



24 Series Drills Folding Markers

Used with:

- 2400
- 2410
- 2420



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 optional markers. The markers fold and unfold hydraulically for field operation. The marker disks leave a line for the drill operator to follow on the next field pass. Markers are mounted on the drill frame and require two hydraulic remote valves on the tractor. A sequence valve is available so markers can be operated on one hydraulic circuit.

These instructions apply to:

113-662A 24FT 3PT DUAL MARKERS
113-466A 94 3PT SEQ VALVE KIT-FIELD

Manual Update

Refer to the drill operator's manual for detailed information on safely operating, adjusting, troubleshooting and maintaining the markers. Refer to the parts manual for part identification.

- 2400, 2410 and 2420 Operator's Manual. 118-706M
- 2400, 2410 and 2420 Parts Manual. 118-706P

Before You Start

Starting on page 4 are detailed listings of parts included in the option packages. Use these lists to inventory parts received.

Assembly Instructions

Marker Assembly

Refer to Figure 1.

1. Lower drill into field position. Allow 15 feet of clearance from each end of drill box for marker assembly.
2. Attach first marker section (1) to drill frame. Mount marker as far out on drill frame as possible. Secure marker to drill frame with 5/8-inch u-bolts (2), lock washers and hex nuts.
3. Remove port plugs from marker cylinder and carefully unfold first marker section. Rotate hinge (3) into a horizontal position.
4. Assemble second marker section (4) onto first section so that stop block (5) on second section faces up. Secure sections with 5/8-inch bolt (6) and lock nut and 3/8-by-2-inch, grade 2 shear bolt (7) and lock nut.

IMPORTANT: Use a grade 2 bolt for the shear bolt or marker damage will occur during field operation.

5. Place third marker section (8) over end of second section and insert hinge pin (9) through second- and third-section pivot. Secure hinge pin with the 1/4-by-2-inch bolt (10) and lock nut.
6. Bolt chain pivot (11) to first marker section with 3/8-by-3 1/4-inch bolt (12) and lock nut so chain pivot pivots freely on bolt.
7. Bolt chain bar (13) to third marker section with the 3/8-by-1 1/2-inch bolt (14) and lock nut so chain bar pivots freely on bolt.

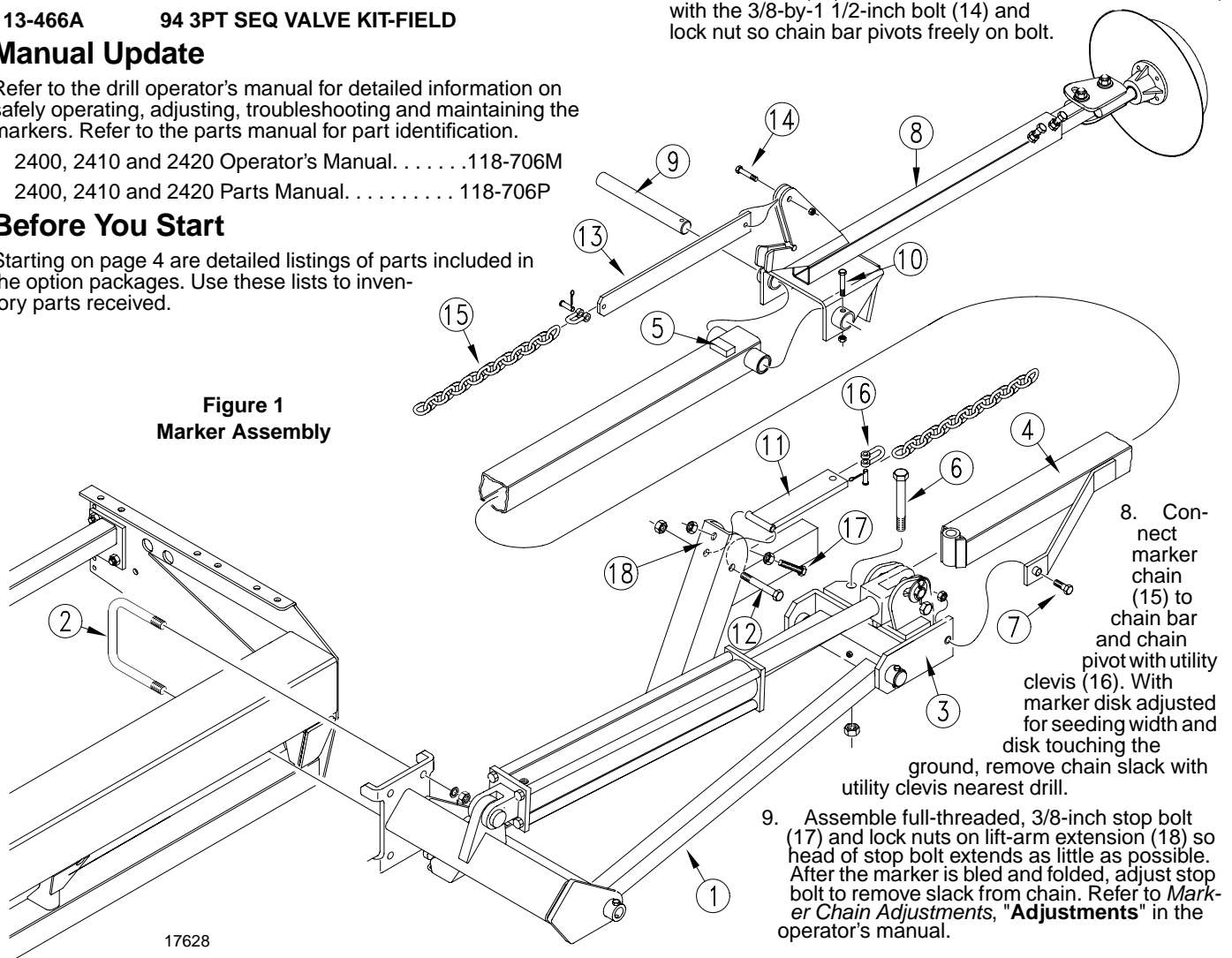


Figure 1
Marker Assembly

8. Connect marker chain (15) to chain bar and chain pivot with utility clevis (16). With marker disk adjusted for seeding width and disk touching the ground, remove chain slack with utility clevis nearest drill.

9. Assemble full-threaded, 3/8-inch stop bolt (17) and lock nuts on lift-arm extension (18) so head of stop bolt extends as little as possible. After the marker is bled and folded, adjust stop bolt to remove slack from chain. Refer to *Marker Chain Adjustments*, "Adjustments" in the operator's manual.

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Assembly

Transport Carrier Assembly

Refer to Figure 2.

1. Assemble transport-carrier mount (1) on drill frame. Center mount 50 3/8 inches from outside end of drill frame. Use 1/2-by-6 1/32-by-7-inch u-bolts (2), flat washers, lock washers and hex nuts (3). Slide mount forward so its leading edge is about 3 15/16 inches ahead of front edge of drill frame tube.
2. Bolt transport carrier (4) to transport-carrier mount so top surface of saddle (5) is about 35 3/8 inches above top of drill frame tube. Secure transport carrier with 1/2-by-2-by-3-inch u-bolts (6), lock washers and hex nuts (7).

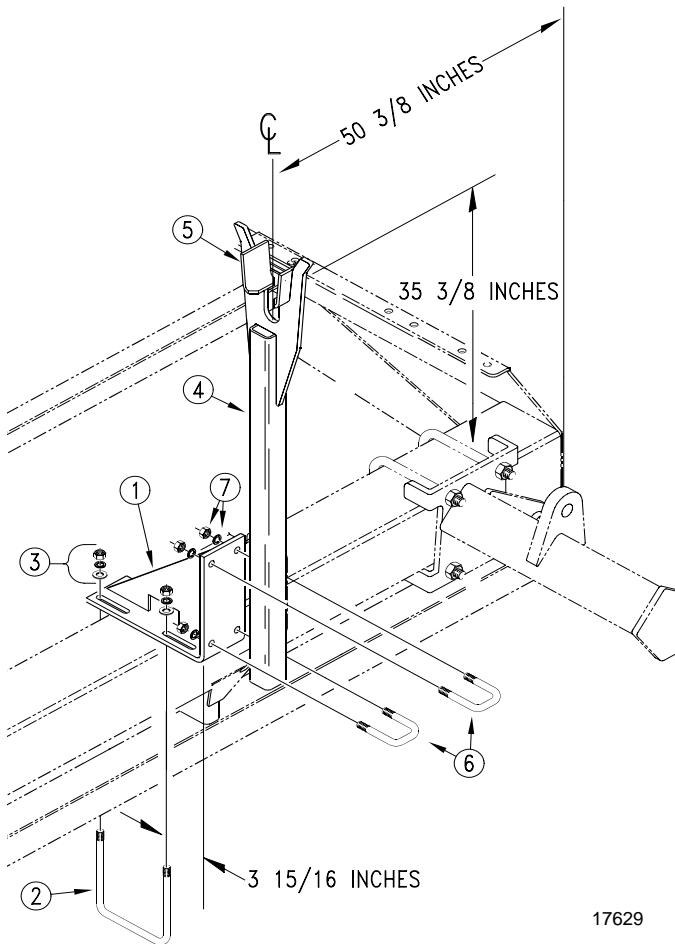


Figure 2
Transport Carrier Assembly

3. After installing and bleeding hydraulics, transport carrier may require further adjustment. When folded, the second marker section should rest in the transport-carrier saddle and be parallel with the drill box. Refer to *Marker Adjustments*, "Adjustments" in the operator's manual.

Installing Marker Hydraulics

Without Sequence Valve

Refer to Figure 3.

1. Install elbow fittings (1) in cylinder ports.
2. At rod end of each cylinder, install an adaptor (2) into elbow fitting. Install a needle valve (3) in adaptor.

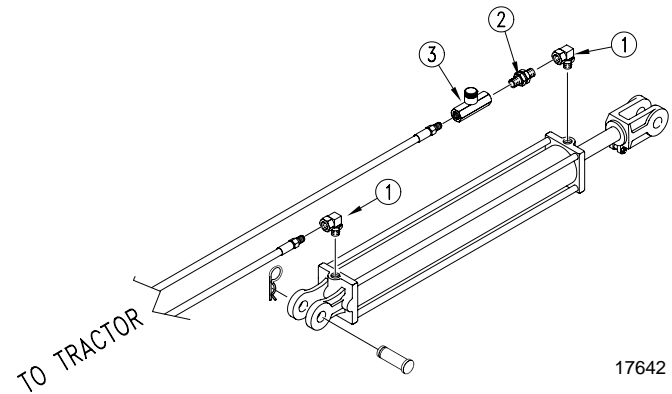


Figure 3
Assemble Needle Valves

3. Connect hydraulic hoses to fittings and route hydraulic hoses to tractor outlets. Route hydraulic hoses through transport-carrier mount at cutout. Use black cable ties to secure hydraulic hoses to drill frame.
4. Using orange cable ties, secure a plastic hose holder to each pair of hydraulic hoses near tractor outlets. See Figure 4.
5. Proceed with "**Bleeding Marker Hydraulics**," page 3.

With Sequence Valve

Refer to Figure 5.

1. Mount sequence valve (1) on drill using mounting plate (2). See Figure 5. Bolt plate to inside end of left-hand-box panel (3) using one 1/2-inch hex bolt (4).
2. Bolt valve to mounting plate with two 3/8-by-3/4-inch hex bolts and lock washers (5).
3. Install elbow fittings in cylinder ports. Discard adaptor fitting and two needle valves provided in marker kit.
4. Use hoses provided to connect valve ports to cylinders. Refer to Figure 5 for port connections.
5. Connect your own hydraulic hoses to ports on front of valve. Route hoses to tractor outlets.
6. Using orange cable tie, secure plastic hose label to hydraulic hoses near tractor outlets. See Figure 4.

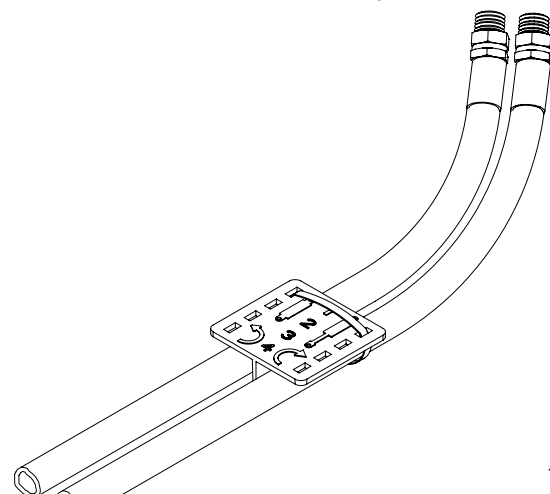


Figure 4
Install Hose Label

7. Proceed with "**Bleeding Marker Hydraulics**," page 3.

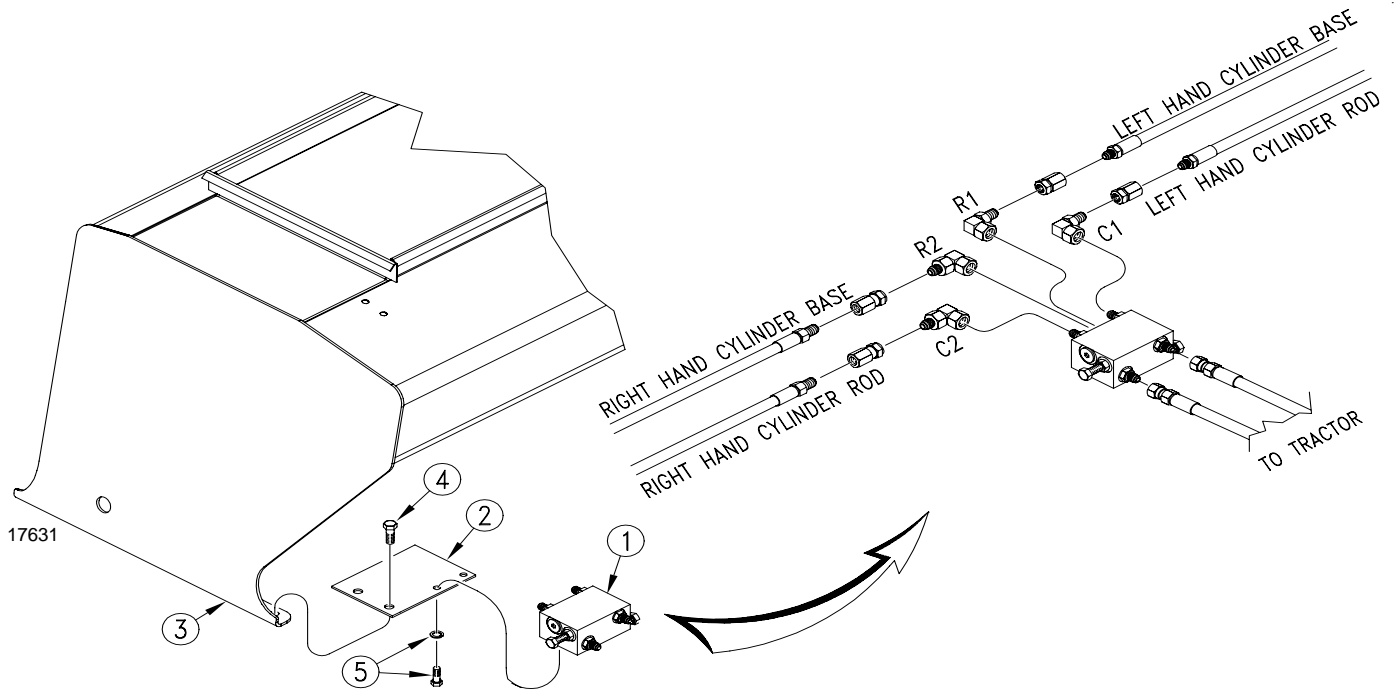


Figure 5
Mount Sequence Valve

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 the markers.



WARNING!

Escaping fluid under pressure can have sufficient pressure to penetrate the skin. Check all hydraulic lines and fittings before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, and wear heavy gloves 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.

1. Check that tractor hydraulic reservoir is full.
2. With both markers lowered into field position, loosen hydraulic-hose fittings at rod and base ends of marker cylinders. If applicable, loosen fittings on back side of sequence valve.

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

3. With tractor idling, activate tractor hydraulic valve until oil seeps out around a loosened fitting. Tighten that fitting.

IMPORTANT: 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 cracking hydraulic fittings from over tightening, do not use plastic sealant tape.

4. Reactivate tractor hydraulic valve until oil seeps out around another loosened fitting. Tighten that fitting. Repeat process until all loosened fitting have been bled and tightened.
5. Adjust marker folding to a safe speed. Refer to *Marker Adjustment, "Adjustments,"* in the operator's manual.

Listing of Parts

113-662A 24Ft 3Pt Dual Markers

Your Kit Includes:

Qty.	Part No.	Part Description
2	811-129C	HH1/4R1 234 3/8MNPT 1/2MNPT
2	811-297C	SP HH1/4R1 212 3/8MNPT-W/AD
1	113-180H	LH FIRST SECTION
1	113-181H	LIFT LUG CHANNEL LH
1	113-188H	RH FIRST SECTION
1	113-189H	LIFT LUG CHANNEL RH
1	113-192H	LH SECOND SECTION
1	113-195H	RH SECOND SECTION
2	113-196H	24' F.F. MKR. 3RD. SECTION
2	113-248D	PIN 1 OD X 4.34 USABLE
2	113-312D	FIRST PIVOT SHAFT
2	113-313D	SECOND PIVOT SHAFT
2	113-324D	CYLINDER STOP
4	113-325D	STOP BUSHING
2	113-352D	MARKER TUBE 30 LG
1	113-558H	MARKER, L.H. MOUNT 96
1	113-559H	MARKER, R.H. MOUNT 96
2	113-563S	MARKER DISC & HUB ASSEMBLY
6	800-001C	GREASE ZERK STRAIGHT 1/4-28
4	801-054C	SCREW SET SQ HD 1/2-13X1 GR
4	802-039C	HHCS 1/2-13X3 GR5
4	802-115C	HHCS 5/16-18X2 GR5
2	802-249C	HHCS 1/2-13X4 1/2 GR5 SPTH
2	802-254C	HHCS 5/8-11X5 1/2 GR5
2	802-266C	HHCS 3/8-16X2 GR2
4	803-011C	NUT LOCK 5/16-18 PLT
2	803-013C	NUT LOCK 3/8-16 PLT
2	803-019C	NUT LOCK 1/2-13 PLT
4	803-020C	NUT HEX 1/2-13 PLT
2	803-024C	NUT LOCK 5/8-11 PLT
4	803-036C	NUT HEX JAM 1/2-13 PLT
4	804-015C	WASHER LOCK SPRING 1/2 P +
8	804-017C	WASHER FLAT 1/2 USS PLT
4	804-029C	WASHER FLAT 1 SAE
4	805-058C	PIN COTTER 3/16 X 2
2	810-118C	CYL 2.5X20X1.12 ROD (TIE)1
4	818-682C	DECAL WARNING PINCH/CRUSH M
2	113-200H	CHAIN BAR WELDMENT
2	113-311D	HINGE PIN
2	113-323D	CHAIN BAR
2	113-328D	24' MARKER CHAIN
2	113-560H	MARKER CARRIER
2	113-568H	MARKER TRANSPORT MOUNT
12	800-082C	CABLE TIE 21" LONG
2	802-022C	HHCS 3/8-16X1 1/2 GR5
2	802-115C	HHCS 5/16-18X2 GR5
2	802-168C	HHCS 3/8-16X3 1/4 GR5
2	802-261C	HHCS 3/8-16X2 1/2 GR5 FTHD
2	803-011C	NUT LOCK 5/16-18 PLT
8	803-013C	NUT LOCK 3/8-16 PLT
16	803-020C	NUT HEX 1/2-13 PLT
8	803-021C	NUT HEX 5/8-11 PLT
4	804-011C	WASHER FLAT 3/8 USS PLT
16	804-015C	WASHER LOCK SPRING 1/2 PLT
8	804-017C	WASHER FLAT 1/2 USS PLT
8	804-022C	WASHER LOCK SPRING 5/8 PLT
4	806-005C	U-BOLT 1/2-13 X 2 X 3 GR 5
4	806-039C	U-BOLT 5/8-11 X 6 1/32 X 7
4	806-060C	U-BOLT 1/2-13 X 6 1/32 X 7
2	810-058C	VALVE 3/8 NEEDLE
2	811-044C	AD 3/8MNPT
4	811-281C	EL 3/8FNPT 9/16MORB
4	890-018C	5/16 X 1 1/4 UTILITY CLEVIS
1	113-672M	MANUAL 24 FT 3PT MARKERS
2	800-300C	CABLE TIE 2 DIA MIN - ORG
2	817-348C	PLASTIC HOSE LABEL

Listing of Parts**113-466A 94 3Pt Sequence Valve Field Kit***Your Kit Includes:*

Qty.	Part No.	Part Description
1	113-488D	SEQUENCE VALVE MOUNT BRACKE
2	802-014C	HHCS 3/8-16X3/4 GR5
2	804-013C	WASHER LOCK SPRING 3/8 PLT
1	810-197C	VALVE,SEQUENCE SHOEMAKER
4	811-169C	EL 9/16MJIC 9/16FJIC
4	811-440C	AD 1/2FNPT X 9/16FJICS