

Maxim Air Drill

Specifications

Maxim Air Drill

Specifications and Options

Base Size	29' (3 Frame)	34' (3 Frame)	39' (3 Frame)	49' (5 Frame)	55' (5 Frame)	60' (5 Frame)
Weight (3 1/2" Steel Packers with Edge-On Shank)						
- 7 1/2" Spacing	14,791 lbs.	16,839 lbs.	18,723 lbs.	24,970 lbs.	N/A	N/A
- 10" Spacing	13,435 lbs.	14,872 lbs.	16,772 lbs.	22,332 lbs.	26,241 lbs.	28,039 lbs.
- 12" Spacing	12,225 lbs.	14,024 lbs.	15,854 lbs.	20,731 lbs.	24,657 lbs.	26,572 lbs.
Number of Shanks						
- 7 1/2" Spacing	47	55	63	79	N/A	N/A
- 10" Spacing	36	42	48	60	66	72
- 12" Spacing	29	35	41	49	55	61
Field Width						
- 7 1/2" Spacing	29' 5"	34' 5"	39' 5"	49' 5"	N/A	N/A
- 10" Spacing	30'	35'	40'	50'	55'	60'
- 12" Spacing	29'	35'	41'	49'	55'	61'
Frame Width						
- Main	14' 6"	14' 6"	14' 6"	14' 6"	14'6"	14'6"
- Inner Wing	7' 6"	10'	12' 6"	10'	12' 6"	12' 6"
- Outer Wing	N/A	N/A	N/A	7' 6"	7' 6"	10'
Overall Length	25' 8"	25' 8"	25' 8"	29' 7"	29' 7"	29' 7"
Transport Position						
- Width	19' 9 1/2"	19' 9 1/2"	19' 9 1/2"	22' 6"	24' 6"	24' 6"
- Height	12' 1"	14' 1"	16' 7"	17' 6"	17'	17'
Tires						
- Main Frame Castor Wheel	(2) 9.5L x 15 FI Load Range D	(2) 9.5L x 15 FI Load Range D	(2) 9.5L x 15 FI Load Range D	(2) 9.5L 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" Spacing - 4 row "Z" Pattern 10" & 12" Spacing - 4 row					
Shank Mounting	400 lb. Spring Cushion Trip with 7/8" x 2" shank					
Shank Options	Forged Edge-On Conventional 'C' Shank (1 3/4" hole spacing) (47 Degree tillage tools)					
Packer Wheel Options	2" Steel or Rubber - (7 1/2" Spacing only) 3 1/2" Steel or Rubber - (7 1/2", 10" & 12" Spacing) 4 1/2" Steel or Rubber - (10" & 12" 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"					
Shank to Shank Spacing	30" on 7 1/2" & 10" spacing, 36" on 12" spacing					
Frame Depth	76" (4 ranks)					
2-Bar Harrows	Optional (10" Spacing ONLY)					
Coulters (Rippled or Plain)	Optional (20" diameter) (10" Spacing ONLY)					
Anhydrous Coulters (Plain)	Optional (20" diameter) with Wiese Chrome Tipped Knife (3 row 10" spacing ONLY)					
Packer Mud Scrapers	Optional (For both Steel and Rubber Packers)					
Rock Deflectors	Optional (7 1/2", 10" & 12" Spacing)					

Operation

Transport - continued

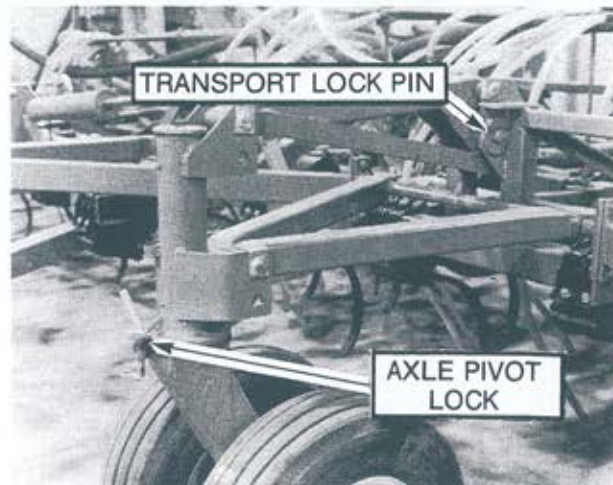
Transport to Field Position

- 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**)
- Remove Transport Lock Pin from main frame gauge wheel.
- Ensure Wing Transport Lock Strap Pins are installed, before removing Wing Rest Pins.
- Remove Wing Rest Pins.
- 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
- Operate depth control hydraulics, lowering machine fully, then 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.

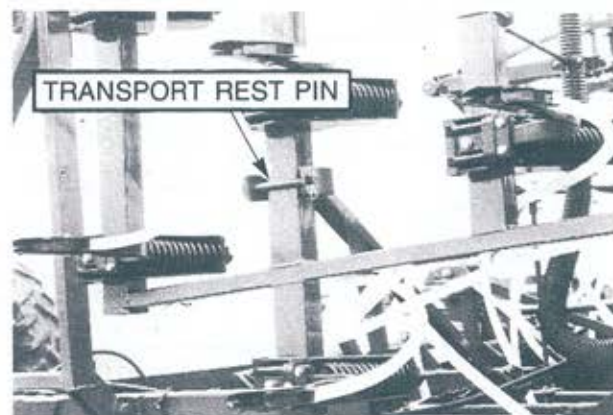
Note: Wings must lower fully before the transport wheels retract. See transport hydraulics.

DANGER

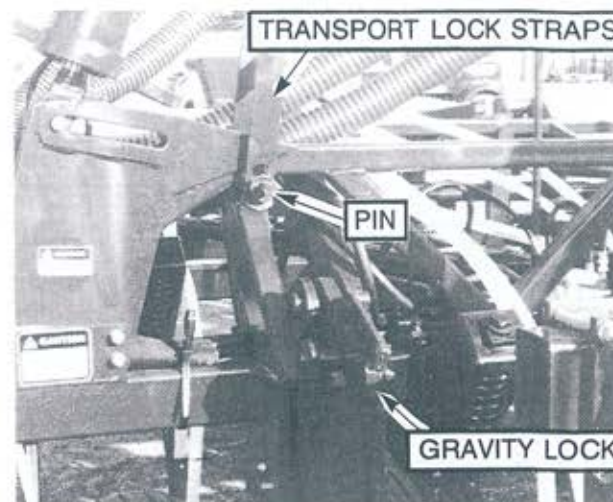
Always stay clear of wings being raised, lowered or in elevated position. Ensure cylinders are completely filled with hydraulic fluid - Wings may fall rapidly causing injury or death.



Main Frame Gauge Wheel Castor



Gravity Lock and Lock Straps



Wing Rest

Transport - continued

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.

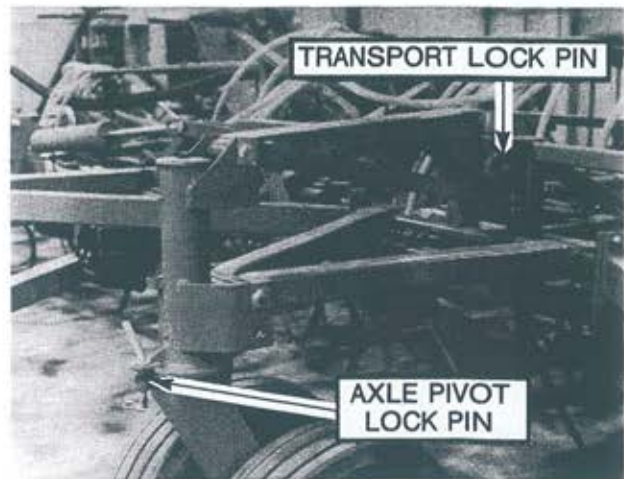
- Raise Air Drill to highest position, Depth Control Hydraulics.
- Operate the wing lift hydraulics. **First**, lower the transport wheels fully. **Second**, raise the wings fully.
- Secure main frame gauge wheel castor lock pin. **It is important to pin the gauge wheel to prevent excessive shimming of wheels.**
- Install Transport Lock Pin for main frame gauge wheel.
- Secure Wing Transport Lock Strap Pins and swing the transport wheels Gravity Locks down. Do not walk under raised wings.
- Install Wing Rest Pins after Wing Transport Lock Strap Pins are installed.
- 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.

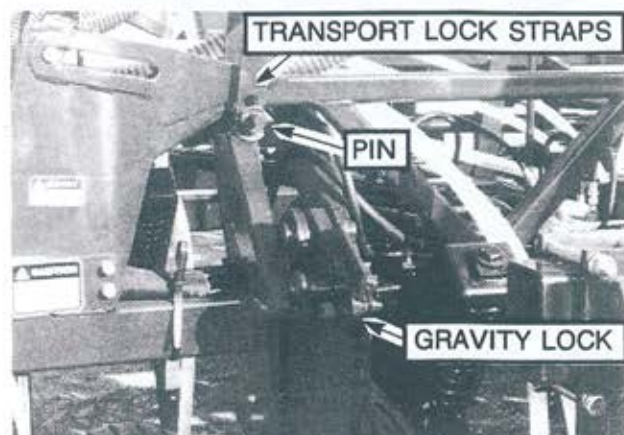


DANGER

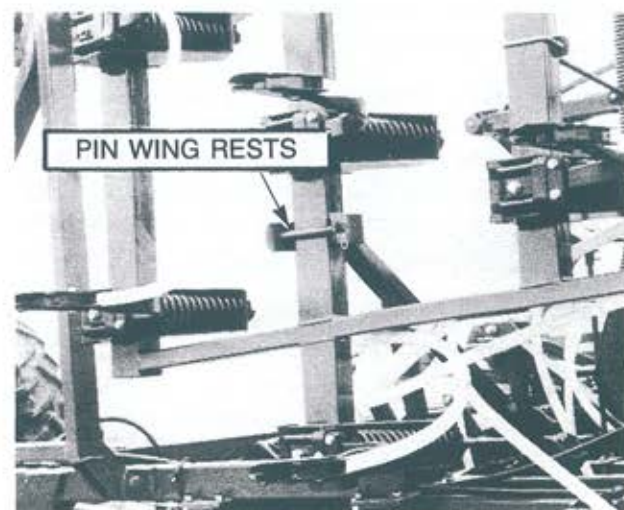
Always stay clear of wings being raised, lowered or in elevated position. Ensure cylinders are completely filled with hydraulic fluid - Wings may fall rapidly causing injury or death.



Main Frame Gauge Wheel Castor



Gravity Lock and Lock Straps



Wing Rest

Operation

Levelling

There are two steps necessary to level the unit:

- 1) An initial levelling where certain measurements must be checked.
- 2) A final levelling procedure that must and can only be done in the field.

Initial Levelling

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

a) Regular Seed Openers

(Lower Height Setting - Field Clearance Settings)

- Adjust the short turnbuckles length to 19 $\frac{3}{8}$ " from pin centre to pin centre.
- Adjust the long turnbuckles length to 101 $\frac{1}{2}$ " from pin centre to pin centre.

b) Double Shoot/Knife Openers

(Higher Height Setting - Field Clearance Settings)

- Adjust the short turnbuckles length to 18 $\frac{1}{8}$ " from pin centre to pin centre.
- Adjust the long turnbuckles length to 101 $\frac{1}{2}$ " from pin centre to pin centre.

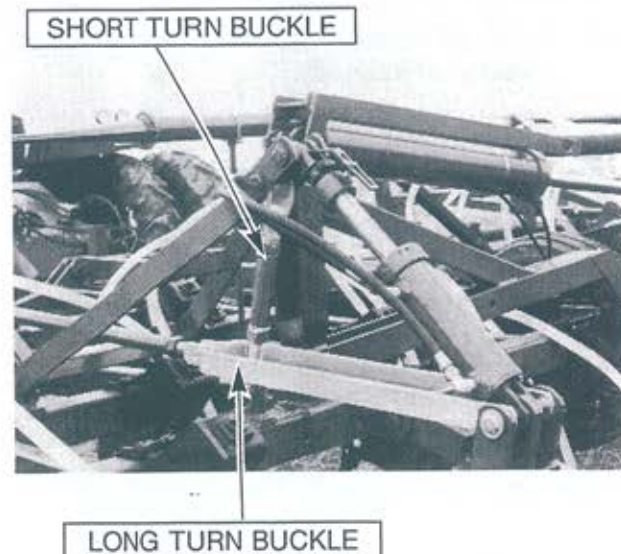
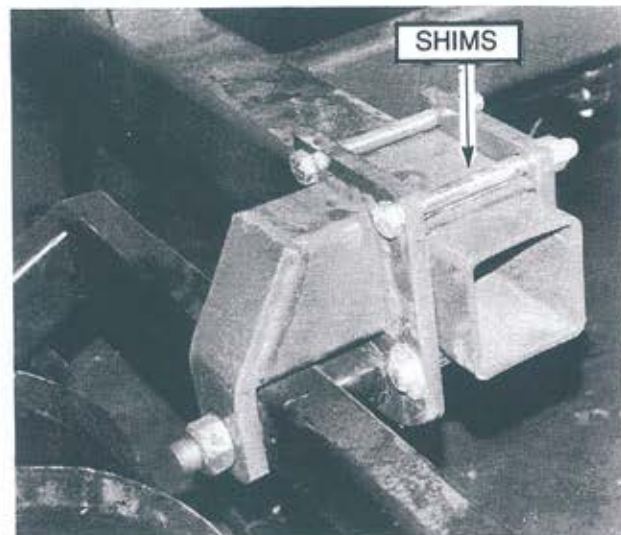
- 2) Lower the unit with the depth control circuit until the points are about 1" above the ground.
- 3) Check the main frame side to side level. Adjust the shims on the packer pivot brackets if necessary.
- 4) Adjust the main frame front to back with long turnbuckle link so the front row of points is 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.



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.
- 5) After the stroke control collars have been set.
- 6) **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.

- 7) 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.
- 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 6 through 8.

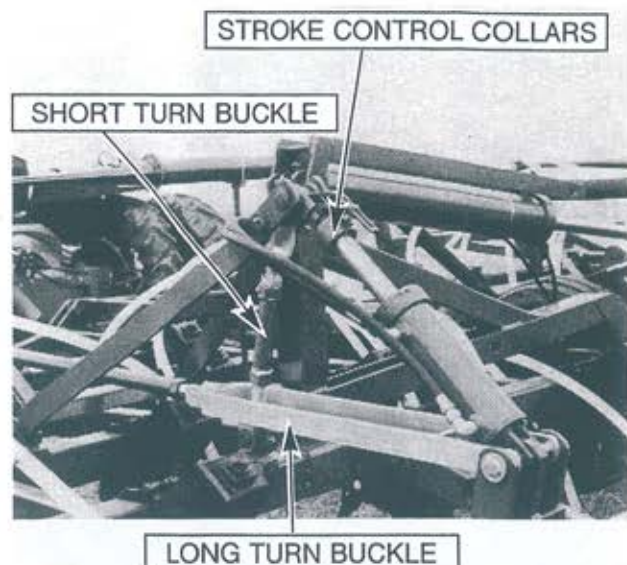
Note: Any change in the depth setting can now be done by adjusting all the stroke control collars evenly across the whole unit. (See Depth Adjustment)

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.



Operation

Field Clearance Settings

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

Regular Seed Openers

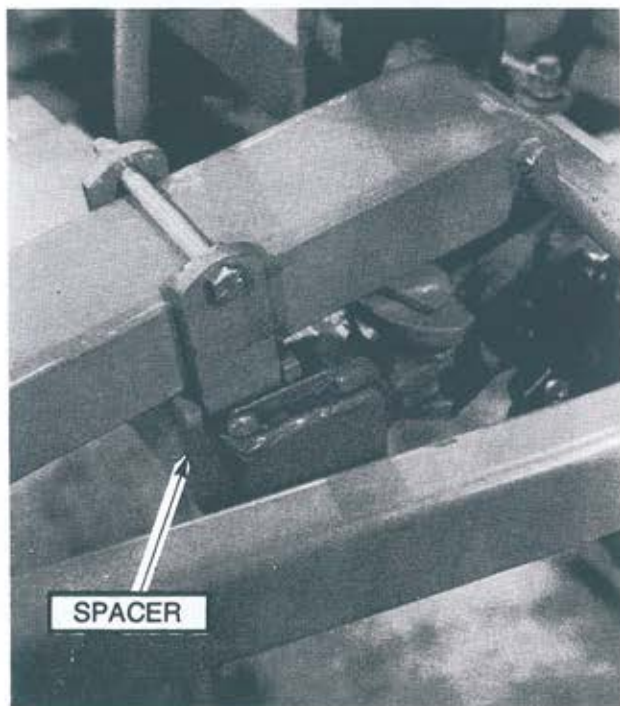
Lower Height Setting

- 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.

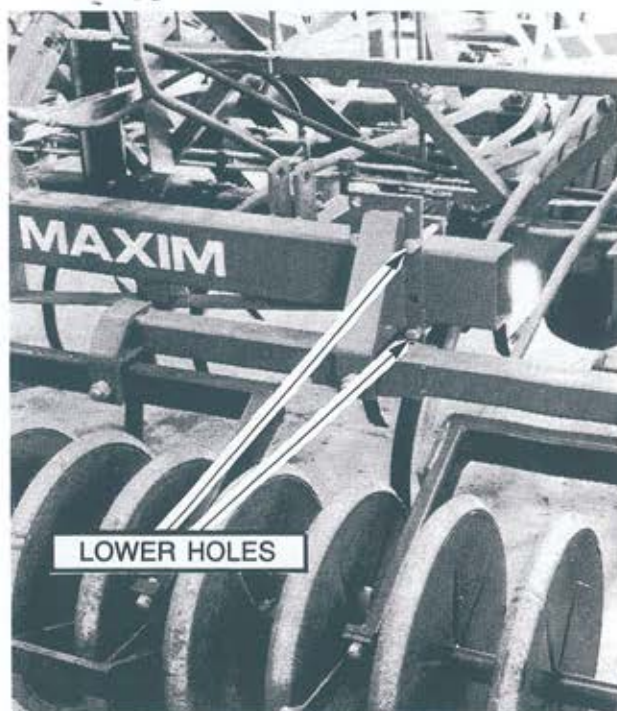
Note: On the 49 ft. model, the wear plate is used only on the outer wings.



(A) Gauge Wheel Main Frame



(C) Wear Plate



(B) Packers Main Frame

Field Clearance Settings - continued

Double Shoot/Knife Openers

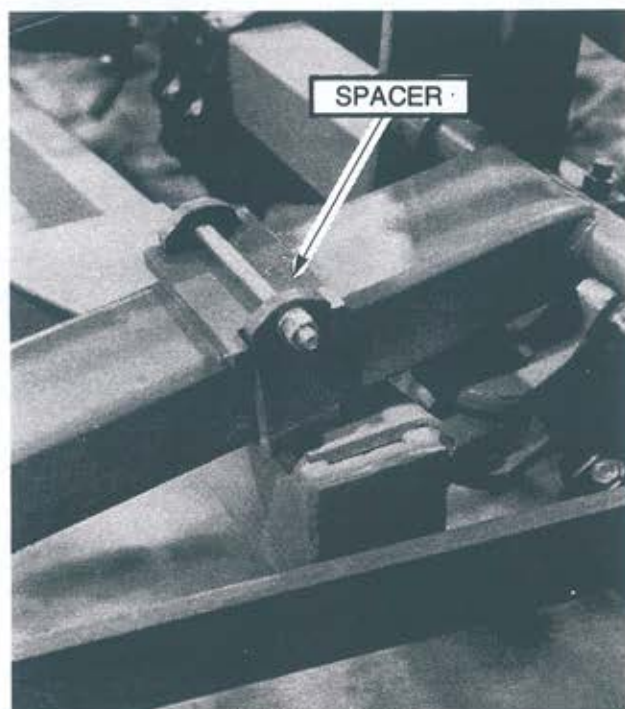
Upper Height Setting

- 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.

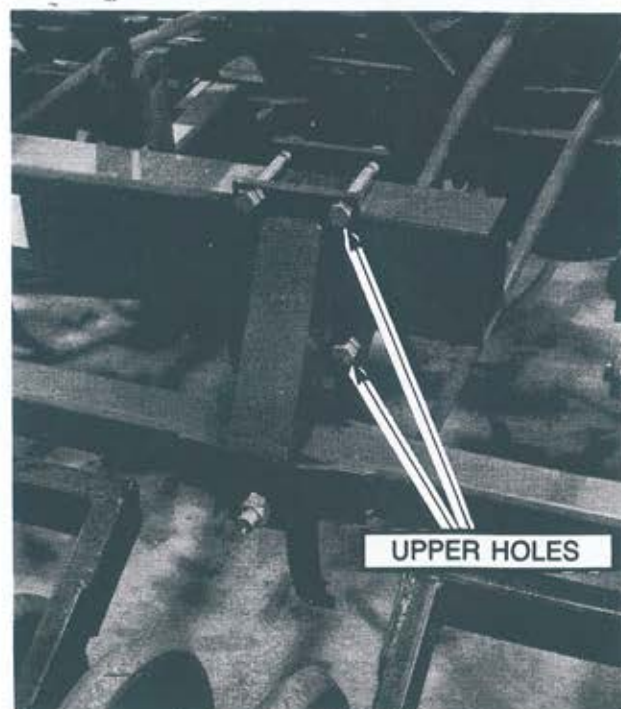
Note: On the 49 ft. model, the wear plate is used only on the outer wings.



(A) Gauge Wheel Main Frame



(C) Wear Plate



(B) Packers Main Frame

Operation

Depth Stop Adjustment

The Morris Maxim Air Drill is equipped with mechanical depth stops. The mechanical depth stops ensure positive depth of each frame section, unaffected by any leaks in the system. (i.e. leaking couplers, internal cylinder leaks, etc.)

Mechanical Depth Stop

- To increase or decrease the working depth, adjust all the stroke control collars **evenly** across the whole machine.
 - a) 1 turn on the collar changes the depth approximately 3/16".
 - b) 6 turns on the collar changes the depth approximately 1".
- The optional spacer may be required when seeding shallow. These spacers are available under part number S25999 through the Parts Department.

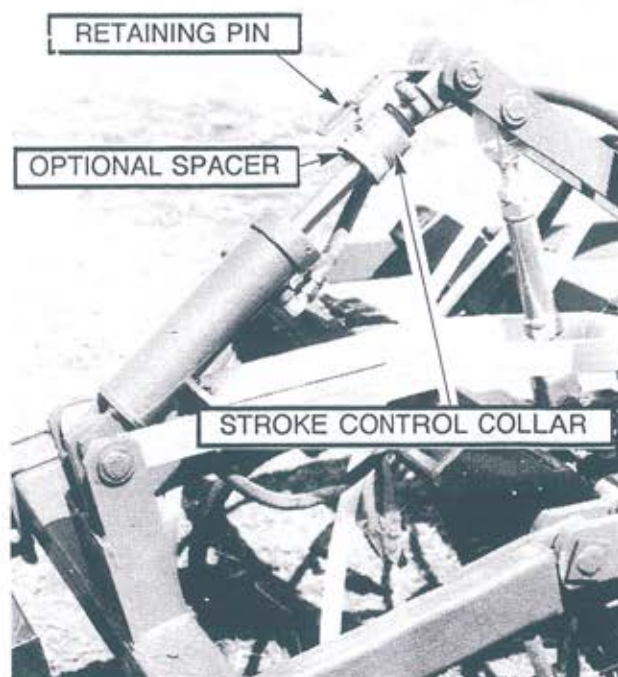
Rephasing

- Raise machine fully, holding hydraulic lever for several seconds to phase the system.
- This will maintain equal pressure, cylinder stroke, and synchronize cylinders.
- **It is recommended that the unit be rephased at each turn on the headland.**

Oil Level

The hydraulic system draws its oil supply from the tractor reservoir.

- Check the oil level after the cultivator system has been filled.
- Refer to tractor operators manual for more information.



Stroke Control Collars

Opener Adjustments

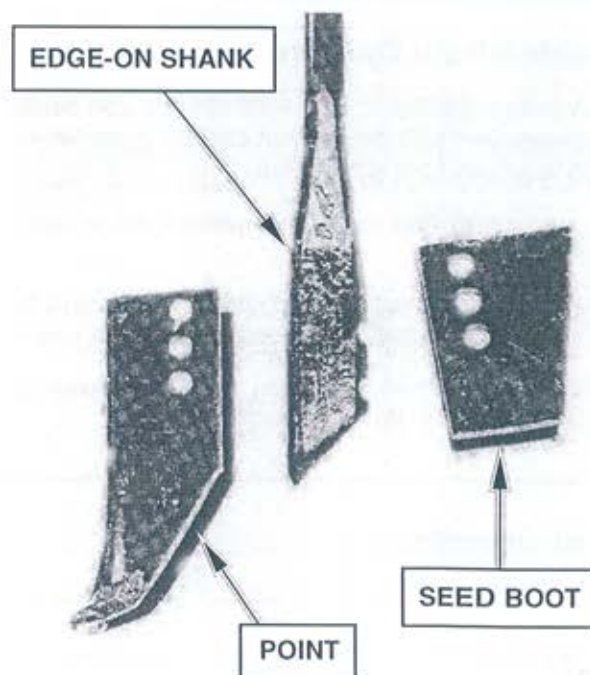
Edge-On Point Adjustment

The Point can be adjusted down 3 positions in increments of 3/8".

Normal Adjusting Sequence			
	Point	Shank	Seed Boot
1	Middle Hole	Top Notch	Bottom Hole
2	Bottom Hole	Bottom Notch	Bottom Hole
3	Top Hole	Top Notch	Middle Hole
4	Middle Hole	Bottom Notch	Bottom Hole

Note: In wet or gumbo land, only move the point down to prevent plugging.

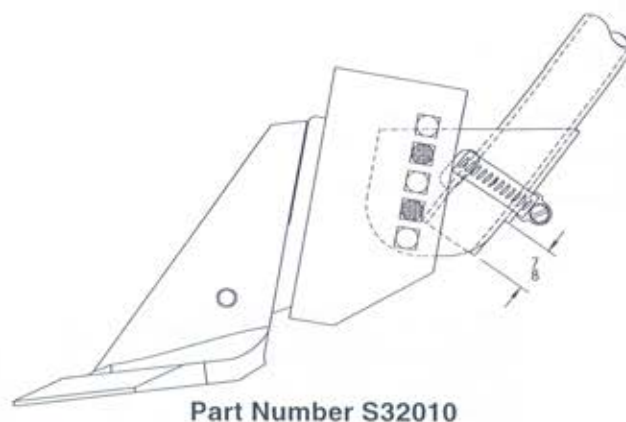
Note: Points can be lowered to compensate for tractor tire impressions.



3 1/2" Sweep

- Insert hose 7/8" past hose holder as shown in diagram.
- Secure hose to holder with a hose clamp.

Note: If plugging occurs decrease dimension hose extends past hose holder.



Trip Lowering Kit

For the Conventional Shank, a trip lowering kit is available to compensate for tractor tire impressions. This kit will lower the trip 3/8".

Trip lowering Kit Part Number is C20521.

Operation

Opener Adjustments

Double Shoot Openers

Improperly adjusted or worn seed openers can cause poor seed/fertilizer separation and plugging which could result in poor emergence.

It is important that the seed openers be properly adjusted.

Note: Points should be adjusted according to wear and deflectors replaced when worn.

Listed below are guidelines for seed openers S25962, S28158, S29000, and S29140.

Note: When applying Anhydrous Ammonia it is strongly recommended to consult local agricultural extension offices for allowable rates which are dependent on soil moisture and soil type.

Soil Condition	Point Position		
	Top	Middle (Factory Setting)	Bottom
Light Soil	Soil moisture medium	Soil moisture wet NH ³ or liquid application	Soil moisture dry NH ³ or liquid application Worn Point adjustment
Medium Soil	Soil moisture medium	Soil moisture wet NH ³ or liquid application	Soil moisture dry NH ³ or liquid application Worn Point adjustment
Heavy Soil	Soil moisture dry	Soil moisture wet NH ³ or liquid application	Not recommended Worn Point adjustment



DANGER

Failure to comply may result in death or serious injury.

Read Operator's Manual and decals on **Ammonia** tank before operating Machine. Become familiar with all warnings, instructions, and controls.

Always wear gloves and goggles when transferring or handling ammonia.

Always stay clear of hose and valve openings.

Always be sure pressure is relieved before disconnecting hoses or parts.

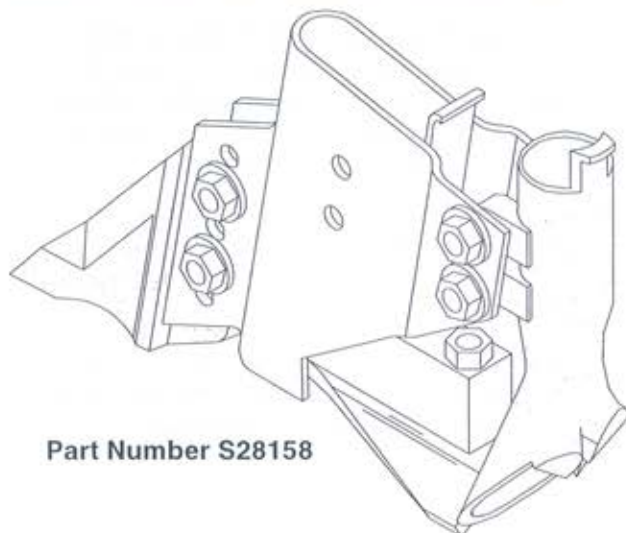
Always secure connecting parts and safety chains before towing ammonia trailer.

Always have ample water available in case of exposure to ammonia liquid or gases.

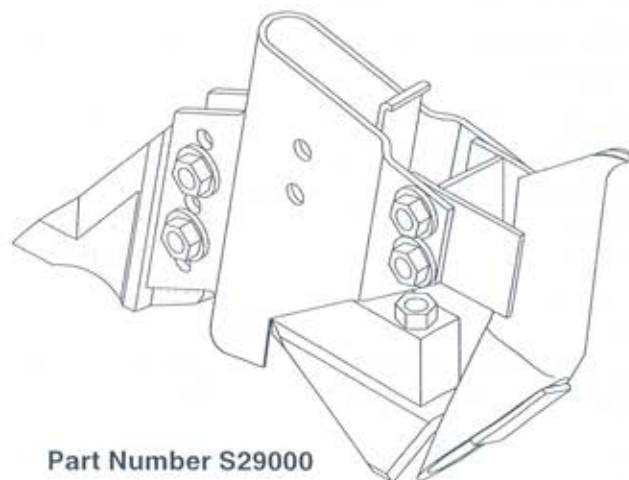
S29378

Opener Adjustments

Double Shoot Openers - continued

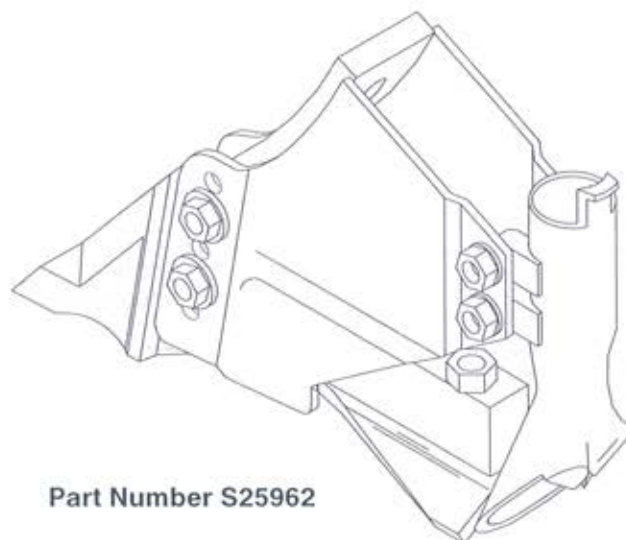


Part Number S28158

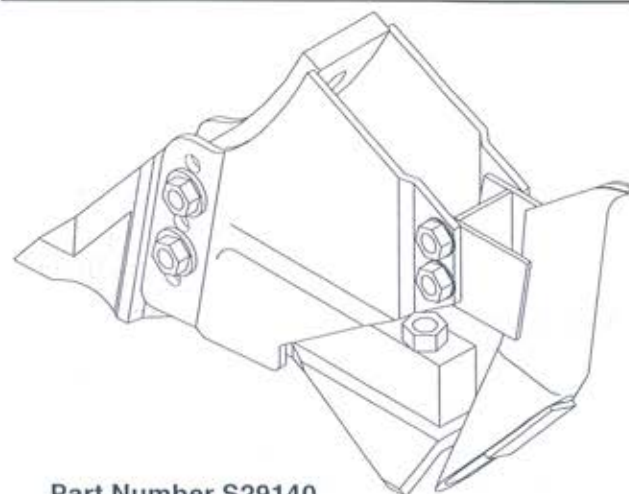


Part Number S29000

Note: Units equipped with **Double Shoot Side Band Openers** (ie S29000, S29140), move packer gangs **3/4"** to the left so packers are in-line with seed tubes.



Part Number S25962



Part Number S29140

IMPORTANT

Re-tighten all bolts after initial 10 hours.
Check tightness periodically thereafter.

Component Replacement

- Tighten all bolts evenly.
- Drift head of bolts with hammer to seat shoulder of bolt head.
- Re-tighten bolts evenly to specified torque.
 - 3/8" bolts torque to 30 ft. lb.
 - 7/16 bolts torque to 50 ft. lb.

Operation

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.

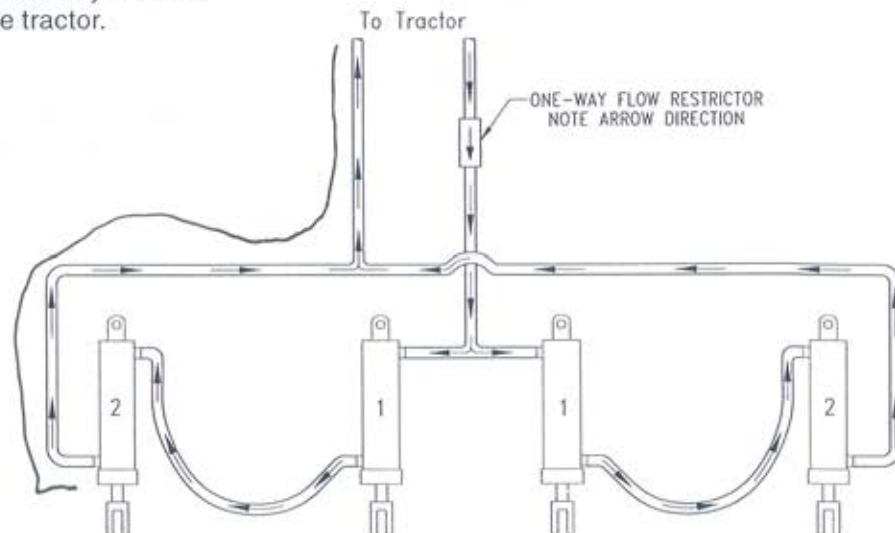
Finally the fluid exits the gland end of cylinders 2 into a common line and then to the tractor.

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.

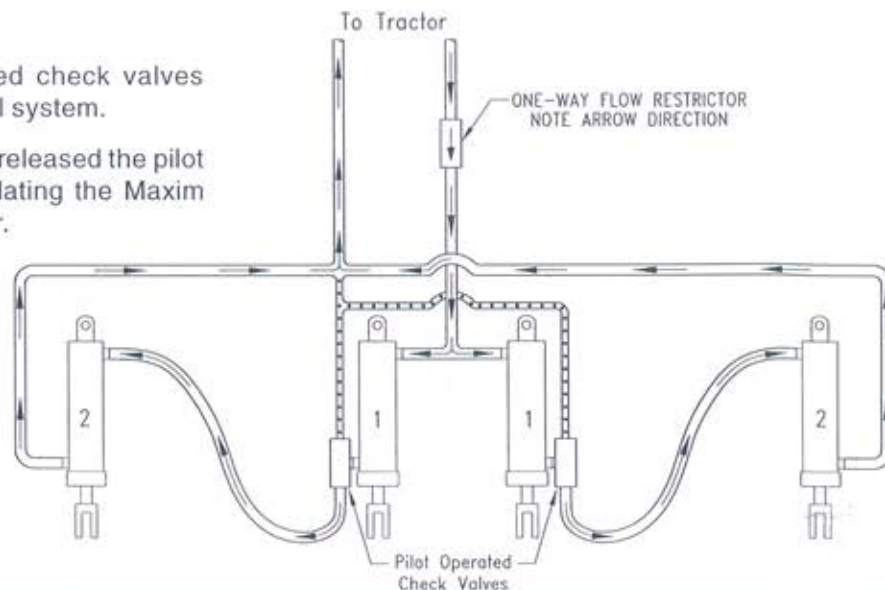
29 ft. and 34 ft. Models



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.

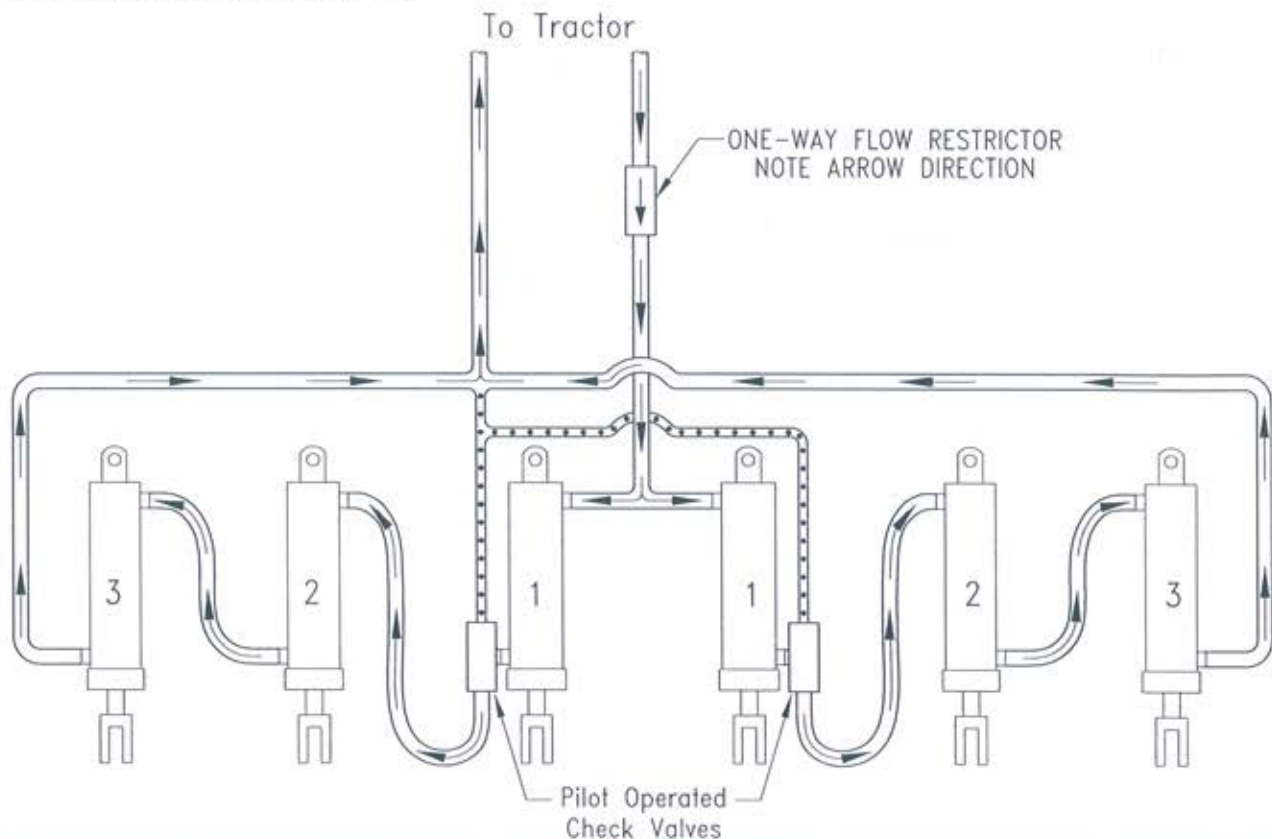
Hydraulic fluid is forced from the gland end of cylinders 2 to the butt end of cylinders 3, causing them to extend, pivoting the packers and gauge wheels down. This causes the outer wings to raise.

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.

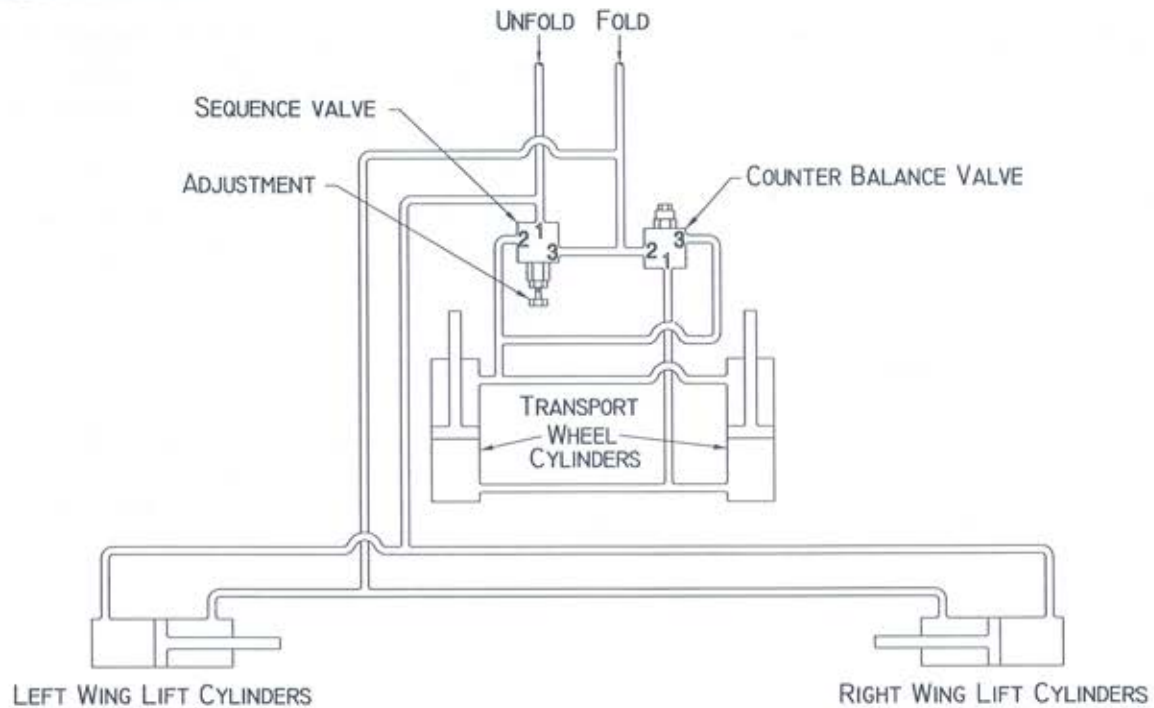
Note: A one-way flow restrictor valve is incorporated into the hydraulic system to maintain a positive oil pressure.



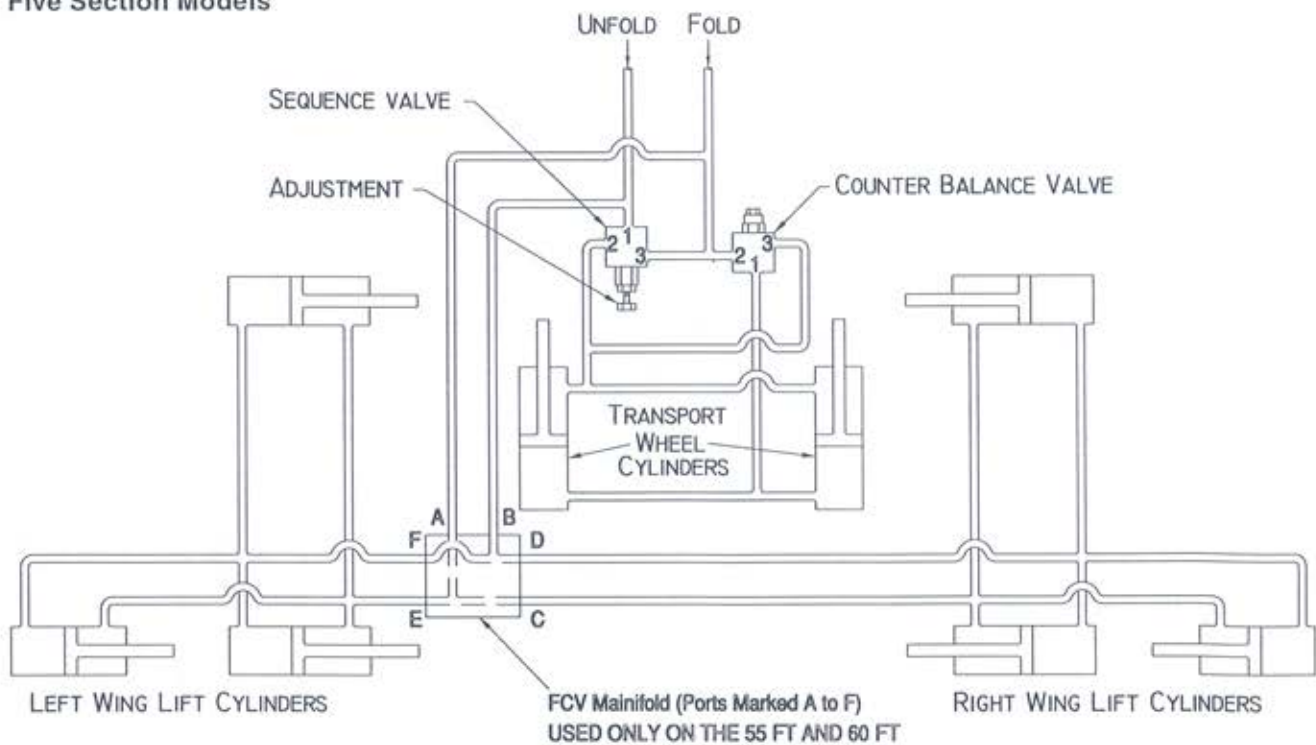
Operation

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 500 psi.

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

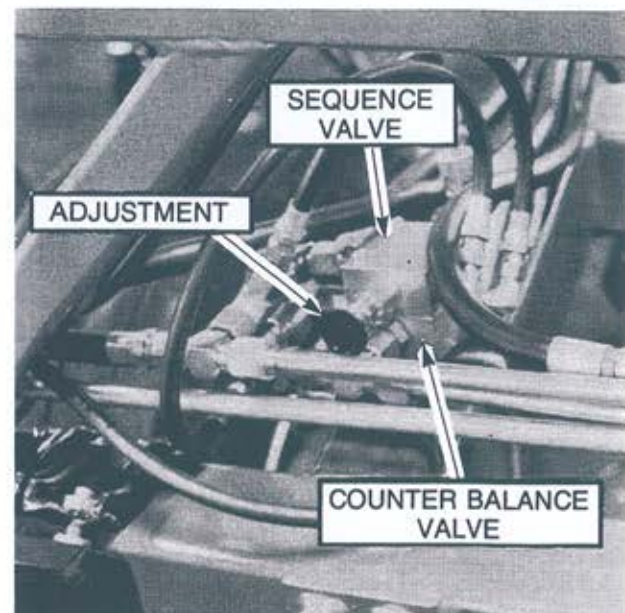
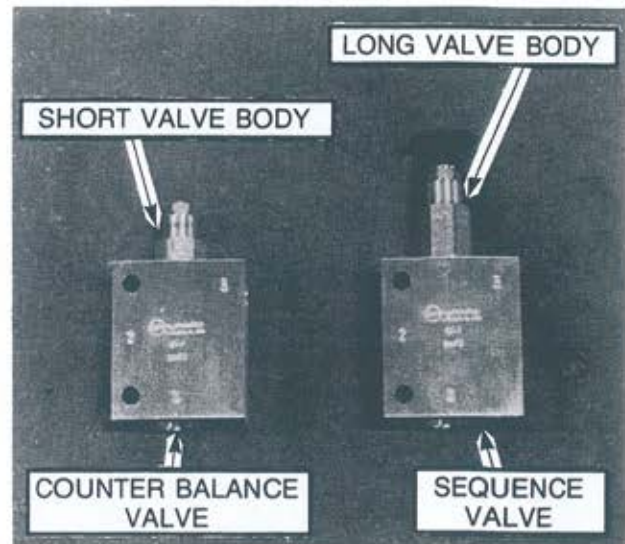
The function of both the sequence valve and counter balance valve are critical, during the unfolding procedure, without these valves the transport wheel cylinders will retract as soon as the tractor lever is moved in the unfolding direction, causing damage to the main frame packer assembly.

Note: On the 55 & 60 foot models, 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.

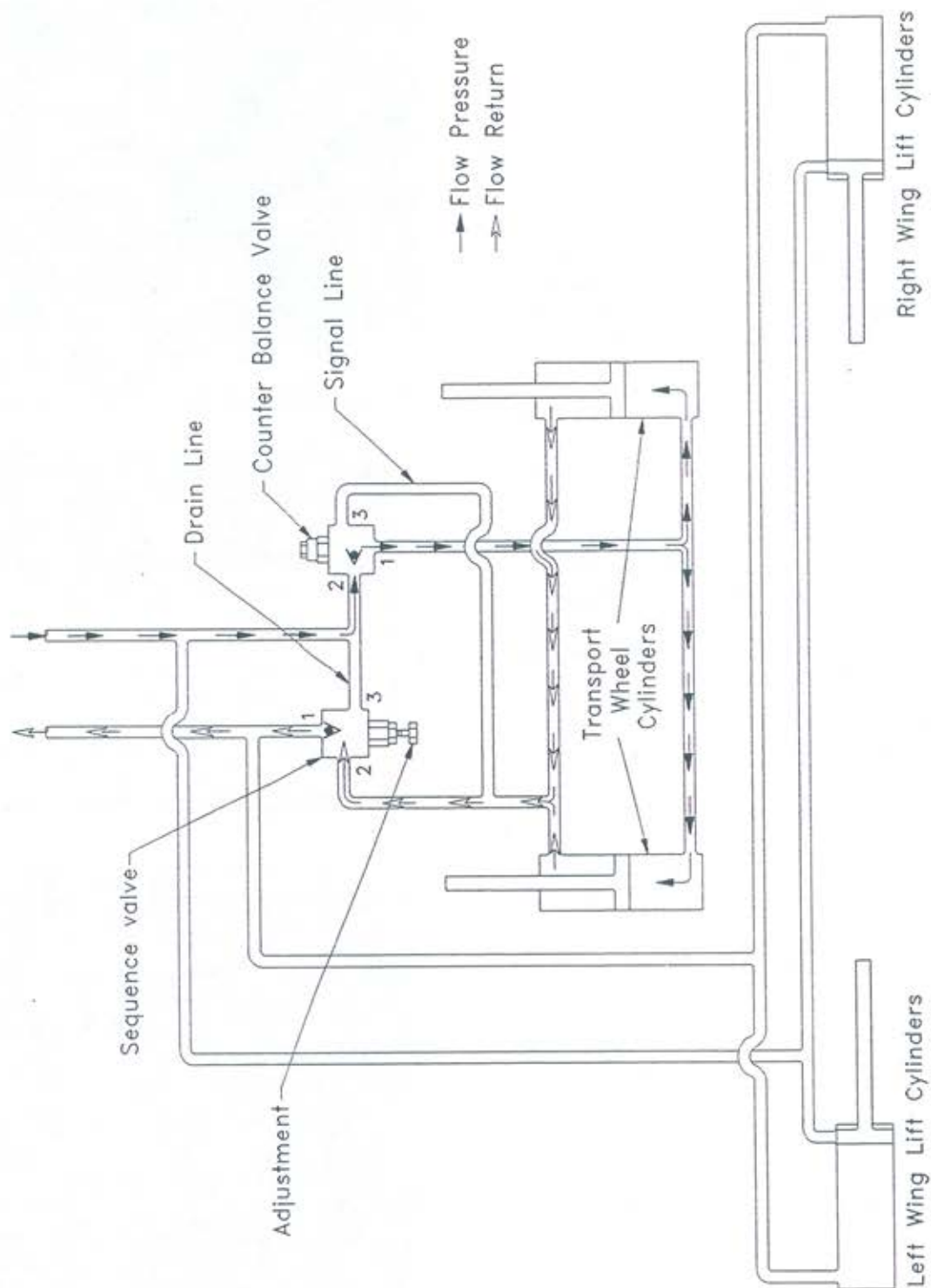
Once the wing lift cylinders are fully extended the pressure in the circuit builds to the point that the sequence valve opens, causing the pilot line to the counter balance valve to pressurize opening the counter balance valve. With both valves open the hydraulic fluid retracts the transport wheels up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

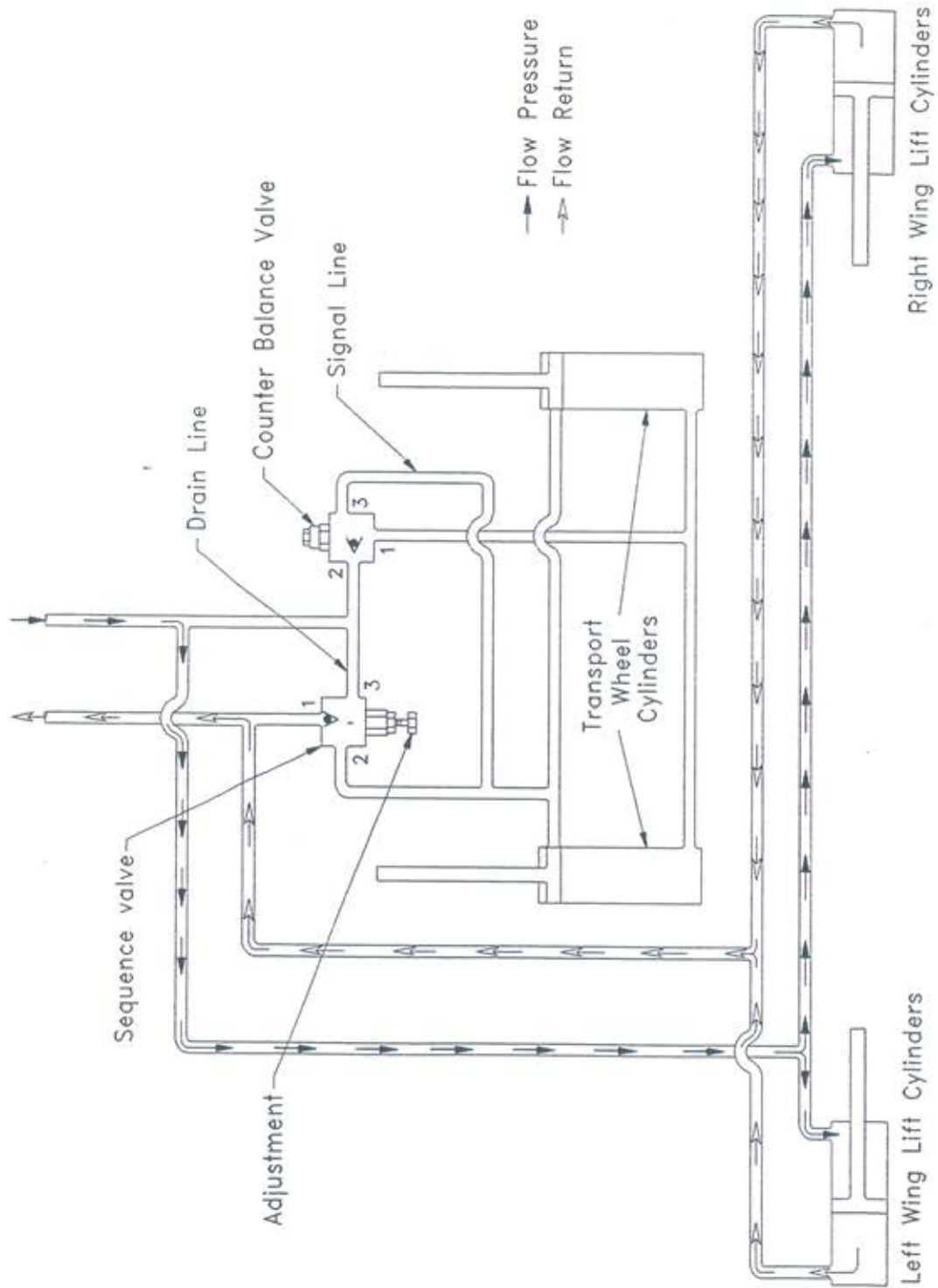


Operation

MAXIM AIR DRILL (3 FRAME MODELS) WING-UP (STEP 1: LOWERING TRANSPORT WHEELS TO RAISE MAIN FRAME)

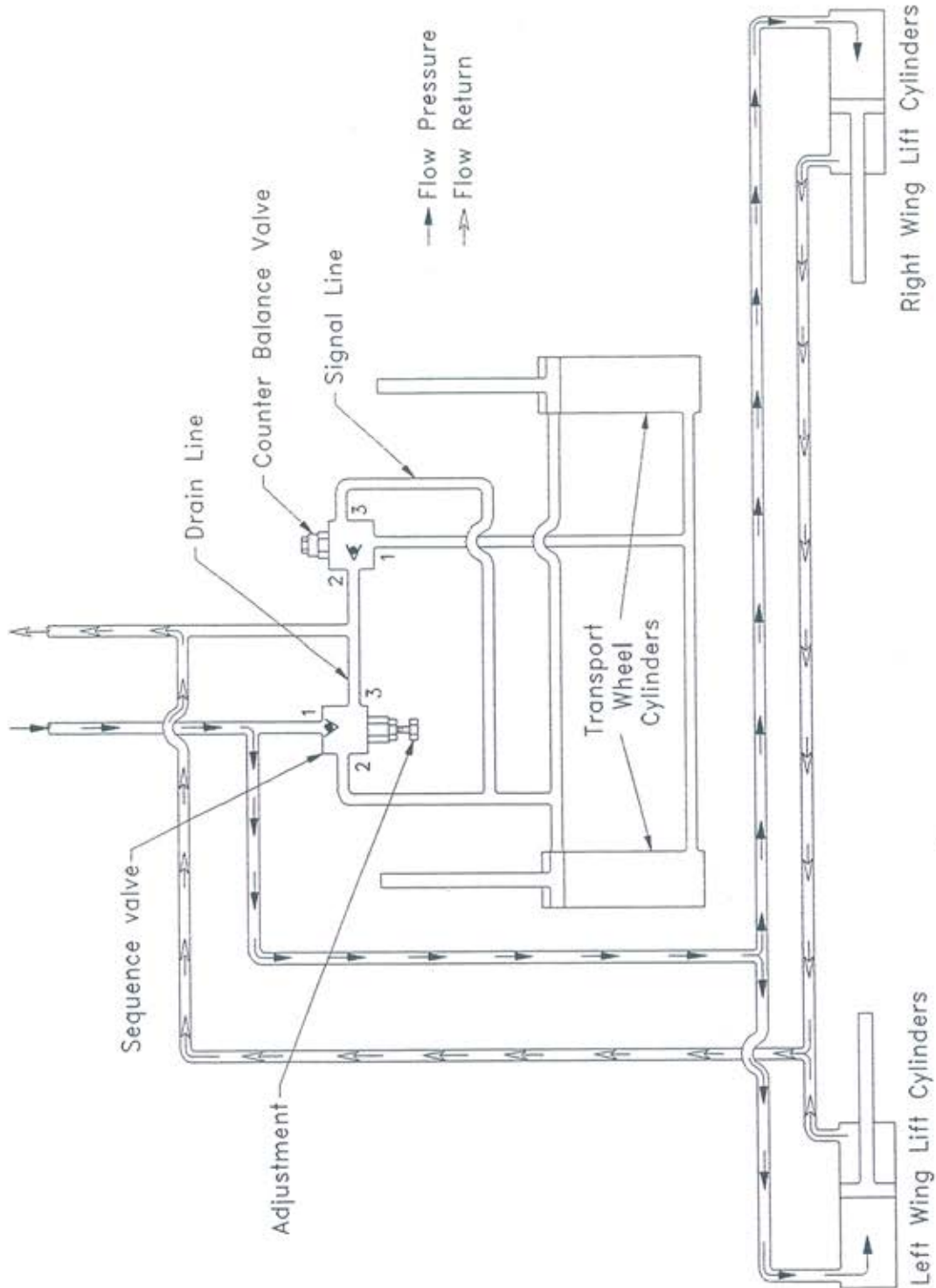


MAXIM AIR DRILL (3 FRAME MODELS) WING-UP (STEP 2: RAISING WINGS)

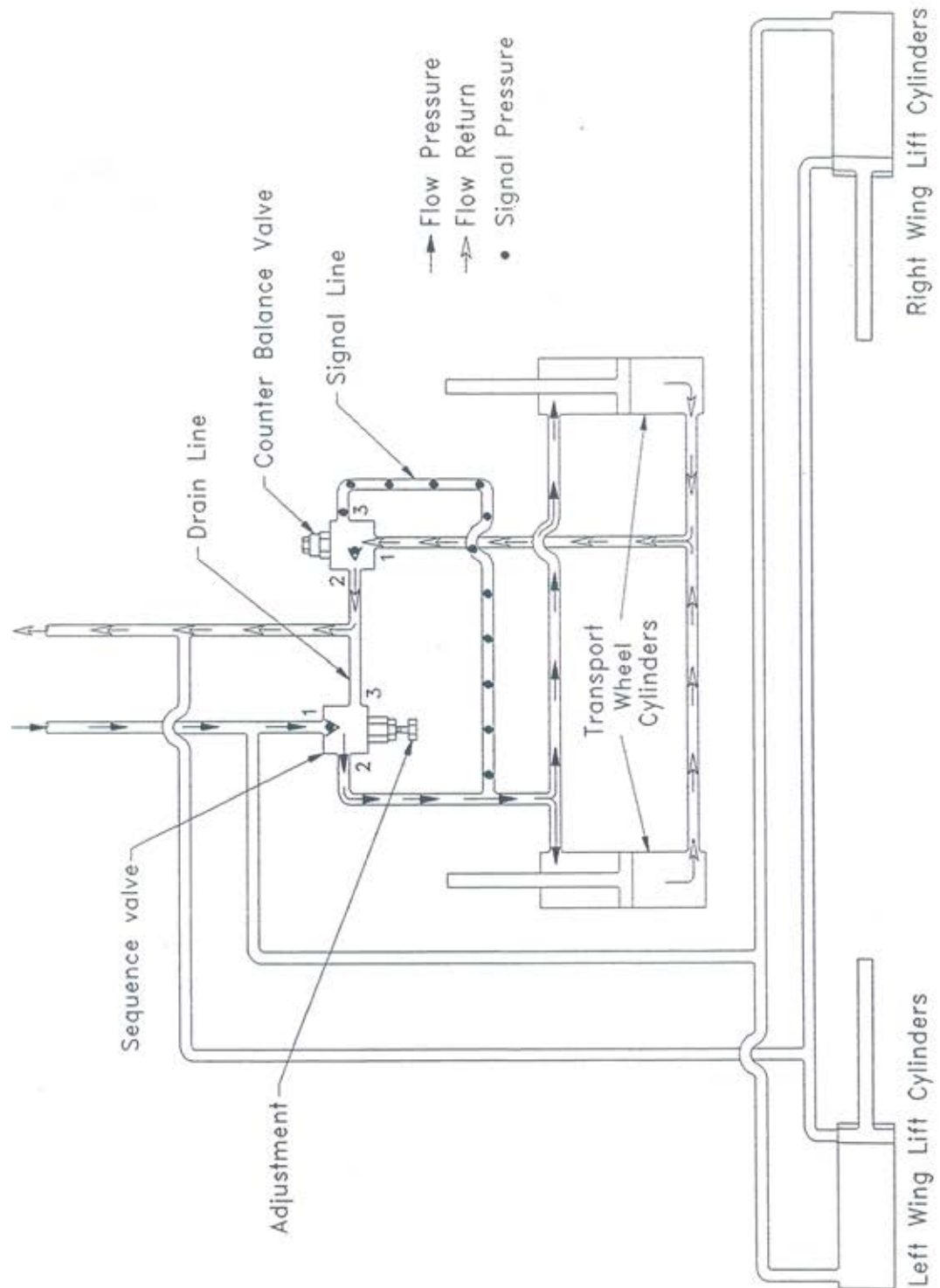


Operation

MAXIM AIR DRILL (3 FRAME MODELS) WING-DOWN (STEP 1: LOWERING WINGS)



MAXIM AIR DRILL (3 FRAME MODELS) WING-DOWN (STEP 2: RAISING TRANSPORT WHEELS)



Operation

General Guidelines

The results obtained from the Maxim Air Drill are directly related to the depth uniformity of the unit. Poor levelling worn shovels, uneven tire pressures, and bent shanks must be avoided to obtain optimum field results.

- Operating depth should be uniform at all shank locations, when spot checking the implement in the field. See Levelling and Rephasing Procedure.
- Points should be adjusted according to wear. See Maintenance Section.
- Repair or replace bent shanks. Bent shanks cause shovels to work at uneven depths and can cause unnecessary ridging. See maintenance Section.
- Keep tire pressure at the listed specifications to maintain proper level. See maintenance Section.
- Avoid sharp turns. Turns sharp enough to cause the inside shovels of the Air Drill to reverse direction are not recommended. This may cause the seed openers to plug.



TAKE SAFETY SERIOUSLY.

Do Not Take Needless Chances!

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

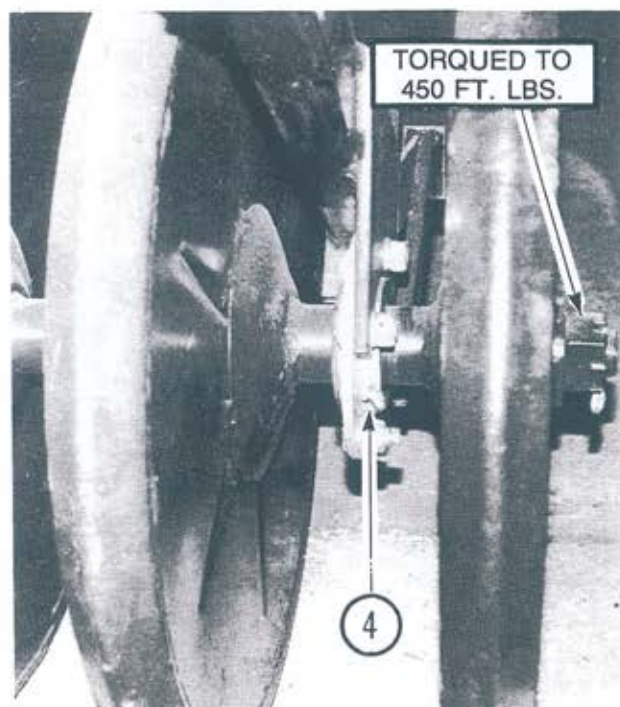
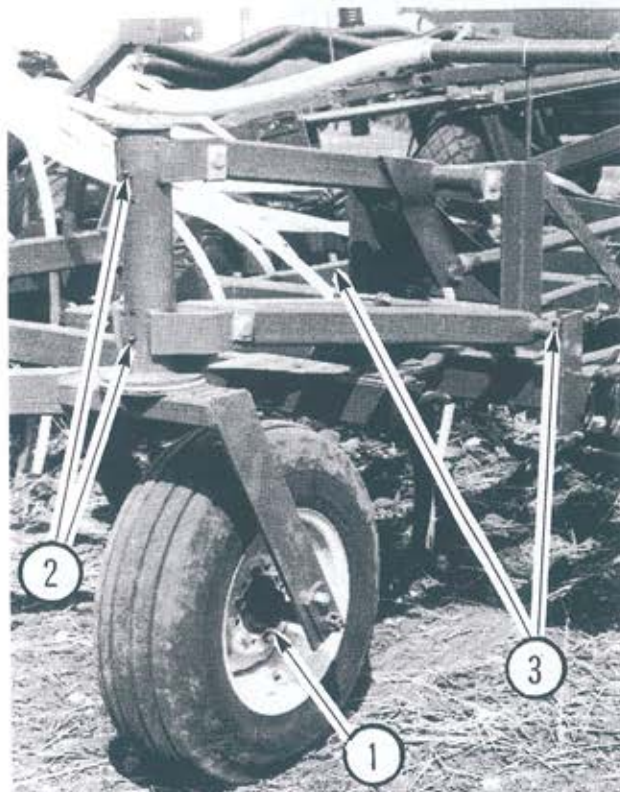
- Grease every 50 hours. (Weekly)
- Two bearings per packer gang.

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.



Maintenance

Trip Maintenance

400 Spring Cushion Trips

Shank Replacement

The dirt shield must be removed to install a new shank. This allows access to the shank bolt nut.

- Loosen the two jam nuts that retain the dirt shield.
- Use a screw driver to remove dirt shield.



CAUTION

Use care when removing shield, Personal injury may occur.

- With shank in place, the shank bolt can be installed. Mount the shank clamp with the two clamp strap bolts.
- Install dirt shield.
- Tighten the two jam nuts that retain the dirt shield.

JAM NUT

DIRT SHIELD

SHANK BOLT

CLAMP STRAP BOLTS

SHANK
CLAMP
STRAP

Trip Maintenance - Continued

400 Spring Cushion Trips

Main Bushing Replacement

In the event the pivot pin nylon bushings need replacing, the following procedure can be used.

- Loosen spring retaining bolt.
- Slide a 1 1/4" wrench between the trip top and the washer on the bolt.
- Tighten bolt, this will lift the casting off the base taking the pressure off the pivot pin.
- Remove cotter pin from retaining pin and remove retaining pin.
- Remove pivot pin from casting. To dismantle the spring, simply unscrew the spring retaining bolt.

Note: Bolt is 8 1/4" long.

- Push casting down by lifting up on shank or by using a prybar.
- Remove the old bushings by pushing out towards the inside of the trip.
- Install the new bushings.

Reverse the above procedure to reassemble trip.

Note: Care must be taken when reassembling the pivot pin not to shear the shoulder off the nylon bushings.

Note: Torque spring retaining bolt to 75 ft. lbs. once trip is reassembled.

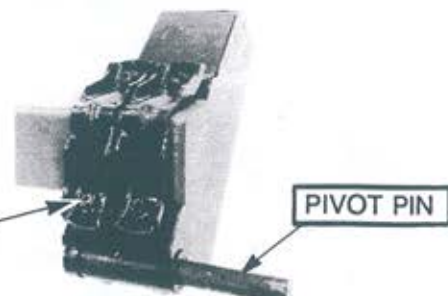
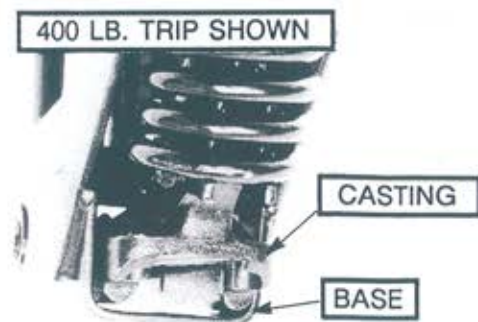
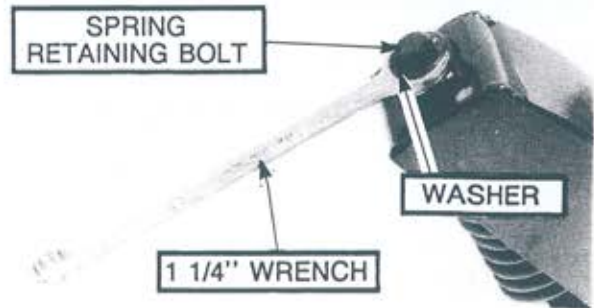


DANGER

Care must be taken when replacing any trip components as the spring is under pressure.

IMPORTANT

Re-torque bolts after initial 50 hours.
Check tightness periodically thereafter.
Torque Bolts to 75 ft. lbs.



Maintenance

Trip Maintenance - Continued

400 Spring Cushion Trips

Spring Rod Pivot Pin Bushing Replacement

A simple check can be performed to see if the bushings need replacing.

The bushing is visible when looking at the spring rod pivot pin from the R.H.S. for the 400 trip unit.

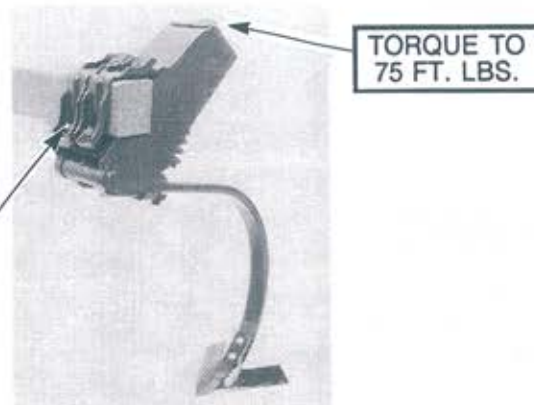
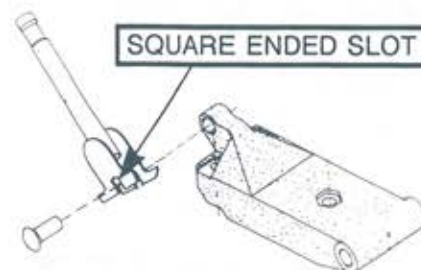
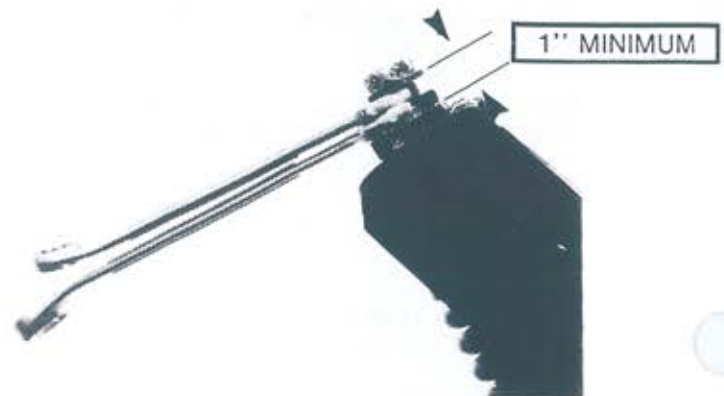
In the event the pivot pin nylon bushings need replacing, the following procedure can be used.

- Loosen spring retaining bolt.
- Slide two wrenches with a combined thickness of at least 1" between the trip top and the washer on the bolt.
- Tighten bolt fully, this will lift the casting off the base.
- Pry the casting away from the spring rod pin. The casting will drop down and the bushings can be easily accessed.
- Replace the bushing.

Reverse the above procedure to reassemble trip.

Note: The head of the spring pin must be orientated correctly with the slot in the spring rod for correct assembly - square shoulder enters the square ended slot.

Note: Torque spring retaining bolt to 75 ft. lbs. once trip is reassembled.



DANGER

Care must be taken when replacing any trip components as the spring is under pressure.

IMPORTANT

Re-torque bolts after initial 50 hours.
Check tightness periodically thereafter.
Torque Bolts to 75 ft. lbs.

Troubleshooting

Problem	Cause	Correction
Machine not operating straight.	Not levelled.	Refer to Operation Section on levelling.
		Rephase cylinders.
		Check tire pressure.
Lack of penetration.	Not levelled.	Refer to Operation Section on levelling.
	Sweeps/points worn.	Replacement necessary.
	Sweep angle.	Conventional Stem requires 47 degree tools.
Sweeps/points wearing unevenly	Not levelled front to rear.	Refer to Operation Section on levelling.
	Tire tracks.	Replace worn sweeps.
	Front row always wears more than the others.	
Wing lifting too slowly.	Tractor hydraulic pressure.	Repair pump. Pressure relief valve needs resetting.
	Hydraulic breakaways.	Foreign material or sticking. Check compatibility.
	Hose restriction.	Cylinder linkage binding.
Wings not lowering.	Transport pins installed.	Remove pins.
	Sequence valve.	Adjust (See Transport Hydraulics)
Transport wheels retract before wings unfold.	Sequence valve set too low.	Increase pressure setting on sequence valve. (Turn adjustment bolt in)
Oil accumulation.	Damaged seal.	Replace seals.
	Loose fittings.	Tighten hose and pipe connections.
	Scored cylinder shaft will damage shaft seal.	Replace.
	Normal.	Slight seepage from seal is normal.

Troubleshooting

Problem	Cause	Correction
One wing will lift, other will not.	Assembly.	Hoses reversed at cylinder.
	Restriction in line.	Clean.
	Internal cylinder leak.	Repair cylinder.
Depth control not working.	Cylinders not phased.	Refer to Operation Section on rephasing.
	Leaks.	Use hand and eye protection - Check for external leaks.
	Low oil level.	Fill tractor reservoir.
	Hydraulics clogged.	Replace filter.
	Load Sensing System creating a void in the cylinders	Install C15975 restrictor valve on return line. See Service Bulletin #194.
	Depth Control collars not adjusted evenly.	Measure and ensure all collars are adjusted properly.
Unable to insert transport pin on wing locks.	Spacer plate not adjusted properly.	Refer to <i>"Field Clearance Settings"</i> in Operation Section.
Packer gangs squeaking.	Gangs not tight enough.	Tighten gang nuts to 450 ft. lbs.