

# Liberty Wood Chipper

## Operation and Assembly Manual



1. Introduction	.....	2
2. Setup and Assembly Instructions	.....	2
3. PTO Driveshaft Safety Tips	.....	2
4. PTO Driveshaft Hazard Reduction	.....	3
5. Protective Guards and Shields	.....	4
6. Warnings and Instructions	.....	4
7. Safety Instructions	.....	5
8. Operator Protective Gear	.....	5
9. Operation Checklist	.....	6
10. Chipper Operation	.....	6
11. Blade Replacement and Sharpening	.....	8
12. Lubrication Frequencies and Locations	.....	9
13. Preventative Maintenance	.....	9
14. Troubleshooting	.....	10
15. Parts and Fasteners	.....	10
16. Driveshaft Fitting Adjustments	.....	11
17. Diagrams and Parts Lists	.....	13

## 1. INTRODUCTON

Congratulations on your purchase of a Liberty Wood Chipper

Before using your wood chipper, please take a few minutes to read and understand this operation manual and the accompanying maintenance instructions. It contains important information which will help you observe proper safety precautions, and get the most from your wood chipper.

## 2. SETUP AND ASSEMBLY INSTRUCTIONS

Your chipper may require some assembly prior to installation. In most cases, your chipper will arrive in a metal shipping frame. This frame can be dismantled in minutes to allow access to major components.

The feed chute and stand are shipped with the unit and are located on the bottom of the metal frame. Remove and assemble the stand, place the chipper on the stand and bolt on the two mounting brackets. See the accompanying Photographs, Diagrams and Parts List for clarification.

Locate the small box containing the two (2) chipper hitch assemblies and mounting bolts. Use these to enclose the feed chute (if applicable, also see retrofit instructions regarding the use of shorter bolts with lock washers and flat washers).

***If the chip deflector or any of the guards have been removed for shipping, be sure to re-install them properly.***

Your chipper is also shipped with a Power Take-Off (PTO) driveshaft . When using the PTO driveshaft, be sure to keep the chipper as close to the tractor as possible. The PTO driveshaft **must** be sized for your tractor – see Section 16 in this manual for this procedure.

***Always ensure that the PTO shaft is straight and within 15 degrees of horizontal when operating your wood chipper.***

Do not allow the chipper to be operated without the chip deflector properly in place.

## 3. PTO DRIVESHAFT SAFETY TIPS

The following steps are recommended for safe operation of the driveshaft under field conditions.

Check and test the proper size joints and telescoping members based upon the power required by the implement, speed of rotation, joint angles, shock loads, and expected life.

### **3. PTO DRIVESHAFT SAFETY TIPS (cont.)**

1. Test the hitch angle to prevent the driveshaft from:
  - Extending beyond the recommended maximum length.
  - “Bottoming out”
  - Reaching a position that allows joints to lock.
  - Exceeding the maximum allowable angle for constant velocity (CV) joints.
2. Specify and test telescoping members to allow the lowest possible thrust loads, considering the expected working conditions.
3. Specify and test torque limiters to control excessive shock loads.
4. Where necessary, specify and test overrun clutches to prevent inertial loads from overpowering the tractor.
5. Provide a means to support the driveshaft when it is disconnected from the tractor, to prevent damage during storage or transportation.

### **4. PTO DRIVESHAFT HAZARD REDUCTION:**

When using a driveshaft application it is important to eliminate or minimize as many potential hazards as possible.

1. On driveshafts with torque-limiting or overrun devices, specify that the device be positioned on the end of the driveshaft near the chipper.
2. For connections which require bolts or set screws, use low-profile hardware to minimize protrusions.
3. For PTO shaft connections, specify a safety type yoke (twist or slide collar) to minimize protrusions.
4. Provide a proper clearance zone for the operation of the driveshaft, to avoid damage to the shielding components.
5. Some common areas of interference are:
  - Three-point linkage
  - Extended or eye loop hitch pins
  - Hydraulic hoses

It is not recommended to use PTO adapters which may defeat the purpose of the tractor's master shield and/or adversely affect the performance of the driveshaft.

### **5. PROTECTIVE GUARDS AND SHIELDS**

PTO driveshaft shielding should consist of a PTO master shield, integral driveshaft shield, and a chipper input connection shield.

1. Follow all chipper and tractor instruction labels and manuals. The chipper should be used only with the tractor's PTO master shield in place.
2. Specify and test an integral driveshaft shield with end cones which will overlap, but not interfere with the PTO master shield or chipper input connection shield.
3. A chipper input connection shield should be used in addition to the integral driveshaft shield, in order to guard the shaft coupling and any torque limiting device installed on the driveshaft.
4. Check that all routine maintenance of the driveshaft can be done without removal of the shields.

## **6. WARNINGS AND INSTRUCTIONS**

Your chipper is provided with an instruction and maintenance manual and various safety labels related to potential hazards associated with its use. They include:

1. Labels on the unit to advise the user of proper hitch dimensions and maximum safe operating speed.
2. Labels supplied with the driveshaft (replacements are available from your driveshaft supplier).
3. Easy-to understand instructions for proper driveshaft operation, maintenance, and repair in the operator's manual.
4. Advise the user of locations of genuine original equipment spare parts.
5. Further information about driveshaft specifications and safety may be obtained from your driveshaft supplier and the following ASME standards and Engineering Practices:

- S203 -- Rear Power Take Off for Agriculture Tractors
- S205 -- Power Take Off Definitions and Technology for Agricultural Tractors.
- S207 -- Operating Requirements for Tractors and Power Take-Off Driven Implement
- S318 -- Safety for Agriculture Equipment
- S311 -- Implement Power Take-Off driver-line specifications
- S333 -- Agricultural Tractor Auxiliary Power Take off Drives
- S350 -- Safety Alert Symbol for Agricultural Equipment
- S441 -- Safety Signs
- S493 -- Guarding for Agricultural Equipment
- EP363 -- Technical Publications for Agricultural Equipment

Other standards may apply for particular types of implements.

Driveshafts, like all machinery, must be used properly, including the proper use of tractor master shields and implement input connection shields.

Please contact the manufacturer or your distributor if you have any questions about using your PTO driveshaft.

## **7. SAFETY INSTRUCTIONS**

Do not attempt to operate the chipper until you have read and understood the owner's manual. If you need another manual, contact the factory or the dealer where you purchased the unit. An extra manual will be provided at no charge.

Always keep the guards and chip deflector properly installed while operating the chipper.

Keep the decals in place and in good repair. The factory or your dealer will furnish new decals upon request. If your chipper is repainted, be sure the labels and decals remain visible.

Never leave the chipper running unattended.

Do not attempt alterations, repairs or adjustments while the chipper head is turning. Always disconnect the PTO and stop the motor, then put the keys in your pocket.

***Keep hands, feet and other extremities out of and away from the hopper. When checking blades or adjusting the cutting bar, EXERCISE EXTREME CAUTION! If accidentally rotated, the flywheel can contain enough residual energy to seriously injure the operator.***

Point the discharge chute away from doorways, sidewalks, or any areas where your view is obstructed.

The chute should be pointed downwind when possible.

***Keep everyone, especially children, away from the area of operation.***

Anyone who has not read this manual and received instructions from a qualified person should not be in the area.

## **8. OPERATOR PROTECTIVE GEAR**

The following protective clothing and gear is recommended when using your chipper:

<b>EYES</b>	--	Wraparound safety glasses or goggles
<b>EARS</b>	--	Ear plugs
<b>HANDS</b>	--	Leather gloves
<b>FEET</b>	--	Steel-toed boots
<b>LEGS</b>	--	Heavy Pants
<b>ARMS</b>	--	Long-sleeved shirt

No loose clothing should be worn around the chipper.

## **9. OPERATION CHECKLIST**

**CAUTION :** Turn the chipper head over by hand before applying power to make sure that the head is clear, all the bolts are clear, and the blades clear the case and cutter bar.

Make sure that:

1. The feed roll drive-shaft and pivots are properly lubricated.
2. The feed roll clutch is properly lubricated, and the clutch releases when the handle is pushed toward the chute.
3. The PTO shaft doesn't come apart or bottom out during the normal lifting range.

After operation, check the chip pile to see if the blades need to be serviced. Long slivers in the chip pile are one the best indications of dull blades.

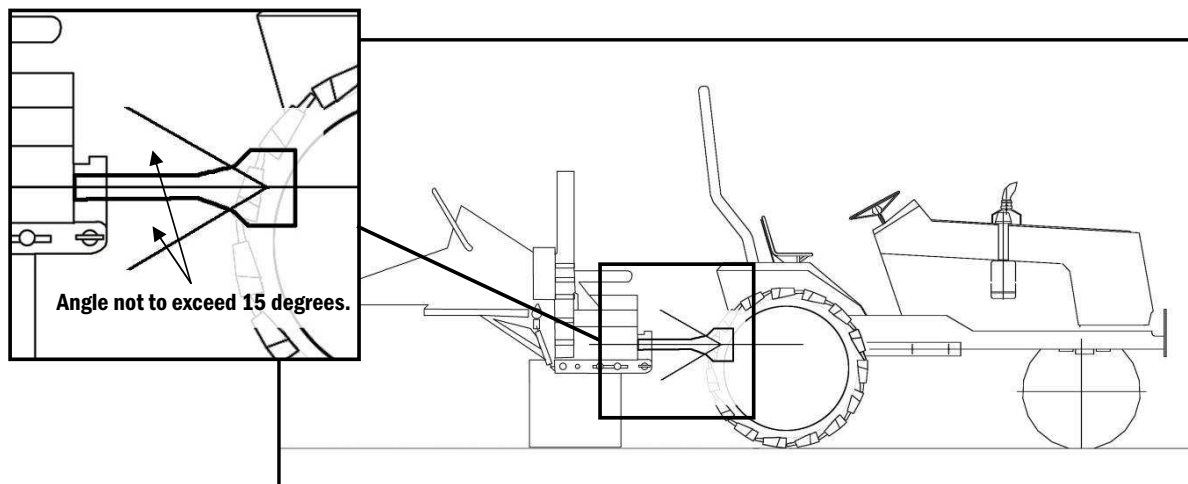
## 10. CHIPPER OPERATION

Remember that the chipper's blades must be sharp to operate properly. Dirt, rocks, nails, or other foreign material will shorten blade life.

Always review the manual before operating the chipper

Locate chipper in safe area with the discharge chute pointed away from doorways, sidewalks, or any areas where your view is obstructed.

After rotating the chipper by hand and making sure there no obstructions in the head, start the tractor and elevate or lower the chipper until the PTO shaft is within 15 degrees of horizontal (see illustration).



With the PTO engaged release the PTO clutch slowly. Gradually increase speed until the tractor PTO speed is 540 RPM.

## 10. CHIPPER OPERATION (cont.)

Feed material into the head with the large end first.

The feed roll will fold branches as they are pulled into the hopper. Occasionally, a fork may have to be cut to feed properly.

If the material stops the feed roll, release the feed roll clutch by pushing it toward the chute. Hold the clutch in the disengaged mode, and pull the material out the hopper. Release the feed roll clutch and the feed roll will turn again.

Do not move the unit while the flywheel is turning.

Block the wheels and set the brake while running the head.

Most of the time this will be enough to clear the chips out of the unit. If the unit slows down noticeably, first shut off the PTO power, then the tractor. Keep the keys in your pocket.

Unplug the head by turning it backwards by hand with the discharge chute and top section of the protective cover off.

Remove the chips from the top of the head. If this fails, remove the clean-out door, located on the lower part of the front side-plate of the chipper below the main shaft, and remove any chips in the case

Replace the clean-out door after all the chips are removed, being sure to use both the lock washers and flat washers.

Turn the head by hand after assembly to be sure it turns freely. Be sure to replace the chip deflector. Do not operate the unit without the deflector in place.

When you have finished working (and before stopping the chipper), be sure that there is no material in the head or feed roll.

After shutting down the unit, rotate the cutting head backward by hand to remove any remaining small chips or debris.



## 11. BLADE REPLACEMENT AND SHARPENING

The best way to tell if the blades need sharpening is to watch the chips coming out of the chip discharge. If they are long and stringy, the blades need to be service. Sometimes the blades feel sharp to the fingers, but may be worn or rounded in area B.

Dull blades cause many problems, including:

- Loss of cutting power
- Jamming or plugging of the discharge chute
- Rough cutting with more vibration than usual
- Broken feed roll shaft
- Wear or loosening of the main bearing causing the flywheel or blades to come in contact with the case or bed knife
- Feed roll kicking out of gear
- Lack of material feeding

To remove the blades, take the PTO shaft out of gear. Shut off the tractor and keep the keys in your pocket. The blades on most models are accessed by removing the inspection plate on the side opposite the chute.

Unhook the feed roll springs, block the feed roll, and, with an Allen wrench on the chute side and a socket on the other, remove the attachment bolts. If necessary, a small screwdriver or ice pick can be used to clean the Allen wrench bolt heads.

***Be careful not drop any parts inside.*** Remove the blade, clean the blade pocket, and replace or sharpen the blade.

Blade installation is the opposite of removal.

Torque the blade attachment bolts to 50 foot-pounds, ensuring that the bolts run through the flywheel.

Replace the inspection plate and reattach the springs.

Rotate the cutting head by hand before applying power. The cutter bar should be adjusted to a distance of .010 to .030 inches from the blades by loosening the bolts in the slotted holes at the bottom of the chute and moving the bar on the slots.

Tighten the adjustment bolts to 35 foot-pounds of torque.

If necessary, remove the cutter bar and reverse or resharpen it.

To properly sharpen the blades, sharpen angle A to approximately 35 degrees.

Area B cannot be rounded, or the blades will not pull the material into the head.

## 12. LUBRICATION FREQUENCIES AND LOCATIONS

PTO shaft	2 zerks on universals once a day with multipurpose grease.
Slip Joint	Lubricate with multi- purpose grease
Feed roll pivot	2 zerks on underside of chute end. Apply multi-purpose grease every 4 to 8 hours of operation. If dust or fine particles make pivot bind, unhook feed roll springs, use cleaning solvent on pivot while moving up and down, wipe off, lubricate slides, and replace springs.
Feed roll drive-shaft	Zerk on feed roll drive-shaft lubricates both the slide and both universal joints. Add multi-propose grease until grease shows at both universals every 4 to 8 hours of operation, particularly before each use. Occasionally remove and thoroughly clean this assembly.
Feed roll clutch	While feed roll shaft is off, lubricate the feed roll clutch inside and outside with multi-purpose grease.
Gear box	Check separate sheet for gear box lubrication.

### **13. PREVENTIVE MAINTENANCE**

Check all bolts, set-screws and fasteners after four hours' operation, and once per day thereafter.

Check for loose belts and broken pulleys, loose springs, dry slides, and proper lubrication of both feed roll driveshaft and feed roll clutch.

The main drive belts on the chipper need to be tight. To tighten these belts, first loosen the four bottom nuts that hold the jack-shaft bearing. Loosen them about three turns, then move the nuts on the top of the bearings down and equal amount. Keep the jack-shaft parallel with the main shaft. Torque the bottom nuts to 80 foot-pounds.

The belts of the main drive on the PTO chipper should be checked every 8 hours of operation. Look for cracks, looseness, or other signs of deterioration. For best performance, replace with a matched set of eight belts.

The feed roll drive belt can be adjusted by first loosening the four bolts that hold the worm gear box to the base, then moving the gear box away from the chute and re-tightening the bolts to 40 foot-pounds of torque.

All decals and safety instructions should be kept clean and legible. It is the operator's responsibility to replace the decals as needed; In the event that they become worn or illegible, replacements are available at no charge.

### **14. TROUBLESHOOTING**

**PROBLEM:** *Head slows but tractor does not*

<b>Possible causes</b>	<b>Solution</b>
Main drive belts slipping	Tighten main drive belts
Blades dull	Sharpen/ reverse

**PROBLEM:** *Feed roll clutch kicking in and out of gear excessively*

<b>Possible causes</b>	<b>Solution</b>
Blades dull	Sharpen/ reverse
Material jammed in chute	Release feed roll clutch and remove material by pulling out of chute, trim forks if necessary.

**PROBLEM:** *Chip deflector plugging; chips too long or stringy*

<b>Possible Causes</b>	<b>Solution</b>
Blades dull	Sharpen / reverse
Cutter bar rounded	Sharpen / reverse
Cutter bar not adjusted properly	Adjust to tolerance level.
Chipper head turning too slowly	Ensure PTO speed at 540 RPM

**PROBLEM:** *Material won't feed*

<b>Possible causes</b>	<b>Solution</b>
Feed roll slides dirty or dry	Clean & lubricate
Fork in material too wide	Remove material and trim fork
Feed roll gear box belt loose	Tighten feed roll gear box belt
Feed roll tension springs stretched	Replace feed roll tension springs

## **15. PARTS AND FASTENERS**

Your chipper is designed for ease of maintenance. Replacement parts are available through your dealer. Bolts, set-screws and other fasteners are available at common hardware stores. Check the parts list for specification. Note: All bolts on the flywheel, blades and cutter bars are grade 8 specification. All other bolts are grade 2 or 5.

## **16. DRIVESHAFT FITTING ADJUSTMENTS**

This data applies to PTO driveshafts on model 4 and 6 PTO-driven chippers and chipper/mulchers with speed –up kit options.

This data is for driveshaft fitting adjustment, which is required prior to initial startup and installation of chippers.

Prior to startup, the PTO supplied with your chipper must be properly sized to insure proper operation. If this is not done, damage to the chipper, tractor, and PTO driveshaft can occur.

**These calculations are based on the following assumptions:**

1. **The PTO driveshaft used is the one supplied with your chipper. It has a size 2 PTO shaft spline and is designed for a type 1 spline on the tractor PTO.**
2. **The driveshaft has an active length range of 24.5” to 21.5”. Contact area on the tractor PTO spline is 2-1/4” contact area on the chipper spline shaft is 1-3/8”.**
3. **The two shaft ends are horizontal with one another.**

The following steps should be taken to insure the proper fit of the PTO driveshaft (provided with your chipper) and your tractor’s PTO drive.

1. Attach the chipper to your tractor three-point connections.
2. Raise the chipper to a position where its drive-shaft is level with the tractor PTO drive-shaft. This horizontal position is recommended for operation of the chipper.
3. A maximum of 15 degrees of offset from the horizontal position between the two shaft ends is allowable for proper operation of the unit by the PTO driveshaft manufacturer. However, driveshaft calculations are based on a level, horizontal position. With the two drive shafts level with one another, measure the distance between the ends of the two shafts (the chipper and the tractor PTO shaft ends ). This distance between the two shaft ends is the measured shaft end distance, or “**MSED.**” The PTO driveshaft is capable of handling a **MSED** of between 18.76” to 21.76”, allowing for at least 1/3 of shaft overlap as recommended by the driveshaft manufacturer.
4. If the **MSED** is longer than 21.76” a longer driveshaft is needed and should be ordered.
5. If the **MSED** is shorter than 18.76” a shorter driveshaft is needed and should be ordered.
6. Most driveshafts must be adjusted to fit by cutting off equal amounts of the ends of the shaft tube and the guard tube of the PTO drive-line.
7. Prior to startup, consult the driveshaft manufacturer’s data enclosed with your driveshaft for proper assembly, disassembly, lubrication and operation.

**Another driveshaft data base is as follows – these calculations are based on the following assumptions:**

1. **The PTO driveshaft is the *Bondioli* model 7102043nnt07607 with a size 2 PTO shaft spline for a type 1 spline on the tractor PTO.**
2. **The driveshaft has an active length range of 31.06” to 25.13”**

## **16. DRIVESHAFT FITTING ADJUSTMENTS (cont.)**

3. That 2-1/4" of contact area on the tractor PTO spline and 1-3/8" of contact area on the chipper spline shaft are utilized.
4. The two shaft ends are horizontal with one another.

The following steps should be taken to insure the proper fitting of the PTO driveshaft provided with your chipper to your tractor PTO drive.

1. Attach the chipper to your tractor three-point connections raise the chipper to a position where its drive-shaft is level with the tractor PTO drive-shaft.  
The recommended position of the chipper during operation is in this horizontal position.  
A maximum of 15 degrees of offset from the horizontal position between the two shaft ends is allowable for proper operation of the unit by Bondioli and chipper.  
Driveshaft calculations have been based on a level or horizontal position.
2. With the two driveshafts level with one another, measure the distance between the ends of the two shafts (the chipper and the tractor PTO shaft ends). This distance between the two shaft ends is the measured shaft end distance or "MSED".
3. The PTO driveshaft is capable of handling a MSED between 27.24" to 20.31" allowing for at least 1/3 of shaft overlap as recommended by the driveshaft manufacturer.
4. If the MSED is longer than 27.24" a longer driveshaft is needed and should be ordered.
5. If the MSED is shorter than 20.31" but longer than 17.31," the PTO drive-shaft must be fitted. Fit the drive-shaft by cutting off equal amounts of the ends of the shaft tube and the guard tube of the PTO driveshaft. The amount to cut off each end of the shaft tube and the guard tube is the difference between 20.31 and the MSED for your unit. In no case can more than 3' of shaft tube and guard tube be removed, or the contact area is not sufficient for proper and safe operation of the drive-shaft.

**EXAMPLE:**

***If the MSED is 17.31", cut off 3" from the ends of the shaft tube and the guard tube of the driveshaft (20.31" minus 17.31"=3" of cut-off distance).***

Cut off the same amount from the shaft tube plastic safety cover and the guard tube safety cover to insure proper assembly and fit of the driveshaft.

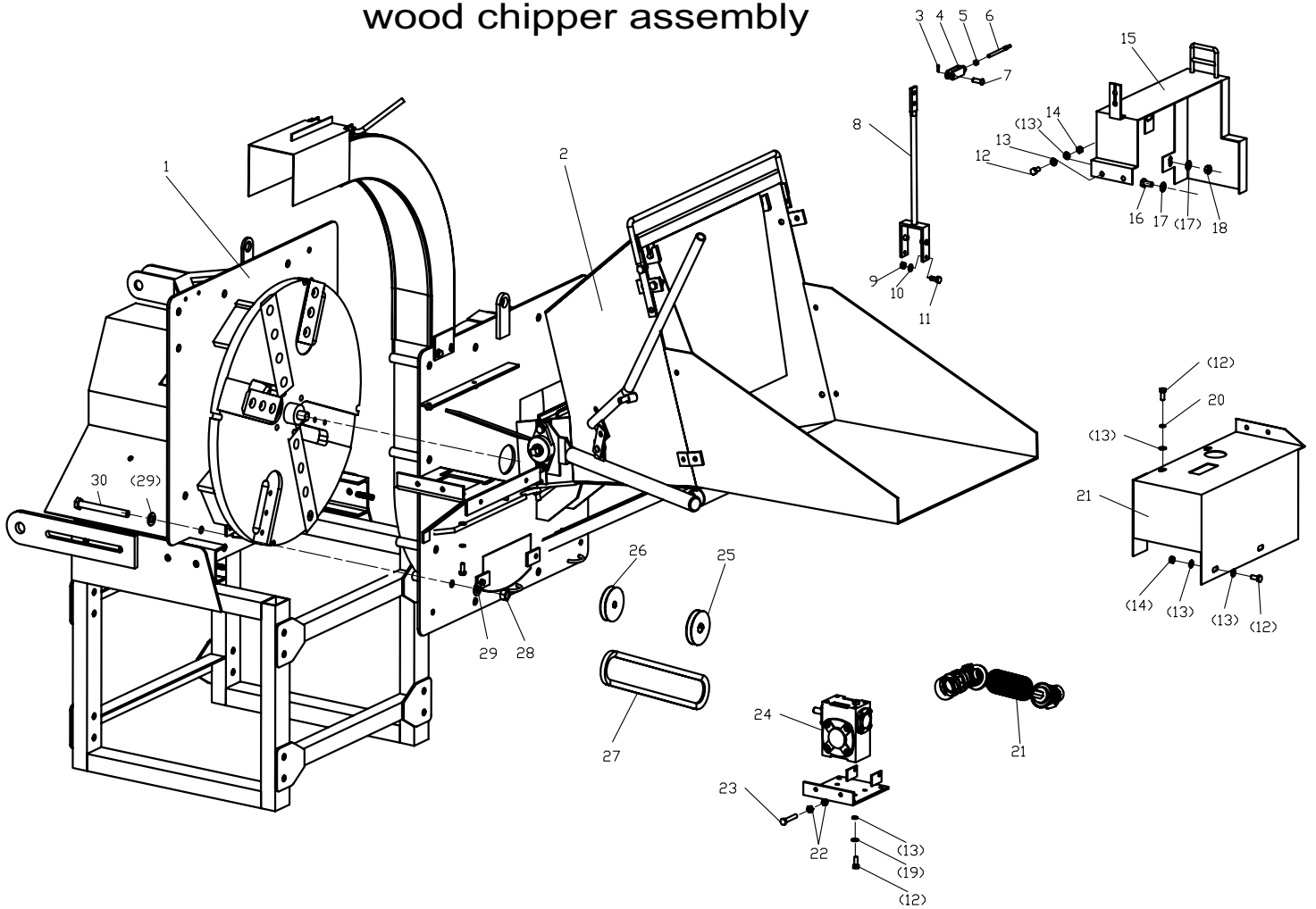
6. If the MSED is shorter than 17.31" a shorter driveshaft is needed and should be ordered.
7. Consult the Bondioli data enclosed with your driveshaft for proper assembly, disassembly, lubrication and operation- prior to startup and during operation.

**REMEMBER:**

***Contact with the driveshaft while in use can result in serious injury or death.***

Any unshielded portion of the driveshaft must be covered by a guard. The manufacturer of the equipment provides the correct guards and shields. Any replacement guard or shield must meet manufacturer's specifications. Do not remove any of the plastic safety covers on the driveshaft, and insure that caution is used around the driveshaft. During operation, keep the area around the driveshaft area clear.

# wood chipper assembly

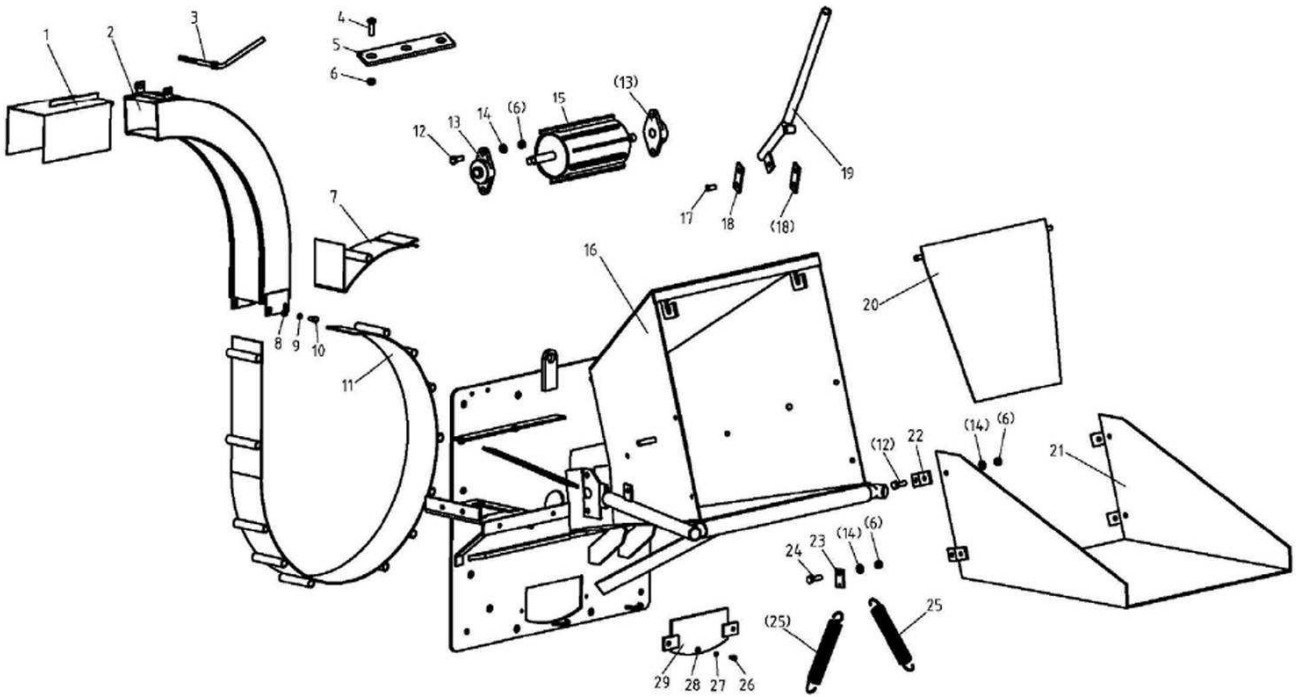


Illus. No.	Part No.	Part Name	Quantity
1	24PMF.02.106B	Drive System Assembly	1
2	24PMF.01.001	Cutter and Feeder Assembly	1
3		R Pin	1
4	24PMF.03.112	Joint	1
5	GB6170 -86	Nut M6	1
6	24PMF.03.141	Locking Line	1
7	24PMF.03.101	Pin Shaft	1
8	24PMF.03.011	Release Handle	1
9	GB 889-86	Locking Nut M6	2
10	GB97.1-85	Plain Washer 6	2
11	GB 5783-86	Bolt M6x16	2
12	GB5783-86	Bolt M8x20	10

## Wood Chipper Assembly Parts List (cont.)

<i>Illus. No.</i>	<i>Part No.</i>	<i>Part Name</i>	<i>Quantity</i>
13	GB97.1-85	Plain Washer 8	14
14	GB889-86	Locking Nut M8	4
15	24PMF.03.015	Roller Case	1
16	GB5783-86	Bolt M10x20	2
17	GB97.1-85	Plain Washer 10	4
18	GB889-86	Locking Nut M10	2
19	GB93-87	Locking Washer 8	6
20	24PMF.03.016	Gearbox Cover	1
21	24PMF.03.014A	Transmission Shaft Assembly	1
22	GB6170-86	Nut M8	4
23	GB5783-86	Bolt M8x50	2
24	Q-IAKY01-91	Worm Reduction Gear WPR40:30:1 II	1
25	24PMF.03.111	Belt Pulley	1
26	24PMF.03.105	Belt Pulley	1
27	GB T1171-96	Belt A991	1
28	GB 889-86	Locking Nut M14x1.5	13
29	GB97.1-85	Plain Washer 14	26
30	GB5782-86	Bolt M14x135	13

## Cutter and Feeder Assembly



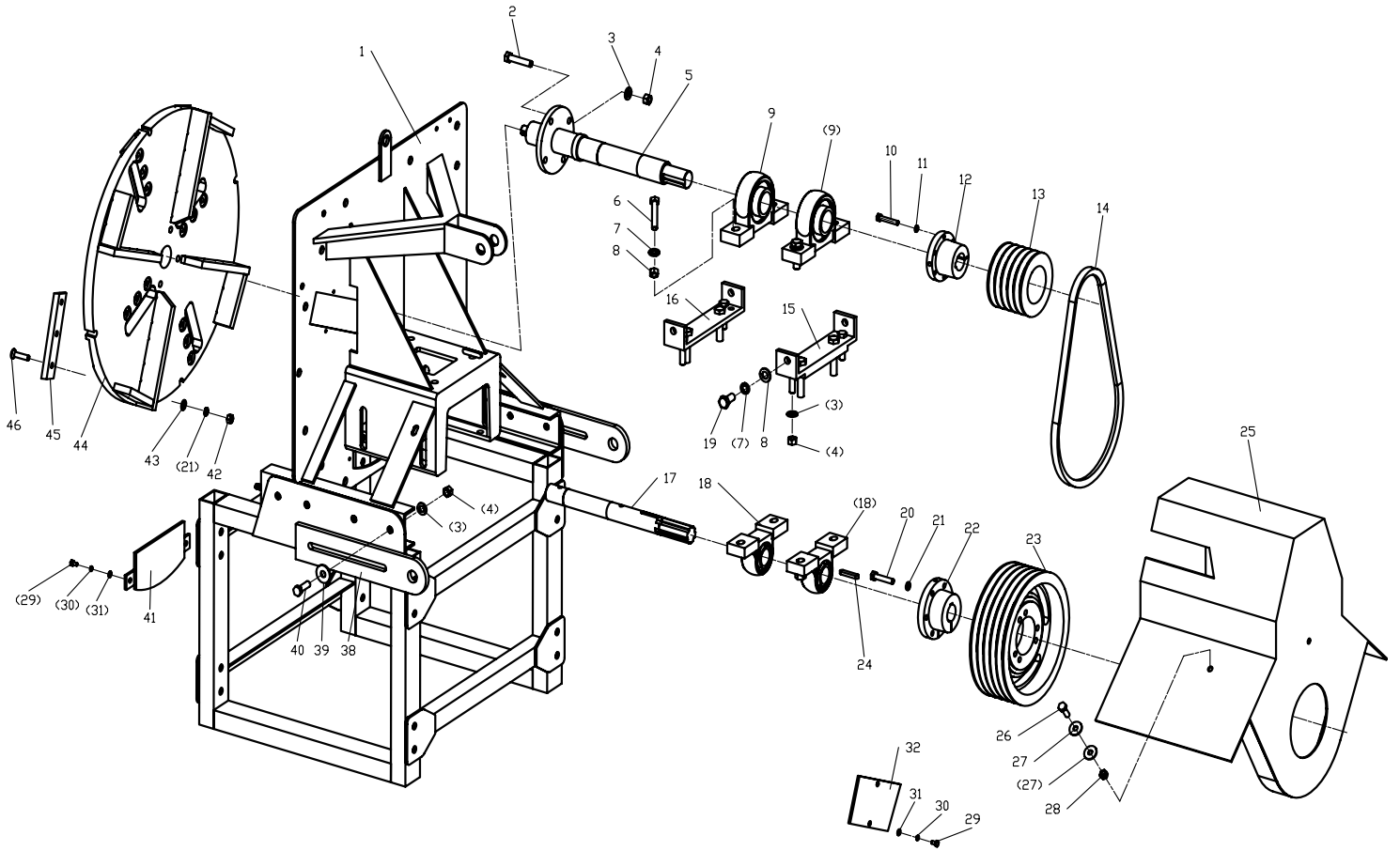
<i>Illus. No.</i>	<i>Part No.</i>	<i>Part Name</i>	<i>Quantity</i>
1	24PMF.01.014	Discharge Pipe Cover	1
2	24PMF.01.012	Discharge Pipe	1
3	24PMF.01.013	Tightening Handle	1
4	ISO-10642	Screw M10x35	3
5	24PMF.01.101	Chipper bed blade	1
6	GB 889-86	Locking Nut M10	17
7	24PMF.01.015	Flywheel Cover Panel	1
8	GB97.1-85	Plain Washer 8	4
9	GB93-87	Spring Washer 8	4
10	GB5783-86	Bolt M8x16	4
11	24PMF.01.016	Flywheel Cover	1
12	GB5783-86	Bolt M10x30	4
13	GB7810-87	Bearing L204	2
14	GB97.1-85	Plain Washer 10	14
15	24PMF.01.019	Blade Roller	1
16	24PMF.01.011	Material Feed Chute	1
17	24PMF.01.132	Pin Shaft	2



## Cutter and Feeder Assembly Parts List (cont.)

<i>Illus. No.</i>	<i>Part No.</i>	<i>Part Name</i>	<i>Quantity</i>
18	24PMF.01.131	Connecting Bracket	2
19	24PMF.01.024	Brake Handle	1
20	24PMF.01.026	Baffle Board	1
21	24PMF.01.018	Material Feed Tray	1
22	24PMF.01.117	Connecting Plate	4
23	24PMF.01.102	Spring Lug	2
24	GB5783-86	Bolt M10x35	2
25	24PMF.01.103	Tension Spring	2
26	GB5783-86	Bolt M6x12	2
27	GB93-87	Spring Washer 6	2
28	GB97.1-85	Plain Washer 6	2
29	24PMF.01.017	Clean-Out Door	1

## Drive System Assembly



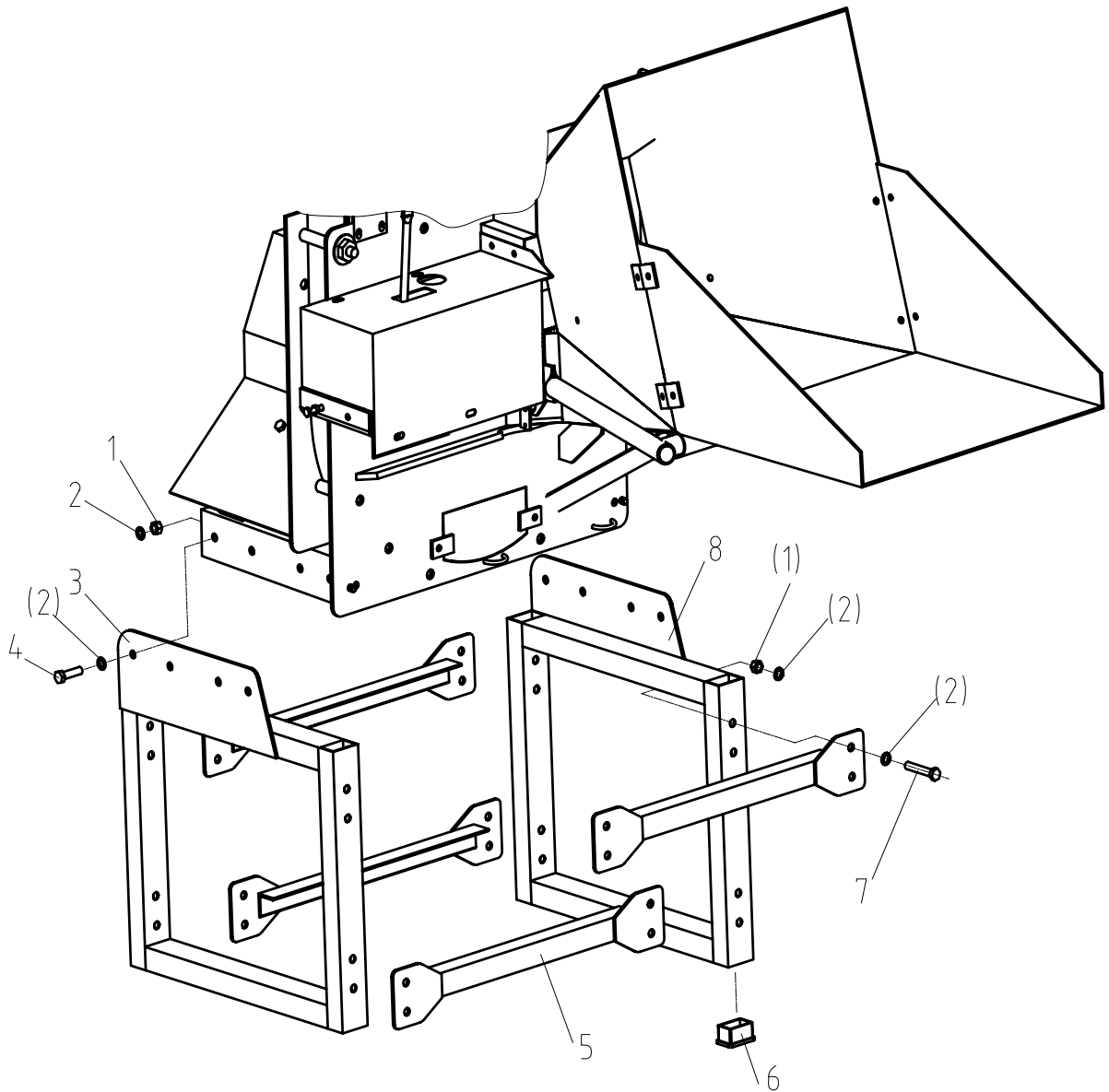
## Drive System Assembly Parts List

1	24PMF.02.012	Support	1
2	GB5783-86	Bolt M12x60	4
3	GB97.1-85	Plain Washer 12	24
4	GB889-86	Locking Nut M12	16
5	24PMF.02.011	Supporting S haft for Flywheel	1
6	GB 5786-86	Bolt M14x1.5x50	4
7	GB93-87	Locking Washer 14	12
8	GB97.1-85	Plain Washer 14	12
9	24PMF.02.138	Bearing Z209	2
10	GB5783-86	Bolt M8x50	6
11	GB93-87	Locking Washer 8	6
12	24PMF.02.105	Small Belt Pulley Hub	1
13	24PMF.02.104	Small Belt Pulley	1
14	GB 1171-74	Belt	1
15	24PMF.02.016	Bearing Seat Shim	1

## Drive System Assembly Parts List (cont.)

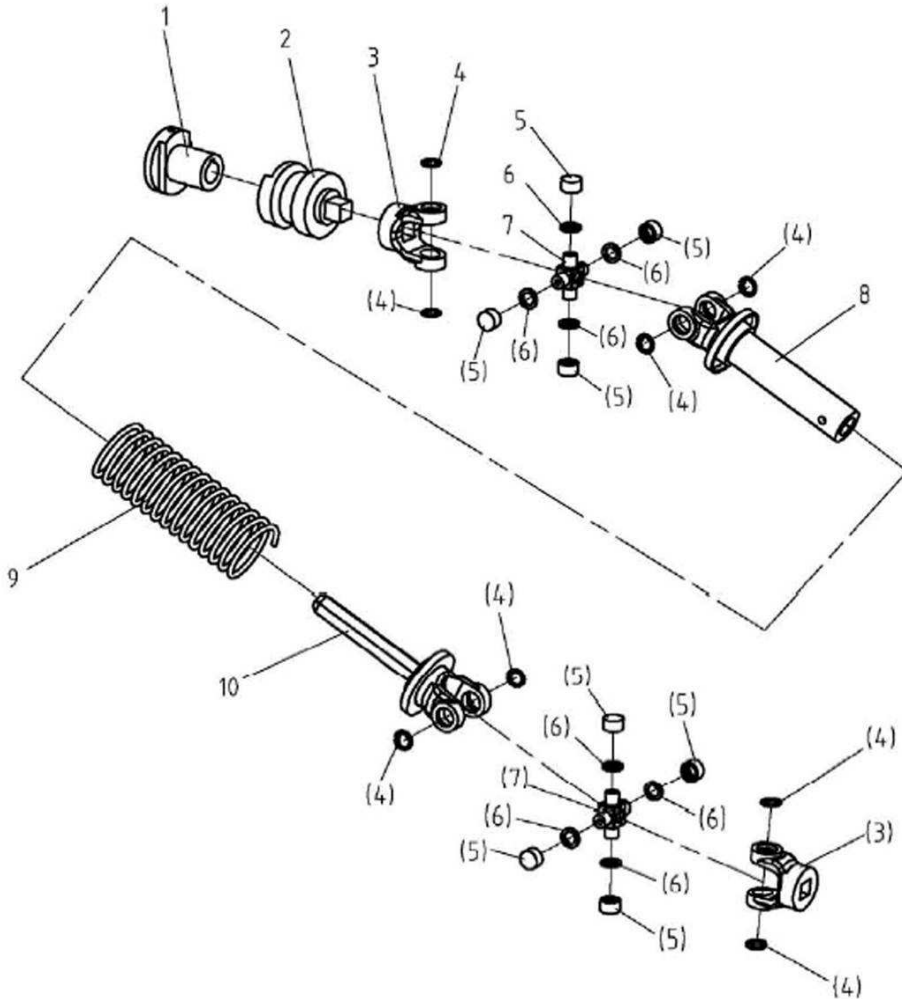
16	24PMF.02.017	Bearing Seat Shim	1
17	24PMF.02.101A	Drive Shaft	1
18	24PMF.02.139	Bearing Z207	2
19	GB 5786-86	Bolt M14x1.5x30	4
20	GB5783-86	Bolt M10x50	6
21	GB93-87	Locking Washer 10	14
22	24PMF.02.102	Big Belt Pulley Hub	1
23	24PMF.02.103	Big Belt Pulley	1
24	GB 1096-79	Key C10x50	1
25	24PMF.02.013	Belt and Pulley Protective Cover	1
26	GB5783-86	Bolt M10x30	2
27	GB96-85	Washer 10	4
28	GB889-86	Locking nut M10	2
29	GB5783-86	Bolt M6x12	2
30	GB93-87	Spring Washer 6	4
31	GB97.1-85	Plain Washer 6	4
32	24PMF.02.118	Cover Panel	1
33	24PMF.02.112	Front Supporting Panel	1
34	24PMF.02.110	Left Supporting Panel	1
35	GB5783-86	Bolt M12x30	8
36	24PMF.02.109	Right Supporting Panel	1
37	24PMF.02.111	Rear Supporting Panel	1
38	24PMF.02.113	Lifting Board	2
39	GB96-85	Washer 12	4
40	GB5783-86	Bolt M12x40	4
41	24PMF.01.017	Cover Panel	1
42	GB6170-86	Nut M10	8
43	GB97.1-85	Plain Washer 10	8
44	24PMF.02.106	Flywheel	1
45	24PMF.02.107	Chipper Bed Blade	2
46	GB 2673-86	Screw M10x35	8

# Liberty PTO Wood Chippper Base Diagram



NO.	Part NO.	Name & Specifications	Quantity
1	GB6184-86	Nut M12	24
2	GB97.1-85	Plain washer 12	48
3	24PMF.02.021	Left bracket	1
4	GB5783-86	Bolt M12×55	8
5	24PMF.02.019	Bar	4
6	24PMF.02.137	cover	8
7	GB5782-86	Bolt M12×70	16
8	24PMF.02.022	Left bracket	1

## Transmission Shaft Assembly



Illus. No.	Part No.	Part Name	Quantity
1	24PMF.03.107	Clutch Inner Claw	1
2	24PMF.03.108	Clutch Outer Claw	1
3	24PMF.03.134A	Drive Yoke	2
4	GB893.1-86	Circlip 15	8
5		Needle Bearing	8
6		Dustproof Washer	8
7	24PMF.03.135A	Universal Joint	2
8	24PMF.03.017A	Outer Drive Shaft	1
9	24PMF.03.109-1	Drive Shaft Spring	1
10	24PMF.03.018A	Inner Drive Shaft	1

# wood chipper Installation process

1. set up the base frame (refer to page 19)
2. connect the chipper with the base frame, see below pictures.



3. connect the discharge pipe(see below picture.)



4. connect the extended tray ( refer to page 15)
5. last step is to connect the PTO to the tractor.(see below pictures)

