

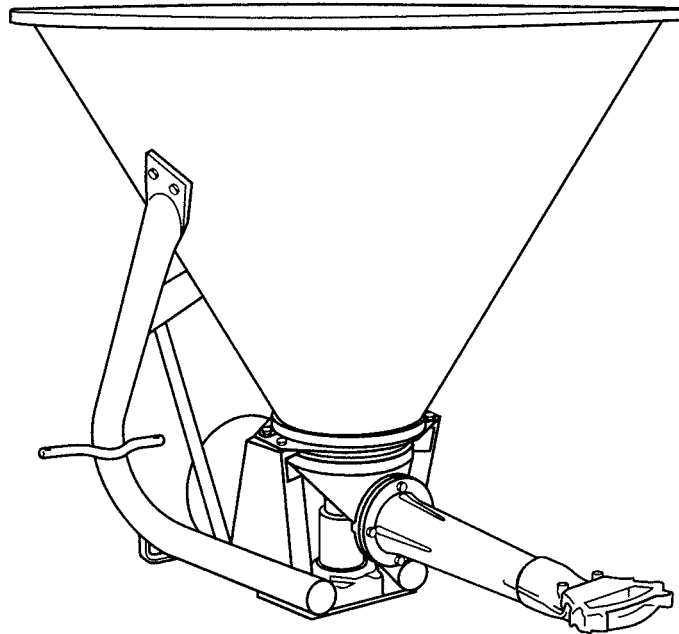
# **BEFCO<sup>®</sup>**

## **Operator's Manual**

### **TURBO-HOP**

**Pendular Spreader**

**302-404**



The operator's manual is a technical service guide and must always accompany the machine.

**Manual 960-137B**

**June 2010**

# SAFETY

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!*

## Signal Words

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



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



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

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# 1 - GENERAL INFORMATION

Thank you and congratulations for having chosen our implement. Your new pendular spreader is a technologically advanced machine constructed of high quality, sturdy components that will fulfill your working expectations. Read this manual carefully. It will instruct you on how to operate and service your implement safely and correctly. Failure to do so could result in personal injury and/or in equipment damage.

## 1.01 - General

The implement described in this manual is to be used with tractors with PTO at 540 rpm and clockwise rotation.



**CAUTION:** Always ensure that the coupling of the implement with the tractor is done at the same PTO speed and direction of rotation. Do not operate this implement at a PTO speed or direction of rotation other than that shown on the implement. Serious damage can occur to the machine and/or the operator.



**CAUTION:** Unless otherwise specified, all hardware is metric. Use only metric tools on metric hardware. Other tools that do not fit properly can slip and cause injury.



**CAUTION:** Right hand and left hand sides of the implement are determined by facing in the direction the implement will travel when going forward (see fig. 2).

Carefully read the Warranty section<sup>1</sup>, detailing coverage and limitations of this warranty. **Warranty** is provided for customers who operate and maintain their equipment as described in this manual. Warranty registration is accomplished by the dealer by completing and forwarding the **Warranty Registration** form to the Company, along with a copy of the dealer's invoice. It is in your best interest to insure that this has been done.

Warranty does not cover the following:

1. Cleaning, transporting, mailing and service call charges.
2. Normal wear items such as belts, blades, bearings, drivelines, shear pins, slip clutches, etc.
3. Depreciation or damage caused by normal wear, accidents, improper maintenance, improper protection or improper use.

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<sup>1</sup> See Chapter 8 - Warranty.

4. The use of non-original spare parts and accessories.

Your Authorized Company Dealer has genuine parts in stock. Only these approved replacement parts should be used.

This limited warranty covers defective material and workmanship. The cost of normal maintenance or repairs for accidents or improper use and related labor will be borne by the owner.

### **1.02 - Model and Serial Number ID**

Attached to the frame is an ID plate showing the model and the serial number. Record your implement model and serial number in the space provided below. Your dealer needs this information to give you prompt, efficient service when you order parts.

<b>BEFCO</b>	1781 S. Wesleyan Blvd. — P.O. Box 6036 Rocky Mount, N.C. 27802 — U.S.A. Tel: 1.252.977.9920 Fax: 1.252.977.9718
<b>MODEL:</b>	<input type="text"/>
<b>SERIAL:</b>	<input type="text"/>
<b>VERSION:</b>	<input type="text"/>

## 2 - SAFETY PRECAUTIONS

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

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

It is the operator's responsibility to read and understand all safety and operating instructions in the manual and to follow these.

Allow only properly trained personnel to operate the fertilizer spreader. Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your tractor, before assembly or operation, to acquaint yourself with the machines. It is the spreader owner's responsibility, if this machine is used by any person other than yourself, is loaned or rented, to make certain that the operator, prior to operating, reads and understands the Operator's Manuals and is instructed in safe and proper use.

### 2.01 - Preparation



1. Before operating equipment read and understand the Operator's Manual and the safety signs (**see fig. 2**).
2. Thoroughly inspect the implement before initial operation to assure that all packaging materials, i.e., wires, bands, and tape have been removed.
3. Personal protection equipment including hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining and/or repairing the implement.
4. Operate the fertilizer spreader only with a tractor equipped with an approved Roll-Over-Protective-System (ROPS). Always wear your seat belt. Serious injury or even death could result from falling off the tractor.
5. Clear area of stones, branches or other debris that might be thrown, causing injury or damage.
6. Operate only in daylight or good artificial light.
7. Ensure fertilizer spreader is properly mounted, adjusted and in good operating condition.
8. Ensure that all safety shielding and safety signs are properly installed and in good condition.
9. Chemicals may cause eye, skin or breathing problems. Always wear a face mask, gloves and goggles when filling hopper.
10. Before loading the fertilizer in the hopper read carefully the instructions printed on the fertilizer canvas bag concerning the precautions to be taken in case of toxicity or

corrosivity of the product. Before loading switch off the engine and remove the ignition key.

11. Load hopper with product only after the spreader has been properly attached to the tractor.

## 2.02 - Starting and Stopping



1. Be sure that no one is near the machine prior to engaging or while the machine is working.
2. Be sure the tractor is in "Neutral" before starting engine.
3. The operating power is supplied from tractor PTO. Refer to your tractor manual for PTO engagement and disengagement instructions. Always operate PTO at 540 rpm. Know how to stop the tractor and machine quickly in case of an emergency.
4. When engaging PTO, the engine rpm should always be low. Once engaged and ready to start operating, raise PTO speed to 540 rpm and maintain throughout operation.
5. Check the tractor master shield over the PTO stub shaft. Make sure it is in good condition and fastened securely to the tractor. Purchase a new shield if old shield is damaged or missing.
6. After striking an obstacle, disengage the PTO, shut the tractor down and thoroughly inspect for damage before restarting.
7. To park the vehicle safely, stop vehicle on a level surface (not on a slope), disengage PTO, engage the parking brake, stop the engine, remove the key, and wait for engine and all moving parts to stop before leaving the operator's seat.
8. Stay clear of rotating drivelines. Entanglement in rotating driveline can cause serious injury or death. Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before getting near it.

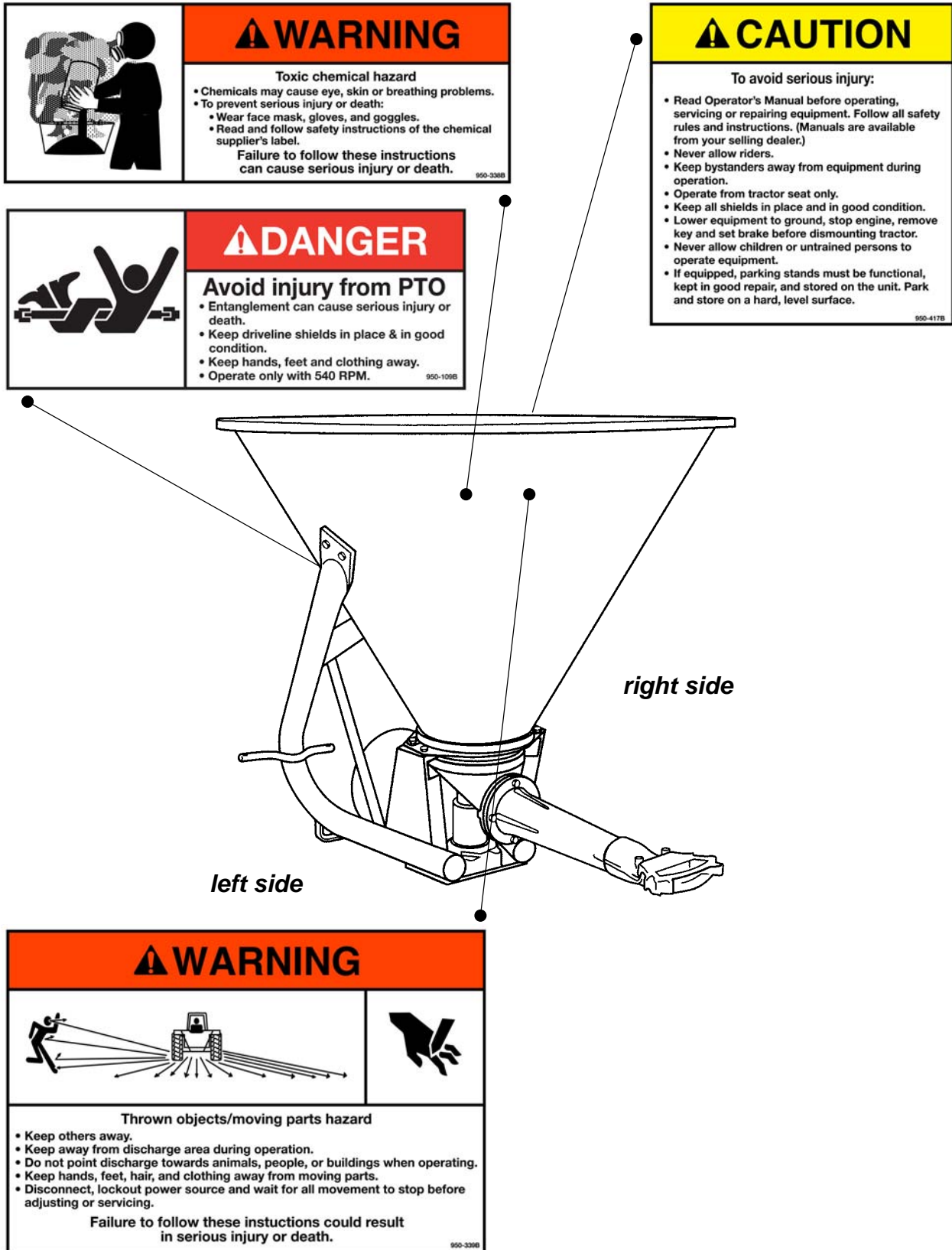
## 2.03 - Messages and Signs



1. Read and adhere to all safety and operating decals on this machine (**see fig. 2**).
2. Before dismounting tractor: Stop engine, set brake and remove the key of unattended equipment.
3. Keep away from rotating parts and driveline.
4. Keep guards and shields in place and in good condition.
5. Do not use with bystanders in area.
6. Allow no riders on tractor or fertilizer spreader.
7. Allow moving parts to stop before repair.
8. Securely support fertilizer spreader before working underneath.

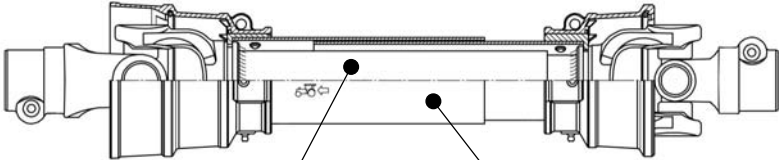
Additional warning and operating decals are available at no extra charge. Please specify model and serial number when ordering.

Fig. 2 - Safety decals - implement; replace immediately if damaged.





Safety decals - driveline; replace immediately if damaged.



placed on outer tube



placed on outer shield

## 3 - OPERATION

The fertilizer spreader is an extremely versatile and accurate machine, ideal for spreading not only granular or powdered material but also for spreading materials containing a humidity percentage of up to 30 percent.

Pendular spreaders can spread up to a width of 47' and are designed for 20 to 60 HP tractors.

By rotating the spout 90 degrees left or right, the spreader will send material only in that direction, allowing the operator to spread material only on desired spots and minimize wasted material. The pendular spreader is also particularly suited for spreading corrosive material since components that come in contact with these are made of either stainless steel or fiberglass.

### 3.01 - Operational Safety



**CAUTION:** Our spreaders are designed considering safety as the most important target and are the safest available in today's market. Unfortunately, human carelessness can override the safety features built into our machines. Injury prevention and work safety, aside from the features on our spreaders, are very much due to the responsible use of the equipment. It must always be operated prudently following with great care, the safety instructions laid out in this manual.



1. The use of this equipment is subject to certain hazards which cannot be prevented by mechanical means or product design. All operators of this equipment must read and understand this entire manual, paying particular attention to safety and operating instructions, prior to using.
2. Do not operate the tractor and spreader when you are tired, sick or when using medication.
3. This spreader is designed for use only on tractors with 540 rpm power take off.
4. Only properly trained people should operate this machine.
5. Accidents are most likely to occur with machines that are loaned or rented to someone who has not read the Operator's Manual and is not familiar with a spreader.
6. Always stop the tractor, set brake, shut off the tractor engine, remove the ignition key, and allow spreader moving parts to come to a complete stop before dismounting tractor. Never leave equipment unattended with the tractor running.
7. Never place hands or feet into hopper with tractor engine running or before you are sure all motion has stopped. Stay clear of all moving parts.

8. Never allow any person inside the hopper for any reason. Serious injury or death can result from someone becoming entangled in the agitator.
9. Do not allow riders on the spreader or tractor at any time. There is no safe place for riders.
10. Never allow anyone within 100 yards of the spreader while the PTO is engaged. Product thrown from the spreader can cause serious injury or death.
11. Before backing up, look behind carefully.
12. Install and secure all guards and shields before starting or operating.
13. Keep hands, feet, hair and clothing away from moving parts.
14. Never operate tractor and spreader under trees with low hanging limbs. Operator can be knocked off the tractor and then run over.
15. Stop spreader immediately upon striking an obstruction. Turn engine off, remove key, inspect and repair any damage before resuming operation.
16. Inspect the entire machine periodically<sup>2</sup>. Look for loose fasteners, worn or broken parts, and leaky or loose fittings.
17. Stay alert for holes, rocks and roots in the terrain and other hidden hazards. Keep away from drop-offs.
18. Use extreme care and maintain minimum ground speed when transporting on hillside, over rough ground and when operating close to ditches or fences. Be careful when turning sharp corners.
19. Reduce speed on slopes and sharp turns to minimize tipping or loss of control. Be careful when changing directions on slopes. Do not start or stop suddenly on slopes. Avoid operation on steep slopes.
20. Pass diagonally through sharp dips and avoid sharp drops to prevent "hanging up" tractor and spreader.
21. Avoid sudden starts and stops while traveling up or downhill.
22. Always operate down slopes; never across the face. Avoid operation on steep slopes. Slow down on sharp turns and slopes to prevent tipping and/or loss of control.
23. All remote control devices (cables, ropes, rods, flexible lines, etc.) should be positioned in a way to prevent maneuvers which could lead to accidents or damages.
24. Chemicals may cause eye, skin or breathing problems. Always wear a face mask, gloves and goggles when filling hopper.
25. Before loading the fertilizer in the hopper read carefully the instructions printed on the fertilizer canvas bag concerning the precautions to be taken in case of toxicity or corrosivity of the product. Before loading switch off the engine and remove the ignition key.
26. Load hopper with product only after the spreader has been properly attached to the tractor.
27. Use only the driveline supplied with the spreader. Do not use it if it is missing any shield or safety protection. Frequently check the driveline and ensure it is in good operating condition. Immediately replace broken or damaged shields or protections.

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<sup>2</sup> See Chapter 4 - Maintenance.

### 3.02 - Set Up and Assembly

**Notice to dealer:** Pre-Delivery set up and service including lubrication are the responsibility of the authorized dealer. It is up to him to assure that the machine is in perfect condition and ready to be used. It is his responsibility to ensure that the customer is aware of all safety aspects and operational procedures for the spreader. He must also fill out the Pre-Delivery Checklist<sup>3</sup> prior to delivering the spreader.



**CAUTION:** Stand clear of bands when cutting as they could be under sufficient tension to cause them to fly loose. Take care in removing bands and wire, as they often have extremely sharp edges and cut very easily.

Note: All hardware needed for assembly will be found in the crate and the hardware bag of the machine. Assembly will be easier if all parts are loosely assembled before tightening the hardware.

### 3.03 - Pre-Operational Check

Check each of the following, carefully, prior to engaging the equipment:

1. Thoroughly read and understand your operator's manual.
2. The oil in the gearbox.
3. The driveline cross and bearings have been greased.
4. No wrappings or foreign objects are around the machine or driveline.
5. All hardware is tight<sup>4</sup>.
6. The tractor, to ensure correct direction of PTO and rpm speed.
7. All safety shields and guards are in place and tightly attached.
8. No people or animals are in the work area.



**DANGER:** Shut off the tractor and remove the key before making adjustments, servicing or cleaning the machine.

### 3.04 - Attaching to the Tractor

Only use this model implement with tractors in the correct power range<sup>5</sup> with PTO speed of 540 rpm that turns clockwise and category 1 three point hitch. Never use with tractors over 60 HP.

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<sup>3</sup> See Chapter 7 - Pre-Delivery Checklist.

<sup>4</sup> See Table 1, page 25.

<sup>5</sup> See Table 2, page 25.



**WARNING:** Never attempt to attach the implement to the tractor or make adjustments to it without first turning the tractor off.



**CAUTION:** Check the tractor PTO rpm to ensure it is set at 540 rpm and turns clockwise.



**CAUTION:** Be sure the tractor tire pressure is correct. It is important to strictly follow the safety guidelines and instructions laid out in the tractor manual.

To attach the implement to the tractor do the following:

Back the tractor up to the implement in order to slip the tractor hitch arms over the hitch pins bolted to the frame. **Turn off the tractor engine and engage the park brake.**

Secure the two tractor hitch arms to the implement with lynch pins. Tighten the tractor arms side movement with either the sway chains or blocks to limit side swing.

Connect the top link, locking it in place with the top hitch pin. Adjust it so the implement is as near parallel to the ground as possible with spout at a distance of 28 to 32 inches above the ground level.

Be sure each end of the driveline is connected securely with the locking pin on the tractor end and 2 roll pins on the implement end. Connect the driveline shielding chains to the tractor and to the implement to prevent the protective shielding from rotating during operation. If it was necessary to remove the PTO shielding to do any of the above operations, do not forget to replace it.

### 3.05 - Start Up



**CAUTION:** Load hopper with product only after the spreader has been properly attached to the tractor.



**WARNING:** Chemicals may cause eye, skin or breathing problems. Always wear a face mask, gloves and goggles when filling hopper. Refer to chemical manufacturer's label for specific safety information.

Before starting to use, never forget that the **operator is responsible** for the following:

1. Safe and correct driving of the tractor and spreader.

2. To learn precise, safe operating procedures for both the tractor and the spreader.
3. To ensure all maintenance and lubrication has been performed on the spreader.
4. To have read and understood all safety aspects for the spreader in the Operator's Manual.
5. To have read and understood all safety decals on the spreader.
6. Checking the tractor tires for the proper pressure in accordance with the tractor Operator's Manual.
7. **Checking that all shields are on the machine and securely in place.**
8. Making sure the proper attire is worn. Avoiding loose fitting clothing which can become entangled. Wearing sturdy, tough-soled work shoes and protective equipment for eyes, hands, ears and head. Never operate tractor or implements in bare feet, sandals or sneakers.
9. Ensuring proper lighting is available, sunlight or good artificial lighting.



**WARNING: Use a tractor with a cab and appropriate filters on the ventilation system or wear a breathing mask capable of filtering toxic powders to prevent inhalation of product.**

Prior to start working do the following:

1. Make sure there are no obstructions.
2. Run machine under a no-load condition for a short while to assure that everything is functioning properly.
3. Adjust all settings for the desired quantity distribution and spread pattern.
4. Shift the transmission to a slow speed gear and start forward, increase the ground speed by shifting upward until the desired speed is obtained. Do not use in reverse unless absolutely necessary and only after careful observation of the area behind the spreader.

### **3.06 - Operating Techniques**

The material delivery is controlled by a lever that opens the orifices in the hopper bottom. The lever has up to 27 positions that it can be locked into depending on the desired output. To ensure a constant output of product always keep the following factors into account.

The quantity of material distributed per acre depends on the following factors:

1. Tractor ground speed.
2. Unit weight and size of the material to be spread.
3. Spreading width.
4. Position of the lever connected to the hopper gates.

The working speed depends on ground conditions. Only a test run will enable you to gauge the optimal working speed for your conditions.



**WARNING:** Before adjusting the spreader or filling the hopper, be sure the tractor PTO is not engaged, the tractor is shut off, and the key is removed from the tractor ignition.

### Spread adjustment

Fill the hopper with the desired material to be spread. Be sure the gates are in the closed position. Raise the spreader with the tractor lift arms until the pendular spout is approximately 30 inches from the ground and with the spreader as parallel to the ground as possible. Place the gauge pin in the desired hole position (**see fig. 3**)<sup>6</sup>. Do not open the gates at this time.

Engage the engine PTO. The spreader is designed to run at 540 rpm at the PTO. Lower or greater PTO speed will change the discharge pattern. Start the tractor forward and open the gates by lowering the lever until it stops against the pin. Close off the gates with the lever after finishing spreading.



**WARNING:** Before engaging the PTO, be sure no persons or animals are behind or beside the spreader.



**DANGER:** Never allow anyone within 100 yards of the spreader while the PTO is engaged. Product thrown from the spreader can cause serious injury or death.



**DANGER:** Never allow any person inside the hopper for any reason. Serious injury or death can result from someone becoming entangled in the agitator.

## 3.07 - Uneven Terrain



**WARNING:** Be careful of roll-over when operating tractor and spreader over uneven ground.

The following precautions should always be observed when working on uneven terrain:

1. In extremely uneven terrain rear wheel weights, front tractor weights, and/or tire ballast should be used to improve stability.
2. Observe the type of terrain and develop a safe working pattern.
3. Whenever traction or stability is doubtful, first test drive over the terrain.

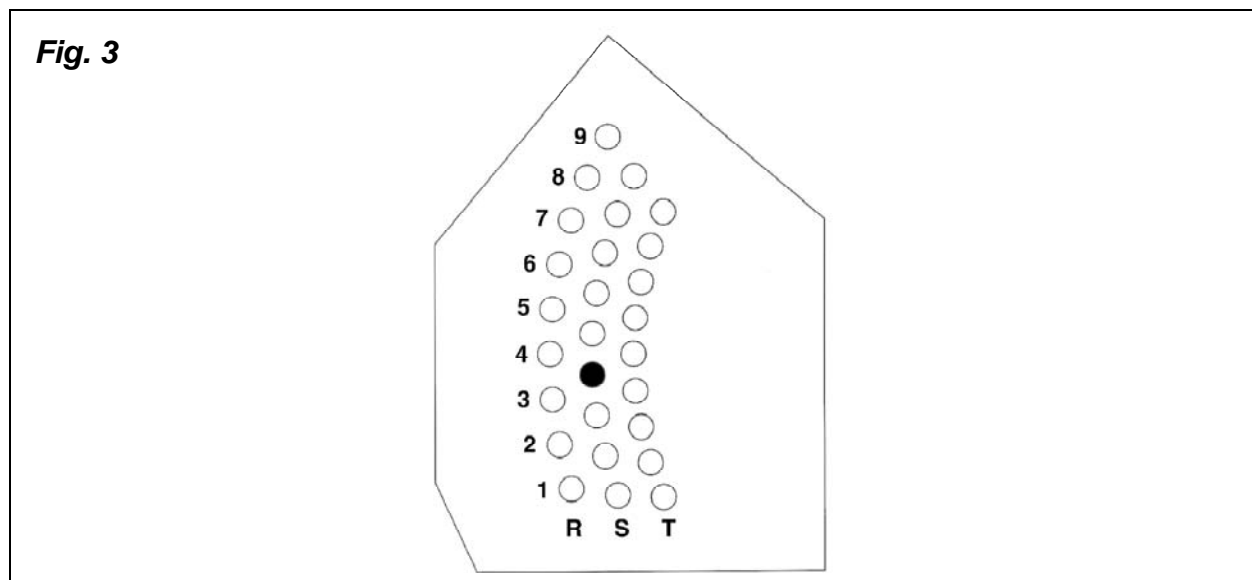
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<sup>6</sup> See Section 3.08 - Spreading Charts.

4. Operate the implement up and down steep slopes, not across slopes, to prevent the tractor from tipping. Avoid sudden stops and starts, slow down before changing directions on a slope.
5. Pass diagonally through sharp dips and avoid sharp drops to prevent hanging up the tractor and implement.
6. Slow down on sharp turns and slopes to prevent tipping or loss of control.
7. Watch for holes, roots or other hidden objects. Do not use near the edge of a gully, ditch or stream bank.

### 3.08 - Spreading Charts

The graded scale comprises three lines of holes marked with letters R, S, T (see fig. 3). Each line consists of 9 holes, which are out of line with the holes of the previous line by half a diameter. This system allows simple but effective adjustment with 27 different fertilizer quantity settings. The spread tables in the following pages will help you determine what setting to use according to the type of product you are spreading. The figure below illustrates the hole selection for "4S".





PTO 540 rpm		Spread Table in Lbs./Acre																											
Type of fertilizer	Spread width ft.	Work speed m.p.h.	LEVER POSITION																										
			1R	1S	1T	2R	2S	2T	3R	3S	3T	4R	4S	4T	5R	5S	5T	6R	6S	6T	7R	7S	7T	8R	8S	8T	9R	9S	9T
Complex 12.12.12	39	3.7				32	52	73	93	130	166	203	258	315	370	434	498	562	621	680	739	840	940	1041	1074	1107	1141	1153	1175
		5				24	38	54	69	97	124	152	193	236	277	326	374	421	465	510	554	630	705	781	805	830	856	865	881
		6.2				20	31	44	55	78	100	122	155	189	222	261	299	337	373	408	443	504	564	625	644	664	684	692	705
		7.5				16	26	36	46	65	83	101	129	158	185	217	249	281	311	340	369	420	470	521	537	554	570	577	587
		8.7				13	22	31	41	56	71	87	110	135	159	186	214	240	266	291	317	360	402	446	460	474	489	494	504
Superphosphate	39	3.7				18	37	57	77	109	142	174	224	272	322	379	438	495	566	639	710	790	872	952	1011	1072	1130	1148	1166
		5				13	28	43	57	81	107	131	168	204	241	284	328	371	425	479	532	593	654	715	758	804	848	861	874
		6.2				11	22	34	45	65	85	105	134	164	193	228	263	297	340	384	425	479	523	571	607	643	678	689	700
		7.5				9	19	28	38	54	71	87	112	136	161	190	219	247	283	320	355	395	436	476	506	536	565	574	583
		8.7				8	16	24	32	46	61	75	96	117	138	163	188	212	243	274	304	338	374	409	433	459	484	492	499
Ammonium Nitrate	39	3.7				50	82	114	146	194	240	288	360	431	502	580	660	739	851	963	1075	1134	1193	1252	1289	1326	1363	1374	1385
		5				37	61	85	109	145	180	216	270	323	376	435	495	554	638	722	806	850	894	939	967	994	1022	1031	1039
		6.2				30	49	69	87	117	144	173	215	258	301	348	396	443	511	578	645	678	716	751	773	796	818	824	831
		7.5				25	41	57	73	97	120	144	180	215	251	290	330	369	425	481	538	567	596	627	644	663	682	687	692
		8.7				21	35	49	62	83	103	124	154	184	215	248	283	317	365	413	461	486	511	537	553	568	584	589	594
Calcium Nitrate	33	3.7				0	0	0	69	101	135	169	219	267	317	377	438	498	564	628	694	774	854	935	1027	1118	1210	1246	1277
		5				0	0	0	53	76	101	126	164	200	237	283	328	374	423	471	521	556	641	701	770	838	908	935	958
		6.2				0	0	0	42	61	81	101	132	160	190	226	263	299	338	377	417	465	513	561	616	671	723	748	766
		7.5				0	0	0	35	51	68	85	109	134	158	189	219	249	282	314	347	387	427	467	514	559	605	623	638
		8.7				0	0	0	29	44	58	72	93	115	135	162	188	214	242	270	297	332	366	401	441	479	519	534	547
Ammonium Sulfate	23	3.7				59	110	162	214	287	360	433	552	669	789	915	1043	1169	1326	1483	1639	1825	2008	2193	2216	2237	2261	2287	2301
		5				44	83	121	160	214	270	324	414	502	591	686	782	878	994	1112	1229	1368	1506	1644	1662	1678	1695	1715	1726
		6.2				36	66	97	128	172	215	259	331	401	473	549	626	701	796	889	983	1095	1205	1315	1330	1342	1357	1372	1380
		7.5				29	55	81	107	143	180	216	276	335	394	457	522	585	663	741	820	912	1004	1096	1108	1119	1130	1144	1150
		8.7				34	47	69	92	123	154	185	237	287	348	392	447	501	569	635	702	781	861	940	950	959	969	980	986
Magnesium Potassium Sulfate	36	3.7				25	50	77	101	144	189	231	290	347	406	463	518	548	655	737	817	920	1025	1129	1181	1234	1286	1323	1335
		5				19	37	57	77	108	142	173	217	260	303	347	388	431	491	553	613	690	769	846	886	925	965	992	1001
		6.2				15	30	46	61	86	113	138	174	208	243	278	311	344	393	442	490	552	615	677	708	740	772	794	801
		7.5				12	25	38	51	72	94	116	145	174	203	231	259	287	328	368	409	460	513	564	590	617	643	661	668
		8.7				11	21	33	44	61	81	99	125	149	174	198	222	246	280	316	350	394	439	483	506	529	551	567	572





## 4 - MAINTENANCE



**DANGER:** Stop engine, lock parking brake and remove key before performing any service or maintenance.

Always use personal protection devices, such as a breathing mask capable of filtering toxic powders, safety glasses and gloves, when performing maintenance.

Refer to chemical manufacturer's label for specific safety information.

Keep fingers out of slots to prevent injury.

### 4.01 - Maintenance Safety



1. Good maintenance is your responsibility.
2. 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 of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
4. Make no repair or adjustments with the tractor engine running. Before working on the machine, disengage the PTO, shut off the engine, set the brakes, and remove the ignition key.
5. Be certain all moving parts on attachment have come to a complete stop before attempting to perform maintenance.
6. Never work under equipment unless it is blocked securely.
7. Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance.
8. Never trust the tractor hydraulics alone to support the machine. Before repairing or adjusting the machine, it should be lowered and allowed to rest on a stand.
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.
11. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
12. Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called to service and/or mount tires.
13. After servicing, be sure all tools, parts and service equipment are removed.
14. Never replace hex bolts with less than grade five bolts unless otherwise specified, i.e. shear bolts<sup>7</sup>.

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<sup>7</sup> Refer to Table 1 - Torque Specifications, for head identification marking, page 25.

15. Where replacement parts are necessary for periodic maintenance and servicing, genuine replacement parts must be used to restore your equipment to original specifications. The company will not claim responsibility for use of unapproved parts and/or accessories and other damages as a result of their use.
16. Unauthorized modifications to the machine may impair the function and/or safety of the machine and reduce its life. If equipment has been altered in any way from original design, the manufacturer does not accept any liability for injury or warranty.

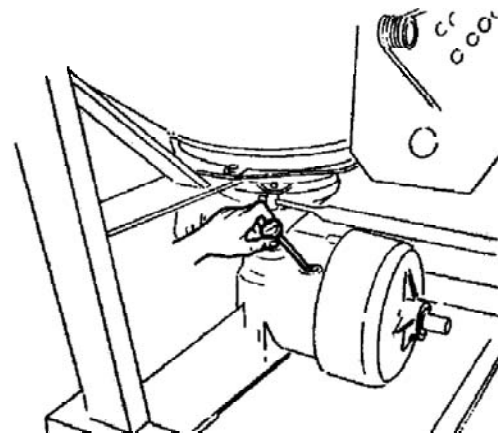
## 4.02 - Service

### Before beginning work:

1. Apply a thick layer of grease to all exposed moving parts.
2. Apply a film of biodegradable oil in crevices and corners in order to keep corrosive material from rusting areas that are difficult to clean.
3. Every 8 hours check the gearbox oil level with dipstick (**see fig. 4**). (Use SAE 90W lubricant).

**Fig. 4 - Gearbox**

**Use dipstick to check  
oil in gearbox every 8 hours.**

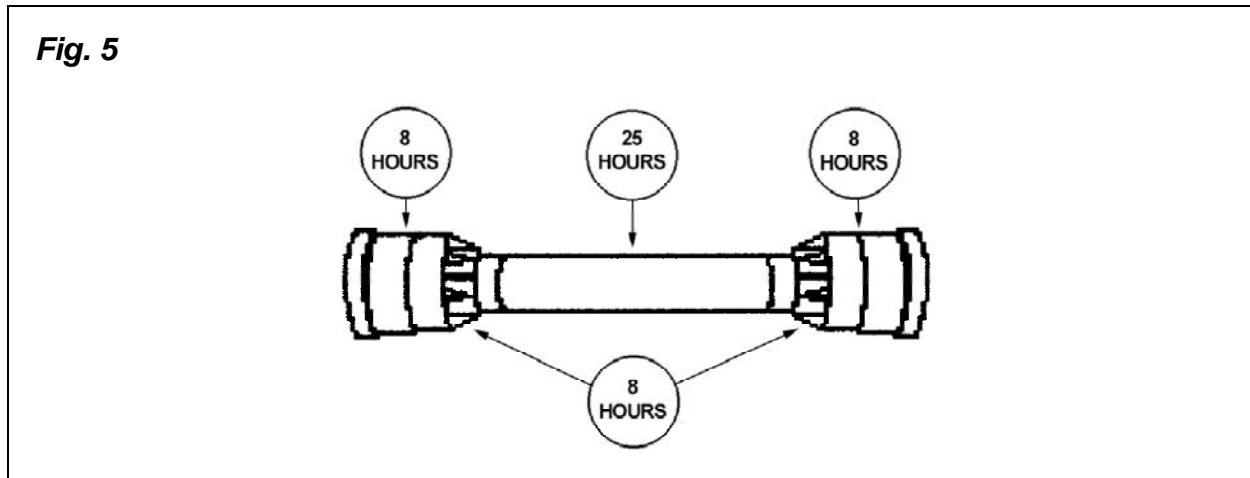


### After each use:

1. Be sure to thoroughly wash the machine without using excessive pressure especially on the moving parts. It is particularly important to wash the implement after using salt or fertilizer. This will help prevent the caustic chemicals in the salt and fertilizer from destroying the metal of the machine.
2. Carefully dry the machine.
3. Apply a thick layer of grease to all exposed moving parts.
4. Apply a film of biodegradable oil in crevices and corners.
5. Grease the driveline cross and bearing and shielding (**see fig. 5**).
6. Grease the telescoping inner and outer tubes (**see fig. 5**).

**NOTE: The gearbox has been filled with EP grade grease from the factory. The grease never needs replacing unless internal work is done to the gearbox.**

**IMPORTANT:** Periodically check the bronze slide (514-505R) inside the gearbox. This is the heart of the machine and its condition will determine how the spreader runs. When the flywheel is turned by hand, there should be no jerking movement. The flywheel and the spout should move as one. If there are stops and starts, this may be an indication of wear on the bronze slide and it should be replaced immediately. Failure to do so can create problems to other parts of the spreader.



### 4.03 - Driveline



**DANGER:** Only use the original driveline supplied with this machine and always with safety shielding installed and working properly. Carefully read and file away the driveline operator's manual supplied by the manufacturer. The following does not substitute the information found in the driveline manual.

**IMPORTANT:** Always check driveline length during initial setup and when connecting to a different tractor.

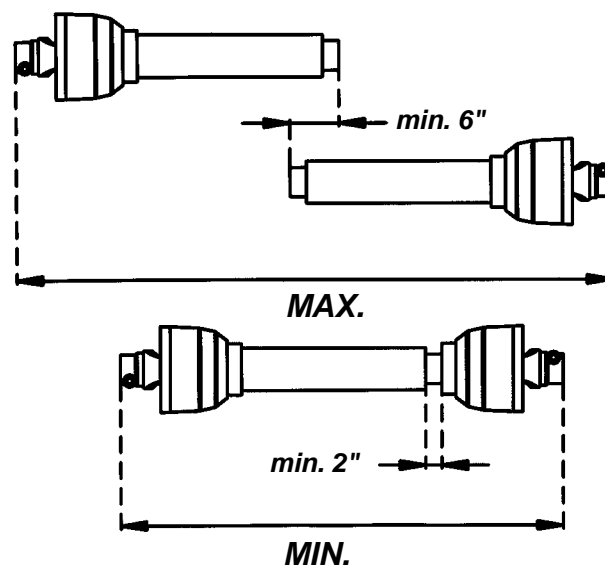
In the collapsed position the driveline should be approximately 2" from bottoming out to prevent possible damage to the tractor or implement. When the driveline is in the maximum extended position, the ideal minimum overlap of the two halves should be approximately 6" (**see fig. 6**).

If determined that the driveline is too long, follow these procedures to adjust the length:

1. Separate the two driveline halves. Connect one half to the tractor PTO and the other half to the spreader.
2. Raise and lower the spreader with the three point hitch to find the position where the driveline is shortest. Hold the halves' shafts side by side and mark the desired length on the outer female tube guard leaving a 2" gap between the end of the guard tube and bell guard.
3. Cut off both guard tubes the same amount as marked in step 2.

4. Shorten both drive tubes the same amount as guard tubes.
5. De-burr and clean filings from drive tubes and apply grease to outside of inner telescoping tube.
6. Reassemble the driveline halves and connect to tractor and implement. Raise and lower implement again to be sure driveline does not bottom out in its shortest position and has a minimum overlap of 6" in the longest position.
7. Install both driveline safety chains. One should be hooked in a hole on the outer driveline yoke shield and to the tractor to restrict outer shield rotation. The second one should be hooked in a hole on the inner driveline yoke shield and to the implement to restrict inner shield rotation.
8. **IMPORTANT:** Secure the driveline to the gearbox shaft with the two roll pins provided.

Fig. 6



If the driveline has less than minimum overlap, do not use and contact your Authorized Company Dealer.



**CAUTION:** Always work with the driveline as straight as possible. This will prolong its life and that of its components. It is advised not to work at an angle greater than 15 degrees.

#### 4.04 - Transport









**CAUTION:** Do not tow tractor and spreader behind other vehicles. Use a properly equipped trailer with heavy tie-downs for towing operations.

Before transporting:

1. Always select a safe ground speed that is appropriate for the terrain.
2. Beware of traffic on public roads. Install a SMV (Slow Moving Vehicle) sign when traveling on roads or streets.
3. Reduce ground speed when turning and take care that the spreader does not strike obstacles such as trees, fences or buildings.



**TABLE 1 - TORQUE SPECIFICATIONS**

Metric (ISO) treaded bolts head marking							Inch (SAE) treaded bolts head marking								
	Class 5.8		Class 8.8		Class 10.9			Grade 2		Grade 5		Grade 8			
Bolt size mm	Thread mm	N.m	ft-lb	N.m	ft-lb	N.m	ft-lb	Bolt size inch	Thread inch tpi	N.m	ft-lb	N.m	ft-lb	N.m	ft-lb
M5	0.8	4	3	6	4	9	7	1/4"	20	7	5	11	8	16	12
M6	1	6	4	10	7	15	11	1/4"	28	8	6	13	10	19	14
M8	1.25	16	12	25	18	36	27	5/16"	18	15	11	24	17	33	25
M8	1	17	13	26	19	38	28	5/16"	24	17	13	26	19	37	27
M10	1.5	31	23	48	35	71	52	3/8"	16	27	20	42	31	59	44
M10	1.25	33	24	51	38	75	55	3/8"	24	31	23	47	35	67	49
M10	1	35	26	53	39	78	58	7/16"	14	43	32	67	49	95	70
M12	1.75	54	40	84	62	123	91	7/16"	20	48	36	75	55	106	78
M12	1.5	56	41	87	64	128	94	1/2"	13	66	48	102	75	144	106
M12	1.25	59	44	90	66	133	98	1/2"	20	75	55	115	85	163	120
M14	2	84	62	133	98	195	144	9/16"	12	95	70	147	109	208	154
M14	1.5	94	69	142	105	209	154	9/16"	18	106	79	164	121	232	171
M16	2	131	97	206	152	302	223	5/8"	11	132	97	203	150	287	212
M16	1.5	141	104	218	161	320	236	5/8"	18	149	110	230	170	325	240
M18	2.5	181	133	295	218	421	310	3/4"	10	233	172	361	266	509	376
M18	2	196	145	311	229	443	327	3/4"	16	261	192	403	297	569	420
M18	1.5	203	150	327	241	465	343	7/8"	9	226	167	582	430	822	606
M20	2.5	256	189	415	306	592	437	7/8"	14	249	184	642	473	906	668
M20	1.5	288	212	454	335	646	476	1"	8	339	250	873	644	1232	909
M22	2.5	344	254	567	418	807	595	1"	12	371	273	955	704	1348	995
M22	1.5	381	281	613	452	873	644	1-1/8"	7	480	354	1077	794	1746	1288
M24	3	444	327	714	526	1017	750	1-1/8"	12	539	397	1208	891	1958	1445
M24	2	488	360	769	567	1095	808	1-1/4"	7	677	500	1519	1120	2463	1817
M27	3	656	484	1050	774	1496	1103	1-1/4"	12	750	553	1682	1241	2728	2012
M27	2	719	530	1119	825	1594	1176	1-3/8"	6	888	655	1992	1469	3230	2382
M30	3.5	906	668	1420	1047	2033	1499	1-3/8"	12	1011	746	2268	1673	3677	2712
M30	2	1000	738	1600	1180	2250	1659	1-1/2"	6	1179	869	2643	1949	4286	3161
M36	4	1534	1131	2482	1830	3535	2607	1-1/2"	12	1326	978	2974	2194	4823	3557

When using lock washers with nuts, increase torque values by 5%.

**TABLE 2 - TURBO-HOP - TECHNICAL FEATURES**

Pendular Fertilizer Spreader, for tractors up to 60 HP, PTO 540 rpm, 3 point hitch cat. 1						
Model	HP	Hopper capacity cu. ft.	Carrying weight lbs.	Weight lbs.	Loading height	Spreading width ft.
302-404	20-60	14.1	1058	229	37"	17-47

## 5 - REPAIR PROCEDURES



**CAUTION: All repair procedures must be done by authorized dealerships. It is not recommended that untrained individuals perform any repair work.**

If cracks and scorings have occurred on the machine:

1. Brush them using a wire brush and touch up with primer and paint.
2. Store the implement on wooden boards.

### 5.01 - Suggested Spare Parts

It is suggested that the following spare parts be kept on hand for the spreader at all times to prevent a minor problem from delaying work:

Description	Quantity
Deflector	1
Spout	1
Slide	1

### 5.02 - Storage

After seasonal use it is important to perform the following for prolonged storage:

1. Empty hopper of product before unhooking it from the tractor.
2. Wash and dry the spreader carefully.
3. Inspect the spreader and replace worn or damaged parts. If corrosive material has eaten under the paint, clean off the area with a wire brush and touch up with primer and paint.
4. Tighten all hardware.
5. Grease or oil all areas indicated under Maintenance<sup>8</sup>.
6. Apply a thick layer of grease to all exposed moving parts.
7. Apply a film of biodegradable oil in crevices and corners.
8. Cover the spreader from the elements in order to have it in perfect condition for the start of the next season.
9. Do not permit children to play on or around the stored unit.
10. Do not park or store equipment where it will be exposed to livestock for long periods of time. Damage and livestock injury could result.
11. Make sure all parked machines are on a hard, level surface, and engage all safety devices.

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<sup>8</sup> See Chapter 4 - Maintenance.

## 6 - TROUBLESHOOTING



**WARNING:** Be sure tractor engine is off, parking brake is locked, and key is removed before making any adjustments.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Non uniform spread pattern.	Wrong gate opening.	Adjust gate opening.
	Spreader or pendular arm not positioned correctly.	Adjust spreader parallel to the ground with spout 28-32 inches above the ground level.
Product not flowing to pendular arm.	Wet product.	Use dry product only or optional rubber insert.
	Powdered product.	Use optional agitator.
PTO shaft turning but not the pendular arm.	Roll pin missing or sheared.	Replace roll pin.
	Cam broken or worn.	Replace cam.
Narrow spread width.	Incorrect PTO speed.	Increase PTO speed to 540 PTO rpm.
	Pendular spout at wrong angle or wrong height.	Adjust spreader parallel to the ground with spout 28-32 inches above the ground level.

## 7 - PRE-DELIVERY CHECKLIST

**To the dealer: Inspect the machine thoroughly after assembly to assure it is functioning properly before delivering it to the customer. The following checklist is a reminder of points to cover. Check off each item as it is found satisfactory or after proper adjustment is made.**

- Gearbox oil level.
- Guards and shield properly fastened.
- Lubrication of grease fittings.
- All hardware properly tightened.
- All decals properly located and readable (**see fig. 2**).
- Overall condition (touch up scratches, clean and polish).
- Test run, check for excessive vibration or overheating of bearings.
- Operator's Manual.

**Review the Operator's Manual with the customer. Explain the following:**

- Warranty.
- Safe operation and service.
- Correct machine installation and operation.
- Daily and periodic lubrication, maintenance and inspections.
- Troubleshooting.
- Operational procedures and storage.
- Parts and service.
- Fill out the Pre-Delivery Checklist and Warranty Registration form.
- Give customer the Operator's Manual and encourage the customer to read the manual carefully.

**IMPORTANT: Warranty is not valid unless Pre-Delivery Checklist and Warranty Registration form in Operator's Manual is completed in detail and mailed to the Company.**

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Delivery Date: \_\_\_\_\_

Dealer's Signature: \_\_\_\_\_

## 8 - WARRANTY

BEFCO's responsibility will be limited to substitution of the acknowledged defective merchandise to the same place of delivery as the previous one was supplied.

### 1. LIMITED WARRANTY

BEFCO, Inc. herein referred to as the Company, warrants its machines and related accessories, hereafter referred to as the Machine, to be free from defects in material and workmanship, for a period of twelve (12) months from the date of invoice to the first registered owner; this limited warranty does not apply to common wear items and excludes belts, shear pins, oil, grease, tires, tubes, hydraulic hoses, knives and PTO shafts.

Labor will be reimbursed at \$40.00 per hour based on BEFCO's time schedule.

Cost of transport to the servicing dealer is the responsibility of the customer.

Warranty coverage shall not be transferable from the first owner to any subsequent owner.

### 2. DISCLAIMER OF ALL OTHER WARRANTIES AND REMEDIES

Neither the Company nor any company affiliated with the Company makes any warranties, representations or promises, expressed or implied, as to the quality, performance or application of its products other than those set forth herein and does not make any implied warranty of merchantability or fitness.

The only remedies the purchaser has in connection with the breach, or performance of any warranty on the Company's Machine are those set forth herein. In no event will the dealer, the Company, or any company affiliated with the Company, be liable for:

- a. Injuries or damages of any kind or nature, direct, consequential or contingent to person or property.
- b. Any expenses incurred by the owner to repair, replace or rework any allegedly defective item.
- c. Any loss, cost, forfeiture or damages (including loss of profits; loss of crops; loss because of delay in field operations; any expenses or loss incurred for labor, supplies, substitute machine rental; liabilities of the owner to its customers or third persons; and all other consequential damages, losses, liabilities or damages for any other reasons) whether direct or indirect, and whether or not resulting from or contributed to by the default or negligence of the Company, its agents, employees and subcontractors which might be claimed as a result of the use or failure of the equipment delivered.

The Company's liability based on this limited warranty or any other applicable laws shall be limited to replacement or refund of the purchase price of the product.

The limited warranty extended herein gives you specific rights and you may also have other rights which vary from state to state. Neither the dealer nor the Company personnel has the authority to make any representation or to modify the terms and limitations of this warranty in any way.

**Other than the limited warranty extended hereby there is no other expressed warranty in connection with the design, safety or use of any of the Company's products except as to title. All implied warranties are expressly disclaimed pursuant to the terms of this warranty.**

### **3. CUSTOM WORK**

If the Machine is used for commercial purposes such as custom work, the period warranted for the Machine is limited to six (6) months from the date of delivery to the first registered owner and does not cover any labor charges incurred.

### **4. RENTAL**

If the Machine is used for rental purposes the period warranted for the Machine is limited to thirty (30) days from the date of delivery to the first registered owner and does not cover any labor charges incurred.

### **5. REGISTRATION**

In order to qualify for coverage on this limited warranty, the product and name of the original purchaser must be registered with the Company by a completed Machine Pre-Delivery Checklist and Warranty Registration along with a copy of the dealer's invoice to the first registered owner to the Company within fourteen (14) days after the date of delivery to the original purchaser.

### **6. WARRANTY SERVICE**

Warranty Service must be performed by a dealer authorized by BEFCO. If the warranty service requested is approved, the owner shall pay only for labor beyond the rate allowed, for overtime labor, and for any mileage charge for transporting the equipment to and from the dealer's shop. It is assumed that the dealer has the appropriate general and special tools to service the machine. Time required for replacement of knives, oil, grease and to remove excessive dirt from the Machine is not subject to reimbursement by the Company. The owner is required to clean the Machine before presenting it to the dealer for service work. The Machine must be delivered within thirty (30) days after failure date by the owner to the dealer to be eligible for warranty consideration.

### **7. UNAPPROVED SERVICE OR MODIFICATION**

All obligations of the Company under this limited warranty shall be terminated if:

- a. Proper service and operation instructions as outlined in the Operator's Manual and on the instruction sticker on the Machine, are not followed.
- b. The Machine is modified or altered in any way not approved by the Company.
- c. The Company does not receive a copy of the dealers invoice to the first registered owner within fourteen (14) days from the date of delivery.
- d. The Company has not been paid in full, by the dealer, for the Machine.

### **8. ACCIDENTS AND NORMAL MAINTENANCE**

This limited warranty covers defective material and workmanship. It does not cover depreciation or damage caused by normal wear, accidents, improper maintenance, improper protection or improper use. The costs of normal maintenance or repairs for accidents or improper use, and related labor will be borne by the owner.

### **9. REPLACEMENT PARTS**

BEFCO, Inc. warrants replacement parts to be free from defect in material and workmanship for a period of thirty (30) days from the date of delivery to the original purchaser.

# WARRANTY REGISTRATION

**BEFCO, Inc.**  
**P.O. Box 6036**  
**Rocky Mount, NC 27802-6036**

**Tel: (252) 977.9920 - Fax: (252) 977.9718**

Dealer _____ Acct. # _____	Retail Customer _____
Street _____ Country _____	Street _____
Town _____ State _____ Zip _____	Town _____ State _____ Zip _____
Date of delivery _____ Invoice # _____	Phone _____
Model # _____ Serial # _____	
<p>Pre-Delivery Checklist:</p> <p><input type="checkbox"/> Oil in gearbox.</p> <p><input type="checkbox"/> Greased fittings.</p> <p><input type="checkbox"/> Safety guards in place.</p> <p><input type="checkbox"/> All hardware tight.</p> <p><input type="checkbox"/> Bolts torqued correctly.</p> <p><input type="checkbox"/> Attached unit to tractor. Yes/No.</p> <p><input type="checkbox"/> Field adjusted. Yes/No.</p> <p><input type="checkbox"/> Test run. Dry/Infield.</p> <p><input type="checkbox"/> Safety decals.</p> <p><input type="checkbox"/> Operator's Manual.</p> <p>The machine described above, has been prepared for delivery according to the Pre-Delivery Checklist and the Customer has been instructed in its care and operation and the condition of warranty.</p>	<p>Tractor make: _____</p> <p>Model: _____; HP _____</p> <p>Type of operation: Private homeowner, Landscaping, Commercial maintenance, Golf Course, Municipality, Turf Farm, others: _____</p> <p>Approximate number of acres machine will be used on annually: _____</p> <p>I hereby acknowledge that:  I have received and accepted delivery of the machine described.  The equipment was checked thoroughly for loose or missing parts and has been adjusted in accordance with the Pre-Delivery Checklist.  I have read and understand the nature and extent of the warranty and understand clearly that there were and are no other representations of warranties either expressed or implied, made by anyone. I have been advised on proper operation, maintenance and lubrication procedure of this equipment.  I have been instructed on and do understand the application, limitation and capacities this equipment was designed and recommended for, all as described in the Operator's Manual and literature published by the Company.</p>
Inspected by: _____	
Date: _____	Date: _____
Dealer's Signature: _____	Customer's Signature: _____

**This registration along with a copy of the invoice must be sent to BEFCO, Inc. within 14 days of date of purchase.**

*Sender:*

*Fold here*

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*Place stamp  
here*

**BEFCO, Inc.**

Warranty Department

P.O. Box 6036

Rocky Mount, NC 27802-6036

*Cut along this line*





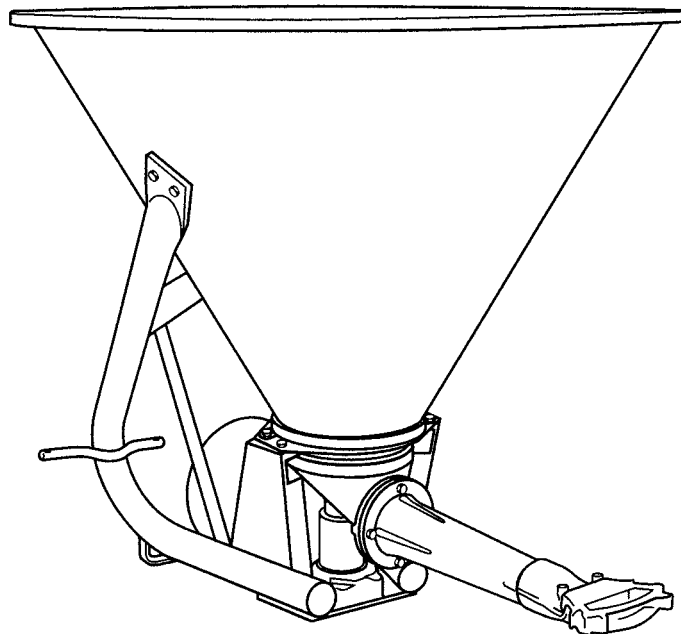
# **BEFCO®**

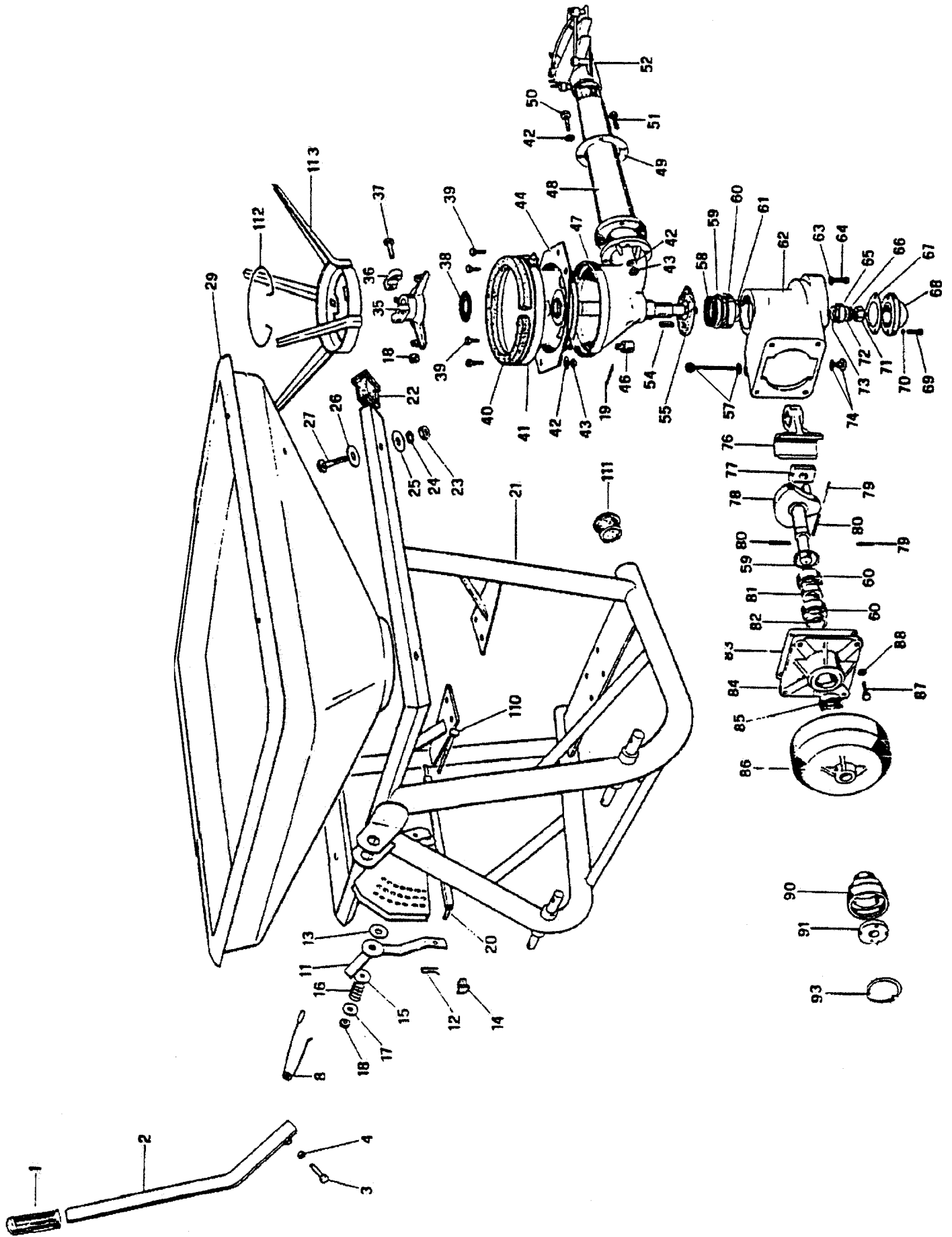
## **Parts Manual**

# **TURBO-HOP**

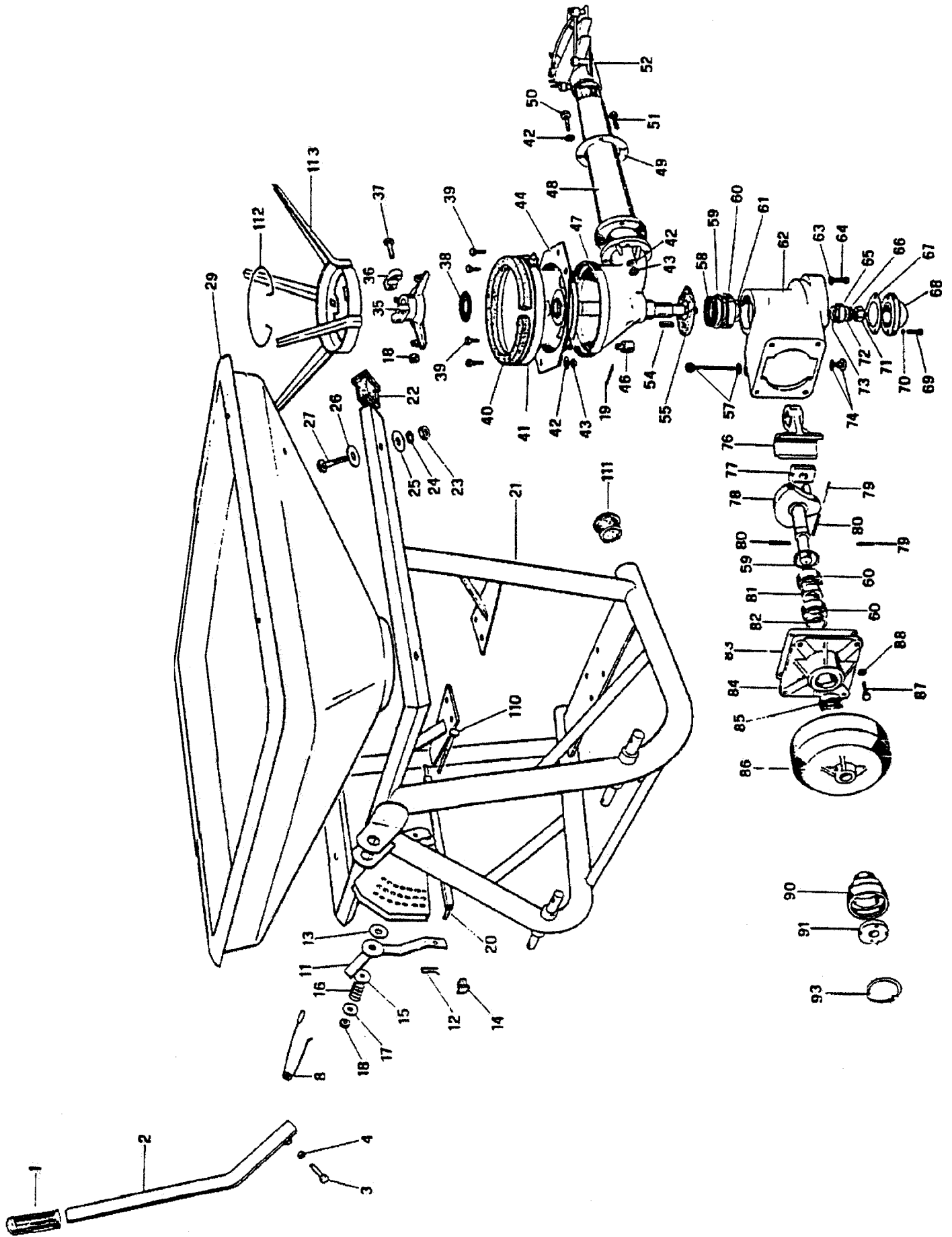
**Pendular Spreader**

**302-404**

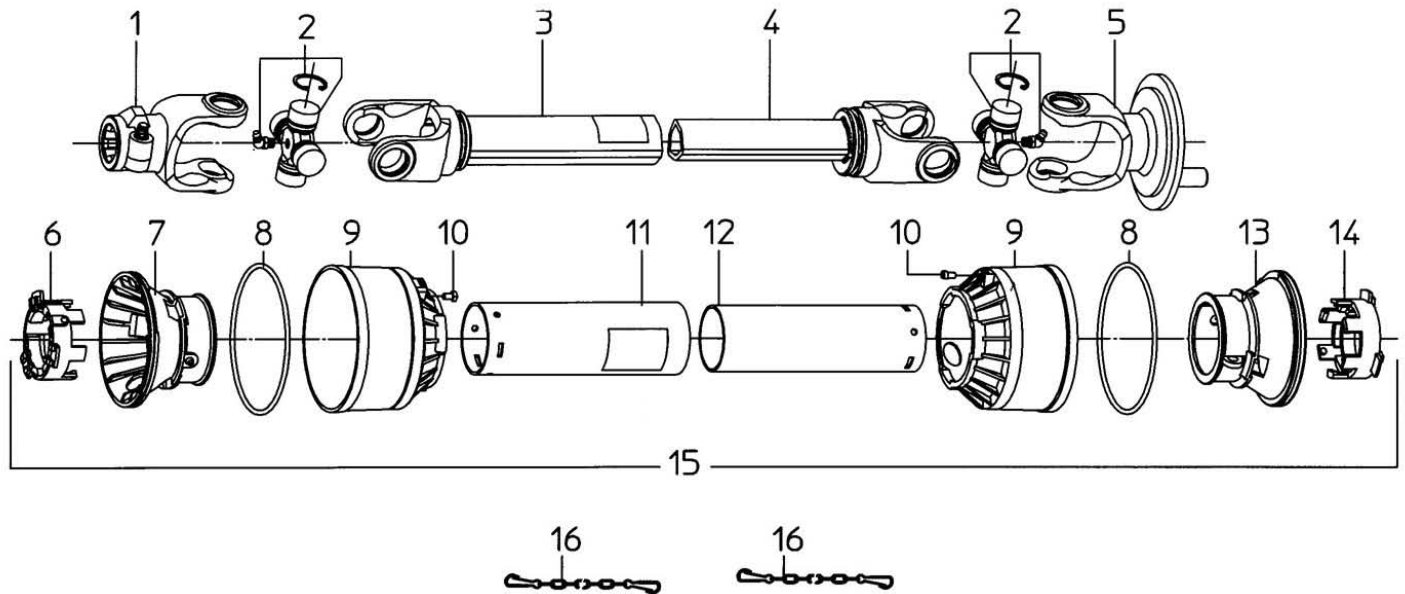




Ref.	Part #	Description	Qty.
1	586-077R	Handle cap	1
2	373-015R	Lever	1
3	009-1446	Bolt HH M08-1.25x25 C8.8 Z F	1
4	000-1806	Nut HH M08-1.25 C6 Z TK	3
8	611-705R	Spring stop	1
11	373-205R	Rod support	1
12	001-8266	Lynch pin Ø11x45	1
13	583-822R	Washer flat nylon Ø13	1
14	583-053R	Plug	1
15	201-916R	Washer flat Ø13 N	1
16	610-143R	Spring	1
17	201-013R	Washer fender Ø14 N	1
18	001-3345	Nut ES M12-1.75 Z TK	2
19	006-7217	Cotter pin Ø3x35 N	1
20	373-405R	Tie rod	1
21	370-211R	Frame 302-404	1
22	583-057R	Plastic cap square	2
23	000-1106	Nut HH M12-1.75 C6 Z MD	4
24	000-1077	Washer lock Ø12 Z	4
25	201-922R	Washer flat Ø12 Z	4
26	201-116R	Washer fender Ø18 N	4
27	229-337R	Bolt CR M12-1.75X50 C8.8 Z	4
29	580-429R	Hopper 302-404	1
35	415-005R	Agitator	1
36	415-205R	Bracket	1
37	019-2236	Bolt HH M12-1.75x70 C8.8 Z P	2
38	583-871R	Washer flat nylon Ø31	1
39	009-1446	Bolt HH M08-1.25x25 C8.8 Z F	4
40	190-758R	Gasket	1
41	394-005R	Ring	1
42	003-5060	Washer external lock Ø10 Z	4
43	001-5360	Nut HH M10-1.50 C6 N MD	7
44	627-030R	Distributing unit	1
46	354-027R	Pawl	1
47	510-505R	Housing	1
48	582-005R	Spout	1
49	368-415R	Spout ring	1
50	009-1281	Bolt HH M10-1.50x35 C8.8 Z F	1
51	003-8614	Bolt HH M10-1.50x40 C8.8 Z F	3
52	582-206R	Spread deflector	1
54	258-103R	Key 12x8x36	1
55	583-890R	Washer special	1
57	583-364R	Dipstick with washer	1
58	275-559R	Oil seal 44.72.10 TC	1
59	002-5329	Snap ring, inner Ø72	2
60	002-5332	Bearing 6207	3
61	351-007R	Spacer	1
62	411-005R	Housing, gearbox	1
63	000-1077	Washer lock Ø12 Z	4
64	001-5255	Bolt HH M12-1.75x30 C8.8 Z F	4



Ref.	Part #	Description	Qty.
65	000-6627	Bearing 6205	1
66	200-021R	Washer flat Ø20 Z	1
67	570-505R	Gasket	1
68	411-330R	Cover lower, gearbox housing	1
69	228-062R	Bolt SC M06-1.00x16 C8.8 Z F	3
70	202-306R	Washer lock Ø6 N	3
71	213-120R	Nut ES M20-1.50 Z TK	1
72	203-020R	Washer external lock Ø20 Z	1
73	351-005R	Spacer	1
74	261-677R	Plug with washer	1
76	412-005R	Yoke	1
77	514-505R	Bronze slide	1
78	310-505R	Shaft	1
79	004-6521	Roll pin Ø6x60	2
80	503-093B	Roll pin Ø10x60	2
81	351-006R	Spacer	1
82	004-2122	Snap ring, outer Ø35	1
83	570-510R	Gasket	1
84	411-305R	Cover, gearbox housing	1
85	000-2295	Oil seal 35.62.10	1
86	413-005R	Flywheel	1
87	000-6349	Bolt HH M10-1.50x20 C8.8 Z F	4
88	003-5060	Washer external lock Ø10 Z	4
90	416-005R	Housing, shock absorber	1
91	588-005R	Shock absorber	1
93	000-1154	Snap ring, inner Ø80	1
110	000-7128	Bolt HH M12-1.75x80 C8.8 Z F	1
111	583-037R	Plastic cap round	1
112	611-715R	Spring, powder agitator (option)	1
113	393-815R	Powder agitator (option)	1
	623-002R	Gearbox, complete	-



Ref.	Part #	Description	Qty.
1	1021010C	Yoke (tractor end)	1
2	1001020C	Cross and bearing	2
3	1941049C	Outer tube and yoke	1
4	1951051C	Inner tube and yoke	1
5	352-005R	Yoke assembly (implement end)	1
6	1781210C	Locking ring, outer tube	1
7	1784201C	Rigid cone, outer tube	1
8	1213233C	Stiffening ring	2
9	1784203C	Standard cone	2
10	1784212C	Pin for stop rotation	2
11	1773047C	Shield, outer tube	1
12	1872047C	Shield, inner tube	1
13	1784202C	Rigid cone, inner tube	1
14	1781211C	Locking ring, Inner tube	1
15	90SS1047C	Shield, complete	1
16	1006065C	Chain, anti-rotation	2
	948-006B	Driveline, complete	-
	950-463B	Decal "DANGER - Rotating driveline, keep away" outer shield	1
	950-464B	Decal "DANGER - Guard missing, do not operate" outer tube	1

## **Use only original spare parts**

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