Read this manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!

Great Plains
Manufacturing, Inc.
P.O. Box 5060 ● Salina, Kansas 67402-5060

Cover illustration may show optional equipment not supplied with standard unit.

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Models ADI334 and ADI345 Air Drill Implement  160-243M  4/7/04
Important Safety Information

For your safety, thoroughly read “Important Safety Information” and “Operating Instructions” in the operator’s manual before proceeding.

Safety Notations
The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precautions must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

Watch for the following safety notations throughout these instructions and the operator’s manual.

⚠️ DANGER!
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

⚠️ WARNING!
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ CAUTION!
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Safety Rules
Most accidents are the result of negligence, carelessness or failure to follow safety precautions. Though your implement is designed with many built-in safety features, safety precautions are mandatory to prevent accidents.
Introduction

Great Plains Manufacturing wants you to be satisfied with any new machine delivered by the Great Plains Trucking network. To ease the assembly task and produce a properly working machine, read this entire manual before assembling or setting up new equipment.

Description of Unit
The three-rank air drill implement is a towed seeding implement used with a Great Plains air-drill cart. Seed is delivered by a pressurized air stream to the floating-hoe openers via primary seed hoses, distribution towers and secondary seed hoses.

The implement has a working width of 34 or 45 feet. The implement has three ranks of staggered openers for easy residue flow. Opener depth is controlled by a hydraulic stop. Press wheels follow the openers to firm and close the seedbed. An electric-clutch drive with an adjustable height switch turns seeding off automatically for headland turns.

Openers and press wheels are spaced over four frame sections on the 34-foot or six sections on the 45-foot implement. Floating arms link the cart to the implement, allowing the implement to move independently of the tractor and cart for increased front-to-rear flexibility.

The implement folds to a transport height of 15 feet, eight inches (45-foot drill) or 13 feet, two inches (34-foot drill). Rear castor wheels are used for transport and field turns and are lifted for seeding.

Using This Manual
This manual was written to help you assemble and prepare the new machine for the customer. The manual includes instructions for assembly and set up. Read this manual and follow the recommendations for safe, efficient and proper assembly and setup.

An operator’s manual is also provided with the new machine. Read and understand “Important Safety Information” and “Operating Instructions” in the operator’s manual before assembling the machine. As a reference, keep the operator’s manual on hand while assembling.

The information in this manual is current at printing. Some parts may change to assure top performance.

Definitions
Right and left as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated.

IMPORTANT: A crucial point of information related to the preceding topic. For safe and correct operation, read and follow the directions provided before continuing.

NOTE: Useful information related to the preceding topic.

Assembly and Setup Assistance
To order additional dealer assembly instructions or operator’s and parts manuals, write to the following address. Include model numbers in all correspondence.

If you do not understand any part of this manual or have other assembly or setup questions, assistance is available. Contact

Product Support
Great Plains Mfg. Inc., Service Department
PO Box 5060
Salina, KS 67402-5060
Section 1 Assembly

This section covers dealer requirements for assembly. As the dealer, it is your responsibility to unload, assemble and prepare the implement for use.

The implement is shipped via flat bed truck. It is not fully assembled. Unload all equipment before beginning assembly. Do not attempt any assembly work while the implement is on the truck.

The following are step-by-step instructions for assembling the implement. Each heading is a step in the assembly process. Begin with Tools Required and Pre-Assembly Checklist to ensure you have all necessary parts and equipment at hand. Then proceed with Assemble Implement Frame. Follow each step to make the job as quick and safe as possible and produce a properly working machine.

Tools Required
- Forklift or overhead hoist with 6,500-pound capacity
- General hand tools
- Jack stands or blocks and safety chain

NOTE: You will need about 12 gallons of hydraulic oil to refill the tractor hydraulic reservoir after initial bleeding and cycling of the hydraulic systems.

Pre-Assembly Checklist
1. Read and understand “Important Safety Information” on page 1 before assembling.
2. Have at least two people on hand while assembling.
3. Make sure the assembly area is level and free of obstructions (preferably an open concrete area).
4. Make sure the assembly area is large enough for the assembled drill. Assembled width is 34 or 45 feet.
5. Have all major frame components.
6. Have all fasteners and pins shipped with drill.

| IMPORTANT: If a pre-assembled part or fastener is temporarily removed, remember where it goes. Keep the parts separated. |

7. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
8. Have a copy of the parts manual on hand. If unsure of proper placement or use of any part or fastener, refer to the parts manual.
9. Check that all safety labels and reflectors are correctly located and legible. Replace if damaged. Refer to Safety Labels, "Important Safety Information," in the operator's manual.

10. Inflate tires and torque all wheel bolts as recommended in the “Appendix,” page 21.

Assemble Implement Frame

WARNING!
Obey all safety instructions from lifting equipment manufacturer. Do not walk or place any part of the body under the raised sections. Be sure transport stands are securely attached prior to lifting. Be sure lifting equipment has enough capacity to lift sections.
1. Remove the implement sections from the truck and place them on the ground.
2. With all stacks securely on the ground, remove the u-bolts from the bottom of the shipping stands on the highest sections so that the stand remains attached to the upper section.
3. Carefully lift the top section off of the stack and place it on solid, level ground or concrete if available.
4. Repeat steps 2 and 3 with each section, placing the sections approximately in the position for assembly.
5. Check that the pivot bushings are in place in the pivot tubes in all sections
6. Use the hoist or forklift to position adjacent sections so that the holes in the clevis line up with the holes in the pivot tubes.

| WARNING! |
| Do not place any part of the body between the frame sections when aligning holes or severe injury may result. |

7. Refer to Figure 1-1. When the holes are aligned, install the pivot clevis bolts (2) in place and secure them with one-inch nylock nuts (1). Install bolts so that the flat section of bolt head is aligned with the square stock on the clevis to prevent the bolt from rotating in the clevis.

Figure 1-1
Pivot Pin Installation

8. Repeat steps 6 and 7 until all sections are bolted together.
Flex Limiter Bars

Refer to Figure 1-2:

1. Position the flex-limiter bars so that the slots line up with the holes in the lugs near the center of the implement.
2. Install the 7/8 x 3 1/2-inch bolts (1), flat washers (2), spacer tubes (6), flex-limiter bars (3), lock washer (4), and nut (5) at each end of tube. The flex-limiter bars should be free to move from side-to-side on the bolts.

![Figure 1-2 Flex Limiter Bar Installation](image)

Lift Cylinder Hydraulic Hoses

Refer to Figure 1-4 or Figure 1-5. Install the hydraulic hoses on the lift wheels. Note the hose lengths listed and be sure to use the correct length of hose in each location. Install the longest hose first and work down to the shortest hose length.

Refer to Figure 1-3. The row openers in some locations have hose clips (1) mounted on them. Always route hydraulic hoses through the clips to prevent damage.

**IMPORTANT:** Carefully check hoses to be sure they are not rubbing on any sharp edges. Check that the hoses are loose enough to allow the implement to fold or unfold and raise or lower without damage. Be sure that hoses will not bind or get pinched during operation.

**NOTE:** The SAE O-ring and JIC 37° flare-type hose connections do not require sealant for reconnecting. They do not require high torque for a good seal.
### 34-Foot Lifting Hydraulics

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### 45-Foot Lifting Hydraulics

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Figure 1-4
34-Foot Lifting Hydraulics
Fold Cylinders

⚠️ DANGER!
The folding cylinders must be bled free of air before attempting to fold implement. Otherwise severe damage and bodily injury may result.

Position fold cylinders with base end toward center of the drill and the rod end toward wings. Pin the base end to the fold cylinder lug. Secure the pin with the provided clip. Leave rod end unhooked until after air is bled from fold cir-

### 45-Foot Folding Hydraulics

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<td>47</td>
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</table>
Section 1 Assembly

Install hydraulic hoses. Refer to Figure 1-6 or Figure 1-7. Note the hose lengths and be sure to use the correct length hose in each location. Start with the longest hose and work to the shortest.

When installing, route hoses through the hose clips on the openers. See Figure 1-3. Be sure hoses are not twisted and will not get pinched when the implement is raised, lowered, folded or unfolded. Do not let the hoses rub on sharp edges, and be sure there is enough slack for down-flex.

NOTE: The SAE O-ring and JIC 37° flare-type hose connections do not require sealant for reconnecting. They do not...
Section 2 Setup

This section covers dealer requirements for implement setup, including hitching the cart to the implement, bleeding air from the hydraulics, leveling the frame, and installing seed towers and hoses.

Hitching Cart to Implement

⚠️ **DANGER!**

*You may be severely injured or killed by being crushed between the cart and the implement. Do not stand or place any part of your body between the cart and implement while hooking up the air drill.*

Refer to Figure 2-1.

1. With cart links tied up, slowly back cart toward the center of the implement.
2. When cart links (1) are aligned with the lower hitch plates on the cart (2), drive link pins (3) in place. Secure with roll pins.

Refer to Figure 2-2.

3. Make sure the cart sling (1) is connected to the cylinder lift arm (2), then align the top hole with the support plates (3) on the back of the cart frame.
4. Install the cart sling pin (4) and secure it with the 1/4 x 2-inch cotter pins (5). Be sure cotter pins are spread.
5. Connect the primary seed hoses to the cart meter box. Connect the hoses left-to-right in the same order.
towers are installed on the implement. Route the hoses above the cart-axle tube. Allow only enough slack for implement to be fully raised and lowered without binding. Use cable ties to secure hoses in a safe location. Secure hoses to metering-box-outlet tubes using 2 1/2-inch band clamps and tighten securely. Be sure outer clamps do not interfere with meter-box latches. Refer to Figure 2-3.

NOTE: The SAE O-ring and JIC 37° flare-type hose connections do not require sealant for reconnecting. They do not require high torque for a good seal.

6. Plug the lead from the electrical harness on the implement into the cart.

7. When all connections have been made, carefully check all lines to make sure none will be damaged when the implement is operated. Re-route the lines or use cable ties to keep them in a safe place. Check warning lights for correct operation.

Bleeding the Lift Hydraulics

The implement lift system is equipped with rephasing hydraulic cylinders that require a special procedure for bleeding air from the circuit. Read and follow the procedure carefully. The rephasing cylinders will not function properly with air in the circuit.

WARNING!

You may be severely injured or killed by being crushed by a falling implement. Always have the frame sufficiently blocked up when working on implement.

WARNING!

Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Use a piece of paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene will result.

Connect hydraulic hoses to rear of cart. Refer to Figure 2-4. Working from left to right, connect hoses in the following order.

a. Connect fold hoses to outlets on the far right (outlets A and B).

b. Connect lift hoses to the next set of outlets (outlets C and D).

1. Check the hydraulic fluid level in the tractor reservoir and fill to the proper level. Add fluid to the system as needed while cycling new cylinders. About 5 gallons of oil will be used to fill new cylinders. A low oil level may draw air into the system, causing jerky or uneven cylinder movement.

2. Jack up and support the front member of each frame section at a point close to each gauge wheel.

3. With the frame blocked and supported, unpin the rod end of the gauge-wheel cylinders. Pivot the cylinders up. Wire or otherwise safely support the rod-end port higher than the base-end port.

IMPORTANT: The cylinders located directly behind the cart will not pivot upward for bleeding. Unpin and remove these cylinders from the implement, then support rod-end port higher than the base-end port. Refer to Figure 2-5.
Section 2 Setup

4. With the tractor engine at an idle speed, engage the remote lever for the lifting circuit. When the outside cylinders on both sides of the implement have completely extended, hold the remote lever on for one minute.

5. Retract the cylinder rods. Extend the rods again and hold the remote lever on for one more minute. Repeat this step two more times to completely bleed the system.

6. Repin cylinders.

7. Recheck the tractor reservoir and fill to the proper level.

Bleeding the Folding Hydraulics

**WARNING!**
Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Use a piece of paper or cardboard, **NOT BODY PARTS**, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene will result.

1. Check the hydraulic fluid in the tractor reservoir and fill to the proper level. Add fluid to the system as needed. A low oil level may draw air back into the system, causing jerky or uneven cylinder movement.

2. Unpin the rod end of the fold cylinders. See Figure 2-6. Wire or otherwise safely support the cylinders so when the rod is fully extended it does not contact anything.

3. Cycle the cylinders completely in and out at least three times to purge the air from the fold system.

**NOTE:** On the 45-foot implement, if the fold cylinders on one side of the drill will not move after the other side has completely extended or retracted, release the remote lever momentarily, reverse the lever, then try again.

4. Fully extend the cylinders and repin the rod ends.

**CAUTION!**
Do not fold implement unless gauge-wheel transport locks are installed.

5. Repin cylinders.

6. Recheck the tractor reservoir and fill to the proper level.
Leveling Frame Side-to-Side
45-Foot Drill
Since the dual gauge wheels on frame sections three and four are not adjustable, make all adjustments with these as a reference.

⚠️ WARNING! ⚠️
You may be severely injured or killed by being crushed from a falling implement. Always have the frame sufficiently blocked up when working on implement.

1. Check that the lift circuit is free of air and full of oil. Refer to *Bleeding the Hydraulics*, page 10.
2. Hydraulically lower the entire implement frame. Fully retract all gauge-wheel cylinders. Block up or otherwise safely support the implement frame.
3. Take a reference measurement off one dual gauge-wheel as show in Figure 2-7. Lay a straight edge across at least two tubes of frame section three or four. Extend the straight edge out over the axle. Measure the distance from the bottom of the straight edge to the center of the dual gauge-wheel axle.

![Figure 2-7 Reference Measurement](image)

4. Move the straight edge out to the first frame section. Lay the straight edge across at least two frame tubes. Extend the straight edge over the non-castored, gauge-wheel axle. Measure the distance from the bottom of the straight edge to the center of the axle. If the dimension is the same as the reference measurement, no adjustment is necessary. Proceed to step 7.
5. If the wing measurement differs from the reference measurement, unpin the gauge-wheel arm. Position and support the arm to match the reference measurement.
6. Swing the cylinder down and adjust the eye-bolt until the pin holes line up. Secure the eye bolt with the jam nut and repin the cylinder to the gauge-wheel arm. See Figure 2-8.

![Figure 2-8 Eye-Bolt Adjustment, Non-Castored Gauge Wheel](image)

7. Move the straight edge so it lies over the castored gauge-wheel axle. Adjust the eye bolt at the base of the cylinder (see Figure 2-9) until the center of the axle is about 1/2-inch higher than the reference measurement. Secure eye-bolt by tightening the jam nuts.

![Figure 2-9 Eye-Bolt Adjustment, Castored Gauge Wheel](image)

8. Repeat steps 5, 6 and 7 for sixth frame section.
9. Make sure all cylinders are securely pinned.
10. With the drill on level ground, note where the frame sections three and four hinge. If the sections bow at their hinge point, adjust the cart sling so the center of the machine is level during field operation. To adjust:
   c. Lower the implement until all weight is on the openers.
   d. Unpin the sling from the cart. Loosen the jam nut shown in Figure 2-10.
      • To raise center of frame, turn the threaded link clockwise.
      • To lower the center, turn link counterclockwise.
Section 2 Setup

Great Plains Mfg., Inc.

**34-Foot Drill**

Since the dual gauge wheels on frame sections three and four are not adjustable, make all adjustments with these as a reference.

**WARNING!**

You may be severely injured or killed by being crushed by a falling implement. Always have the frame sufficiently blocked up when working on implement.

1. Check that the lift circuit is free of air and full of oil. Refer to *Bleeding the Hydraulics*, page 10.

2. Hydraulically lower the entire implement frame. Fully retract all gauge-wheel cylinders. Block up or otherwise support the implement frame.

3. Take a reference measurement from the top of the implement frame to the center of one dual gauge-wheel axle as show in Figure 2-7, page 12. Lay a straight edge across at least two tubes of frame section three or four. Extend the straight edge out over the axle. Measure the distance from the bottom of the straight edge to the center of the axle.

4. Move the straight edge out to the first frame section. Lay the straight edge across at least two frame tubes. Extend the straight edge out over the non-castored, gauge-wheel axle. Measure the distance from the bottom of the straight edge to the center of the axle. If the dimension is the same as the reference measurement, no adjustment is necessary. Proceed to step 7.

5. If the wing measurement differs from the reference measurement, unpin the gauge-wheel arm. Position and support the arm to match the reference measurement.

6. Swing the cylinder down and adjust the eye-bolt (Figure 2-8) until the pin holes line up. Secure the eye bolt with the jam nut and repin the cylinder to the gauge-wheel arm.

7. Repeat steps 5 and 6 for implement section four.

8. Make sure that all cylinders are securely pinned.

9. With the drill on level ground, note where the frame sections three and four hinge. If the sections bow at their hinge point, adjust the cart sling so the center of the machine is level during field operation. To adjust:

   a. Lower the implement until all weight is resting on the openers.
   
   b. Unpin the sling from the cart.
   
   c. Loosen the jam nut shown in Figure 2-10, page 13.
      
      • To raise the center of the frame, turn the threaded link clockwise.
      • To lower the center, turn the threaded link counterclockwise.
   
   d. When satisfied with adjustment, tighten jam nut and repin sling to cart. Recheck levelness and re-adjust as necessary.

**Figure 2-10**

Cart Sling

**e.** Tighten jam nut and repin sling to cart. Recheck levelness and re-adjust as necessary.
Distribution Towers and Hoses

1. Refer to Figure 2-13 for tower mounting locations. Mount towers so there is no interference when wings are folded or unfolded.

2. Refer to Figure 2-11. Install a tower support bracket at each location using the 1/2-inch u-bolts (1), lock washers (2) and nuts (3).

3. Refer to Figure 2-12. Position a tower on bracket so the lower round plate is about 31 1/2-inches above the frame rails. Turn tower so that inlet tube is pointed toward the center of the drill. Secure tower with two u-bolts.

4. When towers have been installed, fold implement very slowly while watching to be sure there is no interference. If towers have any interference, unfold wing then move towers until they clear.

IMPORTANT: Mount towers as vertically as possible. Installing towers so that they lean to one side may cause uneven distribution, especially on hillsides.
Figure 2-13
Tower Mounting Locations

45-Foot Drill

34-Foot Drill
Primary Distribution Hoses

1. Start with the third, or center tower. Route hose as shown in Figure 2-16 and Figure 2-17. Slide clamp over end of hose, then slide hose at least two inches onto tower inlet.

2. Allow enough hose so that implement raising, lowering, folding and unfolding will not pinch or bind hose.

3. Using a hacksaw, cut hose so that it will slide onto meter outlets up to end of flare.

4. Slide clamp over hose end, then slide hose onto meter outlet. Install clamp so that it will not interfere with other hoses, clamps or meter-door latches. Figure 2-14.

5. Repeat this procedure on towers two and four. Cut these two the same length but longer than the center hose.

6. Repeat the same procedures for towers one and five. These two hoses should also be the same length, but longer than the others.

7. Secure all hoses to the frame using 24-inch cable ties. Make sure hoses will not be damaged during drill operation.

Secondary Hoses

Secondary seed hose is one inch in diameter and comes in 100-foot rolls. Cut secondary hoses to connect each opener to a distribution tower. Refer to the appropriate hose routing illustration for the correct hose routings.

**IMPORTANT: Do not cut hose until routed over implement.**

See Figure 2-15.

1. Start with tower 1 (far left tower). Loosen but do not remove bolts holding tower halves together.

2. Insert hose into port. Push hose into port until seated against the stop.

3. Keeping your implement row spacing in mind, refer to Figure 2-16 or Figure 2-17 to find which opener to connect the hose.

4. Route hose over implement frame as shown in Figure 2-16 or Figure 2-17. Route hoses to prevent rubbing on sharp edges or damage when the implement is raised, lowered, folded or unfolded. Allow enough hose slack for implement folding and down-flex.

5. When you are satisfied you have the proper hose length, cut hose.
Figure 2-16
Seed Hose Routings

34-Foot Drill, 7-Inch Row Spacing

34-Foot Drill, 10-Inch Row Spacing
Figure 2-17
Seed Hose Routings (con't.)
Figure 2-17
Seed Hose Routings (con’t.)
Refer to Figure 2-18:

8. Attach the end of the hose to opener. Slide clamp over the end of the hose six inches. Put the end of the hose in the seed tube six inches. Hook the clamp ends in the holes at the top of the seed tube.

9. Repeat steps 1 through 8 for all one-inch hoses on each tower.

10. When all hoses are installed on a tower, tighten the bolts holding the halves together.

IMPORTANT: The tower bolts are equipped with nylock nuts and should not be over-tightened. Tighten the bolts only until the hose is held securely against being blown out.

11. Check all hoses to be sure that they are not rubbing on sharp edges and will not be damaged when the drill is raised, lowered, folded or unfolded. Re-route if needed to prevent damage.
### Tire Inflation Chart

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<thead>
<tr>
<th>Tire Size</th>
<th>Inflation PSI</th>
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<tr>
<td>7.50 x 20&quot; 4-Ply Drill Rib</td>
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<tr>
<td>9.0 x 22.5 10-Ply Highway Service</td>
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<tr>
<td>11L x 15&quot; 6-Ply Rib Implement</td>
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<tr>
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<tr>
<td>12.5L x 15&quot; 10-Ply Rib Implement</td>
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<td>12.5L x 15&quot; 12-Ply Rib Implement</td>
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<tr>
<td>41 x 15&quot; x 18 - 22-Ply Rib Implement</td>
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### Torque Values Chart for Common Bolt Sizes

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<th>Grade 2</th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Bolt Size (Metric)</th>
<th>Class 5.8</th>
<th>Class 8.8</th>
<th>Class 10.9</th>
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