



1183 120th Rd  
Seneca, KS 66538  
www.agsynergy.com

## FERTILIZER APPLICATOR OPERATOR'S MANUAL

Models:

GENESIS TRX

Foreword

READ THIS MANUAL carefully to learn how to operate and service your toolbar correctly. Failure to do so could result in personal injury or damage to the applicator.

THIS MANUAL MUST ALWAYS BE KEPT with the applicator and when the applicator is sold.

MEASUREMENTS in this manual are given in only standard units. Use only correct replacement parts and fasteners. Standard fasteners will require a specific inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction the applicator will travel when going forward.

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## **2 - Delivery**

When the toolbar is delivered, use the checklist that follows as a guide to explain basic information about the toolbar to the customer.

- [ ] Use the correct tools when you service or repair the toolbar.
- [ ] Explain that proper preventative maintenance, as directed by the Operator's Manual, is necessary to achieve the maximum performance and life of the toolbar.
- [ ] Explain how to adjust the settings of the toolbar per the Operator's Manual.
- [ ] Review all of the safety precautions associated with the toolbar per the Operator's Manual.
- [ ] Review the proper precautions associated with transporting the toolbar on a road or highway at night or during the day. Have the customer check the local laws and regulations.
- [ ] To the best of my knowledge, this toolbar is ready for field use and the customer has been fully informed as to the preventative maintenance and operation.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

## **3 - Safety**

### **3.1 Operate Safely**



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#### **3.1.A Review the list below before operating:**

- (1) Make sure there is sufficient room around and above the toolbar before you raise or lower the wings.
- (2) Make sure you bleed the air from the wing fold and row unit hydraulic systems.
- (3) Do not operate with the wings folded.
- (4) Avoid operating in areas with sharp drop-offs.
- (5) Operate at a minimum speed when you turn or when you are on rough ground.
- (6) Put the tractor in PARK and shut off the engine or set the brakes when you leave the tractor.
- (7) Never leave the key in an unattended tractor.
- (8) Never raise or lower the wings while the tractor is in motion.
- (9) Only operate from the tractor seat.
- (10) Follow the safety precautions for Anhydrous Ammonia.
- (11) Use only the recommended tractor size to operate this toolbar.

## **3.2 Supplying Anhydrous Ammonia Information**



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Despite the common odor, anhydrous ammonia properties are dramatically different from those of household ammonia (dilute ammonium hydroxide) cleaning solutions. An uncontrolled release of NH<sub>3</sub> anhydrous ammonia can easily be fatal or cause permanent disabling injury.

**3.2.A Please see the attached manufacturers anhydrous ammonia distribution system operators manual.**

## 4.1 Preparing The Row Unit

### 4.1.A Attaching Hardware

- (1) After the first 12-15 hours of operation, it is recommended that you check all attaching hardware for tightness.

### 4.1.B Blade Depth Adjustment

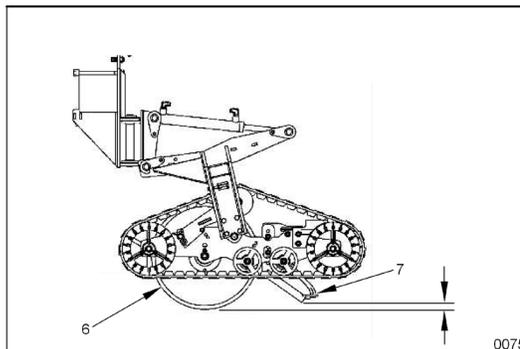
- (1) There are three blade adjustments positions on the row unit, Low, Medium, and High.
- (2) The factory sets the blade in the medium position. When a blade starts to wear or when a deeper or shallower application is required, blade adjustment is necessary. To adjust the blade, refer to the steps below.
- (3) Adjust the blade depth.
  - (a) Place wood blocks ([1] and [2]) underneath the row unit tracks. Make sure the wood blocks are centered under the front and rear side of the row unit.



- (b) Make sure the hydraulic pressure has been removed from the row units before starting blade adjustment.
- (c) Place a breaker bar with a 1-1/8-inch socket on the blade bolt. On the other side place a 1-1/8-inch wrench on the blade nut.
- (d) Remove the blade bolt and nut from the row unit.
- (e) Adjust the blade hub assembly to the appropriate slot: Low [3], Medium [4], and High [5].



- (f) Install the blade bolt and nut. Torque the nut to 140 ft-lbs.
- (g) The blade [6] must be at least 3/4-inch LOWER than the knife [7]. Failure to do so can cause damage to the knife.



- (h) If the knife requires adjustment, refer to the Knife Depth Adjustment/Removal procedure.

### 4.1.C Knife Depth Adjustment/Removal

- (1) Place wood blocks ([1] and [2]) underneath the row unit tracks. Make sure the wood blocks are centered under the front and rear side of the row unit.



- (a) Remove the two nuts and the two carriage bolts from the knife bracket.



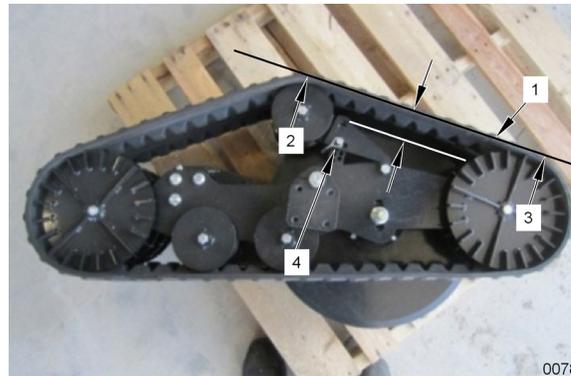
- (b) If necessary, replace the knife.
  - (1) If knife replacement is necessary, disconnect the fertilizer tube(s).
  - (2) Pull the knife downward through the bottom of the two tracks.
  - (3) Push the replacement knife upward through the bottom of the two tracks.
- (c) Slide the knife to the appropriate adjusting hole.

NOTE: The bolts must be installed in the knife and knife bracket as far apart as possible.

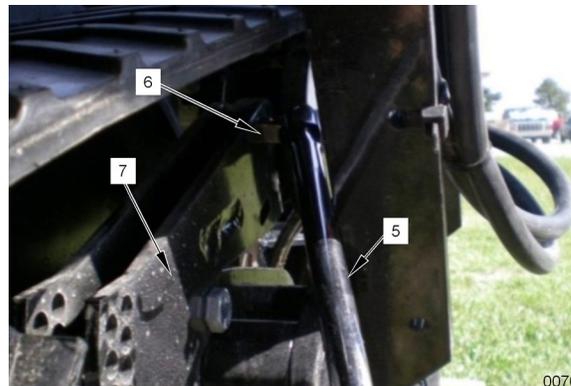
- (d) Install the carriage bolts and nuts. Torque the nuts to 78 ft-lbs.

#### 4.1.D Adjust the Tensioner

- (1) Place a straight edge [1] (metal or wood) on top of the track [2] and the other side of the straight edge on the front of the track [3].
- (2) Pull down on the section of track below the straight edge. If the track flex is more or less than 1? inches, do the steps that follow.



- (a) Remove the tensioner pin [4].
- (b) Install the square end of the 1/2-inch breaker bar [5] into the square hole [6] on the tensioner bracket [7].



- (c) Apply pressure on the 1/2-inch breaker bar in the direction necessary to move the tensioner bracket upwards/downwards to add/remove some of the track's tension.
- (d) Install the tensioner pin [4] in the appropriate hole.
- (e) Check the track flex, go to step 9.A. Do this process until the track travel flex is around 1? inches.

*NOTE: Make sure to use the bottom surface of the straight edge when checking the track travel height.*

*NOTE: Never over tighten the track tensioner. When properly adjusted, the track will flex approximately 1? inch.*

- (f) To replace the blade or hub, refer to Blade and Hub Replacement in section 10.

## **4.2 Row Unit Operation Test**

### **4.2.A Use the following procedure to operate and test the tractors row units.**

- (1) Make sure the tractor transmission is in PARK and/or the brakes are set.
- (2) Start the tractor engine.
- (3) Put the tractors hydraulic controls in the DETENT position.
- (4) Move the control lever for the row units back and forth several times while observing operation of the row units. The row units should raise when the control lever is pulled back and lower when the control lever is pushed forward. If the action is reversed, reverse the hose connections, refer to the Install Hydraulic Hoses to Tractor section.
- (5) After cycling the row units, check the tractor hydraulic fluid reservoir. Add hydraulic fluid if necessary. Refer to the Tractors Operation Manual.

### **4.2.B Check the following components for possible malfunctions and leaks.**

- (1) Damaged, cracked, or charred hoses.
- (2) Cracked, damaged or badly corroded fittings.
- (3) Kinked, crushed, flattened, or twisted hoses.
- (4) Leaking hydraulic cylinders.

*NOTE: When replacing hydraulic hoses on the applicator, make sure to use the same high pressure rating and hose diameter, failure to do so can affect the compatibility of this applicator.*

### **4.3 Row Unit Down Pressure Preparation and Operation**

**4.3.A Using the in-cab down pressure control box set the row unit hydraulic down pressure to 800-1200 PSI**



## **5 - Operating Row Unit**

### **5.1 Tractor Requirements**

**5.1.A Tractor horsepower (HP) requirements are generally 20-25 HP per row, but can vary depending on terrain and speed. Refer to the tractor's manual.**

### **5.2 Operating Rules**

**5.2.A Make sure the wing wheels are set in the correct position. Refer to Section 7.2 of TR 430/440 Operators Manual.**

**5.2.B Raise row units off the ground before making turns.**

**5.2.C Avoid making sharp turns that may cause tractor tires to make contact with the applicator.**

**5.2.D Never raise or lower the wings while applicator is in motion. Refer to Section 5.**

**5.2.E Never operate in the field with wings raised.**

**5.2.F Make sure the applicator is on level ground before raising or lowering wings.**

**5.2.G Make sure tractor and applicator have been properly prepared. Refer to Section 5 and 6.**

### **5.3 Prepare To Operate Row Unit In Field**

**5.3.A Verify the following procedures are completed:**

- (1) Set the row unit down pressure to 800-1200 PSI using the in cab pressure control box.



**5.3.A Continued Verify the following procedures are completed:**

- (2) Set the wing down pressure to 600-700 PSI using the in cab pressure control box.



- (3) For rate controller and anhydrous ammonia applicator, refer to manufacturer's operation manual.

**5.4 Adjust Row Unit Down Force**

**5.4.A The row unit down pressure should not exceed 1800 psi. The wing wheels can be off the ground during row unit down pressure setting.**

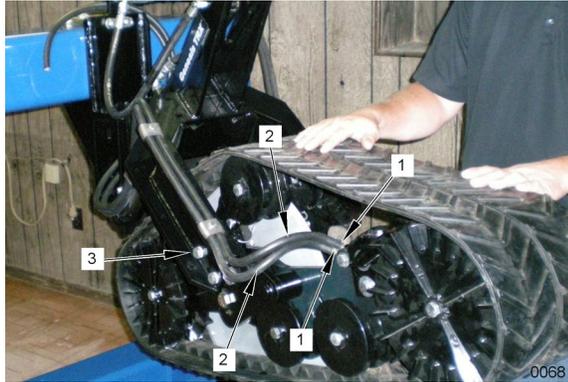
- (1) Do not add suitcase weights to the wings. Only hang suitcase weights on the rear of the tool bar on the weight rack.
- (2) Begin operating and observe that the row units are making full contact to the ground and that the wing wheels are making contact to the ground without excessive compacting.
- (3) After setting the pressure gauge, make a trial pass in the field (20-40 yards). If the penetration is not satisfactory, adjust hydraulic pressure as necessary.

## **6 – Maintenance/Service**

### **6.1 Row Unit Removal/Installation**

#### **6.1.A Row Unit Removal/Installation**

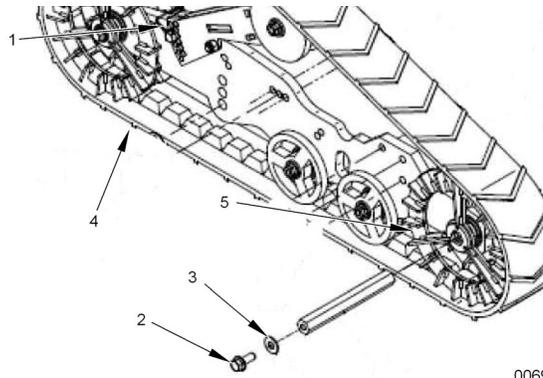
- (1) Use the following procedure to remove the row unit from the lifting arm.
  - (a) Lower the row units to the down position.
  - (b) Loosen the two hose clips [1] and slide the hose clips up.



- (c) Remove the hoses [2] from the knife tubing.
  - (d) Remove the eight bolts and lock washers [3] on both sides of the lifting arm assembly.
  - (e) Carefully remove the row unit.
- (2) Use the following procedure to install the row unit on the lifting arm.
  - (a) Carefully align the row unit with the lifting arm.
  - (b) Install the eight bolts and lock washers [3] on both sides of the lifting arm. Torque the bolts to 76 ft-lbs.
  - (c) Install the hoses [2] on the knife tubing.
  - (d) Tighten the two clips [1].
  - (e) Raise the row unit off the ground.

### 6.1.B Track

- (1) To remove the track, refer to the following procedure.
  - (a) Remove the row unit. Refer to Row Unit Removal/Installation procedure above.
  - (b) Remove the track tensioner pin [1] and pull the tensioner arm down.



- (c) Remove the bolt [2], flat washer [3], and the wheel assembly [5].
  - (d) Remove the track [4].
- (2) To install the track, refer to the following procedure.
  - (a) Install the new track on the row unit. Make sure the track tread (arrow pattern) is pointing to the rear.
  - (b) Install the wheel assembly [5] onto the hex axle. Install the flat washer [3] and bolt [2]. Torque the bolt to 76 ft-lbs.
  - (c) Adjust the tension on the track. Refer to Section 6.
  - (d) Install the row unit. Refer to Row Unit Removal/Installation procedure above.

### 6.1.C Blade or Blade Hub Replacement

- (1) To replace the blade or blade hub, refer to the following procedure.
  - (a) Remove the blade assembly. Refer to the Blade Depth Adjustment in Section 6.
  - (b) Remove the bolts that attach the blade hub to the blade.
  - (c) Replace the blade/hub.
  - (d) Install the blade hub in the blade.
  - (e) Install the bolts that attach the blade hub to the blade. Torque the bolts to 76 ft-lbs.
  - (f) Install the assembly. Refer to the Blade Depth Adjustment in Section 6.

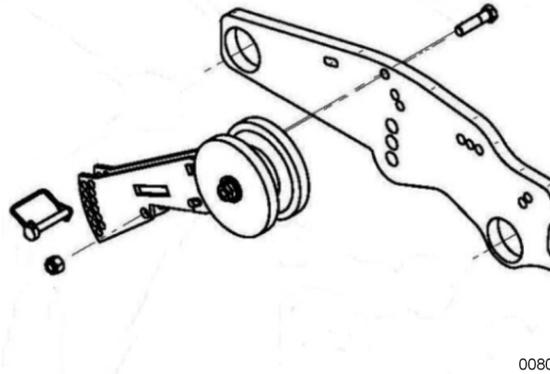
### 6.1.D Row Unit Frame Bearing



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- (1) To replace the row unit frame bearings, refer to the following procedure.
  - (a) Place the row unit frame onto a hydraulic fixture.
  - (b) Press out the bearing.
  - (c) Align the replacement bearing with the hole on the row unit frame.
  - (d) Use the specially designed mandrel, press the replacement bearing into place.
  - (e) Make sure that both bearing surfaces are centered with the row unit frame.

### 6.1.E Tensioner Wheel



**NOTE:** Do not use an air impact wrench on nylon lock nuts.

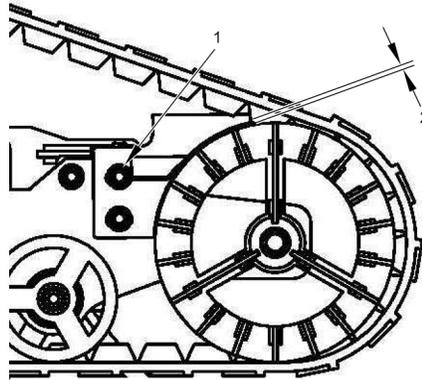
- (1) To remove the tension wheel, use the following procedure.
  - (a) Remove the track tensioner pin and push the tensioner assembly down.
  - (b) Remove the bolt and nut holding the tensioner arm to the frame bar.
  - (c) Remove the nut on the tensioner wheel.
  - (d) Remove the tensioner wheel.
- (2) To install the tension wheel, use the following procedure.
  - (a) Install the tensioner wheel on the tensioner arm.
  - (b) Install the nut holding the tensioner wheel. Torque the nut to 60 ft-lbs.
  - (c) Install the bolt and nut. Torque the nut to 78 ft-lbs.
  - (d) Adjust the track travel height. Refer to Track Tension Adjustment procedure.

### 6.1.F Idler Wheel



- (1) To remove the idler wheel, use the following procedure.
  - (a) Remove the track tensioner pin and pull the tensioner arm down.
  - (b) Remove the all-metal stop nut and bolt holding the idler wheels to the row unit frame.
  - (c) Remove idler wheels.
- (2) To install the idler wheel, use the following procedure.
  - (a) Install the idler wheel.
  - (b) Install the bolt through idler wheel and bearing.
  - (c) Install the nut. Torque the nut to 76 ft-lbs.

### 6.1.G Scraper



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- (1) Use the following procedure to remove the scraper.
  - (a) Remove the two bolts and locking nuts [1].
  - (b) Slide the scraper out from the row unit.
- (2) Use the following procedure to install the scraper.
  - (a) Slide the scraper inside the row unit.
  - (b) Install the two bolts and locking nuts. Torque the nuts to 76 ft-lbs.
- (3) Use the following procedure to adjust the scraper.
  - (a) Loosen the two locking nuts [1].
  - (b) Adjust the scraper to get 1/8-inch of clearance between the wheel to the scraper [2].
  - (c) Tighten the nuts. Torque nuts to 76 ft-lbs.

### 6.1.H Front Idler Bearing Replacement

(1) Remove the bearing.

(a) Remove the track tensioner pin and push the tensioner assembly down.



(b) Remove the bolt from the idler pulley and remove both idler pulleys from the rail.



(c) Pull the track away from the bearing area.

(d) Place bearing remover tool on the inside of the rail and the larger base cup on the outside of the rail.



(e) Tighten the 3/4" grade 8 bolt with a 1-1/8" wrench to remove the bearing from the rail.



(2) Install the bearing.

- (a) Put the installer on the inside of the rail.
- (b) Put the bearing and base cup on the outside of the rail.
- (c) Use a 1-1/8" wrench to turn the bolt clockwise to install the bearing.



- (d) Replace the idler wheels and track and tighten the bolt.



- (e) Apply pressure to track tensioner using a 1/2" drive breaker bar and insert the tensioner pin.



## **6.2 Rear Idler Bearing Replacement**

### **1.2.A Rear Idler Bearing Replacement**

(1) Remove the bearing.

(a) Remove the track tensioner pin and push the tensioner assembly down.



(b) Remove the bolt from rear idler wheel and remove outer idler wheel.



(c) Loosen two bolts in knife holder bracket.



- (d) Drive the hex shaft out to remove the inner rear idler wheel and spacer. Pull the track to the front.



- (e) Place the bearing remover tool on the inside of the rail and the larger base cup on the outside of the rail.



- (f) Tighten the 3/4" grade 8 bolt with a 1-1/8" wrench to remove the bearing from the rail.



(2) Install the bearing.

- (a) Put the installer on the inside of the rail.
- (b) Put the bearing and base cup on the outside of the rail.
- (c) Use a 1-1/8" wrench to turn the bolt clockwise to install the bearing.
- (d) Install the hex shaft back through the bearing with the spacer
- (e) Install the idler wheels with the longer flange towards the bearing.
- (f) Install and tighten the bolt.



- (g) Adjust the scraper and tighten the scraper bolts.



- (h) Apply pressure to track tensioner using a 1/2" drive breaker bar and insert the tensioner pin.

