LYNXKING

Trailer-mounted fairway sand covering machine

KPH1500

Operation Manual

Shouguang Nake Garden Machinery Co., Ltd

Thank you very much for purchasing this product

Please read this manual completely, otherwise you may be injured or damage the equipment. This manual should be kept with you forever and sent to you as the user.

This manual uses the metric standard. The person sitting on the main machine faces the direction of the machine. The left and right of the person are the left and right of the machine. If you encounter a dotted arrow, it means that the parts are hidden inside.

Nake Machinery provides warranty to customers who operate and maintain according to the requirements of this manual as part of the entire support program. The warranty of this product can be explained in the warranty certificate received from the dealer.

Purchase date:

Dealer name:

Phone:

Serial number:

Table of contents

1. Introduction

The KPH1500 fairway sanding machine is a highly efficient lawn sanding maintenance equipment. It is towed by a tractor and uses the tractor's hydraulic PTO to drive two spinners to complete the sanding operation. It is easy to operate and has high working efficiency. It is an indispensable equipment in lawn maintenance operations.

2. Main technical specifications and technical parameters

Model: KPH1500

Working width: 6~8M

Andbox capacity：1.87-2.65m³

Dispersal mode：Sprinkler spreading

3. Installation and Adjustment

Before disassembly or service

Turn off the engine, remove the key, and lock the parking brake.

Lower or lock the main engine.

Tractor requirements

Note: The attachment requires a minimum 30-horsepower tractor. Inflate the tires according to the manual and maintain pressure.

Tractor requirements:

Proper assembly.

Tractor PTO dual-line hydraulic power output interface.

Assembly requirements

CAUTION: To prevent personal injury, a counterweight is required in the front of the tractor so that the vehicle can be driven smoothly. For information on counterweight installation, refer to the tractor manual.

Connecting the connecting rod

1. When installing, place the equipment on a level surface.

2. Back up the tractor so that the hitch point is aligned with the drawbar pin hole.

CAUTION: When working on the attachment hook:

Stop the engine.

Lock the parking brake.

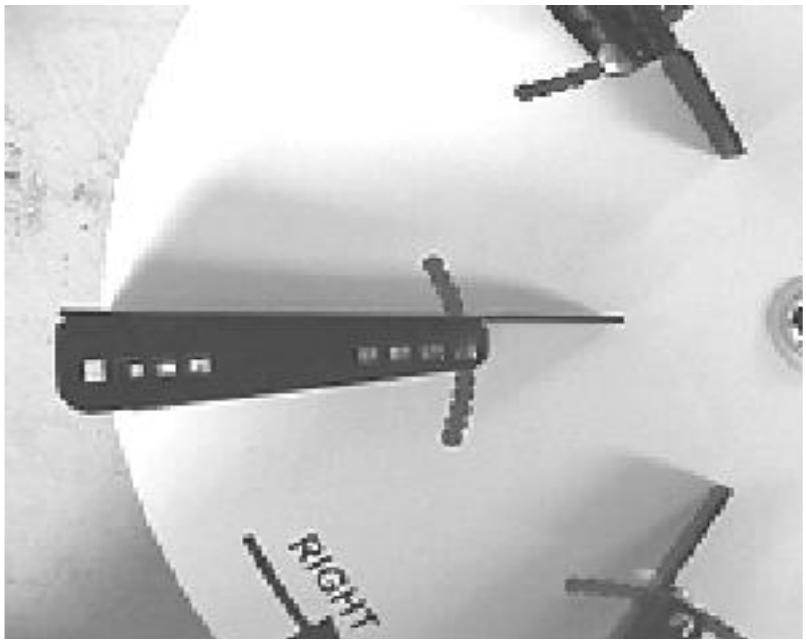
3. Be sure to disengage the PTO.

4. Engage the parking brake, stop the engine, remove the key, and wait for the engine and rotating parts to stop completely before leaving the seat.

5. Connect the lower link to the hitch pin.

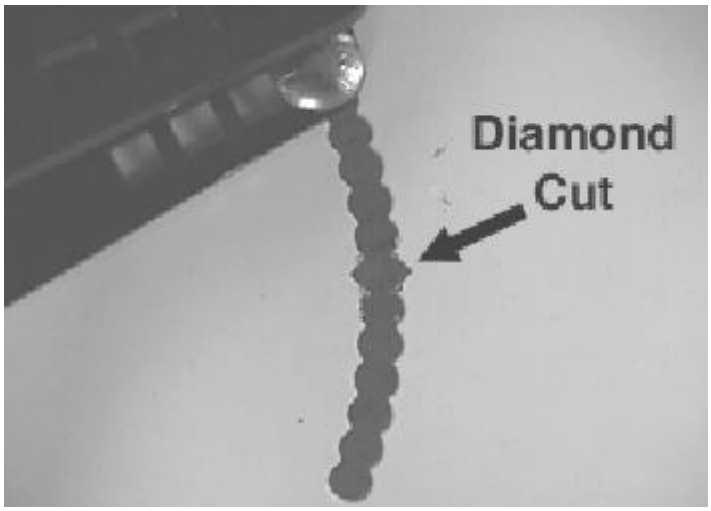
6. Install the quick-lock pin to the hook pin and secure the lower link.

Spreading disc adjustment



NOTE: Do not be too concerned about achieving the maximum spread width; instead, focus on getting a good distribution of your spread pattern.

The “neutral” blade setting, points the blades at the centerof the spinner shaft. There is a diamond cut in the spinner disk indicating the “neutral” position bolt hole for each blade.



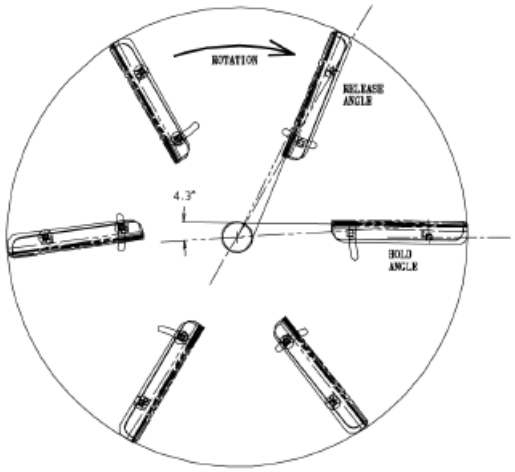
WARNING

All spinner blade fasteners must be tightened after each adjustment. Failure to do so could result in injury or even death.

WARNING

some models, requires the use of a hand-held tachometer. Remove the spinners prior to measuring the spinner rpm. Failure to do so could result is serious injury or even death.

The following illustration represents how three blades may be set to hold the material a little longer and three other blades are set to release material a little sooner. An overview on pattern distributions and blade settings follows.



SPREAD PATTERNS AND ADJUSTMENTS

Overview

Spread pattern is defined as the uniformity of material distribution. Calibration refers to controlling the amount of material deposited over a set area.

Before setting up the spreader disc for calibration, the following items must be correct:

A. The conveyor belt rear roller must be positioned 13 cm from back wall of vertical chute.

NOTE: This is measured from the flat portion of the belt.

B. The conveyor belt must be properly aligned and tensioned.

C. On trailer-type models, all tires must be properly inflated. Adjust tire inflation pressure so all tires are equal and suitably low to avoid excessive soil compaction. The recommended tire pressure operating range is 13-18 psi (90-124 kPa) for 24 in. tires . Remember, the inflation pressure of the tire indicates how much compaction you are imparting on your soil. Running the tire pressure too low may however cause damage to the tire.

D. The spinner shafts must be vertical. If necessary, on trailertype models, make the initial adjustment by changing the hitch height. If unable to bring the spinner shafts fully vertical by changing the hitch height, it may be necessary to adjust the spinner assembly until the spinner shafts are vertical.

E. The hopper wipers must be adjusted tightly down onto the conveyor belt. Failure to properly adjust the hopper wipers results in an adverse spread pattern and application rate. Adjust the hopper wipers by pushing the belt fully downward; then adjust the wipers tightly down to the belt and secure the adjustment.

F. Set the metering gate opening to the approximate material flow rate. Do not open the gate too far. Instead travel slower over the area to get a higher application rate.

Opening the gate too high affects the controllability of the pattern. For most materials,

3-4 inches (7.6-10 cm) seems to be the point at which pattern controllability problems arise. Available hydraulic power from the tractor may also be a limiting factor in your gate setting.

G. Calibrate spinner speed to 325-350 RPM. Extensive testing has shown that excessive spinner speed results in uncontrollable patterns, material hitting the spinner shield and heavy material deposits in the center. Furthermore, increasing the spinner speed to 500 RPM, increases your spread pattern width by only 10-15 feet (3-5 m) and results in segregation of particulates such that fine ones only go a few feet and the larger ones travel to the outer region of the pattern. This causes detrimental results with precision topdressing and fertilizer application.

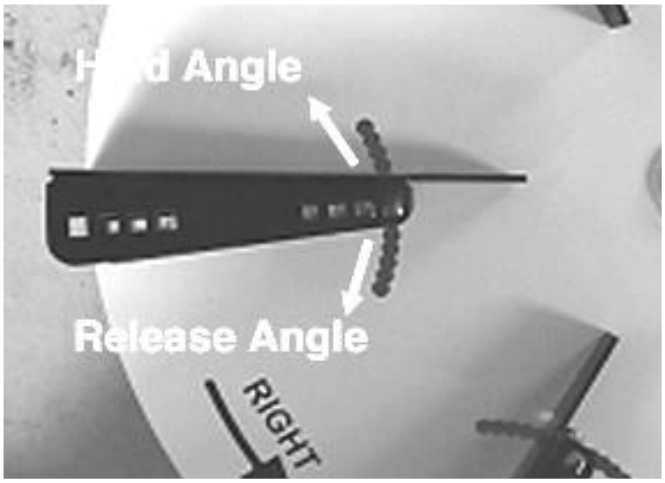
H. Calibrate conveyor speed to approximately 70 RPM. This will result in material just "skimming" the back wall of the vertical spinner chute. The placement location of material on the spinners has proven to be a critical variable in the adjustment and control of the spread pattern.

I. Take note of the material type, condition, and supplier. Material, which has varying moisture and/or clay content from one week to the next, may behave differently each time you spread it. Wet sand, with high clay content, is among the hardest materials to spread. For these reasons, try to maintain uniform material conditions. Sometimes it's as simple as talking with your supplier to arrange for uniform material to be supplied and covering the material pile with a tarp so it is not exposed to the elements. In direct contrast, dry graded silica sand (hour glass sand) is probably the easiest material to spread. The establishment of these preliminary setup steps was developed through extensive testing and experience. For example, the conveyor belt's rear roller distance of 13 cm from the back wall of the vertical spinner chute was found to give the best control of spread pattern distribution with all of the various spinner blades. This applies to all models.

Basic Spinner Adjustments

If the spread pattern is heavy in the middle, adjust three of the six blades (every other one) on each spinner disk two notches in the hold direction; then test the spread pattern. If necessary, move the same blades two more notches in the hold position. If additional

adjustments are desired, move the remaining three blades (that haven't been adjusted) two notches in the hold direction. If the spread pattern is heavy on the outside, adjust three of the six blades (every other one) on each spinner disk two notches in the release direction; then test the spread pattern. If necessary, move the same blades two more notches in the release position. If additional adjustments are desired, move the remaining three blades (that haven't been adjusted) two notches in the release direction. The following photo illustrates the hold and release angles for a right spinner disk which rotates counterclockwise.



Collection Methods

STANDARD PAN COLLECTION METHOD

The typical method of testing the spread pattern is to place collection pans in a row going across the direction of travel. Make one or more passes across the pans and measure the amount of material in each. This doesn't work with large broadcast spreaders. The amount of material collected in each pan can be graphed to reveal the type of spread pattern you are producing. A perfect rectangular pattern is very hard to achieve and, in some cases such as fertilizer application, not desirable because you would have to drive impossibly precise to avoid skips or double application. The inherent limitation of this testing method is that particles coming out of a broadcast spreader have a very low trajectory angle with high velocity and usually skip across the surface. Most test runs will have sand sliding across the pan and launching out the opposite side. We have even tried using square "egg crate" inserts of varying sizes to

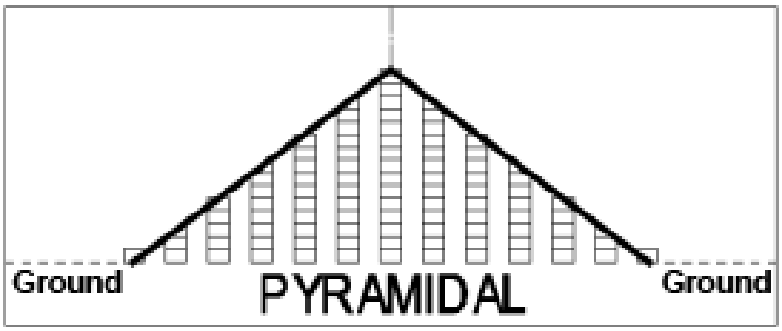
provide better capture of material but we still had material skipping across the top. Therefore, the industry-standard pan collection method does not accurately reflect the true distribution of material.

STATIONARY TESTING METHOD

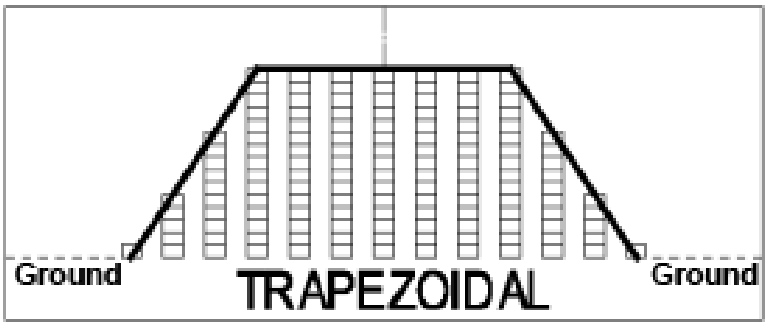
Although there are no references to doing this in industry, we have found that it is best to run several stationary tests of the system to quickly find the operational settings of the spinner blades. By spreading material in an empty parking lot or another area having a paved surface, you will be able to quickly clean up the discharged material for reuse as well as be able to observe the uniformity of the spread pattern. Record the general qualitative characteristics for pattern uniformity and wraparound (spreading ahead and/or to the sides of the Turf Tender's wheels). We found that, initially, we needed to spread material from the stationary position and, when done spreading, push the material into a narrow row (long pile), running across the spread area. Looking at the amount of material in the strip-pile is a pretty good indicator of the distribution pattern. After a short period of time you will be able to look at the distribution (where it dropped) to determine how uniform the pattern is and eliminate the need to pile up the material in a row. As an example of the differences between the two test methods' results, we found that when we had an obvious W spread pattern (heavy center and outside edges) using the stationary testing method, the pan method was indicating that we had a nearly perfect distribution. The problem is that the pan method did not accurately reflect where the material was actually deposited after it had hit the ground, bounced, rolled, and stopped.

Pattern Adjustments

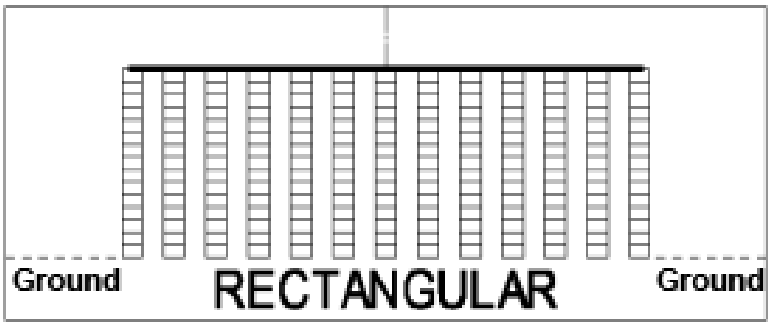
The pattern below shows the optimum distribution of material behind the spreader from one pass. On the next pass, the operator should drive at the edge of the pattern, which overlaps material to the center of the previous pass. This results in a uniform distribution of material across the ground. Most importantly, errors in driving cause minimal streaking from double spreading or gaps. The problem is that it is very hard to attain this pattern with broadcast spreaders.



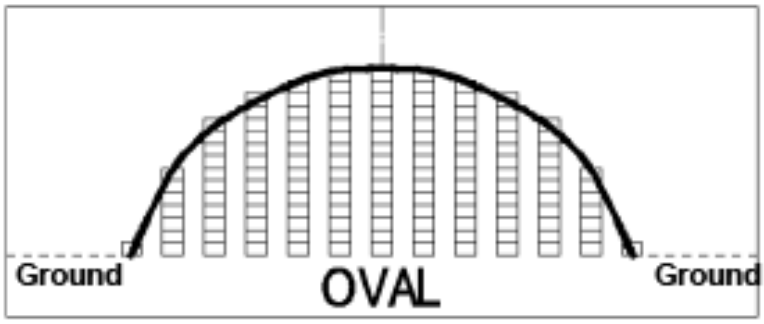
Some spreader manufacturers or users prefer to have a pattern like the following figure. This can give good results but requires more precise driving to achieve the exact interval needed. The pattern must be tested with pans to determine the point half way from the edge to the corner. Then the driving interval must be maintained or gaps and overspreading result.



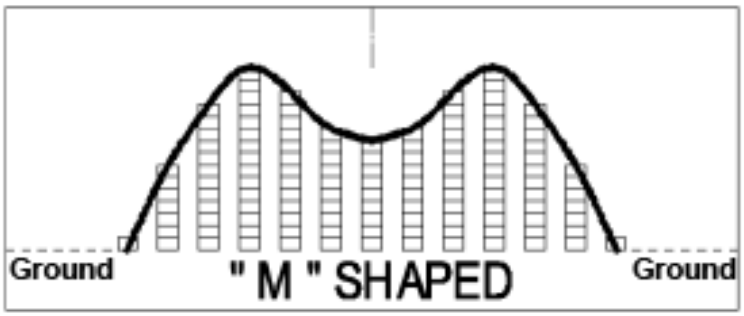
The rectangular pattern is best for sand and requires perfect driving to avoid gaps and overspreading. It is not recommended.



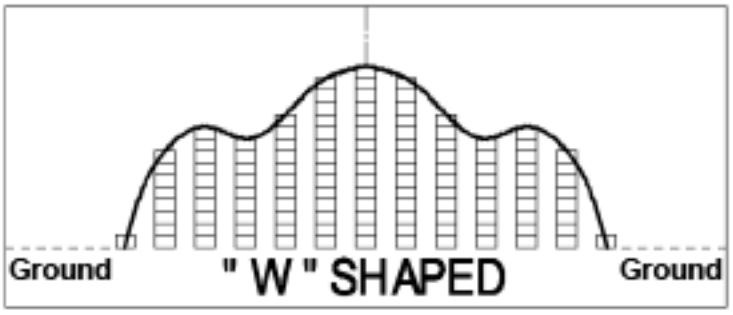
The oval or rounded pattern is common to many spreaders and can yield good results similar to the trapezoidal pattern. The same discussion applies. To get it close to a pyramidal pattern, increase the amount of release angle on the blades. This should cause more material to fall directly behind the spreader. Also, reducing the amount of hold angle should yield the same result.



The following pattern results from excessive hold angle. Too much material is staying on the blades too long. Reduce the hold angle and change half the blades to a release angle.



This pattern may also be caused by too much hold on half the blades. The heavy center may indicate excessively high spinner speeds. From a safe distance, watch how material is exiting the center of the spinners. If a lot of material is coming off each spinner in the center after hitting the shield and crossing over the center, the spinner speed is too fast. This is due to material bouncing off the blades of the spinners rather than siding along the blade. On the other hand, if the material streams crossing from each side are colliding and dropping straight down, the blades need to hold material a little longer. If there is little crossing of material at the center, reduce the hold angle to bring the edge humps toward the center.



4. Repair and Maintenance

Safety Symbols

Read and understand the safety content carefully. Be alert to potential personal injury when you see this safety warning symbol.

Danger, Warning and Caution are safety symbols on the safety labels of this machine. Danger indicates the most serious danger. This manual, caution and symbols warn you of safety requirements.

Equipment Safety Labels

Warning: Be careful of injury from moving parts, keep hands, feet and clothing away from it.

Prevent injury from belts

Install protective covers in place.

Keep hands and feet away from belts.

Serious injury or death can occur if entangled in moving parts. All protective covers must be installed and do not touch moving parts.

CAUTION

Avoid injury

- Read this manual carefully.
- Install according to the manual.
- Be familiar with the control location and function.
- Keep all protective covers in place.
- Keep all power-driven parts clean.
- Do not take passengers.
- Keep children and pets at a safe distance.

Before disassembly or service

- Turn off the engine, remove the key, and lock the parking brake.
- Lower or lock the host.

Tractor Requirements

Note: Attachment requires a minimum 30HP tractor. Inflate tires according to manual and maintain pressure.

Tractor requirements:

Correct assembly.

Tractor PTO dual-line hydraulic power output interface.

Assembly Requirements

CAUTION: To prevent bodily injury, a counterweight is required in front of the tractor for a smooth ride. Refer to the tractor manual for information on counterweight installation.

Connecting the Linkage

1. When installing, place the equipment on a level surface.

2. Back the tractor so that the hitch point is aligned with the drawbar pin hole.

CAUTION: When working on an attachment hitch:

Stop the engine.

Lock the parking brake.

3. Always disengage the PTO.

4. Engage the parking brake, stop the engine, remove the key, and wait for the engine and moving parts to come to a complete stop before leaving the seat.

5. Connect the lower link to the hitch pin.

6. Install the quick-lock pin to the hitch pin and secure the lower tie rod.

Operation Safety

• Before operating, check the tractor brakes and adjust or repair the brakes if necessary.

• Before operating, check that fasteners are tightened. Repair or replace

damaged, severely worn or missing parts. Protective covers must be installed and secured. Make necessary adjustments before operating.

• Clear the work area from objects that may have been thrown out. Keep people and pets away from the work area, and stop the machine if anyone enters the work area.

• Use filtered sand only. Unscreened sand is likely to contain debris such as stones that can damage the conveyor belt.

• Do not leave the machine unattended while it is running.

• Use only during daylight hours or when there is sufficient light.

• Do not allow anyone, especially children, to be on the tractor or equipment.

• Do not allow children or untrained personnel to operate the machine.

• Do not wear a radio or walkman when operating the machine. Safe operation requires full attention.

Beware of rollover

• Do not drive the machine if it is tipped over or overturned.

• If pulling a load or using heavy equipment, limit the load to one you can safely control. If counterweights or wheel weights are required, add counterweights according to the manual or accessory manual.

Wear appropriate clothing and equipment

• Do not wear loose clothing. Wear tight clothing suitable for the work and wear safety equipment.

• Excessive noise may cause hearing loss or deafness. Wear appropriate protective equipment such as earplugs.

Keep rotating parts clean

• Entanglement in drive parts can cause injury or death.

• Wear tight clothing.

• When near drive parts, stop the engine and wait for them to stop.

• Do not step over PTO drive parts. Go around the machine to the other side.

Avoid injury from rotating parts

Keep hands, feet, clothing and other objects away from obstacles.

Training:

• Practice more for the first use, read the operation manual, and learn the operating procedures.

Daily Checklist

• Check if the conveyor belt is running off track.

• Check the belt tension.

• Check if the oil pipe head is loose or broken.

• Check the tire pressure.

Check the tractor ground speed

Note: The recommended ground speed is 6-14.8 km/h.

Check the ground speed in the test area.

1. The test site should be 30.5 m long.

2. Operate the machine at maximum throttle. Select a low speed and let the tractor travel 30.5 m and record the travel time.

3. Make three trips and record the time for each trip. The time to reach the recommended operating speed range should be 30-40 seconds.

• At 2 km/h, the average travel time is 57 seconds.

• At 4.8 km/h, the average travel time is 23 seconds.

4. According to the recommended speed range, adjust the speed accordingly.

Transportation

CAUTION: Prevent injury. When transporting, start the tractor with the machine at a safe speed. Travel slowly on slopes and difficult terrain.

1. Disengage PTO.
2. Transport at a safe speed.
3. If the machine is transported on a road, install a Slow Moving Vehicle (SMV) sign on the rear of the machine.

Replacement Parts

Part numbers may change. Use the part numbers listed below when ordering. If numbers change, your dealer has the latest number. When ordering accessories, your dealer needs the machine serial number.

Maintenance and Operation Safety

Understand the operating procedures before maintenance. Keep the maintenance work area clean and dry.

Do not lubricate, service or adjust the machine while it is in motion. Safety devices must be installed and working properly. Hardware must be tightened.

Prevent scratches or scratches. Keep hands, feet, clothing, jewelry, and long hair away from moving parts.

Before servicing the machine, disconnect all power, stop the engine, lock the parking brake, and remove the key.

Do not run the engine if the parking brake is locked.

Check that all parts are in good working condition and installed correctly. Repair any damage immediately and replace worn or broken parts. Wipe away spilled lubricants. Oil or other debris.

Unauthorized modifications may reduce its function and reduce safety performance.

Wear appropriate clothing

Wear tight clothing and wear safety equipment suitable for the job.

Excessive noise may affect hearing or cause hearing loss. Wear safety protection devices such as earplugs.

When servicing the machine, do not wear a radio or walkman. Pay full attention to safe operation.

Stay away from rotating parts

Entanglement in rotating parts may cause serious injury or death.

Stop the engine and other PTO drive parts before approaching the PTO.

Prevent injury from moving parts.

Keep hands, feet or other objects away from moving parts.

Daily inspection list

Lubricate the drive shaft.

Check the oil pipe joint for leaks.

Check for loose hardware.

Check for correct belt tension.

Quarterly service and inspection

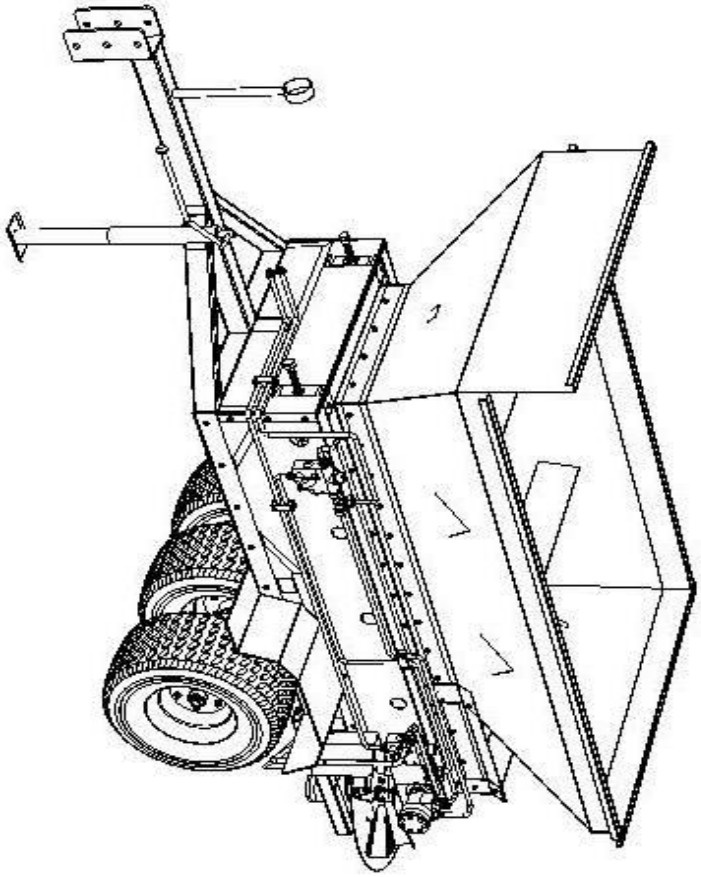
Check conveyor belt wear.

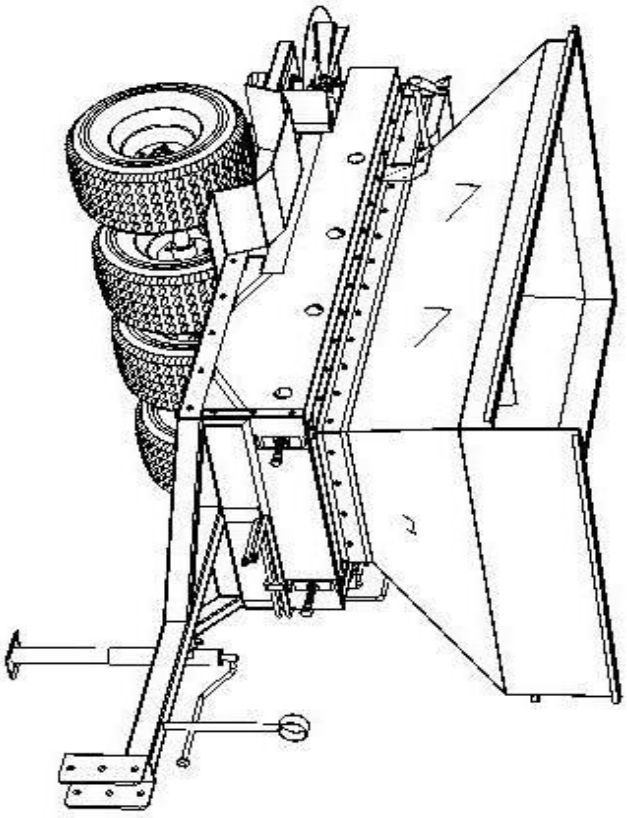
Check for excessive wear or cracks in rubber parts

Replace rubber safety stops at the beginning of each season.

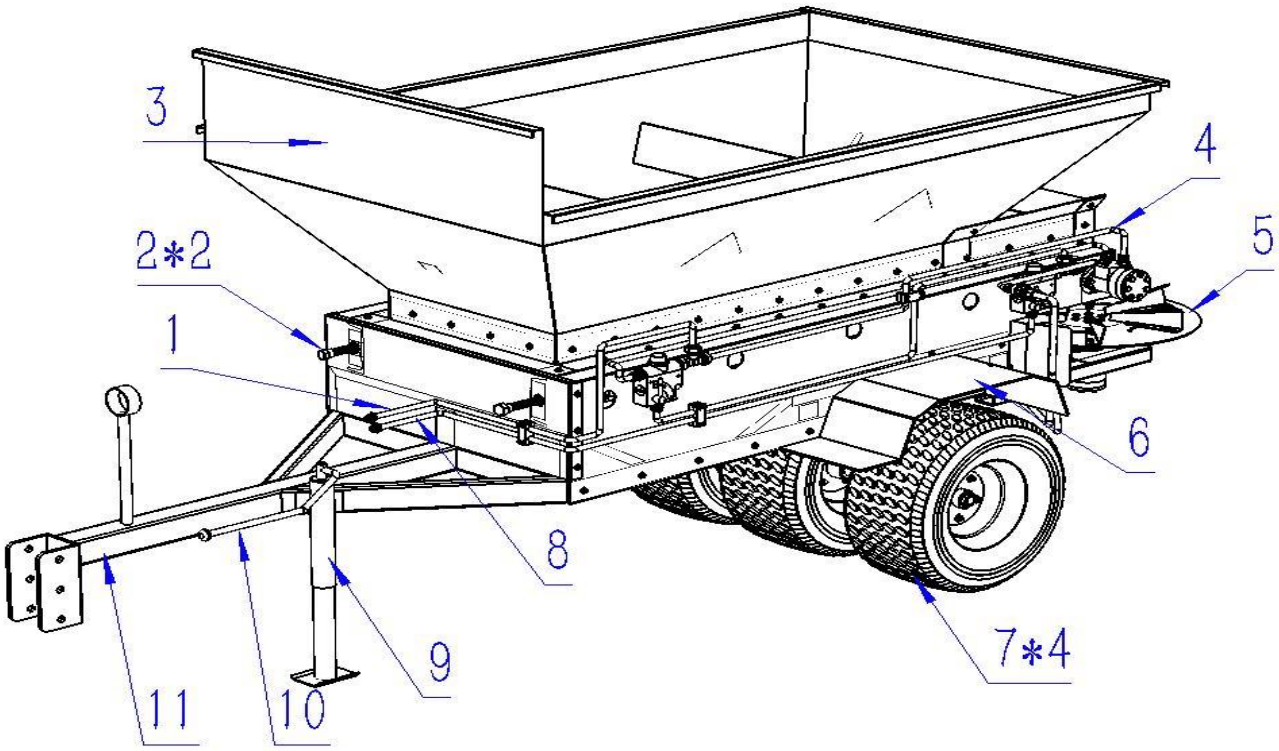
5. Exploded view of parts

Overall picture 2-1



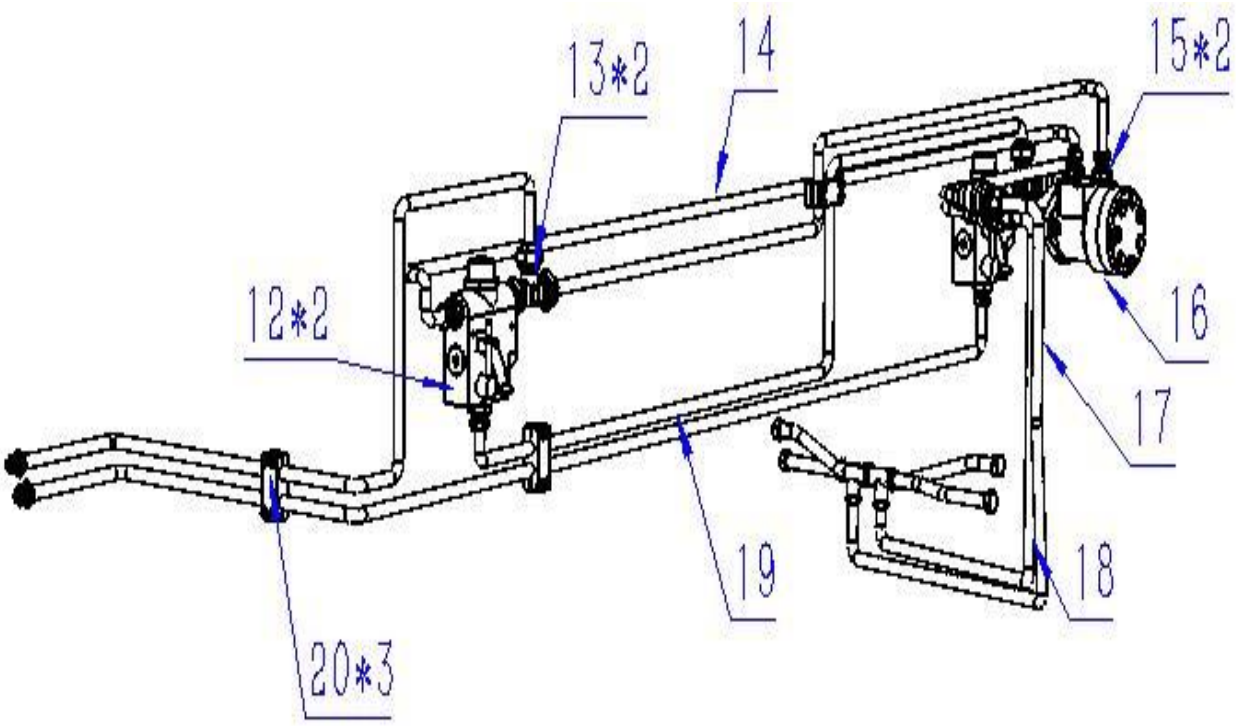


Overall picture 2-2



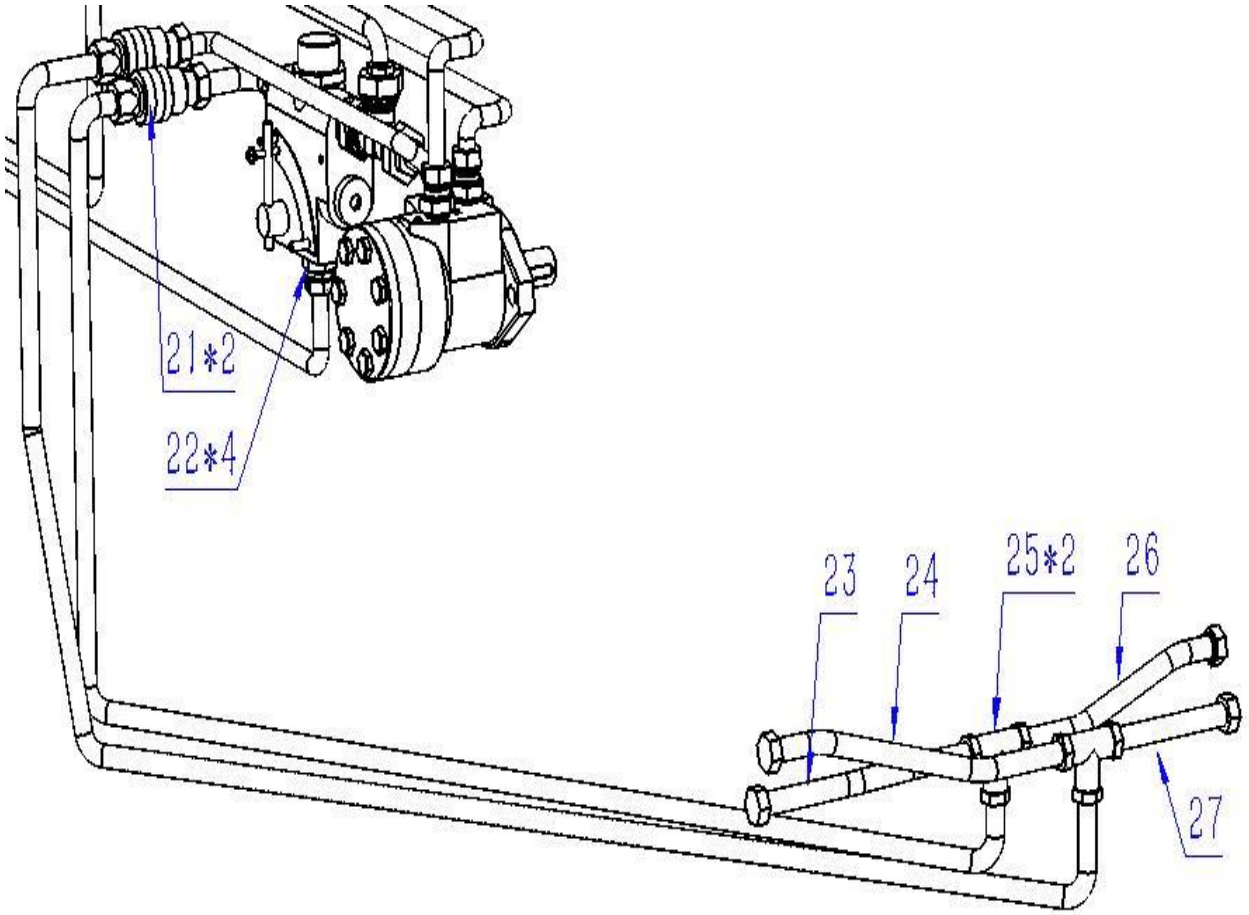
Parts Diagram.				
Item	**Part No.**	**Description**	**Qty.**	**Serial Numbers/Notes**
1	N78-4220	Hydraulic oil pipe	1	油管
2	N96-6688	Adjusting bolt	2	调整螺栓
3	N62-4474	Material box	1	料箱
4	N96-1147	Hydraulic oil pipe	1	油管
5	N65-2626	Spinning Plate	2	甩盘
6	N87-9247	Fender	1	挡泥瓦
7	N95-1609	tire	4	轮胎
8	N25-6248	Hydraulic oil pipe	1	油管
9	N36-6231	jack	1	千斤顶
10	N75-3316	Hydraulic oil pipe	1	油管
11	N25-9743	Traction arm	1	牵引臂

Hydraulic circuit diagram.



2-1

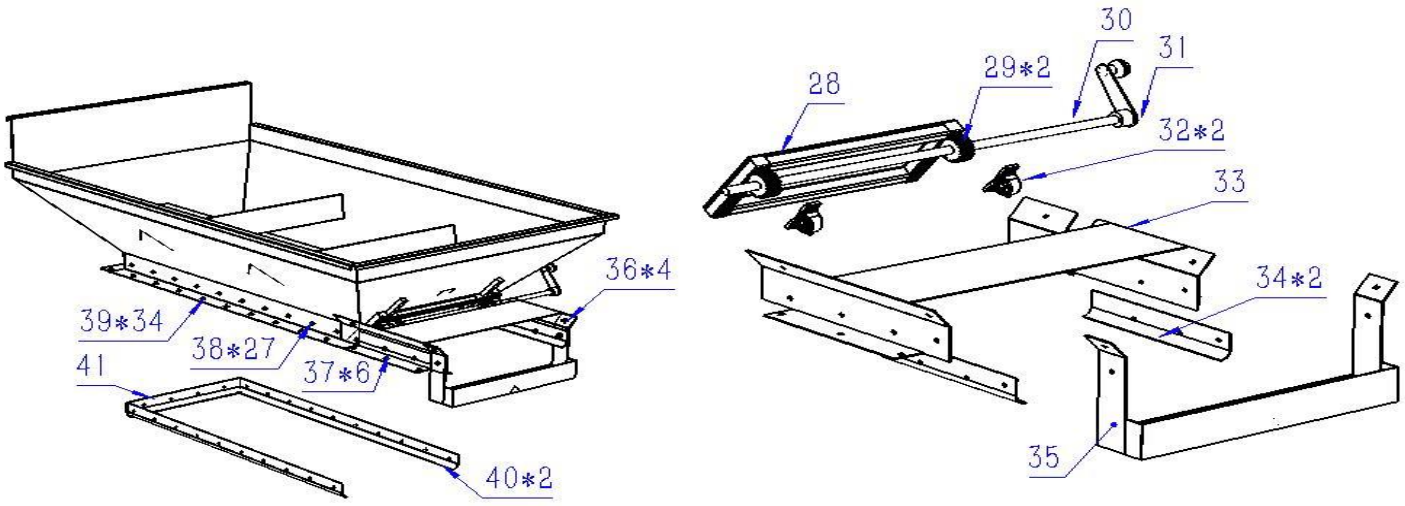
Parts Diagram.				
Item	**Part No.**	**Description**	**Qty.**	**Serial Numbers/Notes**
12	N78-8948	Flow Control Valve	2	流量调节阀
13	N21-4966	Pair of wire	2	对丝
14	N72-4921	Hydraulic oil pipe	1	油管
15	N68-5810	Pair of wire	2	对丝
16	N32-7660	Hydraulic motor	1	液压马达
17	N62-4375	Hydraulic oil pipe	1	油管
18	N76-9400	Hydraulic oil pipe	1	油管
19	N32-8512	Hydraulic oil pipe	1	油管
20	N76-3457	Fixing clip	3	固定夹



Parts Diagram.

Item	Part No.	Description	Qty.	Serial Numbers/Notes
21	N32-8467	Hydraulic quick connector	2	液压快接头
22	N15-5094	Pair of wire	4	对丝
23	N68-5396	Hydraulic oil pipe	1	油管
24	N10-5215	Hydraulic oil pipe	1	油管
25	N96-8818	Tee	2	三通
26	N99-2365	Hydraulic oil pipe	1	油管
27	N72-6850	Hydraulic oil pipe	1	油管

Main body parts drawing.



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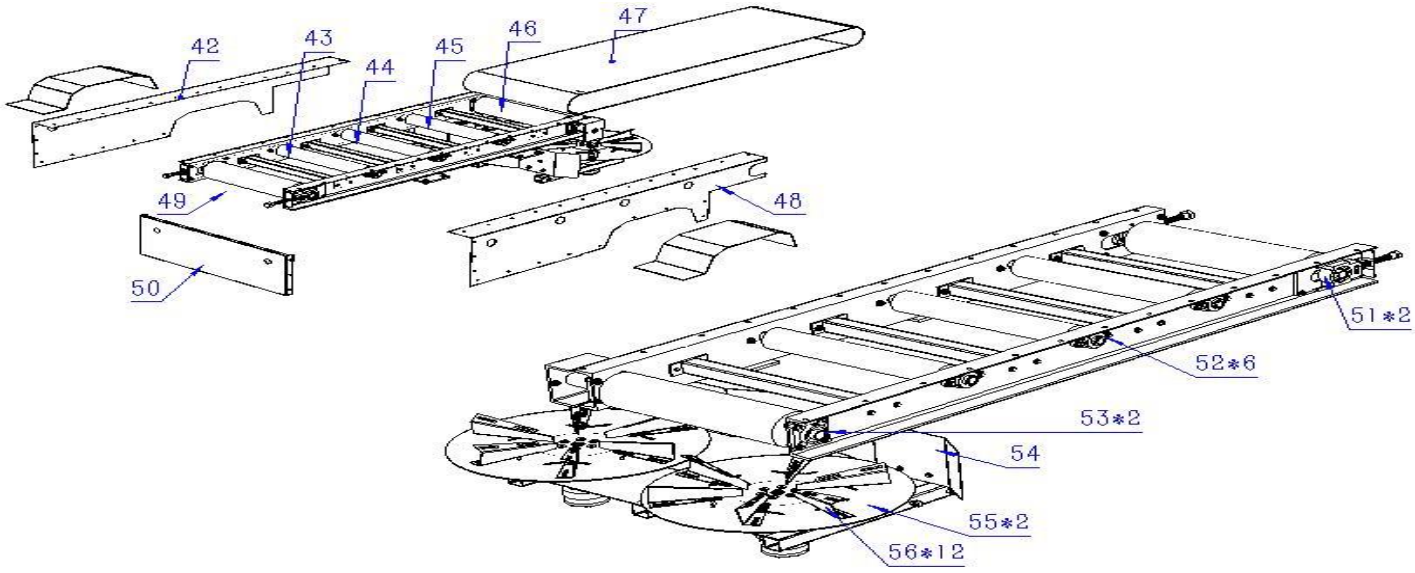
Parts Diagram.				
Item	**Part No.**	**Description**	**Qty.**	**Serial Numbers/Notes**
28	N78-6878	Adjustment plate	1	调节板
29	N75-8356	Gear	2	齿轮
30	N62-7786	Adjustment lever	1	调节杆
31	N52-7595	Rocker arm	1	摇臂
32	N15-4446	Bearing	2	轴承
33	N99-8301	Support plate	1	支撑板
34	N78-5036	Guide plate	2	导板
35	N82-4093	Protective plate	1	防护板
36	N36-1914	Bolt	4	螺栓
37	N96-6106	Bolt	6	螺栓
38	N65-6049	Bolt	27	螺栓
39	N66-7186	Bolt	34	螺栓
40	N25-8624	Rubber Sheet	2	橡胶板
41	N60-3236	Rubber Sheet	1	橡胶板

Transmission parts diagram.



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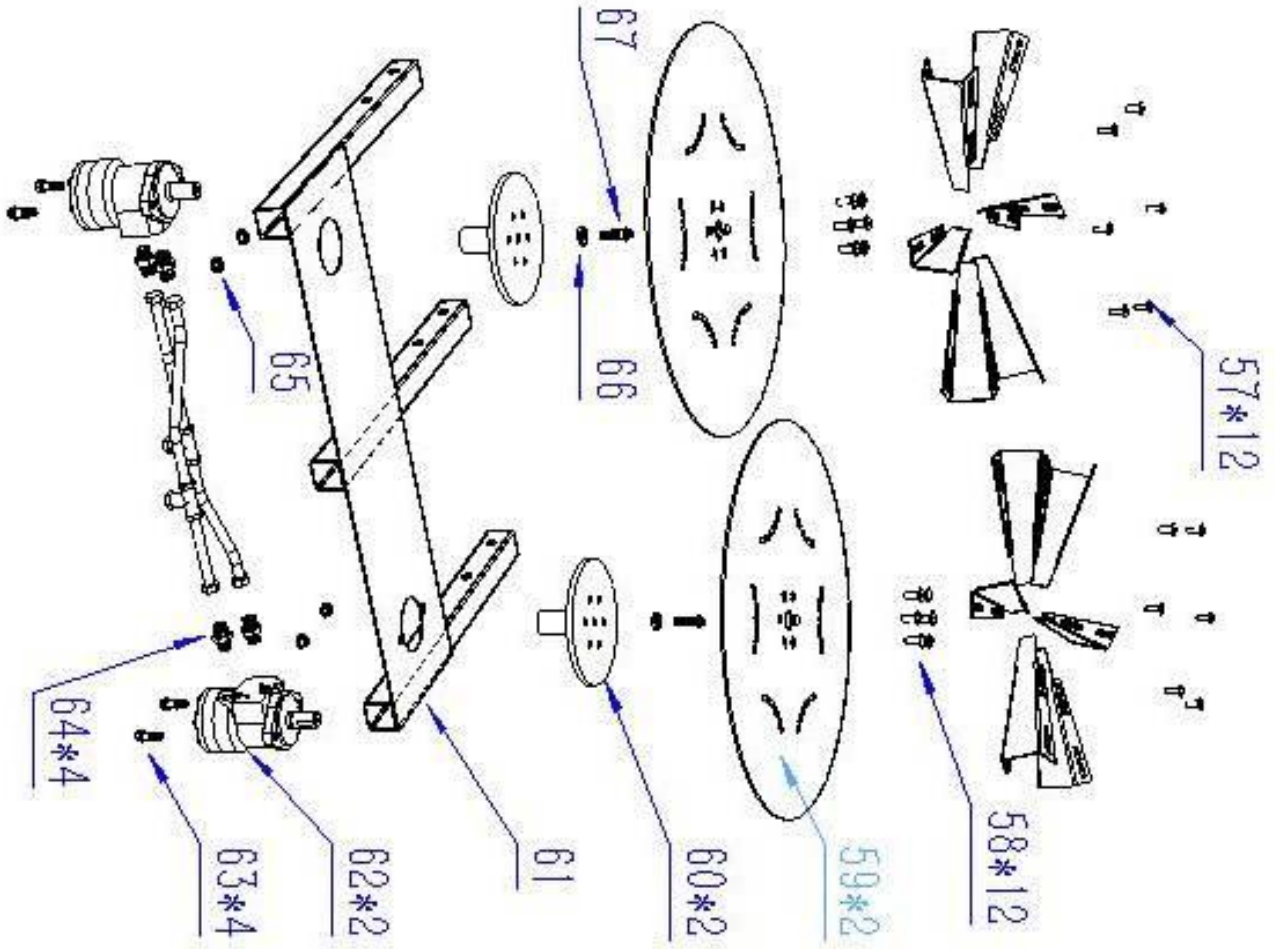
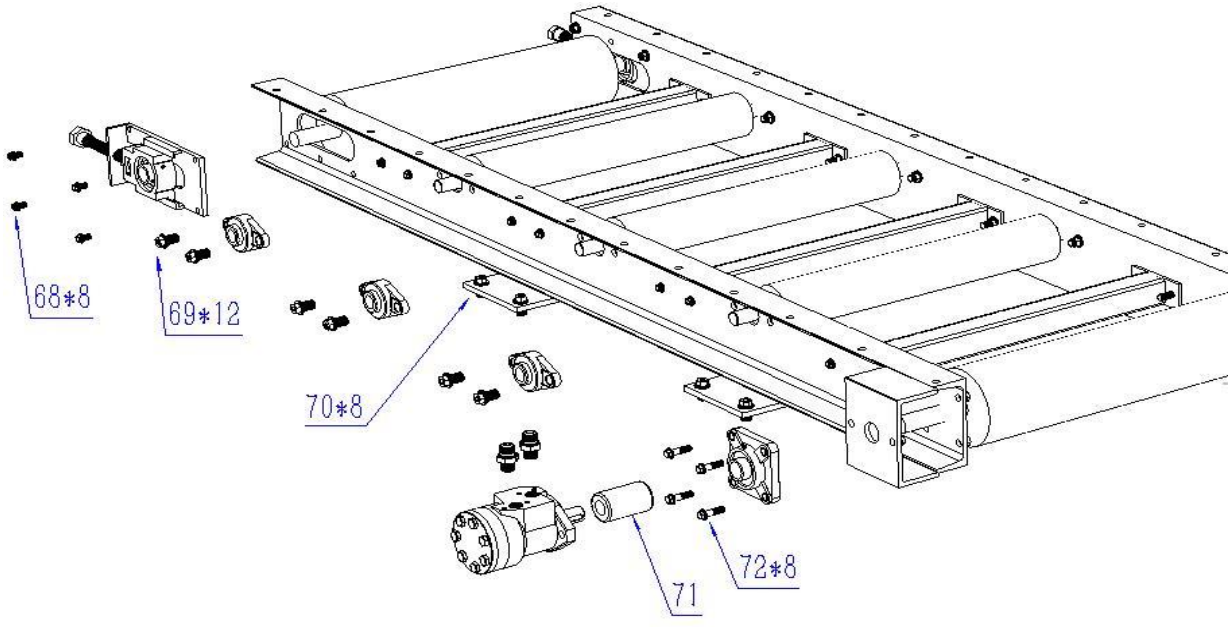
Parts Diagram.				
Item	**Part No.**	**Description**	**Qty.**	**Serial Numbers/Notes**
42	N90-7119	Left side plate	1	左侧板
43	N65-4978	Drum	1	滚筒
44	N99-9505	Drum	1	滚筒
45	N15-1416	Drum	1	滚筒
46	N62-5431	Drum	1	滚筒
47	N25-3419	Drum	1	传送带
48	N86-8346	Conveyor belt	1	右侧板
49	N82-1303	Right side plate	1	滚筒
50	N85-7504	Drum	1	挡板
51	N90-9213	Baffle	2	轴承
52	N90-5479	Bearing	6	轴承
53	N93-1069	Bearing	2	轴承
54	N76-2887	Bearing	1	导板
55	N52-2414	Guide plate	2	甩盘
56	N72-8458	Flip disc	12	叶片

Parts diagram of the spinner.

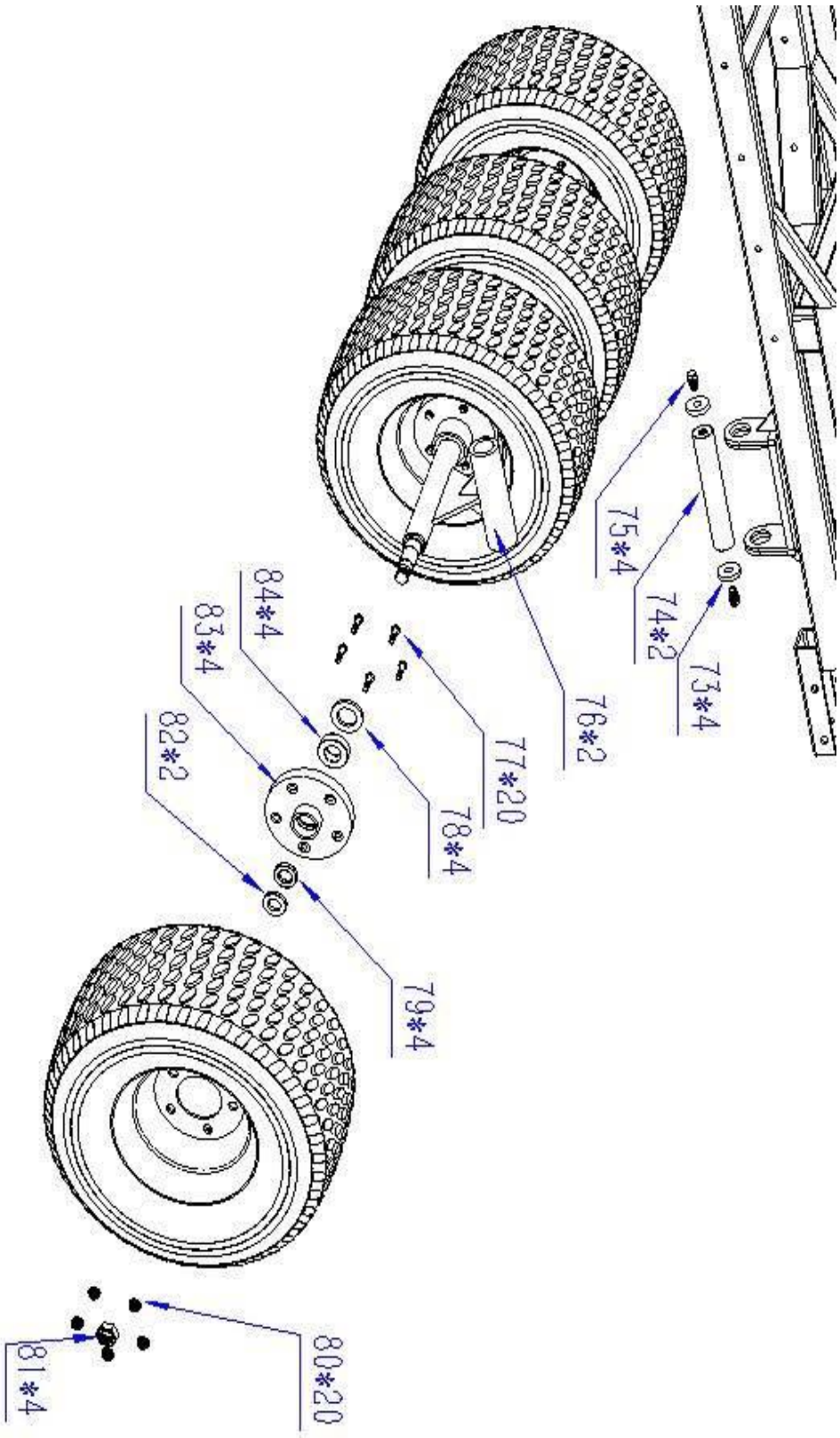




Parts Diagram.

Item	Part No.	Description	Qty.	Serial Numbers/Notes
57	N62-1681	Bolt	12	螺栓
58	N76-1903	bolt	12	螺栓
59	N75-7204	thrower	2	甩盘
60	N36-4302	flange	2	法兰
61	N62-1879	bracket	1	支架
62	N99-4029	hydraulic motor	2	液压马达
63	N88-3706	bolt	4	螺栓
64	N78-2720	thread	4	对丝
65	N10-9343	nut	2	螺母
66	N36-5490	nut	2	螺母
67	N96-9616	bolt	2	螺栓
68	N96-9748	bolt	8	螺栓
69	N87-4117	bolt	12	螺栓
70	N52-7625	bolt	8	螺栓
71	N88-5047	bolt	1	连接套
72	N97-4497	connecting sleeve	8	螺栓

Walking part diagram.



Parts Diagram.

Item	Part No.	Description	Qty.	Serial Numbers/Notes
73	N60-3916	Flat washer	4	平垫
74	N90-2499	Shaft	2	轴
75	N57-9561	Bolt	4	螺栓
76	N95-8455	Sleeve	2	轴套
77	N15-5316	Bolt	20	螺栓
78	N68-2930	Oil seal	4	油封
79	N90-6339	Bearing	4	轴承
80	N86-8973	Nut	20	螺母
81	N70-3897	Nut	4	螺母
82	N36-3360	Gasket	4	垫片
83	N82-2350	Flange	4	法兰
84	N96-3994	Bearing	4	轴承

Equipment maintenance record

Maintenance items	Check the results		Maintenance status	Remark
	normal	Fault		

Shouguang Naco Garden Machinery Co., Ltd.

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