

Harley POWER RAKE MODEL PRO-8



OPERATOR'S MANUAL

DATE PURCHASED

SERIAL NUMBER

PN-P971400 (02/2005)

Glenmac
INC

INTRODUCTION

GLENMAC, INC., based in Jamestown, North Dakota, along with your authorized Harley dealer, are proud that you chose to purchase a Harley Power Rake. Equipment under the Harley name has been built and sold worldwide for over 35 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 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 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.

REMINDER: 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 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 Rake.

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

Dealer Name: _____ _____ _____ _____ _____
--

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	17-24
Trouble Shooting	20
Assembly	25-27
Parts Identification and Drawings	28-37
Warranty	38

SPECIFICATIONS

Raking Width	90 Inches
Roller Type	Bar Roller Standard 8" Diameter
Roller Angle	15 Degrees Both Directions
Roller Gap (Bar to Smooth Roller)	1/4" - 1-1/2" Adjustable
Tires	16.5 x 6.5-8
Tire Pressure	45 psi
Weight	1575 lbs
Oil Capacity of Chain Case	Approximately 1.5 Pints
Tractor Three-Point Attachment	Cat. I or Cat. II
PTO Drive	540 RPM
Tractor Hydraulic System	One Remote Valve
Tractor PTO HP	40 - 70 HP

OWNER ASSISTANCE

GLENMAC, INC. and your authorized Harley Dealer want you to be completely satisfied with your investment. Sometimes, however, misunderstandings can occur. To resolve any problem that may occur, please follow the instructions below.

1. If you did not purchase your Power 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 has direct access to our home office.

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

CUSTOMER SERVICE (8:00 am - 5:00 P.M. CT)
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, IINC. (see "B" above). There may be a new dealer in your area since you purchased your Harley Power 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.

GENERAL INFORMATION

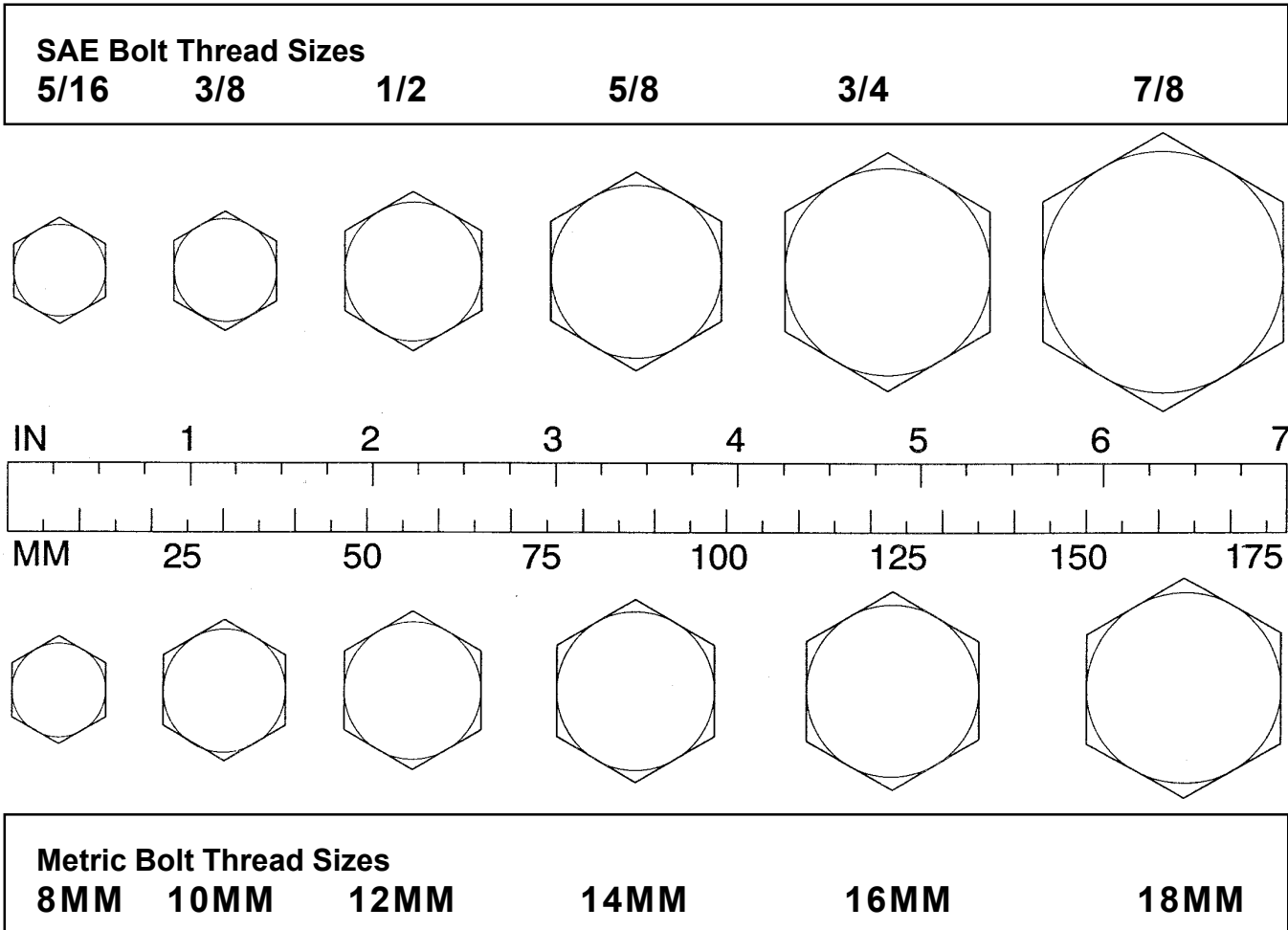
The purpose of this manual is to assist you in operating and maintaining your Power Rake. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. 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 in-line 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 skid-steer.

BOLT SIZE CHART

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



BOLT TORQUE 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.

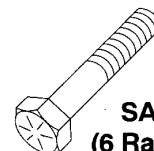
SAE Bolt Head Identification



**SAE Grade 2
(No Dashes)**



**SAE Grade 5
(3 Radial Dashes)**



**SAE Grade 8
(6 Radial Dashes)**

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

BOLT TORQUE CHART

Metric Series Torque Chart

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

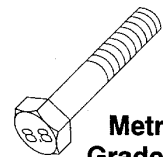
DO NOT use these values if a different torque value or tightening procedure is listed for a specific application. Torque values listed are for general use only.

Fasteners should be replaced with the same grade.

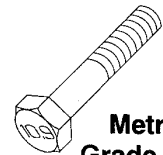
Make sure fastener threads are clean and you properly start thread engagement. This will prevent them from failing when tightening.

Bolt Diameter "A"	Wrench Size	MARKING ON HEAD			
		8.8		10.9	
		N-m	(Lbs.-Ft.)	N-m	(Lbs.-Ft.)
5 mm	8 mm	6	(4.5)	9	(6.5)
6 mm	10 mm	10	(7.5)	15	(11)
8 mm	13 mm	25	(18)	35	(26)
10 mm	16 mm	50	(37)	75	(55)
12 mm	18 mm	85	(63)	130	(97)
14 mm	21 mm	110	(80)	150	(110)
16 mm	24 mm	215	(159)	315	(232)
20 mm	30 mm	435	(321)	620	(457)
24 mm	36 mm	750	(553)	1070	(789)
30 mm	46 mm	1495	(1103)	2130	(1571)

Metric Bolt Head Identification



Metric Grade 8.8



Metric Grade 10.9

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 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.
- 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 (Roll Over Protection Structure) or ROPS CAB and seat belt/operator restraint. Keep seatbelt/operator restraint securely fastened/engaged. Falling off power unit can result in death from being run over or crushed. Keep 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.

SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



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.

SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



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!

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

#1 - PN: P970400

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**

#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**

P970301

#3 - PN: P970301

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.

#4 - PN: P970100

WARNING



STAY CLEAR OF THE MACHINE WHILE IT IS RUNNING. Contact with rotating rollers can cause serious injury.

#5 - PN: P970200

SAFETY DECALS



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Replace Immediately If Damaged!

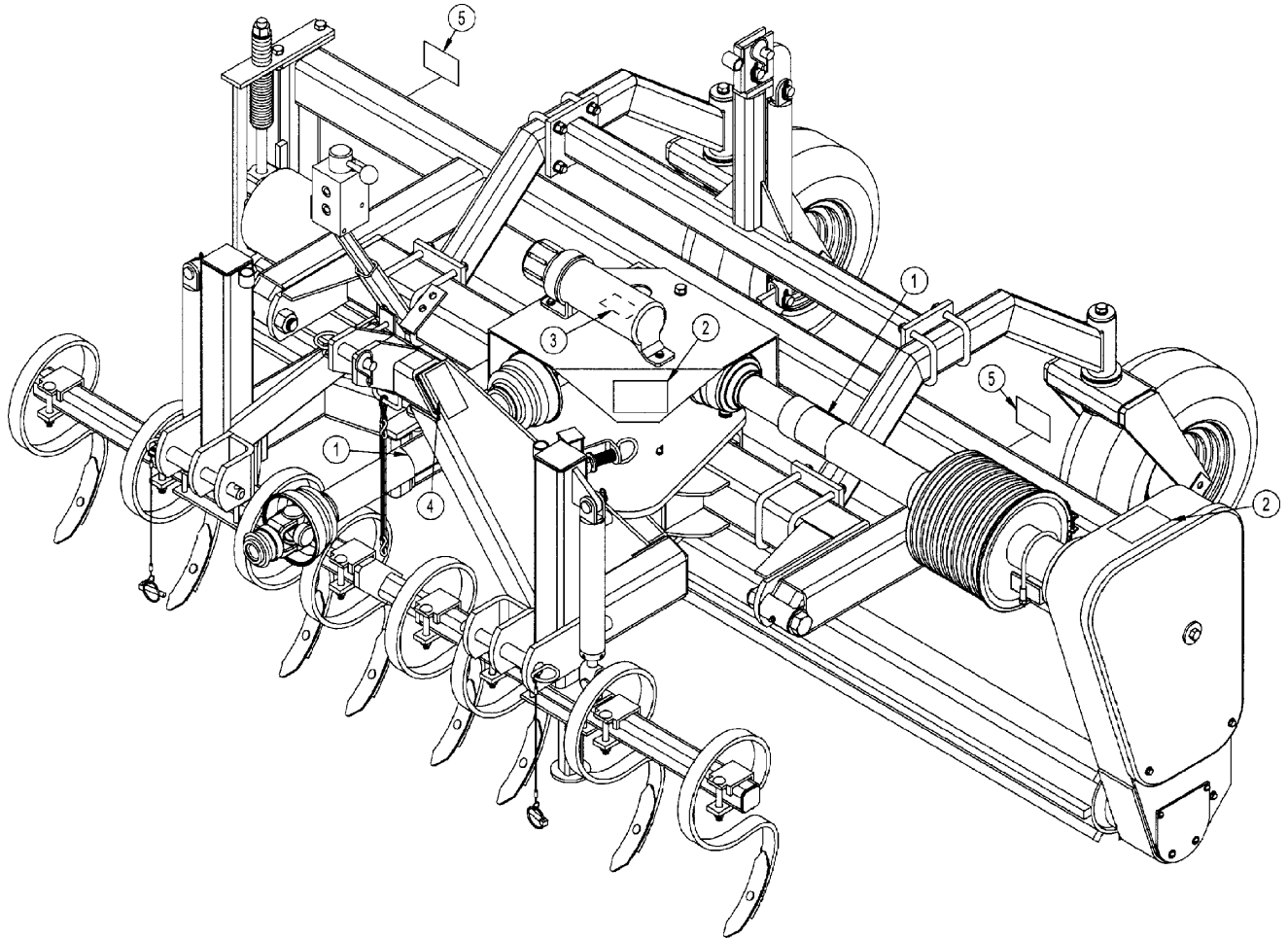


Figure 1

OPERATION

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, and small debris, and for thatching. This manual contains information for the Pro-8 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.

The Pro-8 Power rake is equipped to mount on a category I or II 3-point hitch. The inside setting is for category I and the outer setting is for category II.

Attach the tractor center link to the upper hitch point of the power rake. If you are mounting to a category I tractor, remove the sleeve that is over the top hitch pin.

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 two rollers. The lower roller digs in the ground pulling up rocks and debris. The clean soil goes between the rollers and the rock, and the debris works to the side in a windrow. The scarifier also brings up debris from below the ground and loosens the soil so the rollers can function more efficiently.

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 tractor. 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.

OPERATION

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.

HYDRAULIC SELECTOR VALVE

The hydraulic valve allows the operator to change, 1) the angle of the rake, 2) the working depth of the rollers, and 3) the depth of the scarifier tines by just moving the hydraulic control on the tractor.

These three functions are possible using a directional valve mounted on the Power Rake. This directional valve is controlled by rotating the handle to desired function indicated on the valve.

POWER ROLLERS

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

Also, the Power Rake (mast and pivot section) should be level with the ground front-to-back. To accomplish this, adjust the top link up or down, raise or lower the 3-point hitch.

The penetration of the rollers is controlled by the lift cylinder (90). This lift cylinder is connected to a pivoting link (137), which allows the roller to float and to follow the contour of the grade. However, the pivot link can be locked out with the provided pin (103) adding the full weight of the Power Rake to the lift cylinder. This gives it "down pressure" and allows you greater control for the penetration of the rollers in the ground.

The normal gap between the rollers for average conditions is about 1 inch. This gap can be adjusted either wider or narrower by turning the adjusting bolt (Figure 6) at each end of the roller. A wider opening will allow more dirt and debris to pass through the rollers. For finer raking, reduce the gap between the rollers. Be careful not to let the two rollers hit. The gap between the rollers should be even on both ends.

Scarifier-Tines

The function of the tines is to loosen rock and debris below the ground surface. They should be allowed to run in the dirt 2 to 3 inches deep. Tine shovels are reversible and replaceable when worn.

OPERATION

Operating Depth

When power raking, the depth will determine how much dirt is carried ahead of the rollers. The ideal depth will vary with conditions and can be anywhere from skimming the surface to about 3 inches deep. See instructions in “Power Rollers” pg. 14, to set roller depth.

When making the first windrow, the level of dirt may be halfway up on the top roller. When moving the windrow two or three times, the level of the dirt may be to the top of the top roller. 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 move 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 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.

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.**

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.**

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.

OPERATION

STORAGE

Make sure the disconnected power rake is stored on a hard, level surface.

CAUTION

- **Keep children and bystanders away from storage area.**

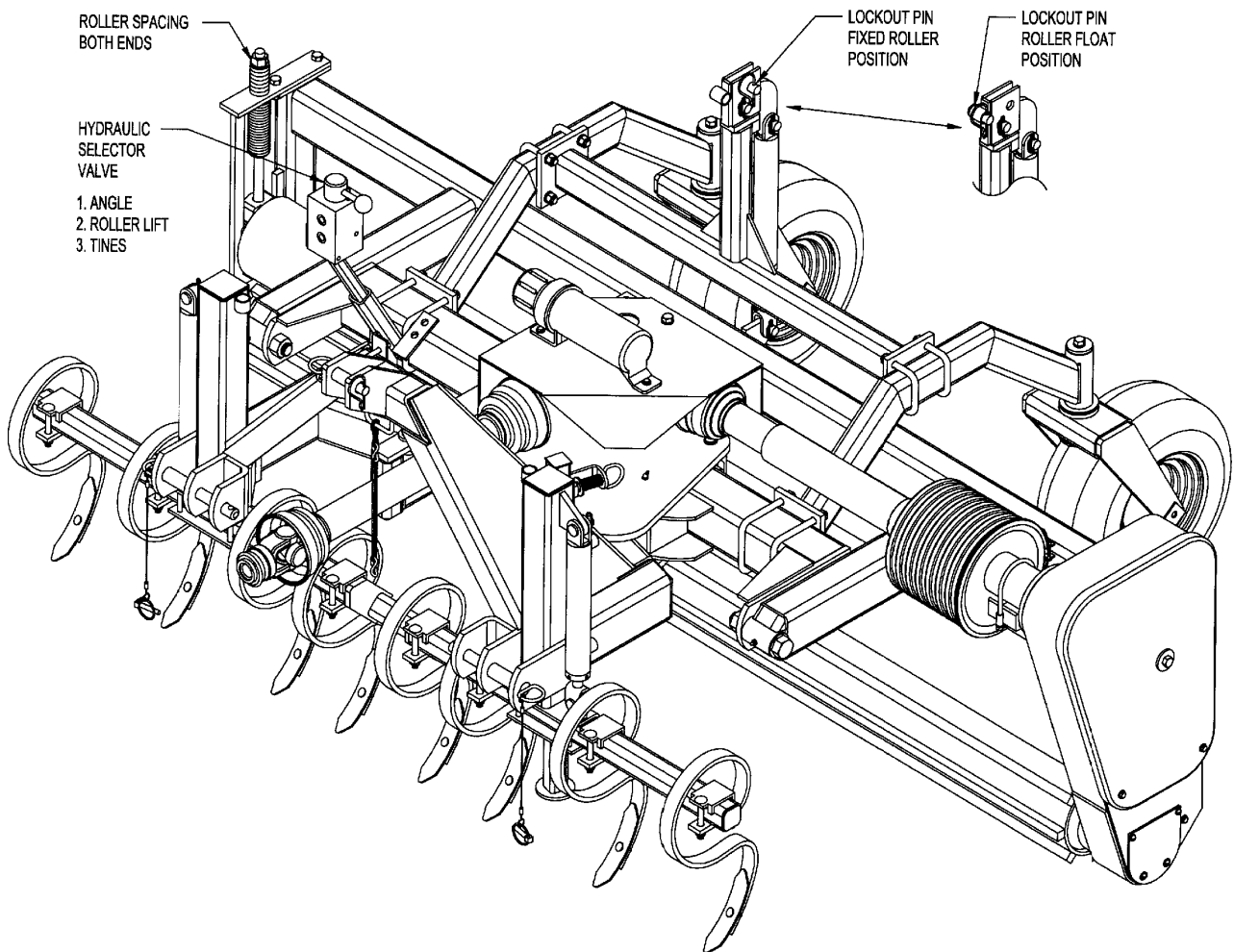


Figure 2

MAINTENANCE

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.**

- **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.**



WARNING

- **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.)**

MAINTENANCE

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.

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.

Check tire pressure. Maintain 60 psi cold.

Lubricate driveline universal joints.

MONTHLY MAINTENANCE

Lightly lubricate bearing at each end of the rollers (1-2 pumps). 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.

Inspect drive chain.

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 85W 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.

The adjustment for chain tension is in the chain case. To tighten the chain, turn the stop nut on the end of the tension rod. Let the spring give the desired tension.

NOTE: The tension spring should be compressed to seven (7) inches for proper tension.



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 85W 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.

SPROCKETS

Sprockets should be checked to be sure slotted hex nut 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.

LUBRICATION MAINTENANCE

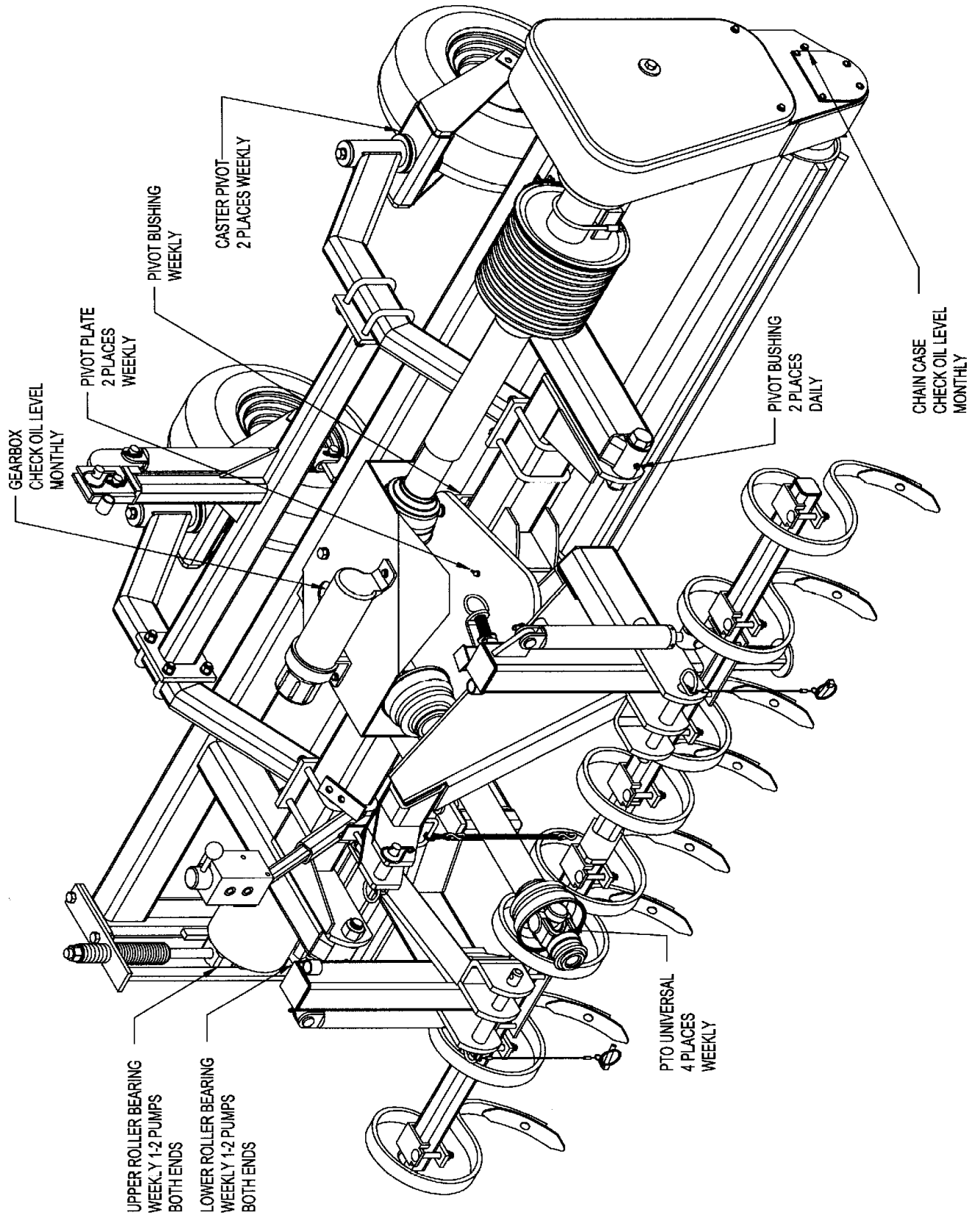


Figure 3

TROUBLE SHOOTING

Problem	Possible Cause
Roller will not turn.	Tractor PTO not engaged. Clutch friction discs worn. Obstruction between rollers. Chain broken. Gearbox damaged. Broken drive shaft between clutch and chain drive.
Hydraulic cylinder inoperative.	Hose ends not completely engaged. Tractor hydraulic shut-off in the “closed” position. Insufficient oil in system. Air in hydraulic system. Obstruction in valve or hydraulic lines. Broken hose. Worn, damaged, insufficient, or inadequate hydraulic pump.
Oil leaks.	Worn or damaged seal. Loose or damaged hoses. Loose or damaged connections. Worn or damaged housing.

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

Run-In

If the rake has not been used or has not been operated for one year, the following run-in procedure is recommended.



WARNING

- **Before dismounting tractor or performing any service or maintenance, disengage power to the 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 break, remove key, and unfasten safety belt.**

The Weasler Torqmaster clutch is a preset, nonadjustable friction disc clutch. Follow the directions below for run-in and clutch maintenance.

TOOLS REQUIRED:

- (1) 1/2" box end wrench or socket and torque wrench.
1. Make sure tractor is off and the PTO disengaged.
2. Disconnect the drive line from the tractor.
3. Remove the clutch shield clamp and slide the shield over to expose the clutch.
4. Locate the six (6) bolts (Item 196) on the OD. of the clutch pack. Loosen the bolts until they rotate freely, finger tighten each bolt, and then tighten each bolt one-half turn.
5. Replace shield back over the clutch and clamp in place.
6. Attach the driveline to the tractor and start the tractor. Engage the tractor PTO and run for a few seconds, or until the friction clutch visibly smokes.
7. Disengage the tractor PTO and shut the tractor off, observing the above-mentioned precautions.
8. Disconnect the drive line from the tractor.
9. Tighten the six (6) bolts (Item 196) on the OD of the clutch pack until the compression plate (Item 185) is in contact with the housing (Item 179). Then tighten each bolt to 30 ft. lbs.
10. Locate the four (4) bolts (Item 197) that attach the yoke and hub (Item 186) to the clutch pack and check that each bolt is tightened to 30 ft. lbs.
11. Replace the clutch shield and clamp in place.

MAINTENANCE

CLUTCH ASSEMBLY

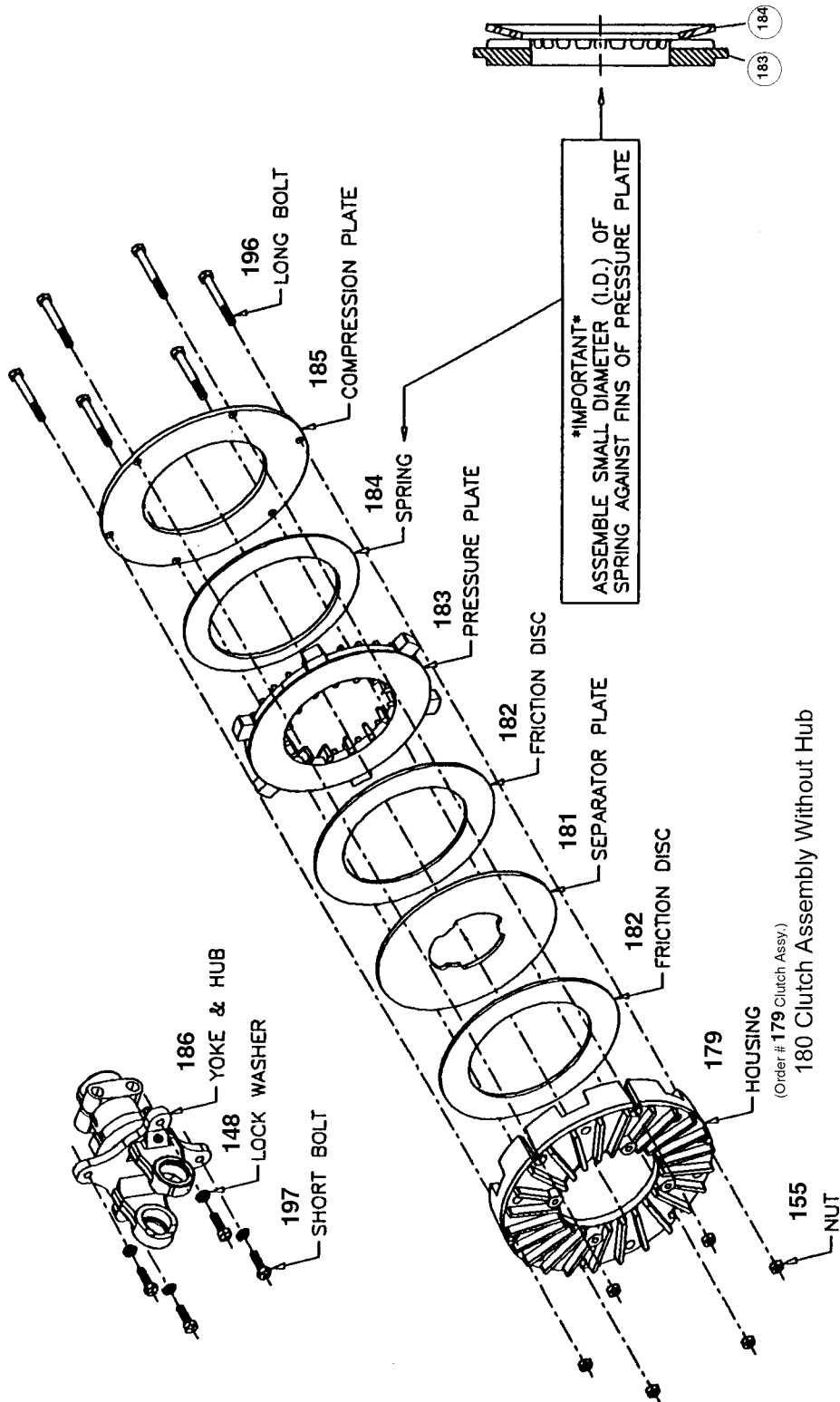


Figure 4

MAINTENANCE

FRICITION DISC REPLACEMENT

1. Make sure tractor is off and the PTO is disengaged.
2. Disconnect the drive line from the tractor.
3. Remove the clutch shield clamp and slide the shield over to expose the clutch.
4. Loosen the 3/8" jam nuts and set screws, securing clutch/PTO to the drive shaft and slide clutch off the drive shaft.
5. Remove the six (6) bolts (Item 196) on the OD of the clutch pack. Remove Items 179 through 185. Replace friction discs and reassemble.
6. Position clutch on drive shaft and secure in place with set screws and jam nuts.
7. Follow procedure for clutch run-in before using rake.

TOP BEARING HOUSING SERVICE

If it is necessary to service the bearing housing because of bearing or shaft failure, please follow these instructions.

IMPORTANT

- **We suggest the bearings also be replaced when the shaft is replaced. See replacement parts in Index to Parts List elsewhere in this manual.**

Removal

Remove chain from top sprocket. Then remove top sprocket by removing the hex bolt and washers.

Remove the clutch shield and side PTO.

Remove the four bolts holding the bearing holder to the chain case.

Press on end of shaft with dimple hole, forcing the shaft to come out. It will now be necessary to reach with a large punch and push each bearing out.

Reassembly

Press bearing (36B) in bearing holder with collar of bearing to the center of the holder. Be careful to press only on the outer bearing race until the bearing hits the shoulder and stops. See Figure 5.

Insert the shaft in the bearing with the spline end at the flange end of the holder.

Slide the sleeve over the shaft and into the bearing holder.

Press bearing (36A) into the bearing holder with the collar part of the bearing facing toward the center of
PN-P971400 (02/2005)

the holder. Be careful to press on both the outer and inner bearing races until the inner race rests on the sleeve. Figure 5.

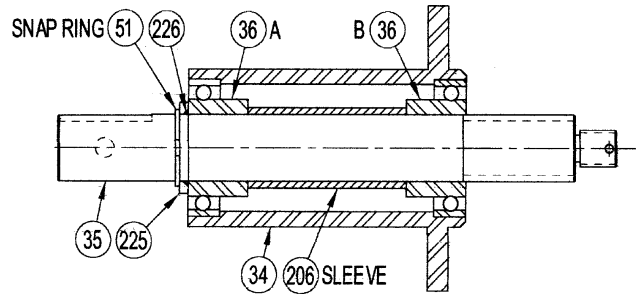


Figure 5

Replace O-ring, O-ring spacer, and the snap ring. Check O-ring for cuts or nicks.

Apply a liberal amount of silicone sealer to the inside of the flange. Attach the bearing holder to the chain case with four bolts and lock washers.

Slide the top sprocket, hub first on the shaft. Use machine bushings on the inside or outside of the sprocket for proper alignment.

IMPORTANT

- **At least one machine bushing MUST be placed between the sprocket and the bearing to prevent damage to the bearing.**

Replace washers, slotted hex nut and cotter pin. Replace chain, PTO and clutch guard.

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.

ROLLER BEARING REPLACEMENT

To change bearings on the chain case side (left side) of the rollers, follow these instructions. Some of the same instruction would apply to the bearings on the opposite end.

MAINTENANCE

Bottom Roller Bearing: Left Side

1. Remove the bottom bearing on the right side from the frame.
2. Remove the drive chain. Then remove the sprocket by removing the cotter pin, slotted hex nut, and washers.

NOTE: Have the roller blocked up or supported.

3. Loosen the eccentric locking collar from the bearing and pull the roller out of the bearing. Loosen the bolt from bearing clamp which holds the cartridge bearing in place on back side of chain case. Remove the bearing and the O-ring.

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

5. When replacing the left bearing, first put the O-ring on the bearing. If the O-ring will not stay on the bearing long enough to set the bearing in place, put a little heavy grease on the O-ring. Now push the bearing in and apply moderate pressure on the bearing so the O-ring will seat and spread slightly thus keeping the oil in the chain case from escaping through the bearing.

6. Reinstall sprocket and chain. Fill chain case with 1.5 pints of 85W 140 wt. lube. Rotate roller and watch for any interference between roller and frame.

Top Roller Bearing Slide: Left side (Figure 6)

1. To replace the bearing or quad seal, remove the RTU bearing holder on the right side. Remove the drive chain. Then remove the sprocket by removing the cotter pin, slotted hex nut, and washers.

2. Remove the three hex head bolts holding the front slide bar (28) being careful not to damage the brass shims between the slide bar and the chain case. Remove the two hex head bolts holding the rear slide bar. Now the roller, the bearing, and bearing slide can be removed.

3. To replace, reverse the order. Be sure all parts and wear surfaces are clean and in good condition. Be sure the quad ring seal is also in good condition. When replacing, put a little grease on the quad ring seal, on the surface it slides against, and on the slide bars. Replace the shim stock and tighten the three hex head bolts.

Position rear slide bar up against bearing slide, add

the two bolts, apply moderate pressure against the bearing slide and tighten the bolts. The bearing slide should be moderately difficult to move up and down. Add or remove shims as needed.

GENERAL BEARING REPLACEMENT INSTRUCTIONS:

-IMPORTANT NOTICE-

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.

-IMPORTANT NOTICE-

Bolt the bearing housing tightly to the frame and then lock bearing to the shaft as follows: Lock bearing to shaft by rotating the eccentric collar in the direction of the shaft rotation. Rotation is clockwise for both rollers when standing at the chain case. Use a punch and tap the collar tight torquing the set screw on shaft to 70 inch pounds. Use a good grade of thread lock on the set screws.

Protective Collars

The special protective collars protect bearings from vine and wire wrap, and dirt buildup next to the bearing seal. The protector locks 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.

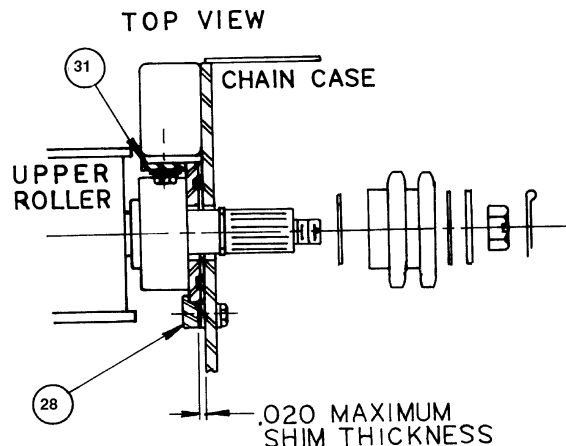


Figure 6

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 moveable 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.

SETUP 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 & 6.

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

Tools Required

3/4", 7/16", 9/16", 11/16" Wrench

Phillips Screw Driver

Rubber Hammer

3/16" Allen Wrench

It is advisable to have a mechanical lifting device to facilitate uncrating. **Do not attempt to lift frame components alone.**

UNPACKING CRATE

Be careful of nails in boards when uncrating.

Remove top, sides, and ends of crate.

Remove scarifier tines.

Remove gauge wheel assemblies.

Remove cross frame assembly.

Remove parts box.

Remove power rake from crate. Remove loose nails from boards and dispose of crate according to local codes.

ASSEMBLY PROCEDURE

NOTE: The reference to front or back, left hand or right hand, used in this manual refers to the position when standing at the rear (by the tires) of the unit facing forward.



WARNING

- Do not allow other people in the area when operating, attaching, removing, assembling, or servicing equipment.
1. Raise front of rake up so the pivot arms of the frame are horizontal. Temporarily place jack stands (not provided) or securely block at each place marked with an "S" on Figure 1.
 2. Install leg stand (102) into holder and pin in lowered position.
 3. Remove gray shipping link holding mast assembly to frame assembly being careful that mast assembly does not roll over unexpectedly.

ASSEMBLY

4. Roll mast assembly over forward until the arms of the mast and pivot assembly are level. NOTE: Frames must be parallel to allow gearbox shield to pass by top roller.

5. Attach the two caster arms (134) LOOSELY to the pivot frame. Do not tighten yet.

6. Attach and tighten the cross member (136) to the two caster arms with four 1/2" U-bolts, nuts, and lock washers. You will note that the cross member can only be attached to the front half of the horizontal member of the caster arms. There is an obstruction to prevent the U-bolts from being placed incorrectly.

7. Now center and tighten the caster wheel frame assembly to the pivot frame.

8. Attach lift cylinder (90) to pivot link (137) and frame ear using pins supplied with cylinder. Now you may remove the temporary jack stands.

- IMPORTANT NOTICE-

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.

9. Loosen band clamp (84) and dismount clutch shield. Slide the clutched PTO (78) into the PTO coming from the gearbox. IMPORTANT: Place clutch shield over assembled PTO. Clean the 1-3/8" drive shaft with the enclosed emery cloth and attach the clutch end of PTO as follows:

Line up dimple hole in shaft with set screw hole in PTO. Use one 5/16" x 2" key (77) in keyway. Also, use one 3/8" x 3/4" set screw on the key and one 3/8" x 1-1/4" set screw with jam nuts 82 to the side of the key. Use a good grade of thread lock on set screws and jam nuts.

10. Install the two stepped category hitch pins (120) and hairpin retainers. Also, attach the top hitch pin (106) and category II sleeve (107) in the mast.

11. To attach the four outer S-Tines (117) on the tool bar, put the bracket (116) on the tine, slide tine and bracket over one end of the tool bar and position according to the given dimensions in Figure 1. Add a 7/16" x 3-1/2" carriage bolt through the bracket and the S-Tine. Attach lock washer and nut making sure the bracket and tine are settled on the tool bar.

To attach the four inner S-Tines, you must force the S-Tine (117) over the bar, then attach the bracket (116) with the bolt, lock washer, and nut.

-IMPORTANT NOTICE-

In our experience, the tines are one of the first items to come loose - check them often.

12. Mount hydraulic selector valve to the top cross tube on the mast, using the 3/8" U-bolts, lock washers, and nuts.

13. Check oil level in chain case, add EP 85W140 wt., if required. See instructions near fill/vent plug (Figure 2).

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.**

ASSEMBLY

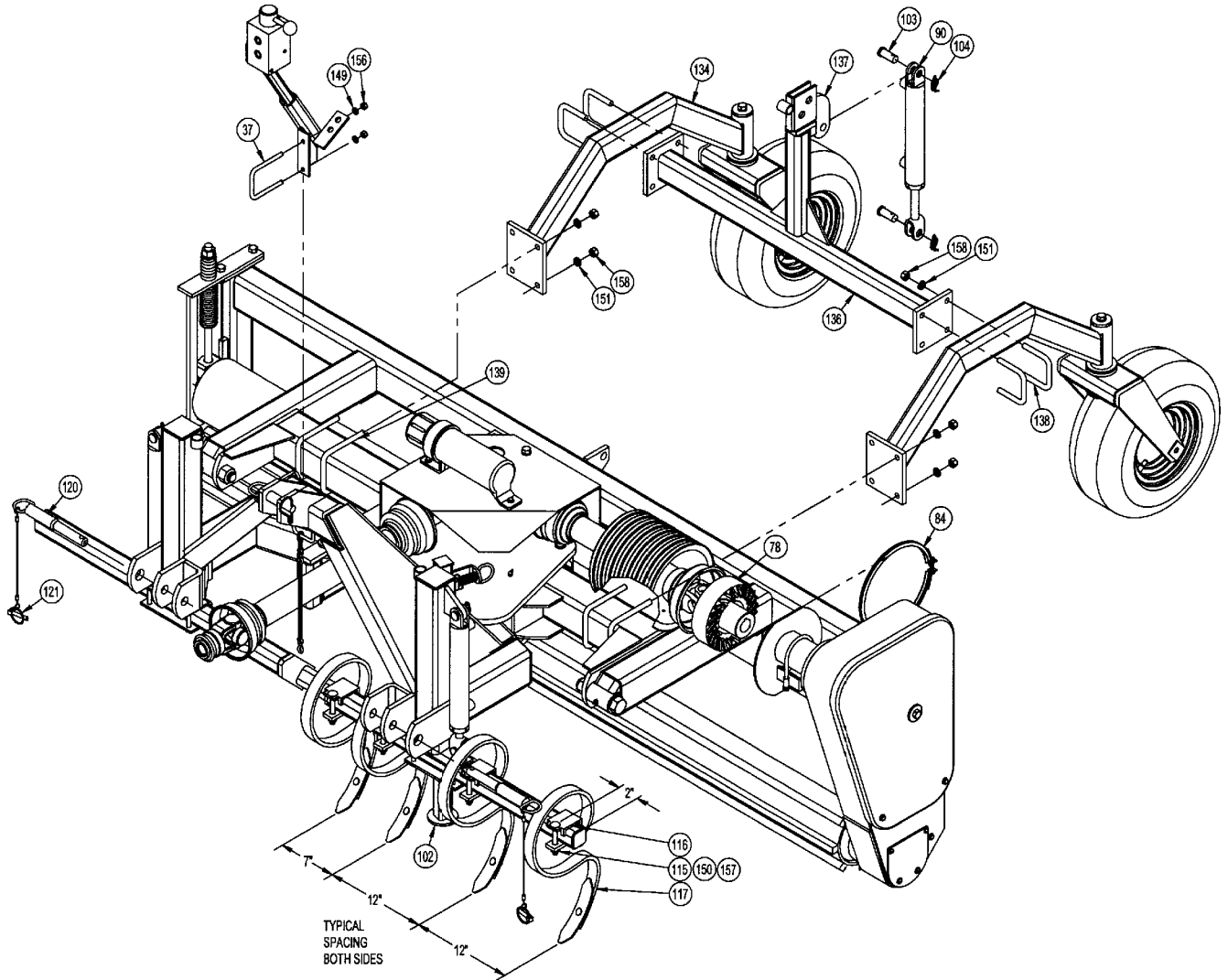


Figure 7

GENERAL ASSEMBLY

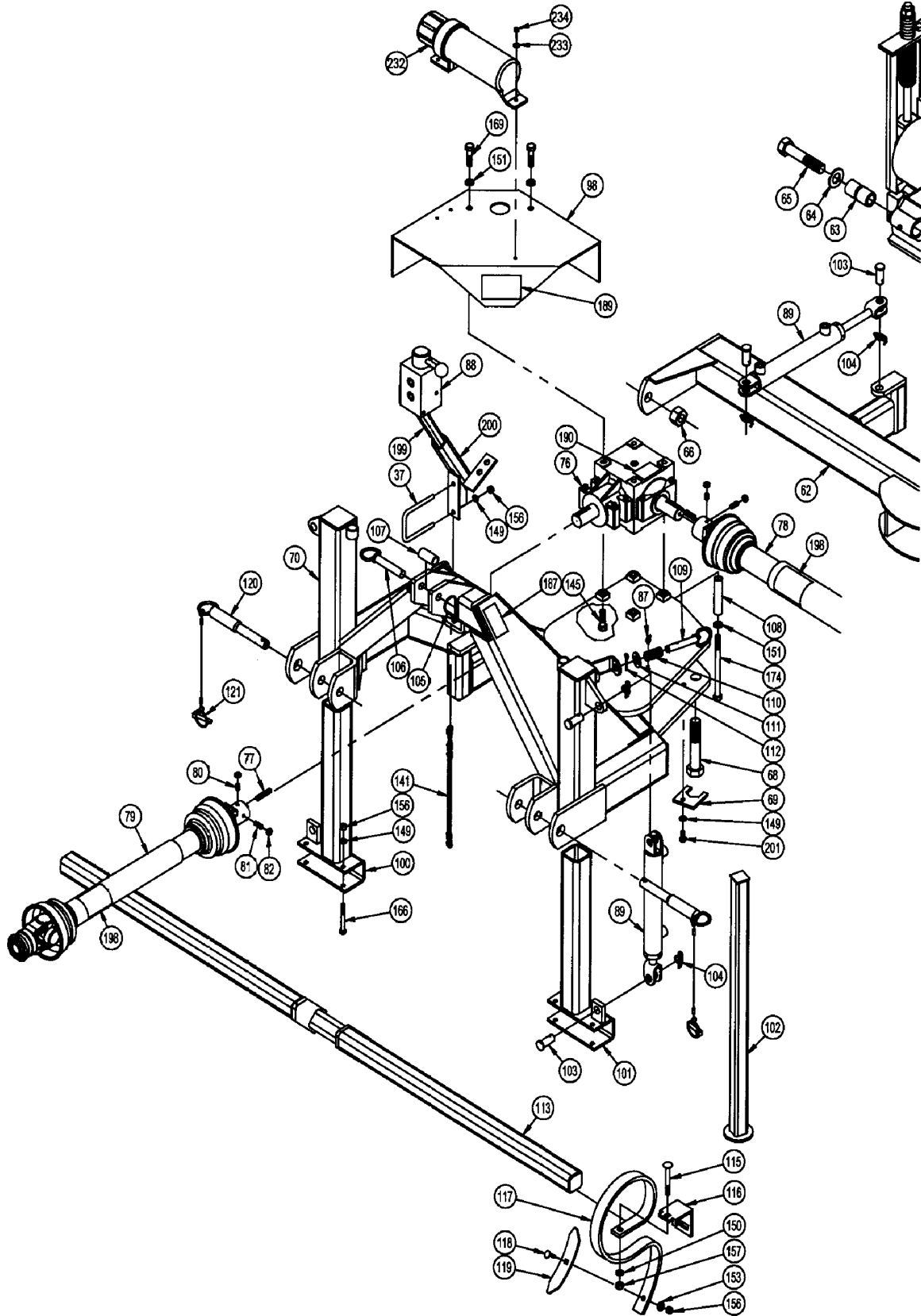


Figure 8L

GENERAL ASSEMBLY

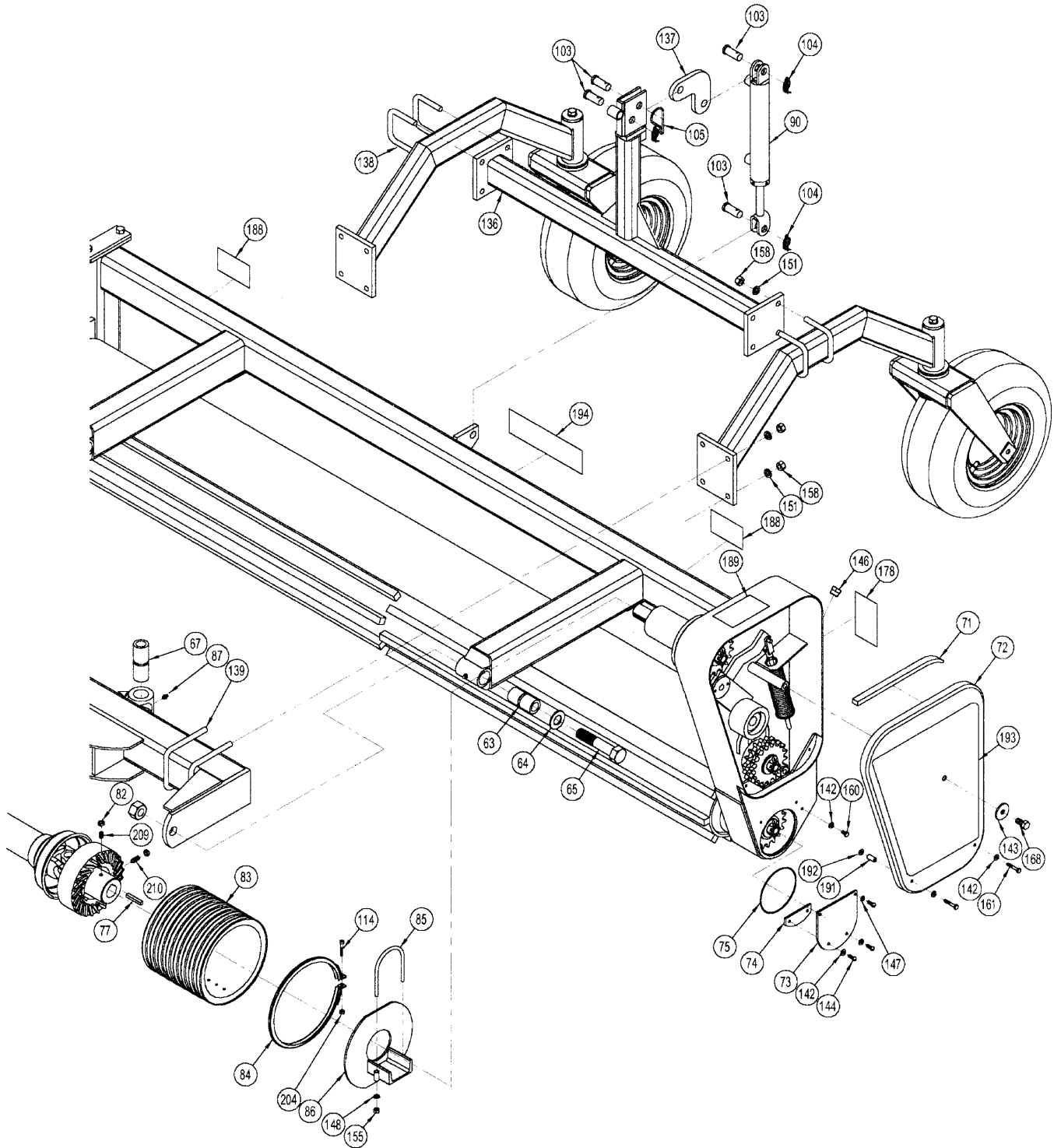


Figure 8R

FRAME & DRIVE ASSEMBLY

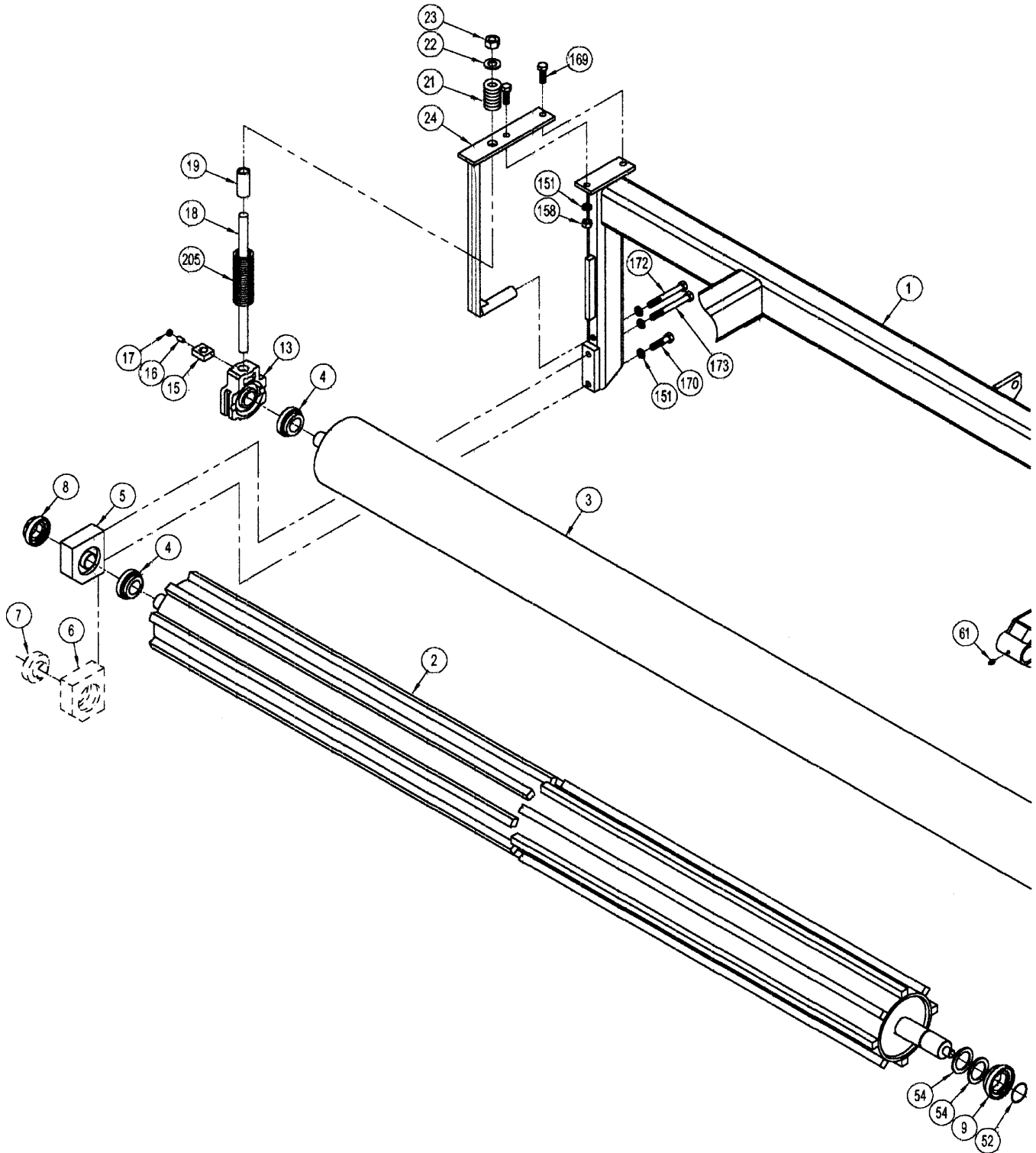


Figure 9L

FRAME & DRIVE ASSEMBLY

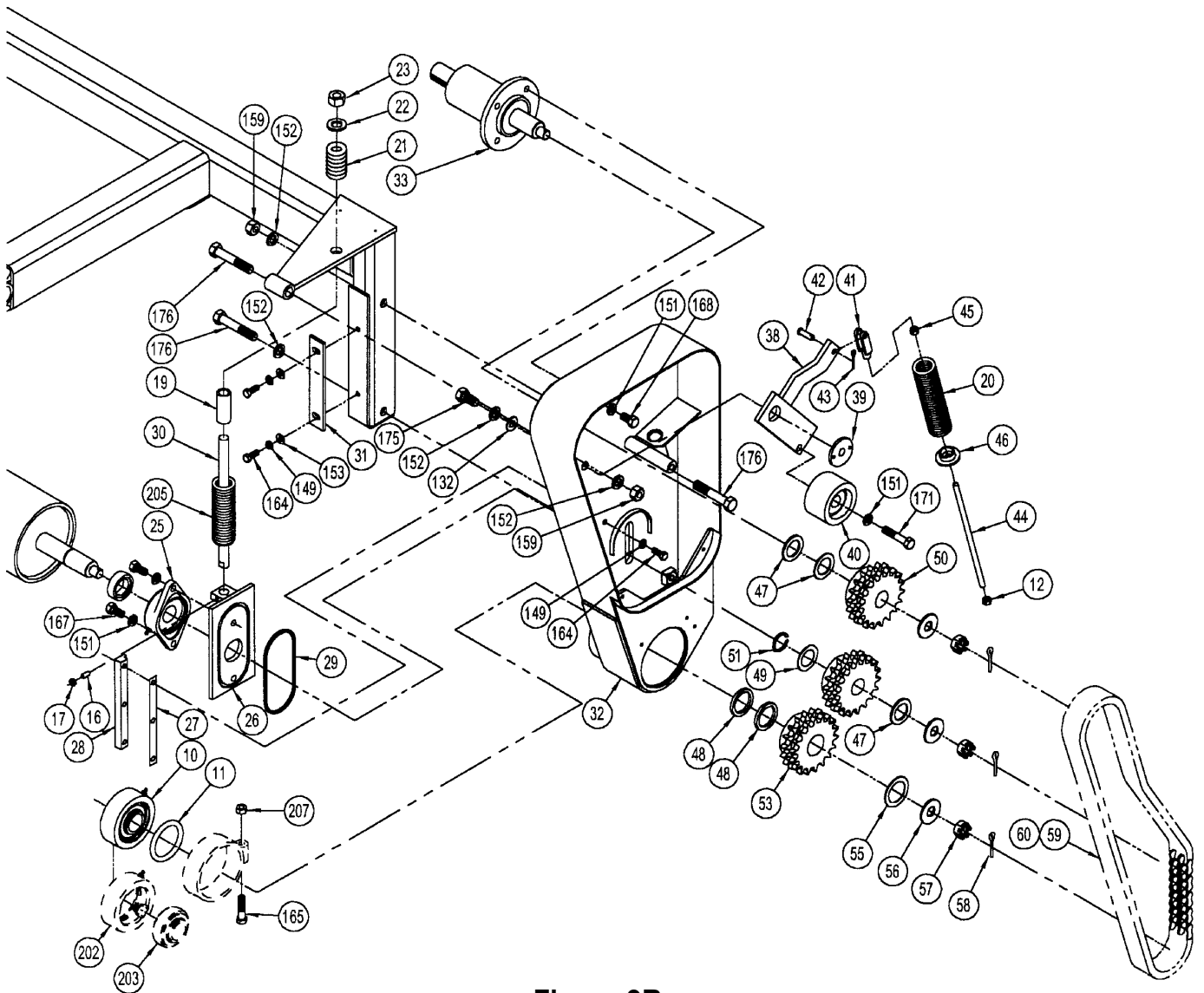


Figure 9R

HYDRAULIC ASSEMBLY

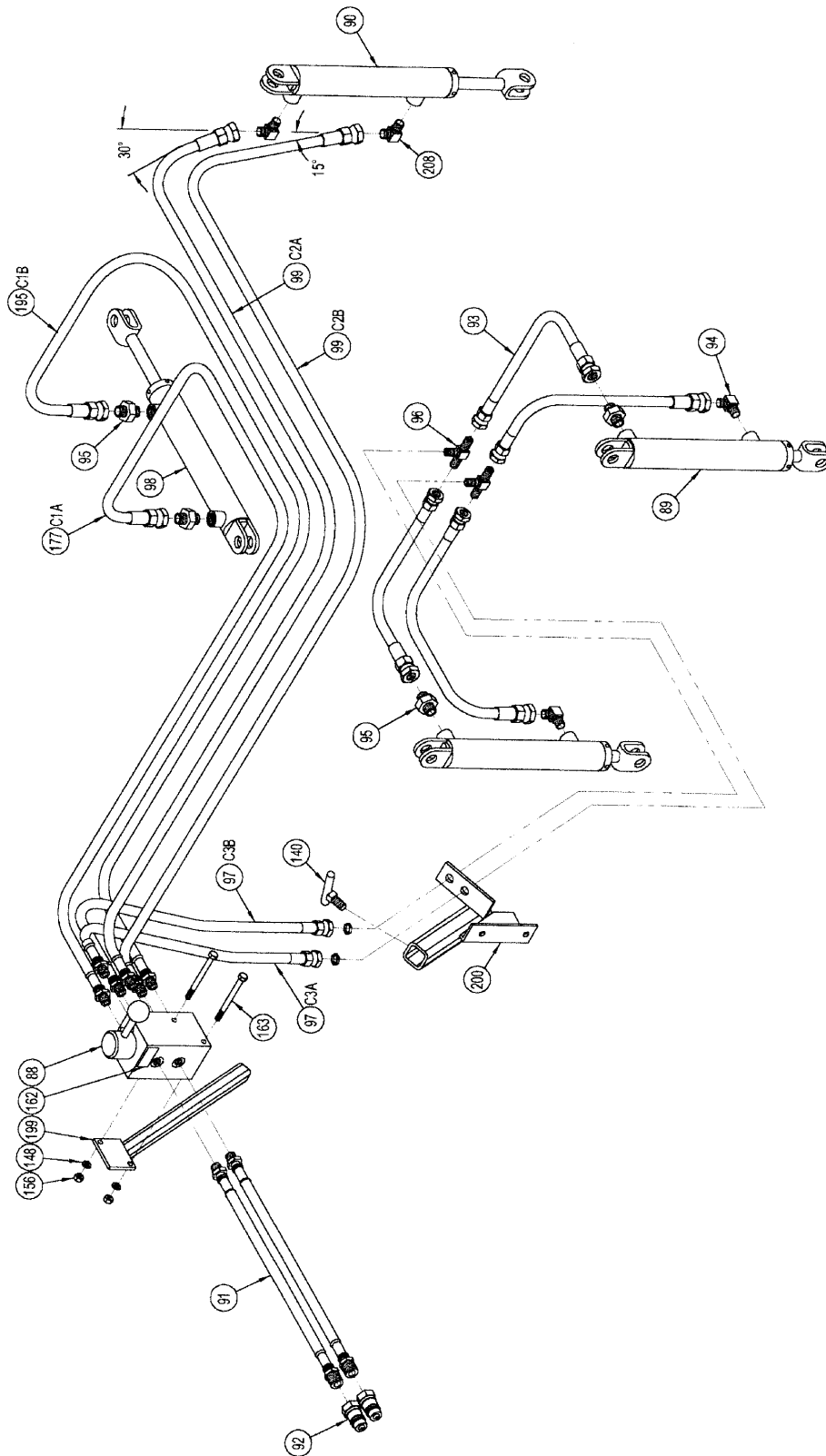


Figure 10

GAUGE WHEEL

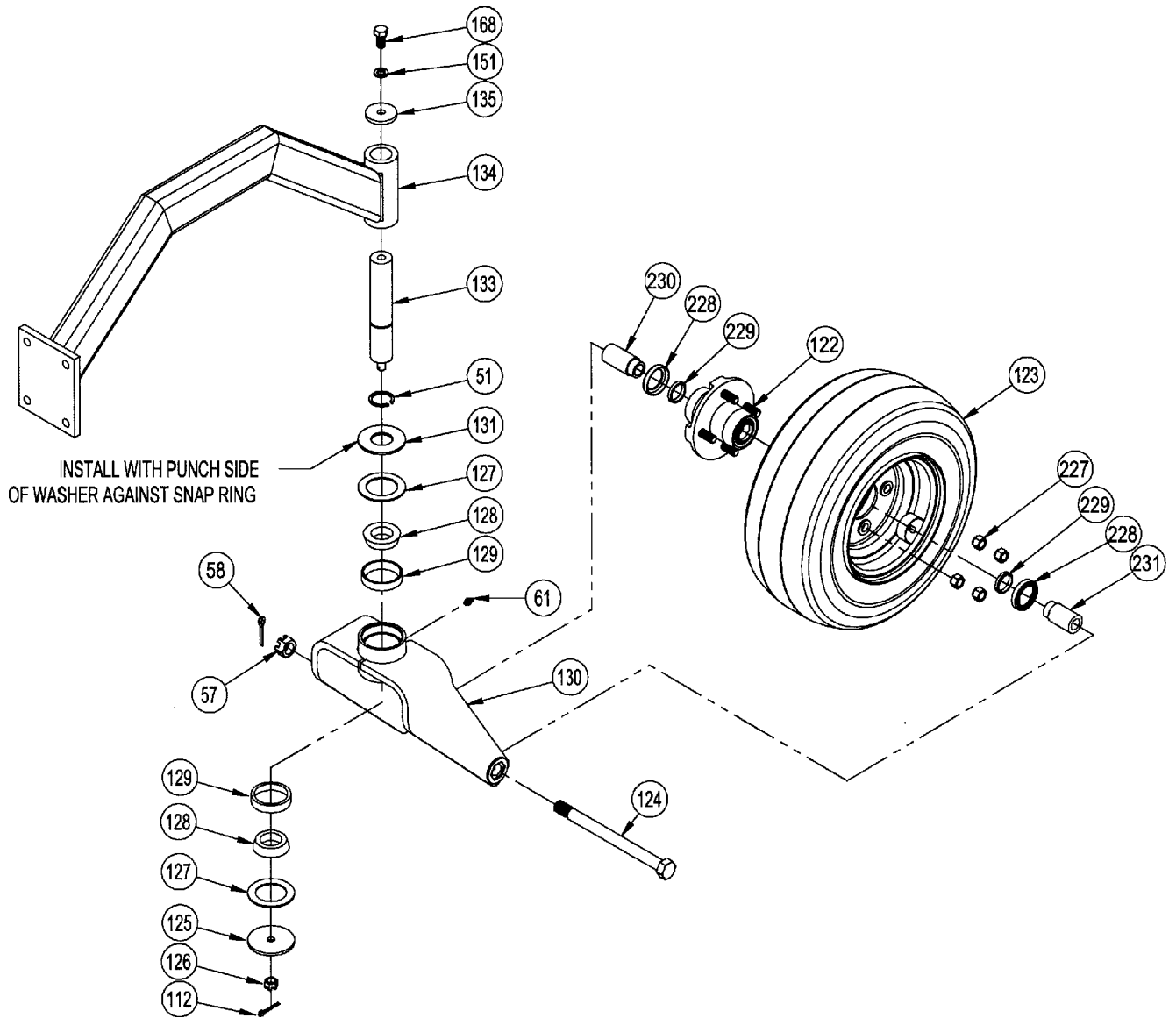
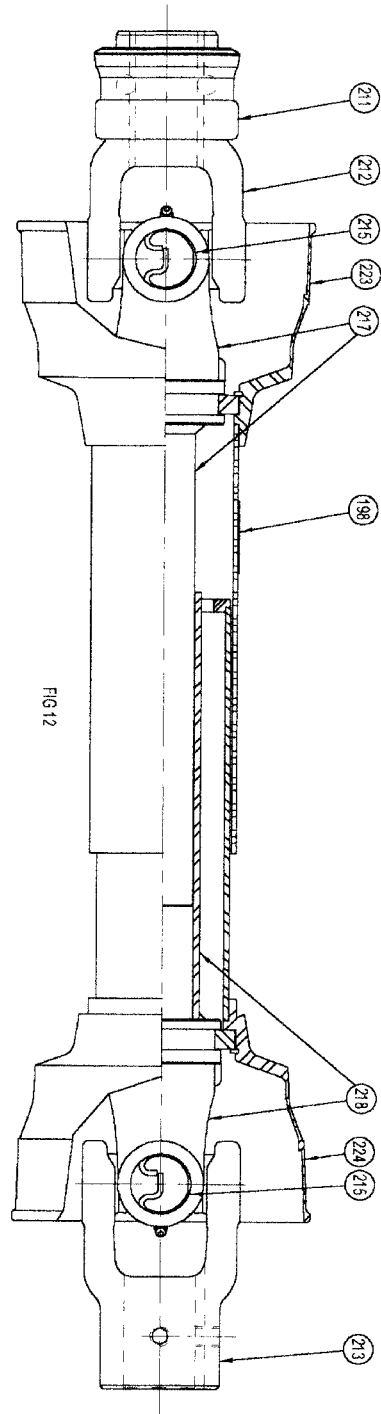
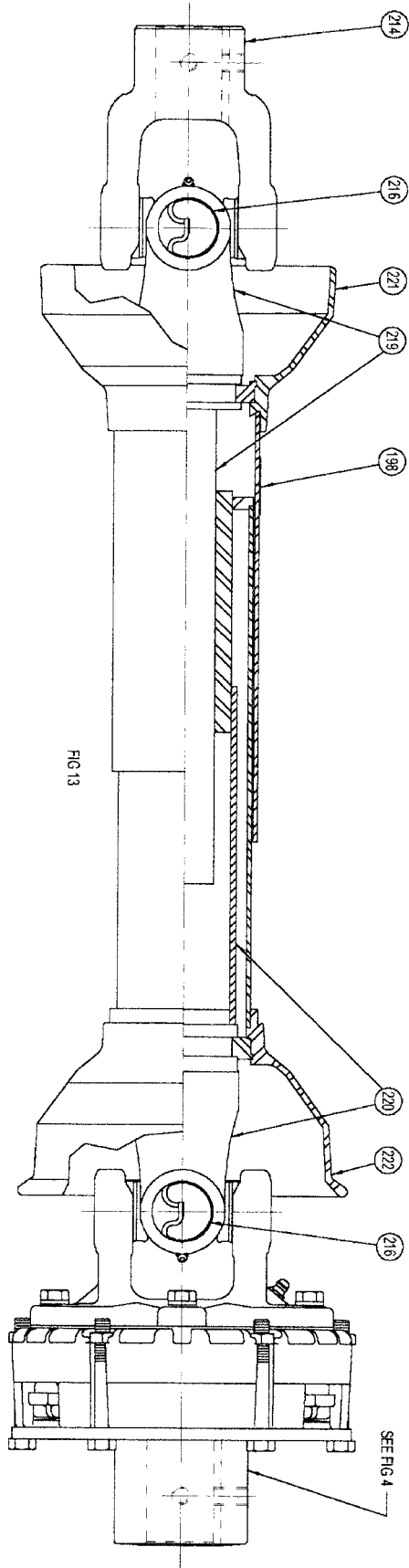


Figure 11

DRIVE LINE



NOTES

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION	ITEM	QTY	PART NO.	DESCRIPTION
1	1	M8202	MAIN FRAME	72	1	M8244	COVER
2	1	M8258	BAR ROLLER	73	1	M8241	LOWER COVER
3	1	M8254	SMOOTH ROLLER	74	1	M8272	COVER TAB
4	2	P015301	1-3/8" ECC LOCK COLLAR	75	1	P500202	O-RING 3/32" X 4-3/4"
5	1	M6261	1-3/8" TAP BASE BEARING	76	1	P205400	GEARBOX
6	1	P015200	TAP BASE BEARING HOUSING	77	3	M5000-5	5/16" X 2" SQ KEY
7	1	P009500	BEARING INSERT	78	1	P403250-1	SIDE PTO CLUTCH HALF
8	1	P015302	1-3/8" SET SCREW COLLAR			P403250-2	SIDE PTO GEARBOX HALF
9	1	P015309	1-3/4" LOCK COLLAR	79	1	P403300-1	FRONT PTO TRACTOR HALF
10	1	M8280	1-3/4" CARTRIDGE BEARING			P403300-2	FRONT PTO GEARBOX HALF
			(See 202 & 203)	80	2	P108610	3/8" X 5/8" SET SCREW
11	1	P500203	O-RING 3/8" X 2-5/8"	81	2	P108616	3/8" X 1" SET SCREW
12	1	P158006	3/8-16 ELASTIC STOP NUT	82	6	P155400	3/8" HEX JAM NUT
13	1	P009700	1-3/8" RTU BEARING	83	1	M6262	SHIELD
14	2	P620400	1/8 NPT X 90 GREASE FITTING	84	1	P128600	BAND CLAMP
15	1	M6056	RTU NUT	85	1	P128500	U-BOLT 5/16" ROUND
16	2	P108512	5/16-18 X 3/4" SET SCREW	86	1	M6258	SHIELD MOUNT
17	2	P155300	5/16-18 JAM NUT	87	3	P620000	1/4-28 X 45° GREASE FITTING
18	1	M8248	ROLLER ADJUSTING SCREW	88	1	P290700	MANIFOLD ASSEMBLY
19	2	M6267	SLEEVE	89	3	P257000	HYDRAULIC CYLINDER 2" X 8"
20	3	P601200	SPRING 9"	90	1	P256000	HYDRAULIC CYLINDER 1-1/2" X 8"
21	8	P400021	SPRING 2-5/16"	91	2	P246200	1/4" HOSE X 40" 8MP-6MB
22	2	P850812	3/4" SAE WASHER	92	2	P272600	QUICK COUPLER
23	2	P157600	3/4" LOCK NUT	93	4	P246100	1/4" HOSE 27" 6FJX-6FJX
24	1	M8224	BEARING SUPPORT	94	4	P261300	90° ELBOW 1/2NPT-6JIC
25	1	P015000	1-3/8" FLANGE BEARING	95	4	P276105	ADAPTER 1/2NPT-6JIC
26	2	P956400	SLIDE PLATE	96	2	P265400	BULKHEAD TEE-6
27	2	M6260	SHIM	97	2	P245023	1/4" HOSE X 26" 6FJX-6MB
28	1	M6232	SLIDE BAR	98	1	M8259	GEARBOX SHIELD
29	1	P500100	QUAD RING	99	2	P246392	1/4" HOSE X 60" 6FJX-6MB
30	1	M8247	ROLLER ADJUSTING SCREW	100	1	M8229	SCARIFIER MOUNT RIGHT
31	1	M6231	SLIDE BAR	101	1	M8230	SCARIFIER MOUNT LEFT
32	1	M8232	CHAIN CASE	102	1	M8225	LEG STAND
33	1	M6256	BEARING HOUSING ASSEMBLY	103	10	M5017	PIN 3/4" X 1-1/2"
34	1	M6227	BEARING HOUSING	104	9	P622610	3/4" RUE RING COTTER
35	1	P635005	DRIVE SHAFT	105	2	P627600	HAIR PIN CLIP
36	2	P009204	BALL BEARING	106	1	M5003	PIN 3/4" X 3-3/4"
37	1	P128393	U-BOLT 3/8" X 3" X 4"	107	1	P126250	CATEGORY I-II BUSHING
38	1	M8223	TENSION ARM	108	2	M8249	SPACER
39	1	M6226	TENSIONER .1" FLAT WASHER	109	1	M8263	5/8" PIN
40	1	P477005	IDLER	110	1	P604500	COMPRESSION SPRING
41	1	P900100	YOKE	111	1	P852001	16mm WASHER
42	1	P118700	PIN	112	3	P116204	1/8" X 1" COTTER PIN
43	1	P116003	3/32" X 3/4" COTTER PIN	113	1	M8261	SCARIFIER BAR
44	1	M8288	3/8" X 11-1/4" THREADED ROD	114	1	P115406	1/4" X 1-1/4" FILLISTER HD SCREW
45	1	P150601	3/8-24 HEX NUT	115	8	P104714	7/16" X 3-1/2" CARRIAGE BOLT
46	1	M6021	SPRING WASHER	116	8	P700200	TINE BRACKET
47	3	P855122	10 GA X 1-3/8" MACHINE BUSHING	117	8	P701000	S-TINE 32mm X 10mm X 450mm
48	2	M16056	.218 X 1-3/4" X 2-1/4" SPACER	118	8	P700400	3/8" X 1-1/4" SHOVEL BOLT
49	1	P855522	18 GA X 1-3/8" MACHINE BUSHING	119	8	P700300	TINE SHOVEL
50	2	P661800	18 TOOTH SPROCKET 1-3/8"	120	2	M8456	CATEGORY I-II PIN
51	4	P952200	1-3/8" SNAP RING	121	2	P126207	7/16" LYNCH PIN
52	1	P500175	O-RING 1/16" X 1-3/4"	122	2	P756161	WHEEL HUB W/STUDS
53	1	P661801	18 TOOTH SPROCKET 1-3/4"	122A	2	M16120	WHEEL HUB COMPLETE
54	2	P855128	10 GA X 1-3/4" MACHINE BUSHING	123	2	P756160	WHEEL & TIRE
55	1	P855528	18 GA X 1-3/4" MACHINE BUSHING	123A	2	M16107	WHEEL, TIRE, & HUB
56	3	P850612	3/4" FLAT WASHER	124	2	M10463	3/4" X 9-1/2" AXLE BOLT
57	5	P158000	3/4-16 SLOTTED HEX NUT	125	2	M6223	WASHER
58	5	P116256	5/32" X 1-1/2" COTTER PIN	126	2	P158006	1/2-13 SLOTTED HEX NUT
59	1	M8267	60-2 ROLLER CHAIN 87 PITCH	127	4	P852200	FELT WASHER
60	1	P630202	60-2 CONNECTOR	128	4	P760300	BEARING CONE
61	5	P620200	1/4-28 STR GREASE FITTING	129	4	P760500	BEARING CUP
62	1	M8207	PIVOT FRAME	130	2	M6817	CASTER FORK
63	2	M6218	SLEEVE	131	2	P850620	1-1/4" FLAT WASHER
64	2	P851616	1" HEAVY WASHER	132	1	P850109	9/16" FLAT WASHER
65	2	P101620	1-14 X 5" HEX BOLT	133	2	M8228	CASTER SHAFT
66	2	P156401	1-14 STOP NUT	134	2	M8227	CASTER ARM
67	1	M8250	PIVOT BUSHING	135	2	M5009-6	3/16" X 1/2" X 2" WASHER
68	1	P101622	1-14 X 5-1/2" HEX BOLT	136	1	M8231	CROSS FRAME
69	1	M8275	BOLT LOCK	137	1	M8246	LIFT LINK
70	1	M8209	MAST FRAME	138	4	P128000	1/2" X 3" X 3-1/4" U-BOLT
71	1	M8274	SEAL	139	4	P128150	1/2" X 4" X 5" U-BOLT

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION				
140	1	M6448	T-HANDLE	213	1	P400036	1-3/8" RD END YOKE
141	1	M6266	PTO SUPPORT CHAIN	214	1	P400511	END YOKE
142	5	P500300	1/4" SEAL WASHER	215	1	P400002	14R REPAIR KIT
143	1	M5009-5	1/2" FLAT WASHER	216	2	P400001	35R REPAIR KIT
144	4	P110901	1/4" X 3/4" BUTTON HEAD SCREW	217	1	P403302	YOKE & SHAFT
145	2	P100807	1/2" X 1-3/4" HEX BOLT	218	1	P403301	YOKE & TUBE
146	1	P278001	BREATHER	219	1	P403201	YOKE & SHAFT
147	2	P851104	1/4" LOCK WASHER	220	1	P403204	YOKE & TUBE
148	8	P851105	5/16" LOCK WASHER	221	1	P403202	OUTER GUARD
149	8	P851106	3/8" LOCK WASHER	222	1	P403203	INNER GUARD
150	8	P851107	7/16" LOCK WASHER	223	1	P403303	OUTER GUARD
151	32	P851108	1/2" LOCK WASHER	224	1	P403304	INNER GUARD
152	4	P851110	5/8" LOCK WASHER	225	1	M5503	O-RING SPACER
153	10	P850106	3/8" FLAT WASHER	226	1	P500138	O-RING 1/16" X 1-3/8" ID
155	10	P150500	5/16" HEX NUT	227	8	P756165	1/4-20 WHEEL NUT
156	14	P150600	3/8" HEX NUT	228	2	P756163	GREASE SEAL
157	8	P150700	7/16" HEX NUT	229	2	P762200	1" BEARING SEAL
158	18	P150800	1/2" HEX NUT	230	1	M16108	AXLE SPACER SHORT
159	2	P151000	5/8" HEX NUT	231	1	M16109	AXLE SPACER LONG
160	1	P100402	1/4" X 1/2" HEX BOLT	232	1	P136000	MANUAL TUBE
161	2	P100406	1/4" X 1-1/2" HEX BOLT	233	3	P850104	1/4" FLAT WASHER
162	1	P975506	VALVE DECAL	234	3	P100403	1/4" X 3/4" HEX BOLT
163	2	P100513	5/16" X 3-1/4" HEX BOLT				
164	5	P100604	3/8" X 1" HEX BOLT				
165	1	P102808	1/2" X 2" FINE THD HEX BOLT				
166	4	P100612	3/8" X 3" HEX BOLT				
167	2	P102804	1/2" X 1" FINE THREAD HEX BOLT				
168	7	P100804	1/2" X 1" HEX BOLT				
169	4	P100806	1/2" X 1-1/2" HEX BOLT				
170	1	P100808	1/2" X 2" HEX BOLT				
171	1	P100810	1/2" X 2-1/2" HEX BOLT				
172	1	P100816	1/2" X 4" HEX BOLT				
173	1	P100818	1/2" X 4-1/2" HEX BOLT				
174	2	P100828	1/2" X 7" HEX BOLT				
175	1	P101005	5/8" X 1-1/4" HEX BOLT				
176	3	P101014	5/8" X 3-1/2" HEX BOLT				
177	1	P246240	1/4 HOSE X 40" 6FJX-6MB				
178	1	P975600	LUBRICATION DECAL				
179	1	P403251	CLUTCH ASSEMBLY				
180	1	P403252	CLUTCH ASSY LESS HUB				
181	1	P400752	SEPARATOR DISC				
182	2	P400755	FRICITION DISC				
183	1	P400753	PRESSURE PLATE				
184	1	P400757	SPRING 15000				
185	1	P100754	COMPRESSION PLATE				
186	1	P403258	YOKE AND HUB				
187	1	P970100	OPERATION WARNING DECAL				
188	2	P970200	ROTATE WARNING DECAL				
189	2	P970300	DRIVE WARNING DECAL				
190	1	P970301	DRIVE WARNING DECAL(SMALL)				
191	2	P481010	SPACER				
192	2	P500302	1/4" RUBBER FACE WASHER				
193	1	P975912	RAKE DECAL PRO 8				
194	1	P970800	HARLEY LOGO DECAL (SMALL)				
195	1	P246248	1/4" HOSE X 48" 6FJX-6MB				
196	6	P100510	5/16" X 2-1/2" HEX BOLT				
197	4	P100504	5/16" X 1" HEX BOLT				
198	2	P970400	SAFETY WARNING DECAL				
199	1	M8285	VALVE MOUNT				
200	1	M8286	VALVE BASE				
201	1	P100603	3/8" X 3/4" HEX BOLT				
202	1	P015215	CYLINDRICAL BEARING HOUSING				
203	1	P012200	1-3/4" BEARING INSERT				
204	1	P158003	1/4" LOCK NUT				
205	2	P603500	5-1/2" SPRING				
206	1	M6301	SLEEVE				
207	1	P155852	1/2-20 LOCK NUT				
208	1	P261350	9° ELBOW 6 OR X 6 MJ90				
209	1	P108612	3/8" X 3/4" SET SCREW				
210	1	P108620	3/8" X 1-1/4" SET SCREW				
211	1	P400031	LOCK YOKE REPAIR KIT				
212	1	P400803	LOCK YOKE ASSY				

LIMITED WARRANTY

Glenmac Inc warrants its line of Harley equipment to be free from defects in material and factory workmanship for a period of twelve (12) months. Exception to this warranty period will be Harley Rock Pickers, which will carry a six- (6) month warranty.

Warranty registration form must be filled out, signed by the customer and returned to Glenmac within thirty (30) days from the date of purchase before any warranty claim will be considered. Dealer rental units are considered sold units and the same warranty policy applies.

This warranty is limited exclusively to equipment manufactured by Glenmac Inc and is subject to inspection by Glenmac Inc to identify the nature and cause of failure. This company in no way warrants belts, bearings, hydraulics, chains, sprockets, tires or any other trade accessory not manufactured by Glenmac Inc since these items are warranted separately by their respective manufactures.

This warranty shall become void if in the best judgement of Glenmac Inc the equipment has been subject to misuse, negligence, alterations, and damage 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 drive chains will not be covered under warranty. Normal wear depreciation is not covered by warranty. Claims for equipment damaged in transit should be referred to the freight carrier. Glenmac will not be responsible for damages incurred in transit.

Glenmac Inc obligations under this warranty shall be limited to repair or replacement at its option of the equipment or trade accessories as they conform to this policy. Trade accessories such as but not limited to bearings, tires and wheels etc will be sent to the respective manufacturer for warranty consideration. Any warranty reimbursement as related to these items will rely solely on the decision of each separate manufacture including Glenmac Inc. Reimbursement on parts will be at dealer net and labor allowances are calculated according to Glenmac's predetermined flat time and rate. Freight charges and misc. shop supplies are not covered under warranty.

Dealer's responsibility is to fully explain the warranty policy to the customer before starting any repairs. Return the defective parts (prepaid) along with a completed Glenmac Inc warranty form. All replacement parts used in warranty must be furnished by Glenmac Inc. (Please refer to warranty procedures). The selling dealer has no authority to make any representation or promise on behalf of Glenmac/Harley Enterprises or to modify the terms or conditions of this warranty in any way.

Owner's responsibility is to complete and return the warranty registration within thirty (30) days from the date of purchase. Operate and maintain the equipment according to the recommendations in the owner's manual. The owner is responsible for freight and transportation to and from the dealership or any service calls made by the dealer.

This warranty is subject to any conditions of supply, which may directly affect our ability to obtain materials or manufacture replacement parts.

Glenmac Inc reserves the right to make improvements in design or change in specifications of its products without notice and is not obligated to make the same improvements to equipment previously manufactured.

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 NIETHER GLENMAC INC NOR THE SELLING HARLEY DEALER SHALL HAVE ANY RESPONSIBILITY FOR LOSS OF USE OF THE PRODUCT, LOSS OF TIME, INCONVENIENCE, COMERCIAL LOSS OR CONSEQUENTIAL DAMAGES.

Harley

by

Glenmac^{INC}

Glenmac Inc

1805 2nd Avenue SW
Jamestown, ND 58401

701-252-9300 tel
701-252-1978 fax
701-952-9307 parts fax

SN: P85C001

PN-P971400 (02/2005)