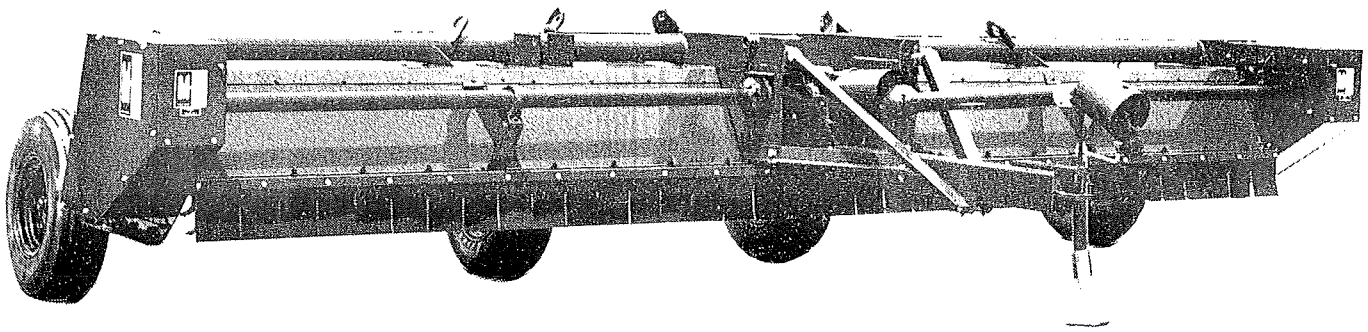
$5.00

MATHEWS COMPANY

Model 180CS, 2206CS & 2408CS Cotton Shredders

Starting w/Serial No. 57378



OPERATOR'S & PARTS MANUAL

Form No. CS360, July 2001

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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 left side of the body, see Figure 1. For future reference, record the model and serial number in the blank spaces in Figure 2.

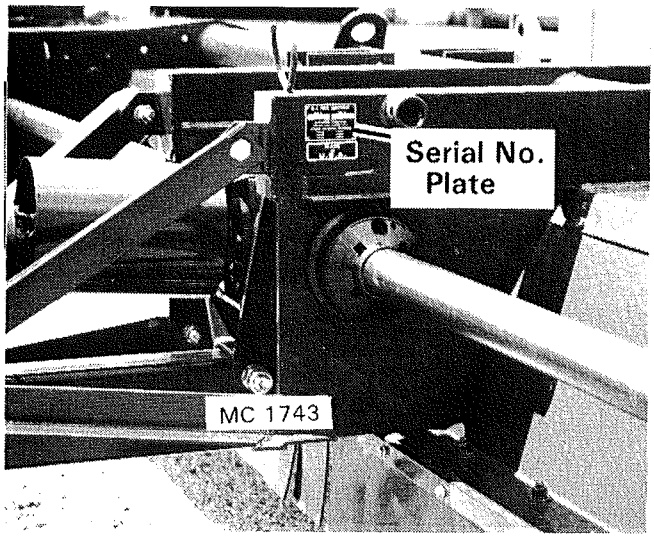


Figure 1

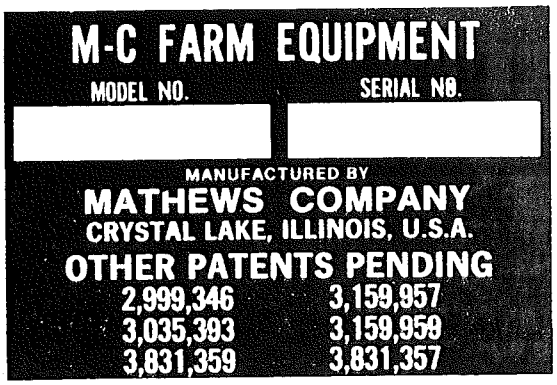


Figure 2

Parts Ordering Instructions

1. Order parts from your local M-C dealer or distributor.
2. Always furnish the Shredder model and serial number. 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: 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.

Cylinder Rear Mount

1. The cylinder rear mount with floating link is installed on the rear axle at the factory. Install the optional mechanical ram or customer supplied hydraulic ram between the cylinder front mount and the cylinder rear mount floating link, see Figure 3.

   NOTE: On some models the cylinder rear mount was moved to the outside for shipping purposes. Move it in so it is in alignment with the cylinder front mount.

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 the top of the Shredder body. Lift the Shredder with a chain hoist just high enough to install the wheel mounts and wheels. **Do not** lift the Shredder by the rotor.
2. **ALWAYS** position the outer wheels so that the tires are just to the inside of the end plates. This will prevent the possibility of the tires rubbing on the end plates when the Shredder is raised. This will also stabilize the Shredder to prevent scalping.

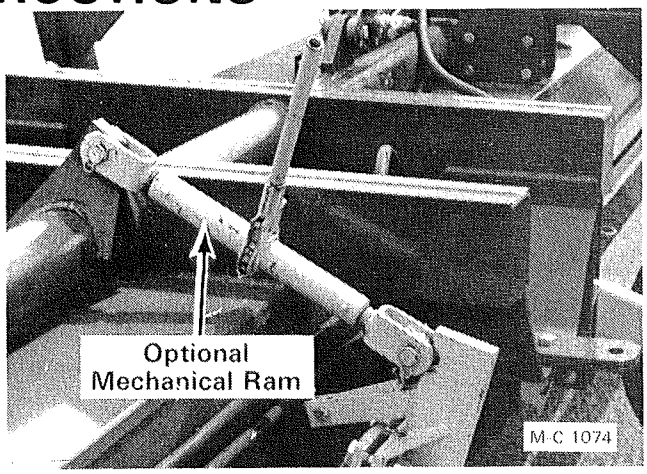


Figure 3 - 2408 w/Optional End Tow System

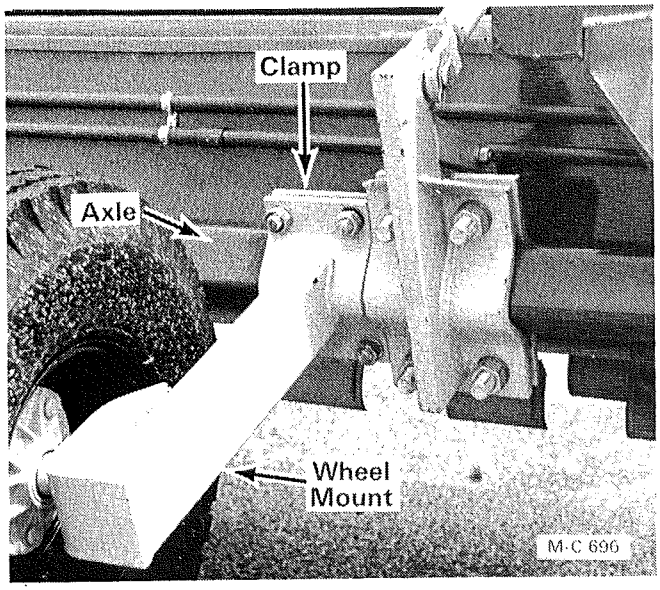


Figure 4 - 2408 w/Optional End Tow System

3. Position the inside wheels as close to the center of the Shredder as possible to eliminate unnecessary loads across the open span of the axle, see Figure 4.
4. The wheel spacing on the left and right should be the same distance from the center of the Shredder for proper operation.
5. Secure each wheel mount clamp with four ¾"-10 x 2½" (Grade 5) hex-head capscrews, lockwashers and nuts.

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

6. 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.

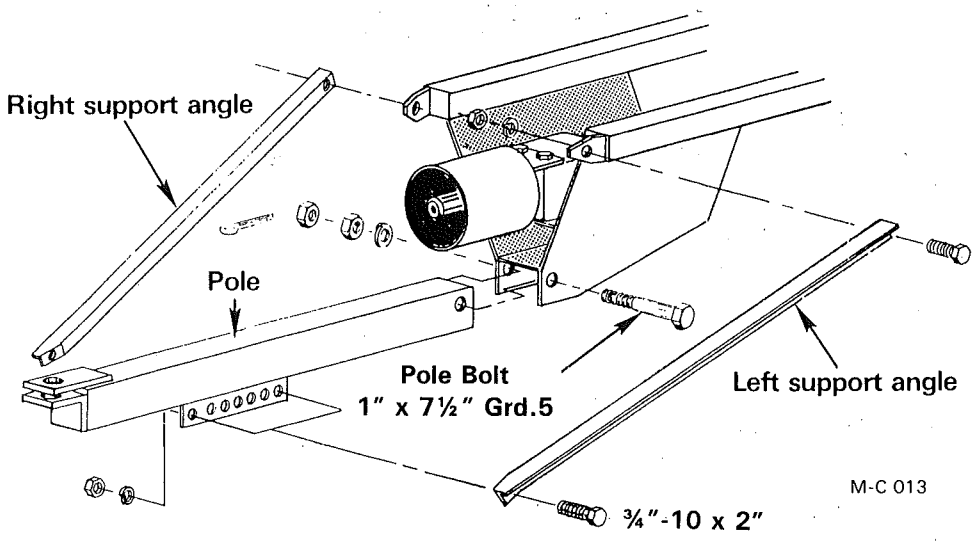


Figure 5

Pole and Supports

1. Lift the front of the Shredder with a chain hoist and place the pole in position under the gear box and install the pole supports, 1" x 7½" Grade #5 pole bolt, 1" lockwasher, hex nuts, and ¼" x 2" cotter pin, see Figures 5 and 6.

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 9.

3. Install the left and right pole brace angles, see Figure 6. Use ¾-10 x 2½" capscrews, lockwashers and nuts.

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

PTO Shaft

1. Remove the red PTO shaft guard from its shipping position on top of the gear box.

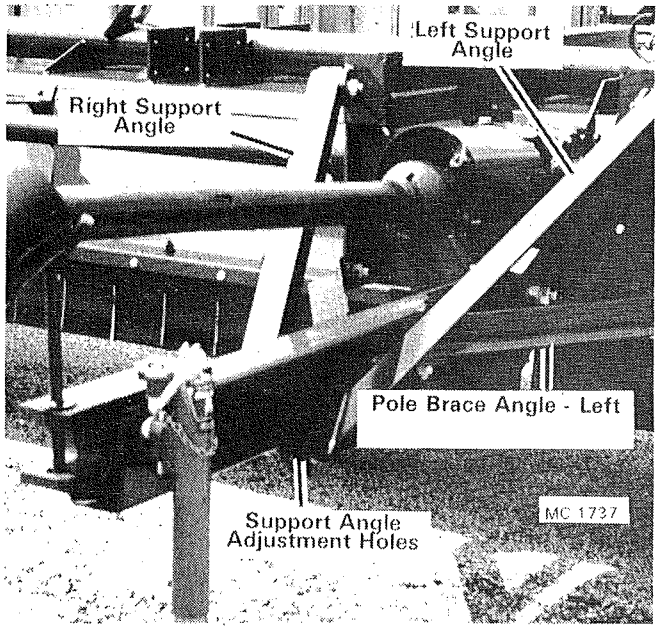


Figure 6

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 yokes 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 to the two front mounting holes in the gear box with two ⅝"-11 X 1" (Grade 5) hex-head capscrews and lockwashers.

NOTE: The PTO shaft supplied with the Cotton Shredder has a 1⅜"-21 spline yoke or a 1¾"-20 spline yoke for the tractor and a 1¾" (6) spline overrunning clutch assembly for the gear box. See page 38 or 39.

Lubrication

1. Remove the oil level plug on the left side of the gear box, see Figure 11 page 8. The oil level should be even with the bottom of the level plug. If the oil level is low, remove the bushing with vent on top of the gear box and add Mobilfluid 424 multipurpose transmission lubricant or equivalent until it just runs out of the level plug.

   Mobilfluid 424 is available from M-C in one pint containers. Order M-C part number 000 8991.

   Install the level plug. Check to be sure the vent is not plugged with paint or dirt. Install the bushing with vent.

2. Lubricate all lubrication fittings on the Shredder. For fitting locations refer to "Lubrication" page 13. Lubricate with a hand grease gun. Do not over lubricate. Too much grease may damage the bearing seals.

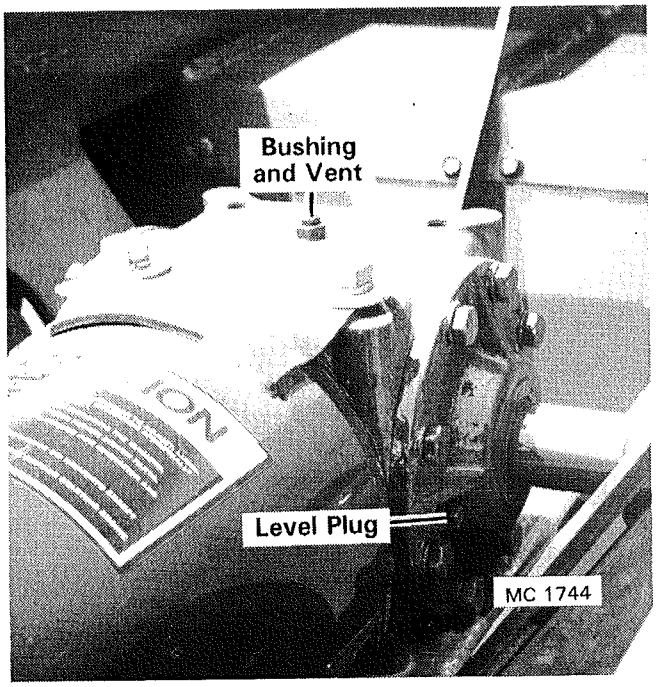


Figure 11 - Model 2408 Shown

Tractor Drawbar Adjustment

(A) CAT. II = 7.87" min, 12.6" max
CAT. III = 8.66" min, 13.78" max
International Tractor (A) dimension = 12.125"

(B) PTO TYPE #1 = 9.84" short, 13.78" regular, 19.68" extended
PTO TYPE #2 = 9.84" short, 15.75" regular, 21.65" extended
PTO TYPE #3 = 13.78" short, 19.68" regular, 25.59" extended
International Tractor (B) dimension = 17.0

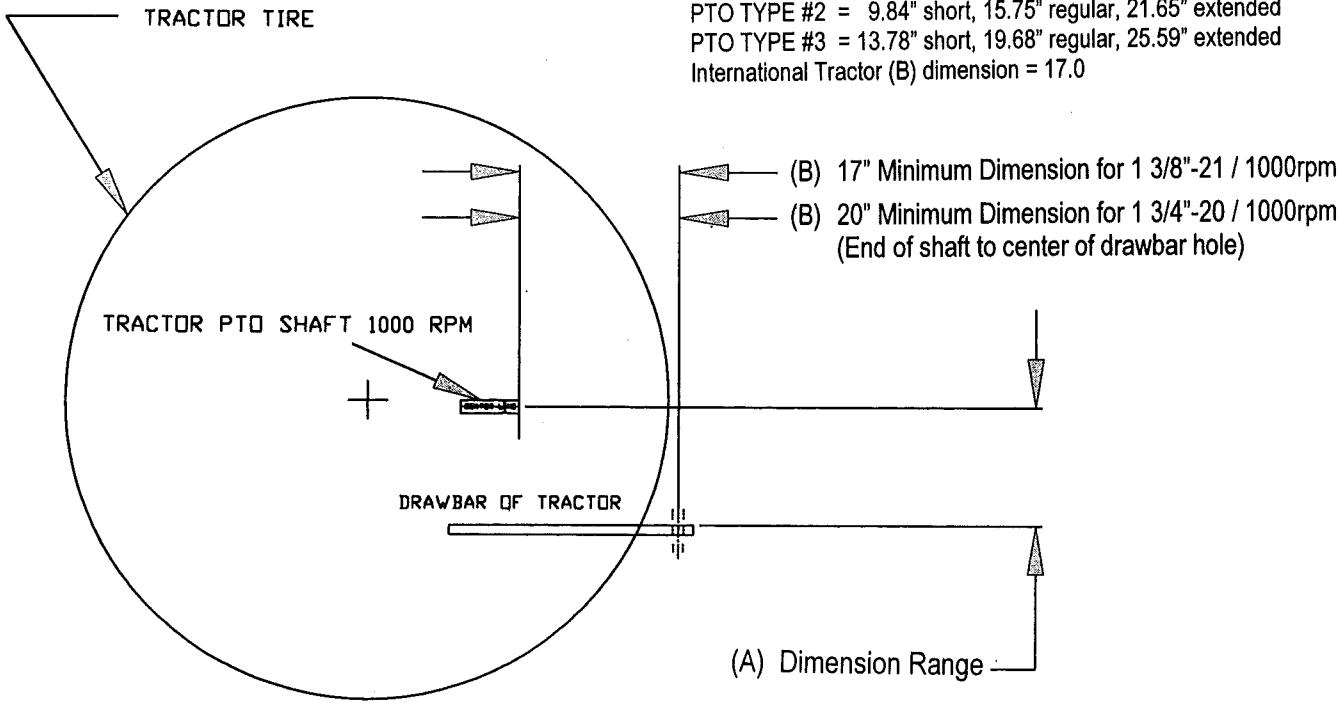


Figure 9

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 17 inches for the 1⅜" 21 spline PTO shaft and 20 inches for the 1¾" 20 spline PTO shaft. See Figure 9 .

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 children or bystanders near 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.

General

1. It takes approximately 10 to 15 acres of shredding to get the inside of the Shredder and 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 15 for procedure.

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

5. After 6 to 10 hours of operation check the drive belt adjustment, see page 15 .
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 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, rotors, gear box, output drive shafts, belt drive assemblies, and PTO shaft for signs of unusual wear. Also check for 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 (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.
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 12. 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. Loosen the capscrews just enough to permit the cutter bars to move in the adjusting slots.

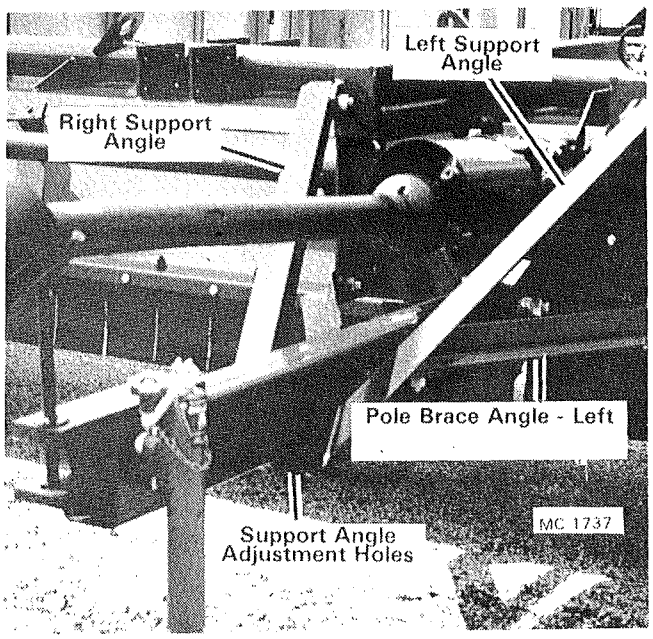


Figure 12

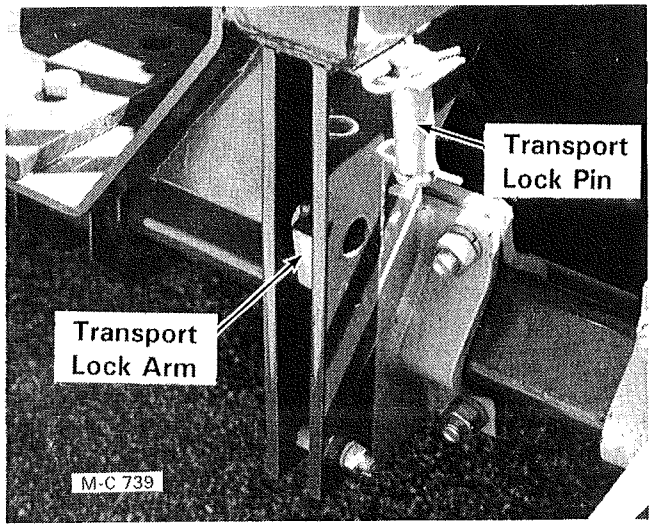


Figure 13

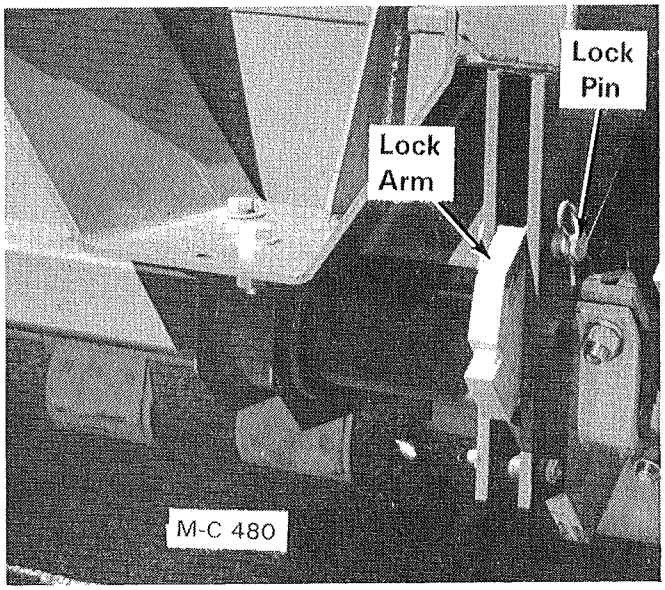


Figure 14

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

Shredders Without Optional End Tow System

1. The transport lock, Figure 13, holds the body of the Shredder up so that it can be transported with the hydraulic or mechanical ram disconnected.

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 in Figure 14. Put the two pin clips on the pin and relieve the ram pressure.

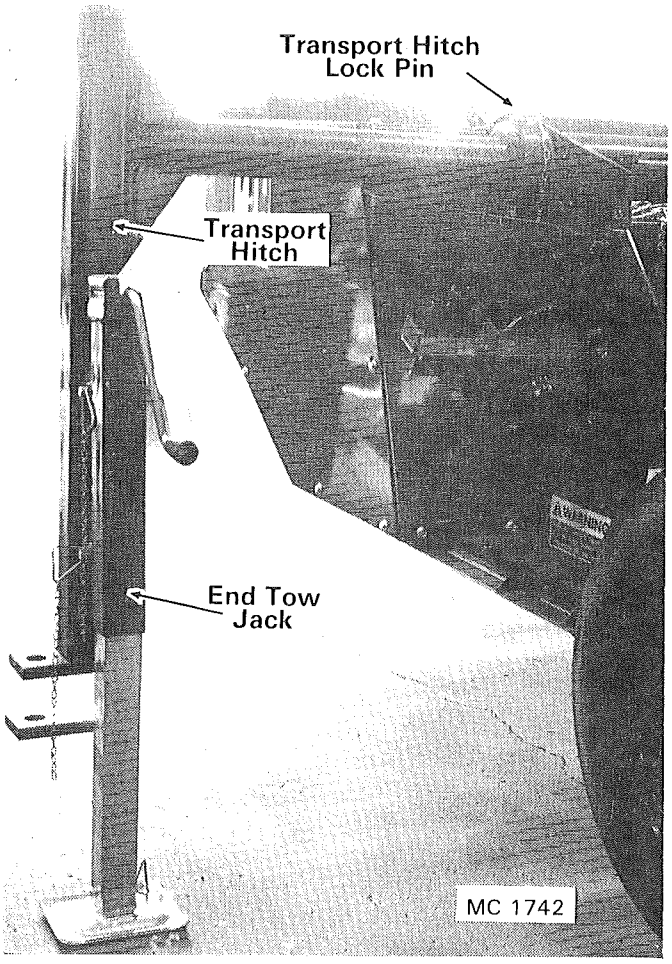


Figure 15

Shredders With Optional End Tow System

Changing From Transport to Field Position

1. Stop the tractor engine and apply the parking brake.

2. Lower the end tow jack to the ground to take the weight off of the tractor drawbar, see Figure 15.

3. Remove the transport ram stop, see Figure 15A. Remove the PTO shaft support from the pole, put it on the mount on the left side of the Shredder and run the hydraulic hoses through it, see Figure 15B.

4. Remove the pole jack from the mount on the right side of the Shredder, put it on the pole and lower the jack to the ground, see Figure 15B. Start the tractor and lower the right side of the Shredder to the ground with the transport ram.

5. Raise the transport wheels all the way up with the transport ram and close the hand valve on the ram, see Figure 15C. Stop the tractor engine. Store the transport ram stop on the PTO shaft support.

CAUTION: The transport ram hand valve must be closed to prevent the transport wheels from drifting down while shredding.

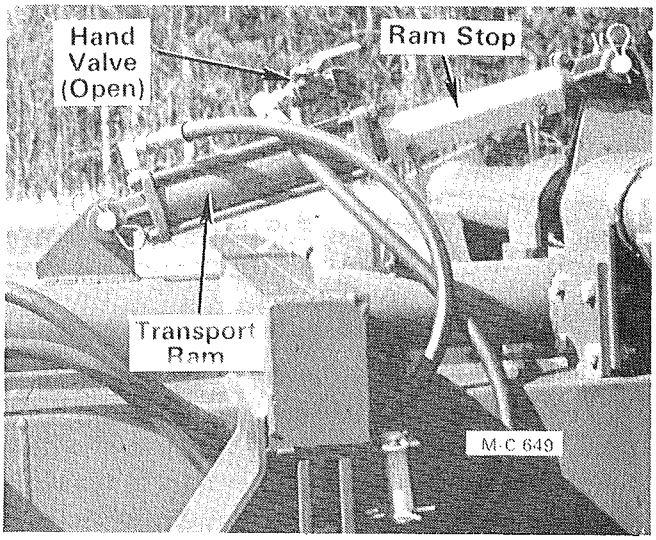


Figure 15A

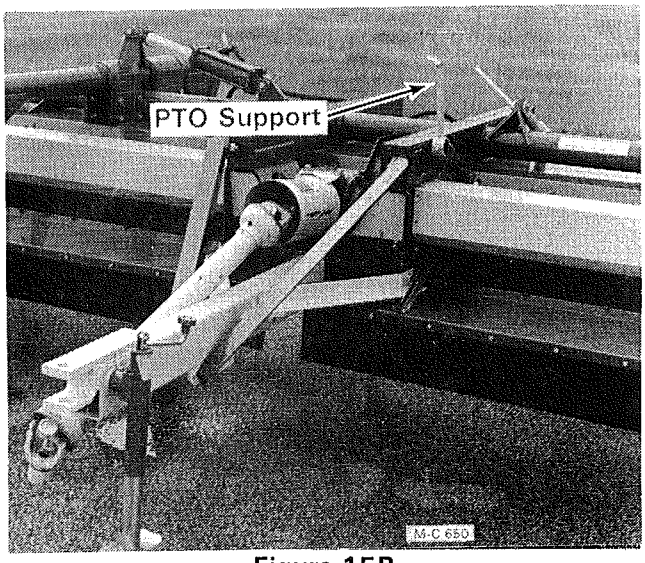


Figure 15B

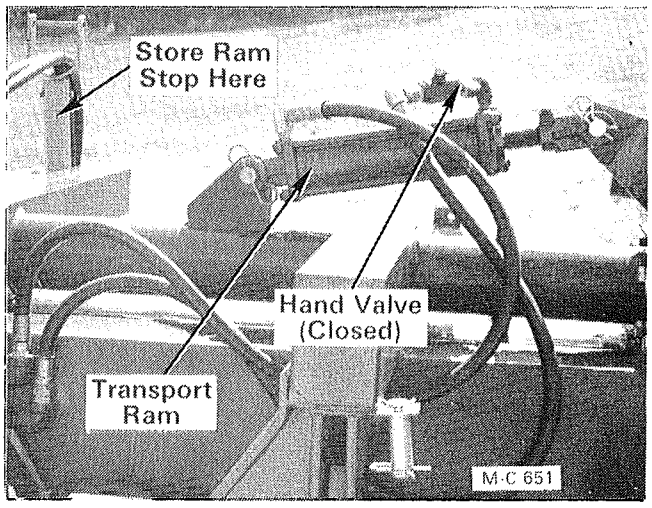


Figure 15C

6. Disconnect the transport ram hydraulic hoses from the tractor and disconnect the tractor drawbar from the transport hitch.
7. Move the tractor to the Shredder pole and connect the drawbar to the pole. Stop the tractor engine and apply the parking brake.
8. Connect the Shredder hydraulic hoses to the tractor. Lower the transport hitch with the jack. Retract the jack all the way, see Figure 15D.
9. Remove the Shredder pole jack and store it on the jack mount on the right side of the Shredder. Remove the axle stop shear bolt, see Figure 15E. Raise the Shredder with the hydraulic ram or optional mechanical ram.
10. Disconnect the transport hitch brace from the Shredder. Remove the clip from the end of the transport hitch lock pin and pull the pin out, see Figure 15D. Store the lock pin in the

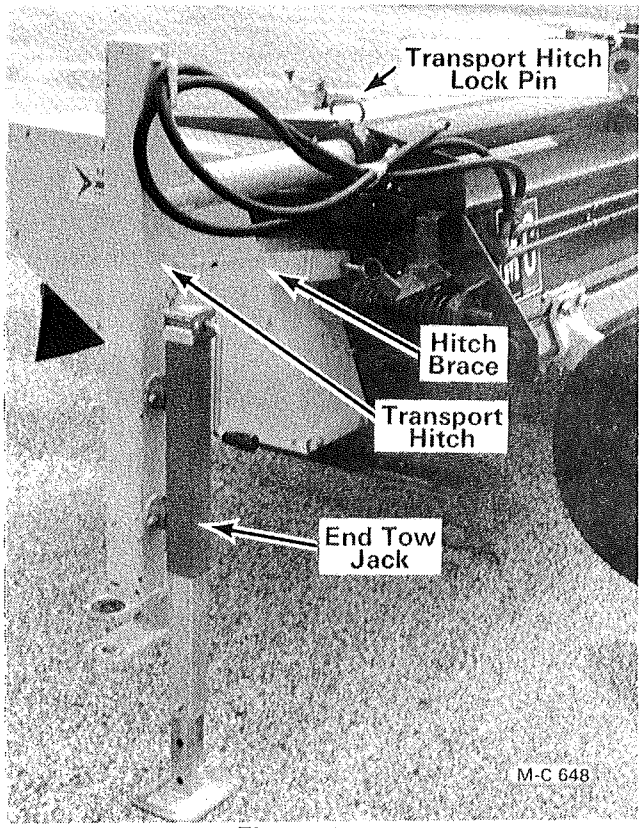


Figure 15D

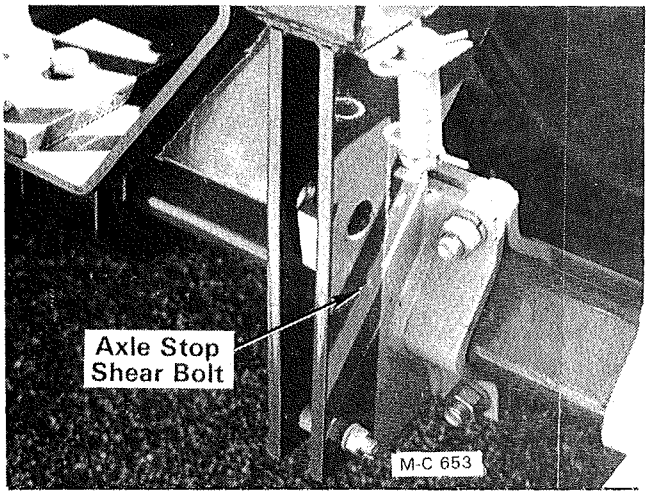


Figure 15E

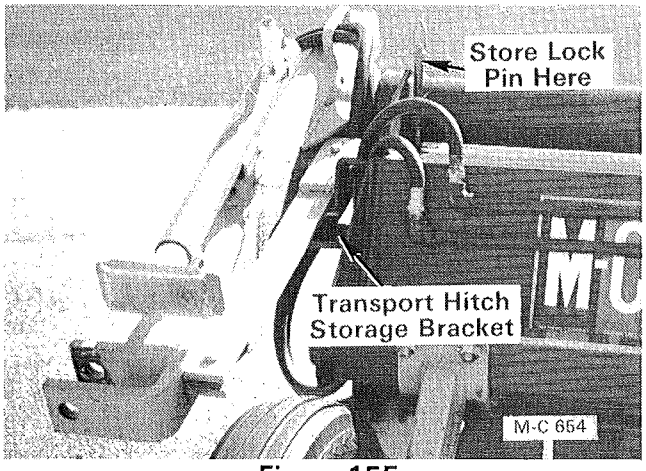


Figure 15F

holder on the left side of the Shredder, see Figure 15F.

11. Slide the transport hitch assembly into the pipe and place it on the storage bracket, see Figure 15F.

Changing From Field to Transport Position

1. Stop the tractor engine and apply the parking brake.
2. Remove the pole jack from the mount on the right side of the Shredder and put it on the pole. Lower the pole jack to the ground.
3. Pull the transport hitch assembly out and intall the lock pin, see Figure 15G. Secure the lock pin with the clip. Connect the transport hitch brace to the Shredder.
4. Lower the Shredder with the hydraulic or optional mechanical ram just far enough to install the axle stop shear bolt, see Figure 15E. The shear bolt holds the Shredder axle and wheels up during transport.
5. Disconnect the Shredder hydraulic hoses and PTO shaft from the tractor. Disconnect the tractor drawbar from the Shredder pole.
6. Move the tractor to the transport hitch. Raise the transport hitch to the tractor drawbar height with the jack and connect the drawbar to the transport hitch. Stop the tractor engine and apply the parking brake.
7. Lower the transport hitch jack.
8. Connect the transport ram hydraulic hose to the tractor. Open the hand valve on the transport ram, see Figure 15H.
9. Raise the Shredder to the transport position,

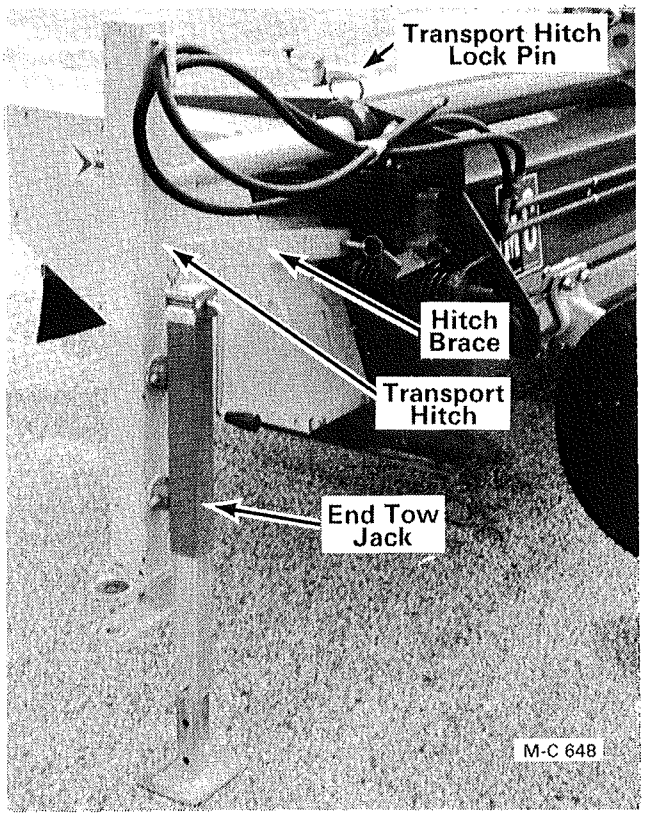


Figure 15G

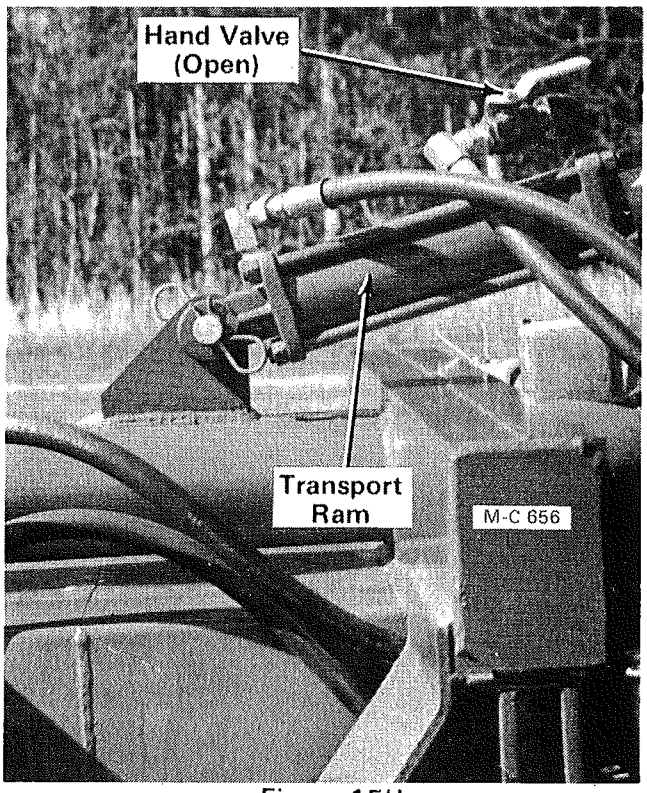


Figure 15H

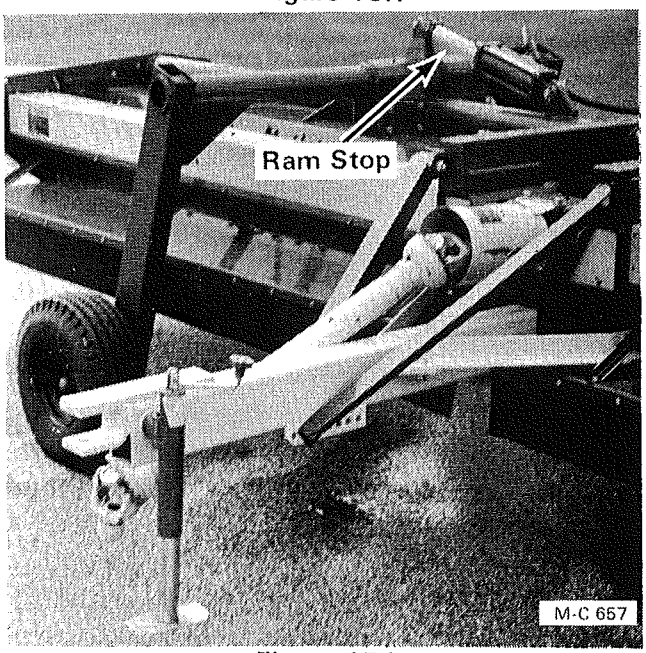


Figure 15J

see Figure 15J. Put the ram stop on the transport ram.

10. Remove the pole jack and store it on the jack mount on the right side of the Shredder. Put the PTO support on the pole and place the PTO shaft on it.

Pole Jack

1. To prevent possible damage to tractor tires when making sharp left turns, remove the pole jack from the pole.

On Shredders without the optional end tow system, store it on the jack mount located on the left side of the body by the gear box. see Figure 25.

On Shredders with the optional end tow system, store it on the jack mount located on the right side of the body by the gear box.

MAINTENANCE

General

CAUTION: Do not allow children or bystanders near the shredder while it is being adjusted and/or serviced.

Periodically During the Season

1. Tighten all capscrews and locknuts.
2. Inspect all knives and knife hangers to be sure they are not damaged and are secure.
3. Check to be sure that all the guards and shields are in place and secure.
4. 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.

Lubrication

Lubricate all fittings with a hand grease gun. Use a good grade of bearing grease. Do not over lubricate. Too much grease may damage the bearing seals.

Every 40 Hours

1. Power take-off shaft universal joints. One fitting in each yoke. One fitting in the telescoping spline shaft. See Figure 17.

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 appears in the slot.

2. Rotor bearings. One fitting on each end of rotors. See Figure 18.

Center rotor bearing grease fittings can be reached from beneath Shredder. See Figure 20.

NOTE: To reach grease fittings use grease gun with a flexible discharge hose. Pull Shredder over a work pit or raise Shredder and support with jacks and safety stands.

3. Output shaft bearings, see Figure 21 and 22.

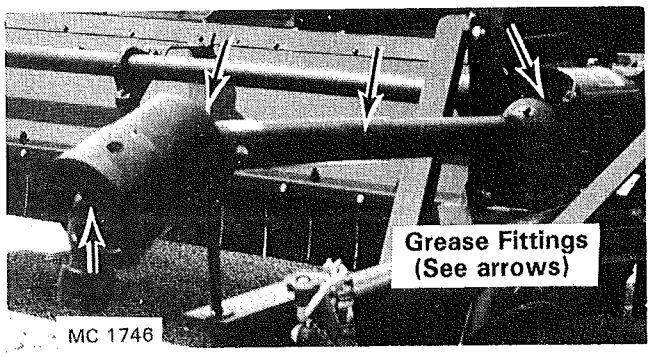


Figure 17

4. Output shaft universal joint, see Figure 23, located under the output shaft guard.
5. Axle on optional end tow system, see Figure 23A.

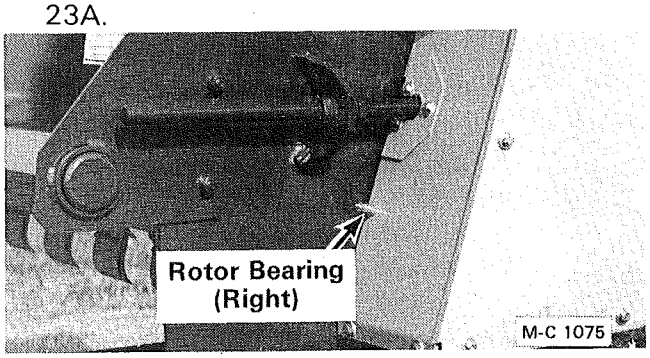


Figure 18 – Rotor End Bearing – Left Side Same

Bearing Lubrication Locations

Center rotor bearing grease fitting can be reached from beneath the Shredder. See Figure 20.

NOTE: To reach the grease fittings use a grease gun having a flexible hose, pull Shredder over a ditch or work pit, or raise the rotor and support with jacks and safety stands or blocking.

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.

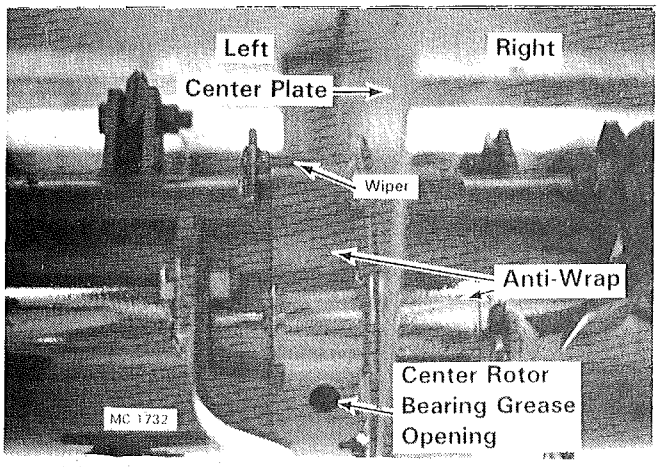


Figure 20 – Center (Inside) Rotor Bearings View from Below

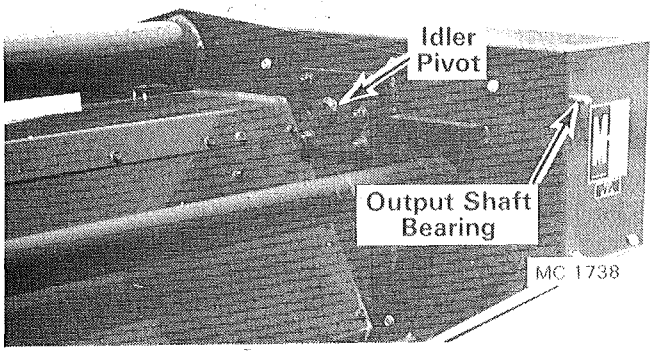


Figure 21 – Two on All Models

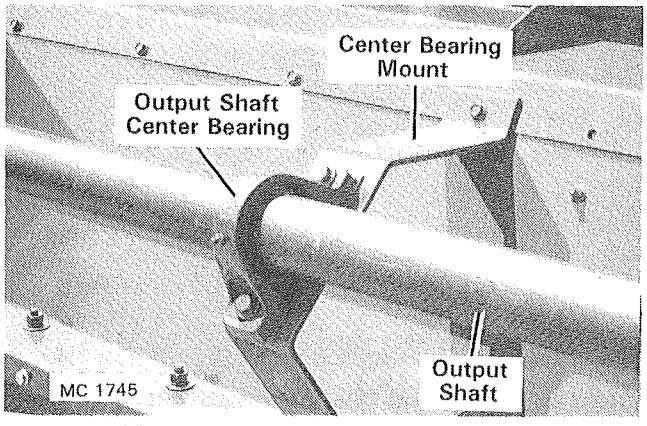


Figure 22 – Two on All Models

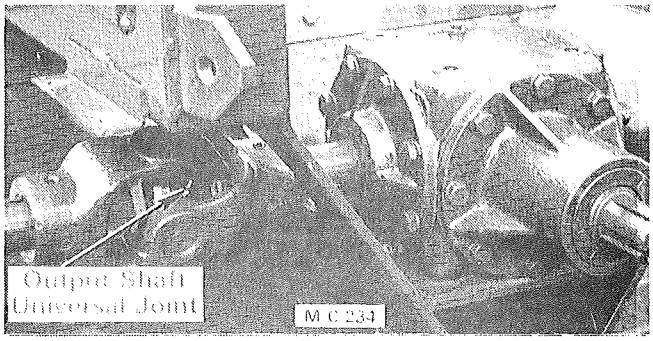


Figure 23 – Two on All Models

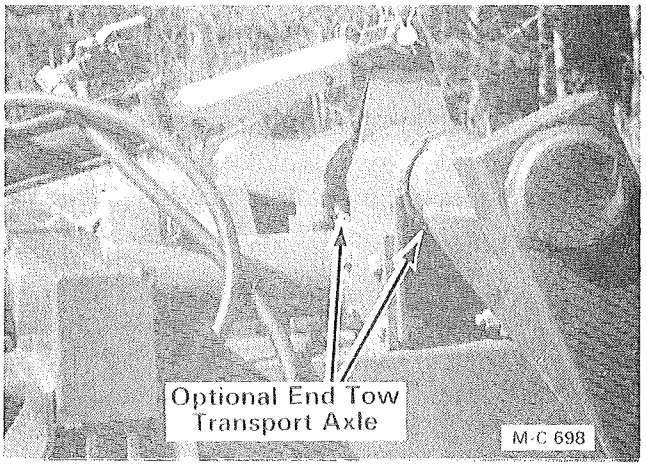


Figure 23A - Optional End Tow System

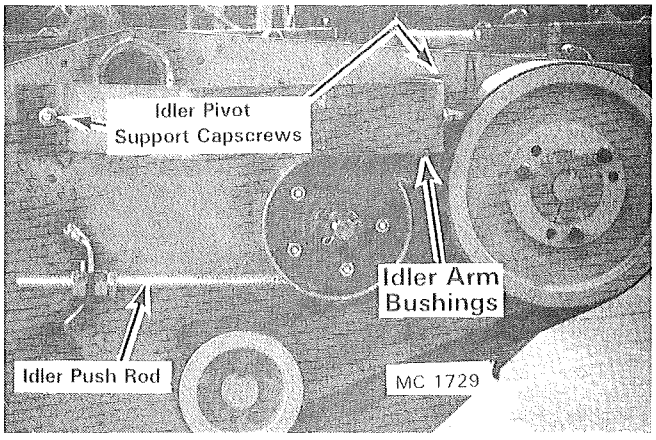


Figure 24 – Two on All Models

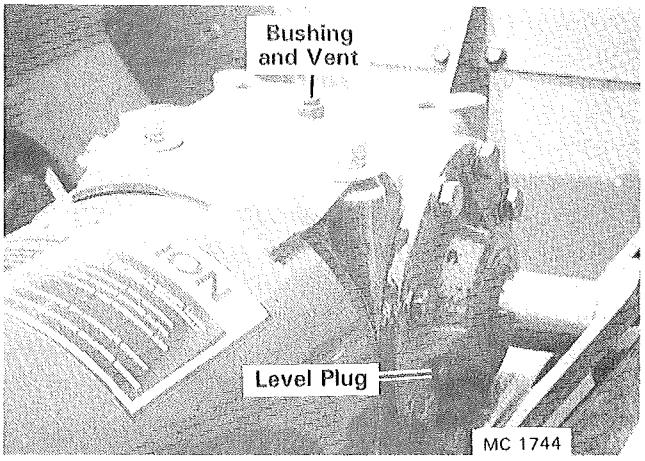


Figure 25

Every 200 Hours (or seasonally)

1. Idler arm bushings. One fitting behind the belt guard cover, see Figure 24 (two on Model 2206 & 2408).

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 25.
2. The oil level should be even with the bottom of the level plug hole. If not, remove the bushing and vent on the top of the gear box and add Mobilfluid 424 multipurpose transmission lubricant or equivalent until it just runs out of the level plug hole.

   Mobilfluid 424 is available from M-C in one pint containers. Order M-C part number 000 8991.
3. Install the level plug and the bushing with vent. Check to be sure the vent is open.

Knife Reversing or Replacement

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 reversed or changed by removing the ⅝" bolt and locknut securing each pair of knives to the rotor,

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

Drive Belt Adjustment

1. Remove the belt guard cover.
2. Correct belt tension is ⅜" upward deflection (full width of the belts) at mid point with a force of 76 lbs. min. - 112 lbs. max., see Figure 30.
3. Use a spring scale or belt tension tester to check belt deflection. To adjust, loosen the locknuts on the idler push rod and tighten the adjusting nut until the ⅜" belt deflection is obtained.
4. Tighten the locknuts and install the belt guard cover.

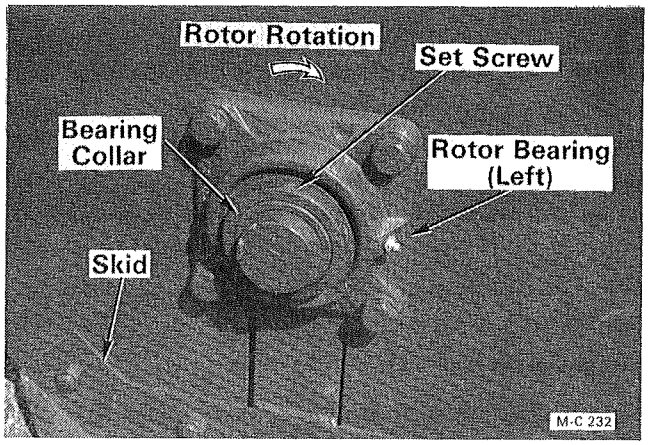


Figure 27

Drive Belt Replacement

IMPORTANT: The 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 belts 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" above.

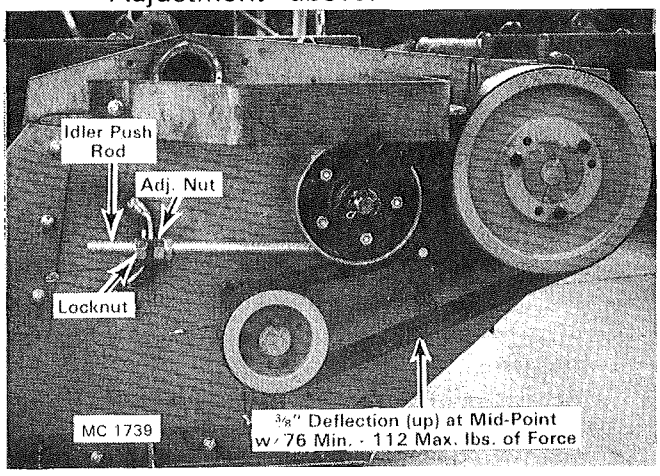


Figure 30

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 16.

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

3. Loosen the push rod locknuts and back off the adjusting nut to relieve all idler tension.
4. Remove the idler push rod seal, see Figure 31. Disconnect the idler push rod at the idler arm.
5. Pull the idler push rod out of the bracket and remove the idler push rod.
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 16.
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 into the idler bracket.
10. Connect the idler push rod to the idler arm and reinstall the idler push rod seal. Install the belt guard cover.
11. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 15.

NOTE: After installing new belts, recheck the tension after 6 to 10 hours of operation.

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 32.
2. If the pulleys are not in alignment, loosen the push rod locknuts and back off the adjusting nut to relieve all idler tension. Block the idler up toward the back of the belt guard.
3. Remove the top belt and output shaft guards. Adjust the output shaft bearings as follows:

A. **Pulleys are out of alignment vertically** Raise or lower the output shaft and bearings as required by adding or removing shims under the bearings, see Figure 33.

B. **Pulleys are out of alignment horizontally** Loosen the bearing mounting capscrews and move the output shaft and bearings forward or back as required. The bearing mounting holes are slotted for this purpose, see Figure 33.

4. Install the output shaft guard. 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

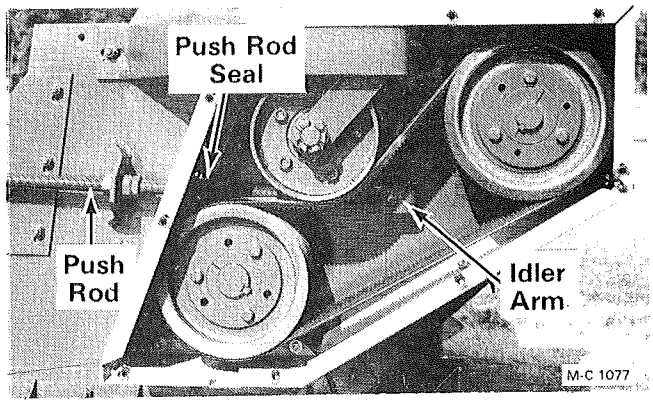


Figure 31 - Idler Push Rod Ass'y.

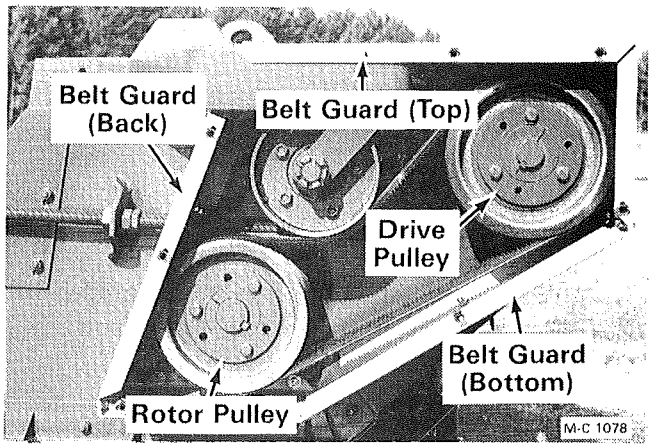


Figure 32 - Idler Push Rod Ass'y.

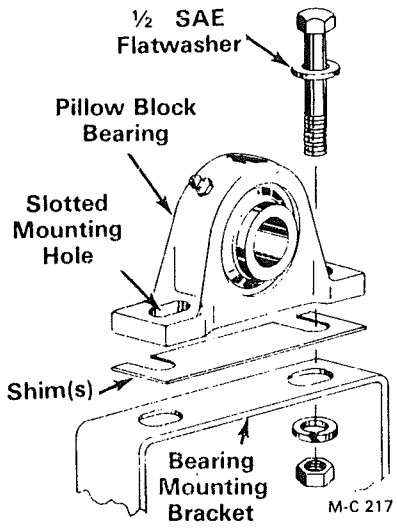


Figure 33

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 push rod locknuts and back off the adjusting nut to relieve all idler tension.
4. The idler pivot support is adjustable horizontally and the idler pivot is adjustable vertically, see Figure 35.
5. Loosen the idler pivot support capscrews, see Figure 35, and the idler pivot capscrews, see Figure 36.
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. Install the top belt guard and the belt guard cover.
9. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 15.

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 15 for procedure.
3. Remove the three mounting capscrews, see Figure 37. 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.
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.

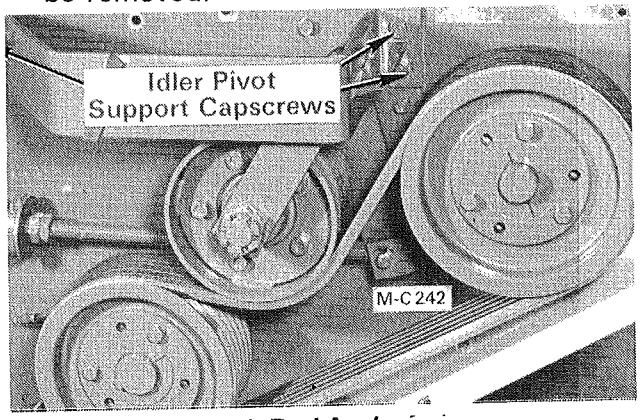


Figure 35 - Idler Push Rod Ass'y.

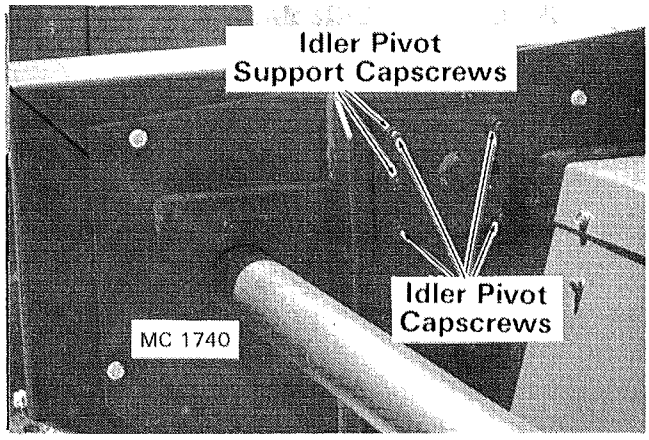


Figure 36

6. Place the bushing into the pulley from the back so that the bushing flange is to the inside, see Figure 38. 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.

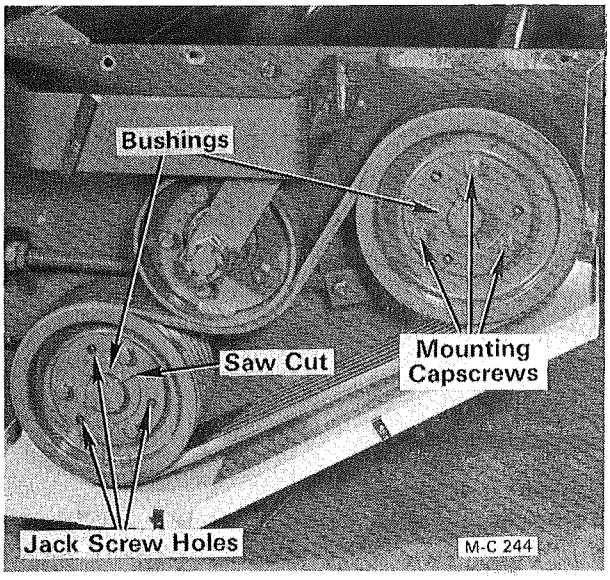


Figure 37

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 flange of the bushing. If the gap is closed, the shaft is undersize.

10. Check "Drive and Rotor Pulley Alignment" page 16 and "Idler Pulley Alignment" page 16 and adjust if necessary. Install the back belt guard, top belt guard and belt guard cover.

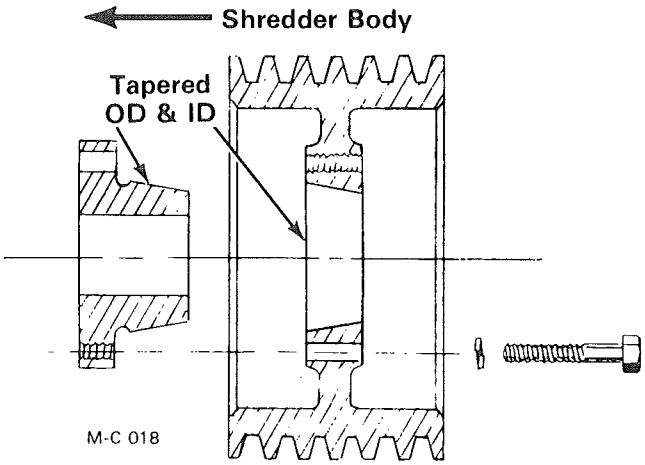


Figure 38

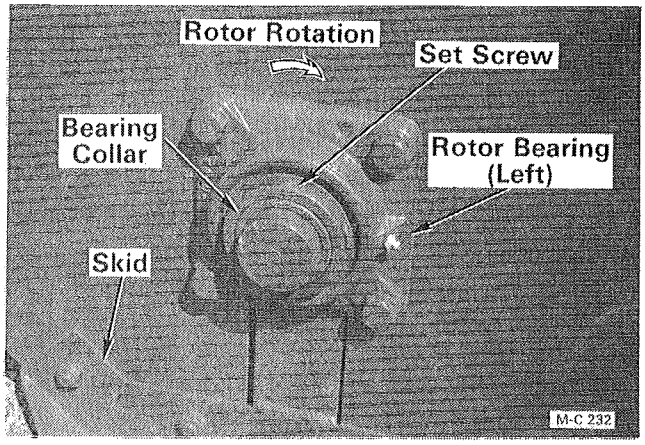


Figure 39

11. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 15.

Rotor Bearing Replacement

Model 180, 2206 & 2408
Left or Right Outer 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 42. Remove the drive belts. Refer to "Drive Belt Replacement" page 15 for procedure.

3. Remove the rotor pulley. Refer to "Drive and Rotor Pulley Replacement" page 17 for procedure.
4. Clean the end of the rotor shaft with emery cloth. Remove the two set screws in the bearing lock collar 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 40. Partially thread the capscrews into the nut bars. Slide the two anti-wrap halves over the capscrews. Tighten the capscrews evenly to align the bearing on the shaft. Tighten the two set screws in the bearing lock collar.

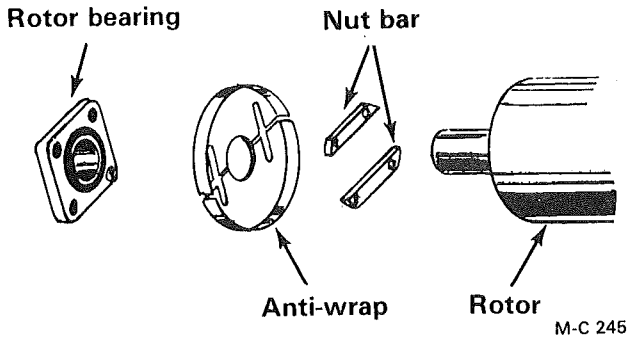


Figure 40

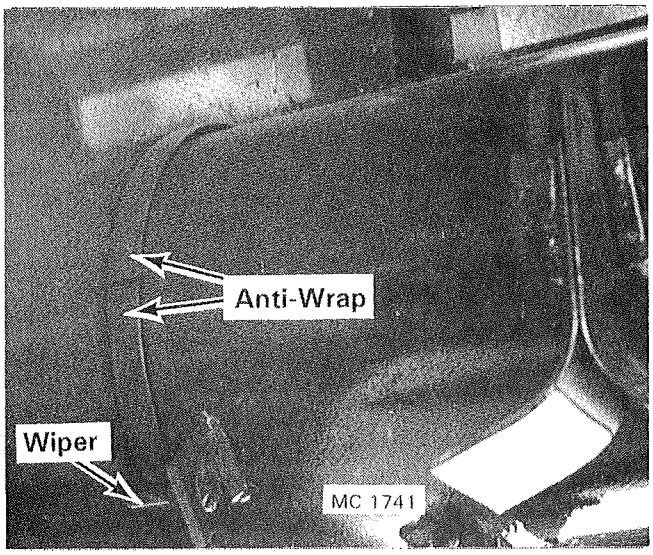


Figure 41

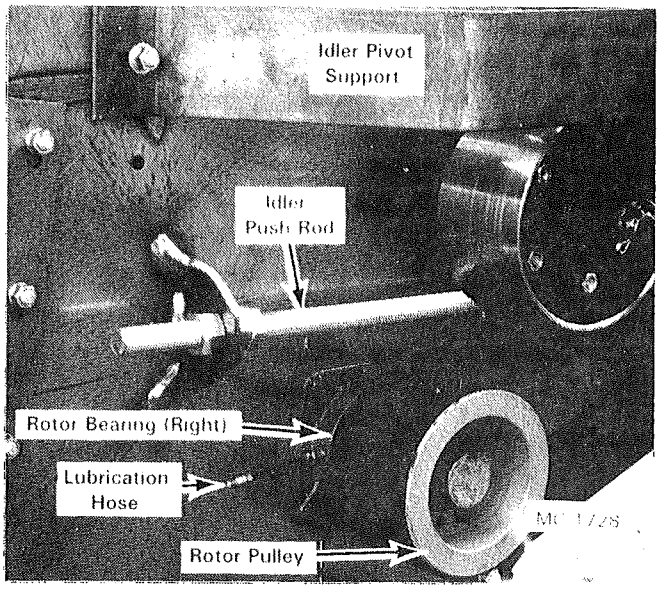


Figure 42 - Idler Push Rod Ass'y.

7. Check the position of the two wipers (180° apart) at the end of the rotor, see Figure 41. 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 17 for procedure. Check "Drive and Rotor Pulley Alignment" page 16 and "Idler Pulley Alignment" page 16 and adjust if necessary.
9. Install the back belt guard, bearing lubrication hose and belt guard cover. Remove the safety stands or blocking 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.
11. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 15.

Model 180, 2206 & 2408 Center Bearings

1. Support the rotor at each end with hydraulic jacks and safety stands or blocking.

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

2. Remove the outer rotor bearing. Follow the procedure for the Right or Left Bearing on page 18. Remove the skid.
3. Remove the anti-wrap from the center rotor bearing center plate.
4. Remove the four capscrews securing the center rotor bearing to the center plate.
5. Raise the rotor and remove the safety stands or blocking. Lower the rotor carefully until the center bearing clears the center plate.
6. Remove the two set screws in the bearing lock collar and slide the bearing off of the rotor shaft.
7. 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.
8. Raise the rotor into position with hydraulic jacks. Place safety stands or blocking under the rotor.

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

9. Place the four bearing mounting capscrews through the bearing and the center plate. Tighten the capscrews evenly to align the bearing on the shaft. Tighten the two set screws in the bearing lock collar.
10. Install the anti-wrap.
11. Install the outer rotor bearing. Follow the procedure for Right or Left Bearing, page 18. Install the skid.

Output Shaft Outer Bearing Replacement

1. Remove the belt guard cover, lubrication hose and top belt guard. Remove the drive belts. Refer to "Drive Belt Replacement" page 15 for procedure.
2. Remove the drive pulley. Refer to "Drive and Rotor Pulley Replacement" page 17 for procedure.
3. Scribe a line on the output shaft bearing mounting bracket as shown in Figure 43 page 21 to establish the location of the new bearing when reassembling.
4. Remove the two set screws in the bearing lock collar, two capscrews, flatwashers, lockwashers and hex-nuts securing the output shaft bearing.Loosen the output shaft center bearing cap screws. Lift up on the output shaft and remove the shims from under the output shaft bearing, see Figure 44 page 21.
5. Clean the output shaft with emery cloth. Support the output shaft and pull the bearing off of the output shaft.
6. 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.
7. Install the drive pulley. Refer to "Drive and Rotor Pulley Replacement" page 17 for procedure. Do not tighten the capscrews in the pulley bushing until the drive belts are installed and pulley alignment has been checked.
8. Install the drive belts.
9. Lift up on the output shaft and place the shims on the output shaft bearing mounting bracket, see Figure 44. 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 43. Tighten the output shaft bearing capscrews and two set screws in the bearing lock collar. Tighten the center bearing capscrews.

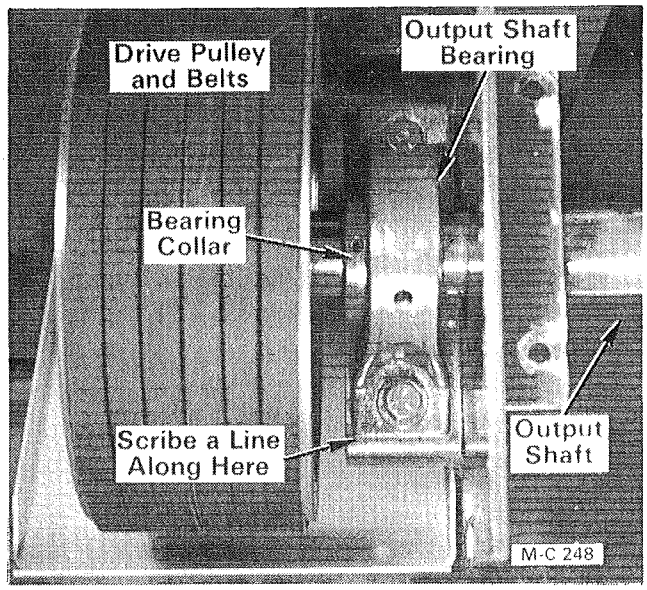


Figure 43

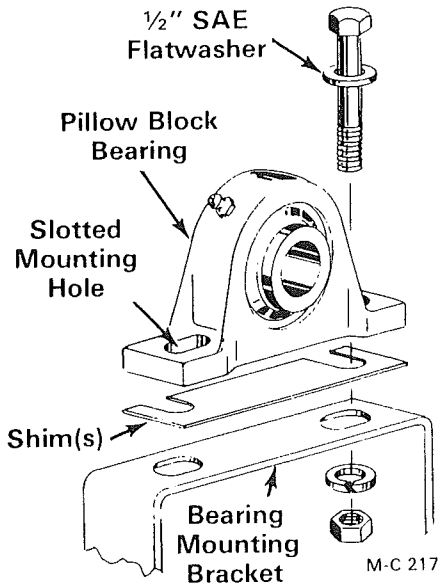


Figure 44

10. Check drive and rotor pulley alignment. Refer to "Drive and Rotor Pulley Alignment" page 16 for procedure (torque drive pulley bushing capscrews) to 60 ft. lbs. Check idler pulley alignment. Refer to "Idler Pulley Alignment" page 16 for procedure.
11. Install the top belt guard, lubrication hose, belt guard cover and output shaft guard.
12. Lubricate the output shaft bearing with a hand grease gun. Do not over lubricate. Too much grease may damage the bearing seal.
13. Adjust the drive belt tension. Refer to "Drive Belt Adjustment" page 15.

Output Shaft Center Bearing Replacement

1. Remove the belt guard cover and top belt guard. Remove the drive belts. Refer to "Drive Belt Replacement" page 15 for procedure.
2. Scribe a line on the output shaft outer bearing mounting bracket to establish the location of the bearing for reassembly, see Figure 43. Remove the two capscrews, flatwashers, lockwashers and hex nuts securing the output shaft bearing to the bearing mount.
3. Remove the two set screws in the output shaft center bearing lock collar.
4. Remove the set screw and roll pin securing the output shaft to the universal joint yoke. Pull the output shaft out of the universal joint yoke and remove the key in the end of the output shaft. Save the shim(s) that are under the output shaft outer bearing.
5. Pull the output shaft out of the center bearing. As the shaft is removed from the center bearing, the inside guard tube with the bell will fall off.
6. Place the new bearing on the center bearing mount with the lubrication fitting facing to the front, see Figure 44. Bolt the bearing to the bearing mount loosely. Loosen the two set screws in the bearing lock collar.
7. Slide the output shaft with the straight plastic guard tube installed through the new center bearing. Once output shaft is through the center bearing, be sure to install the plastic guard tube with the bell onto the shaft as it is pushed through the bearing. Be sure bell portion is next to the gear box and covering the universal joint yoke. Don't forget to install the ⅜" x 2½" key in the end of the output shaft.
8. Tap the output shaft into the output shaft universal joint until the drilled hole in the output shaft lines up with the hole in the universal joint end yoke. Tighten the set screw and install the ⅜" x 3" roll pin.

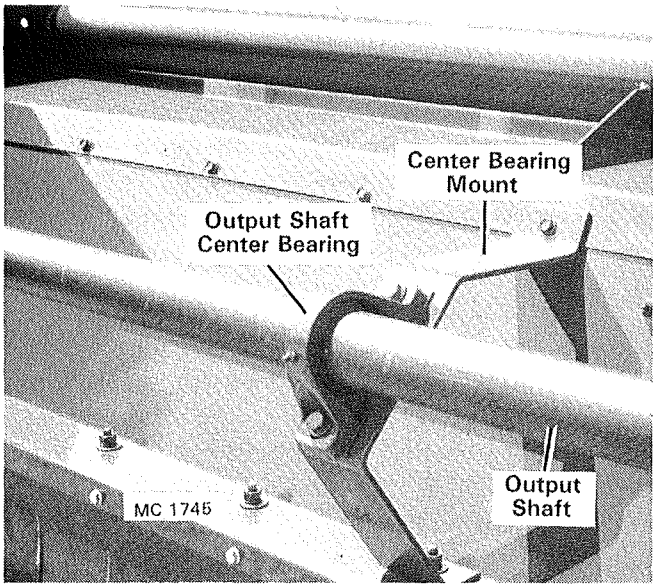
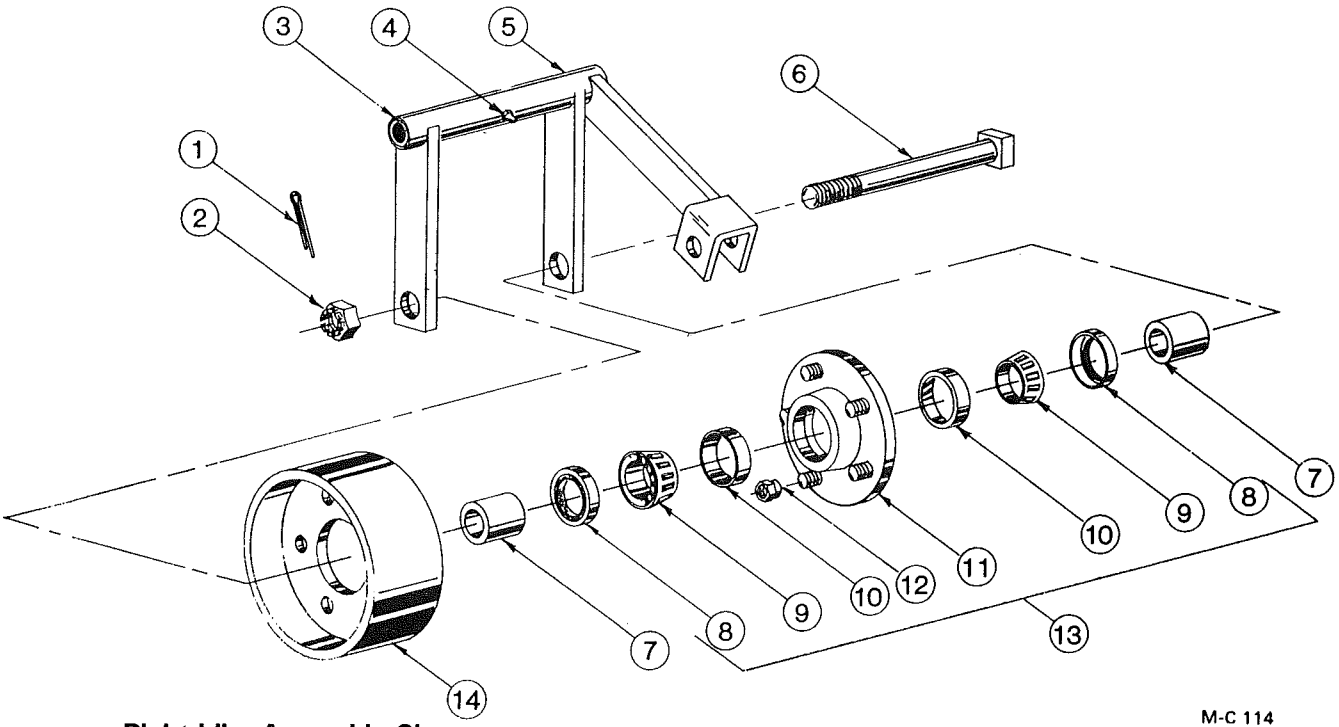


Figure 45

9. Lift up on the output shaft and place the shim(s) that were removed in disassembly of the outer output shaft bearing, see Figure 44. Install the capscrews, SAE flat-washers, lockwashers and hex nuts. Align the edge of the output shaft bearing with the mark scribed on the mounting bracket made in step 2, see Figure 43. Tighten the output shaft bearing capscrews.
10. Check the fit of the new bearing to the center bearing mount. If there is a space between them add shims as required under the bearing. Tighten the bearing mounting capscrews and the two set screws in the bearing lock collar.
11. Replace the drive belts and adjust drive belt tension. Refer to "Drive Belt Adjustment" on page 15.
12. Install the top belt guard and the belt guard cover.
13. Lubricate both output shaft bearings with a hand grease gun. Do not over lubricate. Too much grease may damage the bearing seal.



Right Idler Assembly Shown

Figure 46

Idler Pulley Bearing Replacement

(Reference Nos. Refer to Figure 46)

1. Remove the belt guard cover, top belt guard and back belt guard.
2. Loosen the push rod locknuts and back off the adjusting nut to relieve all idler tension. Disconnect the idler push rod at the idler arm.

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

4. Remove the three capscrews, lockwashers and hex nuts securing the idler pivot support to the Shredder body, see Figure 47 & 48 . 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 49, 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 47 & 48. Do not tighten the capscrews 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.

11. 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.

12. Lubricate the idler arm bushing (4). Check idler pulley alignment. Refer to the Idler Pulley Alignment page 16 for procedure.

13. Install the idler push rod into the idler bracket. Connect the idler push rod to the idler arm.

14. Adjust the drive belt tension. Refer to Drive Belt Adjustment, page 15.

15. 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 13 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 over lubricate. Too much grease may damage the bearing seals.

2. If the Shredder is equipped with the optional end tow system, lubricate the transport axle liberally to eliminate water condensation.

3. Loosen the push rod locknuts 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 15 for procedure.

4. 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 13.
3. Adjust the drive belt tension, See Drive Belt Adjustment page 15.
4. Inspect for missing and/or broken knives. Replace as necessary. See Knife Replacement page 34.
5. Be sure all safety shields are in place and secure.
6. Run the Shredder at low RPM checking to make sure that all drive line parts are moving freely.

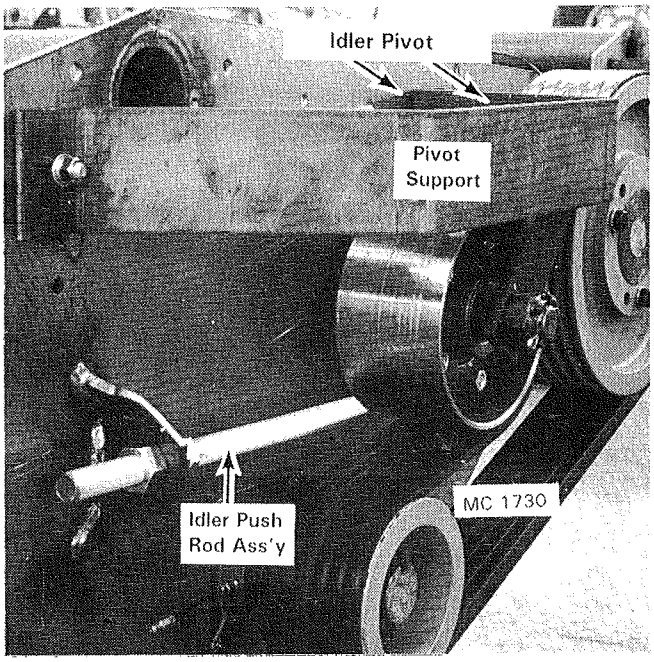


Figure 47 - Idler Push Rod Ass'y.

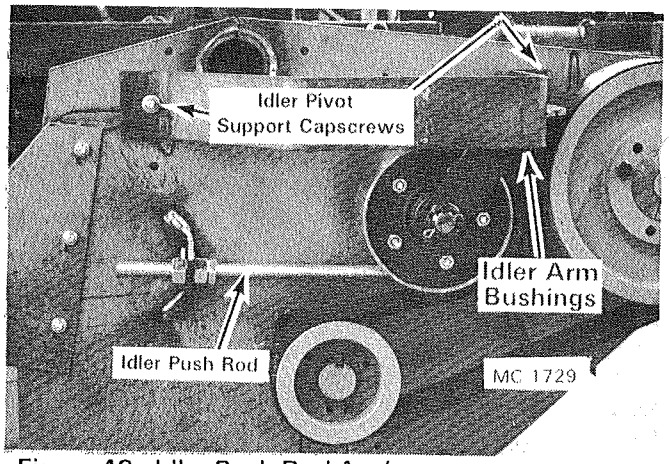


Figure 48 - Idler Push Rod Ass'y.

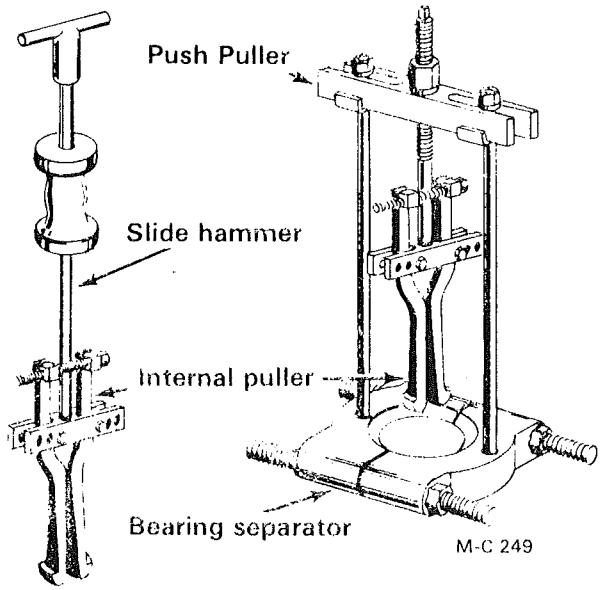


Figure 49

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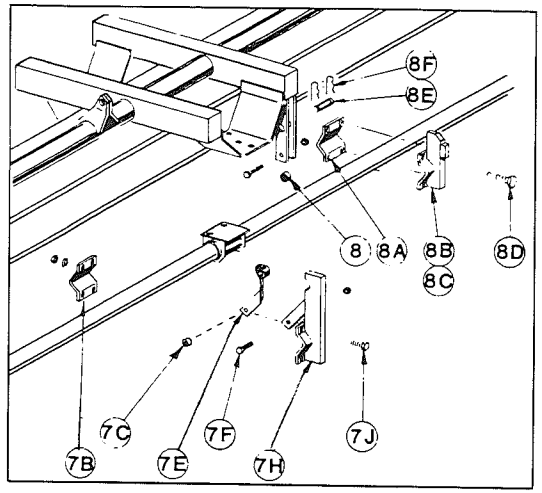
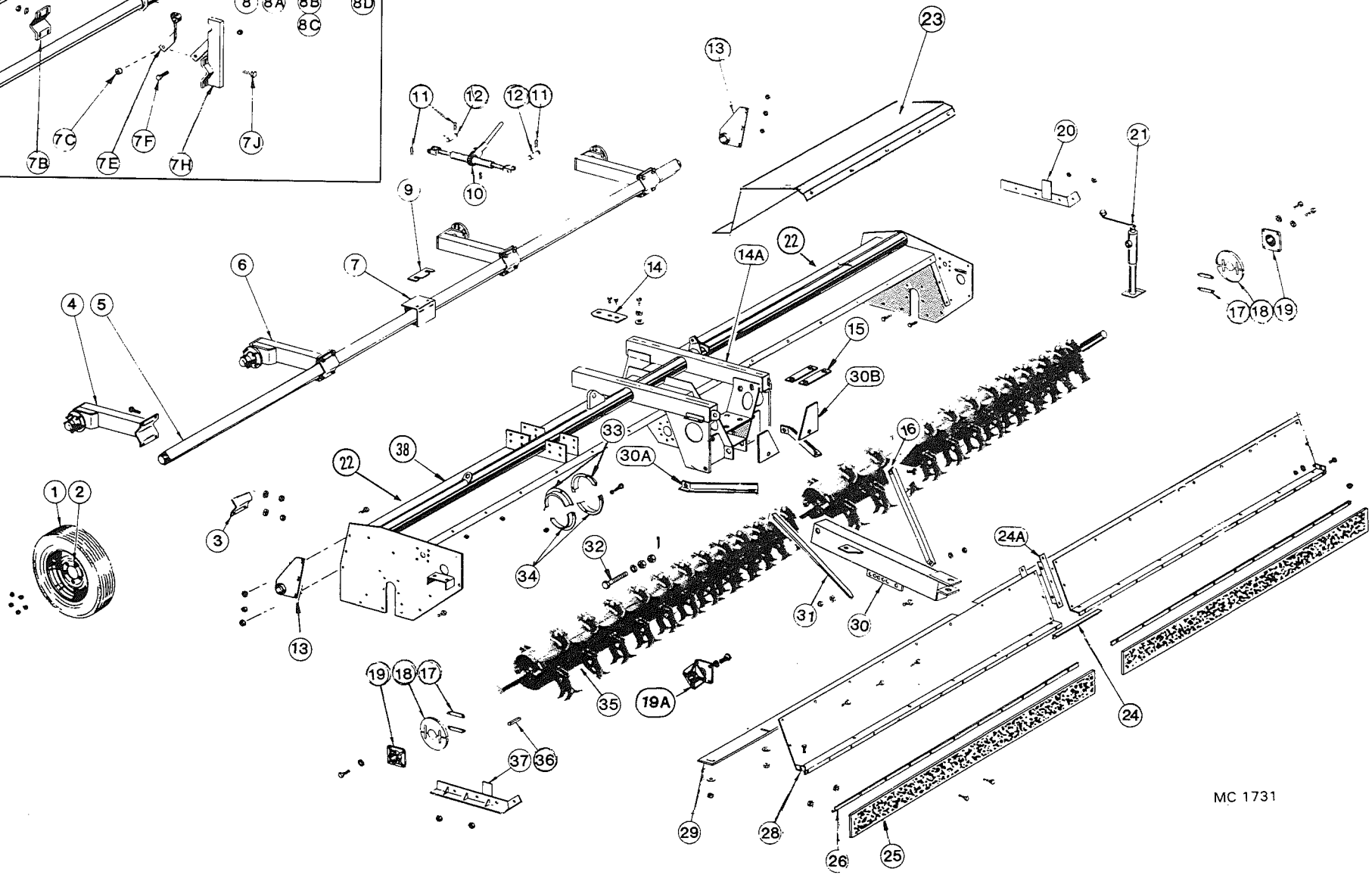
Body, Axle, & Pole
Model 180CS, 2206CS, & 2408CS

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



Rear Cylinder Mt. & Transport Lock



MC 1731

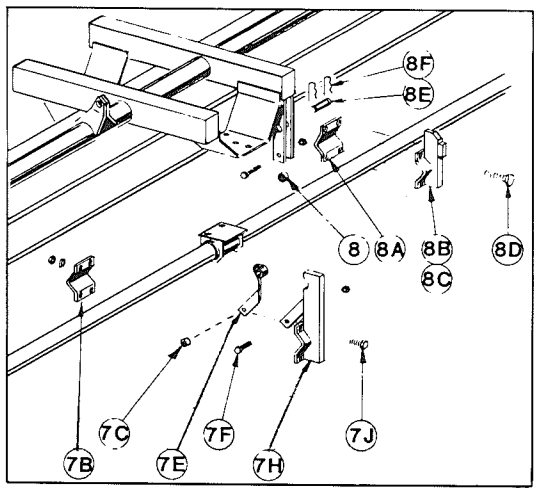
Ref.	Part No.	Qty.	Description
1	001 8949	4	9.5L-15" x 6 Ply Tubeless Stubble Guard Tire
2	001 8950	4	Wheel – 5 Bolt 15" x 8"
3	111 3590	4	Mount Clamp (Axle)
4	111 1066	4	Wheel Mount & Hub Assembly (See page 40)
5	111 0149	1	**Model 180CS** Axle Weldment
	111 0202	1	**Model 2206CS** Axle Weldment
	111 0172	1	**Model 2408CS** Axle Weldment
6	111 1041	4	Wheel Mount Ass'y w/Clamp (See page 40)
7	111 0119	1	Axle Center Bearing Weldment
	000 8146	2	⅝-11 x 1½" Capscrew – Grd. 5
	000 8181	2	⅝" Lockwasher
7B	111 0189	1	Mount Clamp
7C	111 5580	1	Link Arm Bushing
7E	111 0190	1	Floating Link
7F	--- ----	–	Hardware for Ref. 7E
	000 8278	1	½-13 x 1¾" Capscrew – Grd. 5
	000 8175	2	½" Flatwasher
	000 8180	1	½" Lockwasher
	000 8163	1	½-13 Hex Nut
7H	111 0191	1	Cylinder Rear Mount
7J	--- ----	–	Hardware for Ref. 7H
	111 8230	4	1-8 x 4" Capscrew – Grd. 5
	000 8276	4	1" SAE Flatwasher
	128 8231	4	1" Lockwasher
	091 8231	4	1-8 Hex Nut
8	111 5410	1	Stop Bar – Spacer
	128 8166	1	½-13 x 2½" Capscrew – Grd. 5
	000 8180	1	½" Lockwasher
	000 8163	1	½-13 Hex Nut
8A	111 0183	1	Mount Clamp – Transport Lock Only!
8B	111 1068	1	Transport Lock Assembly (Incl. ref. 8A, 8C, 8D, 8E & 8F
8C	111 0163	1	Transport Lock Arm
8D	128 8196	4	¾-10 x 2½" Capscrew – Grd. 5
	000 8182	4	¾" Lockwasher
	000 8165	4	¾-10 Hex Nut
8E	001 8248	1	Transport Lock Pin – 1" x 3½"
8F	000 8252	2	Hair Cotter Pin – 3/16"

Ref.	Part No.	Qty.	Description
9	128 2849	AR	Shim
10	001 8985	1	Mechanical Ratchet Jack (Optional)
11	002 8253	4	Ratchet Jack Pin Clip
12	002 8254	2	Ratchet Jack Pin (1" x 2¾")
13	141 0018	2	Axle Mount
	000 8137	6	½-13 x 1¼" Capscrew – Grd. 5
	000 8180	6	½" Lockwasher
	000 8163	6	½-13 Hex Nut
14	111 3679	1	Disc Hitch Tongue
	128 8195	2	¾-10 x 2" Capscrew – Grd. 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" Capscrew – Grd. 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 (for drive end of rotor)
19	111 6003	4	End Bearing – 2-3/16" (4) Bolt w/Zerk
19A	111 6004	2	Center Bearing – 2-3/16" (4) Bolt w/Zerk
	001 8965	8	⅜-24 x ⅜" Knurled Set Screw
	091 8170	8	⅝-11 x 1¾" Capscrew – Grd. 5 w/NY Patch
	000 8181	8	⅝" Lockwasher
	000 8164	8	⅜-11 Hex Nut
20	111 0109	1	Left Skid
	000 8135	4	½-13 x 1" Capscrew – Grd. 5
	128 8164	4	½-13 Two Way Locknut
21	141 8997	1	Pole Jack w/Retaining Pin
22	128 8300	2	M-C Decal 5" x 4-9/16"
23	111 2715	2	**Model 180CS** Inner Liner – 89½"
	111 2716	2	**Model 2206CS** Inner Liner – 110-9/16"
	111 2717	2	**Model 2408CS** Inner Liner – 121½"
	001 8209	AR	⅜-18 x 1" Washer Hex Bolt – Grd. 5
	000 8168	AR	⅜-18 Flange Locknut

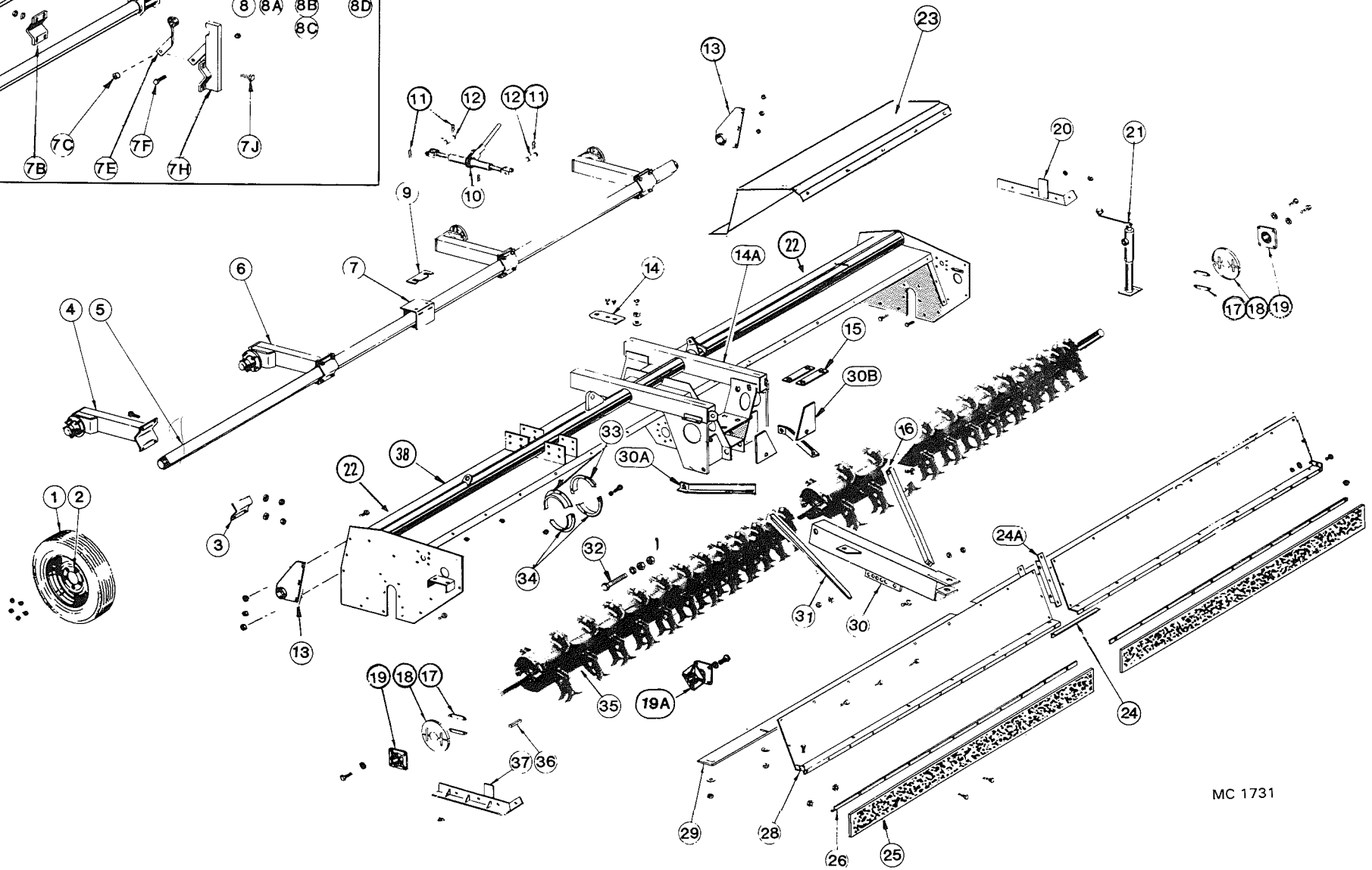
Continued on next page

Body, Axle, & Pole
Model 180CS, 2206CS, & 2408CS

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



Rear Cylinder Mt. & Transport Lock



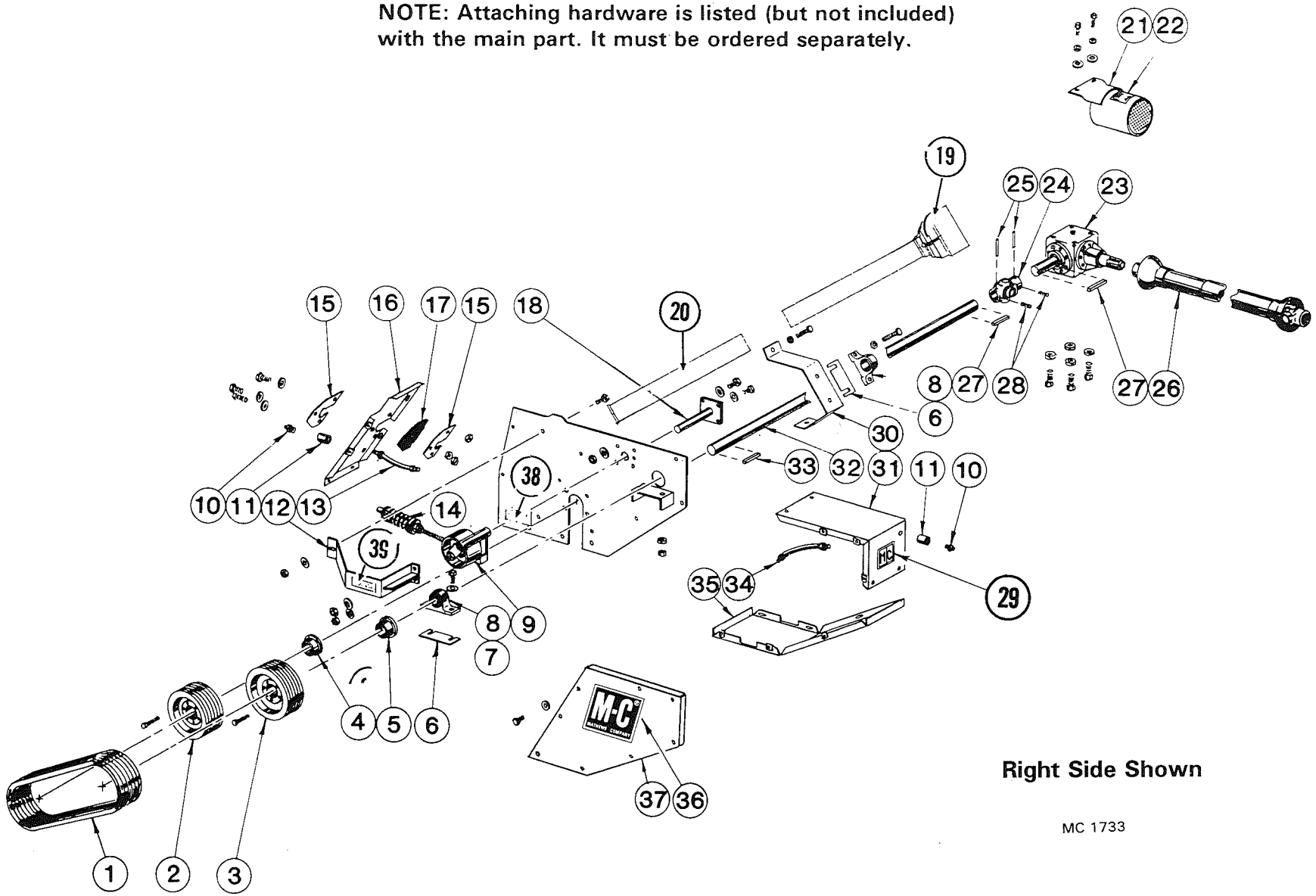
MC 1731

Ref.	Part No.	Qty.	Description
24	111 3486	1	Cover Support Angle
	000 8290	2	⅜-16 x 1½" Capscrew
	000 8174	2	⅜" Flatwasher
	001 8139	2	⅜" Lockwasher
	000 8162	2	⅜-16 Hex Nut
24A	111 4470	2	Front Cover Center Bracket
	001 8144	4	⅜-16 x 1¼" Capscrew – Grd. 5
	000 8168	4	⅜-16 Flanged Locknut
25	111 5733	2	**Model 180CS** Rubber Flap – 87"
	111 5725	2	**Model 2206CS** Rubber Flap – 108"
	111 5726	2	**Model 2408CS** Rubber Flap – 119"
26	111 3389	2	**Model 180CS** Retaining Strip – 89"
	111 3388	2	**Model 2206CS** Retaining Strip – 110"
	111 3390	2	**Model 2408CS** Retaining Strip – 121"
	001 8209	AR	⅜-18 x 1" Washer Head Hex Bolt-Grd. 5
	000 8168	AR	⅜-18 Flange Locknut
28	111 0147	2	**Model 180CS** Front Cover
	111 0203	2	**Model 2206CS** Front Cover
	111 0173	2	**Model 2408CS** Front Cover
	000 8119	–	⅜-16 x ¾" Capscrew
	000 8121	–	⅜-16 x 1" Capscrew
	000 8174	–	⅜" Flatwasher
	000 8168	–	⅜-16 Flanged Locknut
29	111 3483	2	**Model 180CS** Cutter Bar
	111 3505	2	**Model 2206CS** Cutter Bar
	111 3493	2	**Model 2408CS** Cutter Bar
	000 8137	–	½-13 x 1¼" Capscrew – Grd. 5
	000 8175	–	½" Flatwasher
	000 8180	–	½" Lockwasher
	000 8163	–	½-13 Hex Nut
30	111 0197	1	Pole
30A	111 0195	1	Pole Brace Angle – Right
	111 0196	1	Pole Brace Angle – Left
	128 8196	4	¾-10 x 2½" Capscrew – Grd. 5
	000 8182	4	¾" Lockwasher
	000 8165	4	¾-10 Hex Nut

Ref.	Part No.	Qty.	Description
30B	111 4652	2	Universal Joint Guard
	000 8108	2	5/16-18 x 1" Capscrew – Grd. 5
	001 8112	2	5/16" Self Locking Speed Nut
	000 8166	2	5/16" Wing Nut
31	111 0128	1	Pole Support Angle – Right
	128 8195	2	¾-10 x 2" Capscrew – Grd. 5
	000 8182	2	¾" Lockwasher
	000 8165	2	¾-10 Hex Nut
32	111 5721	1	Pole Bolt – 1" x 7½" Long w/Pin Hole
	091 8231	2	1-8 Hex Nut
	128 8231	1	1" Lockwasher
	000 8255	1	¼ x 2" Cotter Pin
33	118 5700	2	Anti-Wrap Half w/o Hole – stub shaft end of rotor (center)
34	118 5701	2	Anti-Wrap Half w/Hole – stub shaft end of rotor (center)
	001 8144	4	⅜-16 x 1¼" Capscrew – Grd. 5
	001 8139	4	⅜" Lockwasher
	000 8162	4	⅜-16 Hex Nut
	000 2715	4	Rotor Bearing Washer
35	--- ----	2	Rotor Assembly (See page 34)
36	001 5147	2	Key ½" x ½" x 3"
37	111 0108	1	Right Skid
	000 8135	4	½-13 x 1" Capscrew – Grd. 5
	128 8164	2	½-13 Two Way Locknut
38	001 8316	1	Safety Decal – Danger

Drive Line and Guards
Model 180CS, 2206CS, & 2408CS

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



Right Side Shown

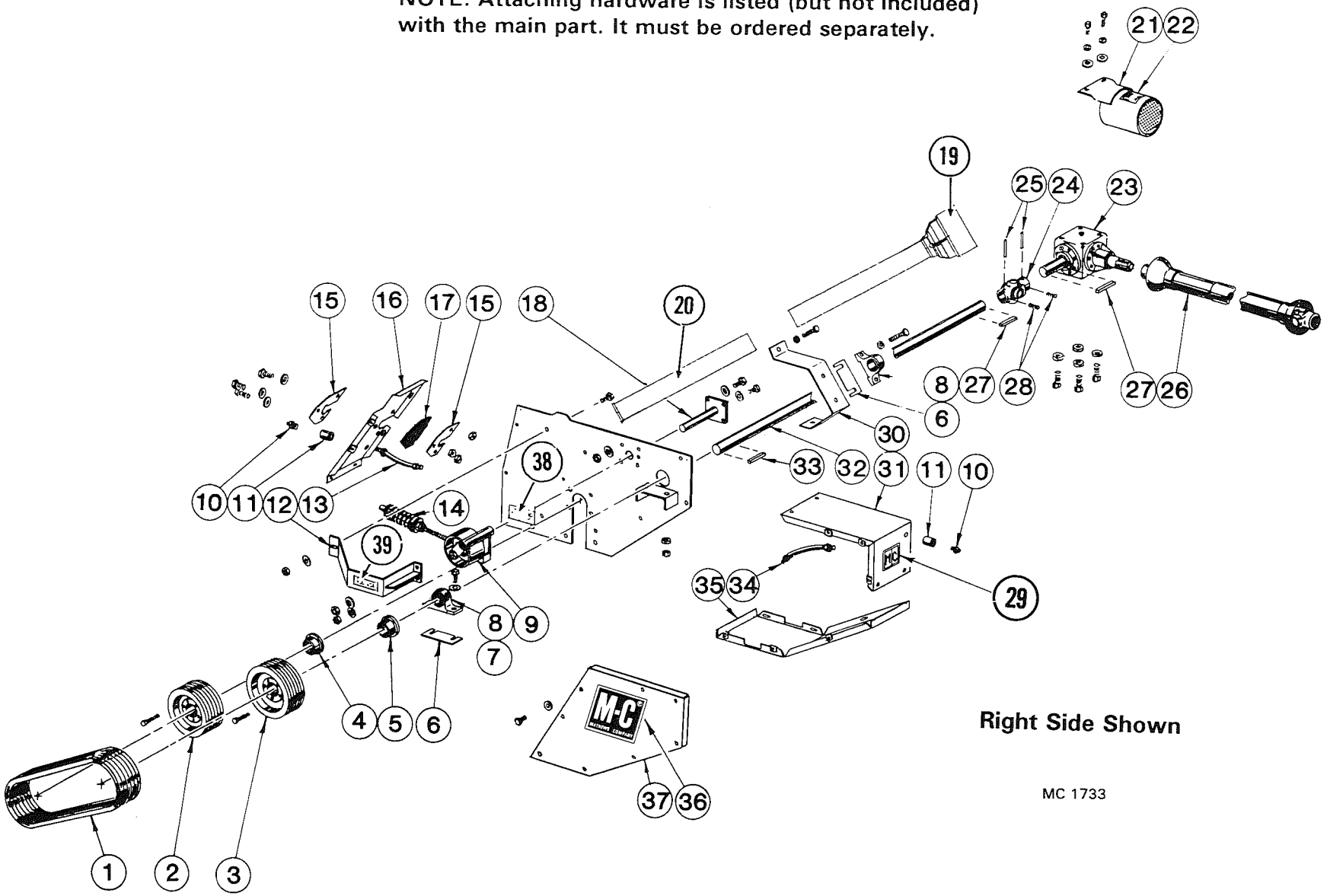
MC 1733

Ref.	Part No.	Qty. 180	Qty. 2206 & 2408	Description
1	111 6101	2	2	Drive Belts (Matched Set of 3)
2	111 6212	2	2	5V/7.1 x 6 Groove Pulley
3	111 6213	2	2	5V/14.0 x 6 Groove Pulley
4	128 6222	2	2	2-3/16" SF Bushing - ½" Keyway (Incl. Capscrews & Lockwashers)
5	111 6204	2	2	F Bushing 1¾" Bore (Incl. Capscrews & Lockwashers)
6	125 2918	AR	AR	Bearing Shim – 16 Ga.
	001 2600	AR	AR	Bearing Shim – 11 Ga.
7	000 8989	4	4	⅛" NPT 90° Grease Adapter
8	091 6001	4	4	Output Shaft Bearing 1¾" Bore w/Zerk
	001 8966	8	8	5/16-24 x 5/16" Knurled Cup Pt. Set Screw
	000 8278	8	8	½-13 x 1¾" Hex Head Capscrew – Grade 5
	001 8257	16	16	½" SAE Flatwasher
	000 8180	8	8	½" Lockwasher
	000 8163	8	8	½-13 Hex Nut
9	111 1028	1	1	Idler Assembly – Right (See page 37)
	111 1073	1	1	Idler Assembly – Left (See page 37)
10	002 6604	4	4	⅛" PT Straight Zerk
11	123 7503	4	4	⅛" Galvanized Coupling
12	111 0116	1	1	Belt idler Pivot Support – Right
	111 0174	1	1	Belt Idler Pivot Support – Left
	000 8137	6	6	½-13 x 1¼" Hex Head Capscrew – Grade 5
	001 8257	8	8	½" SAE Flatwasher
	128 8164	6	6	½-13 Two Way Locknut
13	112 9029	2	2	Grease Hose (Rotor Bearing – 8")
14	--- ----	–	–	Belt Idler Push Rod (See page 43)
15	111 4789	4	4	Idler Bolt Seal (16 Ga.)
	000 8104	6	6	5/16-18 x ¾" Truss Head Screw
	000 8173	6	6	5/16" Flatwasher
	000 8288	6	6	5/16-18 Two Way Locknut
16	111 2604	1	1	Belt Guard Back – Right
	111 2605	1	1	Belt Guard Back – Left
	001 8111	4	4	5/16-18 Clip Nut
	000 8134	4	4	⅜-16 x ¾" Truss Head Screw
	001 8149	4	4	⅜-16 Two Way Locknut
17	111 8985	2	2	Idler Bolt Seal (Rubber)
18	111 0115	2	2	Belt Idler Pivot
	000 8137	8	8	½-13 x 1¼" Hex Head Capscrew – Grade 5
	001 8257	16	16	½" SAE Flatwasher
	128 8164	8	8	½-13 Two Way Locknut
19	111 5730	2	0	**180CS** Output Shaft Guard w/Bell – 36"
	111 5727	0	2	**2206CS** Output Shaft Guard w/Bell – 45½"
	111 5732	0	2	**2408CS** Output Shaft Guard w/Bell – 51"
20	111 5729	2	0	**180CS** Output Shaft Guard Straight – 38"
	111 5728	0	2	**2206CS** Output Shaft Guard Straight – 48½"
	111 5731	0	2	**2408CS** Output Shaft Guard Straight – 54½"
21	--- 8047	1	1	Gear Box Input Shaft Guard
	000 8145	2	2	⅝-11 x 1¼" Hex Head Capscrew – Grd.5
	000 8176	2	2	⅝" Flatwasher
	000 8181	2	2	⅝" Lockwasher
22	001 8314	1	1	Safety Decal – Danger – 5" x 7"
23	111 6611	1	1	Gear Box (See page 36)
	091 8170	4	4	⅝-11 x 1¾" Hex Head Capscrew – Grade 5 w/NY Patch
	000 8181	4	4	⅝" Lockwasher
24	111 8988	2	2	Output Shaft Universal Joint (See page 40)
25	001 8281	4	4	Roll Pin ⅜" x 3"

Continued on next page

Drive Line and Guards
Model 180CS, 2206CS, & 2408CS

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

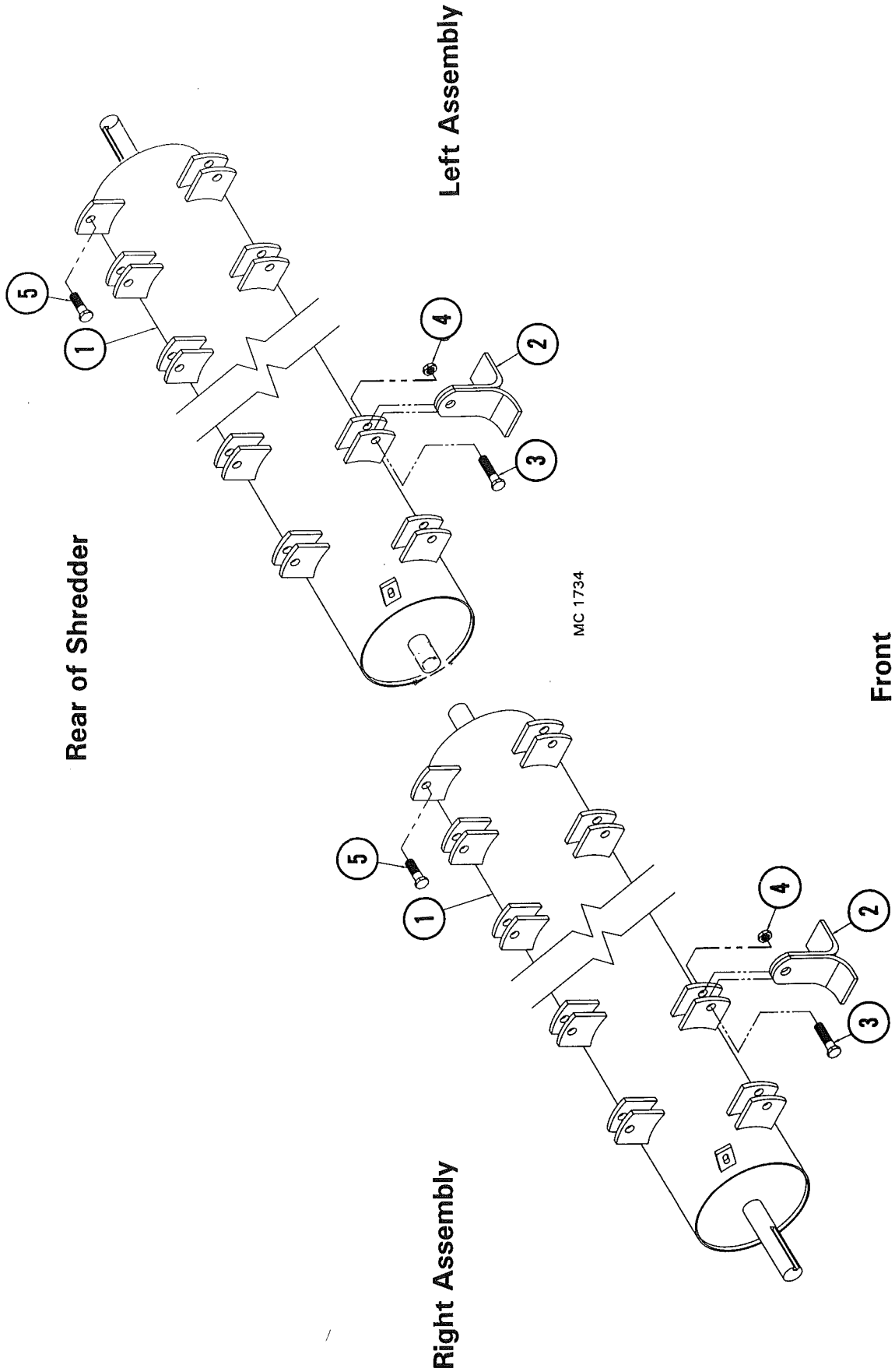


Right Side Shown

MC 1733

Ref.	Part No.	Qty. 180	Qty. 2206 & 2408	Description
26	--- ----	1	1	PTO Shaft – 1000 RPM (See page 38)
27	001 5136	4	4	Key ⅜" x ⅜" x 2½"
28	000 8234	4	4	Set Screw ½-13 x ⅜"
29	128 8300	2	2	M-C Decal – 5" x 4-9/16"
30	111 3399	1	2	Output Shaft Center Bearing Mount
	001 8144	1	2	⅜-16 x 1¼" Hex Head Capscrew – Grade 5
	001 8134	1	2	⅜" SAE Flatwasher
	001 8149	1	2	⅜-16 Two Way Locknut
	133 8161	1	2	½-13 x 1½" Hex Head Capscrew – Grade 5
	001 8257	1	2	½" SAE Flatwasher
	000 8180	1	2	½" Lockwasher
	000 8163	1	2	½-13 Hex Nut
31	111 2601	1	1	Belt Guard Top – Right
	111 2602	1	1	Belt Guard Top – Left
	001 8111	8	8	5/16-18 Clip Nut
	000 8134	8	8	⅜-16 x ¾" Truss Head Screw
	000 8121	8	8	⅜- 16 x 1" Hex Head Capscrew
	000 8174	8	8	⅜" Flatwasher
	001 8149	8	8	⅜-16 Two Way Locknut
32	111 5064	2	0	**Model 180CS** Output Drive Shaft
	111 5066	0	2	**Model 2206CS** Output Drive Shaft
	111 5191	0	2	**Model 2408CS** Output Drive Shaft
33	001 5139	2	2	Key ⅜" x ⅜" x 3"
34	111 1055	2	2	Grease Hose (Output Shaft Outer Bearing 10")
35	111 2603	2	2	Belt Guard Bottom
	001 8111	6	6	5/16-18 Clip Nut
	000 8121	6	6	⅜-16 x 1" Hex Head Capscrew
	000 8174	6	6	⅜" Flatwasher
	001 8149	6	6	⅜-16 Two Way Locknut
36	001 8302	2	2	M-C Decal – 8-3/16" x 9"
37	111 2600	2	2	Belt Guard Cover
	000 8106	16	16	5/16-18 x ¾" Hex Head Capscrew
	000 8173	16	16	5/16" Flatwasher
38	000 8301	2	2	Safety Decal – Caution – 3⅝" x 7"
39	121 8316	2	2	Safety Decal – Warning – 1-13/16"x 4-1/16"

Rotor Assemblies



Model 180CS
Complete Assemblies

Right Rotor Assembly - #111 1142

Ref.	Part No.	Qty.	Description
1	111 0232	1	Balanced Rotor
2	111 7700	76	Slicer Knife
3	128 8172	38	⅝-11 x 2½" Hex Bolt Grd. #8
4	001 8217	40	⅝-11 NY – Lock Nut
5	000 8145	2	⅝-11 x 1¼" Hex Bolt Grd. #5

Left Rotor Assembly - #111 1143

Ref.	Part No.	Qty.	Description
1	111 0232	1	Balanced Rotor
2	111 7700	76	Slicer Knife
3	128 8172	38	⅝-11 x 2½" Hex Bolt Grd. #8
4	001 8217	40	⅝-11 NY – Lock Nut
5	000 8145	2	⅝-11 x 1¼" Hex Bolt Grd. #5

Model 2206CS
Complete Assemblies

Right Rotor Assembly - #111 1144

Ref.	Part No.	Qty.	Description
1	111 0233	1	Balanced Rotor
2	111 7700	94	Slicer Knife
3	128 8172	46	⅝-11 x 2½" Hex Bolt Grd. #8
4	001 8217	48	⅝-11 NY – Lock Nut
5	000 8145	2	⅝-11 x 1¼" Hex Bolt Grd. #5

Left Rotor Assembly - #111 1145

Ref.	Part No.	Qty.	Description
1	111 0233	1	Balanced Rotor
2	111 7700	94	Slicer Knife
3	128 8172	46	⅝-11 x 2½" Hex Bolt Grd. #8
4	001 8217	48	⅝-11 NY – Lock Nut
5	000 8145	2	⅝-11 x 1¼" Hex Bolt Grd. #5

Model 2408CS
Complete Assemblies

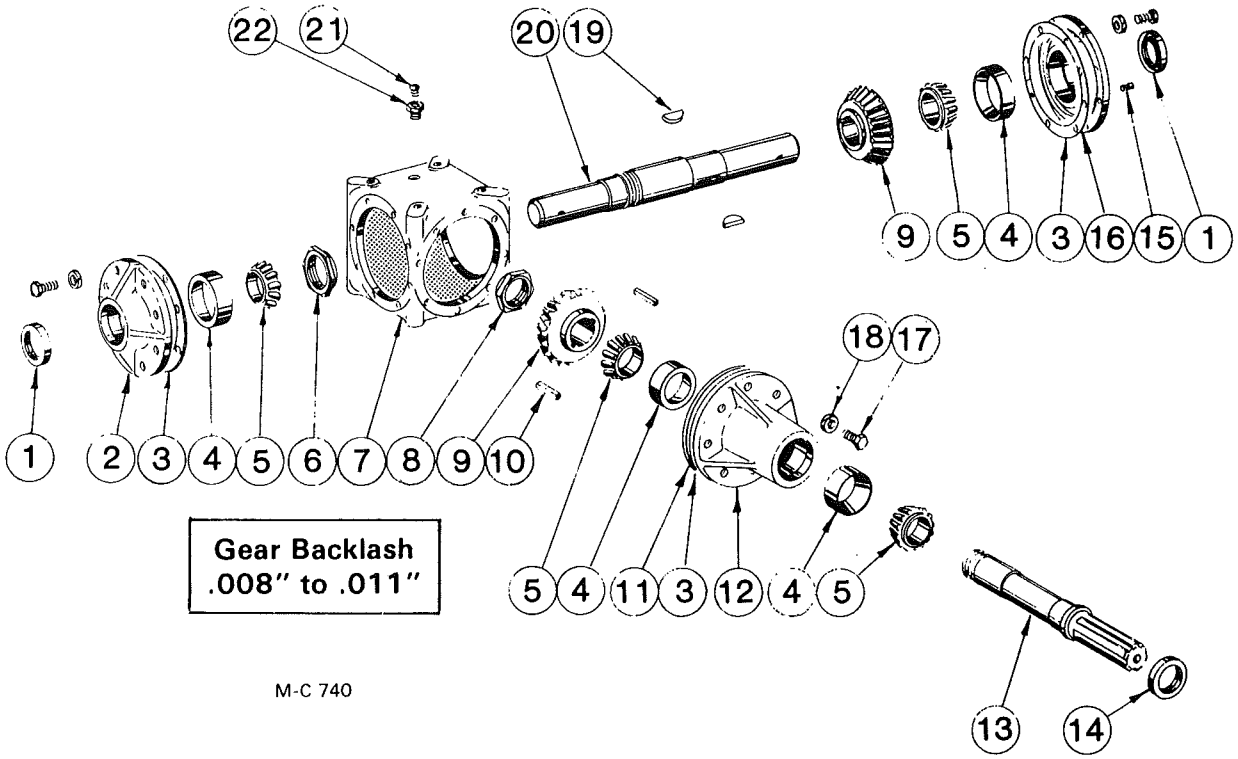
Right Rotor Assembly - #111 1146

Ref.	Part No.	Qty.	Description
1	111 0234	1	Balanced Rotor
2	111 7700	102	Slicer Knife
3	128 8172	52	⅝-11 x 2½" Hex Bolt Grd. #8
4	001 8217	54	⅝-11 NY – Lock Nut
5	000 8145	2	⅝-11 x 1¼" Hex Bolt Grd. #5

Left Rotor Assembly - #111 1147

Ref.	Part No.	Qty.	Description
1	111 0234	1	Balanced Rotor
2	111 7700	102	Slicer Knife
3	128 8172	52	⅝-11 x 2½" Hex Bolt Grd. #8
4	001 8217	54	⅝-11 NY – Lock Nut
5	000 8145	2	⅝-11 x 1¼" Hex Bolt Grd. #5

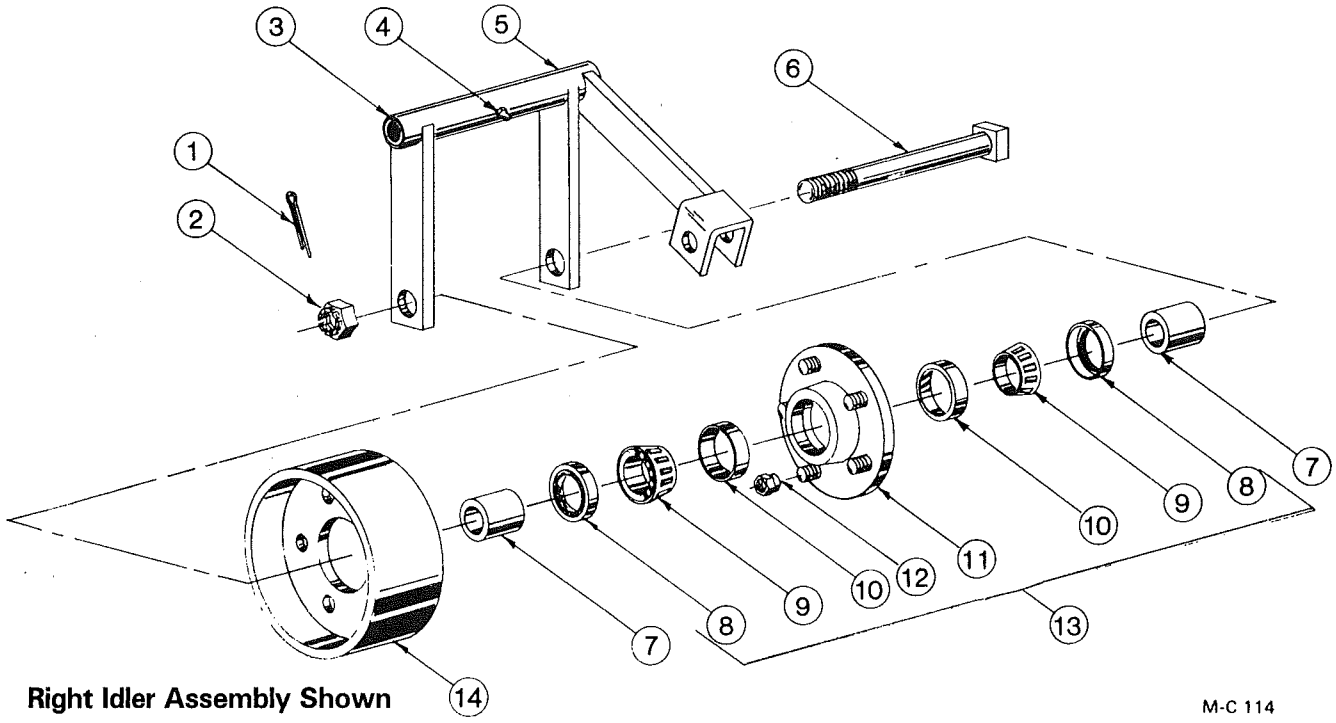
Gear Box Assembly 111 6611
Model 180CS, 2206CS & 2408CS



Ref.	Part No.	Qty.	Description
1	002 6667	2	Grease Seal (Output Shaft)
2	002 7657	1	Cover - Output Shaft Right (Incl. 1 of ref. 1 & 4)
3	092 6609	3	Gasket - 1/32" Thick
4	002 6010	4	Bearing Cup
5	002 6011	4	Bearing Cone
6	112 8252	1	Stake Nut (Output Shaft)
7	002 7654	1	Gear Box Housing
8	002 6668	1	Stake Nut (Input Shaft)
9	002 6500	2	Bevel Gear
10	001 8969	2	Key 3/8" x 1 3/8" (Hard)
11	002 6636	AR	Shim .005" Thick
12	002 7656	1	Hub (Incl. 2 of ref. 4)

Ref.	Part No.	Qty.	Description
13	002 6638	1	Input Shaft
14	002 6639	1	Grease Seal (Input Shaft)
15	002 8000	1	Oil Level Plug
16	112 7658	1	Cover - Output Shaft Left (Incl. 1 of ref. 1 & 4)
17	131 8163	24	½-13 x 1¼" Hex-Hd. Capscrew - Grd. 5 w/NY Patch
18	000 8180	24	½" Lockwasher
19	001 8988	2	Woodruf Key 3/8" x 1½" (Hard)
20	112 6600	1	Output Shaft
21	002 6677	1	Gear Box Vent - 1/8" NPT
22	002 6678	1	Reducing Bushing - 3/8" to 1/8" NPT
—	000 8991	—	Pint of Mobilfluid 424 Lubricant

Belt Idler Assemblies



Right Idler Assembly Shown

M-C 114

111 1028 Right Side, Models 180, 2206, & 2408CS

111 1073 Left Side, Models 180, 2206, & 2408CS

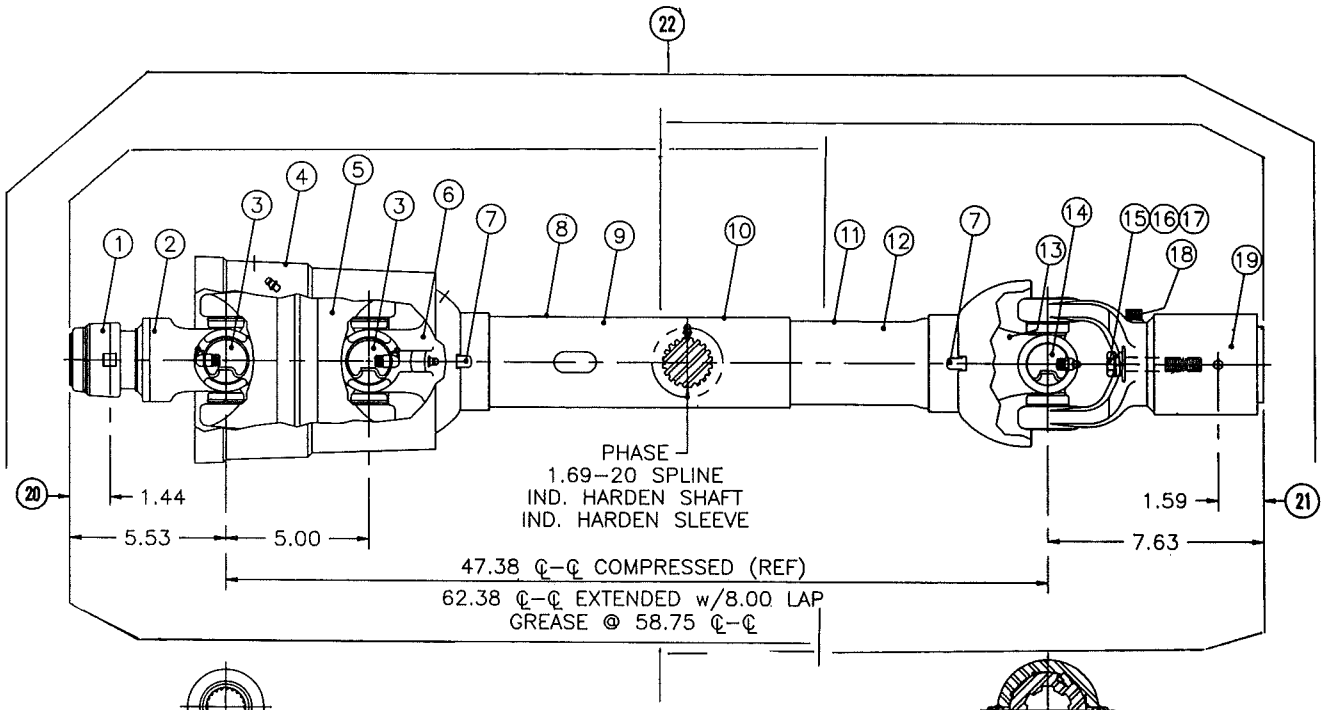
Note: Both assemblies are the same except for ref. 5.

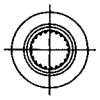
Ref.	Part No.	Qty.	Description
1	000 8255	1	¼" x 2" Cotter Pin
2	111 8252	1	1⅜-12 Castle Nut
3	128 6017	2	Bronze Bushing
4	001 6604	1	90° Zerk Fitting - ⅛"
5	111 1029	1	**180, 2206, & 2408CS** – Idler Rocker Arm – Right (Incl. 2 of ref. 3)
	111 1074	1	**180, 2206, & 2408CS** – Idler Rocker Arm – Left (Incl. 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 (Incl. 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 (Incl. ref. 8 thru 12 in quantities shown)
14	111 5710	1	Idler Pulley

1000 RPM Constant Velocity Power Take-Off Shaft with Overrunning Clutch

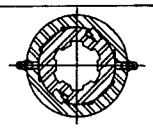
1-3/8"-21 Tractor Spline

#111 6616





1 3/8–21 SPLINE
PER ASAE S203.13



1.75–6 SPLINE
CLOCKWISE ROTATION
AS VIEWED FROM END

NOTES:
1. MAX OPERATING SPEED 1000 RPM
2. ALL LUBES MUST POINT IN DIRECTION SHOWN
3. PAINT ASSEMBLY MEDIUM GLOSS BLACK

MC 1735

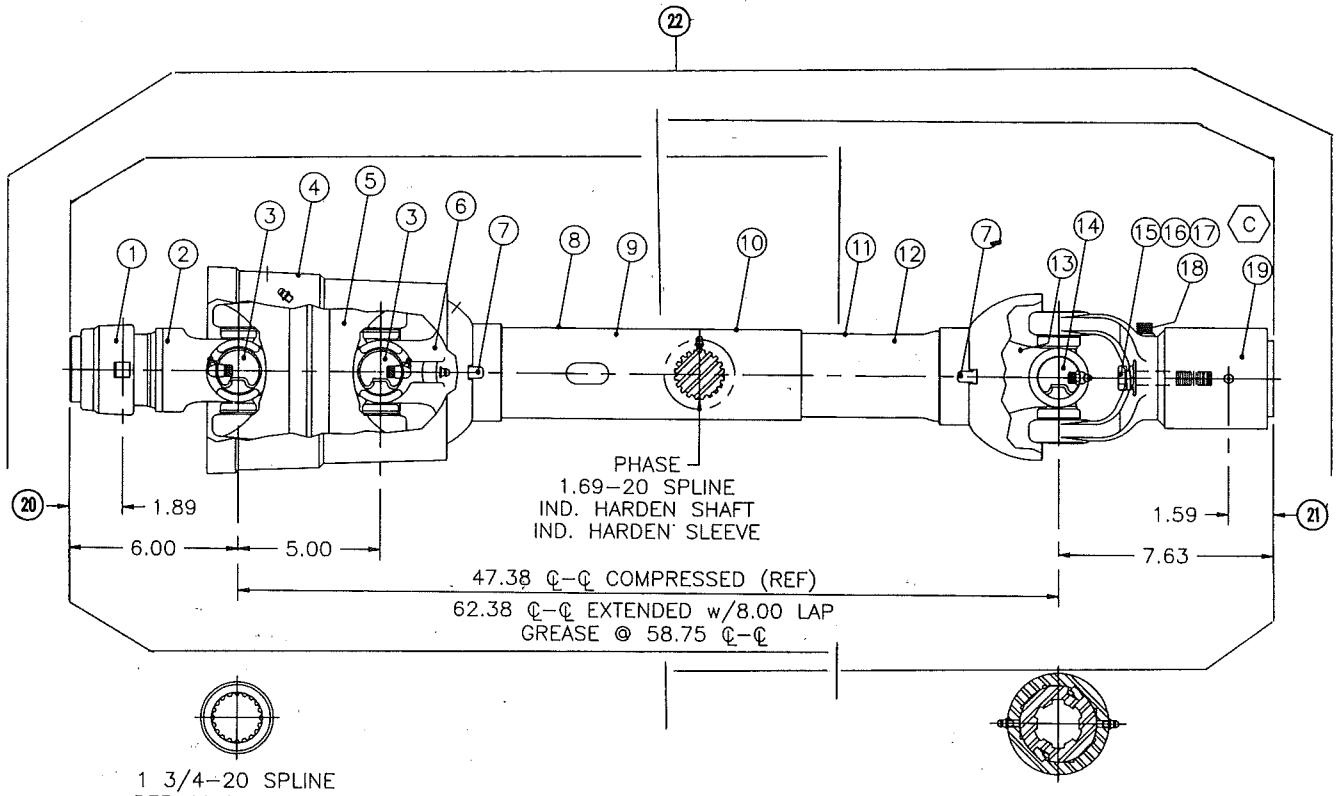
Ref.	Part No.	Qty.	Description
1	002 6704	1	Safety Slide Lock Repair Kit
2	002 6703	1	Safety Slide Lock Yoke Assembly
3	002 6705	2	Category 6 Cross & Bearing Kit
4	112 6661	1	Bell Ext. w/Nylon Centralizer
5	002 6706	1	CV Center Housing Assembly
6	002 6702	1	Yoke & Shaft
7	002 6709	2	Nylon Repair Kit (not shown)
8		1	Safety Sign
9	002 7663	1	Centralizer (not shown)
10	002 6707	1	Outer Guard
11	002 6699	1	Inner Guard
12		1	Safety Sign (not shown)

Ref.	Part No.	Qty.	Description
13	002 6695	1	Yoke, Tube, & Slip Sleeve
14	002 6633	1	55R Cross & Bearing Kit
15	002 8153	1	Bolt, .500-20 x 3.00 Lg., Grade 5
16	000 8180	1	Lock Washer
17	000 8175	1	Washer
18	002 7661	1	Overrunning Clutch Repair Kit
19	002 7662	1	Overrunning Clutch Assembly
20	002 6700	1	Joint & Shaft Half Assembly w/Guard
21	002 6734	1	Joint & Tube Half Assembly w/Guard
22	111 6616	1	Universal Joint & Tel. Shaft Assembly 55R (Category 6 - 80° CV) w/Guard

1000 RPM Constant Velocity Power Take-Off Shaft with Overrunning Clutch

1-3/4"-20 Tractor Spline

#111 6617



1 3/4–20 SPLINE
PER ASAE S203.13

1.75–6 SPLINE
CLOCKWISE ROTATION
AS VIEWED FROM END

NOTES:
1. MAX OPERATING SPEED 1000 RPM
2. ALL LUBES MUST POINT IN DIRECTION SHOWN
3. PAINT ASSEMBLY MEDIUM GLOSS BLACK

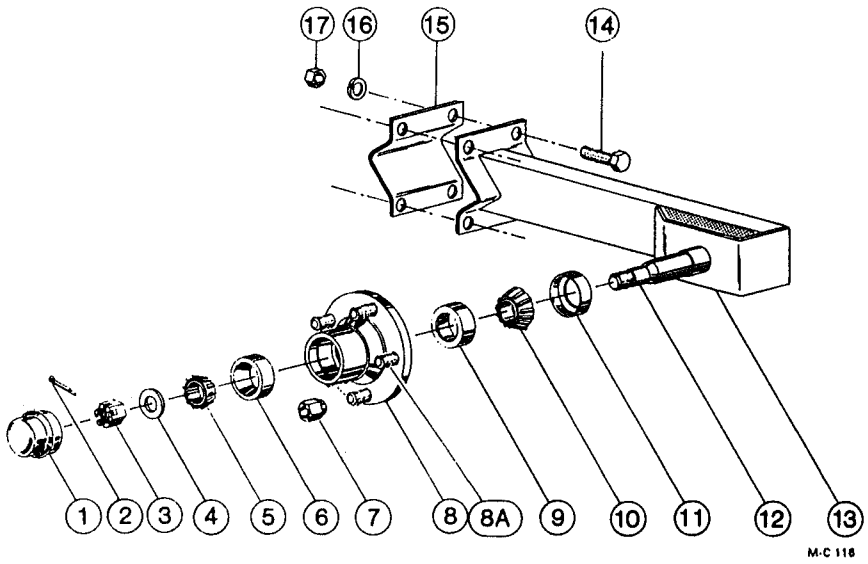
MC 1736

Ref.	Part No.	Qty.	Description
1	002 6712	1	Safety Slide Lock Repair Kit
2	002 6710	1	Safety Slide Lock Yoke Assembly
3	002 6705	2	Category 6 Cross & Bearing Kit
4	112 6661	1	Bell Ext. w/Nylon Centralizer
5	002 6706	1	CV Center Housing Assembly
6	002 6702	1	Yoke & Shaft
7	002 6709	2	Nylon Repair Kit (not shown)
8		1	Safety Sign
9	002 7663	1	Centralizer (not shown)
10	002 6707	1	Outer Guard
11	002 6699	1	Inner Guard
12		1	Safety Sign (not shown)

Ref.	Part No.	Qty.	Description
13	002 6695	1	Yoke, Tube, & Slip Sleeve
14	002 6633	1	55R Cross & Bearing Kit
15	002 8153	1	Bolt, .500-20 x 3.00 Lg., Grade 5
16	000 8180	1	Lock Washer
17	000 8175	1	Washer
18	002 7661	1	Overrunning Clutch Repair Kit
19	002 7662	1	Overrunning Clutch Assembly
20	112 6701	1	Joint & Shaft Half Assembly w/Guard
21	002 6734	1	Joint & Tube Half Assembly w/Guard
22	111 6617	1	Universal Joint & Tel. Shaft Assembly 55R (Category 6 - 80° CV) w/Guard

Wheel Mount and Hub Assembly

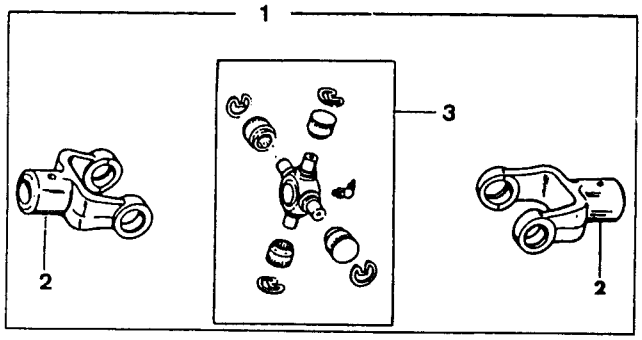
NOTE: There are four wheel mount assemblies on the Shredder. Quantities shown are for one assembly.



Ref.	Part No.	Qty.	Description
—	111 1041	1	Wheel Mount Ass'y. w/Clamp (Incl. ref. 1 thru 17)
—	111 1066	1	Wheel Mount Ass'y. (Incl. ref. 1 thru 13)
1	001 8996	1	Hub Cap
2	001 8252	1	Cotter Pin 5/32" 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 (Incl. ref. 6, 8A and 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
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

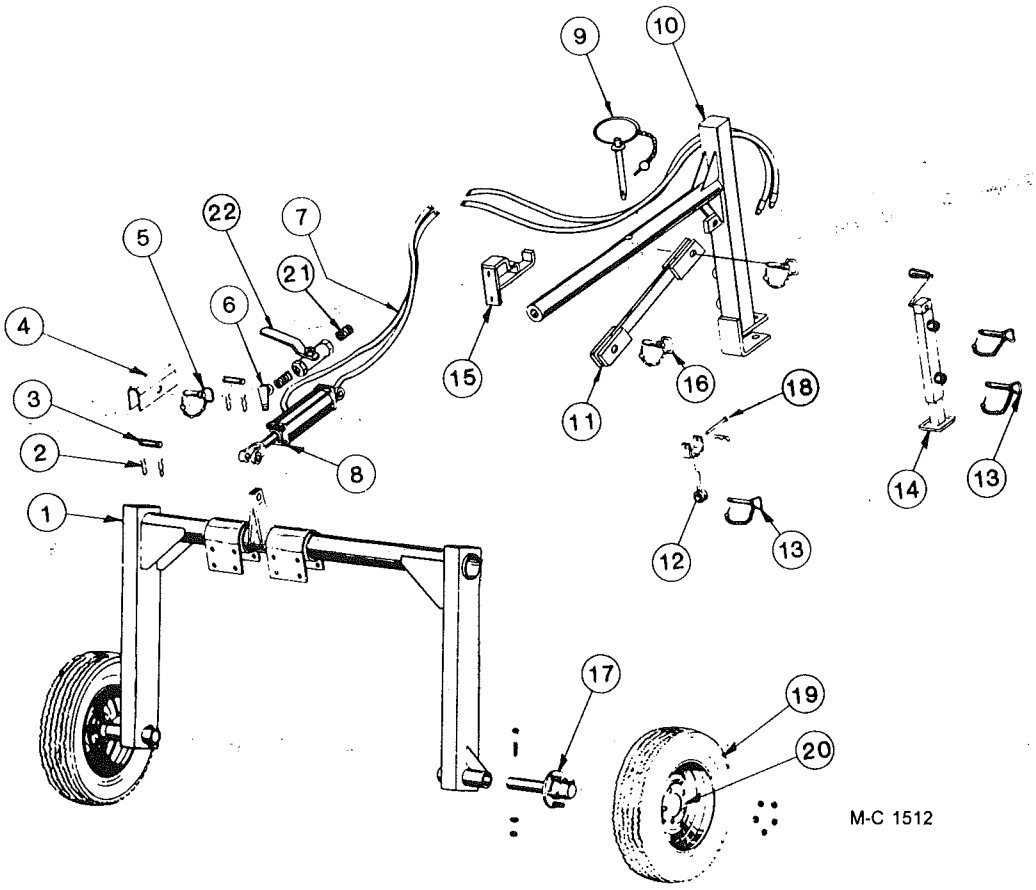
Output Shaft Universal Joint

Ref.	Part No.	Qty.	Description
1	111 8988	—	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

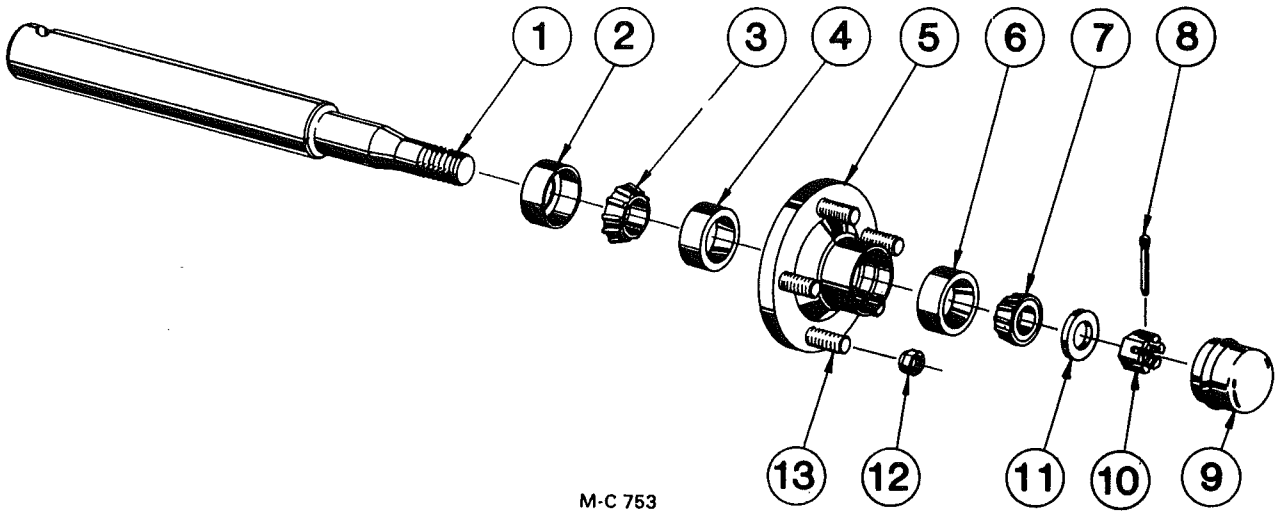
End Tow System
(Optional on 2206 and 2408)



Ref.	Part No.	Qty.	Description
1	111 0178	1	Transport Weldment
	001 8279	16	⅝-11 x 2" Hex-Hd. Capscrew - Grade 5
	000 8176	16	⅝" Flatwasher
	000 8181	16	⅝" Lockwasher
	000 8164	16	⅝-11 Hex Nut
2	042 7002	4	Hair Pin Clip
3	042 7001	2	Clevis Pin 1" x 3¾"
4	111 3808	1	Ram Stop
5	113 8171	1	Transport Clevis Pin
6	121 8071	1	Street Elbow ½" x 90° Exhvy.
7	113 8400	2	Hyd. Hose 255" w/90° Swivel
8	111 7000	1	Hyd. Cylinder - 3½" x 8"
	112 9027	1	Repair Kit for 111 7000
9	113 8160	1	Transport Lock Pin
10	111 0176	1	End Transport Weldment
11	113 0020	1	Pole Brace
12	111 0180	1	PTO Support

Ref.	Part No.	Qty.	Description
13	113 8253	3	Pin - 9/16"
14	113 0021	1	End Tow Pole Jack
15	113 0022	1	Transport Field Support
	000 8278	2	½-13 x 1¾" Hex-Hd. Capscrew - Grade 5
	000 8180	2	½" Lockwasher
	000 8163	2	½-13 Hex Nut
16	113 8170	2	Transport Clevis Pin
17	113 1007	2	Transport Axle Ass'y (Shown next page)
	000 8151	2	⅝-11 x 3½" Hex-Hd. Capscrew - Grade 5
	000 8181	2	⅝" Lockwasher
	000 8164	2	⅝-11 Hex Nut
18	113 8130	1	PTO Hanger Pin
	113 8252	1	Hair Cotter Pin
19	127 8990	2	7.60x15x6 Ply Tubeless Tire
20	001 8993	2	5 Bolt 15" Rim Wheel
21	121 8094	2	Nipple - ½"x1½" Exhvy.
22	111 7001	1	Locking Valve

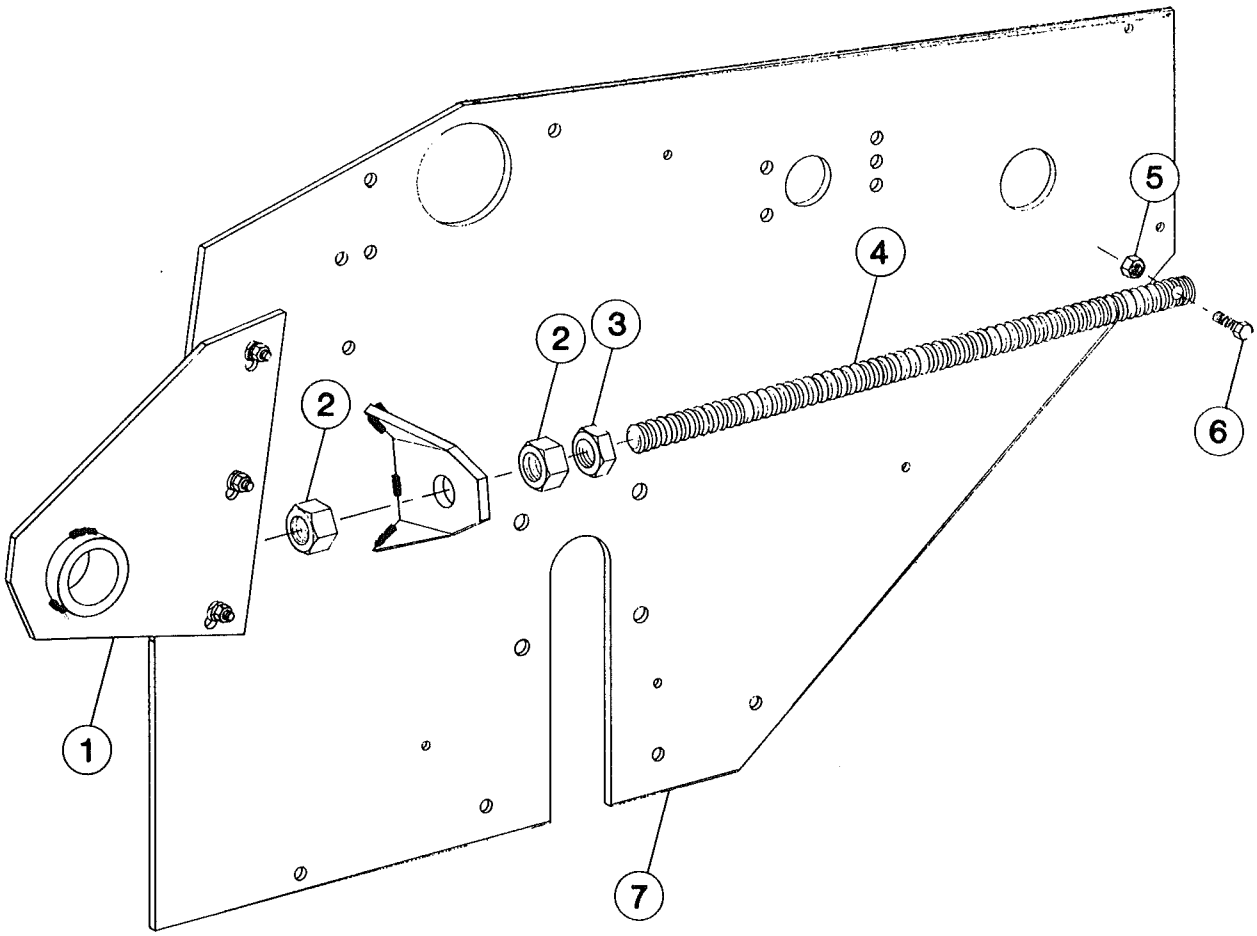
Transport Axle Assembly - 113 1007



NOTE: There are two axle assemblies on the end tow system. Quantities shown are for one assembly.

Ref.	Part No.	Qty.	Description
—	113 1007	1	Transport Axle Ass'y. (Incl. ref. 1 thru 13)
1	111 5065	1	Spindle
2	001 8991	1	Seal
3	001 6001	1	Bearing Cone - Inner
4	002 6001	1	Bearing Cup - Inner
5	001 8992	1	Wheel Hub Ass'y. - 5 Bolt (Incl. ref. 4, 6 & 13)
6	002 6000	1	Bearing Cup - Outer
7	001 6000	1	Bearing Cone - Outer
8	001 8252	1	Cotter Pin ⅛" x 1"
9	001 8996	1	Hub Cap
10	001 8253	1	Spindle Nut
11	001 8254	1	Spindle Washer
12	001 8989	5	½-20 Lug Nut - 45°
13	002 8152	5	½-20 x 1½" Stud

Belt Idler Push Rod Assembly



Ref.	Part No.	Qty. All Models	Description
1	141 0018	2	Axle Mount Weldment
2	091 8231	4	1"-8 Hex Nut
3	001 8291	4	1"-8 Hex Jam Nut
4	111 5722	2	Idler Push Rod – 24" Long
5	128 8164	2	Two Way Lock Nut
6	128 8166	2	½-13 x 2½" Capscrew – Grd. 5
7	111 3492		Side Panel (Reference)

NOTES

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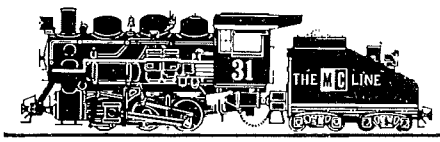

Iron Horse Quality

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