

# 700 and 750 Grinder-Mixers



JOHN DEERE

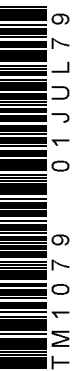
## TECHNICAL MANUAL

700 and 750  
Grinder-Mixers

TM1079 (01JUL79) English

**Des Moines Works**  
**TM1079 (01JUL79)**

LITHO IN U.S.A.  
ENGLISH



# 700 AND 750 GRINDER-MIXERS

TECHNICAL MANUAL  
TM-1079 (Jul-79)

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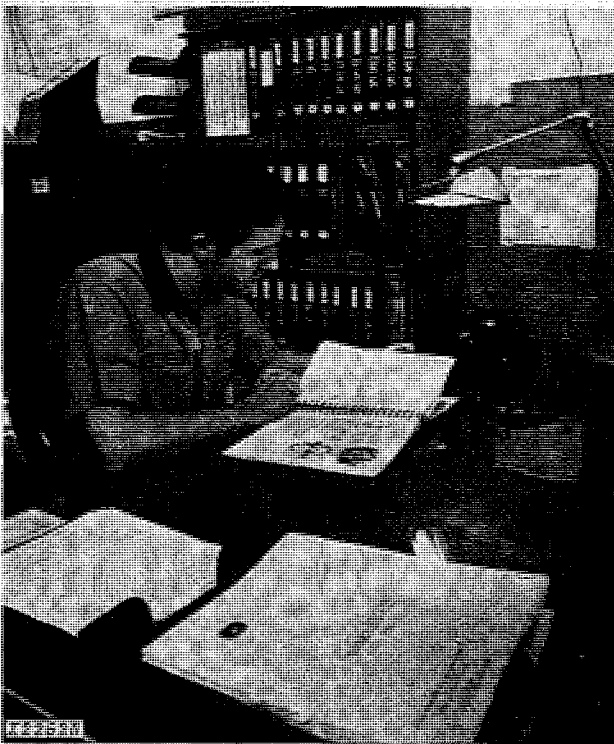
*The specifications and design information contained in this manual were correct at the time this machine was manufactured. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice.*

### FOR YOUR CONVENIENCE

Vertical lines appear in the margins of many of the pages. These lines identify new material and revised information that affects specifications, procedures, and other important instructions.

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## INTRODUCTION



*Use FOS Manuals for Reference*

This technical manual is part of a twin concept of service:

- **FOS Manuals**—for reference
- **Technical Manuals**—for actual service

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

*Fundamentals of Service (FOS) Manuals* cover *basic* theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced service technicians.

*Technical Manuals* are *concise* on the job service guides containing only the vital information needed by an experienced technician for a specific machine.



*Use Technical Manuals for Actual Service*

Some features of this technical manual:

- *Table of contents at front of manual*
- *Exploded views showing parts relationship*
- *Photos showing service techniques*
- *Specifications grouped for easy reference*

This technical manual was planned and written for you—an experienced technician. Keep it in a permanent binder in the shop where it is handy. Refer to it whenever in doubt about correct service procedures or specifications.

Using the technical manual as a guide will reduce error and costly delay. It will also assure you the best in finished service work.

### **SI (International System) Units of Measure**

Metric equivalents have been included, where applicable, throughout this technical manual.

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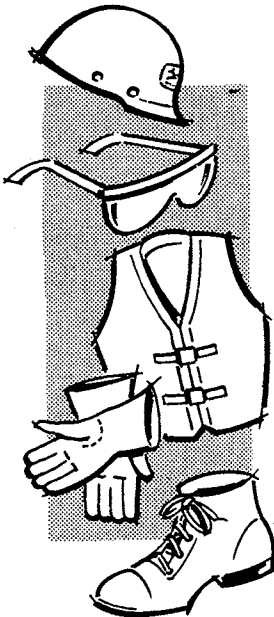
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**MAINTENANCE WITHOUT ACCIDENTS****WORK SAFELY**

T27999

 This safety alert symbol identifies important safety messages in this manual and on the grinder-mixers. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

**EVERY EMPLOYER HAS A  
SAFETY PROGRAM. KNOW  
WHAT IT IS!**

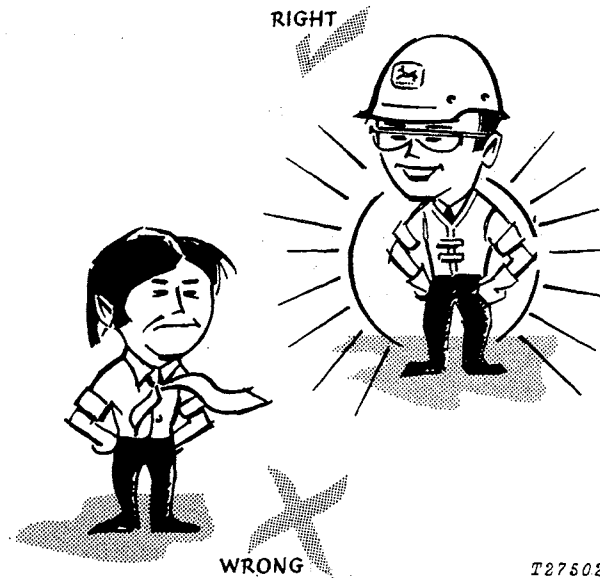


T27501

Consult your shop foreman for specific instructions on a job, and the safety equipment required.

For instance, you may need: Hard hat, safety shoes, safety goggles, heavy gloves, reflector vests, ear protectors, respirators.

*Litho in U.S.A.*



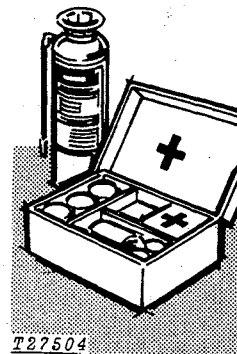
T27502

**ALWAYS AVOID**

Loose clothing or any accessory—flopping cuffs, dangling neckties and scarves, or rings and wrist watches—that can catch in moving parts and put you out of work.

**BE ALERT!**

Plan ahead—work safely—avoid accidental damage and injury. If a careless moment does cause an accident or fire, react quickly with the tools and skills at hand—know how to use a first aid kit and a fire extinguisher—and where to get aid and assistance. In an emergency, split-second action is the key to safety.



T27504

## Section 10 GENERAL

### CONTENTS OF THIS SECTION

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GROUP 5 - DESCRIPTION		GROUP 15 - LUBRICATION	
Description .....	5-1	General Information .....	15-1
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## Group 5 DESCRIPTION

The John Deere 700 and 750 Grinder-Mixers are portable feed grinders and mixers. They are shipped from the factory with either a 540 or 1000-rpm PTO drive. The 540-rpm PTO drive is designed for use with tractors having a maximum of 90 horsepower (67 kW). The 1000-rpm PTO drive is designed for use with tractors having a maximum of 150 horsepower (112 kW).



**CAUTION: Never operate a 540 rpm grinder-mixer with a 1000 rpm tractor PTO.**

All types of grain may be ground with the grinder-mixer. Hay slices may be fed into the plain hopper individually, or the optional hay attachment may be used to feed hay bales. Grinding loose hay is not recommended.

A concentrate hopper with bag opener at the rear of the grinder-mixer allows addition of concentrate while grinding. The mixture of grain or hay is fed into the hammermill and ground until it will pass through the screen.

The bulk of the ground feed is delivered directly to the mixing tank by the horizontal auger. The finely ground feed is drawn by a suction fan through the dust collector into the horizontal auger. The ground feed and concentrate are then mixed thoroughly in the mixing tank.

After the grinding operation is performed, the hammer mill can be disengaged and the mixing tank auger run to mix the feed while it is transported to the feed lot or unloading area.

The unloading auger pivots 225 degrees on its pedestal and will unload the tank at the rate of 22 bushels (0.78 m<sup>3</sup>) per minute.

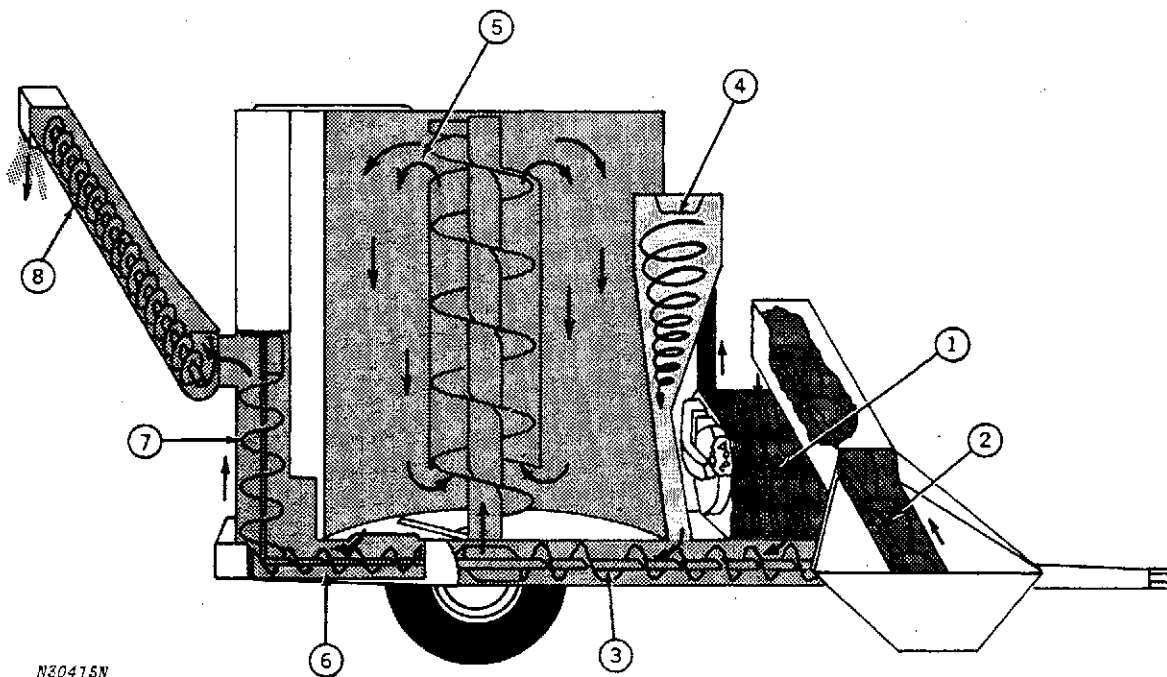
The feed level or quantity in the mixing tank is visible through the three safety glass windows staggered along the side of the mixing tank. Mounting steps at the front of the tank give access to the door on top of the tank.

The grinder-mixer may be equipped with the optional hydraulically driven auger feeder. The auger feeder drive is operated by the tractor hydraulic system. The drive speed can be varied from 0 to 150 rpm by positioning the variable speed lever on the auger feeder. The auger feeder is spring balanced or winch-operated for ease in handling and will pivot through a 120 degree arc.

The hay grinding option makes it possible to power feed bales of hay or straw into the grinder-mixer. The twine on the bales may be removed or left on the bale as the operator desires.

The hay attachment is available with or without the feeding auger.

### FEED FLOW



N30415N

Fig. 1-Feed Flow

The hammer mill capacity depends upon six factors; rate of feed, type of material, moisture content of material, tractor horsepower, hammer mill rotor speed, and screen hole size.

Underfeeding of material reduces capacity, preventing the optimum operation of the hammer mill. Overfeeding tends to slow the tractor rpm, and reduces the capacity of the hammer mill. Uneven feeding is a combination of both underfeeding and overfeeding.

The rotor shaft speed (2600 rpm for 540 rpm PTO and 2750 rpm for 1000 rpm PTO) must be maintained. This speed is obtained when the tractor PTO speed is adjusted properly with the tractor engine speed.

It is important to use the correct size screen. The larger the hole size in the screen, the greater the hammer mill capacity. The smaller the hole size in the screen, the lesser the capacity.

The following is a step-by-step description of the feed flow through the grinder-mixer:

1. After the concentrate is added, material is fed into the hammer mill (1, Fig. 1) by the feed auger (2) or hay attachment (not shown), or directly into the mill, where it is ground until it passes through the screen at the bottom of the hammer mill into the auger (3).

2. From the hammer mill screen, the bulk of the ground feed is augered (3) to the mixing tank (5).

3. The finely ground feed (dust) is sucked through the screen, flows down through the dust collector (4) into the horizontal auger (3), and is augered into the mixing tank (5).

4. The feed in the mixing tank is then mixed thoroughly with the concentrate from the concentrate hopper.

5. When ready to unload, the feed is augered through the horizontal unloading auger (6) to the vertical unloading auger (7), and to the unloading auger (8) where it can be bagged or unloaded into wagons or feeders.

## Group 10 SPECIFICATIONS

### 700 GRINDER-MIXER

Equipped with 1000 to 540-rpm PTO Drive  
Approximate Weight (with auger feeder) . . 3276 lbs.  
(1487 kg)

#### Mixing Tank

Capacity . . . 95 Bushel (3.4 m<sup>3</sup>) (2 Tons) (1814 kg)  
Auger Diameter . . . . . 18 Inches (457 mm)  
Auger Length . . . . . 73 Inches (1 854 mm)

#### Unloading Auger

Diameter . . . . . 6 Inches (152 mm)  
Length . . . . . 13 Feet (3 962 mm)  
Discharge Rate . . 22 Bushels Per Minute (0.8 m<sup>3</sup>)  
Pedestal Height . . . . . 54 Inches (1 372 mm)

#### Hydraulic Variable Speed Auger Feeder

Auger Housing Hopper Width . . . . . 43 Inches  
(1 092 mm)  
Auger Diameter . . . . . 10 Inches (254 mm)  
Auger Length . . . . . 92 Inches (2 337 mm)  
Type Drive . . . . . Hydraulic Variable Speed  
Drive Speed . . . . . 0 to 150 rpm

#### Hammer Mill

Rotor and Fan Speed .2600 rpm for 540-rpm PTO  
2750 rpm for 1000-rpm PTO  
Type Drive . . . . . Six A-Section Powerband  
Belts for 1000-rpm PTO Drive  
(or) Eight A-Section Powerband  
Belts for 540-rpm PTO  
Drive  
Number of Hammers . . . 64 Four-Way Reversible  
Throat Opening . . . . . 20 Inches (508 mm)  
Screen Area . . . . . 703 Square Inches (18 m<sup>2</sup>)  
Screens Available . . . . . Fourteen with Hole  
Diameters from 3/32 Inches to 1-1/2 Inches  
(2.1 mm to 38 mm)

Tire Size . . . . . 11L-15, 8 PR

#### Hay Attachment

Type of Drive . . . . . Hydraulic Variable Speed  
Drive Speed . . . . . 0 to 70 rpm  
Number of Knives . . . . . 16  
Number of Hammers . . . . . 48

#### Scale Attachment

Weight . . . . . 110 lbs. (50 kg)  
Power Input . . . . . 12 Volt DC  
System Range . . . . . 0-15000 lbs. (0-6804 kg)  
Circuitry . . . . . Micro Miniature,  
Modular, Solid State

### 750 GRINDER-MIXER

Equipped with 1000 or 540-rpm PTO Drive  
Approximate Weight (less Auger Feeder) . 3220 lbs.  
(1461 kg)

#### Mixing Tank

Capacity .130 Bushels (4.6 m<sup>3</sup>) (3 Tons) (2722 kg)  
Auger Diameter . . . . . 22 Inches (559 mm)  
Auger Length . . . . . 77-7/8 Inches (1 978 mm)

#### Unloading Auger

Diameter . . . . . 6 Inches (152 mm)  
Length . . . . . 13 Feet (3 962 mm)  
Discharge Rate . . 22 Bushels Per Minute (0.8 m<sup>3</sup>)  
Pedestal Height . . . . . 55 Inches (1 372 mm)

#### Hydraulic Variable Speed Auger Feeder

Auger Housing Hopper Width . . . . . 43 Inches  
(1 092 mm)  
Auger Diameter . . . . . 10 Inches (254 mm)  
Auger Length . . . . . 92 Inches (2 337 mm)  
Type Drive . . . . . Hydraulic Variable Speed  
Drive Speed . . . . . 0 to 150 rpm

#### Hammer Mill

Rotor and Fan Speed .2600 rpm for 540-rpm PTO  
2750 rpm for 1000-rpm PTO  
Type Drive . . . . . Six A-Section Powerband Belts  
for 1000-rpm PTO Drive (or)  
Eight A-Section Powerband  
Belts for 540-rpm PTO Drive  
Number of Hammers . . . 64 Four-Way Reversible  
Throat Opening . . . . . 20 Inches (508 mm)  
Screen Area . . . . . 703 Square Inches (18 m<sup>2</sup>)  
Screens Available . . . . . Fourteen with Hole  
Diameters from 3/32 Inches to 1-1/2 Inches  
(2.1 mm to 38 mm)

Tire Size . . . . . 12.5L-16, 8 PR

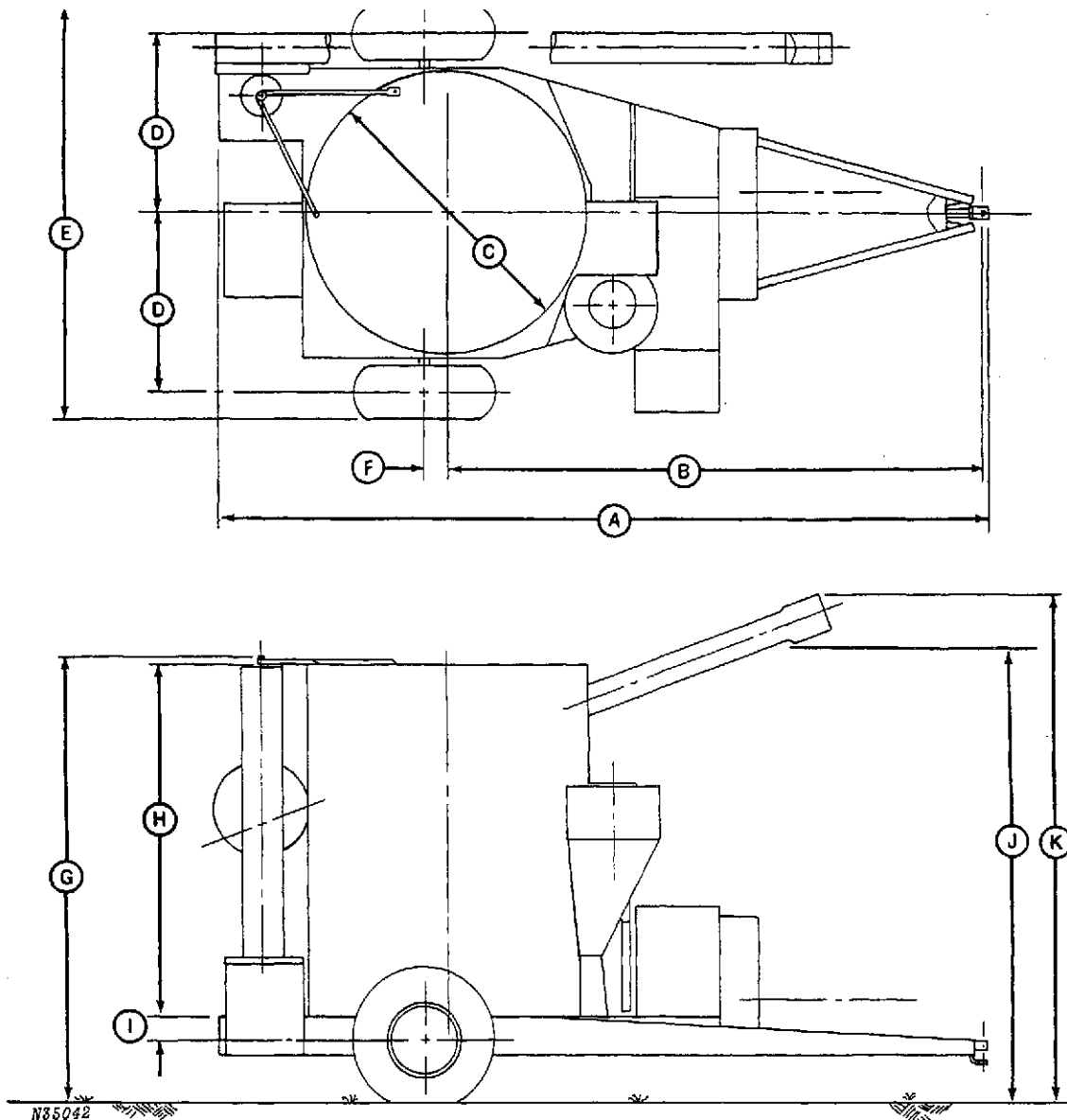
#### Hay Attachment

Type of Drive . . . . . Hydraulic Variable Speed  
Drive Speed . . . . . 0 to 70 rpm  
Number of Knives . . . . . 16  
Number of Hammers . . . . . 48

#### Scale Attachment

Weight . . . . . 110 lbs. (50 kg)  
Power Input . . . . . 12 Volt DC  
System Range . . . . . 0-15000 lbs. (0-6804 kg)  
Circuitry . . . . . Micro Miniature,  
Modular, Solid State

**DIMENSIONS**



	700		750	
	Inch	(mm)	Inch	(mm)
A	170-1/4	(4 324)	179-1/4	(4 553)
B	120	(3 048)	124	(3 150)
C	58-1/4	(1 480)	66-1/4	(1 683)
D	36-1/2	( 927)	41-5/8	(1 057)
E	85	(2 159)	96	(2 438)
F	5-1/2	( 140)	5-1/2	( 140)
G	100	(2 540)	105	(2 667)
H	78	(1 981)	82	(2 083)
I	5-1/4	( 133)	6-1/4	( 159)
J	143	(3 632)	143	(3 632)
K	181-1/2	(4 610)*	181-1/2	(4 610)
	118-1/2	(3 010)	118-1/2	(3 010)
	143	(3 632)*	143	(3 632)

\* Maximum operating (J) and transport (K) heights, with unloading auger extension installed.

Fig. 1-700 and 750 Grinder-Mixers Dimensions

## TRACTOR REQUIREMENTS

The minimum tractor requirement is 60 PTO horsepower (45 kW).

A 1000 rpm PTO driven grinder-mixer may be used with tractors rated at a maximum of 150 horsepower (112 kW) and equipped with a 1000 rpm PTO. A 540 rpm PTO driven Grinder-Mixer may be used with tractors rated at a maximum of 90 horsepower (67 kW) and equipped with a 540 rpm PTO.

**IMPORTANT: Many tractors are equipped with a PTO drive train designed to operate at 1000 rpm. For improved performance and drive train life, the grinder-mixer should be operated by the 1000 rpm PTO, whenever such a PTO speed is available on the tractor.**



**CAUTION: Never operate 540 rpm grinder-mixer with a 1000 rpm tractor PTO.**

When the grinder-mixer is equipped with a variable-speed auger feeder, and hydraulic power is supplied by a tractor equipped with an open-center type hydraulic system, the auger feeder must be equipped with the auger feeder hydraulic control parts attachment. Installation instructions are included with the attachment and operating instructions are included in the grinder-mixer operator's manual.

## SELF-CONTAINED HYDRAULIC DRIVE

This optional hydraulic system consists of a reservoir and hydraulic pump. The pump is driven by a roller chain from the grinder-mixer main drive. This eliminates the need for the tractor hydraulic system, allowing a wider range of tractors to be used with the grinder-mixer.

The hydraulic drive system is recommended when the grinder-mixer is used with tractors having open-center hydraulic systems.

## SERIAL NUMBERS

### Grinder-Mixer

The serial and model numbers are located on the left-hand side of the main frame.

### Scale Attachment

The serial number is located on the bottom of the main control box.

## STANDARD TORQUE VALUES CHART

Recommended Torque Value in Foot-Pounds (Nm [kgm])  
Coarse and Fine Threads

Bolt Diameter	Three Radial Dashes	Six Radial Dashes
1/4	10 ( 14 [1.4])	14 ( 19 [1.9])
5/16	20 ( 27 [2.8])	30 ( 41 [4.1])
3/8	35 ( 47 [4.8])	50 ( 68 [6.9])
7/16	55 ( 75 [7.6])	80 ( 108 [11])
1/2	85 (115 [12])	120 ( 163 [17])
9/16	130 (176 [18])	175 ( 237 [24])
5/8	170 (230 [23])	240 ( 325 [33])
3/4	300 (407 [41])	425 ( 576 [59])
7/8	445 (603 [61])	685 ( 928 [95])
1	670 (903 [92])	1030 (1396 [142])

## Group 15 LUBRICATION

### GENERAL INFORMATION

Carefully written and illustrated lubrication instructions are included in the operator's manual furnished with your customer's machine. Remind him to follow these instructions.

The following chart shows capacities and types of lubricants for the grinder-mixer. Check each area noted and lubricate as required.

Component	Capacity	Type of Lubricant
Powershaft and rotating shield	.....	John Deere Multi-Purpose lubricant or an equivalent SAE multipurpose-type grease
Hitch jack	.....	SAE engine oil
Drive chains	.....	John Deere TY-6240 special lubricant or engine oil
Unloading auger brake bands	.....	Same as above
Discharge door lever slide	.....	Same as above
Gear case	5 lbs.	John Deere Multi-Purpose lubricant or an equivalent SAE multipurpose-type grease
Wheel bearings	Pack	John Deere Multi-Purpose lubricant or an equivalent SAE multipurpose-type grease
Unloading auger gears	Pack	John Deere Multi-Purpose lubricant or an equivalent SAE multipurpose-type grease
Main input drive shaft and gear housings	Pack	John Deere Multi-Purpose lubricant or an equivalent SAE multipurpose-type grease.
Hydraulic oil reservoir	3 gal. (11.4 L)	John Deere TORQ-GARD SUPREME® or an equivalent SAE 10W-20 or 10W-30 oil.

### GREASES

John Deere Multi-Purpose lubricant or an equivalent SAE multipurpose-type grease is recommended for all grease fittings. Application of grease as instructed in the lubrication chart will provide proper lubrication and will prevent contamination of bearings.

### STORING LUBRICANTS

The grinder-mixer will operate efficiently only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contaminants.

## Group 20 DIAGNOSING MALFUNCTIONS

### Hammer Mill and Fan - Section 20

#### *Low Capacity - See Operator's Manual*

- Hammermill rotor not turning at recommended speed, page 10-10-1.
- Knives worn, page 20-5-8.
- Screen away from inner supports, page 20-5-14.
- Screen worn. Reverse or replace screen.
- Hammers worn, page 20-5-8.
- Grinder-mixer not level. Level the grinder-mixer.
- Dust collector air duct vent or hammermill door gate not adjusted properly, page 20-5-15.
- Main drive belts slipping, page 20-5-13.
- Tractor engine speed falls below PTO operating speed.

#### *Maintain proper PTO speed.*

- Wet material build-up inside hammermill. Clean out hammermill and allow material to dry.

#### *Material Not Being Ground to Fineness Desired*

- Screen not in proper position, page 20-5-14.
- Using too large a screen, see operator's manual.

#### *Excessive Vibration*

- Balance weight missing, page 20-5-9.
- Bearings failed, page 20-5-6.
- Hammers missing or broken, page 20-5-8.
- Powershaft bent or twisted, page 40-10-3.
- Powershaft not aligned with tractor PTO, see operator's manual.
- Tractor drawbar improperly positioned, see operator's manual.

#### *Rotor Bearing Failed*

- Main drive belts too tight, page 20-5-13.
- Poor lubrication, see operator's manual.
- Sheaves out of alignment, page 20-5-13.

#### *Rotor Shaft Sheave Floats*

- Taper key not seated, page 20-5-12.

#### *Rotor Shaft Breaks*

- Too much tractor horsepower, see operator's manual.
- Main drive belts too tight, page 20-5-13.

#### *Rotor Shaft Wear in Bearing Area*

- Locking collar not installed properly, page 20-5-10.

#### *Fan Striking Housing*

- Fan sides or scroll not installed properly, page 20-5-8.
- Fan rotor damaged, page 20-5-9.

#### *Drive Belt Wears Prematurely*

- Misalignment of drive belt, page 20-5-13.
- Incorrect belt tension, page 20-5-13.
- Taper key not set, causing sheave to float, page 20-5-12, 13.

### Hydraulic System—Section 30

#### *Hydraulic Motor and Control Valves*

- Hydraulic hoses connected incorrectly, page 30-5-2 to 30-5-15.
- Hydraulic motor chatters, pages 30-10-3, 30-15-1.
- Motor end cap distorted, page 30-10-3.

#### *Oil Leak Around Motor Shaft*

- Motor shaft worn, page 30-10-3.
- Motor shaft scored, page 30-10-3.
- Damaged seals, page 30-10-3.

#### *Oil Leak Around Motor Body*

- Bolts loose, page 30-10-3.
- Cracked housing, page 30-10-3.

#### *Oil Leak Around Control Valve Body*

- O-rings defective, page 30-10-6.
- Worn or scored pin, page 30-10-5.
- Cracked body, page 30-10-5.

#### *Tractor Hydraulic System Heats Up*

- Low on hydraulic oil, see tractor operator's manual.
- Operating tractor with an open-center hydraulic system, pages 30-5-2 to 30-5-15.

#### *Auger Will Not Turn Fast Enough*

- Tractor hydraulic system not operating at full capacity, see operator's manual.
- Orifice plate positioned incorrectly or not required, page 30-10-5.

### Drive Train and Auger—Section 40

#### **Powershaft - Group 10**

##### *Powershaft Will Not Telescope Properly*

- Tractor drawbar not adjusted, see operator's manual.
- Powershaft bent or twisted, page 40-10-3.

##### *Powershaft Vibrates Excessively*

- Powershaft bent or twisted, page 40-10-3.
- Tractor operating at an angle, see operator's manual.
- Powershaft cross bearings defective, page 40-10-3.

##### *Powershaft Won't Stay Engaged*

- Inboard bearing of large driven sheave worn or defective, page 40-15-6.

## DIAGNOSING MALFUNCTIONS—Continued

### Drive Train and Augers—Section 40— Continued

#### Main Input Drive and Slip Clutch - Group 15

##### *Housing Vibrates.*

Main input housing not parallel with rotor shaft, page 20-5-13.

##### *Noisy Gears*

Gears are misaligned with each other, page 40-20-11.

Lack of proper lubrication, see operator's manual.

Main input housing not parallel with rotor shaft, page 20-5-13.

##### *Gears Wear Prematurely*

Lack of lubrication, see operator's manual.

Incorrect gear alignment, page 40-20-11.

##### *Slip Clutch Balls Wear Prematurely.*

Slip clutch springs out of adjustment, page 40-15-8.

##### *Premature Wear in Large Drive Sheave I.D.*

Bearings rotating in sheave, page 40-15-7.

Bearing defective, page 40-15-7.

Sheave defective, page 40-15-7.

##### *Mill Drive Shaft Broken or Twisted*

Excessive load, see operator's manual.

Tractor too large, see operator's manual.

Bearings failed, page 40-15-7.

Main slip clutch springs too tight, page 40-15-8.

##### *Premature Bearing Failure*

Lack of lubrication, see operator's manual.

Misalignment of sheaves, page 20-5-13.

#### Main Gear Case and Drive - Group 20

##### *Noisy Gear Case*

Improper lubrication, see operator's manual.

Improper backlash, page 40-20-10.

Bearings defective, page 40-20-7.

##### *Gear Wear Prematurely*

Seals defective, page 40-20-7.

Lack of lubrication, see operator's manual.

Improper backlash, page 40-20-10.

##### *Bearings Fail Prematurely*

Not properly shimmed, page 40-20-10.

Seals failed, page 40-20-7.

Lack of lubrication, see operator's manual.

##### *40-Tooth Gear Wears Prematurely*

Misalignment with mating gear, page 40-15-11.

Improper adjustment, page 40-15-11.

#### Horizontal Feed Auger and Drive - Group 25

##### *Drive Chain Chatters*

Plugged auger. Clean out auger.

Bearings worn, page 40-25-2.

Chain worn, page 40-25-2.

Damaged auger, page 40-25-2.

#### Unloading Augers, Drive and Slip Clutch - Group 30

##### *Bevel Gears Wearing Prematurely*

Shimmed incorrectly, page 40-30-4, 6.

Lack of lubrication, see operator's manual.

Bearings defective, pages 40-30-4, 6.

##### *Bearings Wearing Prematurely*

Lack of lubrication, see operator's manual.

Misalignment of shafts.

Gear backlash incorrect, page 40-30-5.

##### *Cannot Engage or Disengage*

Throwout lever out of adjustment, see operator's manual.

##### *Slip Clutch Slipping Excessively*

Spring adjustment not correct, pages 40-30-3.

##### *Not Unloading Properly*

Drive chains out of adjustment, pages 40-20-11 and 40-30-6.

Slip clutch out of adjustment, pages 40-30-3.

Throwout lever out of adjustment, page 40-30-3.

Unloading auger door not opening completely, page 40-15-2.

### Miscellaneous—Section 50

#### Scale Attachment - Group 5

See page 50-5-2.

#### Feeder Auger - Group 10

##### *Will not Operate*

Slow speed auger attaching bolt missing, page 50-10-1.

Damaged auger or motor spline, page 50-10-1.

##### *Auger Stops Feeding*

Tractor hydraulic system low on oil, replenish oil.

Overloaded auger, feed material more slowly.

Corn ears wedged between auger and side stripper, page 50-10-1, 2.

## Section 20 HAMMER MILL AND FAN

### CONTENTS OF THIS SECTION

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### Group 5

### ROTOR ASSEMBLY AND FAN

#### GENERAL INFORMATION

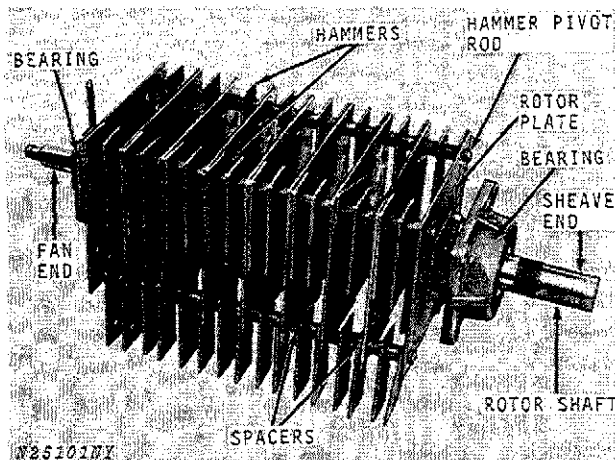


Fig. 1-Rotor Assembly

The rotor assembly includes a fan rotor and hammer mill mounted on the rotor shaft, supported by front and rear bearing assemblies. (See Fig. 1.) Power is supplied through a driven sheave located on the front of the rotor shaft. The hammer mill consists of sixty-four hammers (48 hammers and 16 knives when using the hay attachment) and hammer spacers equally spaced on four hammer pivot rods, supported by nine rotor plates which are fastened to the rotor shaft by snap rings. (Balance weights may be added to the two outside plates if required—see page 20-5-7.)

The hammers are four-way reversible, the hay knives are two-way reversible. When reversing or replacing them, always reverse or replace all four rows at the same time to maintain rotor assembly balance. Always reinstall reversed hammers or knives on each row in exactly the same row and position from which they were removed.

Rotor shaft speed is 2600 rpm for a 540 rpm PTO and 2750 rpm for a 1000 rpm PTO. These speeds must be maintained to achieve rated hammer mill capacity.

There are 14 different screens available for use in the hammer mill, with hole sizes ranging from 3/32 to 1-1/2 inches (2.38 mm to 3.81 cm) in diameter.

## REMOVAL

**NOTE:** It is not necessary to remove the rotor assembly to repair or replace the hammers, knives, bearings, fan rotor, or driven sheave.

Remove the rotor assembly only if it is out of balance or the rotor shaft or rotor plates need replacing.

The following sequence is used to remove the rotor assembly.

### Removing Screen

Remove hammermill screen (Not illustrated).

### Removing Auger Feeder

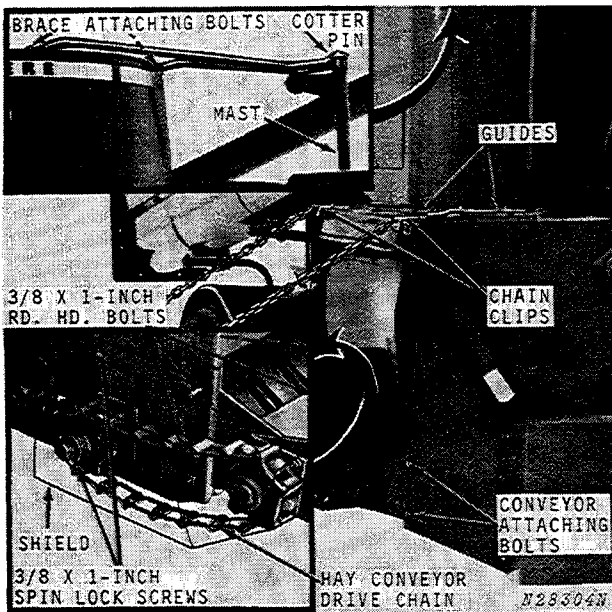


Fig. 1-Removing Hay Conveyor

If grinder-mixer is equipped with hay attachment, remove conveyor as follows:

Remove nuts from conveyor attaching bolts (Fig. 1) and remove TOP bolts only. Unhook chain from chain clips and raise outer end of conveyor to loosen drive chain; then remove chains. Remove lower bolts and set conveyor aside. Loosen brace attaching bolts and remove cotter pin through mast.

Remove three or four of the guides holding the auger feeder to the hopper cover, to allow the feeder housing to disengage from the hopper.

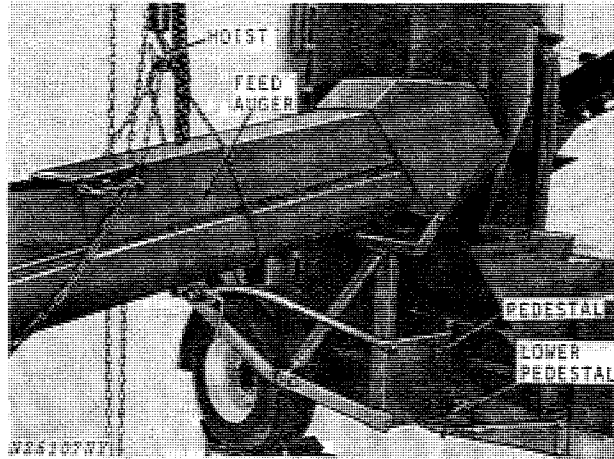


Fig. 2-Removing Auger Feeder

If grinder-mixer is equipped with an auger feeder, attach a hoist or other lifting device to the auger (Fig. 6). Remove the six bolts attaching the lower pedestal to the grinder-mixer main frame (less hay attachment) or free mast from brace (with hay attachment). Lower the auger and swing it out. This will disengage the pedestal from the hopper.

### Removing Hopper

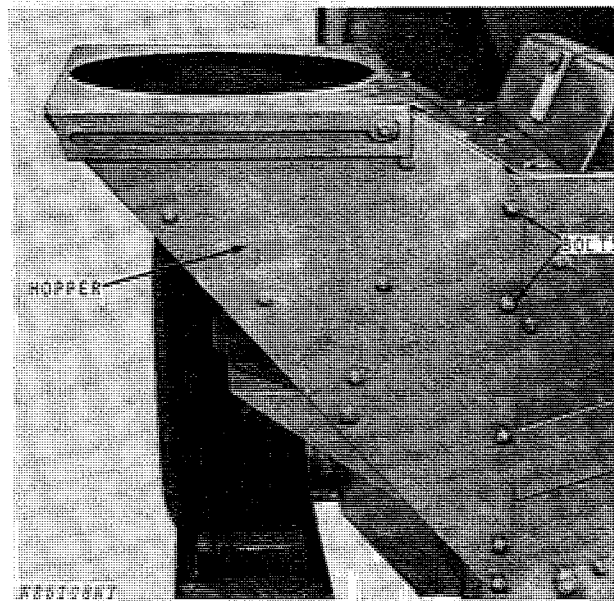


Fig. 3-Removing Hopper (Less Hay Attachment)

**IMPORTANT:** If hopper (Fig. 3) is equipped with a magnet, use a hoist or other lifting device to remove hopper.

Take out the 14 bolts attaching the hopper to the hammer mill, and remove.

### Removing Hopper—Continued

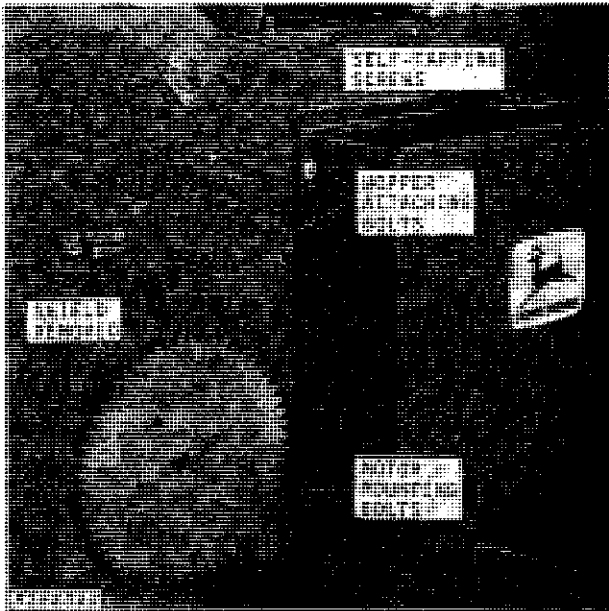


Fig. 4-Removing Hay Attachment Hopper (Front)

Remove gear drive shield from front of hopper (Fig. 4). Remove motor mounting bolts to free hydraulic motor. Remove five bolts holding front of hopper to mill housing. Loosen, but do not remove, the six self-tapping screws holding top of hopper to mill housing.

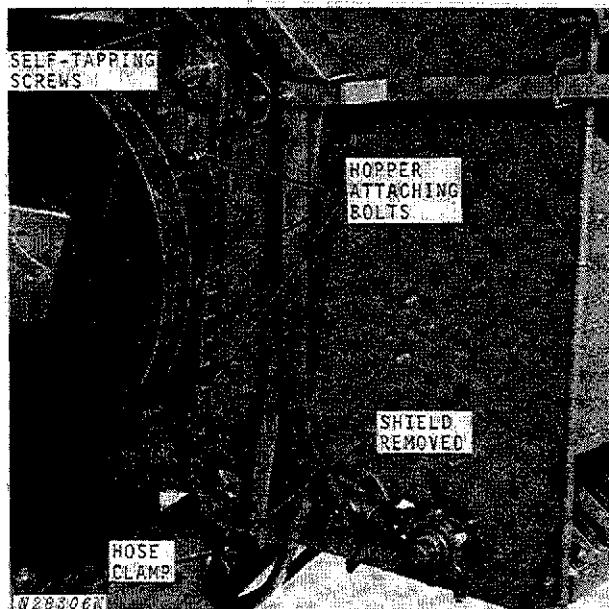


Fig. 5-Removing Hay Attachment Hopper (Rear)

Remove chain shield at rear of hopper (Fig. 5). Remove five hopper attaching bolts.

Remove the self-tapping screws and set the hopper aside.

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### Removing Fan and Inner Bearing

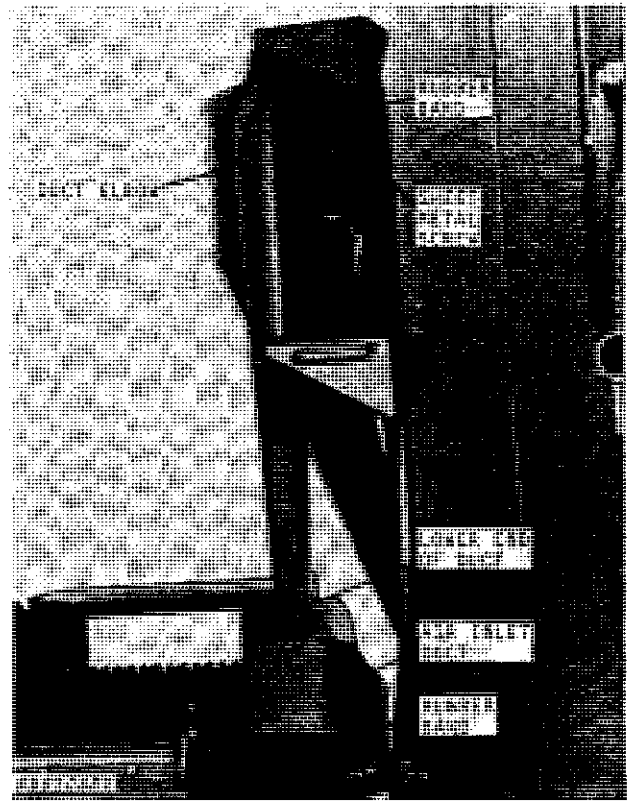


Fig. 6-Fan Duct

Roll back the rubber band from the upper end of fan elbow (Fig. 6). Remove the sheet metal screws connecting the elbow to dust collector.

Remove the bolts holding the lower end of the duct to the fan housing.

Roll back the rubber band from the air inlet duct and remove duct.

### Removing Fan and Inner Bearing— Continued

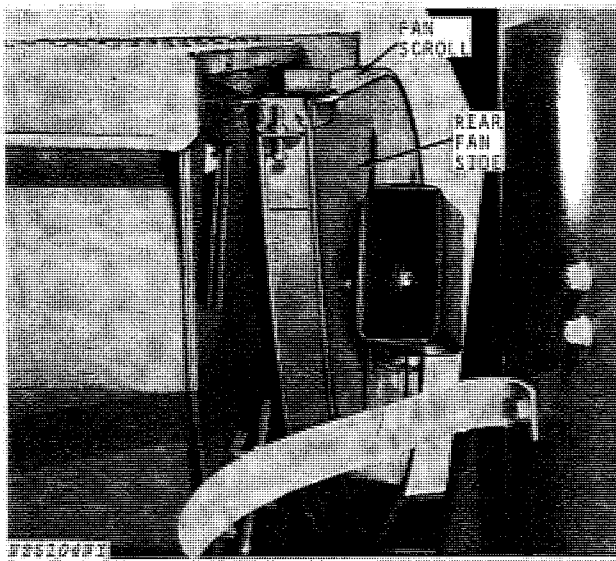


Fig. 7-Fan Scroll and Rear Side

Remove the fan scroll (Fig. 7) and rear fan side from front fan side.

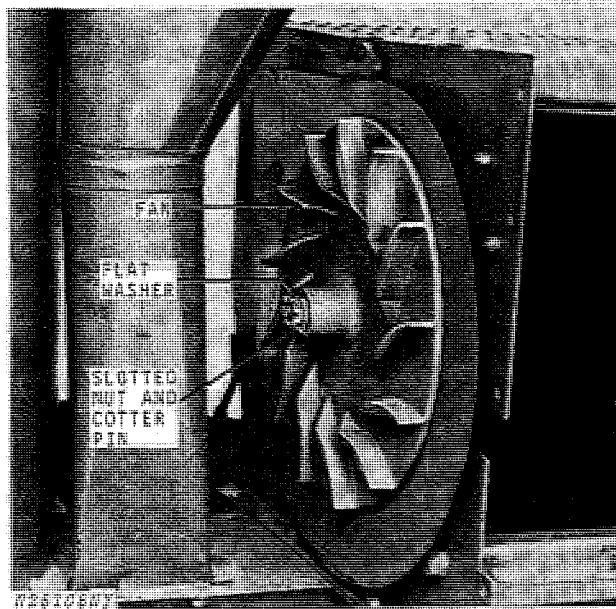


Fig. 8-Removing Fan

Remove cotter pin and slotted nut from rotor shaft and pull fan off (Fig. 8).

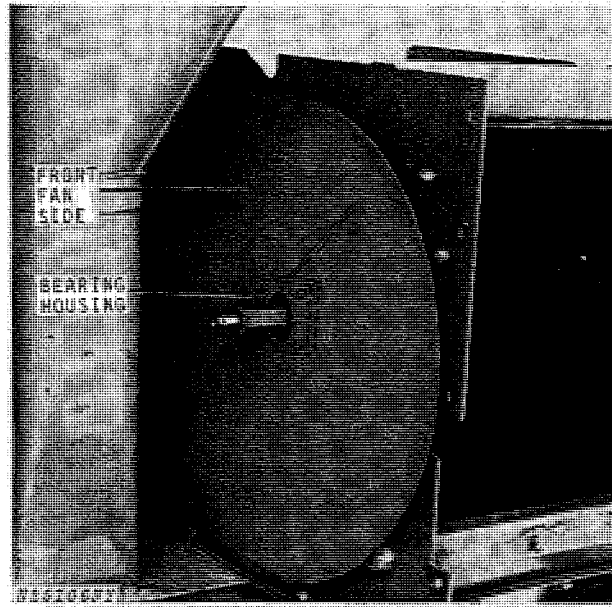
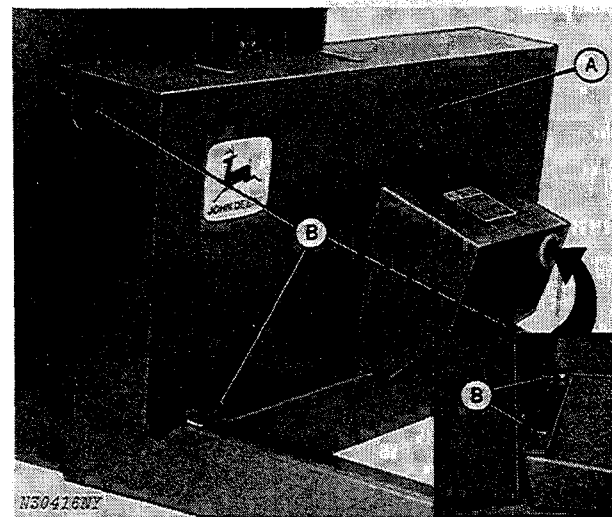


Fig. 9-Removing Inner Bearing Housing

Remove the front fan side; then remove the four bolts fastening the inner bearing (Fig. 9) to the hammer mill. Slide bearing off rotor shaft.

### Removing Driven Sheave, Drive Belts and Front Bearing



A—Shield

B—Attaching Hardware

Fig. 10-Removing Main Safety Shield

Remove the main power shaft (see page 40-10-1).

Remove attaching hardware (Fig. 10). Remove the main safety shield in one piece.

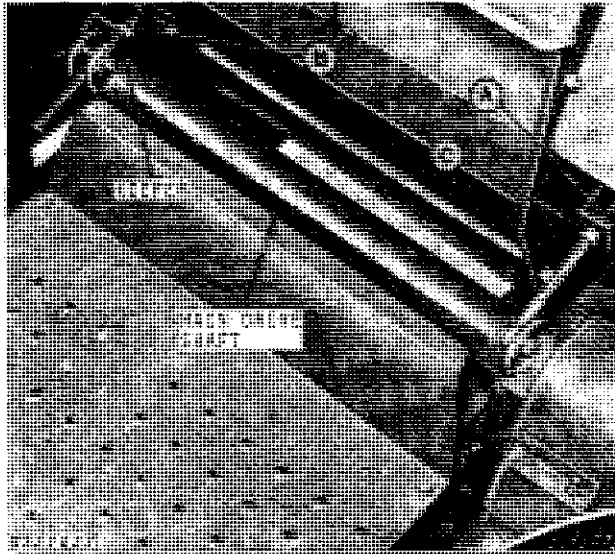


Fig. 11-Removing Main Drive Belts

Insert a screwdriver under the keeper and raise keeper off nut "B". Turn nut "B" clockwise to loosen tension on the belts. Turn nut "C" counterclockwise if more slack is needed to remove the belts.

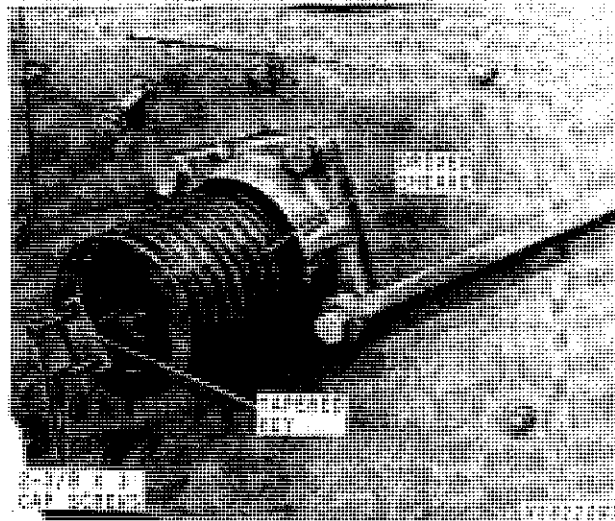


Fig. 12-Removing Driven Sheave

Install two 3/8 x 3-inch standard full-length thread cap screws in the threaded holes in tapered key. Turn cap screws evenly until tapered key is forced out of sheave (Fig. 12). Then remove sheave.

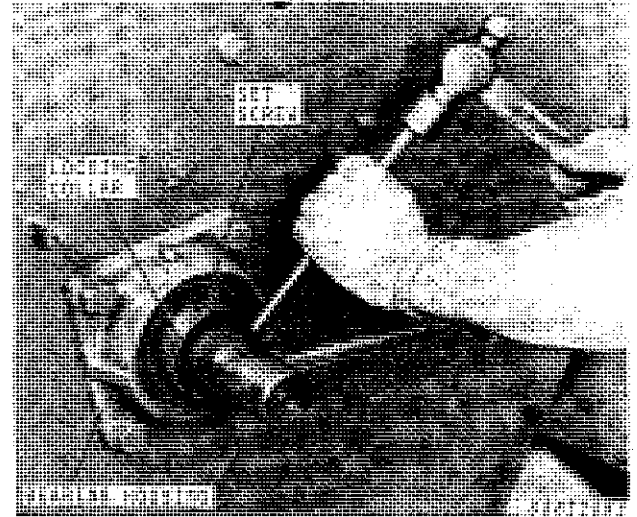


Fig. 13-Removing Front Bearing

Loosen the set screw in the locking collar (Fig. 13). Using a punch and hammer, rotate collar on bearing in opposite direction of rotation until it can be removed. Remove the four cap screws in the bearing housing and remove housing. *NOTE: If removing rotor assembly, leave bearing housing installed until hoist is in place.*

### Removing Rotor Assembly

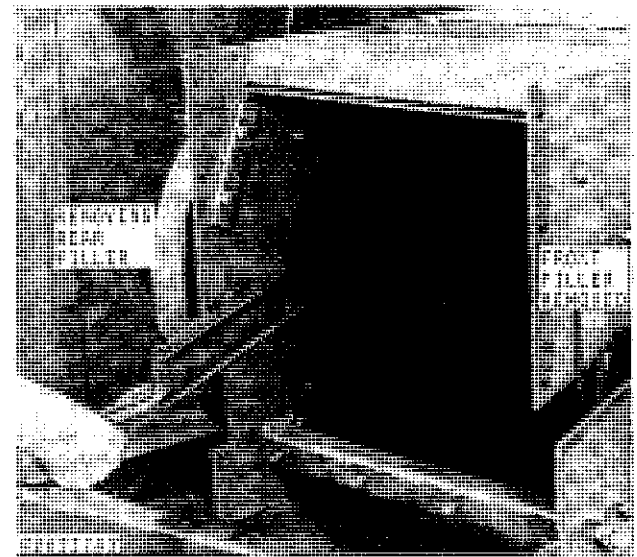


Fig. 14-Removing Filler Plates

**CAUTION:** When removing rotor assembly (Fig. 14), leave the bearing housing bolted to hammer mill until hoist is connected to rotor shaft.

Remove the front and rear filler plates from the hammer mill sides.

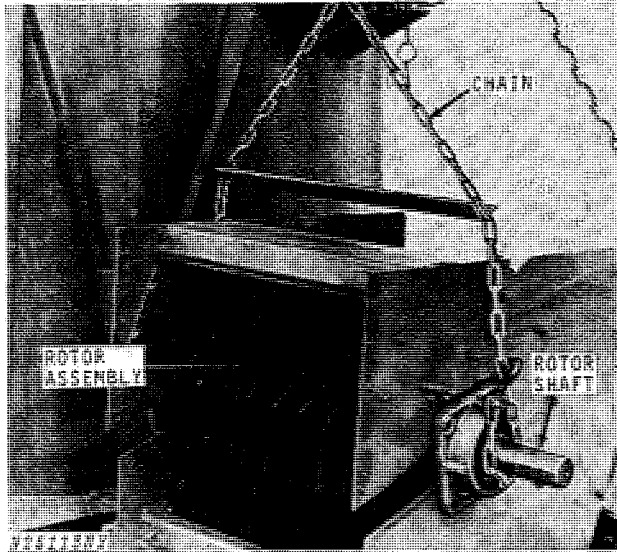


Fig. 15-Removing Rotor Assembly

Connect a hoist or other lifting device to the rotor shaft (Fig. 15). Lower and raise the lifting device to gradually work the rotor assembly out of the housing through the slots.

## INSPECTION AND REPAIR

### Front Rotor Shaft Bearing

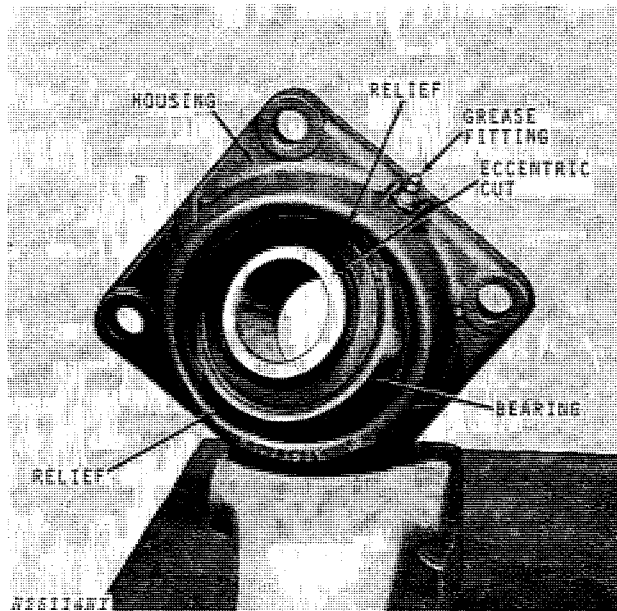


Fig. 16-Front Bearing and Housing

Inspect the bearing (Fig. 16) for excessive wear and lack of lubrication. If bearing is defective it must be replaced.

To replace the bearing, place bearing with housing in vise as shown in Fig. 16. Rotate bearing forward or rearward until bearing will slip out of relief in housing.

Install new bearing through relief and position correctly in housing. Make sure when installing this bearing that eccentric cut is facing outward.

Remove and inspect grease fitting to make sure bearing is receiving grease. Replace with new grease fitting if necessary.

### Rear Rotor Shaft Bearing

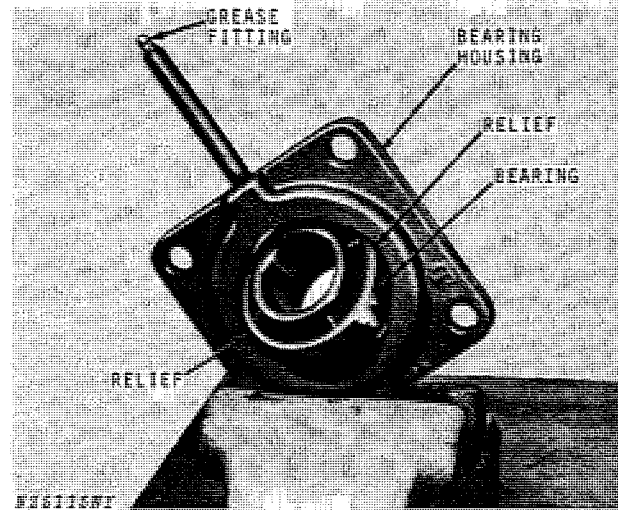


Fig. 17-Rear Bearing and Housing

Inspect the rear bearing (Fig. 17) and housing for defects. If rear bearing needs replacing, place housing in vise and rotate bearing until it can be removed through relief in housing. Inspect the grease fitting and tube to make sure bearing is receiving grease.

Install new bearing through relief and rotate in housing to correct position. The eccentric cut in bearing can be installed facing the front or rear of the housing.



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## INSPECTION AND REPAIR—Continued

### Rotor Shaft

Inspect the rotor shaft. The front bearing area on a new rotor shaft is 1.874 to 1.876 inches (47.60 to 47.65 mm). The rear bearing is 1.4365 to 1.4375 inches (36.487 to 36.513 mm).

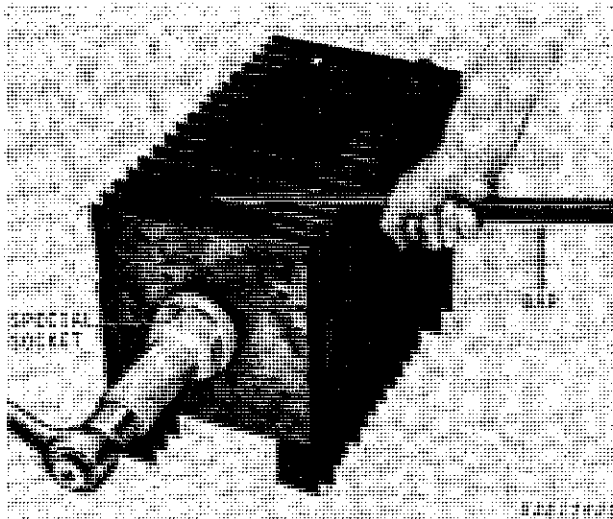


Fig. 18-Removing Rotor Shaft Nut

If the rotor shaft needs replacing, first remove the 2-1/8-inch shaft nut (Fig. 18) with a large socket. (See Figs. 45 and 46 on page 20-5-12 for making a large socket.)

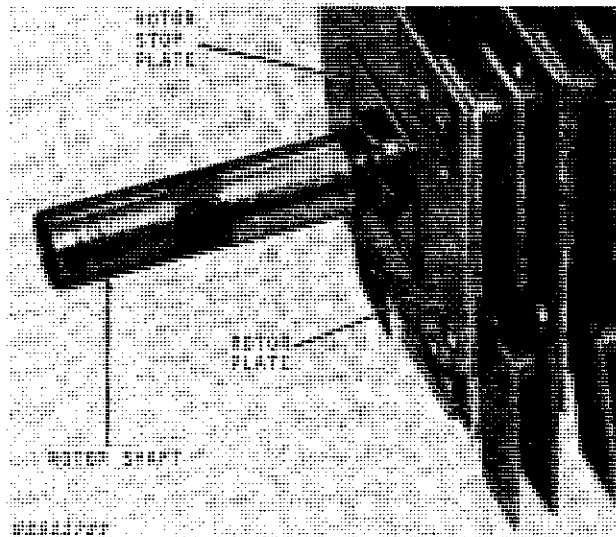


Fig. 19-Rotor Stop Plate

Remove the two bolts holding the rotor stop plate (Fig. 19) against the outside rotor plate. Rotate the stop plate 1/4 turn and slide off hex. portion of shaft.

Remove the shaft toward the front. The spacers will be removed at the same time.

Position new shaft through the front end—positioning spacers between rotor plates as the new shaft is installed.

Slide rotor shaft stop over shaft and into shaft groove. Turn stop 1/4 turn to lock shaft and install the two cap screws.

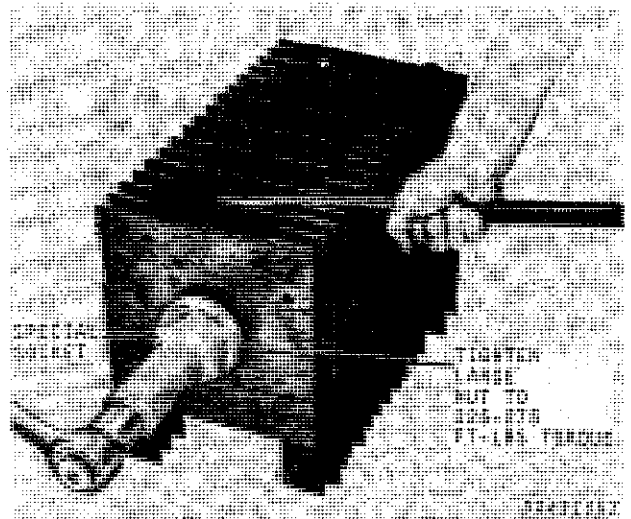


Fig. 20-Tightening Large Nut

Using the special socket, tighten the large nut (Fig. 20) on the rear end of the rotor shaft to 225 to 275 ft-lbs (305 to 373 Nm [31 to 38 kgm]) torque. When nut is tightened, stake it in place.

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