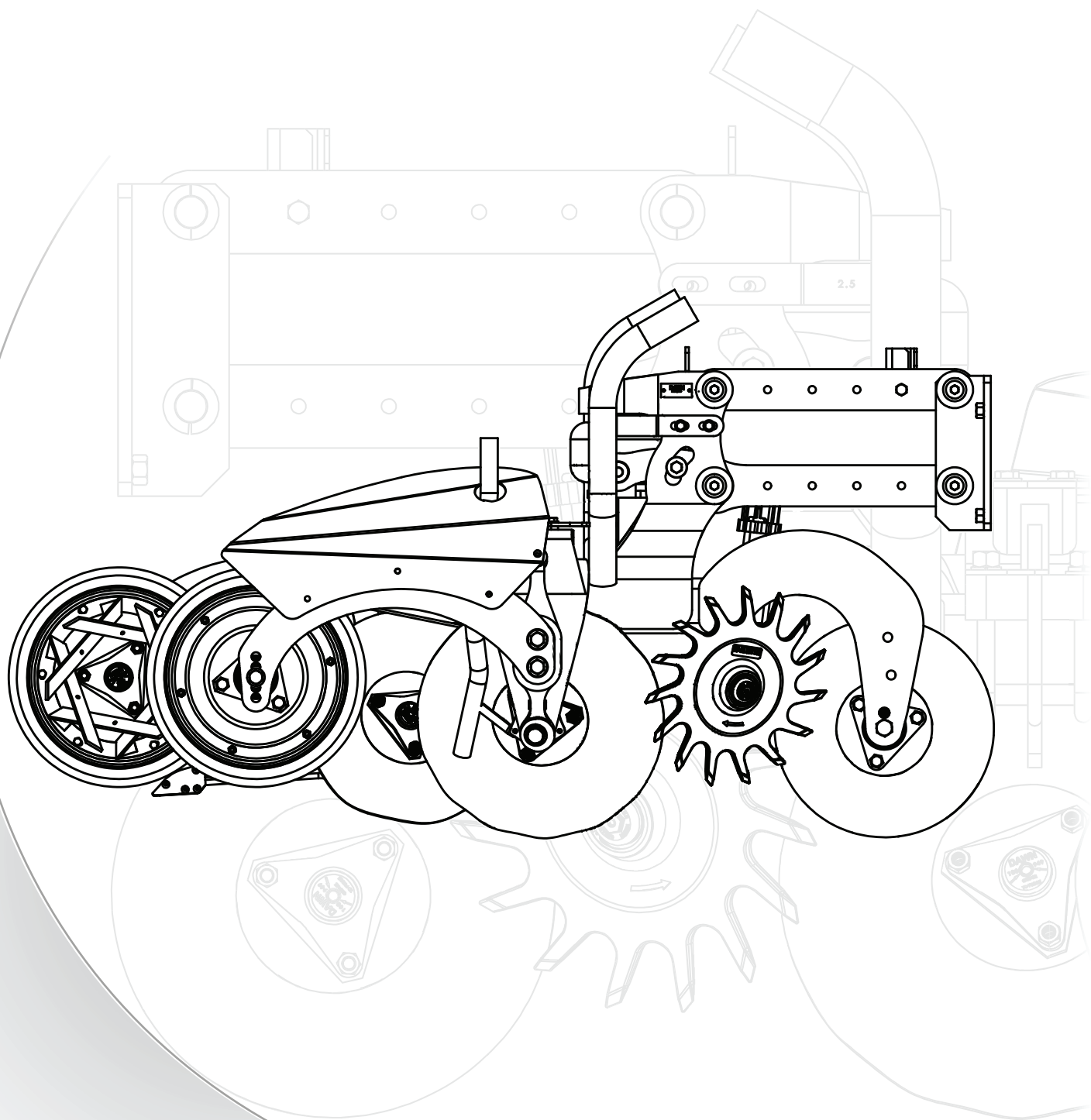


Dawn Model 7772 Pluribus Strip-Till Unit

Assembly and Operation Manual



DAWN®

Introduction

PLEASE CAREFULLY READ THIS MANUAL.

It is strongly recommended that you become familiar with all operation and maintenance procedures of your Dawn agricultural implement.

NOTE: *Failure to follow safety recommendations while this implement is in operation, and/or failure to properly store this implement, and/or failure to adequately prepare this implement for transport, could result in equipment damage, personal injury or death. Please make yourself aware of all federal and local laws that may apply to the transport, use and sale of this implement.*

WARRANTY INFORMATION

All new Dawn Equipment Company products carry a limited warranty. Warranty assurances vary by device, and can be found in the appendices of this or any other Dawn Equipment Company Users Manual. Warranty information is also available upon request by contacting Dawn toll-free at 800.554.0007, or you can request a copy in writing. Request warranty information by e-mail at info@dawnequipment.com, or by US Post at Dawn Equipment Company, PO Box 497, Sycamore IL 60178.

Dawn Equipment Company prides itself on the manufacture of quality American made row crop tools. Warranties will be honored by Dawn to dealers authorized to sell Dawn Equipment products who, in turn, honor such warranties to the original retail purchaser. Should this equipment be improperly cared for, or should it be modified to change performance beyond OEM specifications, applicable Dawn warranties will become void, and Dawn sponsored implement improvements will not be granted.

Disclaimer: *Dawn Equipment Company makes no claim to the safety or reliability of non Dawn OEM parts or wholegoods used in conjunction with Dawn OEM equipment, and shall not be held responsible for any personal injury or property damage, or for any complications with operational performance caused by non Dawn OEM parts or wholegoods. Please familiarize yourself with the users manuals, and safety recommendations of all non Dawn OEM equipment.*

CONVENTION FOR OPERATOR CONTROLS.

We endorse and employ agricultural equipment operator control standards set by the ASABE Standards Committee. These standards are designed to improve operator safety, efficiency, and awareness.

Note: Pursuant to Section 2 of S335.4 of the ASABE Standards--

2.2) Right-hand, left-hand and forward designations are those related to the operator when in the operating position or station. (facing the direction of motion.)

WEIGHTS AND MEASURES

All Dawn Equipment Company part and wholegood designs adhere to the United States Customary Unit System (Inch-Pound). All measurements in this manual are labeled using only the aforementioned units, unless otherwise explicitly specified. Use only US Customary hardware and tools on all Dawn Equipment products unless otherwise explicitly specified.

USING THIS MANUAL

All Dawn manuals have been given a part number and should be considered a principal element of the device they accompany. Please ensure this manual is kept in a location not subject to extreme conditions (i.e. excess humidity, hydraulic fluid, etc.). Please ensure that this manual remains with the implement if traded, leased or sold.

ADDITIONAL INFORMATION

Additional information on this, and any other Dawn tool can be found on the web at www.dawnequipment.com. You may also contact Dawn for information by phone 815.899.8000, by fax 815.899.3663, or by e-mail to info@dawnequipment.com.



Introduction • Pluribus Strip-Till

Here is an example of a 6-Row, 2010 Model 7772-HS-AIR Pluribus Strip-Till System--



fig. P1

The Pluribus Strip-Till Row Unit.



fig. P2



Table of Contents

Safety	4-5	Pluribus Operational Procedures	10-13
General Safety	4.1	Getting Started	10.1
Safety Word Definitions	4.2	In-Field Setup Procedure.....	10.2
Protective Clothing	4.3	Setting Toolbar Height.....	10.2.a
Protective Accessories	4.4	Leveling Toolbar.....	10.2.b
Farm & Tractor First Aid	5.1	Setting Gauge Wheels.....	11.1.a
Reporting an Emergency	5.2	Pneumatic Downpressure.....	11.1.b
		-Regulator Installation	
		-Regulator Operation	
Tractor Preparation	6	Test Run	12.1.a
Tractor Tires	6.1	Setting Trashwheels	12.1.b
Lift Capacity	6.2	Initial Run	12.2
Three-Point Hitch	6.3	General Operation	12.2.a
Drawbar	6.4	Corn Stalks.....	12.2.b
Hydraulic System	6.5	Soybean Stubble.....	12.2.c
Hydraulic Pressure	6.5.a		
Hydraulic Valves/Couplers	6.5.b		
Toolbar Preparation	7	Fertilizer Application	14-15
Toolbar Tires	7.1	Dry Fertilizer	14
Hardware Inspection	7.2	Incorporated	14.1.a
Hydraulic Inspection	7.3	*Manure.....	14.1.b
Toolbar Mounted Equipment	7.4	Banded	14.1.c
Toolbar Hitch	7.5	Liquid Fertilizer	15.1
Strip-till Unit Alignment	7.6	Incorporated	15.1.a
Strip-till Unit Pneumatic Connections	7.7	Banded	15.1.b
Strip-till Unit Fertilizer Tubes.....	7.8	Anhydrous Ammonia	15.2
Tractor / Toolbar Connections	8		
Hitching	8.1		
3-Point Hitch	8.1.a		
Drawn Hitch	8.1.b		
Hydraulic Connections	8.2		
Electrical Connections	8.3		
Pluribus Strip-Till Unit Design Overview	9		
Pluribus Right-Handed Unit	9.1		
Pluribus Left-Handed Unit	9.2		
Abridged Parts List.....	9.3		



Safety Information

GENERAL SAFETY (4.1)

Dawn Equipment Company strongly recommends adhering to a comprehensive and effective safety protocol when transporting, maintaining, and/or operating any agricultural implement. A 2008 study from the United States Dept. of Labor (<http://www.bls.gov/news.release/cfoi.t02.htm>) states that farm related fatalities account for almost 10% of the total number of work related fatalities in the U.S.. Additionally, the loss of a limb, or other bodily disfigurement, may permanently affect your ability to carry out the requisite duties necessary to maintain a profitable farming operation. Please take all appropriate precautions to keep you, your family, and your farm safe!

DEFINITIONS (4.2) - (Ref: ASAE S441.1)

It is essential that you be able to recognize safety signal words and their associated colors. Please be alert to any signs posted on your Dawn Equipment Company products, and/or in your users manual. Make sure you have read all safety messages and that you clearly understand the recommended precautions. If you have questions about any Dawn safety sign, or have further questions about safety recommendations on this or any other Dawn product, please contact us at 800.554.0007.

Danger - Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death. (RED)

Warning - Indicates a potentially hazardous situation that, if not avoided, will result in serious injury or death. (ORANGE)

Caution - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. (YELLOW)

Hazard - A source of potential injury to a person.

A complete list of Dawn Equipment Company safety signs with explanations can be found in the appendix of this manual, or any other Dawn Equipment Company users manual. Please review and understand all safety signs.

PROTECTIVE CLOTHING (4.3)

Wearing proper attire when working on agricultural equipment is a critical safety precaution. Loose clothing or accessories may become entangled in moving parts causing serious injury or death. Please ensure that loose cuffs, shirts, belts, jewelry, etc. are secured such that they cannot be snagged on, or be drawn into, moving machinery.



fig. S1

Make sure that all necessary protective accessories are readily available, this will increase the likelihood they are used when needed. Stay aware of your surroundings when in the proximity of machinery that is either moving or has the potential for spontaneous movement.

PROTECTIVE ACCESSORIES (4.4)

It only takes one accident to permanently curtail your performance in the field and on the farm. Equip yourself with all recommended safety accessories, and develop a strategy for ensuring their use when needed.



Safety Information

Safety Glasses / Goggles

If you will be using hazardous chemicals, or are striking, cutting or grinding metal make sure you are wearing eye protection.



fig. S2

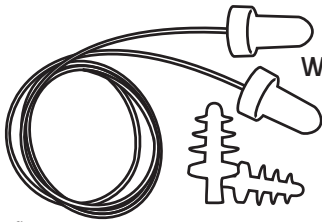


fig. S3

Earplugs / Sound Mufflers

When working around equipment that generates high amplitude sound (ie , dryers, vaccums), ear protection is strongly recommended.

Respirator Mask

Please carefully read all safety information associated with any chemicals you will be handling. Use a respirator mask when using hazardous chemicals, (ie Insecticides, NH3)



fig. S4



fig. S5

Work Gloves

If working around machinery with sharp edges, or rough metal surfaces, work gloves may prevent a few stiches. Work gloves are inexpensive, and are really worth the investment.

Steel-Toed Boots

A good pair of steel-toed boots can save your toes! Avoid an unfortunate accident, and protect your feet.



fig. S6



fig. S7

First Aid Kit

Every shop and tractor should have a complete first aid kit.

FARM & TRACTOR FIRST AID KIT (5.1)

This is a list of provisions for your first aid kit based on NASD and CASA recommendations.

General Supplies:

- A basic first aid manual
- Two triangular bandages with 36" sides (made from bed sheets)
- Spray antiseptic (not a pressurized can), or antiseptic towelettes
- Sterile saline solution
- Twelve adhesive bandages and four safety pins
- 2-4 pairs of rubber or latex gloves
- Eye goggles
- Three small packages of sugar
- Mouth protection device for mouth-to-mouth resuscitation
- Syrup of Ipecac (use to induce vomiting if advised by the Poison Control Center)
- Stainless steel tweezers
- Needle
- Sunscreen

Dressing Supplies:

- Six compress bandages, 2"x 2", 4"x 4", 6"x 6"
- 24"x 72" compress
- One roll of adhesive tape
- Six pressure bandages
- Gauze bandage
- Stainless steel bandage scissors (strong enough to cut through denim)
- emergency tournaquet (or elastic wrap/tubing)
- Splints: ¼ inch thick x 3 inches wide x 12 to 15 inches long.
- Cold pack
- Amputation preservation kit (plastic bags: one large garbage bag, four kitchen-sized and two bread bags)

REPORTING AN EMERGENCY (5.2)

Ensure that you have access to a radio or mobile phone when operating or repairing farm machinery. Working with a partner whenever possible significantly increases the chances of receiving timely emergency care should one party become severely injured, and/or incapacitated.

Tractor Preparation

TRACTOR TIRES (6.1)

In general, set the tractor tires (center to center) at 4x the row spacing (ex. 120" center to center for 30" row spacing). The minimum row spacing for the Pluribus Unit is 28". Make certain that the tires are inflated to the recommended pressure for your conditions.

The majority of Pluribus Strip-Till users run on 30" centers, and split the previous years rows. This typically places the tractor tires running over stalks. You may want to consider an aftermarket tool designed to flatten the stalks and reduce tire wear. If you are equipped with high precision guidance, you may also consider running at an angle to the previous years rows. The practice of running at an angle can also have additional performance benefits in some conditions.

LIFT CAPACITY (6.2)

Due to the low horse power requirements of the Pluribus unit, many users will opt for a smaller tractor to pull the implement. One important factor to consider, however, is the lift capacity of the tractor hitch. Each Pluribus unit can weigh in excess of 550 lbs.. If you will be using a mounted toolbar, please ensure that your tractor is capable of easily lifting the combined weight of the toolbar, the strip-till units and any additional fertilizer distribution equipment.

Should your lift capacity be adequate, there is still a potential that you are excessively tail heavy. If you have difficulty steering in the transport position, you may have to add weight to the nose of the tractor.

▲ WARNING!: *Driving uphill with a tail heavy tractor is dangerous! Tractors with excessive tailweight are susceptible to rollovers.*

(Note: The procedure for determining lift capacity on a tractor equipped with a 3-point hitch can be found in ASAE S349.2)

THREE POINT HITCH (6.3)

If you have a mounted tool bar, you will want to ready your 3-Point hitch. Hitches that have seen little use can freeze up. It is recommended that you free up all your links in preparation for toolbar leveling adjustments. Additionally, it is recommended that you install an aftermarket hydraulic upper link so that you can quickly adjust the toolbar pitch as field conditions change.

TRACTOR DRAWBAR (6.4)

The industry standard for tractor drawbars is approximately 17.5" above ground level. Not all manufacturers adhere to this standard, nonetheless it is very important that the toolbar be hitched in such a way that it can be easily leveled fore and aft. If you are unable to connect your toolbar in such a way that it can be easily leveled, please contact Dawn for advice on your particular tractor/toolbar configuration. Make sure the drawbar has eyelets for safety chains. Pulling an agricultural implement without safety chains is dangerous!

TRACTOR HYDRAULIC SYSTEM (6.5)

Although most Pluribus units alone have no hydraulic components, toolbars with folding systems, and fertilizer delivery systems typically will. Additionally, there are some Dawn toolbars and some Pluribus units that are equipped with hydraulic components. Understanding your tractor hydraulic system is critically important, and you should thoroughly familiarize yourself with the hydraulic system instructions provided by the tractor's manufacturer.

HYDRAULIC PRESSURE (6.5.a)

Know the maximum operating pressure of each hydraulic component. Exceeding the recommended pressure can result in equipment damage or failure. Pressure recommendations can be found in the users manual of most agricultural implements. Also ensure that there is adequate pressure, should you have a system that employs multiple hydraulically driven components.

HYDRAULIC VALVES / COUPLERS (6.5.b)

Hydraulic cylinders are susceptible to abrasion due to impurities in the hydraulic fluid. It is recommended that you use a clean cloth to remove any abrasive particulate that may have collected in and around the valve plug, and the connecting socket. Always keep dust covers in place when valve is not in use. Test your hydraulic hoses and couplers. Make sure there are no leaks.

▲ WARNING!: *Hydraulic fluid under pressure is dangerous! Small holes in hydraulic lines may eject streams of fluid at high pressure. Hydraulic fluid that penetrates the skin can cause serious infection that can lead to amputation. Should oil penetrate your skin, even if it is relatively painless, seek immediate medical attention.*



Toolbar Preparation

TOOLBAR TIRES (7.1)

If your toolbar was built for the purpose of carrying strip-till equipment, tires on the toolbar should be properly placed without any correction needed. Many users will opt for a used planter, or cultivator toolbar. These toolbars can sometimes work, but gauge wheels must run in front of the toolbar. Toolbars with gauge wheels running between strip-till units will not perform properly. Check that your tires are properly inflated to the recommended pressure for your conditions.

HARDWARE INSPECTION (7.2)

Ideally, every piece of equipment, every fastener, and every accessory is perfect right out of the box. In the real world, there is an occasional bolt that is not snug, and an occasional fitting just slightly out of spec. It is important to inspect your entire system, to ensure that every bolt is tight and every component is functioning properly. This simple step can significantly reduce downtime due to small imperfections amplifying into equipment failure.

HYDRAULIC INSPECTION (7.3)

Today's hydraulic systems make setup relatively safe and easy, but it is still important to check all hydraulic lines and fittings before connecting them to the tractor. It is recommended that all couplers be fitted with dust caps when not in use, and carefully cleaned before connecting. Check for damage on all hydraulic cables and replace any lines that have been compromised by wear or fatigue. High pressure hydraulic fluid can be dangerous if couplers, lines and fittings are not properly installed and cared for.

TOOLBAR MOUNTED EQUIPMENT (7.4)

Many toolbars used in conjunction with the Pluribus system carry a number of additional agricultural devices. Fertilizer hoppers, fertilizer distribution systems, pneumatic accumulators and pumps, etc. should be inspected and checked for loose connections whether electrical, hydraulic or mechanical. If you do not have an operator's manual for an agricultural device you will be using with the Pluribus Strip-Till System, it is highly recommended that you obtain and review the equipment manual before using it.

TOOLBAR HITCH (7.5)

Both drawbar and three-point hitches should be checked for fatigue. Pull-type toolbar hitches should be equipped with safety chains. Safety chains can prevent a serious accident should the toolbar hitch become disconnected from the drawbar.

▲ WARNING! *Unsecured agricultural implements can move erratically with extreme force, and may cause serious injury or death.*

STRIP-TILL UNIT ALIGNMENT (7.6)

It is important, particularly if your operation relies heavily on guidance and mapping systems, that your strip-till units be on center. It is recommended that you measure from center-to-center each row unit to ensure they are at the correct row spacing. If they are off center, loosen the u-bolts (15/16" wrench) and position the row units so that they are as close to center as possible. Make sure to torque the u-bolts back to the specifications of the bolt-torque chart found in the appendices of this or any other Dawn Equipment Company user's manual. Note: Instructions for installing Pluribus units on a toolbar can be found in the appendices of this manual.

STRIP-TILL UNIT PNEUMATIC CONNECTIONS (7.7)

All new Pluribus Strip-Till units are equipped with pneumatic downpressure. You should inspect the pneumatic hoses and their connections. Make sure that the tee fitting, running into the airbag, is secure and that all hose clamps are secure around the airline. You may have chosen to install an accumulator or air pump on the toolbar. Please read and understand the user's manual of any pneumatic accessories and connect pneumatic fittings according to the recommendations of the manufacturer.

STRIP-TILL UNIT FERTILIZER TUBES (7.8)

There are a large variety of fertilizer tubes available for the Pluribus system. Often, you will have to install these fertilizer options at your workshop. Check to see if your fertilizer attachment will fit the fertilizer delivery hose. Dawn does offer a number of alternatives and adaptors should the diameters of your fertilizer hose and receiving bracket not match up.



Tractor / Toolbar Connections

HITCHING (8.1)

When you have thoroughly prepared your tractor and toolbar, you are ready to hook-up. There are a wide variety of hitch configurations, and it is recommended that you familiarize yourself with the operation of your hitch. Operational instructions for your hitch type should be found in the users manual of both your tractor and toolbar.

3-POINT HITCH (8.1.b)

Most 3-point hitches will be either Category 2 or Category 3 hitches. If you have a category 2 hitch, make sure that your toplink pin is 1" dia. and your lift arm pins are 1 1/8" dia.. If you have a category 3 hitch, make sure that your toplink pin is 1 1/4" dia. and your lift arm pins are 1 7/16" dia.. In some cases you will have to remove, or relocate the tractor drawbar.

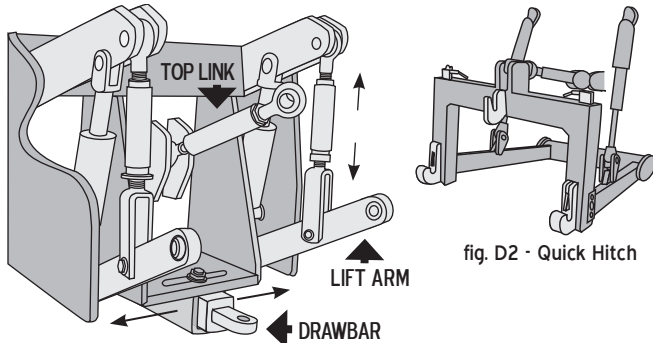


fig. D1 - 3-Point Hitch

If the lift arm is equipped with an extension, release the lock and pull the extension out its full length of travel. Slowly back the tractor up to the toolbar until the lift arms are aligned with the lower hitch pins. Raise or lower the lift arms until the eyelets are concentric with the lower hitch pins. Stop your tractor and engage the parking brake to prevent rolling when pinning the lift arms to the hitch. Pin each lift arm in place and install a spring clip. Restart the tractor and slowly raise the lift arms until the eyelet of the upper link is concentric with upper hitch pin. Once again stop the tractor and engage the parking brake. You may have to lengthen or shorten the upper link to install the hitch pin. After installing the upper hitch pin, make sure to secure it with a spring clip. If you have a "quick-hitch" variety 3-point hitch, as before slowly back up to the toolbar until the lower clasps of the quick-hitch rest below the lower hitch pins. Lengthen or shorten the upper link to align the quick hitch with the hitch pins. Raise the quick-hitch until it engages the hitch pins. Make sure the hitch retainers are lowered, and engaged.

DRAWN HITCH (8.1.b)

Slowly back up the tractor to the toolbar until the tractor drawbar is near the clevis of the toolbar. Stop your tractor and engage the parking brake. Use the toolbar jack to align the clevis with the tractor drawbar. You may have to reposition the clevis. The lower hitch panel of the clevis should be approximately 14 in. above ground level, so that the upper hitch panel rides abutting the tractor drawbar. Most toolbars have optional settings for the clevis. Once the height of the clevis is aligned with the tractor drawbar, slowly back the tractor until the pin holes of the clevis and drawbar are aligned. If you are using assistance in hitching the toolbar, please make sure no person is between the tractor and the toolbar when in motion.

▲ WARNING!: *Tractors in motion may behave erratically! Persons caught between a tractor in motion and an agricultural implement could suffer serious injury or death.*

When you have aligned the pin holes, install the appropriate pin and secure it with a spring clip. Your toolbar should be equipped with safety chains. Make sure to connect the safety chains before moving the toolbar.

HYDRAULIC CONNECTIONS (8.2)

▲ WARNING!: *Shut off tractor and remote cylinder controllers that are in operation before attaching or detaching hydraulic hoses to avoid potential injury from hydraulic fluid escaping under pressure.*

All agricultural implements equipped with hydraulic components should be accompanied by a users manual that details attaching and detaching. Please carefully follow the instructions provided by the manufacturer. If you have Dawn toolbar markers, please refer to the Dawn marker users guide in the appendices of this manual.

ELECTRICAL CONNECTIONS (8.3)

Familiarize yourself with the users manual of any electrical components that your strip-till/fertilizer system might employ. It is a good practice to label your connections with colored electrical tape on both the male and female connectors, particularly connections that have a similar geometry. Carefully read the connection procedure found in the users manual of that components manufacturer.

PLURIBUS STRIP-TILL UNIT DESIGN OVERVIEW

MODEL 7772-HS-AIR-LH

The fully equipped left handed Pluribus Strip-Till Unit.

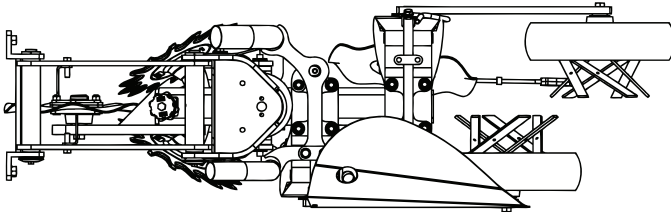


fig. D3.1 - 7772-HS-AIR-LH Top View

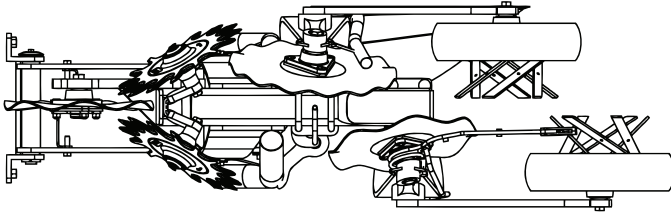


fig. D3.2 - 7772-HS-AIR-LH Bottom View

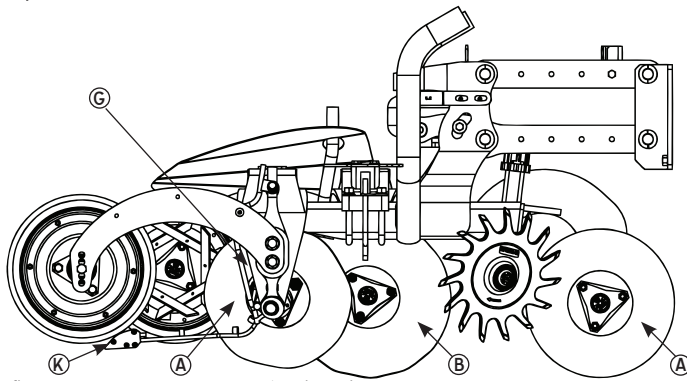


fig. D3.3 - 7772-HS-AIR-LH Right Side View

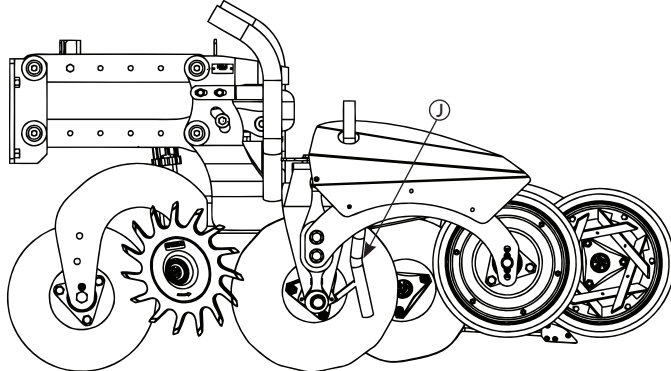


fig. D3.4 - 7772-HS-AIR-LH Left Side View

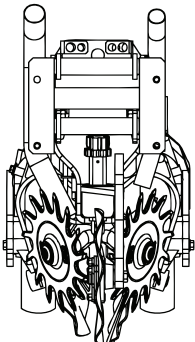


fig. D3.5 - 7772-HS-AIR-LH Front

MODEL 7772-HS-AIR-RH

The fully equipped right handed Pluribus Strip-Till Unit.

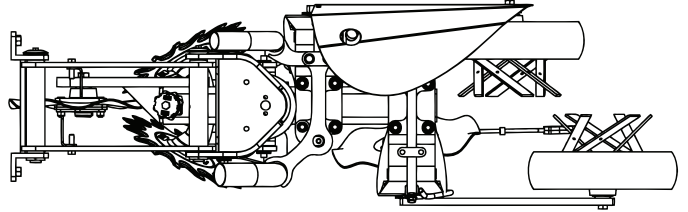


fig. D3.6 - 7772-HS-AIR-RH Top View

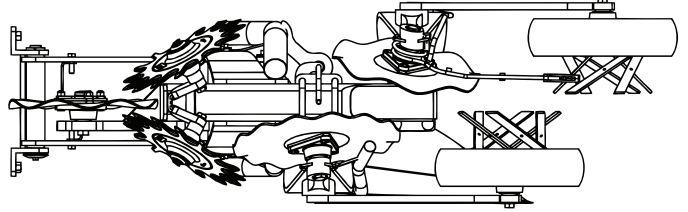


fig. D3.7 - 7772-HS-AIR-RH Bottom View

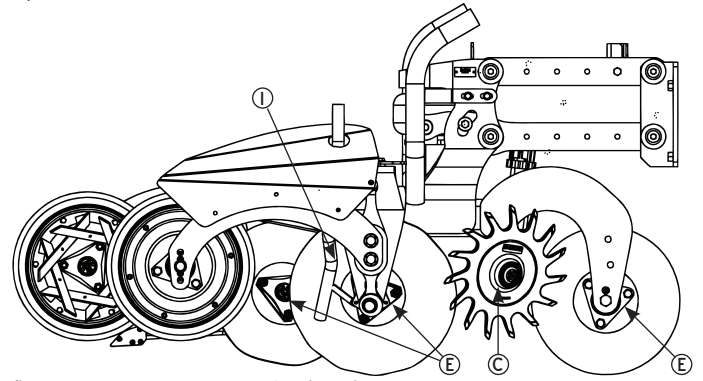


fig. D3.8 - 7772-HS-AIR-RH Right Side View

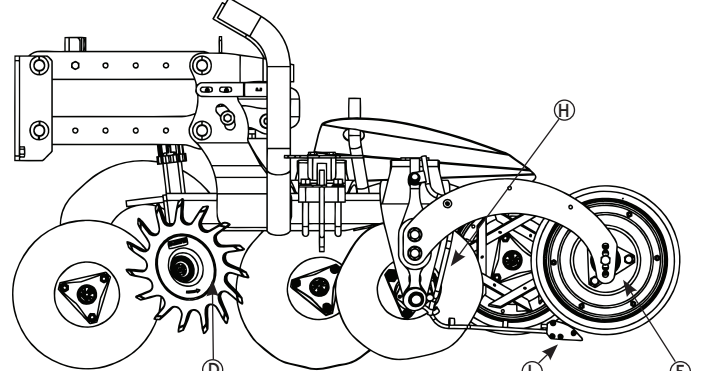


fig. D3.9 - 7772-HS-AIR-RH Left Side View

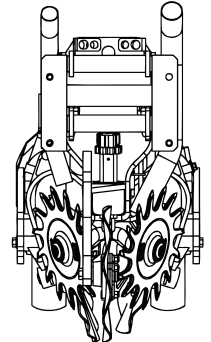


fig. D3.10 - 7772-HS-AIR-RH Front

ABRIDGED PARTS LIST FOR WEAR COMPONENTS

A - part 9063	16" 8-Wave Coulter	G - kit 300348RH	Liq. banding tube RH
B - part 9946	18" 13-Wave Coulter	H - kit 300348LH	Liq. banding tube LH
C - kit 400131R	15" Trashwheel RH	I - kit 300400RH	Dry banding tube RH
D - kit 400131L	15" Trashwheel LH	J - kit 300400LH	Dry banding tube LH
E - kit 400106	3/4" Coulter Hub	K - kit 300365RH	NH3 spring-tine RH
F - kit 400014	Gauge Wheel Hub	L - kit 300365LH	NH3 spring-tine LH

Pluribus Strip-Till Operational Procedures

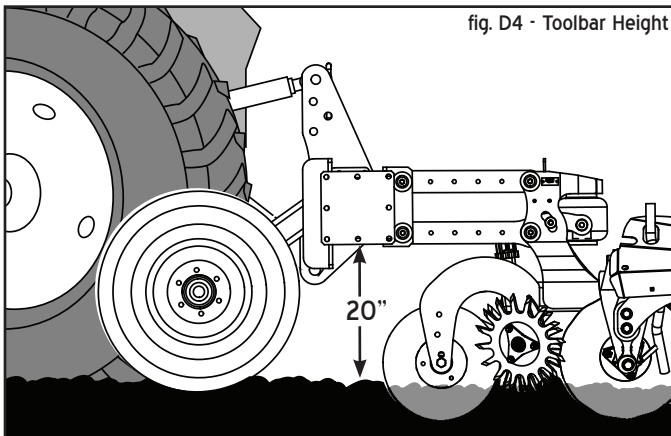
GETTING STARTED (10.1)

Although the Pluribus unit has a natural versatility that allows it to handle a wide variety of conditions at factory settings, you may need to adjust it here and there for optimum performance. At this point, you should transport your strip-till rig to a test area. It is recommended that you select a location that allows you 50-100 ft of relatively level ground. Once you have found a suitable location, carefully run through the in-field setup procedure. Before beginning, please screw the trashwheels up so that there are only one or two dots showing on the stem.

IN-FIELD SET UP PROCEDURE (10.2)

SET THE TOOLBAR HEIGHT (10.2.a)

For proper performance your toolbar height should be set to approximately 20" from the bottom of the 7x7 in. frame, to the nominal ground surface in field operation.



Many strip-till toolbars run at 20" by design, but others may require changing the height of the gauge wheels. Additionally, drawn toolbars with heavily loaded fertilizer tanks may require stops around the toolbar lift cylinders.

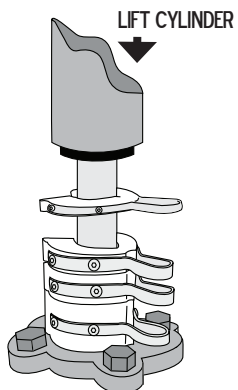
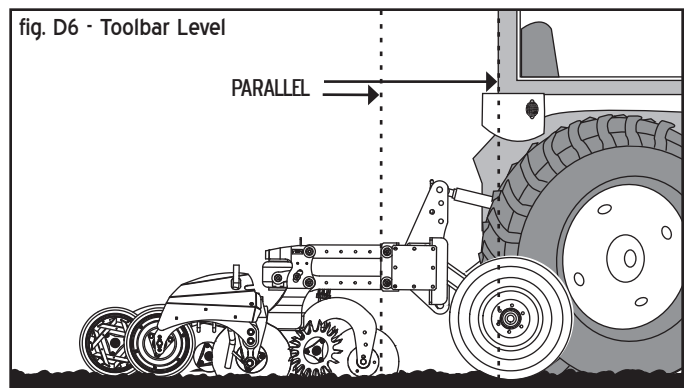


fig. D5 - Lift Cylinder Stops

The Pluribus unit has 16" of vertical travel. This gives you some latitude in toolbar height. In nominal conditions, the units should perform well with the toolbar height set anywhere between 18-22". It is not necessary to be absolutely spot-on 20", but it should be regarded as a benchmark for the ideal setting.

LEVELING THE TOOLBAR (10.2.b)

Due to the overall length (6 ft.) of the Pluribus Strip-till Unit, it is very sensitive to out-of-level operation. Leveling the toolbar is critical for optimum performance. With the toolbar height set at 20" pull the tractor ahead in the field until the units are running at operational depth. Stop the tractor and engage the parking brake. From a short distance (approx 15-20 ft.) visually inspect the toolbar level, fore and aft. You should adjust the toolbar so that the vertical faces of the 7x7 in. frame are parallel with the rear of the tractor cab. If your toolbar has markers, they can serve as an excellent reference line to visually verify levelness. Do not use a bubble level. Level to gravity, is not always level to the ground.



If you have a toolbar with hinges, it is also important that you level the planter laterally. Toolbars with excessive frame weight at the center are particularly susceptible to problems with uneven wings. If you are on relatively flat ground you may consider pinning the wings in place. DO NOT pin your wings if you are on rolling ground, it may damage your toolbar. If you are on rolling ground, you may be able to place stops around the lift cylinders. If that is not sufficient, consider repositioning the tow point. If your toolbar is not level, lateral forces against the coulters and their support arm will cause an asymmetrical build-up of mud and debris, potentially causing residue blockage.

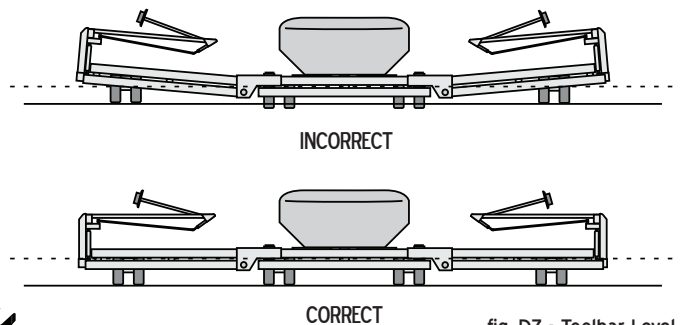


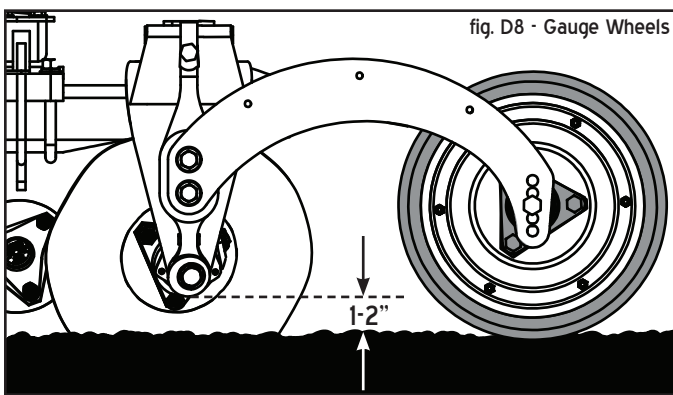
fig. D7 - Toolbar Level

Pluribus Strip-Till Operational Procedures

IN-FIELD SET UP PROCEDURE CONT. (11.1)

SETTING THE GAUGE WHEELS(11.1.a)

The factory setting places the strip-till unit gauge wheels in the 3rd hole, of the 5 options available on the gauge wheel arm. In most cases the factory setting should work well for a one-pass strip-tillage operation. With the strip-till unit still engaged in the ground, check the clearance from the bottom of the coulter support arm to the ground. The thick part of your palm laying flat on the ground should fit snugly between the bottom of the arm and the ground (approx 1-2").



If you are running in particularly difficult conditions (ie., mellow, sticky, compacted) you may have to move the gauge wheel up or down one hole. It is only in very rare instances that either the top or bottom hole should be used. Please speak to a Dawn representative if you are considering any extreme settings.

PNEUMATIC DOWN-PRESSURE SETTINGS (11.1.b)

Your strip-till units were shipped with a pneumatic regulator and pressure gauge assembly.

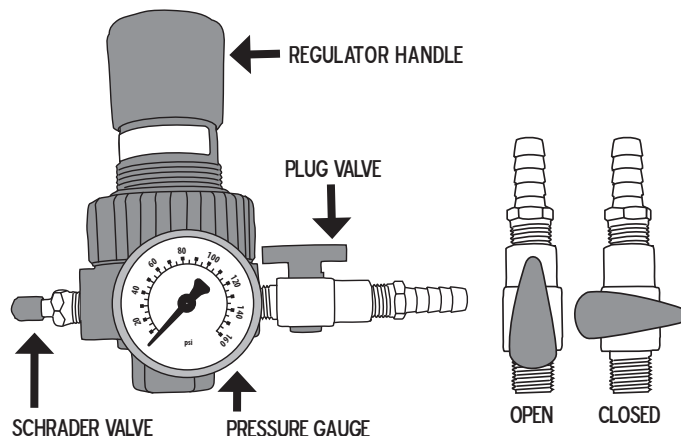


fig. D9 - Pneumatic Regulator

PNEUMATIC REGULATOR INSTALLATION :

1. Your regulator should be fastened to the toolbar in a convenient location, where it can be readily accessed in the field. Cut all air lines to minimize length when possible. It is important to keep all air lines free of dirt and debris. Pipe joint compound should be used sparingly and only applied to the male connectors. Try to avoid using teflon tape, pieces can become dislodged and potentially cause damage.

2. Install air lines so that air flow moves in the direction of the arrow located on the base of the regulator.

3. Ports for the pressure gauge are located on either side of the regulator. Use whichever port is more convenient for use. Make sure that the pipe plug is installed in the other port.

PNEUMATIC REGULATOR OPERATION :

Before turning on your air supply, turn the regulator handle counter clockwise until the handle stops. Make sure the plug valve is in the "open" position (valve handle parallel to air line). Turn on your air supply, and adjust your regulator to the desired pressure by turning the regulator handle clockwise. It is best if you use a filtered air source. Moisture collecting in the regulator may cause damage to internal components. When running into corn stalks, set pressure to approximately 50-60 psi in "normal" field conditions. If your ground is wet, set pressure to approx. 30 psi. For bean residue, often 20-30 psi is adequate. In cases of extreme moisture, mellow ground, or in worked stale seed bed, you may even run around the 10 psi mark. Always keep some pressure in the airbag to avoid internal pinching problems. Never set pressure to exceed 100 psi.

⚠ WARNING!: Exceeding 100 psi may cause product rupture. Product rupture may cause property damage, serious injury or death. Do not connect regulator to bottled gas. Do not exceed maximum primary pressure rating.

When your pressure is set, turn the plug valve handle to the "closed" position (valve handle perpendicular to the air line). To depressurize, turn plug valve handle to the "open" position, and turn the regulator handle counter clockwise. Your system will likely lose pressure if the plug valve handle is not set to the "closed" position when in use.

Pluribus Strip-Till Operational Procedures

IN-FIELD SET UP PROCEDURE CONT. (12.1)

PRELIMINARY TEST RUN (12.1.a)

Once the downpressure is set, it is time to go for a test run. Do not worry about the row cleaners for this initial test. With the unit still engaged in the ground, accelerate until you reach approx 8 mph. Stop the tractor, and engage the parking brake. Inspect the strips of all the row units. Gauge wheels should all be in contact with the ground, but should not be leaving a depression. If the gauge wheels are leaving a depression, reduce the downpressure on the unit, and conduct another test run. Once the gauge wheels are performing properly, check again that there is about 1-2 in. of clearance between the ground and the bottom of the coulter support arm. Verify that the toolbar is still level lengthwise and laterally.

SETTING THE TRASHWHEELS (12.1.b)

This is the final step before your initial run. With the strip-till units still engaged in the ground, lift the Trashwheels adjustment handle of one of the strip-till units and turn it counter clockwise until the Trashwheels contact the ground. You should feel the handle “snug-up” when the Trashwheels are at approximately the right depth. Do not force the Trashwheels into the ground, they may move soil. The purpose of the Trashwheels on the Pluribus unit are to move residue, not soil. Once all Trashwheels are snug to the ground, you are ready for your initial run.

INITIAL RUN (12.2)

GENERAL OPERATION (12.2.a)

The Pluribus Strip-Till Unit is a finesse tool. There is a learning curve, but once you become comfortable with the units capabilities, you will find operation progressively more effortless and more enjoyable. Should this guide not adequately answer questions you have about the units operation, please feel free to call us at 800.554.0007 and we will do our very best to give you the assistance you need.

CORN STALKS (12.2.b)

You will likely find your greatest challenges when running into 200+ bu/ac corn residue, particularly if the soil is wet and sticky. It is important that you not attempt to “ridge-till” with the Pluribus Strip-Till unit into corn stalks.

Although pseudo-ridge-till may be an option with other crop varieties, it is unlikely you will be able to create a satisfactory strip in corn. In general, Dawn recommends that you split the rows (15” over on 30” centers) or move over at least 7.5” should you want to run a controlled traffic program. Another alternative is running at an angle to the previous years rows. If you are averaging well over 200 bu/ac corn, changing your row angle may keep the row units from binding up with residue as they draw near to the previous years strips, or encounter combine piles. This will also give the tires some protection, since they will not be continually driving over year old corn stalks. Tire wear is an issue with modern BT variety corn stalks. You may want to consider an aftermarket stalk conditioner (i.e. stalk stompers, etc.) to give your tires some protection. Fine grained soils, like silt and clay with high levels of organic matter and moisture, such as lowland gumbo, webster or heavy peat, can present some real challenges in the field. The mixing of plant residue and clay has long been a technique for manufacturing bricks to build houses. It is not so desirable to build bricks in your strip! One potential issue you will run into is residue building up between the primary tillage coulters. There are some options for resolving this issue. First, raise the Trashwheels up a bit. This may leave some residue in the strip, but it should still route the majority of the residue outside the strip. Should that not suffice, you may **slightly** raise the tow point, so that the toolbar is angled **slightly** back. If this does not resolve the issue, and you are still building up with material, more extreme measures may need to be taken. Occasionally the swirl tool can give excessive “back-flow” of residue. Removing the swirl tools may allow the residue to pour through unimpeded. If no other method succeeds, you should remove the Trashwheels from two adjacent rows entirely. If the problem ceases on those rows, only then should you remove all the Trashwheels. Make sure the receiver tube is capped off to prevent soil and debris from collecting on the acme screw.

NOTE: *Do not remove the swirl tool or Trashwheels unless absolutely necessary!! Exhaust every other possible avenue first. The Trashwheels and Swirls are critical components of the Pluribus Strip-Till Unit in the vast majority of conditions.*

Pluribus Strip-Till Operational Procedures

INITIAL RUN CONT. (13.1)

The first year of strip-tilling into corn may be very challenging, do not get discouraged. Strip-tilling into soil that has not been well cared for can be difficult. To make a good strip, you need good soil structure. You will find that your soil structure will quickly develop within a short period of time. Your harvesting method can also significantly alter how the unit performs in the field. If you are in an area where your corn decays relatively quickly, you may want to leave your cornstalks standing, the stalks can act like a comb through the units, flushing out debris as they pass by. Conversely, in areas where your corn stalks will not readily break down, and you get a good snow cover, a chopping corn head and a good chaff spreader allow residue to lay flat in the soil, where microbes can begin to break it down.



fig. P3

24 Row 30" Pluribus system on WII-Rich 60ft toolbar and Fargo air cart. South Eastern North Dakota.



fig. P4

12 Row 30" Pluribus system on B&D Metalworks 30 ft. toolbar with liquid fertilizer. South Western Minnesota.

SOYBEAN STUBBLE (13.1.a)

Soybean stubble is typically the most trouble free residue to strip into. In general, you should be able to run into bean residue using factory settings. You will need to make sure that you have gone through the In-Field Setup procedure, but it is unlikely you will have to make any significant modifications. It is recommended that you not attempt to strip directly into the previous years row. You may encounter difficulty running directly over year old bean rows. Trashwheels should be run higher in bean residue. Once you feel the Trashwheels snug-up, back them off 1 or 2 turns. Trashwheels that are set too aggressively in bean residue may lead to residue build-up, and eventual performance loss. If you are stripping into wet, fine grained soil (i.e., gumbo clay) you may need to **slightly** raise the tow point. If you are stripping into hard dry ground (sand/loam) you may need to **slightly** lower the tow point.



fig. P5

12 Row 30" Pluribus system on Deere/Friesen toolbar and Montag air cart. South Eastern Iowa.



fig. P6

16 Row 30" Pluribus system on WII-Rich toolbar, liquid and NH3 fertilizer. Central Kansas.

Fertilizer Application

DRY FERTILIZER (14.1)

NOTE: It is strongly recommended that you use a dry commodity cart that is specifically designed for handling fertilizer, not seed.

INCORPORATING DRY FERTILIZER (14.1.a)

The most common way to apply dry P&K is by using the "incorporating" fertilizer tubes (p/n's 300349 RH / 300349 LH & 300349R3 RH / 300349R3 LH). It is important that the fertilizer enter the tube at approx. atmospheric pressure. Fertilizer entering the target zone under pressure may be ejected.

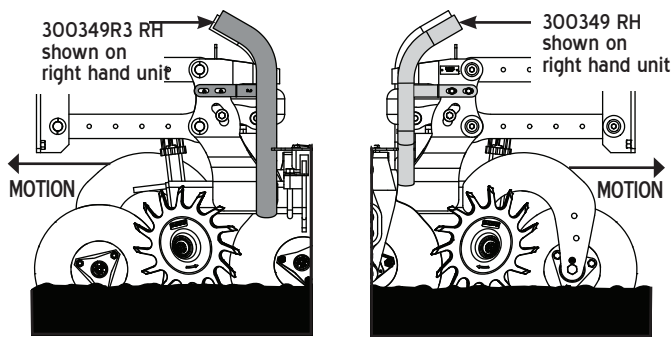


fig. D10 - 2.5" Inc. Dry Fertilizer Tube fig. D11 - 2" Inc. Dry Fertilizer Tube

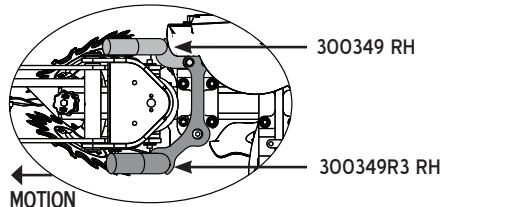


fig. D12 - 2.5" Incorporating Dry Fertilizer Tubes Top View

Consult with the users manual of your dry fertilizer distribution system to determine the ideal way to connect your fertilizer delivery tube to the fertilizer boot. Some users choose to install a diffuser between the delivery tube and the boot to ensure that the fertilizer is not being dropped in under pressure.

MANURE SLURRY (14.1.b)

It is possible to put down moderate amounts of manure slurry with the Pluribus Strip-Till Unit. This is a very nuanced use of the machine however. Please contact a Dawn representative for advice on the the proper set-up and use of the Pluribus System if you would like to include manure slurry in your fertilizer program.

BANDING DRY FERTILIZER (14.1.c)

Although some dry nitrogen can be incorporated, high rates of N may severely damage your crop. If you will be placing any more than 30% of your total N in the strip, using the Pluribus units, you should place N with the "banding" dry tubes (p/n's 300400RH & 300400LH).

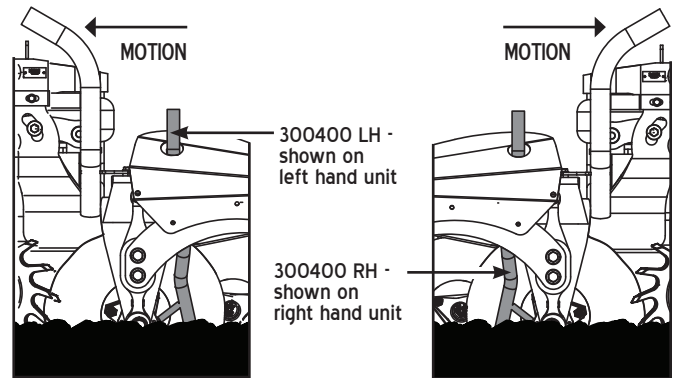


fig. D13 - Banding Dry Fertilizer Tube - LH

fig. D14 - Banding Dry Fertilizer Tube - RH

The "banding" dry tubes can be placed running behind the lead coultter, or the trailing coultter, or both if you would like to place product in a band on both sides of the seed zone. Please consult with the manufacturer of your fertilizer delivery system to determine what is the best hose routing to use if you will be attaching both banding fertilizer tubes.



Fertilizer Application

LIQUID FERTILIZER (15.1)

INCORPORATING LIQUID FERTILIZER (15.1.a)

You should use the centrally placed “incorporating” liquid fertilizer tube to thoroughly work potassium, phosphorous, trace elements and no more than 30% of your liquid nitrogen (i.e.: 28%, 32%) throughout the profile of the strip. (p/n 300350) As with the dry fertilizer tubes, try to avoid high pressure discharge of the fertilizer. Liquid fertilizer should gravity drop into the tillage zone. Fertilizer entering the target zone under pressure may splash out.

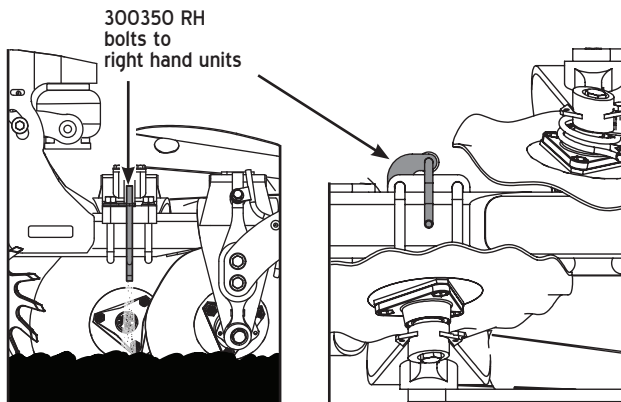


fig. D15 - Incorporating Liquid Fertilizer Tube - Side View

fig. D16 - Incorporating Liquid Fertilizer Tube - Bottom View

BANDING LIQUID FERTILIZER (15.1.b)

In general, nitrogen fertilizers will always be your largest concern. Too much nitrogen in the strip, no matter what type, will damage your crop. The “banding” liquid fertilizer tubes provide protection against getting too much nitrogen in the seed zone, should you want to put down most of your nitrogen with the strip-till unit. These tubes place liquid fertilizer in a coin-sized slot about 4” off the seed zone. Fertilizer should gravity feed into these stainless steel tubes.

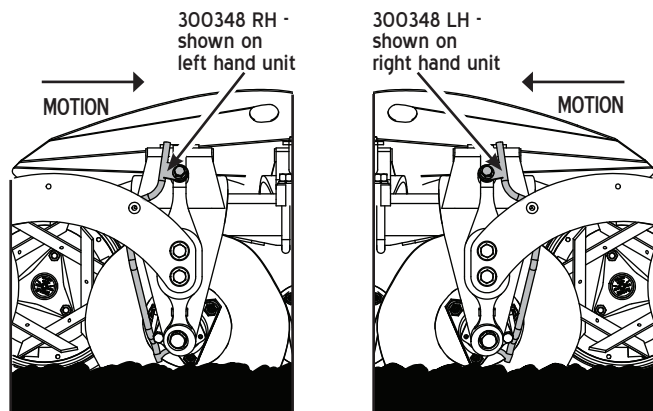


fig. D17 - Banding Liquid Fertilizer Tube - RH

fig. D18 - Banding Liquid Fertilizer Tube - LH

ANHYDROUS AMMONIA (15.2)

In the corn belt, anhydrous ammonia (NH₃) is often the most economical nitrogen fertilizer available. If properly configured, and used in conjunction with reliable delivery and monitoring systems, the Pluribus Strip-Till unit is capable of sealing moderate rates of NH₃. The Dawn NH₃ “Springtine” (Kit #'s 300365RH & 300365LH) for the Pluribus Strip-till system fixes to hub of the rear coulters. This high tensile spring applies down force to a low-friction polymer nozzle that houses a built-in pseudo-orifice. Although not a true orifice, it tends to prevent excess gas from forming in the lines coming from the pressurized delivery system.

The Pluribus Springtine seems to function optimally when the majority of the NH₃ leaves the nozzle as liquid. For this reason, we recommend that you opt for a competent pressureized delivery system. Using only a condensing heat exchanger may not sufficiently isolate the liquid from the vapor, and it is not possible to accurately measure the flow rate of boiling NH₃. Additionally, it is far easier to seal liquid NH₃ than NH₃ as vapor. NH₃ is less dense than air, so it is essential that the gas/liquid mix is buried and the slot is tamped to avoid loss. Since the Dawn Springtine runs below the ground in the loose soil generated by the tillage coulters, the NH₃ is buried. The gauge wheel then firms the soil above the nozzle to seal. (see fig. D20)

You will only be able to deliver 80-100 lbs of actual N using the Pluribus Strip-Till unit. There are conditions where you may be able to seal a bit more, but the unit is not rated for high rates of NH₃ delivery.

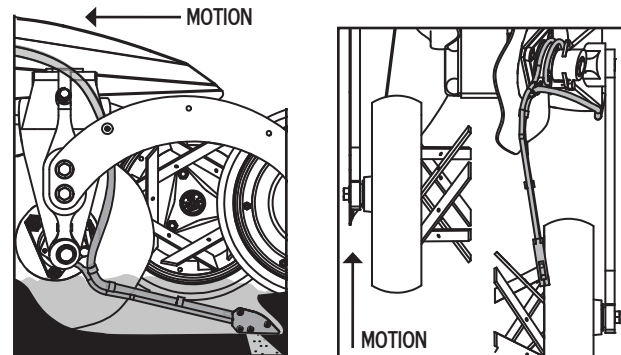


fig. D19 - NH₃ “Springtine” -Side View.

fig. D20 - NH₃ “Springtine” -Bottom View

NOTE: Failure to follow the OEM safety recommendations of your NH₃ equipment can result in serious personal injury or death. Please use care when handling dangerous chemicals.

Safety Labels

WARNING



FAILURE TO SECURE LOOSE CLOTHING OR ACCESSORIES NEAR MOVING FARM EQUIPMENT MAY RESULT IN SERIOUS INJURY OR DEATH.

WARNING



AGRICULTURAL CHEMICALS MAY DAMAGE OR PERMANENTLY IMPAIR EYES, SKIN & LUNGS. WEAR PROPER SAFETY GEAR WHEN HANDLING CHEMICALS.

WARNING



USE EXTREME CAUTION AROUND HEAVY OBJECTS THAT ARE NOT SECURED. FALLING HEAVY OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH.

WARNING



USE CARE WHEN ON TOP OF FARM MACHINERY. ALLOWING RIDERS ON THE TRACTOR HITCH OR TOOLBAR CAN RESULT IN SERIOUS INJURY OR DEATH.

Safety Labels

WARNING



TRANSPORT IMPLEMENT SAFELY. FAILURE TO PROPERLY SECURE TOOLBAR COMPONENTS AND ACCESSORIES CAN RESULT IN SERIOUS INJURY AND DEATH.

WARNING



AVOID HIGH-PRESSURE FLUIDS. FLUID ESCAPING UNDER PRESSURE CAN PENETRATE SKIN AND CAUSE SERIOUS INFECTION. IMMEDIATELY CONSULT A DOCTOR IN CASE OF INJURY.

WARNING



USE EXTREME CAUTION AROUND EQUIPMENT WITH NARROW OR SHARP EDGES. BLADES, FANS, & KNIVES IN MOTION MAY CAUSE SERIOUS INJURY OR DEATH.

WARNING



EXPLOSION HAZARD DRY FERTILIZER TRAPPED IN A CHAMBER (ie. AUGERS, HOSES, HOPPERS) MAY FORM EXPLOSIVE GASES. KEEP AWAY FROM FLAME.

Safety Labels

