Predelivery Instructions

V300, V300F Verti-Drill

Great Plains Manufacturing, Inc.
www.greatplainsmfg.com

Read the operator’s 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!
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Look for Safety Symbol
The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution 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.

Be Aware of Signal Words
Signal words designate a degree or level of hazard seriousness.

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, typically for machine components that, for functional purposes, cannot be guarded.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

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.
Be Familiar with Safety Decals
▲ Read and understand “Safety Decals,” thoroughly.
▲ Read all instructions noted on the decals.

Keep Riders Off Machinery
Riders obstruct the operator’s view. Riders could be struck by foreign objects or thrown from the machine.
▲ Never allow children to operate equipment.
▲ Keep all bystanders away from machine during operation.

Shutdown and Storage
▲ Lower drill, put tractor in park, turn off engine, and remove the key.
▲ Secure drill using blocks and supports provided.
▲ Detach and store drill in an area where children normally do not play.

Use Safety Lights and Devices
Slow-moving tractors and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.
▲ Use flashing warning lights and turn signals whenever driving on public roads.
▲ Use lights and devices provided with implement.

Use A Safety Chain
▲ Use a safety chain to help control drawn machinery should it separate from tractor drawbar.
▲ Use a chain with a strength rating equal to or greater than the gross weight of towed machinery.
▲ Attach chain to tractor drawbar support or other specified anchor location. Allow only enough slack in chain to permit turning.
▲ Replace chain if any links or end fittings are broken, stretched or damaged.
▲ Do not use safety chain for towing.
Transport Machinery Safely

Maximum transport speed for implement is 20 mph. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

▲ Do not exceed 20 mph. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.

▲ Comply with state and local laws.

▲ Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.

▲ Carry reflectors or flags to mark Verti-Drill in case of breakdown on the road.

▲ Keep clear of overhead power lines and other obstructions when transporting.

▲ Do not fold or unfold the drill while the tractor is moving.

Avoid High Pressure Fluids

Escaping fluid under pressure can 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 suspected 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 may result.
Practice Safe Maintenance
▲ Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.
▲ Work in a clean, dry area.
▲ Lower the drill, put tractor in park, turn off engine, and remove key before performing maintenance.
▲ Make sure all moving parts have stopped and all system pressure is relieved.
▲ Allow drill to cool completely.
▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on drill.
▲ Inspect all parts. Make sure parts are in good condition and installed properly.
▲ Remove buildup of grease, oil or debris.
▲ Remove all tools and unused parts from drill before operation.

Prepare for Emergencies
▲ Be prepared if a fire starts.
▲ Keep a first aid kit and fire extinguisher handy.
▲ Keep emergency numbers for doctor, ambulance, hospital and fire department near phone.

Tire Safety
Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.
▲ When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.
▲ When removing and installing wheels, use wheel-handling equipment adequate for weight involved.
Safety At All Times

Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.

▲ Be familiar with all drill functions.
▲ Operate machinery from the driver’s seat only.
▲ Do not leave drill unattended with tractor engine running.
▲ Do not dismount a moving tractor. Dismounting a moving tractor could cause serious injury or death.
▲ Do not stand between the tractor and drill during hitching.
▲ Keep hands, feet and clothing away from power-driven parts.
▲ Wear snug-fitting clothing to avoid entanglement with moving parts.
▲ Watch out for wires, trees, etc., when folding and raising drill. Make sure all persons are clear of working area.
▲ Do not turn tractor too tightly, causing drill to ride up on wheels. This could cause personal injury or equipment damage.
Great Plains welcomes you to its growing family of new product owners. This implement has been designed with care and built by skilled workers using quality materials. Proper setup, maintenance and safe operating practices will help you get years of satisfactory use from the machine.

**Description of Unit**

The Verti-Drill is a pull-type seeding implement. The implement consist of a three-point drill mounted on a centre-pivot hitch. The hitch and drill are integrally connected. No-till coulters are mounted on the hitch to zone-till strips for seed furrows. Straight-arm openers on the drill prepare seedbeds and place the seed. The pivoting action of the hitch helps drill openers track the coulters. A contact-drive tire on the drill powers seeding off a hitch tire. The tongue cylinder controls coulter depth and transport cylinders raise the drill for turns and transport.

**Intended Usage**

Use this implement for seeding production-agriculture crops only. Do not modify implement for use with attachments other than those specified by Great Plains. Use implement in no or minimum tillage.

**Models Covered**

V300, V300F

**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 setup. 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 operators’s manual on hand while assembling.

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

**Definitions**

The following terms are used throughout this manual.

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

**Assembly and Setup Assistance**

To order additional copies of predelivery instructions or operator's and parts manuals, write to the following address. Include model and serial 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

NOTE: Useful information related to the preceding topic.

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

Read and understand the owners manual for your Verti-Drill. A basic understanding of how the drill works will aid in the pre-assembly, assembly, set-up and operation of your drill.

Perform these checks before setting up your Verti-Drill.

1. Read and understand “Important Safety Information,” beginning on page 1.
2. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
3. Check that all grease fittings are in place and lubricated.
4. Check that all safety decals and reflectors are correctly located and legible. Replace if damaged.
The following headings are step-by-step instructions for assembling the Verti-Drill. Begin with **Tools Required** and **Pre-Assembly Checklist** to make sure you have all necessary parts and equipment. Then proceed with **Unload Drill from Truck**. Follow each step in order to make the job as quick and safe as possible and produce a properly working machine.

The Verti-Drill is shipped via flat bed truck. It is the dealer’s responsibility to unload the drill. Unload all equipment before beginning assembly. Do not attempt any assembly work while the Verti-Drill is on the truck.

**Tools Required**
- General hand tools
- Forklift, crane, or loader capable of lifting 6,000lbs

**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. Have all major components.
5. Have all fasteners and pins shipped with drill.
6. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
7. Check that all safety labels and reflectors are correctly located and legible. Replace if improperly located or damaged. Refer to **Safety Decals, “Important Safety Information”** in the operator’s manual.

**Unload Drill from Truck**
1. Using a forklift or tractor, remove drill from truck.
2. When ready to assemble drill, place it in an open, level area. Make sure there is enough overhead and side clearance to fold and unfold assembled drill.

**Unload Rack**
*Refer to Figure 1*
1. Unload all loose pieces from rack. Keep all pieces separate.
2. Unscrew bolts securing walkboard to rack.
3. Remove shipping wire securing handrailing to rack.

**Figure 1**
Unloading Rack
Refer to Figure 2

4. Unscrew bolts securing gauge wheel arms to rack. Untie shipping wire from gauge wheel arms. Using a forklift or other implement, remove gauge wheel arms.

Refer to Figure 3

5. Remove packing material securing tire to rack and remove tire from rack.

Refer to Figure 4

6. Attach lift straps to frame. Unscrew bolts and untie shipping wire securing frame to rack. Remove and discard packing material attached to frame. Using a forklift or other implement, carefully detach frame from rack.
Refer to Figure 5

7. Unscrew bolts attaching coulter toolbar to rack. Keep bolts for reuse.

8. Using forklift or other implement, gently lift the coulter toolbar and tongue up so they are not resting on rack crossbar.

**NOTE:** Do not fully remove toolbar and tongue from rack.

9. Before removing toolbar and tongue from rack, secure toolbar and tongue to forklift with chains.

10. Remove toolbar and tongue from rack and place on empty palette.

Refer to Figure 6

11. Remove packing material from tongue. Remove tongue from coulter toolbar.

**NOTE:** DO NOT REMOVE DRILL BOX FROM RACK. SOME ASSEMBLY REQUIRED BEFORE REMOVING BOX FROM RACK.
Gauge Wheel Arms

Refer to Figure 7

1. With box in rack, attach gauge wheel arms to box using pin and 5/8-11 x 4 bolt.
2. Remove inside and outside hub assembly from gauge wheel arms.

Refer to Figure 8

3. Attach transport lock channel (5) to gauge wheel arm and gauge wheel flex lug (2) using pin (4).
4. Remove shipping wire securing hydraulic cylinder to box. Attach hydraulic cylinder (1) from box to gauge wheel flex lug (2) using 1.25 x 3.88 clevis pin (3).
5. Repeat on other side of drill.
Coulter Toolbar

Refer to Figure 9

1. Secure coulter blades to coulter toolbar using 1/2-13 x 1 1/4 bolts, 1/2 lock washers, and 1/2-13 hex nuts.

NOTE: If attaching turbo coulter blades, blades must be attached correctly with the rotation arrow pointing toward the direction of travel.

Refer to Figure 10

2. Once all coulter blades are attached, remove one coulter from each end of coulter toolbar. Turn coulter backwards and reattach to coulter toolbar.

NOTE: End coulters are turned backwards to support the toolbar prior to installation on the frame.

3. Stand coulter toolbar up on coulter blades.

4. Remove top two bolts from each coulter toolbar clamp. Keep bolts for reuse.

NOTE: Make sure bottom two bolts of each coulter toolbar clamp are resting at the very bottom of the slot.
Refer to Figure 11

5. Using forklift or other implement, lift frame over and position into coulter toolbar.

Refer to Figure 12

6. Before removing lift straps, measure from center of frame to center of outer most coulter to be sure frame is centered on toolbar.

Refer to Figure 13

7. Secure frame to coulter toolbar using bolts removed in step 4.

NOTE: Make sure bolts rest on top of frame. Bolts should rest easily in bottom of slot.

8. Remove end coulter. Reattach coulter turning them forward.

NOTE: ALL COULTERS SHOULD BE FACING SAME DIRECTION.
Tongue

Refer to Figure 14


Refer to Figure 15

2. Remove bolts securing tongue links (5) to level link pivot lever (3). Keep bolts for reuse.
3. Attach level link pivot lever (3) to top of frame (1) using link pivot cross pin (6) and bolt.
4. Replace tongue links (5) to level link pivot lever (3) using bolts removed in step 2.
5. Secure tongue links (5) to tongue using bolts (4) and nuts.

Leaf Spring

Refer to Figure 16

1. Remove roller stop, pin roll, and roller stop pin from one end of leaf spring. Keep all pieces for reuse.
2. Remove four u-bolts and hardware from back of frame. Keep all pieces for reuse.
4. Reattach roller stop, pin roll, and roller stop pin to end of leaf spring.

NOTE: Be sure bolts securing leaf spring are tightened.
Weight Brackets
Refer to Figures 17 and 18

1. Remove bolts securing weight bracket to box frame.
2. Turn weight bracket around and reattach to box frame with bolts.
3. Repeat steps 1 and 2 for other weight bracket.

Hydraulic Hoses
NOTE: It is recommended that hydraulic hoses be attached to both master and slave cylinders while the box is still in the rack.

Refer to Figure 19

1. Using elbow fittings (4), attach 94” hose (3) from base end of the master cylinder (1) to rod end of slave cylinder (2).
2. Using elbow fittings (4), attach 250” hose (5) to rod end of the master cylinder (1). Secure hose to box frame temporarily.
3. Using elbow fittings (4), attach 250” hose (5) to base end of slave cylinder (2). Secure hose to box frame temporarily.
Attaching Box to Frame

1. Attach lift straps to box and secure to forklift or other implement.
2. Remove bolts securing box to rack.
3. Carefully lift box out of rack.

Refer to Figure 20

4. Using forklift or other implement, align box with frame.

NOTE: Do not remove lift straps from box at this point. Some assembly required before lift straps can be removed.

Refer to Figure 21

5. Place pivot washer between top of frame and top of box where box and frame attach.
6. Place other pivot washer between bottom of frame and bottom of box where box and frame attach.
7. Secure frame to box using pivot shaft weldments, pivot shaft bolt weldment, 5/8-11 x 2 1/4 bolts, 5/8 lock washers and 5/8-11 hex nuts.

NOTE: Once box is attached to frame, loosen hex lock nuts securing leaf spring. U-bolts should dangle inside.
**Tires and Hub**

NOTE: Install tires as shown in Figure 22. For each gauge wheel arm, tires come in a pair of left and right. To distinguish left and right tires, the side with the valve stem should be out away from the gauge wheel arm and the tire tread should be pointing the same direction as shown in Figure 22.

Refer to Figure 22

1. Attach inside and outside hub (2) to gauge wheel arm (3) using 3/4-10 x 5 bolts and 3/4-10 hex lock nuts.
2. Secure inside gauge wheel tire to inside hub assembly with bolts and lug nuts.
3. Secure outside gauge wheel tire (1) to outside hub assembly (2) with bolts and 5/8-18 x 90 lug nuts.
4. Repeat steps 1 - 3 for the opposite gauge wheel.

**Struts**

Refer to Figure 23

1. Remove shipping wire securing strut to frame.
2. Swing strut toward the box. If necessary, loosen bolt attaching strut to frame.
4. Tighten all bolts.
5. Repeat steps 5-8 for opposite strut.

**Transport Lock Channel**

Refer to Figure 24

NOTE: After struts are installed, it is necessary to lift the box with forklift or other implement so that the transport lock channels may be installed. It may be necessary to remove hydraulic plugs to expand cylinder.

6. Align the slotted hole in the transport lock channel with the hole in the frame and insert cotter pin.
7. Repeat on other side of drill.
**Top Link**
*Refer to Figure 25*

1. Attach top link to level link rocker arm widmt on box using 1 1/4 x 3 clevis pin, 1 1/4 flat washers, and 1/4 x 2 cotter pin.

2. Secure other end of top link to level link pivot lever with 1-8 x 7 bolt, spacer tube, 1 flat washer, and 1-8 hex nut.

   **NOTE:** The starting point for adjusting the top link is 103 inches from center of level link adjuster to center of level link arm weldment.

*Refer to Figure 26*

3. Attach top link level hydraulic cylinder to frame and tongue. If necessary, remove hydraulic plugs to expand cylinder.

4. Lock cylinder in place using pin and transport cylinder lock.

5. Secure 96' hose to rod end of top link level hydraulic cylinder using elbow fitting.

6. Attach other 96' hose to base end of top link level hydraulic cylinder using elbow fitting.

**Contact Wheel Spring**
*Refer to Figure 27*

1. Remove shipping wire securing contact wheel to box. Carefully lower contact wheel.

   **NOTE:** Pins securing spring need to be inserted from the inside out.

2. Attach spring to box on one side of contact wheel using pins.

3. Using pins, secure spring to contact wheel arm.

4. Repeat process on other side of contact wheel.
Jack

Refer to Figure 28

1. Attach jack to storage stob located on tongue of drill.
2. Lock jack into position using attached pin.
3. Extend so jack takes weight off of forklift or other implement.

NOTE: When jack is not in use, place jack on storage stob located on top of frame.

Openers

Refer to Figure 29 and 30

1. Place forklift under rack and remove bolts to rack securing openers. Carefully remove rack using forklift or other implement.

Refer to Figure 31

2. Once rack is removed attach opener spring rods to openers. Secure with pins and cotter pins.
Refer to Figure 32

NOTE: For shipping purposes, the two end openers were removed from the subframe. They will need to be reinstalled according to steps 3 and 4 below.

3. Attach the two end openers (4) to the opener subframe (2) - one on each end of the subframe (2). Secure openers (4) to subframe (2) using bolts (1), washers (5), and lock nuts (3).

4. Connect seed hose (6) to seed tube opener (8) securing with hose clamp (7).

Press Wheel

Refer to Figure 33

NOTE: The press wheel arm weldment will need to be installed on the two end openers. Install as shown in Figure 33.

1. Attach press wheel arm weldment to opener using bolt (1), parallel arm pivot bushings (5), press wheel pivot tube (4), and hex lock nut (2).

Refer to Figure 34

NOTE: Each type of press wheel installs differently. If installing 2” x 13” or 3” x 13” single press wheel, complete only step 2.

If installing cast press wheel, complete both steps 2 and 3.

For all press wheel types:

2. Attach press wheel (6) to press wheel arm weldment (11). Secure press wheel (6) to weldment using bolt (1), lock washers (2), spacer bushings (3), and washers (4 and 5).

For cast press wheel assembly only:

3. Once the press wheel (6) is attached to the press wheel arm weldment (11), attach bolt (9), hex nuts (10), flat washers (7), and lock washer (8) to press wheel arm weldment.
Small Seeds Hose (Optional)
*Refer to Figure 35*

NOTE: If equipped with small seeds box, follow steps 1 and 2 to attach the small seeds hose.

1. Attach SGS side delivery tube (3) to opener with bolt (4) and lock nut (5).

2. Connect SGS hose (2) to SGS side delivery tube (3) securing with hose clamp (1).

![Figure 35](image-url)
Fertilizer Hose (Optional)
Refer to Figure 36

NOTE: Only install fertilizer hose if V300 is equipped for fertilizer.

1. Secure small seeds tube plastic reinforcement ring (5) to plastic fertilizer tube (1) and opener using hex screw (2).
2. Attach seed hose (4) to plastic fertilizer tube (1). Secure using hose clamp (3).
3. Connect seed hose (4) to fertilizer tray with hose clamp (3).
Walkboard

Front Walkboard
Refer to Figure 37

1. Attach walkboard mount (4) to outermost contact wheel plate (2) on left-hand side of drill. Use 1/2-13 x 1 3/4 bolts (7), 1/2 lock washers (9), and 1/2-13 hex nuts (8).

2. Secure other walkboard mount (4) to weight bracket (1) located on left-hand side of drill. Use 1/2-13 x 1 3/4 bolts (7), 1/2 lock washers (9), and 1/2-13 hex nuts (8).

3. Using 3/8-16 x 1 1/4 bolts (3) and 3/8-16 lock nuts (6), attach 3-point step retainers (5) to top of both walkboard mounts (4).

4. From side of drill, slide walkboard (10) onto walkboard mounts (4) and 3-point step retainers (5).

Refer to Figure 38

5. With 3/8-16 x 1 3/4 bolt and 3/8-16 lock nut, secure front outside handrail weldment (1) to handrail splice tube (2).

6. Attach front handrail weldment (5) to handrail splice tube (2) using 3/8-16 x 1 3/4 bolt and 3/8-16 lock nut.

7. Attach front lower handrail (4) and plugs to walkboard handrail assembly with 3/8-16 x 3 1/4 bolts and 3/8-16 lock nuts.

8. Secure walkboard brace (3), front lower handrail (6), and plug to walkboard handrail assembly using 3/8-16 x 3 1/2 bolt and 3/8-16 lock nut.

9. Attach other end of front lower handrail (6) to walkboard handrail assembly using 3/8-16 x 3 bolt and 3/8-16 lock nut.

10. Attach walkboard handrail assembly to walkboard (8) using bolts and lock nuts.

11. Remove 3/8-16 x 2 1/2 bolt and 3/8-16 lock nut securing front lower handrail (7) to mounting plate on right-hand side of walkboard (8).

12. Attach walkboard brace (3) to right-hand side mounting plate and front lower handrail (7) using 3/8-16 x 2 1/2 bolt and 3/8-16 lock nut removed in step 13.
Refer to Figure 39


14. Tighten all bolts.

Small Seeds Rear Walkboard Extension

Refer to Figure 40

NOTE: If equipped with small seeds, attach walkboard extension before attaching rear walkboard. If not equipped with small seeds, follow instructions under Rear Walkboard section.

NOTE: The small seeds rear walkboard extensions come in a pair of left and right.

1. Attach the right-hand side small seeds rear walkboard extension to back of frame on right-hand side of drill.

2. Use three 1/2-13 x 1 1/2 bolts, two 1/2 flat washers, one 1/2 lock washer, and one 1/2-13 hex nut to secure extension to frame.

3. Repeat steps 1 and 2 to attach left-hand side small seeds extension to back of frame on left-hand side of drill.
Rear Walkboard
Refer to Figure 41

NOTE: If equipped with small seeds, attach small seeds extension before installing rear walkboard.

1. Attach box to frame and rear walkboard using 1/2-13 x 1 1/4 bolt (3), 1/2 lock washer, and 1/2-13 hex nut.

2. Using 1/2-13 x 1 1/2 bolt (1), two 1/2 flat washers (2), 1/2 lock washer (4), and 1/2-13 hex nut (5), secure rear walkboard (7) to frame.

3. Secure step (6) to rear walkboard (7) using 1/2-13 x 1 1/2 bolt (1), 1/2 lock washer (4), and 1/2-13 hex nut (5).

Rear Walkboard Handrail and Ladder
Refer to Figure 42

1. Attach ends of rear handrail crossbar (23) to walkboard (6). Use 1/2-13 x 1 1/2 bolts (13), 1/2 flat washers (10), 1/2 lock washers (9), and 1/2-13 hex nuts (8).

2. Secure middle section of rear handrail crossbar (1) to walkboard (6) using 3/8-16 x 2 bolts (12), 3/8 flat washers (14), and 3/8-16 lock nuts (4).

3. Bolt folding ladder base mount (21) on walkboard (6) using 7/16-14 x 1 3/4 bolts (19), 7/16 lock washers (17), and 7/16-14 hex nuts (18).

4. Using 3/8-16 x 1 1/4 bolts (3), install 3-point ladder weldment (20) on end support (21).

5. Attach rear handrail crossbars (1) to middle crossbar (22) with 3/8-16 x 3 bolts (5) and 3/8-16 lock nuts (4).

6. Bolt rear handrail cross bars (1) to rear handrail (2) with 3/8-16 x 3 bolts (5) and 3/8-16 lock nuts (4).

7. Once rear handrail is assembled, secure to walkboard with 3/8-16 x 2 bolts and 3/8-16 lock nuts.
Lights

Front Lights

Refer to Figure 43

1. Attach sign mount weldment (3) to front side of coulter toolbar on right-hand side of drill using 5/8-11 x 6 x 3 1/2 u-bolt (1) and two 5/8-18 hex jam nuts.


3. Place clear oval light (4) on front of light bracket (5). Pull light cord through opening. Screw light to mounting bracket.

4. Route right-hand branch of light harness (6) through back of sign mount weldment (3).

5. Attach light harness (6) to light cord. Pull harness (6) and cord so that light (4) rests against light bracket (5).

6. Route light harness (6) towards middle of drill. Secure light harness (6) to coulter toolbar with cable ties.

7. Bolt fluorescent safety panel (2) on sign mount weldment (3) using four 3/8-16 x 3/4 bolts and 3/8-16 hex nuts. NOTE: Light cord should rest between bottom of safety panel (2) and bottom of sign mount weldment (3).

8. Repeat steps 1 - 7 on opposite side of drill.

9. Route light harness through tongue towards back of drill.

10. Once routed through tongue, light harness will branch off. Route right-hand branch of light harness along frame toward right-hand side of drill. Where necessary, secure with cable ties.

11. Continue routing right-hand branch of harness between box and frame along right-hand side of drill towards back of box. Fasten with cable ties, if necessary.

12. Route left-hand branch of light harness along frame toward left-hand side of drill. Where necessary, secure with cable ties.

13. Continue routing left-hand branch of harness between box and frame along left-hand side of drill towards back of box. Fasten with cable ties, if necessary.
Rear Lights
Refer to Figure 44

2. Remove hex nut from red triangle reflector. Attach red triangle reflector to light bracket. Secure with hex nut.

NOTE: The red/amber round lights come in a pair of left and right. There is embossing on the left light. The right light will have no embossing.
5. Attach light harness to light cord on back of light.
6. Repeat steps 1 - 3 on left-hand side of drill.

Rear Safety Panels
Refer to Figure 45

1. Place red and white fluorescent panel on back of rear walkboard.
3. Attach slow moving triangle decal to the middle crossbar of rear walkboard handrail using two 1/4-20 x 1 3/4 bolts and two 1/4-20 lock nuts.
Manual Pak

NOTE: If drill is equipped with small seeds box, the manual pak will need to be mounted according to the instructions below. If drill is not equipped with small seeds box, manual pak should already be mounted on back of drill.

Refer to Figure 46

1. Place 1000 small seeds chain guard on FCP 1000 small seeds left-hand drive bracket weldment.

Refer to Figure 47

2. Secure handle, mounting plate, and small seeds chain guard to small seeds left-hand drive bracket weldment with two 1/2-13 x 1 1/2 self tapping screws.

NOTE: Handle attaches to two outer most holes on the mounting plate. The middle two holes will not be used.
Hose Guide Attachment
Refer to Figure 48

1. Attach hose guide attachment (1) to tongue (5) using two 1/2 flat washers (4), 1/2 lock washer (3), and 1/2-13 x 1 bolt (2).
2. Route all hydraulic hoses through hose guide attachment to tractor.

Cylinder Stop Bushings
Refer to Figure 49

NOTE: Cylinder stop bushings are stored on the frame of the drill.

Calibration Crank
Refer to Figure 50

1. When not in use, store calibration crank on stob located on top of contact wheel arm.
Tarp Cover

Installing Tarp
Refer to Figure 51

1. Unfold tarp and place it on top of hopper with center pocket oriented towards the front.
2. Mount latch cleat (10) with pan head screw (9).
Using Spring Installation Tool
Refer to Figure 52

1. Securely clamp spring tool in a bench vise.

Refer to Figure 53

2. Attach end of spring to end of tool with 1/4 x 1/2 hex head cap screw. Hold the spring as shown and use right-hand hole.

NOTE: This will keep the spring centered on tool when pulled the length of the tool.

3. Insert bolt from bottom and thread on nut leaving nut loose.
Refer to Figure 54

4. Place cotter pin in one of the holes in the pipe handle. Slide washer over pipe and insert pipe through spring coil.

Refer to Figure 55

5. Slide the second washer over pipe and insert second cotter pin.

NOTE: It is not necessary to bend the cotter pins, just use caution so they don’t fall out while stretching the spring.

Refer to Figure 56

6. Hold pipe and begin pulling spring towards you.
Refer to Figure 57

7. Carefully pull spring the length of the tool. Be careful when approaching the end of the tool so as not to pull too far past.

Refer to Figure 58

8. Carefully hook the coiled end of the spring over the end of the tool. Position spring between two tabs on end of the tool.

9. Remove cotter pin and washer. Remove pipe handle from spring coil.
Refer to Figure 59

10. Remove spring tool with spring from vise and carefully insert the end with bolt into the pocket in center of tarp. Start at rear of hopper and push towards the front. NOTE: Be sure to insert the spring as shown in the illustration. Inserting the spring upside down will result in improper installation of the tarp.

11. Insert rear tarp support tube (12) into rear pocket of tarp as far as cutout. Place two loop straps and latch assembly into cutout. Thread tube through loop straps and latch assembly with a loop strap on each side of latch assembly. Push rear tarp support tube rest of way through pocket.

12. Attach left end of spring to center support using 1/4" x 1" bolt (8), 1/4" flat washer (2), and 1/4" lock nut (3). Leave bolt loose and do not remove spring tool yet.

13. Insert plastic tarp support tube (13) into center pocket of tarp as far as the cutout. Place two loop straps into cutout with one strap on each side of spring coil. Slide support tube into loop straps and spring coil. Push assembly rest of the way through pocket.

14. Insert mounting bar (14) in front pocket and attach to hopper. Secure bar in place using 1/4" x 1" bolts (8), 1/4" flat washers (2), and 1/4" lock nuts (3).

15. Pull on latch assembly to unroll tarp. With tarp fully extended, pull latch assembly down and hook to latch cleat. Remove bolt and nut that attaches the spring to insertion tool. Slide insertion tool out through the front.

16. Unhook latch from cleat. Let tarp roll forward. Finish attaching end of spring to center support using 1/4" x 1" bolt (8), 1/4" flat washer (2), and 1/4" lock nut (3). Tighten bolt and nut.

17. Pull on latch strap to extend cover over hopper and hook latch over cleat on back of hopper.

18. Stretch elastic cords over cleats on sides of hopper to secure.

19. Bolt end of strap to hole in top of center partition with 1/4" x 1" bolt (8), 1/4" flat washer (2), and 1/4" lock nut (3).
Preparation and Setup

Tramlining
All tramlines for this drill were set up on the following assumptions:

- 3 meter planting width with 19 openers equally spaced at 15.8 cm.
- 1.8 meter wheel spacing of the tramlines.

With these assumptions, the feeder cup allows for the tramline clutches to be placed on rows 1, 4, 6, 13, 14, and 16. Two clutches are assembled as standard on rows 4 and 16. An additional clutch and jumper cable will be required on some patterns (ie 20 meter sprayer/20 bouts).

The tramline clutch locations are as follows:

- 12 meter sprayer/4 bouts:
  a. Asymmetric right or left hand.
     i. Tramlines will be on rows 6 and 14.
  b. Symmetric.
     i. Tramlines will be on rows 4 and 16 (2nd bout must overlap 1st bout 1/2 drill width).

- 15 meter sprayer/5 bouts:
  a. Symmetric.
     i. Tramlines will be on rows 4 and 16.

- 18 meter sprayer/6 bouts:
  a. Asymmetric right or left hand.
     i. Tramlines will be on rows 6 and 14.
  b. Symmetric.
     i. Tramlines will be on rows 4 and 16 (2nd bout must overlap 1st bout 1/2 drill width).

- 20 meter sprayer/20 bouts
  a. Special Pattern:
     i. Tramlines will be on rows 1, 13, and 14. (This pattern requires an optional clutch and jumper cable, which connects rows 1 and 13 together).

Refer to Figure 60
NOTE: On Tramline adjust screw to 1/8” of magnet. Screw can also be adjusted up or down in the slot. When drill is raised, the sensor should be right on the magnet. Otherwise, if sensor passes magnet it may possibly read more than once.

On shaft monitors, adjust screw to 1/8” of magnet. Screw will not adjust up or down.
Monitor

Refer to Figure 61

1. Mount monitor control box (1) in a convenient location in tractor cab. Route the lead cable (4) back toward the tractor drawbar area making sure it will not get kinked or pinched.

2. Connect the power cord (2) to a good uninterrupted 12 volt power source on the tractor. Connecting directly to the battery is recommended.

NOTE: To prevent circuit damage, be sure to attach the ground wire to the negative battery terminal and the fused wire to the positive battery terminal.

3. Plug the cord into the power lead (5) on the back of the control box (1).
## Appendix

### Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size (Inches)</th>
<th>in-tpi (^1)</th>
<th>N (\cdot) m (^2)</th>
<th>ft-lb (^3)</th>
<th>N (\cdot) m</th>
<th>ft-lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; - 20</td>
<td>7.4</td>
<td>5.6</td>
<td>11</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>1/4&quot; - 28</td>
<td>8.5</td>
<td>6</td>
<td>13</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>5/16 - 18</td>
<td>15</td>
<td>11</td>
<td>24</td>
<td>17</td>
<td>33</td>
</tr>
<tr>
<td>5/16&quot; - 24</td>
<td>17</td>
<td>13</td>
<td>26</td>
<td>19</td>
<td>37</td>
</tr>
<tr>
<td>3/8&quot; - 16</td>
<td>27</td>
<td>20</td>
<td>42</td>
<td>31</td>
<td>59</td>
</tr>
<tr>
<td>3/8&quot; - 24</td>
<td>31</td>
<td>22</td>
<td>47</td>
<td>35</td>
<td>67</td>
</tr>
<tr>
<td>7/16&quot; - 14</td>
<td>43</td>
<td>32</td>
<td>67</td>
<td>49</td>
<td>95</td>
</tr>
<tr>
<td>7/16&quot; - 20</td>
<td>49</td>
<td>36</td>
<td>75</td>
<td>55</td>
<td>105</td>
</tr>
<tr>
<td>1/2&quot; - 13</td>
<td>66</td>
<td>49</td>
<td>105</td>
<td>76</td>
<td>145</td>
</tr>
<tr>
<td>1/2&quot; - 20</td>
<td>75</td>
<td>55</td>
<td>115</td>
<td>85</td>
<td>165</td>
</tr>
<tr>
<td>9/16&quot; - 12</td>
<td>95</td>
<td>70</td>
<td>150</td>
<td>110</td>
<td>210</td>
</tr>
<tr>
<td>9/16&quot; - 18</td>
<td>105</td>
<td>79</td>
<td>165</td>
<td>120</td>
<td>235</td>
</tr>
<tr>
<td>5/8&quot; - 11</td>
<td>130</td>
<td>97</td>
<td>205</td>
<td>150</td>
<td>285</td>
</tr>
<tr>
<td>5/8&quot; - 18</td>
<td>150</td>
<td>110</td>
<td>230</td>
<td>170</td>
<td>325</td>
</tr>
<tr>
<td>3/4&quot; - 10</td>
<td>235</td>
<td>170</td>
<td>360</td>
<td>265</td>
<td>510</td>
</tr>
<tr>
<td>3/4&quot; - 16</td>
<td>260</td>
<td>190</td>
<td>405</td>
<td>295</td>
<td>570</td>
</tr>
<tr>
<td>7/8&quot; - 9</td>
<td>225</td>
<td>165</td>
<td>585</td>
<td>430</td>
<td>820</td>
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<tr>
<td>7/8&quot; - 14</td>
<td>250</td>
<td>185</td>
<td>640</td>
<td>475</td>
<td>905</td>
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<tr>
<td>1&quot; - 8</td>
<td>340</td>
<td>250</td>
<td>875</td>
<td>645</td>
<td>1230</td>
</tr>
<tr>
<td>1&quot; - 12</td>
<td>370</td>
<td>275</td>
<td>955</td>
<td>705</td>
<td>1350</td>
</tr>
<tr>
<td>1-1/8&quot; - 7</td>
<td>480</td>
<td>355</td>
<td>1080</td>
<td>795</td>
<td>1750</td>
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<tr>
<td>1-1/8&quot; - 12</td>
<td>540</td>
<td>395</td>
<td>1210</td>
<td>890</td>
<td>1960</td>
</tr>
<tr>
<td>1 1/4&quot; - 7</td>
<td>680</td>
<td>500</td>
<td>1520</td>
<td>1120</td>
<td>2460</td>
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<tr>
<td>1 1/4&quot; - 12</td>
<td>750</td>
<td>555</td>
<td>1680</td>
<td>1240</td>
<td>2730</td>
</tr>
<tr>
<td>1 3/8&quot; - 6</td>
<td>890</td>
<td>655</td>
<td>1990</td>
<td>1470</td>
<td>3230</td>
</tr>
<tr>
<td>1 3/8&quot; - 12</td>
<td>1010</td>
<td>745</td>
<td>2270</td>
<td>1670</td>
<td>3680</td>
</tr>
<tr>
<td>1 1/2&quot; - 6</td>
<td>1180</td>
<td>870</td>
<td>2640</td>
<td>1950</td>
<td>4290</td>
</tr>
<tr>
<td>1 1/2&quot; - 12</td>
<td>1330</td>
<td>980</td>
<td>2970</td>
<td>2190</td>
<td>4820</td>
</tr>
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<table>
<thead>
<tr>
<th>Bolt Size (Metric)</th>
<th>N (\cdot) m</th>
<th>ft-lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 5 X 0.8</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>M 6 X 1</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>M 8 X 1.25</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>M 8 X 1</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>M10 X 1.5</td>
<td>33</td>
<td>24</td>
</tr>
<tr>
<td>M10 X 0.75</td>
<td>39</td>
<td>29</td>
</tr>
<tr>
<td>M12 X 1.5</td>
<td>58</td>
<td>42</td>
</tr>
<tr>
<td>M12 X 1.75</td>
<td>60</td>
<td>44</td>
</tr>
<tr>
<td>M12 X 1.5</td>
<td>90</td>
<td>66</td>
</tr>
<tr>
<td>M14 X 2</td>
<td>92</td>
<td>68</td>
</tr>
<tr>
<td>M14 X 1.5</td>
<td>99</td>
<td>73</td>
</tr>
<tr>
<td>M16 X 2</td>
<td>145</td>
<td>105</td>
</tr>
<tr>
<td>M16 X 1.5</td>
<td>155</td>
<td>115</td>
</tr>
<tr>
<td>M18 X 2.5</td>
<td>195</td>
<td>145</td>
</tr>
<tr>
<td>M18 X 1.5</td>
<td>220</td>
<td>165</td>
</tr>
<tr>
<td>M20 X 2.5</td>
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<td>205</td>
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<tr>
<td>M20 X 1.5</td>
<td>310</td>
<td>230</td>
</tr>
<tr>
<td>M24 X 3</td>
<td>480</td>
<td>355</td>
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<tr>
<td>M24 X 2</td>
<td>525</td>
<td>390</td>
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<td>M30 X 3.5</td>
<td>960</td>
<td>705</td>
</tr>
<tr>
<td>M30 X 2</td>
<td>1060</td>
<td>785</td>
</tr>
<tr>
<td>M36 X 3.5</td>
<td>1730</td>
<td>1270</td>
</tr>
<tr>
<td>M36 X 2</td>
<td>1880</td>
<td>1380</td>
</tr>
</tbody>
</table>

1 in-tpi = nominal thread diameter in inches-threads per inch
2 N \(\cdot\) m = newton-meters
3 ft-lb = foot pounds
4 mm \(\cdot\) pitch = nominal thread diameter in millimeters \(\times\) thread pitch

Torque tolerance +0%, -15% of torquing values. Unless otherwise specified use torque values listed above.

### Tire Inflation Chart

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Inflation PSI (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Wheel</td>
<td>40 (2.75)</td>
</tr>
<tr>
<td>2 x 395/55B 16.5 12ply</td>
<td>60 (4.14)</td>
</tr>
</tbody>
</table>

NOTE: All tires are warranted by the original manufacturer of the tire. Tire warranty information can be found in the brochures included with your Operator’s and Parts Manuals or online at the manufacturer’s websites. For service assistance or information, contact your nearest Authorized Farm Tire Retailer.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titan</td>
<td><a href="http://www.titan-intl.com">www.titan-intl.com</a></td>
</tr>
<tr>
<td>Goodyear</td>
<td><a href="http://www.goodyearag.com">www.goodyearag.com</a></td>
</tr>
<tr>
<td>Firestone</td>
<td><a href="http://www.firestoneag.com">www.firestoneag.com</a></td>
</tr>
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</table>

1/2/2006