

Operator's/Parts Manual

3-Point Planter
Flat Fold Marker

Great Plains

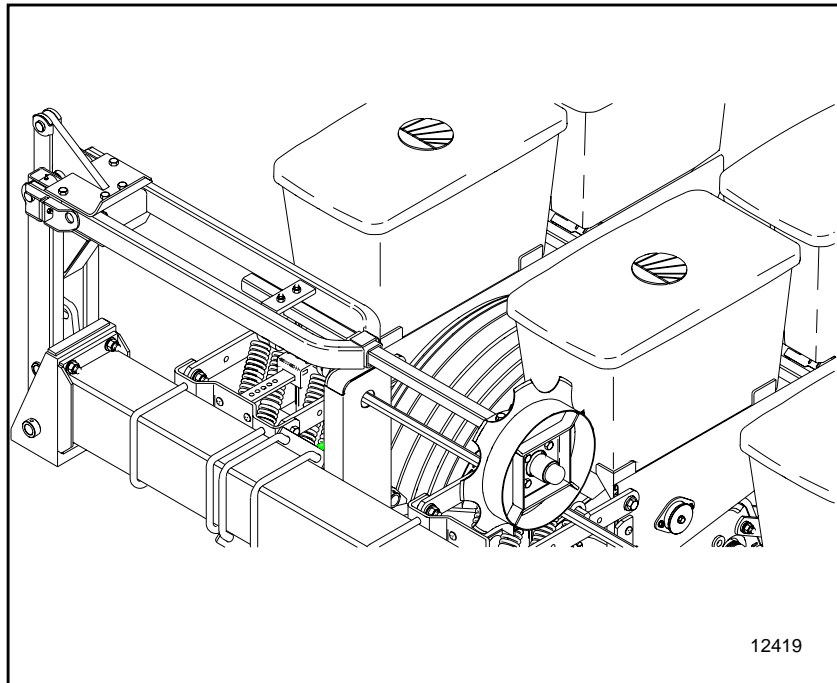
Manufacturing, Inc.

P.O. Box 5060 • Salina, Kansas 67402-5060



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!

Great Plains



Cover illustration may show optional equipment not supplied with standard unit.

General Information

Important Notice

Great Plains Manufacturing, Inc. provides this publication "as is" without warranty of any kind, either expressed or implied, while every precaution has been taken in the preparation of this manual, Great Plains Manufacturing, Inc. assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. Great Plains Manufacturing, Inc. reserves the right to revise and improve its products as it sees fit. This

publication describes the state of this product at the time of its publication, and may not reflect the product at all times in the future.

Printed in the United States of America.

For your convenience, record your Serial Number, Model Number and the Date Purchased, of your drill, in the spaces provided below. Have this information before you when calling a Great Plains Authorized Dealer.

This Operator's Manual applies to the 3-Point Planter Flat Fold Marker listed below:

113-428A	6-Row Flat Fold Marker
113-429A	8-Row Flat Fold Marker

Owner's Information

Name: _____

Model Number _____

Address _____

Date Purchased _____

City _____ State _____ Zip _____

Phone _____

Name of Dealership _____

Dealer's Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

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Using this Manual

For your safety and to help in developing a better understanding of your equipment we highly recommend that you read the operator sections of this manual. Reading these sections not only provides valuable training but also familiarizes you with helpful information and its lo-

cation. The parts sections are for reference only and don't require cover to cover reading. After reviewing your manual store it in a dry, easily accessible location for future reference.

Introduction

This manual has been prepared to instruct you in the safe and efficient operation of your 3-Point Planter Flat Fold Marker. Read and follow all instructions and safety precautions carefully.

The parts on your 3-Point Planter Flat Fold Marker have been specially designed and should only be replaced with genuine Great Plains parts. Therefore, should your 3-Point Planter Flat Fold Marker require replacement parts go to your Great Plains Dealer.

The right hand and left hand as used throughout this manual is determined by facing in the direction the machine will travel when in use unless otherwise stated.



The SAFETY ALERT SYMBOL indicates that there is a potential hazard to personal safety involved and extra safety precautions 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.

Watch for the following safety notations throughout your Operators Manual:



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.



WARNING!

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



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.

NOTE: Indicates a special point of information which requires your attention.

Section 1 Safety Rules



Most accidents are the result of negligence and carelessness, usually caused by failure of the operator to follow simple but necessary safety precautions. The following safety precautions are suggested to help prevent such accidents. The safe operation of any machinery is a big concern to consumers and manufactures. Your 3-Point Planter Flat Fold Marker has been designed with many built-in safety features. However, no one should operate this product before carefully reading this Operators Manual.

General Operation & Repair

1. *Never allow the Flat Fold Marker to be operated by anyone who is unfamiliar with the operation of all functions of the unit. All operators should read and thoroughly understand the instructions given in this manual prior to moving the unit.*
2. *Make sure safety rules are understood before operating machinery or tractor.*
3. *Never permit any persons other than the operator to ride on the tractor.*
4. *Never permit any persons to stand near the Flat Fold Marker while it is in operation.*
5. *Regulate your speed to the field conditions, maintaining complete control at all times.*
6. *After repairing or adjusting, make sure all tools and parts are removed from the implement before attempting to operate it.*
7. *Do not grease or oil machine while it is in operation.*
8. *Loose fitting clothing should not be worn as it may catch in moving parts.*
9. *Never dismount from a moving tractor.*
10. *Do not leave the tractor or the implement unattended with the engine running.*
11. *Do not stand between the tractor and the implement during hitching.*
12. *Detach and store implements in an area where children normally do not play. Stabilize implements by using suitable supports and block wheels.*
13. *If a hydraulic leak develops, correct it immediately. Escaping hydraulic oil can have extremely high pressure. A stream of high pressure oil may easily penetrate the skin as with modern needle-less vaccination equipment - but with the exception that hydraulic fluid may cause blood poisoning. It is imperative that the connections are tight and that all lines and pipes are in good condition. If an injury is caused by the escaping hydraulic fluid, see doctor at once!*
14. *Use a piece of cardboard or wood to detect leaks of hydraulic oil under pressure.*
15. *Be sure to relieve all hydraulic pressure before disconnection any lines or pipes between the implement and the tractor hydraulic system. Keep all guards and shields in place.*

Transporting








1. *Use good judgement when transporting tractor and implements on the highway. Always maintain complete control of the machine.*
2. *Limit transport speed to 20 mph. Transport only with a farm tractor of sufficient size and horse power.*
3. *Always make sure flashing safety lights, "Slow Moving Vehicle" emblem, and reflectors are in place and visible prior to transporting the machine on public roads.*
4. *Know your state and local laws concerning highway safety and regulations. Comply with these laws when transporting machinery.*
5. *Use warning flags or approved warning lights at night and during other periods of poor visibility. Do your best to prevent highway accidents*

Section 2 Assembly Instructions & Set-Up

Torque Values Chart for UNC Threads

Bolt head identification marks are as per grade.

NOTE: Manufacturing marks will vary.

						  				  			
		Grade 2				Grade 5				Grade 8*			
Bolt Size		Foot Pounds		Newton-Meters		Foot Pounds		Newton-Meters		Foot Pounds		Newton-Meters	
inches	mm	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4"	6.35	5	6	6.8	8.13	9	11	12.2	14.9	12	15	16.3	20.3
5/16"	7.94	10	12	13.6	16.3	17	20.5	23.1	27.8	24	29	32.5	39.3
3/8"	9.53	20	23	27.1	31.2	35	42	47.5	57.0	45	54	61.0	73.2
7/16"	11.11	30	35	40.7	47.4	54	64	73.2	86.8	70	84	94.9	113.9
1/2"	12.70	45	52	61.0	70.5	80	96	108.5	130.2	110	132	149.2	179.0
9/16"	14.29	65	75	88.1	101.6	110	132	149.2	179.0	160	192	217.0	260.4
5/8"	15.88	95	105	128.7	142.3	150	180	203.4	244.1	220	254	298.3	358.0
3/4"	19.05	150	185	203.3	250.7	270	324	366.1	439.3	380	456	515.3	618.3
7/8"	22.23	160	200	216.8	271.0	400	480	542.4	650.9	600	720	813.6	976.3
1"	25.40	250	300	338.8	406.5	580	596	786.5	943.8	900	1080	1220.4	1464.5
1 1/8"	25.58					800	880	1084.8	1193.3	1280	1440	1735.7	1952.6
1 1/4"	31.75					1120	1240	1518.7	1681.4	1820	2000	2467.9	2712.0
1 3/8"	34.93					1460	1680	1979.8	2278.1	2380	2720	3227.3	3688.3
1 1/2"	38.10					1940	2200	2630.6	2983.2	3160	3560	4285.0	4827.4

* Thick nuts must be used with Grade 8 bolts

NOTE: Torque requirements listed above do not apply to self-locking nuts. For self-locking nuts increase the torque requirements listed by 15%.

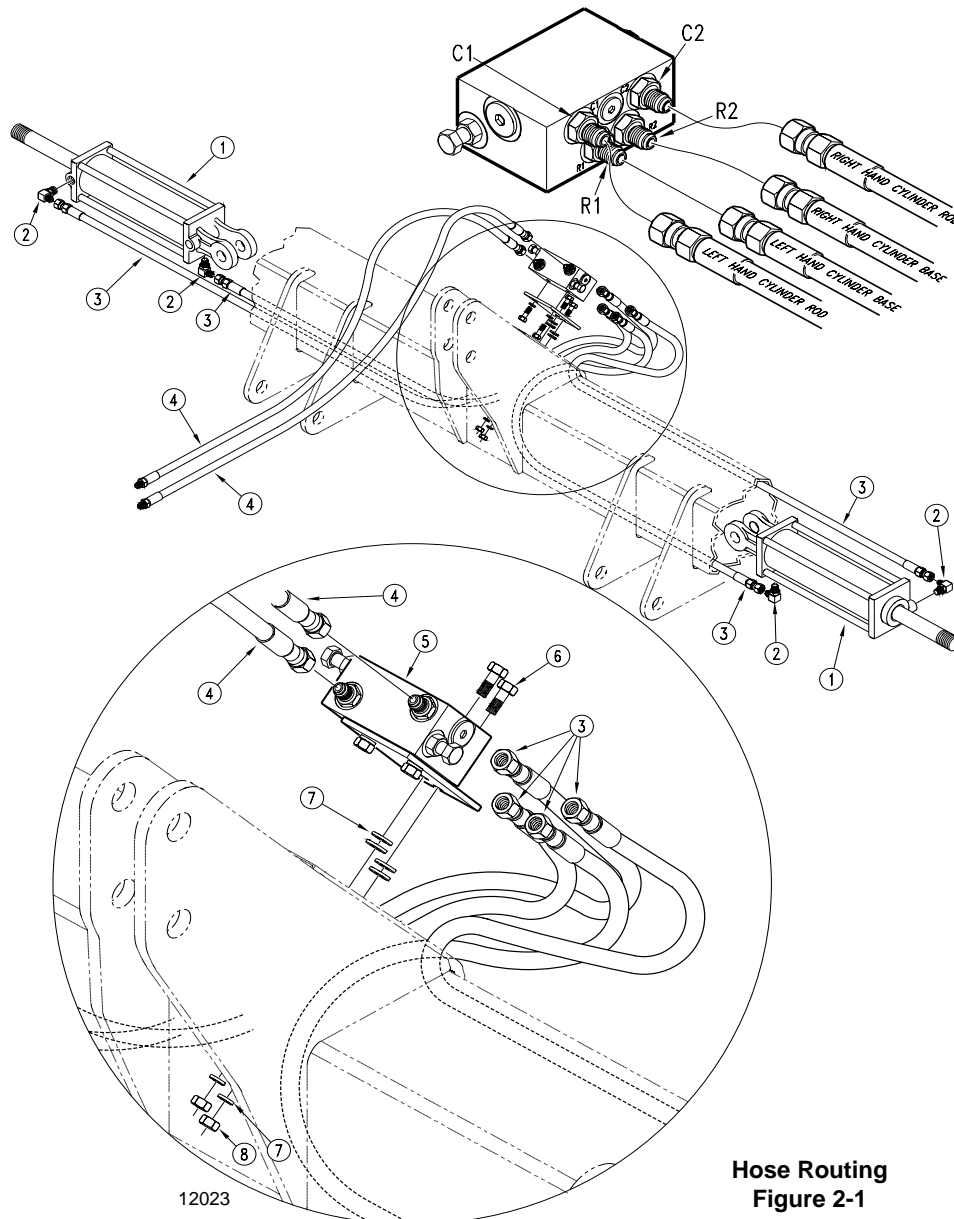
Notes:

3-Point Planter Installation Instructions

NOTE: While using the following text to install your flat fold marker, you may need to refer to the parts section of this manual for more details and for positive identification of related items not mentioned in these instructions.

Refer to Figure 2-1 for the following Installation Instructions.

1. Lower the planter to the planting position. Remove the frame end cap if applicable.
2. Install all hydraulic hoses to valve (#3 & 4). Install the valve and marker hoses to the center mast of the frame (#5, 6, 7, & 8). Mark the hoses that are attached to C1, C2, R1, and R2 ports. (Masking tape attached to cylinder end of the hose is adequate.) Feed the cylinder end of the hoses into the frame making sure C1 and R1 go to the left end of the frame and that C2 and R2 go to the right end of the frame. When the hoses are completely installed there will be excess hose that will be tucked back inside the frame when the cylinder and mount are installed.
3. Install the fittings (#2) into the cylinders noting that the elbows will point to the base ends of the cylinders. Install the hoses (#3) marked C1 and C2 to the rod end of the cylinders and the hoses marked R1



Hose Routing
Figure 2-1

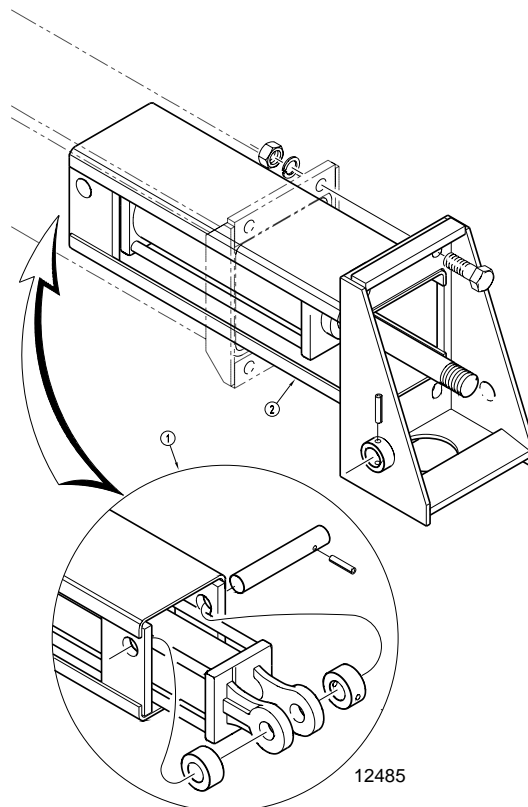
and R2 to the base end of the cylinders.

4. Install the cylinders into the marker mounts (#1 & 2), Figure 2-2, retain cylinders with the pins and spacers. Slide the mounts and excess hoses into the frame. Install bolts and tighten (Torque value charts page 4).
5. Connect hoses to tractor and cycle cylinders in and out several times and purge any air that may be in cylinders. (Note the cylinders will alternate extending.) Retract both cylinders shut off tractor and inspect for any hydraulic leaks as described in Section 1 of this manual

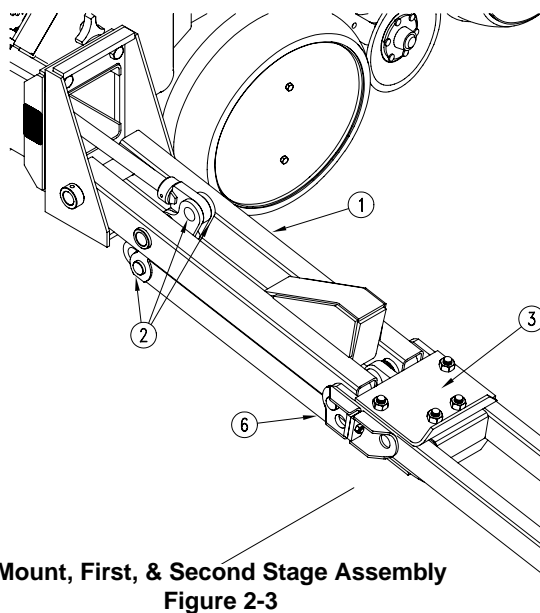


WARNING!

If a hydraulic leak develops, correct it immediately. Escaping hydraulic oil can have extremely high pressure. A stream of high pressure oil may easily penetrate the skin as with modern needle-less vaccination equipment - but with the exception that hydraulic fluid may cause blood poisoning. It is imperative that the connections are tight and that all lines and pipes are in good condition. .



Cylinder to Mount Installation
Figure 2-2



Mount, First, & Second Stage Assembly
Figure 2-3

Refer to Figure 2-3 for the remainder of the Instructions.

6. Install the 1st stage arms(#1). Leave arms resting on the down stops.
7. Install pivot links (#2). Refer to Illustration for proper orientation.
8. Install the 2nd stage mount, 2nd stage, and the extension tube (#3, 4, & 5) onto the end of the 1st stage arms.
9. Install transfer links (#6) to pivot links and 2nd stage mounts.

10. Start tractor and slowly extend one of the cylinders out approximately 6 inches. Shut tractor off and by raising the end of the 2nd stage attach the cylinder and the pivot link. Check all hardware on the marker to specifications then start tractor and fold marker to the storage position.
11. Extend opposite cylinder approximately 6 inches. Shut tractor off and repeat step 10.

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 bolts (1) Figure 2-3, rotate the disk assembly and retighten.

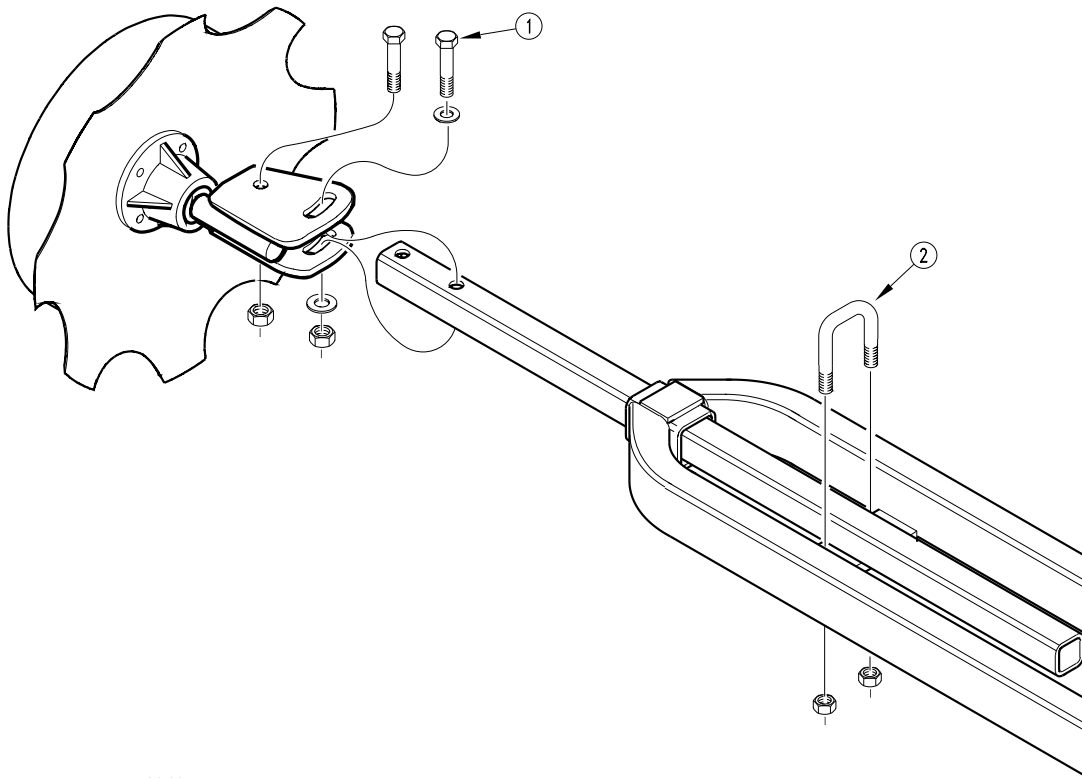
2. Direction Of Cut

The disk may be mounted to throw dirt either in or out which will give different marks in different soil

conditions. To change the direction of cut:

- Reverse the blade and depth band by remounting the four lug bolts on the disk hub.
- Reverse the angle of the assembly by removing the adjustment bolts (1) Figure 2-3 and turning the spindle assembly one half turn. Reinstall and tighten all bolts.

Marker width adjustments are made by loosening the marker tube u-bolt (2) and sliding it in or out to the desired width and be tightening the u-bolt.



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Disk Blade Adjustments
Figure 2-4

Section 3 Hydraulic System

Adjusting The Hydraulics

1. Be sure tractor hydraulic reservoir is full.



CAUTION!

Never allow anyone near the drill when cycling the markers.

2. 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 heads, one for controlling marker speed up and one for controlling marker speed down. To adjust the speed of each marker, screw the needle valve clockwise to adjust the marker speed to a low setting. Fold the marker up and down a few times and recheck for pinching and kinking of hoses. With the tractor engine at an operating rpm, adjust the needle valve to limit the marker to a safe operating speed. Excessive folding speeds can cause marker damage.



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.

General Notes

If both markers are required down at the same time run one marker down, momentarily start to raise it, reverse the hydraulic lever and lower the opposite marker. Holding the lever down then will force both markers down.

If the markers are down they can both be raised simultaneously but they can only be lowered one at a time alternating from one side to the other.

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.

Section 4 Maintenance & Lubrication

Maintenance

Proper servicing and adjustment is the key to the long life of any farm implement. With careful and systematic inspection, you can avoid costly maintenance, time and repair.

Breakaway Protection

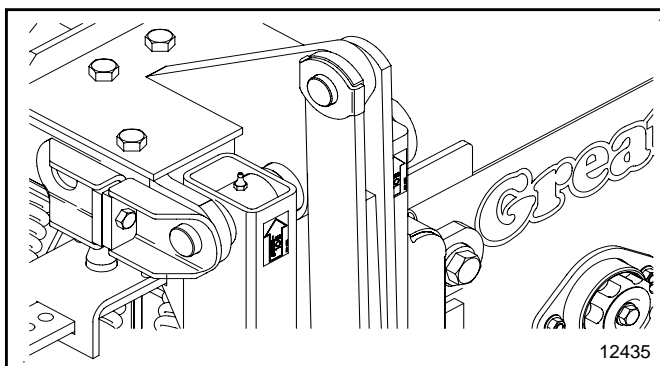
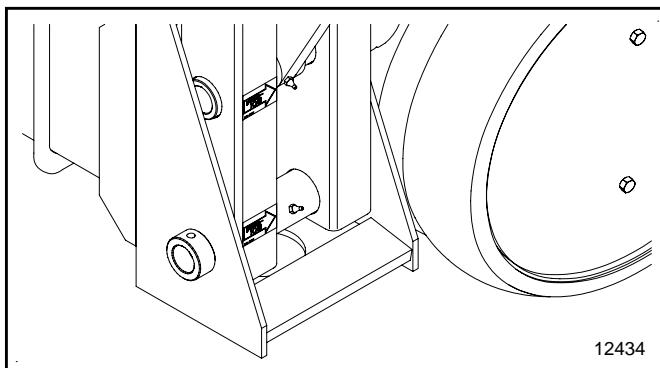
The marker arm is attached to the marker body with a 5/16" breakaway bolt. If excessive force is put on the marker during operation, the bolt will break, allowing the marker arm to swing away rather than cause damage to the marker.

NOTE: The breakaway bolt is a 5/16"-18 x 1 1/2" long grade 5 on planter only (GP #802-012C). If it breaks, it must be replaced by an equivalent grade 2 bolt to prevent marker damage.

Marker Transporting

Always transport the marker with it folded in the flat fold position.

Lubrication



Lubrication Symbols



Lubrication is required every 50 hours of operation.



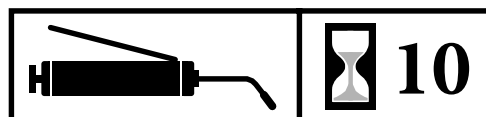
Lubrication is required every 10 hours of operation.



Use a multipurpose spray lube. Use as required.
Do not over lubricate.

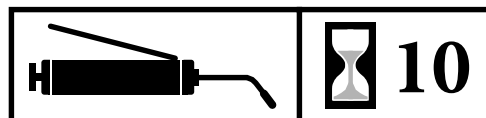


Lubrication is required



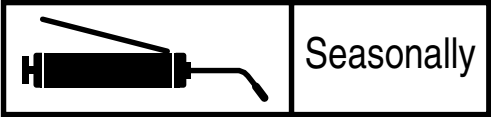
Zerks

Type of Lubrication: Grease



Zerks

Type of Lubrication: Grease



Type of Lubrication: Grease

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Section 5 Troubleshooting

	Solution
Hydraulic marker functioning improperly	Check all hose fittings and connections for air and oil leaks.
	Check tractor hydraulic oil level.
	Check all bolts and fasteners.
	<p>If markers do not alternate:</p> <ol style="list-style-type: none"> Check tractor flow controls and set to maximum oil flow. If problem still exists. Remove valve, disassemble, and check for contamination or damage to spool. Re-assemble.
Blade does not mark	The maximum marker down float is limited by the slot in the pivot link. If the blade does not drop down to follow depressions in the field, make sure the marker cylinder is fully extended.
	The blade may be reversed to pull dirt in or throw dirt out depending on soil conditions.

Section 6 Warranty

Warranty

Great Plains Manufacturing, Incorporated warrants to the original purchaser that this seeding equipment will be free from defects in material and workmanship for a period of one year from the date of original purchase when used as intended and under normal service and conditions for personal use; 90 days for commercial or rental purposes. This Warranty is limited to the replacement of any defective part by Great Plains Manufacturing, Incorporated and the installation by the dealer of any such replacement part. Great Plains reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship.

This Warranty does not apply to any part or product which in Great Plains' judgement shall have been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed. This Warranty shall not apply if the product is towed at a speed in excess of 20 miles per hour.

Claims under this Warranty must be made to the dealer which originally sold the product and all warranty adjustments must be made through such dealer. Great Plains reserves the right to make changes in materials or design of the product at any time without notice.

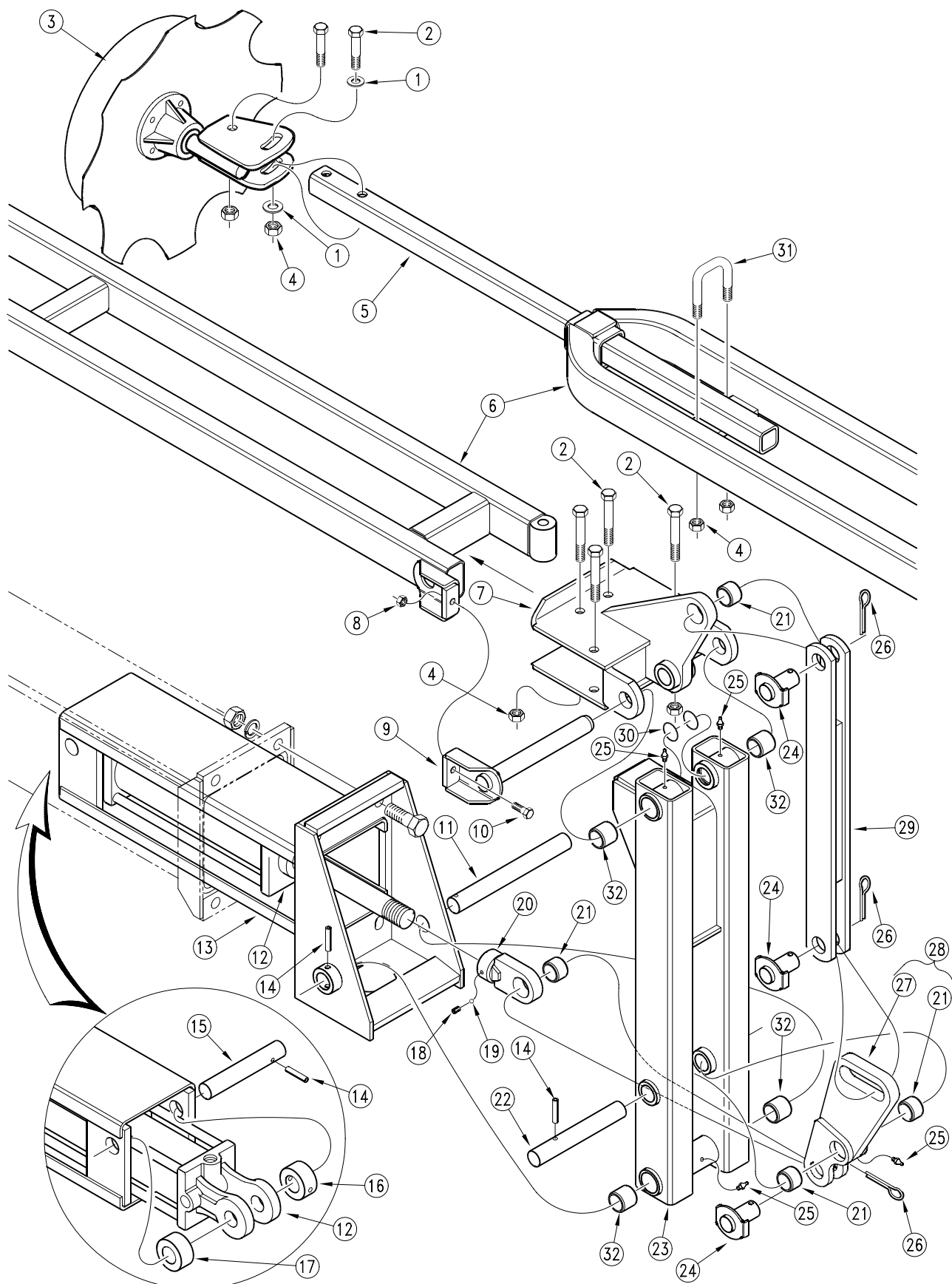
This Warranty shall not be interpreted to render Great Plains liable for damages of any kind, direct, consequential, or contingent, to property. Furthermore, Great Plains shall not be liable for damages resulting from any cause beyond its reasonable control. This Warranty does not extend to loss of crops, losses caused by harvest delays or any expense or loss for labor, supplies, rental machinery or for any other reason.

No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

This Warranty is not valid unless registered with Great Plains Manufacturing, Incorporated with 10 days from the date of original purchase.

Notes:

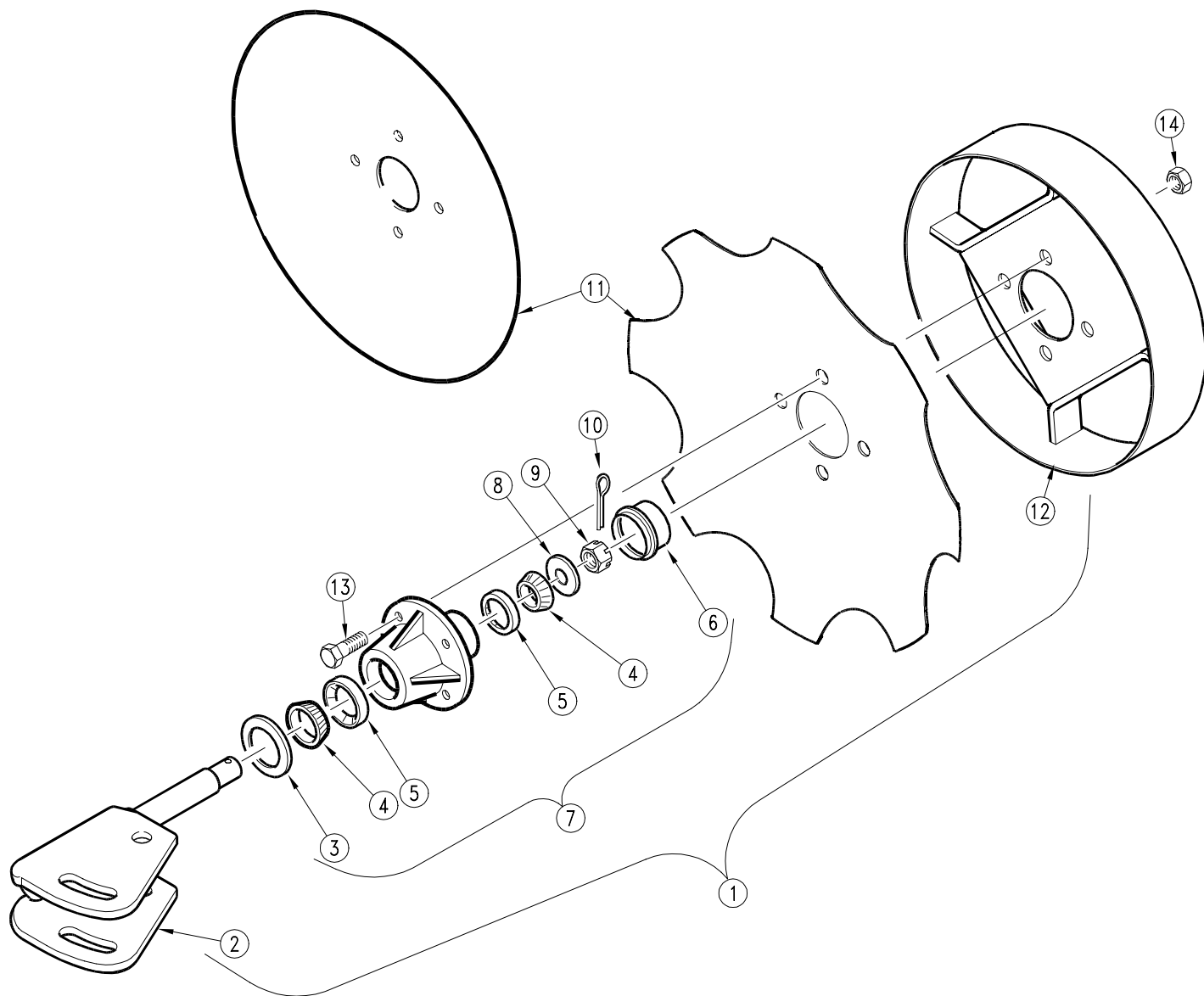
Section 7 Flat Fold Marker Assembly



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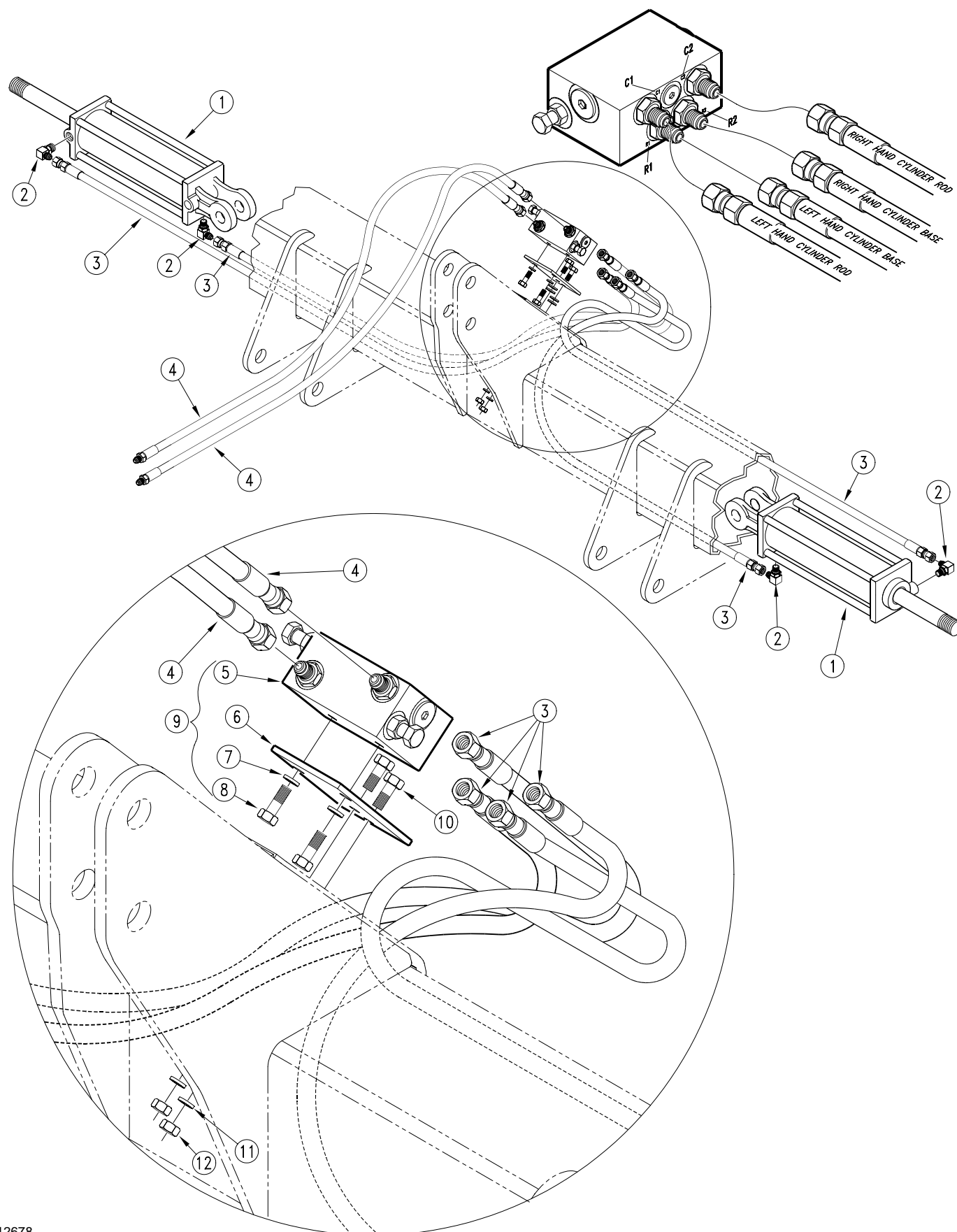
Section 7 Flat Fold Marker Assembly

Ref.	Part No.	Part Description
1.	804-017C	WASHER FLAT 1/2 USS PLT
2.	802-041C	HHCS 1/2-13X3 1/2 GR5
3.	113-564S 113-372S	2020 MARKER DISC & HUB ASSY REPLACED BY 113-564S
4.	803-019C	NUT LOCK 1/2-13 PLT
5.	113-440D	MARKER TUBE 36 LG
6.	113-449H	6 ROW 2ND STAGE ARM WMNT
	113-450H	8 ROW 2ND STAGE ARM WMNT
7.	113-440H	2ND STAGE MOUNT WMNT
8.	803-011C	NUT LOCK 5/16-18 PLT
9.	113-442H	2ND STAGE MOUNT PIN
10.	802-012C	HHCS 5/16-18X1 1/2 GR5
11.	113-439D	1ST STAGE MOUNTING PIN
12.	810-196C	CYL 2.5X10X1.12 ROD(TIE)NOPINS
13.	113-435H	PLANTER MARKER MOUNT WMNT
14.	805-180C	PIN ROLL 1/4 X 1 1/2 LG PLT
15.	113-435D	CYLINDER LUG PIN
16.	113-437D	CYLINDER SPACER W/ HOLE
17.	113-436D	CYLINDER SPACER
18.	801-045C	SCREW SET 1/4-28X1/4 KNL CUP
19.	817-145C	THREAD PROTECTOR-DELRIN
20.	113-444H	CYLINDER TANG WMNT
21.	890-143C	BUSHING HARDENED 1 1/4-1-3/4 L
22.	113-438D	CYLINDER LINK PIN
23.	113-437H	1ST STAGE ARM WELDMENT
24.	113-448H	CYL. PIVOT PIN WMNT
25.	800-001C	GREASE ZERK STRAIGHT 1/4-28
26.	805-021C	PIN COTTER 1/4 X 2 PLT
27.	113-447E	PIVOT LINK WELDMENT
28.	113-453S	PIVOT LINK BUSHING ASSY
29.	113-446H	TRANSFER LINK WMNT
30.	816-166C	O-RING 1 ID X 1 1/4 OD X 1/8
31.	806-103C	U-BOLT 1/2-13 1 17/32 X 2 3/4
32.	890-005C	BUSHING CYL 1 1/4 X 1 X 1



Section 7 Disk Assembly

Ref.	Part No.	Part Description
1.	113-563S	MARKER DISC & HUB ASSEMBLY
	113-564S	REP BY 113-563S
	113-372S	REP BY 113-564S
2.	113-562H	1 SPINDLE MARKER WELDMENT
3.	816-014C	TINE GAUGE WHEEL HUB SEAL
4.	822-030C	BEARING CONE L44643
5.	822-080C	BEARING CUP L44610
6.	890-614C	GREASE CAP #1505
7.	815-001C	TINE GW HUB
8.	804-025C	WASHER FLAT 3/4 SAE PLT
9.	803-053C	NUT HEX SLOTTED 3/4-16
10.	805-019C	PIN COTTER 5/32 X 1 PLT
11.	820-094C	16 4-BOLT NOTCHED MARKER DISK
	820-098C	14 4-BOLT MARKER DISK
12.	113-369H	DEPTH BAND 10 4-BOLT 4B.C.
13.	BO-47	NEILSON STUD 1/2-20UNF X 1 13/16
14.	803-159C	NUT LUG 1/2-20 X 60 DEG PLT

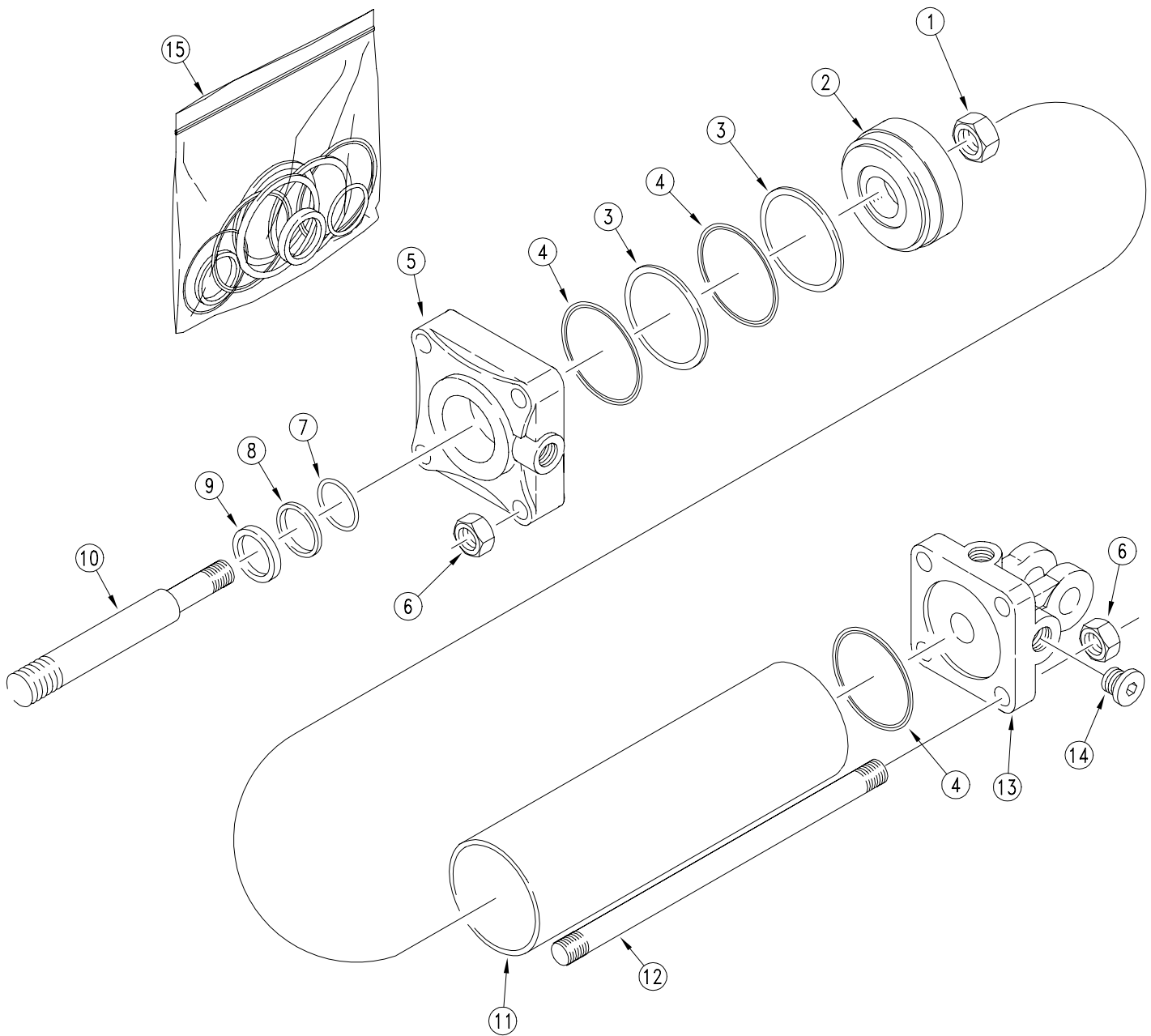


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Section 8 Hydraulic Assembly

Ref.	Part No.	Part Description
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1.	810-196C	Cylinder 2 1/2" x 10 Mid
2.	811-065C	Fitting, Hydraulic Elbow 9/16" JIC Male x 9/16" O-Ring Male
3.	811-229C	Hose, Hydraulic 1/4" R1 x 119" Long x 9/16" JIC Female (6-Row)
	811-173C	Hose, Hydraulic 1/4" R1 x 145" Long x 9/16" JIC Female (8-Row)
4.	811-395C	Hose, Hydraulic 1/4" R1 x 72" Long x 9/16" JIC Female x 1/2" mptm
5.	810-197C	Valve, sequence Shoemaker
6.	113-441D	Alternating Valve Mount Plate
7.	804-013C	Washer, Lock Spring 3/8"
8.	802-014C	Bolt, Hex Head 3/8"-16 x 3/4" Long
9.	113-436S	Alternating Valve Mount Assembly
10.	802-159C	Bolt, Hex Head 5/16"-18 x 1 Long
11.	804-009C	Washer, Lock Spring 5/16"
12.	803-008C	Nut, Hex 5/16"-18

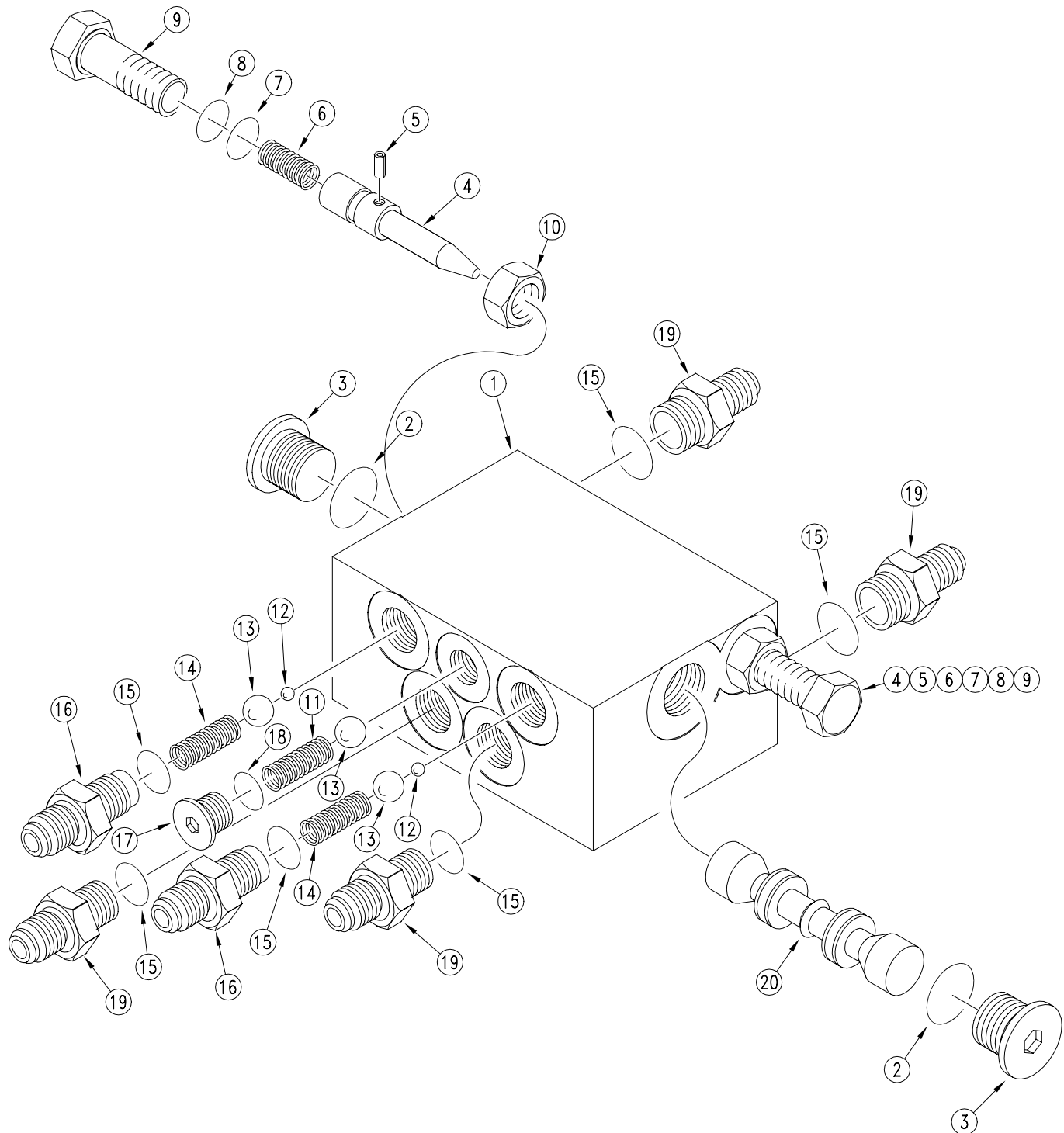


Section 8 Hydraulic Cylinder (810-196C)

Ref.	Part No.	Part Description
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1.	2A0022	Piston Nut
2.	4M3102	Piston
3.	*	Back-up
4.	*	O-Ring
5.	3R0310	MW Head
6.	2A0012	Tie Rod Nut
7.	*	O-Ring
8.	*	Back-up
9.	*	Wiper Seal
10.	2M3393	MW Rod
11.	5M3118	Tube
12.	7M3318	Tie Rod
13.	6R0154	Base Midway
14.	2A0126	Hex Port Plug
15.	810-210C	Seal Kit

*Can Only Be Ordered In Seal Kit (15)



Section 8 Sequence Valve (810-197C)

Ref.	Part No.	Part Description
1.	3089	Body, Sequence Valve
2.	1088-908	O-Ring
3.	1132-08	Plug, Hex Socket
4.	1179	Needle, Flow Control
5.	1217	Pin, .125" Spring Pin
6.	1211	Spring, Compression
7.	1088-011	O-Ring
8.	1089-011	Ring, Teflon Back-Up
9.	1180	Screw, Flow Control Adjustment
10.	1218	Hex, Jam Nut Zink Plated
11.	1099	Spring, Detent
12.	1087-250	Chromium Steel Balls
13.	1087-437	ChromiumSteel Ball
14.	1042	Spring
15.	1088-906	O-Ring
16.	1182	Fitting, Port Adaptor
17.	1132-05	Hex, Socket O-Ring Plug
18.	1088-905	O-Ring
19.	1092-6	Connector, Straight
20.	2153	Spool, Marker Sequence .055" Orifice

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