STOUT

INDUSTRIAL TECHNOLOGY

USER GUIDE


STOUT

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OPERATOR RECOMMENDED TOOL KIT*

Bracket Adjustment Tools

- 1/2" Drive Ratchet
- 1/2" Drive x 18" Breaker Bar
- 1/2" Drive x 6" Extension
- 1/2" Drive x 15/16" Deep 12-Point Socket
- 1/2" Drive x 1-3/8" Deep 12-Point Socket
- 15/16" Combination Wrench
- 12" Crescent Wrench

Actuator Adjustment

- 3/8" Drive Ratchet
- 3/8" Drive x 3/4" 12-Point Socket
- 3/4" Combination Wrench

Wheel Adjustment

- 1/2" Drive x 18" Extension
- 1/2" Drive Universal Joint
- 3/8" Drive x 18" Extension
- 3/8" Drive Universal Joint

Miscellaneous Tools

- Standard Hex Key Set (For Panel Removal)

**The tools listed below are not provided by Stout Industrial Technology.*

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INDUSTRIAL TECHNOLOGY

START UP, SHUT DOWN & TROUBLESHOOTING

START UP

1. Start the tractor
2. Ensure that the 540-1000 PTO speed selector (if equipped) is set to 1000 RPM
3. Engage the PTO
4. Increase the tractor engine RPM until the PTO shaft speed is 1000 RPM
5. Turn on the Smart Cultivator main switch
6. Turn the module lift valve levers to the locked position (up)
7. Open the Control page of the touchscreen
8. Wait for Status (on the left side of the screen) to change from "Initializing" to "Ready", this can take up to 3 minutes
9. Press the Start button to engage the hydraulic controls and actuator controls

NOTES:

TROUBLESHOOTING | PROBLEM: The hydraulic system is not operating.

CHECK: Is the PTO operating at 1000 RPM?

If not, ensure the PTO speed selector is set to 1000 RPM and increase the engine RPM if necessary.

CHECK: Does the Smart Cultivator screen show voltage of at least 13.8V?

If not, the battery may have started at discharged state. In this case, the charging system of the Smart Cultivator uses all available hydraulic power to charge the battery, and the rest of the system will not function.

1. Ensure the modules lift valve levers are in the locked position (up). It does not matter which position the modules are in
2. Shut off the PTO
3. Turn off the main switch on the Smart Cultivator
4. Start the PTO again
5. Wait for 1 minute
6. Turn on the main switch of the Smart Cultivator and follow the start up process

NOTES:

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INDUSTRIAL TECHNOLOGY

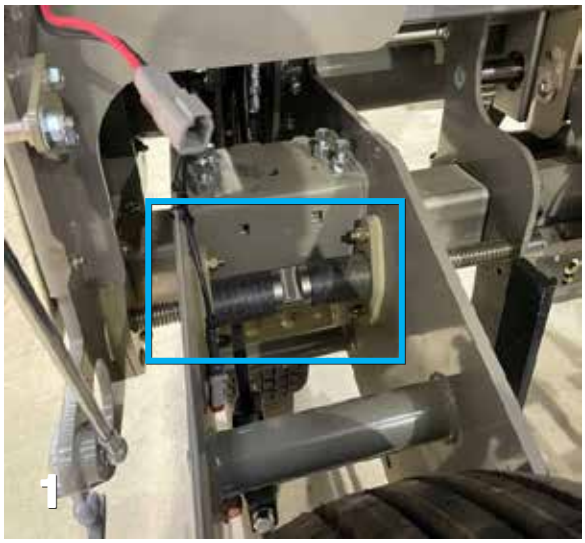
CONFIGURATION HOW TO:

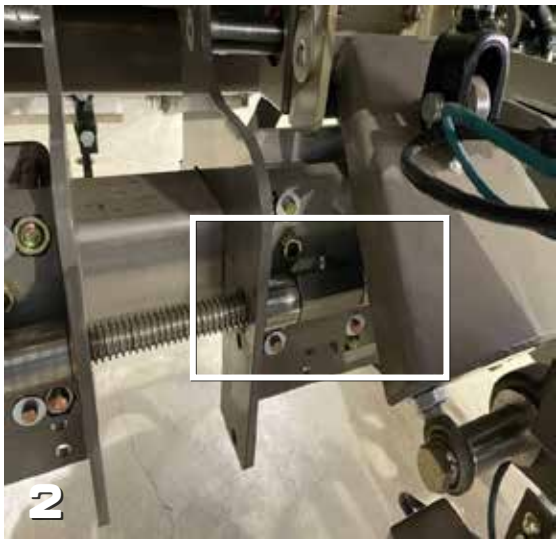
SPACING OUT GAUGE WHEEL FOR DIFFERENT SIZE BEDS

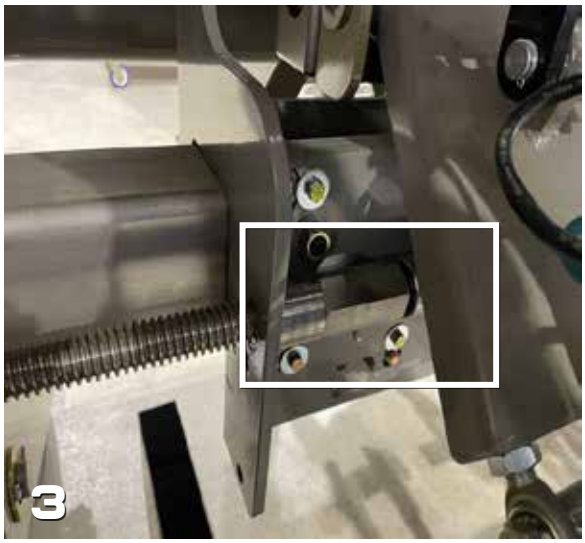
WARNING!!!

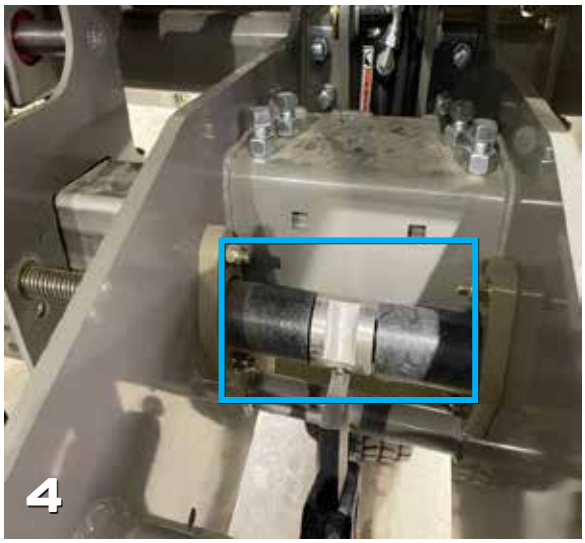
DO NOT HAVE THE TRACTOR AND THE STOUT MACHINE RUNNING WHILE COMPLETING THE FOLLOWING STEPS. MAKE SURE EVERYTHING IS OFF. TAKE THE NECESSARY MEASURES TO ENSURE THAT ANYONE WORKING ON THE CONFIGURATION OF THE MACHINE CAN DO SO SAFELY.

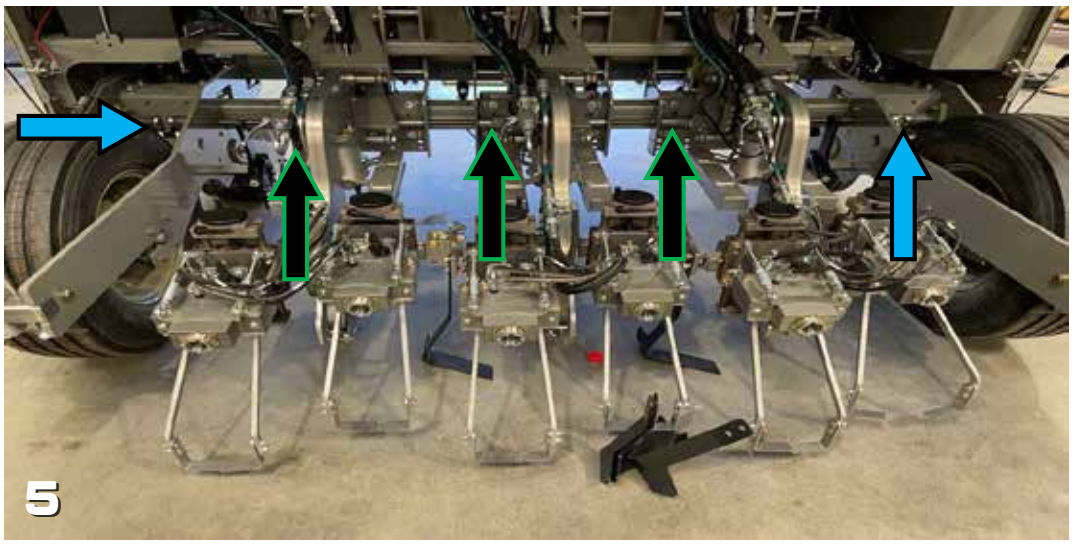
STEP 1: Loosen lead screws located on the acme thread until they are freely rotating. Loosen all of the lead screws on the machine other than one of the lead screws on either of the big gauge wheels (light blue arrow).









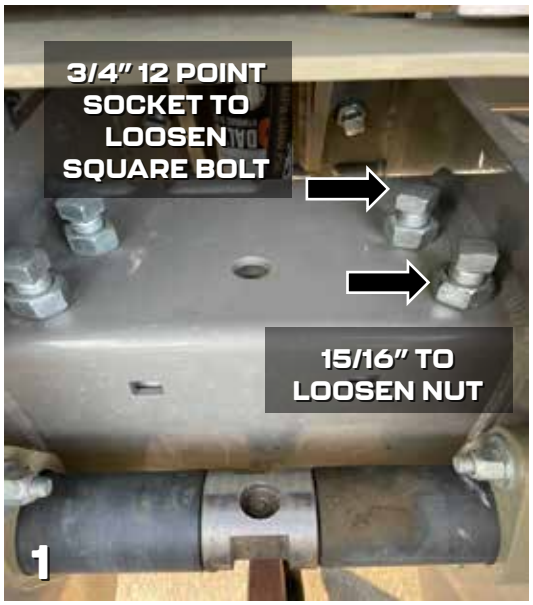


NOTE: The spacing from center wheel to wheel is set to 80", unless otherwise shifted before. It is recommend that you mark off the spacing of the brackets (with a paint pen) before you begin shifting.

Shift each wheel in the same increments. For example: If you are setting your wheel spacing to 84" from 80", move each wheel out 2". If you are setting your wheel spacing to 76" from 80", bring each wheel in 2".

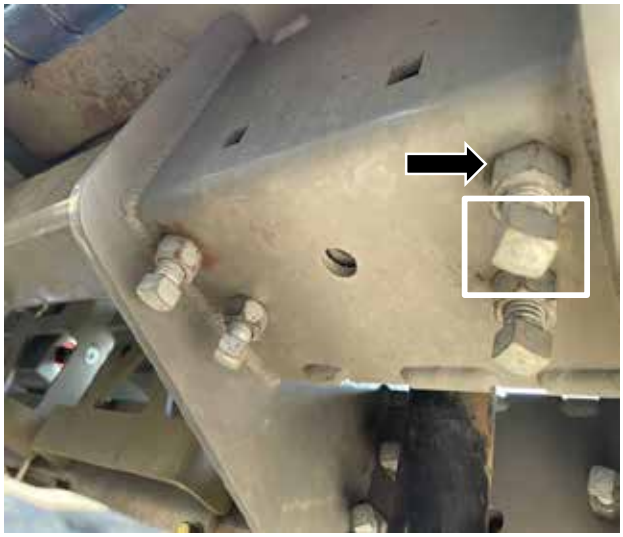
NOTES:

STEP 2: Loosen all of the nuts and bolts located on the gauge wheel bracket. There are a total of 16 of them. You will first need to loosen the nut using a 15/16" deep socket. After loosening the nuts, you can loosen the square bolts. It is best to use a 3/4" 12 point socket. It is also best to have a 24" swivel extension - you will need the extension for the tough to reach nuts.



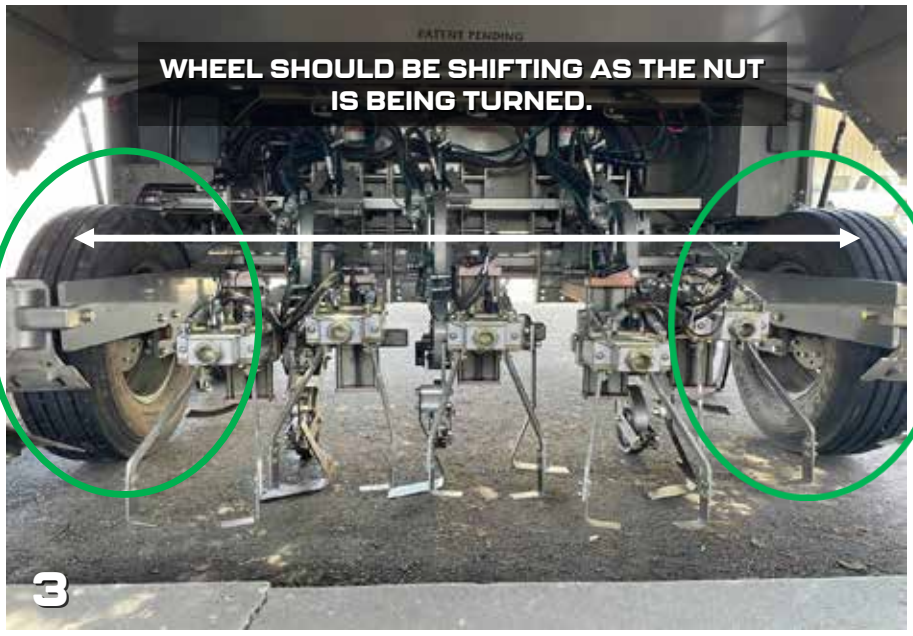
NOTES:

Nuts and bolts are located under the machine. Follow the same steps as the previous page. Once all of the nuts and bolts are loosened, continue to the next steps.

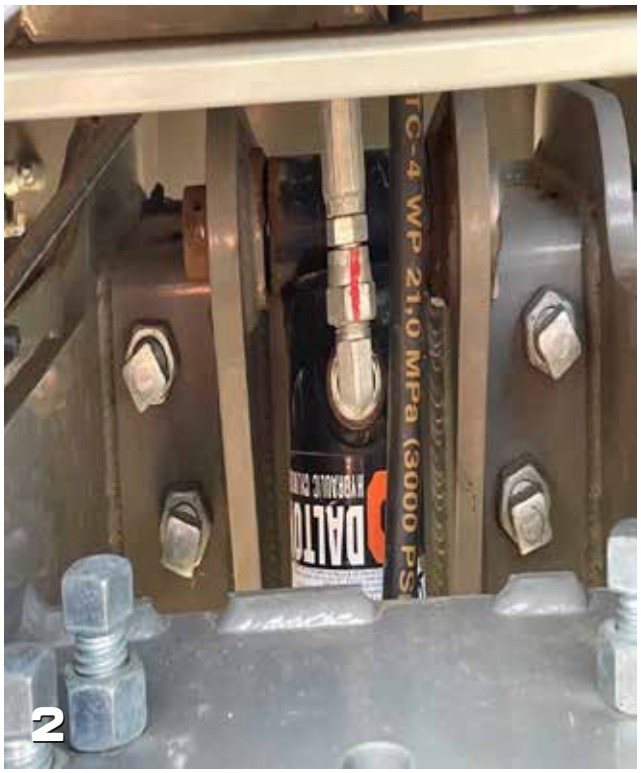


NOTES:

STEP 3: Using an 1 3/8" socket, turn the nut located on the outside of the machine. The nut will turn the lead screw and it is located on both left and right side; you will only need to turn one side. Either side you choose is fine. ***NOTE: Turning the nut clockwise will bring the wheel closer to you. Turning it counterclockwise will push the wheel away from you. Every 5 full turns is approximately 1".*** As the nut is being turned, place a crescent wrench on the lead screw of the gauge wheel you are shifting (this is where having a second person is handy) and ensure that it is tight. Once you have reached the desired spacing on that gauge wheel, follow the same steps to shift the other gauge wheel.



STEP 4: Once the wheels are properly spaced, tighten all of the nuts and bolts on the gauge wheel bracket that were loosened.



STOUT

INDUSTRIAL TECHNOLOGY

CONFIGURATION HOW TO:

6 LINE TO 5 LINE SET UP

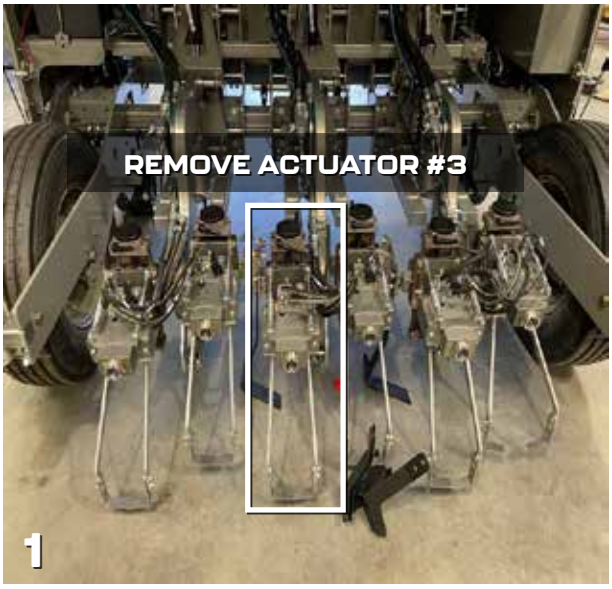
WARNING!!!

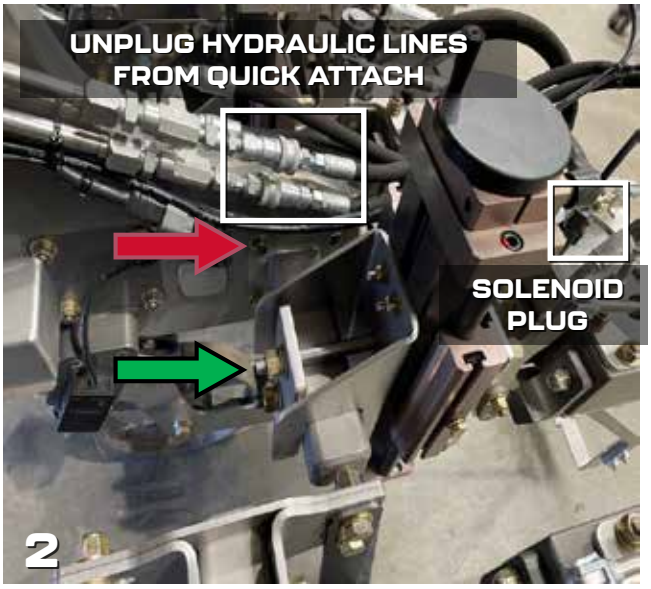
DO NOT HAVE THE TRACTOR AND THE STOUT MACHINE RUNNING WHILE COMPLETING THE FOLLOWING STEPS. MAKE SURE EVERYTHING IS OFF. TAKE THE NECESSARY MEASURES TO ENSURE THAT ANYONE WORKING ON THE CONFIGURATION OF THE MACHINE CAN DO SO SAFELY.

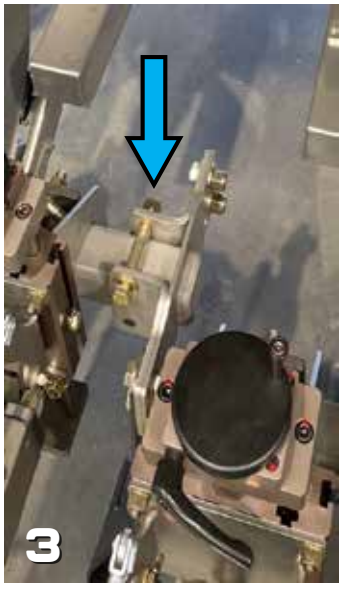
Before beginning the following steps, ensure that the Side Shift is positioned at 0.0 - 0.3. If it is not positioned at 0.0 - 0.3 and you begin the following steps, you will risk misaligning all the backbones and needing to start over.

NOTES:

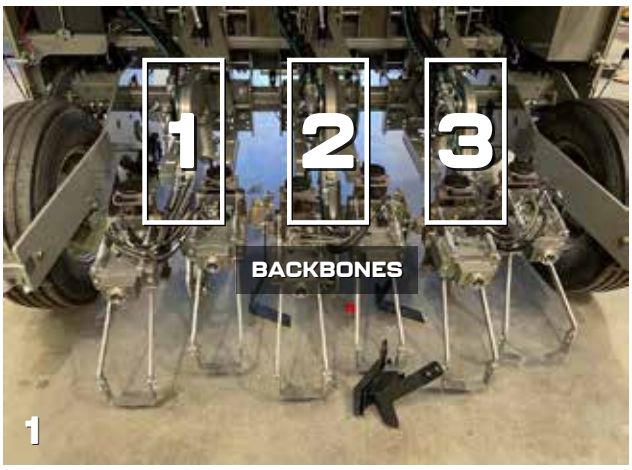
STEP 1: Start by removing actuator #3. Unplug the hydraulic lines, along with the electrical solenoid plug and remove the actuator from the bar (green arrow). Remove the bar by undoing the 4 bolts (red arrow). Loosen actuator 4 and move it in. Remove the bracket that holds the cultivation sweeps in between actuator 2 & 3 (light blue arrow). You will need a 9/16" and 3/4" wrench to complete this step.

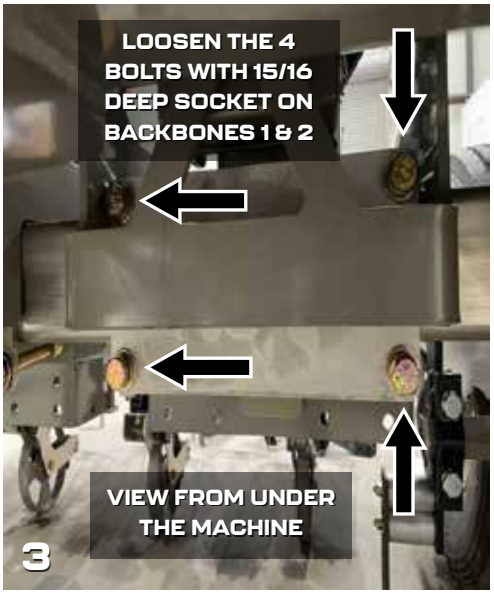


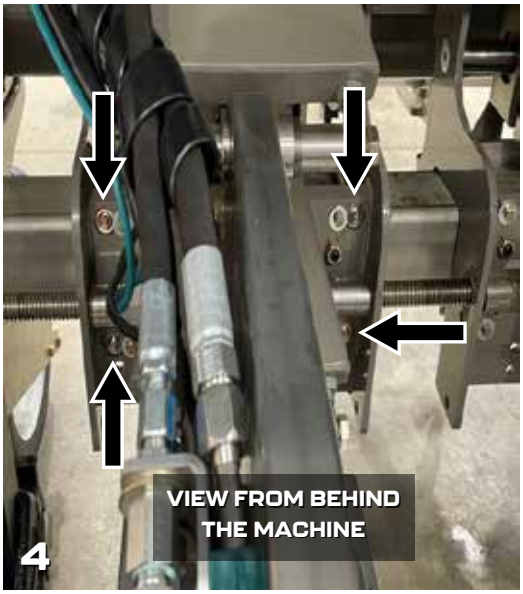




STEP 2: Backbone 1 will need to shift right. Backbones 2 & 3 will need to shift left. In order for them to shift, break loose the back plate on the 2" bar and the 4 bolts on the 4" bar - this will require crawling under the machine. You will need a 15/16" wrench and best to also have a 15/16" deep socket and ratchet.

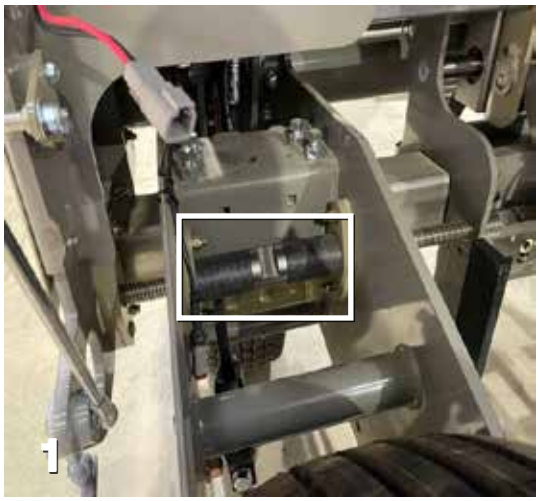


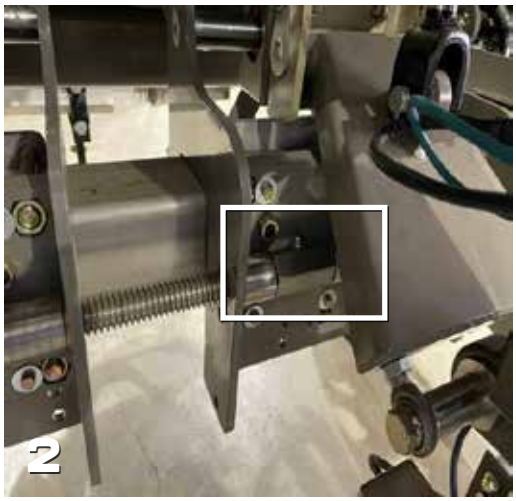


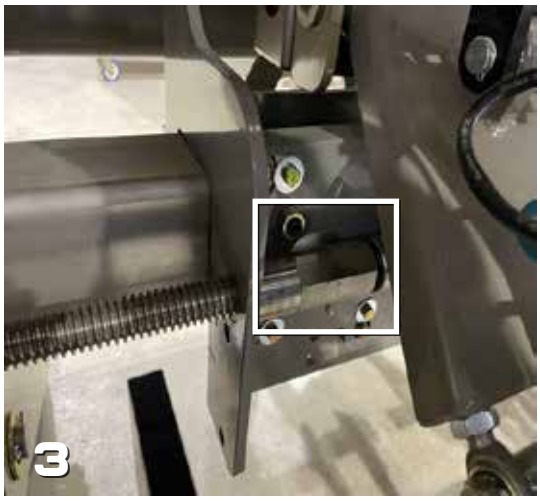


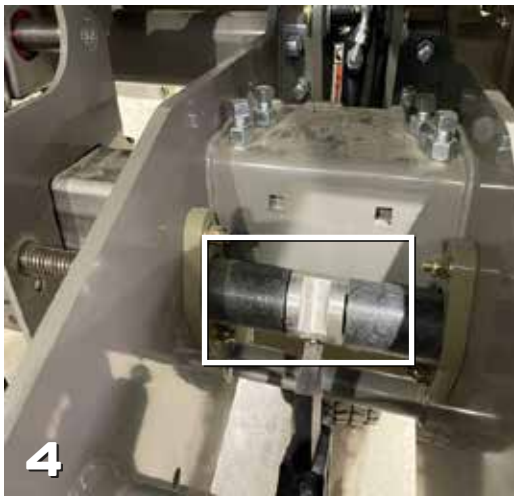
NOTES:

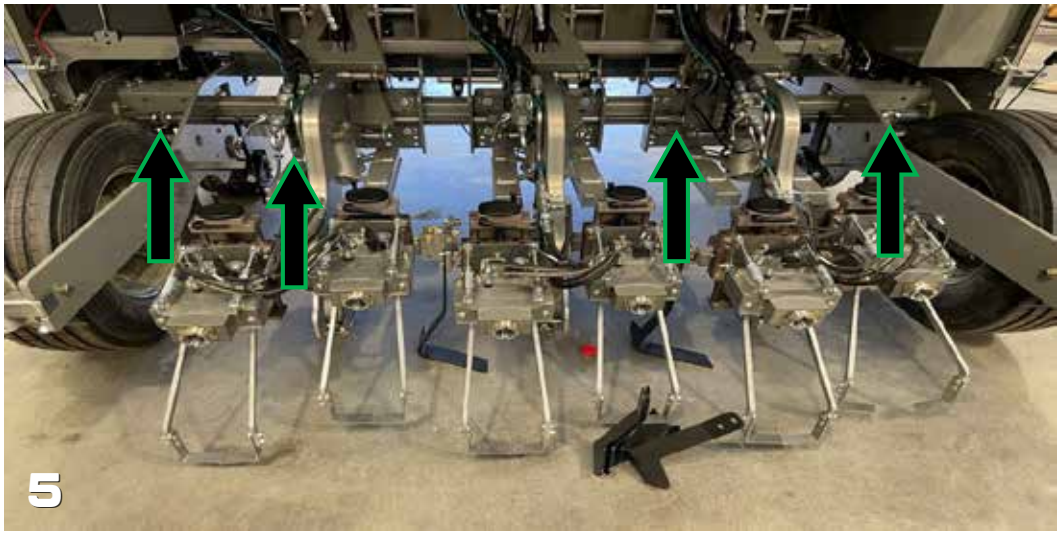
STEP 3: Loosen lead screws located on the acme thread until they are freely rotating. There will be 4 of them - 2 located right where the big gauge wheels are and 2 right under Backbones 1 & 3. It is best to use an adjustable crescent wrench for this step.



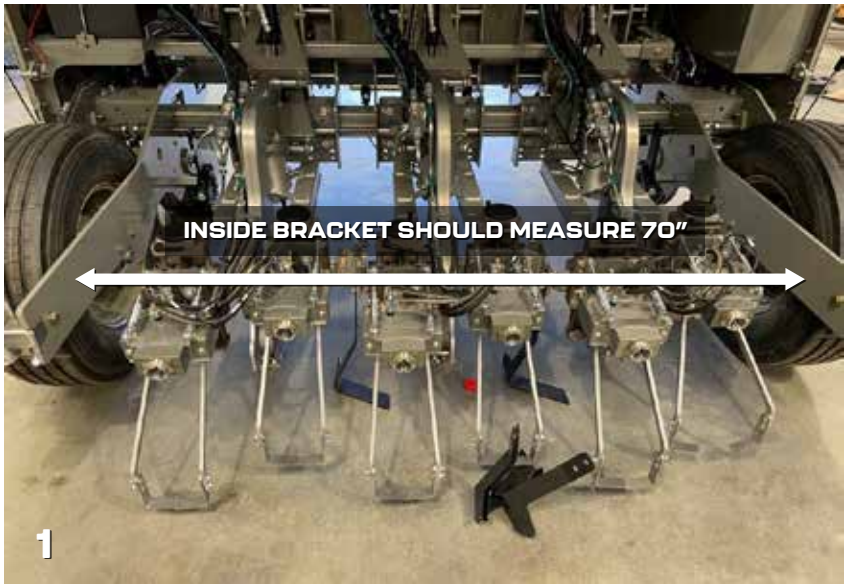


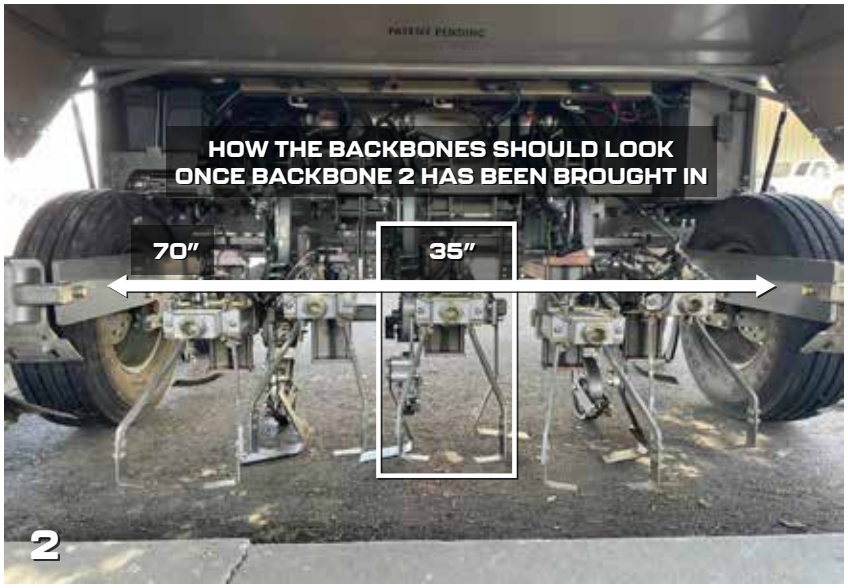






After completing the previous step, the following steps will require movement of the backbones. Base your measurements from the inside of the gauge wheel brackets, which are roughly 70" apart. When you begin to bring in backbone 2, you will want actuator 4 to sit at the corner of the 70" - at 35". Actuator 4 will be your center reference when spacing out the rest of the actuators.

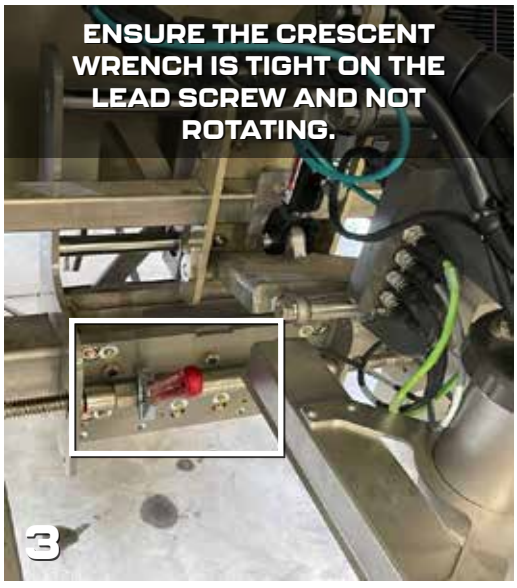


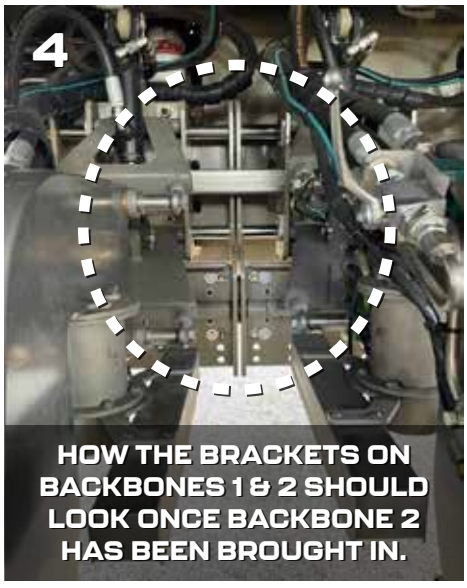


NOTES:

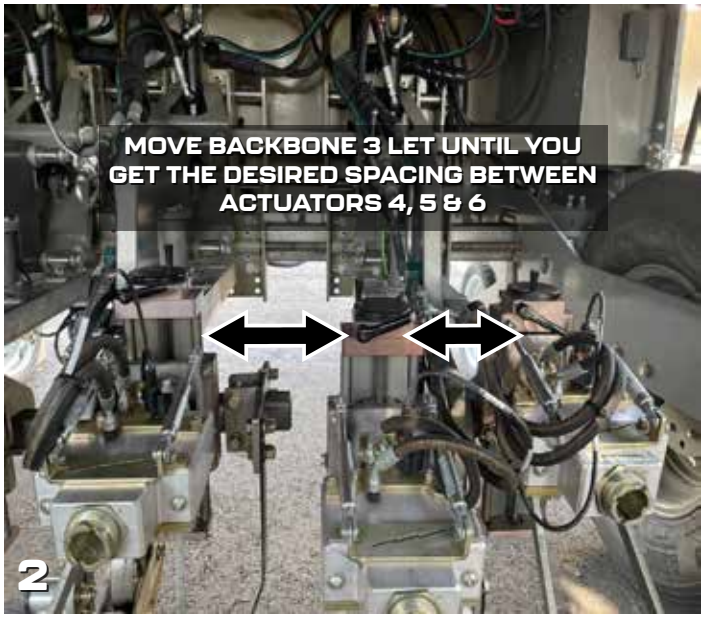
NOTE: It is best to have 2 people for the following steps.

STEP 4: Using a 1 3/8" socket, turn the nut located on the outside of the machine. The nut will turn the lead screw and it is located on both left and right side; you will only need to turn one side. Either side you choose is fine. ***NOTE:*** Turning the nut clockwise will bring the backbone closer to you. Turning it counterclockwise will push the backbone away from you. Brackets on backbones 1 & 2 need to come together. Every 5 full turns is approximately 1". As the nut is being turned, place a crescent wrench on the lead screw on backbone 2 and ensure that it tightens (this is where having a second person is handy). Turn the nut, ensure that backbone 2 is inching closer to backbone 1. Stop once actuator 4 is centered at 35". Following the same steps, now place the crescent wrench on the lead screw under backbone 1 and move backbone 1 to



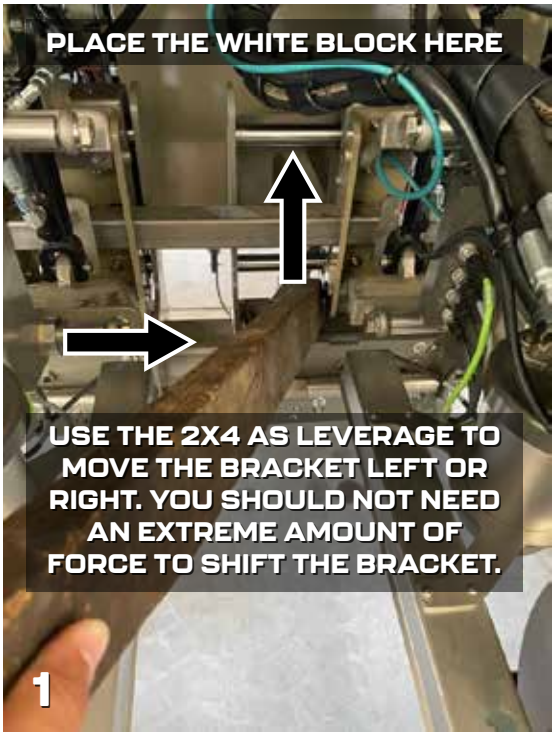


STEP 5: ***NOTE: Having 2 people for this step is best.*** Center actuators 5 & 6 on backbone 3 to what the line spacing of the field is. Once that is done, move backbone 3 to the left (follow the same steps as the previous slides) until you reach the desired line spacing between actuators 4, 5 & 6.



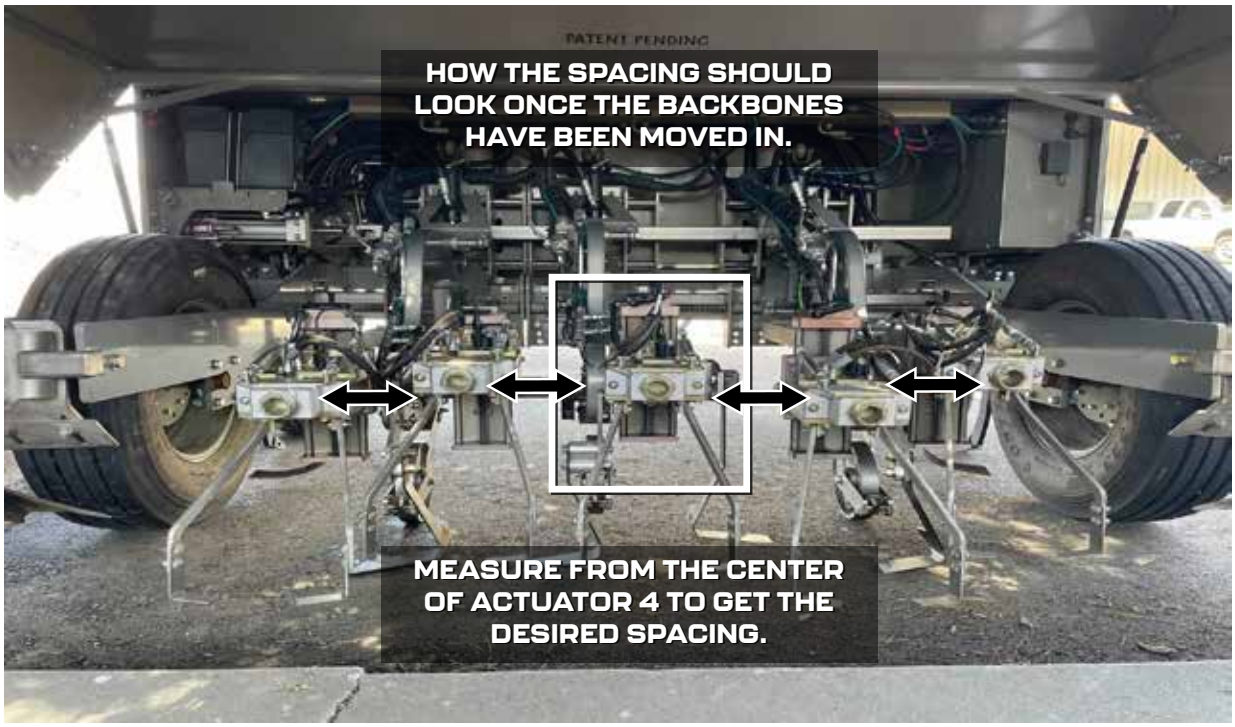
NOTES:

STEP 6: ***NOTE: Having 2 people for this step is best.*** Center the backbones within the brackets. Using a 2x4 and the white blocks, place the white blocks where the shaft is and use the 2x4 to shift the backbone until it is touching the white block. Both of the white blocks should fit snug on each side - that ensures that the backbone is centered.



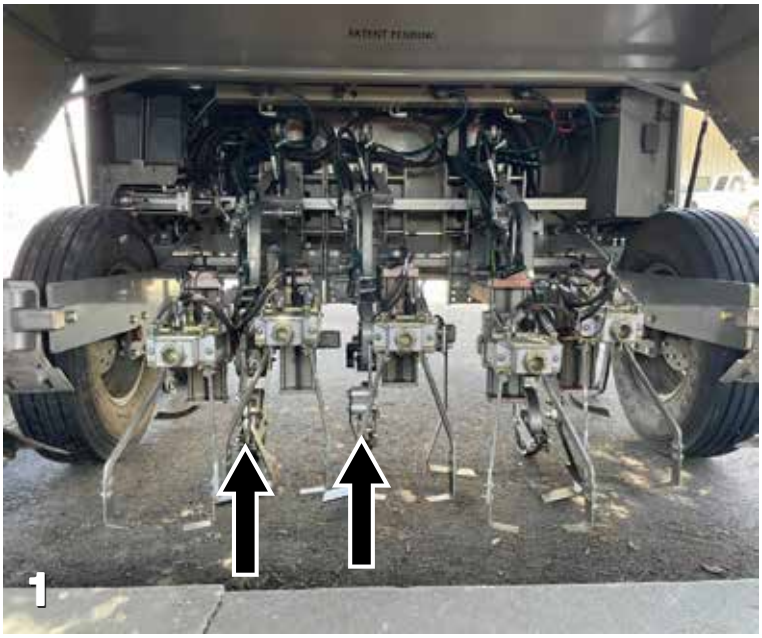
STEP 7: Space out each actuator to the line spacing needed for the field. Actuator 4 will be your center.

NOTE: It is important to understand that while the actuators may be appropriately spaced out, based on the line to line spacing in the field, there may be in field adjustments that need to be made to accommodate the variables of each field.

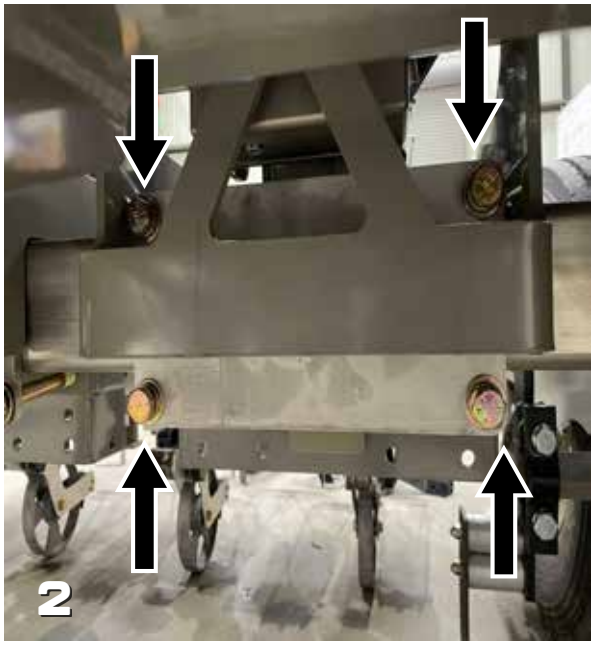


NOTES:

STEP 8: Add the spacers provided for the sweeps for the 5 line set up. You will need a 5/8" spacers and a 2" spacer to properly space out the sweeps.



STEP 9: Once the backbones are centered, you can now begin to tighten all of the nuts that were loosened in the previous steps. Refer to the previous pages. Ensure that everything is tightened, otherwise brackets may shift and cause spacing confusion.



NOTES:

STOUT

INDUSTRIAL TECHNOLOGY

CONFIGURATION HOW TO:

6 LINE TO 4 LINE 40'S SET UP

WARNING!!!

DO NOT HAVE THE TRACTOR AND THE STOUT MACHINE RUNNING WHILE COMPLETING THE FOLLOWING STEPS. MAKE SURE EVERYTHING IS OFF. TAKE THE NECESSARY MEASURES TO ENSURE THAT ANYONE WORKING ON THE CONFIGURATION OF THE MACHINE CAN DO SO SAFELY.

Backbone 1 to Backbone 3 should sit center in-between the 2 line crop rows. For example:

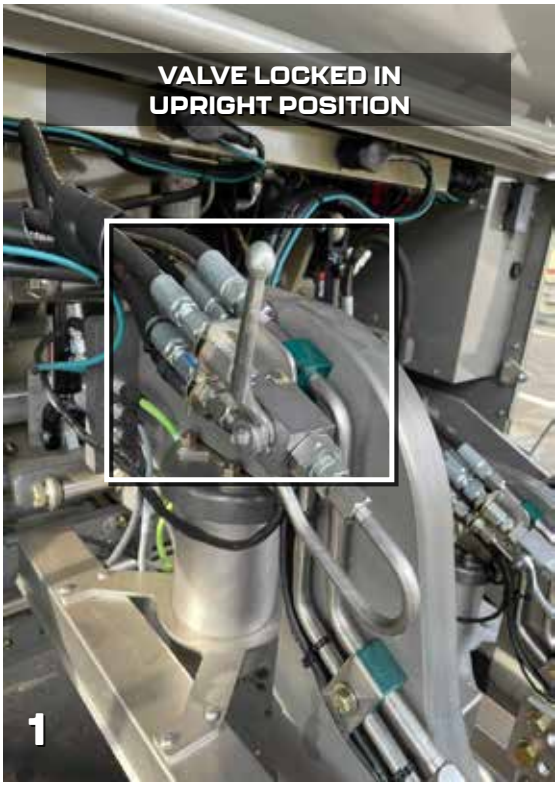
- 2 Line 38" spacing - measure 19" from the center of Backbone 1 to Backbone 3.
- 2 Line 40" spacing - measure 20" from the center of Backbone 1 to Backbone 3.
- 2 Line 42" spacing - measure 21" from the center of Backbone 1 to Backbone 3.

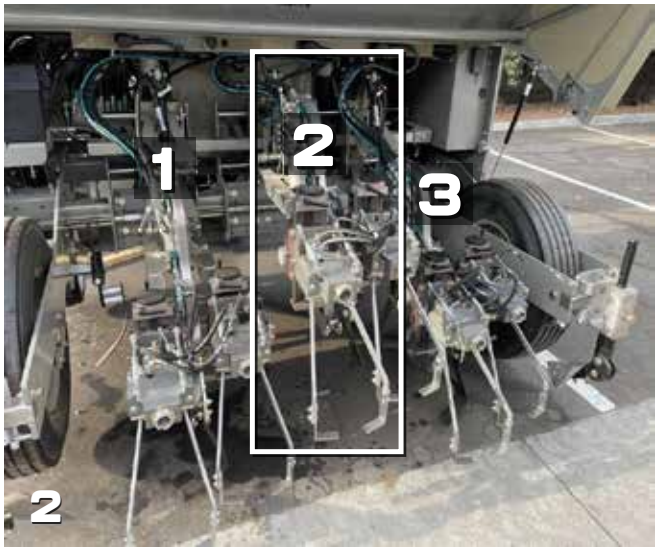
NOTE: 2 line 34" spacing will require Backbone 2 (center) to be removed. We recommend taking the machine to the Stout shop for that configuration.

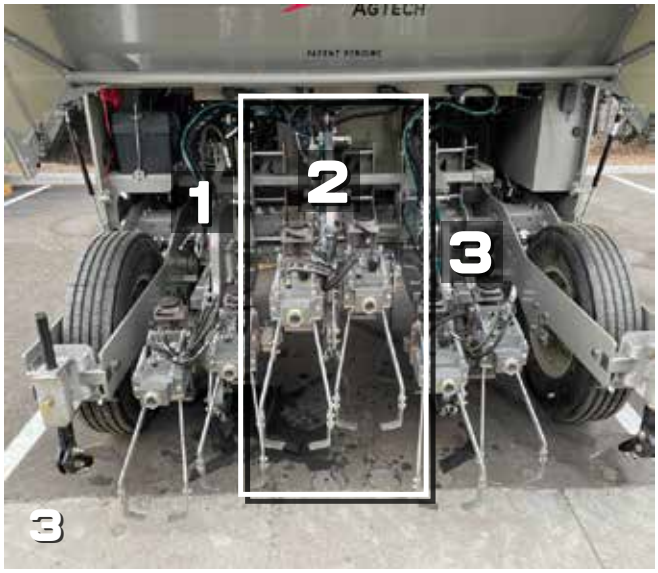
EXAMPLE OF MEASUREMENT FROM BACKBONE 1 TO BACKBONE 3

NOTES:

STEP 1: Pin up Backbone 2. Do so by locking the valve in the upright position. Backbone 2 should stay in the upright position while Backbone 1 & 3 are lowered. You should not need to remove any actuators.
Adjust actuators to get desired spacing.







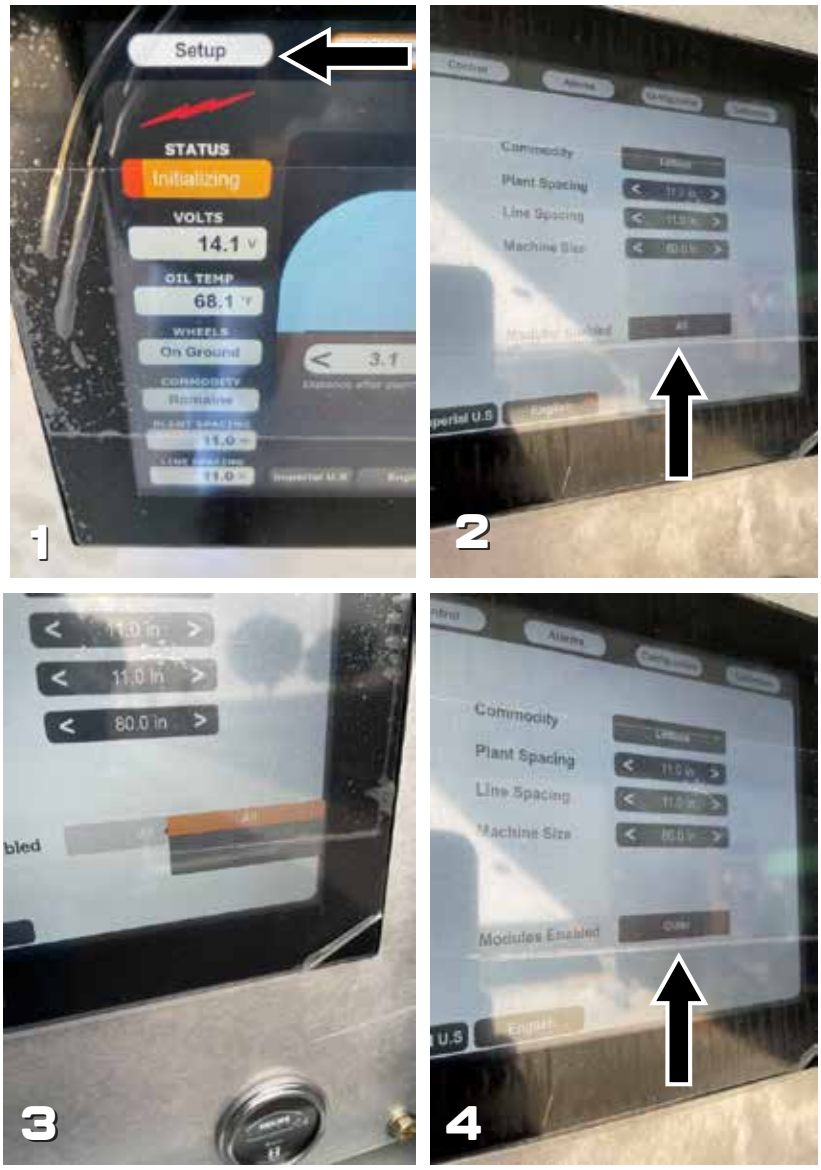
NOTES:

STEP 2: Select the Setup tab on the screen.

- Tap "All" on Modules Enabled
- Select "Outer"

Selecting "Outer" will disable the actuators on Backbone 2. This way you will not have the blades opening and closing while in the air.

Note: Selecting "All" will enable all actuators to open and close. Be sure to do so when going back to a 5 or 6 line set up.



if further bracket adjustment is needed, proceed to the following bracket adjustment steps. The following steps are similar to the 5-line configuration steps.

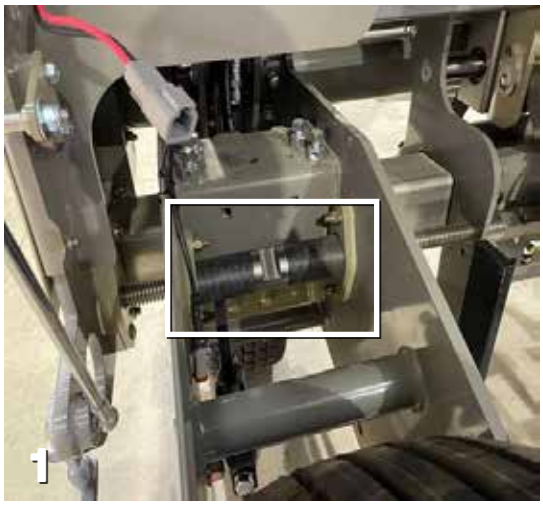
Before beginning the following steps, ensure that the Side Shift is positioned at 0.0 - 0.3. If it is not positioned at 0.0 - 0.3 and you begin the following steps, you will risk misaligning all the backbones and needing to start over.

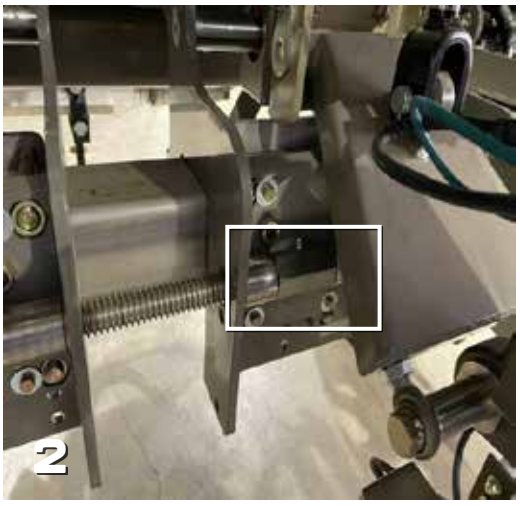
NOTES:

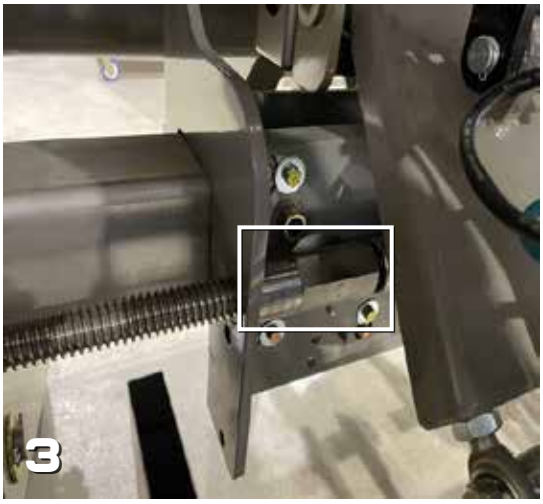
Should you need to shift the Backbones to accommodate the field measurements, follow these steps:

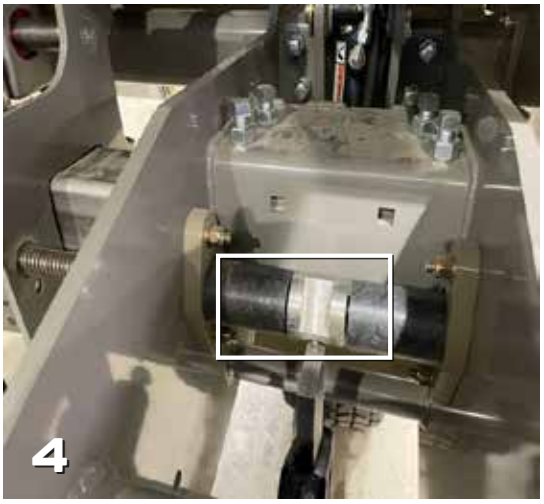
• Loosen lead screws located on the acme thread until they are freely rotating.

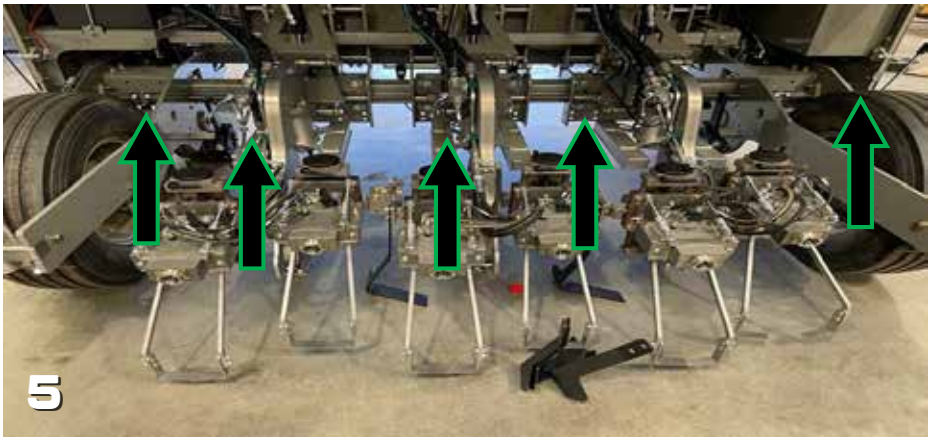
• There will be 5 of them - 2 located right where the big gauge wheels are and 1 under each Backbone. It is best to use an adjustable crescent wrench for this step.











STOUT

INDUSTRIAL TECHNOLOGY

GREASE FITTING LOCATIONS

USE SILVER GRADE ANTI-SEIZE FOR THE FOLLOWING MAINTENANCE STEPS

NOTES:

FOR THE FOLLOWING GREASE FITTINGS, USE NORMAL RED GREASE

GREASE FITTING LOCATED ON THE ADJUSTMENT LEAD SCREW. THERE ARE 3 OF THEM. TO BE GREASED EVERY MONTH.

2

GREASE FITTINGS ARE LOCATED IN BETWEEN THE LEAD SCREWS WHERE BOTH TIRES ARE. TO BE GREASED ON A MONTHLY BASIS.

3

4

GREASE FITTING LOCATED ON BOTH BIG TIRES. TO BE GREASED ON A MONTHLY BASIS.

5

GREASE FITTING LOCATED ON BOTH FRONT GAUGE WHEELS. TO BE GREASED ON A MONTHLY BASIS.

6

GREASE FITTING LOCATED ON THE SCREEN SIDE OF THE MACHINE, BEHIND THE BATTERY. TO BE GREASED EVERY 6 MONTHS.

7

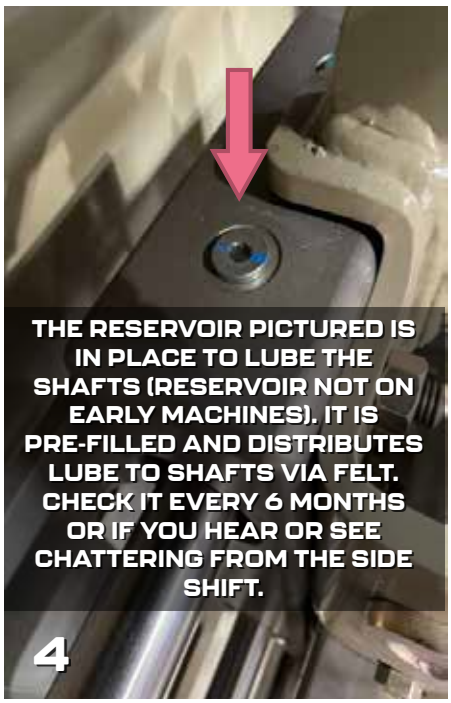
8

USING MULTI-PURPOSE 3-IN-ONE , LUBE THE AREA WHERE THE ACTUATOR ASSEMBLY SLIDES ON THE Z-TABLE. THIS WILL PREVENT IT FROM SEIZING.

2

THE SHAFTS ARE BEING LUBED BY THE OIL IN THE RESERVOIR. IF YOUR MACHINE DOES NOT HAVE A RESERVOIR, LUBE THE SHAFTS ONCE A MONTH TO PREVENT THEM FROM SEIZING.

3



THE RESERVOIR PICTURED IS IN PLACE TO LUBE THE SHAFTS (RESERVOIR NOT ON EARLY MACHINES). IT IS PRE-FILLED AND DISTRIBUTES LUBE TO SHAFTS VIA FELT. CHECK IT EVERY 6 MONTHS OR IF YOU HEAR OR SEE CHATTERING FROM THE SIDE SHIFT.

4

THE PIVOT PIN ON THE GROUND HEIGHT SENSOR WILL GET GUNKED UP OVER TIME. EVERY FEW MONTHS IT IS BEST TO PULL PIN OUT AND LUBE TO PREVENT IT FROM STICKING.

5

STOUT

INDUSTRIAL TECHNOLOGY

SMART CULTIVATOR:

PRESSURE SETTINGS

NOTE: Machine pressure settings are properly set before leaving Stout. If the pressures need to be checked and/or adjusted, follow these steps or call for assistance.

These instructions explain how to set the following hydraulic system settings:
- Alternator speed
- Side shift pressure
- Cultivator arm pressure
- Module lift system back pressure

IMPORTANT: When attaching or removing the test gauge, the PTO must be turned off. The PTO much be turned back ON while reading and adjusting pressure.

DANGER: Parts of the machine may move unexpectedly. Keep clear of all moving parts while turning the PTO on and off and adjusting pressures.

DANGER: The alternator belt and pullets may start spinning unexpectedly during these procedures. Keep clear of the belt and pulleys at all times.

Tools needed:
- 200 PSI pressure gauge with quick disconnect fitting
- 9/1 Open end wrench
- 5/32 Hex key / allen wrench
- 3/16 Hex key / allen wrench
- 1/4 Hex key / allen wrench

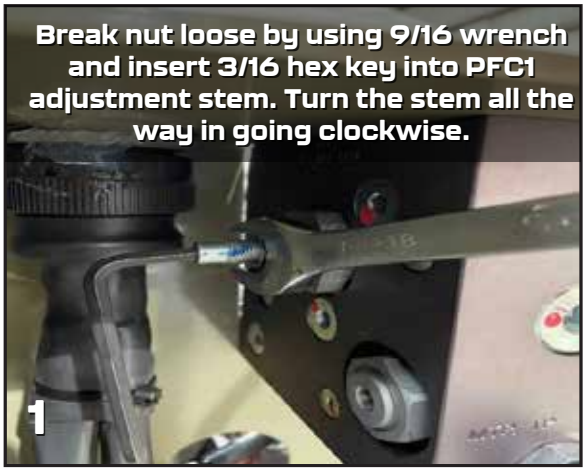
3/4 Open end wrench
- Contact tachometer such as Protmex PT6208A

The pressure manifold is located on the left front side of the machine (If you are looking at the machine from behind).

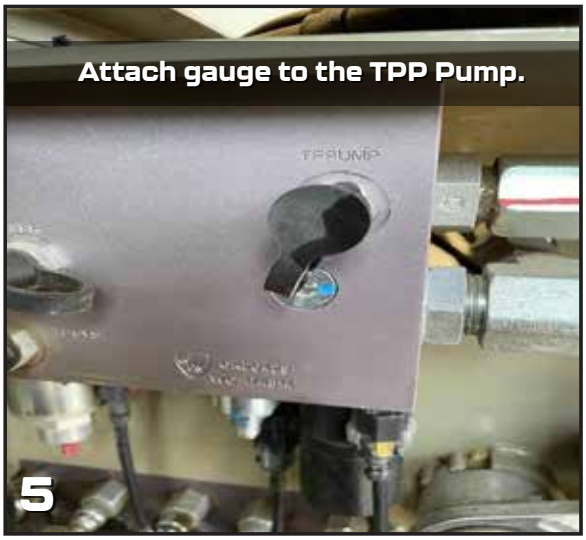
STEP 1: Remove pressure manifold cover panel (8 screws) using 5/32 hex key.
STEP 2: Start the machine. Turn on the main electrical switch to finish loading. Open the control page.

NOTES:

STEP 3: Set pump pressure (only necessary for a full system pressure reset).



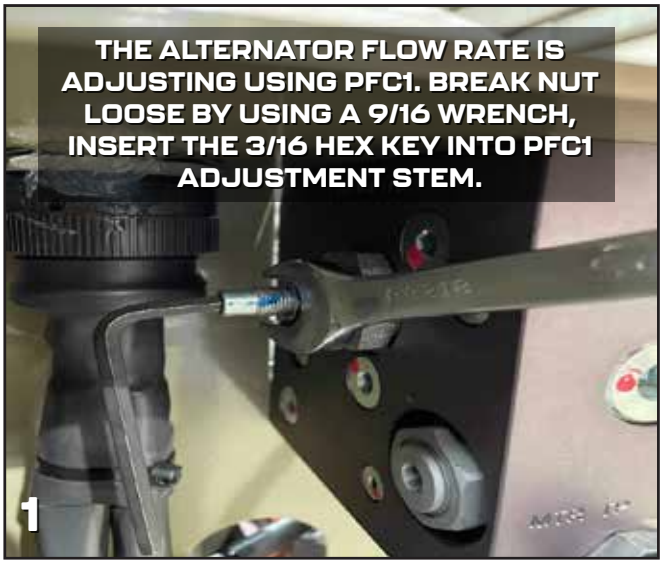
Break nut loose by using 9/16 wrench and insert 3/16 hex key on PR's 2-8 (Cultivator arm, back pressure, side shift) - turn stem counterclockwise all the way

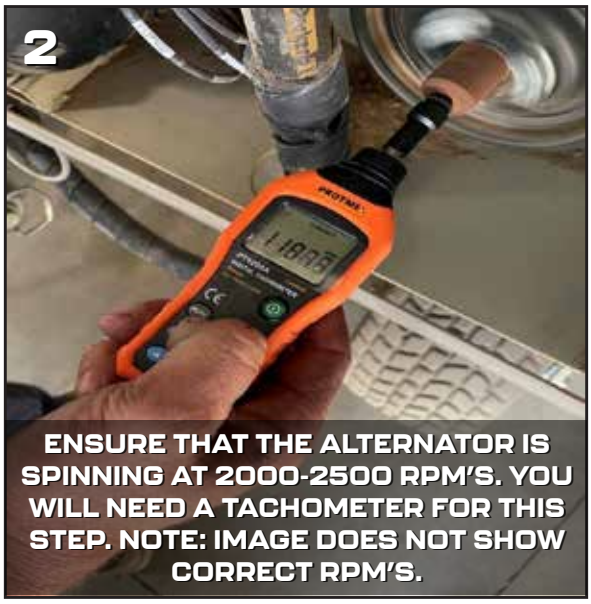


Break jam nut loose with a 3/4 wrench and insert a 1/4 hex key on the RV1 Pump Relief - Turn on PTO Pump. Now turn the hex key clockwise. At the same time, press and hold the minus symbol on the machine angle option until the gauge reads 2200-2250 PSI. Once your gauge reads the right PSI, turn off PTO Pump and lock the jam nut on RV1 Pump Relief. NOTE: Best to have two people for this step. This step is primarily done when completing the initial set up on the machine.

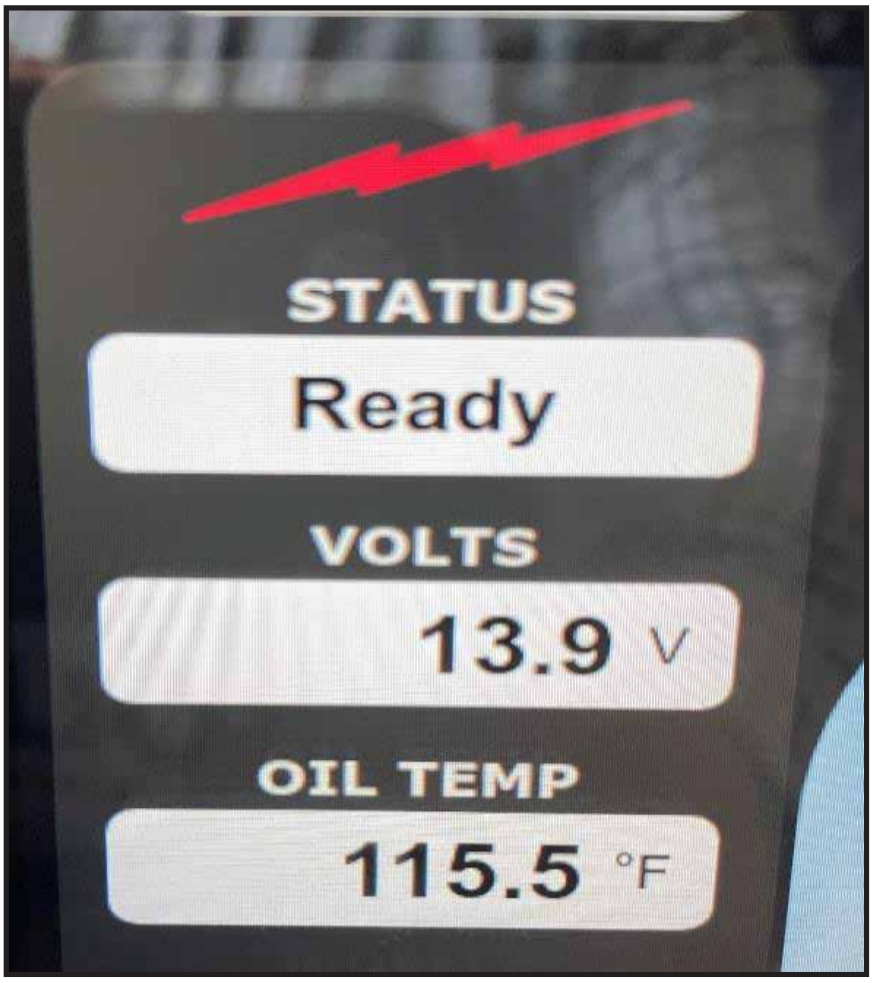
NOTES:

STEP 4: Set Alternator Flow Rate. Ensure that the oil temperature is at least 100°F before starting this step.





Once this is done, the "Volts" readout on the Control screen should read no less than 13.8v. If volts are less than 13.8v, the machine will not function properly.



NOTES:

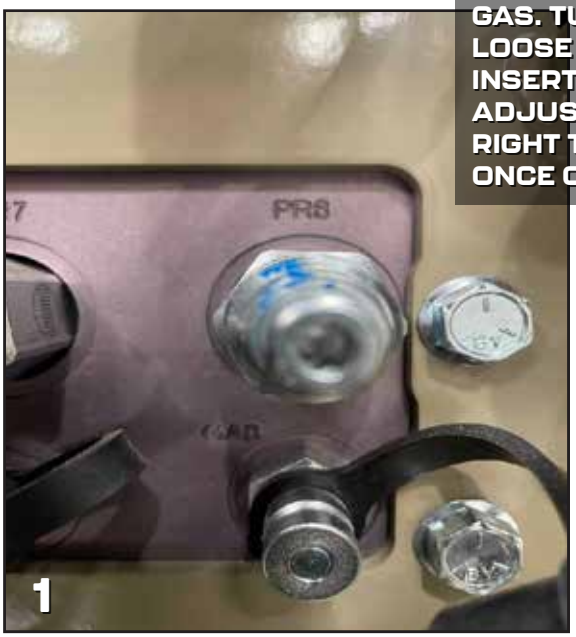
STEP 5: Cultivator Arm Pressure

ATTACH TEST GAUGE TO TPPR3

BREAK NUT ON PR3 LOOSE BY USING THE 9/16 WRENCH AND INSERT THE 5/32 HEX KEY INTO THE ADJUSTMENT STEM. TURN THE ALLEN KEY LEFT OR RIGHT TO SET 1000 PSI. TIGHTEN NUT ONCE COMPLETE.

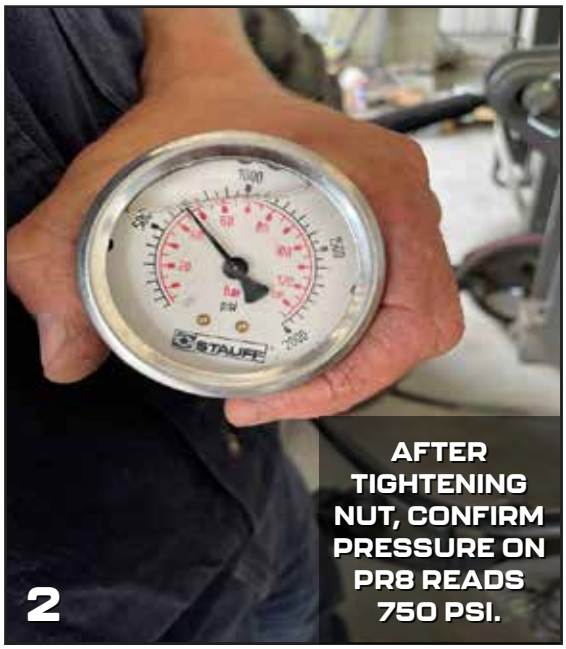
AFTER TIGHTENING NUT, CONFIRM PRESSURE ON PR3 READS 1000 PSI.

STEP 6: Side Shift



1

TURN OFF PTO. ATTACH TEST GAUGE TO GAS. TURN ON PTO. BREAK NUT ON PR8 LOOSE BY USING THE 9/16 WRENCH AND INSERT THE 5/32 HEX KEY INTO THE ADJUSTMENT STEM. TURN LEFT OR RIGHT TO SET 750 PSI. TIGHTEN NUT ONCE COMPLETE.



2

AFTER TIGHTENING NUT, CONFIRM PRESSURE ON PR8 READS 750 PSI.

NOTES:

STEP 7: Module Back Pressure

TURN OFF PTO. ATTACH TEST GAUGE TO GA4-GA7 (FOLLOWING THESE STEPS ONCE FOR EACH PORT). TURN ON PTO. BREAK NUT ON PR4-PR7 LOOSE BY USING THE 9/16 WRENCH AND INSERT THE 5/32 HEX KEY INTO THE ADJUSTMENT STEM. TURN LEFT OR RIGHT TO SET 150 PSI. TIGHTEN NUT ONCE COMPLETE.

AFTER TIGHTENING NUT, CONFIRM PRESSURE ON PR4-PR7 IS 150 PSI.

REPEAT THE PREVIOUS STEPS FOR GA5-GA7 AND PR5-PR7.

STEP 8: Replace pressure manifold cover panel and screws.

NOTES:

PRE-DEMO CHECKLIST

TRACTOR

- ☐ Fill diesel and def tanks to full
- ☐ Tractor cab is clean and ensure it is presentable
- ☐ Wash tractor and remove all dirt from tires
- ☐ Clean and wipe down tractor windows and mirrors
- ☐ Rinse off any hydraulic residue from PTO pump/shaft area
- ☐ Verify arms on 3-point are measured out equally and correctly

SMART CULTIVATOR: BACKBONE MODULE ASSEMBLY

- ☐ Backbone spacing is correct based on grower's bed dimensions
- ☐ After spacing has been set; verify all bracketry nuts and bolts are present and tight
- ☐ A-Arm pins are present and not worn down
- ☐ A-Arm cylinder is in good condition and not leaking hydraulic oil
- ☐ All hydraulic connections are tight and not leaking hydraulic oil
- ☐ Lockout Valve is not leaking hydraulic oil and can be locked and unlocked easily

SIDESHIFT ASSEMBLY

- ☐ Sideshift bracket is in good shape and not showing signs of cracks
- ☐ All sideshift bracket bolts are present and tight
- ☐ Sideshift hydraulic cylinder is not leaking hydraulic oil

VISION MODULE INTERFACE, CAMERA & LIGHT ASSEMBLY

- ☐ All 6 cables plugged into the Vision Module Interface board are secure and tight
- ☐ Silicone on front 4 connections is intact
- ☐ Follow cable lines up to bulkhead and check for wear and tear or pinch points
- ☐ Follow cable lines up to bulkhead and verify they are securely zip tied and spiral wrapped
- ☐ Camera housing is secure and tight
- ☐ Camera lens is wiped off and clean
- ☐ Light housing is secure and not tight
- ☐ Lights are wiped off and clean

GROUND HEIGHT WHEEL

- ☐ Wheel freely rotates
- ☐ Wheel assembly pivots freely and easily

ACTUATORS

- ☐ Hydraulic hoses plugged into actuator are secure and not leaking
- ☐ Hydraulic hoses connected at the tee are secure and not leaking
- ☐ Spacing is accurate based on seed line dimensions
- ☐ Actuators are secure and tight on toolbar
- ☐ Gas shocks have pressure on them
- ☐ Z-Table freely moves up and down
- ☐ Arms are not bent
- ☐ Knives are in workable condition
- ☐ Actuator jam nut is present and tight

CULTIVATION TOOLS

- ☐ Sweeps are in good condition and not in need of replacing
- ☐ Shovels are in good condition and not in need of replacing
- ☐ Side knives are in good condition and not in need of replacing
- ☐ Chisels are in good condition and not in need of replacing
- ☐ Front cultivation bar installed and all tools in good shape (if necessary)

GREASE LOCATIONS

REFER TO USER GUIDE FOR GREASE LOCATIONS - PG. 35

- ☐ Grease all locations specified in the User Guide (Do so every 6 months)

RUN SMART CULTIVATOR AND SET PRESSURES FOR FINAL CHECKS

REFER TO USER GUIDE FOR INSTRUCTIONS OR ASK FOR HELP

- ☐ Run through Startup checklist to start machine (Page 4)
- ☐ Once Smart Cultivator is on, follow the steps on page 39 of the User Guide and begin setting hydraulic
- ☐ pressures (read instructions carefully, do not proceed if you are unclear about the process)
- ☐ Run the actuators by enabling actuator test on Service screen
- ☐ Manually sideshift backbones by pressing the left and right arrows on the Configuration screen
- ☐ Raise and lower the backbones by pressing the Lift & Lower on the Control screen

SOFTWARE UPDATE

- ☐ Verify software is current and up to date

RINSE MACHINE

- ☐ Rinse off Smart Cultivator and remove all dirt and debris
- ☐ Wipe down and shine

IN-FIELD DEMO CHECKLIST

Grower: Commodity & Bed Spacing:	Smart Cultivator Hours // Start:	Smart Cultivator Hours // Finish:
Date:	Smart Cultivator Number:	Stout Trainer(s):

TRACTOR OPERATOR

Give general overview to customer's operator on proper tractor functions in order to run the Smart Cultivator. Go over:

- ☐ Correct tractor PTO RPM
- ☐ Correct tractor gear and speed
- ☐ Lifting and lowering implement

GENERAL WALK AROUND OF STATIC SMART CULTIVATOR

Go Over:

- ☐ PTO attachment
- ☐ 3-point attachment
- ☐ Safety Legs location and their purpose
- ☐ Backbone Lockout Valves
- ☐ Camera & Light location and the importance of keeping both clean
- ☐ Ground height wheel location and its purpose
- ☐ Ultra-sonic sensor location and the importance of keeping clean
- ☐ Actuator functionality and the different opening widths
- ☐ General explanation as to how Stout True Vision works

TURN TRACTOR AND SMART CULTIVATOR ON AND OFF

- ☐ Run through Startup checklist to start machine (Page 4 in User Guide)
- ☐ Explain Setup Screen, Control Screen, Alarm Screen, Configuration Screen and Service Screen
- ☐ Run through Shutdown checklist to turn off machine (Page 4 in User Guide)

RUN SMART CULTIVATOR IN THE FIELD

- ☐ Run through Startup checklist to start machine (Page 4 in User Guide)
- ☐ With Stout operator in control, walk behind Smart Cultivator with customer to allow for any questions
- ☐ Make adjustments on Control screen to show the effects on performance
- ☐ Have customer operator sit in tractor cab with Stout operator to observe tractor functions
- ☐ Give customer operator tractor controls, with Stout operator still in the cab, and allow them to operate

CONCLUSION NOTES

Was the customer satisfied with the demo?

Did the customer operator find it easy to run Smart Cultivator?

What were field conditions like?

Did this demo lead to a second demo, or generate quote?

NOTES:


STOUT


STOUT