

## Disc Mower

---



# ZEPPELIN

## SEGADORAS DE DISCOS DISC MOWERS / FAUCHEUSES À DISQUES



Modelo / Model / Modelé /	ESSEG130DZ2	ESSEG170DZ4	ESSEG215DZ5	ESSEG255DZ6
Nº Discos / Nb. de disk / N° disques	2	4	5	6
Ancho de trabajo / Working width / Largeur de travail	1300 mm	1700 mm	2150 mm	2550 mm
Velocidad de trabajo / Working speed / Vitesse de travail	4-10 km/h			
Dimensiones / Dimensions / Dimensions	2080x1180x780 mm	2533x1180x780 mm	2950x1280x780 mm	3270x1280x780 mm
Peso / Weight / Poids	280 kg	370 kg	400 kg	450 kg
Potencia recomendada / Recommended tractor power / Puissance recommandée :	18-50 HP.	35-80 HP.	40-85 HP.	45-90 HP.



## Safety precautions for operation

Neglecting the following precautions can cause a death or an injury.

Before starting work, read the operation manuals of the disc machine and tractor carefully to understand the correct operating method thoroughly.

### Before starting work

#### Keep the operation manual by the machine



#### CAUTION

● When you do not know something about operation of the machine, if the operation manual is not by the machine, and you judge and act by yourself, an accident may occur and you may be injured. Accordingly, keep the operation manual by the machine so that you can read it whenever you want to know something about the machine.

#### Read operation manual before starting work



#### CAUTION

● If you start work without understanding the all safety precautions and operating procedure written in the operation manual, an accident may occur. Accordingly, before starting work, fully understand the safety precautions and operating procedure. Written in the working labels stuck to the machine and in the operation manual.

#### Do not operate in the following cases



#### WARNING

● If you operate the machine when your physical condition is bad of before you get used to operation of the machine, an accident may occur.

- ◇ Do not operate the machine in the following cases. When you cannot concentrate on work because of fatigue, sickness, doping, etc.
- ◇ After you drink alcohol.
- ◇ When you are not used to operation of the machine
- ◇ When you are pregnant.

#### Check your clothes for work



#### WARNING

● If you operate the machine in unsuitable clothes for work, the clothes may be wound in the machine, and that can cause a death or an injury.

- ◇ When operating the machine, put on the following clothes.
- ◇ Clothes, the sleeves and bottoms of which are not too loose or too long.
- ◇ Trousers and jacket which are not too loose.
- ◇ Cap
- ◇ Do not wear a towel around your head or neck or hang it on your belt.

#### When lending the machine to a person



#### WARNING

● If you lend your machine to a person who does not know the precautions and operating procedure written in the operation manual, he/she may cause an accident. Accordingly, explain the all operation method and order him/her to read the operation manual before starting work.

#### Prohibition of modification of machine



#### CAUTION

● Modification of the machine or installation of an attachments or a part which are not recommend you can cause breakage of the machine and an injury. Do not modify the machine. Use only the attachments which we recommend you. Use only replacement parts which are recommend you.

#### Execution of check before starting work



#### CAUTION

● Neglecting check before starting work can cause breakage of the machine and an injury. Before starting work, check the machine according to the operation manual.

### When starting engine and moving machine



#### WARNING

- If you start the engine, standing by the tractor or on the step of the tractor, you cannot take proper actions in an emergency and you and persons around the machine may be injured.

- Sit on the operator's seat and confirm the safety around the machine before starting the engine.

- If the engine is started with the main gear shift lever is not the "N"( neutral) position, the transmission is connected and the tractor moves abruptly and may cause an accident.

- Accordingly, when starting the engine, set the main gear shift lever in the "N"( Neutral) position.

If the tractor is started sharply, its front wheels may rise and you may be thrown off and persons around the tractor may be injured.

- Accordingly, confirm the safety around the tractor and start it slowly.

- If you start the engine indoor, it may a cause of gas-poisoning.

Wide open a door or a window for ventilation.

- If start the engine without disengaging PTO, it may cause of injury by sudden machine running.

Start the engine after disengaging PTO.

Whenever detach the machine from a tractor, stand on the ground and apply the wheel chock to a tire. If you attach the machine to a tractor whose front wheels weight balance is light, it may cause of loosing control and may cause of injury. Attach front weight to a tractor to get stable weight balance.

### When Universal joint is engaged



#### DANGER

- If the Universal joint is used in missing cover, you may be wound in it and be injured.

Never use the Universal joint missing cover.

- If the Universal joint is used in broken cover, you may be wound in it and be injured.

Replace broken cover immediately.

Check the cover if it has any danger before operation.

Stop engine and disengage PTO when the Universal joint is attached to a tractor and the machine.

- If the Universal joint is used without attaching the cover chain, the cover may rotate and may cause of injury.

Attach the cover chain to immovable part of a tractor and the machine



#### CAUTION

- If the Universal joint is rotated in less than 100mm lapping length at the most extracted position, the Universal joint may be broken and may cause of injury.

If the clearance is less than 25mm at the most retracted position, the Universal joint may push up.

- It may cause of breakage of the Universal joint and may cause of injury.

Use the Universal joint under correct lapping length.

If the clamp pin is not set in the groove of the shaft, the Universal joint may come out and may cause of injury.

Make sure if the clamp pin is set in the groove of the shaft by pushing and pulling the yoke.

### When attaching and detaching the machine



#### WARNING

- Attaching to a tractor, when tractor moves, persons around the machine may be injured.

Make sure none is around the machine.



#### CAUTION

- attaching to a tractor on inclined, uneven or soft ground, a tractor may suddenly move and may cause of injury.

Always attach the machine to a tractor on solid ground,

- If you detach the machine from a tractor without putting the wheel chock between tier and ground, the machine may suddenly move and may cause of injury.

## When traveling



### DANGER

- If the right and left brake pedals are not coupled, only one pedal may be footed on.

It may make sharp turn of a tractor and the machine and may cause of accident.

Couple right and left brake pedal except special operation done in the field.



### WARNING

- Never ride together with other people on a tractor. Riding together with other people may cause of accident.

- Do not stop suddenly or do not turn tightly. Tractor should be slow down on slopes, uneven ground and during tight turn.

- Always take enough distance from other people and obstruction during turn,

Stay away a person from inner tire of tractor and the machine or keep enough distance between inner tire and obstruction when you make turning,

- driving on shoulder of a road, the side of which is sloped or which have a side ditch, the tractor may tip over. Do not drive on the shoulder.

- If you drive over a high obstacle, the tractor may tip over and you may be injured.

Use ramps to over such an obstacle,

If a person ride the disc mower, he(he) may fall and may be injured.

- If anything is pit on the driven disc mower, it may fall to injure persons around it.

Do not allow a person or a thing on the disc mower.

If the tractor is moved without setting the draw bar in the moving position, it may collide with an obstacle and cause an injury.

When moving the tractor, set draw bar in the moving position.



### CAUTION

- If the tractor is driven without turning off the power for the disc mower, persons around the disc mower may be wound in the rotary parts to injure them.

When driving the tractor, turn off the PTO.

## During working

### When working



### DANGER

- If a person touches the pickup or the discs while the disc mower is operating, he(he) may be wound in and injured.

Stones will fly out once met the rotating discs, thus cause injury.

Do not allow any person approaching the disc mower.



### WARNING

- Do not allow people approach the disc mower while it is working. People may be wounded into the machine and cause injury.

- If the PTO speed exceeds the specified speed of the disc mower, the disc mower may be broken and persons around it may be injured.

Observe the specified revolving speed.

- If you allow a person sit on the disc mower, he may fall and may be injured. If load things on the machine, the fall off things will cause people around it being injured.

Do not take people or things on the disc mower.

If you drive down a slope, the tractor may run away.

Drive slowly on the slope.

- If the gear is shifted on the a downhill road, the tractor may run away.

Select a lower gear before the downhill road and drive down slowly.

- If you take your eyes off the road while driving the tractor, you may fail in avoiding an obstacle or a person to cause an accident.

- If you release the steering wheel of the tractor during travel, the tractor may run away.

Hold the steering wheel tightly while driving.



### CAUTION

- While lifting and loading the discs, if people approaches, injured may be occurred.

Do not let people around to approach the machine.

Hand may be suck in and cause injury if hand was put in from the cover opening.

Do not put hand in.

While working on slopes, if people is too close to the inclined facets, the sideslip and lateral overturned may cause unexpected injury.

Do not too close to inclined facets, slow down working speed.

When adjusting and removing sundries, if the PTO shaft and engine was not stopped, another person may drive it by mistake to cause an accident.

Before touching the disc mower, turn off the PTO shaft and stop the engine and check that the rotary parts and movable parts are stopped.

#### When leaving the tractor



#### WARNING

● If the tractor is left parked on a slope or an uneven ground, it may run away to cause an accident.

Park the tractor on a level and hard place and stop the engine, then apply the parking brake to prevent the tractor from running away.

### After work

#### When cleaning the machine body



#### CAUTION

● If you remove sundries from the rotary parts or removable parts without turning off power, you may be wound in the machine and injured.

Before touching the disc mower, make sure you turn off the PTO and stop the engine and check that the rotary parts and movable parts are stopped.

#### Execution of check after finishing work



#### CAUTION

● If you neglect the check after work, the machine may be left adjusted improperly or broken and you may have a trouble or may be injured when you operate the machine next time. Do check the machine according to the operation manual.

● If you lift the machine using 3-point linkage and checking the machine, a third person may not attended this, the discs loading suddenly may cause accident.

Please firstly lock the 3-point linkage oil-way, and then do checking.

#### STORAGE



#### CAUTION

● If you lay the disc mower in vertical, the disc mower may turnover and people may be injured.

Please lay the disc mower in horizontal for storage in case of turnover.

#### Checking, adjusting and maintaining.



#### CAUTION

● If you dismantle the safety device without loose the controlling rack spring, 3P frame will turnover to the main body, people may be nipped, and injured occurred.

● When the machine is abnormal and being neglected, it may cause injury and accident. Do according to the instruction manual.

● If working at slopes or uneven or soft ground, the shaking tractor and disc mower may cause unexpected accident.

Work on even and hard ground.

● If the PTO and engine was not stop, and another person drive the disc mower, will cause unexpected accident.

Stop the PTO and engine and make sure the rotary part and movable part were stop, then do checking.

● If the machine is in lifting condition, people may be injured if he plunge in or foot plunge in.

Prop the machine with a stand before plunge in.

● The hydraulic connectors and pipes, if loose or damaged, the poured high press hydraulic oil and the sudden fall down disc mower may cause accident.

Mend or change the part.

When detach the connector and pipes, please take out the pressure in the hydraulic hoses.

● The covers take out from the machine when checking and adjusting, if working without installing this cover, people will be roll in by rotating and movable part, and cause injury.

Put back the covers to its original place.

# CONTENTS

## For safe work



Warnings about safety

Before start work

During work

After finishing work

## Attaching with tractor

1、 Name and function of each part

2、 Range of applicable tractors

3、 Assembly parts

1.Un-package

2.List of assembly parts

3.Assembly

4、 Attach with tractor

1. coupling with draw bar

2.tractor output with hydraulic pipes

5、 Attach with coupling

1.checking method of lengths

2.cutting method

3.removable and installation method of safety cover

4.connection of coupling

## Inspection before work

1、 Inspection before starting operation

1.inspect each part of the tractor

2.Inspect of coupling parts

(1) 3-point linkage

(2) inspection of coupling

3.inspect the disc mower itself

2、 Inspection after starting the engine

1.inspect the driving system

2.Inspect the hydraulic system of tractor

3、 List of lubricated parts

## How to work

- 1、 Purpose of disc mower
- 2、 Before work
- 3、 Working types
  - 1.cutting grass
  - 2.Cutting on a slope
- 4、 Adjustment for work
  - 1.Adjust the distance between bottom pin and ground
  - 2.Adjust the height of cutting grass
  - 3.Adjust the spring on the control bar
  - 4.Adjust the grass collecting bar
  - 5.Adjust the lower limit of the grass collecting plate
  - 6.Adjust the protecting device
- 5、 Work procedure
  - 1.cutting grass
  - 2.Cutting grass on a slope
- 6、 Transportation

## After finishing work

- 1、 maintenance after work
- 2、 Separate with the tractor
- 3、 For long time storage

## Inspection and maintenance

- 1、 Inspection and maintenance list
- 2、 Adjustment of each part
  - 1.adjust the safety device
  - 2.Adjust the tension of V-belt
  - 3.Change blades
  - 4.Install the discs

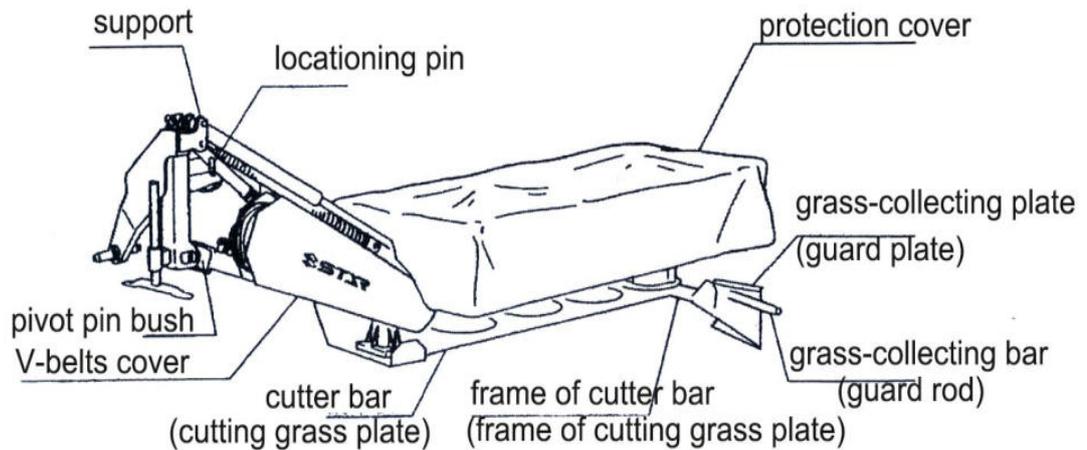
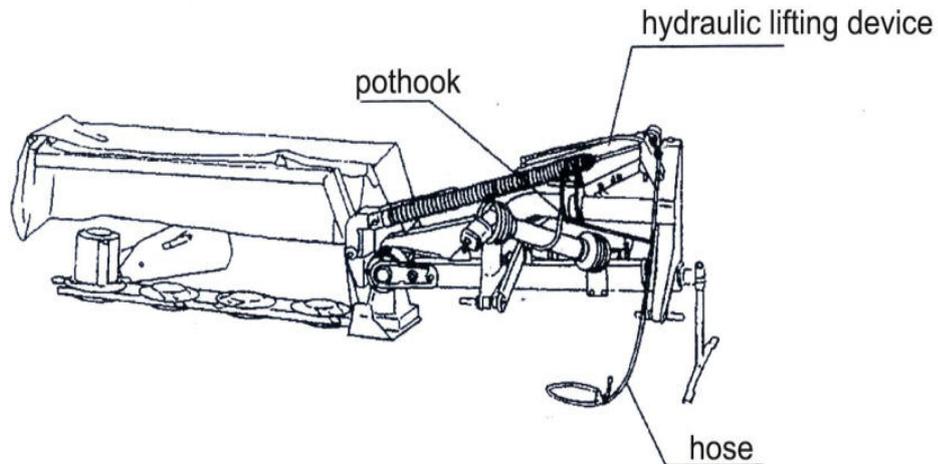
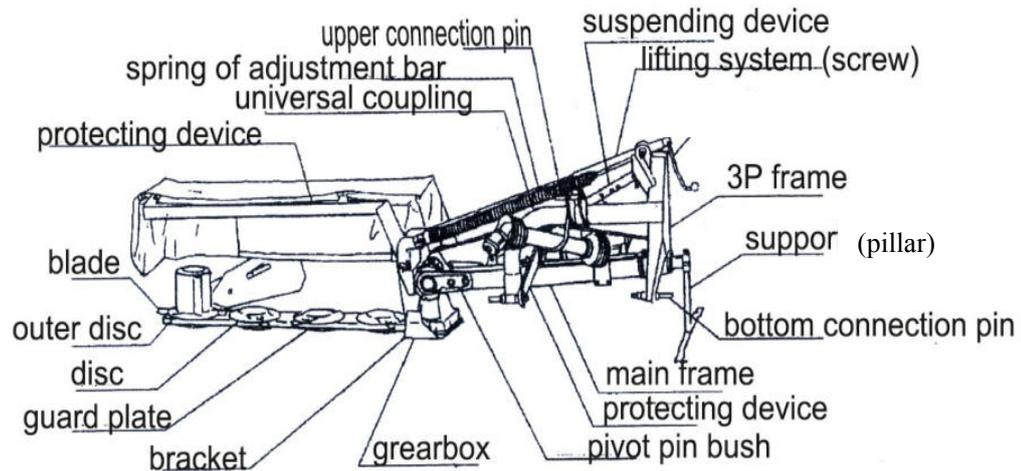
## Remedies against bad condition

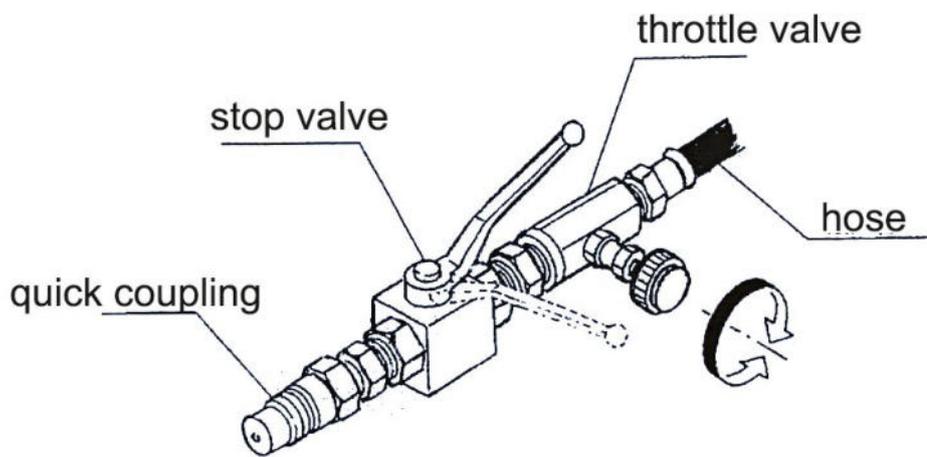
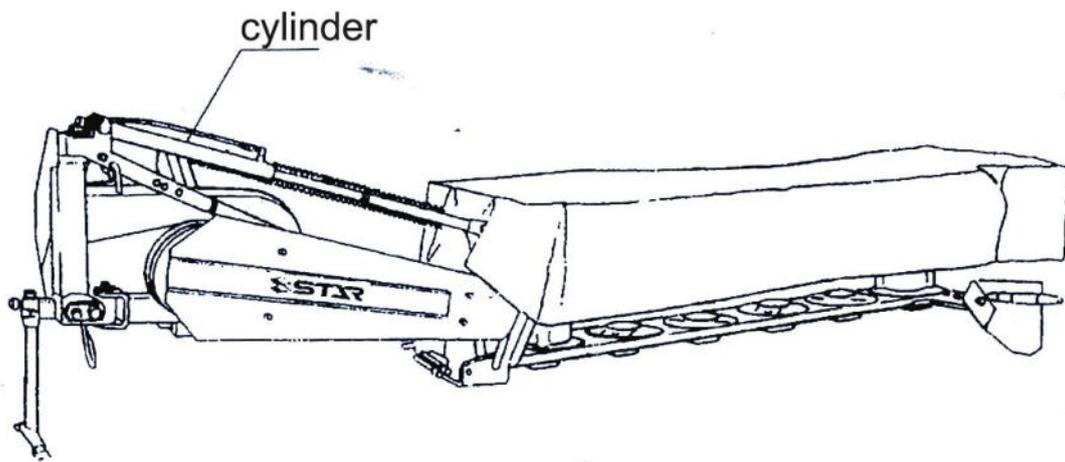
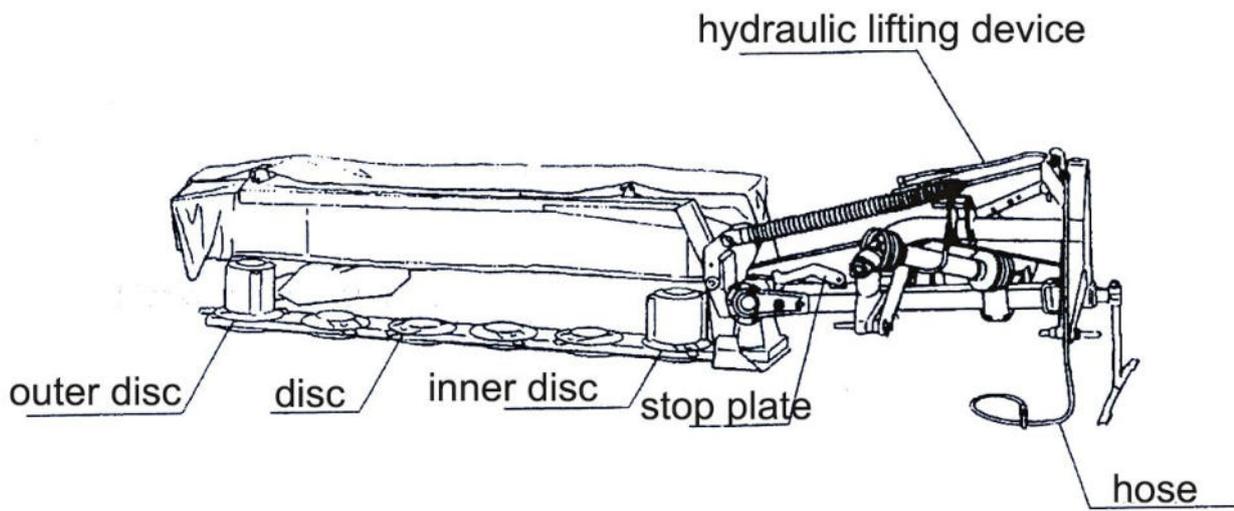
- 1、 List of remedies against bad condition

# 1. Attach to tractor

Install disc mower to the tractor properly for safe work

## 1. Name and function of each part





<MDM2400>

### 1. 3P frame

Connect the tractor and disc mower

### 2. Safety device

When the disc mower started with meeting obstacles or abnormal power during work, the discs will move backward, and avoid the disc mower being damaged.

### 3. Universal coupling

universal coupling with overrunning clutch.

Function of universal coupling with overrunning clutch is to cut the rotary power of the discs while the tractor PTO stops.

### 4. Adjusting bar device ( hydraulic )

The raising and fall of the discs was controlled by hydraulic device.

### 5. Stop valve

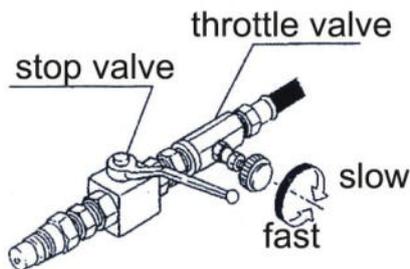
Used to the hydraulic oil circuit of the disc mower, while raising and fall.

### 6. Throttle

Used to adjust the speed of raising and falling of the discs.

### 7. spring of adjustment bar, suspending device

Ease the duty of grounding load of the disc mower, and make the discs suitable to the working condition on the ground.



### 8. Location pin

Switch the suspension device between working and moving.

### 9. Stop plate

Stop the folding discs at middle, make turning easier.

### 10. Grass collecting plate

Adjust the cut grass into a line.

### 11. Protecting device, protecting cover

Prevent the flying stones and soil made by the discs and flying blade.

## 2. Applicable tractor size

This machine is designed to perform by attaching to suitable size of the tractor.

If this machine is attached to unsuitable size of tractor, it will have a possibility of giving bad affection to durability or to operation.

Please prepare a tractor can match this disc mower.

Applicable tractor		HP
RXDM1700	25.7-58.8kw	(35-80HP)
RXDM2500	26.8-73.6kw	(50-100HP)

If you use a tractor smaller than the matched tractor, will cause the disc mower work abnormally because heavy load. In reverse, if you use a tractor bigger than the matched tractor, this machine will damage earlier because of long-time high pressure.

## 3. Assembly

### 1. Open the package

Open the iron crate and take out all the parts.

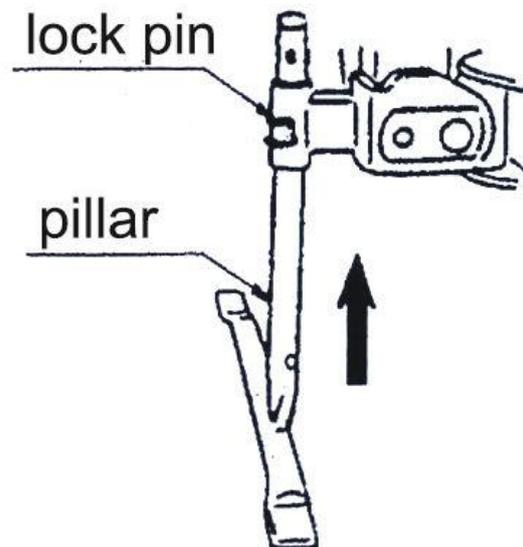
### 2. Details of attached parts

Make sure if all parts delivered in accordance with packing list.

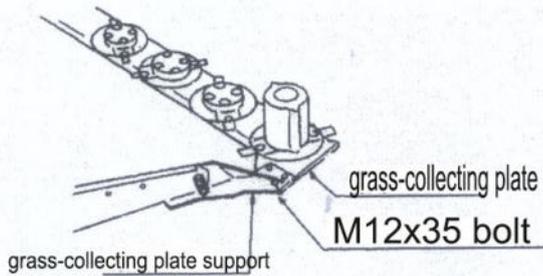
### 3. process of assembling

Refer to the mark numbers on nuts and bolts necessary for assembling in the packing list.

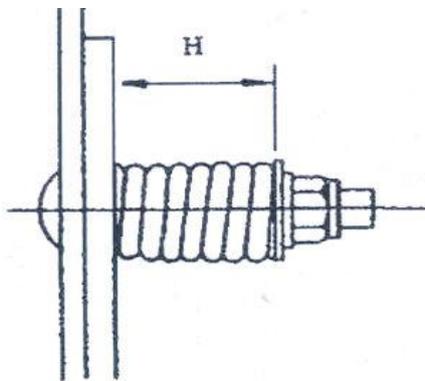
1) Insert the pillar to the hole at the middle of the 3P stand, and insert the lock pin.



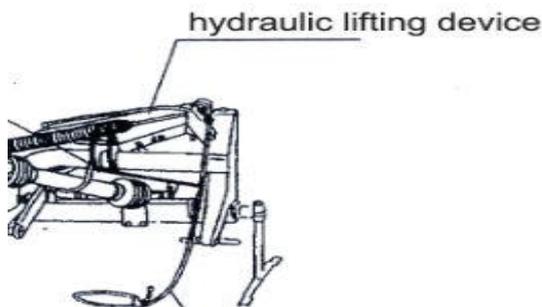
2) Use the square neck bolt, spring, washer, and nut to fix on the grass-collecting plate at the back of the disc mower, so to assemble the grass-collecting plate AS.



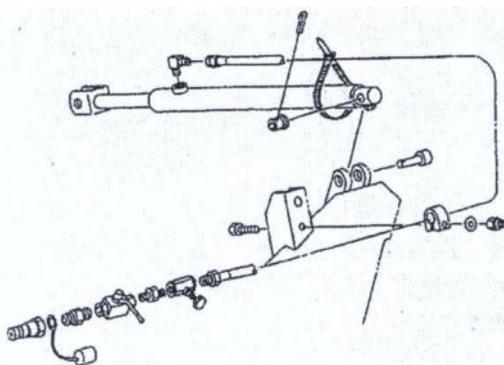
Assemble size of spring : 6x25x48, H=42mm standard.



3) Hydraulic lifting device should be installed on the top of the connecting frame.

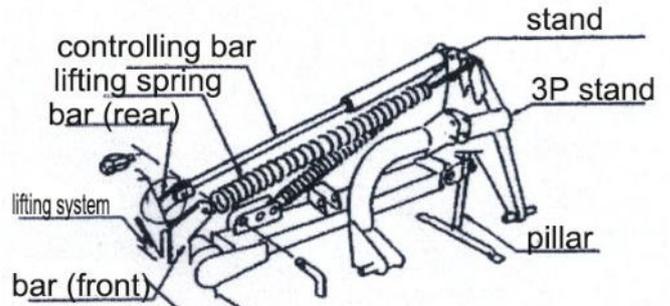


Thrust bearing, and spacer bush install like the above photo.



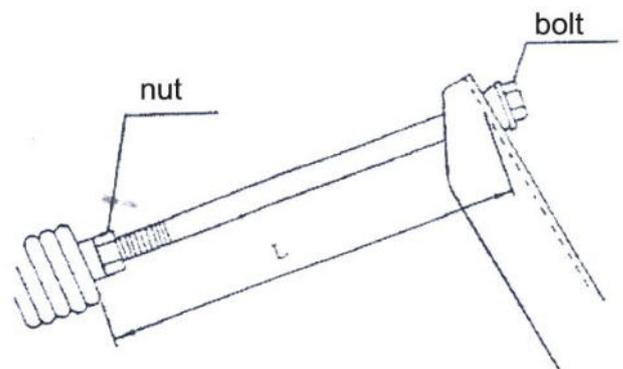
4) The condition of the disc mower on the ground, lift the 3P frame.

The hydraulic lifting device should be installed on the bar(rear).

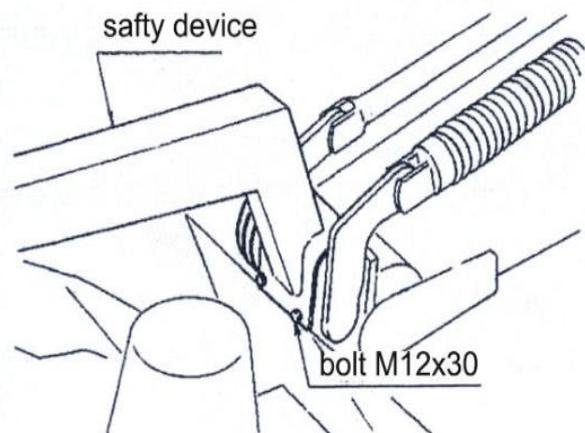


5) After installed the hydraulic lifting device , make sure to insert the pin to the suspension device.

6) Install lifting spring on the 3P frame and controlling bar( front). Install size: DRM=270, ( the length from the install place of 3P frame to the lifting spring).



7) Install safty protection stand on the jacking stand.



#### 4. ATTACH TO THE TRACTOR

##### 1. Attach 3P



● Bystanders must keep safely distance when the machine is attached to the tractor or detached from the tractor.



● While attaching the disc mower to the tractor on uneven ground, slopes, or soft ground, the tractor will move by itself, injury maybe happened. Attach the machine to the tractor or detach the machine from the tractor on flat and solid ground.

Lower link pin species:

DRM1700( standard): lower link pin I

DRM1700 ( hydraulic): lower link pin II

DRM2400 : lower link pin II

When the lower link coupling is not the same, use the lower link coupling bush, or change lower link coupling. While changing lower link coupling, loose the spring on control bar, and take out safety device.



If take out the safety device without loose the spring on control bar, 3P frame will lean to the main frame, people may caught and accident occurred.

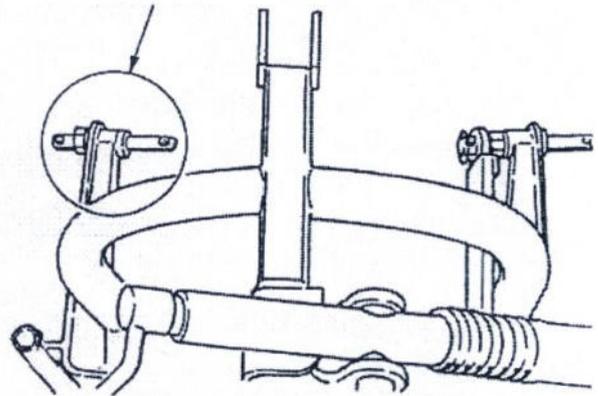
(1) start engine of the tractor and drive a tractor to backward until tips of lower link will be aligned. Stop engine and apply parking brake.

(2) insert left side of lower link pin into the hole of left lower link pin.

Insert right side of lower link by same procedure above.

(3) turn adjusting screw to get the same height of left and right lower links from the ground.

(4) If the width of lower link is small, adjust the link of left side( look from backward) internal.

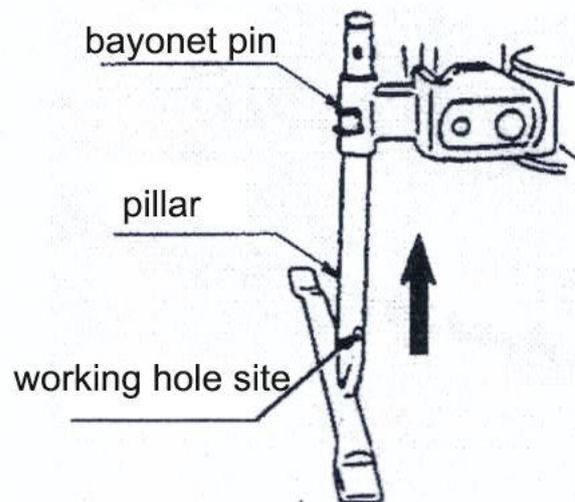


(5) Lift the 3P machine by 3P connection to let the 3P frame upright rise choose the position of main link pin then connect and fix.

(6) Start engine of the tractor and operate the oil pressure handle to lift the machine then stop the engine.

(7) Align center of PIC shaft and PTO shaft by check chains and then tighten check chains to protect the machine swing.

(8) Move the pillar upward, and lock by bayonet pin.

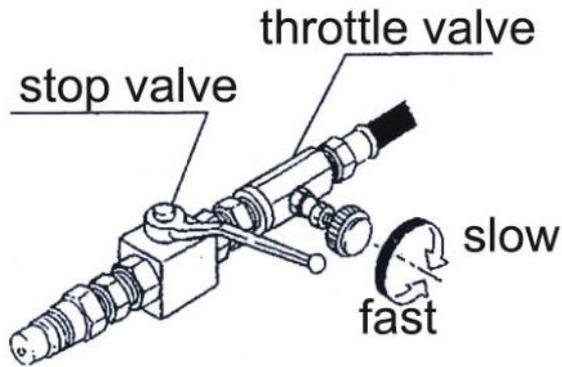


(9) 3P device down, put the machine down.

## 2. Attaching to tractor hydraulic output

This machine use one-way cylinder, quick coupling size is 1/2 inch.

There is also a throttle valve use to adjust the disc lifting speed, and a stop valve to control the hydraulic circuit.



## 5. ATTACHMENT OF UNIVERSAL JOINT



**DANGER**

- Never use universal joint with damaged safety cover or without safety cover.
- Inspect damage is found out on universal joint,
- Stop the tractor engine and disengage PTO clutch when universal joint is attached.
- Fix chains of safety cover to the tractor and stationery part of the machine not to rotate safety cover.



**CAUTION**

- If overlap length between inner and outer tube of universal joint is less than 100mm in extended position, it will be a cause of universal joint breakage.
  - If the space between inner and outer tube is less than 25mm in retracted position, it will be a cause of damage.
- By pushing to each other when the machine is lifted.

## 1. Universal joint length check

- (1) Make a mark of the end of the outer safety cover at the most retract position on the inner safety cover before installing the power joint.
- (2) Pull out other tube of universal joint from inner tube of universal joint.
- (3) Lift up the machine and stop the lifting at the closest distance PTO shaft and PIC shaft.
- (4) Push cramp pin of yoke and insert the yoke into PTO shaft and push on until cramp pin comes out by spring force.
- (5) Insert the other yoke into PIC shaft same procedure as mentioned above.
- (6) Put one universal joint on to one another universal joint.

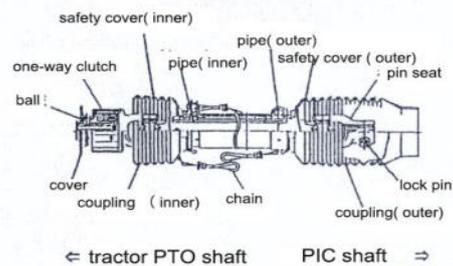
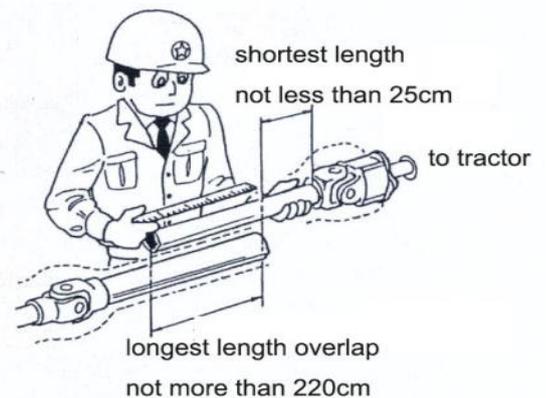
Mark lapping end position of outer safety cover and inner safety cover and mark at further 25mm inside from lapping position.

Cut off safety cover at further 25mm position.

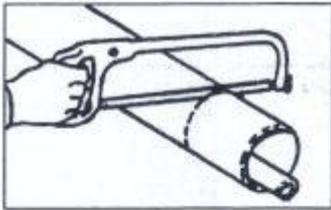
### ● IMPORTANT

While safety device work, the distance between PTO and PIC shaft is 120mm, do not cut over.

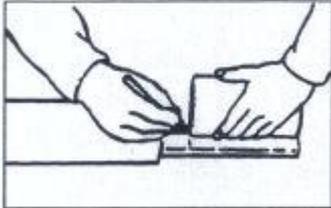
- (7) lift the machine and stop lifting at the most separated position between PTO shaft and PIC shaft.
- (8) Put one safety cover on to one another cover.
- (9) If lapping length is less than 100mm, replace it to longer universal joint.



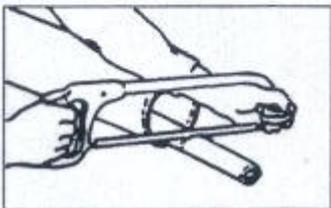
## 2, METHOD OF CUTTING



(1) cut off excess length of inner and outer safety cover.



(2) Mark on inner and outer pipe the same length of cut off safety cover from the end of inner and outer tube.



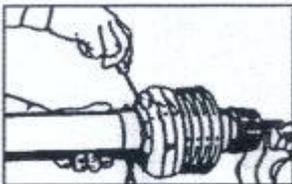
(3) Before cutting off, put rag into between safety cover and pipe not to come into sawdust.

Cut off excess length of tube by metal saw.

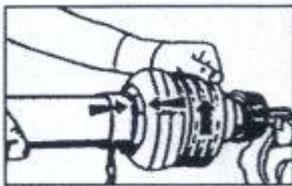
(4) file cut ends and clean the surface.

Apply grease on tube and insert inner tube into outer tube.

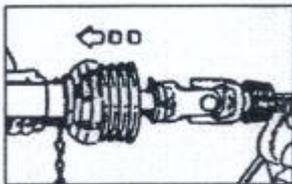
## 3. METHOD OF OUTER SAFETY COVER REMOVAL



(1) Disassemble procedure of cover  
A. Take out fix screw



B. Revolve the cover to the position of release



C. Pull out safe cover from tube

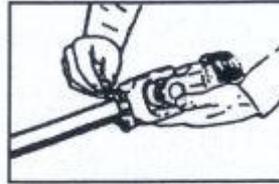


D. Take out the slide loop

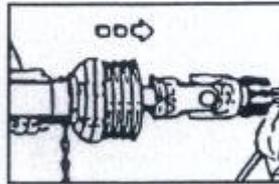
## (2) assemble procedure of cover



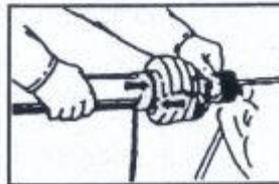
A. Apply oil to slide loop channel and tube inside



B. Open the cut mouth of slide loop and imbed it to the channel of tube



C. Fit the safety cover



D. Screw the cover tightly.

E. Fix the position with fix screw

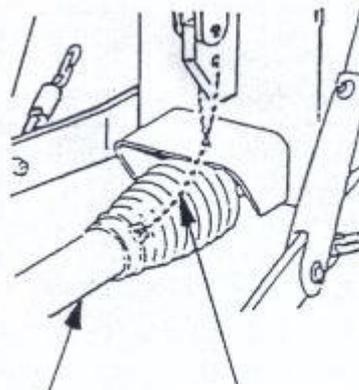
## 4. CONNECTION OF UNIVERSAL JOINT

(1) connection to the machine

Push cramp pin of yoke and insert yoke into PIC shaft and push on until cramp pin comes out by spring force.

(2) Connecting to the tractor

Push cramp pin of yoke and insert the yoke into PTO shaft and push on until cramp pin comes out by spring force.



Safety cover

chain

## 2. INSPECTION BEFORE OPERATEION

### 1、 Inspection before operation

#### 1. Inspection of the tractor parts

Inspect the tractor parts in accordance with operation manual of the tractor

#### 2. Inspection of connecting parts

(1) inspection of 3P connecting parts

① make sure that locking pin is inserted into the hole of lower link pin.

② Make sure that check chains of the tractor are sticked firmly.

③ If any problem is found in connection, remedy the problem according to the instruction"1-4 attachment to tractor ‘.

(2) inspection of universal joint

① make sure that cramp pins stay in the groove of PTO shaft and PIC shaft

② Make sure that chain of safety cover has excess slackness

③ Check the damage on safety cover of universal joint

④ If any problem is found on universal joint, remedy the problem according to the instruction"1-5 attachment of universal joint".

(3) inspection of hydraulic system

① make sure the quick connection of hydraulic system is connected.

② Check the lockage of stop valve, control bar condition, disc lifting is on close state.

③ Whether the hydraulic pipe is excess and sag, whether there is moderate remain.

④ If any problem is found, remedy the problem according to the instruction"1-4-2"

#### 3. Inspection of the machine

(1) check looseness of nylon nuts and bolts

Tighten loosen nuts and bolts firmly

(2) check looseness of nylon nut

Tighten loosen nuts firmly

(3) check the length of pick up tension if the length is improper, adjust the length in accordance with the instruction of "5-2-2"

(4) Check whether there is oil leak of hydraulic system

Mend the leaking point or change part if problem occurred.

(5) check looseness of nuts and bolts.

Tighten loosen nuts and bolts firmly.

(6) check whether there are enough oil and grease.

If it is not enough, add oil in accordance with the instruction"2-3"

### 2. INSPECTION IN TRACTOR ENGINE RUNNING



1. If the machine started before cut down the PTO shaft, it will cause injury to the standbys.

Stop the PTO shaft then start the engine.

2. When starting the engine, injury may be occurred by the lifting of the machine if didn't descend the disc mower.

#### 1. CHECKING DRIVING SYSTEM

Idling first if the machine is new or use after long time storage.

1) start the tractor engine, run in low speed and attach to the PTO shaft.

2) Keep the tractor engine speed at 1000rpm, about 5-6 minutes, check whether there is abnormal.

3) If no abnormal, change PTO running speed to 500-540 rpm, idling about 5 minutes.

If any problem, refer to "6-1".

4) check whether the one-way clutch of the coupling works when the tractor PTO stops, there is no problem when stop running and make sound at the same time.

#### 2. CHECK TRACTOR HYDRAULIC SYSTEM

Operate tractor hydraulic to lift 3P linkage, no problem if there is no descend after lifting.

If there is problem, please contact with the tractor seller.

#### 3. CHECK DISC MOWER HYDRAULIC SYSTEM

1) please fold the front part of the safety device.

#### CAUTION WHEN OPERATING

If fold the discs without fold the safety device, the safety device will be damaged in touching the tractor tires and cabin. Fold the safety device, then lift the discs.

2) Operate the tractor hydraulic power, fold the disc mower into half way, close the stop valve, and tractor hydraulic control bar go back to the original position, it will be normal if the discs don't descend.

3) check the lifting speed of discs.

If too fast, turn the dial of throttle valve to right to reduce lifting speed.

If problem occurred, mend oil leak point or change parts.

### 3. LUBRICATION SPOTS TABLE

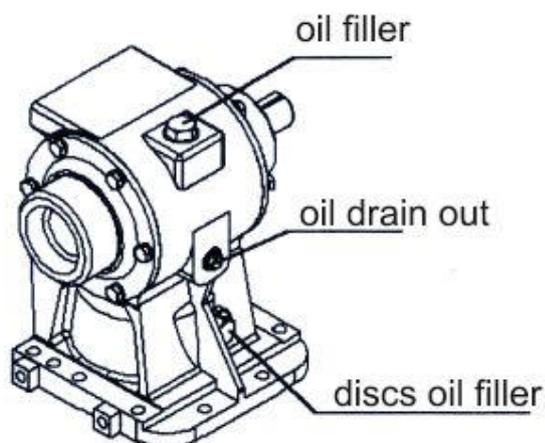
- ▲ Apply fresh and clean oil and grease the machine.
- ▲ Apply grease to a grease nipple until oil grease come out.
- ▲ After finishing production, every part was lubricated, please check before using.

#### 1. Gear box

Replace oil at the first 50 hours or 30ha of new machine, then replace all spots in each 50 hours.

Replace oil from every 300 hours or every season since the second time.

When replacing oil, fold the discs firstly.

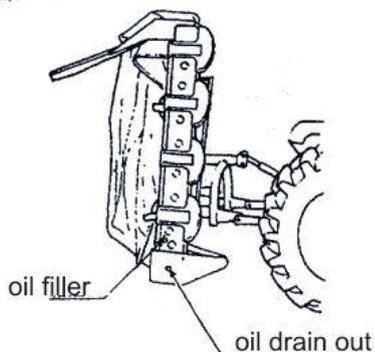


#### 2. Cutter bar

Replace oil at the first 50 hours or 30 ha.

Replace oil from every 300hours or every season since the second time.

Oil filler is on the front part of the bottom cutter bar, oil drain out is on the downside of disc bottom.



Use measuring cup to measure oil, and add oil in fix quantity.

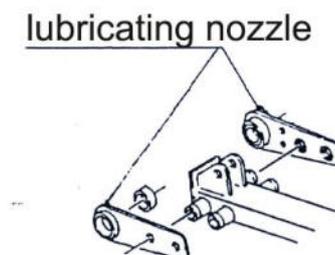
When add oil, the discs are in vertical( fold) states.

In order to let the air out of the gear box, add oil slowly when the oil nearby the oil filler.

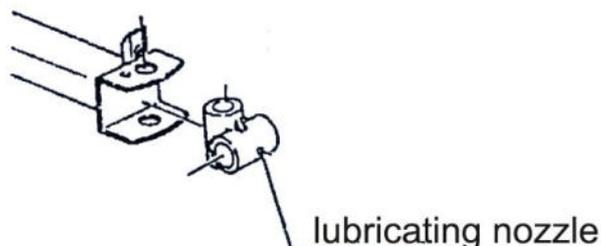
Check the scale of oil to the oil filler after filling oil for 5 minutes.

Check oil in each 50 hours.

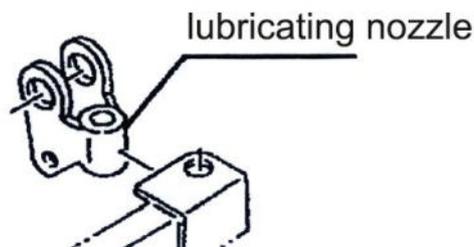
#### 5. Pivot pin bush



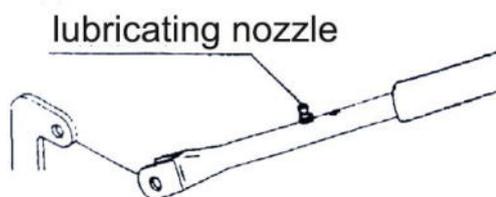
#### 7. Pivot shaft bush



#### 6. Stand



#### 4. Guide sleeve



Please add lubricating oil when the cutter is folding.

8. Universal coupling

NO.	Lubrication points	point	Kind of lubrication	Changing time	Q'ty	remarks	
1	Gear box	1	Gear oil; SAE90 API GL-5	300 hours or 1 season	0.4L	Oil filler	
2	discs	1			1.7L( DRM1700)		
3	Safety bar	1	Grease:No.2	Every use	2.4L(DRM2400)	Lubricating nozzle(DRM1700)	
4	Pivot pin bush	2			Proper Q'ty	Lubriating nozzle	
5	Pivot shaft bush	1					
6	stand	1					
7	Lifting arm;B	1					Lubricating nozzle(DRM1700)
8	Universal coupling	-					Lubricating nozzle, paint inner or outer wall

CAUTION WHEN USING

Avoid adding oil to the safety bar of DRM2400.

## 3 Working methods

### 1. product purpose

1. disc mower is used for harvest forage in pasture, please don't use it in other ways.
2. After rain, when it's too wet or in humidity areas, please don't use it.

### 2. Before working

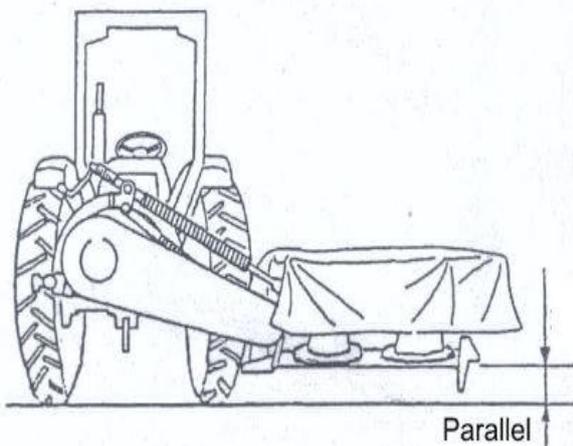
1. when it move, please fold arbor to moving position.
- the mowing position is [3-6]
2. the change of working position.



CAUTION

When lift discs, someone will be hurt if he is too close to the discs

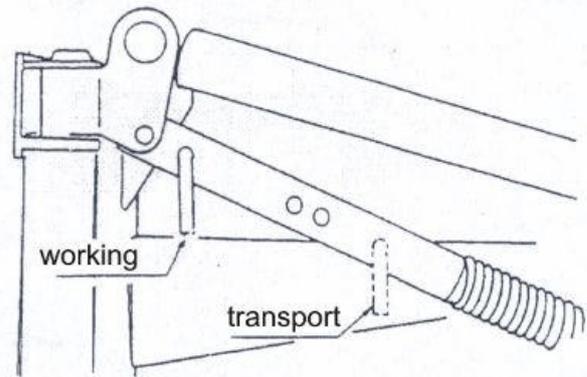
- (1) when arriving pasture, please connect it with 3 point hitch, and adjust the plate to the working position.
- Open the shut-off valve, operate hydraulic control level of tractor, open discs.



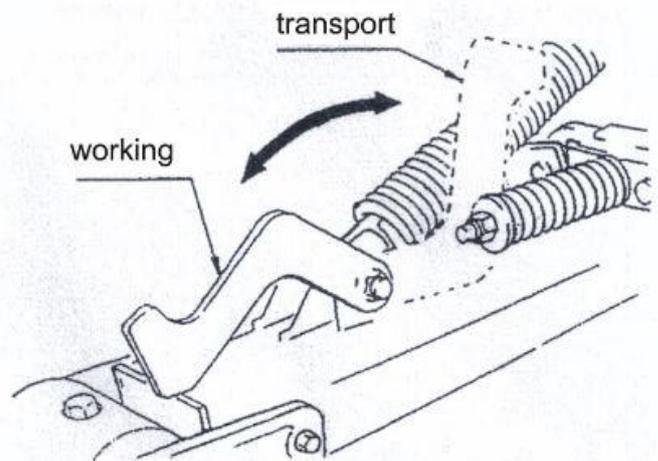
- (2) adjust the cutter bar to the horizontal position from behind
- (3) Adjust the locking pin to the hole in the top

#### Operation attention

Locking pin is in the lower hole, the body will not suit the uneven ground and be damaged by excessive force.



(4) stopper plate to the working position.



(5) Spread protection.

### 3. Working types

#### 1. cutting working

When cutting working, keep horizontal position form arbor.

#### 2. harvest operation in inclined surface.

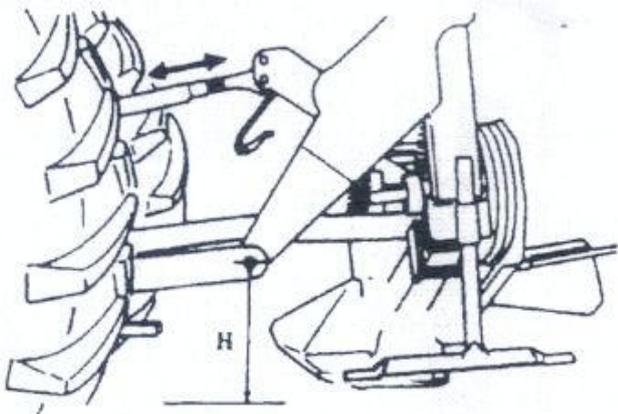
Working in Inclined surface, such as dams, change the mower from horizontal into up or down.

### 4. Adjusting when working

Adjust the height H of the lower connecting pin from the ground.

(1) when working, the height of lower connecting pin is according to the below standard by adjusting the a point hitch.

Height for the hitch 520mm (H)



(2) Cutting in inclined surface, put the discs plate in the inclined surface first, adjust the height of lower connecting pin to make the disc plate match with the inclined surface.

#### 2. adjusting the cutting height

Adjusting the cutting height by top link.

Make it lower by shorten top link, higher by elongate top link.

Usually the cutter Arbor anteversion angle is 3-4°.

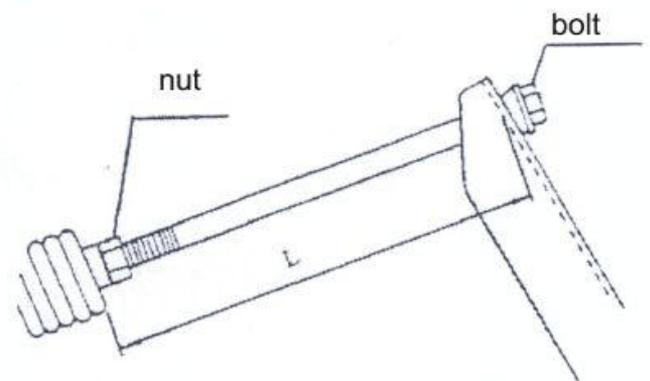
#### 3. Adjusting spring on adjusting bar

(1) It's easy to adjust the cutter folding situation by adjusting bolts.

standard installing size L as below

Please tight the locknut after adjusting.

L=270mm



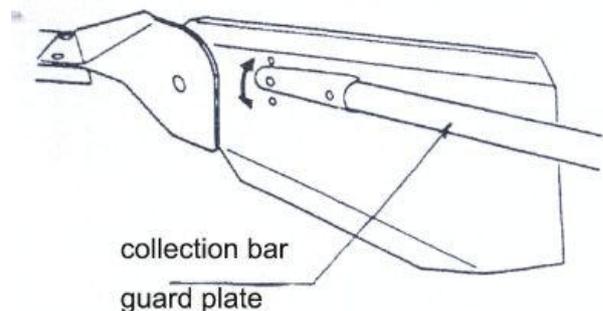
(2) on the inclined surface, such as dams, cutting plate change from horizontal to be above 30° and working towards lower place, the spring should be 50-100mm longer than the above standard.

Tight the locknut after adjusting.

#### 4. How to adjust collecting bar.

Adjusting the collection bar according to grass situation by three parts.

Adjust by grass pasture density, use the top hole when large quantity.

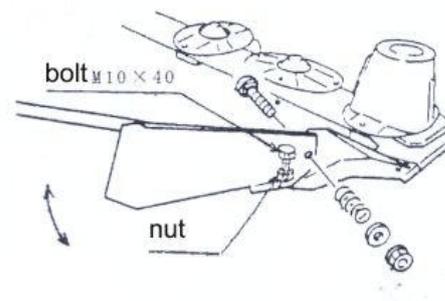


#### 4. Adjust to the minimum of collecting plate

Adjusting the minimum of collecting plate by bolts M10\*40

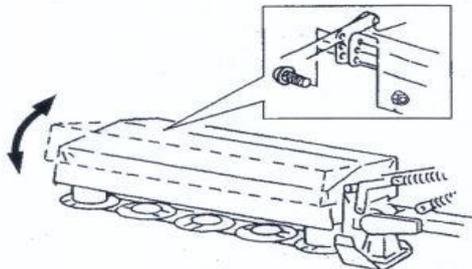
Adjusting by grass collecting condition.

Put the collecting plate lower when there are missing grass, then tight the locknut.



## 6. Adjusting protecting device

When working in the pasture with rocks and uneven ground, to prevent soil and stones being splashed, please adjust the protecting device from top to bottom.



### 5 Operating main points



When working or turning, touching discs will be hurt. Besides, stones splashing from discs will also hurt someone.

Keep away from people around.

Don't operate while the safety cover was open.



When working, somebody will be rolled in and cause heavy casualties if somebody is close to the mowers. Keep away from people around by.

If the PTO rotation speed is more than the pointed speed, the mower will be damaged and cause accident. Obey the pointed PTO speed.

Keep low speed when working in inclined ground.

Pay attention to the front and around.



When lifting the discs up and down, if someone close to the mower, someone will be hurt. Keep people away from the mower.

If put hands to the open position of cover, hands will be rolled in the rotary position and get hurt.

Please don't put hands into the cover.

When adjusting or checking the machine, stop PTO and the engine, and make sure the rotary and movable position completely stop.

## 1. Cutting

When connecting PTO, keep the engine of tractor in low speed and connecting slowly.

(1) the standard rotary speed is 540-600 rpm, please keep this speed.

### Operation precautions

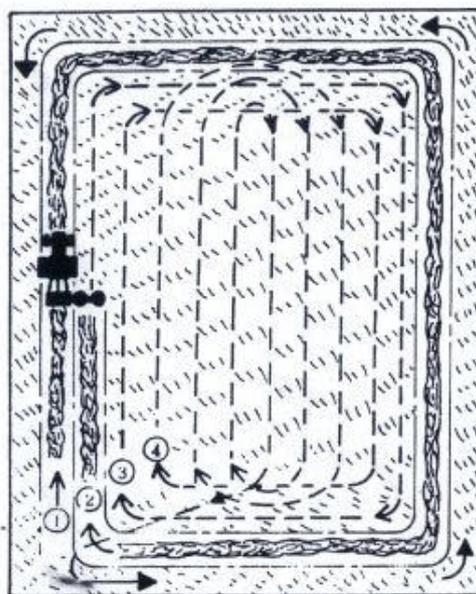
If the locking pin is in the underside hole, mower will not suit to the uneven ground, and the mower will be damaged by excessive force.

When running a tractor with a clutch on PTO, keep 3-5m Run-up distance, and work after the PTO is running in standard speed.

(2) working speed is 6-10km/h, choose speed according to the situation.

(3) Working according to the shape of pasture.

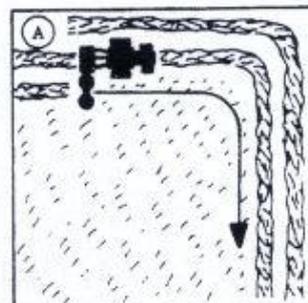
Usually from the left to the right, at last, the outermost is from the right to the left.



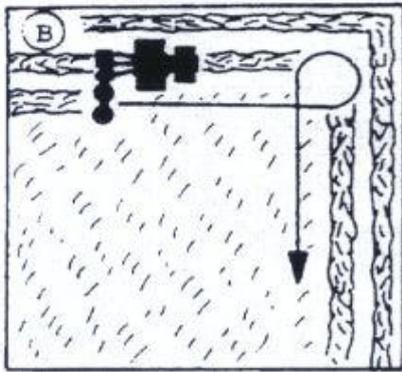
The rotary way in the corner has 3 ways as showing in the following picture.

According to your driving level to choose.

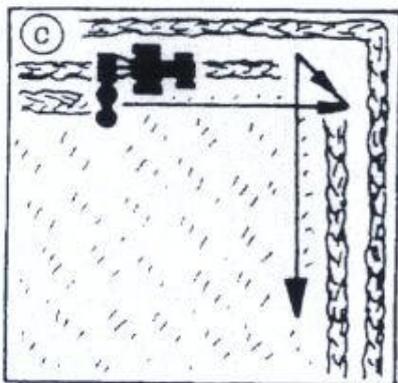
Turn around at the corner



Direct cycle



Turn back to change direction



(4) rotation in peripheral of pasture.

① lift 3 point hitch

Operation precaution

Don't excessively rise the machine

② equipped with hydraulic device, operate the external hydraulic control level, rise the discs horizontally.

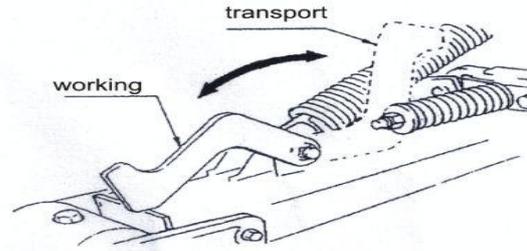
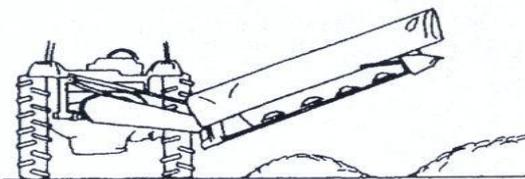
According to the function of stopper plate, the discs cannot be lift at the right position.

Operation precaution

When turn in the ridge, and fold the discs vertically, if the disc is spinning, it will be very dangerous to close the tractor. Besides, the protection device will be damaged if it hits the tractor cab.

Please don't fold the discs vertically.

The position of the lifting discs, just keep away the grasses.



(5) When you cut in the periphery of pasture, operate in low speed, pay attention to the uneven ground and obstacles.

(6) If there are unusual vibration and sound during working:

- ① stop working at once, stop PTO, and stop engine
- ② check the reason after completely stop rotary and movable position, work again after problem solved.

If safety device works while working:

- ① stop working at once, retreat tractor, restore safe device, stop PTO, stop engine.
- ② check the reason after completely stop rotary and movable position, work again after problem solved.

Operation precaution

If you keep working while safety device starts, the working quality will be bad and mower will be damaged.

2. cutting in inclined ground

When cutting in inclined ground, please working as the following procedures:

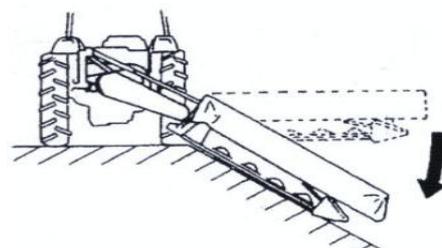
Lift the tractor 3 point hitch vertically, choose the upper linkage hole on the 3P frame.

Adjust the proofreading chain, make the mower shift to the right (look from the back side).

Make the mower towards adown. Adjust the distance of bottom connecting pin and the ground, to make the discs matched with inclined ground.

The discs inclined angle different from the height of bottom linking pin to the ground.

The angle of cutter bar Max 30-40° underneath horizontally.





### CAUTION

When cutting in inclined ground, if the discs are too close to the ground, the tractor's sideslip and lateral turnover, will cause unexpected accident.  
Do not too close to the inclined ground and lower working speed.

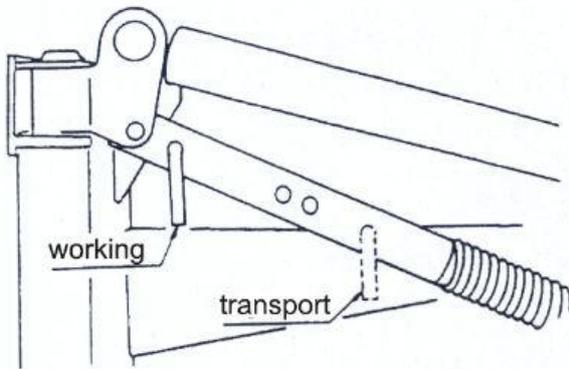
## 6 Transport



### WARNING

Please fold knife arbor before mowing the machine.  
If not, touching obstacle will cause accident.  
Attention  
Some body will be involved in and cause injury if the machine is still working.  
Stop PTO before moving.

1. Lift the 3 point linkage, rise the mower, the support pin insert to the following hole.

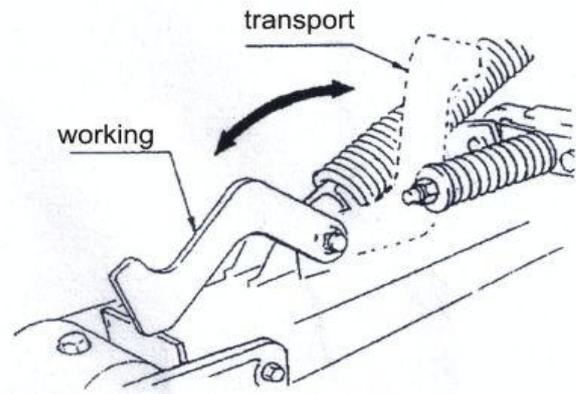


2. Folding the first half of protect cover to the rear.

#### Attention in use

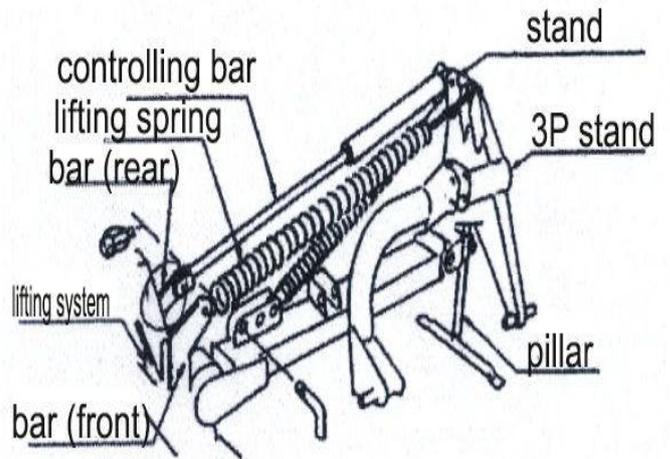
If fold the mower without folding the protect cover to the rear, the safety cover will be damaged.  
Fold the protect cover first, then fold the discs plate.

3. Put the stopper plate to the transport position.



3. folding discs

If the machine have hydraulic device, use the tractor hydraulic joystick to fold discs plate, and stop stop valve, then fix main frame and lift frame by pin.



5. Move after confirming the tractor 3 Point linkage was prevented from decline.

## 4 After work

In order to extend service life, please operate as following.

### 1. Arrangement after working



CAUTION

If cleaning adhesion objects in rotary parts or movable parts without cutting off power, someone will be involved and get hurt.

Cut off PTO, stop engine, make sure rotary parts and movable parts were stopped.

1. Remove grass on the mower, especially in rotary parts, seals, and bearings.
2. Check whether there are missing, losing and damaged bolts, nuts, pins. Fix the nuts or replace the parts if there is abnormal.
3. Blades are easy wearing parts, prepare substitute parts in advance.
4. The exposed positions without painting such as PTO shaft, PIC shaft, and couplings, paint Lubricating oil to prevent rusting.

### 2. Detach with tractor



CAUTION

When detaching tractor and mower in inclined ground or uneven ground or soft ground, tractor move suddenly will cause accident.

Please detach on even and hard ground.

1. Operate in opposite direction with [1 to the tractor connection].
2. Detach and store with tractor
  - (1) discs in horizontal
    - ① Pillar mounting position. Fix at the middle hole by pin.
    - ② The pin of hitch device. Insert to the working position.



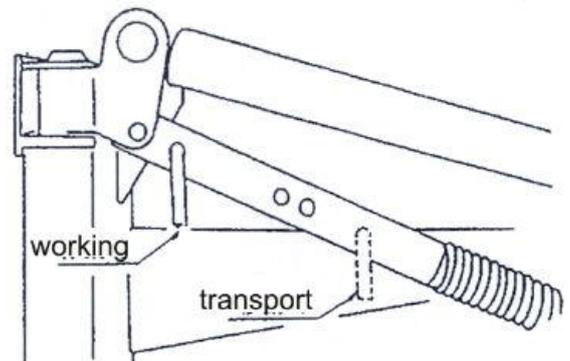
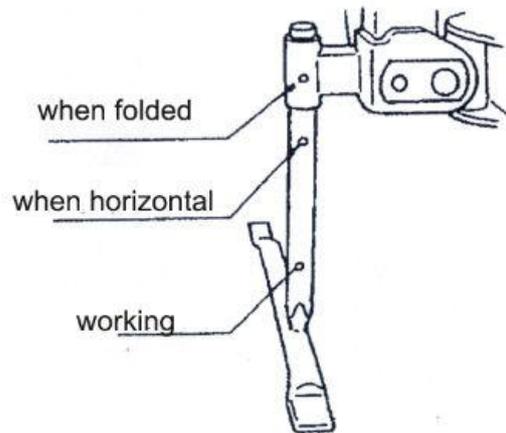
CAUTION

If store the disc mower with discs vertically, the turn-over discs will cause injury.

Please store the machine with discs horizontally

(2) The discs in folded position

- ① Pillar installing position. Fix at the hole bayonet lock pin from the above position.
- ② Suspension device pin. Insert to the moving position.



3. Turn off the stop valve and get rid of the pressure in the quick connector before take off the quick connector from tractor hydraulic output.

Tie up hydraulic soft tubes and hang on the 3P frame.

### Operation precaution

While remove the quick connector from tractor hydraulic output with stop valve open, it will be difficult to connect the next time, because there is pressure in the quick connector

Act after turn off the stop valve, remove the pressure in quick connector.

4. After remove from tractor, keep Universal coupling in the hook of 3P frame.

### 3 Storage in out of season



CAUTION

If store the disc mower with discs vertically, the turn-over discs will cause injury.

Please store the machine with discs horizontally

- 1.clean all parts of mowers
- 2.Replace the consumed and damaged parts in time.
- 3.Add oil according to[2-3].  
Apply oil to rotating, pivoting parts and sliding parts such as clump pin of power joint.  
Apply grease on PTO shaft, PIC shaft and spline holes of power joint yole.
- 4.release V-belt.
5. Paint or apply oil on damaged surface of parts to prevent from the rust.
- 6.Store the machine in well ventilating indoor.

7.If there is no choice but to keep the machine in out dorr, cover the machine with a plastic sheet.

Precaution in use

7.If there is no choice but to keep the machine in out dorr, cover the machine with a plastic sheet.

Precaution in use

Fold discs plate for storage,please do it in flat and hard ground.

Besides,take method to prevent it being turn-over.

## 5 Inspection and Maintenance

Inspection and maintenance should be done regualrly to obtain good condition.

Inspoct and maintain each parts in accordance with inspection and maintenance table to prevent from accident by poor maintenance.



CAUTION

- Lock th hydraulic circuit of tractor when the machine is lifted up for maintenance or inspection tp prevent the machine being fall down.
- Inspection or maintenance should be done on solid ground or concrete.  
Never inspect of main on slant, uneven, or soft ground.
- Stop PTO and engine and make sure the rotaryand movable parts are stopped.  
If inspect the rotary and movable parts without stop the engine, people will be rolled in and cause accident.

- If hydraulic connector and soft tubes is slack or damaged,high pressure oil spray,and mower decline quickly,someone will be hurt.please repair and change parts.

Please release the pressure in hydraulic tubes,then remove hydraulic connector and soft tubes.

- Please put the covers to the original position after inspection and maintenance.if not,someone will get rolled in the rotary and movable parts and cause accident.

Inspection and maintenance table

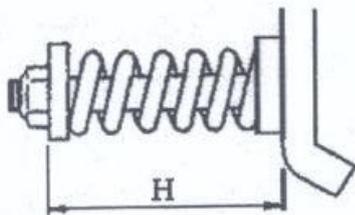
hours	Items for checking	remedy
After initial 1 hour	Looseness of all bolts and nuts	tighting
After initial 2-3 hour	V-belts tightness	According to [5-2-2 V-belts tightness adjustment]
After initial 50 hour or 30ha	Gear box oil Disc plate oil	According to [2-3 refuel list] change
Before operation  After operation	Cleaning up Wearing of blades Looseness of bolts and nylon-nuts Looseness of nylon-nuts on the discs Oil spill of gear box and discs plate V-belts tightness Oil leaking of oil pressure system Spring size of safety device Looseness of bolts and nuts and pins Drive device noisy, abnormal vibration, abnormal heat Damage of coupling, cover, and chain Refuel in rotary parts and movable parts.	According to [5-2-3 blades change Tight, if worn, please change Tighting Change sealing parts In accordance [5-2-2 V-belts tightness ] Amend from the end, tighting or amending According to [5-2-1 adjust safety device] Tighting or change parts According to [6-1 adverse treatment list]  Replace According to [2-3 refuel list] change oil
Out of season	Gear box oil/Discs plate oil Broken part Wearing parts such as blades Cleaning up each parts Damage of painting Worn pivoting parts or pins	According to [2-3 refuel list] change oil Fix or change Change as soon as possible  Printing or applying oil Replacement to new ones

All parts adjustment

1. safety device adjustment

Safety device will protect the mower if it hits obstacles while working.

Spring size of safety device, H=144mm



Precaution in use

When it's available, roll in 1-2mm according to the pasture situation.

If the spring is too tight, when the mower hits obstacles, the spring will not work and the mower will be damaged.

Don't press spring too tight.

## 2.V-belts tightness adjustment

After working a while,V-belts will be loose, please adjust it according to the following:

### Precaution in use

Because of new machine, please adjust V-belts after using 2-3 hours.

If we don't care to adjust tight of belts, the number of rotary of discs can't be guaranteed, and effect the cutting results, and the life of belts will be shorter.

Please keep the tightness of V-belts.

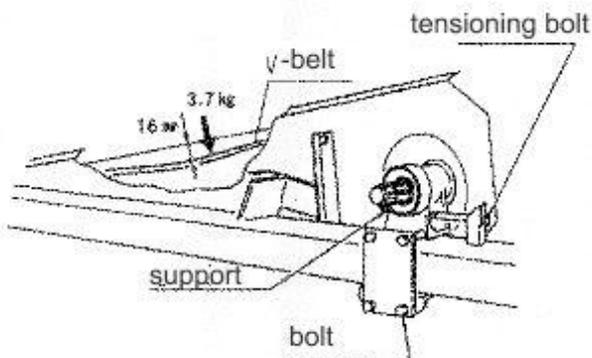
Replace a set of complete belts.

(1)loose four bolts and nuts

(2)Remove the cover of inspection hole, adjust by tensioning bolt.

(3)When we put 3.7kgs weight in the middle of belts,the belts sag 16mm.it show the tightness of V-belts is right.

(4)After adjustment,fix the bolts and nuts again.



## 3. change blades

(1)every disc has two blades.

If worn,please replace or sharpen as soon as possible.

Please keep nylon screw clean,fix discs in angle material,loose nylon screw.

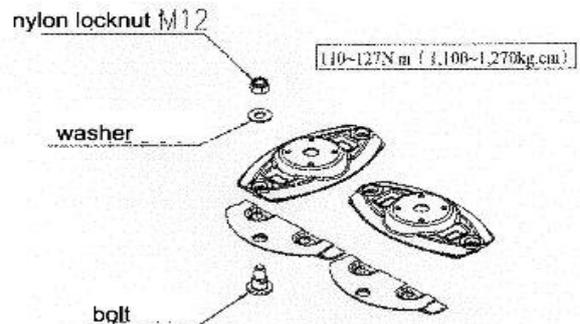
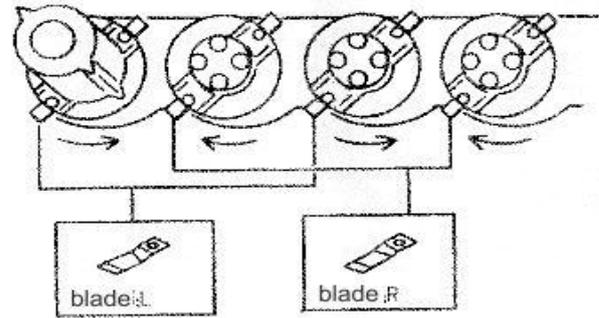
Tight screws and nuts of blades,make discs reasonable fix.

Tightening torque to 110~127N\*m,and fix.

If nuts, bolts and washer of loaded knife is worn, please change in time.

### Precaution in use

The blade can rotate left and right. Confirm the rotating direction first, then change it.



## 4.change discs

When replace discs, please keep 90 degrees with the next disc's knives.

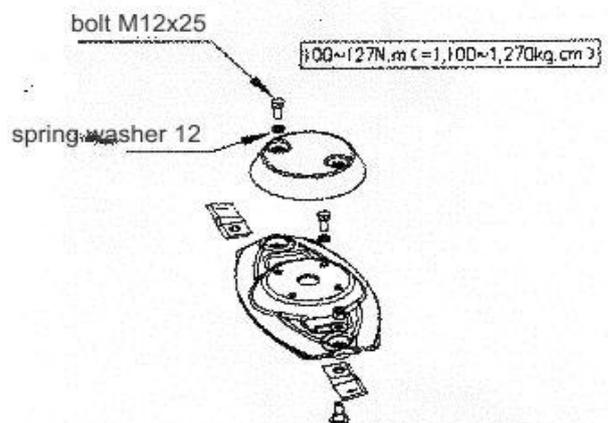
Align splines and gears.

### Precaution in use

The blades may impact each other if the disc are not in 90 degrees with the next disc' knives.

Please install knives correctly.

Install bolts M12x15,clip in angle material when unload, install the discs, to preserve discs move. Tight M12\*25 in 110~127N\*m(=1,100~1,270kg\*cm) tightening torque.



## 6 Trouble shooting

Adjust the machine in accordance with trouble shooting table if it does not work well.



**CAUTION**

1. Lock the hydraulic circuit of tractor when the machine is lifted up for maintenance or inspection to prevent from machine's falling down.
2. Inspection or maintenance should be done on solid ground or concrete.  
Never inspect or maintain on slant, uneven, or soft ground.
3. Stop the tractor engine, disengage PTO and make sure all moving parts stop when inspection or adjustment is done.
4. When someone remove covers to inspect, someone will be involved and get hurt if the covers haven't been installed well.  
Please install all unloading parts well.

Trouble shooting table

	Fault	Possible cause	remedy
Disc Plate (cutter bar)	Abnormal noise	bolts of blades is loose	Tight
	Abnormal heat	Nuts of discs is loose Oil quantity is not suitable Gears or bearings damaged	Change oil according to [2-3 refuel list] Change parts
	Can't match with ground during working	The supporter pins of hitch device is in transporting position The height of bottom connector pin is not suitable Installation length of adjustment spring is not suitable	Put the supporter pins of hitch device in the working position. According to [3-4-1] adjust the height of the bottom connector pin According to [3-4-3] adjust the height of adjustment lever spring.
	Cutting traces mess	PTO rotary speed is too low. Working speed is too fast Working way is wrong Blades cutting is bad Blades is damaged Blades is worn Install different rotary direction blades There is soil or grass in on covers	Adjust PTO rotary speed to 540-600 rmp Reduce working speed According to [3 working way] to deal with According to [5-2-3 changing blades] to deal with Please clean attached grass

	No traces	V-belts slip Safety device works	According to [5-2-2V belts tightness adjustment Safety device reset
	Grass disordered	Working speed is too slow PTO rotary speed not suitable	Improve working speed Adjust PTO rotary speed in 540~560 rpm
	Discs plate couldn't be fold in right angle	Supporter pin of hitch device is not in working position	Put the supporter pin of hitch device in moving position.
Gear box	Abnormal heat	Oil is unfit	According to [2-3 refuel list] change oil Replace parts
	Abnormal noise	Gear,axle,bear is damaged	
V-belts	Abnormal heat	V-belts tightness is unfit	According to [5-2-2 V-belts Tightness adjustment] Reduce working speed
	Discs rotary slowly	Pasture grass is too much	
	V-belts slip		
Safe device	During working, movable	Spring length of Safe device is unfit. Pasture is not smooth	According to [5-2-1 safe device adjustment] Reduce working speed
Block grass cover	Be blocked by mown grass	Working speed is too slow	Speed up working speed
Hydraulic system	Could not lift the discs plate	Throttle to adjusting speed is completely closed	Adjust the throttle to more open
	Discs plate could not be fold in right angle	Stopper plate in working position	Put stopper plate in movable position
Universal coupling	Abnormal noise	No oil Angle is too large	Spread oil in safe cover,tubes(inside and outside) overlapping portion Lift 3 point hitch to standard position
	One-way clutch malfunction	No oil One-way clutch is damaged	Spread oil Replace parts

If you don't know the reason or how to dealing with it, please write the following content and contact with dealer in local market.

- 1.commodity
- 2.Parts supplied form
- 3.Manufactured number
- 4.Fault ( as detailed as possible)

## Appendix

Wearing parts not belong to warranty

number	Part designation	Parts	quantity	Model
1	0450710500	blades	6	DM2400
2	0450710800	blades	6	
3		gasket	12	
4	0450710600	bolts	12	
5	NNF12	Nylon lock nuts;M12	12	
6	VRB104	V-belts;B-104	4	