

# **ASSEMBLY INSTRUCTIONS**



# FIELD CULTIVATOR

PO Box 1030
Wahpeton, ND 58074
PH (701) 642-2621
Fax (701) 642-3372
www.wil-rich.com

#### WARRANTY

The only warranty Wil-Rich gives and the only warranty the dealer is authorized to give is as follows:

We warrant products sold by us to be in accordance with our published specifications or those specifications agreed to by us in writing at time of sale. Our obligation and liability under this warranty is expressly limited to repairing, or replacing, at our option, within 12 months after date of retail delivery, any product not meeting the specifications. We make no other warranty, express or implied and make no warranty of merchantability or of fitness for any particular purpose. Our obligation under the warranty shall not include any transportation charges or costs or installation or any liability for direct, indirect or consequential damage or delay. If requested by us, products or parts for which a warranty claim is made are to be returned transportation prepaid to our factory. Any improper use, operation beyond rated capacity, substitution of parts not approved by us, or any alteration or repair by others in such manner as in our judgment affects the product materially and adversely shall void this warranty. No employee or representative is authorized to change this warranty in any way or grant any other warranty.

Wil-Rich reserves the right to make improvement changes on any of our products without notice.

When warranty limited or not applicable: Warranty on hoses, cylinders, hubs, spindles, engines, valves, pumps or other trade accessories are limited to the warranties made by the respective manufactures of these components. Rubber tires and tubes are warranted directly by the respective tire manufacturer only, and not by Wil-Rich.

Warranty does not apply to any machine or part which has been repaired or altered in any way so as in the our judgment to affect its reliability, or which has been subject to misuse, negligence or accident.

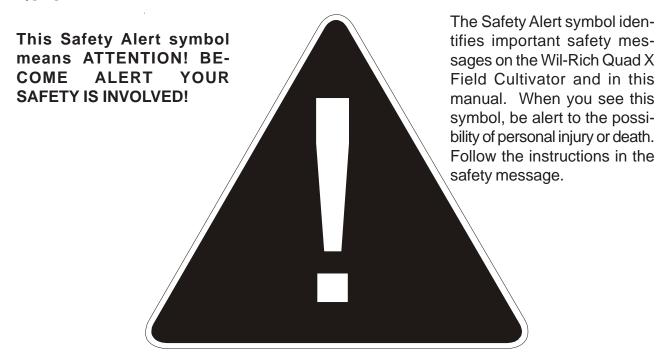
A Warranty Validation and Delivery Report Form must be filled out and received by Wil-Rich to initiate the warranty coverage.

#### WARRANTY CLAIMS PROCEDURE

- 1. The warranty form must be returned to Wil-Rich within fifteen (15) working days from the repair date.
- 2. Parts returned to Wil-Rich without authorization will be refused. The parts must be retained at the dealership for ninety (90) days after the claim has been filed. If the Service Department would like to inspect the parts, a packing slip will be mailed to the dealer. The packing slip must be returned with the parts. The parts must be returned prepaid within thirty (30) days of receiving authorization. After the parts are inspected and warranty is verified, credit for the return freight will be issued to the dealer.
- 3. Parts that will be scrapped at the dealership will be inspected by a Wil-Rich Sales Representative, District Sales Manager or Service Representative within the ninety (90) day retaining period.

## PERSONAL SAFETY IS IMPORTANT!

ALL PERSONNEL INVOLVED WITH THE ASSEMBLY AND/OR OPERATION OF THIS EQUIPMENT MUST BE INFORMED OF PROPER SAFETY PROCEDURES. OPERATOR'S/ ASSEMBLY MANUALS PROVIDE THE NECESSARY INFORMATION. IF THE MANUAL IS LOST FOR A PARTICULAR IMPLEMENT, ORDER A REPLACEMENT AT ONCE. OPERATOR'S AND ASSEMBLY MANUALS ARE AVAILABLE AT NO CHARGE UPON REQUEST.



Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill Accidents Cost Accidents Can Be Avoided

#### SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guidelines:

#### **DANGER**

An immediate and specific hazard which WILL result in severe personal injury or death if the proper precautions are not taken.

#### WARNING

A specific hazard or unsafe practice which COULD result in severe personal injury or death if the proper precautions are not taken

#### **CAUTION**

Unsafe practices which COULD result in personal injury if proper practices are not taken, or as a reminder of good safety practices.

ADDRESS INQUIRIES TO: WIL-RICH PO BOX 1030 WAHPETON, ND 58074 PH (701) 642-2621 FAX (701) 642-3372

# CONTENTS

GENERAL INFORMATION	5
TRANSPORT SAFETY	6
ASSEMBLY	
OPENINGBUNDLE	7-8
AXLESAND WALKING TANDEMS	
11' & 13' MAIN FRAME	
11' & 13' HITCHASSEMBLY	
HITCHASSEMBLY	
7',9'4", & 11'8" WING	
3'OUTERWING	
5'FLOATING OUTER WING W/GAUGE WHEEL	
6'FLOATING OUTER WING W/GAUGE WHEEL	
WINGLIFT COMPONENTS	
OUTER WING HYDRAULIC GAUGE WHEEL	
HYDRAULICS-OUTERGAUGEWHEELS	
PARALLELLINGGAUGEWHEEL	
WINGREST 11 XL <sup>2</sup> ONLY	
DEPTHINDICATOR	
SINGLE POINT DEPTH CONTROL	
CHECK VALVE	
BLANK PAGE FOR NOTES	8-29
HOSE CLAMP	
MAIN LIFT HYDRAULICS	
11 XL <sup>2</sup> 19	31
11 XL <sup>2</sup> 25	
11 XL <sup>2</sup> 30	
13 XL <sup>2</sup> 32	
13 XL <sup>2</sup> 37	35
WING FOLD HYDRAULICS	
11 XL <sup>2</sup> 19 & 25	
11 XL <sup>2</sup> 30	
11 XL <sup>2</sup> 30 W/OUTER WINGS	38
13 XL <sup>2</sup> 32 & 37	
13 XL <sup>2</sup> 32 & 37 W/OUTER WINGS	40
CHARGING LIFT SYSTEM	
CHARGING WING FOLD SYSTEM	42
SHANK PLACEMENTS	
TWIN SPRING SHANK ASSEMBLY	43
SINGLE SPRING SHANK ASSEMBLY	
11'MAINFRAME	45
13'MAINFRAME	46
7' WING	47
9'4" WING	
11'8" WING	
2' OUTER RIGID STUB & 3' OUTER WING	
5'OUTER WING	51
6'OUTER WING	
HDAUXILIARYHITCH	53
LIGHTS	
SAFETYDECALPLACEMENT 59	
BLANK PACE FOR NOTES	

Remove all wires and arrange the parts conveniently.

NOTE: Always wear safety glasses or goggles and be careful when cutting wires and steel bands as they are under tension and will spring back when cut.

Wherever the terms "left" and "right" are used, it must be understood to mean from a position behind and facing the machine.

Lubricate all bearings and moving parts as you proceed and make sure they work freely.

Loosely install all bolts connecting mating parts before final tightening.

When tightening bolts, they must be torqued to the proper number of foot-pounds as indicated in the table unless specified. It is important that all bolts be kept tight.

On new machines, all nuts and bolts must be rechecked after a few hours of operation.

GRADE 2	GRADE 5			GRADE 8				
TORQUE IN FOOT POUNDS								
BOLT DIA	3/8	1/2	5/8	3/4	7/8	1		
HEX HEAD	9/16	3/4	15/16	1-1/8	1-5/1	1-1/2		
UNC GR2	18	45	89	160	252	320		
UNC GR5	30	68	140	240	360	544		
UNC GR8	40	100	196	340	528	792		
UNF GR2	21	51	102	178	272	368		
UNF GR5	32	70	168	264	392	572		
UNF GR8	48	112	216	368	792	840		

#### **ASSEMBLY INFORMATION**

When replacing a bolt, use only a bolt of the same grade or higher. Except in shear bolt applications, where you must use the same grade bolt.

Bolts with no markings are grade 2

Grade 5 bolts furnished with the machine are identified by three radial lines on the head.

Grade 8 bolts furnished with the machine are identified by six radial lines on the head.

All U-bolts are grade 5.



THIS SYMBOL USED TO CALL YOUR ATTENTION TO INSTRUCTIONS CONCERNING YOUR PERSONAL SAFETY.

BE SURE TO OBSERVE AND FOLLOW THESE INSTRUCTIONS

## **A** CAUTION

TO AVOID INJURY AND/OR MACHINE DAMAGE:

- Refer to Operator's Manual for safety instructions.
- Do not stand or climb on machine when operating.
- Use clean hazard flashers and SMV sign when transporting.
- Observe highway traffic regulations.

23325

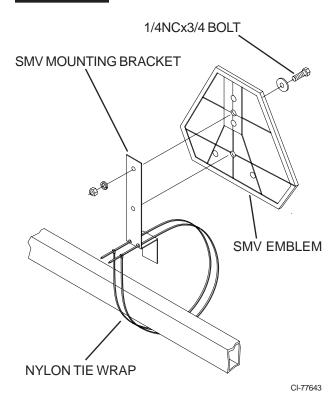
#### **MODIFICATIONS**

It is the policy of Wil-Rich to improve its products whenever possible and practical to do so. We reserve the right to make changes, improvements and modifications at any time without incurring obligation to make such changes, improvements on any equipment sold previously.



FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY AND/OR EQUIPMENT DAMAGE. • Just before and during operation be sure no one is on or around the implement.  Before activating the hydraulic system, check hoses for proper connections.  Before lowering the wings for the first time, make sure the entire system has been charged with oil. • With wings down always install hydraulic cylinder channel lock(s) for transporting.

# SAFETY



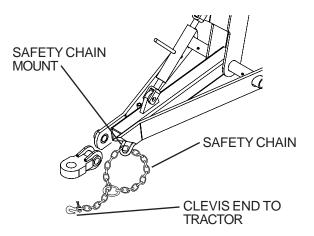
The bracket provided is designed to mount to numerous frame sizes and can be orientated in different positions to avoid interference with implement components.

The SMV emblem is to be secured as near to the rear and centered, or as near to the left of center of implement as practical.

Emblem is to be 2 to 6 feet above the ground measured from the lower edge of the emblem.

Keep safety decals clean. Replace any safety decals that are damaged, destroyed, missing, painted over or can no longer be read. Replacement safety decals are available through your dealer.

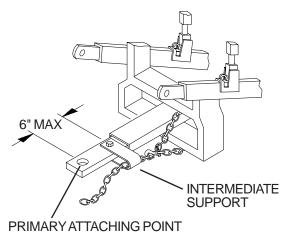
The purpose of the safety chain is to provide an auxiliary attaching system to retain the connection between towing and towed machine in the event of separation of the primary attaching system. The safety chain should be hooked long enough to permit full turns. Unnecessary slack should be taken up.



Intermediate support is to be used if there is more than 6" of unsupported chain on either side of the primary attaching point.

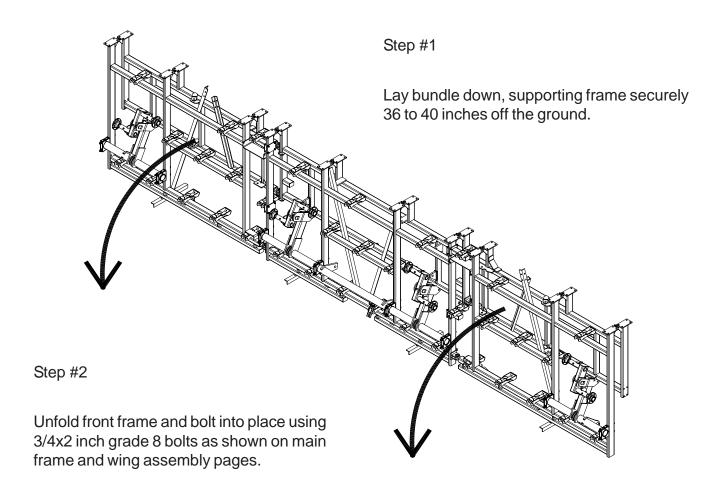
The intermediate support should not be mounted more than 6" from the primary attaching point. (See figure below)

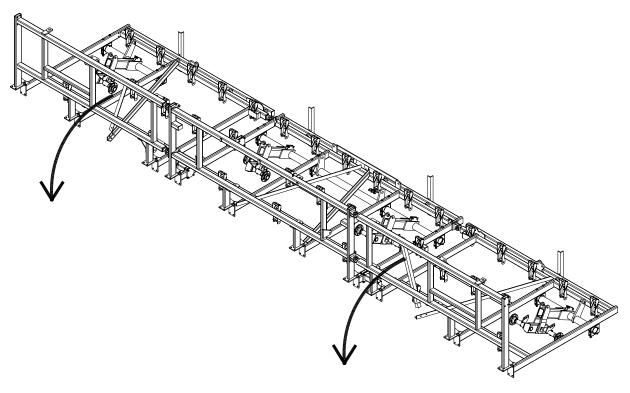
The intermediate support is available from your Wil-Rich dealer.



CI-77825

# **OPENING BUNDLE**



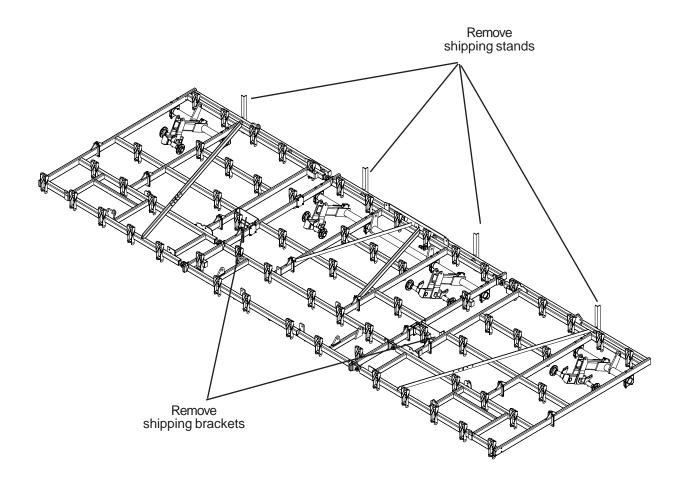


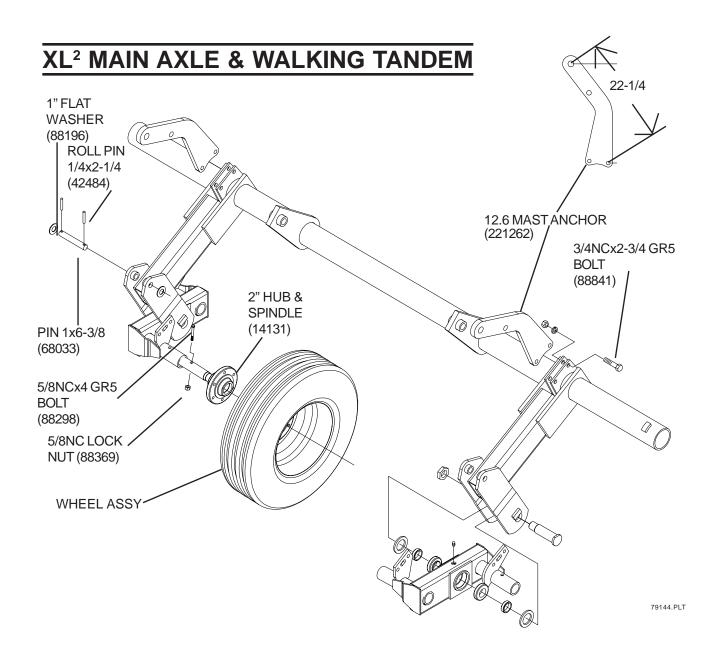
# **OPENING BUNDLE**

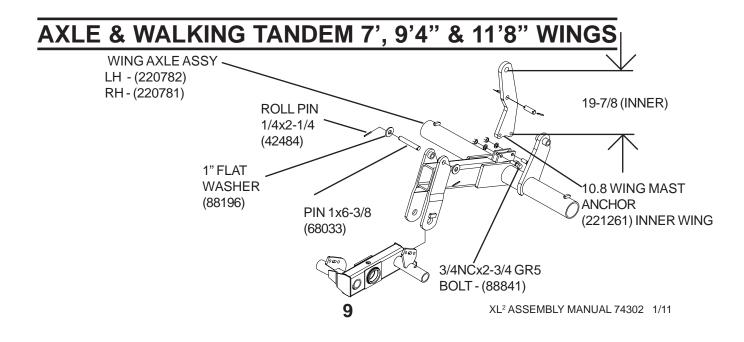
Step #3

After bundle is unfolded and the two frame halves are bolted together remove shipping stands and brackets.

After the shipping stands and brackets are removed the rest of the cultivator may be assembled as shown in this book.

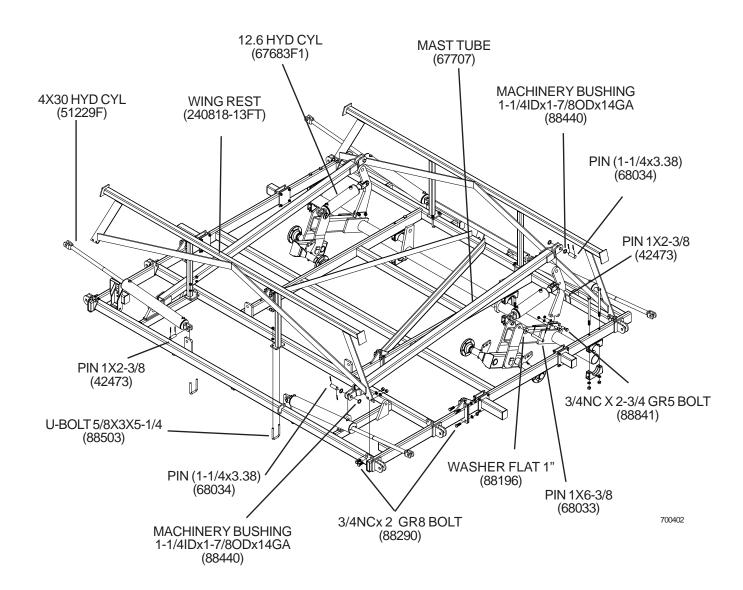






## 11' & 13' MAIN FRAME

(13' SHOWN)



**ASSY HDWR** 74302-1

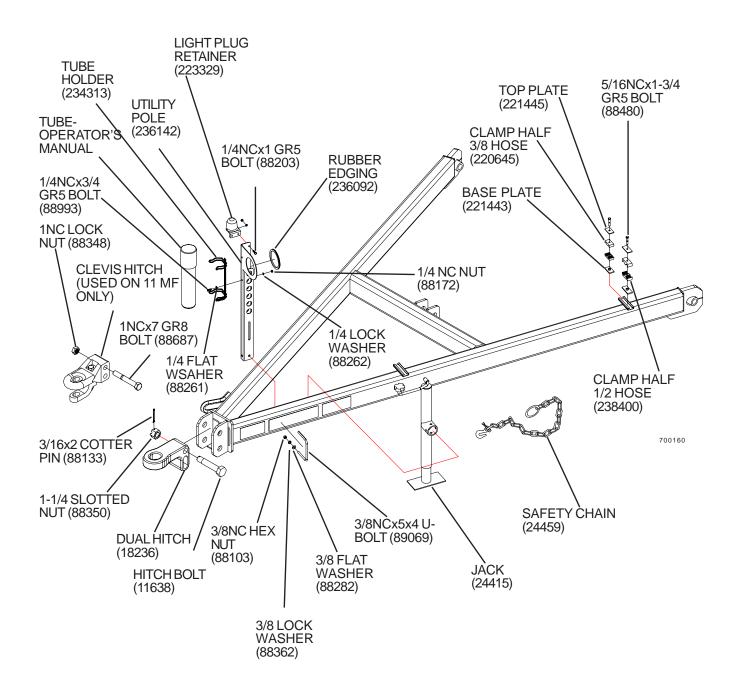
#### 11' & 13' HITCH ASSEMBLY (13' SHOWN) ADJUSTMENT SCREW **ASSY HDWR** CENTER HITCH BRACKET PIN (1-1/4x6-1/8) < ADJUSTER ASSEMBLY (68036) 74302-2 (68030)1-1/4NC JAM NUT (88622) (67937)PIN (1-1/4x5.13) (68031) LIFT SIDE PLATE 4 HOLE PLATE (3.75X4.69) DIAMOND PIN (1-1/40Dx5.13) RIGHT HITCH TUBE LINKAGE (68031) MAIN FRAME HITCH (68086) 11' MAIN FRAME (233672) 13' MAIN FRAME MACHINERY BUSHING 1-1/4x1-7/8x14 GA PIN(1x6.38) 1/4x2-1/4 SPIROL PIN (42484)(88440)5/8NCx3 x5-1/4 U-BOLT (88503)PIN (1-1/40Dx7.25) 1 FLAT WASHER (88196) 1-1/4NCx6-1/2 GR5 BOLT (88349) (68032)**ITCH TUBE** |-1/4NC JAM NUT(2) (88622) **4 HOLE PLATE** (3.5X4.75) 3/4NCx6 GR5 BOLT (88293) 5/8NCx2 GR5 BOLT 3/4NCx5 GR5 BOLT (88294) TUBE LEFT HITCH PIN (1-1/4x3.38) (42484) /4 x 2-1/4 SPIROL PIN 1-1/20Dx1-1/4ID SPRING TENSION BUSHING 13&16 EXCEL CENTER LIFT TUBE (67743 13' MAIN)

11 XL<sup>2</sup>

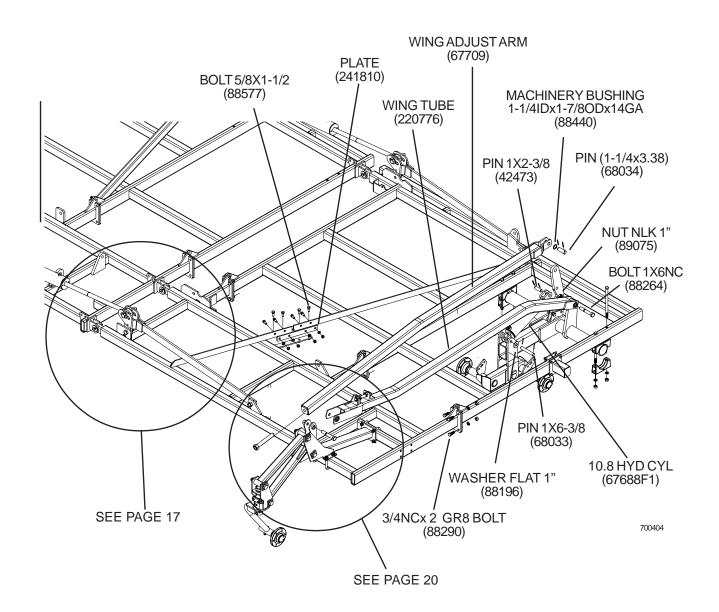
CENTER LIFT TUBE (68084 11')

79149-2

## **HITCH ASSEMBLY CONTINUED**

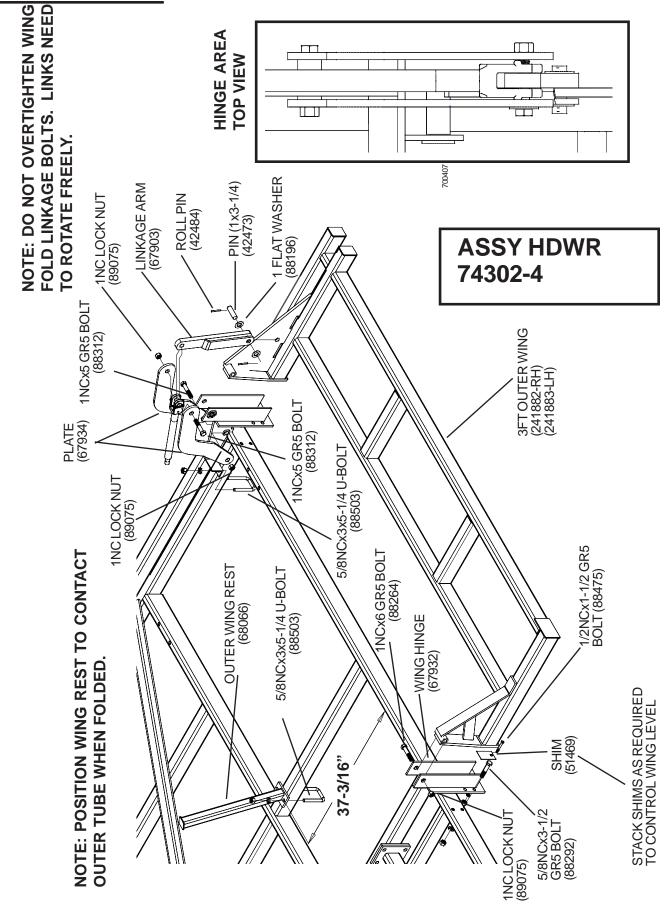


## 7', 9' 4" & 11'8" WING

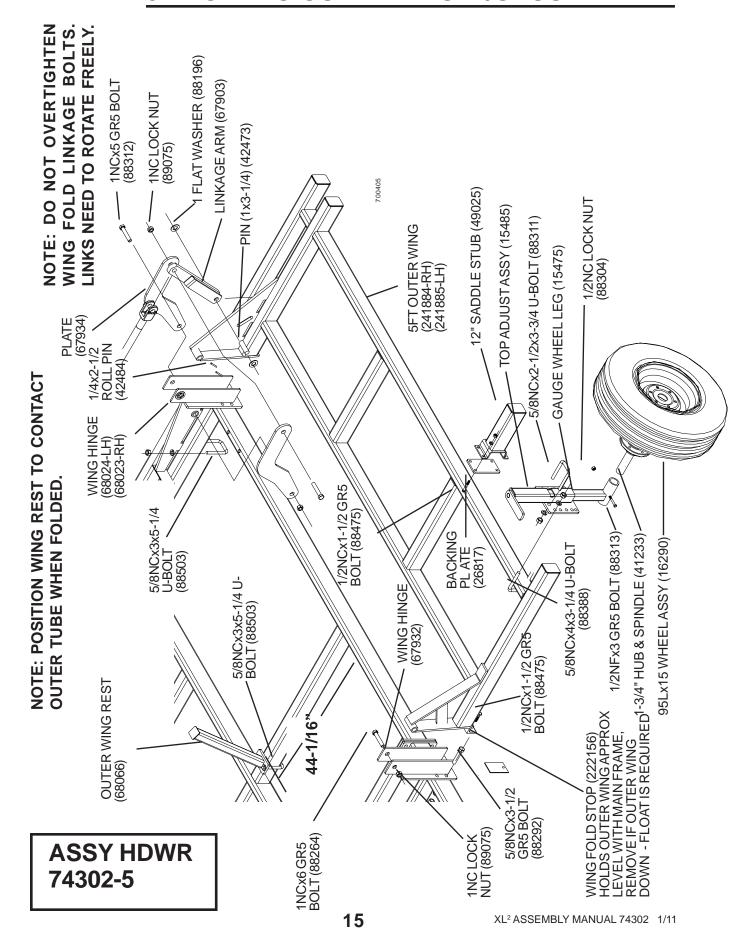


**ASSY HDWR** 74302-3

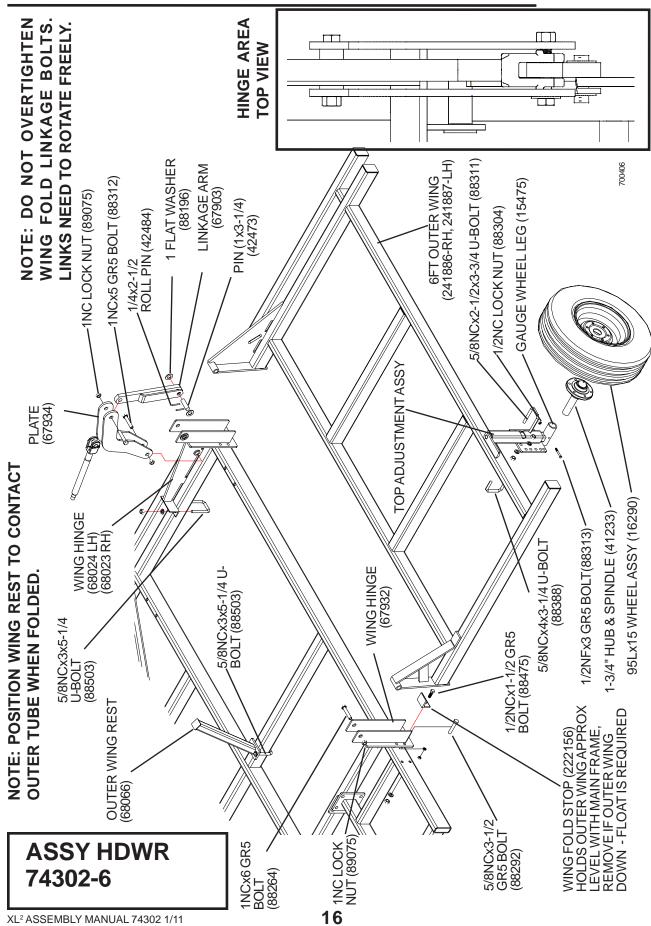
# 3' OUTER WING



### 5' FLOATING OUTER WING W/GAUGE WHEEL

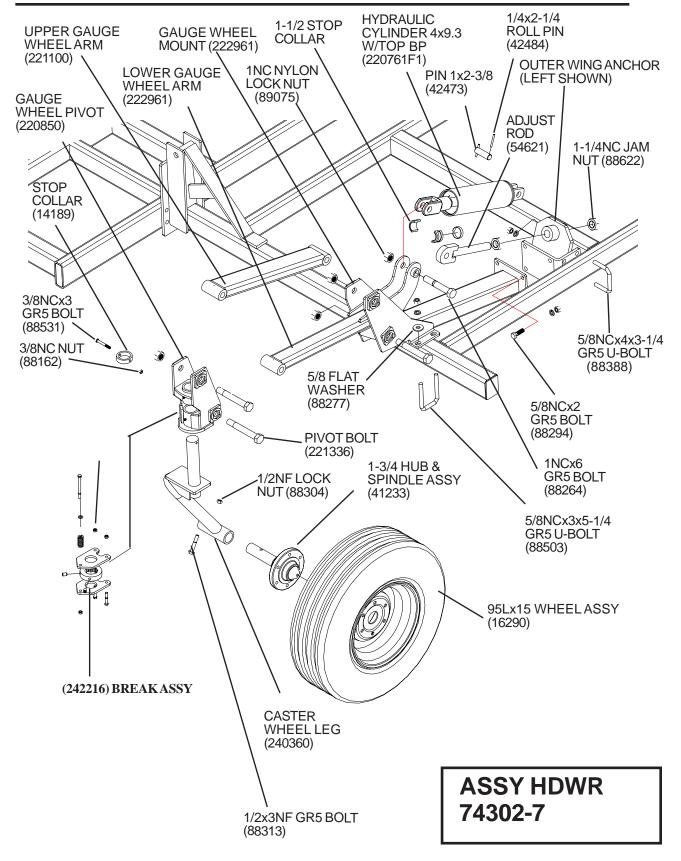


## 6' FLOATING OUTER WING W/GAUGE WHEEL

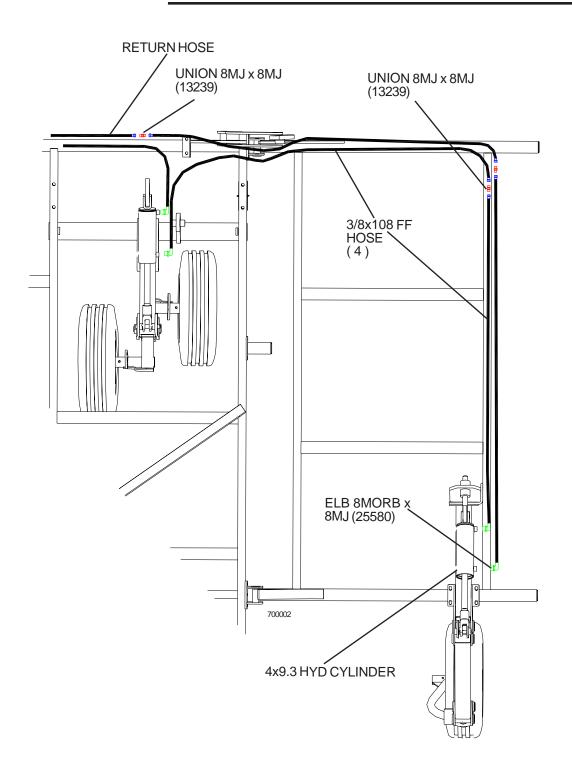


NOTE: SPECIAL WING LIFT STRAP MOUNTING, WING FOLD STUBS AND WING WING LIFT COMPONENTS LIFT LINK LENGTH ARE NECESSARY WHEN 3' 5' OR 6' WINGS ARE ADDED. IST WING LIFT STRAP (REQUIRED ON ALL WINGS) WING FOLD STUBS-REQ'D WITH 3',5' OR 6' WING. NOTE: SPECIAL WING LIFT LINKS AND WING FOLD STUBS ARE PACKED WITH THE 3',5' OR WINGS, IF REQUIRED. 2ND WING LIFT STRAP (REQUIRED ON 9'4" &11'8" WING ONLY) 1NCx3 GR5 BOLT (88399) 31"(2PL) CALLOUTS. 5/8NCx1-3/4 GR5 BOLT (88838) (SPECIAL MOUNT) WING LINK STRAP 1NCNYLON LOCK NUT (89075) SEE BOXED 5/8NCx3x5-1/4 U-BOLT (88503) (STANDARD MOUNT) 2ND HOLE 1NCNYLON LOCK NUT (89075) WING LINK STRAP WING LIFT BUSHING (1.032ID x 1-1/4 OD x 1.06) (48523) NCx6 GR5 BOLT 1 FLAT WASHER STANDARD LINK = 11" C TO C SPECIAL LINK = 12-1/4" C TO C 1NCx3-1/2 GR5 BOLT (88447) (88264) (88196)700413 WING LIFT LINK **17** XL2 ASSEMBLY MANUAL 74302 1/11

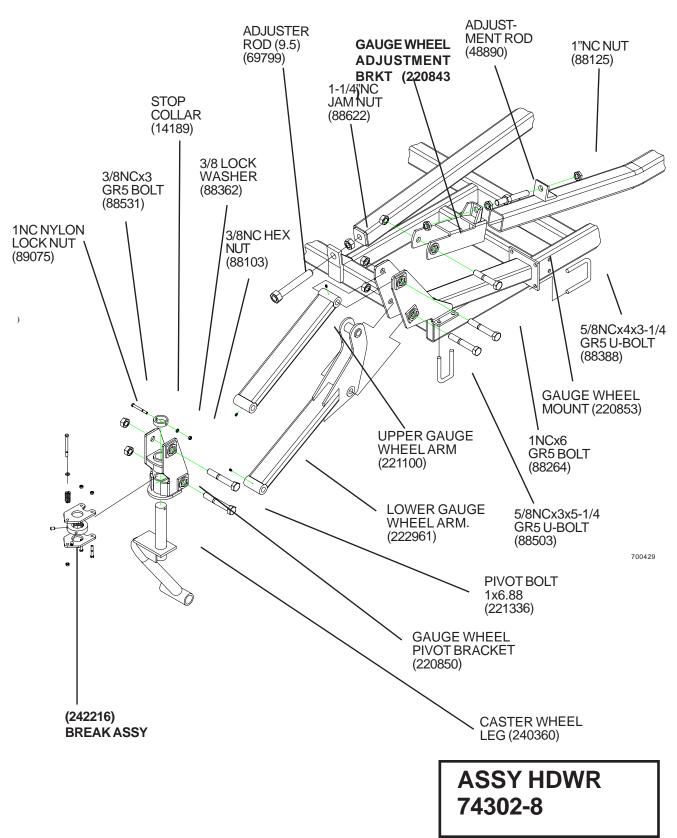
### OPTIONALOUTER WING HYDRAULIC GAUGE WHEEL



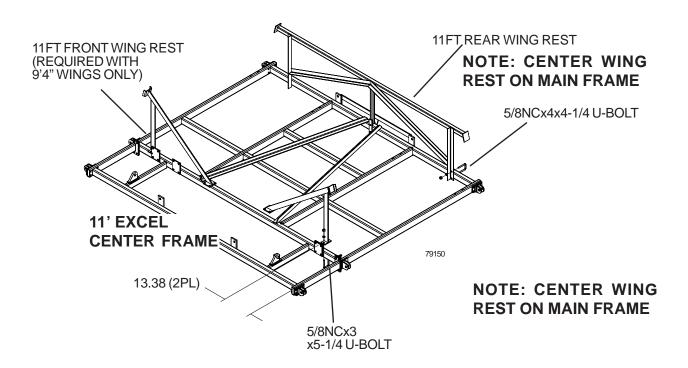
# **HYDRAULICS-OUTER GAUGE WHEELS**



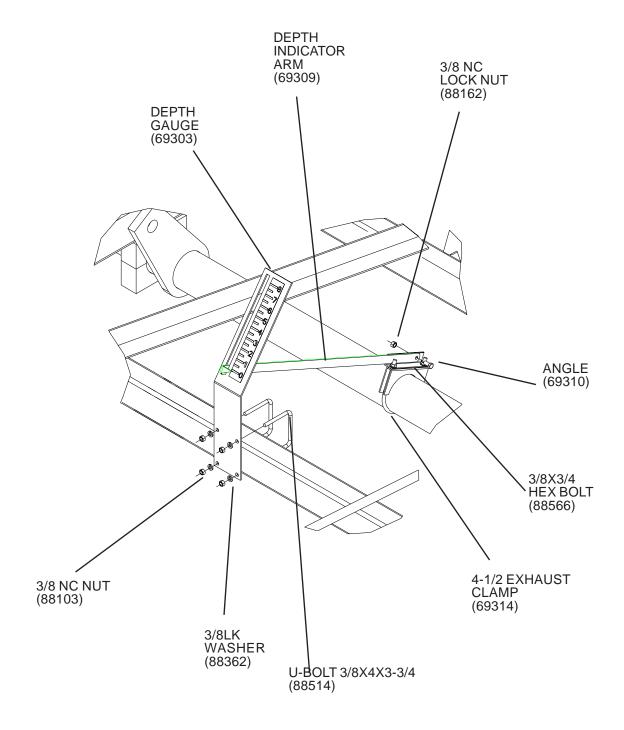
### PARALLEL LINK GAUGE WHEEL



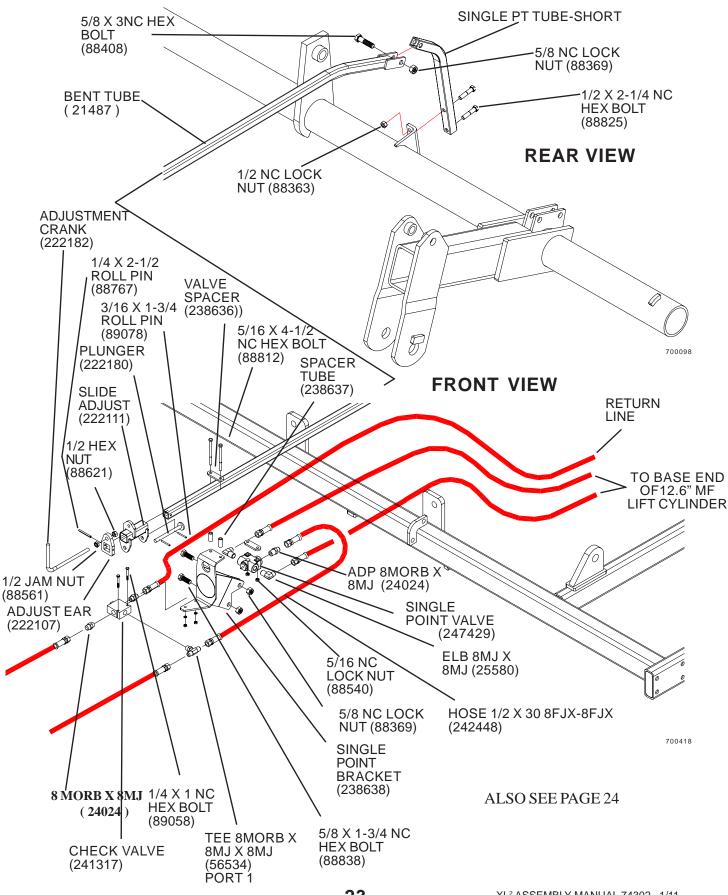
# WING REST 11 XL<sup>2</sup> ONLY



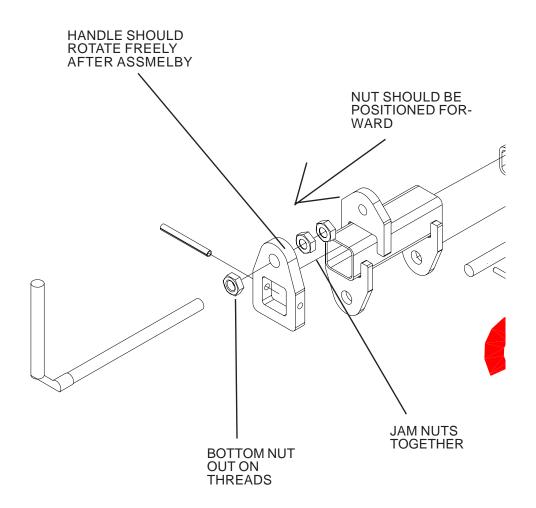
# **DEPTH INDICATOR**



### **OPTIONAL - SINGLE POINT DEPTH CONTROL**

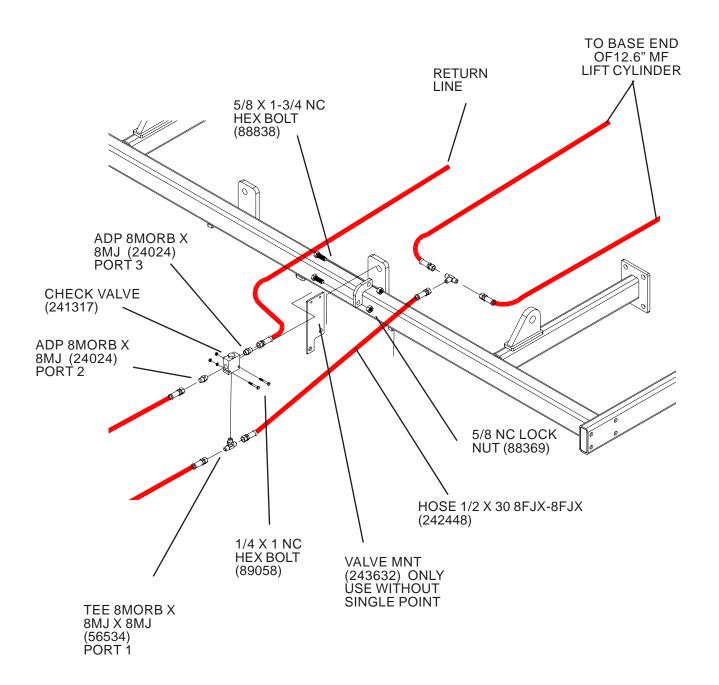


# HANDLE ASSEMBLY

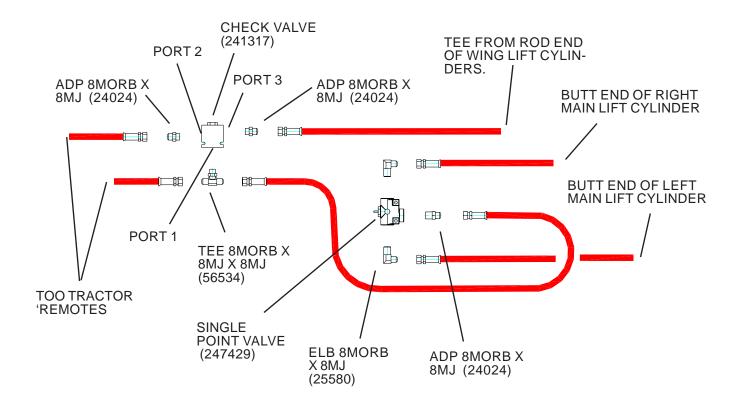


#### **ALSO SEE PAGE 23**

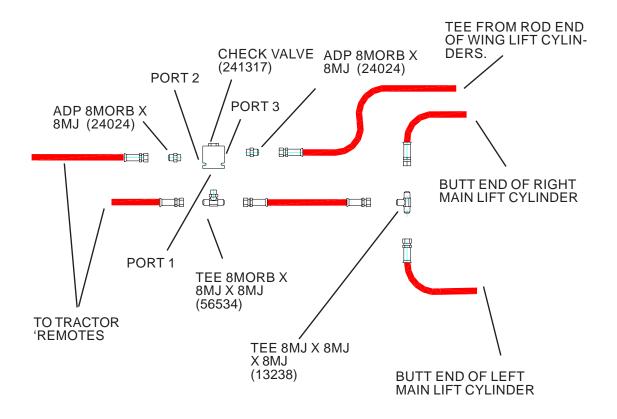
# STANDARD - CHECK VALVE WITHOUT SINGLE POINT



# CHECK VALVE WITH SINGLE POINT VALVE



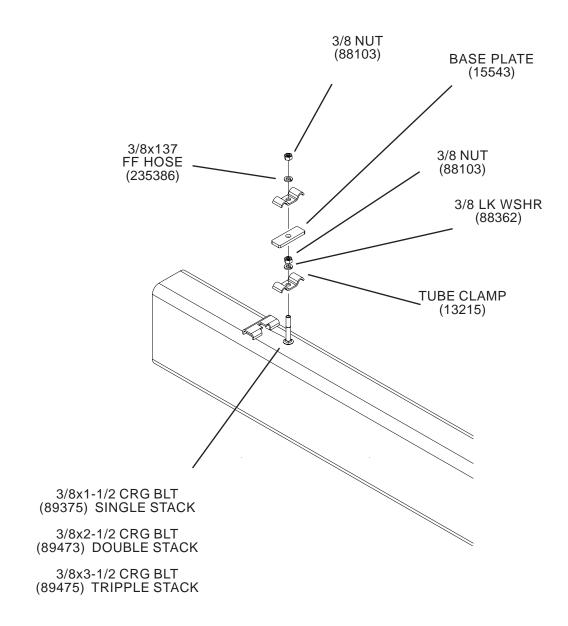
# CHECK VALVE WITHOUT SINGLE POINT VALVE



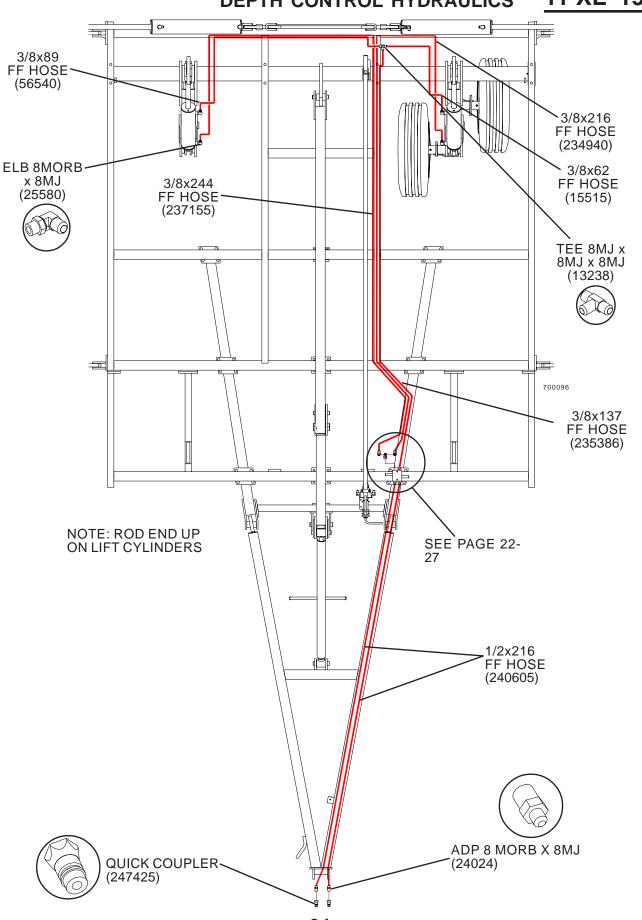
#### **NOTES**

#### **NOTES**

# HOSE CLAMP ASSEMBLY

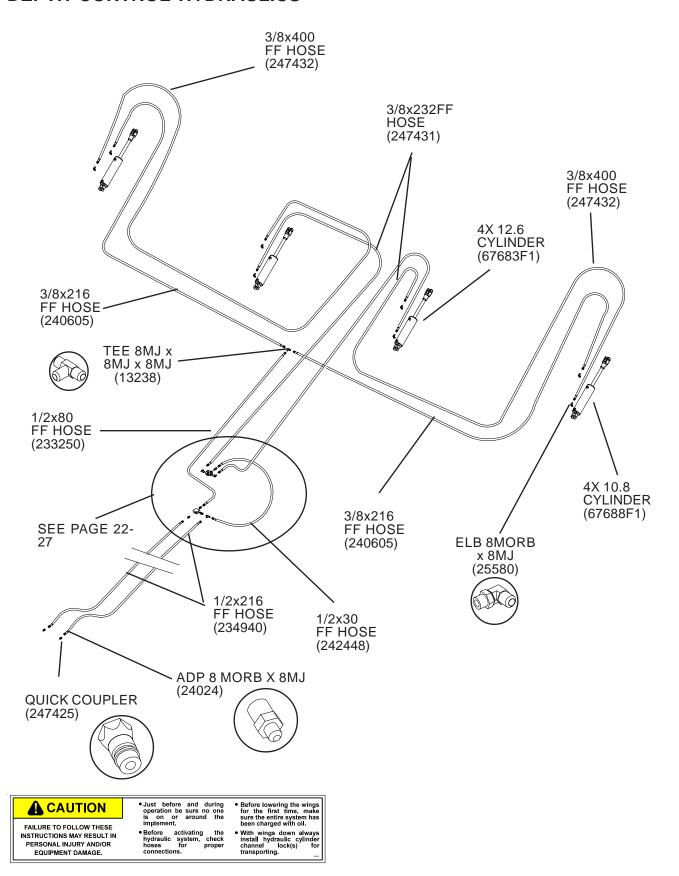


# DEPTH CONTROL HYDRAULICS 11 XL<sup>2</sup> 19

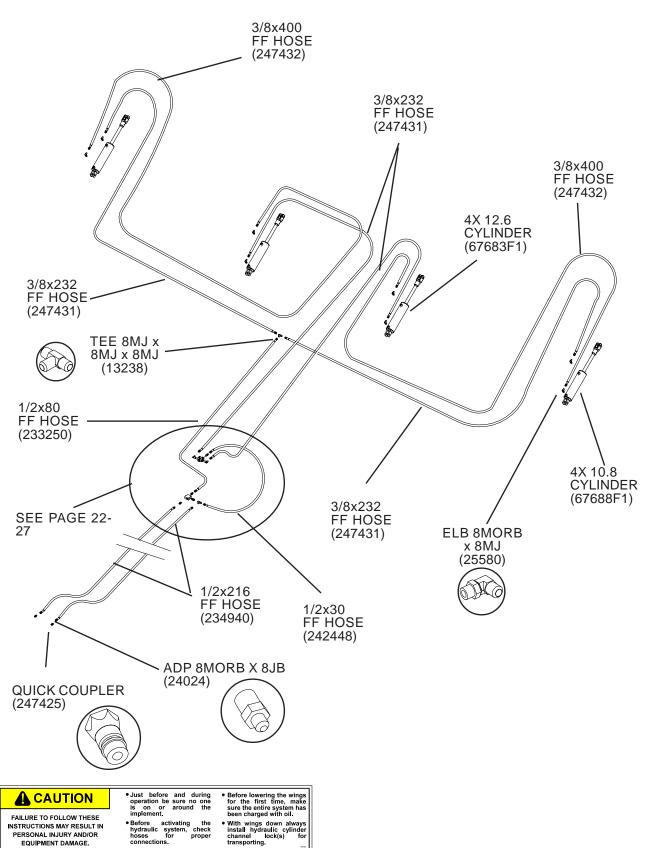


## 11 XL<sup>2</sup> 25

#### **DEPTH CONTROL HYDRAULICS**

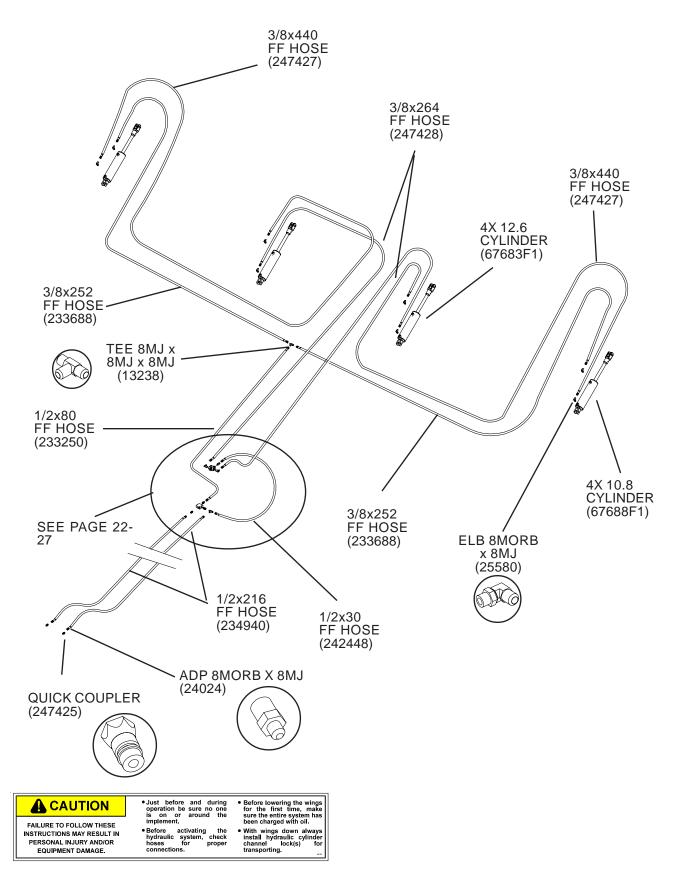


#### **DEPTH CONTROL HYDRAULICS**

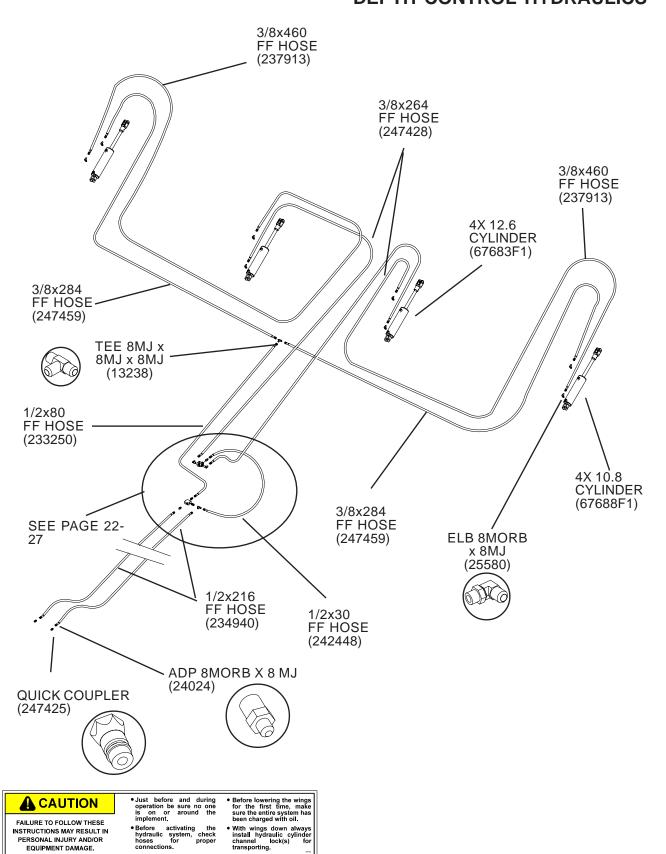


## 13 XL<sup>2</sup> 32

#### **DEPTH CONTROL HYDRAULICS**

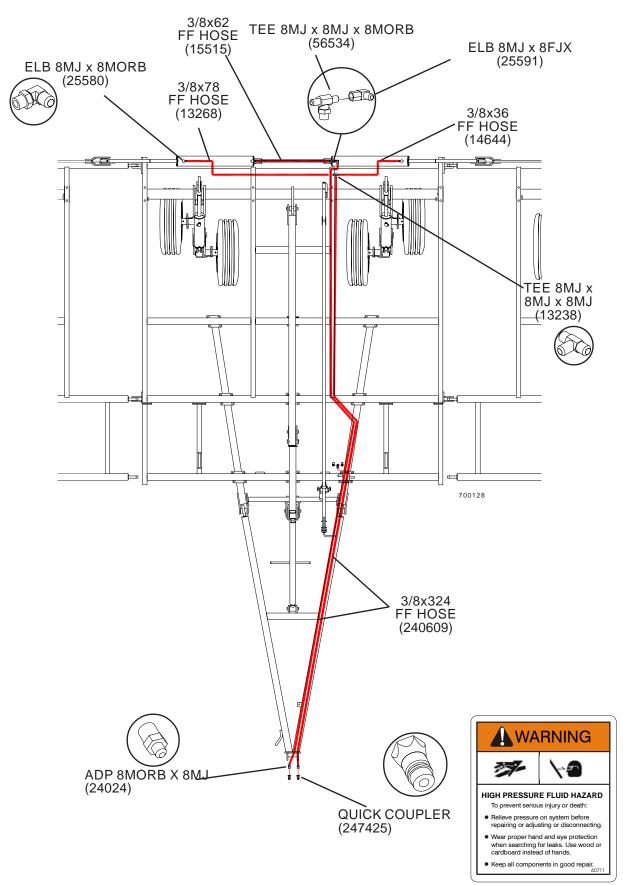


# 13 XL<sup>2</sup> 37 DEPTH CONTROL HYDRAULICS

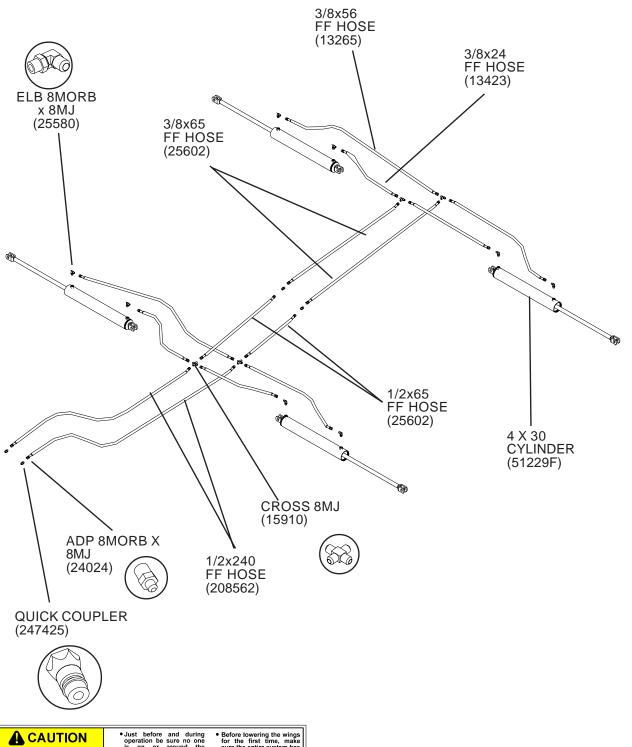


# 11 XL<sup>2</sup> 19 & 25

### WING FOLD HYDRAULICS



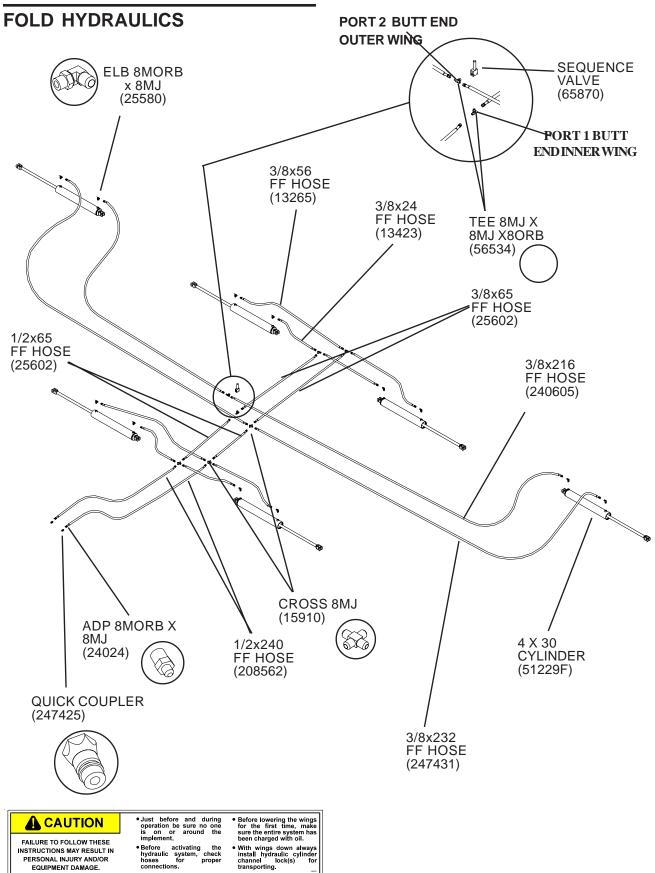
### 11 XL<sup>2</sup> 30 **FOLD HYDRAULICS**



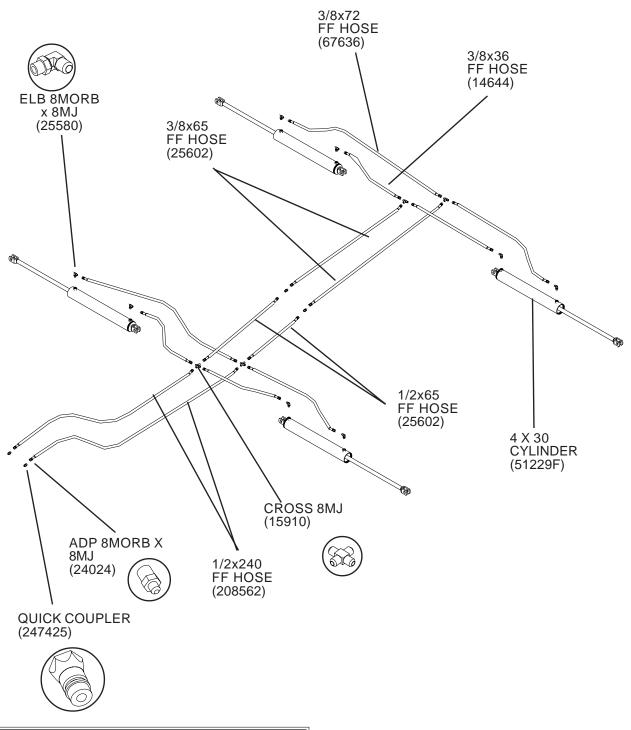
FAILURE TO FOLLOW THESE

- Just before and during operation be sure no one is on or around the implement.
- Before activating the hydraulic system, check hoses for proper connections.
- Before lowering the wings for the first time, make sure the entire system has been charged with oil.
- With wings down always install hydraulic cylinder channel lock(s) for transporting.

# 11 XL<sup>2</sup> 30 W/OUTER WINGS



### 13 XL<sup>2</sup> 32 & 37 FOLD HYDRAULICS

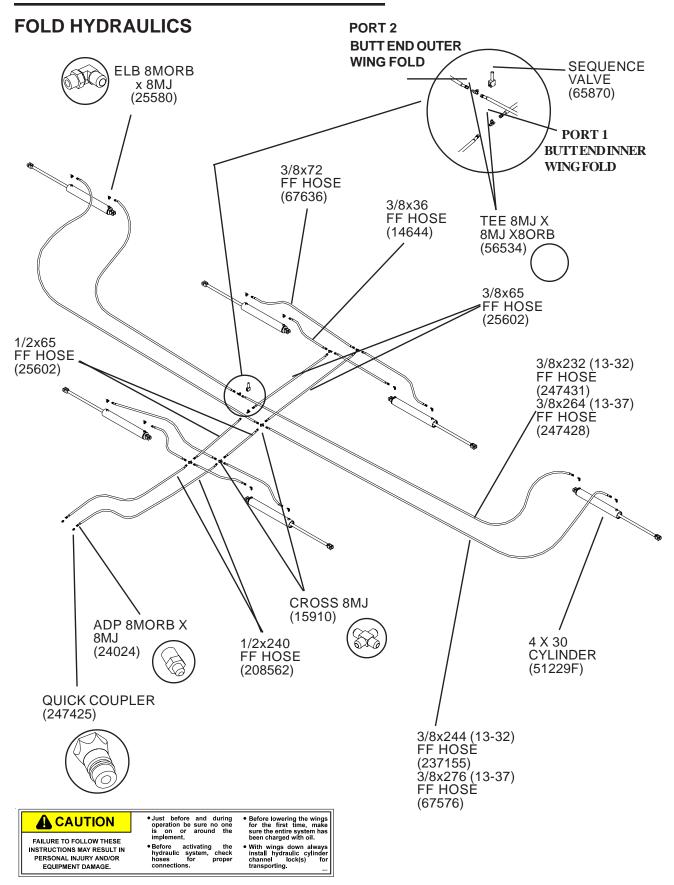




FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY AND/OR EQUIPMENT DAMAGE.

- Just before and during operation be sure no one is on or around the implement.
- Before activating the hydraulic system, check hoses for proper connections.
- Before lowering the wings for the first time, make sure the entire system has been charged with oil.
- With wings down always install hydraulic cylinder channel lock(s) for transporting.

### 13 XL<sup>2</sup> 32 & 37 W/OUTER WINGS



#### **Initial Assembly and Charging of Lift Systems**

All WIL-RICH lift systems should be assembled as noted in the appropriate assembly manual. For best functional results the following steps should be followed.

- Position the main lift cylinders in the locations and connect the hydraulic circuitry as shown.
   Attach the base end of all cylinders but do not connect the rod ends. Support the cylinders to allow the rods to extend without machine contact.
- 2) Most fittings, except the connection tips at the tractor end and some valves, are JIC or Oring type fitting. JIC and O-ring fitting do not require any type of thread compound to seal properly. NOTE: Take care to keep all connections, fitting, hose, etc as clean as possible.
- 3) Where pipe threads are used a thread-sealing compound should be used. **NOTE: Do not use Teflon type tape on any hydraulic circuitry; use an appropriate liquid compound. If any tape or contaminate enters the system if can clog the bypass hole.**
- 4) With all connections secured and the cylinders supported to allow rod extension apply pressure to the system.

The main or base cylinder should extend as oil flows into the base of the cylinder. Because there is air in the remaining cylinders and in the connecting hoses the outer cylinders may extend quickly. Just because the cylinders are extended does not mean the system has been purged. Continue to direct oil into the system until all cylinders have extended fully. **NOTE:** the cylinders will only bypass when the cylinders are fully extended. By allowing the cylinders to extend without having to lift the unit you allow the cylinders to reach the bypass position.

Keep in mind that all the oil going to the outer cylinders must be bypassed through the base cylinder bypass hole and subsequent cylinders. This will take some time, in some cases a considerable amount of time. On large unit with multiple wings and lift cylinders it will take longer to charge the system and a large amount of oil will be required. Check that your tractor has sufficient oil capacity; you may need to add oil to your reservoir. Also, because of the of the need to force all the oil though the by-pass holes you will need to have a system pressure of 2500-3000 psi.

Once all cylinders on the unit have been fully extended, retract the cylinders and again extend fully. Hold the cylinders in the extended (bypass) position for a few minutes, retract the cylinders and observe that the cylinders are working in sequence. Attach the cylinder rod ends to the anchor points of the unit. Raise and lower the unit and check to ensure the unit is moving in a level manner.

If the cylinders have been properly bypassed, all cylinders and hoses should be filled with oil with no air in the system. In actuality there will still be some air in the system as it is unlikely all air has been purged from the system. Even with some air in the system the cylinders should move in sequence and lift and control the depth of the unit. If the cylinders don't seem to be bypassing it may indicate that some debris has blocked the bypass hole. Because the hole may be blocked it is critical to maintain clean oil. Protect the complete hydraulic system at all connection points.

#### Wing Fold System Information

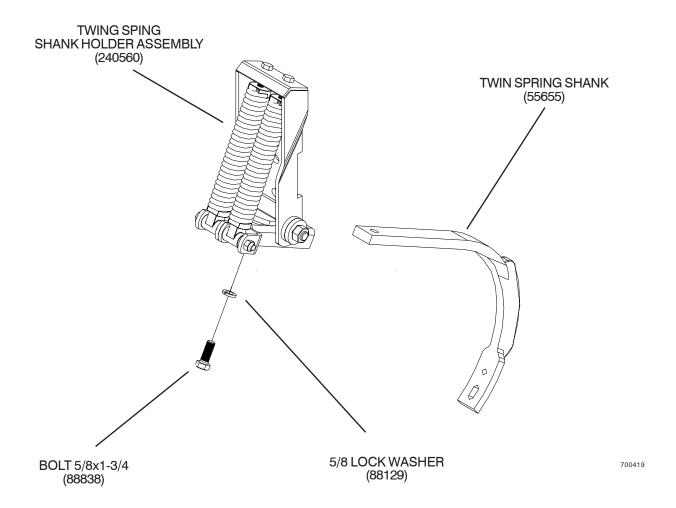
WIL-RICH products use a number of varying designs to fold implement wings. All utilize a two-way cylinder of varying diameters and strokes. All wing fold cylinders use an integral or in-line restrictor to control the cylinder stroke speed. This restrictor is critical to the safe operation of the unit and use of non-WIL-RICH cylinders is not recommended.

Assembly of the wing fold circuitry and mounting of the fold cylinders is outlined in the appropriate Assembly Manual. It is important to properly charge the wing fold cylinders and circuitry in the assembly process. Mount the base of all wing fold cylinders to their anchor points as noted. Tighten all hoses and fittings per specifications. **Before attaching the rod ends of any wing fold cylinders fully extend and retract all cylinders to ensure that the cylinders are filled with oil**. This can be made easier by supporting the cylinders with some type of blocking. Support so that all cylinder rods can be extended and retracted without machine interference. After the cylinders are fully charged attach the rod end of the cylinders to the appropriate anchor. Pressurize the system and check for proper wing fold.

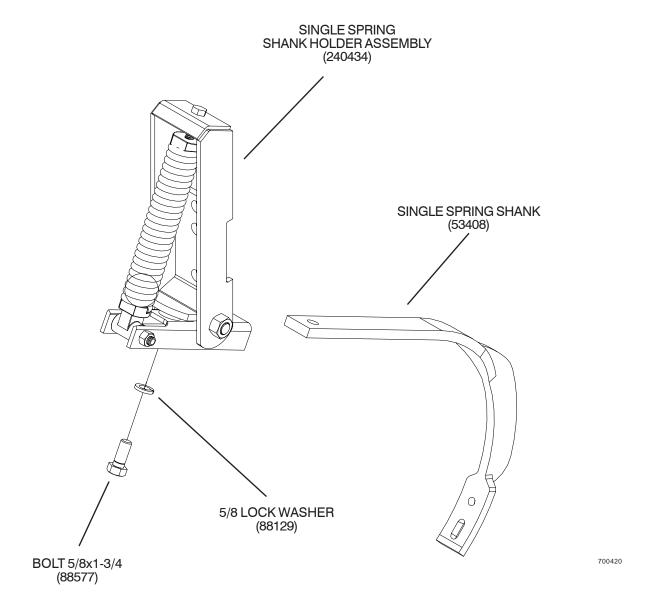
When folding any winged implement make certain that the wing fold cylinders have been fully retracted. Any time the unit is to be stored with the wings folded, whether connected to the tractor hydraulic system or disconnected, it is critical to relieve any pressure from the wing fold circuit. On older tractor, shutting the tractor down, moving the control lever back and forth before disconnecting the hoses can relieve this pressure. Modern tractor can retain significant pressure in the hydraulic lines and contain this pressure once the lines have been disconnected. Before disconnecting folding cylinder hydraulic hoses, relieve pressure from the wing-fold hydraulic system by moving the tractor control valve to the float position while the engine is running.

It is critical to relieve the pressure on all wing fold circuits before storing the unit. Failure to do so may allow the wings to extend or unfold unexpectedly.

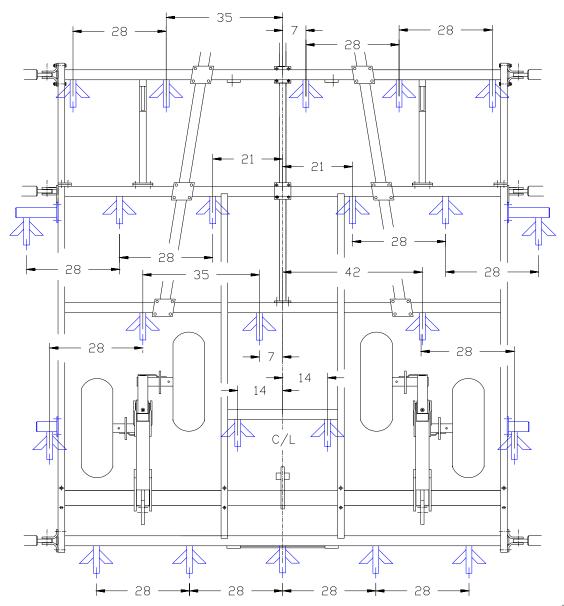
# TWIN SPRING SHANK ASSEMBLY



# SINGLE SPRING SHANK ASSEMBLY

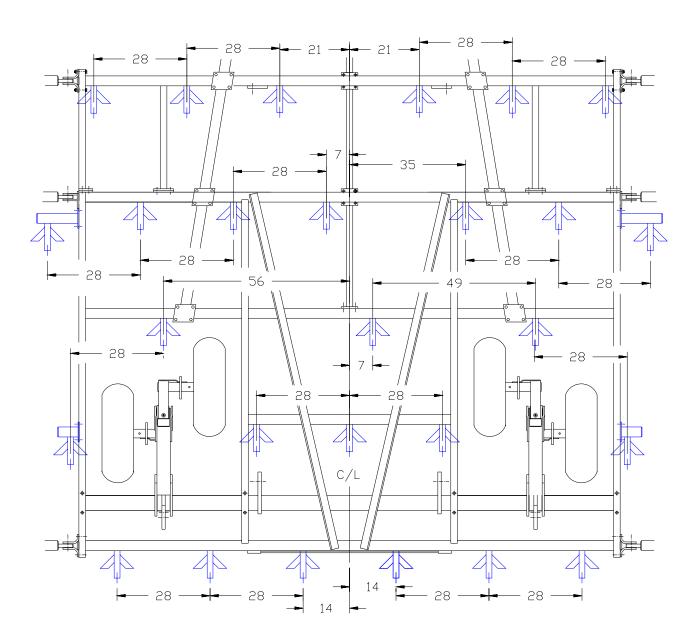


# 11'MAIN FRAME

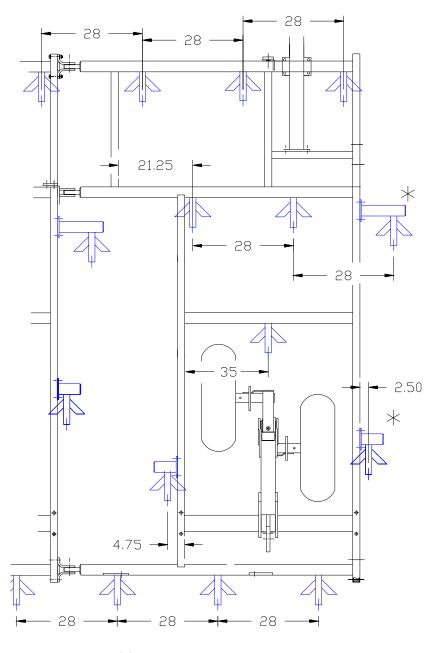


79115-11.PLT

# 13' MAIN FRAME



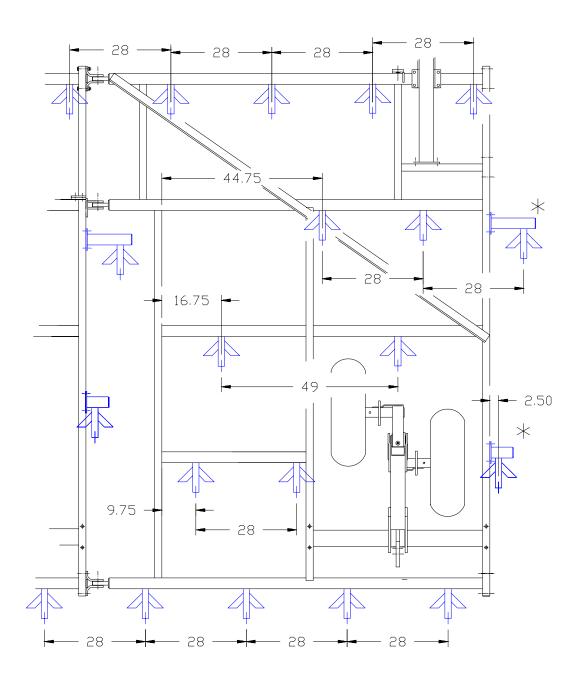
79115-13.PLT



79115-7.PLT

(\*) SHANKS NOT IN BASE WING

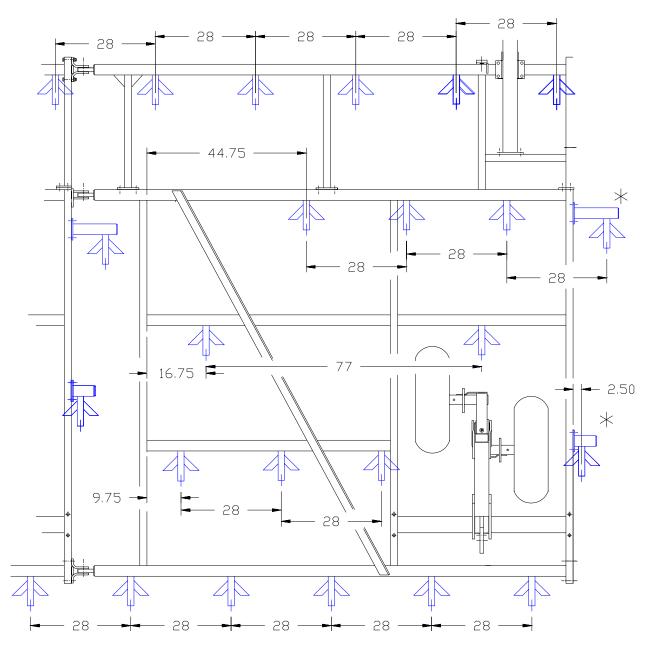
# 9'4" WING



79115-9.PLT

(\*) SHANKS NOT IN BASE WING

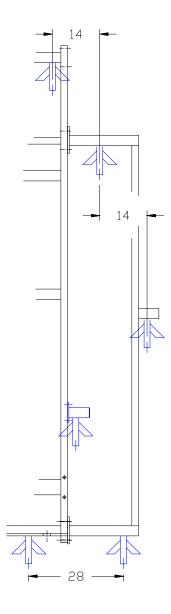
# 11'8" WING



(\*) SHANKS NOT IN BASE WING

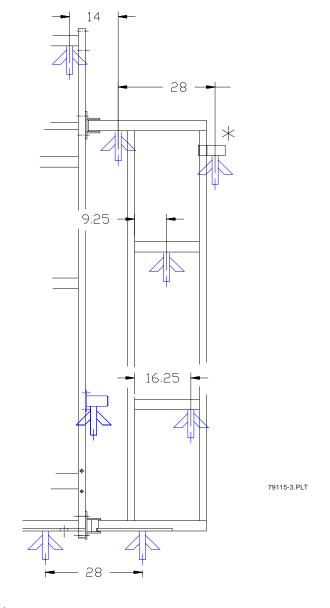
79115W11.PLT

# 2' OUTER RIGID STUB



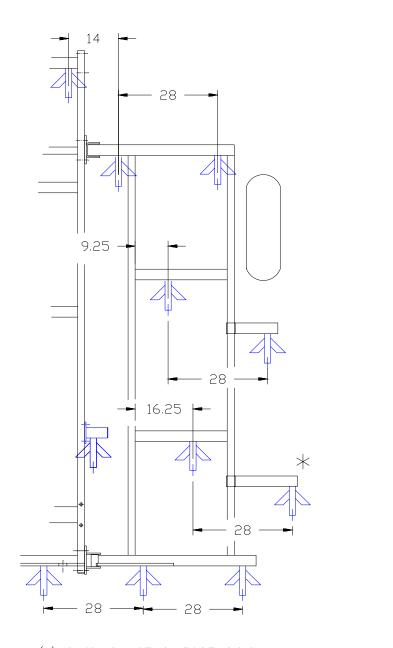
(\*) SHANKS NOT IN BASE WING

# 3' OUTER WING



(\*) SHANKS NOT IN BASE WING

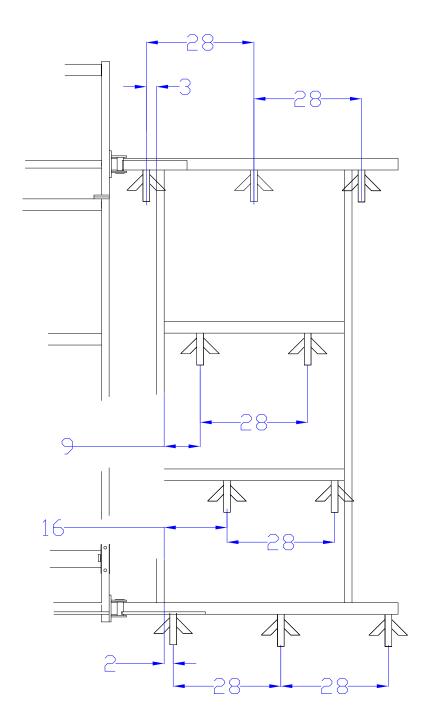
# **5' OUTER WING**



79115-5.PLT

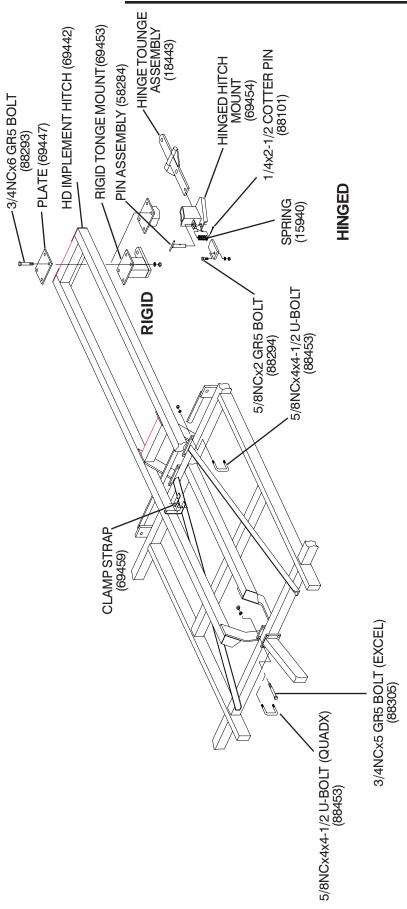
(\*) SHANKS NOT IN BASE WING

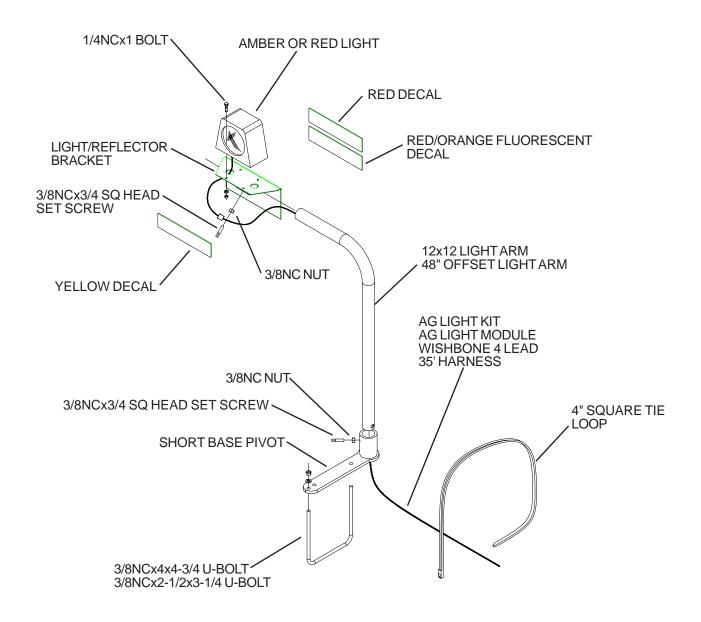
# **6' OUTER WING**

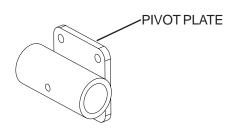


6FT OUTER WING SHANK PLACEMENT

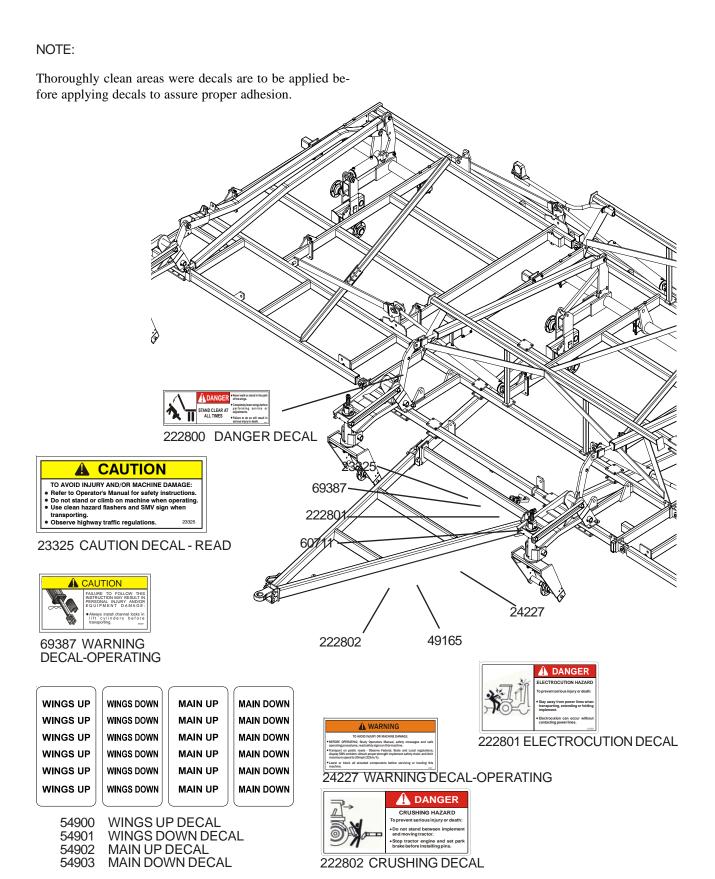
# **OPTIONAL - HD AUXILIARY HITCH**

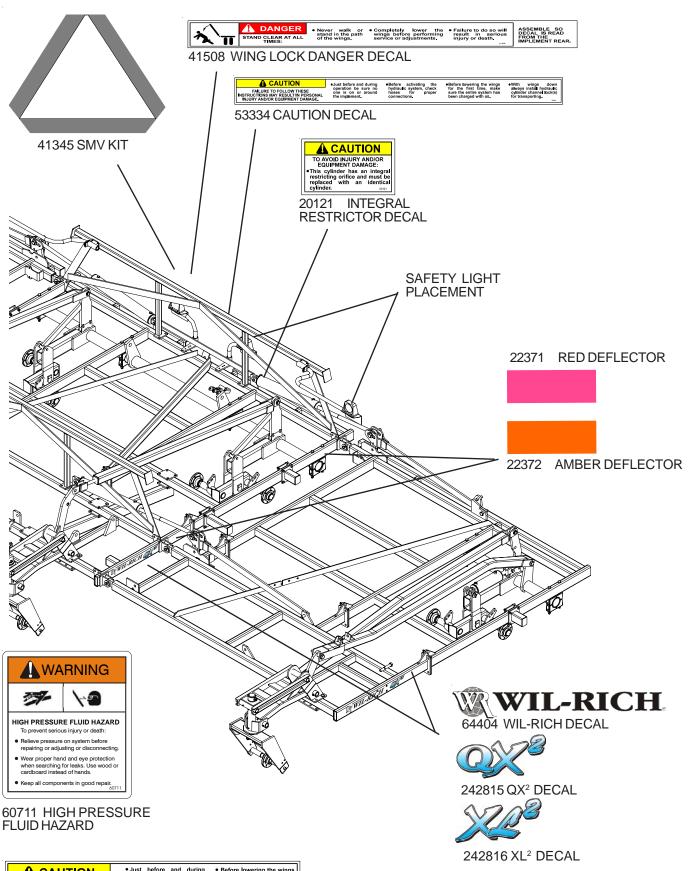






### SAFETY DECAL PLACEMENT







 Just before and during operation be sure no one is on or around the implement.

 Before activating the hydraulic system, check hoses for proper connections.

- Before lowering the wing for the first time, mak sure the entire system ha been charged with oil.
- With wings down always install hydraulic cylinder channel lock(s) for transporting.

#### **NOTES**