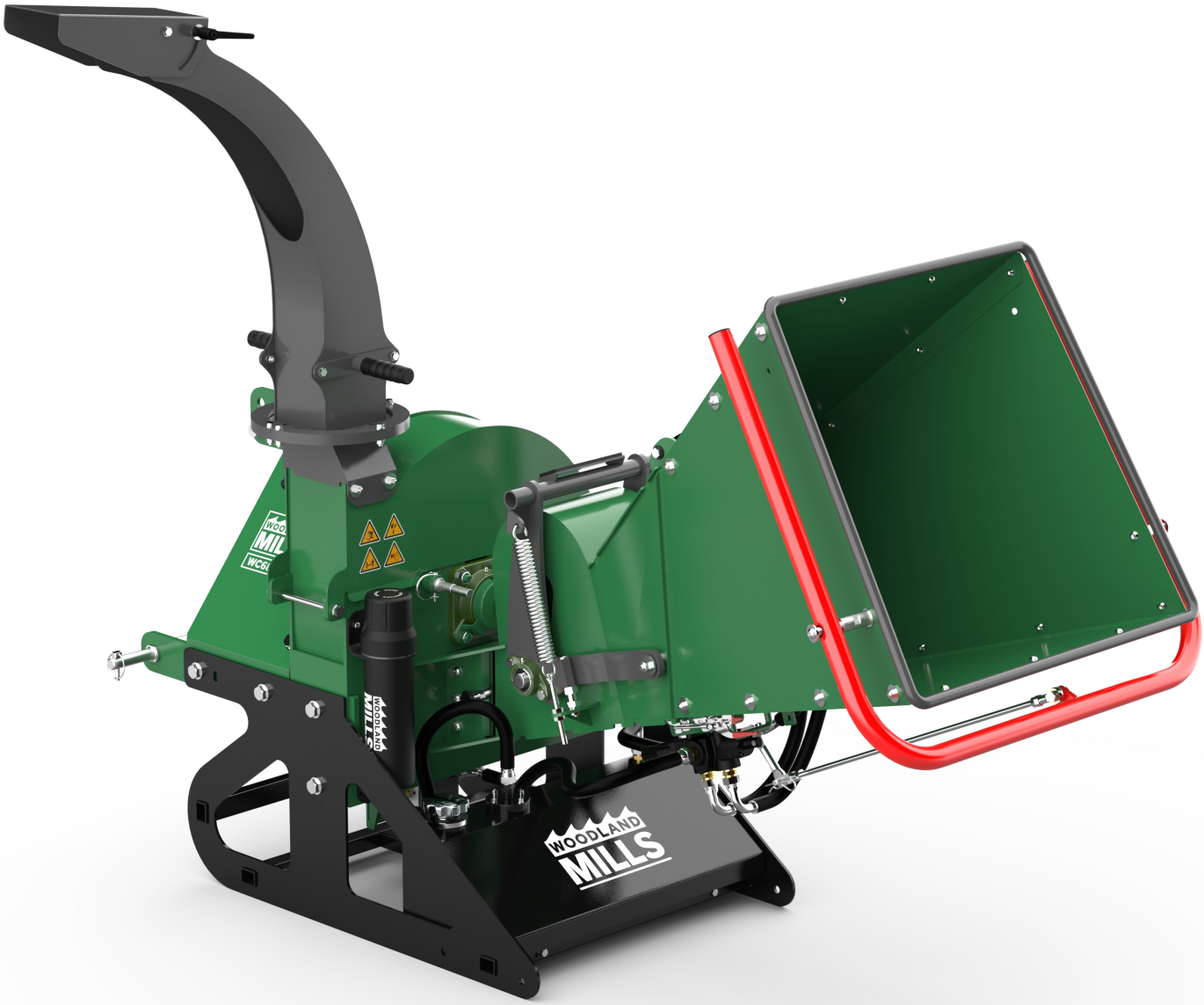
# WC68 PTO WOOD CHIPPER




# OPERATOR'S MANUAL

0010298-M-EN: Rev D
Publication Date: 23-Oct-2024

WOODLAND
MILLS

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# 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, WARNING & INFORMATION SYMBOLS

Throughout this operator's manual and on the wood chipper, there are safety, warning, and information symbols. Please heed and obey all warnings.

| Symbol | Description |
|---|---|
|  | Refer to instruction/operator's manual |
|  | Wear eye protection |
|  | Wear a face shield |
|  | Wear ear protection |
|  | Wear protective gloves |
|  | General warning |
|  | Sharp element warning |
|  | Moving parts warning |
|  | Flying debris warning |
|  | Stand clear warning |

****Look for symbols in the upper-right corner of each page throughout the manual.****

# 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

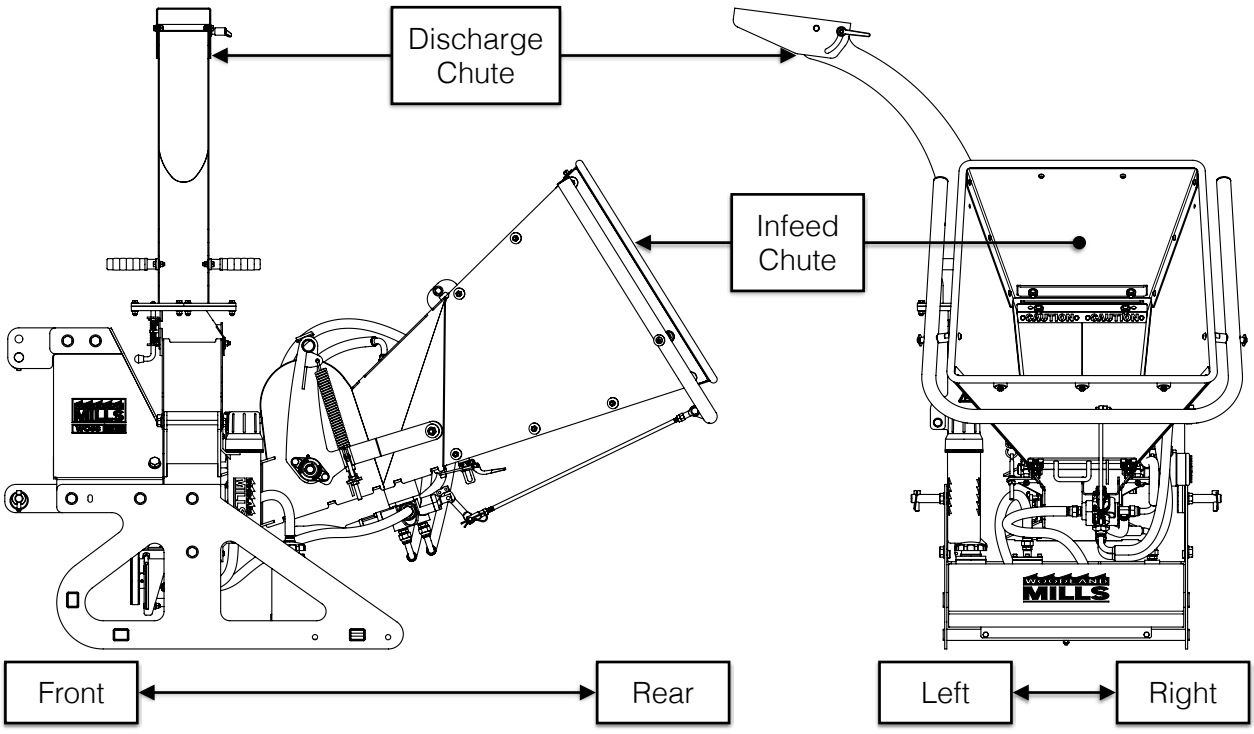
- **Keep work area clean**, free of clutter and well lit. Cluttered and dark work areas can cause accidents.
- **Do not use your wood chipper where there is a risk of causing a fire or an explosion**; e.g. in the presence of flammable liquids, gasses, or dust. Power tools create sparks which may ignite 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

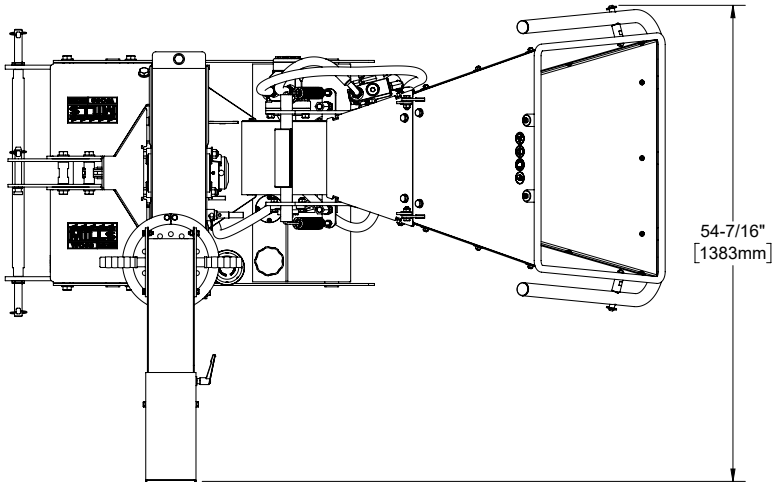
- **Always be sure the operator is familiar** with proper safety precautions and operation techniques before using machine.
- **Do not force the tool.** Tools do a better and safer job when used in the manner for which they are designed.
- **Turn off the tractor engine** and disconnect the PTO shaft 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 in [152 mm] in diameter** or for any purpose other than chipping brush as described in this manual.

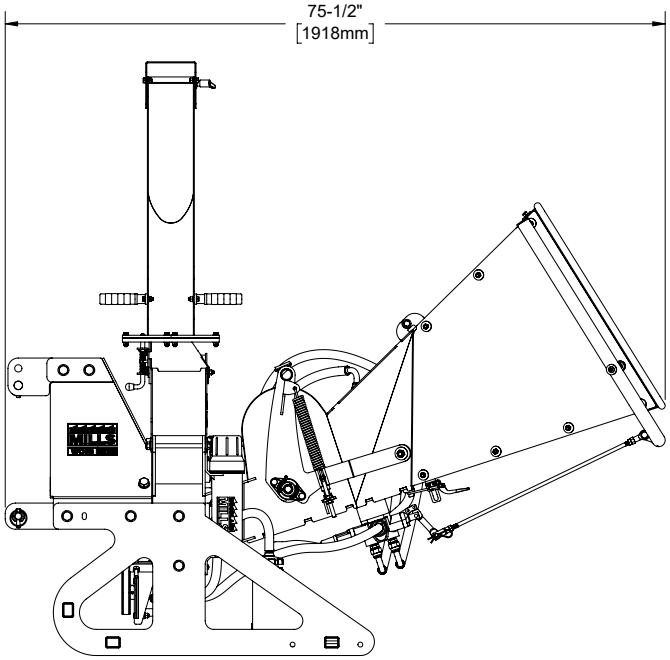
# TECHNICAL SPECIFICATIONS

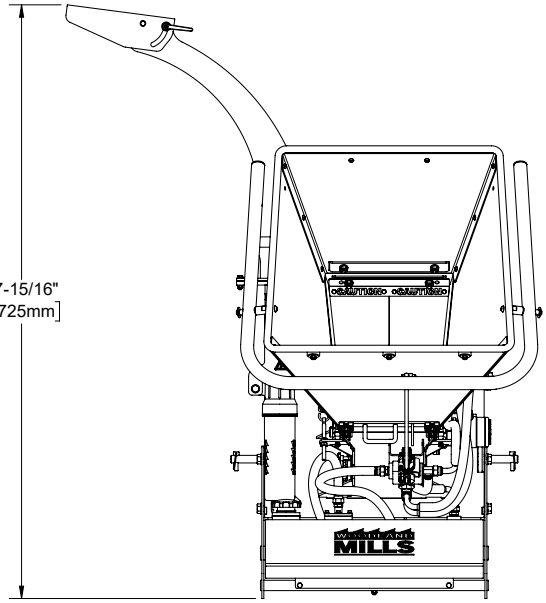
| Component | WC68 Specification |
|---|---|
| Drive System | PTO |
| Transport | 3-Point Hitch |
| Minimum HP Required (at PTO) | 20 hp |
| In-Feed System | Hydraulic |
| Hydraulic Oil | ISO 32 (ISO 46 for warmer climates) |
| Hydraulic Tank Volume | 5.3 gal [20 L] |
| Hydraulic Requirement (Tractor) | 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 in [219 X 69 X 8 mm] |
| Blade Hardware | M10 X 35 mm Flat Head, M10 Lock Nuts - Class 10.9 |
| Infeed Roller Diameter | 7-7/16 in [188 mm] at Tooth Tip |
| Infeed Chute Dimensions (W x H) | 27-1/8 X 26-1/16 in [688 X 663 mm] |
| Product Weight | 693 lb [314 kg] |
| Product Shipping Weight | 864 lb [392 kg] |



# i. OVERALL DIMENSIONS—OPERATING STATE

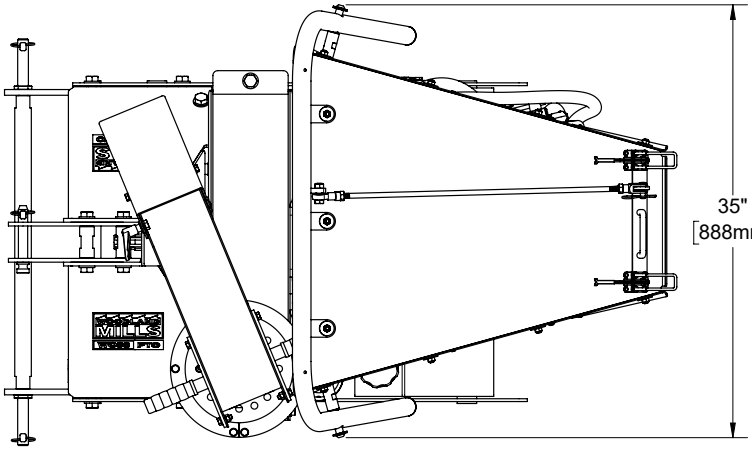


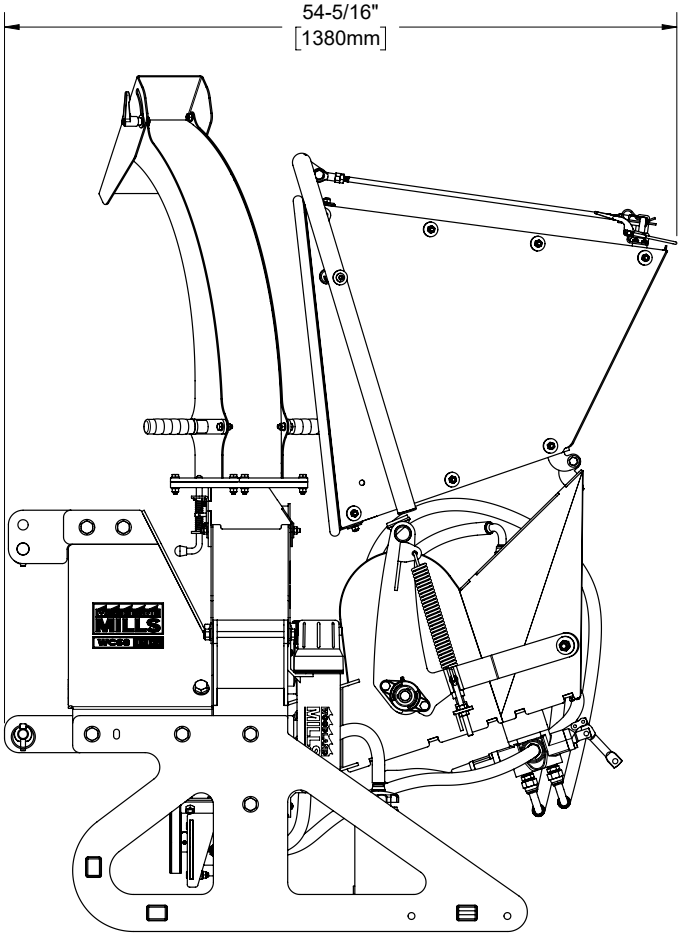



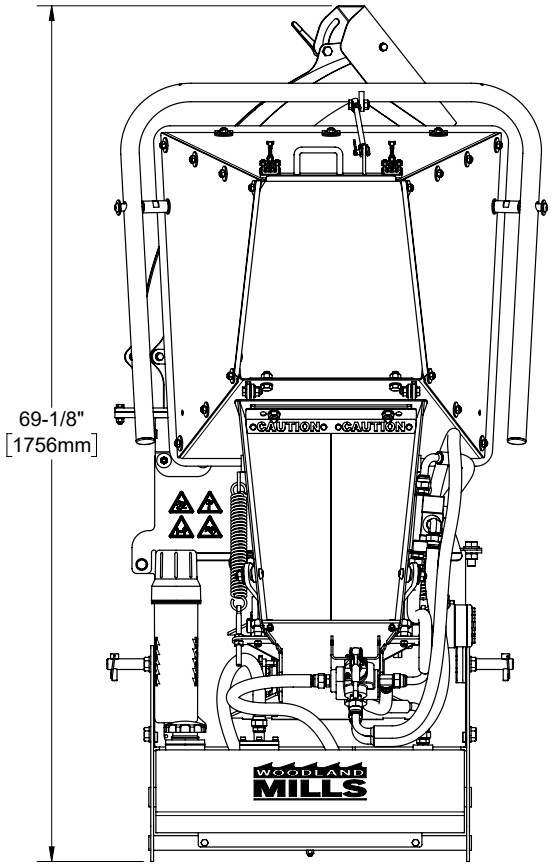



## ii. OVERALL DIMENSIONS—STORED STATE

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.

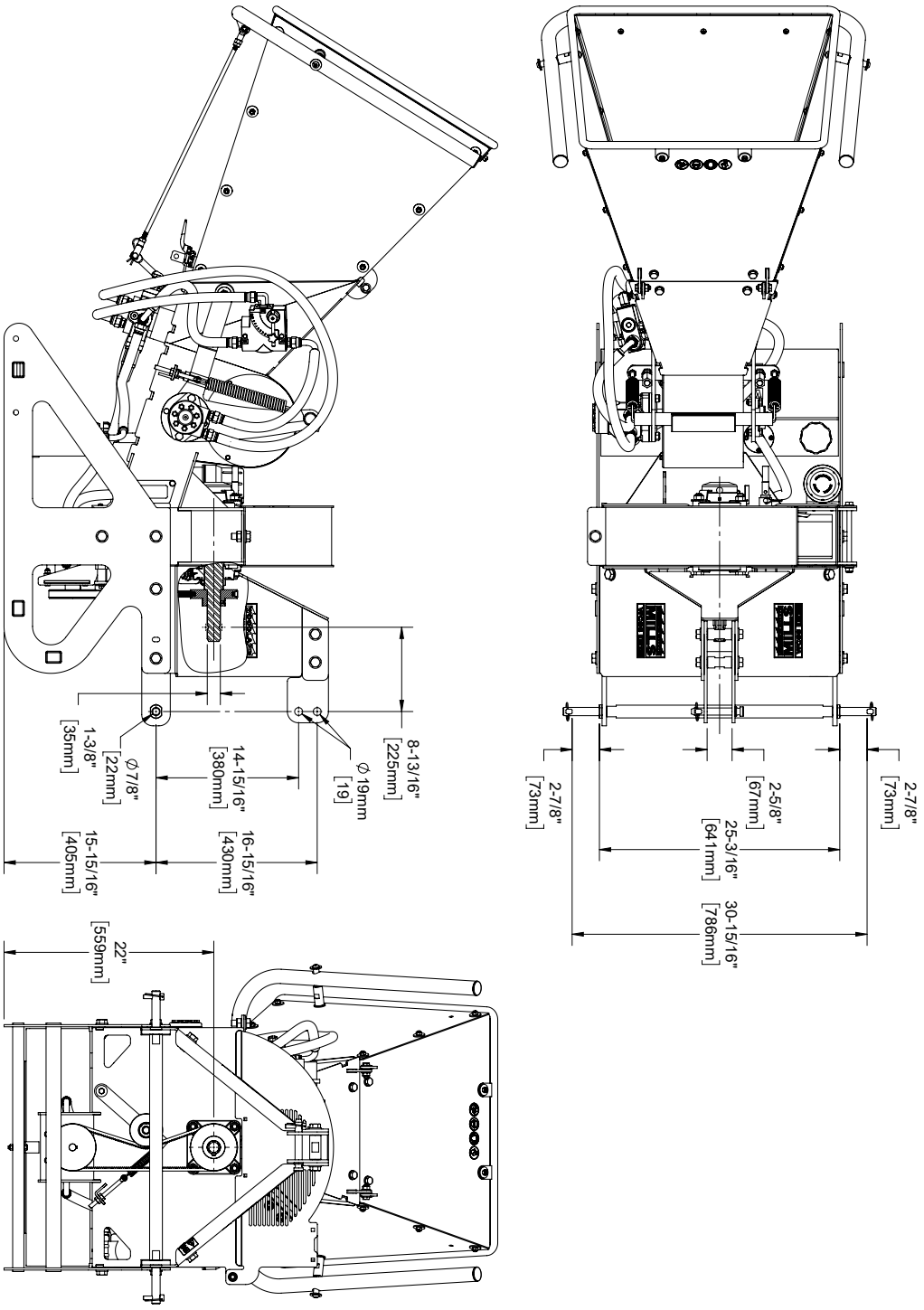


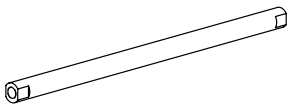
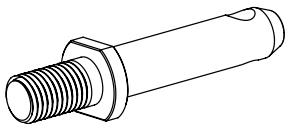
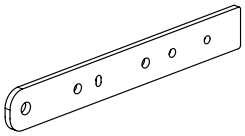
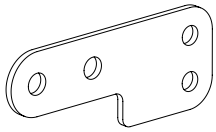
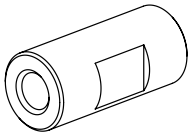
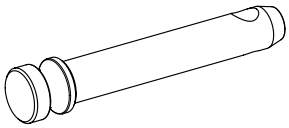
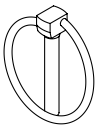
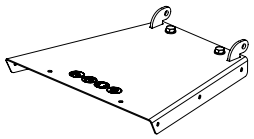
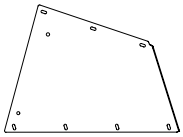
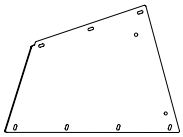
# iii. 3-POINT HITCH DIMENSIONS

The WC68 wood chipper has a Category 1, 3-point hitch system that is designed to work with tractors rated at 20-50 PTO horsepower. Top link pin is ¾" [19 mm] diameter and the lift arm pins are ⅞" [22 mm] diameter.



# COMPONENT LISTS

Verify all component and hardware quantities are correct prior to assembling the wood chipper.

| | | |
|---|---|---|
| 1x | Connecting Rod [0006864] |  |
| 2x | Lower Hitch Pin [0001738] |  |
| 2x | Lower Hitch Arm [0006859] |  |
| 2x | Upper Hitch Plate [0007036] |  |
| 2x | Upper Hitch Bushing [0009856] |  |
| 1x | Upper Hitch Pin [0001156] |  |
| 3x | Linch Pin [0004705] |  |
| 1x | Infeed Chute Top Panel Assembly |  |
| 1x | Infeed Chute Right Side Panel [0006912] |  |
| 1x | Infeed Chute Left Side Panel [0006911] |  |

| | | |
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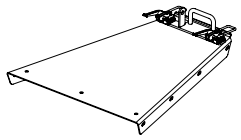
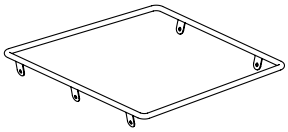
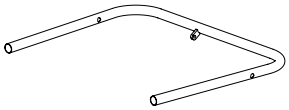
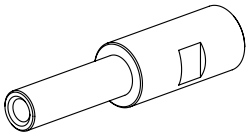
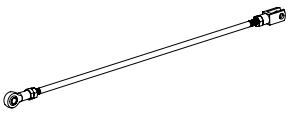
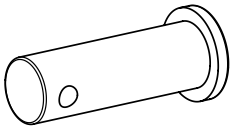
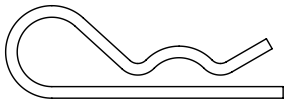
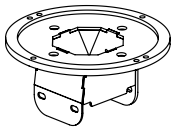
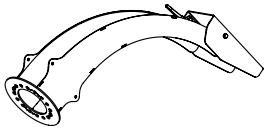
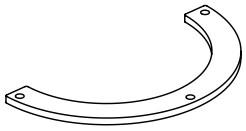
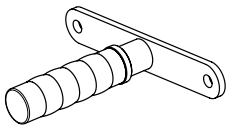
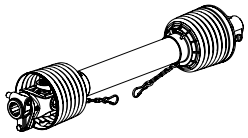
| 1x | Infeed Chute Bottom Panel Assembly |  |
| 1x | Round Edge Bar [0006913] |  |
| 1x | Control Arm [0009646] |  |
| 2x | Control Arm Spacer [0008193] |  |
| 1x | Linkage Rod Assembly |  |
| 1x | Clevis Pin 10 mm [0004749] |  |
| 1x | Hairpin Cotter Pin [0004760] |  |
| 1x | Discharge Chute Nozzle [0010309] |  |
| 1x | Discharge Chute Assembly |  |
| 2x | Discharge Chute Retainer [0002191] |  |

| | | |
|---|---|---|
| 2x | Discharge Chute Handle with Grip |  |
| 1x | Bed Plate Gap Tool [0010411] |  |

| | | |
|---|---|---|
| 1x | PTO Shaft [0010500] |  |

# TO-SCALE HARDWARE

## BOLTS & SCREWS

Hardware graphics are printed at 1:1 scale for ease of identification. Simply place the hardware over the image in the tables to verify it is the correct size.

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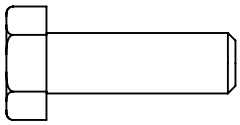
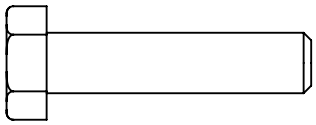
| | |  |
| 6x | HHB-MBJ090FCJ | M8 X 1.25 X 35 mm HEX BOLT |
| | |  |
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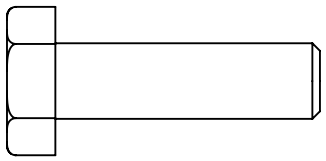
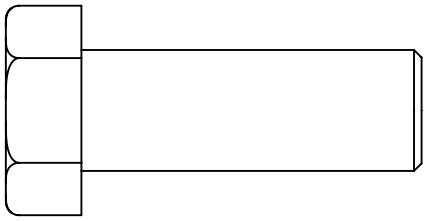
| | |  |
| 4x | HHB-MCA100FCJ | M16 X 2 X 45 mm HEX BOLT |
| | |  |

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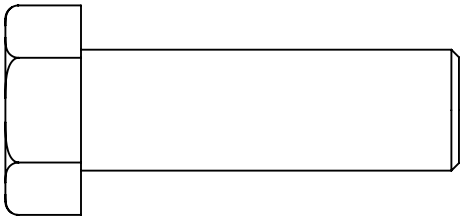
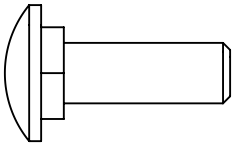
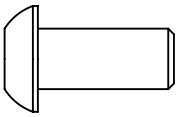
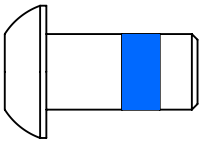
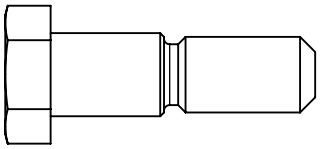
| |  | |
| 4x | SNC-MBJ080FCJ | M8 X 1.25 X 25 mm CARRIAGE BOLT |
| |  | |
| 19x | BHS-MBJ073FCM | M8 X 1.25 X 18 mm BUTTON HEAD SCREW |
| |  | |
| 4x | BHS-MBM075FCT | M10 X 1.5 X 20 mm BUTTON HEAD SCREW, THREADLOCKER |
| |  | |
| 2x | HHS-MBM057069AJ | M10 X 1.5 X 20 mm HEX HEAD SHOULDER SCREW |
| |  | |

## SCALES

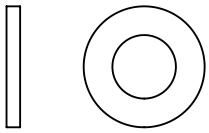
Ruler scales are also provided below to double-check bolt and screw lengths when necessary.


**CENTIMETRES / MILLIMETRES**

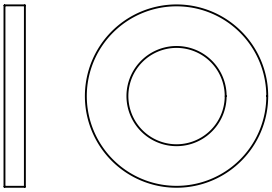

**INCHES**

## WASHERS

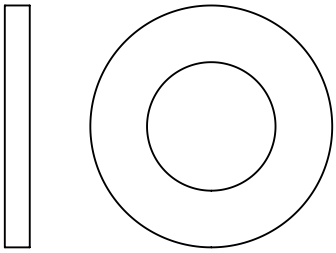
| 20x | FTW-MBJ000AJ<br>M8 FLAT WASHER |
|---|---|



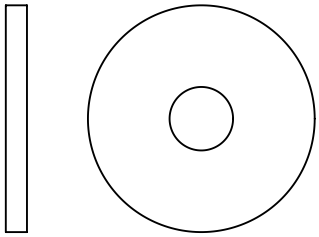
| 6x | FTW-MBR000NA<br>M12 NYLON FLAT WASHER |
|---|---|



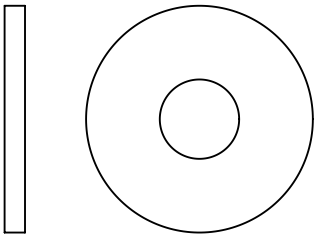
| 12x | SLW-MCA000AJ<br>M16 FLAT WASHER |
|---|---|



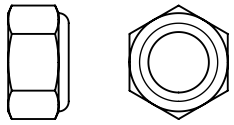
| 23x | FDW-MBJ079000AJ<br>M8 FENDER WASHER, 30 mm OD |
|---|---|

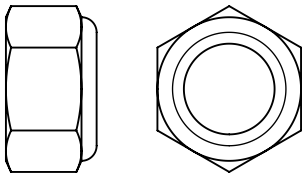


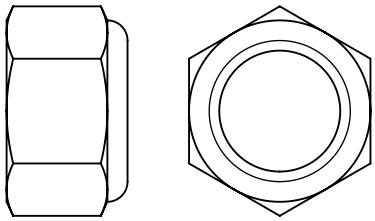
| 4x | FDW-MBM075000AJ<br>M10 FENDER WASHER, 30 mm OD |
|---|---|



## NUTS

| 33x | HLN-MBJCH<br>M8 X 1.25 LOCK NUT |
|---|---|
| |  |

| 4x | HLN-MBRCH<br>M12 X 1.75 LOCK NUT |
|---|---|
| |  |

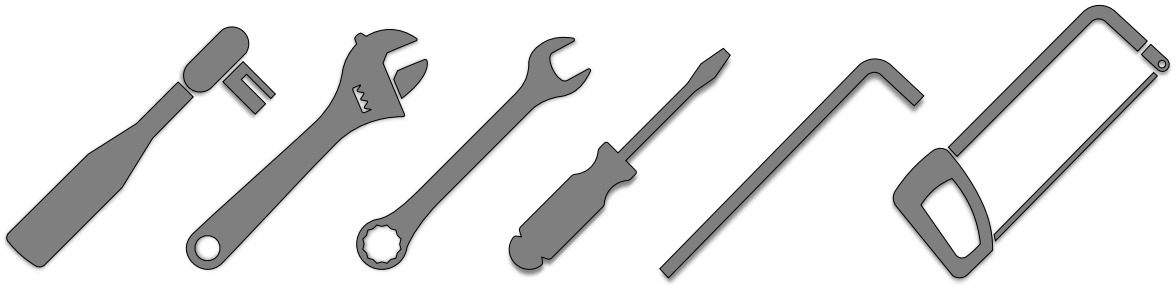
| 4x | HLN-MCACH<br>M16 X 2 LOCK NUT |
|---|---|
| |  |

# 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.) |

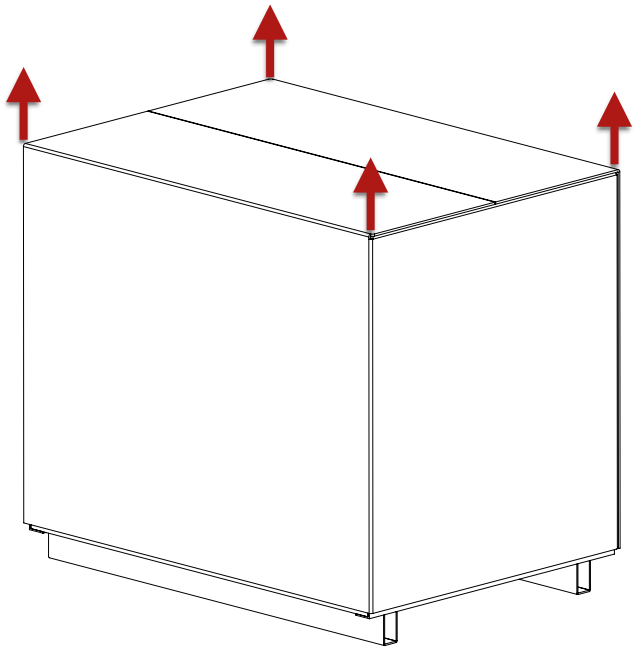
* Only if PTO shaft requires trimming. See ***Trimming the PTO Shaft*** section for more detail.

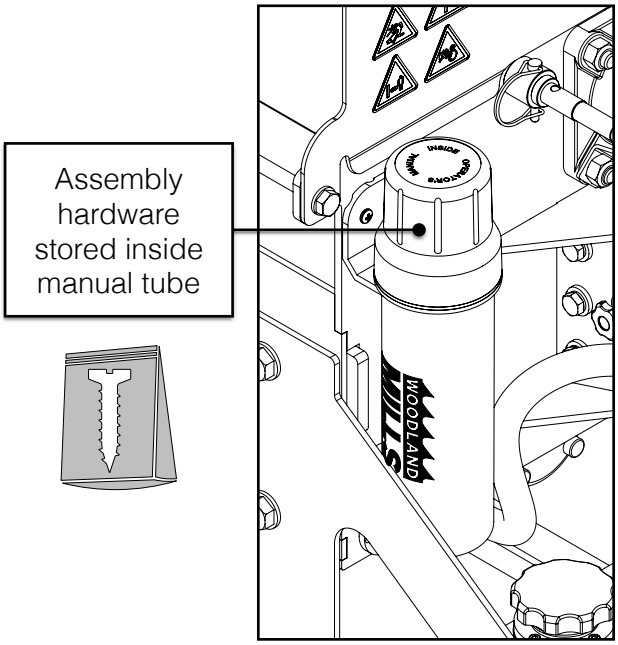


# 2. UNPACKING

## 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 top portion of the crate.

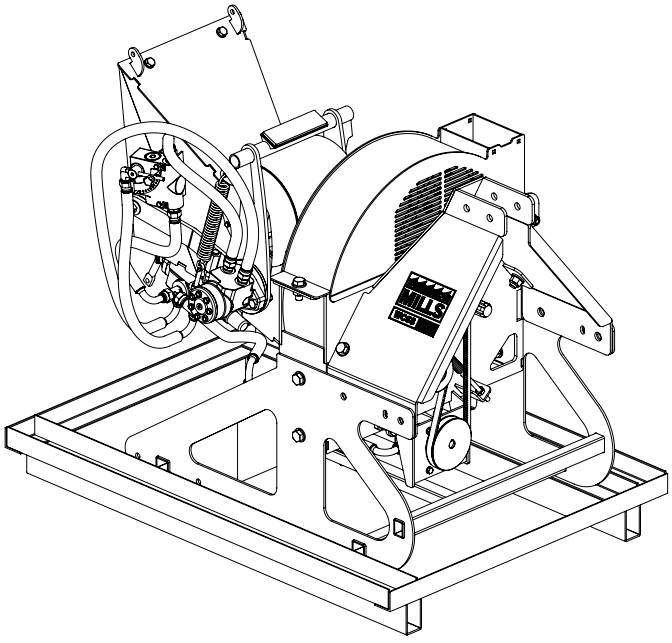





Remove all the loose components from the skid (infeed chute panels, control arm, edge bar, control arm linkage, discharge chute, discharge chute handles, PTO shaft) and set them to the side. Leave the wood chipper on the skid.

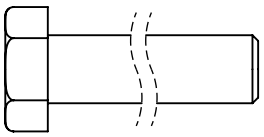
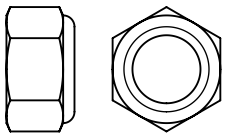
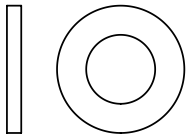
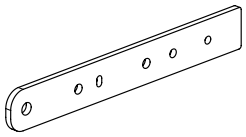
Hardware for assembly is stored inside the manual tube.

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



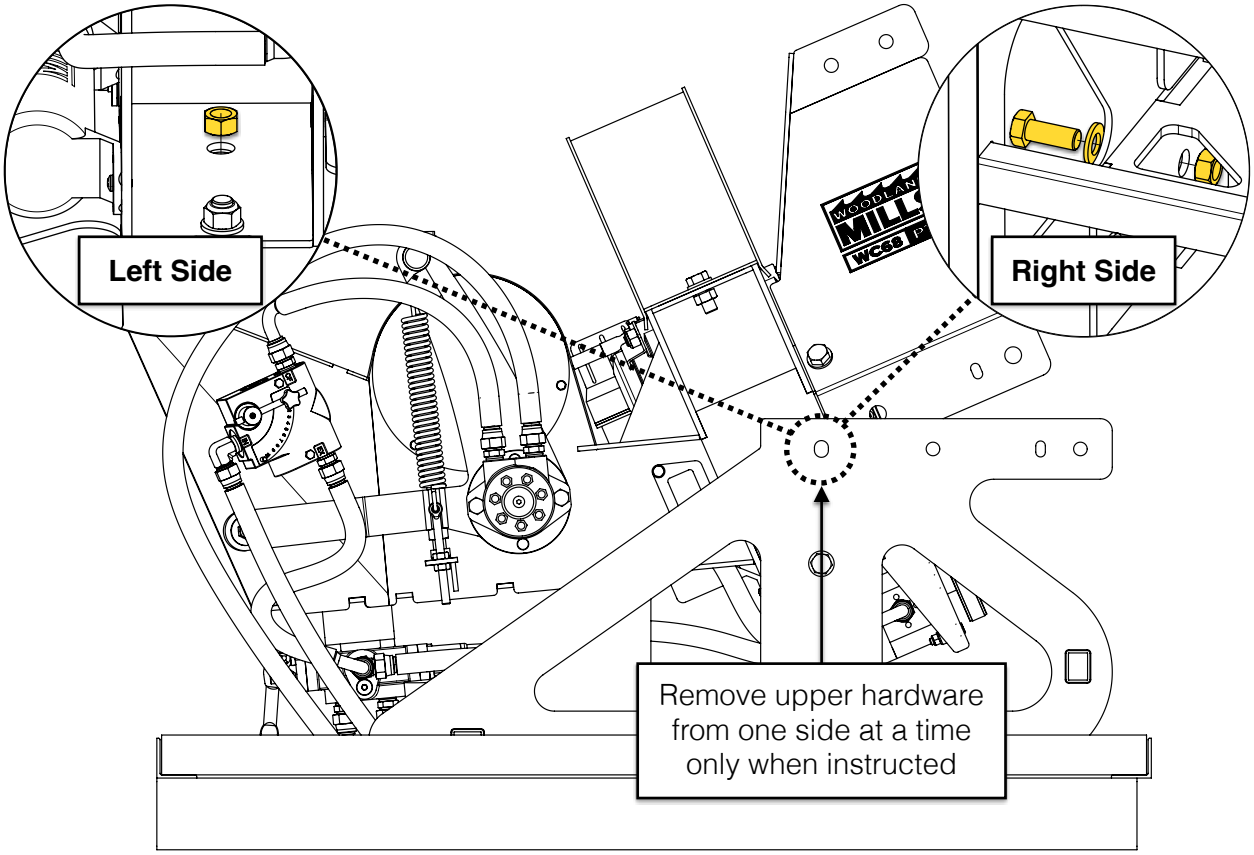
## B. LOWER HITCH

Use the components and hardware listed in the table below to assemble the lower hitch arms to the chipper.

| | | | | | |
|---|---|---|---|---|---|
| 4x | M16 X 55 mm Hex Bolt |  | 4x | M16 Lock Nut |  |
| 8x | M16 Flat Washer |  | 2x | Lower Hitch Arm |  |

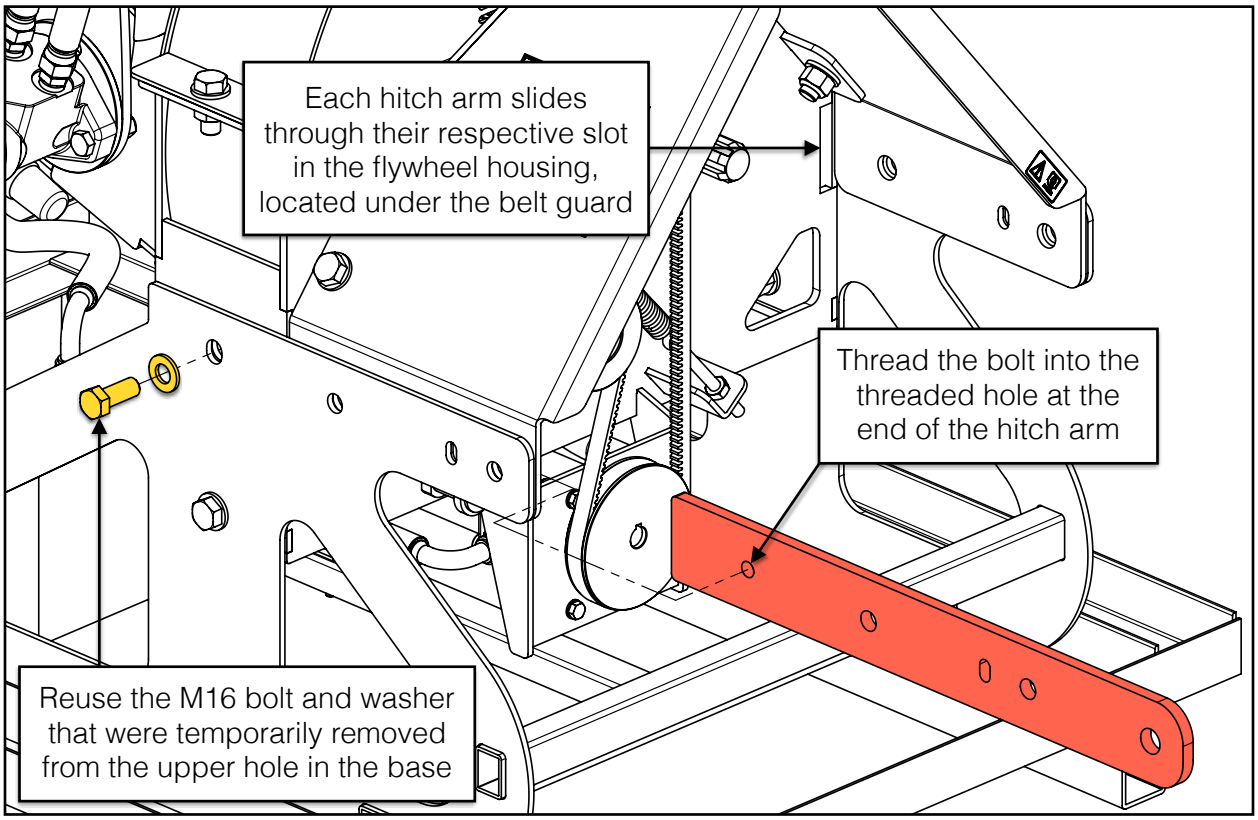
Before the lower hitch arms can be installed, there are temporary nuts securing the two (2) upper base bolts of the flywheel housing (one per side) that need to be removed. If both nuts are removed at the same time, the entire chassis could fall forward in the base and damage the machine as shown in the graphic below.

*****It is imperative that only one side's upper base hardware is removed at a time while the hitch arm for that side is installed. Remove each side's hardware only when instructed.*****

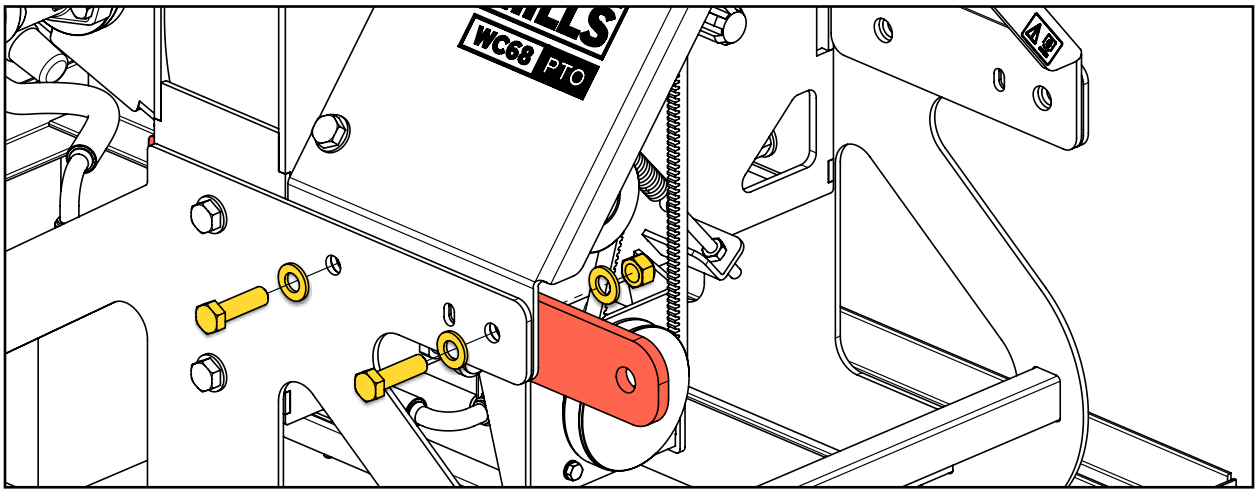


Remove the temporary nut from under the right-side of the flywheel housing and discard it.

Slide one (1) of the lower hitch arms into the rectangular slot on the right-side of the lower flywheel housing and reinstall the M16 X 40 mm bolt and M16 flat washer that were temporarily removed. Only snug the hardware, do not fully tighten until instructed in a later step

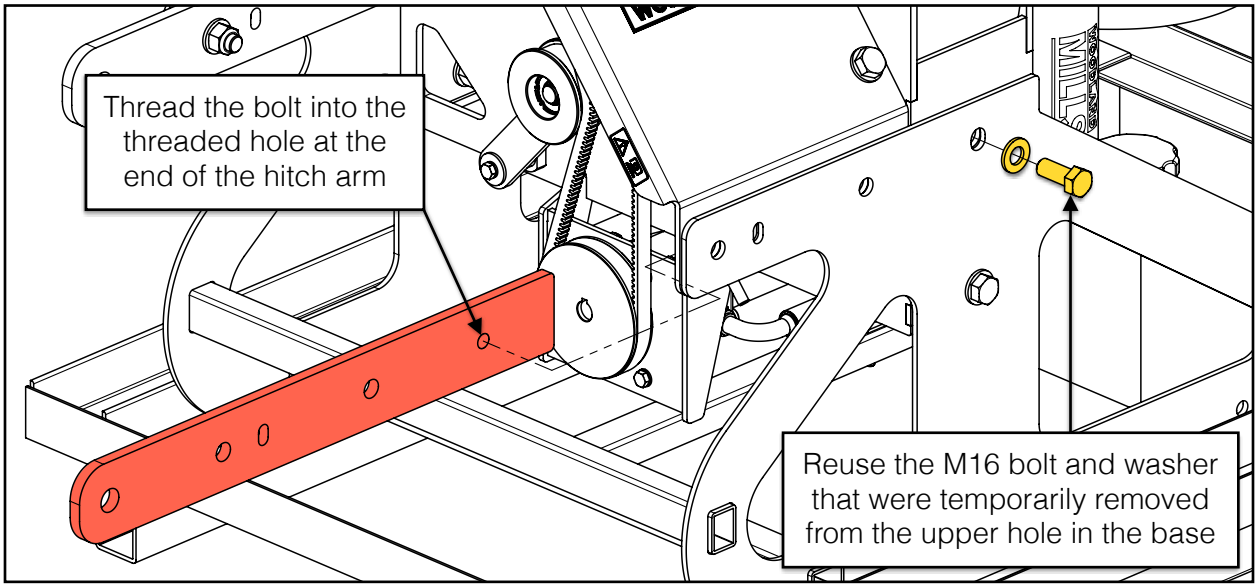



Use two (2) M16 X 55 mm bolts, four (4) M16 flat washers, and two (2) M16 lock nuts to secure the arm. Only snug the hardware, do not fully tighten them until instructed in a later step.

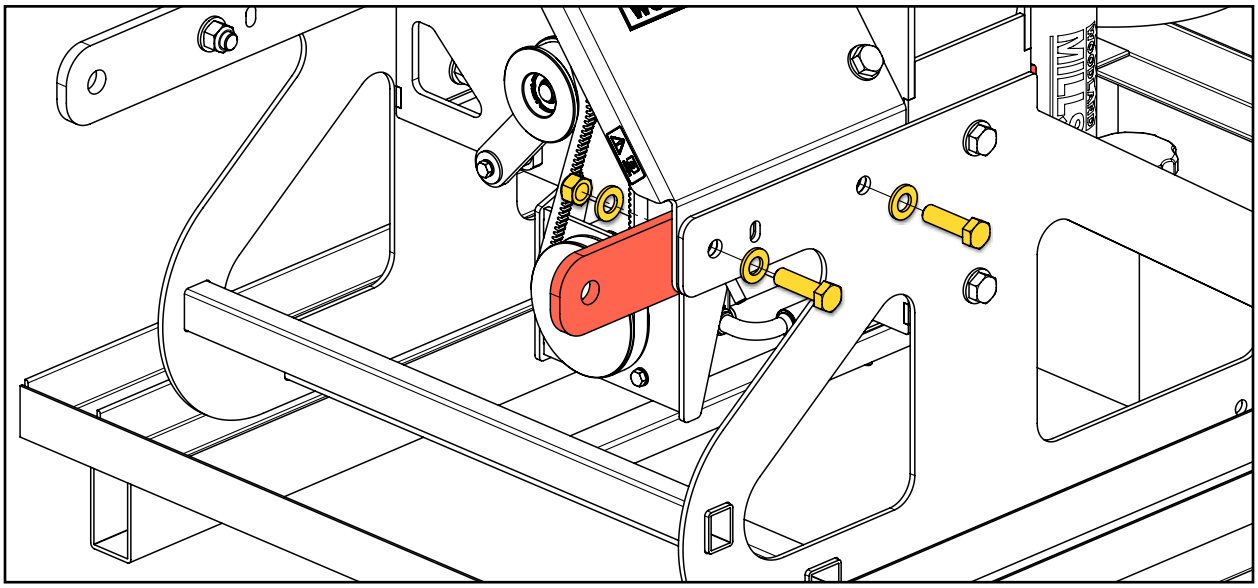


Now remove the temporary nut from under the left side of the flywheel housing and discard it.

Slide the other lower hitch arm into the rectangular slot on the left-side of the lower flywheel housing and reinstall the M16 X 40 mm bolt and M16 flat washer that were temporarily removed. Only snug the hardware, do not fully tighten until instructed in a later step.

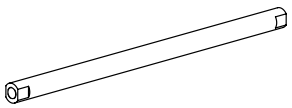
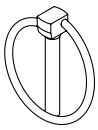
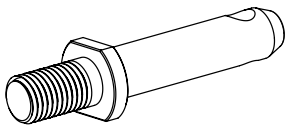



Use two (2) M16 X 55 mm bolts, four (4) M16 flat washers, and two (2) M16 lock nuts to secure the arm. Only snug the hardware, do not fully tighten them until instructed in a later step.

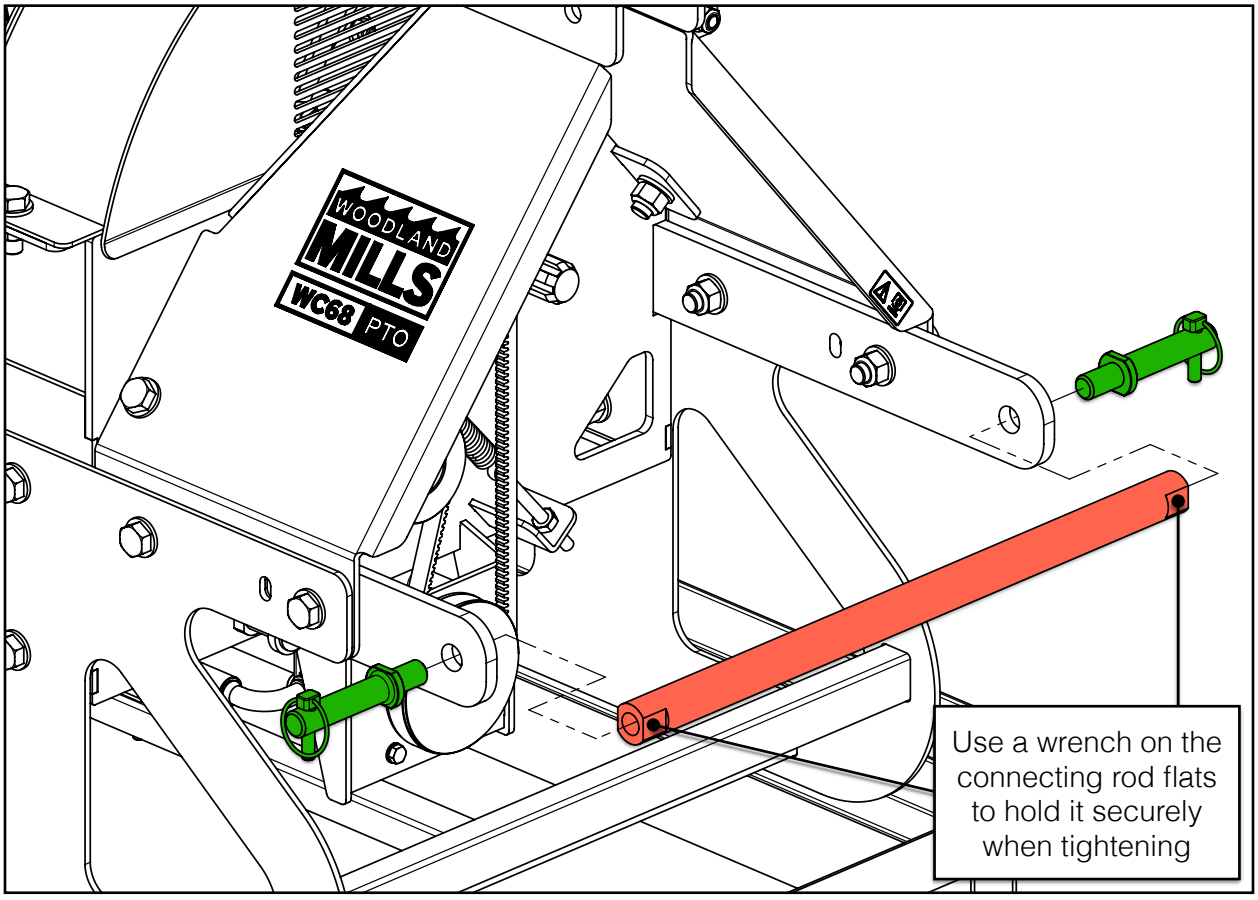


## C. CONNECTING ROD

Using the components listed in the table below, assemble the connecting rod between the lower hitch arms.

| | | | | | |
|---|---|---|---|---|---|
| 1x | Connecting Rod |  | 2x | Linch Pin |  |
| 2x | Lower Hitch Pin |  | | | |

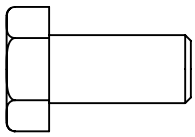
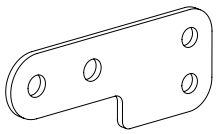
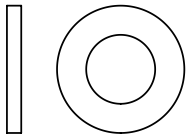
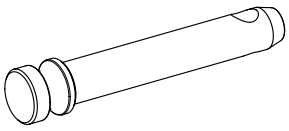
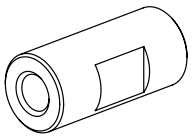
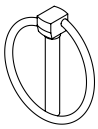
Position the connecting rod between the two (2) lower hitch arms and then thread one (1) lower hitch pin into each end, securing it to the arms. The flats at both ends of the connecting rod will accommodate a 1-⅛ in [28 mm] wrench to prevent it from rotating when tightened.



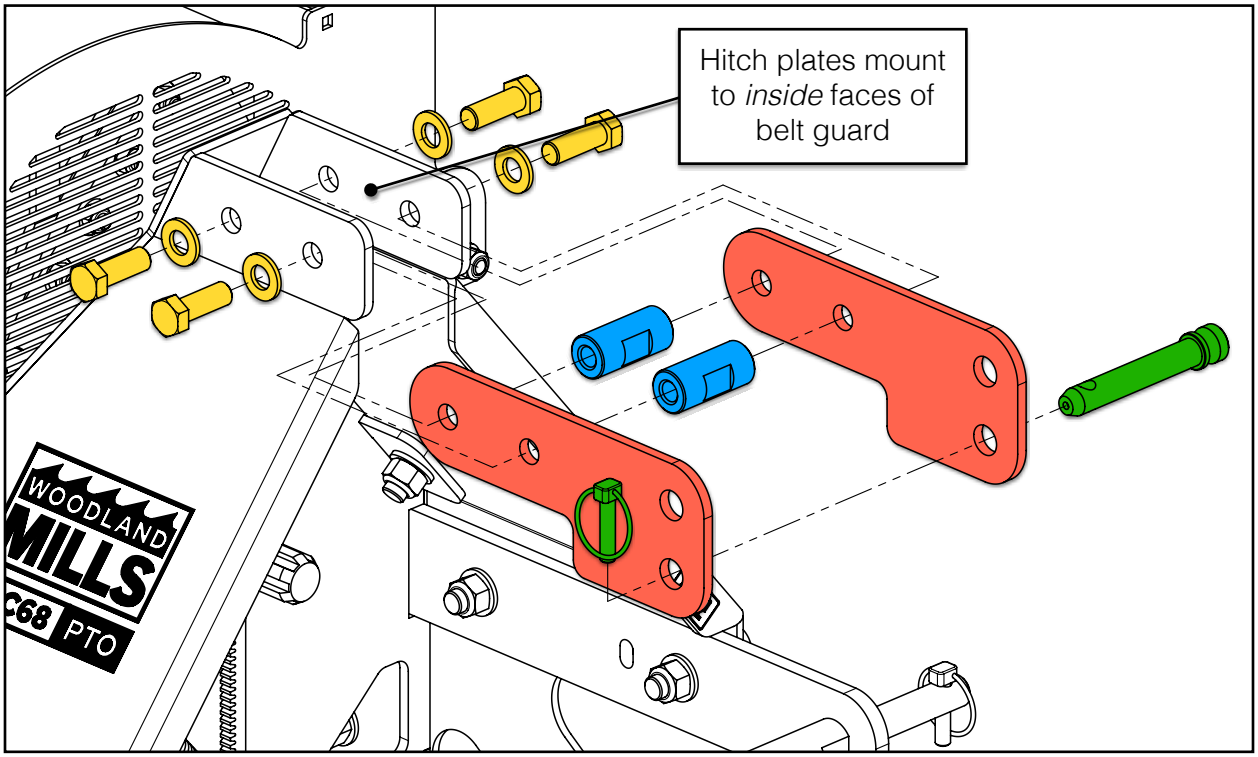

With the connecting rod tight, now fully tighten all the hardware for the lower hitch arms from the previous step.

## D. UPPER HITCH

Using the hardware and components listed in the table below, assemble the upper hitch plates to the belt guard.

| | | | | | |
|---|---|---|---|---|---|
| 4x | M16 X 45 mm Hex Bolt |  | 2x | Upper Hitch Plate |  |
| 4x | M16 Flat Washer |  | 1x | Upper Hitch Pin |  |
| 2x | Upper Hitch Bushing |  | 1x | Linch Pin |  |

Assemble the plates to the belt guard using four (4) M16 X 45 mm hex bolts, four (4) M16 flat washers, and two (2) hitch bushings. The upper hitch plates mount to the *inner faces* of the belt guard with the bushings between them.

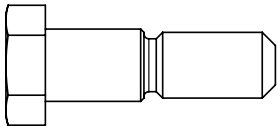
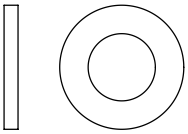
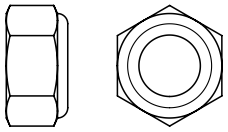
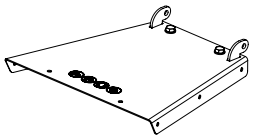



When tightening the hardware, hold the bushings still with an adjustable or 15/16 in [24 mm] wrench and turn the hex bolts with a second wrench or ratchet. Fully tighten all the hardware.

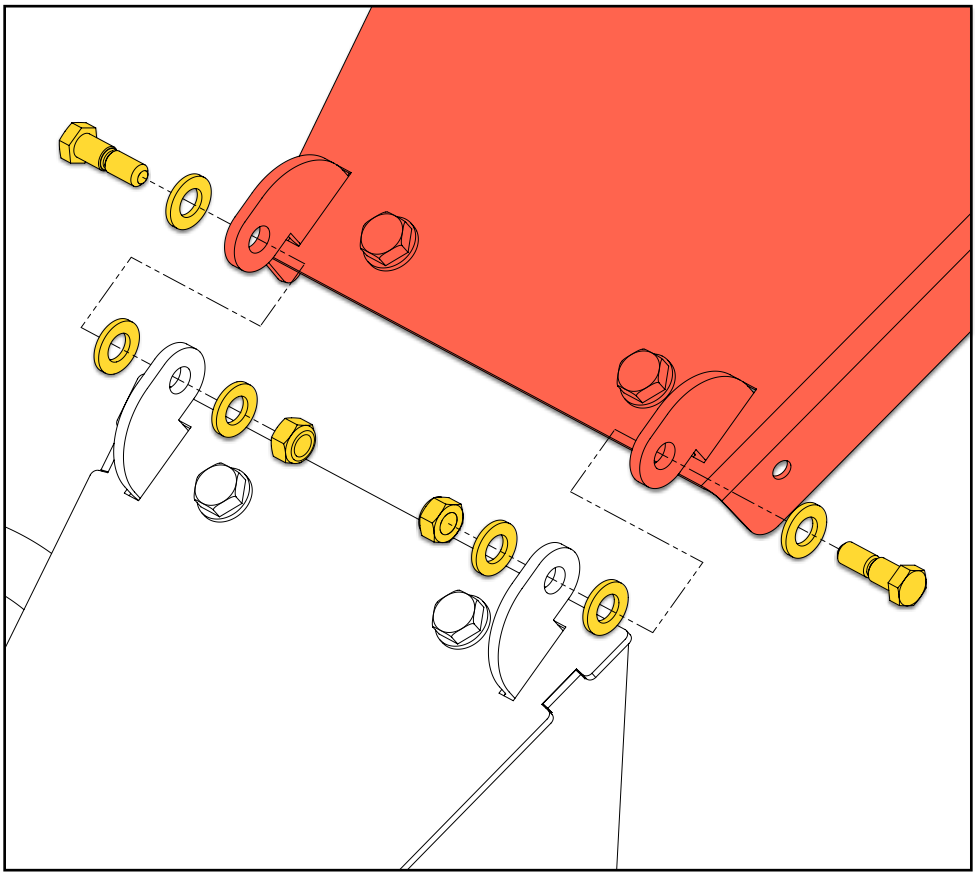
# 3. INFEED CHUTE

## A. TOP PANEL

Assemble the infeed chute top panel to the lower flywheel housing using the components and hardware listed in the table below. Note that the infeed chute top panel and hinge bracket come pre-assembled.

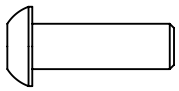
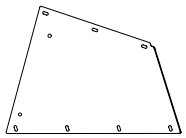
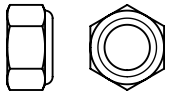
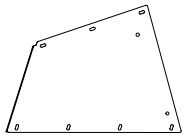
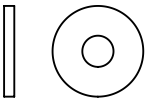
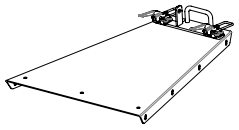
| | | | | | |
|---|---|---|---|---|---|
| 2x | M10 X 15 X 20 mm Shoulder Bolt |  | 6x | M12 Nylon Flat Washer |  |
| 2x | M10 Lock Nut |  | 1x | Infeed Chute Top Panel |  |

Fasten the top panel to the lower flywheel housing using two (2) M10 X 15 X 20 mm shoulder screws, six (6) M12 nylon flat washers, and two (2) M10 lock nuts to form the hinge. Tighten the hardware enough so that the hinge moves with some effort but not too tight that the nylon washers are crushed.

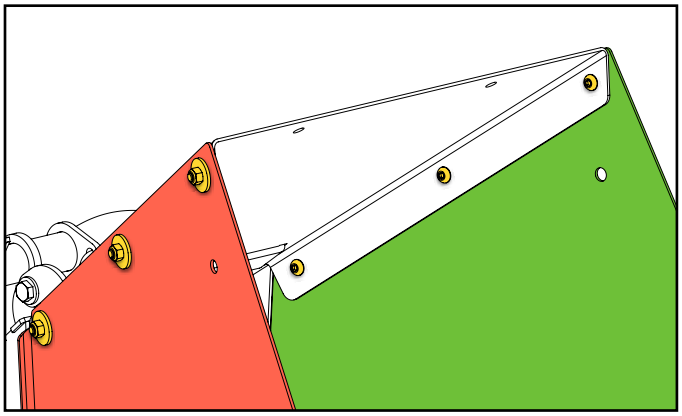


## B. SIDE PANELS AND BOTTOM PANEL

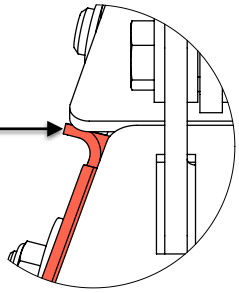
With the top panel bolted to the hinge, assemble each side panel to the sides of the top panel using the M8 X 18 mm button head screws, M8 lock nuts, and M8 fender washers. Use a hex key for the screws and a socket/wrench for the lock nuts.

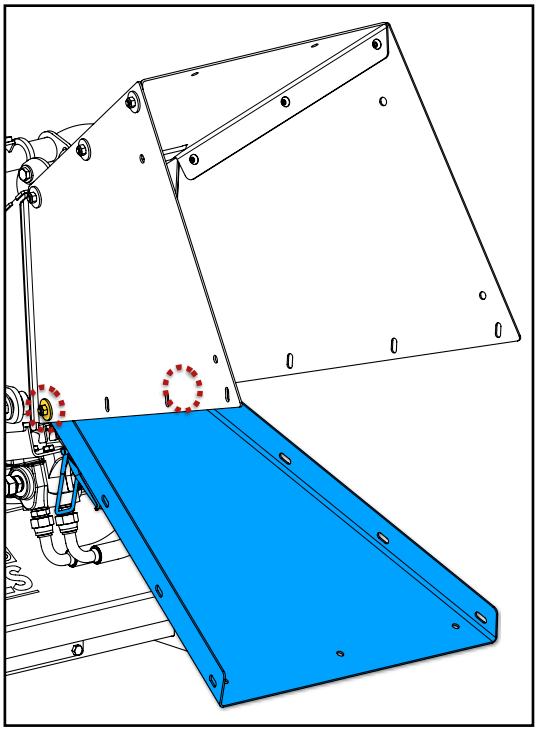
| | | | | | |
|---|---|---|---|---|---|
| 8x | M8 X 18 mm Button Head Screw |  | 1x | Infeed Chute Right Side Panel |  |
| 8x | M8 Lock Nut |  | 1x | Infeed Chute Left Side Panel |  |
| 8x | M8 X 30 mm Fender Washer |  | 1x | Infeed Chute Bottom Panel |  |

Install three (3) screws per side along the top edge. 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 bolt per side 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.



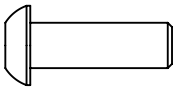
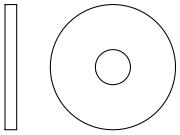
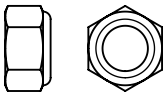
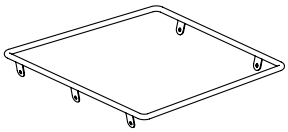
Ensure the side panels are assembled so that the lip edges are *outside* the chute [Viewed from top]





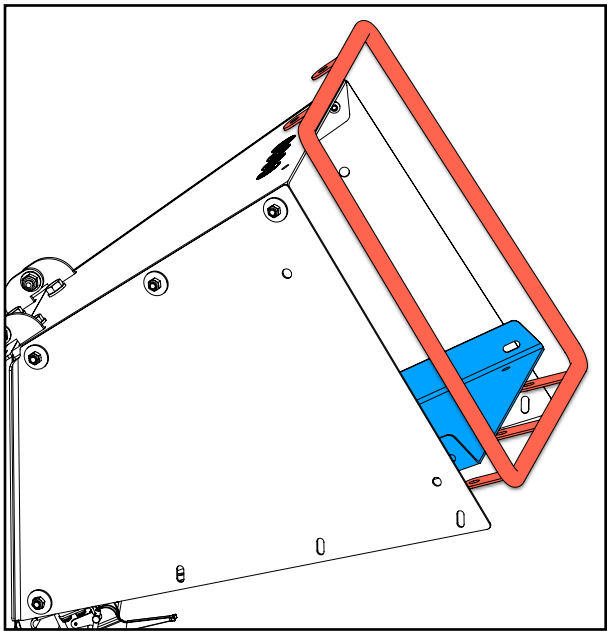
## C. EDGE BAR

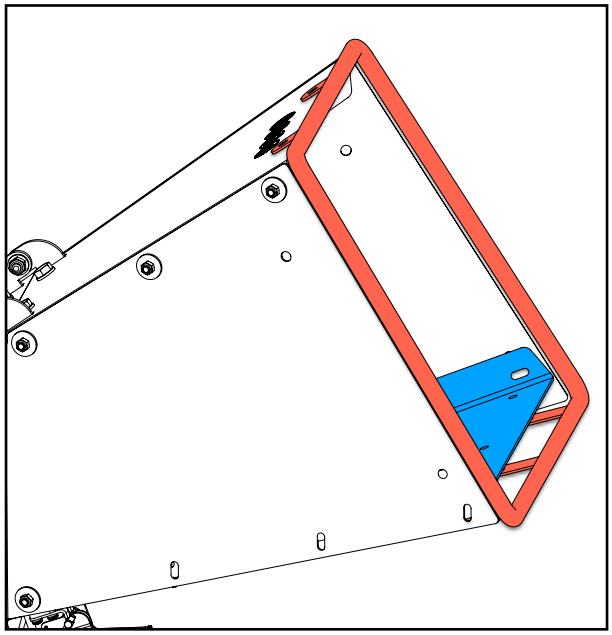
Assemble the round edge bar to the infeed chute using the hardware listed below.

| | | | | | |
|---|---|---|---|---|---|
| 11x | M8 X 18 mm Button Head Screw |  | 11x | M8 X 30 mm Fender Washer |  |
| 11x | M8 Lock Nut |  | 1x | Infeed Chute Round 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.

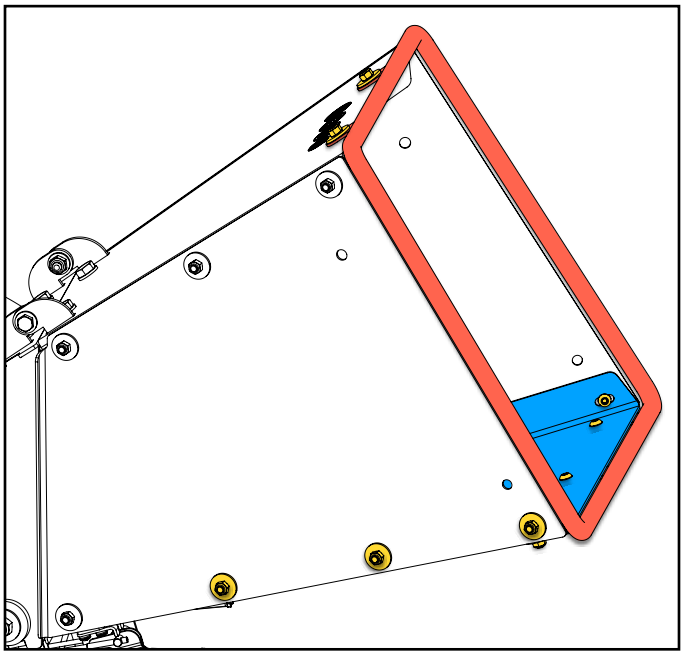
Swing the bottom panel up and fit the top and bottom tabs of the round edge bar over the outside faces of the top and bottom panels as shown below.

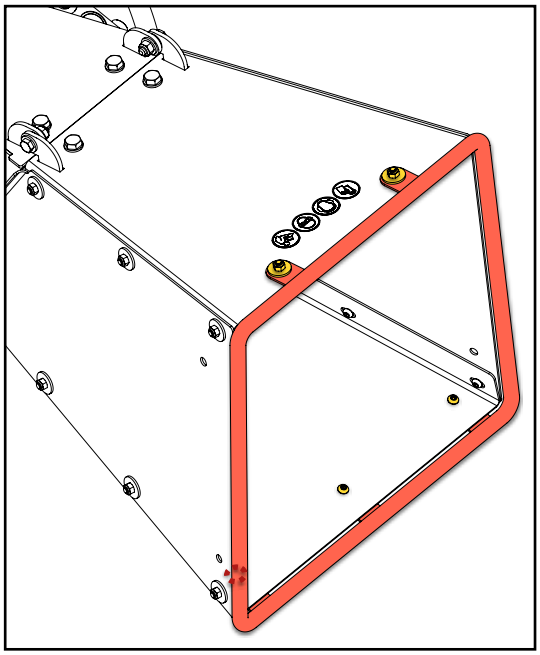




With the edge bar in place, assemble the panels to the edge bar. Use a hex key for the button head screws and a socket/wrench for the lock nuts. Install the remaining eleven (11) M8 X 18 mm button head screws, M8 lock nuts, and M8 X 30 mm fender washers as shown below to secure the panels and edge bar in place.

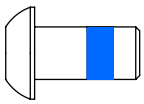
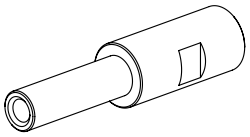
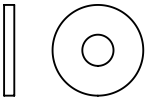
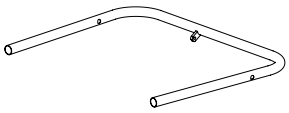
Fully tighten *all* the infeed chute screws.





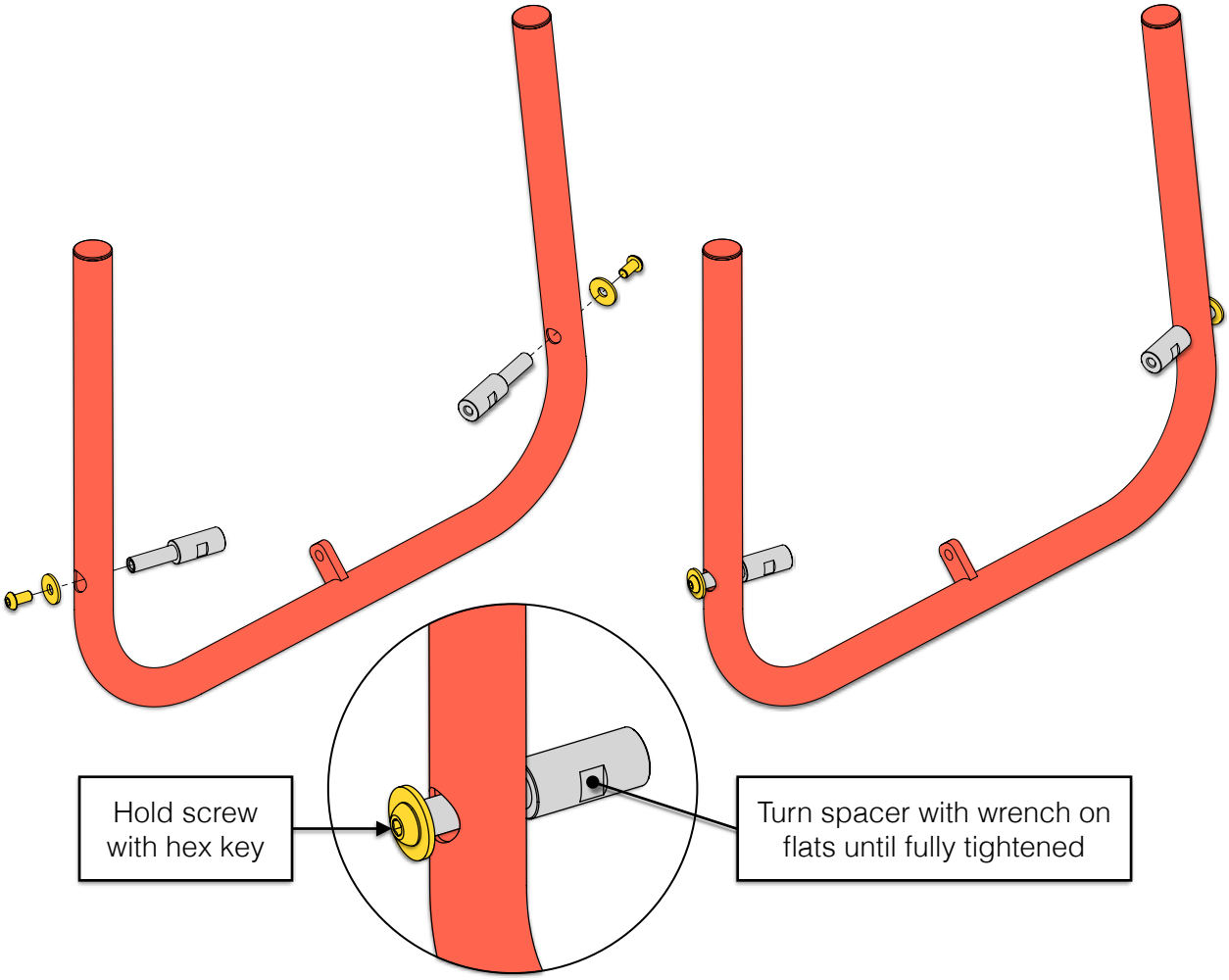
## D. CONTROL ARM

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

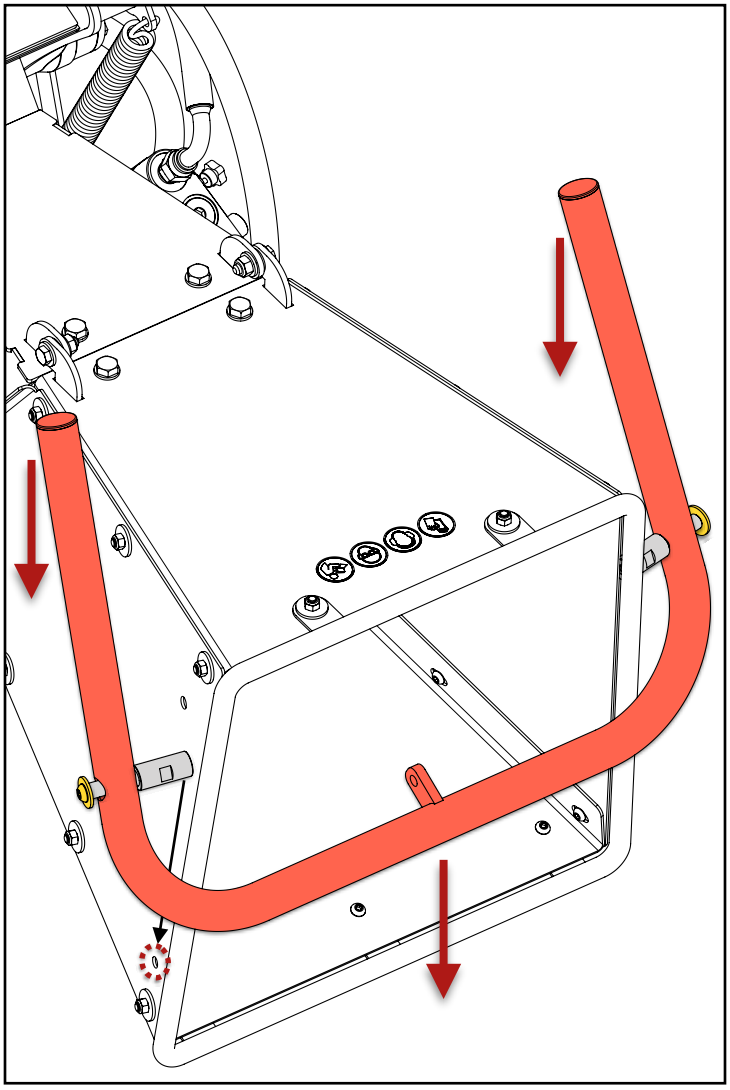
| | | | | | |
|---|---|---|---|---|---|
| 4x | M10 X 20 mm Button Head Screw with Threadlocker |  | 2x | Control Arm Spacer |  |
| 4x | M10 X 30 mm Fender Washer |  | 1x | Control Arm |  |

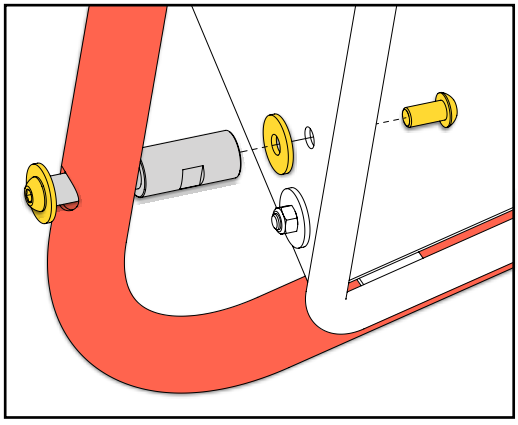
Insert the control arm spacers into the holes in the control arm and secure each with one (1) M10 X 20 button head screw and one (1) M10 X 30 mm fender washer

When tightening the hardware, hold button head screw still with a 6 mm hex key and turn the spacer with a ¾ in [19 mm] wrench using the flats milled into each side. Fully tighten all the hardware. The spacers will sit loose in the control arm once fully tightened—this is normal.

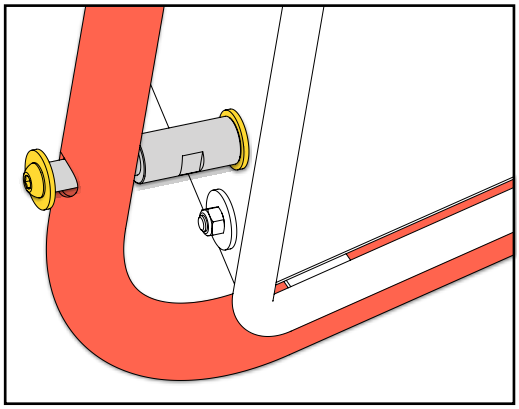


While holding the control arm by the spacers, slide it down over the top of the infeed chute until the spacers are aligned with the holes in the side panels (below left).





**USE 1 M10 X 30 FENDER WASHER BETWEEN THE SPACER AND CHUTE**



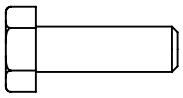
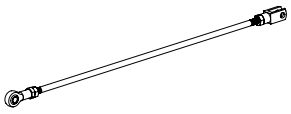
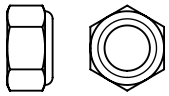
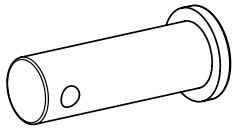
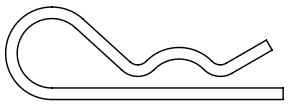
**HOLD INNER SCREW WITH HEX KEY AND TURN SPACER WITH WRENCH ON FLATS UNTIL FULLY TIGHTENED**

With the spacers aligned with the holes in the infeed chute side panels, place one (1) M10 X 30 mm fender washer between the spacer and side panel, and then secure it with one (1) M10 X 20 mm button head screw from inside the infeed chute. Repeat for the other side.

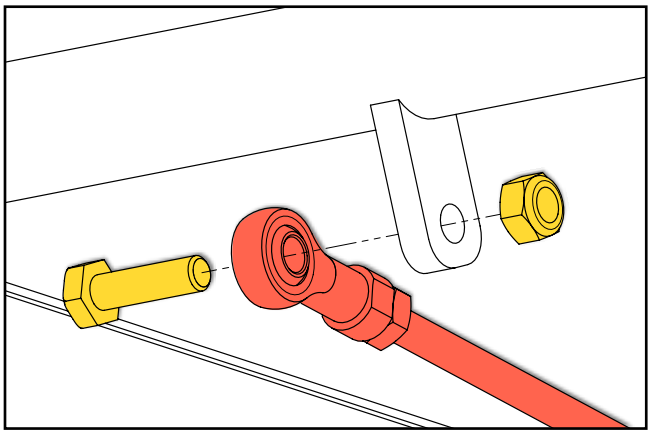
When tightening the two (2) inner button head screws, hold the button head screw inside the infeed chute still with a 6 mm hex key and turn the spacer with a ¾ in [19 mm] wrench. Fully tighten the hardware on both sides.

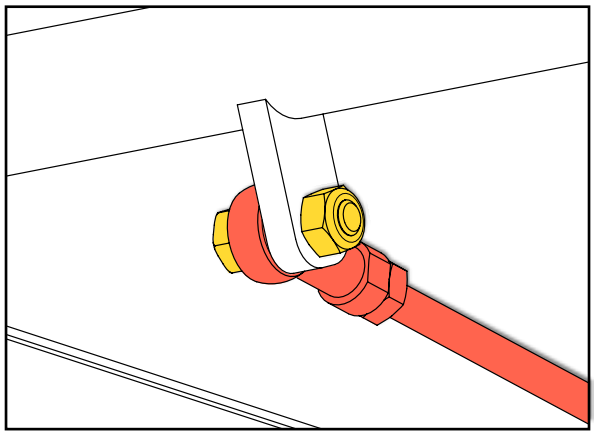
## E. CONTROL ARM LINKAGE

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

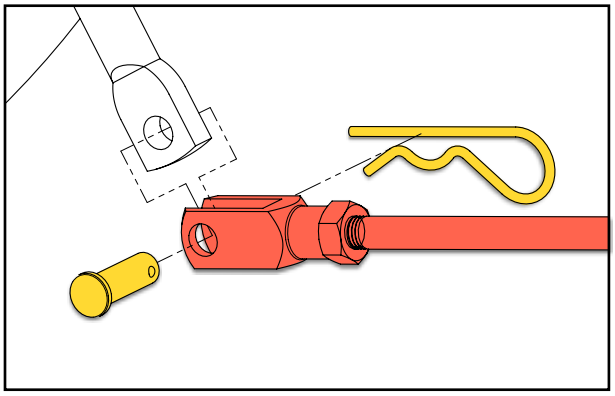
| | | | | | |
|---|---|---|---|---|---|
| 1x | M10 X 35 mm Hex Bolt |  | 1x | Control Arm Linkage Assembly |  |
| 1x | M10 Lock Nut |  | 1x | 10 mm Clevis Pin |  |
| | | | 1x | Hairpin Cotter Pin |  |

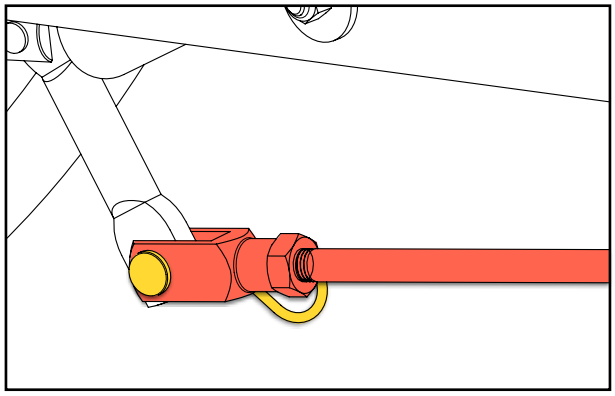
Fasten the rod end bearing to the red control arm with the M10 X 35 mm hex bolt and M10 lock nut as shown below.



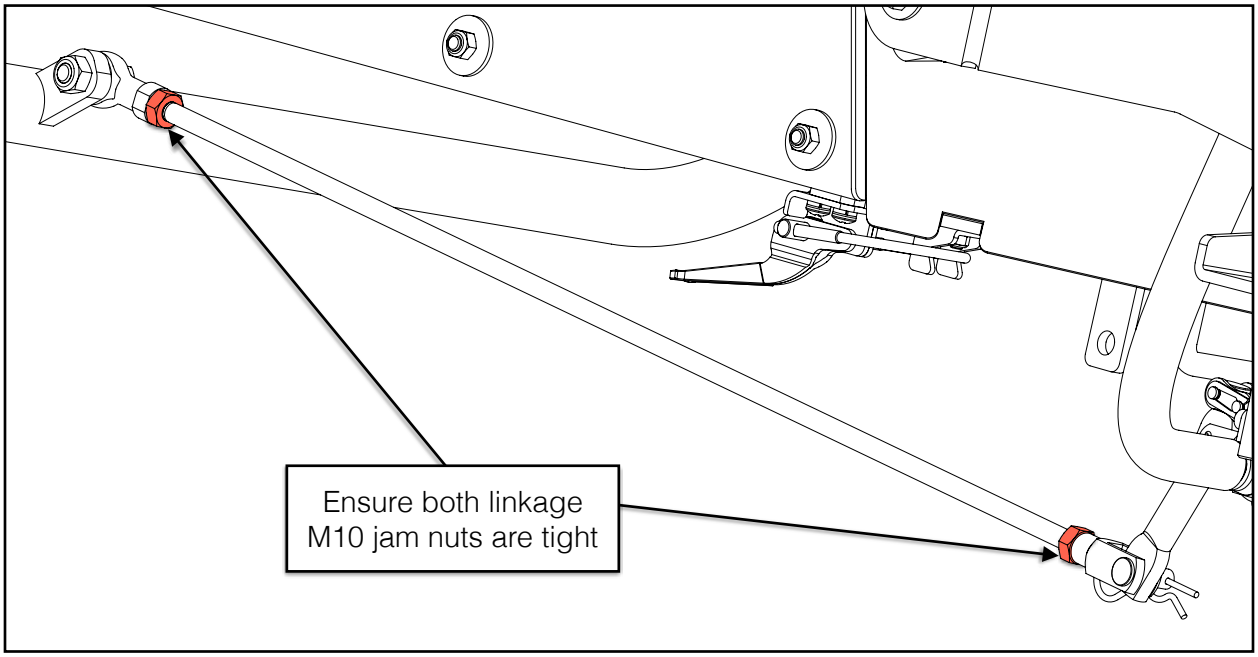


On the opposite end of the linkage, secure the clevis rod end to the the hydraulic directional control valve actuator using the clevis pin and hairpin cotter pin.



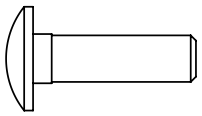
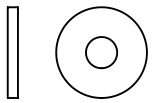
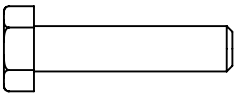
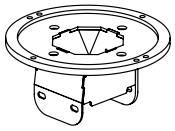
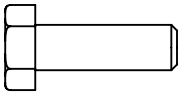
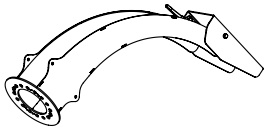
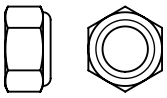
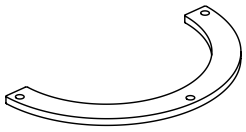
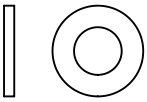
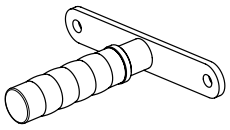


Once the linkage has been assembled, ensure both M10 jam nuts are tight.

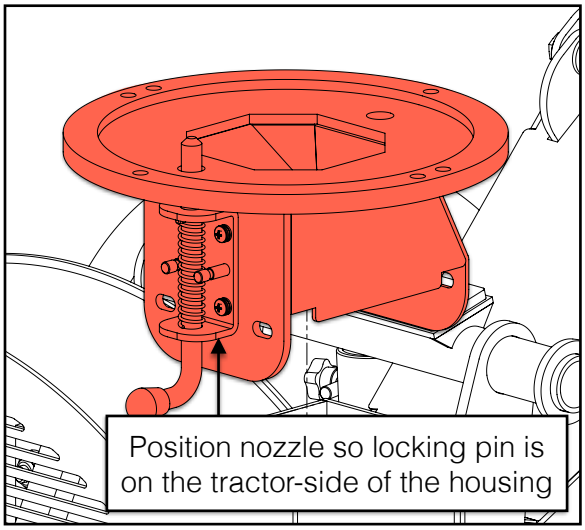


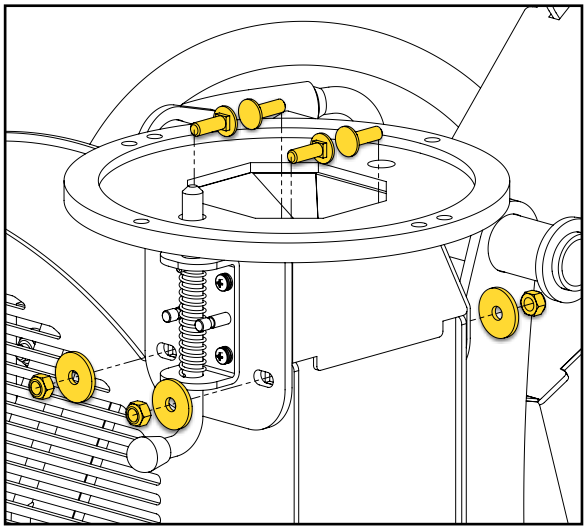
# 4. DISCHARGE CHUTE

The discharge chute comes partially assembled. With the components and hardware listed below, assemble the discharge chute to the upper flywheel housing.

| | | | | | |
|---|---|---|---|---|---|
| 4x | M8 X 25 mm Carriage Bolt |  | 4x | M8 X 30 mm Fender Washer |  |
| 6x | M8 X 35 mm Hex Head Bolt |  | 1x | Nozzle |  |
| 4x | M8 X 25 mm Hex Head Bolt |  | 1x | Discharge Chute Assembly |  |
| 14x | M8 Lock Nut |  | 2x | Retainer |  |
| 20x | M8 Flat Washer |  | 2x | Handle with Grip |  |

Slide the nozzle over the upper flywheel housing exhaust. Secure it to the housing using the four (4) M8 X 25 mm carriage bolts, M8 fender washers, and M8 lock nuts. The carriage bolts are assembled from inside the housing, pointing outward. Fully tighten all the hardware.

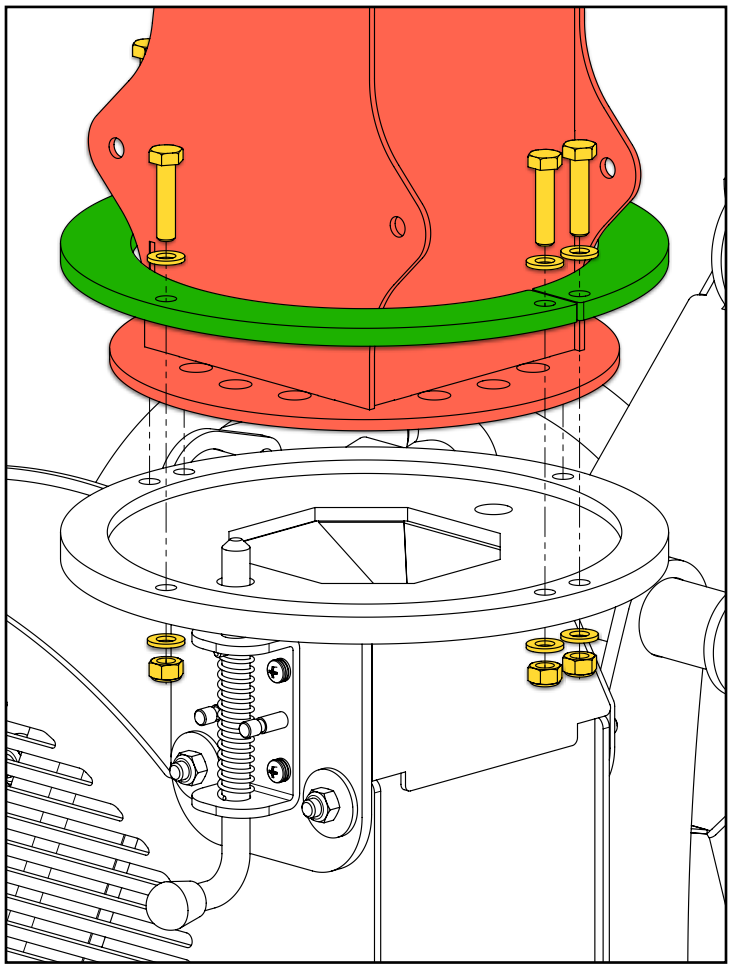


Set the discharge chute into the recess in the top of the nozzle.

Secure the chute to the nozzle using the two (2) retainers with six (6) M8 X 35 mm hex bolts, twelve (12) M8 flat washers, and six (6) M8 lock nuts.

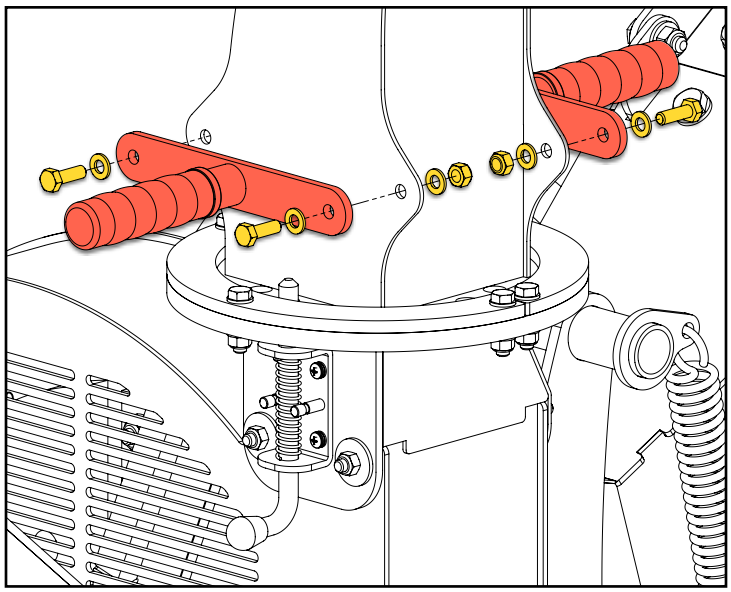
Fully tighten all the hardware.



Assemble the handles—one on each side of the discharge chute.

Secure each handle to the chute using two M8 X 25 mm hex bolts, four (4) M8 flat washers, and two (2) M8 lock nuts.

Fully tighten all the hardware.



# TRIMMING THE PTO SHAFT

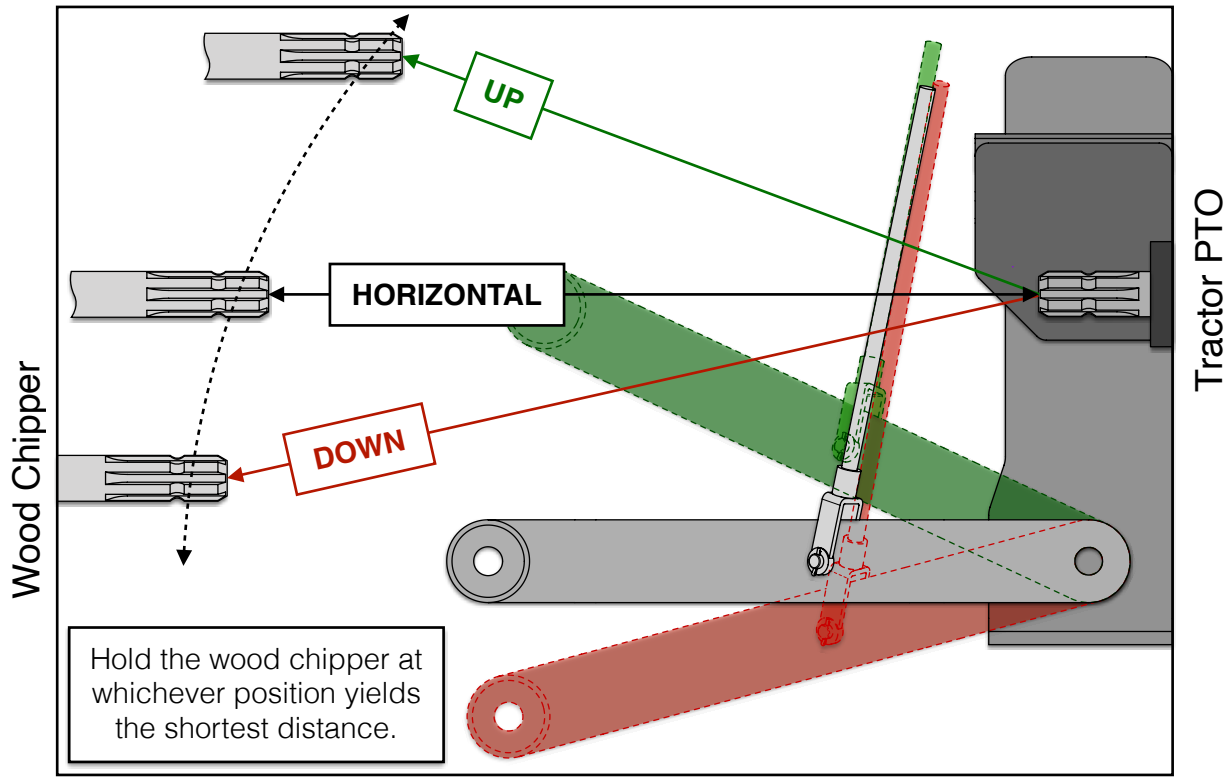
The PTO shaft may need to be trimmed depending on the tractor size and configuration. Follow the 6 steps below to ensure the PTO shaft is fitted correctly, and trimmed if necessary.

## 1. FIND THE SHORTEST DISTANCE

1. Attach the wood chipper to the tractor's 3-point hitch. Do *not* install the PTO shaft yet.
2. Measure the distance between the splined shafts on the tractor PTO and the wood chipper with the 3-point hitch in the following positions:
    i. All the way Down
    ii. In-Line / Horizontal
    iii. All the way Up

    Whichever position yields the *shortest* distance, ***hold the wood chipper at that position for the next step***.

****Note: if the wood chipper shaft cannot be positioned in-line or below the tractor PTO due to the size of the tractor relative to the wood chipper, take two (2) measurements instead: 1 at the lowest and 1 at the highest 3-point hitch position.****

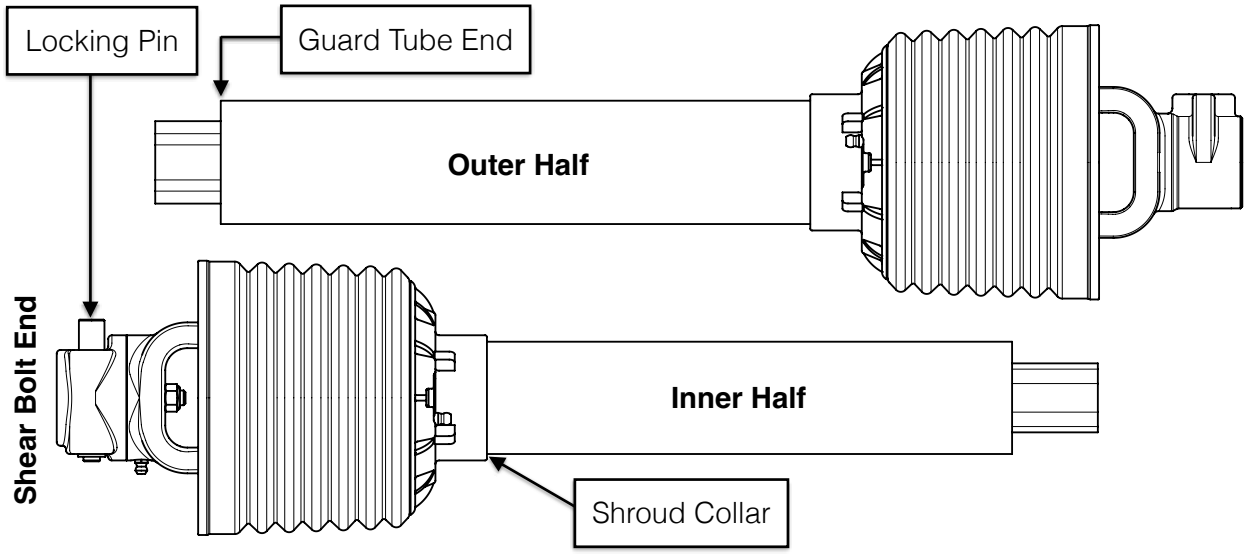



**WARNING!**

Remove the tractor's draw bar—*if equipped*—before installing any Woodland Mills implement (Wood Chipper or Stump Grinder).

## 2. SEPARATE PTO HALVES

Pull the PTO shaft apart until it is two separate halves: inner and outer.



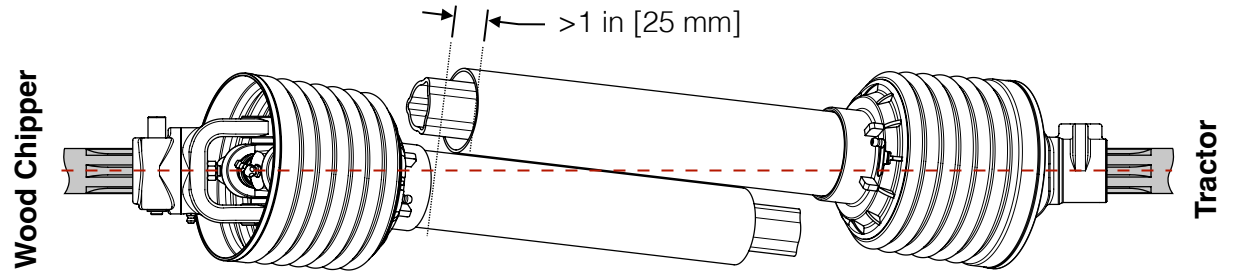

## 3. ATTACH THE PTO SHAFT

Attach the shear bolt end to the wood chipper and the outer half to the tractor as separate pieces.

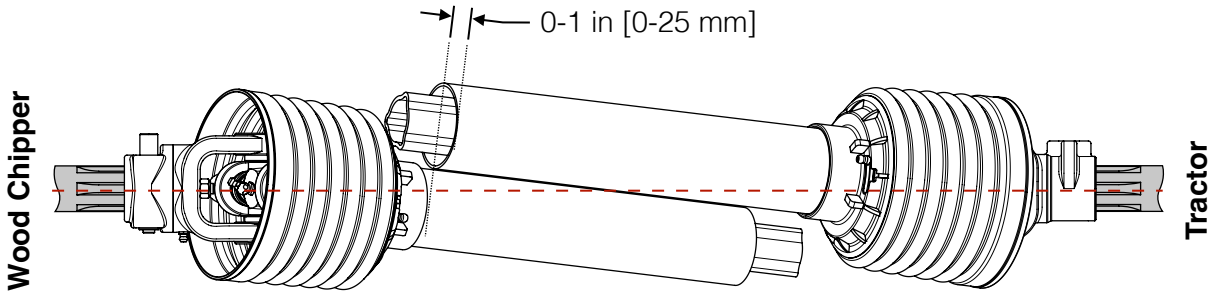
## 4. DETERMINE IF TRIMMING IS REQUIRED

Hold the shafts parallel. Use tape or tie the shaft halves together with string if necessary to get proper measurements. Three possible scenarios can exist.

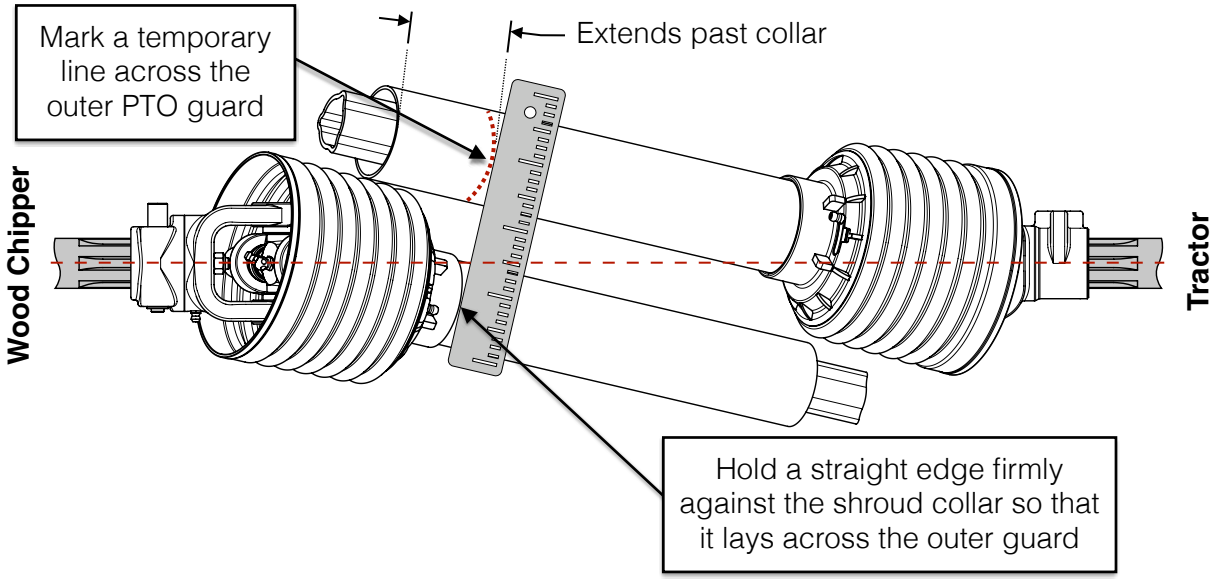
***Scenario 1.*** If the distance between the shroud collar and the guard tube end is ***greater than* 1 in [25 mm]**, the PTO shaft does not require trimming. Remove the PTO shaft from the tractor and wood chipper and proceed to Step 6.



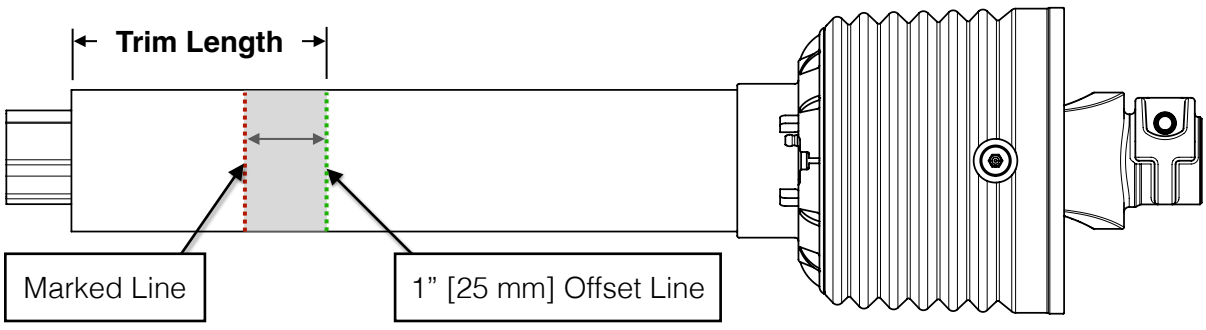
***Scenario 2.*** If the distance between the shroud collar and the guard tube end is ***between 0 and* 1 in [25 mm]**, the PTO shaft requires a 1 in [25 mm] trim. Proceed to Step 5 using 1 in [25 mm] as the "**Trim Length"**.




***Scenario 3.*** If the guard tube end extends past the shroud collar, hold a straight edge firmly against the shroud collar so that it lays across the outer guard. Mark the position on the outer guard.

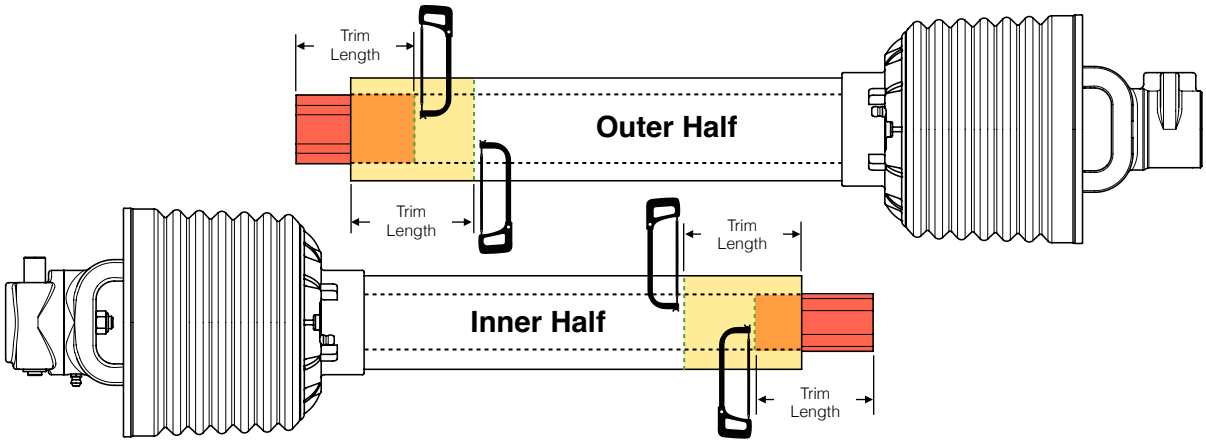



Measure 1 in [25 mm] past the marked line to the guard tube end to determine the trim length. This is the "**Trim Length**" by which the PTO shaft needs to be trimmed. Proceed to Step 5.



# 5. TRIM THE PTO SHAFT

Remove both halves of the PTO shaft from the tractor and wood chipper. Trim **both** outer plastic guards and **both** inner triangular steel shafts by the "**Trim Length**". Trim the plastic guards first, taking care not to cut into the triangular shafts inside. Then trim **both** triangular steel shafts by the **"Trim Length"**. File burrs as necessary.




# 6. REASSEMBLE THE PTO SHAFT

1. Slide the halves back together, ensuring they telescope in-and-out freely.
2. Slide the shear bolt end onto the wood chipper. Install the other end on the tractor.
3. Raise and lower the 3-point hitch, ensuring there is a 1 in [25 mm] minimum gap between the shroud collar and guard tube end throughout the entire lifting range.

# OPERATION

## 1. PRE-START UP CHECKLIST

i. Fill the hydraulic tank with hydraulic oil per the table below:

| Model | Capacity | | Hydraulic Oil |
|---|---|---|---|
| | Gallons (gal) | Litres (L) | |
| WC46 | 4.5 | 17 | ISO 32, ISO 46, AW 32, AW 46 |
| ➡ WC68 | 5 | 18.9 | |
| WC88 | 5 | 18.9 | |
| TF46 PRO | 3.2 | 12 | |
| TF68 PRO | 5 | 18.9 | |
| TF810 PRO | 5 | 18.9 | |

ii. Attach the wood chipper to your tractor and take the appropriate measurements to trim the PTO shaft. Refer to section ***TRIMMING THE PTO SHAFT*** for detailed instructions.

****Note: Failure to do so may result in severe damage to the implement and is *not* covered under warranty.****

iii. Check the gap between the bed plate and blades by using the Bed Plate Gap Tool (⅛ in [3 mm]). Refer to section ***SETTING THE BED PLATE GAP*** for detailed instructions.

iv. The wood chipper has three (3) bearings fitted with Zerk fittings for greasing. The PTO shaft is equipped with seven (7) Zerk fittings. The PTO shaft and all bearings come pre-greased and do not require greasing on initial start-up. Refer to section ***GREASING BEARINGS AND PTO SHAFT*** for detailed maintenance instructions.

v. Check the bolts on each of the four flywheel blades ensuring the torque is set to 40 ft•lb [54 N•m].

# 2. 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. ***Push*** the red control arm away from the operator at the top of the arm until it stops (forward position). This will start the infeed roller rotating. Set the infeed roller control to the desired speed.

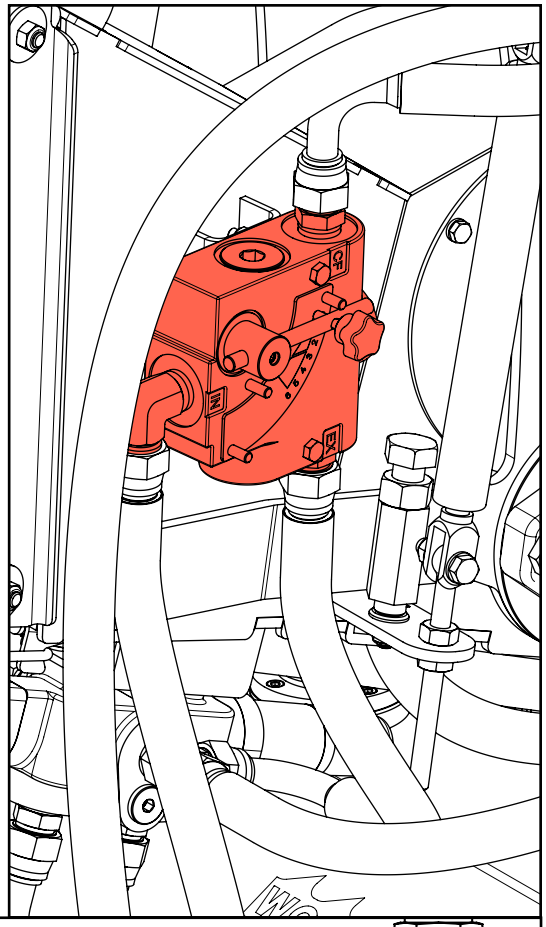
i. With the wood chipper now running and the infeed roller rotating, it is safe to begin chipping. Start by feeding smaller diameter branches until better acquainted with the machine and its operation. Once comfortable, begin feeding in larger pieces. Adjust the infeed roller control as necessary to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

# 3. INFEED ROLLER CONTROL

The valve that controls the wood chipper's infeed roller speed is located to the right of the infeed chute.

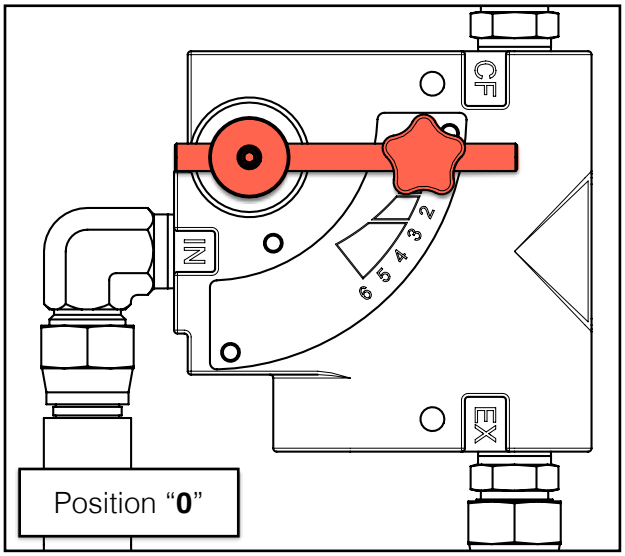


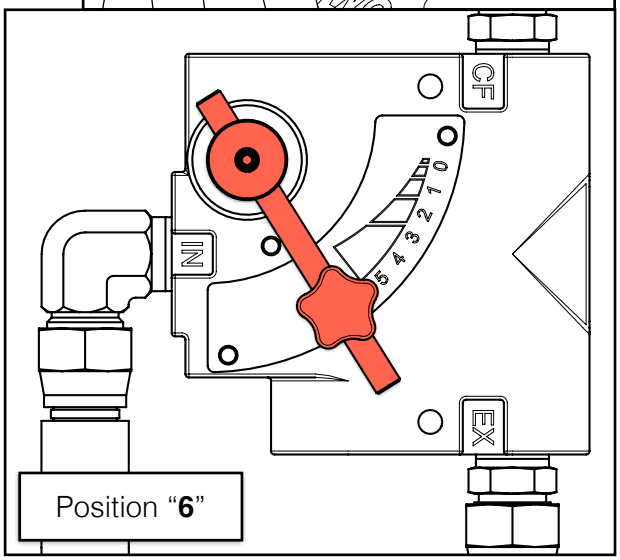
Rotating the valve arm as shown in the pictures below will increase or decrease the roller speed without load and will create a pulsating action once loaded with a branch.

The number "**0**" (left image below) represents no infeed roller rotation while "**6**" (right image below) represents full speed. To maximize productivity and performance, chipping at full infeed speed is recommended.

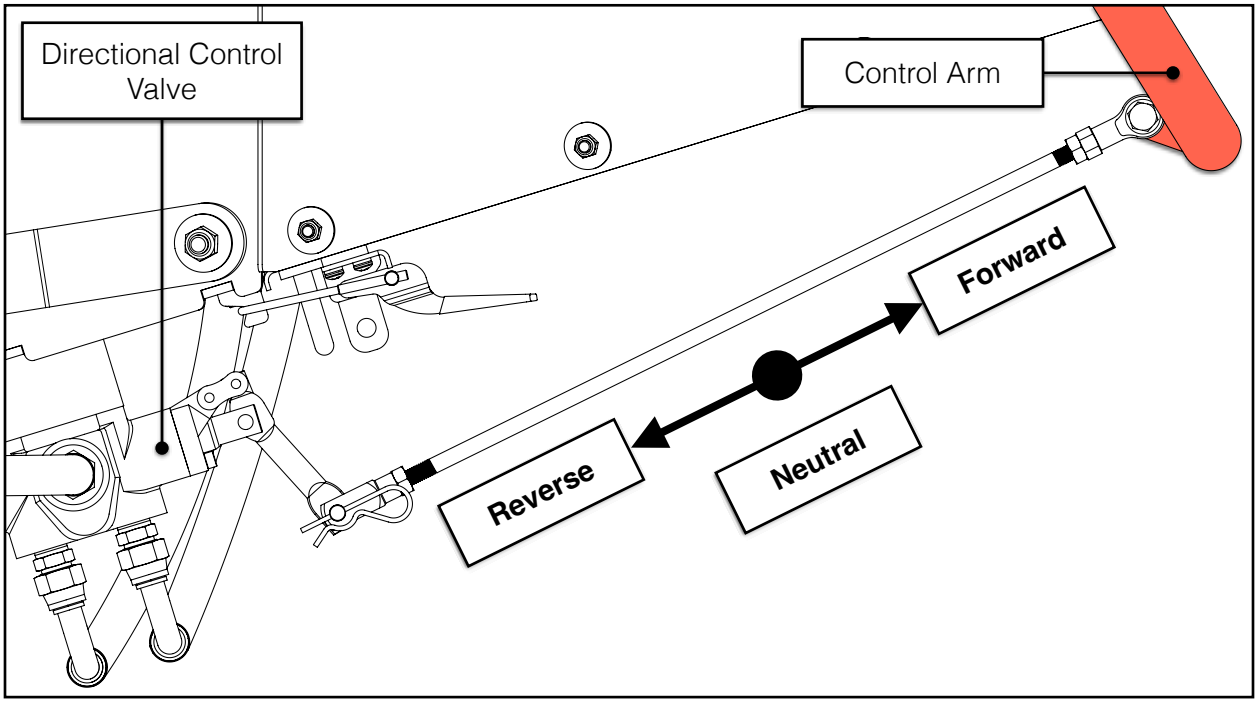
If the tractor is unable to keep up with the workload, rotating the valve arm throughout its range will create a pulsating action—*dependent on branch size and workload*—that will allow larger material to be chipped when horsepower is limited.

This pulsating action can also be created using the red control arm by switching the chipper into **neutral**—which allows the tractor and flywheel to regain speed—and then switching back into **forward** as it works through larger material.



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:

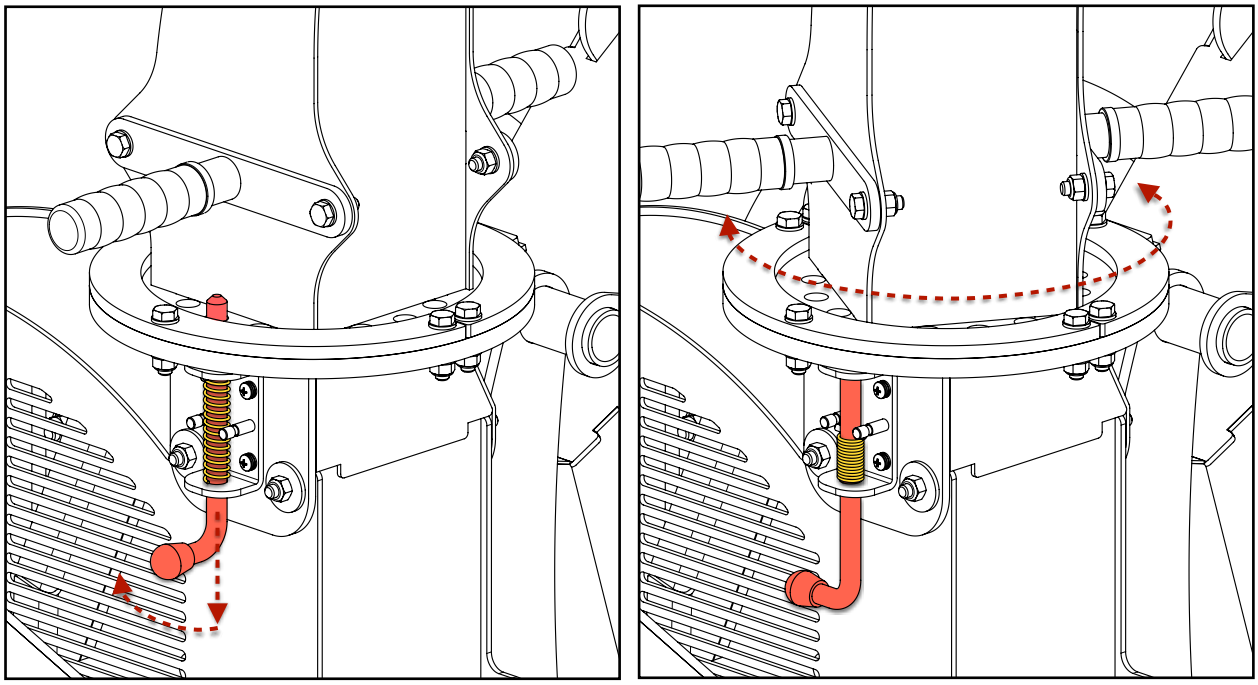



To change the speed of the infeed roller, place the red control arm in the *neutral* position. This stops the infeed roller from rotating. The speed control valve can now be moved to the desired position/speed. Reengage the infeed roller via the control arm.

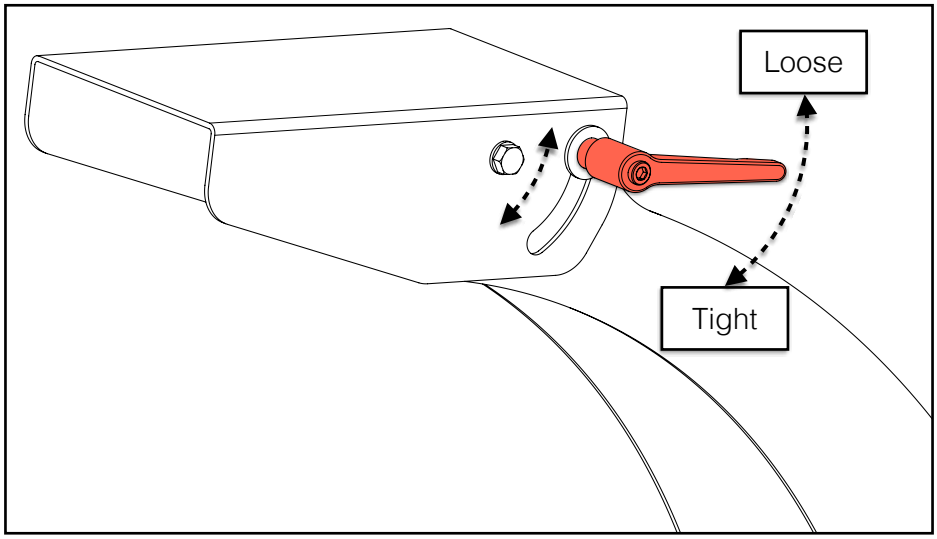
See maintenance section, ***ADJUSTING THE CONTROL ARM***, if the control arm feels too loose or stiff, or if it falls into neutral or reverse unexpectedly.

# 4. DISCHARGE CHUTE

To rotate the discharge chute, push down on the spring-loaded locking pin all the way 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.



# 5. 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 in [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.

# 6. 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:

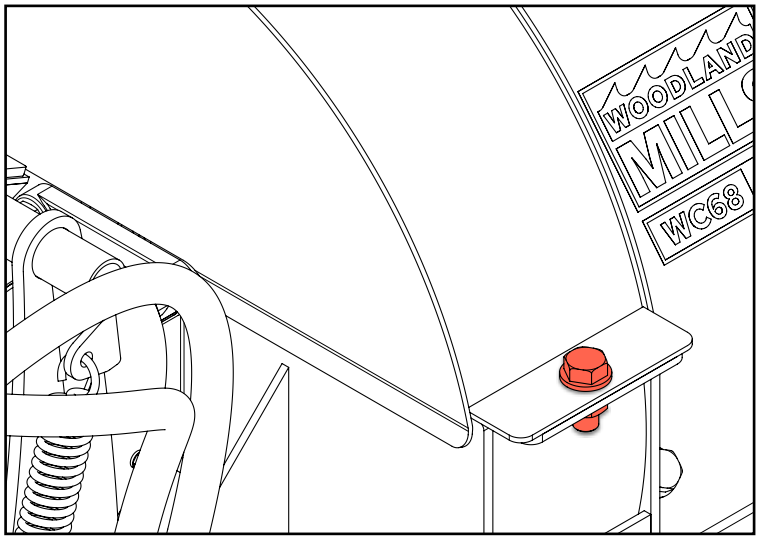
1. Move the tractor throttle to the SLOW/IDLE position.
2. Disengage the PTO lever and turn off the tractor engine.
3. Allow time for the wood chipper to come to a complete stop.

   **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.

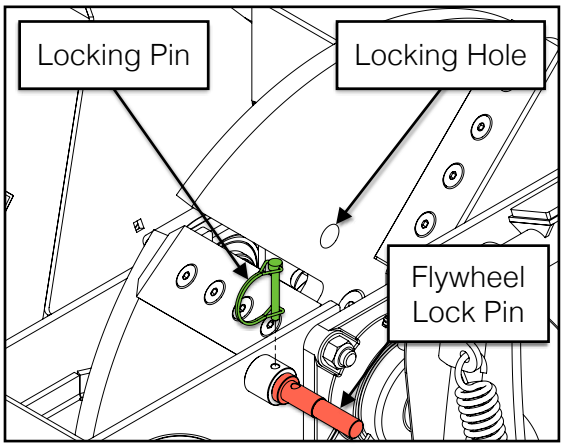
# MAINTENANCE
## REPLACING BLADES

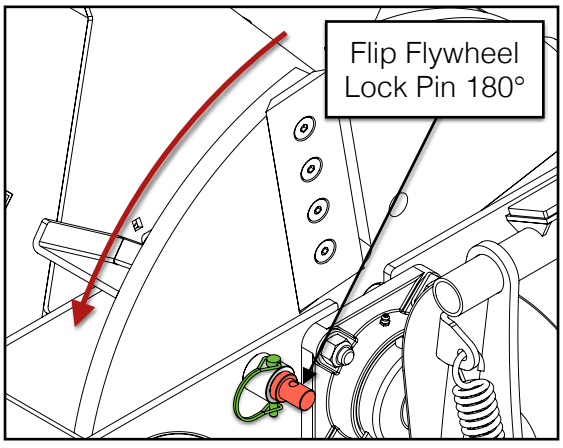
Follow these steps when replacing blades. The WC68 wood chipper uses four (4) reversible hardened steel blades. Each blade is 8.62 X 2.72 X 5/16" [219 X 69 X 8 mm] in size.

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.



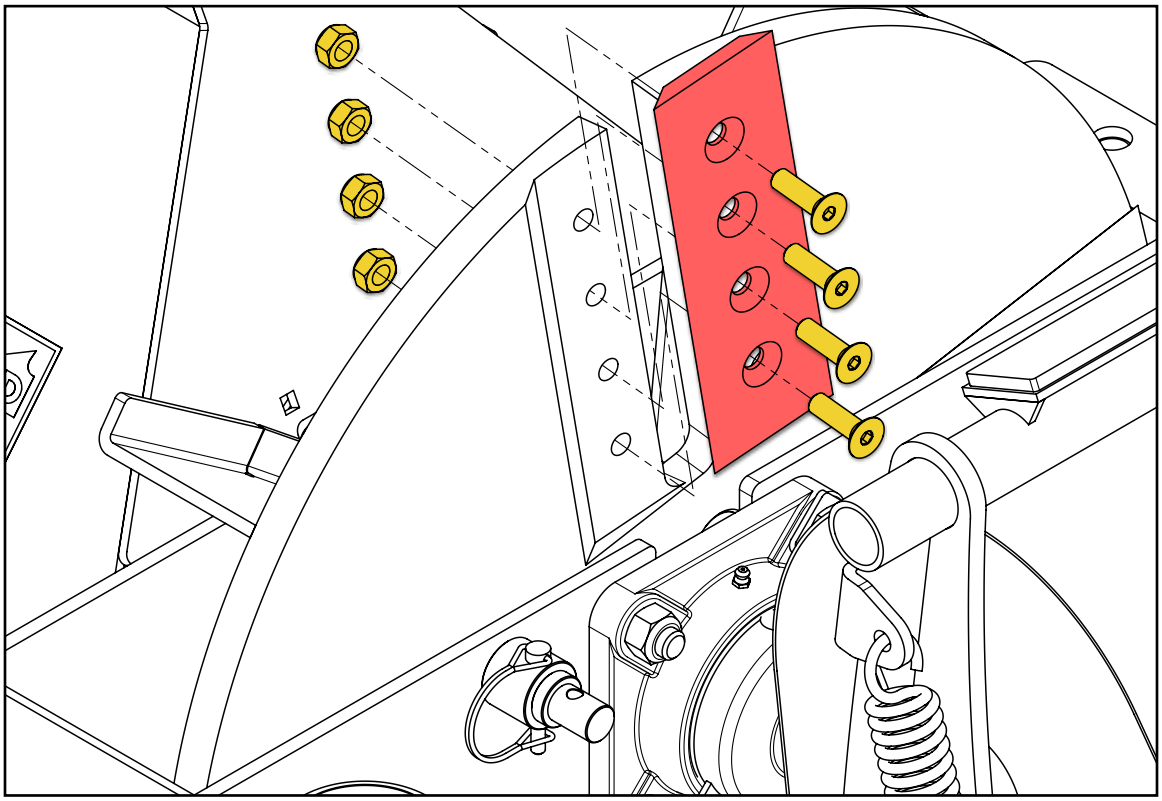

3. With the flywheel exposed, manually rotate it so that one of the four (4) locking holes in the flywheel (near the front of the blade) approximately lines up with the flywheel lock pin at the rear of the housing. Remove the round locking pin from the flywheel lock pin and flip the flywheel lock pin 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.




**Upper flywheel housing removed from images for clarity.**

4. Remove the four (4) M10 X 35 mm flat head bolts and M10 lock nuts that fasten the blade to the flywheel using a 6 mm hex key on the bolts and a 17 mm socket/wrench on the lock nuts. 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.

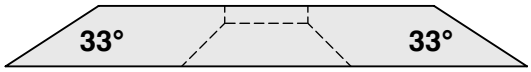


5. Repeat Steps 3 & 4 above to remove the remaining three blades. If this is the first time the blades have been removed following either the original wood chipper purchase or a recent blade sharpening, the blades can be reversed to utilize the other cutting edge. Or, the entire blade can be removed and sharpened or it can be replaced with a new blade. Torque the M10 X 35 mm flat head bolts to 40-45 ft•lb [54-60 N•m] when installing blades. Always replace the M10 lock nuts with a new set when changing or reversing 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 WC68 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.

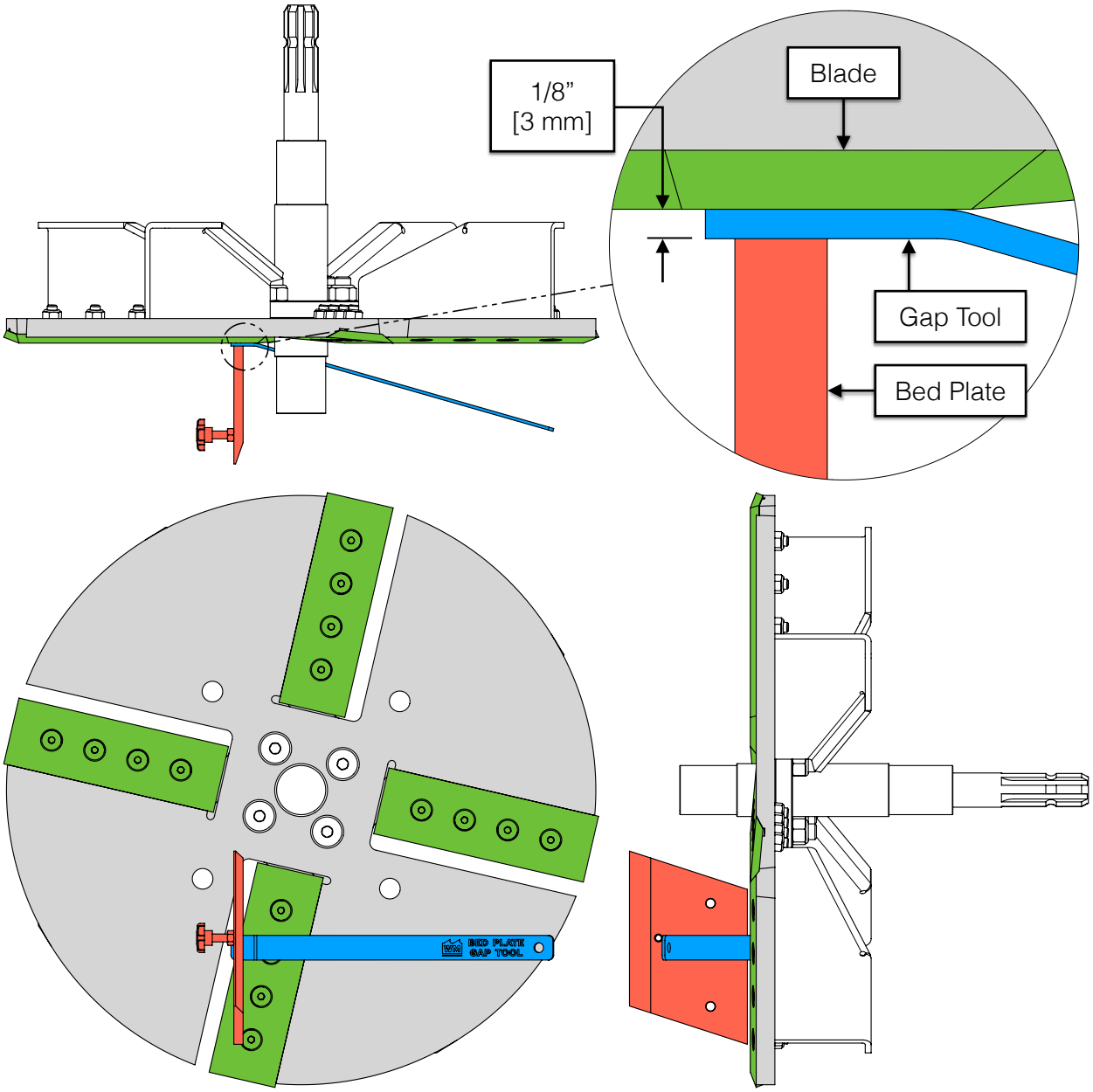



**Blade Profile**

3. Reinstall the sharpened blades on the flywheel and torque the M10 X 35 mm flat head bolts to 40-45 ft•lb [54-60 N•m]. Always replace the lock nuts with new hardware when changing or reversing the blades.
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.

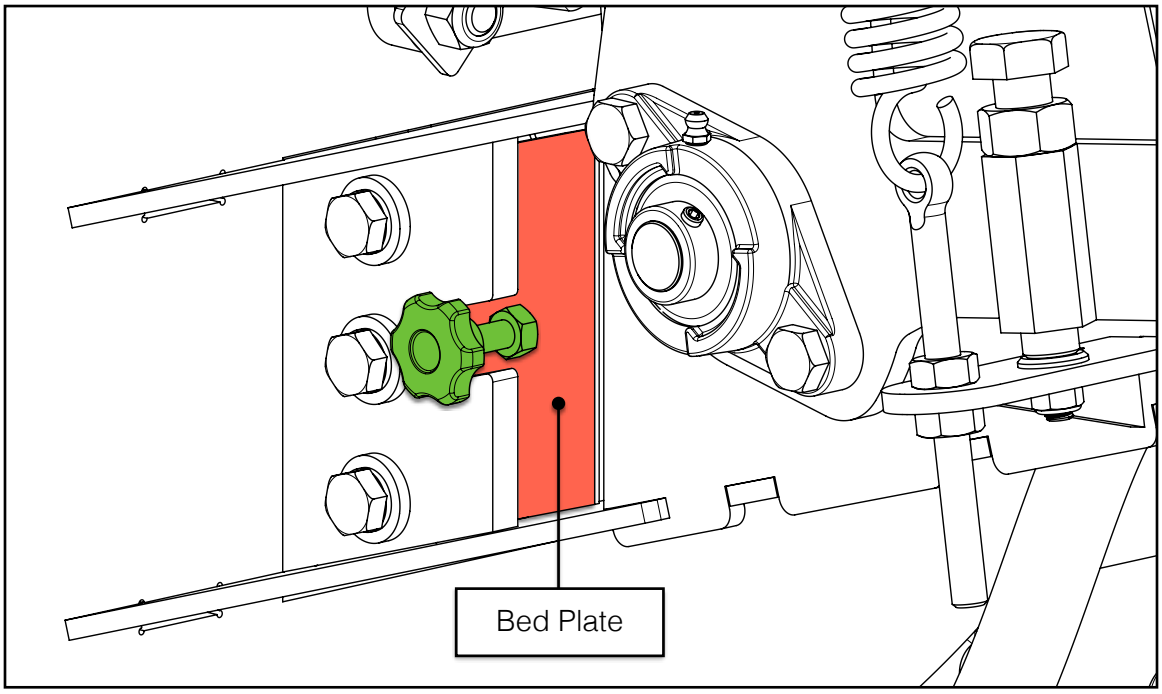
# SETTING THE BED PLATE GAP

The bed plate (also known as the *anvil plate*) is located on the left side of the flywheel housing (while facing the infeed chute). For ideal chipping performance, the gap between the bed plate and blades should be set using the *Bed Plate Gap Tool* (⅛ in [3 mm]).

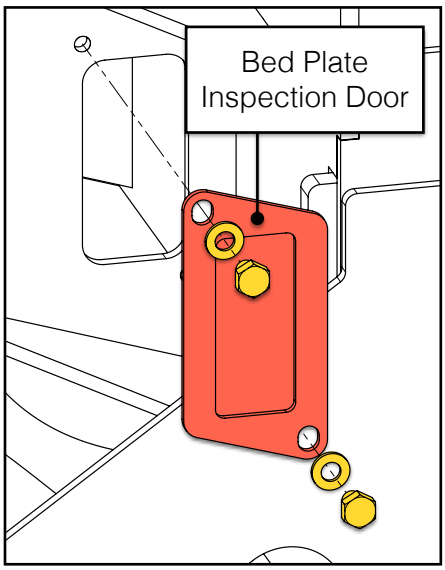


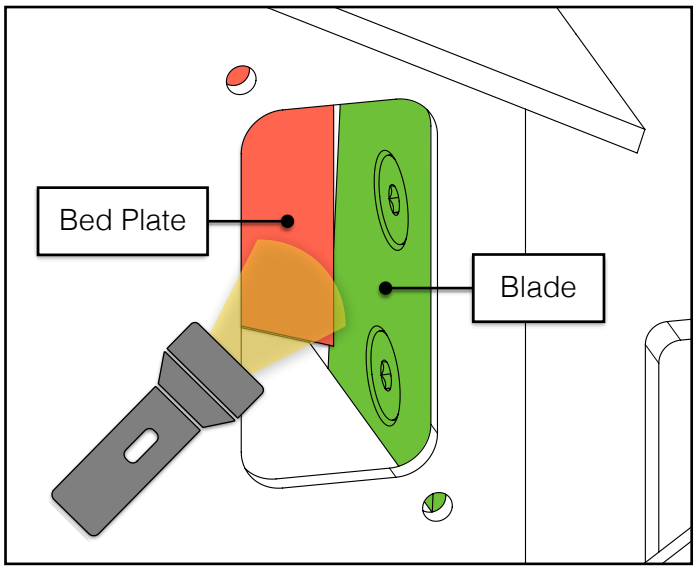

**This graphic illustrates how the gap tool interfaces with the bed plate and blades in order to achieve uniform spacing. Some components removed for clarity.**

Follow the steps on the next page to set the gap correctly. Failure to set the proper gap can lead to poor chipping performance and/or clogging.

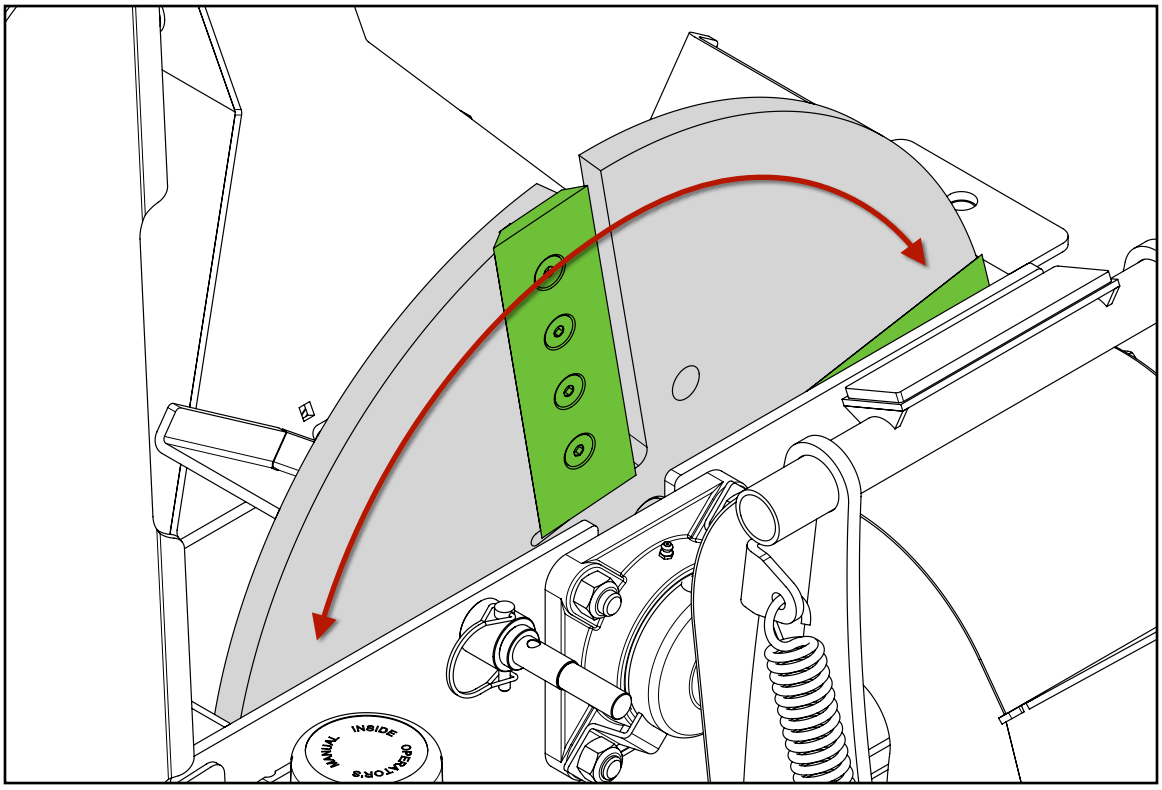



1. Disconnect the PTO shaft from the tractor for safety.
2. Open the upper flywheel housing using a 24 mm socket/wrench.
3. Remove the two (2) M8 X 10 mm hex bolts securing the bed plate inspection door located on the right-side of the lower infeed housing. With the bed plate inspection door removed, a clear view of the bed plate and its relationship to the blades can be seen. Use a flashlight for better viewing if necessary.

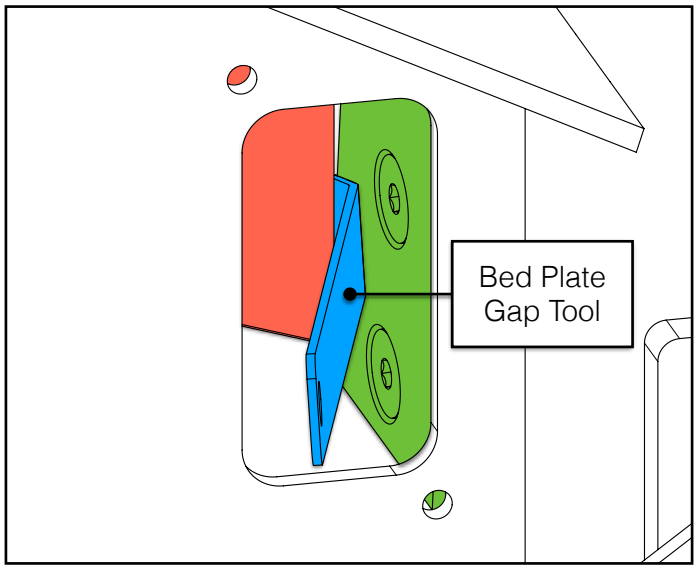


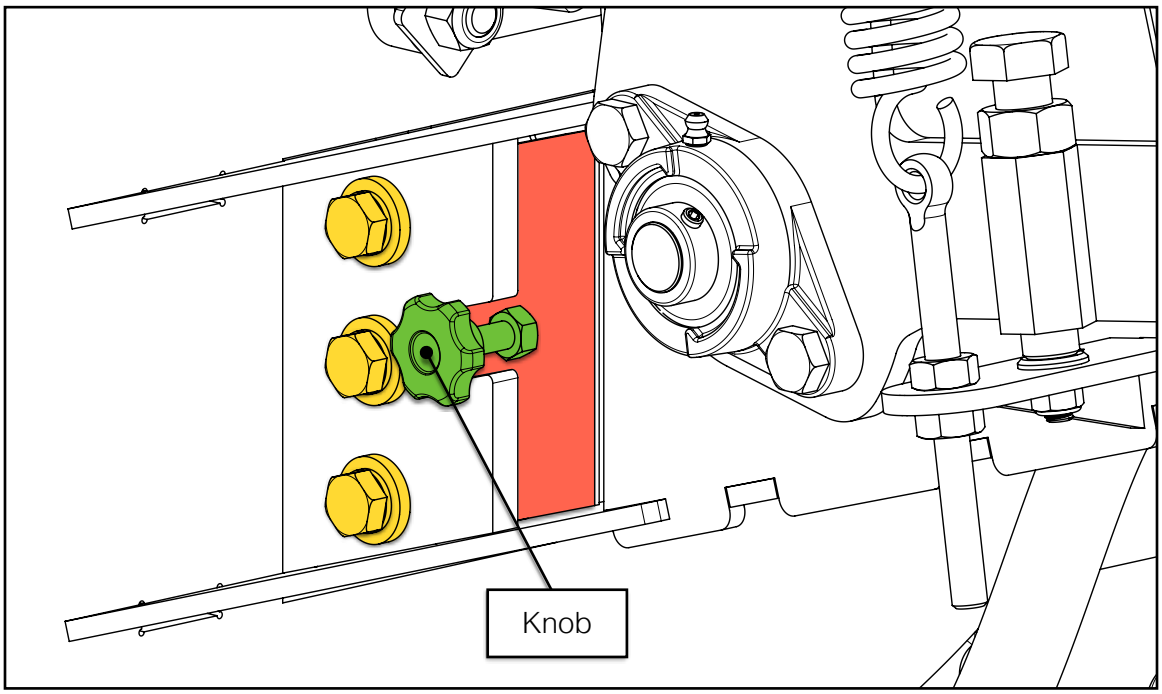
4. Rotate the flywheel so that the first blade is aligned with the bed plate. Take note of the gap between the two and continue to check the remaining blades relative to the bed plate—*taking note of which blade is closest*. Position this closest blade at the bed plate as this is the blade that will be used to set the proper gap with the provided tool.



5. Place the bed plate gap tool between the bed plate and blade. Verify that the gap is consistent vertically from the top of the bed plate to the bottom.



6. Loosen the three (3) bed plate M10 X 25 mm hex bolts enough so that 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.



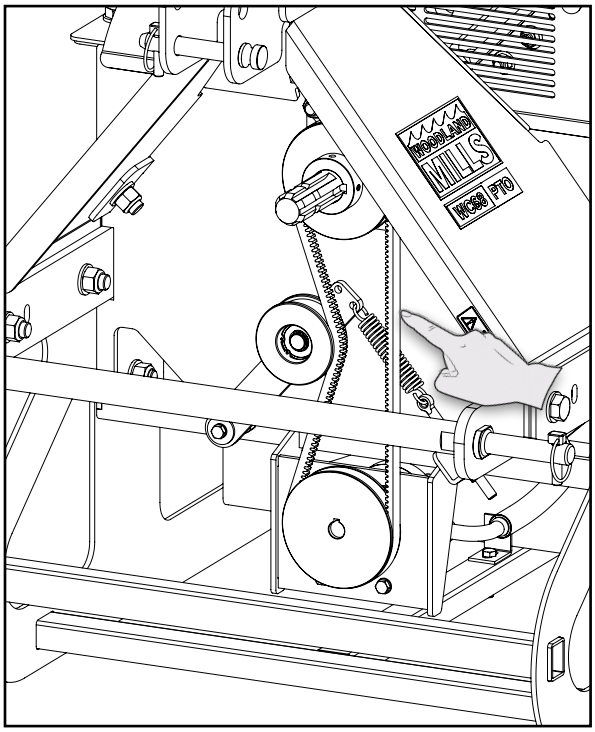

Slide the bed plate by gripping the knob and adjust its position so that it touches the bed plate gap tool. Ensure the gap is uniform along the entire edge of the blade.

7. Snug the three (3) bed plate bolts once the gap has been set correctly for the blade closest to the bed plate.
8. Rotate the flywheel by hand again, checking the gap at each blade. The bed plate gap tool should still fit between the bed plate and blade along the entire length of the blade.
9. Once the bed plate gap is set, torque the three (3) M10 X 25 mm bed plate hex bolts to 40 ft•lb [54 N•m].
10. Close the upper flywheel housing and secure it to the lower housing by reinstalling the M16 X 40 mm bolt and flat washer.
11. Reinstall the bed plate inspection door and torque the two (2) M8 X 10 mm hex bolts to 225 in•lb [25 N•m].

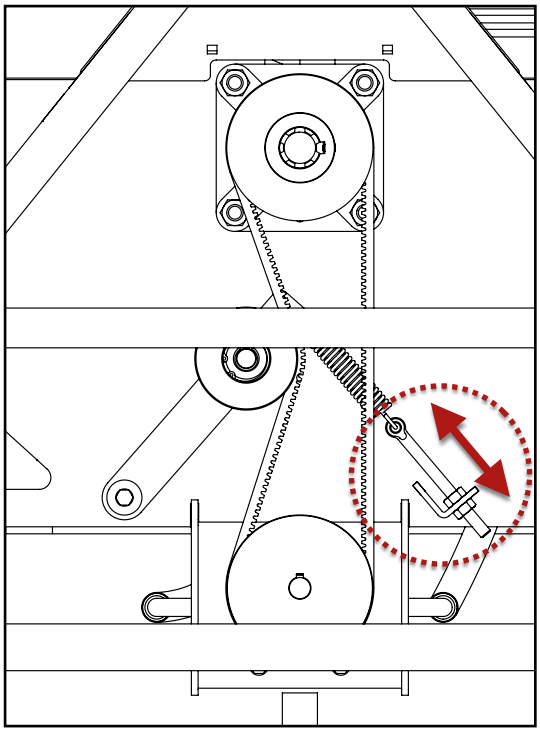
# ADJUSTING THE HYDRAULIC PUMP BELT TENSION

Check the condition and tension of the hydraulic pump belt after every 30 hours of operation. The belt 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 belt tension by pressing on it with your finger (see "*Checking Belt Tension*" below). There should not be any free slack in the belt. It should be under firm tension.
3. If the belt requires more tension, the eyebolt connected to the spring can be adjusted by moving the M8 hex nuts (see "*Adjusting Belt Tension*" below). This will stretch the spring and increase the belt tension until the proper tension is achieved.




**Checking Belt Tension**

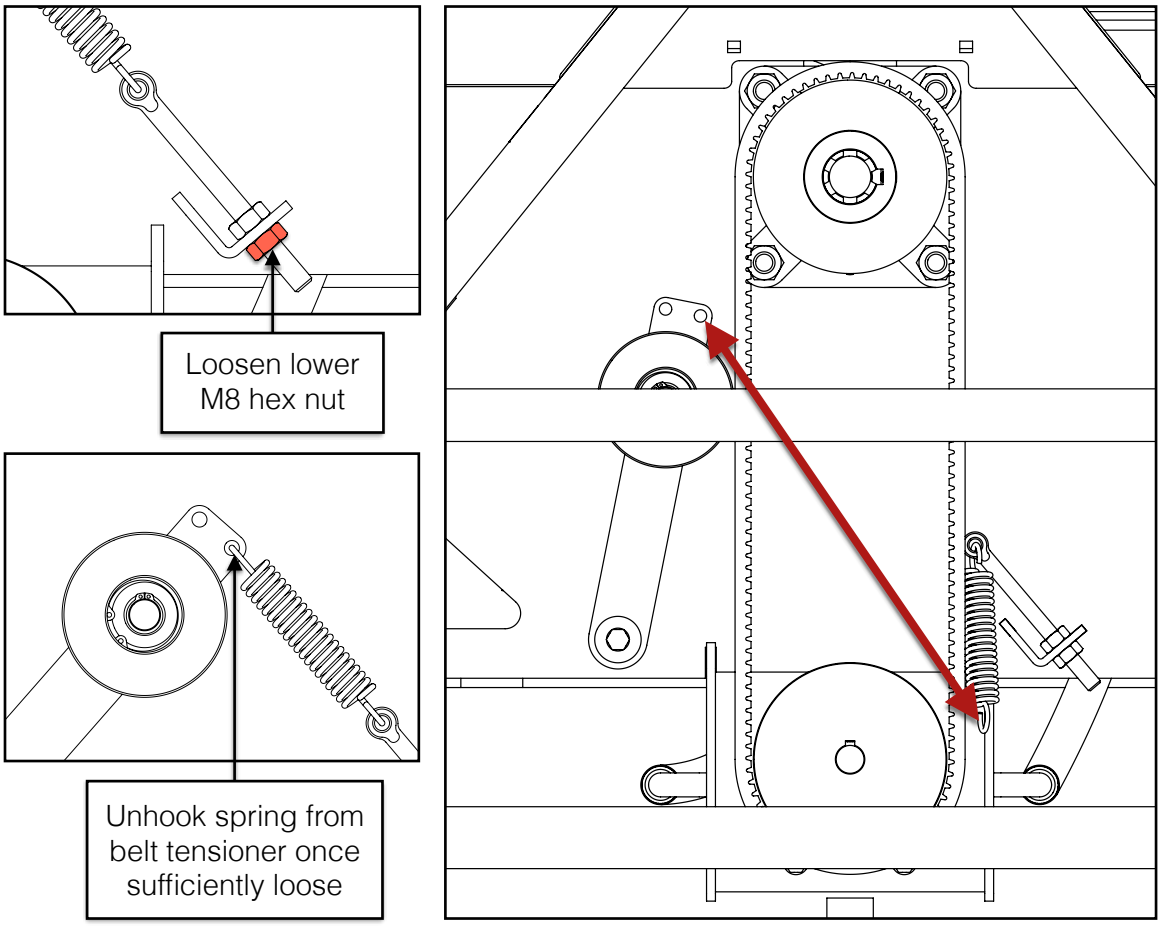


**Adjusting Belt Tension**

# REPLACING THE HYDRAULIC PUMP BELT

Check the condition and tension of the hydraulic pump belt after every 30 hours of operation. If the infeed roller is not rotating, or it is rotating slowly, the 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 the Hydraulic Pump Belt Tension***). To replace a worn belt, follow the steps below:

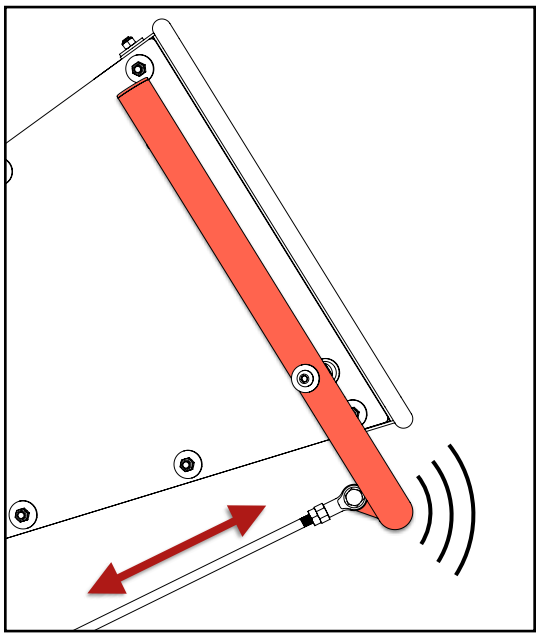
1. If installed, disconnect the PTO shaft from the wood chipper for safety.
2. Loosen the lower M8 hex nut that secures the eyebolt to the steel bracket until sufficient tension has been removed from the spring allowing it to be unhooked from the belt tensioner. The belt tensioner can now be swung up out of the way allowing for removal of the belt from the pulleys.



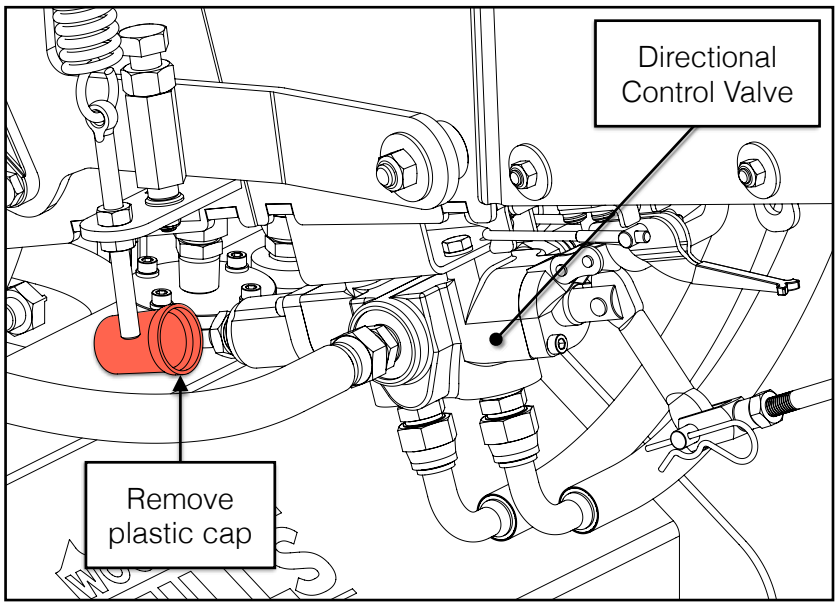

3. Install the new belt around the pulleys first and then reinstall the spring. Re-tension the spring by tightening the lower M8 hex nut on the eyebolt. Refer to the previous section, ***Adjusting the Hydraulic Pump Belt Tension*** for instructions on how to properly re-tension the belt.

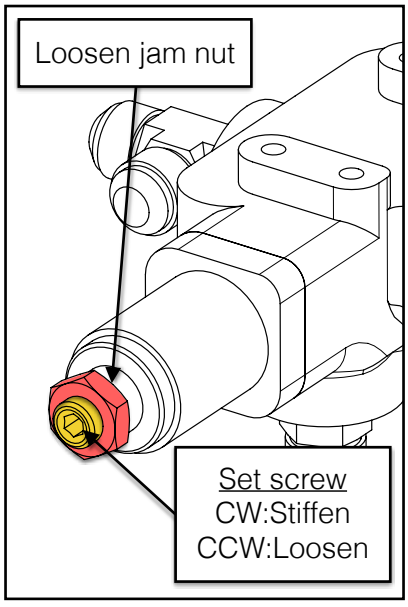
# ADJUSTING THE CONTROL ARM

If the movement of the red control arm feels too stiff or too loose, or if it falls into neutral or reverse unexpectedly, it can be adjusted via the directional control valve.



Unscrew the plastic cap from the back of the directional control valve (located under the infeed chute), exposing the jam nut and set screw.




Loosen the jam nut with a 22 mm [⅞ in] wrench. Use a 6 mm hex key and turn the set screw ***clockwise to stiffen*** the movement of the arm, ***counter-clockwise to loosen*** it. Tighten the jam nut and replace the cap after the control arm movement feels satisfactory.

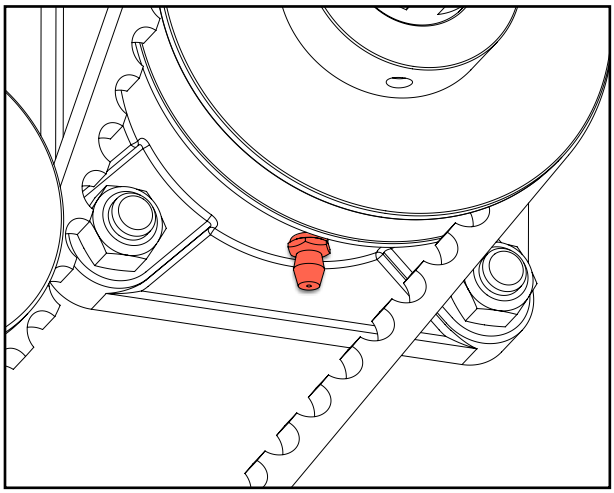
# GREASING

## BEARINGS & OUTPUT SHAFT

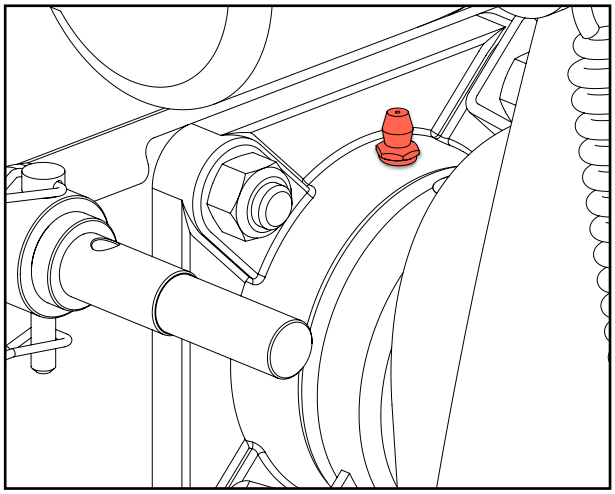
The wood chipper has three (3) grease points with Zerk fittings: two (2) flywheel bearings and one (1) infeed roller bearing. Check each grease point prior to use and add grease as needed.

Also, periodically brush grease onto the wood chipper's output shaft for ease of PTO shaft assembly & removal, to prevent rust buildup, and to prevent the two shafts from seizing together.

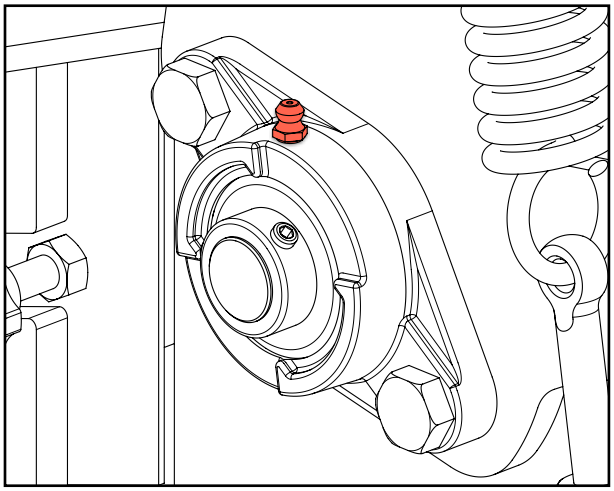
****Warning: These 3 grease points come pre-greased from the factory. *Do not add grease to the Zerk fittings on a new wood chipper*. Over-greasing can damage the bearing seals.****



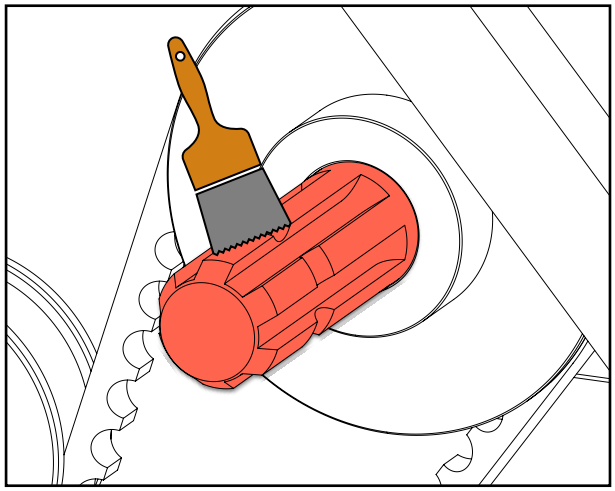
**Front Flywheel Shaft Bearing**



**Rear Flywheel Shaft Bearing**



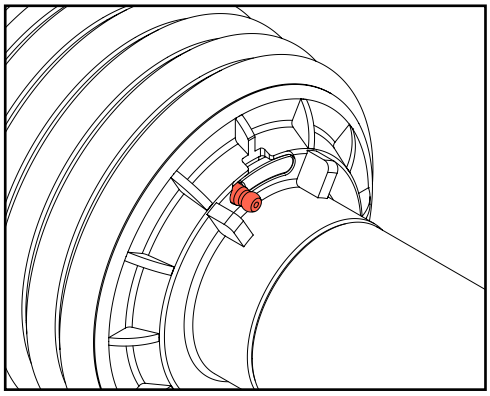
**Infeed Roller Bearing**



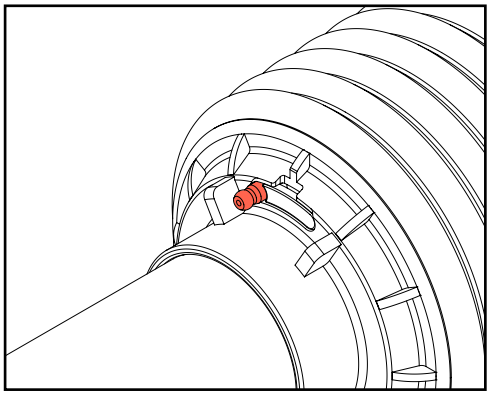
**Output Shaft**

## PTO SHAFT

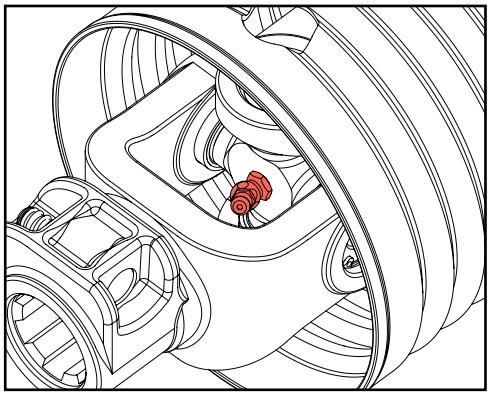
The PTO shaft has seven (7) grease points that are accessible from the outside: one (1) on each of the inner and outer guards, two (2) on the tractor yoke, and three (3) on the shear pin yoke. Check each grease point prior to use and add grease as needed.



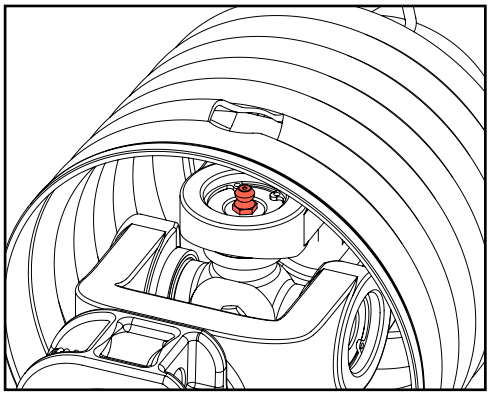
**Inner Cover**



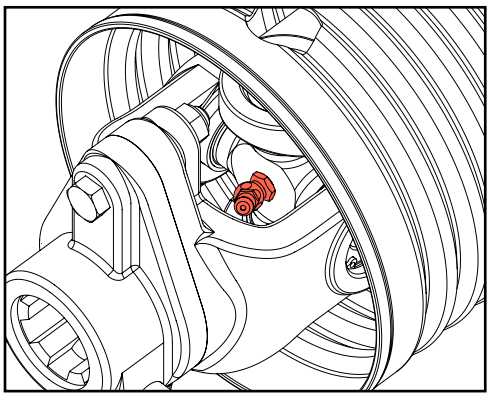
**Outer Cover**



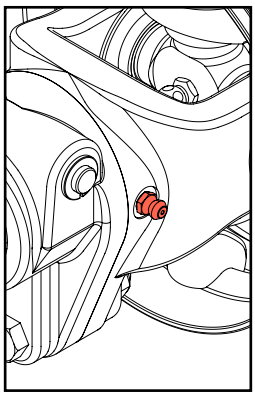
**Tractor Yoke 1**



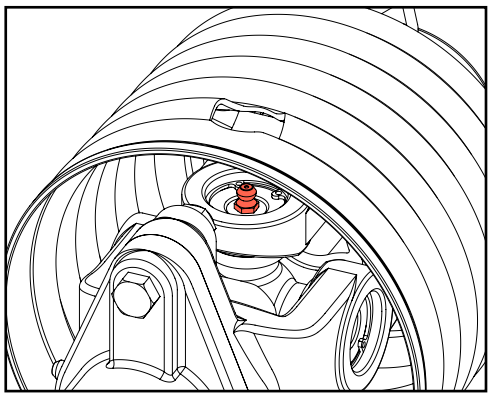
**Tractor Yoke 2**



**Shear Bolt Yoke 1**



**Shear Bolt Yoke 2**

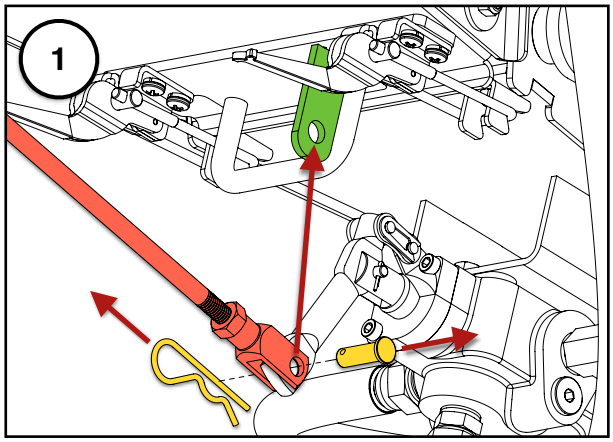


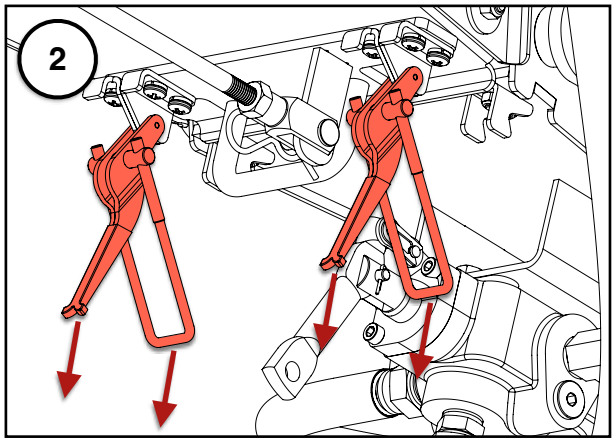
**Shear Bolt Yoke 3**

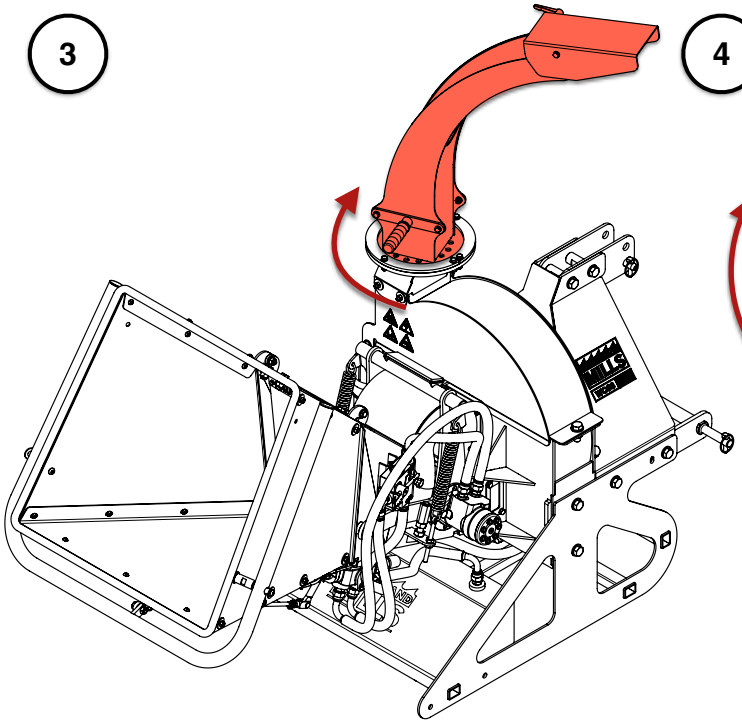
# STORAGE

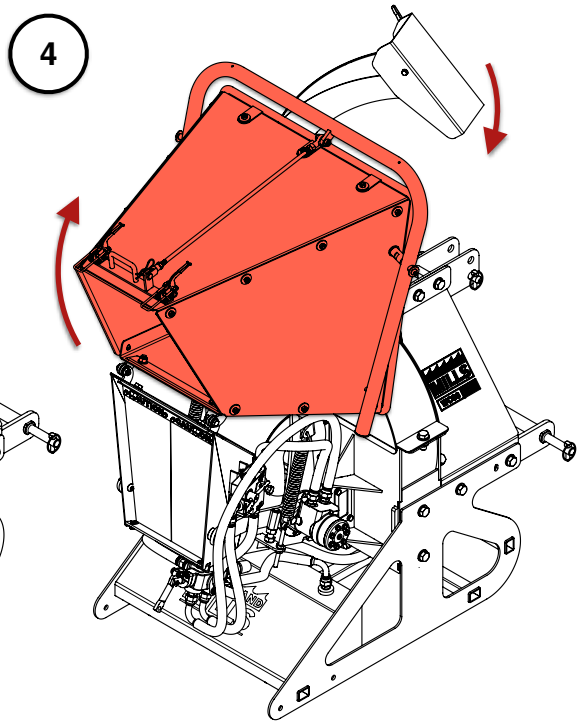
When the wood chipper is not in use, it can be stored to utilize a smaller footprint to save space. Follow these steps to put the wood chipper in its storage state:

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.



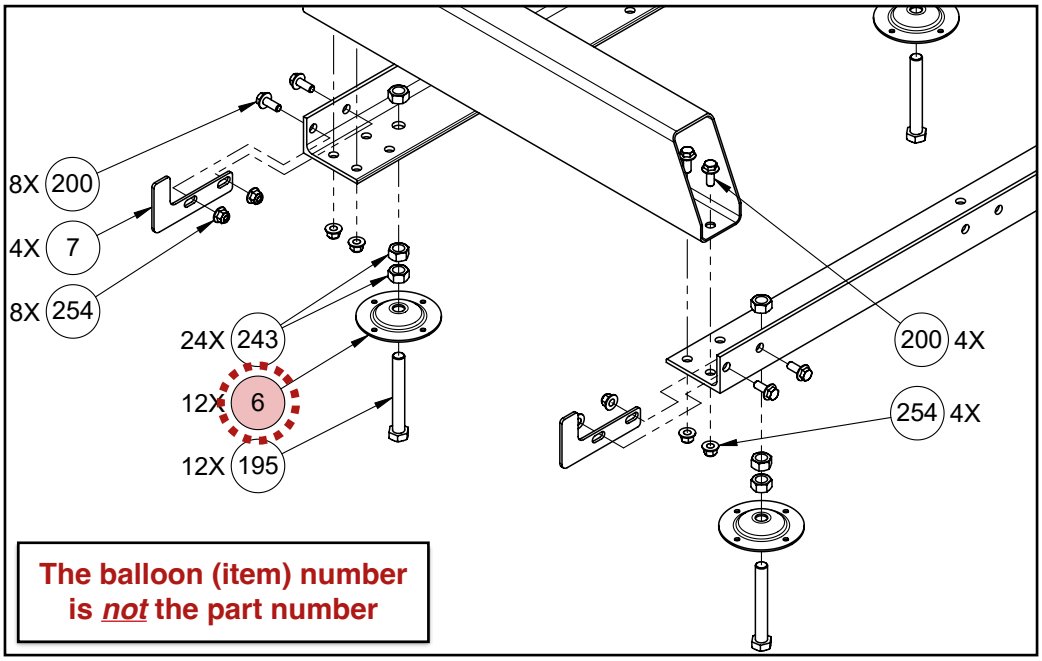



# TROUBLESHOOTING

| Problem/Issue | Possible Causes | Resolution Options |
|---|---|---|
| Brush is feeding too slowly | 1. Infeed roller control set too low.<br>2. PTO RPM below 540.<br>3. Blades are dull.<br>4. Improper bed plate gap. | 1. Increase infeed roller control to a higher value. Refer to page 42.<br>2. Adjust tractor RPMs to 540 at output.<br>3. Reverse, sharpen, or replace blades. Refer to page 46 & page 48.<br>4. Re-set bed plate gap. Refer to page 49. |
| Brush exiting discharge chute is stringy | 1. Blades are dull.<br>2. Brush is excessively sappy. | 1. Reverse, sharpen, or replace blades. Refer to page 46 & page 48.<br>2. Clean blades and bed plate. |
| Excessive clogging | 1. Blades are dull.<br>2. Improper bed plate gap.<br>3. PTO RPM below 540. | 1. Reverse, sharpen, or replace blades. Refer to page 46 & page 48.<br>2. Re-set bed plate gap. Refer to page 49.<br>3. Clean blades and bed plate.<br>4. Adjust tractor RPMs to 540 at output. |
| Hydraulic pump belt slipping or squeaking | 1. Belt tension not set properly.<br>2. Belt is old/worn. | 1. Adjust belt tension. Refer to page 53.<br>2. Replace belt. Refer to page 54. |
| Excessive noise coming from flywheel bearings | 1. Bearings not sufficiently lubricated.<br>2. Bearings are worn. | 1. Grease bearings. Refer to page 56.<br>2. Replace bearings. Please contact Woodland Mills for bearing replacement instructions. |
| Red control arm falls into neutral or reverse | 1. Directional control valve not adjusted properly. | 1. Adjust directional control valve set screw. Refer to page 55. |

# 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:

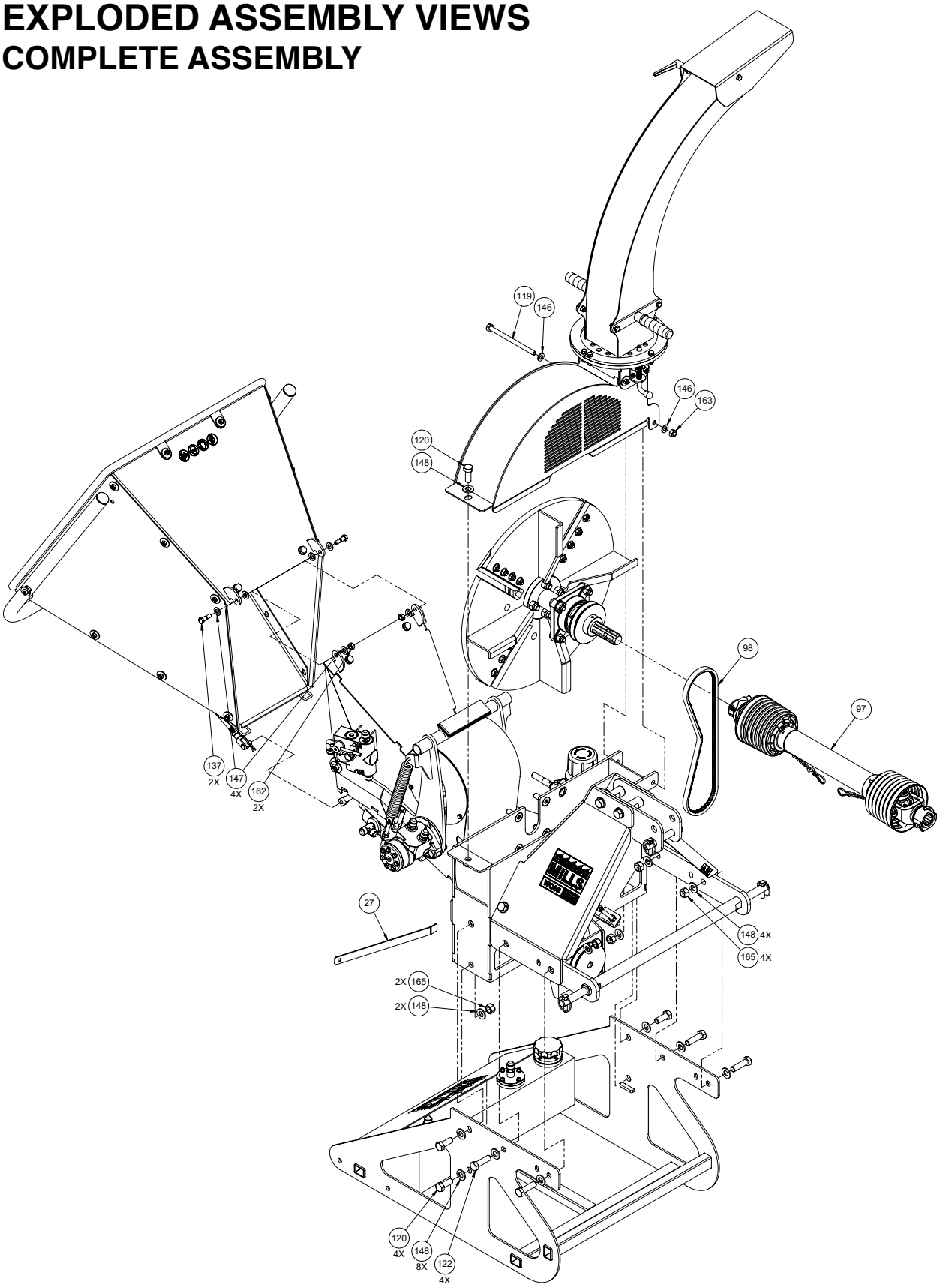
## PARTS LIST

| 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 |

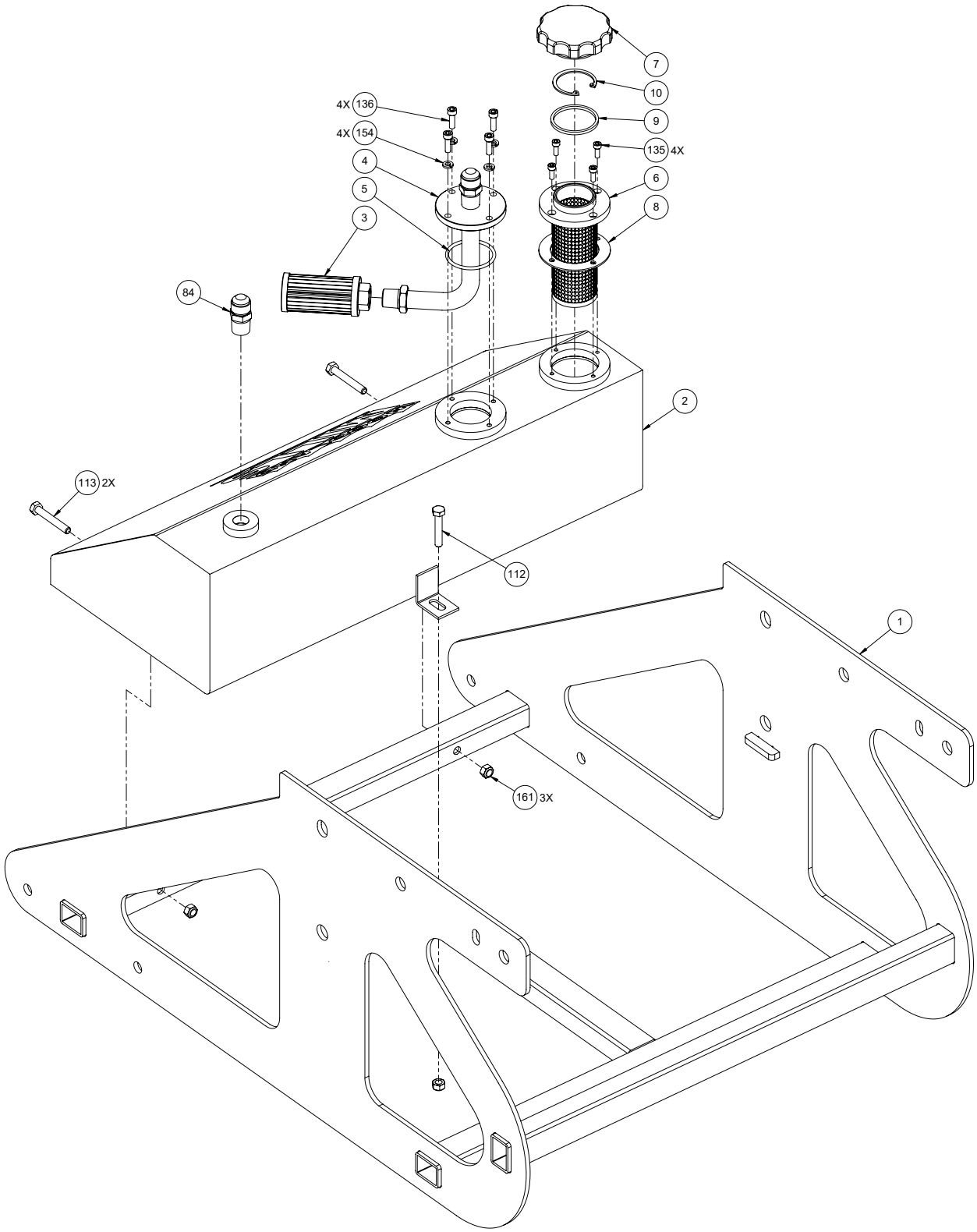
Record the part number (e.g. *0001071, HHB-MBM080FCJ, etc.*) in the "**Part No.**" column.

Contact Woodland Mills through the website or via phone/email. If possible, include the invoice or sales number from the purchased product so an associated account can be located. If the account has multiple addresses on file, please indicate to which address the replacement part(s) will be shipped.

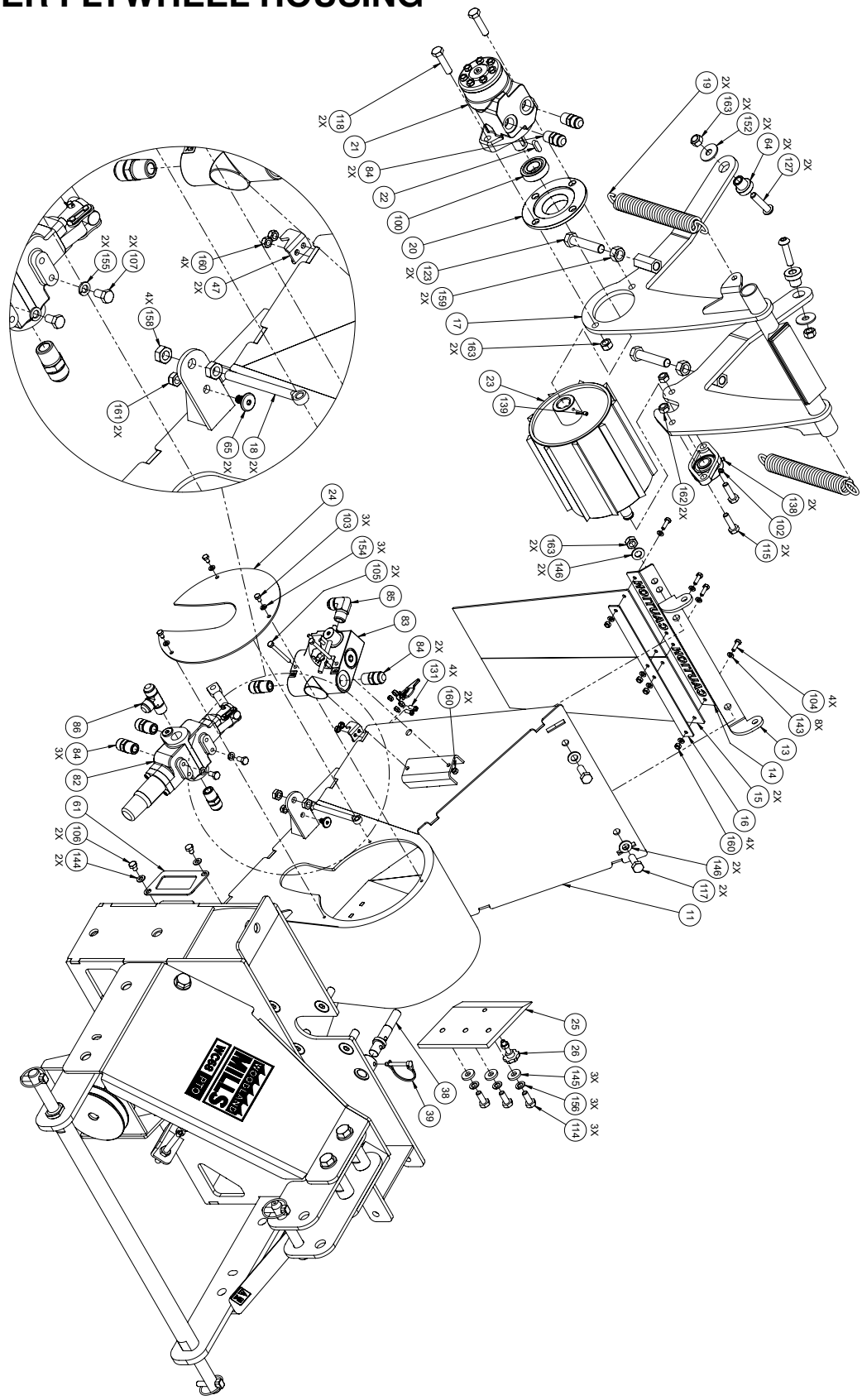
# EXPLODED ASSEMBLY VIEWS
## COMPLETE ASSEMBLY



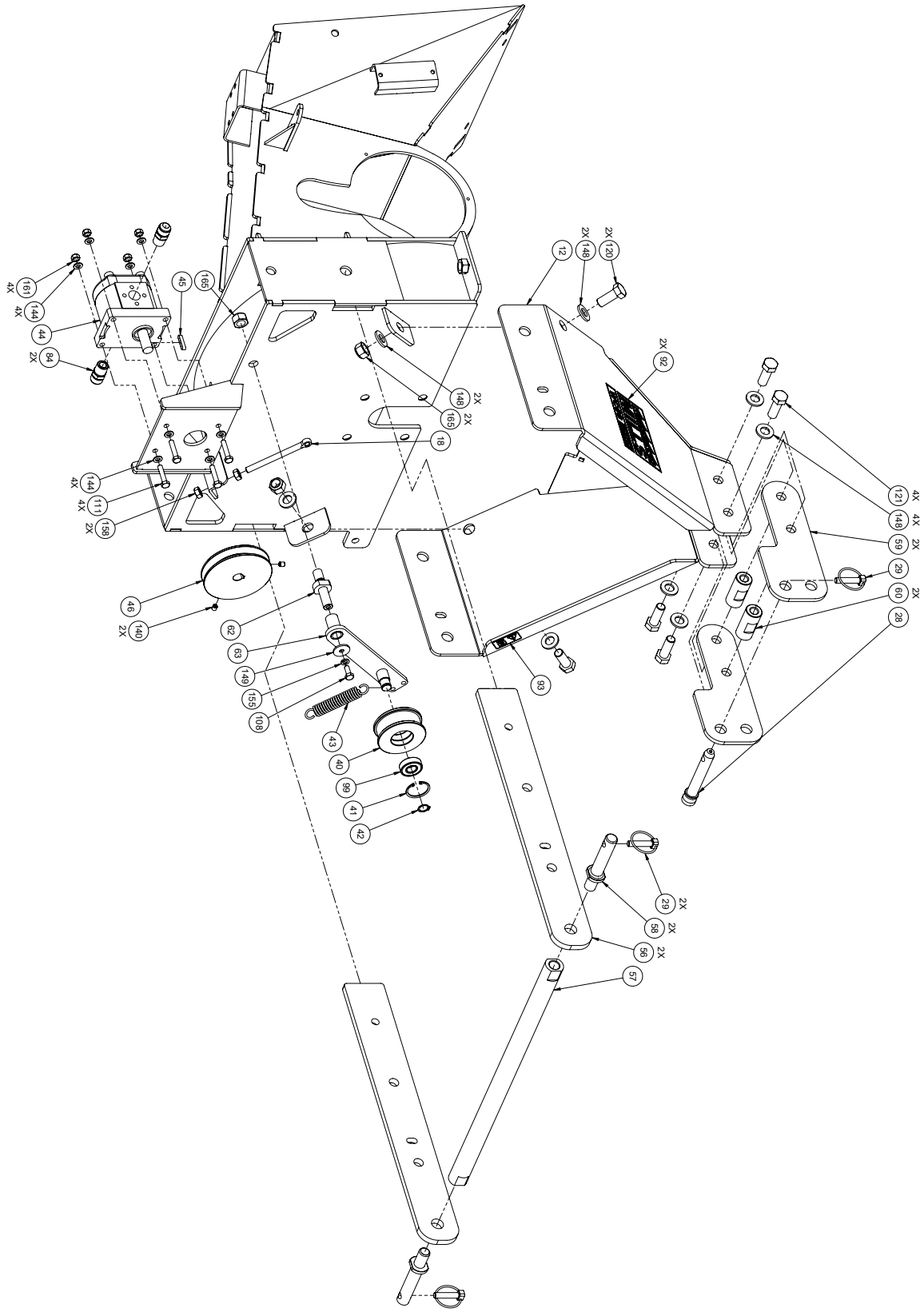
# BASE



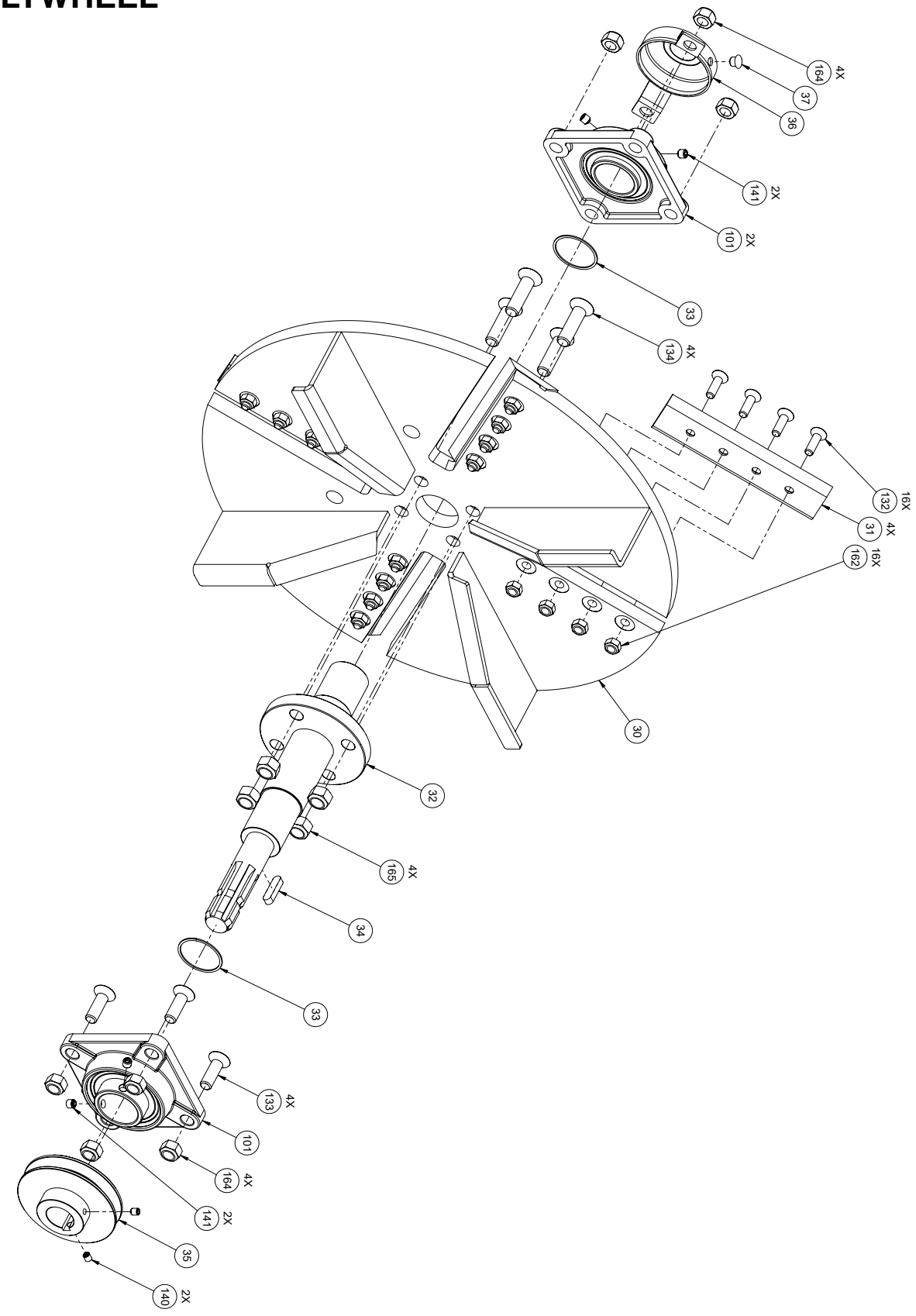
# LOWER FLYWHEEL HOUSING



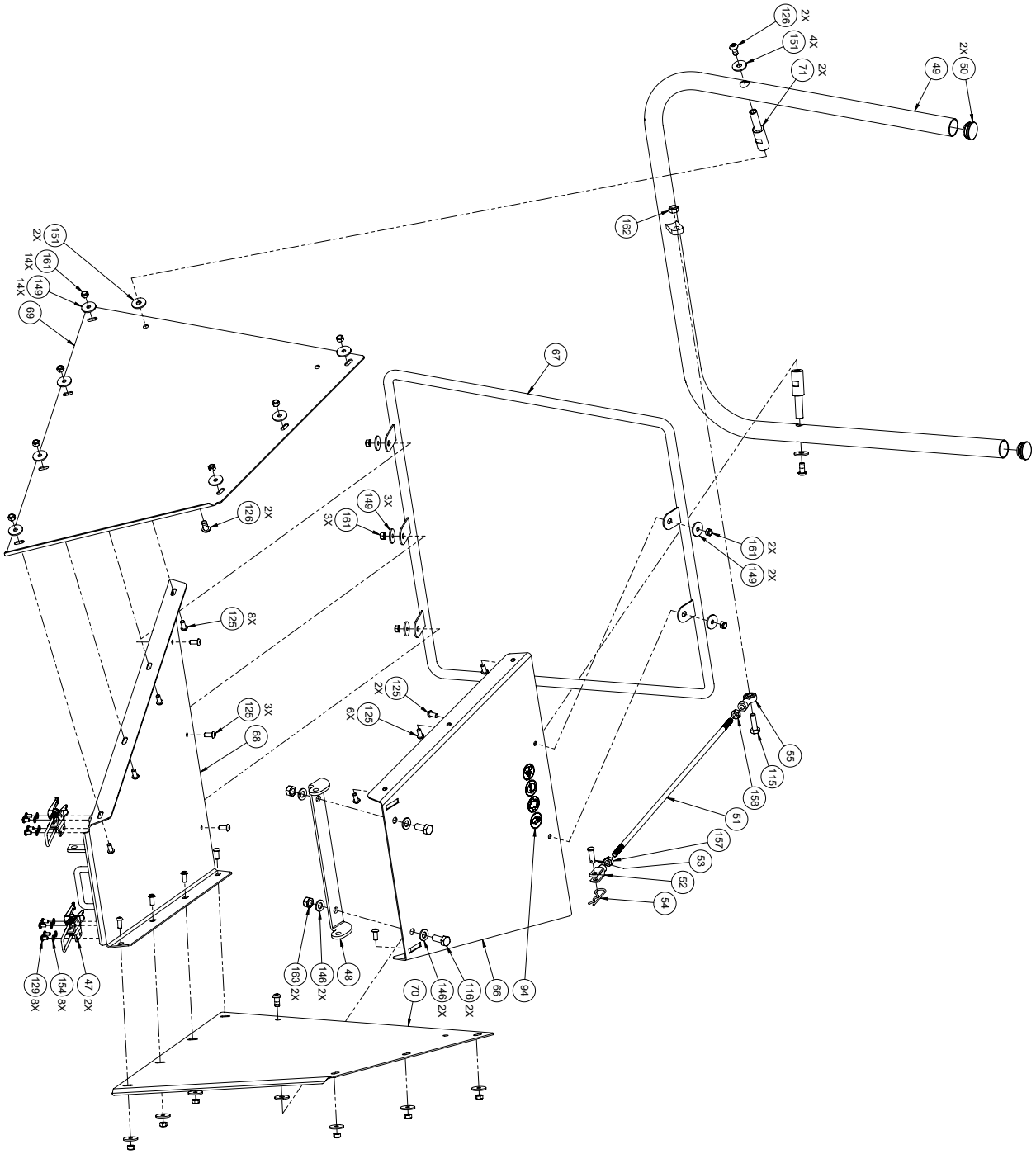
# LOWER FLYWHEEL HOUSING BELT GUARD



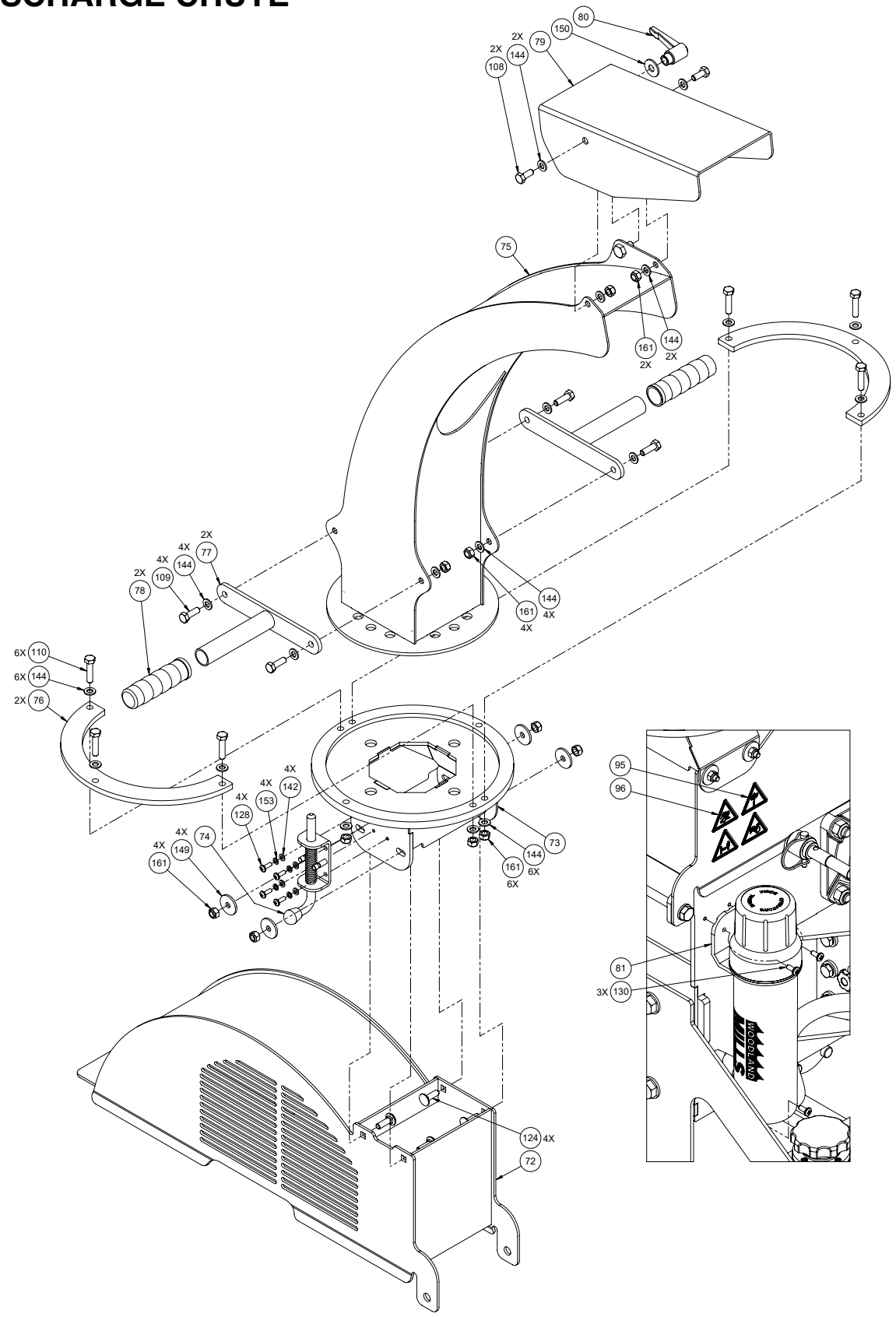
# FLYWHEEL


164 4X
37
36
141 2X
101 2X
33
134 4X
132 16X
31 4X
162 16X
30
32
165 4X
34
33
133 4X
101
164 4X
141 2X
35
140 2X

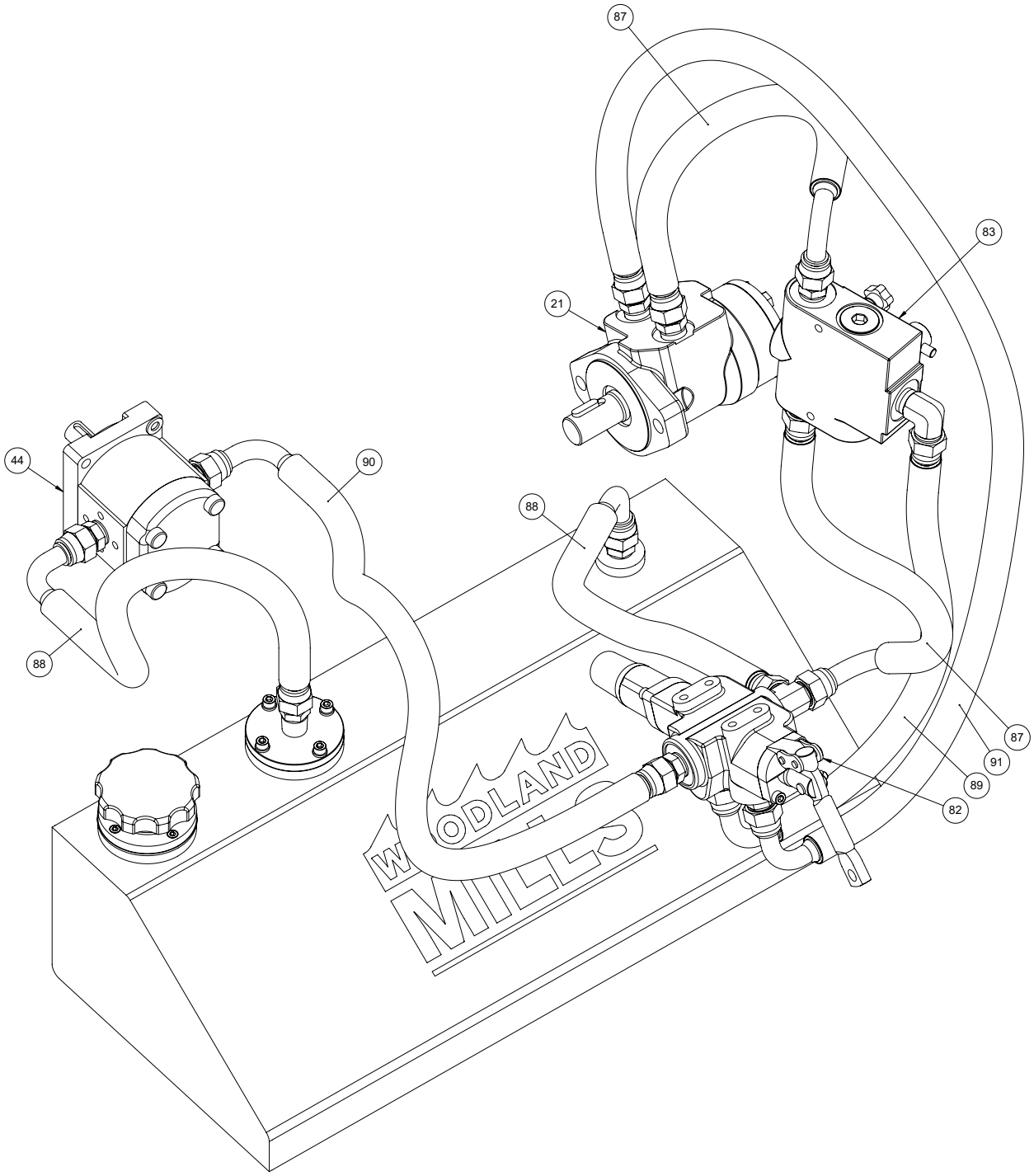
# INFEED CHUTE



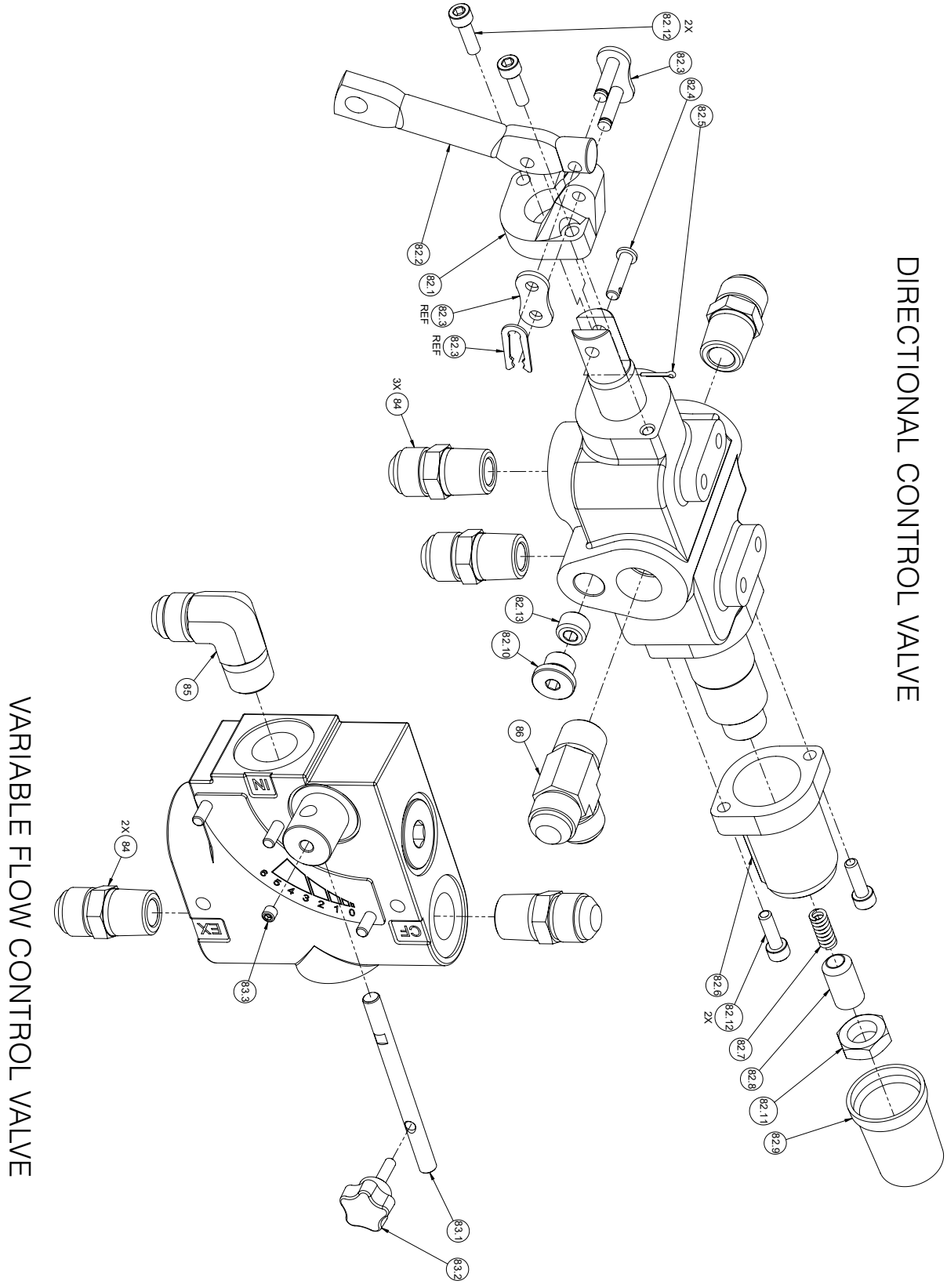
# DISCHARGE CHUTE



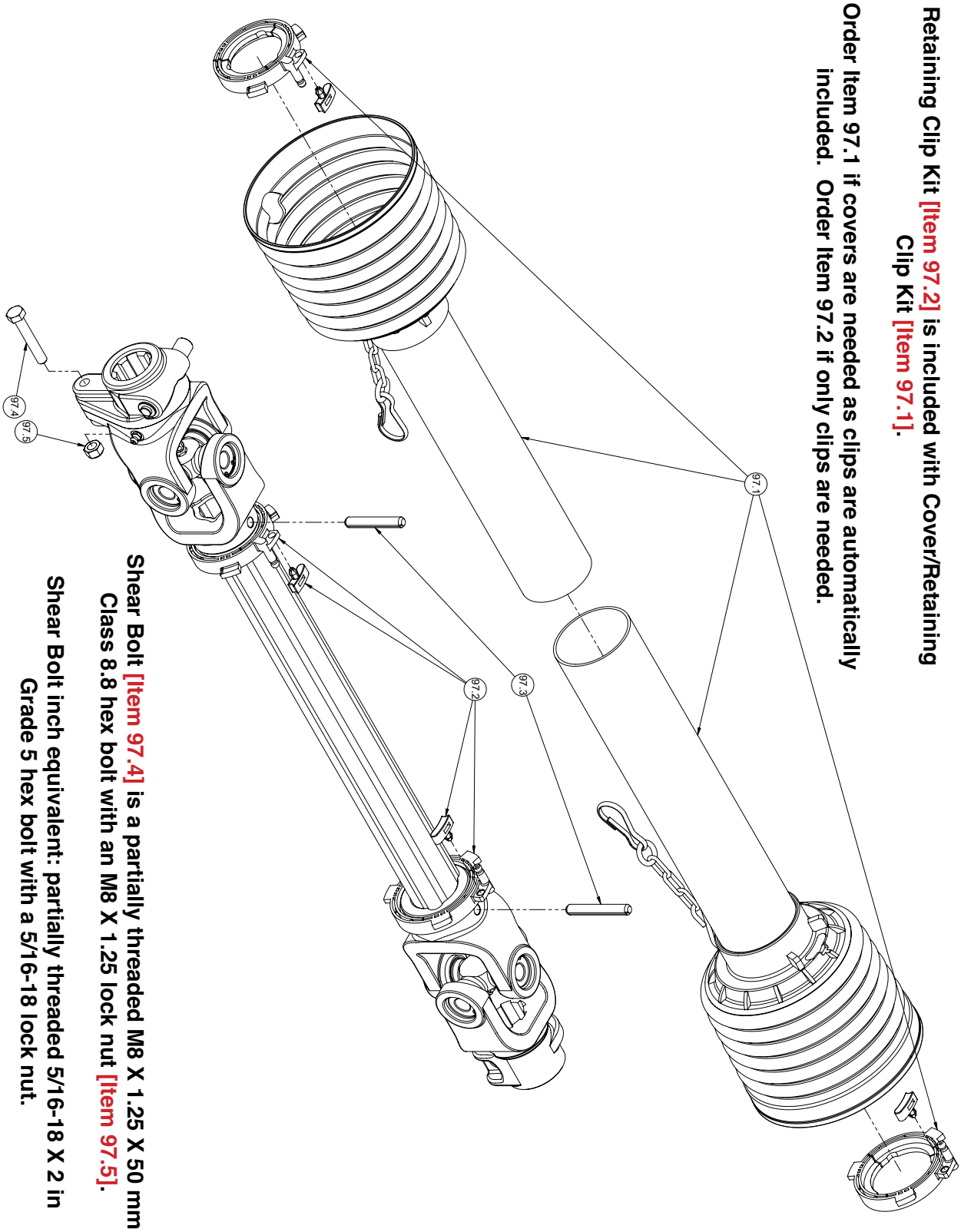
# HYDRAULIC LINES



# CONTROL VALVES



# PTO SHAFT




**Retaining Clip Kit [Item 97.2] is included with Cover/Retaining Clip Kit [Item 97.1].**

**Order Item 97.1 if covers are needed as clips are automatically included. Order Item 97.2 if only clips are needed.**

**Shear Bolt [Item 97.4] is a partially threaded M8 X 1.25 X 50 mm Class 8.8 hex bolt with an M8 X 1.25 lock nut [Item 97.5].**

**Shear Bolt inch equivalent: partially threaded 5/16-18 X 2 in Grade 5 hex bolt with a 5/16-18 lock nut.**

# PARTS LIST

| Item | Qty | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 0007100 | BASE |
| 2 | 1 | 0001168 | HYDRAULIC TANK, 20 L [5.3 gal] |
| 3 | 1 | 0001752 | HYDRAULIC INTAKE FILTER, 1/2 NPT |
| 4 | 1 | 0001164 | HYDRAULIC TANK INTAKE LINE |
| 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 | 0010300 | LOWER FLYWHEEL HOUSING |
| 12 | 1 | 0006862 | BELT GUARD |
| 13 | 1 | 0001208 | INNER HINGE, INFEED CHUTE |
| 14 | 1 | 0001196 | CURTAIN BRACKET |
| 15 | 2 | 0001197 | CURTAIN |
| 16 | 1 | 0001195 | CURTAIN PLATE |
| 17 | 1 | 0009647 | SWINGARM |
| 18 | 3 | 0006059 | EYEBOLT, DIN444, M10 X 1.5, 120 mm LG |
| 19 | 2 | 0001157 | EXTENSION SPRING, HOOK ENDS, 33 mm OD, 5 mm DIA WIRE, 210 mm LG |
| 20 | 1 | 0001179 | HYDRAULIC MOTOR ADAPTER PLATE, 6205-2RS BEARING |
| 21 | 1 | 0004861 | HYDRAULIC MOTOR, CW, 154 cc [9.4 in3/rev], 2-HOLE 1/2 in NPT ALIGNED PORTS, 25 mm SFT |
| 22 | 1 | 0004846 | PARALLEL KEY, 8 X 7 mm, 25 mm LG |
| 23 | 1 | 0001165 | INFEED ROLLER |
| 24 | 1 | 0001201 | INFEED ROLLER COVER PLATE |
| 25 | 1 | 0001186 | BED PLATE, 150 X 120 X 9.4 mm |
| 26 | 1 | 0001191 | KNOB, MULTI-LOBE, 32 mm OD, M8 X 1.25, 30 mm LG, M8 WLD HEX NUT |
| 27 | 1 | 0010411 | BED PLATE GAP TOOL |
| 28 | 1 | 0001156 | HITCH PIN, UPPER, CAT 1, 3/4 in [19 mm] DIA, 3-1/2 in [90 mm] USEABLE LG |
| 29 | 3 | 0004705 | LINCH PIN, 10 mm DIA, 38 mm USABLE LG, 45 mm LG |
| 30 | 1 | 0001210 | FLYWHEEL |
| 31 | 4 | 0001185 | FLYWHEEL BLADE, 219 X 69 X 8 mm |
| 32 | 1 | 0001209 | FLYWHEEL SHAFT |
| 33 | 2 | 0001158 | SPACER, 50.6 ID X 56 OD X 1.5 mm LG |
| 34 | 1 | 0004849 | PARALLEL KEY, 10 X 8 mm, 40 mm LG |
| 35 | 1 | 0001736 | V-BELT PULLEY, 35 mm SHAFT, 125 mm DIA |
| 36 | 1 | 0001184 | FLYWHEEL SHAFT COVER, UCF210 BEARING |
| 37 | 1 | 0001795 | FLYWHEEL SHAFT COVER PLUG |
| 38 | 1 | 0001796 | FLYWHEEL LOCKING PIN |
| 39 | 1 | 0004728 | LOCKING PIN, ROUND, 1/4 in DIA, 1-3/8 in USABLE LG, 2 in LG |
| 40 | 1 | 0001692 | IDLER PULLEY, SINGLE BEARING, 25 mm WD, 80 mm DIA |
| 41 | 1 | 0004816 | RETAINING RING, INTERNAL, 40 mm BORE (42.5 mm GROOVE) |
| 42 | 1 | 0004798 | RETAINING RING, EXTERNAL, 17 mm SHAFT (16.2 mm GROOVE) |
| 43 | 1 | 0001192 | EXTENSION SPRING, HOOK ENDS, 21 mm OD, 3 mm DIA WIRE, 100 mm LG |
| 44 | 1 | 0004869 | HYDRAULIC GEAR PUMP, 10 mL/r, KEYED SHAFT |
| 45 | 1 | 0004845 | PARALLEL KEY, 6 X 6 mm, 32 mm LG |
| 46 | 1 | 0010908 | V-BELT PULLEY, 18 mm SHAFT, 125 mm DIA |

| Item | Qty | Part No. | Description |
|---|---|---|---|
| 47 | 2 | 0001304 | LATCH-STYLE TOGGLE CLAMP, SAFETY LOCK |
| 48 | 1 | 0001207 | OUTER HINGE, INFEED CHUTE |
| 49 | 1 | 0009646 | CONTROL ARM |
| 50 | 2 | 0001781 | PLASTIC END CAP, ROUND, 38 mm DIA |
| 51 | 1 | 0010287 | LINKAGE ROD, CONTROL ARM, 620 mm LG |
| 52 | 1 | 0004834 | CLEVIS ROD END, M10 X 1.5 THD, 10 mm ID, 10 mm JAW OPENING |
| 53 | 1 | 0004749 | CLEVIS PIN, 10 mm DIA, 24 mm USABLE LG, 30 mm LG |
| 54 | 1 | 0004760 | COTTER PIN, HAIRPIN, 10-16 mm CLEVIS, 3 mm WIRE DIA |
| 55 | 1 | 0004888 | ROD END BEARING, 10 mm, M10 X 1.5 FEM THD |
| 56 | 2 | 0006859 | 3-POINT HITCH LOWER ARM |
| 57 | 1 | 0006864 | CONNECTING ROD |
| 58 | 2 | 0001738 | HITCH PIN, LOWER, CAT 1, M20 X 2.5, 7/8 in [22 mm] DIA, 3 in [75 mm] USEABLE LG |
| 59 | 2 | 0007036 | 3-POINT HITCH UPPER ARM |
| 60 | 2 | 0009856 | UPPER HITCH BUSHING |
| 61 | 1 | 0007106 | INSPECTION WINDOW COVER |
| 62 | 1 | 0010379 | PIVOT PIN, BELT TENSIONER ARM, 16 mm DIA, 41 mm LG, M16 X 2 THD |
| 63 | 1 | 0010376 | BELT TENSIONER ARM |
| 64 | 2 | 0006493 | SWINGARM PIVOT BUSHING, 10 mm SHOULDER |
| 65 | 2 | 0001733 | STRIKE PLATE BOLT, 20 mm HEAD DIA, M8 X 1.25 THD |
| 66 | 1 | 0006914 | INFEED CHUTE TOP PANEL |
| 67 | 1 | 0006913 | ROUND EDGE BAR, INFEED CHUTE |
| 68 | 1 | 0006910 | INFEED CHUTE BOTTOM PANEL |
| 69 | 1 | 0006912 | INFEED CHUTE RIGHT SIDE PANEL |
| 70 | 1 | 0006911 | INFEED CHUTE LEFT SIDE PANEL |
| 71 | 2 | 0008193 | CONTROL ARM SPACER |
| 72 | 1 | 0010384 | UPPER FLYWHEEL HOUSING |
| 73 | 1 | 0010309 | DISCHARGE CHUTE NOZZLE, 281.5 mm DIA |
| 74 | 1 | 0001172 | DISCHARGE CHUTE LOCK PIN ASSEMBLY, 12 mm DIA |
| 75 | 1 | 0002190 | DISCHARGE CHUTE |
| 76 | 2 | 0002191 | DISCHARGE CHUTE RETAINER PLATE, 281.5 mm DIA |
| 77 | 2 | 0001718 | DISCHARGE CHUTE ROTATION HANDLE, 170 mm C-C |
| 78 | 2 | 0001030 | HANDLE GRIP, GROOVED, 26 mm ID, 108 mm LG |
| 79 | 1 | 0002200 | DISCHARGE CHUTE DEFLECTOR |
| 80 | 1 | 0001786 | HANDLE, ADJUSTABLE POS, 78 X 54 mm, M10 X 1.5 FEM THD |
| 81 | 1 | 0001655 | MANUAL TUBE |
| 82 | 1 | 0004872 | DIRECTIONAL CONTROL VALVE, 1/2 NPT |
| 82.1 | 1 | 0005487 | ACTUATOR MOUNT, DIRECTIONAL CONTROL VALVE |
| 82.2 | 1 | 0005486 | ACTUATOR, 82 mm LG, DIRECTIONAL CONTROL VALVE |
| 82.3 | 1 | 0005477 | MASTER LINK, NO. 60 CHAIN |
| 82.4 | 1 | 0005482 | CLEVIS PIN, 6 mm DIA, 20 mm USABLE LG, 25 mm LG |
| 82.5 | 1 | 0005483 | COTTER PIN, 2 mm DIA, 10 mm LG |
| 82.6 | 1 | 0005494 | REAR COVER, DIRECTIONAL CONTROL VALVE |
| 82.7 | 1 | 0005481 | COMPRESSION SPRING, CLOSED GROUND ENDS, 8 mm OD, 1.5 mm DIA WIRE, 23 |
| 82.8 | 1 | 0005489 | ADJUSTMENT SCREW, M14 X 1.5, 25 mm LG, DIRECTIONAL CONTROL VALVE |
| 82.9 | 1 | 0005488 | CAP, DIRECTIONAL CONTROL VALVE |
| 82.10 | 1 | 0007182 | PRESSURE RELEASE PLUG, DIRECTIONAL CONTROL VALVE |
| 82.11 | 1 | THN-MBYCC | HEX NUT, THIN, CLS 4, M14 X 1.5 |
| 82.12 | 4 | SHC-MBE075FCP | SHCS, CLS 12.9, M6 X 1, 20 mm LG, FULL |

| Item | Qty | Part No. | Description |
|---|---|---|---|
| 82.13 | 1 | FTS-MBY059GR | SET SCREW, FLAT TIP, GR 45H, M14 X 1.5, 10 mm LG |
| 83 | 1 | 0004875 | VARIABLE FLOW CONTROL VALVE, 1/2 in NPT, 0-16 gal/min |
| 83.1 | 1 | 0007518 | LEVER ARM, VARIABLE FLOW CONTROL VALVE |
| 83.2 | 1 | 0007519 | KNOB, MULTI-LOBE, 25 mm OD, M6 X 1, 20 mm LG |
| 83.3 | 1 | CPS-MBE051GR | SET SCREW, CUP POINT, GR 45H, M6 X 1, 6 mm LG |
| 84 | 10 | 0005124 | FITTING, ADAPTER, 1/2 in NPT MALE TO 7/8-14 UNF MALE |
| 85 | 1 | 0005115 | FITTING, ELBOW, 90°, 1/2 NPT TO 7/8-14 THD |
| 86 | 1 | 0004911 | FITTING, TEE, 1/2 NPT TO 7/8-14 (2X) |
| 87 | 2 | 0003297 | HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 350 mm LG |
| 88 | 2 | 0003298 | HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 500 mm LG |
| 89 | 1 | 0003300 | HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 600 mm LG |
| 90 | 1 | 0003301 | HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 800 mm LG |
| 91 | 1 | 0003303 | HYDRAULIC HOSE ASSEMBLY, STR AND ELB FITTINGS, 1450 mm LG |
| 92 | 2 | 0010493 | LABEL, WC68 W/ WOODLAND MILLS LOGO |
| 93 | 1 | 0010603 | LABEL, PTO 540 RPM WARNING LABEL |
| 94 | 1 | 0010920 | LABEL, CHIPPER MANDATORY SYMBOLS |
| 95 | 1 | 0010921 | LABEL, CHIPPER INFEED WARNING SYMBOLS |
| 96 | 1 | 0010922 | LABEL, CHIPPER DISCHARGE WARNING SYMBOLS |
| 97 | 1 | 0010500 | PTO SHAFT, SHEAR PIN, 4S-SERIES |
| 97.1 | 1 | 0010540 | GUARD KIT, PTO SHEAR BOLT, 4S-SERIES |
| 97.2 | 1 | 0010541 | GUARD BEARING KIT, PTO SHEAR BOLT, 4S-SERIES |
| 97.3 | 1 | 0010542 | TRIANGULAR YOKE PIN KIT, PTO SHEAR BOLT, 4S-SERIES |
| 97.4 | 1 | HHB-MBJ105PCJ | HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 50 mm LG, 22 mm LG THD |
| 97.5 | 1 | HLN-MBJCH | LOCK NUT, CLS 8, M8 X 1.25 |
| 98 | 1 | BX43 | V-BELT, COGGED, BX43 |
| 99 | 1 | 6203-2RS | BALL BEARING, SEALED, 17 mm SFT, 40 mm HSG, 12 mm WD |
| 100 | 1 | 6205-2RS | BALL BEARING, SEALED, 25 mm SFT, 52 mm HSG, 15 mm WD |
| 101 | 2 | UCF210 | FLANGE BEARING, SQ, 4-BOLT, 50 mm SFT, 111 mm C-C |
| 102 | 1 | 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-MBJ059FCJ | HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 10 mm LG, FULL |
| 107 | 2 | HHB-MBJ071FCJ | HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 16 mm LG, FULL |
| 108 | 3 | HHB-MBJ075FCJ | HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 20 mm LG, FULL |
| 109 | 4 | HHB-MBJ080FCJ | HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 25 mm LG, FULL |
| 110 | 6 | HHB-MBJ090FCJ | HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 35 mm LG, FULL |
| 111 | 4 | HHB-MBJ095FCJ | HEX HEAD BOLT, CLS 8.8, M8 X 1.25, 40 mm LG, FULL |
| 112 | 1 | 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 | 3 | HHB-MBM080FCJ | HEX HEAD BOLT, CLS 8.8, M10 X 1.5, 25 mm LG, FULL |
| 115 | 3 | HHB-MBM090FCJ | HEX HEAD BOLT, CLS 8.8, M10 X 1.5, 35 mm LG, FULL |
| 116 | 2 | HHB-MBR085FCJ | HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 30 mm LG, FULL |
| 117 | 2 | HHB-MBR090FCJ | HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 35 mm LG, FULL |
| 118 | 2 | HHB-MBR105FCJ | HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 50 mm LG, FULL |
| 119 | 1 | HHB-MBR235PCJ | HEX HEAD BOLT, CLS 8.8, M12 X 1.75, 180 mm LG, 30 mm LG THD |
| 120 | 7 | HHB-MCA095FCJ | HEX HEAD BOLT, CLS 8.8, M16 X 2, 40 mm LG, FULL |
| 121 | 4 | HHB-MCA100FCJ | HEX HEAD BOLT, CLS 8.8, M16 X 2, 45 mm LG, FULL |

| Item | Qty | Part No. | Description |
|---|---|---|---|
| 122 | 4 | HHB-MCA110FCJ | HEX HEAD BOLT, CLS 8.8, M16 X 2, 55 mm LG, FULL |
| 123 | 2 | HHB-MCA135PCJ | HEX HEAD BOLT, CLS 8.8, M16 X 2, 80 mm LG, 38 mm LG THD |
| 124 | 4 | SNC-MBJ080FCJ | CARRIAGE BOLT, SQ NECK, CLS 8.8, M8 X 1.25, 25 mm LG, FULL |
| 125 | 19 | BHS-MBJ073FCM | BUTTON HEAD SCREW, CLS 10.9, M8 X 1.25, 18 mm LG, FULL |
| 126 | 4 | BHS-MBM075FCT | BUTTON HEAD SCREW, CLS 10.9, TL, M10 X 1.5, 20 mm LG, FULL |
| 127 | 2 | BHS-MBR105FCM | BUTTON HEAD SCREW, CLS 10.9, M12 X 1.75, 50 mm LG, FULL |
| 128 | 4 | PPH-MBA067FCE | SCREW, PPH, CLS 4.8, M5 X 0.8, 14 mm LG, FULL |
| 129 | 8 | PPH-MBE059FCE | SCREW, PPH, CLS 4.8, M6 X 1, 10 mm LG, FULL |
| 130 | 3 | PPH-MBE067FCE | SCREW, PPH, CLS 4.8, M6 X 1, 14 mm LG, FULL |
| 131 | 4 | PPH-MBE071FCE | SCREW, PPH, CLS 4.8, M6 X 1, 16 mm LG, FULL |
| 132 | 16 | HFH-MBM090FCM | SCREW, HFH, CLS 10.9, M10 X 1.5, 35 mm LG, FULL |
| 133 | 4 | HFH-MBW100FCM | SCREW, HFH, CLS 10.9, M14 X 2, 45 mm LG, FULL |
| 134 | 4 | HFH-MCA115FCM | SCREW, HFH, CLS 10.9, M16 X 2, 60 mm LG, FULL |
| 135 | 4 | SHC-MBA067FCP | SHCS, CLS 12.9, M5 X 0.8, 14 mm LG, FULL |
| 136 | 4 | SHC-MBE075FCP | SHCS, CLS 12.9, M6 X 1, 20 mm LG, FULL |
| 137 | 2 | HHS-MBM057069AJ | SHLDR SCREW, HEX HEAD, ALLOY, 11 X 15 mm LG SHLDR, M10 X 1.5 X 20 mm LG |
| 138 | 2 | KCS-MBE051GR | SET SCREW, KNURLED CUP POINT, GR 45H, M6 X 1, 6 mm LG |
| 139 | 1 | KCS-MBE055GR | SET SCREW, KNURLED CUP POINT, GR 45H, M6 X 1, 8 mm LG |
| 140 | 4 | KCS-MBJ059GR | SET SCREW, KNURLED CUP POINT, GR 45H, M8 X 1.25, 10 mm LG |
| 141 | 4 | KCS-MBN059GR | SET SCREW, KNURLED CUP POINT, GR 45H, M10 X 1.25, 10 mm LG |
| 142 | 4 | FTW-MBA000AJ | FLAT WASHER, M5 |
| 143 | 8 | FTW-MBE000AJ | FLAT WASHER, M6 |
| 144 | 34 | FTW-MBJ000AJ | FLAT WASHER, M8 |
| 145 | 3 | FTW-MBM165AJ | FLAT WASHER, DIN7349, M10, 4 mm THK |
| 146 | 10 | FTW-MBR000AJ | FLAT WASHER, M12 |
| 147 | 6 | FTW-MBR000NA | FLAT WASHER, M12, NYLON |
| 148 | 23 | FTW-MCA000AJ | FLAT WASHER, M16 |
| 149 | 24 | FDW-MBJ079000AJ | FENDER WASHER, M8, 30 mm OD |
| 150 | 1 | FDW-MBM075000AJ | FENDER WASHER, M10, 26 mm OD |
| 151 | 4 | FDW-MBM079000AJ | FENDER WASHER, M10, 30 mm OD |
| 152 | 2 | FDW-MBR086000AJ | FENDER WASHER, M12, 37 mm OD |
| 153 | 4 | SLW-MBAAJ | SPLIT LOCK WASHER, M5 |
| 154 | 15 | SLW-MBEAJ | SPLIT LOCK WASHER, M6 |
| 155 | 3 | SLW-MBJAJ | SPLIT LOCK WASHER, M8 |
| 156 | 3 | SLW-MBMAJ | SPLIT LOCK WASHER, M10 |
| 157 | 1 | HXN-MBNCH | HEX NUT, CLS 8, M10 X 1.25 |
| 158 | 7 | HXN-MBMCH | HEX NUT, CLS 8, M10 X 1.5 |
| 159 | 2 | HXN-MCACH | HEX NUT, CLS 8, M16 X 2 |
| 160 | 10 | HLN-MBECH | LOCK NUT, CLS 8, M6 X 1 |
| 161 | 44 | HLN-MBJCH | LOCK NUT, CLS 8, M8 X 1.25 |
| 162 | 21 | HLN-MBMCH | LOCK NUT, CLS 8, M10 X 1.5 |
| 163 | 9 | HLN-MBRCH | LOCK NUT, CLS 8, M12 X 1.75 |
| 164 | 8 | HLN-MBWCH | LOCK NUT, CLS 8, M14 X 2 |
| 165 | 13 | HLN-MCACH | LOCK NUT, CLS 8, M16 X 2 |

# NOTES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