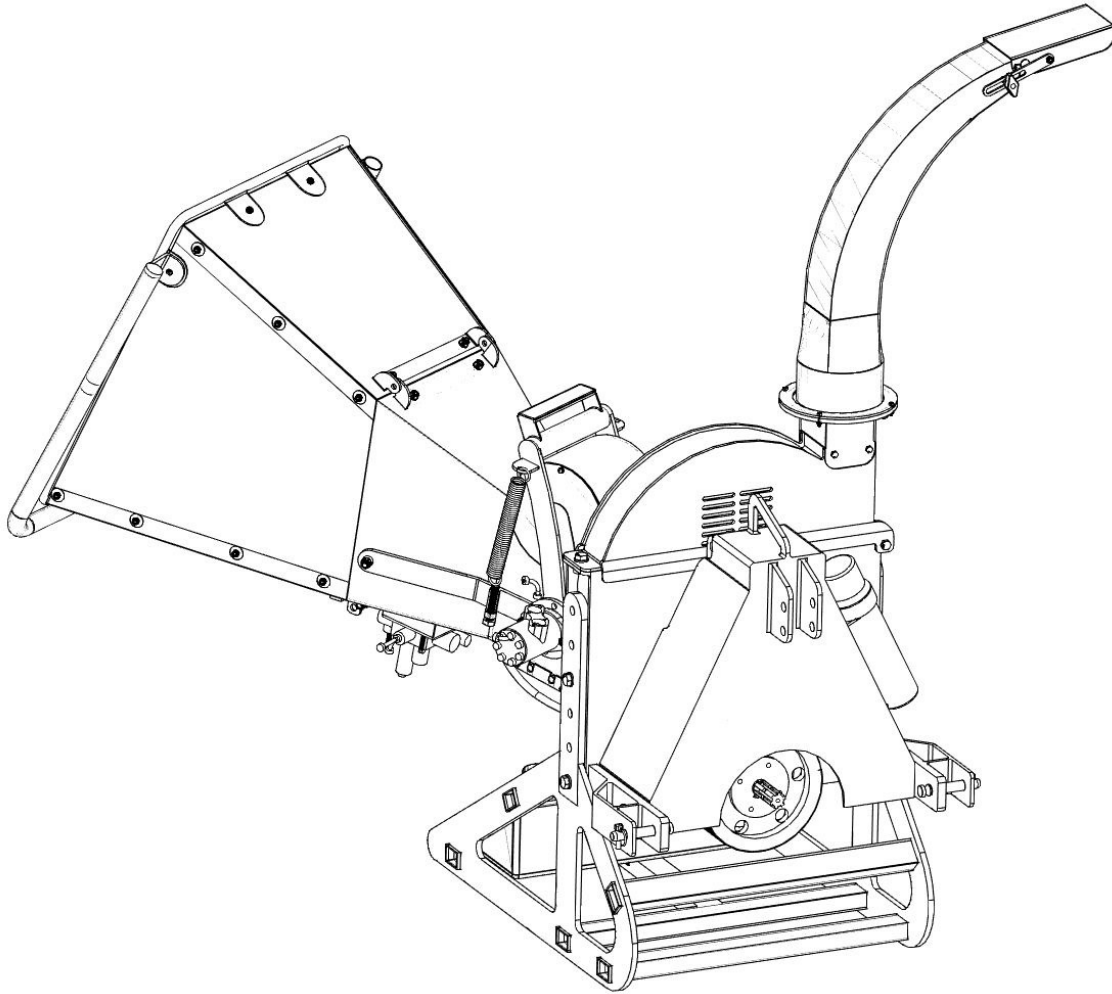


# WC88 PTO WOOD CHIPPER

2017

WC88

28/03/2017



## OWNER'S MANUAL





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**Dear Woodland Mills Customer,**

Congratulations and thank you for choosing the Woodland Mills™ WC88 wood chipper! It was designed to be the best valued PTO wood chipper on the market. Please take the time to read through the manual for detailed instructions on assembly, operation and maintenance. Following the procedures and recommendations in this manual will ensure you yield maximum performance and safety from the WC88 wood chipper.

For any technical questions or replacement parts, please contact Woodland Mills™

### **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**



# INTRODUCTION

## INTENDED USE

Woodland Mills 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.

## SPECIFICATIONS

SPECIFICATIONS	WC88
PTO Shear Pin	M8 X 45mm Bolt - Class 8.8 (Grade 5)
Drive System	PTO
Transport	3 Point Hitch
Minimum HP Required (at the PTO)	30
Flywheel Size	24" (610mm) Diameter / 120 lbs (54kgs)
Blades	(4) 2.75" x 4.5" x 0.3125" (70mm x 114mm x 8mm)
Blade Bolts	M10
In-Feed System	Hydraulic
Hydraulic Oil	ISO 32 (ISO 46 for warmer climates)
Hydraulic Requirement	None. Self contained.
In-Feed Roller	8.25" (210mm) Diameter
Hopper Opening	23" x 27" (584mm x 685mm)
Weight	1050 lbs (475 kgs).





# SAFETY

Do not operate this machine until this manual has been read and fully understood; serious injury or severe machine damage can 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 can 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 chipper.

DO NOT stand directly in front of the infeed hopper when loading material into the hopper; always load from the side of the hopper. This will not allow any part of your body to be pulled into the machine.

Always wear safety hearing protection, eye wear, gloves, and long pants when operating the chipper.

Never place your hands beyond the opening of the hopper while the chipper is running.

Never allow children, disabled, or untrained persons to operate the chipper.

Do not operate the chipper near bystanders, public roads, or anywhere that the debris may travel far enough to injure another person.

Never move the chipper while it is running.

Shut off the tractor and allow the chipper to come to a complete stop before removing any debris.

Never perform any maintenance or repair while the chipper is running.

# SAFETY



## 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 turn freely.

Wear close fitting clothing.

Stop the engine and be sure that PTO driveline is 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 will allow a 1000 rpm tractor shaft to power a 540 rpm implement at speeds higher than 540 rpm.

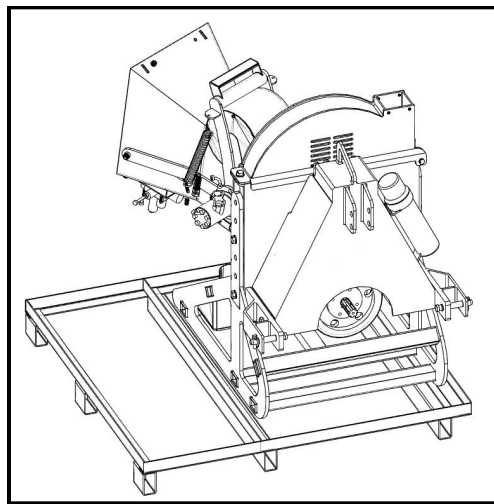
Do not install any adapter device that results in a portion of the rotating implement shaft, tractor shaft, or the adapter to be unguarded. The tractor master shield shall overlap the end of the splined shaft.

# ASSEMBLY

The WC88 wood chipper will arrive in a steel crate and will require minimal assembly and set up. Follow the below steps to properly assemble and set up your chipper.

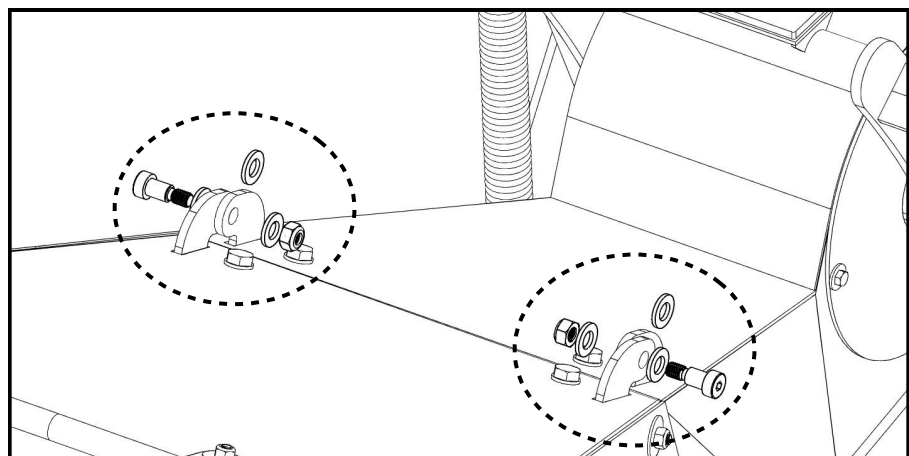
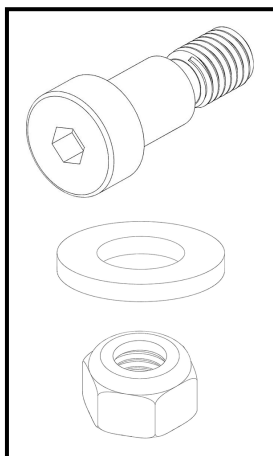
## UNPACKING

The upper steel crate frame may be removed from the crate base by removing the bolts at the bottom. The wrapped chipper parts may also be removed from the crate at this point and packaging material removed. When finished, the chipper will be sitting on the base of the steel crate as shown below.



## INFEED CHUTE PANELS

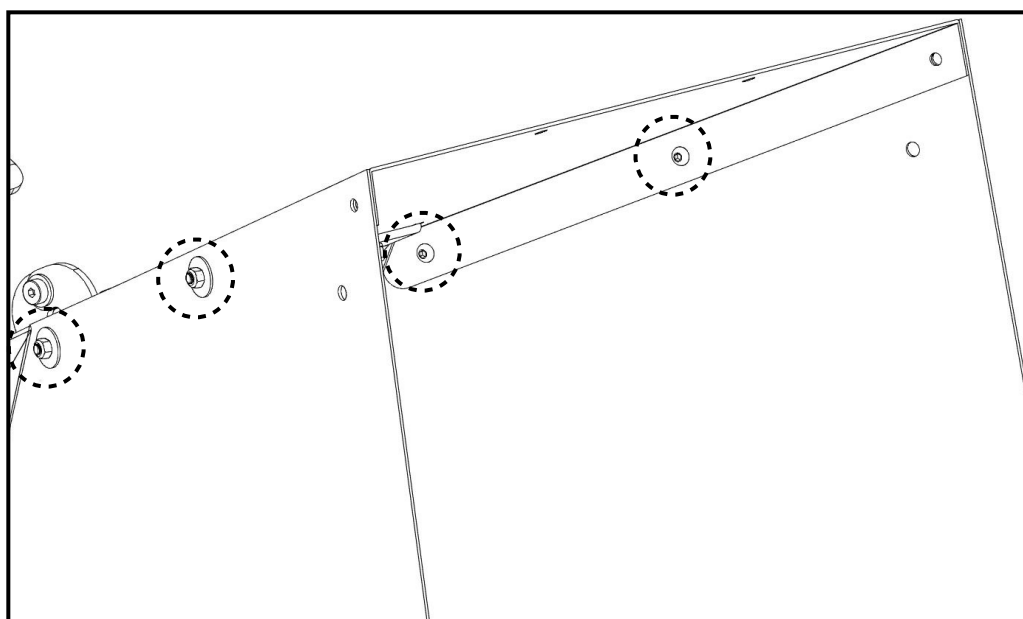
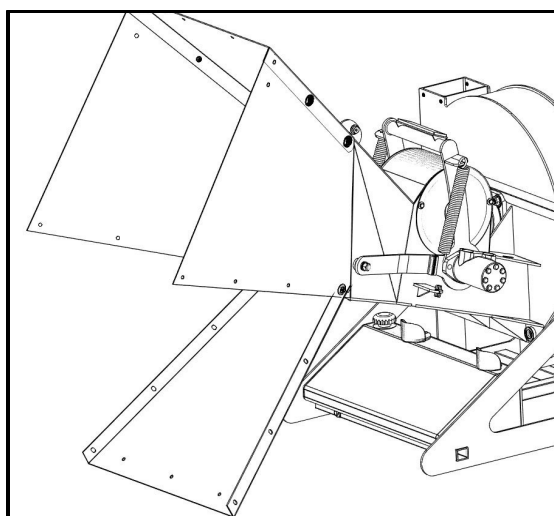
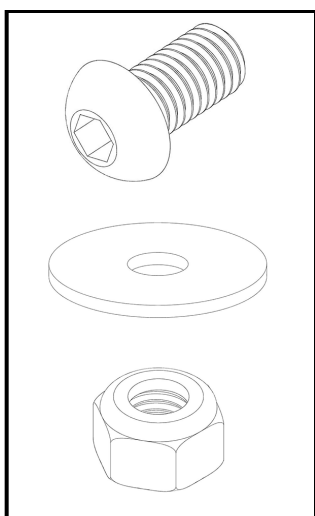
The chipper infeed chute consists of four (4) metal panels that require bolting together. Begin by locating the top panel. It contains two (2) hinge locations that get bolted to the hinge on the chipper. Using the two (2) bolts, lock nuts and washers, assemble as shown below and tighten the bolts.



# ASSEMBLY

## INFEED CHUTE PANELS CONTINUED...

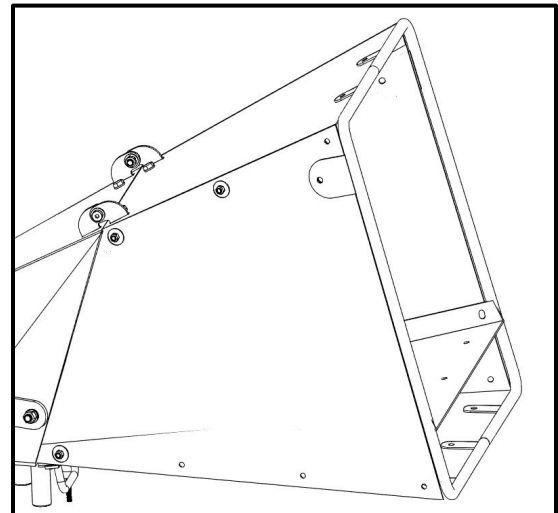
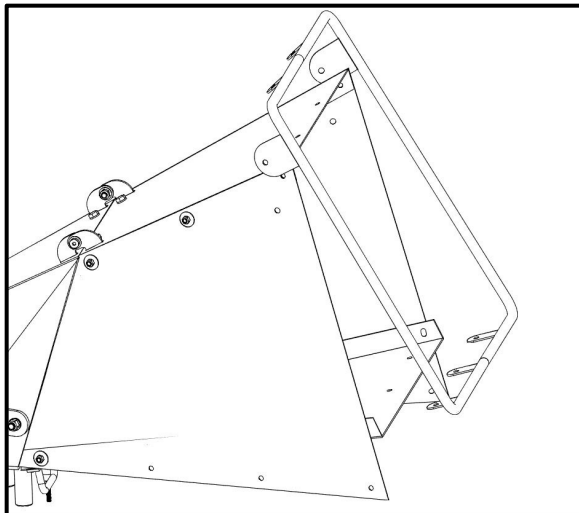
With the top panel bolted to the hinge, the two (2) side panels can now be bolted to the outside of it using the M6 allen key socket button head bolts, 13mm lock nuts and flat washers. Install 2 bolts per side and leave the last bolt out at this point. Do not fully tighten the bolts yet. The head of the bolt should be on the inside of the chute with the washer and lock nut on the outside. The bottom panel may now be installed with the first two (2) bolts as shown below so that it can be swung up to meet the side panels.



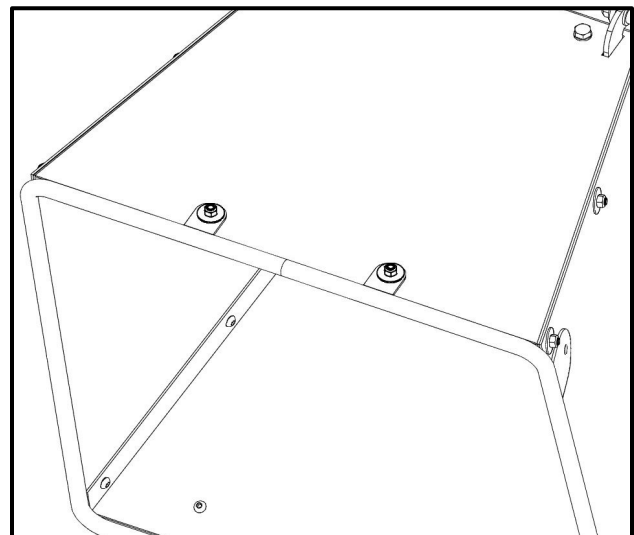
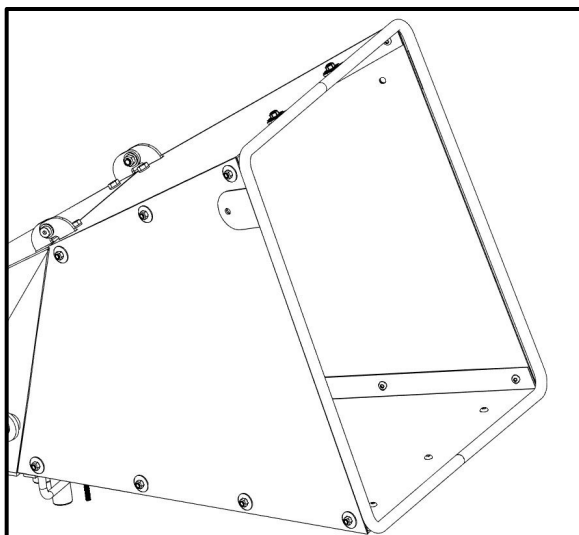
# ASSEMBLY

## INFEED CHUTE ROUND EDGE BAR

The round edge bar is designed to add additional strength to the infeed panels and also act as a rounded edge, eliminating branches from getting caught on the edge of the infeed panels. To install it, swing the bottom panel up as shown below and fit the tabs of the round bar on the outside of the panels. and are held in place using five (5) M6 allen key headed bolts, 13mm lock nuts and flat washers. There are two tabs on the side of the round edge bar which will be bolted to the side panels in the following step.



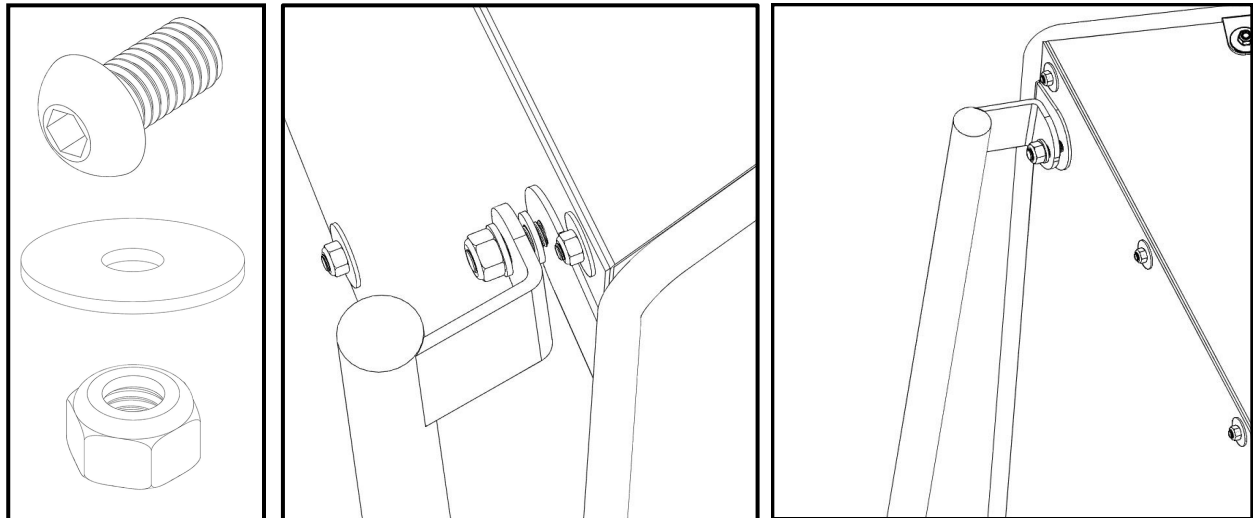
The remaining bolts can be installed as shown below to fully secure the panels and round edge bar in place. Only hand tighten the bolts at this point.



# ASSEMBLY

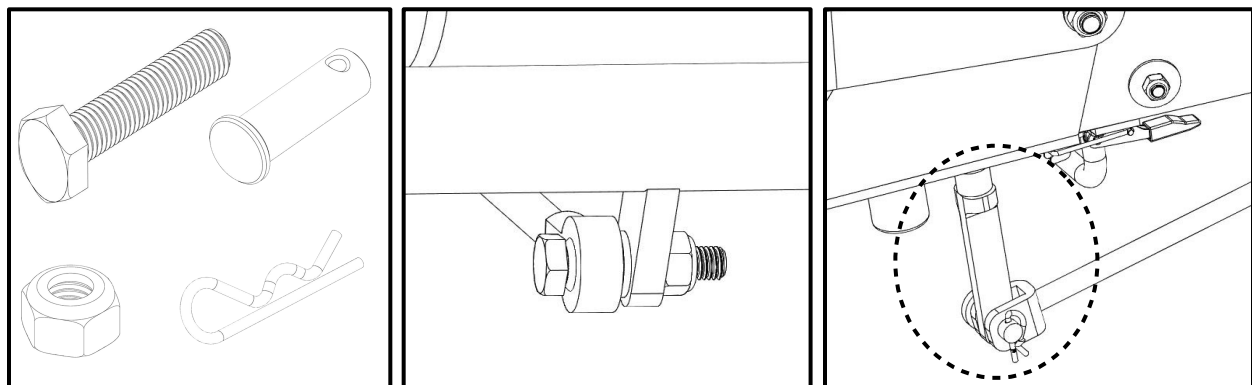
## INFEED ROLLER CONTROL HANDLE

The large red coloured infeed control handle is attached using the two (2) allen key headed bolts, 13mm lock nuts and flat washers. These bolts will go through the panel, round edge bar side tabs and through the control handle as shown below.



## INFEED ROLLER LINKAGE ARM

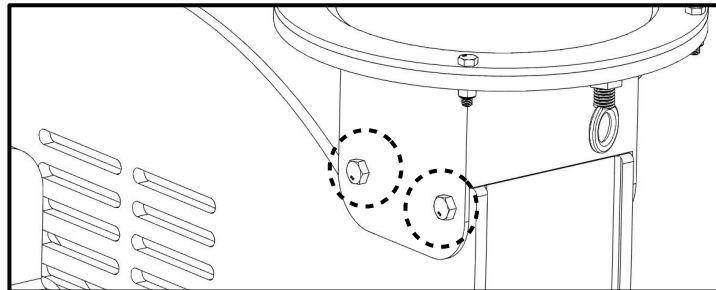
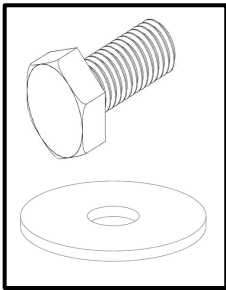
With the control handle now fastened to the infeed chute, the linkage arm can be connected to it and the hydraulic control valve as shown below. The M10 bolt and nut is used to fasten the heim joint to the red coloured control handle. The round pin and clip is used to secure the linkage to the hydraulic valve.



# ASSEMBLY

## DISCHARGE CHUTE

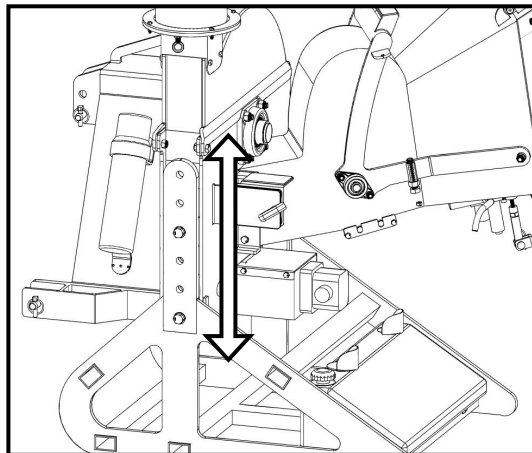
The discharge chute can be attached to the flywheel housing using the four (4) short M6 bolts and lock washers as shown the below with a 13mm socket.



## CHIPPER BASE

The chipper base may be set at different heights depending on the size of your tractor. The chipper is shipped in the shortest height which fits most sub compact tractors. Therefore, most users do not need to make any adjustments to the chipper base.

When the tractor is attached to the chipper and it is set on the ground, the angle between the tractor PTO shaft and the chipper shaft should not be any great than 15-20 degrees. If the chipper sits too low relative to the tractor, the below steps can be taken:



- 1) Attach your tractor to the chipper so it can be lifted with the 3 point hitch system.
- 2) With the chipper supported by the tractor, the four (4) bolts that hold the base to the chipper can be removed so the base is free to slide up and down.
- 3) Lift the chipper up with the tractor 3 point hitch system to the desired series of holes and replace the four (4) bolts to hold the base to the chipper.





# **ASSEMBLY**

## **HARDWARE**

Check all bolts and nuts to make sure everything is tight. All hardware is checked at the factory, but sometimes it will vibrate loose during shipment. Also check all fasteners periodically between use. A wood chipper produces high vibration levels which can cause hardware to loosen.

## **HYDRAULIC OIL**

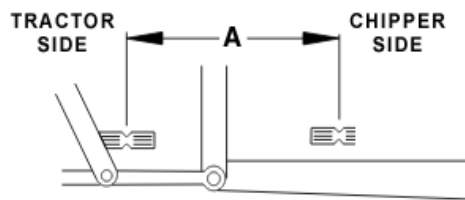
The wood chipper requires 20 litres (5.3 U.S gallons) of ISO 32 hydraulic oil (ISO 46 for warmer climates) before operating. Remove the cap on the hydraulic tank and pour the oil in using a funnel.

# ASSEMBLY

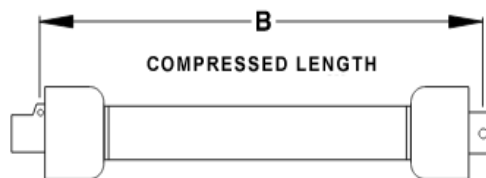
## PTO SHAFT LENGTH

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

- 1) Attach the wood chipper to the tractor, but do not install the PTO shaft.
- 2) Raise the chipper using the tractors 3 point hitch system so that the shaft on the tractor is level with the shaft on the chipper.
- 3) Measure the distance between the locking grooves on the shaft of the tractor and chipper (**A**) as shown below.



- 4) Measure the distance between the locking pins on the PTO shaft itself when it is in the compressed/shortest length (**B**) as shown below.



- 5) If (**A**) is at least 1" (25mm) longer than (**B**), the PTO shaft will not need to be cut. It is recommended that (**B**) not be used at a dimension any longer than 38" (96cm).
- 6) If dimension (**B**) is longer than (**A**), the PTO shaft will need to be cut. The below equation may be used to calculate the correct amount to trim.

$$(\mathbf{B-A}) + 1 \text{ INCH} = \mathbf{C (AMOUNT TO CUT)}$$

- 7) Once (**C**) has been calculated; this amount will need to be cut off of **BOTH** halves of the PTO shaft.
- 8) After both halves of the PTO shaft have been cut, use a file to remove any burrs or sharp edges and slide the shaft together ensuring it telescopes in and out freely. The PTO shaft can now be attached to the chipper and tractor, ready for use.

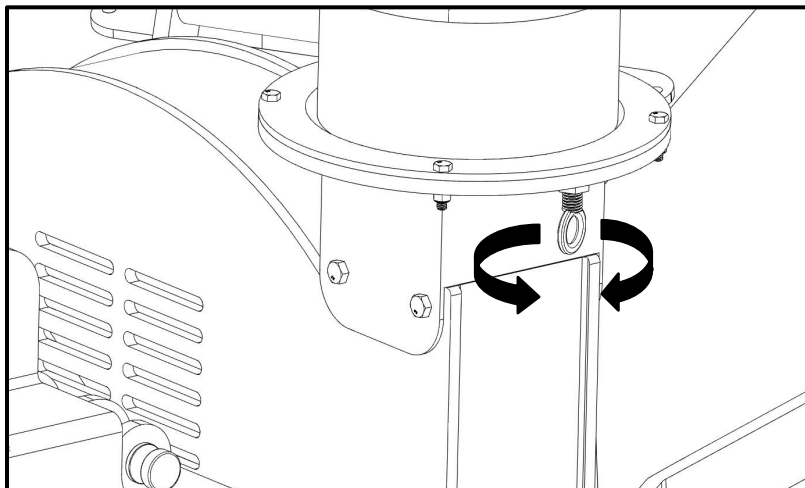
# OPERATION

## START UP

- Place tractor transmission in neutral and set the parking brake, then turn the tractor engine off.
- Connect the 3 pt. hitch linkages to the chipper and secure them with safety lynch pins.
- Adjust the top link so that the chipper sits level.
- Connect the PTO shaft to the tractor. Make sure that the PTO safety chains are attached to both the tractor and the chipper to keep the protective PTO shield from rotating.
- Turn the discharge chute in a safe direction and adjust the chip deflector to the desired position.
- Start 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 you engage the PTO you could damage the drive belts or break the shear bolt on the PTO shaft. After the rotor is spinning freely raise the tractor RPM's until the PTO speed is at 540 RPM. Most tractor RPM gauges indicate this with a line and or text.
- With the chipper now running at full speed you may begin chipping. Start by feeding small diameter branches until you get better acquainted with the machine and its operation, then you may begin feeding larger pieces.

## DISCHARGE CHUTE ADJUSTMENT

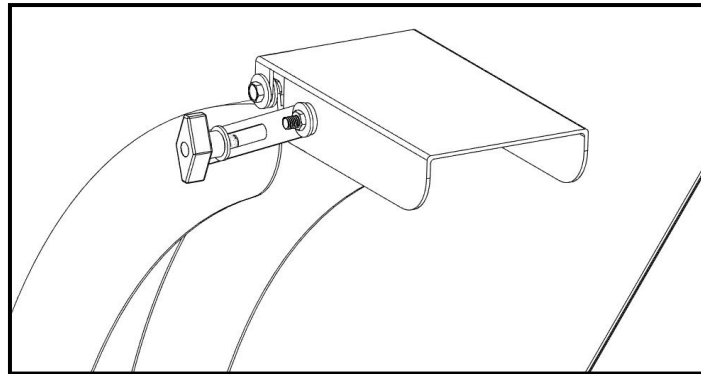
- To position/rotate the chip chute, loosen the eye bolt as shown below. The chute is now free to rotate and conveniently does so at a full 360 degrees. Rotate it to the desired position and re-tighten the eye bolt to secure it in position.



# OPERATION

## DISCHARGE CHUTE DEFLECTOR

- The chip deflector easily adjusts to regulate the distance that the chips are thrown. Loosen the wing nut and adjust as desired.



## CHIPPING

Keep face and body away from the feed opening. Do not over reach. Keep proper balance and footing at all times. The Woodland Mills 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 chipper in accordance with the safety instructions **MAY RESULT IN PERSONAL INJURY!**

- Be sure the wood chipper is at full operating speed before starting to chip material.
- Select limbs up to 8 inches in diameter. Trim side branches that cannot be bent enough to feed into the chipper 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 chipper.
- Never lean into the infeed chute or extend any parts of your body inside the infeed chute to push objects further into the chipper. Use another stick or branch.
- Do not use hand tools to push brush into the chipper. They can go through the chipper and can cause injury or damage to the wood chipper.
- Place branches, butt end first, into the chipper chute until it contacts the infeed roller. Once the infeed roller contacts the branches, it will pull the material inwards.
- **NOTE:** The wood chipper blades dull with use and require periodic sharpening or replacement. Refer to service and maintenance, "sharpening chipper blades" for further instructions.



# OPERATION

## STOPPING

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

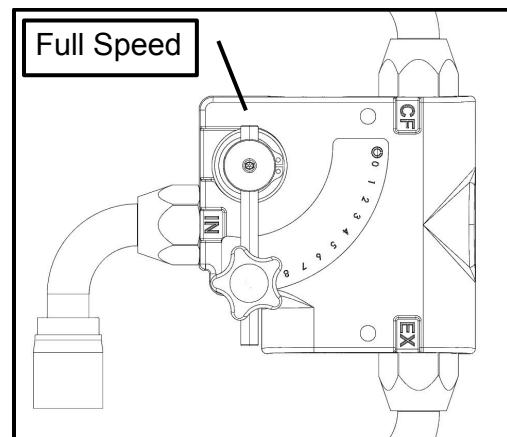
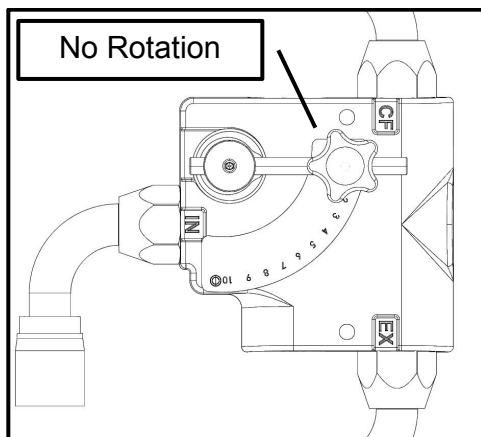
- Move tractor throttle to SLOW / IDLE position.
- Disengage PTO lever and shut off tractor engine.
- Allow the wood chipper to come to a complete stop.
- **NOTE:** The flywheel continues to rotate for some time after the engine or tractor has been shut off. The rotor is stopped when no noise or machine vibration is present. The PTO shaft will also no longer be rotating.

# OPERATION

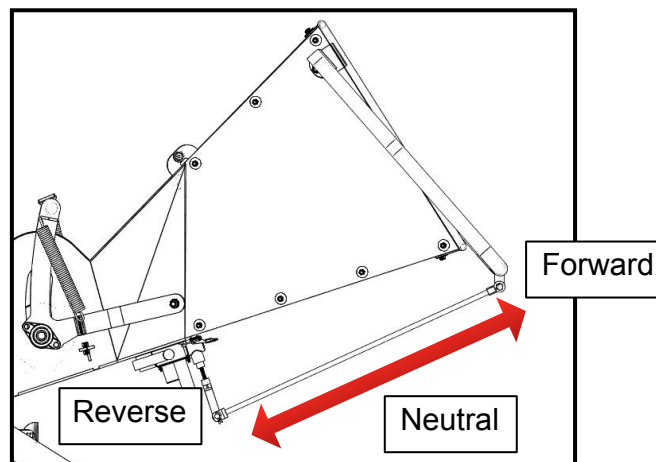
## INFEEED ROLLER CONTROL

The chipper comes standard with an infeed roller speed control valve. Moving the arm shown in the below pictures will increase or decrease the speed of the roller. The number “0” represents (left image) no rotation of the infeed roller while number “10” (right image) represents full speed.

To change the speed of the infeed roller, place the red coloured feed control handle bar in the neutral position. When this is done, the feed roller should not be rotating. The speed control valve can now be moved to the desired position.



The infeed roller can be set to three (3) different rotation settings – Forward, Neutral & Reverse. The forward position will pull branches into the chipper, neutral will stop the roller from turning and reverse will push branches back out of the chipper towards the operator. See the below picture for these positions:

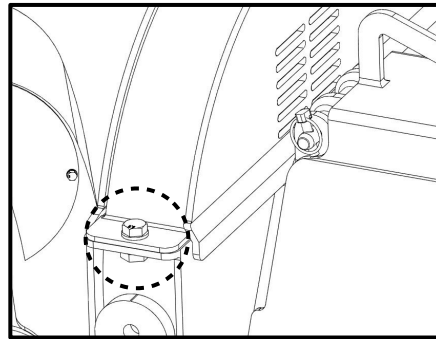


# MAINTENANCE & SERVICE

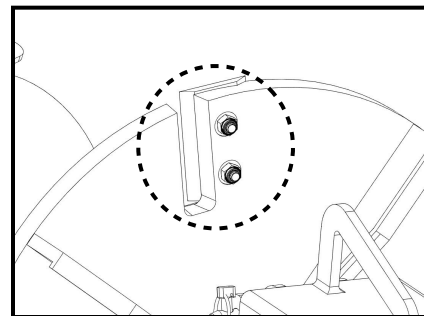
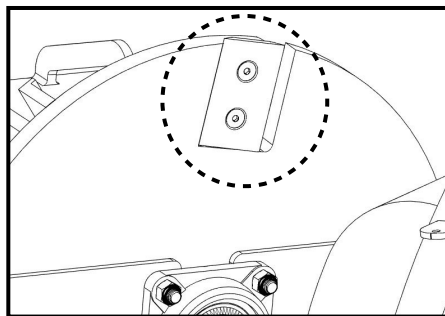
## REPLACING BLADES

Follow these steps to replace the blades. The WC88 wood chipper uses four (4) hardened steel blades. The blades are reversible and are 2.75" x 4.5" x 0.3125" (70mm x 114mm x 8mm) in size.

- 1) If installed, the PTO shaft should be disconnected from the tractor for safety.
- 2) The upper flywheel housing can be opened to access the blades by using a 24mm wrench to remove the bolt holding the two halves together.



- 3) With the flywheel now exposed, rotate it so that there is access to the first blade. Using a 17mm wrench or socket on the nut and a 6mm allen key on the bolt, remove the two bolts holding the blade onto the flywheel. Ensure that you do not drop the nuts or bolts into the bottom of the flywheel housing. If this occurs, a long pen magnet can be used to retrieve them.



- 4) Repeat step 3 to remove the other three blades. At this point, the blades can be reversed to utilize the other cutting edge or the entire blade can be removed and either sharpened or replaced with new blades. If the blades are going to be sharpened, please see the instructions in the next section of the manual.
- 5) Close the upper flywheel housing and tighten the bolt to secure it to the lower flywheel housing.

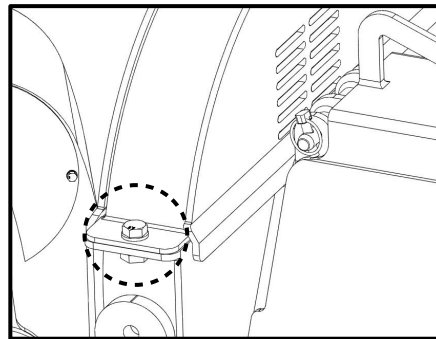


# MAINTENANCE & SERVICE

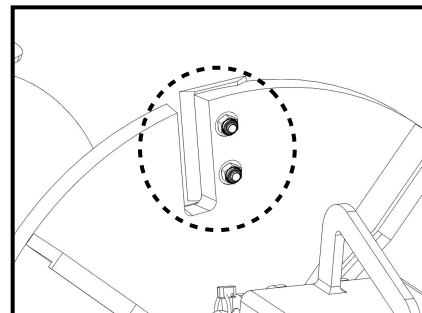
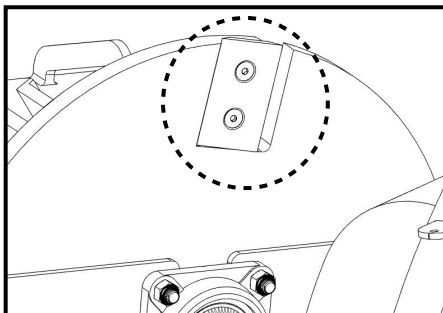
## SHARPENING BLADES

The chipper blades will dull, making chipping difficult and your tractor to labour. It is recommended to sharpen the chipper blades every 25-50 hours of chipper operation. The WC88 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) If installed, the PTO shaft should be disconnected from the tractor for safety.
- 2) The upper flywheel housing can be opened to access the blades by using a 24mm wrench to remove the bolt holding the two halves together.



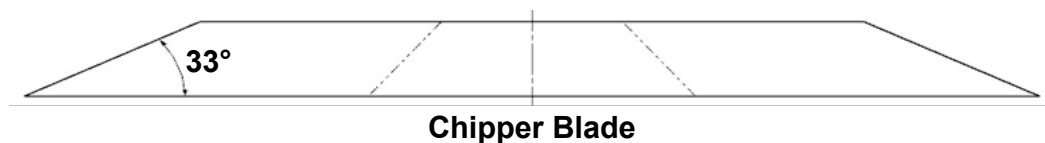
- 3) With the flywheel now exposed, rotate it so that there is access to the first blade. Using a 17mm wrench or socket on the nut and a 6mm allen key on the bolt, remove the two bolts holding the blade onto the flywheel. Ensure that you do not drop the nuts or bolts into the bottom of the flywheel housing. If this occurs, a long pen magnet can be used to retrieve them.



# MAINTENANCE & SERVICE

## SHARPENING BLADES CONTINUED...

- 4) Grind the angled edge of the chipping blade at **33 degrees** (see below picture) using a slow wet grinder or have them sharpened by a professional. A bench style grinder can yield poor results if not used properly. If sharpened too quickly or aggressively on a bench grinder, the blade edge can get hot and begin to change colour. This indicates overheating and will remove the heat treat properties of the blade. Use short grinding times and cool with water. Remove an equal and consistent amount of material from each blade to maintain proper balance.

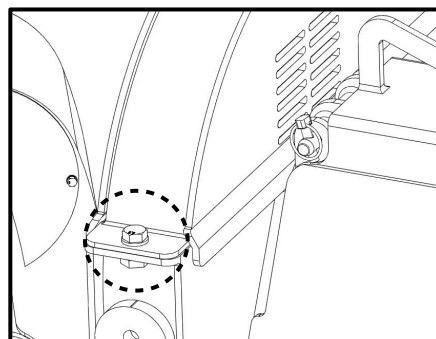


- 5) Re-install the sharpened blades on the flywheel and torque the bolts to **40-45 ft-lbs (54-60N-m)**.

## SETTING BED PLATE GAP

The bed plate (also known as the "anvil plate") is located at the flywheel housing on the left side of the infeed chute (when standing at the back of the chipper). The gap between it and the chipping blades should be set to **1/16"-1/8" (1.5mm-3.0mm)**. Follow the below steps to set the gap properly. Failure to set the proper gap can cause poor chipping performance and/or clogging.

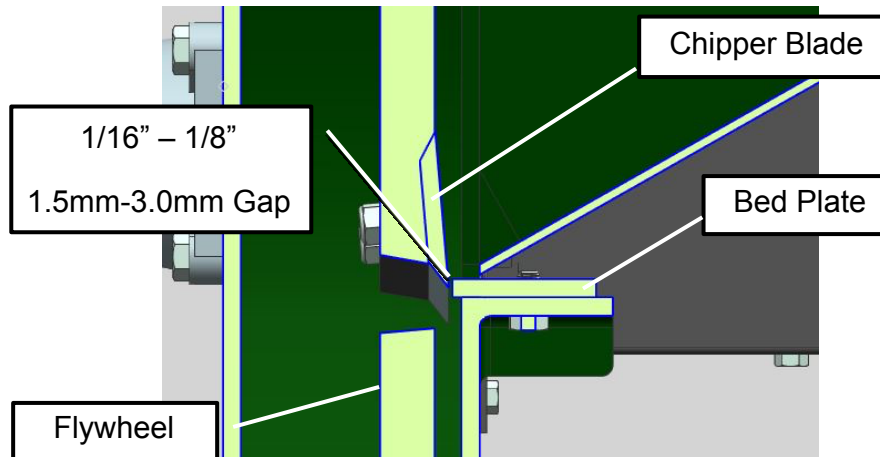
- 1) If installed, the PTO shaft should be disconnected from the tractor for safety.
- 2) The upper flywheel housing can be opened to access the blades by using a 24mm wrench to remove the bolt holding the two halves together.



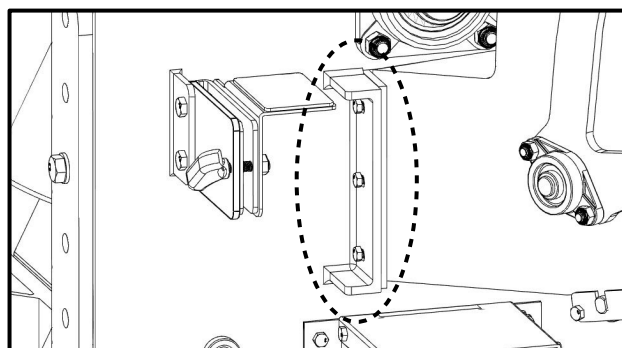
# MAINTENANCE & SERVICE

## SETTING BED PLATE GAP CONTINUED...

- 3) With the flywheel now exposed, rotate it so that the first blade lines up with the bed plate. The use of a flash light will aid in better viewing. Note the gap. Rotate the flywheel so the second, third and finally the fourth blades line up, noting the blade that is the closest. This is the blade that will be used to set the bed plate gap.



- 4) Loosen the three M10 bolts that secure the bed plate to the slotted base plate so that the bed plate is free to slide in and out of slot in the flywheel housing. This movement will increase or decrease the gap between it and the cutting edge of the chipper blade. Position the bed plate so that it is within **1/16\"-1/8\" (1.5mm-3.0mm)** of the cutting edge of the blade. Ensure the gap is consistent along the entire edge of the blade.
- 5) Tighten the three (3) M10 bed plate bolts back up to **40 ft-lbs (54 N-m)** when the position is set correctly.



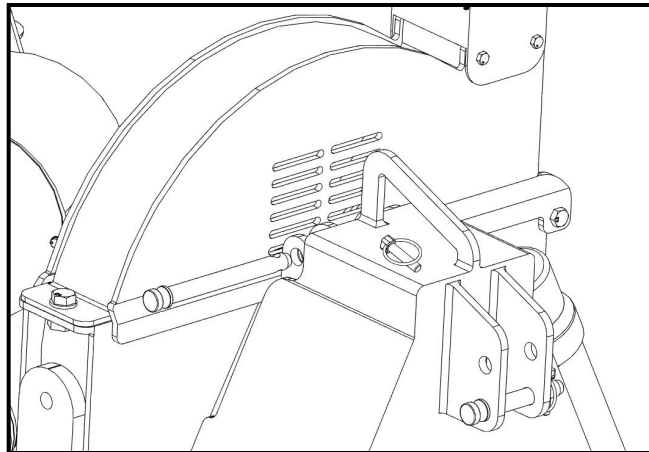
- 6) Rotate the flywheel by hand and note the gap at each chipper blade. Again, the gap should be no more or less than **1/16\"-1/8\" (1.5mm-3.0mm)** at each blade.
- 7) Close the upper flywheel housing and tighten the bolt to secure it to the lower flywheel housing.

# MAINTENANCE & SERVICE

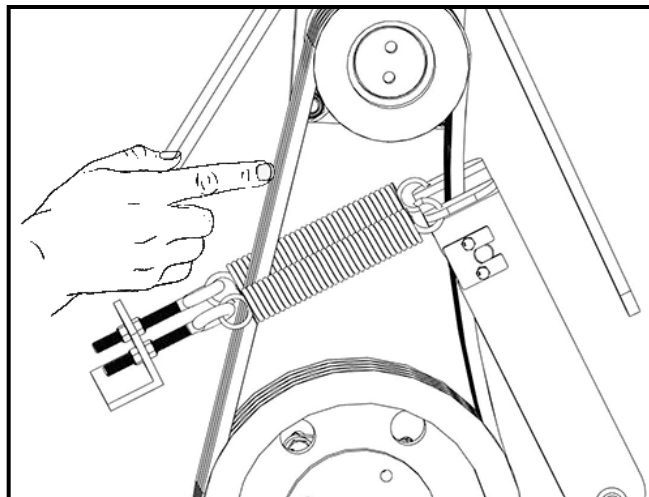
## ADJUSTING DRIVE BELT TENSION

Check the condition and tension of the drive belts every 30 hours of chipper operation. The drive belts are self tensioning via the two springs. However, the amount of tension can be adjusted by doing the following:

- 1) If installed, the PTO shaft and three point hitch top link needs to be disconnected from the chipper for safety and to allow rotation of the belt guard.
- 2) Remove the top pin that secures the belt guard to the chipper housing. The guard will now be free to rotate forward, providing access to the belts and tension system.



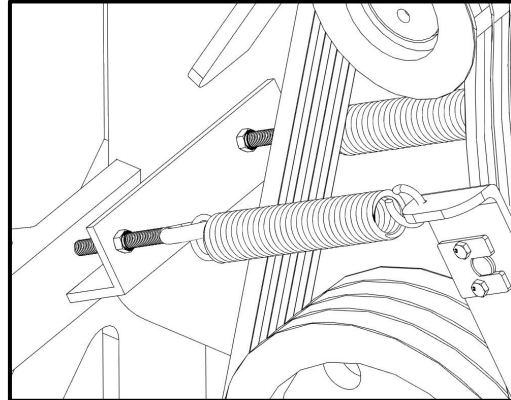
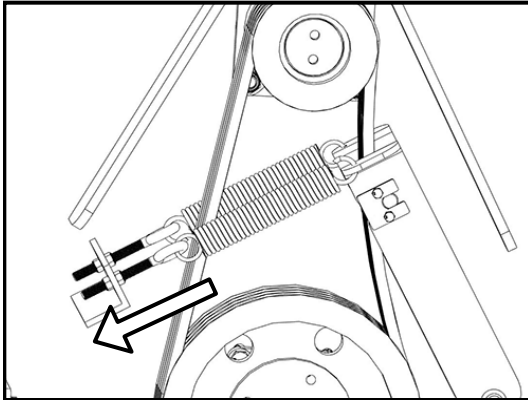
- 3) Check the tension of the belts by pressing on them as shown in the picture below. There should be a maximum of 1/4" (6mm) deflection with a firm push of your finger.



# MAINTENANCE & SERVICE

## ADJUSTING DRIVE BELT TENSION CONTINUED...

- 4) If the belts require more tension, the eye bolts that the springs are attached to can be tightened. This will stretch the springs further and increase the belt tension until the desired deflection of 1/4" (6mm) is achieved.

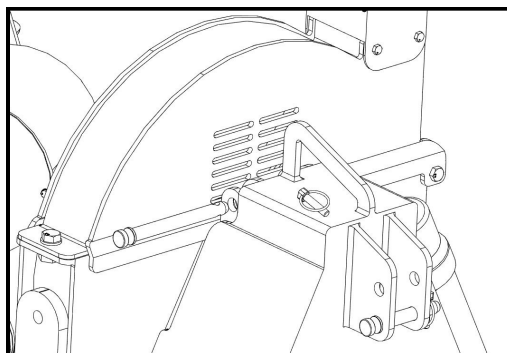


- 5) The belt guard can now be rotated back and the pin installed to secure the guard to the flywheel housing.

## REPLACING DRIVE BELTS

Check the condition and tension of the drive belts every 30 hours of chipper operation. If the chipper flywheel RPM is dropping, but the tractor RPM is not, the belts may be slipping. A squealing noise may also occur. In either case, these conditions can occur due to in proper belt tension as described on the previous page or worn belts. To replace worn belts, follow the below steps:

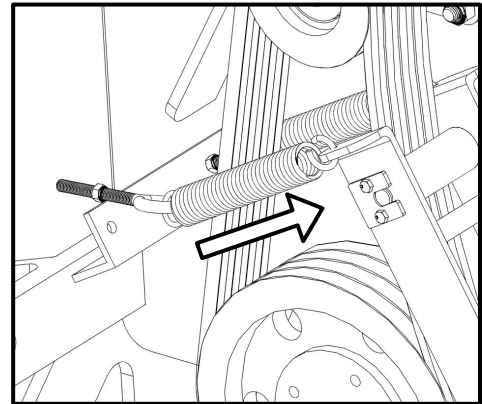
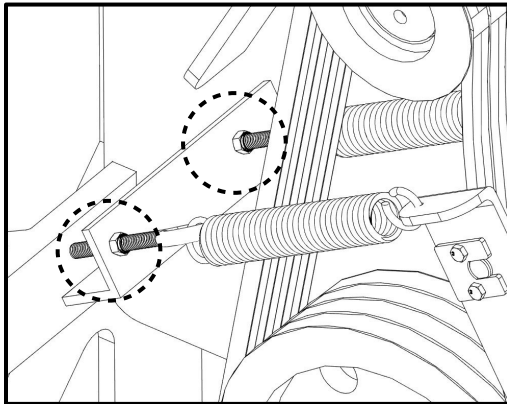
- 1) If installed, the PTO shaft and three point hitch top link needs to be disconnected from the chipper for safety and to allow rotation of the belt guard.
- 2) Remove the top pin that secures the belt guard to the chipper housing. The guard will now be free to rotate forward, providing access to the belts and tension system.



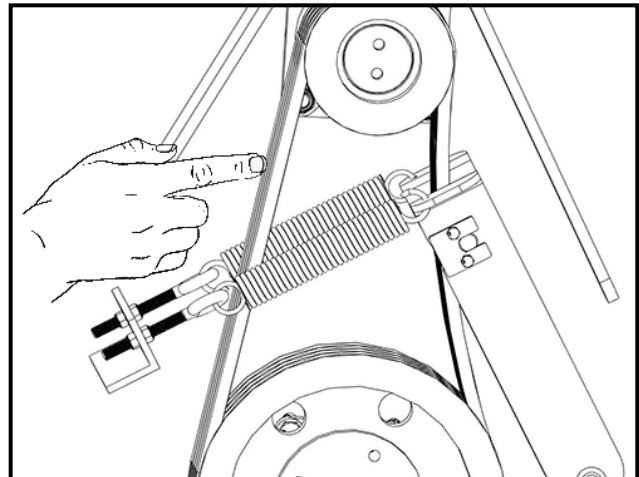
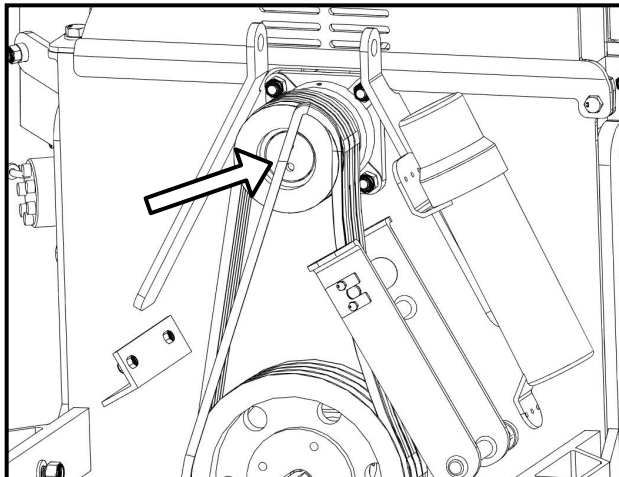
# MAINTENANCE & SERVICE

## REPLACING DRIVE BELTS CONTINUED...

- 3) Loosen the nuts that secure the eye bolts to the “L” channel steel bracket so that the springs can be disconnected from the belt tensioning arm. The arm can now be swung back out of the way allowing the belts to be removed from the two pulleys. The use of a small pry bar will aid in fitting the belts off and out of the “V” grooves.



- 4) Install the four new BX53 drive belts and reinstall the springs. The use of a small pry bar will aid in fitting the belts on and into the “V” grooves. Re-tension the springs. There should be a maximum of 1/4” (6mm) deflection of the belts with a firm push of your finger after the eye bolts have been tightened back up.



- 5) The belt guard can now be rotated back and the pin installed to secure the guard to the flywheel housing.



# **MAINTENANCE & SERVICE**

## **GREASABLE BEARINGS**

The chipper has seven (7) grease zerk fittings on the bearings & PTO shaft. Minimal periodic greasing is needed on these points every 50 hours:

- Two grease zerks on the PTO shaft itself.
- Two greaseable bearings on the flywheel shaft.
- Two greaseable bearings on the bottom jack shaft.
- One greaseable bearing on the infeed roller





# PARTS LIST

P/N	Description	Quantity
1	Base	1
2	Lower Flywheel Housing	1
3	Bed Plate	1
4	Upper Belt Guard Pin	1
5	Chainsaw Holder Bracket 1	1
6	Spacer	2
7	Rubber Pad 1	1
8	Rubber Pad 2	1
9	Lower Hitch Pin	2
10	Upper Flywheel Housing	1
11	Flywheel	1
12	Blade	4
13	Flywheel Shaft	1
14	Lower Shaft	1
15	Upper Pulley	1
16	Lower Pulley	1
17	Lower Pulley Spacer	1
18	Upper Pulley Retainer Plate	1
19	Belt Guard	1
20	Upper Hitch Pin	1
21	Discharge Chute Nozzle	1
22	Flange	1
23	Discharge Chute	1
24	Deflector Link Plate	1
25	Deflector	1
26	Bottom Roller Plate	2
27	Infeed Roller Cover Plate	1
28	Belt Tensioner Arm	1
29	Belt Tensioner Arm Plate	1
30	Infeed Roller	1
31	Infeed Roller Swing Arm	1
32	Infeed Chute Top Panel	1
33	Infeed Chute Bottom Panel	1
34	Infeed Chute Side Panel	2
37	Plastic Flap "L" Bar	1
38	Plastic Flap Plate	1
39	Plastic Flap	2
40	Spring	2
41	Spring	2
42	Pump Protective Plate - Side	1
43	Pump Protective Plate - Top	1

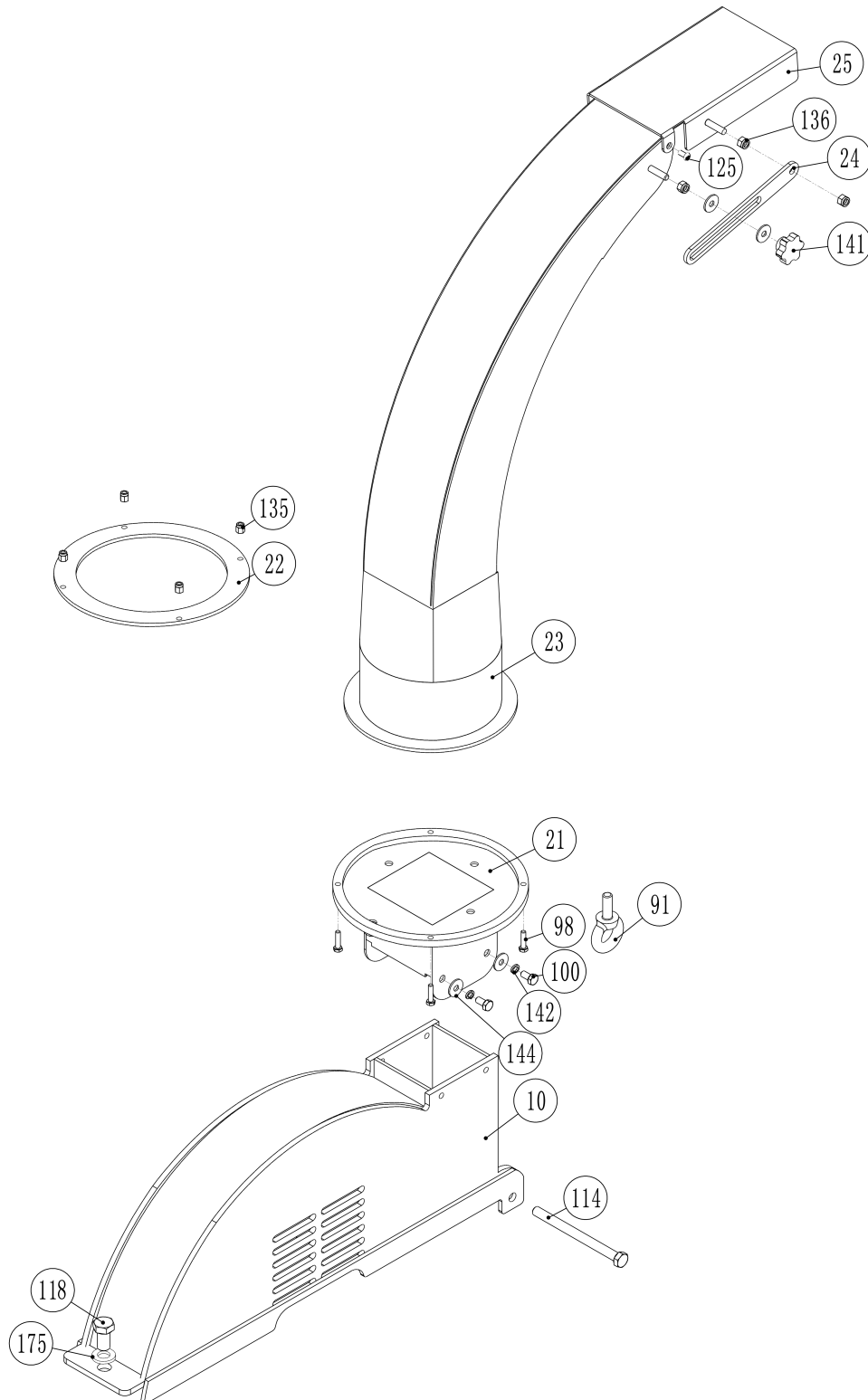
P/N	Description	Quantity
44	Hopper Reinforcement Bar	1
45	Infeed Roller Handle	1
46	Linkage Rod	1
47	Hydraulic Tank	1
48	Intake Line	1
49	Bottom Feed Roller	2
50	Bottom Feed Roller Shaft	2
51	Belt Tensioner Roller	1
52	Belt Tensioner Roller Shaft	1
53	Bushing	2
54	Bearing Housing	1
55	Bearing UCFLU204	1
56	Bearing UCFU207	1
57	Bearing UCFU208	1
58	Bearing UCFU210	2
59	Bearing 6003-2RS	6
60	Bearing 6205-2RS	1
61	Oil Filter	1
62	Oil Screen	1
63	Hydraulic Line A	1
64	Hydraulic Line B	1
66	Hydraulic Line D	2
68	Hydraulic Line F	3
69	NPT 7/8" - 1/2" Coupler	13
70	NPT 3/8" - 7/8" Coupler	1
71	7/8" - 7/8" - 1/2" Tee	1
72	Hydraulic Pump	1
73	Hydraulic Motor	1
74	Flow Control Valve	1
75	Directional Control Valve	1
76	Round Pin 10 x 30	1
77	Cotter Pin	1
78	Heim Joint	1
79	Clevis Rod End	1
80	Hydraulic Pump Coupler	1
81	Nut M10 x 1.25	1
82	Hex Bolt M12 x 25	2
83	Manual Tube	1
84	O Ring	1
85	Key 12 x 50	1
86	Key 8 x 40	1

# PARTS LIST

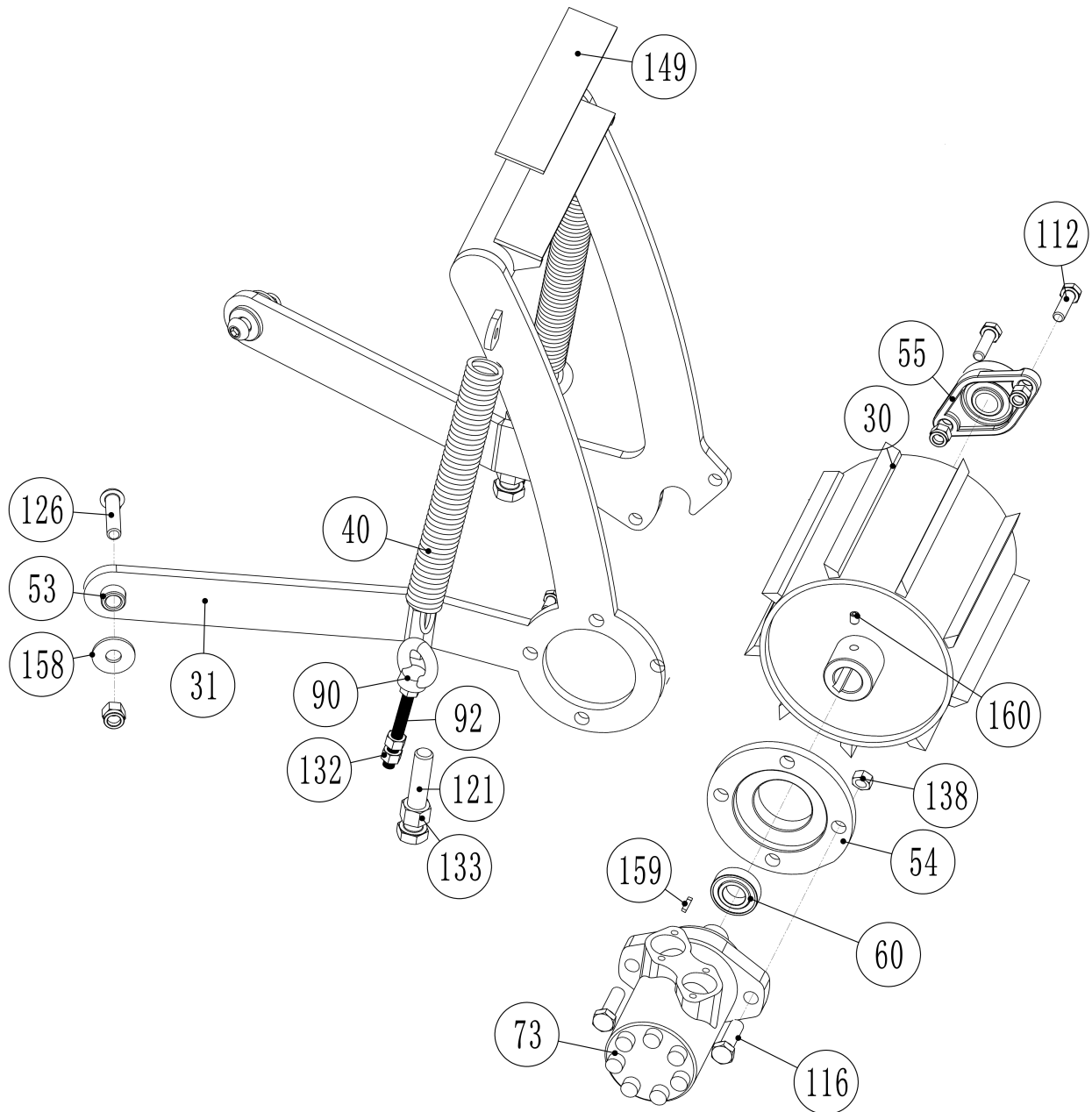
P/N	Description	Quantity
87	Key 12 x 60	1
88	BX53 Belt	4
89	Circlip 17	8
90	Eye Bolt Nut M10	2
91	Eye Bolt M12 x 25	1
92	Threaded Rod M10 x 100	2
93	Eye Bolt M10 x 80	2
94	Linch Pin M10 x 45	4
95	Latch Clamp	2
96	Threaded Knob M10 x 45	1
97	Hex Bolt M6 x 10	3
98	Hex Bolt M6 x 25	4
99	Hex Bolt M6 x 60	2
100	Hex Bolt M8 x 10	4
102	Hex Bolt M8 x 16	12
103	Hex Bolt M8 x 20	6
104	Hex Bolt M8 x 30	4
105	Socket Head Bolt M8 x 35	2
106	Hex Bolt M8 x 80	3
107	Hex Bolt M6 x 12	4
108	Hex Bolt M6 x 20	4
111	Hex Bolt M10 x 30	3
112	Hex Bolt M10 x 35	2
113	Hex Bolt M10 x 45	3
114	Hex Bolt M12 x 140	1
115	Hex Bolt M12 x 40	10
116	Hex Bolt M12 x 50	2
118	Hex Bolt M16 x 40	3
119	Hex Bolt M12 x 20	2
120	Hex Bolt M16 x 60	4
121	Hex Bolt M16 x 80	2
122	Bolt M6 x 10	8
123	Bolt M6 x 12	4
124	Bolt M5 x 30	3
125	Round Head Bolt M8 x 16	19
126	Round Head Bolt M12 x 50	2
128	Socket Head Bolt M6 x 20	4
129	Flat Head Bolt M10 x 40	8
130	Flat Head Bolt M14 x 45	8
131	Socket Head Bolt M16 x 50	4
132	Nut M10	12

P/N	Description	Quantity
133	Nut M16	2
134	Lock Nut M5	3
135	Lock Nut M6	12
136	Lock Nut M8	40
137	Lock Nut M10	35
138	Lock Nut M12	12
139	Lock Nut M14	8
140	Lock Nut M16	8
141	Internal Threaded Knob M8	1
142	Lock Washer M8	8
143	Lock Washer M6	19
144	Washer M8	35
145	Washer M10	15
146	Washer M16	6
148	PTO Shaft	1
149	Rubber Pad	1
150	Hose Clamp	14
151	Jam Nut M40 x 1.5	2
153	Latch Plate	2
154	Shoulder Bolt M10 x 35	2
155	Hex Bolt M8 x 55	1
156	Round Head Bolt M10 x 25	2
157	Plastic Cap	2
158	Washer M12	2
159	Key 8 x 7 x 25	1
160	Set Screw M6 x 8	1
162	Chainsaw Holder Bracket 2	1
163	Inner Hinge Bracket	1
164	Outer Hinge Bracket	1
165	Lock Washer M10	3
167	Washer M20	1
168	Rubber Insert Cap	1
169	Cover	1
170	Name Plate	1
171	Hex Bolt M10 x 25	2
174	Washer M12	4
175	Washer M16	3
176	Washer 10 x 20 x 3	3
355	Nylon Washer 12 x 20 x 2	6
360	Spacer	4
361	Hydraulic Oil Tank Cap	1

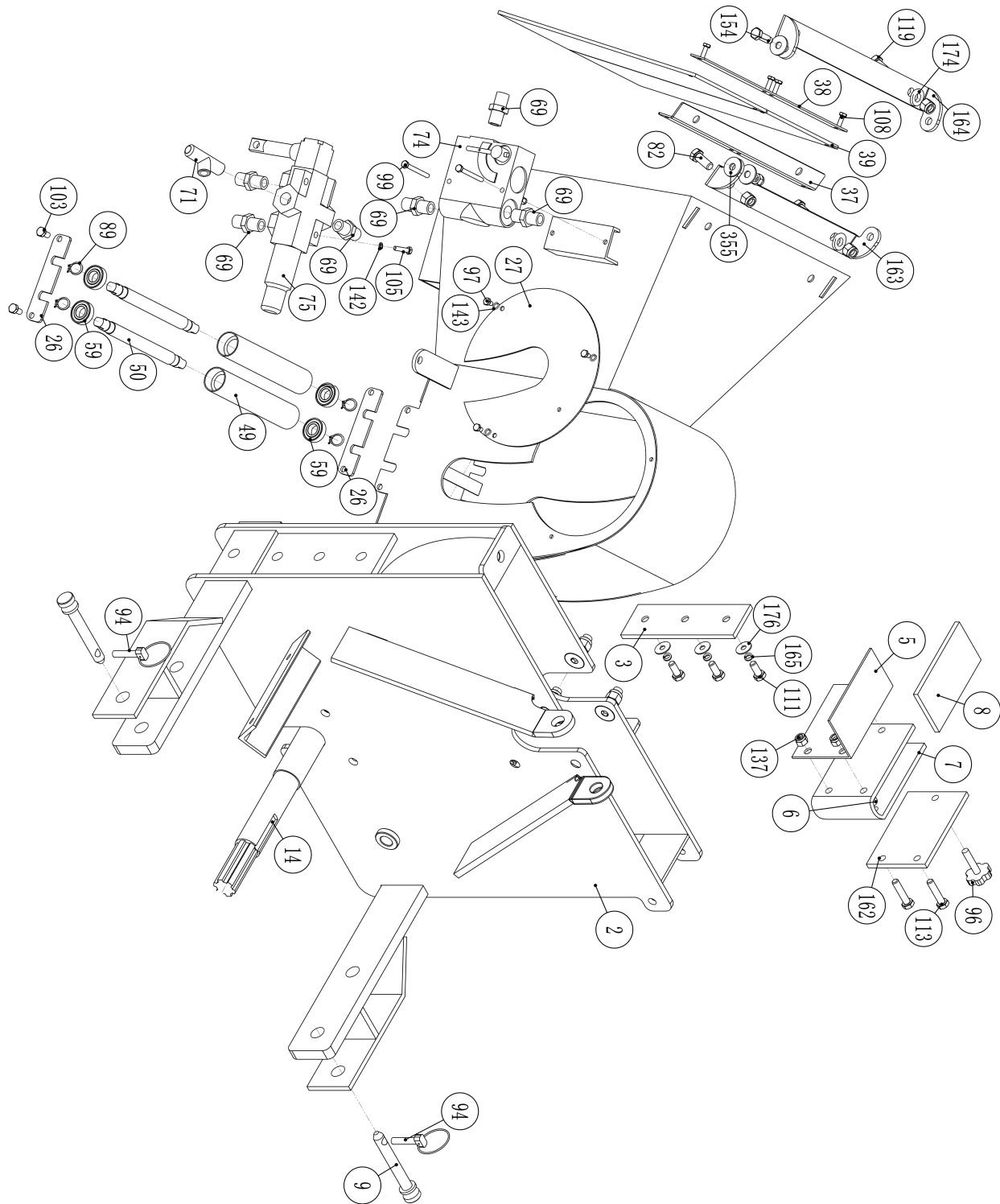
# PARTS DIAGRAM



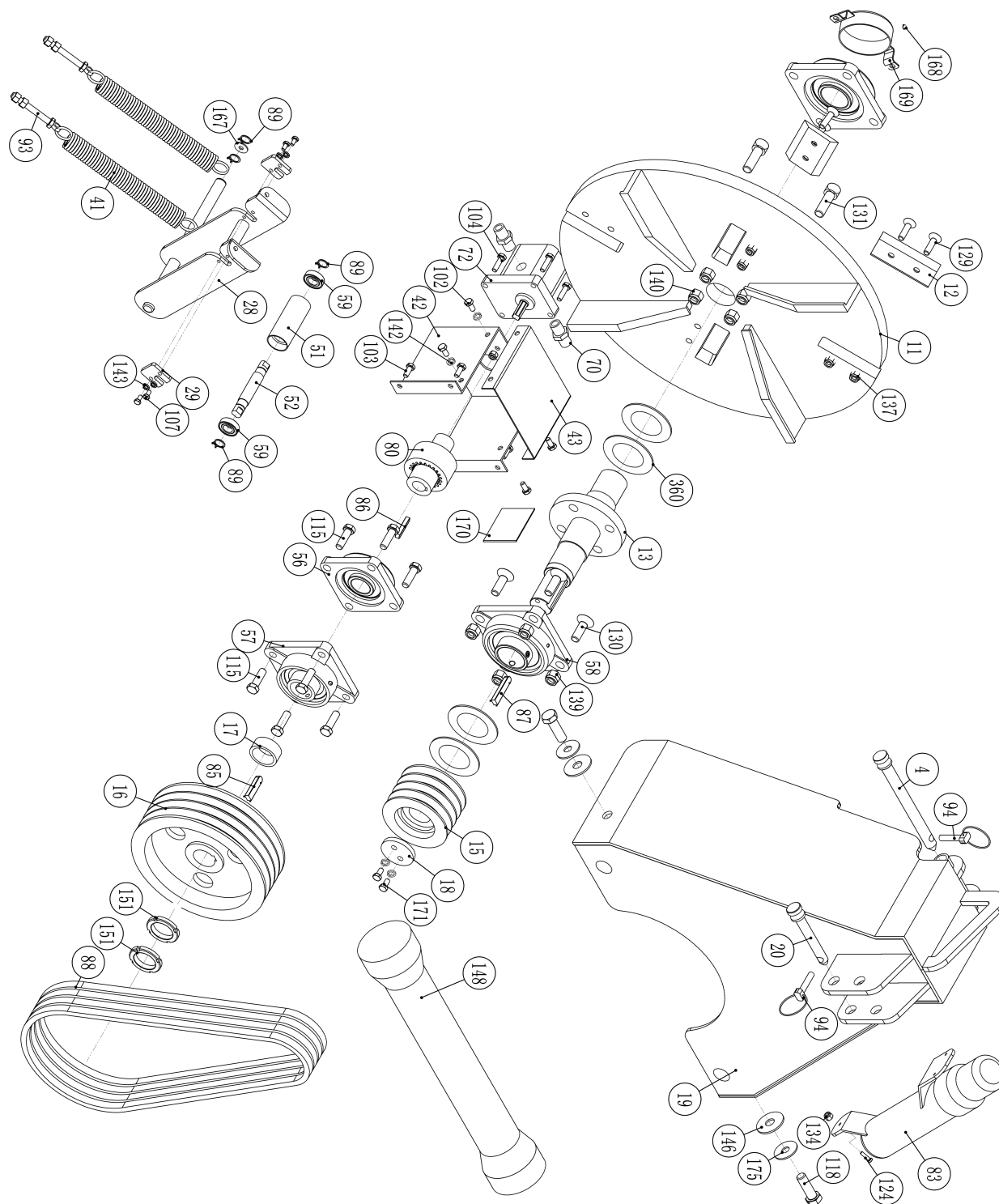
# PARTS DIAGRAM



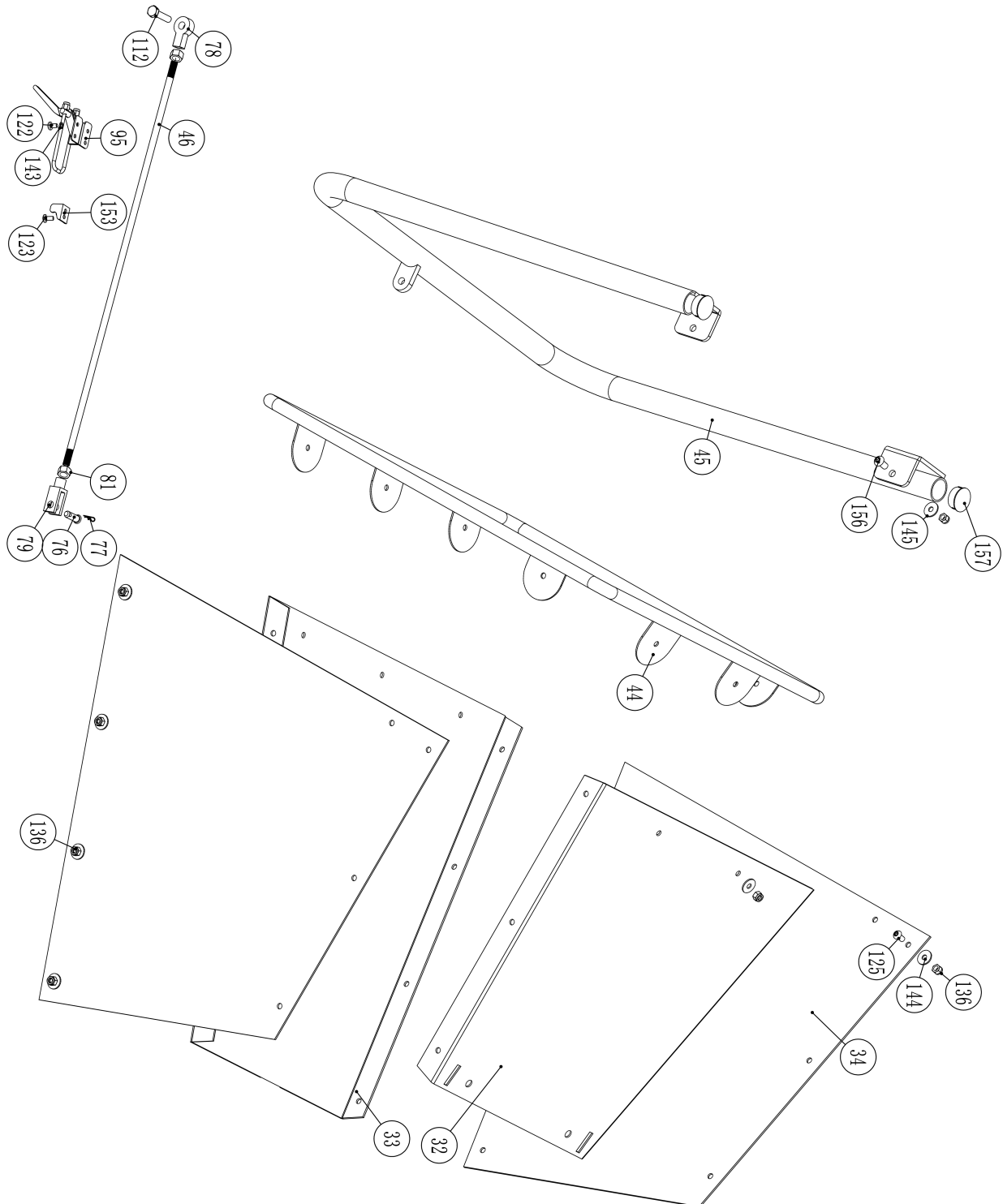
## PARTS DIAGRAM



## PARTS DIAGRAM

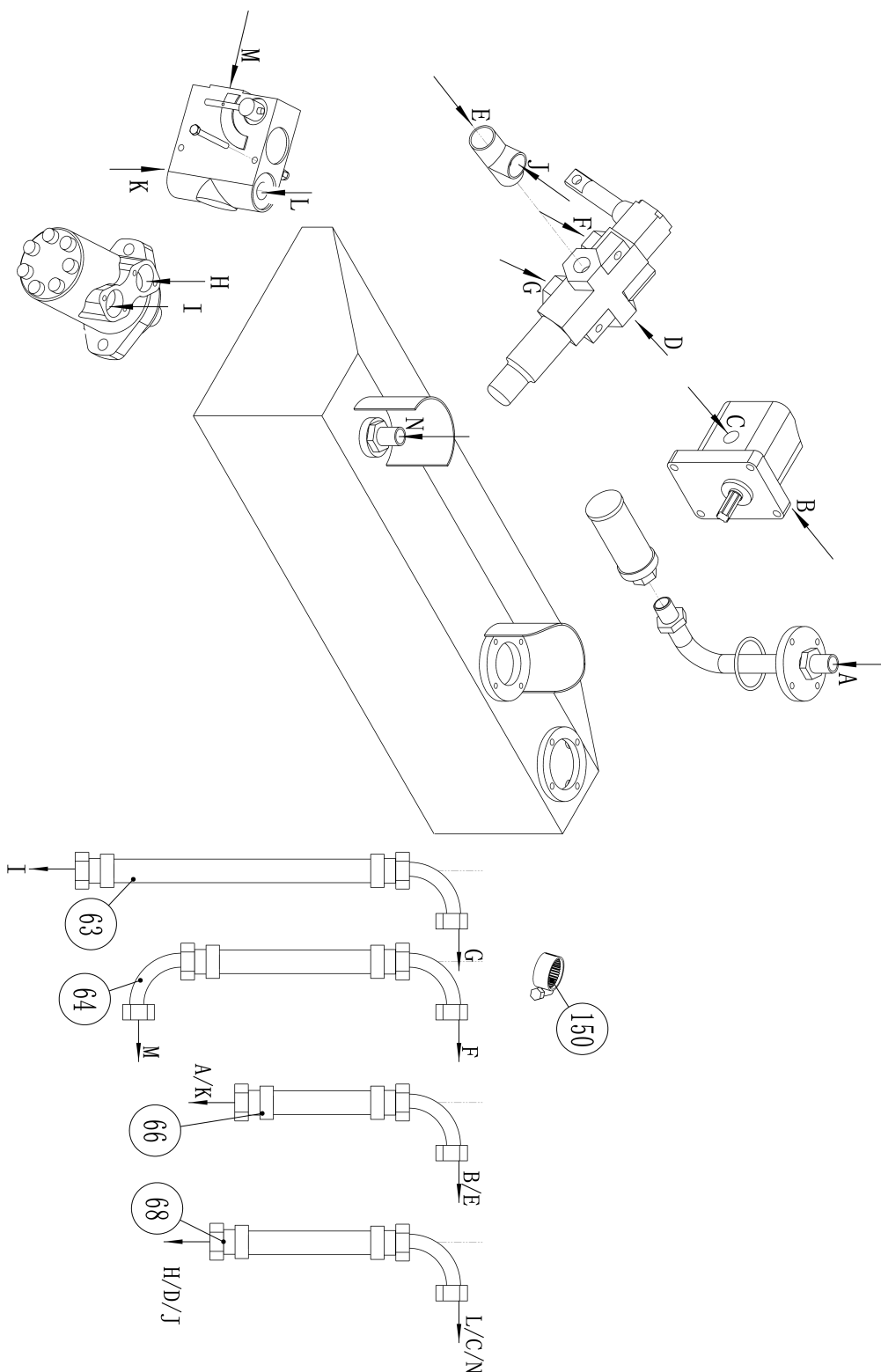


# PARTS DIAGRAM

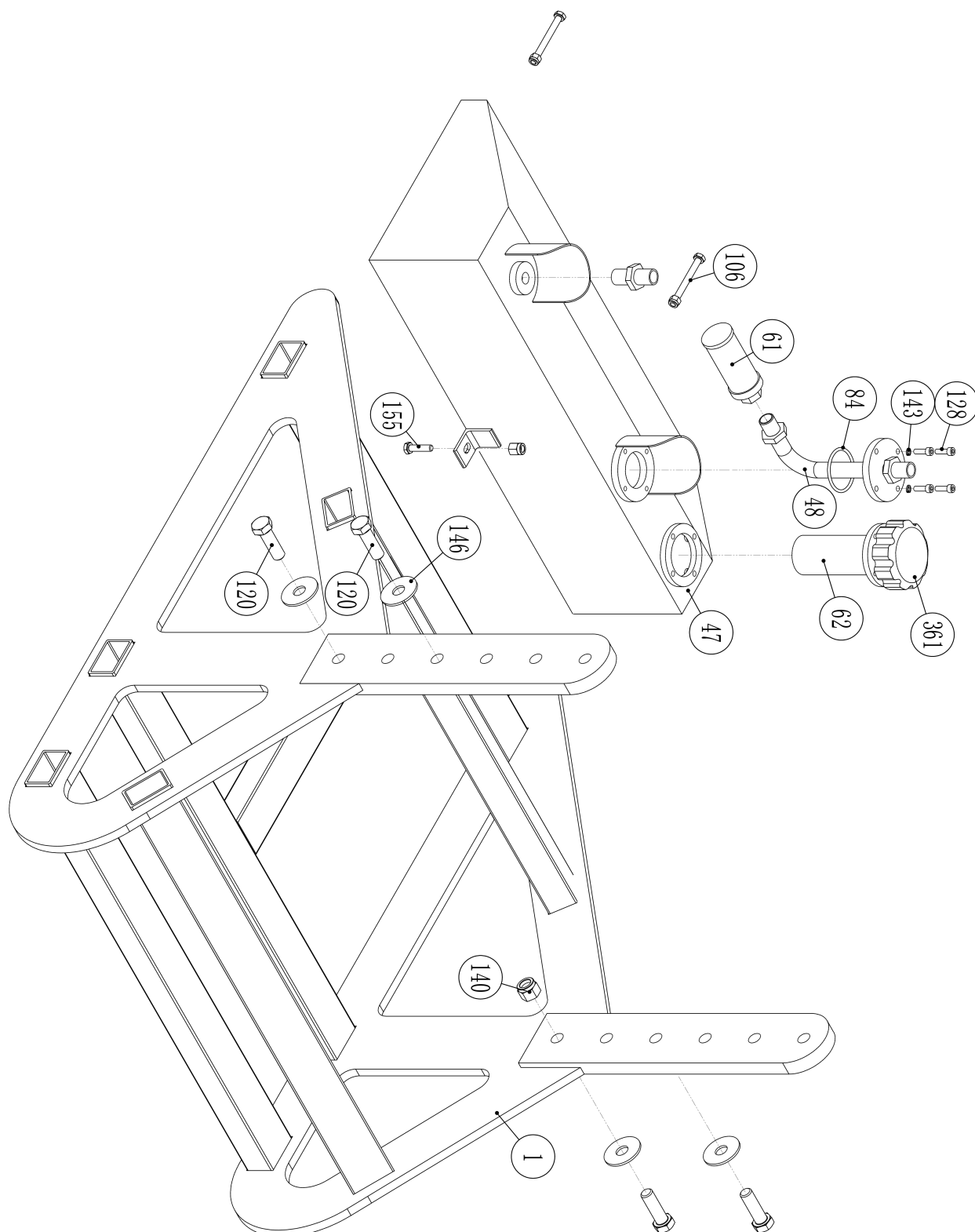




# PARTS DIAGRAM



# PARTS DIAGRAM





# NOTES

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