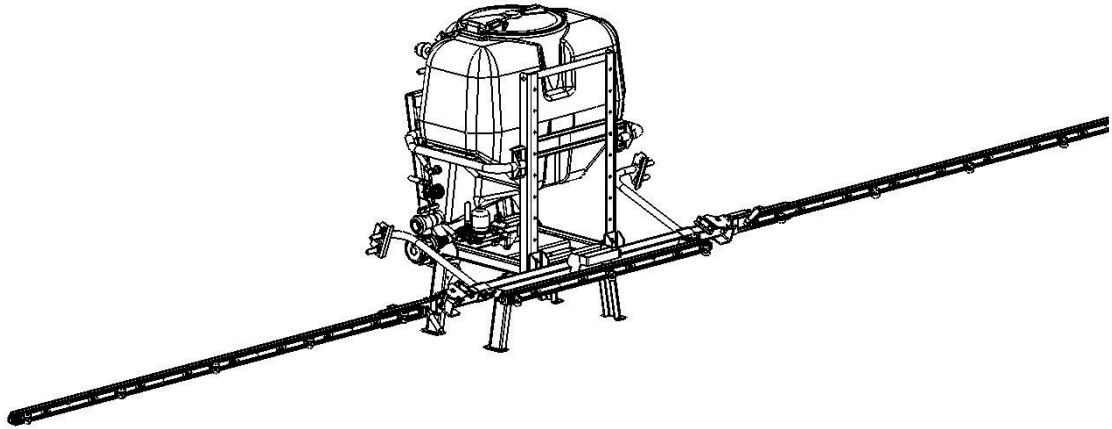




MARUYAMA

BOOM SPRAYER BSM300



Instruction Manual

Completely read and understand this manual before using this product

READ AND SAVE THIS MANUAL

BSM300 INSTRUCTION MANUAL

Preface

Thank you for purchase of this product. This manual explain how to use, maintain properly for safety & comfortable operation.

Before operation, please read this manual carefully and utilize this manual to optimize this products at best performance.

Please keep this manual and refer from time to time to solve problem. Please acknowledge specification is subject to change without notice, so sometimes matter of this manual is not coincidence with actual product.

If you have any question, please feel free to contact dealer.

Objective of this product

This product is developed for spraying chemical for field crop.

We are not liable for accident caused by the usage for other objective or dismantle or modification without admission.

Caution

Please follow caution label attached on machine.


 Danger- If you do not follow instruction, it will cause death or serious injury.

 Warning if you do not follow instruction, it may cause death or serious injury.

 Caution If you do not follow instruction, it may hurt you.

Caution If you do not follow instruction, it may cause accident of machine.

When you lend this product to others.

Please explain how to use this product to whom you lend, and explain each caution label (Indicated by )

Please hand over this manual so that borrower understand how to use before operation so that your kindness may not be spoiled.

In addition, please explain to your family how to use who may use this product.

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1. For safety operation

(1) Please read and follow the instruction manual of chemical, optional device, and operate correctly.

- ① Please operate tractor with boom sprayer at the area within 5° slope.
- ② Please wear safety gear, such as helmet, glove and mask, and wear the suitable cloths.
- ③ Please inspect or repair boom sprayer at flat area. If you inspect while boom sprayer

is mounted on tractor, stop engine at flat area and place parking brake, pull out key then unfold the stand of boom sprayer. Otherwise tractor may move and cause accident.

- ④ Keep away the person except operator at the site of spraying. It may cause accident.
- ⑤ Be careful not to contaminate tap water source, river, pond and lake.
- ⑥ Do not refill fuel nearby flame. It may cause fire. And do not smoke while refill fuel.



(2) Caution for mounting boom sprayer with tractor

- ① Please read tractor's instruction manual and master to operate tractor.
- ② At flat area, please stop engine, PTO of tractor and be sure to inspect tractor & boom sprayer before operation. Please refer page "INSPECTION BEFORE OPERATION" (Refer to P.22)
- ③ Do not allow person to be between tractor & boom sprayer. It may cause serious Accident.
- ④ Universal joint and wiring should be connected properly, otherwise it may cause trouble.
- ⑤ Applicable Tractor to be amounted with BOOM sprayer should be complied with guidance of manual. Depending on tractor, total weight and weight balance for front & rear will be changed.

Please use front weight so that burden on front wheel will be more than 20% of total weight. If the balance is not proper, tractor's front wheel will float in the air and cause accident. Especially, if you attach optional accessory later, total weight will be changed.

(3) Operation

Check the spray pressure and adjustment by pure water.

- ① Before operation, please check the connection of universal joint, wiring and installation of option.
- ② Do not operate at too high speed, at sudden acceleration, sudden brake, sudden

turn. Please drive & operate safely.

- ③ When you travel to plot, be sure to close the side boom. (Refer to P.18)
- ④ When you get in and get out plot, or cross the dike or ditch, or pass through mad area,
- ⑤ When you climb up, travel backward so that tractor may not fall down.



Depending on remained chemical in chemical tank, gravity point is changed and Balance will be unstable. After feeding water in chemical tank, be careful for safety more.

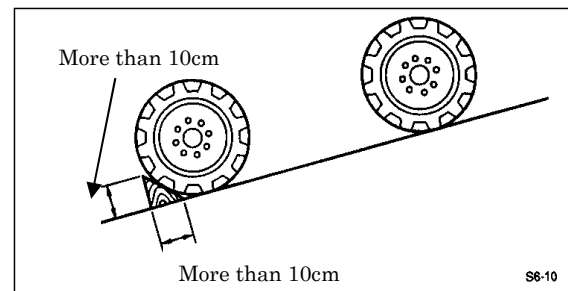
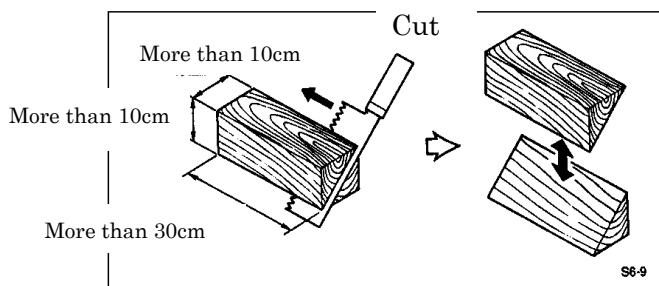
(4) STORAGE

- ① Please store boom sprayer at flat area after inspection and maintenance while stand is unfold.
- ② When you store boom sprayer as it is mounted on tractor, be sure to unfold the stand and put the boom sprayer on the ground and store it.

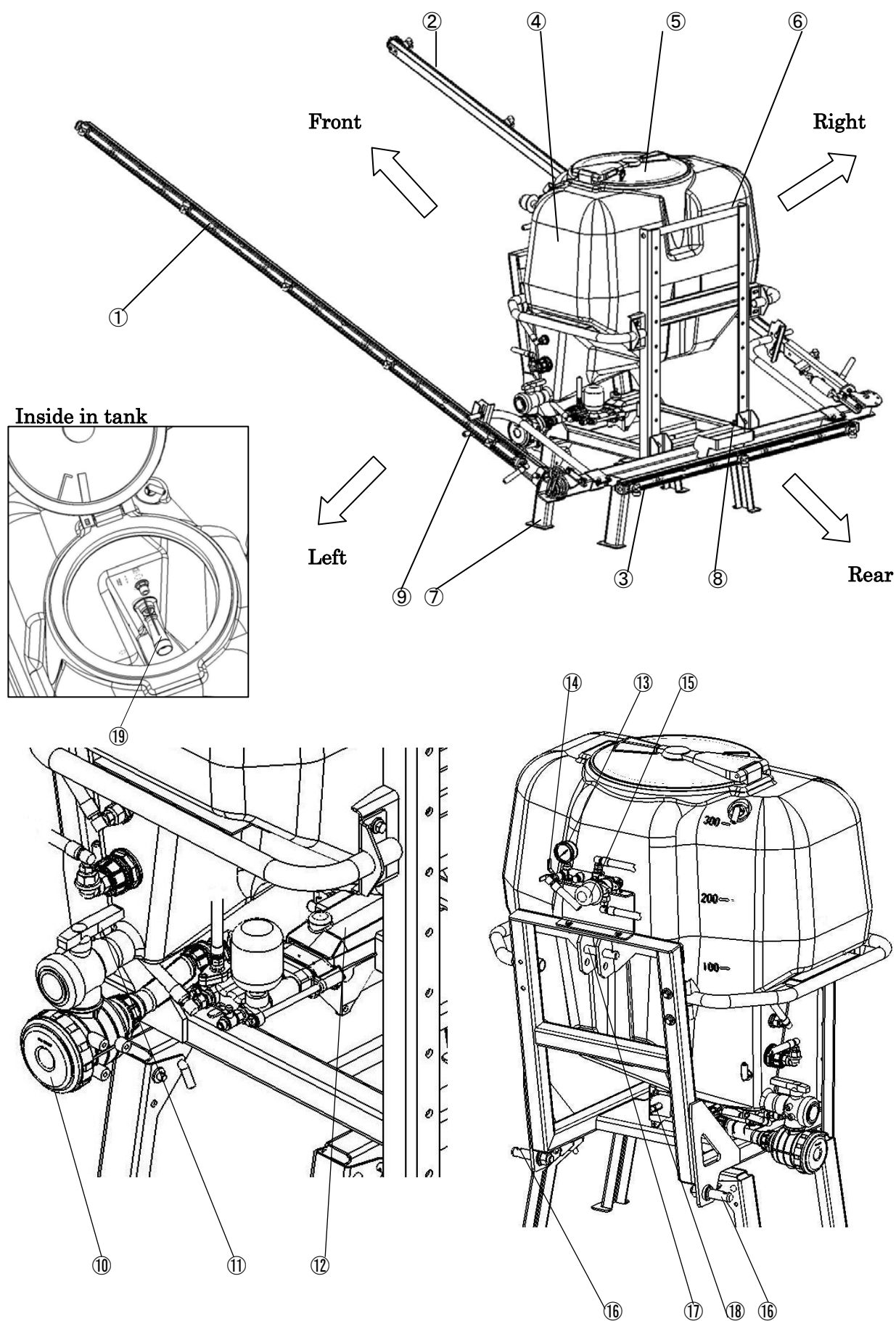


(5) Tire stopper

In order to park the tractor safely, please prepare concrete block, or wooden block (more than 10cm square, 30cm length). Tire stopper is used at slope area, for left and right wheel at lower level.



2. Portion name & accessories



■PORTION' S NAME

Page

ITEM NO.	NAME	
①	LEFT BOOM (SIDE BOOM)	9, 17, 18
②	RIGHTBOOM(SIDE BOOM)	9, 17, 18
③	CENTER BOOM	17, 19
④	CHEMICAL TANK	13, 14, 15
⑤	CHEMICAL TANK LID	14
⑥	MAST FRAME	15
⑦	STAND	12
⑧	STEP	20
⑨	BOOM HOLDER	9, 18, 19
⑩	WATER SUCTION STRAINER	16, 26, 27, 29, 31, 32, 33
⑪	WATER FEEDING VALVE	16, 23, 25
⑫	PUMP	13, 27, 28, 29, 30, 32, 33
⑬	PRESSURE GAUGE	16
⑭	SPRAYER COCK	17, 23, 25, 30, 32
⑮	PRESSURE ADJUSTING DIAL	16, 23, 25, 32
⑯	LOWER LINK PIN	10
⑰	TOP LINK PIN (※)	10, 11
⑱	CRANK SHAFT	10, 29
⑲	JET NOZZLE	15, 26, 27, 30, 33

※Top link pin & linch pin to fix top link pin are provided with tractor.

■ACCESSORIES

Name	P/N	Q'ty	Remark
Instruction manual	*****	1	This manual
Universal joint	567287	1	
key	567183	1	5 × 5 × 25 (For universal joint installation)
Bolt(Hex)	567184	1	M8 × 35(For universal joint installation)
Nut(Hex)	567167	1	M8 (For universal joint installation)

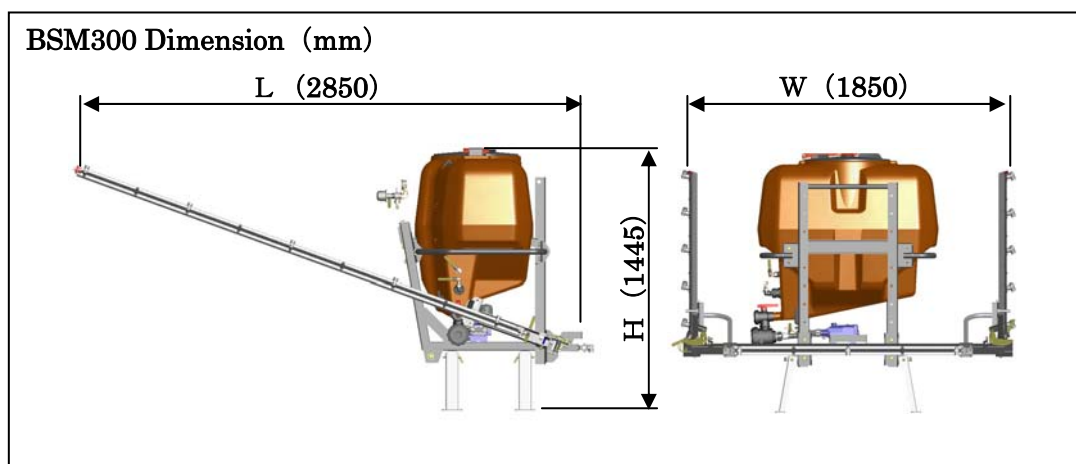
3. Specification

Model name		BSM300
		For field crop
■ Applicable tractor		
Dry weight	kg	Over 1100 (※1 ※2)
Mounting		3 points linkage
Deck		Open
■ Dimension ・ weight		
Dimension (L×W×H)	mm	2850×1850×1445
Boom open width	mm	7330
Dry weight	Kg	115
Equipment weight	Kg	420
■ Chemical tank		
Capacity (Max)	L	300 (310)
Material		LLDPE
Agitation in tank		Jet
■ Pump		
Model		MS330
Operation rpm	Rpm	580－820
Operation pressure	MPa	0.5－2.0
Suction volume	L/min	23.4 (at 820rpm)
■ Boom device		
Spray width	M	7.8
Open & Close		Manual, Ford forward
Height		8steps
Scope	mm	300－1200 (※3)
Nozzle & Q'ty		2 Direction New wide ・ 13pcs
Nozzle pitch	mm	600
Spray volume	L/min	10.5 (at 2.0MPa)
Boom safety device		Spring release

※ 1 . Please install front weight. Please ask dealer shop nearby.

※ 2 . Even though dry weight is less than 1,100kg, some tractor is applicable for this sprayer. Please ask dealer shop.

※ 3 .Spray height at 300mm is adjusted by lower link operation.

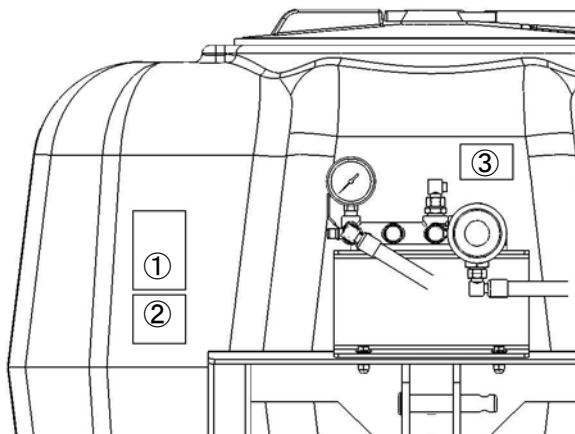


4. Caution label


WARNING

- Please wipe mud on label to make it visible.
- In case caution label is torn, please replace to new one.
- Please attach new label at same space where old label was attached.

※ On the chemical tank, there are following caution label. So please read carefully and understand before operation.



① P/N : 5 6 7 2 3 0

 **WARNING**

- PLEASE WEAR CLOTHES WHICH FITS YOU. PLEASE PREPARE PROTECTION CLOTHES, PROTECTION GOGGLES, RUBBER GLOVES, AND WORK BOOTS, AND WORK WITH SAFE CLOTHES.
- DO NOT TAKE THE WATER DIRECTLY FROM DRINKING WATER SOURCE OR LAKE WHERE LIVING THINGS ARE BREEDING.
- PLEASE FORM A SPRAY PLAN SO THAT CHEMICAL DON'T REMAIN.
- MAKE SURE TO ATTACH AND DETACH THE UNIT WITH EMPTY CHEMICAL TANK.
- PLEASE AVOID SUDDEN STARTING, SUDDEN TURNING, SUDDEN BRAKING, FOR FEAR OF OVER - TURNING.

② P/N : 5 6 7 2 3 1

 **CAUTION**

CAUTION FOR HANDLING CHEMICAL

- PLEASE READ THE INSTRUCTION MANUAL OF CHEMICAL CAREFULLY AND USE CORRECTLY.
- PLEASE ADJUST SPRAY HEIGHT BY THREE PERSON FOR SAFETY. YOU MAY BE INJURED IF BOOM IS FALLEN.
- MAKE SURE OF EXISTENCE OF OIL BEFORE STARTING.

③ P/N : 5 6 7 2 7 0

CAUTION

BE CAREFUL IN OPERATING LIFT UP LEVER OF LOWER LINK. TOO HIGHER LIFT CAUSES HITTING AND DAMAGE TO TRACTOR AND SPRAYER.

5. How to mount on tractor

WARNING

- For safety, be sure to attach boom sprayer with tractor alone.
- When you attach & remove boom sprayer with tractor, be sure that the chemical tank is empty and boom is open for 20°. Otherwise gravity is not stable and it may cause accident.
- Park the tractor & place the boom sprayer on flat area.

- Applicable tractor should be more than 1,100kg (dry weight) and front weight may. Be required depending on tractor model. Please consult with dealer.

Preparation of Boom side

① When you install with tractor, side boom should be opened 20 degree so that tractor tire & boom will not contact.

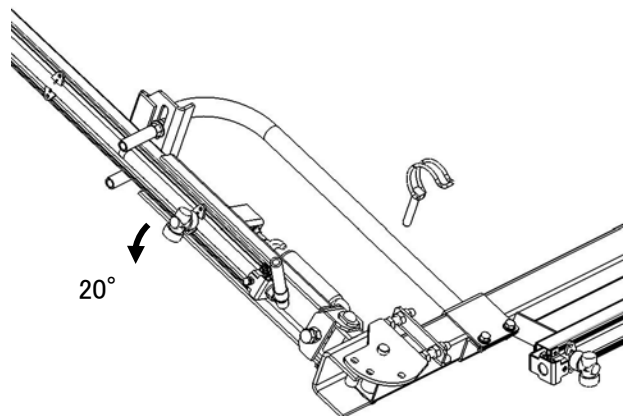
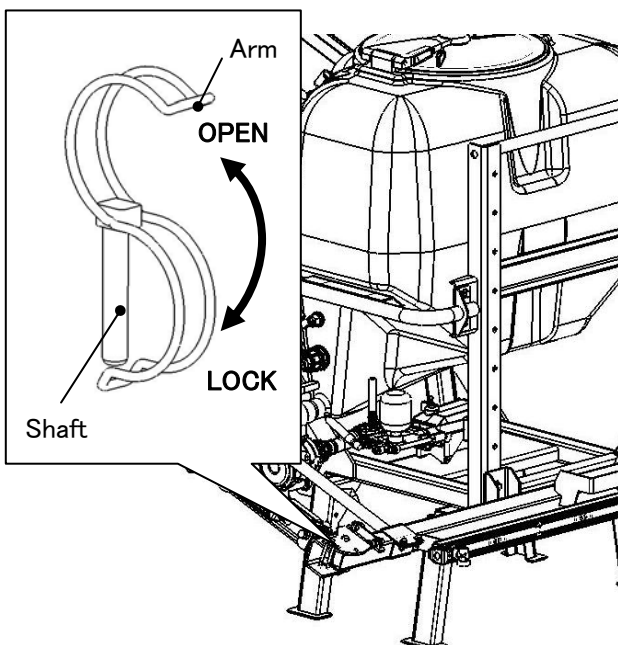
*Here, we explain by left boom, but by right boom also same procedure.

(1) Pull up shaft lock pin arm which fix the side boom to release lock.

(2) While holding the side boom so that it may not move accidentally, then Pull out the shaft lock pin by the other hand.



(3) Remove side boom from boom holder, open the boom for 20 degree, and insert shaft lock pin where upper & lower pin hole are coincident.



(4) Pull down shaft lock pin arm to lock it.

(5) Please do the same procedure for another boom as well.

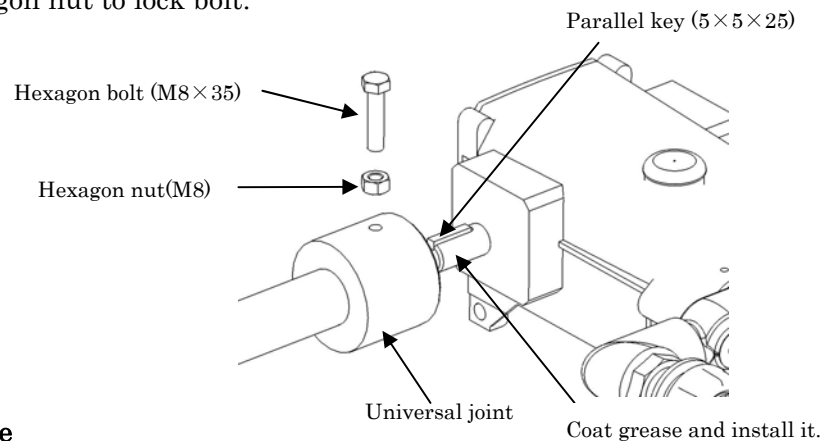
② Install universal joint with pump's crank shaft (input shaft)

(1) Put parallel key on crank shaft's key groove and coat grease on it then install universal joint until end.

(2) Fix universal joint with hexagon head bolt through hexagon nut.

(Provided as accessory)

(3) Then fasten by hexagon nut to lock bolt.



Preparation of tractor side

① Make the right & left tractor's lower link same level.

Please refer to tractor's instruction manual

② Attach top link with tractor.

Installation with tractor

① While adjusting direction of center of boom prayer, drive tractor backward slowly, to boom sprayer, and stop the engine.

② Push the rear wheel by hand and adjust the position of left lower link of tractor and Lower link pin of boom sprayer.

CAUTION

● If right lower link touch to boom sprayer, and left lower link can not lift up, adjust Right stabilizer and open clearance, and be sure not to touch, otherwise you may Hurt your hands.

③ Insert left lower link of tractor to lower link pin, then fix it by linch pin



※ Status of fixed lower link by linch pin.

- ④Insert right lower link and fix it by fastening pin. (Right lower link can be up & down by rotating adjusting handle.)

CAUTION

- Balance of right & left can be adjusted to be horizontal by rotating right lower link adjusting handle. (Please refer to tractor manual)

- ⑤Place parking brake of tractor and confirm whether PTO is OFF, and start engine and lift up lower link slowly, then attach top link to boom sprayer and fix it by linchpin.

- Top link pin & linchpin to fix top link pin are provided with tractor.

WARNING

- Please operate lower link slowly & carefully. And be sure there is no any other person between tractor & boom sprayer. If you move lower link suddenly, boom sprayer will Approach rapidly to tractor or fall over backward, and cause serious accident.

CAUTION

- Be careful in operating lift up lever of lower link. Too higher lift causes hitting and damage to tractor and sprayer.

- ⑥Stop tractor engine, and install universal joint with tractor PTO shaft.

WARNING

- When you install universal joint, stop tractor engine, place parking brake and turn PTO off.

※Please coat grease on PTO shaft of tractor side.

- ⑦Adjust the stabilizer of lower link of tractor and fix the boom sprayer.

- ⑧Please confirm whether boom sprayer is totally installed and fold the stand .

6. Explanation of each portion

■ STAND

Stand is used when you attach and detach boom sprayer with tractor.

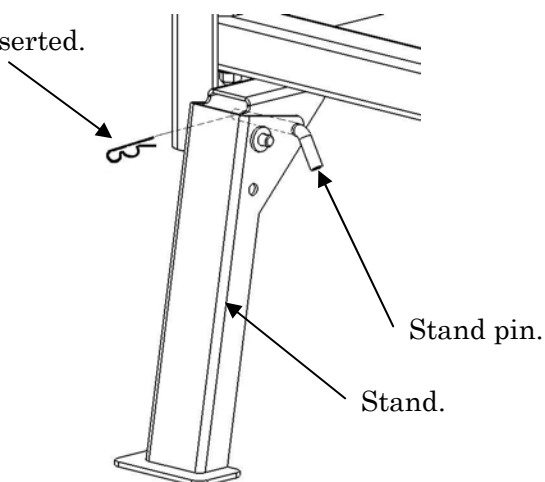
⚠ WARNING

● When you unfold the stand, hold the stand by hand then pull out the pin and Unfold it.

HOW TO SET STAND

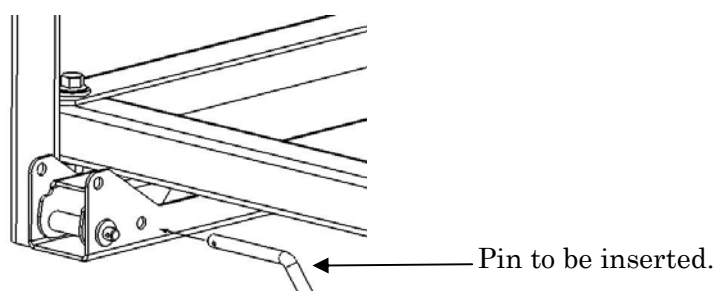
- ① Please lift up lower link by shift lever then confirm stand is not contacting on ground.
- ② Pull out the snap pin and pull out stand pin while holding stand by hand.
- ③ After unfold the stand to the end insert stand pin indicated in sketch and install snap pin.
- ④ Move the stand back and forth to confirm whether it is surely locked.

Snap pin to be inserted.



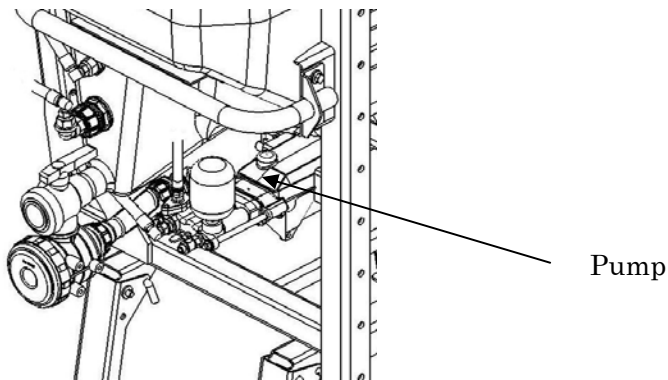
HOW TO FOLD STAND

- ① Please lift up lower link by shift lever then confirm stand is not contacting on ground.
- ② Remove snap pin, and pull out stand pin while holding stand by hand.
- ③ Fold stand and insert stand pin indicated in sketch then install snap pin.
- ④ Move the stand up and down to confirm whether it is surely locked.



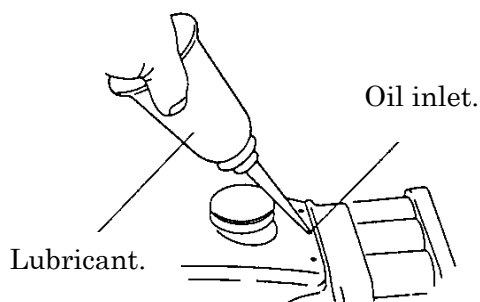
■PUMP

It suctions the chemical liquid in chemical tank, the feed as pressurized.



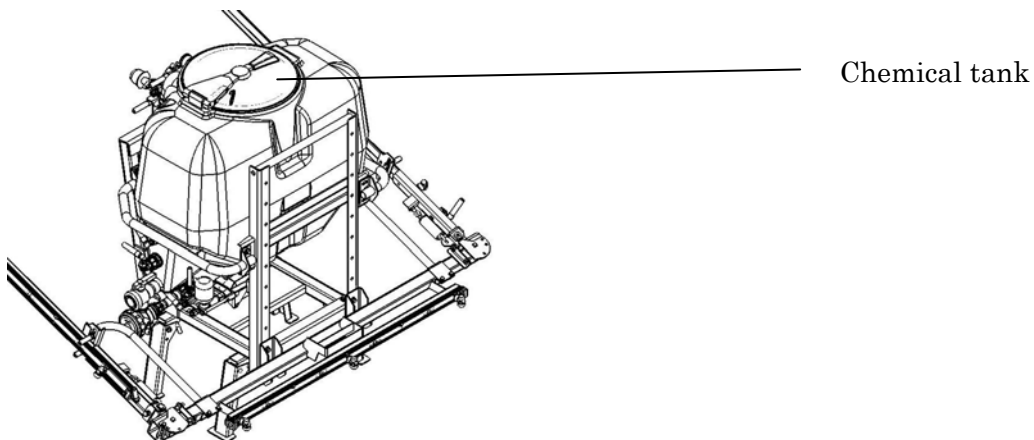
CAUTION

- Tractor's PTO speed should be at 580-820rpm. If PTO rpm is too high or too low, it will cause unevenness of spray or trouble of pump.
- Please lubricate oil (equivalent to SAE10W-30)to 3holes for 3-5 drops every time Before operation.



■CHEMICAL TANK

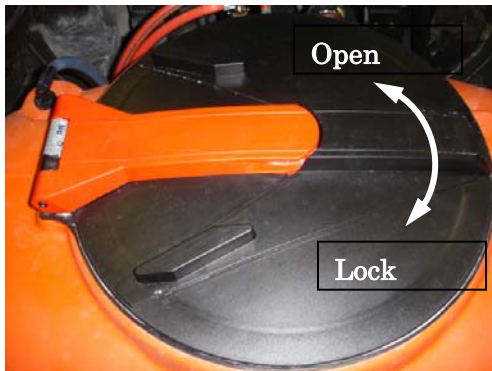
This container stores mixed chemical. Maximum capacity is 310Litre.



CAUTION

- If you travel tractor while water is full in the tank, chemical water may leak from tank lid. Please fill water up to around 300L.

When you open lid of chemical tank, rotate counter clockwise, then release lock and open it. When you close it, rotate clockwise and surely lock it.



The strainer of chemical tank will filter rubbish when you feed water or mixed chemical.

CAUTION

● Please clean strainer every time after operation. You can remove it by pulling out.

There is measure gauge at the left side of chemical tank. Please check the volume at horizontal area.



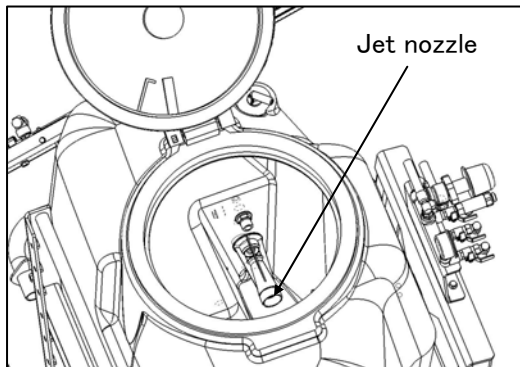
Measurement
tube for remain
chemical

■JET NOZZLE

This device agitate the chemical inside chemical tank. Scroll nozzle should be replaced at every 500hours operation.

CAUTION

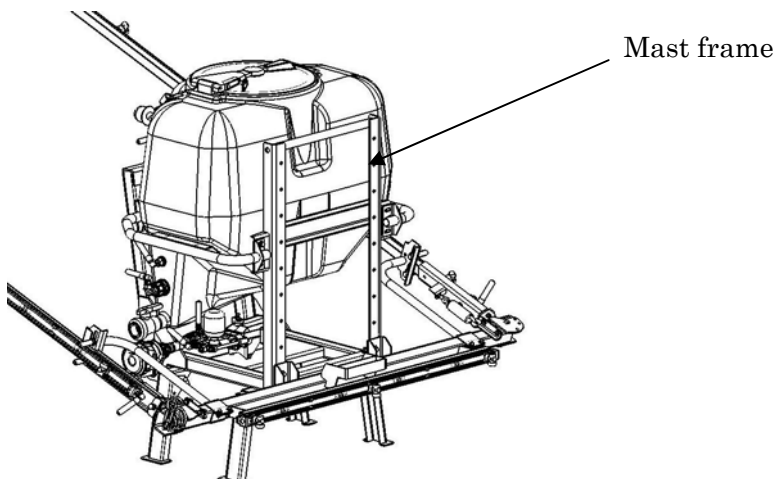
- If the jet nozzle is clogged, chemical will not be agitated smoothly and it may Cause harmful effect of chemical.
- If jet nozzle is worn, sprayer's performance may get worse such as sprayer's pressure will not increase or discharge volume will decrease.



■MAST FRAME

The frame which center boom is installed with. You can change the spray height By changing position of installation of center boom with mast frame.

Please refer to the page of P19



■ SUCTION STRAINER / WATER FEEDING VALVE

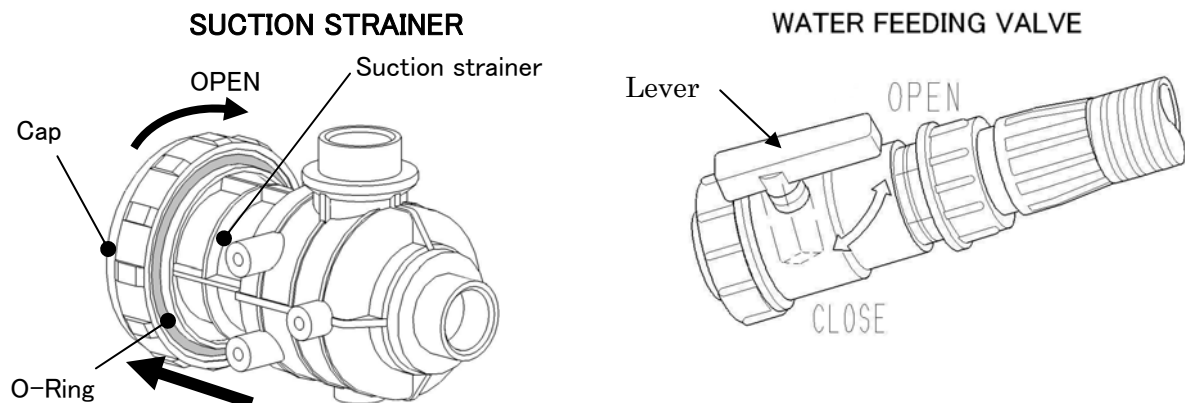
Suction strainer filter the rubbish in chemical tank. You can remove it from strainer itself by loosening nut. When there is remained chemical in chemical tank, please clean strainer while water feeding valve is closed.

⚠ WARNING

- If you remove strainer while feeding valve is open while there is remained chemical in Chemical tank, you will be exposed by chemical or it will flow out accidentally.
- When you remove suction strainer, even though the feeding valve is closed, remained chemical in suction strainer or piping will come out, so please prepare the container to retrieve

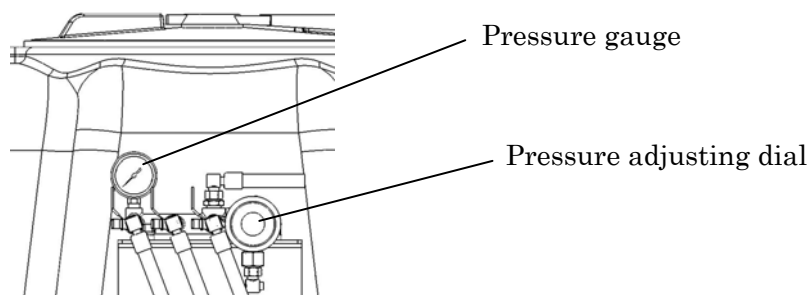
CAUTION

- When you operate pump, be sure to open feeding valve. If you operate while feeding valve is closed, it may cause damage of power sprayer.
- Please clean suction strainer every time after operation. After cleaning, be sure to tighten the nut.



■ PRESSURE ADJUSTING DEVICE

It adjust the pressure of pump. If you rotate pressure adjusting dial clockwise, Pressure will increase, and rotate it counter clock wise, pressure will decrease. Discharging volume will be measured by pressure gauge.

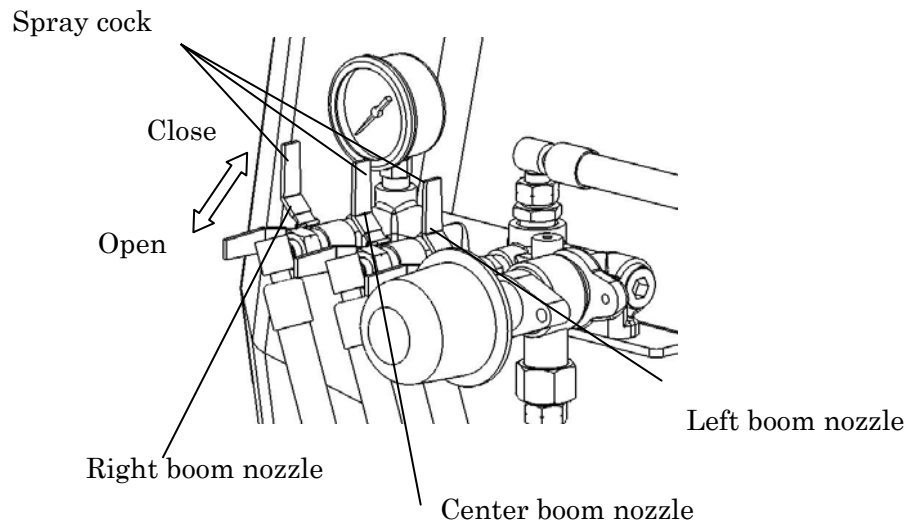


IMPORTANT

- When you pause or finish spraying work, first, please decrease pressure by rotate pressure adjusting dial counter clockwise, then stop PTO.

■ SPRAY COCK

When you position pump cock on “OPEN”, chemical will come out from nozzle, and if you position at “CLOSE”, spray will be stopped. You can operate LEFT, CENTER, & RIGHT nozzle independently.

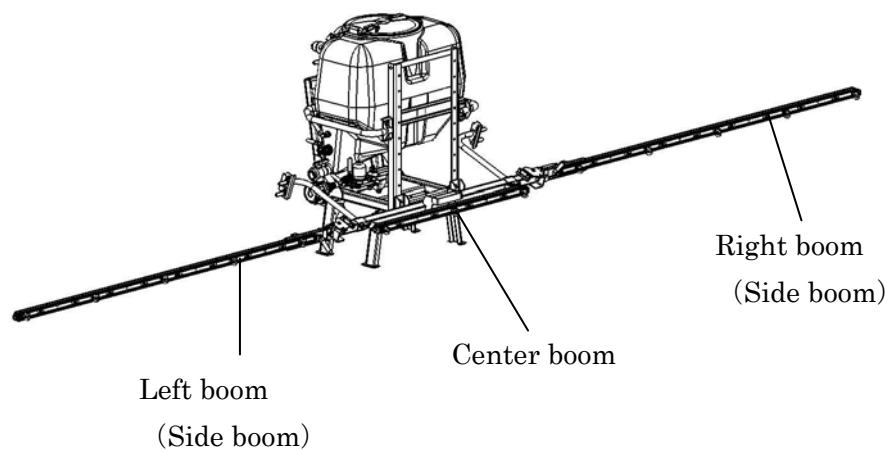


■ BOOM DEVICE

It will spray from nozzle. Boom consists of 3 portion (Left, Center & Right Boom)
Side boom can be folded forward, and it is folded by manual.

IMPORTANT

- When you travel and store, please fold side boom.



HOW TO OPEN SIDE BOOM

CAUTION

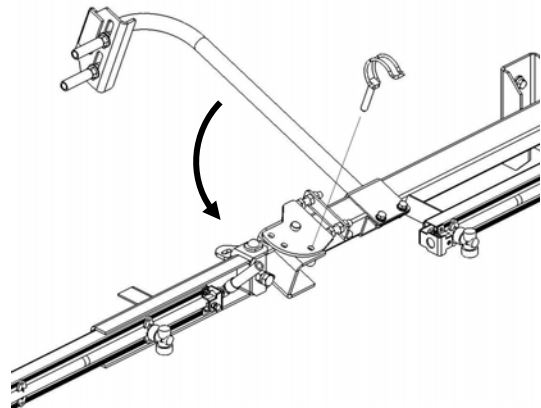
●When you open or close boom, make sure there is no obstacles within 5m radius.

①Pull out shaft lock pin arm fixing side boom then release lock.

※Please refer to page P9

②Please hold the side boom so as not to move accidentally, then pull out lock pin by the other hand.

③ Please open side boom up to horizontal position, and adjust upper & lower pin hole. Then insert shaft lock pin.



④Pull down shaft lock pin arm then lock the position of boom.

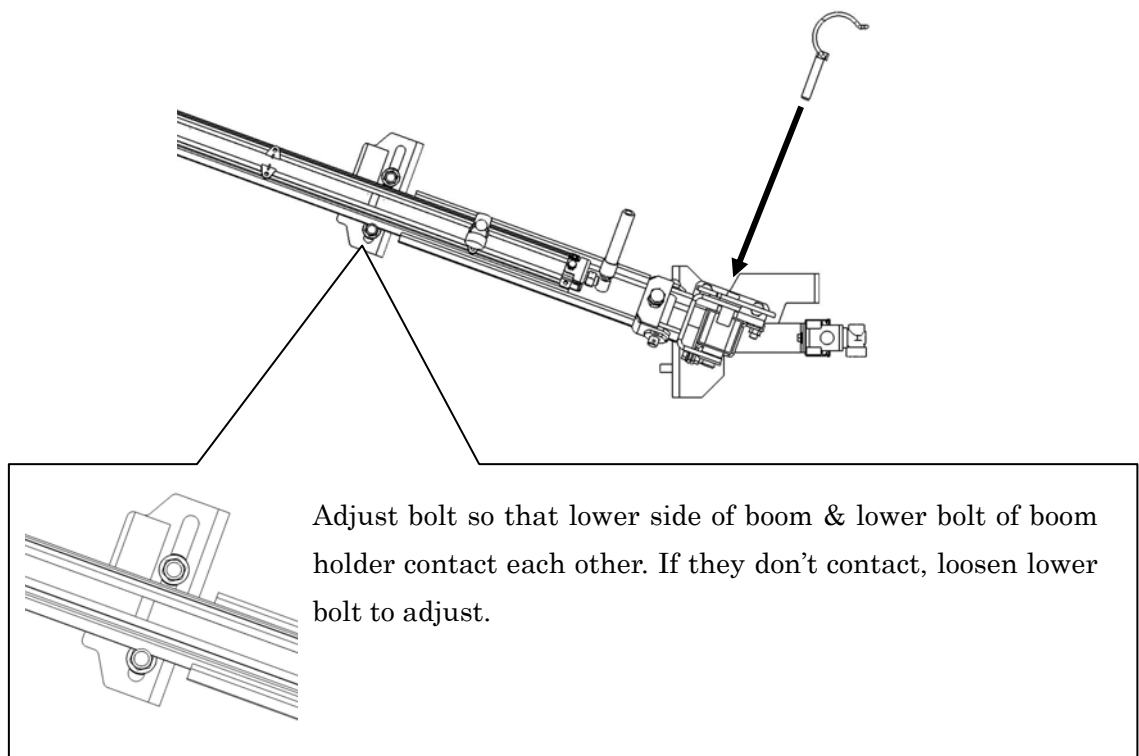
CAUTION

●Shaft lock pin should be locked by arm.

⑤When you close side boom, please follow reverse procedure of opening boom.

CAUTION

- When you close side boom, be sure to place boom on boom holder.
- While storage & traveling, be sure to place boom on boom holder. Otherwise, boom or boom holder will be damaged.
- When you place side boom on boom holder, please confirm whether bolt under boom holder contact on lower side of side boom. In case they don't contact each other, adjust bolt so that they contact lightly.



HOW TO ADJUSTMENT OF SPRAY HEIGHT.

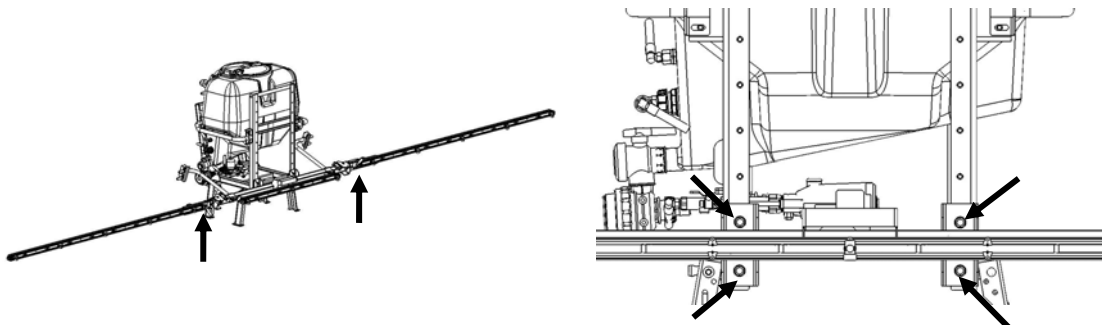
Depending on grass height, you can change the spray height by 10cm pitch.

Maximum spray height is 1.2m.

⚠ CAUTION

- Please change spray height by 3 persons for safety.
(Boom portion's weight is approx 20kg)
- Change the spray height while side(Left & Right) boom is open.

- ① Make sure that the tractor's hydraulic is locked.
- ② Place the parking brake of tractor, stop engine and pull out the key.
- ③ 2 person hold the center boom's both end.
- ④ Other 1 person loosen the 4bolts center boom and remove it.



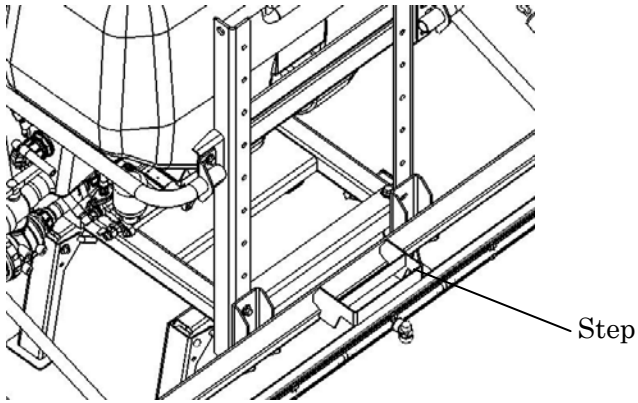
- ⑤ Adjust the center boom for desirable height and fix by 4bolts which were Taken by previous procedure.

If you want to adjust the position where is no nut welded on mast frame, please

use provided nut for back side of mast, and fix tightly.
(Fastening torque: 30[N·m])

■ STEP

Please use while feeding water or mixed chemical to chemical tank.



⚠ WARNING

- Please use step when the parking brake is placed and hydraulic is locked.
- Do not travel while person is on the step.
- Do not get on the step while the boom sprayer is taken away from tractor.
- Do not use step except water feeding or chemical mixture.

7. Spray planning

Before operation, make a spray plan for the day.

IMPORTANT

- Please use manufacturer's designated nozzle only.
- If you use standard nozzle, please set pressure within 0.5- 2.0MPa. If pressure is too high, it may damage nozzle and if pressure is too low, it will cause uneven spray.

HOW TO PLAN

- ① After you decide spray volume per 10a(area unit) ,spray pressure, select suitable nozzle and decide spray speed. (Travelling speed)
- ② Spraying speed 1.44-2.16km/h is suitable. (Like slow walking speed)
- ③ In accordance with below table, please decide travelling speed and spray pressure.

QUICK HELP FOR SPRAY SPEED(For standard nozzle)

Spray volume per 10a	Spray Pressure			
	0. 5 MPa Total spray volume 5.3[L/min]	1. 0 MPa Total spray volume 7.4[L/min]	1. 5 MPa Total spray volume 9.1[L/min]	2. 0 MPa Total spray volume 10.5[L/min]
25L	1. 6 km/h	2. 3 km/h	2. 8 km/h	3. 2 km/h
30L	1. 4 km/h	1. 9 km/h	2. 3 km/h	2. 7 km/h
35L	1. 2 km/h	1. 6 km/h	2. 0 km/h	2. 3 km/h
40L	1. 0 km/h	1. 4 km/h	1. 8 km/h	2. 0 km/h
45L	0. 9 km/h	1. 3 km/h	1. 6 km/h	1. 8 km/h
50L	0. 8 km/h	1. 1 km/h	1. 4 km/h	1. 6 km/h

※Please consult with dealer as actual travelling speed is different from above because of tire slip.

SUPPLEMENTAL INFORMATION

How to seek spraying speed.

- (1) Decide spray volume & pressure per 10a
- (2) Please seek spray speed by below formula.
- (3)

$$\text{Spray speed(km/h)} = 60 \times \frac{\text{Total nozzle discharge volume(Liter/min)}}{\text{Spray volume(L per 10a)} \times \text{spray width (m)}}$$

(ex.) Spray volume 25Liter per 10a, Total nozzle discharge volume 10.5Liter/min
(at 2MPa), Spray width 7.8m

$$V = 60 \times \frac{10.5}{25 \times 7.8} = 3.2\text{km/h}$$

8. Inspection before operation

Please check machine before operation every time.

Then, you can prevent from accident caused by this product or trouble of this product.

※Please refer to page P27 and after.

9. How to feed water

WARNING

●Don't suction water from lake, pond and river which is source for drinking

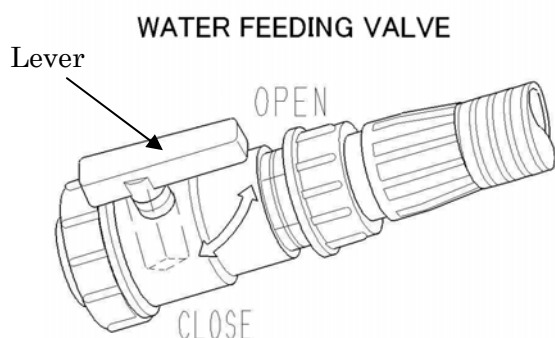
Feed water to chemical tank for required quantity. Be sure to feed water through strainer. Otherwise, nozzle will be blocked or damaged.

10. Check spray

⚠ CAUTION

● When you check spray status, be sure to use water .(Not chemical)

- ① Pour pure water into chemical tank.
- ② Open left & right boom
- ③ Confirm whether water feeding valve is open or not.



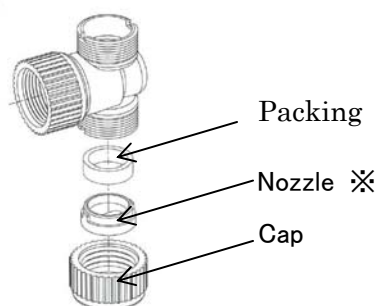
- ④ Run tractor engine at low speed, and rotate PTO.

CAUTION

● If you run tractor engine at high speed, then engage PTO suddenly, it may cause pump's trouble. So, please rotate PTO at low speed.

- ⑤ Operate throttle to run PTO within 580-820rpm
- ⑥ Adjust pressure adjusting dial to set desirable pressure.
- ⑦ Open spray cock to spray from nozzle, then check whether there is something wrong with spray status. If spray pattern is fine fan shape, it is normal.

If the spray angle is too narrow or thickness of mist is uneven, remove nozzle and check whether there is no sludge in it. If you found nozzle is blocked, please clean it and check spray status again.



✖ Nozzle should be installed so that nozzle slit is matching with nozzle holder's slit.

- ⑧When you attach nozzle again, please fasten the nozzle cap surely to prevent from leakage.

⚠ CAUTION

- If you use nozzle for long period, nozzle disc will be worn out and discharge volume will be larger. Rough target replacement period is 500hours
- If you store in winter or long term, please drain out water.

11. Caution for spray work

⚠ WARNING

- Operator should wear the protect gear for chemical spraying such as goggles, boots, protect cloths, waterproof gloves & helmet so that operator should not be exposed by chemical.

⚠ CAUTION

- Pour the chemical for required volume so that chemical will not remain.
- Don't allow any other person to get close to nozzle while operation.

12. Mixture of chemical and handling

⚠ WARNING

- Please read instruction manual of chemical and use properly.

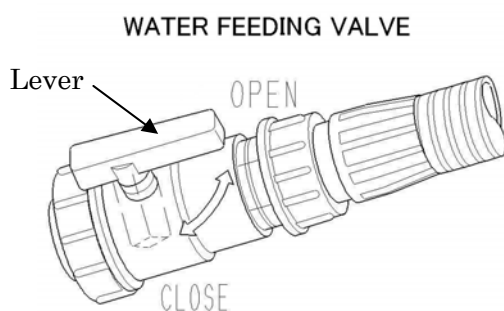
- ①Mix chemical in exclusive use container for required quantity only.
- ②Wet table powder should be diluted for small volume beforehand. Please pour chemical into chemical tank after filling water.
- ③Confirm whether spray cock is close.
- ④Rotate tractor PTO within 580-820rpm.
- ⑤Adjust pressure adjusting dial to set desirable pressure.
- ⑥Run the PTO for more than 3minutes to agitate chemical in the tank.

13. Spray work

CAUTION

- Before operation, please adjust by tractor 's hydraulic lever so that universal joint will be horizontal level. If angle position is beyond above, it will cause damage to pump.

- ① Travel to the position where to start spraying.
- ② Stop tractor in front of point which you want to start.
- ③ Open side boom. (Refer to page P18-19)
- ④ Confirm whether the water feeding valve is open.



- ⑤ Run tractor engine at low speed and rotate PTO.

CAUTION

- If you run tractor engine at high speed, then engage PTO suddenly, it may cause pump's trouble. So, please rotate PTO at low speed.

- ⑥ Operate throttle so that the PTO rpm within 580-820rpm.

CAUTION

- Please operate tractor's PTO at 580-820rpm. If PTO rpm is too high or too low, it will cause Spray unevenness and damage of pump.

- ⑦ Adjust pressure to desired level by rotating pressure adjusting dial.
- ⑧ Position the shift lever of tractor to required position, then travel.
- ⑨ Please position spray cock to "OPEN" and spraying work.

CAUTION

- After running out of chemical, do not run pump more than 1minutes. It will cause trouble of pump.

14. Stop operation

- ①After finish spraying, positions spray cock to “CLOSE”.
- ②Rotate pressure adjusting dial fully to counter clockwise, and decrease pressure.

CAUTION

●If you finish operation as highly pressurized (not returned to 0 position of pressure dial), pump may not suction chemical when you use next time.

- ③Run tractor engine at idling.
- ④Stop tractor's PTO.
- ⑤Close the side boom (refer to pageP18-19)

15. After operation

■WASHING IN CHEMICAL TANK

- ①Prepare the container under suction strainer to retrieve remained chemical in chemical tank(Please plan spray that there will be no extra chemical remain)
- ②Remove suction strainer's cap and retrieve remained chemical.
- ③REPLACE the container to retrieve.
- ④Wash inside of chemical tank by pure water.
- ⑤Wash suction strainer
- ⑥Wash strainer of chemical tank.
- ⑦Attach suction strainer, then pour pure water around 50Liter
- ⑧Open side boom and Spray to clean chemical tank, spray, piping and nozzle until water will run out.

CAUTION

●Do not idle for more than 1minute. Sprayer will be damaged.

■OTHER WORK

- ①Wash by pure water
- ②Chemical should be kept in storage and locked by key.
- ③Keep record for chemical usage diary.
- ④Wash the container for chemical.
- ⑤Wash the protect gear.
- ⑥Take off the cloths and wash body.

16. Inspection

CAUTION!

- When you inspect, please attach boom sprayer with tractor and unfold stand.
- Stop the engine of tractor, lock the hydraulic and pull out the key, then start inspection
- Do not inspect while tractor engine is running. In case you have to do, please consult with dealer.
- Please dispose oil properly.

Check part	Check point	Timing of Inspection & Replacement	REMARKS
Installing bolt, nut	Loose	Before operation	
	Fasten again	When you find looseness or every 1year	
Side boom	Worn out of shaft lock pin	Before operation	Limit 9.5mm
Jet nozzle	Blockage	Before operation	
	Replacement	Every 500hours	※2
Pump	Crankcase oil leakage, volume, contamination	Before operation	
	Crank case oil replacement	Every 100hours (※1)	SAE#10W-30 0.42Litre
	Lubricate to oil inlet	Before operation	SAE#10W-30 3-5drops
	Input shaft unfit, loose	Before operation	
	Input shaft lubrication	When you install universal	Chassis grease
Chemical piping	Loose	Before operation	
	Fasten again	When you find looseness	
Suction strainer	Cleaning	Before operation	
Strainer	Cleaning	Before operation	
Nozzle	Blockage	Before operation	
	Replacement	Every 500hours	※2

※ 1 : Initial replacement should be done after 50hours of operation.

※2 : Even though it is before replacement timing, please replace in case following status.

- Pressure does not increase
- Nozzle in blocked and no improvement after cleaning
- Spray pattern is not normal.

■ INSTALLATION BOLT & NUT

Regarding Lower link pin, chemical tank, mast frame, pump, center boom, side boom, check whether there is no looseness of bolt & nut.

If there is loosened one, fasten again.

Walk around the boom sprayer and check each fastening part (bolt, nut, pin).

If there is loosened one, fasten again.

■ SIDE BOOM

Check whether shaft lock pin is worn out or not.

If it is hardly worn out, replace to brand new one.

Limitation is 9.5mm.

■ PUMP

⚠ CAUTION

● When you drain oil after oil is cool down.

① Please check the oil volume and whether it is contaminated. If there is shortage, refill it and if it is contaminated, replace it.

HOW TO REPLACE

Take off cap of oil inlet and drain plug, then drain oil. When you fill oil, attach drain plug and fill proper volume of oil from oil inlet.

After filling, please confirm oil is filled up to red line by oil gauge.

Engine oil: better than SAE10W-30

Proper volume : 0.42Litre

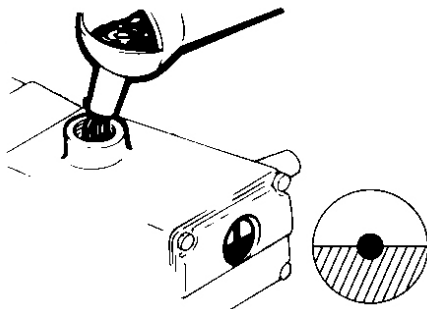
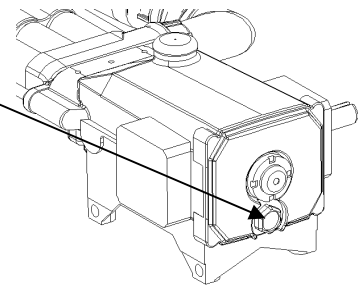
Standard replacement period

INITIAL PERIOD: After 50hours

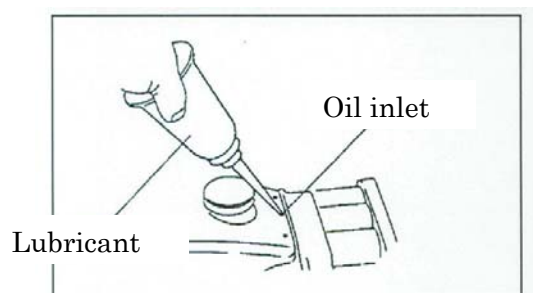
PERIODICAL PERIOD: Every 100hours

Even though working hour is less than above within one year, oil is getting worse as time goes by, so replace it once a year.

Drain plug

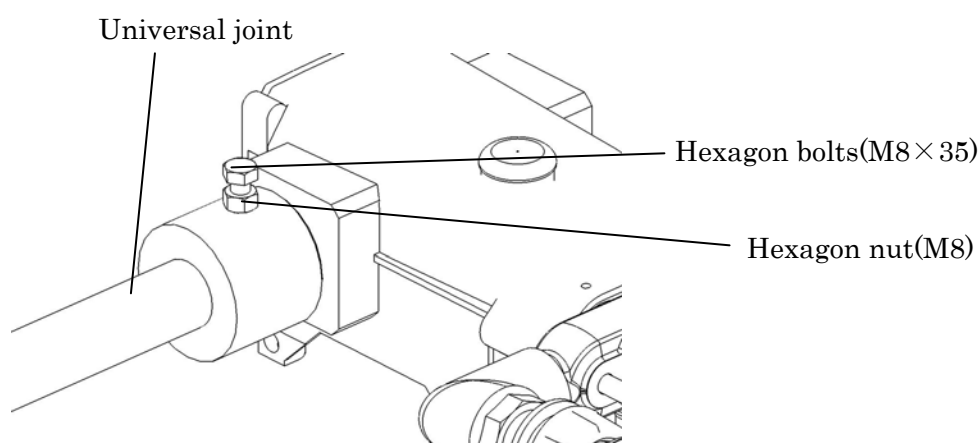


② Before operation, lubricate to 3 points of oil inlet for 3-5 drops. (SAE#10W-30)



③ Check whether there is no gutter or looseness in crank shaft & universal joint.

If it is about to disconnect or looseness, put crank shaft of pump until end of universal joint and fix by fastening hexagon bolts (M8×35) and lock by hexagon nut (M8). And when you install universal joint, coat chassis grease on input shaft.



■ STRAINER

Check whether there is no sludge or rubbish on the strainer, and clean it if there is.

■ SUCTION STRAINER

Check whether there is no sludge or rubbish on the strainer, and clean it if there is.

■ CHEMICAL WATER PIPING

Check spray pattern (Refer to page P23) and check whether there is no water leakage on piping. If there is leakage, check packing (if there is) and fasten connecting part.

(Refer to chapter 19, P.31 Piping diagram for packing)

■ NOZZLE

spray pattern and check whether status of spray pattern is correct or not.

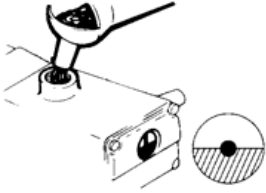
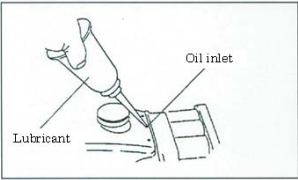
This nozzle should be replaced after 500 hours.

■JET NOZZLE

Check spraying and whether water is flashing from jet nozzle. (Refer to page 23) If water flow is weak, There maybe stuck in nozzle. Then please ask dealer to wash he jet nozzle by dealer.

Please replace it after 500hours operation.

17. Lubrication

LUBRICATION PART		OIL	VOLUME	REPLACEMENT PERIOD
	CRANK CASE FOR PUMP	SAE10W-30 more than class SJ	0.42Litre	Initial 50hrs, every 100hrs(※)
	OIL INLET	SAE10W-30 more than class SJ	3-5drops	Every operation
Fulcrum of part		Chassis grease	Proper volume	Once a year

※Even though within 100hours, please replace once a year.

18. Long term storage

In order to maintain lifetime of boom sprayer, it is important to take care machine.

In addition to daily maintenance, please do following;

Each connecting part of end of piping should be removed, and drain totally.

Especially in cold area, it may cause freezing problem for valve & piping, so

Be careful to open the all valves.

① Please check each part and defective part should be repaired or maintained.

② Each connecting part of end of piping should be removed, and drain totally.

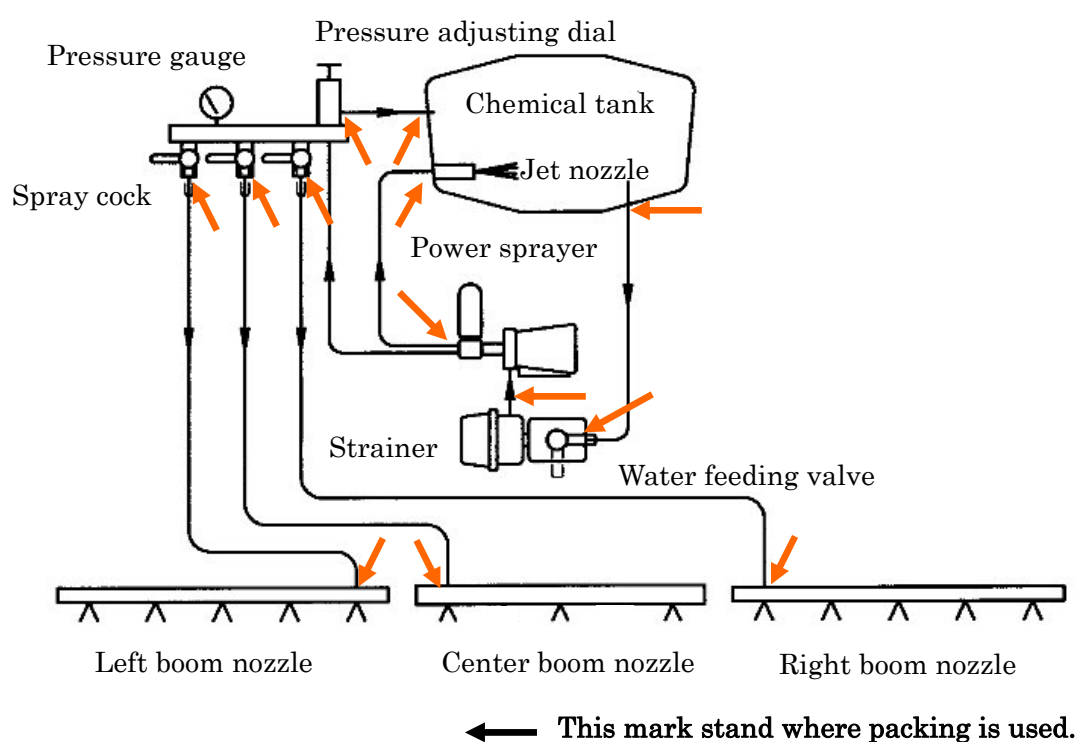
After drain out water, run pump for 30seconds and drain water.

③ All spray cock should be positioned on “OPEN”

④ Wash boom sprayer by pure water.

- ⑤ In order to prevent freezing, nozzle(packing, strainer) and pipe connecting part should be removed and drain it out totally. Nozzle should be kept carefully.
- ⑥ Remove rust by sandpaper and coat paint.
- ⑦ Please keep strainer's lid and chemical tank lid open for venting.
- ⑧ Unfold stand to ground and remove boom sprayer from vehicle. (Procedure for removal is reverse turn of this)
- ⑨ Lubricate grease or oil to lubricating part of power driving part or other mechanical part.
- ⑩ Please store where there is no dust or humidity safely.

19. Piping diagram



20. Trouble shooting

CAUTION

- When you check trouble shooting, mount boom sprayer on tractor, then unfold stand.
- Stop tractor engine and lock the hydraulic then out the key.
- Do not do trouble shooting while tractor engine is running otherwise ask dealer shop.

PHENOMENON	CAUSE	COUNTERMEASURE
Boom sprayer can not mounted on tractor	Mounting on slope area	Mount on flat area.
	Tractor's top link is short	Adjust tractor's top link length longer
It can not spray from nozzle	Chemical is not filled.	Pour chemical for required volume
	PTO is not rotating	Rotate PTO
	Spray cock is closed	OPEN spray cock
	Nozzle is blocked.	Clean up nozzle
Discharge pressure can not increase	PTO rpm is low	Rotate PTO at 580-820rpm
	Pressure adjusting dial is not adjusted	Adjust pressure adjusting dial
	Suction strainer is blocked	Clean up suction strainer
	Wear of pump & pressure regulator valve	Replace parts
	Wear of nozzle	Replace to new one.
Agitation is not normal	Jet nozzle is wear or blocked.	Clean it.

21. Consumable part list

PORTION	PARTS NAME	PARTS NO	Q'ty	REMARK
PUMP	SEAL	100015	3	
	PISTON PACKING	116121	3	
	OIL FILLER CAP	117420	1	
	FELT PACKING	027711	3	
	O-RING	014041	1	
	O-RING	023170	1	
	O-RING	015862	9	
		023172	3	
	CYLINDER PIPE	022929	3	
	INLET VALVE SEAT	014122	3	
	PISTON RETAINER	118628	3	
	DISCHARGE VALVE ASSY	105510	3	
	OIL SEAL	117423	2	
PRESSURE REGULATOR VALVE	VALVE ROD	016975	1	
	RETAINER	012256	1	
	BELLOWS PACKING	016972	1	
	BELLOWS	011451	1	
	VALVE SEAT	117443	1	
	VALVE BALL	107238	1	
	O-RING	014179	1	
SUCTION WATER STRAINER	O-RING	567292	1	

22. Periodical replacement parts list

PORTION	PARTS NAME	PARTS NO.	Q'TY	TIMING
CHEMICAL TANK	JET NOZZLE(SCROLL NOZZLE)	198798	1	Every 500hours
NOZZLE	NOZZLE DISK D-35S	567219	11	Every 500hours

MEMO



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