

ARBUS 1000

English version - MI_USA-0103



WARNING

Read Operator's Manual before setting up, operating, or maintaining sprayer. Failure to follow safety precautions in this manual and in labels on the product could result in serious injury or death to the operator or bystanders.

Keep manual nearby for further reference. If manual is damaged or illegible, contact your Jacto dealer or Jacto at the address below for a replacement.

EDITION - 07/2011

CODE - 511436

Operator's Manual



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INTRODUCTION

The agrochemicals application is necessary to achieve higher and economical production.

Since applying agrochemicals can present risks to humans, the environment and to crops, Jacto wants to ensure the operator uses it in a proper, efficient, and safe manner.

Thoroughly read and understand this manual before operating this sprayer. Always keeps this manual on or near the sprayer at all times for quick reference for the proper operation, maintenance and adjustments to the sprayer.

If you have any questions, contact your Jacto dealer.



This equipment was developed exclusively for chemical spray application.

The sprayer manual refers only to instructions of use and maintenance of parts and components manufactured by Jacto.

Read it carefully and follow strictly the instructions.

If you have any questions, please contact your Jacto dealer.

IDENTIFICATION PLATE

Your sprayer has a plate showing the model, serial number of the machine and lot (month and year of manufacture).

This information is very important so that Jacto can keep records of eventual modifications made on the material used and on its construction characteristics.

In requesting replacement parts or maintenance, always specify the model, serial number and lot of your sprayer for prompt and efficient service.



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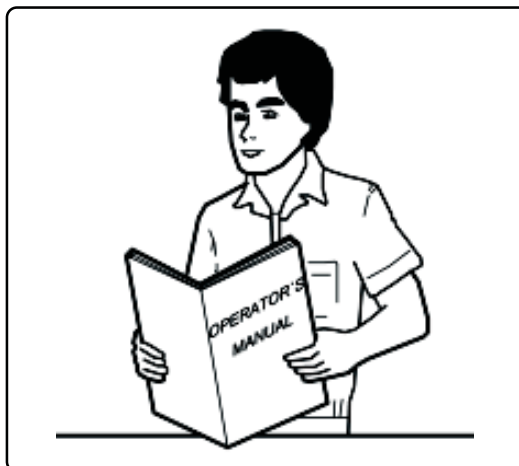
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SAFETY

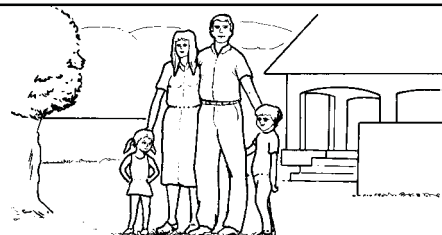
This sprayer was carefully designed and built so as to give you the maximum production, saving, easy operation and safety.

Therefore, you or anyone else who is going to operate, maintain and work around this sprayer must read and understand this manual thoroughly in order to be familiar with all the operating and maintenance procedures and safety information related to this sprayer. All accidents can be prevented if all the safety instructions are correctly followed.

Moreover, always keep this manual close at hand for quick review in case of doubt.



ATTENTION
FAILURE TO FOLLOW THE SAFETY INSTRUCTIONS PROPERLY WILL RISK YOUR OWN LIFE AS WELL AS THE LIFE OF PEOPLE WORKING AND LIVING AROUND YOU.



ATTENTION: THIS SAFETY ALERT SYMBOL IDENTIFIES IMPORTANT SAFETY MESSAGES. WHEN YOU SEE IT, BE ALERT TO ANY POSSIBILITY OF PERSONAL INJURY OR DEATH.

OPERATOR AND OWNER'S RESPONSIBILITIES

According to the standard NR31 - Safety and Healthy Regulation Standard in the Agriculture Work, it is responsibility of the equipment's owner and operator to follow the chemical application safety guidelines.

OPERATOR'S RESPONSIBILITIES

- Always follow the safety procedures when operating the equipment.
- Always operate the equipment within the limits and restrictions indicated in this manual.
- Thoroughly read and understand this manual prior to using the equipment.

OWNER'S RESPONSIBILITIES

- The equipment's owner must keep the owner's manual on or near the equipment at all times for the operator's reference.
- It's the employer responsibility to provide, properly maintain and train the operator regarding the use and requirements for adequate IPE (Individual Protection Equipment).
- The employer must to replace or repair the equipment's components in the event of failure to ensure the safe operation of the sprayer.
- The employer will be responsible for the operator's training to ensure a safe application.

SAFETY

CAUTIONS WHEN OPERATING AGRICULTURAL SPRAYER

- Before operating this sprayer, read carefully and understand thoroughly this manual.
- Only qualified operators that have thoroughly read and understood the owner's manual should operate this sprayer.
- Do not ingest alcohol or drugs before or during the operation of this sprayer.
- Make sure that all the guards are in place before running the sprayer.
- Do not climb on or come down the sprayer when it is in motion.
- Turn the engine off before leaving the operator's place.
- **This sprayer was designed and manufactured to support operations in the crops and on roads, tracks, trails or paths inside farms within the speed limit recommended by Jacto (limit of 18 mph in the routes inside the farm and 4 mph when spraying). The use of the sprayer above the limits mentioned is not approved by Jacto.**
- This sprayer must be maneuvered in safe places, away from people, animals or any other situation that offers risks of personal injuries or material damages. Make sure there are no people near the sprayer before starting the engine.
- Do not make maneuvers or brake abruptly.
- The transportation of people and any loads whatsoever in the sprayer is strictly prohibited in any circumstances.

ATTENTION: Do not touch PTO shafts, belts, fans or any other moving part while the sprayer is running.



Keep away from moving parts and be very careful with hands, feet, loose clothes, long hair, etc.

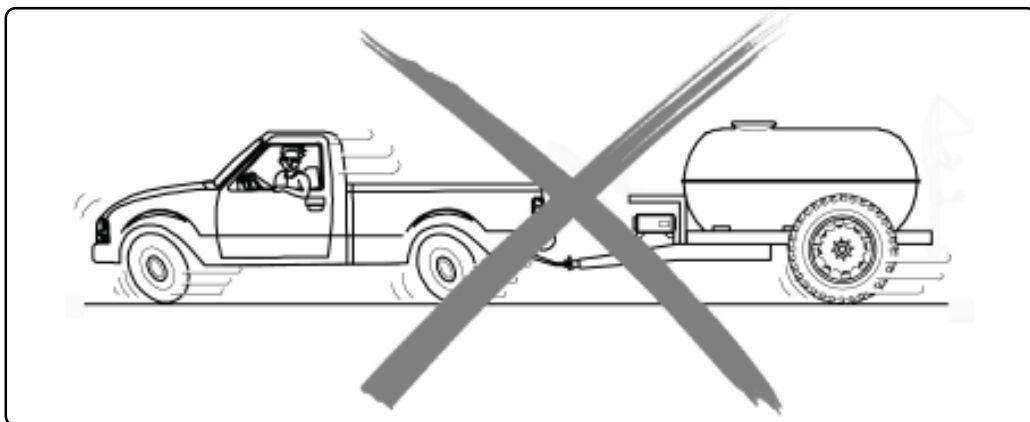
If you have any doubts/questions, please request Jacto Technical Assistance.

- Keep away children, aged people and animals while operating, servicing this sprayer and even when the sprayer is stored.
- Do not run the pump dry.
- Do not exceed 540 rpm at the PTO.
- The PTO shaft ends must be securely locked to the PTO of the tractor and to the sprayer tongue.
- The PTO shaft guard must always remain in good repair and fastened by the safety chains. The PTO shaft must work freely in its interior.
- Make sure the drawbar and the sprayer end are properly connected/fastened.
- Check and change the worn or broken parts.
- Only unhitch the sprayer on firm and level ground.
- Remove the controls installed on the tractor before disconnecting the sprayer.

SAFETY

CAUTIONS IN THE MAINTENANCE AND TRANSPORTATION

- Activities of cleaning, lubrication, repair and adjustment should only be performed by qualified and trained professionals duly protected with the approved and proper PPE (Personal Protective Equipment) such as gloves, masks, goggles, safety boots, etc.
- **Before performing any type of service, adjustment or maintenance in your sprayer, always disengage the PTO shaft and turn off the tractor engine.**
- **It is prohibited to make cleaning, lubrication and maintenance services with the sprayer in operation, except if its very operation is essential to make these services. In this case, all the special protection and signalization measures must be taken in order to prevent accidents.**
- **The removable guards can only be removed for maintenance. Then, they must be obligatorily placed back in their original position.**
- Do not modify this sprayer in any way because this can impair its function and risk your safety.
- Keep your sprayer in thorough repair.
- **Failure to comply with these warnings may result in personal injuries or death.**
- **Jacto neither recommends nor approves the towing or trailing of the sprayer by vehicles, except by recommended tractors mentioned previously in the section "Cautions when operating agricultural sprayer".**
- **The employ in adverse and not recommended conditions can cause damage to the sprayer and components and will make void the warranty as well as exempt the manufacturer from any obligation to any accident or consequences.**
- **For the displacement and transport of the sprayer, the use of trucks or flatbeds are recommended as long as measures for its perfect immobilization are taken in order to avoid accidents as result of improper accommodation.**



- Require from the JACTO representative during the technical delivery of the sprayer that the proper instructions on assembly, maintenance, warranty be carefully explained.

SAFETY INSTRUCTIONS

HANDLING CHEMICALS

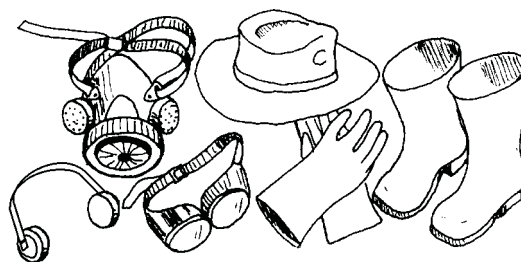
Chemical products are classified in four categories of toxicity. According to their toxicity level, there is a special recommendation of appropriate protective equipment.

As your safety concerns first, we list below all the protective equipment recommended for handling chemical products of the category 1 which includes high toxicity level chemicals.

This way, all the possibilities of serious illness and death are eliminated.

Obligatory individual protective equipment for handling and spraying chemicals:

- Long-sleeved working clothes
- Impermeable apron or coverall
- Impermeable gloves
- Impermeable wide-brimmed hat
- Boots
- Special protective masks equipped with appropriate filters for each type of product



CHEMICAL PRODUCTS CLASSIFICATION

	TOXICITY LEVEL		LABEL COLOR ON CHEMICALS CONTAINER
	I	HIGH	RED
	II	MODERATE	YELLOW
	III	LOW	BLUE
	IV	LIGHT	GREEN

DIRECTIONS

- Read and follow all instructions on the chemicals manufacturer's label.
- Keep the chemical products closed and in a dry and ventilated place.
- Use the chemical products in agriculture only.
- Keep away children, untrained people and animals.
- Handle the chemicals following recommendations of a technician.
- Always handle chemicals in a ventilated place and equipped with individual protective equipment.
- Use the application rate as per instructions on the labels.
- Do not make spray applications in the wind or hot weather.
- Do not drink, eat or smoke while spraying or handling chemicals.
- Keep children, untrained people and animals away from the application areas.
- Never blow through nozzles strainers, valves or pipelines by mouth.
- Do not store or transport chemical products together with food, medicines, people, animals.
- Make sure rivers, lakes, etc. will not be contaminated when washing out the sprayer.
- After spraying, take off all protective clothing and take a shower.
- In case of intoxication, go see a doctor immediately and show him the chemical products label.
- Never medicine an unconscious person through mouth.
- **Do not re-use the chemical products containers for other purposes. Consult an agronomist on how to discard empty containers of chemical products.**

SAFETY INSTRUCTIONS

DECALS

Safety decals are placed on the equipment to reduce the risk of damages or accidents to the operator or to the equipment during the use.

Before operating the equipment, identify and understand the mean of all decals, through this page.

Keep them in good repair, clean and legible. Replade them immediately in case of damage by ordering them through the part numbers specified below.



ATTENTION: Lubrication point with grease.

P/N: 276220



ATTENTION: Lubrication point with oil.

P/N: 395061



ATTENTION: Area where the jack must be placed to lift the equipment.

P/N: 276238



ATTENTION: Drain point.

P/N: 389387



ATTENTION: Risk of injuries. Keep away from the sprayer when it is running.

P/N: 379040



ATTENTION: Read the operator's manual before operating the sprayer.

P/N: 379230



ATTENTION: Risk of serious injuries. Keep at a distance and do not make any kind of maintenance while the fan is in motion and the PTO is engaged.

P/N: 379057



ATTENTION: Obligatory use of hearing protection.

P/N: 379123



Final test of the equipment.

P/N: 013169

SAFETY INSTRUCTIONS



ATTENTION: Read the operator's manual before operating the sprayer.

P/N: 379248



ATTENTION: Obligatory use of protective clothing.

P/N: 379131



ATTENTION: Risk of serious injuries. Keep all protection devices in their places.

P/N: 379065



ATTENTION: Maximum speed allowed for the machine is 18.5 mph.

P/N: 379214



ATTENTION: Risk of serious injuries. Do not make any operation on the PTO shaft if the PTO is engaged.

P/N: 379008



ATTENTION: This machine is not allowed in highways.

P/N: 379222

		1.1m³/h	1.1m³/h
Arbos 3000	115/70 R13	22	2,35
Arbos 3000	7,35-14	26	1,85
Arbos 1900	7,35-14	26	2,88
Arbos 1500/1750	7,35-14	26	2,88
Arbos 1500/1000	110-13	64	3,30
Arbos 2000/730	110-13	64	3,30
Arbos 2000/1000	110-13	64	3,30
Arbos 2000/1000	7,65-14	28	3,50
Arbos 4000/1000	11,4-13	64	3,30
Arbos 4000/1000	14,0-20	31	2,30
Jetris 3000	110-13	64	3,30
Jetris 3000	7,35-14	26	3,30
Jetris 3000	11,40-20	26	1,82
Corol 2P e 3P	7,35-14	26	3,30

ATTENTION: Tire pressure table.

P/N: 391631



ATTENTION: Do not get into the main tank of the sprayer.

P/N: 380014

	Fig. 1	M. m.	Fig. 2
	20-45	202	202
		401	374
	18,3	100	70-80
	11,75	115	
	10	170	120
	22,3	230	145

ATTENTION: Nut torque table.

P/N: 379164



Instructions to connect the PTO shaft

P/N: 428631

SAFETY INSTRUCTIONS



P/N: 515601

Procedures for fan belts tension.



P/N: 219717

Instructions to adjust drawbar.



P/N: 169128

Attention: Never pull the lever without the chemical container over the container rinse nozzle.



P/N: 018705

Instructions to unlock the fan.



P/N: 047035

Sprayer identification plate.

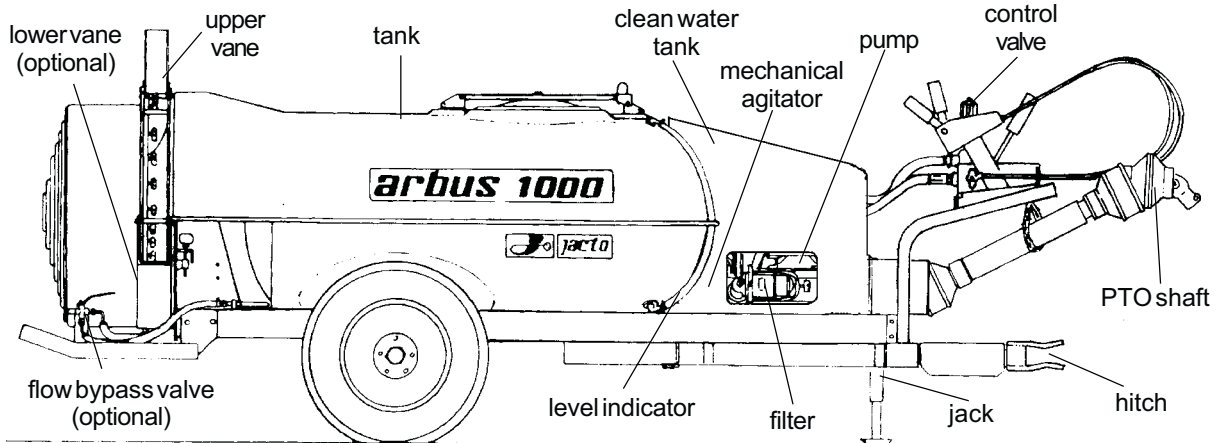


P/N: 018630

Fan diameter - 28.54 inches.

PRESENTATION OF SPRAYER

ARBUS 1000 EF / ARBUS 1000 EA



SPECIFICATIONS	AXLE TYPE			
	Fixed (EF)		Tracking (EA)	
	JP-75	JP-100	JP-75	JP-100
Length (in)	149.52	149.52	149.52	149.52
Width (in)	52.68	52.68	52.68	52.68
Height (in)	47.16	47.16	47.16	47.16
Weight (lb)	1201.5	1223.55	1201.5	1223.55
Tank				
- Capacity (gallons)	264	264	264	264
- Material	Fibergl	Fibergl	Fibergl	Fibergl
Filter				
- Model	FVS-100	FVS-100	FVS-100	FVS-100
- Mesh	60	60	60	60
Pump				
- Model	JP-75	JP-100	JP-75	JP-100
- Flow rate (gallons/min) at 540 rpm	19.81	26.41	19.81	26.41
- Power consumption (HP) at 398.25 psi	5.3	7.0	5.3	7.0
Nozzle				
- Nozzle holder quantity	9	9	9	9
- Nozzle holder model	valve	valve	valve	valve
- Nozzles quantity	48	48	48	48
Track width				
- Fixed (in)	45.24	45.24	45.24	45.24
Ground clearance (in)	9.84	9.84	9.84	9.84
Tires				
- Type	7.35 x 14	7.35 x 14	7.35 x 14	7.35 x 14
- Pressure (psi)	355	25	355	25
Agitator	Mech	Mech	Mech	Mech
Filling unit (optional)	EJ-250	EJ-350	EJ-250	EJ-350
Recommended maximum working speed (mph)	1.5 to 4	1.5 to 4	1.5 to 4	1.5 to 4

FAN FEATURES	PUMP MODEL	
	JP-75	JP-100
- Fan diameter (in)	28.74	28.34
- Pulley diameter (in)	3.50	3.93
- Rotation (rpm)	2,000	1,800
- Air volume (ft ³ /min)	342.55	307.24
- Air speed (mph)	94	84.50
- Power consumption (HP)	21	17

PRESENTATION OF SPRAYER

OPTIONAL

Nozzle holders	8 double nozzle holders with 32 nozzles
	7 double nozzle holders with 28 nozzles
	9 double nozzle holders with 36 nozzles
Filler unit	Fonte limpa (with quick fitting)
Spray lance	
Spray gun	
Pump	JP 75 (19.81 gpm) NI-Resiste
Pump	JP 75 (19.81 gpm)
Fixed axle	7,35 x 1,4
Tires	11L-15
Articulator axle	11L-15
Deflector	Vertical
Electrical control	EC 4400
Line filters	

MAIN COMPONENTS OF SPRAYER

SUCTION FILTER

Located between the tank and pump, the suction filter is specifically designed to prevent dirt or impurities from reaching the pump.

It has a quick shut off valve which allows easy filter cleaning, filtering elements changing and/or pump maintenance.

This valve must always remain open while the sprayer is running. If it remains closed, you will hear an unusual noise in the pump.



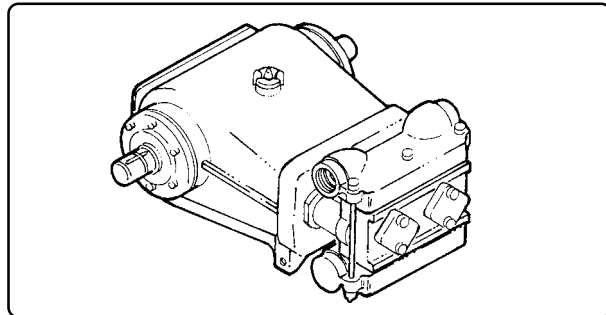
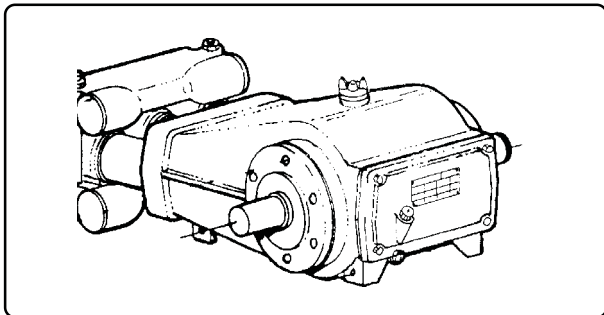
PUMP

The pumps mounted to Jacto sprayers have flow rate ranging from 10.03 to 79.25 gallons per minute.

PUMP MODEL	FLOW RATE (gpm)	MAXIMUM WORKING PRESSURE	
		psi	kg/cm ²
JP - 402	10.03	300	21
JP - 75	19.81	400	28
JP - 100	26.41	400	28
JP - 150	39.62	4000	28
JP - 300	79.25	400	28

The ceramic liners ensure greater resistance to abrasion and agrochemicals' action.

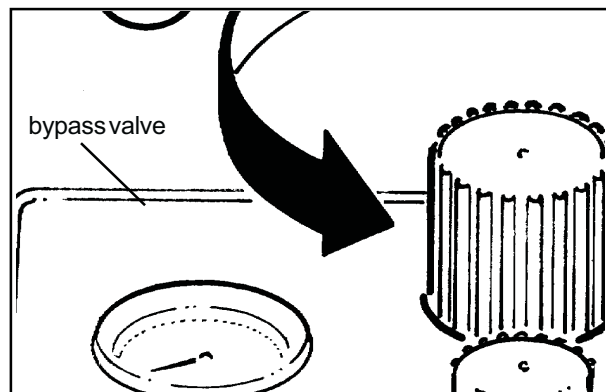
Piston cup replacement becomes easier by removing the head assembly in a quick and simple operation with no need to remove the pump.



FLOW BY PASS VALVE (OPTIONAL)

This is an accessory designed for the attachment of a spray gun or lance to spray specific spots of pests or diseases, seedlings, young trees, thus making quicker the treatment.

Its job is to stop the chemical mixture flow to the nozzles branch and to bypass it to the spray lance or gun.

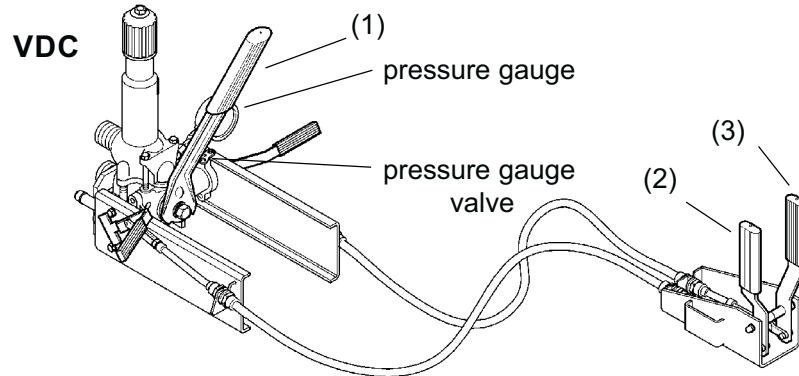


MAIN COMPONENTS OF SPRAYER

PRESSURE REGULATOR

The pressure regulator control provides adjustments ranging from 2 to 35 kgf/cm² (30 to 500 psi), shown by the pressure gauge.

Levers (1), (2), (3) have different functions: lever (1) opens and closes the chemical flow, and levers (2) and (3) distribute the chemical flow to the right and left nozzles branches, making the spraying easier and more economical.



ATTENTION

In order to ensure longer life of the pressure gauge, close lever (1) after regulating the sprayer, thus releasing the pressure, and close the pressure gauge valve.

NOZZLES

The nozzles have the job to generate droplets and distribute them uniformly over the surface being sprayed.

Flow, angle and droplet sizes vary according to working pressure. Operating with pressure over that recommended by the manufacturer will decrease the nozzles' life.

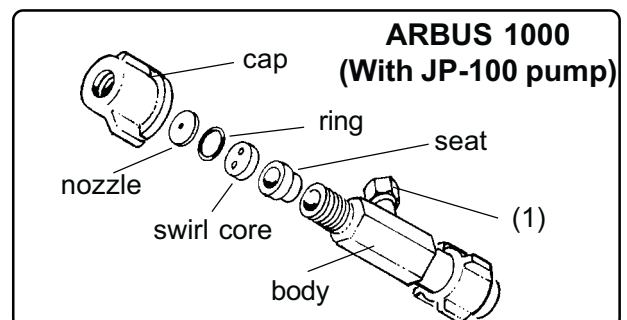
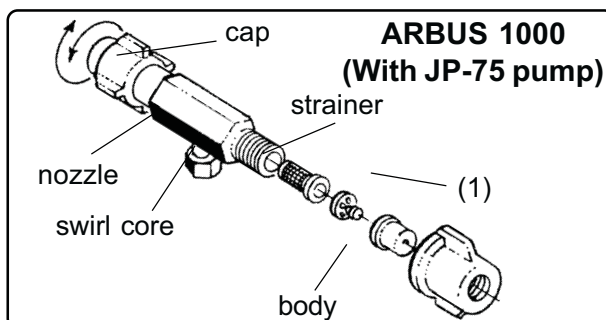
This sprayer is equipped with alumina (ceramic) nozzles, very resistant to wear and to chemical action, and mounted as shown in the figures below.

NOZZLE HOLDER WITH VALVE

The nozzles holders with valve can be adjusted to desired angle and can be shut off individually.

NOTE: To adjust the nozzle, loosen the nut (1), set it in the desired position and retighten the nut.

ATTENTION: Do not overtighten the nut.



MAIN COMPONENTS OF SPRAYER

DOUBLE NOZZLE HOLDER (OPTIONAL)

DIRECTING THE NOZZLE

Loosen the nut (1) and set the desired nozzle at the mark (A) existing on the nozzle body.

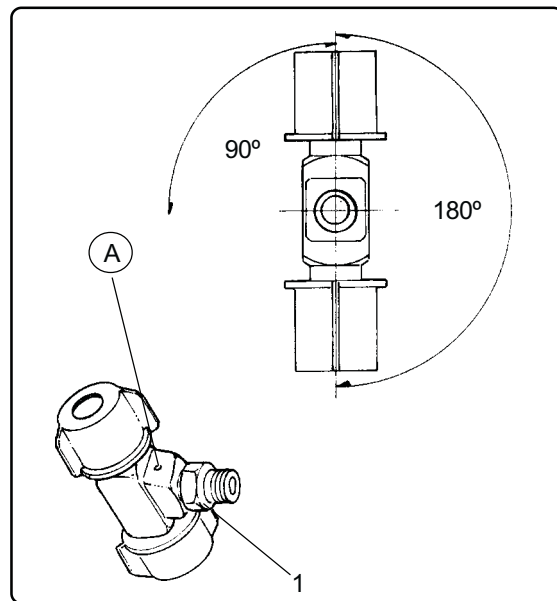
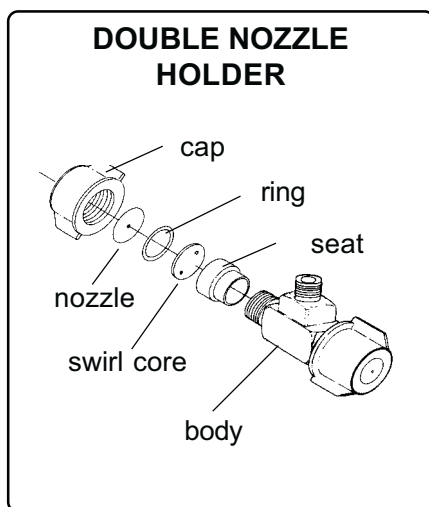
NOTE: This mark indicates the spray direction. So the nozzle at this mark is turned on.

CHANGING THE SPRAY VOLUME

With a simple 180° turn of the nozzle holder it is possible to turn off one nozzle and turn on the other.

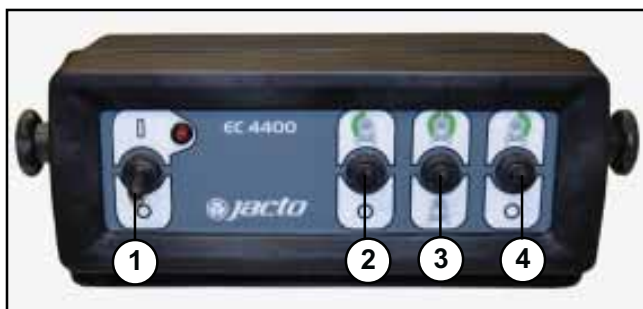
SHUTTING THE FLOW

Just give the nozzle holder a 90° turn in relation to the mark (A) and the flow will be turned off.



MAIN COMPONENTS OF SPRAYER

ELECTRICAL CONTROL EC 4400 (OPTIONAL: SUPPLIED UPON REQUEST AT THE TIME OF PURCHASE)



ATTENTION

Turn switch 3 on before starting spraying from left to right segments.

NOTE

In case the electrical unit does not work, the spraying segments will remain opened. In this case, the VAR command may be used to open or close them manually.

With the electrical unit it is possible to control the opening and closing of spraying segments (left and right sides).

Switch 1: Turns on and off the electrical unit;

Switch 2: Opens left spraying segment;

Switch 3: Opens both left and right spraying segments;

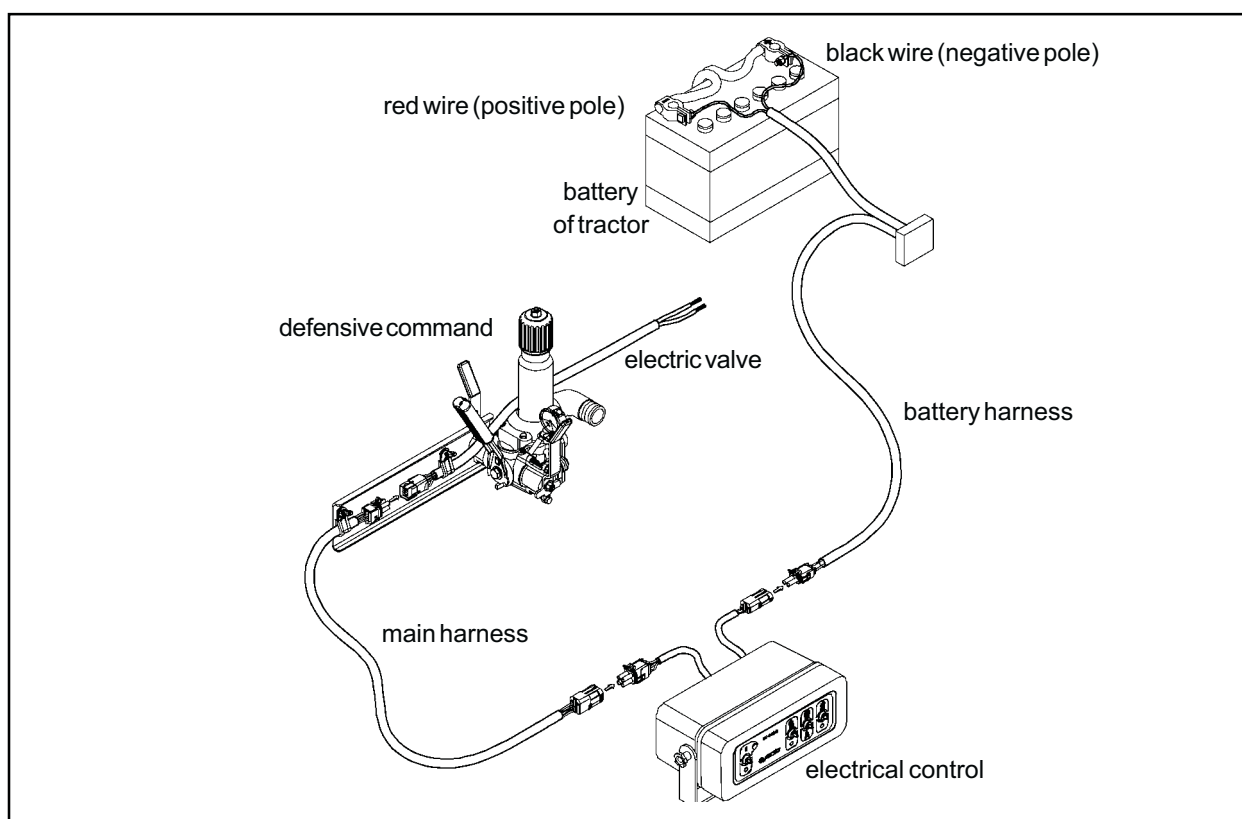
Switch 4: Opens right spraying segment.

The electrical control EC 4400 should be placed within easy access over its mobile base which can be adjusted longitudinally according to the type of tractor or even to the need of the operator.

ASSEMBLY DIAGRAM FOR ELECTRICAL CONTROL

ATTENTION

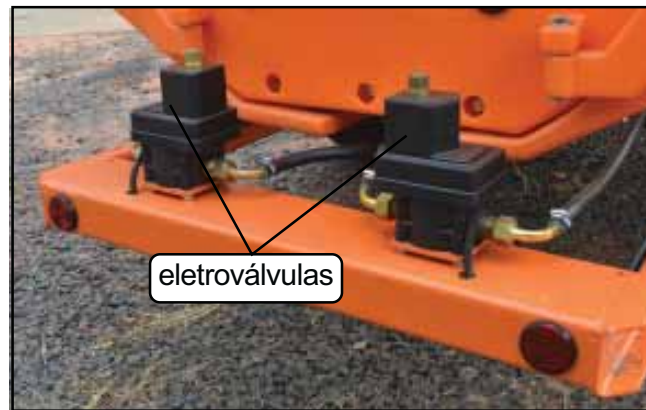
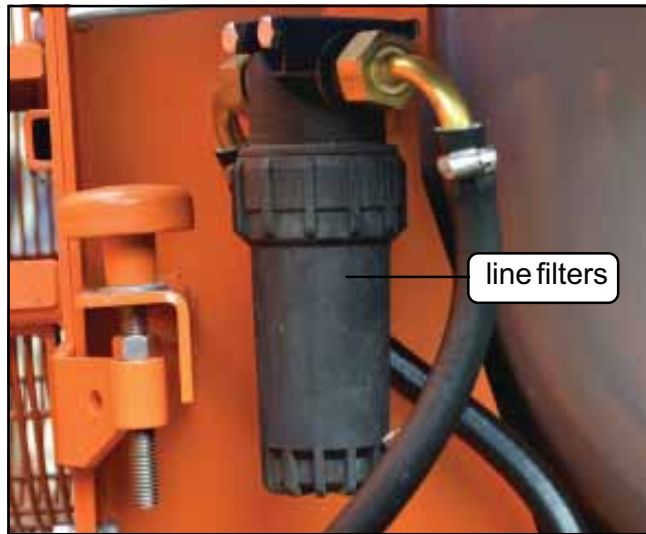
Pay close attention to the position of harness connectors to avoid damaging the circuits.



MAIN COMPONENTS OF SPRAYER

LINE FILTERS (OPTIONAL: SUPPLIED WHEN THE MACHINE IS EQUIPPED WITH ELECTRICAL UNIT EC 4400)

The line filters retain impurities of chemicals, wich damage the spraying, before they reach the electric valves, segments and nozzle holders. There is a line filter installed in the pressure line before each electric valve.



TECNICAL SPECIFICATIONS FOR LINE FILTERS

Maximum work pressure	300 lbf/pol ²
Filter mesh	80 ou 50
Hose nozzle	ø 1/2"

MAIN COMPONENTS OF SPRAYER

FAN

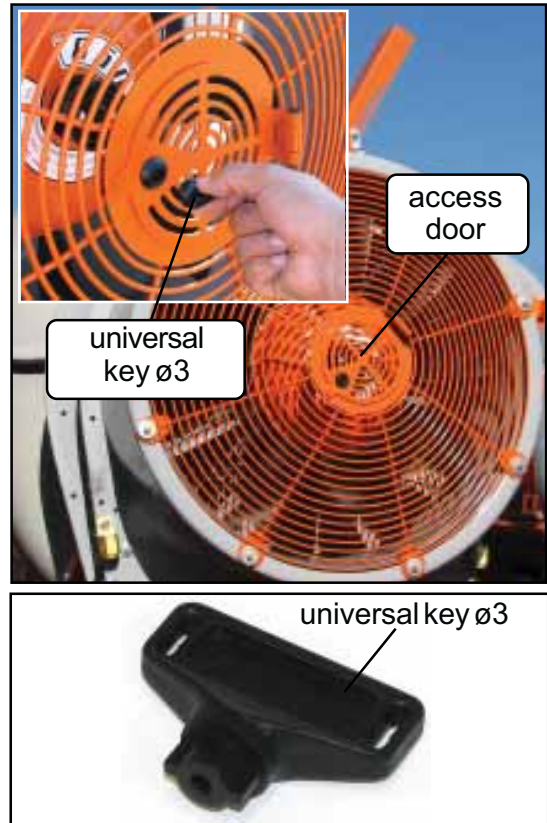
The fan has a locking device designed to be used during the tank filling, agitation of chemical mixture while spraying, as well as for spray lance application. The use of this device reduces power consumption in any of said operations.

In order to reach the fan locking device, it is necessary to use a universal key $\varnothing 3$ (provided together with the machine in the accessories box) which will open the access door.

To turn the fan off, pull the lock and give it a quarter turn. To turn it on, set the lock back. After these procedures, close the access door.

For tractors with independent PTO, the following is recommended:

- Do not engage the PTO with the engine accelerated.
- With the engine idling, engage the PTO and gradually accelerate until reaching the recommended rpm.



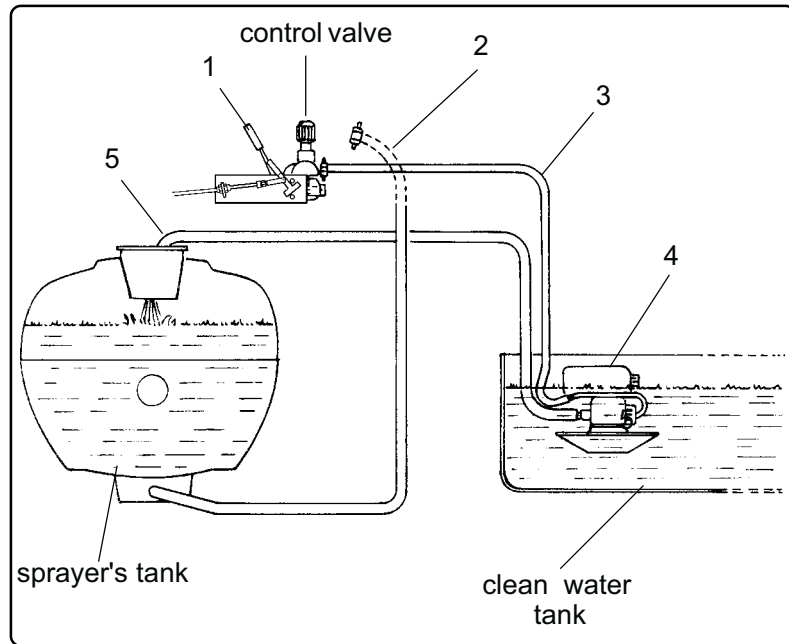
ATTENTION

- Always disengage the PTO and wait for the fan to stop completely before handling the lock or unlock.
- The equipment shall never be used with the fan locking device access door opened. The access door shall never be opened with the tractor on and the PTO shaft engaged.

MAIN COMPONENTS OF SPRAYER

FILLER UNIT (OPTIONAL)

- Set the lever (1) to turn off the chemical flow.
- Pour 13.20 gallons of water into the sprayer tank.
- Remove the return hose (2) from the chemical control.
- Connect the filler hose (3) to the chemical control in the place of the return hose.
- Put the filler unit (4) in the water tank and put the end of the discharge hose (5) in the tank opening.
- Run the sprayer with 540 rpm at PTO.



ATTENTION

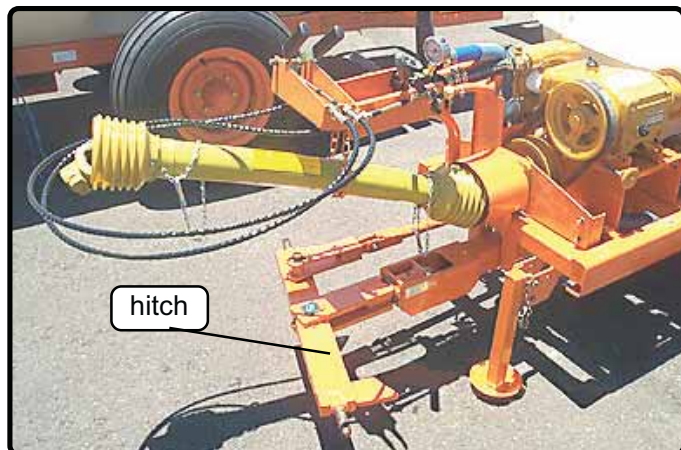
- THE SPRAYER FILLING OPERATION MUST BE DONE IN PLACES APPROPRIATE FOR THIS PURPOSE OR THROUGH APPROPRIATE VEHICLES (TRUCKS, TRAILERS, ETC.).
- NEVER COLLECT WATER FROM RIVERS, LAKES, DAMS, STREAMS, BROOKS, ETC. BY USING THE SPRAYER'S RETURN SYSTEM.

TRACKING AXLE

This is a device that allows to maneuver the tractor in narrower spaces in the field, even with the PTO engaged.

ATTENTION

Whenever you need to move backward with the sprayer (reverse gear), do this carefully, without dragging the sprayer's tires, in order to avoid damage to the transmission.



PTO SHAFT

Your sprayer may be equipped with the wide-angle CV PTO shaft or the standard PTO shaft. The advantage of the wide-angle CV model over the standard model is that the first allows to make turns of up to 70 degrees with no need to disengage the PTO. Both have plastic protection guards to prevent the operator and his clothes from touching the PTO shaft and to avoid damage to the plants while running.

For instruction in detail, refer to the section MAINTENANCE - PTO SHAFT.

MAIN COMPONENTS OF SPRAYER

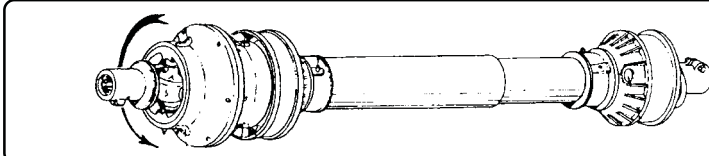
STANDARD PTO SHAFT



NOTE:

For instruction in detail, refer to the section: MAINTENANCE - PTO SHAFT.

WIDE-ANGLE CV PTO SHAFT

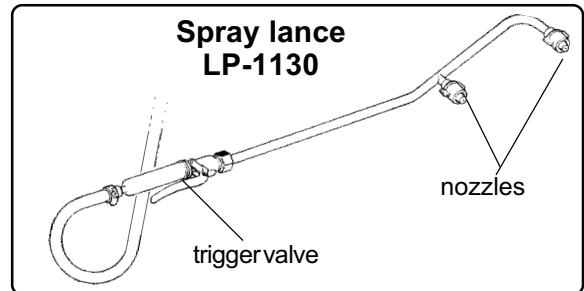


NOTE:

For instruction in detail, refer to the section: MAINTENANCE - PTO SHAFT.

SPRAY LANCE (OPTIONAL)

Nozzle	Pressure (psi)	Flow rate (gpm)	
		Nozzle	Lance
JA-2	150	0.20	0.52
	200	0.30	0.61
	300	0.37	0.75
	400	0.43	0.86

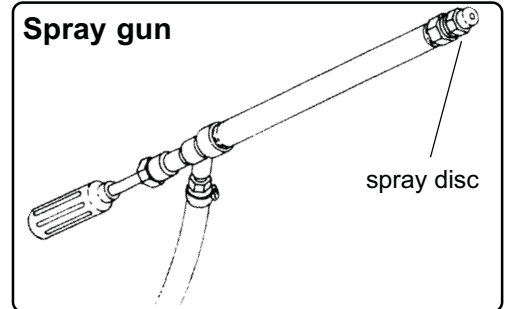


Pressure band not recommended.

SPRAY GUN (OPTIONAL)

This is a component for spot spraying on big plants requiring high application rate.

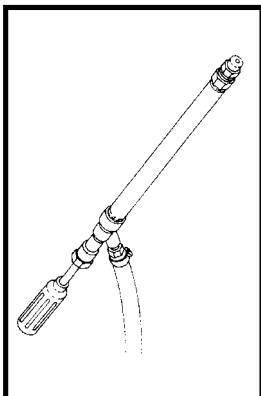
It is possible to have flow rate ranging from 1.31 to 11.88 gallons per minute by shifting the spray discs.



SPRAY DISCS - SERIES D

Made in stainless steel, these discs are designed to be used on the Jacto spray gun for spot spraying on fruit trees due to its large application range, as well as for cleaning sheds, warehouses and agricultural equipment.

The spray discs are available with flow rate ranging from 1.31 to 11.88 gpm.

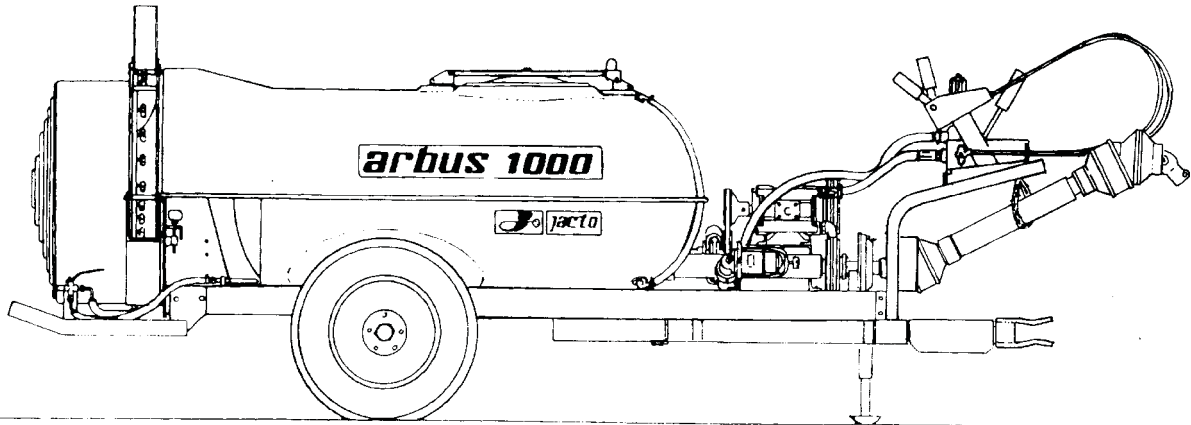


FLOW RATE TABLE

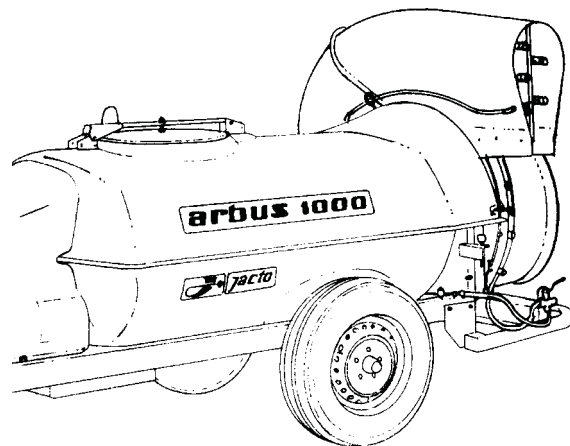
DISC PART #	DISC MODEL	PRESSURE (psi)				
		100	150	200	300	400
		SPRAY GUN FLOW RATE (gpm)				
202275	D - 5	1.31	1.58	1.84	2.11	2.50
202267	D - 6	1.80	2.24	2.64	3.17	3.56
202811	D - 7	2.47	2.87	3.30	3.79	4.49
202259	D - 8	3.39	3.96	4.49	5.28	6.24
622829	D - 9	3.75	4.65	5.47	6.70	7.76
114686	D - 10	4.88	5.81	6.73	7.92	9.42
622837	D - 11	5.54	6.53	7.75	9.77	11.88

MAIN COMPONENTS OF SPRAYER

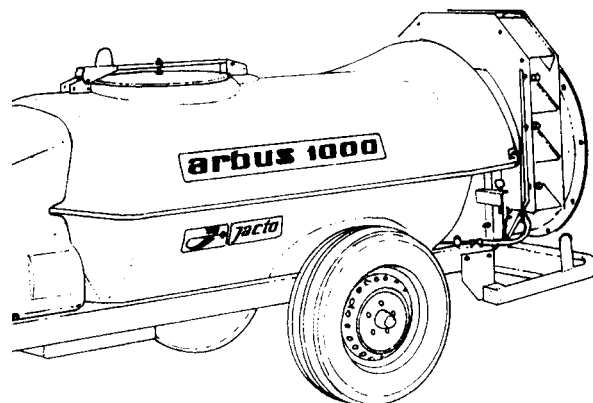
ARBUS 1000 EF / ARBUS 1000 EA



ONE-WAY DEFLECTOR (OPTIONAL)



ROW CROP DEFLECTOR (OPTIONAL)



OPERATIONAL PROCEDURES

Stage	Procedure	Sprayer type	
		Trailer	3 point
Spraying	Use individual protective clothing	X	X
	Do not work at high speeds	X	X
	Do not spray against the wind	X	X
	Do not travel with boom lifted or unlocked	X	X
	Take care with electricity supply cables	X	X
	Do not eat, drink or smoke while spraying	X	X
	After spraying, dispose of all protective clothing and take a shower	X	X
Receiving the sprayer	Check if all components are intact	X	X
	Check the components of accessories box	X	X
	Require trained person to instruct about assembling, operating and servicing components and accessories	X	X
Using the sprayer for the first time	Clean and lubricate every point of the PTO shaft	X	X
	Check if the hitch pin is original	X	-
	Check if the three-point hitch pins are original	-	X
	Check if the hitch pins have cotter pins	-	-
	Check the overlaps of the PTO shaft	X	X
	Remove the tractor's drawbar	X	X
	Raise to the highest the tractor's hydraulic arms	-	X
	Adjust the control valve position to avoid impacts while turning .	X	X
	Check if the grease fittings are filled	X	-
	Check if the oil is on the level on the components	X	X
	Calibrate the tires	X	X
Retighten the tank nuts and lug nuts	X	-	
Whenever filling the tank	Clean the suction or line filters	X	X
	Clean nozzles and their strainers	X	X
Every day or every 10 hours	Clean nozzles, strainers and filters	X	X
	Check the grease fittings and joint pins	X	X
	Check the oil level on the pumps and gear box	X	X
	Wash the inside and outside of the sprayer	X	X
	Check for damage on the paint and repaint	X	X
	Check for oil leakage and stop it	X	X
	Store the sprayer in a dry, ventilated and indoor place	X	X
First 30 hours	Change for the first time the pump oil	X	X
	Retighten the bolts on the tank, axle and wheels	X	-
Every 100 hours	Change the oil of the pump and gearbox	X	X
	Tighten the belts	X	X
	Clean and check the pressure regulator components	X	X
	Clean the inside and outside of the sprayer, and paint the parts subject to corrosion with lubricating oil	X	X
Every 500 hours or annually	Service the pump	X	X
	Change hydraulic oil	X	-
	Change the oil of the gearbox	X	X
	Retighten the bolts of tank, wheels, axle, etc.	X	-
	Change the grease of the wheel hub	X	-
Every 1000 hours	Replace the belts of the equipment	X	X
Every 2000 hours	Replace the bearings of the drive transmission	X	X
	Replace the bearings of the driven transmission	X	X
	Replace the pressure gauge	X	X

CHOOSING THE IDEAL TRACTOR

GUIDELINES

Different working conditions lead us to adopt the following criterion for choosing the tractor to run the Arbus line sprayers of 264.17, 396.25 and 528.34 gallons.

- Check the sprayer weight on the identification plate.
- Check the tank capacity.
- Check in the specifications table the total power consumption of the sprayer at the PTO.

Example:

Sprayer weight = 1,223.56 lb

Tank capacity = 264.17 gallons

Total power consumption = 21 HP

CHOOSING THE TRACTOR CONSIDERING THE POWER CONSUMPTION AND THE LOAD TO BE TRANSPORTED

1- POWER CONSUMPTION

The tractor should have power at least 90% higher than the power required to run the sprayer.

Ex.: Power required by the sprayer = 21 HP

Minimum tractor nominal power = 40 HP

2- LOAD TO BE TRANSPORTED

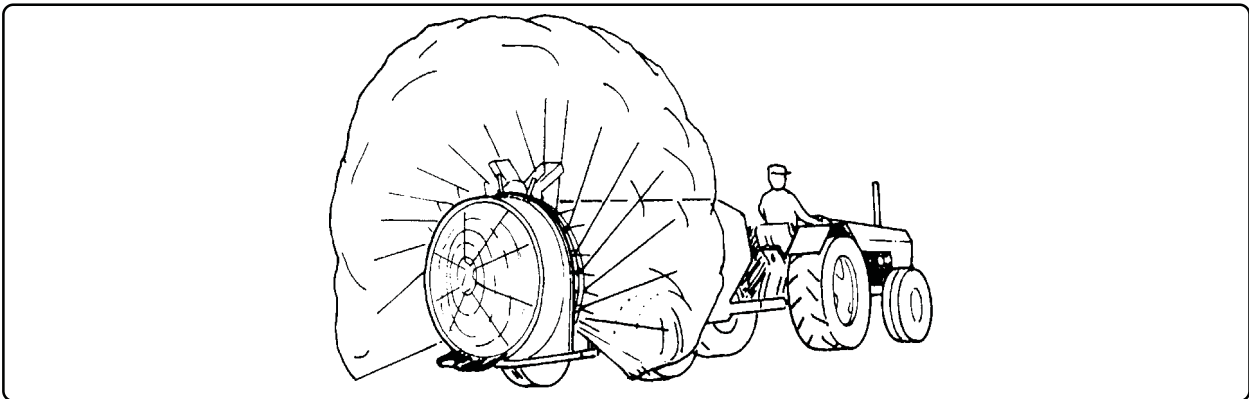
The tractor gross weight should be at least equal to the sprayer gross weight.

Ex: Sprayer net weight = 1,223.56 lb

Filled up tank = approximately 264.17 gallons (2,204.62 lb)

Sprayer gross weight = 3,428.18 lb

Tractor gross weight = 3,428.18 lb



ATTENTION

In this case the recommended tractor should have minimal nominal power of 40 HP and weigh at least gross 3,428.18 lb.

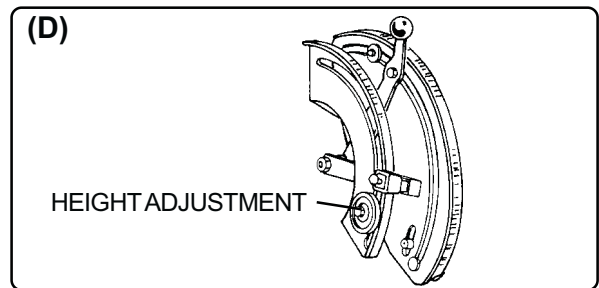
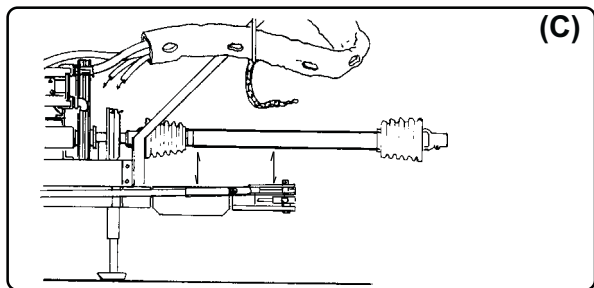
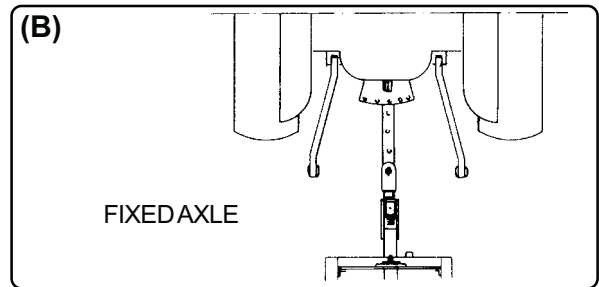
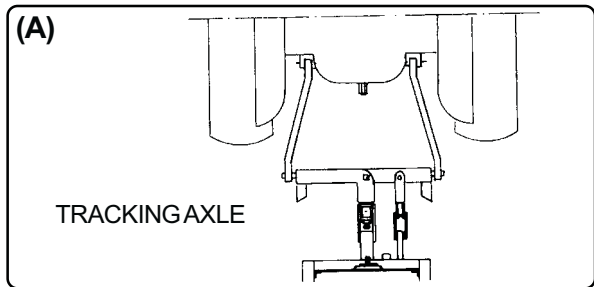
HITCHING THE SPRAYER TO THE TRACTOR

PROCEDURE

- Hitch the sprayer to the tractor (figures A and B).
- NOTE: If the sprayer is equipped with tracking axle, it is necessary to leave a clearance between the sprayer's hitch and the PTO shaft enough for the normal operation of the sprayer (figure C).

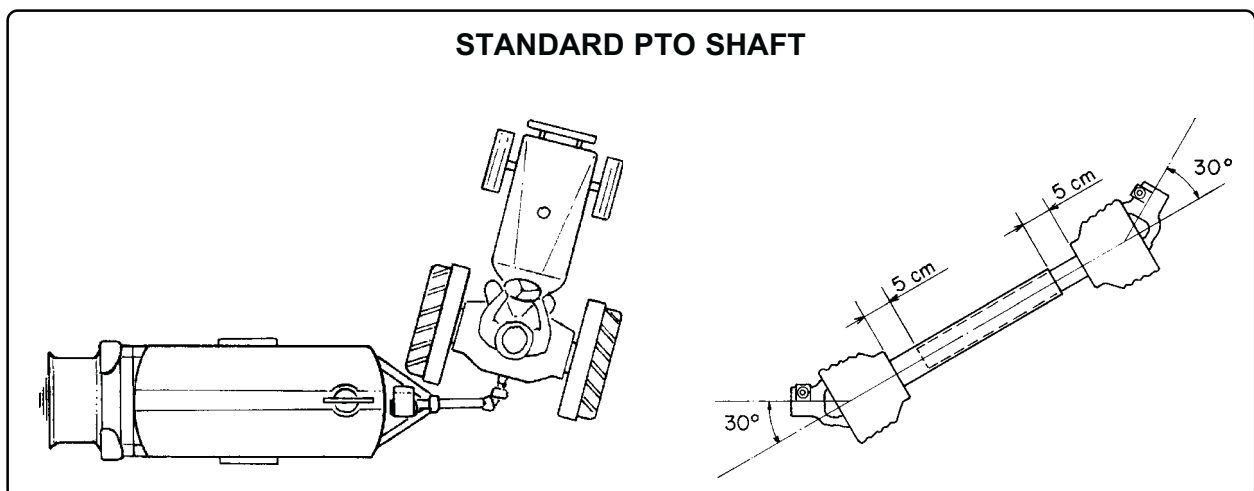
Next, lock the hydraulic lift lever (figure D).

ATTENTION: Make sure the sprayer is properly hitched to the tractor to avoid damage to sprayer.



ADJUSTING THE PTO SHAFT

- Position the tractor so that either of its rear tires can touch the sprayer's chassis head.
- Connect the PTO shaft and mark on both male and female tubes the recommended overlaps (1.96 in).
- If necessary, cut the tubes according to specifications in the section MAINTENANCE - PTO SHAFT.



NOTE: Before cutting the PTO shaft tubes, check for all the possible adjustments of both tractor's drawbar and sprayer's tongue. Make sure the hitch pin is properly installed with cotter pin.

OPERATION AND ADJUSTMENTS

SPRAY APPLICATION TECHNOLOGY

A successful spray application does not depend only on a good sprayer or correct use of the chemicals but also on factors to be determined in the field under specialized orientation.

Among these factors, some concepts should be part of a criterion of evaluation so that positive results may be attained within the pest control program.

- **Ideal time**
- **Safety**
- **Sprayer operational condition**
- **Application rate**
- **Good coverage**
- **Well trained operator**

IDEAL TIME

The ideal time for spraying should be chosen according to the chemical product characteristics, as well as to the field conditions:

- Infestation level of pests, diseases and weeds;
- Infection level of diseases;
- Growing stage of weeds;
- Weather conditions.

SAFETY

When spraying your crops, you must make sure there will be no risk to people, animals and environment. Avoid spraying at hotter times, with humidity below 55% or under windy conditions. **Do not allow the operator to handle chemicals and spraying machinery without the proper individual protective clothing.**

CORRECT APPLICATION RATE

Any type of application requires that the rate be maintained during the whole spraying work. This will be possible when you have a good sprayer properly calibrated.

This calibration can be obtained through practical methods or formulas. Please refer to the section **OPERATION AND ADJUSTMENTS - CALIBRATING THE SPRAYER.**

GOOD COVERAGE

You have a good coverage when the whole target is sprayed with uniform distribution, with no risk to the environment and with good results in the pest control.

The application rate does not have influence on the treatment results. Therefore good coverages can be attained even with different rates, which may vary according to operational and regional factors.

IMPORTANT!

READ CAREFULLY AND FOLLOW STRICTLY THE INSTRUCTIONS ON THE CHEMICALS MANUFACTURER'S LABEL.

ALWAYS FOLLOW DIRECTIONS OF A TECHNICIAN WHEN HANDLING AND APPLYING CHEMICALS.

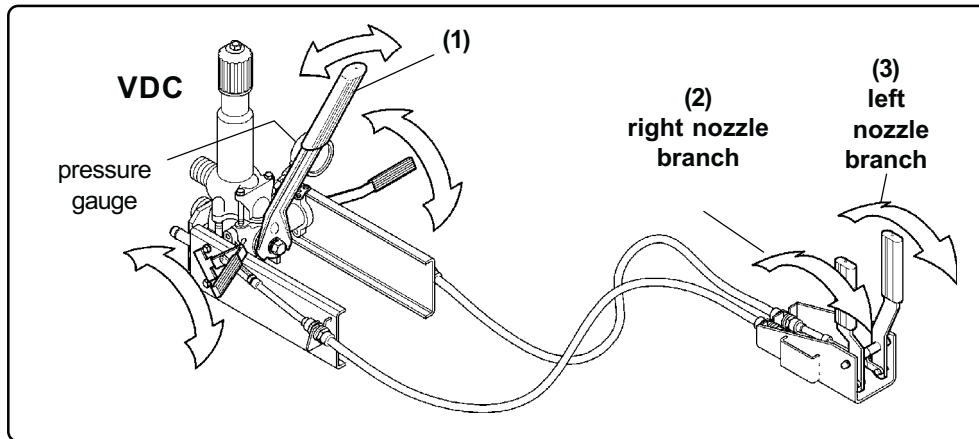
ALWAYS MAKE SURE THE SPRAYER IS IN GOOD OPERATIONAL CONDITIONS BEFORE STARTING THE SPRAYING JOB AND EMPLOY A WELL TRAINED OPERATOR.

OPERATION AND ADJUSTMENTS

CHEMICAL CONTROL

The pressure regulator control provides adjustments that ranges from 2 to 35 kgf/cm² (30 to 500 psi), shown in the pressure gauge.

The levers (1), (2), and (3) have different functions: lever (1) turns the chemical flow on and off, and levers (2) and (3) distribute the chemical flow to the left and right nozzle branches, making the spraying easier and more economical.



REGULATION THE PRESSURE

- Run the tractor PTO and accelerate it gradually until reaching 540 rpm.
- Set the lever (1) to turn on the chemical flow.
- Set the lever (2) and (3) to turn on the chemical flow to both nozzles branches.
- Turn the knob (clockwise to increase the pressure - counterclockwise to decrease the pressure) until obtaining the desired pressure.
- After readjusting the pressure, set the lever (1) back to turn off the chemical flow, and close the pressure gauge valve.

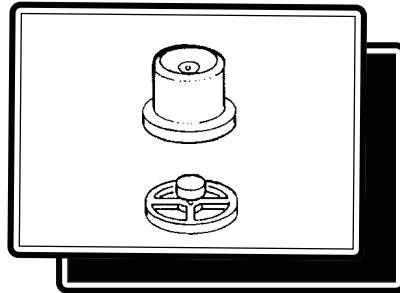
<p>The diagram shows the chemical control system with attention points. A 'turn off' arrow points to the VDC knob. A 'turn on' arrow points to lever (1). A 'turn off' arrow points to the pressure gauge valve. A 'turn on' arrow points to lever (3). The right nozzle branch is labeled (2) and the left nozzle branch is labeled (3). The pressure gauge is also labeled.</p>	<p>ATTENTION: In case of problems to operate the levers by cables, use the levers mounted on the control body. However service the chemical control as soon as possible.</p>	<p>ATTENTION:</p> <p>To ensure longer life of the pressure gauge, its valve should be closed and without retained pressure during the spraying. After calibrating the sprayer, use the lever (1) to release the pressure in the circuit and close the pressure gauge valve.</p>
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ATTENTION

AS THE CHEMICAL CONTROL SHOULD BE INSTALLED CLOSE TO THE OPERATOR TO MAKE EASIER THE SPRAYING JOB, YOU MUST ALWAYS USE THE ORIGINAL HITCH PIN WITH COTTER PIN AND THE ORIGINAL SAFETY CHAIN TO AVOID ACCIDENTS.

OPERATION AND ADJUSTMENTS

HOLLOW CONE NOZZLE HIGH QUALITY CERAMIC SERIES JA



TECHNICAL CHARACTERISTICS

SPRAY PATTERN HOLLOW CONE
 SPRAY ANGLE 75 TO 80 DEGREES AT 150 PSI
 MANUFACTURING MATERIAL **SINTERED ALUMINA**
 FLOW RATE IDENTIFICATION NOZZLE COLOR AND DESCRIPTION

Series JA hollow cone nozzles are produced by processes developed for exacting markets of mechanical engineering, space and aerospace industries. A special mold injection process makes a perfect orifice on the nozzles, giving better quality to the surface finish than that achieved by machines. And the result is better coverage and more homogenous spraying.

These nozzles are approved by international quality standards, ensuring an outstanding spray cone uniformity and flow rate of nozzles.

The alumina-sintered nozzles are almost as hard as diamond and resist yet the most corrosive products. This provides perfect stability for long time concerning all requirements such as flow rate, coverage and droplet size.



TABLE 01 - FLOW RATE

Pressure (psi)	Nozzle model					
	JA - 1	JA-1.5	JA-2	JA-3	JA-4	JA-5
	Flow rate (gpm)					
30	0.06	0.08	0.12	0.16	0.24	0,31
45	0.07	0.10	0.14	0.20	0,29	0,36
60	0.08	0.11	0.17	0.23	0,33	0,42
90	0.10	0.14	0.20	0,28	0,39	0,51
120	0.11	0.15	0.22	0,31	0,45	0,58
150	0.13	0.17	0,26	0,35	0,50	0,64
180	0.14	0.18	0,27	0,38	0,54	0,70
210	0.145	0.20	0,29	0,41	0,58	0,75
240	0.15	0.21	0,32	0,44	0,61	0,85
270	0.16	0.22	0,33	0,46	0,63	0,90
300	0.19	0.23	0,37	0,48	0,67	0,94

NOZZLES STRAINERS: Use 50 or 60 mesh for all nozzle models.

OPERATION AND ADJUSTMENTS

Nozzle		Pressure (psi)	Flow rate (GPM)	Tractor speed (MPH)								
Model	Color			2.5	3	4	4.5	5	5.5	6	6.5	7.5
				Spraying volume (GPA)								
JA - 1	Blue	60	0.08	0.79	0.66	0.49	0.44	0.39	0.36	0.33	0.30	0.26
		90	0.10	0.99	0.82	0.62	0.55	0.49	0.45	0.41	0.38	0.33
		150	0.13	1.28	1.07	0.80	0.71	0.64	0.58	0.53	0.49	0.43
		210	0.14	1.38	1.15	0.87	0.77	0.69	0.63	0.58	0.53	0.46
JA - 1.5	Brown	60	0.11	1.09	0.91	0.68	0.60	0.54	0.49	0.45	0.41	0.36
		90	0.14	1.38	1.15	0.87	0.77	0.69	0.63	0.58	0.53	0.46
		150	0.17	1.68	1.40	1.05	0.93	0.84	0.76	0.70	0.64	0.56
		210	0.20	1.98	1.65	1.24	1.10	0.99	0.90	0.82	0.76	0.66
JA - 2	Black	60	0.17	1.68	1.40	1.05	0.93	0.84	0.76	0.70	0.65	0.56
		90	0.20	1.98	1.65	1.24	1.10	0.99	0.90	0.82	0.76	0.66
		150	0.26	2.57	2.14	1.60	1.43	1.29	1.17	1.07	0.99	0.86
		210	0.30	2.98	2.47	1.86	1.65	1.48	1.35	1.23	1.14	0.99
JA - 3	Orange	60	0.23	2.30	1.90	1.42	1.26	1.14	1.03	0.94	0.87	0.76
		90	0.28	2.77	2.31	1.73	1.54	1.38	1.26	1.15	1.06	0.92
		150	0.35	3.46	2.88	2.16	1.92	1.73	1.57	1.44	1.33	1.15
		210	0.41	3.96	3.38	2.54	2.25	2.03	1.84	1.69	1.56	1.35
JA - 4	Red	60	0.33	3.27	2.72	2.04	1.81	1.63	1.48	1.36	1.25	1.09
		90	0.40	3.96	3.30	2.47	2.20	1.98	1.80	1.65	1.52	1.32
		150	0.50	4.95	4.12	3.09	2.75	2.47	2.25	2.06	1.90	1.65
		210	0.59	5.84	4.87	3.65	3.24	2.92	2.65	2.43	2.24	1.94
JA - 5	Green	60	0.42	4.16	3.46	2.60	2.31	2.08	1.89	1.73	1.60	1.37
		90	0.51	5.05	4.20	3.15	2.80	2.52	2.29	2.10	1.94	1.68
		150	0.64	6.37	5.28	3.96	3.52	3.17	2.88	2.64	2.43	2.11
		210	0.75	7.42	6.19	4.64	4.12	3.71	3.37	3.09	2.85	2.47

Ordering: Specify nozzle model and part #. Ex.: nozzle JA-2, part # 000026.

Color	Blue	Brown	Black	Orange	Red	Green
Model	JA - 1	JA - 1,5	JA - 2	JA - 3	JA - 4	JA - 5
Part #	109744	454256	000026	454264	454272	454280

OPERATION AND ADJUSTMENTS

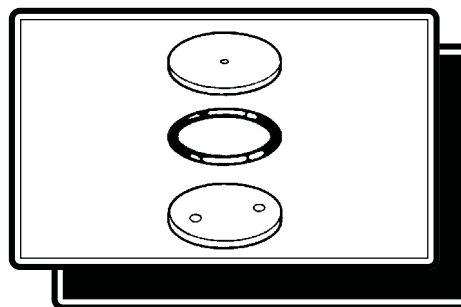
HOLLOW AND FULL CONE NOZZLES - SERIES J

HIGH QUALITY CERAMIC HIGH RESISTANCE TO WEAR

The alumina-sintered nozzles are almost as hard as diamond and resist yet the most corrosive chemicals. This ensures perfect stability for long time besides meeting the requirements for flow, coverage and droplet size.

These nozzles are recommended for fruit trees because of their excellent performance in high volume spraying.

NOTE: As there are many options for row spacing and number of nozzles per branch, we do not list any table showing the spraying volume as it can be obtained through the formula specified in the section OPERATION AND ADJUSTMENTS - CALIBRATING THE SPRAYER.



FLOW RATE TABLE

Nozzle model	Pressure (psi)							
	75	100	150	200	250	300	350	400
	Flow rate (gpm)							
*J4-2 hollow cone	0,28	0,32	0,40	0,45	0,50	0,54	0,59	0,63
J4 - 3 full cone	0,41	0,48	0,58	0,67	0,75	0,83	0,89	0,95
*J5 - 2 hollow cone	0,41	0,48	0,58	0,67	0,69	0,81	0,88	0,94
J5 - 3 full cone	0,70	0,80	0,97	1,13	1,26	1,38	1,49	1,60
J6 - 2 hollow cone	0,60	0,70	0,84	0,97	1,08	1,19	1,28	1,36
J6 - 3 full cone	1,17	1,34	1,63	1,89	2,11	2,30	2,48	2,66

Pressure band not recommended because it will cause premature wear to nozzles.

*** Nozzles mounted to the equipment (J4-2 = 52 nozzles / J5-2 = 52 nozzles)**

ORDERING

Nozzle model	J4 - 2	J4 - 3	J5 - 2	J5 - 3	J6 - 2	J6 - 3	Ring
Part #	325423	819607	325431	327486	325449	327494	913335

Specify nozzle model and part #. Ex: J5-2, part # 325431.

OPERATION AND ADJUSTMENTS

CALIBRATING THE SPRAYER

The safety of people, animals and environment depends on correct spray applications. Therefore, we list below some operational procedures.

WHEN HANDLING THE CHEMICALS

- Follow strictly the instructions on the labels.
- Use individual protective equipment.
- Do not eat, drink or smoke.
- Choose a ventilated place.
- Wash with water and soap the parts of the body touched by chemicals.

WHEN HANDLING THE SPRAYER

- Check for the proper working conditions of the sprayer.
- Do not blow by mouth nozzles, valves or tubes.
- Do not spray against the wind.
- Do not spray in hotter times.
- Use individual protective clothing recommended.
- Do not eat, drink or smoke.

REMEMBER

You are responsible for the success of the application.

PROCEDURE

The sprayer can be calibrated by obtaining the spraying volume through the following formula:

$$GPA = \frac{GPM \times 495}{MPH \times S}$$

Where:

GPA : Application volume in gallons per acre

GPM : Application volume in gallons per minute

MPH : Tractor speed in miles per hour

S : Row spacing width in feet

495 : Conversion factor

EXAMPLE:

Nozzles total flow rate	:	(18-nozzles JA-2 at 150 psi)= 4.75 gpm
Row spacing	:	16.40 x 22.96 (ft)
No. of trees per acre	:	115 trees
Tractor speed	:	2.5 mph

$$GPA = \frac{GPM \times 495}{MPH \times S} \quad GPA = \frac{33.55 \times 495}{2.5 \times 22.96} \quad GPA = 289 \text{ gallons per acre}$$

$$\text{SPRAYING VOLUME PER TREE: } \frac{289}{115} = 2.51 \text{ (gallons/tree)}$$

OPERATION AND ADJUSTMENTS

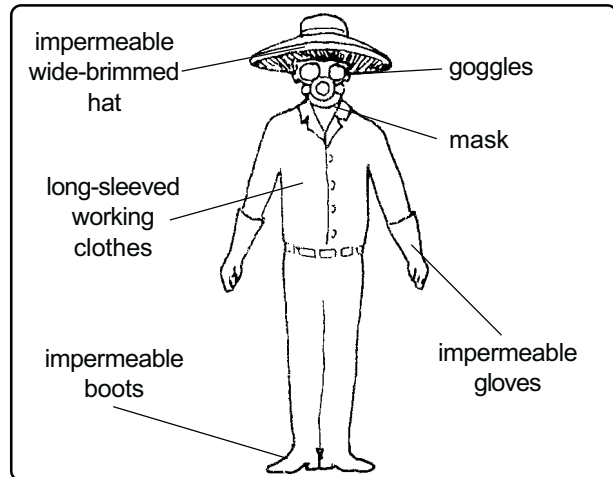
DILUTING THE CHEMICALS

ATTENTION

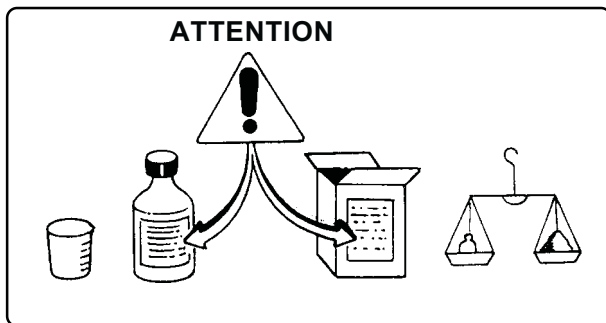
NEVER run the sprayer for with less than 13.20 gallons of water in the tank to avoid damage to the pump.

Always use the following individual protective clothing when handling chemicals:

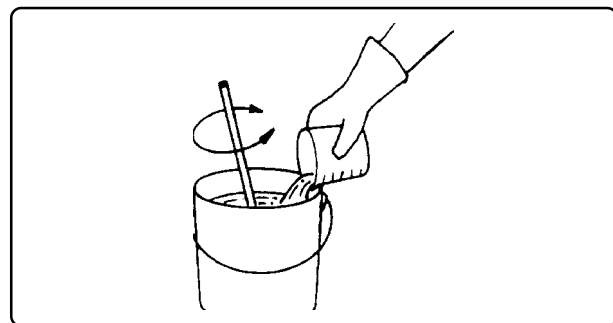
- Impermeable wide-brimmed hat
- Goggles
- Mask
- Long-sleeved working clothes
- Impermeable gloves
- Impermeable boots



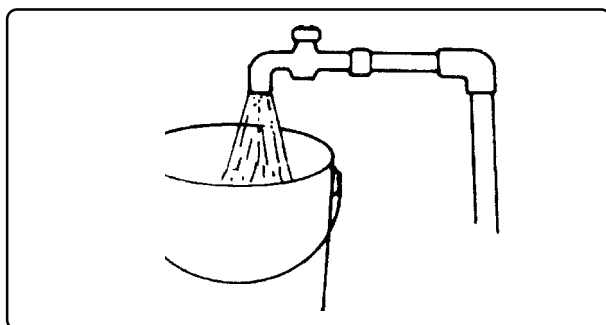
PREPARING THE CHEMICAL MIXTURE



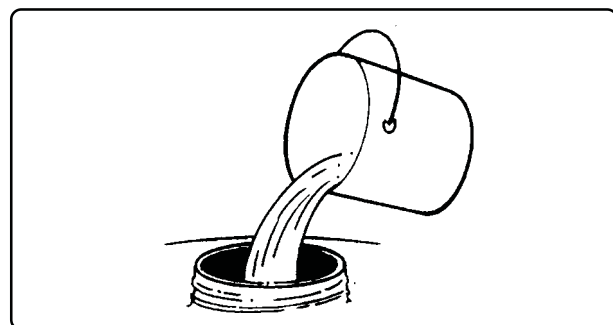
- Read carefully the chemicals manufacturer's label.



- Pour the chemicals into a bucket with little water and stir.



- Add water until filling the bucket up.
- Stir until the mixture is homogeneous.



- Pour the solution into the sprayer's tank.
- Install the tank lid and make sure there is no leakage.

ATTENTION
ALWAYS FOLLOW TECHNICAL RECOMMENDATIONS
WHEN HANDLING CHEMICALS.

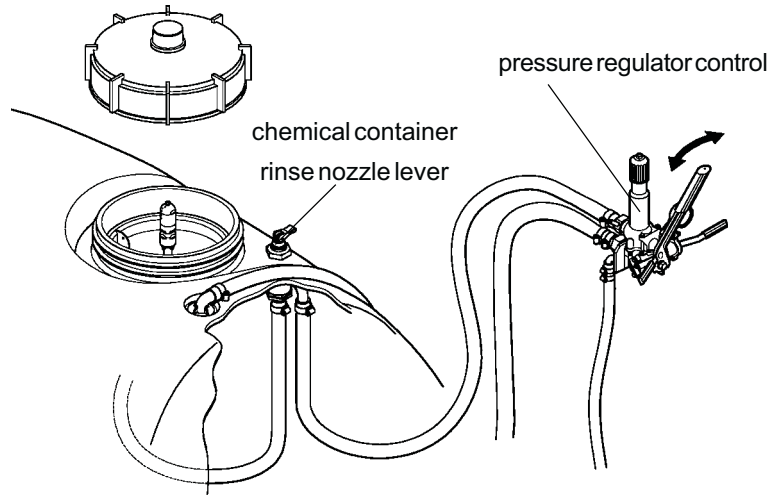
OPERATION AND ADJUSTMENTS

PRESSURE WASH

Procedures to use the container rinse nozzle:

- Fill the tank up to approximately 90% of its capacity.
- Pour the chemical into the tank.
- Engage the tractor's PTO

NOTE: The directional valve lever must be set to allow the chemical return to the tank (off).

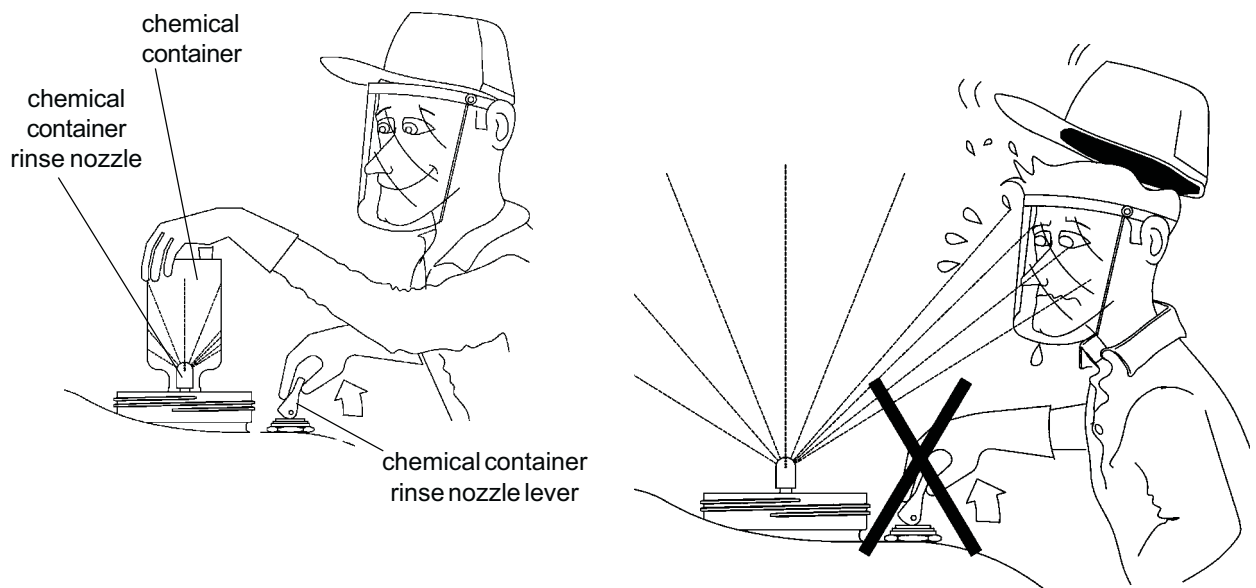


ATTENTION: USE THE RECOMMENDED PROTECTIVE CLOTHING FOR THIS OPERATION

- Hold the chemical container over the rinse nozzle and pull the lever to wash inside the container.

NOTE: With the chemical container over the rinse nozzle, make circular movements to reach all internal walls of the chemical container with the water jet for around 30 seconds.

- Fill up the sprayer tank with water.



ATTENTION: Never pull the lever without the chemical container over the container rinse nozzle.

After rinsing the chemical container, wash it for the last time, using clean water from the auxiliary tank.

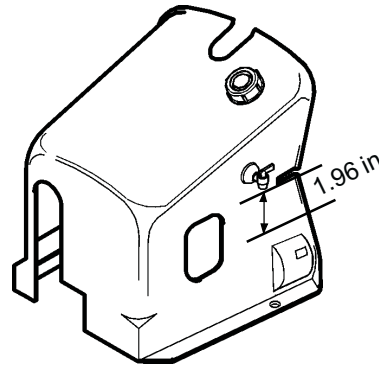
OPERATION AND ADJUSTMENTS

CLEAN WATER TANK

To assist in the operation of the PRESSURE-WASH, a clean water tank is also installed on the sprayers.

ATTENTION: The water from this tank is not fit for drinking, or even washing hands, face, tools, etc. It must be used only to fill the chemical containers for the final rinse.

NOTE: To keep from contaminating the water and the auxiliary tank tap during the filling of the chemical container, hold the container at least 1.96 in away from the tap, as shown.



WASHING THE CHEMICAL CONTAINER

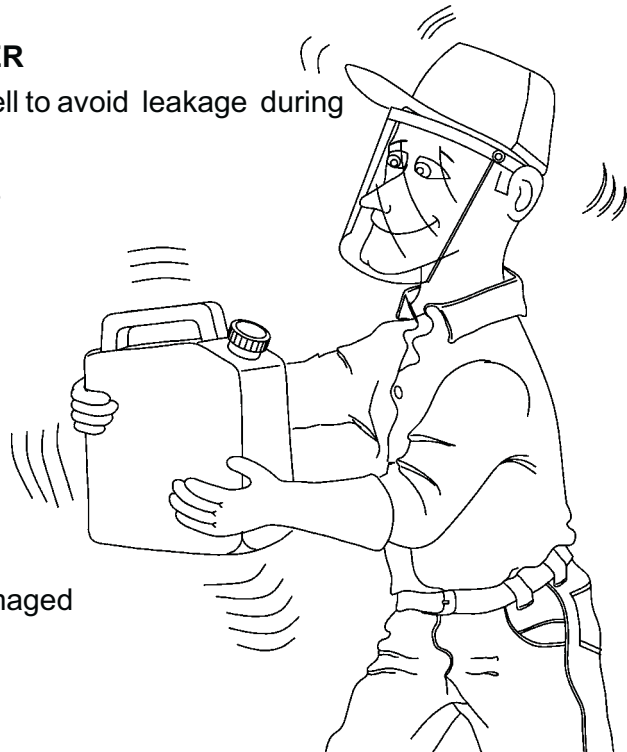
- Fit the container cap and tight it very well to avoid leakage during the agitation.

- Agitate the container strongly in all ways (horizontal and vertical), during approximately 30 seconds to remove the residues that are stuck to the container internal walls.

- Take the container cap off and carefully pour the rinse water into the spray tank.

- Keep holding the container over the spray tank opening until the last drop.

- Next, make the container useless by piercing it. Make sure their labels are not damaged for identification purposes.



OPERATION AND ADJUSTMENTS

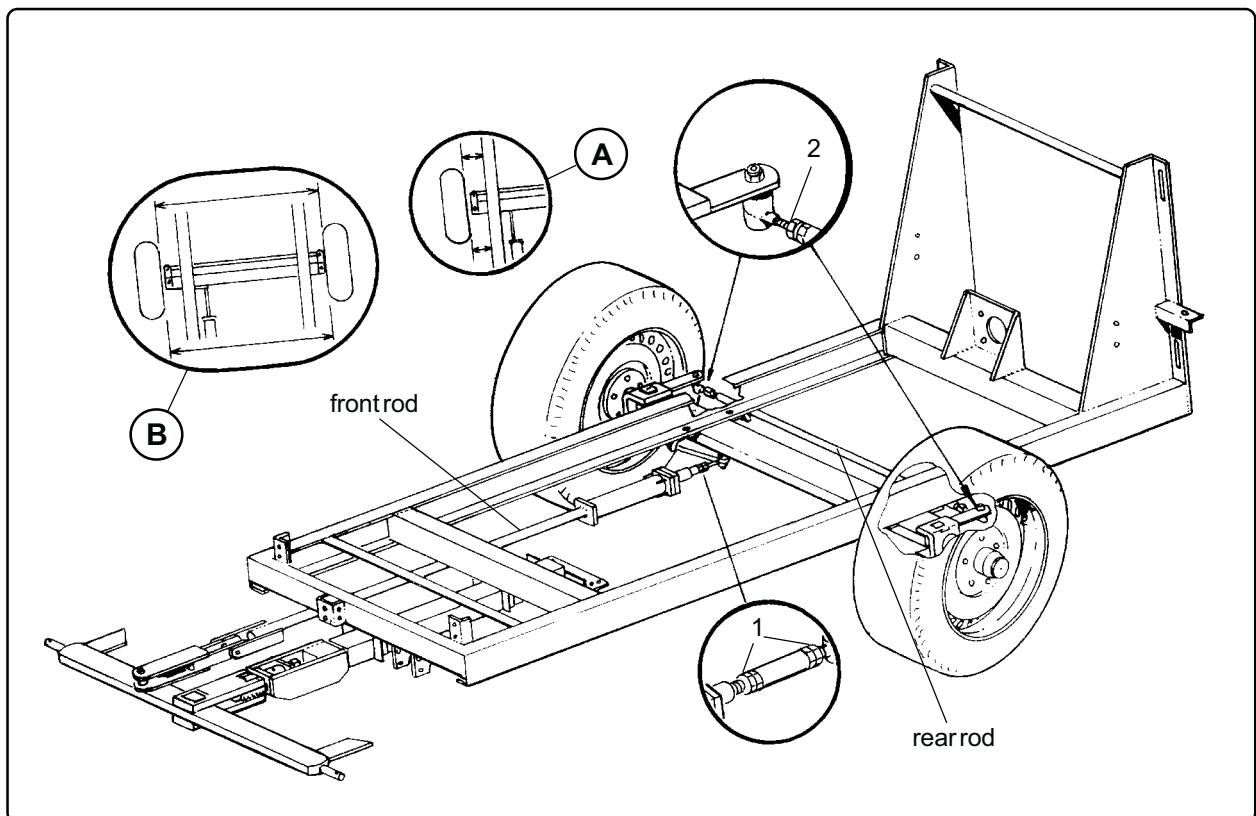
TRACK WIDTH AND GROUND CLEARANCE

TIRES	TRACK WIDTH (in)
	FIXED
7.35 x 14	45.24

TIRES	GROUND CLERANCE (in)
	FIXED
7.35 x 14	9.84

ALIGNING THE WHEELS

- Loosen the nut (1) and rotate the front rod so that the right tire is parallel to the sprayer's chassis (detail A).
- Tighten the nut (1).
- Loosen the nuts (2) and rotate the rear rod until the left tire is parallel to the right tire (detail B).
- Tighten the nuts (2).



ATTENTION:

- Proper alignment is necessary to avoid unusual wear of tires.

ATTENTION

- THE SPRAYER MUST BE WITH EMPTY TANK AND WHEELS PROPERLY SCOTCHED FOR ANY KIND OF MAINTENANCE.
- ALWAYS REQUIRE A TRAINED PERSON TO SERVICE YOUR SPRAYER.
- DO NOT ALLOW PERSONS AND ANIMALS TO BE CLOSE TO THE SPRAYER WHEN BEING SERVICED.

MAINTENANCE

GUIDELINES

After the first working hours, check if the bolts, nuts, clamps on the tanks, wheel and axle are well installed. Retighten them if necessary.

Daily, after finishing the spray application, put clean water in the tank, remove the nozzles and run the sprayer till empty.

Clean and reinstall the nozzles.

Clean the main filter.

Rinse off the inside and outside of the sprayer.

ATTENTION

NEVER WASH SPRAYERS OR INDIVIDUAL PROTECTIVE EQUIPMENT IN OR CLOSE TO RIVERS, LAKES, STREAMS, BROOKS, DAMS, ETC.

Take off and wash the individual protective clothing separated from other clothes.

Take a shower with plenty of water and soap and change your clothes.

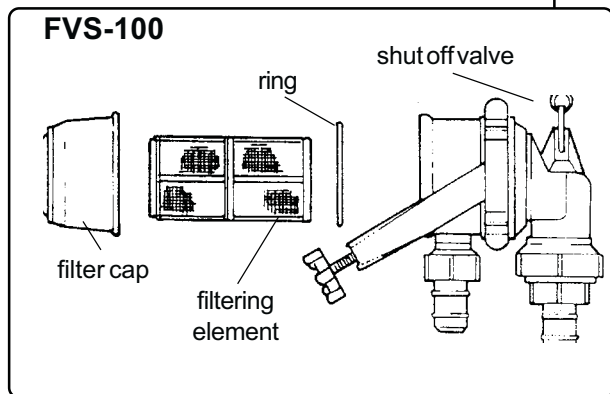
These procedures will avoid future problems caused by strainer, nozzle and tube obstructions and prolong the sprayer's life, as well as protect yourself.

COMPONENTS

MAIN FILTER

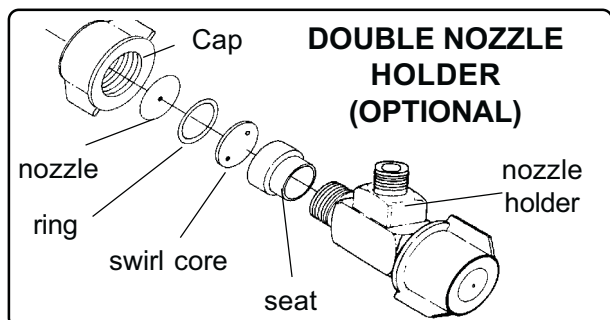
The frequency of filter cleaning will depend on the quality of water and type of agrochemicals applied.

Clean the filter whenever filling the tank or when necessary.



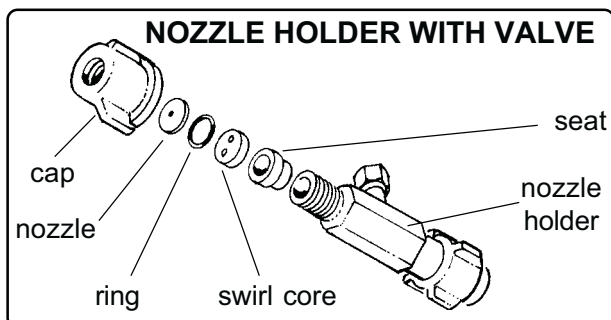
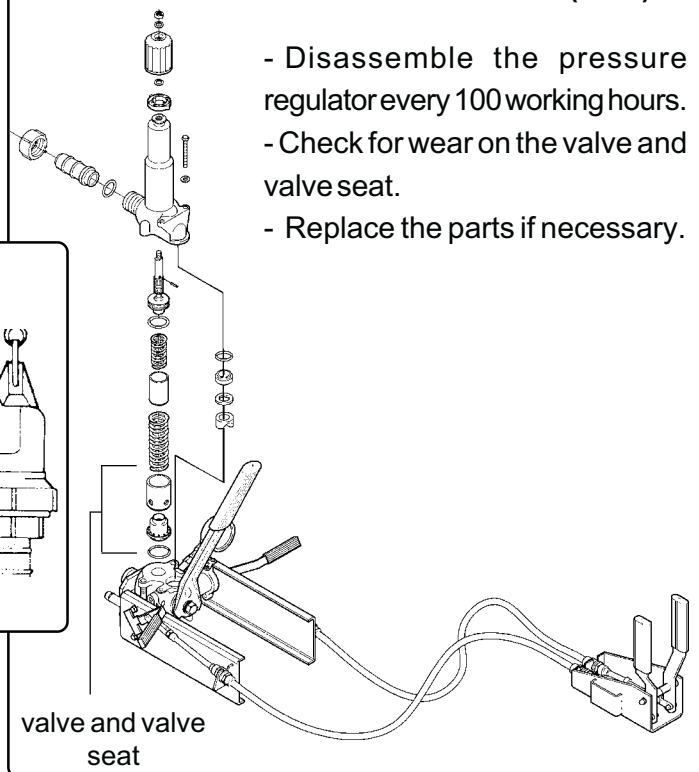
NOZZLE HOLDER

Clean the nozzle holders daily or when necessary.



PRESSURE REGULATOR (VDC)

- Disassemble the pressure regulator every 100 working hours.
- Check for wear on the valve and valve seat.
- Replace the parts if necessary.



MAINTENANCE

LUBRICATION TABLE

PRODUCT	LOCATION	QTY	FREQ	SPECIFICATIONS	RECOMMENDED PRODUCTS
LUBRICATING OIL	JP - 75 PUMP	0.39 gallons	1ST CHANGE: 30 HOURS FURTHER CHANGES: 100 HOURS	API - SB OR SUPERIOR SAE - 30	ALL OILS FOR INTERNAL COMBUSTION ENGINES WITHIN THIS SPECIFICATION
	JP - 100 PUMP	0.52 gallons			
	JP - 150 PUMP	0.66 gallons			
GREASE	PTO SHAFT TRAILER'S HITCH AGITATOR JACK	-	DAILY	LITHIUM BASE NGLI - 2	MULTIFAKEP - 2 MOBILGREASE 77 LUBRAX GMA - 2 BEACON EP - 2 AND SIMILAR PRODUCTS
	WHEEL HUB		500 HOURS		

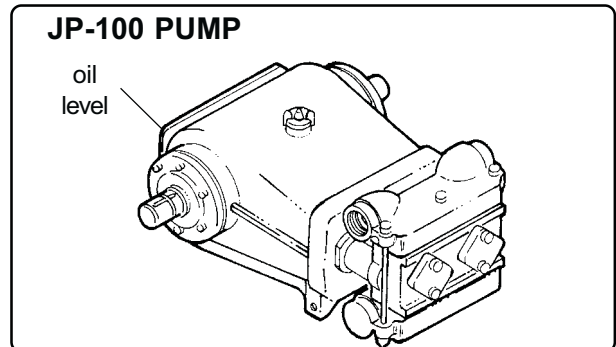
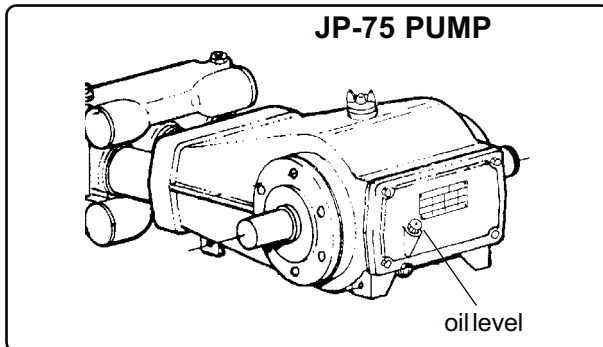
NOTE: The presentation order of recommended products does not imply any preference for any brand or product.

COMPONENTS LUBRICATION

LUBRICATING OIL

PUMP

Check the pump oil level daily and fill it if necessary.

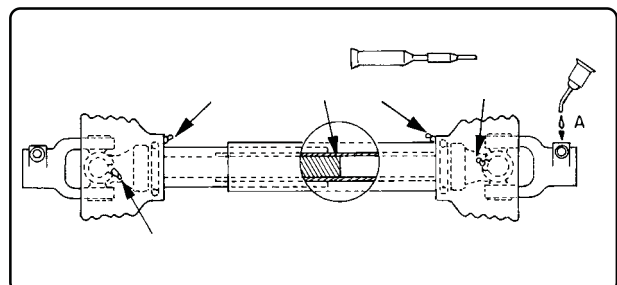


GREASE

PTO SHAFT

- Lubricate daily.

For information in detail on the PTO shaft, refer to the section MAINTENANCE - PTO SHAFT.



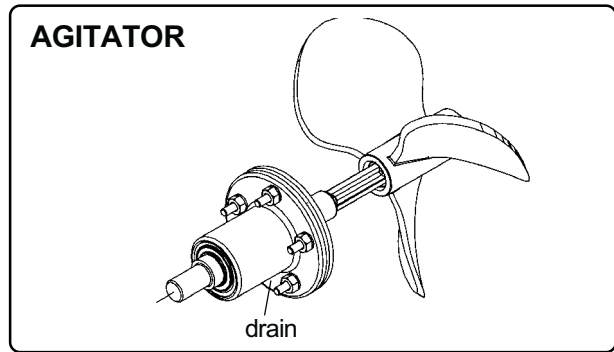
ATTENTION

Before using the equipment for the first time, clean and lubricate every point of the PTO shaft, as shown in the picture beside, with Lithium-based grease NGLI-2 (for further information about the greases, refer to the lubrication table).

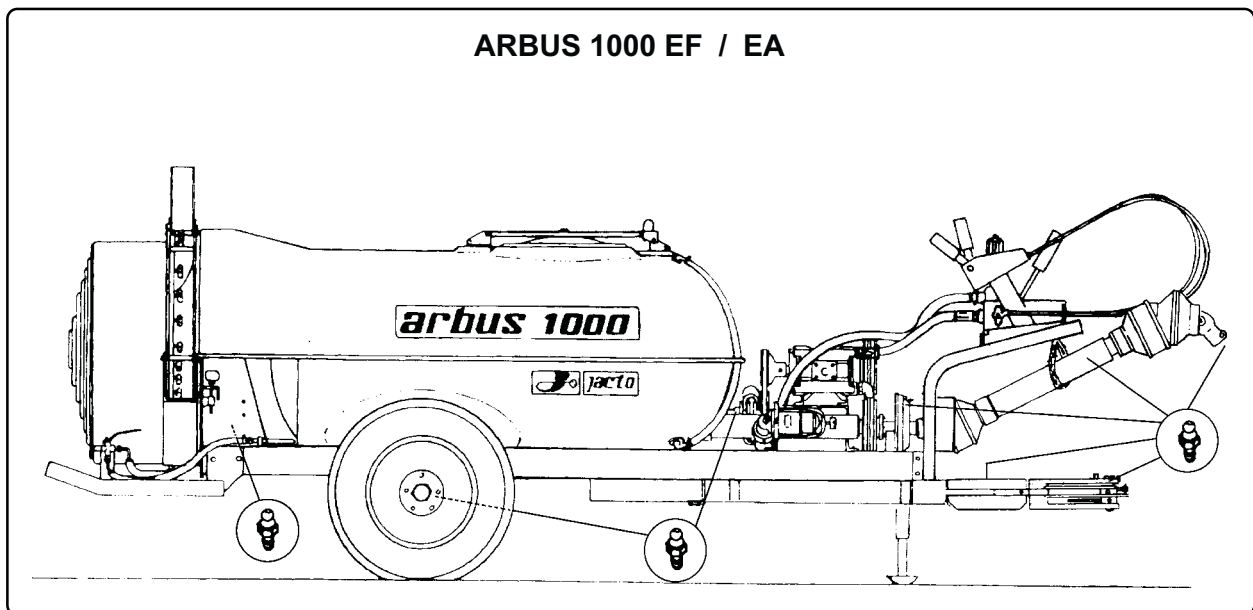
MAINTENANCE

MECHANICAL AGITATOR

At any sign of the drain leak, replace the mechanical seal. Contact your nearest Jacto dealer.

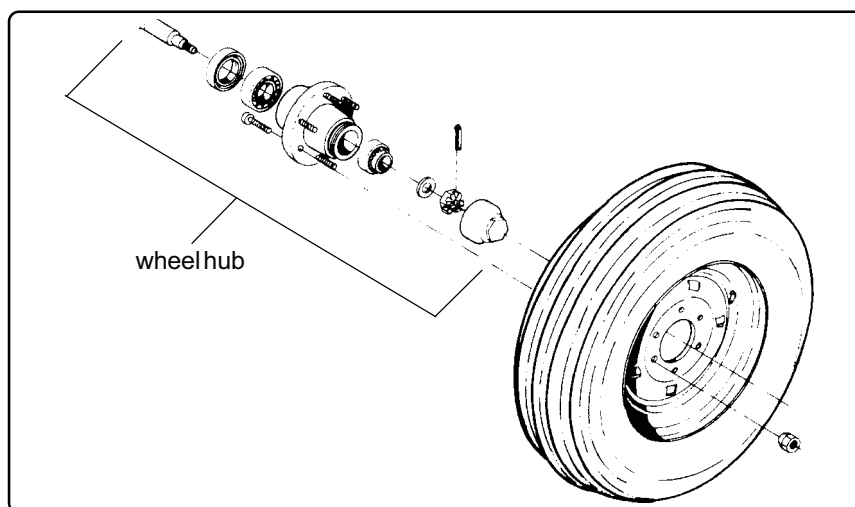


LUBRICATION POINTS



WHEEL HUB

Every 500 working hours, remove the wheels hubs and replace the grease.



ATTENTION
ALWAYS STOP THE SPRAYER AND TURN OFF THE TRACTOR ENGINE
BEFORE ANY KIND OF MAINTENANCE.

MAINTENANCE

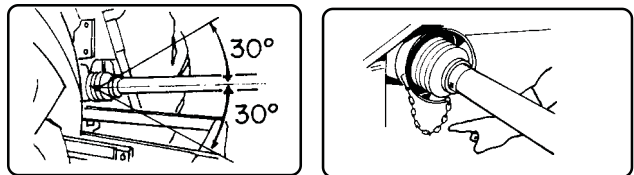
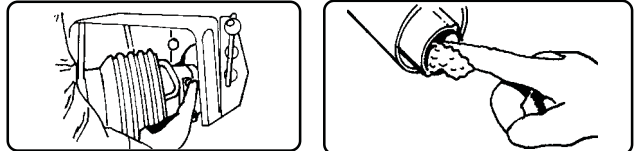
CONVENTIONAL PTO SHAFT

ATTENTION: ALWAYS STOP THE SPRAYER AND TURN OFF THE TRACTOR ENGINE BEFORE SERVICING THE PTO SHAFT. ALL KIND OF MAINTENANCE ON THE PTO SHAFT MUST BE DONE WITH THE USE OF APPROPRIATE PROTECTIVE CLOTHING, SUCH AS: GLOVES, BOOTS, GOGGLES, ETC.

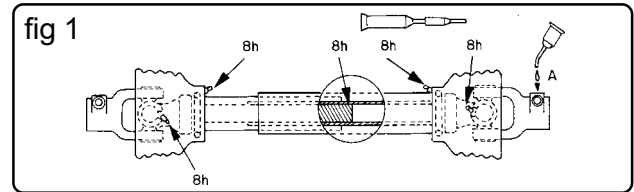
01-CONNECTING

- Check the PTO shaft length.
- Adjust the length by cutting the tubes and protection guards proportionately.
- Note: File and remove all burrs.
- Connect the PTO shaft and install the safety chain.
- Note: Leave some slack on the chain considering angular movements.
- Disengage the PTO when making sharp turns.

ATTENTION
ONLY OPERATE WITH PTO SHAFT
EQUIPPED WITH PROTECTION GUARDS.



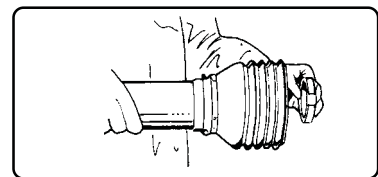
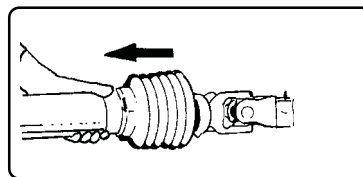
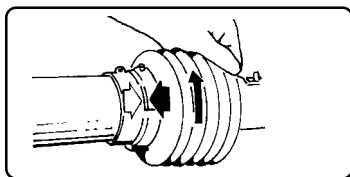
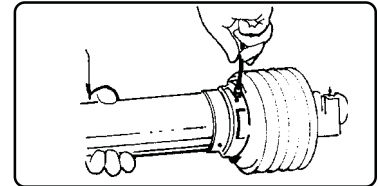
Lubricate the male and female tubes and further points as the figure 1.



02-SERVICING

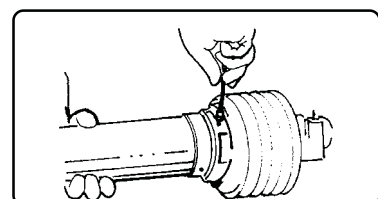
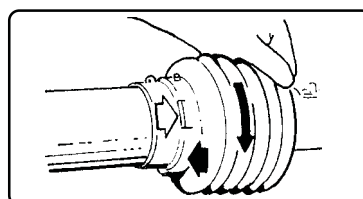
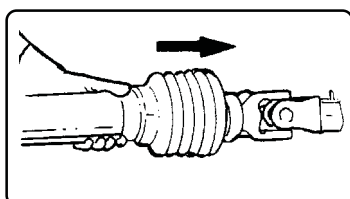
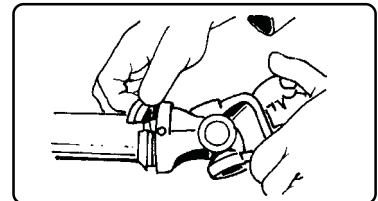
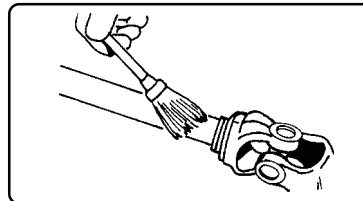
a) DISASSEMBLING

- 1- Remove the lock screw.
- 2- Turn the guard cone until the indicated position.
- 3- Pull the guard cone.
- 4- Remove the sliding ring.



b) ASSEMBLING

- 5- Clean and lubricate the male and female tubes.
- 6- Install the sliding ring into the fitting with the grooves pointing toward the tube.
- 7- Install the protection guards.
- 8- Turn the guard cone until the indicated position.
- 9- Install the lock screw.



MAINTENANCE

WIDE-ANGLE C.V. PTO SHAFT (OPTIONAL)

ATTENTION: ALWAYS STOP THE SPRAYER AND TURN OFF THE TRACTOR'S ENGINE BEFORE SERVICING THE PTO SHAFT.

WARNING: ONLY OPERATE WITH PTO SHAFT EQUIPPED WITH SAFETY GUARD. ALL KIND OF MAINTENANCE ON THE PTO SHAFT MUST BE DONE WITH THE USE OF APPROPRIATE PROTECTIVE CLOTHING, SUCH AS: GLOVES, BOOTS, GOGGLES, ETC.

The WIDE-ANGLE C.V. PTO SHAFT is a component whose advantage over the conventional shafts is in allowing turns at angles of up to 75 degrees, with no need to disengage the PTO.

INSTRUCTIONS

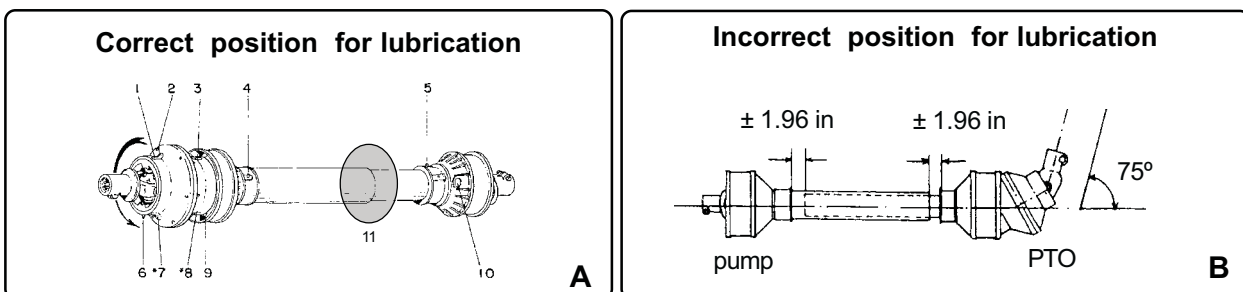
1 - LUBRICATING

- Lubricate the points indicated in the figure (A) every eight working hours.

NOTE 1: The points (7) and (8) are opposite to the points (1) and (3), so turn the guard cap as shown in the figure **A** until reaching the grease pin. **It is important to remind of lubricating the male and female tubes.**

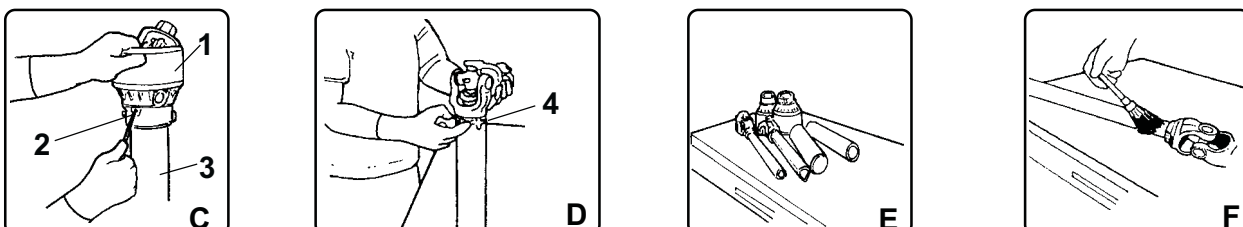
NOTE 2: Every 30-50 working hours, dismantle the guard caps, clean and wash the parts, lubricate and assemble the shaft.

ATTENTION: Only lubricate the PTO shaft with the C.V. joint aligned to the male and female tubes; otherwise the lubrication will not be appropriate and will cause damage to the PTO shaft.



2 - DISASSEMBLING THE C.V. PTO SHAFT FOR LUBRICATING

- Hold the shaft as shown in the figure **C**, push the guard cone (1) down, and simultaneously press the three locks (2) by a point or a screwdriver. Thus the guard cone (1) will slip on the guard cap (3), and can be removed.
- Remove the locking collar (4) and disconnect the guard cap (3) from the tube.
- Repeat the operations shown in the figures **C** and **D** on the C.V. joint end and disconnect its components.
- Clean all parts with a brush, using kerosene or diesel oil and water, and dry them next.

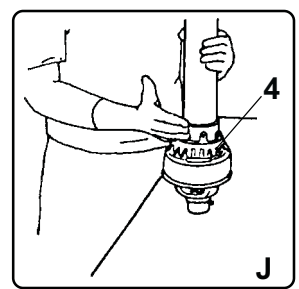
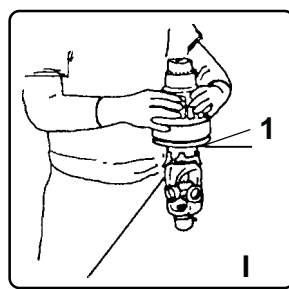
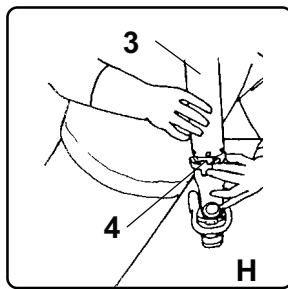
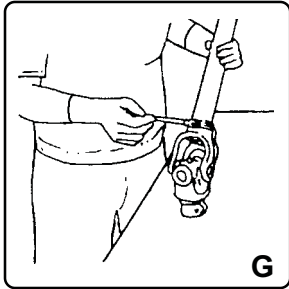


MAINTENANCE

WIDE-ANGLE C.V. PTO SHAFT

3 - REASSEMBLING

- Grease the locking collar groove (figure **G**).
- Fit the guard cap (3) and fasten it with the locking collar (4) - figure **H**.
- Hold the shaft as shown in the figure **I** and slip the guard cone (1) on. Align the grease cup of the guard cone (1) with the bearing tab on the locking collar (4) - figure **J**.
- Push the guard (3) down so that it is engaged by the locks (2).
- Make sure that the three locks (2) are firmly engaged. If necessary, force close to the locks as shown in the figure **J**.
- Repeat this operation on the other side of the shaft and lubricate the whole assembly as indicated in figure **A**.

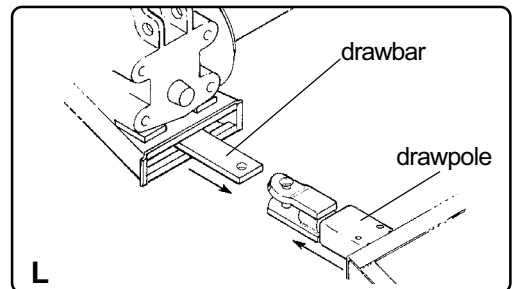


4 - ADJUSTING THE SHAFT LENGTH

a) Before cutting the shaft, **check for all the possibilities of using it without reducing its length.**

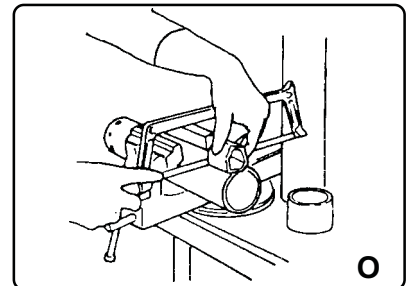
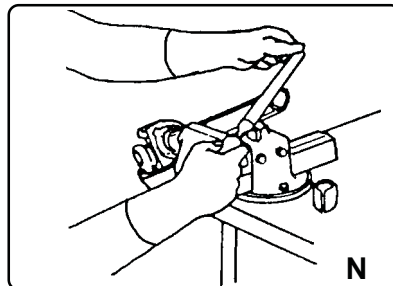
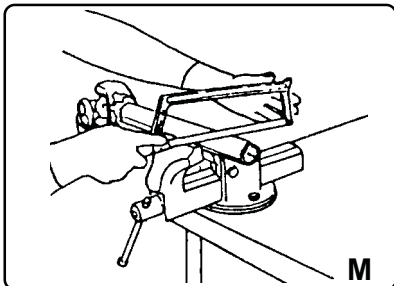
Check:

- The position on the tractor drawbar.
- Whether the sprayer drawpole can be adjusted for longer.



b) Cutting the shaft

- Dismantle the guard caps as shown in the figures **C** and **D**.
- Cut the two tubes (male and female) at the desired dimensions (figure **M**).
- Remove the burrs resulting from the cutting operation, as well as the filings resulting from the burrs removal (figure **N**).
- Cut the guard caps length, using as measure the pieces of the tubes previously cut (figure **O**).
- Clean the residues of cutting.



c) Assembling

- Assemble the C.V. PTO shaft as described in the figures **G**, **H**, **I**, e **J** and lubricate it if necessary.

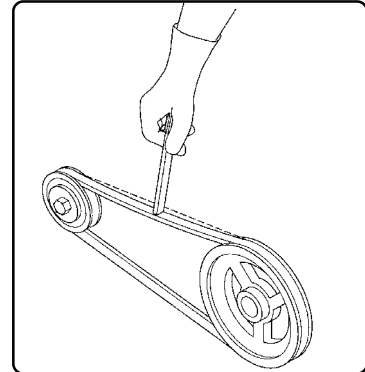
MAINTENANCE

BELTS TENSION

WARNING

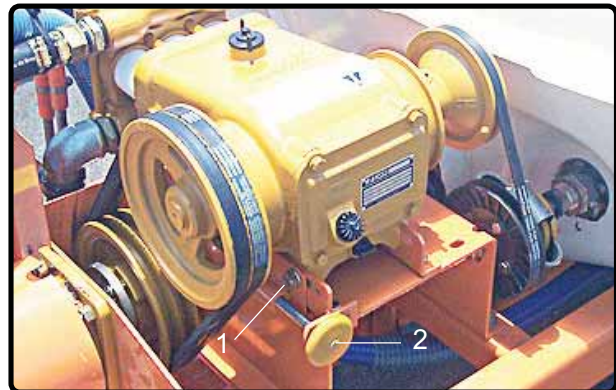
ALWAYS STOP THE MACHINE AND TURN OFF THE THE TRACTOR BEFORE ANY AND ALL KIND OF MAINTENANCE AND USE APPROPRIATE PROTECTIVE CLOTHING, SUCH AS: GLOVES, BOOTS, GOGGLES, ETC.

- Check the belts tension periodically.
- Press the agitator belts as shown in the figure beside. When pressed it should slack 0.39 to 0.59 in. DO NOT USE SHARP-ENDED OR CUTTING TOOL



PUMP BELT

- Loosen the four screws (1).
- Loosen the nut (2).
- Turn the knob (3) until obtaining the tension recommended.
- Retighten the screws (1).
- Retighten the nut (2).



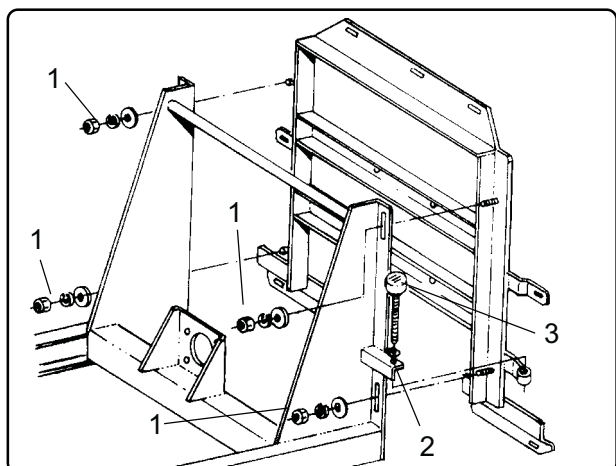
AGITATOR BELT

- Loosen the nut (1) fixing the tension pulley of the agitator belt.
- Use a lever to slide the tension pulley until obtaining the tension recommended.
- Retighten the nut (1).



FAN BELT

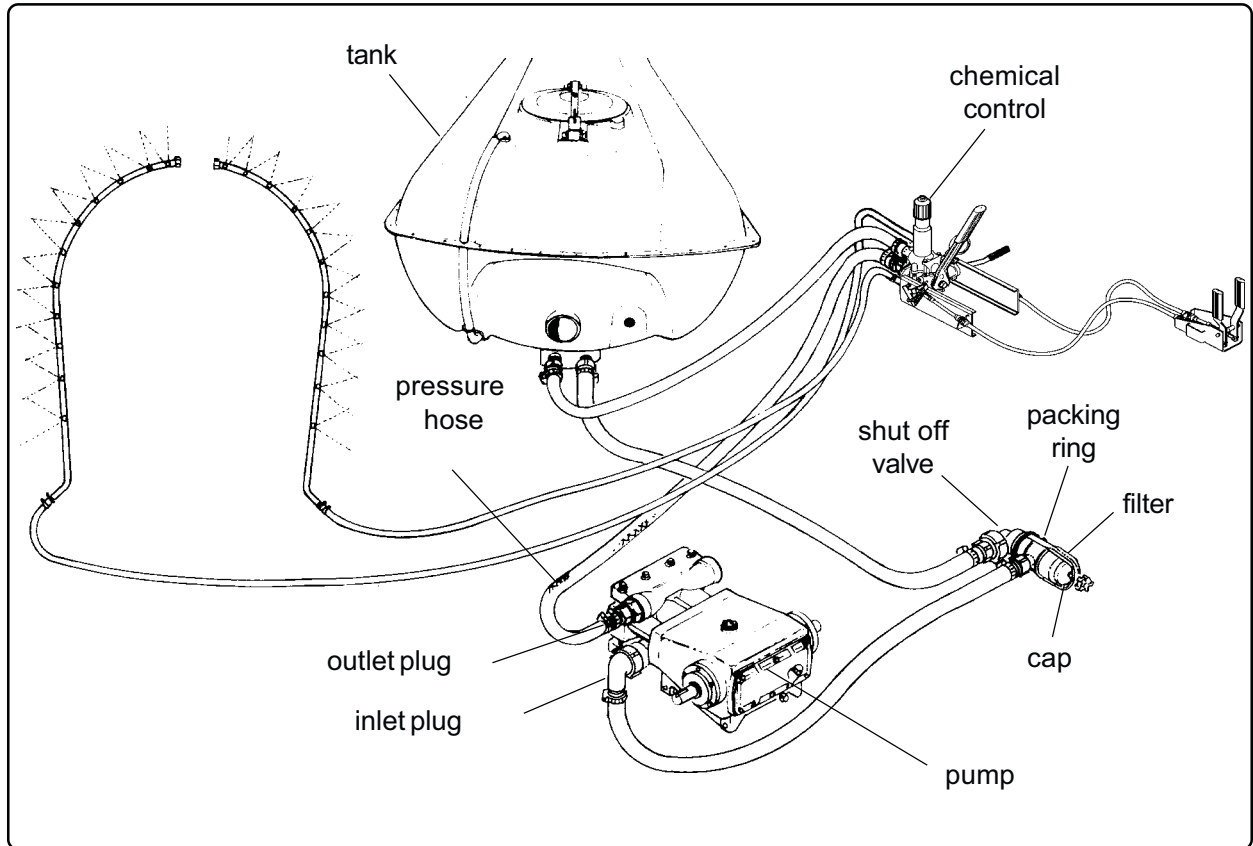
- Loosen the four nuts (1) enough to allow the frame to be moved.
- Loosen the two nuts (2).
- Hand-tighten equally the two knobs (3) until obtaining the tension recommended tension.
- Retighten the two nuts (2).
- Retighten the four nuts (1).



MAINTENANCE

WINTER STORAGE

ATTENTION: In regions where temperatures drop to 32 Fahrenheit or less, the water accumulated in the pump can freeze and cause serious damage.



PROCEDURES

- Empty the tank completely by removing the filter cap and opening the filter shut off valve.
- Disconnect the pressure hose from the pump or remove the outlet plug from the valve cover.
- Run the sprayer for about 30 seconds at half speed.

NOTE: To avoid damage, do not run the sprayer over the recommended time.

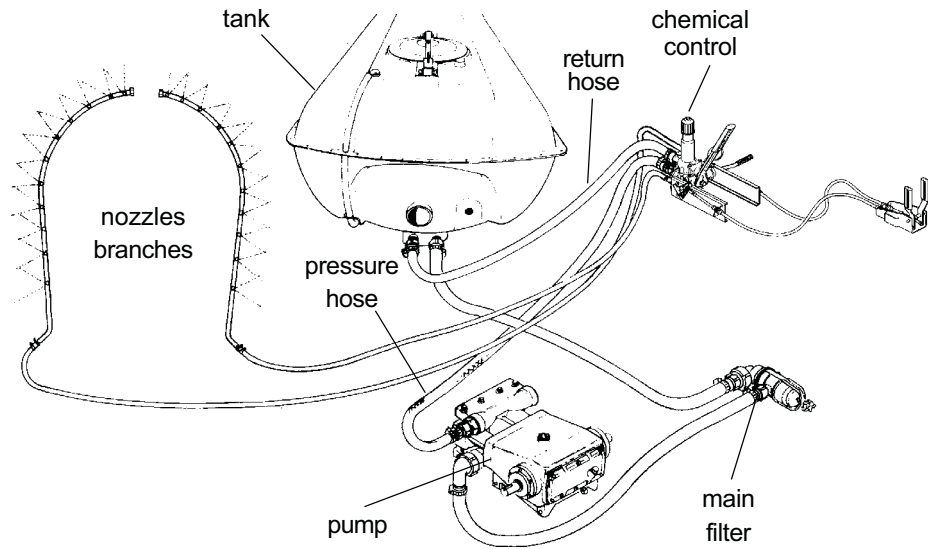
- Assemble the components again in their correct place.
- Repeat this operation at the end of each daily spraying job during the winter to avoid problems in future applications.

MAINTENANCE

TROUBLE-SHOOTING

COMPONENTS:

- Tank
- Main filter
- Control valve
- Pump
- Pressure hose
- Return hose
- Nozzles branches



PROBLEMS - CAUSES - SOLUTIONS

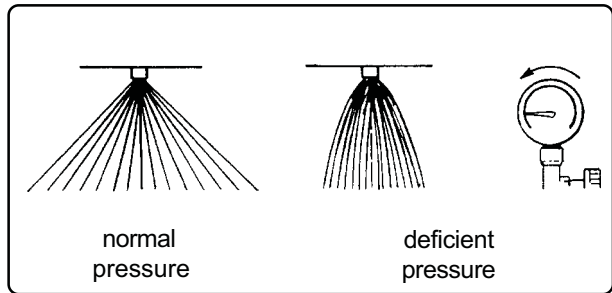
Whenever Jacto sprayers equipped with piston pumps present problems, try to classify them in one of the following four groups.

a) LACK OF SUCTION AND PUMPING CAPACITY

- No liquid flow through the nozzles.
- No return to the tank.
- Pressure gauge does not indicate pressure.

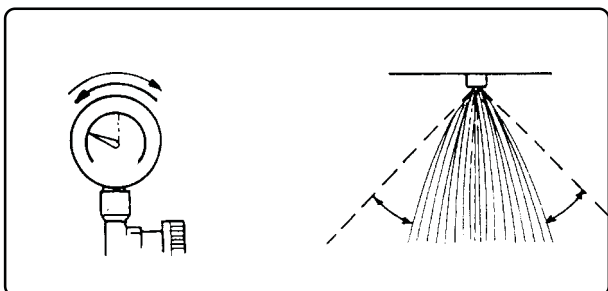
b) PRESSURE DEFICIENCY

- (PARTIAL LACK OF PRESSURE)
- Desired pressure is not attained.
- Specified nozzle spraying angle is not attained.
- Pressure gauge shows lower pressure.



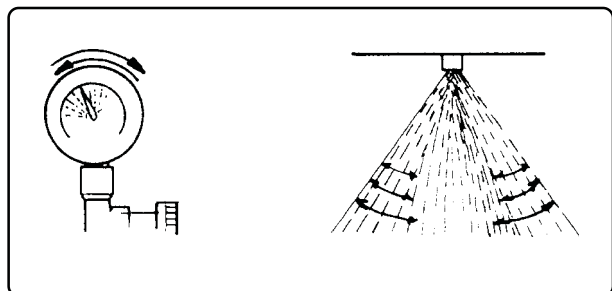
c) PRESSURE OSCILLATION

- The pressure gauge needle oscillates.
- The nozzle spray angle oscillates.



d) INTERMITTENT PRESSURE

- The pressure gauge needle vibrates with intensity.
- The pressure hoses vibrate with intensity.
- The nozzles spray angle varies.



MAINTENANCE

TROUBLE-SHOOTING

a - LACK OF SUCTION AND PUMPING CAPACITY

PROBABLE CAUSES	SOLUTIONS
1- PTO not turning.	The sprayer should be run with 540 rpm at PTO. Check visually whether the pump is being run.
2- Lack of water in the tank.	To run the hydraulic system, it is necessary to contain a minimum quantity of liquid, otherwise there will be no pressure.
3- Filter shut off valve closed.	When the pump runs, liquid will pass through the valve even in the closed position, however it will be insufficient. Open it.
4- Dirty filter.	Impurities in the filter prevent a free liquid flow. Clean the filter whenever filling the tank, or with more frequency depending on the quality of the water and the type of product applied.
5- Obstruction in the intake hoses.	Check whether the hose connecting the filter to the pump is twisted. Check whether there is any obstruction in the hoses from tank to filter. Fill up the tank with water, open the valve and verify if it flows freely.
6- Air in the system.	Check the filter packing ring. The filter should not leak.
7- Insufficient pump suction.	Remove the cover of the suction valves. Check the condition of the valves and replace them if necessary.

b - PRESSURE DEFICIENCY

PROBABLE CAUSES	SOLUTIONS
1- Low PTO rpm.	The proper PTO rotation is 540 rpm.
2- Filter shut off valve closed.	When the pumps runs, liquid will pass through the valve even in the closed position, however flow will be insufficient.
3- Filter partially obstructed.	The filter should be clean to allow free liquid flow.
4- Intake hose partially obstructed.	A deficient pump will cause depressurization. Check whether the hose connecting the filter to the pump is twisted. Verify whether there is any obstruction in the hoses connecting the tank to the filter. Fill the tank with water, open the valve and observe if it flows freely.
5- Air in the system.	Check the connections and the o'rings of the tank outlet and the pump inlet.
6- Pressure regulator.	Check the valve and valve seat.
7- Worn nozzles.	Check whether the nozzle flow is within the recommended guidelines. Replace the nozzles when the flow rate exceeds 10% of the specified. Use only nozzles recommended by the sprayer manufacturer.
8- Pump with lower flow rate.	Disconnect the pressure hose from the control valve. Run the sprayer at 540 rpm. Collect water for one minute and measure. The volume collected should approximate this shown below for each pump model: <div style="text-align: center; margin-left: 100px;"> JP - 402 = 10.03 gpm JP - 100 = 26.41 gpm JP - 42 = 11.09 gpm JP - 150 = 39.62 gpm JP - 75 = 19.81 gpm JP - 300 = 79.25 gpm </div>

MAINTENANCE

c - PRESSURE OSCILLATION

PROBABLE CAUSES	SOLUTIONS
1- Loose belts.	Check belt tension and tighten if necessary.
2- Air in the intake system.	Check for damaged hoses, filter packing rings, etc., and repair if necessary.
3- Pressure regulator.	Check the regulator components and clean or replace them if necessary.

d - INTERMITTENT PRESSURE

PROBABLE CAUSES	SOLUTIONS
1- Filter shut off valve closed.	When the pumps runs, liquid will pass through the valve even in the closed position, however flow will be insufficient.
2- Pump valve deficiency.	Valve with sealing deficiency or stuck due to impurities.
3- Pump head perforated internally.	Replace it.

GENERAL CARE

HANDLING AGRICULTURAL SPRAYERS AND CHEMICALS

We warn the owners and users that the UNREASONABLE USE of this sprayer and chemicals applied may cause damage to people, properties, animals and environment.

Read carefully and understand thoroughly this manual and the recommendations of the chemicals manufacturers.

Follow strictly the instructions for proper use of this sprayer and chemicals to ensure more safety and efficiency when spraying your crops.

AFTER SPRAYING

ATTENTION: Avoid leaving chemical mixture residues in the tank. For the last pass, prepare the chemical solution in enough quantity to spray the remaining of the crop.

- Empty completely the tank and wash thoroughly the sprayer in a proper decontamination place.
- Wash the inside and outside of the sprayer with clean water and detergent.
- Disassemble and clean each nozzle assembly with fine brush, water jet or compressed air.
- Dry, lubricate and store the sprayer in a dry and covered place.
- Repaint the damaged metallic parts to prevent corrosion.
- Spray the mettalic parts with lubricating oil to prevent corrosion.
- Take off and wash the individual protective clothing separately from other clothes.

DANGER

SAFETY OBSERVATION

**OPERATING THIS SPRAYER WITHOUT FOLLOWING THE INSTRUCTIONS
MAY RESULT IN SERIOUS INJURY OR DEATH.**

STATEMENT OF LIMITED WARRANTY

MÁQUINAS AGRÍCOLAS JACTO S.A. warrants the equipment described herein and agrees to repair or replace parts and components which, under normal operation and wear, following the technical recommendations, show DEFECTS IN MATERIAL OR WORKMANSHIP.

WARRANTY PERIOD:

- One (1) year from the purchase date by the original retail purchaser.

WARRANTY APPLICATION:

Jacto or its authorized representative shall honor this warranty, if any part or component shows confirmed defect in workmanship.

IT SHALL BE UNDERSTOOD THAT THE REPLACEMENT OF COMPLETE COMPONENTS SUCH AS PUMPS, CONTROL VALVES, ENGINES, TRANSMISSIONS, HYDRAULIC PISTONS AND SIMILAR ONES SHALL ONLY BE PERFORMED IN CASE THAT THE DEFECT CANNOT BE REPAIRED BY REPLACING PARTS AND/OR PIECES OF THE COMPONENT.

THIS WARRANTY IS NULL AND VOID IF:

- Equipment is not used in accordance with the INSTRUCTION MANUAL, overwork or accidents.
- Improper preventive maintenance or performed by unauthorized people.
- Modification of the equipment in any way from the original design.
- Change, damage, or loss of the product identification plate.
- Utilization of parts and components not supplied by JACTO.

PRODUCT REGISTRATION CARD MUST BE COMPLETED BY THE ORIGINAL RETAIL PURCHASER, AND RETURNED TO JACTO DEALER WITHIN 30 DAYS OF PURCHASE DATE.

WARRANTY EXCLUSIONS:

- Parts considered as normal maintenance such as: filtering elements, belts, hoses, nozzles, pistons, pressure gauges, as well as usual maintenance, adjustments, retightening, lubrication and painting.
- Parts which show wear or tear due to use, UNLESS THEY SHOW DEFECTS IN WORKMANSHIP, ASSEMBLY OR MATERIAL.
- Hydraulic, lubricating oils and grease.
- Injuries of personal or material nature to the user, owner, or third parties.
- Additional charges resulting from paralyzation and repair of the equipment.
- Freight charges, pick up and delivery charges.
- Damages of any nature resulting from action of gases or liquids used in the equipment.

GENERAL INFORMATION:

- Defective parts replaced under warranty period shall be property of JACTO.
- Eventual delays in performing services do not confer to the owner the right to indemnity or to extension of the warranty period.
- JACTO reserves the right to change its products or to interrupt manufacturing the equipment.
- THIS LIMITED WARRANTY shall be understood by its expressed terms, and no one in anyway subject to JACTO shall be authorized to modify or amplify the conditions prescribed herein.
- In case of need for warranty request, call for the authorized dealer supplying all information required for a prompt compliance. Do not forget the identification of the equipment, total hours of work, and the noticed defect.

FOR THIS WARRANTY TO BECOME EFFECTIVE THE PRODUCT REGISTRATION CARD FOUND IN THE INSTRUCTION MANUAL MUST BE FILLED IN AND RETURNED TO YOUR JACTO DEALER. THIS CARD MUST BE SIGNED BY THE ORIGINAL RETAIL PURCHASER, INDICATING THAT HE HAS READ AND UNDERSTOOD ALL SAFETY AND OPERATIONAL INSTRUCTIONS IN THE MANUAL. FURTHER THE RETAILING DEALER HAS EXPLAINED TO THE ORIGINAL RETAIL PURCHASER ALL SAFETY INSTRUCTIONS. IN NO CASE WILL WARRANTY BE SUPPLIED UNTIL THIS CARD, PROPERLY COMPLETED AND SIGNED, IS ON FILE WITH JACTO RETAILING DEALER.



PRODUCT REGISTRATION CARD

Invoice number: _____ Date: ____/____/____

Retailing dealer: _____

Phone: _____ City: _____ State: _____

Sprayer: _____ Model: _____

Series: _____ Sprayer No.: _____ Pump No.: _____

Original retail purchaser: _____

Address: _____ Phone: _____

City: _____ State: _____

Purchase date by the original retail purchaser: ____/____/____

The warranty is in force as of this date: ____/____/____

Retail purchaser signature: _____

Copy Máquinas Agrícolas Jacto S. A. - Urgent respond with in 30 days first class postage required



PRODUCT REGISTRATION CARD

Invoice number: _____ Date: ____/____/____

Retailing dealer: _____

Phone: _____ City: _____ State: _____

Sprayer: _____ Model: _____

Series: _____ Sprayer No.: _____ Pump No.: _____

Original retail purchaser: _____

Address: _____ Phone: _____

City: _____ State: _____

Purchase date by the original retail purchaser: ____/____/____

The warranty is in force as of this date: ____/____/____

Retail purchaser signature: _____

Original retail purchaser's copy