

Manual of Operation and Maintenance for Rotary Cultivator



MADE IN CHINA

The manual concerns the rotary cultivator (hereafter called "machine") for fields with broken stones. The rotary cultivator is and opposite rotative milling cutter , that is , its rotor turns to its advance in opposite direction. It is suitable for the fields with cobbles. It can bury cobbles (middle dimension) and dreys and residues as well to gain a level fields.

Brief Introduction

The user of the machine is responsible for safety of persons in adjacent place.

The operator should know its maintenance and how to harness the machine to tractor rightly.

The operator should make certain that the harness to tractor and use of is in conformity with the law concerned.

The machine shall be operated and maintained only by the skilled person. All instructions concerned shall be observed strictly.

The guarantee conditions are delivered with the machine when purchase of the machine.

The machine shall not be modified by user because all modifications for user uio- late the guarantee agreement:

The manufacturer reserves the right modifying specifications of the machine and improving its performance without notification.

△ATTENTION!!!

Point out [show clearly , demonstrate] potential dangerous situation , if the danger can not be auoided , which can lead to death or bad physical harm , including presence of dangers when protections are removed.

△ ATTENTION!!!

Never operate the machine without one or more drawings of protection of safety.

△ATTENTION!!!

In order to prevent bad physique harm or death ,

——auoid dangerous operation or inamtenance

——No tonching the machine befor you read and learn the operation handbook.

——If you lost the operation hardbook , please contact to youre retail dealer at adjacent place.

The user of the machine should have technic tecknolege enough to understand all notices and instructions , including drawings figures. The user should know standard

concerned to hygiene and prevention of accidents, and tractor with milling cutter, people should maintain and inspect the machine everyday. When it works, protection device shall be always installed at good condition.

Personnel for machine maintenance

Technicians are able to intervene mechanisms of the machine

Exclusion of responsibility.

The manufacturer refuses (decline) all responsibilities in the following conditions:

— Operate the machine when it lacks mechanisms (parts) and the protection device or when it can not go.

— Operate wrongly the machine.

— Operate the machine by unqualified person.

— Mount the milling cutter wrongly to the tractor

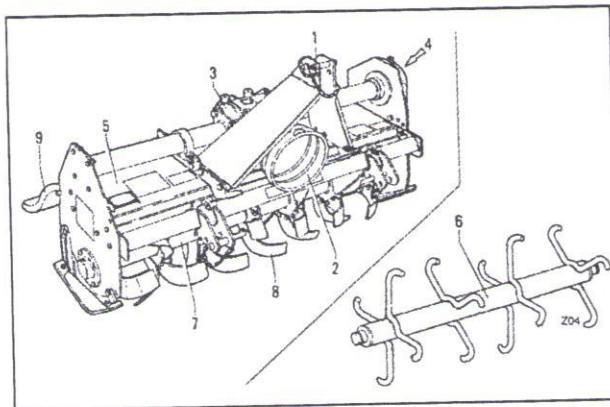
— Lacks of maintenance

— Modify or intervene the machine

— Do not observe the instructions of present notice.

You should contact adjacent retail dealer and tell him exactly the type (model) of the machine. We suggest you take the following documents of your machine:

Model (Type)	_____
year of construction	_____
serial number	_____
weight	_____



1— Harness to three points of the machine to tractor

2— Protection shaft is tightened

3— Box

4— Rotor transmission mechanism of motion (movement). The movement in

output end of case of gear wheel system is transmitted to rotor "7" at middle of the chain of transmission in the case.

5—Chassis

6—Roller. Adjust depth of work of blade milling cutter

7—Axle rotor

8—blade

9—Rear protection case (cover). The case (cover) is mobile and it is used for levelling field

Safety Device

No modifying the safety device of the machine, or operator and other persons are at the risk of their life. But for transport the safety device may be removed from the machine.

After receiving the machine, user should install it and pay attention to fixing all parts. If the safety device is not fixed or there is not it, the machine is not permitted to use. A plastic or small chain protection device shall be fixed to cardan shaft.

Support for

Cardan shaft

The shaft may be separated from the control rod of the tractor. To avoid separating itself or turn down, the machine may be equipped with a support:

Driver's cab

During work, only driver should sit in the cab for operating the driver, other persons should not approach the tractor, keep in a safety distance.

You get off the tractor after finishing the following procedures:

- - - - Take off the control rod
- - - - Step on the brake
- - - - Stop motor
- - - - Remove key from instrument panel
- - - - Set the machine on the ground

Measure noise of the machine, it shall be lower than 70dB.

General instructions:

The machine shall be used as a special installation. It is only equipped to the tractor with a cardan shaft, forbidding to use it as any other function.

Before harness the machine to the tractor and maintenance etc, read carefully the manual.

△ DANGER !!!

No wearing necklace no undoing buttons no untying necktie and scarf, as they may hook the movement parts. During work driver should wear work clothes: skid shoes noise helme, protective glasses and gloves etc. If you operate the machine by highway, you should wear reflective clothes.

If you have any questions, please consult the dealer to guarantee your safety.

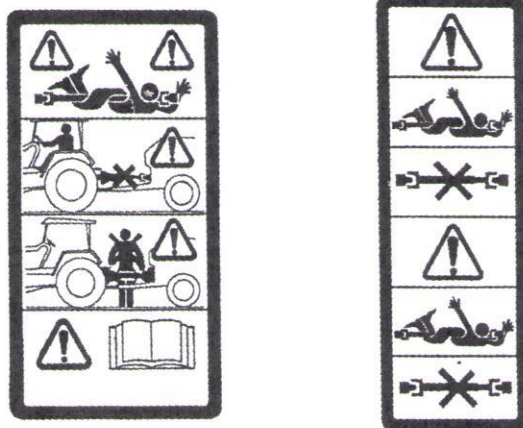
CARDAN

The protection device shall be fixed well, or it must be replaced before operation. Before work you should inspect if the protection device is good, seeing if its connections are stable, positions are right, both ends of transmission chain are connected to the tractor or the machine stable to avoid the protection device turns with cardan shaft. Inspect if the cardan shaft may turn freely in the protection device. Please correct carefully the tractor to the machine less harm the protection device.

Keep the grooved parts clean, and apply lubricating oil to keep their good sliding performance.

According to the regulations cardan shaft shall be checked following the manual provided by manufacturer.

The proper rotational speed of the control rod shall be determined according to its protection device generally 540 r/m; but it shall be in conformity with the manual of operation.



Adjustment instructions of speed.

Inspect all preseat protection device and safety rotational window are good fixing is right, no permitting unskilled person to use the tractor. Before starting the machine, you should make certain there is no person particularly children and animals, in the operation area, make certain there is no obstacle or body in the area. If necessary, you

should clear objects in the area. Do not operate the machine by highway, resident quarter or place where passengers vehicles and animals often past. If necessary, before work or during work, you should make certer that thare is no person in the work site.

Before starting tractor, enter the cab. If there is trouble with the macline, you should stop the machine, and notice the dealer and ask he to take proper measures.

When you are intoxicated or take the sedative, hypaiotic, dope, narcotic or other madeicine which sent forth odour, or can change physisloyical funotion or visional reflection, operator should not work with other persons, any other person should not get on the tractor, you should not divert your attention while work and watch carefully and pay attention to your operation. The motor shall be aways kept contiolled state. When the machine is working, you should make certain that children adults and animals are in safety distance.

Pay attention to fields work, during work the machine shall not cross lest turn over at the stope. Check carefully the constructions concerned from the manufacturer, in particular, max slope for the machine. When the machine works at the slope or change its operation speed or its direction, you should reduce its speed. Do not stop the maine abruptly. If the machine works at moist, slide and adhere fields. It shall go at low speed. Pay attention to any body which conclade blades. When the machine stops, you stop the motor and take off the key for example, remove ropes, yarn or other bodies from the machine.

△ Danger!

Before getting off the tractor, you should separate the control rod. Stop the machine, take off the key, grasp the brake, you should not approach the machine until it stops. When the machine conclude cbstacle, you should stop both the tractor and machine, close the motor remove the key, grasp the brake and inspect its dainage. When the blades turns, you keep the france far away from the moving parts. When tractor is going, do not adjust tension of the transmission chain, but you stop the tractor and adjust it. When the machine works, do not feed lubricating oil to the machine or the control rod.

No smoking!

△ ATTENTION!

Before getting on the tractor, you should remove soil from your shol soles, keep steps, hondle, pedal (brake, clutoh and accelerator) good state without oil, dirty, soil or snow lest skid. Before unloading the machine from the tractor, they shall be supported on ground and keep balance, then remove the tractor and pay attention to

its balance.

Instructions for driving on the highway

When you drive the tractor on highway, you should observe transportation rules and other all regulations concerned you should climb the triangle frame and open mode signal light, flash and keep in conformity with the highway transportation law. In particular, you should not drive the tractor and the machine with soil, dirt on the highway lest remain (left) pollutants on the highway. Before transport, you should put the control rod to the dead position.

Instructions for maintenance.

△ Danger!!!

You should stop the machine and separate the control rod of the tractor for maintenance. The maintenance should be done by professionals, and consult the adjacent dealer:

Never use inflammable essence or other inflammable liquids, such as detergent. The user should use commercial fire – proof and no toxic solvents approved by the authority. No using the compressed air or high – pressure water to clean the machine, you should wear protection glasses. Welding shall not be permitted without instructions of the manufacturer or the authority. Before welding, separate the machine from the tractor. When the maintenance ends, inspect if the machine, brake, shafts, bolts, screws, nuts are fastened, and fix the protection device.

If you want to dismantle joints, pipes or hydraulic parts, inspect if the oil is not lower than the pressure regulated, when low pressure the oil oozing can lead to harm. When you are hurt as oil leakage from the hydraulic equipment, you should see doctor at once. The liquid also penetrates into your skin, even which comes from invisible holes. When finding hydraulic liquid leak out, you should dispose it with a card or board, not touching it with your hand.

△ ATTENTION!!!

Operate the machine in plentiful air. If adjusting the machine, you should do it in a closed place, for example, trial run after repair to ensure ventilation proper lest harm. Harmful air gathers excessively in the air pipe to harm the operator.

△ Danger!!!

Before driving the machine on the road, you should ensure there is stone and other body on the ground hooking the rotor, before transferring the machine, you should put the control rod to the dead position.

Recommendation Important;

Everyday before working, stop engine, release clutch, and carry out the following check steps (Read Operation Manual and Instruction carefully)

1. Check the scale of lubrication (if necessary , fill 90# oil)
2. Lubricate the transom of universal joint
3. Lubricate marked positions
4. Check the screws on blades to make sure they are tightened and work normally.
(Installed before the gear box)

Hung to the tractors

Related primary important points for using machines

△ DANGER!!!

Working machines should be hung horizontally to prevent hurts

When hanging machines to tractors, your hands and feet should be far away from the blades.

No person is allowed to stand between machine and tractor.

△ ATTENTION!!!

Machines should fit their tractors.

Stability, main part and size of machine should meet the standard of related tractor.

Operator must make sure that tractors are suitable.

△ PRECAUTION!

Before using the machines, check the lubrication level of the gear box. Add lubrication of the same type, and check and lubricate rotating stand.

Check blades for rotary tillage to make rotary cultivators turn freely.

In case of overuse, the blades will be replaced.

Read all advice and dangerous items in manual. Replace parts if necessary.

Check tractors to keep their nice working situations.

Read manual when having problems.

Hang machine to tractor.

Let tractor close with the machine, aim at it and connect with bolts.

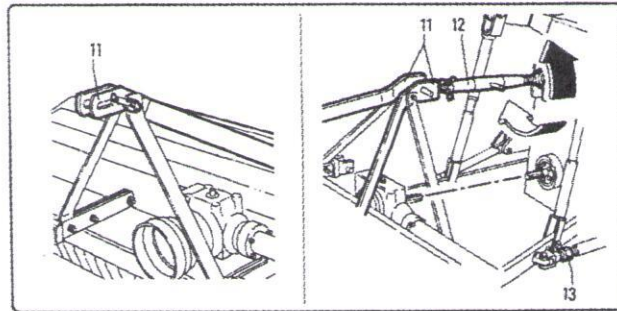
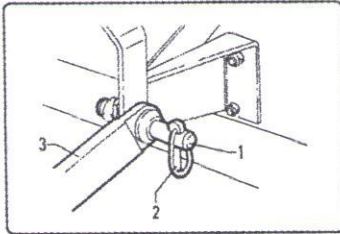
Stop tractor engine, take down key from the side and park it well.

Disassemble connecting shaft ball from blade hook I axle

Tighten with security pin 2.

Install the upper rod 12 of the 3 – point suspending hooks until control rod of the machine is parallel to the ground.

Measure the arm of tractor and install the machine on sides. Blades must have the same distances on both side of the machines.



Install cardan shafts to check the connection and separation between tractors and machines.

If the safety structure get guarantee, install machine instead of tractor.

Make sure the length of universal joint is right.

Min. length of each position is 180mm.

When in max. position, the cardan must have a course of 25mm.

To guarantee the right course, correct adjusting is necessary.

DANGER!!!

Cardan should get coupled and locked up.

In the special groove for control rod, side of tractor is the same with that of the machine.

Unsealed shaft can be released by itself, which will cause personal hurts and serious mechanical problems.

PRECAUTION!

If cardans need replacing, purchase cardans with the same features listed in part list. Unqualified cardans will break themselves.

If it is too long, follow the steps below to shorten.

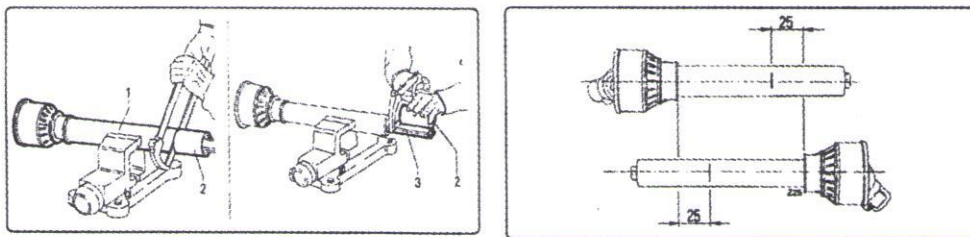
Make the machine close to tractor in a min. distance and then stop the tractor.

Cardan is separated into two parts. Connect the female end to the control rod of the tractor; connect the male end to the control rod of the breaking machine, and fix it to a proper position.

Parallel and maintain cardan.

Mark the position or shorten the two half axles. Measure each half axle to 25mm. See Fig. please.

Firstly, cut protection 1 in the drawing. Use 2 as a reference for cutting notches.



Deal with the other half axle in the same way.

Clean out terminal plates of axle, and take away scraps.

Lubricate the two steel parts, install to get a cardan.

Lift slightly to check right sizes; lower the machines.

The axle cannot touch the pipe bottom or exceed the terminal end. Follow the above specified numbers (25 and 180mm)

Once meeting problems, read the instruction and contact axle manufacturer.

Important

Cardan may include security device to eliminate power charge. In this way, you can't be hurt from machine operation, even in the case of over resistance during working.

Security device should contain the following symbols:

- - - - - Be attention to the break of a couple of bolts.
- - - - - Be attention to the abrasion of a couple of plates. °

This device should be installed and used at proper time by specialists.

Read manual and consult with cardan suppliers.

If the manual is lost, contact the supplier.

Operation of the machines

Walking on roads

ATTENTION!!!

Before the machine hung to tractor walks on public roads, you should be clear about local traffic.

If walking in evening or on unsmooth roads, some ancillary blades should be installed according to instructions.

Maintain the machine during traveling

During traveling, take note about the machine maintaining, and release the clutch.

DANGER!!!

Don't lean on or climb up the machine during operating.

Prepare for working blades.

ATTENTION!!!

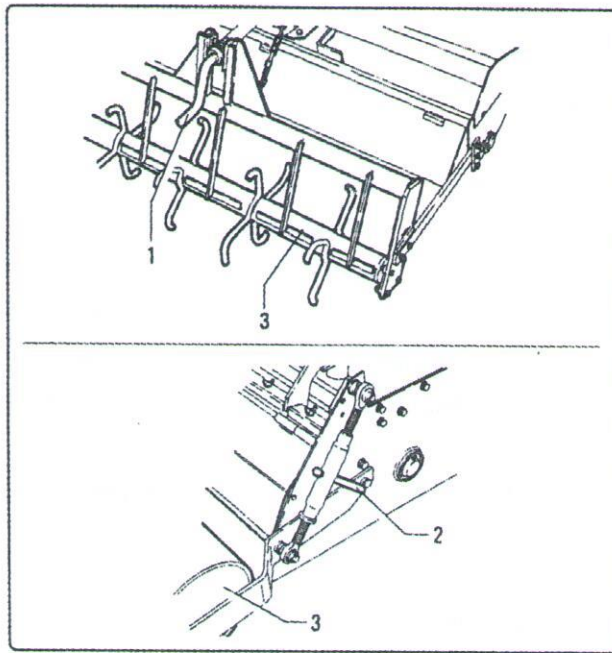
Check the tractor to keep its working power not beyond stated max. value.

Check the clutch speed to meet the requirements of the machine.

Compare these values with that of clutch shaft.

Adjust depth with a measuring tape.

Lift leveling bar 3 with crank 1 or rod 2 (to increase depth) or drop it (to reduce working depth).



Operating the machine

DANGER!!!

To use milling cutters, check all security protecting devices before working. Raise them correctly and keep them in a proper situation.

If malfunction happens, stop the machine and replace the security parts.

You can go to the nearest help center for help.

When the milling blades begin to work, take a serious check to make sure no adults, kids and animals around.

In operating area, no articles or sundries.

No people is allowed to enter the operation area. That should be far away from roads, houses and crowds.

Adjust needed height, check oil fuel and the first scale of the lubrication used before.

Before using the machine, get familiar to the machine, especially the speed of the working machine.

– – – Lower blades to the earth and then operate the blades. Keep people far away.

- - - Operate the clutch.
- - Lay the tractor horizontally.

Important

Don't turn over the machine, or let the blades cut to earth too deeply.

Machines and tractor parts have malfunctions.

During operating, keep the machine horizontal. Check the depth with rule.

When tractor walks ahead, clutch has a speed of 540r/second.

The raveling speed of the tractor depends on the earth depth and ideal speed.

Best working speeds are 1.5km/hour and 2.5km/hour.

Beyond the speed, don't gear up to lower down the gears smoothly.

Important

During operation, the slower walking the larger soil grains.

During operations, rise a little for turn and moving ahead.

After operating for several meters, stop the machine and raise the blades from the soil.

After operating for several meters, stop the machine, do some adjusting and then restart the machine.

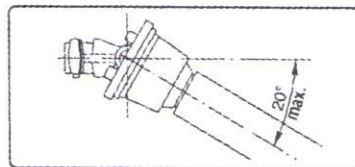
DANGER!!!

Every time adjusting the machine, release the clutch, stop the engine, take down the key, and hold the parking brake well.

Don't be close to the rotating blades until they stop completely.

When the clutch is engaged, don't lift the machine in a soil depth of 250mm to avoid cardan breaking or any dangerous operation.

Max. supporting inclination is 35 degree when cardan is connected to the clutch. However it is recommendable that it be smaller than 25 - 30 degree.



Note:

During working, the gear case may stay without operation due to hot oil. The sur-

face may touches hot, which is not malfunction. It is important to check the oil at a proper scale.

Use milling cutters (follow related regulation.)

Milling cutters are used to smash soil blocks for :

1) Seeding.

Imbedding remained grasses onto the soil for initial preparation of seeding.

Making the soil solid and compacted.

Usually during operating, these milling cutters cannot be used on the soil full of stones, while very small stones don't make troubles to the machine. Otherwise, working on stony soil for long time can break the blades or machines, which can't get our maintaining service as in guarantee periods.

Important

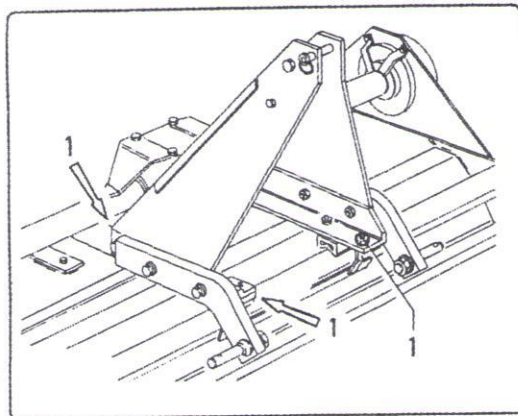
Lift the blades in case of meeting large stones to avoid damaging blades.

Move 3 - point suspending milling blades with hands.

Milling cutters can be used when tractor diverges.

Steps to move the milling cutters from sides :

- - - Don't screw down to release nut 1.
- - - Drive 3 - point trailer with hands to move in needed positions. Tighten nuts.



Long - term storage

Cleaning blades

Store the machine at a place far from kids and animals. Fix it to avoid turning down or moving.

Check in phases

Couple the machine onto tractor in the way of digital operation.

When troubles happen during coupling onto the tractor, take the following steps:

- release the clutch.
- hold brake tightly.
- - stop engine.
- - take down keys.

If operating milling cutters, do protection well.

To avoid the danger caused by tractor hydraulic structure, lower the machine in case of trouble. If you have to work below it, support the machine to ward the machine.

Clean grease to keep other articles away.

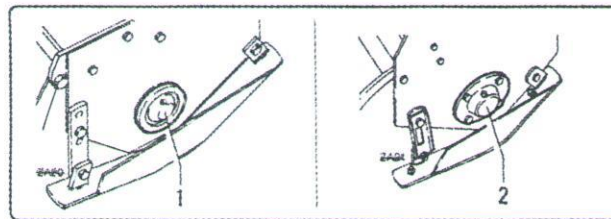
If the oil needs filling or clear out, new filled oil should meet the requirements of manufacturer.

ATTENTION!!!

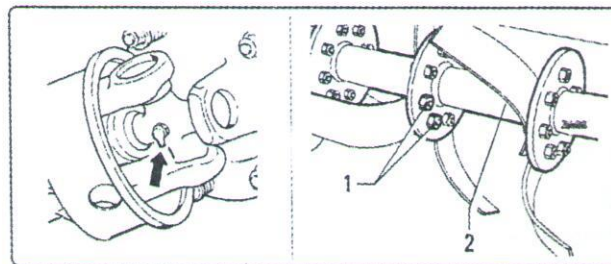
Keep the lubrication beyond the touch of kids.

Read the instructions of lubrication.

Oil the right bearing of rotor 1 (see fig. below). Check the lubrication of the right bearing 2 (see fig. below), the nearing of lubrication dish.

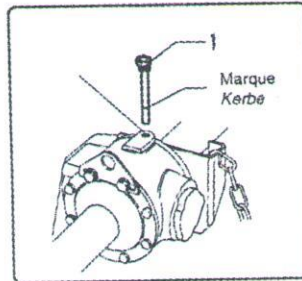


- - - Check cardan, and lubricate its transom.
- - - Check the guard plate of blades.



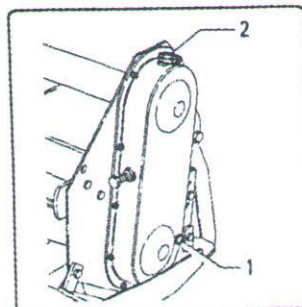
50 working hours

- - - Check the abrasion of the blades. Replace them if necessary.
- - - Disassemble and clean the cardan axle.
- - - Before reassembling the cardan, lubricate the moving parts.
- - - Check the brake of gear case.



- - - Check the lubrication scale of gear case that is just opposite to the bonnet. Fill the lubrication to the right scale.
- - - In case of lack of measuring, oil should reach the lower port 1.
- - - Check the gear case on the side of the lubrication scale.
- - - Lift bonnet 1. Check the lubrication to make it reach the lower side of bonnet notch.

If necessary, you re-adjust the hole 2 to level.



IMPORTANT:

The controller of level shall effect on flat ground and stop in less than 10 minutes.
All 250 hours of work.

- - - - Drain away oil from the multiplier.
- - - - Drain away oil from case at the trasimission side.

Drain away oil from reductor

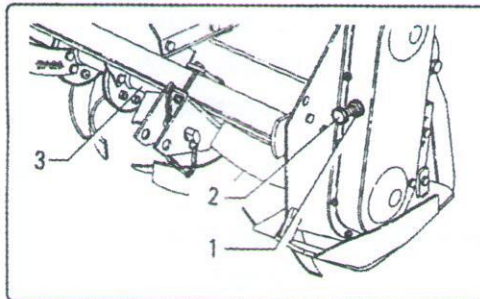
After the first 50 hours of work, you should drain away oil fed in the first time, then drain oil for all 250 hours of work.

Tension of transmission chain

Tense transmission chain. When the motor of tractor is stopped, you should take off the key, grasp the brake, loose the control rod.

Adjust the tension of side transmission chain regularly [periodically], its procedure is as follows.

- - - Twist nut of safety device of tension screw 2 of transmission chain a few of rotations.
- - - Twist screw 2 as so as possible by hand, meanwhile turn rotor support 3 by hand or foot .
- - - Adjust the tension max as so as possible, loose the screw 2 one rotation, keep the nut of safety device 1 tight state.
- - - Turn rotor a few times by hand to inspect if rotational resistance is too excessive, repeat the above - mentioned procedure to adjust the tension of chain.



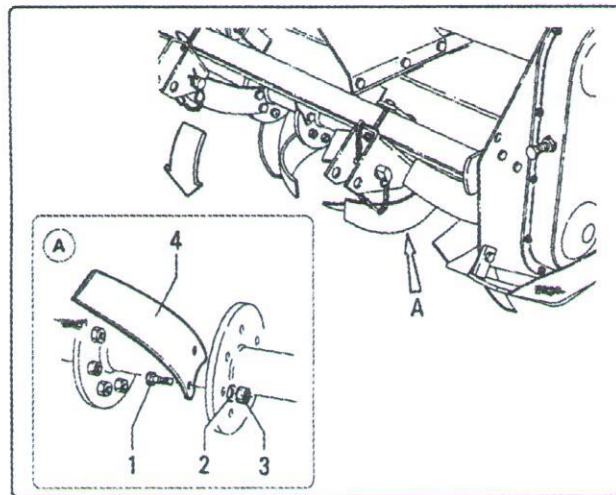
- - - **Replace the blades.**

△ Danger!

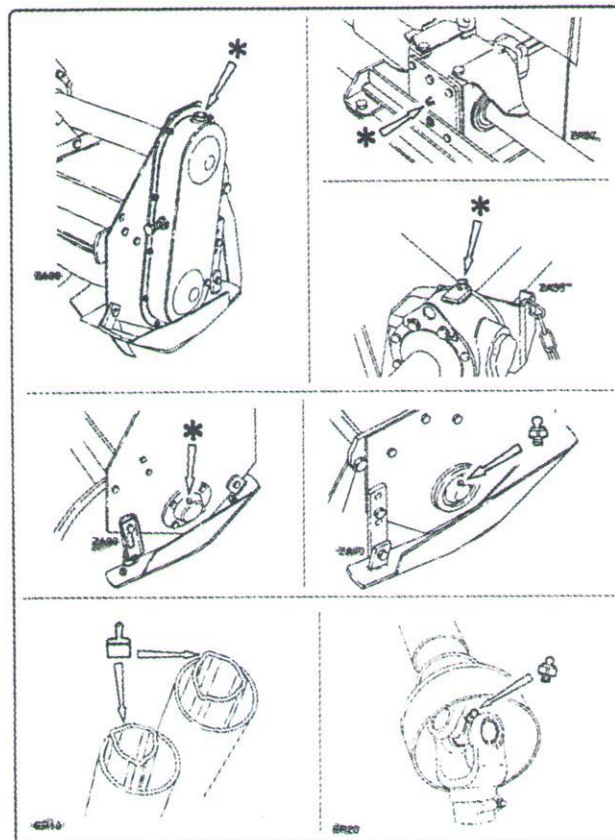
The following operations listed shall be done separating the machine from the tractor:

Left the machine a bit to necessary distance (hight) to finish those operations and bear it on.

- - - high strength support to work safely.
- - - if blade 4 has been damaged, folded or worn off, please replace it.
- - - notice, new blade must be re - fixed to the original position where the tol has been replaced replace a blade once lest error.



pay attention to add the oil



Lubrication points and lubricating oil Recommended lubricating oil is EP3.

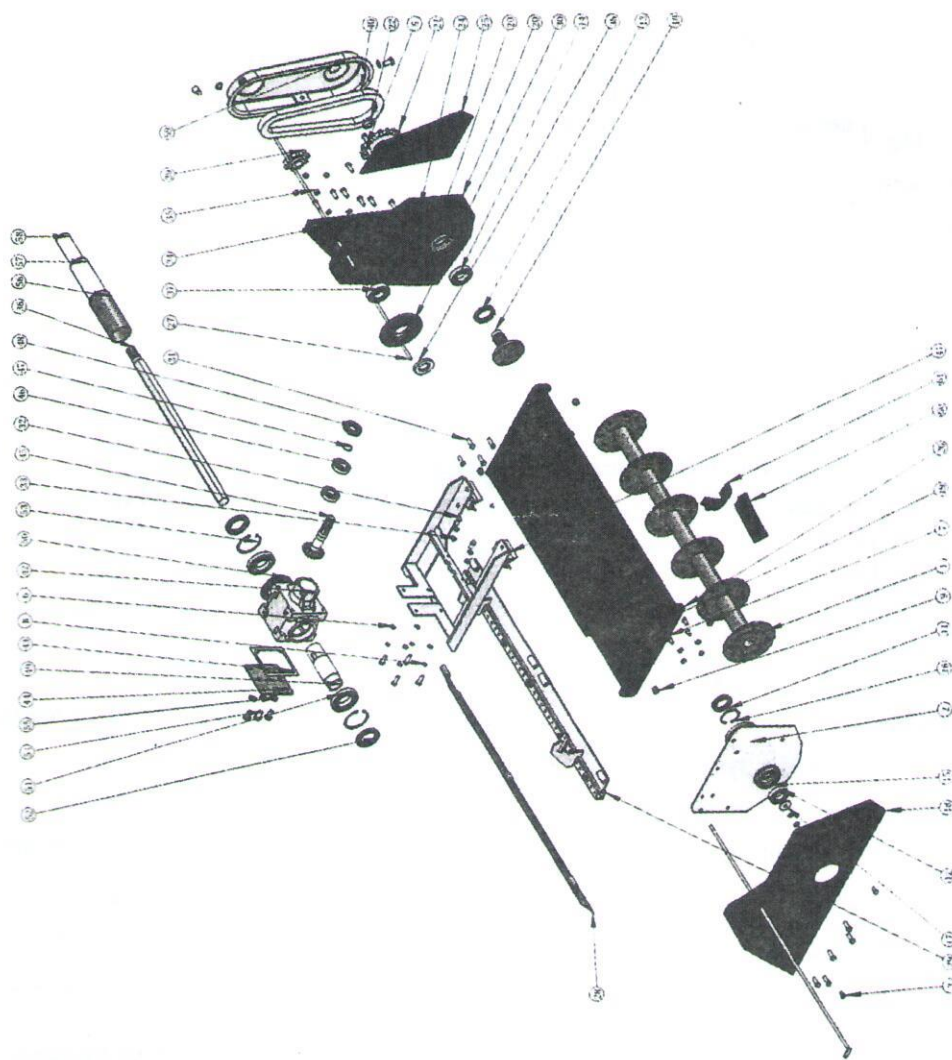
Standard Data of Metric Nuts and Screws Bolts.

Nm = recommended twisting force N/m

Screw Diameter	Class 5.8	Class 8.8	Class 10.9
mm	Nm	Nm	Nm
6	6.5	10	15
8	15.5	24.5	35
10	32	50	20
12	53	85	119
14	84	135	190
16	128	205	288
18	177	283	398
20	250	400	562
22	332	532	748
24	432	691	971

Fault and the reasons for exclusion

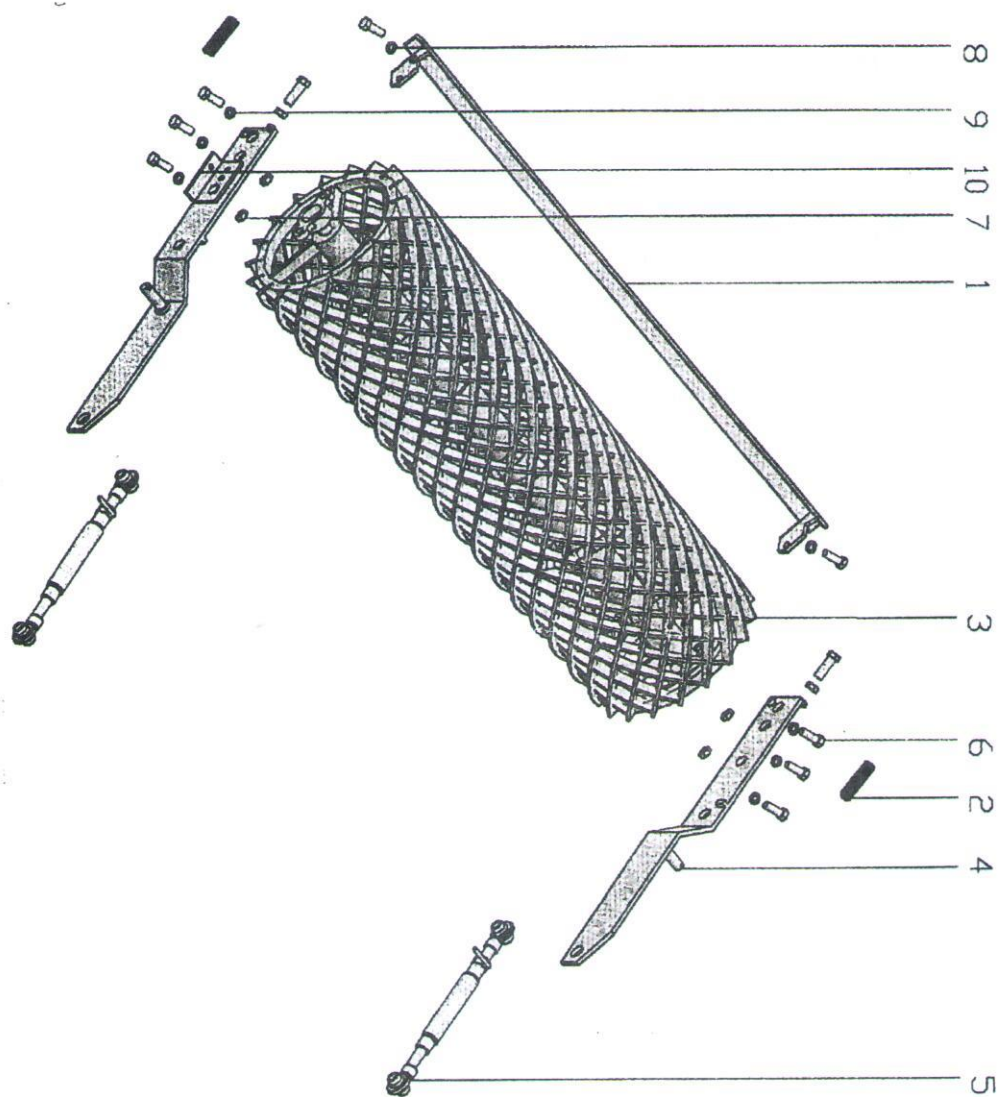
Trouble	cause	Remede
- - Machine with noise	<ul style="list-style-type: none"> - - Workpieces are too louse - - Lack of oil in the reductor or case of side transmission - - Reckoned rotations of the control rod are not right - - Transmission chain is too loose 	
- - Support is overheat	<ul style="list-style-type: none"> - - Rotor end is winded by grass or soil 	Clear rotor and get rid of impurities
- - Work depth is not enough	<ul style="list-style-type: none"> - - Run speed is too fast - - There is not enough power outputed by motor - - Soil is too hard - - Teeth deep soil instead of rotation 	<ul style="list-style-type: none"> - - Reduce motor speed of tractor - - Reduce speed - - Carry out more passages - - Reduce the speed of advancement.
- - Rolling rotor is blocked (it does not turn)	<ul style="list-style-type: none"> - - Transmission chain is too tight - - There are impurities in the rotor 	<ul style="list-style-type: none"> - - adjust the tension of transmission chain - - Remove the impurities, adjust tiols. If necessary replace damaged blades. Before work make certain that the rotor is not damaged again. If it breaks down, natify the dealer for repairing.



List of Parts

Part No.	Reference	Description in English	Quantity
1	MZA – 105 – 01	Blade axle	1
2	MZA – 105 – 002	Connecting plate for blade axle	1
3		Bolt M1020	10
4		Bolt M1230	1
5		Bolt M1225	19
6		Elastic washer $\Phi 10$	12
7		Elastic washer $\Phi 12$	18
8		Flat washer $\Phi 10$	12
9		Flat washer $\Phi 12$	18
10	MZA – 105 – 10	Splite shaft	1
11		Oil seal 805012	1
12	GB276 – 94	Bearing 6208 GB 276 – 94	1
13		Oil seal 855512	
14	GB276 – 94	Bearing 6208 GB 276 – 94	1
15	MZA – 105 – 15	Side plate SLDRRT	1
16		Hole clip $\Phi 75$	1
17	MZA – 105 – 17	Bearing plate 6208	1
18	MZA – 105 – 18	Side plate 3	1
19		Nut M12	17
20	MZA – 105 – 20	Side plate	1
21	MZA – 105 – 21	Big chain	1
22		Thrutle plate $\Phi 40$	1
23		Small round nut M401.5	1
24	MZA – 105 – 24	Side plate 6	1
25	MZA – 105 – 25	Side plate 1	1
26	MZA – 105 – 26	Big top cover plate	1
27	MZA – 105 – 27	Bolt	2
28	MZA – 105 – 28	Plate	1
29	MZA – 105 – 29	Damper support	1
30	MZA – 105 – 30	Bearing cover for the second shaft	1
31		Bolt M1235	4
32		Bolt M1225	2

Part No.	Reference	Description in English	Quantity
33		Elastic washer $\Phi 12$	6
34		Flat washer $\Phi 12$	6
35		Nut M12	4
36	MZA - 105 - 36	Axle	1
37	GB276 - 94	Bearing 6308 GB 276 - 94	1
38		Oil seal 408012	1
39	MZA - 105 - 39	Small chain wheel	1
40	MZA - 105 - 40	Chain 20A	1
41	MZA - 105 - 41	Pedal	1
42	MZA - 105 - 42	Middle gearbox	1
43	MZA - 105 - 43	Paper washer of middle gearbox	1
44	MZA - 105 - 44	Cover plate for middle gearbox	1
45	MZA - 105 - 45	Small conic gearwheel (5 - 5)	1
46		Bearing 0207	2
47		Click $\Phi 35$	1
48		Oil seal 723512	1
49	MZA - 105 - 49	Splite sleeve	1
50	MZA - 105 - 50	Big conic gearwheel	1
51	GB276 - 94	Bearing 3021 GB 297 - 94	2
52		Oil seal 906012	2
53		Slip $\Phi 95$	2
54		Oil plug bolt M16	5
55		Bras washer $\Phi 16$	5
56	MZA - 105 - 56	Big sleeve tabe	1
57	MZA - 105 - 57	Middle sleeve tabe	1
58	MZA - 105 - 58	Small sleeve tabe	1
59	MZA - 105 - 59	Case of chain	1
60	MZA - 105 - 60	Blade cutter 1	1
61	MZA - 105 - 61	Blade cutter 2	1



List of parts

Part No	Reference	Description	Specification	Quantity
1	MZA105 -01	Soil scraping device		1
2	MZA105 -02	Spring		2
3	MZA105 -03	Twist cage		1
4	MZA105 -04	Connection board		2
5	MZA105 -05	Brace rod		2
6	MZA105 -06	Screw	M1240	4
			M1245	2
			M1230	2
			M1225	2
7	MZA105 -07	Nut	M12	4
			M10	
8	MZA105 -08	Plain cushion	Φ10	4
9	MZA105 -09	Washer	Φ12	6
10	MZA105 -10	Knee plate		2

Votre agent