CRARY

CWS

CRARY WIND SYSTEM

PRODUCT MANUAL

CASE IH

2162

MACDON

FD1

FD70

FD75

RECORD SERIAL NUMBER HERE

Manual P/N 50887-00
Rev. 120822.01
SN Range: G00001-Current

HOW TO REACH US

ADDRESS	HOURS	TELEPHONE FAX NUMBER	E-MAIL INTERNET
Crary Industries, Inc. 237 12th St. NW West Fargo, ND 58078	Monday-Friday 8 am-5pm (CST)	For Parts and Service: Ph: 701.282.5520 • 800.247.7335 Fax: 701.282.9522	Email: service@crary.com • sales@crary.com Online: www.crary.com

DISCLAIMER

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations, nor to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not present in all systems. Crary Industries assumes no obligation of notice to holders of this document with respect to changes subsequently made.

Crary Industries assumes no responsibility for the accuracy, completeness, sufficiency, or usefulness of the information contained herein.

SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE..

Crary Industries is continually making improvements and developing new equipment. In doing so, we reserve the right to make changes or add improvements to our product without obligation for equipment previously sold. For the latest product manual, please go to www.crary.com/Product-Support/Find-A-Product-Manual.

Because modification to this machine may affect the performance, function, and safety of its operation, no modifications are to be made without the written permission of Crary Industries. Part replacements should be with original equipment supplied by Crary Industries.

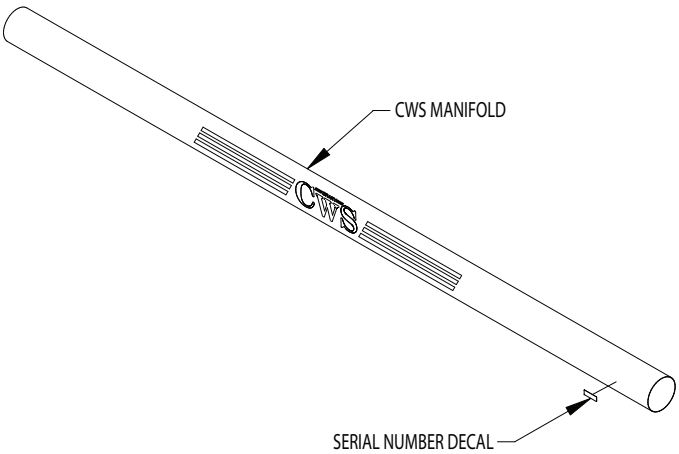
THE CRARY INDUSTRIES STATEMENT OF PRODUCT SAFETY

As a manufacturer of specialized agricultural equipment, Crary Industries fully recognizes its responsibility of providing its customers products that perform their expected use in a reasonably safe manner. Safety considerations shall be an integral and high priority part of all engineering/design analysis and judgments involving Crary products. It is our stated policy that our products will be manufactured to comply with the safety standards specified by the American Society of Agricultural Engineers, the National Electrical Code, the Society of Automotive Engineers, and/or any other applicable recognized standards at the time manufactured. However, this statement should not be construed to mean that our product will safeguard against a customer's own carelessness or neglect in violating common safety practices specified in each product's manual, nor will we be liable for any such act.

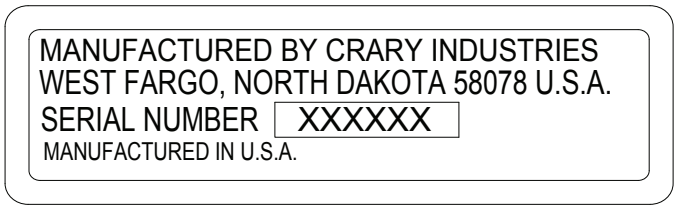
SERIAL NUMBER LOCATION

Always give your authorized Crary dealer the serial number of your machine when ordering parts, requesting service, or any other information. The serial number decal is located on the front, left hand end of the air manifold, as shown below.

Please record the serial number in the space provided on the front cover and on the warranty and registration card.



Serial number location



Serial Number Decal

WARNING: Cancer and Reproductive Harm
ADVERTENCIA: Cáncer y Daños Reproductivos
AVERTISSEMENT: Cancer et Dommages Reproductifs
www.P65Warnings.ca.gov

LIMITED WARRANTY

This warranty applies to all AG and Marine Equipment manufactured by Crary Industries.

Crary Industries warrants to the original owner each new Crary Industries product to be free from defects in material and workmanship, under normal use and service. The warranty shall extend as shown below from date of delivery. The product is warranted to the original owner as evidenced by a completed warranty registration on file at Crary Industries.

Product	Warranty Length
Finger Air Reel	2 year
Crary Wind System	2 year
Replacement Parts	90 days (unless superceded by warranty)

THE WARRANTY REGISTRATION MUST BE COMPLETED AND RETURNED TO CRARY INDUSTRIES WITHIN 10 DAYS OF DELIVERY OF THE PRODUCT TO THE ORIGINAL OWNER OR THE WARRANTY WILL BE VOID.

In the event of a failure, return the product, at your cost, along with proof of purchase to the selling Crary Industries dealer. Crary Industries will, at its option, repair or replace any parts found to be defective in material or workmanship. Warranty on any repairs will not extend beyond the product warranty. Repair or attempted repair by anyone other than a Crary Industries dealer as well as subsequent failure or damage that may occur as a result of that work will not be paid under this warranty. Crary Industries does not warrant replacement components not manufactured or sold by Crary Industries.

1. This warranty applies only to parts or components that are defective in material or workmanship.
2. This warranty does not cover normal wear items including but not limited to bearings, belts, pulleys and reel tines.
3. This warranty does not cover normal maintenance, service or adjustments.
4. This warranty does not cover depreciation or damage due to misuse, negligence, accident or improper maintenance.
5. This warranty does not cover damage due to improper setup, installation or adjustment.
6. This warranty does not cover damage due to unauthorized modifications of the product.

Crary Industries is not liable for any property damage, personal injury or death resulting from the unauthorized modification or alteration of a Crary product or from the owner's failure to assemble, install, maintain or operate the product in accordance with the provisions of the Owner's manual.

Crary Industries is not liable for indirect, incidental or consequential damages or injuries including but not limited to loss of crops, loss of profits, rental of substitute equipment or other commercial loss.

This warranty gives you specific legal rights. You may have other rights that may vary from area to area.

Crary Industries makes no warranties, representations or promises, expressed or implied as to the performance of its products other than those set forth in this warranty. Neither the dealer nor any other person has any authority to make any representations, warranties or promises on behalf of Crary Industries or to modify the terms or limitations of this warranty in any way. Crary Industries, at its discretion, may periodically offer limited, written enhancements to this warranty.

CRARY INDUSTRIES RESERVES THE RIGHT TO CHANGE THE DESIGN AND/OR SPECIFICATIONS OF ITS PRODUCTS AT ANY TIME WITHOUT OBLIGATION TO PREVIOUS PURCHASERS OF ITS PRODUCTS.

NOTE

The warranty will not cover gearboxes that have been disassembled within the warranty period.

PRODUCT REGISTRATION

PLEASE REGISTER YOUR CRARY WIND SYSTEM

To register your product to be protected under our limited warranty coverage please use the QR code below or go to www.crary.com/Product-Support/Product-Registration.

Please take time to fill out the online registration form to register your Crary Wind System and start coverage under our limited warranty.

PARTS ORDERING INFORMATION

For service assistance or parts, contact your nearest authorized Crary dealer. Your nearest authorized Crary dealer will need to know the serial number of your Crary Wind System to provide the most efficient service.

ILLUSTRATION AND TEXT

The arrangement of the parts catalog is for easy identification of the CWS parts. All parts are illustrated in either assembled or exploded views. Except for some common hardware, all parts are identified with an item number which corresponds to the “Item” column on the parts information page. The text pages list the reference number, part number, part description and the quantity required.

REPLACEMENT PARTS

Only genuine Crary replacement parts should be used to repair the CWS. Crary replacement parts are available from your Crary Dealer. To obtain prompt, efficient service, remember to give the dealer the correct part description and serial number of the CWS.

When ordering parts for your unit provide the following:

1. The SERIAL NUMBER of your CWS..
2. The PART NUMBER of the part.
3. The PART DESCRIPTION.
4. The QUANTITY needed.

⚠ WARNING

We urge using only genuine replacement parts, which meet all the latest requirements. Replacement parts manufactured by others could present safety hazards, even though they may fit on this unit.

INSTALLATION KITS

INSPECTION AFTER DELIVERY

After receiving the shipment of your CWS, please ensure that no boxes are missing. The following tables show the number of boxes included in all kits available for a MacDon FD1, FD70, FD75 and Case IH 2162 CWS. Refer to your packing slip to see which kits you should have received. Then, ensure that all boxes were shipped. Contact your dealer immediately if any boxes are missing.

MOUNT KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
54763	1
54563	1
51640	1
52850	1
52860	1

FAN KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
52582	1
52035	1
52040	1
52042	1
52046	1

RIGHT HAND DRIVE KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
52773	2
54565	2
54765	2
54766	2

LEFT HAND DRIVE KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
50225	4
50407	4
52774	4

DRIVELINE KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
54483-00	1
27732-00	1
29858-00	1
29986-00	1

MANIFOLD KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
54381	1
54870	1
50340	1
50665	1

REEL ARM MOUNT KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
50347	4
54833	4

DROP TUBE KIT	
KIT NUMBER	**NUMBER OF BOXES IN KIT**
25919	1
25920	1

TABLE OF CONTENTS

Section 1 INTRODUCTION

Congratulations on your choice of a new Crary Wind System (CWS) to complement your farming operation. This equipment has been designed and manufactured to meet the needs of a discerning agricultural industry for the efficient harvesting of crops.

Safe, efficient, and trouble free operation of your CWS requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance, and Trouble Shooting information contained within the Operator's Manual. Check each item referred to and acquaint yourself with the adjustments required to obtain efficient operation.

This manual covers all the CWS models manufactured by Crary Industries for MacDon FD1, MacDon FD70, MacDon FD75, and Case IH 2162 headers. Use the table of contents as a guide to locate required information.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Crary dealer or distributor if you need assistance, information, or additional copies of the manuals.

Many people have worked on the design, production, and delivery of this machine. They have built into it the highest quality of materials and workmanship. The information in this manual is based on the knowledge, study, and experience of these people through years of manufacturing specialized farming machinery.

The performance of the machine depends on proper maintenance and adjustment. Even if you are an experienced operator of this or similar equipment, we ask you to read the operator's manual before running the machine. Keep the manual handy for future reference. It has been carefully prepared, organized, and illustrated to assist you in finding the information you need. Your Crary dealer will be happy to answer any further questions you may have about the machine.

OPERATOR ORIENTATION - All references to left, right, front and rear of the machine, as mentioned throughout the manual, are determined by standing behind the machine and facing towards the direction of forward travel.

Section 2 SAFETY

2.1 SAFETY ALERT SYMBOL

This Safety Alert Symbol means:

ATTENTION! BECOME ALERT!

YOUR SAFETY IS INVOLVED!

The Safety Alert symbol identifies important safety messages on the machine and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

1. **Accidents Disable and Kill**
2. **Accidents Cost**
3. **Accidents Can Be Avoided**

SIGNAL WORDS:

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

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

WARNING- Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT- Instructions that must be followed to ensure proper installation/operation of equipment.

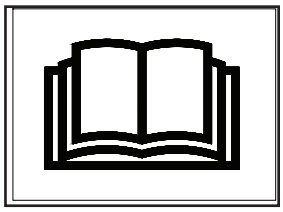
NOTE - General statements to assist the reader.

2.2 GENERAL SAFETY

YOU are responsible for the **SAFE** operation and maintenance of your machine. You must ensure that you and anyone else who is going to operate, maintain or work around the machine are familiar with the operating and maintenance procedures and related safety information contained in this manual. This manual will alert you to all good safety practices that should be adhered to while operating the machine.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

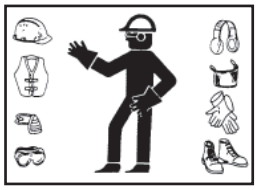
- Owners must give operating instructions to operators or employees before allowing them to operate the machine, and annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is a safe operator. It is the operator's responsibility to read and understand all Safety and Operating instructions in the manual and to follow them. All accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in anyway. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.



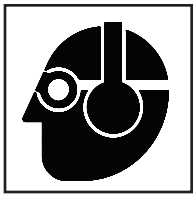
1. Read and understand the Owner's Manual and all safety decals before operating, maintaining, adjusting or servicing the machine.
2. Only trained persons shall operate the machine. An untrained operator is not qualified to operate the machine.

3. Have a first-aid kit available for use, should the need arise, and know how to use it.

4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
5. Do not allow children, spectators or bystanders within hazard area of machine.
6. Wear appropriate protective gear. This list includes but is not limited to:
   - A hard hat.
   - Protective shoes with slip resistant soles.
   - Protective goggles.
   - Heavy gloves.
   - Hearing protection.
   - Respirator or filter mask.



7. Wear suitable ear protection during prolonged exposure to excessive noise.



8. Place all controls in neutral or off, lower header to the ground, stop combine engine, set parking brake, chock wheels, remove ignition key and wait for all moving parts to stop, before servicing, adjusting, repairing or unplugging.
9. Review safety related items annually with all personnel who will be operating or maintaining the machine.

Think SAFETY! Work SAFELY!

2.3 OPERATING SAFETY

1. Read and understand the Owner's Manual and all safety decals before servicing, adjusting or repairing.
2. Install and secure all guards and shields before starting or operating.
3. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
4. Place all controls in neutral or off, lower header to the ground, stop combine engine, set parking brake, chock wheels, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
5. Clear the area of bystanders, especially small children, before starting.
6. Keep all hydraulic lines, fittings, and couplers tight and free of leaks before and during use.
7. Clean reflectors and lights before transporting.
8. Review safety related items annually with all personnel who will be operating or maintaining the machine.
9. Shut the combine off when connecting the machine hydraulics.
10. Do not exceed fan speed of 5300 RPM. Check the fan speed by multiplying the driveline speed (RPM) by the gear ratio of the gearbox.
11. Do not run the fan without back pressure. Close the butterfly valve on the fan if the flex hose is disconnected.

2.4 MAINTENANCE SAFETY

1. Follow ALL operating, maintenance, and safety information in this manual.
2. Support the machine with blocks or safety stands when working around it.
3. Follow good shop practices:
   - Keep service area clean and dry.
   - Be sure electrical outlets and tools are properly grounded.
   - Use adequate light for the job at hand.

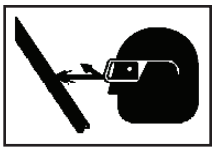
4. Use only tools, jacks and hoists of sufficient capacity for the job.
5. Place all controls in neutral or off, lower header to the ground, stop combine engine, set parking brake, chock wheels, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
6. When maintenance work is completed, install and secure all guards before resuming work.
7. Relieve pressure from hydraulic circuit before servicing or disconnecting from combine.
8. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
9. Clear the area of bystanders, especially small children, when carrying out any maintenance and repairs or making any adjustments.
10. Keep safety decals clean. Replace any decal that is damaged or not clearly visible.
11. First-class maintenance is a prerequisite for the safest operation of your machine. Maintenance, including lubrications, should be performed with the machine stopped and locked out.

Think SAFETY! Work SAFELY!

2.5 HYDRAULIC SAFETY

1. Always place all combine hydraulic controls in neutral before disconnecting from combine or working on hydraulic system.
2. Make sure that all components in the hydraulic system are kept in good condition and are clean.
3. Relieve pressure before working on the hydraulic system.
4. Replace any worn, cut, abraded, flattened or crimped hoses.
5. Do not attempt any makeshift repairs to the hydraulic fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
6. Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.

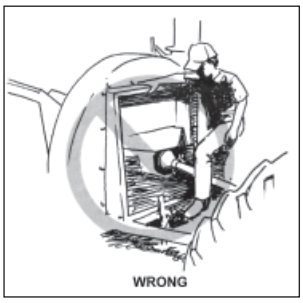
7. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.



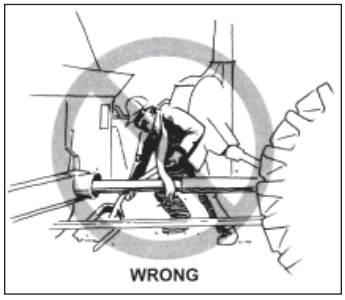
8. Before applying pressure to the system, make sure all components are tight and that lines, hoses, and couplings are not damaged.

2.6 PTO SAFETY

1. Keep bystanders, especially children, away from drivelines.
2. Be extremely careful when working around PTO shafts, drivelines, or other rotating shafts.
3. Do not remove or modify protective shields or guards.
4. Do not step across a PTO shaft or driveline or use it as a step.



5. Keep guards and shields in place at all times while operating.
6. Replace all damaged or missing parts or shields with the correct original manufacturer's parts.
7. Grease, clean, and maintain PTO components according to original manufacturer's specifications and information in this manual.
8. Clothing worn by the operator must be fairly tight. Never wear loose-fitted jackets, shirts, or pants when working around the drivelines. Tie long hair back or put under a cap.



9. Keep hydraulic hoses, electrical cords, chains, and other items from contacting the drivelines.
10. Do not clean, lubricate, or adjust the drivelines when the reel is engaged and the combine is running.`

Think SAFETY! Work SAFELY!

2.7 TRANSPORT SAFETY

1. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
2. It is the responsibility of the owner to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility.
3. See the Owner's manual that came with your combine and header for proper transportation.

2.8 STORAGE SAFETY

1. Store the unit in an area away from human activity.
2. Do not permit children to play on or around the stored machine.
3. See the Owner's manual that came with your combine and header for proper storage.

2.9 ASSEMBLY SAFETY

1. Assemble in an area with sufficient space to handle the largest component and access to all sides of the machine
2. Use only lifts, cranes and tools with sufficient capacity for the load.
3. When necessary, have someone assist you.
4. Do not allow spectators in the working area.

2.10 SAFETY DECALS

1. Keep safety decals clean and legible at all times.
2. Replace safety decals that are missing or have become illegible.
3. Replaced parts that displayed a safety decal should also display the current decal.
4. Replacement decals are to be placed back in the original location.
5. Safety decals are available from your authorized dealer or the factory.

HOW TO INSTALL SAFETY DECALS:

1. Be sure that the installation area is clean and dry.
2. Be sure temperature is above 50°F (10°C).
3. Decide on the exact position before you remove the backing paper.
4. Remove the smaller portion of the split backing paper.
5. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
6. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
7. Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.

Think SAFETY! Work SAFELY!

2.11 SIGN-OFF FORM

Crary Industries follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the equipment must read and clearly understand ALL Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before the season start-up.

Make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. An untrained operator is unqualified to operate this machine.

A sign-off sheet is provided for your record keeping to show that all personnel who will be working with the equipment have read and understand the information in the owner's manual and have been instructed in operation of the equipment.

SIGN - OFF FORM

DATE	EMPLOYEE SIGNATURE	EMPLOYER SIGNATURE

Section 3 SAFETY DECALS

Good safety requires that you familiarize yourself with the various safety decals, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

Think SAFETY! Work SAFELY!

PN 0732-0598-00 - Decal, Warning

PN 17423 - Decal, Danger

REMEMBER - If safety decals have been damaged, removed or become illegible or parts have been replaced without safety decals, new decals must be applied. New safety decals are available from the manufacturer or an authorized dealer.

CRARY

Section 4 ASSEMBLY

4.1 GEARBOX/FAN MOUNT (FD1 HEADER)

NOTE

Apply a medium strength thread locking agent to the bolts used to secure the gearbox mount to the header and the gearbox to the mount.

⚠ ATTENTION ⚠

For Hillco applications, please refer to the supplemental installation manual supplied with your drive line as mounting position and brackets may be different.

1. Place the gearbox mount **(1)** on the center adapter as shown in Figure 1. Secure using the U-bolt, reinforcement plate **(2)**, plate spacer **(3)**, 1/2" x 1-1/2" carriage bolt and nuts (Figure 3). Tighten all hardware.
2. Install the adjustment bracket **(4)** so that it is adjusted tight against the oil reservoir using two 1/2" x 1-1/2" carriage bolts and nuts. Tighten all hardware.
3. Drilling a Ø7/16" hole using the dimensions in Figure 2.
4. Install the inner **(5)** and outer **(6)** supports to the gearbox mount using four 3/8" x 1-1/4" carriage bolts and nuts as shown in Figure 3. Tighten all hardware.
5. This is a universal gearbox mount bracket. Refer to Figure 3 and table for correct combine mounting location.

NOTE

Using incorrect gearbox location will result in reduced drive line life and increased vibration.

6. Use a jack or hoist to position the gearbox in place next to the gearbox mount. Attach the gearbox with six 1/2" x 1-1/4" bolts and nuts. Torque hardware to 75 ft-lbs.
7. Attach the PTO holder **(7)** to the header using two 3/8" x 1-1/4" bolts and nuts (Figure 3). On CLAAS combines, use alternate optional mount to allow clearance for driveline. Contact your dealer, if required.
8. Attach the PTO lock **(8)** to the PTO holder **(7)** using a 3/8" x 1-1/4" bolt and nut. Confirm that the PTO lock **(8)** pivots freely.
9. The snap pin will be used to secure the PTO lock closed.
10. Check the gearbox and, if necessary, fill the gearbox with lube before use.

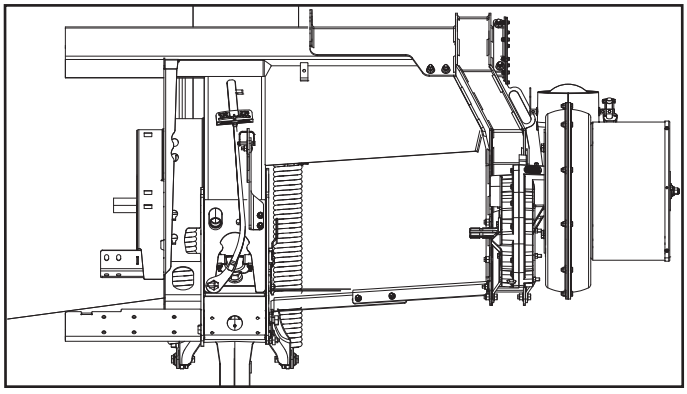


Figure 1: Gearbox mount location

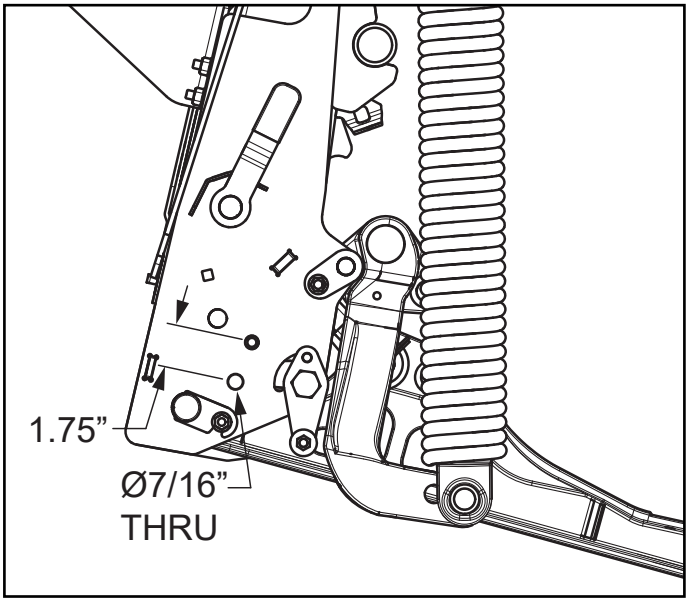


Figure 2: Support bracket OEM hole location

Use Mobilube SHC 75W-90 synthetic gear lube or equivalent with the following specifications:

API Service GL-5/MT.1
MIL-L-2105D
MACK GO-J PLUS
SAE J2360
Capacity: 28 ounces (0.8 liters)

11. Next step, **Right Hand Drive Kit** installation for FD1, go to page 18.

4.1 GEARBOX/FAN MOUNT (FD1 HEADER)

Symbol	Combine
"**A**" Pentagon	CLAAS - ALL
"**B**" Square	John Deere - ALL Case - Pre 5000 Series
"**C**" Triangle	Case - 5000-9000 Series New Holland - ALL Gleaner - ALL

TABLE 1

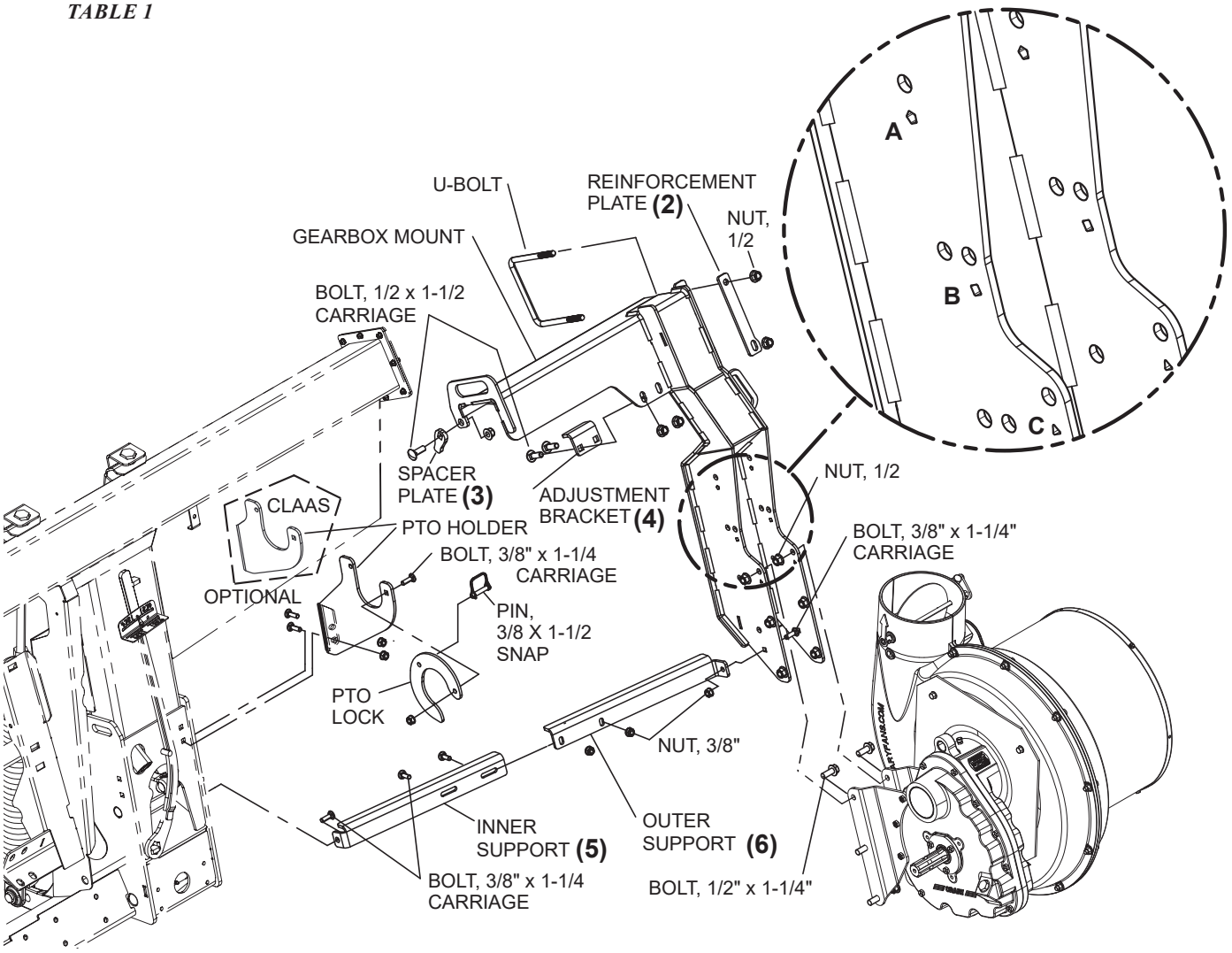


Figure 3: Right hand gearbox/fan mount

4.2 BELT DRIVE/FAN MOUNT (FD1 HEADER)

NOTE

Apply a medium strength thread locking agent to the bolts used to secure the belt drive mount to the header and the belt drive/fan assembly to the mount.

1. Loosely, attach the bottom tube **(1)** to the header on the rear using four 3/8 X 1-1/4 flange bolts on the left hand side (Figure 4). Holes may need to be tapped to 3/8-16.
2. Mark and drill a Ø17/32" hole, refer to Figure 5. Install 1/2 X 2-3/4 flange bolt and nut.
3. Place the upper mount **(2)** on the center adapter as shown in Figure 5. Attach the mount with a 1/2" x 1-1/2" carriage bolt and nut and a 1/2" X 6.5 x 6 U-bolt and two nuts, see Figure 7.
4. Install the adjustment bracket **(3)** so that it is adjusted tight against the oil reservoir using 1/2" x 1-1/2" carriage bolts and nuts. Tighten all upper mount hardware.
5. Bolt the bottom of the LH tube connector **(4)** to the bottom tube **(1)** using one 1/2" x 1-1/2" carriage bolt and nut as shown in Figure 5 and Figure 7. Then, attach the top of the bracket to the upper mount weldment using two 1/2" x 1-1/2" carriage bolts and nuts. Repeat for the RH tube connector **(5)**. Tighten all hardware.
6. Attach the LH mount bracket to the belt drive/fan assembly with four 3/8" x 1" carriage bolts and nuts and then attach the RH mount bracket to the belt drive/fan assembly with six 3/8" x 1" carriage bolts and nuts, Figure 6. Torque 3/8" hardware to 30 ft-lbs and torque 1/2" hardware to 75 ft-lbs.
7. This is a universal mount bracket. Refer to Figure 7 and table for correct combine mounting location. The symbol on the two mounting brackets will align with the symbol on the bracket installed in step 4.
8. Using a jack or hoist to position the belt drive/fan assembly in place next to the mount brackets. Attach the assembly to the brackets with six 1/2" x 1-1/2" carriage bolts and nylock flange nuts. Torque hardware to 75 ft-lbs.

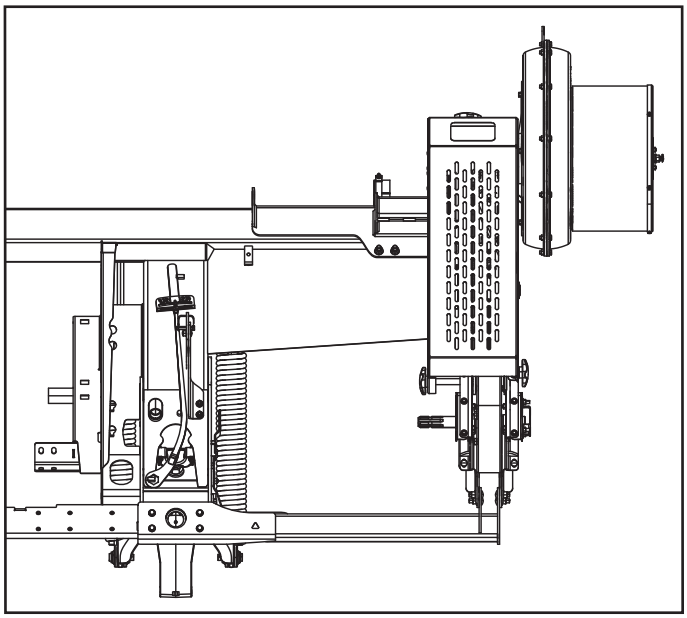


Figure 4: FD1 Belt drive mount location

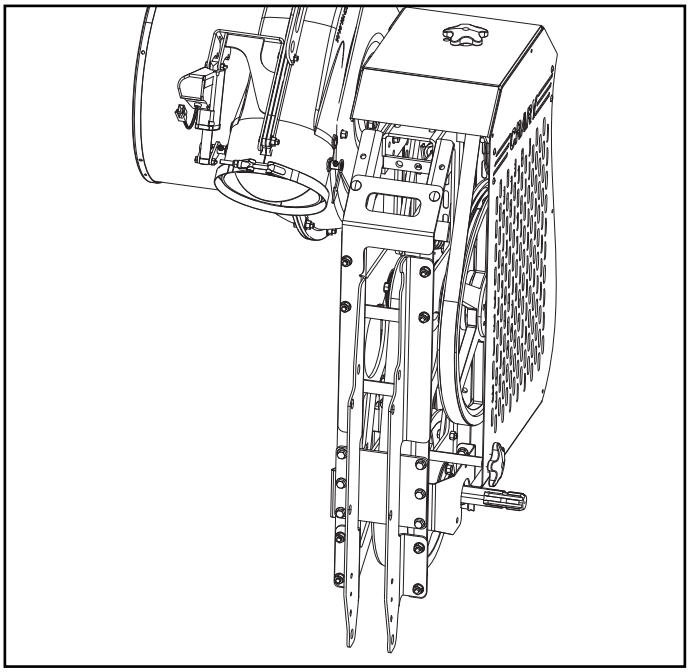


Figure 6: LH & RH mount brackets attached to Belt Drive Assembly, from front left side

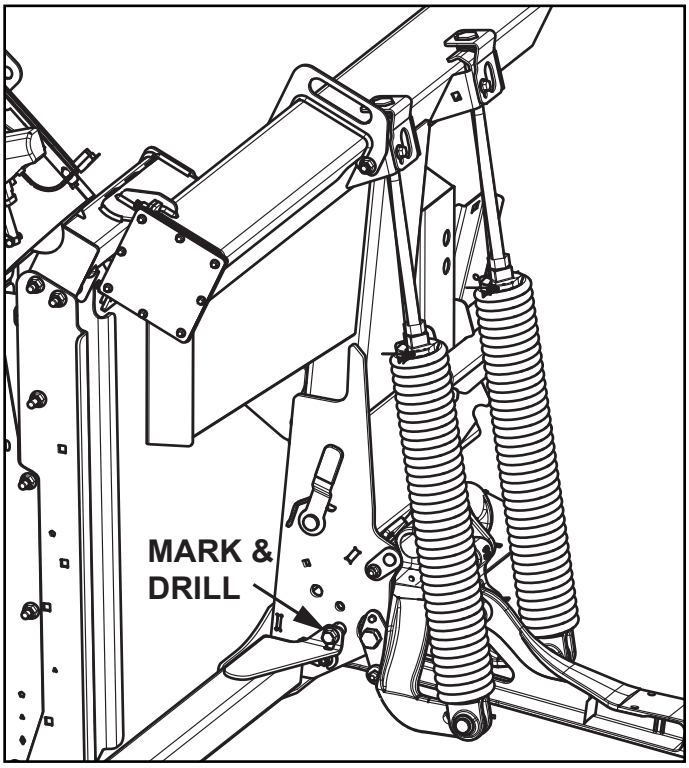


Figure 5: Main mount bracket location, from front right side ***(Portions of header and Belt drive/fan assembly not shown)***

4.2 BELT DRIVE/FAN MOUNT (FD1 HEADER)

NOTE

Using incorrect belt drive/fan assembly location will result in reduced drive line life and increased vibration.

9. Attach the PTO holder **(6)** to the header using two 3/8" x 1-1/4" bolts and nuts (Figure 7).
10. Attach the PTO lock **(7)** to the PTO holder **(6)** using a 3/8" x 1-1/4" bolt and nut. Confirm that the PTO lock plate pivots freely.
11. The snap pin will be used to secure the PTO lock **(7)** closed.
12. Next step, **Right Hand Drive Kit** installation, go to page 18.

Symbol	Combine
"**A**" Pentagon 	CLAAS - ALL
"**B**" Triangle 	John Deere - ALL Case - Pre 5000 Series
"**C**" Diamond 	Case - 5000-9000 Series New Holland - ALL Gleaner - ALL

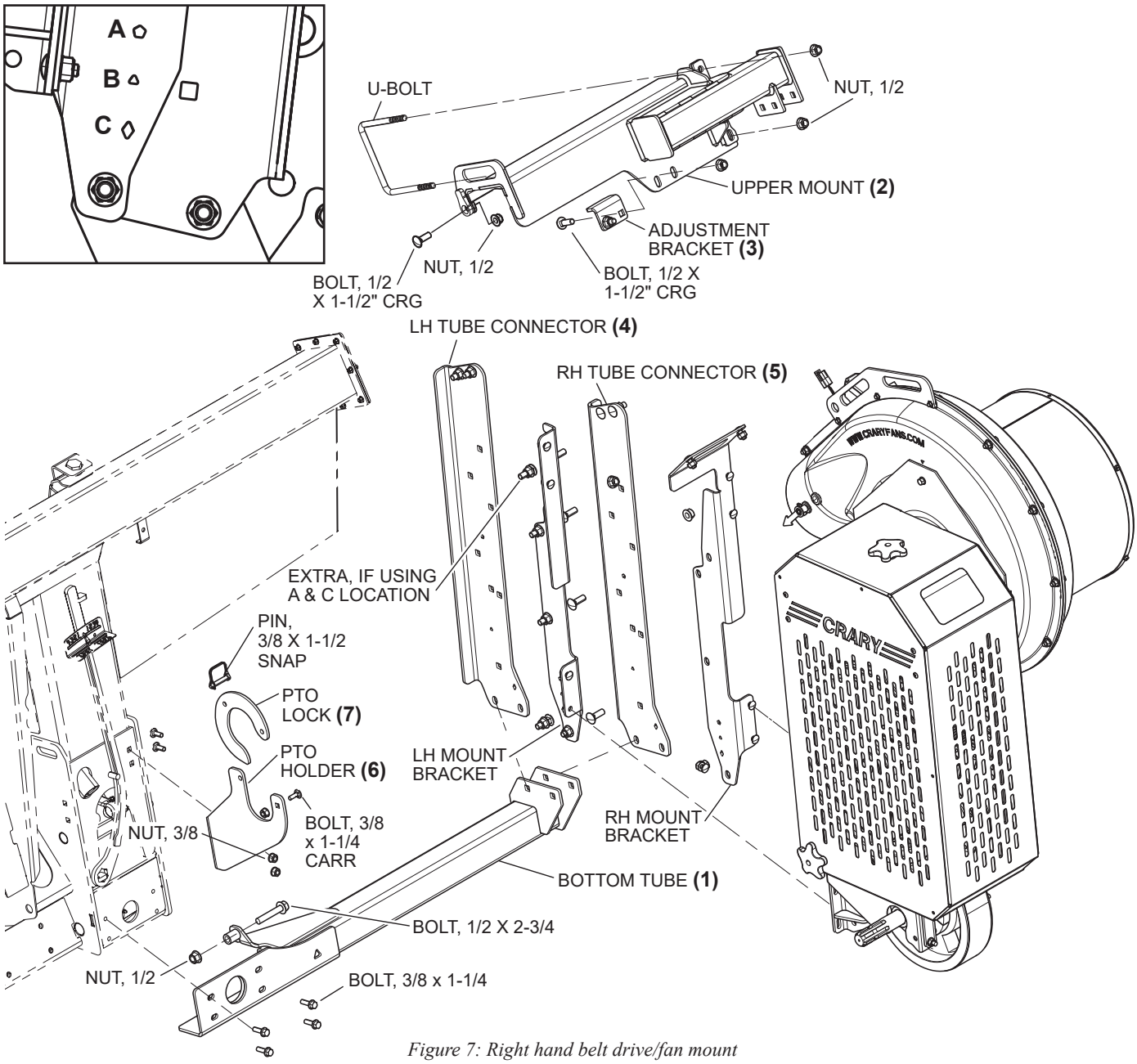


Figure 7: Right hand belt drive/fan mount

4.3 GEARBOX/FAN MOUNT (FD70 , FD75 & CIH 2162 HEADERS)

NOTE

Apply a medium strength thread locking agent to the bolts used to secure the gearbox mount to the header and the gearbox to the mount.

⚠ ATTENTION ⚠

For Hillco applications, please refer to the supplemental installation manual supplied with your drive line as mounting position and brackets may be different.

1. Mark and drill a Ø21/32" clearance hole for the gearbox mount in the head. Measure 8.125" from the vertical beam (Figure 9). The hole should be placed as close as possible to oil reservoir.

NOTE

If you are installing a dual flow system install the tube mount bracket shown in Figure 11 at this time. The bracket can be found in the dual flow kit.

2. Attach the gearbox mount **(1)** to the adapter tube using the gearbox mount plate **(2)** using four 5/8" x 7" bolts and nuts and torque to 150 ft. lbs, Figure 12.
3. Install the outer support **(3)** to the gearbox mount using two 3/8 x 1-1/4" carriage bolts and nuts. Align the inner support **(4)** with the square hole on the header adapter and secure with a 1/2" x 1-1/4 bolt and nut, (Figure 10).
4. Connect the outer **(3)** and inner **(4)** supports using two 3/8 x 1-1/4" carriage bolts and nuts (Figure 10). Tighten all hardware.
5. Use a jack or hoist to position the gearbox in place next to the gearbox mount weldment. Attach the gearbox to the weldment with six 1/2" x 1-1/4" bolts and nuts. Torque hardware to 75 ft-lbs.
6. Attach the PTO holder **(5)** to the gearbox mount using two 3/8" x 1-1/4" carriage bolts and nuts (Figure 12).
7. Check the gearbox and, if necessary, fill the gearbox with lube before use.

   Use Mobilube SHC 75W-90 synthetic gear lube or equivalent with the following specifications:

   API Service GL-5/MT.1
   MIL-L-2105D
   MACK GO-J PLUS
   SAE J2360
   Capacity: 28 ounces (0.8 liters)
8. Next step, **Right Hand Drive Kit** installation, go to page 18.

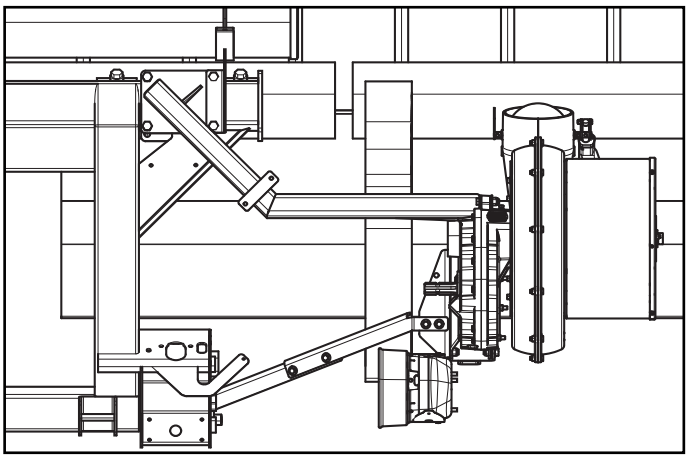


Figure 8: Gearbox mount location, Series II

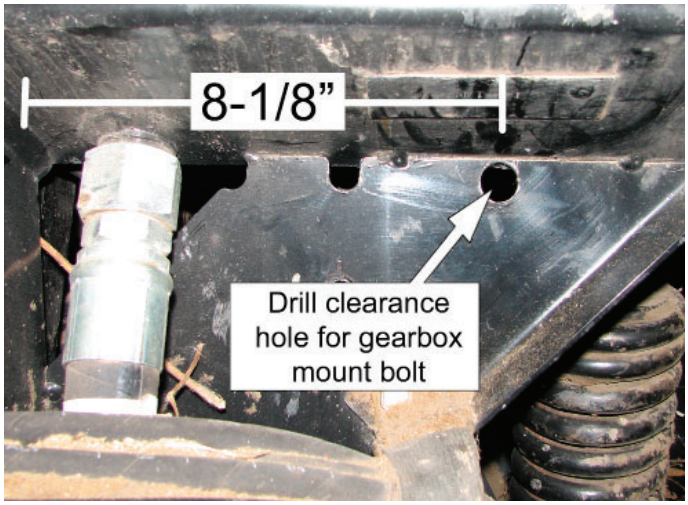


Figure 9: Gearbox mount location, Series II

Figure 10: Support bracket Series II

4.3 GEARBOX/FAN MOUNT (FD70 , FD75 & CIH 2162 HEADERS)

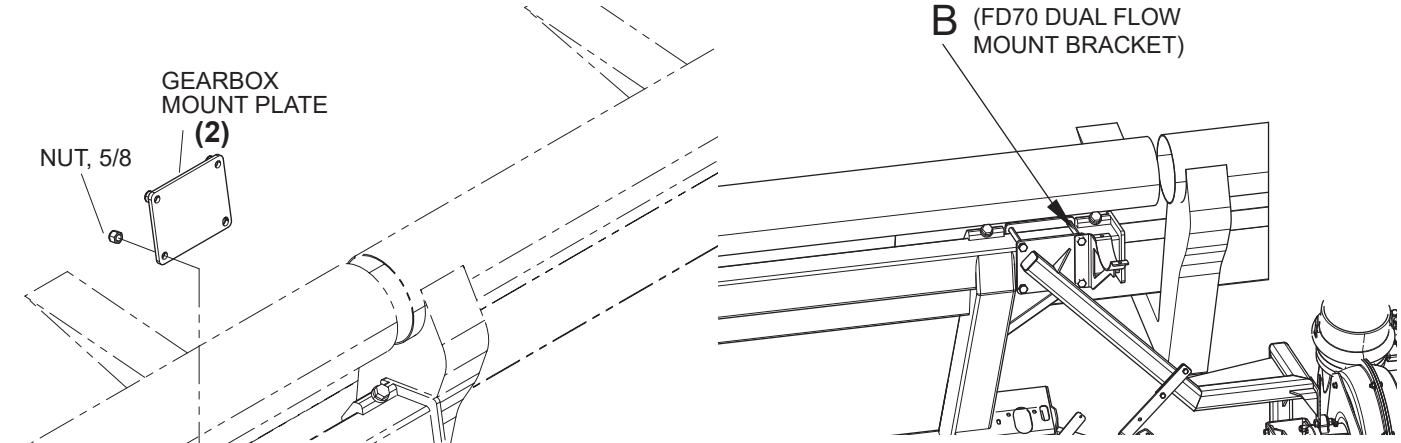


Figure 11: Right hand tube mount location

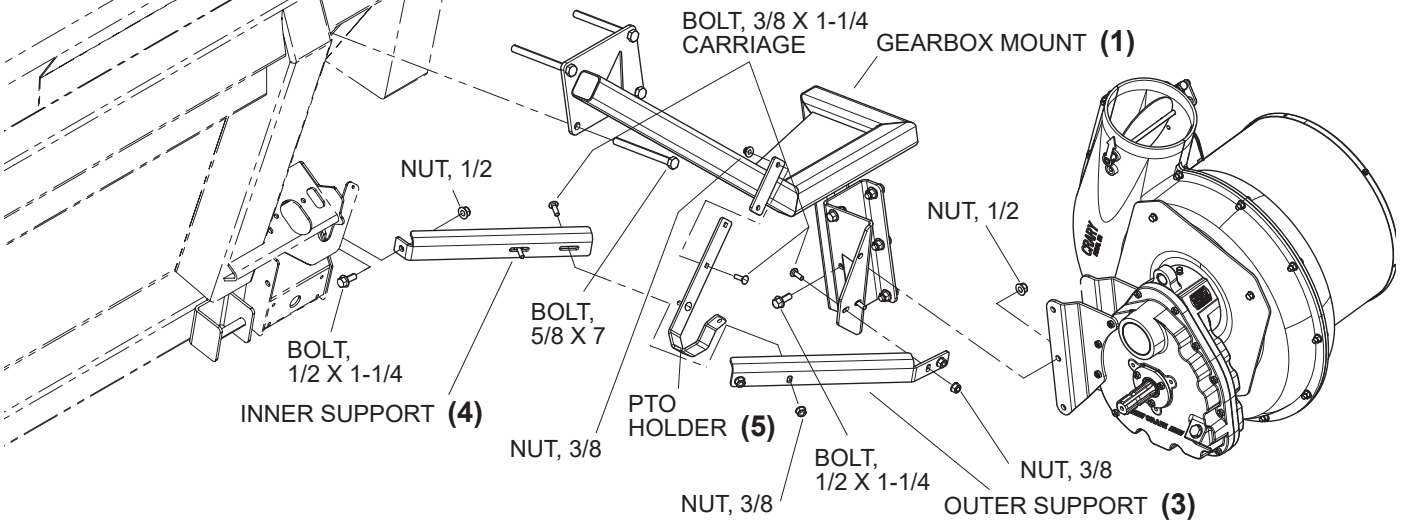


Figure 12: Right hand gearbox/fan mount

4.4 BELT DRIVE/FAN MOUNT (FD70 , FD75 & CIH 2162 HEADERS)

1. Loosely, attach the bottom tube **(1)** to the header on the rear using four 3/8 X 1-1/4 flange bolts on the left hand side (Figure 13). Holes may need to be tapped to 3/8-16.
2. Mark and drill 17/32" hole, refer to Figure 14. Install 1/2 X 2-3/4 bolt and nut.
3. Mark and drill a Ø21/32" clearance hole for belt drive fan mount in head. Measure 8.125" from the vertical beam (Figure 16). The hole should be placed as close as possible to oil reservoir.
4. Attach the top tube **(2)** to the adapter tube using the belt drive mount plate **(3)** and four 5/8" x 7" bolts and nuts and torque to 150 ft. lbs, Figure 13 & Figure 18.

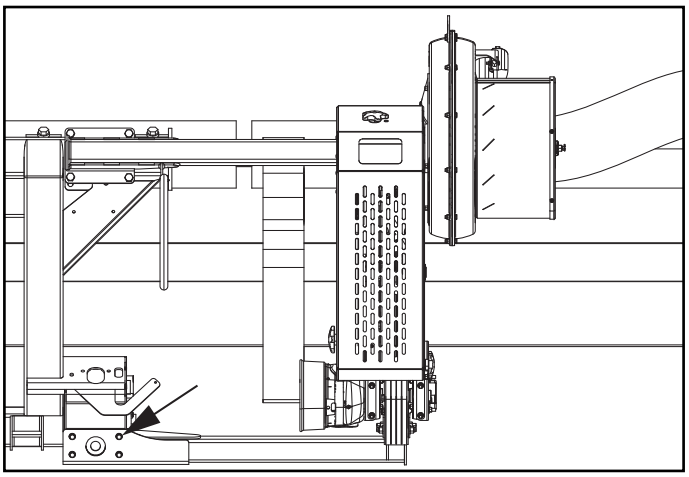


Figure 13: Belt drive mount location

4.4 BELT DRIVE/FAN MOUNT (FD70 , FD75 & CIH 2162 HEADERS)

NOTE

Apply a medium strength thread locking agent to the bolts used to secure the belt drive mount to the header and the belt drive/fan to the mount.

5. Bolt the bottom of the LH tube connector **(4)** to the bottom tube **(1)** using one 1/2" x 1-1/2" carriage bolt and nut as shown in Figure 18. Then, attach the top of the bracket to the top tube **(2)** using two 1/2" x 1-1/2" carriage bolts and nuts. Repeat for the RH tube connector **(5)**. Tighten all hardware.
6. Attach the LH mount bracket **(6)** to the belt drive/fan assembly with four 3/8" x 1" carriage bolts and nuts and then attach the RH mount bracket **(7)** to the belt drive/fan assembly with six 3/8" x 1" carriage bolts and nuts, including two bolts and nuts across the top. Torque 3/8" hardware to 30 ft-lbs and torque 1/2" hardware to 75 ft-lbs.
7. This is a universal mount bracket. Refer to Figure 18 and table for correct combine mounting location. The symbol on the two mounting brackets will align with the symbol on the bracket installed in step 4 (Note, see page 13, top left).
8. Using a jack or hoist to position the belt drive/fan assembly in place next to the mount brackets. Attach the assembly to the brackets with six 1/2" x 1-1/2" carriage bolts and nuts. Torque hardware to 75 ft-lbs.

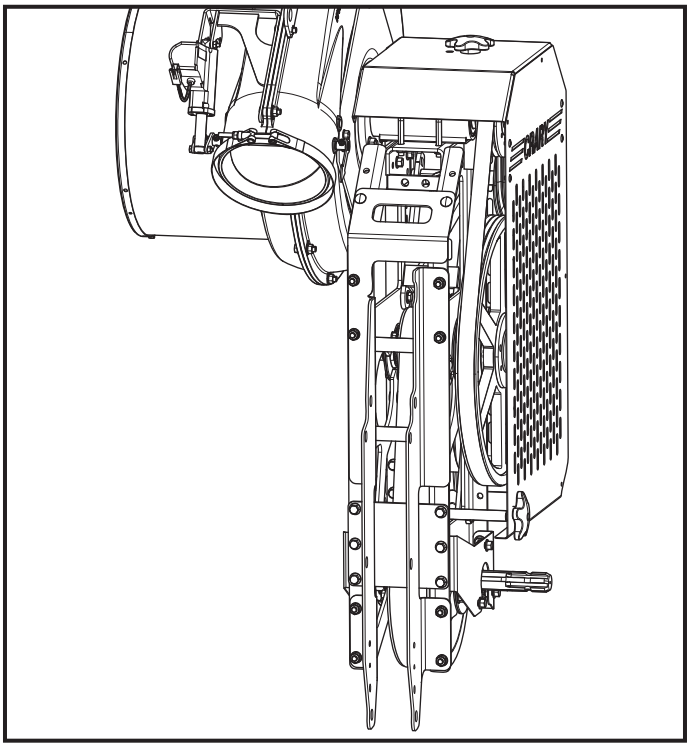


Figure 17: LH & RH mount brackets attached to Belt Drive Assembly, from front left side

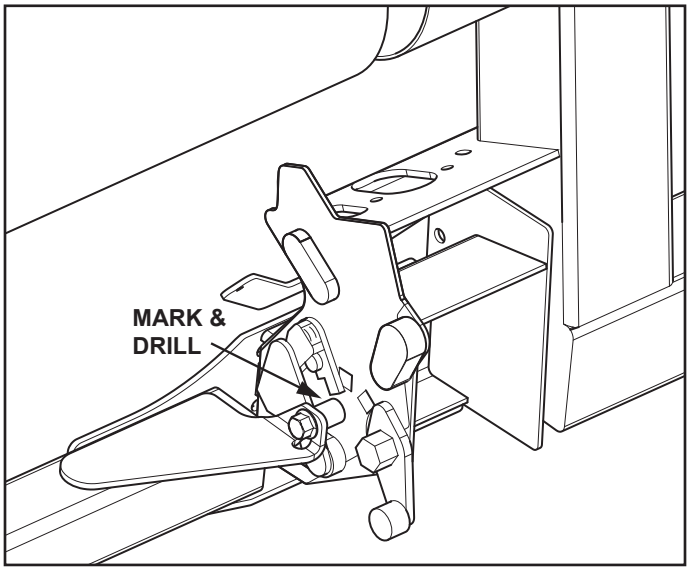


Figure 14: Main mount bracket location, from front right side
(Portions of header and Belt drive/fan assembly not shown)

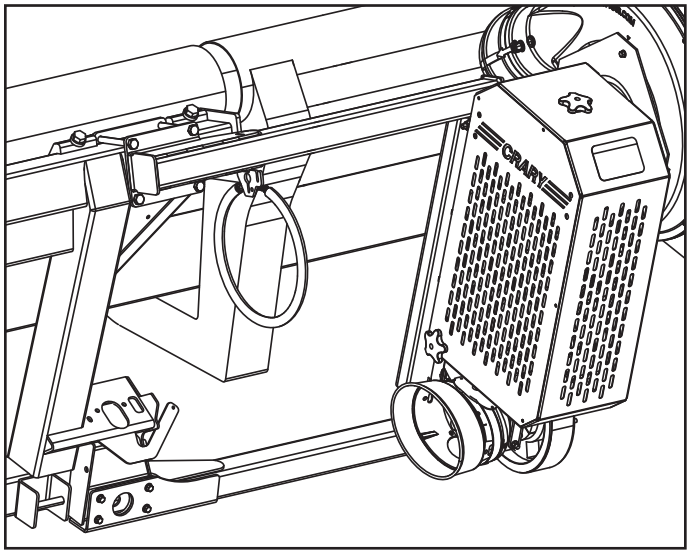


Figure 15: Top & Bottom Tube Supports

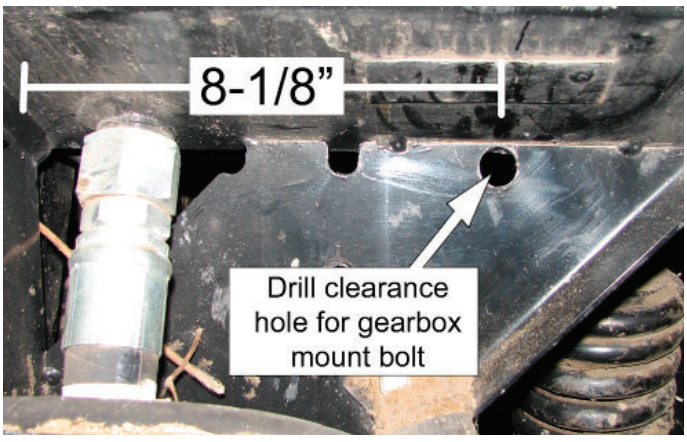
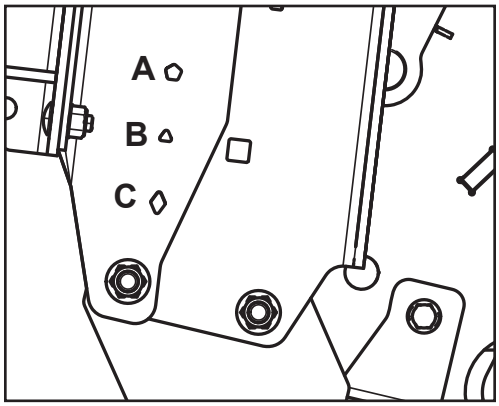


Figure 16: Belt drive mount location

4.4 BELT DRIVE/FAN MOUNT (FD70 , FD75 & CIH 2162 HEADERS)

9. Attach the PTO holder **(8)** to the top tube **(2)**, (Figure 15 and Figure 18).
10. Next step, **Right Hand Drive Kit** installation, go to page 18.

Symbol	Combine
"**A**" Pentagon 	CLAAS - ALL
"**B**" Triangle 	John Deere - ALL Case - Pre 5000 Series
"**C**" Diamond 	Case - 5000-9000 Series New Holland - ALL Gleaner - ALL



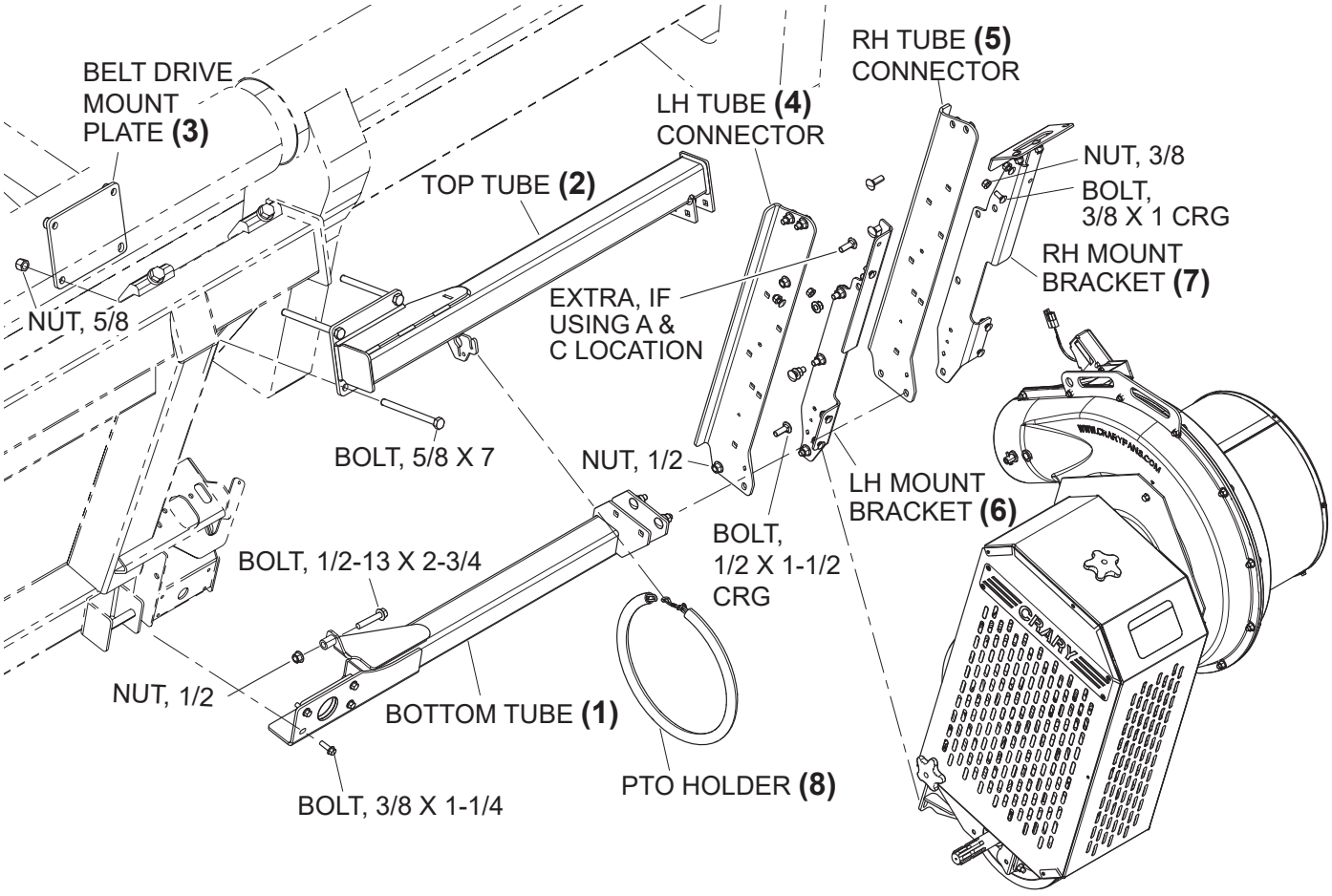


Figure 18: Right hand belt drive/fan mount

4.5 RIGHT HAND DRIVE KIT - ALL

1. Using three 3/8” x 3/4” bolts, install the PTO shield **(1)**. For belt drive three 3/8 nuts are included.
2. Using the table to the right, measure from the end of the header. For proper orientation reference Figure 19 to correctly position FD1 and FD75 rear tube mounts **(2)**. Use the brackets as a template to mark and drill two 9/32” holes for each bracket.

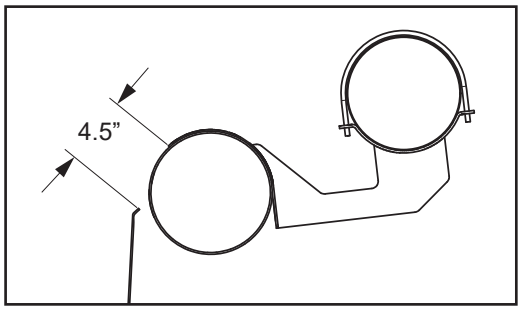


Figure 19: FD1 and FD75 tube mount Diagram

3. Install the two tube mounts using two 11/32” x 7/8” self-tapping screws.

NOTE

OEM Field transport tongue storage brackets may need to be removed.

4. Set the tube on the rear tube mounts on the back of the head.
5. Fasten the manifold to the tube mount weldment with two 5/16” U-bolts and nuts (Figure 20).
6. Next step, **Drive Line Adjustment,** FD1/FD70/FD75 cut driveline if required, go to page 19.
7. Next step, **Reel Arm Mount** installation, FD1/FD75 go to page 20, FD70/CIH2162 go to page 26.

Header Length	“**A**” First Bracket Mount	“**B**” Second Bracket Mount	“**C**”	“**D**” Manifold Length
30’	18”	38”	4”	28”
35’	30”	73”	16”	65”
40’	30”	95”	16”	94”
45’	30”	110”	16”	120”

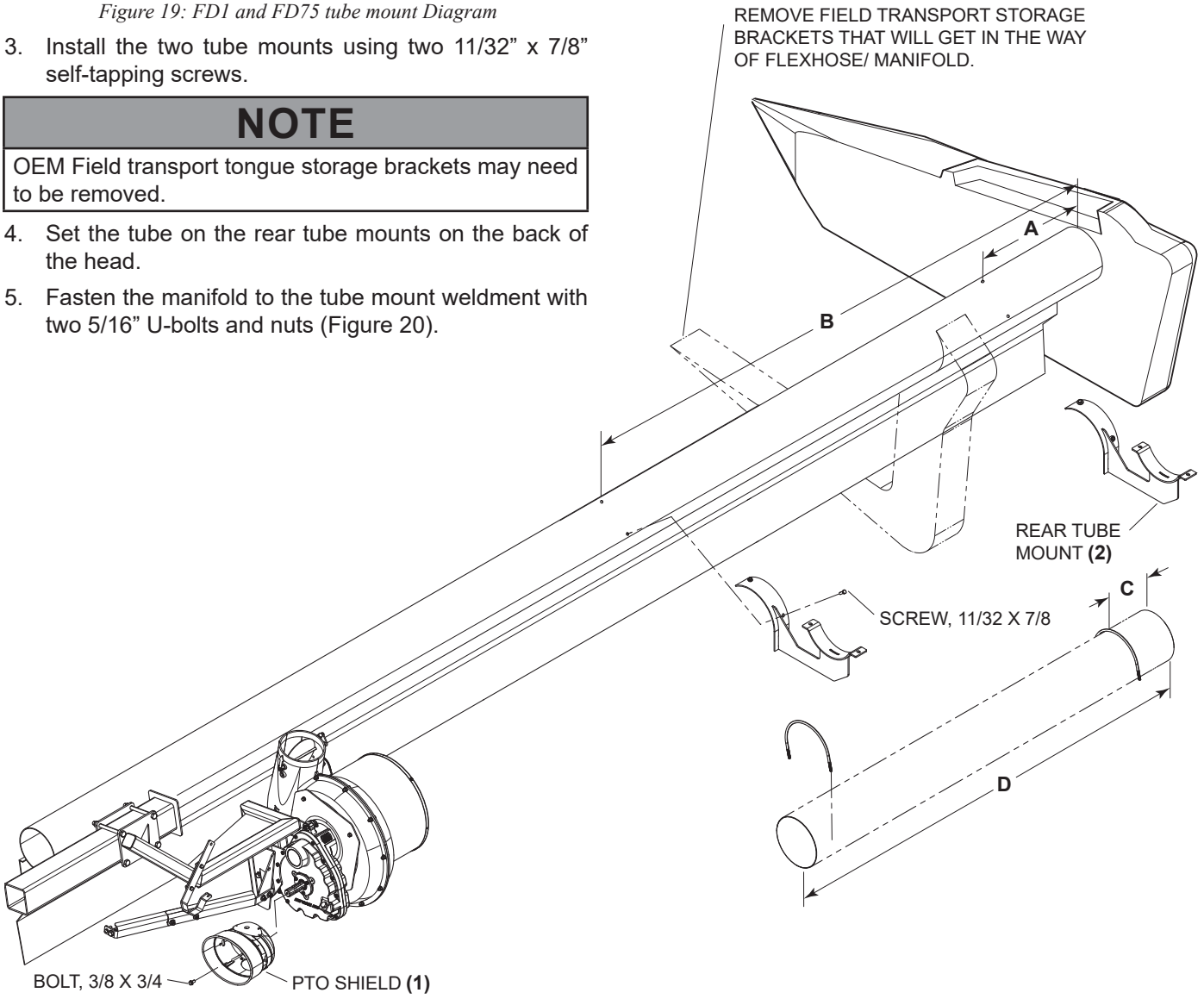


Figure 20: Right hand drive kit assembly

4.6 DRIVELINE ADJUSTMENT

If you determined that your driveline needs to be shortened, use the following steps to modify the shaft length.

If the amount required to be cut off does not include a grease zerk use the steps in section 4.7.1. If a grease zerk is within the cutting area, use the steps in section 4.7.2.

4.6.1 SHORTENING THE DRIVELINE (OPTION A)

1. Pull the driveline into two pieces. Connect one end to the combine and the other end to the drive shaft. Line up the two halves parallel to each other.
2. Measure the distance from the end of one driveline tube to the bottom of the end shield of the other driveline half (dimension A in Figure 21). Measure and mark the driveline tube 1-9/16" inward from dimension A.

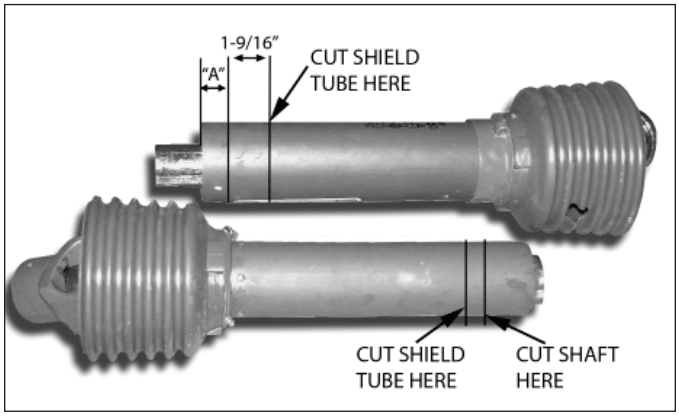


Figure 21: Shorten the driveline if it is too long

3. Cut the shield tube in the marked position.
4. Using the cut piece of shield tube as your measurement, place the cut piece against the end of the shaft. Mark and cut the shaft.
5. Using the cut piece of shield tube as your measurement, mark and cut the tube on the other half of the driveline, and then the shaft.
6. File both shaft ends, and slide the two halves back together.

4.6.2 SHORTENING THE DRIVELINE (OPTION B)

1. Using a Phillips screwdriver, remove the screw at the flexible cone base of the outer shield tube. Then, twist the flexible cone until the cone flare aligns with the bearing tab (Figure 22). Pull the yoke and inner profile out of the tubing.
2. Remove the spring pin.
3. Find a pipe that is large enough to slide the inner profile inside, but is small enough that the end yoke will not pass through. This pipe should extend at least 4 inches past the end of the driveline inner profile.
   A. Insert the inner profile into the pipe.
   B. Place a steel plate on the floor and, with the yoke pointing up, bounce the pipe on the steel plate. After several bounces, the inner profile should drop out of the yoke and onto the floor.
4. Cut the yoke end of both the shaft and shield tube by the length determined.
5. Insert the profile back into the yoke and drill a new spring pin hole.
6. Insert the spring pin.
7. Drill new holes in the shield to accept the shield bearing.
8. Install the driveline shield by reversing the disassembly process from Step 1.

IMPORTANT

The driveline shields must be reinstalled to the original equipment standards of construction and installation.

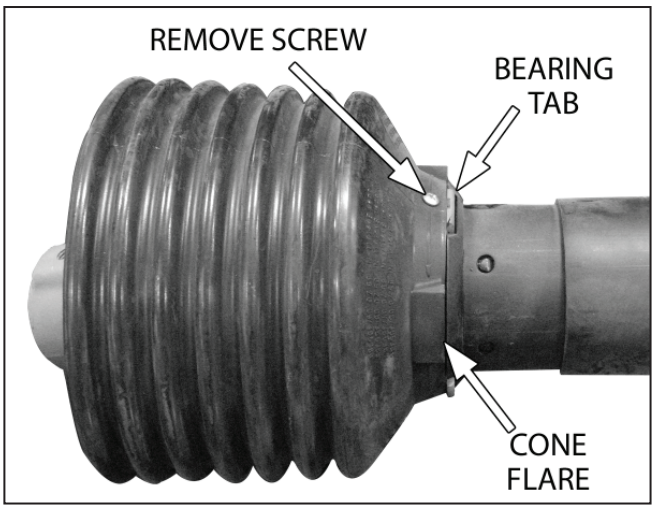


Figure 22: Removing the shield tube

4.7 REEL ARM MOUNT (FD1 & FD75 HEADERS)

4.7.1 LEFT HAND MOUNT

CAUTION

Be sure the reel is secure and will not move before beginning installation.

1. Remove the front pin from the OEM fore/aft cylinder, and discard. Remove the reel stop bolt from the end of the reel arm and discard. Remove the OEM hardware and spacer from the bottom of the OEM reel mounting bracket and discard hardware. The spacer will be reused.
2. Use a 3/8 x 5" bolt and nut to secure the 3-3/4" nylon bearing **(1)** to the LH reel mount **(2)** (Figure 25). The nylon bearing should rotate freely.
3. Slide the LH reel mount **(2)** onto the OEM reel arm. Attach the LH reel mount to the OEM cylinder using a 5/8" x 3-1/4" bolt, nut and two 1/2" washers as shown in Figure 23. Use as many 5/8" washers as required to evenly space the cylinder in between the LH reel mount.
4. Attach the bottom of the LH reel mount **(2)** to the OEM reel arm using the OEM spacer removed in Step 1, 1/2" x 5-1/2" bolt, nut and washers. (Figure 24)
5. Attach the arm mount **(3)** to the LH reel mount **(2)** using two 1/2" x 4" bolts, and nuts. (Figure 25)
6. Insert a reel mount **(4)** into the arm mount **(3)** and secure with a 1/2" x 2-3/4" bolt and nut.
7. Install new cylinder mount **(5)** using four 1/2" x 1" Torx bolts. The top hole will not be used on the LH side.

Figure 23: LH reel mount (FD1 & FD75 headers)

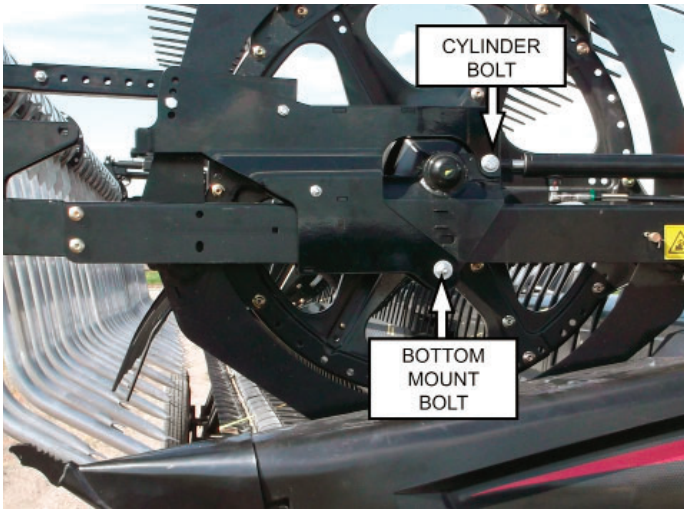


Figure 24: LH reel mount (FD1 & FD75 headers)

4.7 REEL ARM MOUNT (FD1 & FD75 HEADERS)

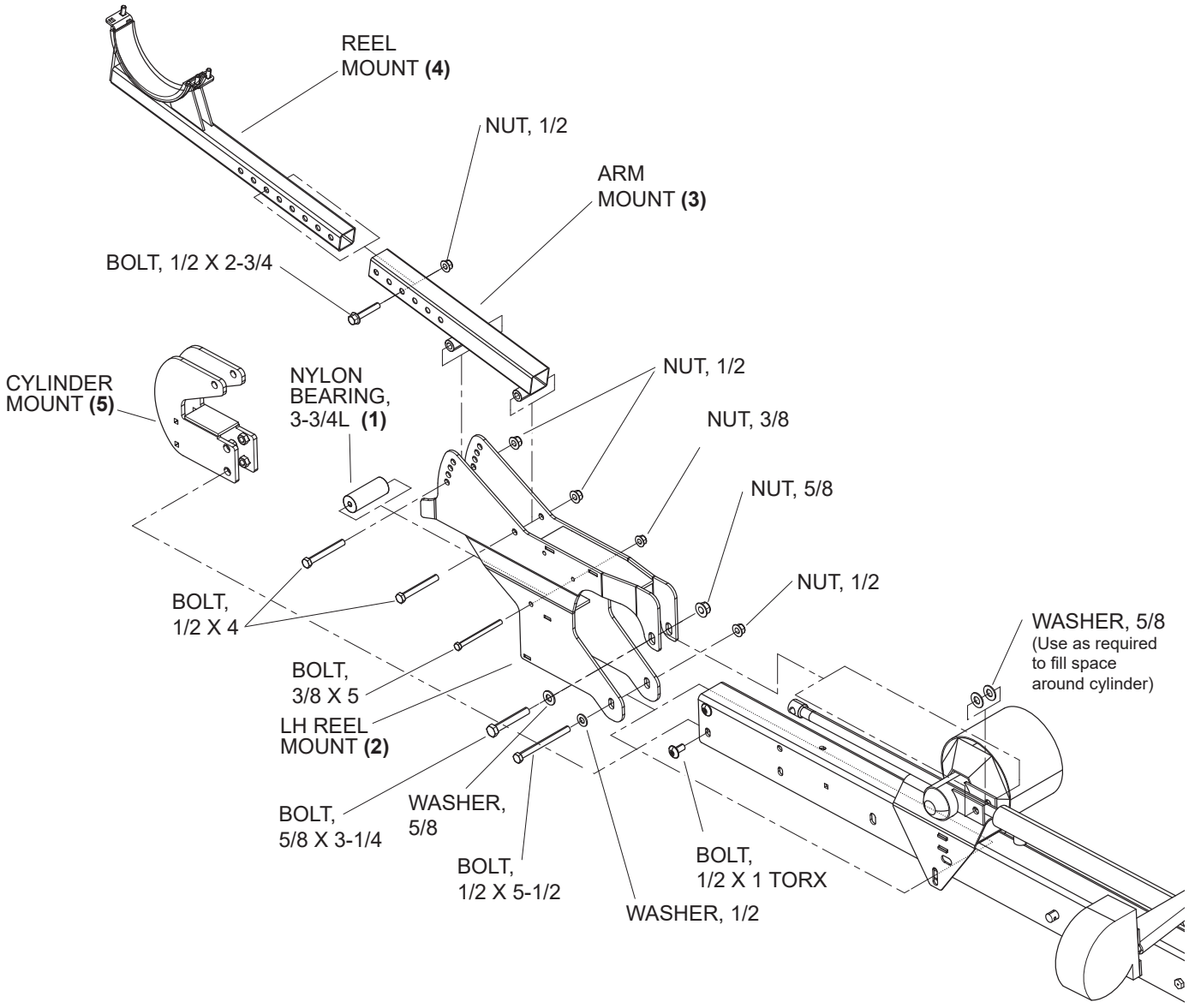


Figure 25: Left reel arm mount assembly (FD1 & FD75 headers)

4.7 REEL ARM MOUNT (FD1 & FD75 HEADERS)

4.7.2 CENTER MOUNT

CAUTION

Be sure the reel is secure and will not move before beginning installation.

1. Remove the existing OEM cylinder mount from the front of the reel arm and discard.
2. Use a 3/8 x 4-1/2” bolt and nut to secure the 3-1/8” nylon bearing **(1)** to the center reel mount **(2)**. Nylon bearing should rotate freely.
3. Slide the center reel mount **(2)** onto the OEM reel arm. Attach the bottom of the center reel mount to the OEM reel arm using a 1/2” x 1-1/4” bolt and nut. (Figure 27)
4. Attach the lock bracket to the center reel mount with two 1/2” x 1-1/4” bolts. The lock bracket **(3)** should be adjusted to securely clamp the center reel mount to the OEM reel mount.
5. Attach the arm mount **(4)** to the center reel mount **(2)** using two 1/2” x 4-1/2” bolts and nuts.
6. Insert the center reel mount **(5)** into the arm mount **(4)** and secure with a 1/2” x 2-3/4” bolt and nut.
7. Install new cylinder mount **(6)** using four 1/2” x 1” Torx bolts.
8. Attach the cylinder to the cylinder mount **(6)** with the provided cylinder pin **(7)** and two hair pins.

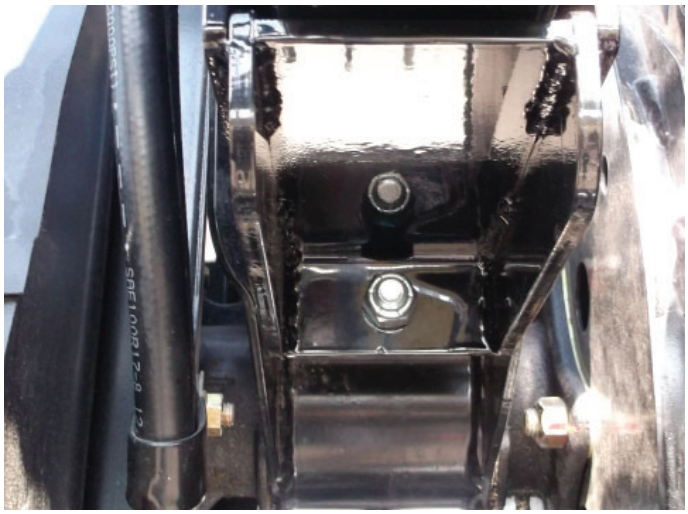


Figure 26: Center reel mount (FD75 headers)

4.7 REEL ARM MOUNT (FD1 & FD75 HEADERS)

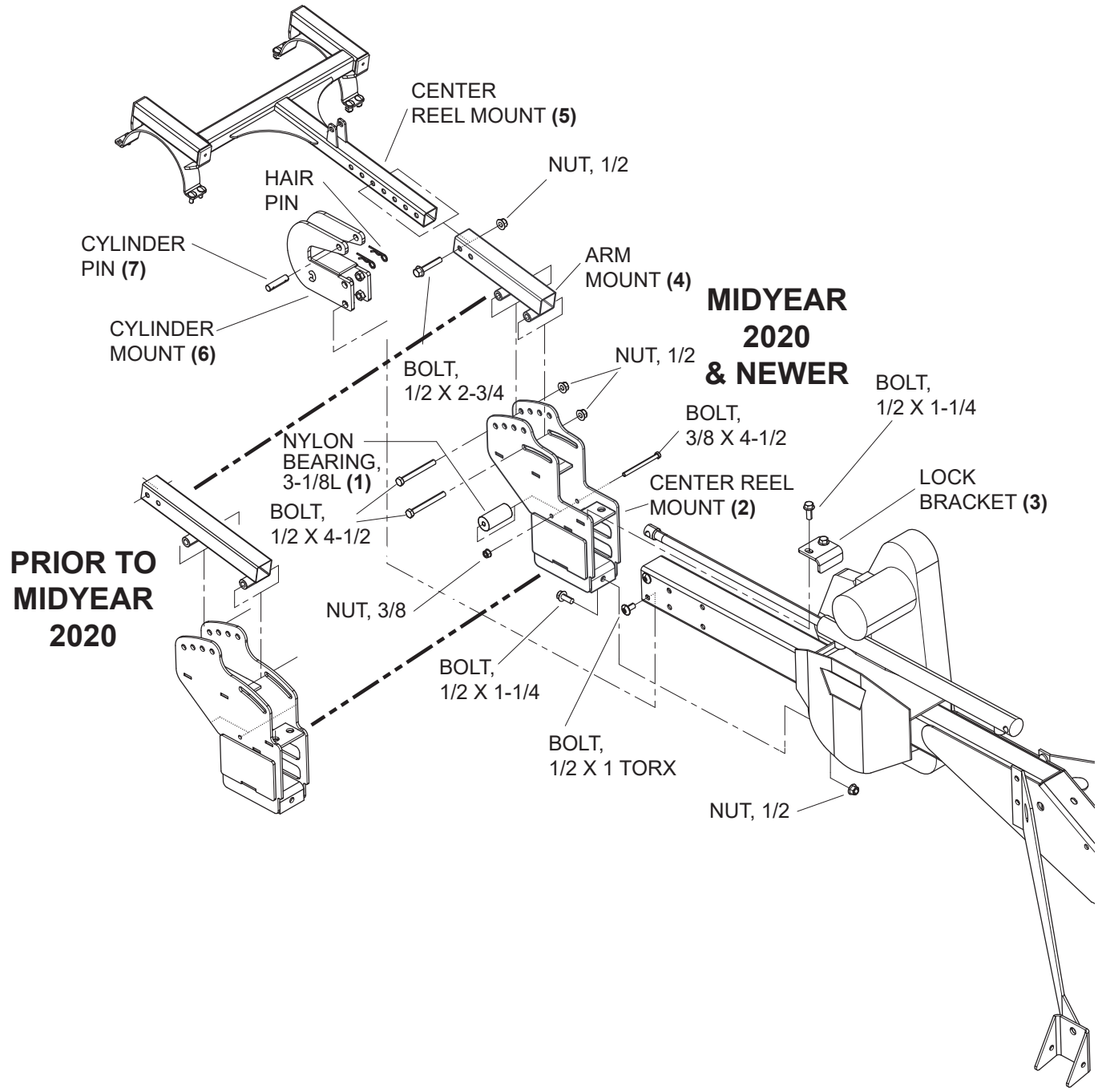


Figure 27: Center reel arm mount assembly (FD1 & FD75 headers)

4.7 REEL ARM MOUNT (FD1 & FD75 HEADERS)

4.7.3 RIGHT HAND MOUNT

CAUTION

Be sure the reel is secure and will not move before beginning installation.

1. Remove transport light and save hardware for reinstalling later (Figure 30).
2. Remove the front pin from the OEM fore/aft cylinder, and discard. Remove the OEM hardware and spacer from the bottom of the OEM reel mounting bracket and discard hardware. The spacer will be re-used.
3. Use a 3/8 x 5” bolt and nut to secure the 3-3/4” nylon bearing **(1)** to the RH reel mount **(2)**. (Figure 32) Nylon bearing should rotate freely.
4. Attach the bottom of the RH reel mount **(2)** to the OEM reel arm using the OEM spacer removed in Step 1, 1/2” x 5-1/2” bolt, nut and washers. (Figure 28)
5. Attach the mount bracket **(3)** to the outside of the RH reel mount **(2)** using a 1/2” x 1-1/4” bolt and nut.
6. Using the mount bracket **(3)** as a guide, mark and drill a 17/32” hole into the OEM reel arm. Be sure to have the bracket straight when marking hole location. Attach the bracket to the OEM reel arm using a 1/2” x 1-1/4” bolt and nut.
7. Attach the arm mount **(4)** to the RH reel mount **(2)** using two 1/2” x 4” bolts and nuts. (Figure 32)
8. Insert a reel mount **(5)** into the arm mount and secure with a 1/2” x 2-3/4” bolt and nut.
9. Install new cylinder mount **(6)** using four 1/2” x 1” Torx bolts.
10. Attach the cylinder to the cylinder mount **(6)** with the provided cylinder pin **(7)** and two hair pins.

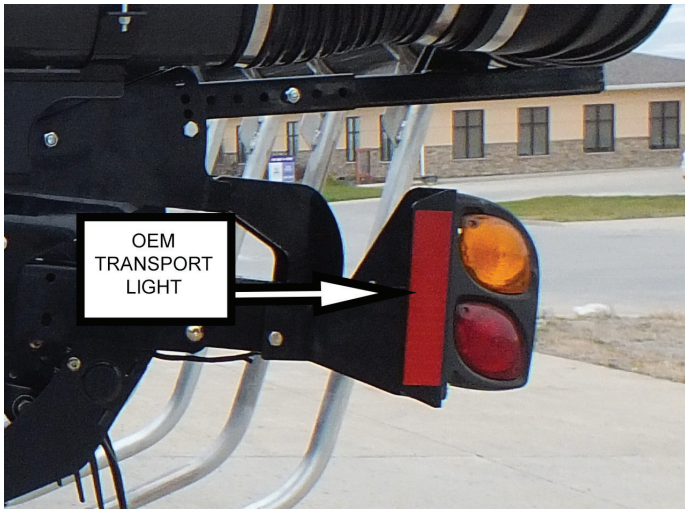


Figure 30: Transport light

11. Attach the side tube mount **(8)** the RH reel mount **(2)** using two 5/16” x 1” bolts and nuts. (Figure 29)
12. Re-use OEM hardware to reinstall transport light using front holes on cylinder mount. (Figure 31)
13. Next step, **Manifold** installation, go to page 32.

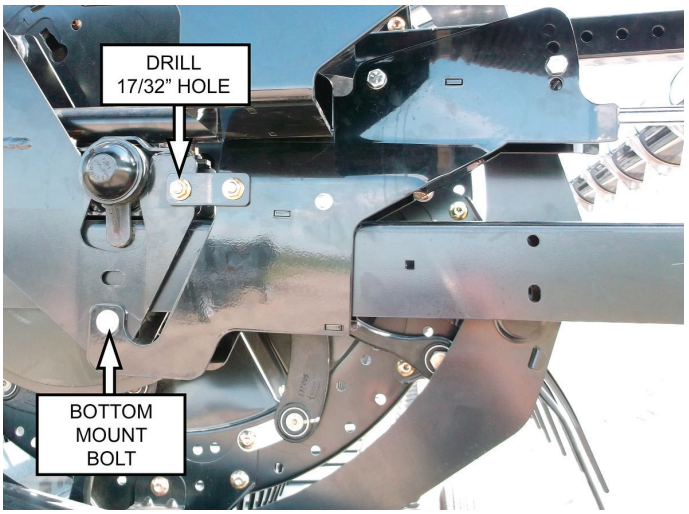


Figure 28: RH reel mount (FD75 headers)

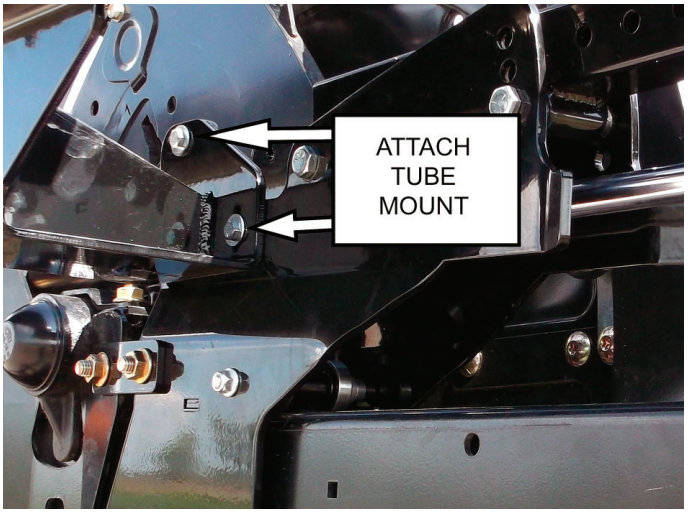


Figure 29: RH reel mount (FD75 headers)

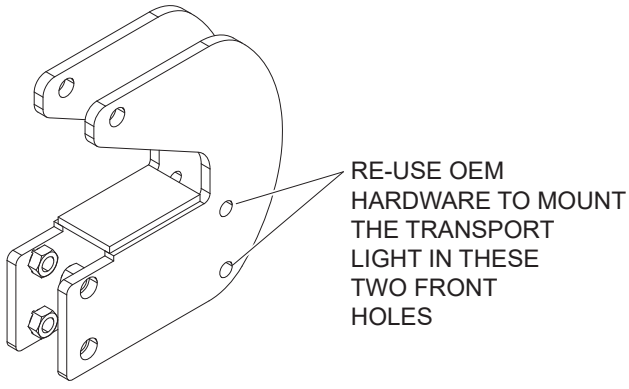


Figure 31: Cylinder mount

4.7 REEL ARM MOUNT (FD1 & FD75 HEADERS)

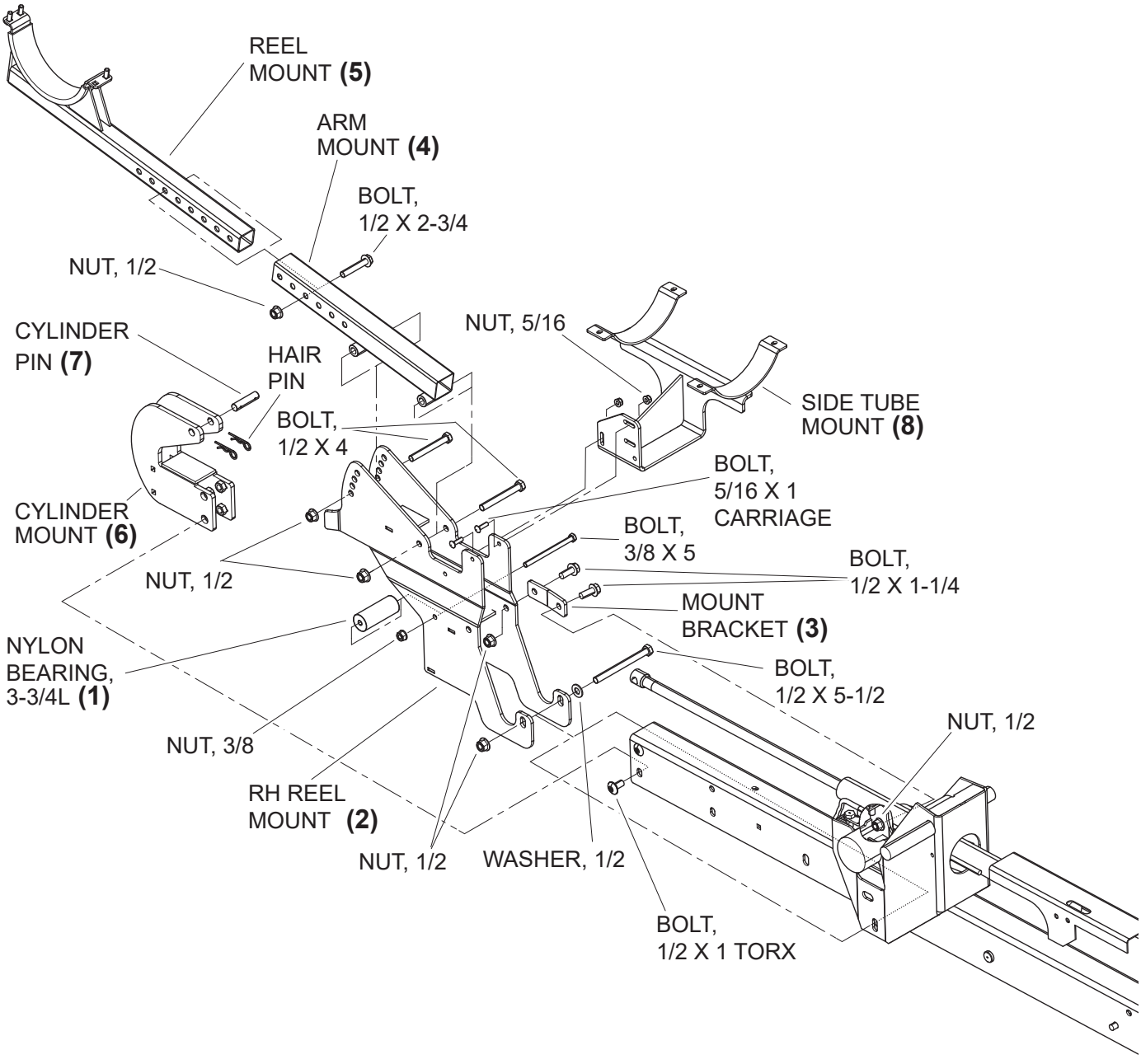


Figure 32: Right reel arm mount assembly (FD1 & FD75 headers)

4.8 REEL ARM MOUNT (FD70 & CIH 2162 HEADERS)

4.8.1 LEFT HAND MOUNT

1. Assemble the bearings using the .63 OD x .39 ID x .63L and .63 OD x .39 ID x 1.13L spacers and washers, 3/8 x 5" bolt and nut to secure the bearings to the outer mount **(1)**. (Figure 36).

CAUTION

Be sure the reel is secure and will not move before beginning installation.

2. Remove the OEM reel stop from the reel arm and discard. Save the hardware for later use. (Figure 35)
3. Set an outer mount **(1)** on the OEM LH reel arm. Slide it back against the OEM bracket shown in Figure 34).
4. Insert a 1/2" x 1-1/2" carriage bolt through the OEM bracket. Install a .75 OD x .51 ID x .27L spacer on the bolt between the outer mount **(1)** and OEM bracket. Install a nut on the end of the bolt. (Figure 34)
5. Use the outer mount **(1)** as a template to drill two Ø7/16" holes through the reel arm bracket.
6. Attach the outer mount **(1)** to the OEM bracket with two 3/8" x 1-3/4" bolts through the top holes. Install a .63" spacer on each bolt between the outer mount and OEM bracket. Install a nut on each bolt and torque to 30 ft-lbs.
7. Using a 1/2" x 3 1/2" carriage bolt and nut, attach an end hole of the arm mount tube **(2)** to the clevis of the outer mount **(1)** (Figure 36).
8. Insert the reel mount **(3)** into the arm mount tube **(2)**.
9. Attach the adjustment strap **(4)** to the arm mount tube **(2)** and reel mount **(3)** with a 1/2" x 3-1/2" bolt, nut, and .75 OD x .51 ID x .27L spacer. (Figure 36)
10. Attach the bottom end of the adjustment strap **(4)** to the front hole of the outer mount **(1)** with a 1/2" x 1-1/2" carriage bolt and nut.
11. Install a new cylinder mount **(5)** to the end of OEM real arm using the OEM hardware removed in step 2.

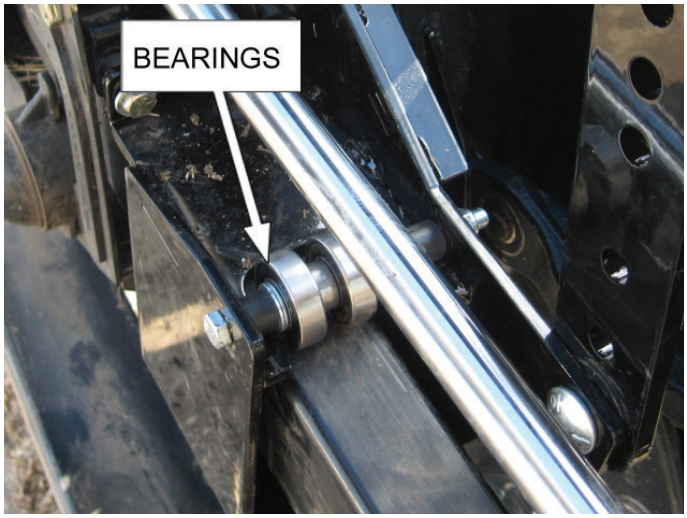


Figure 33: Bearing assembly (FD70 & CIH 2162 headers)

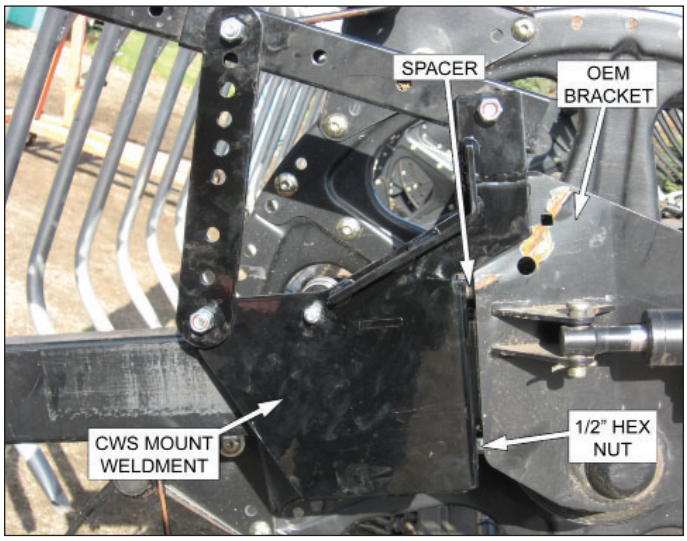


Figure 34: Left hand reel arm (FD70 & CIH 2162 headers)

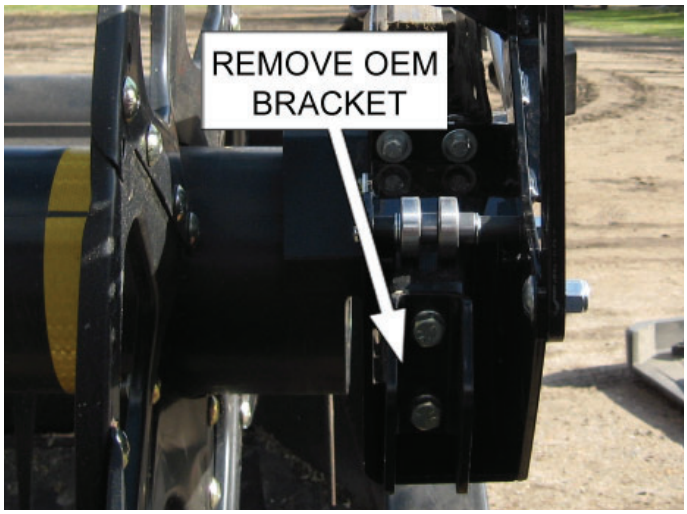


Figure 35: Bearing assembly (FD70 & CIH 2162 headers)

4.8 REEL ARM MOUNT (FD70 & CIH 2162 HEADERS)

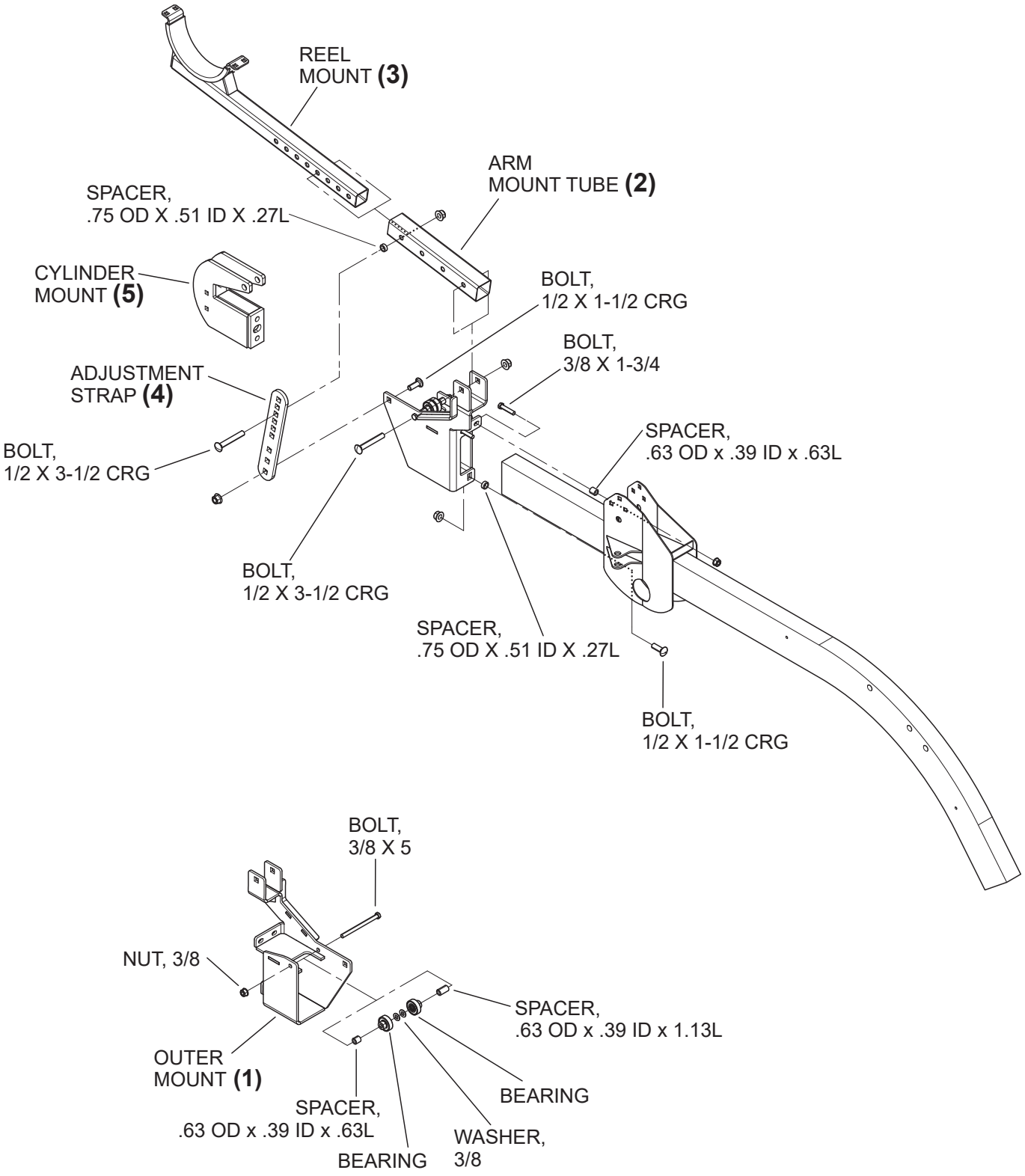


Figure 36: LH reel arm mount assembly (FD70 & CIH 2162 headers)

4.8 REEL ARM MOUNT (FD70 & CIH 2162 HEADERS)

4.8.2 CENTER MOUNT

1. Assemble the bearings using the .63 OD x .39 ID x .63L and .63 OD x .39 ID x 1.13L spacer, washers, 3/8 x 5” bolt and nut to secure the bearings to the center mount **(1)**. (Figure 39)

CAUTION

Be sure the reel is secure and will not move before beginning installation.

2. Remove the OEM cylinder mount from the reel arm and save the hardware for later use.
3. Set the center mount **(1)** on the OEM center reel arm. Slide it back against the OEM bracket shown in Figure 37.
4. Attach the CWS center tube mount **(1)** to the OEM bracket. To do so, replace two existing bolts with 3/8” x 1-3/4” bolts (Figure 37). Install a .63 OD x .39 ID x .63L spacer on each bolt between the center mount and OEM bracket. Use one 1/2” x 1-1/2” carriage bolt and nut to bolt the bottom hole of the center mount to the OEM bracket.
5. Using a 1/2” x 3-1/2” carriage bolt and nut, attach an end hole of the arm mount tube **(2)** to the clevis of the center mount **(1)** (Figure 39).
6. Insert the center reel mount **(3)** into the arm mount tube **(2)**.
7. Attach the adjustment straps **(4)** to the arm mount tube **(2)** and center reel mount **(3)** with a 1/2” x 3-1/2” bolt, nut and .75 OD x .51 ID x .81L spacer. (Figure 39)
8. Attach the bottom end of the adjustment straps **(4)** to the front hole of the center mount **(1)** with 1/2” x 1-1/2” carriage bolts and nuts.
9. Install a new cylinder mount **(5)** to the end of OEM reel arm using the OEM hardware removed in step 2.
10. Reconnect cylinder using provided cylinder pin **(6)** and two hair pins (Figure 37).
11. Ensure the RH, LH and center reel mount assemblies are at equal height.

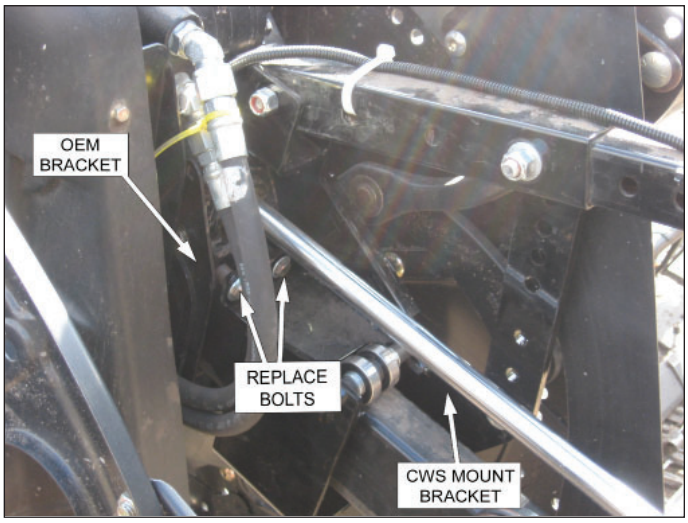


Figure 37: Center reel arm (FD70 & CIH 2162 headers)

Figure 38: Cylinder Mount (FD70 & CIH 2162 headers)

4.8 REEL ARM MOUNT (FD70 & CIH 2162 HEADERS)

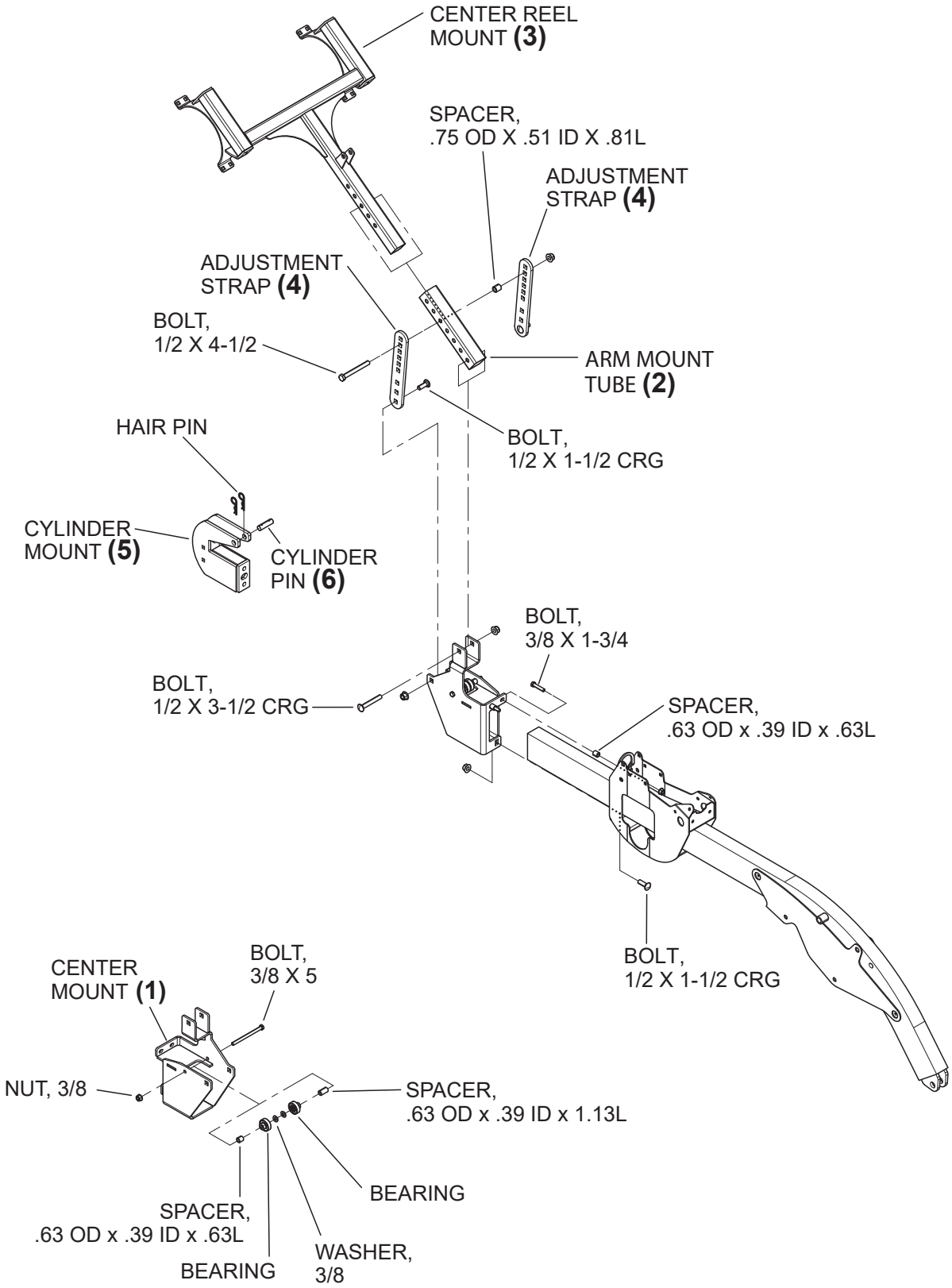


Figure 39: Center reel arm mount assembly (FD70 & CIH 2162 headers)

4.8 REEL ARM MOUNT (FD70 & CIH 2162 HEADERS)

4.8.3 RIGHT HAND MOUNT

1. Assemble the bearings using the .63 OD x .39 ID x .63L and .63 OD x .39 ID x 1.13L spacers, washers, 3/8 x 5" bolt and nut to secure the bearings to the outer mount **(1)**. (Figure 43)

⚠ CAUTION ⚠

Be sure the reel is secure and will not move before beginning installation.

2. Remove the OEM cylinder mount from the reel arm and save the pin and hardware for later use (Figure 40).
3. Set an outer mount **(1)** on the OEM RH reel arm. Slide it back against the OEM bracket shown in Figure 43.
4. Attach the outer mount **(1)** to the OEM bracket. To do so, replace two existing bolts with 3/8" x 1-3/4" bolts (Figure 43). Install a .63 OD x .39 ID x .63L spacer on each bolt between the outer mount and OEM bracket. Use one 1/2" x 1-1/2" carriage bolt and nut to bolt the bottom hole of the outer mount to the OEM bracket.
5. Using a 1/2" x 3 1/2" carriage bolt and nut, attach an end hole of the arm mount tube **(2)** to the clevis of the outer mount (Figure 41).
6. Insert a reel mount **(3)** into the arm mount tube **(2)**.
7. Attach the adjustment strap **(4)** to the arm mount tube **(2)** and reel mount **(3)** with a 1/2" x 3-1/2" bolt, nut and .75 OD x .51 ID x .27L spacer (Figure 43).
8. Attach the bottom end of the adjustment strap **(4)** to the front hole of the outer mount with a 1/2" x 1-1/2" carriage bolt and nut.
9. Position the side tube mount **(5)** as shown in Figure 41 & Figure 43 onto the OEM reel mount. Install a 5/16 x 1-1/4" bolt and nut in the upper left corner. Using the bracket as a template to mark and drill the front hole using a 11/32" drill bit.
10. Bolt the side tube mount **(5)** to the OEM reel mount using a .63 OD x .39 ID x .50L spacer between the bracket and the OEM mount using a 5/16 x 1-1/4" bolt and nut (Figure 43).
11. Install a new cylinder mount **(6)** to the end of OEM reel arm using the OEM hardware removed in step 2 as shown (Figure 42).
12. Reconnect cylinder reusing the OEM hardware (Figure 42).

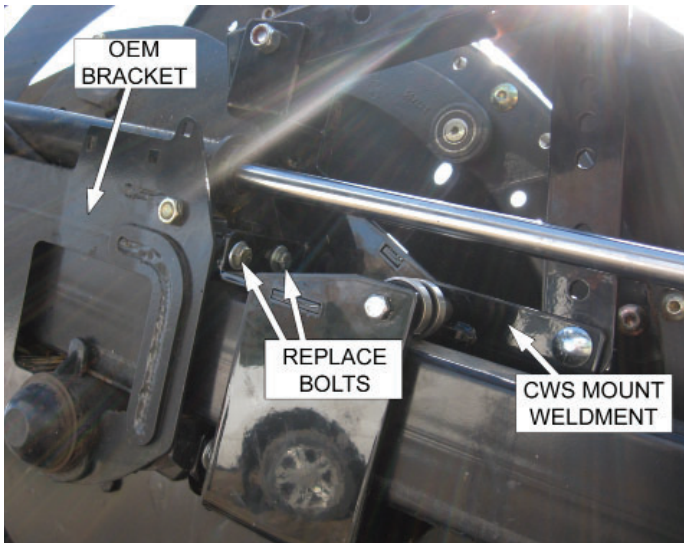


Figure 40: Right hand reel arm (FD70 & CIH 2162 headers)

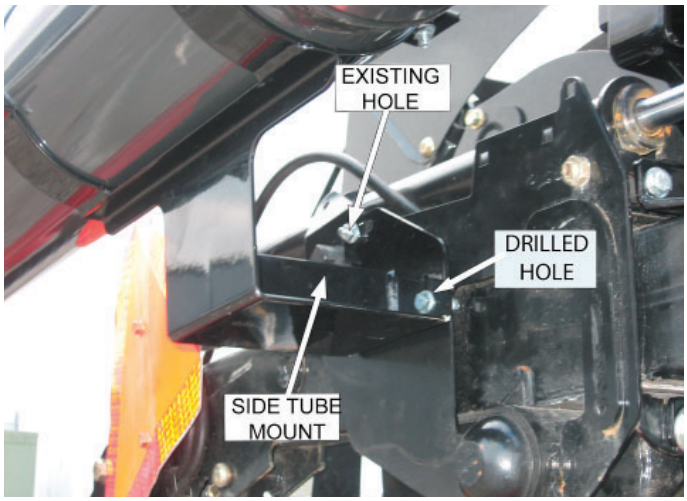


Figure 41: Tube Mount (FD70 & CIH 2162 headers)

Figure 42: Cylinder Mount (FD70 & CIH 2162 headers)

4.8 REEL ARM MOUNT (FD70 & CIH 2162 HEADERS)

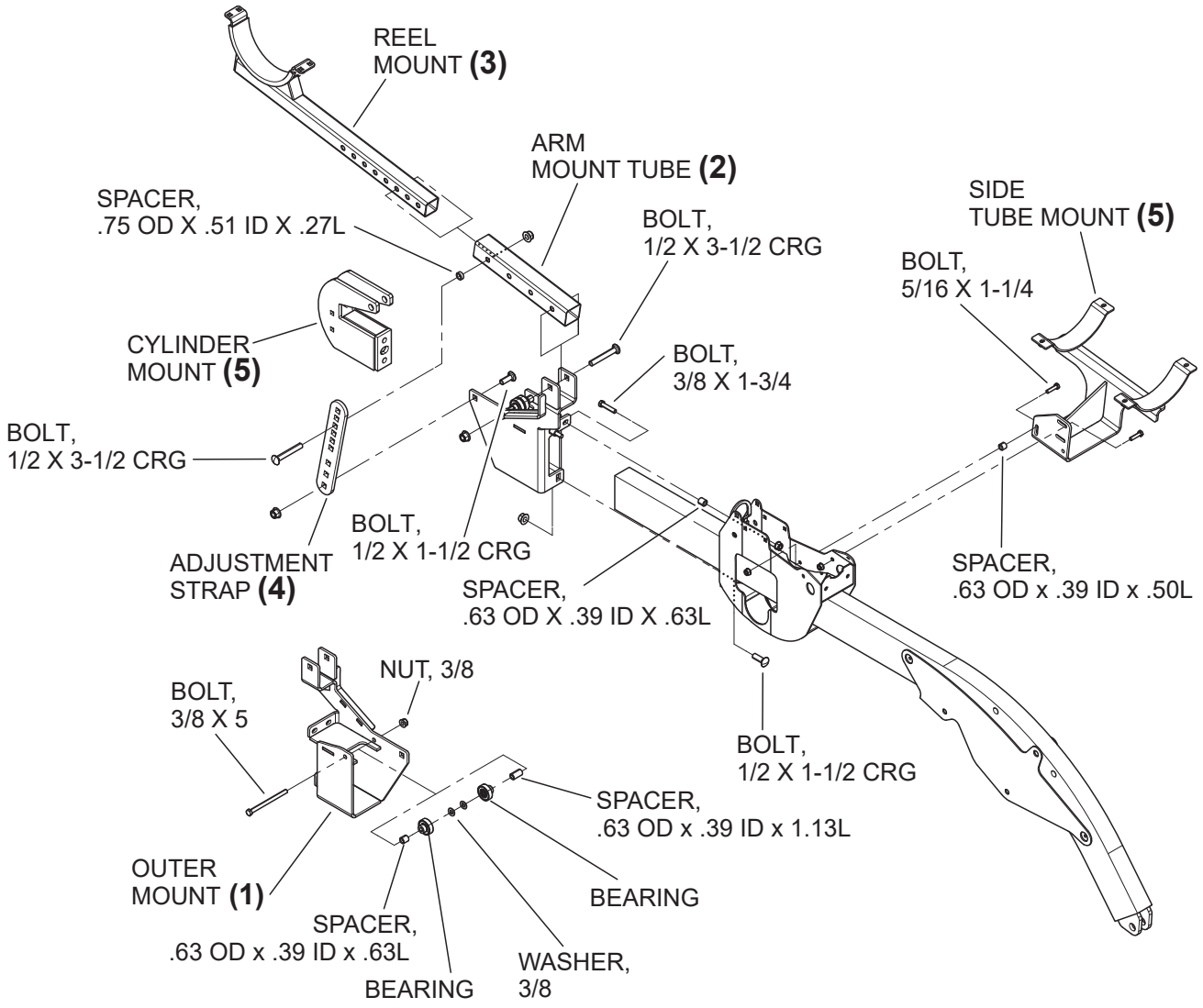


Figure 43: RH reel arm mount assembly (FD70 & CIH 2162 headers)

4.9 MANIFOLD

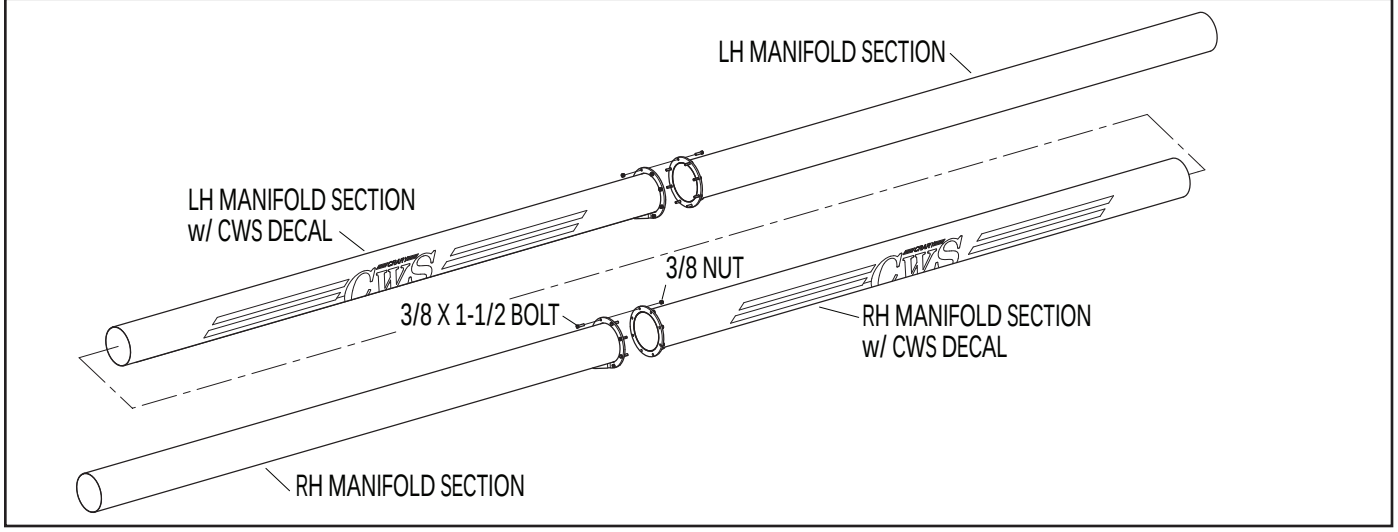


Figure 44: 45FT Manifold assembly (FD70 & CIH 2162 headers)

4.9 MANIFOLD

NOTE

References to left and right of the machine, are determined by standing behind the machine and facing the direction of forward travel.

1. **For 40FT** sectional manifolds no assembly required at this stage. **For 45FT** manifolds, bolt the two LH manifold ends together using eight 3/8" x 1-1/2" bolts and nuts. Bolt the two RH manifold ends together using eight 3/8" x 1-1/2" bolts and nuts. Make sure the air holes of all sections are pointing the same direction and torque hardware to 30 ft-lbs. Refer to page 31, Figure 44.
2. Loosely, install the half clamps **(3)** with 24 3/8" x 1" carriage bolts and nuts to all manifold mounts **(4)**. (Figure 48)
3. Slide a manifold pivot **(5)** over the right end of the manifold with the serial number **(12)**. Slide a manifold pivot **(5)** over the left end of the manifold without the serial number **(7)**. (Figure 48)
4. Slide a brace clamp **(13)** over each end of the manifold. The brace clamps **(13)** should be positioned inside the reel mount assemblies (Figure 46). Slide the brace clamps **(13)** against the inside of the reel mount assemblies and tighten the clamps **(13)** on the manifold.
5. Load each section of the manifold by sliding them into position with enough room for the center assembly.
6. Slide a t-bolt clamp over each end of each single hump hose **(1)**.
7. Slide the single hump hoses **(1)** onto each side of the connector manifold **(2)**. Leave enough room in the middle of the connector manifold to install a drop tube. (Figure 45)
8. Load each half of the LH and RH manifolds **(7 & 12)** by sliding them into position with enough room for the single hump hoses. Securely attach the connector manifold sub-assembly to complete the installation.
9. Adjust the manifold as necessary to center the manifold between the reel mount and align the drop tube holes. Tighten all t-bolt clamps and half clamp hardware **(3)** to the torque specifications on page 53.
10. Attach a manifold pivot rod **(8)** to each manifold pivot **(5)** using two 5/16 x 7/8 carriage bolt and nuts. (Figure 48).
11. Attach the base end of the electric actuator **(9)** to the center manifold mount **(4)** with a 1/2" x 2-3/4" bolt and nut.
12. Extend the actuator rod **(9)** all the way out (approx. 4 inches). This can be done by turning the actuator rod counter-clockwise or by energizing it.
13. Position the actuator rod **(9)** between the manifold

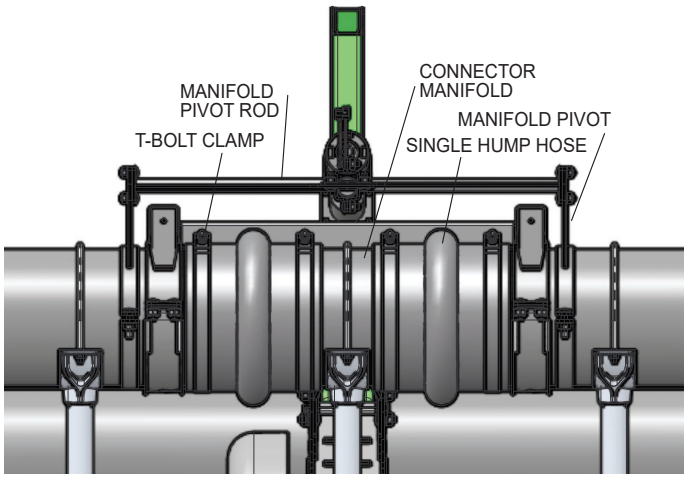
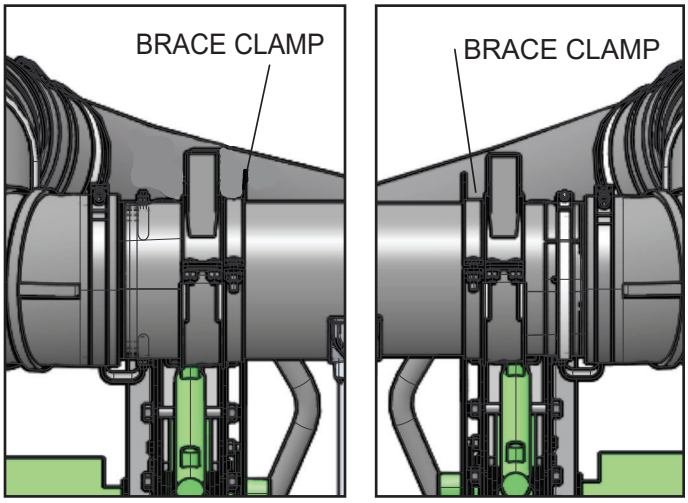


Figure 45: Manifold Assembly



RH Side *LH Side (Single Flow)*

Figure 46: Brace Clamps

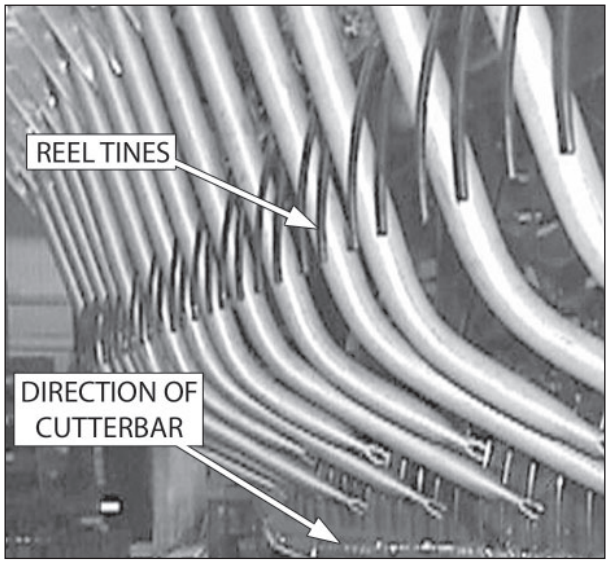


Figure 47: Electric actuator (FD70 & FD75 only)

4.9 MANIFOLD

pivot rods **(8)** and secure with four 5/16 x 7/8 carriage bolts and nuts.

14. Install the drop tubes per **Section "4.10 Drop tube Assembly" on page 34**.
15. Manually adjust the manifold so the drop tubes point towards the cutterbar. The reel tines should extend past the drop tubes on FD70 and FD75 models. The drop tubes will be outside the reel on the FD1 model..

    Manually turn the reel to ensure that the tines follow the curve of the drop tubes as they rotate downward. It will be normal for the tines to slightly contact the drop tubes (Figure 47).
16. Tighten the manifold pivot hardware **(5 & 8)** once the manifold and drop tubes are properly positioned.
17. On single flow headers only, install end cap using 8-3/8" a T-bolt clamp on the LH of manifold (Figure 46).

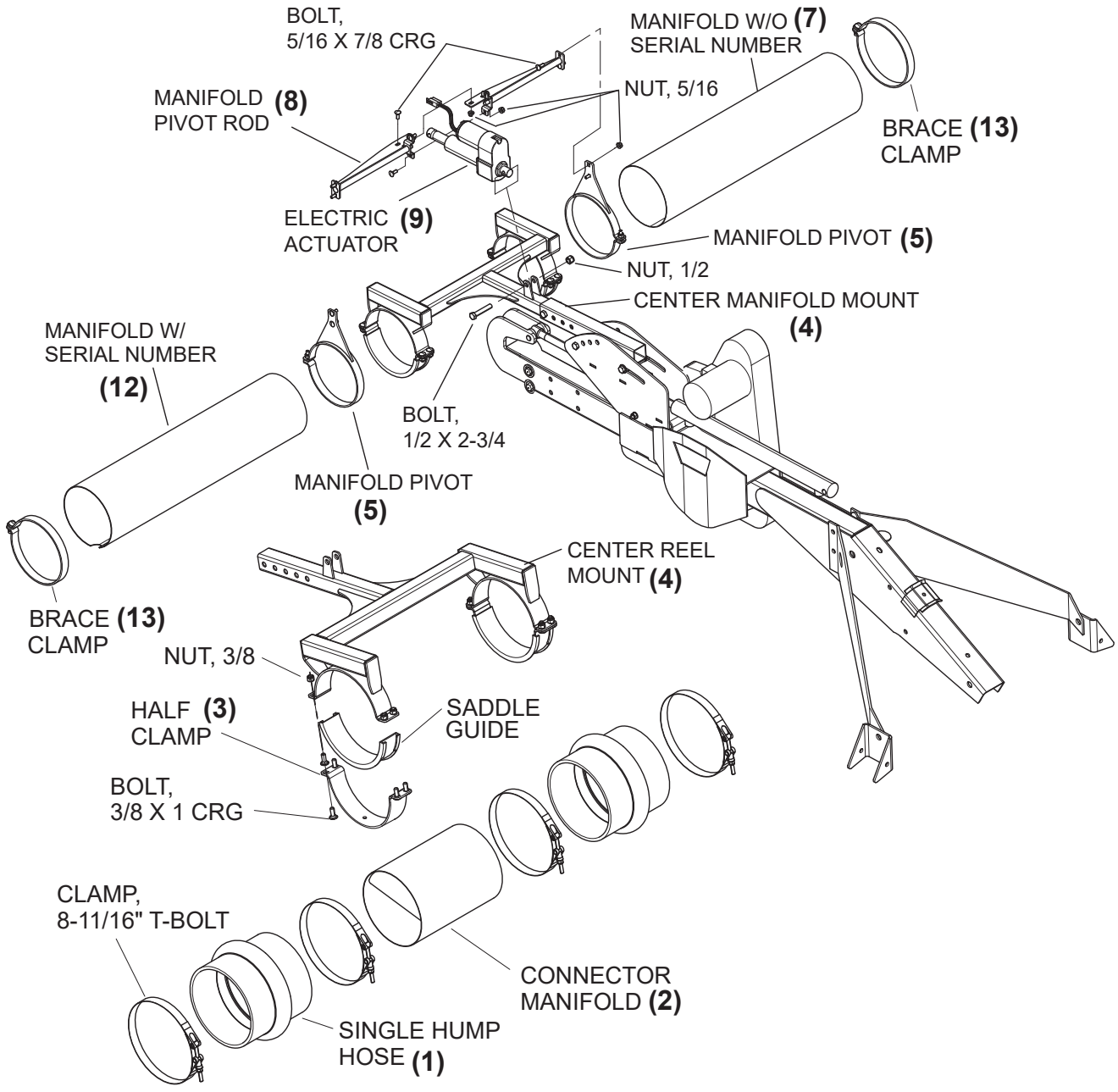


Figure 48: Center manifold Assembly (FD1 & FD75 headers)

4.10 DROP TUBE ASSEMBLY

When installing the drop tubes, start working from the LH side (as looking from the combine cab) of the manifold and work to the right.

1. To connect an air tube, place it on one of the holes in the manifold and point the end towards the direction of the cutterbar.
2. Place a U-bolt around the manifold and through the holes on the drop tube weldment.
3. Secure the drop tube with two 5/16" flange nuts (Figure 49). Torque to 11 ft-lbs.
4. Repeat procedure for all drop tubes.
5. Repeat the steps above to mount the end drop tubes, two 1-9/16" holes must be drilled on each end of the manifold. There is a pre-existing scribe-line on the bottom to aid in centering the drill to align with the other drop tube holes.
6. Drill the holes as far to the outside of the header as possible, while still providing room for the drop tube in between the tines of the reel, Figure 51.

NOTE

DO NOT OVERTIGHTEN U-BOLT AND NUTS.
Over torquing can damage casting and manifold.

7. If the optional Metal End Finger Kit is installed, use an appropriate tool to bend the end fingers on the RH side of the header so that there is 3.25" between them and the end reel tines to allow clearance for the end drop tubes.
8. Next step, **Flex Hose Routing**, go to page 35.

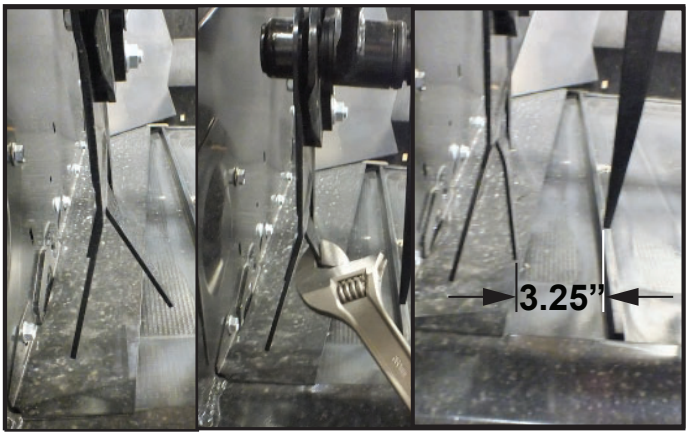
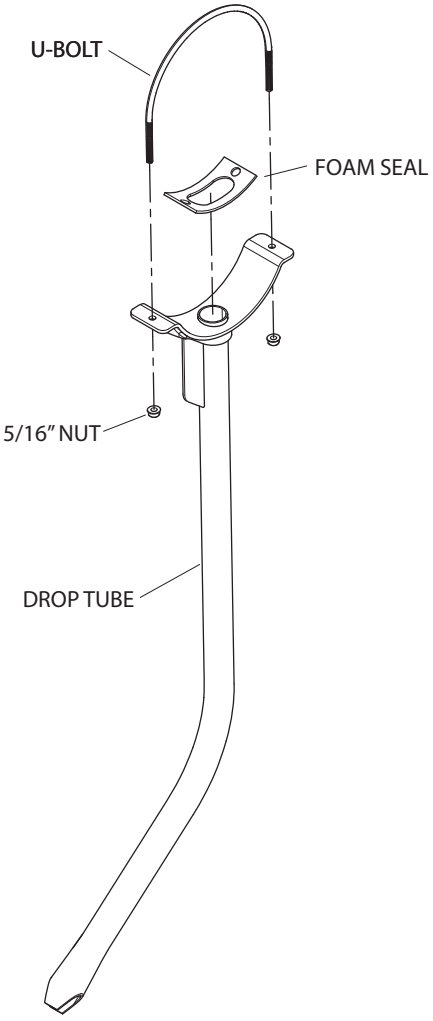
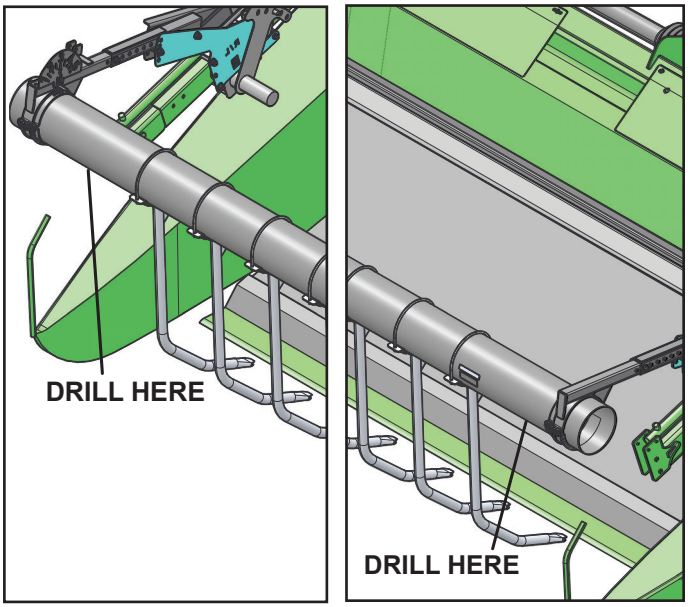


Figure 50: Bending End Fingers



MANIFOLD LENGTH	# OF SHORT DROP TUBES	# OF LONG DROP TUBES
30 FT (12" SPACING)	2	27
35 FT (12" SPACING)	2	33
40 FT (12" SPACING)	2	37
45 FT (12" SPACING)	2	43

Figure 49: Drop tube assembly



RH Side *LH Side*

Figure 51: X-Long 2 Bend Drop Tube Kit

4.11 FLEX HOSE ROUTING

4.11.1 RIGHT HAND ROUTING

NOTE

For easy installation of hose parts, you may use a solution of soap and water as lubricant when sliding hose pieces together.

1. Set the 56” tube **(1)** on the side tube mount **(2)**. Position the manifold so that the front end is about two inches from the front U-bolt (Figure 53)..
2. Fasten the tube **(1)** to the tube mount **(2)** with two 5/16” u-bolts and nuts.
3. Slide an 8-11/16” t-bolt clamp over each end of the 90º elbow **(3)**. Then, slide the elbow over the RH end of the front CWS manifold. Point the elbow toward the 56” tube **(1)**.
4. Insert a 5” tube into the 90º elbow **(3)**.
5. Determine the length of hose needed to connect the 5” tube to the 56” tube **(1)** and cut the hose. Leave enough slack in this portion of flex hose to allow complete up/down and fore/aft movement of the reel.
6. Install the flex hose with two 8-3/8” t-bolt clamps. Set the right rear tube **(4)** on the rear tube mounts **(5)**. Position so that the left end is about 10” from the left bracket. Fasten the tube to the mounts with two 5/16 U-bolts and nuts.
7. Slide an 8-11/16” t-bolt clamp over each end of a 90º elbow **(6)**. Then, slide the elbow onto the fan outlet. Point the elbow toward the rear tube.

NOTE

If installing dual flow system, Install alternate rubber-Y connection, see Figure 53.

8. Insert a 5” tube into the elbow **(6)** installed in the previous step.
9. Determine the length of flex hose needed to connect the 5” tube to the right rear tube **(4)** and cut the hose. Install the flex hose with two 8-3/8” t-bolt clamps.

Figure 52: Fan routing

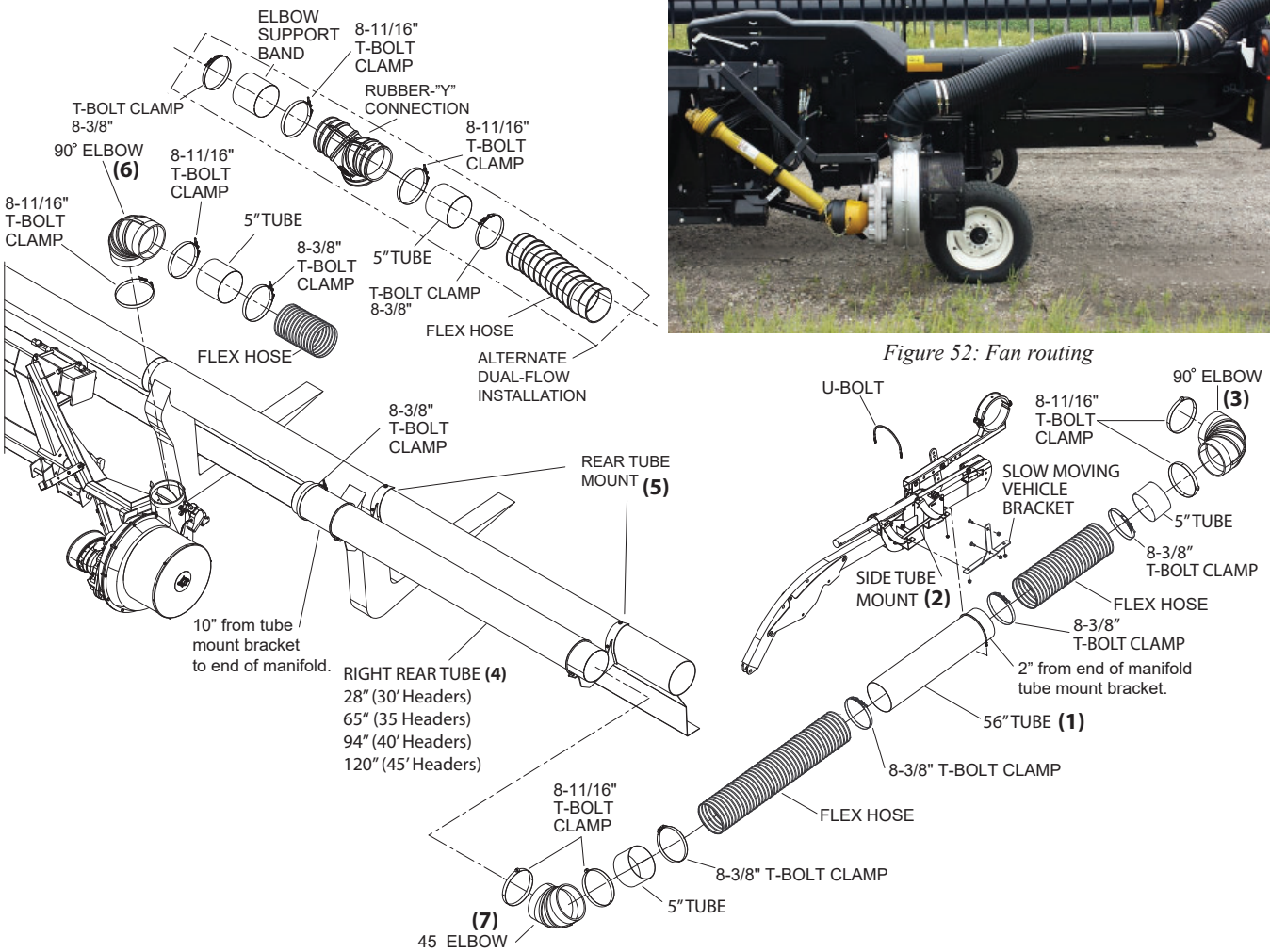


Figure 53: Right Hand - Single flow air hose installation (30’ FD70 & CIH 2162 headers)

4.11 FLEX HOSE ROUTING

10. Slide an 8-11/16” t-bolt clamp over each end of the 45º elbow **(7)**. Then, slide the elbow onto rear tube. Point the elbow toward the 56” tube on the side of the reel.
11. Insert a 5” tube into the 45º elbow **(7)**.
12. Determine the length of flex hose needed to connect the elbow support band to the 56” manifold. Cut the hose if needed. Leave enough slack in this portion of flex hose to allow complete up/down and fore/aft movement of the reel.
13. Install the flex hose with two 8-3/8” t-bolt clamps.
14. Tighten all t-bolt clamps to the torque specifications on page 53.

Figure 54: Fan routing

4.11.2 LEFT HAND ROUTING

1. To install the damper position indicator, remove existing arrow indicator, the hardware will be reused (Figure 55).
2. Loosen and remove two 3/8” bolts at top of fan casting, hardware will be reused (Figure 55).
3. Install and attach orange indicator bracket using the two removed 3/8” bolts at top of fan casting (Figure 56).
4. Using the provided 5/16” X 3/4” shoulder bolt & nut, attach gauge bar to link weldment ensuring free rotation of components.
5. Using the hardware from the arrow indicator, mount link weldment on fan damper. Ensure that gauge bar is inserted in slot in indicator bracket so that the bar shows the damper position on the scale (Figure 56).

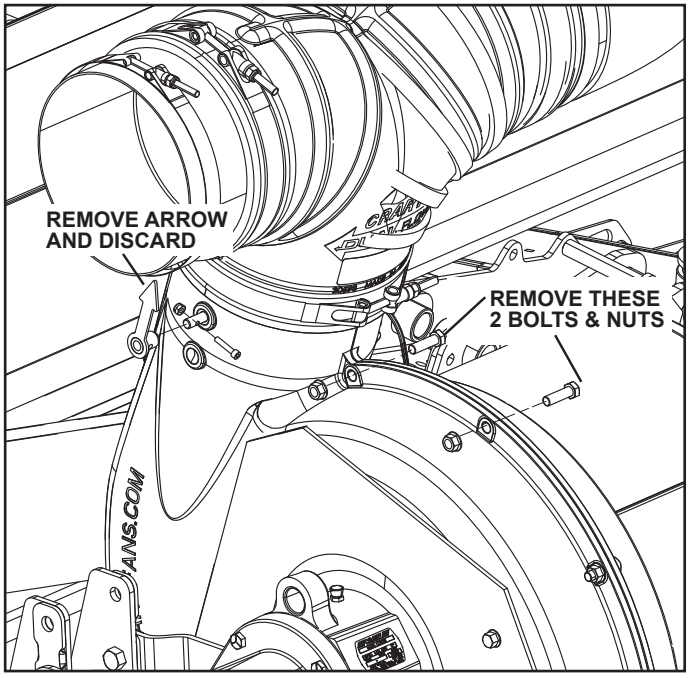


Figure 55: Prepping for Damper position indicator installed

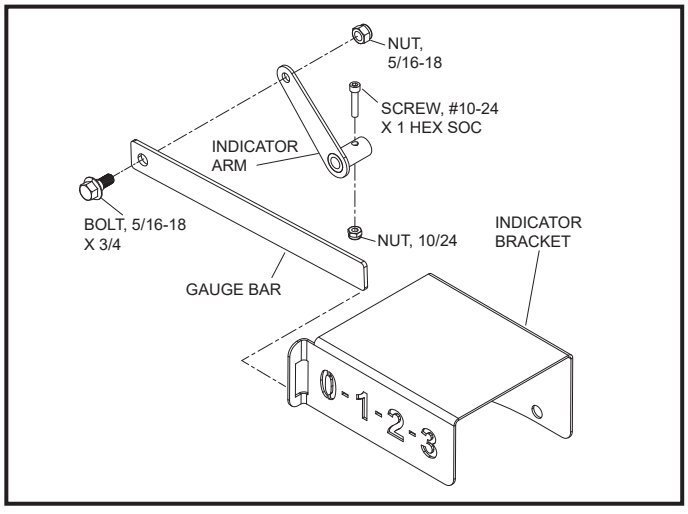


Figure 57: Damper position indicator installed

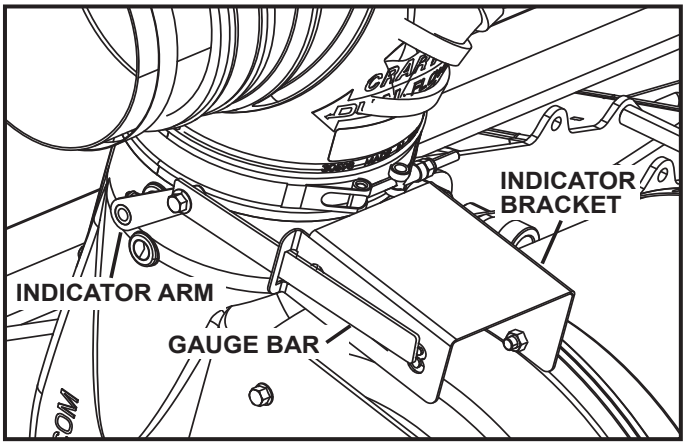


Figure 56: Damper Installed

4.11 FLEX HOSE ROUTING

IMPORTANT

DO NOT drill into the fluid reservoir. Tighten bolts on the clamp so that they secure the clamp around the reservoir.

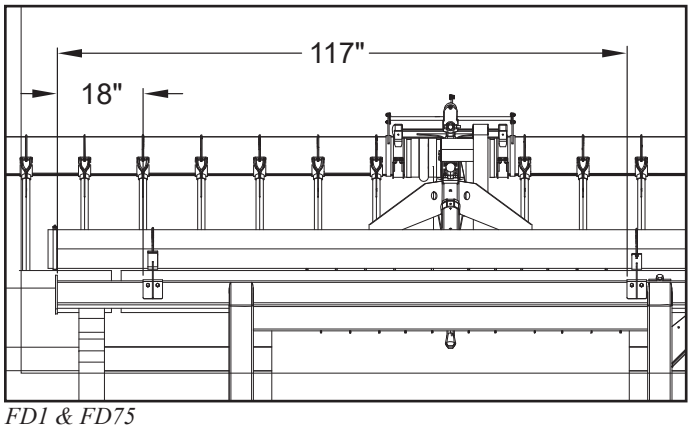
IMPORTANT

Two sets of center tube mounts are provided for the center tube. Use the mounts with the slotted hole (reference purposes only) when installing on an FD70. Use the tube mounts without the slotted hole when installing on an FD1 or FD75. Discard the mounts that are not used.

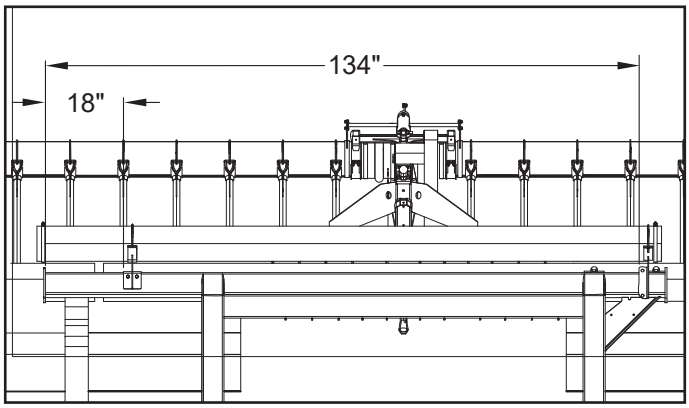
On FD75/FD1 CLAAS combines, use alternate optional center tube mounts. These mounts are required to prevent interference between the feederhouse and wind system ducting.

On FD70 for Gleaner or CLAAS combines only: To prevent damage to the cab when fully raising the head, the tube mount kit on page 94 is required to relocate the center dual flow tube that passes over the feederhouse. Use the FD1 & FD75 dimensions in Figure 55 or similar to locate the two mounts. Failure to do so may cause damage to the cab.

6. Secure the center tube mounts **(1)** to the fluid reservoir on the back of the header using four set screws. Place the tube mount as shown in Figure 58 on page 37. For FD70 or CIH 2162, the right transition tube mount bracket should have been installed at the same time as the gearbox mount bracket.
7. Refer to Figure 19, page 18, and Figure 61 dimensions A and B for tube mount location and orientation. Using a mount clamp as a template, measure from the left hand inside edge of the header and mark and drill two 9/32” holes. Install the tube mount using two 11/32 X 7/8” screws.
8. Set the 141” center tube **(3)** on the center tube mounts **(1)** over the feeder house and secure each end with a u-bolt and two 5/16” nuts and washers. Position as shown in Figure 61, page 39.
9. Determine the length of hose needed to connect the rubber-”Y” and the center manifold. After determining the length of hose needed, cut the hose.
10. Install the flex hose with two 8-3/8” t-bolt clamps.
11. Set the left rear tube **(4)** on the tube mounts **(2)** and secure each end with a U-bolt and two 5/16” nuts and washers. Position as shown (Figure 62).
12. Determine the length of flex hose needed to connect the center manifold and the left rear manifold. Cut the hose.
13. Install the flex hose with two 8-3/8” t-bolt clamps.



FD1 & FD75



FD70 & CIH2162

Figure 58: Left hand tube clamp locations

4.11 FLEX HOSE ROUTING

14. For FD70 or CIH 2162, you will need to drill a hole for the side tube mount **(1)**. Install the mount to the OEM LH reel mount through the square hole shown in Figure 64 and the middle front slot in the side tube mount.
15. Using the mount as a template, position the mount parallel with the reel mount tube **(2)**. Use the rear vertical slot to mark and drill the Ø11/32" hole. (Figure 64).
16. Attach the side tube mount **(1)** to the LH reel mount using two 5/16" x 1-1/4" bolts and nuts.
17. Set the 56" tube **(3)** on the side tube mount **(1)**. Position the tube so that the front end is about two inches from the front U-bolt.
18. Slide an 8-11/16" t-bolt clamp over each end of the 90º elbow **(4)**. Then, slide the elbow over the LH end of the front CWS manifold. Point the elbow toward the rear tube.
19. Insert an 5" tube into the 90º elbow **(4)**.
20. Determine the length of hose needed to connect 5" tube to the 56" tube **(3)** and cut the hose. Leave enough slack in this portion of flex hose to allow complete up/down and fore/aft movement of the reel.
21. Install the flex hose using two 8-3/8" t-bolt clamps.

Figure 59: Left Hand flex hose routing

Figure 60: FD70 / Case IH 2162 Drilling guide

4.11 FLEX HOSE ROUTING

Header Length	Dimension "A"	Dimension "B"	Dimension "C"	Dimension "D"
35'	30"	90"	4"	79"
40'	30"	120"	7"	111"
45'	30"	150"	7"	141"

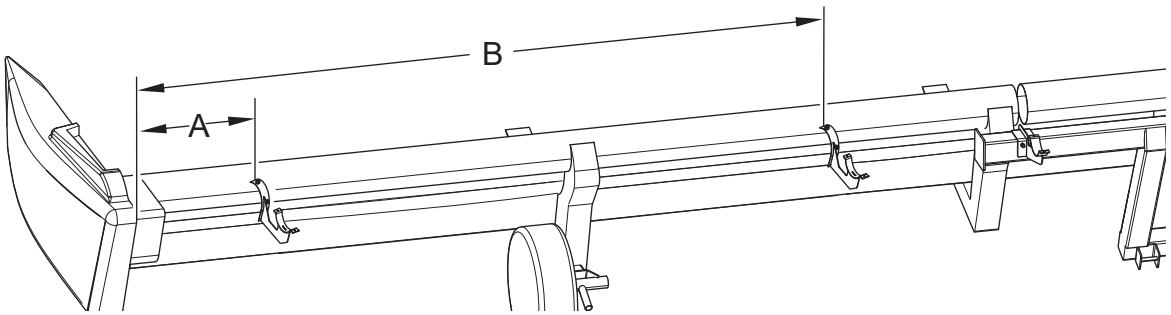


Figure 61: Left hand tube clamp locations

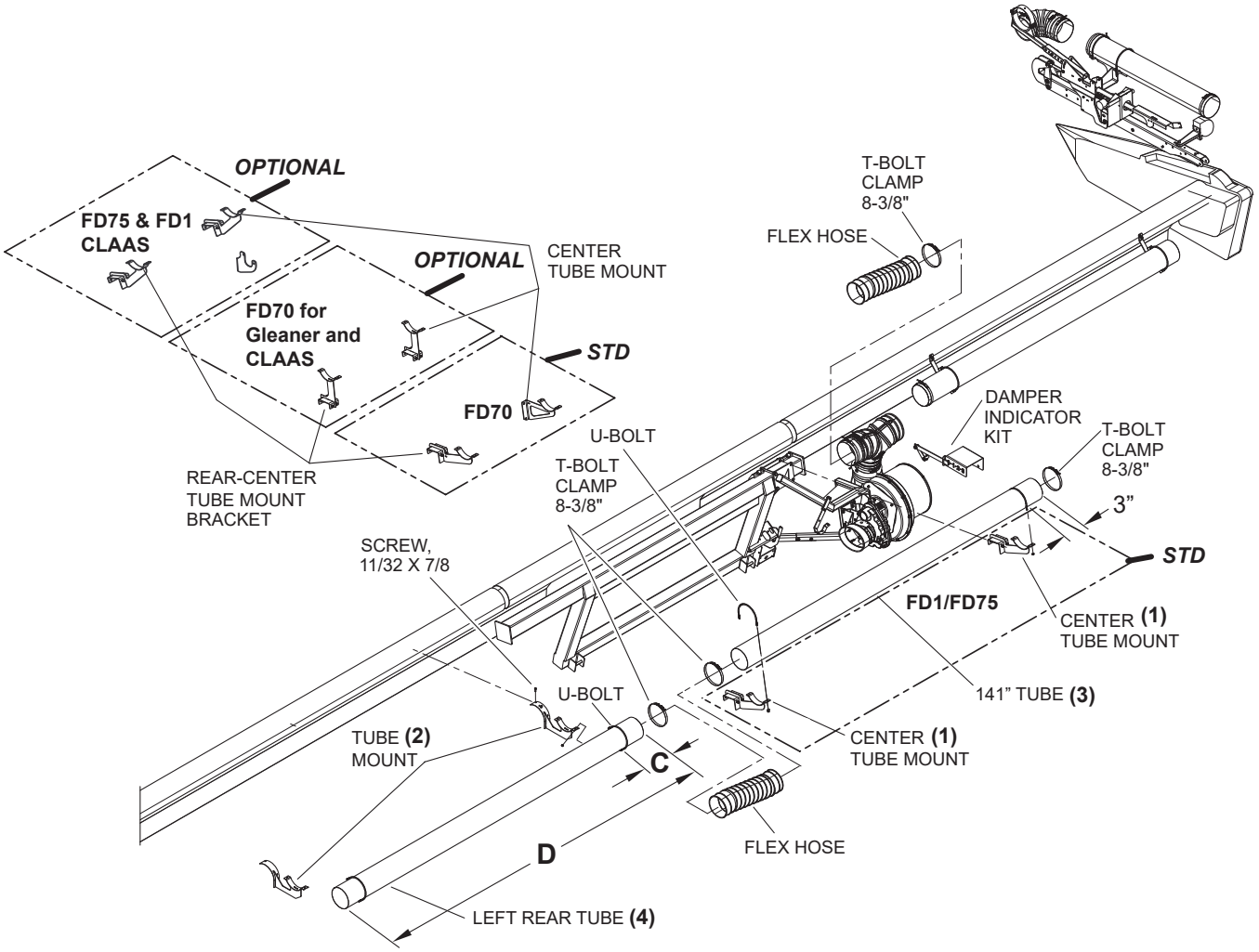


Figure 62: Left hand tube clamp locations

4.11 FLEX HOSE ROUTING

22. Slide an 8-11/16” t-bolt clamp over each end of the 45º elbow **(4)**. Then, slide the elbow onto the left rear tube **(6)**. Point the elbow toward the 56” tube **(3)** on the side of the reel.
23. Insert a 5” tube into the 45º elbow **(5)**.
24. Determine the length of flex hose needed to connect the elbow support band to the 56” tube **(3)**. Cut the hose if needed. Leave enough slack in this portion of flex hose to allow complete up/down and fore/aft movement of the reel.
25. Install the flex hose using two 8-3/8” t-bolt clamps.
26. Tighten all t-bolt clamps to the torque specifications on page 53.

Figure 64: Left side view of hose routing

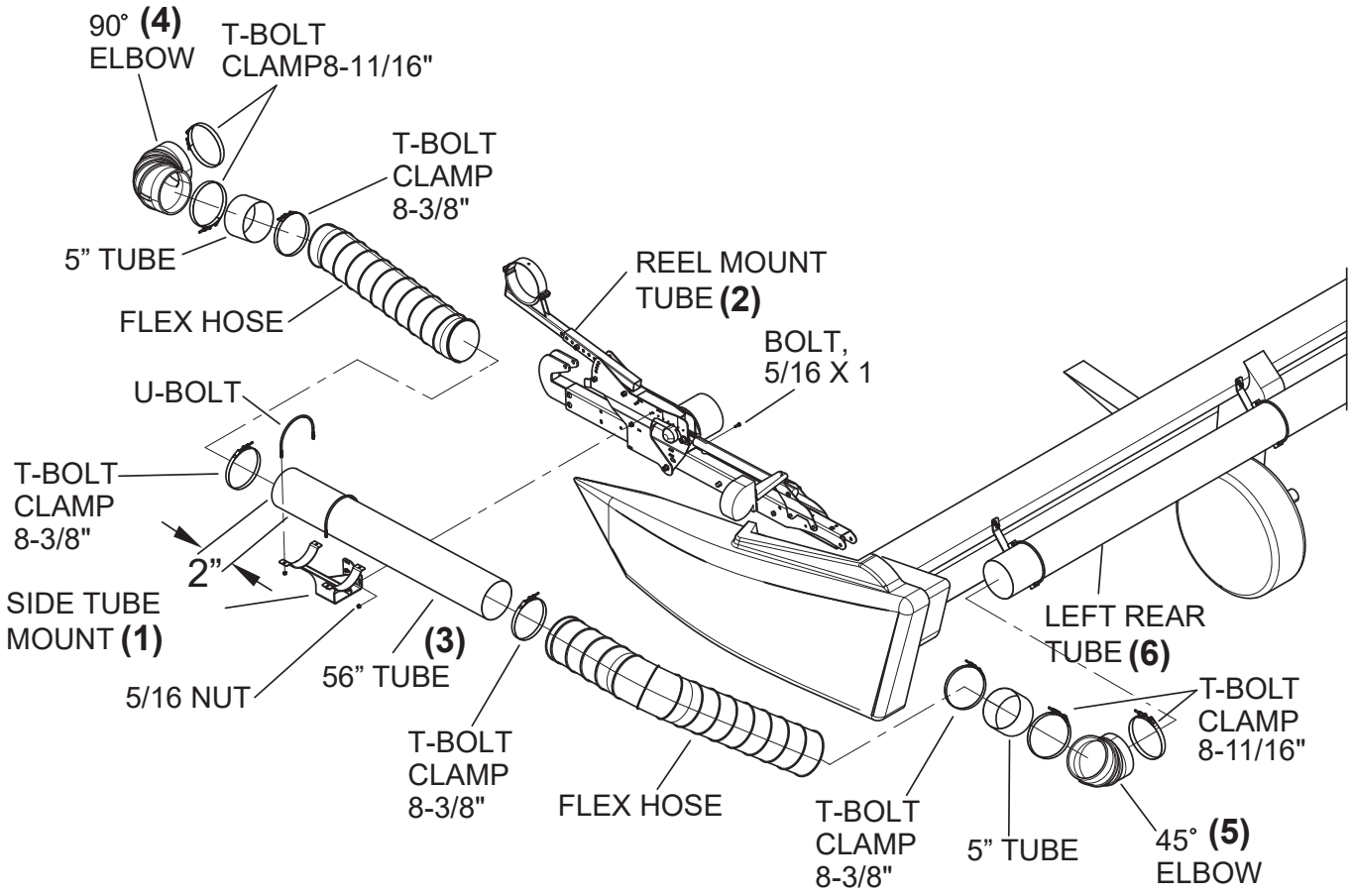


Figure 63: Left hand hose routing (Dual Flow)

4.12 ELECTRICAL WIRING

WARNING

Place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop, then properly block machine before servicing, adjusting, repairing, or unplugging.

NOTE

Disconnect the intermediate harness connector at the feeder house when the header is disconnected from the combine.

1. Mount the switch assembly in a convenient place inside the cab. (Use either velcro or bolts.)
2. Run the power supply wire (red) to a 12 VDC power source. Use actuator switch harness if provided and combine is equipped with same type of auxiliary power supply.
3. Run the black wire to a suitable ground.
4. Route the long harnesses along the combine and header to the actuators (15 Amp Manifold Tilt; 5 Amp Air Volume) and plug in.
5. Mount the intermediate harness connectors to a convenient location on the combine feeder house.

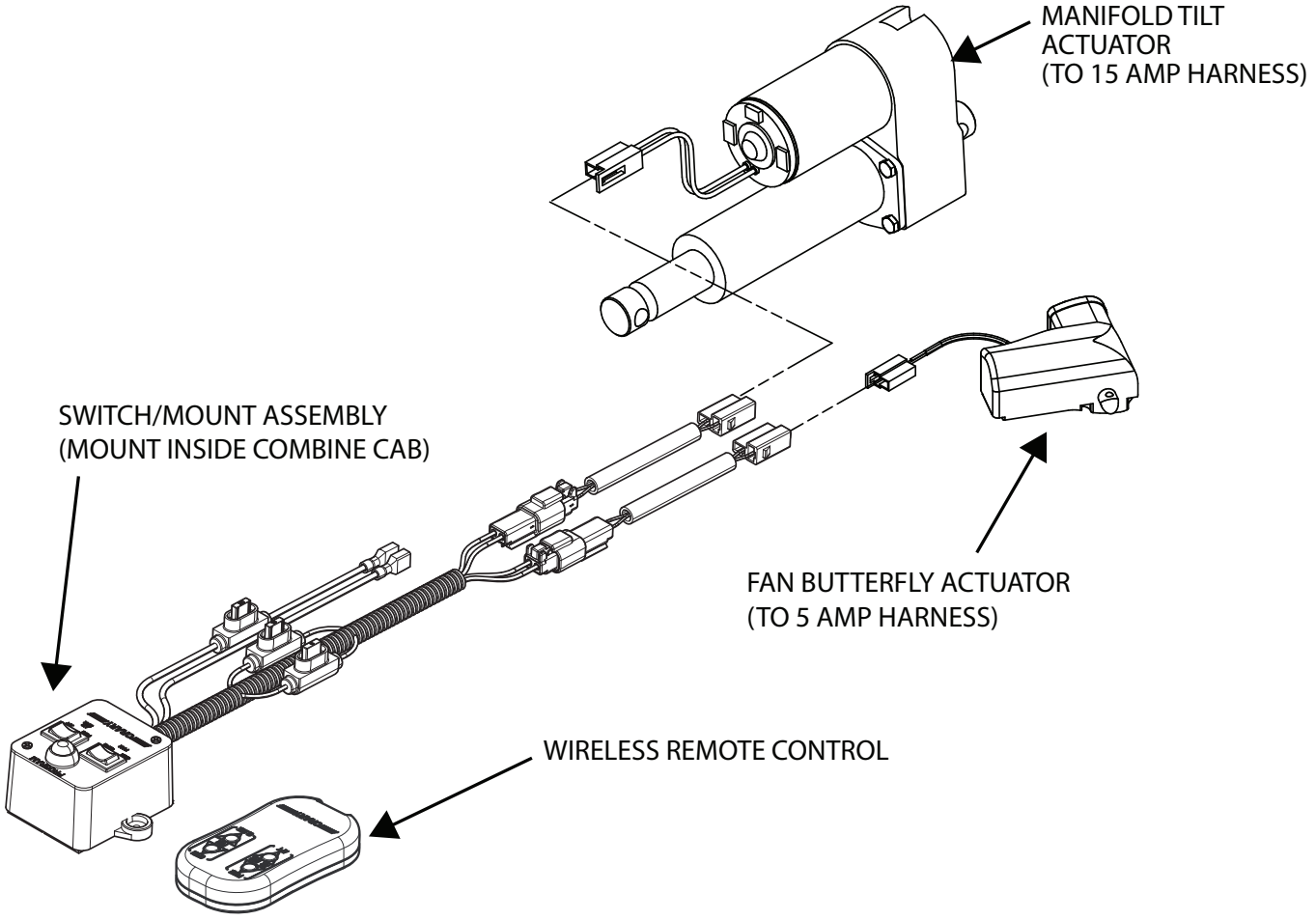


Figure 65: Electric wiring

Section 5 OPERATION

WARNING

1. Read and understand the Owner's Manual and all safety signs before servicing, adjusting or repairing.
2. Install and secure all guards and shields before starting or operating.
3. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
4. Place all controls in neutral or off, lower header to the ground, stop combine engine, set parking brake, chock wheels, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
5. Clear the area of bystanders, especially small children, before starting.
6. Keep all hydraulic lines, fittings, and couplers tight and free of leaks before and during use.
7. Clean reflectors and lights before transporting.
8. Review safety related items annually with all personnel who will be operating or maintaining the machine.
9. Shut the combine off when connecting the machine hydraulics.
10. Do not exceed fan speed of 5300 RPM. Check the fan speed by multiplying the driveline speed (RPM) by the gear ratio of the gearbox.
11. Do not run the fan without back pressure. Close the butterfly valve on the fan if the flex hose is disconnected.

The CWS is designed to dramatically improve harvesting efficiency. Be familiar with the machine before starting.

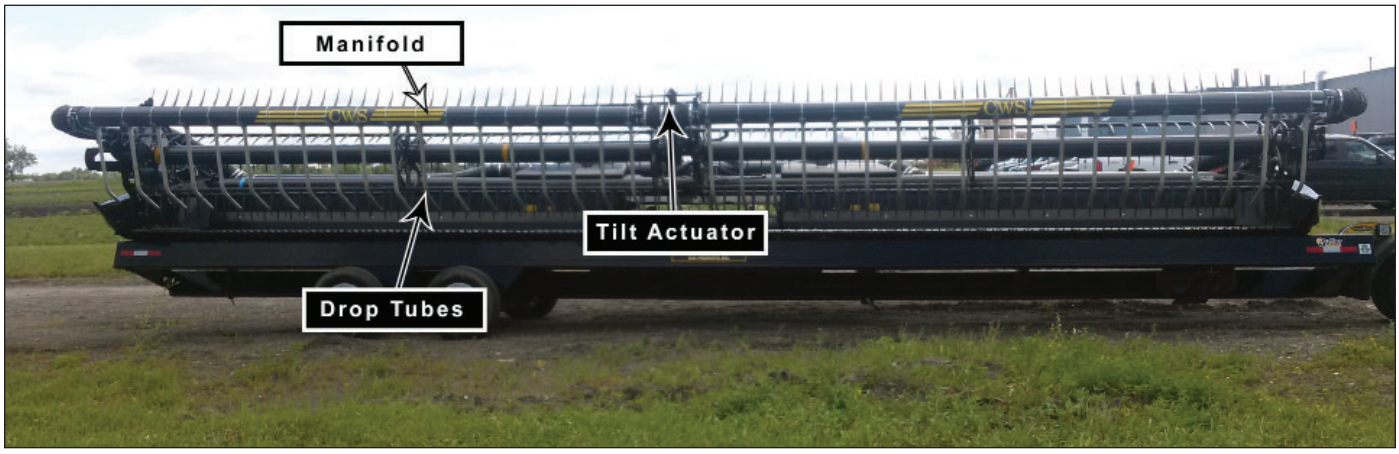
It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. Hazard control and accident prevention are dependent upon the awareness of personnel involved in the operation of the CWS.

Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the work site. Untrained operators are not qualified to operate the machine.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance program, your CWS will provide many years of trouble-free service.

5.1 MACHINE COMPONENTS

The CWS is designed to work with the existing OEM reel to harvest all types of beans, and small grains. Air is used to enhance the performance of your pickup reel by moving the crop off the sickle towards the header auger or belt. Proper adjustment of the air volume and direction will increase the performance of your header while reducing shatter loss. Please take a few minutes to become familiar with the proper setup and operation of your Crary Wind System.



Front of Head

Rear of Head

Figure 66: Machine components

5.2 INITIAL ADJUSTMENTS

WARNING

Place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop, then properly block machine before servicing, adjusting, repairing, or unplugging.

5.2.1 MANIFOLD ADJUSTMENT

1. Adjust your header and pickup reel per the manufacturer's recommendations.
2. Position air manifold to maintain clearance between air tubes and reel bats/tines.
3. Adjust the air tube position to point at the back of the sickle bar. This adjustment refers to the longer air tubes on Crary Wind Systems.
4. Loosen tilt actuator clamp and adjust so the actuator is in middle of stroke (approx. 2" of actuator shaft exposed) with tube nozzles pointed at the back of the sickle bar. Retighten clamp.
5. Make sure air tubes do not hit ground when reel is at its lowest operating position. Adjust as required.

5.2.2 TORQUE LIMITER (SLIP CLUTCH)

The CWS comes equipped with a torque limiter (slip clutch) on the main drive of the CWS. The torque limiter is set in the engaged position from the factory. Before use, the slip clutch must be slipped and adjusted to ensure proper function.

WARNING

To prevent burn-up of slip disks the torque limiter (slip clutch) must be adjusted prior to use.

ALLOWING THE TORQUE LIMITER TO SLIP

1. Loosen the center locknuts (Figure 67) on the torque limiter so that the pressure is relieved from the pressure plates.
2. With the combine engine at idle speed, engage the PTO for 2-3 seconds to make the torque limiter slip. **Do not allow the torque limiter to slip for more than 2-3 seconds at a time to prevent damage to the linings**.
3. If the torque limiter does not slip, repeat the procedure 2 or 3 times. If it still doesn't slip, check that all the center locknuts are loosened and not placing tension on the pressure plates.
4. After the torque limiter has slipped, refer to the next section for instructions on how to reset the torque limiter.

ADJUSTING THE TORQUE LIMITER

After the torque limiter has slipped, it must be adjusted to the tension required to operate the header. The goal of this procedure is to have the torque limiter slip momentarily upon initial startup and then operate normally. The slip clutch must not slip at full RPM.

1. Slowly engage the PTO with the engine running at idle speed.
2. If the torque limiter does not slip, shut off machine and loosen the center locknuts in 1/4 turn increments until it slips momentarily when the header is engaged. If the torque limiter continues to slip after start-up, tighten the center locknuts in 1/4 turn increments until it slips momentarily when the header is engaged.
3. The torque limiter is ready for use.

NOTE

At the end of the season, or before any long period of non-use, loosen the center locknuts to relieve the pressure on the linings.

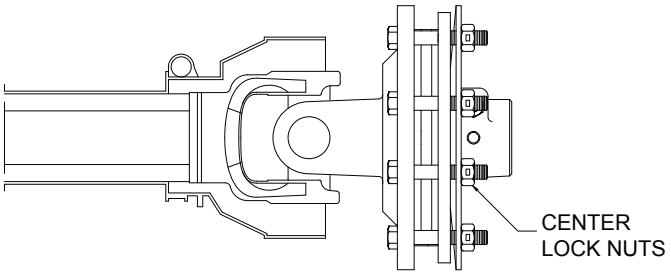


Figure 67: Adjusting the torque limiter

5.3 PRE-OPERATION CHECKLIST

Efficient and safe operation of the CWS requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both personal safety and maintaining the good mechanical condition of the machine that this checklist is followed.

Before operating the machine and each time thereafter, the following areas should be checked off:

1. Service the machine per the schedule outlined in the Service Record.
2. Use only a combine of adequate power and specifications to operate the machine.
3. Check that all guards are installed, secured and functioning as intended. Do not operate with missing or damaged shields.
4. Ensure that the machine is properly attached to the header and that mechanical retainers, such as quick pins, are installed.
5. Check the cutterbar, reel area and drives for entangled material.
6. Check the chains and sprockets for proper tension and alignment. Adjust as required.
7. Visually inspect the hydraulic system for leakage, loose fittings, and damaged hoses. Tighten fittings, replace damaged components and wipe up leaked or excess hydraulic fluid.
8. Check condition of driveline slip clutch friction discs. If installing replacement discs, adjust spring height to original height. Deviation from original setting may be needed depending upon disc wear. Run-in is recommended at the start of the season (see Service and Maintenance Section).

5.4 MACHINE BREAK-IN

5.4.1 PRE-START INSPECTION

1. Read the Operator's Manual.
2. Check that the hydraulic lines and electrical harnesses are routed where they will not contact moving parts. Be sure all components are clipped, taped or tied securely in place.
3. Check that all required nuts and bolts are installed and tightened to their specified torque.

5.4.2 AFTER OPERATING FOR 2 HOURS

1. Re-torque fasteners and hardware.
2. Check that all safety decals are installed and legible. Apply new decals if required.
3. Check that no hydraulic hoses are being pinched, crimped, or are rubbing. Reroute as required.
4. Check that the wiring harness is not being pinched, crimped, or rubbing. Reroute as required.
5. Check the tension and alignment of all drive chains. Adjust as required.
6. The gearbox will generate heat. The typical operating temperature of the gearbox is 180° F.

5.4.3 AFTER OPERATING FOR 10 HOURS:

1. Re-torque fasteners and hardware.
2. Check that all guards are installed, secured and functioning as intended. Do not operate with missing or damaged shields.
3. Check safety decals. Install new ones if required.
4. Check the routing of hydraulic lines and the wiring harness. Reroute as required to prevent pinching, crimping, binding, or rubbing.
5. Refer to the normal servicing and maintenance schedule as defined in the Service Record.

5.5 BELT DRIVE BREAK-IN

5.5.1 AFTER OPERATING FOR 0-10 HOURS

1. Check spacing on tension spring. Should be thickness of a quarter (.07").
2. Check and re-torque hardware.

5.5.2 AFTER OPERATING FOR 11-40 HOURS:

3. Check spacing in tension spring. Should be thickness of a dime (.05").

5.5.3 AFTER OPERATING FOR OVER 40 HOURS:

4. Check spacing in tension spring. Maintain dime spacing on tension spring.

5.6 CONTROLS

Before starting to work, all operators should familiarize themselves with the location and function of the controls and safety devices. Some machines may vary due to different models of combines and headers. Refer to Figure 68 through Figure 70.

MANIFOLD TILT:

1. Moving the toggle switch to the FORE position extends the shaft of the electric actuator. This directs the air tubes toward the back of the header.
2. Moving the toggle switch to the AFT position retracts the shaft of the electric actuator. This directs the air tubes toward the front of the header.

FAN AIR VOLUME ACTUATOR:

1. Move the toggle to the OPEN position to open the butterfly plate which increases air volume to the air tubes.
2. Move the toggle to the CLOSED position to close the butterfly plate which decreases air volume to the air tubes.

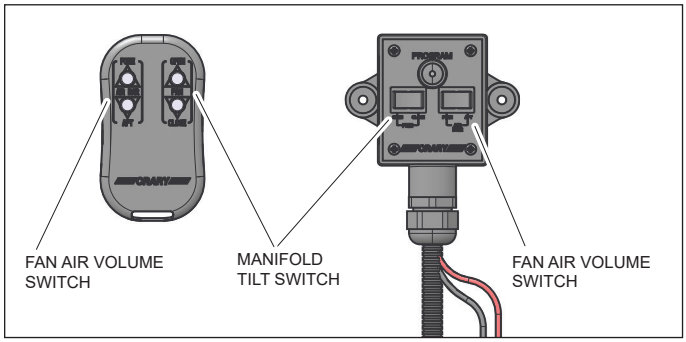


Figure 68: Manifold tilt and fan air volume switch

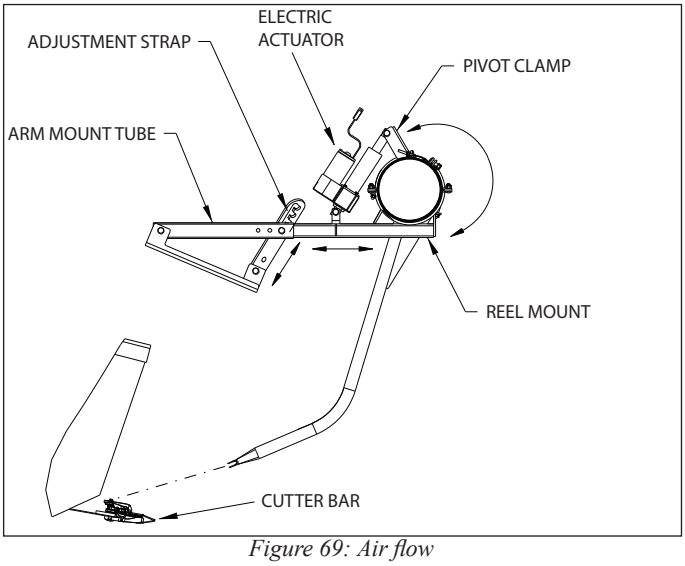


Figure 69: Air flow

REEL LIFT/FORE AND AFT ADJUSTMENT:

Consult your owner/operator's manual that came with your header.

NOTE

This remote has been programmed from the factory and is ready for use. The following programming instructions are provided in the event you need to reprogram your remote.

PROGRAMMING INSTRUCTIONS:

Each transmitter has its own unique internal address that is transmitted whenever a button is pressed. The receiver needs to be programmed to respond only to transmitters it is intended to operate with. The following steps configure the receiver to operate with a particular transmitter(s). Up to twelve transmitters can be programmed to one receiver. Prior to programming the receiver, verify that the receiver is connected to the input power. When the receiver enters program mode, all previous transmitter addresses that were programmed will be erased from the receiver's memory.

1. Locate the push-button labeled "PROGRAM" on the receiver. Press and hold this button until the red LED next to the program button illuminates (approximately 2 seconds). The receiver is now in the transmitter program mode. Release the button. At this point all previously programmed transmitter addresses are erased from the receiver's memory.
2. Press and release any button on the transmitter and verify that the red LED on the receiver extinguishes and then illuminates (blinks once).
3. Repeat previous step for additional transmitters that will operate with this particular receiver. The red LED on the receiver will extinguish and illuminate one time for the first transmitter being programmed, twice for the second, three times for the third, four times for the fourth etc. The receiver will not respond to transmitters that have already been programmed.
4. After 5 seconds of no switch being pressed on the transmitter(s) the receiver will return to normal operation. The red LED on the receiver will blink rapidly, then extinguish. The receiver is now in the normal mode of operation. This completes the programming instructions. The receiver will retain all of its programming even when power is removed

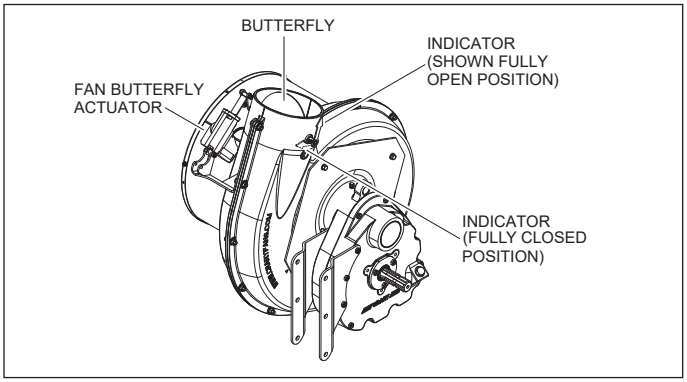


Figure 70: Fan butterfly actuator

5.7 OPERATING HINTS

The following are recommended adjustments the operator can make based on crop conditions. Any adjustments that involve the operator leaving the combine cab should heed the warning instructions listed below.

WARNING

Place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop, then properly block machine before servicing, adjusting, repairing, or unplugging.

1. Increase air to maximum.
2. Move tilt control until air is directed at back of sickle bar with reel feeding properly.
3. Gradually reduce air until crop is no longer flowing smoothly across sickle.
4. Gradually increase air until smooth crop flow across the sickle is achieved.
5. **Remember: more air uses more horsepower.**
6. Gradually adjust air position fore and aft until optimum crop flow is achieved.
7. Gradually reduce air further until minimum air is used to maintain crop flow.

DO USE AIR TO FEED CROP ACROSS THE SICKLE.

DO ADJUST AIR TUBE ANGLE TO MAXIMIZE CROP FLOW ACROSS THE SICKLE.

DO USE THE REEL TO BRING THE CROP TO THE HEADER.

DO MAKE ADJUSTMENTS GRADUALLY.

DO VERIFY PROPER AIR POSITION WHENEVER ADJUSTING REEL HEIGHT OR FORE AND AFT POSITION.

DO SHUT OFF AIR IMMEDIATELY IF THE AIR HOSE SHOULD FAIL. FAILURE TO DO SO MAY RESULT IN GEARBOX FAILURE.

• •

DO FOLLOW TROUBLESHOOTING GUIDE ONE STEP AT A TIME.

DO NOT USE MORE AIR THAN NEEDED.

DO NOT OPERATE WITH THE AIR TUBES ON THE GROUND.

DO NOT OPERATE WITH PLUGGED AIR TUBES.

DO NOT OPERATE WITH AIR HOSE DISCONNECTED.

5.8 TRANSPORTING

The CWS is designed to be easily and conveniently moved from location to location. When transporting the machine, review and follow these safety instructions:

1. Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
2. It is the responsibility to the owner to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility.
3. See the owner's manual that came with your combine and header for proper transportation guidelines.

5.9 STORAGE

After the season's use, the machine should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at the start of next season. To insure a long, trouble free life, this procedure should be followed when preparing the unit for storage.

1. Clear the area of bystanders, especially small children.
2. Thoroughly wash the entire machine using a pressure washer to remove all dirt, mud, debris or residue.
3. Inspect the following components:

   A. PTO Driveline Components

   - Check the condition and operation of the friction disc torque limiter (slip clutch).
   - Release slip clutch pressure.
   - Store in a dry place.

   B. Electrical System

   - Check the wiring harness and all wiring components for damaged or worn areas.
   - Check for cracked or worn insulation.
   - Replace any components that have come in contact with moving parts and re-route to prevent damage in the future.

   C. CWS Components

   - Air Tubes: repair or replace bent or damaged air tubes.

   D. Fan Components

   - Visually inspect fan rotor for wear or buildup.
   - Check condition of the rotary screen bearings.
4. Make a list of all parts needed for repairs and order them immediately. Repairs can then be done when time permits and prevent unnecessary down time at the start of next season.
5. Lubricate all grease points to remove any water residue from the washing and prevent rusting during the storage period. Rotate all moving parts to distribute lubricant to all surfaces.
6. Change gearbox oil.
7. Apply a light coat of grease on the shafts.
8. Check the cutterbar, reel area and drives for entangled material.
9. Touch up all paint nicks and scratches to prevent rusting.
10. Move the machine to its storage area.
11. Select an area that is dry, level, and free of debris.
12. If the machine cannot be stored inside, cover with a waterproof tarpaulin and tie securely in place.
13. Store out of the way of human activity.
14. Do not allow children to play on or around stored unit.

REMOVING FROM STORAGE

When removing from storage and preparing to use, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Clean off accumulated trash and dirt.
3. Check routing and securing of all hydraulic lines and wiring harness; adjust as required.
4. Rotate all components and systems by hand to see that none are seized. Loosen any seized components with penetrating oil before starting.
5. Retighten any loose bolts to their specified torque.
6. Lubricate all grease points and shaft surfaces.
7. Check for excessive wear on all moving parts.
8. Tighten all hydraulic connections and mounts; replace o-rings, fittings, or connectors subject to leaking.
9. Review and follow all items in the Pre-Operation and Machine Break-In sections before starting (Sections 5.3 & 5.4).
10. Check slip clutch for proper adjustment using run-in method from Section 5.2.2.
11. Install all safety shields and review precautions with operators and other personnel involved in the operation.

6 Section SERVICE & MAINTENANCE

6.1 MAINTENANCE CHECKLIST

Along with a servicing interval, perform a visual inspection. Maintenance personnel can often detect potential problems from any unusual sounds made by such components as shafts, bearings and drives.

These service recommendations are based on normal operating conditions. Severe or unusual conditions may require more frequent attention. Copy this page to continue record.

ACTION CODE: √ = CHECK OR INSPECT CL = CLEAN
L = LUBRICATE C = CHANGE

	HOURS										
	SERVICED BY										
	DAILY										
L	PTO CROSS JOURNAL ZERKS										
L	BEARINGS										
√	GEARBOX OIL LEVEL										
√	BELT TENSION										
√	DEBRIS BUILDUP										
	16 HOURS										
L	PTO INNER TUBE										
	40 HOURS										
L	PTO SHIELD RETAINING BEARING										
L	PTO DISCONNECT MECHANISM										
√	FAN HOUSING AND AIRWAY										
√	FAN ROTOR										
√	BELT, IDLER, PULLEY ALIGNMENT AND CONDITION										
	YEARLY										
C	GEARBOX LUBE										
√	CONDITION OF FRICTION DISC TORQUE LIMITER (SLIP CLUTCH)										
√	INSPECT IMPELLER FOR WEAR										
√	HARDWARE										
√	DEBRIS IN MANIFOLD										

6.2 FLUIDS AND LUBRICANTS

GREASE: Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance meeting or exceeding the NLGI #2 rating for all requirements. Also acceptable is an SAE multi-purpose lithium based grease.

GEARBOX LUBE: Use Mobilube SHC 75W-90 synthetic gear lube or equivalent with the following specifications:

API Service GL-5/MT.1
MIL-L-2105D
MACK GO-J PLUS
SAE J2360
Capacity: 28 ounces (0.8 liters)

STORING LUBRICANTS: Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

6.3 GREASING

1. Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.
2. Use a hand-held grease gun for all greasing.
3. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
4. Replace and repair broken fittings immediately.
5. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

6.4 GEARBOX OIL

CHECKING THE GEARBOX OIL LEVEL

Check the gearbox oil level daily. Check more frequently if leaks exist around any of the plugs or shaft seals.

When checking the oil on the gearbox be sure that the base of the gearbox is level.

WARNING

Always clean the vent plug if any leaks are noticed around shaft seals.

CHANGING THE GEARBOX OIL

See Figure 71 for the location of oil fill and drain plugs. Every 500 operating hours or annually, whichever comes first, the oil should be replaced. When changing the oil, follow this procedure:

1. Place a container under the gearbox.
2. Remove the drain plug. Allow 10 minutes to drain.
3. Replace the drain plug.
4. Fill the gearbox oil to recommended level through the top fill plug.
5. Check that the air passage through the vent plug is open.
6. Dispose of the used oil in an environmentally safe manner.

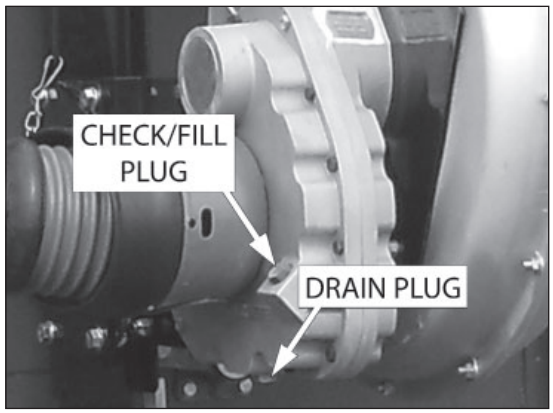


Figure 71: Gearbox oil plugs (Series II)

CHANGING THE GEARBOX SEALS

1. When changing the gearbox seals, use an 1/8” drill bit and drill a hole in the seal.
2. Use a hook to pop seal out.
3. Replace with new seal.

6.5 BELT DRIVE LUBRICATION

DAILY

Lubricate Belt Drive grease locations. Make sure grease purges through all four bearings (Figure 72).

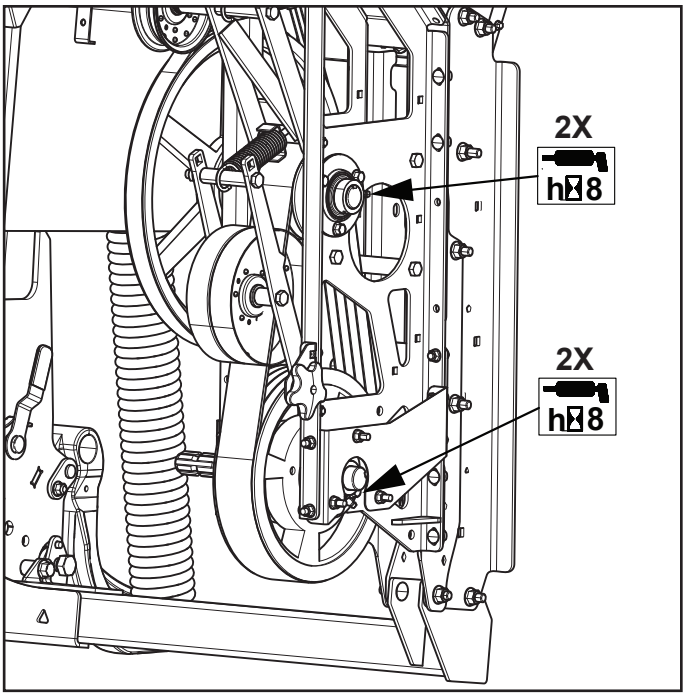


Figure 72: Belt drive grease locations

6.6 PTO LUBRICATION

DAILY

Lubricate PTO cross journals. Make sure grease purges through all four bearings.

EVERY 16 HOURS

Lubricate PTO inner tubes. Telescoping members must have lubrication to operate successfully. Telescoping members without fittings should be pulled apart and grease should be added manually with a brush.

EVERY 40 HOURS

Lubricate the PTO shield retaining bearing (Figure 73). Molded nipples on the guard near each guard bearing are intended as grease fittings and should be lubricated every 40 hours of operation.

Lubricate the PTO disconnect mechanism.

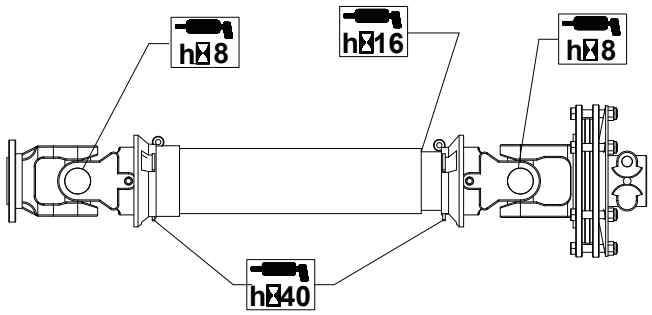


Figure 73: Lubricate PTO cross journals

6.7 FAN HOUSING AND AIR HOSE

1. Every 40 hours the fan housing, blades and airway (Figure 74 and Figure 75) should be checked for wear.
2. Failure to replace worn rotor may reduce fan output and lead to failure and damage of system components.

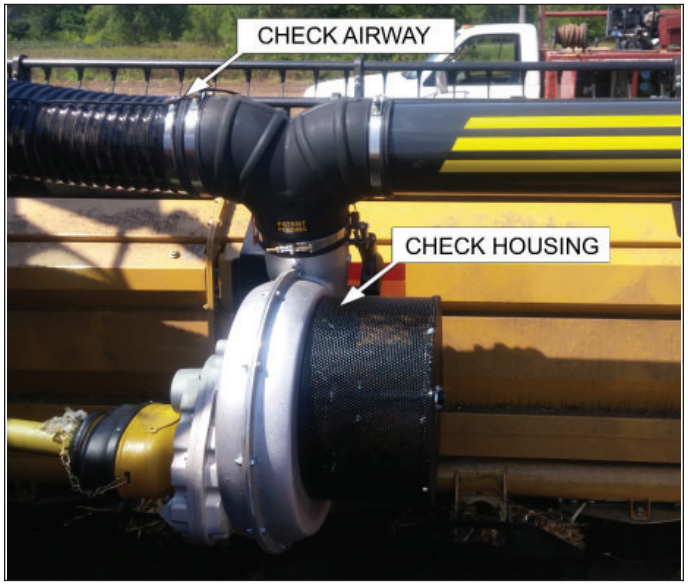


Figure 74: Checking fan housing and air hose

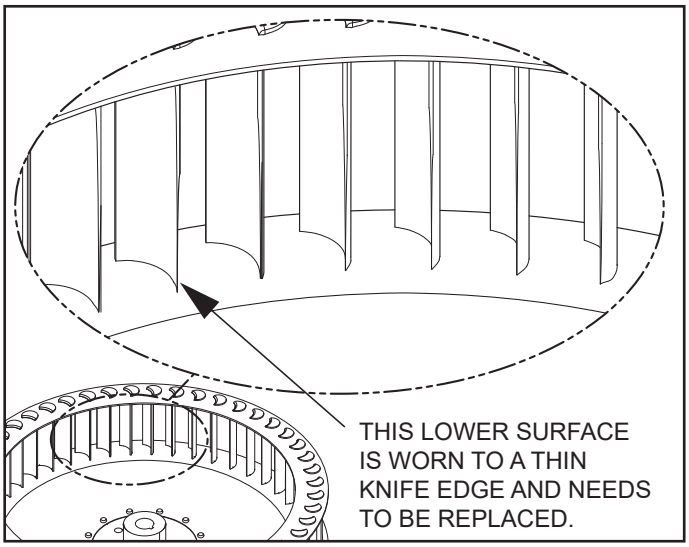


Figure 75: Critically worn impeller blades

6.8 SLIP CLUTCH MAINTENANCE

1. Disconnect the PTO driveline from the implement.
2. Position the driveline on a workbench.
3. Loosen the eight center locknuts.
4. Remove bolts and disassemble all components.
5. Check the condition of all parts, especially the friction discs (Figure 76).
6. If replacement parts are needed, consult your local authorized Crary dealer.
7. Reassemble all components.
8. Tighten nuts following an alternating cross pattern until the clutch slips momentarily upon initial startup and then continues to operate normally.

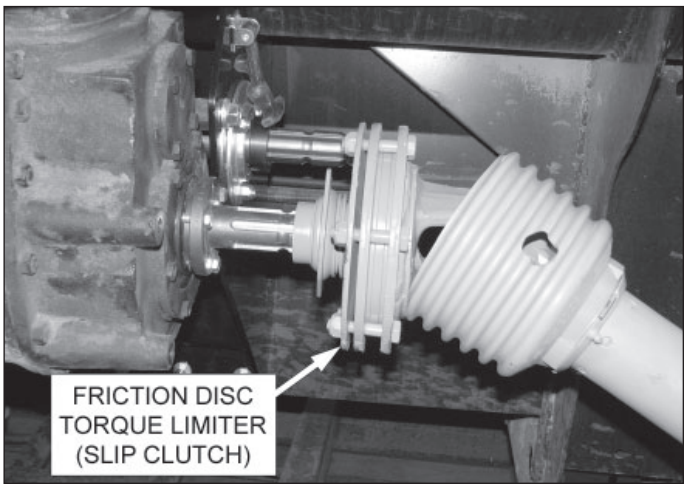


Figure 76: Friction disc torque limiter (slip clutch)

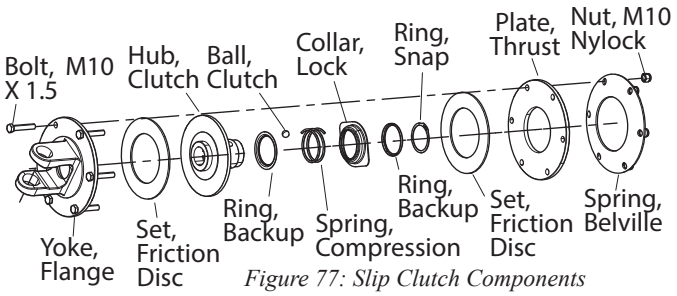


Figure 77: Slip Clutch Components

7 Section TROUBLESHOOTING

In the following section, we have listed many of the problems, causes and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local Crary dealer. Before you call, please have this manual and the serial number from your machine ready.

BEFORE YOU CALL

Please have the following information available:

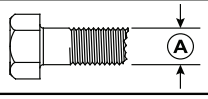
Serial # _____

PROBLEM	POSSIBLE CAUSE	SOLUTION
Shattering of grain ahead of cutter bar	Reel speed not coordinated with ground speed, causing excessive agitation before crop is cut.	Adjust reel speed to coordinate with ground speed so reel will move crop evenly.
	Reel is positioned too low.	Raise reel.
	Ground speed too fast for conditions of crop.	Slow ground speed.
Cut crop building up and falling from front of or behind the cutter bar or loss of grain heads at cutter bar.	Reel not adjusted low enough for proper delivery of cut crop to auger.	Set reel low enough to sweep material from cutter bar.
	Insufficient ledge for crop travel.	Extend rigid cutter bar.
	Auger clearance too high from platform bottom.	Adjust outer ends of auger to 1/2" (13mm) clearance of platform bottom and check finger clearance.
	Insufficient airflow or misdirection of airflow from manifold to clean off cutter bar.	Adjust manifold so that air flow is directed more at cutter bar to keep it clean.
		Clean debris from rotary screen.
		Check for and clear obstruction from flex hose or manifold or drop tubes.
		Check butterfly position and open to allow more air flow.
		Check fan rpm, adjust combine shaft speed and check for proper gear box ratio for combine.
	Reel speed too slow.	Increase speed of reel.
	Reel is positioned too high.	Move reel back and then down.
	Build up of grain on cutterbar.	Lower height of reel and set fore-and-aft position as close as possible to cutter bar and auger.
Uneven or bunched feeding of crop to cylinder.	Feeder chain carrying straw back around and disrupting crop flow to the cylinder.	Extend feederhouse stripper down to stop straw from filtering back out.
	Crop "tailing in" to the auger (heads not feeding first).	Rotate manifold so that air flow is directed higher on the crop.
	Cutter bar not at recommended speed.	Check basic speed of combine (see combine owner's manual).
Gear box leaking or overheating.	Incorrect oil type or level.	Check level and replace if necessary.
	Breather plugged.	Remove breather, clean and reinstall.
	Seals are leaking.	Install new seal kit.
Rotary screen plugs.	Debris is pinched between the base and the screen, stopping the rotor.	Adjust air base closer to the screen.
	Screen cleaner not adjusted properly.	Adjust the screen cleaner to revolve close to the screen, but not touching it.
	Needs Rotary Screen Wrap.	Contact Crary Dealer for Rotary Screen Wrap (P/N 25592-12). This wrap will prevent debris from becoming lodged between the base and the rotary screen.
V-Belts slipping	Loose Belts	Retension belts (See operation Section 5.5)

Section 8 SPECIFICATIONS

CHECKING BOLT TORQUE:

The table shown below is for reference purposes only and its use by anyone is entirely voluntary, unless otherwise noted. Reliance on its contents for any purpose is at the sole risk of that person. Crary Co. is not responsible for any loss claim or damage arising therefrom. In developing these tables, Crary has made a determined effort to present the contents accurately.

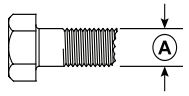
SAE Grade and Head Markings	SAE 2	SAE 5	SAE 8	BOLT DIAMETER
				

NOTE

The 8 3/8” t-bolt clamps should be torqued to 8 ft lbs.

The 8 11/16” t-bolt clamps should be torqued to 12 ft lbs.

ENGLISH						
BOLT DIAMETER	BOLT TORQUE *					
	SAE 2		SAE 5		SAE 8	
	N.m	Ft-lb.	N.m	Ft-lb.	N.m	Ft-lb.
1/4”	7.5	5.5	11	8	16	12
5/16”	15	11	23	17	34	25
3/8”	27	20	41	30	61	45
7/16”	41	30	68	50	95	70
1/2”	68	50	102	75	149	110
9/16”	97	70	149	110	203	150
5/8”	122	90	203	150	312	230
3/4”	217	160	353	260	515	380
7/8”	230	170	542	400	814	600
1”	298	220	786	580	1220	900
1-1/8”	407	300	1085	800	1736	1280
1-1/4”	570	420	2631	1940	2468	1820

METRIC Grade and Head Markings	4.8	8.8	10.9	12.9	BOLT DIAMETER
					

METRIC								
BOLT DIAMETER	BOLT TORQUE *							
	4.8		8.8		10.9		12.9	
	N.m	Ft-lb.	N.m	Ft-lb.	N.m	Ft-lb.	N.m	Ft-lb.
M3	0.5	0.4	-	-	-	-	-	-
M4	3	2.2	-	-	-	-	-	-
M5	5	4	-	-	-	-	-	-
M6	6	4.5	11	8.5	17	12	19	14.5
M8	15	11	28	20	40	30	47	35
M10	29	21	55	40	80	60	95	70
M12	50	37	95	70	140	105	165	120
M14	80	60	150	110	225	165	260	190
M16	125	92	240	175	350	255	400	300
M18	175	125	330	250	475	350	560	410
M20	240	180	475	350	675	500	800	580
M22	330	250	650	475	925	675	1075	800
M24	425	310	825	600	1150	850	1350	1000
M27	625	450	1200	875	1700	1250	2000	1500

**Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.*

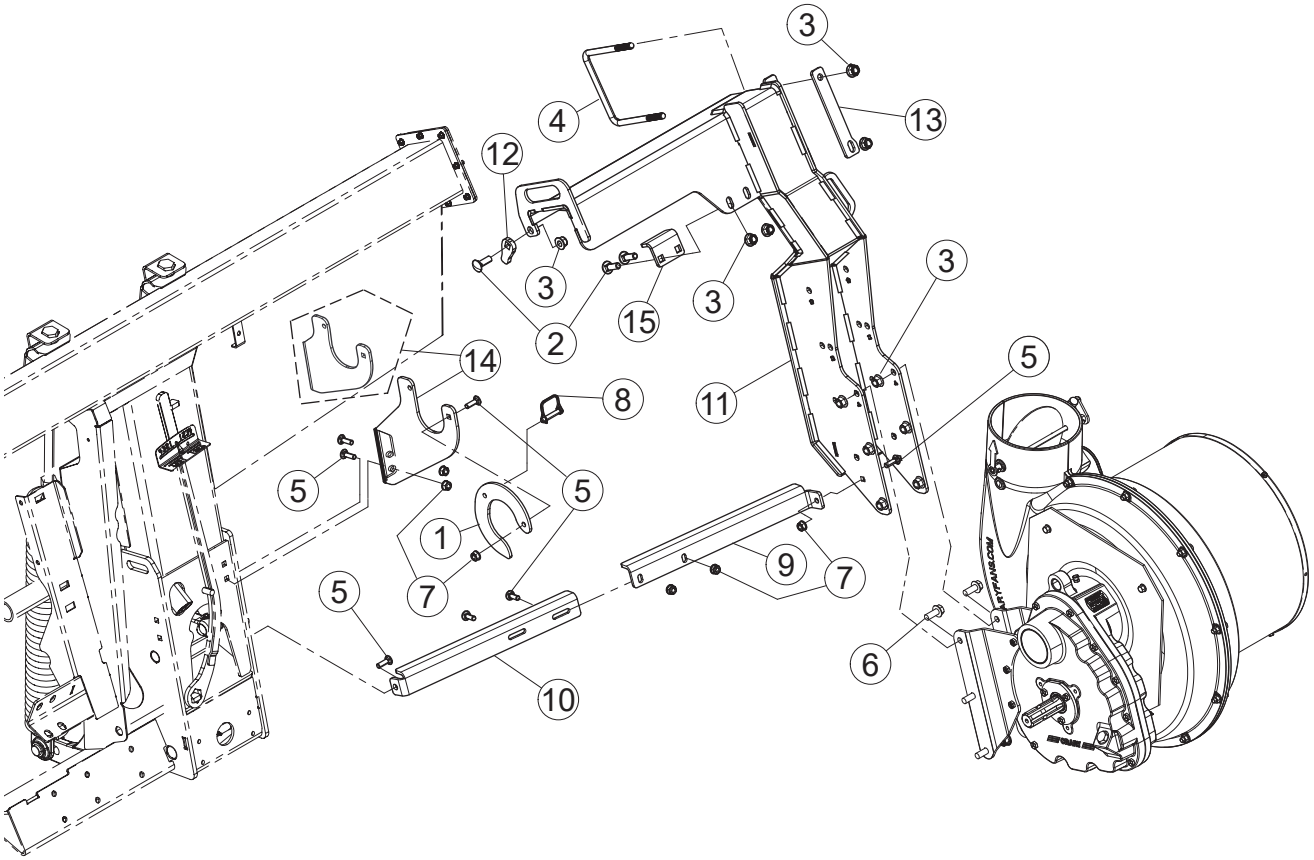
**Torque value for bolts and capscrews are identified by their head markings.*

CRARY

PARTS CATALOG

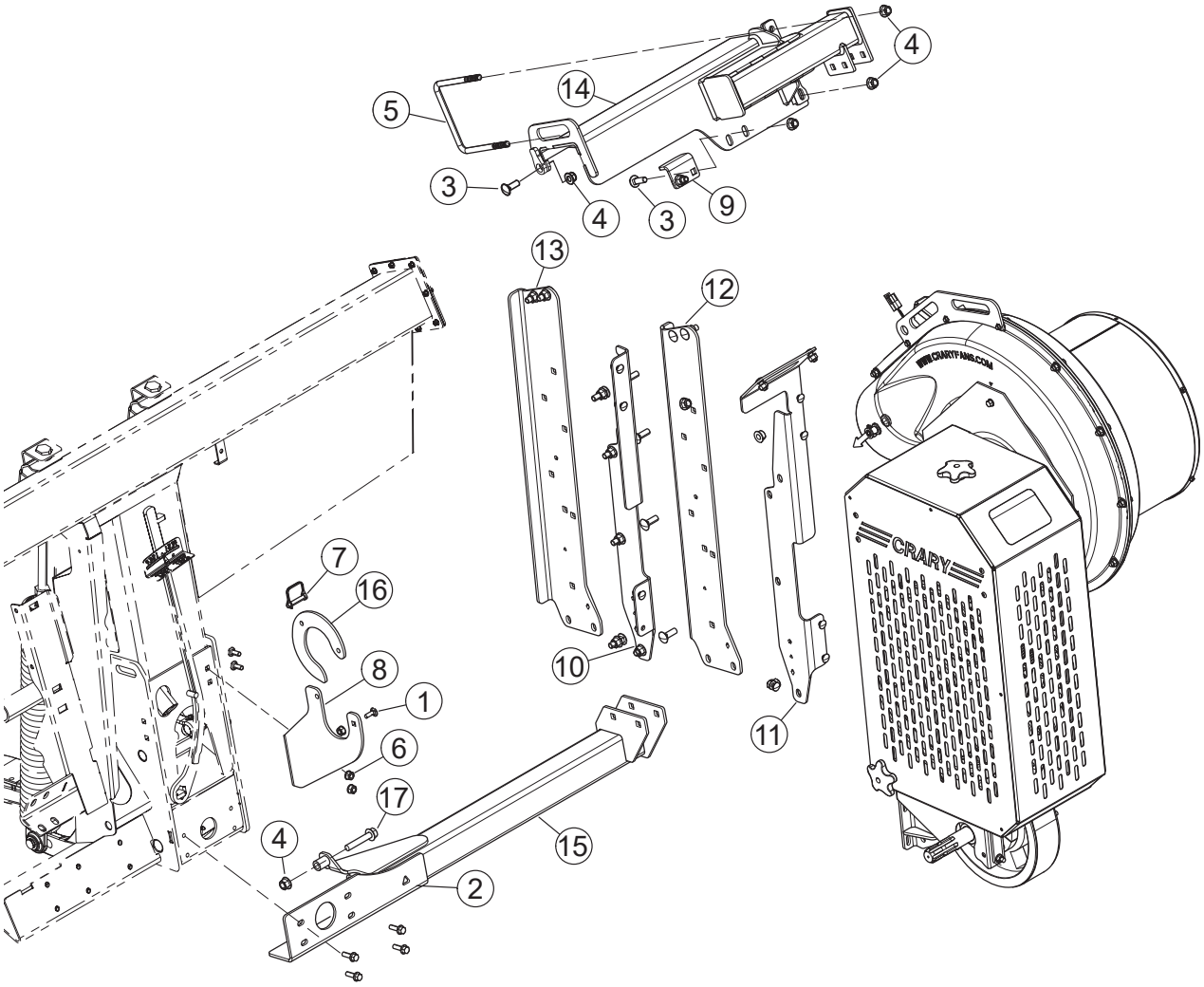
CIH/MacDon Headers

CIH 2162
FD1
FD70
FD75

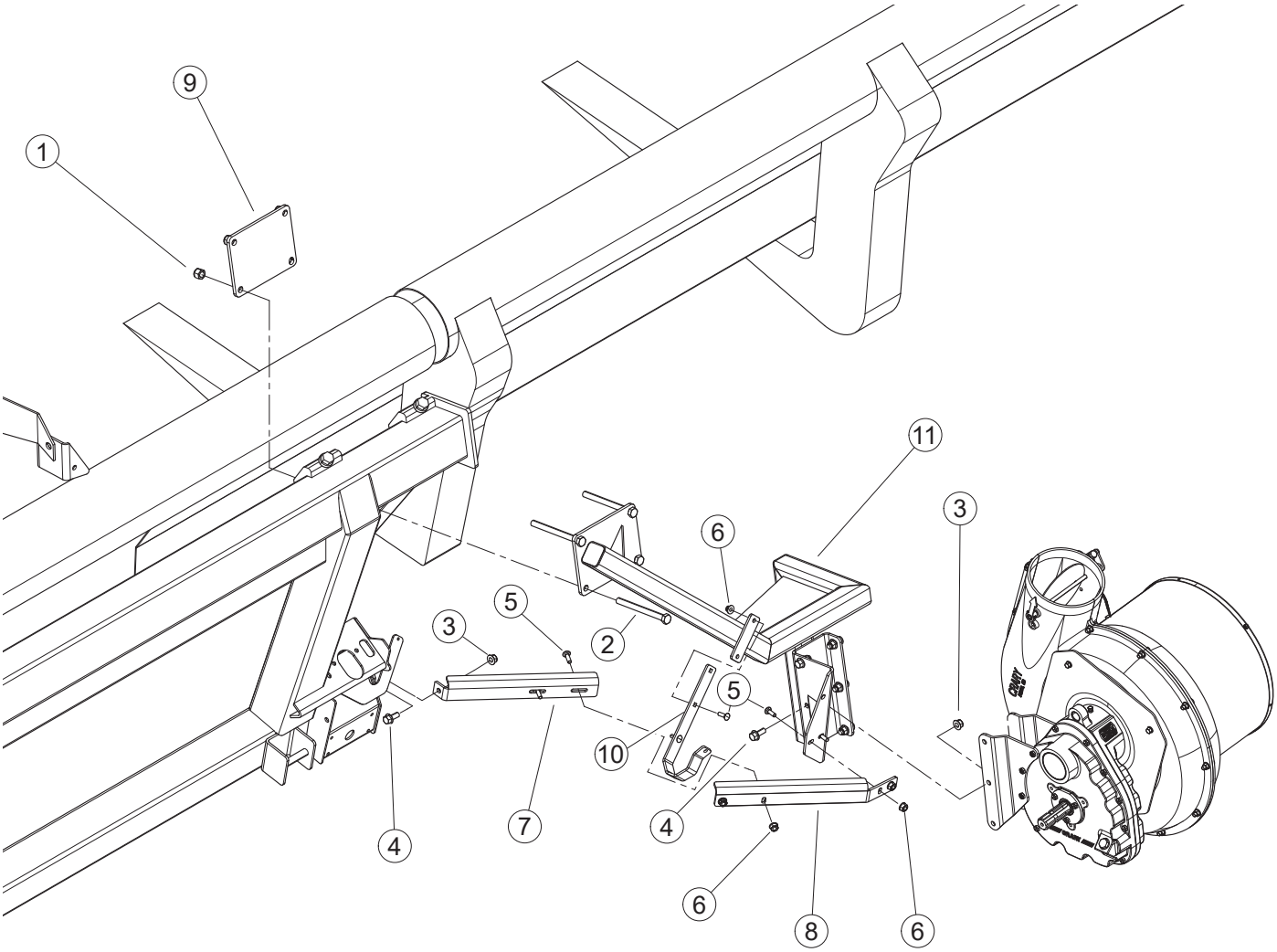


KIT, SERIES 2 GEARBOX MOUNT (51640)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	54450-12	PLATE, PTO LOCK	1
2	15157	BOLT, 1/2 X 1-1/2 CARRIAGE	3
3	15162-00	NUT, 1/2-13 NYLOCK-FLANGE	11
4	15341-00	U-BOLT, 1/2-13 X 6-1/2 X 6	1
5	15378	BOLT, 3/8-16 X 1-1/4 CARRIAGE	7
6	15612	BOLT, 1/2 X 1-1/4 SERRATED FLANGE	6
7	15905-00	NUT, 3/8-16 NYLOCK FLANGE	7
8	17879	PIN, 3/8 X 1-1/2 SNAP	1
9	51638-12	BRACKET, MOUNT SUPPORT - OUTER	1
10	51639-12	BRACKET, MOUNT SUPPORT - INNER	1
11	51641-12	WELDMENT, SERIES II GEARBOX MOUNT	1
12	51646-12	PLATE, SPACER	1
13	51647-12	PLATE, REINFORCEMENT	1
14	51648-12	BRACKET, PTO HOLDER	1
	51645-12	BRACKET, PTO HOLDER (CLAAS - OPTIONAL)	
15	51649-12	BRACKET, ADJUSTMENT	1
	31716-00	THREADLOCKER, MEDIUM STRENGTH, 10ML (NOT SHOWN)	1

BELT DRIVE MOUNT KIT	FD1 HEADERS	

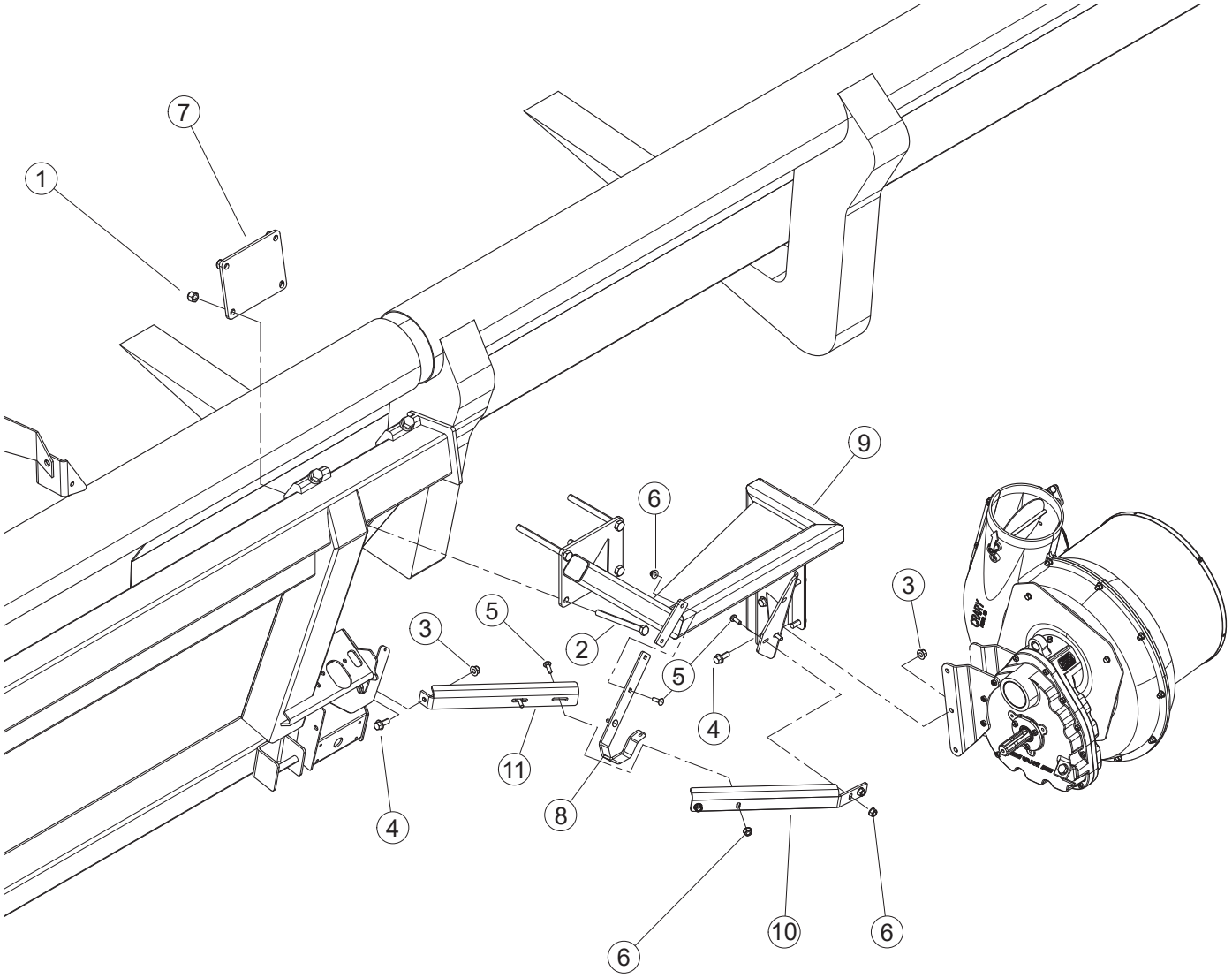


KIT, BELT DRIVE MOUNT (52860)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15057	BOLT, CARR 3/8-16x1 GR5 CMS F1 5ANS	13
2	15109-00	BOLT, 3/8 X 1-1/4 FLANGE NC	5
3	15157	BOLT, 1/2”X1-1/2” GR5 ZP CRG	17
4	15162-00	NUT, 1/2-13 NYLOCK FLANGE	19
5	15341-00	U-BOLT, 1/2-13 X 6.5 X 6 CMS F1 5ANS	1
6	15905-00	NUT, 3/8-16 NYLOCK FLANGE	14
7	17879	PIN, 3/8 X 1-1/2 LYNCH CMS F1 5ANS	1
8	51648-12	BRACKET, PTO HOLDER	1
9	51649-12	BRACKET, ADJUSTMENT	1
10	52836-12	BRACKET, MOUNT - LH	1
11	52837-12	BRACKET, MOUNT - RH	1
12	52857-12	BRACKET, TUBE CONNECTOR RH	1
13	52858-12	BRACKET, TUBE CONNECTOR LH	1
14	52859-12	WELDMENT, MOUNT UPPER	1
15	52861-12	WELDMENT, TUBE BOTTOM	1
16	54450-12	PLATE, PTO LOCK	1
17	15196-00	BOLT, 1/2-13 X 2-3/4, FLANGE, GR5, CZP	1
	31716-00	THREADLOCKER, MEDIUM STRENGTH, 10ML (NOT SHOWN)	1

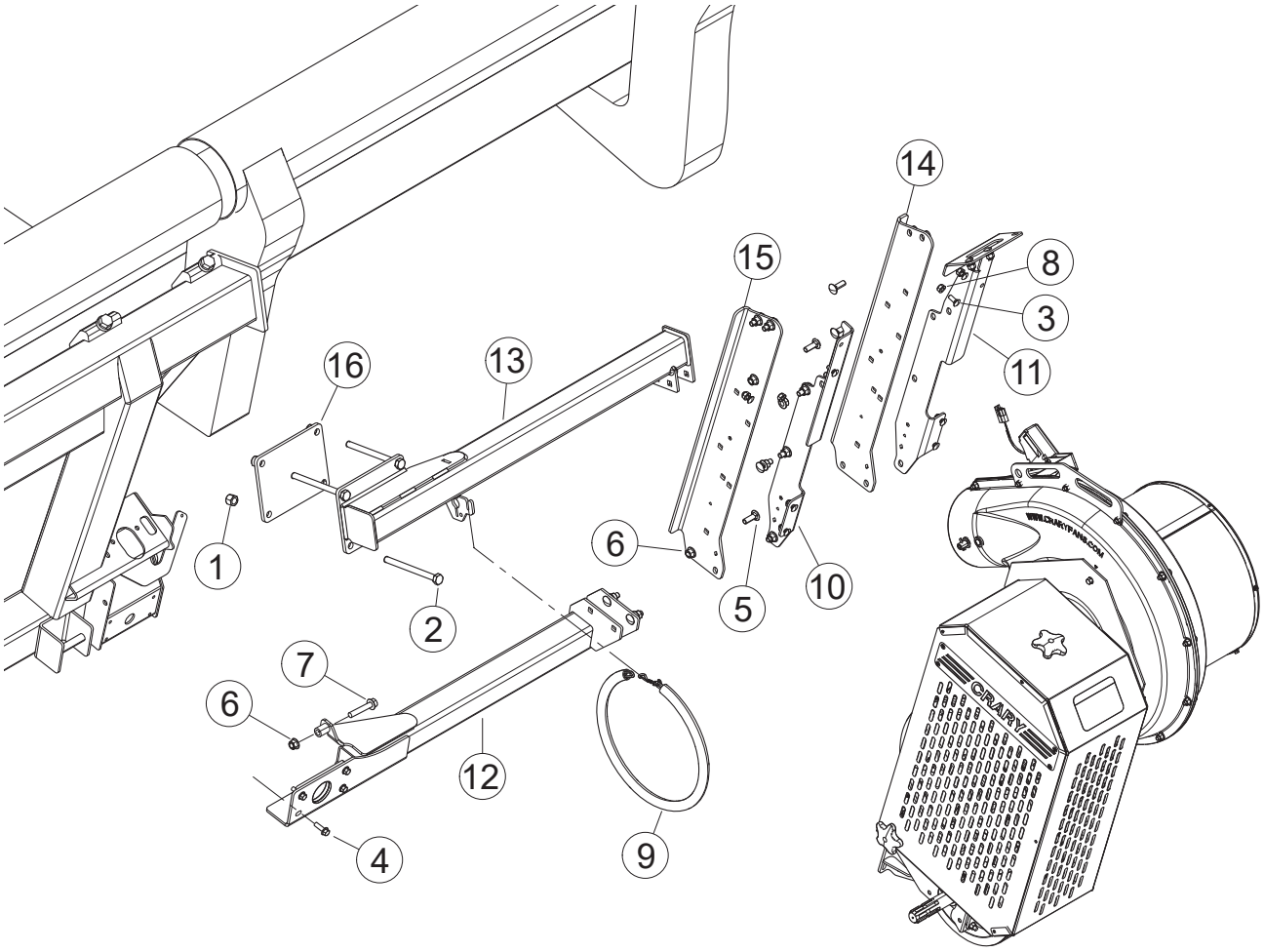


KIT, SERIES 2 GEARBOX MOUNT (54563)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	0101-0102-00	NUT, 5/8-11 UNC NYLOCK	4
2	15024	BOLT, 5/8-11 X 7 GR5 HEX ZP	4
3	15162-00	NUT, 1/2-13 NYLOCK FLANGE	7
4	15232-00	BOLT, 1/2 X 1-1/4 FLANGE NC	7
5	15378	BOLT, 3/8 X 1-1/4 CARRIAGE	6
6	15905-00	NUT, 3/8-16 NYLOCK FLANGE	6
7	53668-12	BRACKET, LOWER SUPPORT	1
8	53669-12	BRACKET, MOUNT SUPPORT	1
9	53670-12	PLATE, GEARBOX MOUNT	1
10	53683-12	BRACKET, PTO HOLDER	1
11	54562-12	WELDMENT, SERIES 2 GEARBOX MOUNT	1
	31716-00	THREADLOCKER, MEDIUM STRENGTH, 10ML (NOT SHOWN)	1

GEARBOX MOUNT KIT | FD70 & FD75 HEADERS-CLAAS

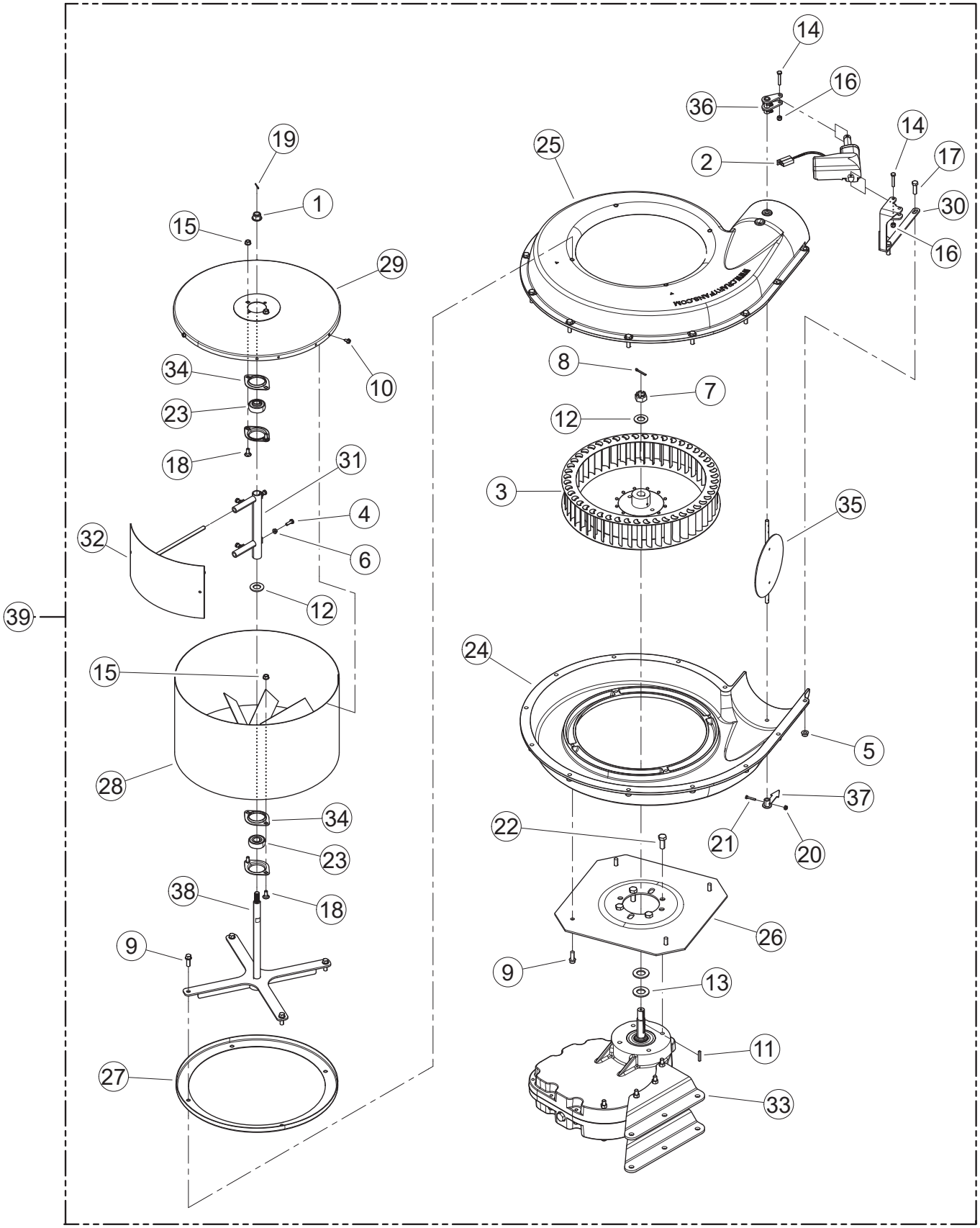


KIT, SERIES 2 GEARBOX MOUNT (54763)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	0101-0102-00	NUT, 5/8-11 UNC NYLOCK	4
2	15024	BOLT, 5/8-11 X 7 GR5 HEX ZP	4
3	15162-00	NUT, 1/2-13 NYLOCK FLANGE	7
4	15232-00	BOLT, 1/2 X 1-1/4 FLANGE NC	7
5	15378	BOLT, 3/8 X 1-1/4 CARRIAGE	6
6	15905-00	NUT, 3/8-16 NYLOCK FLANGE	6
7	53670-12	PLATE, GEARBOX MOUNT	1
8	53683-12	BRACKET, PTO HOLDER	1
9	54761-12	WELDMENT, SERIES 2 GEARBOX MOUNT	1
10	54871-12	BRACKET,HIGH MOUNT SUPPORT,UPPER	1
11	54872-12	BRACKET,HIGH MOUNT SUPPORT,LOWER	1
	31716-00	THREADLOCKER, MEDIUM STRENGTH, 10ML (NOT SHOWN)	1



KIT, BELT DRIVE MOUNT (52850)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	0101-0102-00	NUT, 5/8-11 UNC NYLOCK	4
2	15024	BOLT, 5/8-11 X 7 GR5 HEX ZP	4
3	15057	BOLT, 3/8-16 X 1 CRG	10
4	15109-00	BOLT, 3/8 X1-1/4 FLANGE NC	4
5	15157	BOLT, 1/2 X 1-1/2 CRG	14
6	15162-00	NUT, 1/2-13 NYLOCK FLANGE	15
7	15196-00	BOLT, 1/2-13 X 2-3/4, FLANGE, GR5, CZP	1
8	15905-00	NUT, 3/8-16 NYLOCK FLANGE	10
9	52797-00	ASSEMBLY, CHAIN - DRIVELINE HOLDER	1
10	52836-12	BRACKET, MOUNT - LH	1
11	52837-12	BRACKET, MOUNT - RH	1
12	52839-12	WELDMENT, TUBE BOTTOM	1
13	52841-12	WELDMENT, TUBE TOP	1
14	52857-12	BRACKET, TUBE CONNECTOR RH	1
15	52858-12	BRACKET, TUBE CONNECTOR LH	1
16	53670-12	PLATE, MOUNT	1
	31716-00	THREADLOCKER, MEDIUM STRENGTH, 10ML (NOT SHOWN)	1

GEARBOX/FAN	ALL MODELS	

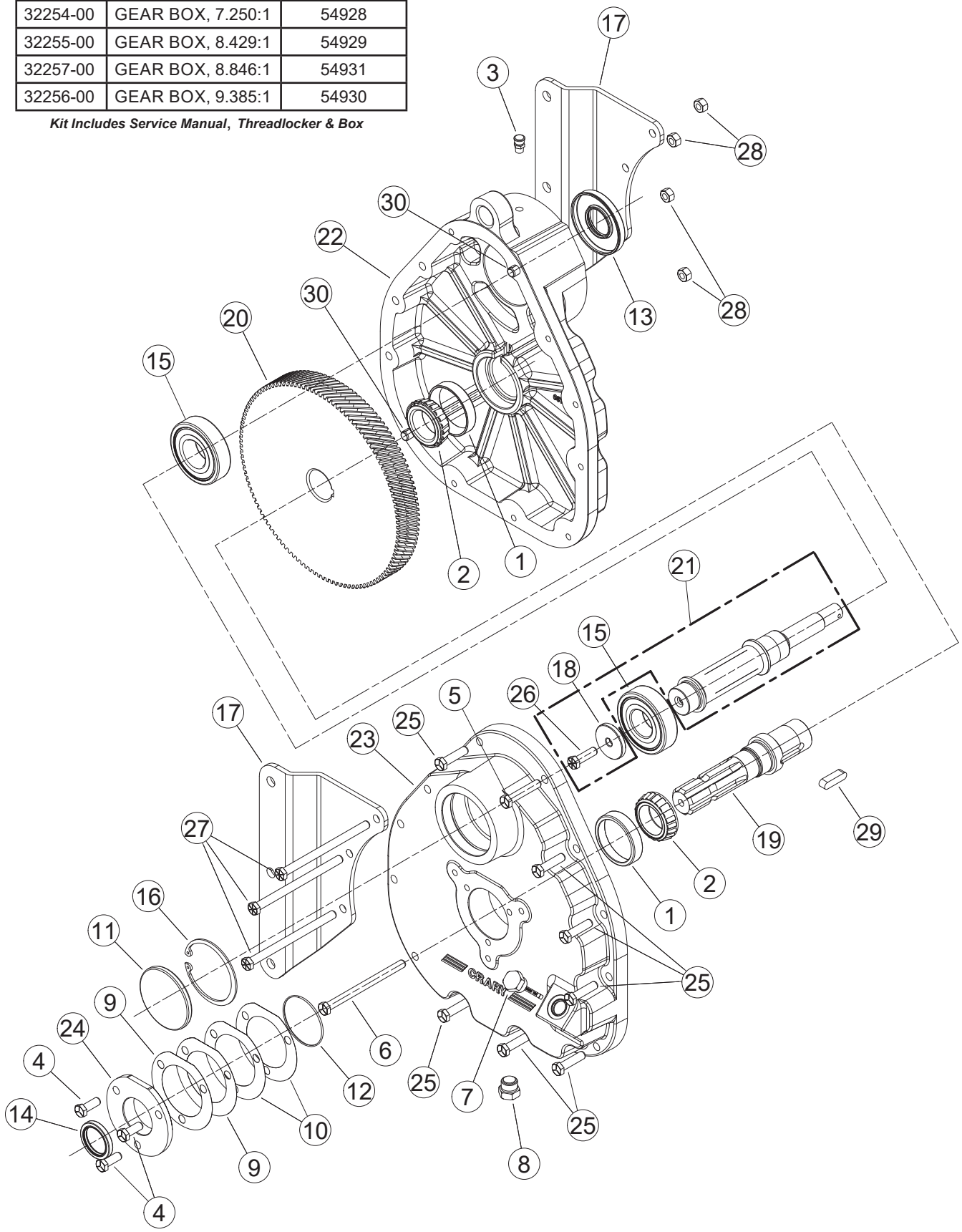


ASSEMBLY, SERIES 2 GEARBOX/FAN			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15162-00	NUT, 1/2-13 UNC NYLOCK-FLANGE	1
2	13460-00	ACTUATOR, 2" STROKE ELECTRIC	1
3	33430-00	ROTOR, FAN, 17.4,3.2, CW,S,7/8,FC,LCP	1
4	15001	BOLT, 1/4 X 3/4 HEX GR5 ZP	4
5	15051	NUT, 3/8 SERR FLANGE NC ZP	12
6	15053	NUT, 1/4-20 SERR FLANGE NC ZP	4
7	15055	NUT, 3/4 NF CASTLE ZP	1
8	15068	PIN, 5/32 X 1-1/4 COTTER ZP	1
9	15076	SCREW, 3/8-16 X 1 LG THD CUTT ZP	8
10	15095	SCREW, #14 X 1/2 HWH T-AB ZP	3
11	7022	KEY, 3/16 SQUARE X 1-1/4 LONG PLAIN	1
12	15098	WASHER, 3/4 SAE FLAT ZP	2
13	15099	WASHER,7/8 SAE FLAT ZP	2
14	15342	BOLT, 1/4 X 1-1/2 HEX GR5 ZP	2
15	15351	NUT, 5/16 SERR FLANGE NC ZP	4
16	15355	NUT, 1/4 NE NYLOCK ZP	2
17	15364	BOLT, 3/8 X 1-1/4 HEX GR5 ZP	12
18	15367	BOLT, 5/16 X 3/4 CRG GR5 NC ZP	4
19	15380	PIN, 3/32 X 3/4 COTTER	1
20	15397	NUT, 10/24 NYLOCK TYPE NM ZP	3
21	15860-00	BOLT, #10-24 X 1 HEX SOC ZP	3
22	15966-00	BOLT, 1/2-13 X 1.25 HEX GR5 ZP W/PATCH	4
23	18998-00	BEARING, 3/4" ROUND INSERT	2
24	21193	CASTING, FAN,8,P,D,B,N,RH,N,N	1
25	21194	CASTING, FAN,8,P,D,B,N,LH,N,N	1
26	21445-12	PLATE, HUB/MOTOR MOUNT (8"B-PILOT)	1
27	22655-12	BASE, 8" ROTARY SCREEN	1
28	23161	WELDMENT, SCREEN/BLADE - RH	1
29	23163	WELDMENT, SCREEN CAP	1
30	50771-12	WELDMENT, ACTUATOR MOUNT	1
31	29919-12	WELDMENT, PIVOT	1
32	29921-12	WELDMENT, 8" FAN SCREEN CLEANER	1
33	32258-00	GEARBOX, HORIZONTAL SHAFT (1/6.647)	1
	32254-00	GEARBOX, HORIZONTAL SHAFT (1/7.250)	
	32255-00	GEARBOX, HORIZONTAL SHAFT (1/8.429)	
	32257-00	GEARBOX, HORIZONTAL SHAFT (1/8.846)	
	32256-00	GEARBOX, HORIZONTAL SHAFT (1/9.385)	
34	36008-00	FLANGETTE, 47MM 2 HOLE	4
35	53744-00	WELDMENT, BUTTERFLY SHAFT (8")	1
36	53747-12	WELDMENT, VALVE ACTUATOR (8"RH/LH)	1
37	53750-35	WELDMENT, INDICATOR (8")	1
38	54891-12	WELDMENT, 8" ROTARY SCREEN THREADED BASE STRAP	1
39	54507-00	ASSEMBLY, SERIES II GEARBOX/FAN (1/6.647)	1
	54503-00	ASSEMBLY, SERIES II GEARBOX/FAN (1/7.250)	
	54504-00	ASSEMBLY, SERIES II GEARBOX/FAN (1/8.429)	
	54506-00	ASSEMBLY, SERIES II GEARBOX/FAN (1/8.846)	
	54505-00	ASSEMBLY, SERIES II GEARBOX/FAN (1/9.385)	
	17755	LUBRICANT, ANTI-SEIZE (NOT SHOWN)	0.002

GEARBOX REPLACEMENT PARTS | SERIES II

PART#	GEAR RATIO	ORDER KIT#
32258-00	GEAR BOX, 6.647:1	54932
32254-00	GEAR BOX, 7.250:1	54928
32255-00	GEAR BOX, 8.429:1	54929
32257-00	GEAR BOX, 8.846:1	54931
32256-00	GEAR BOX, 9.385:1	54930

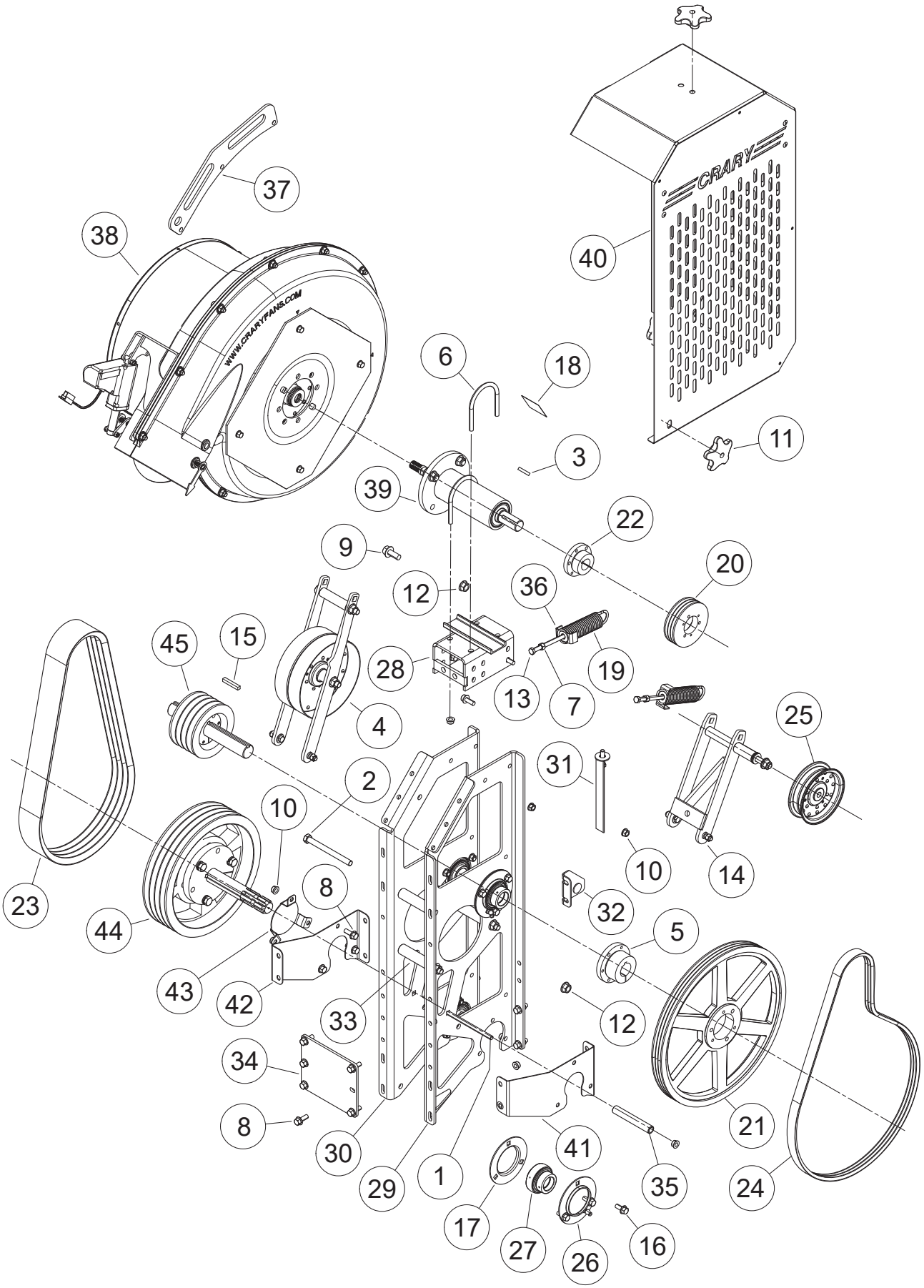
Kit Includes Service Manual, Threadlocker & Box



ASSEMBLY, GEARBOX (REPLACEMENT PARTS)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	0201-0111-00	BEARING, CUP	2
2	0201-0112-00	BEARING, CONE	2
3	0370-0002-00	BREATHER, ZINC-PLATED	1
4	15006	BOLT, 3/8 X 1 HEX GR5 ZP	3
5	15008	BOLT, 3/8 X 2 HEX GR5 ZP	1
6	15205	BOLT, 3/8 X 5 HEX GR5 ZP	1
7	30727-00	PLUG, DIPSTICK GEARBOX SERIES II	1
8	30728-00	PLUG, HEX HD MAGNETIC WITH O-RING	1
9	30729-00	SHIM,GEARBOX INPUT .002 RED	VARIES
10	30730-00	SHIM,GEARBOX INPUT .005 BLUE	VARIES
11	30731-00	PLUG, EXPANSION	1
12	30732-00	O-RING	1
13	30733-00	SEAL	1
14	30734-00	SEAL	1
15	30735-00	BEARING,BALL	2
16	30736-00	RING, BEVELED RETAINING	1
17	54424-12	PLATE, GEARBOX MOUNT	2
18	33908-00	WASHER, RETAINING	1
19	30737-00	SHAFT, INPUT	1
20	NPN	GEAR, HEL RH113T (1/6.647 RATIO)	1
	NPN	GEAR, HEL RH116T (1/7.250 RATIO)	
	NPN	GEAR, HEL RH118T (1/8.429 RATIO)	
	NPN	GEAR, HEL RH115T (1/8.846 RATIO)	
	NPN	GEAR, HEL RH122T (1/9.385 RATIO)	
21	51607-00	KIT, HS SHAFT SERVICE 17T (1/6.647 RATIO) - INCLUDES ITEMS 18 & 26	1
	51621-00	KIT, HS SHAFT SERVICE 16T (1/7.250 RATIO) - INCLUDES ITEMS 18 & 26	
	51622-00	KIT, HS SHAFT SERVICE 14T (1/8.429 RATIO) - INCLUDES ITEMS 18 & 26	
	51623-00	KIT, HS SHAFT SERVICE 16T (1/8.846 RATIO) - INCLUDES ITEMS 18 & 26	
	51624-00	KIT, HS SHAFT SERVICE 13T (1/9.385 RATIO) - INCLUDES ITEMS 18 & 26	
22	NPN	HOUSING, HALF RH	1
23	NPN	HOUSING, HALF LH	1
24	NPN	CAP, OPEN	1
25	15007	BOLT, 3/8 X 1-1/2 HEX GR5 ZP	7
26	33907-00	BOLT, 1/2 X 1-1/2 NF GR8 PLAIN	1
27	NPN	BOLT, 3/8NC X 5-1/2 HEX GR8 ZINC COATED	3
28	15042	NUT, 3/8 HEX NC	4
29	30738-00	KEY	1
30	NPN	BUSHING, DOWEL 3/8 X 1	2
	NPN	OIL, MOBIL DELVAC 75W-90 SYNTHETIC (NOT SHOWN)	28 OZ.

NPN = No Part Number

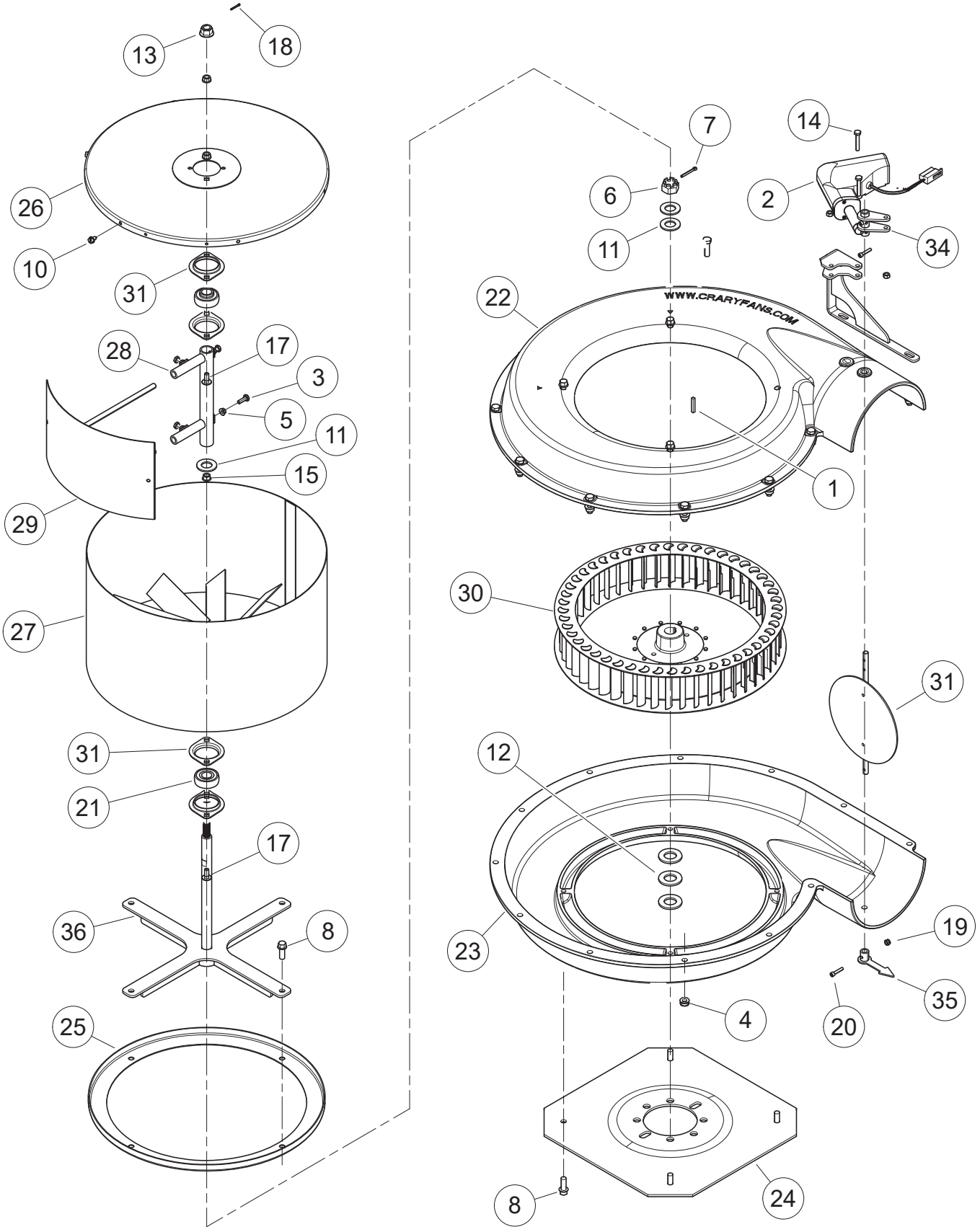
BELT DRIVE REPLACEMENT PARTS



BELT DRIVE REPLACEMENT PARTS

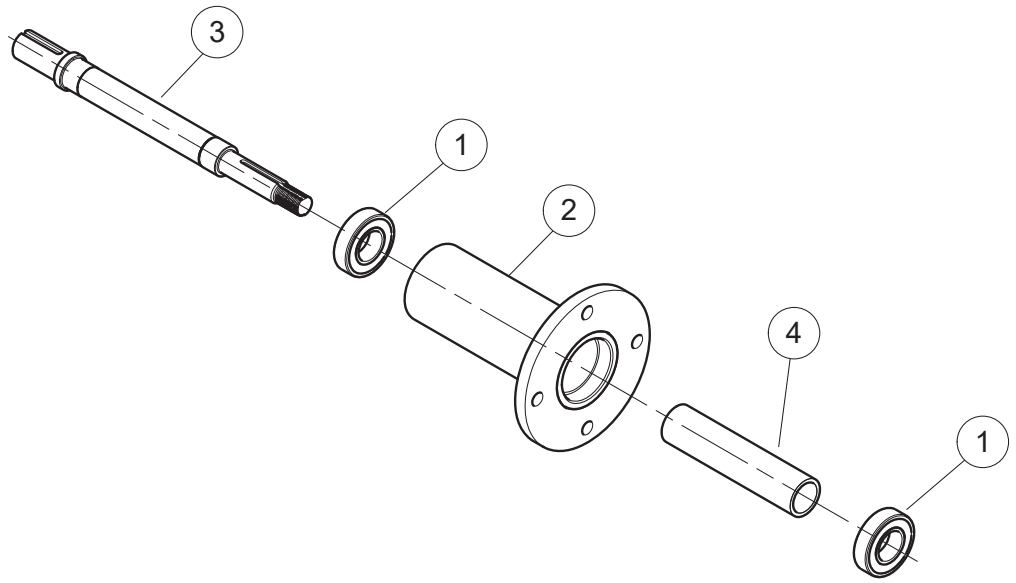
BELT DRIVE (REPLACEMENT PARTS) (52439-00)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	0103-0548-00	BOLT, 3/8 X 6 CARRIAGE GR5 ZP	1
2	0103-0826-00	BOLT, 1/2 X 5-1/2 HEX GR5 ZP	3
3	0122-0007-00	KEY, 1/4 SQ X 1-1/4	1
4	52602-00	ASM, IDLER LOW SPEED	1
5	12439	BUSHING, SK 1-3/8”	1
6	13014	U-BOLT, FAN MOUNT 3/8X3”X4” ZP	2
7	15042	NUT, 3/8” HEX NC ZP	2
8	15163-00	BOLT, 3/8 X 1 FLANGE NC	19
9	15232-00	BOLT, 1/2 -13 X 1-1/4 FLANGE NC	4
10	15291-00	NUT, 3/8-16 SPIRAL LOCK	36
11	15525	KNOB, 3/8” INSERT	3
12	15616	NUT, 1/2 SPIRAL LOCK NC ZP	7
13	15706-00	BOLT, 3/8 X 5 NC ZP FULL THD GR5	2
14	52603-00	ASM, IDLER HIGH SPEED	1
15	15992-00	KEY, 5/16 X 2.0 SQ	1
16	15993-00	BOLT, 3/8-16 X 7/8 FLANGE GR5 NC CMS F1 5ANS	12
17	17060	FLANGETTE, 72MS RND 3BIT, ZP	4
18	17423	DECAL, SHIELD DANGER ANSI	1
19	26479-00	SPRING, DIVIDER OBSOLETE	2
20	31354-00	SHEAVE, 3/3V4.75-SDS	1
21	35336-00	SHEAVE, 3V14.0 3 GROOVE SK	1
22	35339-00	BUSHING, 1-1/8” SDS	1
23	35340-00	BELT, 5VX630 4 RIBS	1
24	35341-00	BELT, 3VX670 3 RIBS	1
25	35406-00	PULLEY, FLAT FLANGED IDLER (8.0 X 1.5 X .50 BORE)	1
26	35409-00	FLANGETTE, GREASEABLE 72MM	4
27	35411-00	BEARING, 1-3/8” BORE GREASEABLE	4
28	52166-12	WELDMENT, FAN BEARING BASE BELT DRIVE	1
29	52167-12	WELDMENT, LEFT FRAME BELT DRIVE	1
30	52168-12	WELDMENT, RIGHT FRAME BELT DRIVE	1
31	52169-12	WELDMENT, COVER TOP SUPPORT	1
32	52185-12	WELDMENT, BRACKET COVER BELT DRIVE	1
33	52214-12	SPACER, FRAME BELT DRIVE	3
34	52215-12	PLATE, FRAME SPACER BELT DRIVE	1
35	52221-12	SPACER, COVER SIDE	1
36	52440-12	WELDMENT, SPRING CLIP 3/8”	2
37	52442-12	PLATE, FAN LIFT	1
38	52452-00	ASM, FAN BELT DRIVE (See page 66)	1
39	52583-00	ASM, FAN BEARING HUB BELT DRIVE (See page 68)	1
40	55413-00	ASSY, DRIVE GUARD	1
41	52596-12	BRACKET, SHAFT GUARD LH	1
42	52597-12	BRACKET, SHAFT GUARD RH	1
43	52598-12	COVER, INPUT SHAFT GUARD	1
44	52599-00	ASM, INPUT SHAFT BELT DRIVE (See page 68)	1
45	52600-00	ASM, SECONDARY SHAFT BELT DRIVE (See page 69)	1

BELT DRIVE/FAN	ALL MODELS	



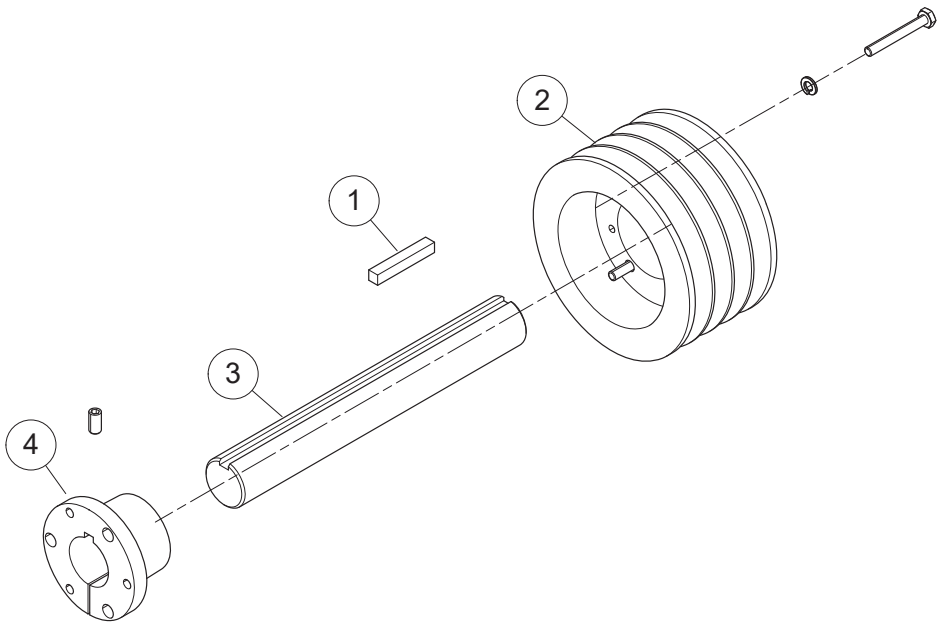
BELT DRIVE/FAN (52452-00)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	7022	KEY, 3/16 SQ X 1-1/4” PLAIN	1
2	13460-00	ACTUATOR, 2” STROKE ELECTRIC	1
3	15001	BOLT, 1/4-20 x 3/4 GR5 HEX HD CMS F1 5ANS	4
4	15051	NUT, 3/8-16 SERRATED FLANGE CMS F1 5ANS	12
5	15053	NUT, 1/4”-20 SERRATED FLNG NC ZP	4
6	15055	NUT, 3/4” NF CASTLE ZP	1
7	15068	PIN, 5/32 X 1-1/4 COTTER ZP	1
8	15076	SCREW, 3/8-16 x 1 T23 FLANGE MAGNI 565 SILVER	8
9	15087	NUT, 1/4 CENTERLOCK NC ZP	2
10	15095	SCREW #14 X 1/2 FLANGE T-AB MAGNI 565 SILVER	3
11	15098	WASHER,3/4”SAE FLAT ZP, 21PC/LB	3
12	15099	WASHER,7/8”SAE FLAT,ZP, 15PC/LB	3
13	15162-00	NUT, 1/2-13 NYLOCK FLANGE	1
14	15342	BOLT 1/4 X 1-1/2 HHCS GR5 ZP	2
15	15351	NUT, 5/16-18 SERR FLNG NC CMS F1 5ANS	4
16	15364	BOLT, 3/8-16 X 1-1/4 HEX HD GR5 CMS F1 5ANS	12
17	15367	BOLT, 5/16 X 3/4 GR5 NC ZP CRG	4
18	15380	PIN, 3/32 X 3/4 COTTER	1
19	15397	NUT, 10/24 NYLOCK TYPE NM, ZP	3
20	15860-00	SCREW, HEX SOC #10-24 X 1.00 ZP	3
21	18998-00	BEARING, 3/4” ROUND INSERT	2
22	21193	CASTING, FAN, 8, P, D, B, N, RH, N, N	1
23	21194	CASTING, FAN,8, P, D, B, N, LH, N, N	1
24	21445-12	PLATE, HUB/MOTOR MOUNT (8”B-PILOT)	1
25	22655-12	BASE, 8” ROTARY SCREEN	1
26	23163	SCREEN CAP WELDMENT	1
27	27532-12	WELDMENT, SCREEN/BLADE (8”-LH)	1
28	29919-12	WELDMENT, PIVOT	1
29	29921-12	WELDMENT, 8” FAN SCREEN CLEANER	1
30	33431-00	ROTOR,FAN,17.4,3.2, CCW, S, 7/8, FC, LCP	1
31	36008-00	FLANGETTE, 47MM 2 HOLE	4
32	50771-12	WELDMENT, ACTUATOR MOUNT	1
33	53744-00	WELDMENT, BUTTERFLY SHAFT (8”)	1
34	53747-12	WELDMENT, VALVE ACTUATOR (8”RH/LH)	1
35	53750-35	WELDMENT, INDICATOR (8”)	1
36	54891-12	WLDMT., 8” ROTARY SCREEN THREADED BASE STRAP	1

BELT DRIVE FAN BEARING HUB | ALL MODELS



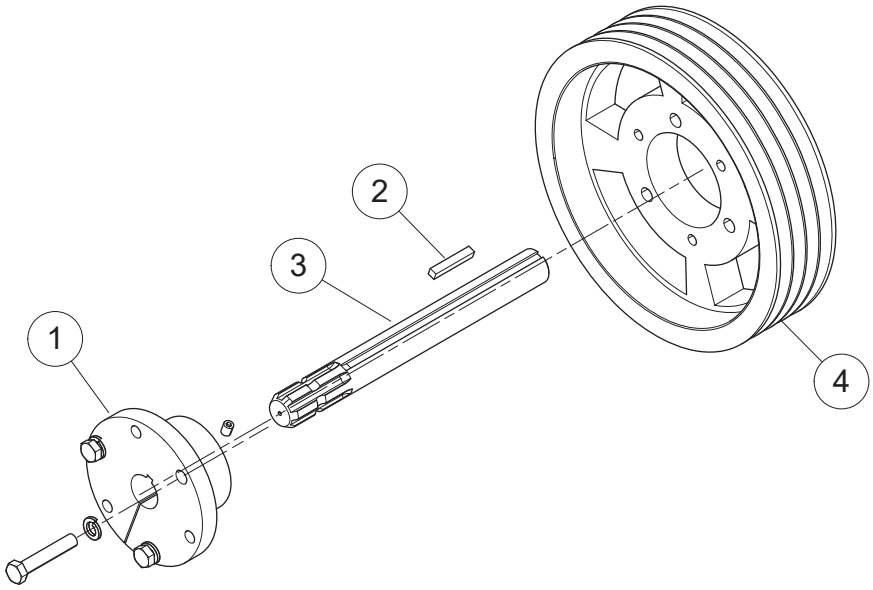
BELT DRIVE FAN BEARING HUB (52583-00)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	10218	BEARING, 30 MM	2
2	52435-00	NHUB, BEARING MACHINED BELT DRIVE	1
3	52694-00	SHAFT, FAN BELT DRIVE	1
4	52695-00	TUBE, CLAMP	1
5	35773-00	RETAINING COMPOUND, HIGH STRENGTH, BULK mL	1.500

BELT DRIVE SECONDARY SHAFT | ALL MODELS



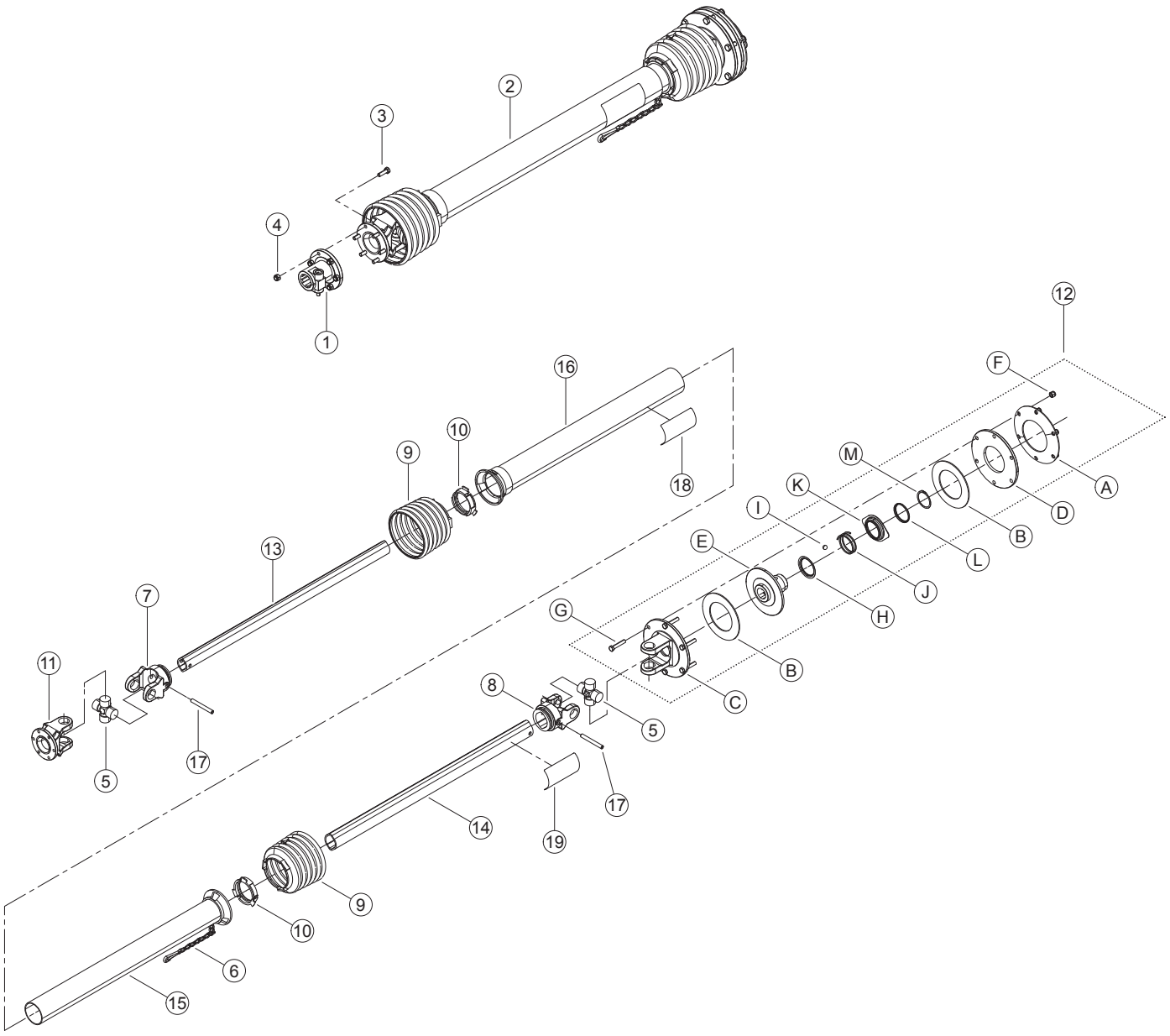
BELT DRIVE SECONDARY SHAFT (52600-00)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15992-00	KEY, 5/16 SQ X 2.0	1
2	35334-00	SHEAVE, 5V5.5 4 GROOVE SD	1
3	52431-00	SHAFT, SECONDARY 1-3/8” X 10 “ BELT DRIVE	1
4	12457P	BUSHING 1-3/8 SD	1

	ALL MODELS	**BELT DRIVE INPUT SHAFT STD**



BELT DRIVE INPUT SHAFT STD (52599-00)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	13320-00	BUSHING, 1-3/8” QD-E	1
4	15992-00	KEY, 5/16 SQ X 2.0	1
6	29854-00	SHAFT, 1-3/8” 6 SPLINE STUB	1
5	34928-00	SHEAVE, 5V 12.5 4 GROOVE E	1

DRIVELINE/C FLANGE ASSEMBLY	ALL MODELS	

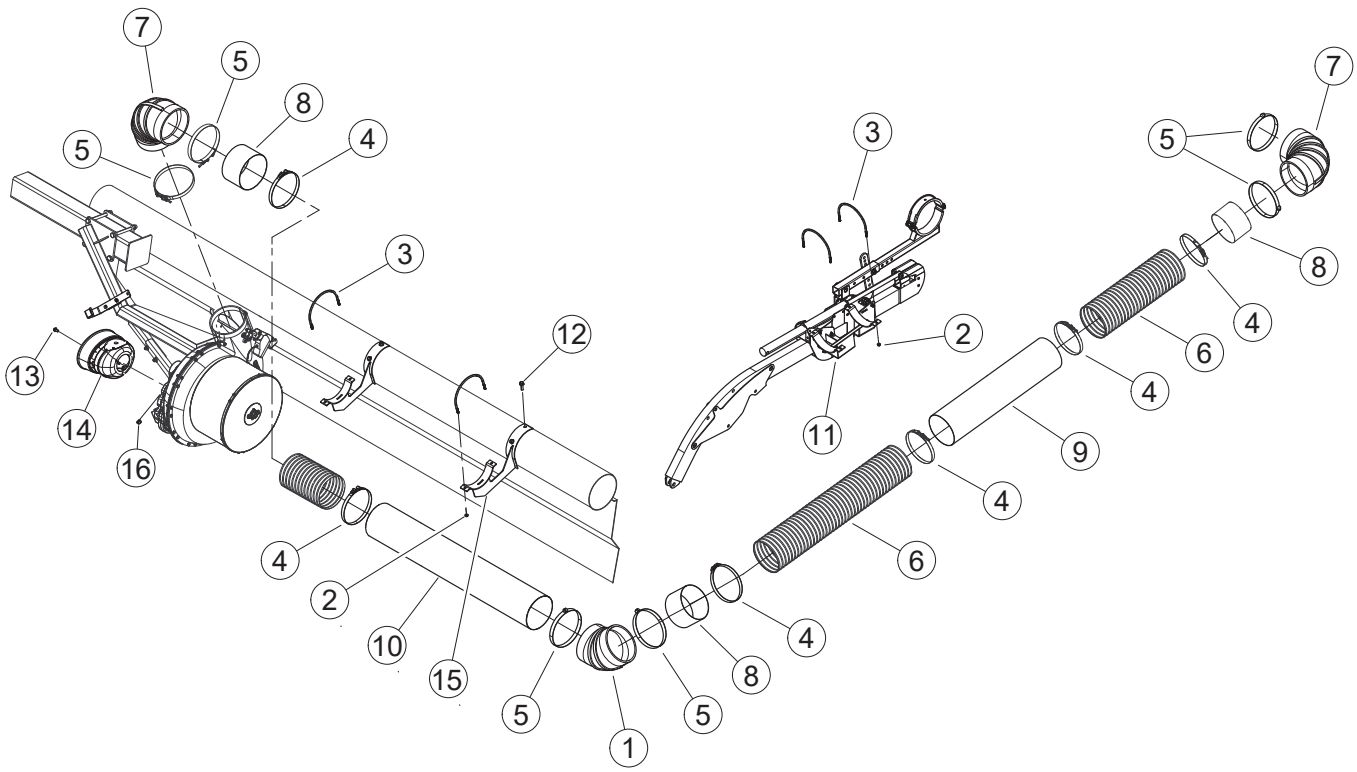


ALL MODELS | **DRIVELINE/C FLANGE ASSEMBLY**

DRIVELINES						
ITEM	**PART NUMBER**	**DESCRIPTION**	**27732-00 QTY**	**29858-00 QTY**	**29986-00 QTY**	**54483-00 QTY**
1	13911-00	COUNTER FLANGE, 1-1/8" HEX 6 BOLT		1		
	13913-00	COUNTER FLANGE, 1-3/8" 6 SPLINE 6 BOLT	1			
	13914-00	COUNTER FLANGE, 1-3/8 21 SPLINE			1	1
2	14389-00	DRIVELINE/CLUTCH, 1-3/8" 6 SPLINE(L) (SEE TABLE BELOW)	1	1	1	
	32454-00	DRIVELINE/CLUTCH, 1-3/8" 6 SPLINE(M) (SEE TABLE BELOW)				1
3	15219	BOLT, 5/16 X 1 HEX HD GR5 ZP	6	6	6	6
4	15356	NUT, 5/16 NE NYLOCK ZP	6	6	6	6

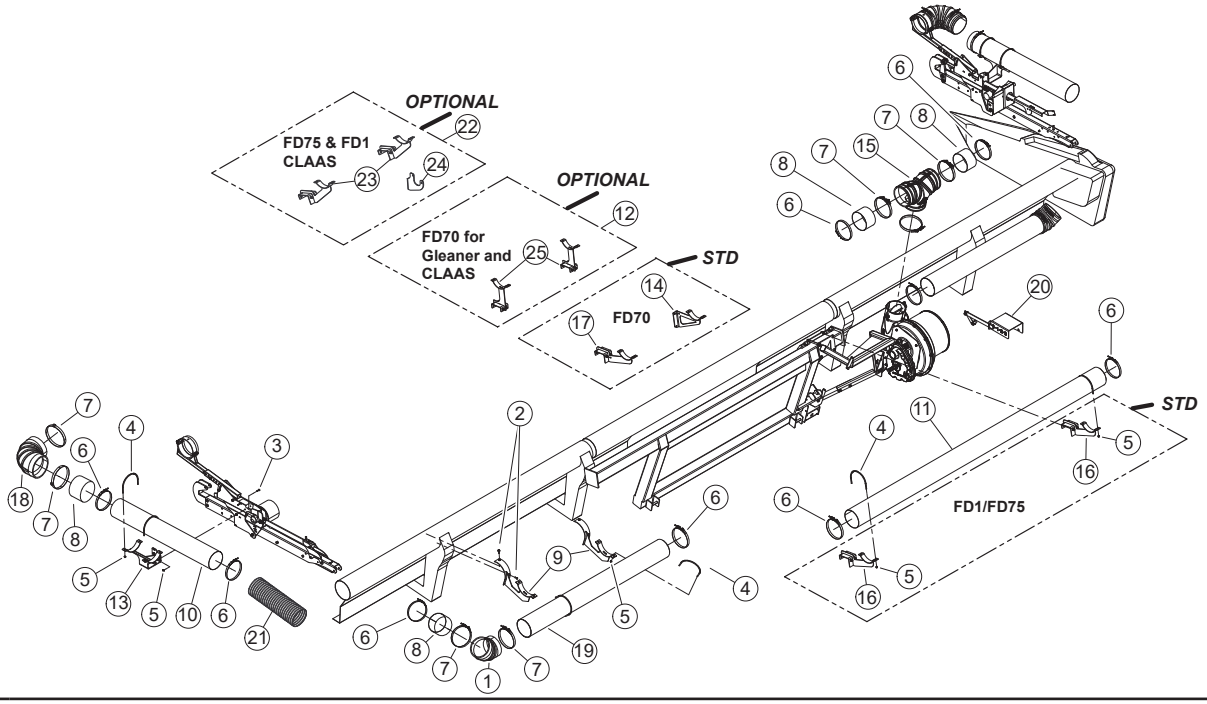
ASSEMBLY, DRIVELINE/CLUTCH				
ITEM	**PART NUMBER**	**DESCRIPTION**	**14389-00 QTY**	**32454-00 QTY**
5	0883-0120-00	KIT, CROSS & BEARING W-2400	2	2
6	12209	SAFETY CHAIN	1	1
7	12215	YOKE, INBOARD 1B	1	1
8	12218	YOKE, INBOARD 2A	1	1
9	12220	CONE, 6 RIB SAFETY	2	2
10	12223	RING, SC25 BEARING	2	2
11	14714-00	YOKE, FLANGE	1	1
12	14744-00	CLUTCH, FRICTION (INCLUDES ITEMS A-M)	1	1
A	14061-00	SPRING, BELVILLE (W/SHIELD)	1	1
B	14062-00	SET, FRICTION DISC	1	1
C	14720-00	YOKE, FLANGE	1	1
D	14736-00	PLATE, THRUST	1	1
E	14737-00	HUB, CLUTCH	1	1
F	15647	NUT, M10 X 1.5 HEX NYLOCK TYPE NE	6	6
G	15747-00	BOLT, M10 X 1.5 X 50 CLASS 8.8 HC	6	6
H	14738-00	BACKUP RING	1	1
I	14739-00	BALL, CLUTCH	3	3
J	14740-00	SPRING, COMPRESSION	1	1
K	14741-00	COLLAR, LOCK	1	1
L	14742-00	RING, BACKUP	1	1
M	14743-00	RING, SNAP	1	1
13	14732-00	PROFILE, INNER 1B (LONG)	1	1
14	14733-00	PROFILE, OUTER 2A (LONG)	1	1
15	14734-00	TUBE, INNER SHIELD (LONG)	1	1
16	14735-00	TUBE, OUTER SHIELD (LONG)	1	1
17	15575	PIN, M10 X 80 SPRING	2	2
18	12210	DECAL, OUT	1	1
19	12211	DECAL, IN	1	1

FAN HOSE ASSEMBLY | ALL MODELS



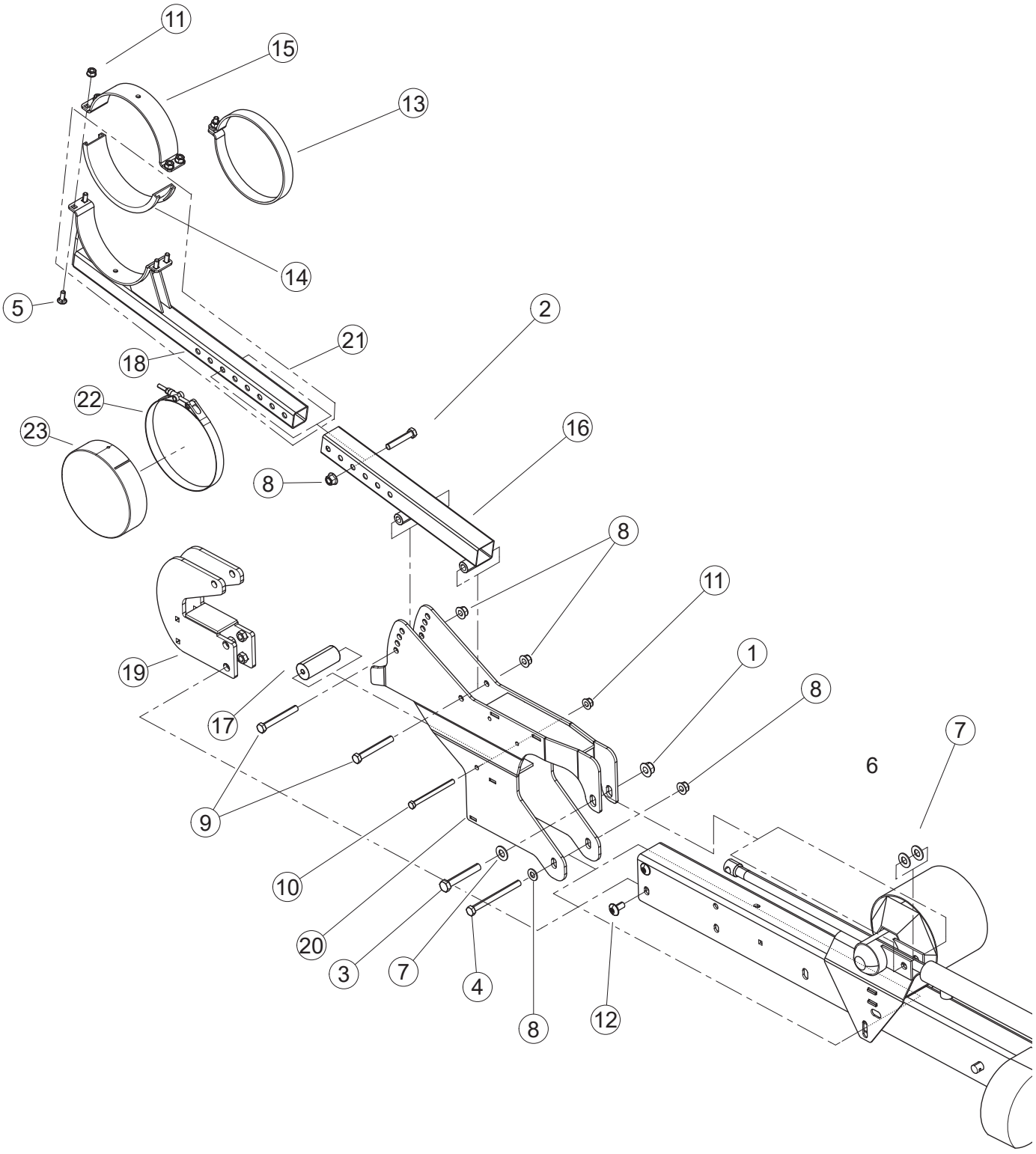
FAN HOSE ASSEMBLY						
ITEM	**PART NUMBER**	**DESCRIPTION**	**30 FT. QTY**	**35 FT. QTY**	**40 FT. QTY**	**45 FT. QTY**
1	12146	ELBOW, 8" X 45 DEG. RUBBER	1	1	1	1
2	15904-00	NUT, 5/16 NYLOCK FLANGE	8	8	8	8
3	15700-00	U-BOLT, 5/16-18 X 8.19 X 6.59	4	4	4	4
4	16091	CLAMP, 8-3/8 T-BOLT	6	6	6	6
5	16092	CLAMP, 8-11/16 T-BOLT	6	6	6	6
6	17410	FLEX HOSE, 8" ID. X 6'	1	1	1	1
7	17437	ELBOW, 8" X 90 DEG. RUBBER	2	2	2	2
8	21512	BAND, ELBOW SUPPORT	3	3	3	3
9	29638-33	MANIFOLD, 56"ALUMINUM	1	1	1	1
10	53067-33	MANIFOLD, 28" ALUMINUM	1			
	53691-33	MANIFOLD, 65" ALUMINUM		1		
	53329-00	ASSEMBLY, 94" TRANSITION MANIFOLD			1	
	54860-00	ASSEMBLY, 120" TRANSITION MANIFOLD				1
11	50139-12	WELDMENT, TUBE MOUNT	1	1	1	1
12	15176	SCREW, 11/32 X 7/8 HWH AB THREAD	4	4	4	4
13	15617	BOLT, 3/8 X 3/4 SERR FLANGE	3	3	3	3
14	32212-00	SHIELD, PTO CONNECTION	1	1	1	1
15	50682-12	MOUNT, MACDON TRANSITION MANIFOLD	2	2	2	2
16	15905-00	NUT, 3/8-16 NYLOCK FLANGE	3	3	3	3

ALL MODELS - DUAL FLOW | FAN HOSE ASSEMBLY



KIT, SERIES 2 DUAL FLOW LH DRIVE - MACDON FD1/70/75					
ITEM	PART NUMBER	DESCRIPTION	50407 35FT. QTY	50225 40FT. QTY	52774 45FT. QTY
1	12146	ELBOW, RUBBER-8" X 45 DEG.	1	1	1
2	15176	SCREW, 11/32 X 7/8 HWH AB THREAD	4	4	4
3	15219	BOLT, 5/16 X 1 HEX HD	2	2	6
4	15700-00	U-BOLT, 5/16-18 X 8.19 X 6.59	6	6	6
5	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	14	14	14
6	16091	CLAMP, 8-3/8" T-BOLT	7	7	7
7	16092	CLAMP, 8-11/16" T-BOLT	7	7	7
8	21512	BAND, ELBOW SUPPORT	4	4	4
9	50682-12	MOUNT, MACDON TRANSITION MANIFOLD	2	2	2
10	29638-33	MANIFOLD, 56" ALUMINUM	1	1	1
11	50129-33	MANIFOLD, 141" ALUMINUM	1	1	2
12	50767	KIT, FEEDER HOUSE MOUNTS DUAL FLOW	1	1	1
13	50139-12	WELDMENT, TUBE MOUNT	1	1	1
14	50155-12	WELDMENT, FD70 TUBE MOUNT BRACKET	1	1	1
15	50660-00	ASSEMBLY, DUAL FLOW Y	1	1	1
16	50237-00	ASSEMBLY, FD1/75 TUBE MOUNT BRACKET	2	2	2
17	50238-00	ASSEMBLY, FD70 TUBE MOUNT BRACKET	1	1	1
18	17437	ELBOW, RUBBER-8” X 90 DEG	1	1	1
19	54515-00	ASSEMBLY, 79" TRANSITION MANIFOLD	1		
	50222-33	MANIFOLD, 111" ALUMINUM		1	
	54860-00	MANIFOLD, 120” ALUMINUM			1
20	52011-00	KIT, DUAL FLOW DAMPER INDICATOR	1	1	1
21	17777	FLEX HOSE, 8”ID X 8FT.	2	2	2
22	55150	KIT, CLAAS MACDON CONVERSION	1	1	1
23	55149-00	ASSY, TUBE MOUNT BRACKET (INCLUDED IN ITEM 22)	2	2	2
24	55145-12	BRACKET, PTO HOLDER (INCLUDED IN ITEM 22)	1	1	1
25	50450-12	WELDMENT, TUBE MOUNT (INCLUDED IN ITEM 12)	2	2	2
	76280-00	HOSE, 8" X 4' FLEXIBLE (NOT SHOWN)	1	1	1

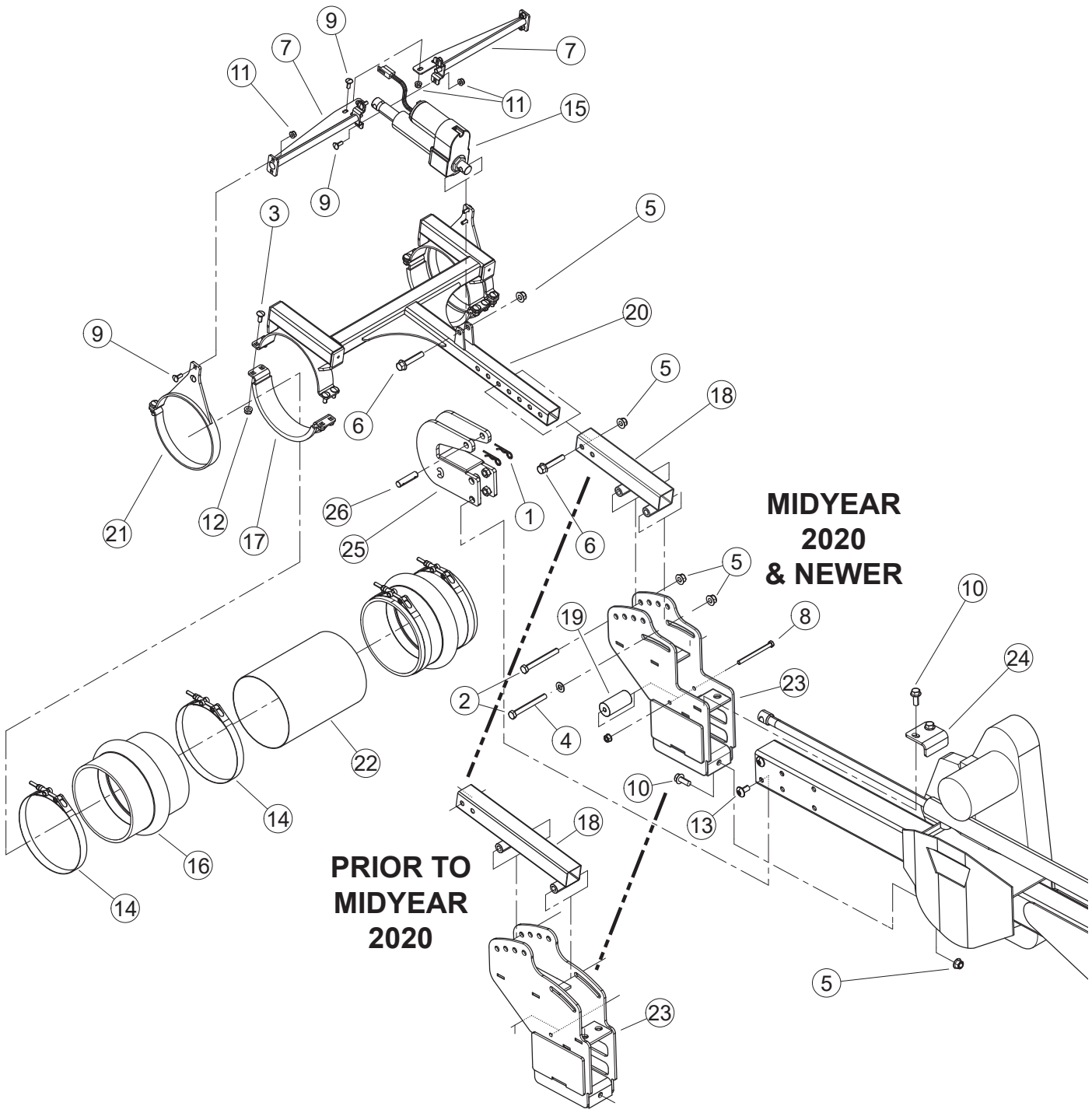
REEL ARM MOUNT - LH	FD1 & FD75 HEADERS	



KIT, REEL ARM MOUNT (54833) LH COMPONENTS			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	0101-0102-00	NUT, 5/8-11 UNC NYLOCK	1
2	15196-00	BOLT, 1/2 X 2-3/4 FLANGE GR5 ZP	1
3	0103-0814-00	BOLT, 5/8 X 3-1/4 HEX GR5 ZP	1
4	0103-0826-00	BOLT, 1/2 X 5-1/2 HEX GR5 ZP	1
5	15057	BOLT, 3/8 X 1 CRG GR5 NC ZP	4
6	15097	WASHER 1/2 SAE FLAT ZP	1
7	15129	WASHER, 5/8 SAE FLAT ZP	5
8	15162-00	NUT, 1/2-13 NYLOCK FLANGE	4
9	15193-00	BOLT, 1/2 X 4 FLANGE GR5 ZP	2
10	15205	BOLT, 3/8 X 5 HEX GR5 ZP	1
11	15905-00	NUT, 3/8-16 NYLOCK FLANGE	5
12	15952-00	SCREW, 1/2-13 X 1 TORX TRS HEAD ZP	4
13	22489	ASSEMBLY, BRACE CLAMP	1
14	22809	SADDLE GUIDE	1
15	23501-12	CLAMP, HALF	1
16	51416-12	WELDMENT, REEL ARM MOUNT	1
17	51425-00	BEARING, NYLON 1.5 OD X .41 ID X 3.75	1
18	54343-12	WELDMENT, REEL MOUNT	1
19	54853-12	WELDMENT, CYLINDER MOUNT-OUTER	1
20	54845-12	WELDMENT, REEL MOUNT - LH	1
21	51417-00	ASSEMBLY, REEL ARM MOUNT (INCLUDES ITEMS 14 AND 18)	1

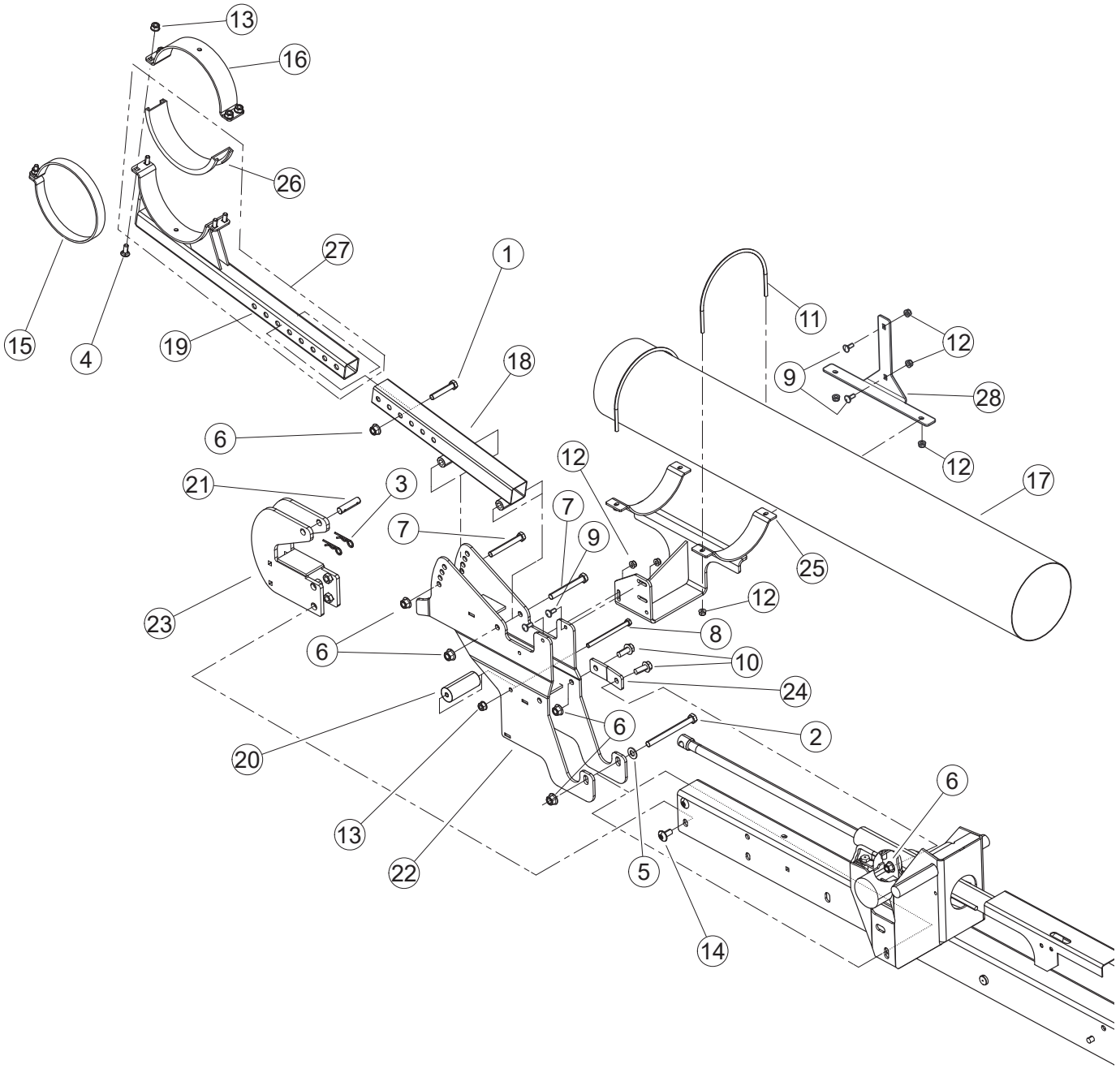
CAP, END			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
22	16091	CLAMP, T-BOLT (8-1/4”)	1
23	21924	CAP, TUBE 8” (NOTCHED)	1

REEL ARM MOUNT - CENTER	FD1 & FD75 HEADERS	



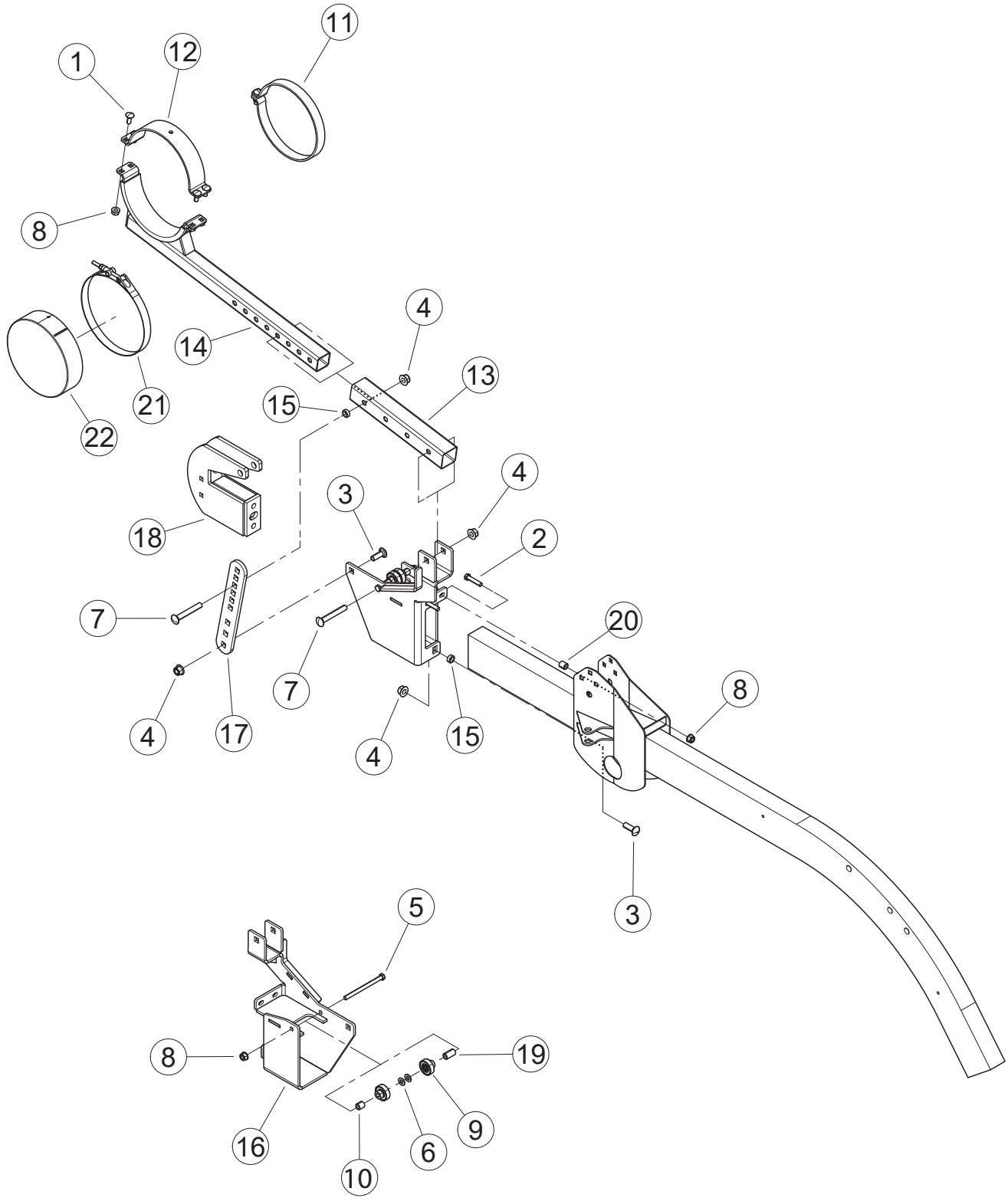
KIT, REEL ARM MOUNT (54833) CENTER COMPONENTS			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	0122-0230-00	PIN, .120 X 2.375 HAIRPIN Z PL	2
2	15017	BOLT, 1/2 X 4-1/2 HEX GR5 NC ZP	2
3	15057	BOLT, 3/8 X 1 CRG GR5 NC ZP	8
4	15097	WASHER 1/2 SAE FLAT ZP	1
5	15162-00	NUT, 1/2-13 NYLOCK FLANGE	5
6	15196-00	BOLT, 1/2 X 2-3/4, HWH GR5 CZP	2
7	54886-12	WELDMENT, MANIFOLD PIVOT ROD	2
8	15274	BOLT, 3/8 X 4-1/2 HEX GR5 NC ZP	1
9	15349	BOLT, 5/16 X 7/8 CRG GR5 NC ZP	8
10	15230-00	BOLT, 1/2 X 1-1/2, FLANGE	3
11	15904-00	NUT, 5/16-18 NYLOCK FLANGE	8
12	15905-00	NUT, 3/8-16 NYLOCK FLANGE	8
13	15952-00	SCREW, 1/2-13 X 1 TORX TRS HEAD ZP	4
14	16092	CLAMP, 8-11/16" T-BOLT	4
15	17843	ELECTRIC ACTUATOR	1
16	18580-00	HOSE, 8” SINGLE HUMP	2
17	25908-00	ASSEMBLY, HALF CLAMP	2
18	51415-12	WELDMENT, REEL ARM MOUNT **(PRIOR TO MIDYEAR 2020)**	1
	52585-12	WELDMENT, REEL ARM MOUNT **(MIDYEAR 2020 & NEWER)**	
19	51423-00	BEARING, NYLON 1.5 OD X .41 ID X 3.125	1
20	54365-12	WELDMENT, CENTER REEL MOUNT	1
21	54370-00	ASSEMBLY, MANIFOLD PIVOT	2
22	54382-33	WELDMENT, CWS CONNECTOR MANIFOLD	1
23	54831-12	WELDMENT, REEL MOUNT-CENTER **(PRIOR TO MIDYEAR 2020)**	1
	52586-12	WELDMENT, CENTER REEL MOUNT **(MIDYEAR 2020 & NEWER)**	
24	54835-12	BRACKET, REEL ARM MOUNT-CENTER	1
25	54840-12	WELDMENT, CYLINDER MOUNT-CENTER	1
26	54843-12	PIN, CYLINDER MOUNT	1

REEL ARM MOUNT - RH	FD1 & FD75 HEADERS	



KIT, REEL ARM MOUNT (54833) RH COMPONENTS			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15196-00	BOLT, 1/2 X 2-3/4 FLANGE GR5 ZP	1
2	0103-0826-00	BOLT, 1/2 X 5-1/2 HEX GR5 ZP	1
3	0122-0230-00	PIN, .120 X 2.375 HAIRPIN Z PL	2
4	15057	BOLT, 3/8 X 1 CRG GR5 NC ZP	4
5	15097	WASHER 1/2 SAE FLAT ZP	1
6	15162-00	NUT, 1/2-13 NYLOCK FLANGE	6
7	15193-00	BOLT, 1/2 X 4 FLANGE GR5 ZP	2
8	15205	BOLT, 3/8 X 5 HEX GR5 ZP	1
9	15349	BOLT, 5/16 X 7/8 CRG GR5 NC ZP	4
10	15230-00	BOLT, 1/2 X 1-1/2, FLANGE	2
11	15700-00	U-BOLT, 5/16-18 X 8.19 X 6.59	2
12	15904-00	NUT, 5/16-18 NYLOCK FLANGE	8
13	15905-00	NUT, 3/8-16 NYLOCK FLANGE	5
14	15952-00	SCREW, 1/2-13 X 1 TORX TRS HEAD ZP	4
	17410	FLEX HOSE 8” X 6 FT (NOT SHOWN)	1
15	22489	ASSEMBLY, BRACE CLAMP	1
16	23501-12	CLAMP, HALF	1
17	29638-33	MANIFOLD, 56"ALUMINUM	1
18	51416-12	WELDMENT, REEL ARM MOUNT	1
19	54343-12	WELDMENT, REEL MOUNT	1
20	51425-00	BEARING, NYLON 1.5 OD X .41 ID X 3.75	1
21	54843-12	PIN, CYLINDER MOUNT	1
22	54849-12	WELDMENT, REEL MOUNT - RH	1
23	54853-12	WELDMENT, CYLINDER MOUNT-OUTER	1
24	54862-12	BRACKET, REEL ARM MOUNT - RH	1
25	50139-12	WELDMENT, TUBE MOUNT	1
26	22809	SADDLE GUIDE	
27	51417-00	ASSEMBLY, REEL ARM MOUNT (INCLUDES ITEMS 19 AND 26)	1
28	52584-12	BRACKET, SMV MACDON	1

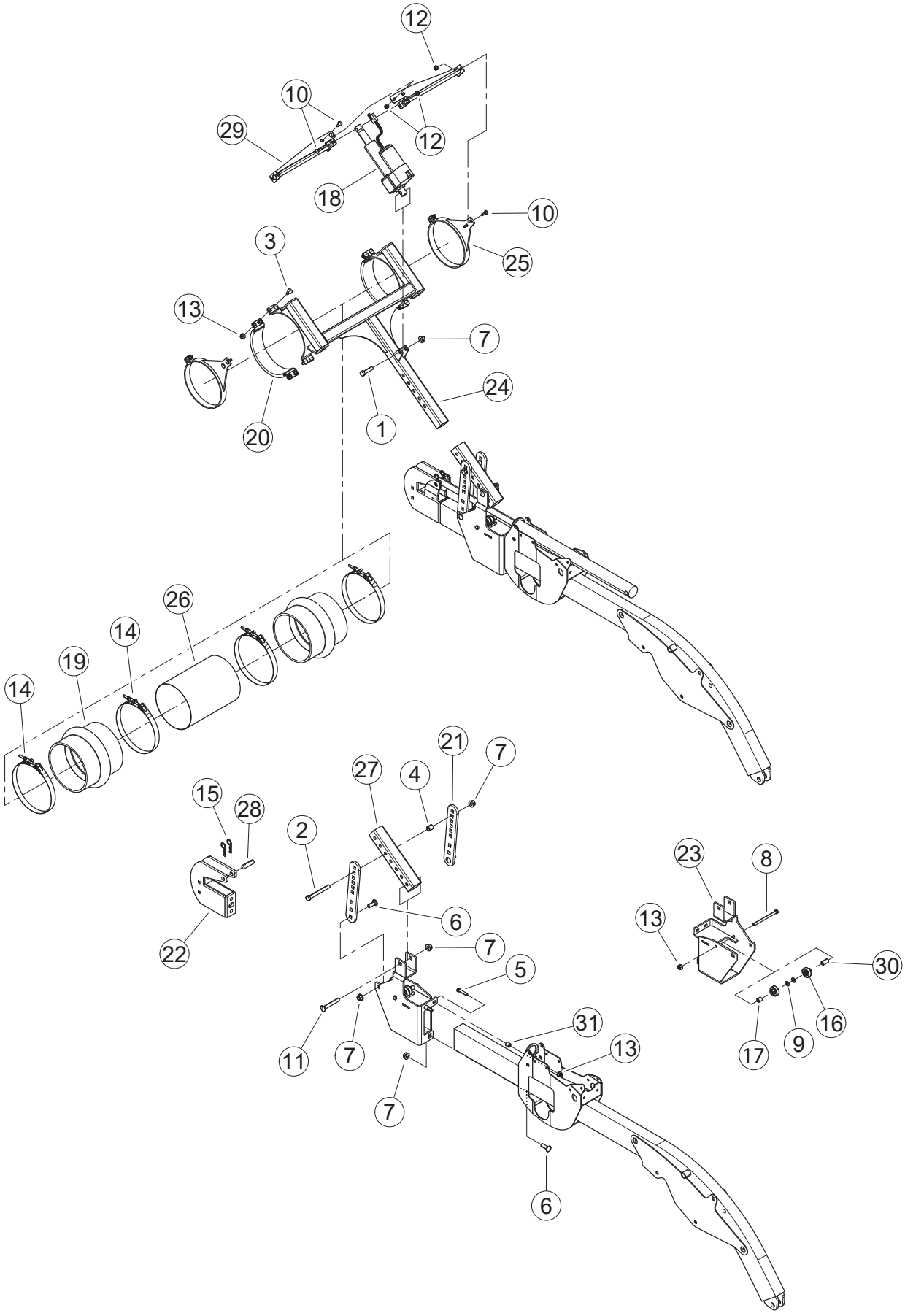
REEL ARM MOUNT - LH	FD70 & CIH 2162 HEADERS	



KIT, REEL ARM MOUNT (50347)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15057	BOLT, 3/8 X 1 CRG GR5 NC ZP	4
2	15078-00	BOLT, 3/8 X 2 FLANGE GR5 ZP	2
3	15157	BOLT, 1/2 X 1-1/2 CRG GR5 ZP	2
4	15162-00	NUT, 1/2-13 NYLOCK FLANGE	4
5	15205	BOLT, 3/8 X 5 HEX GR5 ZP	1
6	15260	WASHER, 3/8 SAE FLAT ZP	2
7	15458	BOLT, 1/2 X 3-1/2 CRG GR5 NC ZP	2
8	15905-00	NUT, 3/8-16 NYLOCK FLANGE	7
9	52769-00	ASSEMBLY, BEARING, W/ ADAPTER	2
10	70362	SPACER .63 X .63 PULLEY	1
11	22489	ASSEMBLY, BRACE CLAMP	1
12	23501-12	CLAMP, HALF	1
13	25814-12	TUBE, ARM MOUNT	1
14	25906-00	ASSEMBLY, REEL MOUNT	1
15	27909-00	TUBE, .75 OD X .51 ID X .27	2
16	29103-12	WELDMENT, CWS MOUNT	1
17	53662-12	STRAP, ADJUSTMENT	1
18	53666-12	WELDMENT, CYLINDER MOUNT	1
19	70046	IDLER SPACER	1

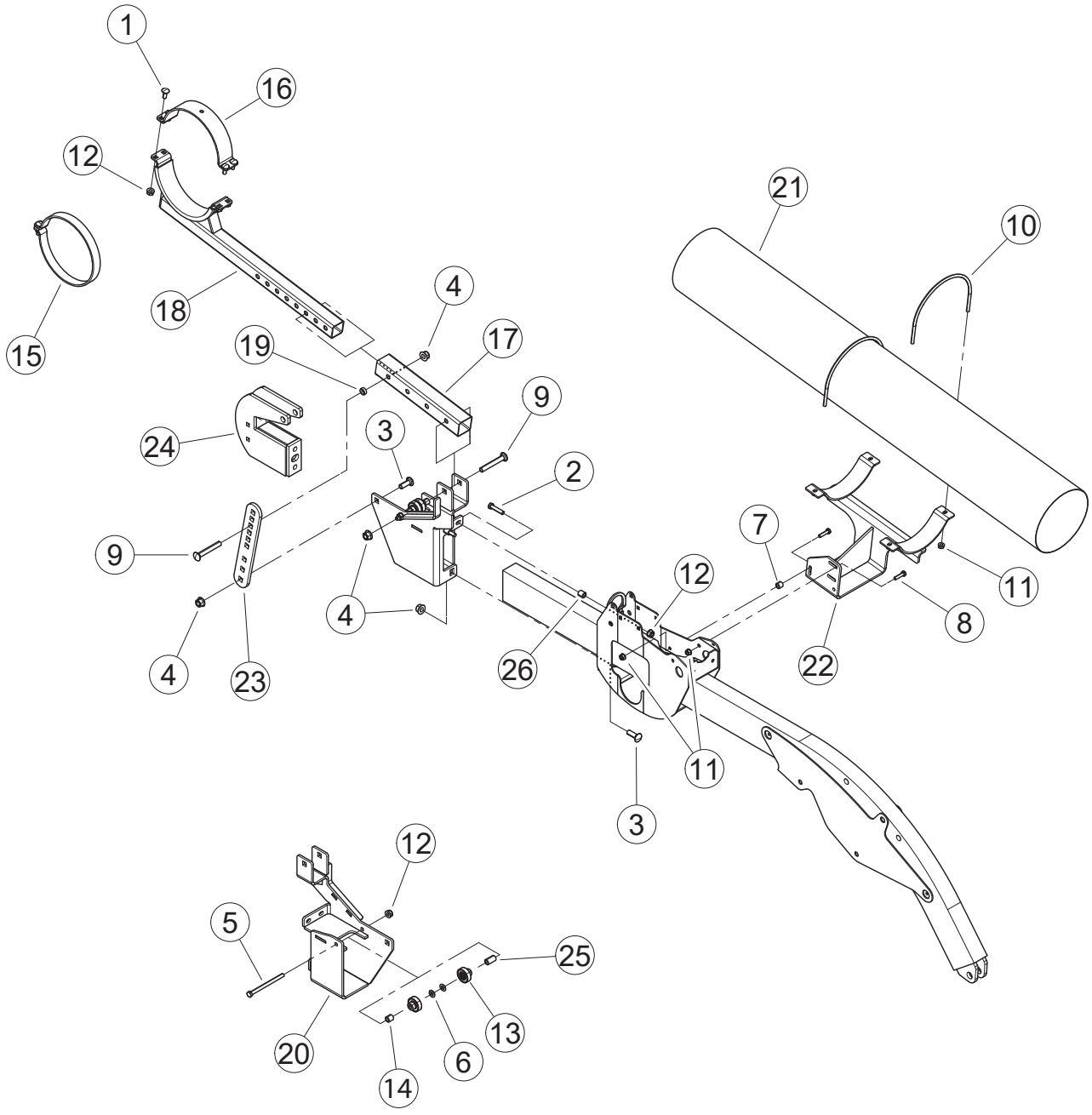
CAP, END			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
21	16091	CLAMP, T-BOLT (8-1/4”)	1
22	21924	CAP, TUBE 8” (NOTCHED)	1

REEL ARM MOUNT - CENTER	FD70 & CIH 2162 HEADERS	



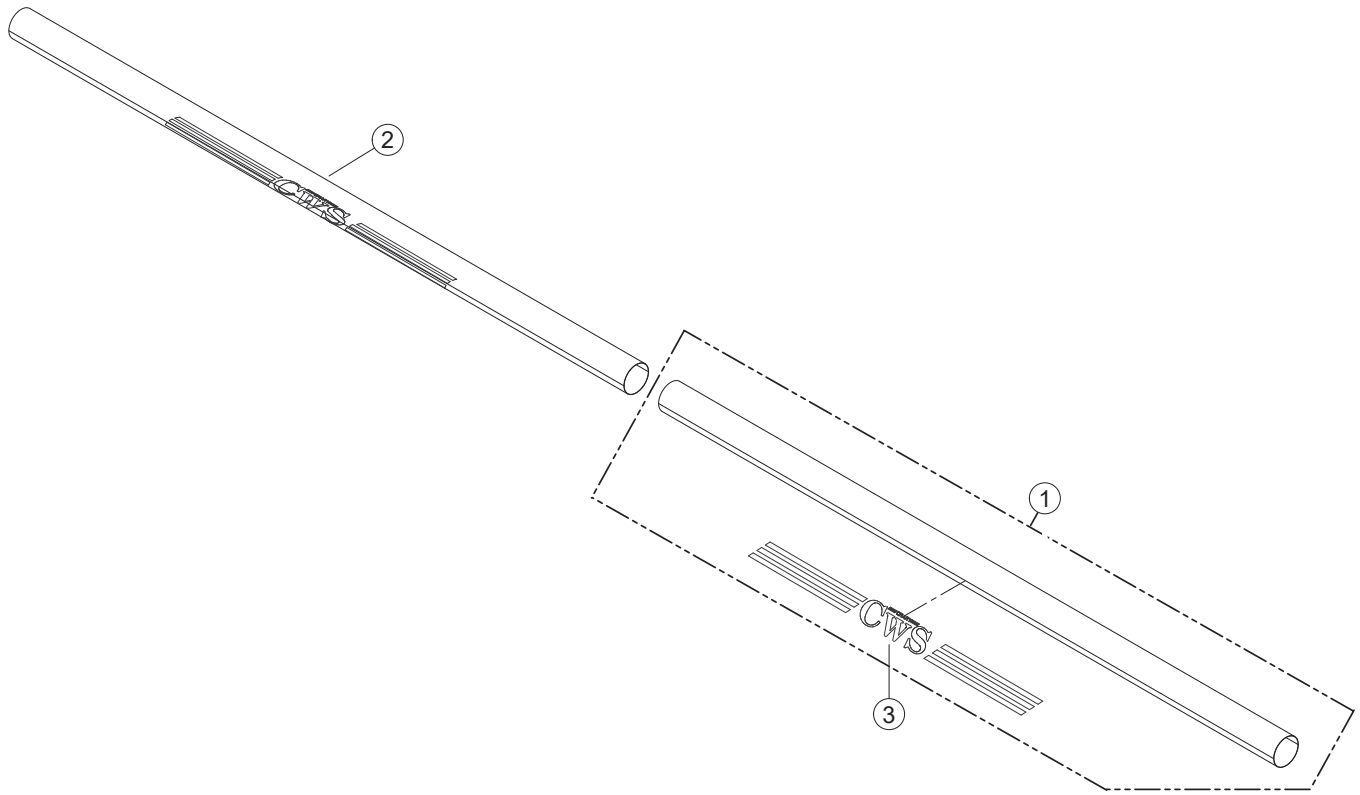
KIT, REEL ARM MOUNT (50347)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15196-00	BOLT, 1/2 X 2-3/4 FLANGE GR5 ZP	1
2	15247-00	BOLT, 1/2 X 4-1/2 FLANGE GR5 ZP	1
3	15057	BOLT, 3/8 X 1 CRG GR5 NC ZP	8
4	74041-12	SPACER, IDLER SHEAVE	2
5	15078-00	BOLT, 3/8 X 2 FLANGE NC	2
6	15157	BOLT, 1/2 X 1-1/2 CRG GR5 ZP	3
7	15162-00	NUT, 1/2-13 NYLOCK FLANGE	6
8	15205	BOLT, 3/8 X 5 HEX GR5 ZP	1
9	15260	WASHER, 3/8 SAE FLAT ZP	2
10	15349	BOLT, 5/16 X 7/8 CRG GR5 NC ZP	8
11	15458	BOLT, 1/2 X 3-1/2 CRG GR5 NC ZP	1
12	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	8
13	15905-00	NUT, 3/8-16 NYLOCK FLANGE	11
14	16092	CLAMP, 8-11/16" T-BOLT	4
15	0122-0230-00	HAIR PIN CLIP, .12 X 2 38-21-06	2
16	52769-00	ASSEMBLY, BEARING W/ ADAPTER	2
17	17670	SPACER .63 X .63 PULLEY	1
18	17843	ELECTRIC ACTUATOR	1
19	18580-00	HOSE, 8" SINGLE HUMP	2
20	25908-00	ASSEMBLY, HALF CLAMP	2
21	53662-12	STRAP, ADJUSTMENT	2
22	53666-12	WELDMENT, CYLINDER MOUNT	1
23	54330-12	WELDMENT, CENTER TUBE MOUNT	1
24	54365-12	WELDMENT, CENTER REEL MOUNT	1
25	54370-00	ASSEMBLY, MANIFOLD PIVOT	2
26	54382-33	WELDMENT, CWS CONNECTOR MANIFOLD	1
27	54682-12	TUBE, ARM MOUNT	1
28	54684-00	PIN, CYLINDER MOUNT	1
29	54886-12	WELDMENT, MANIFOLD PIVOT ROD	2
30	70046	IDLER SPACER	1

REEL ARM MOUNT - RH	FD70 & CIH 2162 HEADERS	

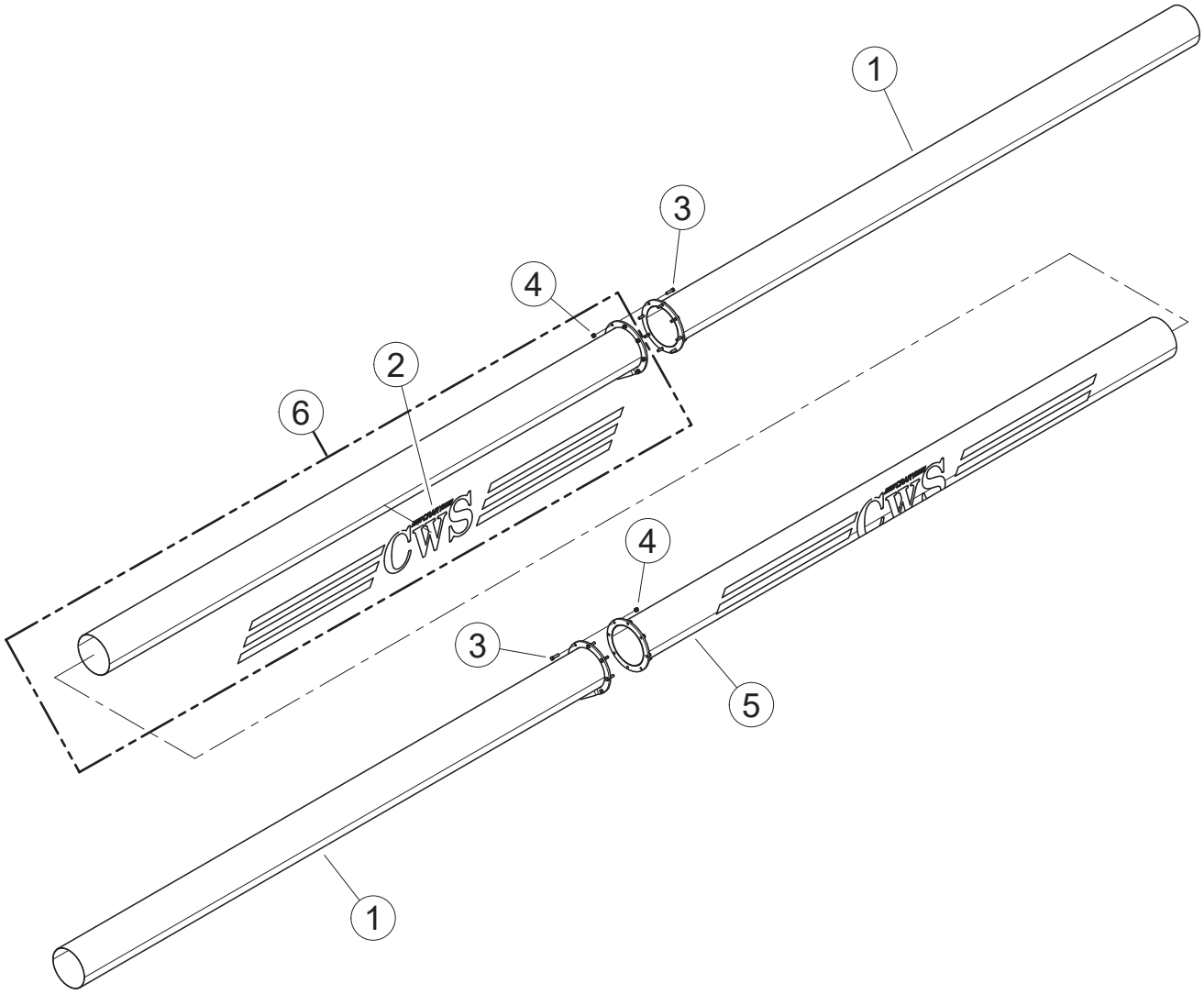


KIT, REEL ARM MOUNT (50347)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15057	BOLT, 3/8 X 1 CRG GR5 NC ZP	4
2	15078-00	BOLT, 3/8 X 2 FLANGE NC	2
3	15157	BOLT, 1/2 X 1-1/2 CRG GR5 ZP	2
4	15162-00	NUT, 1/2-13 NYLOCK FLANGE	4
5	15205	BOLT, 3/8 X 5 HEX GR5 ZP	1
6	15260	WASHER, 3/8 SAE FLAT ZP	2
7	75483-00	SPACER, 5/8 OD X 11 GA X .50	2
8	15258-00	BOLT, 5/16 X 1-1/4 FLANGE NCZP	2
9	15458	BOLT, 1/2 X 3-1/2 CRG GR5 NC ZP	2
10	15700-00	U-BOLT, 5/16-18 X 8.19 X 6.59	2
11	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	6
12	15905-00	NUT, 3/8-16 NYLOCK FLANGE	7
13	52769-00	ASSEMBLY, BEARING W/ ADAPTER	2
14	70362	SPACER .63 X .63 PULLEY	1
15	22489	ASSEMBLY, BRACE CLAMP	1
16	23501-12	CLAMP, HALF	1
17	25814-12	TUBE, ARM MOUNT	1
18	25906-00	ASSEMBLY, REEL MOUNT	1
19	27909-00	TUBE, .75 OD X .51 ID X .27	1
20	29103-12	WELDMENT, CWS MOUNT	1
21	29638-33	MANIFOLD, 56" ALUMINUM	1
22	50139-12	WELDMENT, TUBE MOUNT	1
23	53662-12	STRAP, ADJUSTMENT	1
24	53666-12	WELDMENT, CYLINDER MOUNT	1
25	70046	IDLER SPACER	1
	17410	FLEX HOSE, 8"ID X 6FT. (NOT SHOWN)	1

AIR MANIFOLD	30’, 35’, 40’ HEADERS	

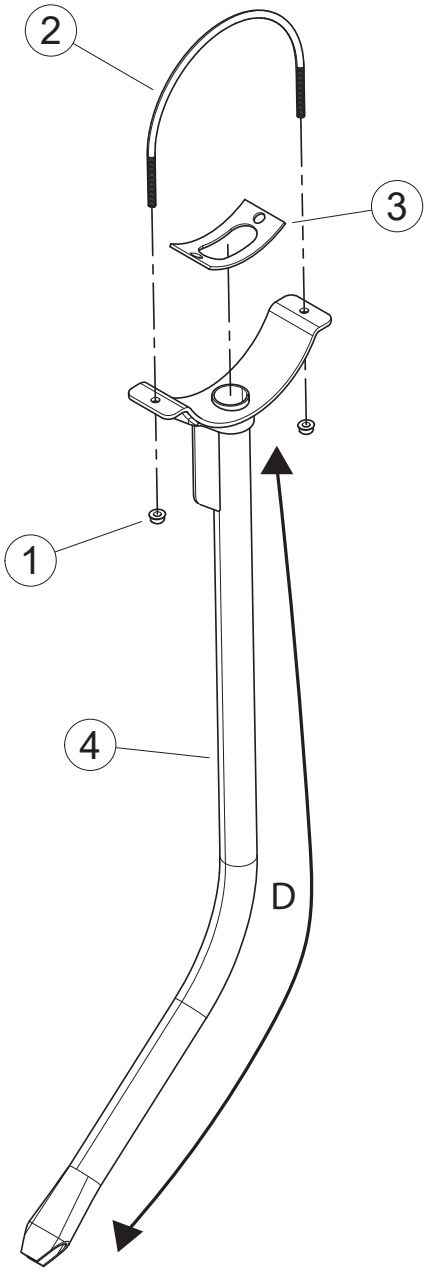


ASSEMBLY, CWS MANIFOLD - MACDON					
ITEM	**PART NUMBER**	**DESCRIPTION**	**50340 30 FT. QTY**	**54870 35 FT. QTY**	**54381 40 FT. QTY**
1	50342-00	ASSEMBLY, 30FT. CWS MANIFOLD - LH (WITH DECAL)	1		
	54869-00	ASSEMBLY, 35FT. CWS MANIFOLD - LH (WITH DECAL)		1	
	54379-00	ASSEMBLY, 40FT. CWS MANIFOLD - LH (WITH DECAL)			1
2	50341-00	ASSEMBLY, 30FT. CWS MANIFOLD - RH (WITH DECAL)	1		
	54868-00	ASSEMBLY, 35FT. CWS MANIFOLD - RH (WITH DECAL)		1	
	54380-00	ASSEMBLY, 40FT. CWS MANIFOLD - RH (WITH DECAL)			1
3	14077-00	DECAL, CWS LOGO (YELLOW)	2	2	2



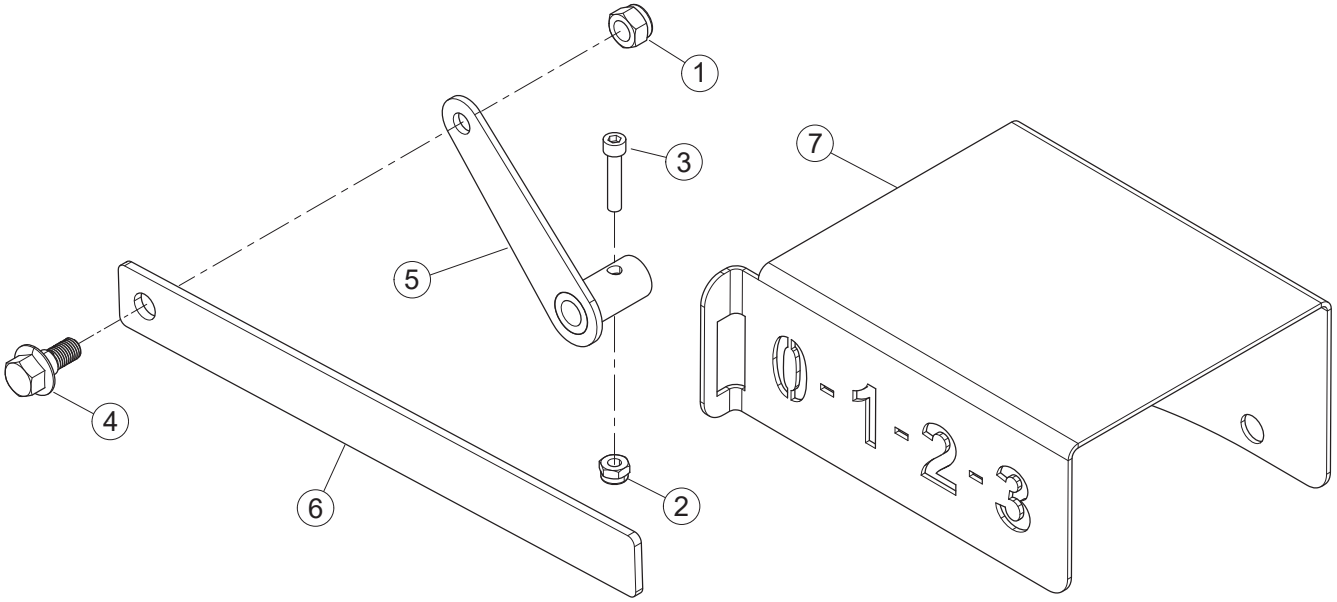
ASSEMBLY, CWS MANIFOLD - 12” HOLE SPACING			
ITEM	**PART NUMBER**	**DESCRIPTION**	**50665 45 FT. QTY**
1	27492-33	WELDMENT, 30' (L) CWS RH/LH MANIFOLD(12")	2
2	14077-00	DECAL, CWS LOGO - YELLOW	2
3	15007	BOLT, 3/8 X 1-1/2 HEX GR5 ZP	8
4	15388	NUT, 3/8 NE NYLOCK ZP	8
5	50198	ASSEMBLY, 45FT CWS MANIFOLD - RH (WITH DECAL)	1
6	50197	ASSEMBLY, 45FT CWS MANIFOLD - LH (WITH DECAL)	1

DROP TUBE KIT	ALL MODELS	



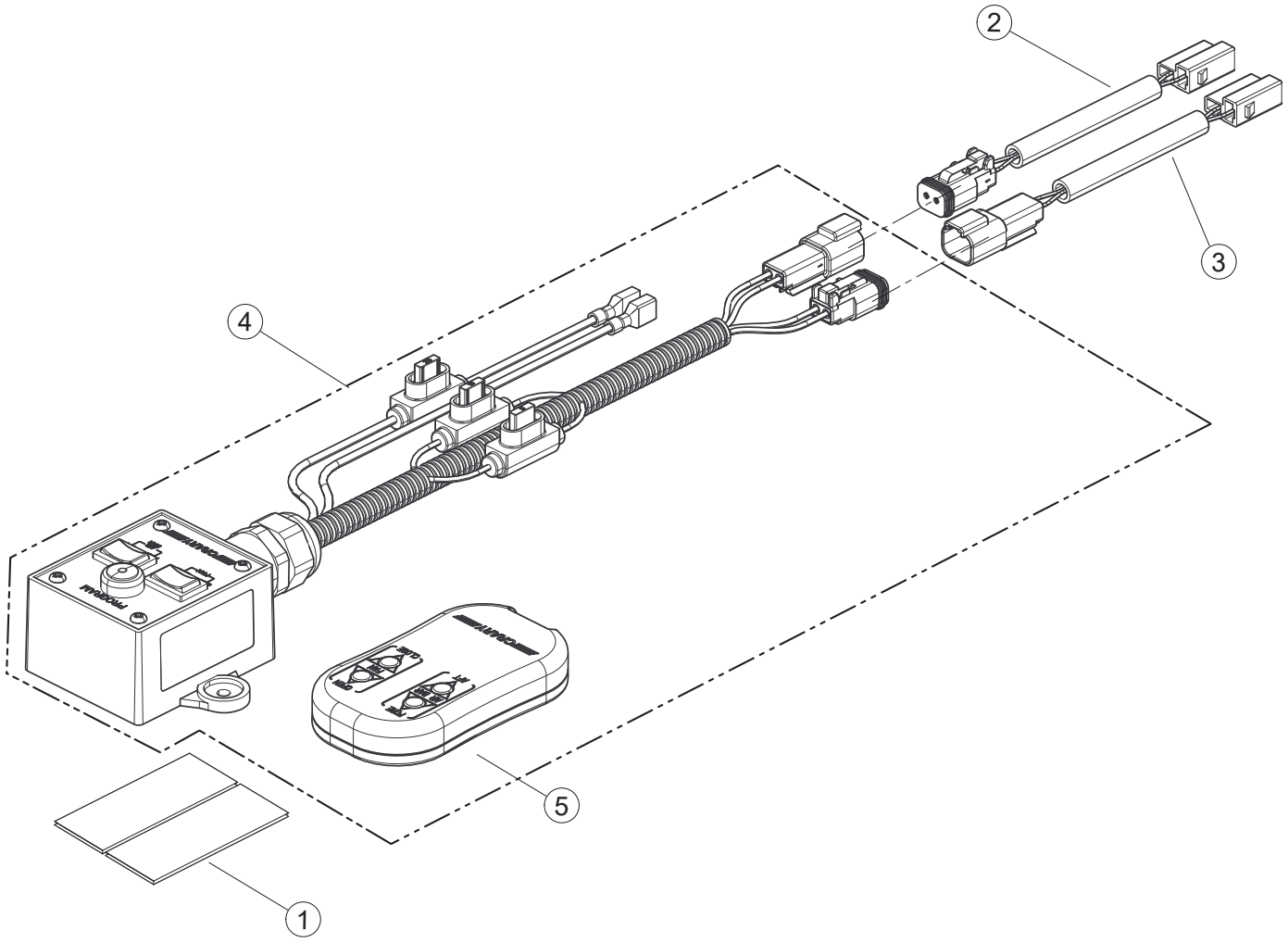
	TOTAL OF BOTH LONG AND SHORT DROP TUBES	
MANIFOLD LENGTH	**# OF SHORT DROPTUBES (25919)**	**# OF LONG DROPTUBES (25920)**
30’ (12” TUBE SPACING)	2	27
35’ (12” TUBE SPACING)	2	33
40’ (12” TUBE SPACING)	2	37
45’ (12” TUBE SPACING)	2	43

DROP TUBE KIT			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY.**
	25920	KIT, LONG DROP TUBE (INCLUDES ITEMS BELOW) D=42’	
1	15351	NUT, 5/16” SERRATED FLANGE NC ZP	2
2	15700-00	U-BOLT, 5/16-18 X 8.19” X 6.59”	1
3	25832-00	ASSEMBLY, LONG AIR TUBE	1
	17313	FOAM SEAL-AIR TUBE (NOT SHOWN)	1
	25919	KIT, SHORT DROP TUBE (INCLUDES ITEMS BELOW) D=36”	
1	15351	NUT, 5/16” SERRATED FLANGE NC ZP	2
2	15700-00	U-BOLT, 5/16-18 X 8.19” X 6.59”	1
3	25831-00	ASSEMBLY, SHORT AIR TUBE	1
	17313	FOAM SEAL-AIR TUBE (NOT SHOWN)	1



DUAL FLOW DAMPER INDICATOR KIT #52011			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15356	NUT, 5/16-18 NE NYLOCK CMS F1 5ANS	1
2	15397	NUT, 10/24 NYLOCK TYPE NM, ZP	1
3	15860-00	SCREW, HEX SOC #10-24 X 1.00 ZP	1
4	15908-00	BOLT, 5/16-18 X 3/4 ZP FLANGE SHOULDER	1
5	52012-12	WELDMENT, DUAL FLOW LINK	1
6	52013-12	BAR, GAUGE DUAL FLOW INDICATOR	1
7	52015-35	BRACKET, INDICATOR DUAL FLOW	1

SWITCH/MOUNT PLATE	ALL MODELS	



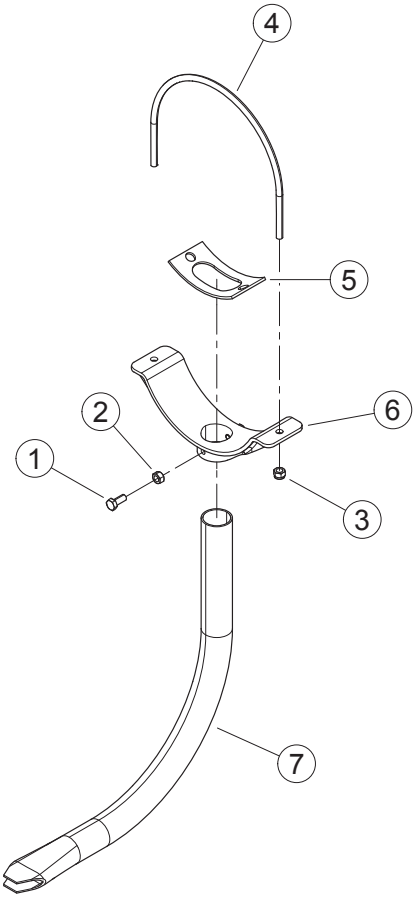
REMOTE CONTROL - CWS/FAR ACTUATOR CONTROLLER 50870-00			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	35120-00	VELCRO STRIP	2
	33186-00	LANYARD, CRARY (BLACK) (NOT SHOWN)	1
2	33184-00	HARNESS, ACTUATOR - MANIFOLD	1
3	31133-00	HARNESS, ACTUATOR - BUTTERFLY	1
4	30349-00	SWITCH AND REMOTE, CWS/FAR ACTUATOR CONTROL ASSM	1
5	55181-00	KIT, REMOTE, CWS/FAR ACTUATOR CONTROLLER (INCLUDED IN ITEM 4)	1

CRARY

Parts Catalog
Crary Wind System

OPTIONS

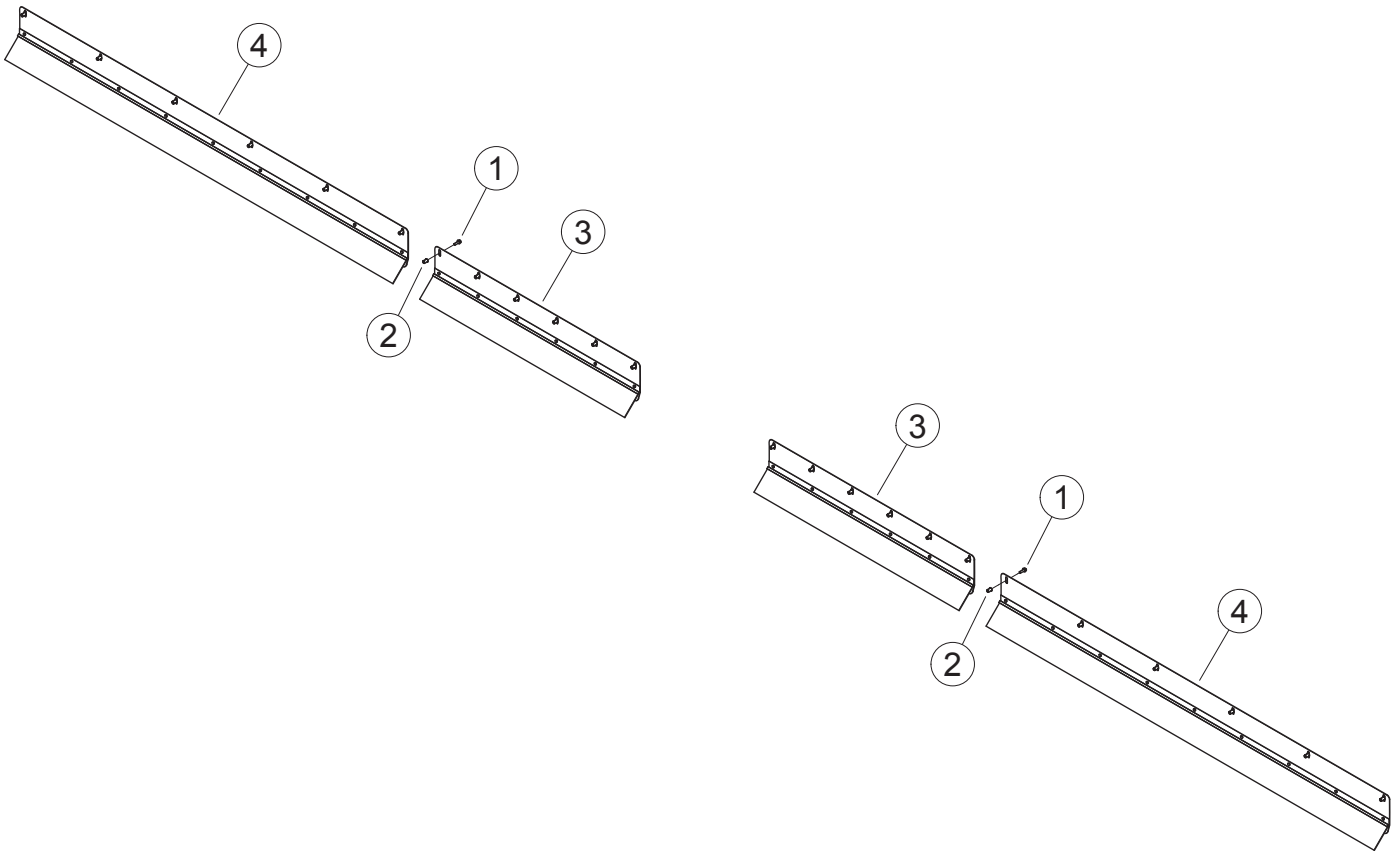
DROP TUBE FEEDERHOUSE CLEANER | ALL MODELS



KIT, DROP TUBE FEEDERHOUSE CLEANER (50384)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15003	BOLT, 5/16 X 3/4 HEX GR5 ZP	2
2	15153	NUT, 5/16 HEX NC ZP	2
3	15356	NUT, 5/16 NE NYLOCK ZP	2
4	15700-00	U-BOLT, 5/16-18 X 8.19 X 6.59	1
5	17313	FOAM SEAL - AIR TUBE	1
6	50381-00	BRACKET, FEEDERHOUSE CLEANER	1
7	50382-00	TUBE, FEEDERHOUSE CLEANER	1

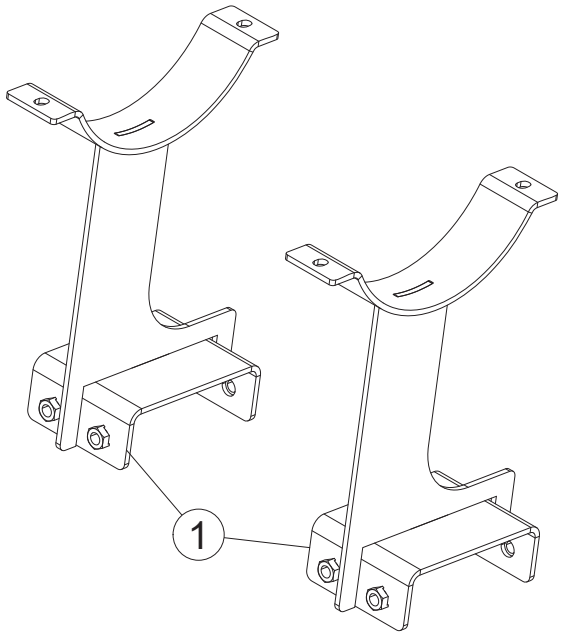
ALL MODELS

DRAPER BRUSH KIT



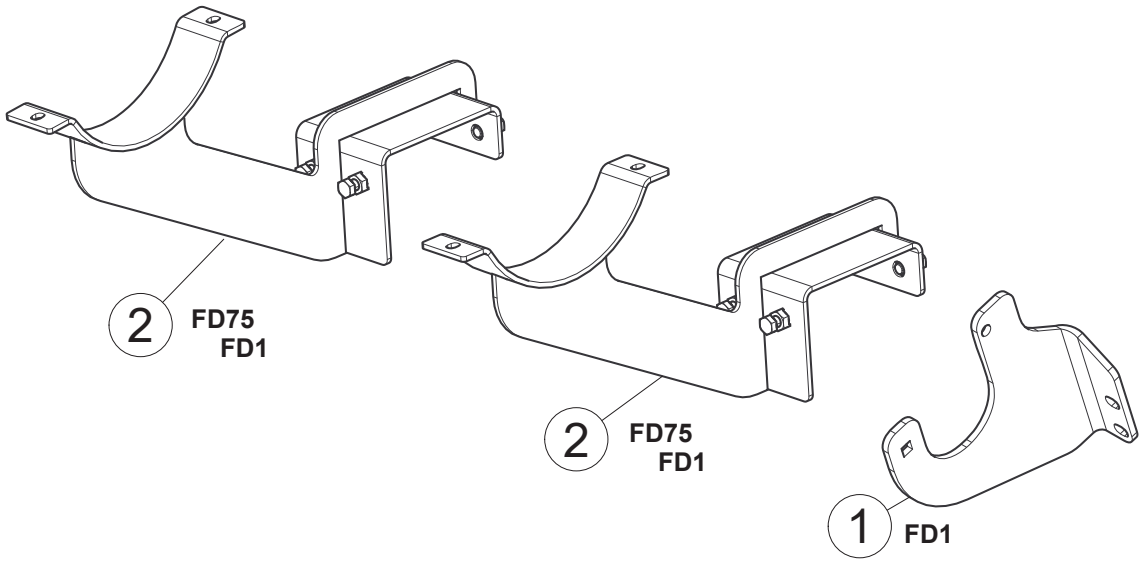
KIT, MACDON) DRAPER BRUSH						
ITEM	PART NUMBER	DESCRIPTION	50391 30FT. QTY	50392 35FT. QTY	50393 40FT. QTY	50394 45FT. QTY
1	15079-00	BOLT, 1/4-20 X 3/4 HWH GR5 CZP	24	24	36	36
2	15177-00	RIVET, 1/4-20 OE KNRLD NUT	24	24	36	36
3	50398-00	ASSEMBLY, 38" BRACKET/BRUSH FD70/75	2		2	
4	50399-00	ASSEMBLY, 72" BRACKET/BRUSH FD70/75	2	4	4	6
	30366-00	TOOL, 1/4-20 MANUAL RIVNUT INSTALL (NOT SHOWN)	1	1	1	1

FEEDERHOUSE TUBE MOUNT KIT | DUAL FLOW MACDON FD70



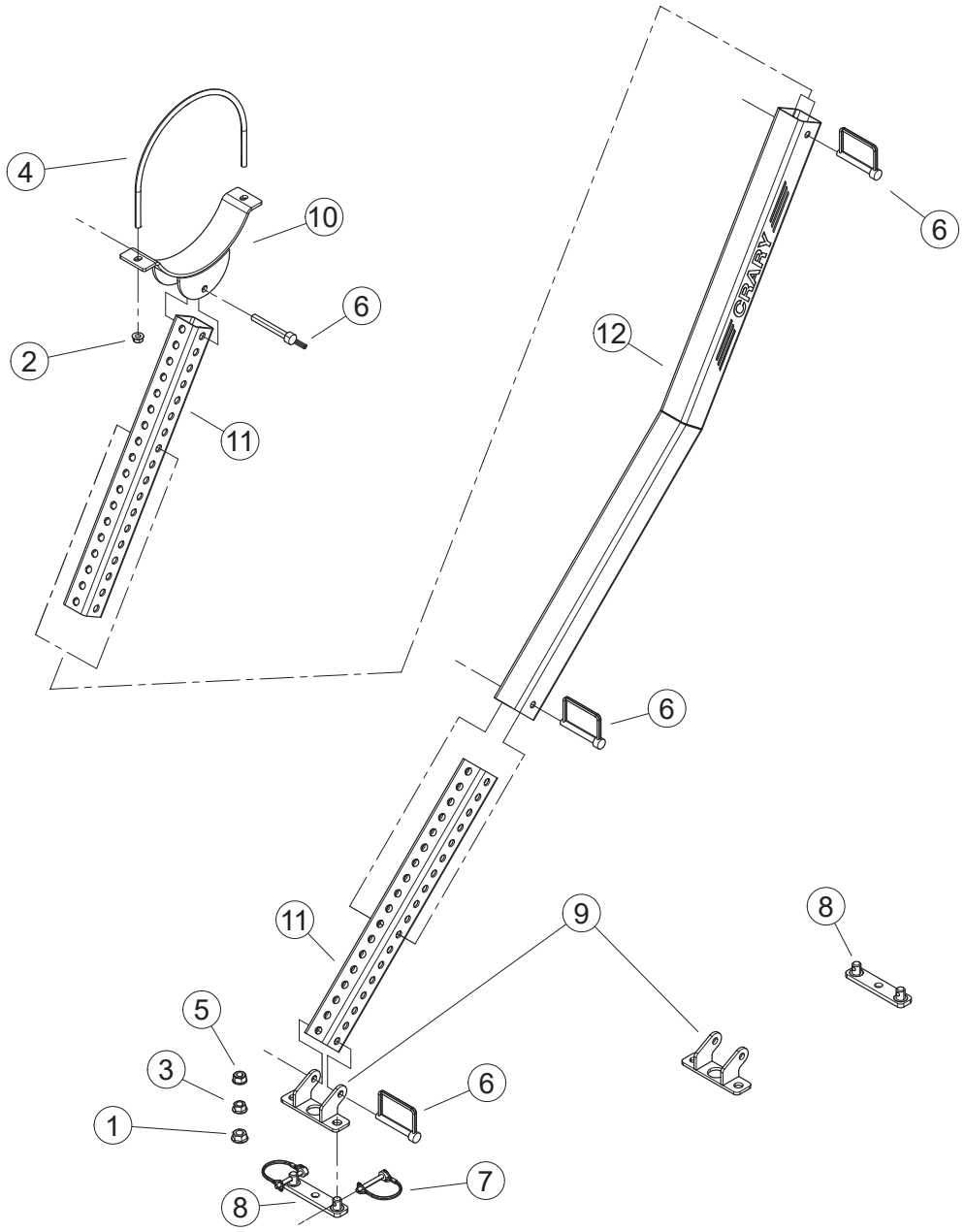
KIT, FEEDER HOUSE MOUNTS DUAL FLOW MACDON FD70 - (50767)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	50450-00	WELDMENT, MACDON FD70 TUBE MOUNT BRACKET	2

CLAAS MACDON CONVERSION KIT | DUAL FLOW MACDON FD1/75



KIT, CLAAS MACDON CONVERSION - (55150)			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	55145-12	BRACKET, PTO HOLDER	1
2	55149-00	ASSEMBLY, CLAAS MACDON TUBE MOUNT BRACKET	2

ALL MODELS	**TRANSPORT SUPPORT KIT**



TRANSPORT SUPPORT KIT #51476			
ITEM	**PART NUMBER**	**DESCRIPTION**	**QTY**
1	15052	NUT, 7/16" SERR FLANGE	1
2	15351	NUT, 5/16" SERR FLANGE	2
3	15554	NUT, M10-1.5 SERR FLANGE	1
4	15700-00	U-BOLT, 5/16-18 X 8.19 X 6.59	1
5	15905-00	NUT, 3/8" NYLOCK	1
6	16808	PIN, 3/8 X 2-3/4 IN SNAPPER	4
7	33805-00	PIN, LOCKING 1/4 X 2 LOOP	2
8	51470-33	WELDMENT, BASE	2
9	51471-35	WELDMENT, LOWER HINGE	2
10	51472-33	WELDMENT, UPPER TRANSPORT MOUNT	1
11	51475-35	ARM, EXTENSION TUBE	2
12	51478-00	ASSEMBLY, TRANSPORT TUBE	1

CRARY INDUSTRIES
A subsidiary of ECHO Inc.

237 12TH ST. NW • P.O. BOX 849
WEST FARGO, ND 58078-0849
PH: 1-800-247-7335 • FAX: (701) 282-9522
www.crary.com

PROUDLY MADE IN USA

Manufactured in the
United States of America
by Crary Industries