



MORRIS

Advanced Air Seeding and Tillage Systems

**Maxim
Air Drill**

S22682-09

**OPERATOR'S
Manual**

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Notes

SAFETY-ALERT SYMBOL



Watch for this symbol. It identifies potential hazards to health or personal safety. It means:

**ATTENTION - BE ALERT.
Your Safety is involved.**

Familiarize yourself with the location of all decals. Read them carefully to understand the safe operation of your machine.

Three words are used in conjunction with the safety-alert symbol:



DANGER

Tells you that a hazard exists which would result in a high probability of death or serious injury if proper precautions are not taken.



WARNING

Tells you that a hazard exists which can result in injury or death if proper precautions are not taken.



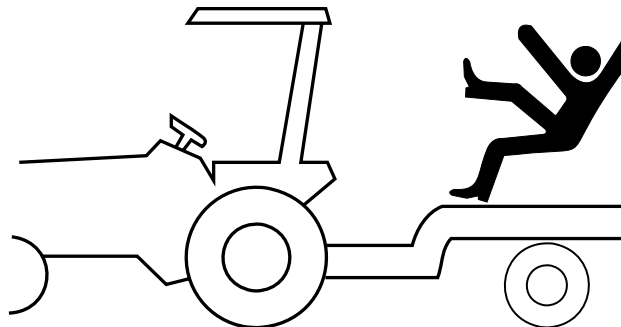
CAUTION

Tells you to remember safety practices, or directs attention to unsafe practices which could result in personal injury if proper precautions are not taken.

Safety

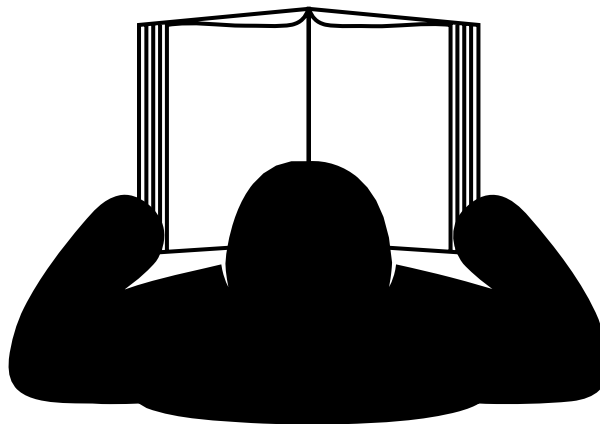
General Operation

- **DO NOT RIDE!!** No one should be allowed to ride on the implement when in motion.
- No one but the operator in the driver's compartment!!
- **Check behind** when backing up.
- **Reduce speed** when working in hilly terrain.
- Never allow anyone within the immediate area when working.
- **Stand clear** when raising or lowering wings.
- **Keep all shields in place**, replace them if removed for service work.
- Always lock auger attachment in raised position.
- Keep hands clear of tank opening when closing lid. Keep lid seal clean to ensure proper sealing.
- **Do Not enter tank unless another person is present.**



Tractor Operation

- Be aware of tractor safety procedure when working with implement.
- Review tractor manuals.
- Secure hitch pin with a retainer and lock drawbar in centre position.



Chemicals

- **Use extreme care** when cleaning, filling or making adjustments.
- **Always read** granular chemical or treated seed labels carefully and always keep label warnings in mind.
- Wear close fitting clothing and appropriate safety equipment for the job.
- **Always wear** safety goggles, breathing apparatus and gloves when handling with granular chemical or treated seed.
- **Do not feed** any treated seed to livestock. Treated seed is poisonous and may cause harm to persons or livestock.
- **Wash exposed skin immediately** - do not leave chemicals on your skin.
- **Properly store** chemicals in original containers with labels intact.
- **Do Not enter tank unless another person is present.**



DANGER

Failure to comply may result in death or serious injury.

Read Operator's Manual and decals on **Ammonia** tank before operating Air Drill. 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.

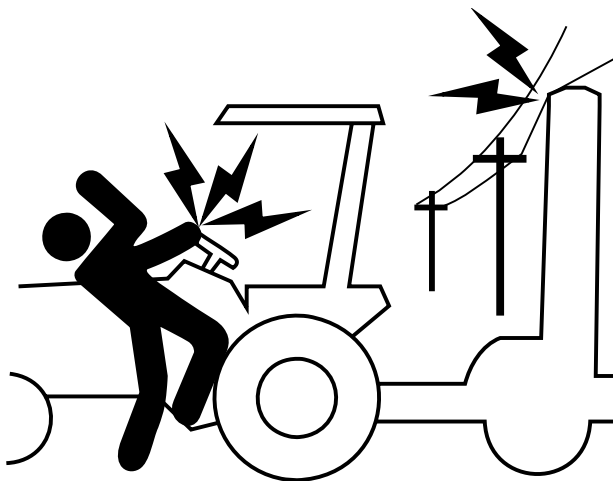
Always secure connecting parts and safety chains before towing ammonia trailer.

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

Safety

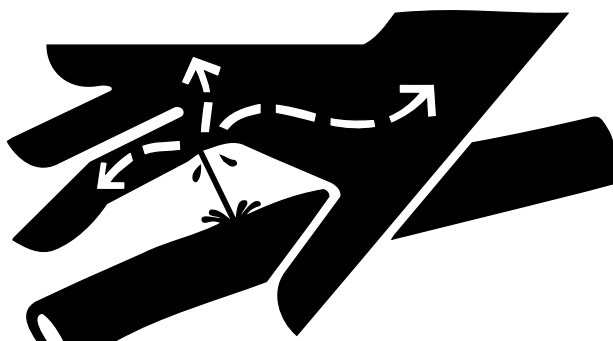
Transporting

- **Be aware** of the height, length and width of implement. Make turns carefully and be aware of obstacles and overhead electrical lines.
- Always travel at a safe speed. Do Not Exceed 20 M.P.H.
- **REDUCE SPEED** with material in Air Cart tanks. **Do Not** Exceed a speed of 10 M.P.H.
- The weight of the implement being towed *must not exceed 1.5 times* the weight of towing vehicle.
- Do not transport in poor visibility.
- The slow moving vehicle (SMV) emblem and safety reflectors must be secured on the machine for safe transport.
- Avoid soft surfaces, the additional wing weight on the centre wheels could cause the machine to sink.
- Ensure safety chain is attached correctly.
- Check that wings are firmly seated in transport wing stops, and lock pins installed.
- Secure transport locks on depth control cylinders.



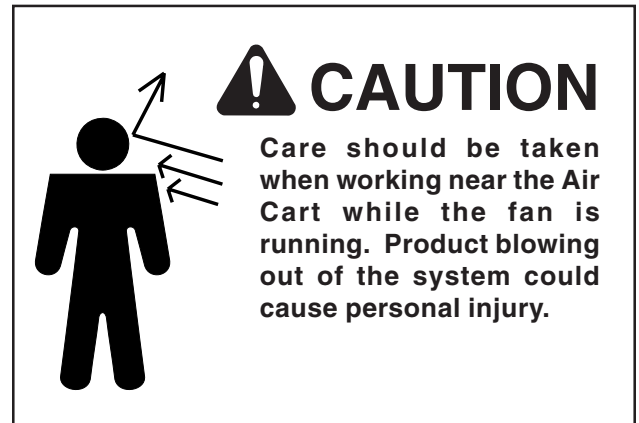
Hydraulics

- **Do not** search for high pressure hydraulic leaks without hand and face protection. A tiny, almost invisible leak can penetrate skin, thereby requiring immediate medical attention.
- Use cardboard or wood to detect leaks - never your hands.
- Double check that all is clear before operating hydraulics.
- **Never** remove hydraulic hoses or ends with machine elevated. Relieve hydraulic pressure before disconnecting hydraulic hoses or ends.
- Maintain proper hydraulic fluid levels.
- Keep all connectors clean for positive connections.
- Ensure all fittings and hoses are in good condition.
- Do not stand under wings.



Maintenance

- **Shut tractor off** before making any adjustments or lubricating the machine.
- **Block** machine securely to prevent any movement during servicing.
- Wear close fitting clothing and appropriate safety equipment for the job.
- **Always wear** safety goggles, breathing apparatus and gloves when working on seeder filled with granular chemical or treated seed.
- **Do not feed** any treated seed to livestock. Treated seed is poisonous and may cause harm to persons or livestock.
- **Do not** search for high pressure hydraulic leaks without hand and face protection. A tiny, almost invisible leak can penetrate skin, thereby requiring immediate medical attention.
- **To prevent personal injury**, do not walk within radius of raised cultivator wings. Always ensure wing rests are locked and in place.
- Do not modify the machine.



Storage

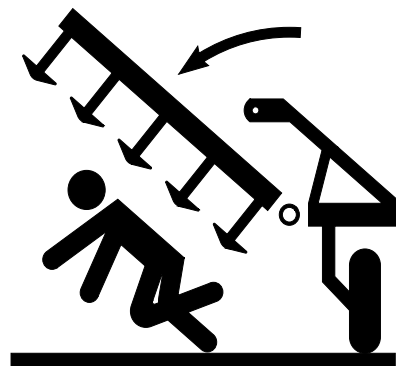
- Store implement away from areas of main activity.
- Level implement and block up securely to relieve pressure on jack.
- Do not allow children to play on or around implement.

Safety

Decals

DANGER

- WINGS MAY FALL RAPIDLY CAUSING BODILY INJURY.
- ALWAYS STAY CLEAR OF FOLDING WINGS WHEN BEING RAISED, LOWERED, OR IN ELEVATED STATE.
- ALWAYS INSTALL ALL LOCKUP DEVICES PROVIDED WHEN WINGS ARE IN ELEVATED POSITION.
- ENSURE CYLINDER IS COMPLETELY FILLED WITH HYDRAULIC FLUID TO AVOID UNEXPECTED MOVEMENT.



C13704

WARNING

This implement may exceed maximum road regulations. Before you transport this implement contact a local agency regarding road regulations concerning maximum allowable implement dimensions.

C31201

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.

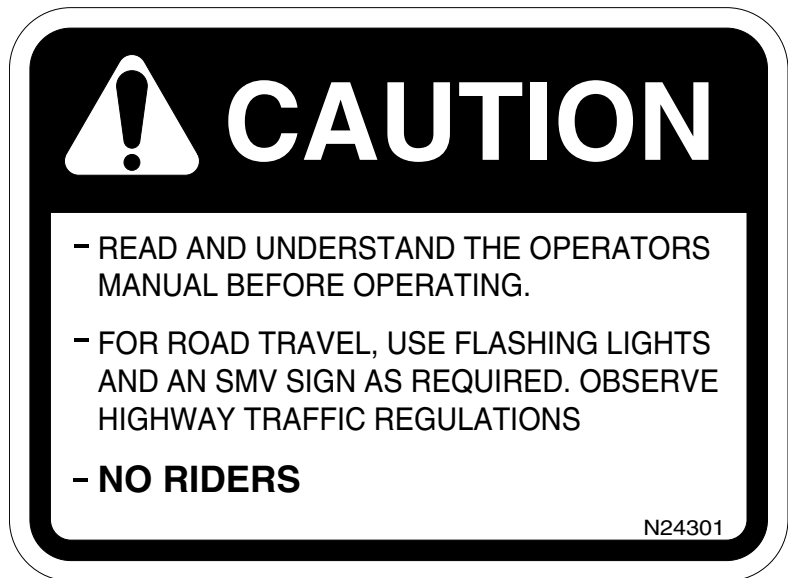
Always have ample water available in case of exposure to ammonia liquid or gases.

S29378



Familiarize yourself with the location of all decals. Read them carefully to understand the safe operation of your machine.

Decals - Continued



Familiarize yourself with the location of all decals. Read them carefully to understand the safe operation of your machine.

Safety

Reflectors

The Slow Moving Vehicle (S.M.V.) Emblem and Safety Reflectors must be secured on the machine to promote safe transportation of this implement.

Note: Always replace missing or damaged reflectors.

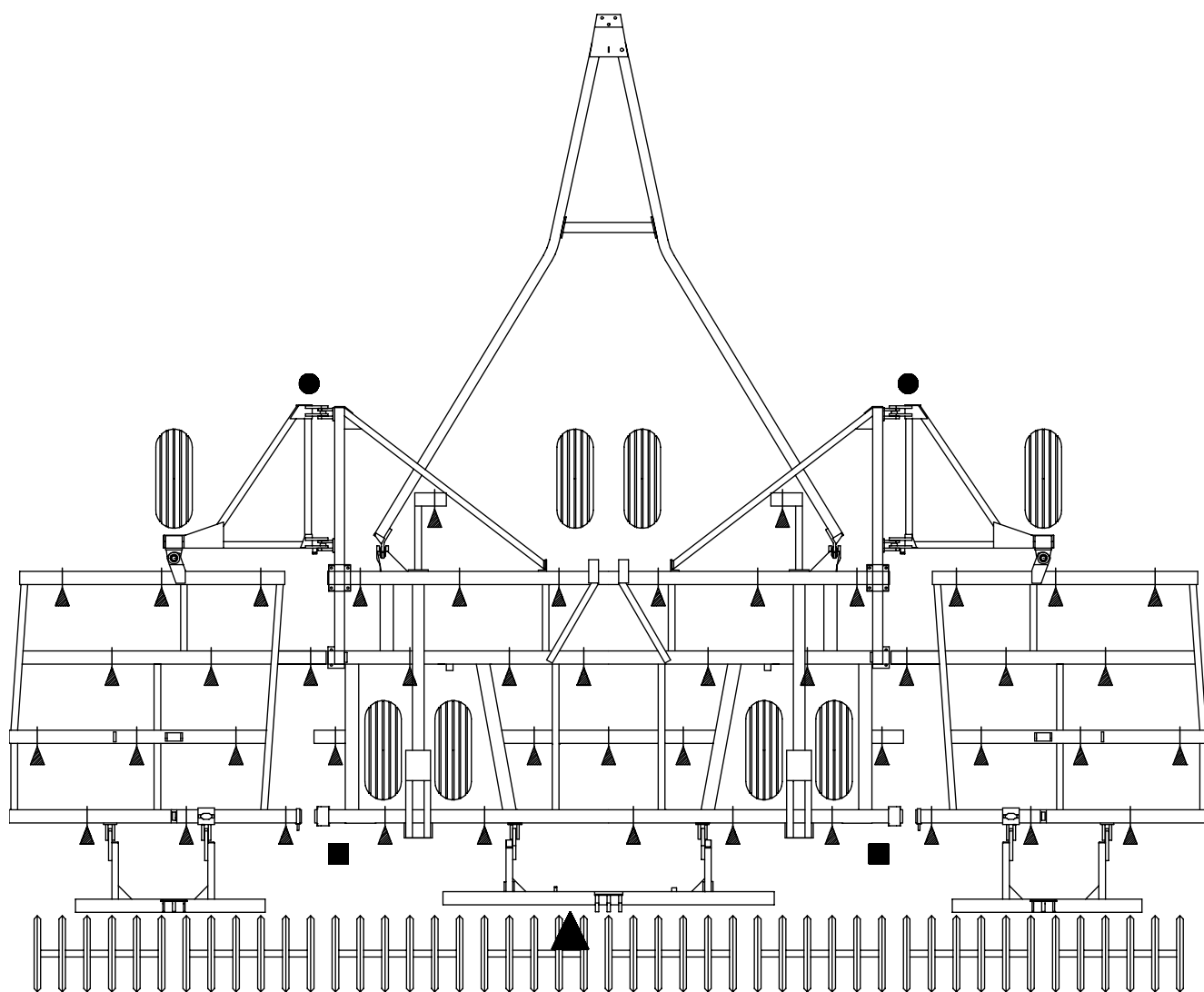
● C12602 Amber Reflector

■ C12603 Red Reflector

▲ SMV Emblem



Use SMV Emblem when transporting, to warn vehicles approaching from the rear. Comply with all provincial, federal and local laws when travelling on the highway.



Familiarize yourself with the location of all decals. Read them carefully to understand the safe operation of your machine.

Safety Lights

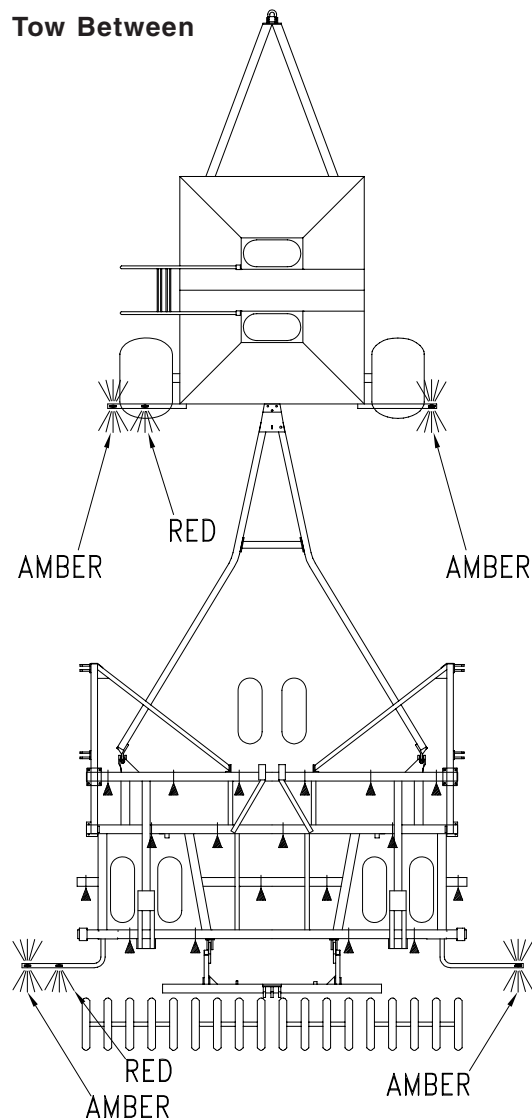
Morris recommends the use of safety lights to meet the ASAE standard for highway travel. Be familiar with and adhere to local laws.

Safety lights secured on the machine promote safe transportation of this implement.

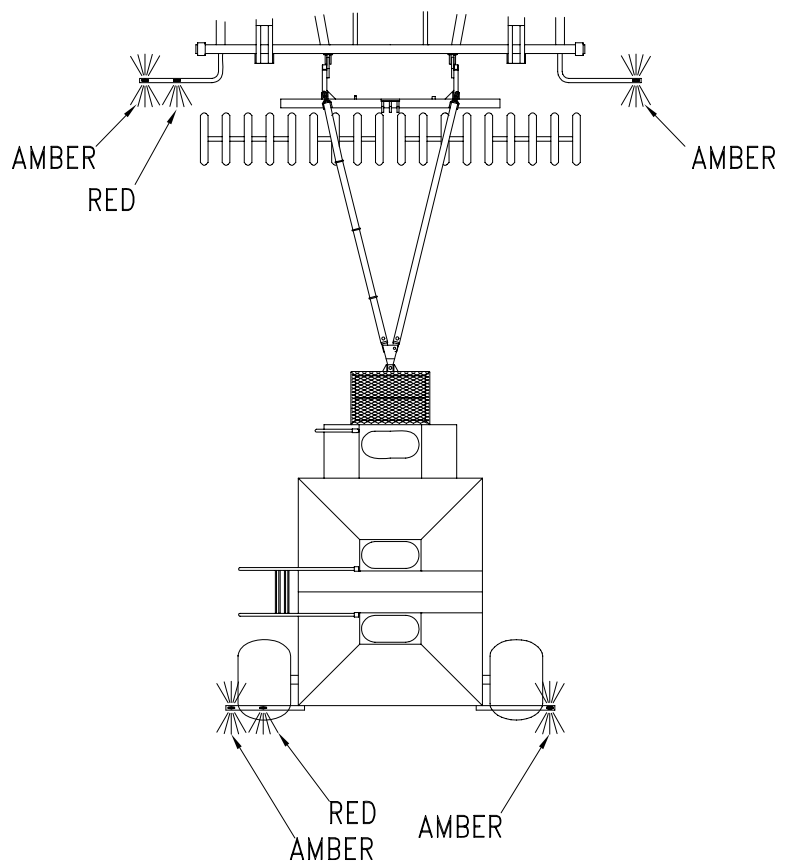
Note: Always replace missing or damaged lights and/or connectors.

Safety lights must be mounted to the rear of the implement and be visible from front and rear. The lights must be within 16 inches of the extremities of the machine and at least 39 inches but not over 10 feet above ground level.

Tow Between



Tow Behind



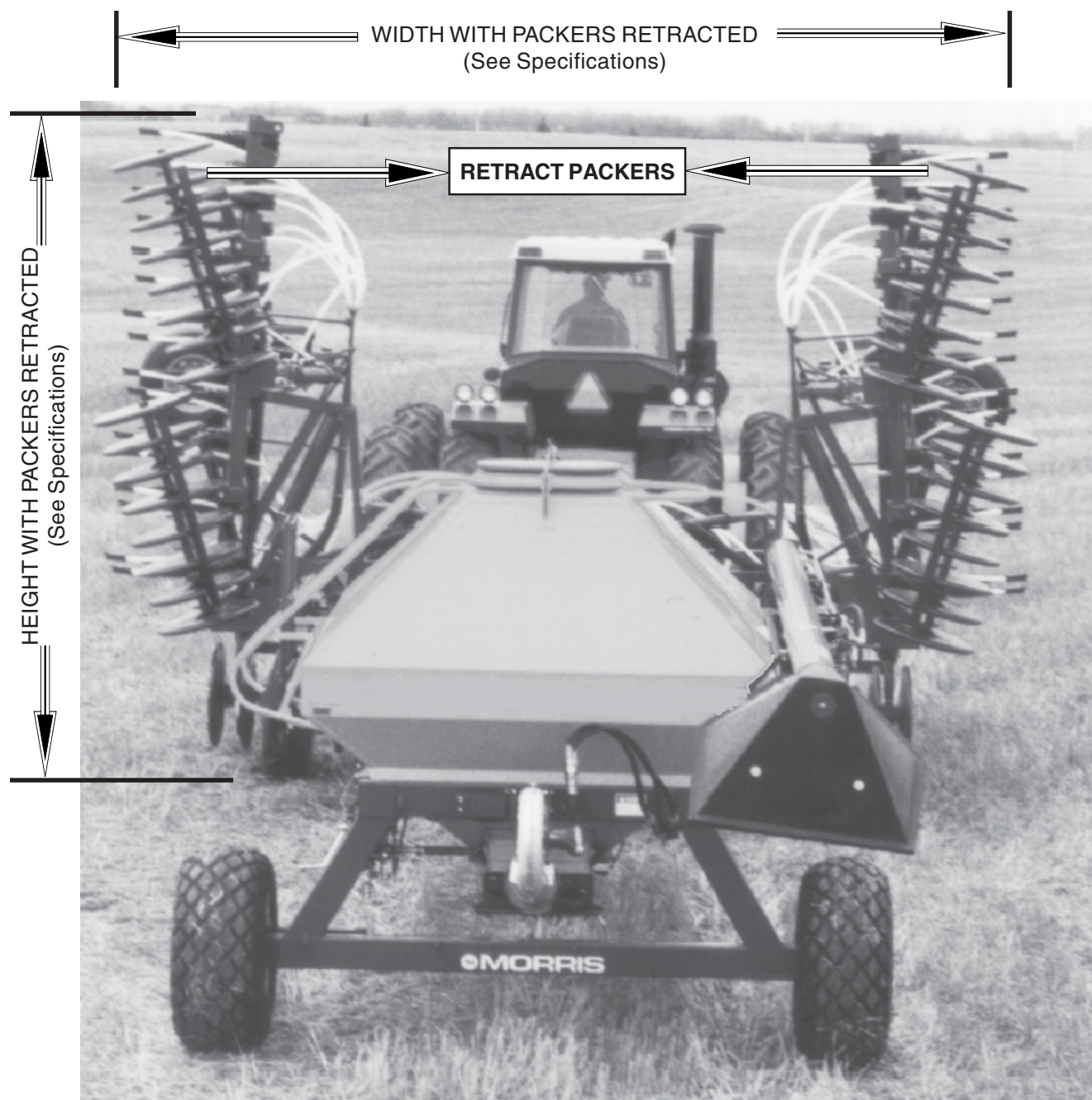
Safety

Notes

Specifications

MAXIM II AIR DRILL						
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"(8.9 cm) 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
19.0 cm Spacing	6,723 kg	7,654 kg	8,510 kg	11,350 kg	N/A	N/A
- 10" Spacing	13,435 lbs	14,872 lbs	16,772 lbs	22,332 lbs	26,241 lbs	28,039 lbs
25.4 cm Spacing	6,107 kg	6,760 kg	7,624 kg	10,151 kg	11,928 kg	12,745 kg
- 12" Spacing	12,225 lbs	14,024 lbs	15,854 lbs	20,731 lbs	24,657 lbs	26,572 lbs
30.5 cm Spacing	5,557 kg	6,375 kg	7,206 kg	9,423 kg	11,208 kg	12,078 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) 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" (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 7/8" (2.2 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) Spacing only) 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" (69.9 cm) with Regular Hoe Point - 30 1/2" (77.5 cm) 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	Optional - Front Row Mount on 30" (76.2 cm) Centres - (20" (50.8 cm) diameter)					
- Trash Cutting (Rippled or Plain)						
- Anhydrous (Plain) - Mid Row Banding	N/A					
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					

Specifications



Be aware of your clearances before proceeding under, through or around buildings, power lines, underpasses or bridges.

**SAFETY-ALERT
SYMBOL**



Watch for this symbol. It identifies potential hazards to health or personal safety. It points out safety precautions. It means:

**ATTENTION - BE ALERT.
Your safety is involved.**

Note: Ownership Verification Form must be completed and submitted to Morris Industries Ltd. within 30 days of the delivery date.

Warranty Void if Not Registered.

Require a Parts Manual? Order Part Number S22681

Check List

Please read the Operator's Manual carefully and become a "SAFE" operator.

Adopt a good lubrication and maintenance program.



General

___ Check if assembled correctly

___ Check hose connections



Lubrication: Grease

___ Gauge Wheel Pivots

___ Packer Bearings

___ Wheel Hubs



Tire Pressure:

___ See maintenance, section 6



Level Frames:

___ Side to side

___ Front to back



Transport:

___ Tighten wheel bolts

___ Transport lock pins are in place

___ Check hose connections.

OWNER REFERENCE

Model _____

Serial No. _____

Dealer _____

Town _____ Prov. (State) _____

Phone _____

OWNER/OPERATOR _____

Date _____



TAKE SAFETY SERIOUSLY.

**DO NOT TAKE
NEEDLESS CHANCES!!**

Introduction

This Operator's Manual has been carefully prepared to provide the necessary information regarding the operation and adjustments, so that you may obtain maximum service and satisfaction from your new MORRIS Maxim Air Drill.

To protect your investment, study your manual before starting or operating in the field. Learn how to operate and service your Maxim Air Drill correctly, failure to do so could result in personal injury or equipment damage.

If you should find that you require information not covered in this manual, contact your local MORRIS Dealer. The Dealer will be glad to answer any questions that may arise regarding the operation of your MORRIS Maxim Air Drill.

MORRIS Dealers are kept informed on the best methods of servicing and are equipped to provide prompt efficient service if needed.

Occasionally, your Maxim Air Drill may require replacement parts. Your Dealer will be able to supply you with the necessary replacement parts required. If the Dealer does not have the necessary part, the MORRIS Factory will supply the Dealer with it promptly.

Your MORRIS Maxim Air Drill is designed to give satisfaction even under difficult conditions. A small amount of time and effort spent in protecting it against rust, wear and replacing worn parts will increase the life and trade-in value.



Shown: 55 foot Maxim Air Drill on 10 inch spacing with 7300 Air Cart

Keep this book handy for ready reference at all times. It is the policy of Morris Industries Ltd. to improve its products whenever it is possible to do so. The Company reserves the right to make changes or add improvements at any time without incurring any obligation to make such changes on machines sold previously.

Introduction

Notes

CAUTION



BE ALERT

SAFETY FIRST

REFER TO SECTION 1 AND REVIEW ALL SAFETY RECOMMENDATIONS.

Application

The Maxim Air Drill utilizes a floating and fully independent frames, this system makes each frame fully flexible, front to back and side to side for improved seeding accuracy.

The 400 lb. Spring Cushion Trip allows the Maxim Air Drill to be used in a variety of seeding applications from conventional to zero till including banding applications.

Tractor

Tires

- Proper ballast and tire pressure are required when pulling heavy implements.
- Consult your tractor operator's manual and follow all recommended procedures.

Hydraulics

- Wipe all hydraulic fittings and couplers with a clean cloth to avoid contaminating the system.
- Check that hydraulic reservoir is filled to the proper level.

Drawbar

- Centre and pin in a fixed position for easier hitching and greater stability.



Do not permit smoking, sparks or an open flame where combustible fuels are being used. Keep the work area well ventilated.



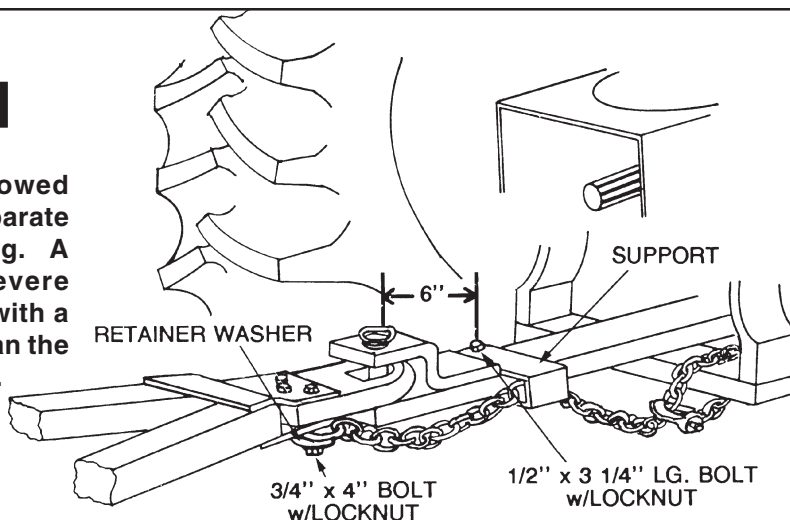
Do not search for high pressure hydraulic leaks without a hand and face protection. A tiny, almost invisible leak can penetrate skin, thereby requiring immediate medical attention.

Operation



CAUTION

A safety chain will help control towed machines should it accidentally separate from the drawbar while transporting. A runaway machine could cause severe injury or death. Use a safety chain with a strength rating equal to or greater than the gross weight of the towed machines.



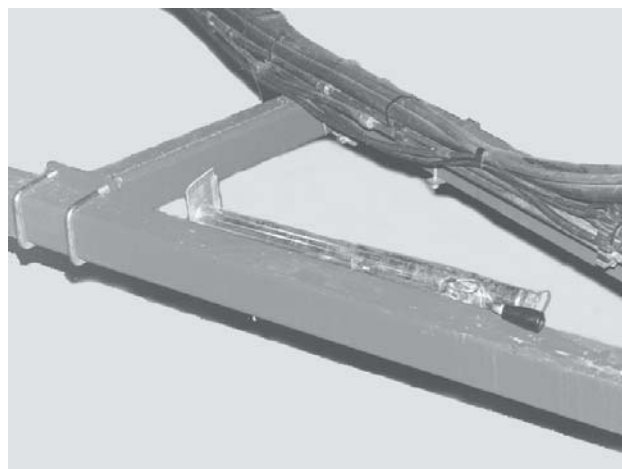
Attach safety chain to the tractor drawbar support or other specified anchor location with the appropriate parts.

Hitching to Tractor

- Ensure swinging drawbar is locked in the centre position.
- Ensure hitch pin is in good condition.
- Level clevis with tractor drawbar using hitch jack.
- Back tractor into position and attach hitch clevis to drawbar, using an adequate hitch pin.
- Lock hitch pin in place with a hairpin or other proper locking device.
- After tractor to implement connection is made, relieve pressure off the hitch jack.
- Place hitch jack in raised position.
- Route Safety Chain through chain support and drawbar support.
- Lock safety hook onto chain.

Note: Provide only enough slack in chain to permit turning.

- Ensure hydraulic hose quick couplers are dirt free.
- Inspect all fittings and hoses for leaks and kinks. Repair as necessary
- Connect the hydraulic hoses to the tractor quick couplers.



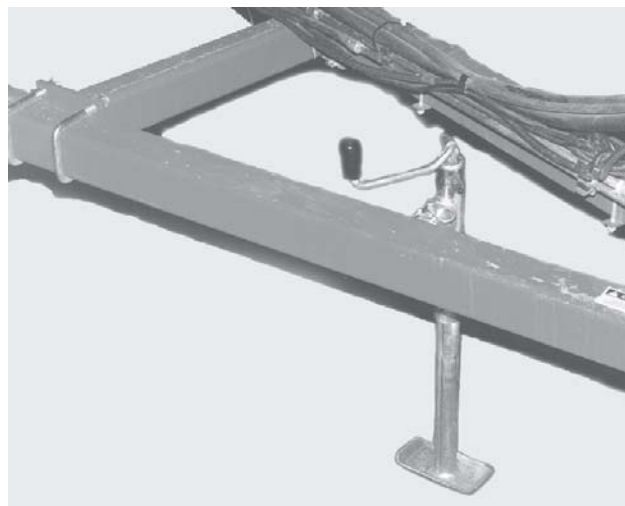
Hitch Jack Raised



Dirt in the hydraulic system could damage O-rings, causing leakage, pressure loss and total system failure.

Unhitching from Tractor

- Pin hitch jack in storage position.
- Lower hitch jack taking the weight off the hitch clevis.
- Ensure all transport locks are properly secured.
- Relieve pressure in the hydraulic hoses by positioning tractor hydraulic lever in “float” position or turn tractor engine off and cycle lever back and forth several times.
- Disconnect the hydraulic hoses.
- Remove the safety chain.
- Remove the drawbar pin.
- Slowly move tractor away from cultivator.



Hitch Jack Lowered

Transport

Observe all applicable safety precautions under transport heading in Safety, Section 1.

- Refer to Specifications, Section 2 for weight, transport height and width.
- Transport with tractor only!
- Always connect safety chain provided to the towing vehicle and the hitch of the seed cart.
- Inspect tires for any serious cuts or abrasions. If such has occurred, tire should be replaced.
- Raise and lower wings on **level ground**.
- Never raise or lower wings when moving.

MORRIS INDUSTRIES LTD. WILL NOT BE RESPONSIBLE FOR ANY DAMAGES OR OPERATOR INJURY RESULTING FROM NON-USE OR IMPROPER USE OF TRANSPORT LOCKS.

Speed

- Only tow at safe speeds.
- The weight of the implement being towed *must not exceed 1.5 times* the weight of towing vehicle.
- Do Not Exceed 20 M.P.H.

Lights

- Ensure proper reflectors are in place, refer to Safety Section 1.
- Be familiar with and adhere to local laws.



CAUTION

**Raise and lower wings on level ground.
Never raise or lower wings when moving.**

Operation

Transport - continued

Transport to Field Position

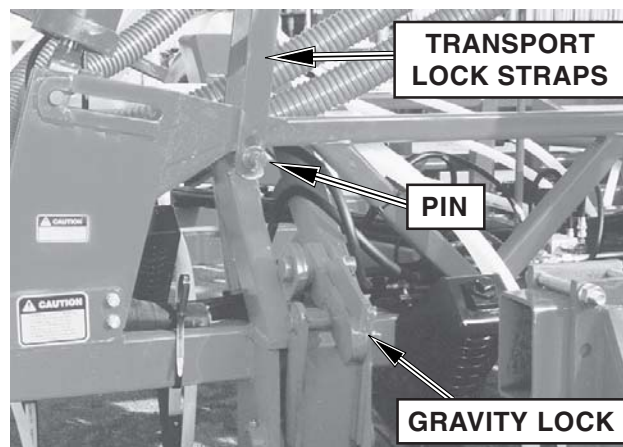
- Position machine on **level ground**.
- Stop tractor, and engage park brake.
- As a precaution, check surrounding area to be sure it is safe to lower wings.
- Extend main frame depth cylinders. (**Fully extending the packers**)
- Ensure wing transport lock strap pins are installed, before removing 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.
- 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.



DANGER

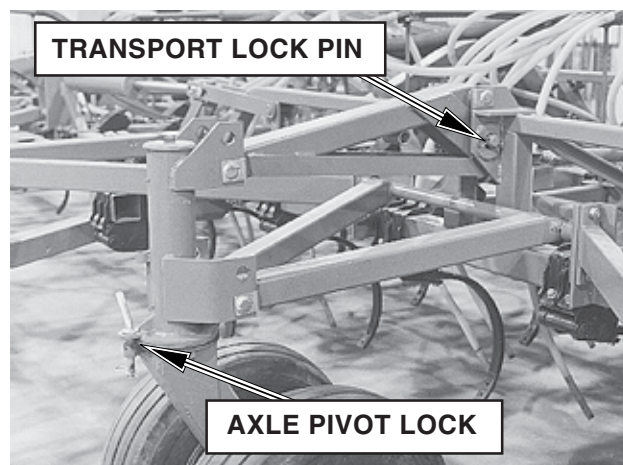
Always stay clear of wings being raised, lowered or in elevated position. Ensure cylinders are completely filled with hydraulic fluid - Wings may fall rapidly causing injury or death.



Gravity Lock and Lock Straps



Wing Rest



Main Frame Gauge Wheel Castor

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.

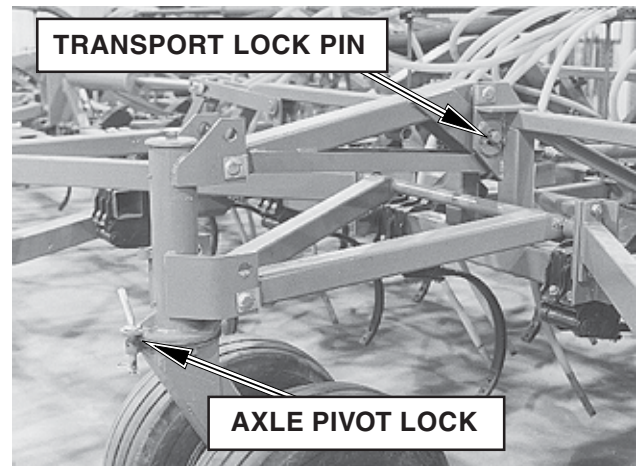
- Raise Air Drill to highest position, depth control hydraulics.
- Install transport lock pin for main frame gauge wheel.
- Secure main frame gauge wheel castor lock pin. **It is important to pin the gauge wheel to prevent excessive shimming of wheels.**
- Operate the wing lift hydraulics. **First**, 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.
- 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.

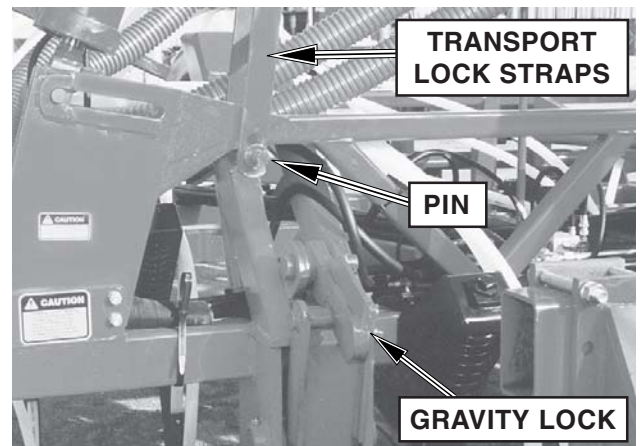


DANGER

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

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

b) Double Shoot/Knife Openers

(Higher Height Setting - Field Clearance Settings)

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

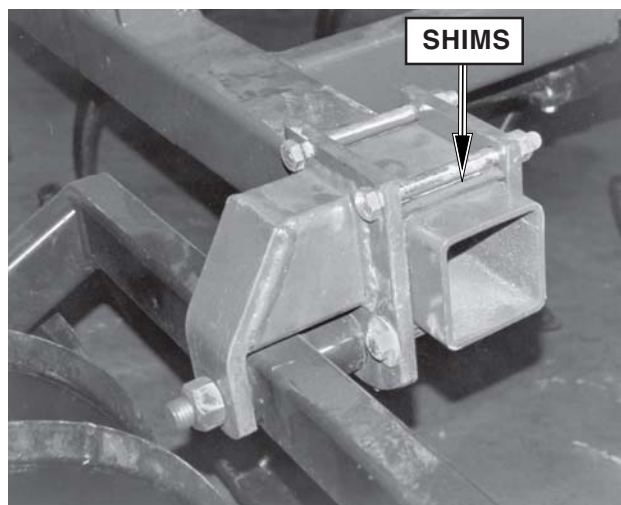
- 2) Lower the unit with the depth control circuit until the points are about 1" above the ground.
- 3) Check the main frame side to side level. Adjust the packer pivot brackets as necessary.
- 4) Adjust the main frame front to back with long turnbuckle link so the front row of points is about 1" lower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

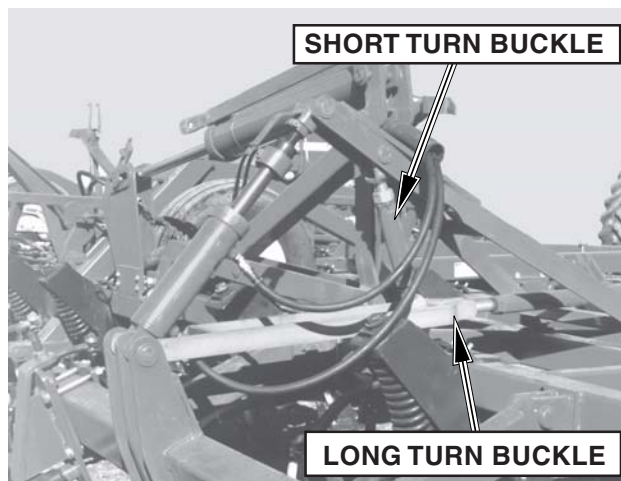
- 5) Adjust the wing frames side to side and front to back in the same way as the main frame (Step 3 and 4).
- 6) Adjust the wing frames to the same height as the main frame, by adjusting the short turnbuckle link. Lengthen the link to lower the frame.

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.

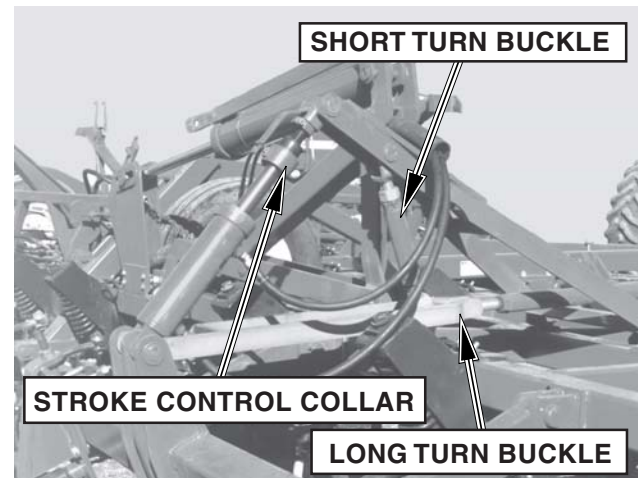
- 6) Check the seeding depth of the points on the **rear row** of the wing frames. Adjust short turnbuckle on the wing frames to match the seeding depth of the main frame. Lengthen the link to lower the frame.
- 7) Check frame side to side level. Adjust the packer pivot brackets as necessary.
- 8) Check 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)

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

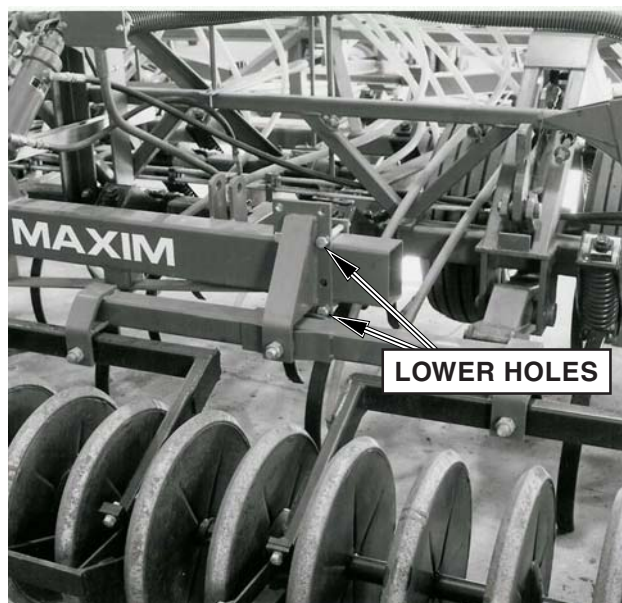
Lower Height Setting

- 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.

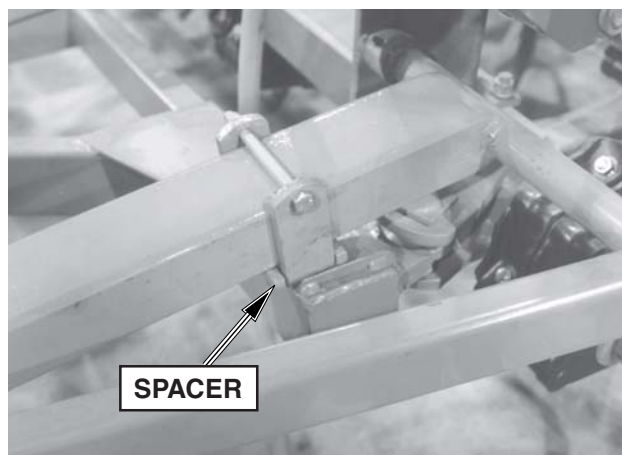
Note: On the 49 ft. model, the wear plate is used only on the outer wings.



(A) Gauge Wheel Main Frame



(B) Packers Main Frame



(C) Wear Plate

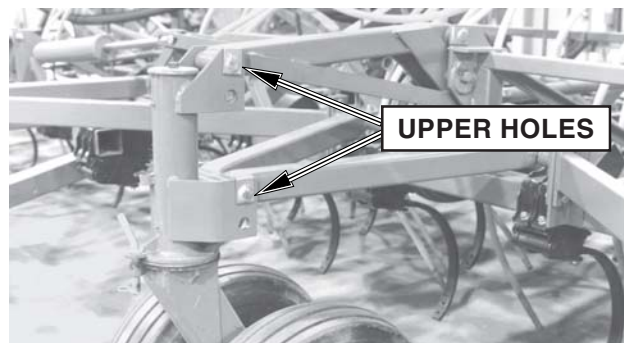
Field Clearance Settings - continued

Double Shoot/Knife Openers

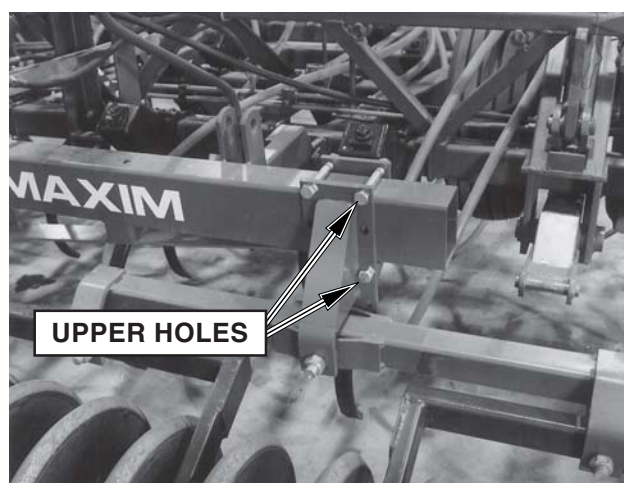
Upper Height Setting

- 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.

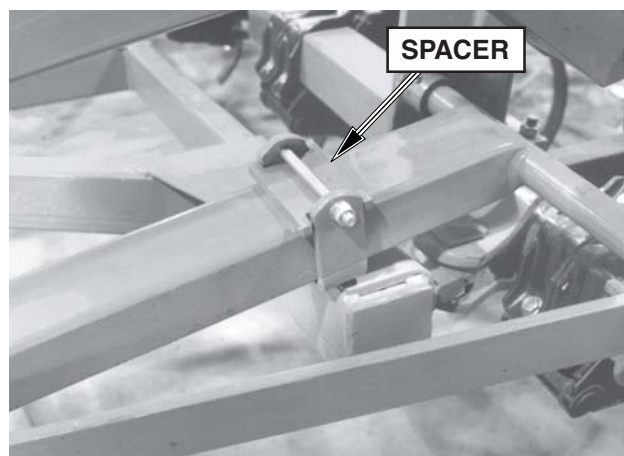
Note: On the 49 ft. model, the wear plate is used only on the outer wings.



(A) Gauge Wheel Main Frame



(B) Packers Main Frame



(C) Wear Plate

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.

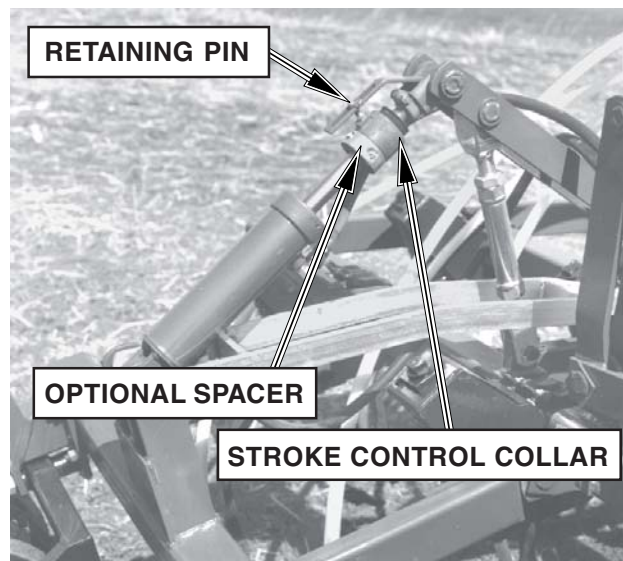
Rephasing

- 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

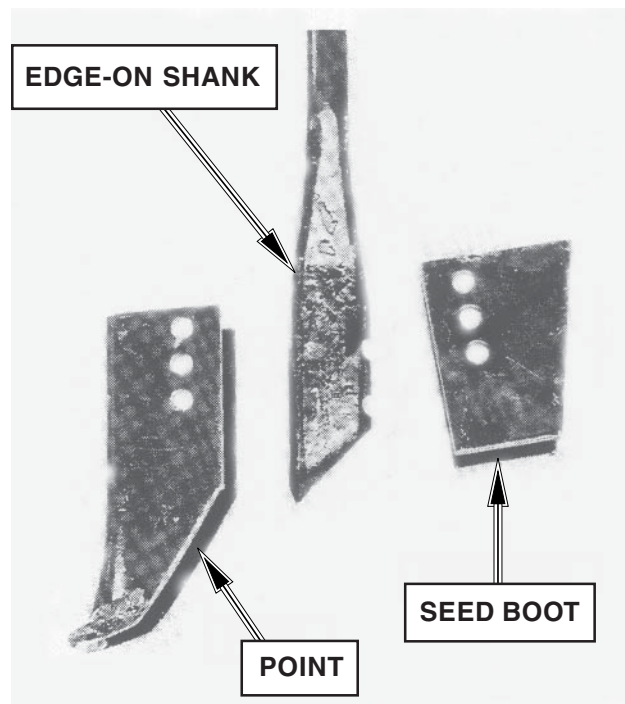
Edge-On Point Adjustment

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.

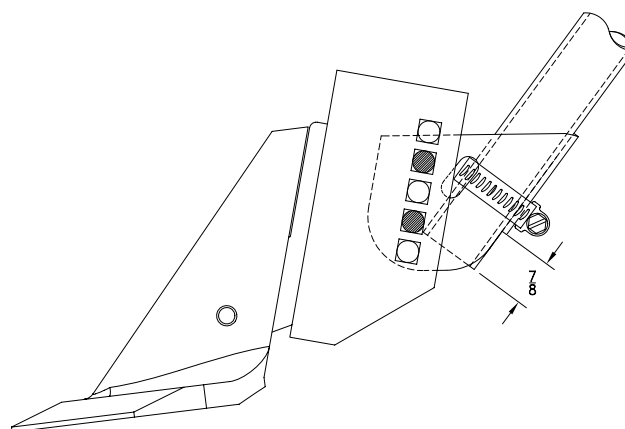
Note: Points can be lowered to compensate for tractor tire impressions.



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.



Part Number S32010

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.

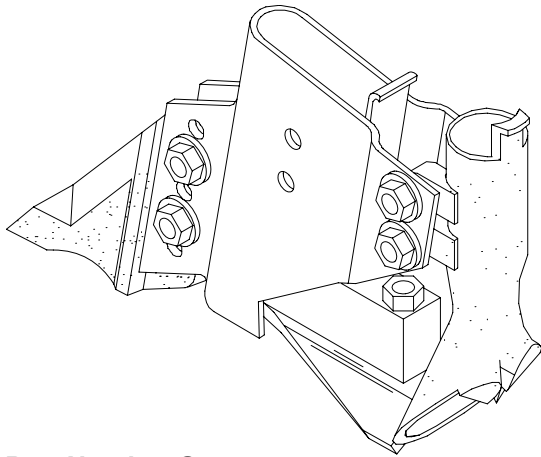
Always secure connecting parts and safety chains before towing ammonia trailer.

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

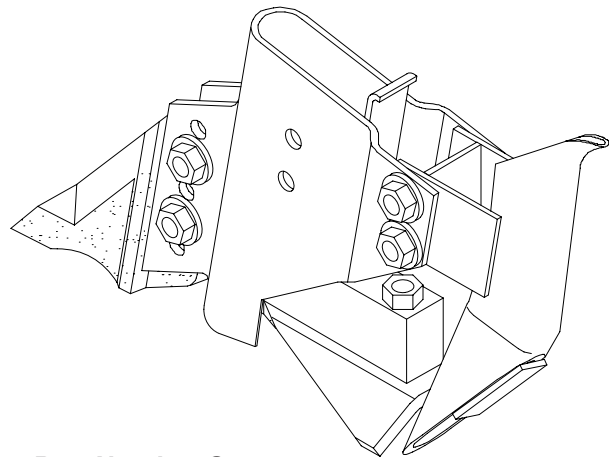
S29378

Opener Adjustments

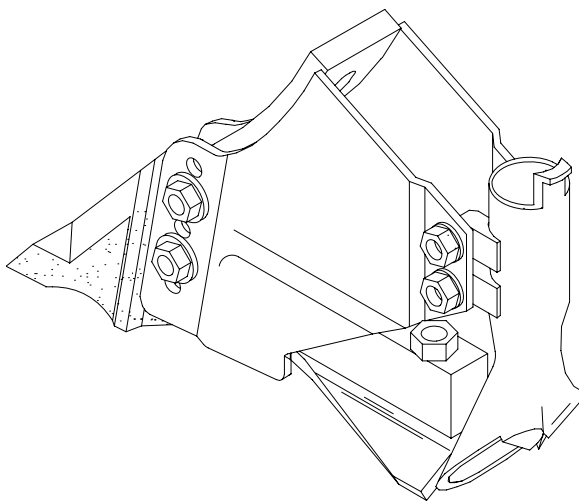
Double Shoot Openers - continued



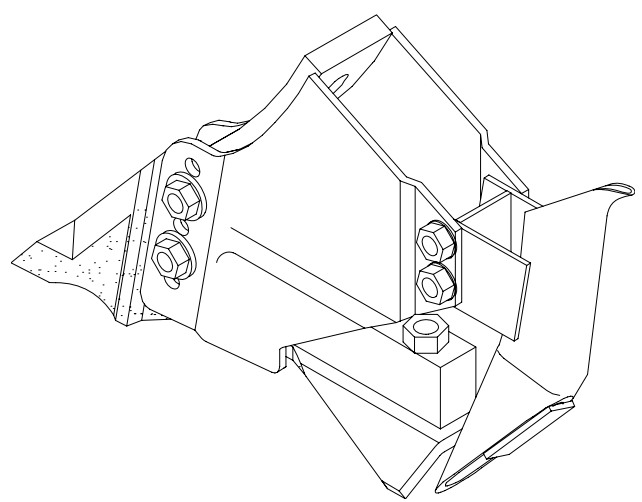
Part Number S28158



Part Number S29000



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 Grade 8 torque to 70 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.

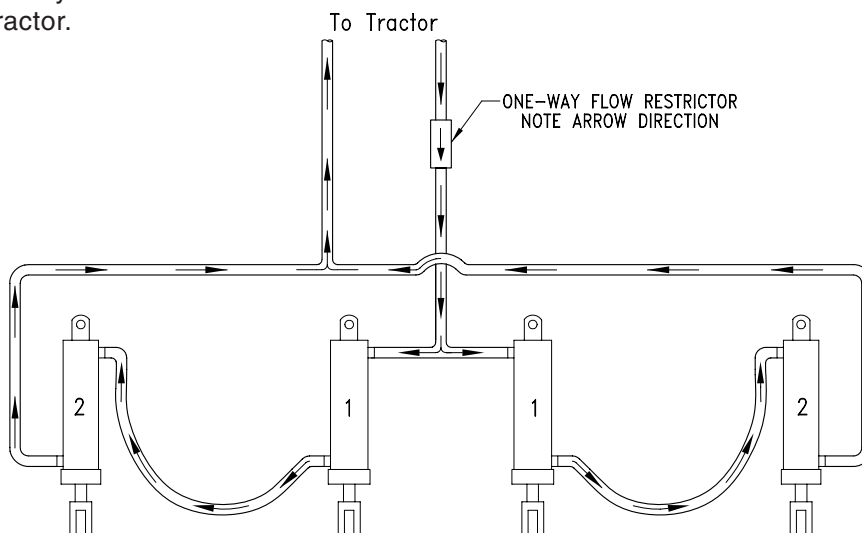
Finally the fluid exits the gland end of cylinders 2 into a common line and then to the tractor.

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.

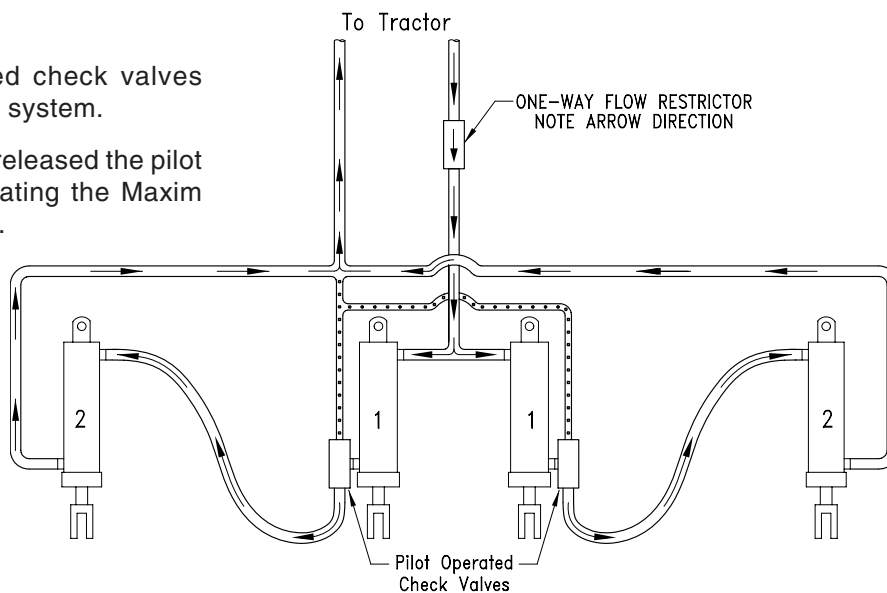
29 ft. and 34 ft. Models



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.

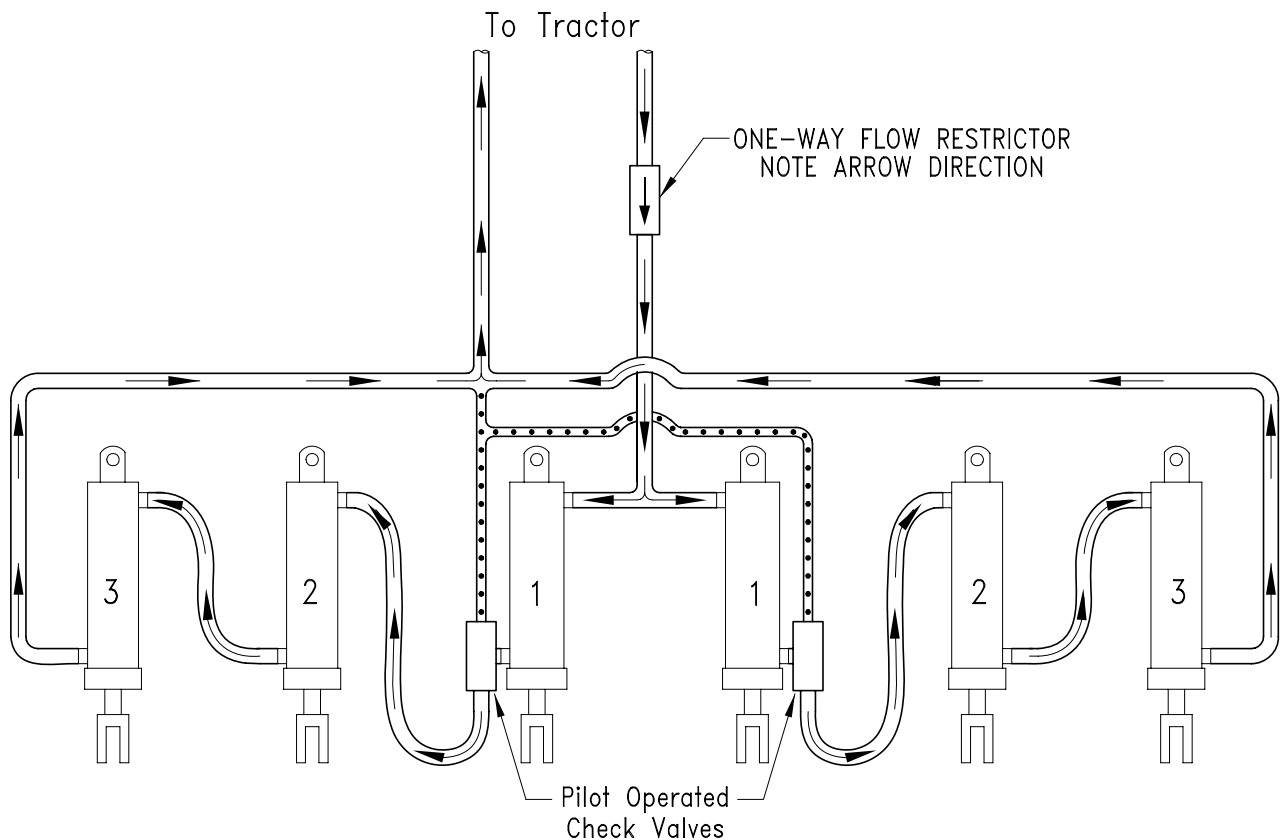
Hydraulic fluid is forced from the gland end of cylinders 2 to the butt end of cylinders 3, causing them to extend, pivoting the packers and gauge wheels down. This causes the outer wings to raise.

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.

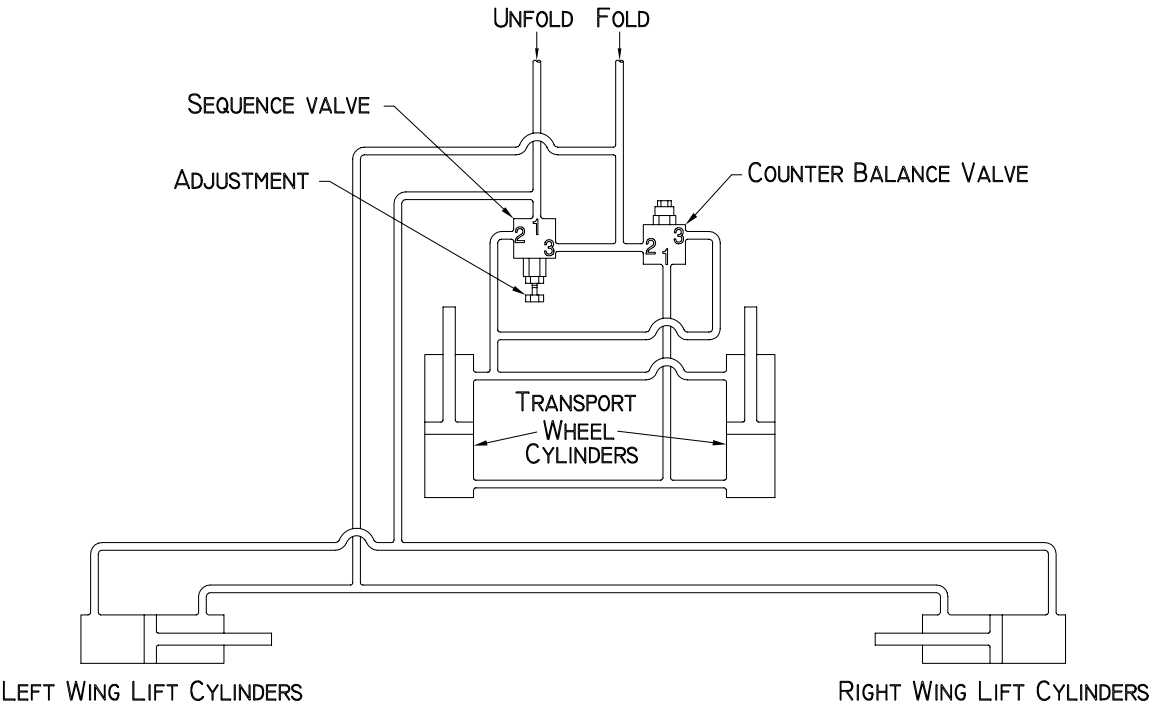
Note: A one-way flow restrictor valve is incorporated into the hydraulic system to maintain a positive oil pressure.



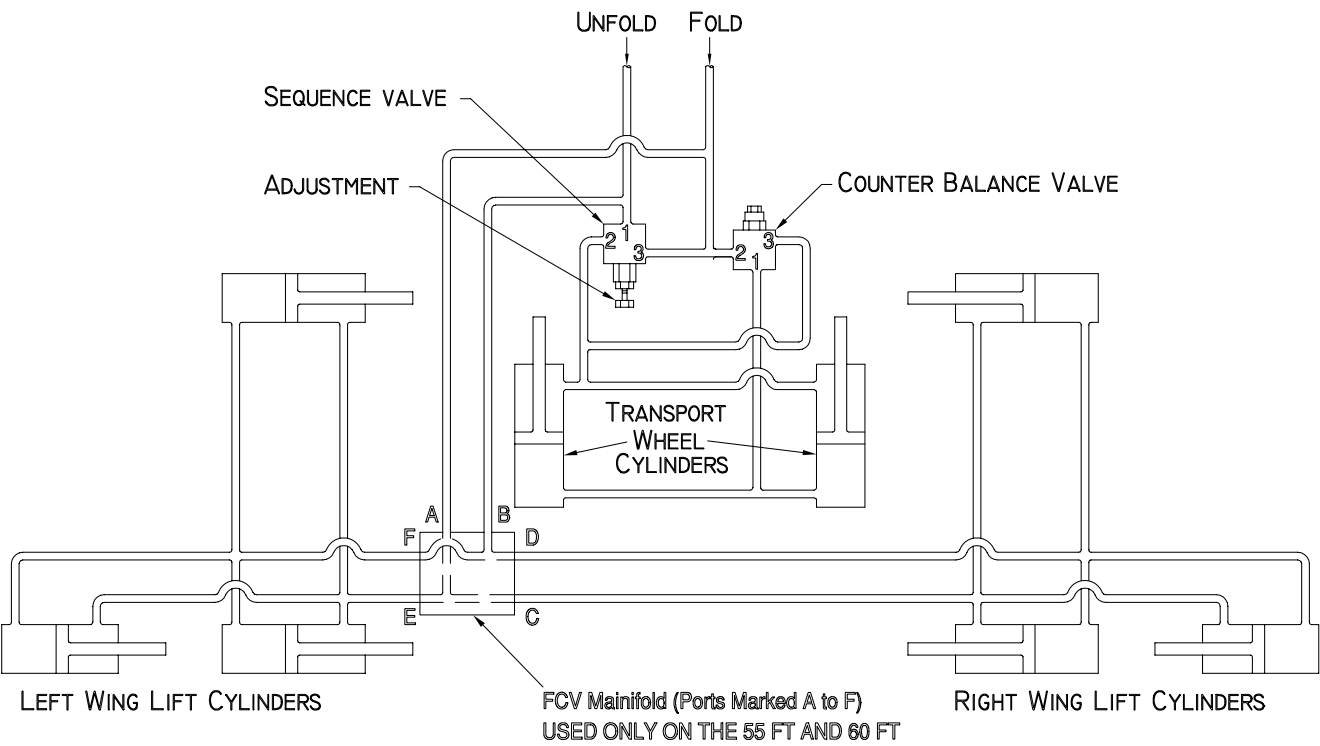
Operation

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 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.

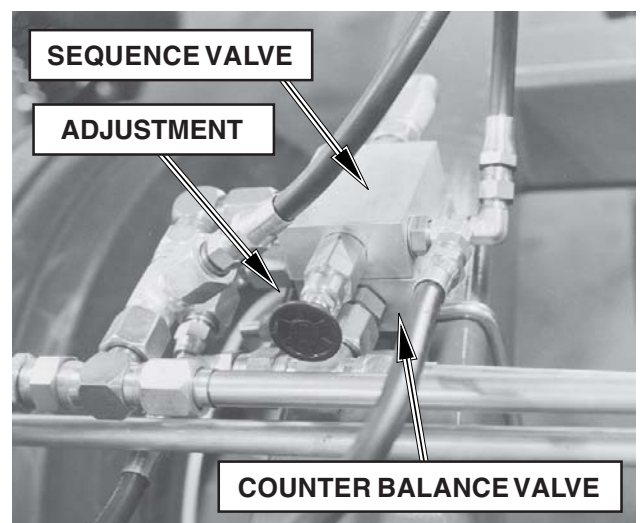
Once the wing lift cylinders are fully extended the pressure in the circuit builds to the point that the sequence valve opens, causing the pilot line to the counter balance valve to pressurize opening the counter balance valve. With both valves open the hydraulic fluid retracts the transport wheels up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

S22441



Operation

General Guidelines

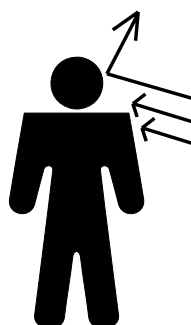
The results obtained from the Maxim Air Drill are directly related to the depth uniformity of the unit. Poor levelling worn shovels, uneven tire pressures, and bent shanks must be avoided to obtain optimum field results.

- 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!



CAUTION

Care should be taken when working near the Air Cart while the fan is running. Product blowing out of the system could cause personal injury.

CAUTION



BE ALERT

SAFETY FIRST

**REFER TO SECTION 1 AND REVIEW ALL
SAFETY RECOMMENDATIONS.**

General

This section deals with two goals, maximum life and dependable operation. Adopt a regular maintenance and lubrication program. Care and sufficient lubrication is the best insurance against delays.

Safety

- Always shut off the tractor and remove key before dismounting.
- Guard against hydraulic high pressure leaks with hand and face protection.
- Never work under the Implement unless it is in the down position or transport lock pins are in place and secured with hair pins. Do not depend on the hydraulic system to support the frame.
- Always wear safety goggles, breathing apparatus and gloves when working on seeder filled with chemical. Follow manufactures recommended safety procedures when working with chemicals or treated seeds.
- Do not feed left over treated seed to livestock, treated seed is poisonous and may cause harm to persons or livestock.



**Securely support any machine elements that
must be raised for service work.**



CAUTION



**Keep service area
clean and dry. Wet or
oily floors are
slippery. Wet spots
can be dangerous
when working with
electrical equipment.**



Maintenance

Tighten Bolts

- Before operating the machine.
- After the first two hours of operation.
- Check tightness periodically thereafter.
- Use Bolt Torque Chart for correct values on various bolts.
- Note dashes on hex heads to determine correct grade.

Note: DO NOT use the values in the Bolt Torque Chart if a different torque value or tightening procedure is given for a specific application.

- Fasteners should be replaced with the same or higher grade. If higher grade is used, only tighten to the strength of the original.

Bolt Torque Chart				
Grade 5 Bolt Marking 		Bolt Size	Grade 8 Bolt Marking 	
Nm	lb. ft.		lb. ft.	Nm
11	8	1/4	12	16
23	17	5/16	24	33
41	30	3/8	45	61
68	50	7/16	70	95
102	75	1/2	105	142
149	110	9/16	155	210
203	150	5/8	210	285
366	270	3/4	375	508
536	395	7/8	610	827
800	590	1	910	1234
1150	850	1-1/8	1350	1850
1650	1200	1-1/4	1950	2600
2150	1550	1-3/8	2550	3400
2850	2100	1-1/2	3350	4550

Tires

- Inspect tires and wheels daily for tread wear, side wall abrasions, damaged rims or missing lug bolts and nuts. Replace if necessary.
- Tighten wheel bolts - refer to Bolt Torque Chart.
- Check tire pressure daily, when tires are cold.
- Correct tire pressure is important.
- Do not inflate tire above the recommended pressure.



Tire replacement requires trained personnel and proper equipment.

Tire Specifications		
SIZE	LOAD RANGE	PRESSURE
9.5L x 15FI	D	60 P.S.I.
11L x 15SL	6 ply rating	28 P.S.I.
11L x 15FI	D	60 P.S.I.
11L x 15FI	F	85 P.S.I.
12.5L x 15FI	F	90 P.S.I.

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

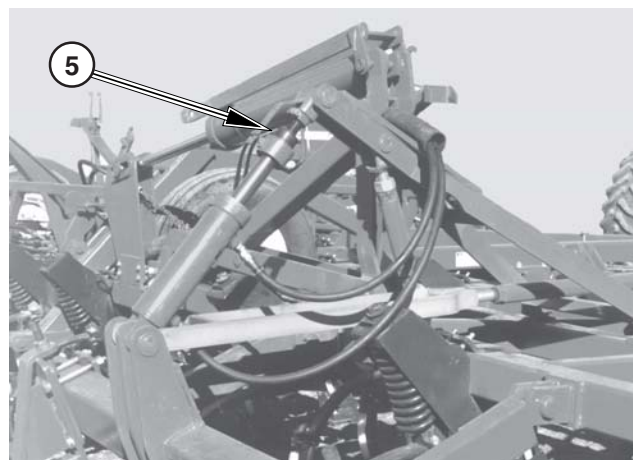
- Grease every 10 hours. (Daily)

4. Packer Bearings

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

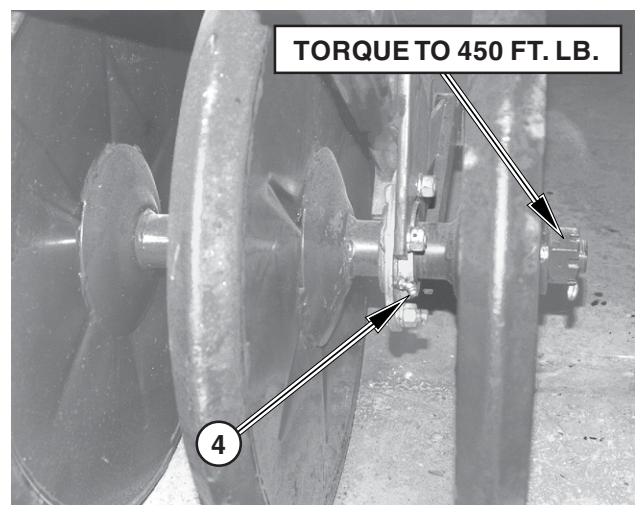
5. Stroke Control Colars

- 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.

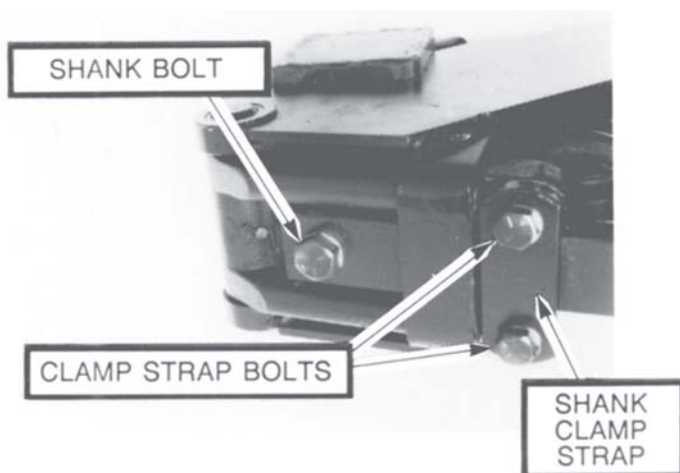
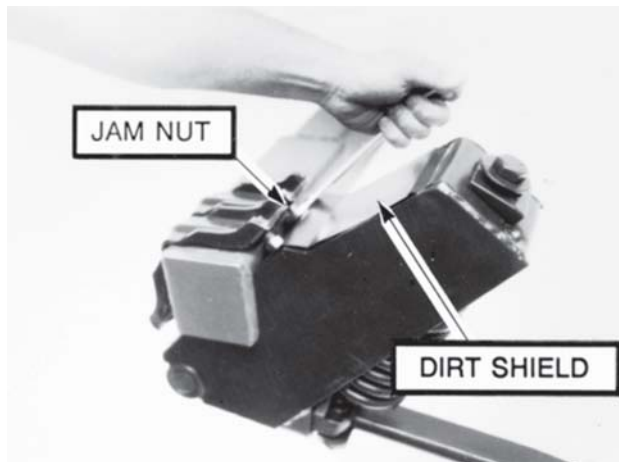
- Loosen the two jam nuts that retain the dirt shield.
- Use a screw driver to remove dirt shield.



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.



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.

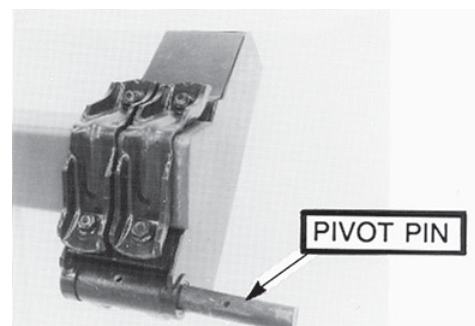
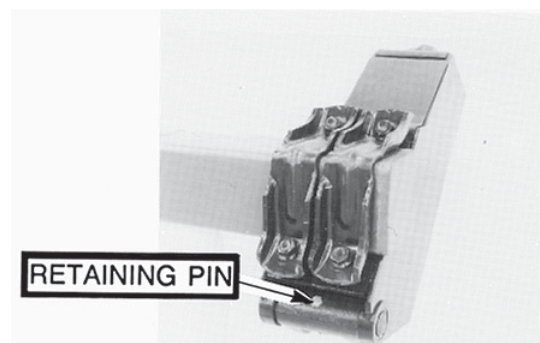
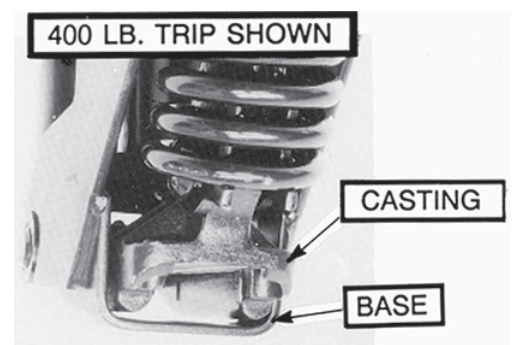
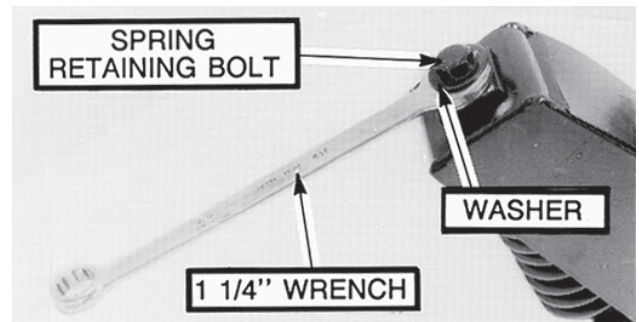


DANGER

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.

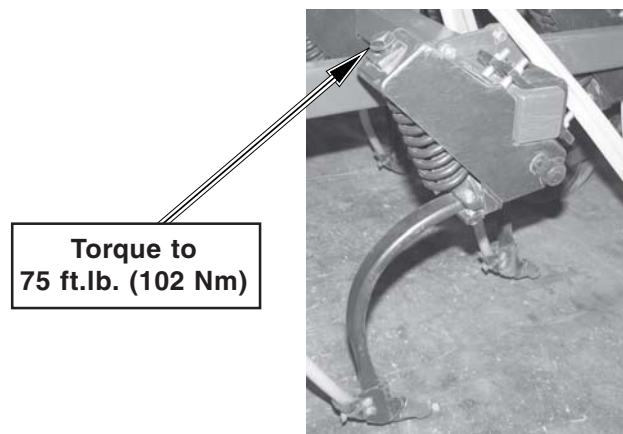
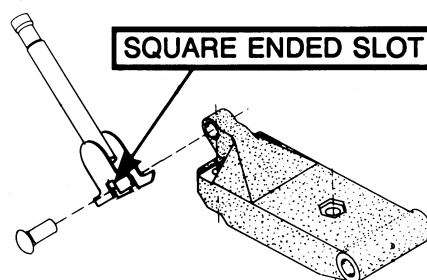
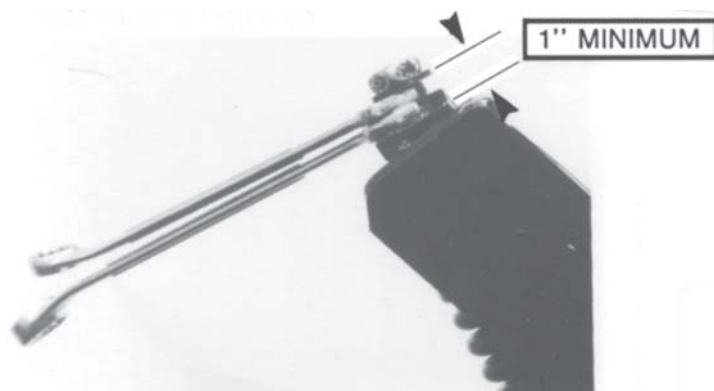
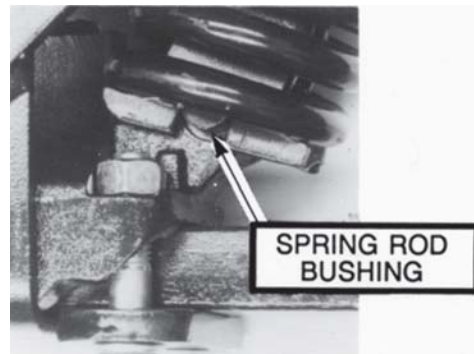


DANGER

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

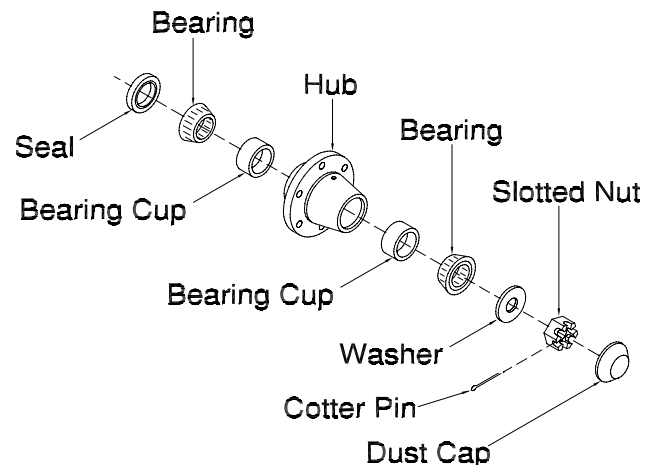
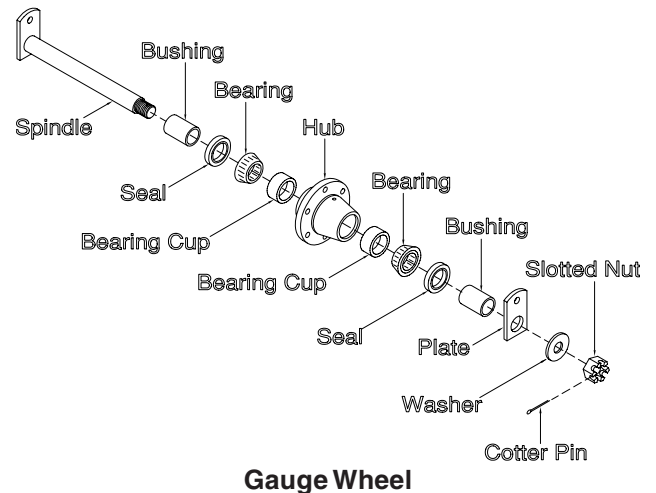
IMPORTANT

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



Wheel Bearings

- Lower the Air Drill and raise the wheels enough to clear the surface.
- Shut tractor off and remove key.
- Block wheel on tractor.
- Remove wheel from hub.
- Remove the dust cap, cotter pin, and the slotted nut and washer.
- Be careful when pulling the hub off as not to drop the outer bearing.
- Clean spindle and bearing components with solvent.
- Inspect for wear on bearings, spindle and cups, replace parts as required.
- Do not reuse old seals. Use only new seals when assembling.
- Pack inner hub with bearing grease.
- Be sure bearing and cup are dry and clean.
- Work grease into the bearing rollers, until each part of the bearing is completely full of grease.
- Install inner bearing and cup first, then press new seals in place.
- Place hub on spindle.
- Install outer bearing, washer and slotted nut.
- Tighten nut while turning the wheel until a slight drag is felt.
- Back nut off one slot and install a cotter pin. Bend cotter pin up around nut.
- Pack grease inside the dust cap and tap into position.



Maintenance

Hydraulics

Refer to Section 1 regarding hydraulic safety.

- Inspect hydraulic system for leaks, damaged hoses and loose fittings.
- Damaged Hoses and hydraulic tubing can only be repaired by replacement. **DO NOT ATTEMPT REPAIRS WITH TAPE OR CEMENTS.** High pressure will burst such repairs and cause system failure and possible injury.
- Leaking cylinders - install a new seal kit.
- Fittings - use Teflon seal tape on all NPT hydraulic joints. **Do not use Teflon tape on JIC ends.**
- Hydraulic Hose Connections - when connecting the hoses to the cylinders, tubing, etc. always use one wrench to keep the hose from twisting and another wrench to tighten the union. Excessive twisting will shorten hose life.
- Keep fittings and couplers clean.
- Check the Tractor Manual for proper filter replacement schedule.

Refer to the Trouble Shooting Section.



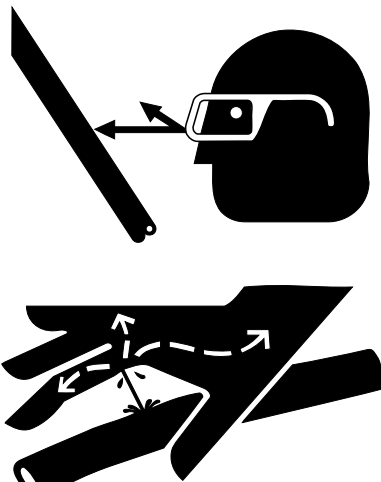
Contact your nearest Dealer for genuine repair parts. Dealers carry ample stocks and are backed by the manufacture and regional associations.



Dirt in the hydraulic system could damage O-rings, causing leakage, pressure loss and total system failure.

Note: Extreme care must be taken to maintain a clean hydraulic system. Use only new hydraulic fluid when filling reservoir.

Important: All air must be removed from hydraulic system.



WARNING

HIGH-PRESSURE FLUID HAZARD

To prevent serious injury or death:

- Relieve pressure on hydraulic system before servicing or disconnecting hoses.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

Cylinder Shaft Protection

The steps summarized below should be followed when protecting chrome plated shafting on equipment:

- Position the equipment as it will be stored, and identify all the exposed portions of the chrome plated shafts.
- Clean dirt and dust from the exposed portions of the shafting using a dry cloth or a cloth which has been dampened with an appropriate solvent.
- Prepare a mixture of 60% oil-based rust inhibitor and 40% Kerosene. Apply a thin coating of this mixture to the exposed surfaces of the chrome plated shafting. No. 1 fuel oil may be substituted for Kerosene. A cloth dipped in the mixture can be used to apply the coating.
- Inspect the shaft surfaces after six months and apply additional corrosion preventative mixture.
- If the equipment is to be moved and then stored again for an extended period of time, the steps above should be repeated for all shafts that were stroked during the move.
- **Before retracting the cylinders the protective coating should be removed**, to prevent fine sand and dirt that has accumulated in the coating, from damaging the shaft seal. **Under no circumstances should sandpaper or other abrasive be used to clean the surfaces.** Plastic or copper wool in combination with an appropriate solvent will remove most of the dirt.



Dirt in the hydraulic system could damage O-rings, causing leakage, pressure loss and total system failure.

Maintenance

Notes

Preparing for Storage

- To insure longer life and satisfactory operation, store the implement in a shed.
- If building storage is impossible, store away from areas of main activity on firm, dry ground.
- Clean machine thoroughly.
- Clean and grease threads on stroke control collars.
- Inspect all parts for wear or damage.
- Avoid delays - if parts are required, order at the end of the season.
- Lubricate grease fittings. (Refer to Lubricating Section).
- Tighten all bolts to proper specifications (Refer to Bolt Torque Chart).
- For a safer storage, lower the implement into field position and release the hydraulic pressure.
- If implement must be stored in a raised position, ensure that wings are properly secured with lock pins.
- Level implement using hitch jack and block up.
- Relieve pressure from hydraulic system.
- Raise frames, block up and relieve weight from the tires.
- Cover tires with canvas to protect them from the elements when stored outside.
- Coat exposed cylinder shafts (**Refer to Cylinder Shaft Protection**).
- Paint any surfaces that have become worn.



**DO NOT ALLOW CHILDREN TO PLAY
ON OR AROUND THE MACHINE.**

MORRIS PAINT

Spray Cans:

Part Number	Description
W-4647	Red MORRIS Spray Can
W-4648	Blue MORRIS Spray Can
N31087	White MORRIS Spray Can

Litre Cans:

Part Number	Description
Z-10	Red MORRIS Paint/Litre
Z-11	Blue MORRIS Paint/Litre

Storage

Cylinder Shaft Protection

The steps summarized below should be followed when protecting chrome plated shafting on equipment:

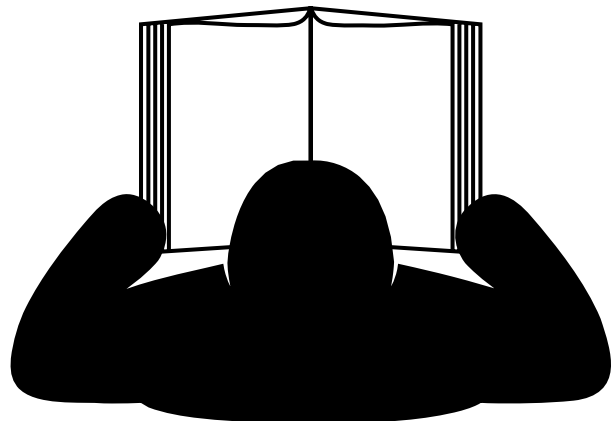
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Dirt in the hydraulic system could damage O-rings, causing leakage, pressure loss and total system failure.

Removing From Storage

- Review Operator's Manual.
- Check tire pressure (Refer to Tire Pressure List)
- Clean machine thoroughly. Remove coating from exposed cylinder shafts (**Refer to Cylinder Shaft Protection**).
- Lubricate grease fittings. (Refer to Lubricating Section).
- Tighten all bolts to proper specifications (Refer to Bolt Torque Chart).



Troubleshooting

Problem	Cause	Correction
Machine not operating straight.	Not leveled.	Refer to Operation Section on levelling.
		Rephase cylinders.
		Check tire pressure.
	Packer pivot bushings worn.	Replace bushings.
Lack of penetration.	Not leveled.	Refer to Operation Section on levelling.
	Sweeps/points worn.	Replacement necessary.
	Sweep angle.	Conventional Stem requires 47 degree tools.
Sweeps/points wearing unevenly	Not leveled front to rear.	Refer to Operation Section on levelling.
	Tire tracks.	Replace worn sweeps.
	Front row always wears more than the others.	Replace worn sweeps.
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.
One wing or one whole side will drop when machine is fully raised.	Depth Control collars not adjusted evenly.	Measure and ensure all collars are adjusted properly.
	Internal cylinder leak.	Repair cylinder.
	Pilot Operated Check Valve leaking.	Replace Pilot Operated Check Valve on side the problem is occurring.
Depth Hydraulics chatter when lowering.	Restrictor valve C15975 not installed correctly.	Install restrictor valve into hydraulic line to raise unit. Note direction of arrow on valve. Refer to <i>"Hydraulic Depth Control System"</i> in Operation Section.
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.



MORRIS

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