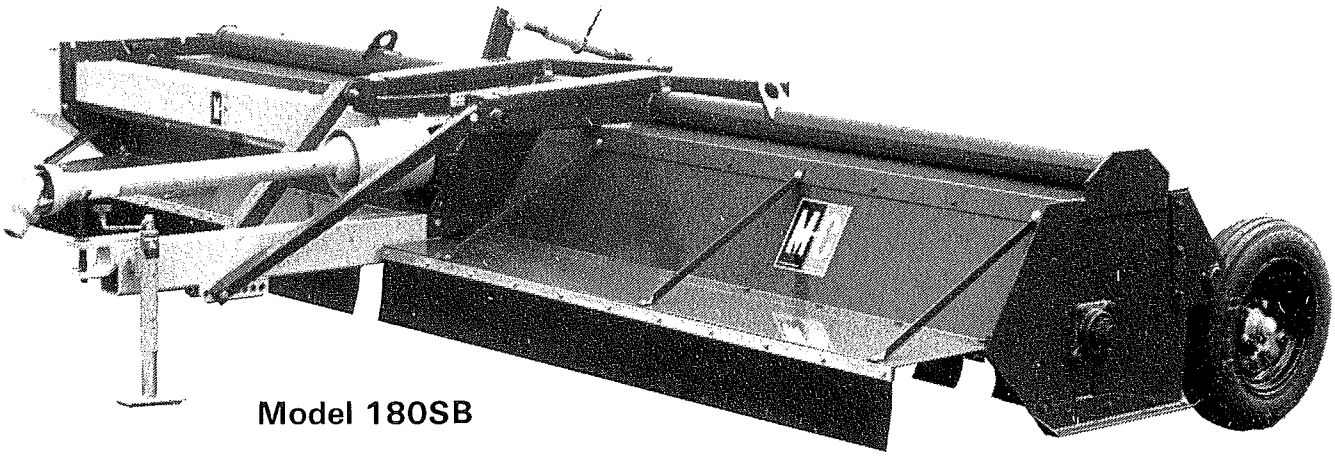
$2.00

MATHEWS COMPANY

Model 144 & 180 Shredders

(Serial No. 36855 thru 47009)



Model 180SB

OPERATOR'S MANUAL

Form No. SH-103, Revision 2, October 1986
(Replaces Rev. 1, Dated August 1984)

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815/459-2210 Telex: 72-2488

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NOTES

INTRODUCTION

To The Owner

Before operating your Shredder read the Operating, Adjustment and Maintenance instructions in this manual. Check each item referred to and become familiar with the adjustments and/or settings required to obtain efficient operation and maximum trouble free service.

Work Safely

This symbol is used to call your attention to instructions concerning your personal safety. Be sure to observe and follow these instructions.

Warranty Registration

It is important to send in your warranty registration card as soon as your new Shredder is delivered. Not only does the card validate your Shredder warranty, but it is also our way of knowing who has purchased M-C equipment so that we can keep in touch with you.

Model and Serial Number Location

The model and serial number of your Shredder is stamped on a plate located on the right side of the body, see Figure 1. For future reference, record the model and serial number in the blank spaces in Figure 2.

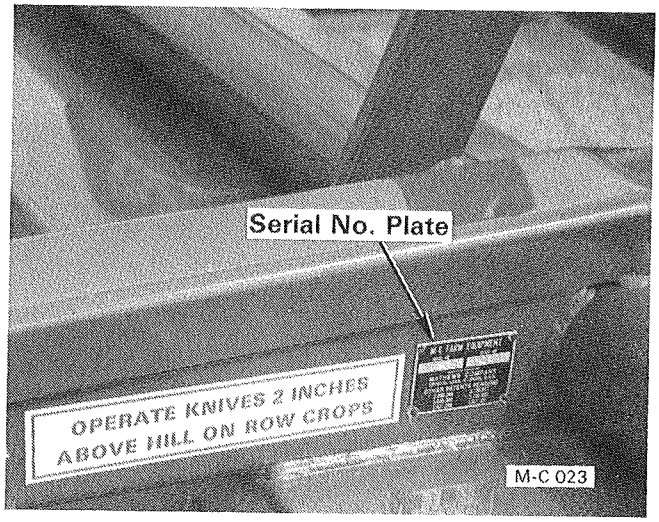


Figure 1

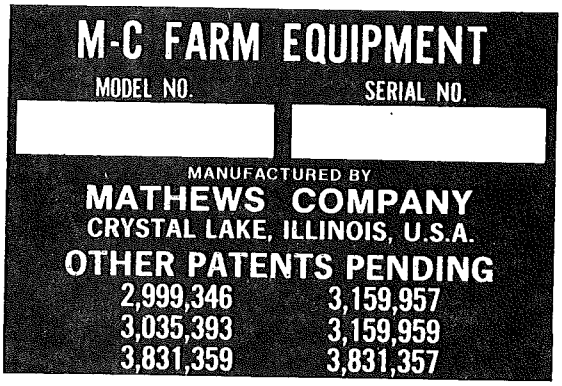


Figure 2

Parts Ordering Instructions

1. Order parts from your local M-C dealer or distributor.
2. Always furnish the Shredder model and serial numbers. This information is stamped on the serial number plate.
3. Service parts for your Shredder are listed in the "Parts" section of this manual. When ordering parts be sure to furnish the part number, description and quantity required.
4. Inspect all shipments upon receipt. If any packages and/or boxes are missing, or parts are damaged, file a claim with the carrier immediately. Failure to do so may void a claim. Check the shipment against the packing list carefully. Report any shortages to the shipper immediately.
5. Do not return any parts to the Mathews Company without a "Return Goods Authorization" from the factory. All return parts shipments must be shipped prepaid (COD shipments will not be accepted). Shipments must also include the following:
   A. A letter of explanation including the "Return Goods Authorization Number," your name and address.
   B. A list of all parts being returned. List must include part numbers, description, quantity and original invoice number.

Capscrew Grade Identification

There are four grades of hex-head capscrews. Grade 1 and 2 are common capscrews, grade 5 and grade 8 are used when greater strength is required. Each grade can be identified by the marking on the head of the capscrew, see chart below.

When servicing the Shredder and/or replacing capscrews, be sure to use the correct size and grade. If in doubt, refer to the parts list. If a specific grade is not shown as part of the description, the capscrew is a grade 1 or 2.

CAPSCREW GRADE IDENTIFICATION CHART

S.A.E. Grade	Description	Capscrew Head Marking*
1 2	WILL HAVE A PLAIN HEAD - NO RADIAL LINES Low or Medium Carbon Steel Not Heat Treated	
5	WILL HAVE 3 RADIAL LINES Quenched and Tempered Medium Carbon Steel	
8	WILL HAVE 6 RADIAL LINES Quenched and Tempered Special Carbon or Alloy Steel	

*The center marking identifies the capscrew manufacturer.

Metric (SI) Measurements

(English Units & Metric (SI) Equivalents)

Area
1 square inch = 6.4516 square centimeters
1 square foot = 0.0929 square meters
1 square yard = 0.8361 square meters
1 acre = 4047 square meters
1 acre = 0.4047 hectare

Force
1 pound (force) = 4.45 newtons

Length
1 inch = 25.4 millimeters
1 inch = 2.54 centimeters
1 foot = 304.8 millimeters
1 foot = 30.5 centimeters
1 foot = 0.305 meters
1 yard = 0.9144 meters
1 mile = 1.6093 kilometers

Mass
1 ounce = 28.35 grams
1 pound = 0.454 kilograms
1 ton = 907.1848 kilograms

Power
1 horsepower = 0.7457 kilowatts

Pressure
1 psi = 6.89 kilopascals
1 psi = 0.00689 megapascals
1 inch of mercury = 3.377 kilopascals

Temperature
1 degree Fahrenheit (°F – 32) - 1.8 = °Celsius

Torque
1 inch pound = 0.113 newton meters
1 foot pound = 1.356 newton meters

Velocity
1 mile per hour = 1.61 kilometers per hour

Volume
1 bushel = 35.24 liters
1 bushel = 0.0352 cubic meters
1 pint = 0.4731 liters
1 quart = 0.9464 liters
1 gallon = 3.7854 liters
1 cubic inch = 16.387 cubic centimeters
1 cubic foot = 0.0283 cubic meters
1 cubic yard = 0.7646 cubic meters

NOTE: The Mathews Company reserves the right to incorporate any changes in design without obligation to make these changes on units previously sold.

SET-UP INSTRUCTIONS

General

Before beginning to set-up your Shredder, read the set-up instructions carefully to become familiar with the machine.

Check to make sure that you have received all parts listed on your packing list and/or machine order. Make claims for any shortages immediately.

RIGHT or LEFT and FRONT or REAR of the Shredder is determined by standing behind the Shredder looking toward the tractor PTO.

Assemble the Shredder on a solid flat level surface to insure safety and to aid in aligning parts during assembly.

CAUTION: Get help if the parts are too heavy or difficult for you to handle.

CAUTION: Always use safety stands or blocking in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.

IMPORTANT: Never lift or handle the Shredder by the rotor. Also, when shipping, never use the rotor as an anchor point to tie the Shredder down.

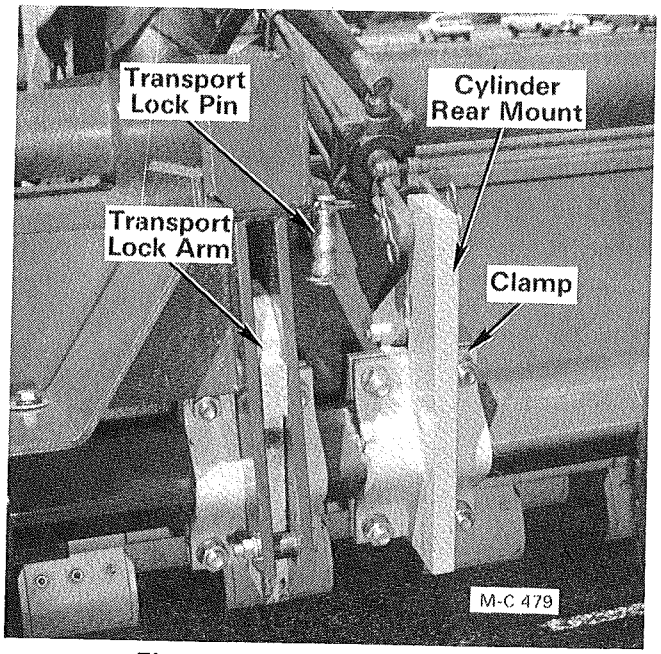


Figure 3 - S/N 46070 & Up

Cylinder Rear Mount

1. Install the cylinder rear mount assembly on the Shredder axle, see Figure 3. Position it on the axle so that it is aligned with the cylinder front mount that is welded to the Shredder body. Secure the clamp with four ¾"-10 x 2½" (Grade 5) hex-head capscrews, lockwashers and nuts. Install the mechanical or hydraulic ram.

Wheel Mounts and Wheels

1. Install the wheels and tires on the wheel mounts. Inflate the tires to 32 lbs. Attach a sling to the lifting eyes on top of the Shredder body. Lift the Shredder with a chain hoist just high enough to install the wheel mounts and wheels.

IMPORTANT: Do not lift the Shredder by the rotor.

2. Determine wheel spacing on the Shredder axle needed to track correctly in your crop rows. The wheel spacing on the left and right should be the same distance from the center of the Shredder for proper balance.

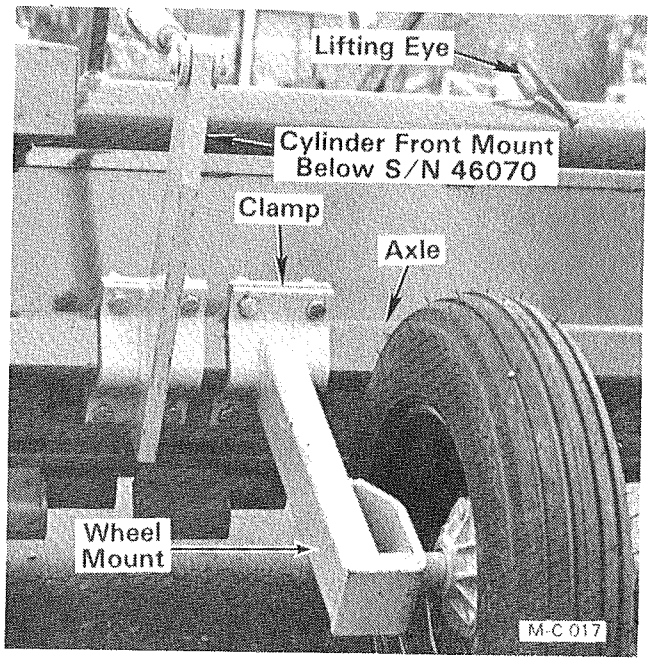


Figure 4

3. Install the wheel mounts and wheels on the axle at the desired spacing,see Figure 4 and note. Secure each wheel mount clamp with four ¾"-10 x 2½" (Grade 5) hex-head capscrews, lockwashers and nuts.

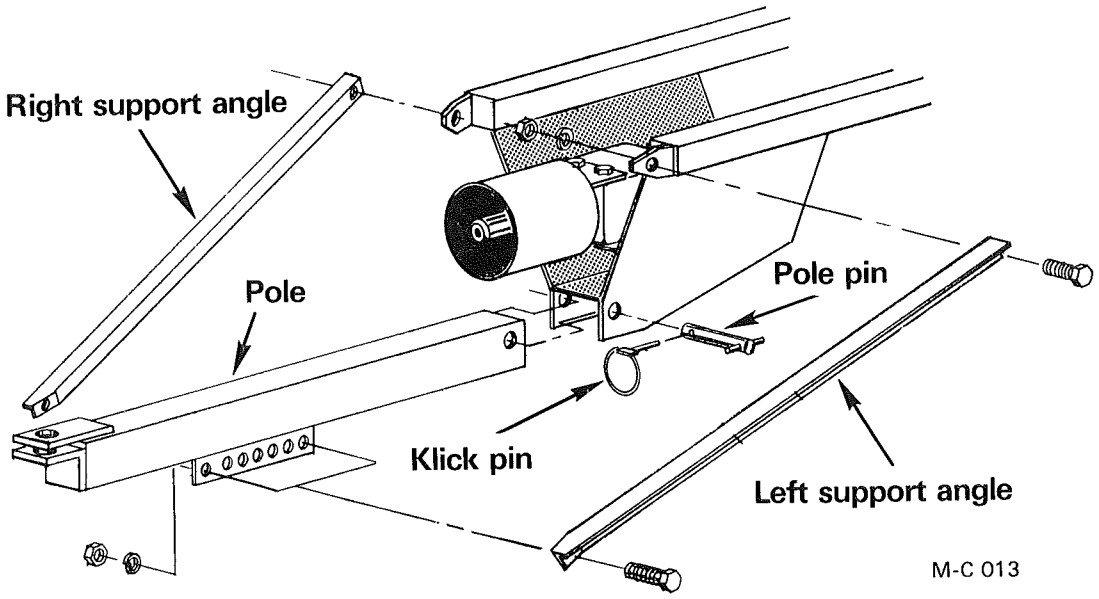


Figure 5

NOTE: If necessary, the optional mechanical or hydraulic ram can be used to rotate the axle to obtain wheel mount clamp alignment.

4. Lower the Shredder and check to see that all wheels contact the ground. If they do not, reposition the wheel mount(s) on the axle.

Pole and Supports

1. Lift the front of the Shredder and place the pole in position under the gear box and install the pole pin, see Figure 5 and 6. Secure the pole pin with the klick pin. Be sure klick pin ring is snapped into the locking position.

IMPORTANT: Do not lift the Shredder by the rotor.

2. There are seven pole support angle mounting holes on each side of the pole, see Figure 5 and 6. Select the position that will set the pole at the correct tractor drawbar height and keep the Shredder body as level as possible (See note). Secure the pole support angles with four ¾"-10 x 2" (Grade 5) hex-head capscrews, lockwashers and nuts.

NOTE: Keeping the Shredder body level as possible, front to rear, will insure safe operation and efficient shredding. The cutting height can be adjusted to suit various crops and/or field conditions. Refer to "Cutting Height" page 10.

3. Install the jack onto the mount and insert retaining pin. Lower the jack to transfer the weight of the Shredder to the pole and body. Remove the chain hoist.

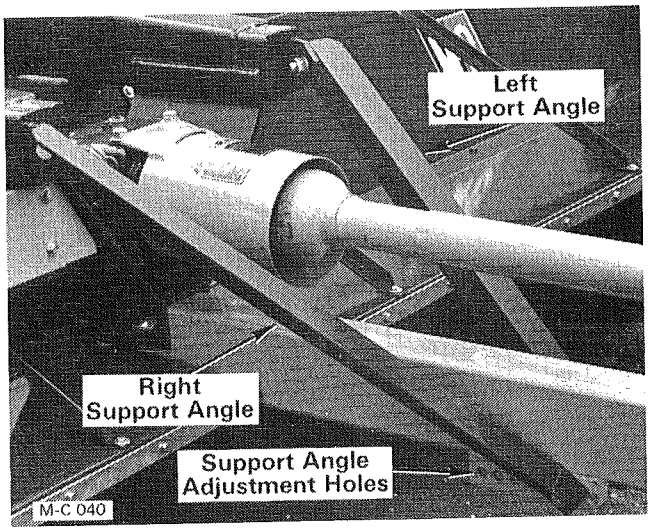


Figure 6

PTO Shaft

1. Remove the yellow PTO shaft guard from it's shipping position on top of the gear box.
2. Remove any paint and foreign material from the gearbox splined input shaft and from both PTO shaft yokes. Be sure the quick disconnect devices on the PTO shaft couplings are working smoothly to ease installation.
3. Apply a small amount of grease to the splines of the gear box input shaft and both PTO shaft yokes.
4. Install the six spline yoke end of the PTO shaft onto the gear box input shaft. Be sure the Saf-T-Pin is fully engaged. Slide the PTO shaft guard over the PTO shaft and attach it

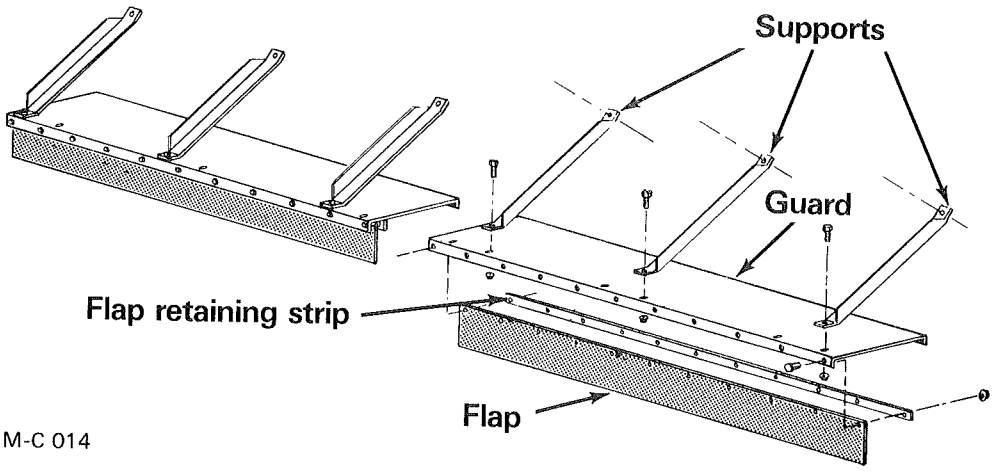


Figure 7

to the two front mounting holes in the gear box with two 5/8"-11 x 1" (Grade 5) hex-head capscrews and lockwashers.

NOTE: The PTO shaft supplied with the Shredder has a 1 3/8" - 21 spline yoke for the tractor and a six (6) spline end for the gear box. A 1 3/4" - 20 spline yoke is available for tractors with this size PTO drive. See Ref. 20 on page 38 for part number.

Stone Guards

1. Assemble the stone guard flaps and retaining strips to the stone guards as shown in Figure 7 and 8. Use 3/8"-16 x 1" hex-head capscrews and locknuts.

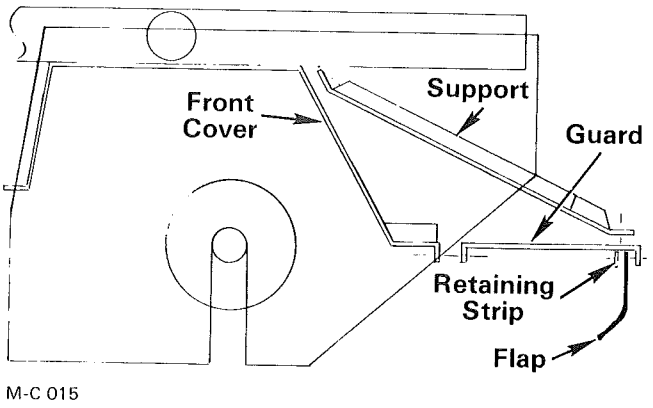


Figure 8

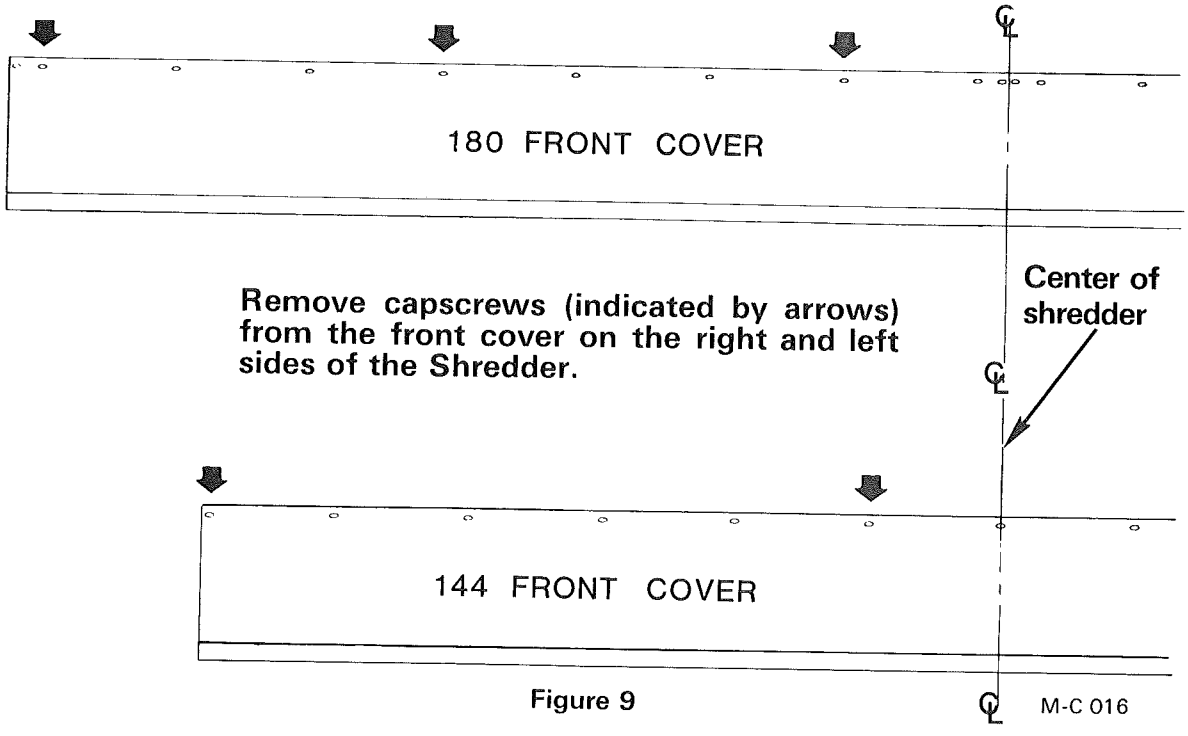


Figure 9

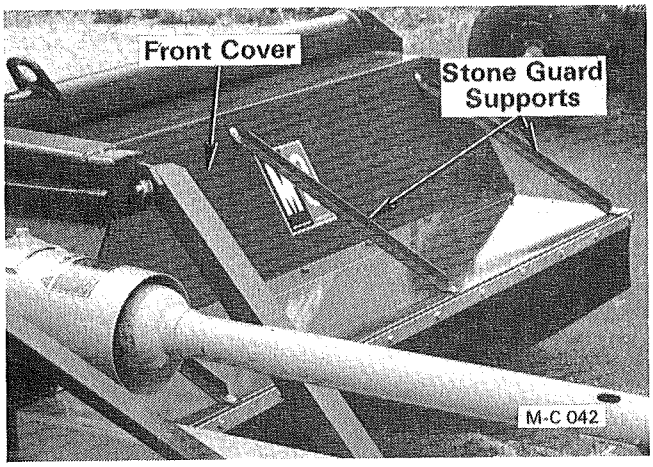


Figure 9A

2. Assemble the stone guard supports to the stone guards using ⅜"-16 x 1" (Grade 5) hex-head capscrews, flatwashers and locknuts. The flatwashers go under the locknuts.
3. Remove capscrews and locknuts securing the front cover to the Shredder body at the locations shown in Figure 9. These are the locations that the stone guard supports bolt to.
4. Install the assembled stone guards to the Shredder front cover, see Figure 9A. Use ⅜"-16 x 1" (Grade 5) hex-head capscrews, flatwashers and locknuts to secure the stone guard supports to the Shredder front cover. The flatwashers go under the locknuts. Use ⅜"-16 x ¾" (Grade 5) hex-head capscrews and locknuts to secure the stone guards to the Shredder front cover.

Lubrication

1. Remove the oil level plug on the left side of the gear box, see Figure 10. If the oil level is too low, remove the bushing, with vent, on top of the gear box and add oil (See note) until it runs out of the level plug. Install the level plug. Check to be sure the vent is not plugged with paint or dirt. Install the bushing with vent.

NOTE: All Model 144 Shredders below S/N 42902 and Model 180 Shredders below S/N 42972 have SAE 90 gear oil in the gear box. All Shredders above these serial numbers were filled with Mobilfluid 423. When adding, do not mix the two types of lubricant. When changing lubricant in the gear boxes with SAE 90 gear oil, refill with Mobilfluid 423 multipurpose transmission lubricant or equivalent.

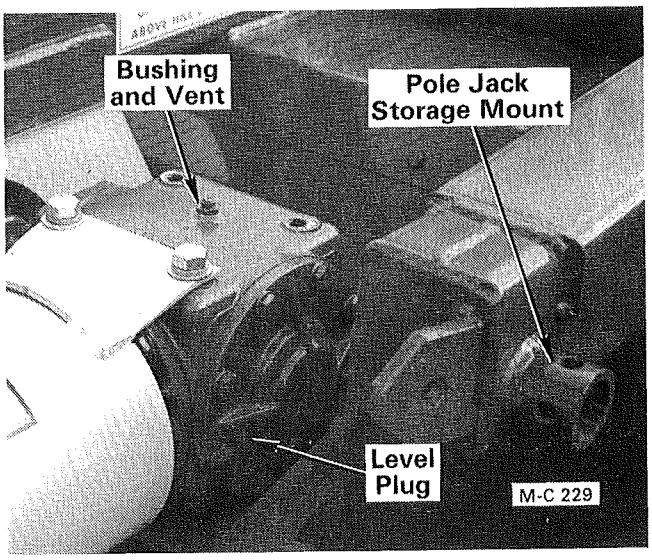


Figure 10

2. There are eight (8) lubrication fittings on the Shredder. For fitting locations refer to "Lubrication" page 12. Lubricate with a hand grease gun. Do not over lubricate. Too much grease may damage the bearing seals.

Tractor Drawbar Adjustment

1. To get the minimum amount of vibration and prolong the life of the bearings in the PTO shaft, adjust the tractor drawbar so that the distance from the end of the tractor PTO shaft to the center of the hole in the drawbar is 16 inches for the 1⅜" 21 spline PTO shaft and 20 inches for the 1¾" 20 spline PTO shaft.
2. Connect the PTO shaft to the tractor PTO. Be sure the Saf-T-Pin or Safety Slide Lock is fully engaged.

IMPORTANT

NOW THAT YOUR SHREDDER IS SET UP AND ALL SAFETY EQUIPMENT IS INSTALLED, RUN IT AT A LOW RPM CHECKING TO MAKE SURE THAT ALL DRIVE LINE PARTS ARE MOVING FREELY.

OPERATION

Safety Precautions

A safe operator is the best insurance against accidents. The precautions listed below must be observed at all times.

- Do not allow anyone on or around the Shredder while it is operating.
- Do not operate the Shredder without all safety shields in place and secure.
- Do not operate the Shredder without the stone guard. Operating without the stone guard could cause personal injury.
- Do not make any inspections or adjustments while the Shredder is operating or while the tractor is running.
- On tractors not equipped with an over-running PTO clutch, the momentum of the Shredder rotor may propell the tractor forward when the tractor clutch is disengaged.

General

1. It takes approximately 10 to 15 acres of shredding to get the inside of the Shredder and the knives polished to obtain the best performance. As the Shredder breaks in, performance will improve.
2. Always start and stop the Shredder slowly to prevent excessive shock loads to the belt drive assembly and rotor. Engage and disengage the tractor PTO at low engine RPM.
3. Rotor rotation is counterclockwise when standing on the right side of the Shredder looking at the belt guard cover.
4. Never operate the Shredder with missing or broken knives. If any knives are missing or broken, the rotor will be out of balance and the Shredder will vibrate. Replace missing or broken knives in sets. See "Knife Replacement" page 13 and 14 for procedure.

CAUTION: Before attempting to make any inspection, be sure to disengage the PTO and stop the tractor engine.

5. After 10 to 20 hours of operation check the drive belt adjustment, see page 16.
6. A safety check should be made after the Shredder has been in operation a few hours.
   A. Tighten all capscrews and locknuts.
   B. Inspect all knives and knife hangers to be sure they are not damaged and are secure.
   C. Check to be sure that all guards and shields are in place and secure.
   D. Inspect the wheel mounts, rotor, gear box, output drive shaft, belt drive assembly and PTO shaft for signs of unusual wear or lubrication leaks that could lead to part failure.

Tractor PTO and Ground Speed

1. The Shredder was designed to operate with a PTO speed of 1000 RPM. A ground speed of three (3) to six (6) miles per hour can be used for shredding moderate to heavy crops.
2. Horsepower requirements will vary with the weight of the crop and/or the type of shredding being done. All of the Shredder drive components are rated safely to 100 horsepower capacity. Tractors with higher or lower horsepower ratings may be used.
3. A lower ground speed will decrease the power requirement by reducing the amount of material being shredded. A higher ground speed will increase power requirements.

Cutting Height

1. With different crops or field conditions it may be necessary to adjust the cutting height. The Shredder body can be raised or lowered easily and quickly to the desired cutting height by rotating the Shredder axle.

IMPORTANT: Operate with knives 2" above hill on row crops.

2. The Shredder axle can be rotated with the optional mechanical ram or an owner supplied hydraulic ram. The hydraulic ram is preferred. The operator can quickly raise and lower the Shredder body to avoid contacting the ground or other obstacles when shredding.

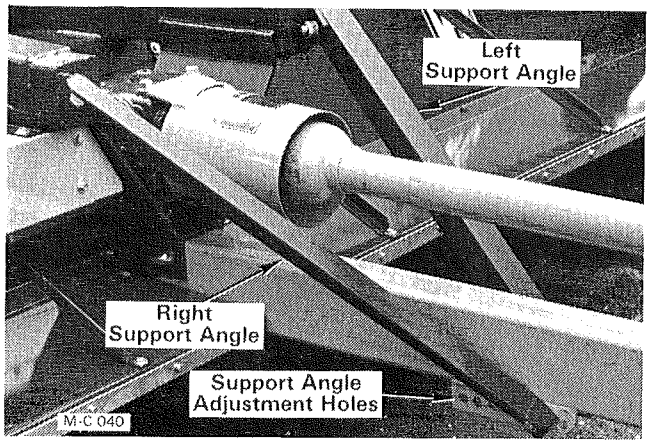


Figure 11

3. The Shredder body must be kept as level as possible from front to rear to insure safe operation and proper shredding action. The Shredder can be leveled by moving the pole support angles forward or back in the pole mounting holes, see Figure 11. Seven (7) holes are provided for adjustment.
4. Moving the angles forward will lower the cutting height and moving the angles to the rear will raise the cutting height. For best operation, the Shredder skids should be parallel to the ground. Be sure to tighten pole support angle capscrews after adjustment has been made.

Cutter Bar

1. Two adjustable cutter bars are located under the front edge of the front cover. Shredders are shipped with the cutter bars in the fully retracted position. This position provides maximum clearance between the cutter bars and knives.

CAUTION: Disengage the PTO and stop the tractor engine before adjusting the cutter bars.

2. If finer shredding is desired, loosen the capscrews and nuts securing the cutter bars to the front cover. (There are five (5) per side on the Model 144 and eight (8) per side on the Model 180). Loosen the capscrews just enough to permit the cutter bars to move in the adjusting slots.
3. Slide the cutter bars toward the back of the shredder until the desired spacing is obtained between the knives and the cutter bars. Adjust both sides evenly. Tighten capscrews and nuts.
4. Before operating the Shredder, rotate the rotor **slowly** to be sure the knives do not strike the cutter bars.

CAUTION: When checking for clearance, do not stand behind the Shredder. Stay well clear and **listen** for possible interference.

Transporting the Shredder

1. All Shredders starting with serial number 46070 are equipped with a transport lock assembly, see Figure 11A.
2. When the Shredder is to be transported, raise the body all the way up with the ram. Remove the pin from the storage bracket and insert it through the body and over the transport lock arm as shown. Put the two pin clips on the pin and relieve the ram pressure.

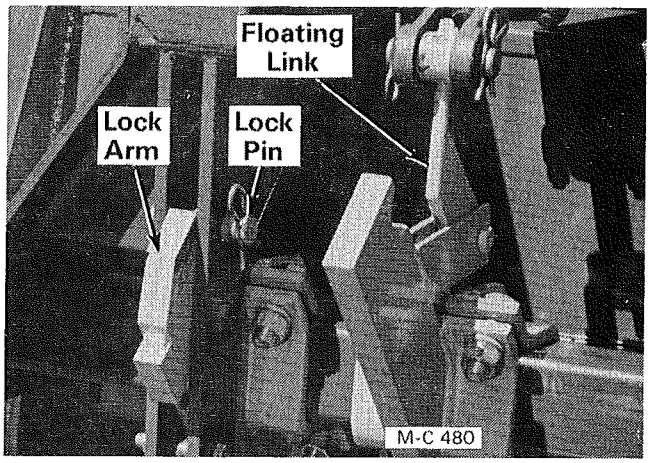


Figure 11A

Pole Jack

1. To prevent possible damage to tractor tires when making sharp left turns, remove the pole jack from the pole. Store it on the jack mount located on the left side of the body by the gear box, see Figure 12.

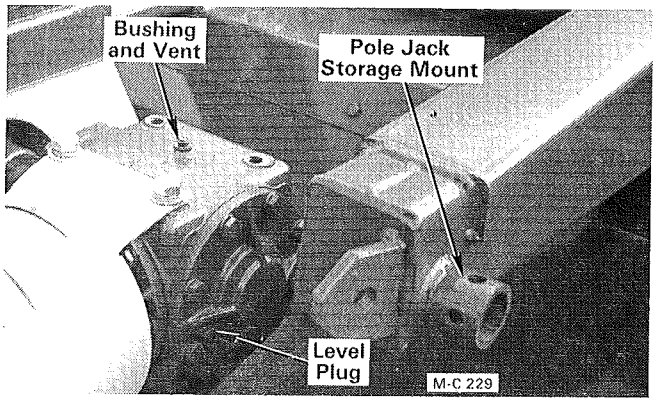


Figure 12

MAINTENANCE

Lubrication

There are 8 lubrication fittings on the Shredder. Lubricate with a hand grease gun. Use a good grade of bearing grease. Do not over lubricate. Too much grease may damage the bearing seals.

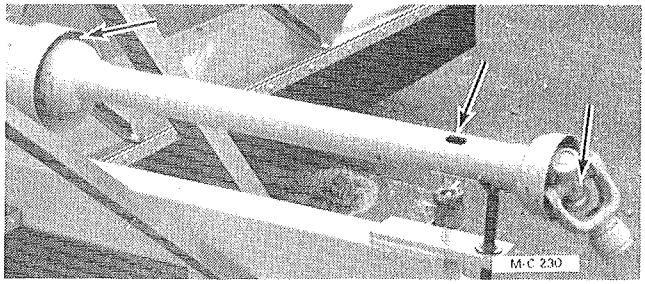


Figure 13

Every 40 Hours

1. Power take-off shaft universal joints. One fitting in each yoke. One fitting in the telescoping spline shaft. See Figure 13.

NOTE: To locate the PTO spline shaft fitting, compress the PTO shaft until the distance from the center of one yoke to the center of the other is 40¼ inches. Rotate the male and female guards until the slots in the guards are aligned. Then rotate both guards together until the fitting apears in the slot.

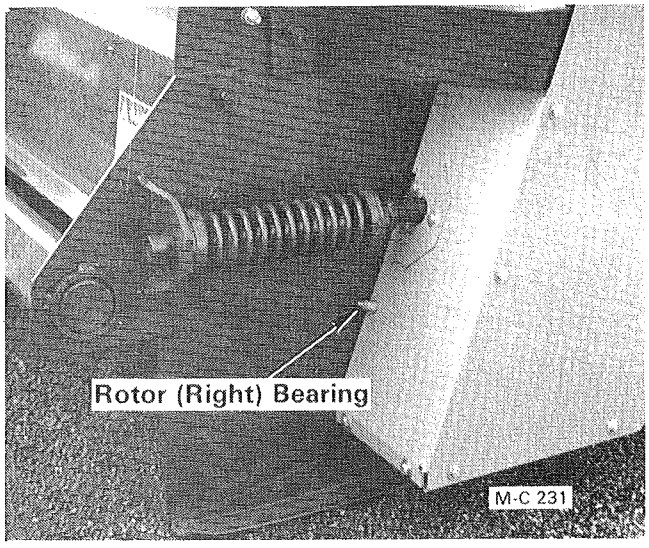


Figure 14

2. Rotor bearings. One fitting on each end of the rotor, see Figure 14 and 15.
3. Output shaft bearing, see Figure 16.
4. Output shaft universal joint, see Figure 17. Located under the output shaft guard.

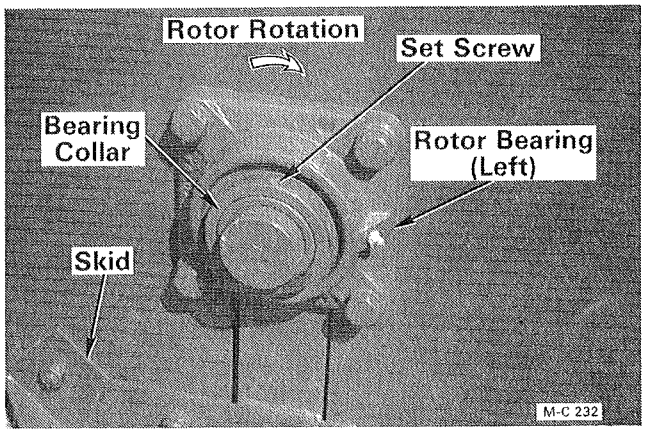


Figure 15

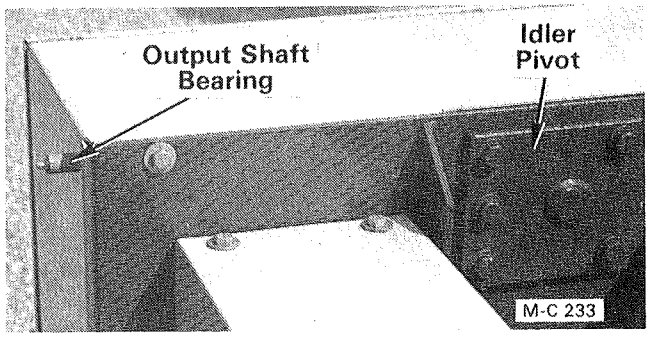


Figure 16

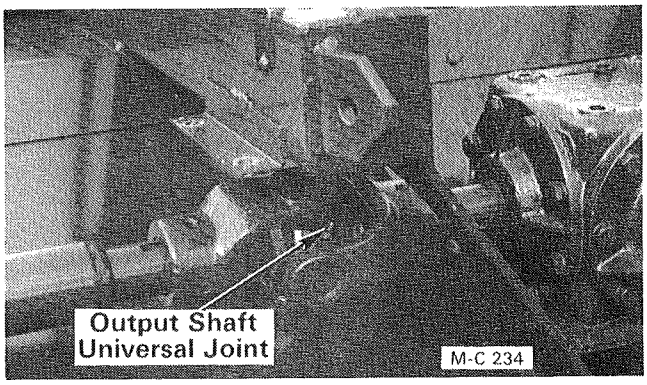


Figure 17

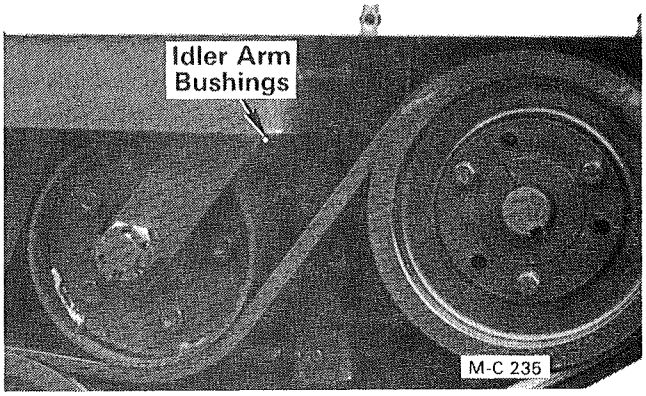


Figure 18

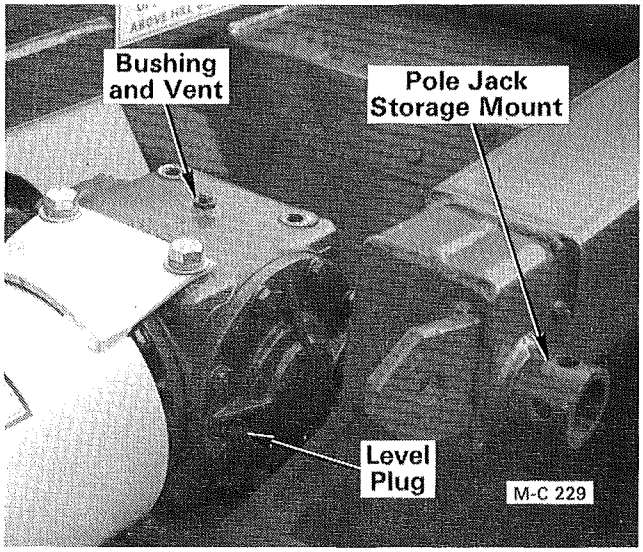


Figure 19

Every 200 Hours (or seasonally)

1. Idler arm bushings. One fitting behind the belt guard cover, see Figure 18.

Periodically During the Season

1. Periodically check the oil level in the gear box. Remove the oil level plug on the left side of the gear box, see Figure 19. The oil level should be even with the bottom of the level plug hole. If not, remove the bushing and vent on top of the gear box and add SAE 90 gear oil (See note).

NOTE: All Model 144 Shredders below S/N 42902 and Model 180 Shredders below S/N 42972 have SAE 90 gear oil in the gear box. All Shredders above these serial numbers were filled with Mobilfluid 423. When adding, do not mix the two types of lubricant. When changing lubricant in gear boxes with SAE 90 gear oil, refill with Mobilfluid 423 multipurpose transmission lubricant or equivalent.

2. Install the level plug and the bushing with vent. Check to be sure the vent is open.

Knife Sharpening

1. Under normal operating conditions the knives will give you many trouble free acres of service with only occasional maintenence. The knives are mounted so they are free to swing on the rotor. This gives the knives increased cutting action and shock absorbing ability.
2. Normally it is not necessary to sharpen the knives on the Model 144SB and 180SB unless the Shredder is being used to cut grass.
3. It is important to check the knives occasionally for sharpness and/or possible damage from hitting rocks or prolonged contact with the ground. Replace any damaged knives. Operating with damaged knives can cause vibration due to rotor imbalance.
4. The slicer knives on the Model 144SS and 180SS are difficult to sharpen with conventional grinding equipment due to the curvature of the knife. Therefore, it is suggested that the knives be replaced as required. See "Knife Replacement" below.
5. The knives on the Model 144SB and 180SB can be sharpened on the Shredder with a portable electric grinder or they can be removed (See "Knife Replacement" page 14) and sharpened on a bench grinder. The knives should be sharpened only on the back side. Be sure to retain the original 30° cutting angle.

CAUTION: Always wear safety glasses when sharpening knives with a grinder.

6. If the knives are to be sharpened on the Shredder, lift the back of the Shredder just high enough to provide access to the knives.

CAUTION: Always use safety stands or blocking in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.

IMPORTANT: Never lift or handle the Shredder by the rotor.

Knife Replacement

Model 144SS and 180SS

1. Lift the back of the Shredder just high enough to provide access to the knives.

CAUTION: Always use safety stands or blocking in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.

IMPORTANT: Never lift or handle the Shredder by the rotor.

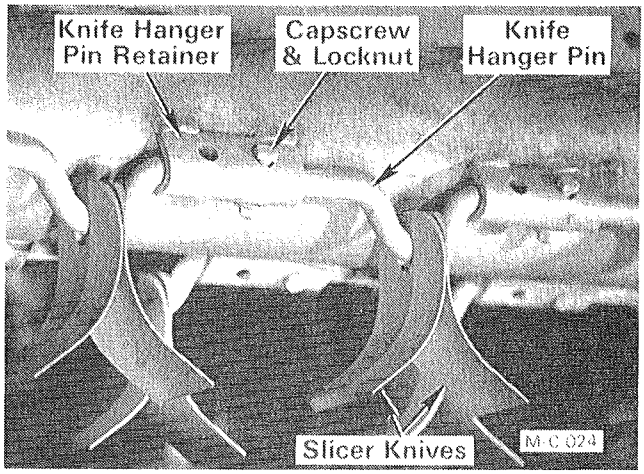


Figure 20 - Front View

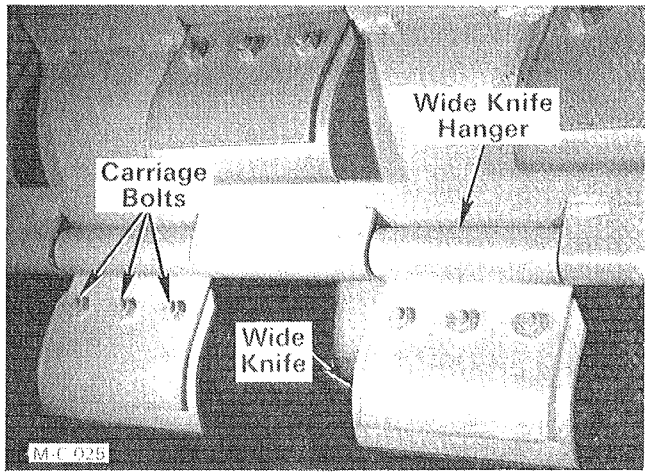


Figure 21 - Rear View

2. Remove the capscrew and locknut from the knife hanger pin retainer. Slide the knife hanger pin to the left and remove the hanger pin and knives, see Figure 20.

IMPORTANT: When replacing knives, always replace the knives on the opposite side to maintain rotor balance.

3. Installation of the knives and hanger pins is the reverse of the removal procedure. The cutting edge of the knives **must** face the front of the Shredder as they hang down from the rotor. If any knife hanger pins are to be replaced see "Knife Hanger Pin Replacement" page 15.

4. Tighten the capscrew and locknut securely. If the capscrew is being replaced, be sure to use a grade 5. Check to be sure that the whole knife assembly swings freely.

Model 144SB and 180SB

1. Lift the back of the Shredder just high enough to provide access to the knives.

CAUTION: Always use safety stands or blocking in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.

IMPORTANT: Never lift or handle the Shredder by the rotor.

2. Individual knives can be removed by removing the three carriage bolts and locknuts securing the knife to the knife hanger, see Figure 21.

3. A complete set of knives and knife hangers on one rotor hanger bar can be removed as explained in step 4 for Shredders with serial number 36855 thru 46069 and in step 5 for Shredders starting with serial number 46070.

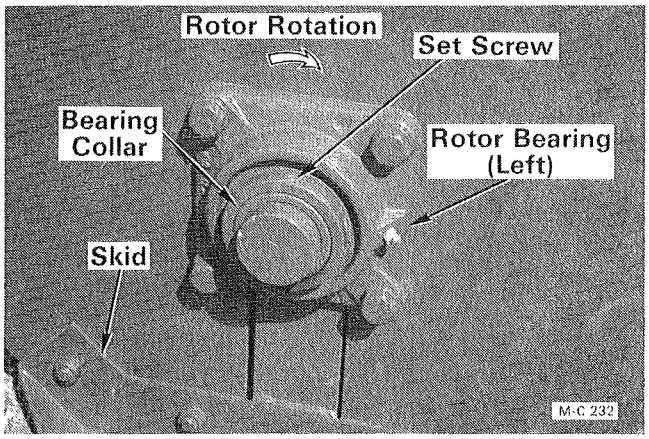


Figure 22

4. **Serial Number 36855 thru 46069**

   A. Remove the left skid, see Figure 22. Remove the right skid and the belt guard cover.

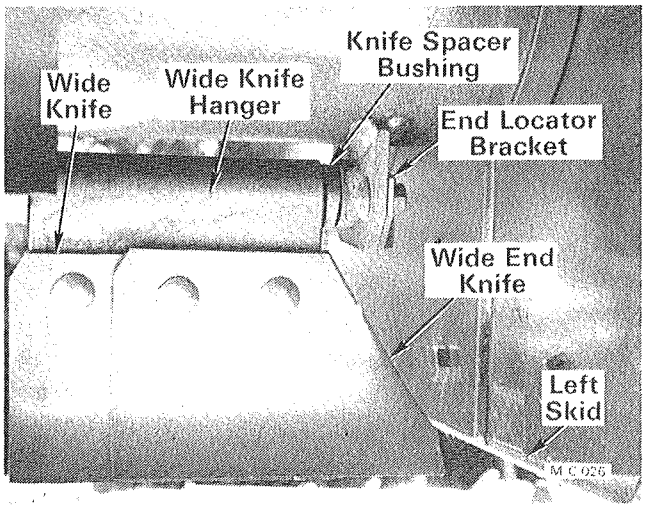


Figure 23 - Front View

B. Turn the rotor and line up the rotor hanger bar in the center of the slot in the left side of the body. Block the rotor in this position. Remove the left end locator bracket, see Figure 23.

C. Place a 3/8 inch bar in the hole in the center of the right end locator bracket. Drive the rotor hanger bar(s) out the left side as far as you can. Attach a vise grip plier to the hanger bar and pull the hanger bar out. The knife hangers and knives will drop off.

5. **Serial Number 46070 and UP**

NOTE: The end locator brackets are welded to the left end of the hanger bars on the 144SB and to the end of the left and right hanger bars on the 180SB.

A. Remove the left skid, see Figure 22.

B. **180SB Only** — Remove the right skid. Remove the rotor pulley. Refer to "Drive and Rotor Pulley Replacement" on Page 19.

C. Turn the rotor and line up the hanger bar in the center of the slot in the left side of the body, see Figure 23. Block the rotor in this position.

D. Loosen the four left rotor bearing mounting bolts and remove the lower half of the anti-wrap.

E. Remove the two capscrews and locknuts securing the left end locator bracket to the rotor. Turn the locator bracket to a vertical position and pull the bracket and hanger bar out through the slot in the body. The knife hangers and knives will drop off as the hanger bar is pulled out.

F. **180SB Only** — Repeat steps D and E to remove the hanger bar on the right side.

Installation of the knife hangers, knives and rotor hanger bars is the reverse of the removal procedure. When reassembling pay particular attention to the following:

A. The dished or concave side of the knives must face the front of the Shredder when hanging down and swing freely.

B. The end knives must be opposite each other at each end of the rotor. The wide end of the knife faces the outside, see Figure 23.

C. A knife spacer bushing goes between each end locator bracket and wide knife hanger, see Figure 23.

IMPORTANT: Whenever a knife is replaced, always replace the knife on the opposite side to maintain rotor balance.

Knife Hanger Pin Replacement

Model 144SS and 180SS

1. Lift the back of the Shredder just high enough to provide access to the knives.

CAUTION: Always use safety stands or blocking in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.

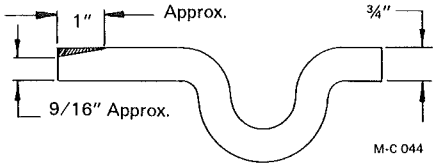
IMPORTANT: Never lift or handle the Shredder by the rotor.

2. Beginning with Serial No. 41689, the diameter of the long and short knife hanger pins was changed from 5/8" to 3/4". The 5/8" diameter knife hanger pins are no longer available.

3. The new 3/4" diameter knife hanger pins can be used as a replacement for the 5/8" diameter knife hanger pins by grinding a small taper on the long end, see Figure 24.

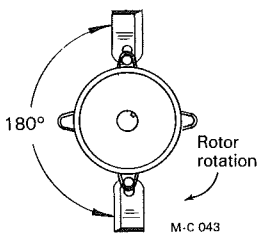
4. If all knife hanger pins are replaced, no rotor balance problem will be experienced. However, if only some of the knife hanger pins are replaced, the same number of pins must be replaced on the opposite side to maintain rotor balance, see Figure 25.

IMPORTANT: To get the correct overlap of knives, the knife pins must be installed as shown in Figure 26 on page 16.



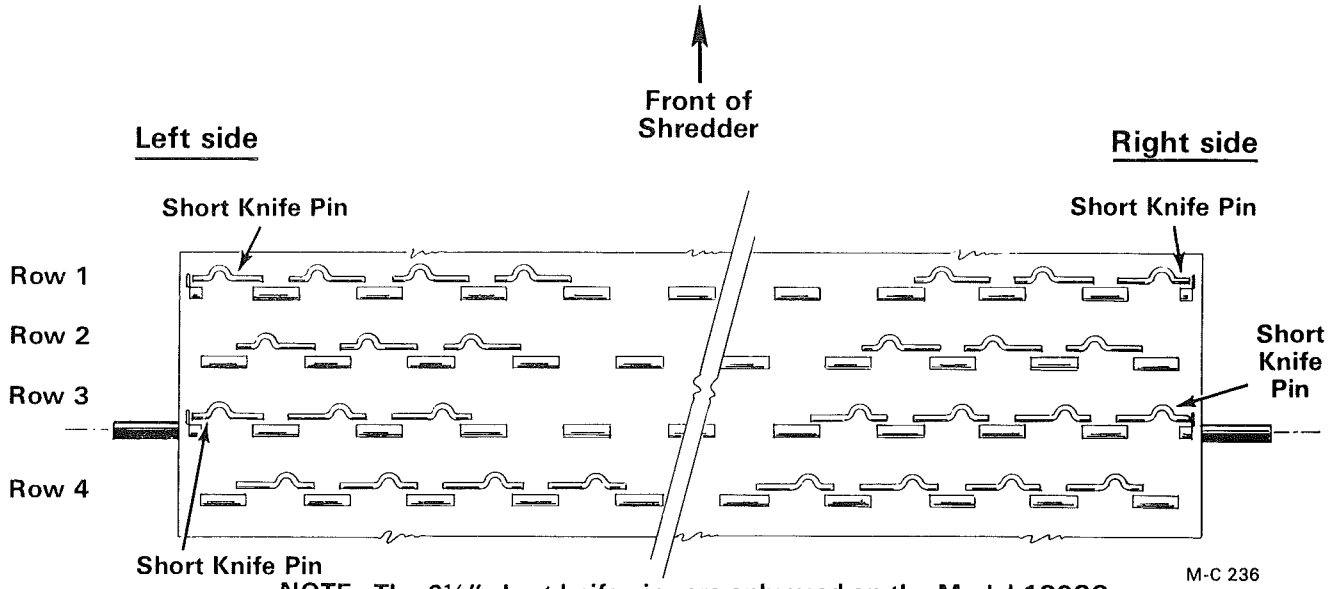
Suggested Dimensions To Gind Off Long End of 3/4" Dia. Hanger Pins.

Figure 24



Pins 180° Apart Must Be The Same Diameter.

Figure 25



NOTE: The 6½" short knife pins are only used on the Model 180SS.

Figure 26

5. Model 180SS has four short knife pins (¾" OD x 6½" long) on the rotor and they must be installed at each end of row 1 and 3 as shown in Figure 26. These two rows are 180° apart. All other knife pins are ¾" OD x 7½" long.
6. All of the knife pins on Model 144SS are ¾" OD x 7½" long.
7. The short end of **all** pins go to the left on rows 1 and 2 and to the right on rows 3 and 4 except the right side of row 1 and the left side of row 3 as shown in Figure 26.
8. This sequence of knife pin installation will provide an even cut the full width of the rotor.

Drive Belt Adjustment

1. With the Shredder running, look at the idler push rod, Figure 27, to see if there is any back and forth movement. If there is, the belt tension needs to be adjusted.

CAUTION: Disengage the PTO and stop the tractor engine before adjusting the drive belt tension.

2. Loosen the jam nut and tighten the adjusting nut one full turn, see Figure 27.
3. Run the Shredder and check for idler push rod movement. If there is back and forth movement, stop the Shredder and tighten the adjusting nut one more full turn.
4. Continue this procedure until there is no back and forth movement of the idler push rod. Then tighten the adjusting nut one additional turn and tighten the jam nut.

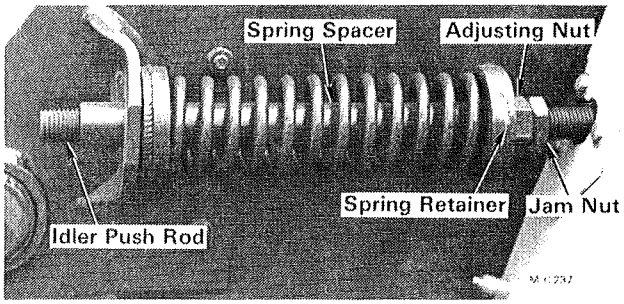


Figure 27

Drive Belt Replacement

NOTE: Shredders with serial number 36855 thru 46069 were equipped with a matched set of two banded belts. Shredders starting with serial number 46070 were equipped with a matched set of six individual belts. The matched set of six individual belts will be supplied for service on all Shredders.

IMPORTANT: The six drive belts are a matched set. If just one belt failed, all belts must be replaced.

1. Remove the belt guard cover.
2. Before replacing the drive belts determine what caused the belt(s) to fail. Three common causes of belt failure are:
   A. If a belt is broken, this indicates a severe shock load or engagement of the tractor PTO at high engine RPM. Always engage and disengage the tractor PTO at low engine RPM.
   B. If a belt is burned in places, this indicates that the belt is slipping. Adjust belt tension. Refer to "Drive Belt Adjustment".

C. If a belt has one segment turned over, is frayed or there is a great amount of powdered rubber in the belt guard, the drive and rotor pulleys are misaligned or the idler pulley is misaligned. Refer to "Drive and Rotor Pulley Alignment" following and "Idler Pulley Alignment" page 18.

To prevent another belt failure, correct the problem before installing new belts.

3. Loosen the idler spring jam nut and back off the adjusting nut to relieve all spring tension.

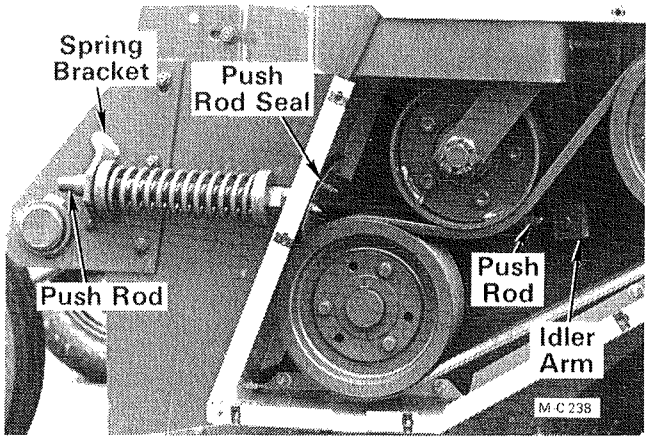


Figure 28

4. Remove the idler push rod seal, see Figure 28. Disconnect the idler push rod at the idler arm.
5. Pull the idler push rod out of the spring bracket and remove the idler push rod and spring assembly.
6. Block or tie the idler pulley up to the back of the belt guard and remove the old belts.
7. Before installing the new belts check Drive and Rotor Pulley Alignment following and the Idler Pulley Alignment page 18.
8. Clean dirt and debris from inside the guard and in the pulley grooves. Dirt build-up in the pulley grooves can ruin the belts.
9. Install the new drive belts. Install the idler push rod and spring assembly into the idler spring bracket, see Figure 28.
10. Connect the idler push rod to the idler arm and reinstall the idler push rod seal.
11. Turn the idler spring adjustment nut clockwise until the spring retainer is up to, but not tight against, the spring spacer, see Figure 27.

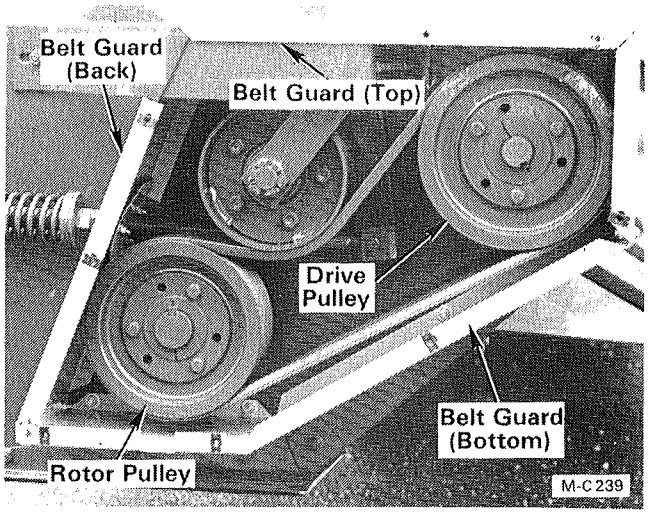


Figure 29

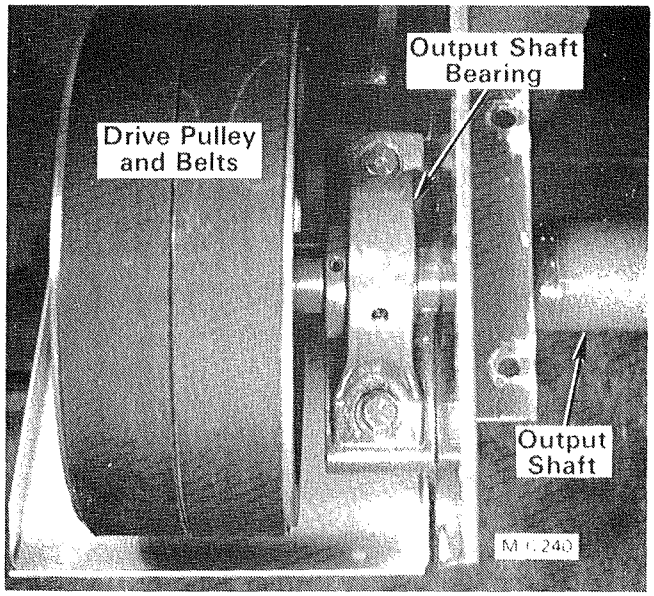


Figure 30 - Top View
(Top Belt Guard Removed)

12. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 16.

Drive and Rotor Pulley Alignment

1. Remove the belt guard cover and place a straight edge across the face of the drive and rotor pulley, see Figure 29.
2. If the pulleys are not in alignment, loosen the idler spring jam nut and back off the adjusting nut to relieve all idler spring tension. Block the idler up toward the back of the belt guard.
3. Remove the top belt guard and adjust the output shaft bearing, Figure 30, as follows:

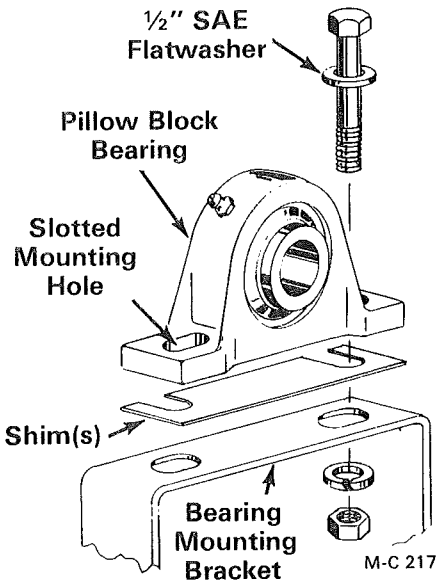


Figure 31

A. **Pulleys are out of alignment vertically** Raise or lower the output shaft and bearing as required by adding or removing shims under the bearing, see Figure 31.

B. **Pulleys are out of alignment horizontally** Loosen the bearing mounting capscrews and move the output shaft and bearing forward or back as required. The bearing mounting holes are slotted for this purpose, see Figure 31.

4. Check idler pulley alignment, see "Idler Pulley Alignment" following.

Idler Pulley Alignment

1. The belt idler pulley must run in line with the drive and rotor pulleys so that the belts track flat on the idler pulley.

IMPORTANT: The drive and rotor pulleys must be in alignment before checking idler pulley alignment.

2. To check idler pulley alignment, place a straight edge across the face of the idler pulley over to the drive pulley. Measure the distance from the face of the drive pulley to the straight edge at two places. If the measurements are equal the idler pulley is aligned.

3. If the idler pulley is out of alignment, loosen the idler spring jam nut and back off the adjusting nut to relieve all idler spring tension, see Figure 27.

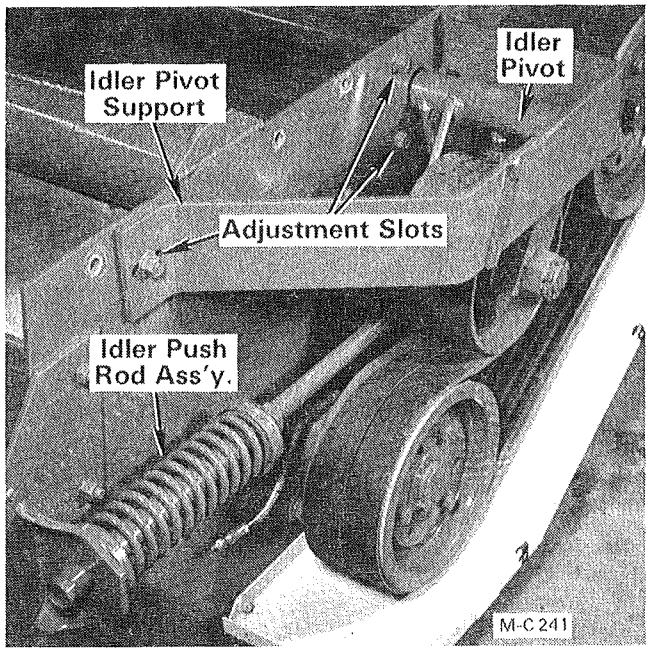


Figure 32

4. The idler pivot support is adjustable horizontally and the idler pivot is adjustable vertically, see Figure 32.

5. Loosen the idler pivot support capscrews, see Figure 33, and the idler pivot capscrews, see Figure 34.

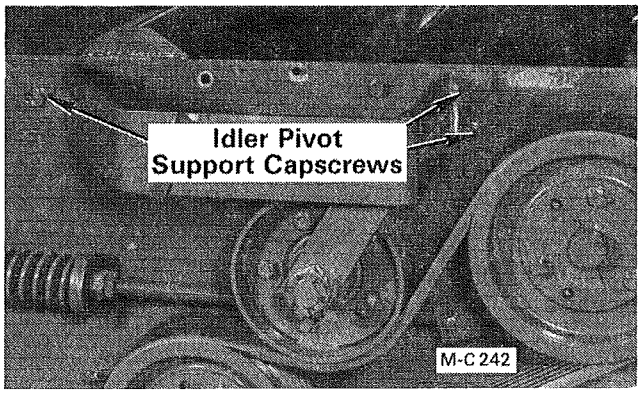


Figure 33

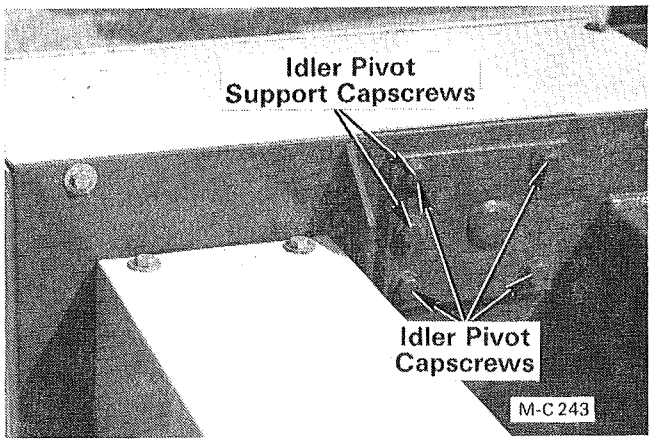


Figure 34

6. Move the idler pivot support forward or back and/or the idler pivot up or down as required until the idler pulley is in alignment.
7. When the idler pulley is aligned with the rotor and drive pulley, tighten the idler pivot and pivot support capscrews securely.
8. Turn the idler spring adjustment nut clockwise until the spring retainer is up to, but not tight against, the spring spacer, see Figure 27.
9. If the spring retainer is over tightened, the self adjusting spring action will be lost and excessive belt wear may result. Install the top belt guard and the belt guard cover.

Drive and Rotor Pulley Replacement

NOTE: The drive and rotor pulleys are held on the shafts with tapered bushings. The bushings have jack screw holes that are used to remove them. **Do not** attempt to remove the pulleys with a gear puller as this could result in damage to the pulleys.

1. Remove the belt guard cover, top belt guard and back belt guard.
2. Remove the drive belts. Refer to "Drive Belt Replacement" page 16 for procedure.

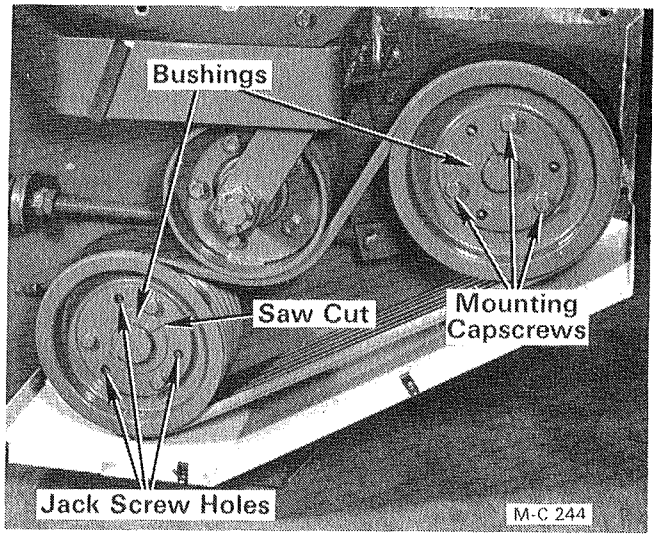


Figure 35

3. Remove the three mounting capscrews, see Figure 35. Thread the capscrews into the three jack screw holes in the pulley. Tighten the three capscrews progressively and evenly until the pulley is loose on the bushing.

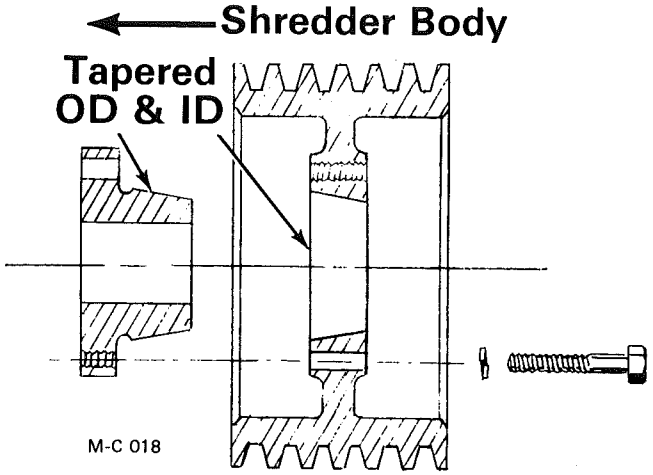


Figure 36

4. Remove the pulley and bushing from the shaft. If the bushing does not slip off of the shaft, wedge a screwdriver blade in the saw cut in the end or flange of the bushing (not the tapered surface) to spread the bushing.
5. Before installing the bushing and pulley thoroughly inspect the tapered bore of the pulley and the tapered surface of the bushing. Any paint, dirt, oil or grease **must** be removed.
6. Place the bushing into the pulley from the back so that the bushing flange is to the inside, see Figure 36. The bushing and the bore of the pulley are tapered. Be sure to install the bushing into the large ID of the pulley tapered bore. If the bushing is installed into the small ID of the pulley, the pulley hub will crack when the mounting capscrews are tightened.
7. Place the three capscrews through the open holes in the pulley and thread them into the bushing by hand. Do not tighten the capscrews.

IMPORTANT: The capscrew and bushing threads must be clean and dry. Do not lubricate.

8. Install the key in the output drive and/or rotor shaft. Slide the bushing and pulley assembly onto the shaft. If the bushing is too tight on the shaft, wedge a screwdriver blade into the saw cut in the end of the bushing to spread the bushing.
9. Install the belts and move the pulley and bushing in or out until the belts are in alignment on the pulleys. Tighten the three

capscrews evenly and progressively. Torque the capscrews to 60 ft. lbs.

IMPORTANT: The tightening force on the three capscrews is multiplied many times by the wedging action of the bushing tapered surface. Do not exceed the specified torque, or use a lubricant on the capscrew threads. To do so may create bursting pressures in the hub of the pulley.

NOTE: There should be a ⅛ to ¼ inch gap between the pulley hub and the flange of the bushing. If the gap is closed, the shaft is undersize.

10. Check "Drive and Rotor Pulley Alignment" page 17 and "Idler Pulley Alignment" page 18 and adjust if necessary. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 16. Install the back belt guard, top belt guard and belt guard cover.

Rotor Bearing Replacement

Left Bearing

1. Lift the left side of the Shredder and block up the rotor so it cannot fall when the bearing is removed. **Do not** lift the Shredder by the rotor.

CAUTION: Always use safety stands or blocking in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.

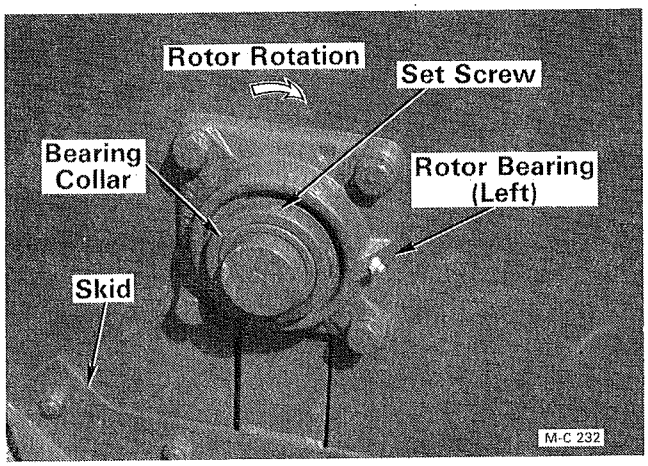


Figure 37

2. Clean the end of the rotor shaft with emery cloth. Remove the bearing collar set screw and four capscrews securing the bearing to the Shredder body, see Figure 37, and slide the bearing off of the rotor shaft.

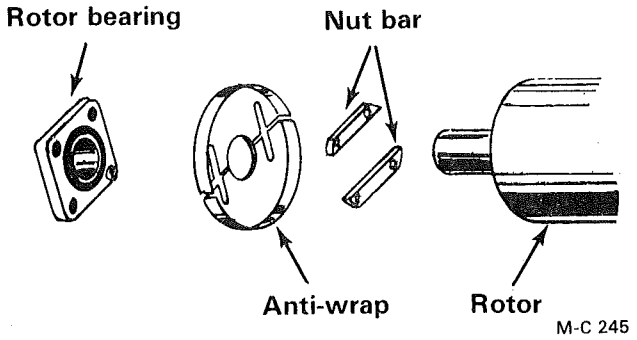


Figure 38

3. Lightly polish the rotor shaft with emery cloth. Lubricate the rotor shaft with motor oil and slide the new bearing onto the shaft with the lubrication fitting facing to the rear.

4. Place the four mounting capscrews through the bearing and Shredder body. Refer to Figure 38. Partially thread the capscrews into the nut bars. Slide the two anti-wrap halves over the capscrews. Tighten the capscrews and bearing collar set screw.

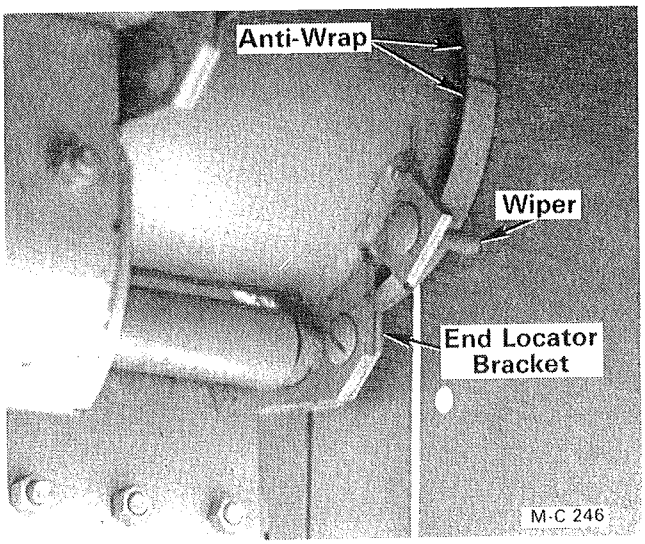


Figure 38A - Rear View

5. Check the position of the two wipers (180° apart) at the end of the rotor, see Figure 38A. They should be as close to the anti-wrap as possible without touching it. The wiper prevents material from building up on the anti-wrap. If necessary, loosen the wiper locknut and reposition the wiper in the adjusting slot.

6. Remove the safety stands and lower the Shredder to the ground. Lubricate the rotor bearing with a hand grease gun. Do not over lubricate. Too much grease may damage the bearing seal.

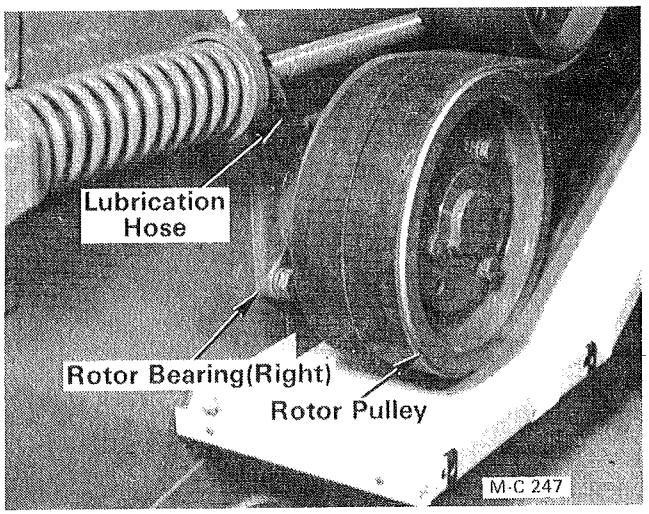


Figure 39

Right Bearing

1. Lift the right side of the Shredder and block up the rotor so it cannot fall when the bearing is removed. **Do not** lift the Shredder by the rotor.

CAUTION: Always use safety stands or blocking in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.

2. Remove the belt guard cover, lubrication hose and back belt guard, see Figure 39. Remove the drive belts. Refer to "Drive Belt Replacement" page 16 for procedure.
3. Remove the rotor pulley. Refer to "Drive and Rotor Pulley Replacement" page 19 for procedure.
4. Clean the end of the rotor shaft with emery cloth. Remove the bearing collar set screw and four capscrews securing the bearing to the shredder body and slide the bearing off of the rotor shaft.
5. Lightly polish the rotor shaft with emery cloth. Lubricate the rotor shaft with motor oil and slide the new bearing onto the shaft with the lubrication fitting on top facing the rear of the Shredder.
6. Place the four mounting capscrews through the bearing and Shredder body. Refer to Figure 38. Partially thread the capscrews into the nut bars. Slide the two anti-wrap halves over the capscrews. Tighten the capscrews and bearing collar set screw.
7. Check the position of the two wipers (180° apart) at the end of the rotor, see Figure 38A. They should be as close to the anti-wrap as possible without touching it. The wiper prevents material from building up on the anti-wrap. If necessary, loosen the wiper locknut and reposition the wiper in the adjusting slot.
8. Install the rotor pulley. Refer to "Drive and Rotor Pulley Replacement" page 19 for procedure. Check "Drive and Rotor Pulley Alignment" page 17 and "Idler Pulley Alignment" page 18 and adjust if necessary. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 16.
9. Install the back belt guard, bearing lubrication hose and belt guard cover. Remove the safety stands and lower the Shredder to the ground.
10. Lubricate the rotor bearing with a hand grease gun. Do not over lubricate. Too much grease may damage the bearing seal.

Output Shaft Bearing Replacement

1. Remove the output shaft guard.
2. Remove the belt guard cover, lubrication hose and the top belt guard. Remove the drive belts. Refer to "Drive Belt Replacement" page 16 for procedure.
3. Remove the drive pulley. Refer to "Drive and Rotor Pulley Replacement" page 19 for procedure.

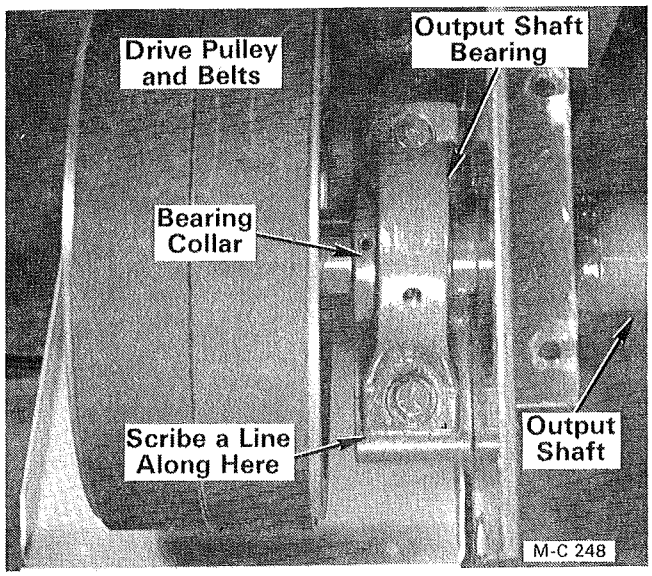


Figure 40

4. Scribe a line on the output shaft bearing mounting bracket as shown in Figure 40 to

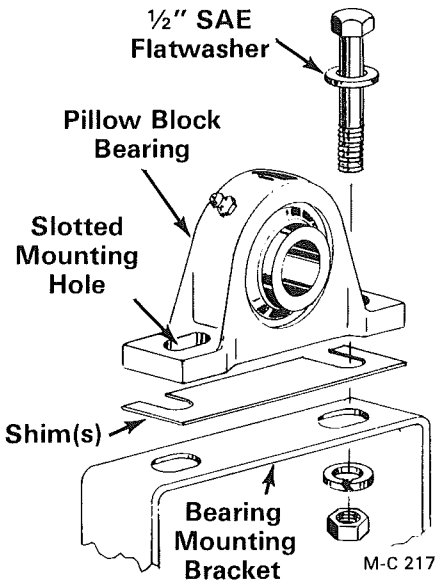


Figure 41

establish the location of the new bearing when reassembling.

5. Remove the bearing collar set screw, two capscrews, lockwashers and hex-nuts securing the output shaft bearing. Lift up on the output shaft and remove the shims from under the output shaft bearing, see Figure 41.

6. Clean the output shaft with emery cloth. Support the output shaft and pull the bearing off of the output shaft.

7. Lightly polish the output shaft with emery cloth. Lubricate the output shaft with motor oil and slide the new bearing onto the shaft. Be sure that the lubrication fitting faces the front of the Shredder.

8. Install the drive pulley. Refer to "Drive and Rotor Pulley Replacement" page 19 for procedure. Do not tighten the capscrews in the pulley bushing until the drive belts are installed and pulley alignment has been checked.

9. Install the drive belts.

10. Lift up on the output shaft and place the shims on the output shaft bearing mounting bracket, see Figure 41. Install the capscrews, SAE flatwashers, lockwashers and hex-nuts. Align the edge of the output shaft bearing with the mark scribed on the mounting bracket made in step 4, see Figure 40. Tighten the output shaft bearing capscrews and set screw in the bearing collar.

11. Check drive and rotor pulley alignment. Refer to "Drive and Rotor Pulley Alignment" page 17 for procedure (torque drive pulley bushing capscrews) to 60 ft. lbs. Check idler pulley alignment. Refer to "Idler Pulley Alignment" page 18 for procedure. Adjust drive belt tension. Refer to "Drive Belt Adjustment" page 16.

12. Install the top belt guard, lubrication hose, belt guard cover and output shaft guard.

13. Lubricate the output shaft bearing with a hand grease gun. Do not over lubricate. Too much grease may damage the bearing seal.

Idler Pulley Bearing Replacement

(Reference Nos. Refer to Figure 42)

1. Remove the belt guard cover, top belt guard and back belt guard.

2. Loosen the idler spring jam nut and back off the adjusting nut to relieve all spring tension. Disconnect the idler push rod at the idler arm.

3. Pull the idler push rod out of the spring bracket and remove the idler push rod and spring assembly.

4. Remove the three capscrews, lockwashers and hex nuts securing the idler pivot support to the Shredder body, see Figure 43 & 44. Remove the idler pivot support and pull the idler pulley assembly off of the idler pivot.

5. Remove cotter pin (1), castellated nut (2) and idler bolt (6) from the idler arm (5).

6. Use an internal puller, see Figure 45, to remove the bearing seals (8) and bearing cups (10).

7. Pack the new bearing cones (9) with a good grade of wheel bearing grease. Press the bearing cups (10) into the hub, install bearing cones (9) and press in the bearing seals (8).

8. Put a hub spacer (7) on each side of the hub assembly and place the assembly in the idler arm (5). Install idler bolt (6) and castellated nut (2). Tighten the nut just enough to hold the assembly together.

9. Place the idler pulley assembly on the idler pivot. Install the idler pivot support, see Figure 43 & 44. Do not tighten the cap

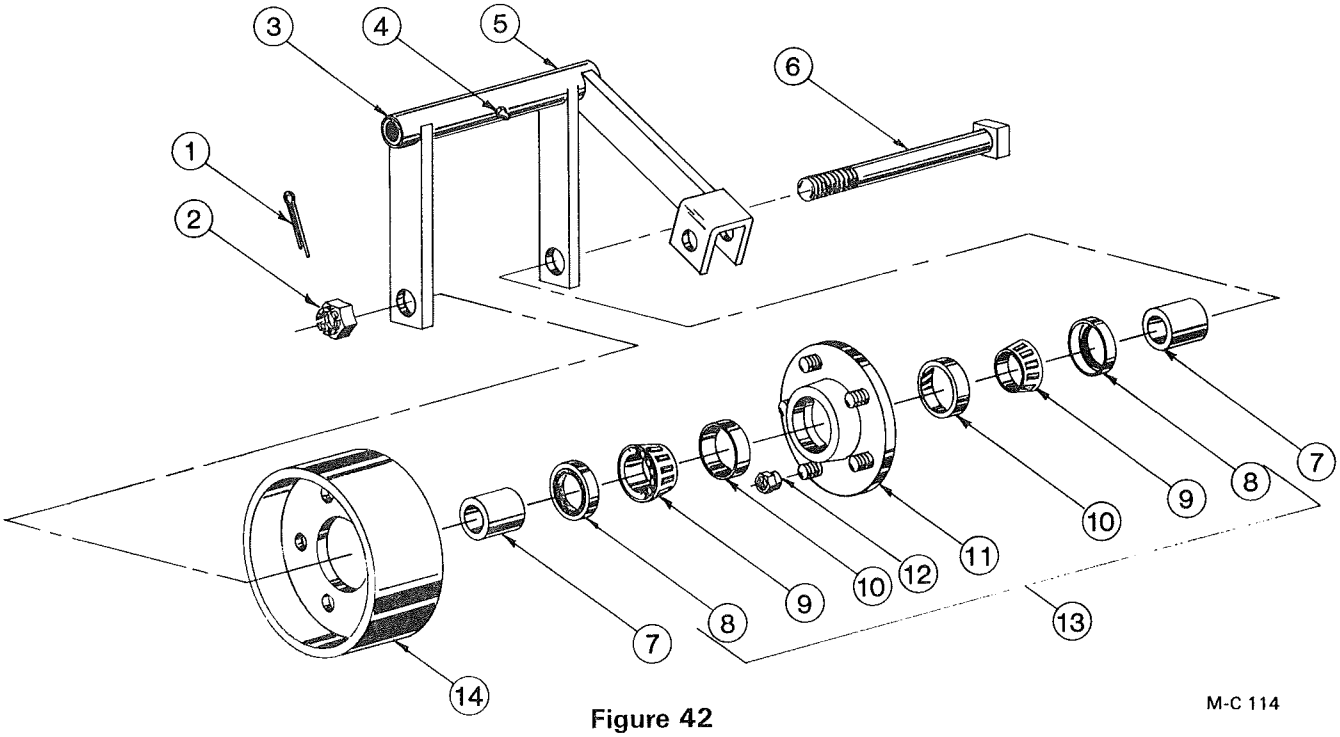


Figure 42

screws until after the idler pulley alignment has been checked.

10. Tighten the idler bolt castellated nut until it is snug to take all end play out of the bearings. Back off the nut to the next slot that lines up with the cotter pin hole. Hit the end of the idler bolt with a mallet and check to see if there is any end play in the pulley. If there is none, install the cotter pin. If there is end play, repeat the procedure until all end play is taken up and install the cotter pin.

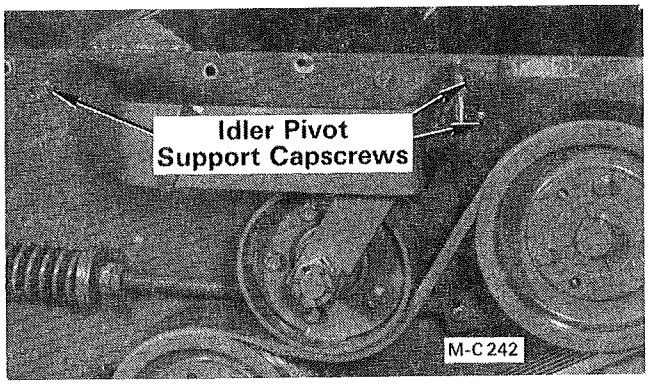


Figure 44

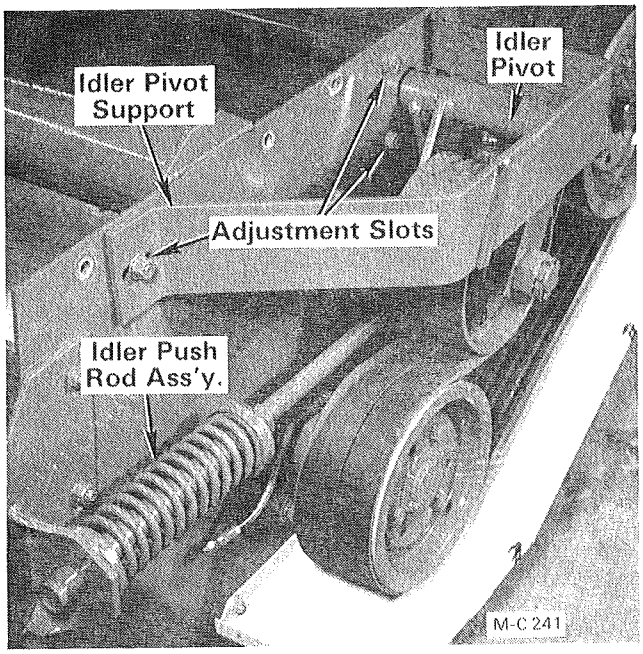


Figure 43

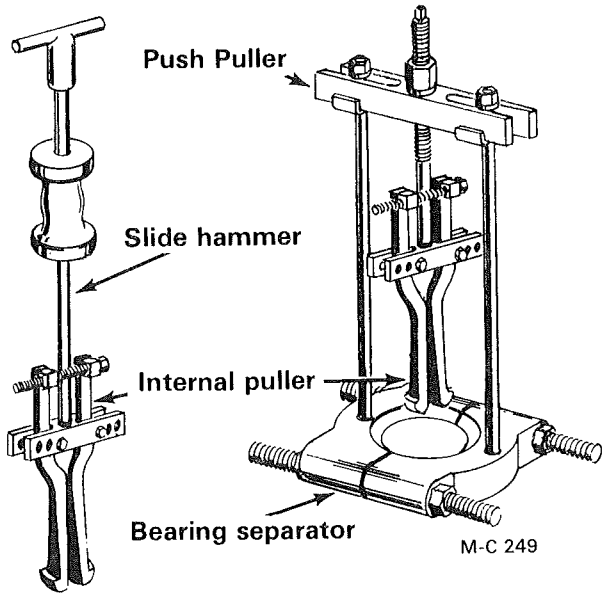


Figure 45

11. Lubricate the idler arm bushings. Check idler pulley alignment. Refer to "Idler Pulley Alignment" page 18 for procedure. Install the back belt guard, top belt guard and belt guard cover.

Storing the Shredder

1. When the Shredder is to be stored for an extended period of time or at the end of the season, lubricate all bearings with enough grease to eliminate any cavities where water condensation may occur and cause damage. Refer to "Lubrication" page 12 for location of all grease fittings. Be sure the vent on top of the gear box is open.

IMPORTANT: Use a hand grease gun. Do not overlubricate. Too much grease may damage the bearing seals.

2. Loosen the drive belt tension spring jam nut and back off the adjustment nut to relieve the drive belt tension.

NOTE: Before next seasons use, be sure to adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 16 for procedure.

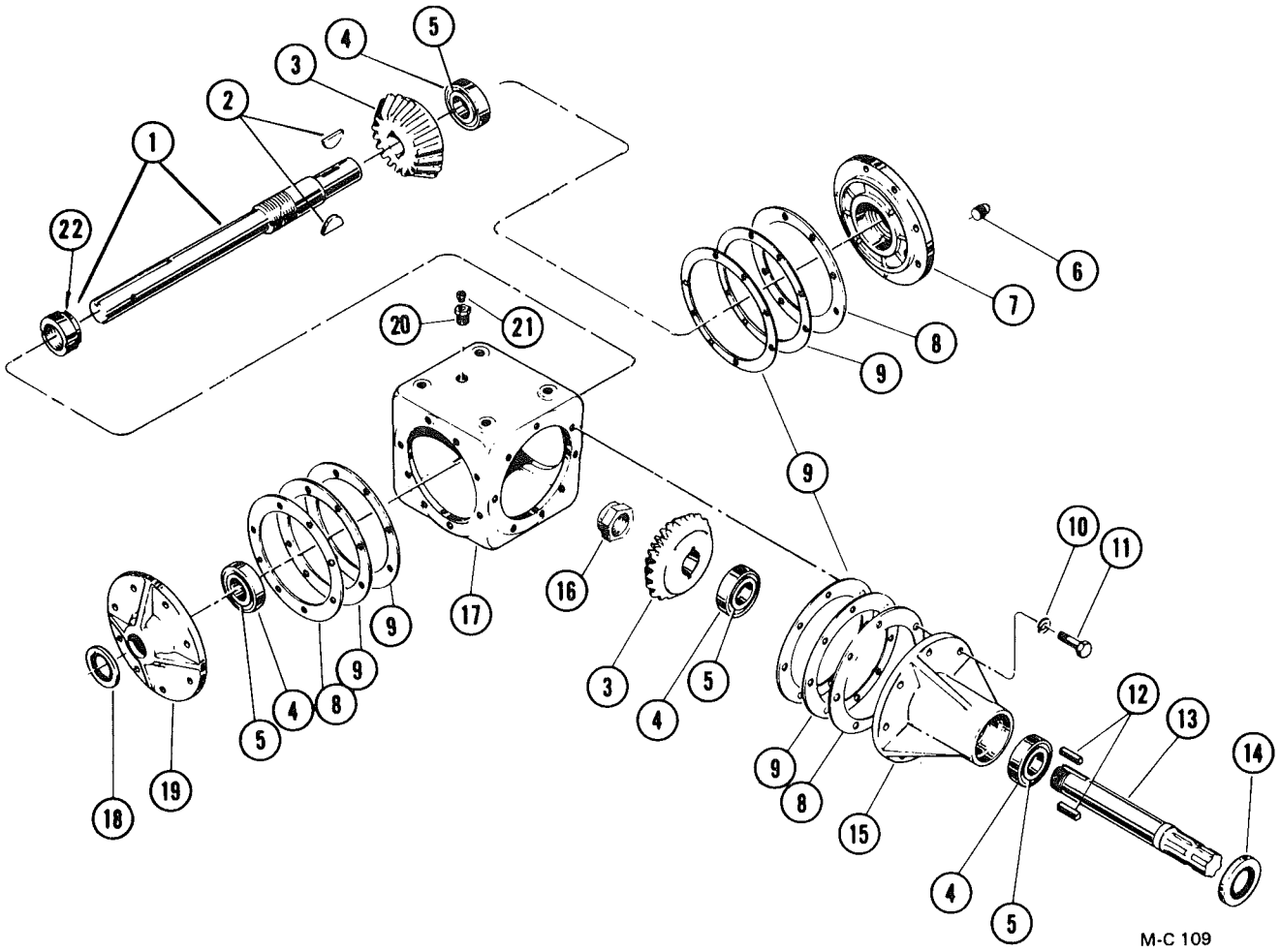
3. Coat all exposed surfaces inside the Shredder with oil or grease to prevent rusting and pitting during storage.

Pre-Season Check

1. Inflate the tires to 32 lbs.
2. Check the oil level in the gear box and lubricate all bearings. See "Lubrication" page 12.
3. Adjust the drive belt tension, See "Drive Belt Adjustment" page 16.
4. Inspect for missing and/or broken knives. Replace as necessary. See "Knife Replacement" page 13 and 14.
5. Be sure all safety shields are in place and secure.
6. Run the Shredder at a low RPM checking to make sure that all drive line parts are moving freely.

PARTS

Gear Box Assembly 091 6608

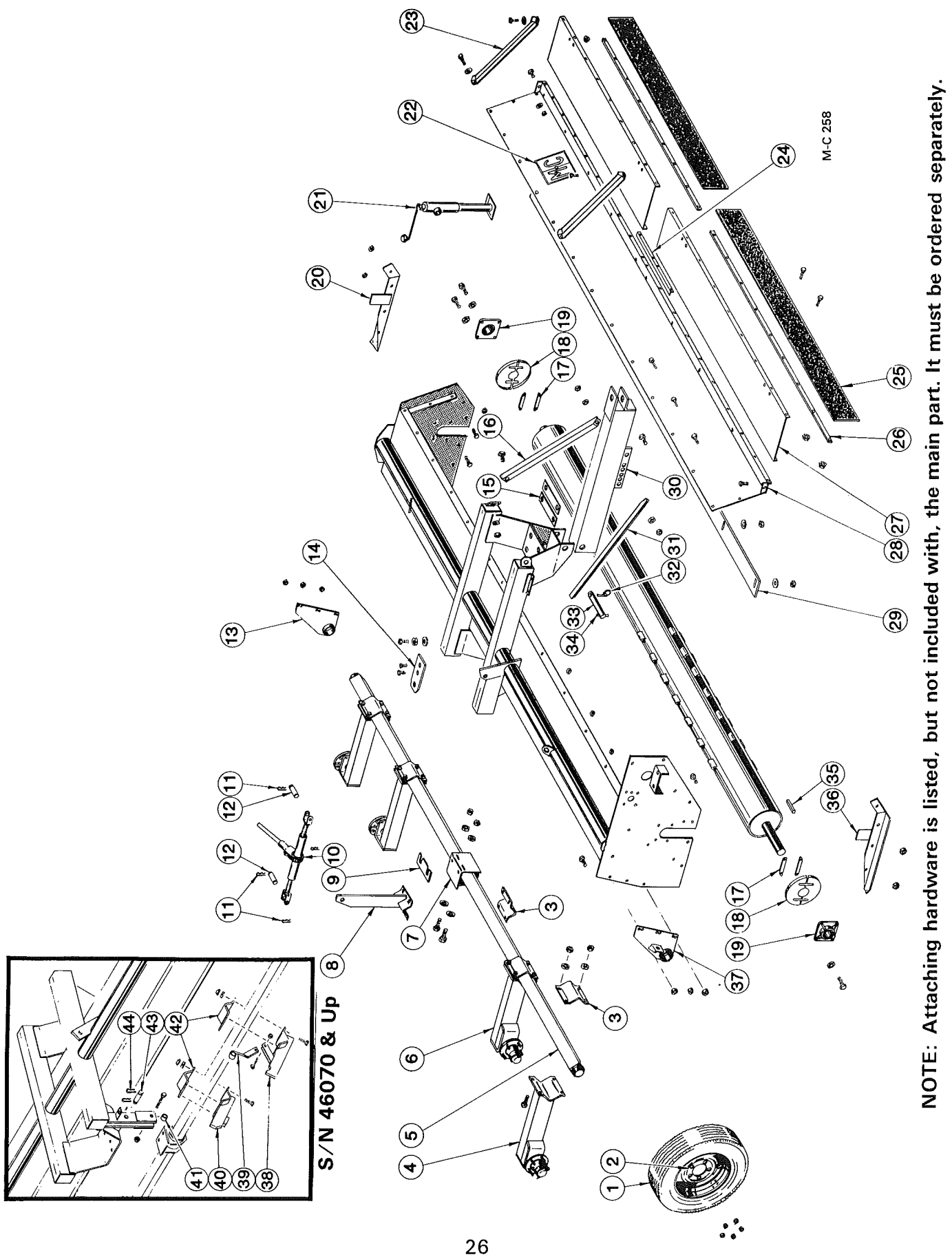


Ref.	Part No.	Qty.	Description
1	092 6621	1	Output Shaft w/Stake Nut
2	001 8988	2	Woodruff Key 3/8 x 1½" (Hard)
3	002 6500	2	Bevel Gear
4	002 6010	4	Bearing Cup
5	002 6011	4	Bearing Cone
6	002 8000	1	Oil Level Plug
7	002 7655	1	Cover, Solid (Includes 1 of ref. 4)
8	002 6636	†	Shim .005" Thick
9	092 6609	3	Gasket - 1/32" Thick
10	000 8180	24	½" Lockwasher
11	131 8163	24	½-13 x 1¼" Hex-Hd Capscrew - Grade 5, w/NY Patch

Ref.	Part No.	Qty.	Description
12	001 8969	2	Key 3/8 x 3/8 x 1 3/8" (Hard)
13	002 6638	1	Input Shaft
14	002 6639	1	Grease Seal (Input Shaft)
15	002 7656	1	Hub (Includes 2 of ref. 4)
16	002 6668	1	Stake Nut (Input Shaft)
17	002 7654	1	Gear Box Housing
18	002 6667	1	Grease Seal (Output Shaft)
19	002 7657	1	Cover, Output Shaft (Includes 1 of ref. 4 & 1 of ref. 18)
20	002 6678	1	Reducing Bushing - 3/8" to 1/8" NPT
21	002 6677	1	Gear Box Vent - 1/8" NPT
22	112 8252	1	Stake Nut (Output Shaft)

† As Required

Body, Axle, Pole and Stone Guard

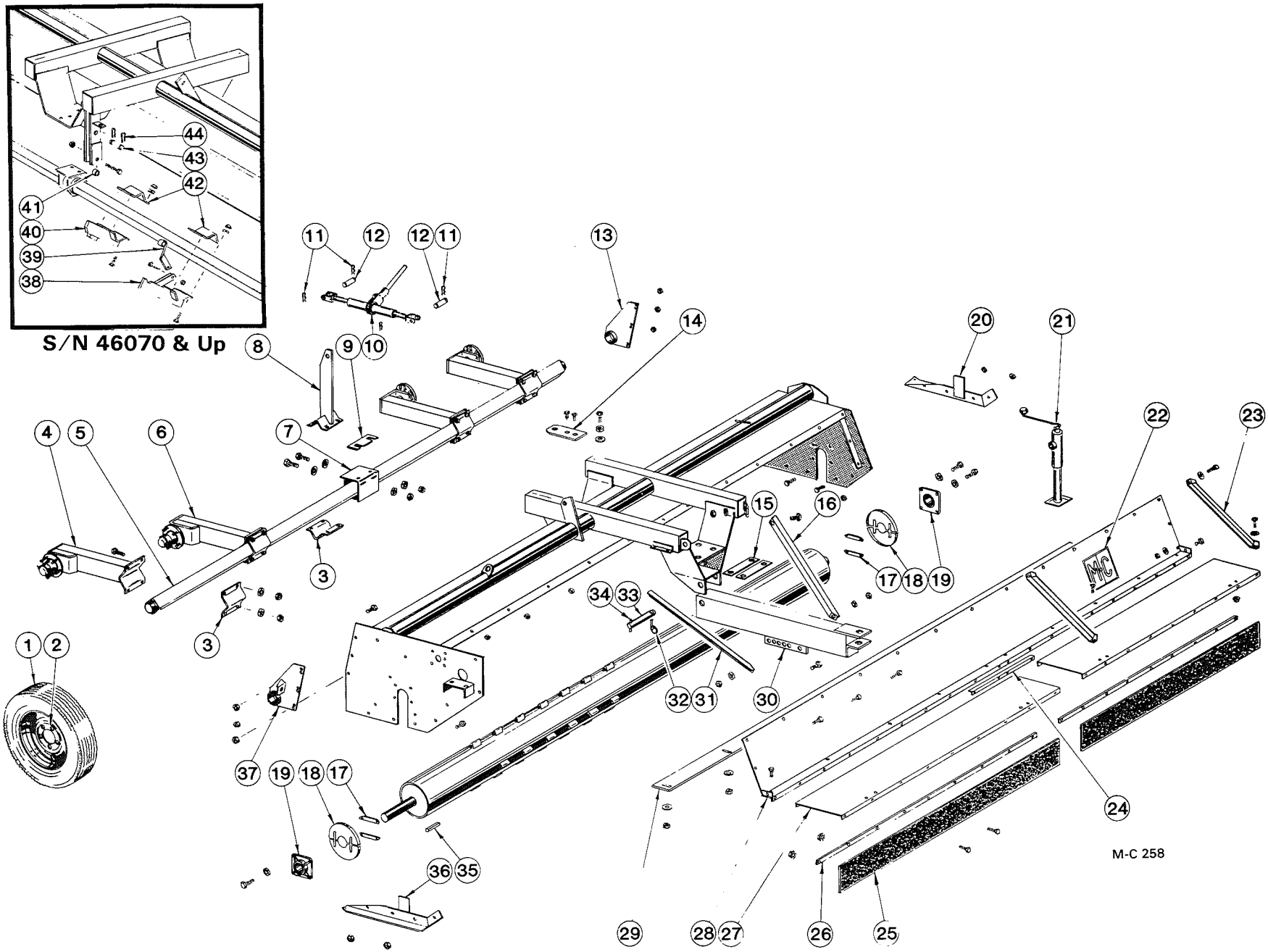


NOTE: Attaching hardware is listed, but not included with, the main part. It must be ordered separately.

Ref.	Part No.	Qty.	Description
1	000 8999	4	6.40 x 15, 6 Ply Tubeless Tire
2	001 8993	4	15" 5 Bolt Rim
3	111 3590	4	Mount Clamp (Axle & Cyl.)
4	111 1066	4	Wheel Mount & Hub Ass'y (See page 39)
5	111 0150	1	**Model 144** Axle Weldment
	111 0149	1	**Model 180** Axle Weldment
6	111 1041	4	Wheel Mount Ass'y. w/Clamp (See page 39)
7	111 0119	1	Axle Center Bearing Weldment
	000 8146	2	5/8-11 x 1½" Hex-Hd. Capscrew - Grade 5
	000 8181	2	5/8" Lockwasher
	000 8121	2	3/8-16 x 1" Hex-Hd. Capscrew
	000 8174	4	3/8" Flatwasher
	001 8149	2	3/8-16 Two Way Locknut
8	111 1053	1	Rear Cylinder Mt. Ass'y. (S/N 36855 thru 46069 incl. ref. 3 & hardware)
	111 0148	1	Rear Cylinder Mt. (S/N 36855 thru 46069, less ref. 3 & hardware)
	128 8172	4	5/8-11 x 2½" Hex-Hd. Capscrew - Grade 8
	000 8181	4	5/8" Lockwasher
	000 8164	4	5/8" Hex Nut
9	128 2849	†	Shim
10	001 8985	1	Mechanical Ratchet Jack - Optional
11	002 8253	4	Pin Clip
12	002 8254	2	Ratchet Jack Pin (1"x2¾")
13	141 0018	1	Axle Mount - Left
	000 8137	3	½-13 x 1¼" Hex-Hd. Capscrew - Grade 5
	000 8180	3	½" Lockwasher
	000 8163	3	½-13 Hex Nut
14	111 3679	1	Disc Hitch Tongue
	128 8195	2	¾-10 x 2" Hex-Hd. Capscrew - Grade 5
	000 8182	2	¾" Lockwasher
	000 8165	2	¾-10 Hex Nut
15	127 3404	2	Gear Box Mount Stiffener
16	111 0129	1	Pole Support Angle - Left
	128 8195	2	¾-10 x 2" Hex-Hd. Capscrew - Grade 5
	000 8182	2	¾" Lockwasher
	000 8165	2	¾-10 Hex Nut
17	111 5182	4	Nut Bar
18	111 5709	4	Anti-Wrap Half
19	111 6003	2	Flange Bearing - 2-3/16", 4 Bolt w/Zerk
	091 8170	8	5/8-11 x 1¾" Hex Hd. Capscrew - Grade 5 w/NY Patch
	000 8181	8	5/8" Lockwasher
20	111 0109	1	Left Skid
	000 8135	4	½-13 x 1" Hex-Hd. Capscrew
	128 8164	4	½-13 Two Way Locknut
21	141 8997	1	Pole Jack w/Retaining Pin
22	001 8302	2	M-C Decal - 8-3/16" x 9"
23	111 0162	—	Stone Guard Support (4 on Model 144 & 6 on Model 180)
	001 8135	—	3/8-16 x 1" Hex-Hd. Capscrew - Grade 5
	000 8174	—	3/8" Flatwasher
	001 8149	—	3/8-16 Two Way Locknut
24	111 3486	1	Cover Support Angle
	000 8290	2	3/8-16 x 1½" Hex-Hd. Capscrew
	000 8174	2	3/8" Flatwasher
	001 8139	2	3/8" Lockwasher
	000 8162	2	3/8-16 Hex Nut
25	111 5716	2	**Model 144** Stone Guard Flap
	111 5715	2	**Model 180** Stone Guard Flap

Continued on next page

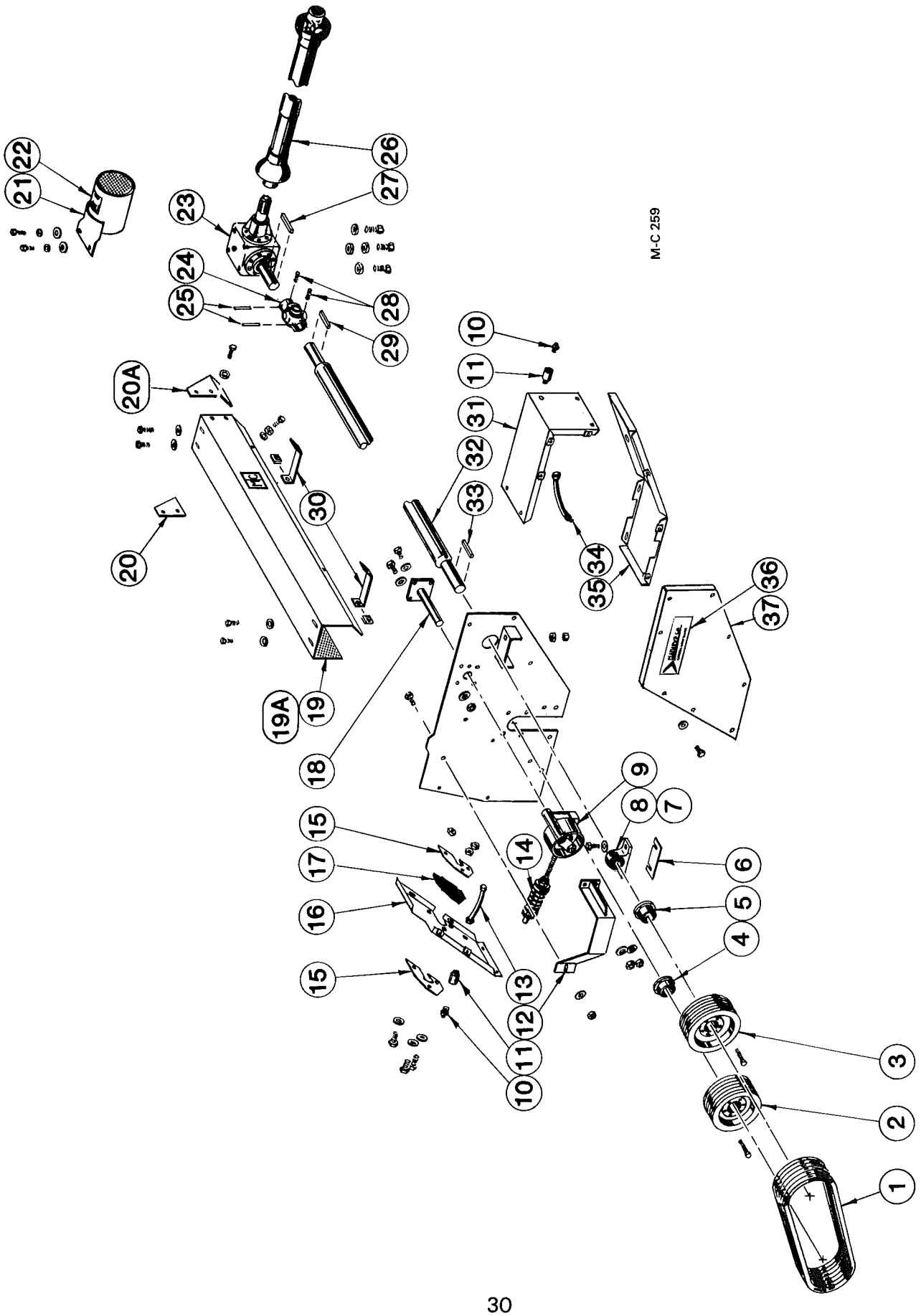
Body, Axle, Pole and Stone Guard



NOTE: Attaching hardware is listed, but not included with, the main part. It must be ordered separately.

Ref.	Part No.	Qty.	Description
26	111 2050	2	**Model 144** Retaining Strip
	111 2051	2	**Model 180** Retaining Strip
	001 8135	—	3/8-16 x 1" Hex-Hd. Capscrew - Grade 5
	001 8149	—	3/8-16 Two Way Locknut
27	111 4456	2	**Model 144** Stone Guard
	111 4457	2	**Model 180** Stone Guard
	001 8148	—	3/8-16 x 3/4" Hex-Hd. Capscrew - Grade 5
	001 8149	—	3/8-16 Two Way Locknut
28	111 0146	1	**Model 144** Front Cover
	111 0147	2	**Model 180** Front Cover
	111 4446	1	**Model 180** Front Cover Splice (Not Shown)
	000 8119	—	3/8-16 x 3/4" Hex-Hd. Capscrew
	000 8121	—	3/8-16 x 1" Hex-Hd. Capscrew
	000 8174	—	3/8" Flatwasher
	001 8149	—	3/8-16 Two Way Locknut
29	000 3470	2	**Model 144** Cutter Bar
	111 3483	2	**Model 180** Cutter Bar
	000 8137	—	1/2-13 x 1 1/4" Hex-Hd. Capscrew - Grade 5
	000 8175	—	1/2" Flatwasher
	000 8180	—	1/2" Lockwasher
	000 8163	—	1/2-13 Hex Nut
30	111 0105	1	Pole
31	111 0128	1	Pole Support Angle - Right
	128 8195	2	3/4-10 x 2" Hex-Hd. Capscrew - Grade 5
	000 8182	2	3/4" Lockwasher
	000 8165	2	3/4-10 Hex Nut
32	000 8994	1	Klick Pin 1/4" Dia.
33	111 1035	1	Pole Pin w/Roll Pin 000 8259
34	000 8259	1	Roll Pin 5/16" x 1 3/4"
35	001 5147	1	Key 1/2" x 1/2" x 3"
36	111 0108	1	Right Skid
	000 8135	4	1/2-13 x 1" Hex-Hd. Capscrew
	128 8164	4	1/2-13 Two Way Locknut
37	111 0117	1	Axle Mount - Right
	000 8137	3	1/2-13 x 1 1/4" Hex-Hd. Capscrew - Grade 5
	000 8180	3	1/2" Lockwasher
	000 8163	3	1/2-13 Hex Nut
38	111 1067	1	Cylinder Rear Mt. Ass'y. (S/N 46070 & up, incl. ref. 3, 39 & hardware)
	111 0164	1	Cylinder Rear Mt. (S/N 46070 & up, less ref. 3, 39 & hardware)
	128 8196	4	3/4-10 x 2 1/2" Hex-Hd. Capscrew - Grade 5
	000 8182	4	3/4" Lockwasher
	000 8165	4	3/4-10 Hex Nut
39	111 0166	1	Floating Link (S/N 46070 & up)
	000 8278	1	1/2-13 x 1 3/4" Hex-Hd. Capscrew - Grade 5
	128 8164	1	1/2-13 Two Way Locknut
40	111 1068	1	Transport Lock Ass'y. (S/N 46070 & up, incl. ref. 3 & hardware)
	111 0163	1	Transport Lock Arm (S/N 46070 & up, less ref. 3 & hardware)
	128 8196	4	3/4-10 x 2 1/2" Hex-Hd. Capscrew - Grade 5
	000 8182	4	3/4" Lockwasher
	000 8165	4	3/4-10 Hex Nut
41	111 5410	1	Stop Bar - Spacer (S/N 46070 & up)
	128 8166	1	1/2-13 x 2 1/2" Hex-Hd. Capscrew - Grade 5
	000 8180	1	1/2" Lockwasher
	000 8163	1	1/2-13 Hex Nut
42	111 0183	2	Mt. Clamp-Reinforced
43	001 8248	1	Transport Lock Pin 1" x 3 1/2"
44	000 8252	2	Hair Cotter Pin-3/16"

Drive Line and Guards



NOTE: Attaching hardware is listed, but not included with, the main part. It must be ordered separately.

Ref.	Part No.	Qty.	Description
1	111 6101	1	1/5V800 - Matched Set of 6 Individual Belts - See note
2	111 6208	1	5V/10.3 x 6 Grv. "E" Rotor Pulley
3	111 6202	1	5V/10.9 x 6 Grv. "E" Drive Pulley
4	111 6211	1	"E" Bushing 2-3/16" Bore (Incl. Capscrews & Lockwashers)
5	111 6205	1	"E" Bushing 1¾" Bore (Incl. Capscrews & Lockwashers)
6	125 2918	2	Bearing Shim
7	000 8989	1	⅛" NPT 90° Zerk ST. EL.
8	091 6001	1	Output Shaft Bearing 1¾" Bore w/Zerk
	000 8278	2	½-13 x 1¾" Hex-Hd. Capscrew - Grade 5
	001 8257	4	½" SAE Flatwasher
	000 8180	2	½" Lockwasher
	000 8163	2	½-13 Hex Nut
9	111 1028	1	Belt Idler Ass'y. (See page 37)
10	002 6604	2	⅛" PT Straight Zerk
11	123 7503	2	⅛" Galvanized Coupling
12	111 0116	1	Belt Idler Pivot Support
	000 8137	3	½-13 x 1¼" Hex-Hd. Capscrew - Grade 5
	001 8257	6	½" SAE Flatwasher
	128 8164	3	½-13 Two Way Locknut
13	000 8984	1	Grease Hose (Right Rotor Bearing - 8")
14	- - - - - - -	—	Belt Idler Push Rod & Spring (See page 37)

NOTE: Shredders with serial number 36855 thru 46069 were equipped with a matched set of two banded belts. Shredders starting with serial number 46070 were equipped with a matched set of six individual belts. The matched set of six individual belts will be supplied for service on all Shredders.

Ref.	Part No.	Qty.	Description
15	111 4789	2	Idler Bolt Seal (16 Ga.)
	000 8104	3	5/16-18 x ¾" Truss Hd. Screw
	000 8173	3	5/16" Flatwasher
	000 8288	3	5/16-18 Two Way Locknut
16	111 4779	1	Belt Guard - Back
	001 8111	2	5/16-18 Clip Nut
	000 8119	2	⅜-16 x ¾" Hex-Hd. Capscrew
	000 8174	2	⅜" Flatwasher
	001 8149	2	⅜-16 Two Way Locknut
17	111 8985	1	Idler Bolt Seal (Rubber)
18	111 0115	1	Belt Idler Pivot
	000 8137	4	½-13 x 1¼" Hex-Hd. Capscrew - Grade 5
	001 8257	8	½" SAE Flatwasher
	128 8164	4	½-13 Two Way Locknut
19	111 4785	1	**Model 144** Output Shaft Guard (S/N 36855 thru 46069)
	111 4786	1	**Model 180** Output Shaft Guard (S/N 36855 thru 46069)
	000 8119	4	⅜-16 x ¾" Hex-Hd. Capscrew
	000 8174	4	⅜" Flatwasher
	000 8179	4	⅜" Lockwasher
	000 8162	4	⅜-16 Hex Nut
	128 8300	1	M-C Decal - 5" x 4-9/16"
19A	111 4790	1	**Model 144** Output Shaft Guard (S/N 46070 & up)
	111 4791	1	**Model 180** Output Shaft Guard (S/N 46070 & up)
	001 8111	4	5/16-18 Clip Nut
	000 8106	4	5/16-18 x ¾" Hex-Hd. Capscrew
	000 8173	4	5/16" Flatwasher
	128 8300	1	M-C Decal - 5" x 4-9/16"

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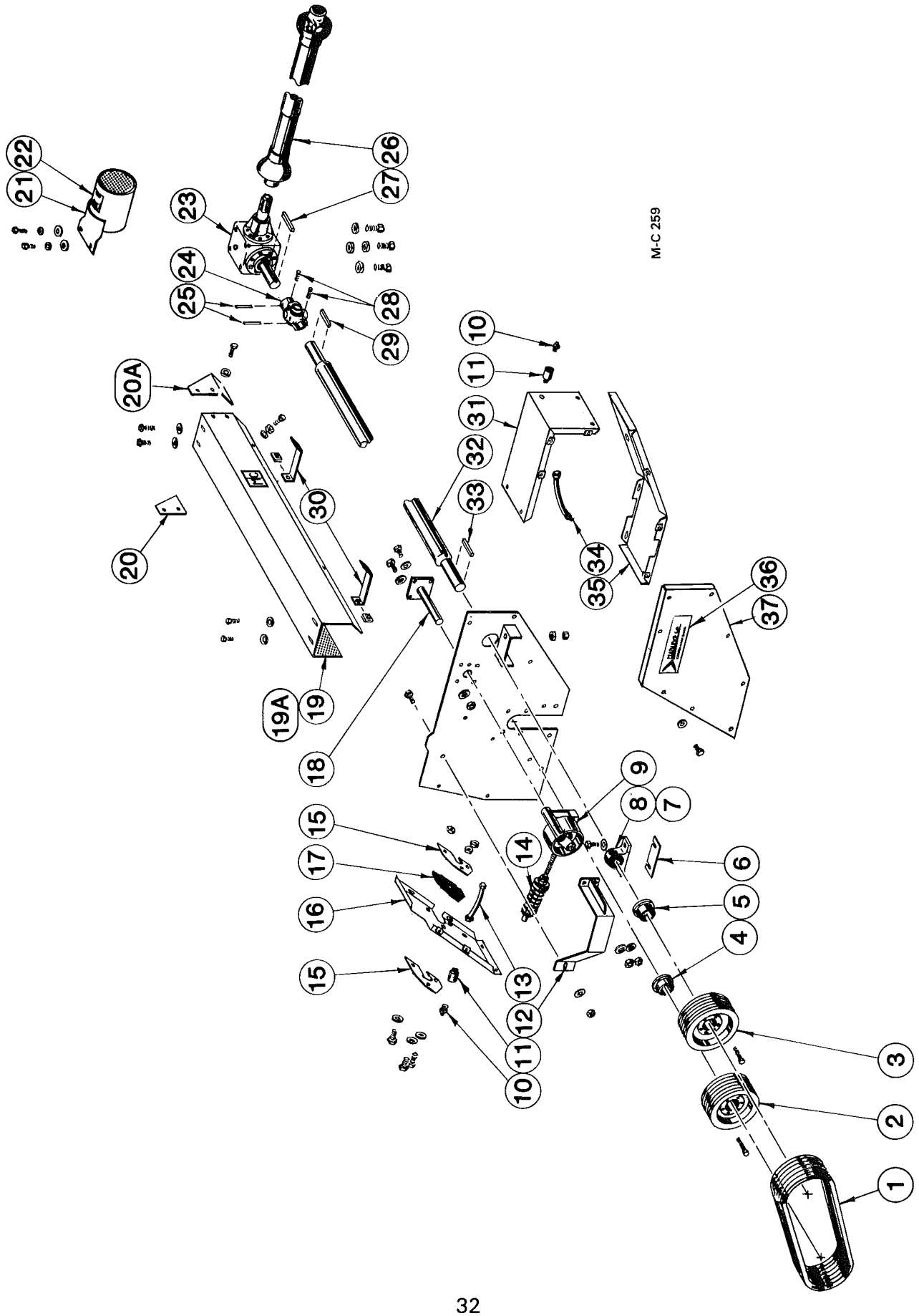
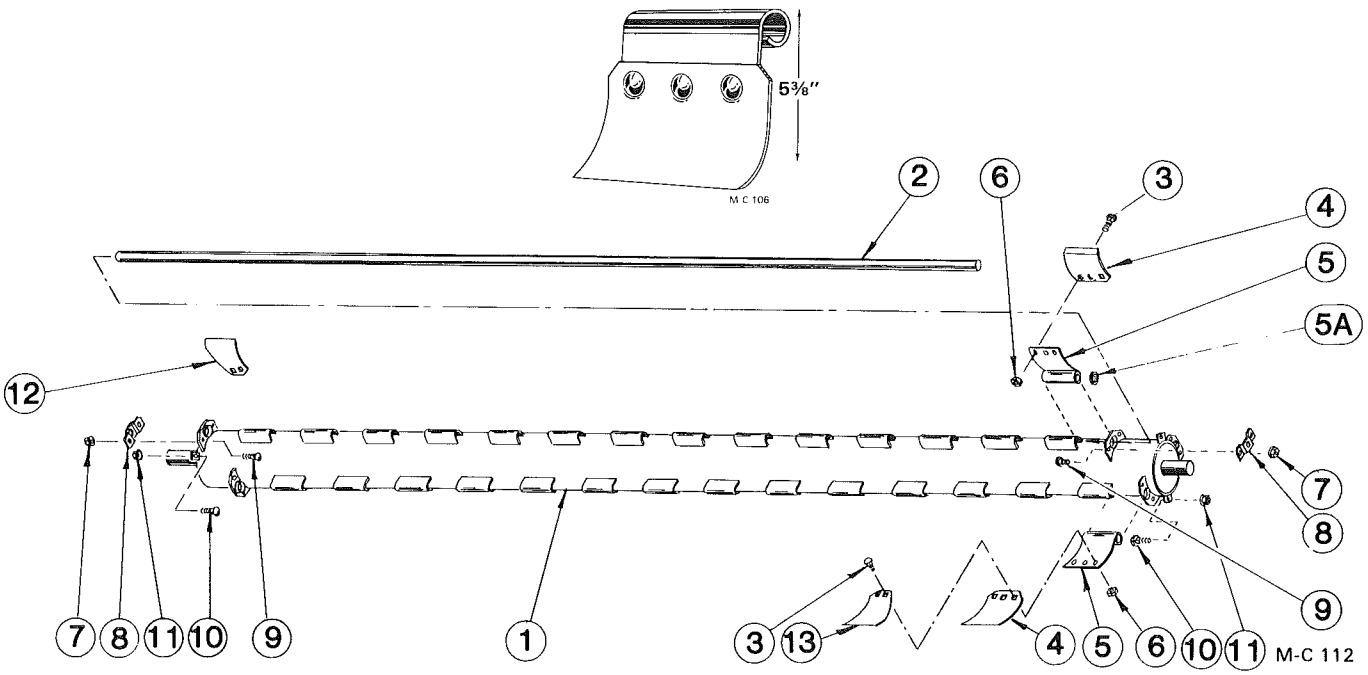
Drive Line and Guards



NOTE: Attaching hardware is listed, but not included with, the main part. It must be ordered separately.

Ref.	Part No.	Qty.	Description
20	111 4787	1	Output Shaft Guard Extension (S/N 36855 thru 46069)
	000 8119	4	3/8-16 x 3/4" Hex-Hd. Capscrew
	000 8174	4	3/8" Flatwasher
	000 8179	4	3/8" Lockwasher
	000 8162	4	3/8-16 Hex Nut
20A	111 4792	1	Output Shaft Guard Extension - Front (S/N 46070 & up)
	111 4793	1	Output Shaft Guard Extension - Rear (S/N 46070 & up)
	000 8106	4	5/16-18 x 3/4" Hex-Hd. Capscrew
	000 8288	4	5/16-18 Two Way Locknut
21	- - - 8047	1	Gear Box Input Shaft Guard
	000 8145	2	5/8-11 x 1 1/4" Hex-Hd. Capscrew - Grade 5
	000 8176	2	5/8" Flatwasher
	000 8181	2	5/8" Lockwasher
22	001 8316	1	Safety Decal - Danger
23	091 6608	1	Gear Box (See page 25)
	091 8170	4	5/8-11 x 1 3/4" Hex-Hd. Capscrew - Grade 5 w/NY Patch
	000 8181	4	5/8" Lockwasher
24	111 8988	1	Output Shaft Universal Joint (See page 39)
25	001 8281	2	Roll Pin 3/8" x 3"
26	111 6610	1	PTO Shaft - 1000 RPM (See page 38)
27	001 5136	1	Key 3/8" x 3/8" 2 1/2"
28	000 8234	2	Set Screw 1/2-13 x 3/8"
29	001 5136	1	Key 3/8" x 3/8" x 2 1/2"
30	111 3404	2	Output Shaft Guard Brace
	001 8111	4	5/16-18 Clip Nut
	000 8106	4	5/16-18 x 3/4" Hex-Hd. Capscrew
31	111 4780	1	Belt Guard - Top
	001 8111	3	5/16-18 Clip Nut
	000 8119	7	3/8-16 x 3/4" Hex-Hd. Capscrew
	000 8174	7	3/8" Flatwasher
	001 8149	7	3/8-16 Two Way Locknut
32	111 0143	1	**Model 144** Output Drive Shaft
	111 0134	1	**Model 180** Output Drive Shaft
33	001 5139	1	Key 3/8" x 3/8" x 3"
34	000 8985	1	Grease Hose (Output Shaft Bearing 10")
35	111 4781	1	Belt Guard - Bottom
	001 8111	3	5/16-18 Clip Nut
	000 8119	2	3/8-16 x 3/4" Hex-Hd. Capscrew
	000 8121	1	3/8-16 x 1" Hex-Hd. Capscrew
	000 8174	3	3/8" Flatwasher
	001 8149	3	3/8-16 Two Way Locknut
36	001 8303	1	M-C Arrow-Decal
37	111 4768	1	Belt Guard Cover
	000 8106	8	5/16-18 x 3/4" Hex-Hd. Capscrew
	000 8173	8	5/16" Flatwasher

Rotor Assembly for Model 144SB & 180SB



NOTE: **Shredder knife kits are shown on page 36.**

Model 144SB

Complete Assembly 111 1040

(Consists of ref. 1 thru 9 in quantities shown. End knives, ref. 12 & 13 and wipers, ref. 10 & 11 must be ordered separately).

Ref.	Part No.	Qty.	Description
1	111 0138	1	Balanced Rotor Weldment
2	001 8975	4	Rotor Hanger Bar 134½"
2A	- - - - - - -	—	Not Used
3	001 8131	144	⅜-16 x ⅞" Knife Carriage Bolt - Grade 8 (Special)
4	001 5208	48	(HD) Wide Knife
5	111 5200	48	Wide Knife Hanger
5A	- - - 6524	8	Knife Spacer
6	001 8149	144	⅜-16 Two Way Lock Nut
7	000 8168	16	⅜-16 Flanged Whiz Lock Nut
8	001 2000	8	End Locator Bracket
9	000 8134	16	⅜-16 x ¾" Truss Head Screw
10	000 8125	4	⅜-16 x 1½" Carriage Bolt
11	000 8168	4	⅜-16 Flanged Whiz Lock Nut
12	001 5212	2	End Knife - Right
13	001 5211	2	End Knife - Left

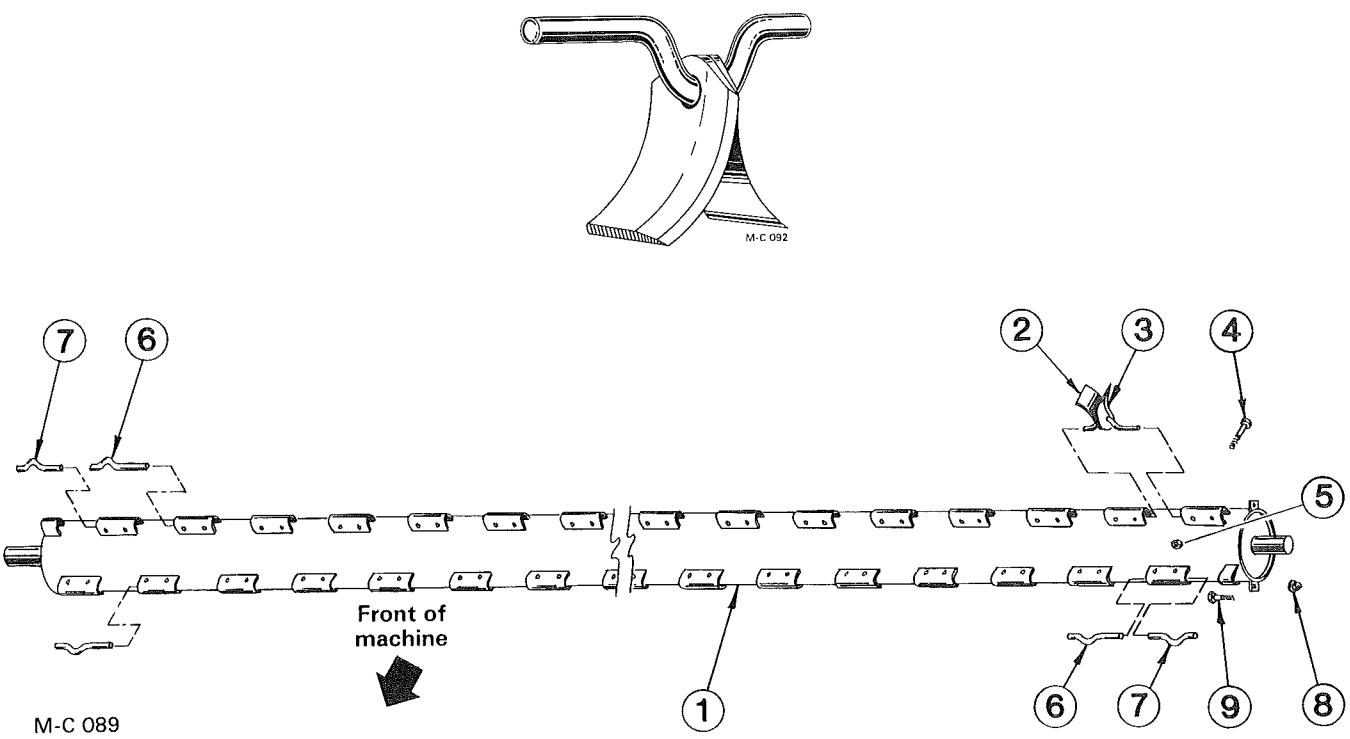
Model 180SB

Complete Assembly 111 1031

(Consists of ref. 1 thru 9 in quantities shown. End knives, ref. 12 & 13 and wipers, ref. 10 & 11 must be ordered separately).

Ref.	Part No.	Qty.	Description
1	111 0121	1	Balanced Rotor Weldment
2	111 8984	4	Rotor Hanger Bar 102"
2A	111 8983	4	Rotor Hanger Bar 67¼"
3	001 8131	180	⅜-16 x ⅞" Knife Carriage Bolt - Grade 8 (Special)
4	001 5208	60	(HD) Wide Knife
5	111 5200	60	Wide Knife Hanger
5A	- - - 6524	8	Knife Spacer
6	001 8149	180	⅜-16 Two Way Lock Nut
7	000 8168	16	⅜-16 Flanged Whiz Lock Nut
8	001 2000	8	End Locator Bracket
9	000 8134	16	⅜-16 x ¾" Truss Head Screw
10	000 8125	4	⅜-16 x 1½" Carriage Bolt
11	000 8168	4	⅜-16 Flanged Whiz Lock Nut
12	001 5212	2	End Knife - Right
13	001 5211	2	End Knife - Left

Rotor Assembly for Model 144SS & 180SS



NOTE: Shredder knife kits are shown on page 36.

Model 144SS

Complete Assembly 111 1039

(Consists of ref. 1 thru 6 in quantities shown. Wipers, ref. 8 & 9 must be ordered separately).

Ref.	Part No.	Qty.	Description
1	111 0139	1	Balanced Rotor Weldment
2	110 5201	58	Right Slicer Knife
3	110 5200	58	Left Slicer Knife
4	001 8138	58	⅜-16 x 1¾" HHCS Grade 5
5	000 8205	58	⅜-16 Top Lock Flange Nut
6	110 5020	58	Knife Pin ¾" OD x 7½"
7	- - - - - - -	—	Short Knife Pin Not Used
8	000 8168	4	⅜-16 Whiz Nut
9	000 8125	4	⅜-16 x 1½" Carriage Bolt

Model 180SS

Complete Assembly 111 1032

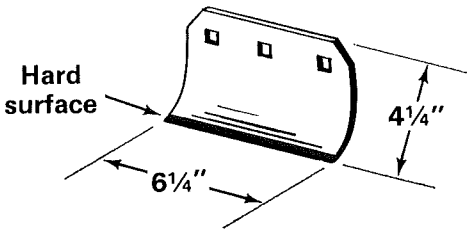
(Consists of ref. 1 thru 7 in quantities shown. Wipers, ref. 8 & 9 must be ordered separately.)

Ref.	Part No.	Qty.	Description
1	111 0122	1	Balanced Rotor Weldment
2	110 5201	74	Right Slicer Knife
3	110 5200	74	Left Slicer Knife
4	001 8138	74	⅜-16 x 1¾" HHCS Grade 5
5	000 8205	74	⅜-16 Top Lock Flange Nut
6	110 5020	70	Knife Pin ¾" OD x 7½"
7	110 5021	4	Knife Pin ¾" OD x 6½"
8	000 8168	4	⅜-16 Whiz Nut
9	000 8125	4	⅜-16 x 1½" Carriage Bolt

Shredder Knife Kits (See Note)

Model Number	Kit Part No.	Qty. to Order	Kit Consists of		
			Qty.	Part No.	Description
144SB	092 9012	1	48	001 5208	H.D. Wide Knife
			2	001 5211	Left End Knife
			2	001 5212	Right End Knife
144SS	081 9006	1	58	110 5201	Right Slicer Knife
			58	110 5200	Left Slicer Knife
180SB	112 9019	1	60	001 5208	H.D. Wide Knife
			2	001 5211	Left End Knife
			2	001 5212	Right End Knife
180SS	112 9020	1	74	110 5201	Right Slicer Knife
			74	110 5200	Left Slicer Knife

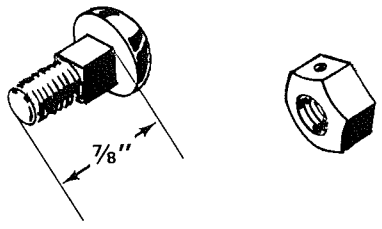
NOTE: Carriage bolts 001 8131 and Locknuts 001 8149 are not included with 144SB or 180SB knife kits. They must be ordered separately.



003 5200

Special Hard Surfaced Cutting Edge Wide Knife. This knife may be substituted for 001 5208 knife for longer knife life on Shredders that are used in non-rocky areas.

If substitution is made, it must be made as a complete set. It is **not** recommended for use on Shredders that operate in rocky fields. The hardening process causes the cutting edge to become brittle, which will have a tendency to chip and break when it comes in contact with a hard surface. These knives are not listed in any kit and will need to be ordered in specific quantities needed.

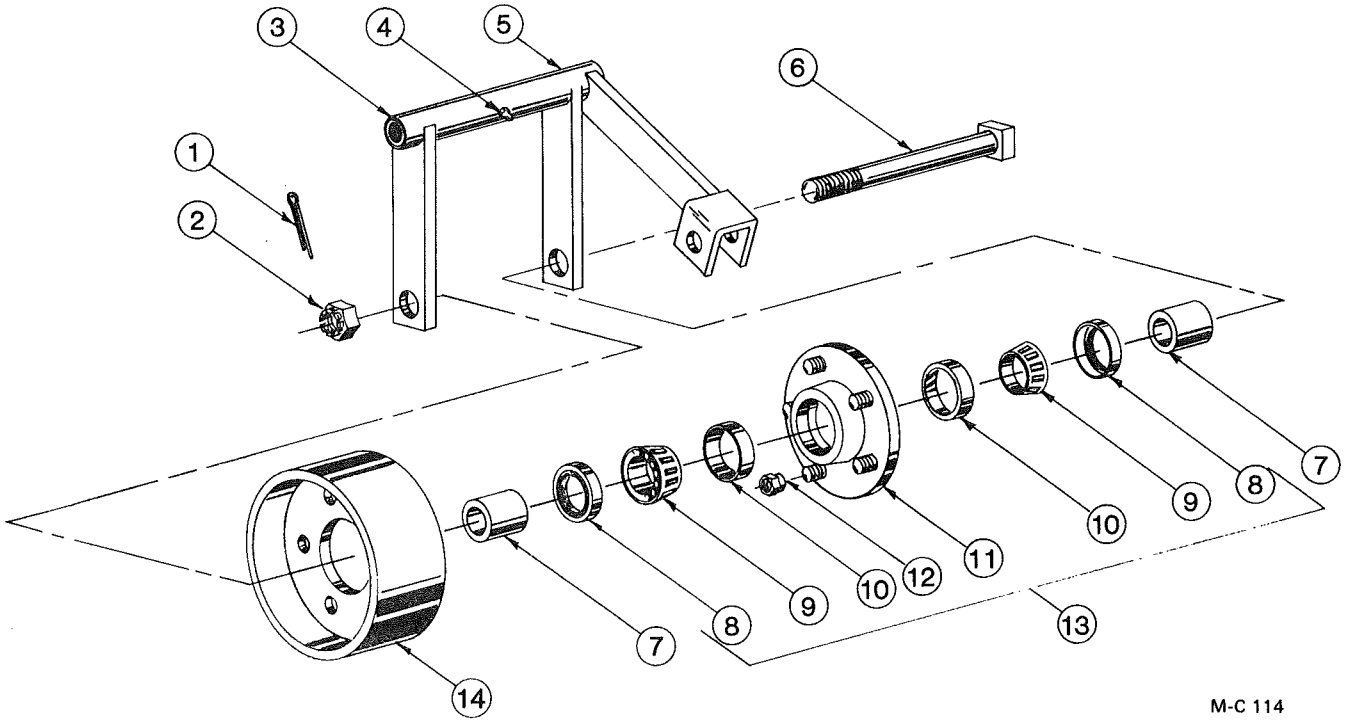


Special Carriage Bolt Part No. 001 8131 (⅜-16 x ⅞" Grade 8)

Special 2-Way Locknut Part No. 001 8149

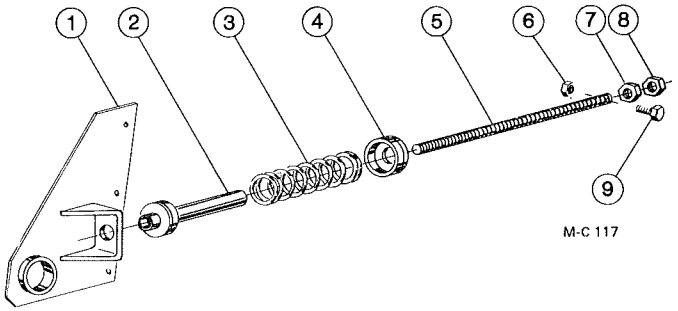
These special carriage bolts and nuts are used on Model 144SB & 180SB Shredders. It is recommended that they be replaced whenever a wide knife or wide knife hanger is replaced.

Belt Idler Assembly 111 1028



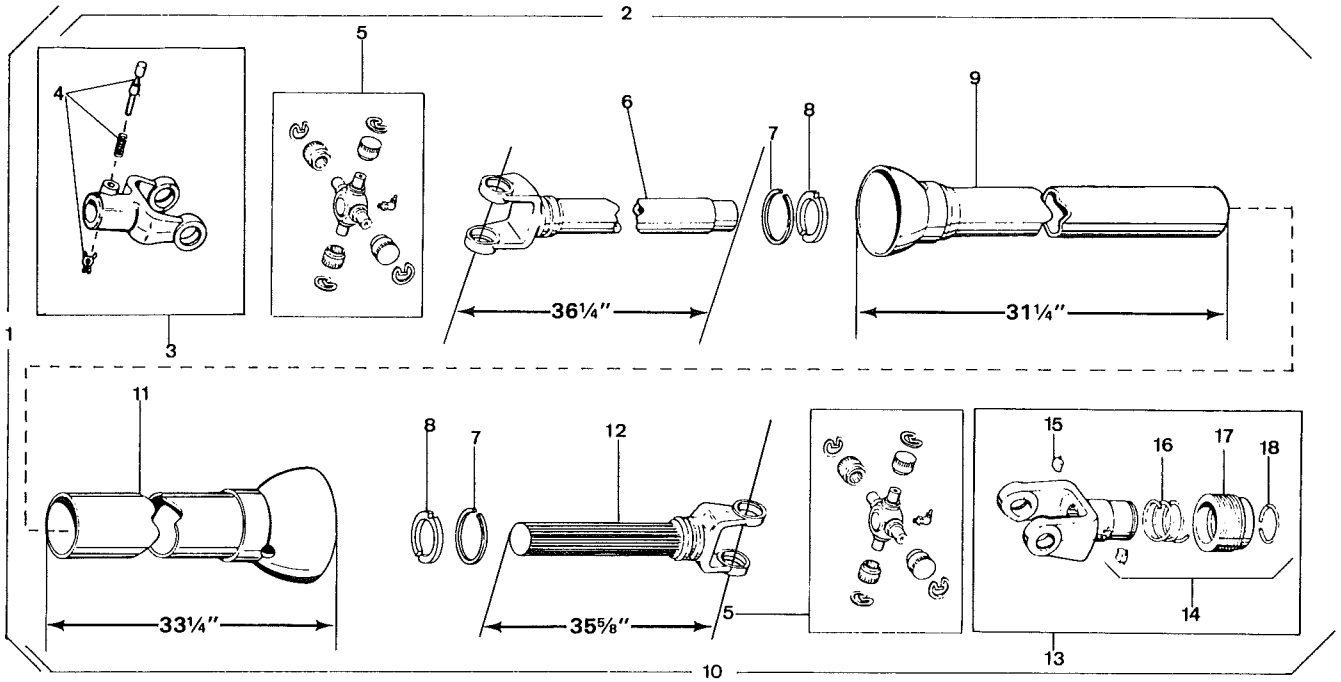
Ref.	Part No.	Qty.	Description
1	000 8255	1	¼" x 2" Cotter Pin
2	111 8252	1	1⅜-12 Castle Nut
3	128 6017	2	Bronze Bushing
4	001 6604	1	90° Zerk Fitting - ⅛"
5	111 1029	1	Idler Rocker Arm (Includes 2 of ref. 3)
6	111 0145	1	Idler Bolt 1⅜" x 7"
7	081 5603	2	Idler Hub Spacer
8	112 6000	2	Seal
9	112 6002	2	Bearing Cone
10	112 6001	2	Bearing Cup
11	112 8999	1	5 Bolt Hub Ass'y. (Includes 2 of ref. 10 & 5 studs)
12	001 8989	5	½-20 NF Lug Nut 45°
13	111 8986	1	5 Bolt Hub Ass'y. (Includes ref. 8 thru 12 in quantities shown)
14	111 5710	1	Idler Pulley

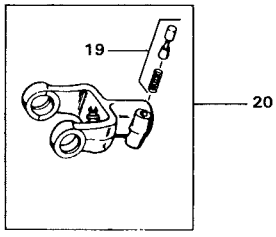
Belt Idler Push Rod and Spring



Ref.	Part No.	Qty.	Description
1	111 0117	1	Right Axle Mount
2	111 0144	1	Spring Spacer
3	141 8979	1	Spring
4	111 0127	1	Spring Retainer
5	111 5717	1	Idler Push Rod
6	128 8164	1	½-13 Two Way Lock Nut
7	091 8231	1	1"-8 Hex Nut
8	001 8291	1	1"-8 Hex Jam Nut
9	128 8166	1	½-13 x 2½" HHCS Grade 5

1000 RPM Tractor Power Take-Off Shaft 111 6610





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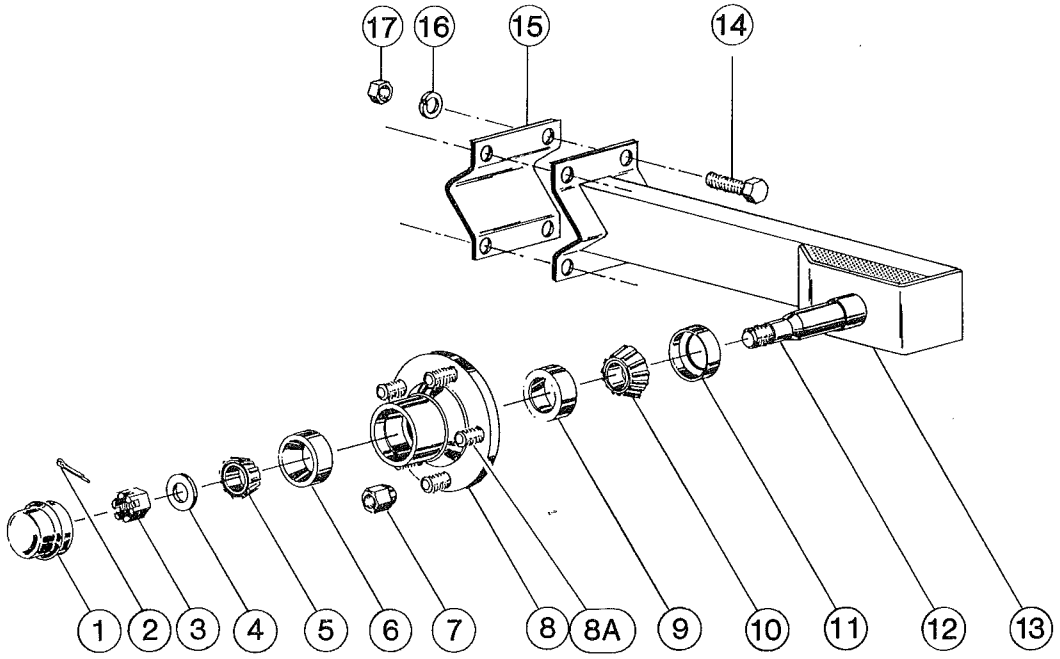
Ref.	Part No.	Qty.	Description
1	111 6610	1	PTO Shaft Complete (1000 RPM)
2	112 6649	1	PTO Shaft (Shredder Half)
3	002 6686	1	Q.D. Yoke Ass'y. 1¾"-6B Spline
4	002 6684	1	Saf-T-Pin, Spring & "X" Washer
5	002 6633	2	Universal Joint Repair Kit
6	142 6641	1	Yoke & Tube
7	092 6692	2	Nylon Bearing Retainer
8	092 6693	2	Nylon Bearing
9	142 6602	1	Male Guard Tube
10	142 6612	1	PTO Shaft (Tractor Half)
11	142 6613	1	Female Guard Tube
12	142 6614	1	Yoke & Shaft
13	002 6674	1	Slide Lock Yoke Ass'y. 1⅜"-21 Spline
14	082 6612	1	Slide Lock Repair Kit
15	002 6632	2	Slide Lock Pawl
16	002 6630	1	Slide Lock Spring
17	002 6631	1	Slide Lock Collar
18	002 6655	1	Slide Lock Retaining Ring
19	142 6648	1	Saf-T-Pin & Spring Kit 1¾"-20 Spline
20	143 6600	1	Yoke Ass'y. 1¾"-20 Spline

Wheel Mount and Hub Assembly



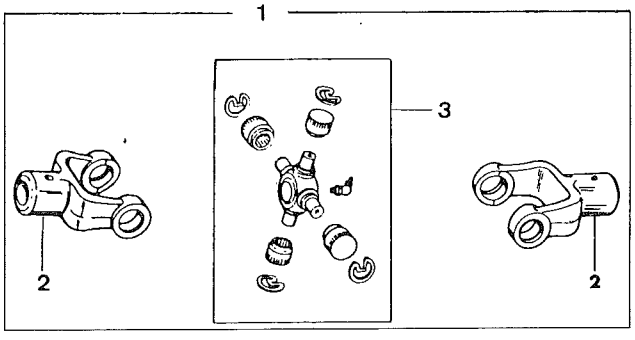
M-C 116

Note: There are four wheel mount assemblies on the Shredder. Quantities shown are for one assembly.

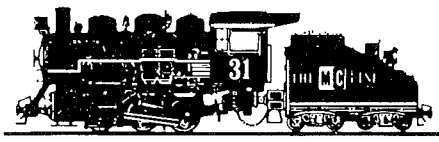
Ref.	Part No.	Qty.	Description
—	**111 1041**	1	Wheel Mount Ass'y. w/Clamp (Includes ref. 1 thru 17)
—	**111 1066**	1	Wheel Mount Ass'y. (Includes ref. 1 thru 13)
1	001 8996	1	Hub Cap
2	001 8252	1	Cotter Pin ⅛" x 1"
3	001 8253	1	Spindle Nut
4	001 8254	1	Spindle Washer
5	001 6000	1	Bearing Cone - Outer
6	002 6000	1	Bearing Cup - Outer
7	001 8989	5	½-20 NF Lug Nut - 45°
8	001 8992	1	Wheel Hub Ass'y. - 5 Bolt (Includes studs and ref. 6, 8A & 9)
8A	002 8152	5	½-20 x 1½" Stud
9	002 6001	1	Bearing Cup (Inner)
10	001 6001	1	Bearing Cone (Inner)
11	001 8991	1	Seal
12	001 8990	1	Spindle Only (Must be welded in place)
13	111 0130	1	Wheel Mount w/Spindle (Incl. ref. 15)
14	128 8196	4	¾-10 x 2½" Hex-Hd. Capscrew Grade 5
15	111 3590	1	Wheel Mount Clamp
16	000 8182	4	¾" Lockwasher
17	000 8165	4	¾-10 Hex Nut

Output Shaft Universal Joint

Ref.	Part No.	Qty.	Description
1	111 8988	1	Output Shaft Universal Joint Ass'y.
2	002 6687	2	End Yoke 1¾" Bore
3	002 6688	1	Universal Joint Repair Kit



M-C 110



Iron Horse Quality

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