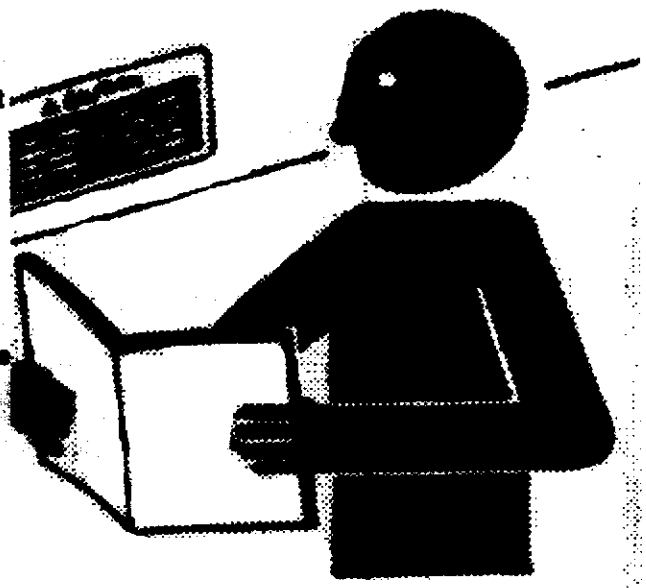
A signal word - DANGER, WARNING, or CAUTION - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

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



Follow Safety Instructions

Carefully read all safety messages in this manual & on your machine 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 machine & how to use the controls properly. Do not allow anyone to operate without instruction.

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

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

Operate Tomato Harvester Safely

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

Do not stand or work under discharge conveyor or header while harvester is operating.

Do not stand between harvester & tongue while positioning tongue.

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

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

Always operate machine at rated PTO speed.

To avoid injury or death:

Disengage drives, shut off engine, & make sure electrical power is off before servicing or unplugging the tomato harvester. The disks & chains can feed tomato plants faster than you can release your grip on the plants.

Do not use your hands or feet to feed plants into the harvester.

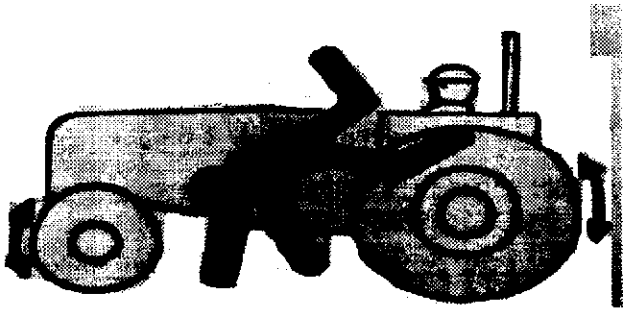
Do not stand between tomato harvester & tongue when detaching harvester.

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

Keep Riders Off Machine & Tractor

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

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

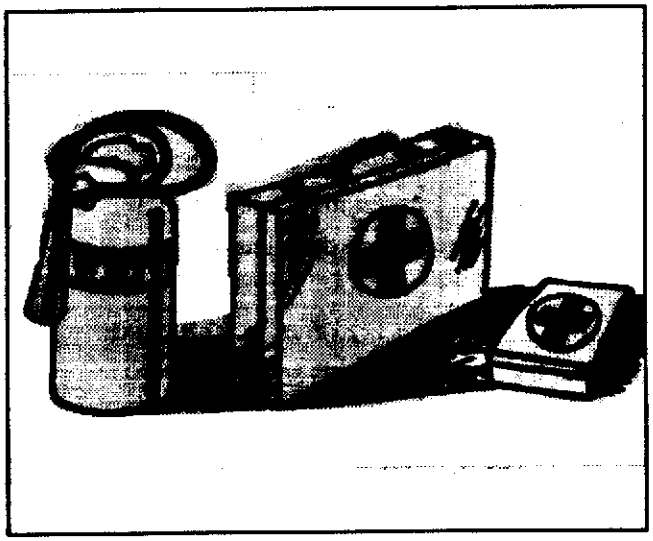


Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit & fire extinguisher handy.

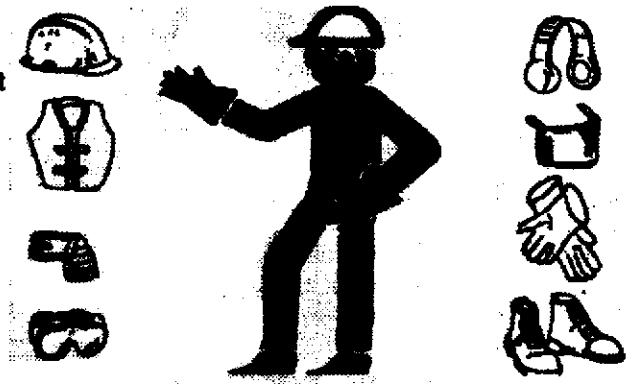
Keep emergency numbers for the ambulance service, hospital, fire department, & doctors near your telephone.



Wear Protective Clothing

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

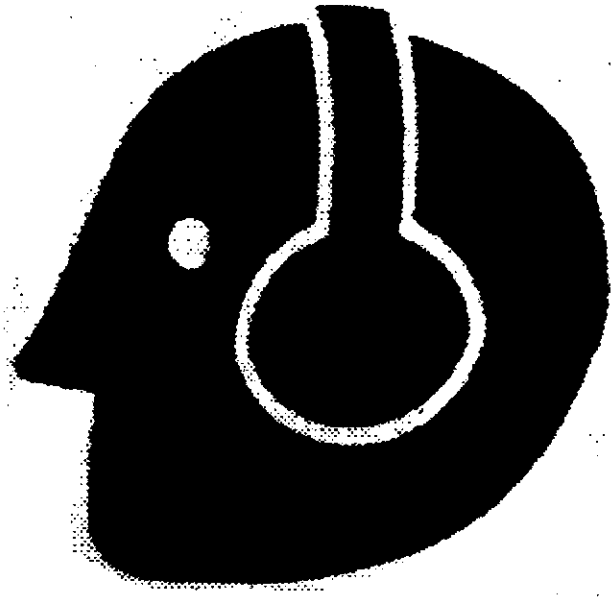
Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



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.



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.)

Stay Clear of Rotating Drivelines

Entanglement in rotating driveline can cause serious injury or death.

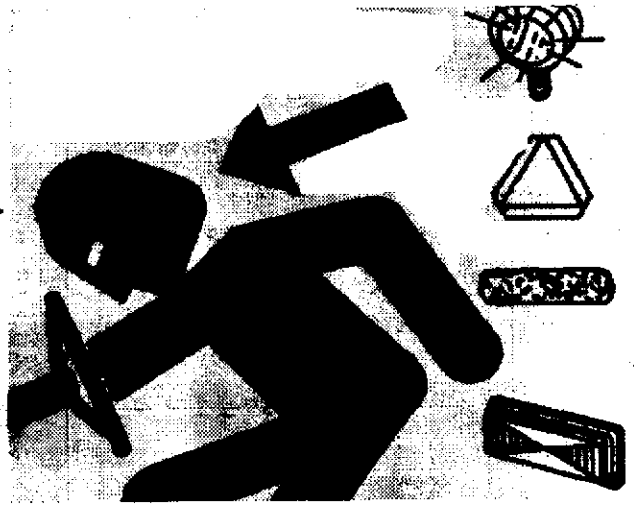
Keep tractor master shield & driveline shields in place at all times. Make certain that rotating shields turn freely.

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

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 machine.

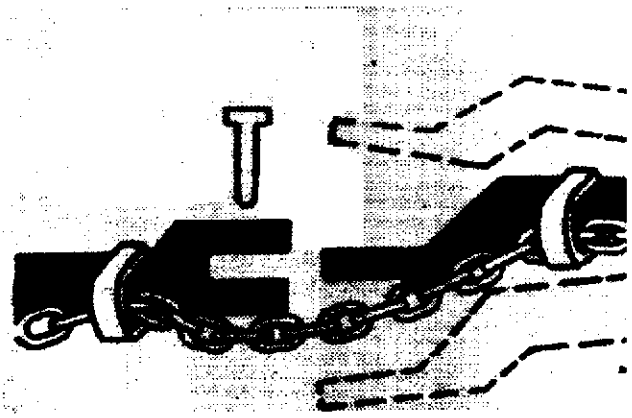


Use a Safety Chain

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

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

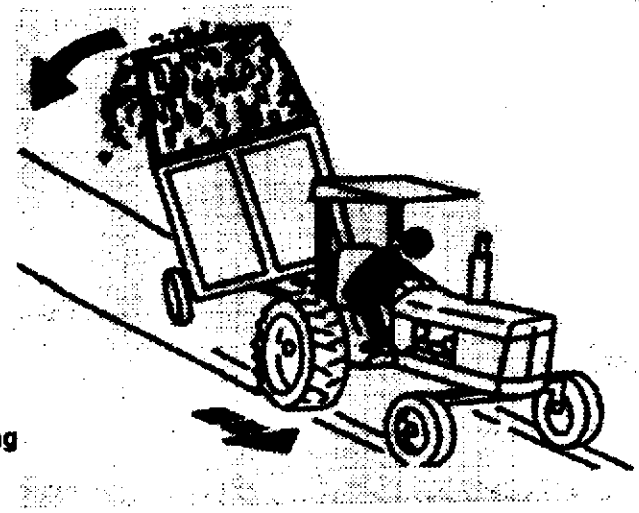
Use a chain with a strength rating equal to or greater than the gross weight of the tomato harvester (approximately 15,000 lbs.). Do not use safety chain for towing.



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 & is not equipped with brakes.

Follow recommended speed-weight ratio guidelines:



- **Maximum speed is 20 mph (32 km/h) when towing load equal to or less in weight than the tractor.**
- **Reduce speed to 10 mph (16 km/h) when towing 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.**

Practice Safe Maintenance

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

Never lubricate or service machine 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 machine to cool.

Securely support any machine 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 machine.

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.

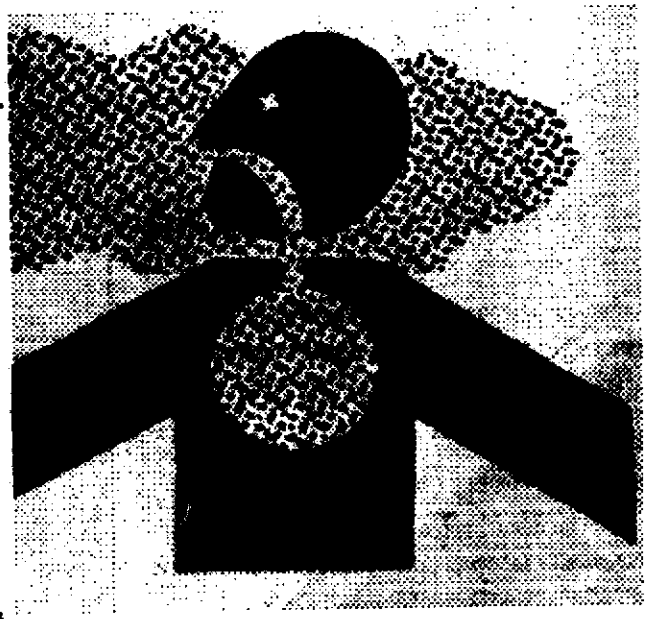
Remove paint before welding or heating:

□

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.



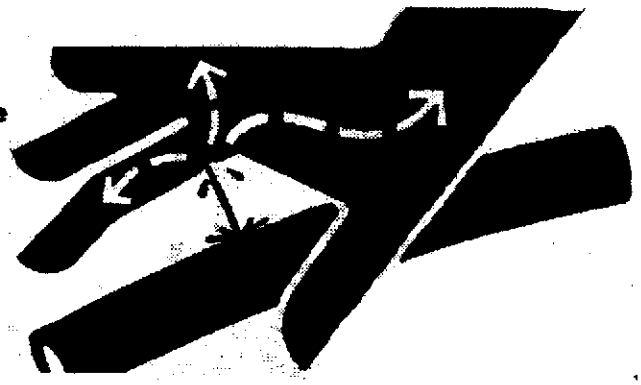
Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself & 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.

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.



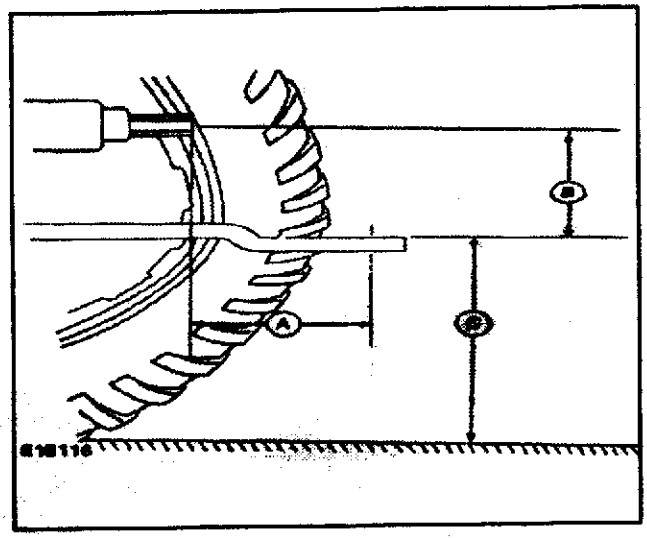
Search for leaks with a piece of cardboard. Protect hands & body from high pressure fluids.

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.

PREPARING THE TRACTOR

2 - 1: Adjusting Tractor Drawbar

The harvester can be attached to any tractor having a drawbar & PTO that conforms to ASAE-SAE standards. However, it should be a minimum size of 85 horsepower. The power requirements to pull the harvester through the field depend on field conditions. In dry conditions, an 85 - 100 HP tractor is adequate. In muddy conditions, 130 HP or more is required.



The tractor tire inflation pressures specified in the tractor operator's manual will apply.

1000 RPM PTO Size	A In. (mm)	B In. (mm)	C In. (mm)
1-3/8 in.	16 (406)	6-12 (152-305)	13-20 (330-508)
1-3/4 in.	20 (508)	8-12 (203-305)	13-22 (330-559)

Align drawbar hitch pin hole vertically with center-line of tractor PTO. After the tractor tongue is positioned properly, hook up to the harvester. Use a minimum of 1" diameter pin with a safety clip.

2 - 2: Power Take-Off Shaft

The tractor must have a PTO speed of 1000 RPM to match the powershaft speed of the harvester. Our harvester can operate down to 600 RPM & up to 1000 RPM. Optimum speed is 750 RPM. That generally means operating the tractor engine at 1600 - 2200 RPM. PTO energy consumption is at apx. 75 HP at 1000 RPM. An 85 HP tractor is the minimum required.
The Pik Rite uses a 21 spline 1-3/8 inch diameter PTO yoke. The 1-3/4 - 20 spline PTO shaft can be special ordered. Before attaching the PTO to the tractor, be sure that the shaft is greased & can slide freely in the tube. Attach the PTO to the tractor. Be sure the PTO lock pin or latches are securely locked into the tractor's PTO shaft.

2 - 3: Hydraulic Power

The Pik Rite relies on the tractor hydraulics to control the machine cylinder functions. A valve body located on the machine is equipped with an in & out hose which needs to be connected to the hydraulic outlets at the rear of the tractor.
In order to make the harvester compatible with any brand tractor*, Pik Rite designs the harvester for operation in the continuous flow mode. This allows the farmer to use any brand tractor* without the complications of changing the harvester valve body when switching tractors. The Pik Rite Tomato Harvester requires a.....
Minimum of 3 gallons per minute & 1500 P.S.I.
Maximum of 12 gallons per minute & 3000 P.S.I.
The back pressure of the return line should not exceed 200 P.S.I.
Follow the tractor manufacturer's instructions for:
CONNECTING AN ORBITAL HYDRAULIC MOTOR
Connecting a hydraulic motor is identical to connecting the hydraulics to the Pik Rite Tomato Harvester.
There are several hydraulic systems used on American tractors. The most popular ones include the CASE IH 7200 series & the John Deere 7000 series. Both use a load sensing closed center system. The earlier John Deere models use a Pressure Compensating Closed Center System & earlier IH models used both open center & closed center systems. All of the closed center systems may be used either open or closed & have adjustable flow rates. However, some types have priority valves or adjustable detentes that require adjustment to avoid overheating. Some need special kits which are available at the tractor dealer.
Reference your tractor manuals or dealers for more information. If you experience problems with your hydraulic system, contact Pik Rite for some other options which may be available.
*There are some rare exceptions as some manufacturers used a special system for a term. Generally, these odd systems are identified within a segment of serial numbers & kits are usually available for these tractors. always check with your dealer before connecting your hydraulics.

2 -4: Electrical

The Pik Rite Harvester relies on the tractor electrical system. At the minimum, an 80 amp alternator is required to keep the voltage constant during night time operations. Operating during the day without the lights requires less voltage.
One hook up to the battery is all that is necessary to operate lights, electrohydraulics, conveyor shut-off switches, & Electronic Color Sorter.

IMPORTANT: This must be hooked up to the battery. The battery acts as a filter for more harmful A.C. volts. A.C. volts will damage the color sorter computer.

With the tractor engine running at PTO speed, check the voltage at the battery. It should be between +12.5 Volts D.C. & +14.5 Volts D.C.
Also check for A.C. current. This must not exceed .05 Volts A.C. Voltage above this indicates that the tractor alternator has a bad rectifier & needs replacement.

CAUTION: Be sure the electronic color sorters are UNPLUGGED before hooking harvester power supply to battery.

Before connecting power plug at the electronic box, check polarity at plug on electronic sorter (if polarity is wrong, it may burn out the box):
White wire = A = Positive-with red probe.
Black wire = B = Negative-with black probe.

With tractor running at apx. 1800 RPM & before plugging into box, insert the tester probe positive in A & negative in B terminal:

Voltage needs to be between +12.5 & +14.5 Volts D.C.
If a negative figure is displayed in the test, the polarity is reversed.
Check for AC volts; .05 AC Volts is the maximum allowed.

Maker of tester preferred: A Fluke meter has been found to be a tester accurate enough to test AC stray voltage.
Anything over .05 AC Volts alternator must be changed. This condition indicates that the alternator is soon to fail which is also detrimental to the Odenberg Electronic Box.

Check all the above tests with the night lights on also.

Important: The power supply wire must be connected at the battery. The battery acts as a filter for harmful voltage spikes which will damage the electronic sorters.

PREPARING THE HARVESTER

3 -1: Unpacking the harvester

A. Upon completing the requirements in Section 2, go to Step B.

B. Secure discharge conveyor cylinder bracket to the harvester main frame using the 3 pins.

C. Remove the 1/2 bolt securing the transport bar to the sorting table post. Remove the transport bar from the discharge conveyor.

D. Extend the discharge conveyor main cylinder (this will lift the discharge conveyor from stored position to upright position). Install the transport bar to canopy post & discharge conveyor. This will hold discharge conveyor in upright position until main cylinder can be repositioned.

E. Remove discharge conveyor main cylinder from the transport position. Install in working position. Remove the transport bar & store for your next use. Raise & lower the discharge conveyor slowly, watching for any binding or misalignment.

F. Install the basket shields. Be sure the basket shields do not catch on the conveyor frame when moving the conveyor up & down; check to be sure the conveyor belt will run smooth.

G. Fold down the drive end of the hand sort conveyor & secure. The belt tension at the rear of this conveyor may require readjustment.

H. Pull out the decking & secure with the catches.

I. Fold out the sun canopy.

3 - 2: Oil Levels

A. Be sure the main hydraulic reservoir is above the low line on the level / temperature indicator located at the front of the reservoir.

B. Check to be sure that the sump of the air compressor is full as indicated on the dip stick plug located on the bottom rear of the air compressor.

C. Turn all of the flow controls to the 0 or off position. There are 10 to 12 controls, depending on how the machine is equipped.

3 - 3: Final Preparations

A. Start the PTO at low RPM.

CAUTION: Always have a tractor operator on the seat & prepared to disengage the PTO when making the following observations & flow control adjustments.

B. Check for oil leaks in the event that a hydraulic fitting loosened or broken.

C. Check to be sure that the oil cooler fan located on the top of the machine is turning counter - clockwise.

D. Be sure the air dryer & air compressor unload after approximately 2 - 3 minutes of running the PTO at low RPM. This is indicated by a loud hiss of air & a change in the sound of the air compressor. The air pressure will be at apx. 120 p.s.i. & remain in this unloaded state until the tank pressure drops to apx. 100 p.s.i., after which the compressor will again begin pumping air until the maximum is reached & a loud hiss of air will again be heard.

E. One by one, open each flow control to approx. the #1 position & observe how it functions. Be sure the component runs freely & without misalignment.
Slowly increase the speed to approx. desired setting. Later, while in actual field conditions, fine adjust to meet requirements.

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 his 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 P.T.O. This warning needs to be established & understood by all crew members. It will greatly reduce the danger to life or limb of a crew member cleaning the machine.

4 - 1: Starting Speed Settings

Speeds of conveyors & components will vary a great deal with field conditions. There is no presubscribed 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 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 P.T.O. If the P.T.O. is engaged or disengaged at high RPM, the pressure spikes may cause unnecessary wear to the Hydraulic Pump.

All of the hydraulic motors except the cooling fan motor are controlled by speed control valves. 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 flows 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 GPM 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 & general inefficiency.

The recommended start-up settings are as indicated in chart 4A. More detailed settings are described in the following instructions:

Chart 4A

With Tractor PTO running to apx. 650 RPM, flow control setting should be:

	Flow control setting
Cutting disk	10
Header	10
Transfer/Cross	5.5
Vibrator	5
Primary Shaker Rotator	1
Secondary Shaker Rotator	1
Primary Shaker Weights	5
Secondary Shaker Weights	5
Debris Fan	5.5
Elevation Conveyor/ Presort Belt	5.1*
Hand Sort	5
Discharge Conveyor	5

4 - 2: Disk Pickup Header

Flow control is wide open; as a result, the tractor PTO speed will vary with the disks & gathering chains. It is important to keep a steady to thin flow of tomato plants through the header. The Disk Pickup Header is to skim the ground just under the tomato 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.

CAUTION: The header on your machine has been designed to flex for better operations. However, flexing the head in excess will cause premature damage & stress on your machine. The maximum difference from side to side should not exceed 6 inches. Always rest the header on the ground when parking the machine to avoid unnecessary stress.

4 - 3: 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 roll, slowing the header chain will help.

4 - 4: Powered Dirt Vibrator

As the vines & tomatoes travel up the header chain, they go through the dirt vibrator tunnel. Field conditions will vary as to how fast to operate the vibrator. Overspeeding the vibrator 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 while 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 - 5: Primary Shaker

The Pik Rite Harvester is designed to allow the operator to observe the rotation & movement of the Primary & Secondary Shakers from the tractor seat. There are two points of control on these shakers: 1) Weight speed & 2) Rotation speed. The weight speed controls the intensity of the shake; 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 tomato vines take longer to ride over & out of the shaker.
Slow the shaker rotation in viney weed conditions, i.e. morning glory. Increase the primary shaker rotation speed in heavy tomato vines, thus keeping a thinner layer of vines on the shaker.
Conditions vary drastically from field to field & day to day & among different varieties of tomato plants. By keenly observing the shaker & outflow of vines, the operator will learn very quickly how & when to make minor adjustments.
Primary Shaker Hood: Generally, the hood must be very close (1/2" to 1") to the shaker tines; some conditions require it to be lifted 3 to 4 inches higher.

CAUTION: <u>Never</u> 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 - 6: Secondary Shaker

If the secondary shaker rotation speed is too high, it will drag fruit out of the back of the machine. Generally, the secondary shaker weight speed is greater than the primary shaker weight speed. (For additional information, see Section 4 - 5: PRIMARY SHAKER)

4 - 7: Transfer & Cross Conveyor

These conveyors are hard to see from the tractor seat but generally require little or no attention. If the transfer chain is running too fast, it will throw the tomatoes out the back of the machine. This needs to be adjusted as field conditions change. There is a pipe roller under the drive end of both of these conveyors. These rollers are equipped with scrapers on the bottom side to keep them clean. The operator should regularly clean the pinch point between the roller & scraper.

4 - 8: Debris Fan

CAUTION: It is possible to overspeed the debris fan when operating high tractor PTO RPM.

Operate the **debris fan** at a speed which satisfactorily removes the vines & debris. Do not overspeed or damage may occur. The operator can see from the tractor seat if all is well with the debris removal system & should regularly observe it as he travels down the row.

4 - 9: Elevation Conveyor & Presort Belt

The **presort belt** is very important. At this point the tomatoes should be spread evenly across the entire conveyor. If they are crowded to one side the machine must be leveled. Stacking or crowding the tomatoes as they pass through the **electronic sort** will result in loss of fruit. The presort belt must be full & one layer deep. If it is half full the **electronic sort** becomes inefficient. The operator can also observe the tomatoes when they pass through the electronic sorter & drop onto the hand sort belt. There should be an even steady flow of fruit at this point also. The operator levels the machine hydraulically by observing the fruit at this point. The operator then determines the ground speed.

Recommended belt speed is 160 feet per minute. This is equal to 27 belt R.P.M.. (Place a white mark on the belt & count 27 belt revelations in one minute). Belt speeds may exceed 200 F.P.M., dependent on field conditions.

NOTE: Adjustment of rejector finger assembly is essential when adjusting the belt speed.

4 - 10: Color Sorter

The color sorter instructions are covered in a separate manual, but here are a few important details:

The Pik Rite Harvester relies on the tractor electrical system. At the minimum, an 80 amp alternator is required to keep the voltage constant during night time operations. Operating during the day without the lights requires less voltage.
One hook up to the battery is all that is necessary to operate lights, electrohydraulics, conveyor shut-off switches, & Electronic Color Sorter. IMPORTANT: This must be hooked up to the battery. The battery acts as a filter for more harmful A.C. volts. A.C. volts will damage the color sorter computer.

CAUTION: Be sure the electronic color sorters are UNPLUGGED before hooking harvester power supply to battery.

Before connecting power plug at electronic box, check polarity at plug on electronic sorter (if polarity is wrong, it may burn out the box):
White wire = A = Positive-with red probe.
Black wire = B = Negative-with black probe.

With tractor running at apx. 1800 RPM & **before plugging into box**, insert the tester probe positive in A & negative in B terminal:

Voltage needs to be between +12.5 & +14.5 Volts D.C.
If a negative figure is displayed in the test, the polarity is reversed.
Check for AC volts; .05 AC Volts is the maximum allowed.

Maker of tester preferred: A Fluke meter has been found to be a tester accurate enough to test AC stray voltage.
Anything over .05 AC Volts alternator must be changed. This condition indicates that the alternator is soon to fail which is also detrimental to the **Odenburg Electronic Box.**

Check all the above tests with the night lights on also.

CAUTION: The power supply wire must be connected at the battery. The battery acts as a filter for harmful voltage spikes which will damage the electronic sorters.

Air pressure should be 45 PSI at the F.R.L. located beside the color sorter.

Oiler should deliver 6 drops of oil per minute when the sorter is at work sorting tomatoes. It is adjusted on top of the F.R.L.
Two bowls are located on the F.R.L. The oiler bowl needs to be filled with electronic sorter oil (see electronic sorter manual); the other bowl is a water trap. Normally, no water is in it because the air

dryer has trapped all of it.

IMPORTANT: Any direct sunlight shining on the tomatoes at the point where the electric eye focuses must be blocked. Example: in early morning or late afternoon when sun is shining in from the side.

4 - 11: Hand Sort Belt

Operate the belt fast enough to keep the tomatoes from stacking. Some operators allow the crew to determine belt speed. However, it is preferred that the operator do this because he has a better observation point of the entire machine & may deem it necessary to speed up in heavy fruit. However, some people on the sorting machine may get sick if the belt is running too fast.

4 - 12: Discharge Conveyor

The operator must pay close attention to the truck being pulled along side the harvester. The **discharge conveyor** can be bent & rendered useless in a very short time if it is left unattended. These are three parts that describe the **discharge conveyor**: **outer link, lower link** (adjusted up & down with a hydraulic cylinder)and **basket** (the bottom part where the tomatoes drop into from the **hand sort belt**).

In heavy tomatoes, the **lower link** should be as close to the truck or as low as possible to prevent fruit rollback & bouncing out over the side. The **basket** can be used to retain tomatoes until a truck can be positioned under the conveyor. By turning the **discharge conveyor** off, the operator can save time because he doesn't need to empty the machine at the end of each row; instead, he can begin harvesting the next row while the truck is being positioned properly.

4 - 13: Air Compressor & Pressure Gauge

In addition to controlling the above mentioned, the operator must listen for the **air dryer** to unload at regular intervals (identified by a loud hiss). The **air dryer** back flushes each time the **air reservoir** reaches peak pressure. At the same time, the **air compressor** head closes & stops pumping air until the pressure drops in the reservoir, calling for more pressure. If the **air dryer** does not unload, it means that the air pressure is not reaching peak pressure. This may mean a compressor problem or an air leak. This in turn may affect the electronic sorter's efficiency.

4 - 14: Hydraulic System

The operator must listen for any high pitched squeals that may indicate that a relief valve in the hydraulic system is opening because a conveyor or other component 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 fins clean. Check weekly.
Hydraulic oil temperature should operate at 150 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.

4 - 15: Dirt Sorter

The dirt sorter instructions are covered in a separate manual, but here are a few important details:

Recommended belt speed is 160 feet per minute. This is equal to 27 belt RPM. (Place a white mark on the belt & count 27 belt revelations in one minute). Belt speeds may exceed 200 F.P.M., dependent on field conditions.

NOTE: Adjustment of rejector finger assembly is essential when adjusting the belt speed.

Before connecting power plug at electronic box, check polarity at plug on electronic sorter (if polarity is wrong, it may burn out the box):
White wire = A = Positive-with red probe.
Black wire = B = Negative-with black probe.

With tractor running at apx. 1800 RPM & **before plugging into box**, insert the tester probe positive in A & negative in B terminal:

Voltage needs to be between +12.5 & +14.5 Volts D.C.
If a negative figure is displayed in the test, the polarity is reversed.
Check for AC volts; .05 AC Volts is the maximum allowed.

Maker of tester preferred: A Fluke meter has been found to be a tester accurate enough to test AC stray voltage.

Anything over .05 AC Volts alternator must be changed. This condition indicates that the alternator is soon to fail which is also detrimental to the **Odenberg Electronic Box.**

Check all the above tests with the night lights on also.

CAUTION: The power supply wire must be connected at the battery. The battery acts as a filter for harmful voltage spikes which will damage the electronic sorters.

Air pressure should be 45 PSI at the F.R.L. located beside the color sorter.

Oiler should deliver 6 drops of oil per minute when the sorter is at work sorting tomatoes. It is adjusted on top of the F.R.L.

MAINTENANCE OPERATIONS

Preventative maintenance is better than emergency repairs.

5 - 1: Cutting Disks

Standard cutting disks measure 34" in diameter when new. Install a new pair when they wear to 33" diameter. Life of disks differs greatly with soil types & operating RPM.
At your dealer you will find 36" diameter disks, which may or may not work better in your specific field conditions.

When harvesting on elevated beds, gathering chain may be longer enabling them to "reach" down into the trenches and pull the tomatoes into the machine (additional chain length will need to be added). The nose cones of the gathering chains should not plow dirt. In elevated beds, the noses need to extend down into the furrows & help lift the vine.

Lube roller chains daily (Conklin Lube Oil is recommended).

Adjust top & bottom disk scrapers to eliminate dirt build up.

5 - 2: Gathering Chains

Be sure the rolls are turning & the lap splice belts are not broken or worn. Keep the belt tension just tight enough to keep it running smoothly - free & straight. Over - tensioning will wear all components prematurely.

Keep grass & vine from wrapping on drive sprockets & clean the build-up at the pinch points.

5 - 3: Header

Clean out build-up at the pinch points.

Check bolts on lap splices of header conveyor & gathering chains. These bolts are dragged through the dirt & rocks & sometimes wear off prematurely.

Lube roller chains daily (Conklin Lube Oil is recommended).

Grease bearings once a week. There are only two grease fittings located on the bearings of the drive shaft.

If harvesting in rocky fields, adjust header chain nose rollers down. In other words, increase

clearance between the bottom of the disks & top of header chain. This allows rocks to pass around the nose rollers without pinching the header chain & disks.

5 - 4: Vibrator

A high wear but very effective tool. Use with discretion. Adjust speeds to match the job required. Check regularly for loose or lost rollers.
Around the vibrator area, 4 rollers are found. These rollers, which are adjustable in height, carry the weight of the header chain. If they are too low, the vibrator shaft rollers will hit the header chain too hard & cause rotating difficulty, especially if operating at low RPM.

5 - 5: Transfer Chain

The drive shaft end is adjustable; as a result, the distance between the transfer chain & secondary shaker tines is adjustable. Dependent on the condition of the crop, this may need adjustment. Loosen the bearing bolts and move as desired. Be sure the roller chain has enough slack and maintains proper tension.

5 - 6: Cross Conveyor

Check drive spockets and lap splice bolts or clips for wear.

5 - 7: Primary Shaker

Keep shaker drum clean. In some ground conditions, dirt builds up between shaker tine groups on the drum. This build-up should not exceed 1" in thickness. Also, dirt builds on the side of the shaker chamber. If not removed, it will wear flat spots on the outside shaker tines. Remove this dirt with a scraper.

Once a week, use a heavy hammer to drive the tines into the rubber holders. This is especially important when operating the shaker weights at high RPM's. Always replace broken tines as soon as possible. **The shaker loses efficiency when tines are broken.**

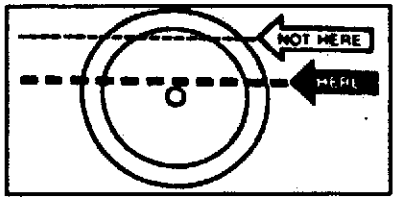
Before installing a new tine, be sure that the hole in the rubber holder is clean & free of dirt. Clamp a vice grip or clamping tool onto the tine to prevent the inner fiberglass rod from sliding into the rubber holder without the plastic coating.

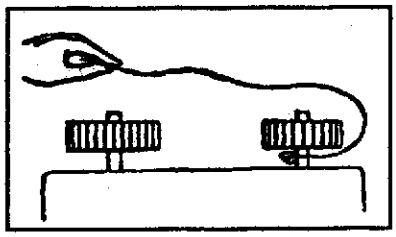
The primary shaker is adjustable forwards & backwards from the header chain. If harvesting in rocky fields, the gap should be widened to help avoid broken shaker tines. However, if the gap is widened too much, some plant varieties tend to fall down in front of the shaker & escape the separating action.

Adjust shaker hood to 1" clearance above shaker tines.

Daily check the bolts on the rubber shaker drive at the motor.

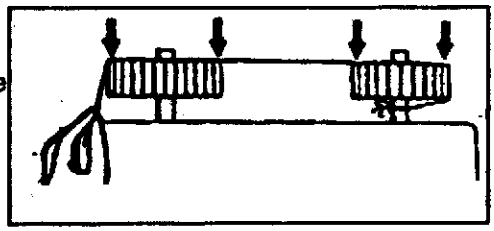
Once a week, grease shaker bearings, check tension on drive belts, & watch for loose set collars or bolts (see shaker timing belt alignment diagram).





INSTALL BELT

Do not pry or otherwise force the belt onto the sprockets, as this can result in permanent damage to the belt. Reduce the center distance betw een the sprockets so that the belt can be easily installed.



Warning: Do not over tighten weight motor drive belt.

BELT TENSIONING - GENERAL METHOD

This method of tensioning the Synchronous belt should satisfy most drive requirements.

Step 1. Reduce the center distance so that the belt can be placed onto the sprockets without forcing or prying it over the flanges.

Step 2. Increase the belt tension until the belt feels snug or taut. Avoid over-tensioning the belt.

Step 3. Start the drive & apply the most severe load condition. This may be either in the motor starting torque or during the work cycle. A belt that is too loose will "jump teeth" under the most severe load conditions. When this occurs, gradually increase the belt tension until satisfactory operation is achieved.

TIMING THE SHAKER WEIGHTS

Both the **Primary & Secondary Shaker** weights must be synchronized. If a shaker is out of time,

it will not work properly & may cause damage. Both shakers can be synchronized using the same procedure.

When the shaker is properly timed, the shaker weights will oppose each other. When one weight is faced away from the center of the box, the other must face away also. Turn weights 90 degrees & one weight will point up & the other down. Continue turning another 90 degrees, now both weights face in toward each other. Again turn 90 degrees & one weight will point up & the other down. These positions must be **precisely** opposing each other within 1/8 inch. Measure the distance from the flat spots on each weight, or, later model machines have a place to insert a 3/8" bolt in each weight & center that bolt with the slot on the box.
Adjustment is made by jumping teeth on the timing belt. Fine tune adjustment is made on the weight cap. The cap has two grade 8 cap screws & is keyed to the shaft. Thus loosening one cap screw & tightening the other will rotate the weight in indefinite increments. Fine adjusting both weights may not be necessary if enough adjustment is available in one weight.

CAUTION: Weight caps will bind on the bolts if travel exceeds clearance. This may cause the mechanic to think that the bolt is tightened down when in fact it may be binding.

When using 3/8" gauge bolts in the box slots & doing the fine adjusting, be sure the 3/8" bolts are not opposing each other & bottoming out. If they are, tightening the cap bolts may tear the drive belts.

5 - 8: Secondary Shaker

Once a week, grease shaker bearings & check tension on drive belts. Look for loose set collars & bolts (See shaker tines & belt alignment diagram under 5 - 5).

Shaker tines on the secondary shaker do not see the abuse the primary shaker gives. They last much longer & rarely get broken.

Daily check for loose bolts on the rubber shaker drive at the motor.

5 - 9: Debris Elimination System

Daily check for tomatoes or dirt both inside & at the bottom of the fan housing. Keep the housing & diffuser clean & smooth for peak efficiency. A periodic wash out with water is suggested.

IMPORTANT: Dirt build-up decreases the efficiency of the fan.

Watch out for build-up on the fan paddle assembly.

Check the pipe-roller & scraper on top of the fan for dirt build up.

Check the large debris roller to be sure it is rotating freely.

Clean the dirt build-up off of the top deflector hood.

5 - 10: Presort Belt & Elevation Conveyor

Frequently clean & scrape dirt build-up from surface of belt.

Check inside slider belt drive rolls. Especially observe the V-guide which is on the center - inside of presort belt, & grooves in the drive rolls.

The belt must be adjusted & properly aligned on the V-guides or irreparable damage will be done to the belt. Do not overtighten presort belt or it will cause tearing at the joint.

SETTING BELT SPEED
Method # 1: Use a belt tachometer to set the belt speed.
Method # 2: Place a white mark on the belt & count the number of belt revolutions in one minute. This belt must run freely & smoothly at 160 feet per minute. This is equal to 27 belt RPM. Belt speeds may exceed 200 FPM, dependent on field conditions. It is essential to adjust the positions of the electronic sort rejector fingers when adjusting the belt speed.

5 - 11: Hand Sort Belt

Adjust the tail & drive pulleys to run the belt in the center of the bed. Running slightly to one side is acceptable, provided it isn't wearing into the slider bed sides. Clean out the tail pulley daily.

5 - 12: Discharge Conveyor

Daily check the lap splice belts. Keep the belt running freely between the rollers. Check the basket sides.
If an operator accidently bends the conveyor, it can be straightened out rather easily; simply pull it in the opposite direction that it was bent. It is designed this way to avoid damage to other components.

5 - 13: Electrohydraulic Valve & Control

The valve is located at the front of the machine. A standard machine consists of 8 portions; starting from the top, they are:

U - Unload with inlet & outlet ports
#1 - Controls header cylinders
#2 - Gauge wheel (outside)
#3 - Gauge wheel (inside)
#4 - Machine level
#5 - Discharge (main)
#6 - Discharge (outer)
#7 - Sliding hitch

For open center, the coil & cartridge should be installed in the unload section with the appropriate wire attached to the coil.
There is a check valve in the inlet line because the oil must flow through the valve in right direction. The valve will not work if the oil is flowing in the wrong direction. There is also a high pressure filter in the inlet line to remove any dirt coming from the tractor. If the filter would become clogged there is a bypass which would be signified by a red pin on the top of the filter which pops up when oil bypasses the filter.

In a closed center application, tractor hydraulic oil is under pressure at the harvester valve body. When the electric switch is activated, an electric coil opens a spool valve sending oil to the hydraulic cylinders.
In a open center application, tractor hydraulic oil is free flowing through the harvester valve body. When the electric switch is activated, an electric coil opens the spool to send oil to the hydraulic cylinder. However, the oil is still flowing freely. Consequently, the unload coil must be employed at the same time to temporarily stop the free flowing oil to build up pressure to move the cylinder. When the electric switch is activated & deactivated, the unload coil is also (there are electrical diodes in the control box preventing electrical feedback through to other inactivated functions).

In order to make the harvester compatible with any brand tractor*, Pik Rite designs the harvester for operation in the continuous flow mode. This allows the farmer to use any brand tractor* without the complications of changing the harvester valve body when switching tractors. The Pik Rite Tomato Harvester requires a.....
Minimum of 3 gallons per minute & 1500 P.S.I.
Maximum of 12 gallons per minute & 3000 P.S.I.
The back pressure of the return line should not exceed 200 P.S.I.
Follow the tractor manufacturer's instructions for:
CONNECTING AN ORBITAL HYDRAULIC MOTOR
Connecting a hydraulic motor is identical to connecting the hydraulics to the Pik Rite Tomato

Harvester. As of 1995, a pole operated check valve body is used. this is identifiable by a higher or larger valve body. These valves are recommended to be operated in the closed center mode if the machine is attached to a tractor with a closed center system. However, no harm will ocurr to the harvester is used in the open center mode.
There are several hydraulic systems used on American tractors. The most popular ones include the CASE IH 7200 series & the John Deere 7000 series. Both use a load sensing closed center system. The earlier John Deere models use a Pressure Compensating Closed Center System & earlier IH models used both open center & closed center systems. All of the closed center systems may be used either open or closed & have adjustable flow rates. However, some types have priority valves or adjustable detentes that require adjustment to avoid overheating. Some need special kits which are available at the tractor dealer.
Reference your tractor manuals or dealers for more information. If you experience problems with your hydraulic system, contact Pik Rite for some other options which may be available.
*There are some rare exceptions as some manufacturers used a special system for a term. Generally, these odd systems are identified within a segment of serial numbers and kits are usually available for these tractors. Always check with your dealer before connecting your hydraulics.
As of 1995, a pole operated check valve body is used. This is identified by a higher or larger valve body. These valves are recommended to be operated in the closed center mode if the machine is attached to a tractor with a closed center system. However, no harm will occur to the harvester if used in open center mode.

5 - 14: Air Compressor

Keep the cooling fins clean on the air compressor. This is its only means for cooling. Dust build-up may cause overheating.
Check air compressor air filter daily. Replace filter every 800 hours.
Check air compressor oil daily. Make certain no dirt enters while pulling out the dip stick. Change oil every 200 hours of running. Refill with #30 non detergent.

Following is the air compressor manufacturer's trouble - shooting list:

A. Compressor "Not Making Enough Air"

1. Drain air tank & measure pump up time. Compare with proper time for compressor model. If time is O.K., compressor may be too small for application. Increasing operating pressure will exaggerate the problem.

2. Test for leaks in air lines, tank, or compressor fittings. Soap suds solution works well.

3. Clogged filter element - remove, clean or replace. Intake air must be free of contamination such as paint mist.

4. Hot air blows out of intake. Intake valves not sealing. Remove & clean. Polish disc on fine emery cloth (#400).

5. Check valve or discharge tubing clogged. Clean or replace.

B. Excessive Oil Consumption (Measure oil consumed per hour of operation)

1. Clogged air intake filter. Clean or replace.
2. Inferior or dirty oil - see recommendations in instructions.
3. Piston rings worn or sticking. Remove rings, clean grooves. Check ring wear by pushing ring into cylinder bore. New ring end gap is apx. .007 to .017 inches. (Operation is O.K. to .060). Stagger ring gaps when installing.
4. Deep scratch on cylinder wall. Caused by lack of oil or dirt in oil. Hone (.015 max. on diameter) or replace.
5. Oil in discharge air. Some oil is always present. Clean accumulation in air lines & tank Add air line filter or clean element.
6. Head or valve plate gasket leaking between cylinders. Remove head & check.
7. Compressor with constant running control unloaded more than 60% of the time. Consider start-stop or dual control.

C. Milky Oil in Reservoir

1. Normal result of water mixing with oil in tank, or possibly in crankcase. Change oil & / or drain tank. Move compressor or pipe intake to lower humidity source or cooler area. Increase intake pipe one size for every 3 feet - keep short.

2. Water is a normal by-product when compressing moist air. A compressor does not "make water". Cooler & dryer intake air or use of aftercooler / dryer devices on discharge air will reduce "water".

D. Noise, Knock, or Vibration

1. Assembly - vibrating. See mounting instruction.
2. Flywheel wobbles. Cracked flywheel or bent shaft. Replace.
3. Flywheel or pulley loose. Remove, apply *Loctite* on shaft. Re-install with new key.
4. Loose or worn connecting rod or piston pin. Tighten or replace.
5. Pressure switch or magnetic starter chatter. Adjust switch for greater differential or replace.
6. Loose V belt. Adjust tension on slotted platform.
7. Foreign matter (carbon, dirt, piece of gasket) on top of piston. Remove cylinder head & check. To increase head clearance, add crankcase gaskets . . . not head gaskets. t head gaskets.

E. Runs Hot (Head & discharge line normally are hot enough to burn if touched.)

1. Compressor operating in excess of rated discharge pressure. Reset pressure control.
2. Poor ventilation. Provide cooler location. Allow minimum 6" flywheel clearance.
3. Incorrect rotation. Check flywheel arrow.
4. Discharge valve or head gasket leak. Remove & clean valve. Replace (Head bolt 22/25 lb. torque).
5. Restriction in discharge line or checkvalve. Clean or replace.
6. Low oil. Check!!

5 - 15: Suspension

Grease the 5 grease fittings on the suspension, & P.T.O. slider tube & U-joints every day.

The leveling axle has three pin settings. It can be adjusted to your row spacing. The leveling hydraulic cylinder remains in the same position for all three pin settings.

5 - 16: 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 a good Quality machinery/bearing grease.
   Grease Fitting Location:
   (2) Hinge (Outer Discharge) / (2) Hinge (Main Discharge)
   (2) Rear Aftersort Auger
   (1) Axle pivot / (4) Axle Rockers [(2) on each side]
   (4) Primary Weight Shafts
   (2) Primary Shaft (Shaker)
   (4) Secondary Weight Shafts
   (2) Secondary Shaft (Shaker)
   (2) Header Chain Drive Shaft / (2) Header Chain Drive Shaft [Dirt Belt Optional]
   (4) Cutter Disk Shafts
   (3) P.T.O. Main Shaft Joints & Slider
4. Machine Hydraulic Oil and Maintenance

Oil Specification

Pik Rite recommends *Hydrocarbon based oils which will maintain a viscosity of 80-100 SUS (20CST) 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. Viscosity increases (fluid is thicker) as temperature decreases and vice versa. To thin an oil may cause problems and likewise will too thick an oil. 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 it's work is most important, thus referred to as operating temperature viscosity.

Pik Rite Harvesters are shipped with Exxons' Nuto H 46 hydraulic oil. 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 machines' hydraulic oil temperature rises to 180 degrees F, Grade #46 viscosity may be too low. If this oil is too thin (viscosity to low), an oil with ISO grade of 68 or SAE 15 may need to be installed . Mixing a 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 the bottom of the reservoir.

2. Cleanliness Requirements

The components on the harvester must have a ISO cleanliness level of 17/14. This means there must be less than 1050 parts per milliliter in the 5 micron or greater size and less than 200 parts per milliliter 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 and it is a common analysis. 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 a straight oil is generally the additives. Some automotive or crankcase motor oils with the proper additives can be acceptable.

5 - 17: Checklist

Note: owner / operator may add to this list at his own discretion

Daily:

All Chains (Belted) & Rollers Turning

All Chains (Belted) Properly Aligned in Conveyor (Discharge / Top & Bottom)

All Return Cleaner Rollers Turning

All Bar Cleaners Turning (Keep Up If Conditions Do Not Require Use)

Machine Free of Obstructions (Mud, etc.)

Debris Fan (Inside) Free of Obstructions

Debris Fan Air Flow Hood (Underside) Clean

Shakers:

- Belt Alignment
- No Excess Vibration
- Drives Properly Tight
- No. of Fingers (Maintained) & Drum Free of Excess Dirt
- Speed Adjusted to Conditions

Electronics:

- Glass Clean
- All Fingers Working
- No Debris (Weeds, Vines, Leaves, etc.) for Eye to See
- Lubricating Oil Level & Proper Amount (6 drops / minute)

Note: Keep Roller Chains Lubricated

Weekly:

Oil Level in Overhung Adaptor (PTO - Pump) (1992 model only)

Oil Level in Air Compressor

Air Intake Filter (in dusty conditions check every day)

Cutter Disks Wear

Flat Belts for Excessive Wear

Cooling (Oil) Radiator for Dirt (Air or Water may be Required to Clean).

Air Compressor Drive Pulley for "Looseness" & belt tension

Presort & Dirtsort Belts for A - GuideBelt Wear (the V-belt inside the belt)

All Bearing for Possible Pre-mature Failure

Drive Couplers (Plastic & Steel); Realign if Necessary

Belted Chain Sprockets & Replace if Excessive Wear

Readjust Scrapers (Under & Above Disks)

All Belted Chain Splices & Renew if Bolts / Backing are Worn

Return Rollers for Excessive Wear (Adjust Belted Chain to Reduce Wear)

All Roller Chain Sprockets & Chain

STORING THE HARVESTER

Check Flows & Pressures of Each of the 4 Sections of Main Pump

Winterize Electronic Color Sorter Box & Rejector (Contact Electronic Sorter manufacturer)

Winterize Electronic MOT Sorter Box & Rejector (Contact Electronic Sorter manufacturer)

If not winterized, operate the sorter for 5 minutes with an excess of sorter oil flowing to the rejectors. Be sure each & every rejector finger is working properly. Use a 1" wide strip of white paper to individually check each channel. Then use a green tomato, a red tomato, & a dirt clod to check each individual channel.

If not winterized, remove the Electronic Box only & store indoors. The Rejector may remain on the machine.

Air Dryer - could last up to ten years; change only if evidence of water or oil in the water bowl of the electronic sort oiler.

Change oil in Air Compressor.

Remove all the belted chains & store indoors (sunlight & weather will cause them to deteriorate prematurely).

Check all bearings & grease ones that can be greased.

Clean & paint any metal that has been rubbed or scuffed.

Oil all roller chains.

Notes