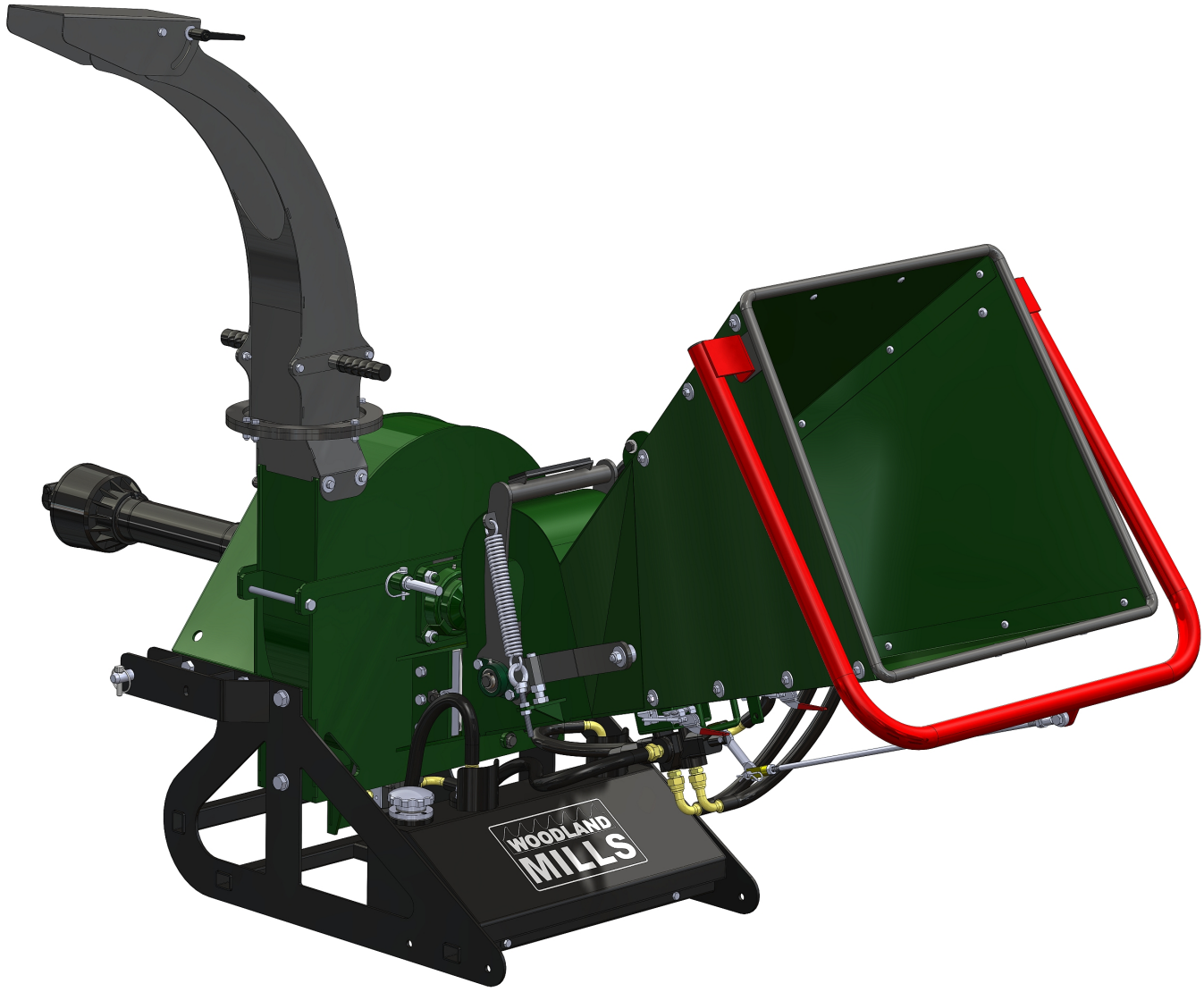
DS68 DUAL STAGE WOOD CHIPPER



0002171-M-EN: Rev A
Publication Date: 01-Dec-2021

OPERATOR'S MANUAL

WOODLAND MILLS

DISCOVER THE WOODLAND™

TABLE OF CONTENTS

INTRODUCTION

Congratulations on your purchase and welcome to Woodland Mills! This manual gives you the necessary information about your machine so you will be able to use it properly. The entire manual must be read and understood before you start using the machine. If any questions should arise that are not covered by this manual, please contact Woodland Mills Inc.

OWNER'S RECORD

Please take a moment to record the following information about your wood chipper. If you need to call for assistance, please be ready to provide your model and serial numbers. This information will allow us to help you more quickly when you call.

MODEL NUMBER

SERIAL NUMBER

DATE OF PURCHASE

This machine is designed for certain applications only. We strongly recommend that this machine is not modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, DO NOT use the machine until you have first contacted us to determine if it can or should be performed on the product.

For technical questions and replacement parts, please contact Woodland Mills Inc.

INTENDED USE

Woodland Mills wood chippers are designed for acreage owners to aid in chipping natural, untreated wood only. Materials that are processed may contain chemicals or by-products that could corrode the machine or damage it, resulting in safety concerns.

SAFETY GUIDELINES

SAVE THESE INSTRUCTIONS

- Do not operate this machine until this manual has been read and fully understood; serious injury or severe machine damage could occur if these safety warnings are ignored.
- Never allow more than one person to operate this machine at one time. If two people are working together it will increase the chance of your workmate engaging the machine or causing you to fall into the machine.
- If your hand is ever near the chipping or feeding area, serious injury could occur.
- Never place your hands or feet on or near the machine while it is engaged.
- Never place your hands or feet on or near the material while it is feeding.
- DO NOT wear loose clothing, jewelry, or anything that can catch a branch that is feeding into the wood chipper.
- DO NOT stand directly in front of the infeed chute when loading material into the hopper; always load from the side of the hopper. This will help prevent any part of your body from being pulled into the machine.
- Always wear safety hearing protection, eye wear, gloves, and long pants when operating the wood chipper.
- Never place your hands beyond the opening of the hopper while the wood chipper is running.
- Never allow children, disabled, or untrained persons to operate the wood chipper.
- Do not operate the wood chipper near bystanders, public roads, or anywhere that debris may travel far enough to injure another person.
- Never move the wood chipper while it is running.
- Shut off the tractor and allow the wood chipper to come to a complete stop before removing any debris.
- Never perform any maintenance or repair while the wood chipper is running.

ROTATING DRIVELINES

STAY CLEAR OF ROTATING DRIVELINES

- Entanglement in rotating driveline can cause serious injury or death.
- Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields spin freely.
- Wear close-fitting clothing.
- Shut off the engine and be sure the PTO driveline has stopped before making adjustments, connections, or cleaning out PTO-driven equipment.
- Do not install any adapter device between the tractor and the primary implement PTO drive shaft that would allow a 1000 RPM tractor shaft to power a 540 RPM implement at speeds higher than 540 RPM.
- Do not install any adapter device that results in a portion of the rotating implement shaft, tractor shaft, or the adapter to be unguarded. The tractor master shield shall overlap the end of the splined shaft.

WARNING!

Read and understand all instructions. Failure to properly follow the instructions listed below may result in serious injury or death.

WARNING!

The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions or situations that could occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product but must be supplied by the operator.

PERSONAL SAFETY

- **Stay alert**, watch what you are doing and use common sense when operating a power tool. Do not use a power tool when you are tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.
- **Dress properly.** Do not wear loose clothing, dangling objects, or jewelry. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts. Air vents often cover moving parts and should be avoided.
- **Use safety apparel and equipment.** Use safety goggles or safety glasses with side shields that comply with current national standards, or when needed, a face shield. Use a dust mask in dusty work conditions. This applies to all persons in the work area. Also use non-skid safety shoes, a hardhat, gloves, dust collection systems, and hearing protection when appropriate.
- **Do not over reach.** Keep proper footing and balance at all times.
- **Remove adjusting keys or wrenches** before connecting to the power supply or turning on the tool. A wrench or key that is left attached to a rotating part of the tool may result in personal injury.
- **Never remove or install blades, conduct any maintenance, or make any other adjustments while the tractor engine is running.** Always shut the engine off, remove the ignition key, and disconnect the PTO shaft prior to carrying out any of the aforementioned procedures. Consult your tractor's manual for safe shutdown procedures to prevent accidental ignition.

WORK AREA

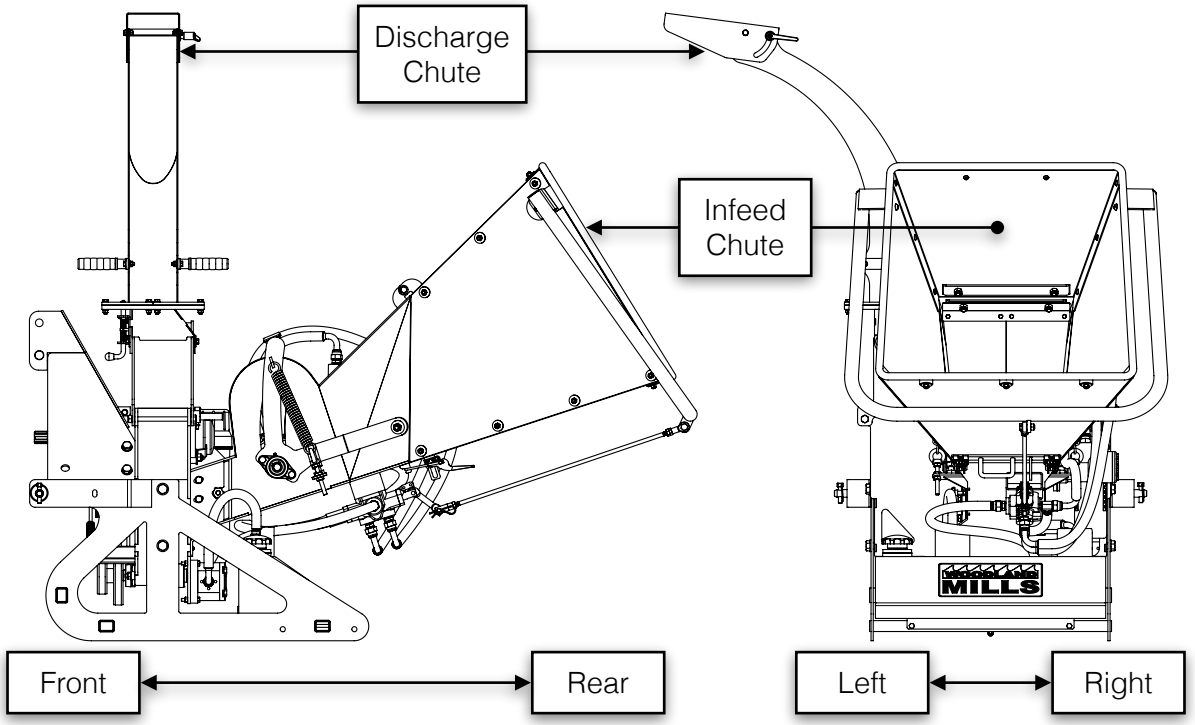
- **Keep work area clean**, free of clutter and well lit. Cluttered and dark work areas can cause accidents.
- **Do not use your wood chipper where there is a risk of causing a fire or an explosion**; e.g. in the presence of flammable liquids, gasses, or dust. Power tools create sparks which may ignite the dust or fumes.
- **Keep children and bystanders** away while operating a power tool. Distractions can cause you to lose control, therefore, visitors should remain a safe distance from the work area.
- **Be aware of all power lines, electrical circuits**, water pipes and other mechanical hazards in your work area, particularly those hazards below the work surface hidden from the operator's view that may be unintentionally contacted and cause personal harm or property damage.
- **Be aware of your surroundings.** Using power tools in confined work areas may put you dangerously close to cutting tools and rotating parts.

TOOL USE AND CARE

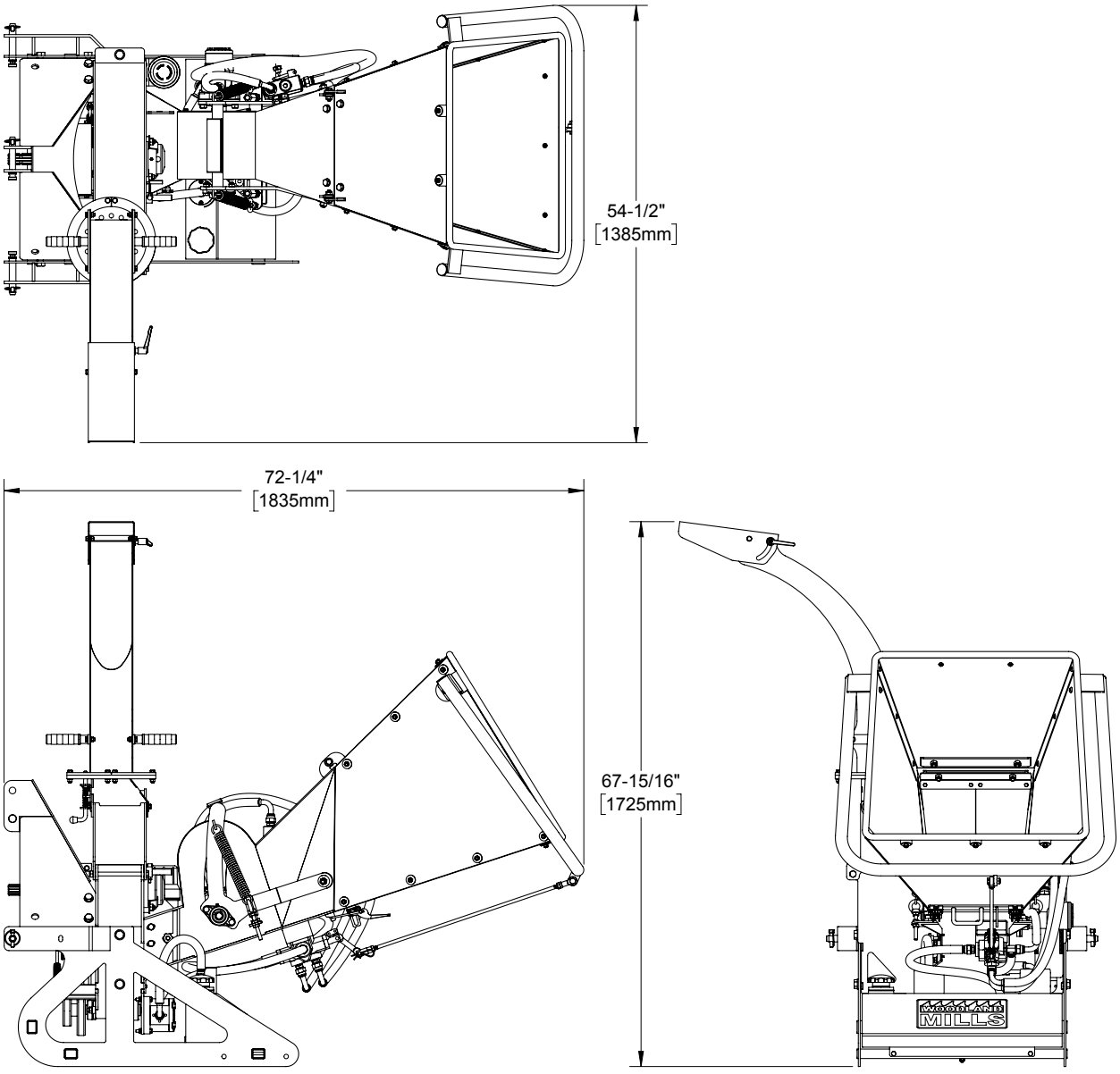
- **Always be sure the operator is familiar** with proper safety precautions and operation techniques before using machine.
- **Do not force the tool.** Tools do a better and safer job when used in the manner for which they are designed.
- **Turn off the tractor engine** and disconnect the PTO shaft before servicing, adjusting, installing accessories or attachments, or storing. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- **Storing the wood chipper.** When the wood chipper is not in use, store it in a dry, secure place or keep it well covered and out of reach of children. Inspect the wood chipper for good working condition prior to storage and before re-use.
- **Maintain your wood chipper.** It is recommended that the general condition of the wood chipper be examined before it is used. Keep your wood chipper in good repair by adopting a program of conscientious repair and maintenance in accordance with the recommended procedures found in this manual. If abnormal vibration or noise occurs, turn the wood chipper off immediately and have the problem corrected before further use.
- **Keep blades sharp and clean.** Properly maintained wood chipper blades are less likely to bind and make feeding-in brush easier.
- **Cleaning and Lubrication.** Use only soap and a damp cloth to clean your wood chipper. Many household cleaners are harmful to plastic and rubber components on the wood chipper.
- **Use only accessories that are recommended** by the manufacturer for your model. Suitable accessories for another wood chipper may create an injury risk when used on this wood chipper.
- **Always** operate the machine with all safety devices and guards in place and in working order. DO NOT modify or make changes to safety devices. DO NOT operate the machine if any safety devices or guards are missing or inoperative.
- **Never leave wood chipper running unattended.**
- **Never use the equipment to chip brush with trunks exceeding 6" (152 mm) in diameter** or for any purpose other than chipping brush as described in this manual.

TECHNICAL SPECIFICATIONS

Component	DS68 Specification
Drive System	PTO
Transport	3-Point Hitch
Minimum HP Required (at PTO)	20 hp
In-Feed System	Hydraulic
Hydraulic Oil	ISO 32 (ISO 46 for warmer climates)
Hydraulic Tank Volume	5 gal [19 L]
Hydraulic Requirement (Tractor)	None. Self contained.
PTO Shear Bolt	M8 X 50 mm Hex Bolt - Class 8.8 (Grade 5)
Blade Quantity and Dimensions	Four (4); 8.62 X 2.72 X 5/16" [219 X 69 X 8 mm]
Blade Hardware	M10 X 16 mm Hex Head, Class 10.9
Infeed Roller Diameter	7-1/4" [185 mm] at Tooth Tip
Infeed Chute Dimensions	26" X 24" [660 mm x 610 mm]
Product Weight	710 lb [322 kg]
Product Shipping Weight	800 lb [363 kg]

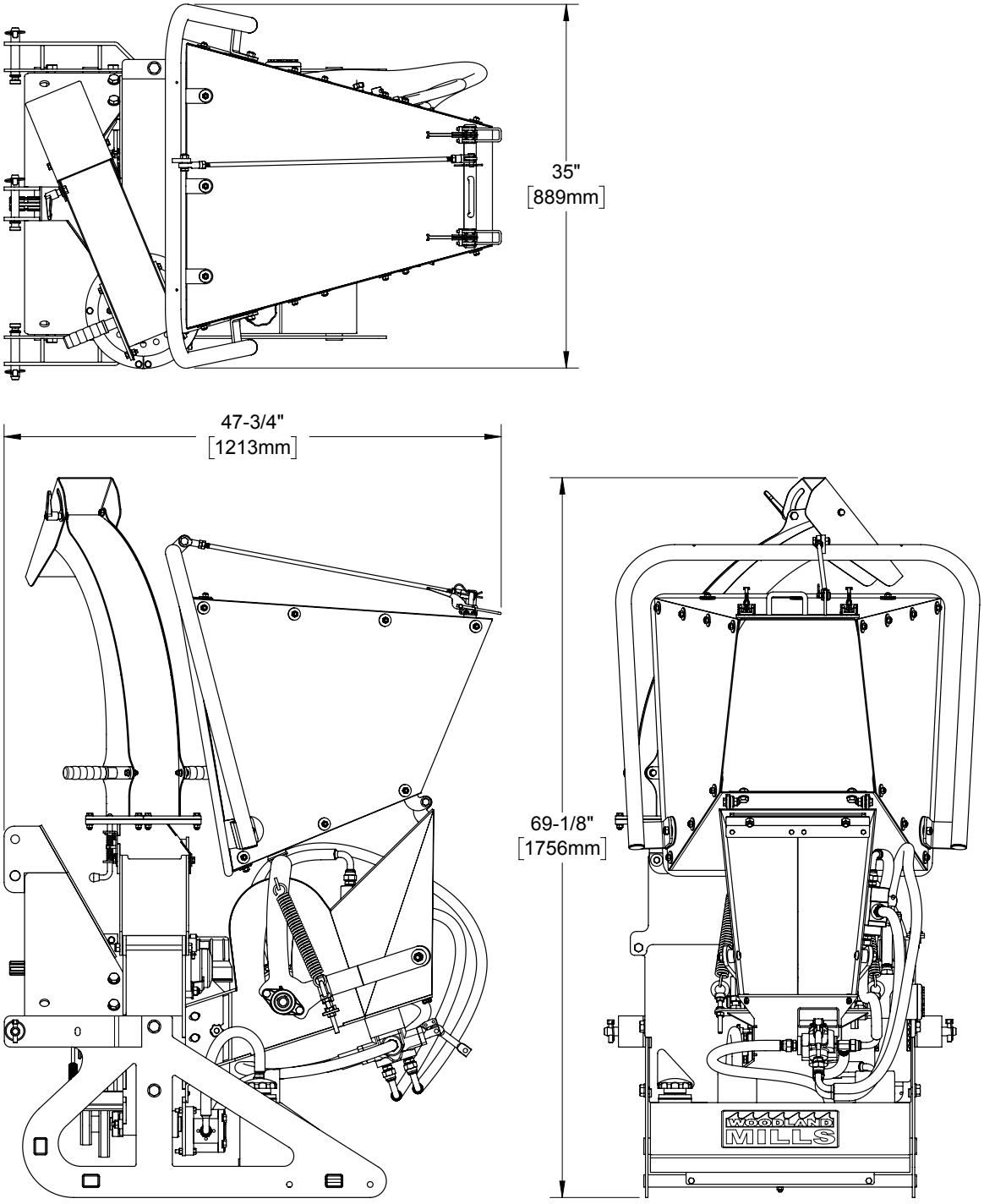


i. OVERALL DIMENSIONS—OPERATING STATE



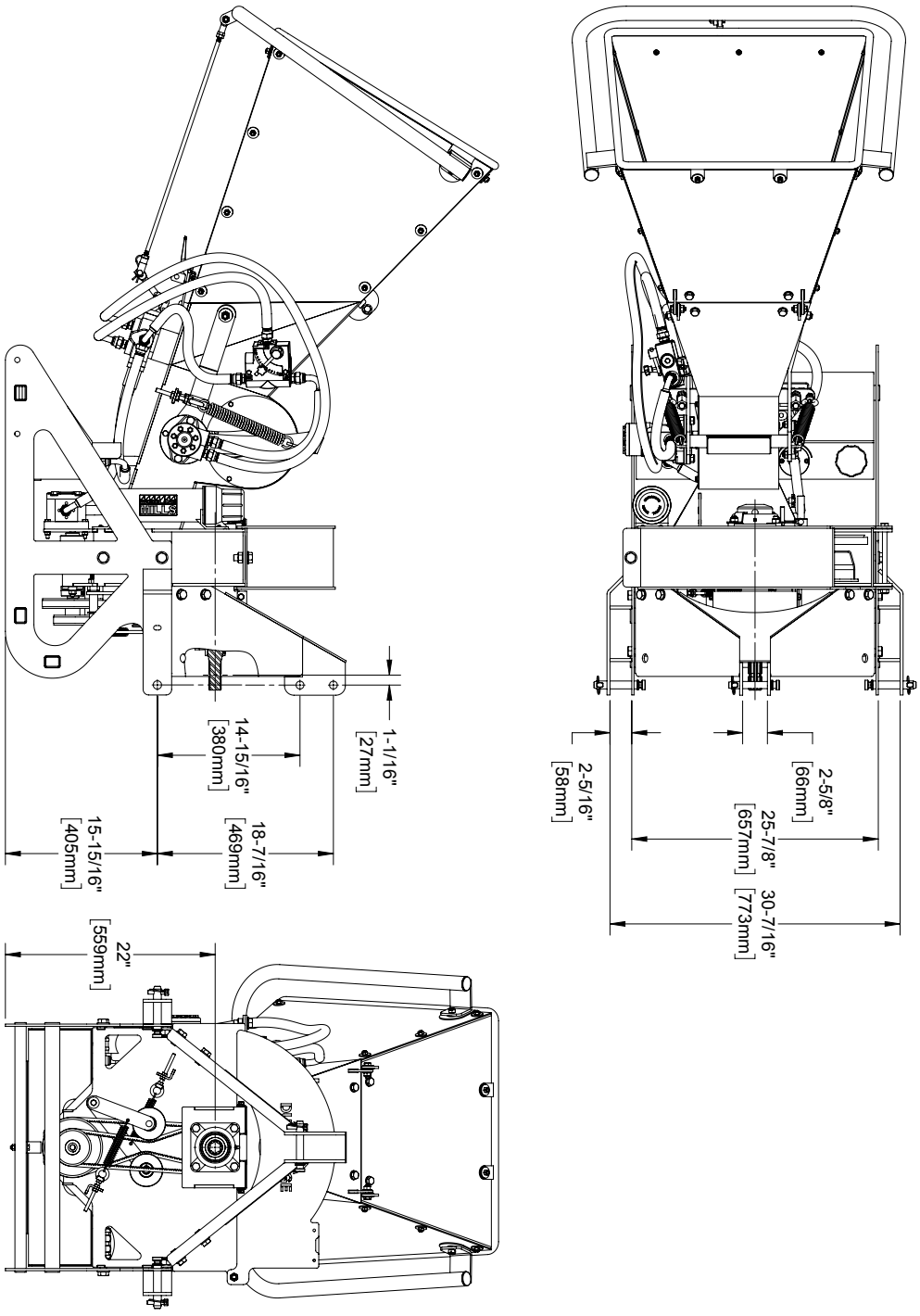
ii. OVERALL DIMENSIONS—STORED STATE

The discharge chute must be rotated so that it is angled towards the left side of the chipper in order to allow room for the infeed chute to be flipped upward when the machine is in its stored state. See section, ***Storage***, for more information.



iii. 3-POINT HITCH DIMENSIONS

The wood chipper 3-point hitch is a *Category 1* system design to work with tractors in the horsepower range of 20-50 hp. Top link pin is ¾" (19 mm) diameter and the lift arm pins are ⅞" (22 mm) diameter.

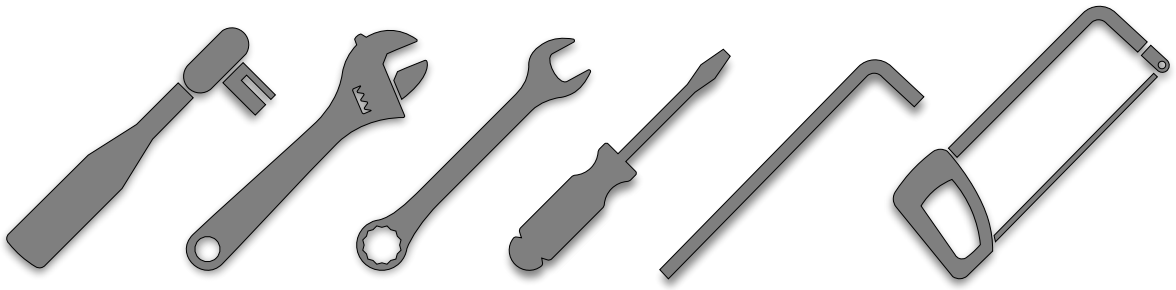


ASSEMBLY

1. TOOLS REQUIRED

Tool	Specification
Wrench/Socket	13 mm (2X)
Wrench/Socket	16 mm (2X)
Wrench/Socket	17 mm
Wrench/Socket	24 mm or Adjustable Wrench
Wrench	27 mm or Adjustable Wrench
Hex Key	Set of Metric Hex Keys (e.g. 2-10 mm)
Hacksaw*	Any metal-cutting saw (Sawzall, etc.)

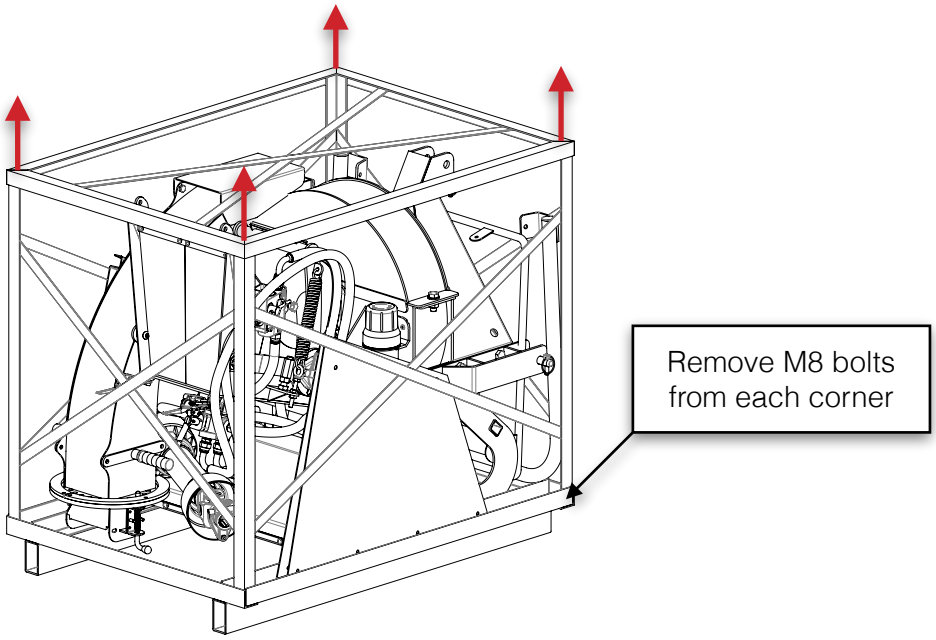
* Only if PTO shaft requires trimming. See ***Trimming the PTO Shaft*** section for more detail.



2. UNPACKING

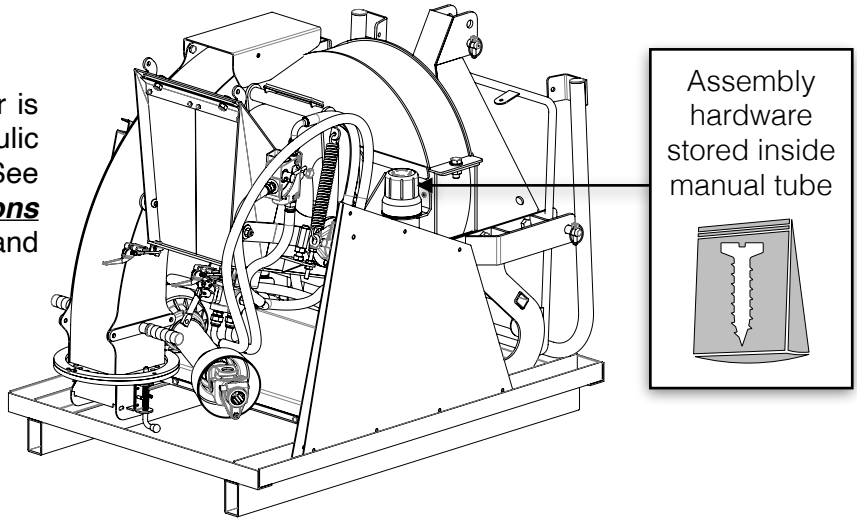
A. UNBOXING THE CRATE

Unpack the contents of the crate by first cutting the nylon strapping and then remove the cardboard top and sides. Remove the four (4) M8 hex bolts and nuts located at each bottom corner of the crate and then lift it off the skid. Discard the crate.



Remove all the loose components from the skid (infeed chute panels, control arm, edge bar, control arm linkage, discharge chute, PTO shaft, hardware boxes) and set them to the side. Use the tractor's 3-point hitch system to lift the wood chipper off the skid and set it on the ground. Discard the skid.

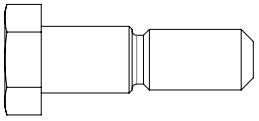
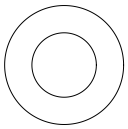
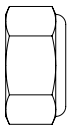
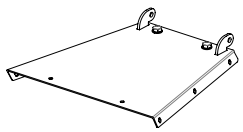
Note that the wood chipper is shipped dry (i.e. no hydraulic fluid) from the factory. See the ***Technical Specifications*** section for the volume and type of oil required.

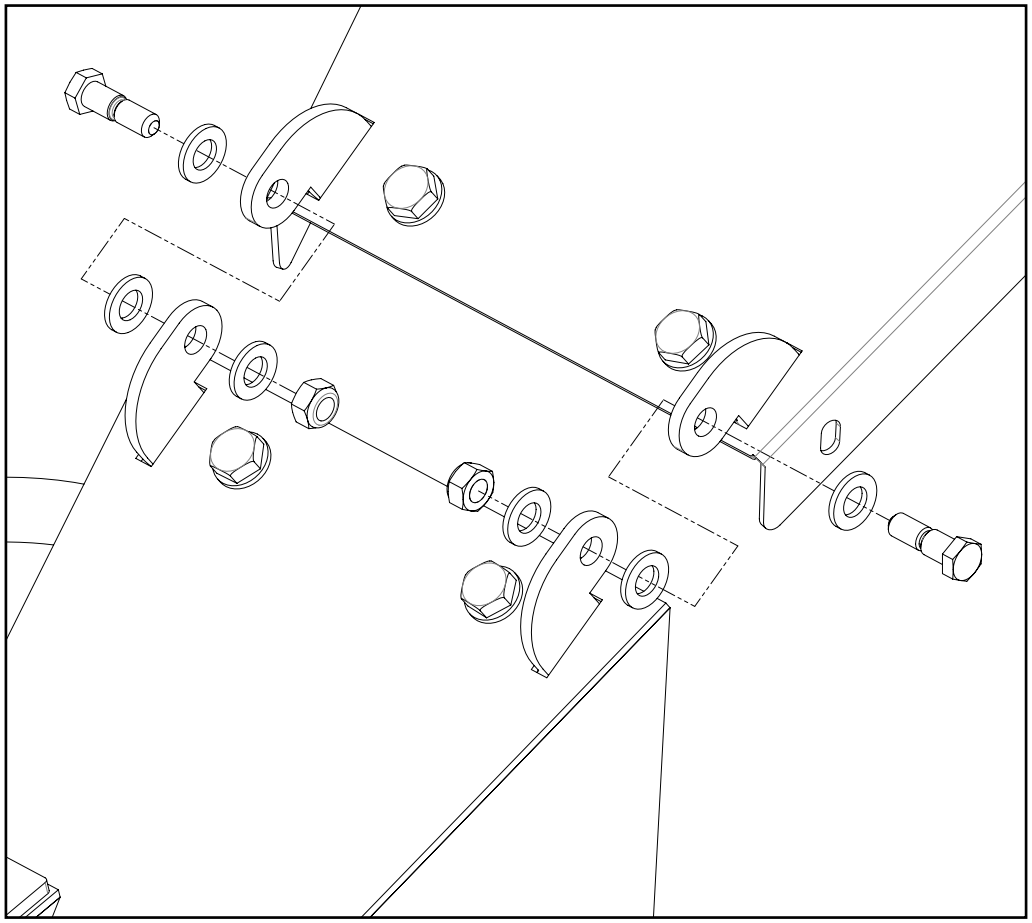


3. INFEED CHUTE

A. TOP PANEL

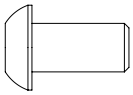
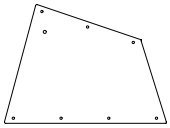
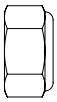
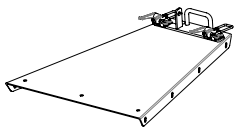
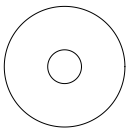
The wood chipper infeed chute consists of four (4) metal panels that are bolted together. The first step is bolting the top panel to the lower flywheel housing that forms the hinge. Using the hardware listed in the table below, assemble the hinge connection with sockets/wrenches. Note that the infeed chute top panel and hinge bracket come pre-assembled from the factory.

2x	M10 X 15 X 20 mm Shoulder Bolt		6x	M12 Nylon Flat Washer	
2x	M10 Lock Nut		1x	Infeed Chute Top Panel	

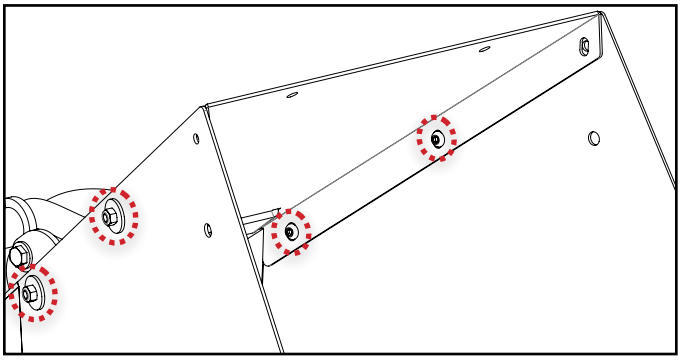


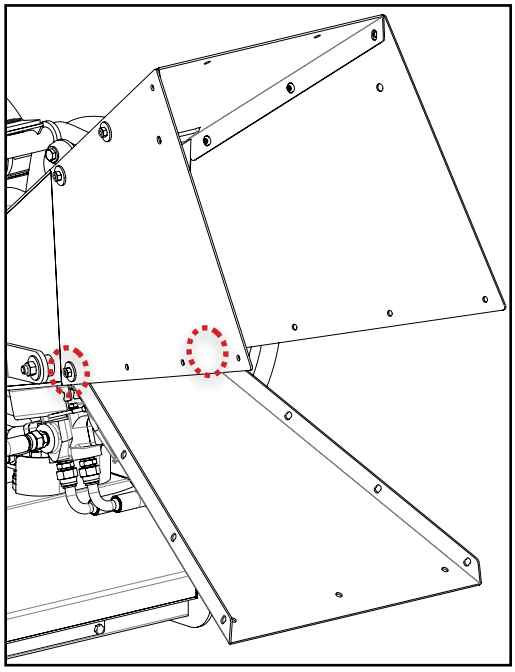
B. SIDE PANELS AND BOTTOM PANEL

With the top panel bolted to the hinge, assemble each side panel to the sides of the top panel using the M8 X 16 mm button head screws, M8 lock nuts, and M8 fender washers.

6x	M8 X 16 mm Button Head Screw		2x	Infeed Chute Side Panel	
6x	M8 Lock Nut		1x	Infeed Chute Bottom Panel	
6x	M8 X 30 mm Fender Washer				

Install two (2) screws per side along the top edge leaving the last holes empty. Do not fully tighten the screws. Be sure to assemble the screws with the heads on the inside of the chute pointing outwards. Next, install the bottom panel using only the first two (2) bolts as shown below (right). This will allow it to swing up to join the side panels in the coming steps. Note that the infeed chute bottom panel and latches come pre-assembled from the factory.

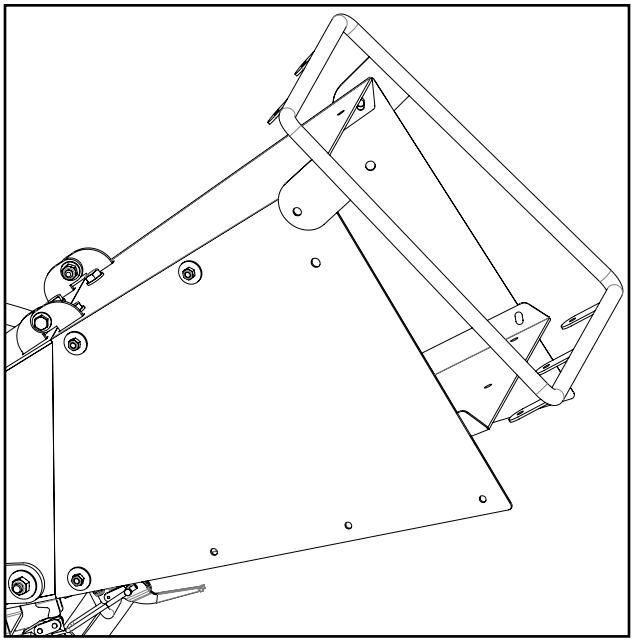


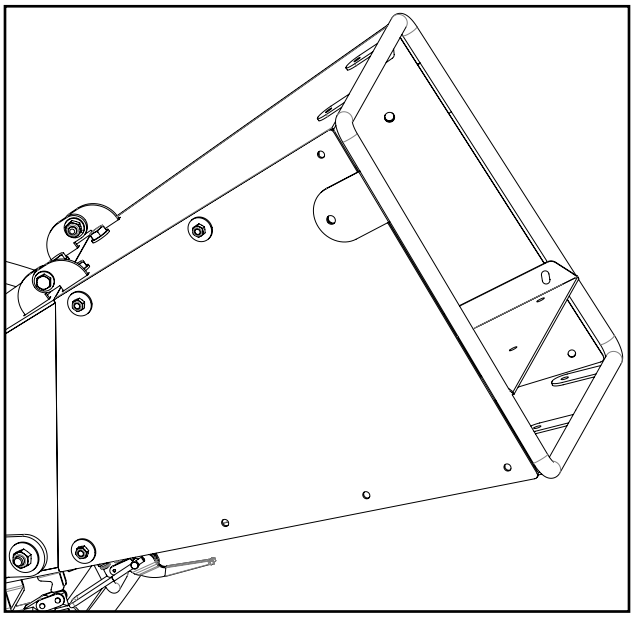


C. EDGE BAR

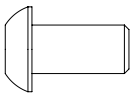
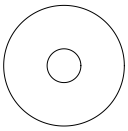
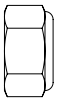
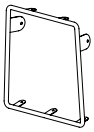
The round edge bar is designed to add additional strength to the infeed panels as well as act as a rounded edge, eliminating branches from getting caught on the edge of the infeed panels.

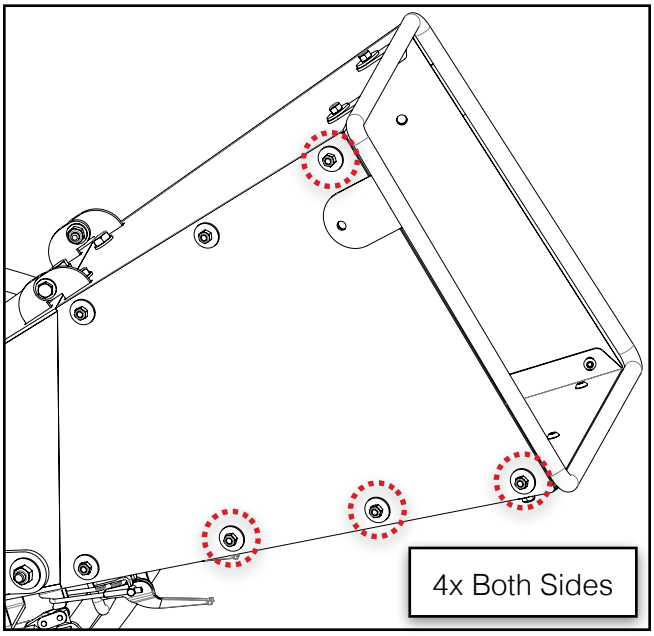
To install the edge bar, swing the bottom panel up as shown below and fit the tabs over the outside of the panels. There are two tabs on the side of the round edge bar which will be bolted to the side panels in a later step.

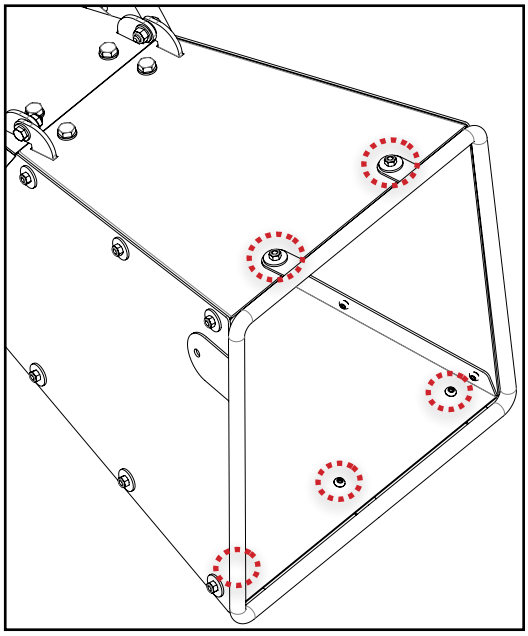




With the edge bar in place, use the hardware listed below to assemble the panels and the edge bar. Use a hex key for the button head screws and a socket/wrench for the lock nuts. Install the remaining thirteen (13) M8 X 16 mm button head screws, M8 lock nuts, and M8 X 30 mm fender washers as shown below to secure the panels and edge bar in place. Do not fully tighten the screws.

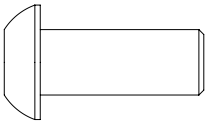
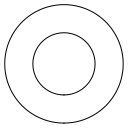
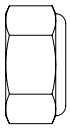
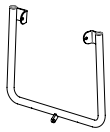
13x	M8 X 16 mm Button Head Screw		13x	M8 X 30 mm Fender Washer	
13x	M8 Lock Nut		1x	Infeed Chute Round Edge Bar	



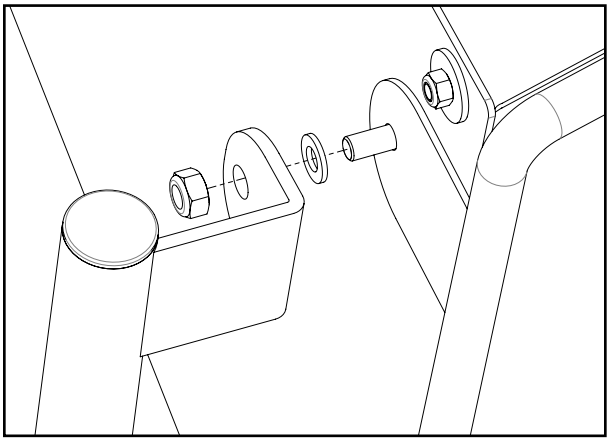


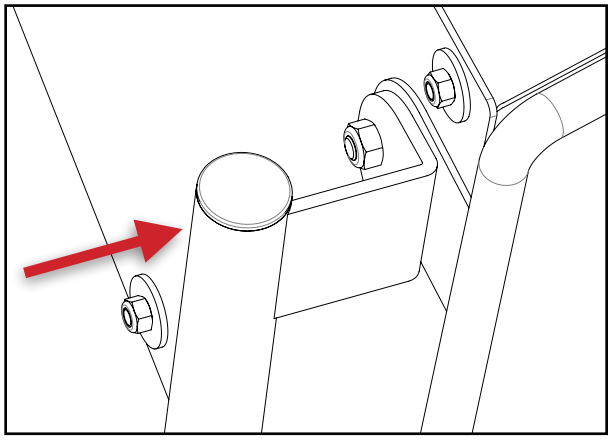
D. CONTROL ARM

The large red infeed control arm is attached using the hardware listed below.

2x	M10 X 25 mm Button Head Screw		2x	M10 Flat Washer	
2x	M10 Lock Nut		1x	Control Arm	

The screw passes through the green chute panel, the grey edge bar side tab, and finally through the red control arm tab as shown below.



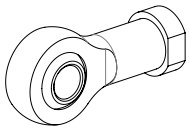
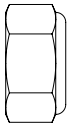
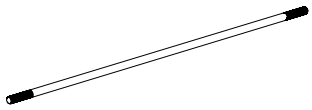
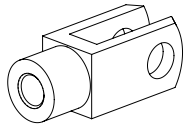
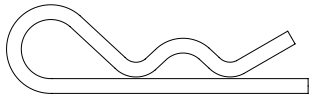


Note that the distance between the unassembled red infeed control arm mounting tabs can be significantly wider than the infeed chute. This is normal and the arm will flex when compressed. Assemble one side of the control arm first (but do not fully tighten it), then pull the other end in and secure that side.

With all of the infeed panel, edge bar, and control arm screws now loosely assembled, tighten all screws securely.

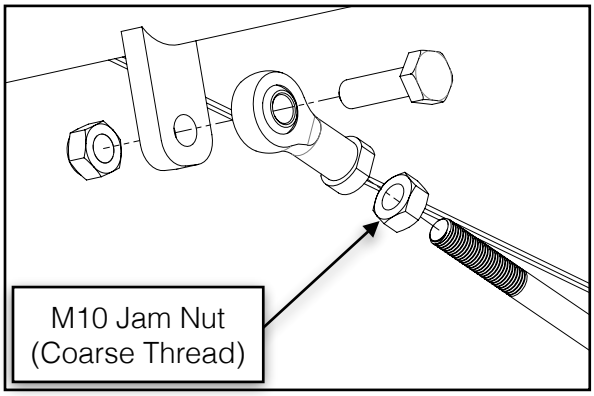
E. CONTROL ARM LINKAGE

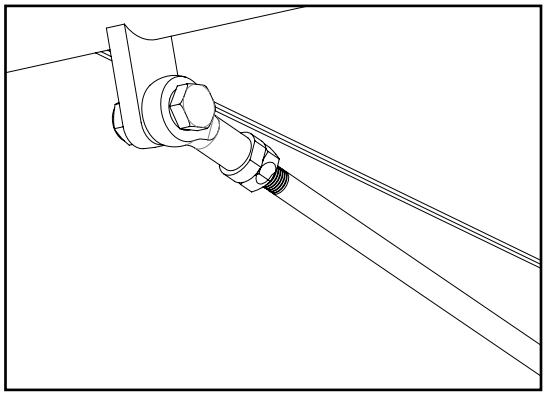
With the control arm fastened to the infeed chute, the linkage bar can now be connected between it and the hydraulic directional control valve.

1x	M10 X 35 mm Hex Bolt		1x	Rod End Bearing	
1x	M10 Lock Nut		1x	Control Arm Linkage Bar	
1x	M10 Jam Nut (Coarse Thread)		1x	Clevis Rod End	
1x	M10 X 1.25 Jam Nut (Fine Thread)		1x	10 mm Clevis Pin	
			1x	Hairpin Cotter Pin	

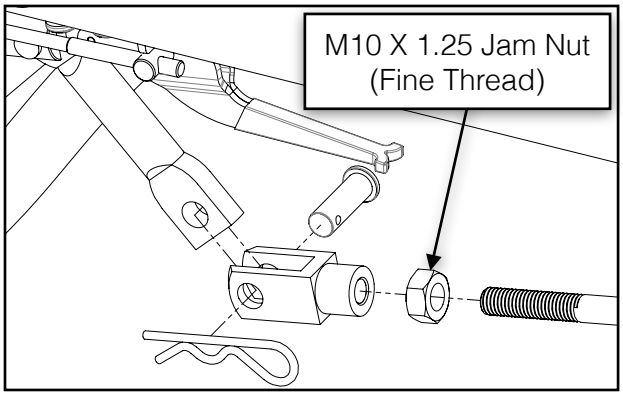
Thread the M10 jam nut (coarse thread) and rod end bearing onto the end of the linkage bar. Be sure the linkage bar is oriented properly so that the coarsely-threaded end is used (see below-left). Using two wrenches/sockets, fasten the rod end bearing to the red control arm with the M10 X 35 mm hex bolt and M10 lock nut

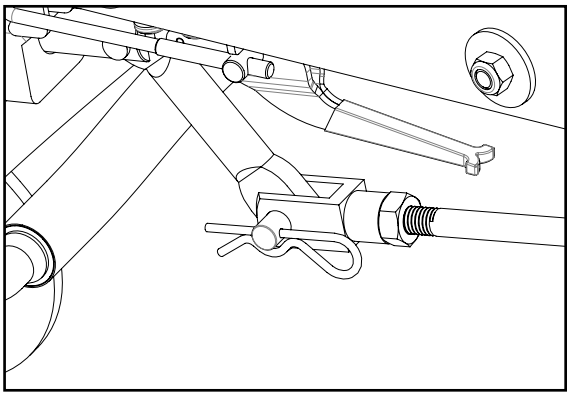
.



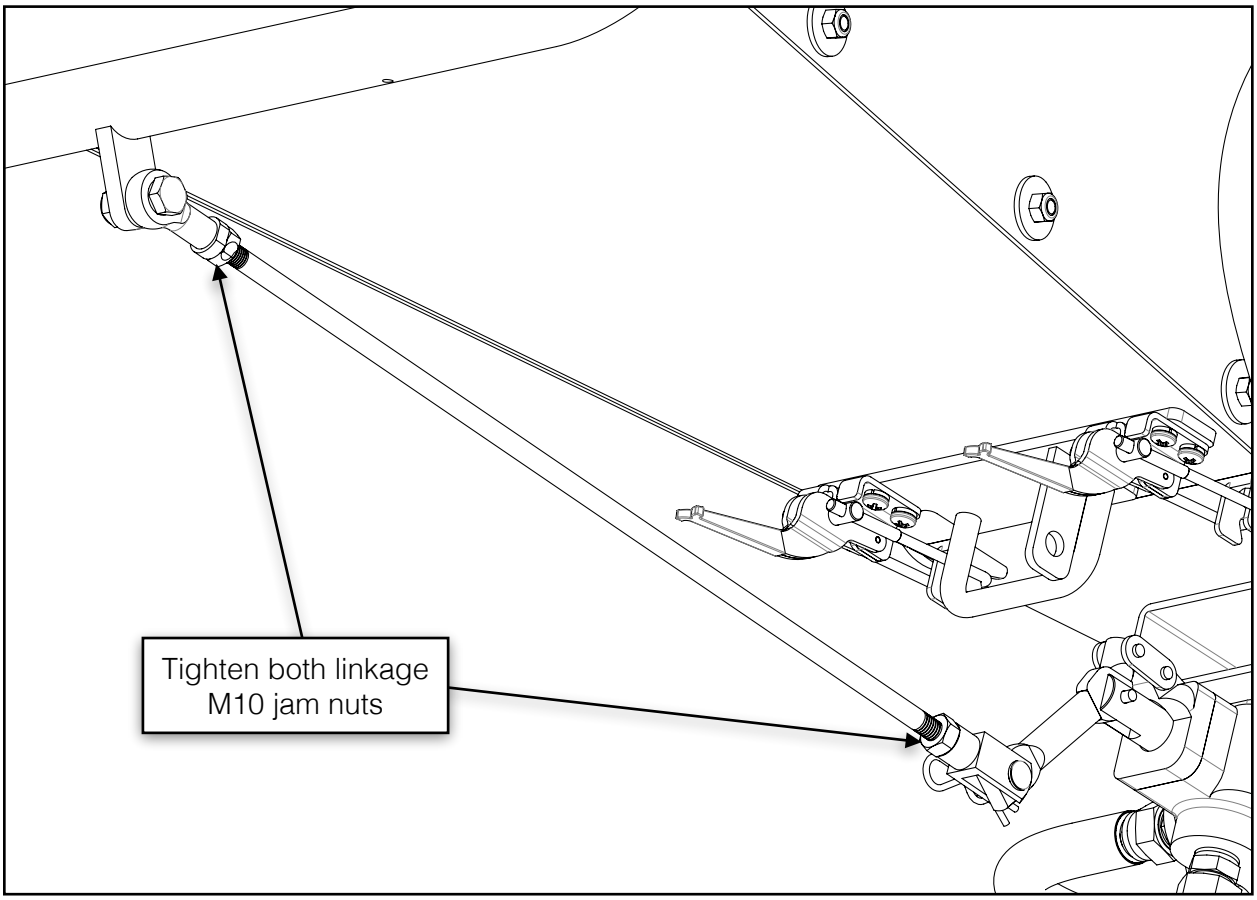


On the opposite end of the linkage, thread the M10 X 1.25 jam nut (fine thread) and clevis rod end onto the linkage bar. Secure the linkage to the the hydraulic directional control valve actuator using the clevis pin and hairpin cotter pin.



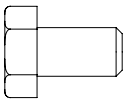
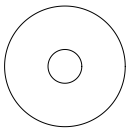
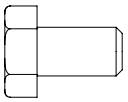
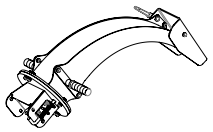
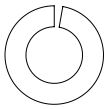


Use a 17 mm wrench to tighten both jam nuts once the linkage has been assembled.

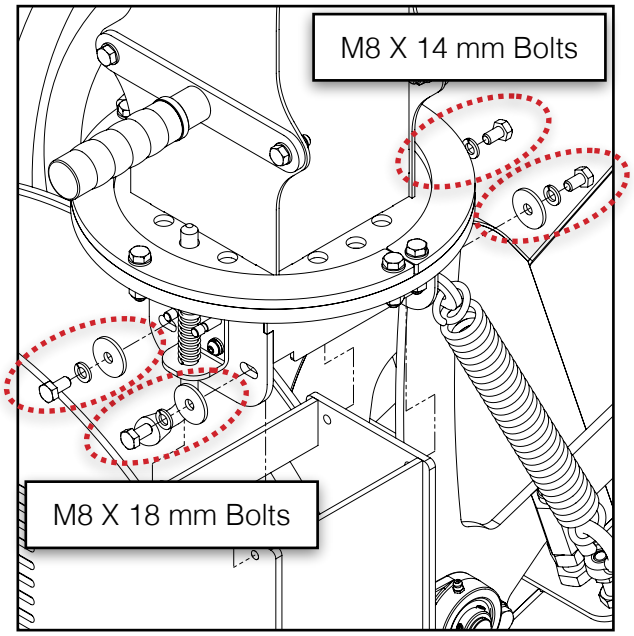


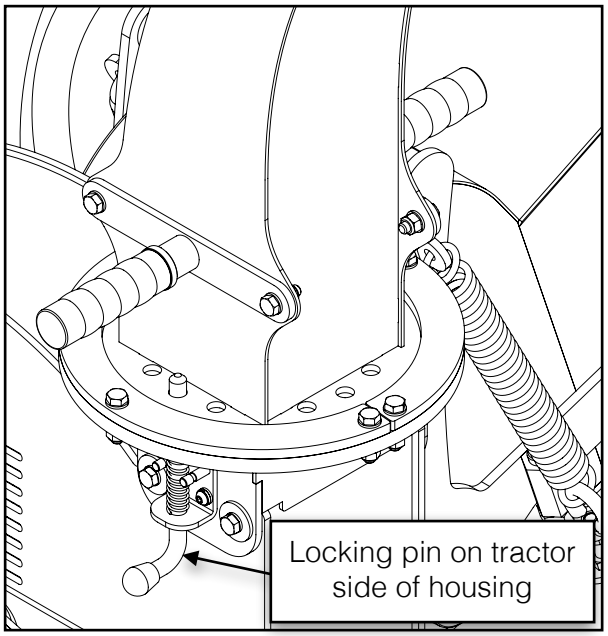
4. DISCHARGE CHUTE

The discharge chute comes pre-assembled from the factory. Using the hardware listed below, fasten the discharge chute assembly to the upper flywheel housing.

2x	M8 X 18 mm Hex Head Bolt		4x	M8 X 30 mm Fender Washer	
2x	M8 X 14 mm Hex Head Bolt		1x	Discharge Chute Assembly	
4x	M8 Lock Washer				

Connect the discharge chute to the upper flywheel housing using two (2) M8 X 18 mm hex bolts, two (2) M8 X 14 mm hex bolts, four (4) M8 lock washers, and four (4) M8 X 30 mm fender washers as shown below.





Note, when orienting the discharge chute on the upper flywheel housing, the locking pin side of the chute is assembled to the tractor side of the housing.

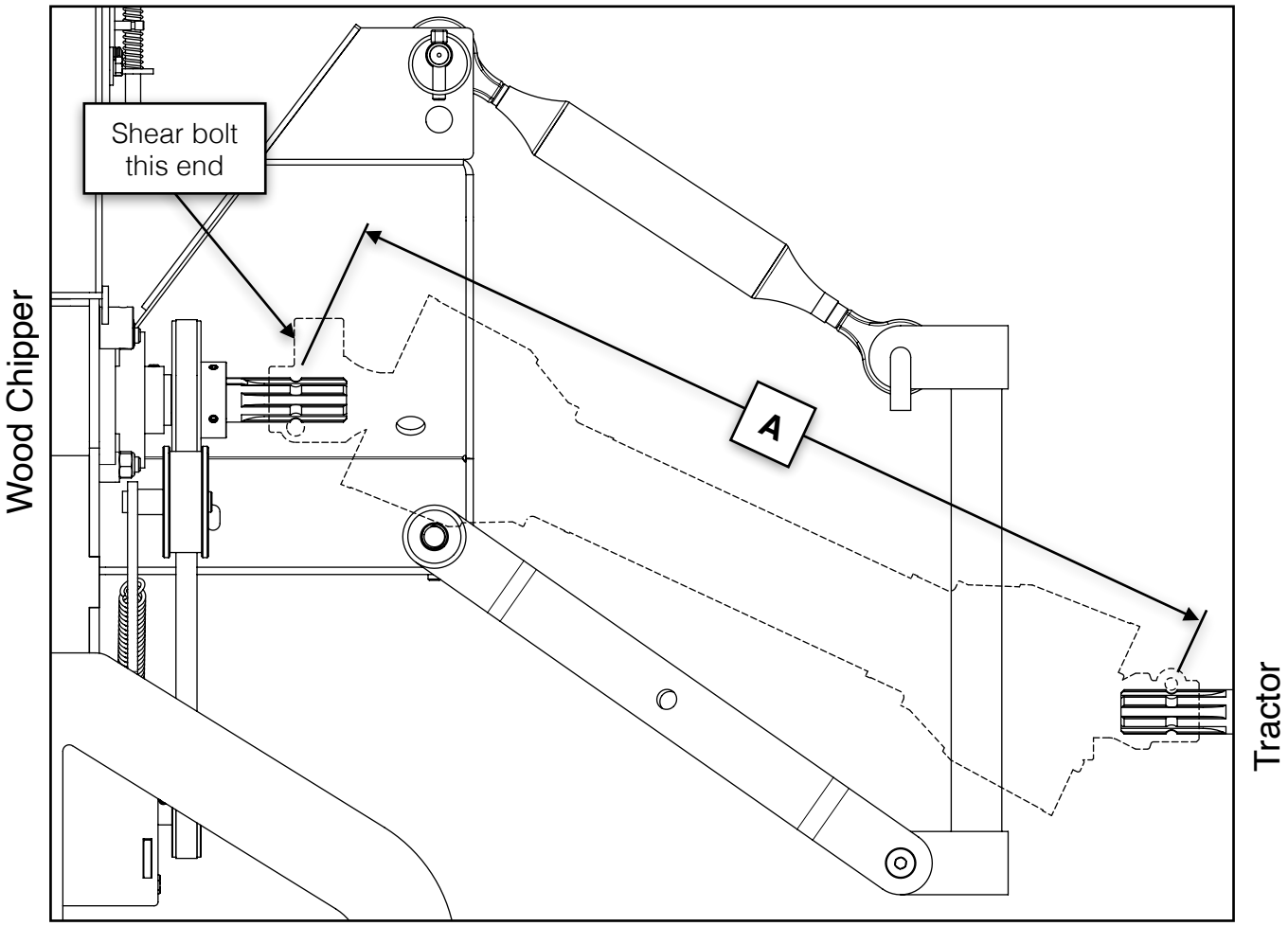
TRIMMING THE PTO SHAFT

The wood chipper is shipped with a PTO shaft that can be fitted to most Category 1 tractors. The PTO shaft may need to be trimmed depending on your tractor and configuration. Follow the steps below to ensure the PTO shaft is correctly fitted to your tractor.

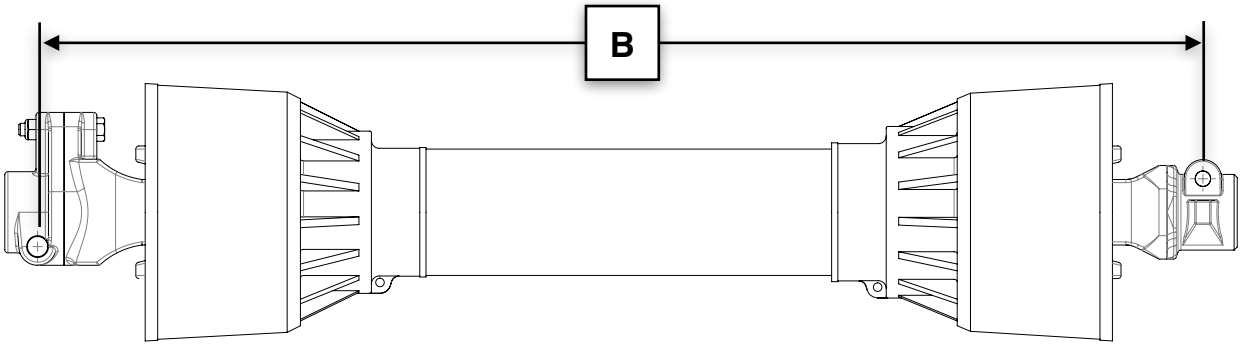
****Note: the shear bolt end of the PTO shaft mounts to the wood chipper.****

1. Attach the wood chipper to the tractor's 3-point hitch system. Do not install the PTO shaft.
2. Raise the wood chipper as high as the tractor's 3-point hitch will allow and measure the straight-line distance between the locking grooves on the splined shafts as shown below.

   Now lower the wood chipper to the ground and measure the distance between the locking grooves again (the two shafts may or may not align—either is normal as tractor output shaft height varies). Whichever dimension is *shortest,* record it as **Dim A**.



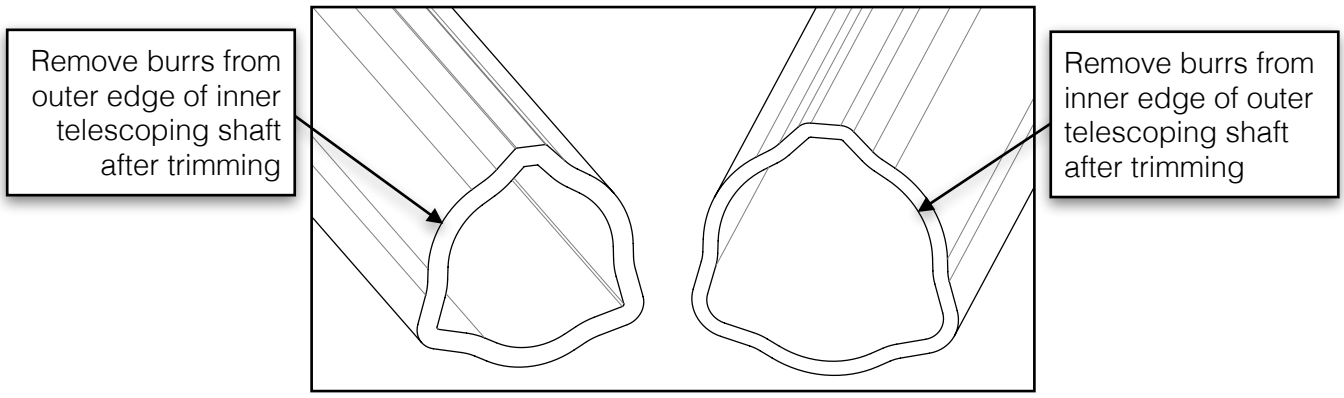
3. Verify the distance between the locking pins on the PTO shaft while in the compressed state (**Dim B**) as shown in the image below. It should measure 29-7/16" (747 mm).



4. If **Dim A** is at least 1" (25 mm) longer than **Dim B**, the PTO shaft does not require trimming. It is recommended the shaft not be used if there is less than 6" (150 mm) of overlap between the two halves of the PTO shaft when the equipment is in the operating position.
5. If **Dim B** is longer than **Dim A**, the PTO shaft will require trimming. Use this equation to calculate the correct amount to trim:

(B - A) + 1 inch = C (Amount to Trim)

6. Once **C** has been calculated, trim that amount from **BOTH** halves of the PTO shaft safety cover *first*, then trim the same amount from both shafts. This will ensure the safety cover on each end remains a few inches back from the ends of the shafts, otherwise PTO shaft reassembly could be difficult.
7. After trimming both halves of the PTO shaft, use a file to remove any burrs or sharp edges and slide the halves back together, ensuring they telescope in-and-out freely. The PTO shaft is now ready to connect the wood chipper to the tractor for operation.



OPERATION

1. START UP

The following steps in the sub-section below (a. through i.) are a summarization of the steps necessary to safely and properly operate the wood chipper. Please follow the references to other sections that provide further detail into the step being performed.

a. Place the tractor transmission in neutral, set the parking brake, then turn the tractor engine off.

b. Connect the 3-point hitch linkages to the wood chipper and secure them with linch pins.

c. Adjust the top link of the 3-point hitch so that the wood chipper sits level.

d. Connect the PTO shaft to the tractor with the shear bolt end of the PTO on the wood chipper. Make sure the PTO safety chains are attached to both the tractor and the wood chipper to keep the protective PTO safety cover from rotating.

e. Rotate the discharge chute towards a safe direction and lock it in place with the spring-loaded latch and indexing holes. Adjust the chip deflector to the desired position based on how far they should be thrown.

f. Push the red control arm all the way in until it stops, then pull it out one click to ensure the infeed roller is in the neutral position.

g. Start the tractor engine and hold the engine RPM's at a strong idle. Engage the PTO slowly. If the tractor is running at a high speed when the PTO is engaged, you could damage the hydraulic pump belt or break the shear bolt on the PTO shaft. After the rotor is spinning freely increase the tractor RPM's until the PTO speed is 540 RPM. Most tractor tachometers commonly indicate this with a line and/or text.

h. Pull the red control arm all the way out until it stops (forward position). This will start the infeed roller rotating. Set the infeed roller control to the desired speed.

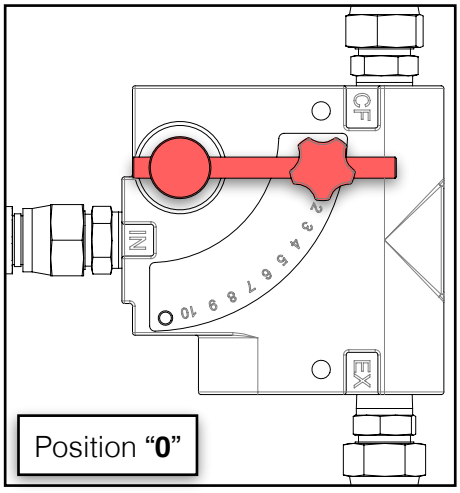
i. With the wood chipper now running and the infeed roller rotating, it is safe to begin chipping. Start by feeding smaller diameter branches until better acquainted with the machine and its operation. Once comfortable, begin feeding in larger pieces. Adjust the infeed roller control as necessary to regulate the infeed rate of the branches.

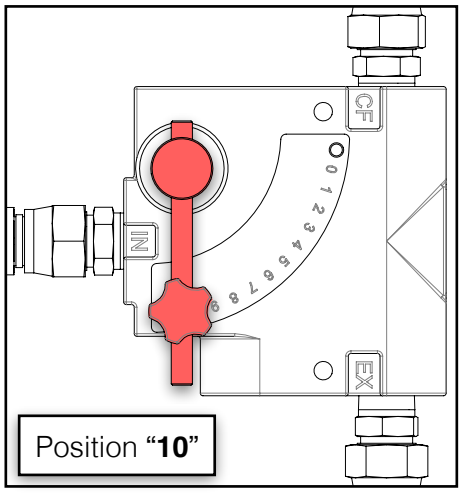
WARNING!

To avoid serious injury or death, do not chip brush containing embedded foreign objects such as nails, wire, metal fragments, etc. The operator and any assistants must always stay clear of the infeed chute of the wood chipper whenever it is running.

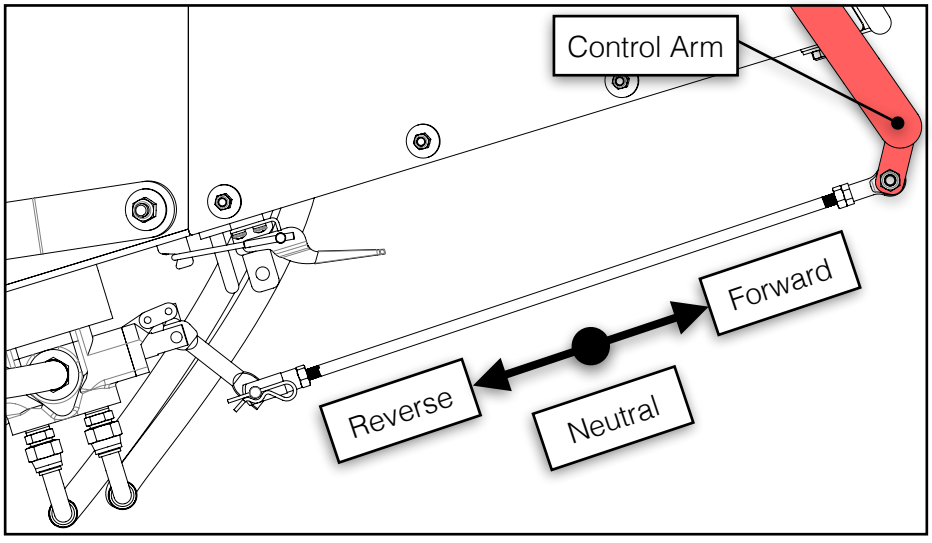
2. INFEED ROLLER CONTROL

The wood chipper infeed roller speed control valve is located to the right of the infeed chute. Rotating the arm as shown in the pictures below will increase or decrease the speed of the infeed roller. The number "**0**" (left image) represents no infeed roller rotation while "**10**" (right image) represents full speed.





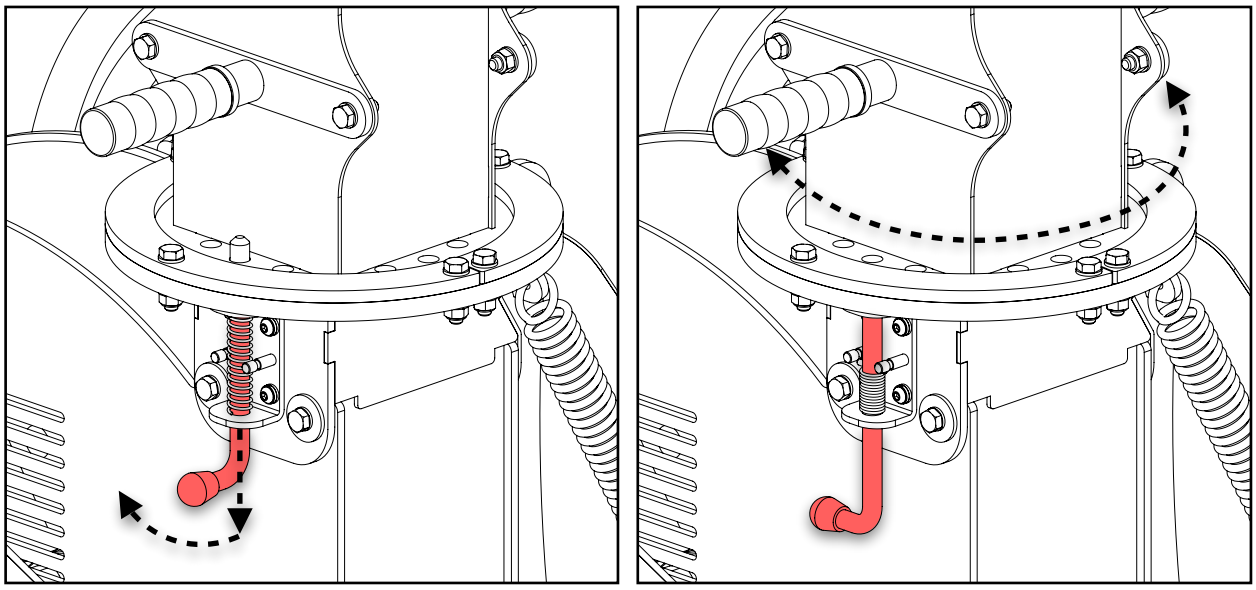
The infeed roller can be set to three (3) different rotation settings—*forward*, *neutral* and *reverse*—by pushing or pulling the red control arm. The *forward* position pulls branches into the wood chipper; *neutral* stops the roller from rotating; and *reverse* pushes the branches back out the wood chipper towards the operator. The diagram below illustrates the 3 positions:



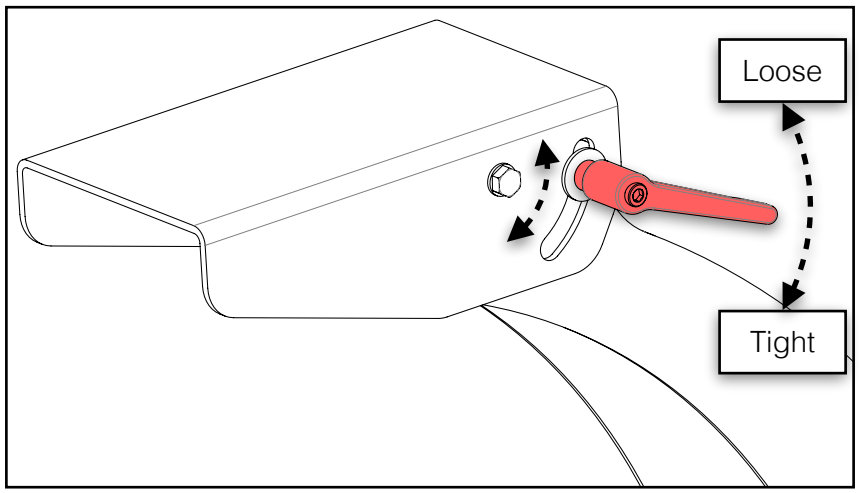
To change the speed of the infeed roller, place the red control arm in the *neutral* position. This stops the infeed roller from rotating. The speed control valve can now be moved to the desired position/speed. Reengage the infeed roller via the control arm.

3. DISCHARGE CHUTE

To rotate the discharge chute, push down all the way on the spring-loaded locking pin and twist it 90° to temporarily lock it in the open position. The discharge chute is now free to rotate a full 360°. Using the handles, rotate it to the desired position and then twist the locking pin back 90° so that it extends into the closest locking hole to secure the chute in position.



The chip deflector easily adjusts to regulate the distance the chips are thrown. Rotate the handle counterclockwise to loosen the deflector, adjust the deflector to the desired angle, then re-tighten the handle by rotating it clockwise to secure the deflector.



4. CHIPPING

Keep your face and body away from the feed opening. Do not over reach. Keep proper balance and footing at all times. The wood chipper is designed to chip a variety of materials into a more readily decomposing or handled condition. The following guidelines can be used to help you get started. Please read and follow all safety instructions in this manual. Failure to operate the wood chipper in accordance with the safety instructions **MAY RESULT IN PERSONAL INJURY!**

- Ensure the wood chipper is at full operating speed before starting to chip material.
- Select limbs up to 6" (152 mm) in diameter. Trim side branches that cannot be bent enough to feed into the wood chipper infeed chute. Hold small diameter branches in a bundle and feed simultaneously.
- Feed brush from the side of the infeed chute rather than from the front. Step aside to avoid being hit by brush moving into the wood chipper.
- Never lean into the infeed chute or extend any parts of your body inside the infer chute to push objects further into the wood chipper. Use another stick or branch.
- Do not use hand tools to push brush into the wood chipper. They can go through the wood chipper and cause injury or damage to the wood chipper.
- Place branches, butt end first, into the wood chipper infeed chute until it contacts the infeed roller. Once the infeed roller makes contact with the branches, it will pull the material inwards.
- **NOTE**: The wood chipper blades dull with use and require periodic sharpening and sometimes replacing. Refer to the section under service and maintenance, "Sharpening Wood Chipper Blades," for further instructions.

5. STOPPING

Do not leave the wood chipper unattended or attempt any inspection/service unless the PTO is disengaged and the tractor engine is turned off. Allow time for the wood chipper to come to a complete stop. To stop the wood chipper, follow the steps below:

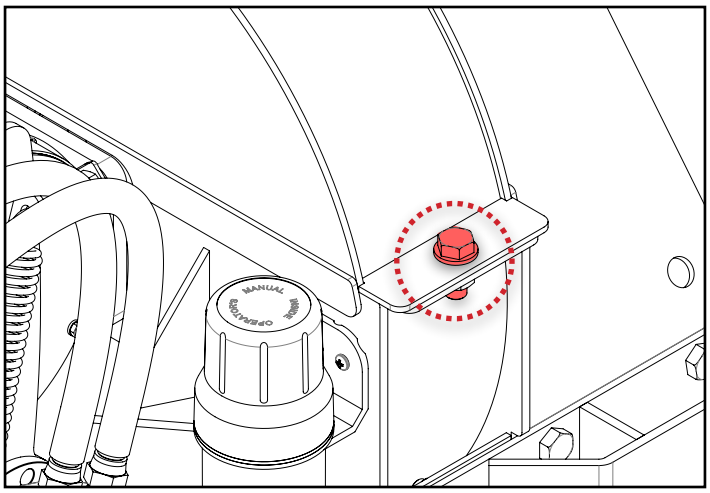
1. Move the tractor throttle to the SLOW/IDLE position.
2. Disengage the PTO lever and turn off the tractor engine.
3. Allow time for the wood chipper to come to a complete stop.

   NOTE: The flywheel continues to spin for some time after the engine or tractor has been turned off. The flywheel has stopped spinning when noise and/or machine vibration are no longer detectable. The PTO shaft will also no longer be spinning.

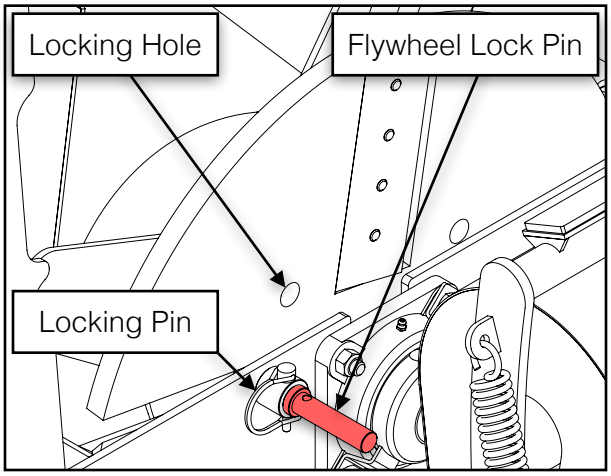
MAINTENANCE
REPLACING BLADES

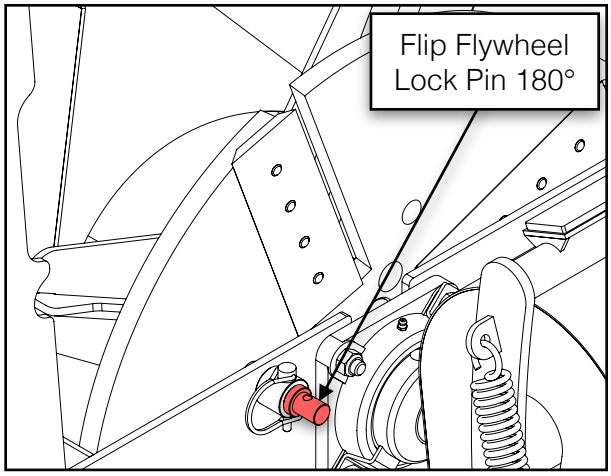
Follow these steps when replacing blades. The DS68 wood chipper uses four (4) reversible hardened steel blades. Each blade is 8.62 X 2.72 X 5/16" [219 X 69 X 8 mm] in size.

1. If installed, disconnect the PTO shaft from the tractor for safety.
2. Open the upper flywheel housing using a 24 mm socket/wrench by removing the M16 X 40 mm bolt and flat washer securing the upper and lower housings together.

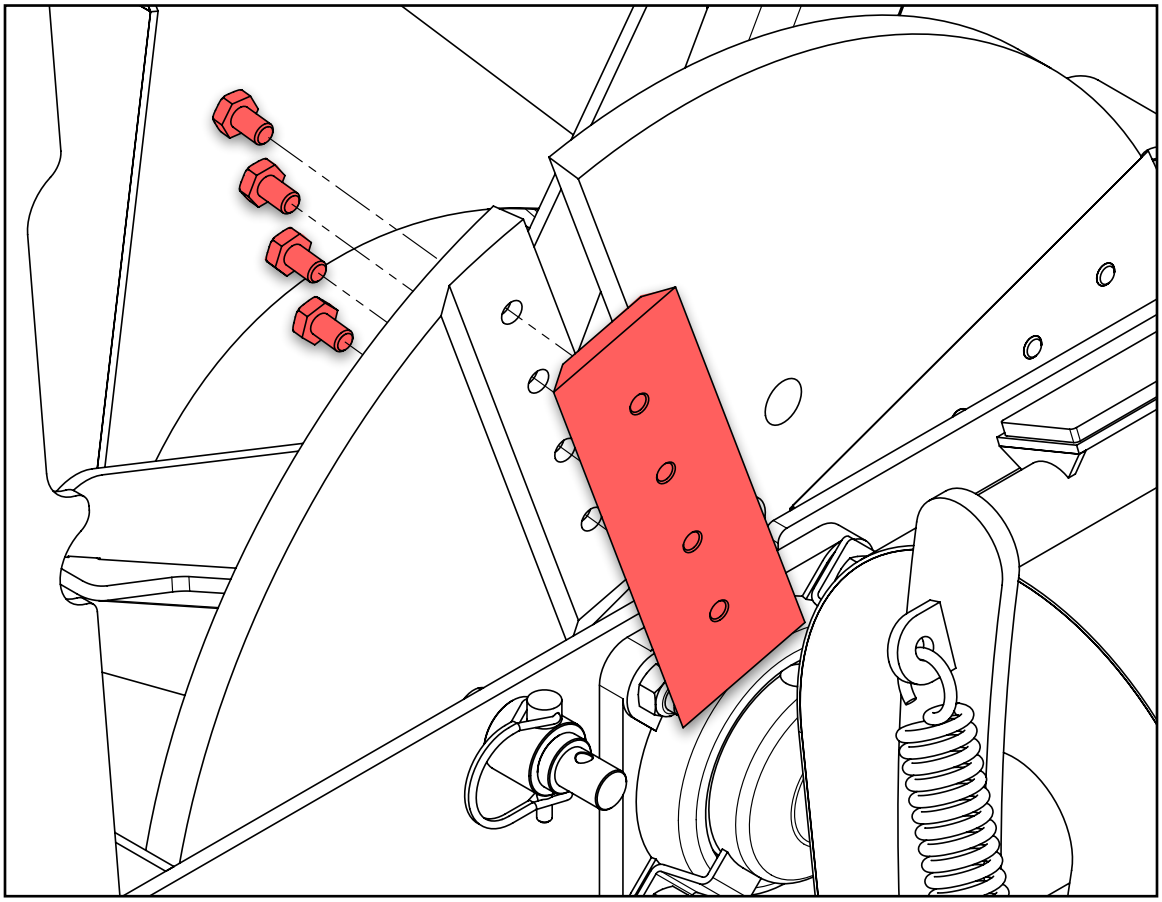


3. With the flywheel exposed, manually rotate it so that one of the four (4) locking holes in the flywheel (near the front of the blade) approximately lines up with the flywheel lock pin at the rear of the housing. Remove the small locking pin from the flywheel lock pin and flip the flywheel lock pin around 180°, passing it through the housing and into the locking hole in the flywheel. Reinstall the smaller locking pin to the flywheel lock pin.





4. Remove the four (4) M10 X 16 mm hex head bolts that secure the blade to the flywheel using a 17 mm socket/wrench. Take care not to drop the hardware into the lower flywheel housing. However, should this occur, a telescoping pen magnet can be used to retrieve them.

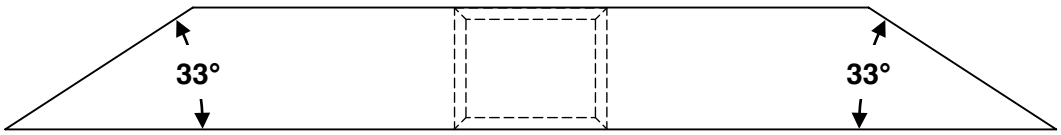


5. Repeat Steps 3 & 4 above to remove the remaining three blades. If this is the first time the blades have been removed following either the original wood chipper purchase or a recent blade sharpening, the blades can be reversed to utilize the other cutting edge. Or, the entire blade can be removed and sharpened or it can be replaced with a new blade. Torque the M10 X 16 mm hex head bolts to 40-45 ft•lb (54-60 N•m) when installing blades. Refer to section, ***Blade Sharpening*** for blade sharpening instructions
6. Once the blades have been reversed or new blades installed, proceed to section, ***Setting the Bed Plate Gap***, to properly set the spacing between the blades and bed plate.

BLADE SHARPENING

The wood chipper blades will dull, making chipping difficult and cause your tractor to labour. It is recommended to sharpen the blades every 25-50 hours of operation. The DS68 wood chipper uses four (4) hardened steel blades. The blades are reversible and can be sharpened on both sides. Follow the below steps to sharpen the blades.

1. Follow the steps from the previous section, ***Replacing Blades***, to safely remove the blades from the flywheel.
2. Hand-grind the angled edges of the blade at 33° (see diagram below) using a whetstone or have them sharpened by a professional. A pedestal style bench grinder will likely yield poor results if not used properly. If sharpened quickly or aggressively on a bench grinder, the blade edge can get too hot and change colour, thus removing the heat treating-properties from the steel. Use short grinding times and cool frequently with water. Remove an equal and consistent amount of material from each blade to maintain proper balance when reassembled to the flywheel.

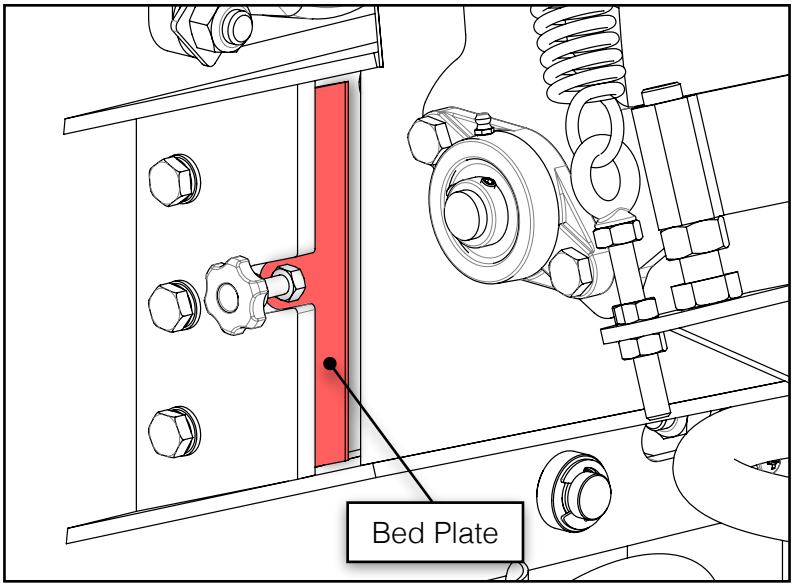


Blade Profile

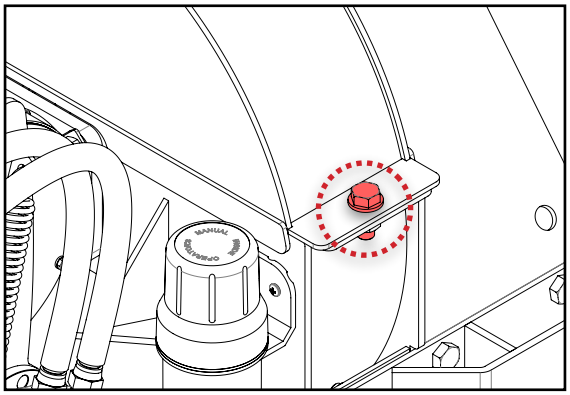
3. Reinstall the sharpened blades on the flywheel and torque the M10 X 16 mm hex head bolts to 40-45 ft•lb (54-60 N•m).
4. Once the blades have been sharpened, proceed to the next section, ***Setting the Bed Plate Gap***, to properly set the spacing between the newly sharpened blades and the bed plate.

SETTING THE BED PLATE GAP

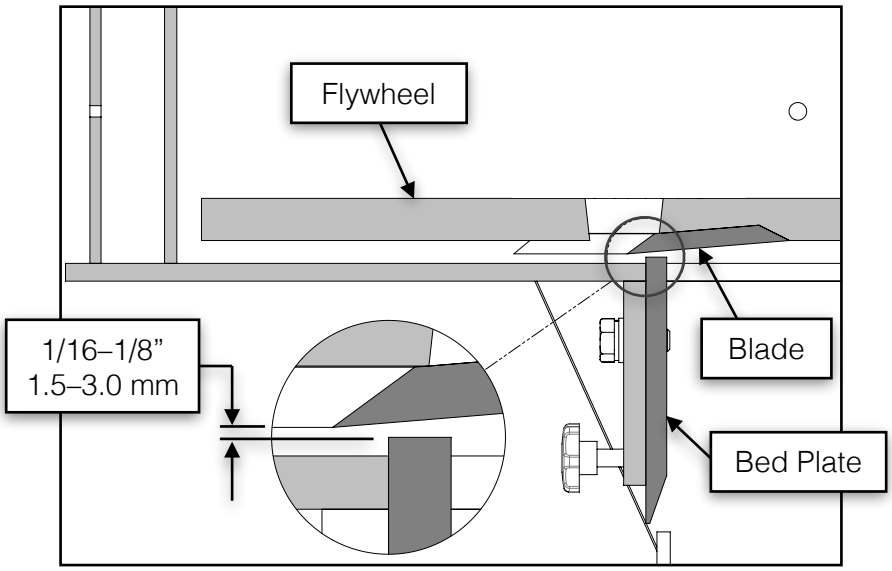
The bed plate (also known as the *anvil plate*) is located on the left side of the flywheel housing (when facing the infeed chute). For ideal chipping performance, the gap between the bed plate and the blades should be set to 1/16-1/8" (1.5-3 mm). Follow the steps below to set the gap properly. Failure to set the proper gap can lead to poor chipping performance and/or clogging.



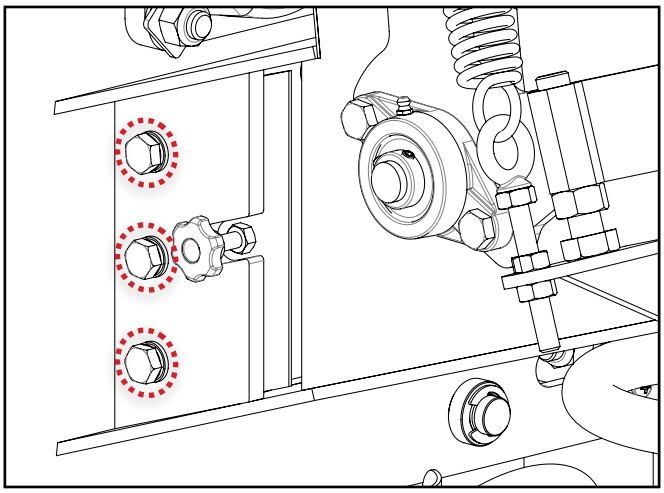
1. If installed, disconnect the PTO shaft from the tractor for safety.
2. Open the upper flywheel housing using a 24 mm socket/wrench by removing the M16 X 40 mm bolt and flat washer securing the upper and lower housings together.



3. With the flywheel exposed, manually rotate it so that the first blade lines up with the bed plate and note the gap between them. Use a flash light for better viewing if necessary. Repeat this process for the remaining three blades, noting which blade is closest. Use this blade to set the bed plate gap.



4. Loosen the three (3) M10 X 25 mm hex bolts securing the bed plate to the lower flywheel housing so the bed plate is free to slide in and out. This movement will increase or decrease the gap between the bed plate and the cutting edge of the blade. Slide the bed plate by gripping the knob and adjust its position so that it is within 1/16-1/8" (1.5-3.0 mm) of the cutting edge of the blade. Ensure the gap is uniform along the entire edge of the blade.



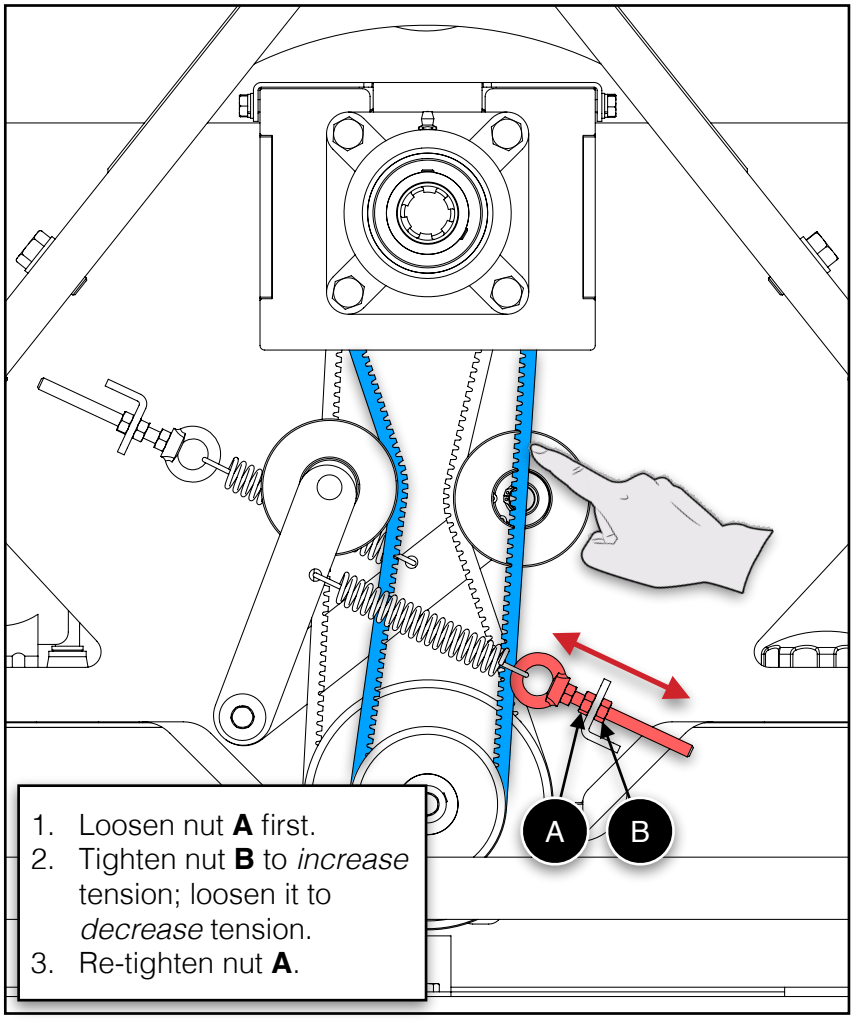
5. Torque the three (3) M10 X 25 mm bed plate hex bolts to 40 ft•lb (54 N•m) once the gap has been set correctly.
6. Rotate the flywheel by hand and note the gap at each blade. Again, the gap should be no more or less than 1/16-1/8" (1.5-3.0 mm) at each blade edge.
7. Close the upper flywheel housing and secure it to the lower housing by reinstalling the M16 X 40 mm bolt and flat washer.

ADJUSTING BELT TENSION

HYDRAULIC PUMP BELT

The hydraulic pump belt is the belt *closest* to the tractor. Check the condition and tension of the belt after every 30 hours of operation. It is self-tensioning via an extension spring. The amount of tension can be adjusted by following these steps:

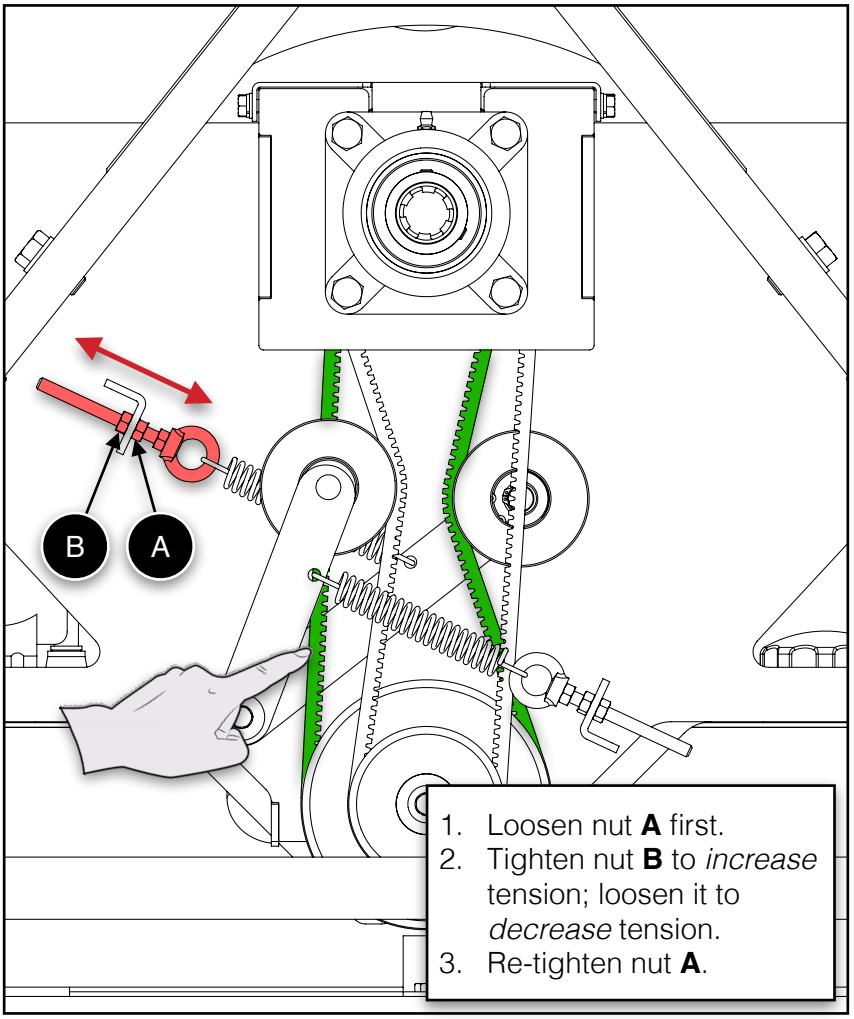
1. If installed, disconnect the PTO shaft from the wood chipper for safety and to allow rotation of the belt and pulleys.
2. Check the pump belt tension by pressing on it with your finger. There should not be any free slack in the belt. It should be under firm tension.
3. If the pump belt requires more tension, the *lower right-side* eyebolt can be adjusted by loosening and tightening the M8 hex nuts as shown below. This will stretch the spring and increase the tension until the belt is firm.



PADDLE FLYWHEEL BELT

The paddle flywheel belt is the belt *farthest* from the tractor. Check the condition and tension of the belt after every 30 hours of operation. It is self-tensioning via an extension spring. The amount of tension can be adjusted by following these steps:

1. If installed, disconnect the PTO shaft from the wood chipper for safety and to allow rotation of the belt and pulleys.
2. Check the paddle flywheel belt tension by pressing on it with your finger. There should not be any free slack in the belt. It should be under firm tension.
3. If the paddle flywheel belt requires more tension, the *upper* left-*side* eyebolt can be adjusted by loosening and tightening the M8 hex nuts as shown below. This will stretch the spring and increase the tension until the belt is firm.



Adjusting Paddle Flywheel Belt Tension

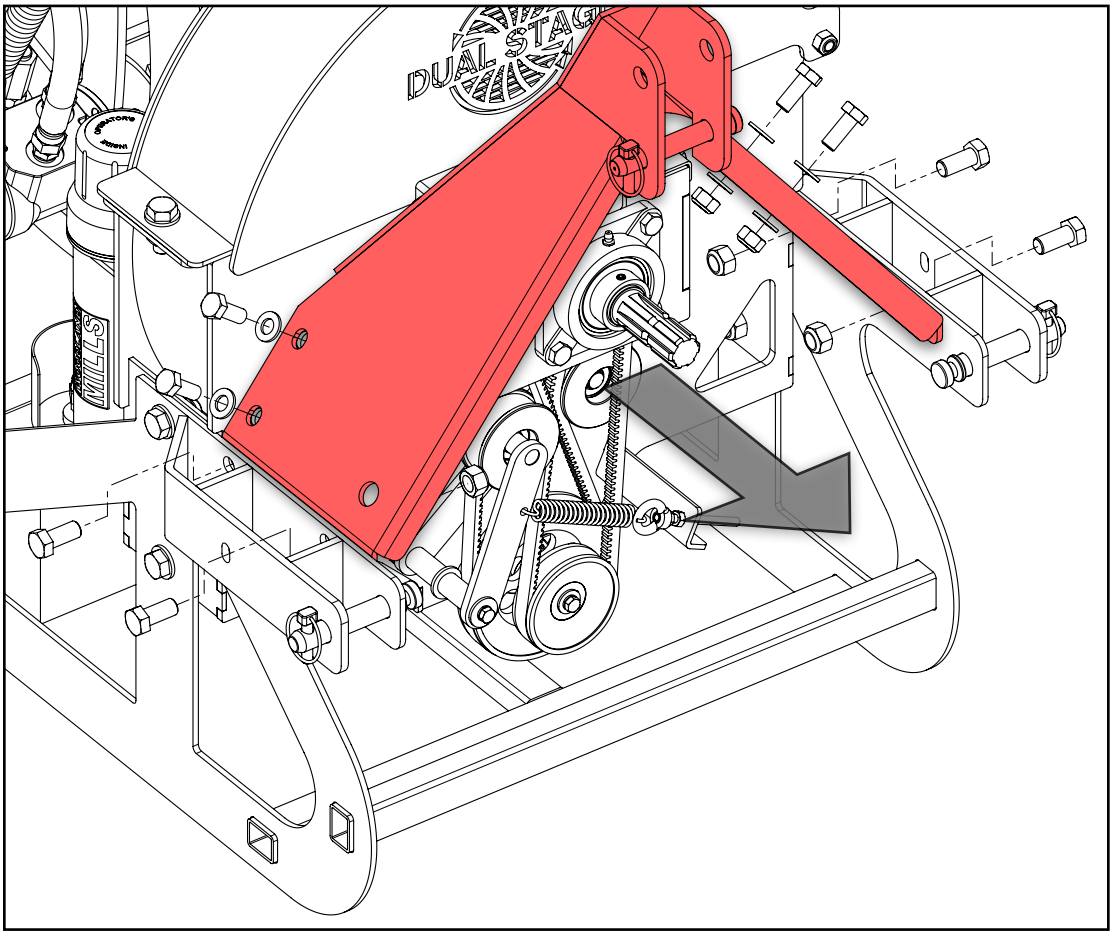
REPLACING BELTS

Check the condition and tension of both belts after every 30 hours of operation. If the infeed roller is not rotating—or rotating slowly—the hydraulic pump belt could be slipping. A squealing noise may also be heard. In either case, these conditions can occur due to a worn belt or improper belt tension (see the previous section, ***Adjusting Belt Tension***). It is recommended *both* belts be replaced at the same time to reduce future maintenance.

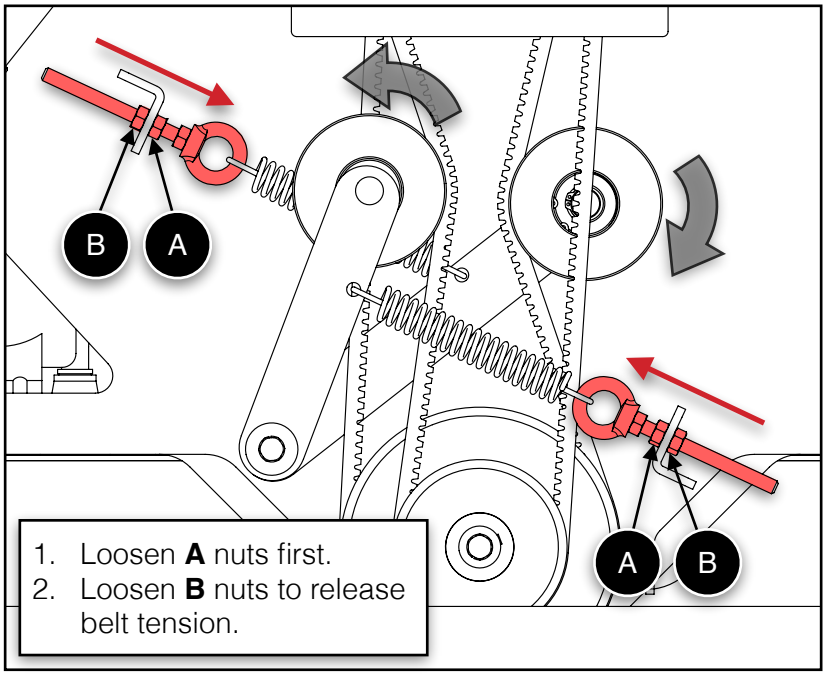
- *Hydraulic Pump Belt*: **BX43**
- *Paddle Flywheel Belt*: **BX45**

To replace the worn belts, follow the steps below:

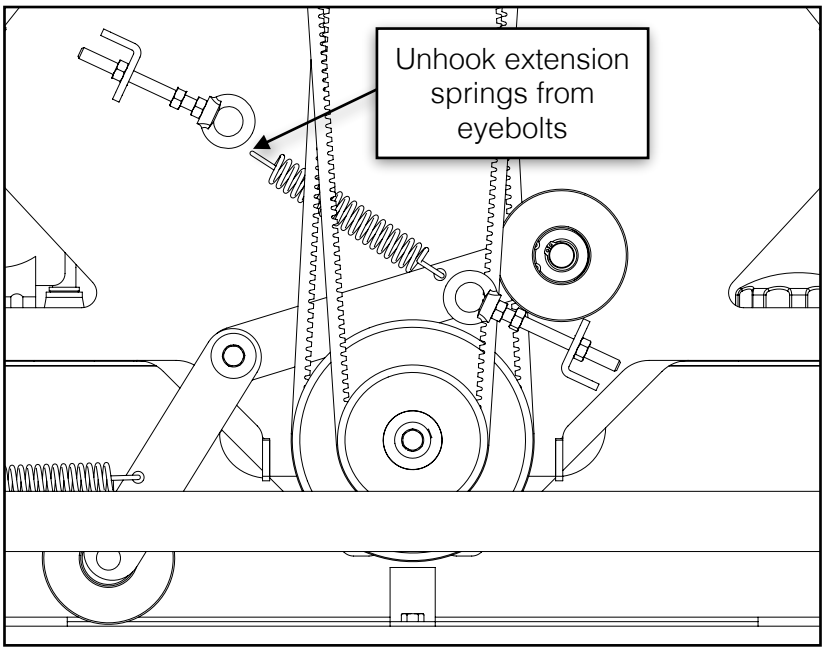
1. If installed, disconnect the PTO shaft from the wood chipper for safety.
2. Remove the four (4) M14 X 35 mm hex bolts, the four M16 X 35 mm hex bolts, and their respective washers and lock nuts securing the belt guard cover. Set the belt guard cover aside.



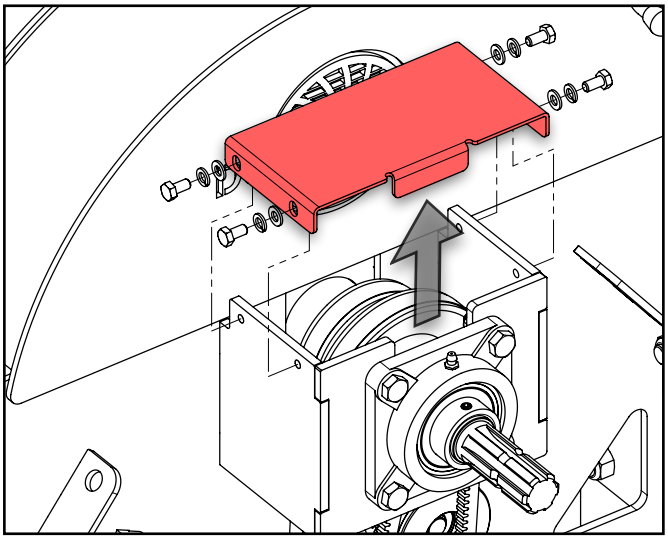
3. Loosen the two (2) jam nuts on both of the belt tensioner eyebolts to completely release the tension on the extension springs.



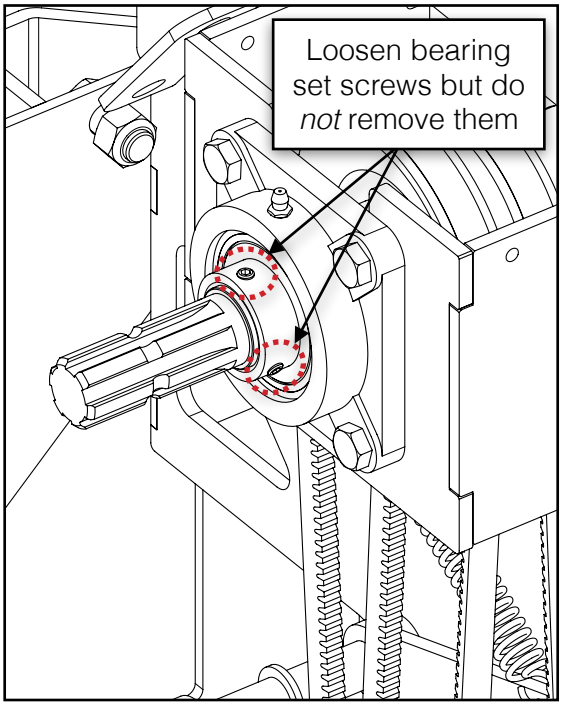
4. Unhook the extension springs from the eyebolts and allow the belt tension arms to rotate downward until they come to rest.

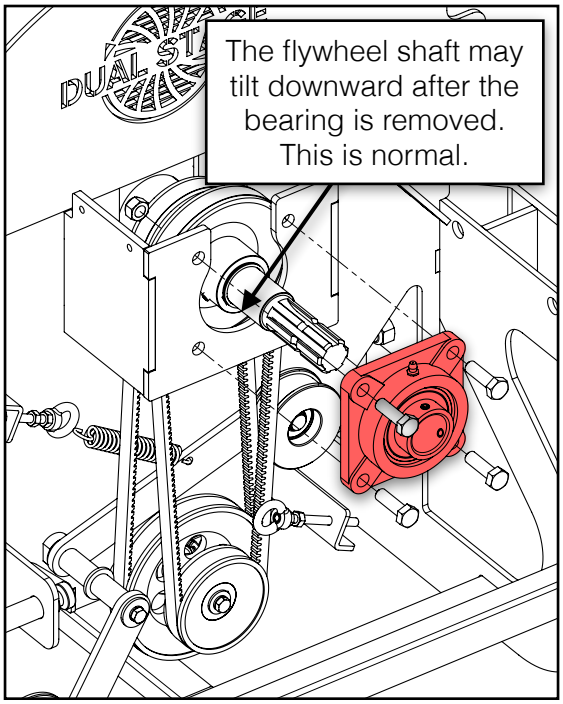


5. Unscrew the four (4) M8 X 16 mm hex bolts, washers, and lock nuts that secure the upper pulley cover and then remove the cover and set it aside.



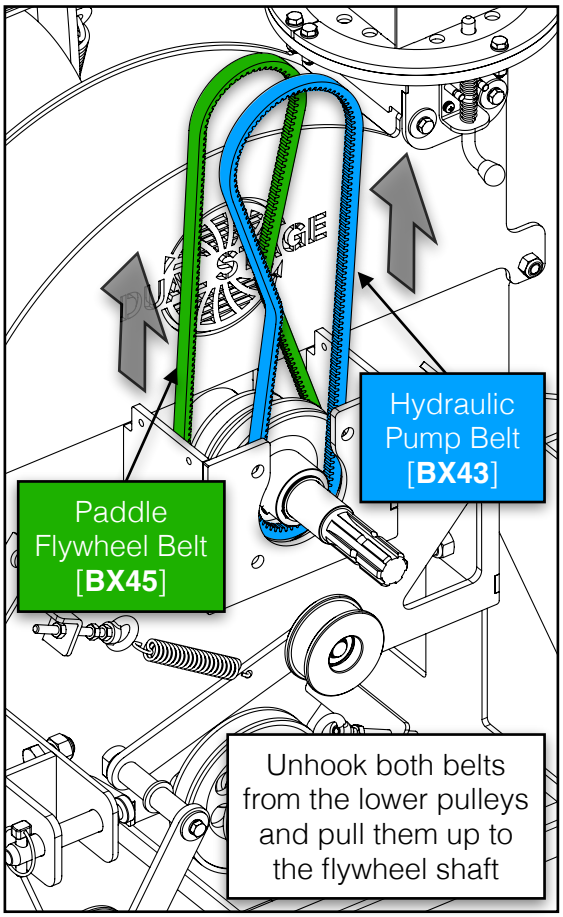
6. Loosen—do not remove—the two (2) M8 set screws on the bearing collar as shown ***below-left***. Then remove the four (4) M12 X 40 mm hex bolts and lock nuts used to mount the bearing and slide it off the flywheel shaft as shown ***below-right***. The shaft may tilt downward once the bolts are removed but this normal.

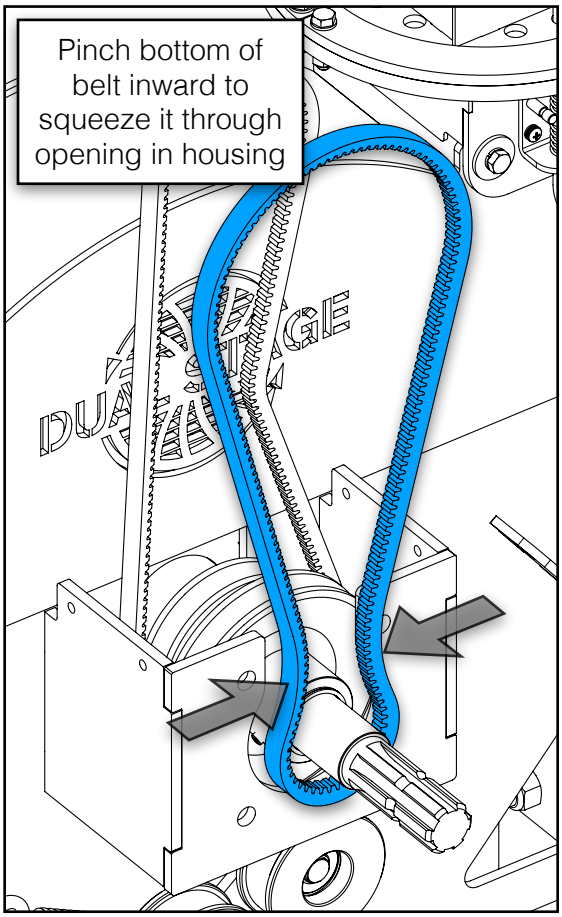




7. Unhook both belts from the lower pulleys and pull them up to the flywheel shaft as shown ***below-left***. Remove the hydraulic pump belt (front) first. Pinch the bottom of the belt inward and squeeze it through the opening between the flywheel shaft and housing as shown ***below-right***. Then repeat the procedure to remove the paddle flywheel belt (rear).

   Note: the shaft may have to be lifted up and supported by hand as each belt is removed.



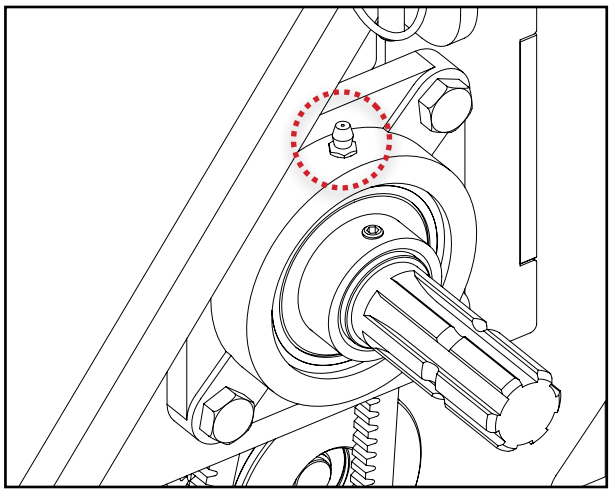


8. Reverse the steps to install new belts. Remember to install the paddle flywheel belt (rear) first before installing the hydraulic pump belt (front).

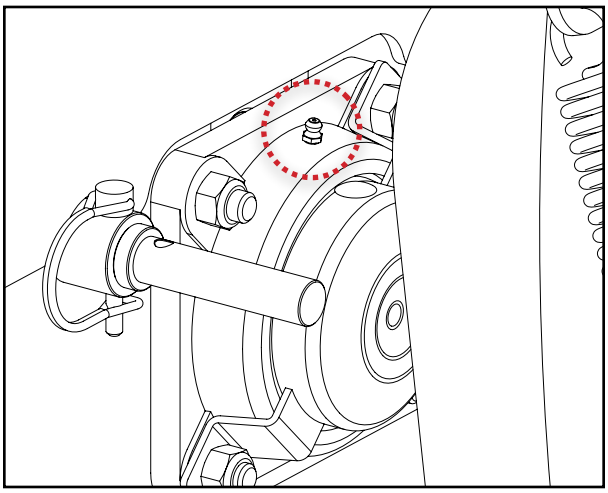
   ****Note: When reinstalling the bearing, be sure to torque the four (4) M12 X 40 mm hex bolts and lock nuts to 65 ft•lb (88 N•m).****

GREASING BEARINGS AND PTO SHAFT

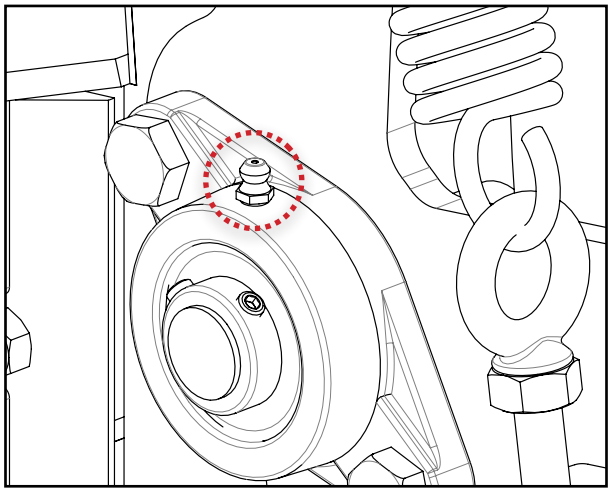
The wood chipper has seven (7) Zerk fitting grease points: two (2) flywheel shaft bearings, two (2) pump shaft bearings, one (1) infeed roller bearing, and two (2) U-joints at the ends of the PTO shaft. Check each grease point prior to use and add grease as necessary:



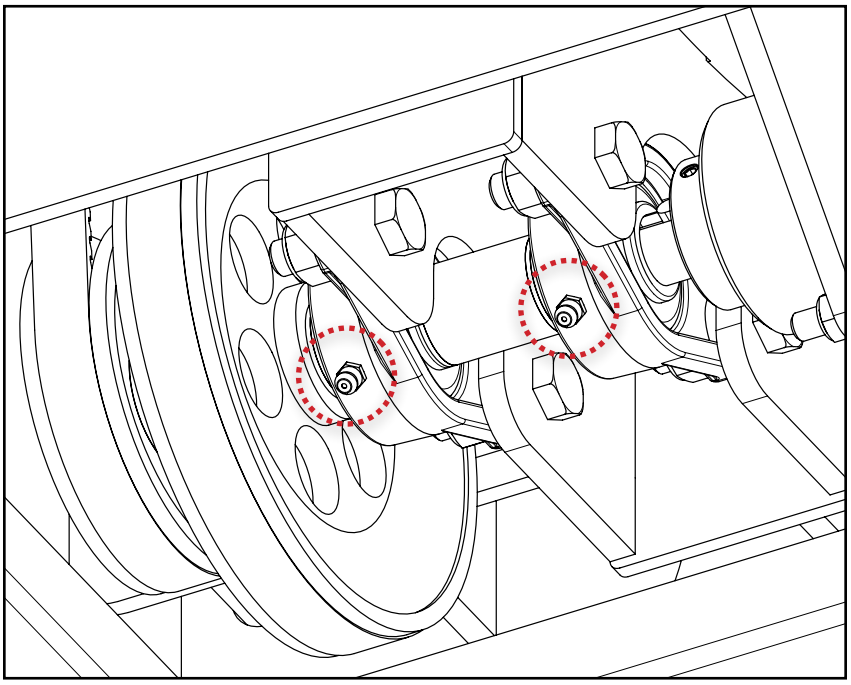
Front Flywheel Shaft Bearing



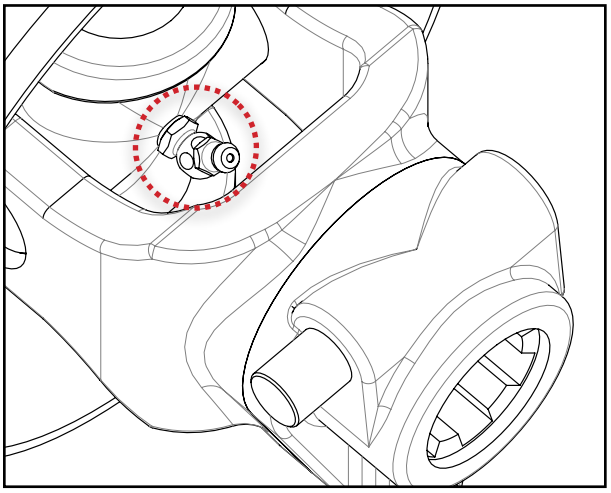
Rear Flywheel Shaft Bearing



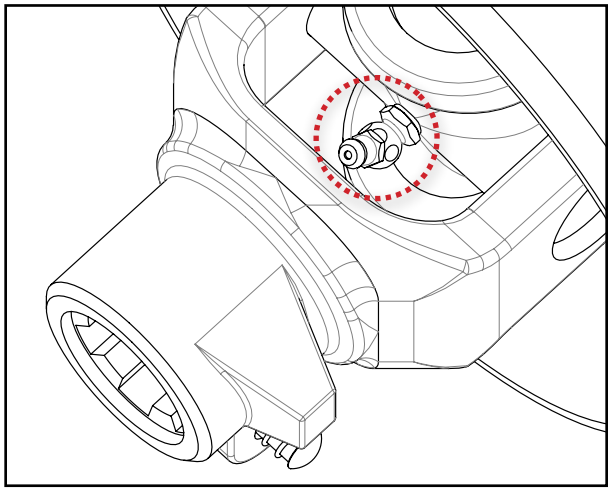
Infeed Roller Bearing



Lower Pump Shaft Bearings



PTO Shaft U-Joint 1

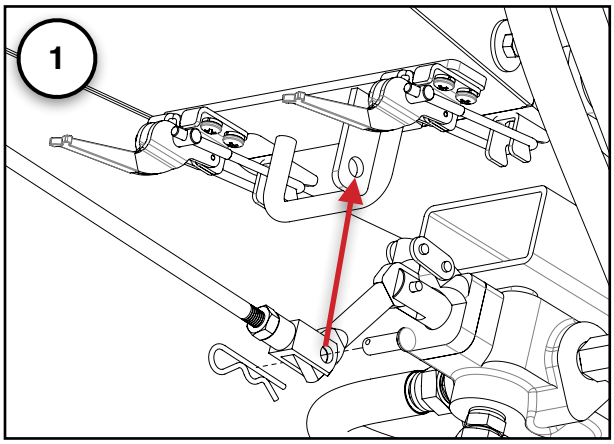


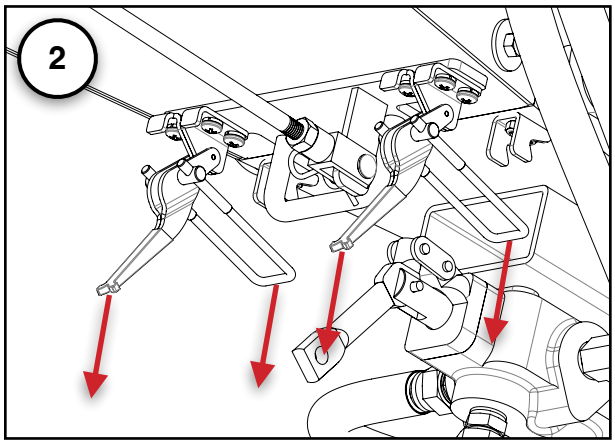
PTO Shaft U-Joint 2

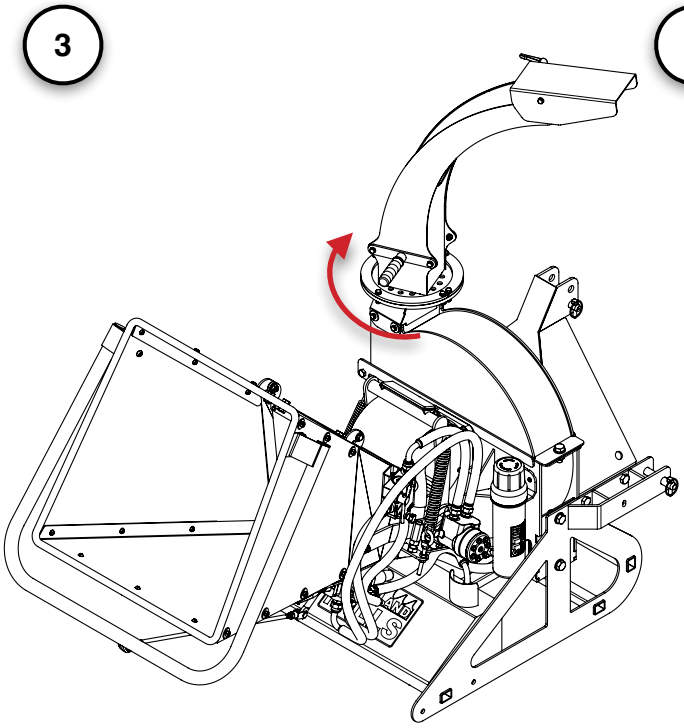
STORAGE

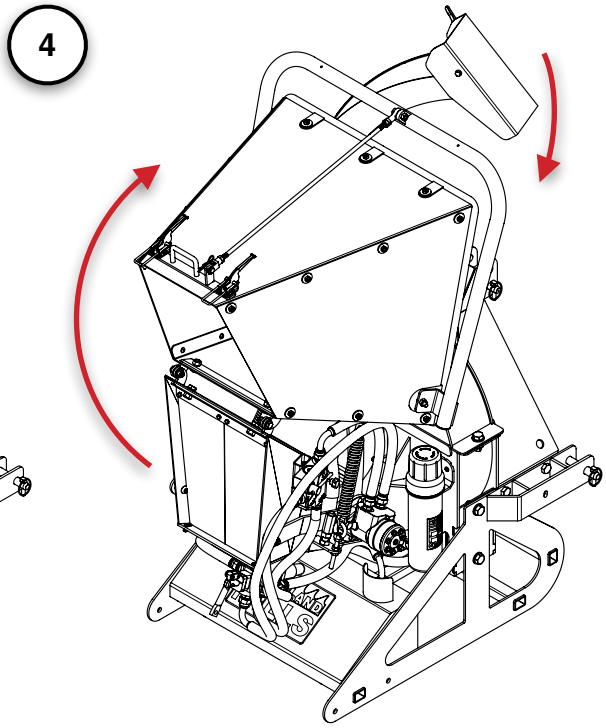
When the wood chipper is not in use, it can be stored to utilize a smaller footprint to save space. Follow these steps to put the wood chipper in its storage state:

1. Disconnect the control bar linkage from the directional control valve and reconnect it to the tab on the underside of the infeed chute bottom panel.
2. Disengage the two (2) latches on the underside of the infeed chute bottom panel.
3. Rotate the discharge chute so that it is angled towards the left side of the machine.
4. Swing the infeed chute up until it is resting on the swingarm. Tilt the deflector down.







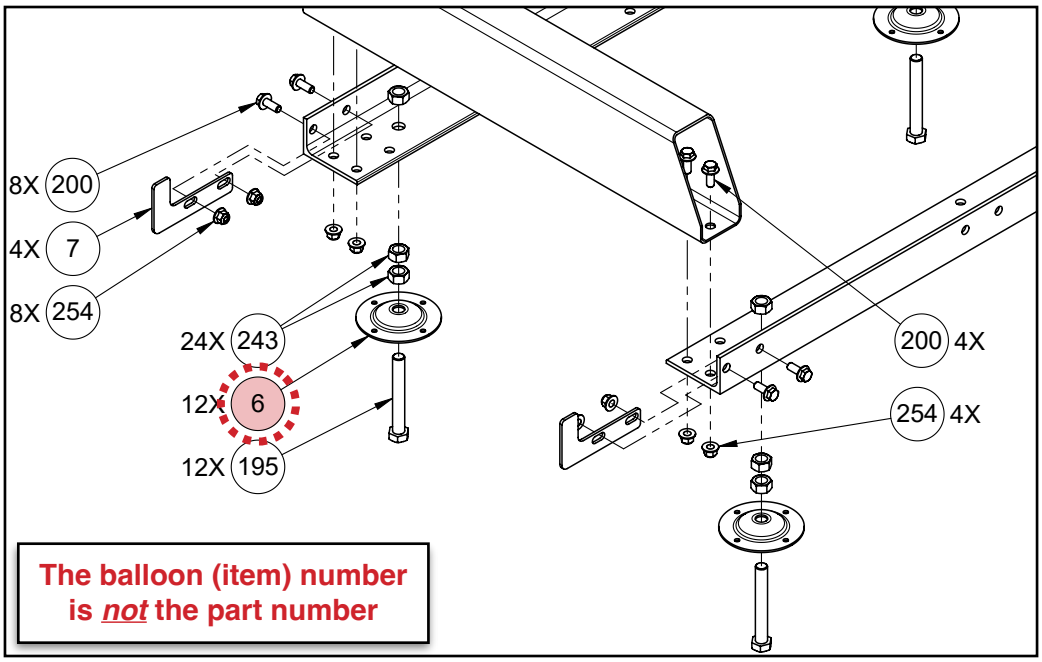


TROUBLESHOOTING

Problem/Issue	Possible Causes	Resolution Options
Brush is feeding too slowly	1. Infeed roller control set too low. 2. PTO RPM below 540. 3. Blades are dull. 4. Improper bed plate gap.	1. Increase infeed roller control to a higher value. Refer to page 26. 2. Adjust tractor RPMs to 540 at output. 3. Reverse, sharpen, or replace blades. Refer to page 29 & page 31. 4. Re-set bed plate gap. Refer to page 32.
Brush exiting discharge chute is stringy	1. Blades are dull. 2. Brush is excessively sappy.	1. Reverse, sharpen, or replace blades. Refer to page 29 & page 31. 2. Clean blades and bed plate.
Excessive clogging	1. Blades are dull. 2. Improper bed plate gap. 3. PTO RPM below 540.	1. Reverse, sharpen, or replace blades. Refer to page 29 & page 31. 2. Re-set bed plate gap. Refer to page 32. 3. Clean blades and bed plate. 4. Adjust tractor RPMs to 540 at output.
Belts slipping or squeaking	1. Belt tension not set properly. 2. Belt is old/worn. 3. Debris stuck between flywheels preventing paddle flywheel from spinning at correct ratio.	1. Adjust belt tension. Refer to page 34 and page 35. 2. Replace belts. Refer to page 36. 3. Disconnect PTO shaft; open upper flywheel housing and clear blockage.
Excessive noise coming from flywheel bearings	1. Bearings not sufficiently lubricated. 2. Bearings are worn.	1. Grease bearings. Refer to page 40. 2. Replace bearings. Please contact Woodland Mills for bearing replacement instructions.

REPLACEMENT PARTS ORDERING

When ordering replacement parts, first locate the balloon number(s) from the appropriate ***exploded assembly view*** as shown in the example below:



Next, turn to the ***Parts List*** section and locate the balloon number in the "**Item**" column:

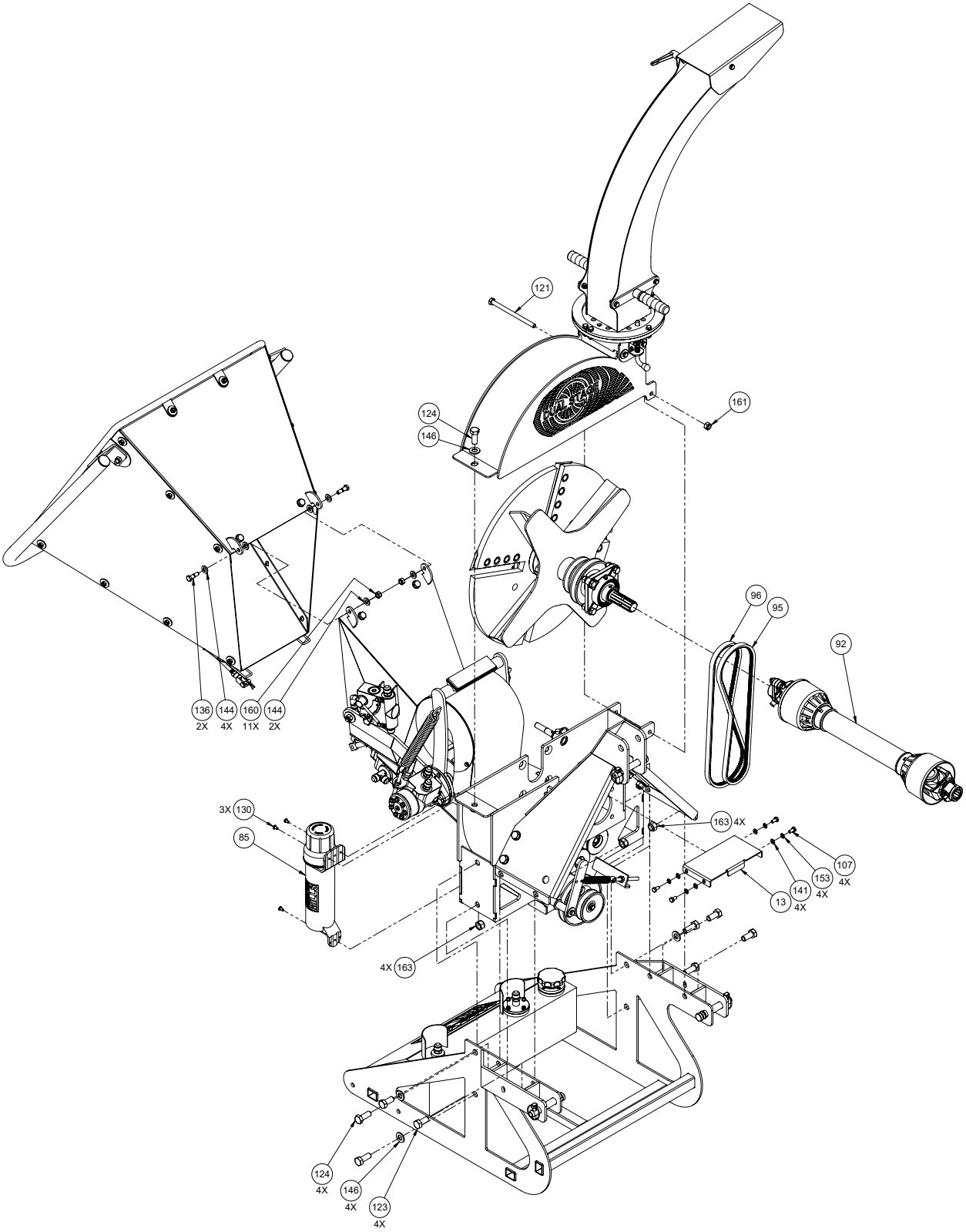
PARTS LIST

Item	Quantity		Part No.	Description
	14 hp	9.5 hp		
1	4	4	0001073	TRACK RAIL, 58.5 mm TALL
2	2	2	0001075	LOG BUNK, END
3	2	2	0001080	LOG BUNK, MID
4	1	1	0001084	LOG BUNK, CENTER
5	2	2	0001072	REINFORCEMENT PLATE, 90 X 200 mm
6	12	12	0001071	LEVELLING FOOT BASE
7	4	4	0001055	CARRIAGE STOP
8	1	1	0001062	LOG CLAMP SHAFT AND BRACKET WELDMENT

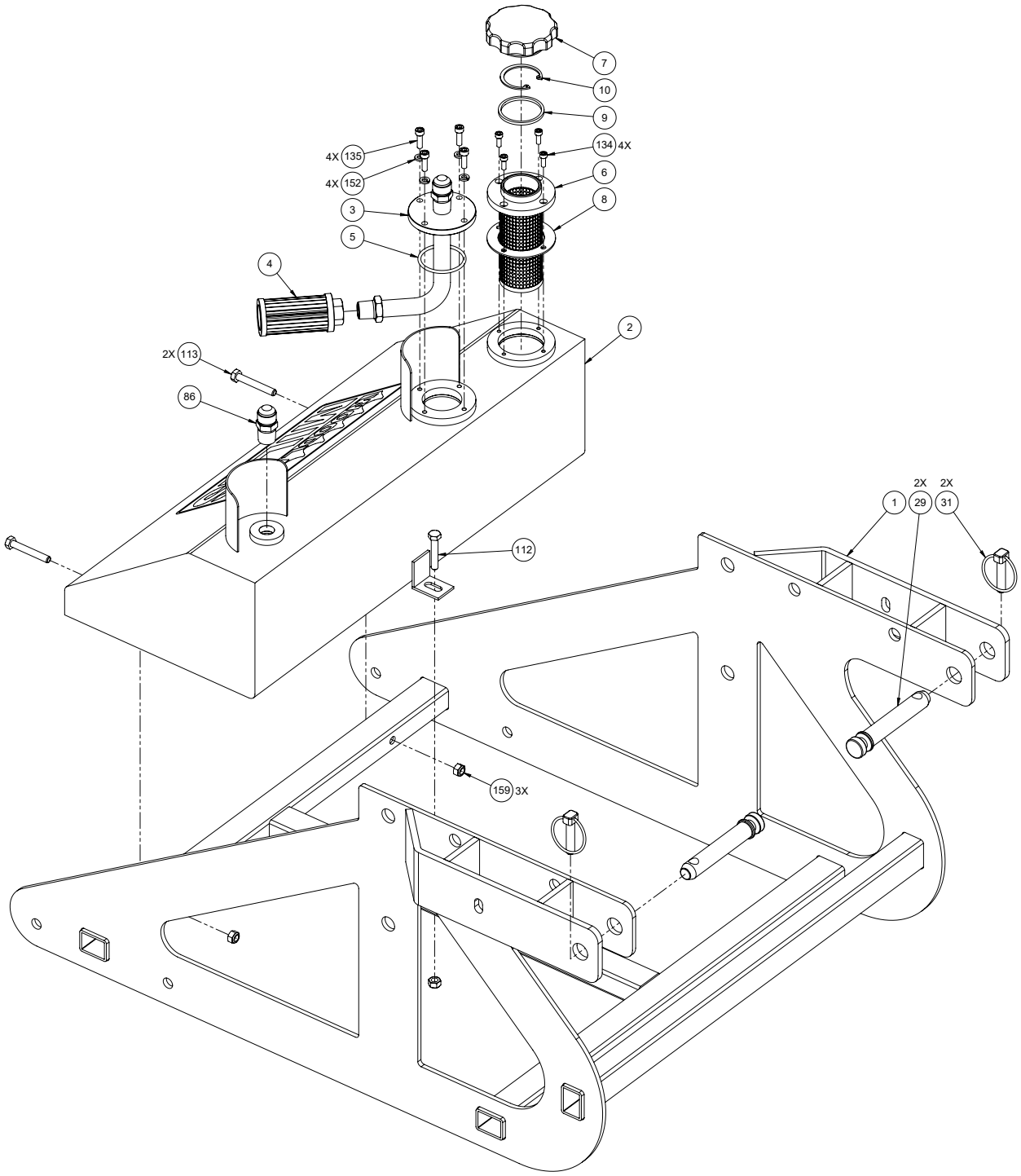
Record the part number (e.g. *0001071, HHB-MBM080FCJ, etc.*) in the "**Part No.**" column.

Contact Woodland Mills through the website (or via phone/email) and provide the list of part numbers, including quantities for each item.

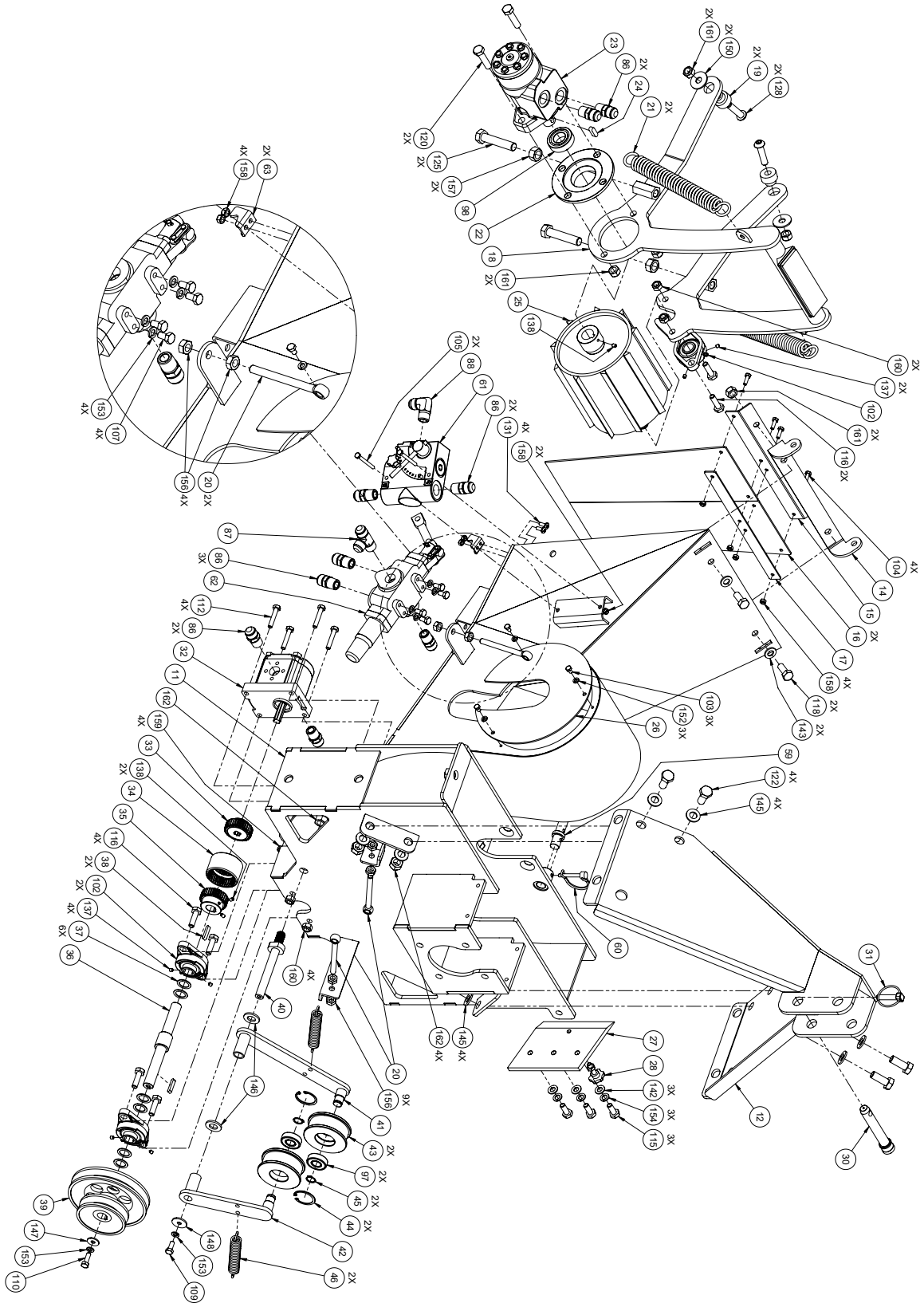
EXPLODED ASSEMBLY VIEWS
COMPLETE ASSEMBLY



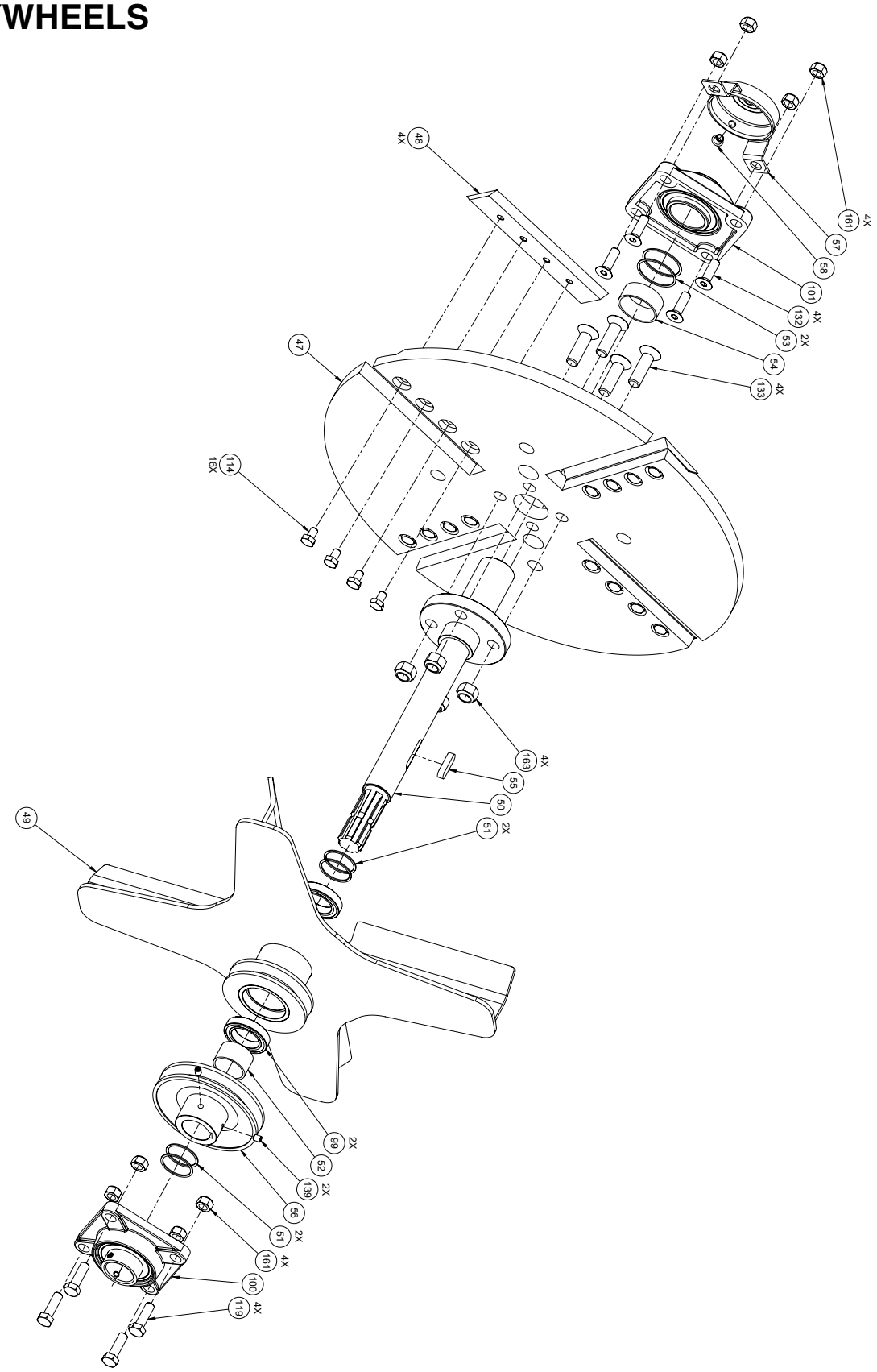
BASE



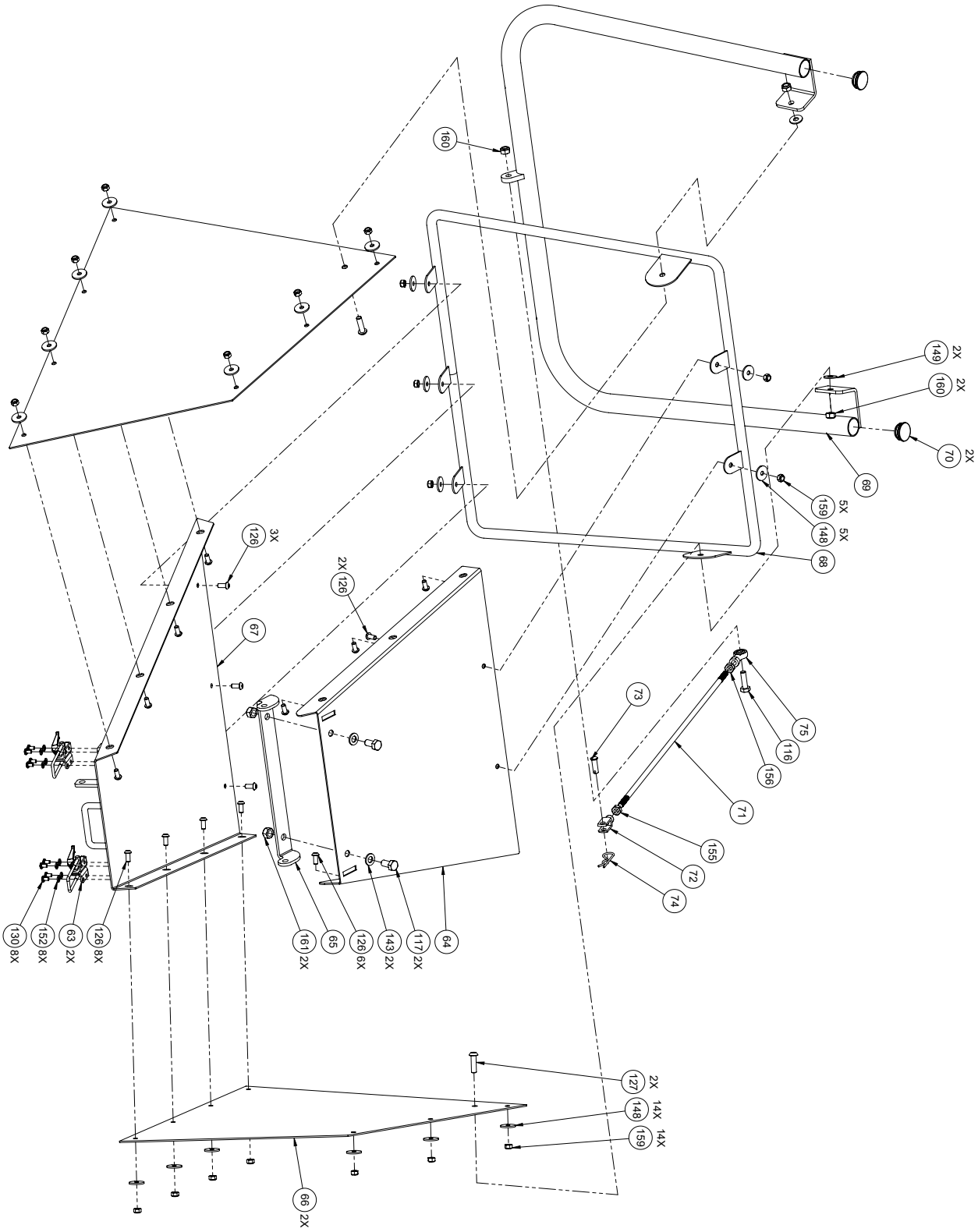
LOWER FLYWHEEL HOUSING



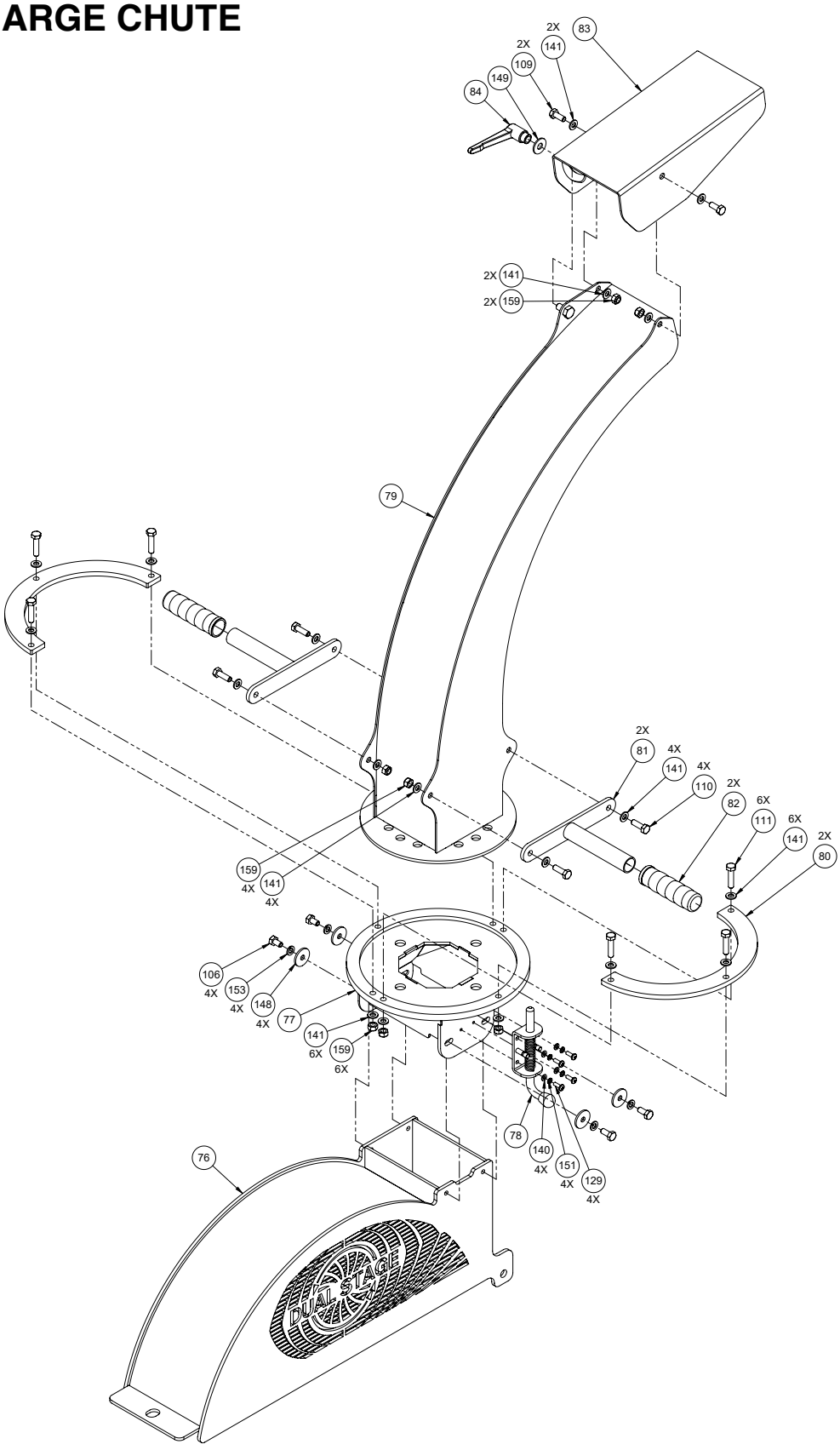
FLYWHEELS


48 4X
161 4X
57
58
101
132 4X
53 2X
54
133 4X
47
114 10X
163 4X
55
50
51 2X
49
99 2X
52
139 2X
56
51 2X
161 4X
100
119 4X

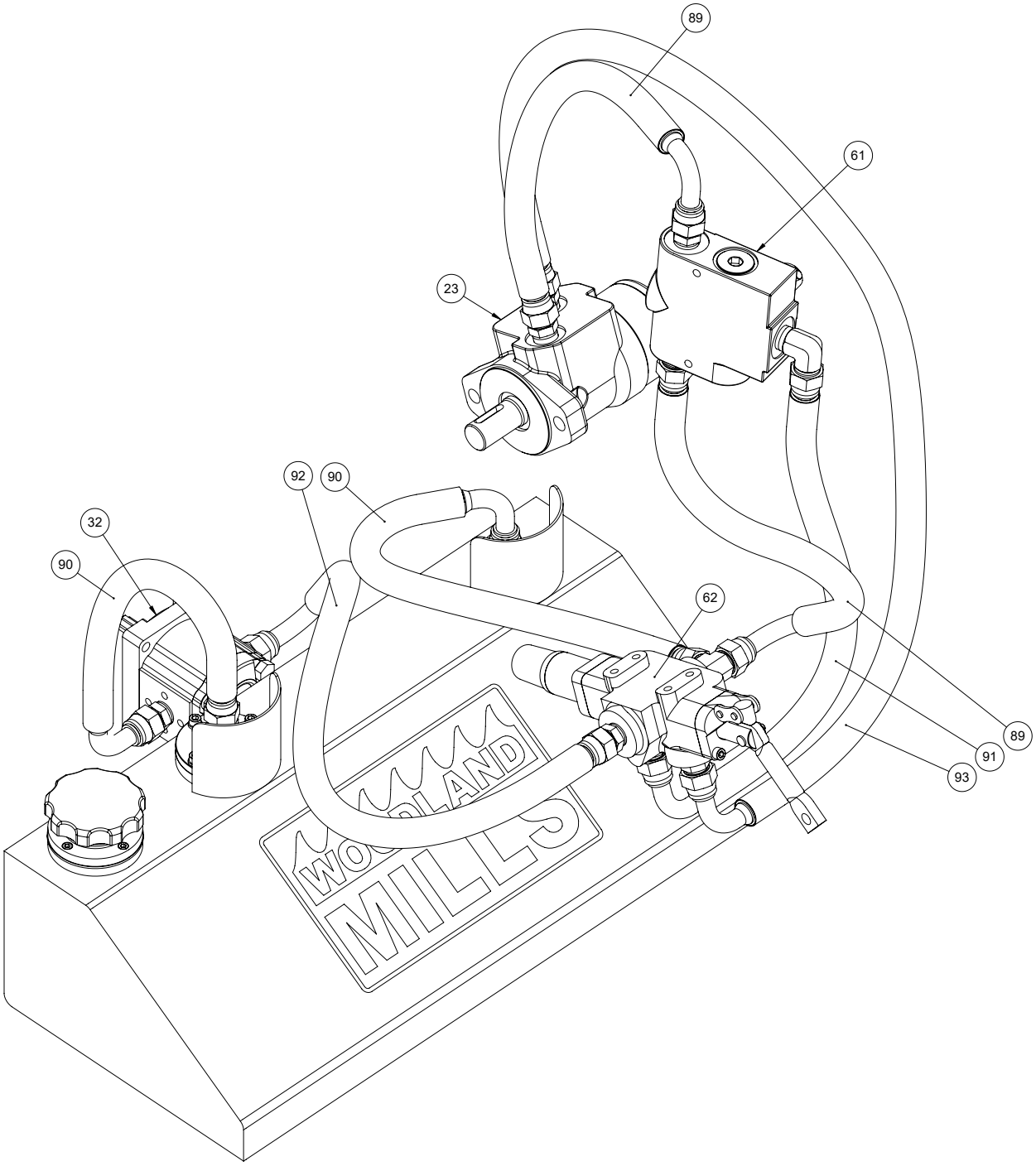
INFEED CHUTE



DISCHARGE CHUTE



HYDRAULIC LINES



PARTS LIST

Item	Qty	Part No.	Description
1	1	0001187	BASE
2	1	0001168	HYDRAULIC TANK, 20 L [5.3 gal]
3	1	0001164	HYDRAULIC TANK INTAKE LINE
4	1	0001752	HYDRAULIC INTAKE FILTER, 1/2 NPT
5	1	0004841	O-RING, 50 mm ID / 57 mm OD, 3.5 mm THK
6	1	0005188	OIL SCREEN, 50 mm DIA X 120 mm LG SCREEN
7	1	0005183	OIL SCREEN CAP, 85 mm DIA, M48 X 2 THD
8	1	0005187	GASKET, OIL SCREEN, 55 mm ID
9	1	0005186	GASKET, OIL SCREEN CAP, 48 mm ID
10	1	0005185	RETAINING RING, INTERNAL, 46 mm BORE (48.5 mm GROOVE)
11	1	0002172	LOWER FLYWHEEL HOUSING
12	1	0002175	BELT GUARD
13	1	0002180	PULLEY BOX COVER
14	1	0001208	INNER HINGE, INFEED CHUTE
15	1	0001196	CURTAIN BRACKET
16	2	0001197	CURTAIN
17	1	0001195	CURTAIN PLATE
18	1	0001200	SWINGARM
19	2	0001182	SWINGARM PIVOT BUSHING, 15 mm SHOULDER
20	4	0006059	EYEBOLT, DIN444, M10 X 1.5, 120 mm LG
21	2	0001157	EXTENSION SPRING, HOOK ENDS, 33 mm OD, 5 mm DIA WIRE, 210 mm LG
22	1	0001179	HYDRAULIC MOTOR ADAPTER PLATE, 6205-2RS BEARING
23	1	0004862	HYDRAULIC MOTOR, CW, 240 cc [14.6 in^3/rev], 2-HOLE 1/2 in BSP.F OFFSET PORTS, 25 mm SFT
24	1	0004846	PARALLEL KEY, 8 X 7 mm, 25 mm LG
25	1	0001165	INFEED ROLLER
26	1	0001201	INFEED ROLLER COVER PLATE
27	1	0001186	BED PLATE, 150 X 120 X 9.4 mm
28	1	0001191	KNOB, MULTI-LOBE, 32 mm OD, M8 X 1.25, 30 mm LG, M8 WLD HEX NUT
29	2	0001161	3-POINT HITCH PIN, LOWER, 21 mm DIA, 92 mm USEABLE LG
30	1	0001156	3-POINT HITCH PIN, UPPER, 19 mm DIA, 90 mm USEABLE LG
31	3	0004705	LINCH PIN, 10 mm DIA, 38 mm USABLE LG, 45 mm LG
32	1	0004868	HYDRAULIC GEAR PUMP, 10 mL/r, SPLINED SHAFT
33	1	0002183	FLEXIBLE SHAFT COUPLING HUB, 12 mm SPLINED SHAFT, 25 mm LG
34	1	0001572	FLEXIBLE SHAFT COUPLING SLEEVE, 65 mm OD
35	1	0002182	FLEXIBLE SHAFT COUPLING HUB, 20 mm SHAFT, 33.5 mm LG
36	1	0002184	PUMP SHAFT
37	6	0002703	SPACER, 20 ID X 28 OD X 1.5 mm LG
38	2	0004845	PARALLEL KEY, 6 X 6 mm, 32 mm LG
39	1	0002194	V-BELT PULLEY, DUAL, 20 mm SHAFT, 160/100 mm DIA
40	1	0002177	IDLER PIVOT PIN, 16 mm DIA, 115 mm LG, M16 X 2 THD
41	1	0002938	IDLER ARM, PADDLE FLYWHEEL BELT
42	1	0002178	IDLER ARM, PUMP BELT
43	2	0001692	IDLER PULLEY, SINGLE BEARING, 25 mm WD, 80 mm DIA
44	2	0004816	RETAINING RING, INTERNAL, 40 mm BORE (42.5 mm GROOVE)

Item	Qty	Part No.	Description
45	2	0004798	RETAINING RING, EXTERNAL, 17 mm SHAFT (16.2 mm GROOVE)
46	2	0001192	EXTENSION SPRING, HOOK ENDS, 21 mm OD, 3 mm DIA WIRE, 100 mm LG
47	1	0002174	FLYWHEEL
48	4	0002181	FLYWHEEL BLADE, 219 X 69 X 8 mm, TAPPED
49	1	0002187	PADDLE FLYWHEEL
50	1	0002173	FLYWHEEL SHAFT
51	4	0002704	SPACER, 40.6 ID X 46 OD X 1.5 mm LG
52	1	0002705	SPACER, 40.6 ID X 46 OD X 27.7 mm LG
53	2	0001158	SPACER, 50.6 ID X 56 OD X 1.5 mm LG
54	1	0002706	SPACER, 50.6 ID X 56 OD X 22 mm LG
55	1	0004850	PARALLEL KEY, 12 X 8 mm, 40 mm LG
56	1	0002193	V-BELT PULLEY, 40 mm SHAFT, 150 mm DIA, 60 DIA X 45.5 mm LG COLLAR
57	1	0001184	FLYWHEEL SHAFT COVER, UCF210 BEARING
58	1	0001795	FLYWHEEL SHAFT COVER PLUG
59	1	0001796	FLYWHEEL LOCKING PIN
60	1	0004728	LOCKING PIN, ROUND, 1/4 in DIA, 1-3/8 in USABLE LG, 2 in LG
61	1	0004875	VARIABLE FLOW CONTROL VALVE, 1/2 in NPT, 0-16 gal/min
62	1	0004872	DIRECTIONAL CONTROL VALVE, 1/2 NPT
62.1	1	0005487	ACTUATOR MOUNT, DIRECTIONAL CONTROL VALVE
62.2	1	0005486	ACTUATOR, DIRECTIONAL CONTROL VALVE
62.3	1	0005477	MASTER LINK, NO. 60 CHAIN
62.4	1	0005482	CLEVIS PIN, 6 mm DIA, 20 mm USABLE LG, 25 mm LG
62.5	1	0005483	COTTER PIN, 2 mm DIA, 10 mm LG
62.6	1	0005488	CAP, DIRECTIONAL CONTROL VALVE
62.7	2	SHC-MBE075FCP	SHCS, CLS 12.9, M6 X 1, 20 mm LG, FULL
63	2	0001304	LATCH-STYLE TOGGLE CLAMP
64	1	0001202	INFEED CHUTE TOP PANEL
65	1	0001207	OUTER HINGE, INFEED CHUTE
66	2	0001203	INFEED CHUTE SIDE PANEL
67	1	0001204	INFEED CHUTE BOTTOM PANEL
68	1	0001194	ROUND EDGE BAR, INFEED CHUTE
69	1	0001302	CONTROL ARM, INFEED ROLLER
70	2	0001781	PLASTIC END CAP, ROUND, 38 mm DIA
71	1	0001303	LINKAGE ROD, CONTROL ARM, 670 mm LG
72	1	0004834	CLEVIS ROD END, M10 X 1.5 THD, 10 mm ID, 10 mm JAW OPENING
73	1	0004749	CLEVIS PIN, 10 mm DIA, 24 mm USABLE LG, 30 mm LG
74	1	0004760	COTTER PIN, HAIRPIN, 10-16 mm CLEVIS, 3 mm WIRE DIA
75	1	0004888	ROD END BEARING, 10 mm, M10 X 1.5 FEM THD
76	1	0003134	UPPER FLYWHEEL HOUSING
77	1	0003136	DISCHARGE CHUTE NOZZLE
78	1	0001172	DISCHARGE CHUTE LOCK PIN ASSEMBLY, 12 mm DIA
79	1	0002190	DISCHARGE CHUTE
80	2	0002191	DISCHARGE CHUTE RETAINER PLATE
81	2	0001718	DISCHARGE CHUTE ROTATION HANDLE
82	2	0001030	HANDLE GRIP, GROOVED, 26 mm ID, 108 mm LG
83	1	0002200	DISCHARGE CHUTE DEFLECTOR
84	1	0001786	HANDLE, ADJUSTABLE POS, 78 X 54 mm, M10 X 1.5 FEM THD
85	1	0001655	MANUAL TUBE

Item	Qty	Part No.	Description
86	10	0005124	FITTING, ADAPTER, 1/2 in NPT MALE TO 7/8-14 UNF MALE
87	1	0004911	FITTING, TEE, 1/2 NPT TO 7/8-14 (2X)
88	1	0005115	FITTING, ELBOW, 90°, 1/2 NPT TO 7/8-14 THD
89	2	0003297	HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 350 mm LG
90	2	0003298	HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 500 mm LG
91	1	0003300	HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 600 mm LG
92	1	0003301	HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 800 mm LG
93	1	0003303	HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 1450 mm LG
94	1	0001761	PTO SHAFT W/ SHEAR BOLT, TRIMMABLE, 31-38 in (790-973 mm)
94.1	1	0003069	COVER/RETAINING CLIP KIT, PTO SHAFT W/ SHEAR BOLT
94.2	1	0003073	RETAINING CLIP KIT, PTO SHAFT W/ SHEAR BOLT
94.3	1	HHB-MBJ105PCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 50 mm LG, 22 mm LG THD
94.4	1	HLN-MBJCH	LOCK NUT, CLS 8, M8 X 1.25
95	1	BX43	V-BELT, COGGED, BX43
96	1	BX45	V-BELT, COGGED, BX45
97	2	6203-2RS	BALL BEARING, SEALED, 17 mm SFT, 40 mm HSG, 12 mm WD
98	1	6205-2RS	BALL BEARING, SEALED, 25 mm SFT, 52 mm HSG, 15 mm WD
99	2	6908-2RS	BALL BEARING, SEALED, 40 mm SFT, 62 mm HSG, 12 mm WD
100	1	UCF208	FLANGE BEARING, SQ, 4-BOLT, 40 mm SFT, 102 mm C-C
101	1	UCF210	FLANGE BEARING, SQ, 4-BOLT, 50 mm SFT, 111 mm C-C
102	3	UCFL204	FLANGE BEARING, OVAL, 2-BOLT, 20 mm SFT, 90 mm C-C
103	3	HHB-MBE059FCJ	HEX HEAD BOLT, CLS 8.8, M6 X 1, 10 mm LG, FULL
104	4	HHB-MBE075FCJ	HEX HEAD BOLT, CLS 8.8, M6 X 1, 20 mm LG, FULL
105	2	HHB-MBE115PCJ	HEX HEAD BOLT, CLS 8.8, M6 X 1, 60 mm LG, 18 mm LG THD
106	2	HHB-MBJ067FCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 14 mm LG, FULL
107	8	HHB-MBJ071FCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 16 mm LG, FULL
108	2	HHB-MBJ073FCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 18 mm LG, FULL
109	3	HHB-MBJ075FCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 20 mm LG, FULL
110	5	HHB-MBJ080FCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 25 mm LG, FULL
111	6	HHB-MBJ090FCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 35 mm LG, FULL
112	5	HHB-MBJ100FCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 45 mm LG, FULL
113	2	HHB-MBJ110PCJ	HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 55 mm LG, 22 mm LG THD
114	16	HHB-MBM071FCM	HEX HEAD BOLT, CLS 10.9, M10 X 1.5, 16 mm LG, FULL
115	3	HHB-MBM080FCJ	HEX HEAD BOLT, CLS 8.8, M10 X 1.5, 25 mm LG, FULL
116	7	HHB-MBM090FCJ	HEX HEAD BOLT, CLS 8.8, M10 X 1.5, 35 mm LG, FULL
117	2	HHB-MBR080FCJ	HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 25 mm LG, FULL
118	2	HHB-MBR085FCJ	HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 30 mm LG, FULL
119	4	HHB-MBR095FCJ	HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 40 mm LG, FULL
120	2	HHB-MBR105FCJ	HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 50 mm LG, FULL
121	1	HHB-MBR235PCJ	HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 180 mm LG, 30 mm LG THD
122	4	HHB-MBW090FCJ	HEX HEAD BOLT, CLS 8.8, M14 X 2, 35 mm LG, FULL
123	4	HHB-MCA090FCJ	HEX HEAD BOLT, CLS 8.8, M16 X 2, 35 mm LG, FULL
124	5	HHB-MCA095FCJ	HEX HEAD BOLT, CLS 8.8, M16 X 2, 40 mm LG, FULL
125	2	HHB-MCA135PCJ	HEX HEAD BOLT, CLS 8.8, M16 X 2, 80 mm LG, 38 mm LG THD
126	19	BHS-MBJ073FCM	BUTTON HEAD SCREW, CLS 10.9, M8 X 1.25, 18 mm LG, FULL
127	2	BHS-MBM090FCM	BUTTON HEAD SCREW, CLS 10.9, M10 X 1.5, 35 mm LG, FULL
128	2	BHS-MBR105FCM	BUTTON HEAD SCREW, CLS 10.9, M12 X 1.75, 50 mm LG, FULL
129	4	PPH-MBA067FCE	SCREW, PPH, CLS 4.8, M5 X 0.8, 14 mm LG, FULL

Item	Qty	Part No.	Description
130	11	PPH-MBE059FCE	SCREW, PPH, CLS 4.8, M6 X 1, 10 mm LG, FULL
131	4	PPH-MBE071FCE	SCREW, PPH, CLS 4.8, M6 X 1, 16 mm LG, FULL
132	4	HFH-MBR095FCM	SCREW, HFH, CLS 10.9, M12 X 1.75, 40 mm LG, FULL
133	4	HFH-MCA110FCM	SCREW, HFH, CLS 10.9, M16 X 2, 55 mm LG, FULL
134	4	SHC-MBA067FCP	SHCS, CLS 12.9, M5 X 0.8, 14 mm LG, FULL
135	4	SHC-MBE075FCP	SHCS, CLS 12.9, M6 X 1, 20 mm LG, FULL
136	2	HHS-MBM057069AJ	SHLDR SCREW, HEX HEAD, ALLOY, 11 X 15 mm LG SHLDR, M10 X 1.5 X 20 mm LG THD
137	6	FTS-MBE051GR	SET SCREW, FLAT TIP, GR 45H, M6 X 1, 6 mm LG
138	3	FTS-MBE055GR	SET SCREW, FLAT TIP, GR 45H, M6 X 1, 8 mm LG
139	2	FTS-MBJ059GR	SET SCREW, FLAT TIP, GR 45H, M8 X 1.25, 10 mm LG
140	4	FTW-MBA000AJ	FLAT WASHER, M5
141	28	FTW-MBJ000AJ	FLAT WASHER, M8
142	3	FTW-MBM000AJ	FLAT WASHER, M10
143	4	FTW-MBR000AJ	FLAT WASHER, M12
144	6	FTW-MBR000NA	FLAT WASHER, M12, NYLON
145	8	FTW-MBW000AJ	FLAT WASHER, M14
146	7	FTW-MCA000AJ	FLAT WASHER, M16
147	1	FDW-MBJ073000AJ	FENDER WASHER, M8, 24 mm OD
148	24	FDW-MBJ079000AJ	FENDER WASHER, M8, 30 mm OD
149	3	FDW-MBM075000AJ	FENDER WASHER, M10, 26 mm OD
150	2	FDW-MBR086000AJ	FENDER WASHER, M12, 37 mm OD
151	4	SLW-MBAAJ	SPLIT LOCK WASHER, M5
152	15	SLW-MBEAJ	SPLIT LOCK WASHER, M6
153	14	SLW-MBJAJ	SPLIT LOCK WASHER, M8
154	3	SLW-MBMAJ	SPLIT LOCK WASHER, M10
155	1	HXN-MBNCH	HEX NUT, CLS 8, M10 X 1.25
156	9	HXN-MBMCH	HEX NUT, CLS 8, M10 X 1.5
157	2	HXN-MCACH	HEX NUT, CLS 8, M16 X 2
158	10	HLN-MBECH	LOCK NUT, CLS 8, M6 X 1
159	38	HLN-MBJCH	LOCK NUT, CLS 8, M8 X 1.25
160	11	HLN-MBMCH	LOCK NUT, CLS 8, M10 X 1.5
161	17	HLN-MBRCH	LOCK NUT, CLS 8, M12 X 1.75
162	5	HLN-MBWCH	LOCK NUT, CLS 8, M14 X 2
163	12	HLN-MCACH	LOCK NUT, CLS 8, M16 X 2

NOTES


WOODLAND
MILLS
DISCOVER THE WOODLAND™