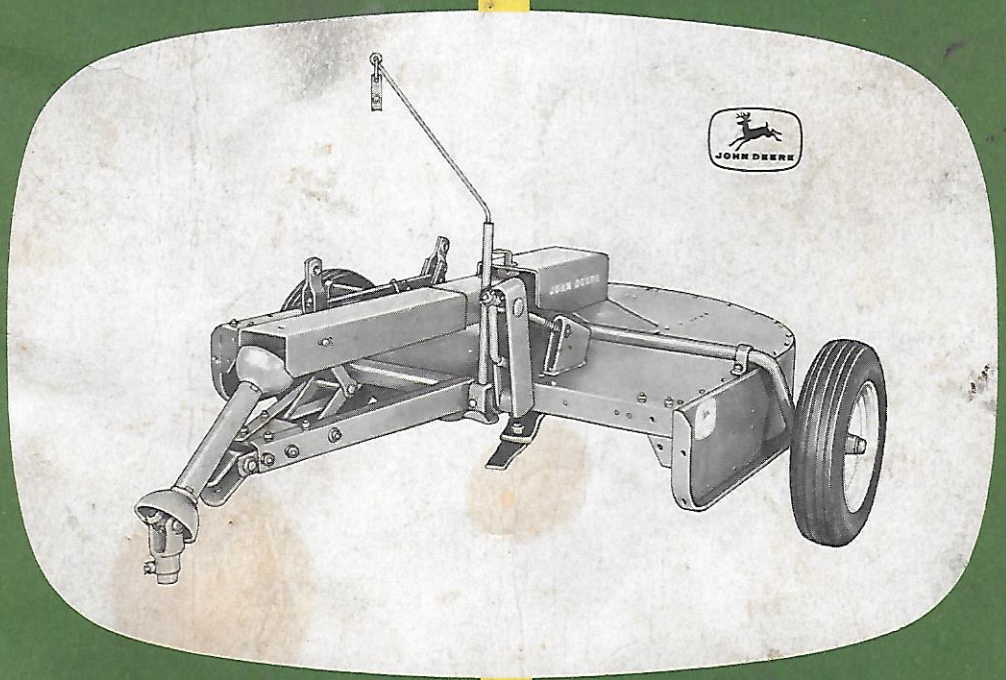
OPERATOR'S MANUAL
OM-W13157

JOHN DEERE

227 GYRAMOR

ROTARY CUTTER



TO THE PURCHASER

Your new John Deere Gyramor Rotary Cutter is sturdy and dependable. Proper care and operation will insure the service and long life built into it.

The many illustrations in this manual will assist you in making the necessary adjustments to adapt your Gyramor Rotary Cutter for all types of jobs.

Occasionally your new machine may require new parts. If so, we suggest that you take advantage of the facilities offered by your John Deere dealer, which assures you of genuine John Deere parts and prompt efficient service in the field or shop.

Study this manual carefully and keep it handy, in a safe place, for future reference.

References to right-hand and left-hand sides in this manual are determined by standing at the rear of the machine and facing in the direction of travel.

John Deere Gyramor Rotary Cutter

The Gyramor Rotary Cutter has a Series Number plate attached to the upper deck, directly behind the gear box. Become familiar with this Series Number and use it when ordering new parts.

DATE PURCHASED . . . . . .19 . . . .

SERIES NUMBER . . . . . .

(To be filled in by Purchaser)

Price $.70

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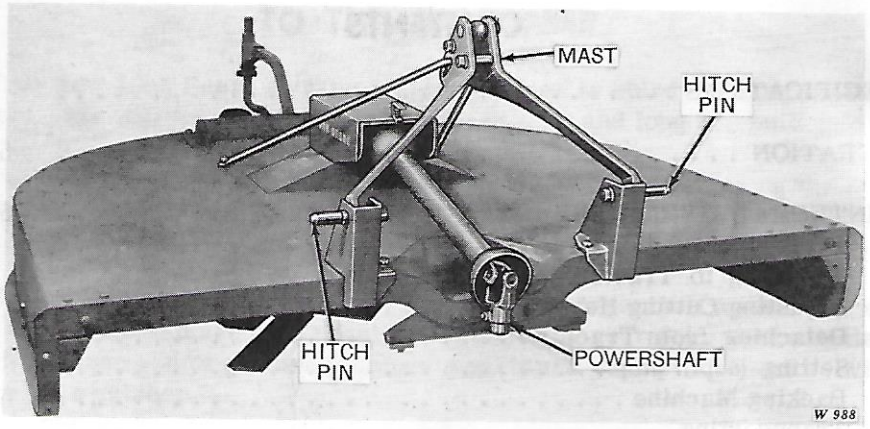
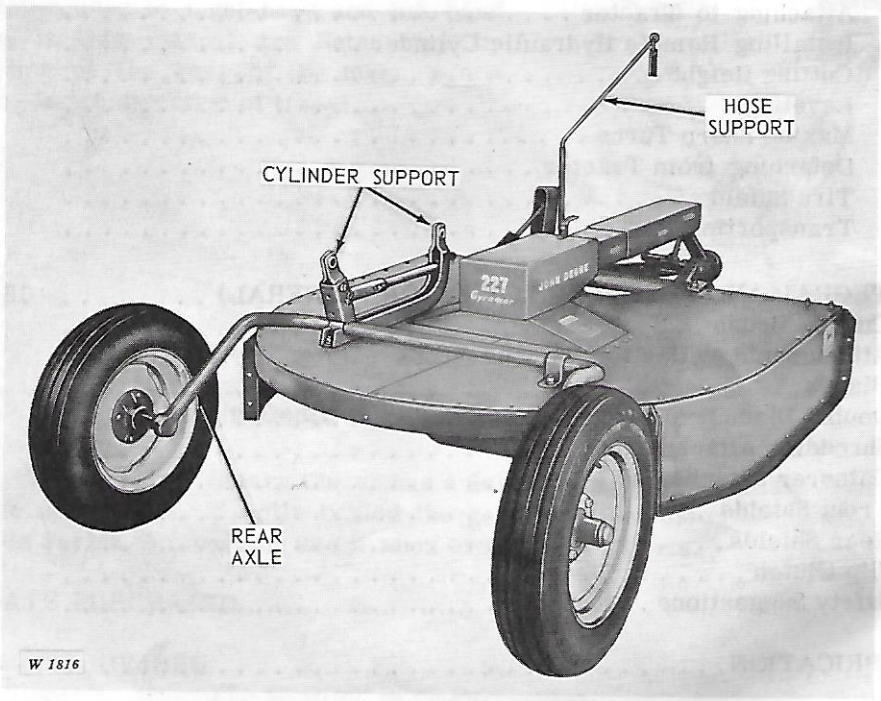
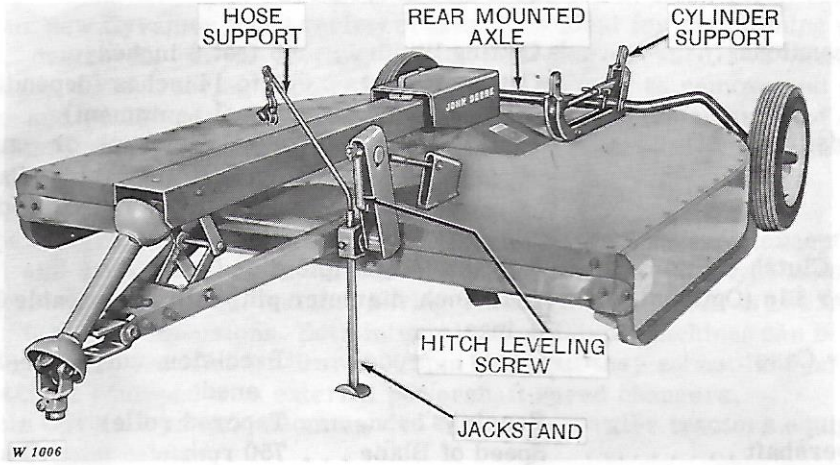


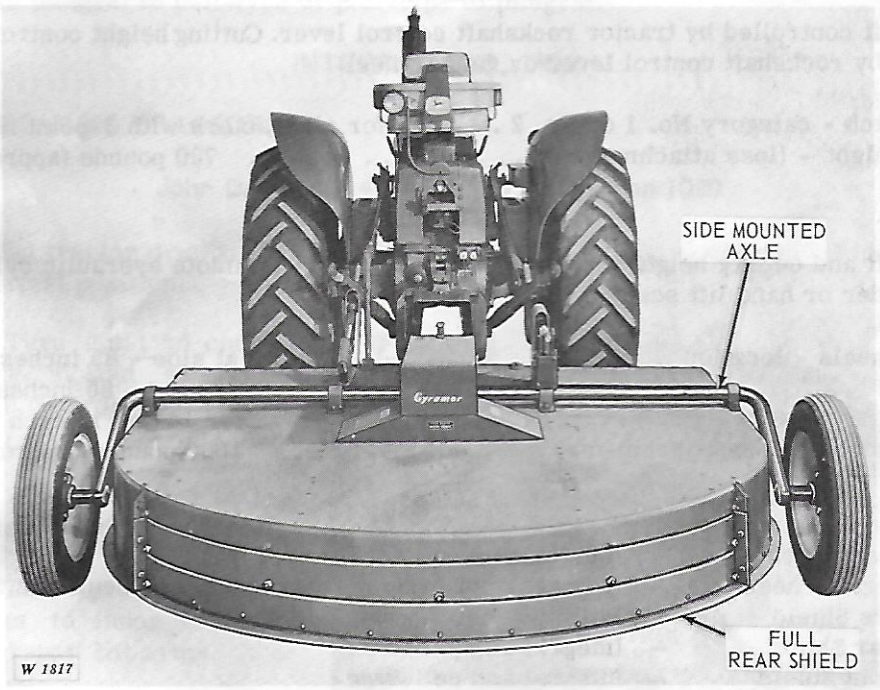
John Deere 227 Integral Gyramor Rotary Cutter Equipped with Rear Gauge Wheel



John Deere 227 Integral Gyramor Rotary Cutter Equipped with Rear Mounted Wheels



John Deere 227 Pull-Type Gyramor Rotary Cutter with Rear-Mounted Wheels



John Deere 227 Pull-Type Gyramor Rotary Cutter with Side-Mounted Wheels

SPECIFICATIONS

Dimensions	Cutting Width	5 feet 6 inches
	Cutting Height	0 to 14 inches (depending on wheel equipment)
Blades	Flail Type	Flat, pickup or suction blades available. Can be used as single or double blades.
Slip Clutch (Optional) . .	Adjustable multiple disk type	
Shear Pin (Optional) . . .	7/16-inch diameter pin, with replaceable bushings	
Gear Case	Gears	Precision cut, case-hardened
	Bearings	Tapered roller
Powershaft	Speed of Blade . . .	750 rpm
	Heavy-duty, with needle roller bearings, fully shielded.	

INTEGRAL TYPE ONLY

Lift controlled by tractor rockshaft control lever. Cutting height controlled by rockshaft control lever or gauge wheel.

Hitch - category No. 1 or No. 2 . . . . . for all tractors with 3-point hitch
Weight - (less attachments) . . . . . 730 pounds (approx.)

PULL-TYPE ONLY

Lift and cutting height controlled by 8-inch stroke remote hydraulic cylinder or hand lift screw jack.

Wheels - location . . . . . at side - 85 inches
at rear - 66 inches
Size . . . . . for 14- or 15-inch tire
Weight - (less attachments) . . . . . 1000 pounds (approx.)

ATTACHMENTS

Wear Shoes	-	Integral and pull-type
Gauge Wheel	-	(Integral only) steel wheel or semi pneumatic tire
Tire Shield	-	Pull-type only
Rear Shield	-	Integral and pull-type
Front Shield	-	Integral and pull-type
Double Blades	-	Integral and pull-type
Shredder	-	Stationary blades (used with double blades)
Anti-Wrap Shield	-	Integral and pull-type
Gatherers	-	Integral and pull-type
Hitch Clevis for 3-Point Hitch		
Drawbars	-	Pull-type only

(Specifications and design subject to change without notice.)

OPERATION

Your new Gyramor has a variety of uses. It is ideal for maintaining pastures, destroying weeds, cutting brush, mulching orchard and vineyard prunings, and shredding crop residues. It can be used to remove and chop potato and peanut vines prior to digging and to pulverize and spread corn and cotton stalks after harvest. It helps in the control of insect pests by destroying their wintering places.

The integral machine can be used on all John Deere Tractors (except Hi-Crop) and similar tractors having a 3-point hitch. The pull-type machine can be used with any tractor having standard ASAE-SAE drawbar and power take-off dimensions. Both integral and pull-type machines can be operated on tractors having 540 or 1000 rpm PTO, but they cannot be operated on tractors equipped with external powershaft speed changers.

This Gyramor is not recommended for use on crawler tractors equipped with a 3-point hitch.

The machine can be assembled as an integral machine with or without rear caster wheel or as a pull-type machine. Parts are available to convert from integral to pull-type or pull-type to integral.

INTEGRAL GYRAMOR

PREPARING TRACTOR

John Deere 40, 420, 430, 435, 1010 and 1020 Series Wheel Tractors

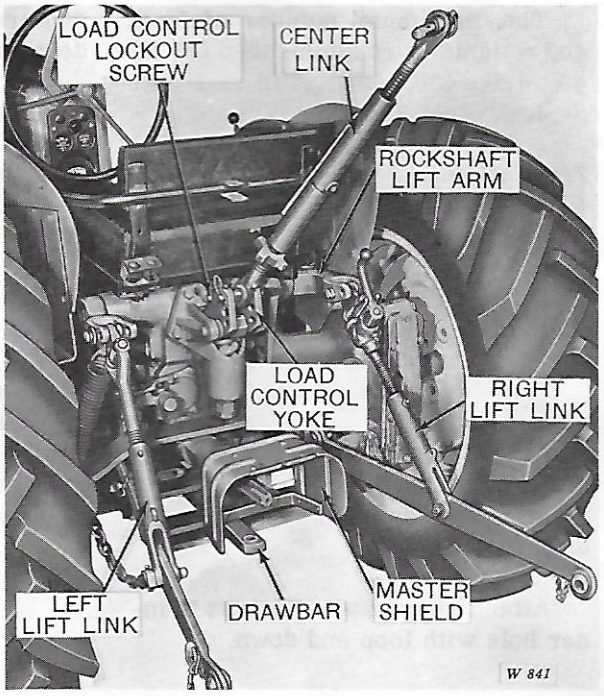
Set tractor drawbar to shortest position.

Turn out load control yoke lockout screw so load control will not operate.

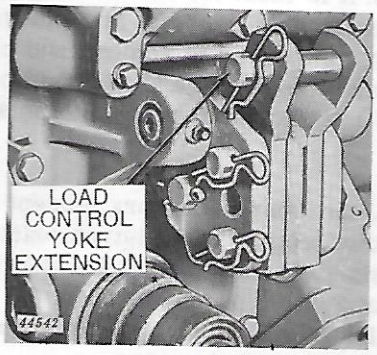
Pin upper link to top hole in load control yoke.

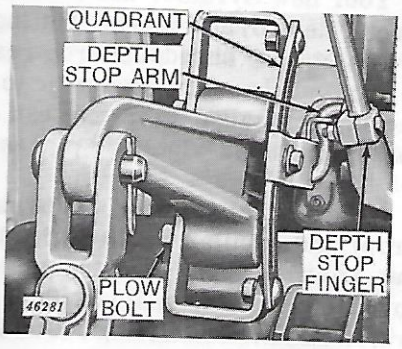
Pin upper ends of lift links to inner holes in rockshaft lift arms.

Remove cap from end of powershaft and install powershaft master shield.



PREPARING TRACTOR—Continued





NOTE: When Gyramor is attached to 40, 420, and 430 Tricycle or Special Tractors, upper link must be pinned to load control yoke extension.

On tractors equipped with dual Touch-o-matic, the dual lift cylinders and left-hand lift arm must be set for parallel operation. (See tractor operator's manual.)

Front end weights

The maximum number of front end weights is recommended for all 40, 420, 430, 435, 1010 and 1020 Series Wheel Tractors.

Tire inflation

Refer to tractor operator's manual for instructions on tire inflation and use of wheel weights.

John Deere 50, 60, and 70 Series Tractors Equipped with 800 Series Hitch

Attach tractor master shield.

Assemble drawbar with offset end down.

Attach sway chain clevises to inner hole with loop end down.

Depth stop assembly

Attach quadrant assembly to left-hand rockshaft lift arm as shown. Install pipe spacer in holes in lift arm and insert plow bolts from right-hand side.

Slip depth stop finger over Powr-Trol lever.

Loosen base of Powr-Trol lever and slide lever assembly in or out until roller on depth stop arm is centered on cam surface at end of depth stop finger.

Tighten clamps.

Adjust throttle valve screw on Powr-Trol valve housing so machine lowers gently with lever in "fast drop" position. (See adjustment for rockshaft operation in tractor operator's manual.)

Tire inflation

Refer to tractor operator's manual for instructions on tire inflation and use of rear-mounted integral implements.

PREPARING TRACTOR—Continued

John Deere 520, 530, 620, 630, 720, 730, 2010, 2020, 2510, 3010, 3020, 4010 and 4020 Tractors

Refer to tractor operator's manual for tire inflation.

Set drawbar in short high position. (See tractor operator's manual.)

Adjust tractor sway blocks so sway is eliminated when implement is in transport position. (See tractor operator's manual.)

Make sure master shield is in place on PTO.

On 520, 530, 620, 630, 720 and 730 Tractors, attach upper link to top hole in load control yoke. (See tractor operator's manual.)

On 2010 and 2020 Tractor, set rockshaft selector lever for parallel lift arm operation. (See tractor operator's manual.)

On 2010, 2020, 2510, 3010, 3020, 4010 and 4020 Tractors set selector lever in "D" position. (See tractor operator's manual.)

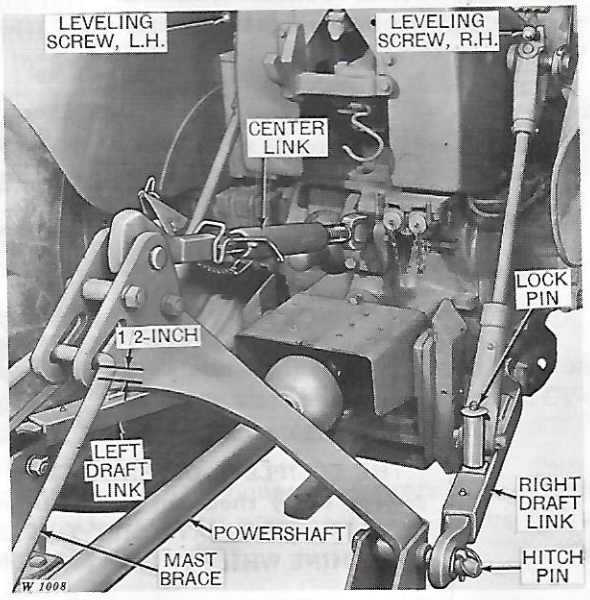
ATTACHING TO TRACTOR

The integral Gyramor can be used with tractors that are geared internally for either 540 or 1000 rpm PTO. It cannot be used with tractors equipped with an external powershaft speed changer. The metal plate on the Gyramor gear box cover indicates the operating speed (540 or 1000 rpm PTO) for which the Gyramor was assembled at the factory. The 540 rpm PTO shaft has six splines; the 1000 rpm PTO shaft has 21 splines. To change the Gyramor from 540 to 1000 rpm PTO speed see page 24.

Back tractor so draft links are approximately in line with hitch pins on Gyramor.

For 540 rpm PTO operation, attach powershaft to tractor power take-off. Press in on plunger in powershaft yoke and slip yoke on splined shaft. Make sure plunger returns to "full out" position to insure positive lock.

For 1000 rpm PTO operation, bolt powershaft securely to tractor power take-off.



ATTACHING TO TRACTOR—Continued

Attach left-hand draft link to hitch pin, using hydraulic control lever to obtain correct alignment. (Lifting the lock pins on tractors so equipped, permits draft links to telescope and facilitates attachment.)

Attach right-hand draft link to hitch pin using leveling screw to align link with pin.

John Deere 520, 620, 720, 2010, 2020, 2510, 3010, 3020, 4010 and 4020 Tractors

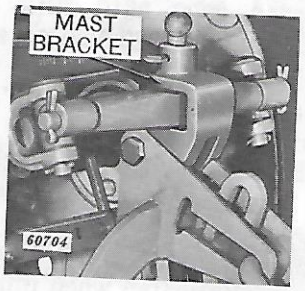
Attach center link to ball pinned in upper hole in Gyramor mast.

John Deere 40, 420, 430, 435, 1010 and 1020 Tractors

On 1010 Single Row-Crop Utility, 40, 420 and 430 Tractors, attach center link to lower hole in Gyramor mast.

On other 40, 420, 430, 435, 1010 and 1020 Wheel Tractors, attach center link to upper hole in Gyramor mast.

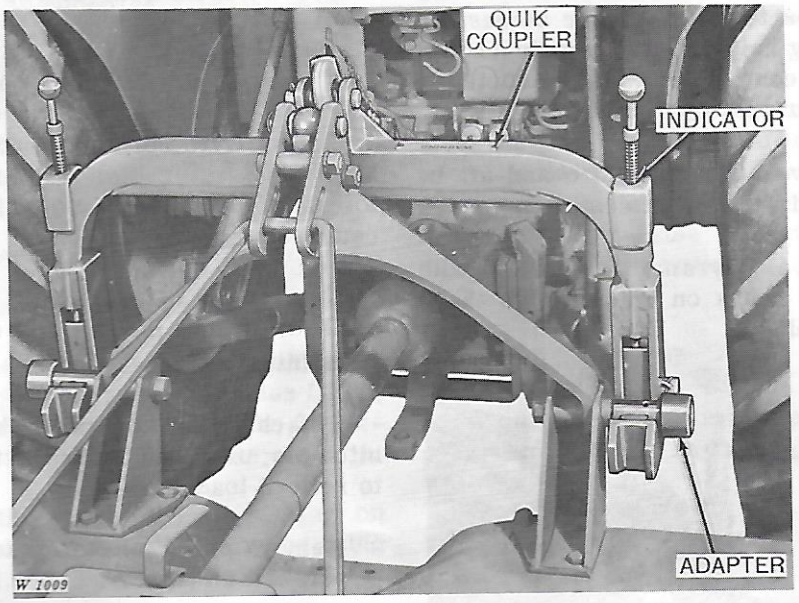
John Deere 50, 60, and 70 Tractors



On tractors equipped with an 800 Series Hitch, pin evener bar to mast bracket.

THE COMPLETE OBSERVANCE of one simple rule would prevent many thousand serious injuries each year. THAT RULE IS: "NEVER ATTEMPT TO CLEAN, OIL, OR ADJUST A MACHINE WHILE IT IS IN MOTION."

John Deere 2510, 3010, 3020, 4010, and 4020 Tractors equipped with Quik-Coupler



Back up the tractor until upper hook is behind the pin between the sides of the implement mast.

As the coupler is raised, the implement hitch pin adapters will be locked automatically in place by the spring-loaded latches.

NOTE: When the spring-loaded latches are properly locked, the indicator rod will protrude through the slot in the coupler frame next to the latch rods.

Attach powershaft on Gyramor to tractor power take-off. For 540 rpm PTO operation press in on plunger on powershaft yoke and slip yoke on splined shaft. Make sure plunger returns to "full out" position to insure positive lock. For 1000 rpm PTO operation, remove bolt from powershaft yoke and slip yoke on splined shaft of tractor. Replace bolt and tighten securely.

CAUTION: Raise Gyramor slowly after connecting PTO to make sure powershaft does not strike Gyramor frame. If there is any interference, shorten center link or lengthen lift links until 1/2-inch clearance is obtained when draft links are fully raised.

Detaching Gyramor from John Deere 2510, 3010, 3020, 4010 and 4020 Tractors equipped with Quik-Coupler

Lower Gyramor to ground level.

Release spring-loaded latches on coupler and lower hooks free of Gyramor adapters.

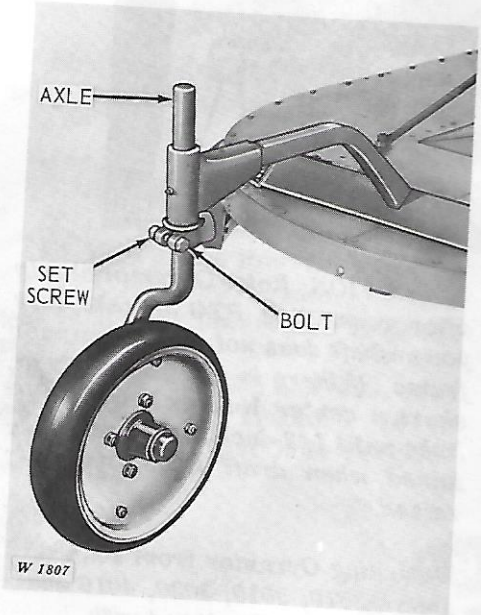
Disconnect powershaft from tractor power take-off. Drive tractor away.

ADJUSTING CUTTING HEIGHT

Use rockshaft control lever on tractor to set Gyramor at desired cutting height. Set stop against rockshaft control lever as instructed in tractor operator's manual.

Level Gyramor fore-and-aft by adjusting length of center link.

Level Gyramor laterally with screw crank on tractor right-hand lift link.



Lower Gyramor to desired cutting height. Loosen set screw and bolt in axle clamp and adjust gauge wheel to desired cutting height.

Tighten bolt and set screw.

With gauge wheel resting on ground, use rockshaft control lever to level machine and set stop so lever will return to this setting.

Adjust length of center link on tractor so mast brace floats 1/2-inch away from rear end of slot in mast.

DETACHING FROM TRACTOR

Lower Gyramor to ground or on blocks and turn center link on tractor until load is relieved. Detach center link.

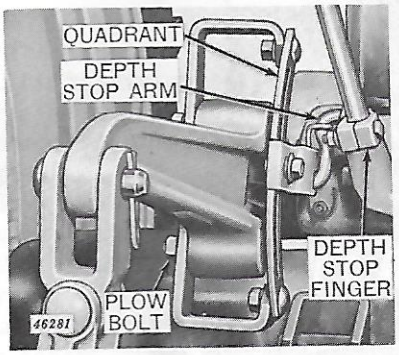
Turn right-hand leveling screw until draft link is free and detach from hitch pin.

Detach left-hand draft link from hitch pin, using lift lever on tractor to relieve load.

Remove power take-off yoke from powershaft on tractor.

CAUTION: Make sure tractor engine is stopped and the PTO control lever is disengaged before dismounting from machine.

SETTING DEPTH STOP



When Gyramor is used with tractor equipped with 800 Series Hitch, it is necessary to make the following additional adjustments:

With gauge wheel resting on ground and set at desired cutting height, use Powr-Trol to level front end of machine.

With Powr-Trol lever in neutral, slide depth stop arm along quadrant until roller is 1/2- to 5/8-inch above cam surface on depth stop finger.

To lower machine, pull lever back to "fast drop" position and release. The depth stop will automatically return lever to "neutral" at the cutting height.

Temporary changes in cutting height may be made with Powr-Trol lever without changing the depth stop. Hold the lever in the "slow-drop" or "slow-raise" position until the desired cutting height is reached.

BACKING MACHINE

When backing up, raise machine off ground to avoid damage to caster wheel.

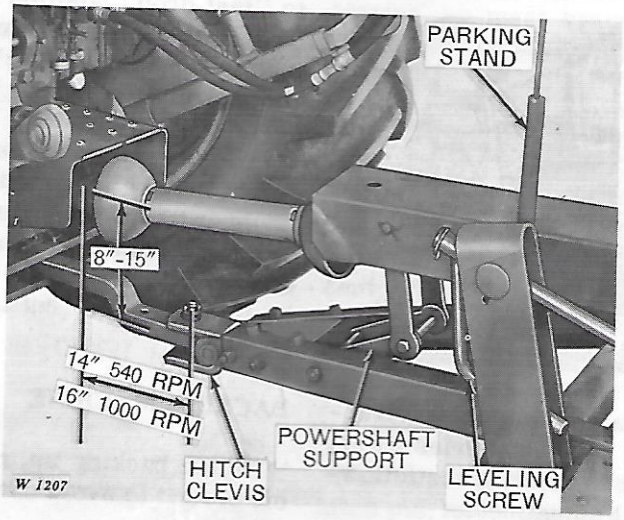
TRANSPORTING

By shortening the tractor upper link, additional transport clearance can be obtained on the integral Gyramor.

CAUTION: Do not transport at high speed, especially when traveling over fields or rough roads.

CAUTION: When transporting the Gyramor on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local governmental regulations. Various safety lights and devices are available from your John Deere dealer.

PULL-TYPE GYRAMOR



PREPARING TRACTOR

The pull-type Gyramor can be attached to tractors having a drawbar and power take-off that conforms to ASAE-SAE standards and has the PTO speed (540 or 1000 rpm) to match the gearing of the Gyramor.

Refer to your tractor operator's manual for operation and preparation of the tractor PTO and drawbar.

ATTACHING TO TRACTOR

Front of machine should be on parking stand.

Attach tractor drawbar to hitch clevis, using leveling screw to align drawbar with hitch clevis. Use bushing in drawbar hole to provide correct hole size for hitch pin. Insert hitch pin and secure with slotted nut and cotter pin.

Place hand crank in locking position and secure with lock pin. Retract parking stand by loosening set screw and raising stand to full height. Make sure set screw is aligned with detent and retighten.

Attach powershaft to tractor PTO shaft. If the Gyramor is to be operated at 540 rpm PTO, press in on plunger and slide powershaft yoke on splined shaft. Be sure plunger returns to "full out" position to insure positive lock.

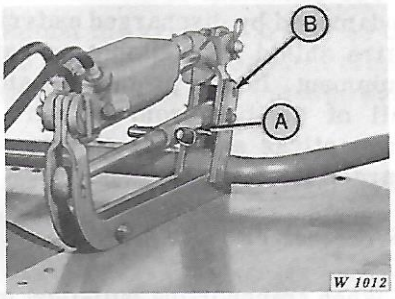
If the Gyramor is to be operated at 1000 rpm PTO, remove bolt from powershaft yoke and slip yoke on splined shaft of tractor. Replace bolt and tighten securely.

CAUTION: Never hook up a Gyramor with a 540 rpm gear case to a tractor with a 1000 rpm PTO. A metal plate on the gear case identifies correct PTO speed.

With Gyramor leveled and at working height, the powershaft should be as straight as possible. It can be adjusted by loosening bolt in powershaft support. The lower powershaft support should lean toward rear of machine. Line up powershaft and retighten bolts.

INSTALLING REMOTE HYDRAULIC CYLINDER

The pull-type Gyramor is equipped for hydraulic operation with the John Deere hydraulic system or the hydraulic system of any tractor having sufficient capacity and using an 8-inch stroke remote cylinder that conforms with ASAE-SAE standards. It can also be used behind tractors not equipped with a remote hydraulic cylinder by using an adjusting screw.



Attach cylinder to cylinder support.

Extend cylinder far enough to remove pin from hole "A" and insert it in hole "B" as illustrated.

Make sure hoses extend approximately straight from breakaway coupler to the hose holders and that front end of hose is not too tight. If tractor has a dual valve housing, the cylinder hoses must be connected to tractor breakaway couplers of the No. 1 circuit. (See your tractor operator's manual.)

CUTTING HEIGHT

The cutting height of the pull-type Gyramor is regulated by the remote hydraulic cylinder or adjusting screw used on the machine. Set the adjustable stop on the remote cylinder as instructed in the tractor operator's manual.

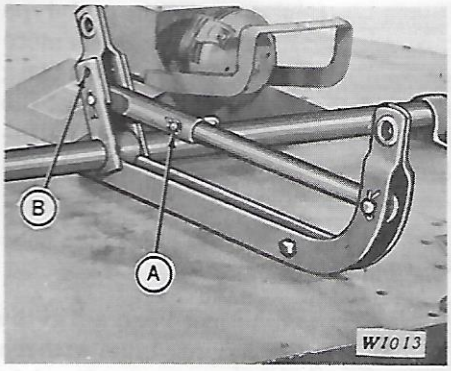
LEVELING

After machine has been set at the desired cutting height, level with the leveling screw hand crank. Check to make sure the powershaft is straight as instructed on page 12.

MAKING SHARP TURNS

When making sharp turns with pull-type Gyramor, make sure rear wheels of tractor do not strike on any part of machine. For extremely short turns, disengage PTO to prevent excessive vibration and possible damage to power line.

DETACHING FROM TRACTOR



Extend cylinder far enough to remove pin from position "B" and insert it through pipe and hang up rod in position "A." Remove cylinder.

CAUTION: Do not use pins in holes "A" and "B" at the same time, because machine will be damaged when hydraulic cylinder is operated.

Disconnect cylinder hoses from couplers on tractor or remove cylinder from Gyramor.

Disconnect powershaft from tractor power take-off.

Remove hitch pin from clevis and tractor drawbar and drive tractor away.

TIRE SHIELD

For conditions in which tires may be damaged by discharged material, a tire shield is available as extra equipment. It will protect the sidewall of the tire from puncture by sharp sticks and other objects discharged from the machine.

TRANSPORTING

When transporting pull-type machine, raise to the highest position. Additional clearance at front of machine can be obtained by adjusting the leveling screw.

CAUTION: Do not transport at high speed, especially when traveling over fields or rough roads.

CAUTION: When transporting the Gyramor on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local governmental regulations. Various safety lights and devices are available from your John Deere dealer.

INTEGRAL AND PULL-TYPE GYRAMOR

CUTTING BRUSH

If the following recommendations are observed, less horsepower will be required and less strain will be placed on the drive mechanism.

USE FLAT BLADES

Flat blades strike brush head-on, much the same as an axe. Do not use pick-up blades which have turned-down edges or suction blades which are angled slightly. See page 16 for blade information.

ADJUST FRONT TO CUT LOWER THAN REAR

Adjust the gyramor frame so the blades cut approximately 1-inch lower at the front. This adjustment eliminates the double cutting action which results if the frame is adjusted so the blades cut higher at the front than at the rear.

NOTE: When cutting light material such as weeds and grasses, adjust the gyramor frame so the blades cut level.

The fore-and-aft height of integral gyramors is regulated by adjusting the length of the tractor hitch center link. On pull-type gyramors, the fore-and-aft height is regulated with the leveling screw hand crank on the gyramore. (Do not use side-mounted wheels when cutting heavy brush.)

ATTACHMENTS TO USE FOR VARIOUS CROPS

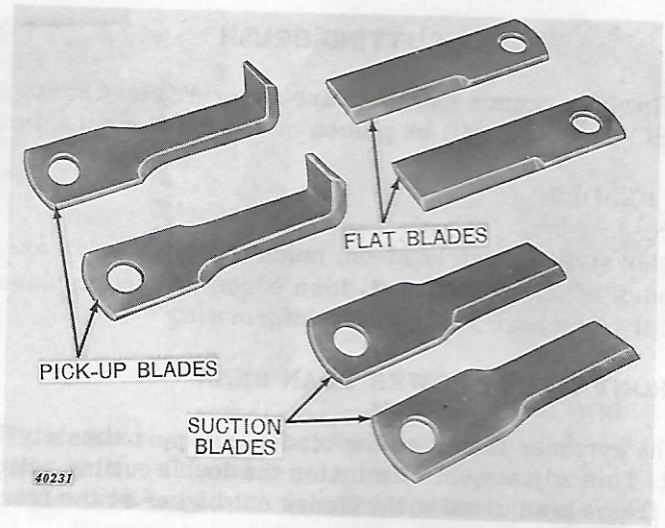
Corn - Full or Half Rear Shield, Double Blades (flat blades in the upper position and suction blades in the lower position), Shredding Attachment (stationary blade).

Cotton - Full Rear Shield, Double Blades (flat blades in the upper position) and suction blades in the lower position), Shredding Attachment (stationary blade), Gatherer Attachment.

Weeds or Grass - Full or Half Rear Shield, Flat or Suction Blades.

Brush - Full or Half Rear Shield, Flat Blades only.

BLADES



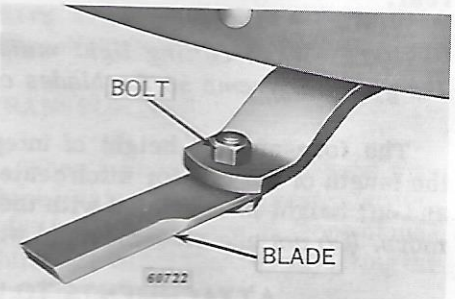
Flat blades are recommended for brush cutting and other heavy work. They are adaptable for lighter work as well and should be regarded as "general-purpose" equipment.

Suction blades are recommended for stalks, crop residues, leaves, weeds, and grasses. Their powerful suction action lifts light material into the path of the blades for a cleaner cut.

Pick-up blades are recommended for use in low-lying material such as orchard prunings and down corn. They provide a closer cut than can be obtained with conventional blades in these conditions.

The flat and suction blades are reversible. When one side is worn, they may be turned over to provide a new cutting edge.

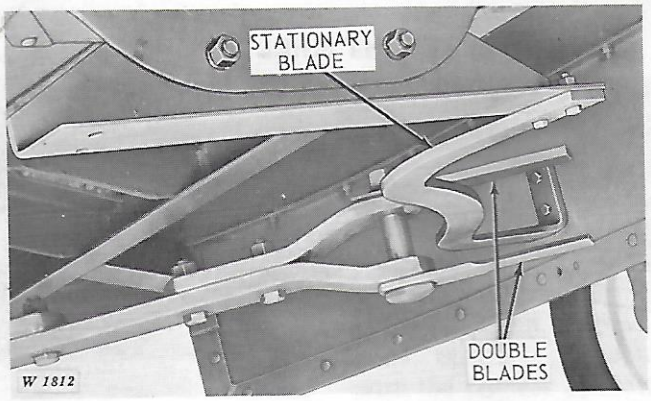
After extensive service, the blades will require replacement. New blades should always be installed in pairs to keep knife arm in balance and avoid vibration.



When Gyramor is first put into operation, blade and knife arm bolts should be retightened after one hour of operation and daily thereafter until all slack has been taken up.

The blade attaching bolts have left-hand threads and are fitted with self-locking nuts. They have a self-tightening action in normal work but should be rechecked periodically to make sure they have not been jarred loose by stones, stumps, or other obstructions.

The wrench supplied with the Gyramor will fit the head of the blade bolts. A large pipe wrench is also useful, particularly when the bolt heads become worn.



DOUBLE BLADES

Double blades improve the mulching action of the machine. Flat blades are provided for the upper position, while any of the two standard blade types may be used in the lower position, depending on the work being done.

While double blades do not provide the same degree of pulverization as the shredding attachment, they require less power but can be used for the same type of work as the shredding attachment.

NOTE: Do not use double blades when cutting brush. Use single flat blades only.

SHREDDING ATTACHMENT

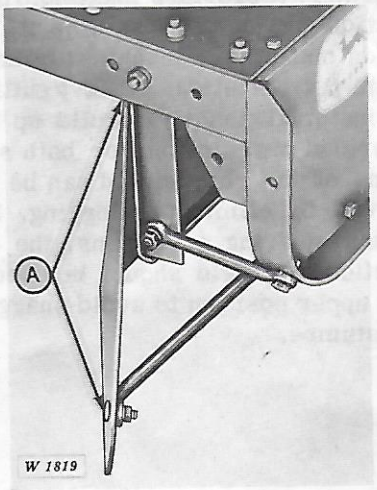
The stationary blades, when used with double blades, adapt the machine for extra fine chopping. Double rotating blades straddle stationary blades for triple the number of cutting edges. The shape of the stationary blades is particularly suited to row-crop work, such as corn and cotton stalks, having a gathering effect to confine the stalks and prevent them from bypassing the stationary edge.

GATHERER ATTACHMENT

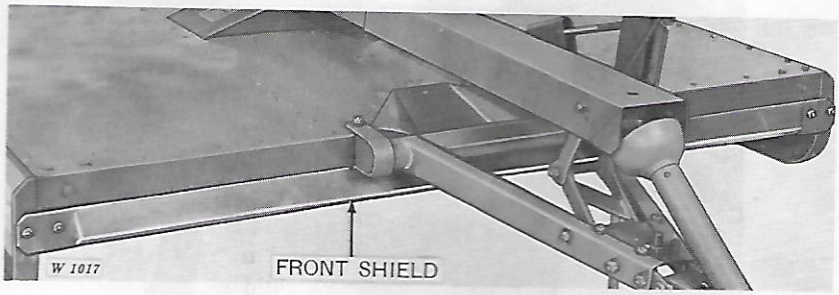
Gatherers help eliminate windrowing and increase the effective cutting width of the machine by guiding down and outlying material into the patch of the blades. They may be used with all Gyramors, providing the rear tractor wheels are set so they do not interfere with the gatherer points.

The gathers may be adjusted up or down for hilled crops to suit the contour of the ground.

Loosen bolts "A." Move gatherers up or down and tighten bolts "A." (Left-hand side illustrated.)



FRONT SHIELDS



The front shield confines cut material within the front of the machine, deflects debris away from the operator and prevents excessive discharge through the front opening.

For conditions where the crop itself is sufficiently dense to act as a baffle or where the machine feeds more efficiently without it, the shield can be taken off by removing four bolts.

REAR SHIELDS

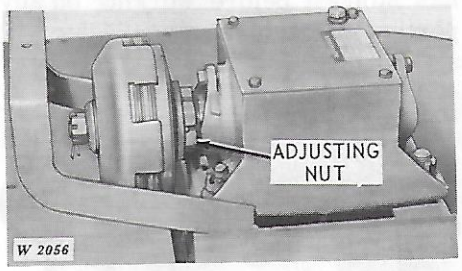
The rear shield is made up of an upper and lower section. When the upper and lower sections are used together, it provides maximum protection against thrown objects and holds material in machine for maximum pulverization. In heavy cutting, if material tends to build up and overload tractor, one or both sections of the rear shield can be removed to eliminate clogging. For brush clearing operations, the one section of shield should be used in the upper position to avoid snagging on stumps.

To use the shield in the upper position only, remove both the upper and lower sections from the machine.

Bolt section removed from lower position to the upper location on Gyramor.

CAUTION: Do not adjust shields while blade is in motion.

SLIP CLUTCH



The slip clutch will protect the tractor transmission and PTO shaft from breakage caused by sudden shocks and overloads when doing heavy work such as cutting brush or striking hidden obstructions.

The clutch slips to relieve excessive loads and resets itself automatically without interrupting the cutting operation.

On new machines, the clutch is set for average work with 50 to 60 h.p. tractors. For heavier work with larger tractors, it may be necessary to tighten the spring to increase its capacity.

If clutch runs hot, with tractor operating at normal load, remove cotter pin from clutch adjusting nut and tighten nut one or two notches with wrench supplied with Gyramor. Resume work, recheck clutch temperature and readjust nut one or two notches at a time until excessive slippage is eliminated. Replace and spread cotter pin.

During continued use, the clutch must be drawn up one or two notches periodically to compensate for facing wear and to maintain desired capacity. The frequency of readjustment will depend on the size of tractor being used and the type of work being done. Should it run continuously hot with the tractor operating at normal load, the clutch should be readjusted immediately to avoid permanent damage.

If the Gyramor has been idle for an extended period, the slip clutch should be checked before putting the machine back in operation.

ADJUSTING SLIP CLUTCH

When assembling or adjusting the Gyramor slip clutch, the following is an effective method of obtaining the correct torque setting.

Loosen the clutch adjusting nut until the saucer-shaped clutch spring is just free enough to turn by hand.

Tighten nut 7 to 8 flats on hex., portion of nut (approximately 1-1/2 turns).

Align hole in shaft with nearest slot in nut and insert cotter.

SAFETY SUGGESTIONS

All rotary cutters are potentially dangerous machines. This Gyramor has been designed to minimize the chance of accidents but there is no substitute for a careful operator.

Be sure all powershaft shields are securely in place at all times during operation.

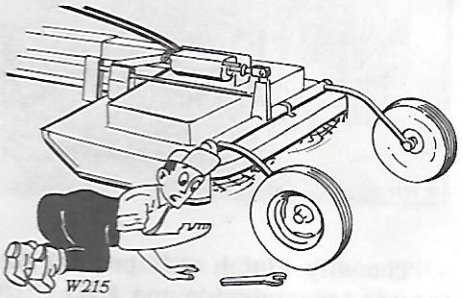
Do not, under any circumstances, operate machine when others are standing in close range. Stones and other debris can be thrown more than a hundred feet by the machine when in operation.

Do not ride or permit others to ride on the tractor or implement unless the person is on the tractor seat or platform provided for the operator.

Be careful when operating on hillsides as the tractor may tip sideways if it drops in a hole, ditch, or other irregularity.

Do not clean, lubricate, or make any adjustments to machine unless powershaft is disengaged and tractor is shut off.

Due to weight of rotor, blades may continue to revolve for some time after tractor power take-off shaft is disengaged. Make sure knife arm has stopped before working on any portion of machine.



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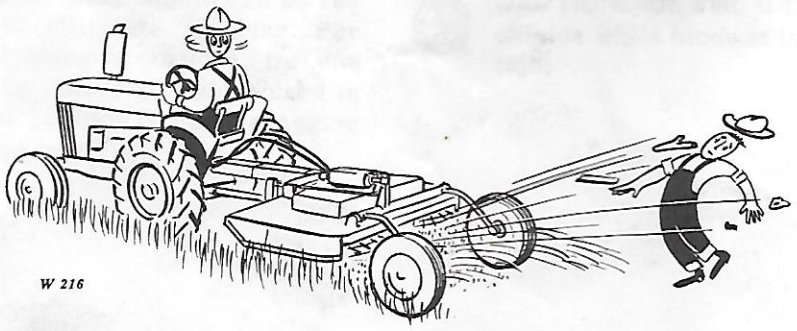
Make sure knives and bolts are in good condition before operating. A loose or excessively worn part may fracture unexpectedly when striking an obstruction.

Retighten all bolts periodically. Make sure cotter pins are in place and properly spread.

Slow down when approaching trees, fences, or ditches. Flywheel effect of Gyramor rotor will drive some tractors forward a considerable distance after main drive clutch is disengaged. To stop forward travel more quickly, apply brakes and throttle back to allow engine compression to slow rotor down before disengaging clutch.

Use flags or warning light when transporting machine on highway.



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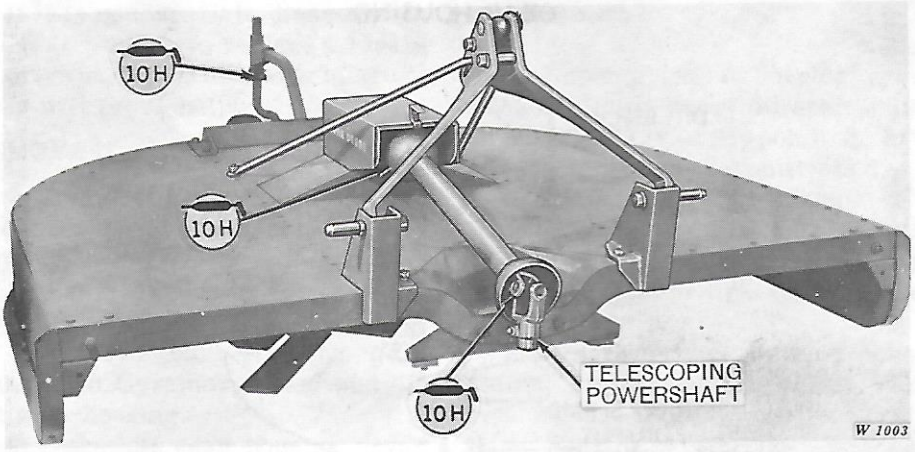
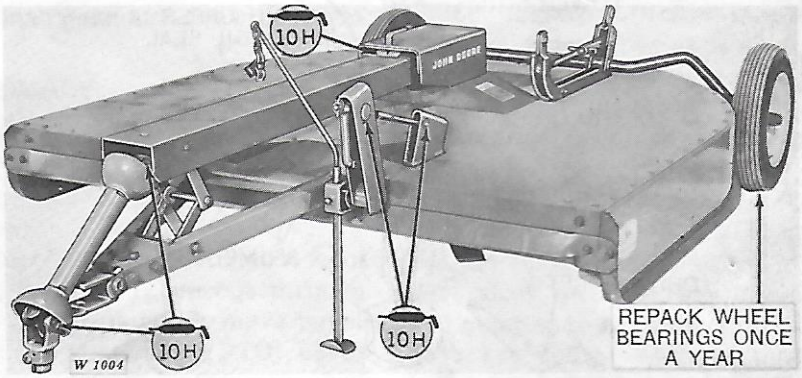
LUBRICATION

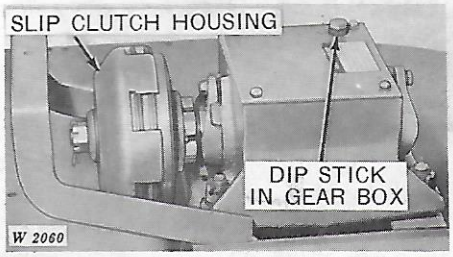




LUBRICATION SYMBOLS

10H Grease every 10 hours of operation.

Powershafts—Pack powershafts with grease after every 50 hours of operation.



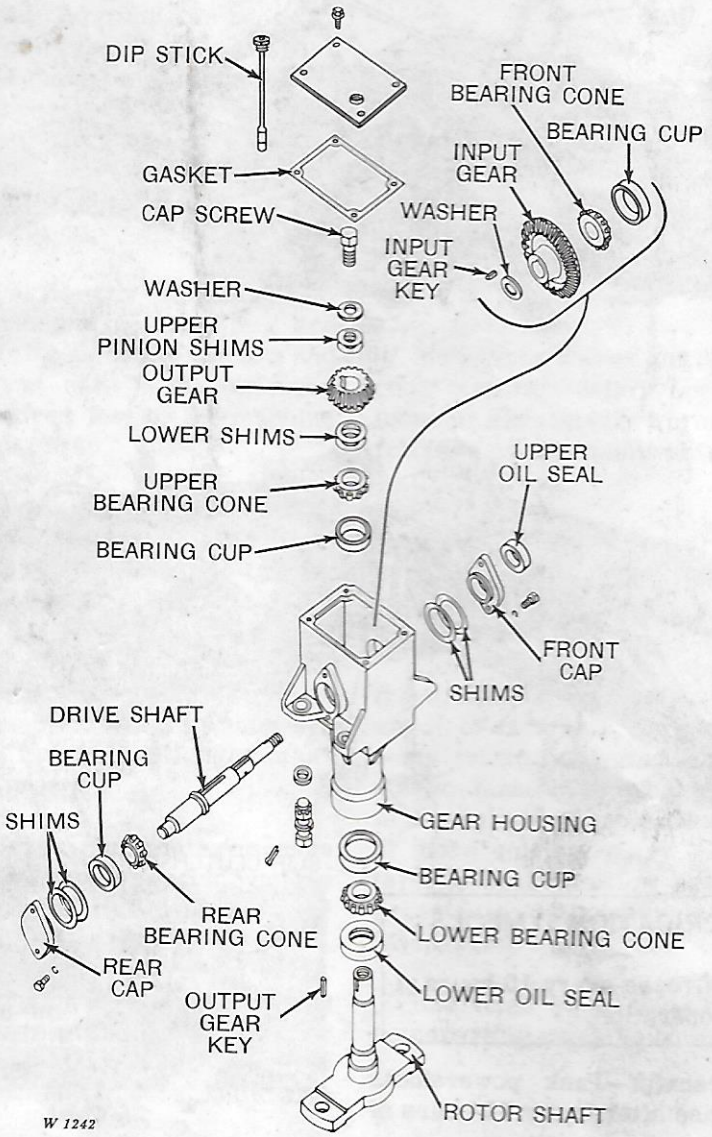
Slip Clutch

Gear Housing - Keep filled with SAE 140 hypoid gear oil.

Slip Clutch - Carefully lubricate bearing with SAE regular type gear lubricant. Clutch facings cannot be contaminated by grease from clutch bearing.

SERVICE

GEAR HOUSING



NOTE: As illustrated above, and described on page 24, the gear box is assembled for 540 rpm PTO operation. For 1000 rpm PTO operation the bevel gear and pinion gear are interchanged so that the bevel gear is on the rotor shaft and pinion gear is on the drive shaft.

GEAR HOUSING—Continued

If it is necessary to disassemble the gear housing to replace oil seals or drive parts, the following instructions will prove helpful.

REMOVAL

1. Remove powershaft and slip clutch or shear pin assembly. (See page 25.)
2. Remove blade holder from rotor shaft.
3. Remove bolts holding gear housing to Gyramor frame and lift out gear housing.
4. Take off gear housing cover and drain out old oil.
5. Flush gear housing with diesel fuel.

DISASSEMBLY

1. Remove caps from front and rear of gear housing. Keep the shims with each cap. Remove oil seal from front cap.
2. Press drive shaft and rear bearing cone and cup out through rear of gear housing. Remove bevel gear (pinion if 1000 rpm PTO), bevel gear key, bearings, and plain washer at end of bevel gear from housing.
3. Remove cap screw, lock washer, pinion washer, and shims from top of rotor shaft. Keep shims with cap screw.
4. Press rotor shaft out of bevel pinion and remove pinion (bevel gear if 1000 rpm PTO), pinion key, shims, and upper bearing cone.
5. Drive oil seal out of bottom of gear housing.

CLEAN, INSPECT, REPLACE

Clean all parts with diesel fuel. Inspect for worn or damaged parts and replace with new parts if necessary. Check bearing cups in gear housing to make sure they are in good condition.

REASSEMBLY

1. Replace lower bearing cone and install new lower oil seal. Start seal squarely, with lip pointing "in" and press into housing until it is inset 1/4-inch past edge of housing.
2. Press rotor shaft into place in gear housing, making sure shoulder at base of shaft is tight against base of lower bearing.
3. Replace upper bearing cone, shims, pinion (bevel gear if 1000 rpm PTO), and pinion key.
4. Replace shims, pinion washer, lock washer, and cap screw on top of pinion. Install sufficient thin shims under pinion washer until shaft runs free with cap screw tightened. Then remove one thin shim for a slight preload and retighten cap screw.
5. Place bevel gear (pinion if 1000 rpm PTO) and front bearing cone in gear housing. With plain washer against shoulder on drive shaft, insert shaft through rear of housing and start gear on shaft. Insert bevel gear key and press drive shaft into bevel gear and through front bearing cone. The shoulder on the drive shaft must be tight against the plain washer and bevel gear hub.
6. Replace rear bearing cone, bearing cups, front and rear housing caps, and shims.
7. Replace oil seal in front housing cap. Assemble with lip "in," using shim stock to guide lip over shoulders on shaft. Press in flush with face of cap.

ADJUSTMENT

Add or deduct shims at front or rear of gear housing for 0.001 to 0.002-inch preload in drive shaft. Adjust for proper heel and backlash between pinion and bevel gear by

adding or removing shims under pinion and under caps at front and rear of gear housing until backs of bevel pinion and gear line up and 0.010-inch backlash is obtained. Failure to obtain proper heel and backlash will result in rapid wear and a noisy drive.

INSTALLATION

1. Bolt gear housing to Gyramor frame, making sure gear housing pads are seated properly in counterbored surfaces in gear housing feet and support angles.
2. Attach blade holder to rotor shaft.
3. Fill gear housing to top of bevel pinion with a good grade of SAE 140 hypoid gear oil. Replace gasket and gear housing cover.
4. Reinstall clutch or shear pin assembly.

CONVERTING GEAR HOUSING FROM 540 TO 1000 RPM OPERATION

The Gyramor is equipped with a compatible gear box. By reversing the position of the bevel gear and pinion it can be used with tractors having either a 540 rpm PTO or 1000 rpm PTO.

The exploded view on page 22 shows bevel gear (large) and pinion gear (small) located for use with tractors having 540 rpm PTO.

To change gear box for use with tractors having 1000 rpm PTO use the following instructions:

Disassemble the gear box as instructed on page 23.

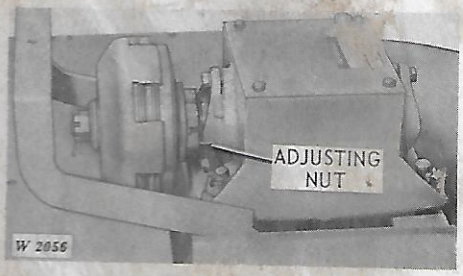
Place the bevel gear (large on the rotor shaft in the same location previously occupied by the pinion gear (small).

Place the pinion gear on the drive shaft in the same location previously occupied by the bevel gear.

Reassemble gear box as instructed on page 23.

NOTE: When converting the gear box from 540 rpm to 1000 rpm, it is necessary to change the yoke on the front powershaft because the tractor will have a 21-tooth spline instead of a 6-tooth spline. Parts are available in Bundle No. BW10058W. (See your John Deere dealer.)

ADJUSTING SLIP CLUTCH



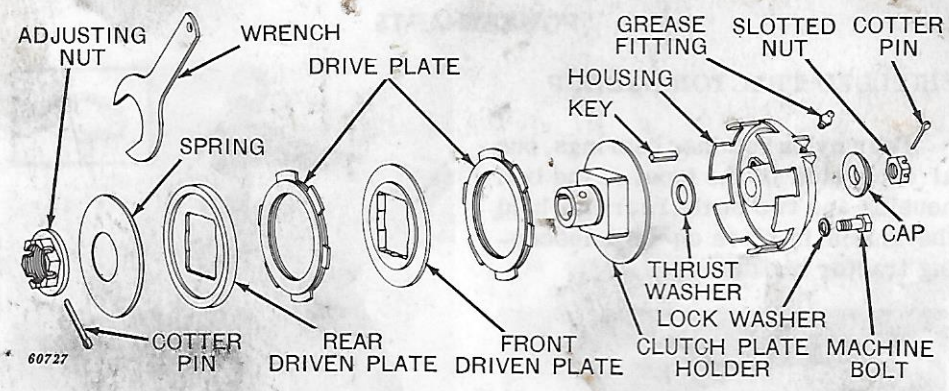
When assembling or adjusting the Gyramor slip clutch, the following is an effective method of obtaining the correct torque setting.

Loosen the clutch adjusting nut until the saucer shaped clutch spring is just free enough to turn by hand.

Tighten nut 7 to 8 flats on hex. portion of nut (approximately 1-1/2 turns).

Align hole in shaft with nearest slot in nut and insert cotter pin.

SLIP CLUTCH



To replace worn or damaged clutch parts, remove bolts from powershaft flange and disconnect from clutch housing.

Remove cotter pin and unscrew slotted nut from end of shaft.

Remove and inspect drive shaft cap, clutch housing, and thrust washer. Replace with new parts if worn excessively.

Remove cotter pin in clutch adjusting nut and pull clutch pack off shaft. Unscrew clutch adjusting nut and disassemble clutch pack to replace plates.

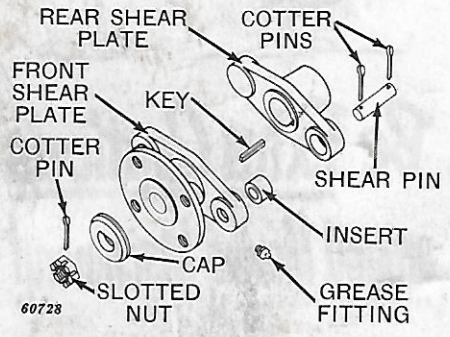
Reassemble clutch pack, and slide against shoulder on shaft, making sure keyways are lined up. Insert key and tap in flush with end of clutch plate holder.

Replace thrust washer, clutch housing, drive shaft cap, and slotted nut in order. **CAUTION: Slotted nut must not be drawn up tight. Draw up nut snug against cap and back off 1/2 to 1-1/2 castellations before inserting cotter pin.** The clutch housing, or shear pin front flange, should have a slight end play when the nut is adjusted properly.

Lubricate clutch housing until grease runs out around face of cap. Attach powershaft flange.

See page 24 for clutch adjustment.

SHEAR PIN



If the bushings become worn in the shear pin flanges, they can be replaced as follows: remove cotter pin, slotted nut, and drive shaft cap.

Remove shear pin, front plate, drive shaft key, and rear plate.

Replace bushings in front and rear shear pin plates if necessary.

Reassemble shear pin assembly. Slide rear flange against rear shoulder on drive shaft, making sure keyways line up. Insert key and tap in flush with end of plate.

Place front plate next to rear plate. Insert shear pin and secure with cotter pins.

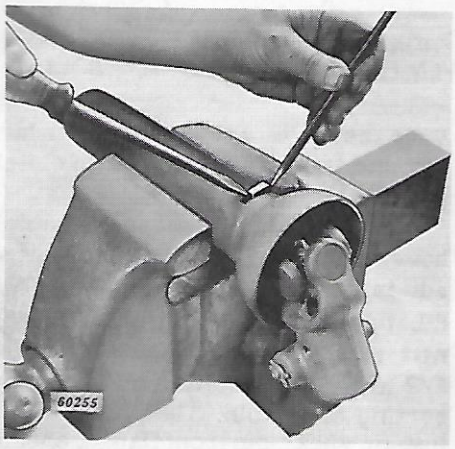
Place drive shaft cap on flattened portion of drive shaft and secure with slotted nut and cotter pin.

Make sure slotted nut on end of shaft is readjusted properly. (See caution in slip clutch instructions above.)

POWERSHAFTS

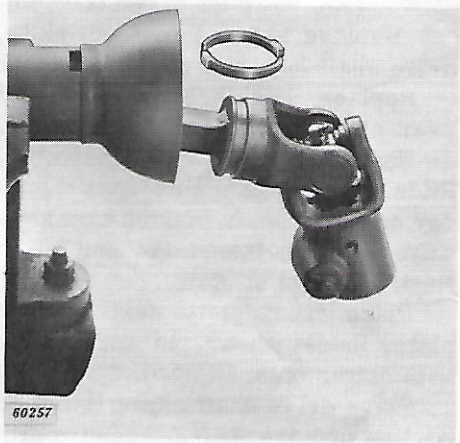
SHIELDED TRACTOR HOOKUP

Four nylon retainer bearings, one at each side of the front of the bell housing and two on the rear end, hold the shield in place on the telescoping tractor hookup.

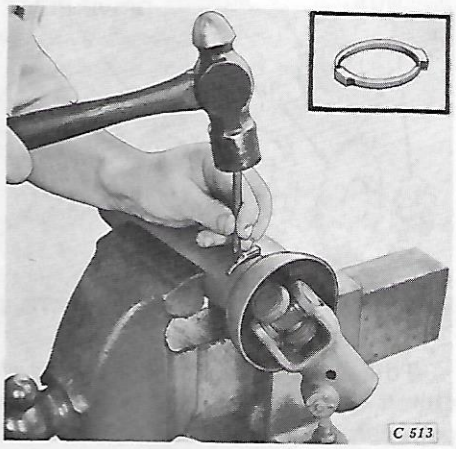


Removing Bearings

To remove the retainer bearings, raise the lug of the bearing with a pointed punch and push against the lug with a screwdriver until the bearing is removed.



Bearings Removed



Replacing Bearings

To replace a bearing, work it into the slot in the tubular shaft, using a pointed punch and a hammer. A small amount of oil or water will aid in getting the bearing in.

INFORMATION ABOUT UNITED STATES AND CANADIAN WARRANTY

The warranty on this machine or equipment comes from your John Deere dealer and is contained in the purchase agreement you sign. If you are purchasing the machine or equipment new, the dealer's warranty ordinarily contains the following provisions.

He agrees to replace parts which prove defective with normal and proper use within:

TWELVE MONTHS from date of delivery to you unless the machine or equipment is sold for industrial, construction or logging use.

SIX MONTHS from the first day of the month following the date on which you first use the machine or equipment if the machine is sold for industrial, construction or logging use.

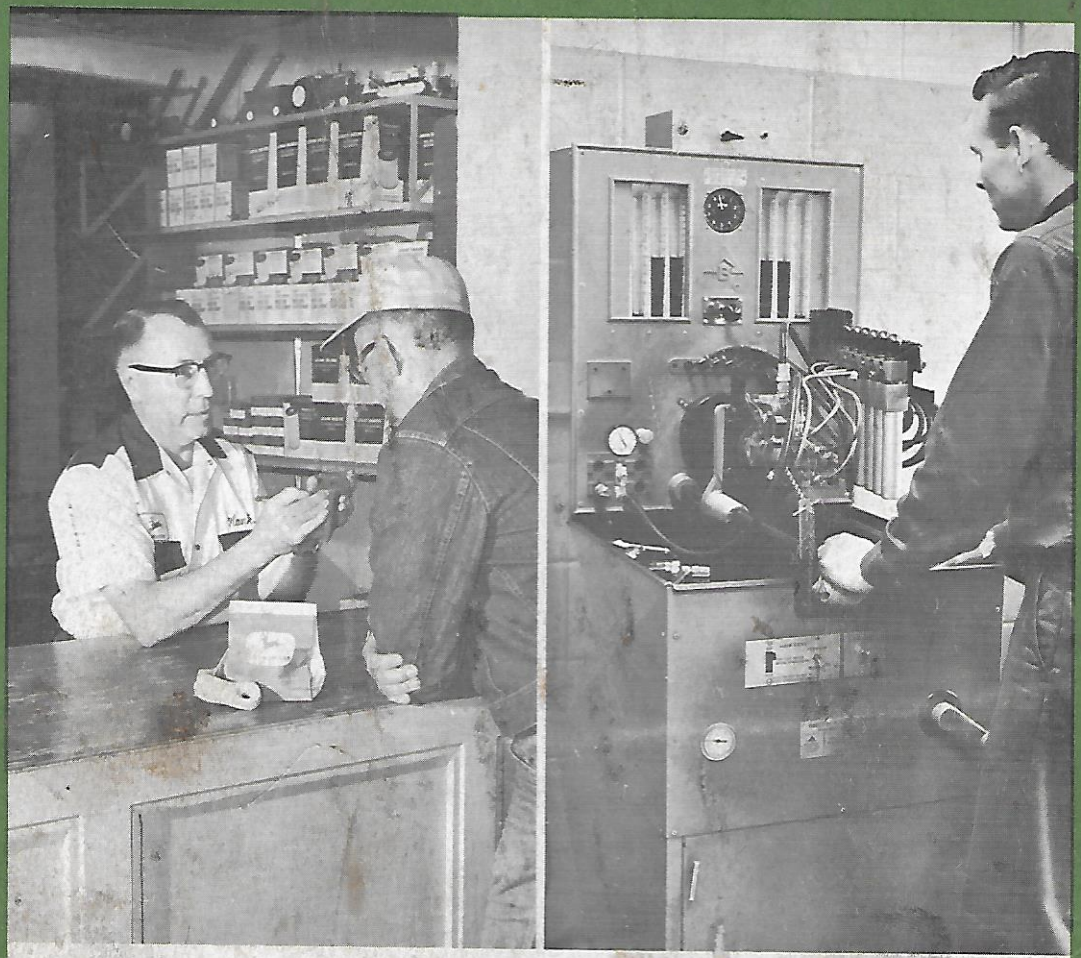
He has no obligation to replace parts whose failure is related to modification or alteration of this machine or equipment in ways not recommended by the manufacturer. It is your obligation to bring the machine or equipment to his service shop or, if this is not possible, to reimburse him for his travel expense in fulfilling the warranty.

The dealer's warranty in the purchase agreement ordinarily does not cover batteries, rubber tires, radios, engines not of John Deere manufacture or used machines or equipment, and there is no warranty or other obligation on such items unless your dealer has delivered to you a certificate or other written statement which is separate from the purchase agreement and is designated "Warranty."

Certain other limitations on the obligation of the dealer and of others may be contained in the warranty in your purchase agreement.

Be sure to read the "Warranty and Agreement" in your purchase agreement, or your separate "Warranty," as there is no other warranty obligation, express or implied, including the implied warranties of merchantability and fitness, on this machine or equipment.

Note: The above summary of the provisions ordinarily found in the dealer's warranty was correct on the date of printing of this manual. The warranty you actually receive governs in case of any inconsistency with the summary.



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A Bedrock Backing of Your Decision to Go with The Long Green Line

Behind every product in *John Deere's Long Green Line* stands a reliable John Deere dealer ready to serve you in time of need with dependable parts and service.

The seasons run early in his Parts Department—his well-stocked shelves of seasonal *(and Genuine)* John Deere Parts will help hold your downtime to a minimum. Service is another phase of his business that is vital to you. Working with modern equipment and guided by factory-prepared service manuals, his service specialists can pinpoint trouble with little delay and eliminate it without costly waste effort.

You can move through your entire year's operations comfortably assured that your John Deere dealer has anticipated your needs and stands ready to help solve your problems. Your competent dealer is one more assurance of the greater satisfaction and value you'll enjoy when you invest in *The Long Green Line of John Deere Equipment.*

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