

Assembly Instructions



1205-NT and 1206-NT Folding Marker Option

Used with:

- 12' End Wheel No-Till Drill



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!

Before You Start

This notice contains only instructions on assembling the attachment to the main unit. A detailed Operator's Manual was supplied with the main unit when it was purchased. For more specific information on safety concerns refer to the Operator's Manual. Also included in the Operator's Manual is important information on operation, adjustment, troubleshooting and maintenance for this attachment (some of these sections do not apply to all options).

A separate Parts Manual for replacement parts can be purchased from your dealer. Have model and serial numbers handy when placing an order.

Manual Part Numbers:

1205NT End Wheel No-Till Drill Operator's Manual. . . 150-131M
 1205NT End Wheel No-Till Drill Parts Manual. 150-131P
 1206NT End Wheel No-Till Drill Operator's Manual. . . 150-166M
 1206NT End Wheel No-Till Drill Parts Manual. 150-166P

General Information

The marker is a center ground marking disk unit which can be mounted on either the right or left side of the drill or both. When mounted on both ends, the controls can be on separate hydraulic circuits or, by the means of sequence valve, alternate activation between markers from a single hydraulic circuit.

These option assembly instructions apply to the Markers listed below:

- 113-532A End Wheel No-Till Dual Marker
- 113-540A End Wheel No-Till Single Marker - Left Hand
- 113-546A End Wheel No-Till Single Marker - Right Hand

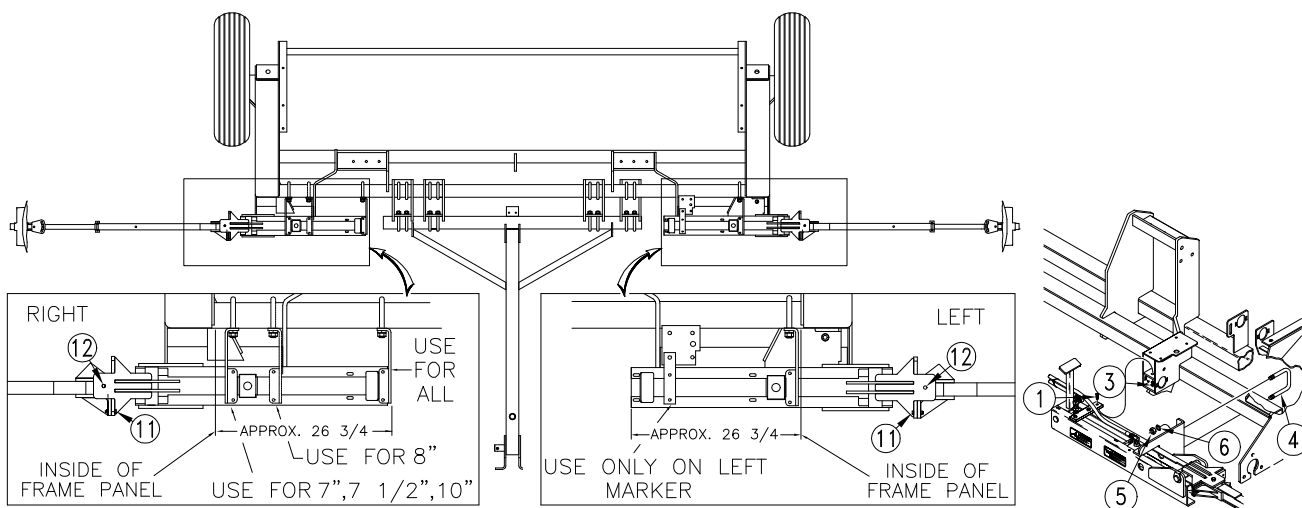
Starting on page 7 is a detailed listing of parts included in these kits. Use this list as a checklist to inventory parts received.

Assembly Instructions

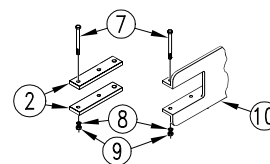
Refer to Figure 1:

If you have dual markers, the right hand and left hand assemblies are identical as you receive them from the factory. The multiple mounting slots in the assembly channel allow for the marker to be attached to the right or left side of the drill with the proper mounting brackets. Refer to the illustration for the correct mounting bracket orientation and location for your drill's row spacing. The marker arms may need to be re-oriented in their attachment to the hinges so that the break away bolt (#11) is oriented towards the front of the drill. This is necessary so that the marker will hinge rearward to clear excessive obstructions when the break away bolt yields. This can be accomplished by removing the break away bolt and the 1/2" pivot bolt (#12) from the hinge assembly and flipping the arm over. Assemble the 1/2" bolt back through the hinge pivot and replace the break away bolt in the front hole. Attach the formed mounts (#10) to the marker assemblies with the 3/8" x 5" long bolts (#7), the 3/8" lockwashers (#8) and the 3/8" nuts (#9). The left hand marker uses two straight bar mounts (#2) to attach the inside end of the marker frame to the mounting tabs on the drill's gear box mount. These must be bolted to the drill first with two 1/2" x 1 1/2" long bolts (#1) and flange locknuts (#3).

Remove the plastic shipping caps from the adapters on the hydraulic cylinders so they can vent, and manually unfold the marker to its extended position. Position the left marker on the front of the drill's frame and fasten the inside end of the marker in place with two 3/8" x 5" long bolts (#7), 3/8" lock washers (#8), and 3/8" nuts (#9). The other brackets are attached to the frame with 5/8" x 4" x 5 1/4" long u-bolts (#4), 5/8" lockwashers (#6), and 5/8" nuts (#5).



Marker Mount Locations
Figure 1

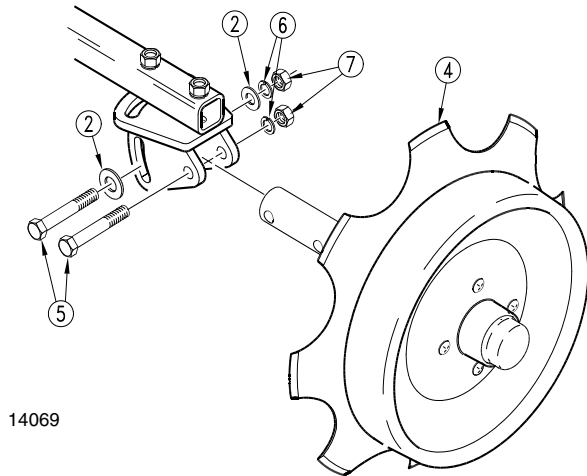


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Marker Disk Assembly

Refer to Figure 2:

Install the marker disk assembly (#4) to the end of the marker arms with two 1/2" x 3" long bolts (#5), 1/2" lockwashers (#6), and 1/2" nuts (#7). A 1/2" flat washer (#2) must be placed under the head and lockwasher of the bolt that goes through the slot in the mounting bracket.

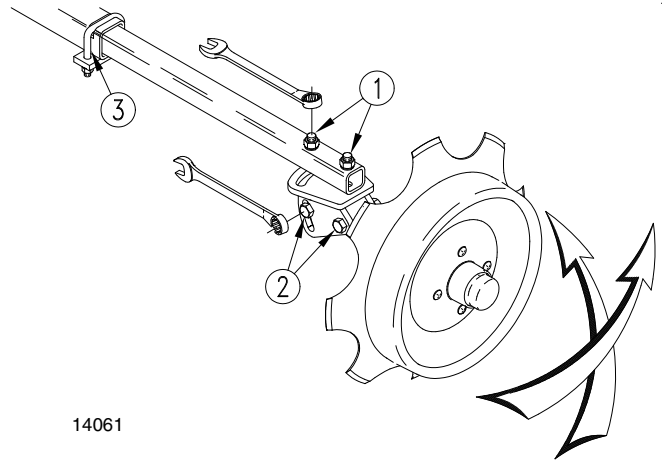


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Disk Adjustments

The aggressiveness and the mark left by the disk may be changed by two methods:

1. **Disk Angle:** To change the angle of cut, loosen the two vertical bolts (#1) in the marker arm and rotate the disk assembly and retighten.
2. **Disk Tip:** To change the tip of the disk, loosen the two horizontal bolts (#5) in the pivot adjustment and rotate the disk assembly and retighten. The marker width adjustments are made by loosening the marker tube u-bolt (#3) and sliding it in or out to the desired width and retightening the u-bolt.



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Marker Disk Assembly
Figure 2

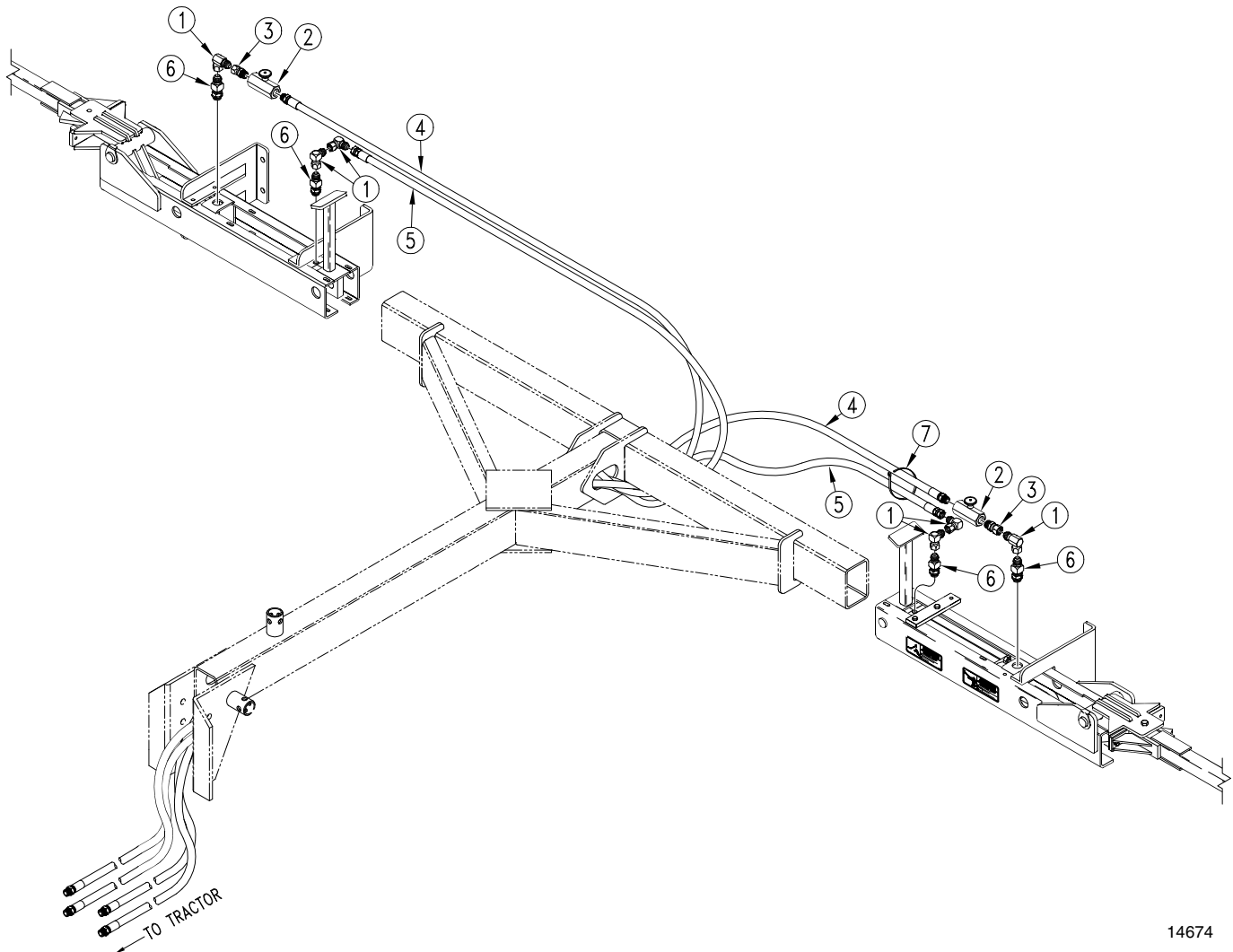
For Markers Without a Sequence Valve

(Right & left hand markers without sequence valve are purchased separately)

NOTE: JIC fittings do not require high torque. JIC and O-Ring fittings do not require sealant. Always use liquid pipe sealant when adding or replacing pipe thread fittings. To avoid possible danger of cracking hydraulic fittings from over-tightening, Do not use plastic sealant tape.

Refer to Figure 3 and install a 9/16" male o-ring boss x 9/16" male JIC adapter (#6) into each end of the cylinder. Assemble a 9/16" female JIC X 9/16" male JIC 90 degree elbow (#1) onto each of these adapters. Two elbows (#1) are required on the base end of the marker cylinder(s) to offset the hoses around the marker rest post. Assemble the needle valve (#2) and the 9/16" female JIC x 3/8" male pipe adapter (#3) to the elbow at the rod port. Attach the 236" long hose(s) (#5) to the elbows at the base end of the marker cylinder(s) and the 252" long hose(s) (#4) to the needle valves at the rod end of the cylinders. Route the hoses to the hole on the left rear side of the tongue and to the hitch.

Tie the hoses to the coultter frame tube with the plastic cable ties (#7) provided.



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Hydraulic Assembly
Figure 3

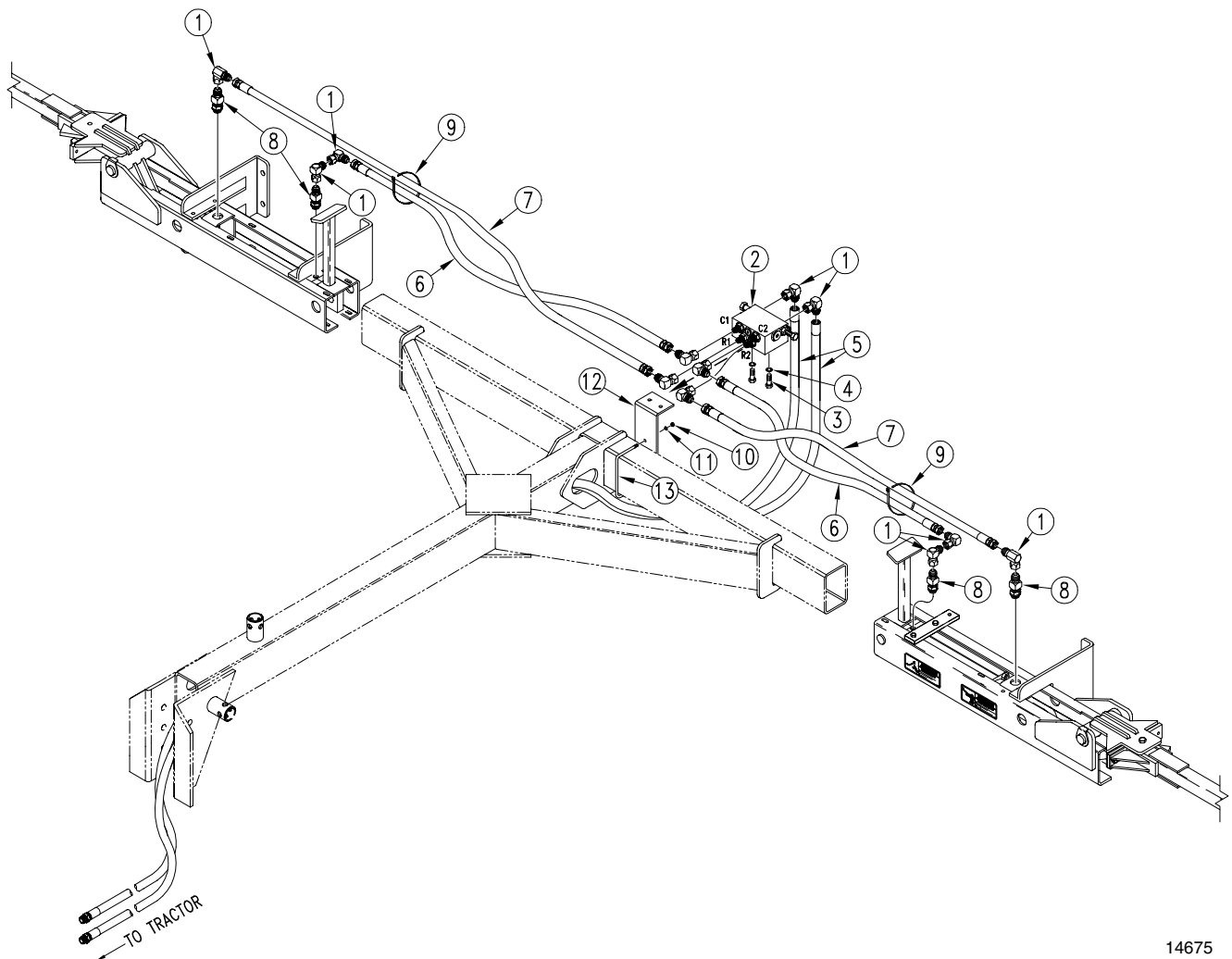
For Dual Markers With a Sequence Valve

NOTE: JIC fittings do not require high torque. JIC and O-Ring fittings do not require sealant. Always use liquid pipe sealant when adding or replacing pipe thread fittings. To avoid possible danger of cracking hydraulic fittings from overtightening, Do not use plastic sealant tape.

If your kit includes a sequence valve (#2), attach the valve mount (#12) to the center rear of the tongue with two 3/8" x 6-1/32" x 5" long u-bolts (#13), 3/8" lock washers (#11), and 3/8" nuts (#10). Attach the sequence valve to the valve mount with two 3/8" x 3/4" long bolts (#3) and 3/8" lock washers (#4). Install a 9/16" male o-ring boss x 9/16" male JIC adapter (#8) into each end of the cylinder. Assemble a 9/16" female JIC x 9/16" male JIC 90 degree elbow (#1) into each of the six ports on the sequence valve and each end of the marker cylinders.

Two elbows (#1) are required on the base end of the marker cylinders to offset the hoses around the marker rest post. Route the 51" long hydraulic hoses (#6) from the elbows at the ports on the sequence valve marked C1 & C2 to the elbows on the base ends of the marker cylinders. The 70" long hydraulic hoses (#7) attach to the elbows on the valve ports marked R1 & R2 and the elbows on the rod end of the marker cylinders. The two 184" long hoses (#5) attach to the remaining two elbows (#1) on the valve opposite the marker ports and are routed through the tongue to the hitch.

Tie the hoses to the coultter frame tube with the plastic cable ties (#9) provided.



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Hydraulic Assembly
Figure 4

Bleeding The Hydraulic System

CAUTION!

Escaping fluid under pressure can have sufficient force to penetrate the skin. Check all hydraulic lines and hoses before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, to check for suspected leaks. If injured, seek medical assistance from a doctor that is familiar with this type of injury. Foreign fluids in the tissue must be surgically removed within a few hours or gangrene will result.

NOTE: JIC fittings do not require high torque. JIC and o-ring fittings do not require sealant. Always use liquid pipe sealant when adding or replacing pipe thread fittings. To avoid possible danger of cracking hydraulic fittings from overtightening, Do not use plastic sealant tape.

NOTE: Check the hydraulic fluid level in the tractor reservoir and fill to the proper level before starting this procedure. Add fluid to the system as needed. A low reservoir level may draw air back into the system, causing jerky or uneven cylinder movements.

DANGER!

Keep all persons clear.

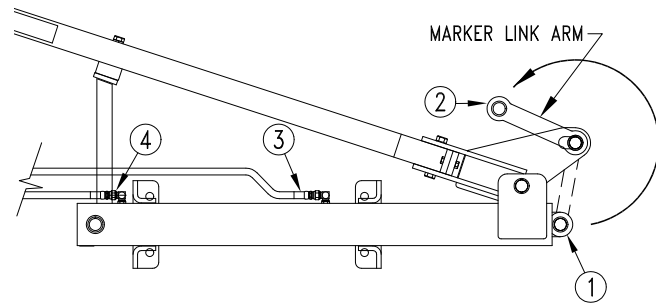
NOTE: The following instructions must be followed to bleed the markers hydraulic system. The markers must be properly bled to displace air in the hydraulic system and for the sequence valve to work properly. Failure to do so could cause the marker to drop quickly to the ground and cause damage to the marker voiding the warranty.

Dual Markers With Sequence Valve

Refer to Figure 5:

1. The markers should be manually folded into the transport position when charging the hydraulic system for the first time. Disconnect the cylinder pin (#1) from the rod end of the cylinders and the marker link arms (#2) and swing the link arm up and out of the way.
2. Connect the hoses to the tractors remote hydraulic outlets.
3. Loosen the hose hydraulic fittings at the rod end of the marker cylinders (#3). With the tractor at idle speed, slowly work the tractor remote lever in the direction which would retract the cylinder. Don't try to retract the cylinder, the goal is to push the air from the lines leading to the cylinder. This will only happen on one side which is dependent on which way the sequence valve is shifted. When the air is expelled and oil starts being pushed out, tighten the hose connection at this cylinder.
4. Slowly work the tractor's remote lever in the same direction to retract the cylinder. When it is retracted, loosen the hose fitting at the base end of the same cylinder (#4). With the tractor at idle speed, slowly work the tractor remote lever in the opposite direction which should put oil to the cylinder base port. When the air is expelled and oil starts being pushed out, tighten the hose connection at this cylinder.
5. Once again, slowly work the tractor's remote lever in the direction to fully extend the cylinder and hold it there for a few seconds. This will shift the sequence valve which will allow you to bleed the opposite cylinder.

6. Repeat steps 3 through 5 for the other cylinder.
7. Once the system is bled, operate the tractor's remote lever several times until both cylinders stop when fully extended and reconnect the cylinders to the marker link arms.



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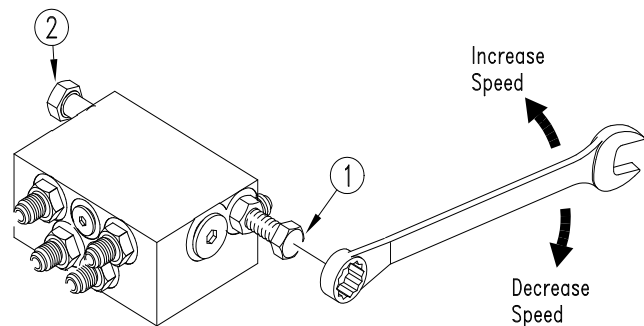
Bleeding The Marker Cylinder
Figure 5

Refer to Figure 6:

8. The marker hydraulic system is equipped with needle valves to control how fast each marker operates. The needle valves are built into the sequence valve body. There are two hex adjustment screws, one for raising, and one for lowering the markers. The "raise" and "lower" needle valves are identified by stamped markings in the valve body next to the adjustment screws. Turn the adjustment screws clockwise to slow the speed down and counterclockwise to speed it up. Adjustments should be made for safe speeds at operating rpm. Excessive folding speeds can cause marker damage and may void the warranty. Be sure to tighten the jam nuts on the hex adjustment screws to hold the desired settings.

The markers cycle in the following sequence:

1. right up, left up
2. right down, left up
3. right up, left up
4. right up, left down
5. sequence repeats



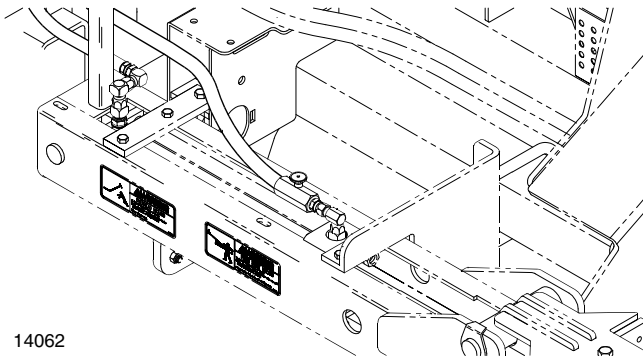
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Sequence Valve, Speed Adjustments
Figure 6

Single or Dual Markers Without a Sequence Valve

Refer to Figure 5:

1. The markers should be manually folded into the transport position when charging the hydraulic system for the first time. Disconnect the cylinder pin (#1) from the rod end of the cylinders and the marker link arms (#2) and swing the link arm up and out of the way.
2. Connect the hoses to the tractors remote hydraulic outlets.
3. Loosen the hose hydraulic fittings at the rod end of the marker cylinders (#3). With the tractor at idle speed, slowly work the tractor remote lever in the direction which would retract the cylinder. Don't try to retract the cylinder, the goal is to push the air from the lines leading to the cylinder. When the air is expelled and oil starts being pushed out, tighten the hose connection at this cylinder.
4. Slowly work the tractor's remote lever in the same direction to retract the cylinder. When it is retracted, loosen the hose fitting at the base end of the same cylinder (#4). With the tractor at idle speed, slowly work the tractor remote lever in the opposite direction which should put oil to the cylinder base port. When the air is expelled and oil starts being pushed out, tighten the hose connection at this cylinder.
5. Once again, slowly work the tractor's remote lever in the direction to fully extend the cylinder and hold it there for a few seconds.
6. If you have dual markers, repeat steps 3 through 5 for the other cylinder.
7. Once the system is bled, operate the tractor's remote levers to fully extend the marker cylinders and reconnect the cylinders to the marker link arms.
8. The marker hydraulic system is equipped with needle valves to control how fast each marker operates. The needle valves are located in the hydraulic hose lines at the rod end of the marker cylinders. Turn the adjustment heads clockwise to slow the speed down and counterclockwise to speed it up. Adjustments should be made for safe speeds at operating rpm. Excessive folding speeds can cause marker damage and may void the warranty, refer to Figure 7.



**Needle Valve At Marker
Figure 7**

113-532A 12' End Wheel No-Till Dual Markers

Your Kit Includes:

Qua.	Part No.	Part Description	Comments
1	548-003S	HG PAIR - GREEN MORB-FORB	
2	811-021C	AD 1/2FNPTS 3/4MORB	
2	811-394C	CP 3/4FORB MALE QD POPPET TYPE	
2	838-265C	DECAL REFLECTOR AMBER 1 1/2X9	
1	113-630V	1205 DUAL MARKERS HOSES BUNDLE	Includes the following parts
2	811-392C	HH1/4R1 051 9/16FJIC	
2	811-518C	HH1/4R1 070 9/16FJIC	
2	811-519C	HH1/4R1 184 1/2MNPT 9/16FJIC	
2	113-541K	12' EWNT MARKER ASY	Includes the following parts
1	113-534H	MARKER HINGE WELDMENT	
1	113-535H	MARKER CYLINDER CHANNEL WLMT	
1	113-536H	MARKER ARM WELDMENT	
1	113-537H	MARKER DISC ADJUSTMENT WLMT	
1	113-539H	MARKER PIVOT PIN WLMT	
1	113-546D	MARKER LINK ARM	
1	113-547S	NO-TILL MARKER DISK HUB ASY	
1	113-548D	MARKER DISC MOUNTING TUBE	
2	800-001C	GREASE ZERK STRAIGHT 1/4-28	
1	802-012C	HHCS 5/16-18X1 1/2GR5	
2	802-039C	HHCS 1/2-13X3 GR5	
3	802-041C	HHCS 1/2-13X3 1/2 GR5	
1	802-130C	HHCS 1/2-13X2 1/2 GR5	
2	802-440C	RHSNB 1/2-13X2 3/4 GR5	
1	803-011C	NUT LOCK 5/16-18 PLT	
4	803-020C	NUT HEX 1/2-13 PLT	
2	803-078C	NUT LOCK 3/8-16 NYLON INSERT	
1	803-147C	NUT HEX NYLOCK 1/2-13	
1	804-010C	WASHER FLAT 5/16 USS PLT	
5	804-015C	WASHER LOCK SPRING 1/2 PLT	
2	804-017C	WASHER FLAT 1/2 USS PLT	
2	804-028C	WASHER FLAT USS 1 PLT	
1	804-035C	WASHER FLAT 1 1/4 USS PLT	
2	805-058C	PIN COTTER 3/16 X 2	
1	805-060C	PIN COTTER 7/32 X 2	
1	805-187C	PIN CLEVIS 1 X 2 1/4 GR5 PLT	
1	806-004C	U-BOLT 3/8-16 X 2 X 2 3/4	
1	810-269C	CYL 2X14X1.12 ROD (TIE ROD)	
1	816-170C	RD BUMP STOP 2 X 1 X 1/2-13	
2	818-579C	DECAL WARNING PINCH/SHEAR HAZ	
2	818-580C	DECAL WARNING OVERHEAD MKR H	
2	890-005C	BUSHING CYL 1 1/4 X 1 X 1	
1	113-542K	12' EWNT DUAL MARKER HDWR BDL	Includes the following parts
3	113-538H	MARKER MOUNTING BRACKET WLMT	
1	113-549M	MANUAL 12'EWNT MARKERS	
2	113-552D	LH INSIDE MARKER MOUNT	
1	151-357D	SEQ. VALVE MOUNT	
4	800-150C	CABLE TIE 22.2 LONG REL.	
2	802-014C	HHCS 3/8-16X3/4 GR5	
2	802-091C	HHCS 1/2-13X1 1/2 GR5	
8	802-318C	HHCS 3/8-16X5	
10	803-014C	NUT HEX 3/8-16 PLT	
6	803-021C	NUT HEX 5/8-11 PLT	
2	803-169C	NUT HEX FLG LOCK 1/2-13 PLT	
12	804-013C	WASHER LOCK SPRING 3/8 PLT	
6	804-022C	WASHER LOCK SPRING 5/8 PLT	
3	806-008C	U-BOLT 5/8-11 X 4 X 5 1/4	
1	806-022C	U-BOLT 3/8-16 X 6 1/32 X 5	
1	810-197C	VALVE,SEQUENCE SHOEMAKER	
12	811-169C	EL 9/16MJIC 9/16FJIC	
4	811-170C	AD 9/16MORB 9/16MJIC	

113-540A 12' End Wheel No-Till Single Marker - Left Hand*Your Kit Includes:*

Qua.	Part No.	Part Description	Comments
1	548-003S	HG PAIR - GREEN MORB-FORB	
2	811-021C	AD 1/2FNPTS 3/4MORB	
2	811-394C	CP 3/4FORB MALE QD POPPET TYPE	
2	113-541K	12' EWNT MARKER ASY	Includes the following parts
1	113-534H	MARKER HINGE WELDMENT	
1	113-535H	MARKER CYLINDER CHANNEL WLMT	
1	113-536H	MARKER ARM WELDMENT	
1	113-537H	MARKER DISC ADJUSTMENT WLMT	
1	113-539H	MARKER PIVOT PIN WLMT	
1	113-546D	MARKER LINK ARM	
1	113-547S	NO-TILL MARKER DISK HUB ASY	
1	113-548D	MARKER DISC MOUNTING TUBE	
2	800-001C	GREASE ZERK STRAIGHT 1/4-28	
1	802-012C	HHCS 5/16-18X1 1/2GR5	
2	802-039C	HHCS 1/2-13X3 GR5	
3	802-041C	HHCS 1/2-13X3 1/2 GR5	
1	802-130C	HHCS 1/2-13X2 1/2 GR5	
2	802-440C	RHSNB 1/2-13X2 3/4 GR5	
1	803-011C	NUT LOCK 5/16-18 PLT	
4	803-020C	NUT HEX 1/2-13 PLT	
2	803-078C	NUT LOCK 3/8-16 NYLON INSERT	
1	803-147C	NUT HEX NYLOCK 1/2-13	
1	804-010C	WASHER FLAT 5/16 USS PLT	
5	804-015C	WASHER LOCK SPRING 1/2 PLT	
2	804-017C	WASHER FLAT 1/2 USS PLT	
2	804-028C	WASHER FLAT USS 1 PLT	
1	804-035C	WASHER FLAT 1 1/4 USS PLT	
2	805-058C	PIN COTTER 3/16 X 2	
1	805-060C	PIN COTTER 7/32 X 2	
1	805-187C	PIN CLEVIS 1 X 2 1/4 GR5 PLT	
1	806-004C	U-BOLT 3/8-16 X 2 X 2 3/4	
1	810-269C	CYL 2X14X1.12 ROD (TIE ROD)	
1	816-170C	RD BUMP STOP 2 X 1 X 1/2-13	
2	818-579C	DECAL WARNING PINCH/SHEAR HAZ	
2	818-580C	DECAL WARNING OVERHEAD MKR H	
2	890-005C	BUSHING CYL 1 1/4 X 1 X 1	
1	113-544K	12' EWNT SGL MKR HDWR BDL LH	Includes the following parts
1	113-538H	MARKER MOUNTING BRACKET WLMT	
1	113-549M	MANUAL 12'EWNT MARKERS	
2	113-552D	LH INSIDE MARKER MOUNT	
2	800-150C	CABLE TIE 22.2 LONG REL.	
2	802-091C	HHCS 1/2-13X1 1/2 GR5	
4	802-318C	HHCS 3/8-16X5 GR5	
4	803-014C	NUT HEX 3/8-16 PLT	
2	803-021C	NUT HEX 5/8-11 PLT	
2	803-169C	NUT HEX FLG. LOCK 1/2-13 PLT.	
4	804-013C	WASHER LOCK SPRING 3/8 PLT	
2	804-022C	WASHER LOCK SPRING 5/8 PLT	
1	806-008C	U-BOLT 5/8-11 X 4 X 5 1/4	
1	810-058C	VALVE 3/8 NEEDLE	
3	811-169C	EL 9/16MJIC 9/16FJIC	
2	811-170C	AD 9/16MORB 9/16MJIC	
1	811-206C	HH1/4R1 252 3/8MNPT 1/2MNPT	
1	811-345C	AD 9/16FJIC 3/8MNPT	
1	811-520C	HH1/4R1 236 1/2MNPT 9/16FJIC	

113-546A 12' End Wheel No-Till Single Marker - Right Hand

Your Kit Includes:

Qua.	Part No.	Part Description	Comments
1	548-003S	HG PAIR - GREEN MORB-FORB	
2	811-021C	AD 1/2FNPTS 3/4MORB	
2	811-394C	CP 3/4FORB MALE QD POPPET TYPE	
2	113-541K	12' EWNT MARKER ASY	Includes the following parts
1	113-534H	MARKER HINGE WELDMENT	
1	113-535H	MARKER CYLINDER CHANNEL WLMT	
1	113-536H	MARKER ARM WELDMENT	
1	113-537H	MARKER DISC ADJUSTMENT WLMT	
1	113-539H	MARKER PIVOT PIN WLMT	
1	113-546D	MARKER LINK ARM	
1	113-547S	NO-TILL MARKER DISK HUB ASY	
1	113-548D	MARKER DISC MOUNTING TUBE	
2	800-001C	GREASE ZERK STRAIGHT 1/4-28	
1	802-012C	HHCS 5/16-18X1 1/2GR5	
2	802-039C	HHCS 1/2-13X3 GR5	
3	802-041C	HHCS 1/2-13X3 1/2 GR5	
1	802-130C	HHCS 1/2-13X2 1/2 GR5	
2	802-440C	RHSNB 1/2-13X2 3/4 GR5	
1	803-011C	NUT LOCK 5/16-18 PLT	
4	803-020C	NUT HEX 1/2-13 PLT	
2	803-078C	NUT LOCK 3/8-16 NYLON INSERT	
1	803-147C	NUT HEX NYLOCK 1/2-13	
1	804-010C	WASHER FLAT 5/16 USS PLT	
5	804-015C	WASHER LOCK SPRING 1/2 PLT	
2	804-017C	WASHER FLAT 1/2 USS PLT	
2	804-028C	WASHER FLAT USS 1 PLT	
1	804-035C	WASHER FLAT 1 1/4 USS PLT	
2	805-058C	PIN COTTER 3/16 X 2	
1	805-060C	PIN COTTER 7/32 X 2	
1	805-187C	PIN CLEVIS 1 X 2 1/4 GR5 PLT	
1	806-004C	U-BOLT 3/8-16 X 2 X 2 3/4	
1	810-269C	CYL 2X14X1.12 ROD (TIE ROD)	
1	816-170C	RD BUMP STOP 2 X 1 X 1/2-13	
2	818-579C	DECAL WARNING PINCH/SHEAR HAZ	
2	818-580C	DECAL WARNING OVERHEAD MKR H	
2	890-005C	BUSHING CYL 1 1/4 X 1 X 1	
1	113-545K	12' EWNT SGL MKR HDWR BDL RH	Includes the following parts
2	113-538H	MARKER MOUNTING BRACKET WLMT	
1	113-549M	MANUAL 12'EWNT MARKERS	
2	800-150C	CABLE TIE 22.2 LONG REL.	
4	802-318C	HHCS 3/8-16X5 GR5	
4	803-014C	NUT HEX 3/8-16 PLT	
4	803-021C	NUT HEX 5/8-11 PLT	
4	804-013C	WASHER LOCK SPRING 3/8 PLT	
4	804-022C	WASHER LOCK SPRING 5/8 PLT	
2	806-008C	U-BOLT 5/8-11 X 4 X 5 1/4	
1	810-058C	VALVE 3/8 NEEDLE	
3	811-169C	EL 9/16MJIC 9/16FJIC	
2	811-170C	AD 9/16MORB 9/16MJIC	
1	811-206C	HH1/4R1 252 3/8MNPT 1/2MNPT	
1	811-345C	AD 9/16FJIC 3/8MNPT	
1	811-520C	HH1/4R1 236 1/2MNPT 9/16FJIC	