

ROTARY SHEAR INSTALLATION KIT 2014 SWATHER & HEADER



**These Instructions are for Tables that are
Roto-Shear Ready or Non Roto-Shear Ready.**

INSTALLATION MANUAL - REVISION 2.0 - 94697

Preparation:

This Instruction Manual covers the mounts, hardware, and hydraulic components common for all table sizes in order to install Roto-Shears on both Roto-Shear Ready and Non Roto-Shear Ready Swather or Header tables.

Table length specific hoses are not included in the Non Roto-Shear Ready kits and must be procured separately. Roto-Shear components & motors are not included in the Non Roto-Shear Ready or Roto-Shear Ready kits and must be procured separately. Specific hose lengths required for the appropriate table sizes are listed after the “Kit Parts Lists”. Some hoses are required to be fed through the inside of the frame.



To ensure no debris gets in the hose, plugging/capping the end of the hose is required.

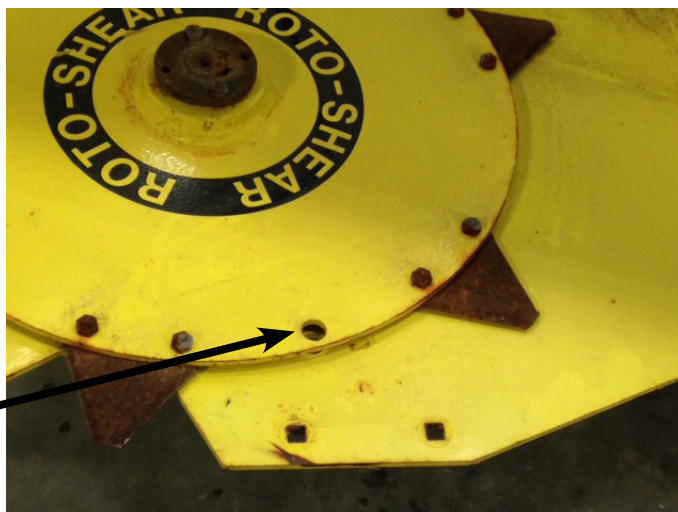
Initial installation requires drilling holes in the Crop Dividers for a custom fit.

Some Roto-Shear components are not shown in some illustrations for clarity.



The sickle sections on the Roto-Shear rotor are extremely sharp. Care must be taken when handling the Roto-Shear during installation. Install a 3/8" bolt through the rotor and sunrise to prevent the rotor from turning during installation. Remove the safety bolt from the rotor and sunrise after installation is complete.

Safety Bolt Hole





Care must be used when working around pressurized hydraulic systems. All fittings must be securely connected before the windrower is started, and power is applied to the swather. Serious injury, and/or damage to equipment may result from poor connections.

Adding this kit requires tapping into the existing hydraulic system which is full of oil. Steps will need to be taken to minimize oil spillage.

Caps and plugs are provided in this kit for disconnecting hoses when the Roto-Shears are removed from the Crop Dividers.

These same caps and plugs can be used for minimizing oil spillage during initial installation as well as keeping debris out of the hose when being fed through the frame.

Swather

The Roto-Shears must operate in series after the Knife Block on the table.

The circuit flows from the Knife Block, to the LH Roto-Shear motor, to the RH Roto-Shear motor, to the return line of the Knife circuit at the RH end of the table.

The Knife Block includes a 5 GPM Flow Control cartridge and a Pressure Reducing/Relieving cartridge to regulate the flow to the Roto-Shears.

Header

The Roto-Shears must operate in series after the Reel Circuit via a manifold block. The manifold block is located on the right-hand end of the Table under the Safety Shielding. It houses a Relief Valve and a 5 GPM Flow Control.

Before starting:

1. Raise the Reel and set the reel lift locks.
2. Install the Crop Dividers on the table. Remove the Crop Divider Pipes or Floating Tip Dividers, and install the bottom covers on the Crop Dividers.

Roto-Shear Ready Parts List - Swather & Header

Description	QTY
BOLT 5/16 X 2-1/2 UNC GR5	2
BOLT 3/8 X 1 UNC CARR GR5	6
BOLT 3/8 X 1-1/4 UNC CARR GR5	8
NUT 5/16 UNC F/LOCK	2
WSHR FLAT 3/8	14
NUT 3/8 UNC C/LOCK	14
HYDRAULIC HOSE CLAMP - 3/4" DOUBLE LINE	2
HYDRAULIC HOSE CLAMP COVER - DOUBLE LINE	2
EDGE TRIM - 10"	2
INST-ROTOSHEAR ASSY	1
BRACE MNT WD-ROTOSHEAR-RH	1
BRACE MNT WD-ROTOSHEAR-LH	1
SUPP WD-ROTOSHEAR-RH	1
SUPP WD-ROTOSHEAR-LH	1
SPCR-.840 X. 546 X 7/16 PLTD	2

Non Roto-Shear Ready Kit Parts - Requires Roto-Shear Ready Parts List

SWATHER

Description	Qty
BOLT 5/16 X 2-1/2 UNC GR5	2
NUT 5/16 UNC F/LOCK	2
HYDRAULIC HOSE CLAMP - 3/4" DOUBLE LINE	2
HYDRAULIC HOSE CLAMP COVER - DOUBLE LINE	2
VELCRO STRAP	1
HYDRAULIC LINE CAP - 10FF	2
HYDRAULIC NIPPLE - 8MB-8MF	1
HYDRAULIC ELBOW - 90°	1
HYDRAULIC FLOW CONTROL CARTRIDGE - 5 GPM	1
HYDRAULIC PRESSURE REDUCING & RELIEF CARTRIDGE - 2500 PSI	1
HYDRAULIC LINE PLUG - HEX HEAD - 10MF	2
HYDRAULIC ELBOW - 90° - 10MF-12MB	1
HYDRAULIC HOSE - 21" - 8FFX-10FFX	1

HEADER**Part # Description Qty**

BOLT 5/16 X 2-1/2 UNC GR5	2
BOLT 3/8 X 1 UNC	2
NUT 1/4 UNC F/LOCK	2
NUT 5/16 UNC F/LOCK	2
WSHR FLAT SAE 3/8	2
WSHR - LOCK 3/8	2
HYDRAULIC HOSE CLAMP - 3/4" DOUBLE LINE	2
HYDRAULIC HOSE CLAMP COVER - DOUBLE LINE	2
BOLT 1/4 X 3/4 NC CARRIAGE HEAD	2
HYDRAULIC ELBOW - 90° - 8MB-10MF	1
HYDRAULIC ELBOW - 90° - 8MB-8MF	1
HYDRAULIC ELBOW - 90° - 10MF-10FFX	4
HYDRAULIC NIPPLE - 10MF-12MB	1
HYDRAULIC NIPPLE - 8MB-8MF	1
HYDRAULIC ELBOW - 90° - 8MF-8FFX	1
HYDRAULIC FLOW CONTROL CARTRIDGE - 5 GPM	1
HYDRAULIC MANIFOLD BLOCK	1
HYDRAULIC MANIFOLD BLOCK MOUNT	1
HYDRAULIC HOSE - 22" - 8FFX-10FFX	1
HYDRAULIC HOSE - 24" - 8FFX-10FFX	1

Hose Lengths

SWATHER

Table Size	LH HOSE	END-TO-END HOSE	RS MALE HOSE	RS FEM HOSE
21 ft	129"	353"	53"	53"
25 ft	153"	401"	53"	53"
30 ft	183"	461"	53"	53"
36 ft	220"	536"	53"	53"
40 ft	224"	584"	53"	53"

HEADER

Table Size	END-TO-END RETURN HOSE	END-TO-END HOSE	RS MALE HOSE	RS FEM HOSE
36 ft	510"	536"	53"	53"
40 ft	558"	584"	53"	53"
45 ft	618"	644"	53"	53"

All hoses are 1/2" hoses (3000 PSI rating)

Lengths above are raw hose lengths.

For **LH HOSE**, and **END-TO-END RETURN HOSE**, hose ends need to be #10 Female swivel ORFS on both ends of hose.

For **END-TO-END HOSE**, hose ends need to be #10 Male ORFS on both ends of hose.

For **RS MALE HOSE**, hose ends need to be #10 Male ORFS on one end and #10 Female swivel ORFS on the other end.

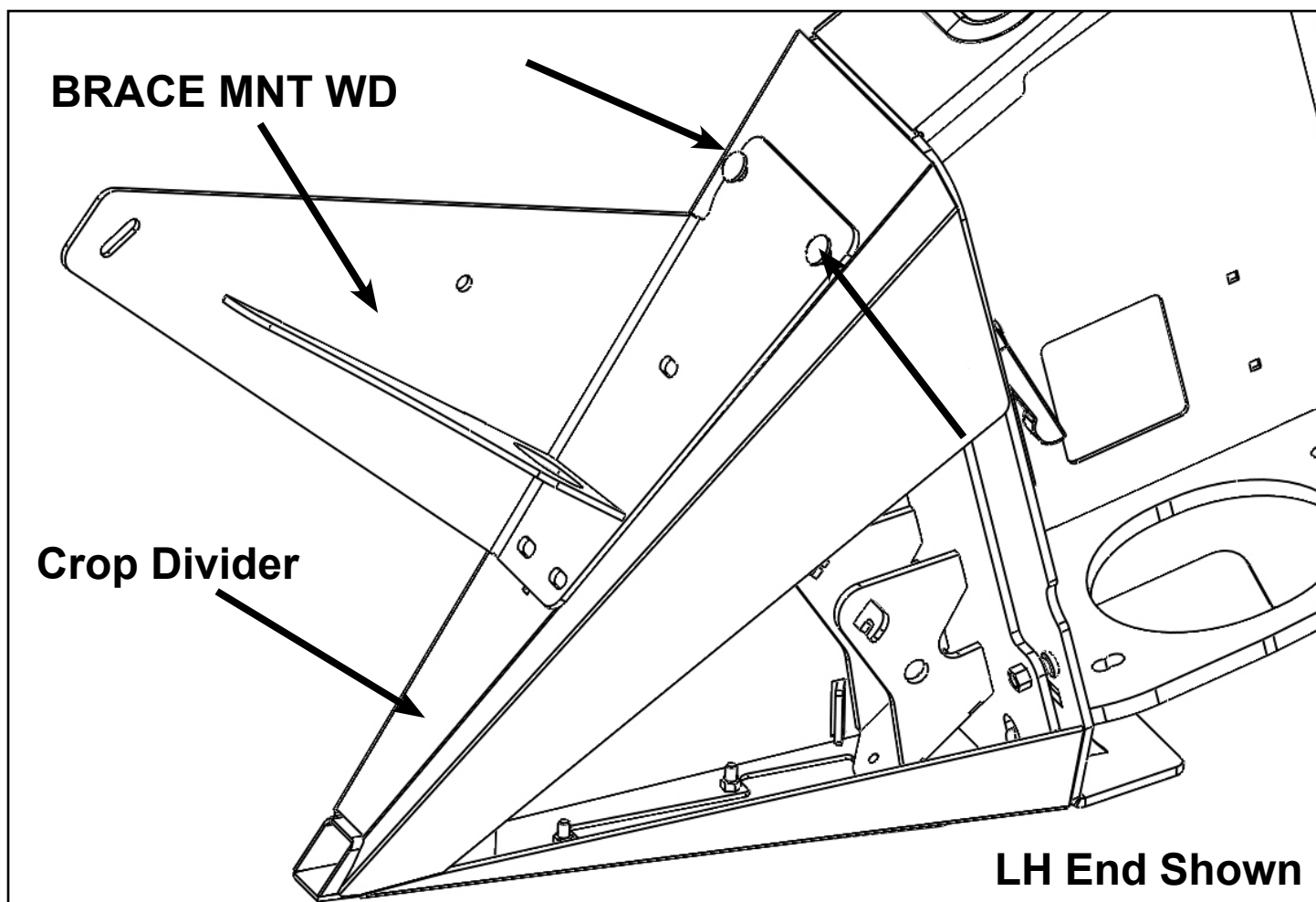
For **RS FEM HOSE**, hose ends need to be #10 Female swivel ORFS on both ends of hose.

Step 1 - HEADER AND SWATHER - READY OR NON READY

Attach **BRACE MNT WD-ROTSHEAR** left and right hand to the top of the Crop Divider on each side of the table. Use the top two holes on the top face of the Crop Divider and the following fastening hardware:

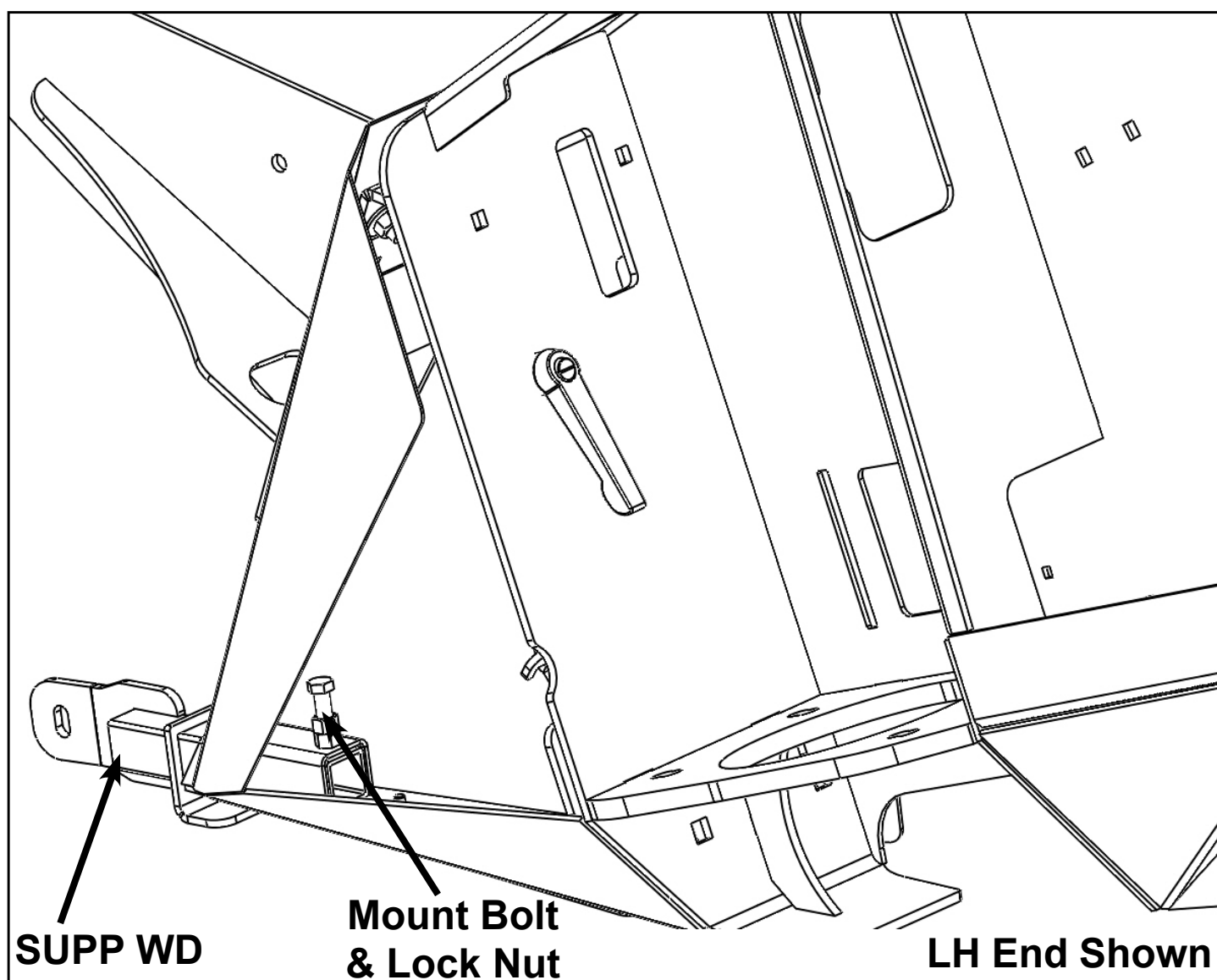
- | | |
|----------------------------------|----------------|
| - BOLT 3/8 X 1-1/4 UNC CARR GR 5 | 2 PCS PER SIDE |
| - WSHR FLAT 3/8 | 2 PCS PER SIDE |
| - NUT 3/8 UNC C/LOCK | 2 PCS PER SIDE |

Do not tighten the hardware yet.



Step 2 - HEADER AND SWATHER - READY OR NON READY

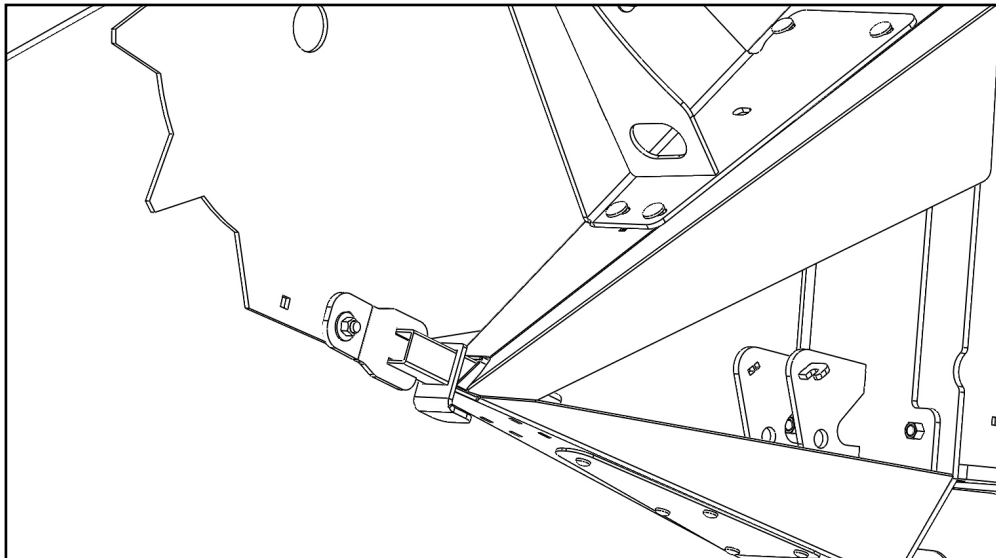
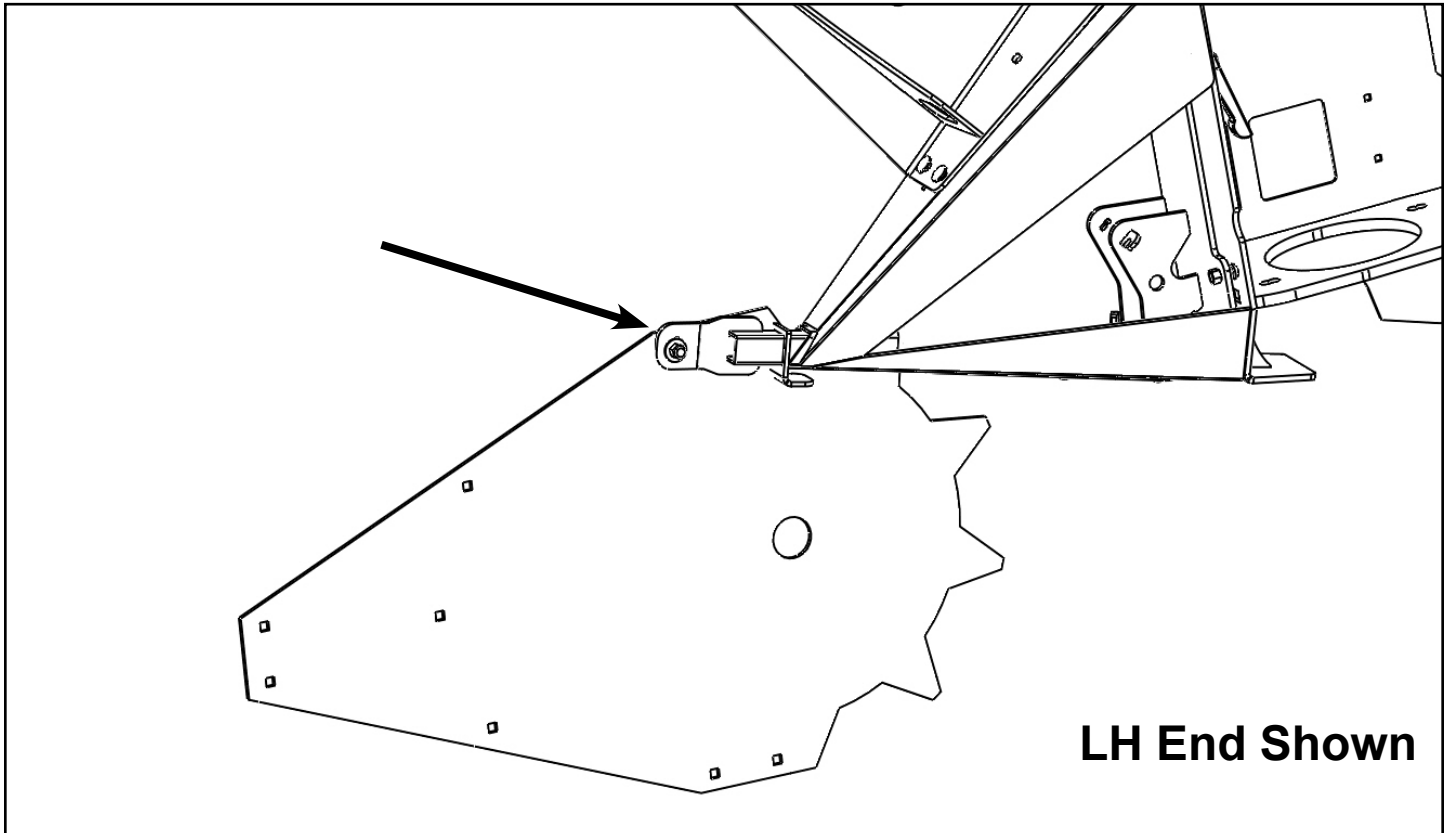
Attach **SUPP WD-ROTSOSHEAR** left and right hand to the Crop Dividers by placing each one into the square tube at the tip of each Crop Divider. Tighten the Mount Bolt (on the Crop Divider) when lined up with the hole in the **SUPP WD**, and then tighten the Lock Nut.



Step 3 - HEADER AND SWATHER - READY OR NON READY

Attach the Roto-Shear to **SUPP WD-ROTOSHEAR** with the following hardware and let it hang inverted.

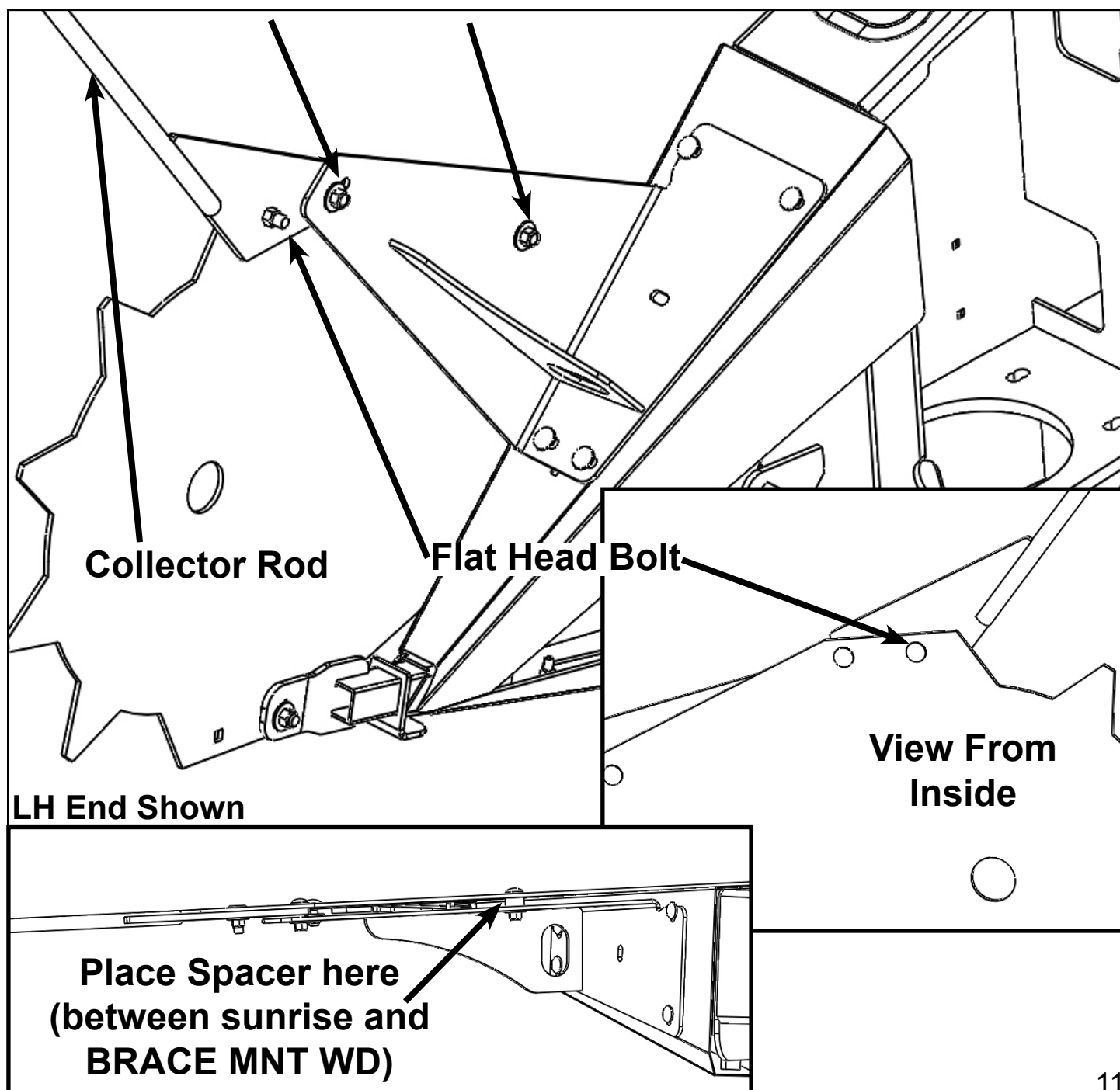
- | | |
|-----------------------------|---------------|
| - BOLT 3/8 X 1 UNC CARR GR5 | 1 PC PER SIDE |
| - WSHR FLAT 3/8 | 1 PC PER SIDE |
| - NUT 3/8 UNC C/LOCK | 1 PC PER SIDE |



Step 4 - HEADER AND SWATHER - READY OR NON READY

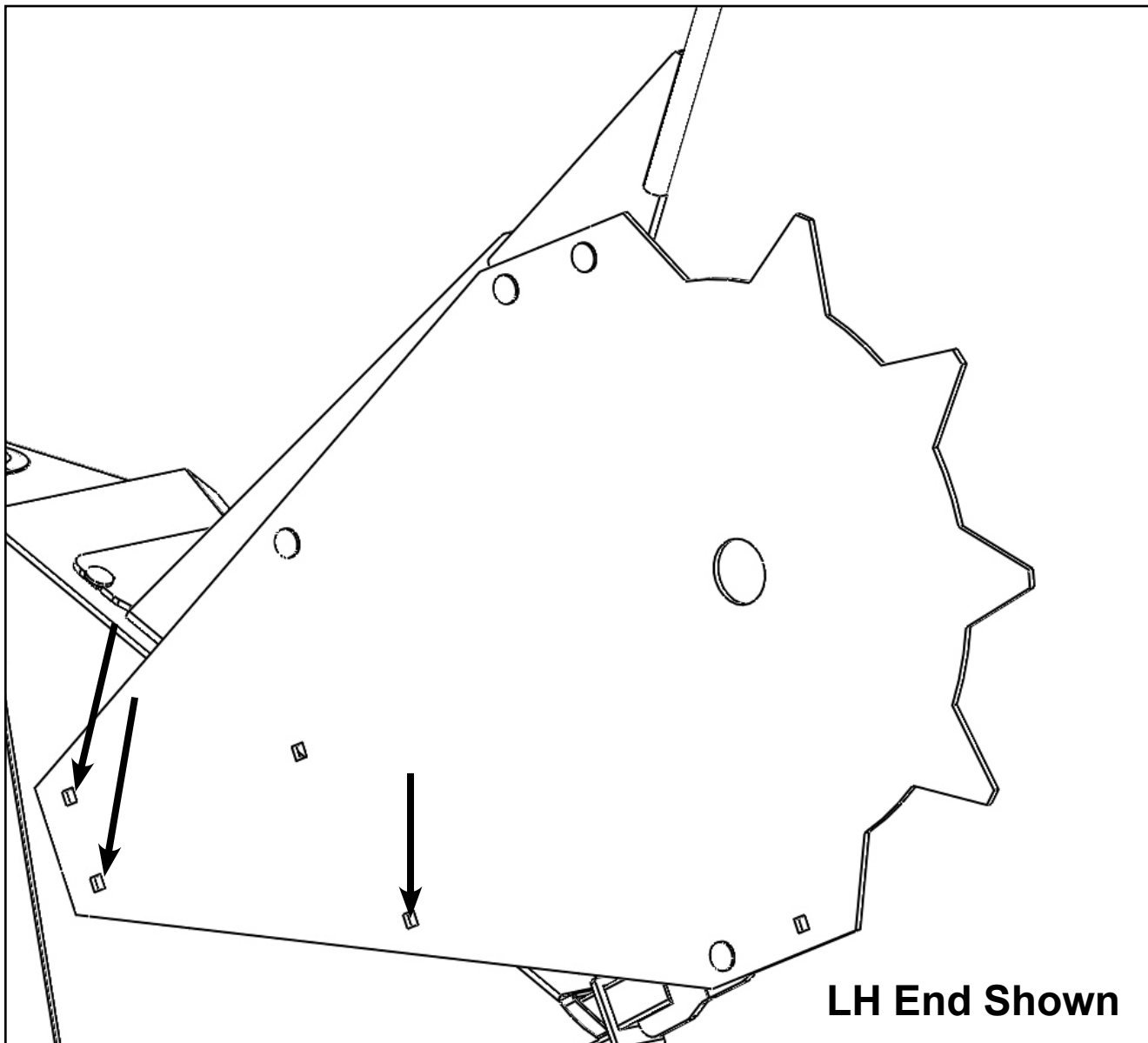
Fasten the Collector Rod to the Roto-Shear with the special Roto-Shear supplied fastening hardware (Flat Head Bolt & nylock nut). Swing the Roto-Shear up to meet with **BRACE MNT WD**. Fasten loosely in place with the following hardware.

- | | |
|---------------------------------|---------------|
| - BOLT 3/8 X 1-1/4 UNC CARR GR5 | 2 PC PER SIDE |
| - WSHR FLAT 3/8 | 2 PC PER SIDE |
| - NUT 3/8 UNC C/LOCK | 2 PC PER SIDE |
| - SPCR-.840 X .546 X 7/16 PLTD | 1 PC PER SIDE |



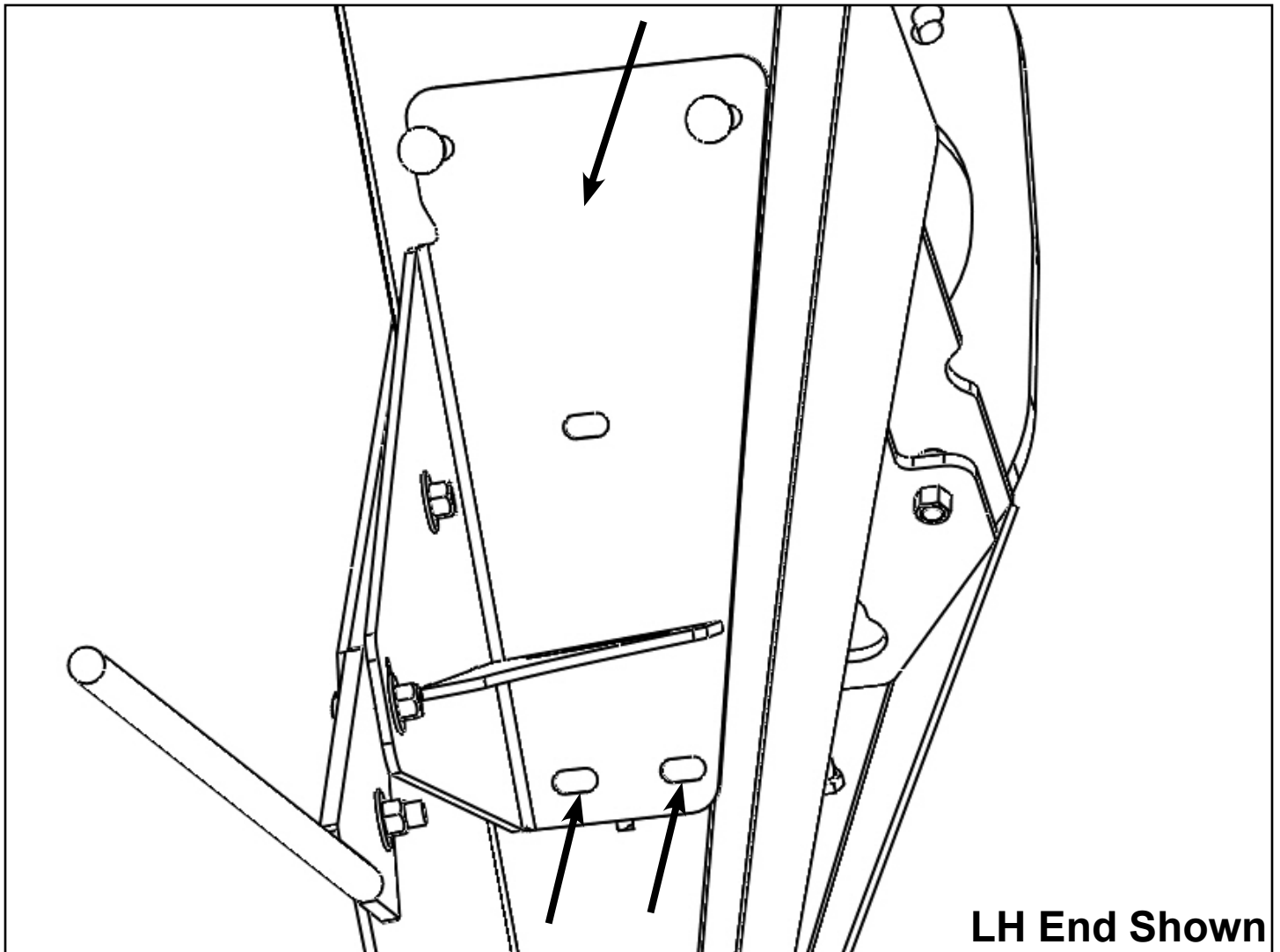
Step 5 - HEADER AND SWATHER - READY OR NON READY

Ensure all parts fit together properly, and then tighten all fasteners installed so far. Mark the centers of the three square holes of the sunrise onto the Crop Divider side face (for drilling in step 7).



Step 6 - HEADER AND SWATHER - READY OR NON READY

Mark the centers of the three slots of **BRACE MNT WD** onto the Crop Divider top face (for drilling in step 7).



Step 7 - HEADER AND SWATHER - READY OR NON READY

Loosen/remove the fasteners and move the components aside enough to gain access to the hole center marks made in steps 5 & 6.

Drill 7/16" diameter holes through the Crop Divider at the six hole center marks.

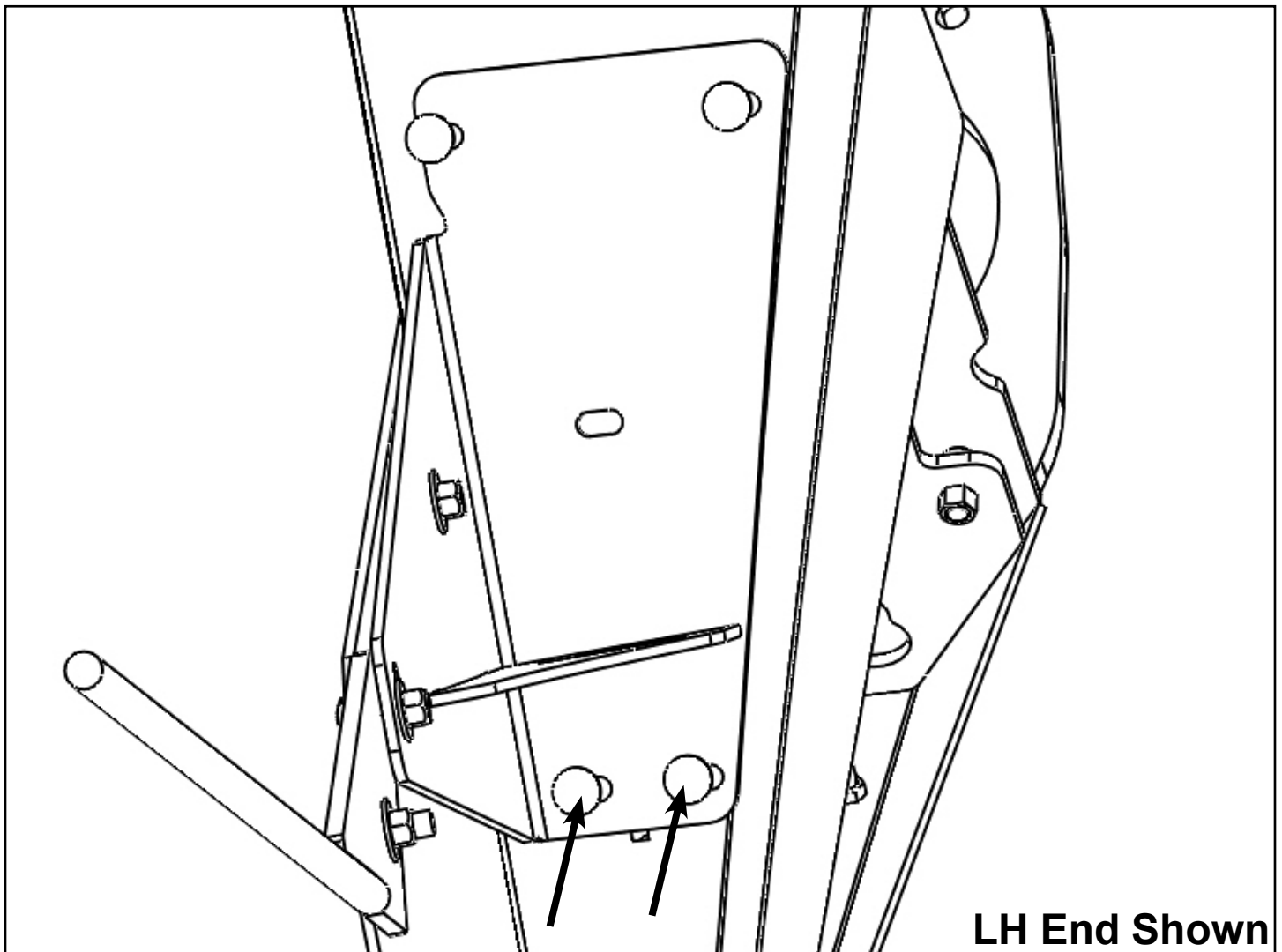
Deburr the holes as necessary after drilling.

Re-install all components with fastening hardware, but do not tighten the hardware yet.

Step 8 - HEADER AND SWATHER - READY OR NON READY

Install the following hardware into the two lower slots of **BRACE MNT WD** and through the drilled holes in the Crop Divider top face.

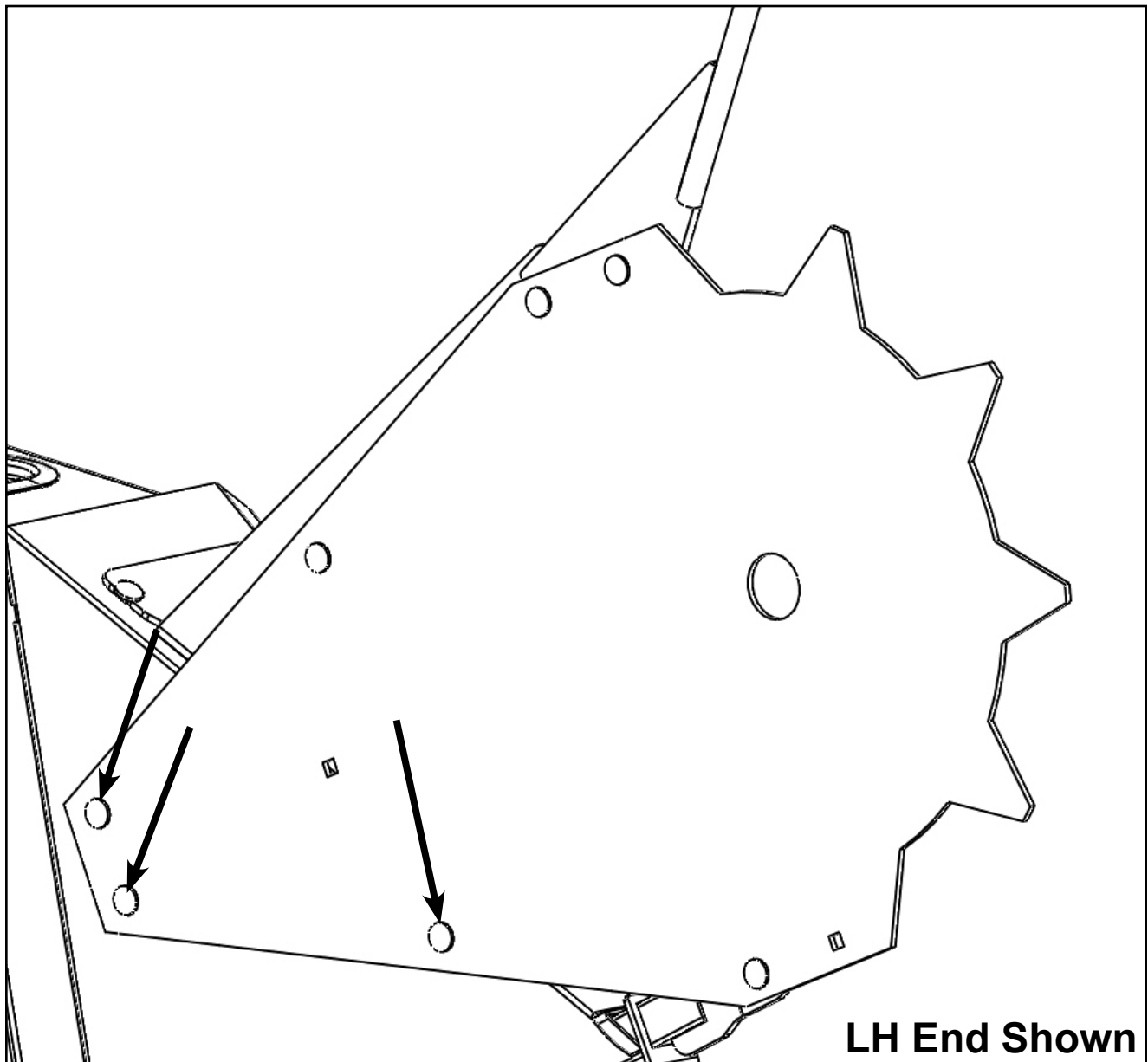
- | | |
|-----------------------------|---------------|
| - BOLT 3/8 X 1 UNC CARR GR5 | 2 PC PER SIDE |
| - WSHR FLAT 3/8 | 2 PC PER SIDE |
| - NUT 3/8 UNC C/LOCK | 2 PC PER SIDE |



Leave the center slot open for now.

Step 9 - HEADER AND SWATHER - READY OR NON READY

Install the 3/8 x 1 carriage bolts and nylock nuts (supplied with the Roto-Shear components), along with **WSHR FLAT 3/8** (supplied with the kit), into the three square holes of the sunrise and through the drilled holes in the Crop Divider side face.

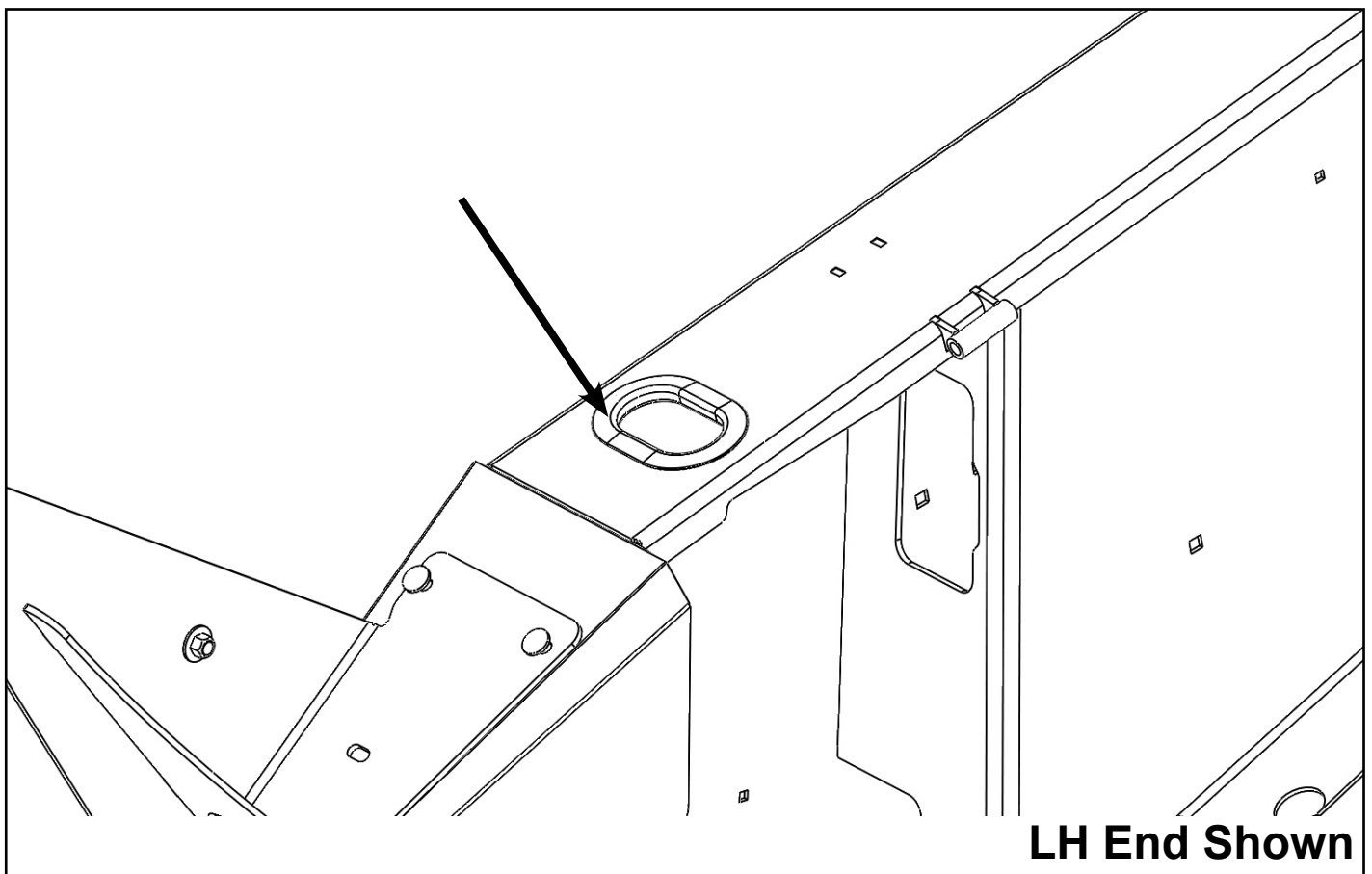


Ensure all parts fit together properly, and then tighten all fasteners installed so far.

Step 10 - HEADER AND SWATHER - READY OR NON READY

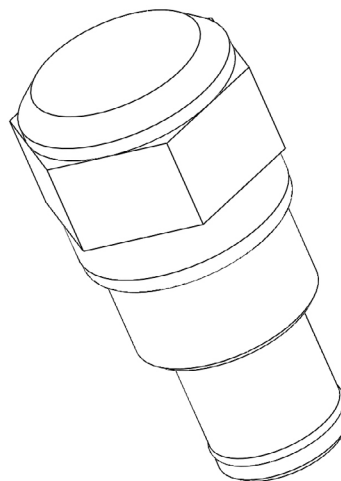
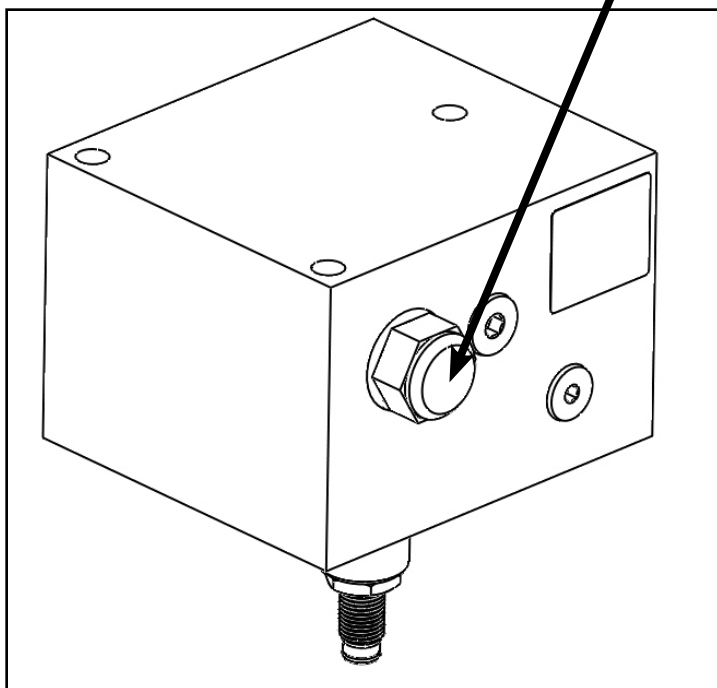
Remove the painted cover from the top of the frame to expose the hole underneath.

Install **EDGE TRIM-10"** around the edge of the exposed hole.



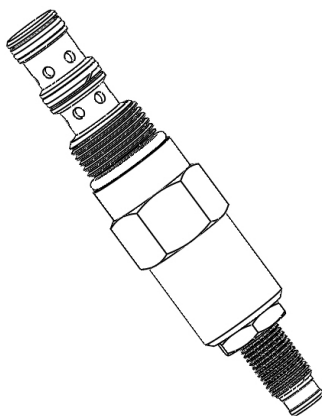
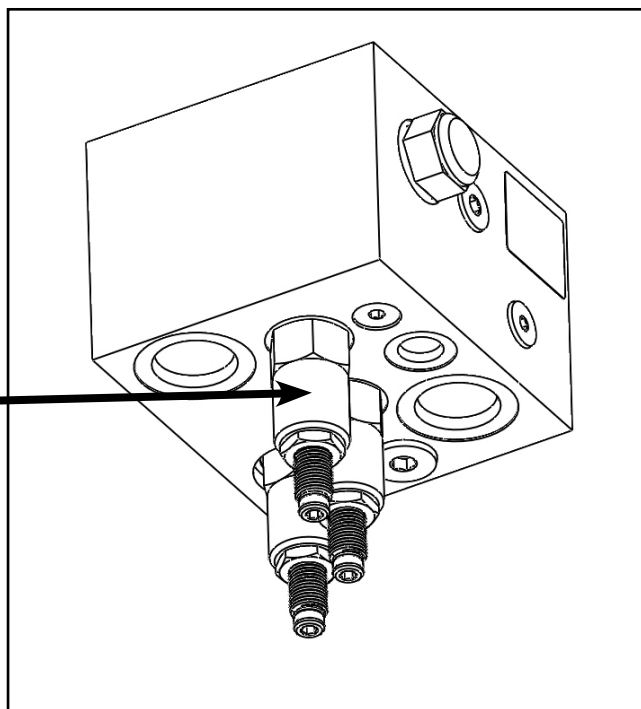
Step 11 - SWATHER ONLY - Skip to Step 17 if Roto-Shear Ready

Locate the Knife Block at the back of the machine, to the left of center. Remove the shielding. Remove the Plug from the "FC" port on the outward facing side of the Knife Block and install **CART-FLOW CNTRL-FXD-5GPM**. **WARNING:** Tighten gently, this is an aluminum block.



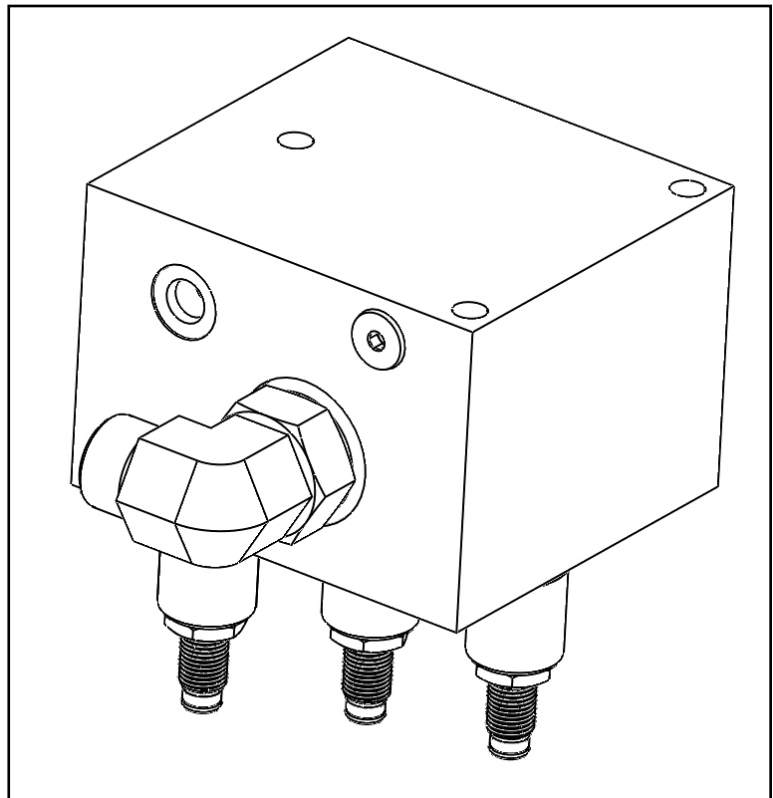
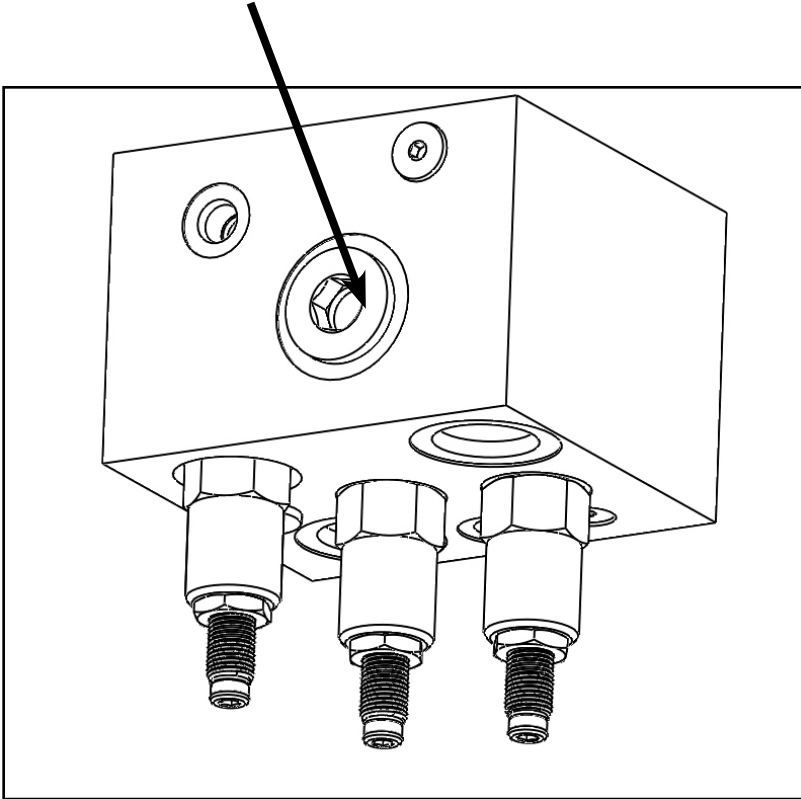
STEP 12 - SWATHER ONLY

Remove the Plug from the "PRS" port on the bottom of the Knife Block. Install **CART-PRSR RDCR/RLF-2500PSI**.



Step 13 - SWATHER ONLY

Remove the Plug from the “OPTION” port on the inner facing side of the Knife Block. Install **ELBOW 10MF-12MB-90°**. Orient the elbow towards the center of the table.

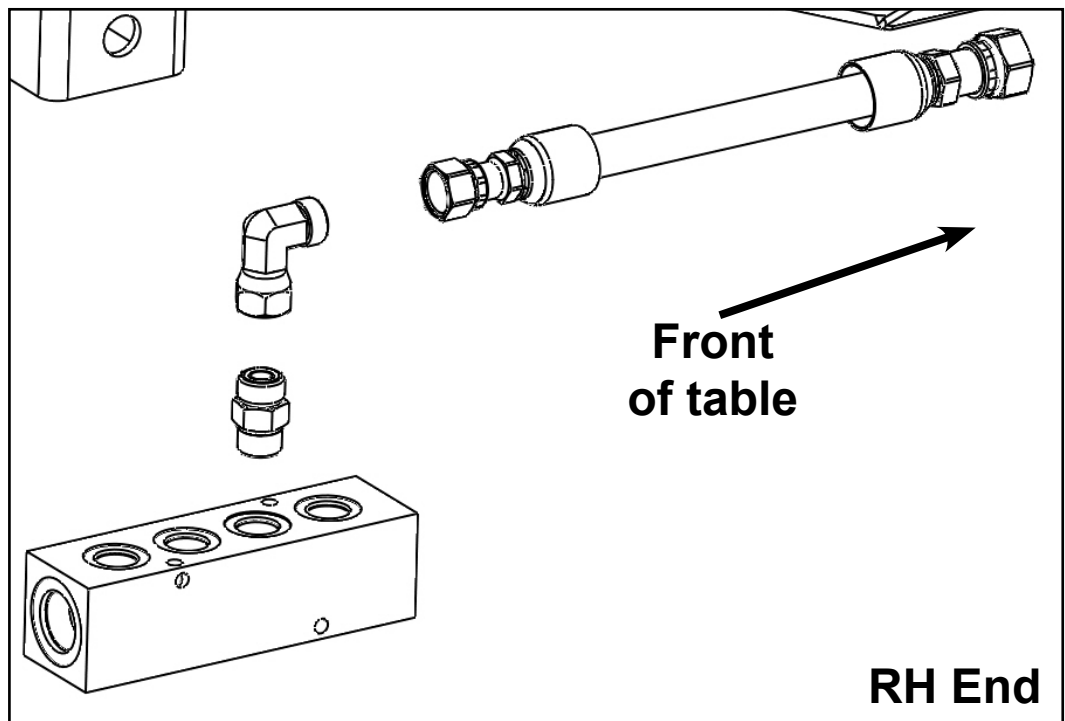
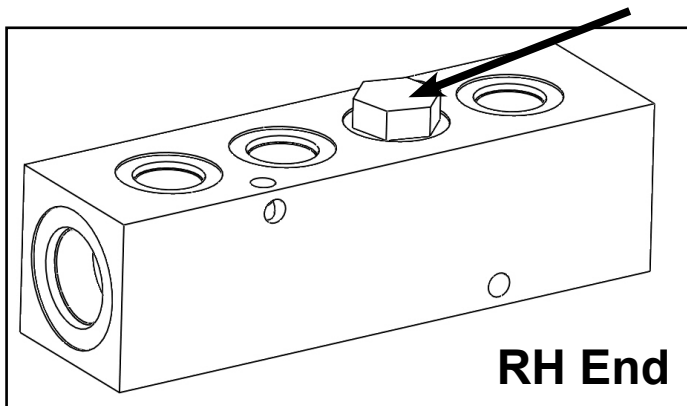


Step 14 - SWATHER ONLY

Locate the black junction block at the RH end of the table.

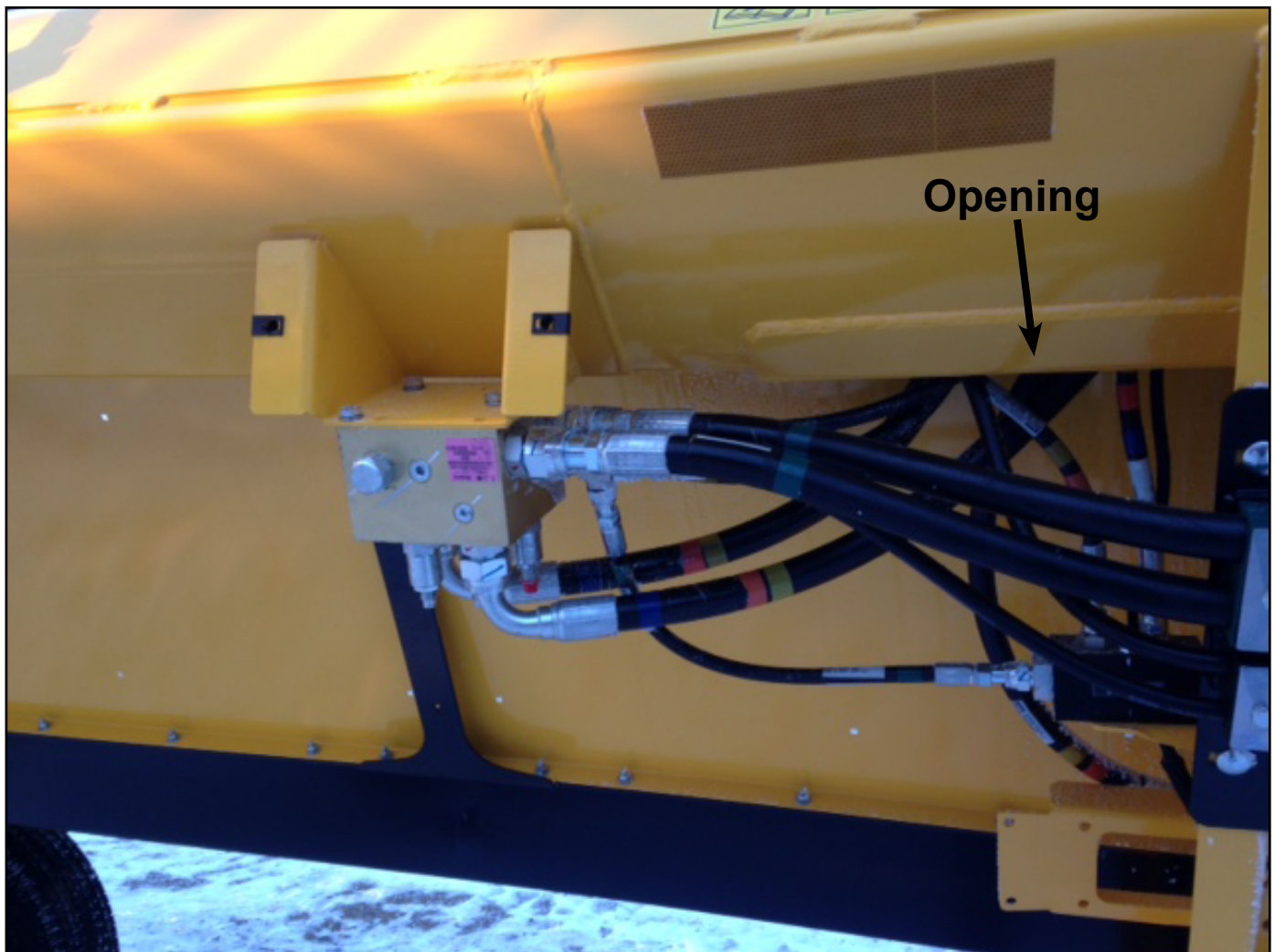
Remove the Plug at the third top hole and install the following:

- | | |
|--------------------------------|------|
| - NIPPLE 8MB-8MF | 1 PC |
| - ELBOW 8MF-8FFX-90 | 1 PC |
| - Hose HH08 21 8FFX-10FFX TCVR | 1 PC |



Step 15 - SWATHER ONLY

Using the appropriate table size **LH HOSE** indicated on the list and ensuring to plug the end of the hose, feed the hose up into the opening of the frame just to the right of the Knife Block. Continue to feed the hose through the frame and to the LH end of the table until it comes out the end. Once out the end, continue to feed it towards the Crop Divider, ensuring that it is put through the frame opening at the Reel Lift cylinder. Back at the Knife Block, connect the end of the hose to the “OPTION” port elbow. Re-install the shielding for the Knife Block removed in Step 11.



Step 16 - SWATHER ONLY

Using the appropriate table size **END-TO-END HOSE** indicated on the list and ensuring to plug the end of the hose, feed the hose into the LH end of the frame and through the frame to the RH end of the table until it comes out the end. Once out the end, feed both ends of the hose towards each Crop Divider, ensuring the hose is put through the frame opening at the Reel Lift cylinder on each end of the table.



Step 11 - HEADER ONLY - Skip to Step 17 if Roto-Shear Ready

The shears are powered by a hydraulic motor and they receive their flow from the Reel Drive Circuit via a manifold block. The manifold block is located on the right-hand end of the Table under the Safety Shielding. It houses a **Relief Valve** and a **5 GPM Flow Control**.



WARNING

Tighten **gently**, this is an aluminum block.

Install the **Hydraulic Manifold Block Mount** to the inside of the **Right Hand Outer Strut**. See **Illustration B** for the bolt hole locations. Attache with:

- Bolt 1/4 X 3/4 NC CARR - 2 Pieces
- Nut 1/4 UNC Flange Lock - 2 Pieces

Attache the **Hydraulic Manifold Block** to the Hydraulic Manifold Block Mount with:

- Bolt 3/8 X 1 UNC - 2 Pieces
- Washer Flat SAE 3/8 - 2 Pieces
- Washer Lock 3/8 - 2 Pieces

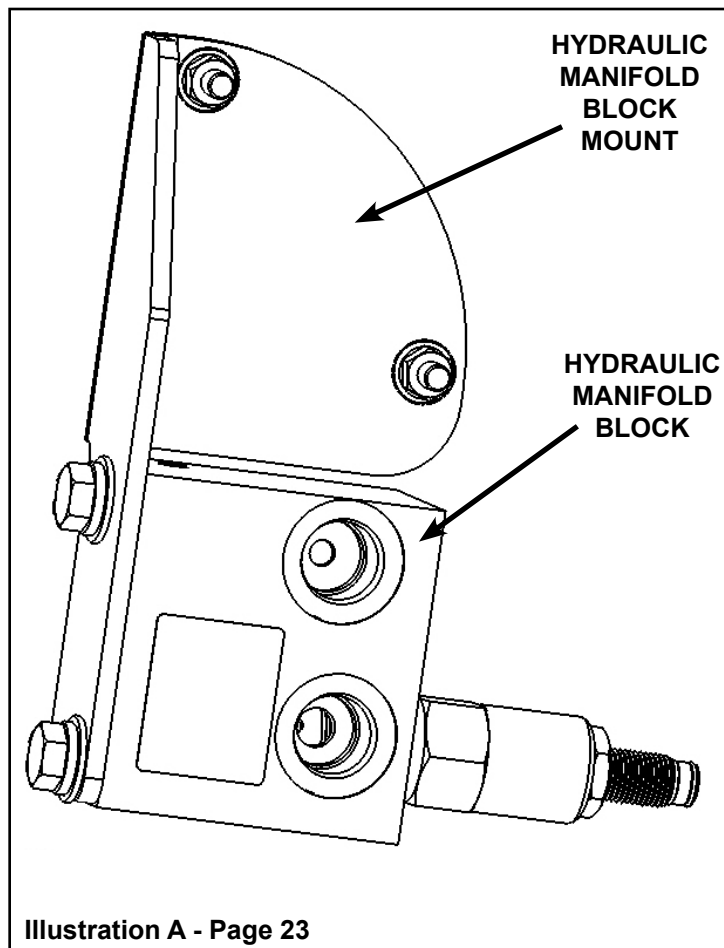


Illustration A - Page 23

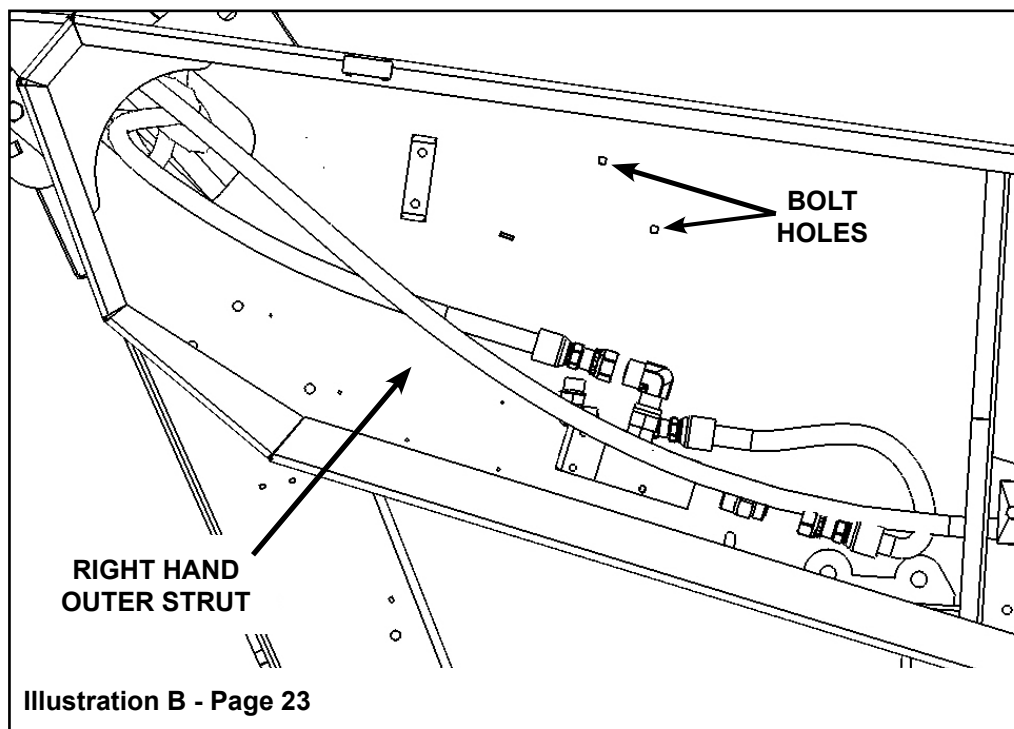
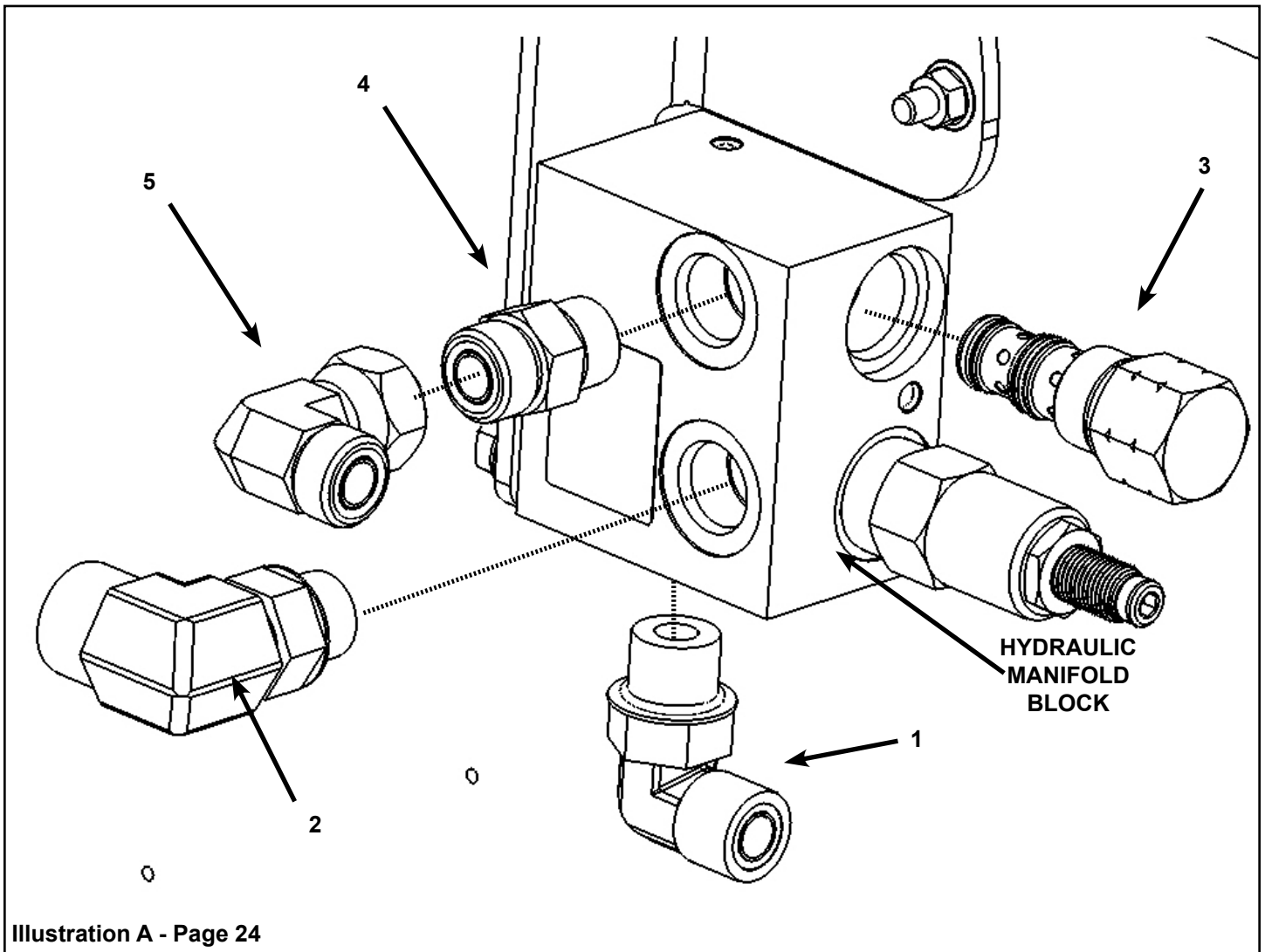


Illustration B - Page 23

Step 12 - HEADER ONLY

Install the following Hydraulic Fittings into the **Hydraulic Manifold Block** as shown in Illustration A

1. Hydraulic Elbow - 90° - 8MB-8MF - 1 Piece
2. Hydraulic Elbow - 90° - 8MB-10MF - 1 Piece
3. Hydraulic Flow Control Cartridge - 5 GPM - 1 Piece
4. Hydraulic Nipple - 8MB-8MF - 1 Piece
5. Hydraulic Elbow - 90° - 8MF-8FFX

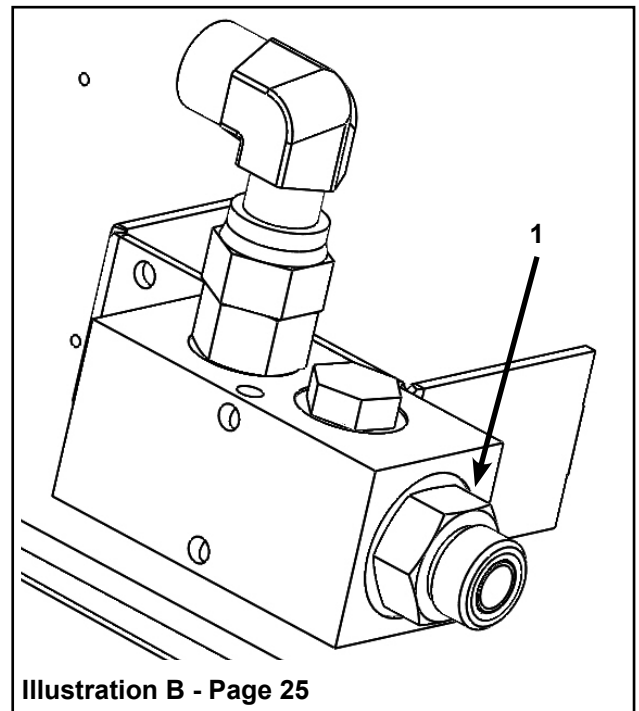
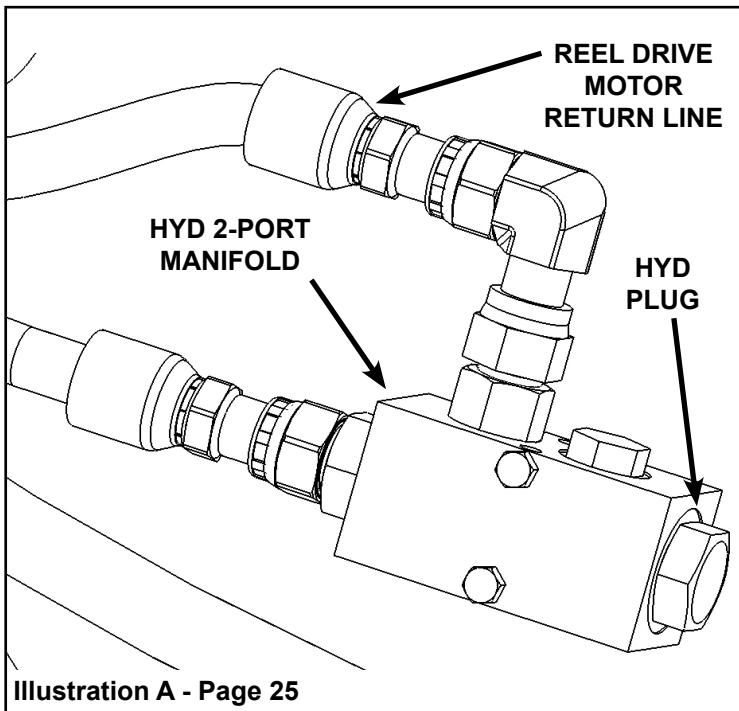


Step 13 - HEADER ONLY

Remove the forward **Hydraulic Plug** from the **Hydraulic 2-Port Manifold** (shown in Illustration A), which is located in the Right Hand Outer Strut. Replace it with:

1. Hydraulic Nipple - 10MF-12MB - 1 Piece

Remove the **Reel Drive Motor Return Line** from the 90° Elbow, on the top of the 2-Port Manifold. It will be connected to the Hydraulic Manifold Block.

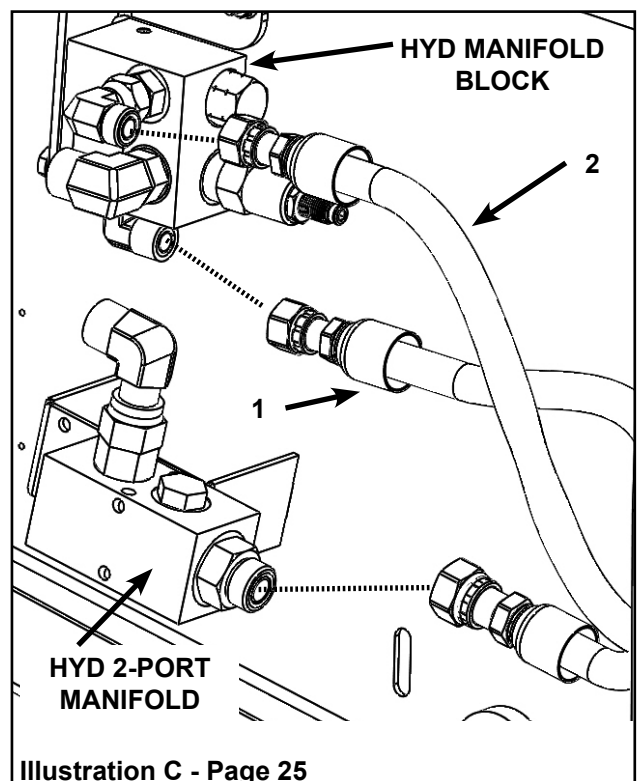


Step 14 - HEADER ONLY

Attache **Hydraulic Manifold Block Return Line (1)** to the **Hydraulic Manifold Block** and the **Hydraulic 2-Port Manifold**.

Attache **Right Hand Roto-Shear Female Line (2)** to the Hydraulic Manifold Block. Run the line to the front of the Strut for a later step. See Illustration C for location.

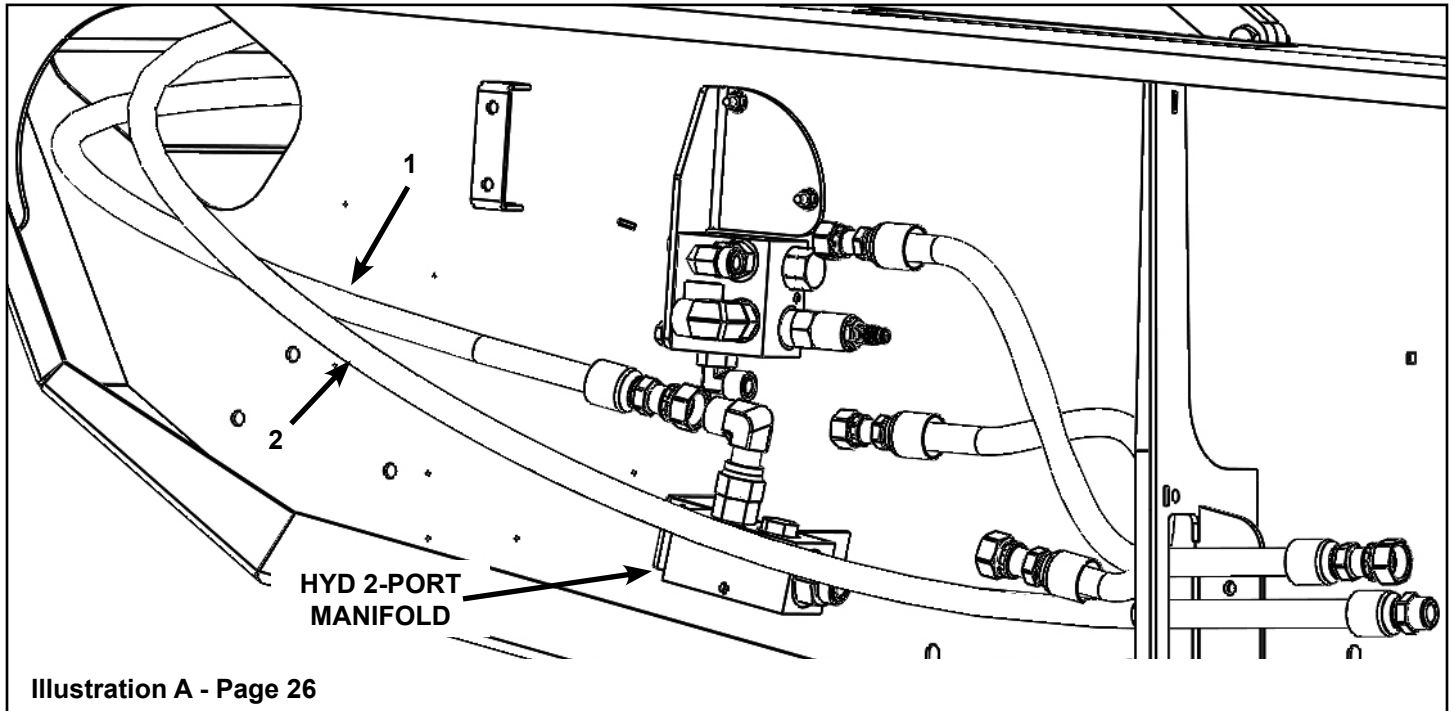
1. Hydraulic Line 22" 8FFX-10FFX - 1 Piece
2. Hydraulic Line 24" 8FFX-10FFX - 1 Piece



Step 15 - HEADER ONLY

Run the **End-to-End Return Hose (1)**, and the **End-to-End Hose (2)** through the **Upper Tube** of the Table Frame. In the Right Hand Outer Strut connect the End-to-End Return Hose to the **Hydraulic 2-Port Manifold** as shown in Illustration A.

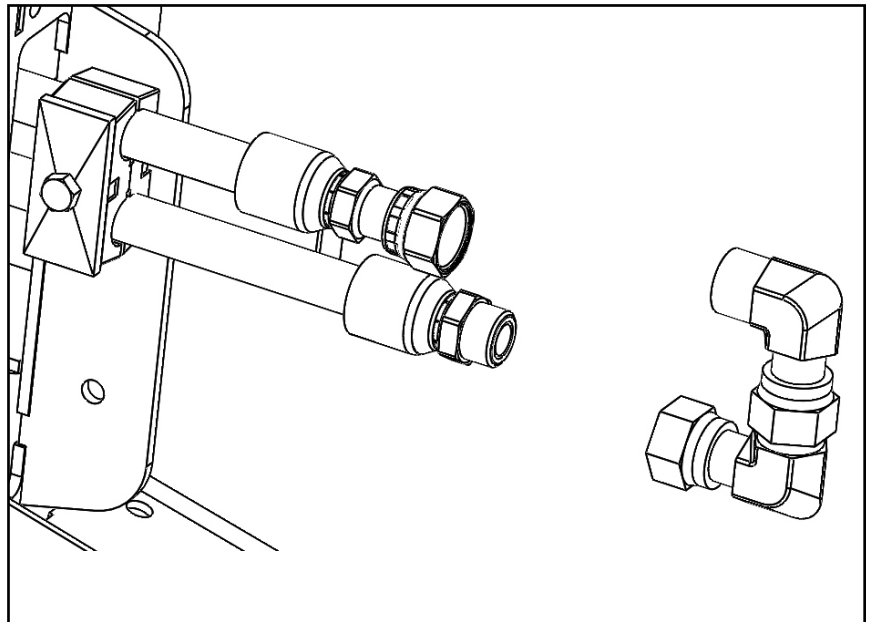
1. End-to-End Return Hose - See Hose Chart for Length - 1 Piece
2. End-to-End Hose - See Hose Chart for Length - 1 Piece



Step 16 - HEADER ONLY

Install two 90° elbows, listed below, onto the ends of the Roto-Shear Ready Hoses in each End Strut. They are removed when the Roto-Shear motor is connected.

1. Hydraulic Elbow - 90°
- 4 Piece



Step 17 - HEADER AND SWATHER - READY OR NON READY

Add the following hydraulic fittings to the Roto-Shear motors:

- NIPPLE 10MB-10MF

2 PC PER SIDE

Connect one **RS MALE HOSE** (with one Male end) to the bottom port of the motor on the LH end of the table.

Connect one **RS FEM HOSE** (with both Female ends) to the top port of the motor on the LH end of the table.

Connect one **RS FEM HOSE** (with both Female ends) to the bottom port of the motor on the RH end of the table.

Connect one **RS MALE HOSE** (with one Male end) to the top port of the motor on the RH end of the table.

Routing all Roto-Shear motor hoses through the holes in the **BRACE MNT WD** and frame, connect all mating hoses on both ends of the table.

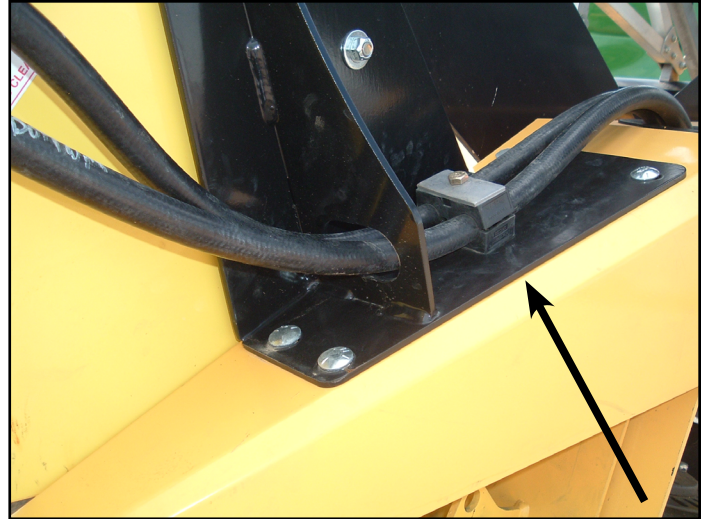
For correct operation of the Roto-Shear, the rotor should turn upwards towards the collector rod when the hydraulics are operating.



Step 18 - HEADER AND SWATHER - READY OR NON READY

Once all hoses are routed correctly, secure the hoses at each end of the table at the frame opening at the Reel Lift cylinder with the following:

- | | |
|------------------------------------|---------------|
| - HYD TUBE CLAMP-3/4 DBL LINE-PAIR | 1 PC PER SIDE |
| - HYD TUBE CLAMP CVR-DBL LINE | 1 PC PER SIDE |
| - BOLT 5/16 X 2-1/2 UNC GR5 | 1 PC PER SIDE |
| - NUT 5/16 UNC F/LOCK | 1 PC PER SIDE |



Secure the hoses for the Roto-Shear motors to the **BRACE MNT WD** with the following:

- | | |
|------------------------------------|---------------|
| - HYD TUBE CLAMP-3/4 DBL LINE-PAIR | 1 PC PER SIDE |
| - HYD TUBE CLAMP CVR-DBL LINE | 1 PC PER SIDE |
| - BOLT 5/16 X 2-1/2 UNC GR5 | 1 PC PER SIDE |
| - WSHR FLAT 3/8 | 1 PC PER SIDE |
| - NUT 5/16 UNC F/LOCK | 1 PC PER SIDE |

Step 19 - HEADER AND SWATHER - READY OR NON READY

While keeping any bystanders away, release the reel lift locks and lower the reel. Remove the safety bolts from the Roto-Shear rotor if not done already.