



Mini-roll baler

K49464
MODEL-MRB0855N

INSTRUCTION MANUAL

IHI Agri-Tech Corporation

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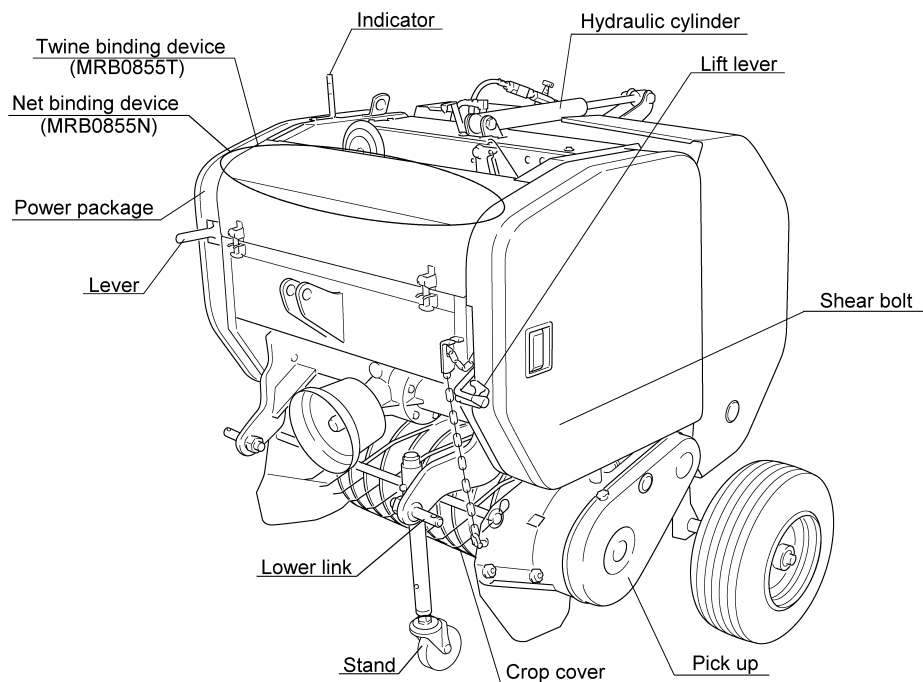
6. Trouble shooting

1 Trouble shooting table

1 Attaching to a tractor

Perform attachment correctly and safely

1 Name of parts and its function



1. Lower link pin and upper link

Lower link pin and upper link are connected with the tractor lower links and top link.

2. Pick-up

Pick-up is operated to pick-up Baling material from the ground.

3. Lift lever

The lever is used to switch between the movement and operating state of the pick up.

4. Crop cover

Crop cover helps to convey hay or straw smoothly to the chamber.

5. Shear bolt

Shear bolt is sheared when overload affect to the machine for preventing from the damage of the machine

6. Power package

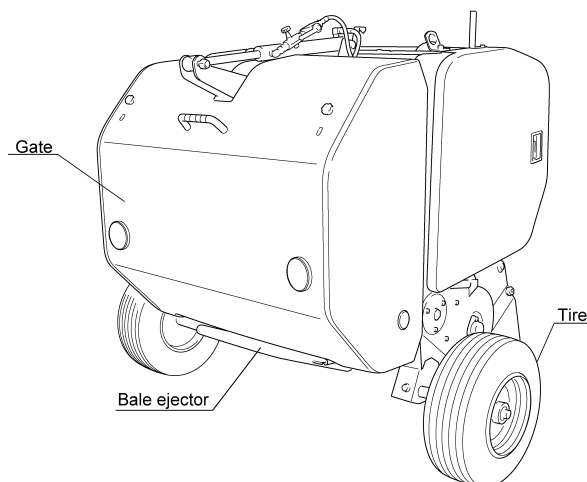
The power package generates hydraulic pressure, and operates the cylinder.

7. Lever

The lever actuate hydraulic cylinder to open and to close gate for bale ejaculation.

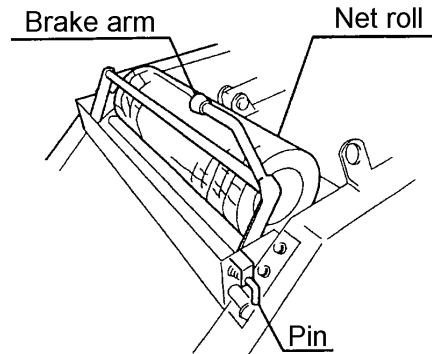
8. Bale ejector

The bale ejector rolls the bale toward the rear when it is time to eject it, and then smoothly opens and closes the gate.



9. Net binding device

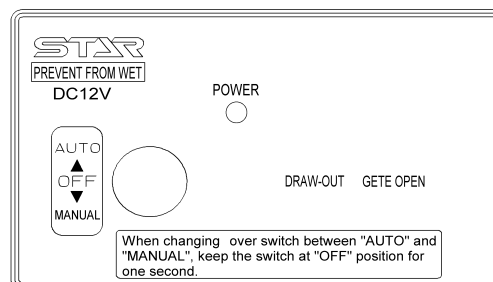
This device winds net around the completely formed bale. For the number of winding turns, 2 or 3 can be selected.



10. Switch box

The switch box notifies the starting of net binding operation by sounding the built-in buzzer. It is used to open or close the gate.

It can draw out the net binding by the draw-out button operation.

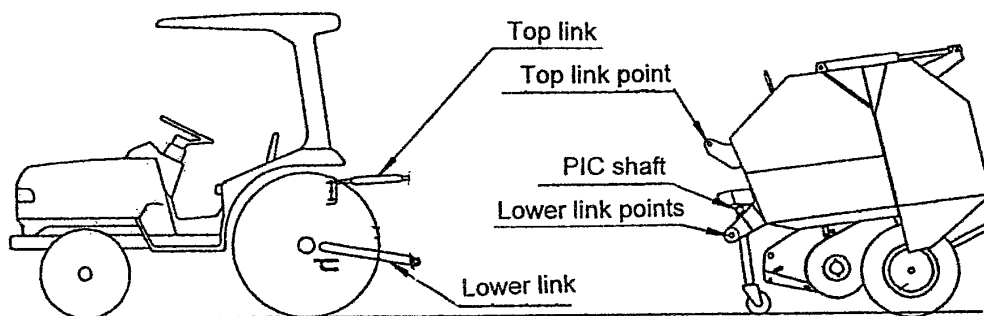


Precaution

When changing over the switch on the switch box between "Auto" and "Manual", keep the switch at "Off" for one second in the middle and then move to "Manual" or "Auto". Otherwise, operation might become unstable.

12. Universal joint

Universal joint transmits the tractor power to the machine.



2 Applicable tractor size

This machine is designed to be used by attaching it to a suitable sized tractor.
Attaching it to an unsuitable tractor could have adverse effects on the durability of the machine.
The suitable tractor horsepower for this machine is as follows:

Applicable tractor HP
18~30PS

If a tractor that is smaller than the applicable tractor size is used with this machine, there may not be enough power for the load.
On the other hand, if a tractor that is larger than the applicable tractor size is used, there will be too much power for the load and could cause damage to the equipment.

3 Assembling

1.Package opening

Open the package and untie the parts from package wooden frame.

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.

4 Attaching to a tractor

! Warning

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

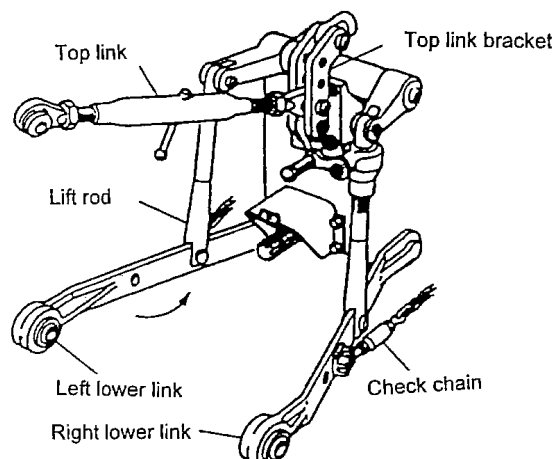
! Caution

- Attach the machine to the tractor or detach the machine from the tractor on flat and solid ground.
- If the machine is attached to a light weight tractor, it has a possibility of getting unstable steering. Attach the front weight on the tractor in case like this.

1.Preparation for attachment

This machine should be attached to the standard 3P tractor.

If the machine can't be lifted up high enough, the pin of lift rod should be inserted into front side of hole of lower link.



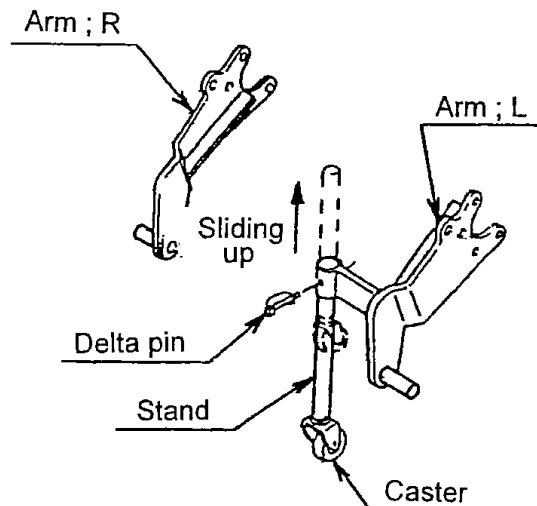
2. Attaching to a standard 3P

In accordance with following procedure.

- (1) Attach the lower link pins on inside of the arms for the category 0 tractor.
Attach the lower link pins on outside of arms for the category 1 tractor.
- (2) 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.
Insert left side of lower link pin into.
- (3) Into the hole of lower link pint.
Insert right side of lower link by same procedure above
- (4) Attach top link to the upper link by inserting pin and insert locking pin.
- (5) Turn adjusting screw to get the same height of left and right lower links from the ground.
- (6) Align center of PIC shaft and PTO shaft by check chains and then tighten check chains not to swing the machine.
- (7) Pull up stand and lock it by delta pin.

Precaution

Some tractors have auto 3P quickly rising mechanism by a switch.
Make sure tractor and the machine do not interfere and lifted height limit to have enough space between tractor and the machine



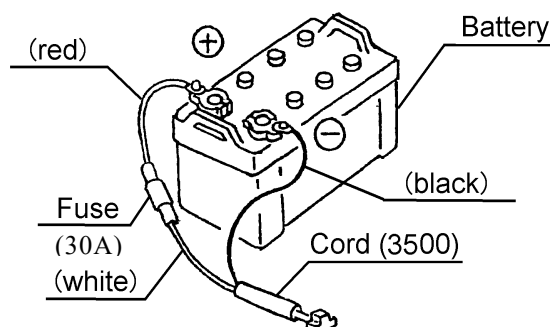
- (8) Lower the machine by operation of 3P until it comes working position.

3. Installation of the switch box

Precaution

Leave just enough slack in the connection cord so it does not come in contact with the tires. Fasten any extra slacks with a insulation lock on the tractor side.
When the switch box is not in use, turn the switch to OFF.
Place the switch box in a place where it will not get by rain.

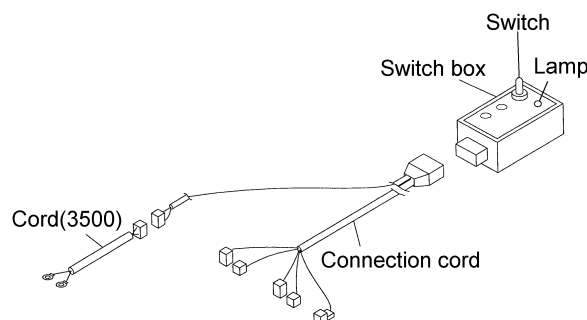
- (1) Connect cord (3500) to the tractor battery. The black cord is the (-) side, and the white cord is the (+) side.
This product is designed for 12V DC.



! Caution

- When removing the battery cords from the battery, remove the cord from the (-) side first, and when connecting the electric cord, connect the cord to the (+) first.
Connecting the cords in the opposite order could result in sparks due to the tools coming in contact with the tractor, and could cause fire.

- ① Remove the (-) negative battery cord from the battery.
 - ② Connect the (+) cord of cord (3500) (red) to the terminal for the (+) battery cord, then attach the terminal for the (+) battery cord.
 - ③ Place the (-) cord of cord (3500) (black) on the terminal for the (-) battery cord, then attach the terminal for the (-) battery cord.
 - ④ Fasten cord 1 so it will not be in the way when operating the tractor and performing work.
- (2) Install the switch box in a place where it can be used easily and where its magnetic section will be touching a flat surface.
- (3) Connect the connection cord to cord (3500).
- (4) Connect the switch box to the connection cord.



- (5) Set the power switch of the switch box to "Manual" or "Auto" to see that the lamp lights up.
- (6) If the lamp does not light up, check the following items:
- Whether or not the fuse (30 A) for the cord (3500) was blown
 - Whether or not the cord is connected wrongly in polarity to the battery
- Resettable fuse is integrated. In case the fuse functions, it takes 30-60 seconds before the switch box is resumed.

Precaution

- To connect between the control box and the battery, be sure to use genuine STAR cord (i.e. cord (3500)).
- When changing over the switch on the switch box between "Auto" and "Manual", keep the switch at "Off" for one second in the middle and then move to "Manual" or "Auto".
Otherwise, operation might become unstable.

4. Installation of net roll

! Warning

- There is a danger that you be caught in a rotary or movable part to be injured if you come in contact with it when installing the net roll or letting the net through specified parts. Be sure to turn OFF the PTO and stop the engine before you start this operation.
- When storing or threading the net roll, there is a possibility of getting entangled and becoming injured by unexpectedly moved binding device.
Turn OFF the power of switch box before storing or threading net.
- Risk of serious injury or death. Follow the safety instructions.

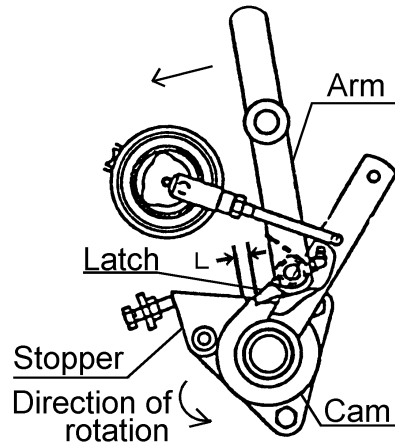
Precaution

Use the following genuine STAR net roll:

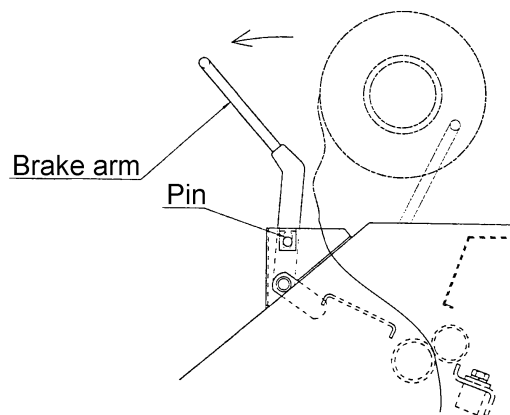
NET 0800

Using other net roll might cause troubles, such as impossibility of mounting, defective cutting and entanglement, resulting in failure in the worst.

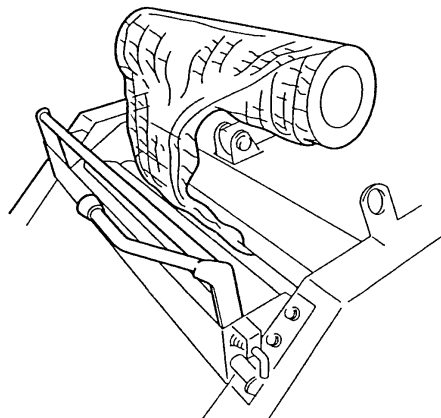
- (1) Pull the arm in the direction of the arrow to rotate the cam in the direction of the arrow and adjust dimension “L” (the clearance between the protruded part of the shaft and the latch) within 5 mm. (Starting position)



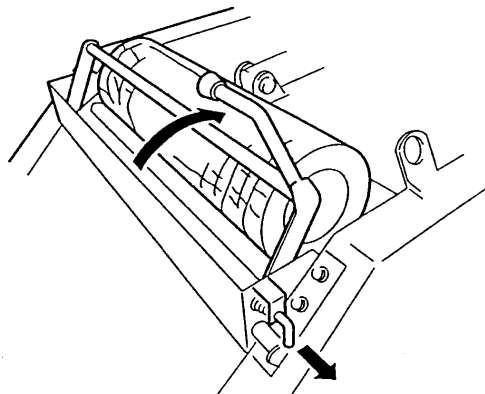
- (2) Pull the brake arm and lock it with the pin.



- (3) Set the net roll as shown below. Bind and place the net between the roller and rubber roller.



- (4) Unlock the brake arm and hold the net roll.



5 Attachment of Universal joint

! Danger

- Never use universal joint with damaged safety cover or without safety cover.
- Inspect damage on universal joint and replace it if 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

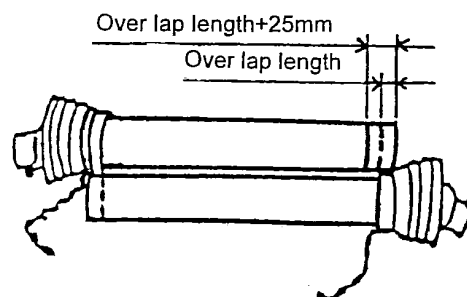
- If overlap length between inner and outer tube of universal joint is less than 100mm in extended position, it will be a cause of universal joint breakage.
If the space between inner and outer tube is less than 25mm in retracted position, it will be a cause of damage.
By pushing to each other when the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

Precaution

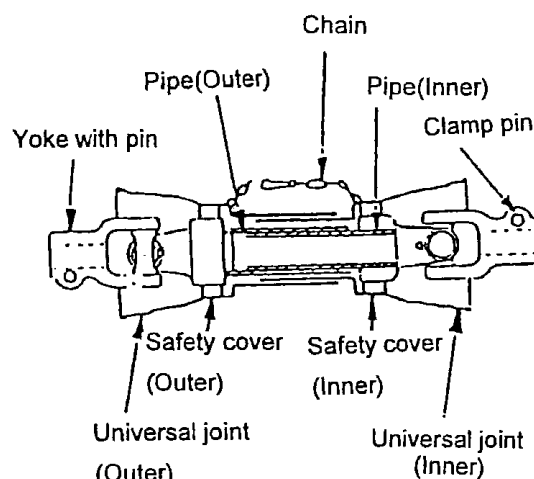
If universal joint makes noise when the machine is lifted up by 3P, limit the height of tractor 3P.

1.Universal joint length check

- (1) Pull out other tube of universal joint from inner tube of universal joint.
- (2) Lift up the machine and stop the lifting at the closet distance PTO shaft and PIC shaft.
- (3) Push cramp pin of yoke and insert the yoke into PTO shaft and push on until cramp pin comes out by spring force.
Insert the other yoke into PIC shaft same procedure as mentioned above.
- (4) 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.

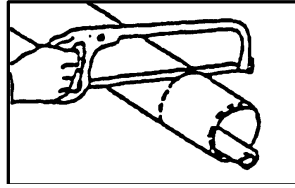


- (5) Lift the machine and stop lifting at the most separated position between PTO shaft and PIC shaft.
- (6) Put one safeties cover on to one another cover.
If lapping length is less than 100mm, replace it to longer universal joint.

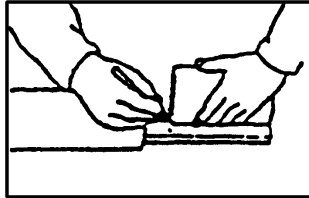


2.Method of cutting

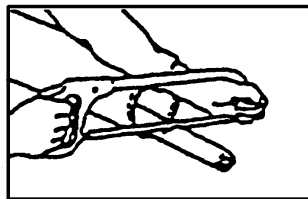
- (1) Cut off excess length of inner and outer safety cover.



- (2) Mark on inner and outer pipes 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.

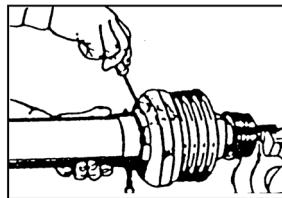


- (4) File cut ends and cleans the surface.
Apply grease on tube and insert inner tube into outer tube.

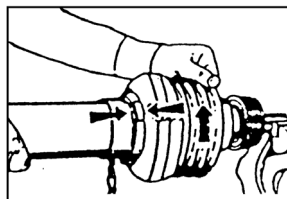
3.How to install and remove the safety cover

- (1) Safety cover removal procedure

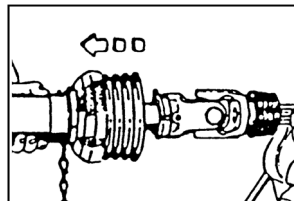
- ① Remove the fixing screw.



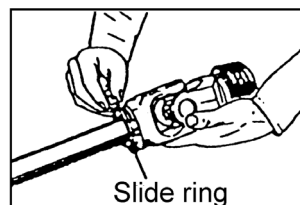
- ② Rotate the safety cover to the removing position.



- ③ Pull out the safety cover.

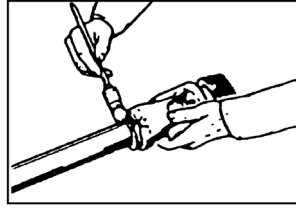


- ④ Remove the slide ring.

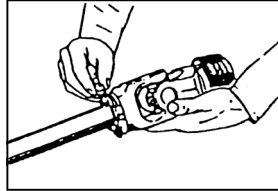


(2) Safety cover installation procedure

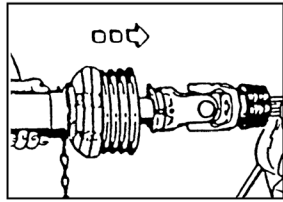
- ① Coat grease on the slide ring groove of the yoke as well as on the pipe (inner).



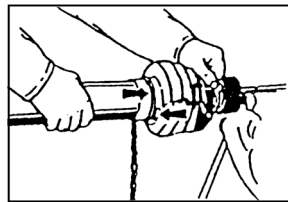
- ② With the flange of slide ring faced the pipe side, fit it in the groove while widening the opening.



- ③ Fit the cover on them.



- ④ Rotate the cover till it surely stops.



- ⑤ Tighten the fixing 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) Connection 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.

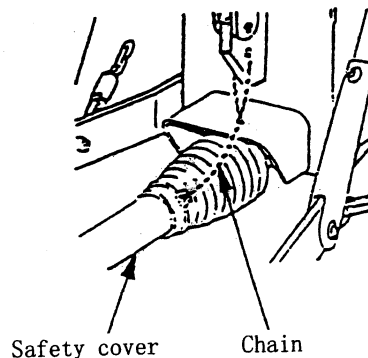
! Caution

- After connection of universal joint, make sure that cramp pins of PTO side and PIC side stay firmly in grooves of PTO shaft and PIC shaft.
If the pins do not stay in grooves firmly, it will be a cause of serious accident.

- (3) Fix of safety cover chain

Fix safety cover chain on stationary part of tractor to prevent from rotation of safety cover.

Slacken off chain not to stretch it in the up and down movement of tractor 3P.



2 Inspection before operation

Following should be done before operation to stand long life the machine.

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 locking pin is inserted into a hole of top link pin.
- 3) Make sure that check chains of the tractor are stretched firmly.
- 4) 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 the machine

(1) Check looseness of nuts and bolts.

Tighten loosen nuts and bolts firmly.

(2) Check if the shear bolt is sheared or not.

If it is sheared, replace to new one referring sufficient. To the parts list.

Beforehand, prepare for replacement shear bolts.

(3) Check if roller chain is properly stretched.

Adjust it in accordance with the instruction “5-2-1 Roller chain tension adjustment”.

(4) Check if the bale density detection link is properly adjusted.

Adjust it in accordance with the instruction “5-2-5 Adjustment of bale density detection link”.

(5) Check the length of pick up tension if the length is improper, adjust the length in accordance with the instruction of “5-2-2 Adjustment of V-belt for pick-up”.

(6) Is there spare net?

(7) Check damage of tine and rotor flush.

If it is damaged, replace it to new one by referring to parts list.

(8) Check stuck hay or straw in the machine.

Remove stuck crop from the machine.

(9) Check application of oil and grease.

If it is not applied properly lubricate in accordance with the instruction “2-3 Lubrication spots table”.

(10) Check if tier air pressure is sufficient.

If it is insufficient, apply air until the pressure becomes 195kPa(2.0Kg/m²).

2. Inspection in tractor engine running

1. Inspection of the tractor hydraulic

Lift up the machine by controlling lever of lift up and down for hydraulic control.

If the machine will not come down in lifting up position, hydraulic system has no trouble.

If hydraulic system has any trouble, contact with tractor dealer for solving problem.

2. Inspection of machine hydraulic system

(1) Inspection of hydraulic system for gate opening and closing.

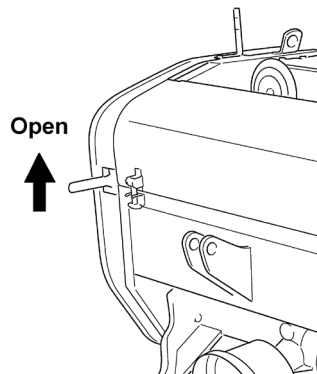
! Warning

- Never allow anyone access behind the rear gate. This may cause serious injury or death if a person is between the rear gate and another object. Check behind the gate when opening..
 - Never allow anyone to approach the machine. Serious injury or death could occur if caught between rear gate and main body when gate is closed.
- Confirm that lever of the stop valve is at the "STOP" position and fix the rear gate to the "OPEN" position by applying gate lock when checking or adjusting the machine.

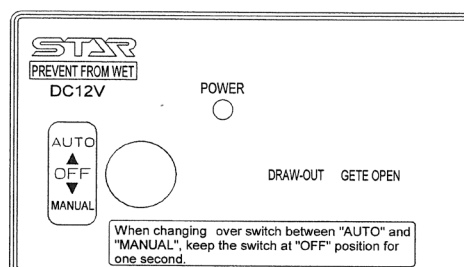
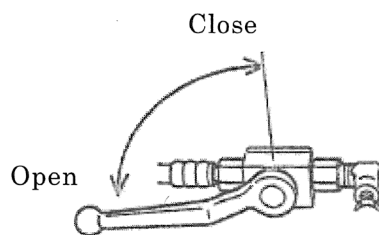
! Caution

- If the hydraulic hose is damaged or hydraulic fitting is loosened, it will be cause of injuring by leaking high-pressured hydraulic oil or suddenly dropping of the machine.
- Replace damaged hydraulic hose or fittings and tighten loosen fittings.

- ① Set the power switch on the switch box to "Manual" or "Auto".
- ② Switch the stop valve 1/4 used when opening / closing the gate to the 'Open' side (as shown in the figure).
- ③ Start up the tractor engine and push the gate open switch on the switch box or move the gate open/close lever in the right front of the machine to "Open" while turning PTO.

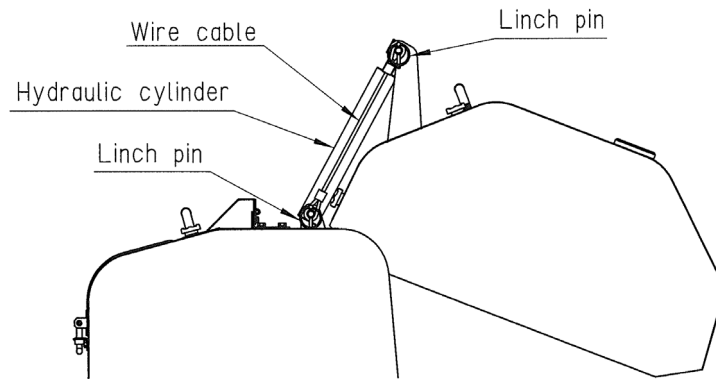


- ④ When the gate is raised, change the stop valve over to "Close" while pushing the gate open switch or keeping the lever to "Open".
Then take you finger off the switch button.



- ⑤ Stop the engine of tractor. If the gate does not drop then there is no problem. If the gate does drop, then find the oil leak and repair or replace any faulty parts.

- ⑥ When the check and/or maintenance of the machine is done with the rear gate opened, hitch each ends of the wire cable to the both pins of hydraulic cylinder and insert linch pins to the pins for locking the wire cable to the pins.

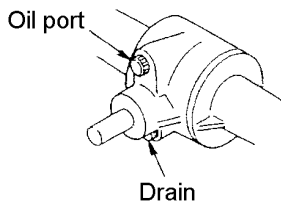


- ⑦ After the check and/or maintenance of the machine, remove the wire cable from pins and store the wire cable in casing.
Turn the lever of stop valve to the “Open” side slowly to close rear gate.

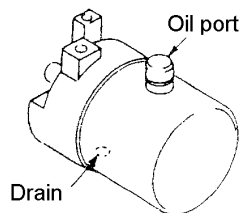
3. Lubrication spots table

- Apply fresh and clean oil and grease the machine.
- Apply grease to a grease nipple until old grease come out.

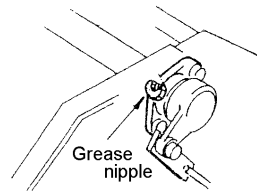
① Gear box



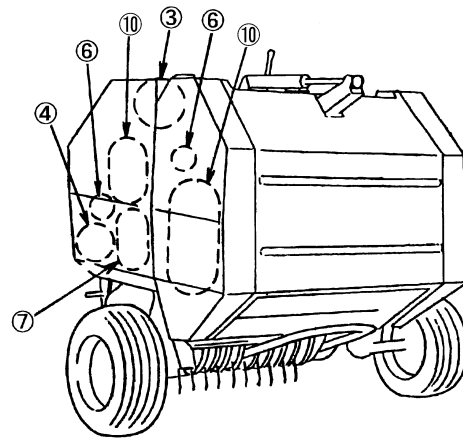
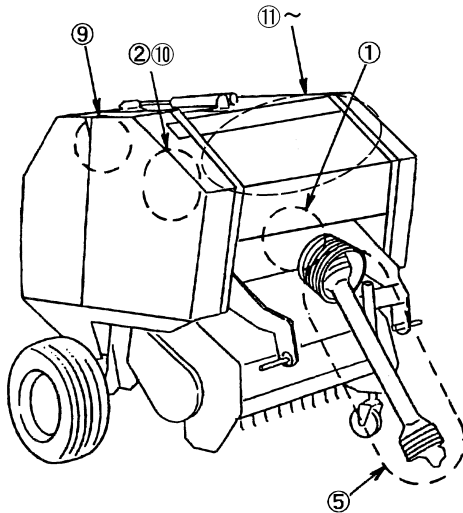
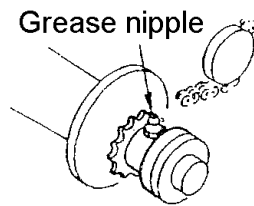
② Power package



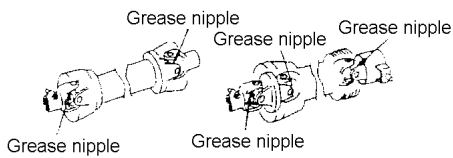
③ Housing



④ Sprocket



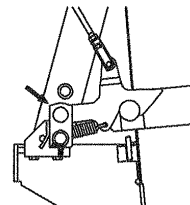
⑤ Universal joint



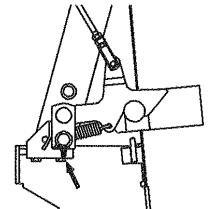
⑥ Tension arm pivot



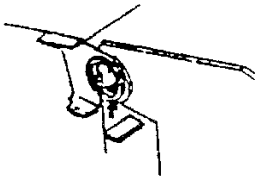
⑦ Hook pivot



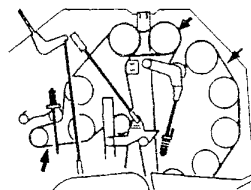
⑧ Arm pivot



⑨ Gate pivot

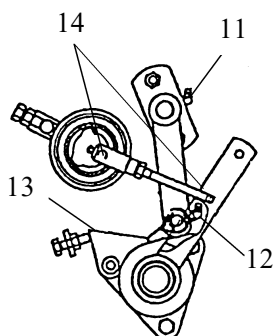


⑩ Roller chain

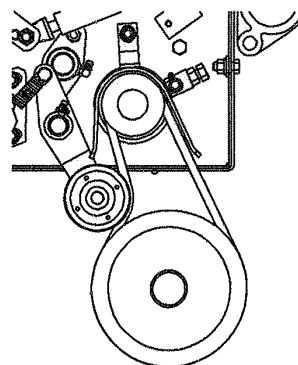


Housing
Stopper

Latch
Crank arm pivot



⑮ Tension arm



No.	Lubrication points	Point	Kind of lubrication	Changing time	Q'ty	Remarks
①	Gearbox	1	Gear oil; VG220	100hours or 1 season	0.6lit.	
②	Power package	1	ISO-VG46 Grade	100hours	1.6lit.	Tank *
③	Housing	2	Grease	After use		Grease nipple
④	Sprocket	1	Grease	After use		Grease nipple
⑤	Universal joint	-	Grease	After use		Grease nipple
⑥	Tension arm pivot	2	Oiling	After use		
⑦	Hook pivot	2	Oiling	After use		
⑧	Arm pivot	2	Grease	After use		Grease nipple
⑨	Gate pivot	2	Oiling	After use		
⑩	Roller chain	4	Apply grease	After use		
⑪	Housing	2	Grease	After use		Grease nipple
⑫	Latch	1	Grease	After use		Grease nipple
⑬	Stopper	1	Apply grease	After use		
⑭	Crank arm pivot	2	Oiling	After use		
⑮	Tension arm	1	Grease	After use		Grease nipple

* The proper quantity in oil tank of No.② is 1.6lit on condition that hydraulic cylinder & hydraulic hose is empty.

The proper oil level is located at 45 mm lower than the oil filler port.

If you pour too much oil into oil tank,oil tank is full of return oil. And the oil spouts from plug hole of filling port.

Be careful not to pour the oil too much.

3 Operation method

1 Purpose of this machine

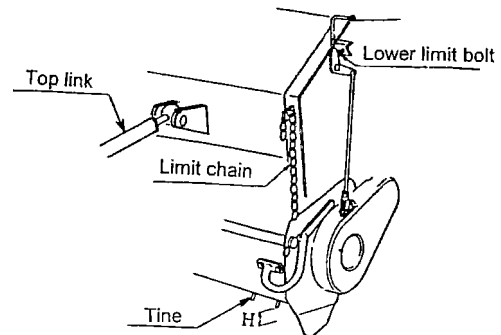
1. This machine is produced for baling grass, rice straw and straw.
Never use except this purpose.
 - (1) Bale for the hay which is less than 20% of moisture content.
 - (2) Bale the grass for making wrapping silage which is between 50% and 60% of moisture content.
2. Do not operate the machine after stopping rain or in muddy field.
Operate the machine in well dried field.

2 Adjustment for operation

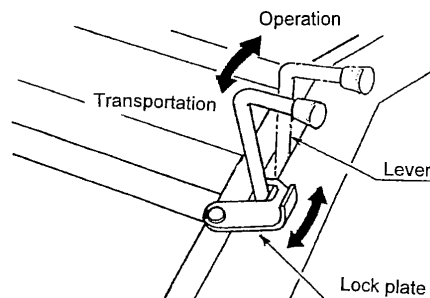
1. Adjustment of pick-up tine height from ground

- (1) Adjust pick-up tine height from the ground by limit chain and lower bolt.
Fine adjustment is done by top link pin of a tractor.

Baling material	H
Cut straw	0mm
Long straw or hay	20mm



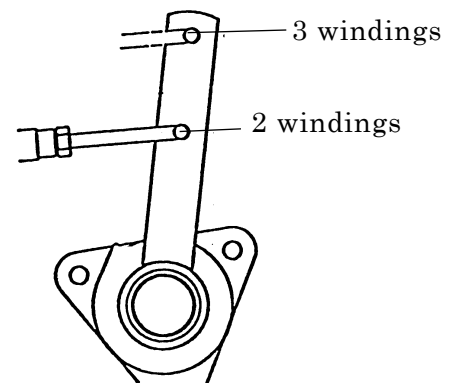
- (2) Select operation position and transport position by moving the lever and lock plate.



2. Adjustment of net winding number

How many turns to wind the net around the bale requires being adjusted according to the object of baling or the number of handling operations necessary in after-work.

Baling material	Handling	Position of mounting hole of crank arm	No of windings
Cut straw Dry straw	Much ↕ Little	Top ↕ Bottom	3
Hay Long straw			2



3.Adjustment of bale density

Precaution

High density of bale requires high tractor PTO horse power.

Adjust bale density according to the tractor size, the field condition and the baling material.

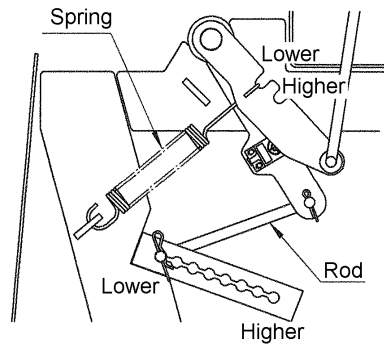
(1) Adjustment of the rod

The bale density becomes lower (light) or higher (heavy) by changing the rod position.

(2) Adjustment by spring position

In addition, the bale density is adjusted by spring position.

Spring is set at low position at regular use.



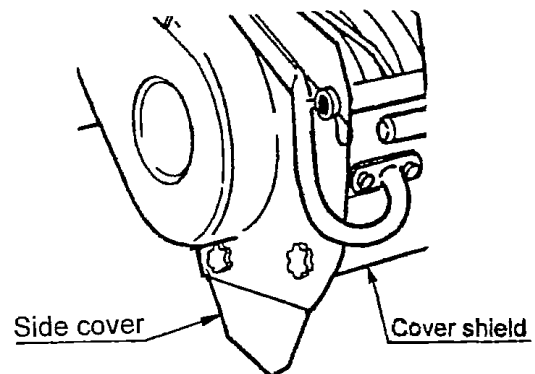
(3) Adjustment by traveling speed

Lower traveling speed make higher density of bale.

Adjustment the traveling speed according to condition of the operation.

4.Adjustment of cover shield and side cover

Baling material	Cover shield / Side cover
Cut straw	Attachment
Hay, Long straw	Removal



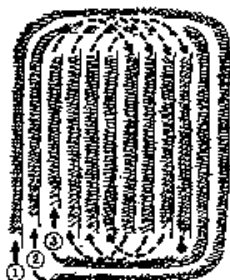
Precaution

Detach the cover shield / side cover to avoid material choking when baling grass or long straw.

3 Operation method in field

1.Method of windrow making

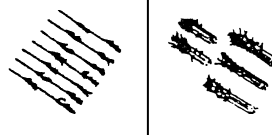
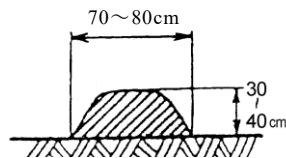
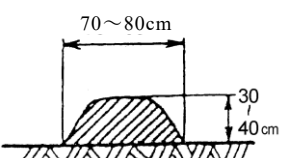
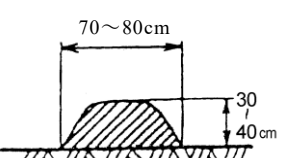
Make windrows of the width from 70cm to 80cm and the height from 30cm to 40cm as uniformly as possible.
The windrows which are made for efficiency and smooth operation are recommended.



Order of making windrows



Finishing

Hay	Long rice straw (straw)		Cut straw
Make windrows as below	Straw chop off operation By 3/4 rows rice combine harvester	Operation by dropper of 2 rows rice combine harvester	Direct straw pick up is Possible
		2 rows direct drop Operation by dropper 	
			Operation after making is better than above. 

2.Field operation

! Warning

- Touching or coming in contact with the pick-up during operation or while it is rotating could result in becoming entangled in the pick-up and being injured.
If the Pick-up becomes clogged with grass or the like, be sure to turn OFF the PTO and engine before removing the hay.
- Touching or coming in contact with the rollers during operation or while they are rotating could result in becoming entangled in the rollers and being injured.
Do not touch the rollers.
Do not let anyone near the rollers.
If grass gets entangled in the rollers, be sure to stop the PTO and engine before removing it.

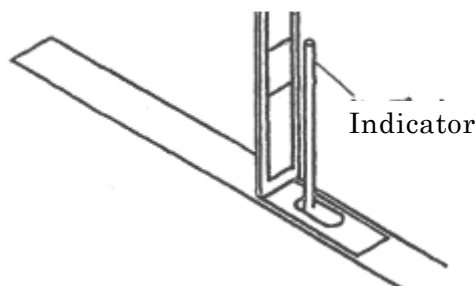
Precaution

- Change the rpm of the PTO to correspond with the moisture content and condition of the baling material.

Moisture content and condition of the baling material	PTO rpm
Standard	540 rpm
Dried, short	350 – 450 rpm
High moisture content and gets clogged in the pick-up.	540 – 600 rpm

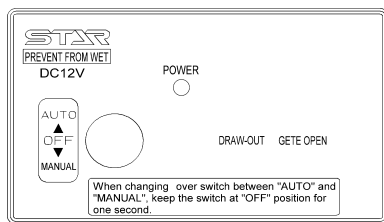
- When forming bales, do not stop the PTO.
- The operation speed is 3 to 5 km / hr. Perform operation at a speed that is suitable to the field conditions and size of the windrows.
- Do not turn the PTO reversely using a reverse rotation PTO or by moving backward with grand PTO inserted. The work equipment might be damaged.
- Be sure to check that the power switch on the switch box is set to "Manual" or "Auto" before starting operation.
- There is a danger that the shear bolt be broken or the baling completion detecting part be damaged unless the power switch on the switch box is set to "ON".
- When changing over the switch on the switch box between "Auto" and "Manual", keep the switch at "Off" for one second in the middle and then move to "Manual" or "Auto". Otherwise, operation might become unstable.

- (1) Set the power switch on the switch box to "ON" and make the machine travel astride the windrow while turning the PTO.
- (2) Quantity of the baling material inside of the chamber can know from the indicator.
The indicator rod rise up when a bale coming to complete.



- (3) Auto/Manual mode:

Net binding operation automatically starts 2seconds after the buzzer is sounded. So stop traveling the machine.
In the Manual mode: Stop traveling the machine when the buzzer is sounded.
And then press "Draw out" switch on the switch box to start net operation.
In case drawing out net before net winding operation automatically starts (buzzer is sounded.), press "draw-out button". Then the buzzer is sounded and starting net winding.



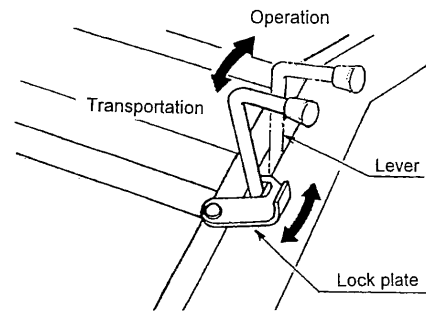
- (4) The binding device is stopped when net is cut after the completion of net winding.
Push the gate open button on the switch box to "Open" while turning the PTO to open the gate and eject the bale.

! Warning

- Never allow anyone access behind the rear gate. This may cause serious injury or death if a person is between the rear gate and another object. Check behind the gate when opening.
- Confirm that lever of the stop valve is at the "stop" position and fix the rear gate to the "open" position by applying gate lock when checking or adjusting the machine.
- Never allow anyone to approach the machine. Serious injury or death could occur if caught between rear gate and main body when gate is closed.

4 Transportation

1. Stop PTO of the tractor.
2. Pull down the lever and lock it by lock plate.



3. Lift up the machine by operating 3P lifting lever.
4. Lock 3P of the tractor not to come down the machine in the transportation.

4 Out of season for storage

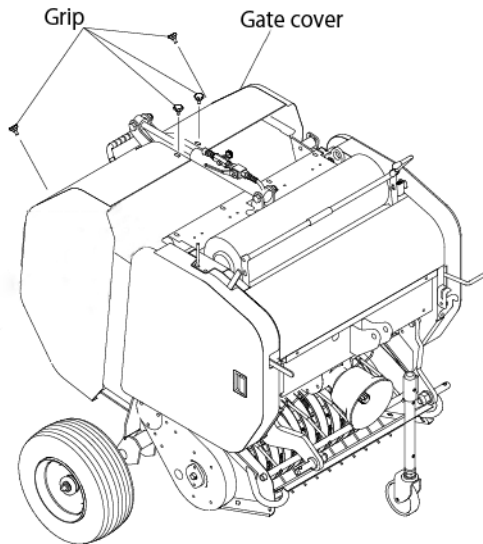
Maintain the machine for keeping long life.

! Caution

- Never try to remove blocked material when the machine is running.
Disengage clutch of PTO drive, stop tractor engine and make sure all moveable parts stop.

1 Maintenance after operation

1. Set the power switch on the switch box to OFF.
2. Remove baling material form pick-up in the field.
3. Remove piled dust from the net binding unit every use.
4. Remove baling material stuck material on the rolls.
5. Remove dust from driving device in the side of the machine.
6. Replace damaged or worm parts to new ones.
7. Inspect driving and connection parts in accordance with inspection spots table.
8. Lubricate in accordance with lubrication spots table.
9. Apply grease on PTO shaft, PIC shaft, power joint and other parts which are not painted to prevent from the rust.
10. Refuse accumulated inside the gate cover can cause damage.
Please remove the gate cover after each work to remove refuse.



2 Detaching from a tractor

1. Slid down stand and insert pin into the highest position of a hole.
2. Lower hydraulic control lever of a tractor until tires of the machine contact with the ground.
3. Stop the tractor engine and apply parking brake.
4. Detach power joint from the tractor PTO shaft.
5. Detach right side of lower link, left side of lower link and top link.

3 Storage in out of season

1. Clean every parts of the machine.
2. Inspect moving parts and connecting parts in accordance with inspection and maintenance points table.
If any damaged or worn parts are found, they must be replaced with new ones.
3. Apply grease or oil in accordance with lubrication points table.
Apply oil to rotating, pivoting parts and sliding parts such as clump pin of power joint.
Apply grease on PTO shaft, PIC shaft and spine holes of power joint yoke.
4. Paint or apply oil on damaged surface of parts to prevent from the rust.
5. Store the machine in well ventilating indoor.
6. If there is no choice but to keep the machine in out door, cove the machine with a plastic sheet.
7. A switch box is keeping it in the room.

5 Inspection and maintenance

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

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

Since tines, shear bolts, knives, net are consuming parts, replace worn parts with new ones or replenish with new ones.

! Warning

- Stop the tractor engine and disengage PTO when adjustment is done.
- Never allow anyone access behind the rear gate. This may cause serious injury or death if a person is between the rear gate and another object. Check behind the gate when opening.
- Confirm that lever of the stop valve is at the "stop" position and fix the rear gate to the "open" position by applying gate lock when checking or adjusting the machine.
- Never allow anyone to approach the machine. Serious injury or death could occur if caught between rear gate and main body when gate is closed.

! Caution

- Lock the hydraulic circuit of tractor when the machine is lifted up for maintenance or for inspection prevent from machine's falling down.
- Inspection or maintenance should be done on solid ground or concrete.
Never inspect or maintain on slant, uneven, or soft ground.
- Stop the tractor engine and make sure all machine parts stop when inspection or adjustment is done.

1 Inspection and maintenance table

Hours	Items for checking	Remedy
After initial 1 hour operation	Looseness of all nuts and bolts Slackness of roller chains	Tightening Adjustment
Before operation After operation	Cleaning up Wear of pick up tines Wear of binding knife Shear of shear bolt Net roll consumption Tires air pressure Cleaning inside the gate Looseness and loss of nuts, bolts and pins Abnormal noise or vibration in driving device Breakage of power safety cover of roller chain cover Lubrication to rotating and moving parts Adjustment of each parts	Replacement Replacement Replacement / Replenishment Replenishment 195kPa (2.0kg/cm ²) Tightening and replenishment Remedy in accordance with trouble shooting table 6-1 Replacement Lubrication in accordance 2-3 Lubrication spots table Adjustment in accordance 5-2 adjustment of each parts
Out of season	Broken parts Worn parts Cleaning up each parts Damage of painting Worn pivoting parts or pins	Repair Replacement with new one Painting or applying oil Replacement to new ones

2 Adjustment for each parts

1. Roller chain tension adjustment

Roller chain is elongated by usage little by little. Adjust tension of roller chain for transmitting the power smoothly.

Since the roller chain is especially elongated by initial usage, adjust tension after initial usage.

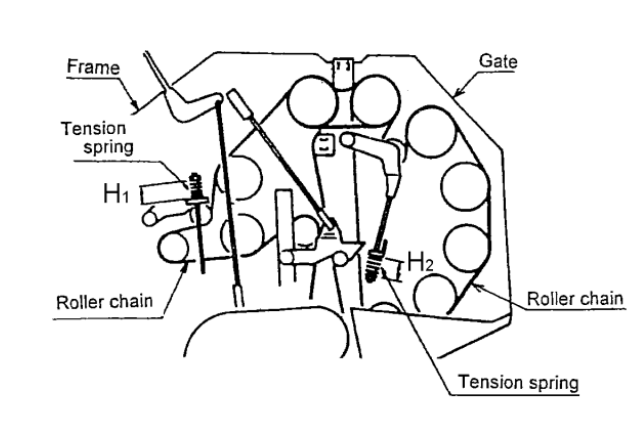
(1) Adjustment of tension spring

Adjust tension of roller chain on frame on the frame and on gate by adjusting the length of the tension springs. The length of spring is mentioned below.

The length of the spring is printed in the which is stuck on the machine.

$$H_1 = 36\text{mm}$$

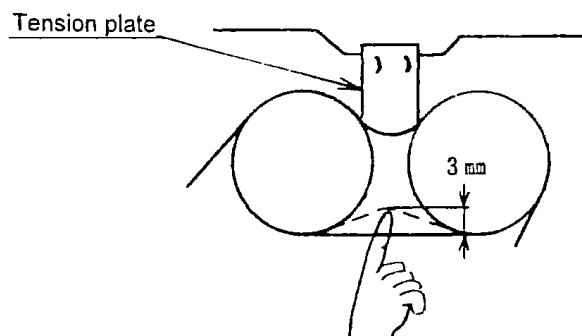
$$H_2 = 38\text{mm}$$



(2) Adjustment of tension plate

Adjust tension of roller chain between frame and gate by tension plate.

Proper roller chain tension gives 3mm deflection when roller chain is pushed by a finger.

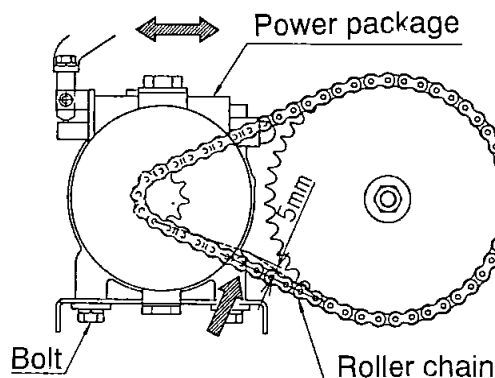


(3) Adjustment of power package

Tension for roller chain to drive the power package is adjusted by moving position of the power package.

Push middle part of chain between both sprockets by finger.

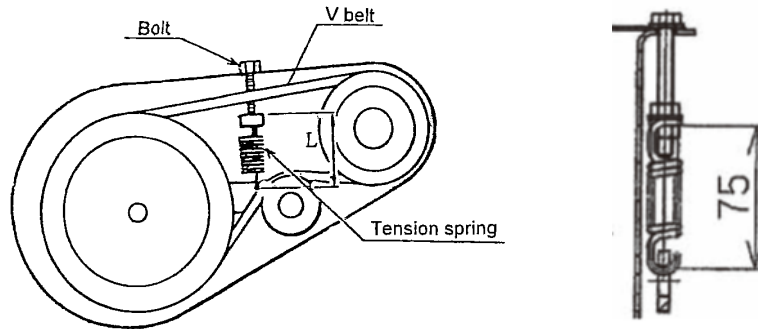
Correct tension is approx. 5mm of deflection when the chain is pushed.



2. Adjustment of V-belt for pick-up

Adjustment of V-belt for pick-up should be done by adjusting the length of spring after removing cover. Spring length is as below.

$L = 75\text{mm}$



Precaution

Do not apply too much tension on V-belt otherwise it will be a cause of pick-up by over load. Adjust spring length as mentioned above.

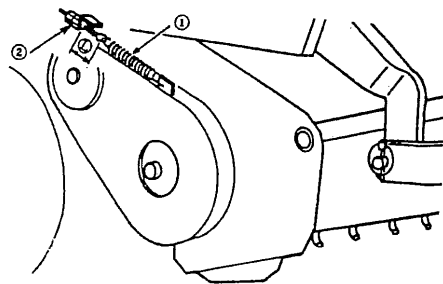
Precaution

Apply original replacement knife of the machine.

3. Adjustment of pick-up suspension

Proper suspension springs length on both sides of pick-up is $L = 55\text{mm}$.

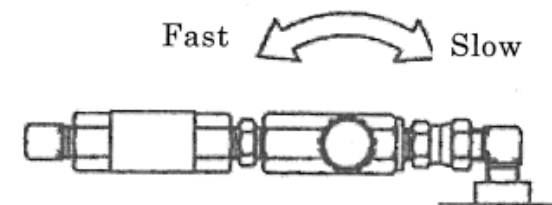
Adjust spring length according to field condition if the pick-up does not follow well the field unevenness. Both springs length should be the same after the adjustment.



4. Adjustment for closing speed of gate

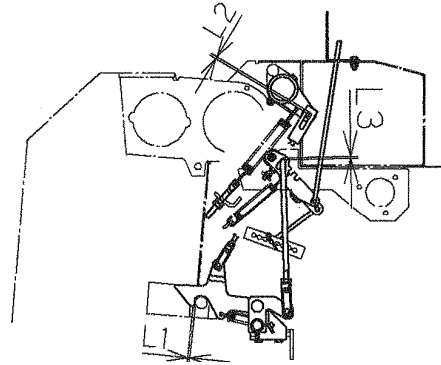
Closing speed can be adjusted by turning of knob on the slow return valve.

Speed is decreased by turning it to right or is increased by turning it to left.



5. Adjustment of bale density detection link

- ① Adjust the space between the locking hook and the gate pin with the long hole of angle.
L1 = 1 to 2 mm is proper.
- ② Adjust the space between the long hole of rod and the bolt with the fork end.
L2 = 2 mm is proper.
- ③ Adjust the space between the long hole of plate and the rod with the fork end.
L3 = 1 to 1.5 mm is proper.



6. Replacing the shear bolts

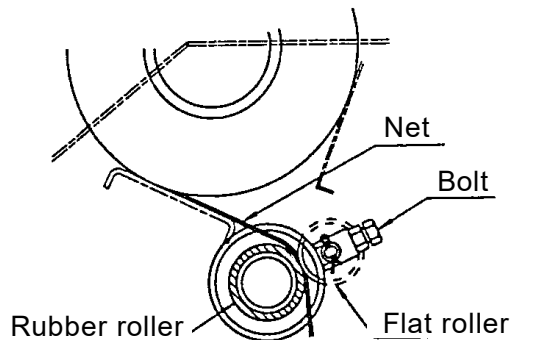
The drive shaft is equipped with a safety device. When there is overloading, the shear bolts are cut and all parts stop, so when this happens, stop the engine, then remove the cause of problem and replace the shear bolt.

Precaution

Only use genuine shear bolts.

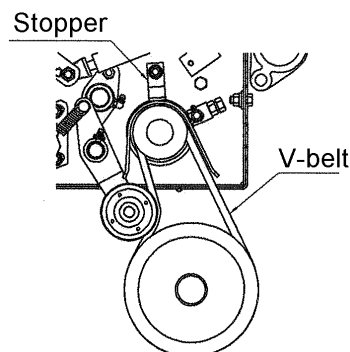
7. Adjustment of contact load of flat roller and rubber roller

When the net is put out, if it slips between the roller and rubber roller and does not come out, adjust the contact load of the roller and rubber roller with the bolt.



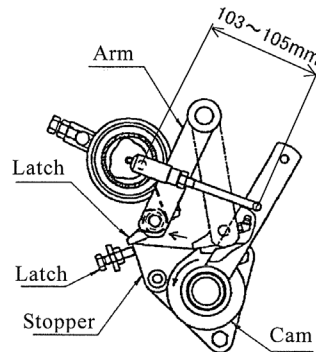
8. Adjustment of V-belt stopper

If the V-belt is dragged, adjust the V-belt stopper so that it will touch the V-belt lightly.



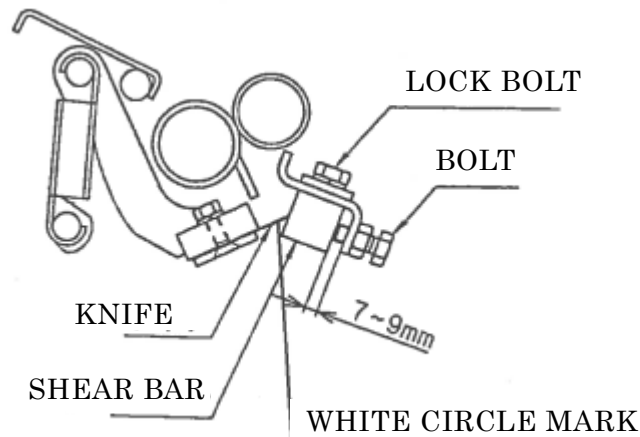
9. Adjustment of knife arm

- (1) Open the gate fully and then close it fully again.
- (2) Position the stopper temporarily so that the latch at the arm end will be hitched to the stopper.
- (3) Turn the cam and adjust the bolt so that the latch will come off the stopper.



- (4) After the Gate fully closed and then fully opened again, make sure that the latch is hitched to the stopper.

10. Adjustment of knife and shear bar



Loosen the lock bolt about a half turn and adjust the bolt so that the gap between the knife and shear bar will be eliminated.

Shear bar can be reversed to use again. Knife cannot be reversed to use (Knife should be set so that white mark is downward as described in illustration).

6 Trouble shooting

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

! Warning

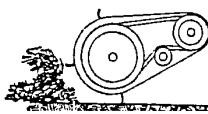
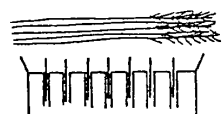
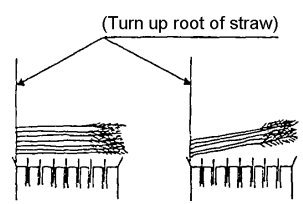
- Stop the tractor engine and disengage PTO when adjustment is done.
- Never allow anyone access behind the rear gate. This may cause serious injury or death if a person is between the rear gate and another object. Check behind the gate when opening.
- Confirm that lever of the stop valve is at the "stop" position and fix the rear gate to the "open" position by applying gate lock when checking or adjusting the machine.
- Never allow anyone to approach the machine. Serious injury or death could occur if caught between rear gate and main body when gate is closed.

! Caution

- Lock the hydraulic circuit of tractor when the machine is lifted up for maintenance or inspection to prevent from machine's falling down.
- Inspection or maintenance should be done on solid ground or concrete.
Never inspect or maintain on slant, uneven, or soft ground.
- Stop the tractor engine, disengage PTO and make sure all moving parts stop when inspection or adjustment is done.
Ask to the dealer by informing followings if the cause of trouble and trouble shooting is not clear

1 Trouble shooting table

•Pick-up

Fault	Possible cause	Remedy
•Abnormal noise is made	•Breakage of tine •Breakage of rotor flush •Breakage of cam roller bearing •Insufficient V-belt tension	•Tine replacement •Rotor flush replacement •Replacement of cam roller bearing •Adjustment in accordance with "5-2-2 Adjustment of V-belt for pick-up"
•Material is not picked up cleanly	•Wrong pick-up setting •Too fast traveling speed •Breakage of tine	•Adjustment in accordance with "3-2-1 Adjustment of pick-up height from ground" •Reduction of traveling speed •Replacement tine with new one
•Baling material is clogged between pick-up and chamber	•Too fast PTO rotation •Obstruction by side cover and cover shield •Too fast traveling speed •Too wide and too high windrow •Too much declined pick-up	•Adjustment PTO rotation in accordance with "3-3-2 Field operation" •Taking out side cover and cover shield •Reduction of traveling speed •Making windrows in accordance with "3-3-1 Method of windrow making" •Shortening top link for obtaining forward declined machine position
•Pick-up does not rotate	•Wrong V-belt tension adjustment •Breakage of V-belt •Too much clearance between pick-up tines and ground •Too wide and too high Windrow •Too mach mowing height from ground	•Adjustment in accordance with "5-2-2 Adjustment of V-belt for pick-up" •Replacement of broken V-belt with new one. •Adjustment in accordance with "3-2-1 Adjustment of pick-up height from ground" •Making windrow in accordance with "3-3-1 Method of windrow making" •Adjustment of cutting height for a mower
•Pick-up pushes long stem rice straw to forward 	•Obstruction by side cover and shield cover •Matching of pick-up center and rice straw center in the pick-up operation 	•Taking out side cover and shield cover  (Turn up root of straw) •Picking-up by adjusting the root end of the straws to the edge of the pick-up.

•Roller

Fault	Possible cause	Remedy
•Roller makes abnormal noise	•Wrapping material or mud on roller or clogging material •Insufficient lubrication •Insufficient roller chain tension •Dent in roller	•Remove of wrapping material, mud or clogged material •Application of oil to roller chain •Adjustment in accordance with "5-2-1 Roller chain tension adjustment" •Replacement dent roller with new one
•Material is winding on roller	•Too fast PTO rotation •Material clogging in pick-up •Dent in roller	•Adjustment of PTO rotation in accordance with "3-3-2 Field operation" •Remedy in accordance with "pick-up" trouble shooting •Replacement dent roller with new one
•Heat generate in roller chain	•Too high bale density •Insufficient lubrication to roller chain •Insufficient roller chain tension	•Adjustment in accordance with "3-2-3 Adjustment of bale density" and "5-2-5 Adjustment of bale density detection link" •Application grease to roller chain •"5-2-1 Roller chain tension adjustment"

•Bale density detection link

Fault	Possible cause	Remedy
•The locking hook becomes unfastened during operation	•The hydraulic pressure for opening / closing the gate did not return completely. •The locking hook is not adjusted properly.	•Operate as described in section "3-3-2 Field operation". •Adjust as described in section "5-2-5 Adjusting of bale density detection link".
•Bale density is loose	•Adjusting bale density is too low. •The tractor speed is too fast.	•Adjust as described in section "3-2-3 Adjustment of bale density". •Decrease the tractor speed.

•Switch box

Fault	Possible cause	Remedy
•Faulty operation (The gate does not open. The buzzer does not sound.)	•The switch is OFF. •Blown fuse •Improper cord wiring •Cord breakage. •The tractor battery is dead. •Damaged switch box. •Overloading the electric motor	•Turn ON the switch. •Replace the fuse (30A) •Check the wiring. •Replace the cord. •Charge or replace the tractor battery. •Replace the switch box. Store it in place out of wind and rain •Resettable fuse is integrated. In case the fuse functions, it takes 30-60 seconds before the switch box is resumed.

•Gate open/close

Fault	Possible cause	Remedy
•Bales are not ejected.	•The bale density is too high. •The windrow width is to large. •Tried to eject the bale on a steep slope.	•Adjust as described in section “3-2-3 Adjustment of bale density”. •Make the windrows as described in section “3-3-1 Method of windrow making”. •Eject bales on a level place.
•The gate does not open.	•The stop valve is closed. •The hydraulic line is damaged or leaks. •Improper adjustment of the locking hook. •The PTO is stopped when ejecting the bale. •Insufficient oil in the power package. •The switch on the switch box is set to OFF. •The cord is not connected properly.	•Open the stop valve. •Handle as described in section “2-2-2-(1) Inspection of hydraulic system for gate opening and closing”. •Adjust as described in section “5-2-5 Adjustment of bale density detection link”. •Eject when the PTO is rotating. •Supply oil according to section “2-3 Lubrication spots table”. •Adjust PTO speed referring to Section “3-3-2 Field operation”. •Check the wiring referring to Section “1-4-3 Installation of the switch box”.

•Shear bolts

Fault	Possible cause	Remedy
•The shear bolts are cut	•High initial PTO speed •The pick-up is clogged with hay. •There is hay entangled in the rollers. •Tractor speed is to fast. •Windrows are too large. •The switch on the switch box is set to OFF.	•Start at a slow speed. •Refer to the item related to pick-up. •Refer to the item related to the rollers. Remove the entangled material. •Decrease the tractor speed. •Make the windrows as described in section “3-3-1 Method of windrow making”. •Operate referring to Section “3-3-2 Field operation”.

•Net binding device

Fault	Possible cause	Remedy
•Net is entangled in the roller.	•The scraper is bent to widen the clearance with the rubber roller. •The net was drawn out when the knife arm was not set at specified position.	•Straighten the bent scraper. •Fully open the gate and adjust such that the knife arm stops at specified position.
•Net is not drawn out.	•Slip occurs between the pulley and the V-belt. •The switch on the switch box is set to OFF. •Net slips between roller and rubber roller	•Adjust as described in Section “5-2-11 Adjustment of V-belt stopper”. •Operate referring to Section “3-3-2 Field operation”. •Adjust as described in Section “5-2-7 Adjustment of contact load of flat roller and rubber roller”.
•Net is drawn out unexpectedly in the middle of operation.	•The rubber roller is dragged by the V-belt. •The brake arm is not pressing down the net roll.	•Adjust as described in Section “5-2-8 Adjustment of V-belt stopper”. •Adjust as described in Section “1-4-4 Installation of net roll”.
•Net cannot be cut.	•The knife or the shear bar is worn or damaged. •There is a clearance between the knife and the shear bar. •The knife arm does not stop at specified position.	•Replace according to the parts list or reinstall reversely. •Adjust as described in Section “5-2-10 Adjustment of knife and the shear bar”. •Adjust as described in Section “5-2-9 Adjustment of knife arm”.
•Net winding position is shifted toward the center.	•The brake arm is not pressing down the net roll. •Tractor PTO speed is too low.	•Take corrective action referring to Section “1-4-4 Installation of net roll”. •Adjust the PTO speed to 350 to 500 rpm.
•Buzzer does not sound	•The switch is set to OFF. •The cord is not connected properly. •Wire breakage occurred on the cord.	•Set the switch to ON. •Connect the cord correctly. •Replace the cord.

