

O P E R A T O R ' S M A N U A L

WOOD CHIPPER

WC1103



FRONTIER™

To the Owner;

Thank-You for choosing a quality product from Frontier Equipment. We strive to give you the best equipment and the best level of service of any company. With a little care and maintenance this machine will do your work for you for many years. In this manual, we make an effort to get you better acquainted with the machine so you can achieve maximum performance. We design and build all of our equipment with the end user in mind so we welcome any suggestions or ideas for improvement. Please note that it is within our rights to make changes or improvements to our equipment without updating the equipment that was manufactured before the change took place.

Please take a few minutes to fill out the area below. This information will be valuable to you when ordering parts or requesting service from your dealer.

Dealer Name:_____

Dealer Phone Number:_____

Service Manager/Technician:_____

Model# and Description:_____

Serial Number:_____

Date of Purchase:_____

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INTRODUCTION

Intended Use

Frontier Chippers are designed to chip natural, untreated wood only. Materials that are processed may contain chemicals or by-products that could corrode the machine, damage the blades, or spontaneously combust. Frontier Equipment will not cover under warranty any chipper that has been used for anything besides natural wood.

Serial Number

The chipper's serial number is located on the inside of the base. This number helps us to track changes and improvements and must be mentioned when ordering parts or requesting service. For your convenience, a space has been provided inside the front cover of this manual to record the serial number, model number, purchase date, and dealer name.

Specifications



Specifications	WC1103	WC1105	WC1205
Chip Opening	3 x 5.5 in. (7.5 x 14cm)	5.5 x 8 in. (14 x 20cm)	
Drive System	PTO	PTO	
Engine	N/A	N/A	
Transport	3 Point Hitch	3 Point Hitch	
HP Required	16	35+	
Rotor Size	65 lbs.	165 lbs.	
Knives	(2) 2.5 x 3.25 x 5/16 in.	(4) 2.5 x 3.25 x 5/16 in.	
Knife Bolts	3/8" Recessed Head Hardened Bolts		
Feed System	Manual		Hydraulic
Hydraulic Requirement	N/A		6 GPM
Feed Roller	N/A		15" (37.5cm)
Hopper Opening	25 x 18 in. (62.5 x 45cm)	28 x 28 in. (70 x 70cm)	
Feed Height	38" (95cm)	41" (102.5cm)	21" (52.5cm)
Weight (lbs.)	375	650	775

SAFETY



Do not operate this machine until this manual has been read and fully understood; serious injury or death can occur if these safety warnings are ignored!



Never allow more than one person to operate this machine at a 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.



Wood is much harder than human flesh! If your hand is ever near the chipping or feeding area serious injury can occur. NEVER place your hands on the machine while it is chipping.



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, eyewear, 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.

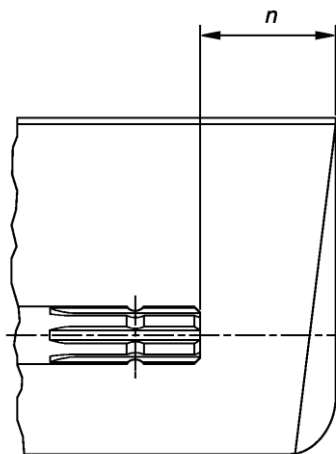


Never perform any maintenance or repair while the chipper is running.

Stay Clear of Rotating Drivelines



TS1644-UN-22AUG95



H96219-UN-29APR10

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 and the added adaptor device as outlined in the table.

PTO Type	Diameter	Splines	$n \pm 5 \text{ mm (0.20 in.)}$
1	35 mm (1.378 in.)	6	85 mm (3.35 in.)
2	35 mm (1.378 in.)	21	85 mm (3.35 in.)
3	45 mm (1.772 in.)	20	100 mm (4.00 in.)

SAFETY DECALS

Safety Decals

Warning decals are provided to insure safe and proper use of the machine and should be heeded at all times. If at any time there are damaged and/or faded decals, contact your dealer for replacements immediately. Below is an illustration of each decal and its placement.

WARNING

Falling off tractor can result in serious injury or death.

- Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times.
- Buckle Up! Keep seat belt securely fastened.
- Allow no riders.

To avoid serious injury or death, do not go underneath implement.

- Never go underneath raised implement which can drop from equipment or tractor 3-point hitch hydraulic leak down, hydraulic system failures, movement.
- Service work does not require going underneath implement. Read manual instructions.

WARNING

THROWN OBJECTS

Do not operate near people. Debris can be thrown a long distance.

WARNING

To avoid serious injury or death from contact with rotating blades, do not place hands or feet beyond the opening of the hopper.

DANGER

Entanglement in rotating driveline can cause serious injury or death. Keep all shields in place. Avoid contact with rotating parts.

CAUTION

To avoid serious injury:

- Read Operator's Manual before operating, servicing or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.)
- Never allow riders.
- Keep bystanders away from equipment during operation.
- Operate from tractor seat only.
- Keep all shields in place and good condition.
- Lower equipment to ground, stop engine, remove key and set brake before dismounting tractor.
- Never allow children or untrained persons to operate equipment.

DANGER

To avoid serious injury or death do not remove shields during operation. Disconnect power source when not in use.



CAUTION

Operate only with 540 rpm PTO

WARNING

To avoid serious injury or death from crushing and pinching hazards:

- Be extremely careful handling various parts of the machine. They are heavy and hands, fingers, feet, and other body parts could be crushed or pinched between tractor and implement.
- Operate tractor controls from tractor seat only.
- Do not stand between tractor and implement when tractor is in gear.
- Make sure parking brake is engaged before going between tractor and implement.
- Stand clear of machine while in operation or when it is being raised or lowered.

INSPECTION AND SET-UP

- Follow the instructions in the lubrication section of this manual to make sure the chipper is greased properly. The initial grease is applied at the factory, but a routine maintenance schedule is the user's responsibility.
- 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 uses. A wood chipper produces high vibration levels which can cause hardware to loosen.
- Check the position of the knives in relation to the chip anvil. The recommended setting is 1/32" (.8mm) between the anvil and the closest knife. You may notice the rotor has a slight wobble which will cause one of the knives to run closer than the other. This is normal. See page 7 for instructions on adjusting the anvil depth.
- Check the length of the PTO shaft. Some tractor 3-point hitch arms are shorter and require a shorter PTO shaft. To determine whether your shaft needs to be cut down to fit you will need to connect the 3-point arms to the chipper, connect the PTO shaft to both the tractor and chipper, and slowly raise the 3-point hitch. Watch closely to make sure that the PTO shaft does not fully retract. If it does, you will need to remove it and cut it down accordingly. If the PTO shaft is not fitted properly it can "bottom out" and cause damage to the PTO shaft or the chipper. Also check the PTO to make sure the tubes overlap at least six inches when the chipper is in the operating position. (sitting level on the ground)

Chip Chute

The WC1103 chip discharge has two positions. The chippers are assembled at the factory with the chute positioned as shown in Figure 2 but can be changed easily by removing the four bolts that attach it to the rotor housing.



Figure 2



Figure 3

OPERATION

Startup

- 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 snap pins.
- Adjust the top link so that the chipper sits level.
- Connect the pto shaft to the tractor. Be sure that the balls are set in the ball groove of the tractor pto shaft. Make sure that the pto safety chains are attached to both the tractor and the chipper to keep the protective PTO shield from rotating.
- Make sure the chip discharge chute is turned in a safe direction.
- 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 belt or the PTO shaft. After the rotor is spinning freely raise the tractor rpm's until the pto speed is around 540 rpm's.
- 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.

Chipping tips

- Feed the blunt end of the branch in first.
- Trim the side limbs that won't fit into the hopper before you feed the chipper. Remember that this is a gravity feed chipper and it will not feed itself if there are side limbs that do not fit through the chip opening. If you have a branch that will not feed properly you may need to turn it or remove it from the hopper and trim some of the limbs off. Never force a branch through! Your hands could slip and get into the blades.
- Feed smaller material into the hopper from the side of hopper so that debris doesn't fly back at you.
- If you have a lot of dry material try to mix in some green (fresh) limbs with the dry. The moisture in the green wood will lubricate and cool the knives. Chipping only dry wood will cause the knives to heat up. A hot knife will lose its edge much quicker.

MAINTENANCE & SERVICE

Belt tension

The belt tension is relatively maintenance free. The spring loaded idler will keep constant pressure on the belt during use. However, there is a slight adjustment by tightening or loosening the eye bolt, increasing or decreasing the spring tension.

Replacing the belts

Follow these steps to replace the drive belt. The WC1103 chipper uses (1) B-58 belt.

- Remove the idler spring to release the tension on the belt.
- Remove the bolts that attach the bearings and slide the shaft forward.
- Replace the belt and bolt the bearings back into position. Reinstall the idler spring. Be sure to put the safety shield back on.

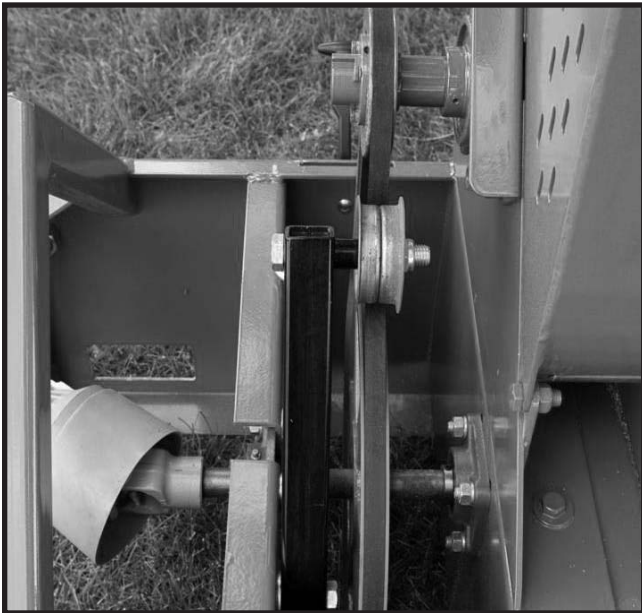


Figure 4

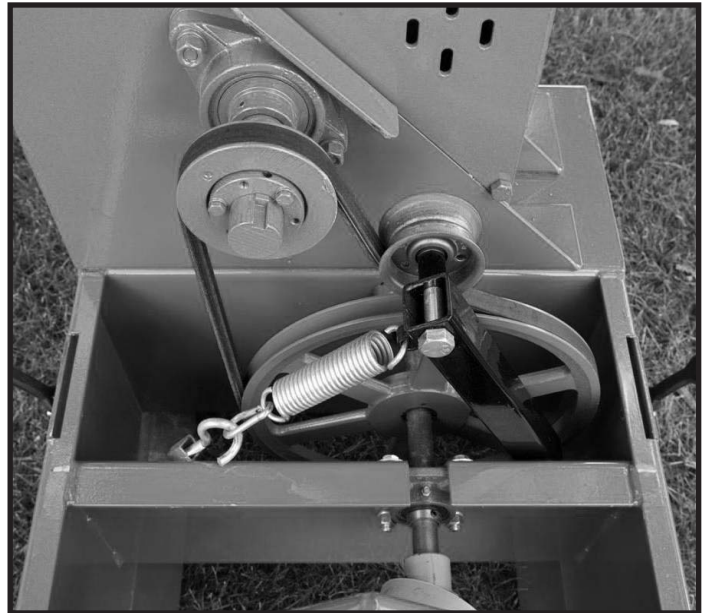


Figure 5

Shield has been removed to show detail. All shields must be on at all times during operation!!

MAINTENANCE & SERVICE

Knives

The performance of the chipper will depend largely on the condition of the knives. If the knives are dull or damaged you will create a lot of unnecessary stress on the whole machine. The knives are reversible and can easily be reversed or replaced by removing the two 3/8 bolts. (Figure 6) We recommend that the knives be resharpened by a precision sharpening service to retain the proper angle. The angle of the cutting edge should be 45 degrees. It is good to keep an extra set of knives on hand to use while the other set is being sharpened.

Anvil

The depth of your anvil will also affect the performance of your chipper. The anvil is also reversible. Follow these steps to adjust the anvil. (Figure 7)

- Loosen the two 1/2" bolts that clamp the anvil in position.
- Open the top of the rotor housing so you can watch the distance between the knives and anvil.
- Move the anvil to within 1/32" (.8mm) of the closest knife using the 3/8" adjustment rods. The knife depth may vary a little as you turn the rotor. This is normal.
- Retighten the bolts to secure the anvil.

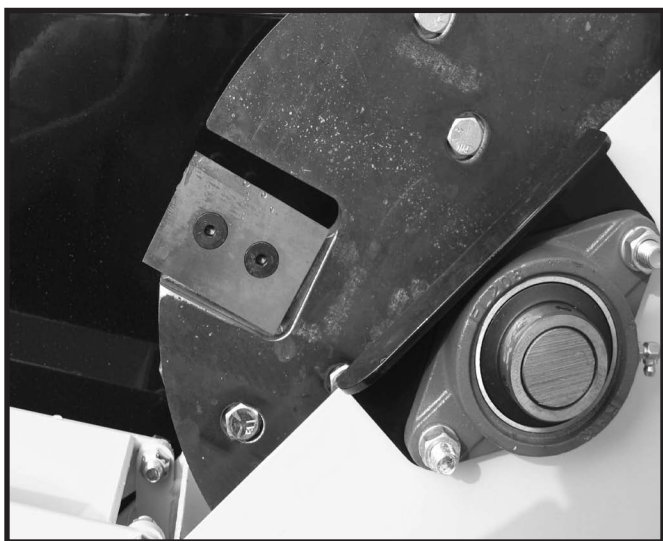


Figure 6



Figure 7

LUBRICATION

Bearings

The WC1103 chipper has four bearings. Figures 8 & 9 show the bearings on the input shaft where the PTO shaft attaches. These bearings should be greased lightly every 8 hours of use. Be sure to wipe all the dirt off of the fitting before greasing.



Figure 8

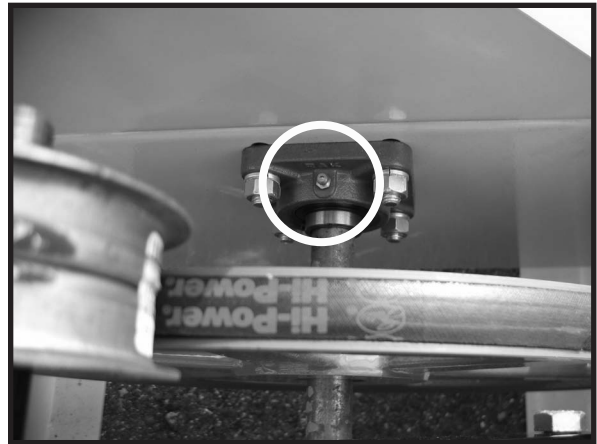


Figure 9

Figures 10 & 11 show the rotor shaft bearings. These should also be greased lightly every 8 hours. When greasing a sealed bearing, be careful that you do not over grease or the grease will push the rubber seal away and expose the bearing to dirt and moisture.



Figure 10

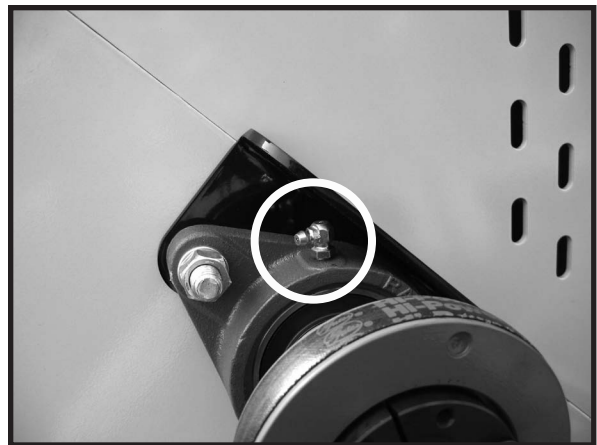


Figure 11

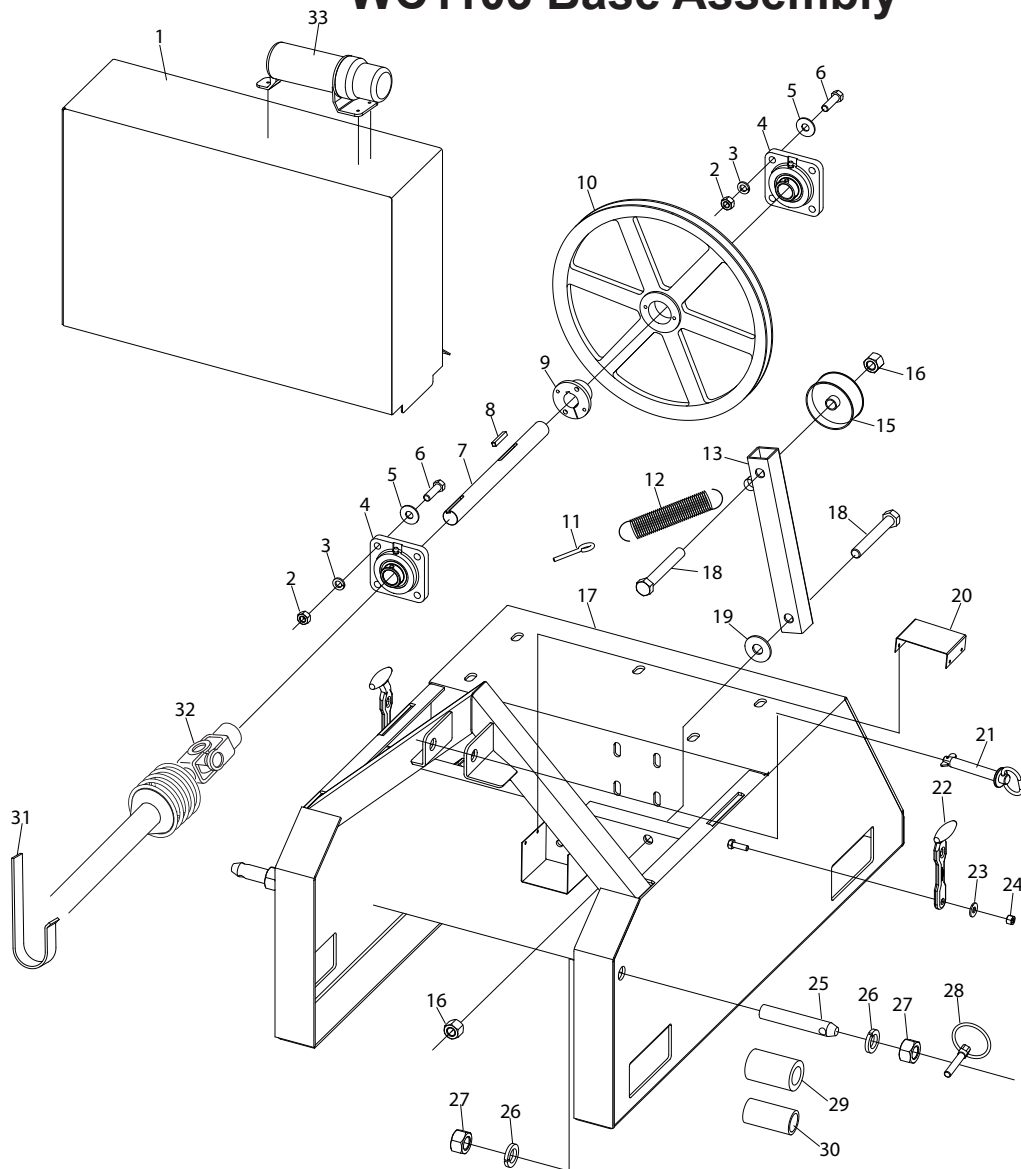
Shields have been removed to show detail. All shields must be on at all times during operation!!

WARRANTY

Warranty coverage is provided by John Deere according to the terms of the Agricultural/Commercial & Consumer Equipment Warranty Statement. Carefully read the warranty statement on the back of your original purchase order for details on coverage and limitations of this warranty.

Illustrated Parts Breakdowns

WC1103 Base Assembly

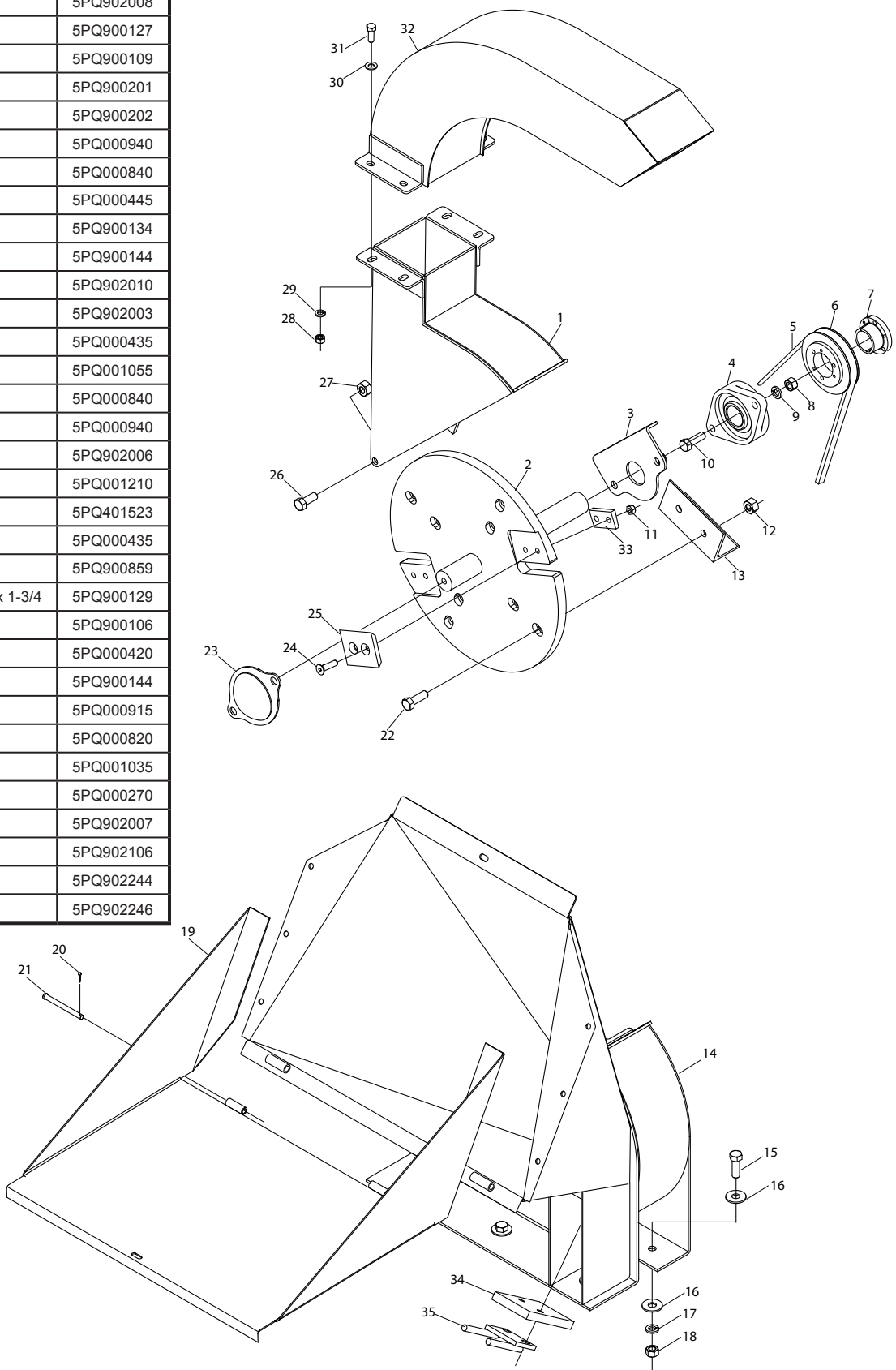


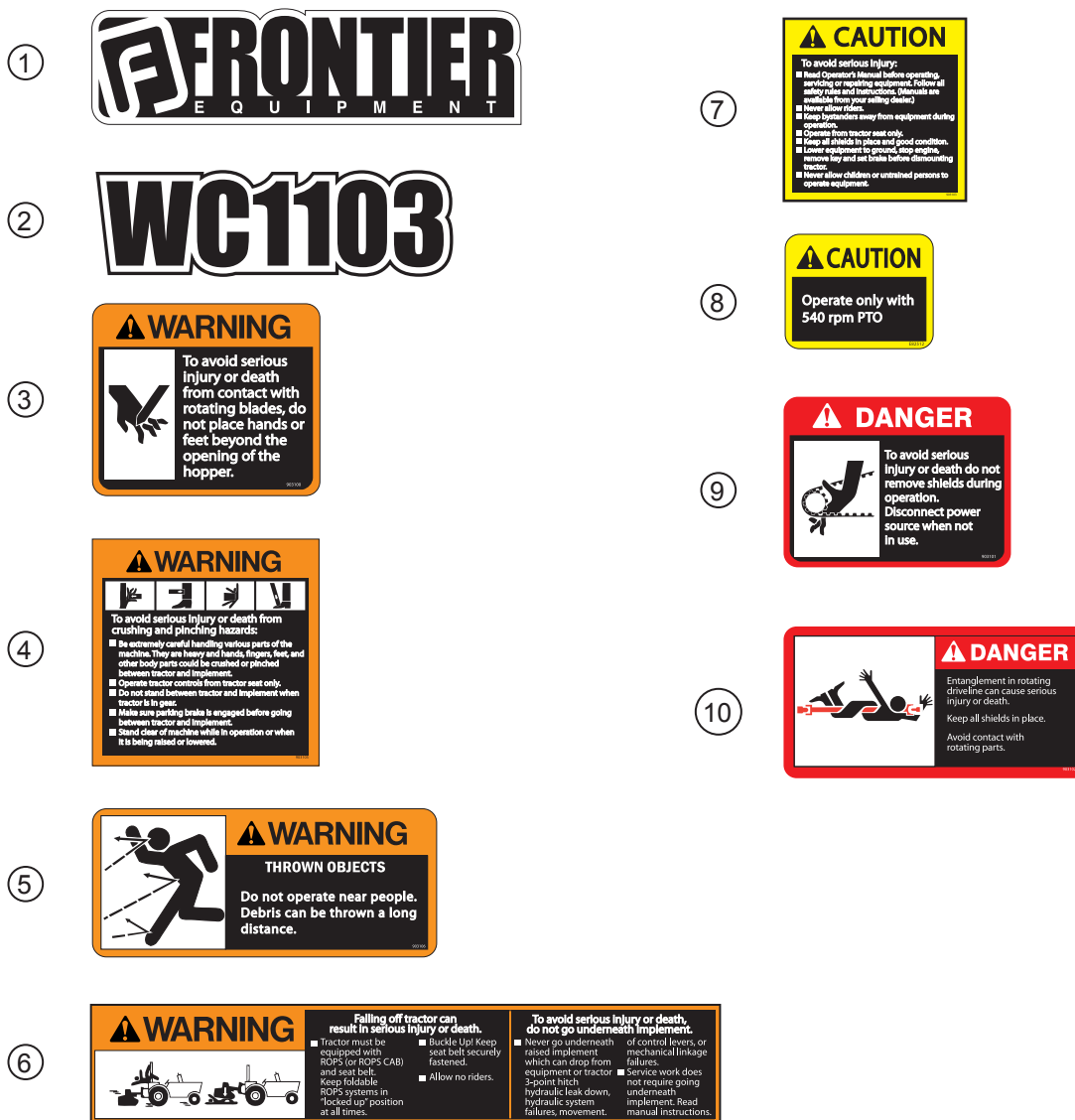
Ref#	Description	Part#
1	Belt Shield	5PQ902016
2	Nut, 7/16	5PQ000935
3	Lock Washer, 7/16	5PQ000830
4	Flange Bearing, 1"	5PQ700053
5	Flatwasher, 7/16	5PQ001045
6	Bolt, 7/16 x 1-3/4	5PQ000362
7	Jack Shaft	5PQ902013
8	Key, 1/4 x 1-1/2	5PQ902017
9	Pulley Bushing	5PQ900204
10	Pulley	5PQ900203
11	Eye Bolt, 3/8 x 3-1/4	5PQ902001
12	Idler Pulley Spring	5PQ900206
13	Idler Arm	5PQ902011
14	Idler Spacer	5PQ902012
15	Idler Pulley	5PQ900205
16	Locknut, 5/8	5PQ000972
17	Base	5PQ902002

Ref#	Description	Part#
18	Bolt, 5/8 x 4-1/2	5PQ000645
19	Flatwasher, 5/8	5PQ001075
20	PTO Guard	5PQ900857
21	Hitch Pin	5PQ903143
22	Rubber Latch	5PQ400092
23	Flatwasher, 5/16	5PQ001030
24	Locknut, 5/16	5PQ002999
25	Lift Arm Pin w/ LockWasher & Nut	5PQ900110
26	Lock Washer, 7/8	N/A
27	Nut, 7/8	N/A
28	Lynch Pin	5PQ500219
29	Quick Hitch Bushing, 1" OD	5PQ903145
30	Quick Hitch Bushing, 1.25" OD	5PQ903146
31	PTO Shaft Cradle	5PQ900862
32	Complete PTO Shaft	5PQ250000
33	Owner's Manual Canister	5PQ503050
33a	Operator's Parts Manual	5PQ990101

WC1103 Rotor Assembly

Ref#	Description	Part#
1	Upper Rotor Housing	5PQ902004
2	Rotor Assembly	5PQ902009
3	Bearing Bracket	5PQ902008
4	Flange Bearing, 1-1/2"	5PQ900127
5	Belt, B-58	5PQ900109
6	Pulley	5PQ900201
7	Pulley Bushing w/ Bolts	5PQ900202
8	Nut, 1/2	5PQ000940
9	Lock Washer, 1/2	5PQ000840
10	Bolt, 1/2 x 1-3/4	5PQ000445
11	Steel Locknut, 3/8	5PQ900134
12	Steel Locknut, 1/2	5PQ900144
13	Rotor Paddle	5PQ902010
14	Lower Rotor Housing	5PQ902003
15	Bolt, 1/2 x 1-1/2	5PQ000435
16	Flatwasher, 1/2	5PQ001055
17	Lock Washer, 1/2	5PQ000840
18	Nut, 1/2	5PQ000940
19	Hopper Lid	5PQ902006
20	Cotter Pin, 1/8 x 1	5PQ001210
21	Hinge Pin	5PQ401523
22	Bolt, 1/2 x 1-1/2	5PQ000435
23	Rotor Shaft Cover	5PQ900859
24	Recessed Head Bolt, 3/8 x 1-3/4	5PQ900129
25	Chipper Knife	5PQ900106
26	Bolt, 1/2 x 1-1/4	5PQ000420
27	Steel Locknut, 1/2	5PQ900144
28	Nut, 3/8	5PQ000915
29	Lock Washer, 3/8	5PQ000820
30	Flatwasher, 3/8	5PQ001035
31	Bolt, 3/8 x 1	5PQ000270
32	Chip Chute	5PQ902007
33	Knife Bolt Washer	5PQ902106
34	Anvil	5PQ902244
35	Anvil Adjuster	5PQ902246





Ref#	Description	Part#
1	Frontier Equipment Decal	5PQ903110
2	WC1103 Decal	5PQ903109
3	Warning, do not place hands	5PQ903100
4	Warning, crush/pinch hazard	5PQ903105
5	Warning, thrown objects	5PQ903106
6	Warning, do not ride	5PQ903104
7	Caution, general information	5PQ903103
8	Caution, 540rpm PTO	5PQ903107
9	Danger, PTO entanglement	5PQ903102
10	Danger, do not remove shields	5PQ903101
	Complete Decal Kit	5PQ903099
	French Decal/OM Conversion Kit	5PQ903177

