

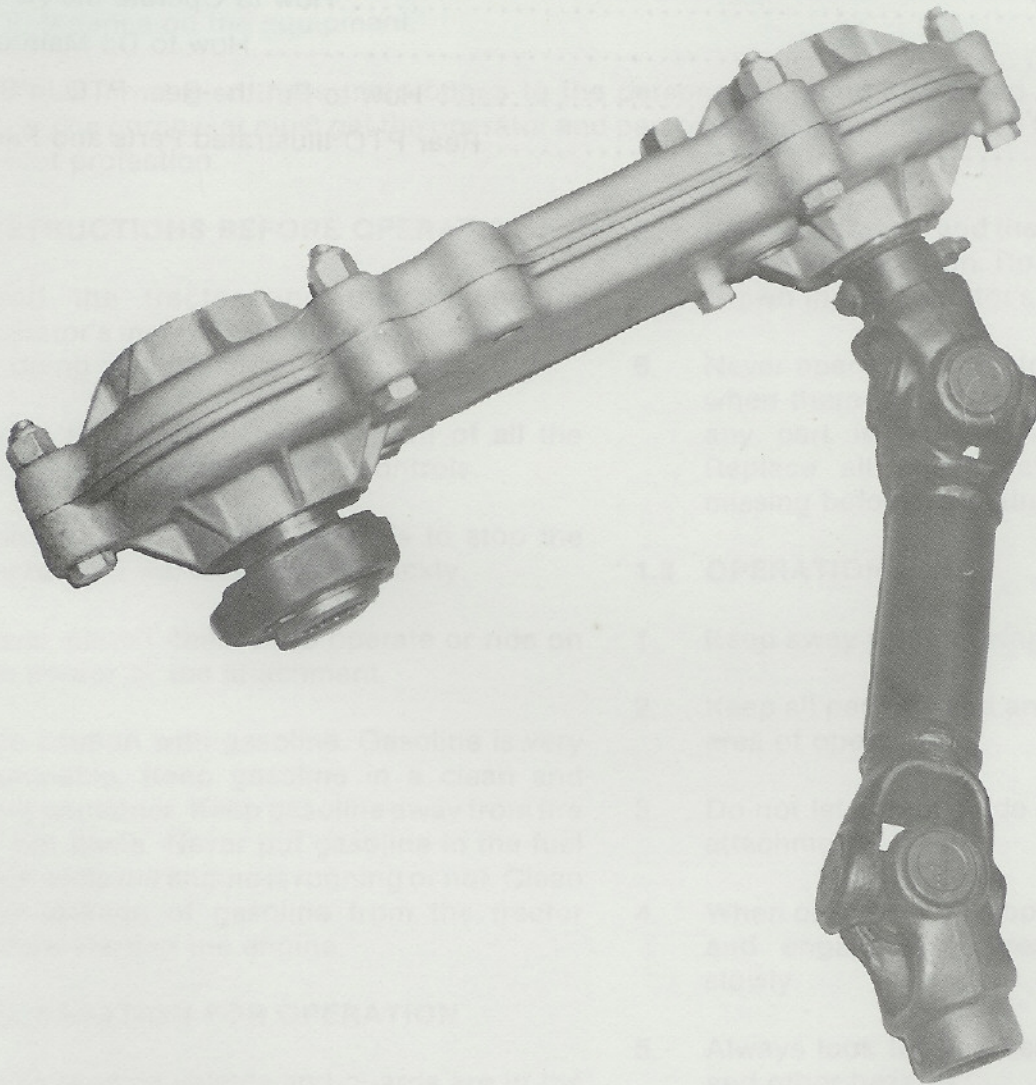
GRAVELY

CLARKE-GRAVELY CORPORATION
A Studebaker-Worthington Company

OPERATOR'S MANUAL

NAME: REAR PTO

PART NUMBER(S): 19814



The Rear PTO is used with the 8000 Series tractors to give power to a rear attachment.

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

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. 31471 (4-79)

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1.0 WARNINGS - FOR YOUR SAFETY

This section gives warnings for you about operating and doing maintenance on this equipment.

Using this equipment the wrong way can cause injury to persons and damage to the equipment. Persons operating or doing maintenance on this equipment must read this Operator's Manual and follow the instructions.

It is important to understand that this Operator's Manual and other Gravely instruction books do not list every possible danger. It is not possible for Gravely to know and tell of all the dangers in operating and doing maintenance on the equipment.

The purchaser must give these instructions to the persons operating and doing maintenance on this equipment. The purchaser must get the operator and person doing maintenance on this equipment to use eye and foot protection.

1.1 INSTRUCTIONS BEFORE OPERATION

1. Read the tractor and the attachment operator's manual carefully before operating or doing maintenance.
2. Learn the location and function of all the tractor and the attachment controls.
3. Know how to use the controls to stop the tractor and the attachment quickly.
4. Never permit children to operate or ride on the tractor or the attachment.
5. Use caution with gasoline. Gasoline is very flammable. Keep gasoline in a clean and tight container. Keep gasoline away from fire or hot items. Never put gasoline in the fuel tank while the engine is running or hot. Clean any leakage of gasoline from the tractor before starting the engine.

1.2 PREPARATION FOR OPERATION

1. Make sure all shields and guards are in the correct position before operating.
2. Wear strong shoes. Wear clothing that is not loose. Wear eye protection.
3. Before starting the engine, put the direction control lever in the "NEUTRAL" position and the PTO control lever in the "OUT" position.
4. Do not operate the tractor where the area of operation is too dark for the operator to see.

5. Keep the tractor and the attachment in good operating condition. Do the maintenance as shown in the operator's manuals.
6. Never operate the tractor or the attachment when there is damage to any part or when any part is not in the correct position. Replace all parts that are damaged or missing before operating.

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 attachment.
4. When operating on slopes, use a slow speed and engage the direction control lever slowly.
5. Always look for and keep away from holes and other hazards.
6. Use caution when moving backwards. Look for persons and hazards in the way.
7. After hitting an item, stop the tractor and the engine. Check for damage. If there is damage, make repairs before restarting.
8. Operate the equipment only when in the operator's position.

9. Before leaving the tractor, put the PTO control in the "OUT" position. Lower the attachment to the ground. Turn the ignition switch to the "OFF" position and remove the ignition key.
10. If there is a sudden change in the sound or vibration of the tractor or the attachment, stop the tractor and check for damage. If there is damage, make repairs before operating.
11. Never start and run the engine inside a building except to move the equipment outside. Exhaust fumes are dangerous.
12. Go slow on surfaces where the tractor can slide.
13. Always follow traffic laws while going on or near a road.
14. Before leaving the operator's position to make adjustments or to do maintenance, put the PTO control lever in the "OUT" position. Turn the ignition switch to the "OFF" position. Wait until the engine and moving parts have stopped.

2.0 BOLT TORQUE SPECIFICATIONS

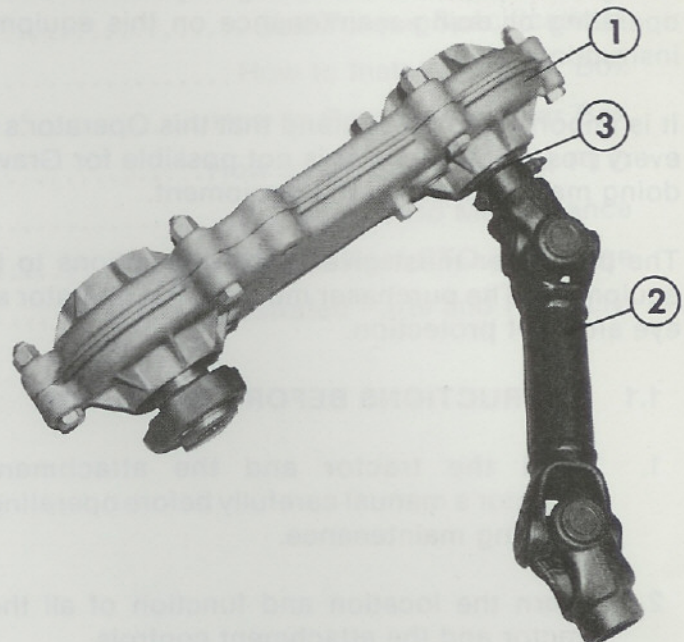
The specifications for tightening the bolts used to assemble the Rear PTO are given in the bolt torque specifications, figure 2.0-1. Tighten the bolts to the torque given, unless shown differently.

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 2.0-1

3.0 HOW TO INSTALL THE GEAR BOX

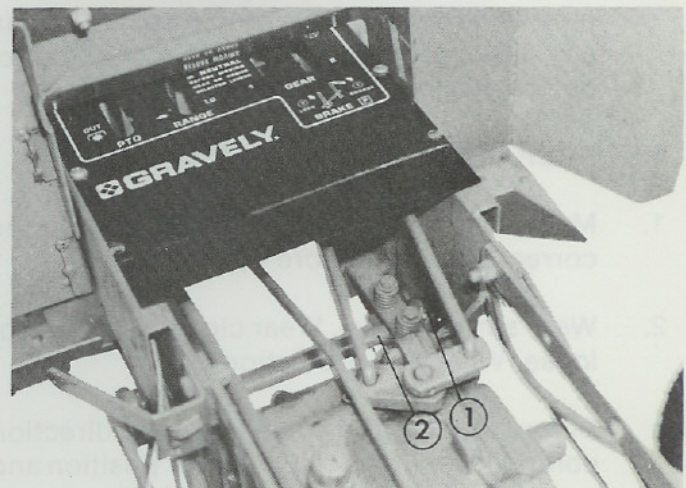
1. Put the end of the drive shaft that has the gear box shaft in the gear box. See figure 3.0-1.



- 1 - Gear Box
- 2 - Drive Shaft
- 3 - Gear Box Shaft (not shown)

Figure 3.0-1

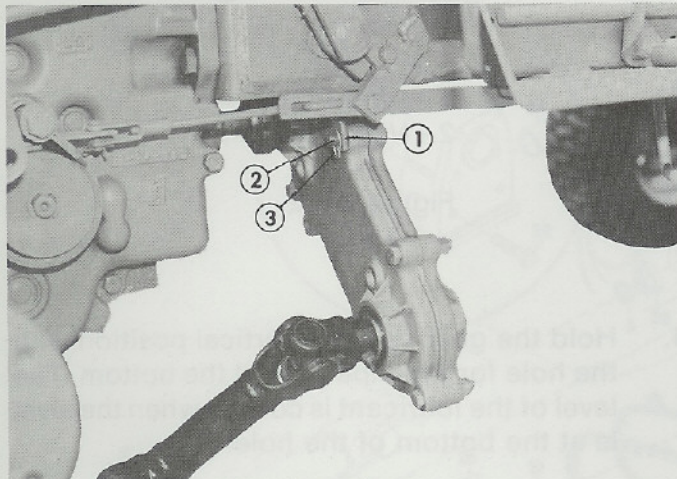
2. Put the hook of the rear PTO bracket over the cross shaft on the tractor. See figure 3.0-2.



- 1 - Rear PTO Bracket
- 2 - Cross Shaft

Figure 3.0-2

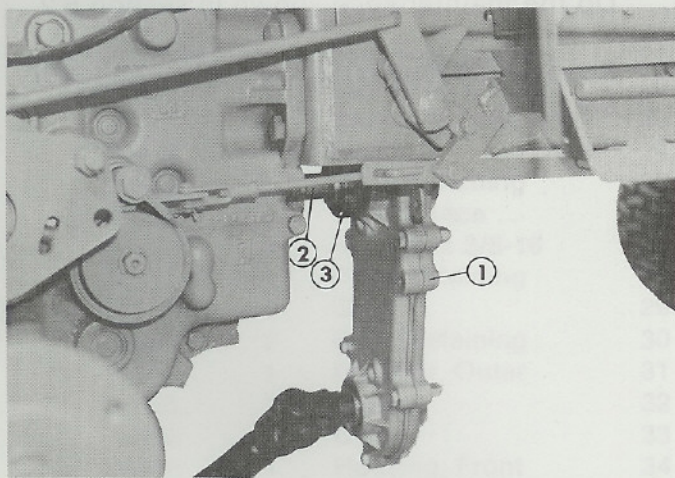
- Turn the locking collar on the gear box clockwise and hold it in position. Slide the locking collar half way on the PTO shaft of the tractor and release the locking collar. Push the locking collar on the PTO shaft until it locks in position on the shaft. See figure 3.0-3.



- 1 - Gear Box
- 2 - PTO Shaft
- 3 - Locking Collar

Figure 3.0-3

- Put the end of the drive shaft on the shaft in the axle.
- Fasten the gear box to the rear PTO bracket with the clevis pin and the hitch pin. See figure 3.0-4.



- 1 - Rear PTO Bracket
- 2 - Clevis Pin
- 3 - Hitch Pin

Figure 3.0-4

4.0 HOW TO REMOVE THE GEAR BOX

- Remove the hitch pin and the clevis pin that fastens the gear box to the rear PTO bracket. See figure 3.0-4.
- Remove the drive shaft from the shaft in the axle.
- Turn the locking collar on the gear box clockwise and remove the gear box from the PTO shaft of the tractor. See figure 3.0-3.
- Remove the rear PTO bracket from the cross shaft of the tractor. See figure 3.0-2.

5.0 HOW TO OPERATE THE REAR PTO

Read the tractor Operator's Manual and the attachment Operator's Manual. Follow the instructions as shown in the Operator's Manuals. Know how to operate the tractor and the attachment.

- Start the tractor engine and wait until the engine is running smoothly before operating.
- Move the throttle lever on the tractor to the "FAST" position.

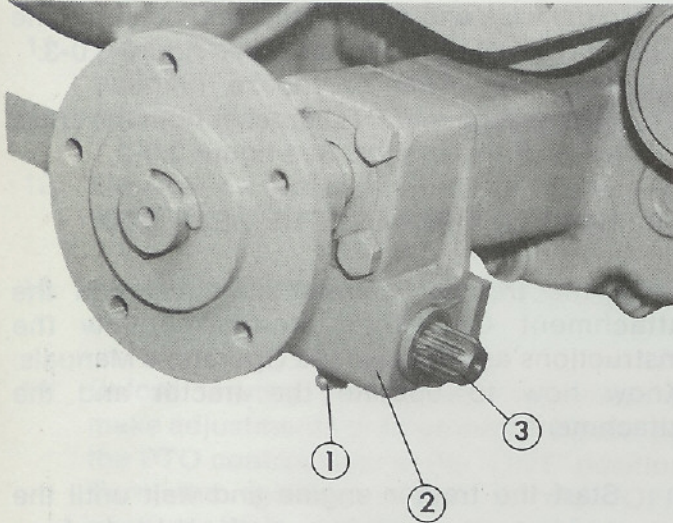
NOTE: Use a slow tractor speed until you know how to operate the attachment.

- Move the PTO control lever on the tractor to the "IN" position.
- Operate the tractor and the attachment as shown in the operator's manuals.

6.0 HOW TO DO MAINTENANCE

6.1 HOW TO LUBRICATE THE AXLE BEARING RETAINER

After every 40 hours of operation, clean the grease fitting on the axle bearing retainer. Add multi-purpose grease to the grease fitting until grease comes out around the shaft in the axle bearing retainer. See figure 6.0-1.



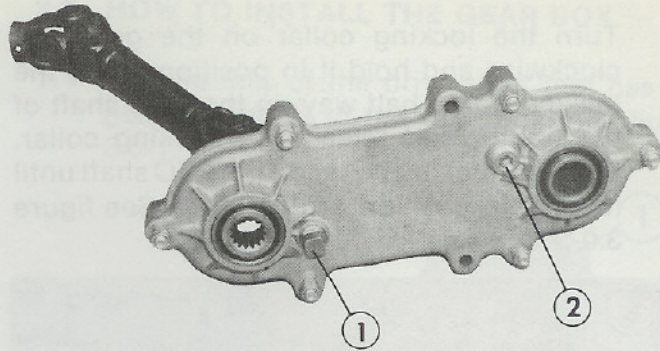
- 1 - Grease Fitting
- 2 - Axle Bearing Retainer
- 3 - Shaft

Figure 6.0-1

6.2 HOW TO LUBRICATE THE GEAR BOX

After every 200 hours of operation, check the level of the lubricant in the gear box. If there is leakage of lubricant, do maintenance at shorter time intervals.

1. Remove the gear box from the tractor as shown in section 4.0.
2. Clean all dirt and debris from the gear box.
3. Check the level of the lubricant in the gear box. Remove the pipe plug by turning the plug counterclockwise. See figure 6.0-2.



- 1 - Pipe Plug
- 2 - Vent Plug

Figure 6.0-2

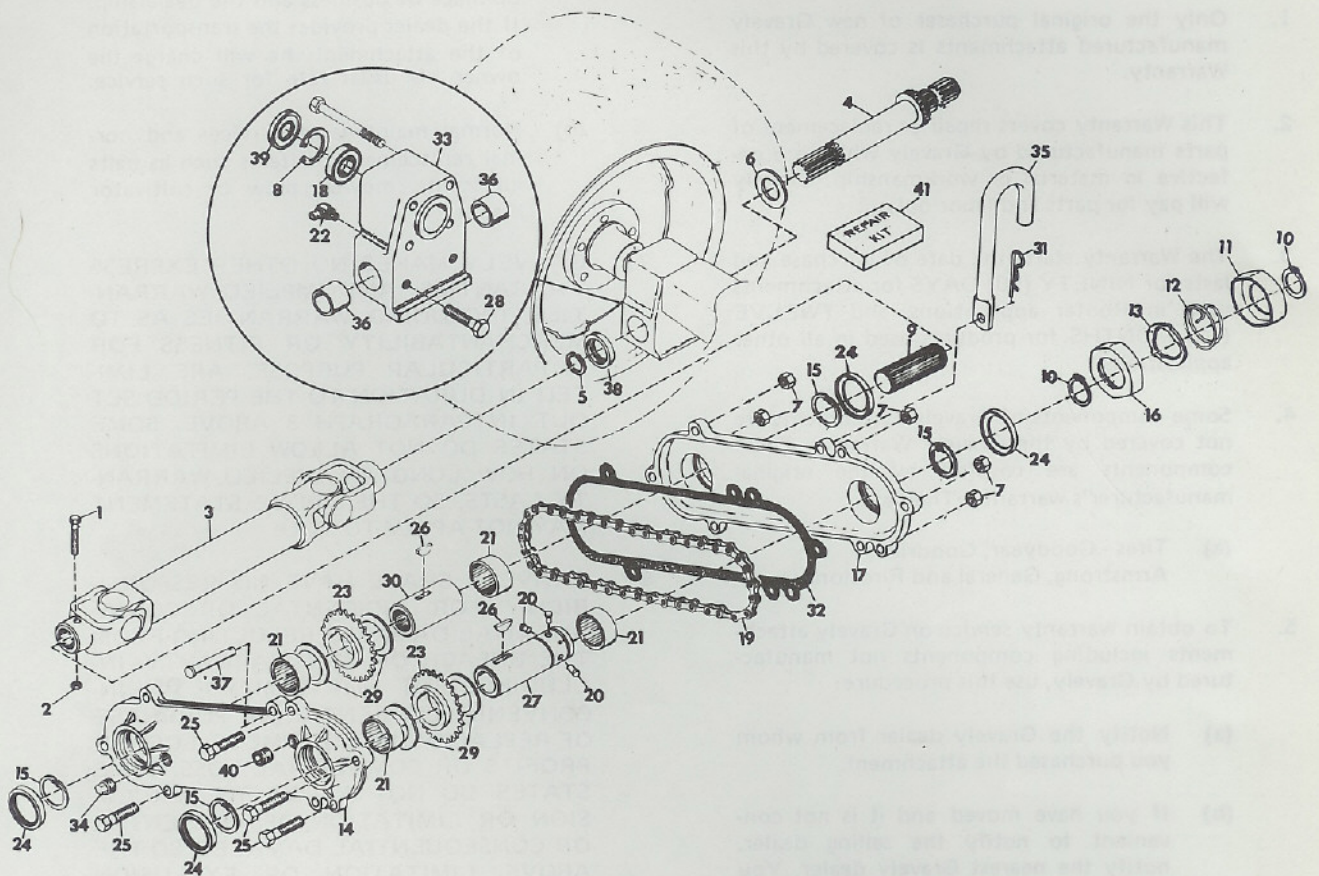
4. Hold the gear box in a vertical position with the hole for the pipe plug at the bottom. The level of the lubricant is correct when the level is at the bottom of the hole.
5. If the level of the lubricant is low, remove the vent plug. Hold the gear box in a vertical position and add SAE 10W-40 engine lubricant through the hole for the vent plug until the lubricant starts to drain from the hole for the pipe plug. Install the pipe plug and the vent plug in the correct position. See figure 6.0-2.

7.0 HOW TO PUT THE REAR PTO IN STORAGE

When the Rear PTO will not be used for three months or more, do the following:

1. Do the maintenance shown in section 6.2.
2. Keep all the Rear PTO parts together in a dry area.

8.0 REAR PTO ILLUSTRATED PARTS AND PARTS LIST



ITEM NO.	PART NO.	QTY.	DESCRIPTION
1	180044	1	Bolt, Hex 1/4-20 x 2
2	419454	1	Nut, Lock 1/4-20
3	18971	1	Universal Drive Shaft
4	18978	1	Shaft
5	14987	1	Ring, Retaining
6	17959	1	Thrust Race
7	456004	6	Nut, Lock 3/8-16
8	18812	1	Ring, Retaining
9	18972	1	Shaft
10	18962	2	Ring, Retaining
11	18967	1	Retainer, Outer
12	18965	1	Spring
13	18966	1	Cam
14	18949	1	Housing, Front
15	18960	4	Ring, Retaining
16	18963	1	Retainer, Inner
17	18948	1	Housing, Rear
18	18029	1	Bearing, Ball
19	18957	1	Chain
20	18964	3	Pin
21	18950	4	Bearing, Needle
22	411032	1	Grease Fitting
23	18953	2	Sprocket
24	18961	4	Seal, Oil
25	180130	6	Bolt, Hex 3/8-16 x 2
26	431787	2	Key, Woodruff 3/16 x 5/8
27	18952	1	Shaft
28	180173	2	Bolt, Hex 1/2-13 x 1
29	18954	4	Thrust Race
30	18956	1	Shaft
31	11860	1	Hair Pin Cotter
32	18958	1	Gasket
33	19480	1	Axle Bearing Retainer & Bushings
34	103880	1	Plug, Pipe 1/2 in.
35	20821	1	Bracket, Rear PTO
36	18977	2	Bearing
37	411602	1	Pin, Clevis 3/8 x 1.875
38	19537	1	Thrust Race
39	18031	1	Seal, Oil
40	18968	1	Plug, Vented
41	20573	1	Repair Kit for Universal Shaft



ATTACHMENT LIMITED WARRANTY

This Limited Warranty is issued by Clarke-Gravely Corporation, Gravely Division, and consists of the following terms:

1. Only the original purchaser of new Gravely manufactured attachments is covered by this Warranty.
2. This Warranty covers repair or replacement of parts manufactured by Gravely which are defective in material or workmanship. Gravely will pay for parts and labor only.
3. The Warranty starts the date of purchase and lasts for NINETY (90) DAYS for attachments used in Roofer applications, and TWELVE (12) MONTHS for products used in all other applications.
4. Some components of Gravely attachments are not covered by the Gravely Warranty. These components are covered by the original manufacturer's warranty. They are:
 - (a) Tires - Goodyear, Goodrich, Armstrong, General and Firestone
5. To obtain warranty service on Gravely attachments including components not manufactured by Gravely, use this procedure:
 - (a) Notify the Gravely dealer from whom you purchased the attachment.
 - (b) If you have moved and it is not convenient to notify the selling dealer, notify the nearest Gravely 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 attachment delivered to the dealer (refer to paragraph 6(a) below).
 - (d) If you have any questions concerning the Gravely Warranty, they should be referred to:

Gravely
Clarke-Gravely Corporation
A Studebaker-Worthington Company
One Gravely Lane
Clemmons, N. C. 27012
Attn: Manager of Customer Services
 - (e) Warranty service on Gravely attachments must be performed by an authorized Gravely dealer or Gravely 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 attachment, he will charge the owner his usual rate for such service.
 - (b) Normal maintenance services and normal replacement of items such as belts lubricants, mower, plow or cultivator blades.
7. GRAVELY 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. GRAVELY 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 Gravely registration card is supplied with each Gravely attachment. Please complete the card and return it to Gravely at the address listed on the card. The registration card will be used by Gravely 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 advantage of this Warranty.
11. This Warranty is not subject to change or modification by anyone, including Gravely dealers and no Gravely dealer is authorized to make any representations or promises on Gravely's behalf.

