CRARY Air Reel

OWNER'S MANUAL

NEW HOLLAND
972/973
73C/74C

CASE IH
2020

RECORD SERIAL NUMBER HERE

PN: 12070 R080607
Companion to 12087

HOW TO REACH US




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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.**

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.

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

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

Serial Number Decal

LIMITED WARRANTY

This warranty applies to Bear Cat, Crary, Load-N-Lift, Lockwood and Weed Roller brand products 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 1 year from date of delivery for income producing (commercial) applications and 2 years from date of delivery for non-income producing (consumer) use of the product. The product is warranted to the original owner as evidenced by a completed warranty registration on file at Crary Industries. Replacement parts are warranted for (90) days from date of installation.

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, filters and chipper knives.
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.
7. Engines are warranted by the respective engine manufacturer and are not covered by this warranty.

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.

INSPECTION AFTER DELIVERY

Inspect your shipping cartons for damage. If you suspect any damage, contact the carrier (trucking company) right away. Unpack the shipping cartons and compare the contents with the parts listing on the packing slips. If any parts are missing or damaged, contact your local authorized dealer or call the factory for assistance. NOTE: Depending on header variations, you may or may not receive all crates and/or boxes listed below.

CRATE 1

BOX	KIT NUMBER(S)	ITEMS
1	22666	GEARBOX/FAN ASSEMBLY, SWITCH/MOUNT PLATE ASSEMBLY, FLEX HOSE CHAIN, RUBBER ELBOWS, T-BOLT CLAMPS, FLEX HOSE, TUBE CAP, MISC. HARDWARE
	29876	GEARBOX/FAN ASSEMBLY, RUBBER ELBOWS, T-BOLT CLAMPS, TUBE CAP, FLEX SUPPORT BAND ASSEMBLY, FLEX HOSE CHAIN, SWITCH/MOUNT PLATE ASSEMBLY, MISC. HARDWARE

CRATE 2

BOX	KIT NUMBER(S)	ITEMS
1	ALL	OWNER'S MANUAL, PARTS MANUAL, WARRANTY/REGISTRATION CARD, ACTUATOR SWITCH ADAPTER HARNESS, ELECTRIC ACTUATOR, ADJUSTMENT STRAPS, HALF CLAMPS, REEL SUPPORT PADS, PIVOT CLAMP ASSEMBLIES, REEL SUPPORT ASSEMBLIES, MISC. HARDWARE

CRATE 3

BOX	KIT NUMBER(S)	ITEMS
1	ALL	HYDRAULIC MOTOR, FOAM SEALS, PIVOT STRAP BUSHINGS, SHAFT COUPLER, SIR TUBE WELDMENTS, IDLER GEAR ASSEMBLIES, REEL BAT ARM ASSEMBLIES, ECCENTRIC ARM ASSEMBLIES, DOUBLE AIR TUBE ASSEMBLIES, BRACE CLAMP ASSEMBLIES, ADJUSTMENT WRENCH, ECCENTRIC MOUNT ASSEMBLIES, MISC. HARDWARE

CRATE 4

BOX	KIT NUMBER(S)	ITEMS
1	25718, 22677	BUSHINGS, ADAPTERS, MOUNT PLATE SUPPORT, SHIELD WELDMENTS, MISC. HARDWARE
	29869, 29870	GEARBOX MOUNT BRACKET, SHIELD HINGES, GEARBOX SHIELDS, MISC. HARDWARE
2	29884	BEARINGS, FLANGETTES, SPLINED STUB SHAFT, MISC. HARDWARE

CRATE 5

BOX	KIT NUMBER(S)	ITEMS
1	24108, 25719	SLIP CLUTCH SHIELD, SHIELD MOUNT PLATE ASSEMBLY, BEARING MOUNT PLATE, MISC HARDWARE
	29867	BEARING MOUNT BRACKET, SICKLE DRIVE SHAFT, BEARING, FLANGETTES, SHIELD MOUNT ASSEMBLY, SLIP CLUTCH SHIELD, HOSE CONNECTOR WELDMENT, T-BOLT CLAMP, DRIVE SHAFT SHIELD
2	24108, 25719, 29867	DRIVELINE/C FLANGE ASSEMBLY
3	29867	HOSE SUPPORT ASSEMBLY

CRATE 6

BOX	KIT NUMBER(S)	ITEMS
1	ALL	AIR MANIFOLD, REEL BAT ASSEMBLIES

CONTENTS

Section 1 INTRODUCTION

Congratulations on your choice of a new Air Reel 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 Air Reel requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance, and Troubleshooting information contained within the Operator's Manual. Check each item referred to and acquaint yourself with the adjustments required to obtain efficient operation.

This manual covers all models of the Air Reel manufactured by Crary Industries for New Holland and Case IH 2020 Headers. Use the table of contents as a guide to locate required information.

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

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

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

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

Section 2 SAFETY

2.1 SAFETY ALERT SYMBOL

This Safety Alert Symbol means:

ATTENTION! BECOME ALERT!

YOUR SAFETY IS INVOLVED!

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

Why is SAFETY important to you?

3 Big Reasons

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

SIGNAL WORDS:

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

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

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

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

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

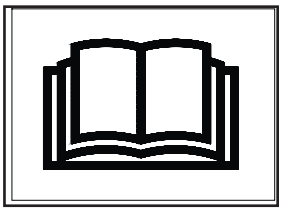
NOTE - General statements to assist the reader.

2.2 GENERAL SAFETY

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

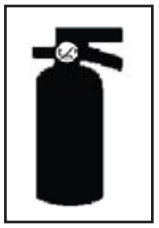
Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and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

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

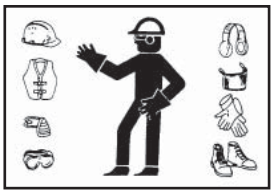


1. Read and understand the Owner's Manual and all safety decals before operating, maintaining, adjusting or servicing the machine.
2. Only trained persons shall operate the machine. An untrained operator is not qualified to operate the machine.

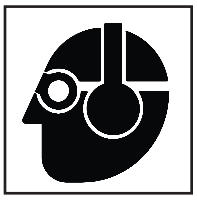
3. Have a first-aid kit available for use, should the need arise, and know how to use it.



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



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



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

Think SAFETY! Work SAFELY!

2.3 OPERATING SAFETY

1. Read and understand the Owner's Manual and all safety decals before servicing, adjusting or repairing.
2. Install and secure all guards and shields before starting or operating.
3. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
4. Place all controls in neutral or off, lower header to the ground, stop combine engine, set parking brake, chock wheels, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
5. Clear the area of bystanders, especially small children, before starting.
6. Keep all hydraulic lines, fittings, and couplers tight and free of leaks before and during use.
7. Clean reflectors and lights before transporting.
8. Review safety related items annually with all personnel who will be operating or maintaining the machine.
9. Shut the combine off when connecting the machine hydraulics.
10. Do not exceed fan speed of 5300 RPM. Check the fan speed by multiplying the 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.

Think SAFETY! Work SAFELY!

2.5 HYDRAULIC SAFETY

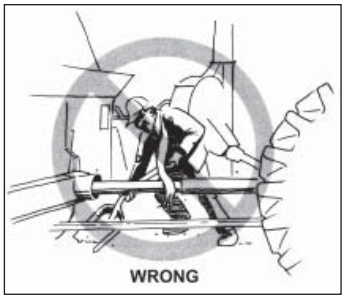
1. Always place all combine hydraulic controls in neutral before disconnecting from combine or working on hydraulic system.
2. Make sure that all components in the hydraulic system are kept in good condition and are clean.
3. Relieve pressure before working on the hydraulic system.
4. Replace any worn,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

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

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

2.6 PTO SAFETY

1. Keep bystanders, especially children, away from 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.
7. Grease, clean, and maintain PTO components according to original manufacturer's specifications and information in this manual.
8. Clothing worn by the operator must be fairly tight. Never wear loose-fitted jackets, shirts, or pants when working around the drive shafts. Tie long hair back or put under a cap.



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

Think SAFETY! Work SAFELY!

2.7 TRANSPORT SAFETY

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

2.8 STORAGE SAFETY

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

2.9 ASSEMBLY SAFETY

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

2.10 SAFETY DECALS

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

HOW TO INSTALL SAFETY DECALS:

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

1. THINK SAFETY! WORK SAFELY!

2.11 SIGN-OFF FORM

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

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

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

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

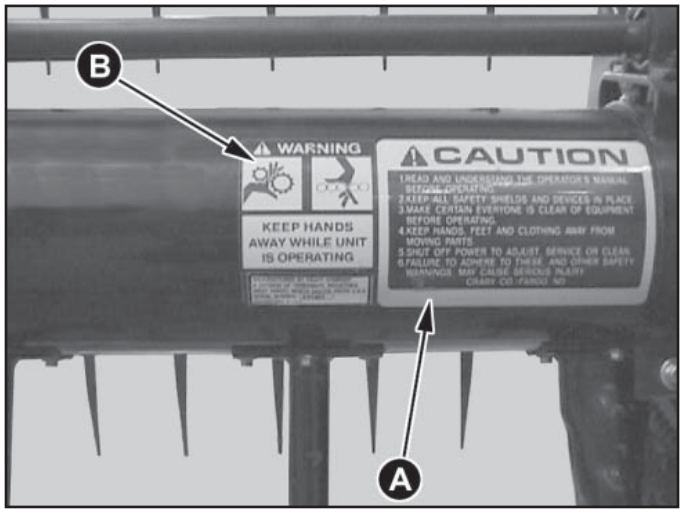
SIGN - OFF FORM

DATE	EMPLOYEE SIGNATURE	EMPLOYER SIGNATURE

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!



Decal location

A

PN 11001 - Decal, Warning

B

PN 11002 - Decal, Caution

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

Read all instructions to become familiar with the parts and procedure used before starting the actual work. You may refer to the parts catalog for additional aid in assembling the Air Reel.

4.1 UNCRATING

WARNING

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

WARNING

1. The sawhorses must be capable of supporting 500 pounds each.
2. The sawhorses must be at least 3 feet high.
3. The sawhorses must be blocked, to keep the manifold from rolling.

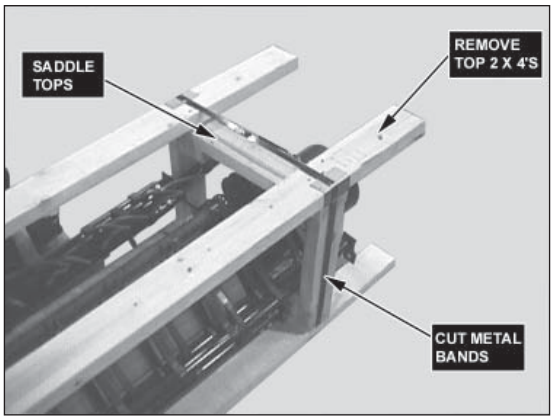


Figure 1, Manifold and bats crate

1. Locate the manifold and bats crate.
2. Cut the metal bands and remove the 2" X 4"s and saddle tops (Figure 1).
3. Remove the bat assemblies from the crate and place to the side.
4. Remove the lag screws from the mounting clamps (as shown in Figure 2) from all locations.
5. Using an overhead hoist and a nylon strap, sling or chain, connect to the center of the manifold (Figure 3).
6. Remove from crate, and set down on two steel sawhorses (or equivalent) two to four inches from the ends of the manifold.
   A. The sawhorses must be capable of supporting 500 pounds each.
   B. The sawhorses must be at least 3 feet high.

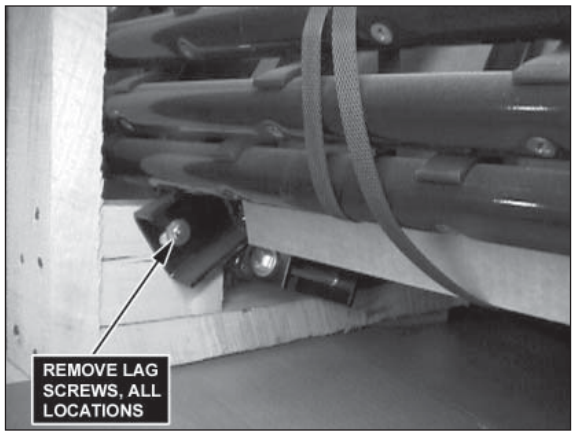


Figure 2, Manifold and bats crate

Figure 3, Manifold and bats crate

4.2 HEADER PREPARATION

4.2.1 972/973 HEADERS (W/OUT GEARBOX STUB SHAFT)

1. **OEM PTO DRIVELINE**: Remove existing OEM PTO driveline.
2. **OEM DRIVESHAFT**: Remove and key the drive shaft. The 5/16" keyway should start 16.25" from the bearing and run for a span of 16".
3. **GEARBOX/FAN:** A clearance of 42" is required between the outside edge of the RH tire on the combine and the RH inside edge of the header in order to mount the standard gearbox/fan. A fan/gearbox neck extension kit can be purchased for headers on combines with dual tires.

4.2.2 73C/74C & CIH 2020 MODELS (W/OUT GEARBOX STUB SHAFT)

1. **OEM PTO DRIVELINE**: Remove existing OEM PTO driveline.
2. **OEM DRIVESHAFT (25' & 35' HEADERS)**: Remove and key the drive shaft. The 5/16" keyway should start 23.5" from the bearing and run for a span of 16". Groove the end of the shaft according to Figure 4, so the PTO can lock onto the drive shaft.
3. **OEM DRIVESHAFT (30' HEADERS)**: Remove and key the drive shaft. The 5/16" keyway should start 16.63" from the bearing and run for a span of 16". Groove the end of the shaft according to Figure 4, so the PTO can lock onto the drive shaft.
3. **GEARBOX/FAN:** A clearance of 42" is required between the outside edge of the RH tire on the combine and the RH inside edge of the header in order to mount the standard gearbox/fan. A fan/gearbox neck extension kit can be purchased for headers on combines with dual tires.

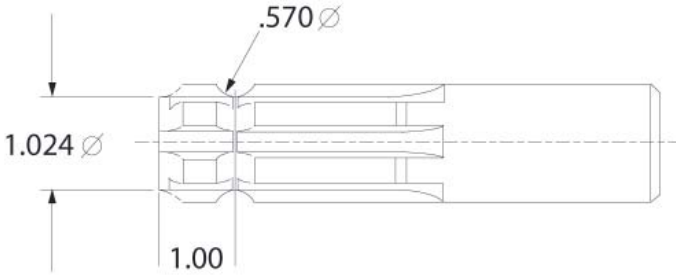


Figure 4, Grooving the drive shaft

4.2.3 ALL HEADERS W/ GEARBOX STUB SHAFT

1. Remove the OEM PTO driveline from the RH sickle drive shaft.
2. Remove the sickle drive belt. Next, remove the OEM pulley from the sickle drive shaft. Then, remove the OEM clamp from the right end of the shaft (Figure 5).
3. Remove the OEM sickle drive shaft. Also, remove all OEM drive shaft bearings except the bearing shown in Figure 5.
4. Set parts aside. Only the PTO driveline and OEM clamp will be reused.

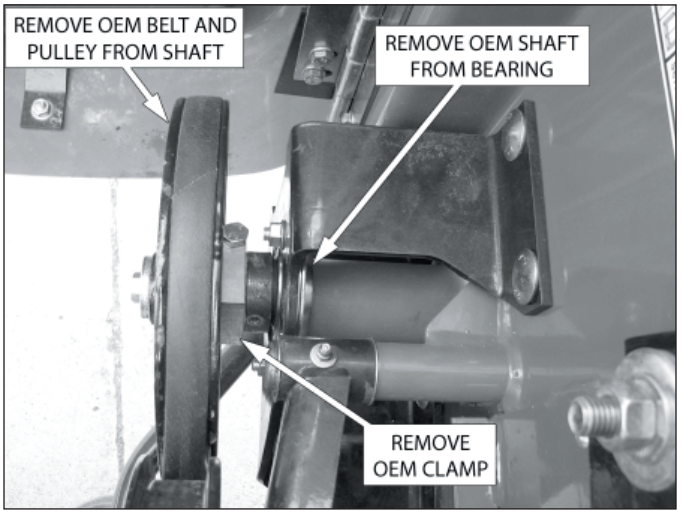


Figure 5, Header preparation

4.3 GEARBOX/FAN MOUNT - 972/973 (W/ GEARBOX STUB SHAFT)

IMPORTANT

See Section 4.2 (Header Preparation) prior to installing the gearbox/fan mount. It is important that the steps in Section 4.2 are completed prior to installation of the gearbox/fan mount.

NOTE

See Figure 7 for reference when installing the gearbox/fan mount.

1. Line up the gearbox mount bracket 43” from the inside RH edge of the header as shown in Figure 6. The support plate mounts below the top header beam. Mark the four bracket holes on the header.
2. Drill two 27/64” holes at the two marked bottom holes. Tap the two bottom holes using a 1/2” - 13NC tap.
3. On the top, drill the top two 1/2” holes through the header panel.
4. Install the gearbox mount bracket with four 1/2” x 1-1/4” bolts, washers and two nuts.
5. If installing the optional neutral drive shaft, follow the instructions in this step. Otherwise, skip to step 6.
   A. Use six 3/8” x 1” carriage bolts, flat washers and nylock nuts to install the splined neutral stub shaft, two bearings and four flangettes to the gearbox mount weldment.
   B. Make sure the stub shaft is centered in the bearings and tighten the lock collar on each bearing. To do so, insert a punch in the lock collar dimple. Using a hammer, tap the punch in the direction of normal shaft rotation until the collar is tight. Then, tighten the lock collar set screw.
6. Attach a flexible latch to each side of the gearbox mount bracket by using two 10-24 x 3/4” bolts and nuts per latch. Using four 10-24 x 1/2” screws and nuts, install the catch for each latch on the gearbox shield weldments.
7. Use a jack or hoist to position the gearbox inside the gearbox mount weldment. Attach the gearbox using four 1/2” x 1-1/4” serrated flange bolts. Torque bolts to 75 ft-lbs.
8. Using four 1/2” x 1” capscrew bolts, install a shield hinge on each side of the gearbox.
9. Attach gearbox drive shield weldments to the shield hinges with two 5/16” x 6-1/2” bolts and 5/16” nylock nuts.
10. Check the gearbox and, if necessary, fill the gearbox with lube before use.

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

    API Service GL-5/MT.1
    MIL-L-2105D
    MACK GO-J PLUS
    SAE J2360
    Capacity: 40 oz.

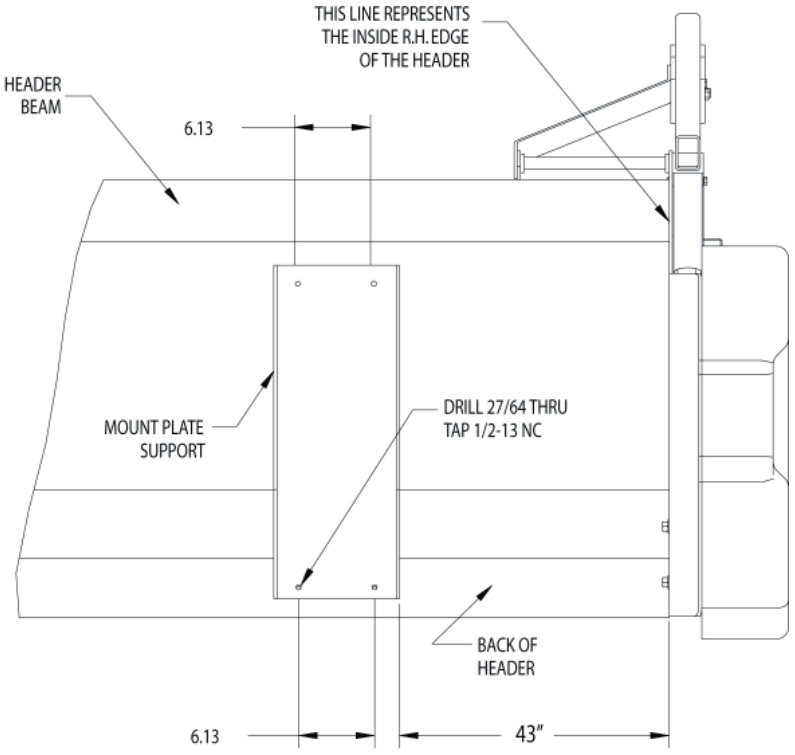


Figure 6, Mount support plate location

4.3 GEARBOX/FAN MOUNT - 972/973 (W/ GEARBOX STUB SHAFT)

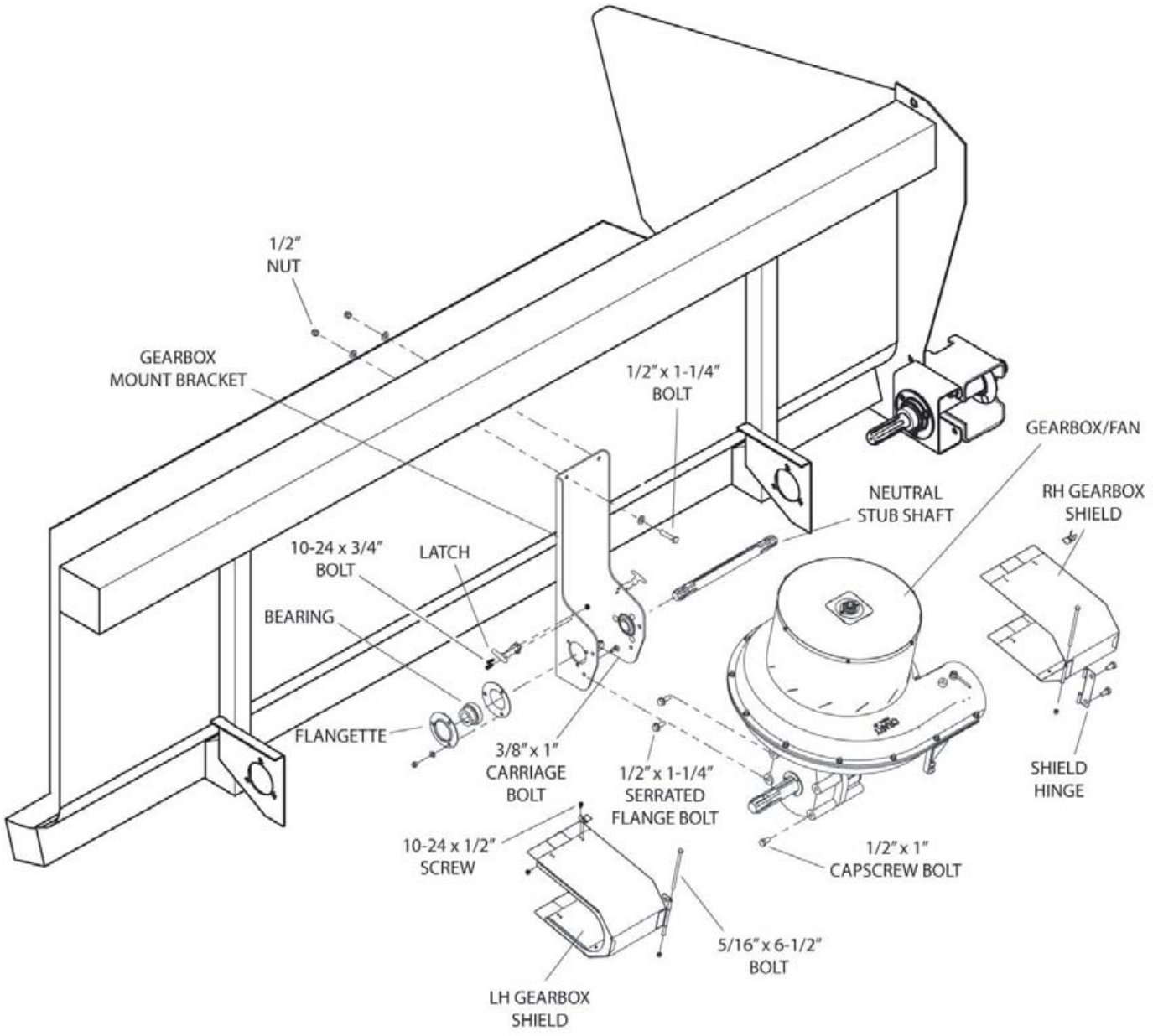


Figure 7, Gearbox/fan mount

4.4 GEARBOX/FAN MOUNT - 972/973 (W/OUT GEARBOX STUB SHAFT)

IMPORTANT

See Section 4.2 (Header Preparation) prior to installing the gearbox/fan mount. It is important that the steps in Section 4.2 are completed prior to installation of the gearbox/fan mount.

1. Line up the gearbox mount support plate 18.75” from the inside RH edge of the header according to Figure 8. The support plate mounts below the header beam.
2. Drill two 27/64” holes at the bottom of the support plate. Tap the two bottom holes using a 1/2” - 13NC tap.

NOTE

Make sure the mount plate support is plumb with the header when marking hole locations.

3. On the top, drill the top two 1/2” holes through the panel underneath the header beam.
5. Install four 1/2” X 1-1/4” bolts, two washers and center lock nuts (Figure 9). Tighten bolts to 75 ft-lbs.
6. Check the gearbox and if necessary, fill the gearbox with lube before use.

   Use Mobilube HD 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: 40 oz.

5. Attach the gearbox and fan to the support plate using four 1/2 x 1-1/4” bolts, washers and spacers. Do not tighten at this time.
6. Reinstall the header driveshaft, placing the shaft through the gearbox. The 972/973 headers use a supplied bearing mount plate at the left end of the shaft. When sliding the shaft through the gearbox, install the taperlock bushings and 5/16” keys. The gearbox may have to be moved or shaken to install the shaft.
7. The shield mount plate should be mounted at this time. Secure it to the bearing mount plate with the OEM bolts.
8. Once the shaft is installed, align the gearbox so that it is centered on the driveshaft. **PROPER ALIGNMENT IS CRITICAL FOR BEARING AND SHAFT LIFE.** Tighten the 1/2” bolts to 75 ft-lbs.
9. Tighten taperlock bushings. There are two sets of holes on the bushings. To tighten, make sure the bolts on the bushing are installed in the non-threaded holes and aligned with the holes of the gearbox. The threaded set of holes are for removing the bushing. Tighten bolts to 15 ft. lbs.
10. Install the shield weldments. Attach each weldment using two 1/2” X 1-1/4” bolts, spacers and washers (Figure 9). Tighten the 1/2” bolts to 75 ft-lbs.

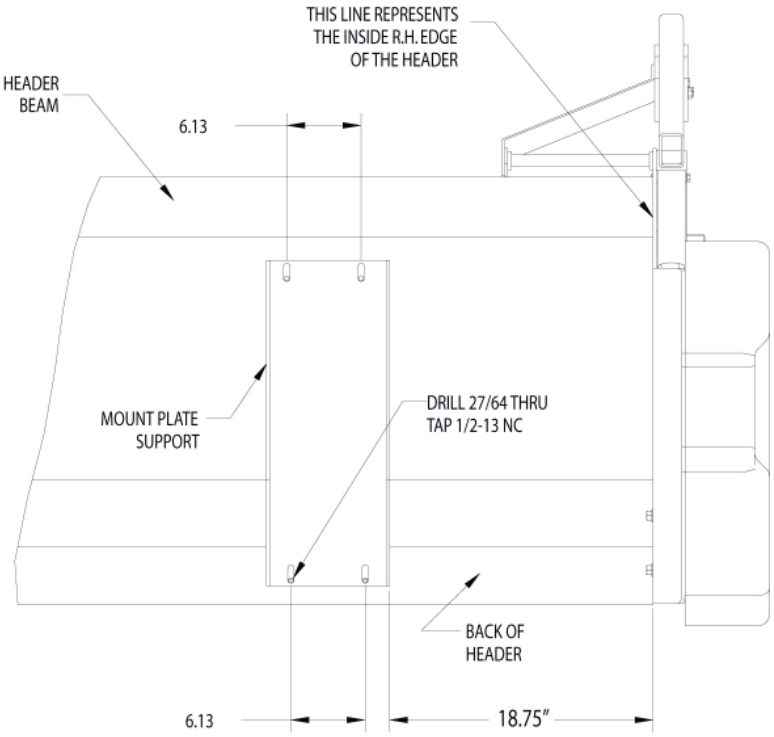


Figure 8, Mount support plate location

4.4 GEARBOX/FAN MOUNT - 972/973 (W/OUT GEARBOX STUB SHAFT)

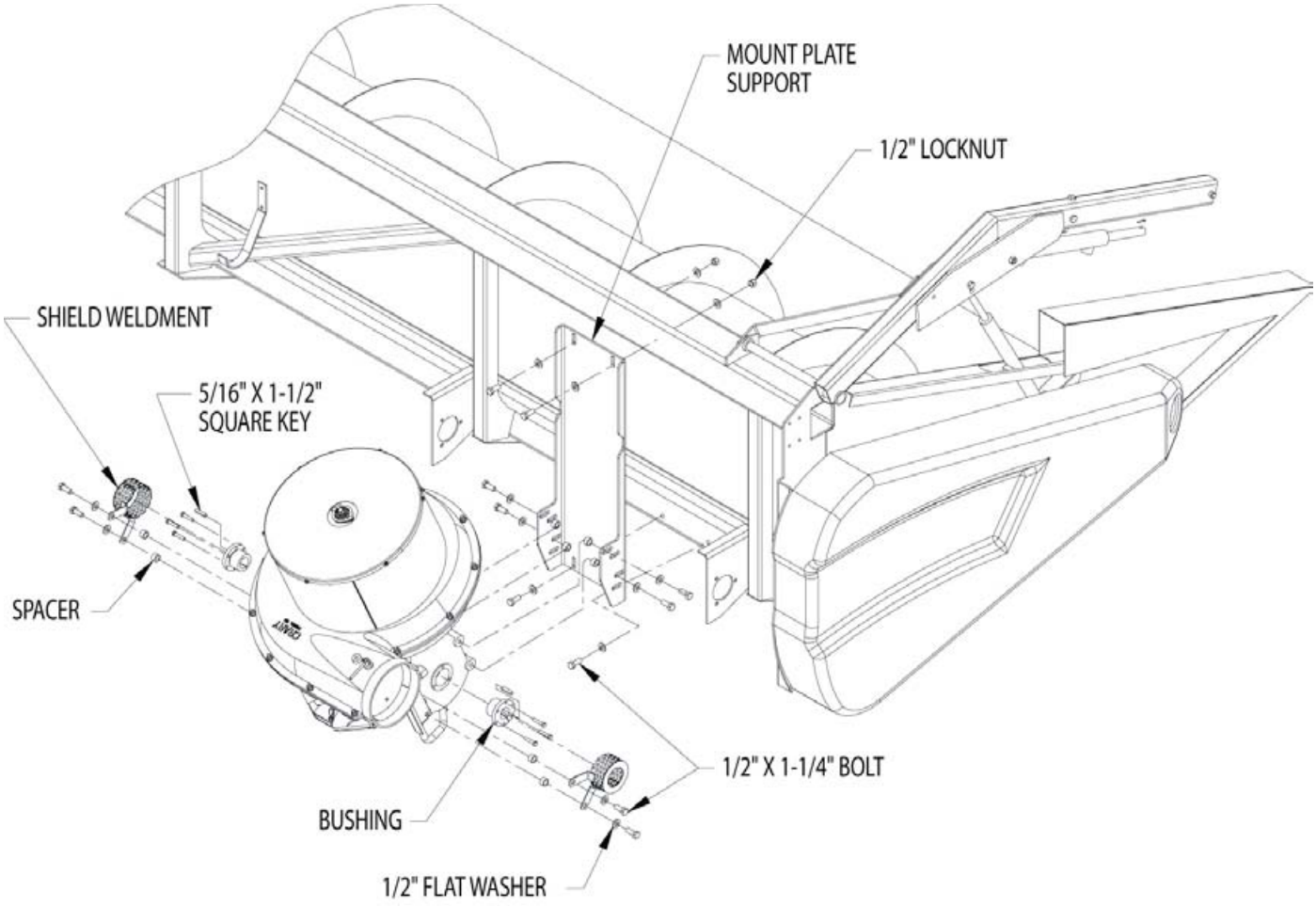


Figure 9, Gearbox/fan mount

4.5 GEARBOX/FAN MOUNT - NH 73C/74C & CIH 2020 (PRE 2007 W/ GEARBOX STUB SHAFT)

IMPORTANT

See Section 4.2 (Header Preparation) prior to installing the gearbox/fan mount. It is important that the steps in Section 4.2 are completed prior to installation of the gearbox/fan mount.

NOTE

See Figure 11 for reference when installing the gearbox/fan mount.

1. Line up the gearbox mount bracket 43” from the inside RH edge of the header as shown in Figure 10. Make sure the bracket is pushed up as far as possible against the header beam. Mark the four bracket holes on the header.
2. Drill four 27/64” holes at the marked points. Tap the holes using a 1/2” - 13NC tap.
3. Install the gearbox mount bracket with four 1/2” x 1-1/4” serrated flange bolts.
4. Using four 1/2” x 1-1/4” serrated flange bolts and nylock nuts, attach the gearbox mount plate to the gearbox mount bracket.
5. If installing the optional neutral drive shaft, follow the instructions in this step. Otherwise, skip to step 6.
   A. Use six 3/8” x 1” carriage bolts, flat washers and nylock nuts to install the splined neutral stub shaft, two bearings and four flangettes to the gearbox mount weldment.
   B. Make sure the stub shaft is centered in the bearings and tighten the lock collar on each bearing. To do so, insert a punch in the lock collar dimple. Using a hammer, tap the punch in the direction of normal shaft rotation until the collar is tight. Then, tighten the lock collar set screw.
6. Attach a flexible latch to each side of the gearbox mount bracket by using two 10-24 x 3/4” bolts and nuts per latch. Using four 10-24 x 1/2” screws and nuts, install the catch for each latch on the gearbox shield weldments.
7. Use a jack or hoist to position the gearbox inside the gearbox mount weldment. Attach the gearbox using four 1/2” x 1-1/4” serrated flange bolts. Torque bolts to 75 ft-lbs.
8. Using four 1/2” x 1” capscrew bolts, install a shield hinge on each side of the gearbox.
9. Attach gearbox drive shield weldments to the shield hinges with two 5/16” x 6-1/2” bolts and 5/16” nylock nuts.
10. Check the gearbox and, if necessary, fill the gearbox with lube before use.

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

    API Service GL-5/MT.1
    MIL-L-2105D
    MACK GO-J PLUS
    SAE J2360
    Capacity: 40 oz.

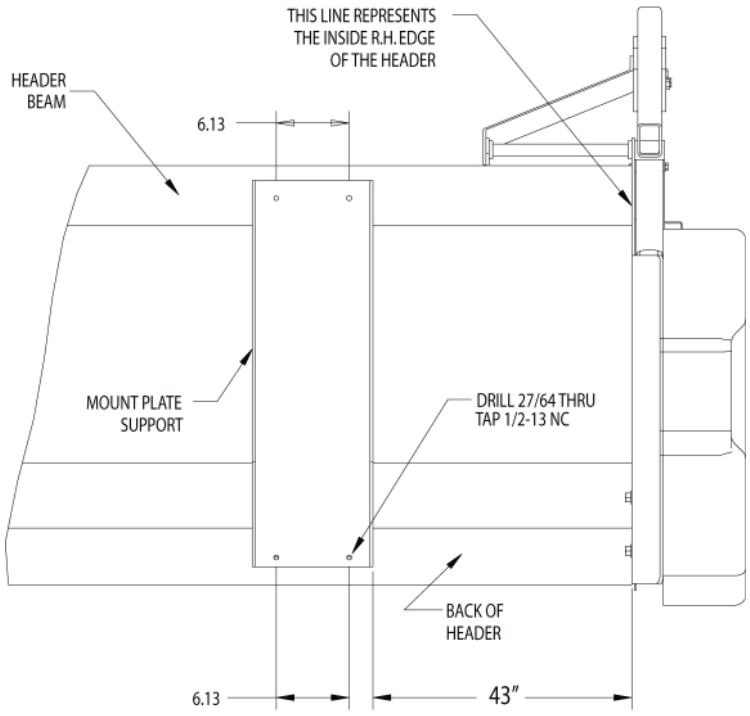


Figure 10, Mount support plate location

4.5 GEARBOX/FAN MOUNT - NH 73C/74C & CIH 2020 (PRE 2007 W/ GEARBOX STUB SHAFT)

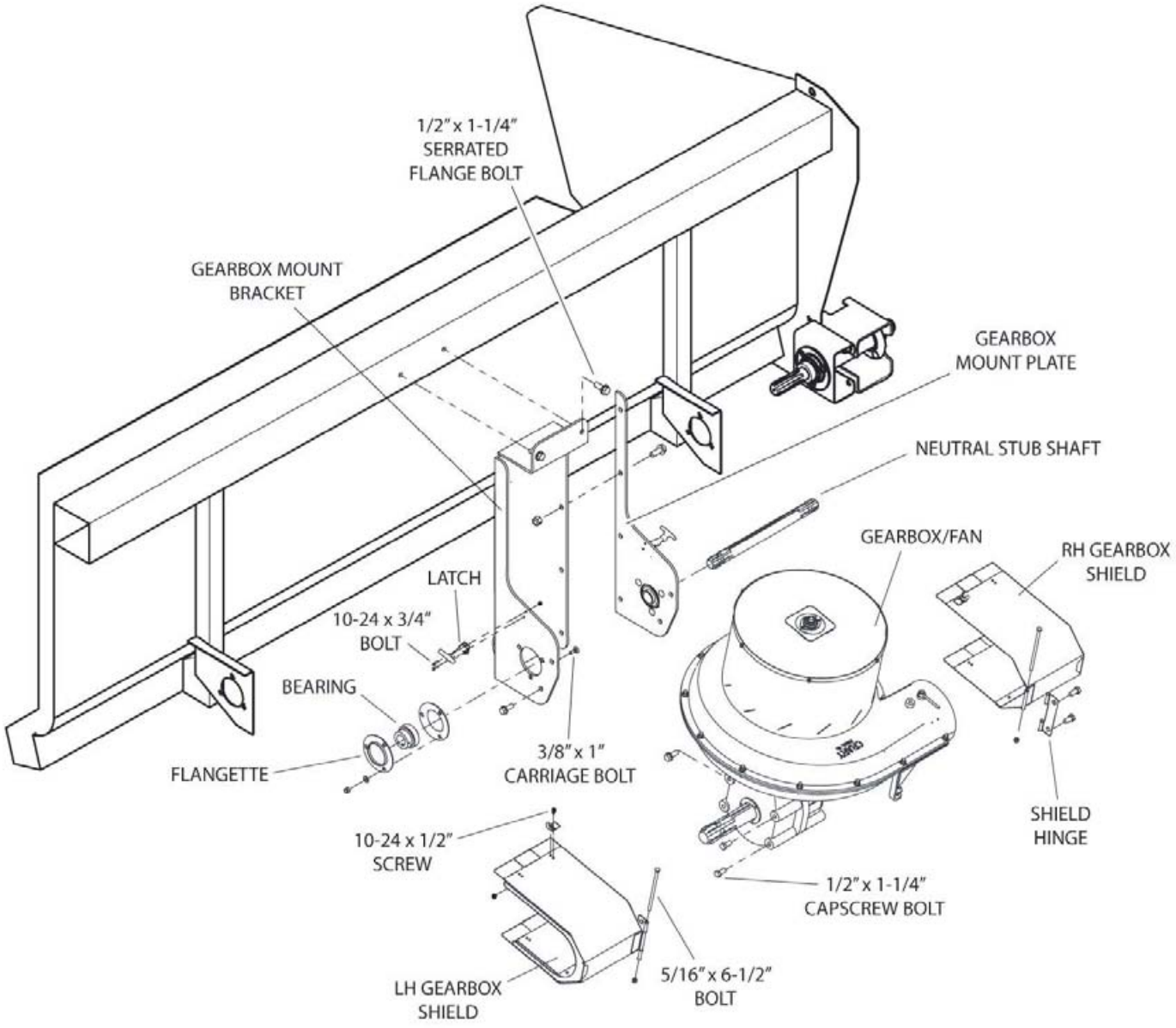


Figure 11, Gearbox/fan mount

4.6 GEARBOX/FAN MOUNT - NH 73C/74C & CIH 2020 (2007 & LATER W/ GEARBOX STUB SHAFT)

IMPORTANT

See Section 4.2 (Header Preparation) prior to installing the gearbox/fan mount. It is important that the steps in Section 4.2 are completed prior to installation of the gearbox/fan mount.

NOTE

See Figure 14 for reference when installing the gearbox/fan mount.

1. Use OEM hardware to bolt the provided template to the OEM RH bearing mount (Figure 12). Use the template holes as a guide to drill through the OEM mount. Drill 7/32" through the top two template holes. Drill 17/32" through the remaining two holes. When finished, remove the OEM bolts and template.

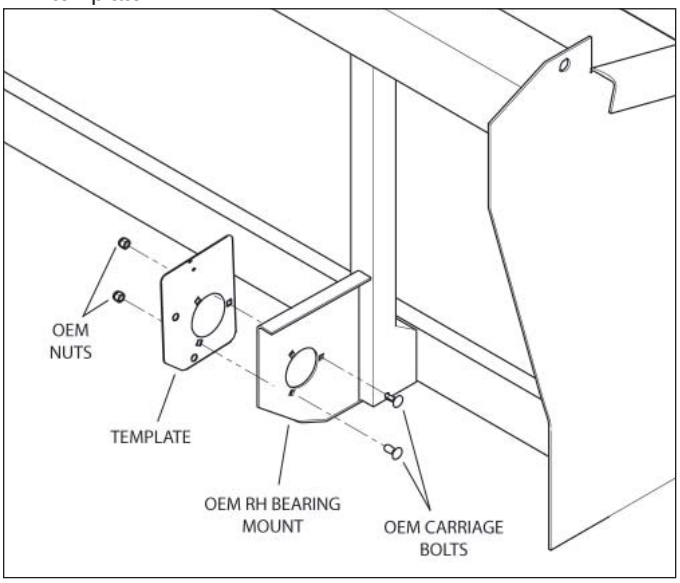


Figure 12, Using the template to drill holes

2. Position the gearbox mount bracket against the LH edge of the OEM right bearing mount (Figure 13). Make sure the bracket is pushed up as far as possible against the top header beam. Mark the four bracket holes on the header.
3. Drill four 27/64" holes at the marked points. Tap the holes using a 1/2" - 13NC tap.
4. Install the gearbox mount bracket with four 1/2" x 1-1/4" serrated flange bolts. Torque to 75 ft-lbs.

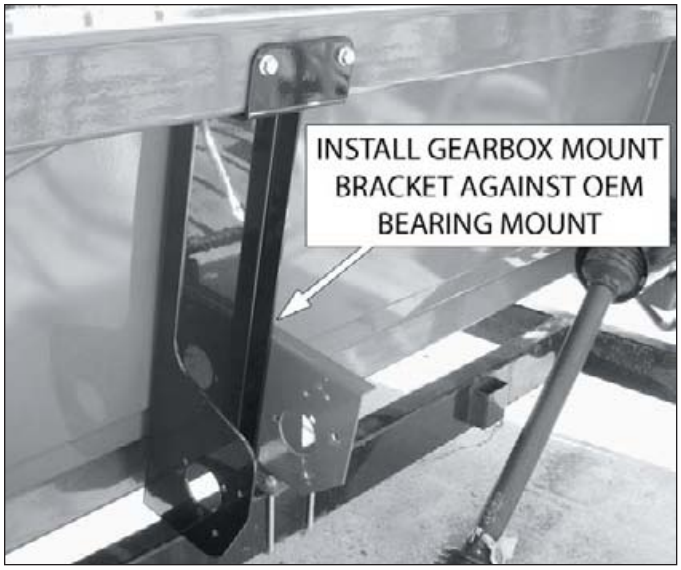


Figure 13, Gearbox mount bracket location

5. If installing the optional neutral drive shaft, follow the instructions in this step. Otherwise, skip to step 6.
   A. Use six 3/8" x 1" carriage bolts, flat washers and nylock nuts to install the splined neutral stub shaft, two bearings and four flangettes to the gearbox mount weldment and OEM bearing mount.
   B. Make sure the stub shaft is centered in the bearings and tighten the lock collar on each bearing. To do so, insert a punch in the lock collar dimple. Using a hammer, tap the punch in the direction of normal shaft rotation until the collar is tight. Then, tighten the lock collar set screw.
6. Attach a flexible latch to each side of the gearbox mount bracket by using two 10-24 x 3/4" bolts and nuts per latch. Using four 10-24 x 1/2" screws and nuts, install the catch for each latch on the gearbox shield weldments.
7. Use a jack or hoist to position the gearbox inside the gearbox mount weldment and OEM bearing mount. Attach the gearbox using four 1/2" x 1-1/4" serrated flange bolts. Torque bolts to 75 ft-lbs.
8. Using four 1/2" x 1" capscrew bolts, install a shield hinge on each side of the gearbox.
9. Attach gearbox drive shield weldments to the shield hinges with two 5/16" x 6-1/2" bolts and 5/16" nylock nuts.
10. Check the gearbox and, if necessary, fill the gearbox with lube before use.

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

    API Service GL-5/MT.1
    MIL-L-2105D
    MACK GO-J PLUS
    SAE J2360
    Capacity: 40 oz.

4.6 GEARBOX/FAN MOUNT - NH 73C/74C & CIH 2020 (2007 & LATER W/ GEARBOX STUB SHAFT)

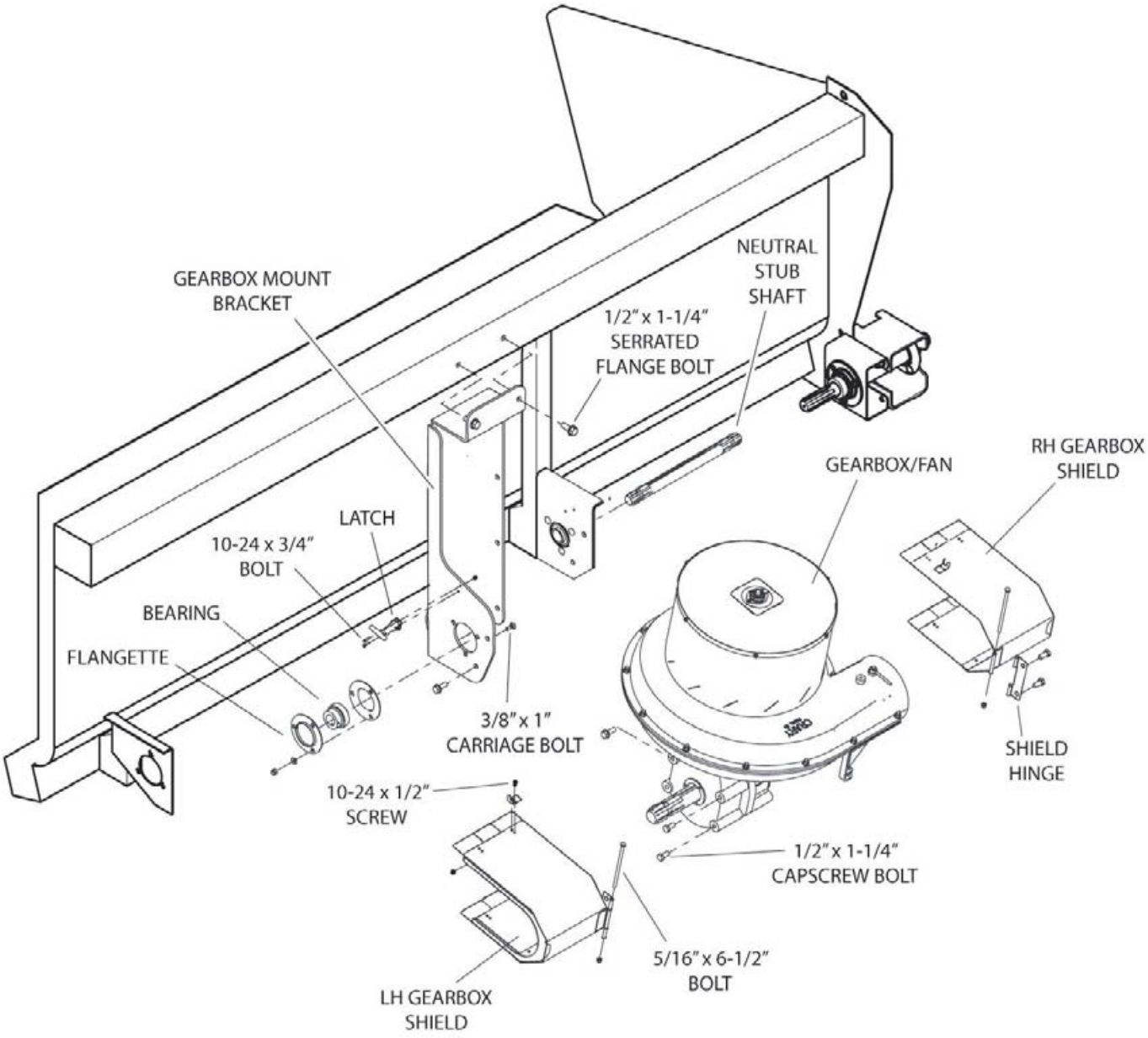


Figure 14, Gearbox/fan mount

4.7 GEARBOX/FAN MOUNT - NH 73C/74C & CIH 2020 (W/OUT GEARBOX STUB SHAFT)

IMPORTANT

See Section 4.2 (Header Preparation) prior to installing the gearbox/fan mount. It is important that the steps in Section 4.2 are completed prior to installation of the gearbox/fan mount.

NOTE

See Figure 16 for reference when installing the gearbox/fan mount.

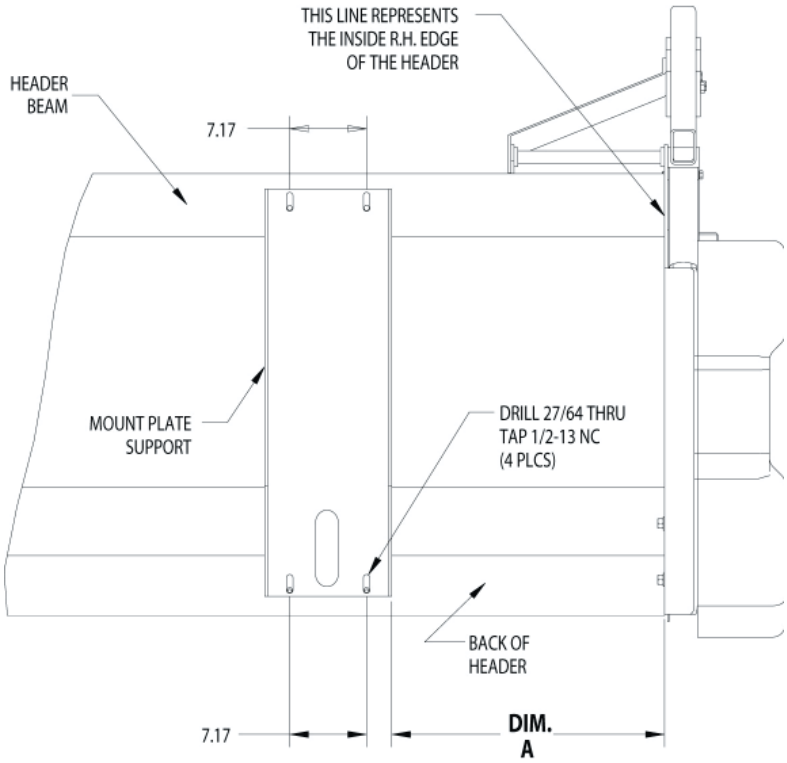
1. Line up the gearbox mount plate according to Figure 15. Make sure the mount plate is pushed up as far as possible against the top header beam before performing Step 2.
2. Drill two 27/64" holes at the bottom of the mount plate, making sure the holes are drilled at the bottom of the slots. Tap the two bottom holes using a 1/2" - 13NC tap.
3. On the top, drill the top two 1/2" holes through the header beam, making sure the holes are drilled at the bottom of the slots.
4. Install two 6" bolts and two 1-1/4" bolts. On the 6" bolts, place a 1/2" washer and a 1/2" center lock nut. Tighten 1/2" hardware to 75 ft-lbs.
5. Check the gearbox and, if necessary, fill the gearbox with lube before use.

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

   API Service GL-5/MT.1
   MIL-L-2105D
   MACK GO-J PLUS
   SAE J2360
   Capacity: 40 oz.

6. Attach the gearbox and fan to the support plate using four 1/2" x 1-1/4" bolts, washers and spacers. Do not tighten at this time.
7. Reinstall the header drive shaft that has the keyway and groove, placing the shaft through the gearbox. Use the original left and right bearings and mounts. Do not use the center bearing if the header is equipped with three bearings and mounts. When sliding the shaft through the gearbox, install the taperlock bushings and 5/16" keys. The gearbox may have to be shifted to install the shaft.
8. The shield mount plate assembly should be mounted at this time. Secure it to the bearing mount plate with the OEM bolts.
9. Once the shaft is installed, align the gearbox so that it is centered on the drive shaft. Proper alignment is critical for bearing and shaft life. Tighten the 1/2" bolts to 75 ft-lbs.
10. Tighten taperlock bushings. There are two sets of holes on the bushings. To tighten, make sure the bolts on the bushings are installed in the non-threaded holes and aligned with the holes of the gearbox. The threaded set of holes re for removing the bushing. Tighten to 15 ft-lbs.
11. Install the shield weldments. Attach each weldment using two 1/2" x 1-1/4" bolts, spacers and washers. Tighten to 75 ft-lbs.

4.7 GEARBOX/FAN MOUNT - NH 73C/74C & CIH 2020 (W/OUT GEARBOX STUB SHAFT)



NH 73C/74C CASE IH 2020 support plate	
header width	dim. a
25 FT	26”
30 FT	19.13”
35 FT	26”

Figure 15, Gearbox mount plate location

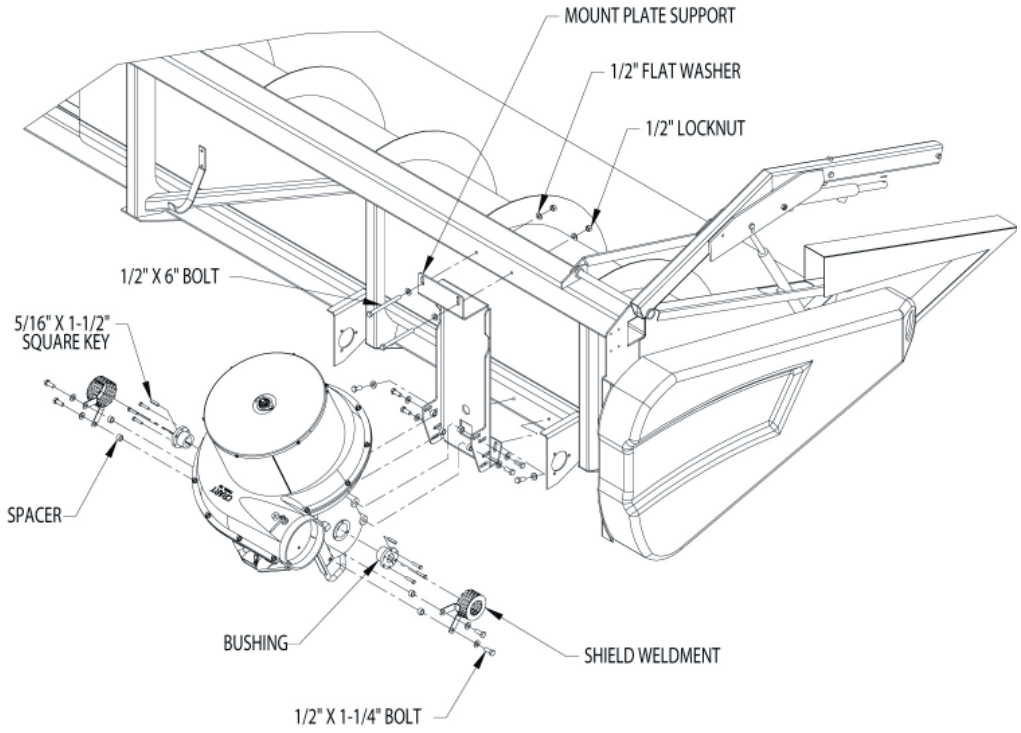


Figure 16, Gearbox/fan mount

4.8 RIGHT HAND DRIVE KIT (ALL HEADERS W/ GEARBOX STUB SHAFT)

1. Install the provided bearing mount bracket, bearing, flangettes and shield mount assembly to the inside RH edge of the header. These are installed with three 3/8" x 1" carriage bolts, washers and nylock nuts (Figure 17).

NOTE

Two bearing mount brackets are provided in the right hand drive kit. Use the bracket that will line up with the OEM bolt holes.

2. Slide the provided sickle drive shaft through the bearing mount bracket and OEM RH bearing. Position the shaft so that the tapered spline end extends 3-1/8" to the right of the OEM bearing mount plate. Reinstall the OEM clamp, sickle drive pulley and belt that was removed in the header preparation section.
3. Tighten the lock collar on both bearings. To do so, insert a punch in the lock collar dimple. Using a hammer, tap the punch in the direction of normal shaft rotation until the collar is tight. Then, tighten the lock collar set screw.
4. Attach one end of the OEM driveline to the sickle drive shaft.
5. Slide the slip clutch shield over the other end of the OEM driveline. Attach the slip clutch shield to the shield mount assembly with three 5/16" x 3/4" bolts and washers.
6. Attach the left end of the OEM driveline to the RH end of the gearbox stub shaft.
7. Attach the slip clutch end of the provided driveline to the LH end of the gearbox stub shaft:
   A. Pull back the spring-loaded collar on the slip clutch end of the driveline.
   B. Slide the end over the gearbox stub shaft and release the collar to lock the driveline in place.
8. Move the OEM PTO holder weldment up to the top of the header panel. This will allow the driveline to clear the OEM LH bearing mount. To do so, position the holder weldment beneath the top header beam. Then, mark and drill two holes for M8 bolts. Feeding the bolts from the back of the header, reinstall the holder weldment with OEM hardware. You may need to bend the holder weldment in order to fit the new driveline.

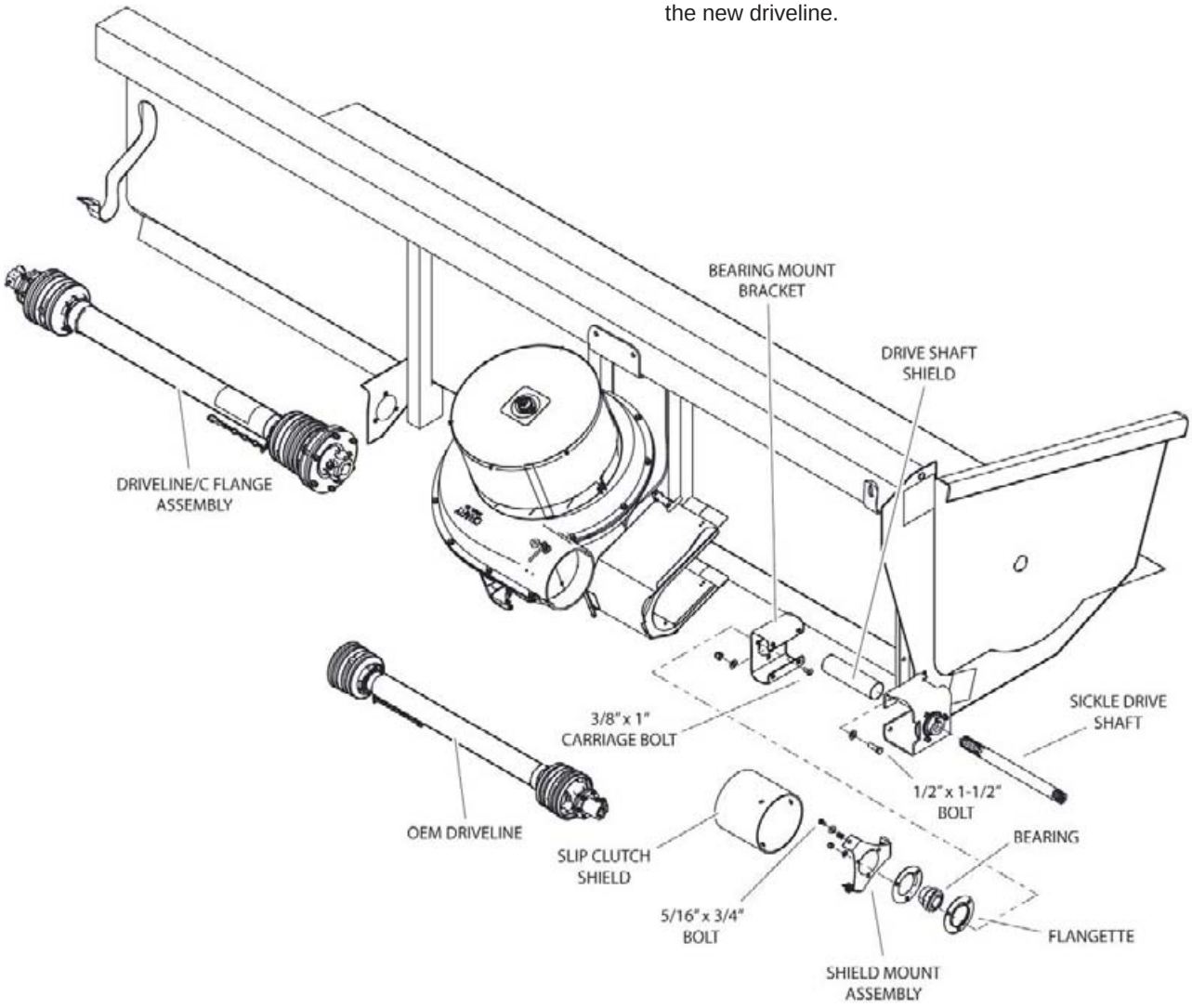


Figure 17, Right hand drive kit for use with gearbox stub shaft

4.9 RIGHT HAND DRIVE KIT (ALL HEADERS W/OUT GEARBOX STUB SHAFT)

WARNING

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

NOTE

When tightening bushing bolts on the gearbox bushings, be sure to use even torque around the bushing.

1. Make sure the bearing mount plate is installed as directed in Section 4.4 or 4.7.
2. Install PTO shaft to the OEM driveshaft (Figure 18).
3. Make sure the 1-3/8” 6 spline counter flange is attached to the PTO. If not, attach using six 5/16” bolts and tighten to proper torque.
4. Install the slip clutch shield and attach to the shield mount plate using three 5/16” X 3/4” bolts and flat washers.

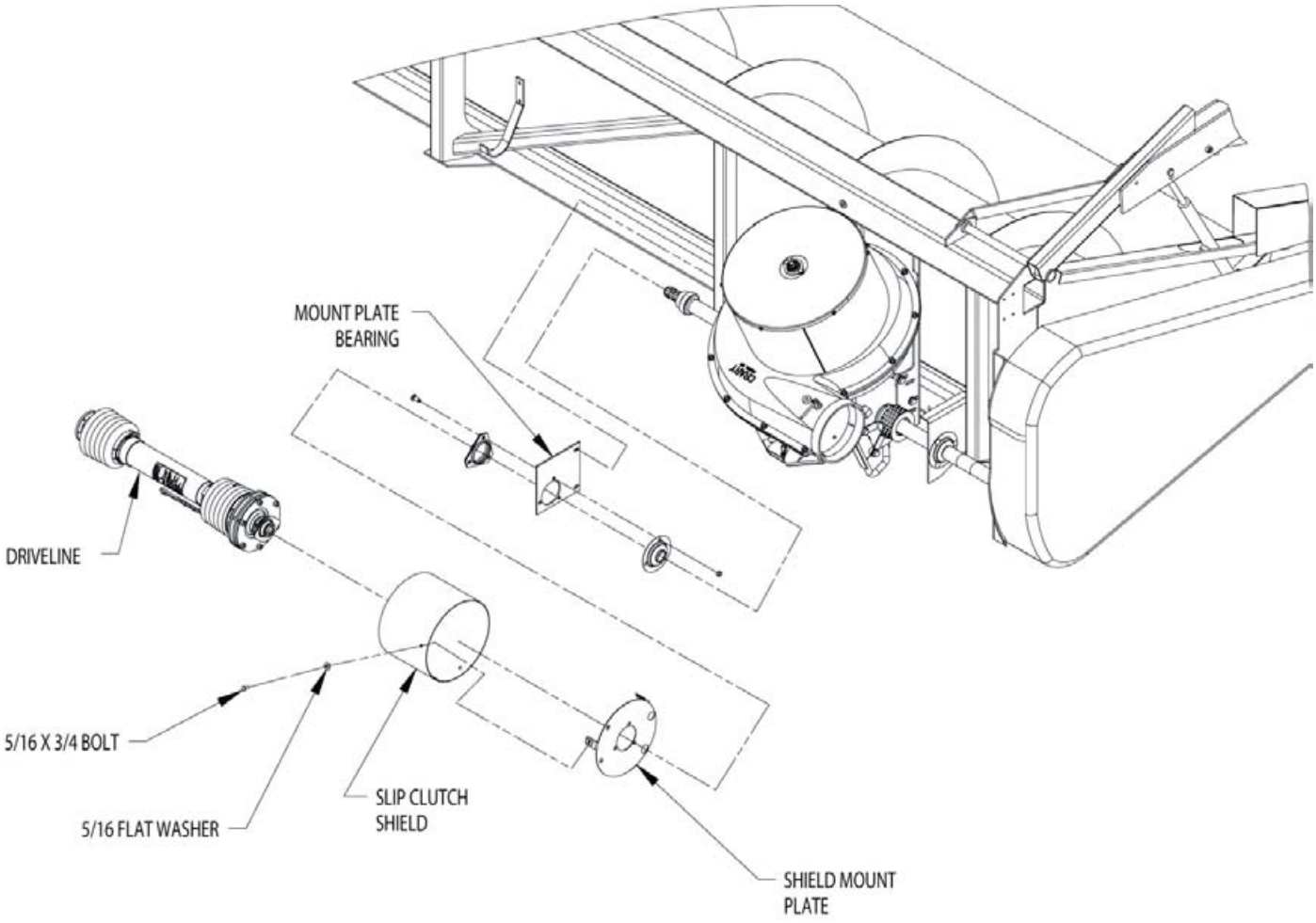


Figure 18, Right hand drive kit for gearboxes without a stub shaft

4.10 ECCENTRIC MOUNT INSTALLATION

1. Sort bolts according to their size and length.
2. Rotate the manifold on the stands so that the drive shaft is at the 12:00 position.

NOTE

The back side of the manifold is opposite that of the large Air Reel decal.

3. Assemble the RH & LH Eccentric Mount Plates (with the nylon rollers facing to the center of the manifold) to the RH & LH End clamps using six 3/8” X 1” carriage bolts, twelve 3/8” SAE flat washers and six 3/8” centerlock nuts. Do not tighten yet (Figure 19 & 20).
4. Align the 5th tooth on the RH & LH eccentric mounting plate assemblies with the indicator mark on the RH & LH end clamps.
5. Tighten the six 3/8” centerlock nuts to 30 ft-lbs.

NOTE

The default pitch angle is with the 5th tooth on the eccentric mounting plate assembly aligned with the indicator mark on the RH & LH end clamps. See Section 5.6 for additional information.

NOTE

Do not tighten the nuts for the nylon rollers yet (Figure 21).

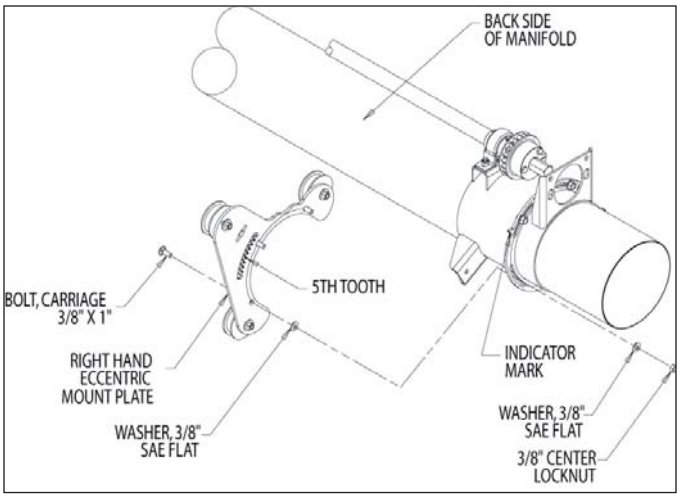


Figure 19, RH eccentric mounting plate

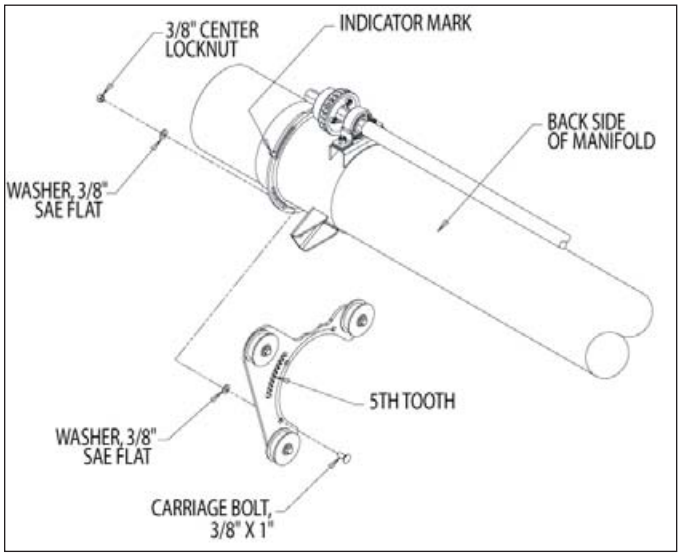


Figure 20, LH eccentric mounting plate

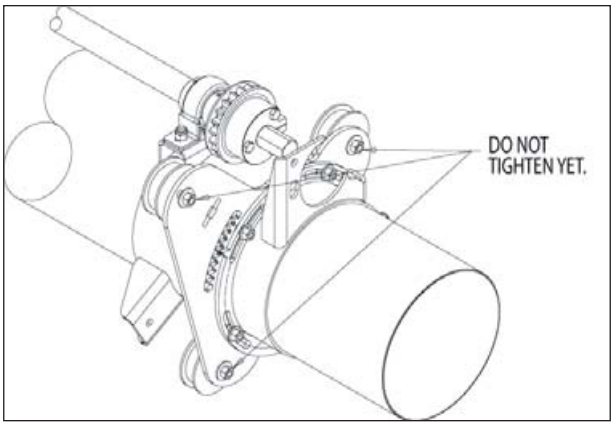


Figure 21, Do not tighten nuts yet

4.11 IDLER GEAR INSTALLATION (REAR)

1. Assemble one idler gear assembly each to the RH & LH end clamps, and to all idler mount clamps (back side of manifold only) using one 3/8” X 2” bolt, three 3/8” flat washers and one 3/8” centerlock nut per each idler gear assembly (Figure 22 & 23).
2. Tighten the 3/8” centerlock nuts to 30 ft-lbs.

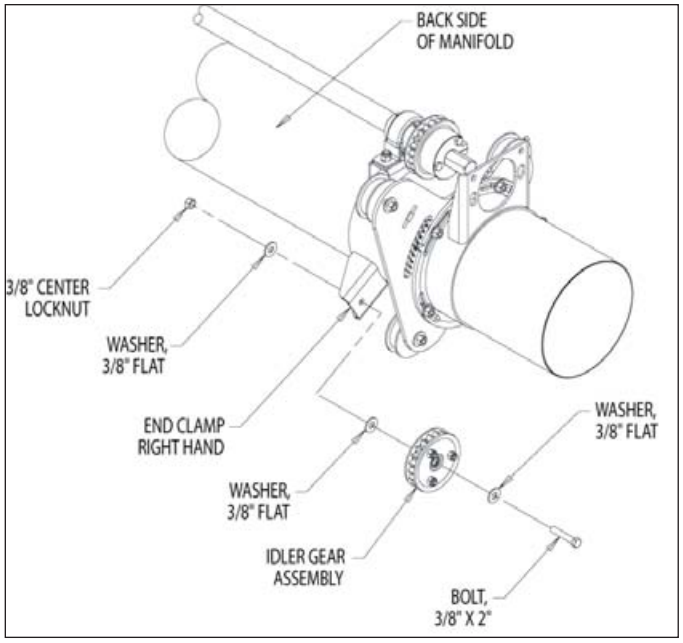


Figure 22, Idler gear assembly to RH end clamp

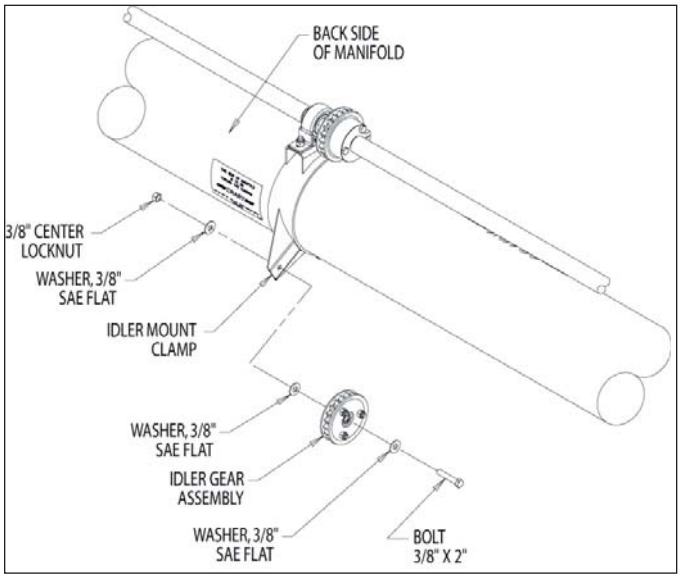


Figure 23, Idler gear assembly to idler clamp

4.12 REEL BAT ARM INSTALLATION

1. Slide the reel bat arm assemblies over the manifold assembly. Position each assembly onto the pinion gears and the idler gears of the manifold assembly (Figure 24).
2. Align the reel bat arm assemblies, so that all of the arms are in line with one another.

WARNING

The outside face of the arms of the reel bat arm assemblies must face away from the pillowblock.

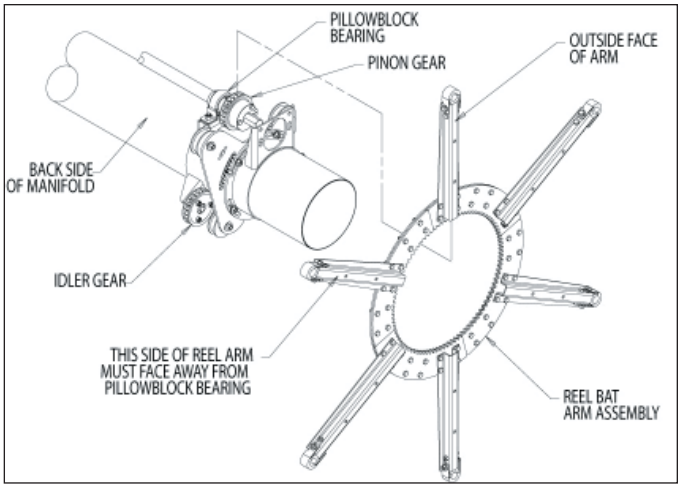


Figure 24, Reel bat arm installation

4.13 IDLER GEAR INSTALLATION (FRONT SIDE OF MANIFOLD)

1. Assemble one idler gear assembly each to the RH & LH end clamps, and to all idler mount clamps (front side of manifold only), using one 3/8” X 2” bolt, three 3/8” flat washers and one 3/8” centerlock nut per each idler gear assembly (Figure 25).
2. Use a small pry bar between the outside wall of the manifold tubing and the idler gears with approx. 5 lbs. of force (Figure 26)

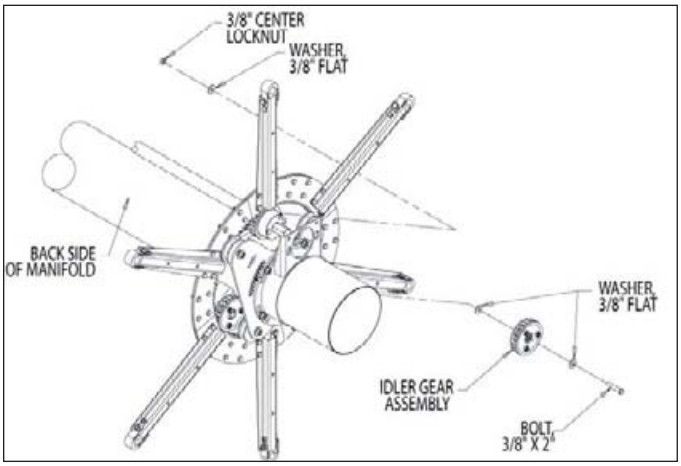


Figure 25, Idler gear installation (front side)

3. Tighten the 3/8” centerlock nuts to 30 ft-lbs.
4. Check the alignment of the reel bat arm assembly with the pinion and idler gears by looking from the front and rear of the manifold.
5. Rotate the reel arm assemblies to ensure they turn freely.

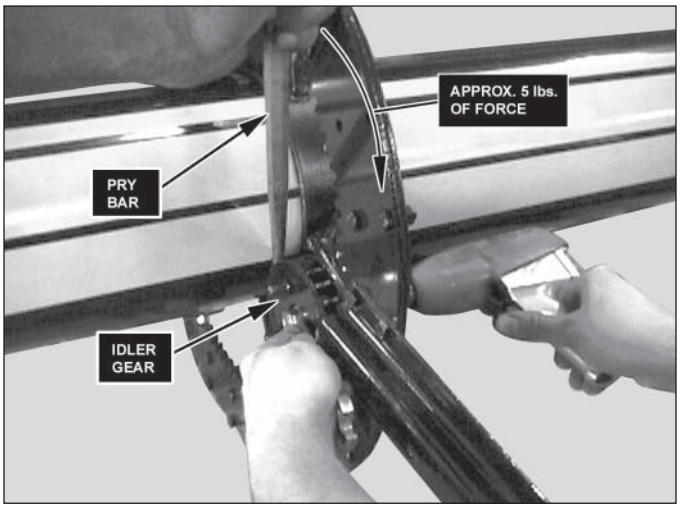


Figure 26, Tighten center lock nuts

4.14 AIR TUBES

1. Roll the manifold over so that the air tube holes in the bottom of the manifold are at the 12:00 position.
2. Apply the self adhesive foam seals (Figure 27).
   A. Remove and discard the slot and two hole cutouts from the self adhesive foam seal.
   B. Remove the self adhesive foam seal from the backing and apply foam seal to manifold.
3. Assemble the single air tubes to the inside manifold holes.
   A. Locate three 11/32 X 7/8 self tapping screws per each air tube.
   B. Place an air tube on the manifold, aligning the three small holes of the air tube with the manifold.

IMPORTANT

Make sure that the opening of the single and double air tubes face towards the rear of Air Reel (Figure 29).

   C. Drive three 11/32 X 7/8 self tapping screws through the air tube into the holes of the manifold (Figure 28) You may use an impact wrench for this step.
   D. Follow steps A thru. D for the remaining air tubes.
4. Install the double air tubes to the manifold outside holes: follow step 3 for installation instructions.

IMPORTANT

The double air tube assemblies are only installed on the ends of the manifold (one per end) (Figure 29).

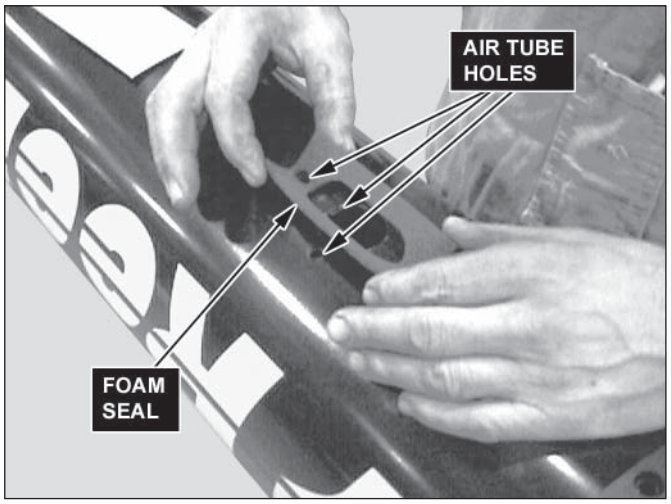


Figure 27, Apply self-adhesive foam seals

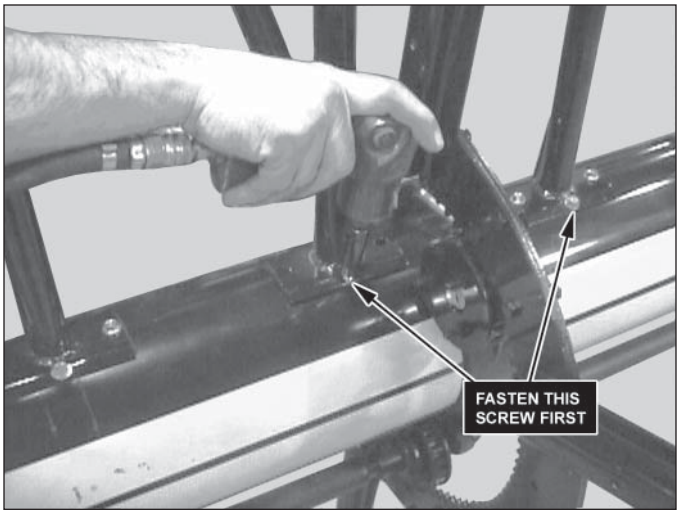


Figure 28, Fasten screws

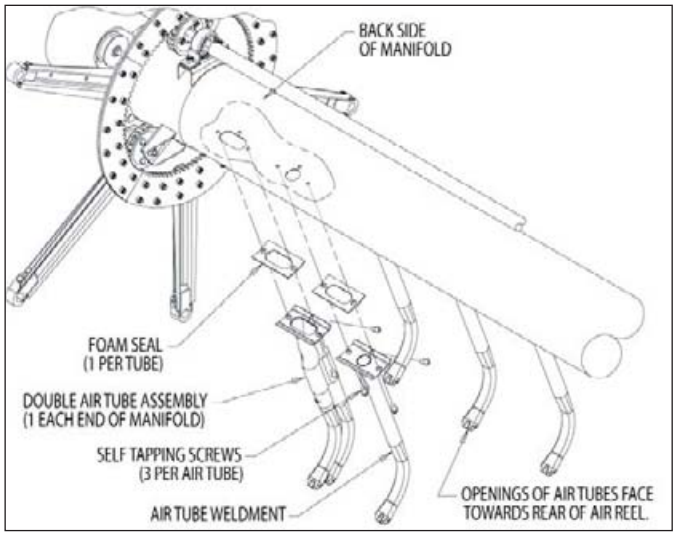


Figure 29, Installation of air tubes

4.15 REEL BATS

1. Remove the plastic bearing caps, by removing one 5/16” x 2” bolt, one 5/16” centerlock nut and two 1/4” flat washers per each reel arm (Figure 30).
2. Assemble the reel bat assemblies to the reel arms.
   A. Determine the correct orientation of the reel bat. The RH and LH pivot straps point to the rear of the Air Reel (Figure 31).
   B. Position the reel bats into the bearing bases.
   C. Reattach the plastic bearing caps, by installing one 5/16” X 2” bolt, one 5/16” centerlock nut and two 5/16” flat washers per each reel arm (Figure 30).
   D. Tighten the 5/16” X 2” bolts to 100 In. lbs. **Note: do not exceed the recommended torque of 100 In. lbs.**
3. Continue with steps 1 and 2 until all six reel bats are installed.

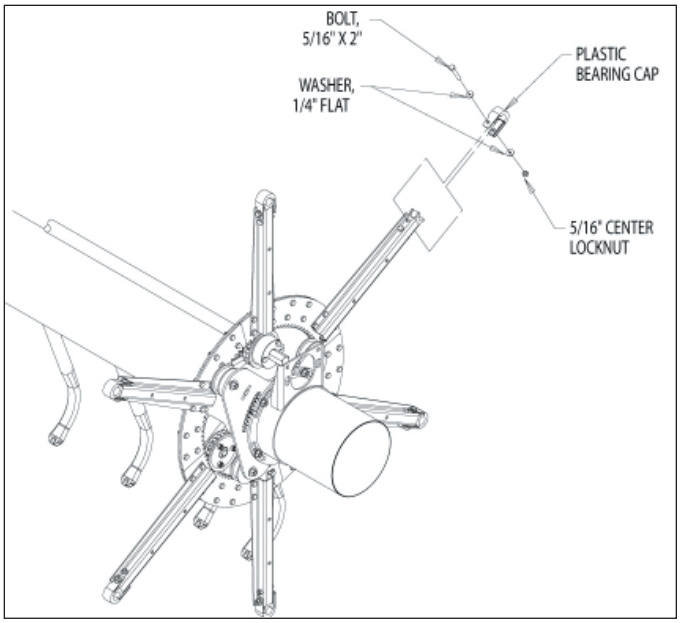


Figure 30, Remove plastic bearing caps

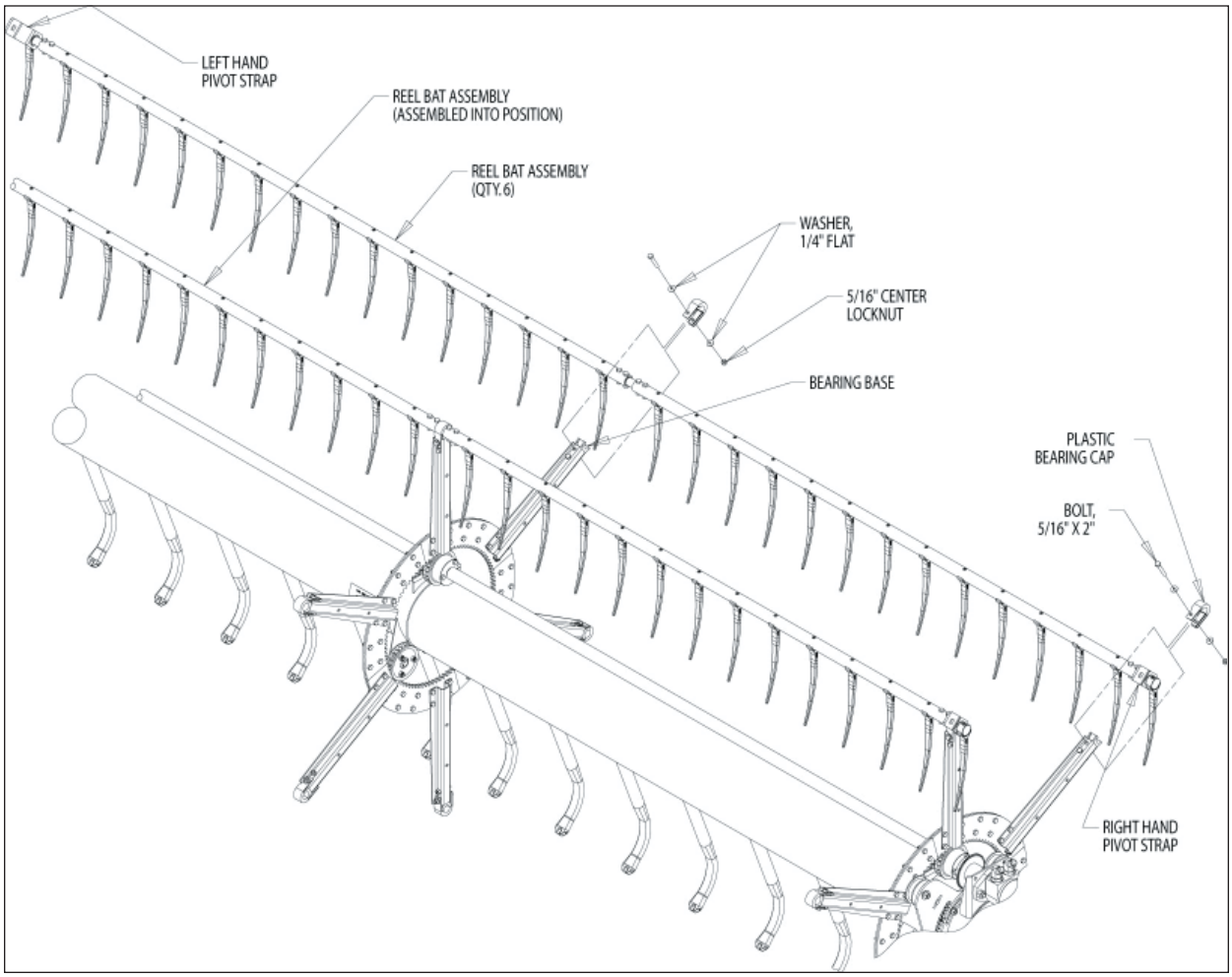


Figure 31, Reel bat installation

4.16 HYDRAULIC MOTOR

1. Determine the drive side of the manifold. For New Holland and Case 2020, the hydraulic motor is mounted on the LH side of machine.
2. Slide the shaft coupler onto the driveshaft (Figure 32).
3. Insert the 5/16” bolts through the shaft coupler and install locknuts. Do not tighten yet.

IMPORTANT

Make sure equal amounts of the roll pin are extended past the shaft coupler.

4. Install the hydraulic motor.
   A. Line up the key on the shaft of the hydraulic motor with the key way of the shaft coupler.
   B. Align the mounting holes of the hydraulic motor with the mounting holes of the motor mount clamp.
   C. Fasten with the supplied 1/2” X 1-1/2” bolts, two 1/2” flat washers and two 1/2” centerlock nuts. Do not tighten.
   D. Tighten shaft coupler bolts to 17 ft-lbs.
   E. Torque the centerlock nuts to 75 ft-lbs.
6. Slide the brace clamp assemblies onto each end of the manifold and tighten.
7. Place the tube cap over the end of the manifold tube and secure with the t-bolt clamp.

IMPORTANT

The brace clamp assemblies will be used during reel to header assembly.

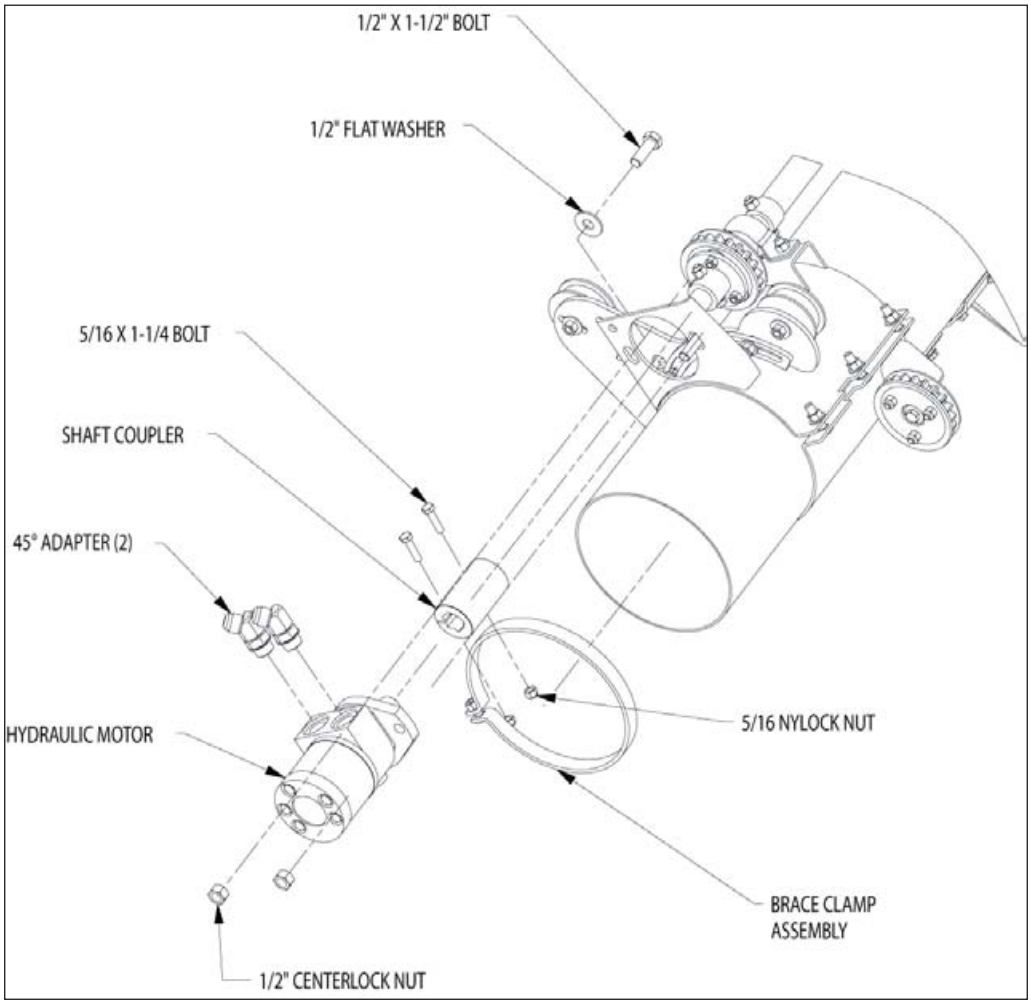


Figure 32, Hydraulic motor installation

4.17 ECCENTRIC ARM

1. Slide an eccentric arm assembly over each end of the manifold, making sure that the end shield faces towards the outside.
2. Position the pivot straps of the reel bat assemblies, so that they point at the 10:00 position, when looking from the right side of the reel, or the 2:00 position from left side.
3. Press a pivot strap bushing into each plastic bearing on the reel arms of the eccentric arm assembly (Figure 33).
4. Bolt the eccentric arm assembly to the reel bat assemblies by inserting a bolt through the end shield and the pivot strap and tighten to specified torque.
5. Adjust each plastic roller against the eccentric ring and tighten to specified torque. You may need to insert additional washers between the roller and the eccentric mount plate to center the eccentric ring on the rollers.

IMPORTANT

The plastic rollers should turn with the reel.

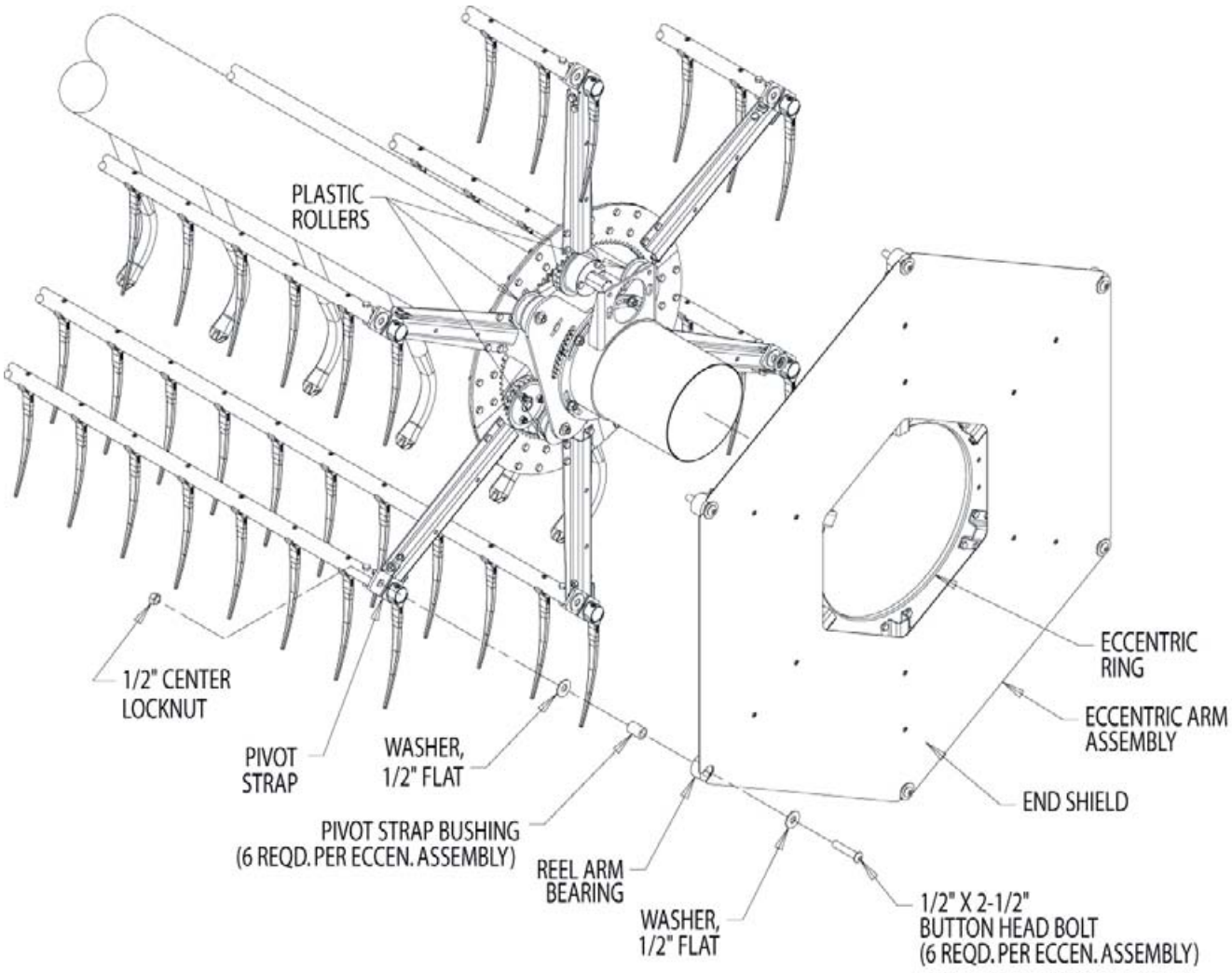


Figure 33, Eccentric arm installation

4.18 REEL SUPPORT (MANUAL)

WARNING

Avoid crushing injury or death from fall of raised reel.

Before working on or under a raised reel, place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop and set cylinder stops on both sides of reel before servicing, adjusting, repairing, or unplugging.

NOTE

While performing the following assembly steps, refer to Figure 34.

1. Mount the adjustable bracket onto the arm of the header according to Figure 4.26. Install the 1/2” bolts and nuts to secure the bracket. Tighten to proper torque. Position the bracket so that the reel support assembly can extend to the end of its slot.
2. Slide the reel support pad underneath the reel support assembly. The pad is held in place by two metal tabs on the reel support assembly.
3. Slide the reel support assembly and pad onto the header arm.
4. Thread the adjustable bracket onto the reel support assembly. Turn until the reel support assembly sits at the desired position.
5. Repeat procedure for the left side. Make sure to align the left and right reel support assemblies to the same position.
6. Insert the 3/8” X 3” bolt, bushings, and locknut into the hole at the end of the reel arm, and tighten to proper torque. Repeat for the other side.

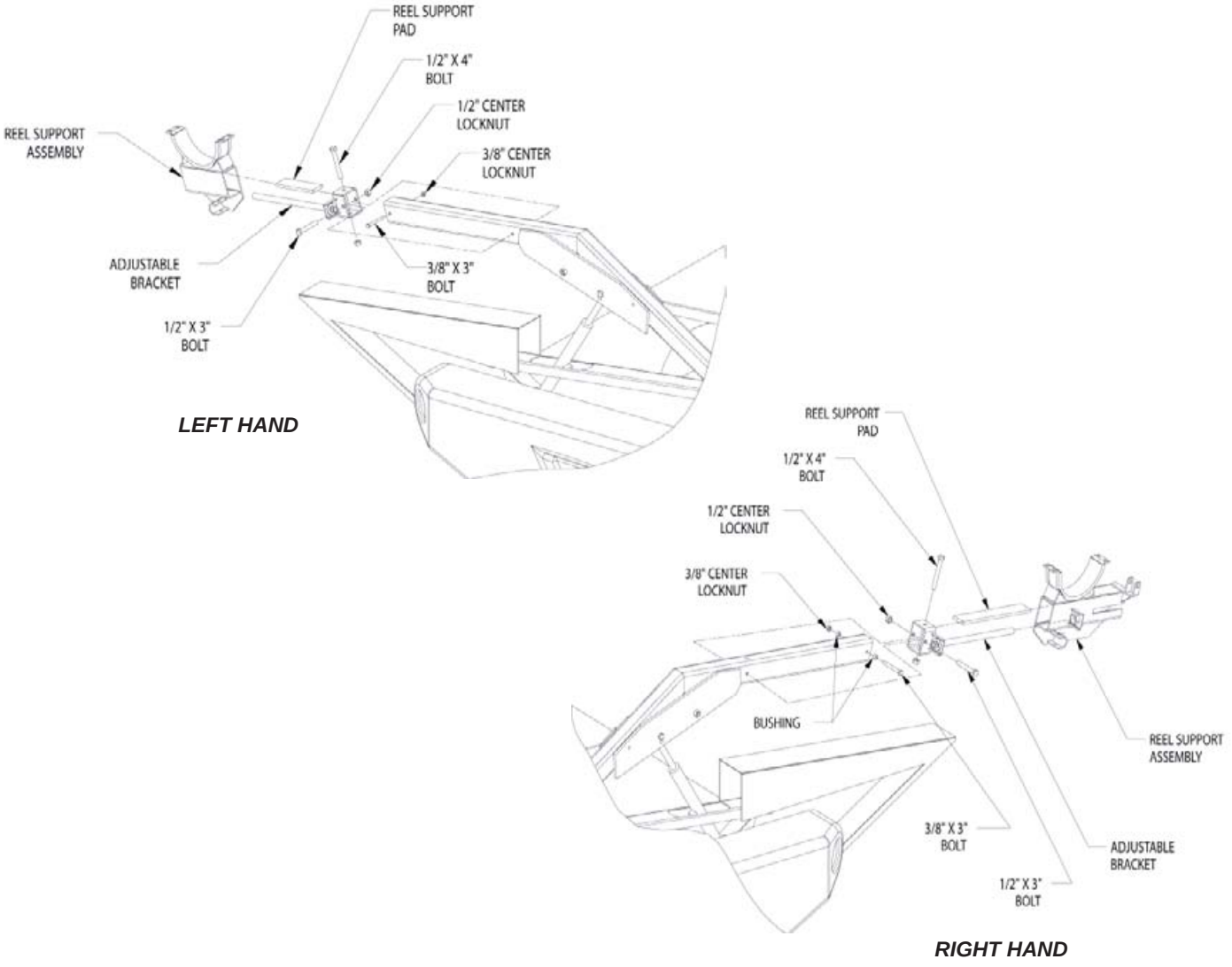


Figure 34, Reel support installation (manual)

4.19 REEL SUPPORT (HYDRAULIC)

WARNING

Avoid crushing injury or death from fall of raised reel.

Before working on or under a raised reel, place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop and set cylinder stops on both sides of reel before servicing, adjusting, repairing, or unplugging.

NOTE

While performing the following assembly steps, refer to Figure 35.

1. Slide the reel arm support pad underneath the reel support assembly. The pad is held in place by two metal tabs on the reel support assembly.
2. Slide the reel support assembly and pad onto the header arm.
3. Install the hydraulic cylinder onto the reel support assembly and attach with the 3/8" X 2" clevis pin secured with a cotter pin.
4. Repeat procedure for the left side. Make sure to align the left and right reel support assemblies to the same position.
5. Insert the 3/8" X 3" bolt, bushings, and locknut into hole at the end of the reel arm and tighten to proper torque. Repeat for the other side.

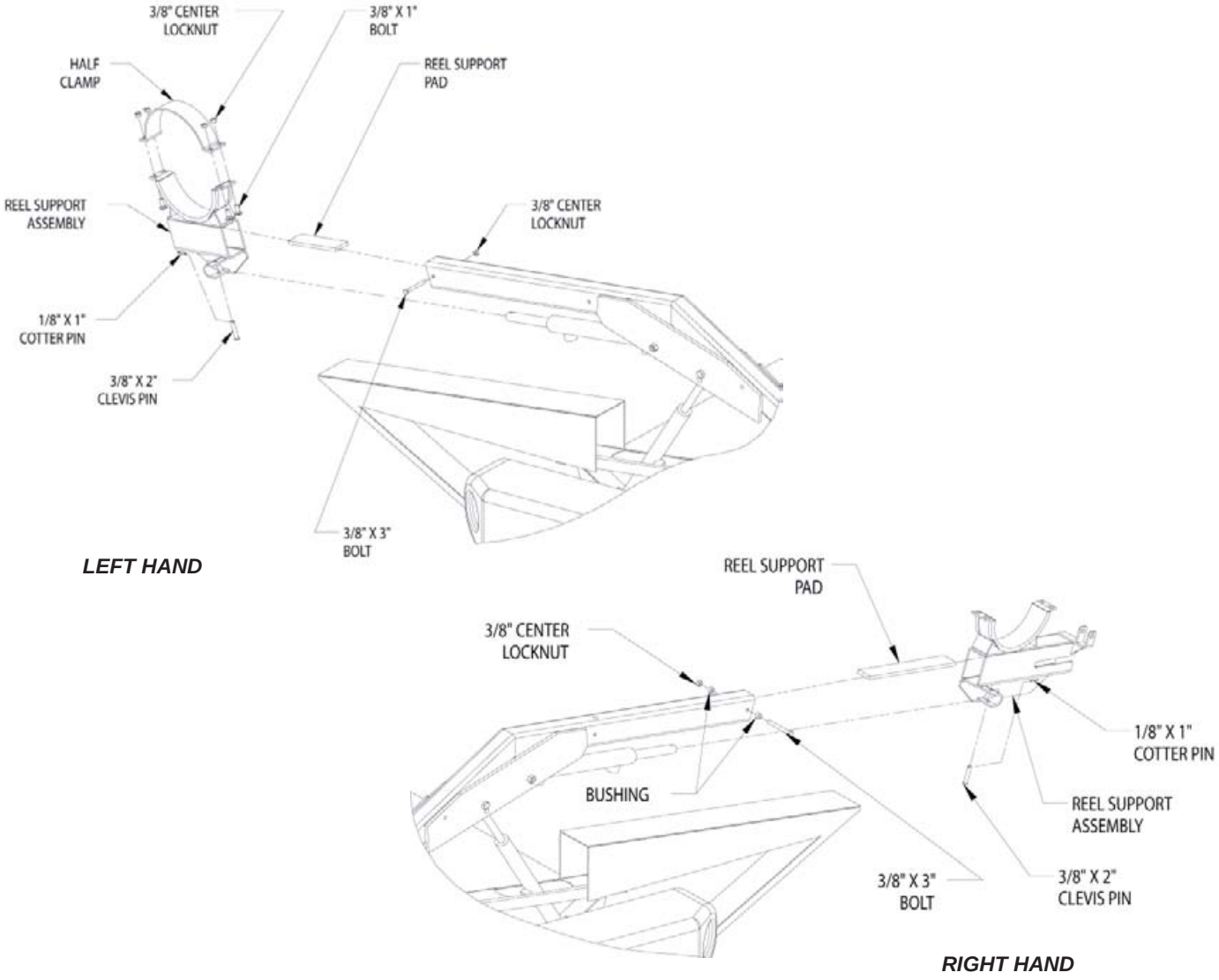


Figure 35, Reel support installation (hydraulic)

4.20 REEL TO HEADER INSTALLATION

WARNING

Avoid crushing injury or death from fall of raised reel.

Before working on or under a raised reel, place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop and set cylinder stops on both sides of reel before servicing, adjusting, repairing, or unplugging.

NOTE

Bolt half-clamps from the bottom up so the nuts are on top.

1. Set assembled reel into the half clamps on reel support brackets so the brace clamps are inside of the reel support brackets.
2. Center the reel between the reel arms.
3. Bolt the half clamps over the manifold and secure with 3/8" bolts and locknuts.

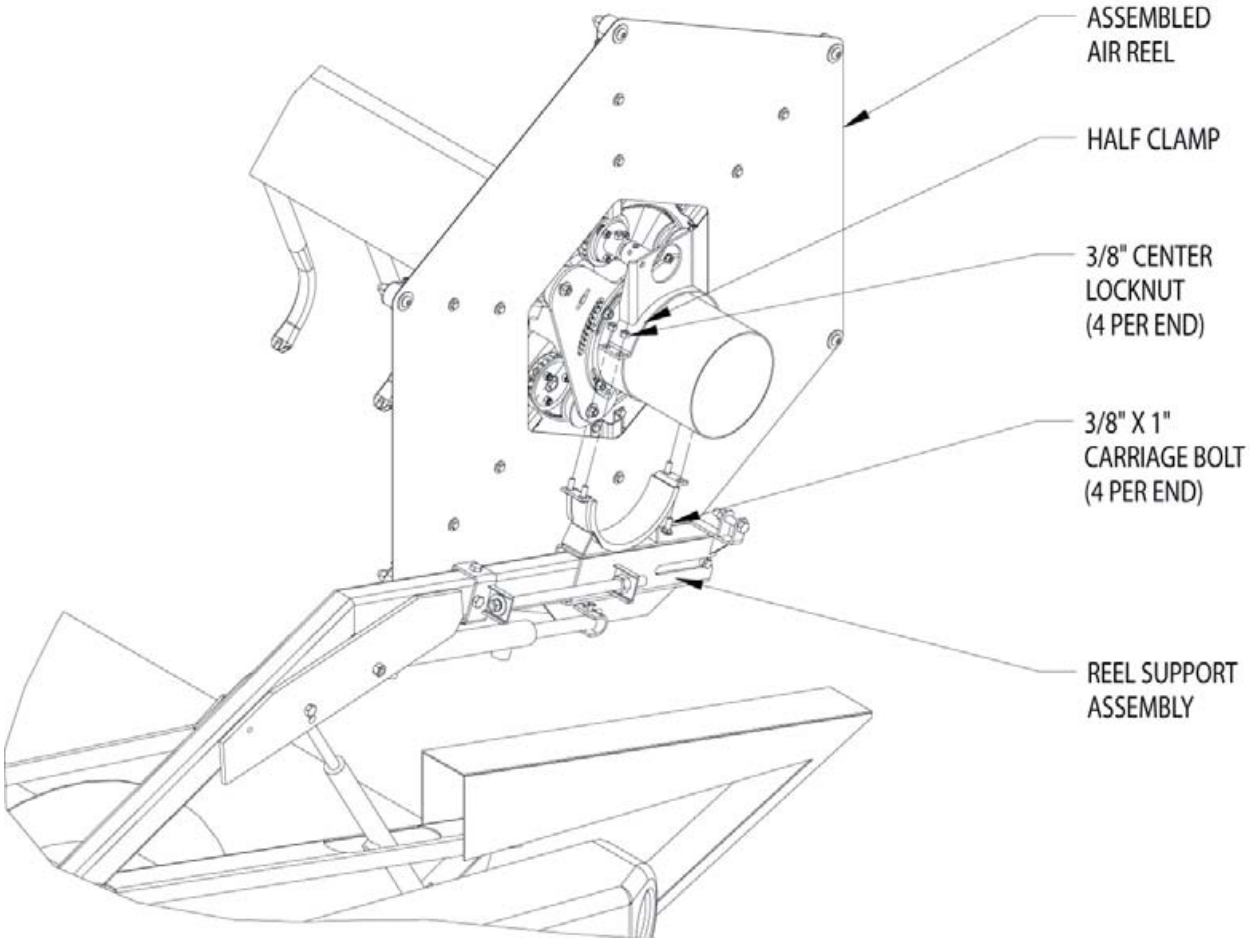


Figure 36, Reel to header installation

4.21 MANIFOLD TILT

WARNING

Avoid crushing injury or death from fall of raised reel.

Before working on or under a raised reel, place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop and set cylinder stops on both sides of reel before servicing, adjusting, repairing, or unplugging.

NOTE

The pivot clamp assembly may serve as a clamp for the tube cap in some instances. In this case, you would not use the 8-1/4" t-bolt clamp.

NOTE

Be sure the reel can be rotated by hand before attaching the actuator.

1. Slide the pivot clamp assembly over the RH end of the manifold, and position it next to the reel support bracket. Do not tighten the clamp at this time.
2. Bolt the stationary end of the electric actuator to the clevis on the reel support bracket.
3. Extend the actuator 1/2 the length (approx. 2") of the full extension.
4. Bolt the actuator to the clevis on the pivot clamp assembly.
5. Rotate the manifold so the line of sight along the air tubes is directed just behind the cutterbar (Section 5.6)
6. Tighten the pivot clamp assembly around the manifold tube.

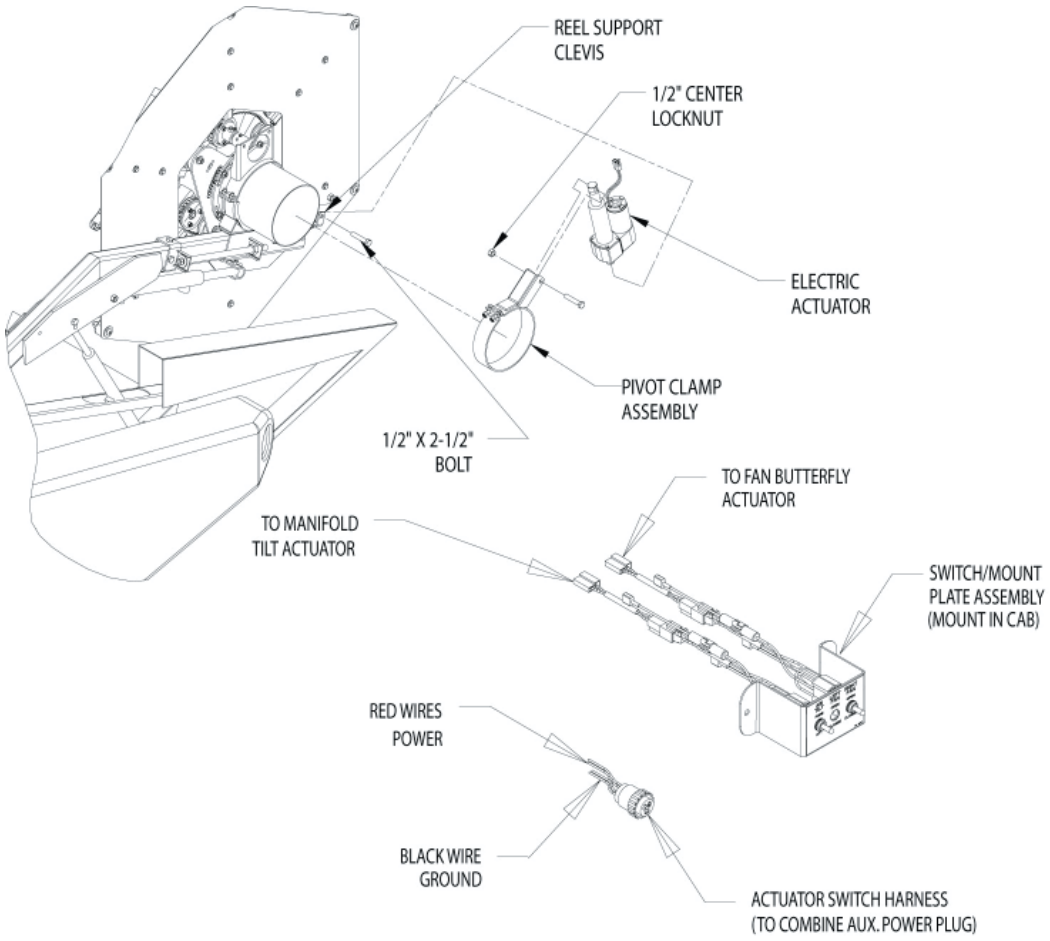


Figure 37, Manifold tilt

4.22 AIR HOSE

WARNING

Avoid crushing injury or death from fall of raised reel.

Before working on or under a raised reel, place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, wait for all moving parts to stop and set cylinder stops on both sides of reel before servicing, adjusting, repairing, or unplugging.

NOTE

Refer to Figure 39 during assembly.

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

1. Install the tube mount weldment to existing holes in the RH reel arm as shown in Figure 38. Use OEM hardware in the large bolt hole of the tube mount weldment. Use the provided 5/16" x 1" bolt, two washers and one nylock nut in the small bolt hole. Torque 5/16" hardware to 17 ft-lbs.
2. Slip one 8-11/16" t-bolt clamp over the 90 degree elbow. Slide the elbow onto the RH end of the front air manifold. Point the open end of the elbow toward the tube mount weldment.
3. Slide an 8-11/16" t-bolt clamp over the 90 degree elbow. Insert an elbow support band from the flex hose assembly into the 90 degree elbow.
4. Determine the amount of flex hose needed to reach the tube mount weldment. Leave enough slack in this section of air hose to allow the fore and aft hydraulic cylinder to fully extend. After determining the length of hose needed, cut the hose.
5. Slip an 8-3/8" t-bolt clamp over the open end of the flex hose. Slide the flex hose onto the tube mount weldment.
6. Slide a 45 degree elbow and 8-11/16" t-bolt clamp over the rear end of the tube mount weldment.
7. Slip an 8-11/16" t-bolt clamp over the open end of the 45 degree elbow. Insert the elbow support band from the remaining piece of flex hose into the elbow.
8. Slip one 8-11/16" t-bolt clamp over the remaining 45 degree elbow. Slide the elbow over the fan outlet.
9. Slip another 8-11/16" t-bolt clamp over the 45 degree elbow. Insert the header/end manifold into the 45 degree elbow.
10. Determine the amount of flex hose needed to connect the tube mount weldment and header/end manifold. Cut the flex hose. Do not leave much slack in this portion of the hose.
11. Tighten all t-bolt clamps.

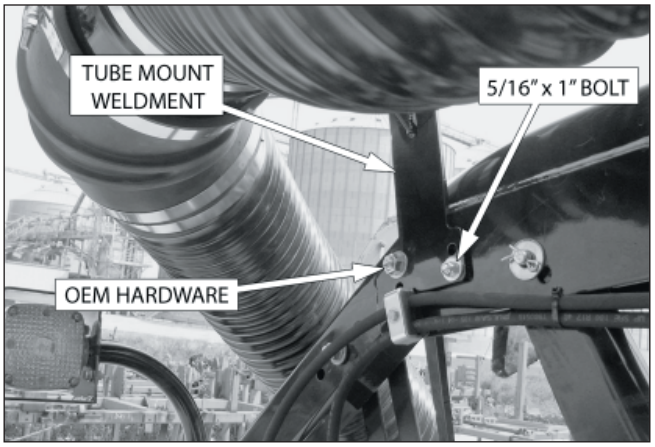


Figure 38, Tube mount weldment

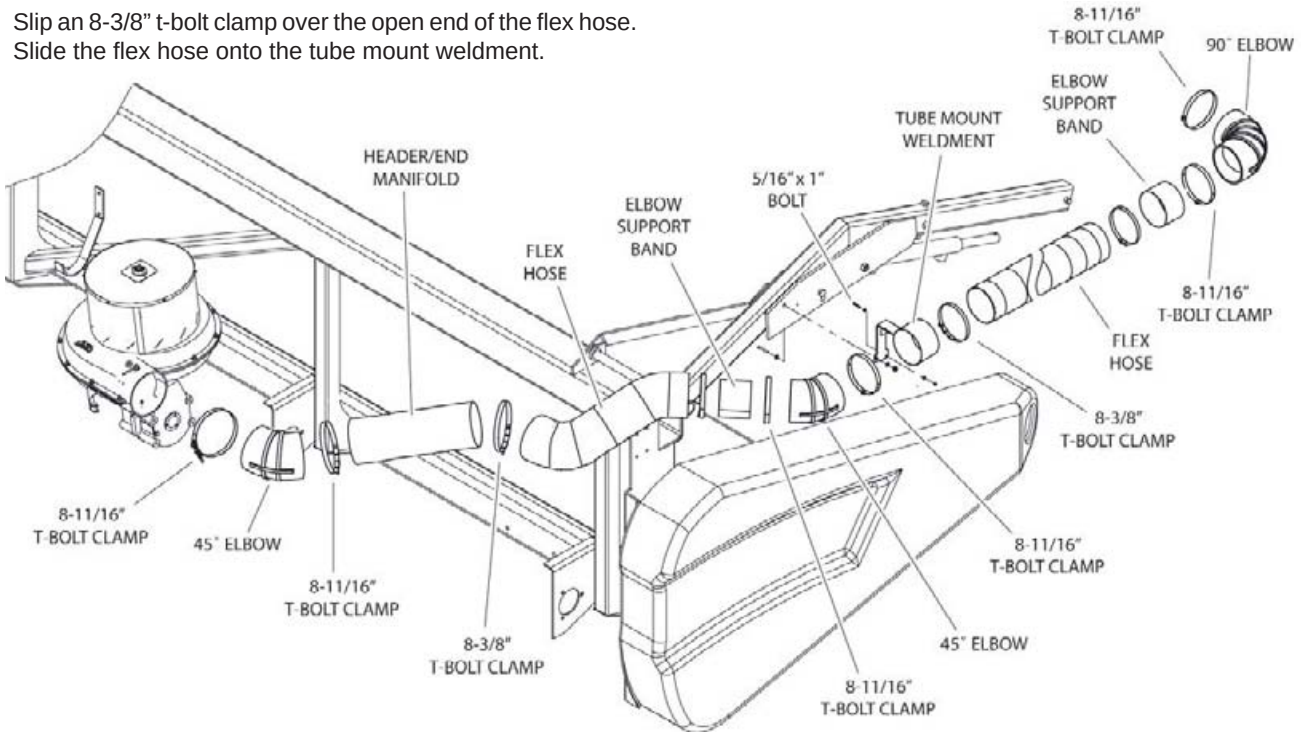


Figure 39, Air hose installation

4.23 ELECTRICAL WIRING

WARNING

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

1. Mount the switch plate assembly in a convenient place inside the cab (use either velcro or bolts).
2. Run the red wires (with fuse-15 Amp & 6 Amp) to a power source. Use actuator switch harness (if provided) and combine is equipped with same type of auxiliary power supply.
3. Run the black wires to a suitable ground or to the actuator switch harness ground wires.
4. Route the long harnesses along the combine and header to the actuators (15 Amp Manifold Tilt; 6 Amp Air Volume) and plug in.
5. Mount the intermediate harness connectors to a convenient location on the combine feeder house.

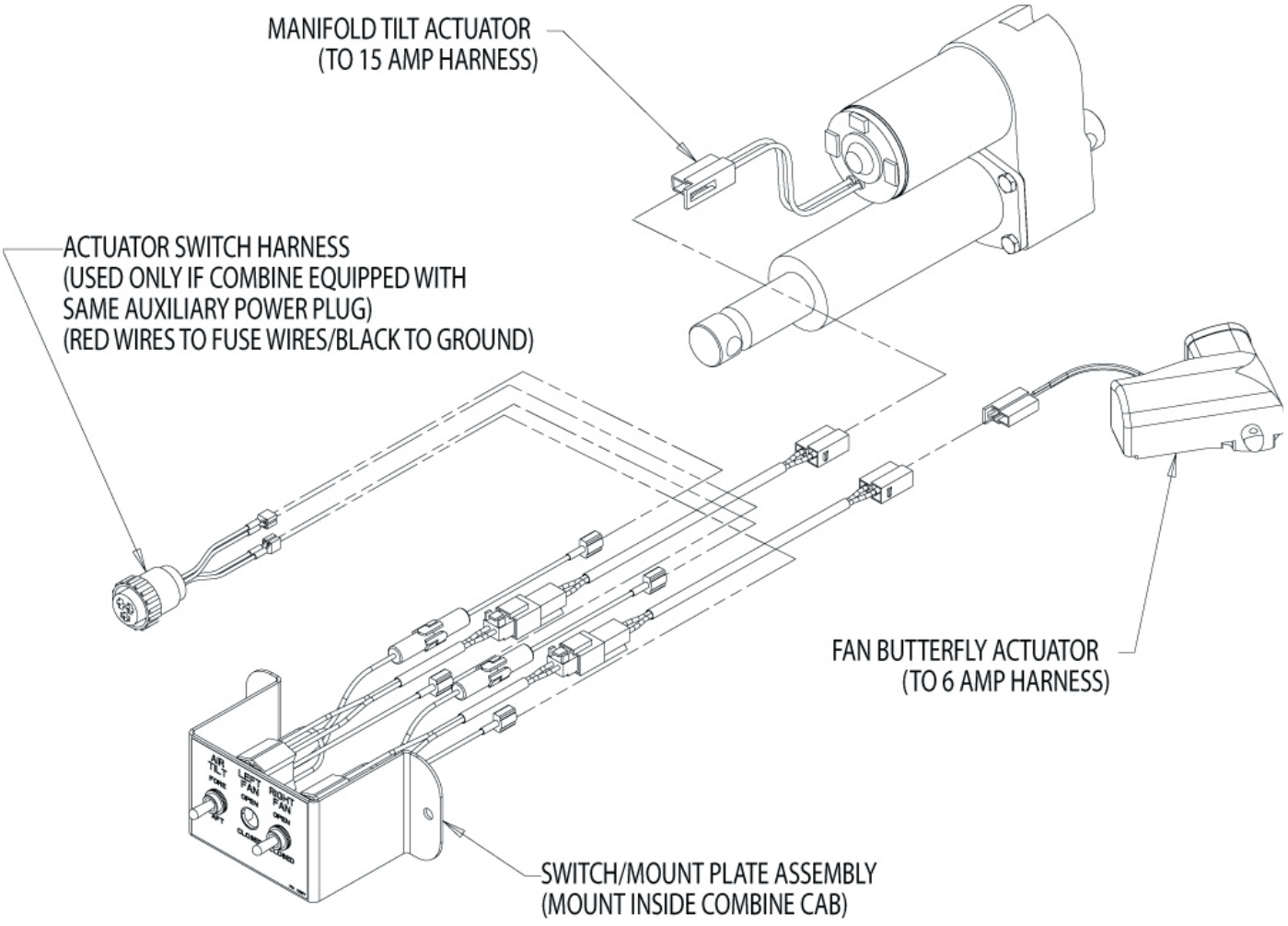


Figure 40, Switch/mount plate assembly

4.24 OPTIONAL EQUIPMENT

4.24.1 AUXILIARY REEL TINE KIT

The auxiliary reel tine kit is recommended for crops that do not move easily from the knife to the auger at the ends of the header.

WARNING

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

1. Remove one 1/2” X 1-1/2” hex bolt, two 1/2” flat washers, one pivot strap bushing and one 1/2” centerlock nut (Figure 41).
2. Simultaneously assemble the auxiliary reel tine assembly with two steel machine bushings as shown in Figure 42.
3. Rotate the auxiliary reel tine assembly until the square end sets into the square hole of the pivot strap.
4. Insert the 3/8” X 2-1/2” carriage bolt through the square hole of the auxiliary reel tine assembly and fasten the 3/8” flat washer and 3/8” centerlock nut.
5. Tighten the 3/8” centerlock nut to the specified torque.
6. Repeat Steps 1 - 5 for each auxiliary reel tine assembly being installed.

NOTE

Make sure the pitch of the auxiliary reel tines line up with the existing reel tines.

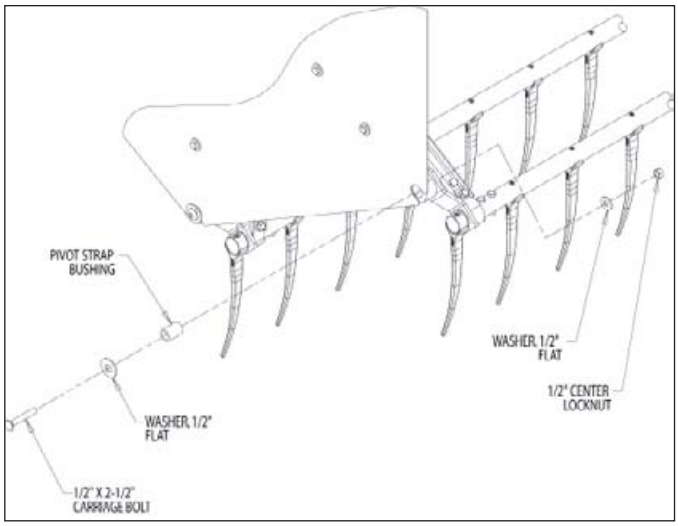


Figure 41, Loosen and remove hardware and bushing

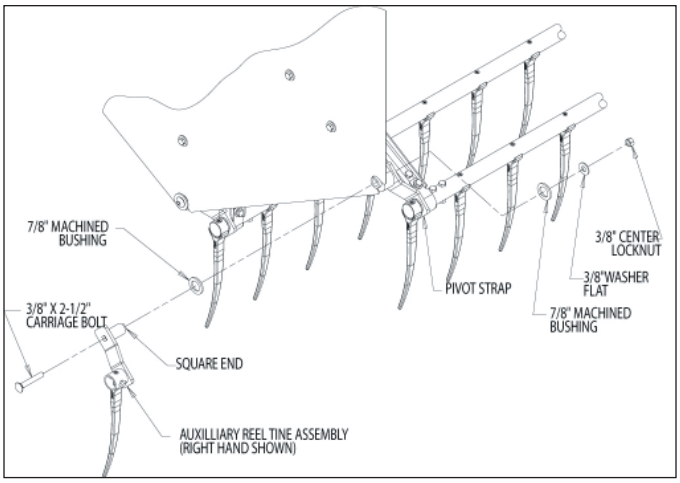


Figure 42, Assemble auxiliary reel tine kit

4.24 OPTIONAL EQUIPMENT

4.24.2 GEARBOX / FAN EXTENSION

The gearbox/fan extension option is designed to extend the fan in order to eliminate clearance problems with headers smaller than 20' and combines with dual tires.

WARNING

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

1. Separate gearbox and fan. Refer to Figure 43 for identification of parts.
    A. Loosen set screw securing the indicator weldment and remove from butterfly shaft.
    B. Remove 3/8" x 1-1/4" bolts connecting fan housings and separate.
    C. Loosen 3/4" castle nut and remove washer and nut from gearbox shaft.
    D. Remove fan rotor and spacer washers.
    E. Remove bolts connecting lower fan housing to gearbox flange.
2. Attach extension shaft/hub assembly.
    A. Bolt extension shaft/hub assembly to gearbox flange with 1/2" x 1" bolts. Rotate extension shaft so the key in the coupler at the bottom of the shaft lines up with the keyway on the gearbox shaft.
    B. Place bearing retainer plate and washers onto end of extension shaft/hub assembly.
    C. Bolt lower fan housing to extension flange with 1/2 x 1" bolts.
    D. Attach spacer washers and fan rotor to extension shaft and secure with washer and 3/4" castle nut.
    E. Bolt upper fan housing to lower fan housing with 3/8" x 1-1/4" bolts.
    F. Reinstall indicator weldment onto butterfly shaft and tighten set screw.
3. Mount gearbox/fan extension to combine.
    A. Refer to owner's manual for gearbox/fan installation instructions.
    B. Select appropriate support bracket for combine model.
    C. Bolt mounting bracket onto header.
    D. Remove upper bolts on gearbox mount plate. Bolt support bracket in the location bolts were removed using provided 1/2 x 1-1/2" bolts.
    4. Attach gearbox/fan extension to support bracket with provided u-bolt.

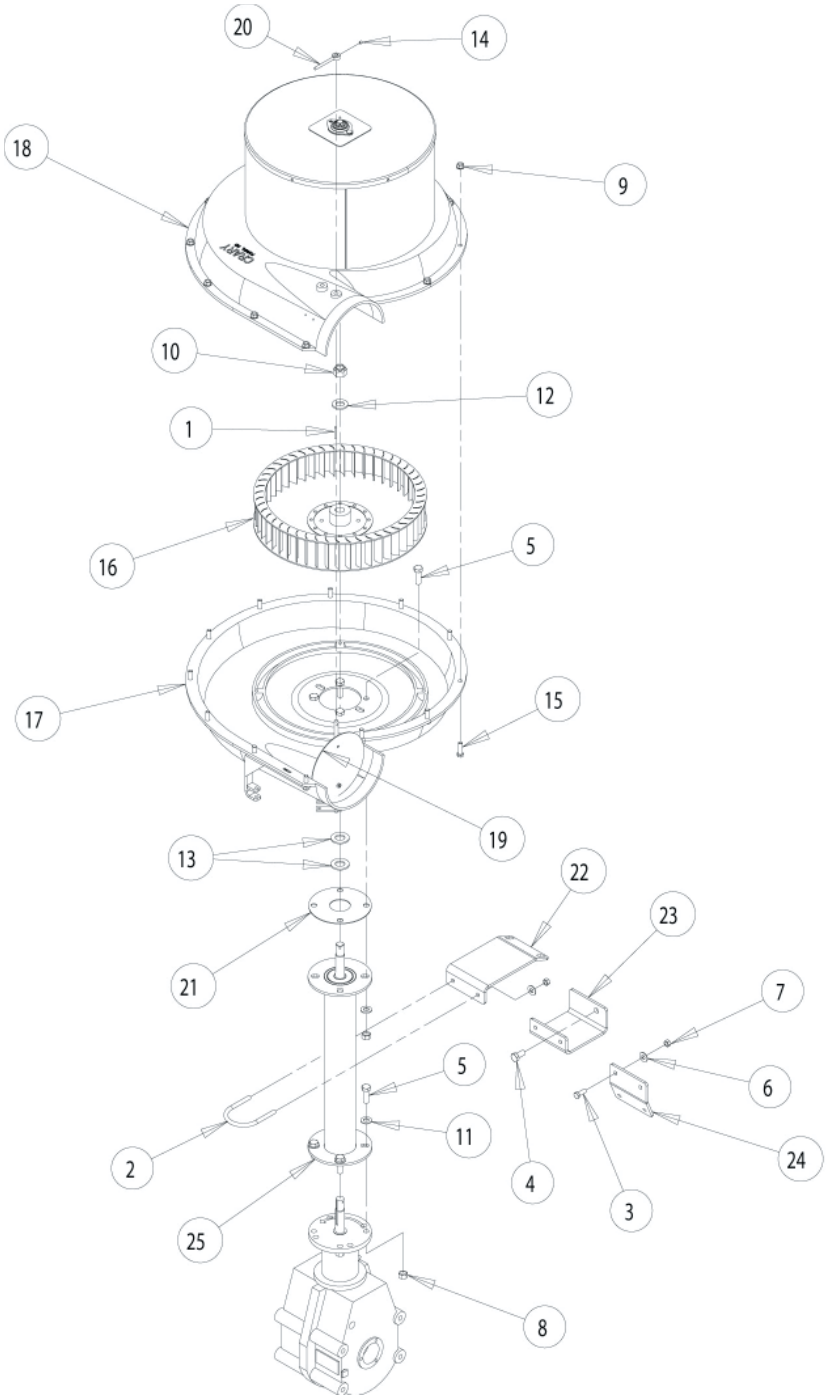


Figure 43, Gearbox/fan extension kit

ITEM	PART NUMBER	DESCRIPTION	QTY
1	7022	KEY, 3/16” SQUARE X 1-1/4” PLAIN	1
2	13014	U-BOLT, 3/8” X 3” X 4”, FAN MOUNT ZP	1
3	15006	BOLT, 3/8” X 1” HHCS GR5 ZP	1
4	15012	BOLT, 1/2” X 1” HHCS GR5 ZP	1
5	15014	BOLT, 1/2” X 1-1/2” HHCS GR5 ZP	8
6	15031	WASHER, 3/8” FLAT ZP	2
7	15042	NUT, 3/8” HEX NC ZP	2
8	15049	NUT, 1/2” CENTERLOCK GRB ZP	8
9	15051	NUT, 3/8” SERRATED FLANGE NC ZP	12
10	15055	NUT, 3/4” NF CASTLE ZP	1
11	15097	WASHER, 1/2” SAE FLAT ZP	8
12	15098	WASHER, 3/4” SAE FLAT ZP	1
13	15099	WASHER, 7/8” SAE FLAT ZP	2

ITEM	PART NUMBER	DESCRIPTION	QTY
14	15332	SCREW, 1/4”-20 X 1/4” SET	1
15	15364	BOLT, 3/8” X 1-1/4” HHCS GR5 ZP	12
16	16466	ROTOR, FAN, 12.88” X 2.5”, 7/8”B, CW, HSPD, ALUM	1
17	21193	8” FAN, SIDE W/BUTTERFLY, RH	1
18	21194	8” FAN, SIDE W/BUTTERFLY, LH	1
19	21444	PLATE, LARGE BUTTERFLY	1
20	22344	WELDMENT, INDICATOR	1
21	24510-12	PLATE, BEARING RETAINER	1
22	24639-12	BRACKET, EXTENSION SUPPORT	1
23	24640-12	BRACKET, EXTENSION SUPPORT	1
24	24641-12	BRACKET, EXTENSION SUPPORT	1
25	24643	ASSEMBLY, EXTENSION SHAFT/HUB	1

Section 5 OPERATION

WARNING

1. Read and understand the Owner's Manual and all safety signs before servicing, adjusting or repairing.
2. Install and secure all guards and shields before starting or operating.
3. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
4. Place all controls in neutral or off, lower header to the ground, stop combine engine, set parking brake, chock wheels, remove ignition key, 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 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.

The Air Reel is designed to dramatically improve harvesting efficiency. Power is provided by the combine feeder and hydraulics. 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. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, and prudence of personnel involved in the operation, transport, maintenance and storage of equipment or in the use and maintenance of facilities.

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.

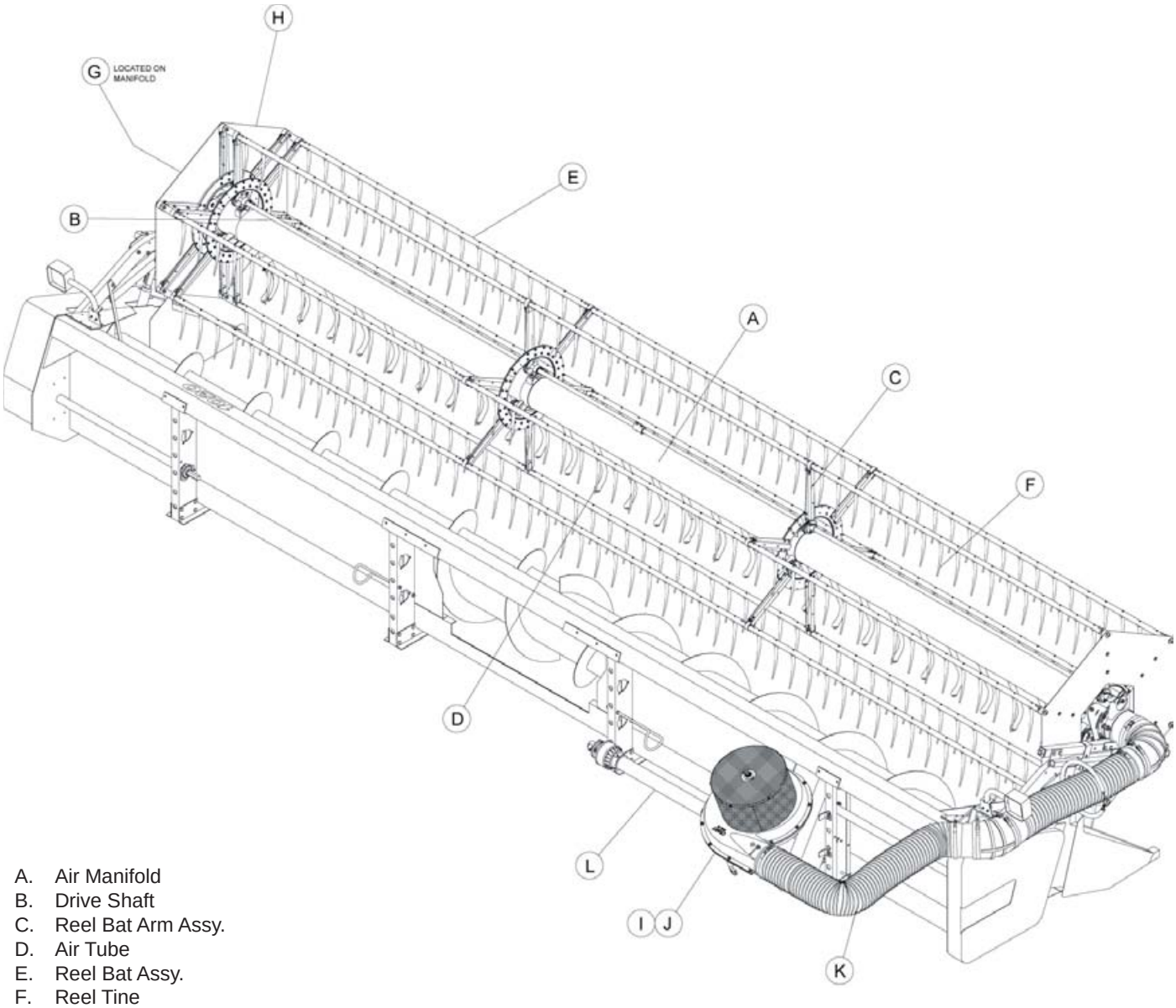
Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance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

5.1 MACHINE COMPONENTS

Your Finger Air Reel incorporates the superior feeding performance of an adjustable tine pitch pickup reel and an adjustable air system. The combination of these two systems results in superior harvesting efficiency. Please take the time to familiarize yourself with the proper adjustment and operation of your Finger Air Reel. You will be well rewarded for your time in increased performance and crop yields.

The finger reel is designed to support and direct the crop during the cutting process and subsequent transfer to the header auger or belt.

Air is used to enhance the performance of your finger reel by moving the cut crop off the sickle towards the header auger or belt.



A. Air Manifold
B. Drive Shaft
C. Reel Bat Arm Assy.
D. Air Tube
E. Reel Bat Assy.
F. Reel Tine
G. Hydraulic Motor
H. Eccentric Arm Assy.
I. Gearbox
J. Fan
K. Fan Hose
L. PTO Driveline

5.2 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Air Reel 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).
9. Check condition of auger driveshaft slip clutch friction discs. Run-in is recommended at the start of the season (see Service and Maintenance Section).

5.3 MACHINE BREAK-IN

5.3.1 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 guards are installed and secured.
4. Check that all required nuts and bolts are installed and tightened to their specified torque.

5.3.2 AFTER OPERATING FOR 2 HOURS

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

5.3.3 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. Check the plastic eccentric rollers for uneven wear.
6. Refer to the normal servicing and maintenance schedule as defined in the Service Record.

5.4 NEUTRAL DRIVE SHAFT (OPTIONAL)

WARNING

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

When harvesting in conditions where air flow is unnecessary, you can bypass the fan to improve combine fuel economy. To do so, place all controls in neutral or off, stop combine engine, set parking brake, remove ignition key, and wait for all moving parts to stop. Then, move the driveline ends that are connected to each end of the gearbox stub shaft to the neutral shaft located behind the fan.

To slide the driveline on and off the splined shafts, pull back the spring-loaded collar at the end of the driveline. After moving the driveline to the desired shaft, release the end collar and make sure the driveline locks into place on the shaft.

5.5 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.

MANIFOLD TILT:

1. Moving the toggle switch to the FORE position (Figures 44 & 45) extends the shaft of the electric actuator forward. This rotates the manifold CW which directs the air tubes towards the front of the header. See Section 5.6.1 for the center stroke position which points the air tubes directly behind the cutterbar.
2. Moving the toggle switch to the AFT position (Figures 44 & 45) retracts the shaft of the electric actuator backward. This rotates the manifold CCW, which directs the air tubes towards the back of the header.

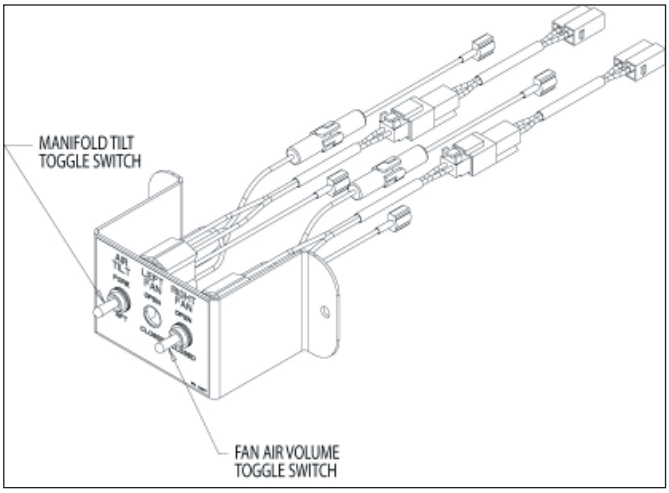


Figure 44, Manifold tilt/air volume toggle switch

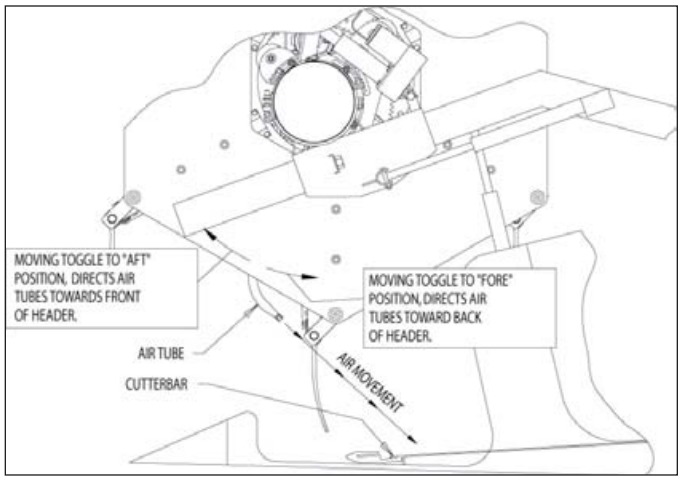


Figure 45, Manifold tilt/air movement

FAN AIR VOLUME ACTUATOR:

1. Move the toggle to the OPEN position (Figures 44 & 46) to open the butterfly plate which increases air volume to the air tubes.
2. Move the toggle to the CLOSED position (Figures 44 & 46) to close the butterfly plate which decreases air volume to the air tubes.

REEL LIFT:

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

HYDRAULIC REEL FORE AND AFT ADJUSTMENT:

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

MANUAL REEL FORE & AFT ADJUSTMENT:

Turn the bolt on the adjustable bracket either counterclockwise or clockwise. Turning the bolt clockwise adjusts the reel forward. Turning the bolt clockwise adjusts the reel to the rear of the machine (Figure 47).

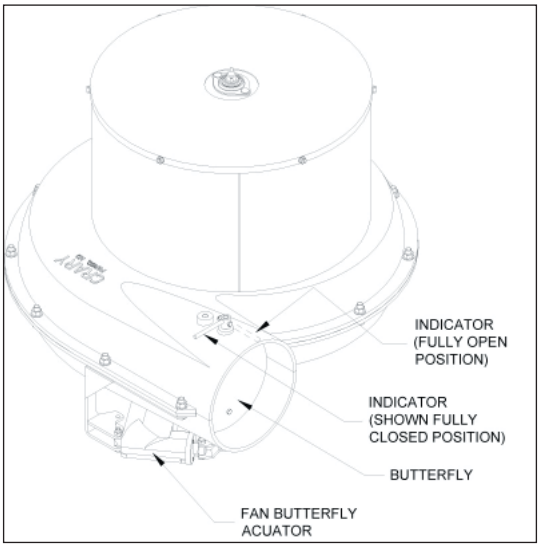


Figure 46, Fan butterfly actuator

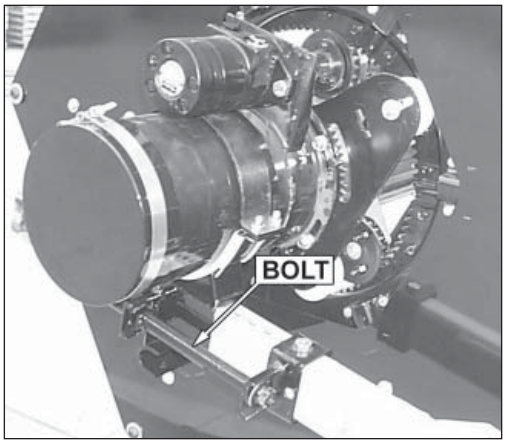


Figure 47, Manual reel adjustment

5.6 INITIAL ADJUSTMENTS

Since all applications of the Air Reel are not the same, based on header and combine variations, some initial adjustments must be made to achieve peak performance of your Air Reel.

5.6.1 INITIAL ADJUSTMENT

1. Place header on a level surface.
2. Pull reel back as close as possible to auger while maintaining clearance between auger flighting and bat tubes.
3. Install aft stop.
4. Adjust reel tines perpendicular to sickle sections.
5. Adjust reel height to achieve reel tine to sickle clearance of 1" minimum for rigid operation.
6. Adjust reel height to achieve reel tine to sickle clearance of 1" minimum with sickle at maximum up flex for flex operation.
7. Set cylinder stops at this position.
8. Move reel ahead until fingers contact ground surface.
9. Install stop on reel arm to prevent further travel.
10. **DO NOT OPERATE WITH TINES CONTACTING THE GROUND.**
11. Move reel aft against stop.
12. Adjust the air tube position to point at the back of the sickle bar.
13. 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 sickle bar.
14. Retighten clamp.

WARNING

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

5.6.2 REEL ADJUSTMENT

1. Rest the header on the ground and lower the reel so the reel tines clear the cutterbar by at least 1 inch.
2. Position the reel so that the reel tines sweep over the cutter bar and begin their lift just behind it.
3. Rotate the manifold so the line of sight along the air tubes is directed just behind the cutterbar.
4. Turn adjustable air tubes at each end approximately 45° - 90° so they direct air into the corners of the header.
5. Open fan butterfly to fully open position.

NOTE

Use the electric actuators to adjust air flow direction and air volume.

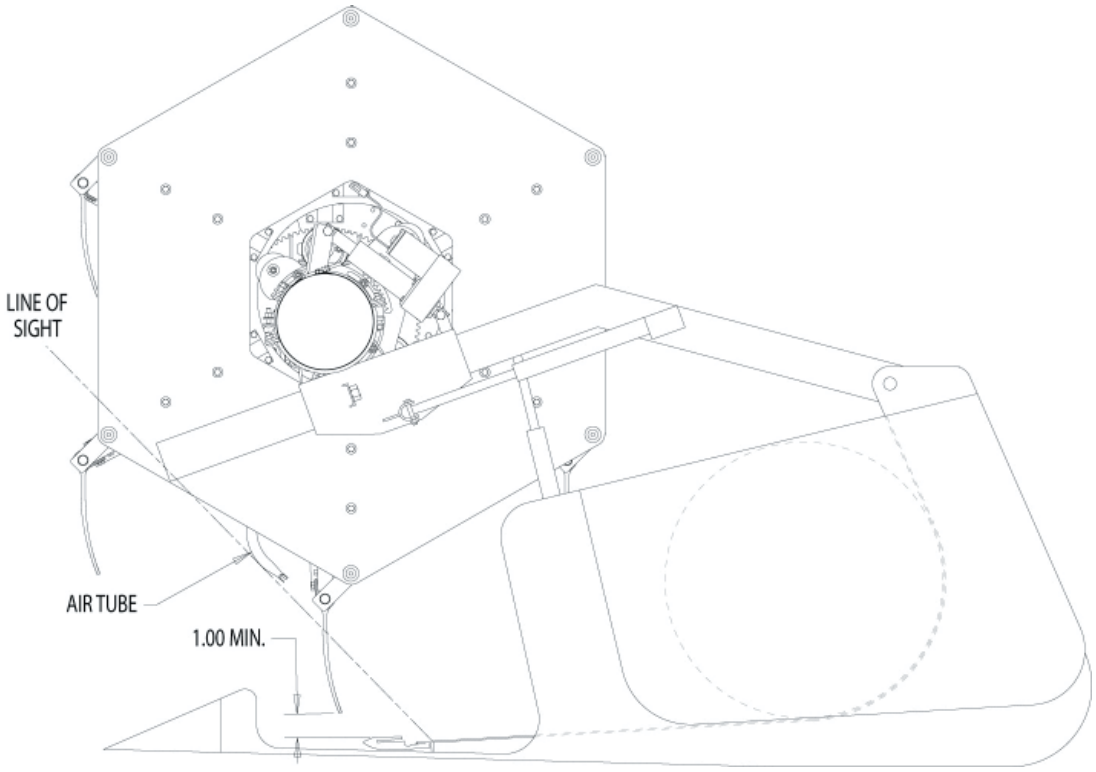


Figure 48, Initial reel adjustment

5.6 INITIAL ADJUSTMENTS

WARNING

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

5.6.3 TINE PITCH ADJUSTMENT

1. From the right side of the machine, loosen the three 3/8" X 1" carriage bolts securing the eccentric mount plate assembly to the RH end Clamp (Figure 49).
2. Insert the Tine Pitch Adjustment wrench into the shaped cutout on the side of the eccentric mount plate assembly (as shown in Figure 49). The default pitch angle is with the 5th tooth (middle tooth) on the eccentric mount plate assembly aligned with the indicator mark on the RH & LH end clamps (Figure 50).
3. From the RH side of the machine, move the Tine Pitch Adjustment wrench CCW to change the tine pitch forward. Move the Tine Pitch Adjustment wrench CW to change the tine pitch backward (Figure 49).
4. Tighten the three 3/8" X 1" carriage bolts to their specified torque.
5. From the LH side of the machine, follow steps 1 & 2, then move the Tine Pitch Adjustment wrench CCW to change the tine pitch backward. Move the Tine Pitch Adjustment wrench CW to change the tine pitch forward (Figure 49).
6. Tighten the three 3/8" X 1" carriage bolts to their specified torque.

NOTE

Although the adjustment can be made anywhere along the adjustment slot, aligning the teeth tips with the indicator point, allow you to better identify the position of the reel tine adjustment for both sides (Figure 50).

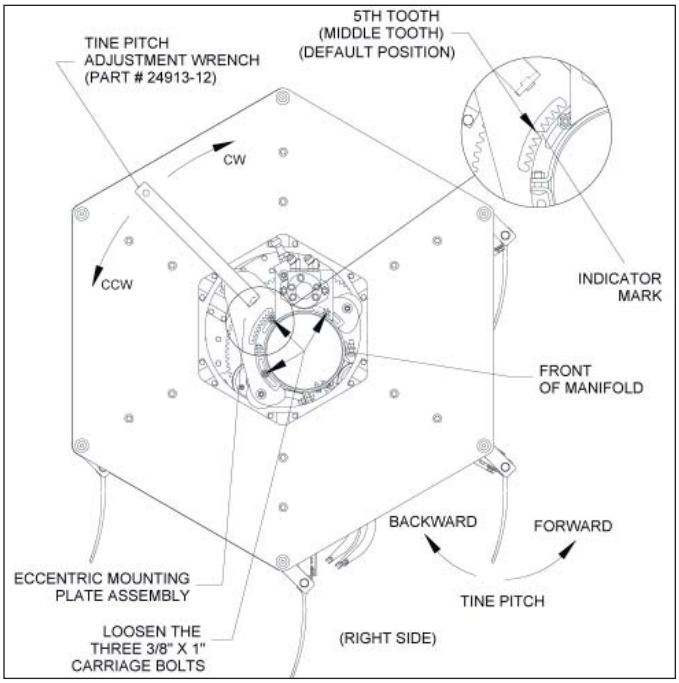


Figure 49, Tine pitch adjustment

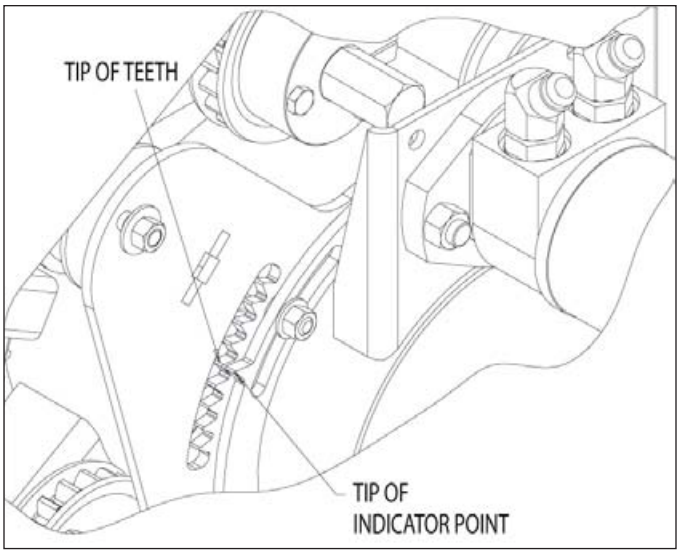


Figure 50, Reel tine adjustment teeth

5.7 OPERATING HINTS

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

WARNING

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

1. Adjust reel speed to slightly faster (5% to 10%) than ground speed
2. Gradually lower reel speed until crop head is slightly tipped towards header and appear to be held stationary when cut
3. Gradually adjust reel height just low enough to tip crop towards head without wrapping
4. Increase air to maximum
5. Move tilt control until air is directed at back of sickle bar with reel feeding properly
6. Gradually reduce air until crop is no longer moving smoothly across sickle
7. Gradually increase air until smooth crop flow across the sickle is achieved.
8. Remember more air uses more horsepower
9. Gradually adjust air position fore and aft until optimum crop flow is achieved.
10. Gradually reduce air further until minimum air is used to maintain crop flow

DO use the reel to bring the crop into the header.

DO operate reel as slow as possible.

DO operate reel as close to auger as possible.

DO keep tines as perpendicular to sickle as possible.

DO use air to feed crop across the sickle.

DO adjust air tube angle to maximize crop flow across the sickle.

DO make adjustments gradually.

DO verify proper air tube position whenever adjusting reel height or fore and aft position.

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

DO follow troubleshooting guide one step at a time.

DO NOT operate reel lower than needed.

DO NOT operate with tines striking the ground or sickle.

DO NOT use more air than needed.

DO NOT operate with plugged air tubes.

5.8 TRANSPORTING

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

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

5.9 STORAGE

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

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

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

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

   C. Hydraulic Components:
      - Check all hydraulic lines for damage; replace as required.

   D. Air Reel Components
      - Air Tubes: repair or replace bent or damaged air tubes.
      - Plastic Tines: repair or replace bent or damaged plastic tines.
      - Manifold Driveshaft Bearings: Driveshaft bearings are sealed bearings and do not need lubrication. If worn or damaged, replace as required.
      - Idler Gears and Bearing Components, Pinion Gears and Bearing Components and Internal Gear sections: Check gears for wear; check for worn or damaged bearings and replace as required; adjust gears as required.
      - Plastic Eccentric Rollers: check for uneven wear; replace as required.

   E. Right Hand Drive Components
      - Roller Chain, Sprockets and Bearings: check for wear; replace as required.
      - Visually inspect fan rotor for wear or buildup.
      - Check condition of the rotary screen bearings.

4. Make a list of all parts needed for repairs and order them immediately. Repairs can then be done when time permits and prevent unnecessary down time at the start of next season.
5. Lubricate all grease points to remove any water residue from the washing and prevent rusting during the storage period. Rotate all moving parts to distribute lubricant to all surfaces.
6. 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 Pre-Operaton and Machine Break-In sections before starting (Sections 5.2 & 5.3).
11. Install all safety shields and review precautions with operators and other personnel involved in the operation.
12. Drain and refill gearbox.

6 Section SERVICE & MAINTENANCE

6.1 MAINTENANCE CHECKLIST

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

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

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

	HOURS										
	SERVICED BY										
	DAILY										
L	PTO CROSS JOURNAL ZERKS										
√	GEARBOX OIL LEVEL										
	16 HOURS										
L	PTO INNER TUBE										
	40 HOURS										
L	PTO SHIELD RETAINING BEARING										
L	PTO DISCONNECT MECHANISM										
√	TENSION OF IDLER GEARS										
√	FAN HOUSING AND DUCTWORK										
√	PLASTIC ECCENTRIC ROLLERS										
	YEARLY										
C	GEARBOX OIL										
√	CONDITION OF FRICTION DISC TORQUE LIMITER (SLIP CLUTCH)										

6.2 FLUIDS AND LUBRICANTS

1. **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.
2. **GEARBOX LUBE:** Use Mobilube HD 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: 40 oz.

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

6.3 GREASING

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

6.4 GEARBOX OIL

CHECKING THE GEARBOX OIL LEVEL

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

The oil level in the gearbox should be no higher than the bottom of the driveshaft (Figure 51).

CHANGING THE GEARBOX OIL

Each gearbox is equipped with a drain plug and a check/fill plug. 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. Add 40 oz of 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: 40 oz.

5. Fill the gearbox oil through the top fill plug.
6. Check that the air passage through the vent plug is open.
7. Dispose of the used oil in an environmentally safe manner.

IMPORTANT

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

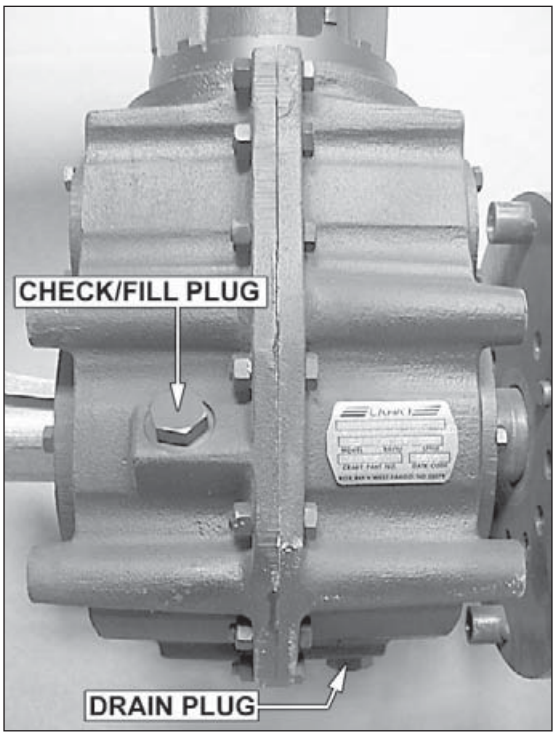


Figure 51, Gearbox oil level

6.5 PTO LUBRICATION

DAILY

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

EVERY 16 HOURS

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

EVERY 40 HOURS

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

Lubricate the PTO disconnect mechanism (Figure 53).

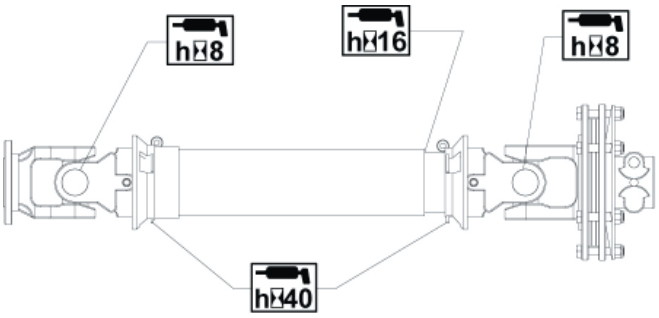


Figure 52, Driveline lubrication

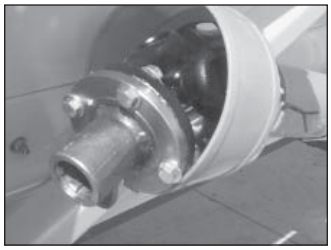


Figure 53, Disconnect mechanism

6.6 IDLER GEAR TENSION

Every 40 hours the tension of the idler gears should be checked. If the tension between the idler gears and internal gear sections of the reel bat arm assembly has any radial movement it will be necessary to make adjustments. When adjusting the tension of the idler to internal gears, follow this procedure.

WARNING

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

1. Loosen the 3/8” centerlock nuts which are on the idler gear assembly on the front side of the manifold.
2. Insert a small pry bar between the outside wall of the manifold tubing and the idler gears. Apply approx. 5 lbs of force to slide the gear away from the manifold (Figure 54).
3. Tighten the 3/8” centerlock nuts to their specified torque.
4. Rotate the reel arm assemblies to ensure they turn freely.

IMPORTANT

Do not grease pinion or idler gears on the reel. Drive shaft bearings on the reel are sealed and do not need lubrication. If worn or damaged, replace as required

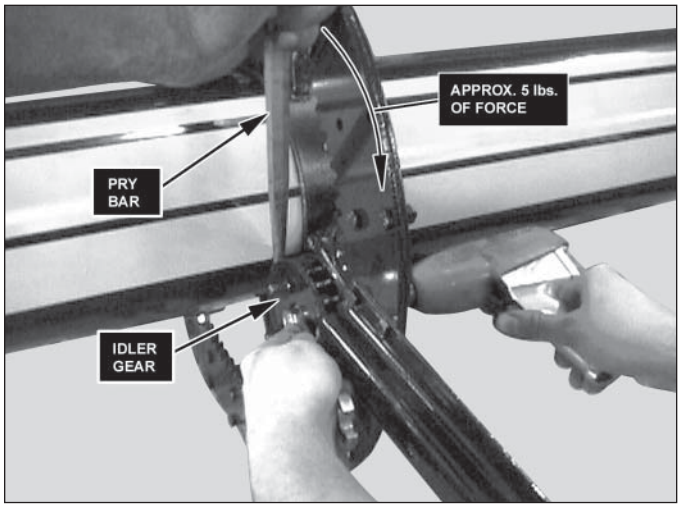


Figure 54, Tightening centerlock nuts of idler gears

6.7 ECCENTRIC ROLLERS (PLASTIC)

Every 40 hours the eccentric rollers should be checked (Figure 55). Flat wear spots may show on the eccentric rollers if they do not rotate while the reel rotates. If this occurs it may be necessary to make adjustments or replace the rollers and/or bearings.

WARNING

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

IMPORTANT

The eccentric rollers must rotate with the reel.

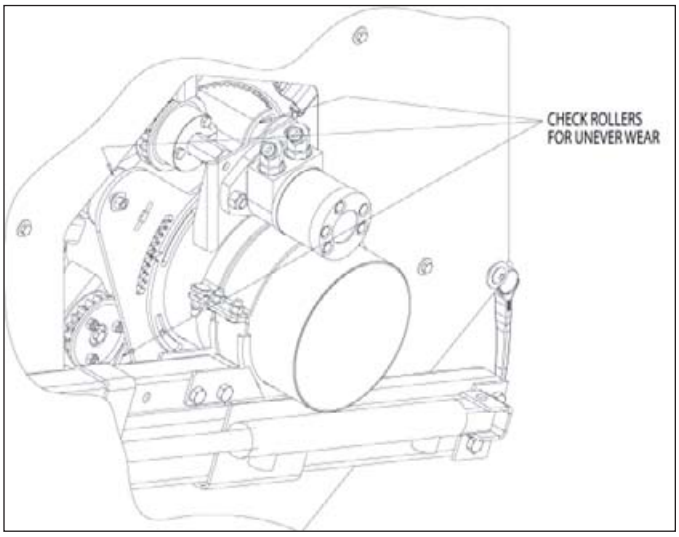


Figure 55, Inspect plastic rollers for uneven wear

1. Inspect the eccentric rollers for uneven wear. If no wear is detected proceed to Step 5.
2. If uneven wear is detected, loosen and remove the bolt and hardware for each roller that is defective.
3. Inspect the radial bearings that are seated in the rollers; check to see if they turn freely.
4. If replacement parts are needed, consult your local authorized Crary dealer.
5. Reassemble the eccentric roller assembly as shown in Figure 56.
6. Readjust the roller firmly against the eccentric ring and tighten bolts to the specified torque. You may need to insert additional washers between the roller and the eccentric mount plate to center the eccentric ring on the rollers.

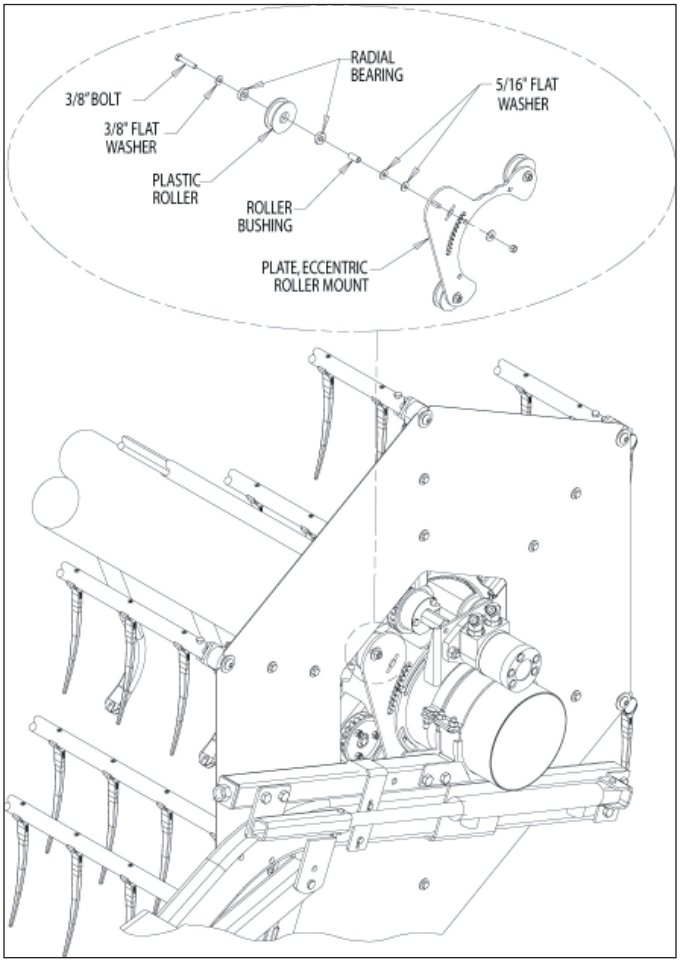


Figure 56, Loosen and remove hardware

6.8 FAN HOUSING AND AIR HOSE

Every 40 hours the fan housing and ductwork should be checked for wear (Figure 57).

Figure 57, Fan housing and air hose

6.9 FRICTION DISC TORQUE LIMITER

1. Disconnect the PTO driveline from the implement (Figure 58).
2. Position the driveline on a workbench.
3. Loosen the eight nuts.
4. Remove bolts and disassemble all components.
5. Check the condition of all parts, especially the friction discs (Figure 59).
6. If replacement parts are needed, consult your local authorized Crary dealer.
7. Reassemble all components.
8. Tighten nuts following an alternating cross pattern until the clutch slips momentarily upon initial startup and then continues to operate normally.

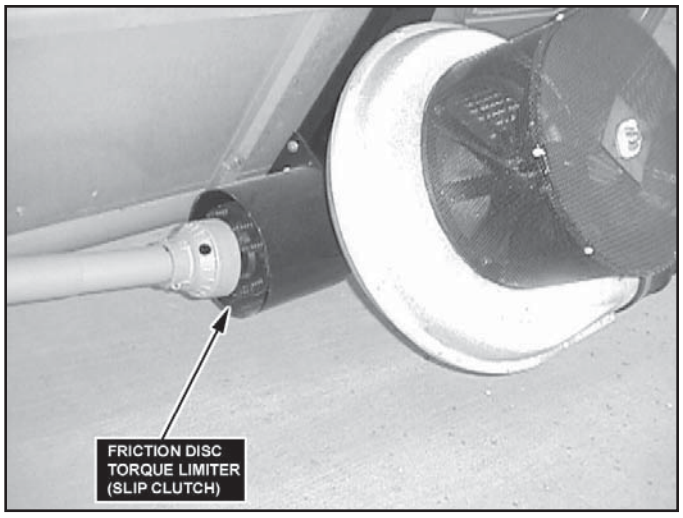


Figure 58, Check condition of torque limiter

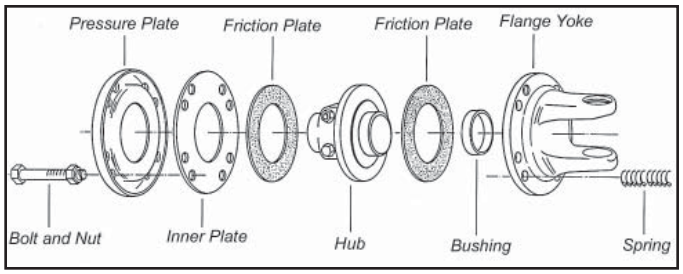


Figure 59, Exploded view of torque limiter

7 Section TROUBLESHOOTING

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

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

BEFORE YOU CALL

Please have the following information available:

Serial # _____

Build-up of crop in corners	Gradually adjust crop dividers to direct crop towards center.
	Gradually direct air from adjustable nozzles to move crop from area
	Add auxiliary tines
Build-up of crop on sickle	Gradually adjust air flow to the middle of the sickle
	Gradually increase air volume until crop flow is achieved.
Crop not feeding auger	Gradually move reel back
	Adjust tine angle one notch at a time closer to perpendicular
	Gradually adjust air flow closer to auger until crop is feeding properly.
	Gradually adjust air volume to achieve optimum crop flow with minimum amount of air
	Gradually increase auger speed
	Gradually increase header speed
Crop not feeding head first	Gradually increase reel speed
	Gradually increase air flow to tilt head of crop towards header
Down or lodged crop	Gradually move reel ahead to achieve best feeding
	Gradually increase reel speed to achieve best feeding
	Gradually adjust air flow forward to assist reel in lifting crop.
	Gradually increase air volume as needed
	Adjust tine angle back one tooth at a time to achieve best feeding
Flying debris	Gradually reduce air flow while maintaining adequate crop flow
Shatter loss	Gradually decrease reel speed
	Gradually increase air flow
Wrapping (reel)	Gradually raise reel to reduce or eliminate wrapping while maintaining crop flow
	Gradually move reel forward to reduce or eliminate rapping while maintaining crop flow
	Gradually reduce reel speed
	Adjust tine angle one notch at a time closer to perpendicular

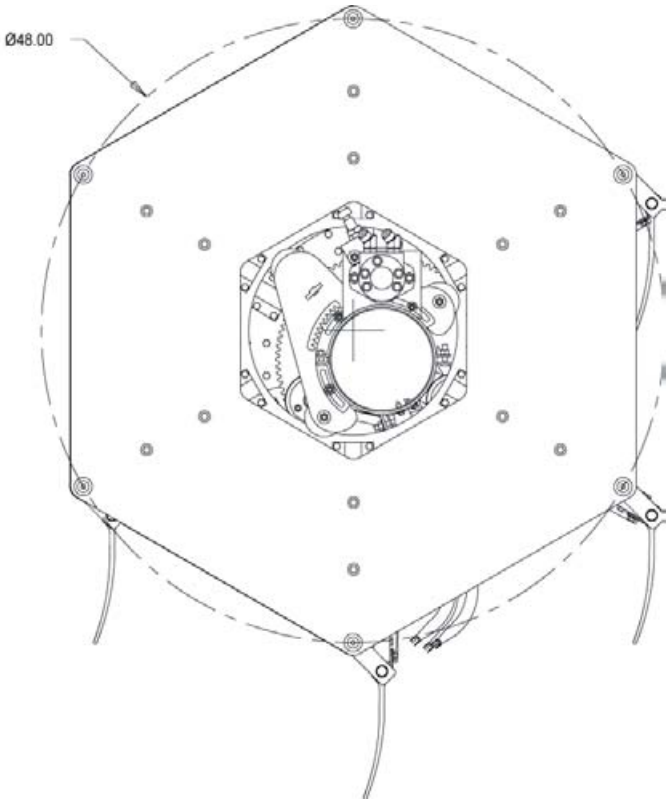
8 Section SPECIFICATIONS

8.1 REEL SPECIFICATIONS

SPEED OF HYDRAULIC DRIVE .....0 - 59 RPM

DIAMETER (BAT REEL) ..... 48”

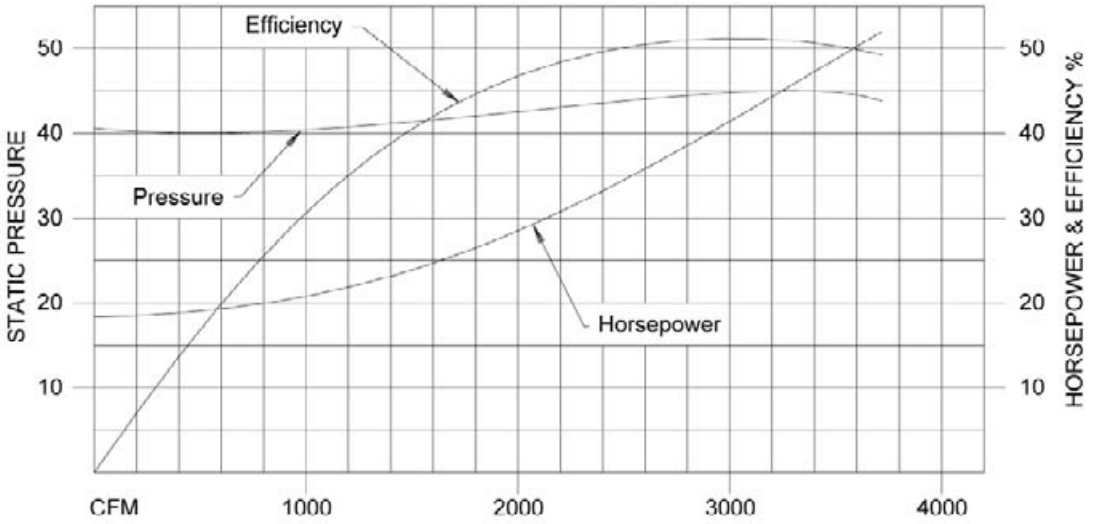
NUMBER OF BATS 6



8.2 FAN PERFORMANCE DATA

4500 RPM
FORWARD CURVE
8" OUTLET FAN

ROTOR SIZE =
16.50" DIA X 3.00" WIDE



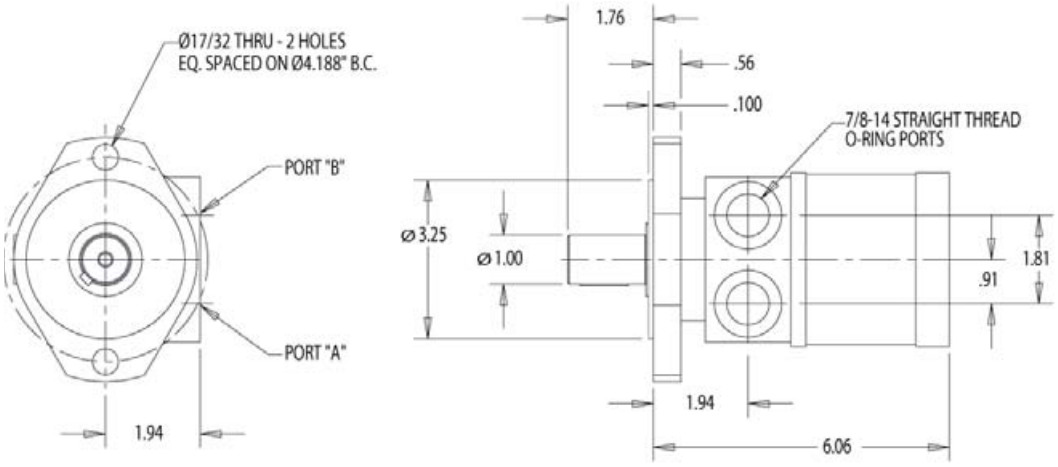
8.3 HYDRAULIC MOTOR DATA

Torqmotor Series		MG08
Displacement	(in³/rev) (cm³/rev)	8.0 130
Pressure (PSI)	Continuous (Differential)[a] (kg-/cm²)	1800 126.6
Torque (in-lbs.) (kg-m)	Continuous Pressure Continuous Flow	1842 21.22
	Intermittent Pressure Continuous Flow	2550 29.38
	Minimum Starting at Continuous Pressure	1482 17.07
	Minimum Starting at Intermittent Pressure	2024 23.32
Flow (GPM) (lpm)	Continuous	12 45
	Maximum	15 57
Speed (RPM)	Cont. Flow & Pressure Max. Flow, No Load	327 430
Weight (Lbs.) (kg)	Standard Mount	13.9 6.32

a - The maximum pressure at the motor inlet or outlet ports without regard to the continuous or intermittent pressure ratings is 2400 PSI (168.7 kg/cm²).

Hydraulic Gear Motor:

- Roller vane rotor set design.
- Full flow lubrication.
- Shaft seal with stands full system pressure.
- Front ports 7/8 - 14 UNF straight thd. o-ring.
- 1” dia woodruff key shaft.
- Roller stator displacement - 8.0 cu. in. per rev.



HYDRAULIC MOTOR MG SERIES PERFORMANCE CHART

Series: MG08 (8.0 Cu. In./Rev.)

Pressure PSID	500	1000	1500	1800	2000	2400
Flow: GPM	**Speed (RPM)** Torque (in lbs.)					
0.5	12 446	10 955	7 1479	5 1797	3 2011	
1.0	27 465	24 989	21 1515	19 1931	17 2043	13 2469
2.0	55 481	52 1023	49 1571	46 1901	44 2120	40 2558
3.0	84 482	81 1029	77 1581	74 1912	72 2133	67 2570
4.0	113 483	109 1042	105 1605	102 1940	100 2164	95 2608
5.0	142 478	138 1041	133 1610	130 1951	128 2179	122 2632
7.0	199 450	195 1019	190 1597	186 1943	184 2174	177 2632
9.0	257 414	252 984	246 1563	242 1911	239 2145	233 2612
12.0	343 335	338 907	331 1489	327 1842	323 2076	316 2550
15.0	430 253	424 818	416 1393	411 1740	407 1974	399 2443

Testing was done at 130° F using 10W40 Oil.

- Intermittent rating all others continuous

8.4 HYDRAULIC FITTING TORQUE

TIGHTENING FLARE TYPE TUBE FITTINGS *

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

FLARE TYPE TUBE FITTINGS					
TUBE SIZE O.D	NUT SIZE ACROSS FLATS	TORQUE VALUE *		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
(in.)	(in.)	(N.m)	(Ft-lb.)	(Flats)	(Turn)
1/5	2/5	8	6	1	1/6
1/4	4/7	12	9	1	1/6
1/3	5/8	16	12	1	1/6
3/8	2/3	24	18	1	1/6
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1-1/4	102	75	3/4	1/8
7/8	1-3/8	122	90	3/4	1/8

* The torque values shown are based on lubricated connections as in reassembly

TIGHTENING O-RING FITTINGS *

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back the centerlock nut off until washer bottoms out at top of groove.
3. Hand tighten fitting until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.
4. Position angle fittings by unscrewing no more than one turn.
5. Tighten straight fittings to torque shown.
6. Tighten while holding body of fitting with a wrench.

O-RING FITTINGS					
TUBE SIZE O.D	NUT SIZE ACROSS FLATS	TORQUE VALUE *		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
(in.)	(in.)	(N.m)	(Ft-lb.)	(Flats)	(Turn)
3/8	1/2	8	6	2	1/3
7/16	9/16	12	9	2	1/3
1/2	5/8	16	12	2	1/3
9/16	11/16	24	18	2	1/3
3/4	7/8	46	34	2	1/3
7/8	1	62	46	1-1/2	1/4
1-1/16	1-1/4	102	75	1	1/6
1-3/16	1-3/8	122	90	1	1/6
1-5/16	1-1/2	142	105	3/4	1/8
1-5/8	1-7/8	190	140	3/4	1/8
1-7/8	2-1/8	217	160	1/2	1/12

* The torque values shown are based on lubricated connections as in reassembly

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

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

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

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

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

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