

ARBUS 2000 VALENCIA 300

English version - MI-0091



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INTRODUCTION

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

However, as it is a work that can bring risks to the human being, environment and crops, Jacto has always been concerned with the proper use of its spraying machineries in an efficient and safe way.

Therefore, read carefully and understand thoroughly this manual before operating this sprayer and keep it always at hand when handling this sprayer for quick consult in case you are not quite sure of some operation or adjustment.

Should your doubt persist, please contact your Jacto dealer.

MÁQUINAS AGRÍCOLAS JACTO S.A.
CONTRIBUTING TO THE AGRICULTURE DEVELOPMENT.

IDENTIFICATION PLATE

Your sprayer has a plate showing its model and serial number.

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 and serial number of your sprayer for prompt and efficient service.



0790

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SAFETY INSTRUCTIONS

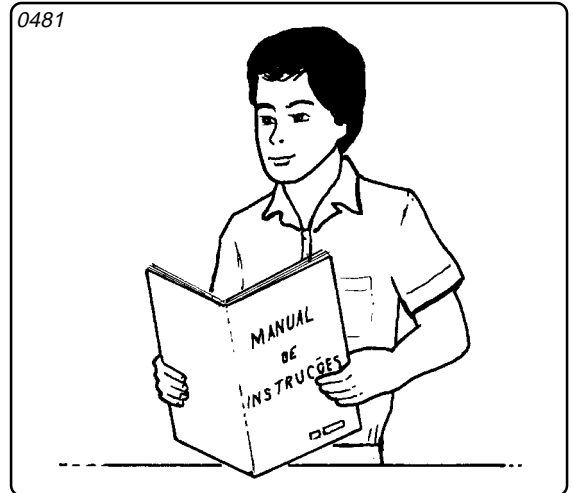
HANDLING AGRICULTURAL SPRAYERS

OWNER / OPERATOR:

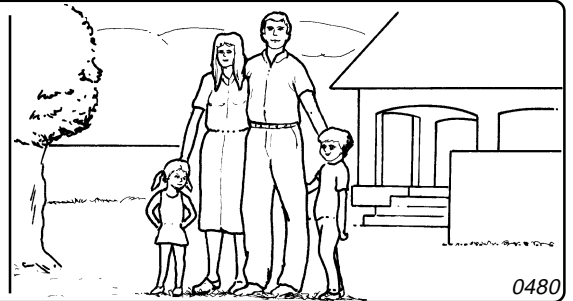
This sprayer was carefully designed and built so as to give you the maximum production, saving, easy operation and safety.

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 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.



0355



This safety alert symbol identifies important safety messages. When you see it, be alert to any possibility of personal injury or death. Keep all the decals on the sprayer and replace them if missing or illegible.

- Before operating this sprayer, read carefully and understand thoroughly this manual.
- Do not allow untrained people to operate this sprayer because this can cause serious injuries or fatal accidents.
- Do not modify this sprayer in any way because this can impair the function and risk your safety.
- Keep away children, aged people and animals while operating, servicing this sprayer and even when the sprayer is stored.
- In the delivery of your sprayer, have your Jacto dealer instruct you on the assembly, operation, maintenance and warranty in detail.
- Keep hands, feet and clothing away from moving parts.
- Never use loose clothing or mittens while working around the sprayer.
- Do not travel at high speeds.
- **Always stop tractor engine, disengage the PTO and wait for all moving parts to stop before servicing, adjusting or repairing the sprayer.**

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

- Only unhitch the sprayer on firm and level ground.
- Keep your sprayer in thorough repair.
- **ATTENTION:** When using track width set at 1.29 m and ground clearance of 0.37 m, the risks of turning over the sprayers are higher on irregular ground. See recommendations in the section MAINTENANCE - ADJUSTING TRACK WIDTH.

SAFETY INSTRUCTIONS

HANDLING CHEMICALS

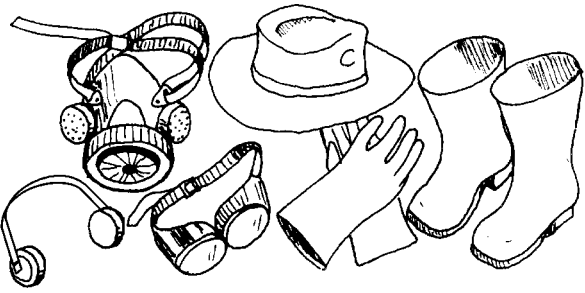
Chemical products are classified in four categories of toxicity. According to their toxicity level, there is a special recommendation of appropriate protective equipment.

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



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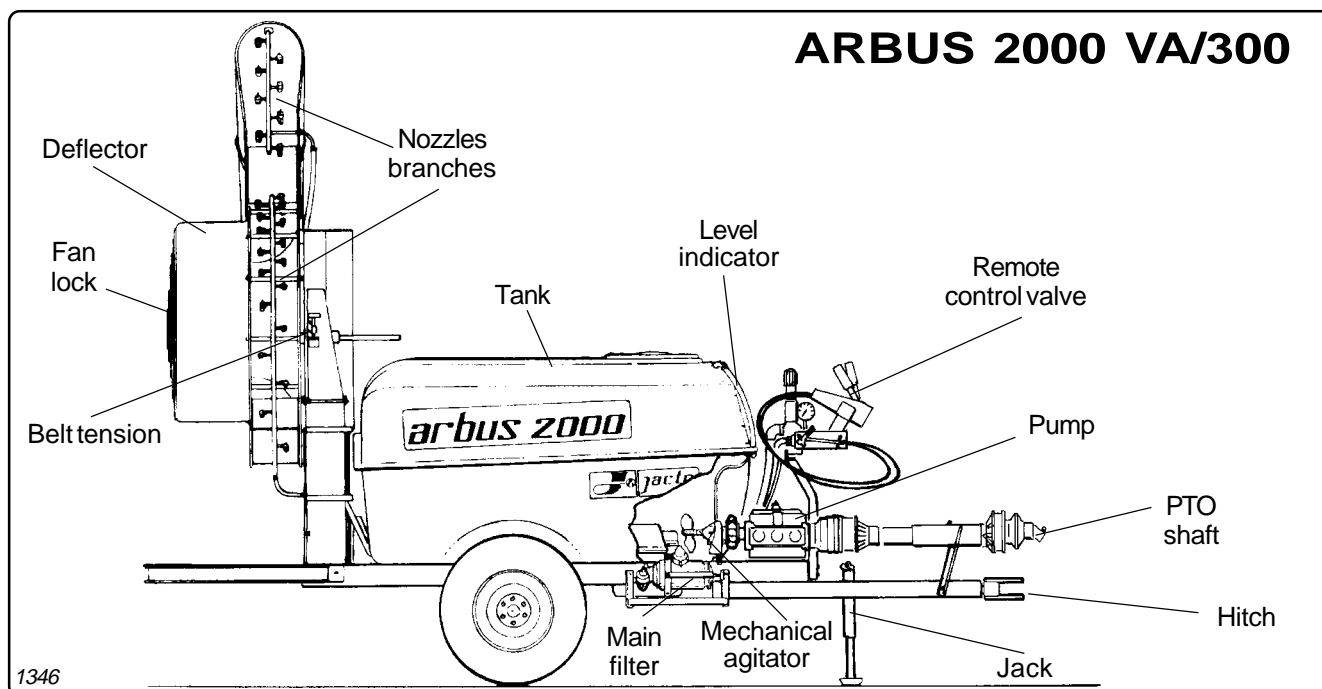
CHEMICAL PRODUCTS CLASSIFICATION

0479 	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.**

PRESENTATION OF SPRAYER



Model	Arbus 2000 VA/300
Length (m)	4.40
Width (m)	2.33
Height (m)	
- Minimum	3.26
- Maximum	3.42
Weight (kg)	980
Tank	
- Capacity (l)	2,000
- Material	Fiberglass
Filter	
- Quantity	02
- Model	FVS-200
- Mesh	24/40
Pump	
- Model	JP-300
- Flow rate (L/min).....	300
- Maximum pressure (kg/cm ² - psi)	28 - 400
- Power consumption (HP at 400 psi).....	19
Nozzles	
- Type	Double nozzle holder
- Total	52
- Model/Quantity (on standard deflector)	J5-2 (44) / J6-3 (44)
- Model/Quantity (on one-way deflector)	J5-2 (8) / J6-3 (8)
- Maximum pressure (kg/cm ² - psi)	14 - 200
Tires	
- Type	11 L - 15
- Nominal width (mm)	270
- Pressure (kg/cm ² - psi)	3.1 - 44
Ground clearance (m)	
- Minimum	0.21
- Maximum	0.37
Track width (m)	
- Minimum	1.23
- Maximum	1.55
Agitator	Mechanical
Control valve	VAR
Pressure gauge	Glycerin-filled
PTO shaft	Wide-angle/CV
Recommended maximum working speed (km/h)	2 to 6

PRESENTATION OF SPRAYER

FAN FEATURES

SPECIFICATION	ARBUS 2000 VA/300
Fan diameter (mm)	850
Pulley diameter (mm)	87
Rotation (rpm)	2,050

FAN PERFORMANCE WITH ONE-WAY DEFLECTOR	PLASTIC BLADES POSITION	
	*A	B
Air speed (km/h)	129	-
Air volume (m ³ /min - with one-way deflector)	1,032	-
Air volume (m ³ /min - without one-way deflector)	1,374	-
Maximum power consumption (HP)	31.5	-

*This sprayer is shipped with the blades set on the position A.

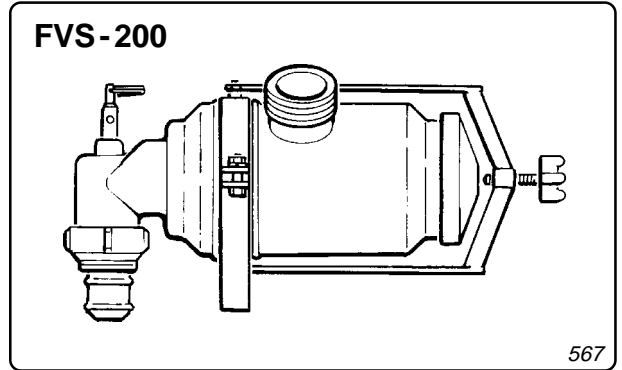
POWER CONSUMPTION	
Mechanical agitator	±1 HP
Pump (at 400 psi)	19 HP
Fan (position A)	31.5 HP
TOTAL	50.5 HP

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.



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

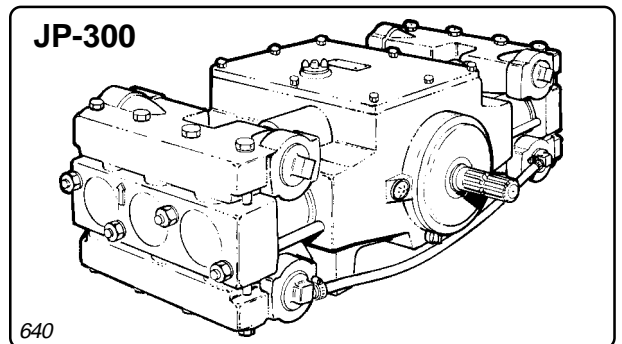
PUMP

The pumps mounted to Jacto sprayers have flow rate ranging from 38 to 300 liters per minute.

PUMP MODEL	FLOW RATE (l/min)	MAXIMUM WORKING PRESSURE	
		psi	kg/cm ²
JP - 402	38	300	21
JP - 75	75	500	35
JP - 100	100	500	35
JP - 150	150	500	35
JP - 190	190	400	28
JP - 300	300	500	35

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

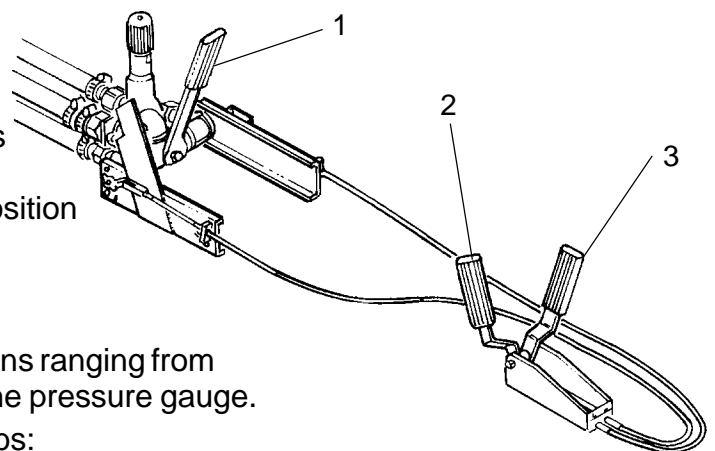
Piston cup replacement becomes easier by removing the head assembly in a quick and simple operation with no need to remove the pump.



CONTROL VALVE

The control valve is operated through cables and allows the operator to turn the chemical mixture flow on and off to both sides or right or left side only.

It can be easily installed in a convenient position to the operator.



PRESSURE REGULATOR

This pressure regulator provides calibrations ranging from 2 to 35 kg/cm² (30 to 500 psi), indicated by the pressure gauge.

The levers (1), (2) and (3) have different jobs:

- The lever (1) turns on and off the chemical mixture flow to both nozzles branches.
- The lever (2) turns on and off the chemical mixture flow to the right nozzle branch.
- The lever (3) turns on and off the chemical mixture flow to the left nozzle branch.

MAIN COMPONENTS OF SPRAYER

NOZZLES

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

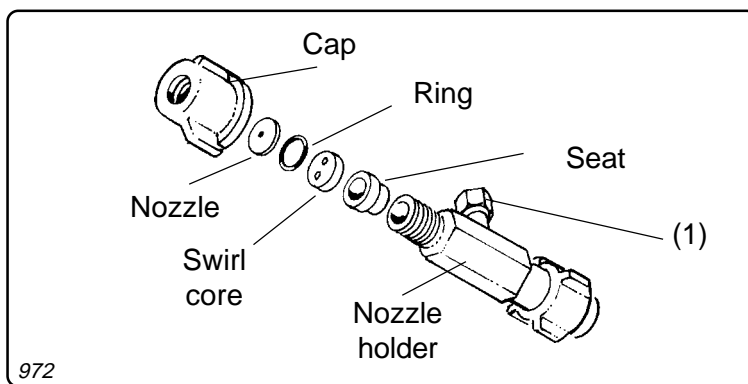
Flow, angle and droplet sizes vary according to working pressure. Operating with pressure over that recommended by the manufacturer will decrease the nozzles' life.

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

The nozzle bodies can be adjusted to desired angle and can be shut off individually.

NOTE: This sprayer can be mounted with nozzle holder with valve or double nozzle holder. Identify it in the figures below and proceed as directed.

NOZZLE HOLDER WITH VALVE



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

ATTENTION: Do not overtighten the nut.

DOUBLE NOZZLE HOLDER

DIRECTING THE NOZZLE

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

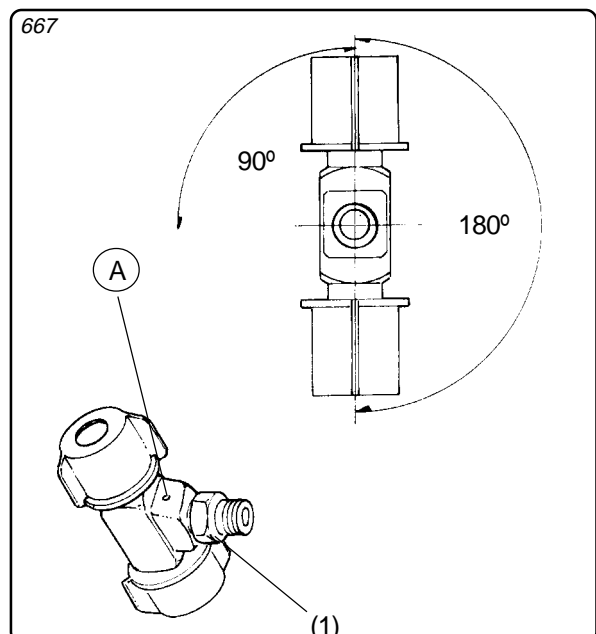
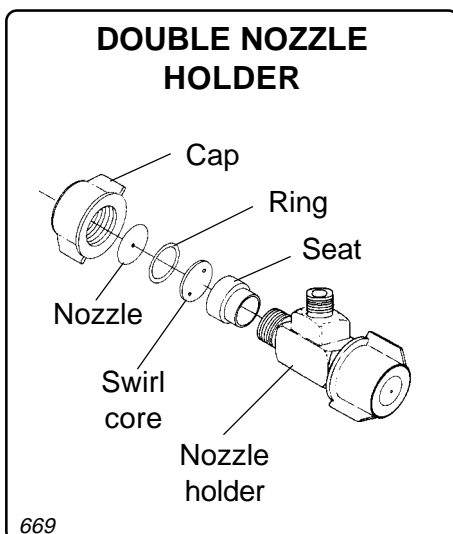
NOTE: This mark indicates the spray direction. So the nozzle set at this mark is on.

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 shut.

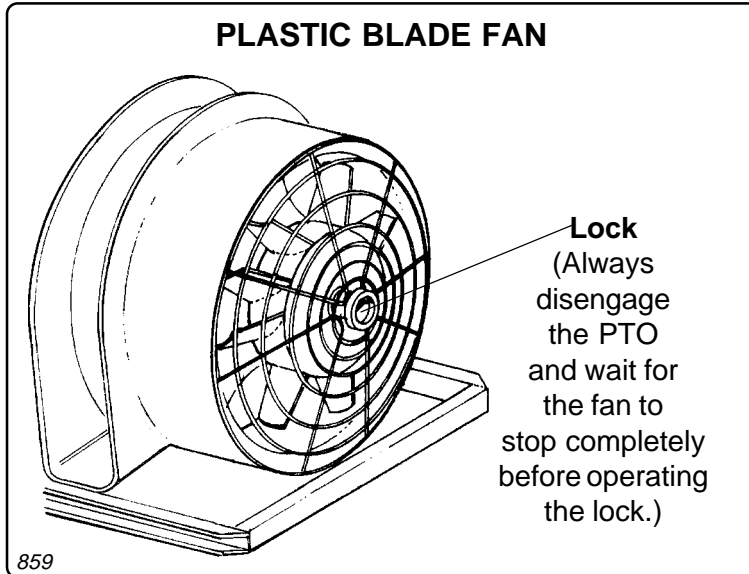


MAIN COMPONENTS OF SPRAYER

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.

To turn the fan off, pull the lock and give it a quarter turn. To turn it on, set the lock back.



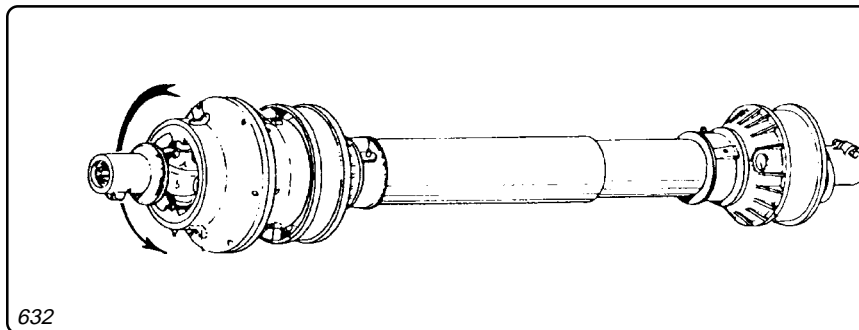
ATTENTION

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.

WIDE-ANGLE CV PTO SHAFT

The wide-angle CV PTO shaft is a component whose advantage on the standard PTO shaft is in allowing the sprayer to make turns of up 75-degree angle with no need to disengage the PTO.



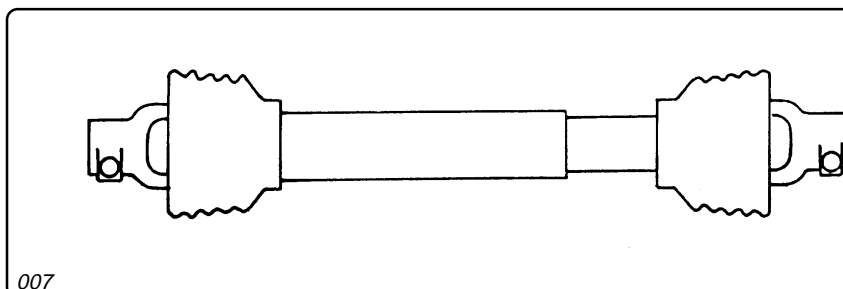
NOTE:

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

PTO SHAFT

The sprayer's PTO shaft is equipped with plastic protection guards to prevent the operator and his clothes from touching the PTO shaft and avoid damage to the crops.

STANDARD PTO SHAFT (OPTIONAL)



NOTE:

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

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, take off 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	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	X	X
	Check the overlaps of the PTO shaft	X	X
	Remove the tractor's drawbar	-	X
	Raise to the highest the tractor's hydraulic arms	X	X
	Adjust the control valve position to avoid impacts while turning	X	-
	Check if the grease fittings are filled	X	X
	Check if the oil is on the level on the components	X	X
	Calibrate the tires	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
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 a mixture of lubricating oil at 80% and diesel oil at 20%	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	-

CHOOSING THE IDEAL TRACTOR

Different working conditions lead us to adopt the following criterion for choosing the tractor to run the Arbus line sprayers of 1,000, 1,500 and 2,000 liters.

- 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 = 980 kg

Tank capacity = 2,000 liters

Total power consumption = 50,5 HP

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

1st- 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 = 50,5 HP

Minimum tractor nominal power = 100 HP

2nd- LOAD TO BE TRANSPORTED

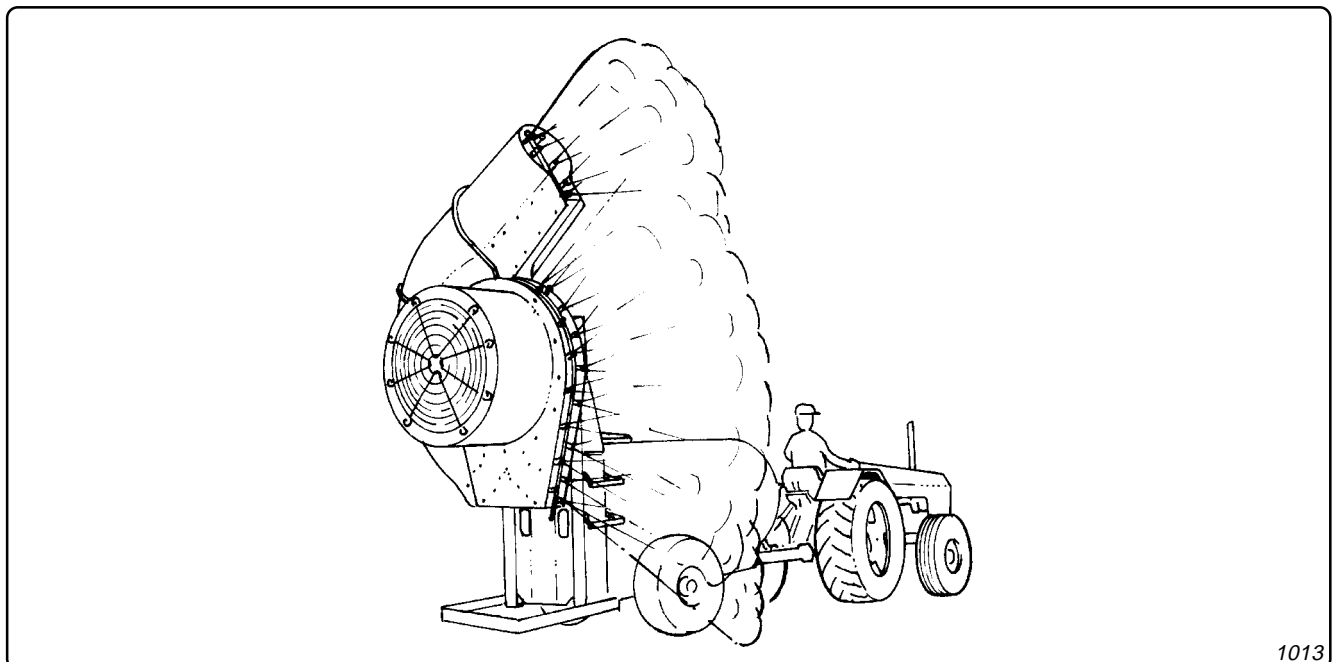
The tractor gross weight should be at least equal to the sprayer gross weight.

Ex: Sprayer net weight = 980 kg

Filled up tank = approximately 2,000 kg (2,000-liter tank)

Sprayer gross weight = 2,980 kg

Tractor gross weight = 2,980 kg



1013

ATTENTION

In this case the recommended tractor should have minimal nominal power of 100 HP and weigh at least gross 2,980 kg.

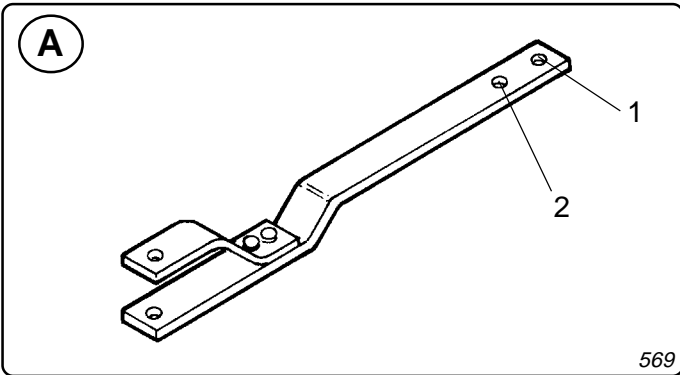
SETTING UP TRACTOR AND SPRAYER

Adjusting the drawbar

Fit the drawbar pin into the proper hole (1 or 2) to vary the distance between the PTO shaft and the hitch point (see figure A).

Hole	Distance between the PTO shaft and the hitch point	Maximum (static) load in lift
1	35 cm	455 kg
2	25 cm	590 kg

NOTE:
For heavy load, the hole no. 2 is recommended (see figure A).



ATTENTION

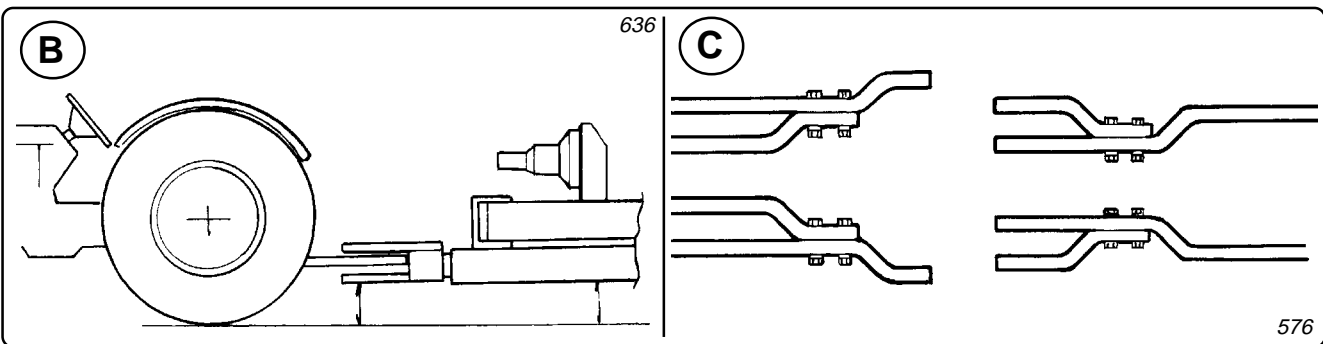
The figures shown in above table were obtained on a 63 HP tractor.

For explanation in detail, please consult the operator's manual of your tractor.

Adjusting the sprayer height and the tractor's drawbar

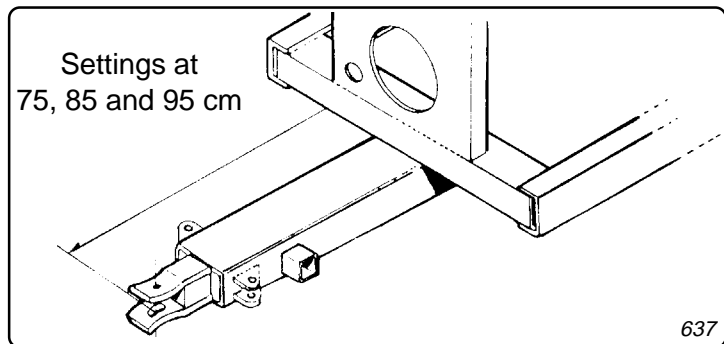
Set the tractor's drawbar so as to allow the sprayer to work on level after being hitched (see figure B).

Invert the drawbar to vary the height of the hitching point (see figure C).



Adjusting the sprayer's tongue

The sprayer's tongue can be adjusted from 75 to 95 cm, as shown in the figure beside.



NOTE

In order to know what is the weight (kg) put on the tractor drawbar when hitched to Arbus line sprayers, just add the sprayer weight to the tank capacity and multiply the total by 0.12.

CONNECTING THE PTO

CONVENTIONAL PTO SHAFT

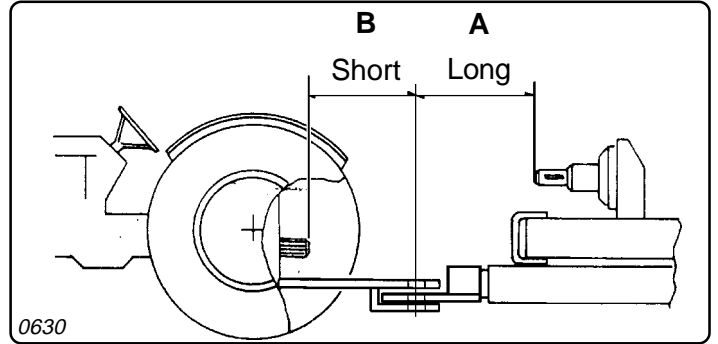
(WITHOUT CV JOINT)

-Adjust the drawbar length in relation to the PTO as shown in the figure beside.

IDEAL CONNECTION

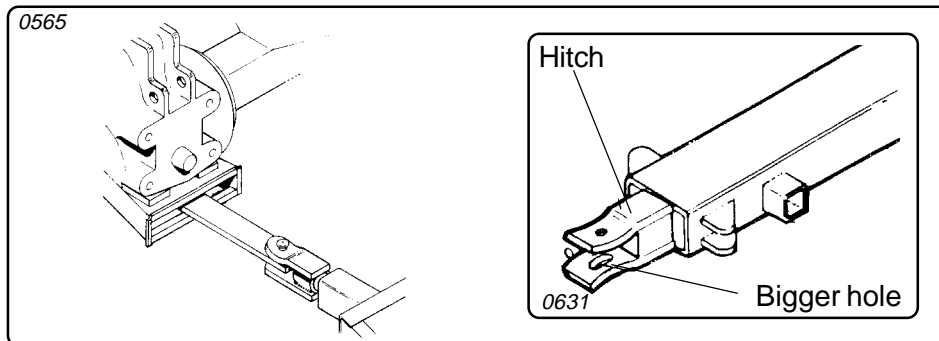
Distance A = B or as close as possible.

Ex.: If A = 40 cm, then B should be somewhere between 35 and 45 cm.

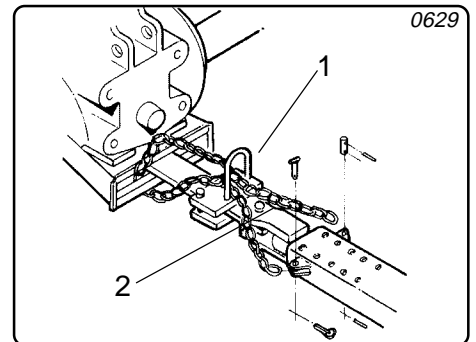


-Hitch the sprayer to the tractor as shown in the figures below.

NOTE: The bigger hole on the hitch must always be set in the lower position since it is designed to allow the hitch pin to swing when the sprayer is overcoming obstacles.



- Install the safety chain as shown in the figure below and give heed to the following:
- Leave some slack on the chain so that it is not stretched when maneuvering.
- The chain holder (1) must be mounted as close to the hitch pin (2) as possible.



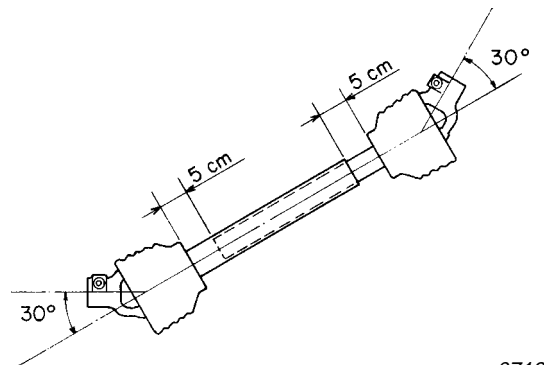
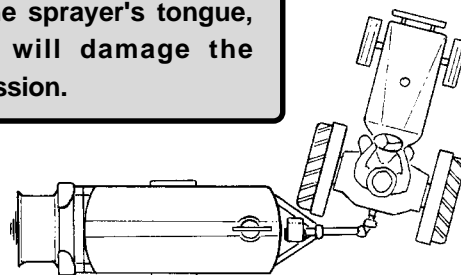
ATTENTION

Replace the safety chain if one or more links are damaged.

ADJUSTING THE PTO SHAFT MALE AND FEMALE TUBES

- Position the tractor until its rear tire gets close to the sprayer's tongue.
- Connect the PTO shaft.
- Adjust the male and female tubes lengths (recommended overlap: 5 cm).

ATTENTION: When maneuvering, disengage the PTO and keep the tire from touching the sprayer's tongue, otherwise this will damage the sprayer's transmission.



ATTENTION: 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 installed with cotter pin.

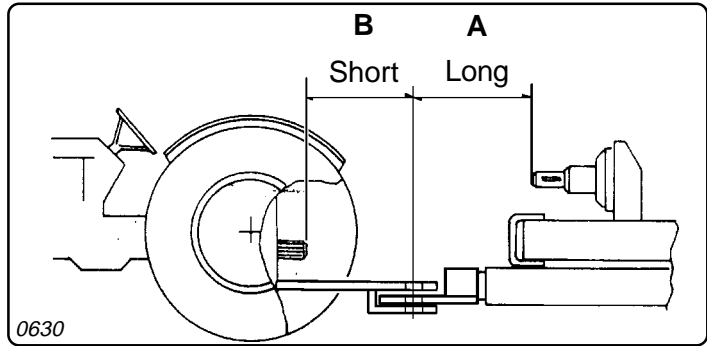
CONNECTING THE PTO

WIDE-ANGLE CV PTO SHAFT (WITH CV JOINT)

-Adjust the drawbar length in relation to the PTO as shown in the figure beside.

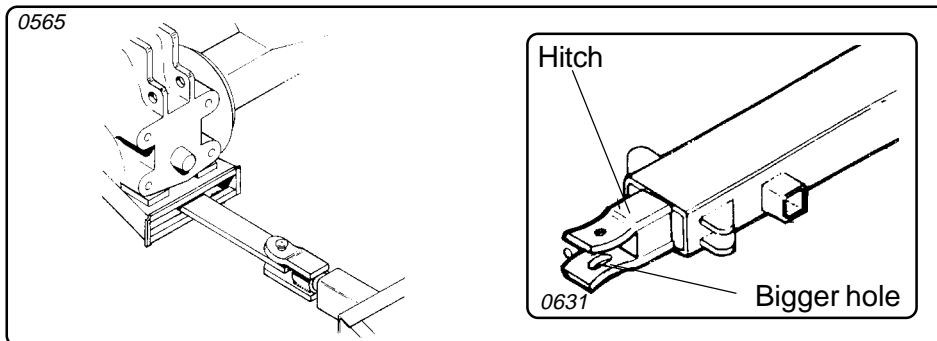
IDEAL CONNECTION

- The distance A must be as long as possible and the B as short as possible. This provides a wider angle to the CV joint. The ideal is to have $A = 2 \times B$.

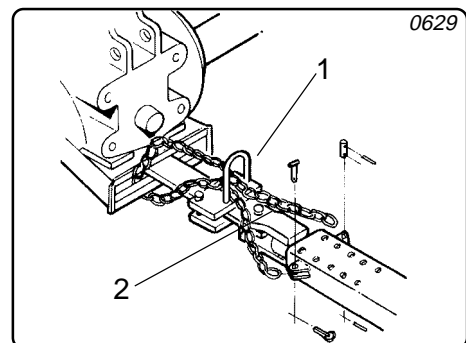


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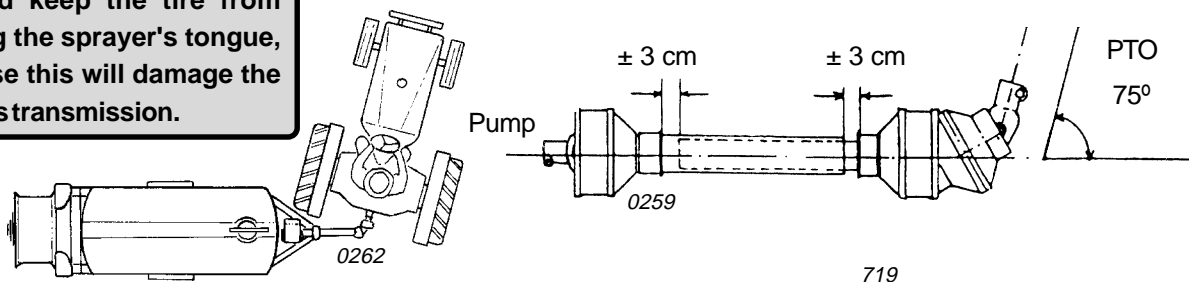
ATTENTION

Replace the safety chain if one or more links are damaged.

ADJUSTING THE PTO SHAFT MALE AND FEMALE TUBES

- Position the tractor until its rear tire gets close to the sprayer's tongue.
- Connect the PTO shaft.
- Adjust the male and female tubes lengths (recommended overlap: 3 cm).

ATTENTION: When maneuvering, disengage the PTO and keep the tire from touching the sprayer's tongue, otherwise this will damage the sprayer's transmission.



ATTENTION: 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 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

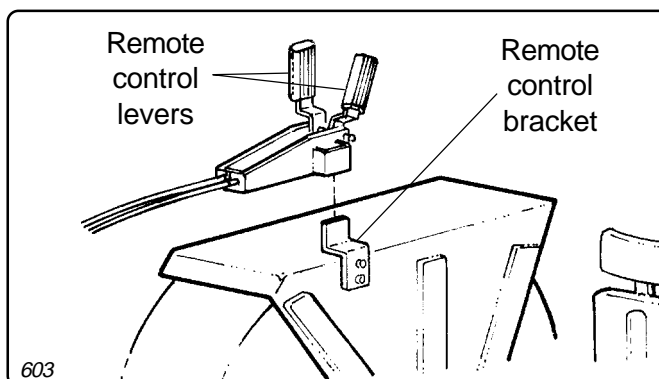
REMOTE CONTROL VALVE

This control valve is operated through cables and allows the operator to turn on and off the chemical mixture flow to both left and right nozzles branches or to one only.

It can be easily installed in a position convenient to the operator.

INSTALLATION

Install the remote control bracket on the tractor's fender and mount the remote control levers as shown in the figure beside.

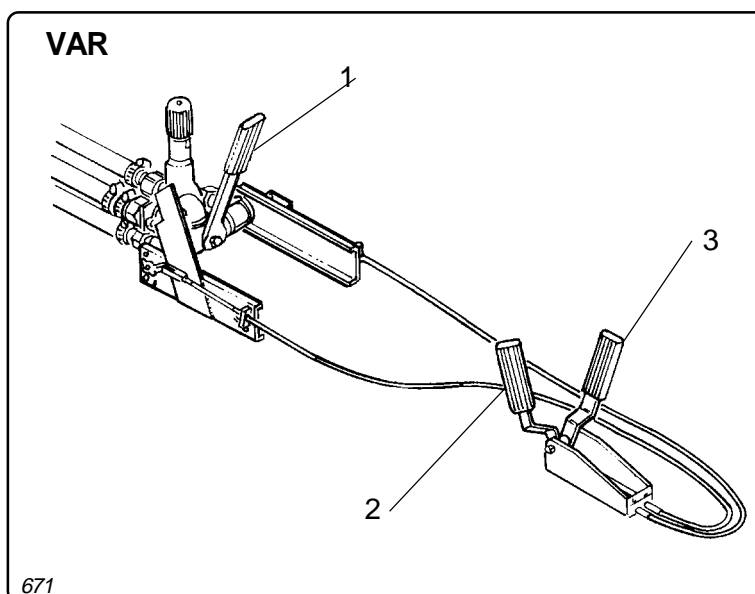


OPERATION

The lever (1) turns on and off the chemical mixture flow to both nozzles branches.

The lever (2) turns on and off the chemical mixture flow to the right nozzle branch.

The lever (3) turns on and off the chemical mixture flow to the left nozzle branch.



NOTE

During the spray applications there may be times when it will be necessary to close the chemical mixture flow to the nozzles branches through the levers (1) and (2). However, do this only at the row ends for maneuvering, for short time and with the PTO disengaged.

ATTENTION

AS THE REMOTE CONTROL WILL BE MOUNTED CLOSE TO THE OPERATOR'S SEAT, IT IS IMPERATIVE THAT THE ORIGINAL HITCH PIN WITH COTTER PIN AND SAFETY CHAIN BE INSTALLED IN ORDER TO AVOID ACCIDENTS.

ATTENTION

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

OPERATION AND ADJUSTMENTS

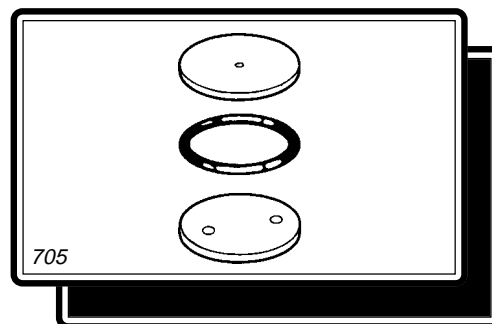
HOLLOW AND FULL CONE NOZZLES - SERIES J

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 (L/min)							
J4-2 hollow cone	1.07	1.21	1.48	1.70	1.90	2.07	2.23	2.39
J4 - 3 full cone	1.56	1.81	2.21	2.55	2.86	3.14	3.38	3.61
J5 - 2 hollow cone	1.56	1.82	2.22	2.54	2.63	3.10	3.34	3.57
J5 - 3 full cone	2.65	3.05	3.69	4.28	4.77	5.22	5.63	6.03
J6 - 2 hollow cone	2.26	2.63	3.21	3.68	4.12	4.50	4.83	5.16
J6 - 3 full cone	4.42	5.07	6.19	7.15	7.99	8.73	9.41	10.06

Pressure band not recommended because it will cause premature wear to 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 AGROCHEMICALS

- Follow strictly the instructions on the labels.
- Use individual protective clothing.
- 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 at sunny 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 spray volume through the following formula:

$$V = \frac{F \times 600}{S \times A} \text{ (L/ha)}$$

Where:

- V : Spray volume (L/ha)
- F : Nozzles total flow rate (L/min)
- S : Tractor speed (km/h)
- A : Row spacing (m)
- 600 : Conversion unit

EXAMPLE

Row spacing (A): 5.0 x 7.0 (m)
Number of trees per hectare: 286
Tractor speed (S): 3 km/h
Nozzles: 30 x J6-3 at 200 psi

$$V = \frac{F \times 600}{S \times A} \text{ (L/ha)} \quad V = \frac{233 \times 600}{3 \times 7} \text{ (L/ha)} \quad V = \frac{139,800}{21} \quad V = 6,657 \text{ L/ha}$$

$$\text{SPRAY VOLUME PER TREE: } \frac{V \text{ (L/ha)}}{\text{Number of trees per hectare}} = \frac{6,657}{286} = 23,3 \text{ L/tree}$$

OPERATION AND ADJUSTMENTS

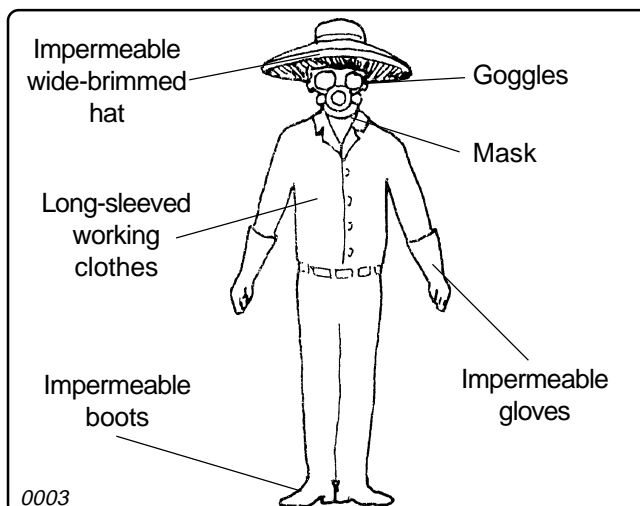
DILUTING THE CHEMICALS

ATTENTION

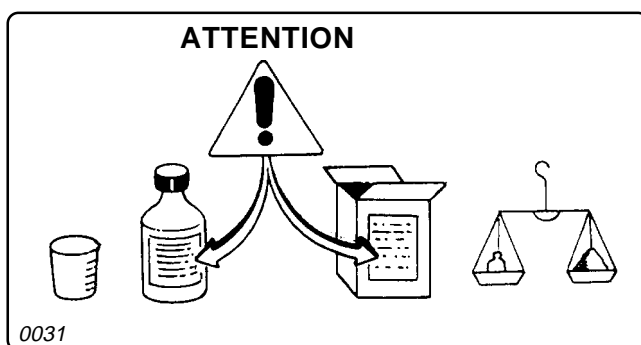
NEVER run the sprayer for with less than 50 liters of water in the tank to avoid damage to the pump.

Always use the following individual protective clothing when handling chemicals:

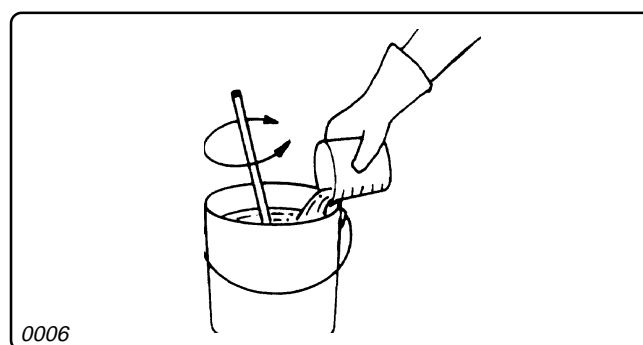
- Impermeable wide-brimmed hat
- Goggles
- Mask
- Long-sleeved working clothes
- Impermeable gloves
- Impermeable boots



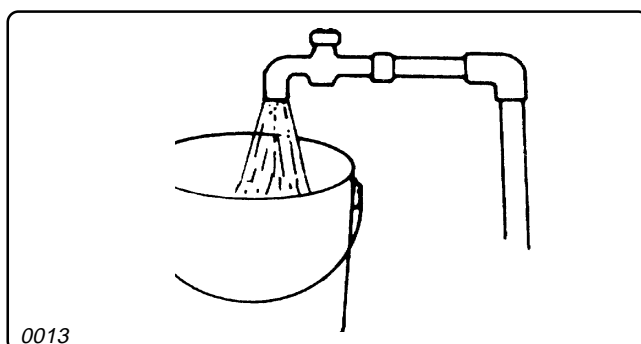
PREPARING THE CHEMICAL MIXTURE



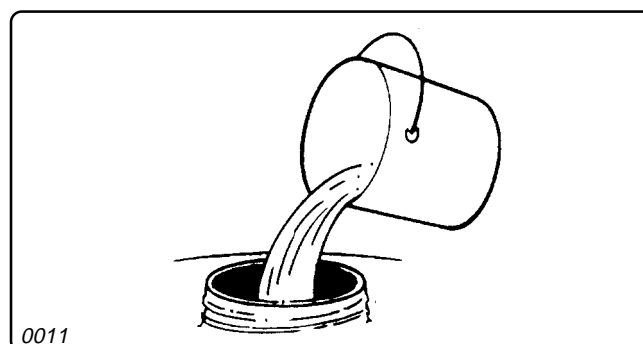
- Read carefully the chemicals manufacturer's label.



- 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.

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.

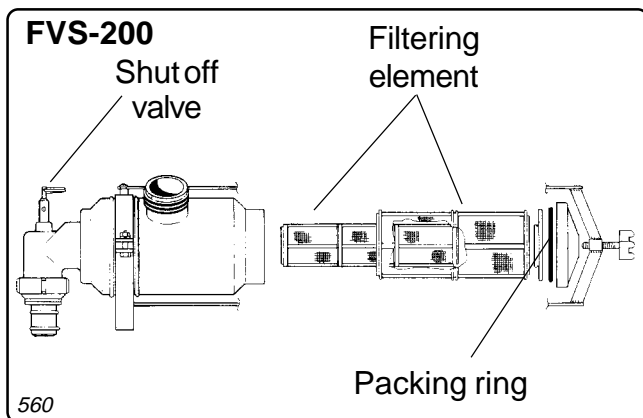
These procedures will avoid future problems caused by strainer, nozzle and tube obstructions and prolong the sprayer's life, as well as protect yourself.

COMPONENTS

MAIN FILTER

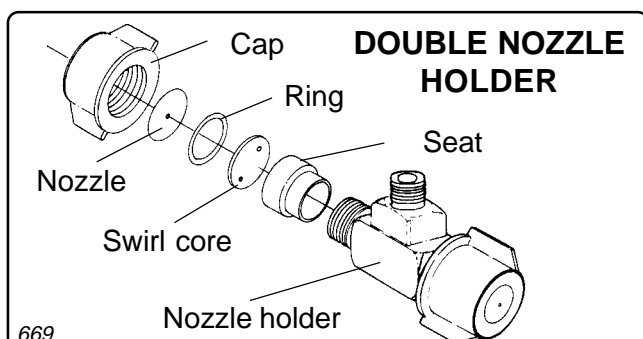
The frequency of filter cleaning will depend on the quality of water and type of agrochemicals applied.

Clean the filter when filling the tank or whenever necessary.



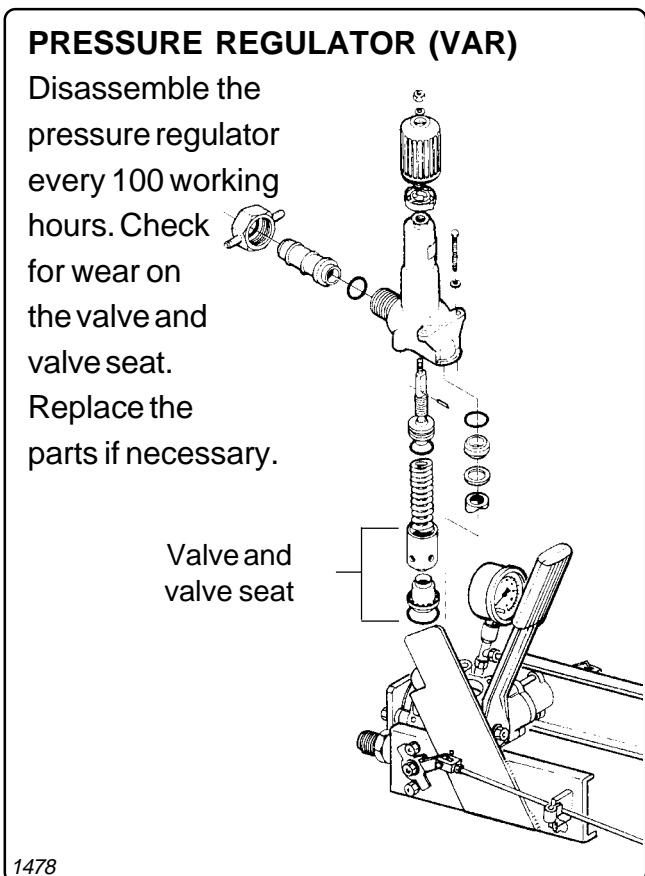
NOZZLE HOLDER

Clean the nozzle holders daily or whenever necessary.

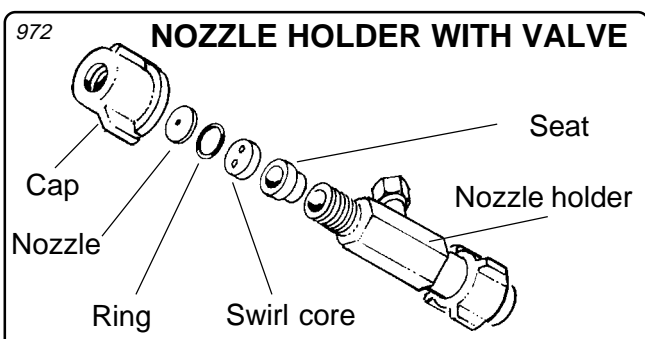


PRESSURE REGULATOR (VAR)

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



NOZZLE HOLDER WITH VALVE



MAINTENANCE

LUBRICATION TABLE

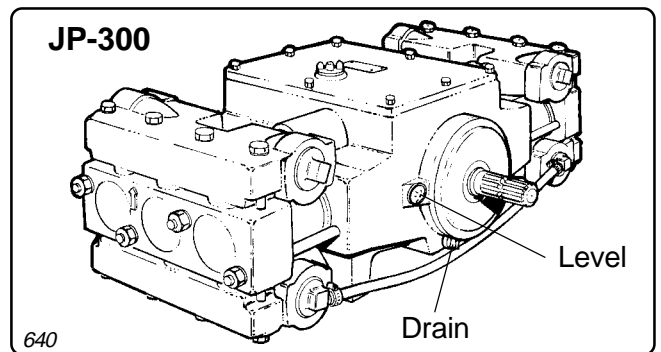
PRODUCT	LOCATION	QTY.	FREQ.	SPECIFICATION	RECOMMENDED PRODUCTS
LUBRICATING OIL	JP-75 PUMP	1.5 L	1ST CHANGE: AFTER THE FIRST 30 H. FURTHER CHANGES: EVERY 100 H	API-SB OR SUPERIOR SAE-30	ALL INTERNAL COMBUSTION ENGINES WITHIN THIS SPECIFICATION
	JP-100 PUMP	2.0 L			
	JP-150 PUMP JP-190 PUMP	2.5 L			
	JP-300 PUMP	4.0 L			
GREASE	PTO SHAFT, TRAILER HITCH, REAR AND FRONT PILLOW BLOCKS, MECHANICAL AGITATOR, JACK	-	DAILY	LITHIUM BASE NGLI - 2	MULTIFAKEP - 2 MOBILGREASE 77 LUBRAX GMA - 2 BEACON EP - 2 OR SIMILAR TYPES
	WHEEL HUB		500 HOURS		

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

COMPONENTS LUBRICATION

PUMP

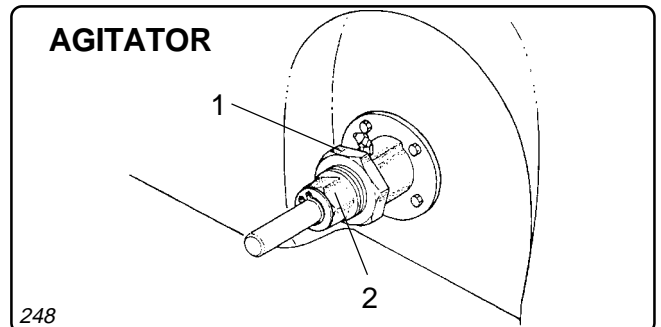
Check the pump oil level daily and fill it if necessary.



MECHANICAL AGITATOR

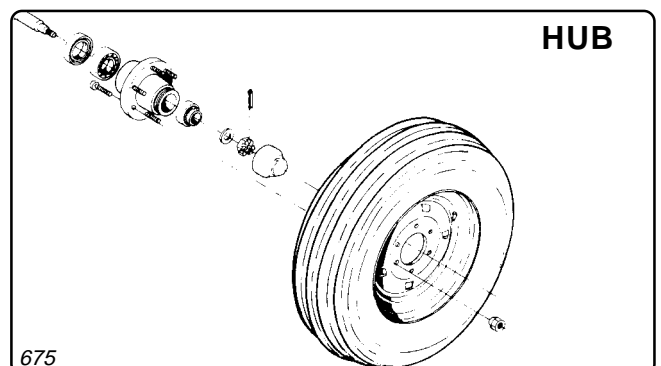
If there is leak on the agitator assembly, proceed as follows:

- Loosen the nut (1) by turning it clockwise.
- Tighten the screw (2) pressing the gasket till the leak stops.
- Retighten the nut (1) and lubricate the agitator.



WHEEL HUB

Replace the grease every 500 working hours according to specifications in the lubrication table.



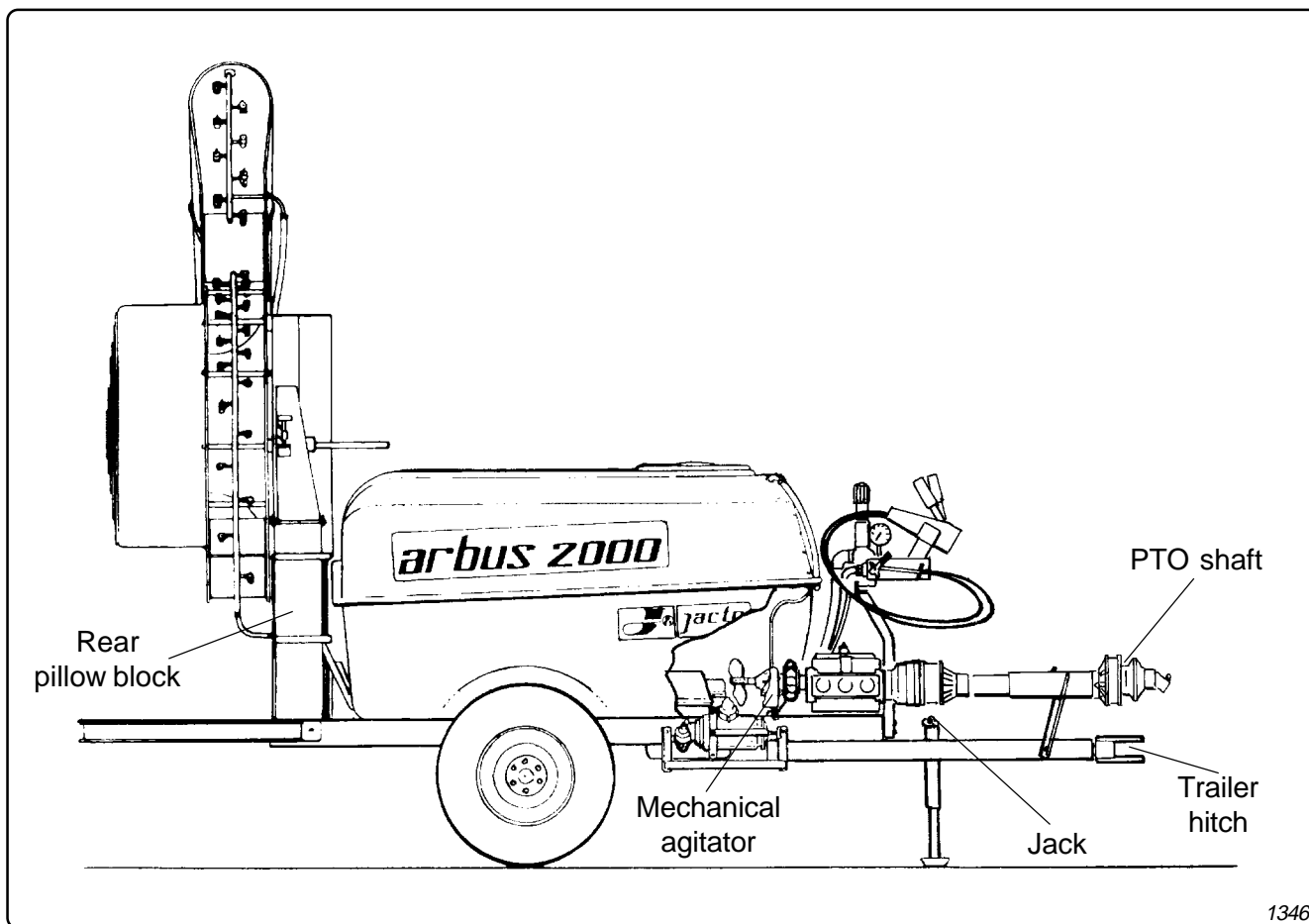
ATTENTION

PLACE THE SPRAYER ON A FIRM AND LEVEL GROUND AND SCOTCH ITS WHEELS BEFORE LUBRICATING THE WHEEL HUB.

MAINTENANCE

LUBRICATION POINTS

- 1 -PTO shaft cross and tubes (Refer to the section MAINTENANCE - PTO SHAFT)
- 2 - Jack
- 3 -Trailer's hitch
- 4 -Mechanical agitator
- 5 -Rear pillow block



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

MAINTENANCE

TRACK WIDTH AND GROUND CLEARANCE

TRACK WIDTH

TIRES	TRACK WIDTH (m)	
	MINIMUM	MAXIMUM
11 L 15 / 7.5 x 16	1.23	1.55

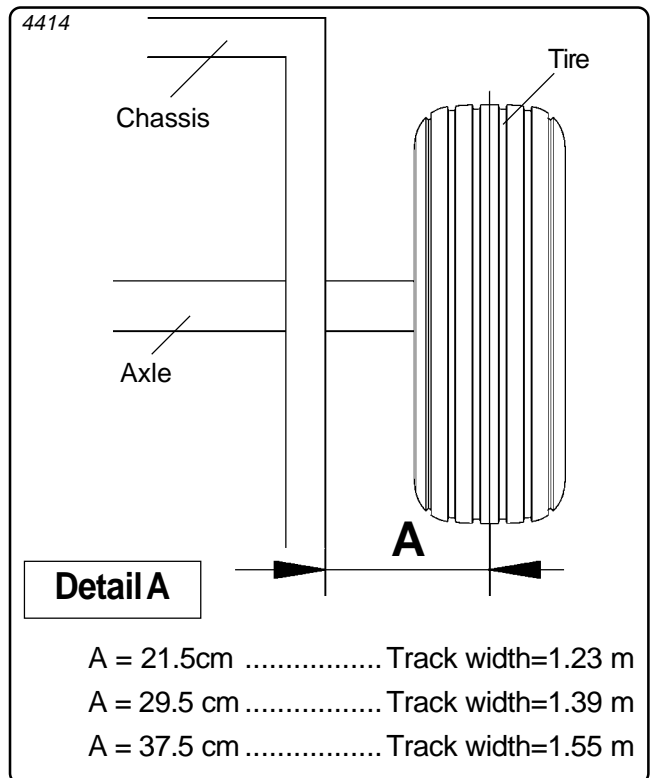
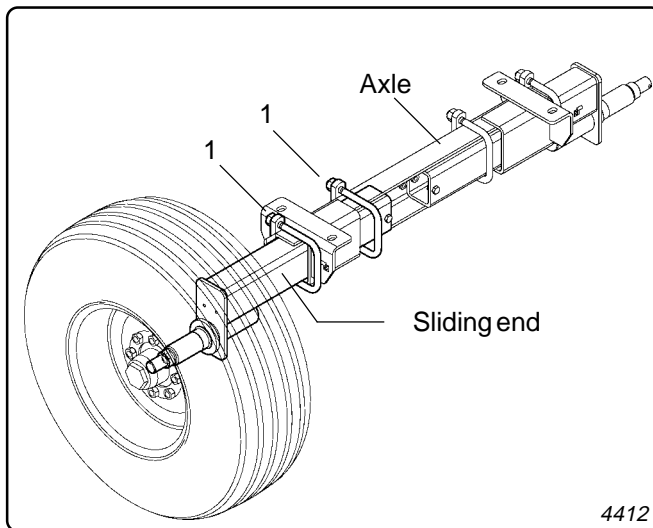
GROUND CLEARANCE

TIRES	GROUND CLEARANCE(m)	
	MINIMUM	MAXIMUM
11 L 15 / 7.5 x 16	0.21	0.37

ADJUSTING THE TRACK WIDTH

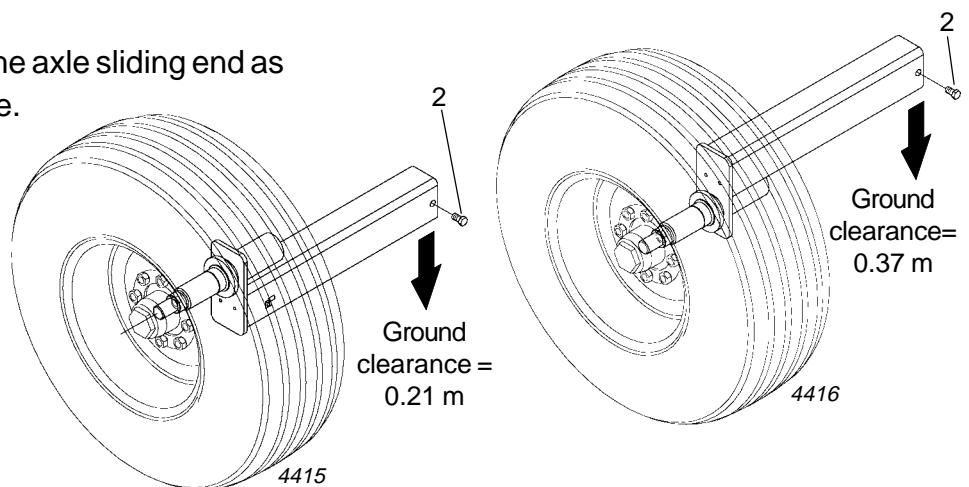
- Raise the trailer back enough to suspend the wheels over the ground.
- Loosen the 4 nuts (1) that fasten the sliding end to the axle.
- Slide the axle end measuring the distance from the tire inner face to the chassis outer face. (example in the detail A).

NOTE: Depending on the sprayer and on the track width desired, it may be necessary to adjust the locking bolt for the high axle. Then you should adjust according to the recommendations in the table "Recommended Minimum Track Width (mm)".



ADJUSTING THE GROUND CLEARANCE

- Raise the trailer back enough to suspend the tires over the ground.
- Loosen the 4 nuts (1) that fasten the sliding end to the axle.
- Remove the bolt (2) that stops the movement of the sliding end.
- Invert the assembly of the axle sliding end as shown in the figures beside.
- Fit the sliding end in the desired position.
- Loosen the 4 nuts (1).
- Fit the bolt (2).



MAINTENANCE

TRACK WIDTH ADJUSTMENT

SAFETY INSTRUCTIONS

- The maximum working speed for the ARBUS 1500 and 2000 airblast sprayers must not exceed 6.0 km/h.
- The maximum speed for moving around the ARBUS 1500 and 2000 airblast sprayers must not exceed 10.0 km/h.


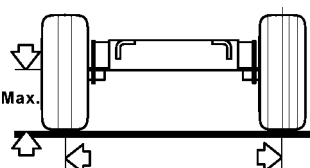
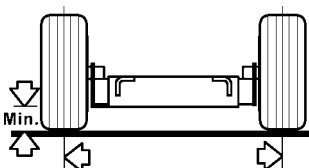
NOTE: For both moving around and working with the sprayer, it is important to have the axle assembled according to the recommendations in the table below. Preferably, for moving around the sprayer at speeds above 8.0 km/h, set the axle with the maximum track width and minimum ground clearance.

- Avoid moving on irregular ground. If it is necessary and the axle is set in the minimum recommended assembly, you must take double care.

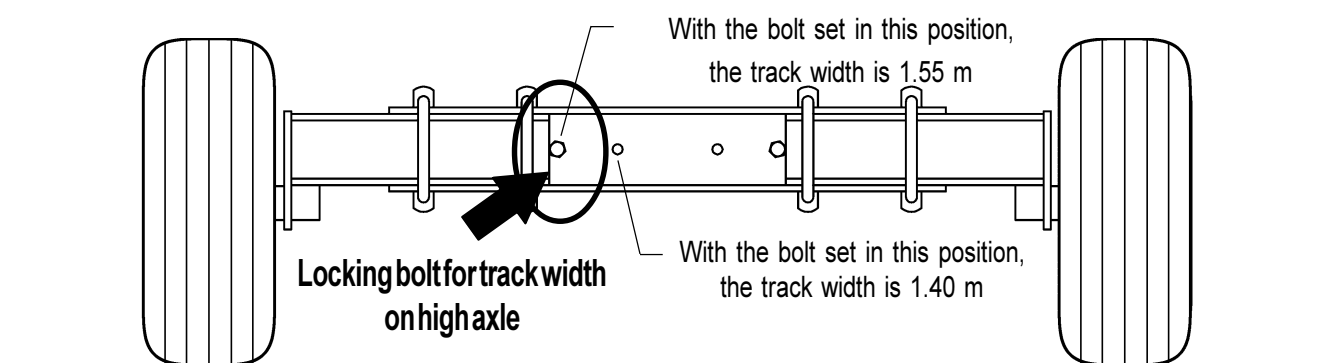
ATTENTION: Irregular ground risks operator's safety and sprayer.

- The axle on the ARBUS 1500 and 2000 airblast sprayers are assembled with bolts to block the track width adjustment way when set to high axle. The position of these bolts varies according to the sprayer type.

To adjust the track width and ground clearance, proceed as follows:

	BITOLA (mm) MÍNIMA RECOMENDADA	RECOMMENDED MIN. TRACK WIDTH (mm)	TROCHA (mm) MÍNIMA RECOMENDADA
			
ARBUS 2000 VALÊNCIA / CERRADO	1550	1400	1400
ARBUS 2000 EXPORT / USA	1550	1230	1230
ARBUS 1500-2000 GOLDEN	1550	1230	1230
ARBUS 1500 DIAMOND	1550	1230	1230
ARBUS 2000 CAFÉ	1400	1230	1230

ATTENTION: To adjust the track width, be alert to the position of the locking bolt, and adjust according to the dimensions recommended in above table.



MAINTENANCE

WIDE-ANGLE C.V. PTO SHAFT

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

The **WIDE-ANGLE CV PTO SHAFT** is a component whose advantage in relation to standard PTO shafts is to allow turns at angles up to 75° with no need to disengage the PTO.

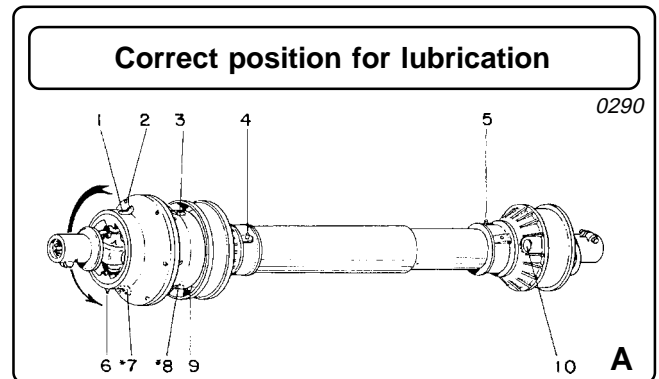
INSTRUCTIONS

1 - LUBRICATION

- Lubricate the points indicated in the figure **A** every 8 working hours.

NOTE: The points (7) and (8) are opposite the points (1) and (3), so turn the guard cone as shown in the figure **A**.

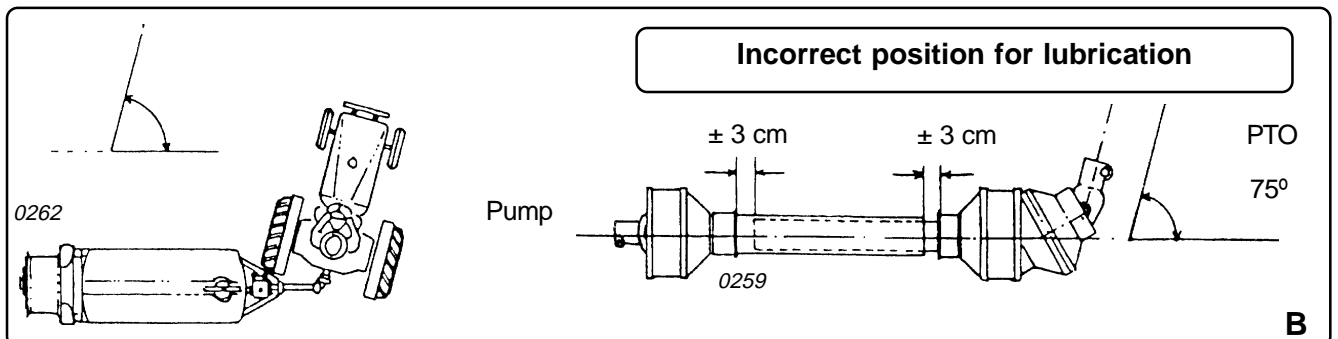
NOTE: Every thirty/fifty working hours dismantle the protection guards, clean and wash the parts, lubricate and assemble the PTO shaft.



ATTENTION: Only lubricate the PTO shaft with the CV joint aligned to the male and female tubes; otherwise, the lubrication will not be appropriate and the PTO shaft can be damaged.

2 - CONNECTING THE PTO

- Adjust the sprayer's tongue and the tractor's drawbar so that there is an overlap from 3 to 5 cm when the tractor is making a sharp turn (that is, when the tractor's tire is touching the sprayer's frame head).



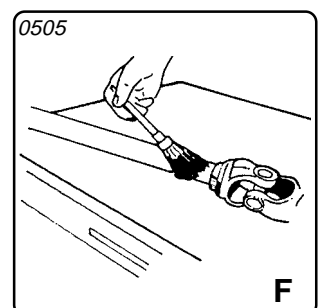
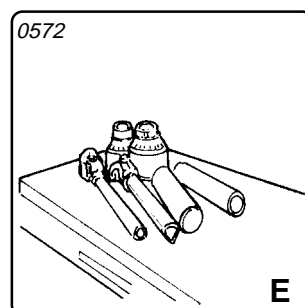
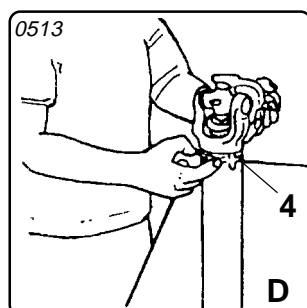
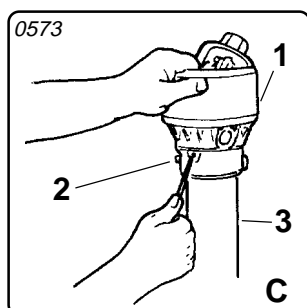
3 - DISASSEMBLING THE PTO SHAFT FOR LUBRICATION

- Hold the shaft as shown in the figure **C**, push the guard cone (1) down and simultaneously press the three locks (2) with a point or screw-driver. Thus the guard cone (1) will slip on the guard tube (3) and can be removed.

- Remove the locking collar (4) and disconnect the guard tube (3) from the shaft.

- Do the same shown in the figures **C** and **D** with the C.V. joint end and set apart its components.

- Clean all parts with a brush by using kerosene or gas oil and water and dry them next.

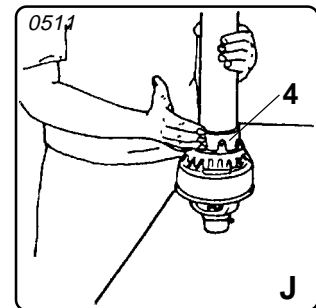
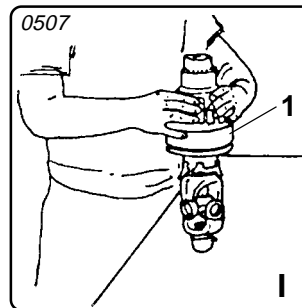
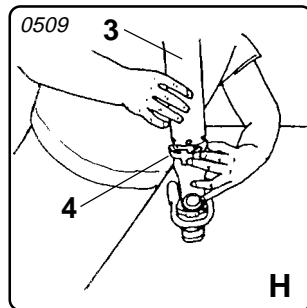
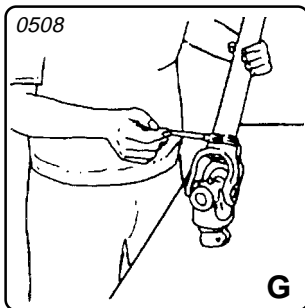


MAINTENANCE

C.V. PTO SHAFT

4- 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**.

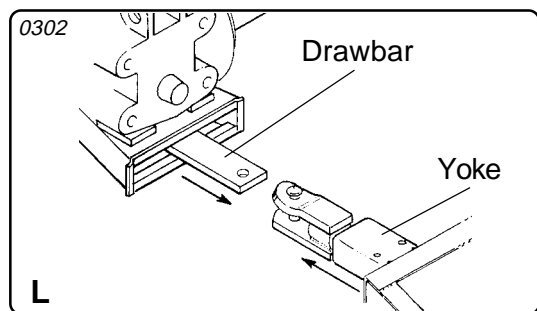


5- ADJUSTING THE SHAFT LENGTH

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

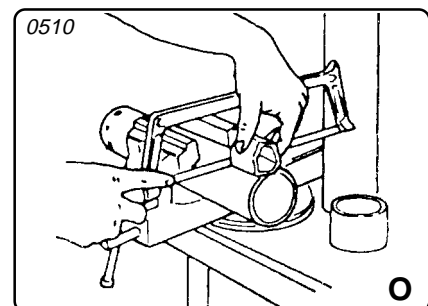
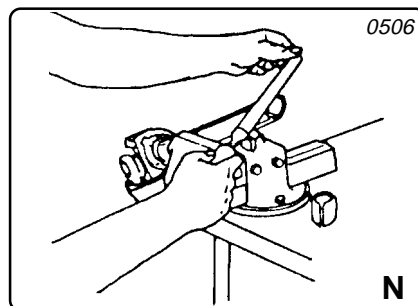
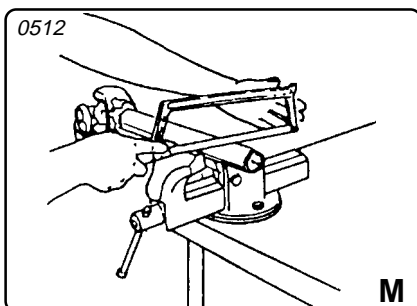
Check:

- The position on the tractor drawbar.
- Whether the sprayer yoke 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.

ATTENTION

ONLY OPERATE WITH PTO SHAFT EQUIPPED WITH PROTECTION GUARDS.

MAINTENANCE

CONVENTIONAL PTO SHAFT

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

01-CONNECTING

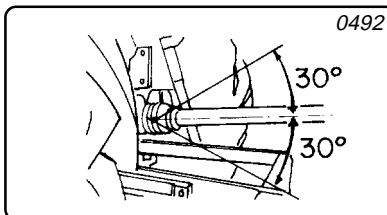
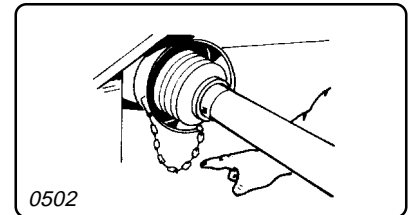
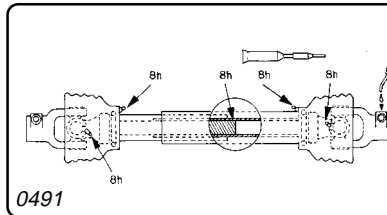
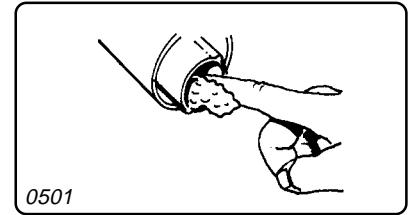
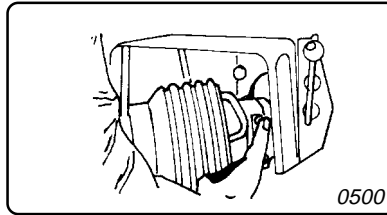
- Check the PTO shaft length.
- Adjust the length by cutting the tubes and protection guards proportionately.

Note: File and remove all burrs.

- Lubricate the male and female tubes.
- 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.

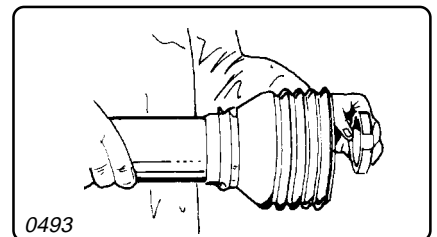
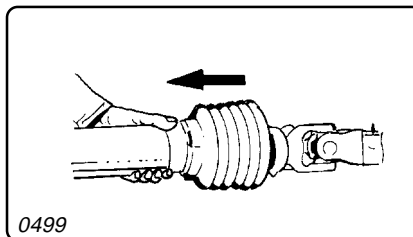
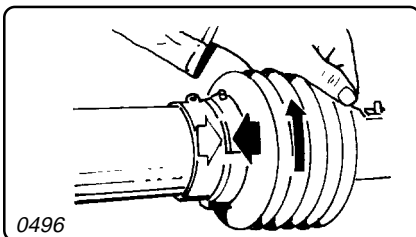
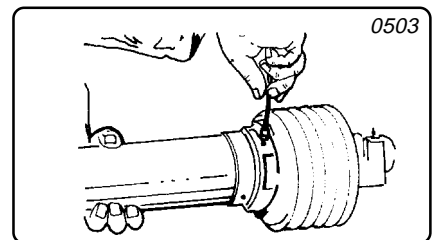


ATTENTION
ONLY OPERATE WITH
PTO SHAFT EQUIPPED
WITH PROTECTION
GUARDS.

02-SERVICING

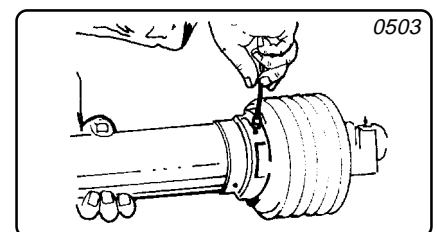
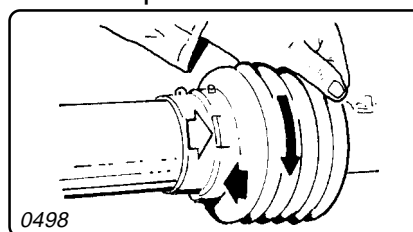
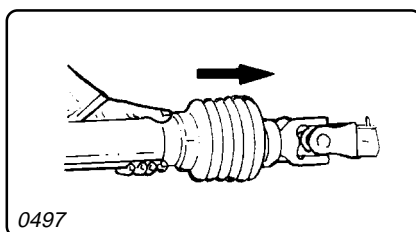
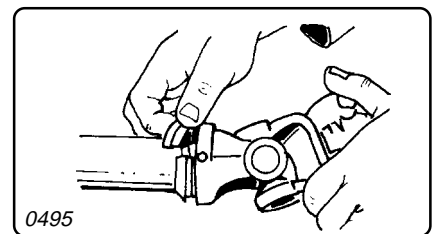
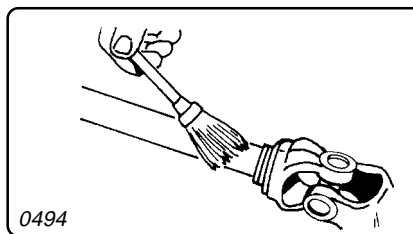
a) DISASSEMBLING

- 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

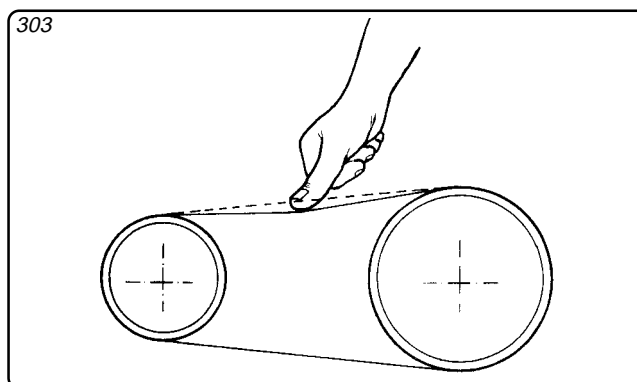
BELTS TENSION

Check the belts tension periodically.

Press the belts as shown in the figure beside.

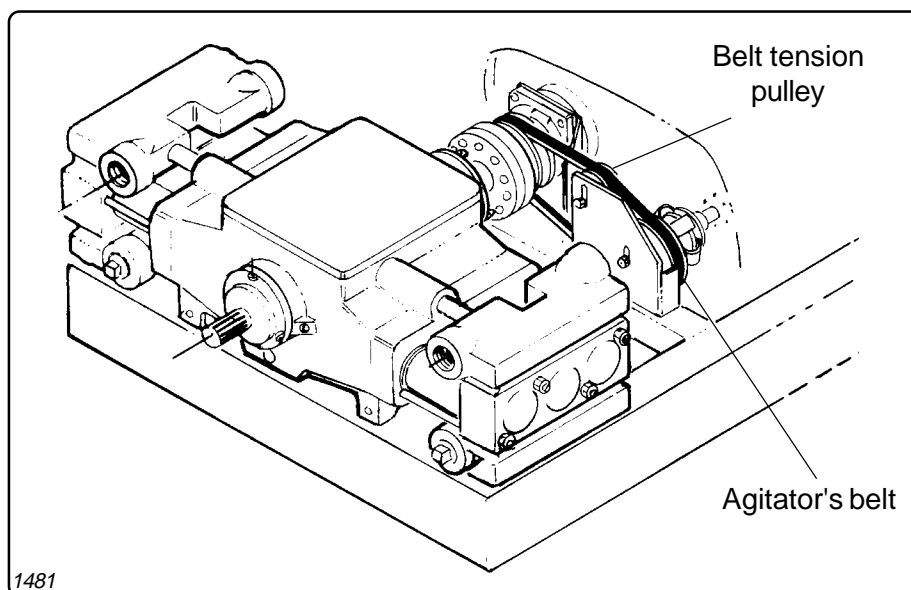
When pressed, they should slack as follows:

- Pump belt: 04 to 07 mm
- Agitator belt: 10 to 15 mm
- Fan belt: 10 to 15 mm



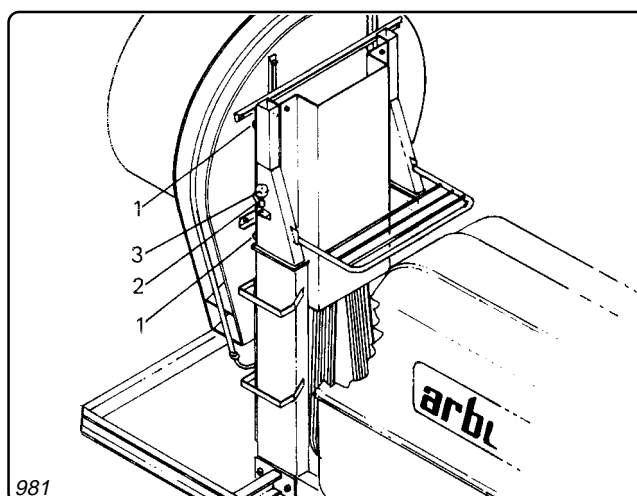
AGITATOR'S BELT

- Remove the pulleys protection cover.
- Loosen the bolt fixing the tension pulley of the agitator's belt.
- Position the pulley until obtaining the required tension for the proper operation of the agitator.
- Retighten the bolt.



FAN BELT

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



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

MAINTENANCE

DECALS

Jacto sprayers have several decals aiming to direct on the use and maintenance as well as to warn about dangerous and damageous locations and procedures.

Keep them in place because they are important for the operator and people working and standing around the sprayer.

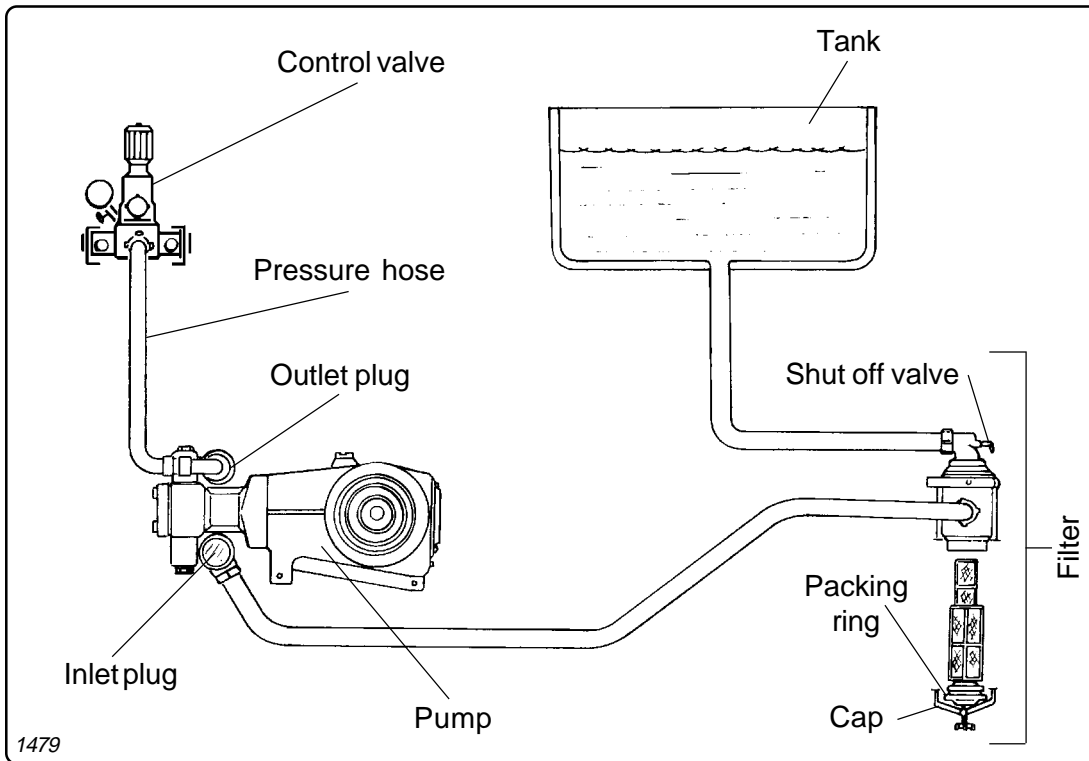
ITEM	PART #	DESCRIPTION	QTY.
01	013169	TESTE FINAL (Portuguese/English/Spanish)	01
02	130120	PRESSÃO NOS PNEUS (Tires pressure)	01
03	515734	LIMPAR O FILTRO... (Port./Eng./Sp.)	01
04	019356	MANTER O ÓLEO NO NÍVEL... (Keep oil on level)	01
05	039396	CUIDADOS COM O CARDÃ... (Port./Eng./Sp.)	01
06	360248	VENTILADOREM ALTA ROTAÇÃO... (Port./Eng./Sp.)	01
07	360255	É NECESSÁRIO USO DO PROTETOR... (Port./Eng./Sp.)	01
08	039222	ADESIVO DO VENTILADOR (Fan's decal)	01
09	515726	LUBRIFICAR DIARIAMENTE (Port./Eng./Sp.)	01
10	018705	DESTRAVE DO VENTILADOR (Port./Ing./Esp.)	01
11	039420	PRODUTOS QUÍMICOS ...	01
12	039446	APÓS AS PRIMEIRAS ...	01
13	039412	IMPRÓPRIO PARA TRÂNSITO ... (Port./Eng./Sp.)	01
14	436113	EIXO DE TRANSMISSÃO EM ...	01
15	360230	MANTENHA TODOS OS ... (Port./Eng./Sp.)	01
16	436469	MANTENHA SEU PULVERIZADOR ...	01
17	728113	REGULAGEM DA BARRA DE ...	01

ATTENTION
REPLACE THE DECALS IN CASE OF DAMAGE OR ILLEGIBILITY.
YOU MAY ORDER THEM THROUGH THE PART NUMBERS
SPECIFIED ABOVE.

MAINTENANCE

WINTER STORAGE

ATTENTION: In regions where temperatures drop to 0°C or less, the water accumulated in the pump can freeze and cause serious damage.



PROCEDURES

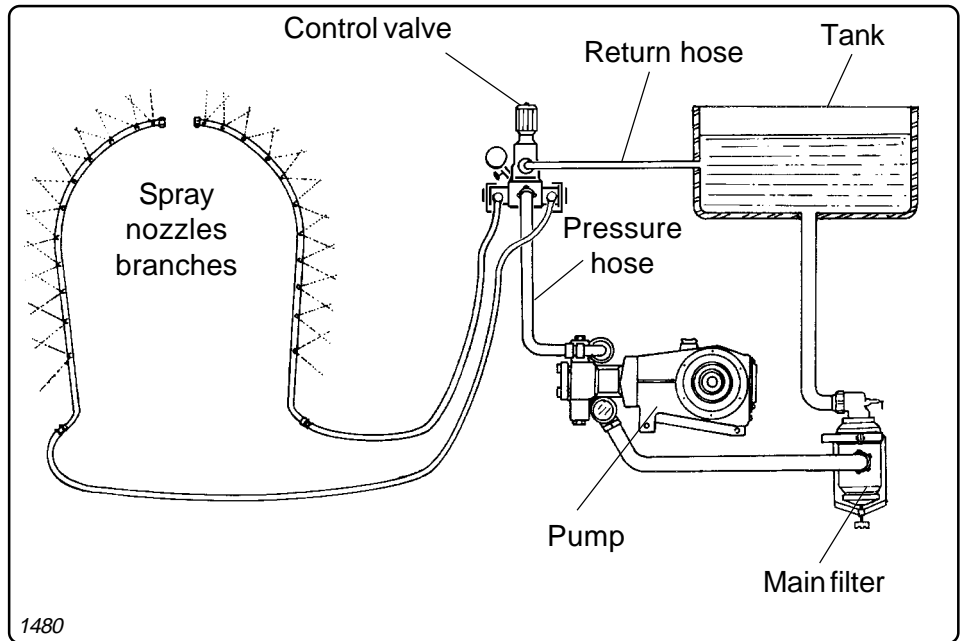
- Empty the tank completely by removing the drain plug.
 - Remove the filter cover and open the filter valve.
 - Disconnect the pressure hose from pump or remove the outlet plug from the valve cover.
 - Run the sprayer for about 30 seconds at half speed.
- NOTE: To avoid damage, do not run the sprayer over the recommended time.
- Assemble the components again in their correct place.
 - Repeat this operation at the end of each daily spray application during the winter.

MAINTENANCE

TROUBLE-SHOOTING

COMPONENTS:

- Tank
- Main filter
- Control valve
- Pump
- Pressure hose
- Return hose
- Spray nozzles



PROBLEMS - CAUSES - SOLUTIONS

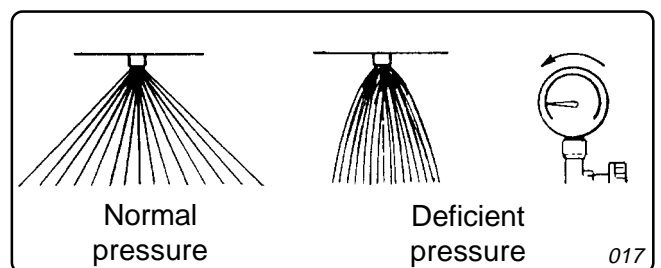
Whenever Jacto sprayers equipped with piston pumps present problems, try to classify them in one of the following four groups.

a) LACK OF SUCTION AND PUMPING CAPACITY

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

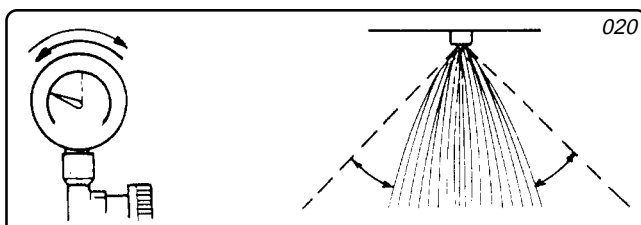
b) PRESSURE DEFICIENCY (PARTIAL LACK OF PRESSURE)

- Desired pressure is not attained.
- Specified nozzle spraying angle is not attained.
- Pressure gauge shows lower pressure.



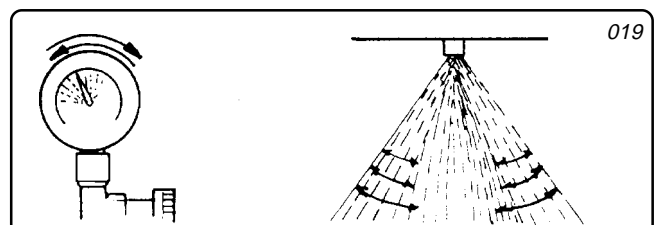
c) PRESSURE OSCILLATION

- 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

PROBABLECAUSES	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

PROBABLECAUSES	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: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">JP - 402 = 38 L/min</td> <td style="width: 50%;">JP - 100 = 100 L/min</td> </tr> <tr> <td>JP - 42 = 42 L/min</td> <td>JP - 150 = 150 L/min</td> </tr> <tr> <td>JP - 75 = 75 L/min</td> <td>JP - 300 = 300 L/min</td> </tr> </table>	JP - 402 = 38 L/min	JP - 100 = 100 L/min	JP - 42 = 42 L/min	JP - 150 = 150 L/min	JP - 75 = 75 L/min	JP - 300 = 300 L/min
JP - 402 = 38 L/min	JP - 100 = 100 L/min						
JP - 42 = 42 L/min	JP - 150 = 150 L/min						
JP - 75 = 75 L/min	JP - 300 = 300 L/min						

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.

GENERAL CARE

HANDLING AGRICULTURAL SPRAYERS AND AGROCHEMICALS

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 a mixture of lubricating oil at 80% and diesel oil at 20% 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. INNO 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: _____

Original retail purchaser's copy



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: _____

**URGENT
RESPOND WITHIN 30 DAYS
FIRST CLASS POSTAGE REQUIRED**