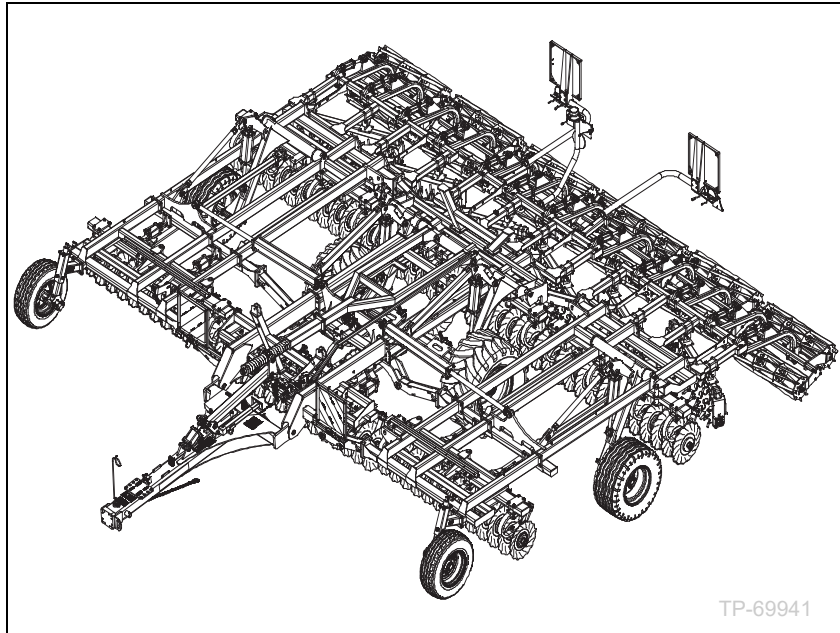


Operator Manual

VT1110-6.0M & VT1110-7.5M
Turbo Max



Read the operator's manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!



Illustrations may show optional equipment not supplied with standard unit.

ORIGINAL INSTRUCTIONS



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Printed 2026-07-09

588-689M

Machine Identification

Record your machine details in the log below. If you replace this manual, be sure to transfer this information to the new manual.

If you, or the dealer, have added Options not originally ordered with the machine, or removed Options that were originally ordered, the weights and measurements are no longer accurate for your machine. Update the record by adding the machine weight and measurements.

Model Number	
Serial Number	
Machine Height	
Machine Length	
Machine Width	
Machine Weight	
Year of Construction	
Delivery Date	
First Operation	
Accessories	

Dealer Contact Information

Name: _____

Street: _____

City/State: _____

Telephone: _____

Email: _____

Dealer's Customer No.: _____

CALIFORNIA PROPOSITION 65 WARNING

WARNING: This machine contains components and/or fluids known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires this warning to be given to customers in the State of California.)

For more information: oehha.ca.gov/proposition-65



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Printed in the United States of America



Introduction

Great Plains' Turbo Max is a pull-type unit designed for tilling and working soil. Every Turbo Max we build is designed and built with care using only quality materials. For the best user experience, read this manual and follow all instructions carefully. These pages will guide you through the operation and contain tips for easier adjustment and maintenance.

All information in this manual is current as of publication. Information contained within is subject to change to ensure top performance.

Models Covered

VT1110-6.0M 6m (19cm) spacing

VT1110-7.5M 7.5m (19cm) spacing

Document Family

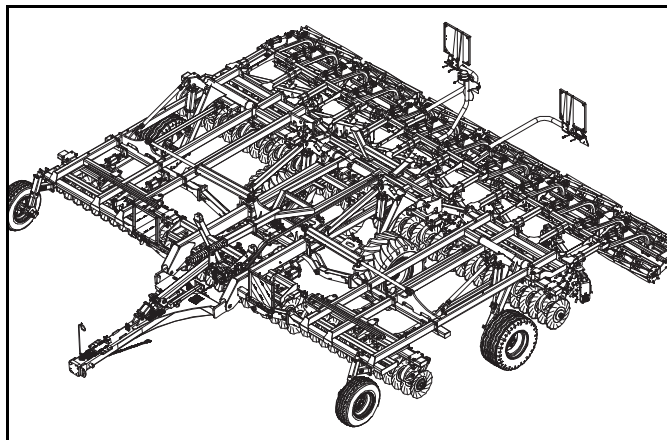
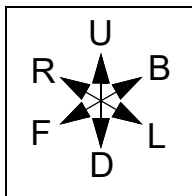
588-689M	Operator Manual (this document)
588-689Q-ENG-	Pre-Delivery Manual
588-689P	Parts Manual

Using this Manual

This manual familiarizes you with safety, operation, adjustments, troubleshooting, and maintenance. Read this manual and follow that recommendations to help ensure safe and efficient operation.

The information in this manual is current at printing. Some parts may change to assure top performance.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Downs, Front, Right.



See "Turbo Max Turbo Max Specifications and Capacities" on page 37 for precise swath information.



Parts Manual QRC

The QR Code to the left will take you to this machine's parts manual. Use your smart phone or tablet to scan and start viewing.



Product Manuals QRC

The QR Code to the left will take you to Great Plains' catalog of product manuals. Use your smart phone or tablet to scan and start viewing.

Owner Assistance

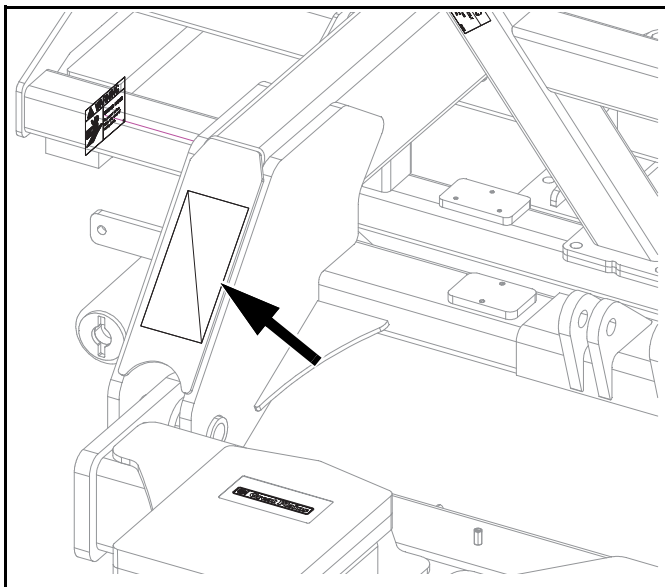
If you need customer service or repair parts, contact a Great Plains dealer. They have trained personnel, repair parts and equipment specially designed for Great Plains products.

Your machine's parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer.

Record your machine's model and serial number on the inside cover of this manual for quick reference.

CE Identification

The CE identification is located on the right hand side of the Center brace bar above where the hitch is connected.



Further Assistance

Great Plains Manufacturing, Inc. and your Great Plains dealer want you to be satisfied with your new Turbo Max. If for any reason you do not understand any part of this manual or are otherwise dissatisfied, please take the following actions first:

1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.
2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

If your dealer is unable to resolve the problem or the issue is parts related, please contact:

Great Plains Service Department
1525 E. North St.
P.O. Box 5060
Salina, KS 67402-5060

Or go to www.greatplainsag.com and follow the contact information at the bottom of your screen for our service department.



Safety Information

Look for Informational Symbols



The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.



NOTE indicates useful, but not crucial, information for machine operation, assembly, or adjustment. It may also direct you towards additional information.

Be Aware of Signal Words

Signal words designate a degree or level of hazard seriousness. The signal words are:



DANGER indicates an imminent hazard which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.



WARNING indicates a potential hazard which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION indicates a potential hazard which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



NOTICE indicates a potential hazard which, if not avoided, may result in moderate to severe damage to your machine, machine parts, or nearby property.

Be Familiar with Safety Decals



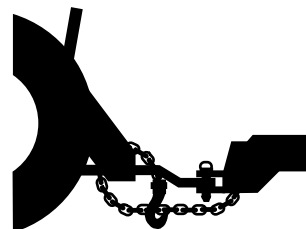
1. Thoroughly read and understand “**Safety Decals**” on page 7.
2. Read all instructions noted on the decals.
3. Keep decals clean. Replace damaged, faded and illegible decals.

Wear Protective Equipment



1. Wear protective clothing and equipment appropriate for the job, such as safety glasses, hard hat, and ear plugs.
2. Clothing must fit snug without fringes and pull strings to avoid entanglement with moving parts.
3. Avoid using distracting multimedia devices, such as audio that requires headphones, tablet, or smart phone, while operating machinery.

■ Use A Safety Chain



1. A safety chain will help control drawn machinery if the machinery separates from tractor drawbar.
2. Use a chain with a strength rating equal to or greater than the gross weight of towed machinery.
3. Attach chain to tractor drawbar support or other specified anchor location. Allow only enough slack in chain to permit turning.
4. Replace chain if any links or end fittings are broken, stretched or damaged.
5. Do not use safety chain for towing.

Avoid High Pressure Fluids



WARNING: Escaping Fluid Hazard

Escaping fluid under pressure can penetrate the skin, causing serious injury.

1. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
2. Avoid the hazard by relieving pressure before disconnecting hydraulic lines or performing any work on the system.
3. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
4. Escaping fluid under pressure can penetrate the skin causing serious injury.
5. Use a piece of paper or cardboard, **NOT BODY PARTS**, to check for suspected leaks.
6. **DO NOT DELAY.** If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury. Any fluid injected into the skin or eyes must be treated within a few hours or gangrene can result.

Tire Safety



 **NOTE: Use Correct Tire Changing Tools**
Tire changing can be dangerous and must be performed by trained personnel using correct tools and equipment.

1. When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.
2. When removing and installing wheels, use wheel-handling equipment adequate for weight involved.

Use Safety Lights and Devices



 **NOTE: Always Use Safety Lighting**
Slow-moving tractors and towed machinery can create a hazard when driven on public roads. They are difficult to see, especially at night.

1. If equipped, use flashing warning lights and turn signals whenever driving on public roads.
2. Use safety devices provided with implement.
3. Keep safety lights and signs clean and visible from rear of the machine.

Keep Riders Off Machinery



WARNING: Do Not Ride Machinery

Riders obstruct the operator's view. Riders could be struck by foreign objects or thrown from the machine.

1. Never carry riders or use machinery as a personal lift.
2. Riders obstruct the operators view.
3. Riders can be struck by foreign objects or thrown from the machine.
4. Never allow children to operate equipment.
5. Keep all bystanders away from machine during operation.

Transport Machinery Safely



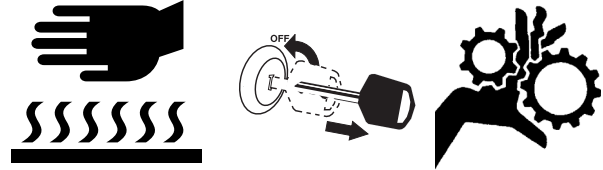
NOTE: **Maximum Transport Speed**
 Maximum Transport speed for implement is 30 kph (20 mph). Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

1. Comply with state and local laws.
2. Carry reflectors or flags to mark machinery in case of breakdown on the road.
3. Keep clear of overhead power lines and other obstructions when transporting.
4. Do not fold or unfold the implement while the tractor is moving.
5. Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.
6. Turning tractor too tight can cause implement to tip over.
7. When towing on a trailer, secure implement with tie downs and chains.
8. When towing on a trailer, sudden braking can cause a trailer to swerve and upset. Reduce speed if trailer is not equipped with brakes.

Shutdown and Storage

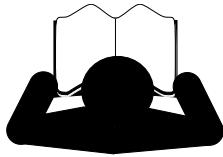
1. Park the tractor and implement on a solid, level surface where children normally do not play.
2. Raise the wings, put tractor in park or set park brake. Turn off engine and remove switch key to prevent unauthorized starting.
3. Wait for all components to come to a complete stop before leaving the operator's seat.
4. Turn lockout valve and wing lock levers to locked position to prevent the wings from lowering.
5. Install transport lock onto lift cylinders then lower implement on locks to relieve pressure on hydraulic hoses.
6. Detach the tractor. Secure the implement using blocks.

Practice Safe Maintenance



1. Understand procedure before doing work. Use proper tools and equipment. Refer to this manual.
2. Work in a clean, dry area.
3. Lower the implement. Put tractor in Park, turn off engine. To prevent unauthorized starting, remove key before performing maintenance or service work.
4. If work must be performed with wings raised, turn lockout valve and wing lock levers to locked position.
5. Make sure all moving parts have stopped and all system pressure is relieved.
6. Disconnect lighting harness from the tractor before servicing or adjusting electrical systems.
7. Welding: Disconnect lighting harness from the tractor. Protect hydraulic lines. Avoid fumes from heated paint.
8. Inspect all parts. Make sure parts are in good condition and installed properly.
9. Do not alter this machine in a way which will adversely affect its performance.
10. Remove buildup of grease, oil or debris.
11. Remove all tools and unused parts from implement before operation.

Safety At All Times



 **NOTE: Read Operator Manual**
Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.

 **NOTE: Do Not Use Untrained Operators**
Do not allow anyone to operate this equipment who has not fully read and comprehended this manual and who has not been properly trained in the safe operation of the equipment.

1. The operator must not use drugs or alcohol as they can change the alertness or coordination of that person while operating equipment. If over-the-counter drugs are used, seek medical advice on whether you can safely operate equipment.
2. Operator must be familiar with all functions of the tractor and attachments, and be able to handle emergencies quickly.
3. Make sure all guards and shields in place and secured before operating the implement.
4. Keep all bystanders away from equipment and work area.
5. Operator must start tractor and operate controls from the driver's seat only, never from the ground.
6. Dismounting from a moving tractor can cause serious injury or death.
7. Be familiar with all functions of the implement.
8. Do not leave implement unattended with tractor engine running.
9. Do not stand between the tractor and the implement during hitching.
10. Watch out for wires, trees, etc., when folding and raising the implement.
11. Turning tractor too tight can cause hitched implement to ride up on wheels. This can result in injury or equipment damage.

Safety Decals

Safety Reflectors and Decals

Your implement comes equipped with all lights, safety reflectors and decals in place. They were designed to help you safely operate your implement.

- ▲ *Read and follow decal directions.*
- ▲ *Keep lights in operating condition.*
- ▲ *Keep all safety decals clean and legible.*
- ▲ *Replace all damaged or missing decals. Order new decals from your Great Plains dealer. Refer to this section for proper decal placement.*

- ▲ *When ordering new parts or components, also request corresponding safety decals.*

To install new decals:

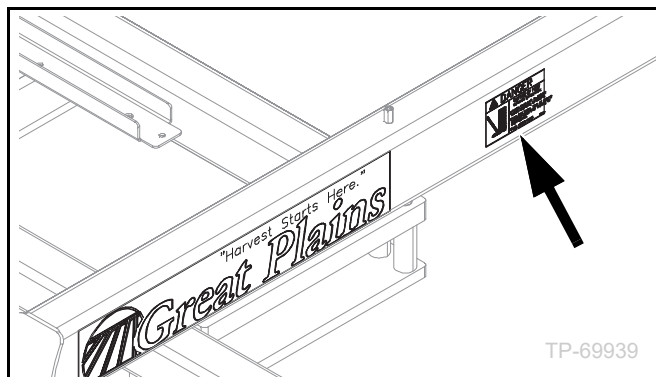
1. Clean the area on which the decal is to be placed.
2. Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

848-271C



Cutting of Foot

One on each side of the center frame;
2 total



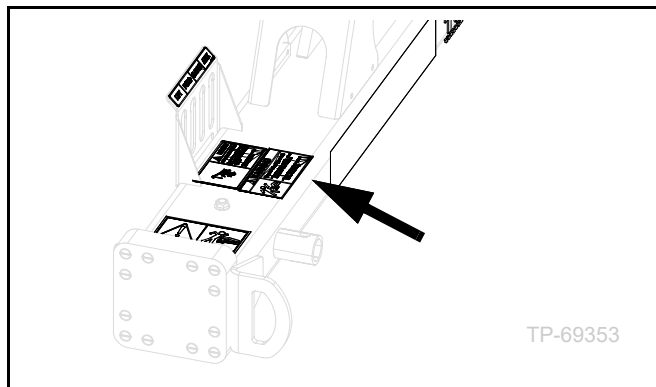
TP-69939

838-606C



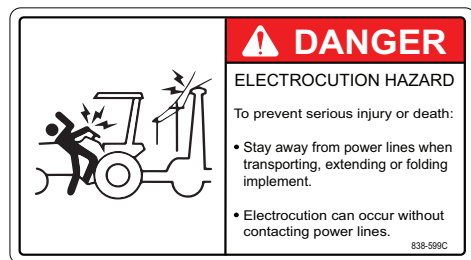
Tongue Rising

On front of hitch;
1 total



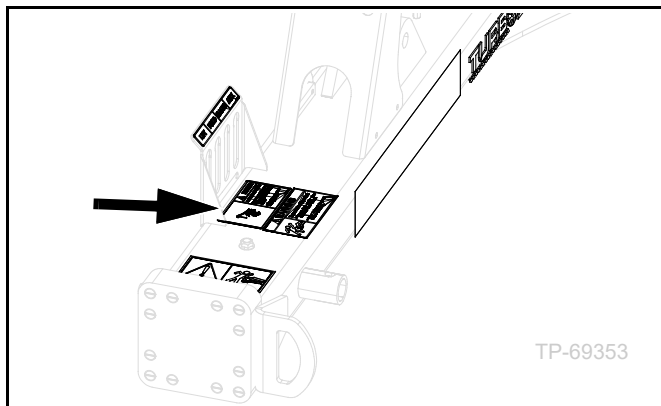
TP-69353

838-599C

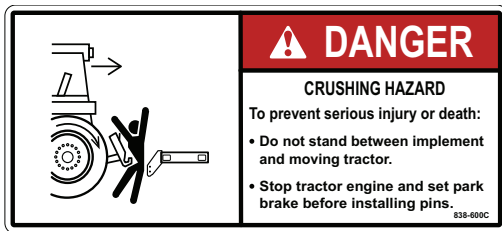


Danger: Electrocution Hazard

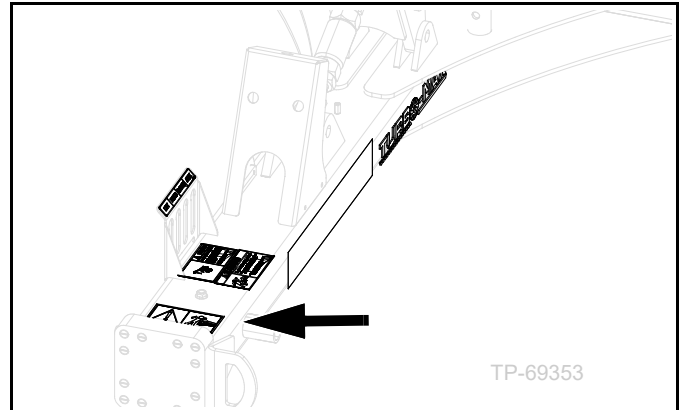
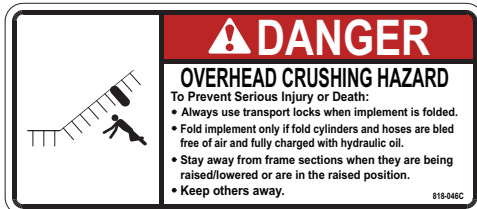
On middle of hitch;
1 total



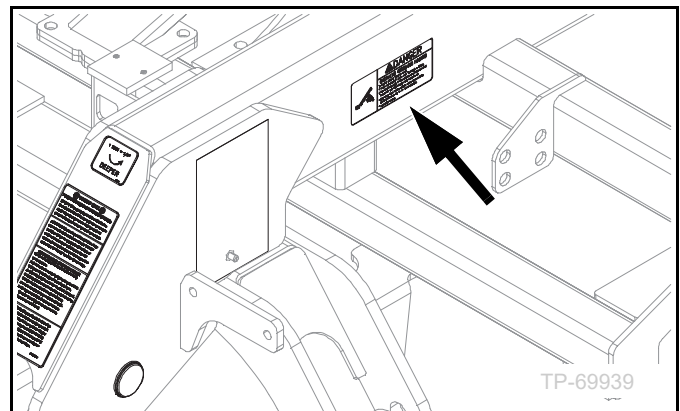
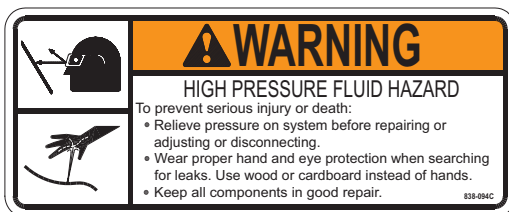
TP-69353

838-600C**Danger: Crushing Hazard**

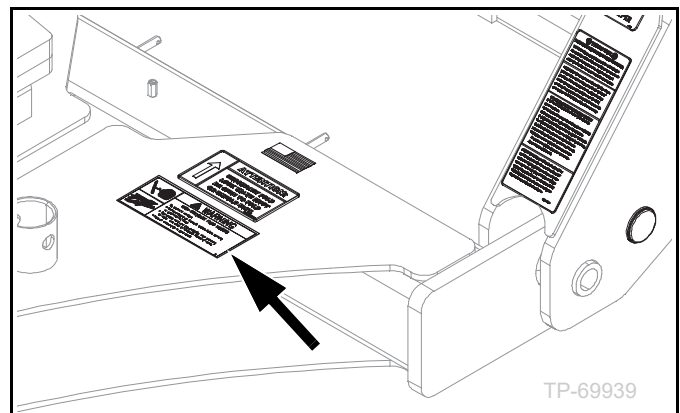
On middle of hitch;
1 total

**818-046C****Danger: Crushing Hazard**

On outside tube of center brace bar;
2 total

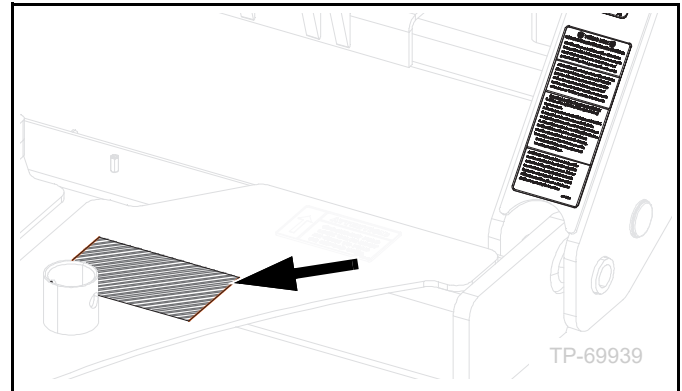
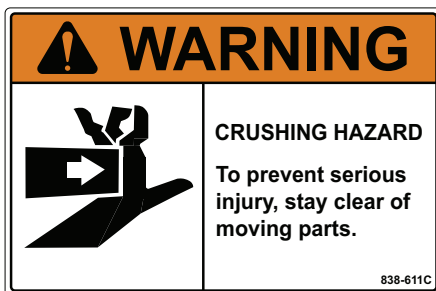
**838-094C****Warning: High Pressure Fluid**

On rear of hitch;
1 total

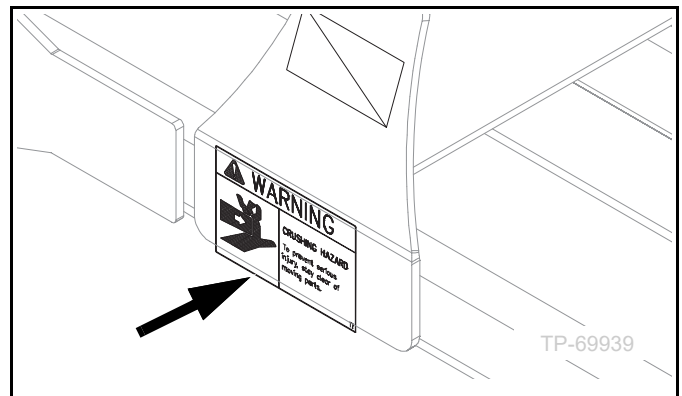


858-636C**Hazard Group**

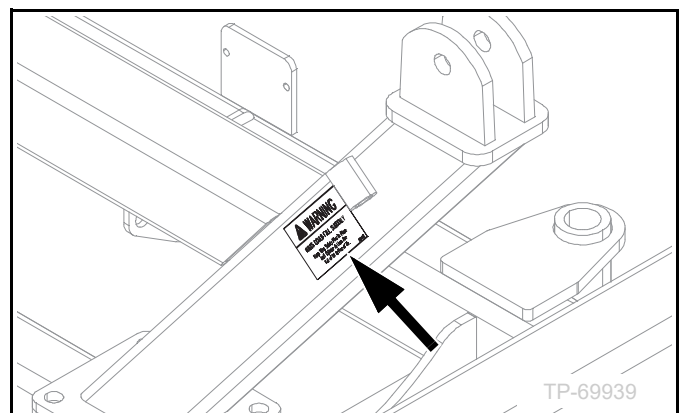
On rear of hitch;
1 total

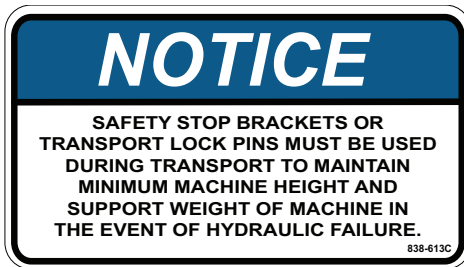
**838-611C****Danger: Crushing Hazard**

On front tube of each wing;
2 total

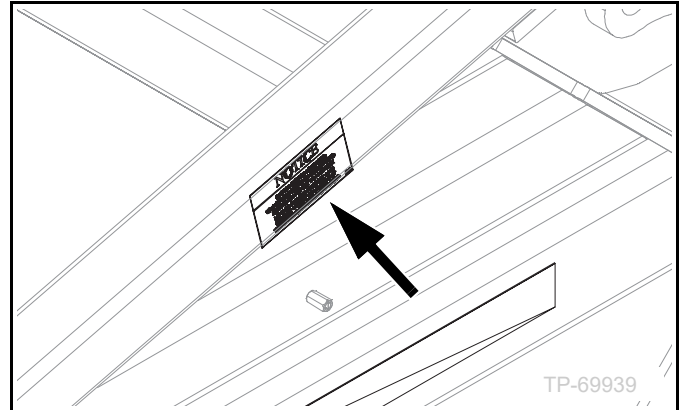
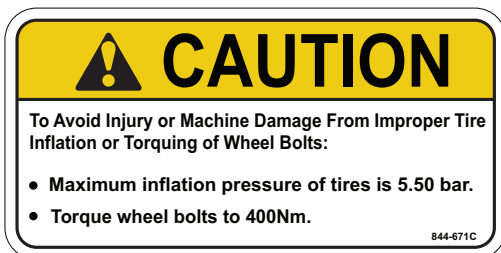
**838-612C****Warning: Wings Could Fall**

On front of wing rest;
2 total

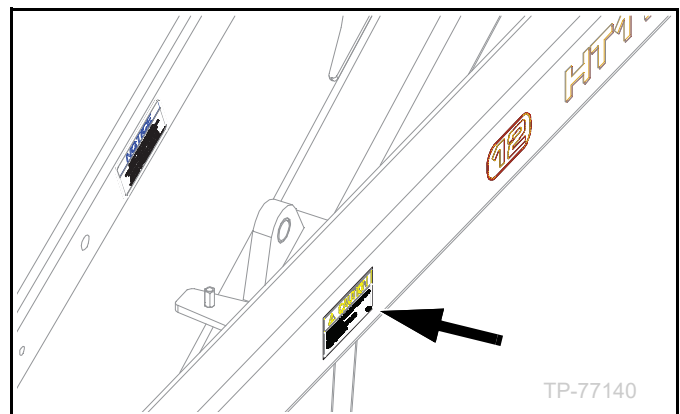
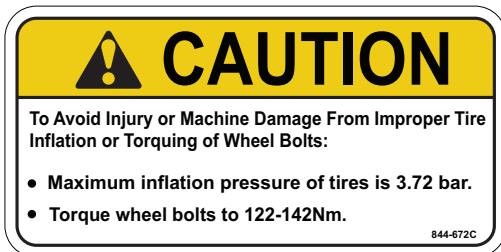


838-613C**Warning: Wings Could Fall**

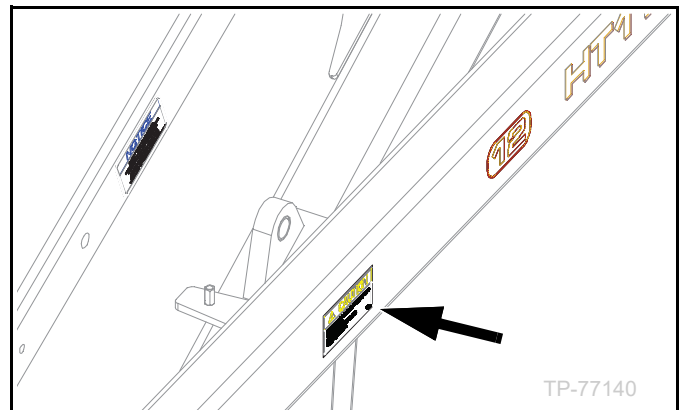
On sides of lift links;
2 total

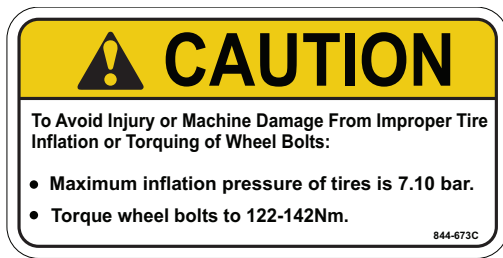
**844-671C****Warning: Tire Pressure/Torque**

On center frame near tires;
2 total

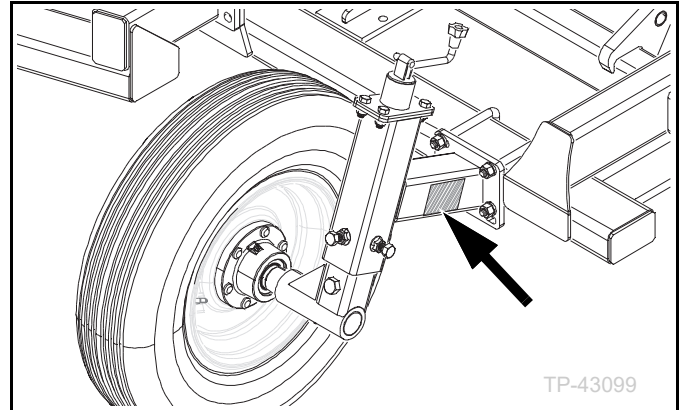
**844-672C****Warning: Tire Pressure/Torque**

On wing frame near tires;
2 total



844-673C**Warning: Tire Pressure/Torque**

On frame gauge wheel tires;
2 total





Adjustments and Installation

This section helps you prepare your tractor and Turbo Max for use, and covers tasks that need to be done for new machines, seasonally, or when the tractor/Turbo Max configuration changes.

Before using the VT1110 Turbo Max® in the field, you must hitch it to a suitable tractor, inspect systems and level the Turbo Max. Before using the Turbo Max for the first time, and periodically thereafter, certain adjustments and calibrations are required.

Pre-Operation Checklist

Complete this checklist before routine setup:

- ☐ Read and understand “**Safety Information**” on page 3.
- ☐ Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
- ☐ Make sure your tractor horsepower matches the implement you are pulling. This is important so the implement can do the best possible job.
- ☐ Maximum hydraulic working pressure is 3000psi.
- ☐ Clean all hydraulic couplings and connect to tractor, see “**Hydraulic Hose Hookup**” on page 15.
- ☐ If machine is folded, unlock wings and open wing lock valve then slowly unfold the unit. Make sure no one is under the wings during the unfolding process.
- ☐ Check again for hydraulic leaks and watch that hoses do not get pinched in hinges, wing stops, etc.
- ☐ After the machine is completely unfolded, raise and lower the Turbo Max several times to purge air from the hydraulic system. Again check for hydraulic leaks and tighten or replace if necessary.
- ☐ Check safety chain hookup. Make sure all warning lights are hooked up and functioning correctly.
- ☐ Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “**Safety Decals**” on page 7.
- ☐ Inflate tires to pressure recommended and tighten wheel bolts as specified. See “**Tire Inflation Chart**” on page 33.
- ☐ Check field for hazards prior to starting field work.
- ☐ Check field for underground services with local utilities authorities prior to conducting any field work.
- ☐ Refold the machine slowly, then lock wings and close wing lock valve. Always place wing locks in locked position when moving from field to field. Put transport locks into place. You are now ready to go to the field.

Hitching Turbo Max to Tractor

Hitch to a tractor for highway transport and field operations. Before hitching, check the compatibility and capability of the towing tractor:

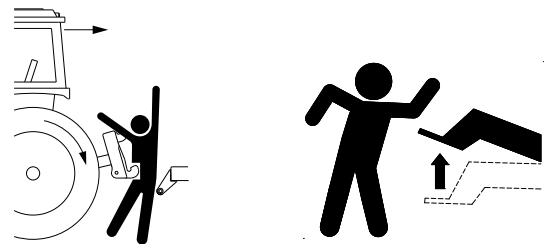
For hillsides and steep slopes, set tractor wheels as wide as possible for maximum stability.

1. Raise tractor three-point arms (if equipped) all the way up to clear Turbo Max.
2. For TWO-WHEEL DRIVE and MFWD tractors, pin drawbar in fixed center position for field and transport. For FOUR-WHEEL DRIVE and TRAC-DRIVE tractors, leave one hole clearance on each side of drawbar for field position, hitch damage may occur if pinned solid. Pin in center position for transport to maintain maximum steering control.
3. Use jack (1) to raise and lower Turbo Max tongue.
4. Back tractor draw bar into alignment with hitch (2).
5. Secure with a locking hitch pin.
6. Secure safety chain to an anchor on the tractor.

⚠ WARNING

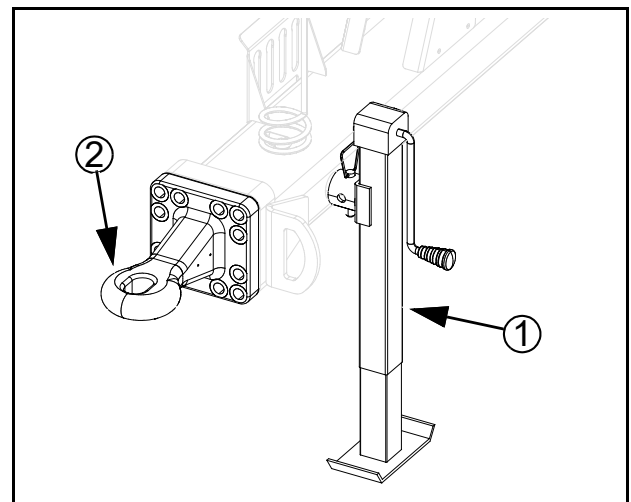
Negative Tongue Weight Hazard:

Make certain that VT1110 Turbo Max® is securely hitched to the tractor or leading implement before unfolding. An unhitched Turbo Max can tip over backwards during hitching if the tongue is not secured.



Crushing Hazard:

Do not stand or place any body part between Turbo Max and moving tractor. You may be severely injured or killed by being crushed between the tractor and Turbo Max. Stop tractor engine and set parking brake before attaching cables and hoses.

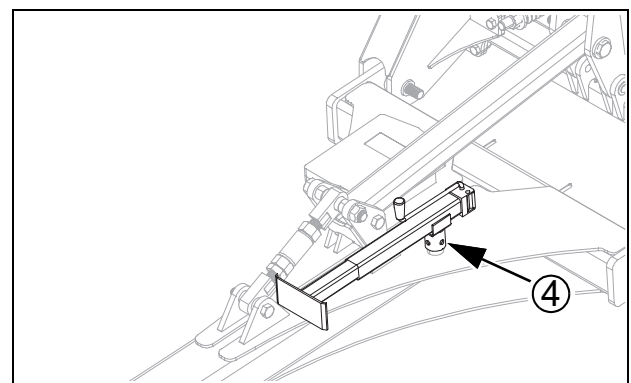


Jack Storage

7. Retract jack foot. Re-orient jack to storage position.
8. After hitching tractor to Turbo Max, store jack on storage stub (4) on the tongue.

Load Sway Hazard:

 Lock drawbar swing to center position to minimize any side-to-side sway to assure proper tracking in the field, and safe road travel. See **“Transport”** on page 27, for safe transporting.

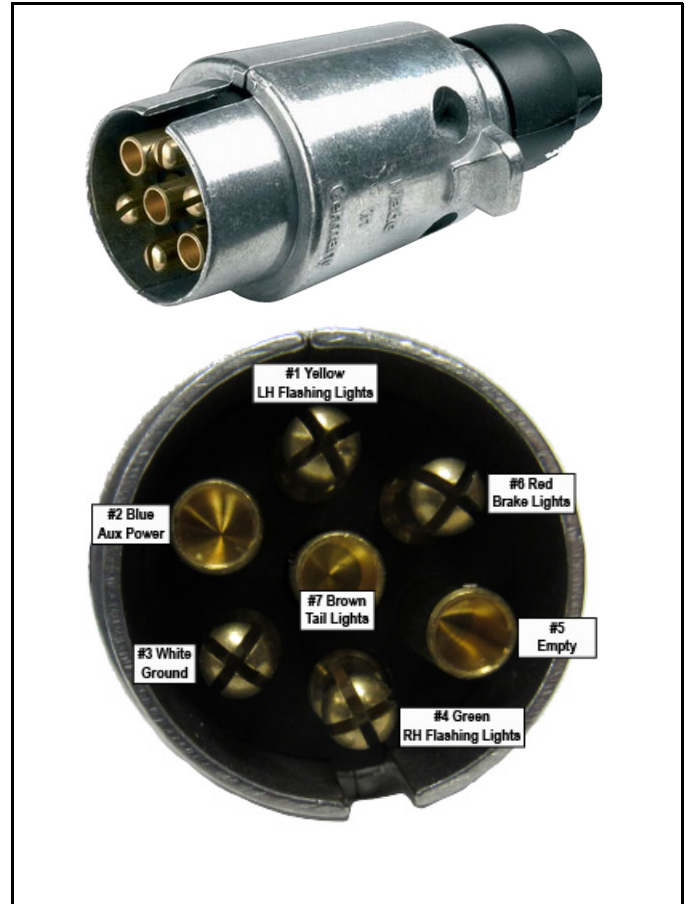


Electrical Hookup

Make sure tractor is shut down with accessory power off before making connections.

Connect lighting connector and any options or after-market electronics to tractor outlets.

 **NOTE: Make Electrical Connections**
Make connections prior to machine movement.



Hydraulic Hose Hookup

Great Plains hydraulic hoses are color coded to help you hookup hoses to your tractor outlets. Hoses that go to the same remote valve are marked with the same color.

⚠ WARNING

WARNING: High Pressure Fluid Hazard

Shut down tractor before making hydraulic connections. Only trained personnel should work with system hydraulics.

Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

Use paper or cardboard, NOT BODY PARTS, to check for leaks.

Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

To distinguish hoses on the same hydraulic circuit, refer to hose label.

- The hose with an extended-cylinder symbol feeds a cylinder base end.
- The hose with a retracted-cylinder symbol feeds a cylinder rod end.

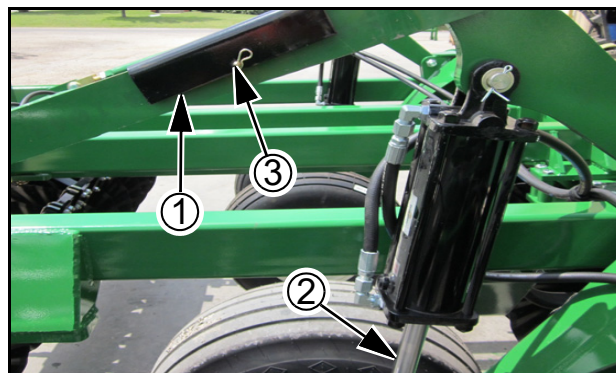
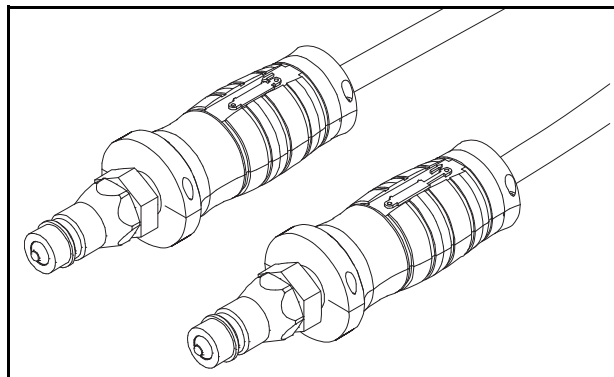
Secure hoses and cables so that they have sufficient slack for hitch movements, but cannot get caught between moving parts of tractor, turbo max or hitch. Failure to safely route and secure hoses and cables could result in damage requiring component repair/replacement, and lost field time.

Clean all hydraulic couplings and hook hoses to tractor.

Transport Locks

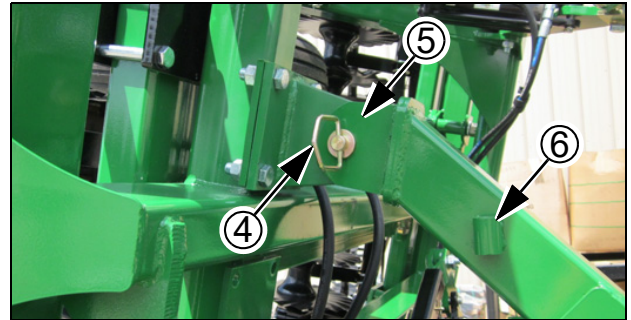
9. Once the cylinders are connected, raise the unit completely. If the transport locks (1) are in place on cylinders (2), remove them at this time.
10. Store the transport locks (1) in hole of the lift mechanism link (3).
11. Always use transport locks and wing fold pins when transporting.

Color	Hydraulic Function
Black	Lift (2 hoses)
Green	Fold (2 hoses)
Red	Gang Adjustment (2 hoses)
Yellow	Attachment (2 hoses)



Wing Folding/Unfolding

12. If wing stop pins (4) are installed, remove pins from wing stop clevis (5).
13. Install pin in storage tube (6) on wing stop.



NOTE: Operating Wing Lock Valve

The wing locking valve (7) is located on the center brace bar close to the by pass valve to prevent wing movement during transport and maintenance. The valve is shown with the handle (8) in the open position. To close the locking valve (7), turn handle (8) 90 degrees, to keep wings from un-folding.

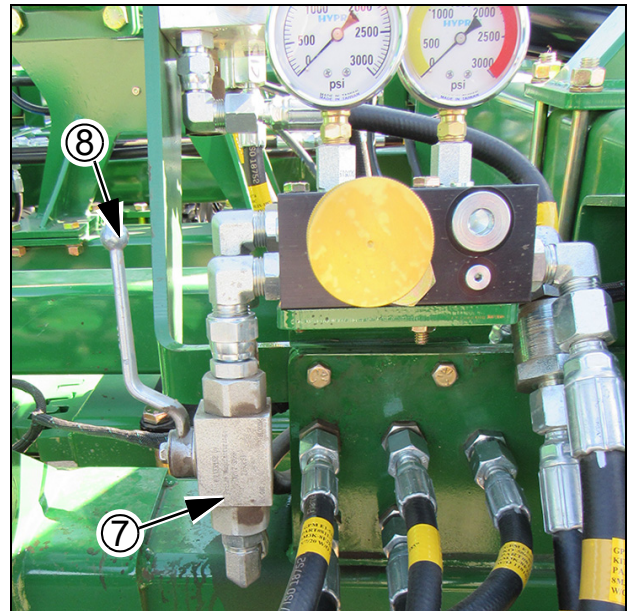
14. Once the machine is unfolded, raise and lower the machine several times to purge air from the lift system. Again, watch for any leaks and tighten if necessary.

 Lock valve may be used for transport and temporary storage.

15. Once the transport locks, wing stop pins are removed and wing fold valve is in the open position (as shown), unfold the wings (if folding unit). You may need to extend lift cylinders fully to be able to unfold machine completely.

 Make sure no one is under the wings during the unfolding process. Watch for leaks and make sure hoses do not get pinched during the initial unfolding process.

16. Once the machine is unfolded, raise and lower the machine several times to purge air from the lift system. Again, watch for any leaks and tighten if necessary.



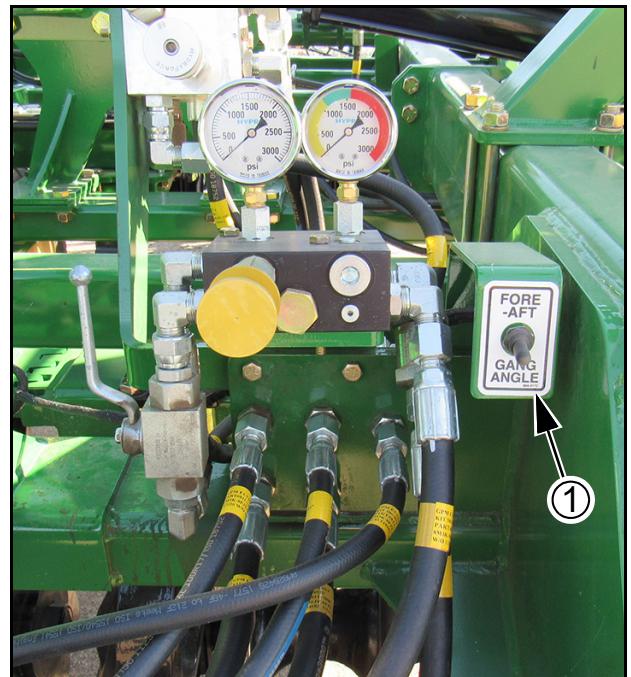
Pre-Leveling of Machine

 *Pre-leveling of machine should be done on a good level surface.*

Front to Rear Leveling

17. Your machine is equipped with hydraulic hitch option, lower your machine so the front coulter gangs are 1-2" off the ground, and use the hydraulic controls from the cab of your tractor to level the machine front to back.

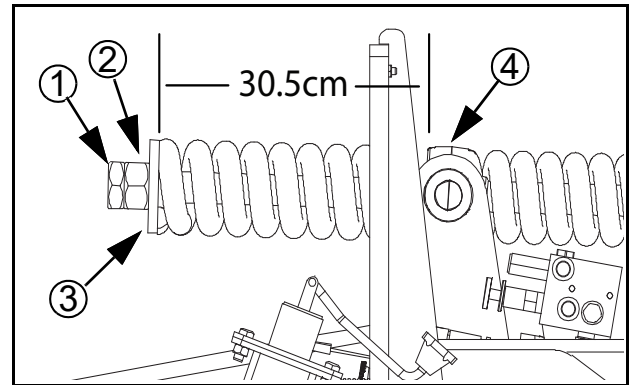
The leveling system and the gang adjustment use the same hydraulic circuit. To change between the two different systems you must select the system using the switch mounted by the by-pass valve. The lights must be connected to change the system using the switch.



Leveling

Level Bar Spring Adjustment

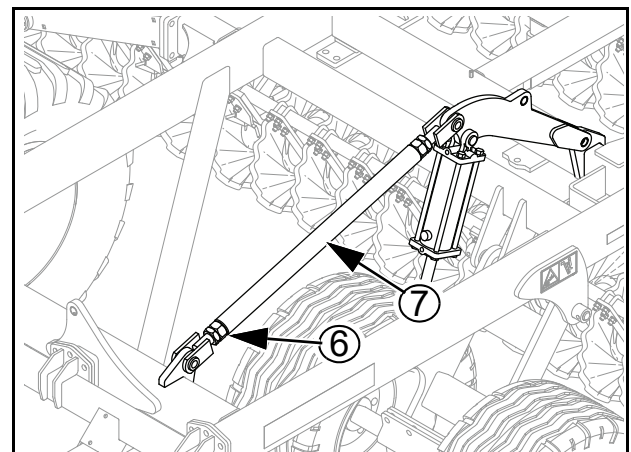
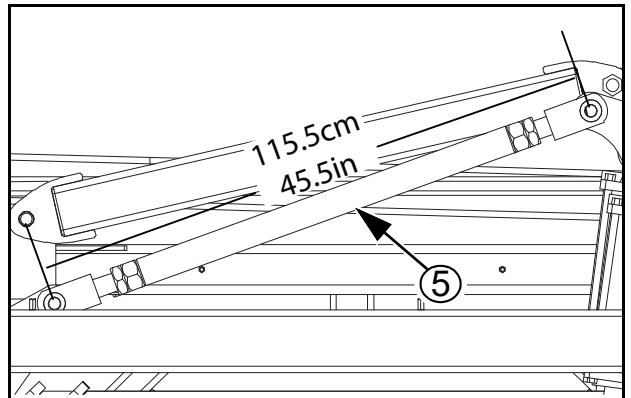
1. To adjust the level bar spring assembly to the preset position of 30.5cm, loosen jam nut (1) with turnbuckle wrench (stored on rear pegs of hitch).
2. Adjust nut (2) until the 30.5cm dimension is reached between front side of spring guide (4) and back side of level bar spring rod plate (3), as shown in the illustration.
3. Re-tighten the jam nut (2) to secure.



Wing Adjustment

Wing Turnbuckle 586-295S

4. The wing turnbuckle (5) should be pre-set at 115.5cm (45¹/₂ in) as shown.
5. Once machine is leveled side to side, any further adjustment in the field should be done with the hydraulic down pressure.
6. If running gangs at an angle and the wings are going too deep, then you should not run down pressure at all. Switch hydraulic to the float position.
7. If wings are running too high, increase hydraulic down pressure setting, too low, decrease down pressure setting. See **"Hydraulic Down Pressure"** on page 22.
8. Once the machine is level fore to aft, the wings may be leveled. Start by unfolding the wings. Lower the lift cylinders down until center coulter gangs are 2.5 - 5 cm off of ground.
9. Set the wings to match the depth of the center. Start by loosening jam nut (6) with turnbuckle wrench (stored on rear pegs of hitch). Turn the turnbuckle (7) to adjust (shorten turnbuckle to run shallower and lengthen to run deeper).
10. Run machine in field with wings unfolded and down pressure applied. If wings are not making contact or running too deep into the soil, make additional adjustments to turnbuckle.





First Time Field Adjustments

When the Turbo Max is taken to the field for the first time and is unfolded, pre-leveling completed, and ready to run, there are multiple settings that need to be completed to achieve the desired tillage results.

Gang Angle

11. The recommended first step is to set your gang angle, (Red Handles) by presetting this first time at 3°-4°. This can later be adjusted in both directions to change results.

 *Research has shown that 3°-5° of gang angle is the most popular setting.*

12. The turbo max may be operated with the gangs running from 0-6 degrees. Changing this angle does affect the operation of the unit in a couple of ways. As indicated above, if the blades are operated at an angle, down pressure is generally unnecessary. Also, operating speeds will need to be less when operating with the blades angled 3-6 degrees. Operating speeds should be from 7-9 mph when operating gangs in the angled position and from 8-10 mph when operating in the straight position.

13. When operating the turbo max with the blades running at an angle, it is generally unnecessary to operate with hydraulic down pressure to the wings. Only in very hard ground will down pressure be needed. If down pressure is needed, see **“Hydraulic Down Pressure”** on page 22 for initial setup, If no down pressure is needed, set the fold hydraulic system to the “FLOAT” position at this time.

14. When operating the blades in the straight position, down pressure may be necessary, usually between 200 and 400 psi.

 *Never leave tractor valve centered when unfolded with machine in motion. Machine damage may occur when wings flex. The hydraulic down pressure cylinders have no wing flex capability and oil flow is required when the wings flex up or down. You must have the tractor fold hydraulic lever in continuous downward flow or “FLOAT” position before the wings can flex over terrain in the raised or lower lift position.*

These settings need to be optimized for best outcome.

These key settings are:

- Gang Angle
- Depth
- Wing Down Pressure
- Fore and Aft Leveling
- Finishing Reel Down Pressure
- Operating speed

All of these settings are important and changing one could affect others as they are intertwined.



Gang Cylinders

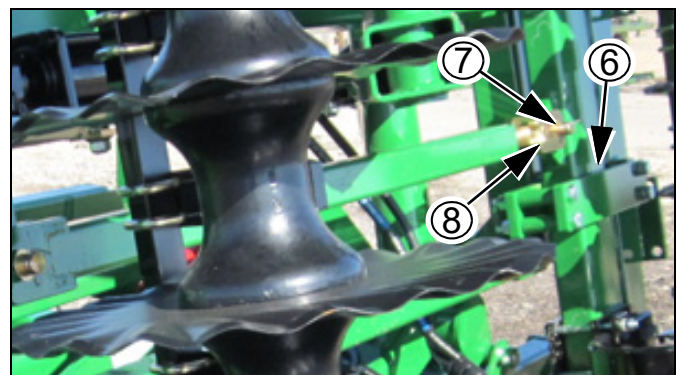
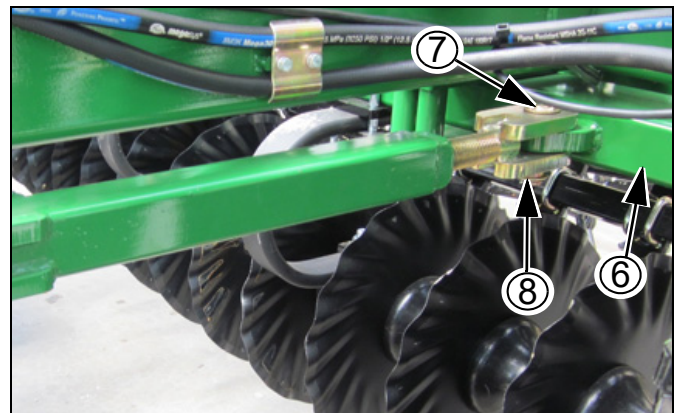
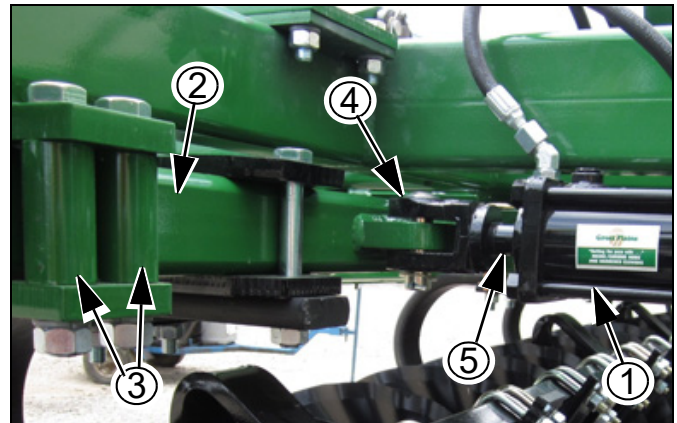
Gang Angle Adjustment

 Check gang angle adjustment when machine is new and annually after, as wear may occur.

15. With front gang adjusting cylinders (1) in the full retract position the gang bar (2) should be $\frac{1}{8}$ " from tubes (3).
16. If gang bar (2) is not $\frac{1}{8}$ " from tubes (3) loosen allen screw (4) on clevis on rod end of cylinder (there are two flat spots on rod to get wrench on to adjust) and shorten cylinder rod (5) by turning cylinder rod to bring gang bar closer and lengthen clevis to get cylinder to retract all the way.
17. Re-tighten allen screw (4) when adjustment is made.

 Note the two different turnbuckles used. One is on the center frame and the other is used on the wings. They function in the same way.

18. When the front gang adjusting cylinders (1), have been adjusted and are in the full retract position the rear gang bar (6) should be parallel to back frame tube.
19. If rear gang bar (6) is not parallel to back frame tube, remove pin (7) from turnbuckle end (8) and shorten turnbuckle end by turning clevis to bring gang bar closer and lengthen clevis to get gang bar to retract all the way.
20. Re-install pin (7) after adjustment is made.

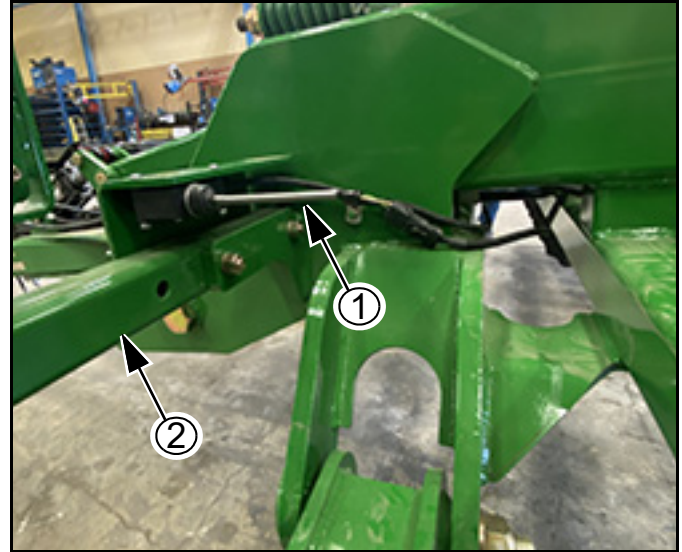


Wing Folding Assist

Whisker Switch

 The whisker switch (1) is located on the front left light bracket (2).

21. This switch is necessary to achieve transport width under 3 meters by diverting oil flow via solenoids to retract the wing torque tubes during fold. It is only active when the “whisker” of the switch is contacted by the wing frame and bent from its central axis.
22. When the switch becomes activated during fold, it will retract the wing torque tubes fully during completion of the fold cycle.
23. It will also activate during unfold to extend the wing torque tubes during completion of the unfold cycle.
24. You may need to extend the lift hydraulics to level the wings with the rest of the machine during unfold.



Hydraulic Down Pressure

 This setup procedure is for tractors with closed-center or pressure compensated flow hydraulic systems. Open center hydraulics not supported. Adjust down pressure valve as shown on decal (1) (located on front of left truss.)

25. Engage the hydraulics (continuous flow) down.
26. From the cab, adjust the flow so the needle on the bypass gauge (2) is in the green zone 1000-1500PSI.
27. At the valve, adjust the valve (3) to set your initial down pressure (4) (usually 300-400). Do not exceed 800 PSI.
28. If the wings run high during operation, increase pressure. If the center runs high, decrease pressure. If no pressure is needed, move valve in tractor to "FLOAT" position.

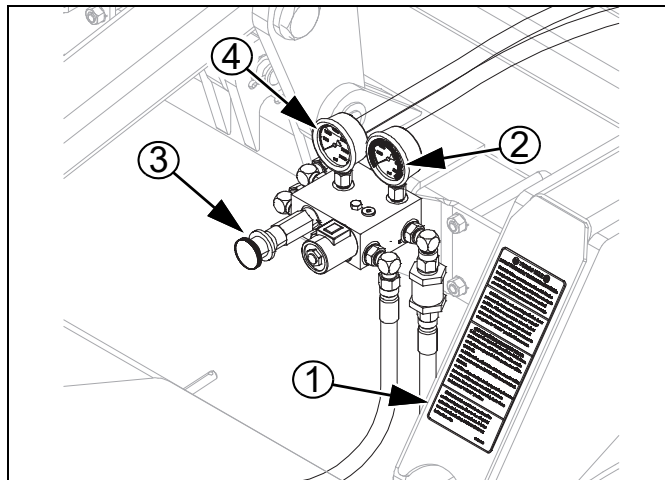
NOTICE

Notice: When operating machine with the blades in angled position it is generally unnecessary to apply wing down pressure. Only in very hard ground will wing down pressure be necessary.

CAUTION

When not operating with live down pressure the fold system must be in "FLOAT" position. Failure to operate in either float or active down pressure will damage the fold system. see your tractor operator's manual to set system to "FLOAT" position if necessary.

29. This machine is designed for continuous hydraulic flow to the wing fold cylinders during field operations. It is for use on tractors having CLOSED CENTER hydraulics only.



TURBO MAX DOWN PRESSURE VALVE INSTRUCTIONS:

NOTICE: When operating machine with blades in angled position it is generally unnecessary to apply wing down pressure. Only in very hard ground will wing down pressure be necessary.

CAUTION: When not operating with live down pressure the fold system must be in "FLOAT" position. Failure to operate in either float or active down pressure will damage the fold system. See your tractor operator's manual to set system to "FLOAT" position if necessary.

SETTING DOWN PRESSURE VALVE

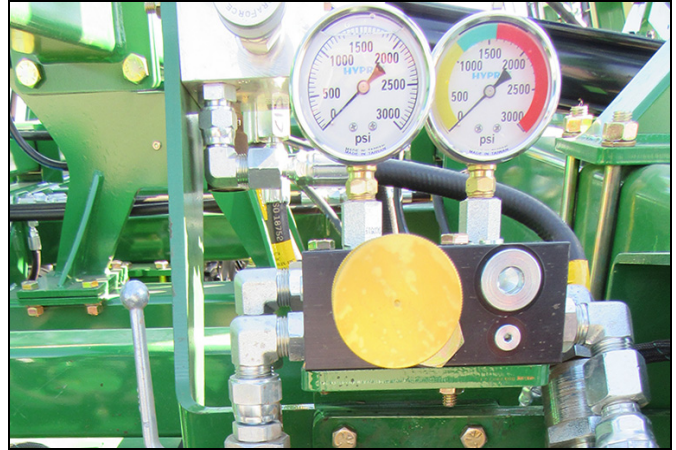
1. Engage the hydraulics (continuous flow) down.
2. From the cab, adjust the flow so the needle on the bypass gauge is in the green zone 1000 - 1500 PSI.
3. At the valve, adjust the valve to set your initial down pressure (usually 300-400). Do not exceed 800 PSI.
4. If the wings run high during operation, increase pressure. If the center runs high, decrease pressure. If no pressure is needed, move valve in tractor to "FLOAT" position.

CAUTION: This machine is designed for continuous hydraulic flow to the wing fold cylinders during field operations. It is for use on tractors having CLOSED CENTER hydraulics only.

848-972C

Wing Down Pressure

30. Wing down pressure will vary with multiple factors. Gang angle can affect it the most. The higher the gang angle, the less pressure required to the wings. At 3" and higher, it may be necessary to eliminate down pressure completely. If that is the case, fold system needs to be operated in float position so wing cylinders can still extend and retract as needed.



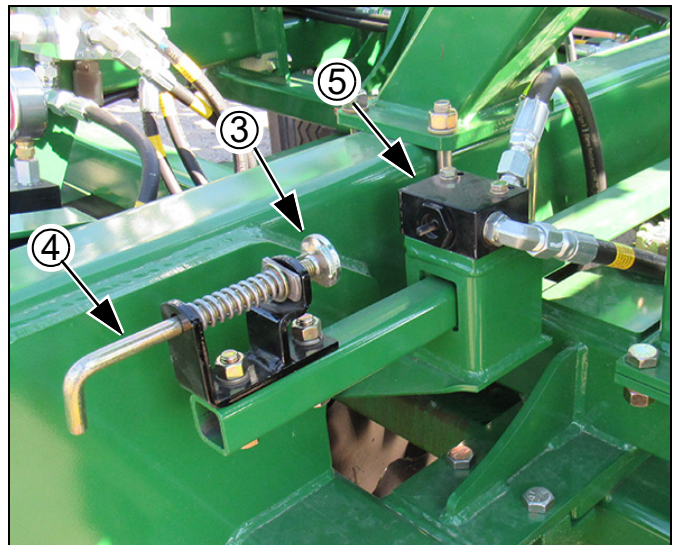
Depth

The next critical setting is depth. Depth is set with the depth stop adjustment at the front of the machine.

31. Once the machine is level and set to the desired depth, set the depth stop (3) at the front of the machine to ensure that the unit will operate at a consistent depth every pass. After setting the stop, if a change of depth is desired, 1 full turn of the handle (4) either in or out will change the depth approximately $\frac{1}{4}$ " up or down respectively.

 *Slight tire to ground pressure should be maintained to prevent cylinder pin and clevis wear. If after setting the depth stop, the detent on the tractor kicks out before the stop contacts the button (5) on the depth stop, slow the hydraulic flow speed down. If this problem exists, contact the factory service representative for other possible adjustments. On tractors with a timed detent setting, set the detent so when you raise the machine, the pump will run for $\frac{1}{2}$ to 1 full second after full raise. If it runs longer than this, damage to the seals of the lift cylinders may result.*

Standard operating depth is 1-4". For first time settings a depth of 2.5-3" is recommended unless it is too wet to go this deep. Remember this is just a recommendation as a starting point and depth can be adjusted from here.

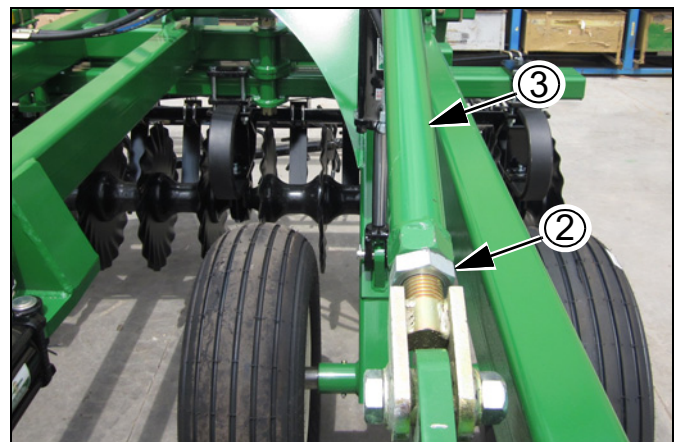
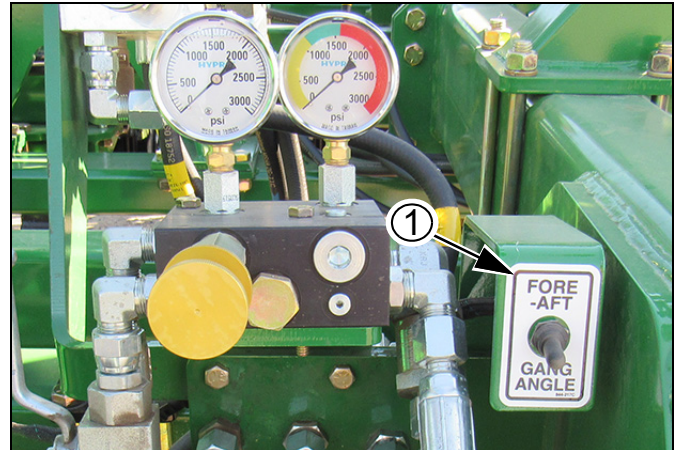


Fore/Aft Leveling

The VT1110 Turbo Max® needs to run level front to rear and from side to side. Though pre-leveling was done, you may still need to change this slightly once you go to the field. Fore and Aft cylinder is on the same circuit as the gang angle. It has to be switched, adjusted and then switched back. Once this is set to the tractor it should not require changing again.

Fore/Aft Adjustment

32. Be sure the switch (1) has Ford/Aft selected and adjust the hydraulic cylinder (Red handles) on the hitch to bring the front up and down until the machine is level front to back. Be sure to switch back to Gang Angle selection when finished. Never run the machine lower (deeper) in the rear than in the front.
33. As far as leveling the wings to the center section, if the wings were pre-leveled as shown in **“Wing Adjustment”** on page 18, then further adjustment should be done with the down pressure setting. If the wings are running low, back off the down pressure. If wings are running high, increase the down pressure, see **“Hydraulic Down Pressure”** on page 22, for complete down pressure adjustment.
34. If no down pressure is being used, set the wings to match the depth of the center. Start by loosening jam nut (2) with turnbuckle wrench (stored on rear pegs of hitch). Turn the turnbuckle (3) to adjust. (Shorten turnbuckle to run shallower, lengthen to run deeper).
35. In a first time operation, it is generally best to operate the unit at a slight angle to the rows. If the unit is used as a secondary pass it is recommended to operate the unit at a slight angle to the previous tillage pass. This will improve trash flow and increase the leveling capability.



Double Finishing Reel

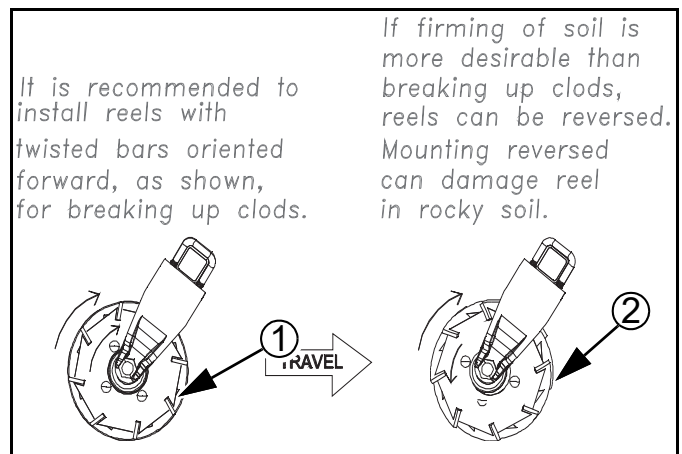
Down pressure to the finish reels is a key component in the operation of the Turbo Max.

36. Initially it is recommended to start these out in the float so we are not applying pressure which could affect other components of the machine. Once all the previous settings are completed to satisfaction, increased down pressure to the reels can be applied. Initial down pressure should be about 200-300PSI. Increases from there can be done depending on conditions. Never exceed 800 PSI. Do not run down pressure in very wet fields and you may need to raise it completely in some circumstances.
37. If your machine is equipped with the optional hydraulic reels you can adjust the down pressure from the cab of the tractor by raising and lowering the reels using the hydraulics.
38. The bars on the reels are angled forward (1) and should be installed as such on the machine. In some conditions in which a firming of the soil is more desirable than breaking up clods then these reels can be mounted in reverse (2). This does however increase the chance of causing damage to the bars in rocky soil.

WARNING

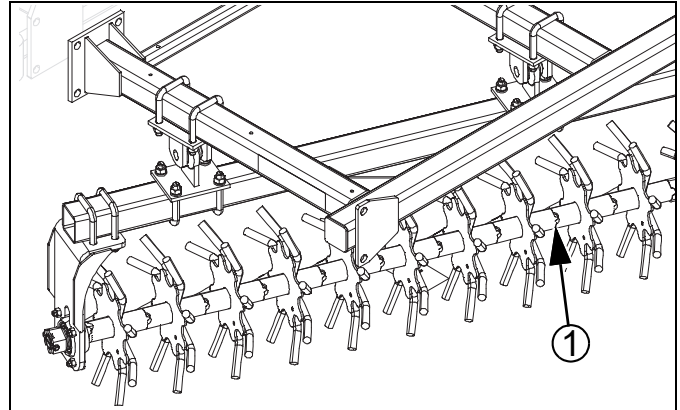
Be sure reels are installed with twisted bars oriented forward (1) as shown. Mounting in reverse (2) can damage reel in rocky soil.

39. Situations that may require the operator to angle the gangs would be in a field that requires the unit to be more aggressive as far as moving soil such as leveling ditches, filling in sprayer tracks, more aggressive weed control, etc. In these instances, the gangs may be angled as needed to level the ground and remove problem weeds. In the fall, the gangs would be angled to make the unit more aggressive to cover more residue. This will tie the residue to the surface and enhance the breakdown of the residue. Also in very hard ground, the angled gangs will allow the unit to penetrate better.
40. The Turbo Max is a versatile tool that allows the operator to make changes from the cab of the tractor. It is important to remember the relationships between gang angle, speed and wing down pressure. When operating the gangs at an angle, slow down (6-8 mph) and set wing fold system to "FLOAT". When operating gangs in the straight position, speed up (8-10 mph) and set the wing fold system to active hydraulic down pressure.



Setting the Rolling Harrow

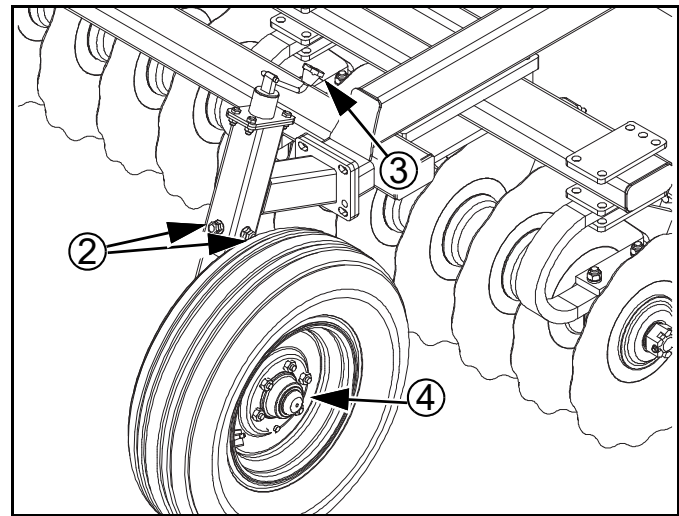
41. The rolling harrow (1) is a very versatile part of the leveling attachment and requires very little adjustment. The rolling harrow sections come preset at 22 degrees and should not need to be modified. In some severe conditions at high speeds, some windrowing may occur and the gang angle may need to be reduced slightly. When adjusting this, be careful to maintain adequate clearance between sections in the field position as to not cause damage to the units.



Gauge Wheel Adjustment

 *Gauge wheels are not necessary on all machines. Rolling terrain or terraced ground are conditions that may require a gauge wheel. The gauge wheels should never be in constant contact with the ground. They should operate at a position $1\frac{1}{2}$ " to $1\frac{1}{2}$ " above the ground.*

42. Once the machine has been adjusted and set to the desired working depth, you may now adjust the gauge wheels.
43. Start by loosening set screws (2) on each gauge wheel. Turn jack handle (3), to adjust spindle receiver (4). To lengthen the spindle receiver (4) (turn counter-clockwise), to run wheel closer to ground, to shorten the spindle receiver (turn clockwise) to run further away from ground.
44. After adjusting gauge wheel to position needed, re-tighten the set screws (2).
45. If the overall depth of the machine is adjusted, especially if it is set deeper, remember to readjust the gauge wheels.



Operating Speeds

Due to the fact that different settings affect this it can really vary. This is a high speed tool with speeds up to 11 MPH possible. Recommended speeds vary with gang angle as well. 0-3 degree gang angle can be run at 8-10 MPH. 4-6 degree gang angle would be run from 7-9 MPH. If depth is increased, speed will need to be slowed down a bit more as well. $6\frac{1}{2}$ MPH is the bottom end of the required speed. If you can't pull this unit at least $6\frac{1}{2}$ MPH it will not be effective.

Summary of First Time Field Settings

- Gang Angle - 3-4°
- Working Depth - 2.5-3°
- Wing Down Pressure - Start in Float position. Increase to 200 PSI if some pressure is needed
- Fore/Aft - Machine must be level front to rear to ensure all blades are working at the same depth
- Finish Reel Down Pressure - Start in Float position, increase to 200-300 PSI if pressure is desired
- Operating Speeds - 7-9 MPH



Operating Instructions

This section covers general operating procedures. Experience, machine familiarity, and the following information will lead to efficient operation and good working habits. Always operate farm machinery with safety in mind.

Pre-Start Checklist

WARNING

High Pressure Fluid Hazard:

Relieve pressure and shut down tractor before connecting, disconnecting or checking hydraulic lines. Use a piece of paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

Perform the following steps before transporting the Turbo Max to the field.

- ☐ Carefully read “**Safety Information**” on page 3.
- ☐ Lubricate Turbo Max as indicated under “**Maintenance and Lubrication**” on page 33.
- ☐ Check all tires for proper inflation, “**Tire Inflation Chart**” on page 33.
- ☐ Check all bolts, pins, and fasteners. Torque as shown in “**Torque Values Chart**” on page 39.
- ☐ Check Turbo Max for worn or damaged parts. Repair or replace parts before going to the field.

Check hydraulic hoses, fittings, and cylinders for leaks. Repair or replace before going to the field.

Transport

DANGER

Loss of Control Hazard:

Do not tow the turbo max behind another implement on public roads. Tow the turbo max to the field with a separate vehicle. The leading implement may not provide sufficient lateral control of a trailing implement at highway speeds. The total weight of the train can also exceed the steering and/or braking capability of the tractor. The resulting accident could cause serious injury or death.

DANGER

Loss of Control Hazard:

Use an adequate towing vehicle. Never tow an implement that weighs more than 150% of the towing vehicle (transport vehicle must weigh at least 67% of implement). Ensure that the towing vehicle is adequate for the task. Using an inadequate

tow vehicle is extremely unsafe, and can result in loss of control, serious injury and death.

DANGER

Braking and Loss of Control Hazard:

Do not exceed 30 kph (20mph). Slow down on rough roads.

Transport Steps

Know your implement weight. If tractor capabilities are marginal, check actual weight of implement at a scale.

1. Check that implement is securely hitched to a sufficient tractor (page 13).
2. Always use a locking-style hitch pin sized to match holes in hitch and draw-bar, and rated for the load.
3. Verify correct operation of lights.
4. Install transport locks, wing locks and close wing lock valve (page 15 & page 16).
5. Check that tires are properly inflated (page 33).
6. Do not exceed 30 kph (20 mph). Comply with all national, regional and local laws when traveling on public roads.
7. Remember that the implement may be wider than the towing vehicle. Allow safe clearance.

Field Operation

This implement is designed to be pulled in the lowered field position (including wide turns). Lifting for short distances to clear residue clogs is acceptable. Lifting for tight turns or reverse moves is required.

NOTICE

Equipment Damage Risk:

Lift for tight turns and reverse moves. Tight turns can result in a section moving backward. Never back up with harrows on the ground. If the inside tire stops or rolls backward, the turn is tight and requires lift.

Field Set-Up Checklists

Use the following tables to develop a final checklist for your tractor/Turbo Max configuration. Additional or fewer steps may be necessary depending on tractor features, Turbo Max options and accessories.

Final Checklist

Mechanical Checklist	Page
☐ Turbo Max hitched	13
☐ Hitch pin locked	-
☐ Implement jack stowed	13
☐ Check all tire pressures	33
☐ Transport locks are removed and lock valve is in the field position (open)	15 & 16
☐ Wings locks are in the unlocked position	16

Hydraulic System Checklist	Page
☐ Check tractor hydraulic reservoir full	-
☐ Make hydraulic connections	15
☐ Inspect connections for leaks	-
☐ Unfold Implement	16

First Pass Operation Checklist	Page
1. Implement unfolded and aligned for first pass.	-
2. Pull forward, lower Turbo Max, and begin tilling for a short distance.	-
3. Stop. Assess: • coulter depth • finishing attachment operation	-
4. Make necessary adjustments	29

Sharp Field Turns Checklist	Page
1. Raise Turbo Max	-
2. Make turn	-
3. Lower Turbo Max	-
4. Resume tilling.	-

Ending Tilling Checklist	Page
1. Suspend operations as above	-
2. Lift implement	-
3. Set tractor for fold and fold wings	16
4. Secure wings with wing locks	16
5. Place locking valve and transport locks in transport positions	15
6. Lower implement on to transport locks	-
7. Lights ON for transport	-

General Operation and In-Field Adjustments

When operating the Turbo Max with the blades running at an angle, it is generally unnecessary to operate with hydraulic down pressure to the wings. Only in very hard ground will down pressure be needed. If down pressure is needed, see **"Hydraulic Down Pressure"** on page 22 for initial setup. If no down pressure is needed, set the fold hydraulic system to the "FLOAT" position at this time.

When operating the blades in the straight position, down pressure is necessary, usually between 300 and 400 psi.

Tillage Gang Controls

Your Turbo Max's gang angles are hydraulically adjustable from within a tractor cab. Simply determine the desired angle and apply hydraulics until satisfied with the result. Angling your machine's tillage gangs can help breakup and level difficult-to-work soil and root systems. For softer soil and final passes when planting, set gangs to a vertical (non-angled) position.

NOTE: Setting Gang Angles

Setting the gang angles to a more severe angle allows disks to breakdown and circulate more crop residue to the soil surface with fewer passes.

When gangs are angled, operating speed should be lowered to between 9-12 kph to reduce machine stress and chance of disk breakage. After returning the gangs to a vertical position, you can resume normal operating speeds.

Turn off down pressure to wings while gangs are angled. Resume applying down pressure when disks are returned to a vertical position.

CAUTION

CAUTION: Field Hazard

Down pressure applied to wings while gangs are angled causes overly aggressive and uneven tilling of soil.

 **NOTE: Set Tractor Valve Properly**
Never leave tractor valve centered when unfolded with machine in motion. You must have the tractor fold hydraulic lever in continuous downward flow or "FLOAT" position before the wings can flex over terrain in the raised or lower lift position.

 **NOTE: Angle Rows**
In a first time operation, it is generally best to operate the unit at a slight angle to the rows. If the unit is used as a secondary pass it is recommended to operate the unit at a slight angle to the previous tillage pass. This will improve trash flow and increase the leveling capability.



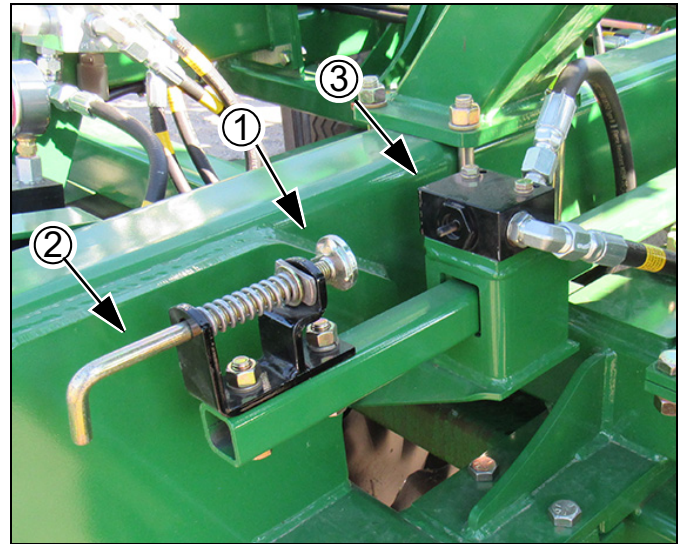
Depth Stop Adjustment

Once the machine is level and set to the desired depth, the next critical setting is depth. Depth is set with the depth stop adjustment as the front of the machine.

8. Once the machine is level and set to the desired depth, set the depth stop (1) at the front of the machine to ensure that the unit will operate at a consistent depth every pass. After setting the stop, if a change of depth is desired, 1 full turn of the handle (2) either in or out will change the depth approximately $\frac{1}{4}$ " up or down respectively.

Standard operating depth is 1-4". For first time settings a depth of 2.5-3" is recommended unless it is too wet to go this deep. Remember this is just a recommendation as a starting point and depth can be adjusted from here.

NOTE: Maintain Tire-To-Ground Pressure
Slight tire to ground pressure should be maintained to prevent cylinder pin and clevis wear. If after setting the depth stop the detent on the tractor kicks out before the stop contacts the button (3) on the depth stop, slow the hydraulic flow speed down. If this problem persists, contact the factory service representative for other possible adjustments. On tractors with a timed detent setting, set the detent so when you raise the machine, the pump will run for $\frac{1}{2}$ to 1 full second after full raise. If it runs longer than this, damage to the seals of the lift cylinders may result.

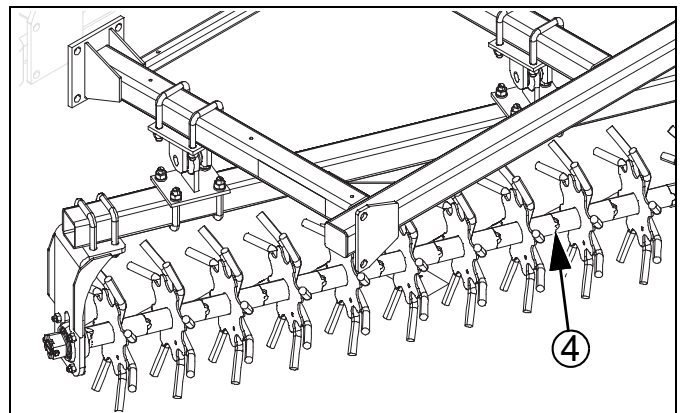


Setting the Rolling Harrow and Reel

9. The rolling harrow (4) and reel attachment (5) (next page) is a very versatile leveling attachment and requires very little adjustment. The rolling harrow sections come preset at 22 degrees and should not need to be modified. In some severe conditions at high speeds, some windrowing may occur and the gang angle may need to be reduced slightly. When adjusting this, be careful to maintain adequate clearance between sections in the field position as to not cause damage to the units.

Operating Speeds

Due to the fact that different settings affect this it can really vary. This is a high speed tool with speeds up to 11 MPH possible. Recommended speeds vary with gang angle as well. 0-3 degree gang angle can be run at 8-10 MPH. 4-6 degree gang angle would be run from 7-9 MPH. If depth is increased, speed will need to be slowed down a bit more as well. $6\frac{1}{2}$ MPH is the bottom end of the required speed. If you can't pull this unit at least $6\frac{1}{2}$ MPH it will not be effective.



Finish Reel

Down pressure to the finish reels is a key component in the operation of the Turbo Max.

10. Initially it is recommended to start these out in the float so we are not applying pressure which could affect other components of the machine. Once all the previous settings are completed to satisfaction, increased down pressure to the reels can be applied. Initial down pressure should be about 200-300PSI. Increases from there can be done depending on conditions. Never exceed 800 PSI. Do not run down pressure in very wet fields and you may need to raise it completely in some circumstances.
11. If your machine is equipped with the optional hydraulic reels you can adjust the down pressure from the cab of the tractor by raising and lowering the reels using the hydraulics. Watch the gauge (6) to check how much down pressure you are using, or to adjust the valve.

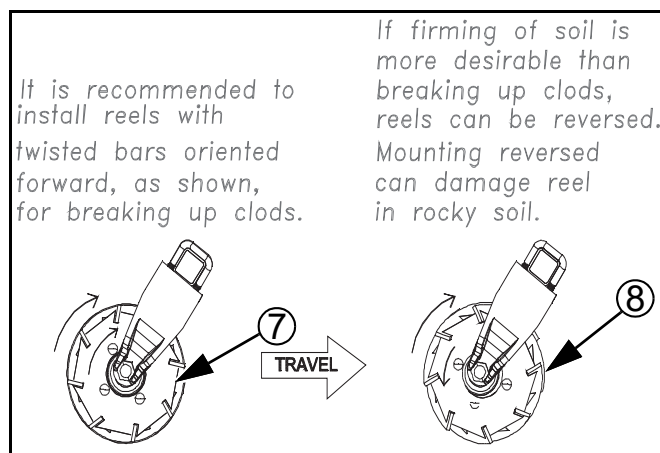
 **NOTE: Avoid Down Pressure In Wet Conditions**
It is recommended to run little or no down pressure in wet or sticky field conditions.

12. The bars on the reels are angled forward (7) and should be installed as such on the machine. In some conditions in which a firming of the soil is more desirable than breaking up clods then these reels can be mounted in reverse (8). This does however increase the chance of causing damage to the bars in rocky soil.

WARNING

WARNING: Rough Terrain Hazard

Be sure reels are installed with twisted bars oriented forward (7) as shown. Mounting in reverse (8) can damage reel in rocky soil.



Parking

Follow these steps when parking the implement for periods of less than 36 hours. For longer periods, see “**Storage**”.

1. Position the implement on firm, level ground. Raise, fold and lock implement (page 13 and 16).

DANGER

DANGER: Negative Tongue Weight Hazard

If rear tow hitch is installed it is possible that the VT1110 Turbo Max® can tip over backwards during hitching and unhitching resulting in severe injury or death.

2. Remove jack from storage position and pin securely to lifting stub on outside of implement tongue. See “**Hitching Turbo Max to Tractor**” on page 13.

NOTE: Avoid Soft Ground

If ground is soft, place a wide block or plate under the jack to increase contact area.

3. Unhook electrical lines and protect with any plugs or caps provided.
4. Release pressure on hydraulic system, then disconnect hydraulic lines and pull all lines back onto implement tongue. Store hose ends in keyholes of hose holder bracket.
5. Disconnect the safety chain.
6. Unhitch from tractor.

Storage

If you intend to store your machine for an extended period of time, follow the procedures outlined below. These procedures will ensure that the machine is ready to operate with minimum preparation when it is removed from storage.

Placing Machine Into Storage

NOTE: Keep Stored Away From Children

Store the implement where children do not play. If possible, store inside for longer life.

1. Raise, fold and lock implement (page 16).
2. Clean Turbo Max of mud, dirt, excess oil and grease.
3. Perform “**Parking**” checklist (see above).
4. Check all bolts, pins, fittings and hoses for wear or damage. Tighten, repair or replace parts as needed.
5. Use touch-up paint to cover scratches, chips and worn areas to prevent rust.

Removing Machine From Storage

1. Check tire pressure and inflate tires as necessary. See “**Tire Inflation Chart**” on page 33 for recommended PSI levels.
2. Perform any necessary repairs to the machine before performing any adjustments or operation.
3. Check that wings are securely raised and locked.

NOTICE

NOTICE: Winter Storage Removal

If machine is stored outdoors over the winter months, it is a good idea to fold the machine then set it down on the ground so all the cylinders are retracted to protect the cylinder rods. This will extend the life of the cylinder seals and reduce internal and external leaks.



Maintenance and Lubrication

Maintenance

1. Always use the transport lock when working on or doing maintenance to the Turbo Max. If folded, ensure you have secured wing locks and closed the wing fold valve. Read and understand all safety decals on your equipment.
2. During the first season of operation, and periodically after that, check your bolts for tightness.
3. Replace or rotate worn parts as needed -- hinge bolts, clevis pins, bearings, coulters, etc.
4. Check and tighten or replace any hydraulic leaks. Check hoses for any leaks. It is important that there are no leaks on the equipment.
5. Grease wheel bearings sparingly. Over greasing may cause damage to seals and reduce the life of the bearing. Coulter, Finishing Reel and Heavy Reel bearings are all maintenance free and do not require greasing.
6. Check drag bolts for looseness or excessive wear. Your drag is an important part of the tillage operation.

Tire Inflation Chart

Tire Inflation Chart		
Wheel	Tire Size	Inflation
Center Transport	550/45 - 22.5 22 PR.	80 psi (551 kPa) (5.5 bar)
Transport/ Wings	15.0/55 - 17 EURO	54 psi (372 kPa) (3.72bar)
Gauge Wheel	10.0/75 - 15 18Ply	105 psi (723 kPa) (7.1 bar)

Tire Warranty Information

All tires are warranted by the original manufacturer of the tire. Tire warranty information is found in the brochures included with your Operator's and Parts Manuals or online at the manufacturer's web sites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.

Manufacturer Web site
 Firestone www.firestoneag.com
 Gleason www.gleasonwheel.com
 Titan www.titan-intl.com
 Galaxy www.atgtire.com
 BKT www.bkt-tire.com

Troubleshooting

Problem	Solutions
Machine will not unfold: (Green Hand-grips)	Make sure hoses are connected properly to the tractor's remote.
	Make sure the wing lock levers are unlocked.
	Make sure the hydraulic lock valve is open for field operation, close down pressure valve completely for full pressure. *If closing the down pressure valve allows to unfold be sure to open for field use.
	Switch fold hoses to another remote on tractor.
	Trace hydraulic plumbing to confirm proper routing
	Replace hydraulic tips on fold hoses.
Machine will not fold	Make sure hoses are connected properly to the tractor's remote.
	Make sure the hydraulic lock valve is open for field operation.
	Switch fold hoses to another remote on tractor.
	Trace hydraulic plumbing to confirm proper routing.
	Replace hydraulic tips on fold hoses.
Machine will not lower: (Black Hand-grips)	Make sure both transport locks are removed.
	Make sure hoses are connected properly to the tractor's remote.
	Make sure the hydraulic depth stop valve is in operating condition, and not damaged.
	Switch lift hoses to another remote on tractor.
	Trace hydraulic plumbing to confirm proper routing.
	Replace hydraulic tips on lift hoses.
Machine will not lift	Make sure hoses are connected properly to the tractor's remote.
	Make sure the hydraulic depth stop valve is in operating condition, and not damaged.
	Switch lift hoses to another remote on tractor.
	Trace hydraulic plumbing to confirm proper routing.
	Replace hydraulic tips on lift hoses.
Machine will not lift evenly: (Black Hand grips)	Call your GP representative for cylinder diagnostics.
	Call your GP representative.

Wing cylinder will not retract during fold operation	Check that the whisker switch for correct operation and active.
	Check 7 pin light connector for a secure connection.
	Check that there is power to the solenoids
	Check 10amp fuse in solenoid harness
	Inspect solenoid harness for damage.
	Double check hydraulic routing for proper configuration.
Machine will only retract one side of wing cylinders	Check the Dual solenoid, the left solenoid controls the left wing, the right solenoid controls the right wing. The wing with the issue is the solenoid that is malfunctioning.
	Inspect harness and solenoid connections for damage.
	Reverse harness connections at the solenoid if same problem presents that side's solenoid is damaged, if problem switches the harness is damaged.
Cannot adjust gang angle of machine: (Red Hand-grips)	Make sure hoses are connected properly to tractor's remote.
	Try another remote on tractor.
	Replace hydraulic tips on gang hoses.
	Bypass the lock valve, if problem corrects replace the lock valve.
	Call your GP representative to further diagnose if needed.
Cannot adjust weight transfer: (Green Hand-grips)	Reset flow on tractor and readjust weight transfer, per operating manual.
	If valve is opened completely and lower pressure to wings is desired reduce tractor flow rate further.
	If tractors flow is still too high to adjust weight transfer be sure to set flow so it is running no more than 1500lbs, 1000lbs is preferred.
	Turn the weight transfer knob while running active hydraulics. The audible tone should change with every turn of the knob. If not the bypass valve is faulty.
	Call your GP representative to further diagnose if needed.
Machine lights are not working:	Check 7-pin light connection to tractor.
	Check wire harness for damage and individual light connections.
	Check voltage, should be 12VDC+. See pin layout on page 11
	Check lighting harness schematic on page 29
Entire machine runs to shallow (Black & Green Hand-grips)	Make sure depth stop valve is set to correct depth.
	Increase gang angle to help penetrate the ground and increase depth.

Entire Machine runs to deep (Black & Green Hand-grips)	Make sure depth stop valve is set to correct depth and working correctly.
	A center cylinder may be damaged and or leaking.
Wings running deeper than Center	Reduce down pressure or put in float
	Adjust wing tires
Wing running shallower than center	Increase down pressure.
	Adjust wing tires, see Operator manual page 14
Machine is side drafting	Re-phase gang cylinders, be sure to completely extend and retract both cylinders when doing this.
	Check wing tire adjustment is equal.
	Call your GP representative to further diagnose if needed.
Retracting Wing Transport Tires	Make sure there is power to Whisker Switch. The whisker switch may be faulty.
	Check the function, bend the "whisker" in any direction and check for activation voltage.
	When Whisker Switch is activated there should be power to single valve solenoid and both sides of double valve solenoid. If only one wing wheel retracts, the side of the double valve toward the un-retracted axle is not working. Check solenoids.
	Dirt and debris could also get lodge near the hinges and be unintentionally activating the switch.
	Check the connections to the retract and light harness. If the connections are correct, check the function of the double and single solenoid valves.
Wings not folding	Reference Hydraulic layouts.



Appendix

Turbo Max Turbo Max Specifications and Capacities

Model No.	VT1110-6.0M Turbo Max	VT1110-7.5M Turbo Max
Tillage Width	6m (19ft 8in)	7.5m (24ft 7in)
Center Section	2.97m (9ft 10in)	2.97m (9ft 10in)
Number of Coulters	66	82
Blade Spacing	19cm (7.5in)	19cm (7.5in)
Gang Angle	Hyd. Adjustable 0* to 6*	Hyd. Adjustable 0* to 6*
Weight, No weight Packs	9,550kg (21,054lbs)	11,430kg (25,199lbs)
Hitch Load	533kg (1,175lbs)	460kg (1,015lbs)
Axle Load	9,017kg (19,879lbs)	10,970kg (1,015lbs)
Transport Width	3m (9ft 10in)	3m (9ft 10in)
Transport Height	3.5m (11ft 6in)	4m (13ft 8in)
Length (w/ attachment)	7m (22ft 11in)	7m (22ft 11in)
Tire Size (Center)	550/4.5-22.5 20 Ply	550/4.5-22.5 20 Ply
Tire Size (Wing)	15.0/55-17 14PR	15.0/55-17 14PR
Tire Size (Gauge Wheel)	10.0/75-15.3 18-Ply	10.0/75-15.3 18-Ply
Horsepower (PTO)	180-230	230-285
Kilowatt	134-172	172-213

With a continued commitment to constantly improving our products, these specifications are subject to change without notice.

Hydraulic Connectors and Torque

Leave any protective caps in place until immediately prior to making a connection.

NPT - National Pipe Thread

Note tapered threads, no cone/flare, and no O-ring.

- (1) Apply liquid pipe sealant for hydraulic applications. Do not use tape sealant, which can clog a filter and/or plug an orifice.

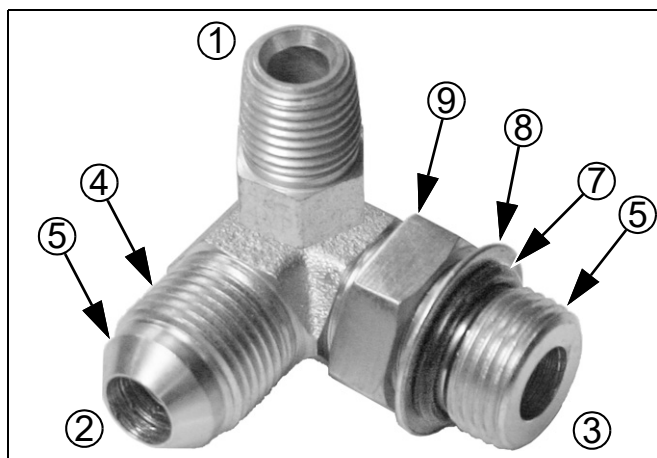
JIC - Joint Industry Conference (SAE J514)

- (2) Note straight threads (4) and the 37° cone (5) on "M" fittings (or 37° flare on "F" fittings). Use no sealants (tape or liquid) on JIC fittings.

ORB - O-Ring Boss (SAE J514)

Note straight threads (5) and elastomer O-Ring (7). Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid.

- (3) ORB fittings that need orientation, such as the ell depicted, also have a washer (8) and jam nut (9) ("adjustable thread port stud"). Back jam nut away from washer. Thread fitting into receptacle until O-Ring contacts seat. Unscrew fitting to desired orientation. Tighten jam nut to torque specification.



Fittings Torque Values			
Dash Size	Fitting	N-m	Ft-Lbs
-4	1/4-18 NPT	1.5-3.0 turns past finger tight	
-5	1/2-20 JIC	19-20	14-15
-5	1/2-20 ORB w/jam nut	12-16	9-12
-5	1/2-20 ORB straight	19-26	14-19
-6	5/16-18 JIC	24-27	18-20
-6	5/16-18 ORB w/jam nut	16-22	12-16
-6	5/16-18 ORB straight	24-33	18-24
-8	3/4-16 JIC	37-53	27-39
-8	3/4-16 ORB w/jam nut	27-41	20-30
-8	3/4-16 ORB straight	37-58	27-43

Torque Values Chart

Bolt Size in-tpi ^a	Bolt Head Identification					
						
	Grade 2	Grade 5	Grade 8			
	N-m ^b	ft-lb ^d	N-m	ft-lb	N-m	ft-lb
1/4-20	7.4	5.6	11	8	16	12
1/4-28	8.5	6	13	10	18	14
5/16-18	15	11	24	17	33	25
5/16-24	17	13	26	19	37	27
3/8-16	27	20	42	31	59	44
3/8-24	31	22	47	35	67	49
7/16-14	43	32	67	49	95	70
7/16-20	49	36	75	55	105	78
1/2-13	66	49	105	76	145	105
1/2-20	75	55	115	85	165	120
9/16-12	95	70	150	110	210	155
9/16-18	105	79	165	120	235	170
5/8-11	130	97	205	150	285	210
5/8-18	150	110	230	170	325	240
3/4-10	235	170	360	265	510	375
3/4-16	260	190	405	295	570	420
7/8-9	225	165	585	430	820	605
7/8-14	250	185	640	475	905	670
1-8	340	250	875	645	1230	910
1-12	370	275	955	705	1350	995
1 1/8-7	480	355	1080	795	1750	1290
1 1/8-12	540	395	1210	890	1960	1440
1 1/4-7	680	500	1520	1120	2460	1820
1 1/4-12	750	555	1680	1240	2730	2010
1 3/8-6	890	655	1990	1470	3230	2380
1 3/8-12	1010	745	2270	1670	3680	2710
1 1/2-6	1180	870	2640	1950	4290	3160
1 1/2-12	1330	980	2970	2190	4820	3560

Bolt Size mm x pitch ^c	Bolt Head Identification					
						
	Class 5.8	Class 8.8	Class 10.9			
	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb
M 5 X 0.8	4	3	6	5	9	7
M 6 X 1	7	5	11	8	15	11
M 8 X 1.25	17	12	26	19	36	27
M 8 X 1	18	13	28	21	39	29
M10 X 1.5	33	24	52	39	72	53
M10 X 0.75	39	29	61	45	85	62
M12 X 1.75	58	42	91	67	125	93
M12 X 1.5	60	44	95	70	130	97
M12 X 1	90	66	105	77	145	105
M14 X 2	92	68	145	105	200	150
M14 X 1.5	99	73	155	115	215	160
M16 X 2	145	105	225	165	315	230
M16 X 1.5	155	115	240	180	335	245
M18 X 2.5	195	145	310	230	405	300
M18 X 1.5	220	165	350	260	485	355
M20 X 2.5	280	205	440	325	610	450
M20 X 1.5	310	230	650	480	900	665
M24 X 3	480	355	760	560	1050	780
M24 X 2	525	390	830	610	1150	845
M30 X 3.5	960	705	1510	1120	2100	1550
M30 X 2	1060	785	1680	1240	2320	1710
M36 X 3.5	1730	1270	2650	1950	3660	2700
M36 X 2	1880	1380	2960	2190	4100	3220

a. in-tpi = nominal thread diameter in inches-threads per inch

b. N·m = newton-meters

c. mm x pitch = nominal thread diameter in mm x thread pitch

d. ft-lb = foot pounds

Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above.

25199

Torque Values Chart	
Gang Bolt Torque 1 3/4"-5	850 Foot-pounds (165 lbs on 5' cheater).
Rolling Harrow Spike Bolt 1 1/2"-6	650-750 Foot-pounds (175 lbs on 4' cheater).
Wheel Bolt Torque Values	5/8"-18 (170ft-lbs) 3/4"-16 (295ft-lbs)



WARRANTY

Great Plains (a division of Great Plains Manufacturing, Inc.) warrants to the original purchaser that this Great Plains machine will be free from defects in material and workmanship for a period of one year (Parts & Labor) from the first use date when used as intended for personal use; ninety days for custom/commercial or rental use.

Second year limited warranty covers Parts ONLY (personal usage only, excluding labor and wear items). This warranty is limited to the replacement of any defective part by Great Plains. Great Plains reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship.

The following items and/or conditions are **NOT COVERED UNDER WARRANTY**: Failures resulting from the abuse or misuse of the equipment, failures occurring as a result of accidental damage or Force Majeure, failures resulting from alterations or modifications, failures caused by lack of normal maintenance as outlined in the operator's manual, repairs made by non-authorized personnel, items replaced or repaired due to normal wear (such as wear items and ground-engaging components including, but not limited to, disc blades, chisel points, tires, bushings, and scrapers), repeat repair due to improper diagnosis or improper repair by the dealer, temporary repairs, service calls and/or mileage to and from customer location, overtime premium, or unit hauling expenses. The warranty may be voided if the unit is towed at speeds in excess of 20 miles per hour (32 kilometers per hour), or failures occurring from soils with rocks, stumps, or other obstructions.

Great Plains reserves the right to make changes in materials or design of the product at any time without notice. The warranty shall not be interpreted to render Great Plains liable for damages of any kind, direct or consequential or contingent to property. Furthermore, Great Plains shall not be liable for damages resulting from any cause beyond its control. This warranty does not extend to crop loss, losses caused by planting or harvest delays or any expense or loss of labor, supplies, rental machinery, or for any other reason.

No other warranty of any kind whatsoever expressed or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

This warranty is not valid unless registered by a certified Great Plains dealer.

Effective August 1, 2020

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