Maxim II
Air Drill

MAXIM II
Specifications and Options

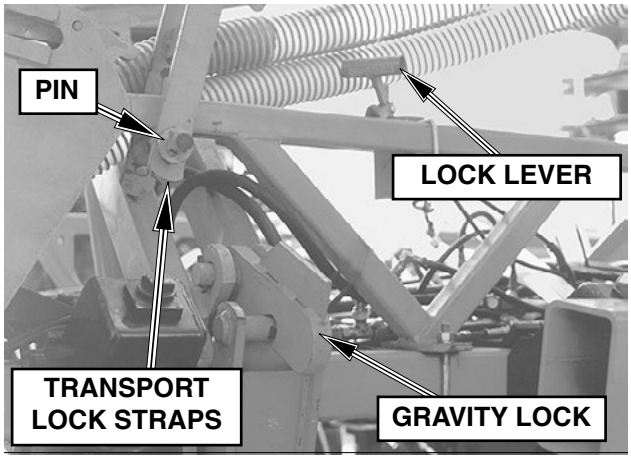
Base Size	3 Frame Models			5 Frame Models		
	29' (8.84 m)	34' (10.36 m)	39' (11.89 m)	49' (14.94 m)	55' (16.77 m)	60' (18.29 m)
Weight (3 1/2" Steel Packers with Edge-On Shank)						
- 7 1/2" Spacing	14,962 lbs.	17,039 lbs.	18,952 lbs.	25,257 lbs.	N/A	N/A
19.0 cm Spacing	6,801 kg	7,745 kg	8,615 kg	11,480 kg	N/A	N/A
- 10" Spacing	13,566 lbs.	15,025 lbs.	16,946 lbs.	22,550 lbs.	26,981 lbs.	28,801 lbs.
25.4 cm Spacing	6,166 kg	6,830 kg	7,703 kg	10,250 kg	12,264 kg	13,091 kg
- 12" Spacing	12,330 lbs.	14,151 lbs.	16,003 lbs.	20,909 lbs.	25,357 lbs.	27,294 lbs.
30.5 cm Spacing	5,605 kg	6,432 kg	7,274 kg	9,504 kg	11,526 kg	12,406 kg
Working Width - 7 1/2" (19.0 cm) Spacing	29' 5" (8.97 m)	34' 5" (10.49 m)	39' 5" (12.01 m)	49' 5" (15.06 m)	N/A	N/A
- 10" (25.4 cm) Spacing	30' (9.14 m)	35' (10.67 m)	40' (12.19 m)	50' (15.24 m)	55' (16.76 m)	60' (18.29 m)
- 12" (30.5 cm) Spacing	29' (8.84 m)	35' (10.67 m)	41' (12.50 m)	49' (14.93 m)	55' (16.76 m)	61' (18.59 m)
Number of Shanks - 7 1/2" (19.0 cm)	47	55	63	79	N/A	N/A
- 10" (25.4 cm)	36	42	48	60	66	72
- 12" (30.5 cm)	29	35	41	49	55	61
Frame Width - Main	14' 6" (4.42 m)	14' 6" (4.42 m)	14' 6" (4.42 m)	14' 6" (4.42 m)	14' 6" (4.42 m)	14' 6" (4.42 m)
- Inner Wing	7' 6" (2.29 m)	10' (3.05 m)	12' 6" (3.81 m)	10' (3.05 m)	12' 6" (3.81 m)	12' 6" (3.81 m)
- Outer Wing	N/A	N/A	N/A	7' 6" (2.29 m)	7' 6" (2.29 m)	10' (3.05 m)
Overall Length	25' 8" (7.82 m)	25' 8" (7.82 m)	25' 8" (7.82 m)	29' 7" (9.02 m)	29' 7" (9.02 m)	29' 7" (9.02 m)
Transport Position - Width	19' 10" (6.03 m)	19' 10" (6.03 m)	19' 10" (6.03 m)	22' 6" (6.86 m)	24' 6" (7.47 m)	24' 6" (7.47 m)
- Height	12' 1" (3.68 m)	14' 1" (4.29 m)	16' 7" (5.06 m)	17' 6" (5.33 m)	17' (5.18 m)	17' (5.18 m)
Tires - Main Frame Castor Wheel	(2) 11L x 15 FI Load Range D	(2) 11L x 15 FI Load Range D	(2) 11L x 15 FI Load Range D	(2) 11L x 15 FI Load Range D	(2) 12.5L x 15 FI Load Range F	(2) 12.5L x 15 FI Load Range F
- Inner Wing Frame Castor Wheel	(1 per wing) (2) 11L x 15 6 ply rating	(1 per wing) (2) 11L x 15 6 ply rating	(1 per wing) (2) 11L x 15 6 ply rating	(1 per wing) (2) 11L x 15 6 ply rating	(2 per wing) (4) 11L x 15 6 ply rating	(2 per wing) (4) 11L x 15 6 ply rating
- Outer Wing Frame Castor Wheel (1 per wing)	N/A	N/A	N/A	(2) 11L x 15 6 ply rating	(2) 11L x 15 6 ply rating	(2) 11L x 15 6 ply rating
- Main Frame Transport Wheels	(4) 11L x 15 FI Load Range D 6 Bolt Hub	(4) 11L x 15 FI Load Range D 6 Bolt Hub	(4) 11L x 15 FI Load Range F 8 Bolt Hub	(4) 11L x 15 FI Load Range F 8 Bolt Hub	(4) 12.5L x 15 FI Load Range F 8 Bolt Hub	(4) 12.5L x 15 FI Load Range F 8 Bolt Hub
Dual Castor Wheels on Wings	Optional	Optional	Optional	Optional	Standard on Inner Wing Optional for Outer Wing	
Number of Ranks	7 1/2" (19.0 cm) Spacing - 4 row "Z" Pattern 10" (25.4 cm) & 12" (30.5 cm) Spacing - 4 row					
Trip Mechanism	400 lb (180 kg) Spring Cushion Trip with 1 (2.54 cm) x 2" (5.1 cm) shank					
Shank Options	Forged Edge-On Conventional 'C' Shank (1 3/4" (4.4 cm) hole spacing) (47 Degree tillage tools)					
Packer Wheel Options	2" (5.1 cm) Steel or Rubber - (7 1/2" (19.0 cm) & 10"(25.4 cm) Spacing) 3 1/2" (8.9 cm) Steel or Rubber - (7 1/2" (19.0 cm), 10" (25.4 cm) & 12" (30.5 cm) Spacing) 4 1/2" (11.4 cm) Steel or Rubber - (10" (25.4 cm) & 12" (30.5 cm) Spacing **ONLY**)					
Frame to Opener	Vertical Clearance - 27 1/2" with Regular Hoe Point - 30 1/2" with Double Shoot/Knife Openers					
Rank to Rank Spacing	24" (61.0 cm)					
Shank to Shank Spacing	30" (76.2 cm) on 7 1/2" (19.0 cm) & 10" (25.4 cm) spacing, 36" (91.4 cm) on 12" (30.5 cm) spacing					
Frame Depth	76" (1.93 m) (4 ranks)					
2-Bar Harrows	Optional (3 Row 10" (25.4 cm) Spacing ONLY)					
Coulters - Trash Cutting (Rippled or Plain)	Optional - Front Row Mount on 30" (76.2 cm) Centres - (20" (50.8 cm) diameter)					
- Fertilizer (Plain)	Optional - Random Mounting on 20" (50.8 cm) Centres - (20" (50.8 cm) diameter) (N/A on 55 and 60 ft)					
Packer Mud Scrapers	Optional (For both Steel and Rubber Packers)					
Rock Deflectors	Optional (7 1/2" (19.0 cm), 10" (25.4 cm) & 12" (30.5 cm) Spacing)					
Safety Lights	Standard					
Safety Chain	Standard					

Transport

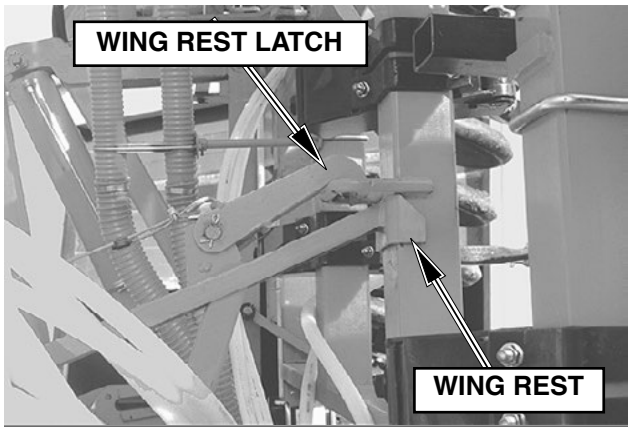
Transport to Field Position

- Position machine on **level ground**.
- Stop tractor, and engage park brake.
- As a precaution, check surrounding area to be sure it is safe to lower wings.
- Extend main frame depth cylinders. **(Fully extending the packers)**
- Position lock lever in forward position, unlatching wing rest latch.
- Remove wing transport lock strap pins and swing the transport wheels gravity lock up. Do not walk under raised wings.
- Operate the wing lift hydraulics. **First**, lowering the wings fully. **Secondly**, raising the transport wheels fully. **Never raise or lower wings when moving.**
- Ensure wing lift cylinders are fully extended.
- Remove transport lock pin and castor lock pin from main frame gauge wheel.
- Operate depth control hydraulics, to raise machine fully, holding the hydraulic lever for several seconds to phase the system.
- On the **Five Frame Models** ensure that the inner wing foot has retracted.

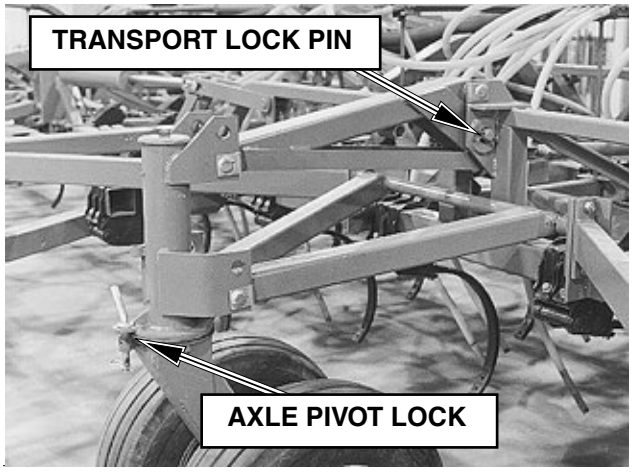
Note: Wings must lower fully before the transport wheels retract. See transport hydraulics.



Gravity Lock and Lock Straps



Wing Rest



Main Frame Gauge Wheel Castor

⚠ Danger

Always stay clear of wings being raised, lowered or in elevated position. Ensure cylinders are completely filled with hydraulic fluid - Wings may fall rapidly causing injury or death.

Transport

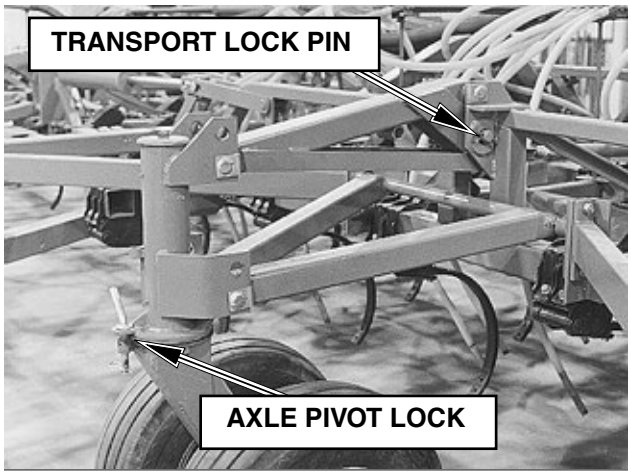
Field to Transport Position

- Position machine on **level ground**.
- Stop tractor, and engage park brake.
- Ensure wing lift cylinders are fully extended.

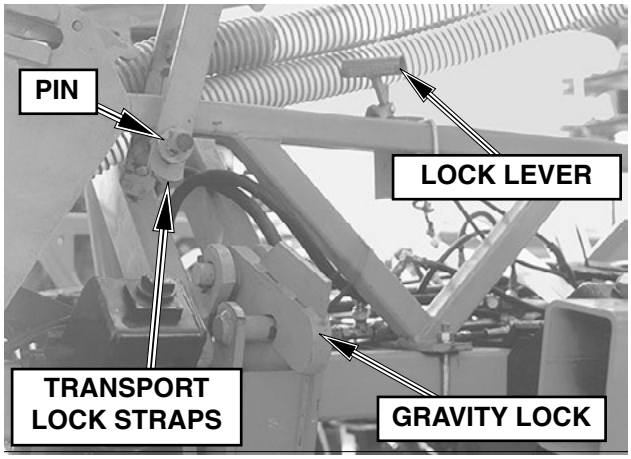
Note: On five-section models the wing lift cylinders must be fully extended to ensure proper operation of the FCV manifold.

- Raise Air Drill to highest position, depth control hydraulics.
- Install transport lock pin for main frame gauge wheel.
- Secure main frame gauge wheel castor lock pin. **It is important to pin the gauge wheel to prevent excessive shimming of wheels.**
- Operate the wing lift hydraulics. **First**, lower the transport wheels fully. **Second**, raise the wings fully.
- Secure wing transport lock strap pins and swing the transport wheels gravity locks down. Do not walk under raised wings.
- Position lock lever in rear position, latching wing rest latch.
- Ensure safety chain is properly installed, see page two of Operation Section.
- **Retract packers** with depth control circuit.

Note: The front gauge wheel lock pin must be installed to do this.



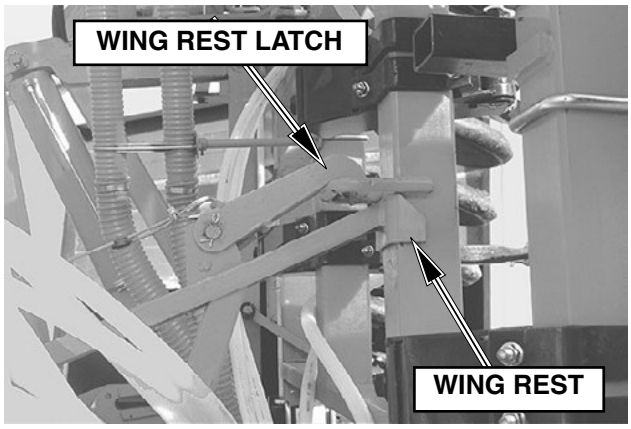
Main Frame Gauge Wheel Castor



Gravity Lock and Lock Straps

⚠ Danger

Always stay clear of wings being raised, lowered or in elevated position. Ensure cylinders are completely filled with hydraulic fluid - Wings may fall rapidly causing injury or death.



Wing Rest

Levelling

Initial Levelling

1) Initial levelling should be done on a flat, level surface, similar to that of a concrete floor.

- Adjust packer pivot brackets to bottom of adjusting slot.

a) Regular Seed Openers

(Lower Height Setting - Field Clearance Settings)

- Adjust the short turnbuckles length to 19 3/8" from pin centre to pin centre.
- Adjust the long turnbuckles length to 101 1/2" from pin centre to pin centre.
- **55 ft and 60 ft Inner Wing** adjust the long turnbuckle length to 100 3/4" from pin centre to pin centre.

b) Double Shoot/Knife Openers

(Higher Height Setting - Field Clearance Settings)

- Adjust the short turnbuckles length to 18 1/8" from pin centre to pin centre.
- Adjust the long turnbuckles length to 101 1/2" from pin centre to pin centre.
- **55 ft and 60 ft Inner Wing** adjust the long turnbuckle length to 100 3/4" from pin centre to pin centre.

2) Lower the unit with the depth control circuit until the points are about 1" above the ground.

3) Check the main frame side to side level. Adjust the packer pivot brackets as necessary.

4) Adjust the main frame front to back with long turnbuckle link so the front row of points is about 1" lower than the back row of points. Lengthen the link to lower the front of the frame.

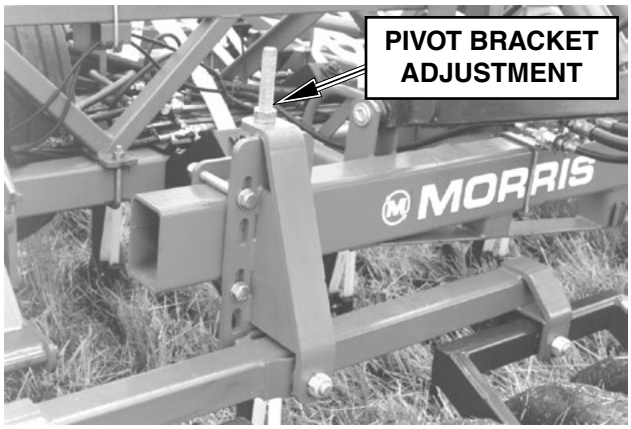
Note: Frames should be preset with a 1" difference front to back due to the tendency of the packers to sink more in worked soil than the front wheels. This setting is approximate and may have to be adjusted, depending on soil conditions.

5) Adjust the wing frames side to side and front to back in the same way as the main frame (Step 3 and 4).

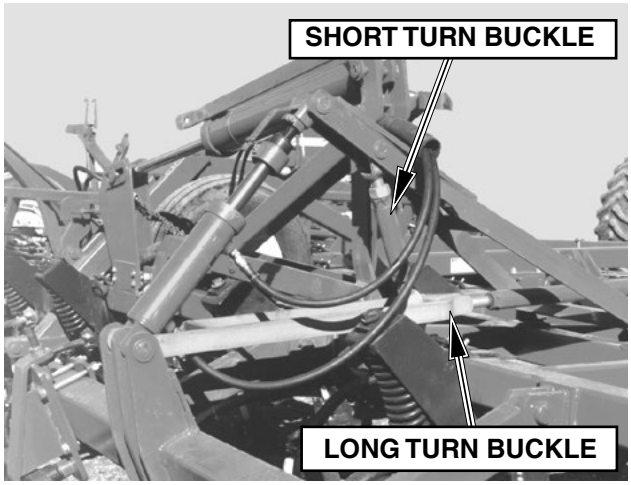
6) Adjust the wing frames to the same height as the main frame, by adjusting the short turnbuckle link. Lengthen the link to lower the frame.

Important

Keep tire air pressure at the listed specifications to achieve and maintain proper level.



Packer Pivot Bracket



Levelling - Continued

Final Levelling

In order for any Air Drill to perform as intended, it must be properly levelled. To properly level an Air Drill, the **final levelling must be done in the field with ground conditions being firm and unworked.**

If the Air Drill is levelled in preworked, soft conditions, the front may dip when working in harder conditions. This causes the back row of shanks to work shallower than the front and can result in rough, uneven field finish and uneven seed depth which may result in strips appearing in the crop.

Final levelling requires the following basic steps to be followed:

1) Ensure that all stroke control collars are backed off completely.
2) **Rephase** hydraulic depth system.
3) Lower the unit with the depth control circuit until the points on the rear row of the main frame are seeding at the desired depth.
4) When the desired depth is reached and with the unit still in the ground turn down the stroke control collars on ***all*** the frames.

After the stroke control collars have been set:

5) **Rephase** hydraulic depth system. Pull the unit 100 feet at the desired depth at **approximately 2 m.p.h.**. Stop the unit in the ground.

Note: Only do one adjustment at a time.

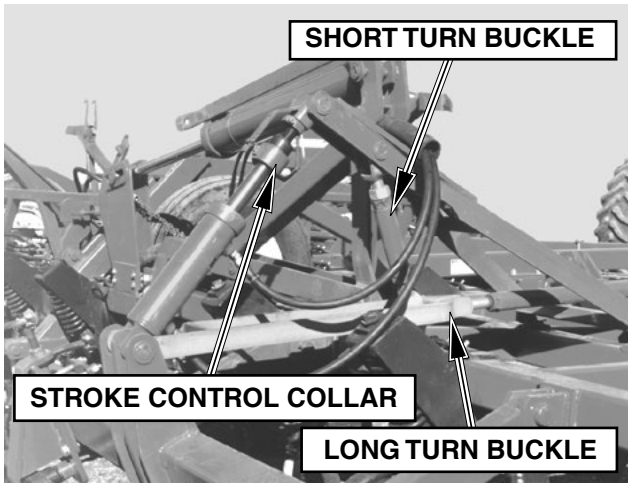
6) Check the seeding depth of the points on the **rear row** of the wing frames. Adjust short turnbuckle on the wing frames to match the seeding depth of the main frame. Lengthen the link to lower the frame.
7) Check frame side to side level. Adjust the packer pivot brackets as necessary.
8) Check depth front to back on all frames. Adjust the long turnbuckles. Lengthen link to lower the front of the frame.
9) Pull the unit 100 feet at the desired depth travelling at **normal operating speed**. Check machine level and make any adjustments necessary by repeating steps 5 through 8.

Important

Final Levelling is
"VERY IMPORTANT"

It is suggested that the operator read carefully and carry out the procedures exactly as described.

Note: Each operator is responsible for levelling their Air Drill. As field conditions vary, fine tuning is left to the operator's discretion.



Note: Any change in the depth setting can now be done by adjusting all the stroke control collars evenly across the whole unit. (See Depth Adjustment)

Field Clearance Settings

To accommondate different seed openers, the Maxim Air Drill has two Height Settings for Regular Seed Openers and Double Shoot/Knife Openers.

Regular Seed Openers

Lower Height Setting

a) Mount main frame gauge wheel in lower holes.

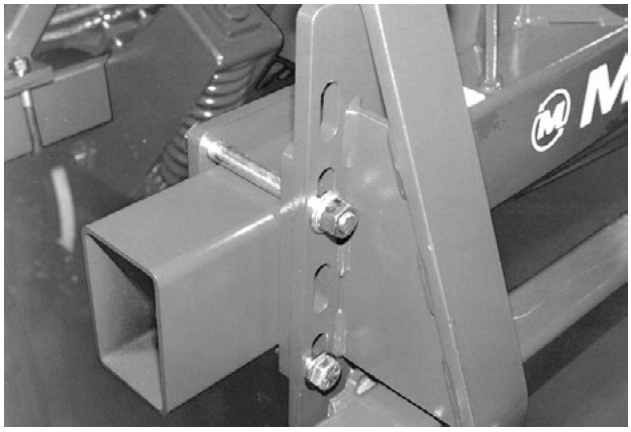
b) Mount packers on main frame in lower holes.

c) Place spacer on the bottom of wear plate.

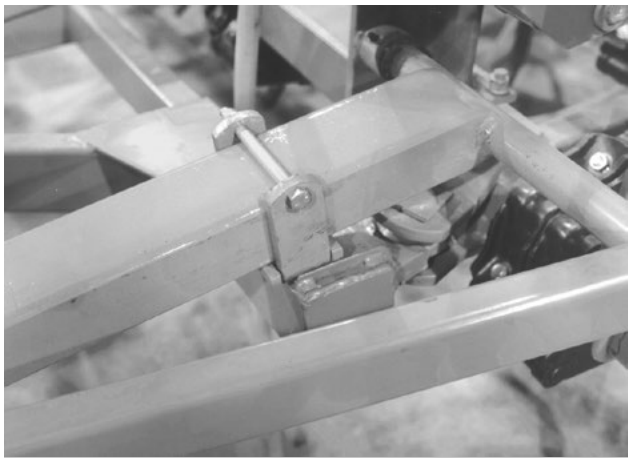
- Wear plates are located on the wing gauge wheel lower link.
- Wear plate should contact the hitch truss in the middle as shown.

Note: On the 49 ft. model, the wear plate is used only on the outer wings.

(A) Gauge Wheel Main Frame



(B) Packers Main Frame



(C) Wear Plate

Field Clearance Settings - continued

Double Shoot/Knife Openers

Upper Height Setting

a) Mount main frame gauge wheel in upper holes.

b) Mount packers on main frame in upper holes.

c) Place spacer on the top of wear plate.

- Wear plates are located on the wing gauge wheel lower link.
- Wear plate should contact the hitch truss in the middle as shown.

Note: On the 49 ft. model, the wear plate is used only on the outer wings.

(A) Gauge Wheel Main Frame

(B) Packers Main Frame

(C) Wear Plate

Hydraulic Depth Control System

Three Section Models

The hydraulic depth control system is a series system.

To lift the Maxim Air Drill, hydraulic fluid is forced into the butt end of cylinders 1. This causes the piston rods to extend, pivoting the packers and the gauge wheel down. This causes the main frame to raise.

Simultaneously, hydraulic fluid is forced from the gland end of cylinders 1 to the butt end of cylinders 2, causing them to extend, pivoting the packers and gauge wheels down. This causes the wings to raise.

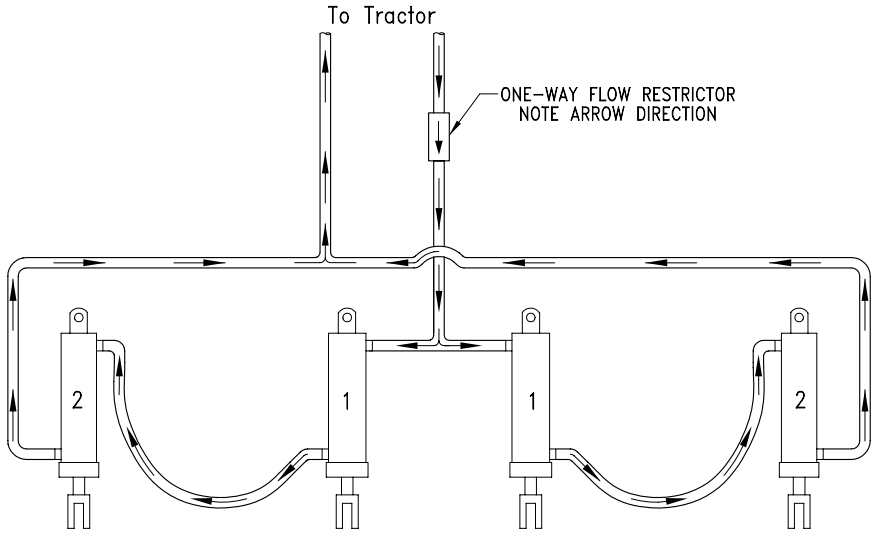
Finally the fluid exits the gland end of cylinders 2 into a common line and then to the tractor.

To lower the Maxim Air Drill, hydraulic fluid flows through the cylinders in the reverse direction to that described above, until the stroke control collars seat firmly on the gland end of the cylinders. This causes the flow of oil from the tractor to stop.

With the stroke control collars firmly seated, the cylinders will hold this working depth until the tractor hydraulic controls are activated to lift the Maxim Air Drill.

Note: A one-way flow restrictor valve is incorporated into the hydraulic system to maintain a positive oil pressure.

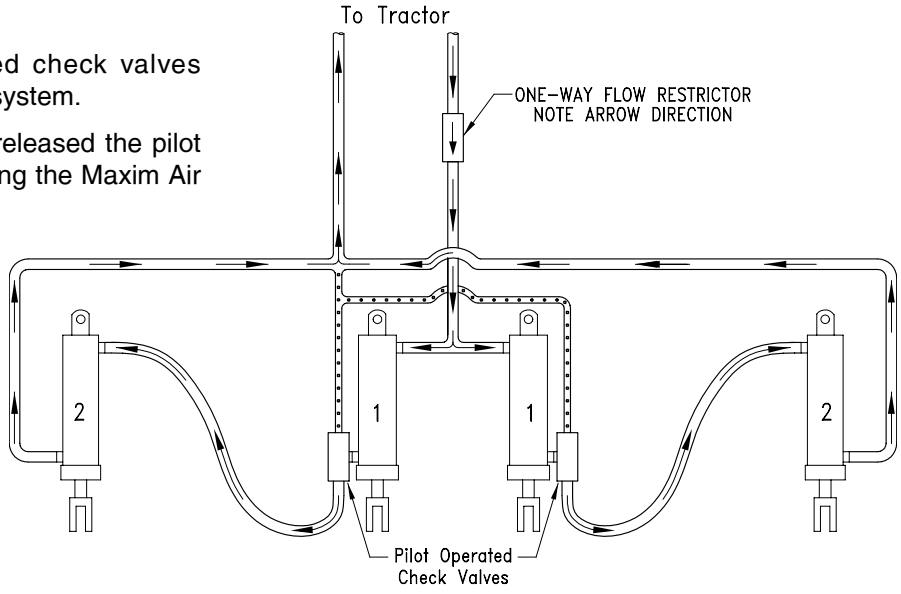
29 ft. and 34 ft. Models



39 ft. Model

The 39 ft. unit has pilot operated check valves incorporated into the depth control system.

Once the tractor hydraulic lever is released the pilot operated check valves close, isolating the Maxim Air Drill hydraulics from the tractor.



Hydraulic Depth Control System

Five Section Models

The hydraulic depth control system is a series system.

To lift the Maxim Air Drill, hydraulic fluid is forced into the butt end of cylinders 1. This causes the piston rods to extend, pivoting the packers and gauge wheels down. This causes the main frame to raise.

Simultaneously, hydraulic fluid is forced from the gland end of cylinders 1 through the pilot operated check valves to the butt end of cylinders 2, causing them to extend, pivoting the packers and gauge wheels down. This causes the inner wings to raise.

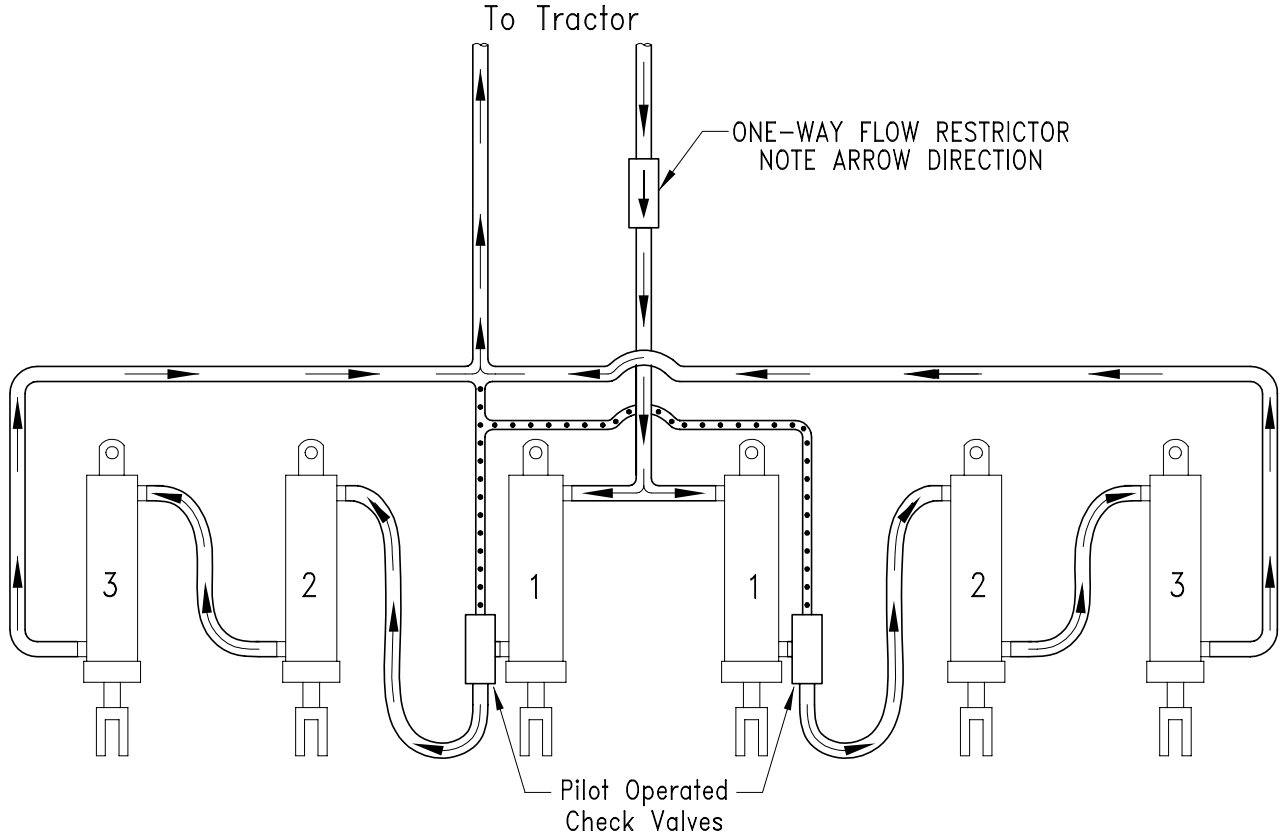
Hydraulic fluid is forced from the gland end of cylinders 2 to the butt end of cylinders 3 , causing them to extend, pivoting the packers and gauge wheels down. This causes the outer wings to raise.

Finally the fluid exits the gland end of cylinders 3 into a common line and then to the tractor. Once the tractor hydraulic lever is released the pilot operated check valves close, isolating the Maxim Air Drill hydraulics from the tractor.

To lower the Maxim Air Drill, hydraulic fluid flows through the cylinders in the reverse direction to that described above, until the stroke control collars seat firmly on the gland end of the cylinders. This causes the flow of oil from the tractor to stop.

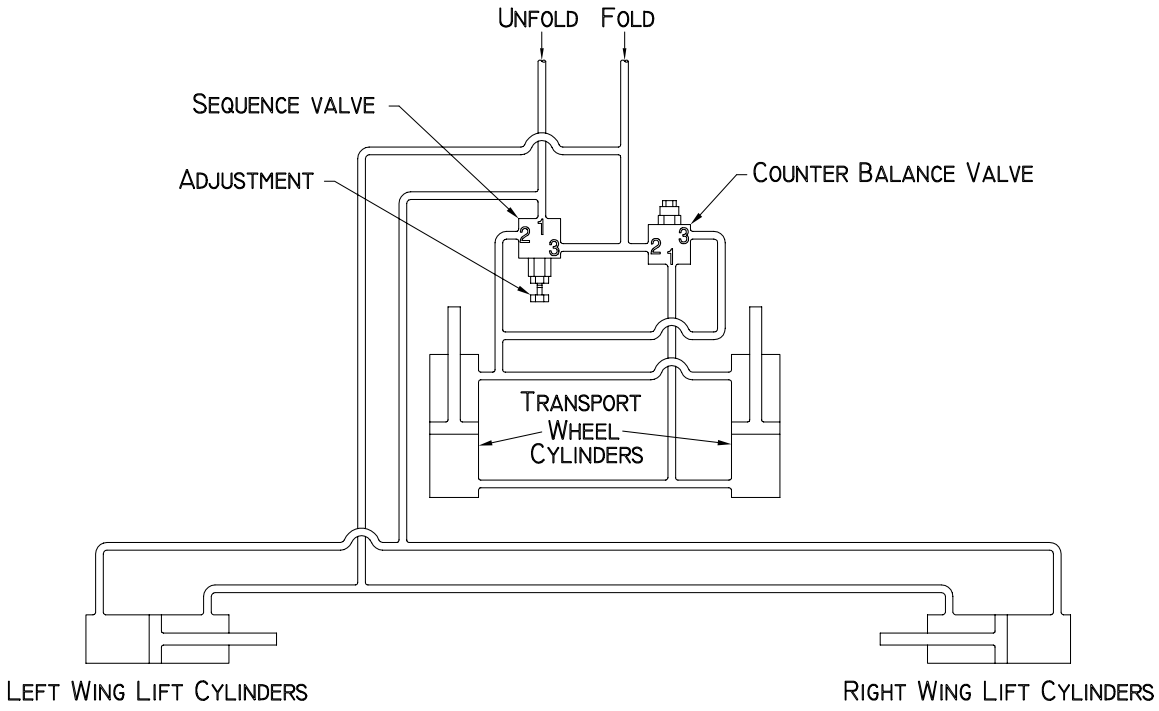
With the stroke control collars firmly seated, the cylinders will hold this working depth until the tractor hydraulic controls are activated to lift the Maxim Air Drill.

Note: A one-way flow restrictor valve is incorporated into the hydraulic system to maintain a positive oil pressure.

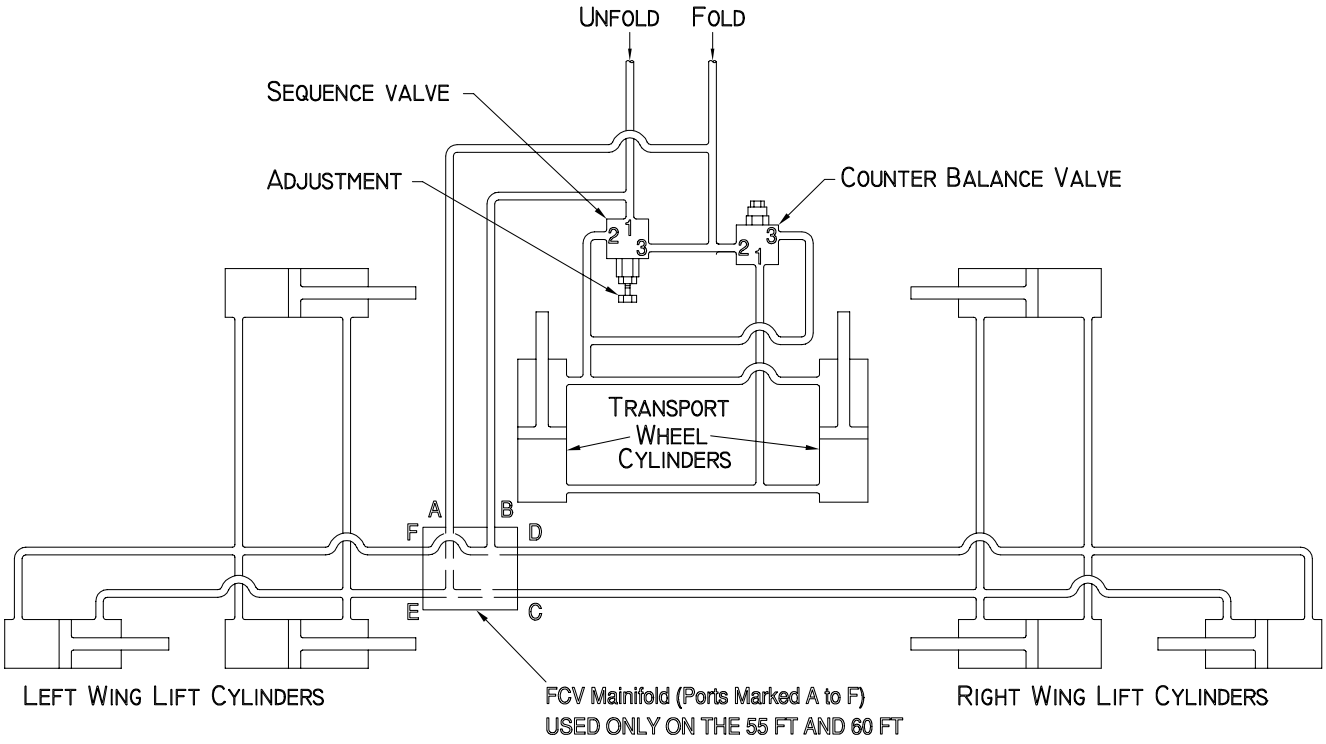


Transport Hydraulics

Three Section Models



Five Section Models



Transport Hydraulics

The transport hydraulic system is controlled by a parallel hydraulic system. A sequence valve and counter balance valve are used to control the order in which the hydraulic cylinders are activated.

The valves are located on the main frame with the sequence valve mounted on top of the counter balance valve. The counter balance valve is preset at 3000 psi with a pilot pressure of 1000 psi. The sequence valve is preset at 2400 psi.

Note: The sequence valve may have to be adjusted depending on individual tractor characteristics. The counter balance valve should not be adjusted.

The function of both the sequence valve and counter balance valve are critical, during the unfolding procedure, without these valves the transport wheel cylinders will retract as soon as the tractor lever is moved in the unfolding direction, causing damage to the main frame packer assembly.

Note: On the 55 and 60 foot model, a pressure compensated flow control valve (FCV) manifold is integrated in the circuit to synchronize the raising and lowering of the wings.

To unfold the Maxim Air Drill, the sequence valve prevents hydraulic fluid from flowing to the transport wheel cylinders, forcing the fluid to the wing lift cylinders causing the wings to unfold first.

Once the wing lift cylinders are fully extended the pressure in the circuit builds to the point that the sequence valve opens, causing the pilot line to the counter balance valve to pressurize opening the counter balance valve. With both valves open the hydraulic fluid retracts the transport wheels up into field position.

During the folding procedure, hydraulic fluid free flows through both valves. First, hydraulic fluid extends the transport wheel cylinders lifting the main frame packers off the ground. Once the transport wheel cylinders are fully extended, the wing lift cylinders retract folding the wings. As the weight of the wings transfer onto the main frame, the counter balance valve prevents the transport wheels from retracting.

⚠ CAUTION

TRANSPORT WHEELS MUST BE LOCKED IN PLACE BEFORE FOLDING UNIT UP OR DOWN AND WHEN TRANSPORTING. FAILURE TO DO SO COULD RESULT IN SEVERE DAMAGE TO MAIN PACKER FRAME AND/ OR PACKER GANG PIVOTS.

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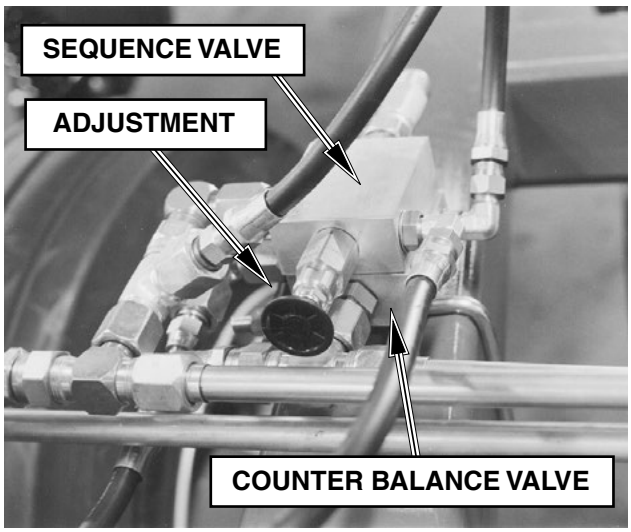


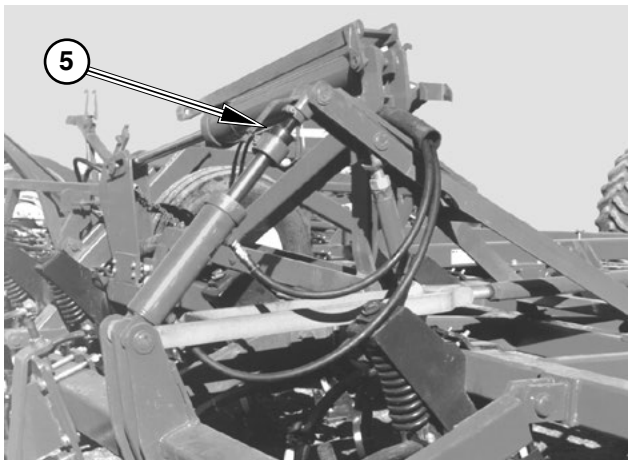
Lubrication

Greasing pivot points prevents wear and helps restrict dirt from entering. However, once dirt does enter a bearing, it combines with the lubricant and becomes an abrasive grinding paste, more destructive than grit alone.

- Apply new lubricant frequently during operation to flush out old contaminated lubricant.
- Use a good grade of **lithium based grease**.
- Use a good grade of machine oil.
- Clean grease fittings and lubricator gun before applying lubricant.

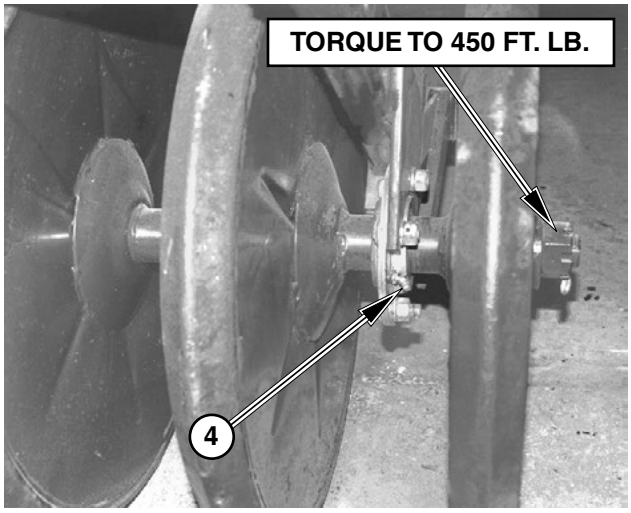
Refer to the photos for grease fitting locations.

1. **Hubs**
   - Grease every 500 hours. (Once a season)
2. **Gauge Wheel Castor Pivot**
   - Grease every 100 hours. (Bi-weekly)
3. **Gauge Wheel Lower Pivot Arms**
   - Grease every 10 hours. (Daily)
4. **Packer Bearings**
   - Grease every 50 hours. (Weekly)
   - Two bearings per packer gang.
5. **Stroke Control Colars**
   - Clean and Grease threads at end of season.



Press Wheels

- Press wheels assembly is torqued to 450 ft. lbs. at the factory.
- Check at 5 and 15 hours and periodically afterwards.
- Packer Torque Wrench is located on the front side of the main frame packer assembly.



Axle Pivot Bushings

Inspect seasonally the axle pivots for wear. Replace bushings if excessive movement is found.

In the event the Axle Pivot Bushings need replacing, use the following procedure.

- Remove roll pin (E) from pivot pin (D).
- Remove pivot pin (D).
- Remove seals. **Note Seal Lips Facing Out.**
- Remove pivot bushings.
- Thoroughly clean all parts.
- Inspect pivot pin for abrasions, replace if necessary.

Note: Any abrasions on the pin will severely limit the life of the bushings.

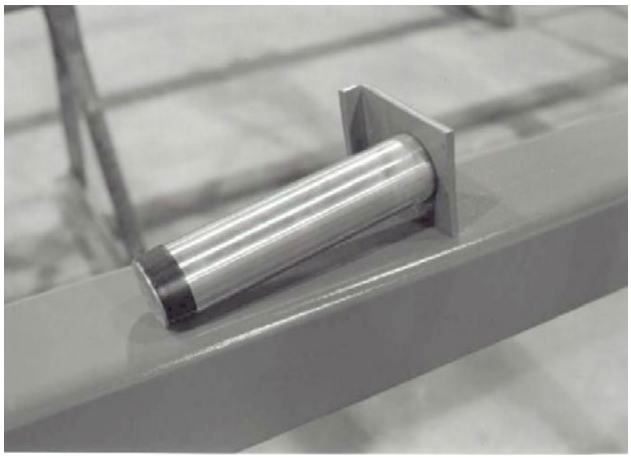
- Carefully press bushings in place, ensuring the inner lining of the bushings are not damaged.
- Install the seals with the **seal lips facing out.**

Note: Seal lips *must face outward* to prevent dust from entering bushings.

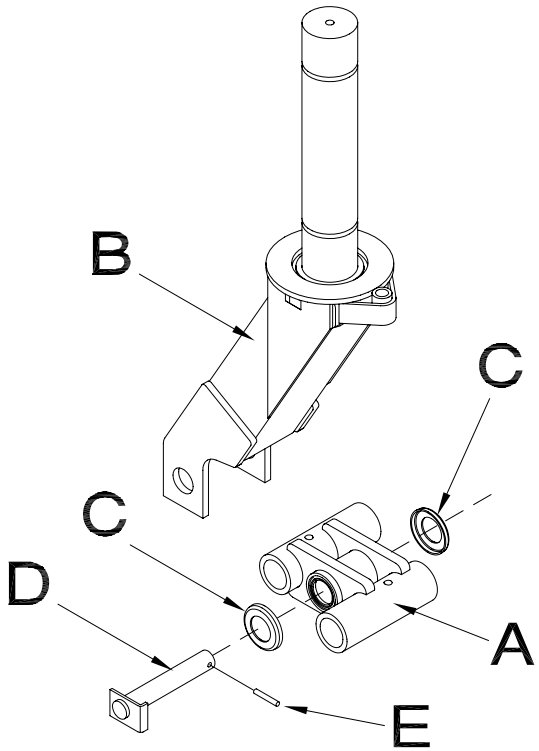
- Apply a thin layer of oil onto seal lips to ease in the installation of pivot pin.
- Place cupped washers (C) over seals.
- Align axle walking beam (A) with castor (B).
- Wrap a single layer of electrical tape over hole. This will ensure the edge of the hole will not damage the seal lips.

Note: Do not use grease on any components.

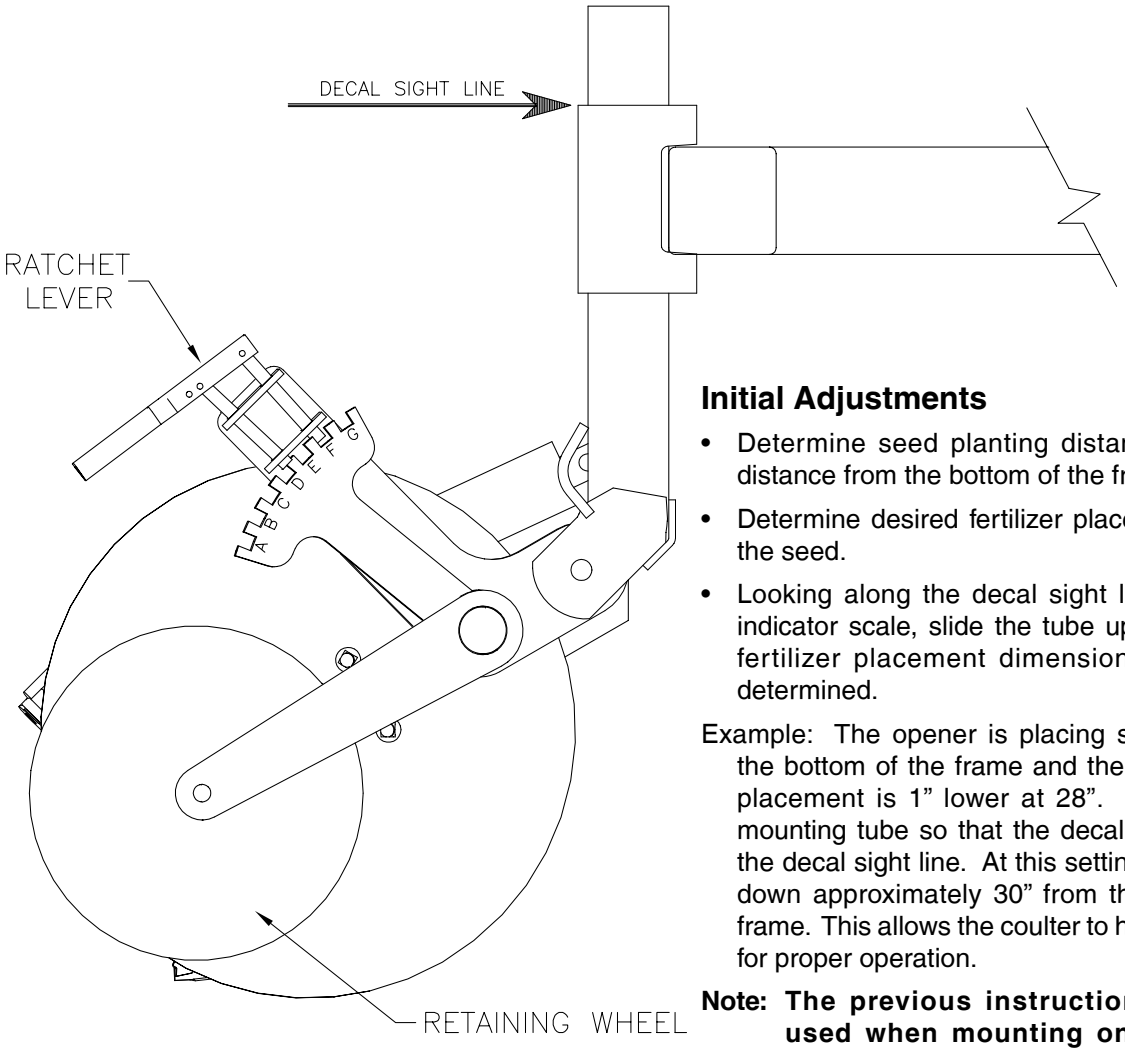
- Carefully install pivot pin, ensuring the seal lips and inner lining of the bushings are not damaged. **Do not force pin through the bushings.**



Tap Pivot Pin Hole



Fertilizer Coulter

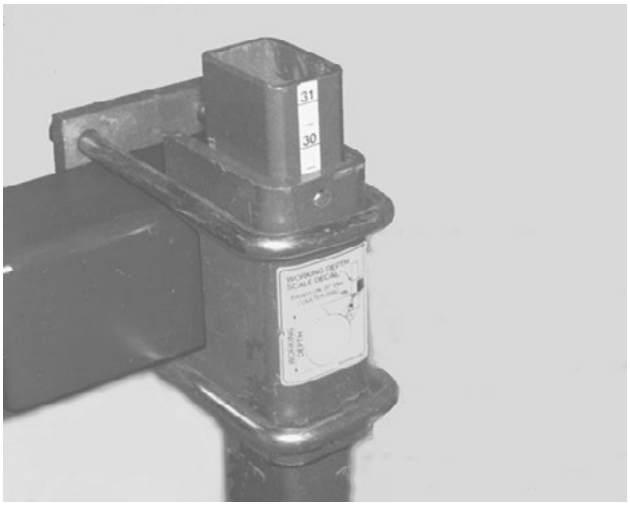


Initial Adjustments

- Determine seed planting distance: the vertical distance from the bottom of the frame to the seed.
- Determine desired fertilizer placement relative to the seed.
- Looking along the decal sight line at the depth indicator scale, slide the tube up or down to the fertilizer placement dimension that has been determined.

Example: The opener is placing seed at 27" from the bottom of the frame and the desired fertilizer placement is 1" lower at 28". Adjust the main mounting tube so that the decal reads 28" along the decal sight line. At this setting the disc hangs down approximately 30" from the bottom of the frame. This allows the coulter to have a 2" pre-load for proper operation.

Note: The previous instructions can not be used when mounting onto subframes, compensate for the difference in elevation.



Final Adjustments

- Now that the correct mounting position and pre-load has been set, adjust the soil retaining wheel by using the ratchet lever.
- The soil retaining wheel must be in slight contact with the disc to ensure that the disc will remain clean when in wet conditions.

Note: Binding should not occur when rotating disc by hand. CAUTION must be used when performing this procedure.

Fertilizer Coulter

Closing Tine

The closing tine is located on coulters which do not have a trip located behind it to close the fertilizer opening. These tines can be placed on all coulters as an option if so desired.

Mount the tine as follows:

- There are left and right tines.
- The tine coil should face outward and be positioned to the top as shown.
- Secure tine with set screw and jam nut.
- Adjust tine for desired closing action.

Closing Tine

Important

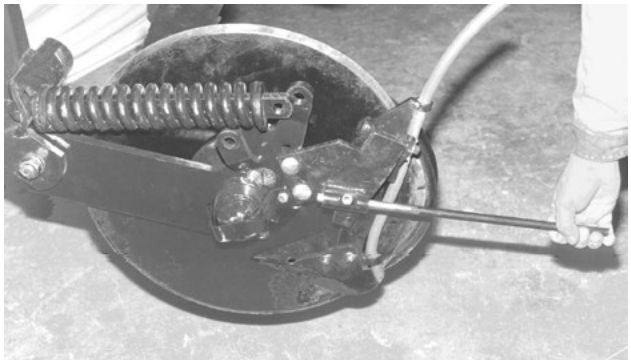
Retighten setscrew after the first 20 acres.

Coulter Positions

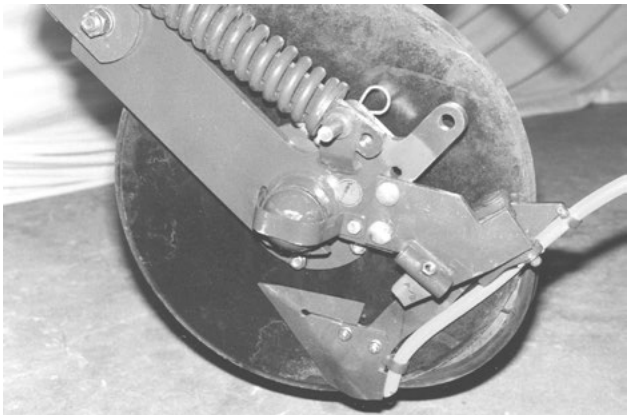
The coulter has two positions the working or field position and the storage or transport position.

The storage position is used when the coulter is not being used during field operation, this prevents unnecessary wear on the coulter unit. The storage position is also used on the main frame to raise coulters for transport where necessary.

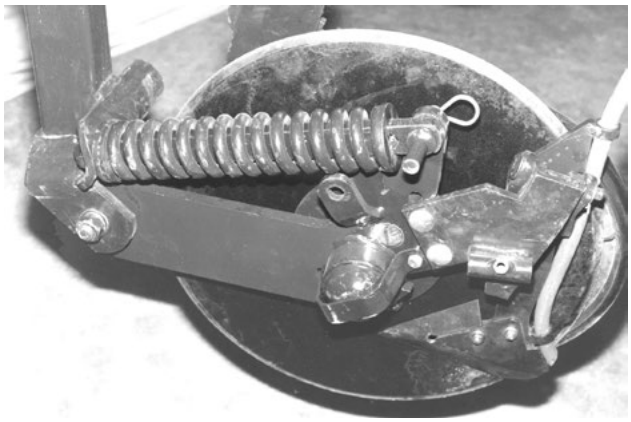
The working position is used when the coulter is being used during field operations.



Leverage Bar



Working Position



Storage Position

Fertilizer Coulter

Lubrication

- Use a good grade of **lithium based grease**.

1. **Hubs**
   - Grease every 100 hours. (Bi-weekly)

Scraper Positions

The scraper has two positions to extend the life of the coulter disc.

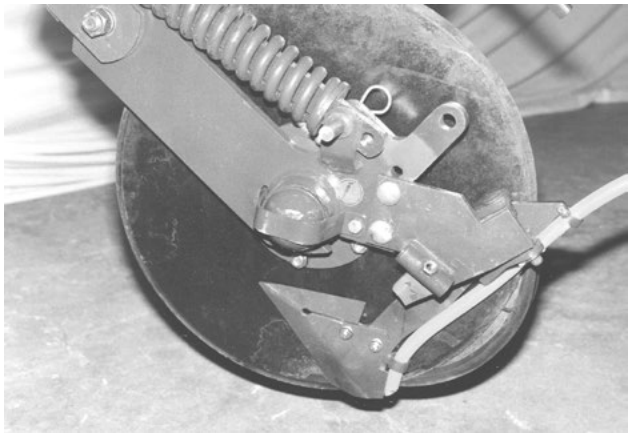
NH3 applications only

Initially the opener is set in the lower position.

Once the coulter disc has worn approximately 1 inch the scraper is moved to the upper position.

Granular or liquid applications

Initially the scraper is set in the upper position.



Working Position

Closing Tine

The closing tine can be adjusted outward as it wears and can be reversed to use the other half of the tine.

Mount the tine as follows:

- There are left and right tines.
- The tine coil should face outward and be positioned to the top as shown.
- Secure tine with set screw and jam nut.

Closing Tine

Important

Retghten setscrew after the first 20 acres.