OPERATOR’S MANUAL
INTRODUCTION

GLENMAC, INC., based in Jamestown, North Dakota, along with your authorized Harley dealer, are proud that you chose to purchase a Harley Power Box Rake®. Equipment under the Harley name has been built and sold worldwide for over 36 years. GLENMAC, INC. specializes in the manufacturing of construction and landscape attachments designed to make your job more efficient, cleaner, and easier regardless of the complexity of the job. The Harley Power Box Rake® brings state-of-the-art design, ruggedness, and maneuverability to jobs such as: landscaping, seedbed preparation, site development, rock raking and picking, golf course construction, ball field renovation and maintenance, liner installation, horse track screening, sod farm ground work, beach cleaning - and the job for which you purchased your Harley.

This manual will provide you, the operator, with instructions for proper safety, assembly, and operation procedures so you can benefit from the equipment’s optimum level of performance. Successful operation and long-life of your Harley Power Box Rake® depends on you. As owner and operator of your new Harley, it is your responsibility to become familiar with the proper operation and care required to operate it safely and efficiently, and to maintain the equipment in top condition.

To keep your Harley equipment at peak performance, please READ THIS MANUAL CAREFULLY several times and follow the directions as specified for each operation. Correct operation and maintenance will save you time and expense.

REMEMBER: Fill in the warranty card and mail within 10 days of your purchase date. While filling in the card with the correct information, put the date purchased and the serial number on the front cover of this manual. Should you need to call your dealer or GLENMAC, INC., this information will help them to more quickly provide accurate service for you.

Thank you for purchasing a HARLEY POWER BOX RAKE®

For more information, contact your local Harley dealer or call:

GLENMAC INC
PO Box 2135
Jamestown ND 58402-2135 U.S.A.
TEL: 1/800/437-9779
TEL: 1/701/252-9300
FAX: 1/701/252-1978

This Safety-Alert Symbol indicates a hazard and means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

DANGER Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed.

CAUTION Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.
TABLE OF CONTENTS

Introduction ................................................................. 1
Specifications .................................................................... 2
Owner Assistance ........................................................... 3
General Information .......................................................... 4
Bolt Size Chart ................................................................. 4
Bolt Torque Chart .............................................................. 5-6
Safety Rules ....................................................................... 6-9
Safety Decals ................................................................. 10-11
Operation ........................................................................ 12-16
Maintenance ..................................................................... 17-23
Trouble Shooting ............................................................. 20
Assembly, Parts Identification and Drawings .................24-35
Warranty .......................................................................... 36

SPECIFICATIONS

Raking Width ................................................................. 56 Inches
Roller Type ................................................................. Tooth Roller Standard 7" Diameter
Roller Angle ............................................................... 15 Degrees Both Directions
Gap (Tube to Barrier) ................................................... 1-1/8" - 2-1/4" Adjustable
Tires ................................................................................ 13 x 5.00
Tire Pressure ...................................................................... 20 psi
Weight .............................................................................. 550 lbs
Oil Capacity of Chain Case ........................................... Approximately 1.5 Pints
Tractor Three-Point Attachment ...................................... Cat. 1
PTO Drive ........................................................................ 540 RPM
Tractor Hydraulic System ................................................. 3 Pt Hitch and One Remote Valve
Tractor PTO HP ............................................................... 16 - 22 HP
GLENMAC, INC. and your authorized Harley dealer want you to be completely satisfied with your investment. Sometimes, however, misunderstandings can occur. To resolve any problems that may occur please follow the instructions below.

1. If you did not purchase your rake from an authorized Harley dealer, go to number (2) below.

   A. Contact the Service Manager of the dealership, explain the problem, and request assistance. If additional assistance is needed, your dealer had direct access to our home office.

   B. If your problem has not been handled to your satisfaction contact:

      CUSTOMER SERVICE  (8:00 a.m. – 5:00 p.m. Central Time)
      GLENMAC, INC.
      PO BOX 2135
      JAMESTOWN ND  58402-2135
      701/252-9300
      800/437-9779

   C. Please be prepared to provide the following information:

      • Your name, address, and telephone number
      • Machine model and SERIAL NUMBER
      • Dealership name and address
      • Machine purchase date
      • Nature of problem

Your problem will likely be resolved in the dealership using the dealer’s facilities, equipment, and personnel. Therefore, it is important that your initial contact be with the dealer.

2. If you did not purchase your equipment from an authorized dealer, call GLENMAC, INC. (see “B” above). There may be a new dealer in your area since you purchased your Harley Power Box Rake®. If there is no dealer in your area, our Customer Services Department can and will help you obtain the parts and information you may need. Please be prepared to provide the information requested under “C” above.
The purpose of this manual is to assist you in operating and maintaining your Power Box Rake®. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing, but due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to front, back, right and left directions. These are determined by sitting in the operator’s seat of the tractor.

**NOTE:** Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and Metric Bolts.

<table>
<thead>
<tr>
<th>SAE Bolt Thread Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metric Bolt Thread Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MM</td>
</tr>
</tbody>
</table>

**GENERAL INFORMATION**

**BOLT SIZE CHART**
After every ten (10) hours of operation, check all hardware and tighten where required.

**SAE Series Torque Chart**

DO NOT use these values if a different torque value or tightening procedure is listed for a specific application. Torque values listed are for general use only.

Fasteners should be replaced with the same grade.

Make sure fastener threads are clean and you properly start thread engagement. This will prevent them from failing when tightening.

<table>
<thead>
<tr>
<th>Bolt Diameter &quot;A&quot;</th>
<th>Wrench Size</th>
<th>MARKING ON HEAD</th>
<th>SAE 2 Lbs.-Ft</th>
<th>SAE 2 (N-m)</th>
<th>SAE 5 Lbs.-Ft</th>
<th>SAE 5 (N-m)</th>
<th>SAE 8 Lbs.-Ft</th>
<th>SAE 8 (N-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>7/16</td>
<td>SAE Grade 2</td>
<td>6</td>
<td>(8)</td>
<td>11</td>
<td>(15)</td>
<td>14</td>
<td>(19)</td>
</tr>
<tr>
<td>5/16</td>
<td>1/2</td>
<td>SAE Grade 2</td>
<td>13</td>
<td>(18)</td>
<td>21</td>
<td>(28)</td>
<td>25</td>
<td>(34)</td>
</tr>
<tr>
<td>3/8</td>
<td>9/16</td>
<td>SAE Grade 5</td>
<td>23</td>
<td>(31)</td>
<td>38</td>
<td>(52)</td>
<td>55</td>
<td>(75)</td>
</tr>
<tr>
<td>7/16</td>
<td>5/8</td>
<td>SAE Grade 5</td>
<td>37</td>
<td>(50)</td>
<td>55</td>
<td>(75)</td>
<td>80</td>
<td>(110)</td>
</tr>
<tr>
<td>1/2</td>
<td>3/4</td>
<td>SAE Grade 8</td>
<td>57</td>
<td>(77)</td>
<td>85</td>
<td>(115)</td>
<td>120</td>
<td>(165)</td>
</tr>
<tr>
<td>9/16</td>
<td>13/16</td>
<td>SAE Grade 8</td>
<td>82</td>
<td>(111)</td>
<td>125</td>
<td>(170)</td>
<td>180</td>
<td>(245)</td>
</tr>
<tr>
<td>5/8</td>
<td>15/16</td>
<td>SAE Grade 8</td>
<td>111</td>
<td>(150)</td>
<td>175</td>
<td>(240)</td>
<td>230</td>
<td>(310)</td>
</tr>
<tr>
<td>3/4</td>
<td>11/8</td>
<td>SAE Grade 8</td>
<td>200</td>
<td>(270)</td>
<td>300</td>
<td>(410)</td>
<td>440</td>
<td>(600)</td>
</tr>
<tr>
<td>7/8</td>
<td>15/16</td>
<td>SAE Grade 8</td>
<td>280</td>
<td>(380)</td>
<td>450</td>
<td>(610)</td>
<td>720</td>
<td>(975)</td>
</tr>
<tr>
<td>1&quot;</td>
<td>1 1/2</td>
<td>SAE Grade 8</td>
<td>350</td>
<td>(475)</td>
<td>680</td>
<td>(925)</td>
<td>1035</td>
<td>(1400)</td>
</tr>
<tr>
<td>1 1/8</td>
<td>1 11/16</td>
<td>SAE Grade 8</td>
<td>450</td>
<td>(610)</td>
<td>885</td>
<td>(1200)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 1/4</td>
<td>1 7/8</td>
<td>SAE Grade 8</td>
<td>600</td>
<td>(815)</td>
<td>1255</td>
<td>(1700)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 3/8</td>
<td>2 1/16</td>
<td>SAE Grade 8</td>
<td>675</td>
<td>(915)</td>
<td>1620</td>
<td>(2200)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 1/2</td>
<td>2 1/4</td>
<td>SAE Grade 8</td>
<td>920</td>
<td>(1250)</td>
<td>2200</td>
<td>(2900)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BOLT TORQUE CHART**

PN-P970605 (07/2001) 5
Metric Series Torque Chart

Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.

DO NOT use these values if a different torque value or tightening procedure is listed for a specific application. Torque values listed are for general use only.

Fasteneners should be replaced with the same grade.

Make sure fastener threads are clean and you properly start thread engagement. This will prevent them from failing when tightening.

<table>
<thead>
<tr>
<th>Bolt Diameter &quot;A&quot;</th>
<th>Wrench Size</th>
<th>MARKING ON HEAD</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8.8</td>
<td>10.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N·m (Lbs·ft)</td>
<td>N·m (Lbs·ft)</td>
<td></td>
</tr>
<tr>
<td>5 mm</td>
<td>8 mm</td>
<td>6 (4.5)</td>
<td>9 (6.5)</td>
<td></td>
</tr>
<tr>
<td>6 mm</td>
<td>10 mm</td>
<td>10 (7.5)</td>
<td>15 (11)</td>
<td></td>
</tr>
<tr>
<td>8 mm</td>
<td>13 mm</td>
<td>25 (18)</td>
<td>35 (26)</td>
<td></td>
</tr>
<tr>
<td>10 mm</td>
<td>16 mm</td>
<td>50 (37)</td>
<td>75 (55)</td>
<td></td>
</tr>
<tr>
<td>12 mm</td>
<td>18 mm</td>
<td>85 (63)</td>
<td>130 (97)</td>
<td></td>
</tr>
<tr>
<td>14 mm</td>
<td>21 mm</td>
<td>110 (80)</td>
<td>150 (110)</td>
<td></td>
</tr>
<tr>
<td>16 mm</td>
<td>24 mm</td>
<td>215 (159)</td>
<td>315 (232)</td>
<td></td>
</tr>
<tr>
<td>20 mm</td>
<td>30 mm</td>
<td>435 (321)</td>
<td>620 (457)</td>
<td></td>
</tr>
<tr>
<td>24 mm</td>
<td>36 mm</td>
<td>750 (553)</td>
<td>1070 (789)</td>
<td></td>
</tr>
<tr>
<td>30 mm</td>
<td>46 mm</td>
<td>1495 (1103)</td>
<td>2130 (1571)</td>
<td></td>
</tr>
</tbody>
</table>

After every ten (10) hours of operation, check all hardware and tighten where required.

SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said, “The best safety device is an informed, careful operator.” We ask you to be that kind of an operator.

The designed and tested safety of this equipment depends on it being operated within the limitations as explained in this manual.

TRAINING

• Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from dealer or, in the United States and Canada, call 1-800-437-9779.) Failure to follow instructions or safety rules can result in serious injury or death.

• If you do not understand any part of this manual and need assistance, see your dealer.

• Know your controls and how to stop engine and attachment quickly in an emergency.

• Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.
SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

- Keep hands and body away from pressurized lines. Use paper or cardboard, not body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

- Make sure that all operating and service personnel know that in the event hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury, or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.

- Do not allow children or untrained persons to operate equipment.

PREPARATION

- Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. Before operating or allowing anyone to approach the equipment, purge any air in the system by operating all hydraulic functions several times after connecting equipment, connecting hoses, or doing any hydraulic maintenance.

- Check that all hardware is tight and properly installed. Always tighten to torque chart specifications.

- Before starting tractor, check all equipment driveline guards for damage and make sure they rotate freely on all drivelines. Replace any damaged guards. If guards do not rotate freely on drivelines, repair and replace bearings before operating.

- Make sure driveline is correct length to prevent bottoming out or pulling apart during the full lift range of the hitch.

- Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO splined groove.

- Protective hose sleeves must cover all hoses and be secured onto metal hose fittings. Replace if damaged or if protective sleeve is not properly positioned or secured.

- After connecting hoses, check that all control lever positions function as instructed in the Operator’s Manual. Do not operate until control lever and equipment movements are correct.

- Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

- Ensure implement is properly attached, adjusted, and in good operating condition.

- Power unit must be equipped with ROPS or ROPS CAB and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.

- Remove accumulated debris from this equipment, tractor, and engine to avoid fire hazard.

- A minimum 20% of tractor and equipment weight must be on tractor front wheels with attachments in “transport” position. Without this weight, tractor could tip over causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires, or front tractor weights. When attaining the minimum 20% weight on the front wheels, you must not exceed the Roll Over Protection Structure (ROPS) weight certification. Weigh the tractor and equipment. Do not estimate.

- Ensure all safety decals are installed. Replace if damaged. (See “Safety Decals” section for location.)

- Ensure shields and guards are properly installed and in good condition. Replace if damaged.
OPERATIONAL SAFETY

- Consult local utilities before digging. Know location and depth of, and avoid contacting, all underground cables, pipelines, and other hazards in working area.
- Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.
- Only engage power when equipment is at ground operating level. Always disengage power when equipment is raised off the ground.
- Do not disconnect hydraulic lines until all system pressure is relieved. Lower unit to ground, stop engine, and operate all hydraulic control levers.
- Keep bystanders away from equipment while it is in operation.
- Never go underneath equipment lowered to the ground or raised. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
- Service work does not require going underneath equipment.
- Read operator’s manual for service instructions or have done by a qualified dealer.
- Never direct discharge toward people, animals, or property.
- Do not operate equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.
- No riders are allowed on equipment.

- Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting tractor engine.
- Operate tractor PTO at RPM speed stated in “Specifications” section.
- Do not operate tractor PTO during transport.
- Stop tractor and implement immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.
- Before dismounting tractor or performing any service or maintenance, disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, stop engine, set parking brake, remove key, and unfasten seat belt.
- Lower implement to ground or block securely, turn tractor engine off, remove key, and disconnect driveline from tractor PTO before performing any service or maintenance.
- Never go underneath equipment lowered to the ground or raised. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Service work does not require going underneath.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Use extreme care when working close to fences, ditches, other obstructions, or on hillsides.
- Do not operate on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
MAINTENANCE SAFETY

• Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.

• Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes, and protective equipment for eyes, hair, hand, hearing, and head.

• Before dismounting tractor or performing any service or maintenance, disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, stop engine, set parking brake, remove key, and unfasten seat belt.

• Lower implement to ground or block securely, turn tractor engine off, remove key, and disconnect driveline from tractor PTO before performing any service or maintenance.

• Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.

• Do not modify or alter, or permit anyone else to modify or alter, the equipment or any of its components in any way.

• Never go underneath equipment lowered to the ground or raised. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.

• Service work does not require going underneath equipment.

• Read operator’s manual for service instructions or have done by a qualified dealer.

• Ensure implement is properly attached, adjusted, and in good operating condition.

• Never perform service or maintenance with engine running.

• Keep all persons away from operator control area while performing adjustments, service, or maintenance.

• Tighten all bolts, nuts, and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before operating.

• Ensure all safety decals are installed. Replace if damaged. (See “Safety Decals” section for location.)

• Ensure shields and guards are properly installed and in good condition. Replace if damaged.

• Do not disconnect hydraulic lines until all system pressure is relieved. Lower unit to ground, stop engine, and operate all hydraulic control levers.

STORAGE

• Follow manual instructions for storage.

• Keep children and bystanders away from storage area.

NOTES
SAFETY DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

REPLACE IMMEDIATELY IF DAMAGED!

#1 - PN: P970400

DANGER

ROTATING DRIVELINE CONTACT CAN CAUSE DEATH KEEP AWAY!
DO NOT OPERATE WITHOUT –
• ALL DRIVELINE GUARDS, TRACTOR AND EQUIPMENT SHIELDS IN PLACE
• DRIVELINES SECURELY ATTACHED AT BOTH ENDS
• DRIVELINE GUARDS THAT TURN FREELY ON DRIVELINE

#2 - PN: P970300

DANGER

ROTATING PART HAZARD
• KEEP HANDS, HAIR AND CLOTHING AWAY FROM MOVING PARTS.
• CLOSE AND SECURE ALL SHIELDS BEFORE OPERATING.
FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH

#3 - PN: P970301

DANGER

ROTATING PART HAZARD
• KEEP HANDS, HAIR AND CLOTHING AWAY FROM MOVING PARTS.
• CLOSE AND SECURE ALL SHIELDS BEFORE OPERATING.
FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH

#4 - PN: P970100

WARNING

DO NOT ALLOW ANYONE TO OPERATE POWER RAKE WHO HAS NOT BEEN PROPERLY TRAINED IN ITS SAFE OPERATION AND HAS NOT READ AND UNDERSTOOD THE OPERATOR'S MANUAL.

BEFORE ATTACHING, CHECK TRACTOR'S 3PT. LIFT CAPACITY TO ENSURE ITS ABILITY TO SAFELY HANDLE THE WEIGHT.

MAX. PTO SPEED IS 540 RPM'S.

DO NOT OPERATE WITHOUT GUARDS/SHIELDS IN PLACE AND IN GOOD WORKING ORDER.

STOP ALL MOVING PARTS INCLUDING TRACTOR ENGINE BEFORE CLEANING, UNPLUGGING, ADJUSTING, AND/OR PERFORMING MAINTENANCE.

KEEP Bystanders 10 FEET FROM POWER RAKE WHEN IN OPERATION.

FAILURE TO FOLLOW THE ABOVE SAFETY SUGGESTIONS AND THOSE IN THE OPERATOR'S MANUAL CAN RESULT IN SERIOUS INJURY OR DEATH.

#5 - PN: P970250

• Stay at least 9 feet (3m) away from operating equipment.
• Flying objects and rotating parts can cause injury or death.
• Stop engine before cleaning or servicing.
• Keep all guards in place.
Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said, “The best safety device is an informed, careful operator.” We ask you to be that kind of an operator.

The operator is responsible for the safe operation of this equipment. Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.

The power rake is designed for removing rock, small debris, and for thatching. This manual contains information for the T5 model. Refer to the information in this manual for specifications, parts, assembly, and adjustment.

**WARNING**

- Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from dealer or, in the United States and Canada, call 1-800-437-9779.) Failure to follow instructions or safety rules can result in serious injury or death.
- Do not allow children or untrained persons to operate equipment.
- Power unit must be equipped with ROPS or ROPS CAB and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.
- Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.
- Never go underneath equipment lowered to the ground or raised. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
  - Service work does not require going underneath equipment.
  - Read Operator’s Manual for service instructions or have done by a qualified dealer.
  - Before dismounting tractor or performing any service or maintenance, disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, stop engine, set parking brake, remove key, and unfasten seat belt.
  - Ensure implement is properly attached, adjusted, and in good operating condition.

**ATTACHING POWER RAKE TO TRACTOR**

Move tractor into position in front of the power rake. Move back slowly and carefully, not allowing anyone to be between the tractor and the rake. Turn off tractor engine. Attach the two lower arms of the 3-point hitch with the two hitch-pin assemblies.

Attach the tractor center link to the upper hitch point of the power rake. Use either the “lock-out” setting or the “float” feature depending on your application.

Attach the front PTO from the power rake to the tractor. Slide the front section of the PTO into the back section and attach to the PTO shaft at the rear of the tractor.

Wrap driveline storage chain around hitch tube and secure it so that it will not contact PTO driveline.
OPERATION

IMPORTANT

• If the PTO is too long, severe PTO and gearbox damage is possible when hooking up the PTO from the power rake to the tractor. The front PTO is long enough to fit a variety of tractors. It is possible that the front PTO will need to be cut. There will be NO benefit by cutting only one telescoping section. Both sections of the PTO must be cut. DO NOT FORCE THE PTO TO FIT.

• WARRANTY IS VOID IF THE PTO IS TOO LONG, resulting in gearbox, PTO, yoke, or cross bearing damage.

The PTO, when attached to the tractor and gearbox, must not extend so there is less than five inches of overlap within the PTO.

Attach the two hydraulic lines on the rake to the two female hydraulic couplers on the tractor. The hydraulic hose ends on the power rake are ISO male couplers, which are compatible with newer tractors.

Raise jackstand and secure in operating position.

IMPORTANT

• Always clean connector ends prior to attaching. Dirt could contaminate hydraulic fluid and damage the hydraulic system.

POWER RAKE FUNCTION

The tractor PTO drives the roller, which digs into the ground, cultivating and pulling up rocks, roots, and debris.

The clean soil goes between the roller and barrier, while the rocks, roots, and debris work to the side in a windrow.

With the end plates mounted in the working position and the rake straight (end plates parallel with tractor tires), material can be moved along, filling in the low spots.

Maximum safe PTO operating speed is 540 RPM.

PRE-OPERATION CHECK LIST

___ Review and follow all safety rules and safety decal instructions on pages 6 through 11.
___ Check that all safety decals are installed and in good condition. Replace if damaged.
___ Check that all shields and guards are properly installed and in good condition. Replace if damaged.
___ Check that all hardware and cotter pins are properly installed and secured.
___ Check that equipment is properly and securely attached to tractor.
___ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
___ Before starting tractor, check all equipment driving guards for damage and make sure they rotate freely on all drivelines. Replace any damaged guards. If guards do not rotate freely on drivelines, repair and replace bearings before operating.
___ Do not allow riders.
___ Check for and keep all bystanders away from equipment working area.
___ Make sure gearbox is filled to the correct level with high quality 80W-90 gear oil.
___ Check all lubrication points and grease as instructed in “Maintenance, Lubrication” information.
___ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting skid steer. Check that hoses are not twisted, bent sharply, kinked, frayed, or pulled tight. Replace any damaged hoses immediately.
___ Make sure tractor ROPS or ROPS CAB and seat belt are in good condition. Keep seat belt securely fastened during operation.
___ Check tire pressure and service if necessary.
OPERATING INSTRUCTIONS

Read and understand the power rake and tractor operator’s manuals before operating the power rake. Failure to do so may result in death, serious personal injury, or property damage.

Never raise the power rake more than a few inches off the ground when traveling from job site to job site. Shut off the engine, set brake, remove key, and remove seat belt. Dismount the tractor.

**WARNING**
- Look down and to the rear and make sure area is clear before operating in reverse.
- Never direct discharge toward people, animals, or property.
- Only engage power when equipment is at ground operating level. Always disengage power when equipment is raised off the ground.

Start-Up Sequence

**WARNING**
- Only engage power when equipment is at ground operating level. Always disengage power when equipment is raised off the ground.

Start tractor engine.
Lower power rake slowly to the ground.
Engage tractor PTO.
Increase engine rpm to give desired rpm at the roller. Normal operating speed must not exceed 540 rpm. If operating in heavy rock, reduce the speed slightly.
Move the tractor forward. Select a slow tractor speed and increase slightly until operation is satisfactory.

**Ground Speed**

Ground speed should be between 3 mph and 5 mph under normal conditions. In heavy rock, reduce the ground speed to 1 mph to 3 mph.

**Power Rake Angle Adjustment**

The power rake may be angled up to 15 degrees left or right for placing material in a windrow.

With the power rake angle cylinder connected to a tractor hydraulic control valve, move tractor control valve to select the desired angle. Return the tractor control to neutral to maintain the selected angle.

**Power Roller**

The roller should be level with the ground. To level the rake from side to side, adjust one of the tractor 3-point lower lift arms.

The power rake should be level front to back. Level the rake using the tractor 3-point top link, the 3-point lift arms, or the gauge wheels.

To allow the roller to penetrate deeper into the ground, loosen the handle and raise the gauge wheels. To achieve the opposite, lower the gauge wheels.

Be sure to check the air pressure in each tire regularly so that an even, consistent grade will be maintained.

The normal gap between the roller and barrier for average conditions is about 1-1/4”. This gap can be adjusted either wider or narrower by loosening the U-bolt that holds the barrier mount and sliding it up or down. A wider opening will allow more dirt and rock to pass through. For finer raking, reduce the gap. (Be careful not to let roller hit barrier.) The gap should be the same all the way across. Barrier adjustment is shown in Figure 2.

**Operating Depth**

When power raking, the depth will determine how much dirt is carried ahead of the roller. The ideal depth will vary with conditions and can be anywhere from skimming the surface to about 3” deep. See instructions in “Power Roller” above to set roller depth.

When making the first windrow, the level of dirt may be halfway up on the barrier. When moving the windrow two or three times, the level of the dirt may be to the top of the barrier. However, try to prevent material from flowing over the top.

The power rake allows fast raking of large areas of ground by being able to make windrows several times. Of course, the volume or density of the material being raked will dictate how many times a windrow can be moved.

Soil can be removed from the windrow of rocks by moving it back and forth a few times onto the clean area. If dirt clods are a problem, running the tractor tire over the windrow and then moving it a final time will help to break up and cut down on dirt clods.
End Plates
The function of the end plates is to contain the material in front of the roller while the clean material passes between the roller and barrier.

With the end plates mounted in the operating position and the rake straight (end plates parallel with tractor tires), material can be moved along, filling in the low spots.

By decreasing the gap between the roller and barrier, more material can be pulled along. Barrier adjustment is shown in Figure 2.

When not using the end plates for operation, they can be placed in “storage” position, see Figure 2.

Make sure the disconnected power rake is stored on a hard, level surface. Use the end plates mounted on attachment side of rake to ensure stability.

Operator Production
Successful operation of the power rake will come with operator experience. The rake’s performance also depends on the type and size of the tractor it’s mounted on.

An operator that masters the technique of adjusting the angle of attack of the roller against the soil will also find ideal settings under various conditions to give the desired results.

IMPORTANT
- Do not drop power rake to the ground with the roller turning. Sudden high-speed jolts multiply stress to the driveline and can cause extreme damage.

Application Techniques
The power rake is capable of many applications. The following are some of the common applications.

See Figure 2 for adjustment locations.

Pulverizing Topsoil
For breaking up compacted soil or conditioning hardened baseball diamonds, the 3-point top link is set in the “lock-out” position so that down pressure can be exerted on the tooth roller. The top link is shortened to take the guide wheels off the ground so only the toothed roller is in contact with the ground.

Maintain sufficient rpm to avoid stalling the toothed roller in its progress. The rake can be straight or angled, but the end plates should not be mounted in order to allow material to move out of the way and not slow the process.

Debris Removal
Once the surface has been loosened, the process of removing debris can begin. The 3-point hitch top link is mounted in the “float” position holes. This allows the rake to begin the early stages of the final grading process. The 3-point hitch is lowered until the guide wheels control the depth of the toothed roller. The rake can be angled at this time for windrowing debris or the rake can be set straight with both end plates installed to collect debris. Tractor travel speed should be increased for this process.

Finish Grading
For this operation, set the tractor topline in the “float” position and mount both end plates in the “forward” position. The rake is tilted forward until the teeth of the toothed roller are barely touching the soil. Tractor speed can be increased for this operation, the idea being to collect material from the high spots and leave it in the low areas.

Spreading Fill and Topsoil
Start with tractor topline in “fixed” position and rake tiled on gauge wheels, since depth of cut is not the objective. End plates can be installed and the windrow angle set as needed to control the material movement.

Changing Grade
Grade modification can be accomplished during finish grading by angling the rake to collect and windrow the maximum amount of material toward targeted areas.

Thatching Existing Grass Areas
This procedure is done with the 3-point topline in the “lock-out” position so accurate depth control can be maintained. The attachment plate should be lengthened to support the rake on the gauge wheels and toothed roller raised so teeth are just grazing the surface. Select and maintain a slow travel speed.
Shutting Down

Stop equipment.

Lower the lift arms and power rake to the ground.

Purge any air in the system. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly.

Shut off engine, set brake, remove key, and remove seat belt before leaving the tractor operator’s seat.

**WARNING**

- Do not disconnect hydraulic lines until all system pressure is relieved. Lower unit to ground, stop engine, and operate all hydraulic control levers.

REMOVING POWER RAKE FROM TRACTOR

**WARNING**

- Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.

Install end plates on attachment side of power rake as shown in Figure 2.

Lower jackstand to “storage” position.

On a hard level surface, lower attachment to the ground.

Shut off engine, set brake, remove key, and remove seat belt before leaving the tractor operator’s seat.

**WARNING**

- Do not disconnect hydraulic lines until all system pressure is relieved. Lower unit to ground, stop engine, and operate all hydraulic control levers.

Disconnect driveline from tractor PTO shaft and support with storage chain.

Disconnect 3-point upper and lower links from power rake.

Disconnect hydraulic hoses from quick couplers. Install dust plugs for storage.

Move to tractor seat and start engine. Release brake and drive tractor forward until it is disengaged from the attachment. The attachment should rest in a stable position for storage.

**STORAGE**

Make sure the disconnected power rake is stored on a hard, level surface. End plates mounted on attachment side of rake increase stability.

**CAUTION**

- Keep children and bystanders away from storage area.

![Figure 2](image-url)
The information in this section is written for operators who possess basic mechanical skills. Should you need help, your dealer has trained service technicians available. For your protection, read and follow all safety information in this manual.

Regular preventive maintenance and immediate repair of broken or worn parts will ensure maximum efficiency and long life.

Because of the nature of the jobs the power rake does, such as site preparation and rock raking, the power rake is constantly vibrating and shaking. Parts may loosen up as it is used. One of the most important functions an operator can perform is observing and inspecting the equipment for loose or worn parts to prevent further damage or excessive downtime.

**WARNING**

- Never go underneath equipment lowered to the ground or raised. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
- Service work does not require going underneath equipment.
- Read operator’s manual for service instructions or have done by a qualified dealer.
- Before dismounting tractor or performing any service or maintenance, disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, stop engine, set parking brake, remove key, and unfasten seat belt.
- Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.
- Never perform service or maintenance with engine running.
- Ensure shields and guards are properly installed and in good condition. Replace if damaged.

**WARNING**

- Keep hands and body away from pressurized lines. Use paper or cardboard, not body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.
- Make sure that all operating and service personnel know that in the event hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury, or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.
- Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.

**CAUTION**

- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes, and protective equipment for eyes, hair, hand, hearing, and head.

**WARNING**

- Do not modify or alter, or permit anyone else to modify or alter, the equipment or any of its components in any way.
- Ensure all safety decals are installed. Replace if damaged. (See “Safety Decals” section for location.)
DAILY MAINTENANCE

When operating the power rake, check the tractor hydraulic system to be sure the level of hydraulic oil is adequate. If necessary, add hydraulic oil as recommended in your tractor operator’s manual.

Repair hydraulic oil leaks promptly to avoid loss of oil and serious personal injury from escaping oil.

After every 10 hours of operation, check all hardware and tighten where required.

Lightly lubricate bearing at each end of roller. Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations. Be sure to clean fittings thoroughly before attaching grease gun. See Figure 3.

Check oil level in chain case.

WEEKLY MAINTENANCE

Lubricate all pivot points. Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations. Be sure to clean fittings thoroughly before attaching grease gun. See Figure 3.

Inspect drive chain.

Check tire pressure. Maintain 20 psi cold.

Lubricate driveline universal joints.

MONTHLY MAINTENANCE

Inspect and clean safety decals. Replace if damaged. (See “Safety Decals” section for location.)

Check gearbox oil level.

QUARTERLY MAINTENANCE

Change oil in chain case and add 1.5 pints of 140-wt. lube.

PRELIMINARY CHECK

The best maintenance is regular preventive checks, particularly when the machine is new. Check that all nuts and bolts are tight.

CHAIN MAINTENANCE

The drive chain should be inspected weekly. New chain has a tendency to stretch, so it is necessary to check the chain tension to prevent flopping around, thus causing potential problems.

Chain tension is preset with the extension spring. If the chain becomes excessively loose, it may be necessary to remove one link (two pitches). If unable to reassemble, add an offset link to lengthen the chain.

IMPORTANT

- Replacement chain should be only high quality original equipment chain for longer life.

When being stored for a long period or at end of season, change the oil, adding EP 140 wt. oil, and rotate the roller several times allowing the chain to be coated with oil, enhancing chain life. Rotate the roller periodically to maintain lubrication. In order to rotate the roller and chain, you must hook the two hydraulic hoses together.

SPROCKETS

Sprockets should be checked to be sure slotted hex nut or hex bolt is tight, the cotter pin is in place, and the sprocket cannot move on shaft.

PTO DRIVE LINES

Periodically check the yoke on both ends of the front PTO to the tractor. Make sure the set screws/jam nuts are tight and the yoke is not moving on the shaft. PTO shafts and U-joints should be sparingly lubricated weekly.

GEARBOX

The gearbox is almost maintenance-free, but should be checked monthly to be sure that the oil level is maintained at half full. EP 80-90 wt. gear lube is recommended for use in the gearbox. Oil should be changed after the first 100 hours or 30 days of operating. Then, normal change intervals of 1,000 hours or 12 months of operation should be adequate. In the case of seasonal usage, it is best to change the oil at the end of the season to remove moisture and corrosive contaminants.

It should be noted that the gearbox only exceeds its thermal capacity when the oil temperature exceeds 200°F.
## TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller will not turn.</td>
<td>Tractor PTO not engaged.</td>
</tr>
<tr>
<td></td>
<td>Clutch loose on power rake or friction discs worn.</td>
</tr>
<tr>
<td></td>
<td>Obstruction between roller and barrier.</td>
</tr>
<tr>
<td></td>
<td>Chain off.</td>
</tr>
<tr>
<td></td>
<td>Gearbox damaged.</td>
</tr>
<tr>
<td></td>
<td>Broken drive shaft between clutch and chain drive.</td>
</tr>
<tr>
<td>Hydraulic cylinder inoperative.</td>
<td>Hose ends not completely engaged.</td>
</tr>
<tr>
<td></td>
<td>Tractor hydraulic shut-off in the “closed” position.</td>
</tr>
<tr>
<td></td>
<td>Insufficient oil in system.</td>
</tr>
<tr>
<td></td>
<td>Air in hydraulic system.</td>
</tr>
<tr>
<td></td>
<td>Obstruction in valve or hydraulic lines.</td>
</tr>
<tr>
<td></td>
<td>Broken hose.</td>
</tr>
<tr>
<td></td>
<td>Worn, damaged, insufficient, or inadequate hydraulic pump.</td>
</tr>
<tr>
<td>Oil leaks.</td>
<td>Worn or damaged seal.</td>
</tr>
<tr>
<td></td>
<td>Loose or damaged hoses.</td>
</tr>
<tr>
<td></td>
<td>Loose or damaged connections.</td>
</tr>
<tr>
<td></td>
<td>Worn or damaged housing.</td>
</tr>
</tbody>
</table>
MAINTENANCE

The information in this section is written for dealer service personnel. The repair described herein requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

**WARNING**

- Never go underneath equipment lowered to the ground or raised. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
- Service work does not require going underneath equipment.
- Read Operator’s Manual for service instructions or have done by a qualified dealer.

**CAUTION**

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.
- Do not modify or alter, or permit anyone else to modify or alter, the equipment or any of its components in any way.
- Do not disconnect hydraulic lines until all system pressure is relieved. Lower unit to ground, stop engine, and operate all hydraulic control levers.
- Ensure implement is properly attached, adjusted, and in good operating condition.
- Ensure all safety decals are installed. Replace if damaged. (See “Safety Decals” section for location.)
- Ensure shields and guards are properly installed and in good condition. Replace if damaged.

**CLUTCH**

The clutch is a friction disc style clutch with a preset torque setting of 4500 in lbs. The center drive section of the clutch is nickel plated to prevent rusting.

The torque setting is not adjustable, therefore, if the clutch is continually slipping, the friction discs will need to be replaced.

**Friction Disc Replacement**

The clutch is attached to the output shaft of the gearbox. To access the clutch discs, remove the gearbox shield then remove the four bolts mounting the gearbox to the frame. The gearbox and clutch will now slide out of the drive shaft coupler. With the clutch exposed, remove the ten bolts, washer, spring, and spacer combinations. Remove the outer pressure plate, center drive shaft, and friction discs. Inspect the components for wear and reassemble with new friction discs.

NOTE: When replacing springs, note that there are 12 mounting holes and 10 spring, spacer, washer, and bolt combinations. The two open holes must be opposite each other for even pressure on the friction discs. Torque the 3/8 hex bolts to 20 foot lbs. (See Figure 8, Page 34)

Reinstall gearbox and clutch by lining up the spline on the clutch output shaft with the coupler on the end of the top drive shaft. Bolt the gearbox in place with the four spacers positioned between the gearbox and the frame. Replace the gearbox shield.

**BEARINGS**

Highest quality bearings are used on the power rake. Only triple-seal bearings are used on the roller, which operates down in the dirt. Lubrication of bearings will vary considerably with conditions. As a rule, bearings should be under-lubricated rather than over-lubricated. Over-lubrication can cause seals to blow out.

**IMPORTANT**

- Replacement bearings should be only high quality original equipment bearings for longer life.

Install new complete bearing housing if needed or just replace the bearing insert.

The shafts should be straight, free of burrs, and up to size. If shaft is worn, replace or have the shaft built up to standard prior to completing assembly.
Protective Collars

The special protective collars protect bearings from vine and wire wrap and dirt buildup next to the bearing seal. The bearing protector is sandwiched onto the shaft, which rotates within a close clearance from the outer race of the bearing. Grease coming from the bearing oozes into the protecting collar, keeping dust and particles from entering the seal area, increasing the bearing life.

BEARING & ROLLER REPLACEMENT

Top Drive Bearing

Remove the drive chain. Then remove the upper sprocket by removing cotter pin, slotted hex nut, and washers. Remove the four bolts mounting the gearbox to the frame and slide the gearbox, clutch, and drive shaft away from the chain case until the top bearing is cleared. Remove the two bolts mounting the bearing to the chain case. When replacing the bearing, apply sealant to the mating face of the bearing to seal the chain case. To reassemble, reverse the procedure.

Left Roller Bearing

Remove drive chain. Then remove lower sprocket by removing cotter pin, slotted hex nut, and washers. Remove the two bolts holding the chain case to the frame.

NOTE: Have roller blocked up or supported and slide chain case and bearing off roller shaft.

NOTE: The top drive shaft will come off with the chain case.

Loosen bolt on the bearing tube that holds cartridge bearing in place. Remove bearing and O-ring.

To replace, reverse the procedure. Be sure all parts and wear surfaces are thoroughly clean and in good condition. Be sure O-ring is also in good condition.

When replacing bearing, first put O-ring on bearing. Apply a coat of grease on O-ring. Slide bearing in and apply moderate pressure on bearing so O-ring will seat and spread slightly, thus keeping the oil in chain case from escaping through the bearing.

Right Roller Bearing

Remove the hex bolt and bearing cap from outside of bearing.

Loosen bolt on the bearing tube that holds cartridge bearing in place. Pry bearing tube apart to free bearing assembly.

NOTE: Have roller blocked up or supported. Pry bearing off of shaft and out of bearing holder.

To replace, reverse the procedure. Be sure all parts and wear surfaces are thoroughly clean and in good condition.

Roller Replacement

It will be necessary to have a lifting device or additional help while removing and replacing the roller. The roller weighs approximately 100 lbs.

Remove upper and lower chain case covers.

Remove tension spring and drive chain. Then remove lower sprocket by removing cotter pin, slotted nut, and washers. Remove the sleeve behind the sprocket you just removed.

NOTE: Have the roller blocked up or supported.

Remove the two bolts holding chain case to frame and slide chain case off of roller shaft. The roller bearing will stay in the chain case.

NOTE: If chain case bearing is also being replaced, see “Left Roller Bearing” above.

Loosen bolt on the bearing tube of the non-drive end, sliding roller and bearing out of frame.

Remove hex bolt, bearing cap, bearing, and protective collar from roller. On roller to be installed, place machine bushing and protective collar against end plate of roller. Place bearing and bearing cap on roller. Clamp in place with hex bolt and lock washer into end of roller shaft.

Slide roller and bearing into bearing tube on non-drive end of frame. Do not tighten bearing tube at this time.

Place spacer and protective collar from splined end of removed roller onto replacement roller. Apply sealant to bearing area of shaft. Slide chain case back onto roller and bolt to frame.

Replace sleeve, sprocket, and washers on drive shaft. Clamp solid with the 3/4” slotted nut. Check that roller clears frame on both ends. Adjust, if required.

Tighten 3/8” bolt in bearing tube on non-drive end of frame.
ASSEMBLY

CAUTION

• Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

WARNING

• Keep hands and body away from pressurized lines. Use paper or cardboard, not body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

• Make sure that all operating and service personnel know that in the event hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury, or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.

• Route hydraulic hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate movable components through full operational range to check clearances. Replace any damaged hoses immediately.

• Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.

• Do not modify or alter, or permit anyone else to modify or alter, the equipment or any of its components in any way.

SET-UP INSTRUCTIONS

The power rake is shipped partially assembled. Assembly will be easier if components are aligned and loosely assembled before tightening hardware. Recommended torque values for hardware are located on pages 5 and 6.

Select a suitable working area. Refer to illustrations, accompanying test, parts lists, and exploded view drawings.

Tools Required

9/16" Wrench
Jackstands

It is advisable to have a mechanical lifting device to facilitate uncrating.

Unpacking Crate

Be careful of nails in boards when uncrating.
Remove top, sides, and ends of crate.
Remove end plates.
Remove gauge wheel assemblies.
Remove parts box.
Remove power rake from crate. Remove loose nails from boards and dispose of crate according to local codes.

ASSEMBLY PROCEDURE

WARNING

• Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.

For reference, front, back, left, and right directions are determined by sitting in the tractor operator’s seat.

Do not permit any bystanders within 10 feet of power rake during assembly.

Set roller frame upright and securely block in position with jackstands (not supplied).

IMPORTANT

• Do not add front PTO half to power rake yet. Follow instructions and important notice concerning the front PTO in the “Attaching and Detaching power rake” section.

Slide the parking stand into the receiving tube and pin in place.

Attach the two (2) gage wheel assemblies to the main frame with two (2) 3/8" U-bolts, lock washers, and nuts. Refer to Figure 4 for specific location of gage assembly.

Mount the left and right end plates to the frame. Note the storage location for future reference.
Check the gear lube level in the chain case. Add EP 85-140 wt. oil, if required.

Tighten all fasteners to specifications shown in the torque chart at the front of this manual.

This should complete the assembly of your new power rake. Make sure that all guards/shields are in place and are not removed during use.

WARNING

- Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.

NOTES
## POWER RAKE ASSEMBLY PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>PART NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>M5426</td>
<td>RIGHT END PLATE</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>M5427</td>
<td>LEFT END PLATE</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>M5435</td>
<td>JACK STAND</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>M5433</td>
<td>5/8&quot; X 2-1/2&quot; GATE PIN</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>M5003</td>
<td>3/4&quot; X 3-3/4&quot; UPPER HITCH PIN</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>M8073</td>
<td>7/8&quot; X 3-3/4&quot; LOWER HITCH PIN</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>P622600</td>
<td>HAIR PIN CLIP</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>P851106</td>
<td>3/8&quot; LOCK WASHER</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>P850812</td>
<td>3/4&quot; SAE WASHER</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>P150600</td>
<td>3/8&quot; HEX NUT</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>P127200</td>
<td>U-BOLT 3/8&quot; X 1-1/2&quot; X 5-1/2&quot;</td>
</tr>
</tbody>
</table>

## NOTES
Figure 5
<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>PART NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>M5495</td>
<td>MAIN FRAME</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>M5474</td>
<td>CARBIDE TOOTH ROLLER</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>M4410</td>
<td>CHAIN CASE</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>M20192</td>
<td>1-3/8&quot; BEARING COLLAR</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>P015310</td>
<td>1-3/8&quot; BEARING CAP</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>M5463</td>
<td>BEARING SPACER</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>M5440</td>
<td>DRIVE BEARING ASSEMBLY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P015209</td>
<td>1-3/8&quot; CYLINDRICAL BEARING HOUSING</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P099500</td>
<td>1-3/8&quot; BEARING INSERT</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>M5441</td>
<td>IDLE BEARING ASSEMBLY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P015209</td>
<td>1-3/8&quot; CYLINDRICAL BEARING HOUSING</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P099500</td>
<td>1-3/8&quot; BEARING INSERT</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>M5442</td>
<td>TOP BEARING ASSEMBLY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P015299</td>
<td>1-3/8&quot; FLANGE BEARING HOUSING</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P099500</td>
<td>1-3/8&quot; BEARING INSERT</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>M5494</td>
<td>DRIVE SHAFT ASSEMBLY</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>P400105</td>
<td>CLUTCH ASSEMBLY (TEROG)</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>M5493</td>
<td>SHIELD ASSEMBLY</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>P400115</td>
<td>BELL EXTENSION</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
<td>M5434</td>
<td>GEARBOX SPACER</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>P205400</td>
<td>2:1 GEARBOX</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>P652180</td>
<td>18 TOOTH 50-2 SPROCKET</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>P652170</td>
<td>17 TOOTH 50-2 SPROCKET</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>M5461</td>
<td>50-2 CHAIN 73P W/CONN</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>M6240</td>
<td>LOWER COVER</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>M6243</td>
<td>COVER TAB</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>M5460</td>
<td>CHAIN ROLLER</td>
</tr>
<tr>
<td>22</td>
<td>1</td>
<td>M5444</td>
<td>TENSION ROLLER</td>
</tr>
<tr>
<td>23</td>
<td>1</td>
<td>M5445</td>
<td>COVER SPACER</td>
</tr>
<tr>
<td>24</td>
<td>1</td>
<td>M5443</td>
<td>TENSION ARM</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>P604700</td>
<td>EXTENSION SPRING</td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>M6630</td>
<td>PIVOT BUSHING</td>
</tr>
<tr>
<td>27</td>
<td>1</td>
<td>P500200</td>
<td>O-RING 3/32&quot; X 3-3/4&quot;</td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>P500201</td>
<td>O-RING 3/8&quot; X 2-3/8&quot;</td>
</tr>
<tr>
<td>29</td>
<td>1</td>
<td>M5000-5</td>
<td>5/16&quot; X 2&quot; SQ KEY</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
<td>P116256</td>
<td>5/32&quot; X 1-1/2&quot; COTTER PIN</td>
</tr>
<tr>
<td>31</td>
<td>4</td>
<td>P855122</td>
<td>1-3/8&quot; X 10&quot; GA MACHINE BUSHING</td>
</tr>
<tr>
<td>32</td>
<td>1</td>
<td>P855322</td>
<td>1-3/8&quot; X 14&quot; GA MACHINE BUSHING</td>
</tr>
<tr>
<td>33</td>
<td>1</td>
<td>M6756</td>
<td>PINNED WASHER</td>
</tr>
<tr>
<td>34</td>
<td>2</td>
<td>P500300</td>
<td>1/4&quot; O-RING WASHER</td>
</tr>
<tr>
<td>35</td>
<td>2</td>
<td>P851104</td>
<td>1/4&quot; LOCK WASHER</td>
</tr>
<tr>
<td>36</td>
<td>1</td>
<td>P851106</td>
<td>3/8&quot; LOCK WASHER</td>
</tr>
<tr>
<td>37</td>
<td>1</td>
<td>P851108</td>
<td>1/2&quot; LOCK WASHER</td>
</tr>
<tr>
<td>38</td>
<td>1</td>
<td>P850609</td>
<td>9/16&quot; FLAT WASHER</td>
</tr>
<tr>
<td>39</td>
<td>2</td>
<td>P850612</td>
<td>3/4&quot; FLAT WASHER</td>
</tr>
<tr>
<td>40</td>
<td>2</td>
<td>P155350</td>
<td>5/16&quot; LOCK NUT</td>
</tr>
<tr>
<td>41</td>
<td>1</td>
<td>P150600</td>
<td>3/8&quot; HEX NUT</td>
</tr>
<tr>
<td>42</td>
<td>2</td>
<td>P155400</td>
<td>3/8-16 HEX JAM NUT</td>
</tr>
<tr>
<td>43</td>
<td>1</td>
<td>P155582</td>
<td>1/2-20 LOCK NUT</td>
</tr>
<tr>
<td>44</td>
<td>2</td>
<td>P158000</td>
<td>3/4-16 SLOTTED HEX NUT</td>
</tr>
<tr>
<td>45</td>
<td>1</td>
<td>P100402</td>
<td>1/4&quot; X 1/2&quot; HEX BOLT</td>
</tr>
<tr>
<td>46</td>
<td>3</td>
<td>P110901</td>
<td>1/2&quot; X 3/4&quot; BUTTON HEAD SCREW</td>
</tr>
<tr>
<td>47</td>
<td>1</td>
<td>P100503</td>
<td>5/16&quot; X 3/4&quot; HEX BOLT</td>
</tr>
<tr>
<td>48</td>
<td>1</td>
<td>P100505</td>
<td>5/16&quot; X 1-1/4&quot; HEX BOLT</td>
</tr>
<tr>
<td>49</td>
<td>1</td>
<td>P108610</td>
<td>3/8-16 X 5/8&quot; SET SCREW</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>P108612</td>
<td>3/8-16 X 1&quot; SET SCREW</td>
</tr>
<tr>
<td>51</td>
<td>1</td>
<td>P100608</td>
<td>3/8&quot; X 2&quot; HEX BOLT</td>
</tr>
<tr>
<td>52</td>
<td>2</td>
<td>P100804</td>
<td>1/2&quot; X 1&quot; HEX BOLT</td>
</tr>
<tr>
<td>53</td>
<td>1</td>
<td>P102805</td>
<td>1/2&quot; X 1-1/4&quot; FINE THD HEX BOLT</td>
</tr>
<tr>
<td>54</td>
<td>1</td>
<td>P102808</td>
<td>1/2&quot; X 2&quot; FINE THD HEX BOLT</td>
</tr>
<tr>
<td>55</td>
<td>4</td>
<td>P100811</td>
<td>1/2&quot; X 2-3/4&quot; HEX BOLT</td>
</tr>
<tr>
<td>56</td>
<td>2</td>
<td>P100812</td>
<td>1/2&quot; X 3&quot; HEX BOLT</td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>P975108</td>
<td>DECAL: DANGER GUARD MISSING</td>
</tr>
<tr>
<td>ITEM</td>
<td>QTY</td>
<td>PART NO</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>M5496</td>
<td>MAST FRAME</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>M5497</td>
<td>BARRIER MOUNT</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>M5423</td>
<td>BARRIER</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>M5424</td>
<td>BARRIER STRAP</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>M5426</td>
<td>RIGHT END PLATE</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>M5427</td>
<td>LEFT END PLATE</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>M5489</td>
<td>GEARBOX SHIELD ASSEMBLY</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>M4416</td>
<td>COVER</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>M4418</td>
<td>COVER SEAL</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>M5435</td>
<td>JACK STAND</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>M10462</td>
<td>PIVOT BUSHING</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>M6266</td>
<td>PTO SUPPORT CHAIN</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>P400100</td>
<td>FRONT PTO</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>P604500</td>
<td>COMPRESSION SPRING</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>P278001</td>
<td>BREATHER</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>M8263</td>
<td>JACK PIN</td>
</tr>
<tr>
<td>17</td>
<td>2</td>
<td>M5433</td>
<td>5/8&quot; X 2-1/2&quot; GATE PIN</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>M5003</td>
<td>3/4&quot; X 3-3/4&quot; UPPER HITCH PIN</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>M8073</td>
<td>7/8&quot; X 3-3/4&quot; LOWER HITCH PIN</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>P116204</td>
<td>1/8&quot; X 1&quot; COTTER PIN</td>
</tr>
<tr>
<td>21</td>
<td>5</td>
<td>P622600</td>
<td>HAIR PIN CLIP</td>
</tr>
<tr>
<td>22</td>
<td>5</td>
<td>P272600</td>
<td>MALE QUICK COUPLER</td>
</tr>
<tr>
<td>23</td>
<td>1</td>
<td>P246366</td>
<td>1/4&quot; HOSE X 66&quot; 8MP – 6MB</td>
</tr>
<tr>
<td>24</td>
<td>1</td>
<td>M5457</td>
<td>RESTRICTED HOSE</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>P256250</td>
<td>HYDRAULIC CYLINDER 1-1/2&quot; X 6&quot;</td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>M5000-5</td>
<td>5/16&quot; X 2&quot; SQ KEY</td>
</tr>
<tr>
<td>27</td>
<td>2</td>
<td>P620000</td>
<td>1/4-28 X 45° GREASE FITTING</td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>P620200</td>
<td>1/4-28 STR GREASE FITTING</td>
</tr>
<tr>
<td>29</td>
<td>4</td>
<td>P851106</td>
<td>3/8&quot; LOCK WASHER</td>
</tr>
<tr>
<td>30</td>
<td>4</td>
<td>P851606</td>
<td>3/8&quot; HEAVY WASHER</td>
</tr>
<tr>
<td>31</td>
<td>4</td>
<td>P851108</td>
<td>1/2&quot; LOCK WASHER</td>
</tr>
<tr>
<td>32</td>
<td>1</td>
<td>M5009-5</td>
<td>3/16&quot; X 1/2&quot; X 1-3/4&quot; WASHER</td>
</tr>
<tr>
<td>33</td>
<td>1</td>
<td>P852001</td>
<td>16MM WASHER</td>
</tr>
<tr>
<td>34</td>
<td>2</td>
<td>P850812</td>
<td>3/4&quot; SAE WASHER</td>
</tr>
<tr>
<td>35</td>
<td>7</td>
<td>P155350</td>
<td>5/16&quot; TOP LOCK NUT</td>
</tr>
<tr>
<td>36</td>
<td>4</td>
<td>P150600</td>
<td>3/8&quot; HEX NUT</td>
</tr>
<tr>
<td>37</td>
<td>2</td>
<td>P155400</td>
<td>3/8&quot; HEX JAM NUT</td>
</tr>
<tr>
<td>38</td>
<td>4</td>
<td>P158007</td>
<td>3/8&quot; ELASTIC STOP NUT</td>
</tr>
<tr>
<td>39</td>
<td>1</td>
<td>P157120</td>
<td>3/4-10 TOP LOCK NUT</td>
</tr>
<tr>
<td>40</td>
<td>2</td>
<td>P127200</td>
<td>U-BOLT 3/8&quot; X 1-1/2&quot; X 5-1/2&quot;</td>
</tr>
<tr>
<td>41</td>
<td>2</td>
<td>P128393</td>
<td>U-BOLT 3/8&quot; X 3&quot; X 4&quot;</td>
</tr>
<tr>
<td>42</td>
<td>7</td>
<td>P104506</td>
<td>5/16&quot; X 1-1/2&quot; CARRIAGE BOLT</td>
</tr>
<tr>
<td>43</td>
<td>1</td>
<td>P108610</td>
<td>3/8-16 X 5/8&quot; SET SCREW</td>
</tr>
<tr>
<td>44</td>
<td>1</td>
<td>P108616</td>
<td>3/8-16 X 1&quot; SET SCREW</td>
</tr>
<tr>
<td>45</td>
<td>1</td>
<td>P100804</td>
<td>1/2&quot; X 1&quot; HEX BOLT</td>
</tr>
<tr>
<td>46</td>
<td>4</td>
<td>P100807</td>
<td>1/2&quot; X 1-3/4&quot; HEX BOLT</td>
</tr>
<tr>
<td>47</td>
<td>1</td>
<td>M5499</td>
<td>2-13/16&quot; CYLINDER BOLT</td>
</tr>
<tr>
<td>48</td>
<td>1</td>
<td>M5500</td>
<td>2-5/16&quot; CYLINDER BOLT</td>
</tr>
<tr>
<td>49</td>
<td>1</td>
<td>P101218</td>
<td>3/4&quot; X 4-1/2&quot; HEX BOLT</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>P970003</td>
<td>DECAL: LUBRICATION</td>
</tr>
<tr>
<td>51</td>
<td>1</td>
<td>P975800</td>
<td>DECAL: HARLEY</td>
</tr>
<tr>
<td>52</td>
<td>1</td>
<td>P975919</td>
<td>DECAL: T5 COVER</td>
</tr>
</tbody>
</table>
CASTER WHEEL ASSEMBLY

Figure 7
### CASTER WHEEL ASSEMBLY PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>PART NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>M5451</td>
<td>CASTER SUPPORT ARM</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>M5488</td>
<td>CASTER FORK</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>M5450</td>
<td>CASTER SHAFT</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>P752100</td>
<td>WHEEL &amp; TIRE 5&quot; X 13&quot;</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>M5454</td>
<td>HANDLE</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>P762100</td>
<td>BEARING CUP</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>P762200</td>
<td>BEARING CONE</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>P852300</td>
<td>FELT WASHER</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>M5464</td>
<td>1&quot; ID X 2-1/4&quot; OD WASHER</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>M5462</td>
<td>17/32&quot; ID X 2-1/4&quot; OD WASHER</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>M5456</td>
<td>AXLE SLEEVE</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>P851108</td>
<td>1/2&quot; LOCK WASHER</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>P851606</td>
<td>3/8&quot; HEAVY WASHER</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>M5009-5</td>
<td>3/16&quot; X 1/2&quot; X 1-3/4&quot; WASHER</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>P620200</td>
<td>1/4-28 STR GREASE FITTING</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>P116204</td>
<td>1/8&quot; X 1&quot; COTTER PIN</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>P158006</td>
<td>1/2&quot; SLOTTED HEX NUT</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>P157120</td>
<td>3/4&quot; TOP LOCK NUT</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>P102608</td>
<td>3/8&quot; X 2&quot; FINE THD HEX BOLT</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>P100804</td>
<td>1/2&quot; X 1&quot; HEX BOLT</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>P101230</td>
<td>3/4&quot; X 7-1/2&quot; HEX BOLT</td>
</tr>
</tbody>
</table>

**NOTES**
Figure 8
## CLUTCH ASSEMBLY PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>PART NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>P400103</td>
<td>CLUTCH HUB</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>P400104</td>
<td>CLUTCH BACK PLATE</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>P400106</td>
<td>CLUTCH DRIVE SHAFT</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>P400107</td>
<td>CLUTCH SPRING</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>P400108</td>
<td>CLUTCH SPRING SPACER</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>P400109</td>
<td>CLUTCH FIBER DISC</td>
</tr>
</tbody>
</table>

### NOTES
LIMITED WARRANTY

GLENMAC, INC. warrants, to the original purchaser of the HARLEY POWER BOX RAKE®, that it will repair or replace any manufactured parts thereof found to be, under normal use, defective in factory material or workmanship for six (6) months from the date of purchase.

This warranty shall become void if in the judgment of GLENMAC, INC., the equipment has been subject to misuse, negligence, alteration, damaged by accident or lack of required maintenance, or if the product has been used for a purpose for which it was not intended. Wear items such as, but not limited to, rollers and chain cases will not be covered under warranty.

This warranty does not apply to hydraulic motor, electric actuator, tires, bearing, sprockets, or any other trade accessories not manufactured by GLENMAC, INC. Buyer must rely solely on the existing warranty, if any, of these respective manufacturers.

This warranty will become void if a valid warranty registration card is not received by GLENMAC, INC. at its JAMESTOWN, ND office within ten (10) days of original purchase.

Certain HARLEY dealers provide Limited Warranty replacement service. We would suggest that you contact your selling dealer and attempt to resolve your Warranty service problem locally prior to contacting our home office. Any questions concerning warranty service can be directed to our Customer Service Department at PO Box 2135, Jamestown, ND 58402, or call (701) 252-9300.

THERE IS NO OTHER EXPRESSED OR IMPLIED WARRANTY ON THIS PRODUCT OR ON ITS MERCHANTABILITY OR ON ITS FITNESS. TO THE EXTENT ALLOWED BY LAW NEITHER GLENMAC, INC. NOR THE SELLING HARLEY DEALER SHALL HAVE ANY RESPONSIBILITY FOR LOSS OF USE OF THE PRODUCT, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS OR CONSEQUENTIAL DAMAGES.

Some states do not allow limitations on the exclusion or limitation of incidental or consequential damages, therefore the above limitations may not apply to you.

This warranty gives you specific legal rights that vary from state to state.

Please enter information below and SAVE FOR FUTURE REFERENCE.

Date Purchased: ______________ From (Dealer): ________________
Model Number: _______ T-5 _______ Serial Number: ________________

Glenmac, Inc.
1805 2nd Avenue SW
Jamestown, ND  58401
701-252-9300 tel
701-252-1978 fax
701-251-9259 parts fax