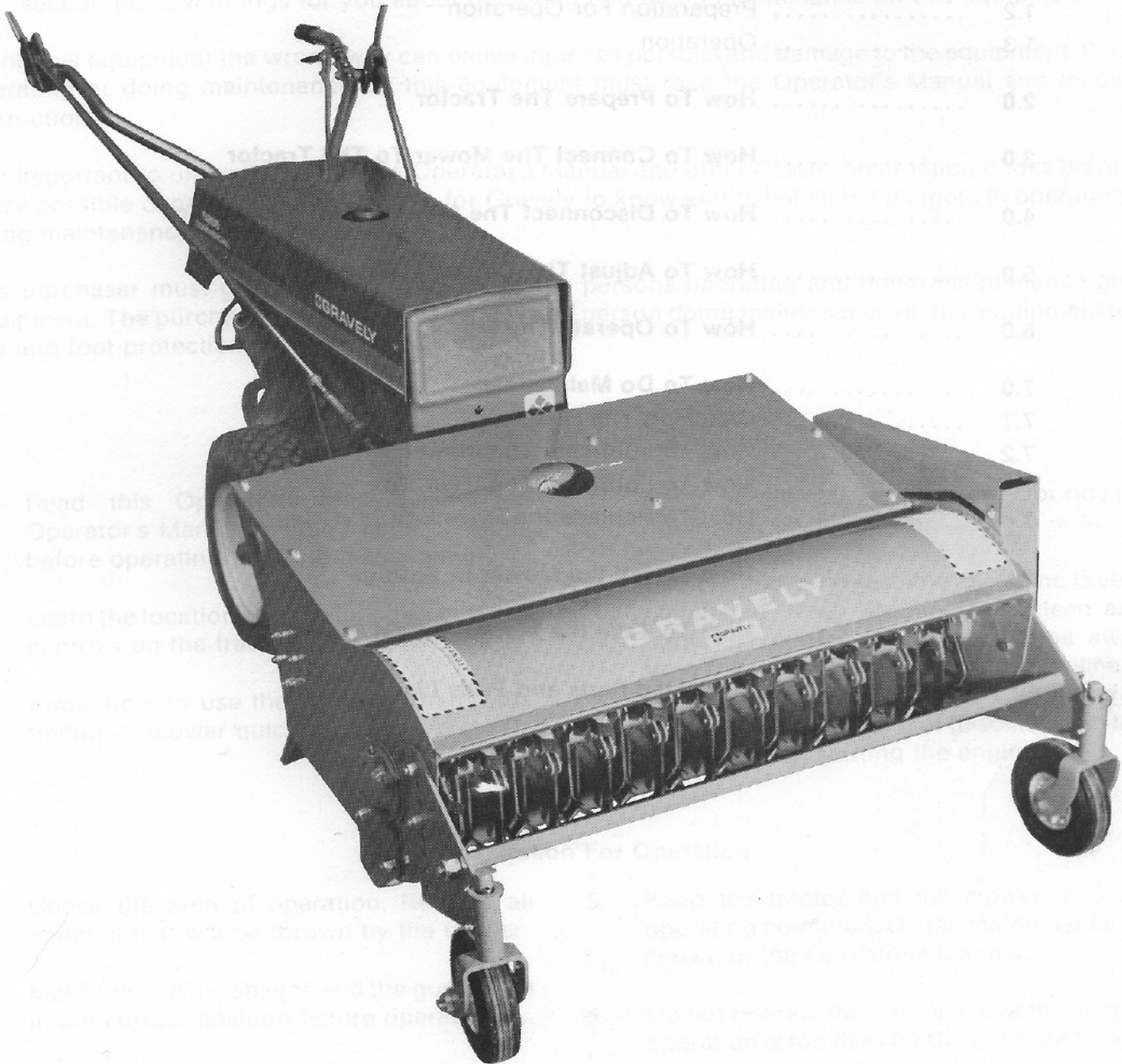


GRAVELLY OPERATOR'S MANUAL

NAME: 32 INCH FLAIL MOWER

PART NUMBER(S): 21305



The 32 Inch Flail Mower is for use with the Gravely 500 and 5000 Series tractor.

All reference to left side, right side, front, and rear are given from the operator's position at the handlebars of the tractor.

To continue its program of quality and design improvement, the manufacturer reserves the right to change specifications, designs and prices without notice and incurring obligation.

Form No. 31458 (3-80)

Printed in U.S.A.



1.3 Operation

1. Keep away from moving parts.
2. Keep all persons and animals away from the area of operation.
3. Do not let persons ride on the tractor or the mower.
4. When operating on slopes, use a slow speed and engage the direction control lever slowly.
5. When operating on a slope, go across the slope.
6. Always look for and keep away from holes and other hazards.
7. Use caution when moving in the reverse direction. Look for persons and hazards.
8. After hitting an item, stop the tractor. Stop the engine on the tractor. Check for damage. If there is damage, make repairs before starting the engines.
9. Operate the equipment only when in the operator's position.
10. Before leaving the tractor, put the PTO control in the "OFF" position. Turn the key in the ignition switch to the "OFF" position and remove the key.
11. If there is a sudden change in the sound or vibration of the tractor or the mower, stop the tractor. Stop the engine on the tractor. Check for damage. If there is damage, make repairs before operating.
12. Never start and run the engine inside a building except to move the equipment outside. Exhaust fumes are dangerous.
13. Always follow traffic laws while going on or near a road.
14. Go slow on surfaces where the tractor can slide.
15. Before leaving the operator's position to make adjustments or to do maintenance, put the PTO control lever in the "OFF" position. Turn the key in the ignition switch to the "OFF" position. Wait until the engine and moving parts have stopped.

1.3 Preparation For Operation

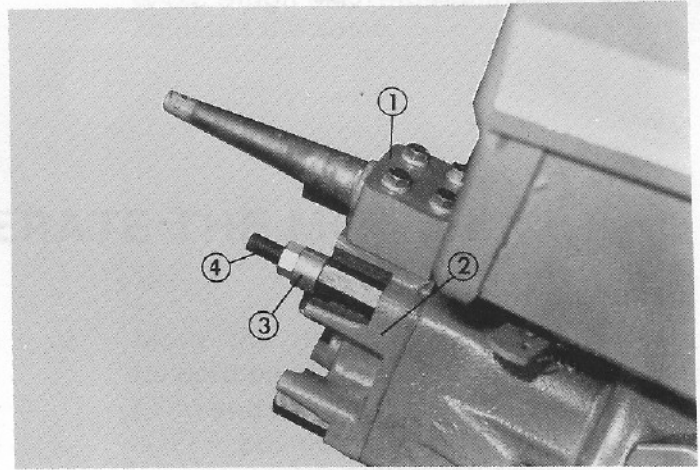
1. Check the work area. Remove all material that will be thrown by the mower.
2. Make sure all shields and guards are in the correct position before operating.
3. Wear strong shoes. Wear clothing that is not loose. Wear protection for your eyes.
4. Before starting the engine of the tractor, put the direction control lever in the "NEUTRAL" position and the "PTO" control in the "OFF" position.
5. Keep the tractor and the mower in good operating condition. Do the maintenance as shown in the Operator's Manual.
6. Do not operate the tractor when the area of operation is too dark for the operator to see.
7. Never operate the tractor or the mower when there is damage to any part or when any part is not in the correct position. Replace all the parts that are damaged or missing before operating.



2.0 HOW TO PREPARE THE TRACTOR



1. If the tractor does not have a quick hitch pin, install the quick hitch pin kit. Gravelly part No. 23220. See figure 2.0-1.
2. Put the spacer on the top attachment stud on the left side. Put the nut on the attachment stud and tighten the nut. See figure 2.0-1.



- 1 - Quick Hitch Pin
- 2 - Attachment Adapter
- 3 - Spacer
- 4 - Attachment Stud

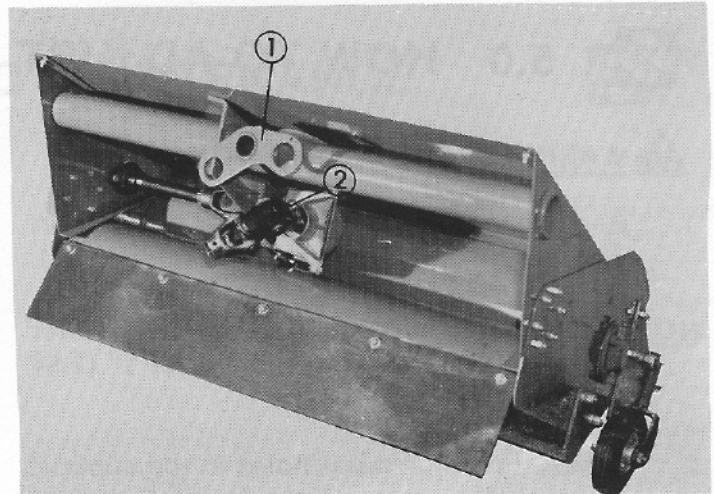
Figure 2.0-1



3.0 HOW TO CONNECT THE MOWER TO THE TRACTOR



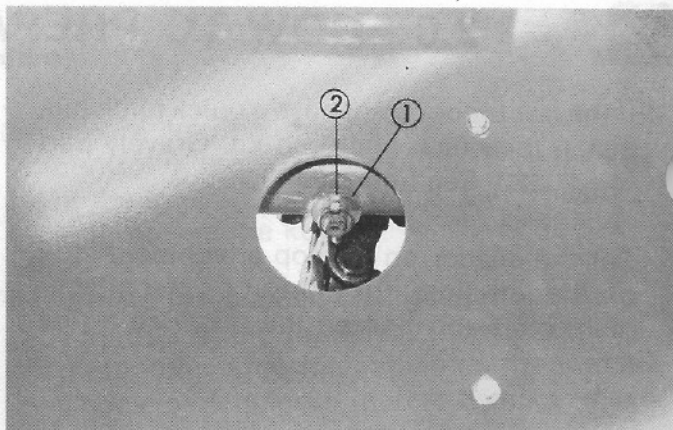
1. Put multi-purpose grease on the quick hitch pin.
2. Put the end of the quick hitch pin into the pivot support on the mower. See figure 3.0-1.
3. Put the universal joint of the mower on the drive shaft of the tractor. See figure 3.0-1.
4. Move the pivot support all the way on the quick hitch pin.



- 1 - Pivot Support
- 2 - Universal Joint

Figure 3.0-1

- Put the flat washer on the end of the quick hitch pin. Install the "klik" pin in the end of the quick hitch pin. See figure 3.0-2.



- 1 - Flat Washer
- 2 - Klik Pin

Figure 3.0-2



4.0 HOW TO DISCONNECT THE MOWER FROM THE TRACTOR



WARNING: Stop the engine before removing the mower from the tractor.

- Lower the stand on the tractor to keep the rear of the tractor from falling to the ground when the mower is disconnected.
- Remove the "klik" pin and the washer from the quick hitch pin.

- Put the direction control lever and the gear selector, on the tractor, in the "Neutral" position. Pull the tractor backwards to remove the quick hitch pin from the pivot support.
- Install the washer and the "klik" pin on the quick hitch pin.



5.0 HOW TO ADJUST THE CUTTING HEIGHT

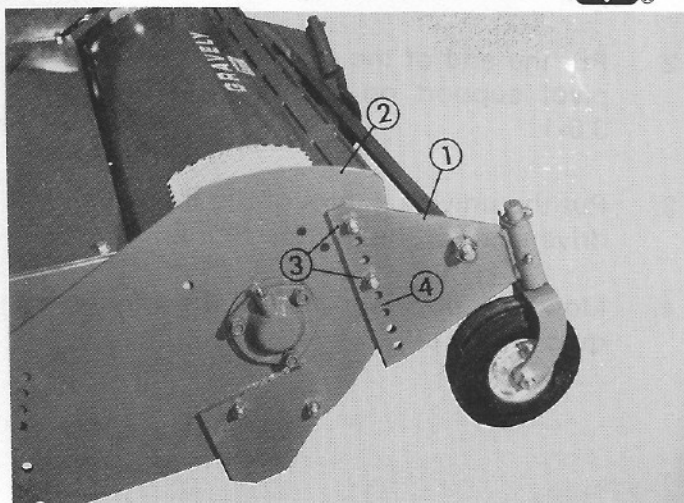


WARNING: Stop the engine.

- Remove the two bolts that fasten the support plate to the cutter housing. See figure 5.0-1.


NOTE: Each adjustment hole will raise or lower the cutting height of the mower 1" (2.54 cm).

- Select the adjustment holes in the support plate that will give the cutting height needed. Align the adjustment holes with the holes in the cutter housing. Install the bolts and the nuts. See figure 5.0-1.



- 1 - Support Plate
- 2 - Cutter Housing
- 3 - Bolts
- 4 - Adjustment Holes

Figure 5.0-1

 **WARNING:** The support plate must be fastened to the cutter housing with two bolts.


3. Repeat steps 1 and 2 for support plate on the other side. Both support plates must be adjusted the same.



6.0 HOW TO OPERATE THE MOWER



Read this Operator's Manual and the Operator's Manual for the tractor before operating.

 **WARNING:** Use a slow tractor speed the first time you use the tractor and the mower.

1. Start the engine of the tractor. Wait until the engine is running smoothly before operating.
2. Put the gear selector and the range selector in the "LOW" position.
3. Engage the PTO.
4. Move the throttle lever to the "FAST" position.

5. Move the direction control lever to the forward position. Mow a distance of ten feet (3 m) and stop the tractor. Put the PTO in the "OFF" position and turn the key in the ignition switch to the "OFF" position.

6. Check to see if the mower is cutting to the needed height. If the cutting height needs adjusting, follow the instructions given in section 5.0.


7. After you know how to operate the mower, select the speed that is best for the mowing condition.

NOTE: Always operate the tractor with the throttle lever in the "FAST" position.



7.0 HOW TO DO MAINTENANCE



 **WARNING:** Stop the engine before doing maintenance.

1. Clean all the grass, dirt and other debris from the mower.
2. Inspect all nuts, bolts and other fasteners to make sure they are tight. Replace any fasteners that are missing. Tighten the bolts to the torque shown in figure 7.0-1, unless given differently.

BOLT TORQUE SPECIFICATIONS

BOLT SIZE	FOOT POUNDS (ft. lbs.)	NEWTON METERS (N.m)
1/4"	7	9.5
5/16"	14	19
3/8"	25	34
7/16"	40	54
1/2"	60	82
9/16"	83	113
5/8"	120	163
3/4"	200	271

Figure 7.0-1

7.1 Checking The Blades

1. After every eight hours of operation, inspect the blades and replace any blades that are damaged or missing.

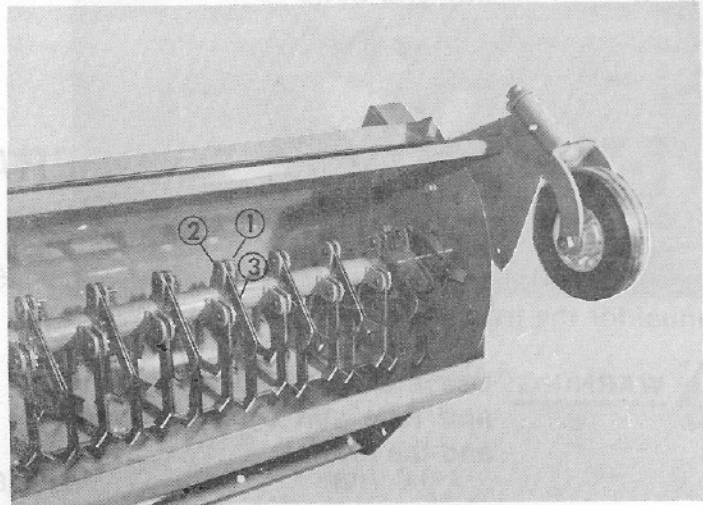
NOTE: Always use a new 1/8" x 3/4" cotter pin when installing the blades.

2. Check to see that the blades are sharp. If the blades are not sharp, follow these instructions:

- A. Remove the cotter pin from the clevis pin. See figure 7.0-2.
- B. Remove the clevis pin and the blade set.
- C. Turn the blade set 180°. Put the blade set in position and install the clevis pin. Install a new 1/8" x 3/4" cotter pin.

NOTE: When the blade sets have been used on both sides, replace the blade sets.

⚠ WARNING: Never operate the mower with blade sets missing.



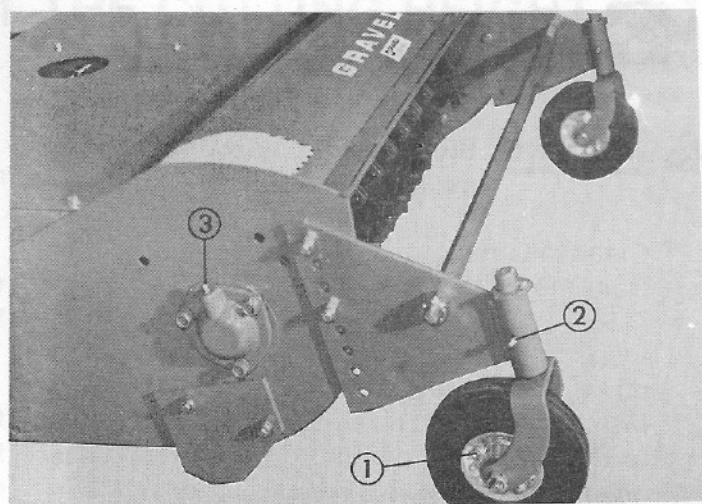
- 1 - Cotter Pin
- 2 - Clevis Pin
- 3 - Blade Set

Figure 7.0-2

7.2 How To Lubricate The Mower

After every eight hours of operation, clean the area around the grease fittings. Add multi-purpose grease to the following grease fittings:

- A. Caster Wheels - 2: See figure 7.0-3.
- B. Caster Forks - 2: See figure 7.0-3.

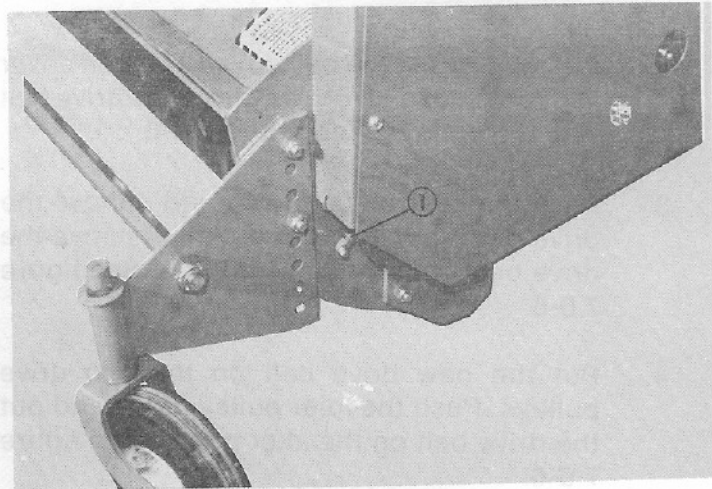


- 1 - Caster Wheel
- 2 - Caster Fork
- 3 - Cutter Shaft

Figure 7.0-3

C. Cutter Shaft - 2: See figure 7.0-4.

D. The pivot support for the quick hitch pin - 1: Not shown



1 - Cutter Shaft

Figure 7.0-4

7.3 How To Lubricate The Gear Box

After every 100 hours of operation, lubricate the gear box.

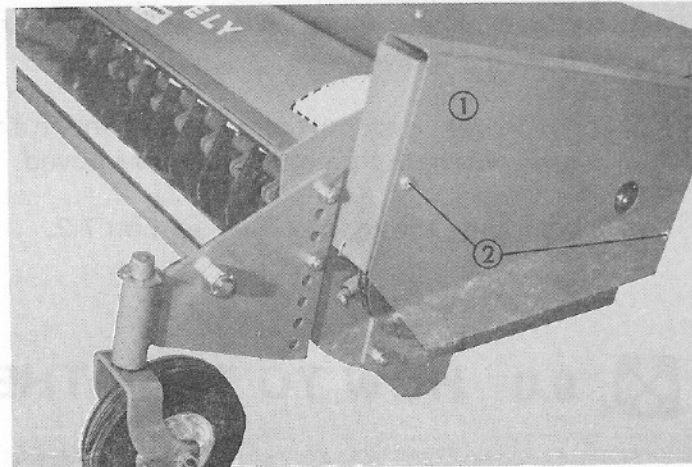
1. Remove the four bolts that fastens the gear box cover to the gear box.

NOTE: Use caution when removing the gear box cover. Do not damage the gasket. The gasket must be replaced if there is damage.

2. Remove the gear box cover. Remove the old grease from the gear box. Fill the gear box with new multi-purpose grease.
3. Install the gear box cover.

7.4 How To Replace The Drive Belt

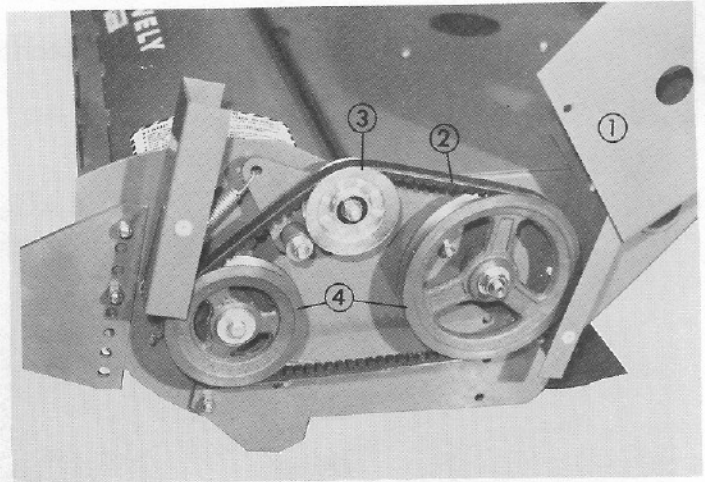
1. Remove the two screws that are on the side of the belt cover. See figure 7.0-5.



1 - Belt Cover
2 - Screws

Figure 7.0-5

2. Lift the front of the belt cover. The belt cover will rotate on a pivot away from the drive belt and the pulleys. See figure 7.0-6.
3. Push the idler pulley down and remove the drive belt from the idler pulley. Remove the drive belt from the drive pulleys. See figure 7.0-6.
4. Put the new drive belt on the two drive pulleys. Push the idler pulley down and put the drive belt on the idler pulley. See figure 7.0-6.
5. Move the belt cover into position over the drive belt and the pulleys. Install the screws that were removed in step 1. See figure 7.0-5.



- 1 - Belt Cover
- 2 - Drive Belt
- 3 - Idler Pulley
- 4 - Drive Pulleys

Figure 7.0-6



8.0 HOW TO PUT THE MOWER IN STORAGE



When the mower will not be operated for three months or more, follow the instructions in this section.

1. Disconnect the mower from the tractor.
2. Clean all the grass, dirt and other debris from the mower.
3. To prevent rust, put paint or lubricant on any area where the paint has been removed.
4. Lubricate the mower. See section 7.2.



9.0 HOW TO TAKE THE MOWER OUT OF STORAGE



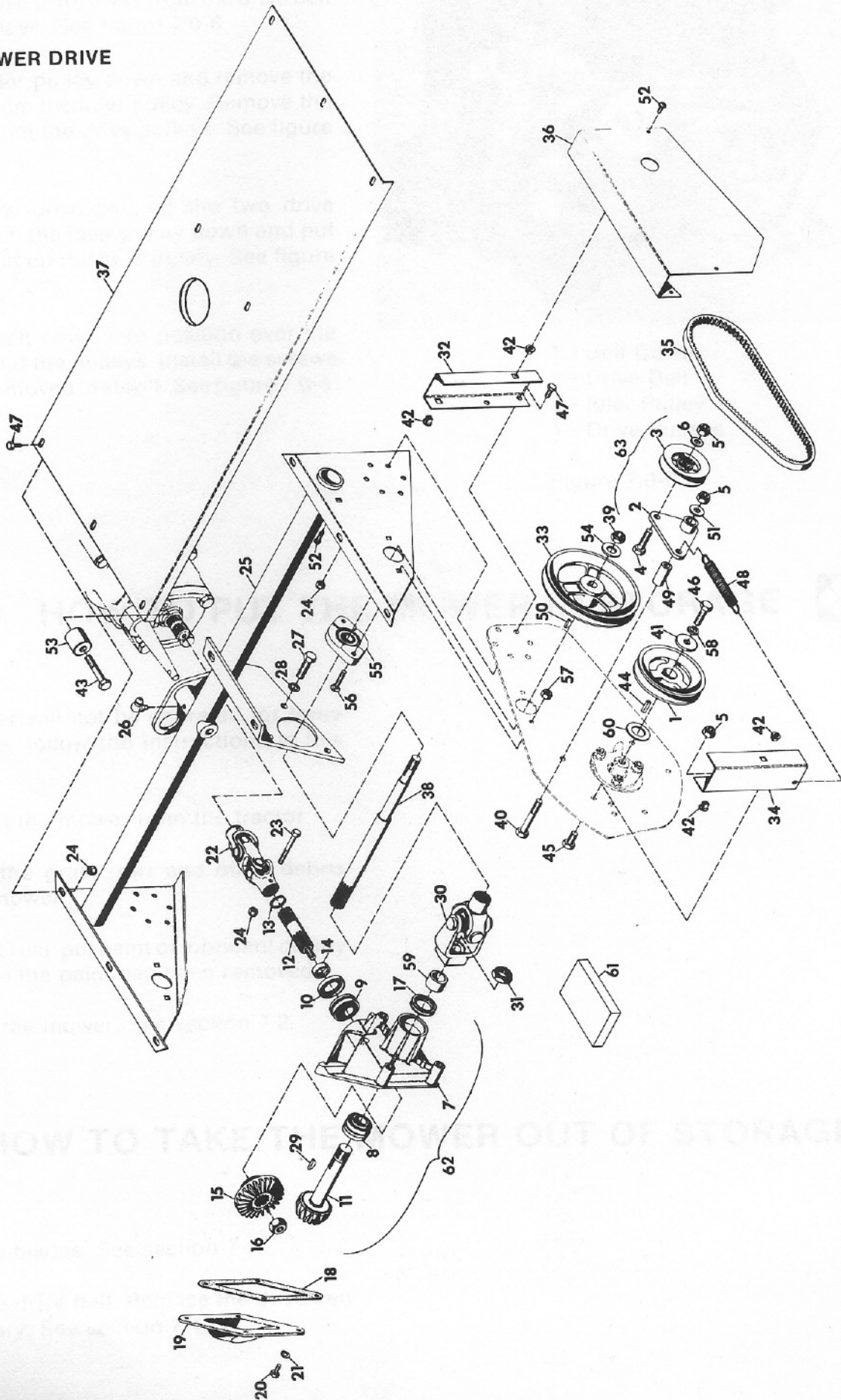
1. Check the blades. See section 7.1.
2. Check the drive belt. Replace the drive belt if necessary. See section 7.4.



10.0 ILLUSTRATED PARTS AND PARTS LIST



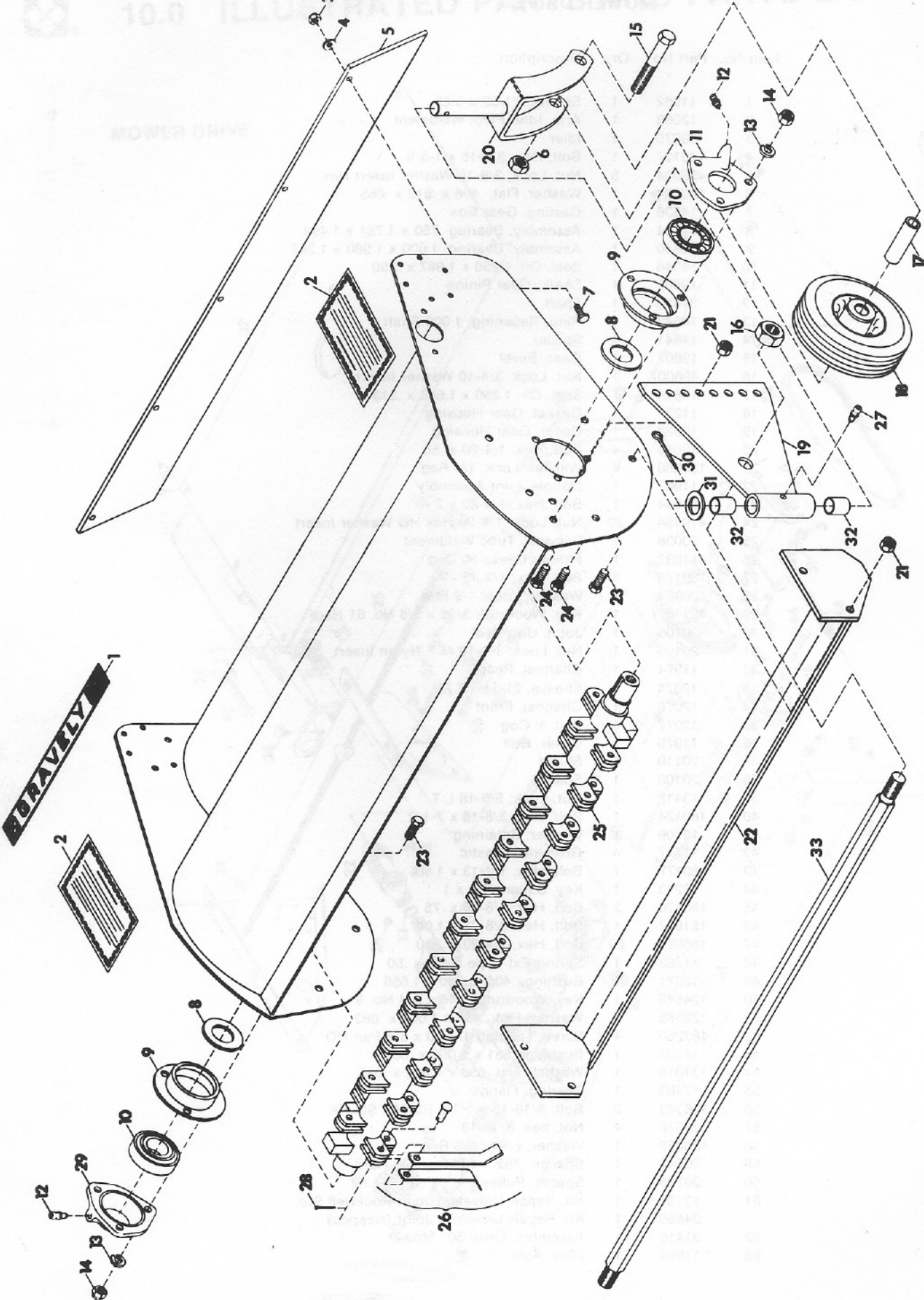
MOWER DRIVE



MOWER DRIVE

Item No.	Part No.	Qty.	Description
1	11962	1	Sheave, 21/32 x 5.25
2	12068	1	Arm, Idler Pivot Weldment
3	12070	1	Idler
4	180127	1	Bolt, Hex; 3/8-16 x 1-5/8
5	456004	5	Nut, Lock; 3/8-16 Washer Insert Hex
6	120394	1	Washer, Flat; .406 x .812 x .065
7	14636	1	Casting, Gear Box
8	14644	1	Assembly, Bearing .750 x 1.781 x 1.499
9	14640	1	Assembly, Bearing; 1.000 x 1.980 x 1.243
10	14646	1	Seal, Oil; 1.250 x 1.987 x .250
11	19608	1	Shaft,, Gear Pinion
12	31412	1	Shaft
13	14642	1	Ring, Retaining; 1.000 Shaft
14	14641	1	Spacer
15	19607	1	Gear, Bevel
16	456007	1	Nut, Lock; 3/4-10 Washer Insert
17	14645	1	Seal, Oil; 1.250 x 1.686 x .313
18	11231	1	Gasket, Gear Housing
19	10982	1	Cover, Gear Housing
20	180016	4	Bolt, Hex; 1/4-20 x .50
21	120380	4	Washer, Lock; 1/4 Reg
22	11967	1	Double Joint Assembly
23	180044	1	Bolt, Hex; 1/4-20 x 2
24	419454	20	Nut, Lock; 1/4-20 Hex HD Washer Insert
25	20098	1	Support, Tube Weldment
26	411032	1	Fitting, Gease 90 Deg
27	180173	3	Bolt, Hex; 1/2-13 x 1
28	120384	3	Washer, Lock; 1/2 Reg
29	431787	1	Key, Woodruff; 3/16 x 5/8 No. 61 Hard
30	20105	1	Joint, Universal
31	20106	1	Nut, Lock; 3/4-10 M-F Nylon Insert
32	11974	1	Channel, Rear
33	12074	1	Sheave, 21/32 x 7.25
34	12076	1	Channel, Front
35	12077	1	Belt, V Cog
36	11976	1	Cover, Belt
37	20110	1	Shield
38	20108	1	Shaft
39	13412	1	Nut, Lock; 5/8-18 L.T.
40	180134	1	Bolt, Hex; 3/8-16 x 2-1/2
41	12106	1	Washer, Retaining
42	11777	4	Grommet, Plastic
43	180177	1	Bolt, Hex; 1/2-13 x 1.50
44	9213	1	Key, Square 1/4 x 1
45	180120	2	Bolt, Hex; 3/8-16 x .75
46	181637	1	Bolt, Hex; 3/8-24 x 1.00
47	180020	20	Bolt, Hex; 1/4-20 x .750
48	11263	1	Spring Ext Type 5-1/2 x .50
49	12071	1	Bushing, .406 x .750 x 1.656
50	124549	1	Key, Woodruff/ 3/16 x 3/4 No. 9
51	120388	1	Washer, Flat; .438 x 1.000 x .083
52	167260	4	Screw Tapping 1/4-20 x 5/8 Pan HD
53	19297	1	Bushing; .531 x 1.000 x .600
54	131016	1	Washer, Flat .656 x 1.312 x .095
55	12409	1	Bearing, Flange
56	126363	2	Bolt, 5/16-18 x 1-1/8 RD HD SQ NK
57	120376	4	Nut, hex; 5/16-18
58	120382	1	Washer, Lock/ 3/8 Reg
59	20542	1	Spacer, .752 x 1.252 x .690 Hard
60	20798	1	Spacer, Pulley
61	12134	1	Kit, Repair Universal Joint Rockwell Std.
	24560	1	Kit, Repair Universal Joint (Neapco)
62	31410	1	Assembly, Drive 50" Mower
63	11964	1	Idler, Asm.

MOWER DRIVE



MOWER

Item No.	Part No.	Qty.	Description
1	19365	1	Decal, Gravely
2	18549	2	Decal, Danger
3	419454	5	Nut, Lock; 1/4-20 Hex HD, Washer Insert
4	120392	5	Washer, Flat; .281 x .625 x .065
5	11997	1	Shield, Repair Deflector
6	120238	2	Nut, Jam; 1/2-13 Hex
7	180020	5	Bolt, Hex; 1/4-20 x .750
8	12060	2	Washer, Bearing Shield
9	12062	2	Bearing, Cage
10	12063	2	Bearing, Cutter Shaft
11	12065	1	Retainer, Grease
12	12086	2	Fitting, Lube
13	120382	6	Washer, Lock; 3/8 Reg
14	120369	6	Nut, Hex; 3/8-24
15	180193	2	Bolt, Hex; 1/2-13 x 3.75
16	418692	2	Nut, Lock; 5/8-11 Washer Insert Hex
17	11387	2	Bushing; .515 x .750 x 2.594
18	11386	2	Wheel, Caster
19	19173	1	Weldment & Bushing Assembly
20	11385	2	Weldment, Caster Fork
21	456004	6	Nut, Lock; 3/8-16 Washer Insert Hex
22	11959	1	Skid, Weldment
23	181637	4	Bolt, Hex; 3/8-24 x 1.00
24	180122	8	Bolt, Hex; 3/8-16 x 1.00
25	12059	1	Shaft, Cutter
26	12091	Req	Kit, Knife Replacement, Flail Mower
27	411027	2	Fitting, Lube; 1/4-28
28	177923	44	Pin, Cotter; 1/8 x 3/4
29	12064	1	Cap, Bearing
30	137204	2	Pin, Cotter; .125 x 1.500
31	131017	2	Washer, Flat; .812 x 1.496 x .134
32	11375	4	Bearing, Bronze; .751 x .877 x .750
33	20107	1	Rod

GRAVELY LIMITED WARRANTY

This Limited Warranty is issued by Gravelly International, Inc., and consists of the following terms:

1. Only the original purchaser of new Gravelly equipment is covered by this Warranty.
2. This Warranty covers repair or replacement of parts manufactured by Gravelly which are defective in material or workmanship. Gravelly will pay for parts and labor only.
3. The Warranty starts the date of purchase and lasts for TWELVE (12) MONTHS.
4. Some components of Gravelly equipment are not covered by the Gravelly Warranty. These components are covered by the original manufacturer's warranty, which is included with the product. They are:
 - a. Engines
 - b. Tires
5. To obtain warranty service on Gravelly equipment including components not manufactured by Gravelly, use this procedure:
 - a. Notify the Gravelly dealer from whom you purchased the equipment.
 - b. If you have moved and it is not convenient to notify the selling dealer, notify the nearest Gravelly dealer. You should supply this dealer with a copy of the bill of sale as proof of the date of purchase.
 - c. Make arrangements to have the equipment delivered to the dealer (refer to paragraph 6(a) below).
 - d. If you have any questions concerning the Gravelly Limited Warranty, they should be referred to:

Gravelly International, Inc.
One Gravelly Lane
Clemmons, NC 27012

Attn: Manager of Customer Services
 - e. Warranty service on Gravelly equipment must be performed by an authorized Gravelly dealer or Gravelly factory branch.
6. This Warranty does not cover the following:
 - a. Transportation between owner's home or place of business and the dealership. If the dealer provides the transportation of the equipment, he will charge the owner his usual rate for such service.
 - b. Normal maintenance services and normal replacement of items such as spark plugs, belts, oil, oil filters, air filters, and mower, plow or cultivator blades.
 - c. Alterations or Modifications - All obligations under this warranty shall be terminated if the equipment is altered or modified in any way.
 - d. Customer Neglect or Lack of Proper Maintenance - The purchaser is responsible for making sure that the tractor is operated and serviced as directed in the operator's manual. Incorrect use or maintenance will void the warranty.
7. GRAVELLY MAKES NO OTHER EXPRESS WARRANTIES. ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE PERIOD SET OUT IN PARAGRAPH 3 ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE STATEMENT MAY NOT APPLY TO YOU.
8. GRAVELLY SHALL HAVE NO RESPONSIBILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE BREACH OF ANY WARRANTY, INCLUDING, BUT NOT LIMITED TO, INCONVENIENCE, RENTAL OR PURCHASE OF REPLACEMENT EQUIPMENT, LOSS OF PROFITS OR COMMERCIAL LOSS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.
9. This Warranty gives you specific legal rights, and you may have other rights which vary from state to state.
10. A Gravelly product registration card is supplied with each Gravelly product. Please complete the card and return it to Gravelly at the address listed on the card. The equipment registration card will be used by Gravelly for:
 - a. Recording date of purchase.
 - b. Notification of owners in compliance with the Consumer Product Safety Act, should any notification be necessary.The return of registration card is not required in order to take advantages of this Warranty.
11. This Warranty is not subject to change or modification by anyone, including Gravelly dealers and no Gravelly dealer is authorized to make any representations or promises on Gravelly's behalf.

 **GRAVELLY**