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# Section 1: Safety

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Safety

**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.

---

**Signal Words**

The words **DANGER**, **WARNING** or **CAUTION** are used with the safety alert symbol. Learn to recognize the safety alerts, and follow the recommended precautions and safe practices.

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

- **DANGER**: Indicates an imminently hazardous situation that, if not avoided, will result in DEATH OR SERIOUS INJURY.
- **WARNING**: Indicates a potentially hazardous situation that, if not avoided, could result in DEATH OR SERIOUS INJURY.
- **CAUTION**: Indicates a potentially hazardous situation that, if not avoided, may result in MINOR OR MODERATE INJURY.

Replace any **DANGER**, **WARNING**, **CAUTION** or instructional decal that is not readable or is missing. The location and part number of these decals is identified later in this section of the manual.

The words **Important** and **Note** are not related to personal safety but are used to give additional information and tips for operating or servicing this equipment.

**IMPORTANT**: Identifies special instructions or procedures which, if not strictly observed could result in damage to, or destruction of the machine, process or its surroundings.

**NOTE**: Indicates points of particular interest for more efficient and convenient repair or operation.
General Operation

- **DO NOT RIDE!!** Do not allow riders on the implement when in motion.
- Do not allow extra riders in the tractor unless an instructor seat and seat belt are available.
- **Check behind** when backing up.
- **Reduce speed** when working in hilly terrain.
- Never allow anyone within the immediate area when operating machinery.
- **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 and the tractor engine has been shut off.**

Tractor Operation

- Be aware of the correct tractor operating procedures, when working with implements.
- Review tractor operator’s manual.
- Secure hitch pin with a retainer and lock drawbar in centre position.
Safety

Chemicals

- **Use extreme care** when cleaning, filling or making adjustments.

- **Always read** granular chemical or treated seed manufacturer’s warning labels carefully and remember them.

- Wear close fitting clothing and appropriate personal protective equipment for the job as specified by the chemical and/or seed manufacturer.

- **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 per the manufacturer’s instructions.

- Always follow the manufacturer’s operating instructions and warning labels when operating an ammonia tank with the equipment.

- **Do Not enter tank unless another person is present and the tractor engine has been shut off.**
**Transporting**

- **Be aware** of the height, length and width of implement. Make turns carefully and be aware of obstacles and overhead electrical lines.
- Empty tanks before transporting. Do Not Exceed 20 M.P.H. (32 kph) with an empty air cart.
- Use an agricultural tractor that is large enough with sufficient braking capacity so that the weight of the loaded equipment towed does not exceed 1.5 times the weight of the tractor.
- Use flashing amber warning lights, turn signals and SMV emblems when on public roads.
- Do not transport in poor visibility.
- The slow moving vehicle (SMV) emblem and reflectors must be secured and be visible on the machine for transport.
- Avoid soft surfaces, the additional wing weight on the centre wheels could cause the machine to sink.
- Ensure safety chain is attached correctly to the towing vehicle and the hitch of the seed cart.
- Check that wings are firmly seated in transport wing stops, and lock pins installed.
- Secure transport locks on depth control cylinders.
- Be familiar with and adhere to local laws.

**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.
Safety

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.
- **To prevent personal injury**, do not walk within radius of raised wings. Always ensure wings are locked in place.
- Do not modify the machine.

Hitching and Unhitching

- The hitch of the Heavy Harrow Bar can swing up abruptly when disconnected from the tractor drawbar.
- Do not stand under raised machine.
- Cable arms swing up and outwards.
- Ensure hitch jacks are properly secured.

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

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

Safety Signs

**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.

**DANGER**

- BEFORE DISCONNECTING DRAWBAR FROM TRACTOR MAKE SURE ALL JACKS ARE IN PLACE. FAILURE TO DO SO WILL RESULT IN HITCH RAISING ABRUPTLY AND POSSIBLE BODILY INJURY.
- **NEVER** DISCONNECT DRAWBAR FROM TRACTOR WHEN WINGS ARE RAISED WITH MACHINE IN FIELD POSITION.

**WARNING**

Keep off while machine is moving or mechanism is running.

**WARNING**

Personal injury or property damage may result from loss of control.
- Always use large enough tractor with sufficient braking capacity.
  - Weight of fully loaded implement should not be more than 1.5 times weight of tractor.
- Maximum recommended towing speed is 20 mph (32 km/h).
- Use flashing amber warning lights and SMV emblem when on public roads, except where prohibited by law.
- Refer to tractor and implement Operator’s Manuals for weights and further information.
Familiarize yourself with the location of all decals. Read them carefully to understand the safe operation of your machine.
Lighting and Marking

Rear View

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

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

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

Side View

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

**FIELD-PRO "Heavy Harrow Bar"**

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<th>Model</th>
<th>50 feet (15.24 m)</th>
<th>70 feet (21.33 m)</th>
</tr>
</thead>
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<tr>
<td>5-Bar Harrows - 10' (3.05 m) Wide x 72&quot; (183 cm) Deep</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Tines - Straight 1/2&quot; (1.27 cm) Diameter x 27 1/4&quot; (69 cm) Long</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Hydraulic Tine Adjustment</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Main Frame - Single Axle - Tire Size -</td>
<td>(2) 16.5L x 16.1</td>
<td>(2) 16.5L x 16.1</td>
</tr>
<tr>
<td></td>
<td>6 ply rating</td>
<td>6 ply rating</td>
</tr>
<tr>
<td>Wing Axle (1 per wing) - Tire Size</td>
<td>(2) 9.5L x 15</td>
<td>(2) 9.5L x 15</td>
</tr>
<tr>
<td></td>
<td>6 ply rating</td>
<td>6 ply rating</td>
</tr>
<tr>
<td>Wing Transport Axle - (1 per wing) - Tire Size</td>
<td>(2) ST225/75R15 SL Load Range D</td>
<td>(2) 11L x 15 Fl Load Range D</td>
</tr>
<tr>
<td>Lift Cylinders *</td>
<td>(2) 3 1/2&quot; (9 cm) Dia. x 24&quot; (61 cm)</td>
<td>(2) 4&quot; (10 cm) Dia. x 24&quot; (61 cm)</td>
</tr>
<tr>
<td>Cart Frames - 2&quot; (5 cm) x 8&quot; (20.3 cm) Structural Tubing</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Main Frame - 6&quot; (15 cm) x 8&quot; (20.3 cm) Structural Tubing</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Wing Frame - 6&quot; (15 cm) x 8&quot; (20.3 cm) Structural Tubing</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Harrow Arms - 1 1/2&quot; (3.81 cm) x 3&quot; (7.62 cm) Structural Tubing</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Safety Chain</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Safety Lights</td>
<td>Standard</td>
<td>Standard</td>
</tr>
<tr>
<td>Weight</td>
<td>9,310 lbs. (4,232 kg)</td>
<td>13,800 lbs. (6,273 kg)</td>
</tr>
<tr>
<td>Harrow Tine Length</td>
<td>27 1/4&quot; (69 cm)</td>
<td></td>
</tr>
<tr>
<td>Harrow Tine Diameter</td>
<td>1/2&quot; (1.27 cm)</td>
<td></td>
</tr>
<tr>
<td>Harrow Tine Spacing</td>
<td>2 inches (5 cm)</td>
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</tr>
<tr>
<td>Harrow Tine Angle Degree Range</td>
<td>30 - 90</td>
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</tr>
<tr>
<td>Overall Working Length</td>
<td>27' 10&quot; (8.34 m)</td>
<td></td>
</tr>
<tr>
<td>Frame Ground Clearance</td>
<td>20&quot; (51 cm)</td>
<td></td>
</tr>
<tr>
<td>Transport Height</td>
<td>11' 9&quot; (3.58 m)</td>
<td></td>
</tr>
<tr>
<td>Transport Length</td>
<td>40' (12.2 m)</td>
<td>50' (15.2 m)</td>
</tr>
<tr>
<td>Transport Width</td>
<td>14' 7&quot; (4.45 m) at a Height of 9' (2.74 m)</td>
<td></td>
</tr>
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*NOTE: Minimum Hydraulic Pressure 1,950 P.S.I. (13,435 kPa)
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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.

Manuals

Note: Pre-Delivery Inspection Form must be completed and submitted to Morris Industries within 30 days of delivery date.

Parts Manual  Order Part Number H28542
Assembly Manual  Order Part Number H28543

Warranty Void if Not Registered
Please read the Operator’s Manual carefully and become a “SAFE” operator.

Adopt a good lubrication and maintenance program.

General

- Check if assembled correctly.
- Proper cable tension.
- Check hose connections.

Lubrication - Grease

- Knuckle Joints.
- Axle Pivots.
- Wheel Hubs.

Lubrication - Oil

- See maintenance, section 6

Tire Pressure

- See maintenance, section 6

Transport

- Tighten wheel bolts.
- Transport wheel adjustment.
- Lock pins are in place.
- Check hose connections.

OWNER REFERENCE

Model: ________________________________
Serial No: ______________________________
Dealer: ________________________________
Town: ____________ State: ______
Phone: ________________________________
OWNER/OPERATOR: ____________________
Date: ________________________________

TAKE SAFETY SERIOUSLY.

DO NOT TAKE NEEDLESS CHANCES!!
Section 4: Introduction

Section Contents

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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 Field Pro Heavy Harrow Bar.

To protect your investment, study your manual before starting or operating in the field. Learn how to operate and service your Heavy Harrow Bar 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 Heavy Harrow Bar.

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

Occasionally, your Heavy Harrow Bar 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 Heavy Harrow Bar 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.

Field-Pro - 70 foot model

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.
Section 5: Operation

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Operation

CAUTION

BE ALERT

SAFETY FIRST

REFER TO SECTION 1 AND REVIEW ALL SAFETY RECOMMENDATIONS.

Application

The Morris Heavy Harrow Bar has excellent straw handling capacity. The unique design of the pressure spring allows the Morris Heavy Harrow to be used in a wide range of applications from heavy straw busting to seed bed finishing. With the addition of a Granular Applicator the Morris Heavy Harrow Bar can apply granular herbicide or other fine seeds.

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.

Warning

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

Warning

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

Hitching to Tractor

- Ensure swinging drawbar is locked in the centre position.
- Insure hitch pin is in good condition.
- Level clevis with tractor drawbar using hitch jacks.
- 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 jacks.
- Place hitch jacks 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.

Caution

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

Unhitching from Tractor

Transport Position

• Pin hitch jacks in storage position.
  • 50 foot located on left wing.
  • 70 foot located on both wings.
• Lower hitch jacks taking the weight off the harrow cart clevis.

Note: For added Safety it is recommended to unload any material that may be in the Granular Applicator tank.

• 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 Heavy Harrow Bar.

Field Position

• Pin one hitch jack on the hitch of the heavy harrow.
• Follow above procedures.

Unit equipped with Applicator Tank

• Pin one hitch jack on the hitch of the heavy harrow. (Transport or Field Position)
• Pin the other hitch jack in its normal position. (Transport Position only)
• Follow above procedures.
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 implement.
- Inspect tires for any serious cuts or abrasions. If such has occurred, tire should be replaced.

Speed

- Always travel at a safe speed. Do Not Exceed 20 M.P.H. (32 kph).
- The weight of the implement being towed must not exceed 1.5 times the weight of towing vehicle.

Lights

- Ensure proper reflectors are in place, refer to Safety Section 1.
- Use flashing amber warning lights, turn signals and SMV emblems when on public roads.
- Be familiar with and adhere to local laws.

Transport Wheels Adjustment

- Check to see if machine wings track straight.
- Adjust rear bolt as required to get proper wing track.
- Adjust front bolt as required to get proper wing action to allow for satisfactory wing swing out.
- Ensure jam nuts are tight.

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

Transport to Field Position

- Position tractor and Harrow Bar in a straight line.
- Back machine up to unfold wings evenly into field position.
- Unfold wings evenly until the cable arms sit firmly in saddle with pull cables slack.
- Remove both transport pins.
- Lower machine until cable arm lock is fully engaged.

Note: Ensure cable arms are completely seated in the saddle and cable arm lock is fully engaged as illustrated.

- Continue lowering harrows while moving forward allowing the harrow tines to swing into position.

Field to Transport Position

- Stop tractor.
- Raise Harrow Bar into transport position using hydraulic cylinders.
- Secure both transport lock pins.
- Move tractor forward swinging wings in behind main frame.
- Secure slow moving vehicle sign to left rear harrow arm.

Caution

Ensure cable arms are completely seated in the saddle and cable arm lock is engaged as illustrated.
**Back-Up Arms**

The back-up arms are used for the following:

a) Adjust harrow tine angle, see harrow adjustment for more details.

b) To prevent wings from moving ahead of main frame in turns.

c) To back machine up in field position (raise harrows off ground before backing up)

**Note:** Use back-up arms in field position only.

- Connect back-up arms to pin on wings in field position.
- Retain arms with hair pin.
- Return back-up arms to storage position before placing harrow bar into transport position.

**Pull Arm Adjustment**

- Raise wings fully.
- Install transport pins.
- Remove hair pin and pin from both pull arms on harrow.
- Relocate pull arms to desired hole.
- Reinstall pin.
- Retain pin with hair pin.
- Repeat for other harrows.
- Remove transport pins.
- Lower wings fully, refer to Operation Section under Transport for correct procedure.

**Warning**

Install transport lock pins before working under raised wings.
Harrow Tine Adjustment

Manual Tine Adjustment

Decrease Tine Angle

- Raise harrows until tines just touch ground.
- Adjust tine angle to desired position using the harrow adjusting lever, located at front of cart.
- Place adjusting lever over the rear harrow tube and the strap bolt.
- Remove hair pin from the adjusting link.
- Pull on lever to free adjusting link.
- Decrease tine angle to desired position using the harrow adjusting lever.
- Secure adjusting link with hair pin.
- Repeat the above procedure for all harrow sections.

Increase Tine Angle

- Raise harrows until tines just touch ground.
- Adjust tine angle to desired position using the harrow adjusting lever, located at front of cart.
- Place adjusting lever over the rear harrow tube and the strap bolt.
- Remove hair pin from the adjusting link.
- Pull on lever to free adjusting link.
- Increase tine angle to desired position using the harrow adjusting lever.
- Secure adjusting link with hair pin.
- Repeat the above procedure for all harrow sections.

Note: Increasing tine angle to the 2 most aggressive positions requires the following:

- Attach back-up arms to wings, see back-up arm operation.
- Raise harrows until tines just touch ground.
- Back harrow bar while lowering harrows allowing tines to rotate backwards onto ground.
- Adjust tine angle as described above.
- Raise harrows until tines just touch ground. Move tractor forward, lowering harrows fully into field position.
**Harrow Tine Adjustment**

**Hydraulic Tine Adjustment**

The tines can be adjusted on-the-go with the hydraulic tine adjustment.

Use the indicator to determine tine position, number 1 being the least aggressive setting and number 6 being the most aggressive setting.

It is recommended that the unit be rephased periodically during the day. To rephase the cylinders extend cylinders fully, holding hydraulic lever for several seconds to phase the system. This will maintain equal pressure, cylinder stroke, and synchronize cylinders.

---

**Straw Raking**

The Removable Link enables the operator to disconnect the cable attached to the arm lock mechanism. When using the Field-Pro for raking straw, the disconnected cable enables the operator to raise the harrows while driving forward to pile straw. This allows the operator to concentrate on the task of piling the straw without having to worry about raising the unit too high causing the arm lock to disengage.

- Place Field-Pro into field position, relieving the tension on cable.
- Disconnect removable link from arm lock.
- Connect removable link to slotted hole, located at pull-arm pivot.
- Reconnect removable link to arm lock before placing Field-Pro into transport position.
Operation

Hydraulic System

The Morris Heavy Harrow Bar is controlled by a parallel hydraulic control system.

- To lower the harrows fluid is forced from the tractor through a line lock valve which feeds the butt end of both cylinders simultaneously, forcing both cylinders to extend.

- While the harrows are being lowered, hydraulic fluid displaced from the gland end of the cylinder returns through the line lock valve to the tractor.

- Once the flow ceases, the line lock valve closes the system from the tractor, thus holding the cylinders in working position until the tractor hydraulic controls are activated to lift the machine.

- To raise the harrows fluid is allowed to flow into the gland end of both cylinders, causing fluid from the butt end of both cylinders to return to the tractor.

Line Lock Valve Adjustment

If the machine chatters when lowering or the lowering speed seems slow the line lock valve should be adjusted as follows:

1. With tractor running at high idle (operating engine speed) raise and lower the Heavy Harrow Bar.

2. Check for chattering - if chattering loosen jam nut, screw in adjusting bolt 1 turn and repeat step 1.

3. Repeat step 2 until chattering is eliminated. Tighten jam nut.

4. If the unit appears slow in lowering and does not chatter, then screw out the bolt until chattering starts, then screw in one turn. Tighten jam nut.
Operation

**General Guidelines**

The results obtained from the Field-Pro 2000 Heavy Harrow are directly related to uniform adjustments of the unit. Poor levelling, worn/bent tines, uneven tire pressures, and incorrect tine angles must be avoided to obtain optimum field results.

**Level**

- Level heavy harrow front to back by adjusting hitch clevis position.
- Adjust Pull-Arms to maintain level running of harrow frames. See Diagrams.
- Keep tire pressure at the listed specifications to maintain proper level. See Maintenance Section.

**Worn or Bent Tines**

- Repair or replace any bent tines. Bent tines cause uneven field finish.
- Adjust harrow pull arms and wedges to maintain even operation of harrows when tines have worn 3". See Maintenance Section.

**Tine Angle Adjustments**

Correct tine angle adjustment for field conditions is very important for optimum field results.

- Front two ranks of tines can be adjusted independently from the rear three ranks. This accommodates specific conditions for better straw flow through the harrow sections and preventing straw bunching.
- The more aggressive angles are ideal for dry straw conditions and granular chemical incorporation.
- The middle tine angles are ideal for levelling and breaking down large soil clumps which often result from prior banding or tillage operations.
- The least aggressive position is ideal for a finishing harrow without being too aggressive. The result is good seed to soil contact combined with packing action for a firm but not over-packed seed bed.

---

**Front two ranks set more aggressive**

**Front two ranks set less aggressive**

**Most Aggressive Setting**

**Mid Setting**

**Least Aggressive Setting**
Section 6: Maintenance

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Maintenance

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.

Warning
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.
Tighten Bolts

- Before operating the Air Cart.
- 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.

<table>
<thead>
<tr>
<th>Bolt Torque Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 5 \ Bolt Marking</td>
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<tr>
<td>Nm</td>
</tr>
<tr>
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</tr>
<tr>
<td>1650</td>
</tr>
<tr>
<td>2150</td>
</tr>
<tr>
<td>2850</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Tire Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
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<tr>
<td>9.5L x 15</td>
</tr>
<tr>
<td>ST225/75R15</td>
</tr>
<tr>
<td>11L x 15FI</td>
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<tr>
<td>16.5 x 16.1</td>
</tr>
</tbody>
</table>

⚠️ Caution

Tire replacement should be done by trained personnel using the proper equipment.
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
   - Repack every 500 hours.

2. Knuckle Joints
   - Grease every 50 hours.

3. Transport Axle Pivot
   - Grease every 100 hours.
**Pull Cables Adjustments**
Adjust pull cables so wings pull even with the main frame under load.

**50 foot model**
- Make sure cable is slack.
- Remove bolt holding cable.
- Take up slack by relocating to next hole.
- Reinstall bolt and tighten.

**70 foot model**
- Make sure cable is slack.
- Loosen bolts holding cable bracket.
- Take up slack by relocating cable bracket on frame.
- Tighten bolts holding cable bracket.

**Cable Lock Adjustment**
- With harrow bar in field position make sure lock cable allows the cable lock to fully engage. Cable should be loose in field position.
- With harrow bar in transport position make sure cable releases lock enough to allow cable arms to swing freely in and out of saddle.

**Note:** Initial set up of lock cable should be done when machine is in transport position.
Harrow Pressure Adjustment

To maintain the downward pressure of the harrows Morris has incorporated a wedge on each harrow arm.

When the harrow tines wear down 3” the wedge supplied is simply moved from the bottom of the harrow arm spring bar to the top using the following procedure.

- Position Heavy Harrow Bar in field position.
- Securely block machine.
- Loosen front spring bar retaining bolt.
- Remove U-bolt from spring bar.
- Position wedge on top of the spring bar.

Note: The raised edges on the wedge must be placed against spring bar.

- Install U-bolt.
- Tighten front spring bar retaining bolt.
- Repeat the above procedure for all harrow arms.
- Adjust pull-arms to desired hole. See Operation Section under Pull-Arm Adjustment.

Additional wedges (Part Number H27934) are available through the parts department for a further adjustment when the harrow tines wear down an additional 3".
Wheel Bearings

- Lower the Heavy Harrow fully.
- Shut tractor off and remove key.
- Block wheel on tractor.
- Raise the Heavy Harrow wheels enough to clear the surface.
- Securely block frame.
- 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. In addition:

- 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 liquid Teflon on all NPT hydraulic joints. **Do not use liquid Teflon or Teflon tape on JIC or ORB 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.

Caution
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.

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.
Section 7: Storage

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Storage

Preparing for Storage

• To insure longer life and satisfactory operation, store the Heavy Harrow in a shed.
• If building storage is impossible, store away from areas of main activity on firm, dry ground.
• Clean machine thoroughly.
• 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 Heavy Harrow into field position and release the hydraulic pressure.
• If Heavy Harrow must be stored in a raised position, ensure that wings are properly secured with lock pins.
• Level Heavy Harrow using hitch jack and block up.
• Relieve pressure from hydraulic system.
• Raise frames, block up and relieve weight from the tires.
• Cover tires with canvass to protect them from the elements when stored outside.
• Coat exposed cylinder shafts (Refer to Cylinder Shaft Maintenance).
• Paint any surfaces that have become worn.

Warning

Do not allow children to play on or around the machine.

MORRIS PAINT

Spray Cans:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-4647</td>
<td>Red MORRIS Spray Can</td>
</tr>
<tr>
<td>W-4648</td>
<td>Blue MORRIS Spray Can</td>
</tr>
<tr>
<td>N31087</td>
<td>White MORRIS Spray Can</td>
</tr>
</tbody>
</table>

Litre Cans:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-10</td>
<td>Red MORRIS Paint/Litre</td>
</tr>
<tr>
<td>Z-11</td>
<td>Blue MORRIS Paint/Litre</td>
</tr>
</tbody>
</table>
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.

Caution

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

Removing From Storage

- 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).
Section 8: Troubleshooting

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Hydraulics Seem Slow. ..................................................................................... 8-2
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wings do not track properly in transport.</td>
<td>Transport wheels.</td>
<td>Adjust transport wheels. Refer to operation section.</td>
</tr>
<tr>
<td>Wings open slowly from transport to field position.</td>
<td>Transport wheels.</td>
<td>Adjust transport wheels. Refer to operation section.</td>
</tr>
<tr>
<td>Wings not parallel to main frame in field position.</td>
<td>Cables stretched.</td>
<td>Adjust cables accordingly.</td>
</tr>
<tr>
<td>Excessive harrow bounce.</td>
<td>Machine not level.</td>
<td>Level machine by adjusting hitch clevis, cylinders fully extended.</td>
</tr>
<tr>
<td></td>
<td>Pull arms not adjusted.</td>
<td>Adjust arms position to get straight pull.</td>
</tr>
<tr>
<td></td>
<td>Excessive speed for conditions.</td>
<td>Reduce speed.</td>
</tr>
<tr>
<td>Cable arm lock not engaging.</td>
<td>Arms not fully seating in saddle.</td>
<td>Make sure cable arms are fully seated.</td>
</tr>
<tr>
<td></td>
<td>Lock cable.</td>
<td>Adjust lock cable length.</td>
</tr>
<tr>
<td></td>
<td>Transport pins.</td>
<td>Remove transport pins.</td>
</tr>
<tr>
<td>Hydraulics will not lower.</td>
<td>Line lock valve.</td>
<td>Adjust, see Hydraulic Operation Section.</td>
</tr>
<tr>
<td></td>
<td>Damaged seal.</td>
<td>Replace seals.</td>
</tr>
<tr>
<td>Oil accumulation.</td>
<td>Loose fittings.</td>
<td>Tighten hose and pipe connections.</td>
</tr>
<tr>
<td></td>
<td>Scored cylinder shaft will damage shaft seal.</td>
<td>Replace.</td>
</tr>
<tr>
<td></td>
<td>Normal.</td>
<td>Slight seepage from seal is normal.</td>
</tr>
<tr>
<td>Hydraulics Chater.</td>
<td>Line Lock Valve.</td>
<td>Adjust, see Hydraulic Operation Section.</td>
</tr>
<tr>
<td>Hydraulics Seem Slow.</td>
<td>Line Lock Valve.</td>
<td>Adjust, see Hydraulic Operation Section.</td>
</tr>
</tbody>
</table>
May 2011

It is the policy of Morris Industries Ltd. to improve its products whenever it is possible to do so. Morris Industries reserves the right to make changes or add improvements at any time without incurring any obligation to make such changes on machines sold previously.