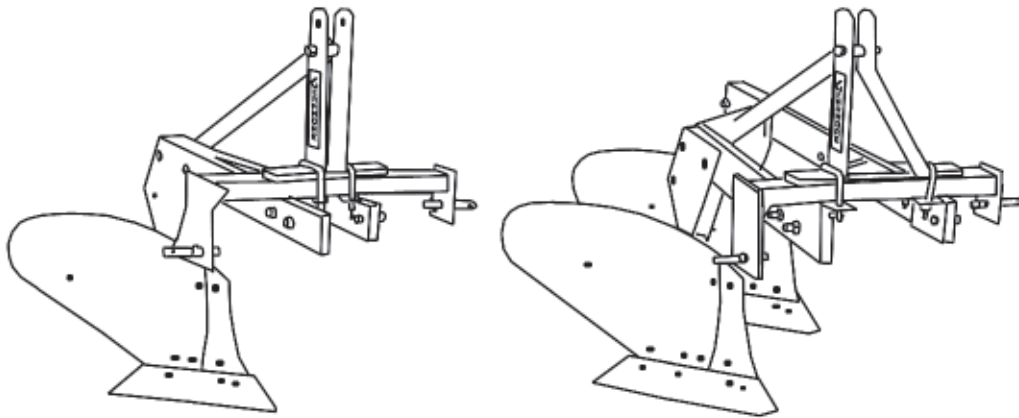




MOLDBOARD PLOWS



**ASSEMBLY, PARTS
& OPERATOR'S MANUAL
FOR MODELS
MP1-14-LC & MP2-14-LC**

March 2007

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
1	Introduction	1
1.1	General Information	2
2	Safety	3
2.1	Training	4
2.2	Preparation	4
2.3	Operational Safety	5
2.4	Maintenance Safety	5
2.5	Transporting Safety	5
2.6	Storage Safety	6
2.7	Safety Decals	6
3	Assembly	7
3.1	General	7
3.2	3-Point Hitch Assembly	7
3.3	Optional Coulter Kit Assy.	7
4	Operation	8
4.1	Operation Safety	8
4.2	Before Operation	8
4.3	Attaching	8
4.4	Transporting	8
4.5	Adjustments	9
4.6	Operation	10
4.7	Operating Hints	10
5	Service and Maintenance	11
5.1	Maintenance	11
5.2	Shearbolt Replacement	11
5.3	Lubrication	11
5.4	Detaching	11
5.5	Storage	11
6	Troubleshooting	12-13
7	Specifications	14
7.1	Bolt Torque	14
8	Parts Breakdown	15
8.1	One Bottom - Plow Frame Components	15
8.2	Two Bottom - Plow Frame Components	16
8.3	Plow Bottom Components	17
8.4	Rolling Coulter Components	18
9	Limited Warranty	19

1 INTRODUCTION

This manual covers the assembly, operation, and maintenance of your Series MP Moldboard Plow. Studying and obeying these instructions will insure optimum product performance and longevity. Be sure to read all instructions carefully. Read all safety precautions prior to operation.

The moldboard plow is designed as a primary tillage tool for turning over soil. They work well for burying trash and aerating the soil.

Maintain your implement with original repair parts to insure optimum performance.

It is the policy of the manufacturer to improve its products whenever possible and practical. We reserve the right to make changes, improvements, and modifications at any time without incurring the obligation to make such changes, improvements, and modifications on any implement sold previously.

TO THE DEALER:

The moldboard plow assembly and proper installation to the tractor is the responsibility of the dealer. Read manual instructions and safety rules. Make sure all items on the pre-delivery and delivery check lists are completed before releasing equipment to the owner.

TO THE OWNER:

Read this manual before operating your moldboard plow. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer.

The moldboard plow you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the moldboard plow and tractor.

For service, your authorized dealer has trained mechanics, genuine service parts, and the necessary tools and equipment to handle all your needs.

Provide this information to your dealer to obtain correct repair parts.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout this manual, are as seen from the driver's seat and facing in the direction of travel.

1.1 GENERAL INFORMATION

Read this manual carefully to learn how to properly operate and service your moldboard plow correctly. Failure to do so could result in personal injury or equipment damage.

Throughout this manual references are made to right and left direction. **RIGHT - HAND AND LEFT - HAND** sides are determined by standing behind the plow facing the direction the plow will travel when going forward.

The purpose of this manual is to assist you in operating and maintaining your moldboard plow. 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.

Maintain your moldboard plow with original equipment repair parts to ensure optimum performance.

The illustrations and data used in this manual were current at the time of printing, but due to possible 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.

CUSTOMER INFORMATION:

Name: _____

Purchased From: _____

Date Purchased: _____

Model No: _____

Serial No: _____

2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



The Safety Alert symbol identifies important safety messages on the Gearmore Seeder/Spreader and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

SI NO LEE INGLES, PIDA AYUDA A AIGUIEN QUE SI LO LEA PARA QUE LE TRADUZCA LAS MIDIDAS DE SEGURIDAD.

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

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. It may also be used to alert against unsafe practices.

CAUTION - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer.



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

Your personal safety is a primary concern in the design and manufacture of our products. Our efforts to provide such 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 design of this equipment depends on it being operated within the limitations as explained in this manual.

2.1 TRAINING



1. Safety instructions are important! Read this manual and the tractor manual; follow all safety rules and safety decal information. (Replacement manuals are available from your dealer) Failure to follow instructions or safety rules can result in serious injury or death.
2. If you do not understand any part of this manual and need assistance, see your dealer.
3. Know your controls and how to stop engine and attachment quickly in an emergency.
4. The operator must be instructed in and be capable of the proper operation of the equipment, its attachments and all controls. Do not allow anyone to operate this equipment without proper instructions.
5. Do not allow children or untrained persons to operate equipment.

2.2 PREPARATION

1. Always wear close fitting clothing and personal protection equipment called for by the job conditions. These items may include a hard hat, safety glasses, goggles or face shield, hearing protection, and safety boots. **DO NOT** wear loose clothing, jewelry or any other items that may be entangled in moving parts. Tie up long hair.



2. Ensure implement is properly mounted, adjusted and in good operating condition.
3. Tighten all bolts and nuts and check that all cotter pins are installed securely to ensure equipment is properly assembled before operating.
4. Tractor must be equipped with ROPS FRAME or ROPS CAB and seat belt. Keep seat belt securely fastened. Falling off tractor can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.
5. Remove accumulated debris from this equipment, tractor, and engine to avoid fire hazard.
6. Ensure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
7. Ensure shields and guards are properly installed and in good condition. Replace if damaged.
8. A minimum 20% of the combined tractor and plow weight must be on tractor front wheels with plow in transport position. Without this weight, tractor could tip over causing personal injury or death. See your tractor operators manual for information regarding adding weights.

2.3 OPERATIONAL SAFETY

- ❑ Keep bystanders away from equipment while it is in operation.
- ❑ Operate only in daylight or good artificial light.
- ❑ Always comply with all state and local lighting and marking requirements.
- ❑ Use caution when working around sharp objects such as shares, coulter blades, tines, etc.
- ❑ No riders are allowed on equipment.
- ❑ Always sit in tractor seat with seat belt fastened when operating controls or starting engine. Place transmission in park or neutral, engage brake and ensure all other controls are disengaged before starting tractor engine.
- ❑ Look down and to the rear and make sure area is clear before operating in reverse.
- ❑ 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.
- ❑ Stop tractor and implement immediately upon striking an obstruction. Turn off engine, remove key, inspect and repair any damage before resuming operation.
- ❑ When performing any service or maintenance, disengage power to implement. Lower all raised components to the ground. Operate valve levers to release any hydraulic pressure. Stop engine, set parking brake and remove key before dismounting tractor.

2.4 MAINTENANCE SAFETY

Before working underneath, raise moldboard plow to highest position and block securely. Blocking up prevents moldboard plow dropping from hydraulic leak down, hydraulic system failures, or mechanical failure on the tractor.

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

Frequently check plow shares. They should be sharp, free of nicks and cracks and securely fastened.

Do not handle plow shares with bare hands. Careless or improper handling may result in serious injury.

Your dealer can supply genuine replacement plow shares. Substitute plow shares may not meet original equipment specifications.

2.5 TRANSPORTING SAFETY

Use a slow-moving-vehicle (SMV) emblem and proper lighting on the tractor when transporting the moldboard plow.

Do not transport the plow over 20 MPH (30 KPH) on the best surface conditions. Reduce speed when going up or down hills and when approaching ditches or corners.

Always comply with all state and local lighting and marking requirements.

Raise plow to highest position for transport.

Keep your plow in proper working condition. Unauthorized modifications to the plow may impair the function, affect plow life, and put you at risk. Do not add excessive weight to plow. Additional weight could cause frame to fail resulting in loss of control of plow/tractor during transport.

Watch low hanging overhead power lines during transport. Avoid contact as this can cause serious injury or death.

2.6 STORAGE

1. Lower plow to the ground for storage and block to prevent rolling.
2. Store on a level surface sheltered from the weather.
3. Coat soil engaging surfaces with a rust inhibitor after cleaning.
4. Keep playing children and bystanders away from storage area.

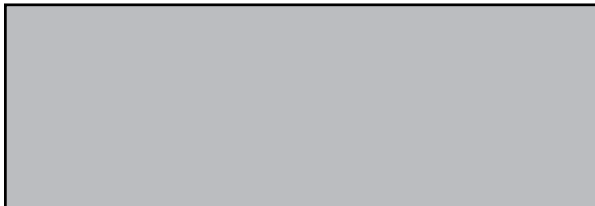
2.7 SAFETY DECALS



SAFETY DECALS **ATTENTION! BECOME ALERT!** **YOUR SAFETY IS INVOLVED!**

**REPLACE IMMEDIATELY ANY
DAMAGED SAFETY DECALS**

The following safety decals are located on your implement. Read them and follow their instructions. Keep all decals in place and legible. Replace worn or missing decals. Replacement safety decals are available through your dealer. Order by number listed.



Part No. 029770 Amber Reflector
Located front outside corner of frame



Part No. 029771 Red Reflector
Located rear outside corner of frame

How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

3 ASSEMBLY

3.1 GENERAL

Your Series MP Moldboard Plow is shipped partially assembled. Choose a level area to arrange the parts conveniently. Assemble parts for each step loosely to insure fit. Use flatwashers with slotted holes. Always use lockwashers unless a lock nut is called for. Tighten hardware after parts are installed according to the torque chart given on Page 14. Unless otherwise stated, all hardware is Grade 5. The following assembly steps are given to minimize the need for adjustment after assembly. Remember that **LEFT** and **RIGHT** are determined by standing at the rear of the implement and facing it.

3.2 3-POINT HITCH ASSEMBLY

The moldboard plow 3-point hitch assembly is shipped inverted for packaging shipment.

1. Stand the plow upright and block the frame securely to support the plow and keep it from moving.
2. Remove top nut, bolt, spacer, and pull lug from A-frame. Loosen nut holding other end of pull lug to plow frame.
3. Remove the (4) nuts, (2) angle irons, and (4) bolts from front frame area. Turn the assembly upside down and install on top of frame rails. Put angle iron, bolts and nuts back on.
4. Install pull lug and spacer removed previously in A-frame and install bolt and nut in second hole from top. Tighten bolt on plow frame at other end of pull lug.

3.3 OPTIONAL COULTER KIT ASSY. (SEE FIG. 3)

Rolling coulters are used to make plowing smoother and neater. Coulters also reduce the drag, thereby reducing power required.

Mount the coulters on the beam in front of the plow bottom. It can be mounted on either side of the beam to aid in lateral adjustment.

1. Stand the plow upright and block the frame securely to support the plow and keep it from moving.
2. Install u-bolts through coulters plate and put on lockwasher and nut. Slip u-bolts and coulters plate over plow beam.
3. Slide coulters stem up from bottom through the u-bolts. Snug the nuts to keep the coulters stem from dropping.
4. Move coulters to desired position and torque the nuts.
5. Remove the blocks or safety stands.

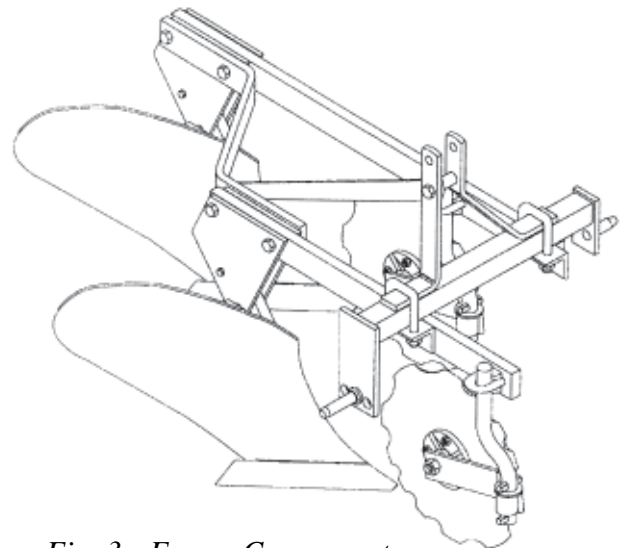


Fig. 3 - Frame Components

4 OPERATION

4.1 OPERATION SAFETY

Your personal safety is a primary concern in the design and manufacture of our products. Our efforts to provide such 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 had 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 proper operation of this moldboard plow. The operator must be properly trained. Operators should be familiar with the moldboard plow and tractor and all safety practices before starting operation. Read the safety information on pages 3-6

TRACTOR STABILITY (Fig. 5)



WARNING

A minimum 20% of combined tractor and plow weight must be on tractor front wheels with attachment in transport position. Without this weight, tractor could tip over causing personal injury or death. See your tractor operators manual regarding adding weights.

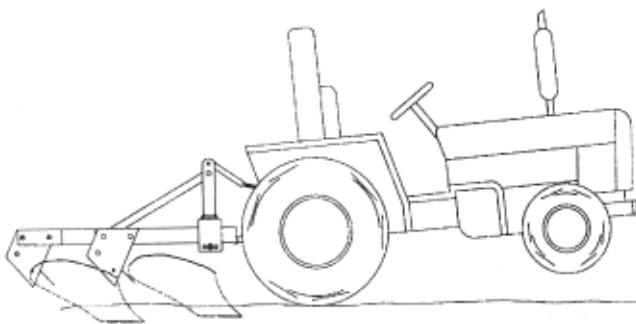


Fig. 5

4.2 BEFORE OPERATION

1. Tighten all loose hardware using the torque chart on page 14. SEE ASSEMBLY. Replace any missing hardware. On new machines, all hardware must be rechecked after first few hours of operation.
2. Replace any bent or broken parts.
3. Refer to your Tractor's Owner's Manual for recommended adjustments and weight distribution.
4. Read the SAFETY section of this manual to be sure of all precautions.

4.3 ATTACHING

1. Back tractor to align lower link arms with plow link pins.



WARNING

Be sure bystanders are clear. Do not stand between plow and tractor. Shut off tractor and engage parking brake prior to dismounting.

2. Connect lower link arms to plow using link pins provided. Secure with click pins.
3. Connect top link to implement using a pin. Secure with click pins. Adjust top link so plow bottom sits flat on floor.

4.4 TRANSPORTING

1. Transport plow lifted high above ground.
2. Travel at a speed suitable for terrain and other conditions. Transport at speeds compatible with safety and no more than 20 MPH (30 KPH). Use care when transporting on rough terrain.
3. Avoid night travel on public roads. If unavoidable, be sure to use adequate lighting on tractor and implement. Always have a slow moving vehicle (SMV) emblem attached to the implement clearly visible from the rear. Check local laws regarding transport on public roads.

4.5 ADJUSTMENTS

PLOW DRAWBAR ADJUSTMENT

The plow share on the right hand furrow must be aligned next to the furrow in order to do a clean job.

It is recommended that the tractor rear wheels be set so the right hand tire runs in the previous furrow.

In order to trail properly with a minimum effect on tractor steering, it is necessary to adjust the drawbar so that the plow is pulling as close to the tractor centerline as possible. Refer to the table below and fig. 6, dimension A. Note that for one bottom plows in particular, the ideal wheel tread width is too narrow for most tractors to obtain. In those cases, set the width as narrow as possible.

Loosen the u-bolt nuts holding the frame to the front cross frame and front angles and slide drawbar as necessary. Torque the u-bolt nuts when completed.

The right hand 3-point mounting pin can be located in three position. You can use it to affect plow trailing.

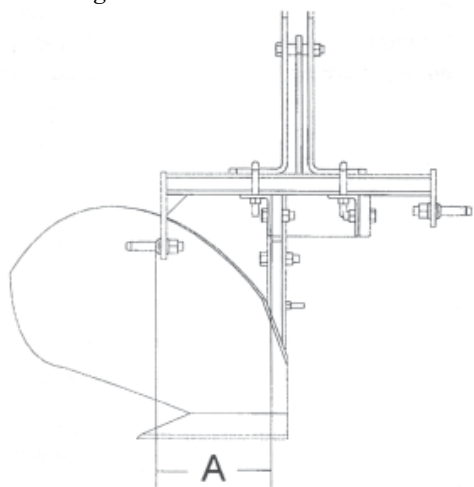


Fig. 6 - Drawbar Setting

SIDE TO SIDE LEVELING

The plow should be leveled from side to side. With the plow in the ground and tractor right tire in the furrow, use the tractor's link arm crank to adjust the lower link arm up or down as needed to level the plow frame. The plow should be level in the working position.

FRONT TO REAR LEVELING

The plow is leveled front to rear by adjusting the length of the top link of the 3-point hitch. Shorten the top link to tilt the plow forward, and lengthen the top link to tilt the plow backward.

OPTIONAL COULTER ADJUSTMENT

The rolling coultter outlines the cut of the plow bottom. It cuts through sod and surface trash, aids in securing clean, uniform furrows, reduces draft and lessens wear of the plow bottom. The coultter should be 1 to 2 inches from the moldboard for the best results.

Adjust the coultter laterally by loosening the u-bolts and twisting the coultter shaft. Height adjustment is made simply by raising or lowering the coultter shaft. Be sure to tighten u-bolt nuts after adjustment is completed.

WIDTH OF CUT

The rolling coultter should only be positioned far enough to the left of the landslide to allow a clean, straight furrow wall. For average conditions, set the coultter blade between 1/2" and 5/8" to the left of the landslide. Loose ground and tough scouring conditions will sometimes require the coultter to be set a little wider.

DEPTH OF CUT

The rolling coultter should be set deep enough to cut trash and leave a clean furrow wall. It should not run too deep or it will push trash and not cut it.

TRACTOR 3-POINT STABILIZERS

Install the lift arm stabilizer or shorten the stop chains to place the arms into the "non-sway" configuration. Refer to the tractor operators manual for details.

Model	Drawbar Setting "A"	Ideal Pull Point*	Tire Tread (inside of tire)
12" One Bottom	11-1/2"	9"	18" Minimum
14" One Bottom	11-1/2"	10-1/2"	21" Minimum
12" Two Bottom	8"	14-3/4"	28-1/2"
14" Two Bottom	7-1/4"	17-3/4"	35-1/2"

*Measure from the inside of the tires to the centerline of pull.

4.6 OPERATION

ATTACHING

1. Back tractor to align lower link arms with plow link pins.



WARNING

Be sure bystanders are clear. Do not stand between plow and tractor. Shut off tractor and engage parking brake prior to dismounting.

2. Connect lower link arms to plow using link pins provided. Secure with click pins.
3. Connect top link to implement using a pin. Secure with click pins. Adjust top link so plow bottom sits flat on ground.

TRACTOR FRONT END BALLAST

Front end ballast may be required for stability and steering control when weight is transferred to the back tires as the plow is raised. As a general guide:

- Ballast the tractor (less plow) so that approximately 1/3 of the tractor weight is on the front wheels.
- When mounted plow is raised, the reaction on the front wheels should be less than 20% of tractor and plow weight.
- See your tractor operators manual regarding adding weights.

TRACTOR HYDRAULICS

- Always set the 3-point hitch in the "float" mode to allow the plow to follow the contour of the ground.
- Many newer tractors are equipped with "Load Sensing" hydraulics. It is the responsibility of the operator to set the tractor hydraulic system to provide "float" on the 3-point hitch. Refer to the tractor operators manual for details.

TRACTOR GROUND SPEED

- Plowing speed can vary between 3 and 6 mph (5 and 10 kph) depending on the trash and soil conditions. It is the responsibility of the operator to note the condition of the job being done and set the speed to obtain a quality plowing job.

4.7 OPERATING HINTS

- When starting a new field or working area, space the strike-outs to minimize driving empty at the field ends. Keep the strike-outs as close to parallel as possible.
- Leave a headland wide enough to allow for easy turning.
- Set the hitch so the right rear tractor tire runs in the furrow.
- "Scour" the plow in sandy conditions to remove the rust and build-up on the moldboard before starting work. This will reduce power requirements and make a higher quality job.
- In very hard conditions, it may be necessary to add weight to the plow frame. Do not add more than 75 pounds per bottom.
- Install the optional coulter in heavy trash or ground cover conditions. This will cut through the surface material and make a clear path for the moldboard.
- Set the coulter 1 to 2 inches from the moldboard for best results. Vary the space if the coulter does not cut cleanly.
- Each plow bottom is protected by a $\frac{7}{16}$ " x 3" Grade 5 shear bolt in its pivot frame. The bolt will fail when rocks, stumps, roots, or other obstructions are encountered. Lift the plow, back up and replace the shear bolt.
- Maintain the landslide and wear plate in good condition. They stabilize the side load from the shears going through the ground.

5 SERVICE AND MAINTENANCE

5.1 MAINTENANCE

1. Thoroughly clean the plow after each use. Coat soil engaging surfaces with oil or other rust inhibitor for storage between uses.
2. Check over plow frequently for loose or worn parts. Replace parts as necessary to maintain product performance and to prevent further damage.
3. The coulter has greasable bearings that require lubrication. Check these coulters periodically to see that they rotate freely.
4. Keep coulter blades and moldboard cutting edges sharp at all times.
5. Ground Contacting Components - When the ground contacting components wear, they will have to be replaced. These include the coulter blade, plow shear, shin, landside, wear plate, and bottom.

5.2 SHEARBOLT REPLACEMENT

Each plow bottom is protected by a $\frac{7}{16}$ " x 3" Grade 5 shear bolt in its pivot frame. The bolt will fail when rocks, stumps, roots, or other obstructions are encountered. Lift the plow, back up and replace the shear bolt.

IMPORTANT!

Replacement of the shear bolt with a bolt higher than Grade 5 may result in serious damage to plow or injury to operator and voids the manufacturer warranty.

5.3 LUBRICATION

Clean grease fittings before applying grease. Use a multipurpose, lithium base grease.

5.4 DETACHING

1. Choose a level place to store plow, preferably under shelter.



WARNING

Shut off tractor, engage brake, and remove key prior to dismounting.

2. Lower plow to ground.
3. For one bottom plows, place support under left end of drawbar. Plow will tip over if not supported.
4. Remove top link from plow.
5. Detach lower link arms from plow.
6. Be sure plow is stable.

5.5 STORAGE

1. Clean all dirt and debris from plow prior to storage.
2. Store your plow on a flat surface sheltered from the weather.
3. Lower the plow to the ground and block to prevent rolling.
4. For periods of long storage, coat soil engaging surfaces with a rust inhibitor such as grease or oil. Apply touch up paint to frame where paint is worn or chipped to prevent rusting.
5. Keep playing children and bystanders away from storage area.

6 TROUBLE SHOOTING

The principle cause of plowing difficulties is improper adjustments. When you experience problems, do not attempt to make adjustments without consulting this section. Also, when making adjustments, try one adjustment at a time.

PROBLEM: POOR PENETRATION	
POSSIBLE CAUSE:	POSSIBLE REMEDY:
Insufficient suck	Shorten tractor top link
Worn share	Replace
Coulters too deep or too far forward	See coulter adjustment
Dull counter blade	Sharpen or replace
Position of tractor selector levers	Refer to tractor's owner's manual for proper settings
Ground hard and dry	Increase depth of headland starting furrow

PROBLEM: PLOW CROWDING	
POSSIBLE CAUSE:	POSSIBLE REMEDY:
Plow running on nose	Lengthen tractor top link
Plow crowding to the left	Front bottom too deep, shorten right-hand leveling screw or lengthen top link
Plow crowding to the right	Front bottom too shallow, lengthen right-hand leveling screw or shorten top link
Plow goes too deep	Lengthen top link to reduce suck. On plows used with a gauge wheel, the wheel should not carry too much of the weight. Check and adjust tractor hydraulic selector lever.
Plow won't stay down	Shorten top link to give plow more suck. Be sure coulters are sharp and not too far forward.
Cut of front bottom	Using the adjustable link pinholes, adjust plow to right or left so front bottom cuts proper width. Note: This adjustment should not be used to compensate for improper wheel and cross shaft adjustments.
Improper wheel and cross shaft setting	Set wheels and cross shaft properly as described in Cross Shaft Adjustment
Coulter adjustment	Be sure coulters run free and stay straight
Worn share	Replace

PROBLEM: PLOW RIDGING	
POSSIBLE CAUSE:	POSSIBLE REMEDY:
Front bottom too deep	Lengthen top link or shorten right-hand leveling screw
Front bottom too shallow	Shorten top link or lengthen right-hand leveling screw
Front bottom cutting too wide or too narrow	Check wheel and cross shaft settings.

PROBLEM: POOR TRASH COVERAGE	
POSSIBLE CAUSE:	POSSIBLE REMEDY:
Coulter adjustment	Set coulters deep enough to cut trash, but not deep enough to push trash.
Dull coulters	Sharpen or replace blade.
Coulters not turning	Worn or binding hub bearings - replace bearings.
Bottoms not scouring	Clean bottoms frequently until land polish is obtained.

PROBLEM: BOTTOMS WON'T SCOUR	
POSSIBLE CAUSE:	POSSIBLE REMEDY:
New bottoms	Clean surfaces with kerosene or fuel oil.
Plow running on nose	Lengthen top link.
Plow running crooked	Place the link pin in the cross shaft's center adjustment hole. Obtain the proper width of cut for front bottom at this setting by making cross shaft and tractor wheel adjustments. The wheel track should be adjusted so that the inside of the right-hand front tire is in line with the inside of the right-hand rear tire.

PROBLEM: RAGGED FURROW WALL	
POSSIBLE CAUSE:	POSSIBLE REMEDY:
Rear coulter adjustment	Set coulters to run more toward land and deeper if in loose soil. Be sure coulter swings freely.
Plow running crooked	See <i>Bottoms Won't Scour.</i>

PROBLEM: PLOW PULLS HEAVY	
POSSIBLE CAUSE:	POSSIBLE REMEDY:
Plow running on nose	Lengthen top link
Bottoms not scouring	See <i>Bottoms Won't Scour.</i>
Excessive landside pressure	Incorrect tractor wheel or cross shaft setting - rear landside should run approximately 1/4 to 1/2" from furrow wall.
Excessive tractor wheel slippage	Refer to tractor manual for correct operation of depth control or tractor control, if necessary.

OTHER PROBLEMS		
PROBLEM:	POSSIBLE CAUSE:	POSSIBLE REMEDY:
Furrows rolling back	Furrows too deep for width of bottom.	Reduce plowing depth.
Broken or misplaced furrows	Plowing speed too high.	Reduce tractor speed.
Broken furrow walls	Coulter disc set too close to plow bottom.	Reset coulters.
Step in furrow walls	Coulter set too far away from plow bottom.	Reset coulters.

7 SPECIFICATIONS

SPECIFICATIONS			
Model:	MP1-12	MP1-14	MP2-14
Cutting Width - in. (mm):	12 (304.8)	14 (355.6)	28 (711.2)
Max. Cutting Depth - in. (mm):	9 (228.6)	10.5 (266.7)	10.5 (266.7)
Hitch Type - In Furrow:	Cat. I	Cat. I	Cat. I
Tractor HP (Approx.):	18	22	44
Number of Bottoms:	1	1	2
Length - in. (mm):	43 1/2 (1105)	46 (1168)	65 1/2 (1664)
Width - in. (mm):	39 1/2 (1003)	40 1/2 (1029)	42 (1067)
Optional Coulter(s) Plain Blade Diameter:	14 (356)	14 (356)	14 (356)
Blade Material:	Heat treated high carbon steel	Heat treated high carbon steel	Heat treated high carbon steel
Coulter Bearing Type:	Ball	Ball	Ball
Main Beam Size - in. (mm):	1 x 4 (25.4 x 101.6)	1 x 4 (25.4 x 101.6)	1 x 4 (25.4 x 101.6)
Approx. Weight - lbs. (kg):	210 (95.2)	215 (97.5)	378 (171.4)
<i>BOTTOMS: Shearbolt Protected, 3 Piece Design With Replaceable Shins</i>			

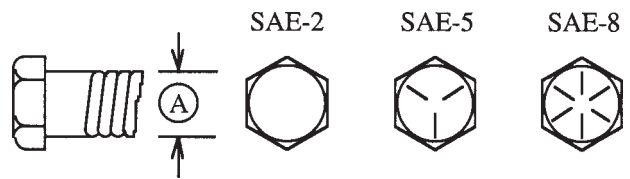
7.1 BOLT TORQUE

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque *					
	SAE 2		SAE 5		SAE 8	
	N.m	(lb-ft)	N.m	(lb-ft)	N.m	(lb-ft)
1/4"	8	(6)	12	(9)	17	(12)
5/16"	13	(10)	25	(19)	36	(27)
3/8"	27	(20)	45	(33)	63	(45)
7/16"	41	(30)	72	(53)	100	(75)
1/2"	61	(45)	110	(80)	155	(115)
9/16"	95	(70)	155	(115)	220	(165)
5/8"	128	(95)	215	(160)	305	(220)
3/4"	225	(165)	390	(290)	540	(400)
7/8"	230	(170)	570	(420)	880	(650)
1"	345	(225)	850	(630)	1320	(970)

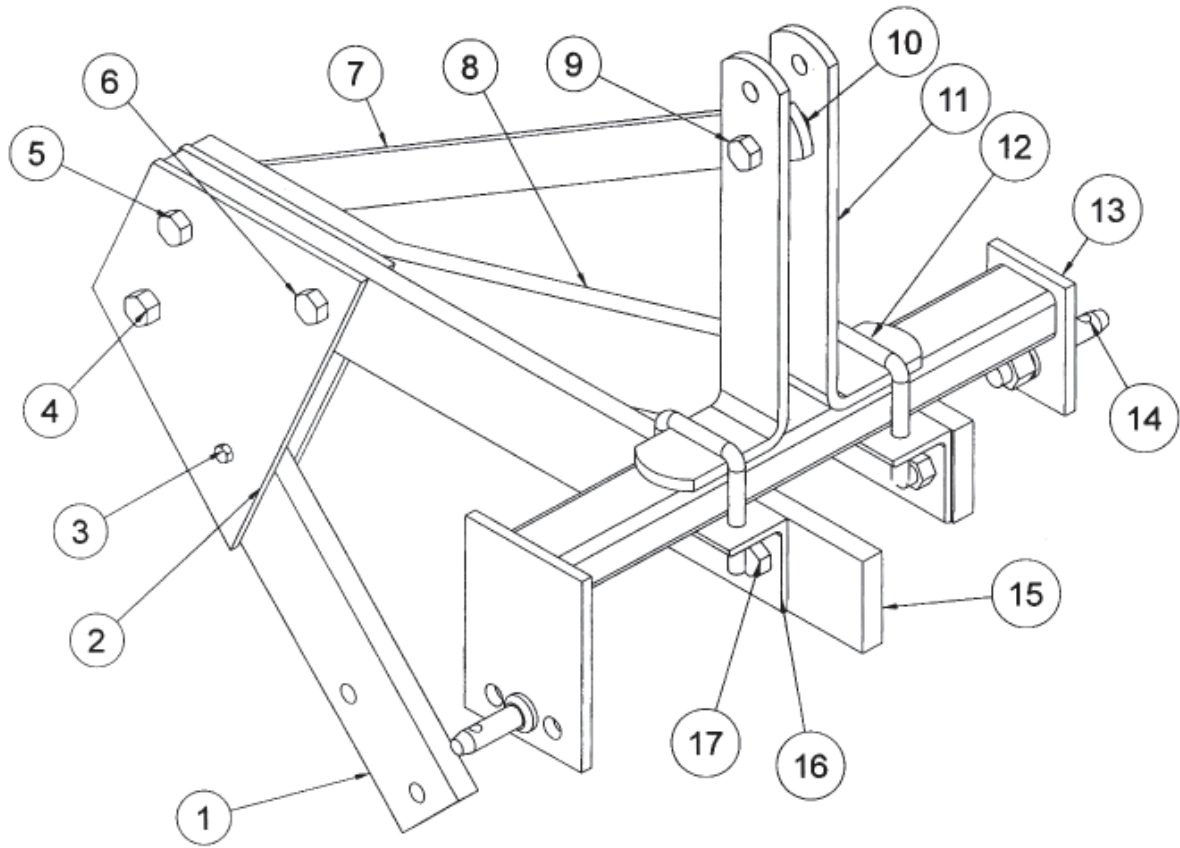


Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

8 PARTS BREAKDOWN

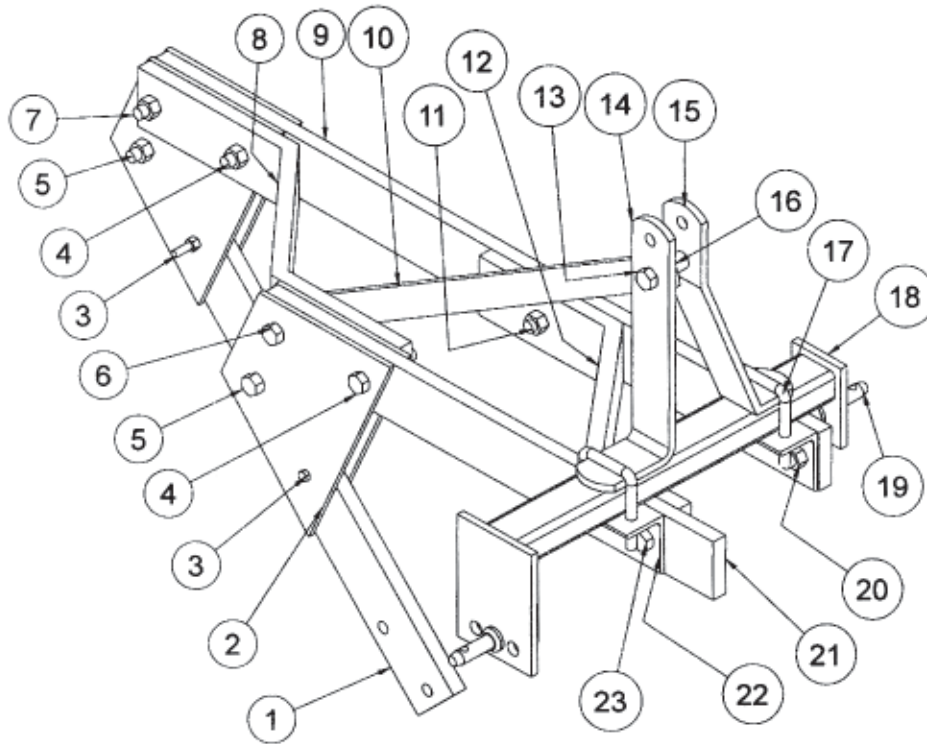
8.1 ONE BOTTOM - PLOW FRAME COMPONENTS



REF #	QTY.	PART #	DESCRIPTION	REF #	QTY.	PART #	DESCRIPTION
1	1	930211	Shank/Heavy	10	1	930215	Sleeve 1.06 OD x 2"
2	2	930212	Plate/Side Shank	11	2	930216	A-Frame Upright
3	1	303638	HHCS 7/16 x 3 Gr. 5	12	1	930218	U-Bolt 5/8 x 3 3/4 x 4 9/16
	1	304019	Nut/Hex Lock 7/16 NC		4	304021	Nut/Hex Lock 5/8 NC
4	1	304615	HHCS 3/4 x 3 UNF Gr. 5	13	1	930219	Drawbar Weldment
	1	304806	Nut/Hex Nut 3/4 NC	14	2	203266	Link Pin w/Hardware
5	1	303706	HHCS 3/4 x 4 1/2 Gr. 5		2	303958	Washer/Lock 7/8
	1	304022	Nut/Hex Lock 3/4 UNF		2	304082	Nut/Hex 7/8 UNF
6	1	303705	HHCS 3/4 x 4 Gr. 5	15	1	930220	Beam - Inner
	1	304022	Nut/Hex Lock 3/4 NC	16	2	930222	Angle 3 x 4 x 6"
7	1	930213	Brace/Pull	17	4	304613	HHCS 3/4x2 1/2 UNF Gr. 5
8	1	930214	Z Bar - Brace		4	304806	Nut/Hex Lock 3/4 UNF
9	1	303705	HHCS 3/4 x 4 Gr. 5				
	1	304022	Nut/Hex Lock 3/4 NC				

****NOTE:** Use only a Grade 5 bolt for shearbolt applications or serious damage may result. Use of a higher grade bolt voids the manufacturer warranty.

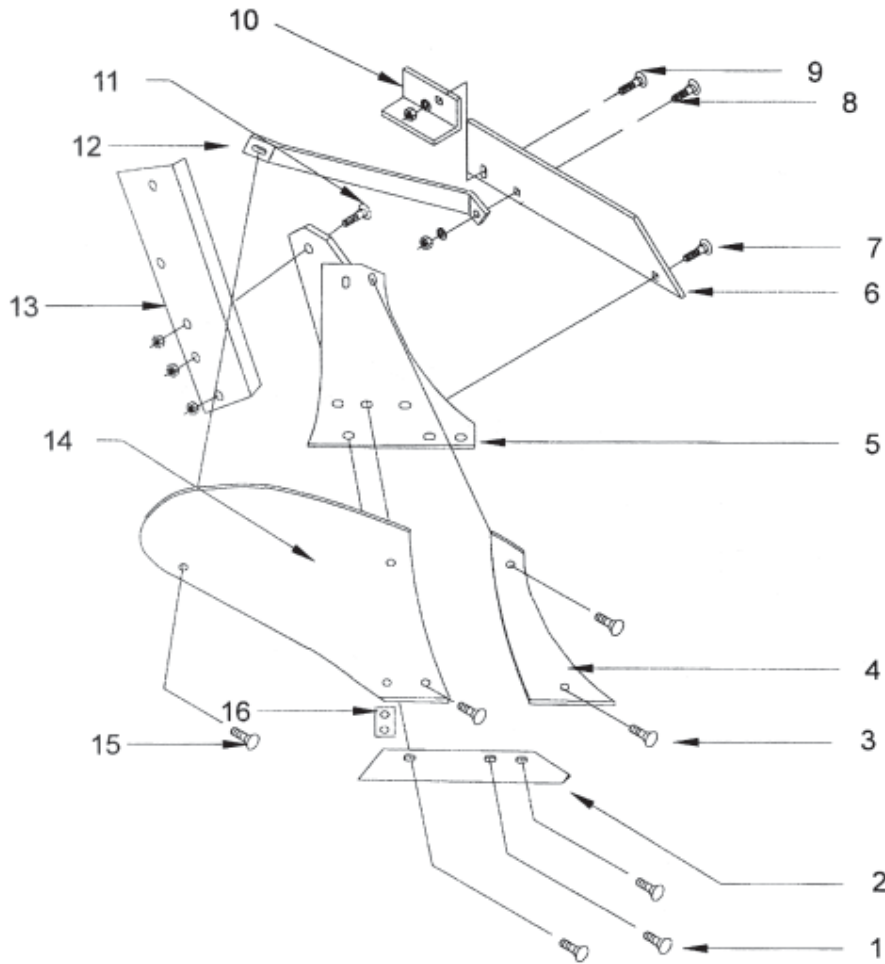
8.2 TWO BOTTOM - PLOW FRAME COMPONENTS



REF #	QTY.	PART #	DESCRIPTION	REF #	QTY.	PART #	DESCRIPTION
1	2	930211	Shank/Heavy	12	1	930225	Brace/Cross 2 Bot. 12" Frt.
2	4	930212	Plate/Side Shank	1	1	930226	Brace/Cross 2 Bot. 14" Frt.
3	2	303638	HHCS 7/16 x 3 Gr. 5	13	1	303705	HHCS 3/4 x 4 Gr. 5
	2	304019	Nut/Hex Lock 7/16 NC	1	1	304022	Nut/Hex Lock 3/4 NC
4	2	303705	HHCS 3/4 x 4 Gr. 5	14	1	930216	A-Frame Right Side
	2	304022	Nut/Hex Lock 3/4 NC	15	1	930217	A-Frame Left Side
5	2	304615	HHCS 3/4 x 3 UNF Gr. 5	16	1	930215	Sleeve 1.06 O.D. x 2"
	2	304806	Nut/Hex Nut 3/4 NC	17	2	930218	U-Bolt 5/8 x 3 3/4 x 4 9/16
6	1	303706	HHCS 3/4 x 4 1/2 Gr. 5		4	304021	Nut/Hex Lock 5/8 NC
	1	304022	Nut/Hex Lock 3/4 UNF	18	1	930219	Drawbar Weldment
7	2	303705	HHCS 3/4 x 4 Gr. 5	19	2	203266	Link Pin w/Hardware
	2	304022	Nut/Hex Lock 3/4 NC		2	303958	Washer/Lock 7/8
8	1	930223	Brace/Cross 2 Bot. 12" RR		2	304082	Nut/Hex 7/8 UNF
	1	930224	Brace/Cross 2 Bot. 14" RR	20	2	303705	HHCS 3/4 x 4 Gr. 5
9	1	930221	Beam/Outer 2 Bottom		2	304022	Nut/Hex Lock 3/4 NC
10	1	930213	Brace/Pull	21	1	930220	Beam - Inner
11	2	303703	HHCS 3/4 x 3 Gr. 5	22	2	930222	Angle 3 x 4 x 6"
	2	304022	Nut/Hex Lock 3/4 NC	23	2	304615	HHCS 2 x 3 UNF Gr. 5
					2	304806	Nut/Hex Lock 3/4 UNF

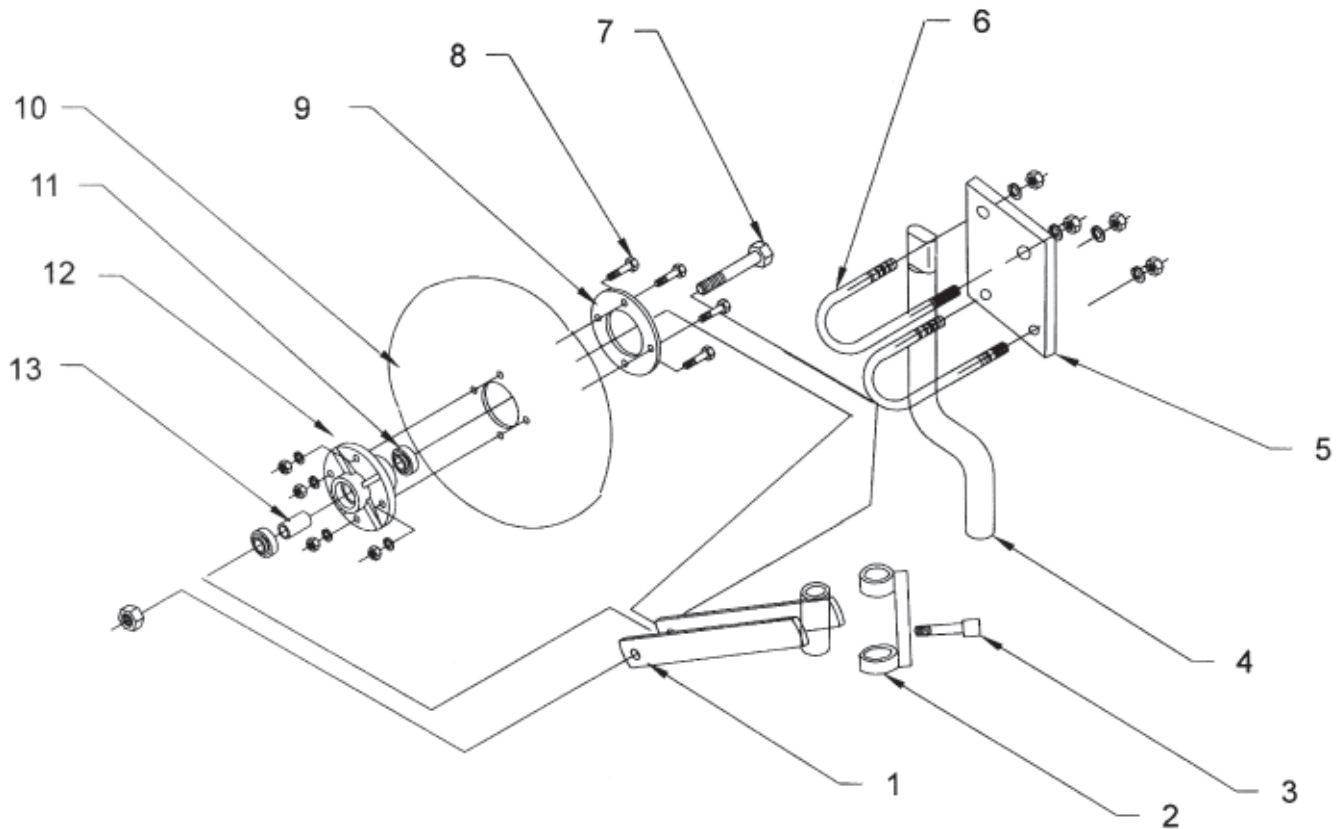
****NOTE:** Use only a Grade 5 bolt for shearbolt applications or serious damage may result. Use of a higher grade bolt voids the manufacturer warranty.

8.3 PLOW BOTTOM COMPONENTS



REF #	QTY.	PART #	DESCRIPTION	REF #	QTY.	PART #	DESCRIPTION
1	3	303929	Bolt/Plow 7/16 x 1 1/2"	9	1	303929	Bolt/Plow 7/16 x 1 1/2"
	3	303970	Washer/Flat 7/16		1	303970	Washer/Flat 7/16
	3	304019	Nut/Hex 7/16 NC		1	304019	Nut/Hex 7/16 NC
2	-	930227	Share/12" w/Hardware	10	1	930233	Heel (f/Long Landslide only)
	-	930228	Share/14" w/Hardware	11	2	303678	HHCS 5/8 x 2 1/2 Gr. 5
3	2	303929	Bolt/Plow 7/16 x 2"		2	304021	Nut/Hex Lock 5/8 NC
	2	303970	Washer/Flat 7/16	12	-	930234	Brace - Moldboard
	2	304019	Nut/Hex Lock 7/16 NC	13	-	930211	Shank/Heavy
4	-	930229	Shin w/Hardware	14	-	930235	Moldboard 12"
5	-	930230	Frog		-	930236	Moldboard 14"
6	1	930231	Landslide/Long - Rear	15	5	303929	Bolt/Plow 7/16 x 1 1/2"
	-	930232	Landslide/Short - Front		5	303970	Washer/Flat 7/16
7	1	900172	Bolt/Plow 5/8 x 2 1/2"		5	304019	Nut/Hex 7/16 NC
	1	304021	Nut/Hex Lock 5/8 NC	16	-	930237	Bar/Reinf - 14" Bottom
8	1	303918	Bolt/Plow 7/16" x 2"				
	1	303970	Washer/Flat 7/16				
	1	304019	Nut/Hex Lock 7/16 NC				

8.4 ROLLING COULTER COMPONENTS



<u>REF #</u>	<u>QTY.</u>	<u>PART #</u>	<u>DESCRIPTION</u>
1	1	930238	Yoke/Coulter
2	1	930239	Lock/Coulter Cast
3	1	930240	Screw/Set 5/8 x 1 1/4"
4	1	930241	Stem/Coulter
5	1	930242	Plate/Mount Coulter
6	2	930243	U-Bolt 5/8 Coulter
	4	303956	Washer/lock 5/8
	4	304008	Nut/Hex 5/8 NC
7	1	303664	HHCS 1/2 x 6 1/2 Gr. 5
	1	304020	Nut/Hex Lock 1/2 NC
8	4		HHCS
	4		Nut/Hex Lock
9	1	930244	Washer/Coulter Blade
10	1	930245	Blade/Coulter Smooth 14"
11	2		Bearing - Ball
12	1	930246	Hub/Coulter
13	1	930247	Spacer/Bearing
	-	930200	Kit/Coulter (1 Per Bottom)

9 LIMITED WARRANTY



GEARMORE, INC., warrants each new Gearmore product to be free from defects in material and workmanship for a period of twelve (12) months from date of purchase to the original purchaser. This warranty shall not apply to implements or parts that have been subject to misuse, negligence, accident, or that have been altered in any way.

Our obligation shall be limited to repairing or replacement of any part, provided that such part is returned within thirty (30) days from date of failure to Gearmore through the dealer from whom the purchase was made, transportation charges prepaid.

This warranty shall not be interpreted to render us liable for injury or damages of any kind or nature, direct, consequential or contingent, to person or property. This warranty does not extend to loss of crops, loss because of delay in harvesting or any other expenses, for any other reasons.

Gearmore in no way warrants engines, tires, or other trade accessories, since these items are warranted separately by these respective manufacturers.

Gearmore reserves the right to make improvements in design or changes in specification at any time, without incurring any obligations to owners or units previously sold.

GEARMORE, INC.
13477 Benson Ave.
Chino, CA 91710

Always refer to and heed machine operating warning decals on machine.

The serial number of this product is stored in our computer database, thus submitting a warranty registration card is not required.