

Ingersoll

SHREDDER - CHIPPER
HS24W, HS24H
AHS24W, AHS24H
Operator's Manual 8-57381

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QUALITY IN THE AMERICAN TRADITION

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Ingersoll Equipment Co., Inc.

Winneconne, Wisconsin 54986-9576



This Safety Alert Symbol Indicates Important Safety Messages In This Manual When You See This Symbol Carefully Read The Message That Follows and Be Alert To The Possibility Of Personal Injury Or Death

IF THIS MACHINE IS USED BY AN EMPLOYEE OR IS LOANED OR RENTED, MAKE ABSOLUTELY CERTAIN THAT THE OPERATOR(S), PRIOR TO OPERATING:

1. IS INSTRUCTED IN SAFE AND PROPER USE.
2. REVIEWS AND UNDERSTANDS THE MANUAL(S) PERTAINING TO THE MACHINE.

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WARNING

BEFORE STARTING ENGINE

STUDY OPERATOR'S MANUAL SAFETY MESSAGES

READ ALL SAFETY SIGNS ON MACHINE

CLEAR THE AREA OF OTHER PERSONS

LEARN & PRACTICE SAFE USE OF CONTROLS BEFORE OPERATING

IT IS YOUR RESPONSIBILITY TO UNDERSTAND AND FOLLOW MANUFACTURER'S INSTRUCTIONS ON MACHINE OPERATION, SERVICE, AND TO OBSERVE PERTINENT LAWS AND REGULATIONS. OPERATOR AND SERVICE MANUALS MAY BE OBTAINED FROM YOUR EQUIPMENT DEALER.

WARNING:

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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SAFETY ALERT SYMBOL AND NOTATIONS

The following safety notations are used throughout this manual to call attention to special information or operating procedures. Understand the message in each notation. Be alert to unsafe conditions and the possibility of personal injury.

NOTE: A NOTE points out general reference information regarding proper operation and maintenance practices.

IMPORTANT



An IMPORTANT statement indicates specific procedures or information that is required to prevent damage to the machine or its attachments.

This safety alert symbol is used to attract your attention! PERSONAL SAFETY IS INVOLVED! When you see this symbol - BECOME ALERT - HEED ITS MESSAGE.



CAUTION

CAUTION identifies safe operating practices or indicates unsafe conditions that could result in personal injury.



WARNING

A WARNING describes a condition where failure to follow the instructions could result in severe personal injury.



DANGER

A DANGER designates a condition where failure to follow instructions or heed warning will most likely result in serious personal injury or death.

SAFETY MESSAGES



THIS MACHINE IS CAPABLE OF INFLICTING SERIOUS INJURY IF OPERATED IMPROPERLY - READ WARNINGS AND CAUTIONS

TRAINING AND PREPARATION

NEVER operate shredder-chipper before you read and understand this manual completely. Become familiar with it for your own safety. To fail to do so may cause serious injury. Do not allow anyone to operate your shredder-chipper who has not read this manual.

INTENDED USE

NEVER use your shredder-chipper for any other purpose than shredding and chipping gardening products. It is designed for this use only and any other may cause injury.

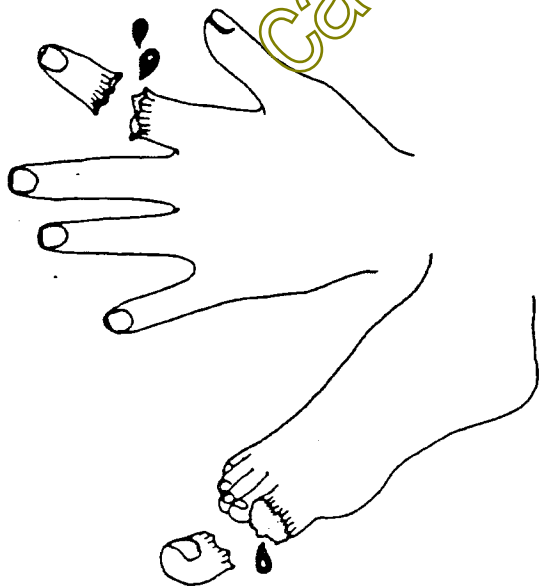


DANGER

Rotating cutting blades. Keep hands and feet out of discharge opening while machine is running.

Rotating cutting blades. Keep hands out of inlet opening while machine is running.

This machine can **CRUSH, GRIND, CUT, and SEVER** parts of your body if they enter the inlet or discharge area of your shredder-chipper.



OPERATORS RESPONSIBILITY

NEVER allow children to operate your shredder-chipper, nor adults lacking the proper instructions. Keep children, pets, and bystanders a minimum of 20 feet away from your work area. Flying chips can be hazardous.

NEVER run this machine in an enclosed area since the exhaust from the tractor contains carbon monoxide which is an odorless, tasteless, and deadly poisonous gas.

NEVER run this machine on cement or blacktop. This machine should be operated **ONLY** on a level earthen surface.

NEVER put your hands, feet, face, or any other part of your body in the feed hopper or discharge area.

NEVER remove plastic shield attached to the shredding hopper. This device prevents flyback and must be intact at all times. This is a protective guard. Never use the chipper with the chipper hopper removed.

NEVER operate your shredder-chipper while under the influence of alcohol, drugs, or medication. A clear mind is essential for safety.

NEVER allow a person who is tired or otherwise not alert to operate this machine.

SAFETY WEAR

NEVER wear loose clothing or jewelry that can be caught by moving parts of your shredder-chipper and pull you into it. Keep all clothing away from moving parts. Wear proper head gear to keep hair away from moving parts.

ALWAYS wear safety glasses or goggles, and work gloves at all times while operating your shredder-chipper. A chip could fly out and hit you in the eye. Be sure your glasses fit properly and your gloves do not have loose cuffs or draw strings.

OPERATING PROCEDURE

ALWAYS know how to turn the unit off.

NEVER clear discharge area while unit is running. After shredder-chipper is shut off, then use a long handle tool to clear area.

NEVER move your shredder-chipper or leave it unattended with the PTO engaged.

OPERATE IN SAFE ENVIRONMENT

NEVER operate your shredder-chipper on slippery, wet, muddy, or icy surfaces. Safe footing is essential in preventing accidents.

ALWAYS keep work area clean and clear of debris so that you don't stumble over it.

REPAIR AND MAINTENANCE SAFETY

NEVER operate your shredder-chipper in poor mechanical condition or when in need of repair. Periodically check that all nuts, bolts, screws, and belts are tightened. Be sure all safety guards and shields are in the proper position. These safety devices are for your protection.

ALWAYS replace old, damaged or worn parts such as bolts or guards immediately.

NEVER service or repair your Shredder-Chipper without disengaging the PTO valve lever and shutting off the tractor engine.

OPERATION

ALWAYS wear gloves and safety glasses when you operate your shredder-chipper. If necessary to push material into shredding chamber, use a wood stick never hands or steel implements. At the end of this section we offer additional cautions. Read and observe them.

INSTALLATION

HYDRAULIC CONNECTIONS:

1. Connect PTO valve outlet hose to shredder motor inlet. On trailer models, inlet port is toward rear of trailer. On 3pt hitch models, inlet port is toward left hand side of unit. Refer to Figures 7 and 8.

2. Connect PTO valve return hose to shredder motor outlet.
3. Connect case drain hose on shredder to case drain coupling on rear of tractor.

IMPORTANT: The drain hose couplers must be connected whenever the shredder/chipper is in operation or damage to hydraulic motor will occur.



CAUTION

Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks - never use the hands or other parts of the body.

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.

SPEED: This unit has been designed to operate at a no-load rotor speed of approximately 2800 RPM. The rotor speed will vary depending upon the engine speed and hydraulic system efficiency. At 3600 RPM engine speed, rotor speed should be approximately 2800 RPM.

OPERATION

This manual contains information concerning proper and improper operating procedures, warning, maintenance, trouble shooting, assembly and tips. Everyone who operates this machine should read these instructions and be thoroughly familiar with them.

**THIS MACHINE IS CAPABLE OF INFLICTING SERIOUS INJURY IF OPERATED IMPROPERLY—
READ WARNINGS & CAUTION**

1. ALWAYS wear safety glasses and gardening or work gloves at all times while operating this shredder-chipper.
2. NEVER allow children to operate this equipment.
3. NEVER operate this equipment in the vicinity of children, pets, or bystanders.
4. ALWAYS wear proper work apparel; avoid loose clothing such as skirts or dresses.
5. NEVER run this machine in an enclosed area since the exhaust from the tractor contains carbon monoxide which is an odorless, tasteless and deadly poisonous gas.
6. ALWAYS keep hands and face away from feed hopper and discharge area. Read operating section carefully.
7. NEVER remove the plastic shield or curtain inside shredding hopper. This device prevents flyback and should be intact at all times when shredding or chipping. This is a protective guard.

GENERAL OPERATION



**THIS MACHINE IS CAPABLE OF INFLICTING SERIOUS INJURY IF OPERATED IMPROPERLY -
READ WARNINGS AND CAUTIONS**

In operating your shredder-chipper, you should first understand the basic principle of design. Other sections of this manual discuss shredding with and without a screen, dry or green material. This is general. At the end of this section we offer additional cautions to be observed. Read them and observe.

ALWAYS wear gloves and safety glasses. If necessary to push material into the shredding chamber, use a wood stick, never hands or steel implements.

Adjust the baffle plate (item 7, page 9) to direct the discharge down and away from the shredder. The discharge end of the shredder body has three drilled holes in each side through which passes a baffle support rod. The loose end of the plate rests over this rod providing you with three angles of discharge. If ever you shred or compost without the perforated screen be certain the baffle plate is held away from the rotor by the baffle rod (figure 1, item 15), at the center hole of the discharge. If not, the baffle plate will swing backward into the grinding chamber striking the rotor hammers. Damage will result.

When viewed from the motor side of the shredder body, the rotor runs counterclockwise. This action tends to pull materials into the shredding chamber. Short stalks (bean plants), cobs, sod and similar materials should be fed into the hopper by garden spade or pitchfork. Long stalks like corn or trimmings can best be fed by hand slowly to avoid having the rotor pull in the complete stalk, wrap it and stall. When feeding stalks or trimmings by hand, be certain to keep your hands away from the rotor and hammers. Remember, a technique and understanding is required to successfully shred or grind the great variety of materials which may be available to you for compost.

Branches are fed into the side hopper for chipping. One at a time if they are thicker than 2", several together if of smaller diameter. Since the throat opening is approx. 3" square some side shoots or side branches may have to be trimmed from the main stalk before the chipping process. Short stubs of branches may be pushed through the chipper section with the next branch. Never assume you know where the blade is, and try to push short branches in by hand. You don't know where it is. Be safe, keep your hands away from the chipping blade.

1. ALWAYS be careful that pieces of metal, glass, rocks, cans or other non-organic or foreign objects are not fed into this equipment.
2. NEVER allow an accumulation of processed material to build up under the discharge of the shredder as this can prevent following shredded material to discharge and will result in clogging.
3. NEVER allow your hands or any part of your body or clothing inside the feed hopper or discharge area of the shredder-grinder.
4. ALWAYS keep all protective guards on the machine and deflectors in place and in good working condition.
5. ALWAYS stand clear of the discharge area when the shredder is running.

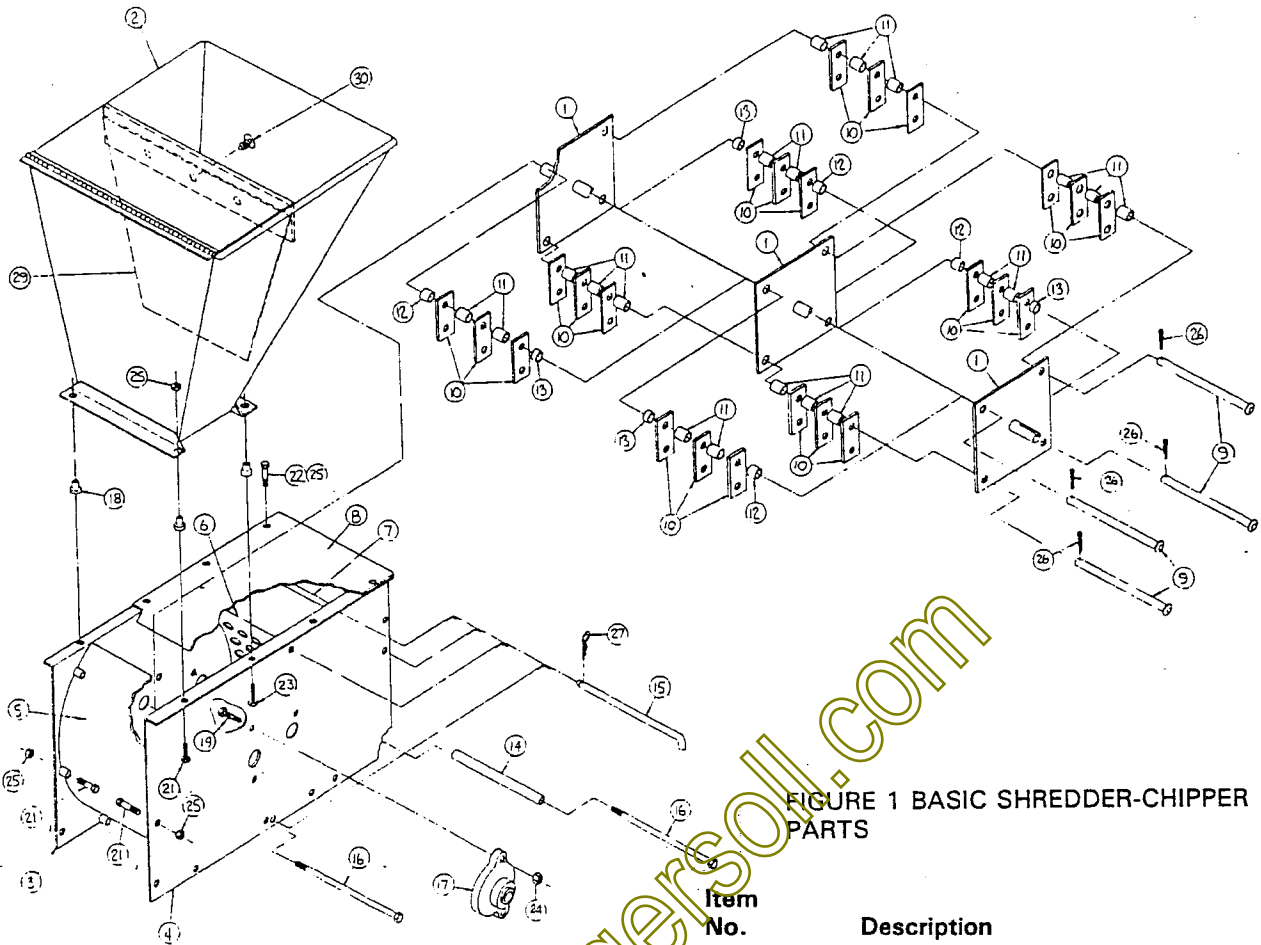


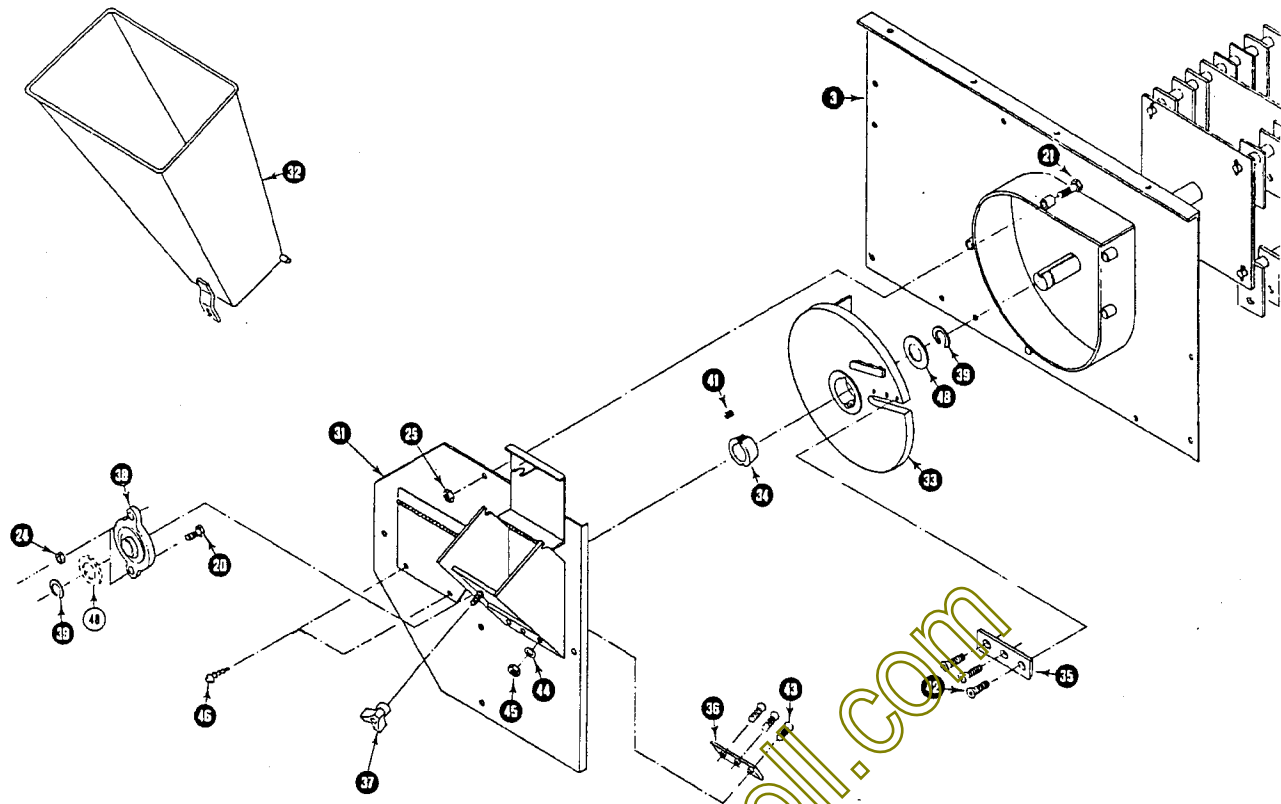
FIGURE 1 BASIC SHREDDER-CHIPPER PARTS

6. ALWAYS keep your face and body back from the feed hopper to avoid being struck by any material that may bounce back. Do not over-reach, keep proper balance and footing.

SHREDDING TIPS

1. When material being processed is dry, brittle, hard or woody, use the standard 1" perforated screen in the shredder. For wet, soggy materials, the unit will shred better without a screen. An optional bar screen can be used to advantage when shredding green fibrous materials such as cornstalks, wet straw or manure. After processing wet or soggy materials, the shredding chamber can be cleaned quickly by reinstalling the 1" screen and grinding a few branches or wood chips.
2. The optional screens with 1/4, 1/2, or 3/4" perforations are for special purpose (potting soil, grinding shellfish residue such as clam shells). It is necessary to first process the material through the 1" screen, then through the smaller hole screen, This works very well on grains for poultry feed.

Item No.	Description
1	Rotor
2	Hopper
3	Chipper Side Plate Weldment
4	Drive Side Plate
5	Scroll
6	Screen (1" Standard)
7	Baffle Plate
8	Top Plate
9	Hammer Rod
10	Hammer
11	Spacer 7/8"
12	Spacer 5/8"
13	Spacer 5/16"
14	Spacer
15	Screen and Baffle Rod
16	Tie Rod
17	Bearing Right Side
18	Vibration Dampener
20	3/8"-16 x 1" Hex Hd. Cap Screw GR 5
21	5/16"-18 x 1-1/4" Hex Hd. Cap Screw GR 5
22	5/16"-18 x 3/4" Hex Hd. Cap Screw GR 5
23	5/16"-18 x 1-1/2" Hex Hd. Cap Screw GR 5
24	3/8"-16 Grip Co Lock Nut
25	5/16"-18 Grip Co Lock Nut
26	Groove Pin
27	3/32" Hair Cotter Pin
29	Hopper Flex Guard
30	Push Button



NOTE: Item 48 may be located either place at factory assembly.

FIGURE 2 BASIC SHREDDER-CHIPPER PARTS

Item No.	Description
3	Chipper side Plate Weldment
20	3/8-16 x 1-1/4" Hex Hd. Cap Screw GR 5 Bk.
21	5/16-18 x 1-1/4" Hex Hd. Cap Screw GR 5
24	3/8-16 Grip Co Lock Nut
25	5/16-18 Grip Co Lock Nut
28	Spacer
31	Chipper Plate
32	Chipper Hopper
33	Chipper Disc
34	Bushing
35	Knife
36	Wear Plate
37	Hopper Locking Handle
38	Bearing Left Side
39	Retaining Ring
41	3/8-16 x 5/8" Set Screw
42	5/16-18 x 3/4" Flat Hd. Socket Cap Screw
43	1/4-20 x 1" Flat Hd. Socket Cap Screw
44	1/4" Flat Washer
45	1/4-20 Flex Lock Nut
46	6-32 x 3/8" Sheet Metal Screw
48	1-3/16" Flat Washer

3. When grinding green or damp material (cornstalks, potato vines, tomato vines, green or fresh pulled plants), remove the 1" screen and either install a bar screen or use no screen at all. Direct the shredder to discharge into a compost pile or against a wall, large board or other obstruction. Feed cornstalks by hand, slowly, several at a time until the last 18" remain in your hand then let go. This will give you a coarsely shredded product several inches long and stripped. With a garden spade or pitchfork refeed this material into the shredder until it reaches the condition you want. A cornstalk that has been processed this way, just one time, will break down within a day or two in your compost heap. For green materials such as tomato or potato vines, you may first have to snap off extending side shoots. Place the vine in the hopper and prod further with a rugged stick (never your hands).

4. For grinding dry leaves, use the 1" perforated screen and dump leaves into the top feed hopper by basket, bag or pitchfork. If bridging occurs, use a stick to stir leaves into the shredding chamber. Freshly fallen leaves do present a problem, and it is best to pile these and allow to sit until they become quite soggy. If this is impractical, these wet or damp leaves must be processed through the unit with no screen and along with other materials. All by themselves, for the most part, wet leaves will simply blow through the shredder. Soggy, partly decomposed leaves process very well through your unit if you first remove the screen. Dump in pitchfork loads and prod through with a stick.

5. For green hedge prunings, small diameter wood prunings (with leaves), rose or flower trimmings, process with the 1" perforated screen installed. Feed bunches at a time through the top feed hopper. Experience will tell you how much your shredder can handle at one time.
6. To process branches, dry or green use the side chipping hopper. The 1" screen may be left in but it serves no practical purpose when chipping. It is best to clip off side twigs or limbs from the main branch. Enter one at a time if they are 2" or more in diameter. Green branches process more quickly and easier than dry branches and of course soft wood easier than hardwood.

Push the branch in at the angle of the hopper and throat. Always have the removable hopper in place. Never allow your hands to enter the hopper. As the branch being chipped shortens, finish chipping it by shoving in the stub with the next branch to be chipped.

Only your operator experience will tell you when to use a screen or no screen, how fast to feed and how to process difficult materials. There are so many possible materials that we cannot discuss each individually. Some naturally are easier to work with than others, but most all common organic products available to a gardener can be processed by using your shredder-chipper and common sense.

MAINTENANCE AND STORAGE

If the cutting mechanism strikes any foreign object or if your machine should start making an unusual noise or vibrating, stop the engine, and disengage PTO valve lever.

- a. Inspect for obvious damage.
 - b. Check for loose parts, bolts, rods, broken hammers or spacers. Examine rotor visually for any obvious defects.
1. Lubricate the chipper side rotor bearing before operating and after every 10 hours of operation with multi-purpose grease. The motor side bearing is self-lubricating and does not require greasing. Also check the bearing collar set screws regularly to be sure they are tight. If they are loose reset them with EV grade LOC-TITE or equivalent obtainable at any hardware store.
 2. Do not allow an accumulation of processed material to build up under the discharge of the shredder-chipper as this can prevent following shredded material to discharge and will result in clogging. Use a long handled stick or spade to remove processed material build-up. **DO NOT USE YOUR HAND OR FOOT.** Always shut the unit off before clearing build-up.
 3. When not in use, your shredder-chipper should be stored out of the reach of children. Be sure there are no gasoline fumes in the storage area.
 4. When the hard steel hammers become dull or round on the cutting or leading edge, they may be reversed. First remove the cover plates to expose the hammer rod access holes. One hammer rod at a time can be removed through this side hole and the hammers reversed as the rotor is reassembled. Each rod is held in place by a grooved pin. Install new pins. Extreme care must be taken to reinstall the spacers (item 11, 12, and 13) in exactly the same order as shown on the drawing. We emphasize this point. The

spacers and hammers must be reinstalled in exactly their original order (see figure 1). See page 10 for information on removal and reinstallation of the pin.

5. When the steel chipping knife (item no. 35, figure 3) needs replacing or sharpening, rotate the chipper disc until the three countersunk screws holding the blade is behind the access panel. When you install the knife be certain to use E.V. grade LOC-TITE on the threads so they will not come loose.
6. Care must be exercised when sharpening the blade to maintain the correct bevel and a straight cutting edge. When you install a knife, the clearance between knife and wear plate (item no. 36, figure 3) must be checked. This clearance or gap should be minimum 3/64" maximum 1/16". See figure 3, below. To adjust this clearance, loosen the three 1/4" flathead bolts which are located on the outside of the chipper wear plate next to the chipper side plate. Move the wear plate in or out as necessary and tighten the 1/4" nuts securely.

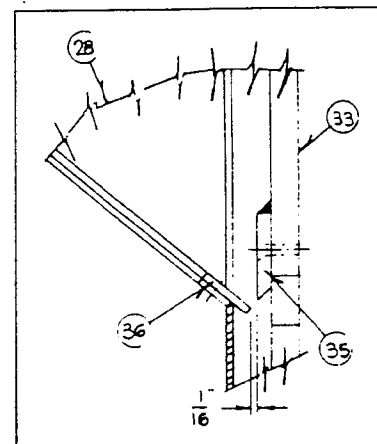


FIGURE 3

7. Note, if the gap between wear plate and knife is excessive, you will have vibration when chipping and the blade will seem to be dull.
8. If at any time it becomes necessary to disassemble the chipper for repairs, the chipping disc (item no. 33, figure 2) must be installed in exactly its correct position on the shaft.

REMOVAL AND RE-INSTALLATION OF GROOVE PINS

1. Remove hopper. (Item 2)
2. Turn rotor until hammer rod is facing up - see figure 4.
3. Turn hammer rod until small end of groove pin is facing up.
4. Use a 3/16" Dia. punch and drive groove pin out of hammer rod.
5. When installing groove pin be sure you put the end without groove in hole first, then drive pin in to hammer rod until it stops.
6. Re-install hopper.

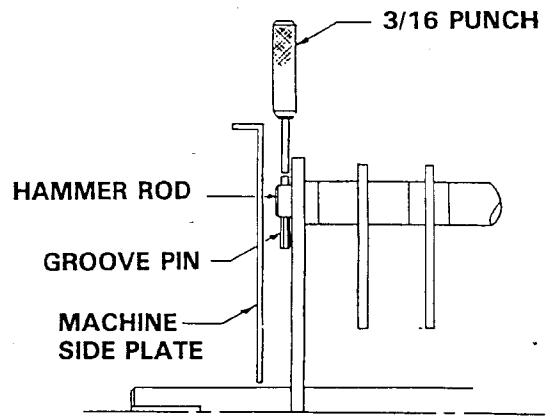
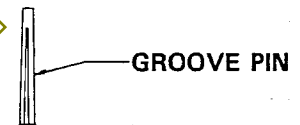


FIGURE 4



INSTALLATION

ASSEMBLY OF HOPPER WITH VIBRATION DAMPENERS

1. Take the hopper and push the vibration dampeners up into the holes, see figure 1 and 5.
2. Place the hopper with the vibration dampeners on the unit. NOTE: the slanted side of the hopper is over the discharge end. Align the holes of the side plates with the hopper.
3. With the 5/16"-18 x 1-1/4" bolts (Item 21) thread the bolt up through the shredder side plate and in the vibration dampener.
4. Continue to tighten the bolt until the distance from the top of the vibration dampener to the top surface of the hopper angle is 5/8" (see figure 5. DO NOT OVERTIGHTEN.

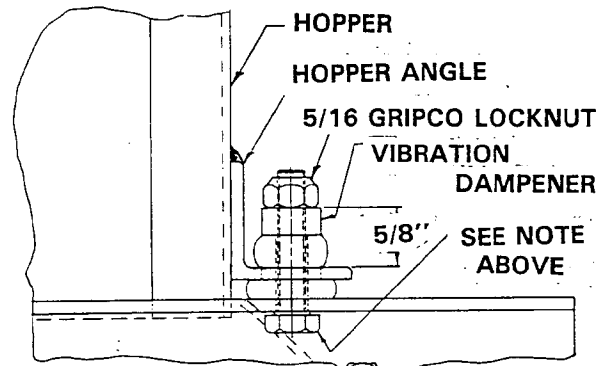


FIGURE 5

HOPPER FLEX GUARD

Position plastic hopper flex guard (Item 29, figure 6) to the backside of the lip on the hopper lid. Install three pushbuttons (Item 30) thru hopper lid and flex guard to secure in position.

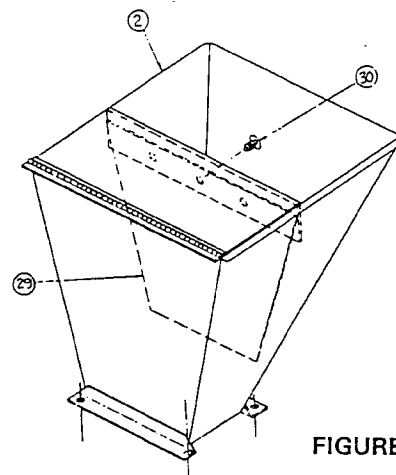


FIGURE 6

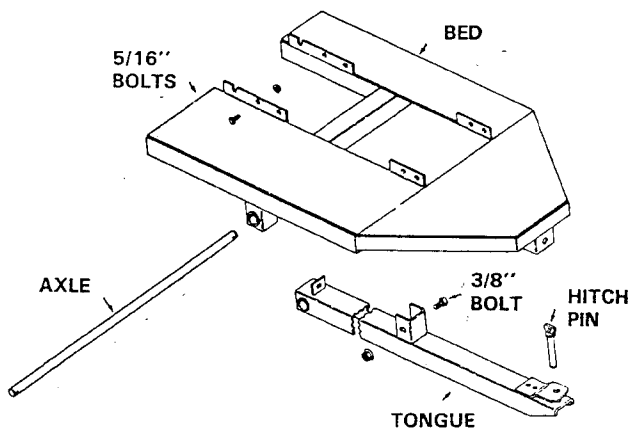


FIGURE 7 - TRAILER

TRAILER ASSEMBLY

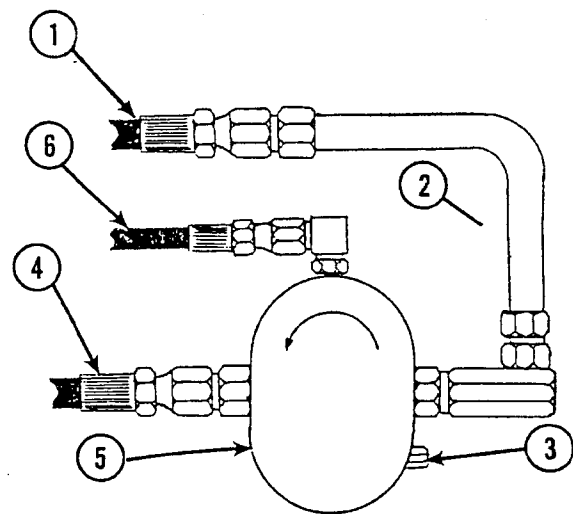
1. Position trailer tongue to trailer bed and secure with three 3/8" NC x 1.0" bolts and flange locknuts. Leave bolts loose.
2. Slide axle thru sleeves on trailer. Tighten tongue bolts.
3. Slide wheels onto axles with grease fittings to the outside. Secure wheels with cotter pins thru axle.
4. Position shredder/chipper onto trailer so that hydraulic motor is toward left hand side of the trailer.
5. Align mounting holes on trailer. Secure shredder to trailer with eight 5/16" NC bolts and flange locknuts.

COUPLER SWITCH KIT

Install this kit on the following tractors to allow operation of the hydraulic PTO when operator seat is not occupied.

3012 - PIN 14167800 and after
 3014 - PIN 14168800 and after
 3016 - PIN 14169500 and after
 4016 - PIN 14170800 and after
 3118, 4116, 4118, 4120 - all

NOTE: This kit is only for use with attachments that are normally operated with the operator off the seat such as the shredder/chipper. You must be in the seat before you move tractor.



- 1 Supply hose
- 2 Supply elbow tubing
- 3 Check valve
- 4 Return hose
- 5 Hydraulic motor
- 6 Case drain hose

FIGURE 8

HYDRAULIC CONNECTIONS

NOTE: The inlet port on the hydraulic motor should be toward the rear of the shredder assembly with check valve assembly located below the inlet port. An elbow fitting will be installed on the pump inlet and a straight fitting will be installed on the pump outlet.

1. Install supply elbow tubing to elbow fitting. Position supply elbow tubing toward front of shredder and tighten fitting.
2. Connect supply and return hoses between proper ports on PTO valve and hydraulic motor on shredder.
3. Connect case drain hose to case drain fitting on top of hydraulic motor and case drain line on tractor. If case drain line must be installed on tractor, refer to hydraulic PTO or case drain kit instructions.