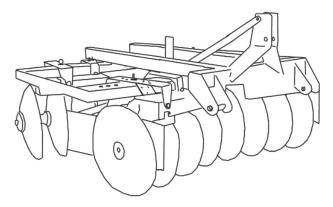


REVERSIBLE TANDEM DISCS



Assembly/Operator's & Parts Manual For GRT Series

June 2009

Form: RevTandemDiscGRT

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1 INTRODUCTION

Congratulations on your choice of a 3-point hitch reversible tandem disc. This equipment is manufactured to precise specifications using the best quality parts and materials available. With proper care and maintenance, this piece of equipment should last for many years. Before operating this machine, thoroughly read and become familiar with this manual.

1.1 OPERATOR'S RESPONSIBILITY

Safe, efficient and trouble free operation of your Disc requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance and Troubleshooting information contained within the Operator's Manual.

It is the responsibility of the user/purchaser to lubricate and maintain this product according to the schedule in this manual. The user is responsible for inspecting the machine, and for having parts repaired or replaced when continued use of the product would cause damage or excessive wear to other parts. All fasteners should be checked and tightened periodically and as necessary. When supporting the frame or the machine, use stands that are capable of handling the weight of the assembly. Insure that the supports are on a clean, dry surface. It is the user's responsibility to deliver this product to the dealer when repairs that are covered by the standard warranty need to be made.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Gearmore dealer if you need assistance, information or additional copies of the manuals.

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.

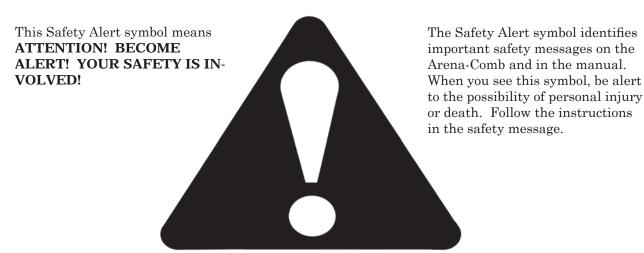
1.2 SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Disc when ordering parts or requesting service or other information. The serial number plate is located where indicated. Please mark the number in the space provided for easy reference.

Serial Number Plate	
DATE OF	Purchase:
Model N	UMBER:
Serial N	UMBER:

2 SAFETY

SAFETY ALERT SYMBOL



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.

2.1 GENERAL SAFETY

YOU are responsible for the SAFE operation and maintenance of your Disc. YOU must ensure that you and anyone else who is going to operate, maintain or work around the Disc be familiar with the operating and maintenance procedures and related SAFETY information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the Disc.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Disc owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually there after per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety feature on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Most accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.
 An untrained operator exposes himself and bystanders to possible serious injury or death.
- DO NOT modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- Think SAFETY! Work SAFELY!

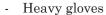
- Read and understand the Operator's Manual and all safety signs before operating, maintaining or adjusting the disc.
- 2. Have a first-aid kit available for use should the need arise and know how to use it.



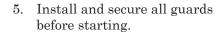
3. Have a fire extinguisher available for use should the need arise and know how to use it.



- 4. Wear appropriate protective gear. This list includes but is not limited to:
 - A hard hat
 - Protective shoes with slip resistant soles
 - Protective goggles, glasses or face shield



Protective clothing



- 6. **DO NOT** allow riders.
- 7. Wear suitable ear protection for prolonged exposure to excessive noise.



- 8. Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, or repairing.
- 9. Clear the area of people, especially small children, before starting.
- 10. Review safety related items annually with all personnel who will be operating or maintaining the Disc.

2.2 EQUIPMENT SAFETY GUIDELINES

Safety of the operator and bystanders is one of the main concerns in designing and developing a machine. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.

- NEVER use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
- Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works. Review the safety instructions with all users annually.
- This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with farm machinery and trained in this equipment's operations. If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.
- Use a tractor equipped with a Roll Over Protective Structure (ROPS) and a seat belt.
- NEVER exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - DON'T TRY IT.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.

In addition to the design and configuration of this implement, including Safety Signs and Safety 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 the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the tractor and machine manuals. Pay close attention to the Safety Signs affixed to the tractor and the machine.

Think SAFETY! Work SAFELY!

2.3 SAFETY TRAINING

avoided.

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 or bystander.

It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Accidents can be

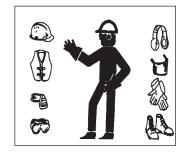
Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your tractor, before assembly or operating, to acquaint yourself with the machines. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to operating:

- a. Reads and understands the operator's manuals.
- b. Is instructed in safe and proper use.

Know your controls and how to stop tractor, engine and machine quickly in an emergency. Read this manual and the one provided with your tractor. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will operate the machinery. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.

2.4 PREPARATION

- 1. Never operate the tractor and machine until you have read and completely understand this manual, and the Tractor Operator's Manual.
- 2. Personal protection equipment, including hard hat, safety glasses, safety shoes and gloves are recommended during assembly,



installation, operation, adjustment, maintaining, repairing, removal or moving the implement. **DO**

NOT allow long hair, loose fitting clothing or jewelry to be around equipment.

3. PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!



Tractors with or without equipment attached can

often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80db. Noise over 85db on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss.

NOTE: Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.

- 4. Operate the machine only with a tractor equipped with an approved Roll-Over Protective Structure (ROPS). Always wear your seat belt. Serious injury or even death could result from falling off the tractor particularly during a turn-over when the operator could be pinned under the ROPS or the tractor.
- 5. Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.
- **6.** Operate only in daylight or good artificial light.
- 7. Be sure machine is properly mounted, adjusted and in good operating condition.

2.5 OPERATING SAFETY

All things with moving parts are potentially hazardous. There is no substitute for a cautious, safeminded operator who recognizes potential hazards and follows reasonable safety practices.

If a safety shield or guard is removed for any reason, it must be replaced before the machine is again operated.

When the use of hand tools is required to perform any part of assembly, installation, adjustment, maintaining, repairing, removal, or moving, be sure the tools used are designed and recommended by the tool manufacturer for that specific task.

Always use two people to handle heavy, unwieldy components during assembly, installation, removal, or moving.

Never place any part of your body where it would be in danger if movement should occur during assembly, installation, operation, maintaining, repairing, removal, or moving.

Never place yourself between the tractor and machine while implement is in operation.

Do not walk or work under a raised machine or attachment unless it is securely blocked or held in position. Do not depend on the tractor hydraulic system to hold the machine or attachment in place.

A heavy load can cause instability of the tractor. Use extreme care during travel. Slow down on turns and watch out for bumps. The tractor may need front counterweights to counterbalance the weight of the machine.

Never use alcoholic beverages or drugs, which can hinder alertness or coordination, while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.

Do not allow riders on the machine or tractor at any time. There is no safe place for any riders.

Before you operate the machine, check over all pins, bolts and connections to be sure all are securely in place. Replace any damaged or worn parts immediately.

Clear the work area of objects which might be picked up and snagged or entangled in the machine.

Keep hands, feet, hair, jewelry, and clothing away from all moving and/or rotating parts.

2.6 TRANSPORT SAFETY

- Comply with state and local laws governing highway safety and movement of farm machinery on public roads.
- 2. The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
- 3. At all times, when driving the tractor and equipment on the road or highway under 20 mph (32 kph) use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem. Do not exceed 20 mph (32 kph). Reduce speed on rough roads and surfaces.
- **4.** Plan your route to avoid heavy traffic.
- **5.** To transport the machine, extend the axle cylinders and place the transport pin into the transport slots.
- **6.** Do not drink and drive.
- 7. Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc. Watch for traffic when operating near or crossing roadways.
- 8. Turn into curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steerage. Slow down on rough or uneven surfaces.
- **9.** Never allow riders on either tractor or machine.

2.7 STORAGE SAFETY

- **1.** Store the unit in an area away from human activity.
- **2.** Do not permit children to play on or around the stored machine.
- **3.** Store the unit is a dry, level area. Support the frame with planks if required.

2.8 MAINTENANCE SAFETY

- 1. Good maintenance is your responsibility.

 Poor maintenance is an invitation to trouble.
- **2.** Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.



- 3. Make sure there is plenty of ventilation. Never operate the engine in a closed building. The exhaust fumes may cause asphyxiation.
- **4.** Before working on this machine, shut off the engine, set the brakes, and remove the ignition key.
- **5.** Never work under equipment unless it is blocked securely.
- **6.** Use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work.
- 7. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts **must** be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
- 8. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment





- **9.** Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.
- **10.** When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

3 ASSEMBLY

Your Reversible Tandem Series Disc was assembled at the factory with the gangs set in the straight position for shipping purposes. Because of varying soil conditions, desired cutting depth, and tractor speed, gang adjustment must be made for even and uniform discing. Before using this disc, check all nuts and bolts to make sure everything is tightened.

3.1 ADJUSTMENT

The design of the Reversible Tandem Disc permits more or less angle to be set to the front and rear gangs. Each gang is individually adjustable. The more angle set to the gangs, the greater soil breaking will occur, with increased penetration. A smoother and more leveling type of operation will occur if less angle is set to the gangs. To adjust the cutting angle on the gangs, remove the lynch pin from the adjusting pin, pull the adjusting pin out, slide the gang backward or forward to obtain the desired cutting angle, and then replace the adjusting pin and lynch pin.

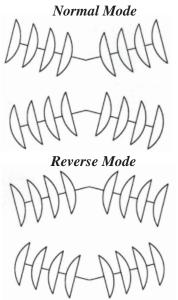
The entire disc can be adjusted front and rear by using the top link on the tractor's 3-point hitch. This will allow more pressure to be put on the front gangs so they will cut deeper, or on the rear gangs so they will cut deeper. Ideally, the best results will be attained if an equal amount of pressure is put on both gangs. The disc should also be adjusted laterally so that the outer disc blade of the right hand gangs and the left hand gangs cut at the same depth. This is done by adjusting and leveling the lift arms on the tractor hitch.

Your Reversible Tandem Disc is also equipped with a 1" x 3" shank and foot piece mounted in the center of the disc. The foot piece will accept most common types of cultivating sweeps. The shank, with the desired sweep mounted on it, will cut in the center behind the front gangs. Under normal conditions, a distance of 14" to 16" between the rear inside blades will create level soil in the center of the disc. The shank can be adjusted up or down by removing the pin, placing the shank at the desired depth, and replacing the pin through the shank. If ridging or leaving a furrow occurs, changing the speed of the tractor or changing the rear gang angle should correct the problem. If the problem persists, the rear gangs may need to be repositioned.

3.2 REVERSING THE DISC

Your disc has been designed to be pulled from the opposite end. To change the operating direction, please use the following steps as a guideline:

- **1.** Remove the pin from the A-frame back brace.
- **2.** Remove the two pins from the lower A-frame disc tubing.
- **3.** With the disc A-frame attached to the tractor, re-connect to the opposite end of the disc.
- **4.** Re-pin the A-frame to the disc.
- 5. Raise the disc so that the 1" x 3" shank can be removed and reversed.
- **6.** It may be necessary to readjust the gangs.



Improper adjustments can cause discing problems. If problems should occur after following instructions in the manual, check the *Trouble Shooting Chart* for possible remedies.

3.3 SCRAPER ASSEMBLY

Scraper blades and mounts were assembled on the disc at the factory. Each scraper is individually mounted and adjusted. To adjust the scraper, loosen the nut on the mount arm, slide the scraper in or out until it is approximately ¾" away from the disc blade, and tighten nut.

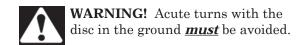
4 OPERATION

4.1 TRACTOR PREPARATION

First of all, make sure the tractor used is heavy enough to handle the disc. If not, add front weight to the tractor. When mounting to the tractor's 3-point hitch, make sure the tractor lower arm sway bars are tight.

4.2 DISC PREPARATION

This disc was designed for two way operation. The disc is shipped with the 3-point hitch mounted in the normal position. In the reverse position the disc moves more dirt toward the center.



4.3 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Disc requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this manual. A pre-operation checklist is provided for the operator. It is important for both the personal safety and maintaining the good mechanical condition of the Disc that this checklist is followed. Before operating the machine and each time thereafter, the following areas should be checked off:

- √ Use only a tractor of the recommended horsepower on the machine.
- √ Check that the machine is properly attached to the tractor.
- √ Be sure extra weights are mounted on the front of the tractor if required.
- √ Check to be sure there no damaged or broken parts. Repair or replace as required.
- √ Check for entangled material. Remove this material.

5 MAINTENANCE

5.1 REGULAR MAINTENANCE

The Reversible Tandem Disc should be inspected after the discing season. Note excessively worn or broken parts and replace during the off-season. That way it is ready for use when needed.

After a **few hours of operation**, the gang bolts should be checked for tightness. To insure correct performance and avoid needless wear and breakage, these bolts must be tight at all times.

- √ Regularly check all nuts and bolts and make sure they are tight.
- √ Regularly check all pins and lynch pins to make sure they are in place.
- $\sqrt{}$ Check scraper blades and replace as needed.
- √ If bearing dirt shields are used, check and replace as needed.
- √ GRT discs are equipped with non-greaseable sealed ball bearings. Regularly check beaings and make sure gang turns freely. Replace bearing if needed.
- $\sqrt{}$ Store disc out of weather.

5.2 STORAGE

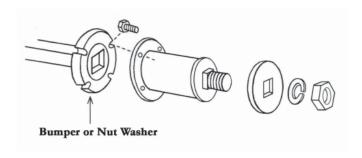
A

STORAGE SAFETY

- Store the unit in an area away from human activity.
- Do not permit children to play on or around the stored machine.
- 3. Store the unit in a dry, level area. Support the frame with planks if required.

5.3 OPTIONAL SPOOL EXTENSION

All GRT discs are equipped with an end washer and nut washer, which will accommodate an extension spool. Extension spools are designed to fit either side of a gang and blades will mount on spool for either side of gang. See illustration below for mounting instructions.

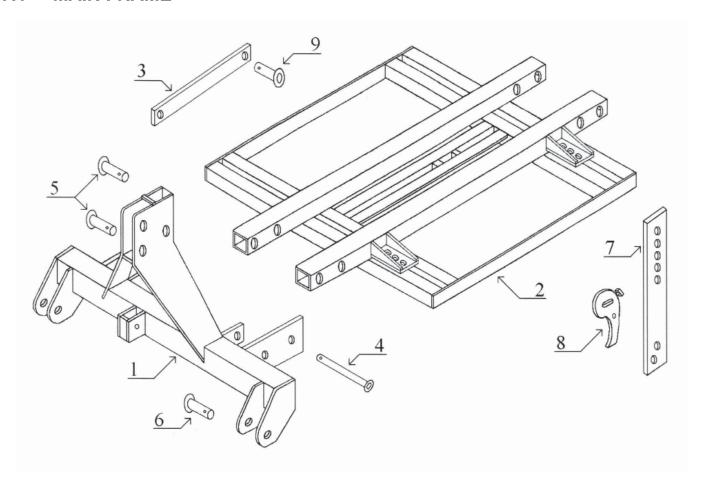


6 TROUBLE SHOOTING CHART

PROBLEM	POSSIBLY REMEDY
Rear gang leaving ridge in center	 Space rear gangs proper distance apart (14" - 16"). Decrease angles in rear gang and/or increase angle in front gang. Decrease the operating depth of rear gangs and/or increase the depth of the front gangs.
Bedding on each side of disc	 Increase angles on rear gang and/or increase depth of rear gangs. Decrease angle of front gang and/or decrease depth of front gang. Space rear gangs proper distance (14" - 16")
Disc will not penetrate	Increase angle on all gangs equally.
Disc moves from side to side	 Make sure all gangs are equal distance from center of frame. Correct gang angle settings.
Furrow left directly behind tractor	 Increase angle of gangs to increase depth of cut. Increase tractor horsepower or decrease width of cut.
Bending front outside disc blade and/or gang bolt	Lift disc off ground before turning.
Bearing failure	 Check gang bolt. If bent, straighten or replace as needed. Tighten nut on gang bolt if needed.
Gang bolt bending	 Check nut on gang bolt, tighten if needed. Check spacer spool, replace if needed.

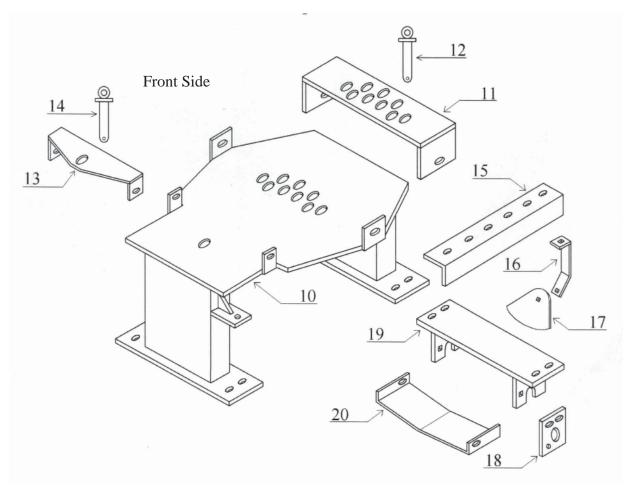
7 PARTS LIST

7.1 MAIN FRAME



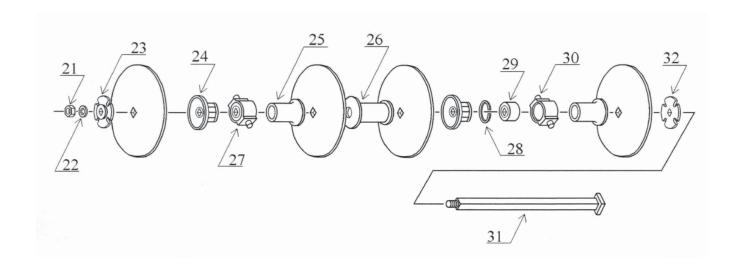
REF.	PART NO.	DESCRIPTION
1	185110	Top Mast
2	185117	Main Frame
3	185112	Brace
4	185113	A-Frame Link Pin
5	185003	Upper Top Link Pin - Cat. 2
6	185115	Lower Pull Pin - Cat. 2
7	185083	1' x 3" Shank
8	185084	Foot Piece - 1" (New Style)
9	185106	Lower Link Pin

7.2 GANG FRAME



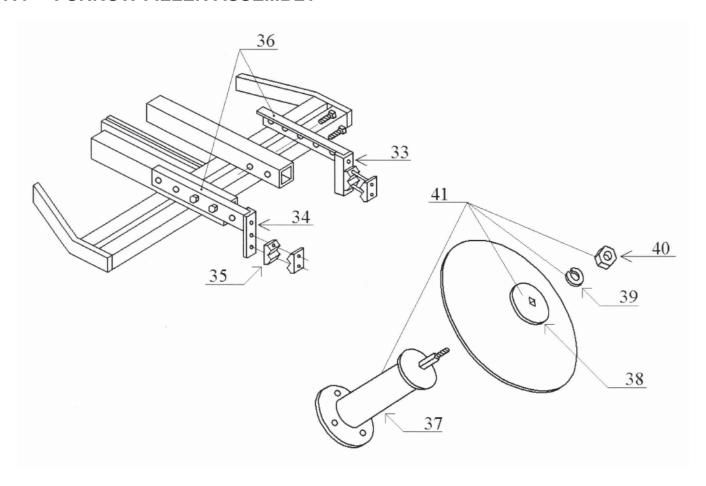
REF.	PART NO.	DESCRIPTION
10	186010MD5	Front Gang Frame - 5 Blade
10	186011MD5	Rear Gang Frame - 5 Blade
10	186010MD6	Front Gang Frame - 6 Blade
10	186011MD6	Rear Gang Frame - 6 Blade
11	185034	Gang Adjustment Hanger
12	185037	Gang Adjustment Pin
13	185097	Pivot Clamp
14	185099	Pivot Clamp Pin
15	186033	Left Scraper Bar - 4 Blade
15	186034	Right Scraper Bar - 4 Blade
15	186035	Left Scraper Bar - 5 Blade
15	186036	Right Scraper Bar - 5 Blade
16	WO6041L	Scraper Mount Arm - Left
16	WO6041R	Scraper Mount Arm - Right
17	WO6042	Scraper Blade
18	WO6072	Bearing Holder
19	WO6081	Bearing Mount
20	WO6082	Bearing Guard

7.3 GANG ASSEMBLY



REF.	PART NO.	DESCRIPTION
21	WO6033	Axle Nut - 1 ½"
22		Lock Washer - 1 ½"
23	185053	Axle Nut Washer
24	185052	Half Spool Concave - 1 ½"
25	185051	Half Spool Convex - 1 1/2"
26	WO6029	Full Spool - 1 ½"
27	770013	Bearing & Housing Assembly
28	770016	Snap Ring
29	770017	Bearing - 1 ½" Square Bore
30	770018	Bearing Housing
31	185050	5 Blade Axle - 1 ½"
31	WO6024	6 Blade Axle - 1 ½"
32	185054	Axle Washer

7.4 FURROW FILLER ASSEMBLY



405004	
33 185021 Tool Bar Bracket - Right	
34 185022 Tool Bar Bracket - Left	
35 185023 Clamp	
36 185070 Tool Bar Attachment Complete	
37 Extension Spool Concave or Convex - 1 ½"	
37 185018E 6" Extension Spool	
38 185019 Extension Spool Washer Concave or Convex - 1 ½	½ "
39 Lock Washer - 1 ½"	
40 WO6033 Axle Nut - 1 ½"	
41 185078 Furrow Attachment Complete, Less Blade - Single	e - 1 ½"
41 185018E Furrow Attachment Complete, Less Blade - Pair -	1 ½"

GERRHORE INC.

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 warranties 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.