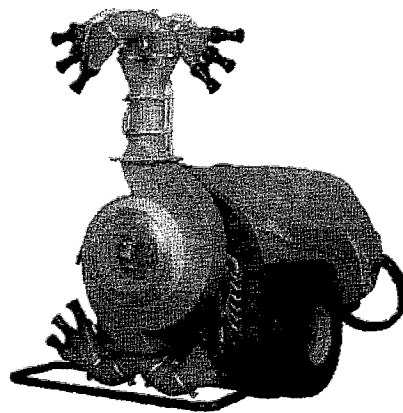


ANNEX "A"

FAN GROUP "PNEUS"
For
"Low volume sprayers"



This annex is to be integrated to:

"Use and maintenance manual for MOUNTED and TRAILED SPRAYER"

Read this manual carefully before using the machine

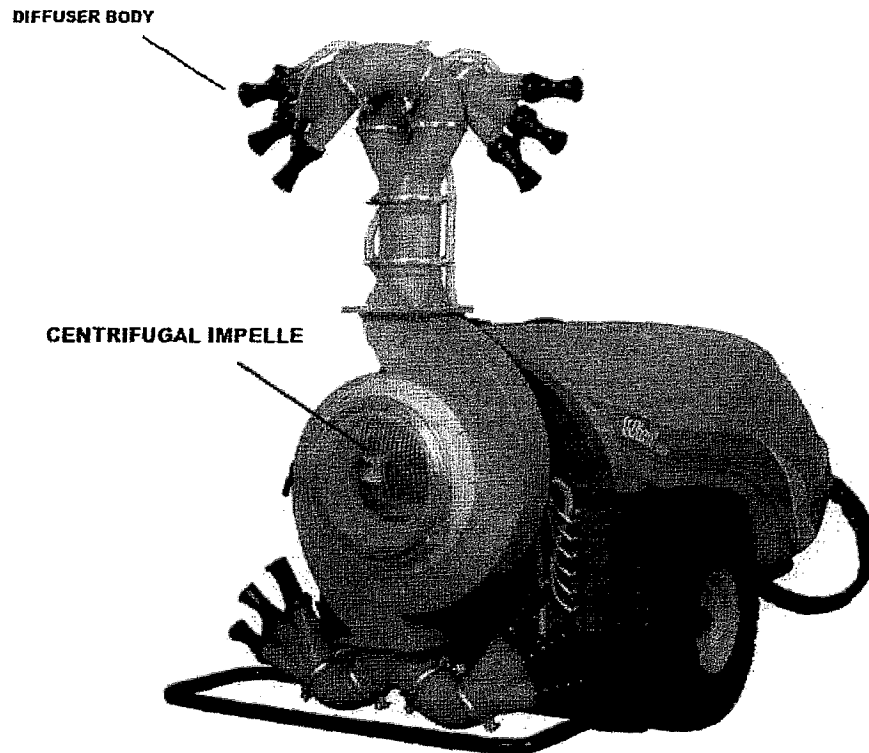


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ANNEX A.1 : DESCRIPRION OF THE FUN GROUP

The fun group "PNEUS" is composed by:

- CENTRIFUGAL IMPELLER: body made of polyethylene ,it presents inside the steel impeller, through which the gear box raises the wind needed to spray.*
- DIFFUSER BODY: composed of a flow divided into 3 ways, turning from a diffuser inside which enters the liquid mixture to spray through a cannula.*
- REGULATORS: Taps through which t's possible to adjust the flow rate of the fluid. Upstream of these taps lay interchangeable nozzles.*



DIMENSIONS AND WEIGHTS TABLE

MODEL	CAPACITY	WIDHT	LENGHT	HEIGHT	WEIGHT
	LT	MM	MM	MM	KG
MAXI PNEUS 660	600	1100	2300	1160	440
MAXI PNEUS 1100	1000	1150	3080	1195	550
MAXI PNEUS 1650	1500	1350	3140	1500	690
MAXI PNEUS 2200	2000	1400	3600	1400	780
MIX PNEUS 330	300	1400	1000	1070	207
MIX PNEUS 440	400	1400	1000	1200	227
MIX PNEUS 660	600	1400	1410	1220	247

LAYOUT TABLE

MODEL	CAPACITY		FUN GROUP Ø	SPEED
MAXI PNEUS 660	600		500	2 + IN NEUTRAL
MAXI PNEUS 1100	1000		500	2 + IN NEUTRAL
MAXI PNEUS 1650	1500		500	2 + IN NEUTRAL
MAXI PNEUS 2200	2000		500	2 + IN NEUTRAL
MIX PNEUS 330	300		500	2 + IN NEUTRAL
MIX PNEUS 440	400		500	2 + IN NEUTRAL
MIX PNEUS 660	600		600	2 + IN NEUTRAL

ANNEX A.2 PNEUMATIC SYSTEM "PNEUS"

A.2 FAN GROUP FOR "LOW VOLUME "

A.2.1 INTRODUCTION

In the "low Volume" sprayer; a strong current of air coming from a horizontal fan invests the liquid from a specially shaped cannon.

Water sprayed in low pressure is pulverized by air at high speed.

The size of the droplets obtained is from 50 to 100 microns, compared with 250, 300 micron in a normal atomizer .

This drop size ensures the formation of a "Cloud" of water that settles on the leaf surface so much smoother..

In addition ,to an equal volume of water used in a normal atomizer, we can obtain a sprayed area much higher supply of about 3 times ...

In practice with a "low Volume" sprayer, it's possible to spray the same leaf surface with less quantity of water..

Example

Remember that the quantity of the plant protection product to be used per hectare is always the same regardless of the used machine and is listed on the package..

Suppose that for one hectare we need 3 kg of product in 1000 litres of water.

With a normal atomizer we will take 300 grams in 100 liters.

The same thing, in the case of a "low Volume" sprayer for a hectare and 1000 liters.

if we should spray spray 2 acres:

normal atomizer: 6 kg in 2000 litres

low-volume sprayer: 6 kg (20003) litres i.e. about 700 litres against 2000 liters of normal atomizer..

A.2.2 Adjustment procedure of the "PNEUS" machine

- Working width Determination "*WWD*" (in meters).

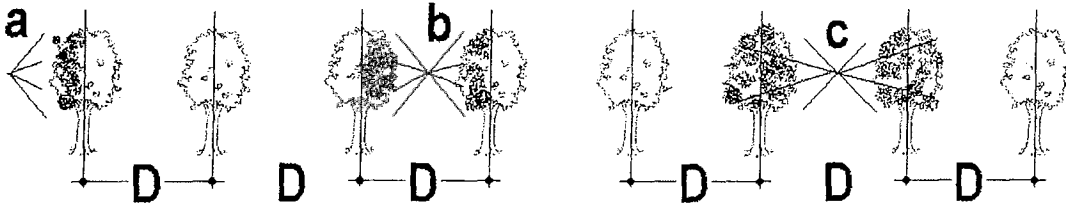
It means the width of land which includes the number of rows processed at each step taking into account also of the sides to spray.

Each plant has two sides, and then we must consider whether treating them together in one pass or separately.

In the case "A" the working width *WWD* is equal to half of "D" having to spray only half spin.

in the case "b" width *WWD* is equal to "D" having to spray half right and half left.

in the case "c" we spray 2 complete rows with one pass, so the *WWD* would be 2D, the double



Once evaluated the working width *WWD* (in meters) we pass on:

Choice of tractor speed "*V*" (km/h).

According to the moving progress, knowledge and practice of various parameters such as the slope of the ground, the roughness and whatnot, it's possible to choose the working speed "*V*" in Km/h.

-Surface treated in 1 hour of actual work "*S*" (hah)

Multiply "*LT*" x "*V*" and divide by 10 getting the "*S*" working surface per hour.

- Choice of liquid volume per hectare to be sprayed "C" (in lt/hect)

in a low-volume sprayer, as previously explained, the volumes of water may be assessed at the rate of 13, .1/4, .15 of the normal atomizers.

As an indication ,for a hectare of Orchard , we can use 350/400 litres and for a vineyard it's possible to use 150/250 litres of water.

It reaffirmed that, notion and everything is based on the knowledge of the operator, so values are purely indicative..















- Scope of the sprayer "P" (in liters/hours)

Multiplying "S" x "C" we get "P" in lt/hr i.e. the amount of litres delivered by machine in a working hour in an hectare.

Choice of nozzles to be applied to the machine and working pressure of the pump

From the table, taking into account the parameter "P" and number of nozzles on the machine , the choice depends on the type of nozzle pressure to be applied and, on the verse of fitting inside of the controller..

Divide "P" for the number of nozzles and later for 60 (minutes), locate the nearest value box found after choosing the column relative to the working pressure.

Hole nozzle	Mounting verse	Bar								
		1 BAR	1,5 BAR	2 BAR	2,5 BAR	3 BAR	3,5 BAR	4 BAR	4,5 BAR	5 BAR
0,8		0,42	0,47	0,57	0,62	0,67	0,72	0,75	0,77	0,82
		0,32	0,37	0,44	0,49	0,54	0,58	0,61	0,63	0,66
1		0,72	0,80	0,95	1,15	1,20	1,25	1,30	1,36	1,42
		0,45	0,51	0,62	0,68	0,75	0,81	0,86	0,92	0,96
1,2		1,00	1,15	1,35	1,45	1,60	1,70	1,80	1,84	1,91
		0,62	0,70	0,86	0,96	1,04	1,13	1,20	1,27	1,34
1,5		1,45	1,65	1,85	2,15	2,35	2,50	2,65	2,75	2,85
		1,10	1,20	1,45	1,65	1,80	1,90	2,00	2,10	2,21
1,8		1,95	2,20	2,70	2,90	3,20	3,40	3,60	3,75	3,90
		1,50	1,70	2,10	2,35	2,50	2,70	2,90	3,00	3,15
2		2,55	2,85	3,50	3,85	4,20	4,50	4,80	5,05	5,32
		1,80	2,00	2,45	2,75	2,95	3,20	3,40	3,60	3,70
2,3		3,20	3,50	4,25	4,70	5,20	5,50	5,80	6,10	6,40
		2,35	2,65	3,25	3,60	3,90	4,20	4,50	4,75	5,00

Practical example::

field with interrow of 2.5 metres (value denoted by D) cultivated in orchard.
Spraying mode: 2 rows for complete spraying.

Number of nozzles: 12 ↓

The value "LT" is:
 $(2 \times D) = (2 \times 2,5) = 5$ meters

↓
We choose the tractor speed "V" = 3,5 km/h


↓
The surface treated in 1 hour will be :
"S" = ("LT" x "V" : 10) = (5 x 3,5 : 10) = 1,75 ha/working hour

↓
We choose to spray per 1 ha the quantity of liquide qual to:
"C" = 400 lt/ha

↓
The scope "P" will be :
"P" = ("S" x "C") = (1,75 x 400) = 700 lt/hrs

↓
Dividing "P" for the number of nozzles (12) we obtain
700 : 12 = 58,3 ly/hrs per unitary nozzle

↓
Dividing per 60 (minutes) we obtain :
58,3 / 60 = 0,97 lt at minutes per nozzle

↓
From the table :
we choose the pressure of:
2,5 bar and mounting verse 

↓
find the nearest equivalent to 0.96 that gives us :
NOZZLE WITH HOLE of 1,2.

↓
Mount 12 nozzles hole 1.2

A.3.1 SCHEDULED MAINTENANCE TABLE

INTERVENTION	10/H	60/H	250/H	ENDING SEASON
Wear control nozzles			X	
Checking and cleaning nozzles, anti-drip membrane	X			
Control soldering failure in particular of weeding bars				X
Tyre pressure control (lubricate with grease bearings and wheel hubs)	X X			
Pressure accumulator control		X		
Circ control. suction (pipes and fittings)		X		
Control valves aspirazionemadata				X
Clamping screw pump control				X
Cleaning the filters and wear State	X			
Fixing screws and pins control		X		
Oil control (and State)	X			
Membranes and replacement oil control			X	X
Hydraulic oil level check		X		

A.3.2 TROUBLESHOOTING TABLE

ANOMALY	CAUSE	REMEDY
the manometer indicates a different pressure from that set	Breaking pressure gauge Pressure relief valve seals worn out Suction strainer clogged Etc ...	Replacement Replacement Cleaning or replacing
Decrease the speed of impeller	Worn clutch Contaminated oil clutch	Replacement Cleaning
The pump does not reach the pressure indicated	valve and/or adjustment valve seat worn. Valves or valve intake seats worn or dirty. Insufficient number of rps 1' Worn or used nozzles with holes too big. Intake throttled	Replace () Replace or clean () Restore correct RPM. Replace. Clean the filter cartridge or remove the constriction.
not under pressure pump	Air suction. Valve closed. valves suction and discharge valves worn or dirty.	Check suction apparatus. Place the lever correctly. Replace or clean.
Irregular delivery vibration	Exhaust pressure accumulator or incorrect air pressure.	Return air at the correct pressure (see pump Handbook) (*)
The pressure is not regular	valves suction and discharge valves worn or dirty. Air suction.	Replace or clean () Check suction apparatus.
Liquid does not come out from spray nozzles	Inlet filter dirty, dirty drip filters, clogged nozzles	Cleaning
Water in oil	Rupture of one or more membranes	replace (*)
Noise and oil level lowered	Intake throttled	Check suction apparatus.

(*) ONLY SPECIALISED TECHNICIAN