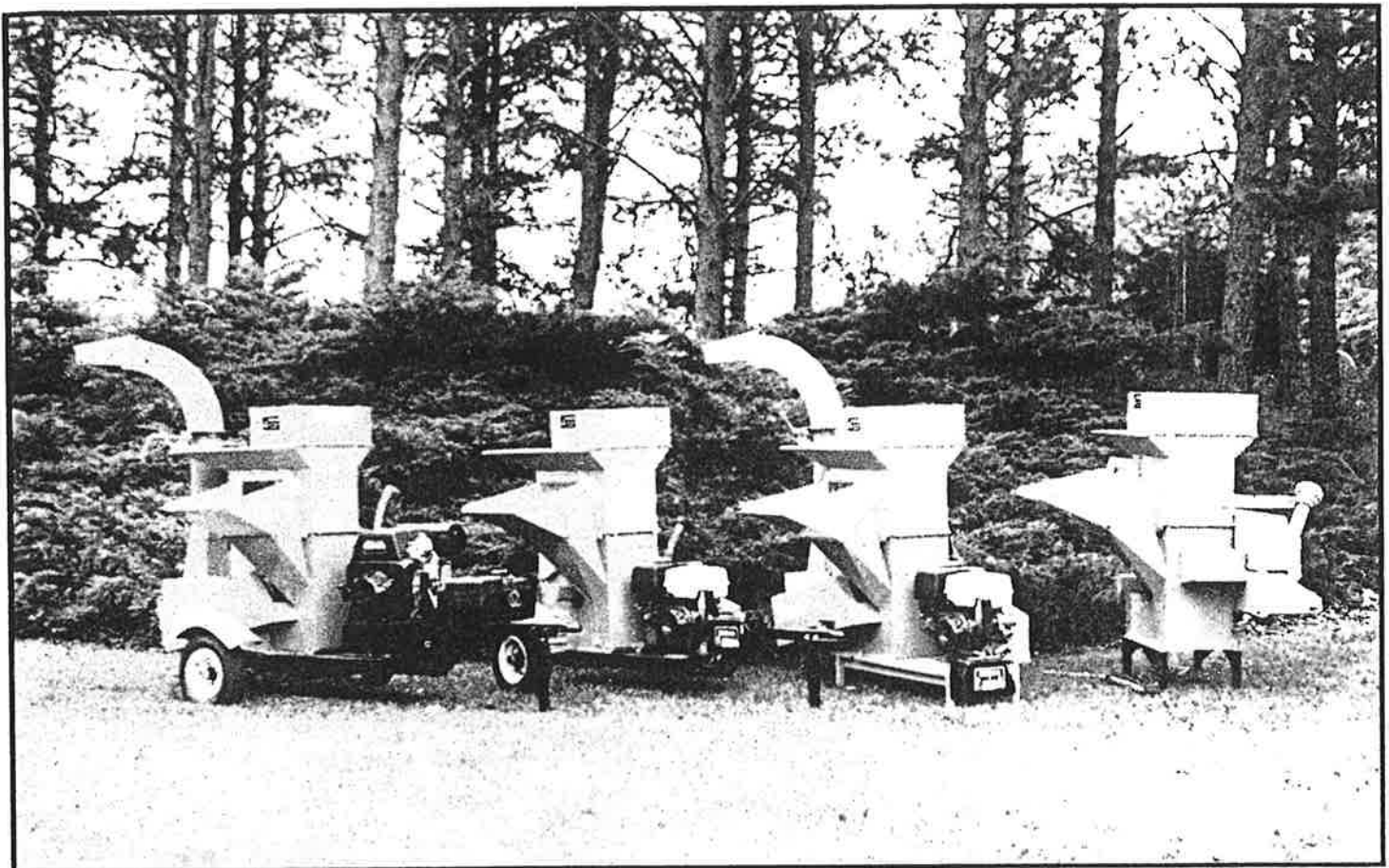


Goossen

INDUSTRIES

Operator's Manual

Chipper/Shredder



Copyright ©1992 Goossen Industries

Table of Contents

WARRANTY	1
SAFETY INSTRUCTIONS AND WARNINGS	3
CONTROL IDENTIFICATION	
CS-1 PTO Model.....	5
CSG-1 13 hp. Self-powered Model	6
CSG-3 18 hp. Self-powered Model	6
ASSEMBLY	
CS-1 PTO Model.....	7
CSG-1 13 hp. Self-powered Model	7
CSG-3 18 hp. Self-powered Model	7
OPERATION	
CS-1 PTO Model.....	9
CSG-1 13 hp. Self-powered Model	9
CSG-3 18 hp. Self-powered Model	9
ADJUSTMENTS	
Belt Tension	11
SERVICE	
Break-in.....	12
Lubrication.....	12
Knife Replacement.....	12 & 27
Storage.....	27-28
CS-1 PTO MODEL	
Parts List	13
Parts Diagram	14-15
CSG-1 13 HP. SELF-POWERED MODEL	
Parts List	16
Parts Diagram	17-18
CSG-3 18 HP. SELF-POWERED MODEL	
Parts List	19
Parts Diagram	20-21
CSG-1 13 HP. SELF-POWERED MODEL (DELUXE TRAILER)	
Parts List	22
Parts Diagram	23-24
BLOWER ATTACHMENT	
Parts List	25
Parts Diagram	26
BLADE ASSEMBLY DIAGRAM	27
TROUBLESHOOTING	
Belts	29
Cutting and Discharge.....	29
Engine.....	29

Standard Torque Chart

Size	In. Lbs.	Ft. Lbs.	N-m
No. 10-24	25-35	5-7	2, 8-4, 0
1/4 in.	60-80	18-20	7-9
5/16 in.	120-140	28-30	14-16
3/8 in.	340-360	64-74	24-27
1/2 in.		126-150	90-100

NOTE: When tightening two or more screws on the same part, **DO NOT** tighten screws completely right away, or one at a time. To avoid distortion, first tighten all screws in sequence to one-third of torque value, then tighten to two-thirds of torque value, then tighten to full value.

Safety Section



SAFETY WARNING!

- Use genuine factory parts or parts with equivalent characteristics, including type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or others.
- Replace locknuts and locking screws if you can tighten them without feeling considerable resistance for several turns before they are completely tight. Replace them with factory authorized parts or their equivalent.
- If hardware is not secure, or if some of the hardware is overtightened, equipment failure may result, posing possible safety hazards.
- To prevent possible eye injury, always wear SAFETY GLASSES while servicing the equipment.

Gasoline

- Gasoline is extremely flammable and can be highly explosive. To minimize the danger:
 - Always use an approved container for gasoline.
 - Do not allow open flames or sparks while performing maintenance or refueling.
 - Never remove the fuel tank cap or add gasoline when the engine is running or while it is hot.
 - Never fill the fuel tank indoors (fumes can collect).
 - Wipe up spilled gasoline immediately and completely.
 - Do not store gasoline in a room with an appliance that has a pilot light to where electrical appliances or switches may cause sparks. Always store gasoline outside in a safety can (a can which has a flame arrestor and pressure relief valve in pour spout).
- Gasoline fumes are heavy and will sink to the lowest point, collecting and becoming more and more hazardous. 1 part gasoline in 20 parts air will explode easily and violently.

- Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
- Be certain to provide adequate ventilation if an engine must be run indoors — exhaust fumes are dangerous.

Guards & Shields

- Keep the equipment and attachments in good operating condition, and keep all safety devices in place. Replace all worn, damaged, unusable, missing or lost safety shields and guards before operating the equipment.

Safety Decals

- If safety related or instructional decals become illegible or are removed, replace them immediately. If you replace parts that have such decals attached to them, make sure the decals are replaced with current versions, and that the decals are on the replacement parts before the machine is operated again. New decals may be obtained from your local Goossen Dealer.

Equipment & Controls

- Altering this equipment in any manner which adversely affects its operation, performance, durability, or use will void the warranty and may cause hazardous conditions.
- Know the location and function of all controls and how to stop this equipment quickly in an emergency before you operate the equipment. **READ AND UNDERSTAND THE OWNER'S MANUAL.**
- Keep all nuts, bolts and screws tight to help ensure safe operation of this equipment.

Battery

- The battery, on Chipper/Shredders with electric start, can produce explosive gases. Ventilate when charging or using in an enclosed space. **DO NOT** produce sparks from cable clamps, tools, or other sources; and **DO NOT** allow flames or smoking in the vicinity of the battery. Shield eyes when working near the battery, and always keep the vent caps tight and level.



SAFETY WARNING!

Before Operation

- Before operating this equipment, read and understand the Owner's Manual.
- Do not allow children to operate this machine.
- Never operate this machine in the vicinity of bystanders.
- Before servicing or inspecting the machine, make certain that the power source is shut down, make certain all moving parts have stopped and disconnect the spark plug or PTO shaft.
- Never allow hands, clothing or any part of the body to enter the discharge chute, feed chamber or near moving parts.
- Exhaust gas contains poisonous carbon monoxide. Avoid inhalation of exhaust gases. Never run the engine in an enclosed area.
- Allow the engine to cool sufficiently before adding gasoline. DO NOT allow smoking, sparks, or flames in the vicinity when adding gasoline.
- Avoid wearing loose-fitting clothing.
- Wear approved eye and ear protection while operating the machine. One pair of safety goggles are provided with each Chipper/Shredder.
- The machine should be operated on level surfaces only.
- Never operate the Chipper/Shredder on hard surfaces such as concrete or paved areas. Operating in those areas may cause increased vibration which may attribute to premature wear or loosening of fasteners. Operating on a hard surface may also produce bounce back of discharged material, which can present a hazard to the operator.
- Before starting the machine, visually inspect all nuts, bolts and other fasteners to see that they are properly secured. Nuts, bolts and other fasteners should be checked every 8 to 10 hours of operation for proper alignment and tightness.

Operation

- When placing shreddable material into the machine, make certain there are no foreign materials such as rocks, cans, bottles or other hard materials included.
- If a foreign object should strike the cutting mechanism of the machine and cause an unusual noise or vibration, shut the engine or PTO off immediately and allow it to come to a complete stop. Disconnect the spark plug wire from the spark plug, or PTO from the power unit, and then do the following:
 1. Inspect for damage.
 2. Repair or replace any damaged parts.
 3. Check for and tighten any loose bolts, nuts, fasteners or parts.
- Keep processed material from building up in the discharge area, as this may prohibit proper discharge of processed material and can cause a backfeed of material through the feed opening.
- Keep the engine area clean from debris and other accumulations.
- Keep all safety shields and guards in place and in good working condition.
- Keep your face and all body parts away from feed openings.
- Stay away from the discharge area when machine is in operation.
- Always keep proper balance and footing, never overreach.
- Never attempt to move or transport machine while engine or machine is still operating.
- Engine governor settings are preset and should not be changed; any change can damage moving parts.
- If the Chipper/Shredder should become clogged, shut off the engine or PTO and allow it to come to a complete stop. Disconnect the spark plug wire from the spark plug or PTO shaft before clearing debris.
- Don't allow hands, clothing or any part of the body to enter the discharge chute, feed chamber or near any moving parts.
- Replace damaged or missing safety decals.

Additional Safety Instructions for Chipper/Shredders

PTO Models

- Never operate the PTO unit when tractor is moving. Machine should only be operating when setting level on ground surface.
- To move the unit, shut the PTO off. Lift the 3-point hitch, and then move to the area you want.
- Keep hands, feet and clothing away from PTO driven parts.
- Keep all guards and shields in place during operation. Disengage PTO and shut off the engine before removing guards or shields.
- Never attempt to adjust, clean or lubricate the machine while it is in operation.
- Operator should never wear loose clothing when working around PTO.
- Before starting tractor, make sure that the transmission and PTO are disengaged.



SAFETY WARNING!

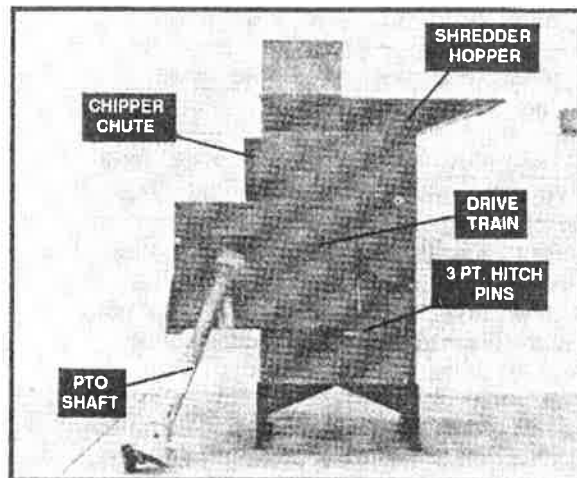
Recommended tractor PTO H.P. is 18 H.P. to 30 H.P. Use of tractors above 30 H.P. may cause belt damage.

Self-Powered Models

- Towable model requires an 2" ball. Make sure bolts holding tongue are secure and always use a safety chain.
- When towing, always have the jack in transport position.
- Tire pressure should be 60 psi. Make sure all wheel lug nuts are tight.

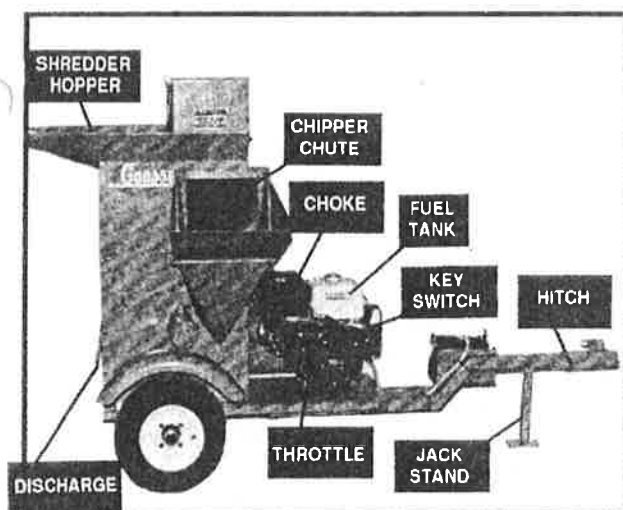
Control Identification

CS-1 PTO Model



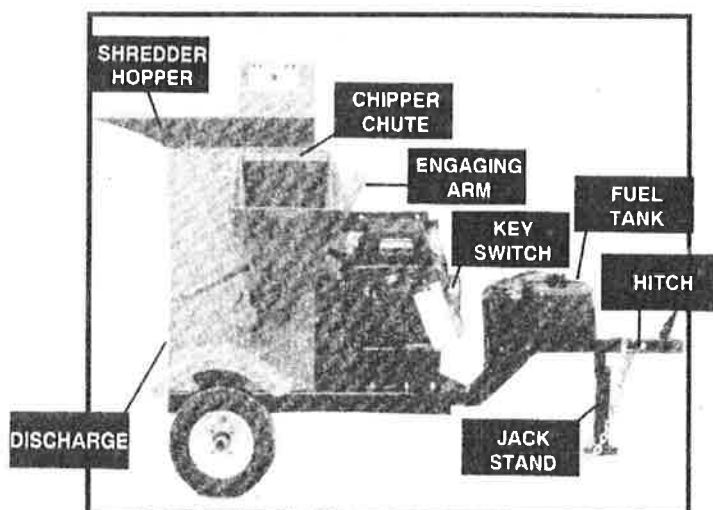
1. PTO Shaft — Transfers power from the tractor to the Chipper/Shredder. Make sure up or down angle of PTO shaft does not exceed 15 degrees.
2. 3-Point Hitch Pins — Mount the Chipper/Shredder to the 3-Point Hitch of the tractor.
3. Drive Sheaves, Belts, Bearings and Shields — All sheaves, belts and bearings are driven by the PTO. Never operate the Chipper/Shredder without the shields in place.
4. Chipper Chute — Materials that are to be chipped are fed into the chipper chute.
5. Shredder Hopper — Materials that are to be shredded are fed into the shredder hopper.
6. Jack Shaft — Is driven directly off the PTO shaft and is used to adjust tension for drive belts. (Located opposite PTO shaft shown above.)

CSG-1 13 hp. Self-Powered Model



1. Engine Throttle Lever — The throttle lever controls engine speed and ranges from full throttle operation to low idle for warm up operation.
2. Engine Choke Lever — The choke lever is used in cold starting situations. Refer to engine manual for starting instructions.
3. Key Switch — Is used for activating the starter switch.
4. Fuel Tank — Is located on top of the engine. Refer to the engine manual for fuel recommendations and capacity.
5. Drive Sheaves, Belts, Bearings and Shields — Are driven from the engine, never operate the Chipper/Shredder without the shields in place. (Not shown in above photo, but are located on opposite side.)
6. Trailer Hitch — Tow unit with a 2" ball only. Always use a safety chain.
7. Jack Stand — Should always be in the up position when transporting. When operating the Chipper/Shredder it should be down and locked.
8. Chipper Chute — Materials that are to be chipped are fed into the chipper chute.
9. Shredder Hopper — Materials that are to be shredded are fed into the shredder hopper.
10. Discharge — Is the area where chipped and shredded material are discharged through a specific grate.

CSG-3 18 hp. Self-Powered Model



1. Engine Throttle Lever — The throttle lever controls engine speed and ranges from full throttle operation to low idle for warm up operation.
2. Engine Choke Lever — The choke lever is used in cold starting situations. Refer to engine manual for starting instructions.
3. Key Switch — Is used for activating the starter switch.
4. Fuel Tank — Is located on the hitch and has a 3-gal. capacity. Refer to engine manual for fuel recommendations.
5. Drive Sheaves, Belts, Bearings and Shields — Are driven from the engine, never operate the Chipper/Shredder without the shields in place. (Not shown in above photo, but are located on opposite side.)
6. Trailer Hitch — Tow unit with a 2" ball only. Always use a safety chain.
7. Jack Stand — Should always be in the up position when transporting. When operating the Chipper/Shredder it should be down and locked.
8. Chipper Chute — Materials that are to be chipped are fed into the chipper chute.
9. Shredder Hopper — Materials that are to be shredded are fed into the shredder hopper.
10. Discharge — Is the area where chipped and shredded material are discharged through a specific grate.

Assembly

CS-1 PTO Model

1. Remove from crate.
2. Mount feet onto machine base using hardware bag #1.
3. Connect PTO shaft to input shaft of machine, tighten set screws on shaft.
4. Mount 3-point pins on Chipper/Shredder.
5. Mount Chipper/Shredder to 3-point of tractor and connect PTO shaft.



SAFETY WARNING!

1. Keep pants and loose clothing away from PTO drive and shaft and all drive pulleys, belts and shafts.
2. Never operate the Chipper/Shredder beyond the suggested 540 PTO speed.
3. Do not attempt to service machine while it is in operation.

CSG-1 13 hp. Self-powered Model

CSG-3 18 hp. Self-powered Model

1. Remove from crate.
2. Mount tires and rims onto spindles.
3. Install trailer tongue to trailer using hardware from Bag #1.
4. Mount 12 volt battery onto box on trailer tongue and connect cables.

PLEASE NOTE: The battery is shipped without electrolyte. Therefore, the battery must be filled with sulfuric acid electrolyte before the Chipper/Shredder can be operated.



SAFETY WARNING!

Battery electrolyte can cause severe burns if handled improperly. Observe all poison/danger warnings on electrolyte cartons and on the battery. Wear splash-proof goggles and protective clothing when adding electrolyte to batteries. Avoid contact of electrolyte with skin, eyes, or clothing. **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.** If electrolyte is spilled or splashed on the body, **IMMEDIATELY FLUSH WITH WATER;** if electrolyte comes into contact with the eyes, **FLUSH WITH WATER FOR 15 MINUTES AND GET PROMPT MEDICAL ATTENTION;** if electrolyte is taken internally, **DRINK LARGE QUANTITIES OF WATER OR MILK, FOLLOWED WITH MILK OF MAGNESIA, BEATEN EGGS, OR VEGETABLE OIL.**

To fill the battery with electrolyte:

1. Place the battery on a level surface and remove the vent caps. If the battery has thin plastic shields in the cell openings, remove and discard them.
2. Fill the battery with battery grade sulfuric acid to just above the separators. **DO NOT OVERFILL.**
3. Reinstall the vent caps, then charge the battery as instructed below. **AFTER** charging, check the acid level, and fill to the bottom of the vent well openings. **DO NOT OVERFILL!**

Charging the battery:



SAFETY WARNING!

The battery can produce explosive gases. Ventilate when charging or using in an enclosed space. **DO NOT** produce sparks from cable clamps, tools or other sources; and **DO NOT** allow flames or smoking in the vicinity of the battery. Shield eyes when working near the battery, and always keep the vent caps tight and level.

Make sure the vent caps included with the battery are installed.

2. Connect the battery to the charger according to the charge manufacturer's instructions and charge at 10 amperes for 50 minutes; or 2-9 amperes for 2 hours (depending on the capabilities of the charger).

Installing the battery:

1. Make sure the cable terminals and any hard hold-down wires are clean. If the battery is a replacement and the connectors and hold-down have been used before, clean them with a wire brush.
2. Place the battery in the box with the terminals on the side nearest the tongue, and secure the battery in position with hold-downs provided.
3. Connect the cables to the proper terminals, connecting the **UNGROUND**ED cable first. Do not overtighten. Apply a commercial battery anti-corrosion material or petroleum jelly to the terminals to minimize corrosion.

Gasoline:



SAFETY WARNING!

Gasoline is extremely flammable and can be highly explosive. To minimize the danger:

- Always use an approved container for gasoline.
- Do not allow open flames or sparks while performing maintenance or refueling.
- Never remove the fuel tank cap or add gasoline when the engine is running or hot.
- Refer to Engine manual for additional information on gasoline.

CSB1000 Blower Installation:

1. Remove blower and directional spout from boxes.
2. Remove rear shaft guard and safety door from Chipper.
3. Mount blower attachment to Chipper using safety door hinge pin, secure blower to unit using 4 - 5/16" x 3/4" bolts and 5/16" nylock nuts.
4. Install belt shield mount tab on top bolt of bearing using 1/2" lock nut.
5. Mount drive pulley on drum shaft. Align pulleys and tighten to 17 ft. lbs. Mount belt on unit routing idler in center of belt. Install belt shield using 5/16" bolts and flat washers.
6. Mount lower directional spout to blower using 5/16" bolts and flat washers.
7. Mount upper directional spout to lower using 5/16" x 3/4" bolts, 5/16" lock nuts and bearings. Make sure that 1/4" washer is placed between bearing and mount tab.
8. Mount crank assembly to mount tab using 2 3/8" x 1" carriage bolts and 3/8" nylock nuts. Place 2 3/8" flat washers under each bolt location to shim up crank assy. NOTE: This may vary due to required clearance for crank.
9. Mount deflector spout to upper spout using 2 5/16" x 3/4" truss head bolts. A 5/16" washer is used for a spacer between deflector and spout.

Operation

CS-1 PTO Model

CSG-1 13 hp. Self-Powered Model

CSG-3 18 hp. Self-Powered Model



SAFETY WARNING!

- Wear approved eye and ear protection while operating the Chipper/Shredder.
- Keep all guards in place during operation. Never operate the Chipper/Shredder with safety shields removed.
- Before operating the machine, check to ensure that all belt guides and snubbers are in place to prevent belts from slipping off the pulleys and systems from being accidentally engaged.
- Check feed housings for children, pets and foreign objects before operating.
- Keep clothing and all body parts away from rotating parts.
- Periodically clean chopped material away from engines to lessen the possibility of fire. Always keep a fire extinguisher near the Chipper/Shredder during operation.

Note: On initial operation of the Chipper/Shredder, the belts may shrink and need readjustment after the first hour of use. When readjusting belt tension, use a straightedge across the faces of pulleys to make sure they are properly aligned and the belts will run true.

PTO Model

A set of belts between the PTO shaft and the drum shaft assembly drive the cutting blades whenever the PTO driveshaft is turning.



SAFETY WARNING!

Cutting blade rotation cannot be controlled from the Chipper/Shredder.

To begin operation:



SAFETY WARNING!

Obtain and wear safety glasses when operating this machine. Do not wear loose fitting clothing. Operator should always wear heavy duty gloves, boots, and other articles of clothing. A safe operator is one who practices safety and uses good common sense to protect himself from sharp objects and branches.

Move the Chipper/Shredder to a clear level area outdoors before operating. Do not operate on uneven, paved or other hard surfaced areas. Do not operate in the vicinity of bystanders.

1. Mount PTO Chipper/Shredder to 3-point of tractor and connect PTO shaft to tractor output shaft.
2. Adjust center link on tractor so that the Chipper/Shredder is setting level at the ground surface.
3. If it is necessary to inspect or work on the Chipper/Shredder, always disengage the PTO and shut off the tractor engine before doing so.

Self-powered Models



SAFETY WARNING!

The Chipper/Shredder rotor may continue to rotate after the engagement lever has been disengaged. Never attempt to make adjustments or repairs until the engine has been shut off, machine has come to a complete stop, and spark plug has been removed.

To begin operation:



SAFETY WARNING!

Move the Chipper/Shredder to a clear level area outdoors before operating. Do not operate on uneven, paved or other hard surfaced areas. Do not operate in the vicinity of bystanders.

1. Obtain and wear safety goggles before operating the Chipper/Shredder.
2. Check feed housings for children, pets and foreign objects before operating.



SAFETY WARNING!

Gasoline is highly flammable and can be highly explosive. To minimize danger:

- Always use an approved container for gasoline.
 - Never fill the fuel tank indoors (fumes can collect).
 - Never remove the fuel tank cap or add gasoline when the engine is running or while it is hot.
3. Before operating fill the tank with gasoline. (Refer to engine manual for further information.)
 4. Open throttle to half way and place the choke lever to the full open position.
 5. Turn the key switch to the start position and release as soon as the engine starts. **DO NOT TURN THE START OVER FOR MORE THAN 10 SECONDS.**
 6. Once the engine is running, gradually move the choke lever to the off position, and allow the engine to warm up before opening the throttle to full speed.
 7. When restarting a warm engine, it should not be necessary to use the choke lever. If choking is necessary, open the lever only halfway. (Refer to engine manual for more information.)



SAFETY WARNING!

To avoid personal injury, always keep face and body parts away from feed openings. Never over-reach and keep proper footing and balance.

Chipping

1. Select limbs that are up to 5 inches in diameter; trim branches that will not fit into the chipper chute. Smaller branches can be bunched and ran through together.



2. Place limb, butt end first, into the chipper chute until it touches the chipper knives. (See figure.) The feed rate of the limb into the chipper depends on the material and sharpness of the chipper knives. The operator can feed the limb by alternately inserting and retracting the limb or continuously feeding it, so long as it doesn't kill the engine or the tractor. By rotating the limb you can improve the cutting action of the chipper. The chipping knives will become dull at varying times depending on the wood material used. Periodic sharpening of knives will be required. Refer to the service section for sharpening instructions.

Shredding



SAFETY WARNING!

To avoid entanglement with material going into the shredder hopper it is suggested to use a throwing motion when feeding material.

Material such as grass, leaves, garden refuse, and branches up to 1" in diameter and 36" long can be fed into the shredder hopper. Use a leaf tamper, branch or similar object to push light material into shredding chamber. Feed material at an even pace to avoid plugging or lugging of the Chipper/Shredder. If the shredder should become plugged, refer to the service section of the manual before clearing plugged material. Branches or material that cause plugging or slow operation should be fed at a slower pace to avoid plugging.

Stopping Operation



SAFETY WARNING!

Never leave this machine unattended, or attempt any service or inspection unless the machine has come to a complete stop, the engine has been shut off, and the spark plug has been disconnected. On PTO units, make sure the PTO and the tractor engine has been shut off and the machine has come to a complete stop.

To stop operation, proceed as follows:

On Self-powered Models:

Move the throttle lever to the slow position and disengage manual engage lever. Shut off the engine and allow the machine to come to a complete stop. Remove the spark plug wire from the spark plug.

On PTO Models:

Move throttle on tractor to the slow position and disengage the PTO lever on the tractor. Shut off the tractor engine and allow the machine to come to a complete stop.



SAFETY WARNING!

The cutting rotor is heavy and will continue to turn even though the operator has shut off the power source. Do not attempt to service or inspect the machine until you see that the shafts have stopped turning and that there is no noise coming from the machine. If the operator wants to slow the machine faster, he can do so by inserting a limb into the chipper chute so that it contacts the knives and slows the machine down.

Adjustments

Belt Tension Adjustment

Check the condition of drive belts before each use or after every 25 hours of operation.

Note: Use only industrial V-belts. Do not use automotive belts.

Note: Do not overtighten belts. Excessive tension can cause premature bearing and belt failure.

Note: Use a straightedge to check alignment across the faces of pulleys after adjusting belt tension to ensure that the belts will run true.

PTO Model

To replace or readjust the belt you must:

1. Make certain that PTO shaft is removed from power source and unmounted from 3-point of tractor.
2. Disconnect PTO shaft from Chipper/Shredder and remove belt guards.
3. Loosen bolts that mount the jack shaft pillow block and move the shaft towards the frame.
4. Remove the belt. Inspect or replace with a new belt.
5. Move the shaft in the opposite direction to tighten the belt and check to see that there is no more than 1/4" up and down play in the belt.
6. Snug two bolts and check pulley alignment with a straightedge. If they are not in line, loosen one bolt and adjust. Tighten all bearing bolts when alignment is achieved.



SAFETY WARNING!

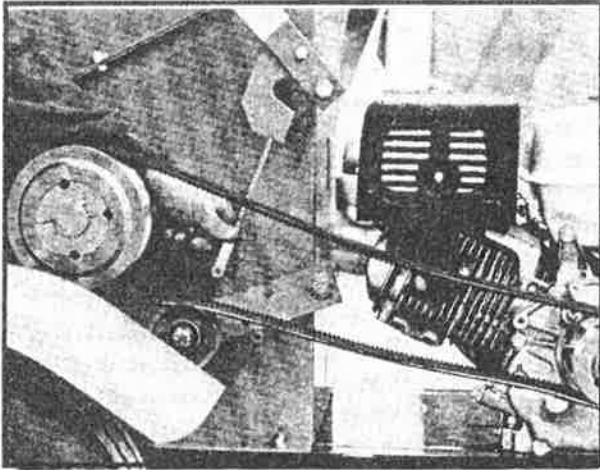
Never operate Chipper/Shredder without ALL GUARDS in place.

Self-powered Models



SAFETY WARNING!

Before working on this machine, disconnect spark plug wire from the spark plug and remove the positive wire from the battery.



Fine tension adjustment can be attained by adjusting as follows: (See figure.)

1. Remove belt shield.
2. Located below the manual engage lever is a turnbuckle. Remove the cotter pin and turnbuckle pin.
3. Turn the turnbuckle in which ever direction you need to acquire proper belt tension.
4. Replace turnbuckle pin and cotter pin and recheck adjustment. If necessary, readjust.
5. Replace belt shield.

If adjustment requires more than what is available at the turnbuckle, then do the following:

1. Loosen the four 3/8" x 1 1/2" bolts holding the engine.
2. Remove the belt and inspect or replace it.
3. Reinstall belt and draw engine back until there is 1/4" up and down play in the belt. Use a straightedge and check for proper alignment.
4. Tighten four engine bolts and replace safety shield.

Service & Maintenance



SAFETY WARNING!

Before servicing or inspecting the Chipper/Shredder, make sure the power source is shut off and all moving parts have stopped. Disconnect the spark plug wire from the spark plug on self-powered units. On PTO units disconnect the PTO shaft from the tractor. Always wear safety glasses and protective gloves when service the Chipper/Shredder.

Break-in Service

After the first hour of use:

1. Check belts. Retension if needed.
2. Tighten set screws on bearings.
3. Check nuts, bolts and fasteners to see that they are secure.

Lubrication

Lubricate grease fittings on Self-powered and PTO powered units after every 50 hours of use. There are two fittings on the drum shaft for both units and there are 2 fittings on the jack shaft and PTO shaft for the PTO model.

Knife Replacement



SAFETY WARNING!

- Wear protective gloves whenever handling blades or working near them.
- Knives and their retaining hardware rotate at high speed. It is essential that they be mounted securely to prevent accidents from flying metal. Mount the knives only with Grade 5 bolts and locknuts treated with Loctite® (or equivalent). Tighten to torque specified in the Torque Specification Section.

(Continued on page 27)

Goossen Chipper/Shredder

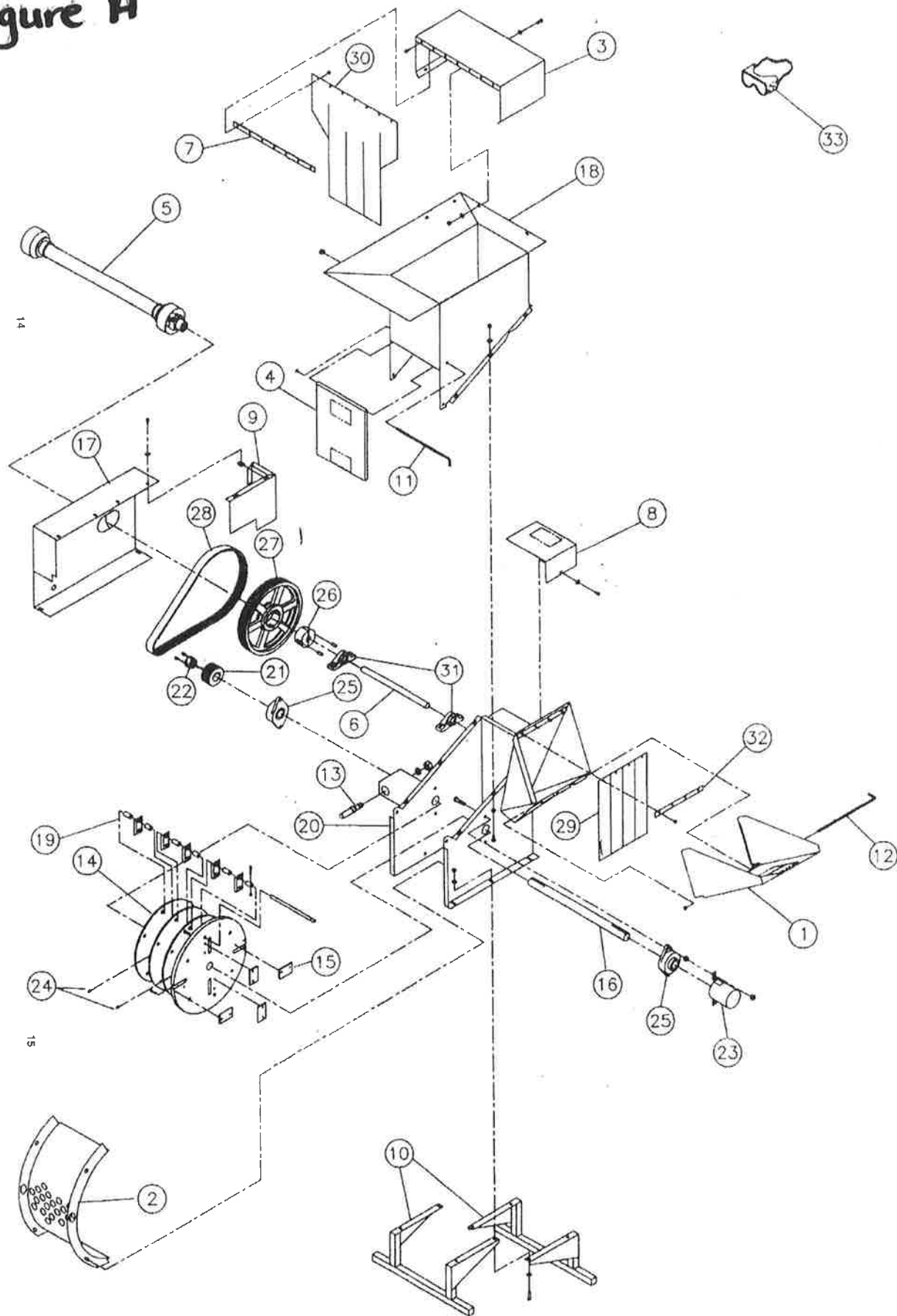
Figure A

CS1000PTO Chipper/Shredder

Parts Identification

Drawing #	Part #	Description	Quantity	Drawing #	Part #	Description	Quantity
1	CS-102-00	Spout Door.....	1	20	PCS-200-00	PTO Lower Half Mainframe	1
2	CS-240-00	1 1/2" Grate	1	21	CSP-105-00	PTO Drum Sheave	1
3	CS-104-00	Tub Cover	1	22	CSP-106-00	PTO Drum Sheave Taperlock.....	1
4	CS-105-00	Discharge Door.....	1	23	CS-136-00	Rear Shaft Guard.....	1
5	PB-125-00	PTO Shaft	1	24	CSP-123-00	Rotor Shaft Roll Pin.....	2
6	CS-123-00	Jack Shaft.....	1	25	CSP-104-00	SVX-2 Bolt Flange Bearing.....	2
7	CS-108-00	Long Flap Mount.....	1	26	PB-204-00	2517 X 1" Taperlock	1
8	CS-113-00	PTO Jack Shaft Guard.....	1	27	PB-202-00	PTO Drive Sheave	1
9	CS-114-00	PTO Belt Shield Back	1	28	CSP-107-00	PTO Drive Belt.....	1
10	CS-132-00	PTO Leg Stand	2	29	CSP-113-00	Chipper Intake Spout Skirt.....	1
11	CS-115-00	Rear Door Hinge Pin.....	1	30	CSP-112-00	Tub Skirt	1
12	CS-116-00	Spout Door Hinge Pin.....	1	31	PB-105-00	Pillow Block Bearing	2
13	PF-214-00	Three Point Pin.....	2	32	CS-100-09	Short Flap Mount	1
14	CS-120-00	Rotor Assembly	1	33	CSP-114-00	Safety Goggles	1
15	CS-121-00	Chipper Knife	4				
16	CS-122-00	Rotor Shaft	1				
17	CS-112-00	PTO Front Shield	1				
18	PCS-201-00	PTO Upper Half Mainframe	1				
19	CS-127-00	1.188" Spacer w/Hole	4				
	CS-128-00	1.188" Spacer	8				
	CS-129-00	.615" Spacer w/Hole.....	2				
	CS-130-00	.615" Spacer	10				
	CS-131-00	Knife Rod	6				
	CS-226-00	1.375" Spacer	18				
	CS-233-00	Shredder Knife.....	36				
	CSP-119-00	Knife Rod Bolt w/Nylock Nut.....	6				

Figure A



Goossen Chipper/Shredder

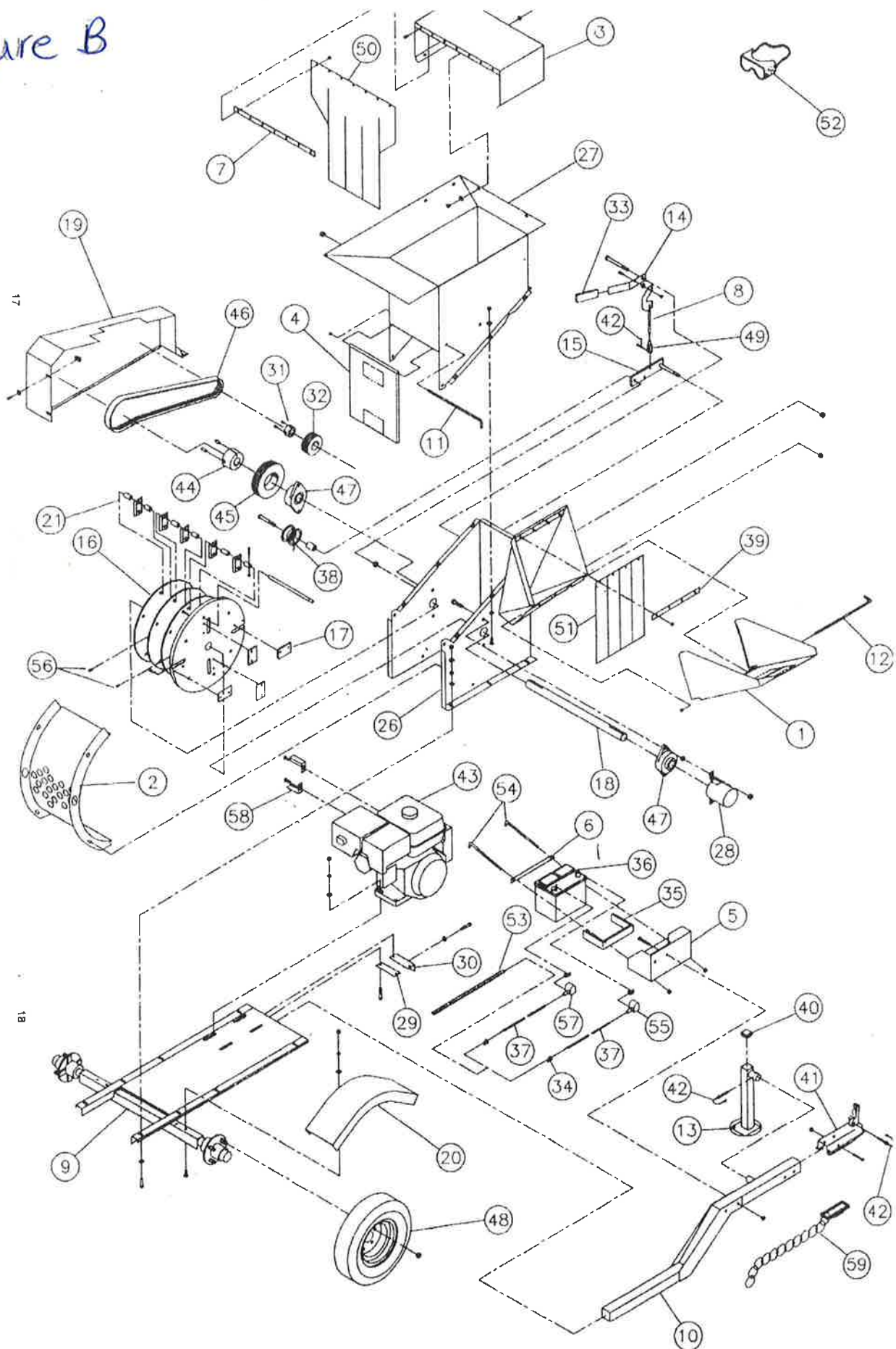
Figure B

CS5000 ESME Chipper/Shredder

Parts Identification

Drawing #	Part #	Description	Quantity	Drawing #	Part #	Description	Quantity
1	CS-102-00	Spout Door	1	30	CS-138-00	Motor Tensioner	1
2	CS-240-00	1 1/2" Grate	1	31	GB-204-00	Taperlock Bushing	1
3	CS-104-00	Tub Cover	1	32	GB-504-00	Gas Drive Sheave	1
4	CS-105-00	Discharge Door	1	33	GF-226-00	Engaging Handle Cover	1
5	CS-106-00	Gas Battery Case	1	34	GF-232-00	Battery Cable Terminal End	4
6	CS-107-00	Gas Battery Hold Down	1	35	GF-233-00	Battery Box Liner	1
7	CS-108-00	Long Flap Mount	1	36	GF-235-00	Battery	1
8	CS-109-00	Gas Engagement Link	1	37	GF-237-OR	Red Battery Cable	3 ft
9	CS-110-00	Gas Trailer	1		GF-237-OW	White Battery Cable	3 ft
10	CS-111-00	Gas Hitch	1	38	GF-251-00	Wide Idler Pulley	1
11	CS-115-00	Rear Door Hinge Pin	1	39	CS-100-09	Short Flap Mount	1
12	CS-116-00	Spout Door Hinge Pin	1	40	PF-224-00	Cap Plug	1
13	CS-117-00	Gas Jack Stand	1	41	VT-132-00	Ball Coupler	1
14	CS-118-00	Gas Engagement Handle	1	42	VT-251-00	Round Wire Lock Pin	2
15	CS-119-00	Gag Engagement Arm	1	43	CSP-100-00	13 hp. Honda Engine	1
16	CS-120-00	Rotor Assembly	1	44	CSP-102-00	Gas Drum Sheave Taperlock	1
17	CS-121-00	Chipper Knife	4	45	CSP-101-00	Gas Drum Sheave	1
18	CS-122-00	Rotor Shaft	1	46	CSP-103-00	Gas Drive Belt	1
19	CS-124-00	Gas Front Belt Shield	1	47	CSP-104-00	2-Bolt Flange Bearing	2
20	CS-125-00	Gas Fender	2	48	CSP-108-00	Gas Tire & Wheel Assembly	2
21	CS-127-00	1.188" Spacer w/Hole	4	49	CSP-111-00	Gas Manual Engage Clevis	1
	CS-128-00	1.188" Spacer	8	50	CSP-112-00	Tub Skirt	1
	CS-129-00	.615" Spacer w/Hole	2	51	CSP-113-00	Chipper Intake Spout Skirt	1
	CS-130-00	.615" Spacer	10	52	CSP-114-00	Safety Goggles	1
	CS-131-00	Knife Rod	6	53	CSP-125-00	Battery Cable Cover	1
	CS-226-00	1.375" Spacer	18	54	CSP-120-00	Battery Hold Down Bolt	2
	CS-233-00	Shredder Knife	36	55	CSP-124-OR	Right Battery Terminal Cover	1
	CSP-119-00	Knife Rod Bolt w/Nylock Nut	6	56	CSP-123-00	Rotor Shaft Roll Pin	2
26	GCS-200-00	Gas Lower Half Mainframe	1	57	CSP-124-OL	Left Battery Terminal Cover	1
27	GCS-201-00	Gas Upper Half Mainframe	1	58	GB-106-00	Belt Guide	2
28	CS-136-00	Rear Shaft Guard	1	59	CSP-145-00	Safety Chain	2
29	CS-137-00	Motor Mount Reinforcement Plate	1				

Figure B

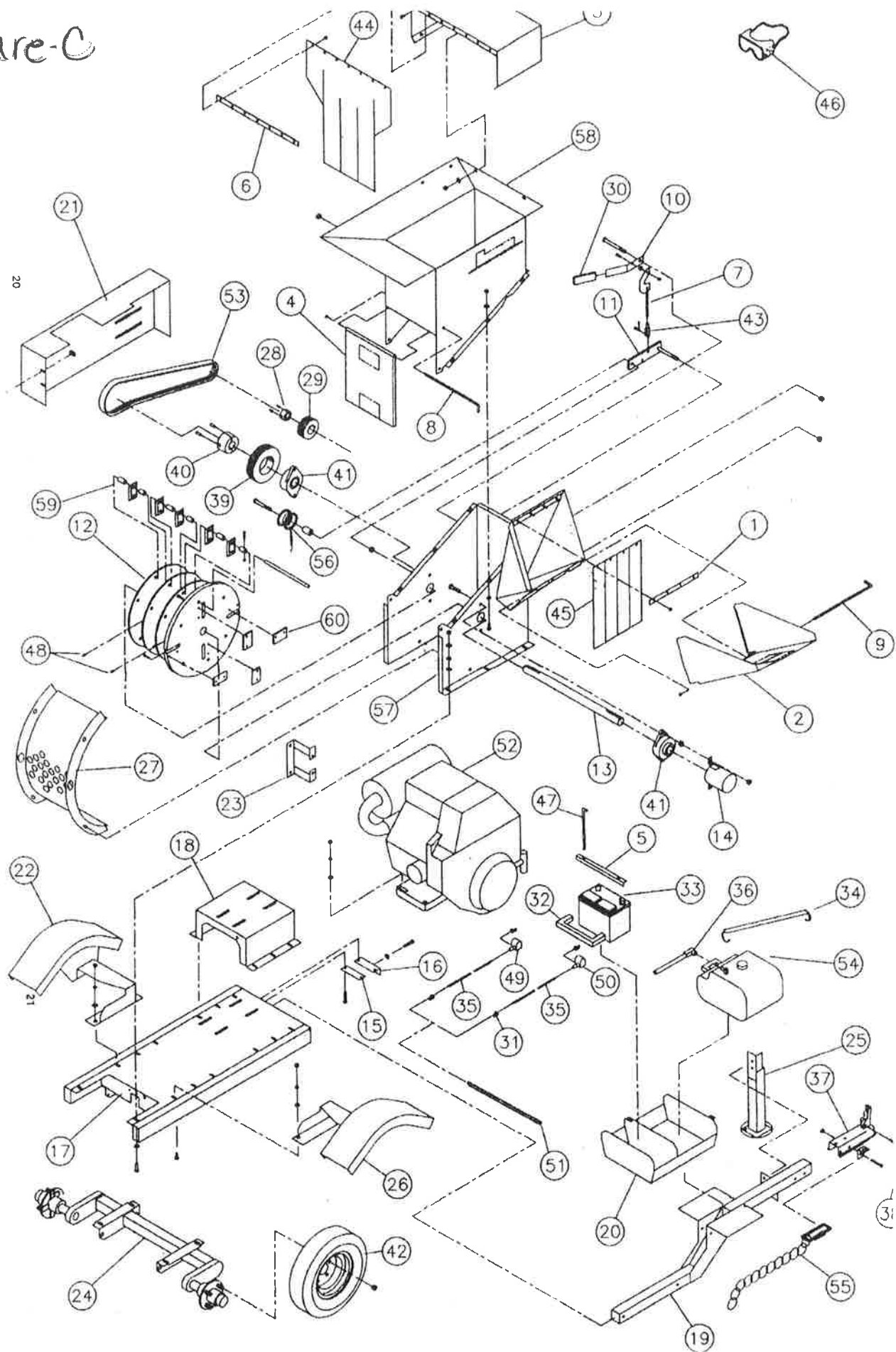


CS6000ESME Chipper/Shredder

Parts Identification

Drawing #	Part #	Description	Quantity	Drawing #	Part #	Description	Quantity
1	CS-100-09	Short Flap Mount.....	1	36	GF-570-00	Fuel Line Hose.....	5 ft
2	CS-102-00	Spout Door.....	1		GF-570-01	Fuel Line Hose Clamp.....	2
3	CS-104-00	Tub Cover.....	1		CSP-142-00	Female Fuel Fitting.....	1
4	CS-105-00	Discharge Door.....	1	37	VT-232-00	2" Ball Coupler.....	1
5	CS-107-00	Gas Battery Hold Down.....	1	38	VT-251-00	Round Wire Lock Pin.....	1
6	CS-108-00	Long Flap Mount.....	1	39	CSP-101-00	Gas Drum Sheave.....	1
7	CS-109-00	Gas Engagement Link.....	1	40	CSP-102-00	Gas Drum Sheave Taper Lock.....	1
8	CS-115-00	Rear Door Hinge Pin.....	1	41	CSP-104-00	2-Bolt Flange Bearing.....	2
9	CS-116-00	Spout Door Hinge Pin.....	1	42	CSP-108-00	Wheel & Tire Assembly.....	2
10	CS-118-00	Gas Engagement Handle.....	1	43	CSP-111-00	Manual Engage Clevis.....	1
11	CS-119-00	Gas Engagement Arm.....	1	44	CSP-112-00	Tub Skirt.....	1
12	CS-120-00	Rotor Assembly.....	1	45	CSP-113-00	Chipper Intake Spout Skirt.....	1
13	CS-122-00	Rotor Shaft.....	1	46	CSP-114-00	Safety Goggles.....	1
14	CS-136-00	Rear Shaft Guard.....	1	47	CSP-120-00	Battery Hold Down Bolt.....	2
15	CS-137-00	Motor Mount Reinforcement Plate.....	1	48	CSP-123-00	Rotor Shaft Roll Pin.....	2
16	CS-138-00	Motor Tensioner.....	1	49	CSP-124-OL	Left Battery Terminal Cover.....	1
17	CS-147-00	Trailer.....	1	50	CSP-125-OR	Right Battery Terminal Cover.....	1
18	CS-148-00	Motor Mount.....	1	51	CSP-125-00	Battery Wire Cover.....	1
19	CS-149-00	Trailer Tongue.....	1	52	CSP-135-00	18 hp. Honda Engine.....	1
20	CS-150-00	Gas Tank Box.....	1	53	CSP-139-00	18 hp. Drive Belt.....	1
21	CS-151-00	Belt Shield.....	1	54	CSP-140-00	Fuel Tank.....	1
22	CS-152-00	Left Fender.....	1		CSP-141-00	Male Fuel Fitting.....	1
23	CS-154-00	Belt Guide.....	1	55	CSP-145-00	Safety Chain.....	2
24	CS-155-00	Torsion Axle.....	1	56	CSP-146-00	Idle Pulley.....	1
25	CS-156-00	Jackstand.....	1	57	GCS-200-00	Gas Lower Half Mainframe.....	1
26	CS-157-00	Right Fender.....	1	58	GCS-201-00	Gas Upper Half Mainframe.....	1
27	CS-240-00	1.5" Grate.....	1	59	CS-127-00	1.188" Spacer w/Hole.....	4
28	GB-204-00	Drive Sheave Taper Lock.....	1		CS-128-00	1.188" Spacer.....	8
29	GB-504-00	Drive Sheave.....	1		CS-129-00	.615" Spacer w/Hole.....	2
30	GF-226-00	Engaging Handle Cover.....	1		CS-130-00	.615" Spacer.....	10
31	GF-232-00	Battery Cable Terminal End.....	4		CS-131-00	Knife Rod.....	6
32	GF-233-00	Battery Box Liner.....	1		CS-226-00	1.375" Spacer.....	18
33	GF-235-00	Battery.....	1		CS-233-00	Shredder Knife.....	36
34	GF-236-00	Battery Hold Down Strap.....	1		CSP-119-00	Knife Rod Bolt w/Nylock Nut.....	6
35	GF-237-OR	Red Battery Cable.....	3 ft	60	CS-121-00	Chipper Knife.....	4
	GF-237-OW	White Battery Cable.....	3 ft				

Figure-C

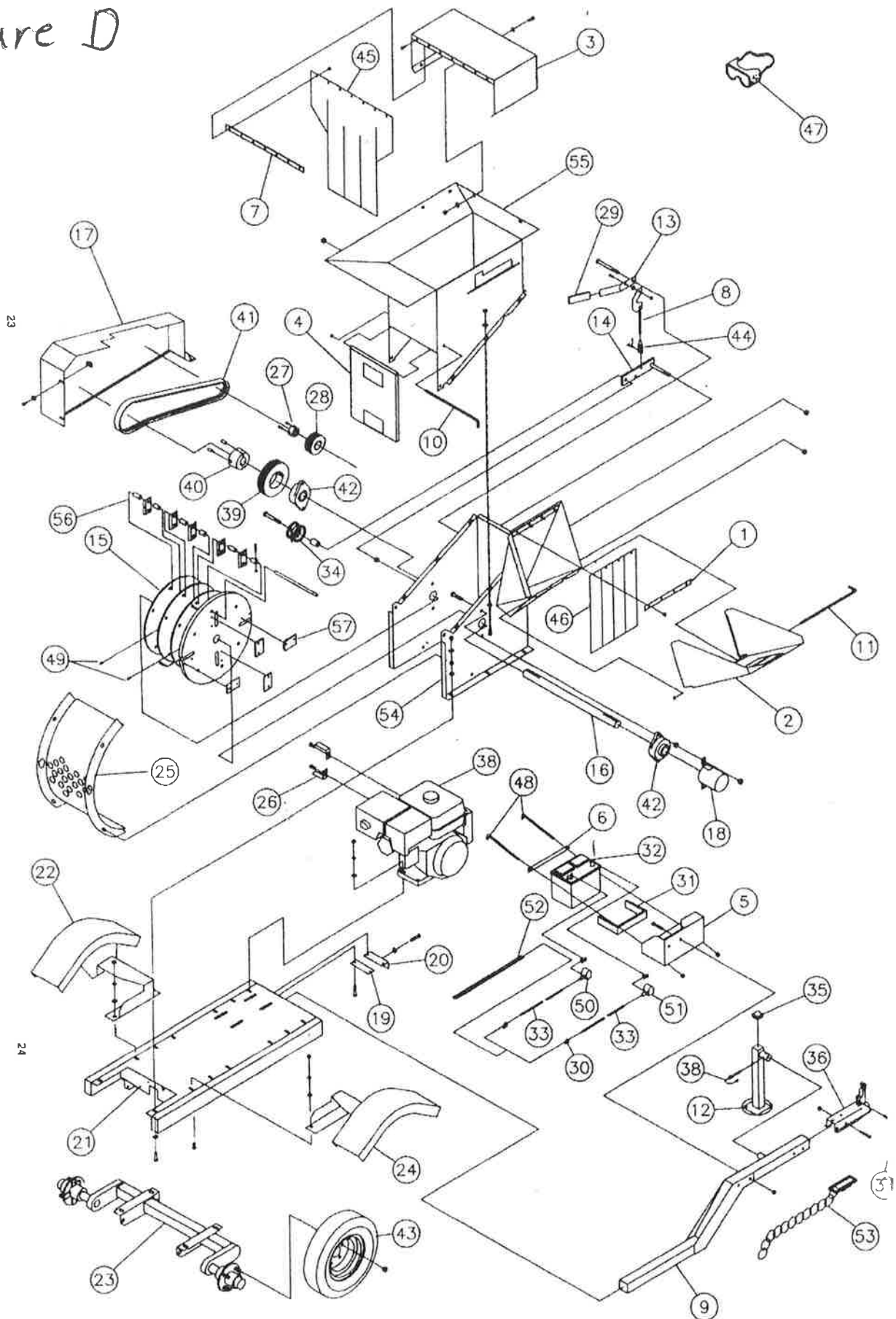


CS5100ESME Chipper/Shredder (Deluxe Trailer)

Parts Identification

Drawing #	Part #	Description	Quantity	Drawing #	Part #	Description	Quantity
1	CS-100-09	Short Flap Mount	1	GF-237-OW	White Battery Cable	3 ft	3
2	CS-102-00	Spout Door	1	GF-251-00	Wide Idler Pulley		1
3	CS-104-00	Tub Cover	1	PF-224-00	Cap Plug		1
4	CS-105-00	Discharge Door	1	VT-232-00	2" Hitch Coupler		1
5	CS-106-00	Gas Battery Case	1	VT-251-00	Round Wire Lock Pin		1
6	CS-107-00	Gas Battery Hold Down	1	CSP-100-00	13 hp. Honda Engine		1
7	CS-108-00	Long Flap Mount	1	CSP-101-00	Gas Drum Sheave		1
8	CS-109-00	Gas Engagement Link	1	CSP-102-00	Gas Drum Sheave Taper Lock		1
9	CS-111-00	Gas Hitch	1	CSP-103-00	Gas Drive Belt		1
10	CS-115-00	Rear Door Hinge Pin	1	CSP-104-00	2-Bolt Flange Bearing		2
11	CS-116-00	Spout Door Hinge Pin	1	CSP-108-00	Gas Tire & Wheel Assembly		2
12	CS-117-00	Gas Jack Stand	1	CSP-111-00	Gas Manual Engage Clevis		1
13	CS-118-00	Gas Engagement Handle	1	CSP-112-00	Tub Skirt		1
14	CS-119-00	Gas Engagement Arm	1	CSP-113-00	Chipper Intake Spout Skirt		1
15	CS-120-00	Rotor Assembly	1	CSP-114-00	Safety Goggles		1
16	CS-122-00	Rotor Shaft	1	CSP-120-00	Battery Hold Down Bolt		2
17	CS-124-00	Gas Front Belt Shield	1	CSP-123-00	Rotor Shaft Roll Pin		2
18	CS-136-00	Rear Shaft Guard	1	CSP-124-OL	Left Battery Terminal Cover		1
19	CS-137-00	Motor Mount Reinforcement Plate	1	CSP-124-OR	Right Battery Terminal Cover		1
20	CS-138-00	Motor Tensioner	1	CSP-125-00	Battery Wire Cover		1
21	CS-147-00	Trailer	1	CSP-145-00	Safety Chain		2
22	CS-152-00	Left Fender	1	GCS-200-00	Gas Lower Half Mainframe		1
23	CS-155-00	Torsion Axle	1	GCS-201-00	Gas Upper Half Mainframe		1
24	CS-157-00	Right Fender	1	CS-127-00	1.188" Spacer w/Hole		4
25	CS-240-00	1.5" Grate	1	CS-128-00	1.188" Spacer		8
26	GB-106-00	Belt Guide	2	CS-129-00	.615" Spacer w/Hole		2
27	GB-204-00	Drive Sheave Taper Lock	1	CS-130-00	.615" Spacer		10
28	GB-504-00	Drive Sheave	1	CS-131-00	Knife Rod		6
29	GF-226-00	Engaging Handle Cover	1	CS-226-00	1.375" Spacer		18
30	GF-232-00	Battery Cable Terminal End	4	CS-233-00	Shredder Knife		36
31	GF-233-00	Battery Box Liner	1	CSP-119-00	Knife Rod Bolt w/Nylock Nut		6
32	GF-235-00	Battery	1	CS-121-00	Chipper Knife		4
33	GF-237-OR	Red Battery Cable	3 ft				

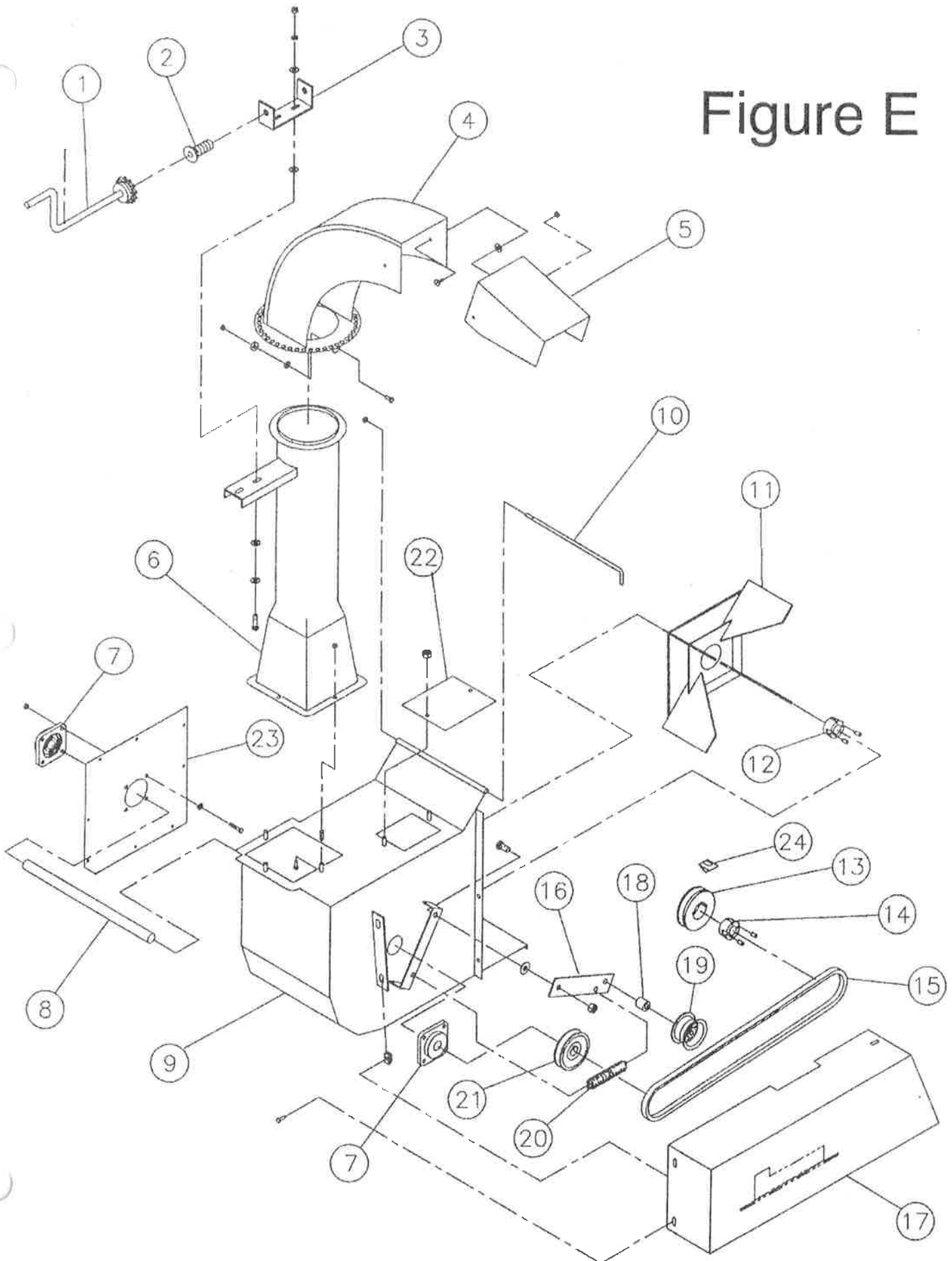
Figure D



Goossen Chipper/Shredder
CSB1000 Blower Attachment
 Parts Identification

Drawing #	Part #	Description	Quantity
1-2-3	CB-106-00	Directional Spout Crank Assy	1
4	CB-107-00	Upper Directional Spout	1
5	PT-304-00	Directional Spout Deflector	1
6	PT-502-00	Lower Directional Spout	1
7	BD-733-00	1" Flange Bearing	2
8	CB-105-00	Blower Impeller Shaft	1
9	CB-300-00	Blower Assembly	1
10	CS-115-00	Rear Door Hinge Pin	1
11	VAC-203-00	Vac Impeller Assembly	1
12	VAC-203-04	Vac Impeller Taper Lock	1
13	CSP-132-00	Blower Drive Sheave	1
14	CSP-106-00	Drum Shaft Sheave Taper Lock	1
15	CSP-133-00	Blower Drive Belt	1
16	CB-104-00	Tensioner Arm	1
17	CB-102-00	Blower Belt Shield	1
18	RS-255-00	1" Spacer	1
19	PB-117-00	Narrow Idler Pulley	1
20	PF-211-00	Tensioner Spring	1
21	CSP-128-00	Blower Impeller Shaft Sheave	1
22	CB-208-00	Clean Out Door	1
23	CB-209-00	Impeller Door	1
24	CB-203-00	Blower Shield Mount Tab	1

Figure E



Chipper Knives

Depending on the type of wood being fed into the chipper, the knives eventually become dulled, slowing chipping time and making it harder to produce chips. It is recommended that chipper knives are sharpened every 5 to 10 hours of use.

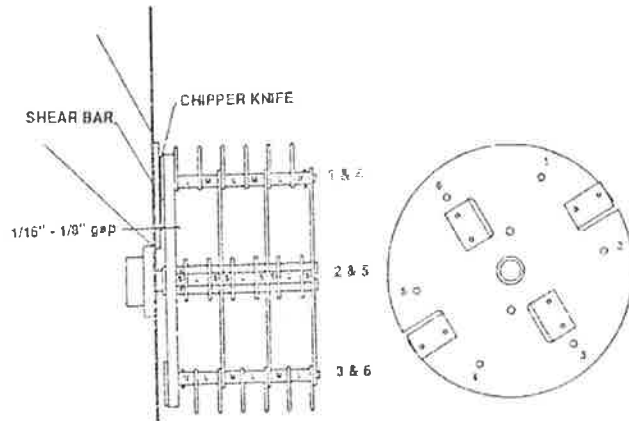


Fig. 1

To Sharpen or Replace

1. Remove the nine 5/16" bolts that fasten the top and bottom housings together.
2. Remove the bolts that fasten the top of the grate and open hinged housing to access drum housing.
3. Rotate drum so that knife is most accessible through chipper chute. Remove the two 5/16" bolts and the chipper knife. Repeat this step for the remaining knives.

To Regrind Chipper Knives

The chipper blades can be ground on a bench grinder or by a professional. When grinding chipper blades avoid getting blade surface too hot to where it changes color. This will remove the heat treated properties and may attribute to premature knife failure. When grinding use short grinding intervals and cool in between with water. Remove equal amounts to keep knife balanced. Regrind knife edge to 35 degrees of angle. (See figure.) Failure to do so may affect chipping performance.

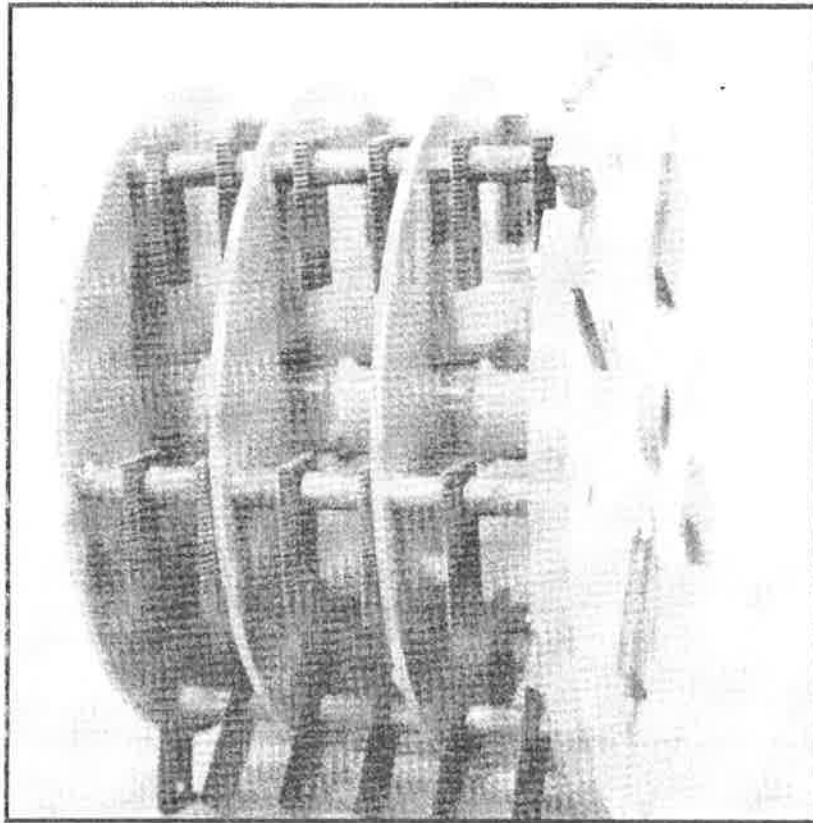
To Replace Chipper Knives

1. Mount chipper knives to drum plate using Grade 5 5/16" x 1" bolt that have been treated with Loctite® or equivalent. (Make certain bevel is facing drum plate.)

2. After knife is mounted, torque it to specified torque using the Standard Torque Chart on page 2.

Knife Clearance (See Fig. 1)

1. Remove safety shields covering the drive pulley on the rotor shaft front.
2. Remove safety cover on rotor shaft rear side.
3. Loosen screws on the rotor shaft pulley.
4. Loosen set screws on front and rear rotor bearing lock collars.
5. Using a hammer and punch, tap the lock collars opposite the direction of normal rotation and remove.
6. Tap the end of the rotor shaft until the necessary 1/16 to 1/8" clearance between the knife and chipping block is obtained. (See figure.)
7. After clearance is set, replace lock collars onto eccentric hub on bearings.
8. Rotate the lock collars in the direction of the shaft rotation and set them with a hammer and punch.
9. Using a straightedge, align rotor pulley with the drive pulley and tighten to 17 FT LBS. Set bushing with a punch and re-torque.
10. Inspect and make sure all parts are aligned and tight.
11. Close top half of drum housing, install bolts and tighten. Replace grate pin in top of grate assembly.
12. Make certain all bolts and fasteners are tight and secure before replacing shields and guards.



Shredder Knives

The serrated shredder knives can be rotated four times and resharpened.

To Reverse or Replace

1. Remove the nine 5/16" bolts that fasten the top and bottom housings together.
2. Remove the pin that fastens the top of the grate and open hinged housing to access drum housing.
3. Remove the #10-24 bolt and nut from the knife shaft. Work with one shaft at a time only; this will eliminate any confusion as to proper spacing and alignment.

NOTE: Replace knives and spacers in the same manner they are removed; this will eliminate improper balance and misalignment of knives, which may cause damage to the machine and void warranty.

4. Remove the knife shaft knives and spacers and reverse or replace desired shredder knives.
5. Replace #10-24 bolt and nut through end spacer and torque to the specified torque value in the Standard Torque Chart on page 2.
6. Service all remaining knife shafts in this manner.
7. Inspect and make sure all parts are aligned and tight.
8. Close top half of drum housing install bolts and tighten. Replace grate pin in top of grate assembly.
9. Make certain that all bolts and fasteners are tight and secure before operating.

NOTE: If unit is equipped with a CSB1000 Blower attachment, you will need to remove the blower before rotating or replacing shredder knives.

Troubleshooting

Engine:

Problem:

Engine will not start.

What to check:

- Improper control settings.
- Engine may be low on fuel.
- Engine may be low on oil.
(The Honda Engine is equipped with "Oil-Alert" automatic shut-off.)
- Battery charge may be too low.
- Possible internal problems

Problem:

Engine shuts off during operation

What to check:

- Engine may be low on fuel.
- Engine may be low on oil.
(The Honda Engine is equipped with "Oil-Alert" automatic shut-off.)
- Air breather may be clogged.

Belts:

Problem:

Belts slip.

What to check:

- Tension adjustment.
- Load may be excessive
- Knives may be too dull.
- Foreign material may be lodged in the chipper or shredder housing.
- Bearings may have seized.

Problem:

Belts wear rapidly;

Belts jump, catch or twist.

What to check:

- Pulleys may not be properly aligned.

Check with straightedge across faces of pulleys.

Cutting and Discharge:

Problem:

Chipper hard to feed.

What to check:

- Discharge plugged.
- Dull chipper knives.
- Improper knife clearance.