



Operator's Manual

Poly Fertilizer Spreader

Models: BS-250L, BS-400L, BS-500L



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INTRODUCTION

Thank you for purchasing your fertilizer spreader. Your fertilizer spreader is designed to be used on Cat. 1 tractors and at 540. It is important to properly maintain and keep in place all safety guards and shields that came with your spreader.

SAFETY

Read and understand this manual and all safety signs before operating and maintaining.
Review the safety instructions and precautions annually.

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



THIS SYMBOL MEANS
- ATTENTION!
- BECOME ALERT!
- YOUR SAFETY IS INVOLVED!



SAFETY SIGNAL WORDS

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



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.



GENERAL SAFETY GUIDELINES

Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. Designers and manufacturers build in as many safety features as possible. 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, study the following precautions and insist those working with you or for you, follow them.

- Replace any CAUTION, WARNING, DANGER or instruction safety decal that is not readable or is missing. Location of such decals is indicated in this booklet.
- Do not attempt to operate this equipment under the influence of drugs or alcohol.
- 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 adult familiar with farm machinery and trained in this equipment's operations. **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.**
- To prevent injury or death, use a tractor equipped with a Roll Over Protective System (ROPS). Do not paint over, remove or deface any safety signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.
- 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.**



SAFETY DECAL CARE

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current sign.
- Safety signs are available from your Distributor or Dealer Parts Department or the factory.

How to Install Safety Signs:

- Be sure that the installation area is clean and dry.
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the decal 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 decal in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.



BEFORE OPERATION

- Carefully study and understand this manual.
- Do not wear loose-fitting clothing, which may catch in moving parts.
- Always wear protective clothing and substantial shoes.
- Give the unit a visual inspection for any loose bolts, worn parts or cracked welds, and make necessary repairs. Follow the maintenance safety instructions included in this manual.
- Be sure that there are no tools lying on or in the equipment.
- Do not use the unit until you are sure that the area is clear, especially children and animals.
- Don't hurry the learning process or take the unit for granted. Ease into it and become familiar with your new equipment.
- Practice operation of your equipment and its attachments. Completely familiarize yourself and other operators with its operation before using.
- Use a tractor equipped with a Roll Over Protective System (ROPS) and fasten your seat belt prior to starting the engine.
- The manufacturer does not recommend usage of tractor with ROPS removed.
- Move tractor wheels to the widest recommended settings to increase stability.
- Securely attach to towing unit. Use a high strength, appropriately sized hitch pin with a mechanical retainer and attach safety chain.
- Do not allow anyone to stand between the tongue or hitch when backing up to the equipment.



DURING OPERATION

- Children should not be allowed on the product.
- Clear the area of small children and bystanders before moving the spreader.
- Make sure you are in compliance with all local and state regulations regarding transporting equipment on public roads and highways. Lights and slow moving signs must be clean and visible by overtaking or oncoming traffic when feeder is transported.
- Beware of bystanders, **particularly children!** Always look around to make sure that it is safe to start the engine of the towing vehicle or move the unit. This is particularly important with higher noise levels and quiet cabs, as you may not hear people shouting.
- **NO PASSENGERS ALLOWED** - Do not carry passengers anywhere on, or in, the tractor or equipment, except as required for operation.
- Keep hands and clothing clear of moving parts.
- Do not clean, lubricate or adjust your equipment while it is moving.
- When halting operation, even periodically, set the tractor brakes, disengage the PTO, shut off the engine and **remove the ignition key**.
- Be especially observant of the operating area and terrain - watch for holes, rocks or other hidden hazards. Always inspect the area prior to operation.
- **DO NOT** operate near the edge of drop-offs or banks.
- **DO NOT** operate on steep slopes as roll over may result.
- Operate up and down (not across) intermediate slopes. Avoid sudden starts and stops.



HIGHWAY AND TRANSPORT OPERATIONS

- Adopt safe driving practices:
 - Keep the brake pedals latched together at all times. **NEVER USE INDEPENDENT BRAKING WITH MACHINE IN TOW AS LOSS OF CONTROL AND/OR UPSET OF UNIT CAN RESULT.**
 - Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure. Keep speed to a minimum.
 - Reduce speed prior to turns to avoid the risk of overturning.
 - Avoid sudden uphill turns on steep slopes.
 - Always keep the tractor or towing vehicle in gear to provide engine braking when going downhill. Do not coast.
 - Do not drink and drive!
- Comply with state and local laws governing highway safety and movement of farm machinery on public roads.
- Use approved accessory lighting flags and necessary warning devices to protect operators of other vehicles on the highway during daylight and nighttime transport. Various safety lights and devices are available from your dealer.
- 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.
- When driving the tractor and equipment on the road or highway under 40 kph (20 mph) at night or during the day, use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem.
- Plan your route to avoid heavy traffic.
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.

- Be observant of bridge loading ratings. Do not cross bridges rated lower than the gross weight as which you are operating.
- Watch for obstructions overhead and to the side while transporting.
- Always operate equipment in a position to provide maximum visibility at all times. Make allowances for increased length and weight of the equipment when making turns, stopping the unit, etc.
- Pick the most level possible route when transporting across fields. Avoid the edges of ditches or gullies and steep hillsides.
- Be extra careful when working on inclines.
- Maneuver the tractor or towing vehicle at safe speeds.
- Avoid overhead wires or other obstacles. Contact with overhead lines could cause serious injury or death.
- Avoid loose fill, rocks and holes; they can be dangerous for equipment operation or movement.
- Allow for unit length when making turns.
- Operate the towing vehicle from the operator's seat only.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside of unit.
- Never leave running equipment attachments unattended.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems. Follow the maintenance safety procedures.

Assembly

Hopper

1. With the hopper right side up, insert Retainer Bushing through the center hole of the hopper. The bushing rim should be on the inside of the hopper.
2. Turn the hopper upside down.
3. Slip the 2-hole (Top Shutter Plate Flow Control) stainless steel disc over the bushing and against the hopper bottom.
4. Do the same with the 3-hole (Bottom shutter Plate Directional Control) stainless steel disc. **Important: See photo to be sure the discs are flipped the proper way.**
5. Put the 4 3/8" diameter washer over the Retainer bushing.
6. Secure everything in place with the snap ring.

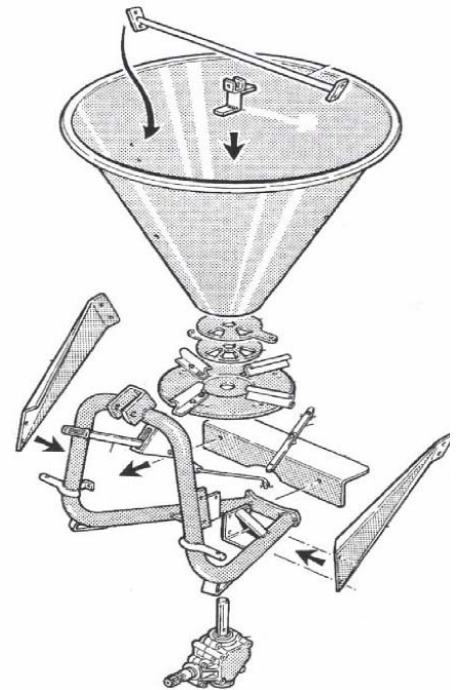
IMPORTANT: Make sure both holes can be exposed after the discs are assembled. If not assembled correctly, the openings will not line up when the gates are supposed to be open.

Frame

1. Install the spin disc on the gearbox output shaft. Secure it in place with the 8mm roll pin in the lower most hole, which is closest to the gearbox housing.
2. Install the spreading fins on the disc. The cup of the fin, when facing the disc, should be pointing to the right. Secure the fins to the disc using the 8 x 20mm bolt, flat washer and hex nut. The fins are in the correct position if, when turning the input shaft of the gearbox, the cupped end of the fin is forward.
3. Install the 1/4" roll pin in the middle hole of the gearbox output shaft.
4. Place the 1" I.D. washer over the output gearbox shaft and have it rest against the 1/4" roll pin.



5. Install the deflector shield on the inside of the frame. Bolt it to the tabs welded in front of the lower hitch pins on the frame. Secure it in place with the 10 x 25mm bolts, flat washers, and Hex nuts.
6. Secure the Fixed Pivot to the deflector shield with an 8mm nut and flat washer.
7. Loosely attach the left and right hopper support arms to the frame using the M10 x 25mm bolts, star washers and Hex nuts. The notch end goes on the frame. Do not tighten.
8. **Attaching the adjustment spreader lever.** Slip the adjustment lever through the scaled slot. Put the spring over the 10 x 70mm bolt. Insert the bolt through the spreader lever and put the fiber washer next to the lever. Put the bolt through the frame and secure in place with the 10mm lock nut. Compress the spring by tightening the bolt and nut until there is resistance in moving the handle up and down.
9. **Installing the Threaded Adjustment Block.** Slip the wing bolt through the indication gauge and then through the scaled slot on the frame. Thread the wing bolt through the solid block to secure it to the frame.
10. Flip the hopper right side up, and position it over the frame. Slide center hole over the gearbox output shaft. Secure the back of the hopper in place by slipping a fender washer over a 10 x 35mm bolt and sliding it through hopper and then through the frame near the top hitch. Secure it in place with a 10mm flat washer, star washer and hex nut. Insert the support bar and bolt it in place with the 10 x 25mm bolts. The flat washers, star washers and hex nuts are tightened against the hopper supports.
11. Install the agitator with the 8 x 50mm bolt and lock nut.
12. Install the Tie Rod to the Top Shutter Plate and secure it with two 2mm cotter pins and 2 10mm flat washers.
13. Install the Directional lever to the Bottom Shutter Plate and secure the end to directional disc with 2mm cotter pin and 8mm flat washer and the R clip to the Fixed Pivot bolted to the deflector shield.
14. Tighten all hardware.



Operation

Attaching to the tractor

1. With the Fertilizer Spreader on a level surface, back the Cat. 1 tractor so the tractor lift arms are even with the fertilizer spreader lower hitch pins. Lower or raise the tractor hitch arms until the 7/8" bushing in the arm is level with the hitch pins. **Be sure nothing is between the tractor and the spreader before backing up.**
2. Insert the lower link hitch hole of the tractor's lift arm over the implement's hitch pin.
3. Secure the lift arm in place by using a 7/16" lynch pin or other fastener.
4. Repeat with the other arm.
5. Connect the driveline to the tractor's PTO output shaft, making sure the twist lock collars snap in place. Repeat on the spreader gear box shaft.
6. Connect the tractor top link to the upper pivot hitch of the fertilizer spreader.
7. Start the tractor and slowly raise the fertilizer spreader. Check for drawbar interference. Be sure that the PTO driveline does not bottom out when lifting the fertilizer spreader to its maximum height. If it does appear that it could bottom out, it is necessary to shorten the PTO driveline. (See Shortening a PTO Driveline section). Ensure that in the working position there is an overlap of a minimum of 1/3 the length of each profile.

Shortening a PTO Driveline

1. With the implement attached to the tractor's three point hitch, and the PTO driveline not installed, separate the PTO driveline. Attach the implement end to the implement and the other end to the tractor PTO input shaft.
2. Raise the implement by using the tractor's hydraulic 3-point hitch to its maximum lift height.
3. Hold the half shafts next to each other and mark them so each end is approximately 1/2" from hitting the end of the telescopic profiles.
4. Shorten the inner and out guard tubes equally.
5. Shorten the inner and outer profiles by the same length as the guard tubes.
6. Using a rattail file, round off all sharp edges and burrs. Grease the telescopic profile generously before reassembling.



Do not shorten too much, the proper overlap is a minimum of 1/3 the length of each profile.

Spreading Height

Before operating the spreader, make sure that the spreading disc is set to the horizontal position and it is about 30" from ground level.

Spreading with revolving vanes.

Since fertilizers vary with respect to weights and density, in order to obtain a perfect spreading it may be necessary to adjust the vanes in order to compensate for these differences. The vanes are usually set to the center position. By moving the vanes forward, distribution is increased towards the left side of the tractor operator, moving them backwards causes distribution to be increased towards the right.

Left– Center – Right Spreader pattern

A simple adjustment of the lower lever allows directional flow of the spreader pattern towards the right, center or left of the tractor

Removal and Storage

1. After finishing, remove the spreader from the tractor.
2. Put the PTO driveline in a safe location so it will not become damaged.
3. Wash out the spreader, removing all fertilizer or other material.



FOLLOWING OPERATION

- Shut off the engine and **remove the ignition keys** following operation, or when unhitching, stop the tractor or towing vehicle, set the brakes, disengage the PTO and all power drives, shut off the engine and **remove the ignition keys**.
- Store the unit in an area away from human activity.
- Do not park equipment where it will be exposed to livestock for long periods of time. Damage and livestock injury could result.
- Do not permit children to play on or around the stored unit.



PERFORMING MAINTENANCE

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Make sure there is plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
- Be certain all moving parts on attachments have come to a complete stop before attempting to perform maintenance.
- Always use the proper tools or equipment for the job at hand.
- Use extreme caution when making adjustments.
- Never replace hex bolts with less than grade five bolts unless otherwise specified.
- After servicing, be sure all tools, parts and service equipment are removed.
- 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 claim responsibility for use of unapproved parts and/or accessories and other damages as a result of their use. If equipment has been altered in any way from original design, the manufacturer does not accept any liability for injury or warranty.

MAINTENANCE

Although the hopper of your spreader is fabricated with polypropylene, and therefore impervious to rust and corrosion, it is very important that the other parts of the spreader be kept clean due to the corrosive properties of fertilizers.

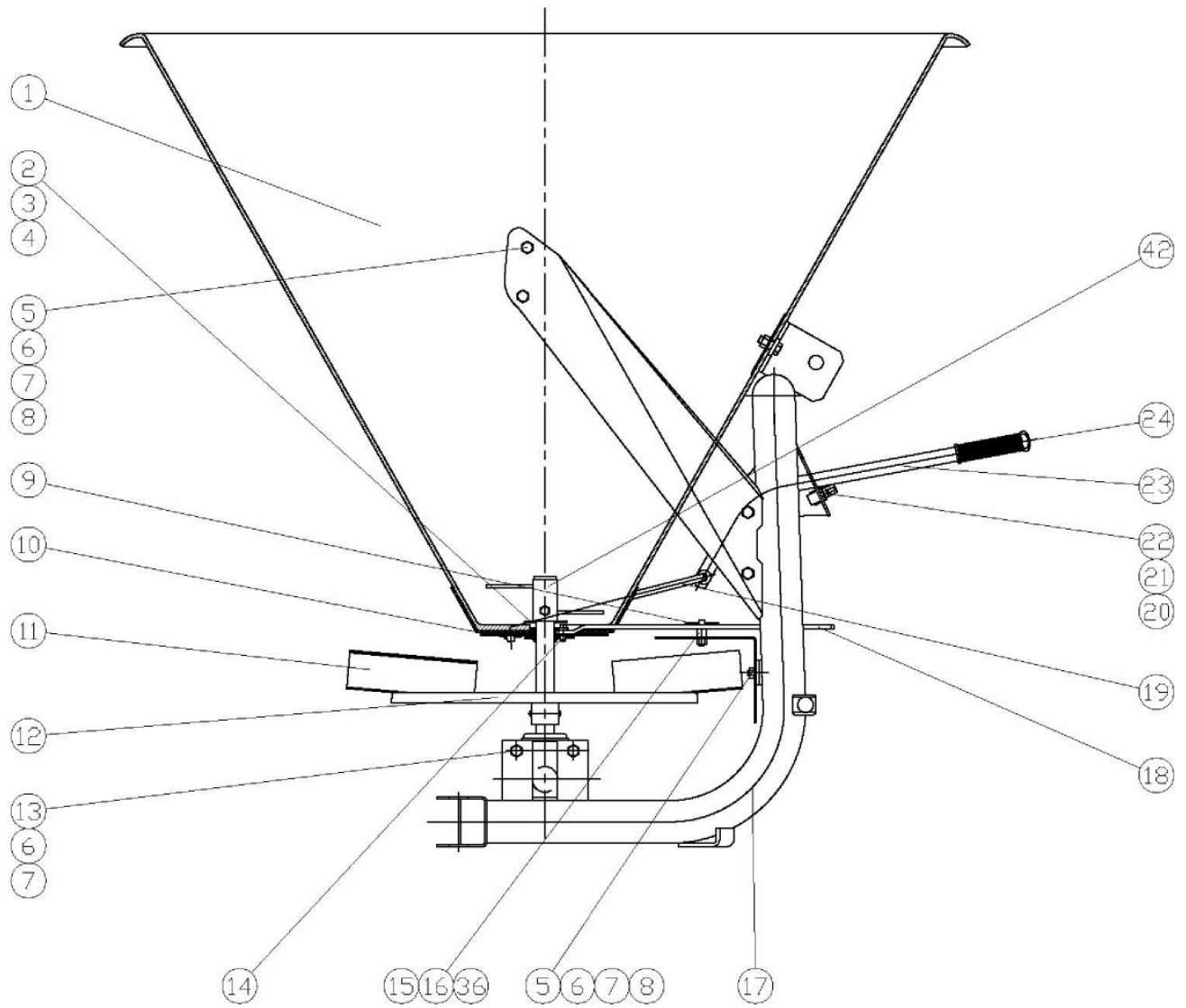
Item	Interval
PTO shaft grease zerks	Grease weekly
PTO shaft telescopic tubing	Grease every 40 hours
Clean spreader	After each use.

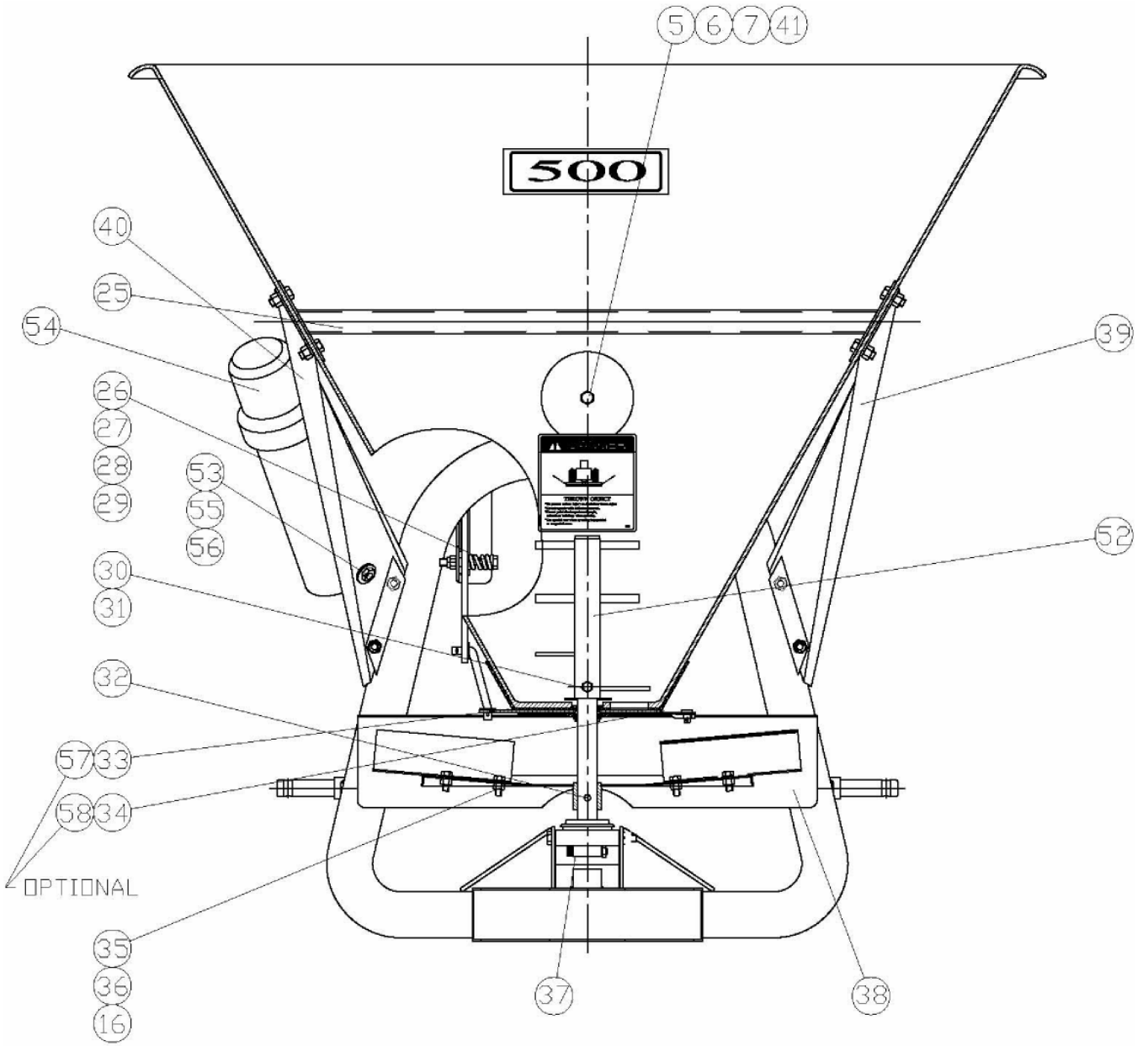
The gearbox is sealed and filled with grease so not maintenance is necessary.

Spreading Charts

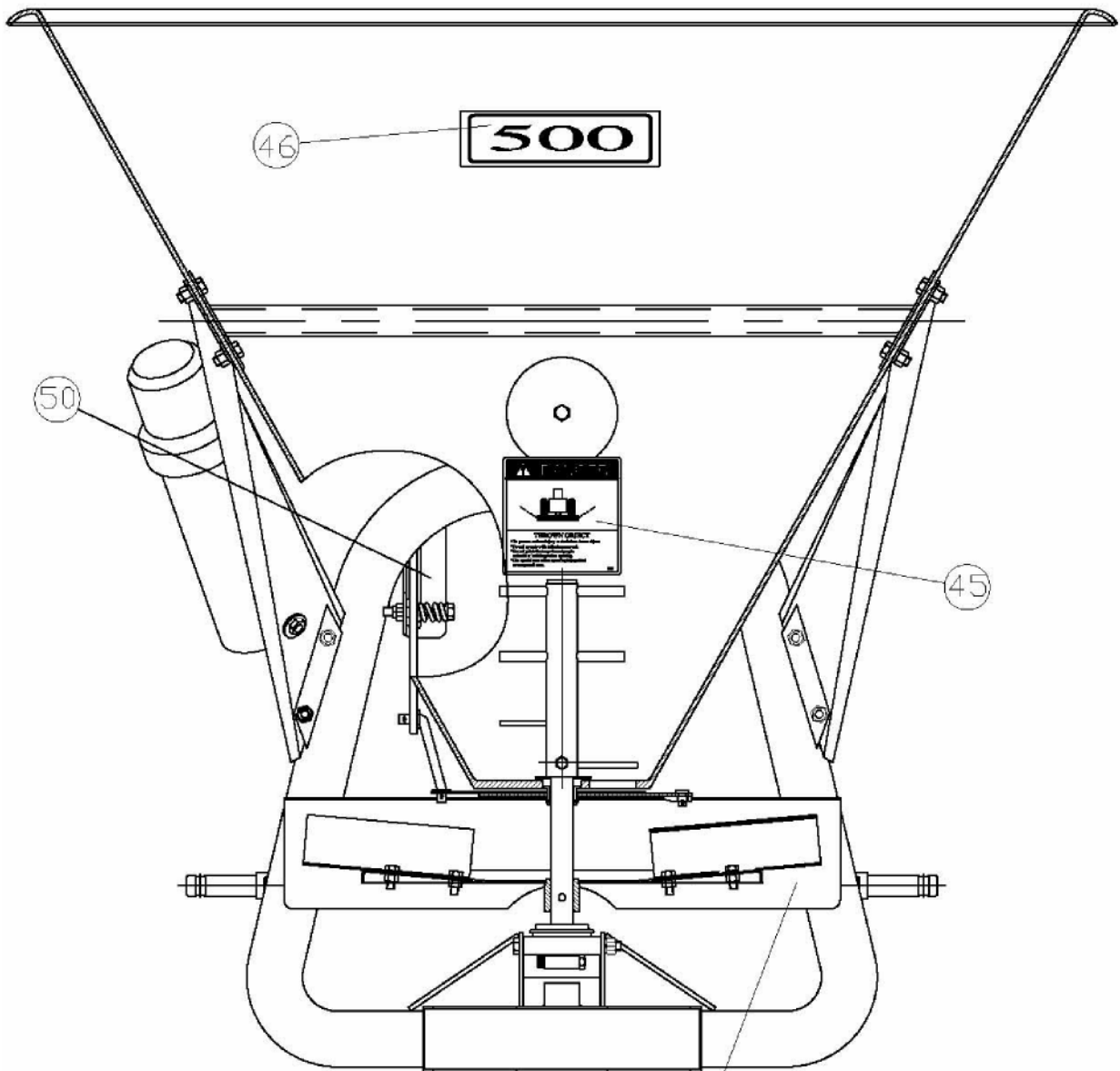
Fertilizer Type	Spread	LBS PER ACRE												
		Gate setting												
		1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	
Granular Fertilizer	39	1	174	285	484	815	1052	1326	1554	1870	2105	2414	2622	2919
		2.5	84	121	202	336	435	545	640	762	854	987	1071	1172
		5	46	60	106	176	222	277	320	392	436	494	535	596
		7.5	29	40	92	121	151	191	216	260	294	336	365	400
		10	17	30	52	86	113	136	166	197	231	253	279	295
Medium Crystalline Fertilizer	26	1	330	546	1007	1632	2019	2587	3024	3603	4033	4476	4908	5407
		2.5	115	219	412	661	816	1053	1221	1446	1621	1801	1973	2174
		5	68	112	209	329	416	534	614	730	821	907	989	1092
		7.5	44	76	140	223	280	364	415	490	546	606	664	728
		10	30	54	100	171	208	275	318	363	408	455	496	549
Calcium Cyanamid & Similar	32	1	275	750	1104	1636	2020	1844	2868	3345	4289			
		2.5	109	300	453	662	809	994	1158	1343	1508			
		5	58	149	229	297	407	495	584	672	755			
		7.5	37	99	148	218	272	333	388	449	502			
		10	26	73	112	166	204	251	289	336	376			
Ammonium Sulph. (CR)	10	1	142	565	924	1391	1779	2199	2607	3061	3355	3767	4039	4521
		2.5	61	224	373	557	716	886	1040	1228	1347	1512	1621	1810
		5	28	114	188	281	362	444	519	615	671	757	809	909
		7.5	23	73	122	189	241	295	348	418	451	508	544	607
		10	15	58	94	143	180	222	262	308	336	378	410	453
Thomas Metal	20	1				2262	5037	6670	6929					
		4				572	1277	1685	1736					
		7				290	537	843	869					
		12				195	427	297	583					

Spreader Parts Identification Drawings



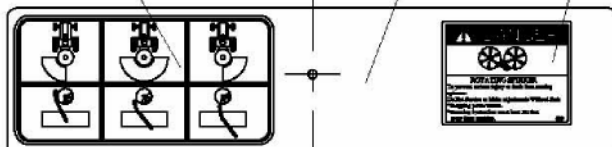


DECAL LOCATIONS

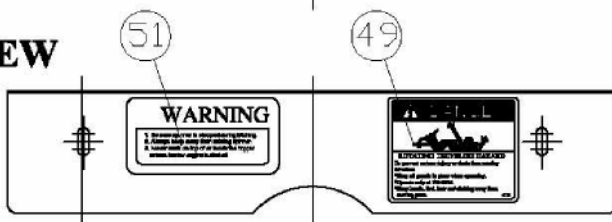


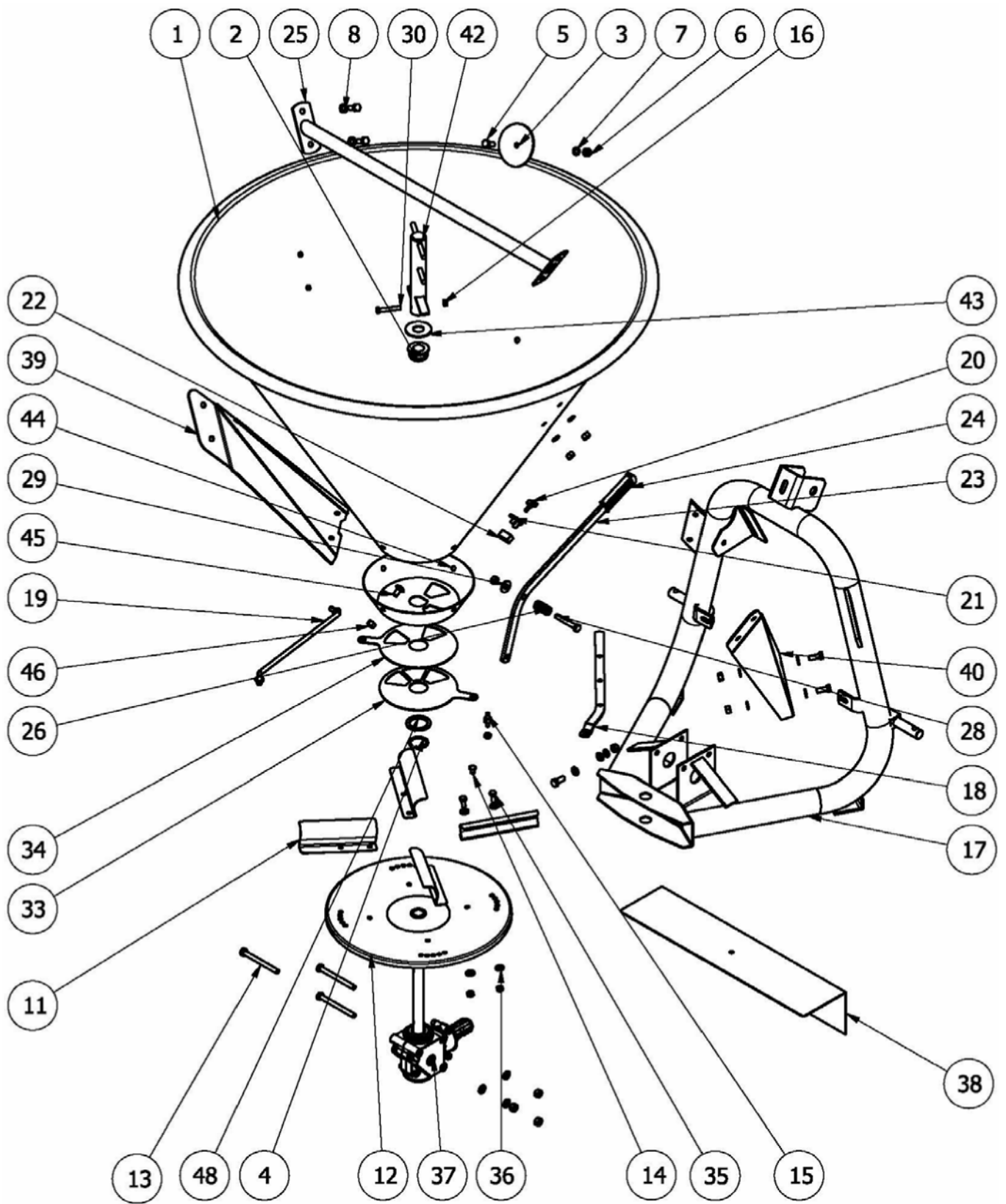
47 SHIELD DECAL LOCATIONS 48

TOP VIEW



FRONT VIEW





REF	QTY	DESCRIPTION
1	1	HOPPER
2	1	RETAINER BUSHING
3	1	HOPPER SUPPORT WASHER
4	1	RETAINING RING
5	10	HEX HEAD BOLT
6	14	HEX HEAD NUT
7	14	SPLIT TYPE LOCKWASHER
8	14	FLAT ZINC PLATED WASHER
9	2	HAIR PIN
10	2	COTTER PIN
11	4	SPREADER DISTRIBUTOR VEIN
12	1	SPREADER DISC
13	3	HEX BOLT
14	1	SPREADER SHUTTER ADJUSTMENT PIVOT JOINT
15	1	SPREADER LEVER, FIXED PIVOT
16	11	HEX HEAD NUT
17	1	SPREADER BASE ASSEMBLY
18	1	SPREADER DIRECTIONAL LEVER
19	1	SPREADER TIE ROD
20	1	SPREADER THUMB SCREW
21	1	SPREADER GAGE POINTER
22	1	SPREADER THREADED ADJ BLOCK
23	1	SPREADER LEVER
24	1	SPREADER LEVER, RUBBER GRIP
25	1	SPREADER HOPPER SUPPORT ASSEMBLY
26	1	SPREADER SPRING
27	1	NYLON LOCK NUT
28	1	HEX BOLT
29	1	ADJUSTMENT LEVER SPACER
30	1	HEX HEAD BOLT
31	1	NYLON LOCK NUT
32	1	ROLL PIN
33	1	SPREADER TOP SHUTTER PLATE (FLOW CONTROL)
34	1	SPREADER BOTTOM SHUTTER PLATE (DIRECTIONAL)
35	10	HEX HEAD BOLT

36	11	AINC PLATED FLAT WASHER
37	1	SPREADER DRIVE
38	1	SPREADER FRONT SHIELD
39	1	RIGHT SIDE HOPPER SUPPORT ARM
40	1	LEFT SIDE HOPPER SUPPORT ARM
41	1	FLAT WASHER
42	1	SINGLE PIECE AGITATOR (SHORT)
43	1	NYLON WASHER
44	1	SPREADER HOPPER SUPPORT PAN
		DECALS
45	1	THROWN OBJECT WARNING DECAL
46	1	SIZE DECAL
47	1	DIRECTIONAL DECAL
48	1	SPINNER WARNING DECAL
49	1	DRIVE SHAFT WARNING DECAL
50	1	GAGE DECAL
51	1	WARNING DECAL
		OPTIONAL PARTS
52	1	SINGLE PIECE EXTENDED AGITATOR (LONG)
53	2	HEX NUT
54	1	MINI MANUAL HOLDER
55	2	HEX HEAD BOLT
56	2	AINC PLATED FLAT WASHER
57	1	SPREADER TOP SHUTTER PLATE – STAINLESS STEEL
58	1	SPREADER BOTTOM SHUTTER PLATE - STAINLESS STEEL

CAMMOND INDUSTRIES PRODUCT WARRANTY

Cammond Industries warrants its new equipment to be free of defects in material and workmanship at the time of delivery to the first retail purchaser. All equipment is warranted for six (6) months from the date of purchase by the first retail customer. Cammond will repair or replace, at its option, without charge for parts and labor, any defective part of the equipment during the six (6) months. All warranty work will be done by an authorized dealer or at the factory. Any work performed by the dealer must be authorized by the factory and charges will be determined based on the factory-approved rate. This warranty does not include transportation of equipment to the dealer or the factory, or the removal or replacement of any products attached to Cammond equipment. It is the responsibility of the owner, at the owner's expense, to transport the equipment to the service shop or an authorized dealer or alternatively to reimburse the dealer for any travel or transportation expense involved in fulfilling this warranty.

EXCEPTIONS TO THIS WARRANTY: This warranty will not apply in the following cases:

1. Warranty registration card is not completed and returned to Cammond Industries, 902 Arlington Center, PMB 225, Ada, OK. 74820
2. Normal wear of components and structure.
3. Damage caused by accident, fire, flood, abuse, negligence, alterations, lack of performance or lack of required maintenance.
4. Replacement of maintenance items such as hoses, hydraulic cylinders, etc. is not covered
5. Any unauthorized alteration of equipment or use of unauthorized parts.
6. Use of equipment in rental fleets.

This warranty is in lieu of all warranties of merchant ability, fitness for a purpose or other representations, warranties on conditions, expressed or implied. The remedies of the owner set forth herein are exclusive. Cammond Industries neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale of covered equipment. Correction of defects in the manner and for the applicable period of time provided above will constitute fulfillment of all responsibilities of Cammond Industries to the owner and Cammond will not be liable for negligence, under contract or in any other manner with respect to such equipment. **IN NO EVENT WILL THE OWNER BE ENTITLED TO RECOVER FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS LOSS OF CROPS, PROFITS, REVENUE OR RENTAL COST.**

If you have any warranty claim contact your dealer within 30 days of the occurrence. Your dealer will contact Cammond Industries and together they will determine the manner that it will be handled. DO NOT HAVE UNAUTHORIZED REPAIRS COMPLETED AND THEN CLAIM A WARRANTY REIMBURSEMENT.

If equipment has been altered in anyway from original design, Cammond does not accept any liability for warranty.