988 AND 1088 SCHIELER TREE CROP HARVESTER

This document was created to help customers new to the Schieler Harvester machine. The development of this machine and it's inner workings, actually began in the early 70's, and has continued to this very day. It is advised to read and re-read it thoroughly. The recommendations herein are the result of many years of trial and error and millions of trees being shook to harvest their nuts and fruit and should not be taken lightly.

Through the years, our customers often have ideas about how we should have built a certain feature of the machine. Sometimes the ideas are good, and we use them on the next machine we build, but due to the hundreds of things we have tried, most often the reply is, "we tried that. It didn't work".

Service

Every 12 hours

- Top off fuel tank with clean no. 2 diesel.
- Check engine oil and hydraulic oil level and add if necessary. Use only the highest quality oil available.
- Clean engine air cleaner with blow gun or vacuum. Use air compressor and blow gun to clean engine radiator/radiators, condenser, cab filter and evaporator coil and hydraulic oil cooler. Be carful not to damage the fins on evaporator and condenser.
- Blow dust off cab, inside and out. Clean windows with clean water and squeegee if necessary. Clean windows and cab will enhance performance of the operator. In some cases, it may be necessary to clean the windows more than once a day. Keep debris off engine.
- When bowing out hydraulic oil cooler, the screen should be dropped down and the top cover should be propped up and dirt and debris blown out first from the top down and then from the bottom up. This is best done with the machine running to help remove dirt and debris and away from the person with the blow gun. Remember to lock the screen back to up position and close the top lid before moving the machine.
- Check tension of shaker head belt.

Grease

- Shaker head

    - Rod end of clamp cylinder
    - Both ends of link bar and bell crank
    - When greasing head always check wear strip supporting the movable jaw for wear and to make sure, it is in place. DO NOT OPPERATE MACHINE WITHOUT IT!
- Wrap system
    - Pole pivots. Leading arm pivot points. (the ones that allow the leading arm to move up and down).
    - Spring assist rod sleeves under leading arms.
    - Front tie rod ends on torque bar. (the ones next to the tree opening of the machine)

Every 100 hours

Grease

- All Conveyor roller bearings including the main conveyor and stick remover
- Leading arm pivot bearings
- Rear tie rod ends (on the rear of the torque bar, farthest away from the tree)
- Rear cylinder pin on shaker head
- Both energy wheel bearings on shaker head (25 pumps each)
- Bearings on table rollers
- Pole pivot bearing housings
- Leaf blower bearing housing (Just a few pumps. Do not grease until the grease comes out.)
- Gilcrest turning units and tie rod ends on axles

Check oil level in torque hubs

- Position one plug to topmost position and oil level should reach the bottom of the remaining plug. Fill with 90 wt. Gear oil if necessary.

Seasonal

Grease

- Both ends on lift cylinders
- Main beam pivot points

Maintenance

- Change engine oil and filters

- Change all hydraulic filters except the Sundstrand filter on the hydrostat. It can last for several seasons if the oil has been kept clean.
- Replace air filters when they become very worn, torn or extremely dirty.

Operation

Hydrostat

The hydrostat drives the wheel motors and the feroy valve automatically switches the hydrostat to the shaker motor whenever the tree is clamped. Hydrostat pumps have very close tolerances and foreign material as small as a tiny grain of sand can destroy a several thousand-dollar hydrostat pump. Be careful when filling the oil tank or changing hoses or filters.

The operator should always engage and disengage the hydrostat peddle smoothly and never abruptly. A hydrostat transmission can exert as much as 6000 pounds of pressure on the components.

Start Up

It matters whether the machine is just being moved around or checking for something or going to be harvesting. In both situations, the machine should never be operated at full throttle when the hydraulic oil is cold. The higher viscosity cold oil exerts more strain on the entire hydraulic system, especially hoses and seals. Moving the machine around the equipment yard or something similar, one should never use more than medium throttle if possible. If the machine is going to be harvesting, running the conveyors for 5 to 10 minutes will begin to warm the oil and shaking the first few trees at a medium throttle setting before going full throttle is advised. Full throttle should be set at 1800 rpm. The 1088 machine with IQAN has a throttle control which will automatically hold the machine at medium throttle until the machine has sufficiently warmed up. If the machine has just been serviced, make certain all air filters have been replaced and openings closed, and latches secured before starting the machine. Be certain the forward- reverse foot peddle is free and in the neutral position. Keeping the floor clear of items that could roll around the cab and interfere with the peddle is clearly important. The right foot is used for forward and the left for reverse.

The Schieler Harvester is different than typical side by sides since shaking the fruit off the tree and collecting that fruit is done with one machine, therefore, the throttle must remain constant for maintaining conveyor speed and blower rpms. The main conveyor has speed control and should be operated as slow as possible for best leaf removal and least amount of wear.

Maintaining the proper distance away from the tree is probably the hardest thing to learn. The stroke of the in-out cylinder is 52 inches. One must pass the tree at the correct distance so that the shaker pads line up centered with the tree when the stroke is all the way out or nearly all the way out. When the table is all the way out and with the center of the shaker pads in the center of the tree, you know that you are as far away from the tree as you can get and should steer a little closer when moving to the next tree. When the table is not yet leveled out, you are too close and need to move away from the tree when moving to the next tree. The ideal position is to be almost all the way out but not quite. The last foot or more of travel, the table flattens out and allows the canvas to operate properly. Being too close to the tree will allow the table to point downward and therefore allow the canvas to not shed properly.

A common mistake that many drivers make is to weave in and out constantly and it is far less efficient. Always try to keep the machine as straight as possible. One should always try to make any corrections in the first few feet on the way to the next tree and then try to not touch the steering wheel the rest of the way.

Once the machine is lined up with the tree and the table slid out with the joy sick, and the table is in position, the tree can be wrapped and clamped with the button on top of the joy stick pushed to the right.

Clamp pressure on the tree will automatically switch the Feroy valve from forward travel to shake and one can now shake the tree with the same peddle as you used for forward travel. NOT REVERSE. When done shaking, pressing the button on top of the joy stick to the left will “unwrap” the tree and pulling the joy stick back will retract the table.

To speed up the operation, there are several things you can do and practice. An experienced operator in good conditions can successfully operate the machine up to 4 trees per minute. This is done by starting to slide out the table about 3 feet before you are lined up with the tree trunk. With a little practice this will make it much easier to line up the tree. The wrap button can be pushed a split second before the table has reached the point where you planned to stop it. After shaking the tree, the “unwrap” button is pushed and when the leading arms are half way back you can pull the joy stick back and when the leading arms are all the way back and the table is ALMOST all the way in you can begin the forward travel on the way to the next tree. You must remember to complete each function even though you have started another. Not fully retracting the leading arms and table is a common mistake and can lead to a disaster.

The IQAN system has an auto feature when turned on can perform some of these chores for you, as follows…

When wrapping the tree, hold the button down for one second and then you may let go. The machine will automatically finish wrapping and clamping the tree. You then must shake the tree manually with your foot, but as soon as you stop shaking, the machine will automatically unwrap and retract the table (the auto retract at the end of shake is currently only programmed on the modified 988 with IQAN, Hoffman #7, not the 1088 models). This will save your thumb by the end of the day and speed up most drivers and reduce fatigue.

Bin Changing System

The bins are loaded onto the side track with the bin carrier and holds 7 bins. Each bin when full is pushed off and an empty one put in place by moving the joy stick toward the back of the machine. To accept a new load of bins, the joy stick is pushed toward the front of the machine until the “flap” has flipped under the track. Once the bins are loaded, the “flap” must be returned to the top of the track and against the bin.

The IQAN system will automatically push the bins off when full and return the flap to the front and ready to accept bins whenever the last bin is in place. The driver need not do anything, further reducing fatigue. The weight or “fullness” of the bin is adjustable.

There is a one- way adjustable needle valve on the motor driving the bin chain. It can be adjusted to push the bin off slowly to prevent spilling fruit or nuts. The other direction is fully open allowing the flap a quick return to the front.

Turns

Turns should always be made to the left as it is much easier when using the rear steering feature. Various turning patterns can be used to accommodate this. The main conveyor should be shut off when making a turn since uneven ground is usually encountered when turning and the conveyor can be damaged when the machine is driven over very uneven surfaces. The IQAN system turns off the main conveyor automatically when the rear steer is activated.

The rear steer is operated manually with a button and is automatically centered when returned to the auto position.

The IQAN system shows which way the wheels are turned on the screen.

Pad Lube

The pad lube system can and should be observed throughout the day. Each time the machine finishes shaking a tree, there should be some water running or dripping from each shaker pad. This can clearly be seen from the driver's seat while moving to the next tree. Also, the pad pressure gage should always drop significantly when the wrap button is pushed and recover when the button is released. If this does not occur, stop the machine and check the fluid level in the tank. If that is not the problem, clean the screen under the tank. Make sure the pump is operating. If that does not resolve the issue, clearly there is a blockage somewhere or a broken line. Do not operate the machine without the pad lube working.

Various products are on the market for pad lube, but we recommend "Sling Glide" Follow the manufactures recommendation for strength. When new slingers are installed on the machine, coat the slingers with some full-strength product before shaking the first tree and double the strength in the tank for the first tankful. In some cases, it may be necessary to keep the tank strength doubled when the orchard has been irrigated recently. We recommend the irrigation water be cut off 10 days prior to harvest to allow the bark to dry and toughen.

Clamp Pressure

Starting out, the clamp pressure should be set at around 1000 pounds. If trees are being "barked", reduce the clamp pressure to 900 pounds but no less. If "barking" still occurs and you can find no other reason for it, you can wait a few more days before harvesting that orchard or try increasing the strength of the sling glide.

Always remember, higher clamp pressure will shake the tree harder but more likely to slip the bark. Never set it more than 1200 pounds. Higher clamp pressure will also make the wrap system go faster. Heavier soils require more time for the bark to dry and toughen. We have been in orchards where the soil was so sandy, you could irrigate one day and harvest the next and you could never "bark" a tree if you tried. On the other hand. We have seen orchards with so much clay content in the soil and the bark with so much moisture, simply clamping the tree without even shaking would "bark" the tree. So therefore, irrigation timing is very important and can vary with soil types.

Shaker Head Belt

The shaker head belt on the Schieler Harvester is a CC 195. (A singe belt with a double V). There are several ways the belt can be installed but only one is correct. First make certain the drive motor is turning counterclockwise when observing from the top. If it is not, the one-inch hoses to the drive motor are reversed. When laying on your back with

the bottom cover plate removed, and looking up at the underside of the head, the belt from the bottom energy wheel on your left or nearest the front of the machine, should go to the top drive pulley. It will be pulling the energy wheel up at an angle. It then goes around the drive pulley, and the slack side is in line with the top energy wheel and goes around it from the same side. The resulting loop on the other end of the belt goes on the bottom drive pulley. Schieler harvester can provide a diagram which explains this clearly. Installing the belt correctly will ensure a much longer life of the belt. A short piece of rope is a good way to thread the belt around the energy wheels. When installing a new belt, tighten the belt tight but not enough to risk breaking the fibers within the belt. Generally, the belt will stretch. Shake about 10 trees and check the belt. Tighten some more if it has loosened. Shake about 50 trees and check it again. Tighten some more if it has loosened. Shake about 100 trees and check it again. Shake one or two rows and check it again. When you have checked it twice without loosening, check once a day from then on. It is VERY IMPORTANT THIS PROCEEDURE IS FOLLOWED. The first time a new belt is thrown off the pulleys and wedged in the head, you will find out why! When removing a thrown belt, it may be necessary to loosen the taper locks on the pin.

Schieler Harvester recommends Gates belts with Kevlar. They are more expensive but will last much longer. The Kevlar belts will also stretch mush less and one will spend less time checking the belt.

It is a common practice to operate the machine with the bottom cover-plate removed. However, it is advised to keep it in place if operating in tall weeds and brush.

Fan Speed

The fan should be operated at the highest speed possible without blowing out fruit or nuts. Usually, Pistachios are the only crop one must worry about blowing out. A high fan speed will blow out pistachios so walk behind the machine and observe and set the fan speed accordingly. Remember, the fan is also cooling the hydraulic oil and should never be shut off completely for an extended period.

Signals

If two- way radios have not been installed on the shaker and carrier, communication must be established between the shaker driver and the carrier driver. When the shaker is ready for bins, flashing the headlights is a good way to do this. The IQAN system does this automatically whenever the machine needs bins.

Transport

When transporting the machine, the “unclamp” pressure may sometimes bleed off and cause the machine to go into shake mode if you are transporting for an extended period. To prevent this one must push the “unclamp” button momentarily every few minutes. 2, wheel motors may be shut off to increase the speed when transporting. When harvesting in smooth orchards. one motor may be shut off all the time to increase ground speed. When doing this, one should occasionally rotate the motors to be shut off. The IQAN system shows wheels turned off in RED on the IQAN screen. When using the almond attachment, the RIGHT REAR wheel motor can NEVER be shut off since it is driving the unloader on the almond box.

Almond attachment.

The almond attachment is used for harvesting almonds. Since almonds must be dried laying on the ground, it holds the almonds in a hopper and unloads the almonds into a windrow controlled by ground speed to avoid the almonds being piled into a lump. The IQAN system will automatically shut off the unloader when making a turn using the rear steer. It will not unload again until the machine has shook the second tree in the new row the machine has just turned in to. This prevents almonds being dropped in the turn row. The almonds can then be picked up with a pickup machine in a week or so. The advantage of the Schieler Harvester Almond Attachment is best realized when harvesting young orchards when the yields are generally light.

When installing the almond attachment, the one- inch hoses must be connected in series with the right rear drive motor. The low- pressure side of the drive motor when going forward is connected to drive the almond box. When doing this, USE EXTREEM CAUTION TO KEEP OUT DIRT. The hoses and motor driving the rear conveyor are used to drive the leveling auger on the almond box.

Conveyors

The side conveyors and the rear conveyor are adjusted by the sliding bearings on both sides of the rear ends of the conveyors and one side of the front of the conveyors. These are commonly called “take-ups”. Tighten the rear take-ups of the conveyors till the belt has lifted just off the pan in the center of the belt on the bottom. To keep the belt tracking in the center of the conveyor, tighten the side that the belt is too close to the edge or loosen the other side keeping it just off the pan. When installing and tightening a belt, it will be necessary to run the conveyors 30 minutes or more while adjusting until the conveyors are tracking properly. The conveyors can be adjusted throughout the day while harvesting if you already have them reasonably close. Sometimes ¼ turn is all that

is needed to move the belt over to where you want it. You must give it some time to see if it is going to move. When the front of the conveyor needs to be moved, tighten or loosen the one side to move it to center. After doing this you will need to recheck the rear.

The main conveyor is run by sprockets and chain and is tightened by the take-up bearings in the front. All slack must be removed but be careful not to put undue strain on the chain. One can push up on the chain right in front of the rear sprockets on the bottom chain and feel the tension. The chain should be firm but with no tension and no slack. When observing the chain going around the rear sprocket, a slack chain will try to keep following the sprocket momentarily before it is pulled away from the sprocket. A chain too tight will bounce up and down a little.

Vibrisizer

When operating in prunes, the Vibrisizer attachment can be switched with the rear conveyor. It is equipped with a sizing chain made of rubber belting with steel bars wrapped with rubber that can be configured to different sizes and a vibrator motor with shock mounts that is adjustable in intensity. It usually works better to keep the intensity slow.

A common mistake is to try to slow the speed of the chain down to do a better job of sizing. The opposite is true. The faster the chain, the better the sizing since more of the chain is exposed to the fruit.

The sizer chain is also equipped with two “knocker” sprockets to bounce the chain up and down.

Stick Remover

The stick remover is very simple and requires little adjustment and maintenance. Occasionally one or more rods can become broken and must be welded back together with a piece of scrap metal to stop further damage.

Canvas

The canvas is not a canvas at all but an extremely strong laminated membrane. The seams are not sown but welded together with a special heat gun. Holes, rips and tears can be patched with the same material with a heat gun and roller. Patching material, heat gun and roller can be purchased from Schieler Harvester.

The “canvas” is pulled around the tree by the leading arms down low and with the help of the spring assist rods, is lifted to a 45-degree angle by the “canvas” itself. When the

inner slide cylinder begins to reach the end of its stroke, the leading arms are pulled up by the canvas, lifting them high enough to shed fruit or nuts.

The rope on the roped down section has very little to do with keeping the canvas tight. To tighten the canvas, the rope must be first removed or extremely loosened, and the anchor point (the part bolted to the wing) moved farther away from the tree. When the outer edge is drooping or sagging between the poles, the anchor point must be moved straight down. If the anchor point is moved too far, either out or down, the canvas will hold back the leading arms and keep them from coming together. When the leading arms are “slapping” together, that can be corrected by moving the anchor point down. The “slapping” sound can generally be heard from a distance.

The correct anchor spot should be located before the canvas is roped down.

The tie rod ends on the leading arm pivots are originally set at the factory centered at 7 and ¼ inches from the pivot shaft. That distance will seldom need changed. Screwing the tie rod in will increase the leading arm travel in both directions and screwing it out will decrease the travel. Moving the tie rod end on the other end of the torque bar will increase the travel in one direction while decreasing it in the other.

Generally, the settings are correct when the leading arms come together parallel, (top is the same distance apart as the bottom) and are approximately at a 45-degree angle vertically, with no sagging or wrinkles in the canvas and when retracted fit snug against the wings without excessive banging.

The spacers on the spring assist rods can be changed whenever a leading arm needs to be pulled up or down to keep the vertical distance between them close.

Shake pressure and shaker brake.

There is a cross port relief valve between the one-inch hoses driving the shake motor. One side can be adjusted to allow the motor to stop slowly, not instantly. Abruptly stopping the shake motor can sometimes throw the belt. The peddle should be released slowly and allow the shake motor at least a full second to stop. The shaker brake will do this even when the operator accidently releases the peddle suddenly. On the other hand, the shaker should not be allowed to “coast” causing the operator to wait for it to stop.

The other side will adjust the shake pressure and be easier on the belt whenever the peddle is pushed down quickly. Big trees will require more shake pressure. This

adjustment is usually not required and can be monitored by the in-cab hydrostat pressure gage.

Tree Seals

The dimensions and configuration of the tree seals are the result of nearly 40 years of trial and error. They will last several seasons depending on the acreage being harvested. In the past many customers have tried to modify them and usually resulting in a disaster. We recommend new tree seals when they become very worn.

If the customer wants to build new ones themselves, use the old ones for a pattern and don't change the dimensions. Remember the support rubber underneath, has a ¾ inch offset on the mounting bolt holes to give the seals elevation at the trunk.

[Note: This version of the operator manual is the most current, written by Darrel Schieler, May 2019. Revised by Dustin Schieler, June 2026]