Pre-Delivery Manual

Nutri-Pro® NP30 or NP40
30- and 40-Foot Fertilizer Applicators

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!

Illustrations may show optional equipment not supplied with standard unit, or may show anhydrous, conventional liquid or NP3000 models where the topic function is identical.
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Important Safety Information

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.

Introduce No Anhydrous

For pre-delivery of NP30A and NP40A (anhydrous ammonia) models:

Do not introduce any liquid or gaseous NH₃ prior to final delivery to customer or otherwise prior to placing this unit into field service.

Pre-delivery steps may include meter harness routing, and minor connection items for NH₃ applicator tubing, but these items do not need to be tested with actual anhydrous ammonia.

If there are any concerns about the metering system, contact Great Plains. Deliver to the end user an implement that has never had NH₃ in it.
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. Have contact numbers available.

Be Familiar with Safety Decals

▲ Read and understand the “Safety Decals” in the Operator manual.
▲ Read all instructions noted on the decals.
▲ Keep decals clean. Replace damaged, faded and illegible decals.

Avoid High Pressure Fluids

Escaping fluid under pressure can penetrate the skin, causing serious injury. This applicator requires a Power-Beyond port, which is always under pressure when the tractor is running.

▲ Avoid the hazard by relieving pressure at other remotes, and shutting down tractor before connecting, disconnecting or inspecting 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, seek immediate medical assistance from a physician familiar with this type of injury.

Shutdown and Storage

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

Tire Safety

Tire changing can be dangerous. Employ 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.
Introduction

The Nutri-Pro® 30- and 40-Foot Fertilizer Applicators (NP30 or NP40) have been designed with care and built by skilled workers using quality materials. Proper setup, maintenance, and safe operating practices will help the customer get years of satisfactory use from the machine. This manual will familiarize you with planning, unloading, and assembly of this applicator. Most operating information is contained in the Operator manual.

Models Covered

Anhydrous Ammonia Models
NP30A-11R30  30-Foot, 11-Row, 30 inch  
NP30A-12R30  30-Foot, 12-Row, 30 inch  
NP30A-13R30  30-Foot, 13-Row, 30 inch  
NP40A-15R30  40-Foot, 15-Row, 30 inch

Conventional Liquid Fertilizer Models
NP30L-11R30  30-Foot, 11-Row, 30 inch  
NP30L-12R30  30-Foot, 12-Row, 30 inch  
NP30L-13R30  30-Foot, 13-Row, 30 inch  
NP40L-15R30  40-Foot, 15-Row, 30 inch

Description of Unit

The Nutri-Pro® NP30 or NP40 Applicator is a precision implement for sub-soil application of anhydrous ammonia (NH₃) or conventional liquid fertilizer from a user-provisioned nurse tank cart. The NP30 or NP40 offer a choice of pull-type, 3-point or lift-assist 2-point hitching.

Intended Usage

Use the NP30A or NP40A Applicator to apply liquid anhydrous ammonia. Use the NP30L or NP40L to apply conventional liquid fertilizer. Do not modify Great Plains-provisioned components, or install aftermarket components, except as authorized or recommended by Great Plains.

Document Family

The documents delivered with the implement vary by model and options installed.
Using This Manual

This manual will familiarize you with unloading, assembly and initial setup of the implement. Read this manual and follow the recommendations to help ensure safe and efficient delivery preparation.

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.

**NOTICE**

A crucial point of information related to the preceding topic. Read and follow the directions to remain safe, avoid serious damage to equipment and ensure desired field results.

Note: Useful information related to the preceding topic.

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. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Down, Front, Right.

Call-Outs

① to ⑨ Single-character callouts in the ranges 1-9, a-z or A-Z identify elements from only the most recently referenced Figure or Figures. These numbers and letters may be re-used for other elements on other pages.

⑩ to ⑧ Single-character callouts in the ranges 1-9, a-z or A-Z identify elements from only the most recently referenced Figure or Figures. These numbers and letters may be re-used for other elements on other pages.

⑩ to ⑧ Two-digit callouts in the range 11 to 81 reference the same Great Plains part numbers throughout this manual.

About Parts

**Fasteners**

Fasteners called out are often loosely installed in one of the two parts to be joined, and must be removed before the parts are mated. To avoid mix-ups and misplaced parts, do not remove fasteners from shipping locations until the “Select” instruction that calls for those parts.

**Tags**

Some parts have engraved metal tags attached. These tags are for parts ID and may be removed and discarded as the part is installed. In some cases, the tag must be removed or it will interfere with part installation. Parts may alternatively be marked with grease pencil. These marks may be left on and removed at close-out.

**NOTICE**

Great Plains not Responsible for Aftermarket Integration:

Great Plains disclaims all liability for applicators whose final assembly (other than “Pre-Delivery” items and installation of supported accessories) includes subsystems not provided by Great Plains. Warranty claims may be disallowed if, in the opinion of Great Plains, damage resulted from installation or use of third-party components not supplied or supported by Great Plains.

Assembly and Setup Assistance

To order additional copies of pre-delivery instructions, operator or 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. For further assistance, contact:

**Product Support**

Great Plains Mfg. Inc., Service Department
PO Box 5060
Salina, KS 67402-5060
gp_web_cs@greatplainsmfg.com
785-823-3276
Pre-Delivery Planning

To meet highway clearance requirements, Nutri-Pro® implements are shipped with a few components and/or sub-assemblies uninstalled.

The exact list and status of uninstalled components varies with implement model, implement width, hitch type and options ordered. Shipping configuration may change over time.

This manual assumes a hypothetical extreme case of disassembly. Inspect the delivered implement, and skip steps that are already completed or that do not apply to the present implement.

Tools Required

- One or more lifters with a combined capacity of 12,000 to 15,000 pounds (5450-6800 kg)
- 1 1/4 in hitch pin (for drive-off unload of 2-Point or Pull-Type implements at pit or side dock)
- Adjustable stands or supports.
- Hydraulic oil (3 to 5 gallons, 11 to 19 liters)
- Basic hand tools

Work Space Requirements

Final assembly of the applicator requires a well-lit, flat surface space large enough to accommodate the fully unfolded implement, any wing extensions, any pull-type tongue, any rear casters, and lifter access from all sides.

Delivery Cycle

Standard Great Plains deliveries do not include time for implement assembly while still on the trailer bed. If you are reviewing this manual prior to delivery, and you anticipate that you might have a problem implementing the unload instructions, notify Great Plains prior to shipment.
Unload Trailer

Plan the Unload

Refer to Figure 2 (depicting an NP30A-13R30)

Inspect the load. Plan the unload.

How to conduct the unload depends on:

- what type of dock is available (side dock or pit dock provides the greatest options), and
- what type of power equipment is available, the lifting capacity, and if only fork-lifts, the number available.

Unfolded Delivery

In some cases, applicators are shipped unfolded. Unload is similar to folded unload, but requires more space and more care.

Fold Configurations

NP30A (30-foot) applicators are shipped folded against the transport rest 1. 12- and 13-row applicators are shipped with the outer wing extensions removed.

NP40A (40-foot) applicators are shipped over-folded. The wing cylinders are disconnected from the wings at the rod ends. The transport rest is replaced by special shipping braces.

Forward Tool Bar Support

2- or 3-point NP30 or NP40 applicators are shipped resting on their own parking stands in front. These swing-down adjustable height stands remain with the applicator.

Pull-Type NP30 or NP40 applicators are shipped with temporary shipping stands 2 under the front tool bar. These are not attached to the implement. They are also returned to Great Plains. Plan to support the front of the frame after the unload.

Lift-Assist Caster Yokes

Pull-Type NP30 or NP40 applicators may be shipped with the rear caster yokes 3 removed.

If the yokes are installed, a 2- or 3-point tractor can remove the implement at a side dock or pit dock.

In either case, the parallel arms are floating. They are not supporting any implement weight, do not have lock channels or spacers installed, and the cylinders may not be charged with hydraulic oil.

NOTICE

Equipment Damage Risk:

Do not fold the implement on the trailer. The hydraulic system may not be charged, and the wings could fall suddenly. Folded wings could obstruct hoist lines, making unload more difficult.

NOTICE

Equipment Damage Risk:

Do not unfold the implement on the trailer. The wings will droop, making unload more difficult. The wings may strike and damage truck components. The hydraulic system may not be charged, and the wings could fall suddenly.

NOTICE

Equipment Damage Risk:

Plan to relocate temporary shipping stands early in the implement move. Temporary shipping stands under the front tool bars are NOT attached to the tool bars. Unfolded and pull-type implements, that have no optional coulters, require front support until gauge wheels are installed.

NOTICE

Equipment Damage Risk:

Install lift-assist cylinder lock channels or spacers if lifting at the caster pivots. Without a stop on the cylinder rod, the arms are likely to swing up during lift.
Unload Miscellaneous Components

Refer to Figure 3
1. Use hoists or fork lifts to remove all pallets, crates and loose sub-assemblies from the trailer bed.
2. Check serial numbers on components and crates against the serial number plate of the implement. If the shipment included multiple implements, particularly for multiple destinations, it is critical to unload all (but only) the extra components for the implement.

![Figure 3](image)

**WARNING**

**Falling Implement Hazard:**
Do not release any chains or straps securing the applicator itself to the trailer bed until the applicator is fully supported by the lifter(s). Some applicator configurations could tip to one side or the other if not tied down or fully supported. This could result in equipment damage, serious injury or death.

Pre-Lift Inspection

**Pull-Type Anhydrous without Coulters**
Have stands or supports available for Pull-Type anhydrous implements that have no coulters. This configuration does not have any front support until after the gauge wheels are installed.

![Figure 4](image)

**Any Model Shipped Unfolded**

Refer to Figure 5
3. If the implement was shipped unfolded, verify that there are wing pivot blocks at both wing pivots. If a block is missing at either wing, contact the factory. If the wings are not blocked, they will droop at lift, and coulter/knife damage is possible when the implement is set down.

![Figure 5](image)
Execute the Unload

Hoist Unload

Refer to Figure 6, Figure 7 and Figure 8

Recommended line attachment points vary with implement hitch type. Key objectives are:

- Use four attach points for safety.
- Use attach points inboard of the wing pivots.
- Use implement structures designed for the implement weight (such as hitches or caster mount points).
- Keep the implement center of gravity inside the four lines.
- Attach so that lines cannot slip toward center.
- Use lines that are individually rated for at least half the load.
- Secure lines to implement to avoid implement damage.

Hoist Unload Steps:

4. Support the implement with the hoist.
5. Release the straps or chains securing the implement to the trailer bed. Remove loose stands.
6. To avoid hazards associated with swinging loads, lift the implement, and have the truck driven out from under it.
7. Lower the implement to the ground.
Two Forklift Unload

Refer to Figure 9

Refer to Figure 6, Figure 7 and Figure 8
Recommended lift points vary with implement hitch type. Key objectives are:

- Use two lifters for safety.
- Spread the forks as wide as possible without striking implement components.
- Strap the implement frame, at the fork contact point, to the fork, to prevent tilting and shifting.
- Use implement structures designed for the implement weight.
- Keep the implement center of gravity inside the four forks.
- Use lifters that are individually rated for the entire load.

Forklift Unload Steps:
8. Support the implement with the lifters.
9. Release the straps or chains securing the implement to the trailer bed. Remove loose stands.
10. Lift the implement, and have the truck driven out from under it.
11. Lower the implement to the ground. Do not attempt to drive both fork lifts while supporting the implement.

Tip-Over Hazard:
Use two lifters. Unloading with a single fork lift is not recommended. Even if the lifter is rated for the implement weight, the width of the trailer bed, plus the front-to-back width of the implement, places the center of gravity well out on the forks, and is a tip-over hazard.
Drive-Off Unload

If a side dock or pit dock is available, all Nutri-Pro® implement configurations may be safely removed by a 3-point tractor with adequate lifting capability.

The lift must be performed in full 3-point mode. All implements (including Pull-Type) have suitable pins in the lower holes of the hitch weldment.

2-Point and Pull-Type implements do not include a $1\frac{1}{4}$ in hitch pin for the top hole. You need to provide this if drive-off unload is desired.

On 2-Point and Pull-Type implements, do not attempt to use the lift-assist circuit while the implement is on the trailer bed. The lift-assist circuit may not be charged with oil.

**NOTICE**

**Machine Damage Risk:**

On 2-Point implements, the lift-assist circuit is also interconnected with the fold circuit. On 40-foot models, using lift-assist on the trailer bed causes wing cylinder movement, which could cause machine or trailer damage.

Note: The lift-assist caster assemblies are likely to settle downward when the implement is lifted. This is normal, but they provide no support for the implement during unload.

**Drive-Off Unload Steps:**

12. Hitch the tractor 3-point to the implement. See the Operator manual (407-313M or 407-502M) for hitching details. Do not connect the hydraulics.

13. Support most of the weight of the implement with the tractor hitch.

14. Release the straps or chains securing the implement to the trailer bed. Remove loose stands.

15. Pull the tractor forward.

16. Lower the implement onto its parking stands, or other stands or supports.
Prepare Hydraulics

**WARNING**

**Crushing Hazards / Equipment Damage Risk:**
Do not operate the hydraulic systems until charged. If there is air in any part of the systems, wings could fall suddenly, and sections could lift unevenly, or fall suddenly. Anyone in the path of movement could be seriously injured or killed. Major equipment damage is possible.

**WARNING**

**High Pressure Fluid Hazard:**
Relieve pressure before disconnecting hydraulic lines. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks. Escaping fluid under pressure can penetrate the skin, causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

Hydraulic systems may not be pre-charged at the factory. Systems also vary by hitch type.

**Disable Weight Transfer**

Do this for all hitch types.

Refer to Figure 14 (depicting an NP3000, which has an identical weight transfer control system)

17. Close the weight-transfer shut-off valve (1) (shown closed in Figure).

18. Release the locking discs (2, 3) on both valves.

19. Close the bypass valve (4) (the valve without the pressure gauge (5)) by turning the control knob (6) fully clockwise.

20. Open the pressure reducing valve (7) by turning the control knob (8) fully counter-clockwise.

These settings are for hydraulic charge only. Initial field values are set later at “Set Rough Weight Transfer” on page 32.

Continue at the page for the implement configuration:

2-Point Hydraulics ....................................................12
3-Point Hydraulics ....................................................13
Pull-Type Hydraulics.................................................14

**OVER-TORQUE AND LEAK RISKS:**

JIC (Joint Industry Conference 37° Flare) fittings do not require high torque. Excess torque causes leaks. JIC and ORB (O-Ring Boss) fittings do not require sealant.

**JIC Torque Chart**

<table>
<thead>
<tr>
<th>Size</th>
<th>Foot-Pounds</th>
<th>N-m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16-20</td>
<td>11-12</td>
<td>15-16</td>
</tr>
<tr>
<td>1/2-20</td>
<td>15-16</td>
<td>20-22</td>
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</tr>
<tr>
<td>11/16-12</td>
<td>79-87</td>
<td>108-119</td>
</tr>
</tbody>
</table>

Bleed only at JIC and NPT fittings. Never try to bleed a QD (Quick Disconnect) fitting. Avoid bleeding at ORB fittings. The O-ring is likely to be torn if any pressure remains in the circuit.
2-Point Hydraulics

The 2-point implements have a combined lift and fold system, with weight transfer controls. The lift and fold circuits operate in opposite directions.

Charge 2P Lift / Fold System

Refer to Figure 15

Note: On 40-foot models delivered cross-folded (no transport rest), the rod ends of the fold cylinders are disconnected for shipment.

21. Disconnect the rod ends of the lift and fold cylinders (six rods).

Orient lift rods so that they are lower than the cylinder base ends.

Orient fold rods so that they are higher than cylinder base ends.

Make sure no rods can strike implement parts during extension.

22. Operate the circuit to fully retract the lift cylinders (this causes the fold cylinders to extend). Set circuit to Float.

Note: This may be a slow operation. There are flow restricting orifice plates at each fold cylinder port.

23. Slightly loosen (crack) the JIC fittings at the base end of the lift cylinders (two places).

24. Slowly extend cylinders. As oil appears at a cracked fitting, set the circuit to Neutral and secure the fitting.

25. When the last lift fitting has been secured, operate circuit to fully extend the fold cylinders.

26. Slightly loosen (crack) the JIC fittings at the base end of the lift cylinders (four places).

27. Slowly extend cylinders. As oil appears at a cracked fitting, set the circuit to Neutral and secure the fitting.

28. When the last lift fitting has been secured, operate circuit to position lift-assist rods for re-attachment.

29. If this is:
   • an unfolded implement, or
   • a 30-foot implement folded to transport rest,
     operate circuit to position wing rods for re-attachment. Do not attempt, at this time, to connect rod ends on cross-folded wings.

Continue at section “Install Components” on page 15.
3-Point Hydraulics
Charge 3P Fold System

Refer to Figure 16

Note: On 40-foot models delivered cross-folded (no transport rest), the rod ends of the fold cylinders are disconnected for shipment.

30. Disconnect the rod ends 1 of the fold cylinders.

31. Elevate the rod ends relative to the cylinder bodies. Point and support them so that they cannot strike implement parts during extension.

Note: This may be a slow operation. There are flow restricting orifice plates at each cylinder port.

32. Fully retract the cylinders. Make sure fold locks do not engage. Set circuit to Float.

33. Slightly loosen (crack) the JIC fittings 2 at the base end of the cylinders.

34. Slowly extend cylinders. As oil appears at a cracked fitting, set the circuit to Neutral and secure the fitting.

35. Fully extend, then fully retract several times. Make sure fold locks do not engage.

36. When the last fitting has been secured, if this is:
   • an unfolded implement, or
   • a 30-foot implement folded to transport rest, operate circuit to position rods for re-attachment. Do not attempt, at this time, to connect rod ends on cross-folded wings.

Continue at section “Install Components” on page 15.
Pull-Type Hydraulics

**Charge PT Lift System**

Charge the lift system prior to the fold system, so that lift-assist is available prior to first fold or unfold.

*Refer to Figure 17*

37. Disconnect rod ends of lift cylinders. Point rods so they cannot strike implement parts during extension. If possible, orient cylinders horizontally, with re-phasing orifices facing up.

Note: Rod ends of the front (gauge wheel) cylinders are already disconnected for shipment.

38. Slowly supply oil to the circuit to extend the cylinders.

39. If the cylinders are horizontal, hold at extended for several seconds to pass oil at the re-phasing orifices. If the cylinders are not horizontal, hold at extended, at low flow, for several minutes.

40. Retract the cylinders. Do not hold.

41. Extend and hold.

42. Repeat step 38 through step 41 until cylinder extension and retraction is synchronized and smooth.

43. Re-connect rod ends of lift-assist cylinders (only, do not install gauge wheels at this time).

**Charge PT Fold System**

*Refer to Figure 18*

Note: On 40-foot models delivered cross-folded (no transport rest), the rod ends of the fold cylinders are disconnected for shipment.

44. Disconnect the rod ends ① of the fold cylinders.

45. Elevate the rod ends relative to the cylinder bodies. Point and support them so that they cannot strike implement parts during extension.

Note: This may be a slow operation. There are flow restricting orifice plates at each cylinder port.

46. Fully retract the cylinders. Make sure fold locks do not engage. Set circuit to Float.

47. Slightly loosen (crack) the JIC fittings ② at the base end of the cylinders.

48. Slowly extend cylinders. As oil appears at a cracked fitting, set the circuit to Neutral and secure the fitting.

49. Fully extend, then fully retract several times. Make sure fold locks do not engage.

50. When the last fitting has been secured, if this is:
   - an unfolded implement, or
   - a 30-foot implement folded to transport rest, operate circuit to position rods for re-attachment. _Do not attempt, at this time, to connect rod ends on cross-folded wings._

Continue at section “Install Components” on page 15.
Install Components

**WARNING**

Crushing and Machine Damage Hazards:
“Prepare Hydraulics” beginning on page 11, must be completed prior to most topics in this section. Hydraulic lines may not be charged prior to shipment. Operating systems with air in the lines could result in jerky movements and sudden falls of frame or wings. Anyone nearby could be seriously injured or killed. Machine damage is likely.

Not all topics of this manual section will apply to the implement at hand. Each topic includes a continue-at instruction if the topic does not apply, and may end with a further continue-at instruction if the next topic would not apply, based on the current topic.

**NOTICE**

Loss of Time Risk:
Don’t install out of order. To ensure safety and reduce effort, the topics must be completed in the order presented. Later topics rely on earlier topics having been completed. Some steps cannot be performed at all if required prior steps are not yet completed.

Before beginning installation steps:

- the implement is presumed to be unloaded from the trailer,
- the hydraulic systems are presumed to be charged and safe to operate, but
- the implement is not presumed to be folded or unfolded.
Install Lift-Assist Casters

If the rear lift-assist casters are already installed, continue at “Install Center Gauge Wheels” on page 17. If the implement is a 3-Point continue at “Install Transport Rest” on page 18.

For this component, two lifters, or a single lifter and a set of tall supports are required. Plan the installation based on the available tools. These instructions assume a single lifter and supports. The caster yoke can be lifted by strapping a lifter fork under the yoke.

51. Disconnect the rod ends of both lift-assist cylinders.

Refer to Figure 20

52. Loosen caster stabilizer jam nuts. Back the adjuster bolts most of the way out. Secure with jam nut finger-tight.

53. Locate two sets of the caster stabilizer internal components:
   - 266-012D PLATE RND 3/16" THK 1 7/8" DIA
   - 807-143C SPRING COMP 1.88OD x .362W
   - 266-020D UHMW RND 2.0 DIA X 2.0 LONG

54. Hoist one of the caster weldments high enough that the caster yoke assembly can be positioned under it.

55. On one of the caster yokes, remove and save two sets of:
   - 802-034C HHCS 1/2-13X1 1/4 GR5
   - 804-015C WASHER LOCK SPRING 1/2 PLT
   - 161-231D NTA CASTER RETAINER CAP

   Do not remove the:
   - 804-102C PIVOT THRUST WASHER

56. Lift the yoke. Align the vertical shaft with the pivot. Raise yoke one or two inches into pivot.

57. Insert into the stabilizer tube, in this order, one each:
   - 266-012D PLATE RND 3/16" THK 1 7/8" DIA
   - 807-143C SPRING COMP 1.88OD x .362W
   - 266-020D UHMW RND 2.0 DIA X 2.0 LONG

58. Fully raise the yoke into the caster weldment. Secure with one cap, and two sets of lock washers and bolts.

59. Loosen the stabilizer jam nut. Turn the adjuster bolt until it contacts the plate and spring. Tighten one more inch. Secure jam nut.

60. Repeat step 54 through step 59 for the other caster.

61. Re-connect the lift-assist cylinders.
Install Center Gauge Wheels

This applies to Pull-Type implements only. These may be shipped with just the wheel assembly removed.

For 2-Point, 3-Point, or for a Pull-Type with the gauge wheels already installed, continue at “Install Transport Rest” on page 18.

- If the implement was shipped unfolded, install all four gauge wheels.
- If the implement was shipped folded, install only the two center section gauge wheels at this time. The wing gauge wheels are installed at “Install Pull-Type Wing Gauge Wheels” on page 23.
- Do not activate the lift circuit as part of this installation.
- Do not install lock channels as part of this installation.

Refer to Figure 22

62. At each gauge wheel mount where a wheel/arm assembly is to be installed, remove and save six sets of:
   - 803-021C NUT HEX 5/8-11 PLT
   - 804-022C WASHER LOCK SPRING 5/8 PLT
   - 802-057C HHCS 5/8-11X2 1/4 GR5
   - two: 161-040D AXLE TUBE BUSHING MACH.
   - and one set of:
     - 2A0134 MW COTTER PIN
     - 805-124C PIN CLEVIS 1 X 3 11/16 GR5 PLT

63. Hoist a wheel arm tube into alignment with the mount holes. Secure the alignment by re-inserting the axle tubes (12).

64. Secure the axle tubes with bolts (49), lock washers (64) and nuts (57).

65. Align the arm lug (1) with the clevis of the cylinder rod. Secure with clevis pin (57) and cotter pin (17).

66. Repeat step 63 through step 65 for remaining gauge wheel(s) to be installed at this time.

Continue at topic “Install Transport Rest” on page 18.
Install Transport Rest

This topic is only for 40-foot models shipped with overfolded wings (transport rest not installed). If the implement is a 30-foot model, or was shipped unfolded, continue at “Install Wing Gauge Wheels” on page 21.

Unfold Over-Folded Wings

Fully raise the implement. For 2-point and 3-point, set the parking stands to maximum height. For 2-point and Pull-Type, install lift cylinder lock channels on rear casters. For Pull-Type, install lock channels on center section gauge wheels.

If only a simple stationary hoist is available, use the following procedure:

Refer to Figure 23

67. Orient the fold cylinders of the left hand (lower) under-folded wing so that their rods can extend without striking implement parts.

68. Connect the hoist to the top end of the right hand (upper) over-folded wing.

69. Support some of the RH wing weight with the hoist.

70. Loosen the nuts on the U-bolts securing the right shipping stand to the wing.

71. Increase tension in the hoist until the stand provides no support. Remove the upper and lower U-bolts, and the RH stand itself. The stand and the fasteners are returned to Great Plains.

Note: If an overhead moving crane is available, you can use it to completely unfold the wings and then connect cylinder rod ends. Lower carefully nearing full unfold, as the wing end coulters or knives will contact the ground (since the wing gauge wheels are not yet installed).

72. Lift the wing until the fold cylinder rod ends may be aligned with the wing lugs.

73. Connect the top wing cylinder rod ends.

74. Close the weight-transfer shut-off valve (see page 11), if not still open from step 17 on page 11.

75. Operate the fold circuit to unfold the wings. Only the RH wing unfolds. Reduce the unfolding rate as the wing end nears the ground. The wing end will be supported by the outside coulter or knife until the wing gauge wheels are installed.

76. Disconnect the cylinder rod ends of the RH (unfolded) wing, to prevent refolding of the RH wing. Orient the fold cylinders of the unfolded wing so that their rods can extend without striking implement parts.

Note: On the 2-Point model NP40L, the lift-assist cylinders attempt to retract during unfold, but are restrained by the lock channels. They do extend to full length during fold.

77. Connect the hoist to the top end of the LH (folded) wing.

78. Support some of the LH wing weight with the hoist.

79. Loosen the nuts on the U-bolts securing the left shipping stand to the wing.

80. Increase tension in the hoist until the stand provides no support. Remove the upper and lower U-bolts, and the LH stand itself. The stand and the fasteners are returned to Great Plains.

81. Lift the wing until the fold cylinder rod ends may be aligned with the wing lugs. Retract the fold circuit as needed to achieve alignment.

82. Connect the cylinder rod ends at the LH wing.

83. Operate the fold circuit to unfold the LH wing. Reduce the unfolding rate as the wing end nears the ground. The wing end will be supported by the coulter or knife until the wing gauge wheels are installed.

84. Connect the cylinder rod ends at the other (RH) unfolded wing.
Dismount Transport Rest

Refer to Figure 24 and Figure 25 (depicting wings still folded)

85. With the wings unfolded, attach hoist lines at each end of the cross plate of the:
   - 407-478H NP40 WING REST
   Loop them around both the riser tubes below and the plate to keep them from slipping.

**CAUTION**

**Sharp Object Hazards:**
Keep feet and legs clear of anhydrous knives and disc sealers. On NP40A, this dismount requires working in between row implements. Knives and sealers are sharp and can cause injury.

86. Loosen the nuts on the shipping U-bolts ⑤. Check that the hoist is supporting the full weight of the free end of the rest.

87. Have workers support the base ends of the rest while removing the U-bolts completely.

Install Transport Rest

Refer to Figure 25

88. Select two:
   - 806-039C U-BOLT 5/8-11 X 6 1/32 X 7 3/4
   and eight sets:
   - 803-021C NUT HEX 5/8-11 PLT
   - 804-022C WASHER LOCK SPRING 5/8 PLT

89. With the cross plate to the rear, hoist the rest ③2 to implement center, over the middle tool bars ⑤ of the mainframe.

90. Check that the rest’s base plates are equal distances from implement center-line. Secure with U-bolts ⑤2, lock washers ⑤4 and nuts ⑤7

Do not install the SMV reflector until “Install SMV Reflector” on page 31.
Unfold Implement

If the implement is already unfolded, continue at “Install Wing Gauge Wheels” on page 21. The weight-transfer shut-off valve (page 11) is presumed to be closed.

91. Fully raise implement. For a 3-Point model, use a 3-point tractor.

92. For 2-Point and 3-Point models, fully extend parking stands.

93. For 2-Point and 3-Point models, install lift cylinder lock channels.

94. Lower implement onto stands and/or locks.

95. If stands are available, set one beyond, but not in the path of each wing. Adjust the height to match the raised center section.

96. Slowly extend the fold circuit to begin wing unfolding.

97. When wings are just above level, position the stands to support the wings.

98. Continue unfold. When wing-ends rest on stands, wing gauge wheels (if factory-installed), or rest on wing-end coulters or knives, stop extension. Set circuit to Float.

Note: Wing locks engage during unfold.
Note: Wing-end coulters or knives are likely to contact the ground. Slow the unfold as this point nears.
Install Wing Gauge Wheels

If all the gauge wheels are already installed, continue at topic “Install Wing Extensions” on page 24.

Continue at the topic for the gauge wheel type:

Install 2P/3P Manual Gauge Wheels........................ below
Install Pull-Type Wing Gauge Wheels...............page 23

Install 2P/3P Manual Gauge Wheels

If not installed for shipment, these assemblies may be fully dismounted at the tool bar, or may have only the wheels removed. If only the wheels need to be installed, continue at topic “Install 2P/3P Wheels” on page 22.

2P/3P Gauge Wheel Stations

99. Before installing, determine the location for each gauge wheel, which varies by row count.

<table>
<thead>
<tr>
<th>Implement Model</th>
<th>Gauge Wheel Station</th>
<th>RH</th>
<th>LH</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP30-11R30</td>
<td>Row 10</td>
<td>Row 2</td>
<td></td>
</tr>
<tr>
<td>NP30-12R30</td>
<td>Row 11a</td>
<td>Row 2a</td>
<td></td>
</tr>
<tr>
<td>NP30-13R30</td>
<td>Row 11a</td>
<td>Row 3a</td>
<td></td>
</tr>
<tr>
<td>NP40-15R30</td>
<td>Row 13</td>
<td>Row 3</td>
<td></td>
</tr>
</tbody>
</table>

a. Note that if the wing extensions were not installed for shipment (the usual case), the first and last rows are not present (illustrated in gray). The first present row on the LH wing is Row 2 and not Row 1. Similarly, on the RH wing, row 12 (12 row) or row 13 (13 row) is not yet installed.

Gauge wheels mount at row center-lines. This may place one U-bolt against a rib. Do not straddle a rib.

Install 2P/3P Gauge Wheel Mounts

Refer to Figure 27

100. Select two:
   407-321S 3PT GW ASSEMBLY
   and four:
   806-016C U-BOLT 5/8-11 X 6 1/32 X 5 3/4
   and eight sets:
   803-021C NUT HEX 5/8-11 PLT
   804-022C WASHER LOCK SPRING 5/8 PLT

101. Secure the mounts at the gauge wheel stations from the table above.

Continue at topic “Install Wing Extensions” on page 24.
Install 2P/3P Wheels

Refer to Figure 28

102. Locate two:

- 596-065K TIRE 20.5 X 8 10 PLY 6 BOLT with hub assemblies installed.

103. Remove and save at each wheel, two sets:

- 802-064C HHCS 3/4-10X2 GR5
- 804-023C WASHER LOCK SPRING 3/4 PLT

104. Install the wheel assemblies at each gauge wheel arm [23].

Continue at topic “Install Wing Extensions” on page 24.
Install Pull-Type Wing Gauge Wheels

Installation is slightly different for right wing and left wing. The left side cylinder rod has a depth stop assembly.

Refer to Figure 29 (depicting a center section mount - the right wing mount install is identical)

105. At each wing gauge wheel mount where a wheel/arm assembly is to be installed, remove and save six sets of:
   - 803-021C NUT HEX 5/8-11 PLT
   - 804-022C WASHER LOCK SPRING 5/8 PLT
   - 802-057C HHCS 5/8-11X2 1/4 GR5

   two:
   - 161-040D AXLE TUBE BUSHING MACH.

   and one set of:
   - 2A0134 MW COTTER PIN
   - 805-124C PIN CLEVIS 1 X 3 11/16 GR5 PLT

106. Guide a wheel arm tube into alignment with the mount holes. Secure the alignment by re-inserting the axle tubes (12).

107. Secure the axle tubes with bolts (49), lock washers (64) and nuts (47).

Refer to Figure 30

108. For the left gauge wheel, rotate the depth stop clevis (19) so that it is to the front.

109. Align the arm lug (3) with the clevis of the cylinder rod.

110. Secure rod clevis with clevis pin (67) and cotter pin (17).

111. Repeat step 106 through step 109 for remaining gauge wheel.

Do not exercise the lift hydraulics at this time.
Do not install wing gauge wheel lift lock channels.

NOTICE

Machine Damage Risk:
Never install a lock channel on the depth stop cylinder unless the clevis has been rotated clear of the cylinder rod. Lowering the implement onto a lock channel with the clevis in place will damage the clevis.
Install Wing Extensions

If the implement is an 11-row model, or shipped unfolded with the wing extensions already installed, continue at “Install Nurse Tank Hitch” on page 29.

If the implement is a 40-foot model delivered folded, continue at “Mount Outside Coulters”.

Install Wing Frame

Refer to Figure 31
112. Select one:
   27 407-331H BOLT ON WING FRAME
   and eight sets:
   48 802-055C HHCS 5/8-11X2 GR5
   65 804-022C WASHER LOCK SPRING 5/8 PLT
   57 803-021C NUT HEX 5/8-11 PLT

113. Orient the extension so that any decals are upright. Attach it loosely to the wing end with bolts (48), lock washers (57) and nuts (57). Bring nuts to snug.

114. Adjust position of extension to make mating end plates flush at front, top and rear.

Mount Outside Coulters

If the implement is an NP-40A model ordered without coulter, continue at “Mount Outside Knives” on page 25.

Refer to Figure 32 (depicting a Vantage I coulter for NP40L)
On over-folded NP40 models, the outside coulter clamps (11) are installed, but the coulters (14) are not.

115. Loosen all four nuts (57) securing an end row clamp (11) to the frame. Be careful to avoid moving the clamp on the frame.

116. Select one of the crated coulters (14). Insert the shank into the coulter clamp.

117. Elevate coulter, setting distance (c) from the bottom of the frame to the top of the coulter casting to: 7.5in (19.1 cm).

118. Maintaining elevation, rotate shank in clamp so that coulter blade is straight forward when centered in the casting slot (57).

119. Secure clamp nuts (57).
Mount Outside Knives

if the implement is an NP-40L model, continue at “Extend Conventional Tubing”.

Refer to Figure 33

On over-folded NP40A models, the outside knife shanks are not installed.

120. Select two:
   75 806-154C U-BOLT 3/4-10 X 4 1/32 X 7 1/2
   and four:
   59 803-181C NUT HEX FLANGE LOCK 3/4-10 PLT

121. Loosely mount the shank assembly 80 on the rear tool bar.

122. Adjust the horizontal position to be exactly one row space 59 from the nearest factory-installed row (30 in. or 76.2 cm on “R30” models).

123. Secure the flange nuts 59.
Mount Raven Accuflow Cooler
The Raven Accuflow cooler (single or dual) is shipped assembled and crated separately from the Nutri-Pro machine. It must be mounted on the machine.

Attach Accuflow Frame Mount Brackets
Attach the two Accuflow frame mount brackets to the center section.

Refer to Figure 34
124. Select two:
- 36 407-689D ACCUFLOW FRAME MOUNT BRACKET
- and four each:
  - 73 806-060C U-BOLT 1/2-13 X 6 1/32 X 7 1/4
  - and eight each:
  - 56 803-020C NUT HEX 1/2-13 PLT
  - 62 804-015C WASHER LOCK SPRING 1/2 PLT

125. Using U-bolts 73, attach both frame mount brackets 36 to middle of the 6x6 frame tube, position inside of cylinder lugs 56.

126. Secure loosely (until coolers are positioned correctly in next step) with nuts 56 and lock spring washers 62.

Attach Cooler Assembly
127. Select cooler (either single or dual):
- 23 407-341L SINGLE COOLER ASSY
- or
- 33 407-477L RAVEN DUAL COOLER ASSY
- and eight (for dual cooler), four (for single):
  - 53 802-091C HHCS 1/2-13X1 1/2 GR5
  - 63 804-016C WASHER FLAT 1/2 SAE PLT
  - 62 804-015C WASHER LOCK SPRING 1/2 PLT
  - 56 803-020C NUT HEX 1/2-13 PLT

128. Install the cooler assembly in the slots on the mount brackets just attached 36 and center left to right on the machine.

Note: When installing the single cooler assembly attach it in the forward most slots of the brackets.

129. Secure with bolts 53, washers 63 and 62, and nuts 56, making sure of clearance around transport rest.
Install Delivery Tubing

Refer to Figure 36 and Figure 37

The NH₃ \( \frac{3}{8} \)in EVA tubing is to be run from the Impellicone flow divider \( \circ \) to the shank knives.

Note: It may be necessary to fold and unfold the machine and take note of the extra length needed for tubing in the hinge pivot areas so the hoses do not bind or pinch when folding or unfolding the machine.

130. Starting with the knife located furthest from Impellicone flow divider, run the \( \frac{3}{8} \)in EVA tubing from the flow divider along the frame tubing to the knife shank, making allowances for frame fold-up in the hinge pivot areas.

131. Run the tubing down the shank under the closer and attach to the knife outlet tube \( \circ \) with the hose clamp \( \circ \).

Note: Before securing this first hose, measure the total length and record. Cut all remaining knife tubes to this furthest length.

NOTICE

Rate Imbalance Risk:

It is very important that all knife tubes are cut to the same length as the longest hose to maintain equal rate to each knife.

132. Coil any excess tubing inboard of the shank. Secure with tie \( \circ \). Secure all other ties. Do not overtighten. Avoid crushing or cutting the tubing.

133. Continue to run each vapor tube, securing to the rear frame tubes and shanks with cable ties \( \circ \) and \( \circ \) as needed.

Two vapor overflow outlets \( \circ \) exist on each cooler. These outlets are \( \frac{3}{4} \)in EVA tubing and are run to the dual outlet knives on the center section.

134. Attach the \( \frac{3}{4} \)in EVA tubing to the outlet hose barbs on the Accuflow coolers and run the tubing to the larger outlet tube on the knives. Secure the tubing in the same manner as the \( \frac{3}{8} \)in EVA tubing.

Continue at “Install Nurse Tank Hitch” on page 29.
Extend Conventional Tubing

Refer to Figure 38

135. Select one:
   43 800-390C CLAMP WRM DRV #6 SS (.38-.87)
   Place the clamp over the coulter tube ④.

136. Push the boom drop line ⑤ onto the coulter inlet until fully seated on hose barb fitting.

137. Slide the clamp halfway up the overlap and secure.
   Do not over-tighten. Avoid cutting the tubing.

Figure 38
Coulter Fertilizer Tubing
Install Nurse Tank Hitch

If the implement was ordered without a rear hitch, continue at “Install Tongue” on page 30. If it is a 3-point model (on which the hitch should already be installed), continue at topic “Install SMV Reflector” on page 31.

Refer to Figure 39
For shipping of other configurations, at least the hitch mount (21) is removed. The hitch extension (18) may also be removed, in which case the break-away coupler (25) needs to be relocated.

Free Break-Away Coupler
Hitch extension is used on 2-Point and Pull-Type models. If there is no hitch extension (18) for this implement, and the breakaway coupler is already installed at the center of the rear-most tool bar, continue at topic continue at topic “Install Hitch”.

138. At the break-away coupler mount (30), remove and save two sets:
   - 803-020C NUT HEX 1/2-13 PLT
   - 804-015C WASHER LOCK SPRING 1/2 PLT
   and one:
   - 806-034C U-BOLT 1/2-13 X 6 1/32 X 5 1/4
Set the coupler assembly (25) out of the way.

Install Hitch Extension
If there is no hitch extension, but the hitch is not mounted, continue at topic “Install Hitch”.

139. Select one:
   - 407-273H HITCH EXTENSION
and six:
   - 806-016C U-BOLT 5/8-11 X 6 1/32 X 5 3/4
   and twelve sets:
   - 804-022C WASHER LOCK SPRING 5/8 PLT
   - 803-021C NUT HEX 5/8-11 PLT

140. Position the extension (18) at the center of the rear-most tool bar. If the hitch is already installed on the extension, orient the entire assembly with the red handle (1) down. Secure with six U-bolts (70), lock washers (64) and nuts (57).

   If the hitch is already installed on the extension, continue at topic “Relocate Break-Away Coupler”.

Install Hitch

141. Select one:
   - 407-304H MOUNT HITCH SHUCK
which should already have the Schick hitch installed within it.

142. Select six:
   - 806-016C U-BOLT 5/8-11 X 6 1/32 X 5 3/4
   and twelve sets:
   - 804-022C WASHER LOCK SPRING 5/8 PLT
   - 803-021C NUT HEX 5/8-11 PLT

   143. Orient the hitch assembly (21) with the red handle (1) down, and centered on the hitch extension (18) (or if no hitch extension, on the rear tool bar). Secure with six U-bolts (70), lock washers (64) and nuts (57).

Relocate Break-Away Coupler
This applies to anhydrous models only. For other models, or if the breakaway coupler was not removed at step 138, continue at topic “Install Tongue” on page 30.

144. Select the set-aside:
   - 407-322S FLO-MAX BREAKAWAY COUPLER ASY
   and one:
   - 806-034C U-BOLT 1/2-13 X 6 1/32 X 5 1/4
   and two sets:
   - 804-015C WASHER LOCK SPRING 1/2 PLT
   - 803-020C NUT HEX 1/2-13 PLT

145. At the rear tube of the hitch extension (18) (or if none, the rear most tool bar), orient the mount (30) with the break up and to the rear. Secure to tube or tool bar with U-bolt (71), lock washers (62) and nuts (58).

146. Orient break-away so that inlet Acme cap (2) is to implement rear.
Install Tongue

If the implement is a 2-point or 3-point model, continue at "Install SMV Reflector" on page 31.

Refer to Figure 40

147. Select two sets:
   68 805-168C PIN HITCH 1 7/16 X 8 3/8 PLT
   69 805-185C PIN COTTER .186 WIRE DIA

148. Raise the rear of the tongue 69 into alignment with the lower holes 3 of the 3-point hitch. Secure with pins 68 and cotter pins 69.

Route Hoses and Cables

Refer to Figure 41

149. Loosen fasteners at hose clamps 37 on tongue.

150. Route implement hydraulic hoses under clamps, leaving enough slack at pins for tongue to dip well below level on hills afield.

151. Route lighting harness and controller harness (Option) through clips 42 on top of hose clamp stacks.

152. Coil excess hose and cable in the wire loop 76.

153. Store the lighting connector in the rain cap 81.

154. Store two hydraulic hoses in the caddy keyholes 34.
Install SMV Reflector

Refer to Figure 42

155. Select one:

- 407-512D SMV POST 2 1/2 U-BOLT
- Two sets:
  - 802-091C HHCS 1/2-13X1 1/2 GR5
  - 804-015C WASHER LOCK SPRING 1/2 PLT
  - 803-020C NUT HEX 1/2-13 PLT

156. With the SMV reflector up and facing rear, mount the SMV post on the rear face of the wing rest.

Mount Ground Drive Wheel

If the implement is an anhydrous model, or was ordered without a ground drive pump, continue at section “Final Setup” on page 32.

**CAUTION**

**Sharp Object Hazard:**
Use a hoist or two people. Wear gloves. The wheel is heavy and the tines are sharp.

Refer to Figure 43

157. Select one:

- 407-473D GROUND DRIVE WHEEL
- Three sets:
  - 802-331C RHSNB 1/2-13X1 3/4 GR5
  - 804-015C WASHER LOCK SPRING 1/2 PLT
  - 803-020C NUT HEX 1/2-13 PLT

158. At the ground drive hub, orient the wheel so that at the top, the vertical face of the top tooth is to the rear, and the longer angled face is to the front.

159. Secure the wheel to the hub with bolts, lock washers and nuts.
Final Setup

Set Rough Weight Transfer

This topic applies only to NP30L and NP40L conventional liquid fertilizer models. For anhydrous models, continue at "Lift-Assist Valve Setup" on page 34.

**WARNING**

Crushing and High Pressure Fluid Hazards:
This adjustment requires working near the unfolded and lowered implement with the hydraulic system active. Assign two people to this task, one in the tractor, ready to shut down on hand signal from adjuster or any unplanned event.

**DANGER**

Crushing Hazard:
Keep body parts clear of wings, row cleaners and coulters while adjusting. Keep all bystanders well away. You will be seriously injured or killed if you are caught between lowering row implements and ground.

**CAUTION**

Falling Hazard - Tires Not a Step:
Do not use tires as steps or platforms. At some transfer settings, cylinders can lift wheels sufficiently for them to spin.

**WARNING**

High Pressure Fluid Hazard:
Escaping fluid under pressure can penetrate the skin causing serious injury. 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, seek immediate medical attention from a physician familiar with this type of injury.

Refer to Figure 44 and Figure 45 (depicting NP3000)
Wing fold cylinders can extend, during field operation, to push the wings down using mainframe/center weight. Weight transfer is enabled by opening the weight-transfer shut-off valve 2, and controlled by two adjustment valves (3 and 4). See circuit diagrams on page 40 through page 42.

The fold circuit is set to continuous flow (in unfold mode) to maintain the active weight transfer.

The weight-transfer shut-off valve 2 must be open for weight transfer. When open, it bypasses the reducing valve 3 for faster fold cylinder operation (and faster 2-point lift-assist).

The pressure reducing valve 3 controls the flow to the cylinders.

The bypass valve 4 returns excess oil to the tractor.

Note: On 2-point implements, fold and unfold are followed by lift and lower operations.
Adjust the weight transfer to achieve consistent coulter depth, while keeping the wings level with the center section. If insufficient weight is transferred, outside (wing) coulters may run higher than center section. If too much weight is transferred, center section may run high.

If adjusted when the tractor is cold, re-adjustment may be required when the oil warms. Monitor the pressure gauge during early field operations.

Refer to Figure 44 on page 32 and Figure 46

160. In field conditions, unfold, lower implement, and set or check application depth (see Operator manual for these steps).

161. Pull forward to put coulters in ground.

162. Put tractor in Park and set parking brake.

163. Open the weight-transfer shut-off valve.

164. If this is a 2-Point implement, close the lift-assist valve ( in Figure 44 on page 32) by turning the knob fully clockwise.

165. Release the bypass valve lock disc. Turn the bypass valve knob fully clockwise to shut-off all bypass oil flow. Tighten lock disc.

166. Set tractor to half throttle. Adjust tractor flow control valve so that wings fold/unfold at a reasonable speed. Keep tractor running for step 167 through step 170.

Note: On 2-point implements, fold and unfold are followed by lift and lower operations.

167. Set tractor remote circuit for unfold. Lock lever for continuous operation.

168. At the pressure reducing valve, release the lock disc.

169. Adjust the knob for an initial value of 800 psi on the gauge. Tighten the lock disc.

170. At the bypass valve, release the lock disc. Adjust the bypass valve knob counter-clockwise until the pressure reading just begins to fall from the value set at step 169. Turn the knob clockwise \( \frac{1}{4} \) turn. Tighten the lock disc.

171. Observe implement operation, and re-adjust down-pressure as necessary after oil warm-up. Repeat step 167 through step 170. The bypass valve needs to be closed prior to any adjustment to increase weight transfer.
Lift-Assist Valve Setup

This applies to 2-Point implements only. If the implement is 3-Point or Pull-Type, continue at “Pre-Delivery Close-out” on page 36.

2-Point Lift-Assist Valve

172. The implement is presumed to be unfolded.
   Hitch the implement to a tractor.
   Raise the implement (as for parking).

173. Locate the one-way restrictor valve ① at the tee that supplies the rear cylinder base ends.

174. Turn the knob fully counterclockwise, then clockwise one turn.

175. Start a lift/fold operation. Initially, the lift occurs before the fold. Stop. Lower.

176. Turn the valve clockwise one turn.

177. Start a lift/fold. Stop. Lower.

   If the lift occurred before the fold, repeat step 176.

   If the fold occurred before the lift, back the valve off (counterclockwise) a partial turn, and re-test lift/fold.

178. Find the point at which the wings fold to the wing locks prior to lift commencing.
Install Lift Cylinder Locks
Install only the center section locks.

**CAUTION**

*Falling Hazard:*
Do not climb or stand on tires or wheels. Even at full extension on level ground, tires may not be in firm ground contact. They could spin without warning. A fall could result in serious injury.

*Refer to Figure 48 and Figure 49*
Transport locks are present on all wheel assemblies with hydraulic cylinders. Normally, only the center and rear locks are installed. To install cylinder stops:

1. Fully raise implement. Set lift circuit to Neutral.
2. At each rear lift-assist cylinder, and center lift cylinder, remove cotter pin and lock pin. Remove lock channel from storage location.

**NOTICE**

*Machine Damage Risk:*
Lock only the center and lift-assist cylinders for pre-delivery. Do not install a lock channel on the left wing depth stop cylinder unless the clevis has been rotated clear of the cylinder rod. Lowering the implement onto a lock channel with the clevis in place will damage the clevis.
Pre-Delivery Closeout

Stow Spacers

This topic applies to 2-Point models only. For 3-Point and Pull-Type, continue at “Pre-Delivery Closeout” on page 36.

181. Select two sets:
   78 810-242C STROKE CONTROL SPACERS 1 1/8

182. Clip each set around the wire loop ② on each of the two lift-assist mounts.

Stow Documents

Place all documents in the Manual-Pak™

Remove Pre-Assembly Markings

Remove all part tags. Wipe off all grease pencil part numbers.

Final Inspection

183. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.

184. Check that all grease fittings are in place and lubricated. See “Lubrication and Scheduled Maintenance” in the Operator manual.

185. Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “Safety Decals” in the Operator manual.

---

1. Manual-Pak™ is a trademark of Custom-Pak, Inc.
## Appendix A - Reference Information

### Specifications and Capacities

#### Anhydrous Models

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<td>13</td>
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<td>Row Spacing</td>
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<td>30 in</td>
<td>30 in</td>
<td>30 in</td>
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<td>30ft. 0in.</td>
<td>32ft. 6in.</td>
<td>37ft. 6in.</td>
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<td>17ft. 0in.</td>
<td>17ft. 0in.</td>
<td>17ft. 9in.</td>
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<td></td>
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</tr>
<tr>
<td>Controller Console</td>
<td>Raven SCS 450 (Optional)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Length (2 Point)</td>
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<td></td>
<td></td>
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<tr>
<td>Length (3 Point)</td>
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<tr>
<td>Length (Pull Type)</td>
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<tr>
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<td>Transport Height (Folded)</td>
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<td>Transport Clearance, 2P, PT</td>
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</tr>
<tr>
<td>Transport Clearance, 3P</td>
<td>(depends on tractor 3-point hitch range)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Min. Tractor HP Req.¹</td>
<td>130 - 165 hp</td>
<td>145 - 180 hp</td>
<td>155 - 195 hp</td>
<td>180 - 225 hp</td>
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<tr>
<td>Hydraulic Circuits Req.</td>
<td>1 or 2 Circuits, 2250 psi, 4 gal/min</td>
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<tr>
<td>Weight, 2P (maximum)²</td>
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<td>8100 lbs</td>
<td>9400 lbs</td>
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<tr>
<td>Weight, 3P (maximum)²</td>
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<td>7400 lbs</td>
<td>7600 lbs</td>
<td>8900 lbs</td>
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<tr>
<td>Weight, PT (maximum)²</td>
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<td>11300 lbs</td>
<td>11500 lbs</td>
<td>12800 lbs</td>
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<tr>
<td>Transport Tire Size</td>
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<tr>
<td>2- &amp; 3-Point Gauge Wheel Tire</td>
<td>20.5X8.0-10 (Load Rating E, 1520 Pounds)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Operating Depth</td>
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<td></td>
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<tr>
<td>Rear Hitch</td>
<td>Option: Schuck Model 850</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Nurse Tank Capability</td>
<td>3000 Gallons</td>
<td></td>
<td></td>
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</tbody>
</table>

¹ Power requirements vary significantly with conditions and practices.
² With Great Plains-installed AccuFlow metering, Schuck hitch, coulters and spider sealers. All weights are approximate.
* Implement functions not monitored include: pressure and temperature.
## Conventional Models

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<thead>
<tr>
<th>Model</th>
<th>NP30L -11R30</th>
<th>NP30L -12R30</th>
<th>NP30L -13R30</th>
<th>NP40L -15R30</th>
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<td>30 in</td>
<td>30 in</td>
<td>30 in</td>
</tr>
<tr>
<td><strong>Working Width</strong></td>
<td>27 ft. 6 in.</td>
<td>30 ft. 0 in.</td>
<td>32 ft. 6 in.</td>
<td>37 ft. 6 in.</td>
</tr>
<tr>
<td><strong>Transport Width</strong></td>
<td>17 ft. 0 in.</td>
<td>17 ft. 0 in.</td>
<td>17 ft. 0 in.</td>
<td>17 ft. 9 in.</td>
</tr>
<tr>
<td><strong>Swath</strong></td>
<td>27 ft. 6 in.</td>
<td>30 ft. 0 in.</td>
<td>32 ft. 6 in.</td>
<td>37 ft. 6 in.</td>
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<tr>
<td><strong>Metering System</strong></td>
<td>Option: Raven Control/Section Valves, Pressure Sensor &amp; RFM60P Flow meter</td>
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<tr>
<td><strong>Controller Console</strong></td>
<td>Option: Raven SCS 450 (Optional)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Length (2 Point)</strong></td>
<td>9 ft. 4 in.</td>
<td></td>
<td></td>
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<tr>
<td><strong>Length (3 Point)</strong></td>
<td>8 ft. 10 in.</td>
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<td></td>
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</tr>
<tr>
<td><strong>Length (Pull Type)</strong></td>
<td>17 ft. 4 in.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Working Height</strong></td>
<td>6 ft. 10 in.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport Height (Folded)</strong></td>
<td>12 ft. 6 in.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Transport Clearance, 2P, PT</strong></td>
<td>16 in</td>
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<td></td>
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</tr>
<tr>
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<td>(depends on tractor 3-point hitch range)</td>
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</tr>
<tr>
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<td>130 - 165 hp</td>
<td>145 - 180 hp</td>
<td>155 - 195 hp</td>
<td>180 - 225 hp</td>
</tr>
<tr>
<td><strong>Hydraulic Circuits Req.</strong></td>
<td>1 or 2 Circuits, 2250 psi, 4 gal/min</td>
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<td></td>
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<tr>
<td><strong>Weight, 2P (maximum)²</strong></td>
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<td>7400 lbs</td>
<td>7600 lbs</td>
<td>8900 lbs</td>
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<tr>
<td><strong>Weight, PT (maximum)²</strong></td>
<td>11100 lbs</td>
<td>11300 lbs</td>
<td>11500 lbs</td>
<td>12800 lbs</td>
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<tr>
<td><strong>Transport Tire Size</strong></td>
<td>265/70B16.5 (10-16.5) (NHS 8-Ply Skid Loader 4140 lbs @ 5 mph)</td>
<td></td>
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</tr>
<tr>
<td><strong>2-Point Gauge Wheel Tire</strong></td>
<td>20.5X8.0-10 (Load Rating E, 1520 Pounds)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operating Depth</strong></td>
<td>0 to 6 in. Do not exceed 6.5 in. (release depth is 4.5 in above coulter depth.)</td>
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<tr>
<td><strong>Rear Hitch</strong></td>
<td>Option: Schuck Model 850</td>
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<tr>
<td><strong>Nurse Tank Capability</strong></td>
<td>3000 Gallons</td>
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1. Power requirements vary significantly with conditions and practices.
2. With Great Plains-installed JohnBlue pump, Schuck hitch and Terra-Tines™. All weights are approximate.

## Tire Inflation Chart

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## Tire Warranty Information

All tires are warranted by the original manufacturer of the tire. Tire warranty information is found in the brochures included with your Operator’s and Parts Manuals or online at the manufacturer’s web sites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.

<table>
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<th>Manufacturer</th>
<th>Web site</th>
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<tbody>
<tr>
<td>Firestone</td>
<td><a href="http://www.firestoneag.com">www.firestoneag.com</a></td>
</tr>
<tr>
<td>Gleason</td>
<td><a href="http://www.gleasonwheel.com">www.gleasonwheel.com</a></td>
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<tr>
<td>Titan</td>
<td><a href="http://www.titan-intl.com">www.titan-intl.com</a></td>
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Great Plains Manufacturing, Inc.

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# Torque Values Chart

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<th>Grade 5</th>
<th>Grade 8</th>
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<tr>
<td>M12 X 1</td>
<td>90</td>
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<td>M14 X 2</td>
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<td>225</td>
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<td>M18 X 1.5</td>
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<td>440</td>
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<td>230</td>
<td>650</td>
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<td>M24 X 3</td>
<td>480</td>
<td>355</td>
<td>760</td>
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<td>525</td>
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<td>M30 X 3.5</td>
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<td>1060</td>
<td>785</td>
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<td>M36 X 2</td>
<td>1880</td>
<td>1380</td>
<td>2960</td>
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- **in-tpi**: nominal thread diameter in inches-threads per inch
- **N· m**: newton-meters
- **mm x pitch**: nominal thread diameter in mm x thread pitch
- **ft-lb**: foot pounds

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

Fold Hydraulics: 3-Point and Pull-Type
Lift and Fold Hydraulics: 2-Point
Lift Hydraulics: Pull Type: 2011+
### Index

<table>
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