



PRODUCT MANUAL

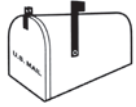


JOHN DEERE HDF/HDR SERIES

RECORD SERIAL NUMBER HERE

Manual P/N 55057-00
Rev. 020722.09
SN Range: M00001-Current

HOW TO REACH US



WWW.**CRARY**.COM

ADDRESS	HOURS	TELEPHONE FAX NUMBER	E-MAIL INTERNET
Crary Industries, Inc. 237 12 th 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.

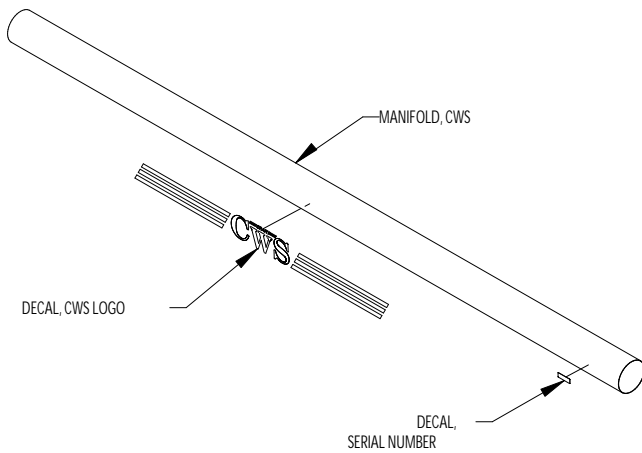
THE CRARY INDUSTRIES STATEMENT OF PRODUCT SAFETY

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 unless stated otherwise.

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



Serial number location

MANUFACTURED BY CRARY INDUSTRIES
WEST FARGO, NORTH DAKOTA 58078 U.S.A.
SERIAL NUMBER
MANUFACTURED IN U.S.A.

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 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
Big Top	1 year
Cutting Systems	1 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 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 John Deere FD/RDF series header with 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.

GEARBOX FAN KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
52042	1

MANIFOLD KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
50519	1
50665	1
51272	1
52755	1
54381	1
55100	1
55060	1
55065	1

DUAL FLOW KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
55075	3
55085	3
55095	3
55045	5

REEL ARM MOUNT KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
55050	2

DROP TUBE KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
52556	1
52782	1

DRIVELINE KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
54483-00	1

FAN MOUNT/DRIVE KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
55000	1

RIGHT HAND DRIVE KIT	
KIT NUMBER	NUMBER OF BOXES IN KIT
55070	1
55080	2
55090	2
55040	2

TABLE OF CONTENTS

DESCRIPTION	PAGE	DESCRIPTION	PAGE
INTRODUCTION	ii	5.8 TRANSPORTING.....	35
SAFETY.....	3	5.9 STORAGE	36
2.1 SAFETY ALERT SYMBOL	3	SERVICE & MAINTENANCE	37
2.2 GENERAL SAFETY	4	6.1 MAINTENANCE CHECKLIST.....	37
2.3 OPERATING SAFETY.....	4	6.2 FLUIDS AND LUBRICANTS	38
2.4 MAINTENANCE SAFETY	5	6.3 GREASING.....	38
2.5 HYDRAULIC SAFETY	5	6.4 GEARBOX OIL.....	38
2.6 PTO SAFETY	5	6.5 FAN HOUSING AND AIR HOSE.....	39
2.7 TRANSPORT SAFETY.....	6	6.6 PTO LUBRICATION.....	39
2.8 STORAGE SAFETY	6	6.7 SLIP CLUTCH MAINTENANCE	40
2.9 ASSEMBLY SAFETY	6	6.8 CLUTCH ADJUSTMENT	40
2.10 SAFETY DECALS.....	6	TROUBLESHOOTING	41
2.11 SIGN-OFF FORM.....	7	SPECIFICATIONS.....	42
SAFETY DECALS	8	8.1 BOLT TORQUE	42
ASSEMBLY	9	PARTS CATALOG	43
4.1 GEARBOX/FAN MOUNT.....	9	GEARBOX MOUNT KIT	44
4.1.1 35/40/45/50 FT HEADERS	9	GEARBOX/FAN	46
4.2 PTO SUPPORT BRACKET & SHIELD - ALL.....	10	GEARBOX REPLACEMENT PARTS	48
4.2.1 35/40/45/50 FT HEADERS	10	DRIVELINE/C FLANGE ASSEMBLY.....	50
4.3 DRIVELINE ADJUSTMENT	11	DAMPER INDICATOR KIT.....	52
4.3.1 SHORTENING THE DRIVELINE (OPTION A).....	11	FAN HOSE ASSEMBLY.....	54
4.3.2 SHORTENING THE DRIVELINE (OPTION B).....	11	REEL ARM MOUNT, LH	56
4.4 REEL ARM MOUNT	12	REEL ARM MOUNT, CENTER.....	57
4.4.1 35/40/45/50 FT (LEFT HAND).....	12	REEL ARM MOUNT, RH.....	58
4.4.1 35/40/45/50 FT (CENTER)	14	AIR MANIFOLD.....	59
4.4.3 35/40/45/50 FT (RIGHT HAND)	16	DROP TUBE KIT.....	63
4.5 MANIFOLD	18	SWITCH/MOUNT PLATE	64
4.6 DROP TUBE ASSEMBLY.....	21	KIT, DROP TUBE FEEDERHOUSE CLEANER	65
4.6.1 ALL MANIFOLDS WITH 12" SPACING.....	21	PARTS CATALOG OPTIONS.....	65
4.7.1 RIGHT HAND ROUTING	22	TRANSPORT SUPPORT KIT	66
4.7.2 LEFT HAND ROUTING	24		
4.8 ELECTRICAL WIRING	27		
OPERATION	28		
5.1 MACHINE COMPONENTS	29		
5.2 INITIAL ADJUSTMENTS.....	30		
5.2.1 MANIFOLD ADJUSTMENT	30		
5.2.2 TORQUE LIMITER (SLIP CLUTCH).....	30		
5.3 PRE-OPERATION CHECKLIST	31		
5.4 MACHINE BREAK-IN	31		
5.4.1 PRE-START INSPECTION.....	31		
5.4.2 AFTER OPERATING FOR 2 HOURS.....	31		
5.4.3 AFTER OPERATING FOR 10 HOURS.....	31		
5.5 JD GEN4, TUNING OF HDR/HDF PLATFORM.....	32		
5.5.1 WING DOWN FORCE ADJUSTMENT	32		
5.6 CONTROLS.....	34		
5.6.1 MANIFOLD TILT:.....	34		
5.6.2 FAN AIR VOLUME ACTUATOR:.....	34		
5.6.3 LIFT/FORE AND AFT ADJUSTMENT:.....	34		
5.6.4 PROGRAMMING INSTRUCTIONS:.....	34		
5.7 OPERATING HINTS	35		

1 Section 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, Service & Maintenance, and Troubleshooting sections of this manual. Check each item referred to and acquaint yourself with the adjustments required to obtain safe, efficient operation.

This manual covers all models of the CWS manufactured by Crary Company for John Deere HDF/HDR series headers. Differences are covered and explained where appropriate. 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 manual.

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 this manual before operating 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.



NOTE

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 the direction of forward travel.

2 Section 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 CWS 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.

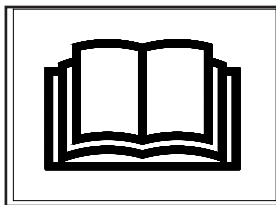
2.2 GENERAL SAFETY

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.
- 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 any way. 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.



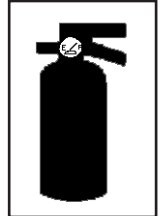
2. Only trained persons shall operate the machine. An untrained operator is not qualified to operate the machine.

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



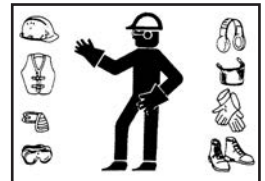
4. Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.

5. Do not allow children, spectators or bystanders within hazard area of machine.



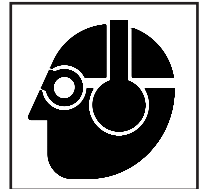
6. Wear appropriate protective gear. This list includes but is not limited to:

- 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.

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.

Think SAFETY! Work SAFELY!

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 CWS.
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 drive shaft 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

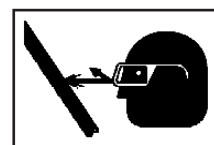
1. Follow ALL operating, maintenance, and safety information in this manual.
2. Support the machine with blocks or safety stands when working around it.
3. Follow good shop practices:
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light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

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.

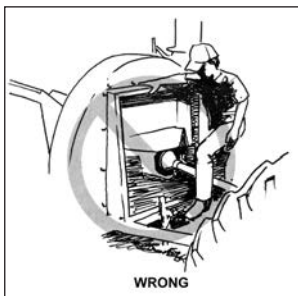


2.6 PTO SAFETY

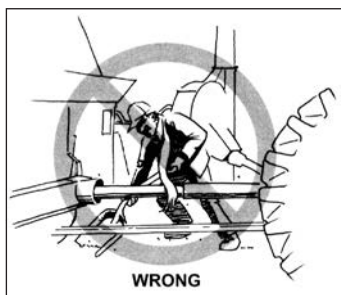
1. Keep bystanders, especially children, away from drive shafts.
2. Be extremely careful when working around PTO shafts, drivelines, or other rotating shafts.
3. Do not remove or modify protective shields or guards.
4. Do not step across a PTO shaft or driveline or use it as a step.
5. Keep guards and shields in place at all times while operating.
6. Replace all damaged or missing parts or shields with the correct original manufacturer's parts.

Think SAFETY! Work SAFELY!

- Grease, clean, and maintain PTO components according to original manufacturer's specifications and information in this manual.



- Clothing worn by the operator must be fairly tight. Never wear loose-fitted jackets, shirts, or pants when working around the drive shafts. Tie long hair back or put under a cap.



- Keep hydraulic hoses, electrical cords, chains, and other items from contacting the drive shafts.
- Do not clean, lubricate, or adjust the drive shafts when the reel is engaged and the combine is running.

2.7 TRANSPORT SAFETY

- Make sure you are in compliance with all local regulations regarding transporting equipment on public roads and highways.
- 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.
- See the owner's manual that came with your combine and header for proper transportation.

2.8 STORAGE SAFETY

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

2.9 ASSEMBLY SAFETY

- Assemble in an area with sufficient space to handle the largest component and access to all sides of the machine.
- Use only lifts, cranes and tools with sufficient capacity for the load.
- When necessary, have someone assist you.
- Do not allow spectators in the working area.
- Be sure to read the Maintenance Safety section.

2.10 SAFETY DECALS

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

HOW TO INSTALL SAFETY DECALS:

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

THINK SAFETY! WORK SAFELY!

3 Section 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.

4 Section ASSEMBLY

4.1 GEARBOX/FAN MOUNT



WARNING

Place all controls in neutral or off, lower header to the ground, stop combine engine, set parking brake, remove ignition key, chock wheels and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.

4.1.1 35/40/45/50 FT HEADERS

Refer to Figure 1 for the following installation.

1. Clamp the gearbox mount (1), and the driveline hanger (4) around the OEM horizontal header beam as shown in (Figure 1).
2. Fasten the lower support (3) to the gearbox mount (1) with two 1/2 X 1-1/4 flange bolts and nuts. fasten the other end of the support to the OEM header beam with a 1/2" U-bolt and two nuts as shown in Figure 1.
3. Use a jack or hoist to position the gearbox inside the gearbox mount bracket. Attach the gearbox to the bracket with six 1/2" x 1-1/4" flange bolts and 1/2" nylock nuts. Torque hardware to 75 ft-lbs.
4. Install Hose Wrap (5) around OEM hoses.

5. Check the gearbox and, if necessary, fill the gearbox with lube before use. The gearbox should be pre-filled with the proper amount of oil.

Use Mobilube SCH 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 oz. (0.8 L)

6. Next step, **Right Hand Drive Kit** installation, go to page 10.

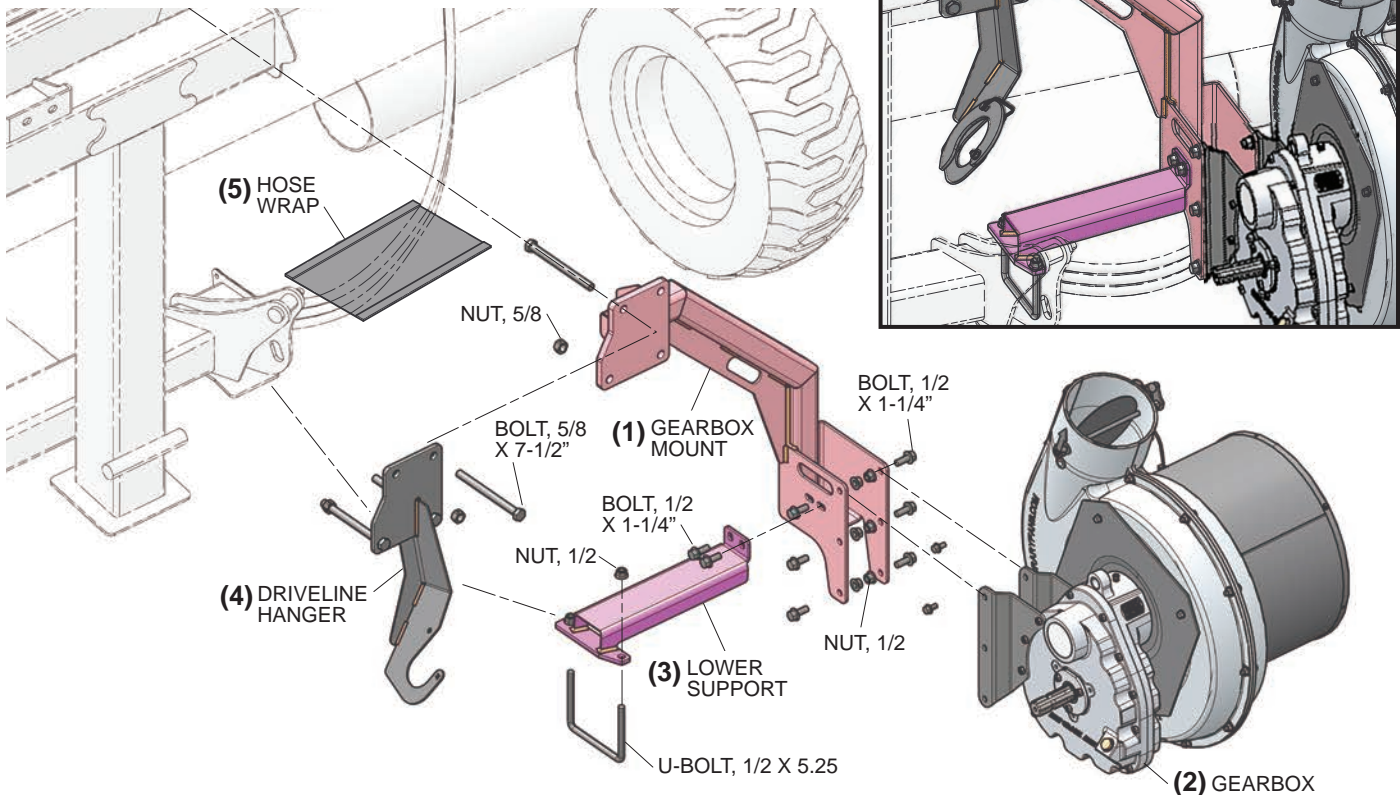


Figure 1: Gearbox/fan mount kit

4.2 PTO SUPPORT BRACKET & SHIELD - ALL

4.2.1 35/40/45/50 FT HEADERS

RIGHT HAND DRIVE KIT PARTS	
KIT #	DESCRIPTION
55070	KIT, SERIES II RH DR 35 FT
55080	KIT, SERIES II RH DR 40 FT
55090	KIT, SERIES II RH DR 45 FT
55040	KIT, SERIES II RH DR 50 FT

Refer to Figure 2 for the following steps:

- Using three 3/8" x 3/4" bolts, install the PTO shield (1).
- Attach the PTO lock (3) to the driveline hanger (2) using a 3/8" x 1" bolt and 3/8" nylock nut.

- The snap pin (4) will be used to secure the PTO lock (3) closed.
- Next step, **Drive Line Adjustment**, cut driveline if required, go to page 11.
- Next step, **Real Arm Mount** installation, go to page 12.

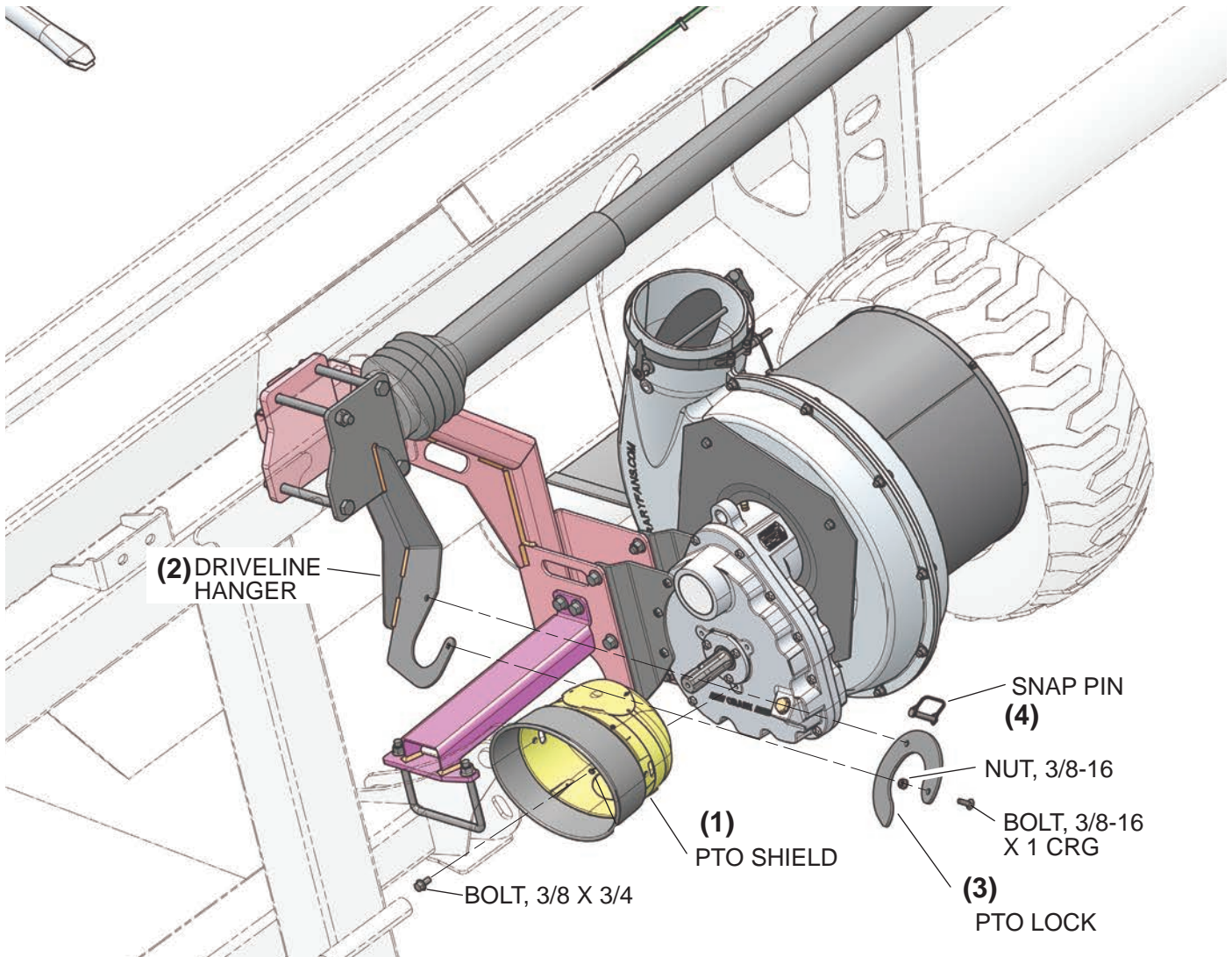


Figure 2: Right hand drive kit

4.3 DRIVELINE ADJUSTMENT

Lay driveline out to check if driveline connects correctly, If you determine 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 4.3.1. If a grease zerk is within the cutting area, use the steps in section 4.3.2.

4.3.1 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 3). Measure and mark the driveline tube 1-9/16" inward from dimension A.

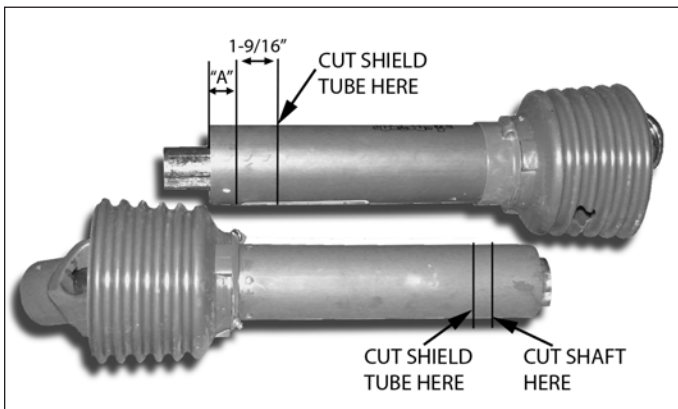


Figure 3: Shorten the driveline if it is too long

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 to deburr them, and then slide the two halves back together.

4.3.2 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 4). 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.

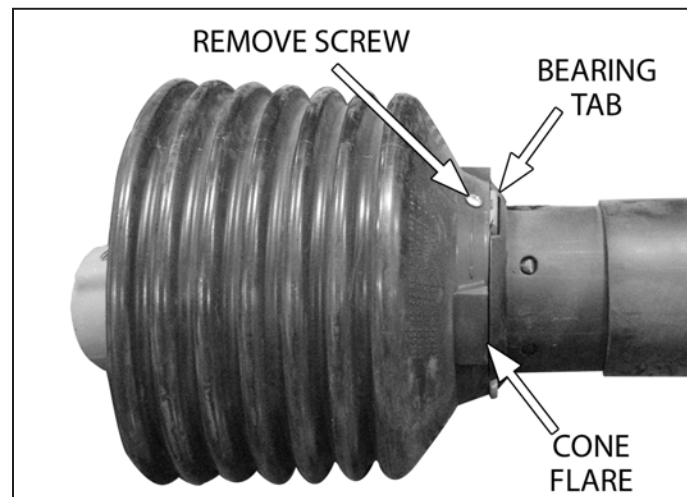


Figure 4: Removing the shield tube

4.4 REEL ARM MOUNT



CAUTION



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

4.4.1 35/40/45/50 FT (LEFT HAND)

1. Clamp the outer LH reel mount **(1)**, and the inner LH reel mount **(2)** around the OEM rear arm as shown in (Figure 8) using four 1/2 X 4-1/2 flange bolts and nuts.
2. Assemble the nylon bearing **(5)** and inner roller bushing **(6)** as shown and attach to the outer LH reel mount and the inner LH reel mount using one 3/8" x 4-1/2" bolt and 3/8" nylock nuts. The bearing should turn freely when installed.
3. Align the mount tube **(3)** to the holes in the top of the reel mounts **(1) & (2)** and secure with two 1/2" x 2-3/4" bolts and nylock nuts.
4. Insert the manifold mount **(4)** into the mount tube **(3)** so that the cradle is facing down. Secure with one 1/2" x 2-3/4" bolt and a 1/2" nylock nut.



Figure 5: Reel arm mount assembly, Left hand side shown

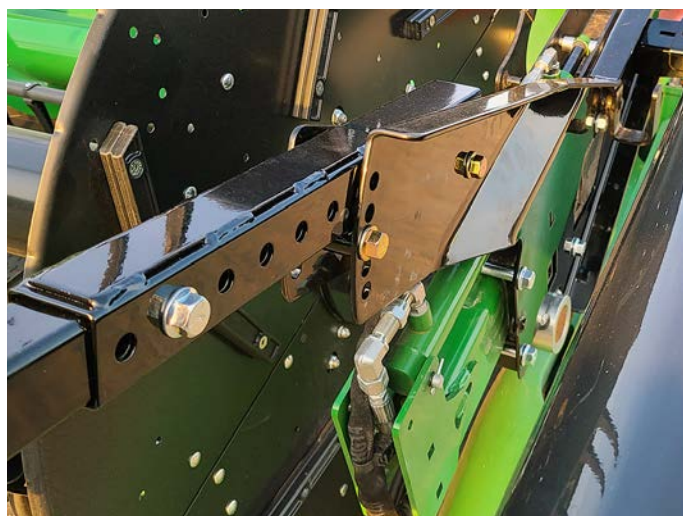


Figure 6: Reel arm mount assembly (LH)

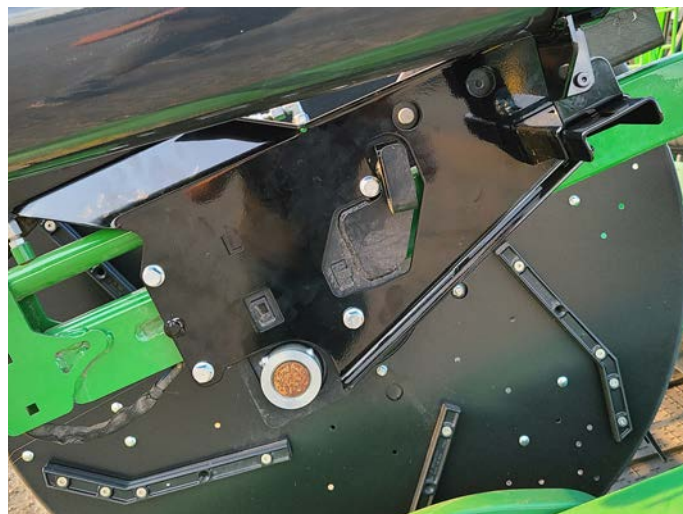


Figure 7: Left hand side shown

4.4 REEL ARM MOUNT

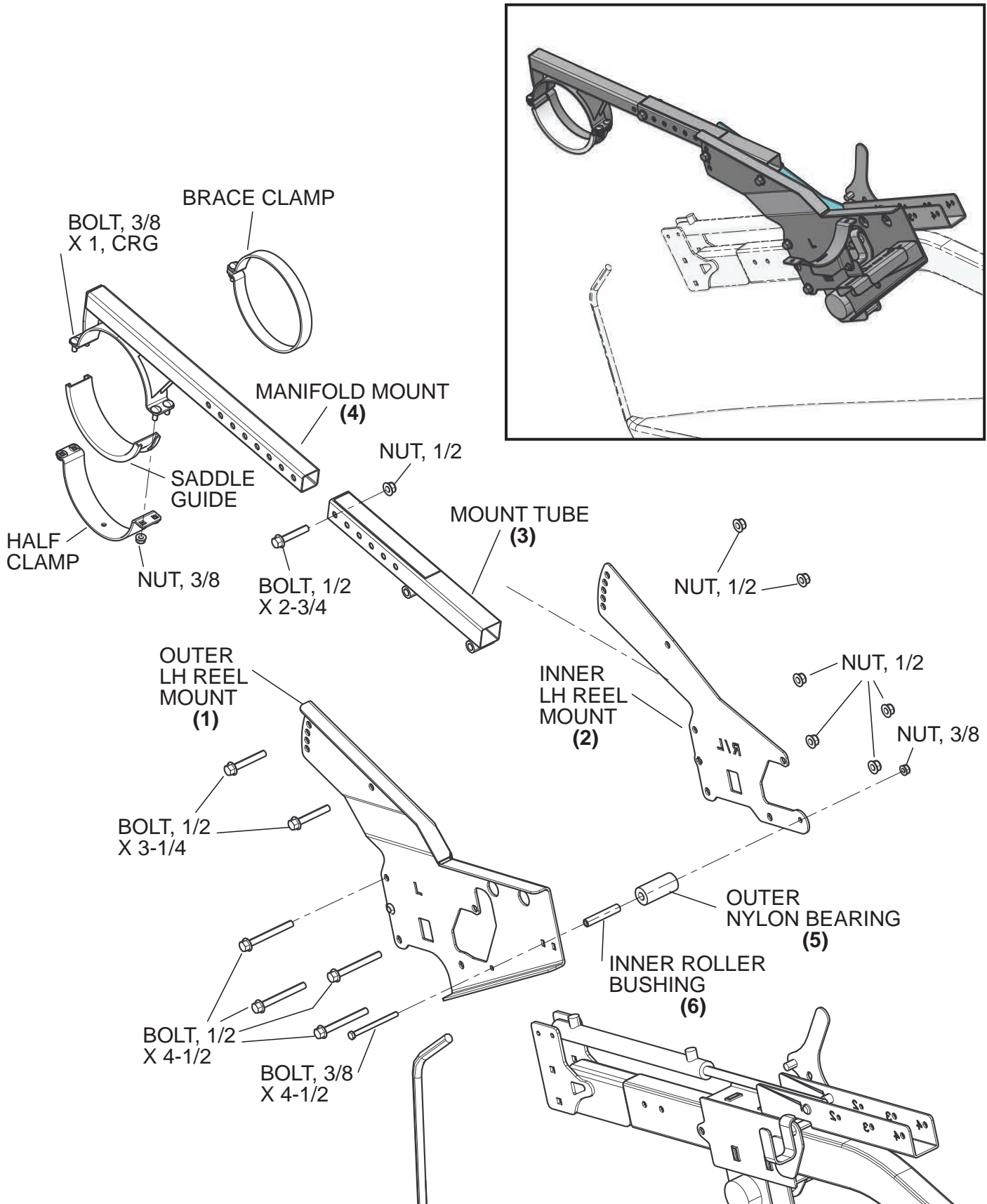


Figure 8: Reel arm mount (LH)

4.4 REEL ARM MOUNT



CAUTION

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

4.4.1 35/40/45/50 FT (CENTER)

1. Remove the front pin from the OEM hose support, Figure 11, you will be re-inserting it later in step 2.
2. Attach both the left center reel mount (1) and the right center reel mount (2) using two 3/8 X 1" carriage bolts and nuts each, and then replace the OEM pin and insert the cotter pin.
3. Align the mount tube (3) to the holes in the top of the reel mounts (1) & (2) and secure with two 1/2" x 3-1/4" bolts and nylock nuts.
4. Insert the center manifold mount (4) into the mount tube (3) so that the cradle is facing down. Secure with one 1/2" x 2-3/4" bolt and a 1/2" nylock nut.



Figure 9: Reel arm mount assembly, Center shown



Figure 10: Reel arm mount assembly (Center)

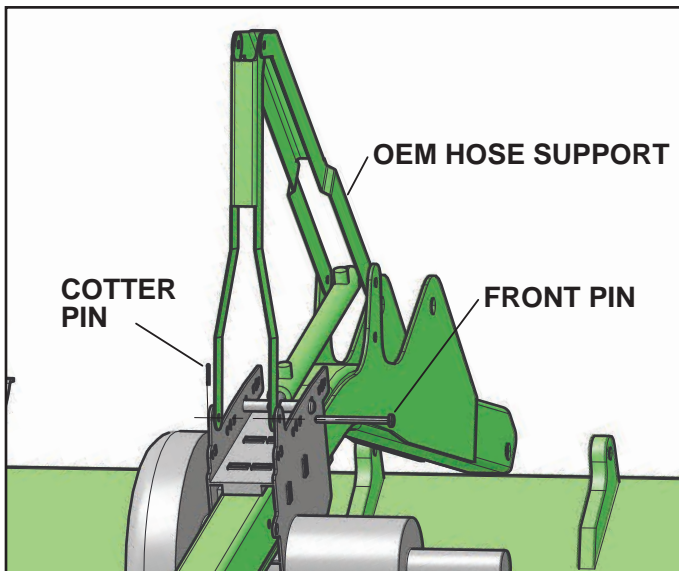


Figure 11: OEM pin and cotter pin

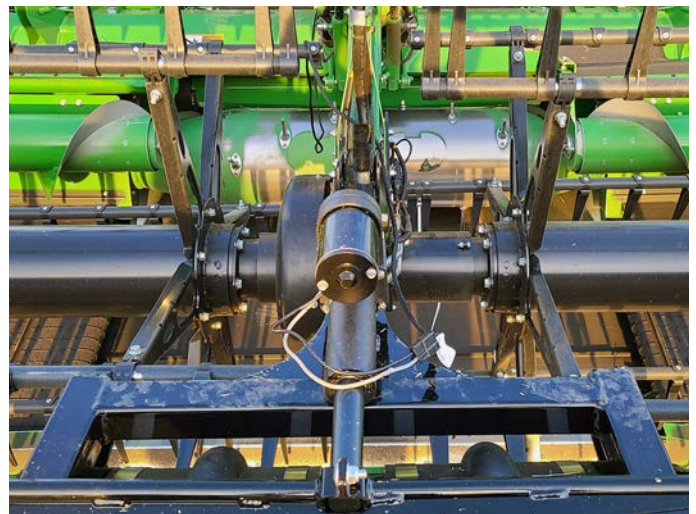


Figure 12: Center Shown

4.4 REEL ARM MOUNT

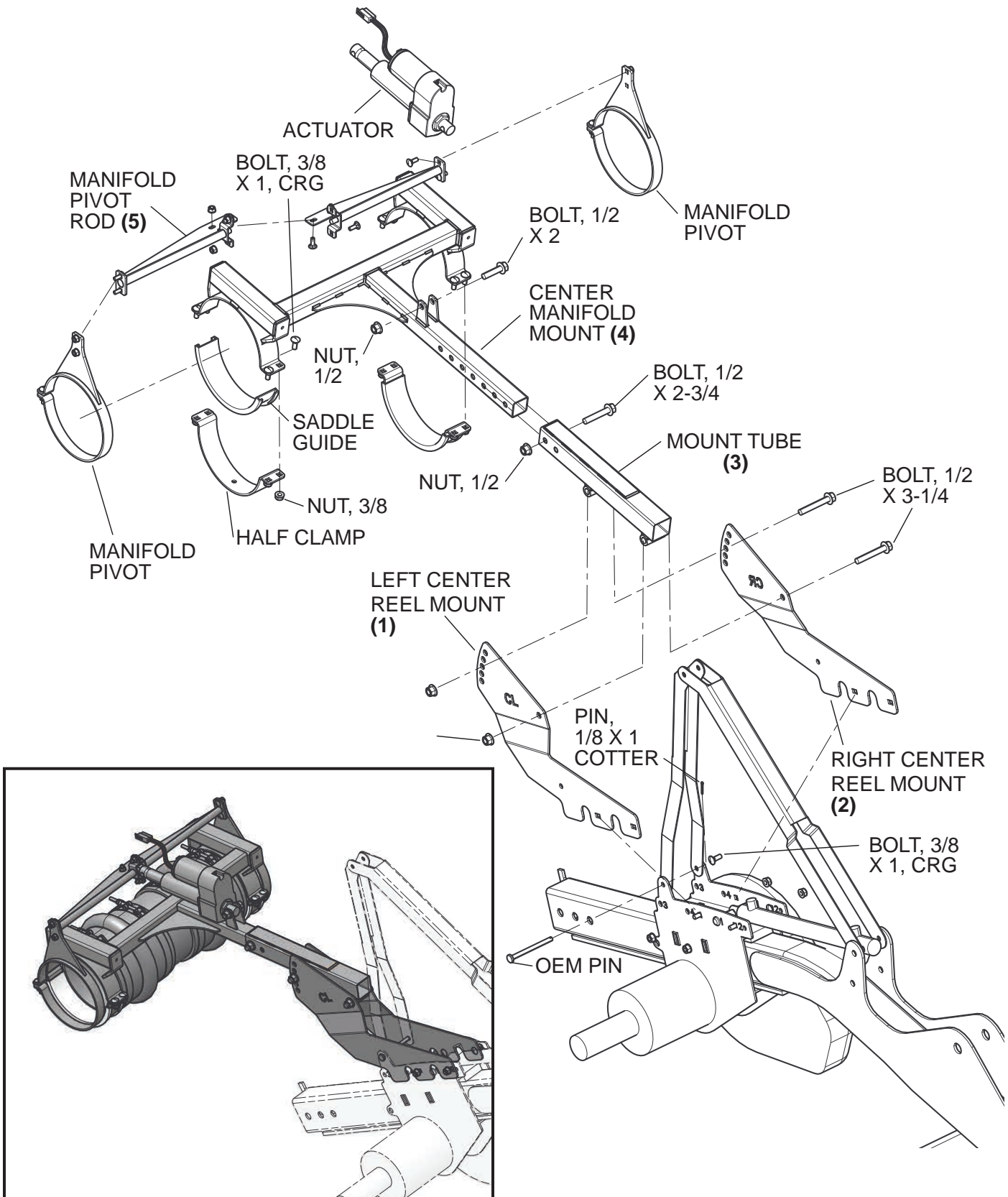


Figure 13: Center reel arm mount

4.4 REEL ARM MOUNT



CAUTION



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

4.4.3 35/40/45/50 FT (RIGHT HAND)

1. Clamp the outer RH reel mount **(2)**, and the inner RH reel mount **(1)** around the OEM reel arm as shown in (Figure 17) using four 1/2 X 4-1/2 flange bolts and nuts.
2. Assemble the nylon bearing **(5)** and inner roller bushing **(6)** as shown and attach to the outer LH reel mount and the inner LH reel mount using one 3/8" x 4-1/2" bolt and 3/8" nylock nuts. The bearing should turn freely when installed.
3. Align the mount tube **(3)** to the holes in the top of the reel mounts **(1) & (2)** and secure with two 1/2" x 2-3/4" bolts and nylock nuts.
4. Insert the manifold mount **(4)** into the mount tube **(3)** so that the cradle is facing down. Secure with one 1/2" x 2-3/4" bolt and a 1/2" nylock nut.
5. Next step, **Manifold installation**, go to page 18.



Figure 14: Reel arm mount assembly, Right hand side shown



Figure 15: Reel arm mount assembly (RH)



Figure 16: Right hand side shown

4.4 REEL ARM MOUNT

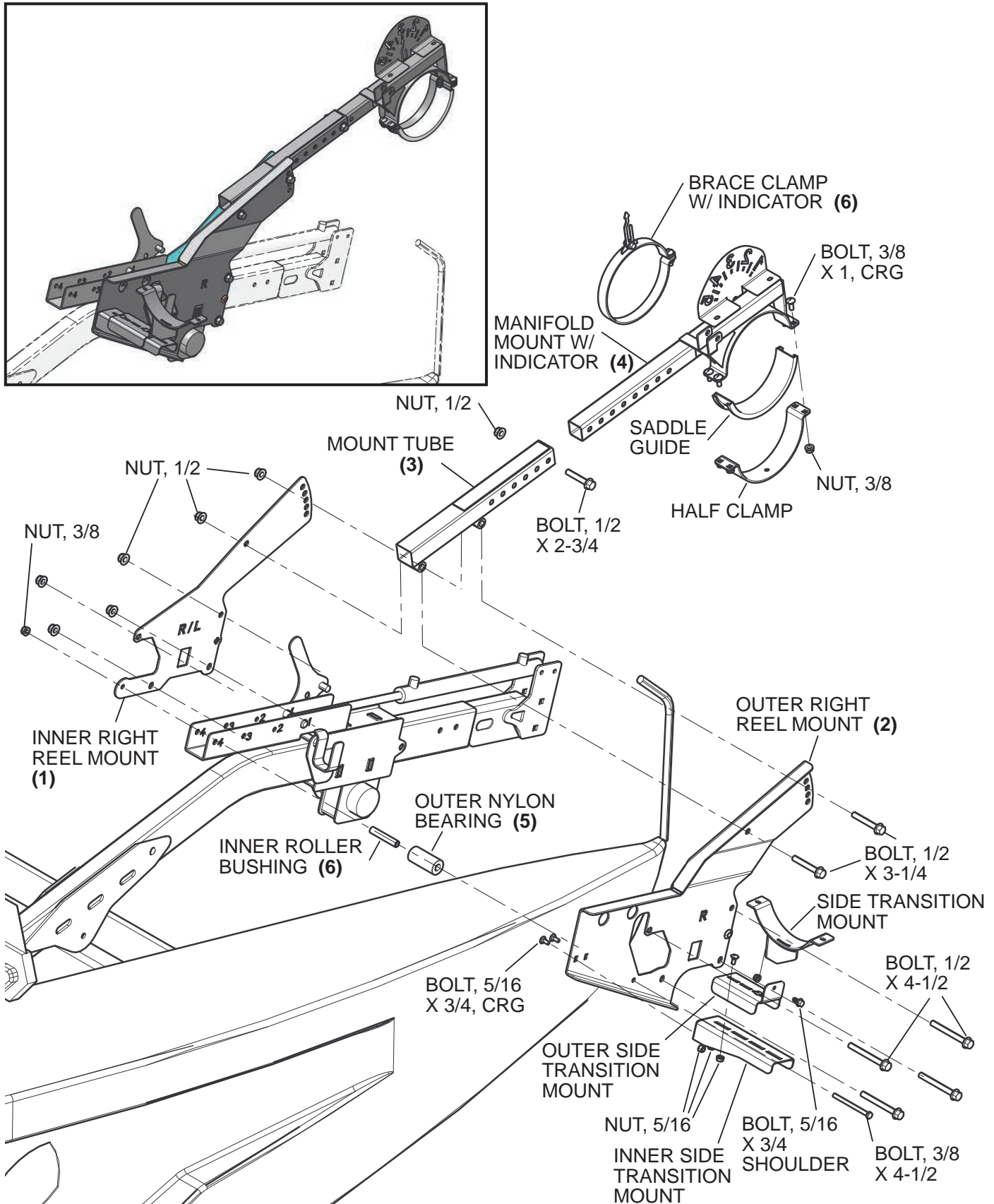


Figure 17: Reel arm mount (RH)

4.5 MANIFOLD

NOTE

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

- Loosely, install the half clamps (3) with 24 3/8" x 1" carriage bolts and nuts to center manifold mount (4). (Figure 21)
- Slide a manifold pivot (5) over the right end of the left manifold (12). Slide a manifold pivot over the left end of the right manifold (7). (Figure 21)
- Slide a brace clamp (10) over the left end of the left manifold (12). Slide the brace clamp with indicator (11) over the right end of the right manifold (7). The brace clamps should be positioned inside the manifold mounts (Figure 19).
- Load each section of the manifold by sliding them into position with enough room for the center assembly.
- Slide a t-bolt clamp over each end of each single hump hose (1).
- Slide the single hump hoses onto each side of the connector manifold (2). Leave enough room in the middle of the connector manifold to install an air tube. (Figure 21)
- Insert the assembly into the center manifold mount.
- 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 to the torque specifications on page 42.
- Attach a manifold pivot rod (8) to each manifold pivot (5) using two 5/16 x 7/8 carriage bolts and nuts. (Figure 21).
- 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.
- Extend the actuator rod all the way out (approx. 4 inches). This can be done by turning the actuator rod counter-clockwise or by energizing it.
- Position the actuator rod between the manifold pivot rods and secure with four 5/16 x 7/8 carriage bolts and nuts.
- Install the drop tubes per **Section "4.6 Drop tube Assembly" on page 21.**
- Adjust the manifold so the drop tubes point towards the cutterbar. The reel tines should extend past the air tubes. Manually turn the reel to ensure that the tines follow the curve of the air tubes as they rotate downward. It will be normal for the tines to slightly contact the drop tubes. (Figure 20)

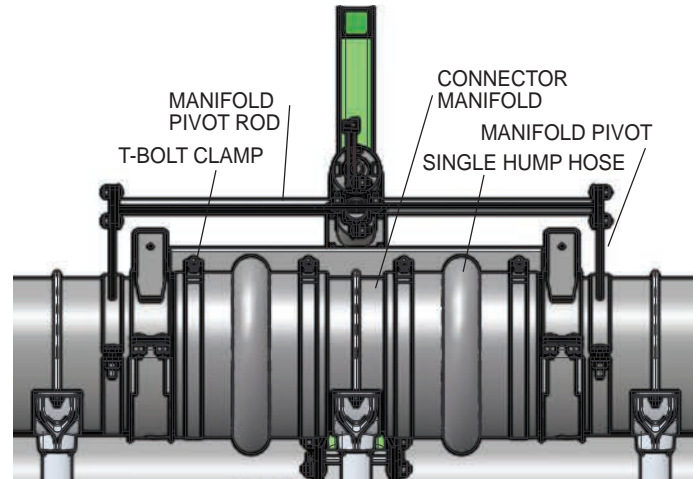


Figure 18: Manifold Assembly

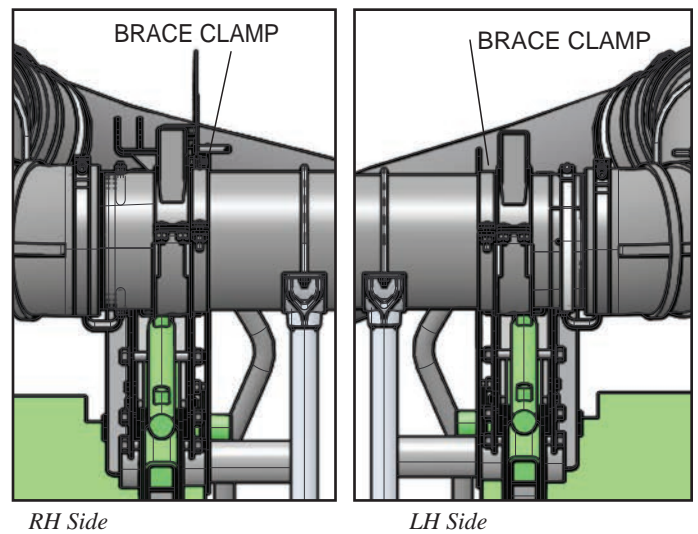


Figure 19: Brace Clamps

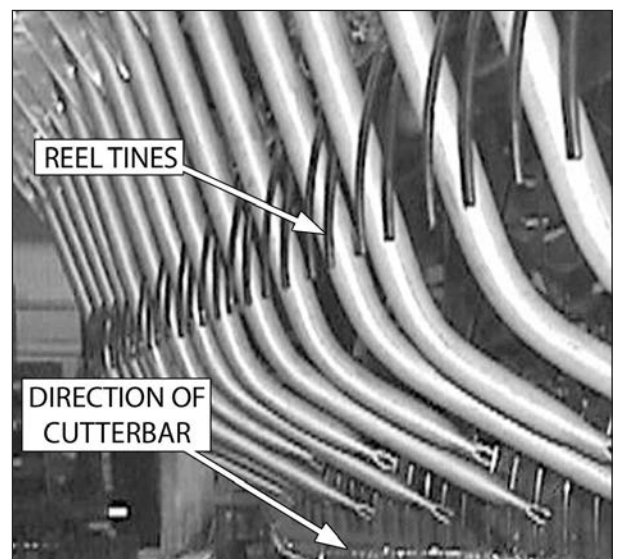


Figure 20: Air tube adjustment

4.5 MANIFOLD

15. Tighten the manifold pivot hardware once the manifold and drop tubes are properly positioned.
16. Slide the left brace clamp **(10)** against the inside of the manifold mount and tighten the clamp on the manifold. (Figure 21)
17. Slide the right brace clamp with the indicator **(11)** against the inside of the right manifold mount. To adjust the indicator, the electric actuator should be fully extended. Adjust the indicator so the arrow is pointing at 4-1/2, then tighten the clamp on the manifold.
18. On single flow headers only, install the end cap using 8-3/8" T-bolt clamp on LH of manifold (Figure 21).

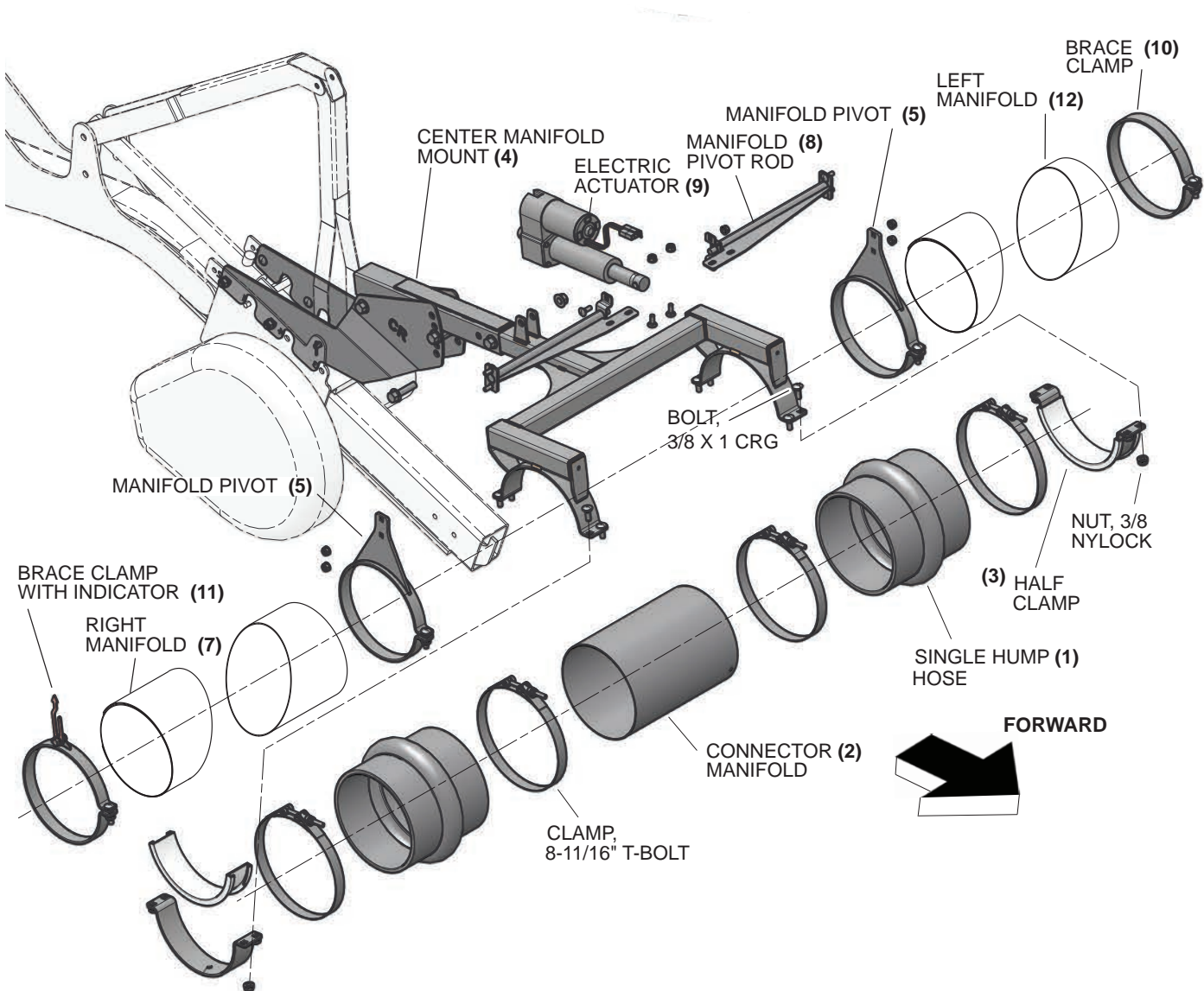


Figure 21: Center manifold Assembly



4.6 DROP TUBE ASSEMBLY

4.6.1 ALL MANIFOLDS WITH 12" SPACING

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. Refer to Figure 22 during assembly.

1. To connect the drop tube, place it on one of the holes in the manifold and point the end towards the cutterbar.
2. Insert the U-bolt around the manifold and through the holes on the drop tube weldment.
3. Secure the U-bolt evenly with two 5/16" flange nuts. Torque to 11 ft-lbs.
4. Repeat procedure for all drop tubes.
5. To mount the end drop tubes, two 1-9/16" holes must be drilled on each end of the manifold. Drill the holes as far to the outside of the header as possible, while still providing room for drop tube in between the tines of reel, Figure 23.
6. Repeat the steps above to mount the end drop tubes. There is a pre-existing scribe-line on the bottom to aid in centering the drill to align with the other drop tube holes.
7. Next step, **Flex Hose Routing**, go to page 22.

NOTE

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

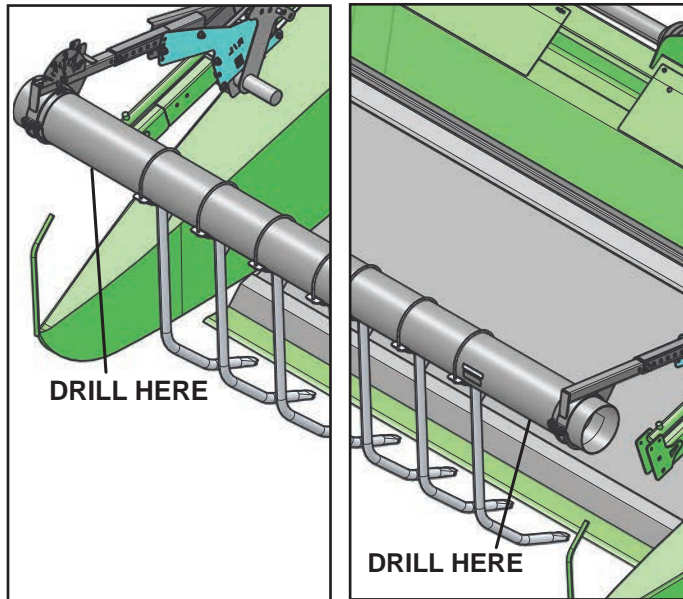


Figure 23: Drilling Drop Tube Holes

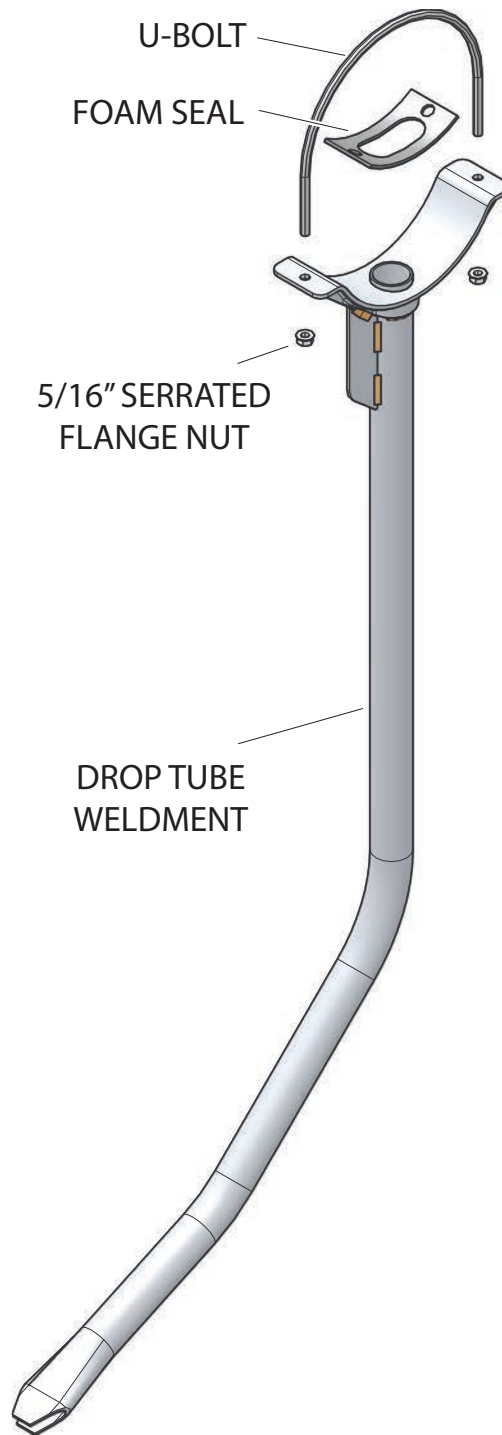


Figure 22: X-Long 2 Bend Drop Tube Kit

MANIFOLD LENGTH	# OF X-LONG 2 BEND DROP TUBES
35 FT.	35
40 FT.	39
45 FT.	45
50 FT.	49

4.7 FLEX HOSE ROUTING

4.7.1 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.

- Place an adjustable adapter (1) into the RH end of the front CWS manifold, Figure 27.
- Using the adjustable adapter (1) as a template mark and drill two $\text{\O}11/32$ " holes, 7/8" from the edge on the top and bottom of the manifold, as shown in (Figure 24).
- Install the adapter (1) using two 5/16 X 7/8" bolts, spacers and nuts. Must turn freely. Adjust the electric actuator midway out (approximately 2").
- Align the notch in the adapter with the bolts.
- Fasten the inner side tube mount (4) to the right reel mount with two 5/16" x 3/4" carriage bolts.
- Attach the outer side tube mount (5) to the inner side tube mount (4) with two 5/16" x 3/4" carriage bolts.
- Attach the side tube mount (3) to the outer side tube mount (5) with one 5/16" x 3/4" flanged shoulder bolt and nut.
- Slide an 8-11/16" t-bolt clamp over each end of a 90° elbow (2). Then, slide the 90° elbow (2) over the adapter (1). The elbow should point at the side tube mount. Slide the 56" side tube (6) into the lower end of the 90° elbow (2).
- Set the 56" side tube (6) onto the side tube mount (3).
- Fasten the 56" side tube (6) to the side tube mount (3) with one 5/16" u-bolt and two nuts (Figure 27). Tighten the t-bolt clamps.
- Refer to (Figure 26) and the table to install the rear tube mounts (13) to the dimensions shown. Secure each clamp using a 5/16 X 5-1/2 bolt and nut. You will need to remove covers, refer to Figure 25.
- Set the right rear tube (12) on the rear tube mounts (13). Position the rear tube so that the left end is about 14 inches from the right rear tube mount.
- Fasten the right rear tube (12) to the rear tube mounts (13) with two 5/16" u-bolts and four nuts (Figure 27).
- Slide an 8-11/16" t-bolt clamp over each end of the 45° elbow (11). Then, slide the elbow (11) onto the right end of the right rear tube (12). Point the elbow (11) toward the 56" side tube (6) on the side of the reel.
- Insert a 6" support tube (10) into the 45° elbow (11).
- Determine the length of flex hose (9) needed to connect the 6" support tube (10) to the 6" support tube (8). 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.

- Slide an 8-11/16" t-bolt clamp over each end of a 90° elbow (35). Then, slide the elbow onto the fan outlet. Point the elbow toward the right rear tube (12).

NOTE

If installing dual flow system, Install alternate rubber-Y connection (15), see Figure 27.

- Insert a 6" support tube (14) into the 90° elbow (35) installed in the previous step.
- Determine the length of flex hose (16) needed to connect the 6" support tube (14) to the left end of the right rear tube (12) and cut the hose. Install the flex hose (16) over the support tube and the end of the rear tube (12) with two 8-3/8" t-bolt clamps.
- Tighten all t-bolt clamps to the torque specifications on page 42.
- Next step, if Dual Flow system continue to 4.7.2 LEFT HAND Routing Installation, on page 24.

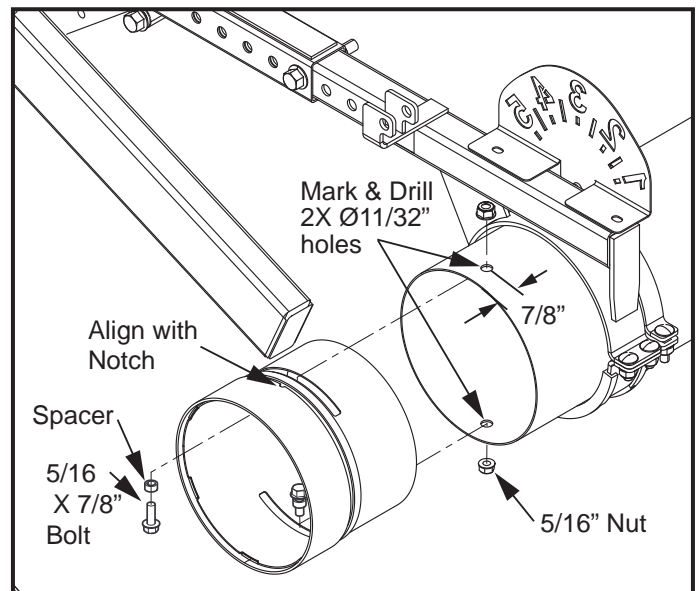


Figure 24: Adjuster Adapter installation

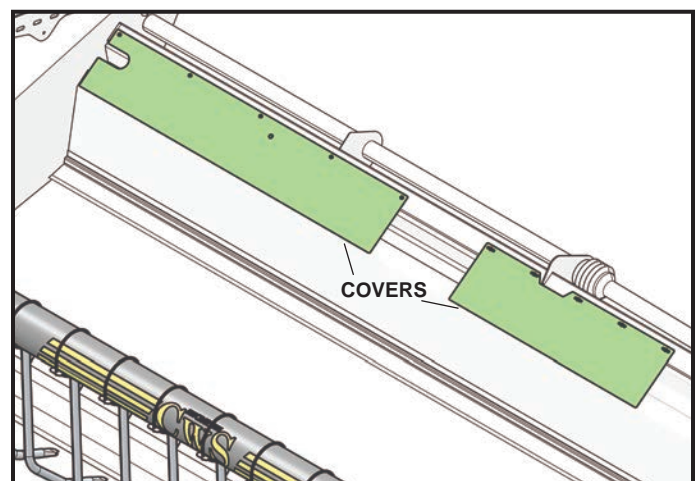


Figure 25: Remove these covers

4.7 FLEX HOSE ROUTING

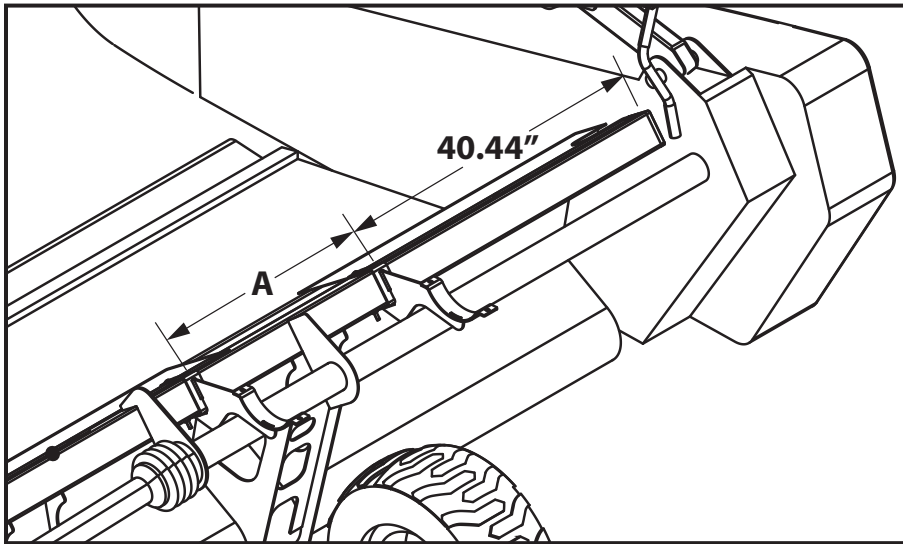


Figure 26: Right Rear Tube Mount Locations

Header Length	Dimension "A"
35'	28"
40'	58"
45'	88"
50'	118"

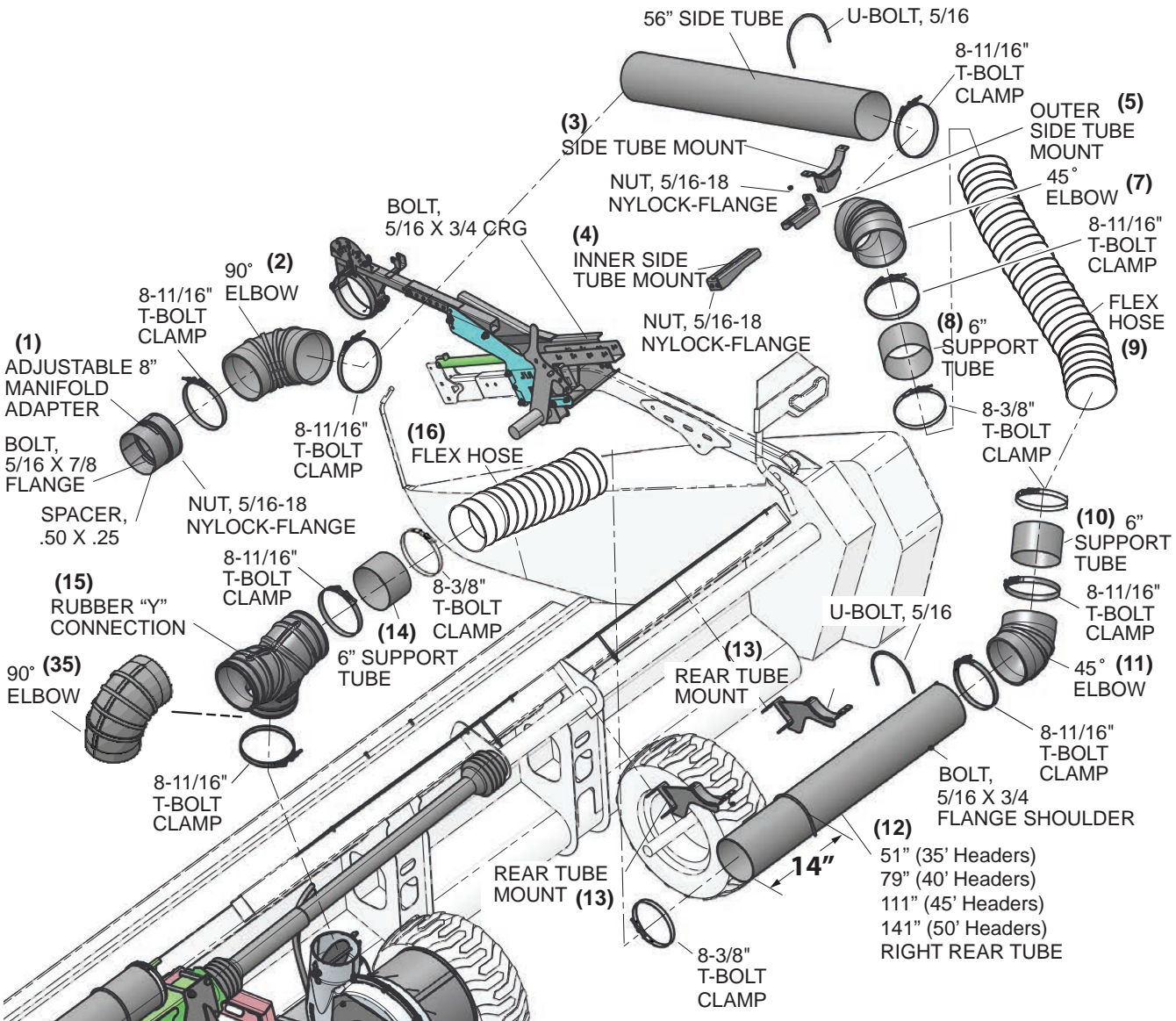


Figure 27: Flex hose installation

4.7 FLEX HOSE ROUTING

4.7.2 LEFT HAND ROUTING

- To install the damper position indicator, remove existing arrow indicator, the hardware will be reused (Figure 28).
- Loosen and remove two 3/8" bolts at top of fan casting, hardware will be reused. (Figure 28)
- Install and attach the orange indicator bracket using the two removed 3/8" bolts at top of fan casting. (Figure 29)
- Using the provided 5/16" X 3/4" shoulder bolt & nut, attach gauge bar to link weldment ensuring free rotation of components. (Figure 28)
- Using the hardware from arrow indicator, mount the indicator arm onto the 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 30).
- Slide an 8-11/16" t-bolt clamp over the end of the rubber-Y connector (15) (Figure 27). Insert a 6" support tube (17) into the left side of the rubber-Y and secure with an 8-11/16" t-bolt clamp.
- Secure the center tube mounts (18 & 35) to the back of the header using four 1/2 X 1" carriage bolts and nuts in the existing OEM holes in the existing brackets as shown in (Figure 31). Place the tube mounts as shown.
- Set the 146" middle rear tube (20) on the tube mounts (18 & 35) over the feeder house. Position the 146" tube so that the left end is about 60.63 inches to the left of the left rear tube mount.
- Fasten the tube (20) to the rear tube mounts (18) with two 5/16" u-bolts and four nuts (Figure 31).
- Determine the length of hose needed to connect the rubber-"Y" and the middle rear tube (20), (Figure 31). After determining the length of hose needed, cut the hose.
- Slide an 8-3/8" t-bolt clamp over each end of the flex hose (19). Then, slide one side of the flex hose onto the support tube on the rubber-"Y" and the other end onto the right end of the middle rear tube (20).
- Refer to (Figure 35), page 26, using those dimensions for two left rear tube mounts (21) location and orientation. You will need to remove shields, Figure 25, page 22. Install the tube mounts using two 5/16 X 5-1/2 carriage bolts and nuts (Figure 35).
- Set the 51" for 35FT, 79" for 40FT, 111" for 45FT or 141" for 50FT left rear tube (23) on the tube mounts (21). Position the tube so that the left end is about dimension "D" to the left of the left rear tube mount.
- Fasten the left rear tube (23) to the left rear tube mounts (21) with two 5/16" u-bolts and four nuts (Figure 35).
- Determine the length of hose needed to connect the 146" middle rear tube (21) and the left rear tube (23).

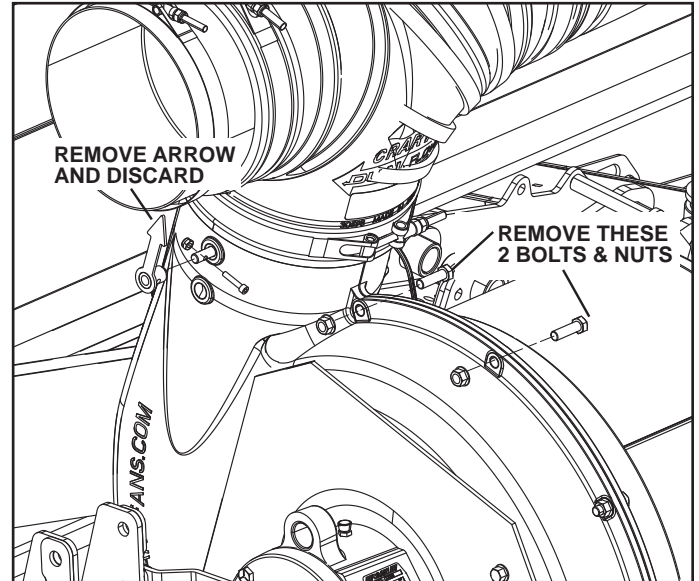


Figure 28: Prepping for Damper position indicator install

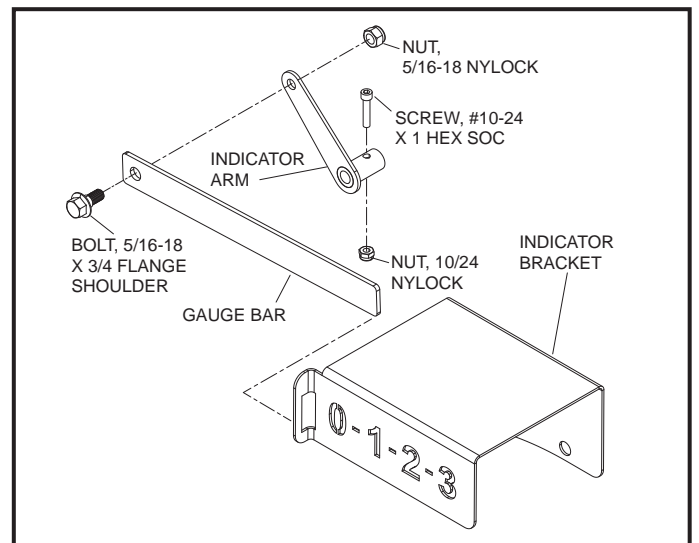


Figure 29: Damper position indicator installed

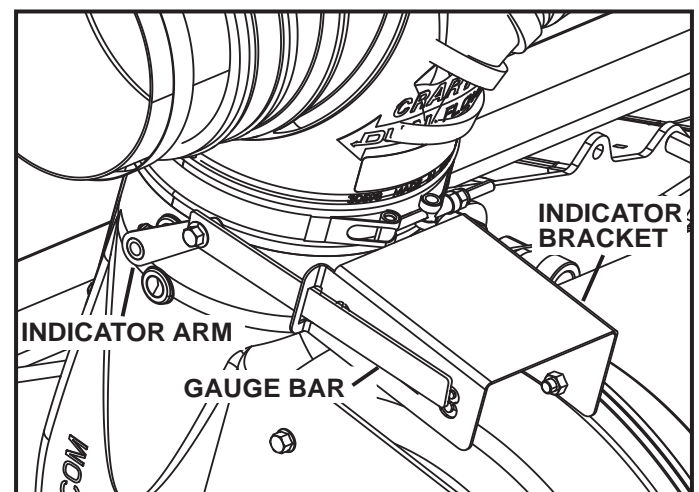


Figure 30: Damper position indicator installed

4.7 FLEX HOSE ROUTING

4.7.2 LEFT HAND ROUTING - DUAL FLOW (Cont.)

After determining the length of hose needed, cut the hose.

16. Slide an 8-3/8" t-bolt clamp over each end of the flex hose (22). Then, slide one side of the flex hose onto the left end of the 146" middle rear tube (21) and the right end of the left rear tube (23).
17. Tighten all t-bolt clamps to the torque specifications on page 42.
18. Place an adjustable adapter (34) into the LH end of the front CWS manifold as shown in Figure 35. (See Section 4.7.1, Steps 1-4 for installation instructions, page 22).
19. Fasten the inner side tube mount (30) to the left reel mount with two 5/16" x 3/4" carriage bolts and nuts.
20. Attach the outer side tube mount (31) to the inner side tube mount (30) with two 5/16" x 3/4" carriage bolts
21. Attach the side tube mount (29) to the outer side tube mount (31) with one 5/16" x 3/4" flanged shoulder bolt and nut.

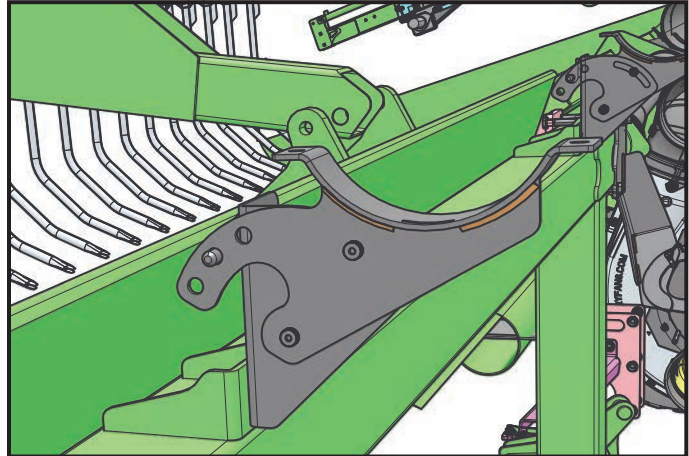


Figure 32: Center Tube mount orientation



Figure 33: Center Tube Mounts

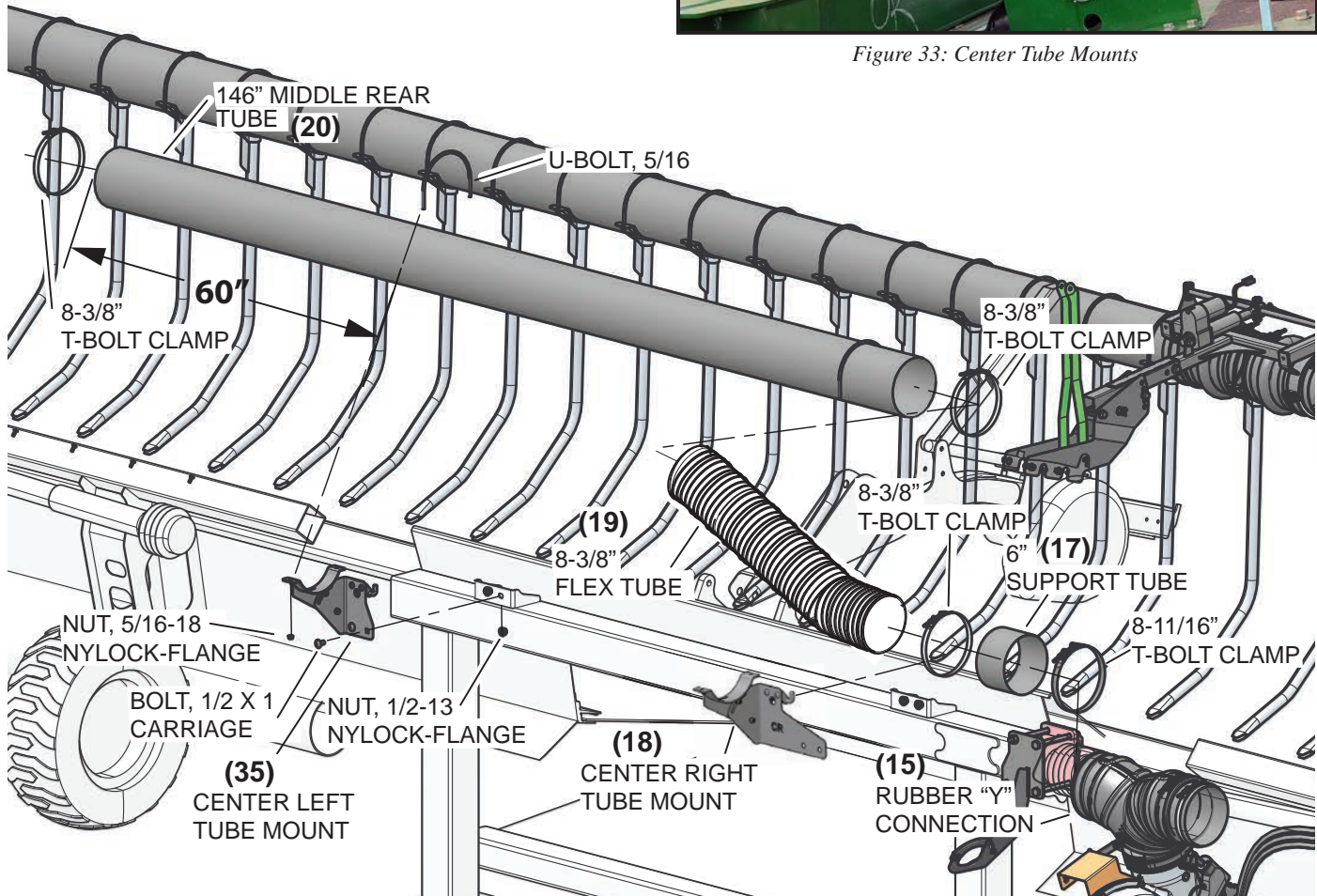


Figure 31: Flex hose installation - Dual Flow (35 FT/40 FT/45 FT/50 FT)

4.7 FLEX HOSE ROUTING - DUAL FLOW

4.7.2 LEFT HAND ROUTING - DUAL FLOW (Cont.)

22. Slide an 8-11/16" t-bolt clamp over each end of the 90° elbow (33). Then, slide the elbow (33) over the adapter (34).
23. Slide the 56" side tube (32) into the lower end of the 90° elbow (33).
24. Set the 56" side tube (32) onto the side tube mount (29).
25. Fasten the 56" side tube (32) to the side tube mount (29) with one 5/16" u-bolt and two nuts (Figure 35). Tighten the t-bolt clamps.
26. Slide an 8-11/16" t-bolt clamp over each end of a 45° elbow (28). Then, slide the 45° elbow (28) over the back end of the 56" side tube (32). Point the elbow toward the back of the header and the other 45° elbow (24).
27. Insert a 6" support tube (27) into the 45° elbow (28).
28. Determine the length of flex hose needed to connect the elbow support band to the hose connector and cut the hose. Leave enough slack in this portion of flex hose to allow the fore/aft hydraulic cylinder to fully extend and have an overlap of 2-3" on connectors.
29. Slide an 8-3/8" t-bolt clamp over each end of the flex hose and install.
30. Tighten all t-bolt clamps to the torque specifications on page 42.
31. Next step, **Electrical Wiring Installation**, go to page 27.



Figure 34: LH - Dual Flow Flex hose installation

Header Length	Dimension "B"	Dimension "C"	Dimension "D"
35'	25.00"	13.00"	5.00"
40'	40.53"	27.50"	11.50"
45'	40.53"	57.50"	13.38"
50'	40.53"	87.50"	13.38"

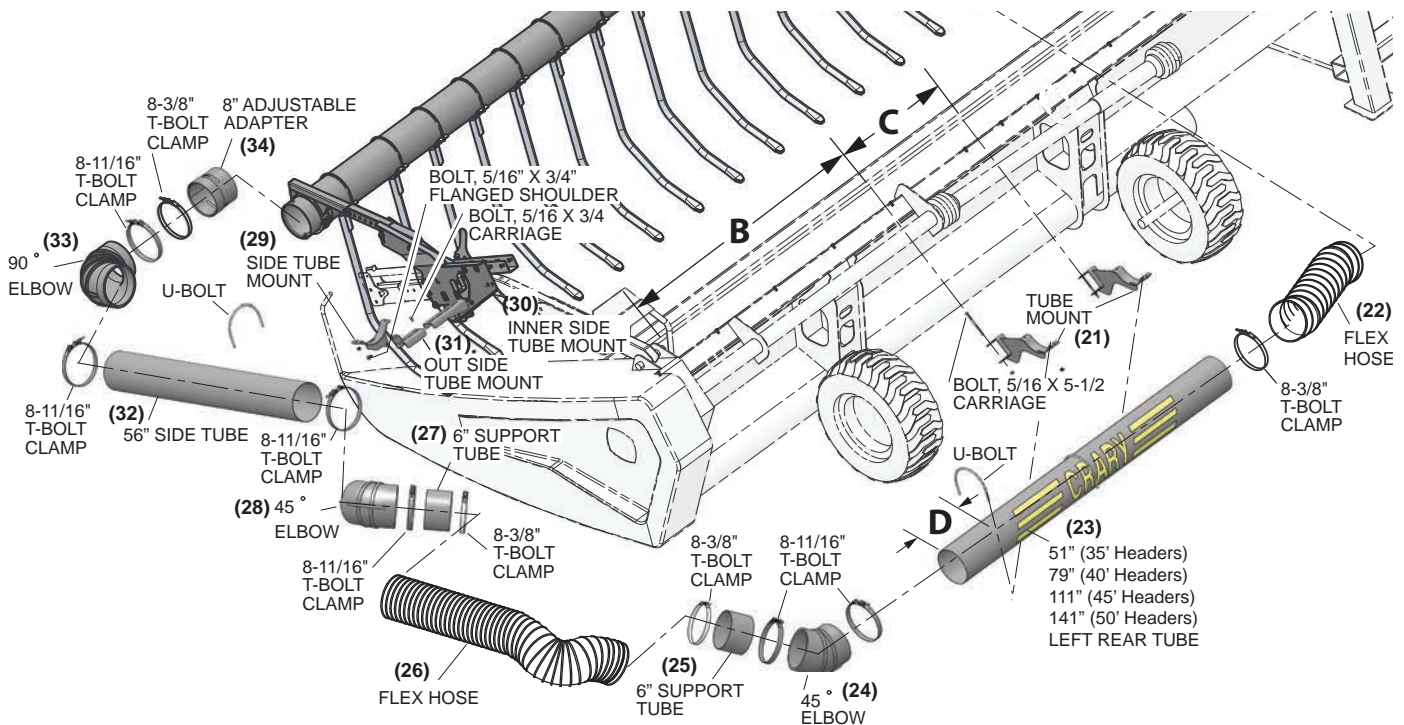


Figure 35: Flex hose installation - Dual Flow

4.8 ELECTRICAL WIRING

NOTE

Disconnect the intermediate harness connector at the feederhouse 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 - green/yellow wires; 5 Amp Air Volume - blue/orange wires) and plug in.
5. Mount the intermediate harness connectors to a convenient location on the combine feeder house.

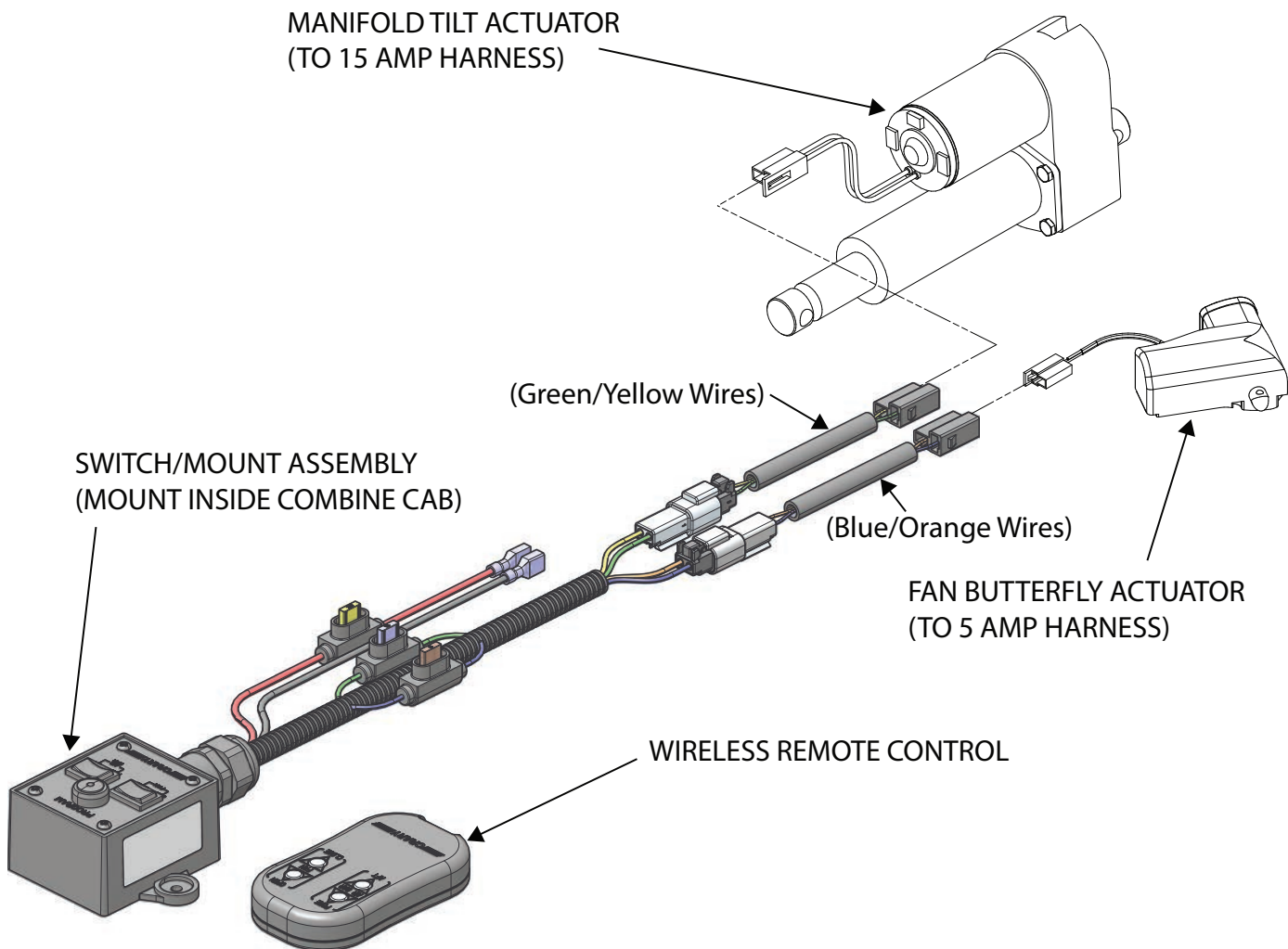


Figure 36: Electrical wiring

5 Section

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 handle all types of beans and small grains such as wheat and barley.

The CWS stationary air tubes deliver a constant stream of high velocity air which firmly pushes the crop off the

cutterbar, over the platform and to the auger. To generate the high velocity air, power is provided by the combine feeder shaft. The gearbox provides rotational power to the high pressure fan.



Figure 37: Front and Rear views of Machine Components

5.2 INITIAL ADJUSTMENTS



IMPORTANT

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 Cray 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.

Allowing the torque limiter to slip



IMPORTANT

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

1. Loosen the center locknuts (Figure 38) 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.

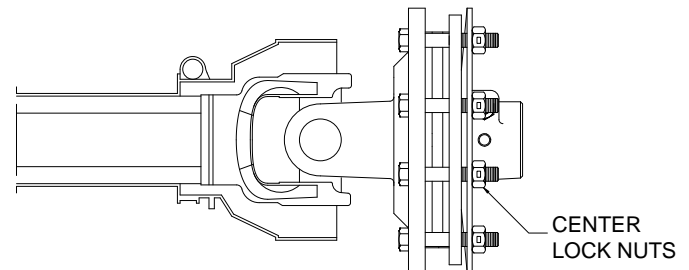


Figure 38: Adjusting the torque limiter

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).

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.



IMPORTANT



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.

5.4 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.

5.5 JD GEN4, TUNING OF HDR/HDF PLATFORM FOR CRARY WIND SYSTEM (CWS)

5.5.1 WING DOWN FORCE ADJUSTMENT

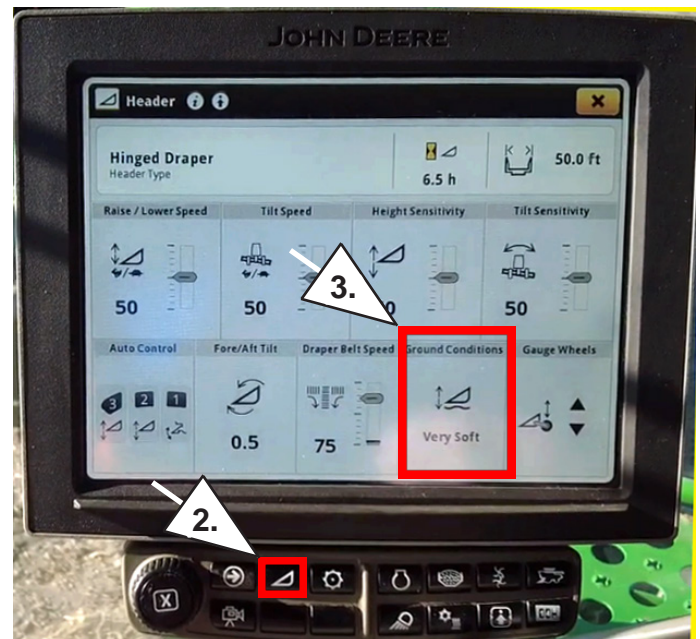
With the addition of the Crary system to your platform additional calibration may be required to compensate for the added weight. Perform the following steps to adjust the wing down force.

1. Navigate to Header settings.



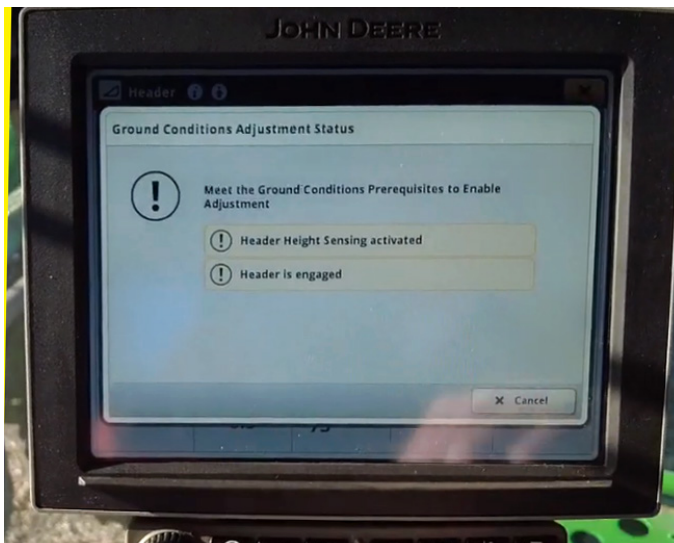
2. An alternate way into header settings is using the shortcut button on the bottom of the display.

3. Select Ground Conditions.

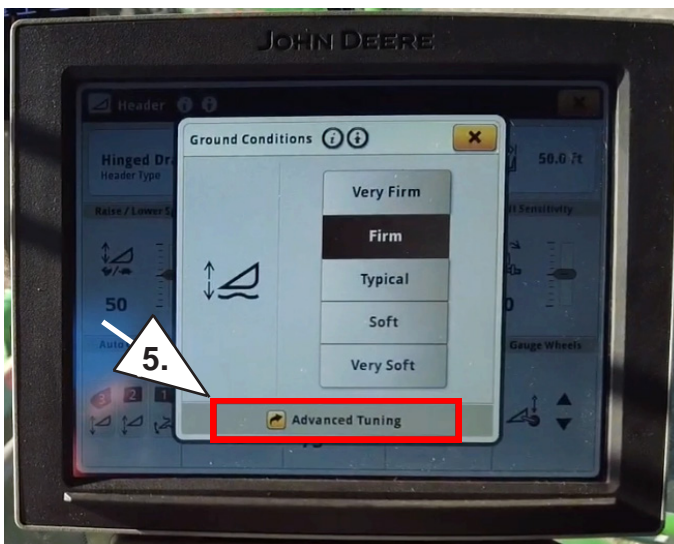


5.5 JD GEN4, TUNING OF HDR/HDF PLATFORM FOR CRARY WIND SYSTEM (CWS)

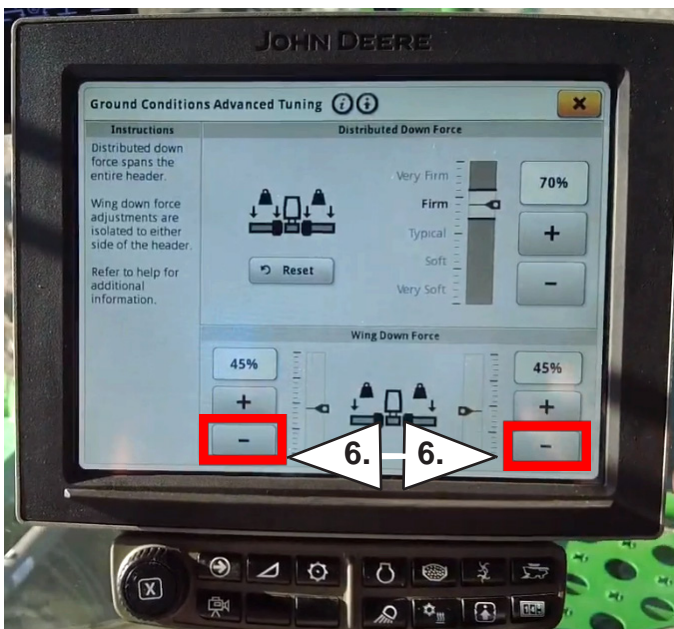
4. Be sure that all conditions are met to proceed.



5. Select Advanced Tuning.



6. Adjust wing down force until the desired float is achieved.



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 39 through Figure 41.

5.6.1 MANIFOLD TILT:

1. Moving the switch to the FORE position extends the shaft of the electric actuator forward. This rotates the manifold CW which directs the air tubes towards the back of the header.
2. Moving the switch to the AFT position retracts the shaft of the electric actuator backward. This rotates the manifold CCW, which directs the air tubes towards the front of the header.

5.6.2 FAN AIR VOLUME ACTUATOR:

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

5.6.3 LIFT/FORE AND AFT ADJUSTMENT:

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

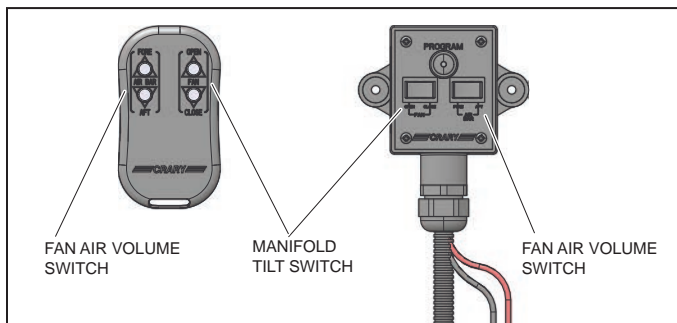


Figure 39: Manifold tilt and fan air volume switch

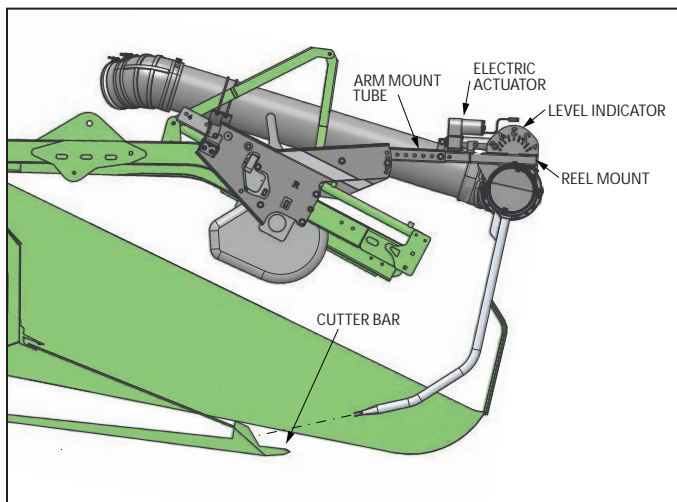


Figure 40: Air flow

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.

5.6.4 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.

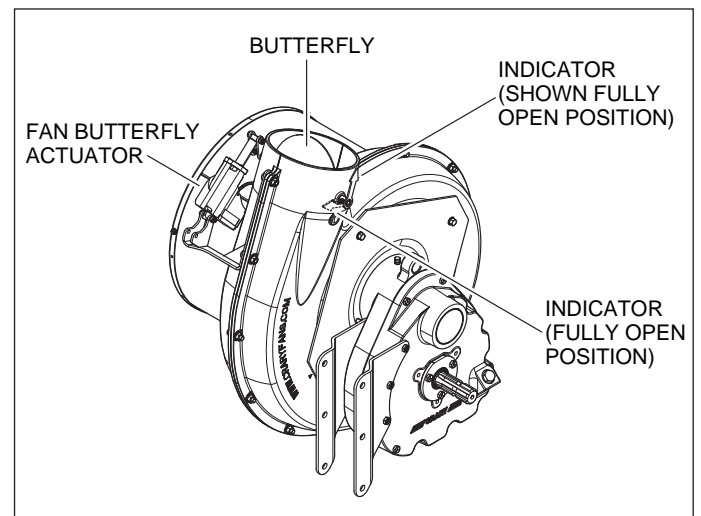


Figure 41: Fan butterfly actuator

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

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.

1. Increase air to maximum.



IMPORTANT



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.

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 & CLUTCH 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 ensure 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) (see the maintenance section).
 - 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 build-up.
 - 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 to 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. Apply a light coat of grease on the shafts.
7. Check the cutterbar, reel area and drives for entangled material.
8. Touch up all paint nicks and scratches to prevent rusting.

9. Move the machine to its storage area.
10. Select an area that is dry, level, and free of debris.
11. If the machine cannot be stored inside, cover with a waterproof tarpaulin and tie securely in place.
12. Store out of the way of human activity.
13. 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. Remove the tarpaulin from the machine if it was covered.
3. Clean off accumulated trash and dirt.
4. Check routing and securing of all hydraulic lines and wiring harness. Adjust as required.
5. Rotate all components and systems by hand to see that none are seized. Loosen any seized components with penetrating oil before starting.
6. Retighten any loose bolts to their specified torque.
7. Lubricate all grease points and shaft surfaces.
8. Check for excessive wear on all moving parts.
9. Tighten all hydraulic connections and mounts. Replace o-rings, fittings, or connectors subject to leaking.
10. Review and follow all items in the machine break-in section before starting (Section 5.3).
11. Install all safety shields and review precautions with operators and other personnel involved in the operation.
12. Drain and refill gearbox lube.
13. Readjust the torque limiter on main driveline.

6 Section

SERVICE & MAINTENANCE

6.1 MAINTENANCE CHECKLIST

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
L = LUBRICATE

CL = CLEAN
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.

NOTE

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

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 42 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.

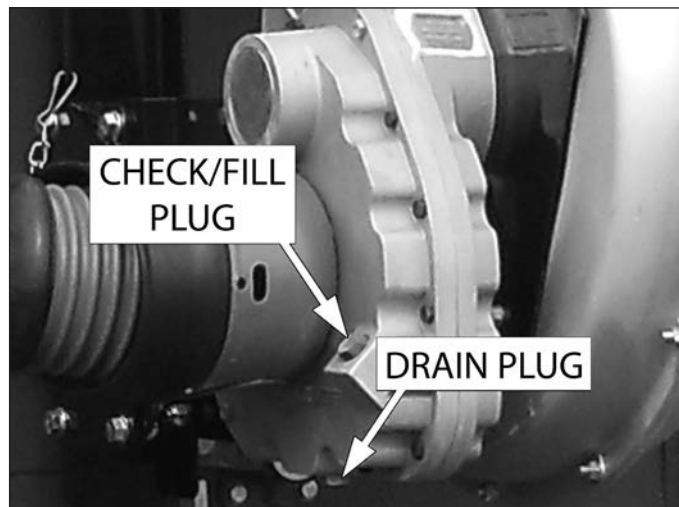


Figure 42: Gearbox oil plugs (Series II)

6.5 FAN HOUSING AND AIR HOSE

1. Every 40 hours the fan housing, blades and airway (Figure 43 and Figure 46) should be checked for wear.
2. Failure to replace worn rotor may reduce fan output and lead to failure and damage of system components.

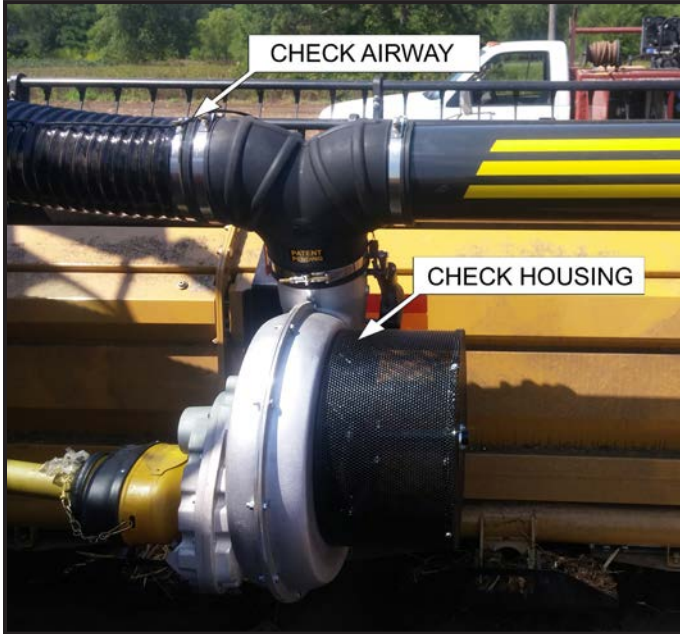


Figure 43: Fan airway

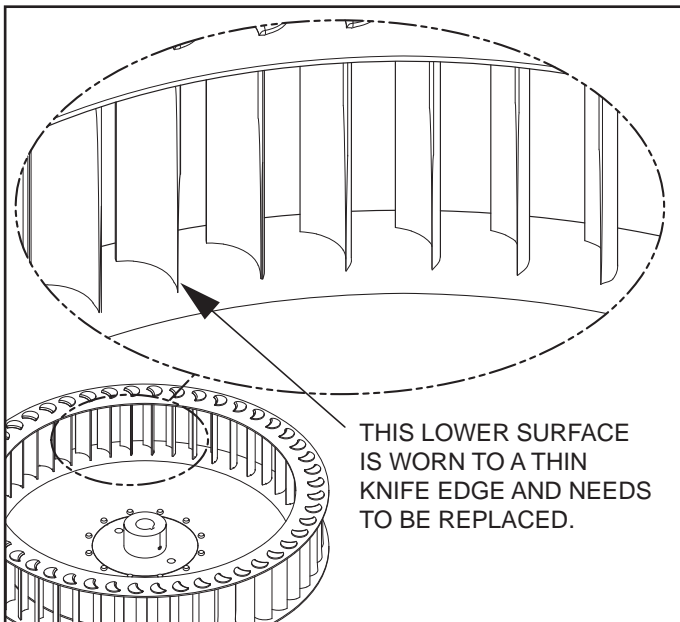


Figure 46: Critically worn impeller blades

6.6 PTO LUBRICATION

DAILY

Lubricate PTO cross journals. Make sure grease purges through all four bearings (Figure 44).

EVERY 16 HOURS

Lubricate PTO inner tubes (Figure 44). 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. Molded nipples on the guard near each guard bearing are intended as grease fittings and should be lubricated every 40 hours of operation (Figure 44).

Lubricate the PTO disconnect mechanism.

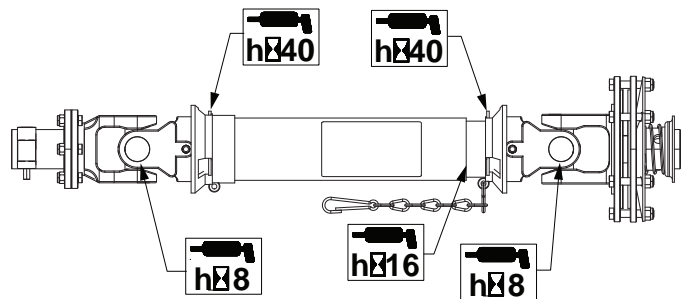


Figure 44: Driveline lubrication

CONSTANT VELOCITY DRIVELINES (HILLCO)

The double yoke cavities (noted in Figure 42 with h8*) will hold as much as 30 pumps of grease. To insure maximum joint life, lubricate double yokes when joints are in straight position. Visually inspect all wear surfaces inside double yokes to insure presence of grease after operation.

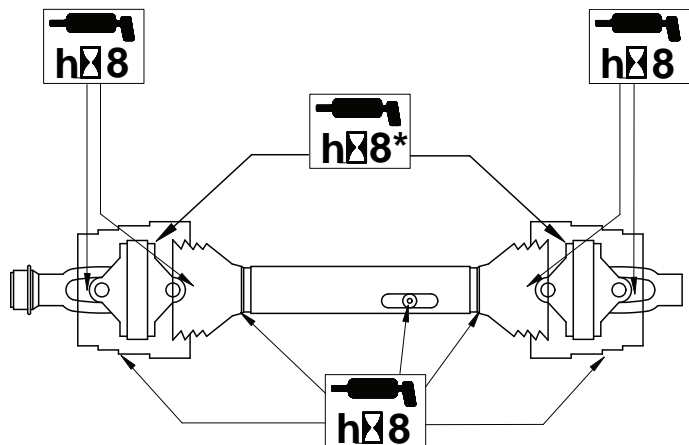


Figure 45: CV driveline lubrication

6.7 SLIP CLUTCH MAINTENANCE

1. Disconnect the PTO driveline from the implement (Figure 47).
2. Position the driveline on a workbench.
3. Loosen the eight slip clutch nuts.
4. Remove bolts and disassemble all components.
5. Check the condition of all parts, especially the friction discs (Figure 48).
6. If replacement parts are needed, consult your local authorized Cray 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.

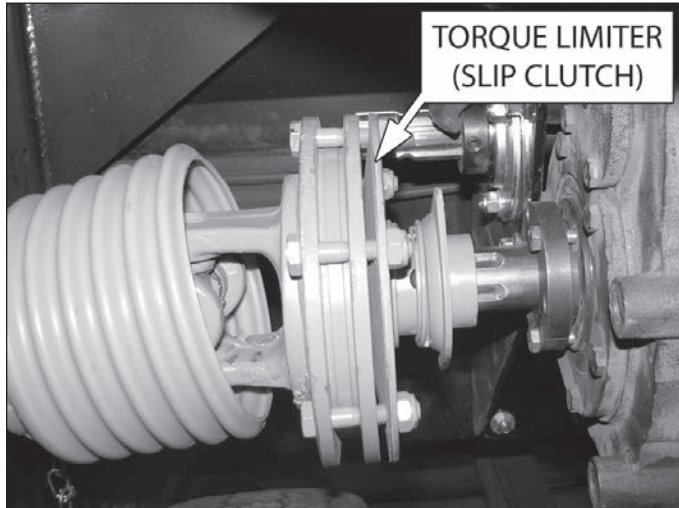


Figure 47: Friction Disc torque limiter (slip clutch)

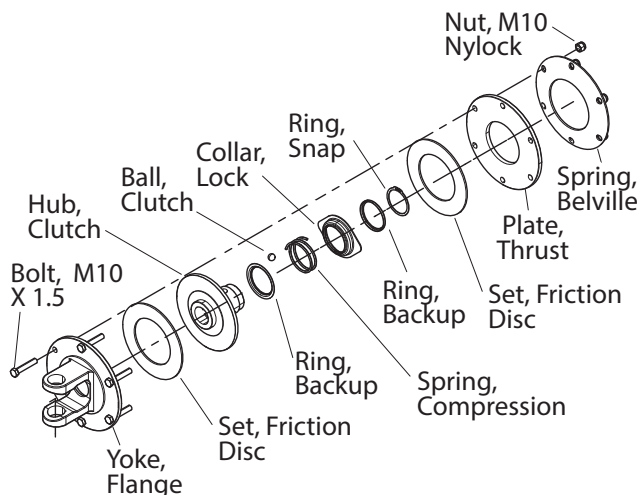


Figure 48: Slip clutch components

6.8 CLUTCH ADJUSTMENT

Walterscheid Clutch Setting Procedure:

1. In order to set the clutch to 1000 N.m, the gap between the belleville spring (14061-00) and the driveplate should be 4mm
2. Tighten each of the M10 bolts until the spring is flat against the driveplate.
3. Loosen each nut until the indicated clearance of 4 mm has been obtained.

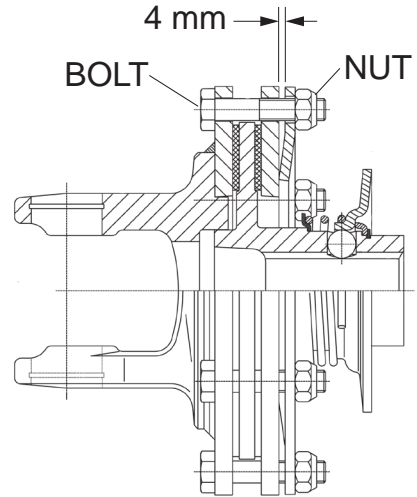


Figure 49: Clutch settings

CONSTANT VELOCITY DRIVELINES

CV drivelines for the Hillco option require whole slip clutch replacement rather than individual components.

Clutch is set at factory and needs no further adjustment.

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 troubleshooting section, please call your local Cray 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.
Platform pushing on end	Wing down force needs adjustment	See Section 5.5, page 32
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 Cray Dealer for Rotary Screen Wrap (P/N 25592-12). This wrap will prevent debris from becoming lodged between the base and the rotary screen.




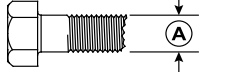
8 Section

SPECIFICATIONS

8.1 BOLT TORQUE

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. Cray Co. is not responsible for any loss claim or damage arising therefrom. In developing these tables, Cray has made a determined effort to present the contents accurately.

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

NOTE





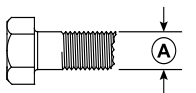
The 8 3/8" t-bolt clamps should be torqued to 8 ft lbs.

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

Torque figures indicated 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.

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

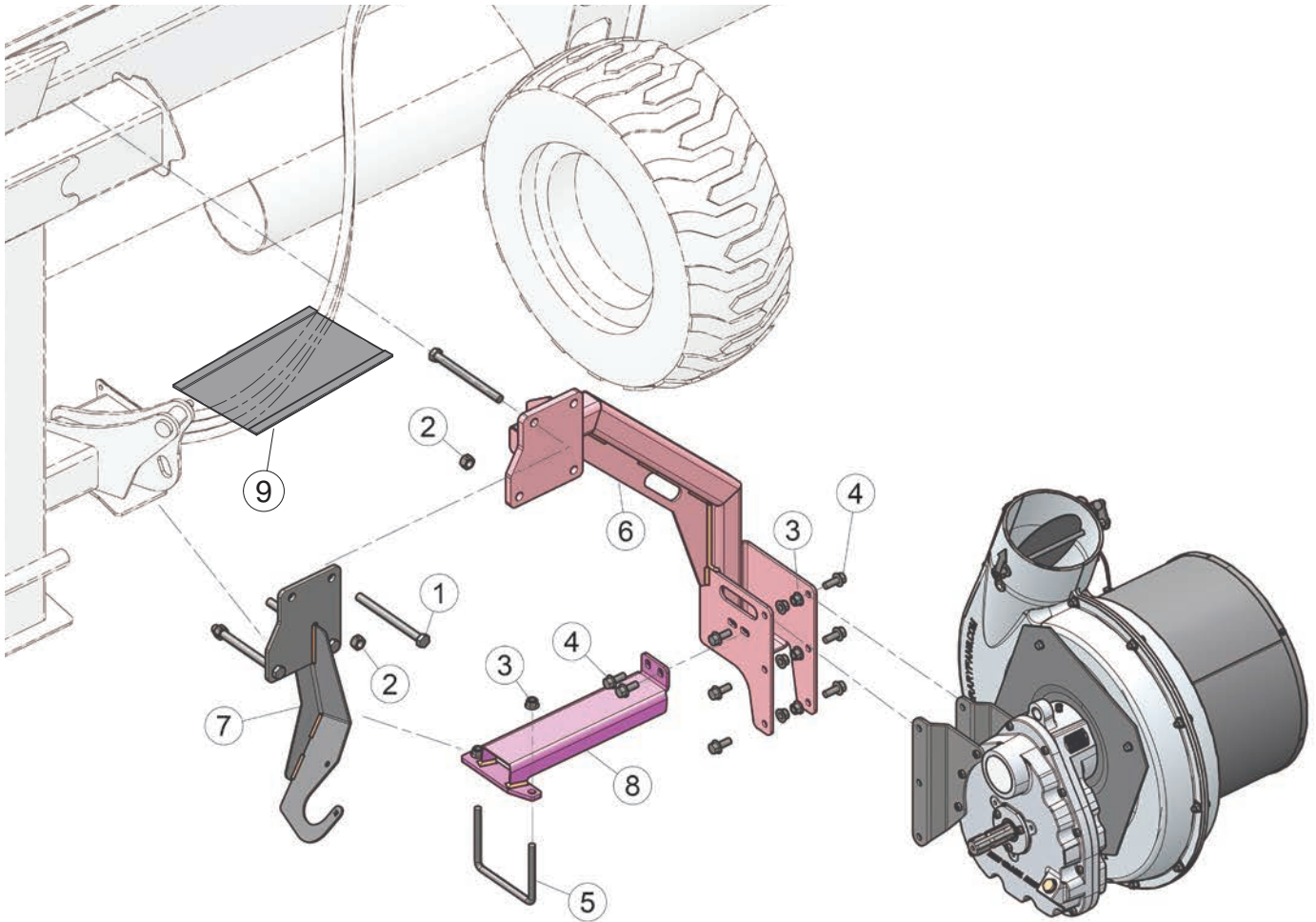


PARTS CATALOG

John Deere Headers HDF/HDR Series

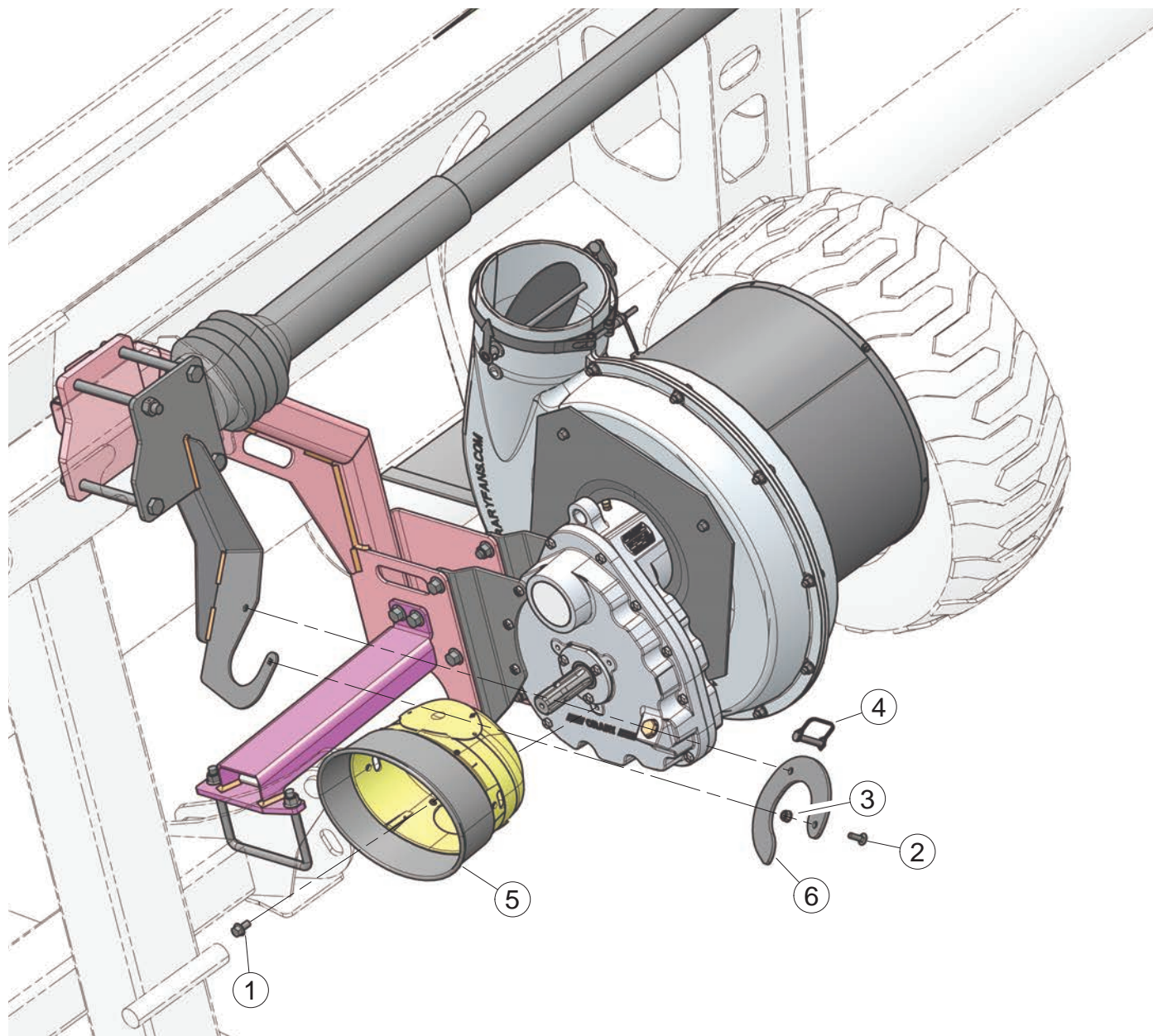


GEARBOX MOUNT KIT		
--------------------------	--	--



KIT, GEARBOX MOUNT (54997-12)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	0103-0874-00	BOLT, 5/8 X 7-1/2 HEX GR5 ZP	4
2	15050	NUT, 5/8-11 CENTERLOCK	4
3	15162	NUT, 1/2-13 NYLOCK-FLANGE	4
4	15232-00	BOLT, 1/2 X 1-1/4 FLANGE	12
5	15846-00	U-BOLT, 1/2 X 5.25 X 6	1
6	54997-12	WELDMENT, MOUNT JD HDF / R	1
7	55042-12	WELDMENT, HANGER DRIVELINE	1
8	55049-12	WELDMENT, SUPPORT LOWER	1
9	31660-00	HOSE WRAP	1.5 FT
	31716-00	THREADLOCKER, MEDIUM STRENGTH, 10ML (NOT SHOWN)	1

PTO LOCK AND SHIELD

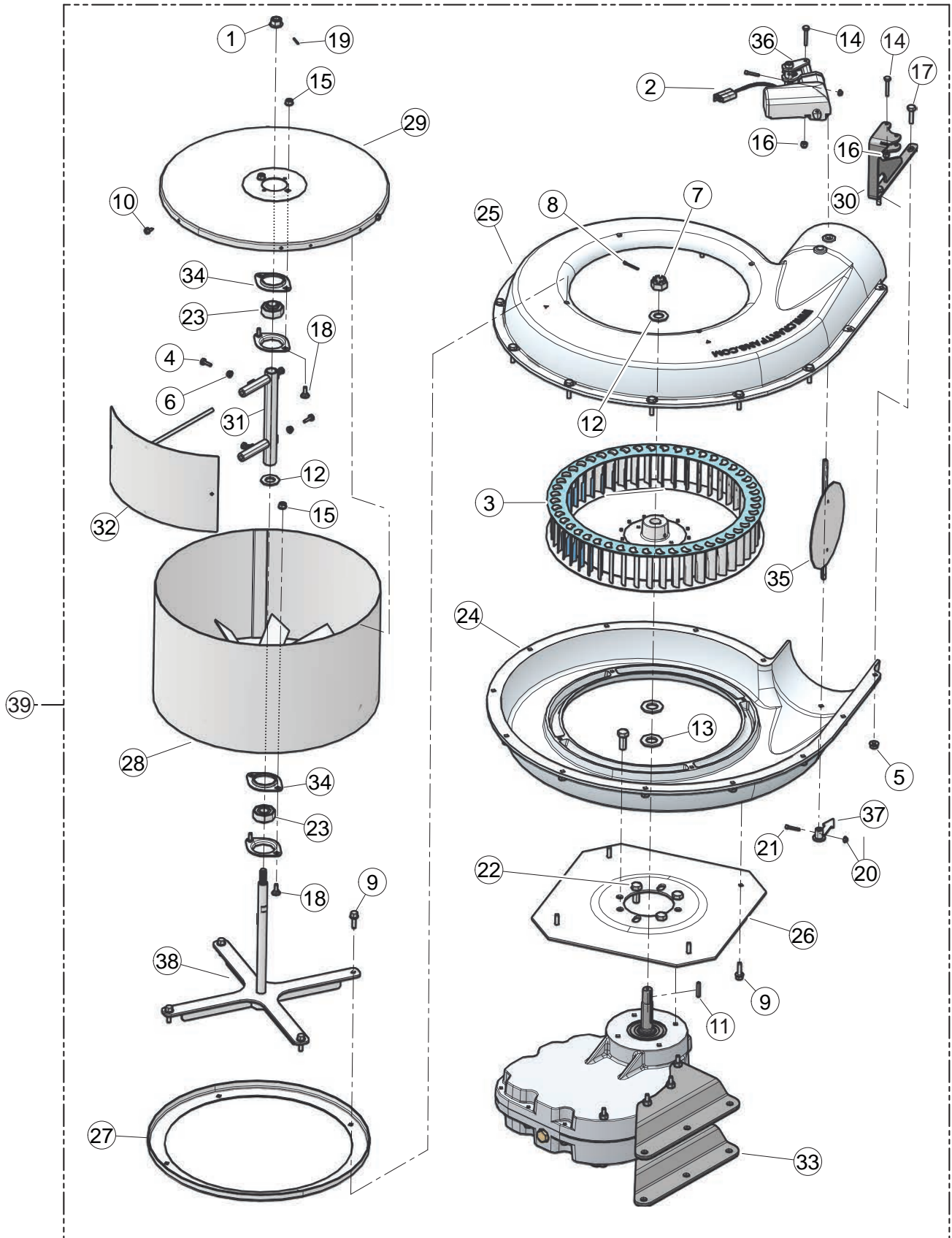


PTO LOCK AND SHIELD

ITEM	PART NUMBER	DESCRIPTION	QTY
1	15229-00	BOLT, 3/8 X 3/4 FLANGE NC	3
2	15301	BOLT, 5/16-18 X 1 CRG	1
3	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	4
4	17879	PIN, 3/8 X 1-1/2 SNAP	4
5	32212-00	PTO SHIELD	1
6	54450-12	PTO LOCK	1
	31716-00	THREADLOCKER, MEDIUM STRENGTH, 10ML (NOT SHOWN)	1

GEARBOX/FAN

KIT #52042: S/N 0-CURRENT



KIT #52042: S/N 0-CURRENT

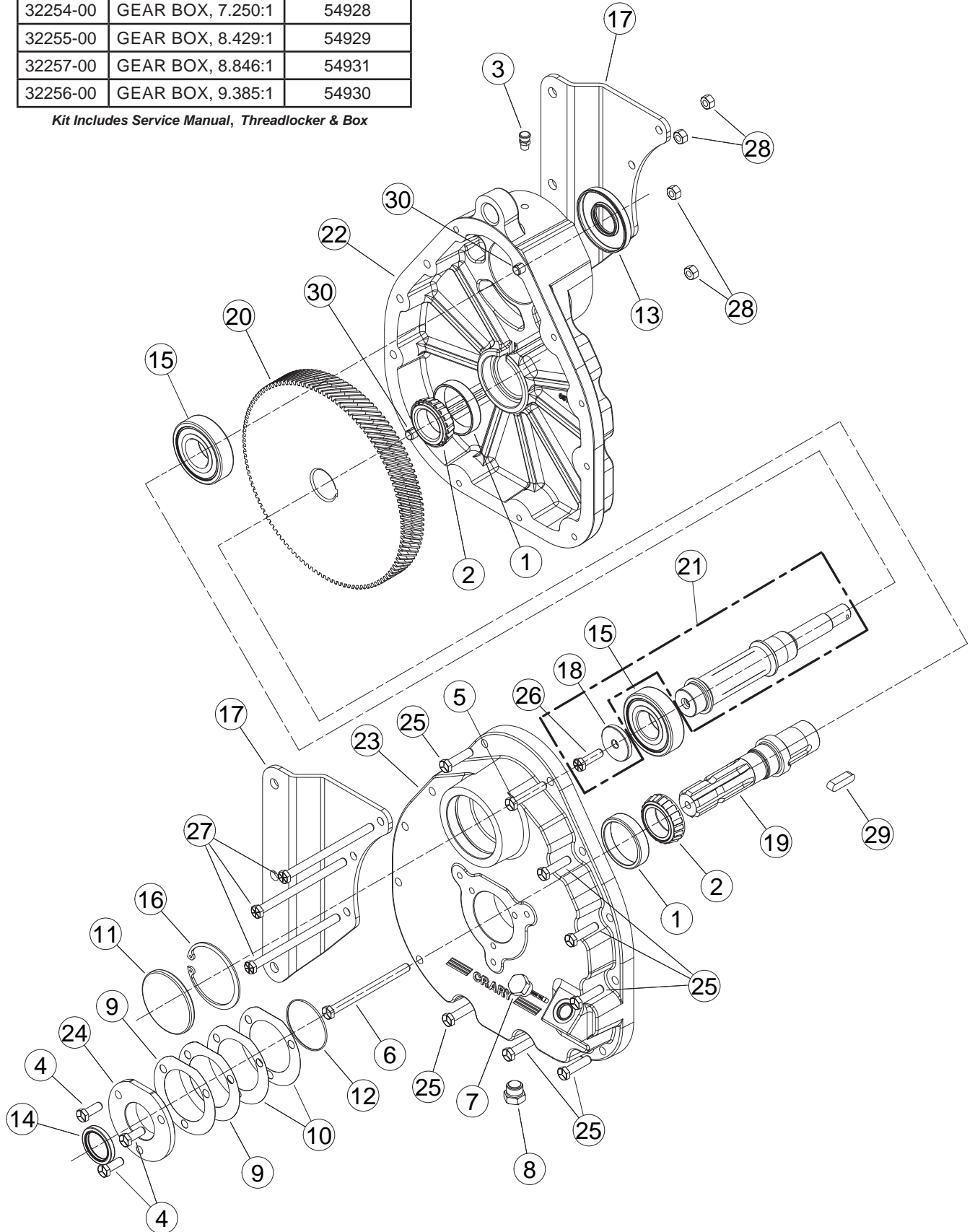
GEARBOX/FAN

ASSEMBLY, 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

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

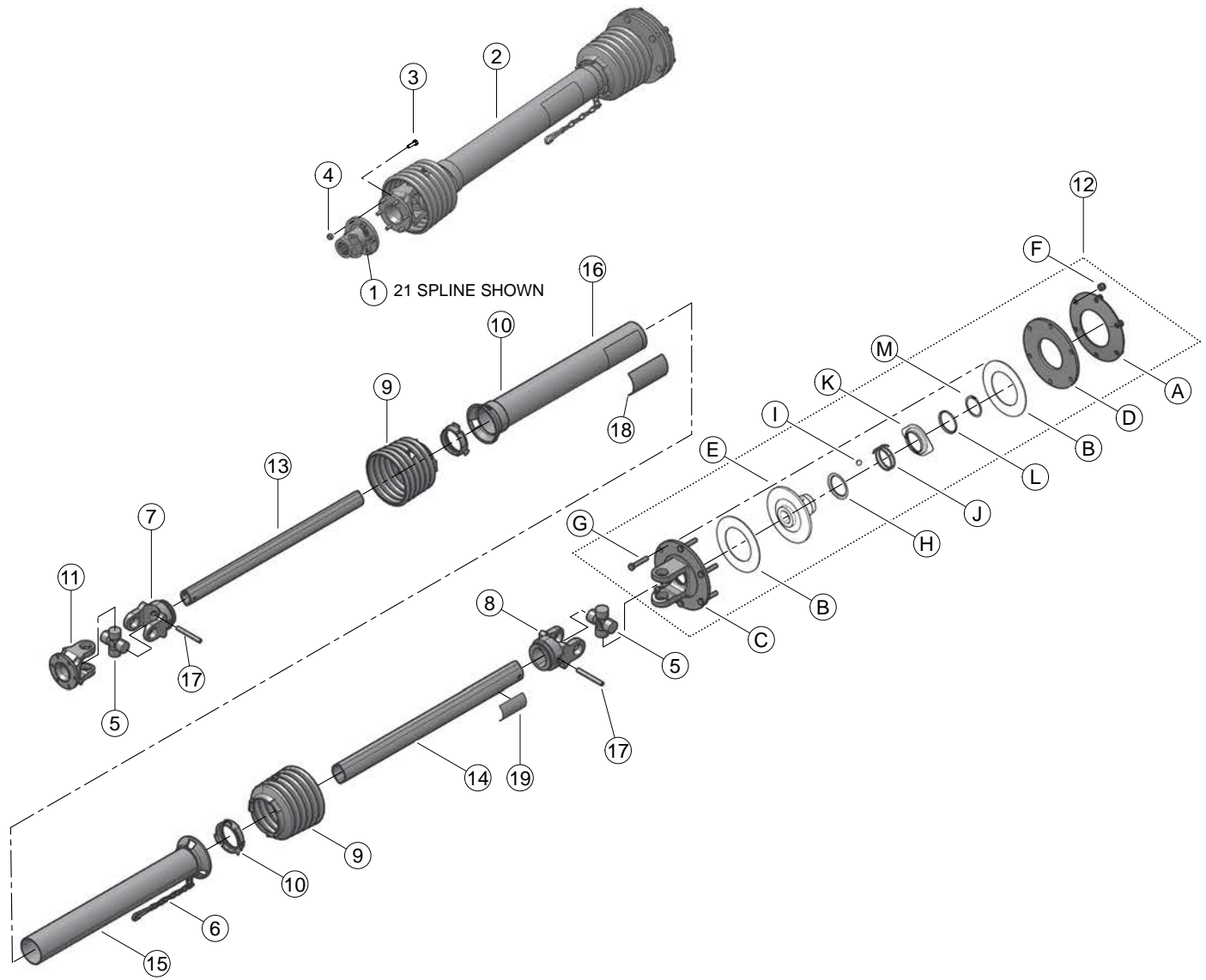


	GEARBOX REPLACEMENT PARTS
--	----------------------------------

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

DRIVELINE/C FLANGE ASSEMBLY	35 FT/40 FT/45 FT HEADER
------------------------------------	---------------------------------



35 FT/40 FT/45 FT HEADER

DRIVELINE/C FLANGE ASSEMBLY

DRIVELINE/C-FLANGE KIT

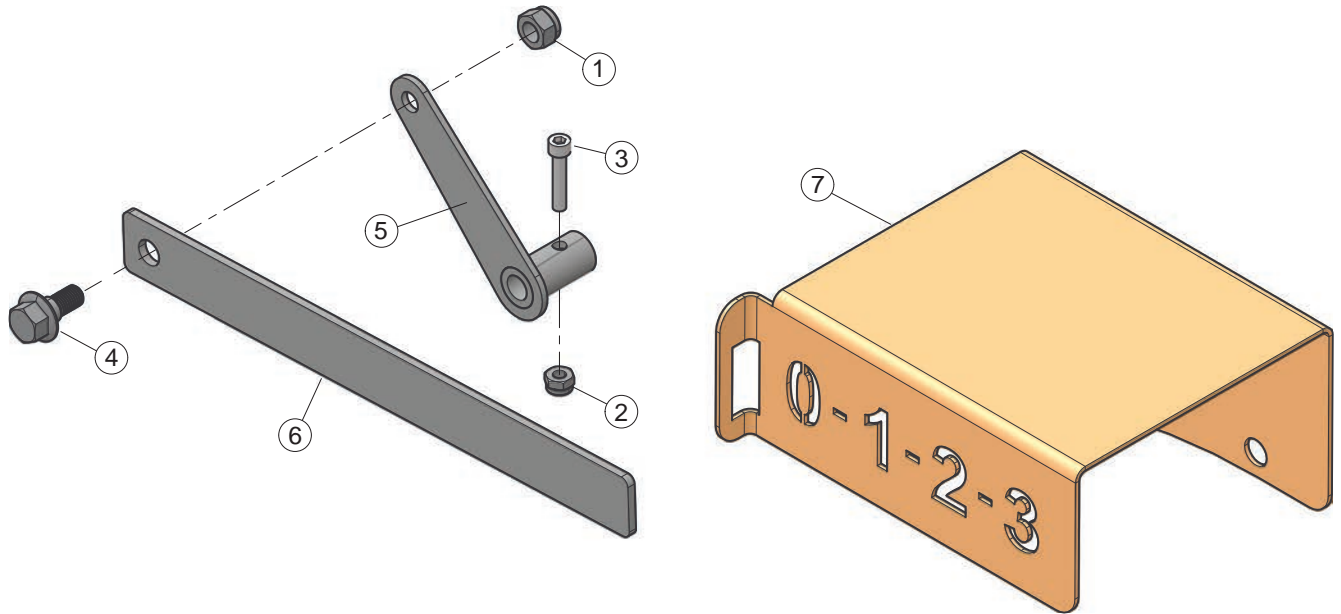
ITEM	PART NUMBER	DESCRIPTION	54483-00 QTY
1	13914-00	COUNTER FLANGE, 1-3/8" 21 SPLINE	1
2	32454-00	DRIVELINE/CLUTCH, 1-3/8" 6 SPLINE(M) (SEE TABLE BELOW)	1
3	15219	BOLT, 5/16 X 1 HEX HD GR5 ZP	6
4	15356	NUT, 5/16 NE NYLOCK ZP	6

ASSEMBLY, DRIVELINE/CLUTCH

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

DAMPER INDICATOR KIT

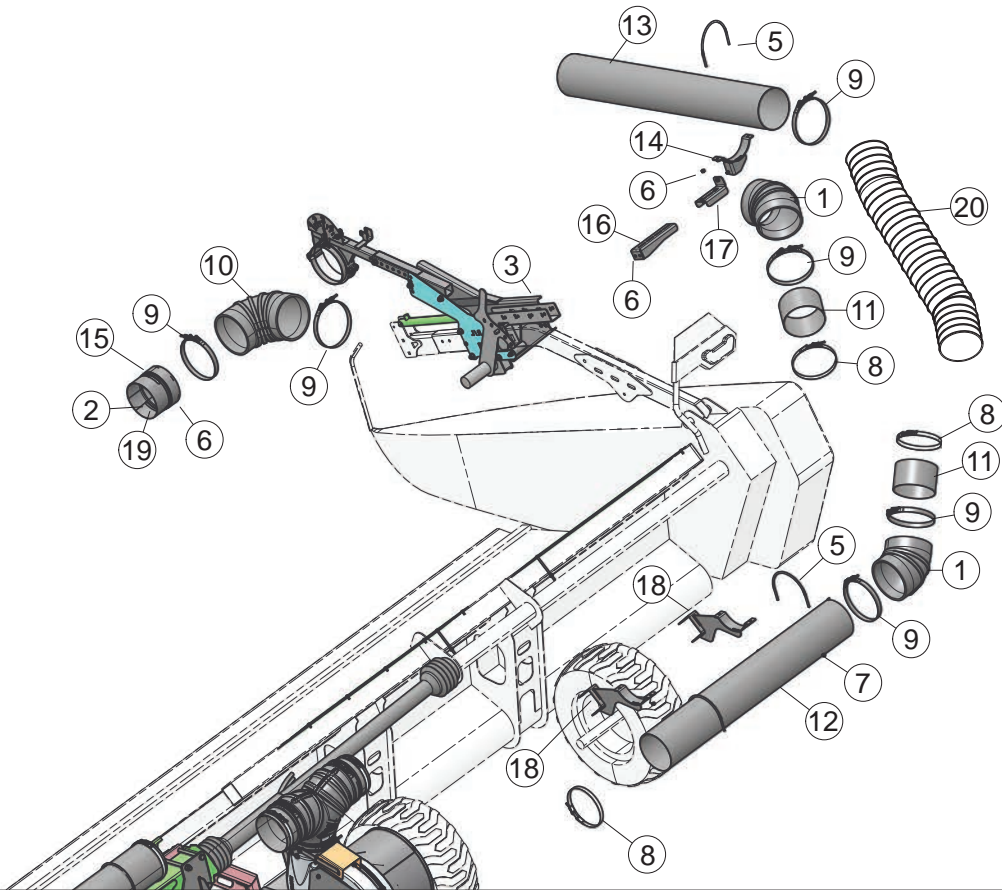
DUAL FLOW MODELS



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

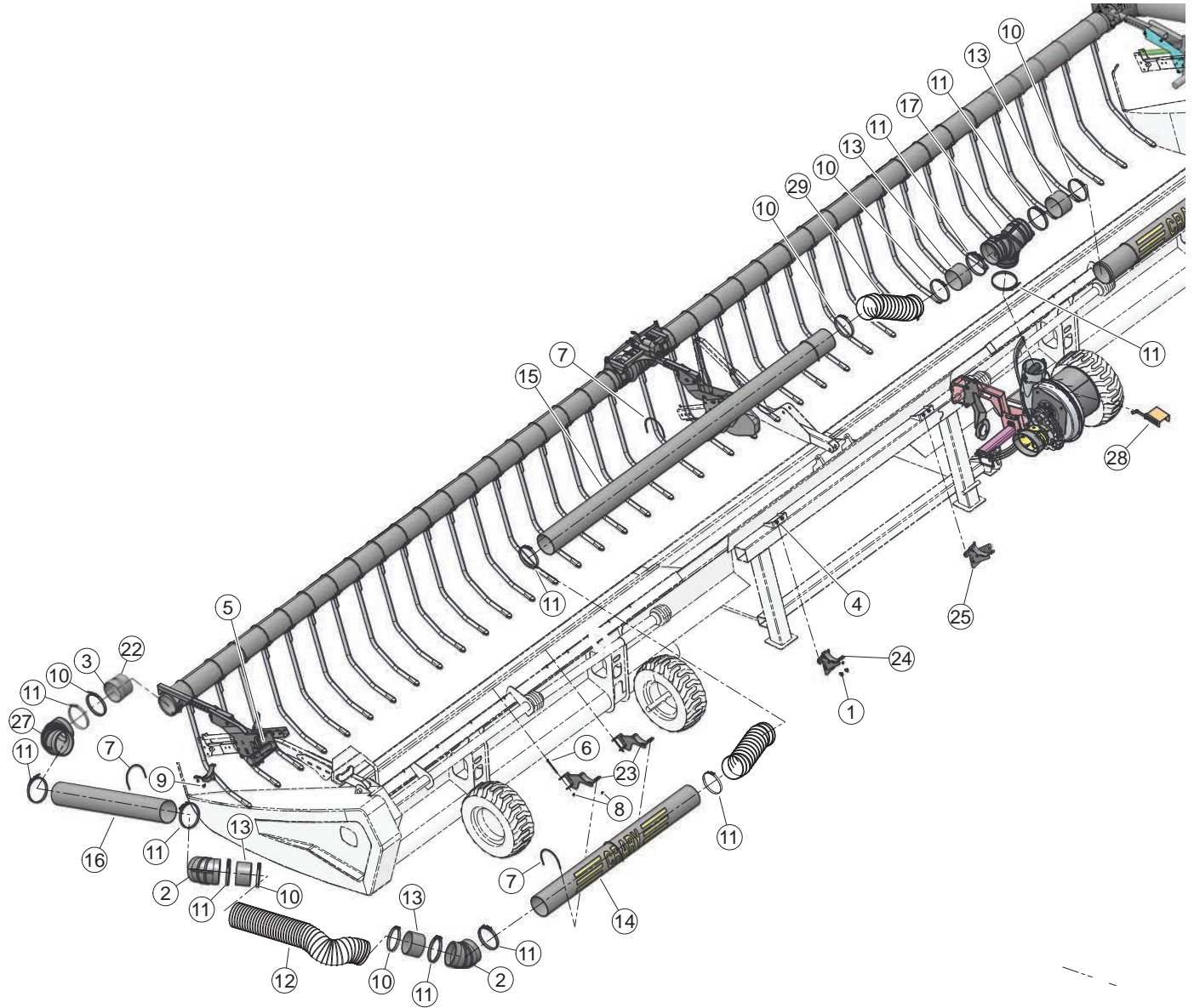
35 FT/40 FT/45 FT/50 FT

RIGHT HAND DRIVE KIT



KIT, RH DRIVE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	12146	ELBOW, RUBBER-8" X 45 DEG	2
2	15119-00	BOLT, 5/16 X 7/8 FLANGE NC	2
3	15367	BOLT, 5/16X3/4 GR5 NC ZP CRG	4
4	15537	BOLT, CRG 5/16 * 5-1/2" GR5 ZP	2
5	15700-00	U-BOLT,5/16-18 X 8.19 X 6.59	3
6	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	15
7	15908-00	BOLT, 5/16-18 X 3/4 ZP FLANGE 0.250 SHOULDER	1
8	16091	CLAMP, 8-3/8" T-BOLT	2
9	16092	CLAMP, 8-11/16" T-BOLT	6
10	17437	MANIFOLD ELBOW - 8" (MR)	1
11	21512	BAND, ELBOW SUPPORT	1
12	25914-33	MANIFOLD, 51" ALUMINUM - 35 FT ONLY (55070)	1
	25844-33	MANIFOLD, 79" ALUMINUM W/DECAL - 40 FT ONLY (55080)	
	50222-33	MANIFOLD, 111" ALUMINUM W/DECAL - 45 FT ONLY (55090)	
	50129-33	MANIFOLD, 141" ALUMINUM - 50 FT ONLY (55040)	
13	29638-33	MANIFOLD, 56" ALUMINUM	1
14	52971-12	WELDMENT, MOUNT TRANSITION SIDE	1
15	52994-00	ASSEMBLY, ADAPTER MANIFOLD 8" ADJUSTABLE	1
16	55055-12	WELD, MOUNT SIDE TRANSITION - INNER ELBOW SUPPORT	1
17	55056-12	BRACKET, MOUNT SIDE TRANSITION - OUTER ELBOW SUPPORT	1
18	55061-12	WELDMENT, MOUNT TRANSITION-REAR L/R	2
19	73063	SPACER, .50 X .25	2
20	76280-00	HOSE, FLEXIBLE 8" ID X 4 FT LONG	1



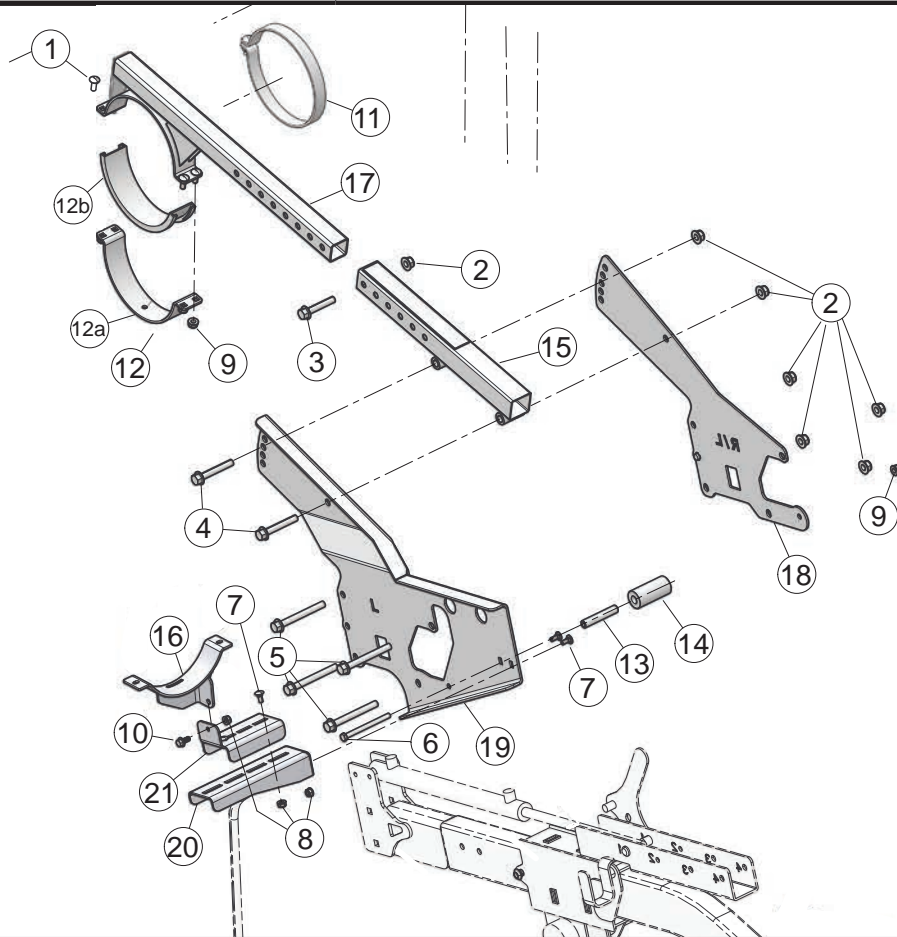
DUAL FLOW

FAN HOSE ASSEMBLY

KIT, DUAL FLOW DRIVE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	15231-00	BOLT, 1/2-13 X 1.00 GR5 FLANGE NC	4
2	12146	ELBOW, RUBBER - 8" X 45 DEG	2
3	15119-00	BOLT, 5/16 X 7/8 FLANGE NC	2
4	15162-00	NUT, 1/2-13 NYLOCK FLANGE	4
5	15367	BOLT, 5/16 X 3/4 GR5 NC ZP CRG	4
6	15537	BOLT, CRG 5/16 * 5-1/2" GR5 ZP	2
7	15700-00	U-BOLT,5/16-18 X 8.19 X 6.59	5
8	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	20
9	15908-00	BOLT, 5/16-18 X 3/4 ZP FLANGE 0.250 SHOULDER	2
10	16091	CLAMP, 8-3/8" T-BOLT	5
11	16092	CLAMP, 8-11/16" T-BOLT	7
12	17410	HOSE, FLEXIBLE 8" ID X 6 FT LONG	2
13	21512	BAND, ELBOW SUPPORT	3
14	25914-33	MANIFOLD, 51" ALUMINUM - 35 FT ONLY (55075)	1
	25844-33	MANIFOLD, 79" ALUMINUM W/DECAL - 40 FT ONLY (55085)	
	50222-33	MANIFOLD, 111" ALUMINUM W/DECAL - 45 FT ONLY (55095)	
	50129-33	MANIFOLD, 141" ALUMINUM - 50 FT ONLY (55045)	
15	50751-00	MANIFOLD, 132" ALUMINUM	1
16	29638-33	MANIFOLD, 56" ALUMINUM	1
17	50660-00	ASSEMBLY, DUAL FLOW Y	1
18	52012-12	WELDMENT, DUAL FLOW LINK	1
19	52013-12	BAR, GAUGE DUAL FLOW INDICATOR	1
20	52015-35	BRACKET, INDICATOR DUAL FLOW	1
21	52971-12	WELDMENT, MOUNT TRANSITION SIDE	1
22	52994-00	ASSEMBLY, ADAPTER MANIFOLD 8" ADJUSTABLE	1
23	55061-12	WELDMENT, MOUNT TRANSITION-REAR L/R	2
24	55062-00	ASSEMBLY, MOUNT TRANSITION-CENTER LEFT	1
25	55707-00	ASSEMBLY, MOUNT TRANSITION-CENTER RIGHT	1
26	73063	SPACER, .50 X .25	1
27	17437	MANIFOLD ELBOW - 8" X 90 DEG (MR)	1
28	52011-00	KIT, DUAL FLOW DAMPER INDICATOR	1
29	76280-00	HOSE, FLEXIBLE 8" ID X 4 FT LONG	1

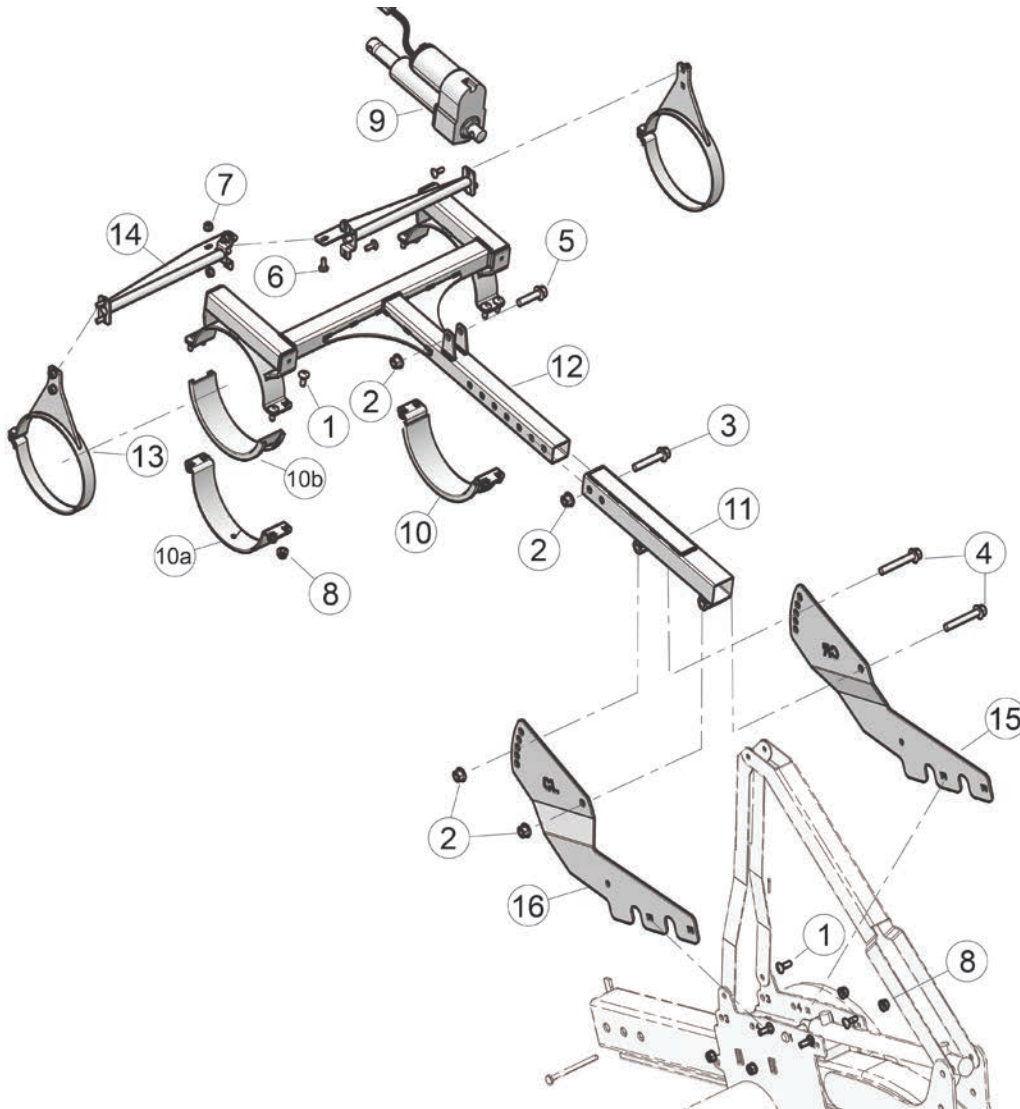
REEL ARM MOUNT, LH



KIT, REEL ARM MOUNT - HDF/HDR (55050 - LH PARTS)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	15057	BOLT, CARR 3/8-16 X 1 GR5 CMS F1 5ANS	4
2	15162-00	NUT, 1/2-13 NYLOCK FLANGE	7
3	15196-00	BOLT, 1/2-13 X 2-3/4, FLANGE, GR5, CZP	1
4	15198-00	BOLT, 1/2-13 X 3-1/4, FLANGE, GR8, YZP	2
5	15247-00	BOLT, 1/2 X 4-1/2, FLANGE, GR5, CZP	4
6	15274	BOLT, 3/8 X 4-1/2 HHCS GR5 NC ZP	1
7	15367	BOLT, 1/2-13 X 3-1/4 FLANGE, GR8 YZP	4
8	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	7
9	15905-00	NUT, 3/8-16 NYLOCK FLANGE	6
10	15908-00	NUT, 5/16-18 NYLOCK-FLANGE	2
11	22489	ASSEMBLY, BRACE CLAMP	1
12	25908-00	ASSEMBLY, HALF CLAMP	1
12a	23501-12	CLAMP, HALF	1
12b	22809	GUIDE, SADDLE	1
13	51833-00	BUSHING, INNER ROLLER	1
14	51834-00	BEARING, OUTER NYLON	1
15	52008-12	WELDMENT, REEL ARM MOUNT	1
16	52971-12	WELDMENT, MOUNT TRANSITION SIDE	1
17	54343-12	WELDMENT, REEL MOUNT	1
18	55013-12	WELDMENT, MOUNT - INNER RH/LH	1
19	55052-12	WELDMENT, MOUNT OUTER - REEL RH	1
20	55055-12	WELD, MOUNT SIDE TRANSITION - INNER	1
21	55056-12	BRACKET, MOUNT SIDE TRANSITION - OUTER	1

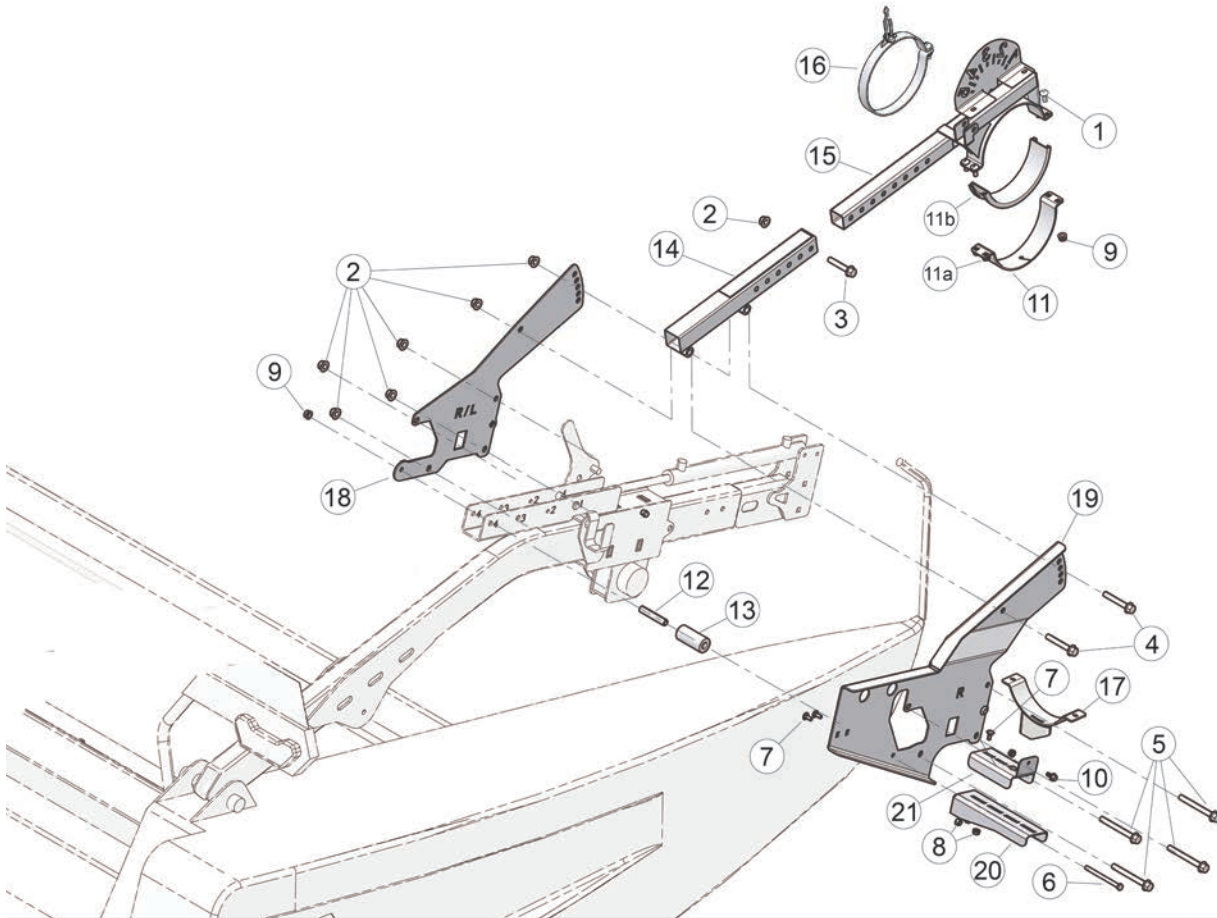
REEL ARM MOUNT, CENTER



KIT, REEL ARM MOUNT CWS - HDF/HDR (55050 - CENTER PARTS)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	15057	BOLT, CARR 3/8-16 X 1 GR5 CMS F1 5ANS	6
2	15162-00	NUT, 1/2-13 NYLOCK FLANGE	4
3	15196-00	BOLT, 1/2-13 X 2-3/4, FLANGE, GR5, CZP	1
4	15198-00	BOLT, 1/2-13 X 3-1/4, FLANGE, GR8, YZP	2
5	15200-00	BOLT, 1/2-13 X 2, FLANGE, GR5, CZP	1
6	15349	BOLT, CARR 5/16-18 X 7/8 GR5 CMS F1 5ANS	1
7	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	1
8	15905-00	NUT, 3/8-16 NYLOCK FLANGE	6
9	17843	ELECTRIC ACTUATOR	1
10	25908-00	ASSEMBLY, HALF CLAMP	2
10a	23501-12	CLAMP, HALF	1
10b	22809	GUIDE, SADDLE	1
11	52944-12	WELDMENT, ARM MOUNT, GUSSETED CENTER 15.75"L X 2.13"W	1
12	54365-12	WELDMENT, CENTER REEL MOUNT	1
13	54369-12	WELDMENT, MANIFOLD PIVOT	1
14	54886-12	WELDMENT, MANIFOLD PIVOT ROD	2
15	55053-12	BRACKET, MOUNT CENTER - REEL RH	1
16	55054-12	BRACKET, MOUNT CENTER - REEL LH	1

REEL ARM MOUNT, RH

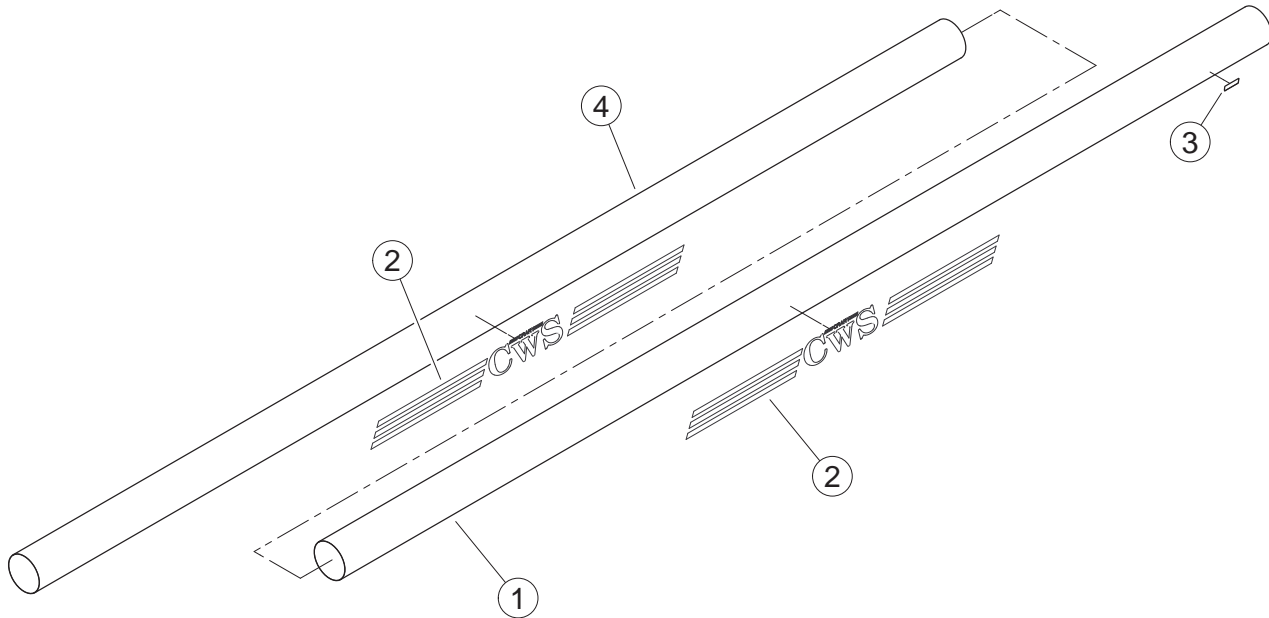


KIT, REEL ARM MOUNT - HDF/HDR (55050 - RH PARTS)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	15057	BOLT, CARR 3/8-16 X 1 GR5 CMS F1 5ANS	4
2	15162-00	NUT, 1/2-13 NYLOCK FLANGE	7
3	15196-00	BOLT, 1/2-13 X 2-3/4, FLANGE, GR5, CZP	1
4	15198-00	BOLT, 1/2-13 X 3-1/4, FLANGE, GR8, YZP	2
5	15247-00	BOLT, 1/2 X 4-1/2, FLANGE, GR5, CZP	4
6	15274	BOLT, 3/8 X 4-1/2 HHCS GR5 NC ZP	1
7	15367	BOLT, 1/2-13 X 3-1/4 FLANGE, GR8 YZP	4
8	15904-00	NUT, 5/16-18 NYLOCK-FLANGE	7
9	15905-00	NUT, 3/8-16 NYLOCK FLANGE	6
10	15908-00	NUT, 5/16-18 NYLOCK-FLANGE	2
11	25908-00	ASSEMBLY, HALF CLAMP	1
11a	23501-12	CLAMP, HALF	1
11b	22809	GUIDE, SADDLE	1
12	51833-00	BUSHING, INNER ROLLER	1
13	51834-00	BEARING, OUTER NYLON	1
14	52008-12	WELDMENT, REEL ARM MOUNT	1
15	52467-12	WELDMENT, REEL MOUNT W/INDICATOR	1
16	52510-00	ASSEMBLY, MANIFOLD PIVOT W/INDICATOR	1
17	52971-12	WELDMENT, MOUNT TRANSITION SIDE	1
18	55013-12	WELDMENT, MOUNT - INNER RH/LH	1
19	55052-12	WELDMENT, MOUNT OUTER - REEL RH	1
20	55055-12	WELD, MOUNT SIDE TRANSITION - INNER	1
21	55056-12	BRACKET, MOUNT SIDE TRANSITION - OUTER	1

SECTIONAL MANIFOLDS 35 FT HEADERS

AIR MANIFOLD



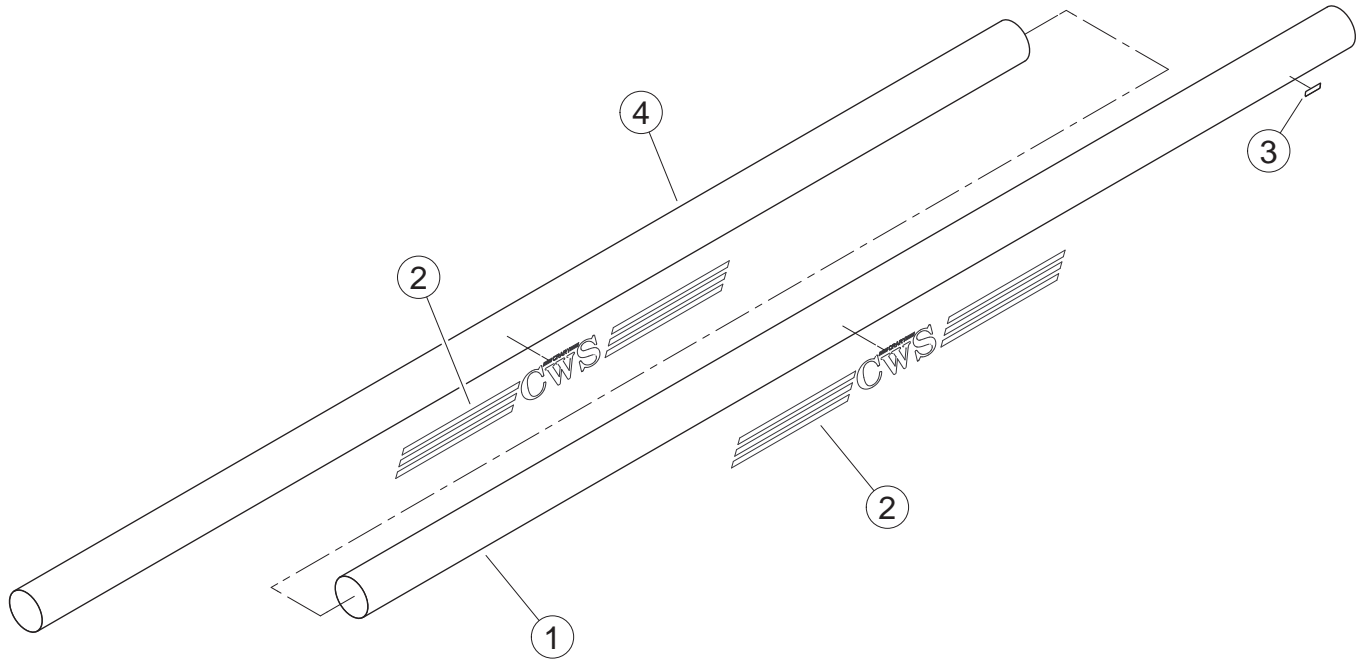
ASSEMBLY, 35FT. CWS MANIFOLD (55100)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	55099-00	ASSY.,35FT.CWS MANIFOLD - LH	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1
3		DECAL, SERIAL NUMBER	1
4	55098-00	ASSY.,35FT.CWS MANIFOLD - RH	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1

ASSEMBLY, 35FT. CWS MANIFOLD - GREEN (55065)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	55081-00	ASSY.,35FT. CWS LH MANIFOLD - GREEN	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1
3		DECAL, SERIAL NUMBER	1
4	55078-00	ASSY.,35FT. CWS RH MANIFOLD - GREEN	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1

AIR MANIFOLD	SECTIONAL MANIFOLDS - 40 FT HEADERS	
---------------------	--	--

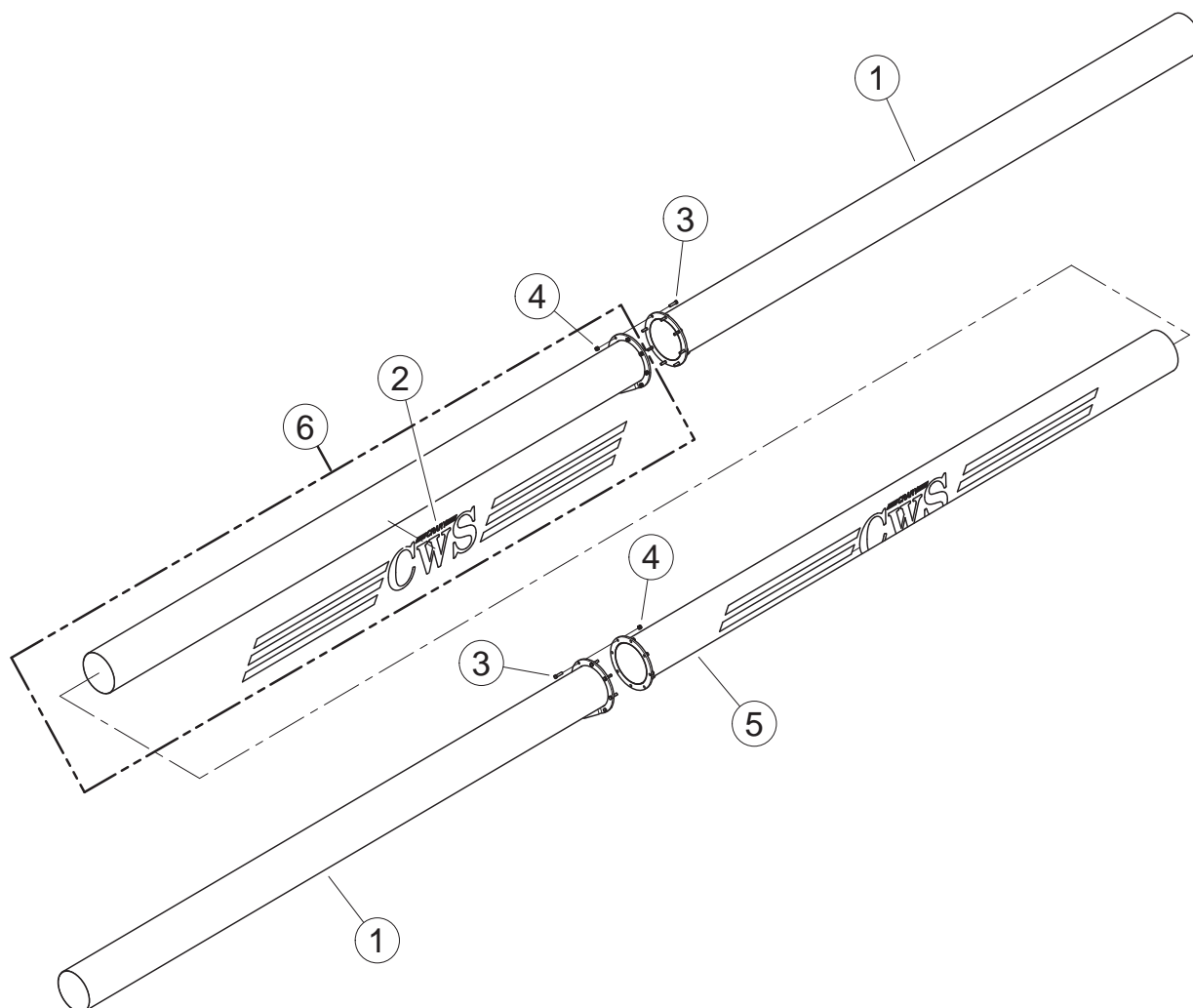


ASSEMBLY, 40FT. CWS MANIFOLD (54381)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	54379-00	ASSY.,40FT.CWS MANIFOLD - LH	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1
3		DECAL, SERIAL NUMBER	1
4	54380-00	ASSY.,40FT.CWS MANIFOLD - RH	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1

ASSEMBLY, 40FT. CWS MANIFOLD - GREEN (50519)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	50521-00	ASSY.,40FT. CWS LH MANIFOLD - GREEN	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1
3		DECAL, SERIAL NUMBER	1
4	50522-00	ASSY.,40FT. CWS RH MANIFOLD - GREEN	1
2	14077-00	DECAL, CWS LOGO (YELLOW)	1

SECTIONAL MANIFOLDS - 45' HEADERS

AIR MANIFOLD

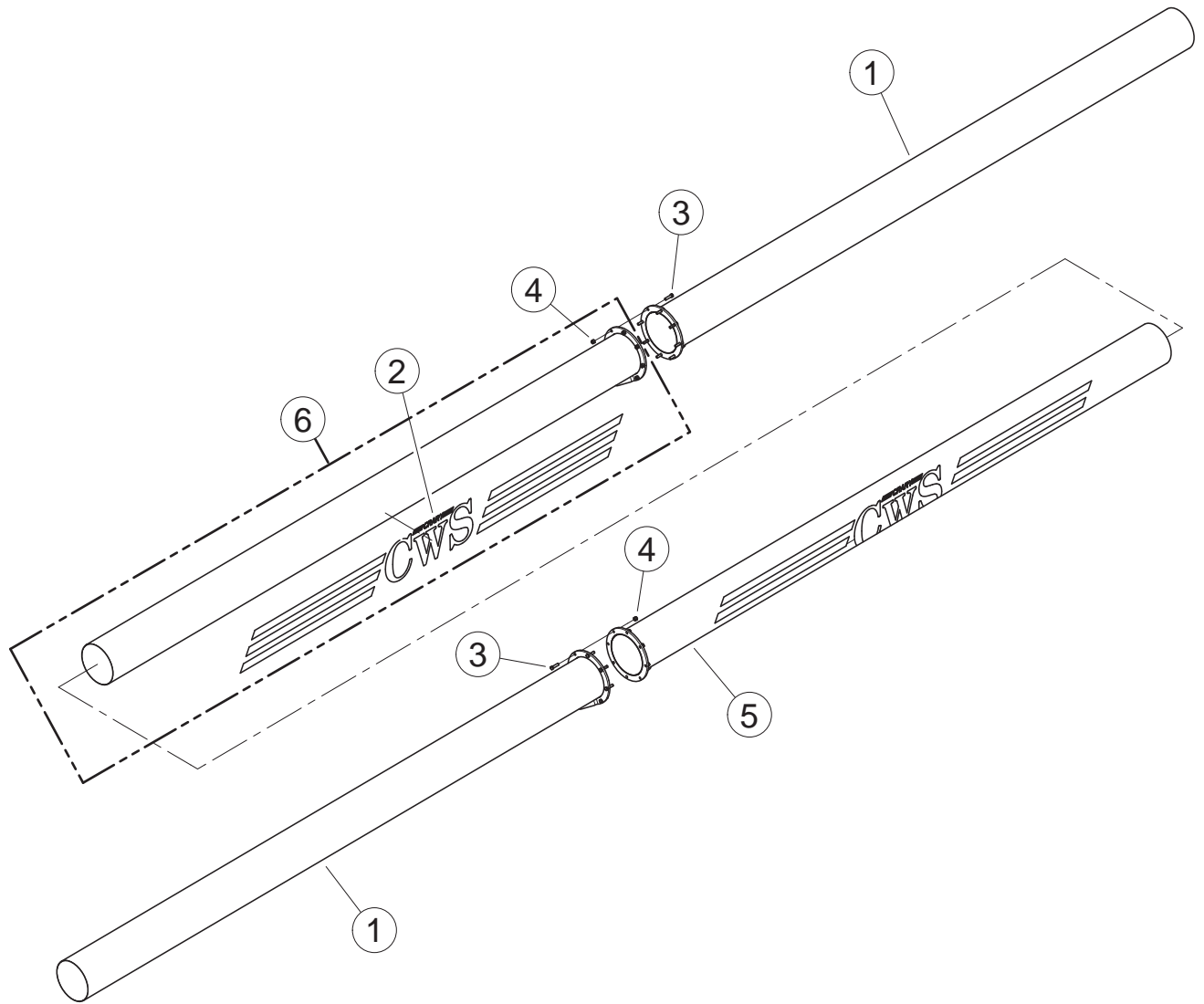


ASSEMBLY, CWS MANIFOLD - 12" HOLE SPACING

ITEM	PART NUMBER	DESCRIPTION	50665 45 FT. QTY
1	50437-33	WELDMENT, 45' LONG 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	50198-00	ASSEMBLY, 45FT CWS MANIFOLD - RH (WITH DECAL)	1
6	50197-00	ASSEMBLY, 45FT CWS MANIFOLD - LH (WITH DECAL)	1

ASSEMBLY, CWS MANIFOLD - 12" HOLE SPACING, GREEN

ITEM	PART NUMBER	DESCRIPTION	51272 45 FT. QTY
1	51355-15	WELDMENT, 45' LONG CWS RH/LH MANIFOLD(12") GREEN	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	51357-00	ASSEMBLY, 45FT CWS MANIFOLD - RH GREEN (WITH DECAL)	1
6	51356-00	ASSEMBLY, 45FT CWS MANIFOLD - LH GREEN (WITH DECAL)	1



ASSEMBLY, CWS MANIFOLD - 12" HOLE SPACING

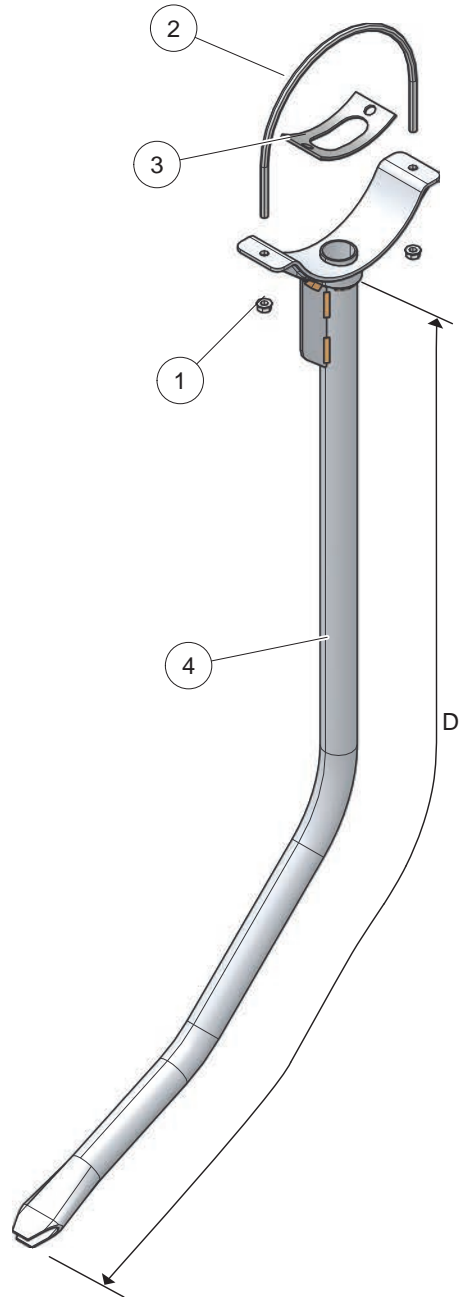
ITEM	PART NUMBER	DESCRIPTION	52755 50 FT. QTY
1	52754-33	WELDMENT, 50' LONG CWS RH/LH MANIFOLD(12")	2
2	14077-00	DECAL, CWS LOGO - YELLOW	2
3	15007	BOLT, 3/8 X 1-1/2 HEX GR5 ZP	8
4	15388	NUT, 3/8 NE NYLOCK ZP	8
5	52752-00	ASSEMBLY, 50FT CWS MANIFOLD - RH (WITH DECAL)	1
6	52751-00	ASSEMBLY, 50FT CWS MANIFOLD - LH (WITH DECAL)	1

ASSEMBLY, CWS MANIFOLD - 12" HOLE SPACING, GREEN

ITEM	PART NUMBER	DESCRIPTION	55060 50 FT. QTY
1	55073-15	WELDMENT, 50' LONG CWS RH/LH MANIFOLD(12") GREEN	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	55071-00	ASSEMBLY, 50FT CWS MANIFOLD - RH GREEN (WITH DECAL)	1
6	55069-00	ASSEMBLY, 50FT CWS MANIFOLD - LH GREEN (WITH DECAL)	1

ALL

DROP TUBE KIT



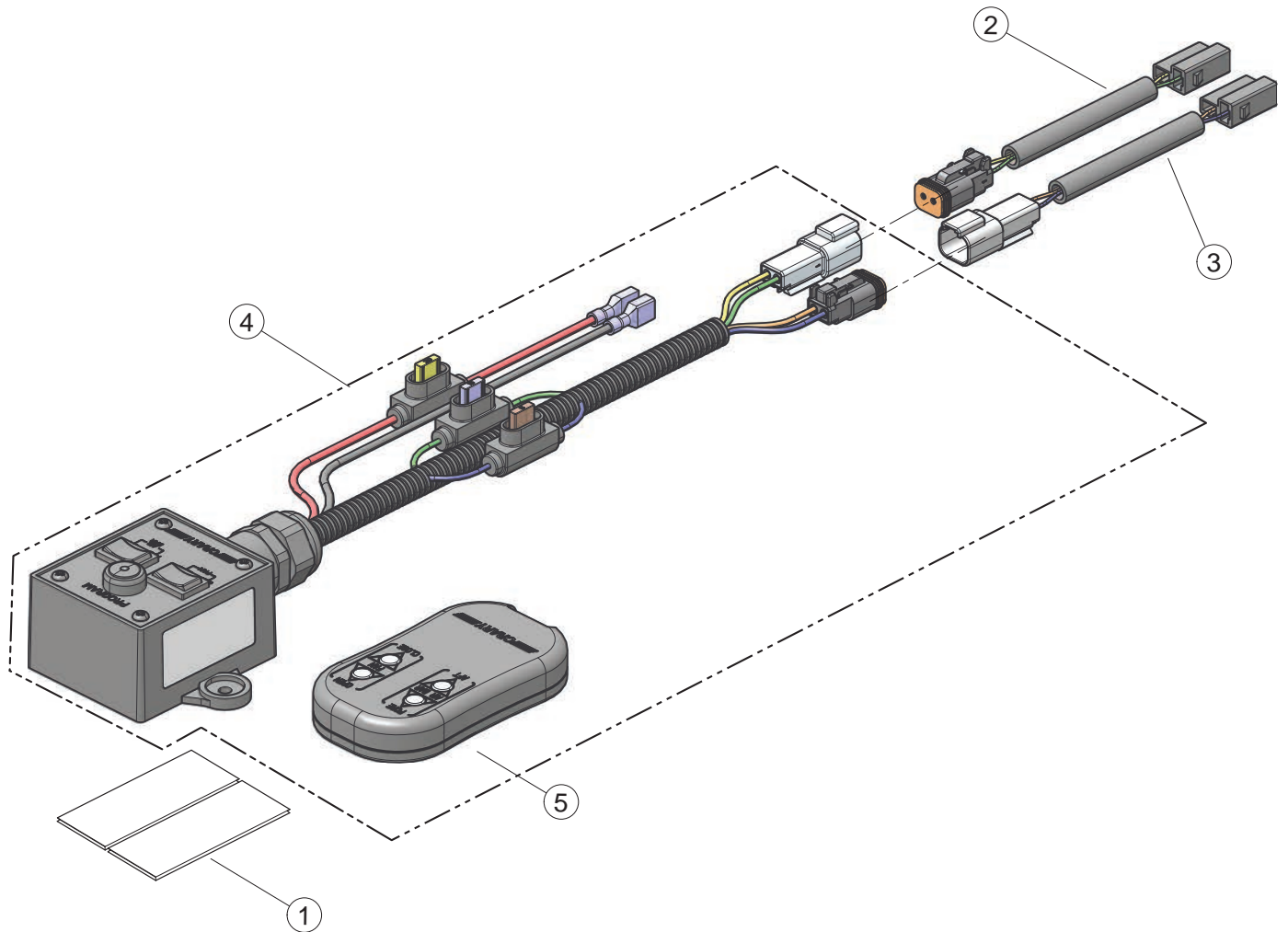
MANIFOLD LENGTH	# OF X-LONG 2 BEND DROP TUBES (52556/52782)
35'	35
40'	39
45'	45
50'	49

DROP TUBE KIT

ITEM	PART NUMBER	DESCRIPTION	QTY.
	52556	KIT, X-LONG 2 BEND DROP TUBE (INCLUDES ITEMS BELOW) D=48"	
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	52557-00	WELDMENT, X-LONG 2 BEND DROP TUBE	1
4	17313	FOAM SEAL- DROP TUBE	1
	52782	KIT, X-LONG 2 BEND DROP TUBE YELLOW (INCLUDES ITEMS BELOW) D=48"	
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	52557-28	WELDMENT, X-LONG 2 BEND DROP TUBE YELLOW	1
4	17313	FOAM SEAL- DROP TUBE	1

SWITCH/MOUNT PLATE

ALL MODELS

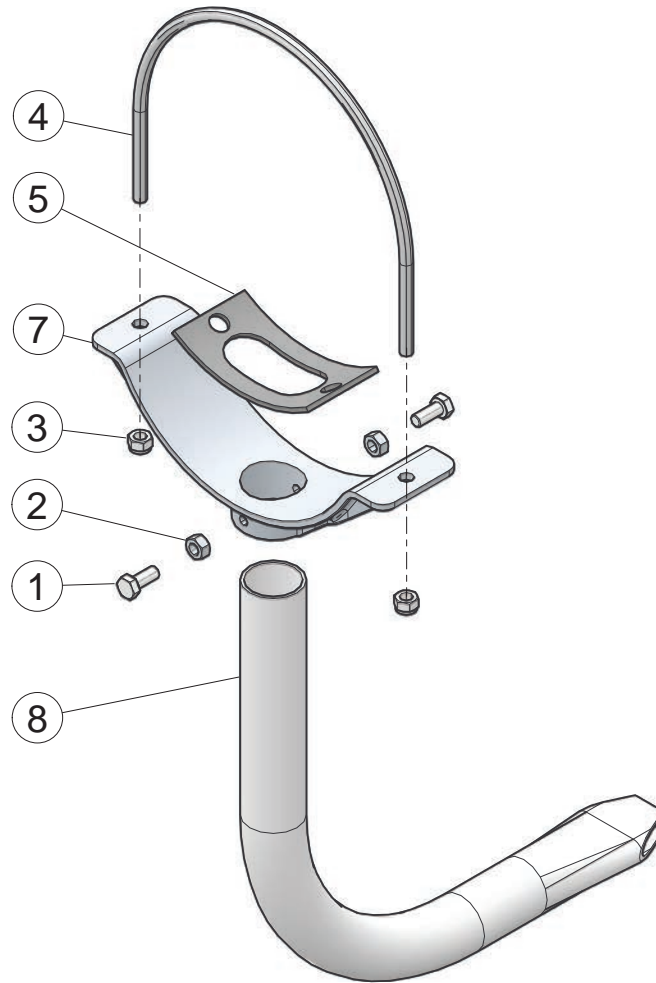


REMOTE CONTROL - CWS/FAR ACTUATOR CONTROLLER 50870-00			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	35120-00	VELCRO STRIP	2
	33186-00	LANYARD, CRARY (BLACK) (NOT SHOWN)	1
2	33184-00	HARNESS, ACTUATOR - MANIFOLD	1
3	31133-00	HARNESS, ACTUATOR - BUTTERFLY	1
4	30349-00	SWITCH AND REMOTE, CWS/FAR ACTUATOR CONTROL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



Parts Catalog Options

KIT, DROP TUBE FEEDERHOUSE CLEANER

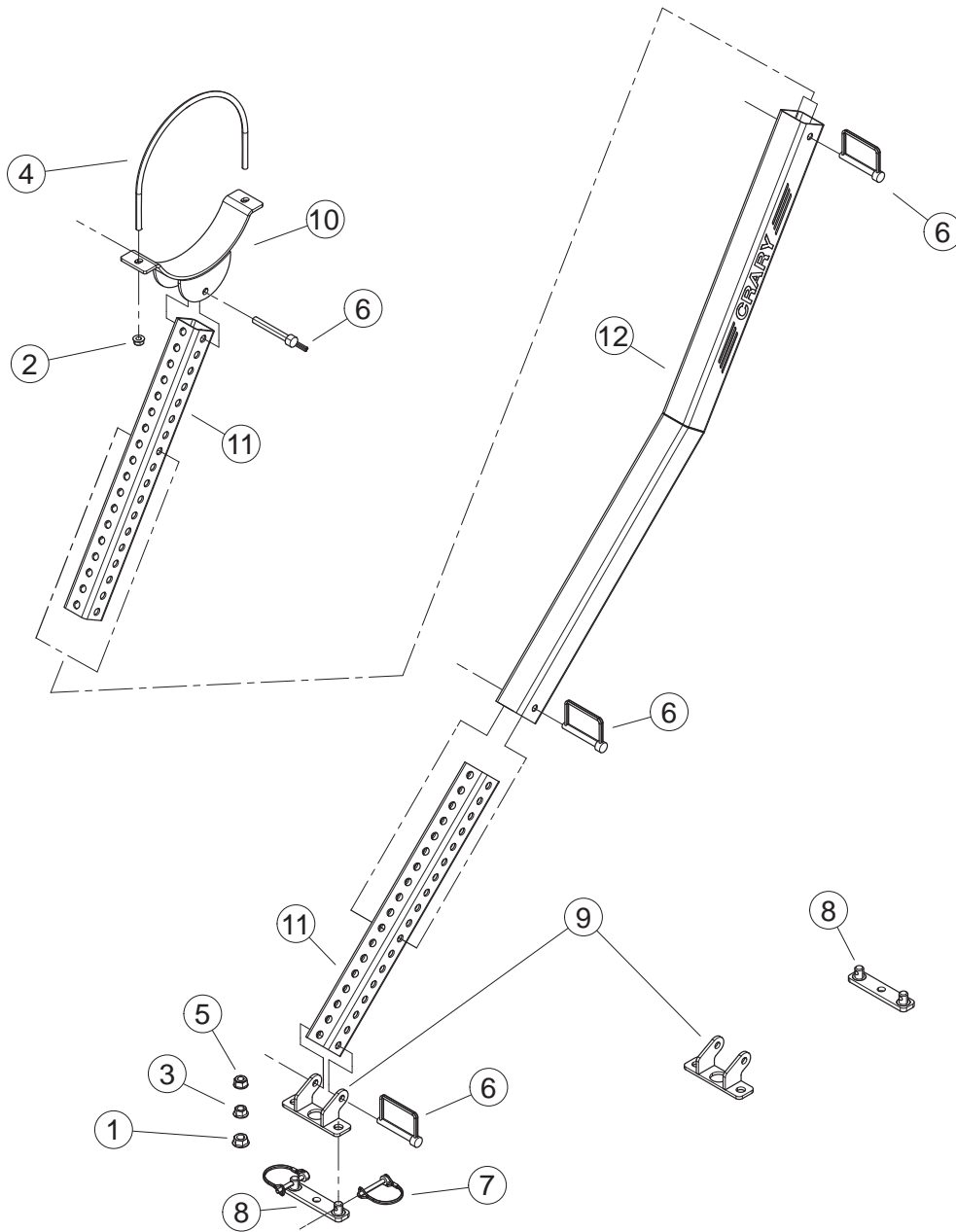


KIT, DROP TUBE FEEDERHOUSE CLEANER (50384)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	15003	BOLT, 5/16 X 3/4 HEX HD	2
2	15153	NUT, 5/16 HX NC - ZP	2
3	15356	NUT, 5/16 NYLOCK	2
4	15700-00	U-BOLT, 5/16-18 X 8.19 X 6.59	1
5	17313	SEAL, FOAM	1
6	31756-00	BOX, 14 X 14 X 6 (NOT SHOWN)	1
7	50381-00	BRACKET, FEEDERHOUSE CLEANER	1
8	50385-00	TUBE, FEEDERHOUSE CLEANER	1

TRANSPORT SUPPORT KIT

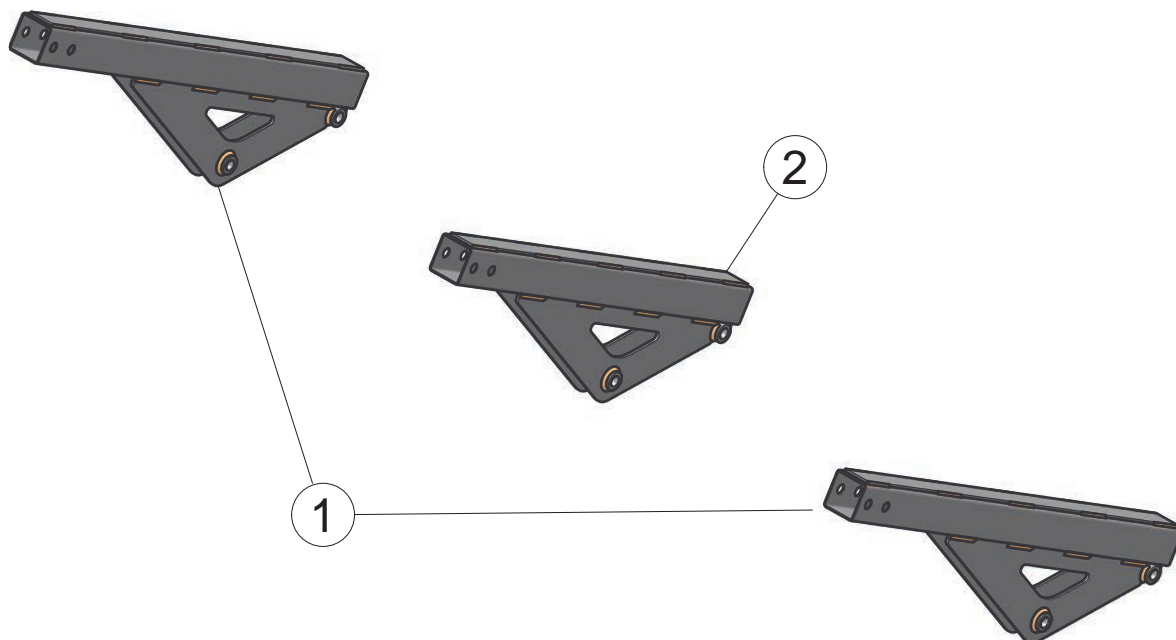
ALL MODELS



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

ALL

MANIFOLD ARM EXTENSION KIT



MANIFOLD EXTENSION KIT #55470			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	55463-12	WELDMENT, ARM MOUNT-EXTENSION OUTER	2
2	55464-12	WELDMENT, ARM MOUNT-EXTENSION CENTER	1



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



Manufactured in the
United States of America
by Crary Industries