3 Section Pull-Type Nutri-Pro Liquid Coulter

Models Affected: NP1330LL

General Information

Proper servicing and adjustment is key to the long life of all farm equipment. With careful and systematic inspection of equipment, costly maintenance, time and repair can be avoided. The following information will assist with recommended servicing and adjustments:
Folding The Applicator (Pull-Type):
1) Note: Before folding the applicator, ensure that the tractor is pointed into the wind and all NH3 flow has stopped.
2) Close the weight-transfer shut-off valve.
3) Fully extend the lift cylinders. Install the transport locks onto the lift-assist and center section cylinders.
4) Retract the fold cylinders to begin folding the wings.
5) Once both wings have rested up against the transport nest, stop hydraulic flow and put the hydraulic circuit in Neutral during transport.

Unfolding The Applicator (Pull-Type):
1) Point the applicator into the wind and close the weight-transfer shut-off valve.
2) Extend the fold cylinders to begin unfolding the applicator and set the hydraulic level to float when the wing gauge wheels contact the ground.
3) Once unfolded, extend the lift-assist cylinders to fully raise the applicator off the ground.
4) Remove and store the center section and lift-assist transport locks. If the transport locks were installed on the wing lift cylinders, remove them and re-engage the hydraulic depth stop.
5) Open the weight-transfer shut-off valve.
6) Now the applicator is ready for field operation.

Weight Transfer Adjustment (Older Style):
1) With the applicator unfolded, pull forward to lower the coulters into the ground.
2) Put the tractor in Park and close the lift-assist shut-off valve(3).
3) Release the bypass valve locking disc (4) and turn the bypass valve knob (5) fully clockwise to shut off all oil flow. After all oil flow has stopped, tighten the locking disc.
4) Set the tractor to half throttle and adjust the tractor flow control valve so that the wings fold/unfold at a reasonable speed. Note: On 2-point applicators, the fold and unfold are followed by the lift and lower operations.
5) Lock the hydraulic lever for continuous pressure for the unfold circuit.
6) At the pressure reducing valve (1), release the locking disc (6) and adjust the knob (7) for an initial value of 800 psi on the gauge (8). Once that value is achieved, tighten the locking disc.
7) At the bypass valve (2), release the locking disc (4) and adjust the knob counter-clockwise until the pressure reading just begins to fall from 800 psi. Turn the knob back clockwise a 1/4 turn and re-tighten the locking disc.
8) Observe the applicator during operation and re-adjust the down pressure as necessary. Note: The bypass valve needs to be closed prior to any adjustments to increase the weight transfer.
**Adjusting Weight Transfer:** Adjust the weight transfer system to achieve consistent coulter depth along with keeping the wings level with the center section. If insufficient weight is transferred, outside (wing) coulters may run higher than the center section and if too much weight is transferred, the center section may run too high. Adjust the weight transfer per the following:

1) Unfold the applicator and lower it to the ground. Once on the ground, set the Fold/Field control box to Field.

2) Pull forward until the coulters are in the ground.

3) Set the tractor to half throttle and extend the fold/lift circuit to unfold. Lock the lever for continuous flow.

4) Adjust the tractor flow control valve so that the bypass gauge needle (9) is in the green zone (1000 to 1500 psi).

5) Release the locking disc (10) and adjust the knob (11) until an initial 1800 psi is read on the gauge (12). Re-tighten the locking disc (10).

6) Check that the bypass gauge (9) is still within the green zone. Adjust the tractor remote if any adjustments are needed. Re-check the reading on the pressure-reducing gauge (12).

**Adjusting Hydraulic Depth Stop:** Pull-type applicators are equipped with a hydraulic depth stop located on the left gauge wheel. This will allow the operator to fix the desired depth per the following:

1) Mark the desired depth on a knife with a grease pen or chalk near the left outside row but not behind the gauge wheel.

2) Lower the applicator until the knives or tines just touch the ground and hold that height by setting the lift circuit to Neutral.

3) Adjust the knob (13) on the depth stop until the plunger just touches the stop clevis.

4) Raise the applicator all the way up and then fully lower the applicator.

5) Pull forward roughly 10 feet and stop.

6) Measure the depth at which the knives or tines are running. If the desired depth is achieved, no further adjustment is necessary.

7) If the desired depth still isn’t achieved, raise the applicator out of the ground and adjust the depth stop either up to increase the depth or down to reduce the depth. Adjust until the desired depth is achieved. **Note: Always adjust the depth stop in small increments.**
**Frame Mounted Coulter Adjustment:** Coulters are factory installed and are configured for in-row operation at knife or tine shoe depth. They can be set for fixed or limited castering. Coulter depth can be adjusted per the following:

1) Loosen the U-bolt nuts (14) and slide the shaft (15) up or down. Check the coulter-to-knife/tine alignment and re-tighten the nuts.

2) Adjust the coulters to have a running depth at the bottom of the knife or tine shoe. Roughly 3/4 inch below the application depth.

3) For fields that have frequent sharp turns, coulters can be adjusted to pivot at the pivot casting.

4) Loosen the jam nuts along with loosening the set screws just enough to allow the casting to swivel and re-tighten the jam nut. **Note:** Do not remove the center stop screw.

**Vantage I Coulter Height & Castering:** During operation, the coulter height controls the application height and may need to be adjusted for rows behind wheel tracks. Coulters may also be set for rigid row alignment or limited castering.

1) The factory setting for coulter height (16) is 7.5 inches from the bottom of the frame to the top of the coulter mount casting.

   With a tool bar height of 25 inches (17) above the ground, the disc blade will have a depth of 4 inches (18).

2) For fields where frequent sharp turns are unavoidable, coulter plowing can be reduced by allowing the coulters to caster at the pivot casting.

   To adjust, loosen the jam nuts (19) and set screws just enough to allow the casting to swivel. Re-tighten the jam nuts but do not remove the center stop screw.

3) As blades wear, keep the release height (20) constant by raising the applicator weldments on the coulter arm.

   Simply loosen the bolts (21) and slide the weldments up as needed. Once the desired position is achieved, tighten the bolts. **Note:** If the application height is still too low after this adjustment, the coulter blades may be worn and in need of replacement.

   It is recommended to replace the coulter blade when the initial diameter has been reduced by 1 to 2 inches.
**Terra-Tine Adjustments (Option):** All adjustments are to be made with the applicator in the fully raised position.

1) When the coulter blade is out of the soil, adjust the lock collar height to set the height of the tine fingers flush with the bottom of the coulter blade.

2) Side-to-side alignment can be done by rotating the shank mount around the vertical shaft and re-tightening the square head set screw.

3) Factory setting for a Terra-Tine is a distance of 5.4 inches from the bottom of the frame to the top of the Terra-Tine mount.

   Height may be adjusted at the mount set screw, or at the frame clamp. Changing the arm angle (22) also changes the tine height.

4) The arm angles are factory set on the lowest down-force setting available (22).

**Terra-Tine Down Force:** A series of three holes in the spring adjuster (23) and pivot mount plate (24) provide five combinations for different levels of spring tension. The following table shows the down-forces available:

<table>
<thead>
<tr>
<th>Position</th>
<th>Newtons</th>
<th>Pounds</th>
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<tr>
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<td>12</td>
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**Rear Eye Bolt Adjustment:** Side to side levelness at the rear of the applicator is controlled by the eye bolts located on the lift-assist cylinder bases. On pull-types the rear height is controlled by the cylinders, slaved to the hydraulic depth stop valve. Check to see that both eye bolts are set to the same distance.

1) The factory setting is 3.5 inches from the end of the eye bolt to the top face of the lug tube.

2) To adjust the eye bolt, loosen the hose guide nut and jam nut.

3) Rotate the adjustment nut to until the eye bolt is at the desired length.

4) Check that the hose guide is on top and tighten the jam nut along with the hose guide nut.
Pull-Type Wing Leveling: On pull-type applicators, wing levelness is controlled by the gauge wheel lift cylinders and the top eye bolt. If wings get out of level, re-phase the cylinders across the applicator. If the wings are still not level, check that the eye bolt length is still set at the factory setting.

1) The factory setting is 3.5 inches from the end of the eye bolt to the top face of the gauge wheel lug tube.

2) To adjust the eye bolt, loosen the hose guide nut and jam nut.

3) Rotate the adjustment nut to until the eye bolt is at the desired length.

4) Check that the hose guide is on top and tighten the jam nut along with the hose guide nut.

Fertilizer Operation: The liquid fertilizer system is designed to operate ideally between 15 and 40 psi. Several system elements affect system pressure and need initial setup, periodic maintenance, and adjustment.

Ground Drive Operations: When the applicator is lowered to the ground and in motion, the pump begins to operate and fertilizer is applied based on the drive Range sprocket and pump adjuster dial setting.

The following presumes that fertilizer has been loaded into the tanks and the tank is configured and ready for use:

**Priming the Ground Drive System:**

1) On suitable ground, raise the applicator off the ground.

2) With the optional variable rate system, use the SELF TEST feature of the SCS-450 console to simulate a field speed.

3) Wearing gloves, manually rotate the ground drive wheel until material appears at the applicator tubes.

**Ground Drive Field Operation:**

4) Begin field operations and monitor the fertilizer pressure gauge or the PSI display on the optional console.

5) Monitor the fertilizer tank levels while planting to confirm expected consumption rate and to avoid running the pump dry.

6) If residual fertilizer is not recovered at the end of planting, apply it to the last field planted. **Note: Once finished, always clean out the fertilizer system to avoid corrosion or possible freeze damage.**
**Hydraulic Drive Operations:** The output of the pump is under pressure whenever the hydraulic motor circuit is activated. The rate is regulated by a flow control valve and monitored by a flow meter. Both are connected to a Raven SCS 450 console or any other compatible Raven console.

**Hydraulic Drive Start-Up:**
1) Set the console MASTER switch to OFF.

2) Set the console POWER switch ON.

3) Select the FLOW CONTROL RATE1 or RATE2 as desired and verify the rate setting.

4) Set console BOOMS switch 1 ON.

5) Set the flow rate for the hydraulic remote.

6) Activate the circuit by moving the hydraulic level to the Retract position. The pump will then be activated but with the MASTER switch OFF, there will be no material flow.

7) Set the MASTER switch to ON and check for material flow at the tines. Prime the second hydraulic pump as required.

8) Begin field operations and monitor the fertilizer pressure gauge or PSI display on the optional console.

**Hydraulic Drive Field Operations:**
9) Monitor the fertilizer tank levels while planting to confirm expected consumption rate and to avoid running the pump dry.

10) If residual fertilizer is not recovered at the end of planting, apply it to the last field planted. **Note:** Once finished, always clean out the fertilizer system to avoid corrosion or possible freeze damage.