

Installation Instructions



No-Till Precision Seeding System and No-Till Drill Flat Fold Marker Option

Used with:

- 3N-4010P
- 3N-4015P
- 3N-4020P
- 3N-4025P
- 3N-4010
- 3N-4020



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!

General Information

These instructions explain how to install the Flat Fold Marker. The hydraulically operated, flat-fold markers leave a line for you to follow on the next field pass. Markers are sold as single units for mounting on the left end of your drill or as dual units for mounting on both ends of your drill. Dual markers are plumbed together with a sequence valve so you can operate both markers on the same hydraulic circuit. These instructions apply to:

- 113-769A 40P Dual No-Till Marker
- 113-770A 40P LH No-Till Marker

Manual Update

Refer to the No-Till Precision Seeding System operator's manual for detailed information on safely operating, adjusting, troubleshooting and maintaining the Flat Fold Marker.

Refer to the parts manual for part identification.

196-286M	Operator's Manual
196-286P	Parts Manual
196-359M	Operator's Manual
196-359P	Parts Manual

Before You Start

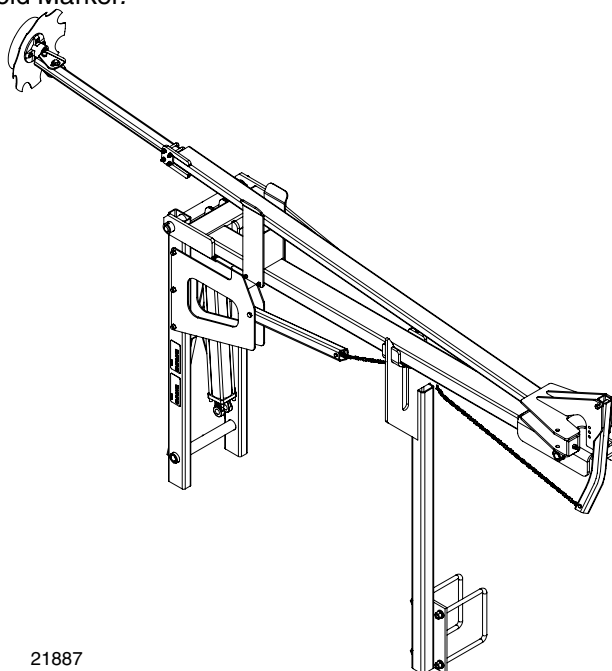
Pages 10 through 14 are a detailed listing of parts included in the Flat Fold Marker package. Use these lists to inventory parts received.

Tools Required

- Basic hand tools

Definitions

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



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Assembly Instructions

Refer to Figure 1

1. Lower drill into field position. Allow 25 feet on each end of drill for marker assembly. Always assemble marker in unfolded position.
2. Mount first marker section (1) on drill frame mounting bracket using the 1 1/4" x 20 5/8" marker hinge pin (2). Insert the tapered end of the pin (2) in first then align the hole on the opposite end with the hole in the mounting bracket. Secure pin in place with a 5/16" x 2 1/2" bolt and 5/16" lock nut (5).
3. Attach the base end of the cylinder (3) to the cylinder mount. Mount the cylinder (3) with the hydraulic ports facing towards the front of the drill. Secure cylinder (3) in place with a 1" x 2 3/4" clevis pin (4) and spring clip.

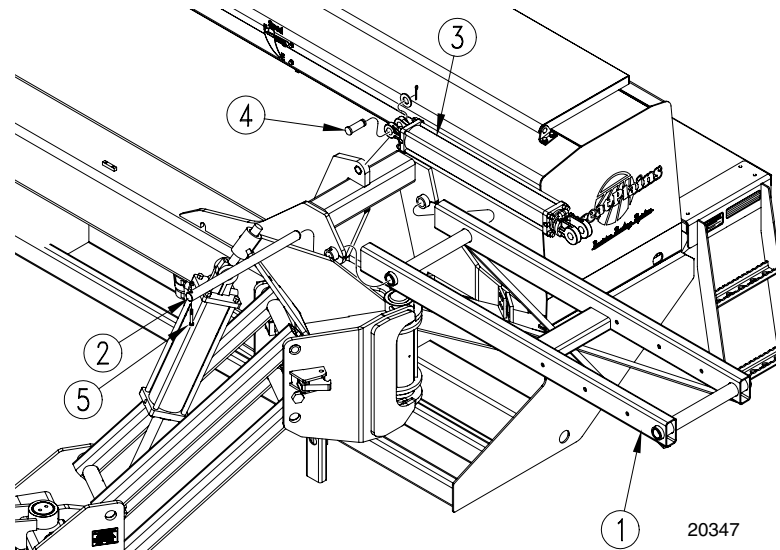


Figure 1
First Marker Section Assembly

Refer to Figure 2

4. Assemble second marker section (6) to first marker section (1) with 20 5/8" hinge pin (7). Fasten with 5/16" x 2 1/4" hex bolt (8) and 5/16" lock nut (9).

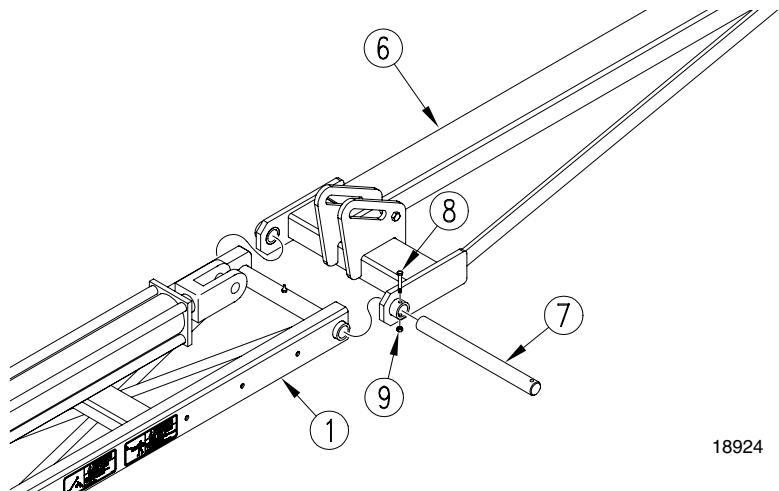


Figure 2
Second Marker Section to First Marker Section

Refer to Figure 3

5. Attach cylinder rod end to second marker section with clevis pin (10), flat washers (11) and cotter pin (12).

NOTE: Make sure cylinder pin lock (13) is positioned under cylinder clevis pin (10).

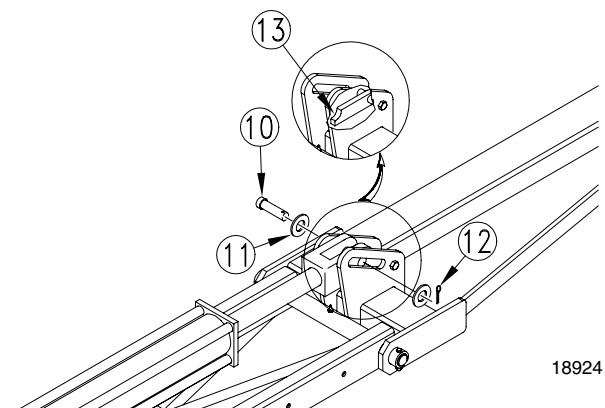


Figure 3
Cylinder Rod End to Second Marker Section

Refer to Figure 4

- Assemble third marker section (14) to second marker section (19) with 5/8" x 5" bolt (15) and 5/8" nut lock (16). After the hinge bolt (15) is installed, take as much play out of the assembly by tightening both the hinge bolt (15) and the middle clamp bolt (17). Stop tightening both bolts when all the play has been removed. Do not over tighten. Check to make sure arm (14) can be rotated by hand. Secure opposite side with 7/16" x 2" bolt (17) and 7/16" nut hex lock (18).

NOTE: The 7/16" bolt (17) is the marker break away bolt.

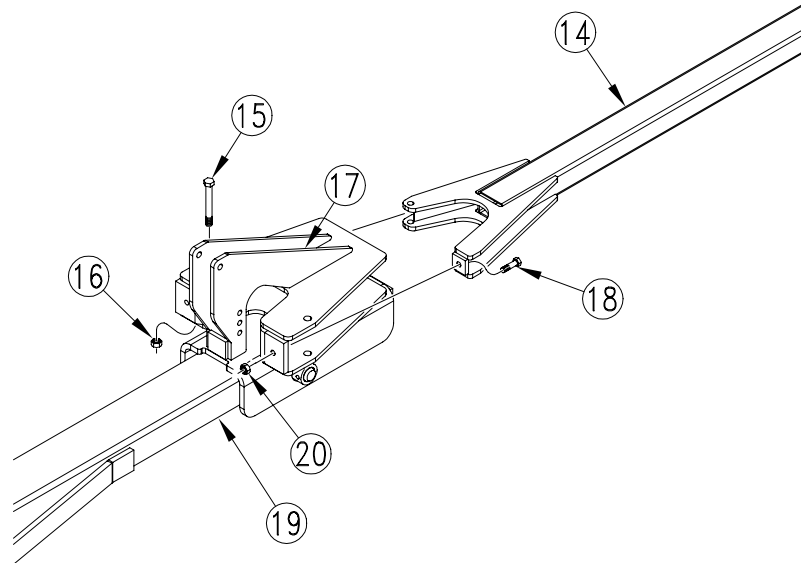


Figure 4
Third Marker Section to Second Marker Section

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Refer to Figure 5

- Attach bumper (21) to marker rest bracket (22) with a 1/2" x 3/4" bolt (23) and 1/2" lock washer (24).
- Attach marker rest bracket (22) to second marker section (27) with 3/8" x 6" bolts (25) and 3/8" lock nuts (26).

NOTE: The 34" dimension shown is from the center of the hinge pin to the inner edge of rest bracket.

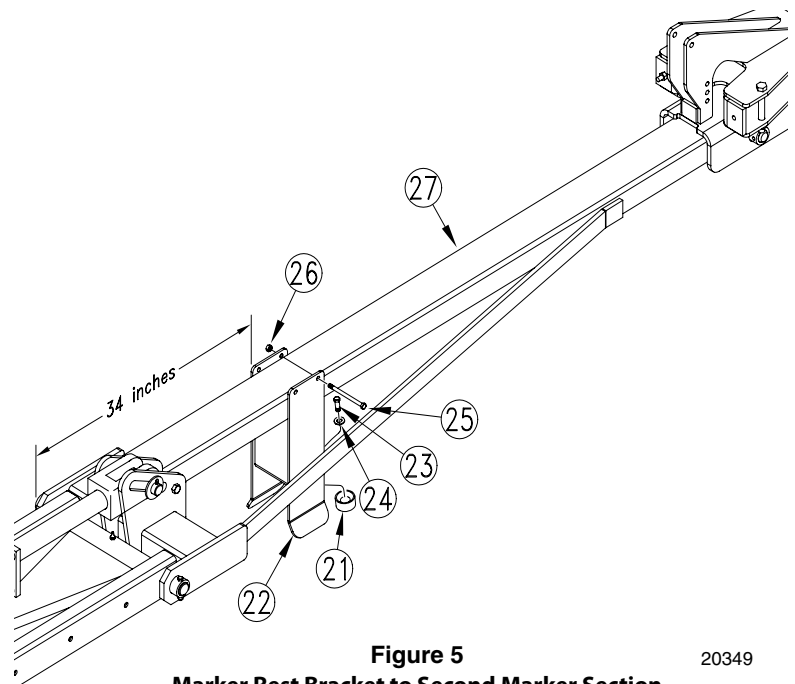


Figure 5
Marker Rest Bracket to Second Marker Section

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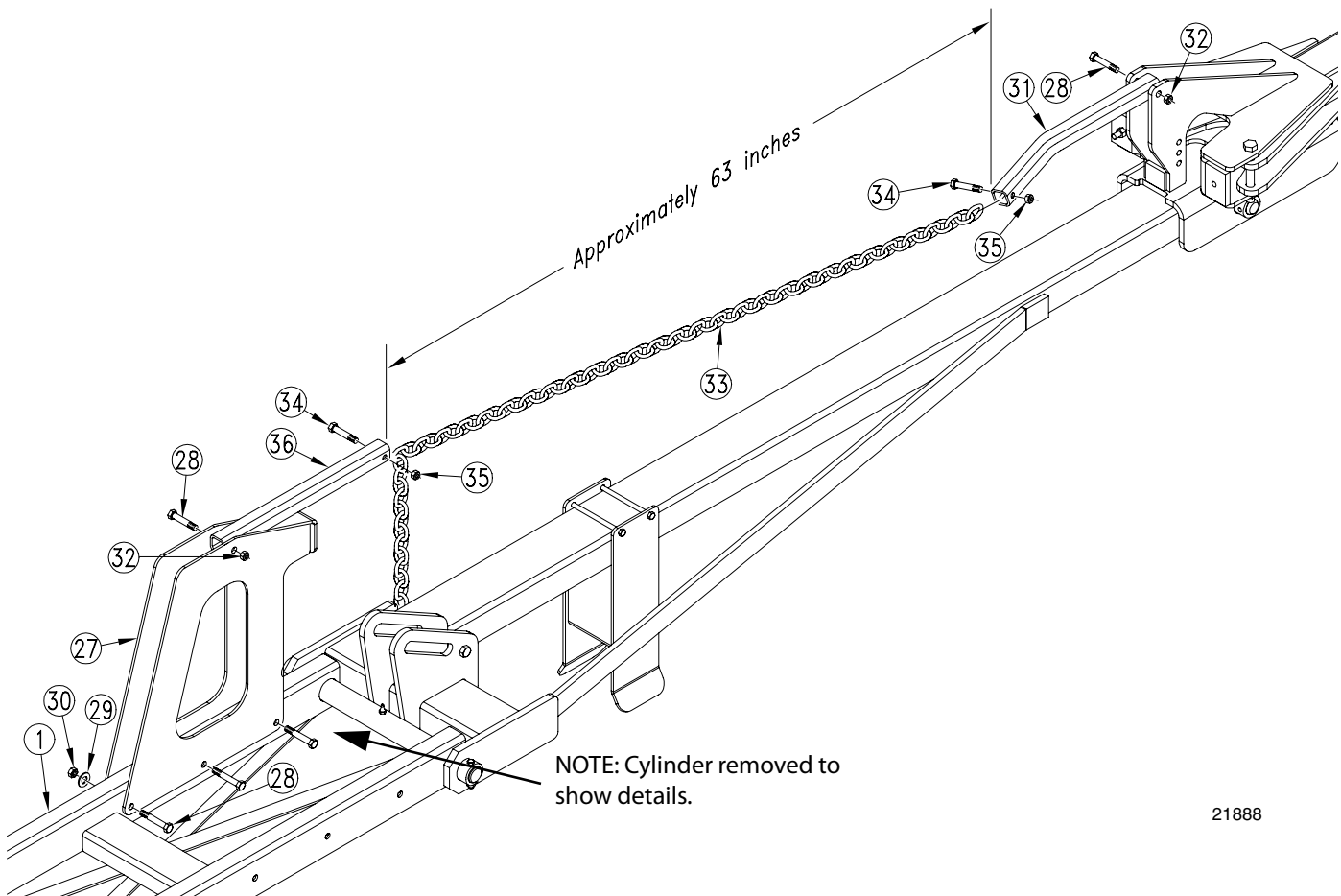
4 Flat Fold Marker Option

Refer to Figure 6

9. Attach transport brace (27) to first marker section (1) with 1/2" x 3 1/4" bolts (28) 1/2" washers (29) and 1/2" nuts (30).
10. Assemble lift arms (31) and (36) to the transport brace and second marker section as shown. Fasten with 1/2" x 3 1/4" bolts (28) and 1/2" lock nuts (32).

NOTE: Make sure the curved end of arm (31) is facing down as shown.

IMPORTANT: Do not overtighten. The lift arms must be able to swivel in their mounts.



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Figure 6
Transport Brace and Marker Chain Assembly

Marker Carrier Assembly

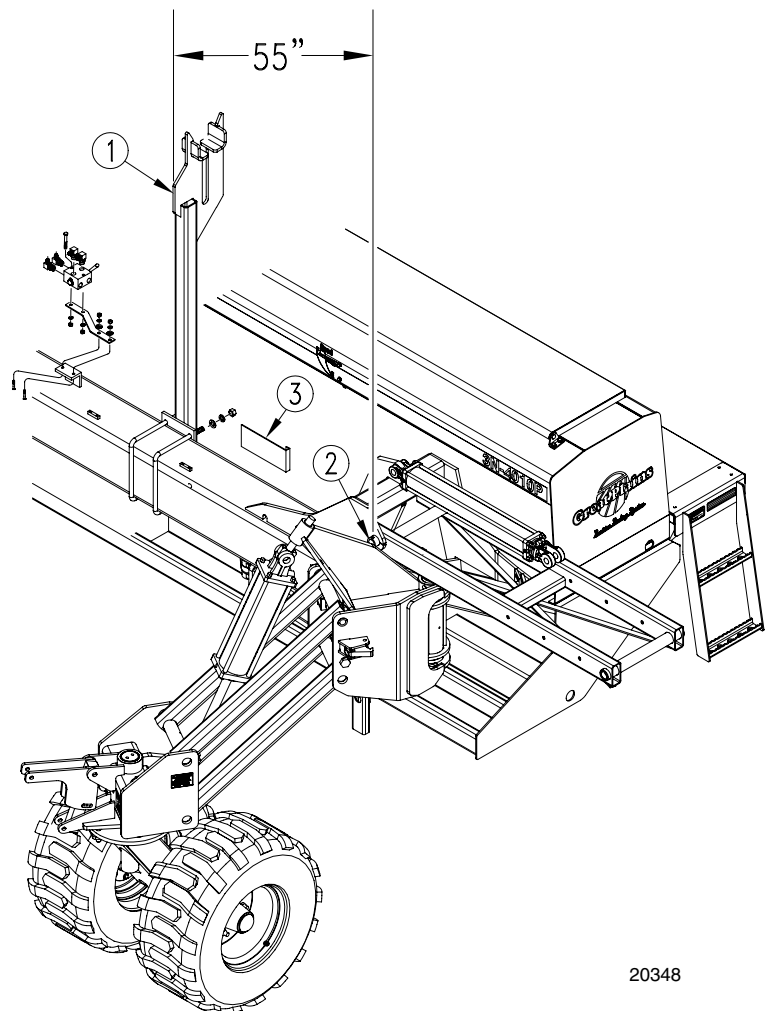
Single Marker

Refer to Figure 7

1. Attach marker carrier (1) to the backside of the 10" x 10" square frame using two 3/4" x 10" x 11 1/2" U-bolts, 3/4" flat washers, 3/4" lock washers and 3/4" nuts.

Note: If you fold the marker to the up position and it hits the tapered edge of the carrier (1) you can install a shim (3) behind the mount plate. If the marker hits the front edge install the shim at the bottom edge of the 10" x 10" frame. If it hits the back edge install the shim at the top edge of the 10" x 10" frame.

2. Position so the center of marker carrier (1) measures 55" from the center of the hinge pin (2) and tighten U-bolts.



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Figure 7
Single Marker Carrier Installation

Marker Carrier Assembly

Dual Marker

Refer to Figure 8

1. Attach marker carrier (1) to the backside of the 10" x 10" square frame using two 3/4" x 10" x 11 1/2" U-bolts, 3/4" flat washers, 3/4" lock washers and 3/4" nuts.

Note: If you fold the marker to the up position and it hits the tapered edge of the carrier (1) you can install a shim (3) behind the mount plate. If the marker hits the front edge install the shim at the bottom edge of the 10" x 10" frame. If it hits the back edge install the shim at the top edge of the 10" x 10" frame.

2. Position so the center of marker carrier (1) measures 55" from the center of the hinge pin (2) and tighten U-bolts.

3. Mount the marker sequence valve (4) next to the Veris Drive and lock circuit double selector valve (5), located on the left-hand frame. Remove the two selector valve strap bolts (6) and discard. Place the sequence valve (4) on top of the selector valve mount strap (7), and install the 3/8 x 1" bolts (8) and lock washers (9) from below.
4. Install four 9/16" x 9/16" JIC elbows (10) to the backside of the sequence valve (4). Tighten the elbows so they point away from the center of the sequence valve (4).

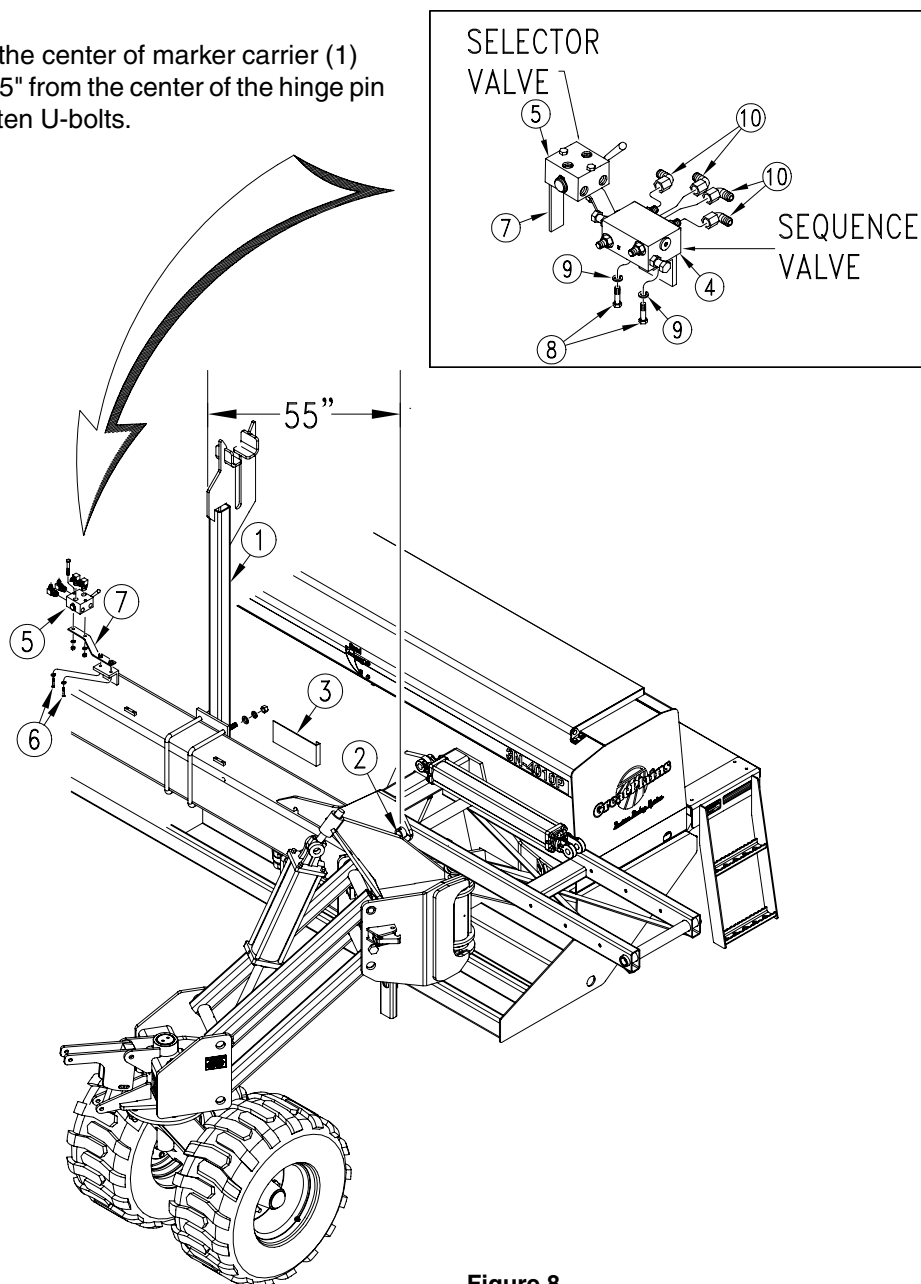


Figure 8
Dual Marker Carrier Installation

Hydraulics Assembly

Single Marker

Refer to *Figure 9*

1. Install 3/8" x 9/16" elbow fitting (1) in the rod end cylinder port.
2. At rod end of the cylinder, install a 3/8 MNPT adaptor (2) into elbow fitting. Install a needle valve (3) into adaptor and a 3/8 MNPT x 9/16 MJIC adaptor (4) into the needle valve.
3. Assemble the 529" hose (5) to rod end.
4. Install 9/16" x 9/16" elbow (6) in the base end cylinder port.
5. Assemble the 504" hose (7) to the base end.
6. Route hoses along the frame down the left-hand pull bar to the tractor. Leave slack at pivots as needed. Secure hoses to main hose bundle using hose clamp brackets supplied in kit.
7. Proceed with "Bleeding Marker Hydraulics", page 9.

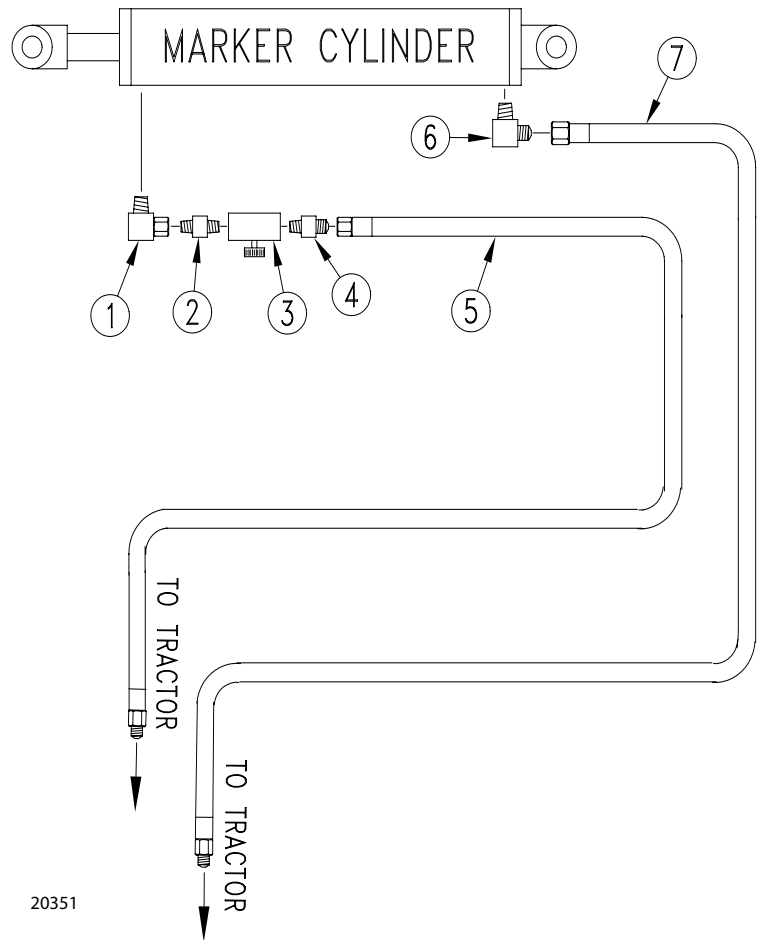
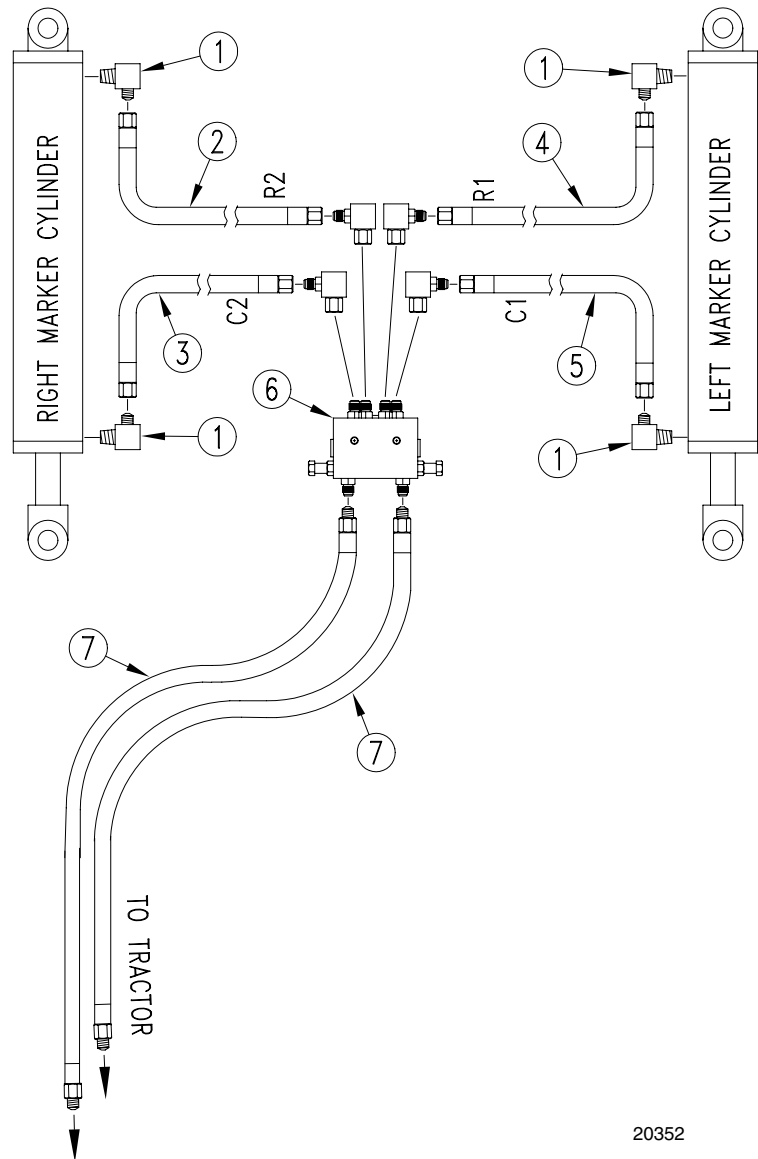


Figure 9
Single Marker Hydraulics

8 Flat Fold Marker Option

Dual Marker*Refer to Figure 10*

1. Install elbow fittings (1) in cylinder ports.
2. For the right-hand marker attach 372" hose (2) to base end elbow fittings. Attach 396" hose (3) to the cylinder rod end elbow fittings.
3. For the left-hand marker attach 114" hose (4) to base end elbow fittings. Attach 134" hose (5) to the cylinder rod end elbow fittings.
4. Route the hoses along the same path as fold cylinder hoses, allowing the same slack at drill toolbar pivots.
5. Connect hose from base end of left marker cylinder to elbow, then to port R1 on sequence valve (6). Connect hose from base end of right marker cylinder to elbow, then to port R2.
6. Connect hose from rod end of left marker cylinder to elbow, then to port C1. Connect hose from rod end of right marker cylinder to elbow, then to port C2.
7. Connect 340" hoses (7) to the front side of the sequence valve (6). Route the hoses down the left-hand pull bar to the tractor. Secure hoses to main hose bundle using hose clamp brackets supplied in kit.
8. Route hoses down left-hand pull bar to the tractor. Leave slack at pivots as needed. Secure hoses to main hose bundle using hose clamp brackets supplied in kit.
9. Proceed with "Bleeding Marker Hydraulics", page 9.



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Figure 10
Dual Marker Hydraulics

Bleeding Marker Hydraulics

CAUTION!

You may be injured if hit by a folding or unfolding marker. Markers may fall quickly and unexpectedly if the hydraulics fail. Never allow anyone near the drill when folding or unfolding markers.

Refer to Figure 11

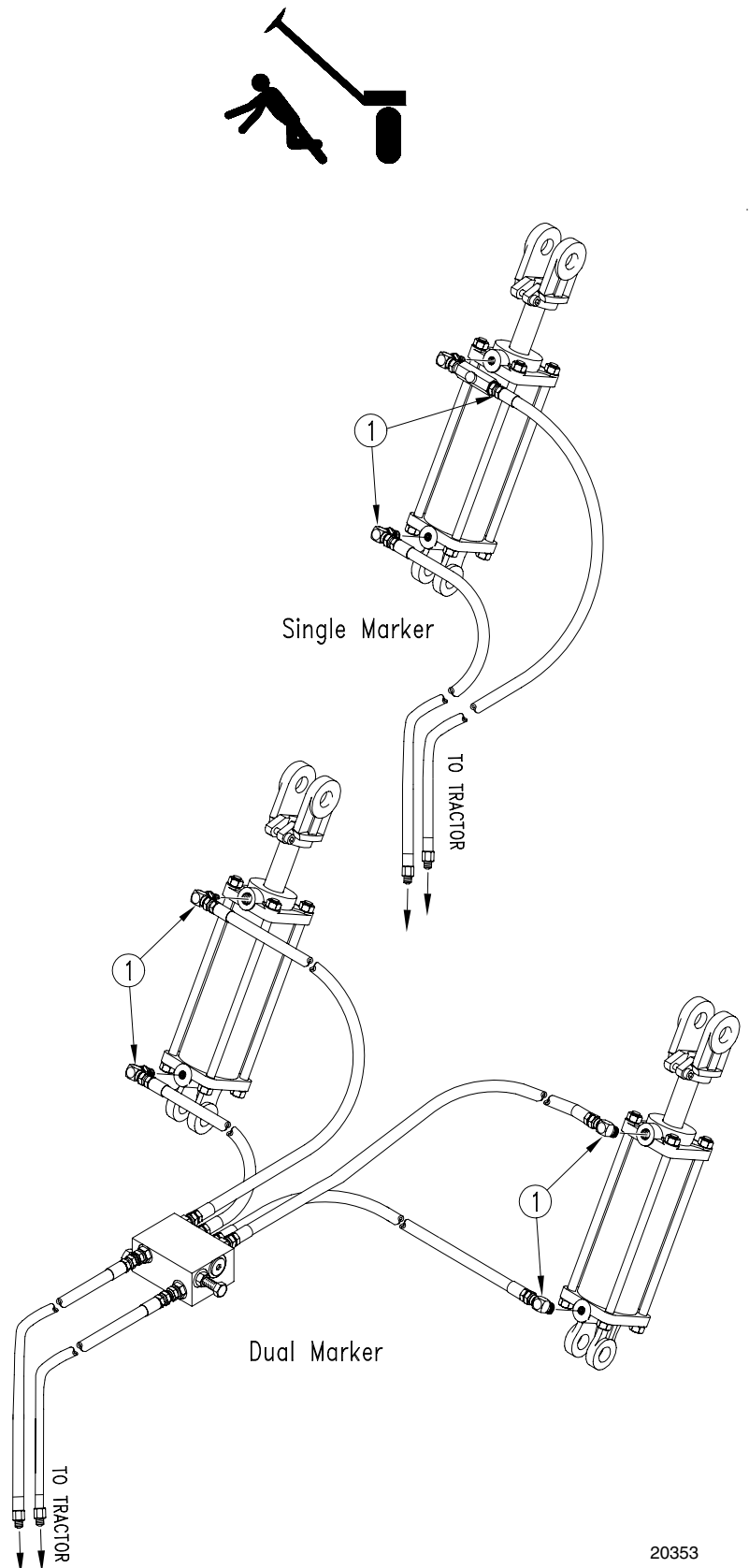
1. Make sure tractor hydraulic reservoir is full.
2. With markers unfolded in field position, crack hydraulic-hose fittings (1) at base and rod ends of each marker cylinder.

IMPORTANT: Never bleed an O-ring fitting. Instead, bleed a nearby pipe or JIC fitting.

3. With tractor at idle speed, activate tractor hydraulic valve forward until oil appears at one fitting. When oil begins to seep out around a fitting, tighten that fitting. Reverse the tractor hydraulic valve until oil appears at opposite hose fitting and tighten that fitting.
4. If you have dual markers, activate your tractor hydraulic valve forward again until oil seeps out around one fitting on the other marker cylinder and tighten that fitting. Reverse tractor hydraulic valve until oil seeps out around remaining hose fitting and tighten it.
5. Fold and unfold markers slowly to work out all air.

NOTE: Use caution when folding and unfolding markers for the first time, checking for pinching and kinking of hoses.

6. Adjust marker folding to a safe speed. Refer to *Marker Adjustment* in the operator's manual.



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Figure 11
Bleeding Marker Hydraulics

10 | Flat Fold Marker Option

113-769A 40P DUAL NO-TILL MARKER

Your kit includes:

Qty.	Part No.	Part Description
1	113-771K	40P DUAL MARKER ASSEMBLY
1	113-773K	40P DUAL MARKER HDW BUNDLE
1	113-776V	40P DUAL MARKER HOSE BUNDLE
1	813-028C	NO TILL HARROW PALLET

113-770A 40P LH NO-TILL MARKER

Your kit includes:

Qty.	Part No.	Part Description
1	113-772K	40P LH MARKER ASSEMBLY
1	113-774K	40P LH MARKER HDW BUNDLE
1	113-775V	40P LH MARKER HOSE BUNDLE
1	813-028C	NO TILL HARROW PALLET

113-771K 40P DUAL MARKER ASSEMBLY

Your kit includes:

Qty.	Part No.	Part Description
2	113-682D	3S-4000 MARKER CYL PIN LOCK
4	113-683D	3S-4000 MARKER CYL PIN SPACER
2	113-685D	3S-4000 MARKER LIFT ARM
2	113-686D	3S-4000 MARKER HINGE PIN LG
2	113-687D	3S-4000 MARKER HING PIN SHORT
2	113-715H	3S-4000 MARKER 1ST SEC WLMT
1	113-716H	3S-4000 MARKER 2ND SEC WLMT LH
2	113-717D	3S-4000 MARKER CHAIN 70 IN LG
1	113-717H	3S-4000 MARKER 2ND SEC WLMT RH
2	113-722H	3S-4000 MARKER TRANS BRC WLMT
2	113-725H	3S-4000 MARKER REST BRKT WLMT
2	113-779H	40P MARKER EXT TUBE WLDMT
2	113-780H	40P TRANS REST WLDMT
2	113-790D	MARKER LIFT ARM TUBE BENT
2	113-790S	40P MARKER DISC & HUB ASSEMBLY
2	113-792H	MARKER SHEAR BASE
2	113-793H	MARKER SHEAR ARM 40P
4	123-199D	TUBE RND .620DX .3851DX1.06
6	800-001C	GREASE ZERK STRAIGHT 1/4-28
2	802-032C	HHCS 1/2-13X3/4 GR5
4	802-044C	HHCS 1/2-13X4 GR5
4	802-062C	HHCS 5/8-11 X 5 GR5
10	802-099C	HHCS 1/2-13X3 1/4 GR5
2	802-100C	HHCS 5/8-11X4 1/2 GR5
4	802-114C	HHCS 3/8-16X2 1/2 GR5
4	802-138C	HHCS 5/16-18X2 1/4 GR5
4	802-381C	HHCS 3/8-16X6 GR5
2	802-589C	HHCS 7/16-14 X 2 GR5
4	803-011C	NUT LOCK 5/16-18 PLT
8	803-013C	NUT LOCK 3/8-16 PLT
4	803-019C	NUT LOCK 1/2-13 PLT
10	803-020C	NUT HEX 1/2-13 PLT
6	803-024C	NUT LOCK 5/8-11 PLT
1	803-200C	NUT HEX LOCK 7/16-14 PLT
12	804-015C	WASHER LOCK SPRING 1/2 PLT
4	804-017C	WASHER FLAT 1/2 USS PLT
4	804-028C	WASHER FLAT 1 USS PLT
2	805-058C	PIN COTTER 3/16 X 2
2	805-131C	PIN CLEVIS 1 X 4 11/16 USABLE
2	810-423C	CYL 3X24X1.50 ROD (TIE ROD)
2	816-170C	RD BUMP STOP 2 X 1 X 1/2-13
4	818-579C	DECAL WARNING PINCH/SHEAR HAZ
4	818-580C	DECAL WARNING OVERHEAD MKR HAZ

113-773K 40P DUAL MARKER HDW BUNDLE

Your kit includes:

Qty.	Part No.	Part Description
2	113-686D	3S-4000 MARKER HINGE PIN LG
1	113-777M	40P MARKER MANUAL
2	113-789D	40P MARKER TRANS REST SHIM
7	502-068D	HYD HOSE CLAMP BRACKET
20	800-082C	CABLE TIE .31X21.5 6DIA 120LB
2	802-017C	HHCS 3/8-16X1 GR5
2	802-138C	HHCS 5/16-18X2 1/4 GR5
14	802-172C	HHCS 5/16-18 X 2 1/2 GR5
2	803-011C	NUT LOCK 5/16-18 PLT
4	803-020C	NUT HEX 1/2-13 PLT
8	803-027C	NUT HEX 3/4-10 PLT
2	804-013C	WASHER LOCK SPRING 3/8 PLT
4	804-015C	WASHER LOCK SPRING 1/2 PLT
8	804-023C	WASHER LOCK SPRING 3/4 PLT
8	804-025C	WASHER FLAT 3/4 SAE PLT
2	805-004C	PIN CLEVIS 1 X 2 3/4 USABLE LG
2	806-010C	U-BOLT 1/2-13X2 1/2X 3 1/2
4	806-172C	U-BOLT 3/4-10 X 10 1/32X11 1/2
1	810-422C	VALVE,SEQ SHOEMAKER HI FLO
4	811-065C	EL 9/16MJIC 9/16MORB
4	811-169C	EL 9/16MJIC 9/16FJIC

113-776V 40P DUAL MARKER HOSE BUNDLE

Your kit includes:

Qty.	Part No.	Part Description
2	811-199C	HH3/8R1 340 9/16 FJIC 3/4MOR
1	811-217C	HH3/8R1 114 9/16FJIC
1	811-586C	HH3/8R1 134 9/16FJIC
1	811-803C	HH3/8R1 372 9/16FJIC
1	811-804C	HH3/8R1 396 9/16FJIC

113-772K 40P LH MARKER ASSEMBLY

Your kit includes:

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2	113-683D	3S-4000 MARKER CYL PIN SPACER
1	113-685D	3S-4000 MARKER LIFT ARM
1	113-686D	3S-4000 MARKER HINGE PIN LG
1	113-687D	3S-4000 MARKER HING PIN SHORT
1	113-715H	3S-4000 MARKER 1ST SEC WLMT
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1	113-717D	3S-4000 MARKER CHAIN 70 IN LG
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1	113-725H	3S-4000 MARKER REST BRKT WLMT
1	113-779H	40P MARKER EXT TUBE WLDMT
1	113-780H	40P TRANS REST WLDMT
1	113-790D	MARKER LIFT ARM TUBE BENT
1	113-790S	40P MARKER DISC & HUB ASSEMBLY
1	113-792H	MARKER SHEAR BASE
1	113-793H	MARKER SHEAR ARM 40P
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1	804-044C	HHCS 1/2-13 X GR5
2	802-062C	HHCS 5/8-11 X 5 GR5
5	802-099C	HHCS 1/2-13 X 3 1/4 GR5
1	802-100C	HHCS 5/8-11 X 4 1/2 GR5
2	802-114C	HHCS 3/8-16 X 2 1/2 GR5
2	802-138C	HHCS 5/16-18 X 2 1/4
2	802-381C	HHCS 3/8-16 X 6 GR5
1	802-598C	HHCS 7/16-14 X 2 GR5
1	803-011C	NUT LOCK 5/16-18 PLT
4	803-013C	NUT LOCK 3/8-16 PLT
2	803-019C	NUT LOCK 1/2-13 PLT
5	803-020C	NUT HEX 1/2-13 PLT
3	803-024C	NUT LOCK 5/8-11 PLT
1	803-200C	NUT HEX LOCK 7/16-14 PLT
6	804-015C	WASHER LOCK SPRING 1/2 PLT22
2	804-017C	WASHER FLAT 1/2 USS PLT
2	804-028C	WASHER FLAT 1 USS PLT
1	805-058C	PIN COTTER 3/16 X 2
1	805-131C	PIN CLEVIS 1 X 4 11/16 USAB
1	810-423C	CYL 3 X 24 X 1.50 ROD (TIE ROD)
1	816-170C	RD BUMP STOP 2 X 1 X 1/2-13
2	818-579C	DECAL WARNING NG PI NCH/SHEAR
2	818-580C	DECAL WARNING OVERHEAD MKR

14 | Flat Fold Marker Option

113-774K 40P LH MARKER HDW BUNDLE

Your kit includes:

Qty.	Part No.	Part Description
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1	113-789D	40P MARKER TRANS REST SHIM
7	502-068D	HYDRAULIC HOSE CLAMP BRACKET
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14	802-172C	HHCS 5/16-18 x 2 1/2 GR5
1	803-011C	NUT LOCK 5/16-18 PLT
2	803-020C	NUT HEX 1/2-13 PLT
4	803-027C	NUT HEX 3/4-10 PLT
2	804-015C	WASHER LOCK SPRING 1/2 PLT
4	804-023C	WASHER LOCK SPRING 3/4 PLT
4	804-025C	WASHER FLAT 3/4 SAE PLT
1	805-004C	PIN CLEVIS 1 X 2 3/4 USABLE
1	806-010C	U-BOLT 1/2-13X2 1/2X 3 1/2
2	806-172C	U-BOLT 3/4-10 X 10 1/32X11 1/2
1	810-058C	VALVE 3/8 NEEDLE
1	811-044C	AD 3/8MNPT
1	811-065C	EL 9/16MJIC 9/16MORB
1	811-151C	AD 9/16MJIC 3/8MNPT
1	811-281C	EL 3/8FNPT 9/16MORB

113-775V 40P LH MARKER HOSE BUNDLE

Your kit includes:

Qty.	Part No.	Part Description
1	811-823C	HH3/8R1 504 9/16 FJIC 3/4 MOR
1	811-824C	HH3/8R1 528 9/16 FJIC 3/4 MOR

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