

ZATURN

Original

Instruction book

67025102-100 - Version 1.00

GB - 03.2011





Congratulations for choosing a HARDI crop protection product. The reliability and efficiency of this machine depend entirely on the care it receives. The first step is to carefully read and pay attention to this instruction book. It contains essential information on correctly using and ensuring a long useful life of this quality product.

As this instruction book includes all versions of the equipment, including all the different hydraulic boom and operating unit versions, please pay particular attention to the paragraphs dealing with your specific model.

This book should be read in conjunction with the 'Spraying Techniques' booklet.

The original instruction book is approved and published in English. All other languages are translations of the original. In the event of any conflicts, inaccuracies or deviations between the English original and other languages the English version shall prevail.

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As this instruction book covers models, specifications or equipment that are only available in certain countries, please pay particular attention to the paragraphs dealing with your specific model.

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1 - EC Declaration	
EC Declaration of Conformity	5
2- Safety	
Operator safety	7
Symbols	7
Precautions	7
3 - Description	
General information	9
Overview	9
Overview	10
Use of the mist blower	10
Roadworthiness	10
Identification plate	11
Chassis	11
Tank	11
Liquid system	12
General information	12
HLC circuit	12
Diaphragm pump	12
Valves	12
Valves and symbols	12
Blue valve – Blue disc = Return valve	13
Circuit Diagram	13
Suction filter	14
Safety valve	14
Pressure manifold	14
Suction and pressure pulsation dampers	14
Agitator	15
Operating unit	15
MC/2 Operating unit	15
EVC/2 Operating unit	15
Filters	15
Powder mixer	15
Chemical inductor, TurboFiller (optional)	16
Axial blower units	17
Technical information	17
AG820 and AG920 air kits	17
Air flow for the AG820 and AG920 air kits	18
Protective grid	18
Gearbox	18
Fan	19
Centrifugal Blower Units	20
General information	20
HF540 and HF540D blower units	20
Components	20
Air flow of HF540 and HF540D centrifugal blower units	21
Protective Grid	21
Gear box	22
HF540 and HF540D Turbine	22
Clutch (All blower types)	22
Equipment	23
Ring drawbar	23
Fork drawbar	23
Turnable drawbar	23
Wedges	24
Light kit	24
B11 boom	24

Table of Contents

B50 and B51 boom	24
Pneumatic spray system	25
Hydropneumatic spray system	25
IRIS system	26
4 - Starting up	
General information	27
Unloading the mistblower from the truck	27
Before starting up for the first time	27
Counterweights	27
Mechanical connections	28
Adjusting the drawbar length	28
Jockey wheel	28
Connecting the fork drawbar	28
Connecting the ring drawbar	28
Connecting the articulated drawbar	29
Coupling the driveshaft	30
Hydraulic connections	31
General information	31
Tractor requirements	31
Electrical connections	32
General information	32
CB/2 and EVC/2 operating unit	32
Fluid circuit	33
Suction filter	33
Pressure damper	33
Diaphragm pump	33
Booms	34
General information	34
IRIS system setup	34
5 - Operation	
Blower unit	37
Safety information	37
Selecting the gear	37
Adjusting the fan	37
Single side blinds (Optional)	38
Fluid circuit	39
Filling with water	39
Filling through tank lid	40
Filling the rinsing tank	40
Rinsing nozzle	40
Filling the clean water tank	41
Drain valve	41
Filling liquid chemicals by HARDI TurboFiller (optional)	41
TurboFiller rinsing	43
Adjusting the EVC/2 operating unit	44
Adjusting the BK/2 Operating Unit	45
MC/2 operating unit	45
Cleaning	46
General information	46
Cleaning and maintaining the filters	46
Cleaning the tank and liquid system	47
6 - Maintenance	
Lubrication	49
General information	49
Recommended lubricants	49
Lubricating and greasing the mistblower	49

Transmission shaft	50
Diaphragm pump	50
Filters and fittings	50
Fork drawbar	51
Ring drawbar	51
Articulated drawbar	51
Axles with brake	52
Service and maintenance intervals	53
General information	53
Every 10 working hours – Spray circuit	53
Every 50 working hours – Transmission shaft, chassis, air pressure and diaphragm pump	53
Every 100 working hours – Drawbar	53
Every 250 working hours – Wheels, brakes, hoses and gearbox	53
Every 1000 working hours – Full service	53
Regular maintenance	54
Every 10 working hours – Suction filter	54
Every 10 hours of operation – Pressure filters	54
Every 10 working hours – Nozzles	55
Every 1000 working hours - Gearbox oil change	55
Every 1000 working hours - Fan clutch inspection	56
Every 1000 working hours - Fan transmission shaft inspection	56
Occasional maintenance	57
Replacing the 321 valves and diaphragms	57
Cone check/renewal for EVC operating unit	57
Cone check/renewal for EVC section valves	57
Tank level indicator adjustment	58
Replacing the valves and 363 and 463 diaphragms	58
Adjusting the 3-way valve	59
Replacing the driveshaft protector guard	59
Replacing the driveshaft crossheads	59
Replacing the seal on the drain valve	60
Storing the mistblower at the end of the season	61
Preparing the machine for use after storage	61
7 - Troubleshooting	
Operational problems	63
General information	63
Fluid circuit	64
Blower unit	65
Electrical problems	66
Emergency function – Fluid circuit	66
8 - Technical specifications	
AXIAL dimensions and weight	67
Dimensions	67
Tare weight	67
Conversion factors (SI to Imperial)	68
Specifications	69
Pump model 363/7	69
Pump model 321/10	69
Filters and nozzles	69
Temperature and pressure range	69
Approved configurations	70
Materials and recycling	71
Disposing of the mistblower	71
Charts	72
Connections of the electric control box of the EVC/2 operating unit	72

Table of Contents

Index	73
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EC Declaration of Conformity



Manufacturer:

ILEMO HARDI S.A.U.

Poligono El Segre, 712, 713

25080 Lleida

SPAIN

declares the following product(s):

ZATURN

- was manufactured in conformity with the applicable provisions of the Directive 2006/42/EC on machinery, and
- all the applicable provisions of the Council Directive 2004/108/EC (EMC)

Lleida, June 2010

A handwritten signature in black ink, which appears to read 'Josep M. Godia', written in a cursive style.

Josep Maria Godia

Technical Director

ILEMO HARDI S.A.U.

Operator safety

Symbols

These symbols are used in the book and require special attention. The meaning of the four symbols is:



This symbol means DANGER. Be alert as your safety is involved!



This symbol means WARNING. Be alert as your safety may be involved!



This symbol means ATTENTION. This will guide you on how to correctly and safely use the sprayer equipment.



This symbol means NOTE.

Precautions

Please note these precautions and safe operating practices before using the sprayer.

General information



Read and fully understand this instruction book before using the equipment. It is also equally important that other operators of the equipment read and understand this book.

If you do not fully understand any part of this instruction book after reading it, please contact your HARDI distributor for further information before using the equipment.



Local law may demand that the operator be certified to use this spray equipment. Comply with the law.



The tractor seat is the safest area when handling the equipment.



Wear protective clothing. Protective clothing may vary according the chemical product being used. Comply with regulations.

Wash and change clothes after spraying. Clean the tools if they have become contaminated.



Do not eat, drink or smoke while spraying or working with contaminated equipment.

In the event of poisoning, immediately seek medical advice. Remember to identify the chemicals used.

Filling and spraying



Be careful not to hit persons or objects while manoeuvring the spraying equipment, especially when reversing.



Slow down when driving over uneven terrain as the machine could overturn.



Keep children away from the sprayer.



Do not attempt to enter the tank.



Do not climb under the sprayer unless it has been securely fastened. The boom is only secure when it is placed in the transport brackets.

2- Safety

Service



Always pressure test with clean water before filling with chemicals. Do not remove the hose if the machine is turned on.

DANGER! Do not exceed the maximum recommended r.p.m.



Rinse and wash out the equipment after use and before servicing.



Do not remove the hose if the machine is turned on. Always replace all safety devices or shields immediately after servicing.



Disconnect the power supply before servicing, and de-pressurise the equipment after use and servicing.



If an arc welder is used on the equipment, disconnect any power leads before welding.



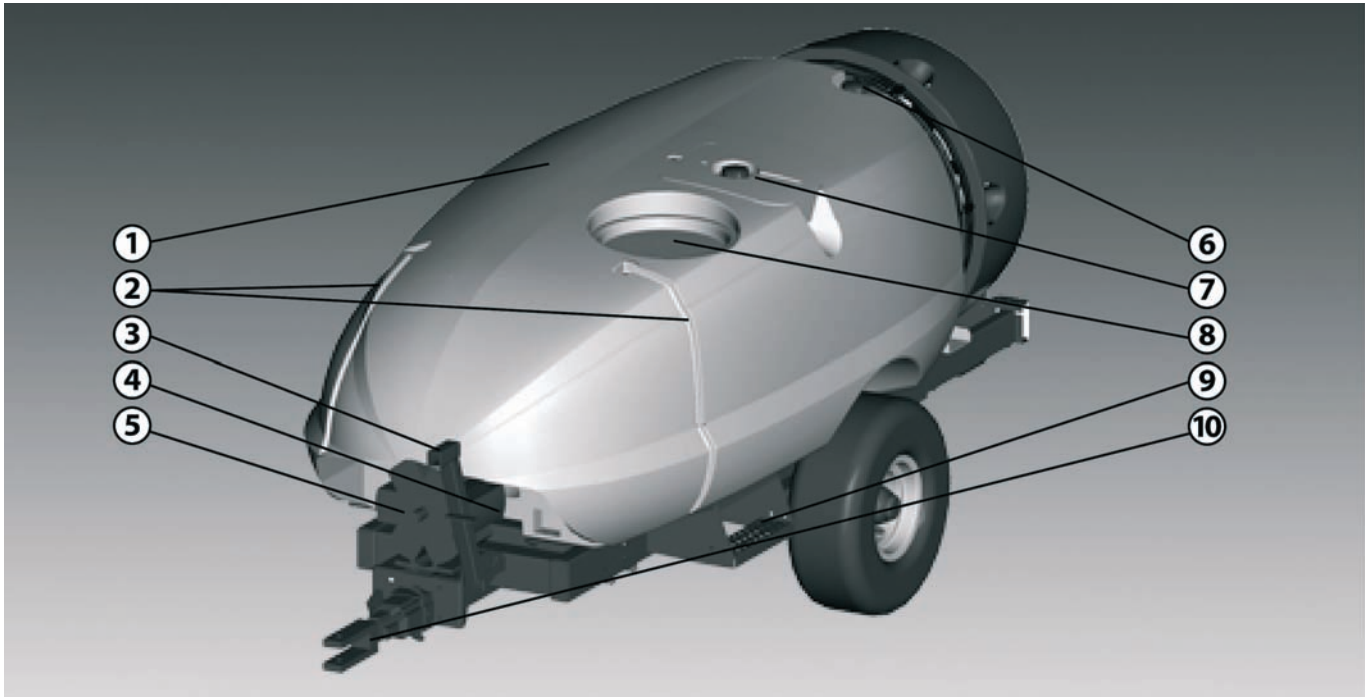
Remove all inflammable or explosive materials from the area.



The External Cleaning Device should not be used if any part of the equipment has been damaged, including safety devices, high-pressure hoses, etc.

General information

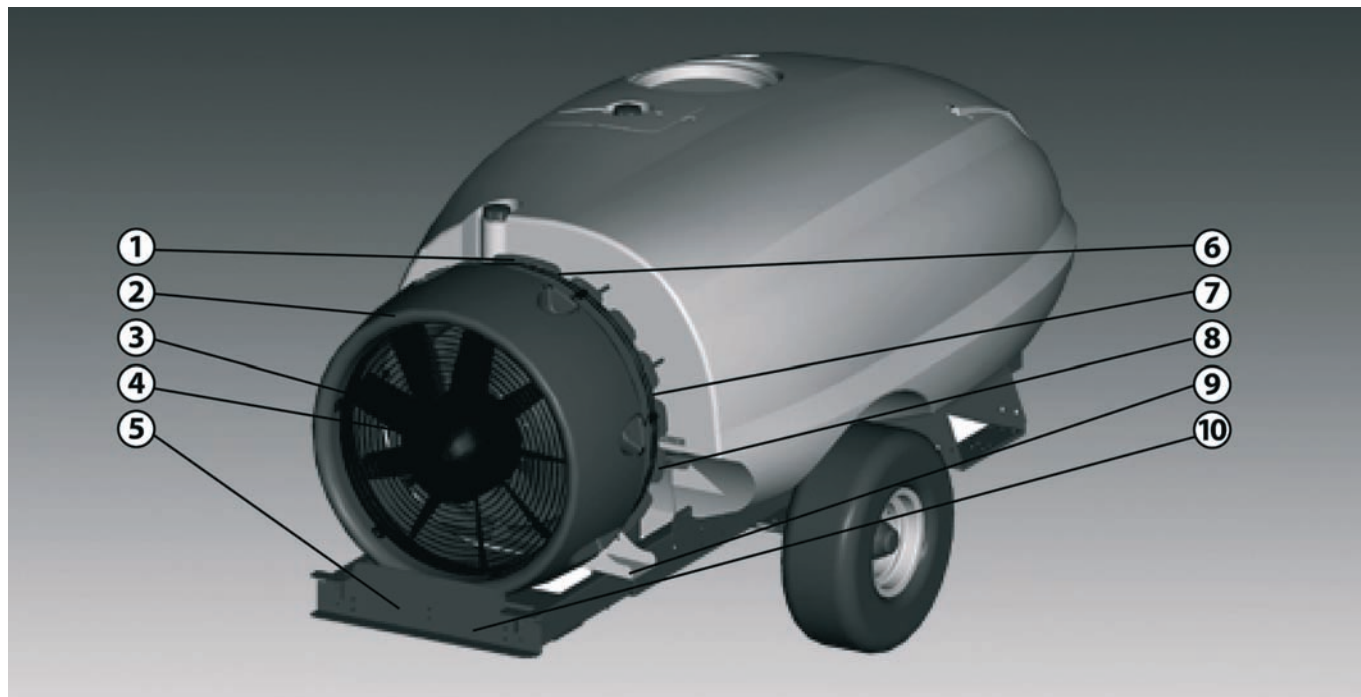
Overview



- | | |
|-----------------------------------|-------------------------|
| 1. Main tank | 6. Rinse tank |
| 2. Front and side level indicator | 7. Clean water tank |
| 3. Operating unit | 8. Lid of main tank |
| 4. Suction filter | 9. Step and TurboFiller |
| 5. Pump | 10. Hitch |

3 - Description

Overview



- 11. Main fan support
- 12. Fan housing
- 13. Air guide and grid
- 14. Main hubcap
- 15. Bumper

- 16. Cap of oil gear box
- 17. Air outlet
- 18. Spray line
- 19. Lower deflector
- 20. Position for light kit

Use of the mist blower

The HARDI mist blower is designed for applying chemical products used for crop protection. This equipment may only be used for this purpose. Use of this equipment for other purposes is not allowed. If there is no special law in your region which obliges the user to have a permit, it is recommended you are well-prepared for protecting crops in a correct way and for handling chemical products safely so as to avoid unnecessary risks to people and the environment while spraying takes place.

For environmental issues the air kit is offered with option to close either left or right side of the air stream from the blower. these blinds, are mandatory in some sensitive areas, to avoid chemical contaminated air, blowing towards river sides and water channels

Roadworthiness

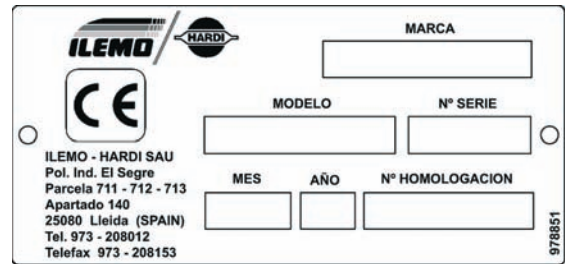
When driving on public roads and other places where the road safety code or where there are other special rules and regulations for marking and lights on machinery, the machine must be equipped to comply with these regulations.



ATTENTION! For models not fitted with brakes the maximum speed is 25 km/h and 40 km/h for those with. This could vary according to local legislation. Contact your local authorities to find out the current maximum speed limits.

Identification plate

The identification plate is located on the front right-hand side of the machine and is riveted to the chassis. It indicates the make, model, serial number, and date of manufacture.



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MARCA
MODELO
N° SERIE
MES
AÑO
N° HOMOLOGACION

978851

The serial number is also engraved onto the chassis. The number is found above the identification plate, as indicated in the picture. The serial number consist of five digits.



Chassis

The monoblock cold-pressed metal chassis is highly durable and build to last under everyday use under extreme conditions. It is manufactured using only the most advanced laser cutting and automated soldering processes. To protect against corrosion it is coated with a polyurethane bi-component paint on top of a highly adherent, steel blasted base.

Tank

The main tank made of impact-proof, UV-resistant and chemical resistant polyethylene, has a purposeful design with no sharp corners for easy cleaning. Nominal contents are 1000, 1500, 2000 or 3000 l. A large, easy to read tank contents indicator is placed on the front - right-hand side and another one is placed on the left side. First one is visible from the tractor cabin. The filling hole is accessible from the left-hand side. This ensures an easy access for the filling of spray liquid, cleaning of the tank, etc. The mistblower is equipped with a clean water tank integrated with the main tank design.

3 - Description

Liquid system

General information

All the suction system functions are operated via a 3-way valve. The pressure valve is also to be found in the pressure circuit. The low pressure circuit is called HLC (Hardi Liquid Circuit).

HLC circuit

The low pressure circuit is called HLC (Hardi Liquid Circuit). It is always used in configurations with a diaphragm pump. The pressure manifold is made of plastic and delivers the flow to three different places. The section on the "HLC Pressure Manifold" indicates what each of the valves on the manifold are used for.

This manifold is fitted with a safety valve (see section on "Safety Valve").

The maximum pressure levels for this type of circuit are those allowed for diaphragm pumps.

Diaphragm pump

Pumps with a diaphragm: Models 321/10 (max. 20 bar) or 363/7 (max. 20 bar)

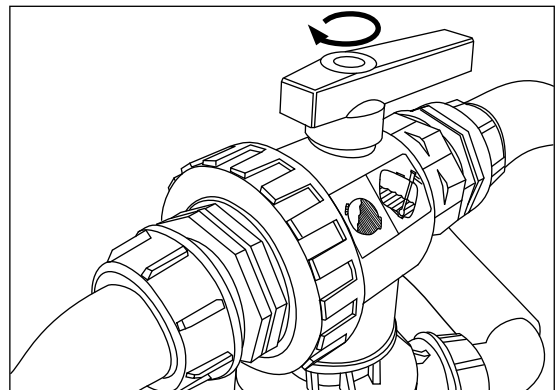
They are low pressure and robustly built. Use only grease for lubrication. The 363 model has six diaphragms and the 321 has two. This type of pump is self-priming, works without oil and can run dry as long as necessary.

Valves

The suction valve is located above the pump and is used to select where to suck liquid from. Either suction from the main tank for spraying or from the rinse tank for internal cleaning of the liquid circuit. The function is selected by turning the handle of the valve towards the desired function.



ATTENTION! If one of the handles is too tight - or too loose (= liquid loss) - the valve needs to be serviced. For more information, see section on "Maintenance".



Valves and symbols

The valves are identified by coloured discs fitted on the valves themselves. The symbols correspond to the optional accessories, and are located on the discs for quick identification and handling. To activate/open a function, turn the lever to the desired function.

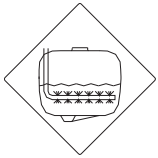


ATTENTION: Only the functions to be used should be activated – the other valves should always be kept closed.

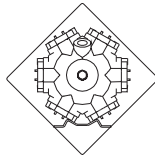


ATTENTION: If the handle of a MANIFOLD valve is too tight – or too loose (loss of fluid) – the valve needs to be serviced. For more information, see the section on 'Maintenance'.

Blue valve – Blue disc = Return valve

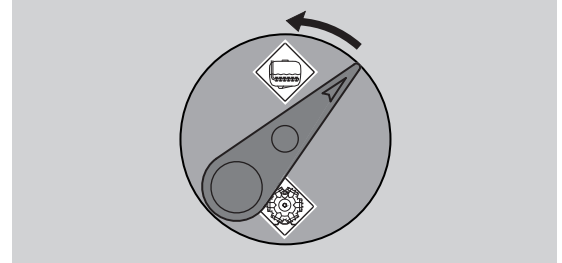


Towards agitation

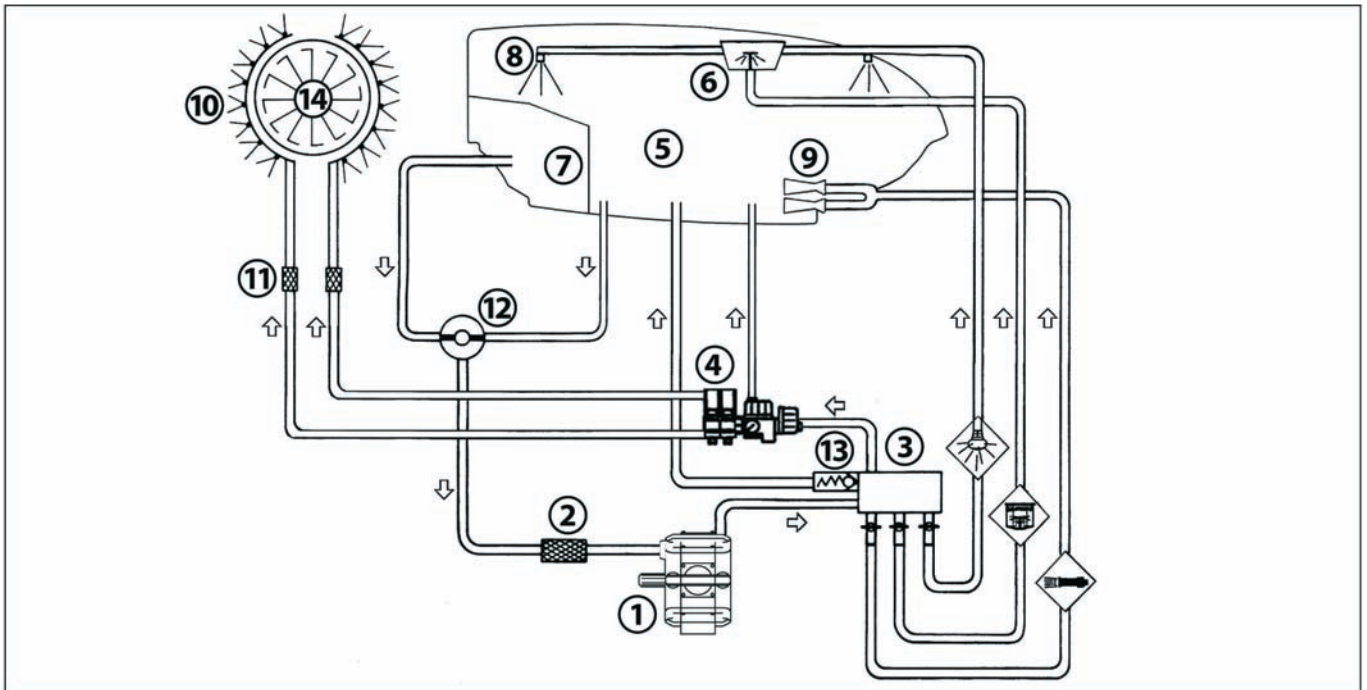


Towards the suction pump

The position of the return MANIFOLD valve determines where the excess flow from the fluid circuit goes. When the arrow on the handle points to a symbol, the excess fluid will be fully sent towards that function (the example shows agitation). This valve does not have the '0' position.



Circuit Diagram

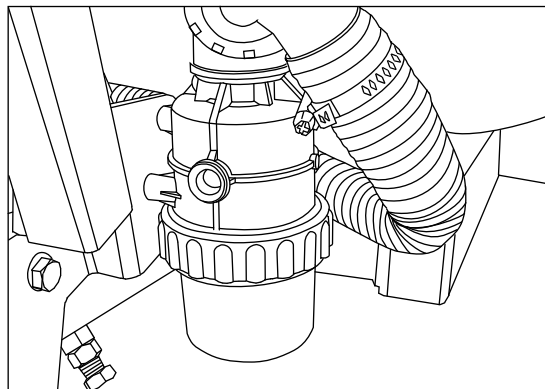


- | | |
|--------------------------------|----------------------|
| 1. Pump | 8. Rinsing Nozzle |
| 2. Suction Filter | 9. Agitator |
| 3. Pressure Manifold | 10. Nozzles |
| 4. Operating Unit | 11. Pressure Filters |
| 5. Main tank | 12. Three-way valve |
| 6. Powder Mixer or TurboFiller | 13. Safety valve |
| 7. Rinsing tank | 14. Fan |

3 - Description

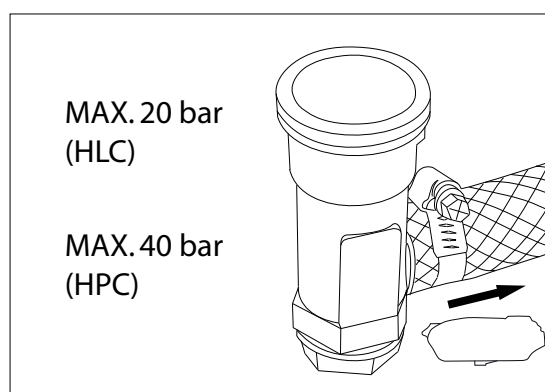
Suction filter

The suction filter is located underneath the three-way suction valve.



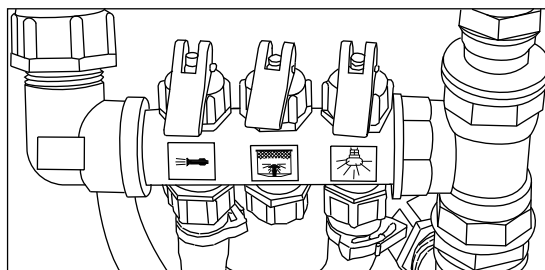
Safety valve

It is made of cast iron and is situated at the front of the machine next to the operating unit. From this manifold it is possible to activate the agitator and the rinsing nozzle for internal cleaning (optional), as well as the Turbofiller (optional) or powder mixer. Do only open the manifold valve in order to send pressure the desired device, as example given the Turbofiller.



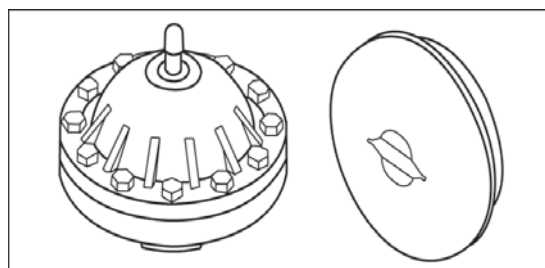
Pressure manifold

It is made of plastic and is situated at the front of the machine next to the operating unit. From this manifold it is possible to activate the agitator and the rinsing nozzle for internal cleaning (optional).



Suction and pressure pulsation dampers

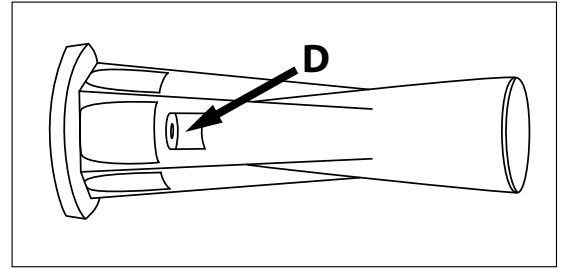
The 321 pump is fitted with a pulsation damper on suction and pressure sides. The pressure side damper is pressureized. The dampers will reduce pulsations and secure an even flow from the pump.



Agitator

At the front and on each side of the inside of the tank there are two ventury-shaped agitators. The agitators activated by a valve on the pressure manifold.

Each agitator has a Ø 3mm nozzle (D).



Operating unit

The mistblower can be equipped with following types of operating units: MC/2, SV/2 and EVC/2 (low pressure).

MC/2 Operating unit

It has two section valves which control RH and LH sides. The section valves are remote controlled from the tractor cab by via two bowden cables.

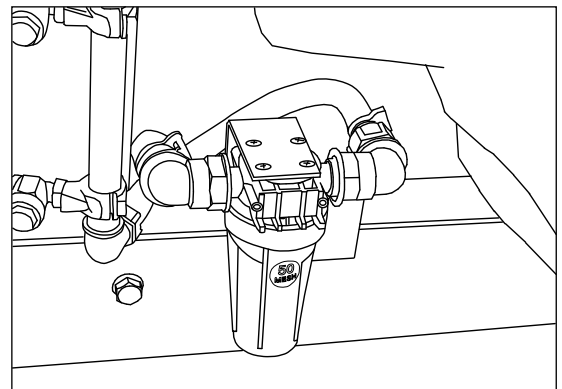
EVC/2 Operating unit

An electric operating unit with a control box fitted inside the tractor cab. It allows operation of all the spraying functions from the tractor. There is no pressure hose near the user, to avoid the risk of contamination of the operator. This operating unit is fitted with pressure compensation valves on the section valves.

Filters

The pressure filters are located on the bumper next to the air outlet nozzle. In the HLC circuit the filters are made of plastic and in the HPC circuit they are made of brass.

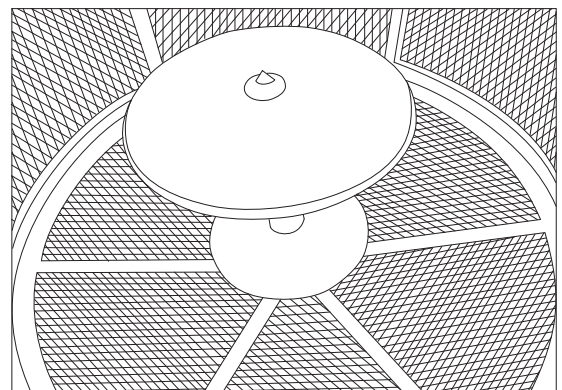
All filters should be kept in good condition and cleaned regularly. Make sure you to use correct combinations of filter and mesh size. The mesh size should always be less than the average of the total flow from the nozzles.



Powder mixer

This is used to rinse the filter basket intank's filling hole when adding powdered products that do not dissolve properly form lumps on contact with the water in the tank.

After using the powder mixer it must be disengaged as it uses a large amount of the available pump capacity.



3 - Description

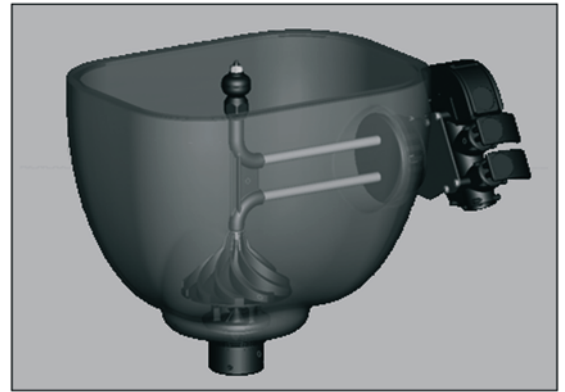
Chemical inductor, TurboFiller (optional)

The TurboFiller allows filling of both powder and liquid spray chemicals safe and conveniently when standing next to the machine.

The Turbofiller is neatly stowed away to the bay under the main tank when not in use.



ATTENTION! Local legislation may require chemicals to be filled by use of a chemical inductor - Always follow local legislation in force at any time.

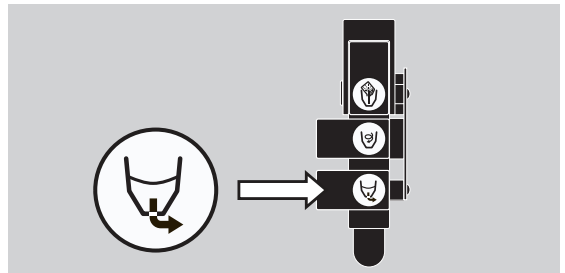


TurboFiller suction valve

The valve is used simultaneously with the TurboFiller. The valve has 2 settings: Continuously open or spring loaded normally closed. Open the valve when chemicals are to be filled into the TurboFiller.



Filling chemicals without TurboDeflection

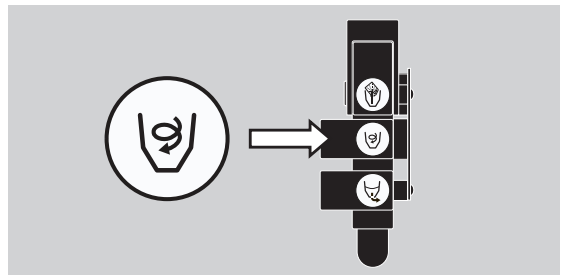


TurboDeflector valve

This TurboDeflector valve activates the Vortex flushing of the TurboFiller. Lift the lever to lock it in open position for continuous liquid rotation in the hopper.



Start TurboDeflector



Chemical Container Rinsing lever

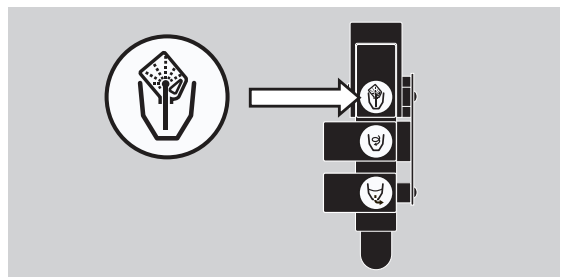
The upper lever is used for two purposes:

When the TurboFiller lid is open: For rinsing empty containers. Place the container over the rotating flushing nozzle in the middle of the TurboFiller to rinse the inside of the container.

When the TurboFiller lid is closed: Use the Chemical Container Rinsing lever to rinse the hopper when the filling of chemicals is completed.



Chemical Container Rinsing



DANGER! Do not press the lever unless the multi-hole nozzle is covered by a container as spray liquid may otherwise hit the operator.

Axial blower units

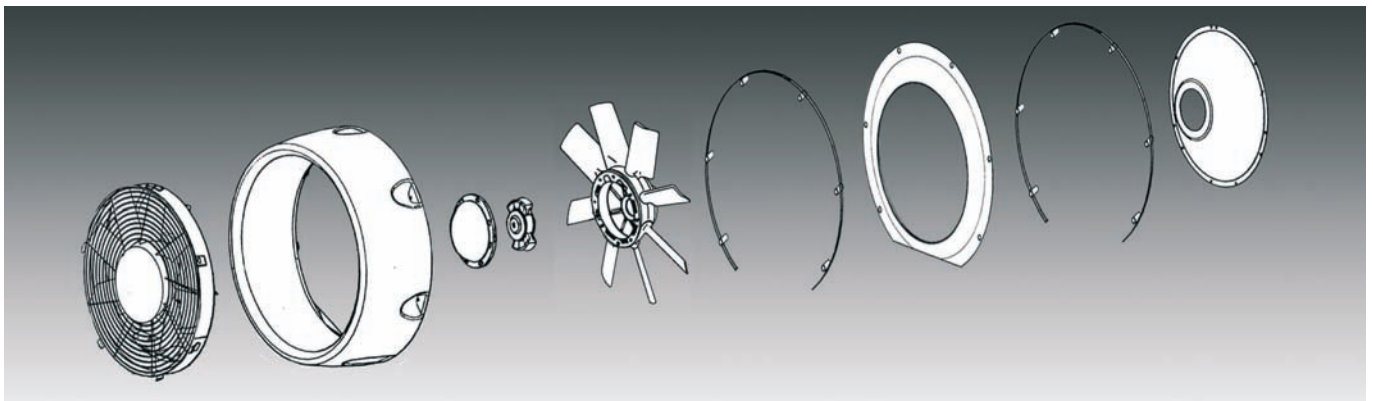
Technical information

The air kits fitted on the HARDI ZATURN mist blowers are the AG820 and AG920, both having a polyethylene housing and fan blades made of a hardened synthetic material. Their aerodynamic shape offers a high quantity and perfect air distribution, low noise levels and low power consumption when adjusted to standard levels. The fan clutch enables a smooth start and stop.

AG820 and AG920 air kits

The AG820 and AG920 air kits are fitted with a grid with 9 air guides at the air intake, which forms the air flow before reaching the fan, to decrease the imbalance in the airflow. The fan is either 820 or 920 mm of diameter and is fitted with blades made of a hardened synthetic material. This reduces the power consumption to a minimum as a result of low material density.

There is a channel between the air intake and the cone of the air kit which increases the air speed through the outlet, and ensures that a high uniformity in air distribution is achieved.



NEVER exceed 540 r.p.m. on the tractor P.T.O.! The fan may explode if overspeeded!



KEEP AWAY from the air inlets and outlets while the fan is on. Some objects may be shot out of the air outlet or a piece of clothing could be sucked into the air inlet.



The fan is the most dangerous part of the machine. Do not try to replace any of the parts without consulting your HARDI dealer first. Any service job or modifications on fan and air kit is to be carried out by your HARDI dealers qualified technicians.

3 - Description

Air flow for the AG820 and AG920 air kits

Air volume AG820

Gear	m3/h Pitch 1	kw	m3/h Pitch 2	kw	m3/h Pitch 3	kw
1	31000	15	35000	24	45000	36
2	38000	26	45000	35	52000	42

Air volume AG920

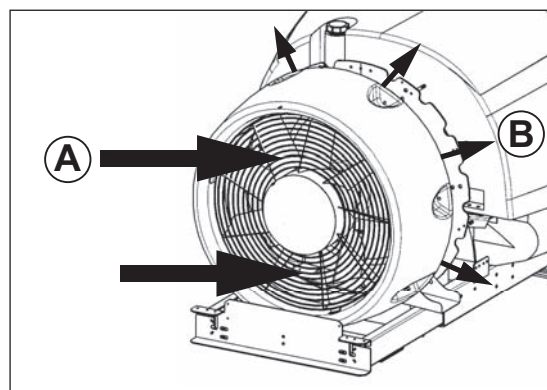
Gear	m3/h Pitch 1	kw	m3/h Pitch 2	kw	m3/h Pitch 3	kw
1	35000	24	42000	32	49000	37
2	43000	33	53000	39	60000	46

Protective grid

The AG820 and AG920 air kits are fitted with protection grids. They are fundamental for avoiding accidents and for stopping foreign bodies from getting inside the air kit.



Tractor drivers seat is the intended working place during operation.



DANGER! It is strictly forbidden to use the blower unit without the protective grid.



DANGER! Do not approach the fan when in use.



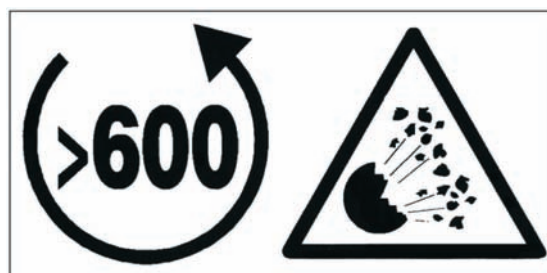
DANGER! Do not introduce foreign bodies through the grid, regardless of whether the fan is in use or not.



DANGER! During the working day, protect your hearing from the noise produced with EN 352-1:1992 approved hearing protection or similar.



DANGER! If you notice vibrations or unusual noise, stop the fan immediately and consult your HARDI dealer.



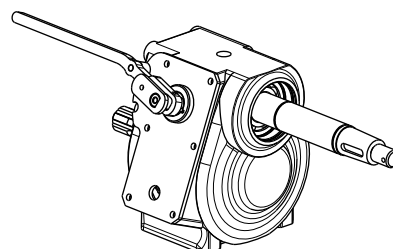
Gearbox

The AG820 and AG920 are fitted with a 2-speed gear box with a neutral position. The front and lower area of the gear box are attached to the chassis. It is fitted with a speed selector that prevent from jumping out of gear when engaged.

The speed ratios are following:

1st speed, low gear: 1 – 3.6

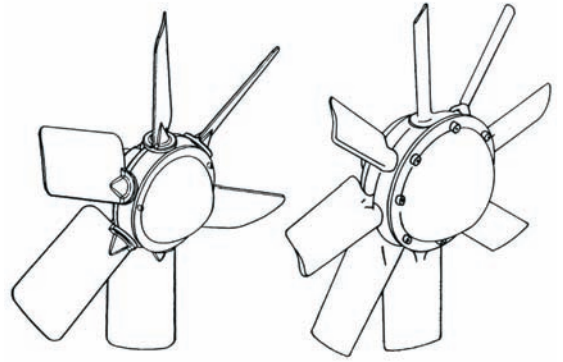
2nd speed, high gear: 1 – 4.4



Fan

The axial fan has syntetic, impact proof blades resistant to high and low temperatures as well as chemical products.

The blades have 4 different angle settings to adjust the air flow. To change the angle see the section "Adjusting the fan". (page 5.1).



3 - Description

Centrifugal Blower Units

General information

The blower unit is located at the back of the machine. It contains a gearbox unit, blanking plate, casing, outlet hoses and nozzles, turbine and clutch.

There are two different turbine models: the steel model assembled in P540 and P540D centrifugal blower units, and the aluminium model assembled in HF600 blower units.



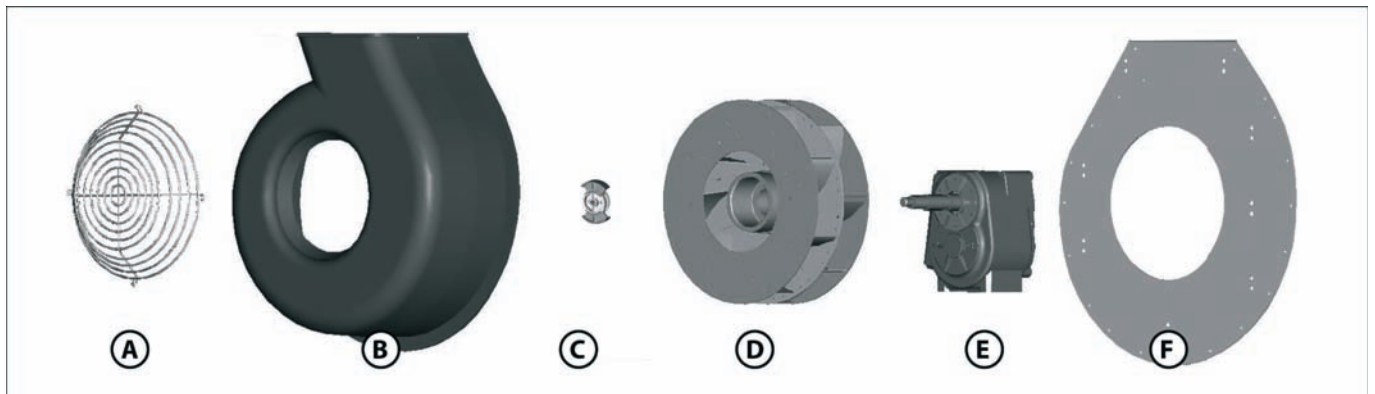
ATTENTION! The clutch is one of the most important parts in the blower unit in terms of safety. Make sure that it is in perfect conditions (i.e. that it is not blocked, etc.). Otherwise, it could cause the blower unit to explode.

HF540 and HF540D blower units

The air kit should adapt to the requirements of the crop in order to give the best application results. The following section gives more details about the different pneumatic air kits available.

The letters HF***D means High Flow and Double, respectively. They have a polyester casing and turbines with 600 mm of width.

Components



A. Grid

B. Polyethylene casing (HF600 polyester)

C. Clutch

D. Steel turbine

E. Gearbox

F. Blanking plate



DANGER! UNDER NO CIRCUMSTANCES WHATSOEVER should you exceed 540 r.p.m. from the tractor PTO as there is a serious danger of air kit explosion.



DANGER! STAY CLEAR of the air inlet and outlet while the turbine is in use. Foreign objects could be expelled from the air outlet or parts of clothing could be sucked into the air inlet.



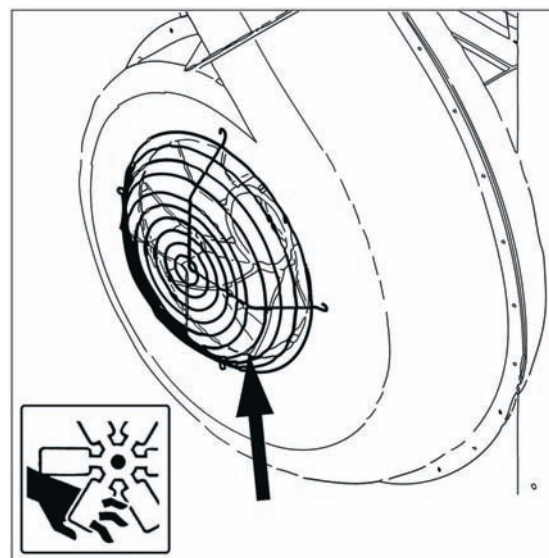
WARNING! The blower units are the most dangerous part of the machine. Do not attempt to alter any of its components without checking with your nearest distributor first. Manipulating blower units to change their characteristics should only be carried out by qualified personnel that has been expressly authorised by ILEMO-HARDI S.A.U.


Air flow of HF540 and HF540D centrifugal blower units


Blower unit	Speed	Gear ratio	Turbine diameter	Power	Flow
HF540	1st low	1 - 3.6	540 mm	12 kW	8000 m ³ /h
	2nd. high	1 - 4.6	540 mm	16 kW	10000 m ³ /h
Blower unit	Speed	Gear ratio	Turbine diameter	Power	Flow
HF540D	1st low	1 - 3.6	540 mm	14 kW	11000 m ³ /h
	2nd. high	1 - 4.6	540 mm	22 kW	15000 m ³ /h


Protective Grid


The blower units have protective grids fitted to the air inlets. They are essential for avoiding accidents and preventing small stones, leaves or other foreign bodies from entering the blower unit that could cause damage inside.ective grid.




 **DANGER!** It is strictly forbidden to use the blower unit without the protective grid.

 **DANGER!** Do not approach the fan when in use.

 **DANGER!** Do not introduce foreign bodies through the grid, regardless of whether the turbine is in use or not.

 **DANGER!** During the working day, protect your hearing from the noise produced with EN 352-1:1992 approved earmuffs or similar.

 **DANGER!** In the case of vibrations or knocking, stop the turbine immediately.



3 - Description

Gear box

The HF540 and HF540D blowers have a two-speed gearbox with neutral position.

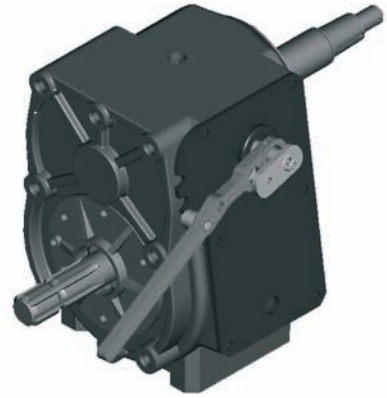
Upper pos: High speed

Middle pos.: Neutral

Lower pos.: Low speed



DANGER! Do not attempt to engage or disengage the speed with the PTO in operation.



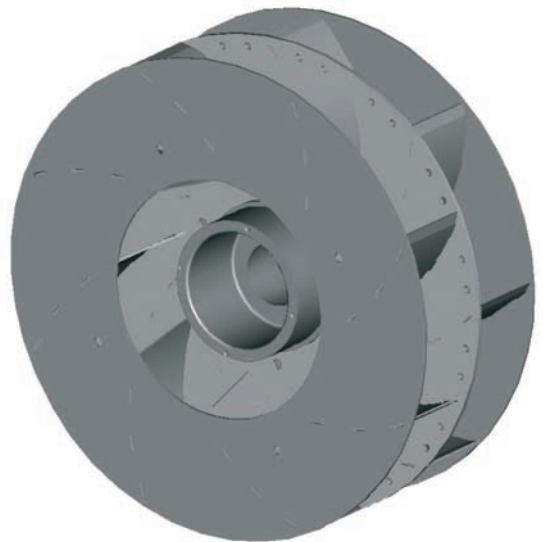
HF540 and HF540D Turbine

The HF540 and HF540D centrifugal blower units contain a galvanised steel turbine. The difference between the single model and the double model is that the double provides the same power as two single turbines combined.

The position of the blades in this type of turbine is fixed. Their angle cannot be changed like in axial fans.

The turbines are allowed to turn at a maximum of 540 r.p.m.

The clutch is at the centre of the turbine, which ensures smooth start-up and stop - see section "Clutch" for further information.



Clutch (All blower types)

The clutch is integrated at the centre of all the fan models and will ensure a smooth start-up and stop of the fan. The clutch design may vary from model to model, but the functioning and maintenance is the same.



WARNING! The clutch is a vital part in the blower unit. Poor condition could cause the blower unit to break or explode. The condition of this part should be regularly checked. Please carefully read the section on its 'Maintenance'.



DANGER! The clutch is one of the most important parts in the blower unit in terms of safety. Make sure that it is in perfect conditions (i.e. that it is not blocked, etc.) Otherwise, it could cause the blower unit to explode.

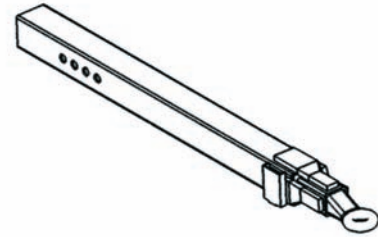


Equipment

Ring drawbar

This is attached near the tractor's rear axle. Before engaging the tractor PTO (Power take-off), make sure the drawbar pin is firmly in place and secured, and that the tractor's wheels do not touch the mistblower when turning.

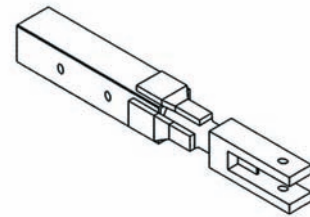
There needs to be a CV joint on the side of the tractor. The length of the drawbar can be adjusted (see section "Adjusting the length of the drawbar").



Fork drawbar

This is attached to a transversal hole boom fitted to tractor's lift arms. Before engaging the tractor PTO make sure the drawbar pin is firmly in place and secured, and that the tractor's wheels do not touch the mistblower when turning.

A CV joint is not required. The length of the drawbar can be adjusted (see section "Adjusting the length of the drawbar").

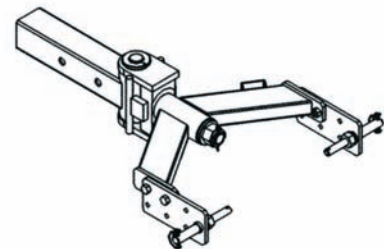


Turnable drawbar

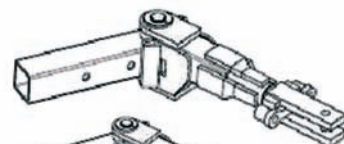
This is attached to the tractor's lift arms. Before engaging the tractor PTO make sure the diameter of the shaft fits the ball couplers at the lift arms. Also make sure to fit the securing pins and check that the tractor's wheels do not touch the mistblower when turning.

This type of coupling allows narrow turns, if a CV joint is fitted at the mist blower's power intake. The length of the drawbar can be adjusted (see section "Adjusting the length of the drawbar").

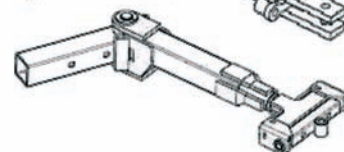
The turnable drawbars, model X and Y are fitted under the rear axle of the tractor, a common arrangement on smaller fruit orchard models of tractors. Important that the two stop bolt are tighten up, to avoid slack



X



Y

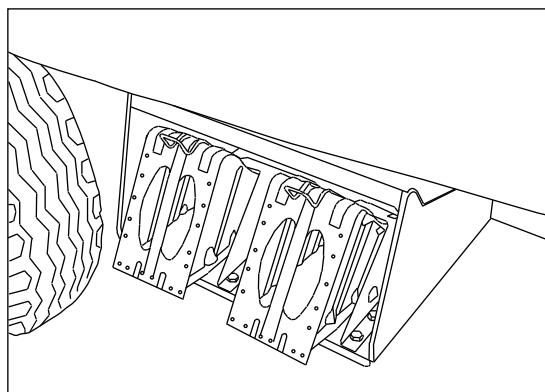


Always stop PTO before making a tight turn even with a wide angle transmission shaft fitted. Tight turns with PTO engaged may damage the transmission shaft, the pump crank shaft and induce huge vibrations through the gearbox. This may lead to severe damages on gearbox and/or fan.

3 - Description

Wedges

The wedges are located on the left-hand side of the machine. They should always be carried in their support so they are available when required.



Light kit

The light kit can be fitted to the rear bumper at the fan. They are connected via a universal plug adaptable to any make and model of tractor.



Lights must be used when driving on public roads both inside and outside urban areas. If any of the components should break, they should be replaced immediately. In order for the device to work, connect the plug to the light socket on the tractor.



B11 boom

Either a pneumatic or hydropneumatic system can be fitted. The B11 boom includes 8 spouts of 3 nozzles on each one. Each spout can be brought closer to or further from the vegetation and its angle and height can be varied.

This boom treats a complete row.



B50 and B51 boom

The B50 and B51 are available as Y- and Z-versions.

The Y-version has hydraulic lift and folding. This requires three double-acting outlets (two for folding and one for lift).

The Z-version are equipped with open centre hydraulics feature and requires one double acting outlet and is controlled via an electric remote control box from the tractor cabin.

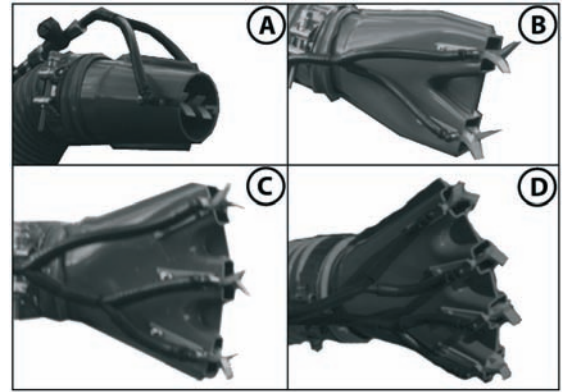
The B51Z-version has a trapeze-suspended boom and individual tilt function RH and LH sides.

Pneumatic spray system

The pneumatic system is low pressure. This system takes advantage of the high air speed in the spout outlet to break the spray liquid and give a very fine mist together with turbulence. Using the deflectors at the spout outlet, the mist means that the liquid is distributed uniformly.

There are four spout models, which can be combined according to the bar type and assembly requested for the machine:

- A. Cannon with 1 atomizer
- B. Spout with 2 atomizers
- C. Spout with 3 atomizers
- D. Spout with 4 atomizers



The Paraflow pneumatic system is low pressure. This system takes advantage of the high air speed at the pipe outlet to break the spray liquid and give a very fine mist together with turbulence. Using the deflectors at the tube outlet, the mist means that the liquid is distributed uniformly.

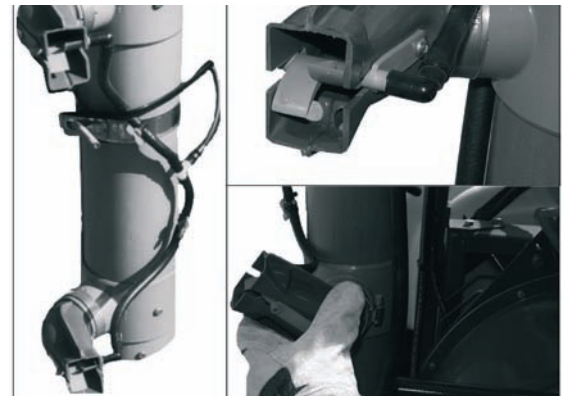
There are two Paraflow models, which cannot be used together, according to the bar type and assembly requested for the machinery:

Paraflow tube with 4 in-line atomizers

Paraflow tube with 6 in-line atomizers



ATTENTION! Ceramic nozzles are used for the standard pneumatic system and the paraflow system. This type of nozzle has two positions. If the nozzle is fitted so that the flow enters on the flat side, less flow will be allowed than on the conical side



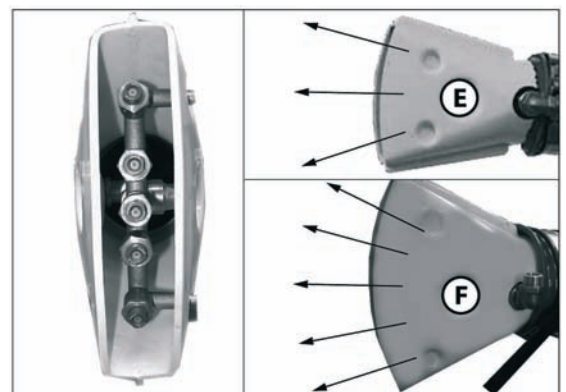
Hydropneumatic spray system

The hydropneumatic system is medium-high pressure. This system takes advantage of higher turbulence in the low-volume conical nozzle and sprays the liquid with an even distribution. The air reaches high speed in the spout, spraying the liquid in a fan.

There are three spout models with three or five nozzles. These two models cannot be combined.

- E. Spout with 3 nozzles.
- F. Spout with 5 nozzles.

Where not all the nozzles are required in treating the crop, the nozzles can be replaced for caps.



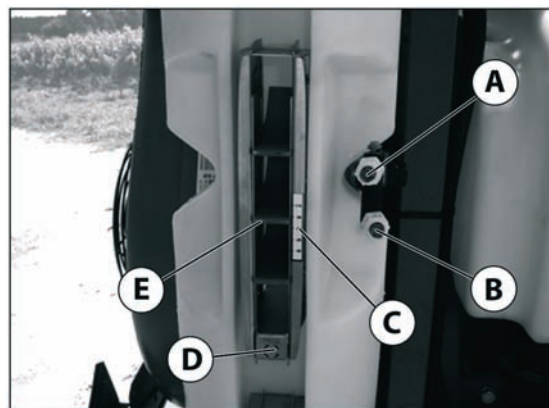
3 - Description

IRIS system

The IRIS application system allows for individual air adjustment as each outlet permits steep angling or even closing of the air supply, if necessary.

The IRIS system provides the required droplet size and air conduction to the target. The most delicate and difficult part of the vine, the grape cluster, is safely treated throughout the season, due to a very easy and quick calibration with the IRIS system.

- A. Non-drip valve
- B. Nozzle
- C. Vane position indicator (angle)
- D. Air vane adjustment
- E. Air vanes



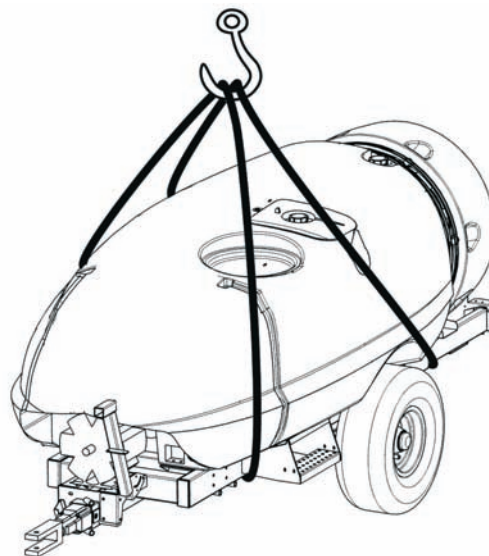
General information

Unloading the mistblower from the truck

When loading or unloading the mistblower to/from a lorry by using a lever and pulley or a crane, use the suspension points shown on the diagram and make sure the straps used are strong enough.



DANGER! Nobody must stand below or next to the machine during loading or unloading.



Before starting up for the first time

Although the surface of the metallic parts of the mist blower have been coated with a strong, protective product, we recommend you apply a layer of anti-corrosion oil (e.g. CASTROL RUSTILLO or SHELL ENSIS FLUID) to all metal parts to avoid chemical products discolouring the enamel, as well as to ease future cleaning.



ATTENTION! This treatment should be carried out whenever the protective layer wears off.

Counterweights

Check if it is necessary to place a counterweight on the front of the tractor, to increase the stability and steering performance.

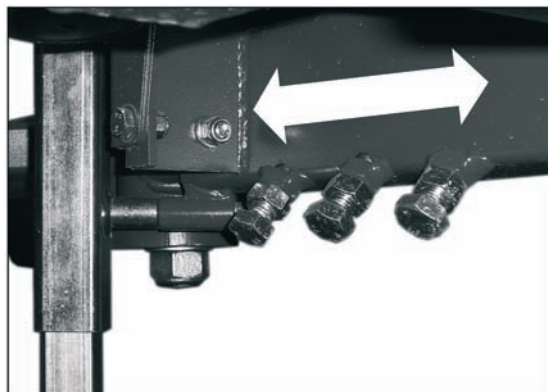


4 - Starting up

Mechanical connections

Adjusting the drawbar length

1. Place the jockey wheel in the position indicated in the photo.
2. Loosen the three bolts (A), located in the area where the drawbar is connected in the chassis.
3. Remove the bolt (B).
4. Adjust the drawbar to the desired position.
5. Replace bolt (B), making sure that it passes through the holes in the chassis and the shaft.
6. Tighten the bolts (A) and the locknut again.



Jockey wheel

The jockey wheel allows the mistblower to be coupled to or uncoupled from the tractor. The illustration shows the position when the mistblower is detached from the tractor; when the mistblower is attached it will be stored on the left-hand side of the mistblower chassis using two pins.

The height of the machine can be adjusted by turning the handle (C).



Connecting the fork drawbar

This is attached to the transversal hole boom mounted on the tractor lower links. Before connecting the PTO make sure that the coupler is correctly attached and secured, and that the tractor wheels do not touch the mistblower when turning. A transmission shaft with CV joint is not required.

Adjust the drawbar if necessary as explained in another section.

Connecting the ring drawbar

This is attached to the standard clevis-type coupler close to the tractor body. Before connecting the PTO make sure that the drawbar is correctly attached and secured, and that the tractor wheels do not touch the mistblower when turning. A transmission shaft with CV joint is required on the tractor's side. It is possible to adjust the length of the drawbar.

Adjust the drawbar if necessary as explained in another section



Connecting the articulated drawbar

This is attached to the tractors lower linkage arms. Before connecting the PTO make sure that the diameter of the pins matches the ball diameter on the lower links, that the snap locks are engaged and check that the tractor wheels do not touch the mistblower when turning. Of the three hitch types this is the one that permits the tightest turns, but a transmission shaft with CV joint is then required on the mistblowers power intake side. The length of the drawbar is adjustable.

Adjust the drawbar if necessary as explained in another section.



4 - Starting up

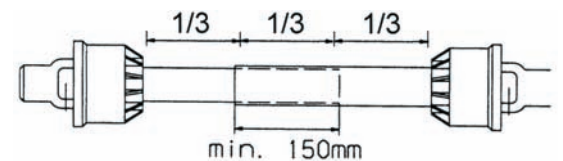
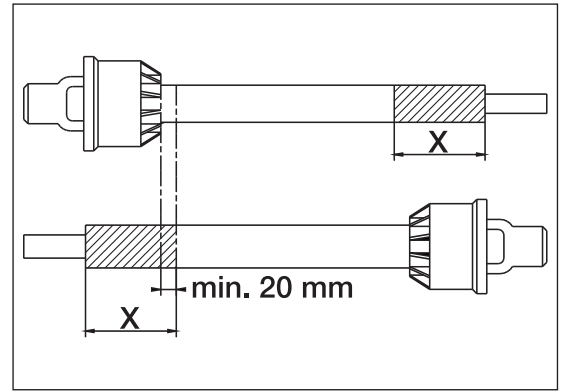
Coupling the driveshaft

Initial installation of the driveshaft may involve having to cut the axle to adapt it to the tractor to which it will be hitched. To hitch it for the first time, proceed as follows:

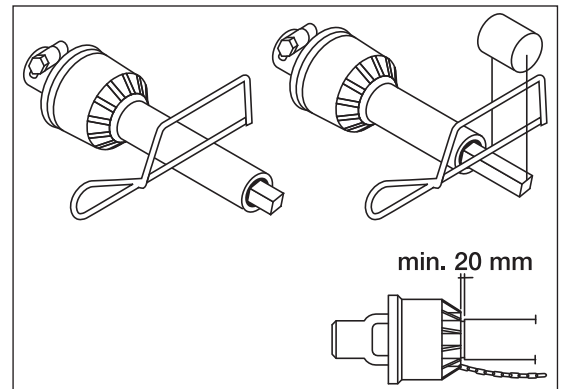
1. Attach the mistblower to the tractor in such a way that the distance between the PTO shaft and the mistblower pump is the shortest possible.
2. Stop the engine and remove the ignition key.
3. If the driveshaft needs to be shortened, pull the two parts of the shaft apart. Fit the two parts of the shaft, one to the tractor and the other to the mistblower crankshaft and measure out the length that needs to be removed. Mark the protection guards.



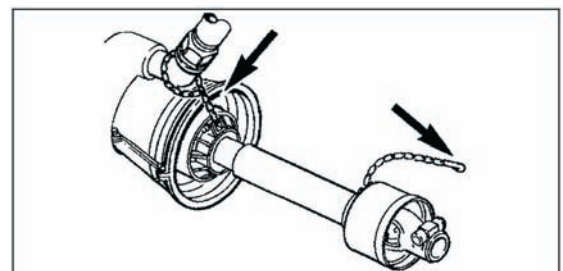
ATTENTION! The shafts must always have a minimum overlap of one third of their working length.



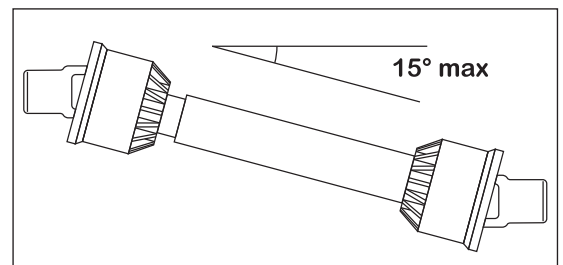
4. Cut both parts equally, using a saw. File the profiles afterwards to remove burrs.
5. Grease the profiles and reassemble male fitting and female fitting.
6. Fit the shaft to the tractor PTO and to the mistblower pump shaft.



7. Place the input part towards the tractor. Fit the chains to prevent the protection guards from rotating with the shaft.



ATTENTION! To ensure long life of the driveshaft and prevent possible damage to the equipment, try to avoid working at angles of more than 15°.



Hydraulic connections

General information

Make sure that the couplings are clean before fitting them!

After pressing the brake pedal and when the system has filled with oil, check the level of hydraulic oil in the tractor and refill if required.



DANGER! Testing the hydraulic system should be done with care. Air may have entered the system and cause sudden movements.



DANGER! Oil leakage: Do not use your hands under any circumstances to locate a leakage in any point in the hydraulic system. Due to the system's high pressure, the oil could penetrate the skin.

Tractor requirements

The hydraulic connection requirements according to model are as follows:

Boom	Hydraulic outlet	Side adjustment	Open Centre	Trapeze suspension	Tilt
B50 Y	3 double acting	Manual	No	No	No
B50 Z	1 double acting	Manual	Yes	No	No
B51 Y	3 double acting	Manual	No	Yes	No
B51 Z	1 double acting	manual	Yes	Yes	Yes

4 - Starting up

Electrical connections

General information

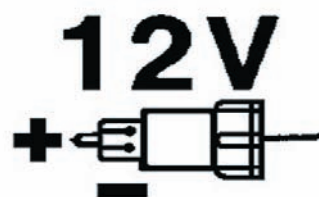
If your equipment includes an electrical component, please note the following information to correctly connect the equipment and to prevent problems when working.

The voltage required by the electrical components is 12 V. Before connecting any component, make sure that the polarity is correct.

Red wire = 12 V (+ positive)

Black wire = (- negative)

The connectors assembled on the electric components comply with the standards for the majority of modern tractors. If your tractor has another type of power supply connector, the supplied connector will need to be removed and adapted to the tractor connector.

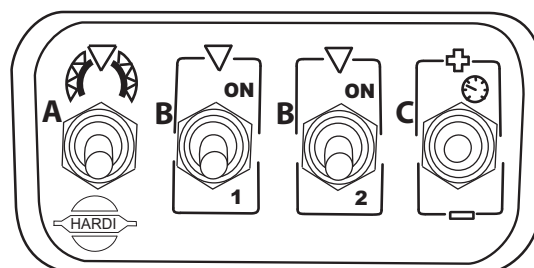


CB/2 and EVC/2 operating unit

Find a place in the tractor's cab where it is possible to fit the control box so you can operate it as comfortably as possible. The most recommended place is to the right of the driver's seat.



The control box must be properly attached to prevent it from being hit or excessive vibrations.



The connector type is universal and it should be able to be connected to any tractor.

As an emergency solution, remove the connector and splice the wires directly to the battery.



WARNING! Always remember: Red wire (+) Black wire (-)



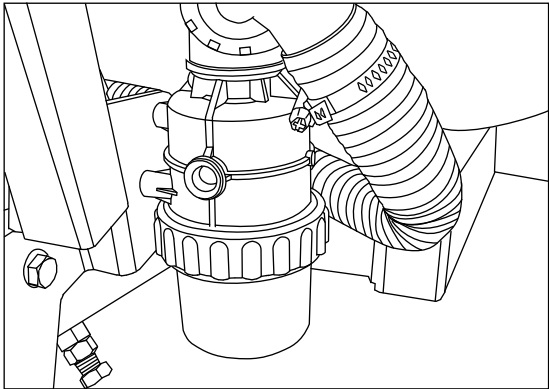
Fluid circuit

Suction filter

The mesh size of the standard filter is 50 mesh. 80 and 100 mesh filters are available and can be changed by opening the top lid of the filter. Check the o-ring before replacing the lid and replace it if it is damaged.



ATTENTION! For better sealing between the lid and the o-ring, coat the area between the joint and the lid with grease. This will make the O-rings seal and avoid suction of false air.

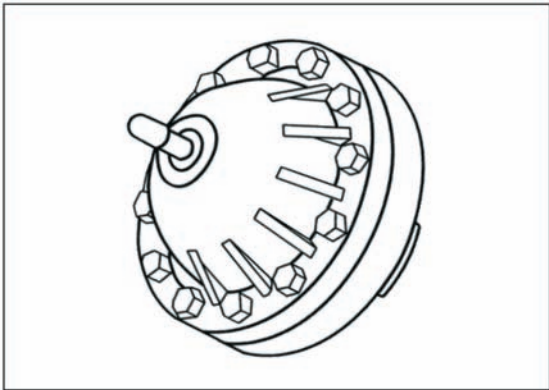


Pressure damper

The air pressure of the pulsation damper (321 pump) is factory-set at 2 bar to match spraying pressures between 3 and 15 bar.

When spraying with different pressures than this, you must change the pressure of the damper. Follow the list to adjust it to the correct pressure. This table is also engraved on the damper.

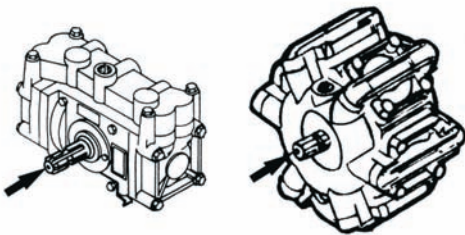
Spraying pressure bar	Pulsation damper air pressure bar
1.5 - 3	0 - 1
3 - 15	1 - 3
15 - 25	3 - 4



Diaphragm pump

Before starting to use the machine, make sure the diaphragm pump is well greased to prevent wear.

The pump is greased from factory, but should be greased again during bedding in.



4 - Starting up

Booms

General information

The pneumatic and hydropneumatic booms, B11, B20, B30, B40, B50 and B51 can be easily regulated and adapted to the vegetation, ensuring correct treatment.

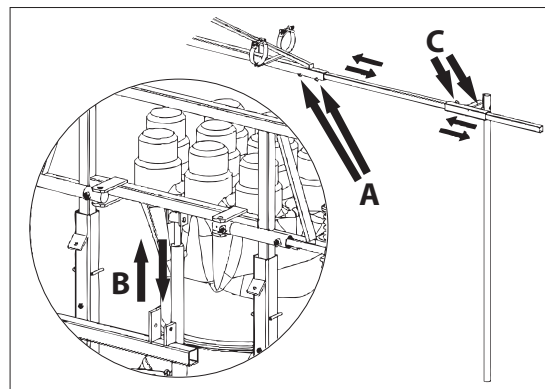
Regulation is generally mechanical. Some booms, and according to the equipment, also include hydraulic cylinders that allow you to vary the boom or boom arm height individually, for example in the B40 boom.

Regulating the booms

The B20 and B30 booms allow you to regulate treatment height. By loosening the two screws (A), the boom can be opened to adapt it to the vegetation.

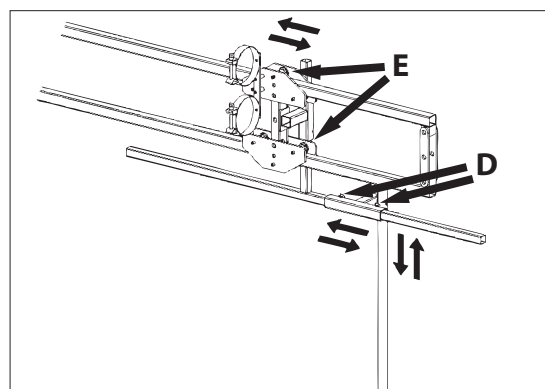
With the cylinder B (according to model), the height of the boom can be changed. This movement allows the boom to be adapted to different heights and facilitates turning in difficult locations.

The screws C also allow you to vary the height of treatment, using the vertical boom member that holds the vertical delivery tubes instead of changing the boom width (point A).



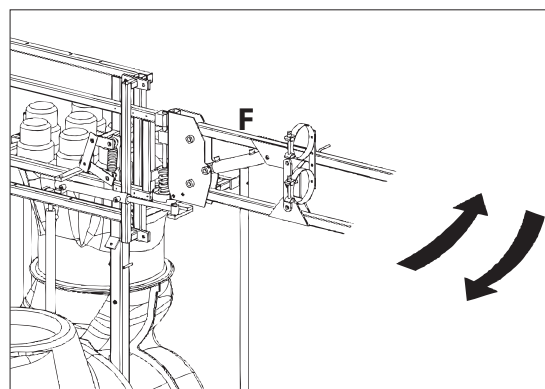
The B40 boom can also be regulated mechanically with the two screws D on the vertical member of the boom. The width of treatment can be varied by loosening these two screws slightly.

Another way of adjusting the treatment width is with the screws E, so that the position of the vertical member can be changed.



Cylinder F allows you to individually raise the height of one of the arms of the boom to adapt it to the terrain and crop conditions.

This adjustment is recommended for working on slopes.



IRIS system setup

The IRIS application system is standard equipped with ceramic hollow cone nozzles. Each drop leg holds 8 nozzles per drop leg. If a curtain area of the canopy is not meant to be sprayed, a small valve is fitted as per two nozzles that allow turning of the spray mist. If only one nozzle is needed in that area it is as well possible to fit a blind cap.

4 - Starting up

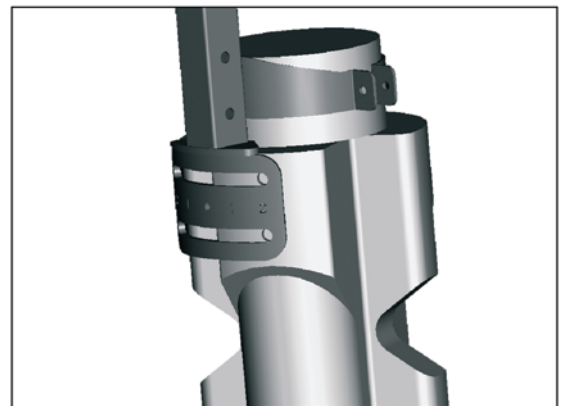
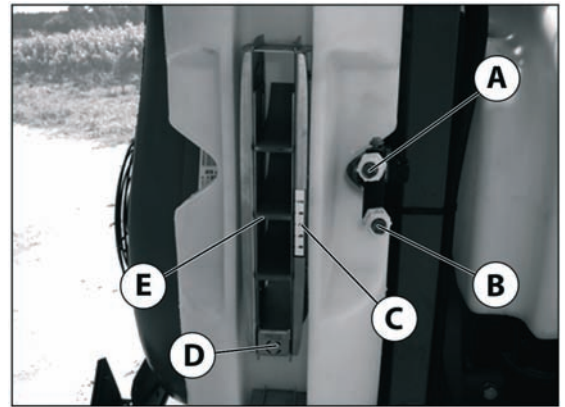
In the valve A that allows the spray mist to pass on the nozzle, there is a small no drip valve, that secures when the main switch turns of the spray mist, that all nozzles stops instantly, and do not spill on the ground.

The nozzles B are fitted in an adjustable support, in order to angle them forward accordingly to forward speed, and there by not loosing spray mist behind the sprayer.

The air outlet has an indicator C that shows the angling of the air vanes E which are adjusted by pressing bottom D in, and then move up or down the vanes E.

The air outlet in the lower part shall be orientated upwards to get the spray mist penetrating from down and upwards. The upper spout shall point downward in order to avoid drift. Those setting are accordingly to grot hog the canopy, and adjustment is necessary during the season, as the size of the canopy change.

In order to get the optimal cross flow effect and penetrate the canopy the IRIS drop leg shall be set 10°, 15°, 20° or 30° forward, as indicated in the adjustable part in the top of the drop leg. The forward angling is set accordingly to forward speed while spraying.

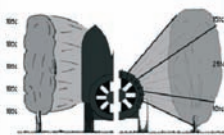


Calibration

Enter to www.hardi-international.com and download the Excel programme for calibration.

The working distance given in, is total sprayed distance. If two rows of 1,8 then multiply by 2 that equals 3,6 m.

Input		ATR	l/min
Work- Row dist. m	3,6	32	0,24
Velocity km/h	5,0		0,33
Pressure Bar	4,0		0,43
Read out			0,66
Dose rate l/ha.	259		0,88
Litres / min.	7,76		1,25
			1,34
			1,58
			1,79
			2,19



Blower unit

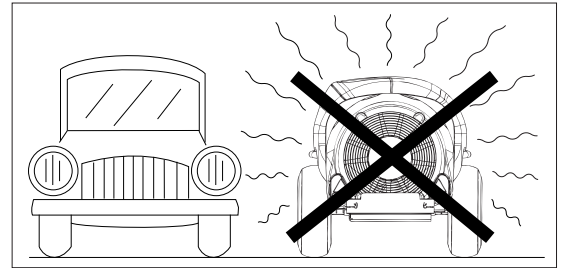
Safety information

The fan must not be in operation when driving on public roads. The nozzle opening function should never be used on public roads. Any failures could cause injury to persons and animals or damage to crops

In the event that the machine needs to be in operation (agitation) while driving along public roads until reaching the field, make sure that the gearbox speed selector is switched to neutral position.



DANGER! If any unusual noise or excessive vibration in the air kit is detected then stop the equipment immediately and have it serviced by an authorised HARDI technician.



Selecting the gear

The low or high gear can be selected using the specially designed lever.

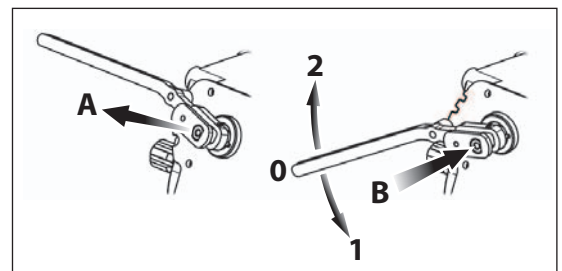
On the rear, left-hand side of the machine the selection lever is accessed between the tank and fan.

To change the speed, pull the lever outwards (A) and then move it up or down as required. Lock the lever in the selected position (at the lid)

Bottom position: 1st gear or low speed (1).

Top position: 2nd gear or high speed (2).

Centre position: Neutral (0).

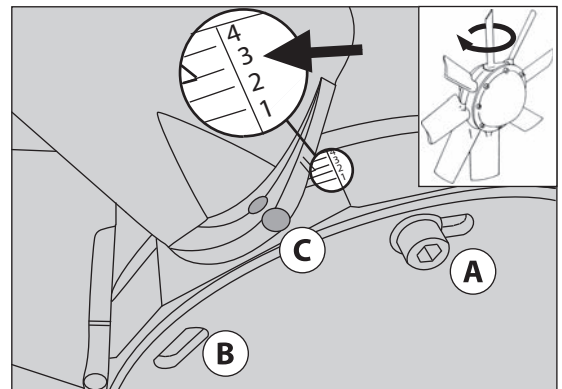


Adjusting the fan

The angle of the fan blades can be adjusted to 4 positions. The factory setting is pos. 3 (40°). Decreasing the angle of the blades (minimum angle, pos. 1 (30°)), reduces the air flow and power consumption. Increasing the angle (maximum angle, pos. 4 (45°)), will increase the air flow and power consumption. It allows the mist blower to be adapted to the different spray jobs and tractor sizes.

To change the angle of the fan blades you should follow these steps::

1. Loosen the Allen screws without taking them out completely.
2. Loosen the Allen screws whilst holding the nut at the back of the fan.
3. With both hands on opposite blades, turn them to the desired position between 1 and 4. All the blades should turn at the same time.
4. Finally, check that all the blades are in the correct position.
5. Tighten all the screws.



5 - Operation

Single side blinds (Optional)

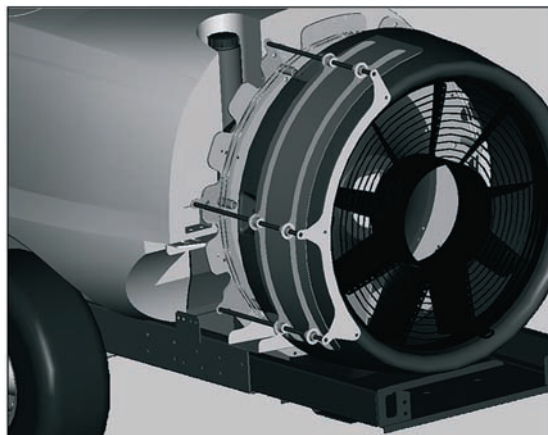
The air stream can be blocked to one side to prevent spraydrift towards sensitive areas.

This is used when one section valve is shut during spraying along orchard edges, streams, open waters or other sensitive areas where spray drift must be kept away.

Loosen the nuts, slide the blind over the air outlet and tighten the nuts again.



ATTENTION! Only blind one side at the time. Never close both sides at the same time!



Fluid circuit

Filling/washing location requirements

When filling the sprayer with chemicals and water it is important to avoid spot contamination by spray chemicals in order to protect the subsoil water resources.

- A. If the mistblower is always filled at the same place, a special filling/washing location should be established. This should have a hard, liquid-impenetrable surface (e.g. concrete) securing against seepage and edges securing against run-off to the surrounding areas. The place should be drained to an adequate receptacle (e.g. slurry tank or similar).

Any spillage or washings should be retained and diluted in order to be distributed on a larger area to ensure minimal environmental impact and avoid build-up of larger chemical concentrations at one spot.

If no other requirements of distances exist, the following general recommendation of distance could be used. Not closer than:

- 1) 50 metres from public water supplies for drinking purposes,
- 2) 25 metres from non-public water supplies for drinking purposes, treatment sumps and cesspools of drainage systems, and
- 3) 50 metres from surface water (watercourses, lakes and coastal waters) and from nature reserves.

- B. Alternatively the sprayer can be filled in the field where the spraying is to take place. If so, choose a different location for each refilling.

If no other requirements of distances exist, the filling should not be established closer than:

- 1) 300 metres from public or non-public water supplies for drinking purposes and
- 2) 50 metres from surface water (watercourses, lakes and coastal waters), treatment sumps, cesspools of drainage systems, and nature reserves.



ATTENTION! Legislation and requirements vary from country to country. Always follow local legislation in force at any time.



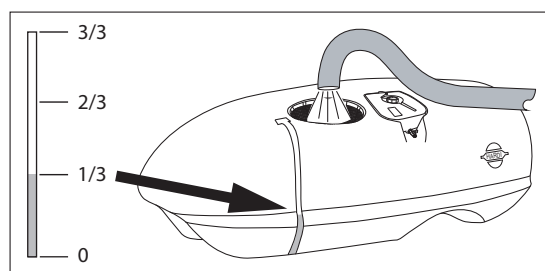
NOTE! It is the responsibility of the sprayer owner/operator to comply with all relevant legislation. HARDI cannot undertake any responsibilities for incorrect operation and use.

Filling with water

The tank should be filled to a third of its capacity with clean water before adding the chemical product. Always follow the instructions given on the product label!



WARNING! If spray liquid is left in the tank, for safety reasons all valves must be shut.



5 - Operation

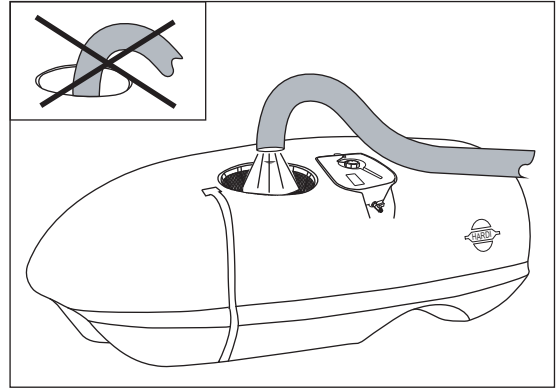
Filling through tank lid

The tank is filled with water through the filling hole by removing the lid located on the top of the tank. The water used should be as clean as possible to obtain best results.

Fill the tank using the filter to prevent impurities from entering the tank. For greater filling capacity, an overhead tank can be used.



DANGER! Do not place the filling hose inside the tank. Keep it out of the tank at all times and only point it towards the filling hole. If the pressure hose were placed inside the tank and there was a drop in water supply pressure, the chemical product could be syphoned back and contaminate the water supply lines, plant and well.



ATTENTION! The water supply line should be provided with a check valve as additional safety precaution. Follow local legislation in force at any time.



ATTENTION! The water supply should be provided with a meter to avoid spillage by over-filling. Follow local legislation in force at any time.

Filling the rinsing tank

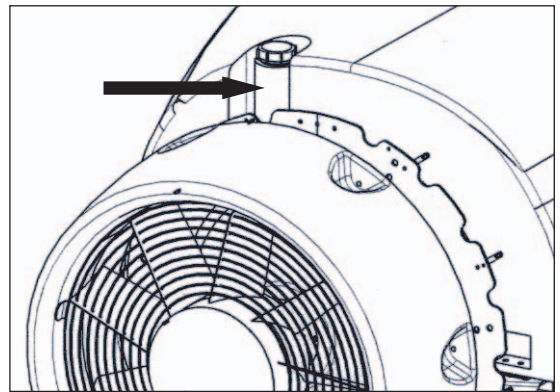
The rinsing tank is integrated with the main tank.

Capacity: 90 litres for 1000 and 1500 litres main tanks, and 130 litres for 2000 and 3000 litres main tanks

The illustration shows the location of the rinse tank.



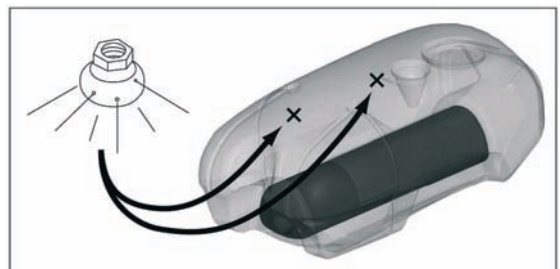
ATTENTION! Only fill rinsing tank with clean water! To avoid algae developing in the rinsing tank always drain the rinsing tank if the sprayer is not in use for a longer period of time.



Rinsing nozzle

This is located inside the main tank. When the nozzle engaged it rotates fast and spray clean water in all directions.

If the machine is fitted with a rinsing system, there is one rinsing nozzle in 1,000-litre tanks, and two rinsing nozzles 1,500, 2,000 and 3000 litre tanks.

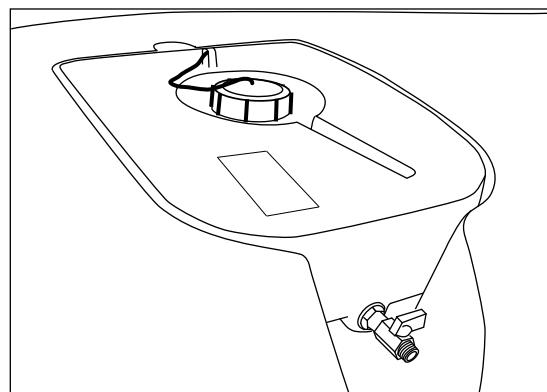


Filling the clean water tank

The clean water tank is located at the front and integrated in the main tank design. It is used for washing hands, gloves and cleaning clogged nozzles, etc.



WARNING! Although this tank is completely separate from the main tank and should only be filled with clean water, this does not mean that the water is suitable for drinking.



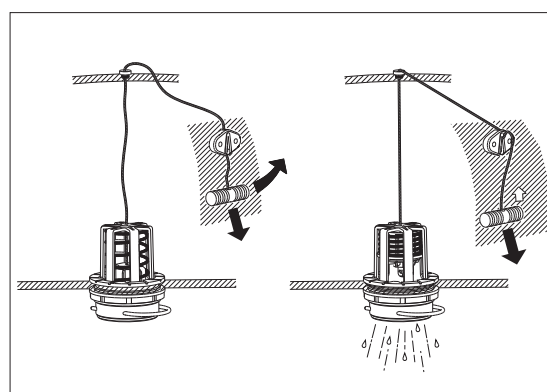
Drain valve

The valve for safe draining is located on the underneath of the tank. To access it, you must crouch on the left side of the equipment, where the jockey wheel is attached to the chassis when the equipment is hitched to the tractor.

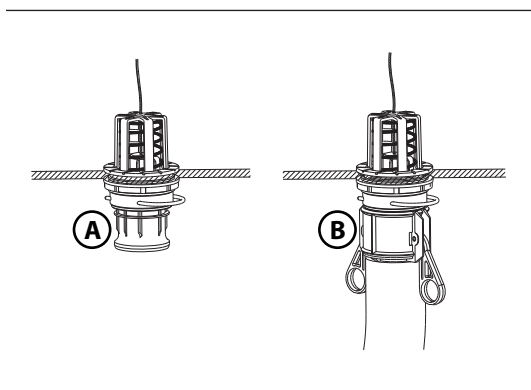
To empty the tank, pull the handle towards the valve. To fill the tank again, pull the valve handle toward the front of the equipment and it will close.



WARNING! When opening the valve, take care to ensure that the liquid does not spill over your hands or feet.

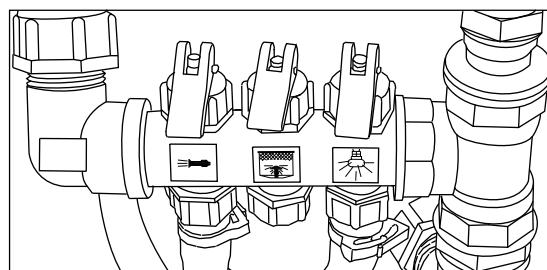


To empty the residual liquid in a special tank or container for storage, the quick release A of the drain valve can be adapted to connect a hose with the fitting B so that liquid can be emptied safely.



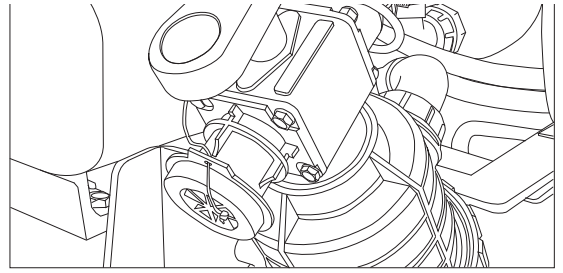
Filling liquid chemicals by HARDI TurboFiller (optional)

1. Fill the main tank at least 1/3 with water (unless otherwise stated on the chemical container label).
2. Turn the Manifold valve towards towards TurboFiller.
3. Set the fan gear lever to neutral position, engage the pump and set P.T.O. at 540 r/min.
4. Open TurboFiller lid. Measure the correct quantity of chemical and fill it into the hopper.

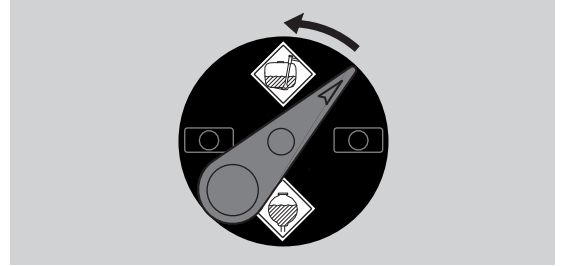


5 - Operation

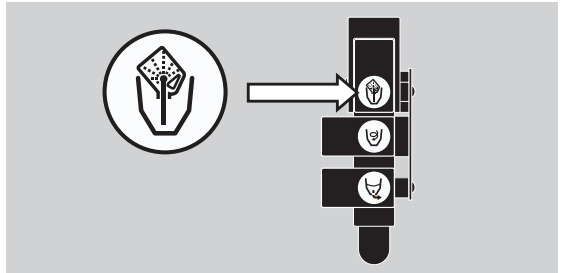
- Engage the hopper transfer device by opening the TurboFiller suction valve and the chemical is being transferred to the main tank.




- Engage the flushing device to flush the hopper. If powder chemicals are filled the flushing device must be open before pouring the powder into the hopper.





- If the chemical container is empty, it can be rinsed by the Chemical Container Cleaning device. Place the container over the multi-hole nozzle and push the upper lever to the left of the TurboFiller.
- Close TurboFiller suction valve when the hopper has been rinsed.
- Close the TurboFiller lid.




 **DANGER!** Always wear face shield and other appropriate personal safety equipment when filling chemicals.

 **ATTENTION!** The scale in the hopper can only be used if the sprayer is parked on level ground! It is recommended to use a measuring jug for best accuracy.

 **DANGER!** In order to avoid spray liquid hitting the operator, do not press lever unless the multi-hole nozzle is covered by a container as spray liquid may otherwise hit the operator.

 **ATTENTION!** Rinsing device uses spray liquid to rinse containers for concentrated chemicals. Always rinse the chemical containers with clean water several times until they are clean before disposal.

 **ATTENTION!** The hopper rinsing device is using spray liquid for rinsing the hopper for concentrated chemical! Cleaning the TurboFiller must always be done when the spray job is ended and together with the entire sprayer - a cleaning after the last filling and before spraying the last tankful does not ensure a clean TurboFiller!

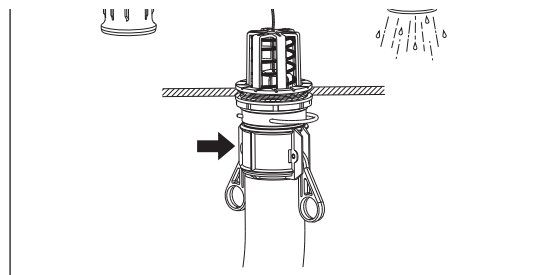
- Disconnect the pressure to the TurboFiller, keep agitation activated to ensure homogene concentration.
- Engage the fan gearbox before spraying.

TurboFiller rinsing

Rinsing the TurboFiller and chemical containers are done in the following two ways:

When TurboFiller lid is open

For cleaning empty containers. Put container over the rotating flushing nozzle in the middle of the TurboFiller so that the nozzle is inside the container. Press the Chemical Container Cleaning lever and the TurboFiller suction valve at the same time to activate the flushing nozzle in the middle of the TurboFiller and empty out the TurboFiller rinsing liquid.



When TurboFiller lid is closed

Use the Chemical Container Cleaning lever to rinse the hopper after filling of chemicals has ended. Press the Chemical Container Cleaning lever and the TurboFiller suction valve at the same time to activate the flushing nozzle in the middle of the TurboFiller and empty out the TurboFiller rinsing liquid. Do this 3 times and after the last flushing open the lid to inspect if the TurboFiller is empty. If not, close the lid again and press the TurboFiller suction valve until the TurboFiller is empty.



ATTENTION! The TurboFiller needs to be cleaned thoroughly after finishing spraying again to be sure it is clean before spraying other crops that may be sensitive to the chemicals just used. See section Cleaning on page 55 for details.

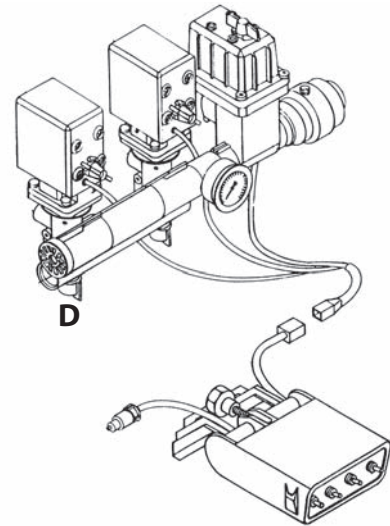
5 - Operation

Adjusting the EVC/2 operating unit

The EVC operating unit must be adjusted with clean water before spraying with chemical products.

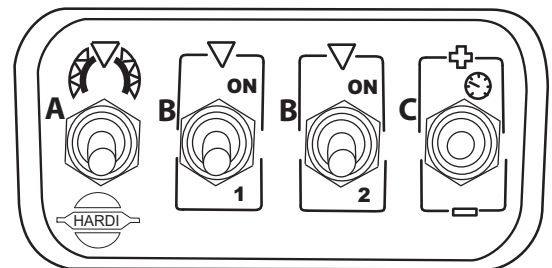
Adjusting the pressure:

1. Select the correct nozzle by turning the nozzle holder if the equipment contains a double jet. See the 'Spraying techniques' booklet.
2. The ON/OFF switch (A) is in the down position.
3. The two section valves (B) are in the down position.
4. The pressure switch (C) must be activated to set the pressure to minimum.
5. Put the tractor in neutral and adjust the PTO to the same revolutions as during spraying.
6. Adjust the pressure by toggling the switch until the pressure gauge indicate the desired pressure.



To adjust the constant pressure valves, proceed as follows:

1. Open both section valves on the control box.
2. Increase the pressure (e.g. to 10 bar).
3. Close one of the section valves.
4. Adjust the constant pressure valve (D) of the closed section valve until the pressure gauge shows 10 bar again.
5. Open the section valve again and repeat the procedure with the other section valve.
6. Test by opening any of the section valves individually. If the operating unit is correctly adjusted, the pressure should remain stable.



ATTENTION! ONCE THE PRESSURE ADJUSTMENT HAS BEEN PERFORMED, IT ONLY NEEDS READJUSTMENT WHEN:

1. ANOTHER NOZZLE WITH A DIFFERENT CAPACITY IS USED.
2. THE NOZZLE OUTPUT HAS INCREASED DUE TO WEAR.

Adjusting the BK/2 Operating Unit

A manual low-pressure operating unit that can be fitted in configurations with diaphragm pumps.

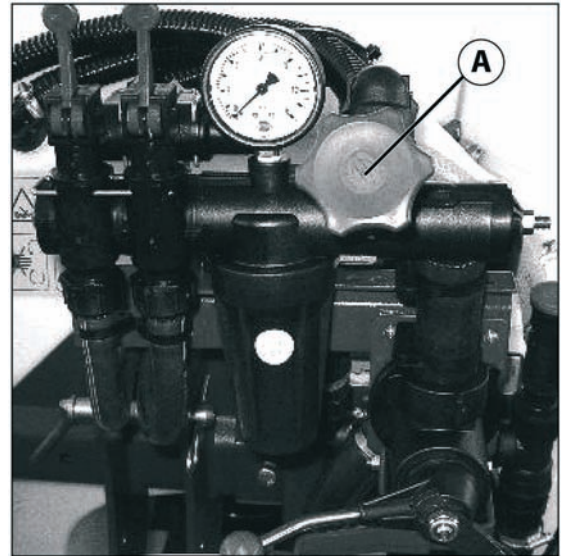
By flipping two lever taps, the right- and left-hand sections of the spray line is opened and closed.

Using a mechanical remote ON/OFF control, will control the the will open or close the main valve.

Before starting to spray the pressure must be adjusted. Adjust the pressure by turning the red handle in the centre of the operating unit next to the pressure gauge. Turn clockwise to increase pressure or anti-clockwise to decrease it. Check the pressure gauge to see when the correct pressure is reached.



ATTENTION! It is very important that the operating unit is well adjusted. Before using the equipment for the first time, it is necessary to adjust the constant pressure valves at each section valve.



During this procedure, the individual return capacity of each section is adjusted, so that it returns the same amount of liquid that would normally be sprayed through all the nozzles at the section when open.

This avoids variations in pressure when one or both sections are shut. The adjustment procedure is the following:

1. Open both sections via the lever taps.
2. Set the pressure at, for example, 3 bar.
3. Close one of the Sections.
4. Adjust the constant pressure valve of the closed section valve until the pressure gauge indicates 3 bar again.
5. Open the section valve again and repeat this procedure for the other section valve.
6. Verify the adjustment by opening both sections at the same time or one by one. If the operating unit is correctly adjusted the pressure always remains unchanged.



ATTENTION! It is recommended to carry out this adjustment as close to the intended working pressure as possible.



ATTENTION! Carry out this adjustment every so often as somebody may accidentally change the position of the pressure equalisation valve



ATTENTION! ONCE THE PRESSURE ADJUSTMENT HAS BEEN PERFORMED, IT ONLY NEEDS READJUSTMENT WHEN:

1. ANOTHER NOZZLE WITH A DIFFERENT CAPACITY IS USED.
2. THE NOZZLE OUTPUT HAS INCREASED DUE TO WEAR.

MC/2 operating unit

This high-pressure manual operating unit is used in configurations with piston or diaphragm pumps.

It consists of a pressure valve with a built-in pressure gauge.

To adjust the pressure, turn the black handle. To increase the pressure, turn the handle clockwise. To decrease pressure, turn it anti-clockwise.

The spray can be controled from the tractor using the two remote levers.

Each lever controls one section valve. You can select one section, two sections or no sections open.



5 - Operation

Cleaning

General information

In order to be able to use your mistblower for many years, a maintenance programme needs to be followed. This programme should include a comprehensive cleaning procedure.



ATTENTION! Always read the individual sections. Carefully read the maintenance task instructions before starting. If any part of these instructions is unclear, for safety reasons, please contact your HARDI dealer for further information.



ATTENTION!

A clean mistblower is a safe mistblower.

A clean mistblower is always ready for action.

Clean mistblowers are not damaged by pesticides and their solvents.

Steps to follow:

1. Fully read the chemical product's label. Take note of any special instructions regarding protective clothing, deactivating agents, etc. Read the labels on the detergents and deactivating agents. If any cleaning procedure is specified, follow it accordingly.
2. Familiarise yourself with local legislation regarding the disposal of pesticides, mandatory decontamination methods, etc. Contact the appropriate department, e.g. Department of Agriculture.
3. Pesticide washings can usually be emptied out on a soakaway or retained at a washing location (See "Filling/washing location requirements"). This must be an area not used for crop growing. You must avoid seepage or runoff of residue into watercourses, wells, springs, pools, etc. The fluid remaining after rinsing the equipment cannot be disposed of down a sewer. It must be emptied into a suitable soakaway.
4. Cleaning starts with calibration. A properly calibrated mistblower ensures a minimal amount of fluid remaining.
5. It is good practice to clean the mistblower immediately after use, leaving it safe and ready for the next spray job. This prolongs the life of the parts.
6. At times, the spray liquid may need to be left in the tank for a short time e.g. overnight or until weather is suitable for spraying. Unauthorised persons or animals should not have access the mistblower under these circumstances.
7. If the product applied is corrosive, all metal parts of the machine before and after use should be coated with a suitable rust inhibitor.

Cleaning and maintaining the filters

Clean filters ensure:

- Mistblower parts, such as the valves, diaphragms and operating units, are not blocked or damaged during use.
- Nozzles are not blocked during spraying.
- The pump has a long service life. A clogged suction filter will result in pump cavitation. The main filter that protects the mistblower parts is the suction filter. Check it regularly.

Cleaning the tank and liquid system

1. Dilute remaining spray liquid in the tank with at least 10 parts of water and spray the liquid out in the crop/orchard just sprayed.
2. Select and use the appropriate protective clothing. Select detergent suitable for cleaning and suitable deactivating agents if necessary.
3. Rinse and clean mistblower and tractor externally. Use detergent if necessary.
4. Remove tank and suction filters and clean. Be careful not to damage the mesh. Replace suction filter top. Replace filters when the sprayer is completely clean.
5. With the pump running, rinse the inside of the tank. Don't forget the tank roof. Rinse and operate all components and any equipment that have been in contact with the chemical. Before opening the distribution valves and spraying the liquid out, decide whether this should be done in the field again or on the soakaway.
6. After spraying the liquid out, stop the pump and fill at least 1/5 of the tank with clean water. Note that some chemicals require the tank to be completely filled. Add appropriate detergent and/or deactivating agent, e.g. washing soda or Triple ammonia.
7. Start the pump and operate all controls enabling the liquid to come into contact with all the components. Leave the distribution valves until last. Some detergents and deactivating agents work best if left in the tank for a short period. Check the label.
8. Drain the tank and let the pump run dry. Rinse inside of the tank, again letting the pump run dry.
9. Stop the pump. If the pesticides used have a tendency to block nozzles and filters, remove and clean them immediately.
10. Replace all the filters and nozzles and store the mistblower. If, from previous experiences, it is noted that the solvents in the pesticide are particularly aggressive, store the sprayer with the tank lid open.



ATTENTION! It is advisable to increase the forward speed (double, if possible) and reduce the pressure to 1.5 bar (20 psi) when spraying diluted remaining liquid in the field just sprayed.



ATTENTION! If a cleaning procedure is given on the chemical label, follow it closely.



ATTENTION! If the sprayer is cleaned with a high pressure cleaner, lubrication of the entire machine is recommended.

Use of rinsing tank and rinsing nozzles (optional)

The incorporated rinsing tank can be used for two different purposes.



ATTENTION! If a cleaning procedure is given on the chemical label, follow it closely.

In-field diluting before cleaning

In-field diluting of remaining spray liquid residue in the spraying circuit, before cleaning the sprayer.

Rinsing the tank and liquid system:

1. Empty the sprayer as much as possible. Close the Agitation Valve (no agitation) and spray till air comes out of all nozzles.
2. Turn suction valve towards "Rinsing tank" and pressure valve towards "Spraying".
3. Engage and set the pump at approximately 300 r.p.m.
4. When 1/3 of the contents in the rinsing tank is used, turn suction valve towards "Main tank" and operate all valves on the pressure side of the system in the following order so that all hoses and components are rinsed:
 - Turn the pressure valve towards TurboFiller (if fitted) and open the TurboFiller suction valve.
 - Open TurboDeflector valve and close it again when clean water comes out of nozzles.
 - Close TurboFiller lid and squeeze the Chemical Container Cleaning grip to clean this device.
 - Open TurboFiller lid again and make sure that TurboFiller is empty.

5 - Operation

- When empty, close the TurboFiller suction valve again.
- Turn the suction valve towards "Main tank" and the pressure valve towards "Spraying" and spray the liquid in the field just sprayed.

Cleaning of Main tank:

5. Turn the suction valve towards "Rinsing tank" and the pressure valve towards "Internal Tank Rinsing". Remove the filling strainer to avoid any cleaning shadows behind it.
6. When another 1/6 of the contents in the rinsing tank is used, turn the suction valve towards "suction from Main tank".
7. Turn pressure valve towards "Spraying" and spray the liquid in the crop/orchard just sprayed.
8. Repeat point 6 - 8 one more time.



WARNING! When critical chemicals have been used, before spraying another crop/orchard sensitive to the chemical just used or a cleaning detergent is recommended, do an extra cleaning:

9. Fill the rinse tank again.
10. Fill the main tank with 500 l clean water.
11. Add the cleaning detergent to the main tank by using the TurboFiller. Follow instructions on the label of the cleaning agent.
12. Clean the whole system again.
13. To get the best cleaning effect the Self-Cleaning Filter and the Suction Filter sieves should be washed with clean water.
14. Rinse the sprayer with clean water afterwards.



ATTENTION! The rinsing nozzles cannot always guarantee a 100% cleaning of the tank. Always clean manually with a brush afterwards, especially if crops sensitive to the chemical just sprayed are to be sprayed afterwards!

Rinsing when main tank is not empty

Rinsing the pump, operating unit, spray lines, etc. in case of stop in spraying before main tank is empty (e.g. beginning rain etc.).

Cleaning of the liquid system:

1. Turn suction valve towards "Rinsing tank". (Keep pressure valve in "Spraying"-position).
2. Close AgitationValve (no agitation).
3. Engage the pump and spray the water from the rinsing tank in the field until all nozzle tubes/nozzles have been flushed with clean water.
4. Disengage pump again.



ATTENTION! It is advisable to increase the forward speed (double, if possible) and reduce the pressure to 1.5 bar (20 psi) when spraying diluted remaining liquid in the field just sprayed.



ATTENTION! If the sprayer is cleaned with a high pressure cleaner, lubrication of the entire machine is recommended.

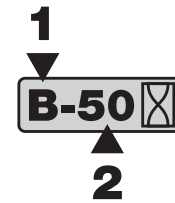
Lubrication

General information

Keep all lubricants clean and stored in a cool, dry place to avoid contamination from dirt and condensed water. Keep all oil filling jugs, funnels and grease guns clean and clean the lubricating points once lubricated. Avoid skin contact with mineral oil products for long periods.

Always follow the guidelines on the recommended amounts. If the recommended amount is not given, lubricate until traces are visible. The pictograms on lubrication are as follows:

1. Lubricants to be used (See 'Recommended lubricants').
2. Operating hours before next lubrication.



ATTENTION! If the sprayer is cleaned with a high-pressure water cleaner, the whole machine should be lubricated.

Recommended lubricants



BALL BEARINGS:

Universal Lithium grease, NLGI No. 2 2
SHELL RETINAX EP2
CASTROL LMX grease



SLIDE BEARINGS:

Lithium grease enhanced with molybdenum or grafito disulphate
SHELL RETINAX HDM2
CASTROL MOLYMAX



OIL LUBRICATION:

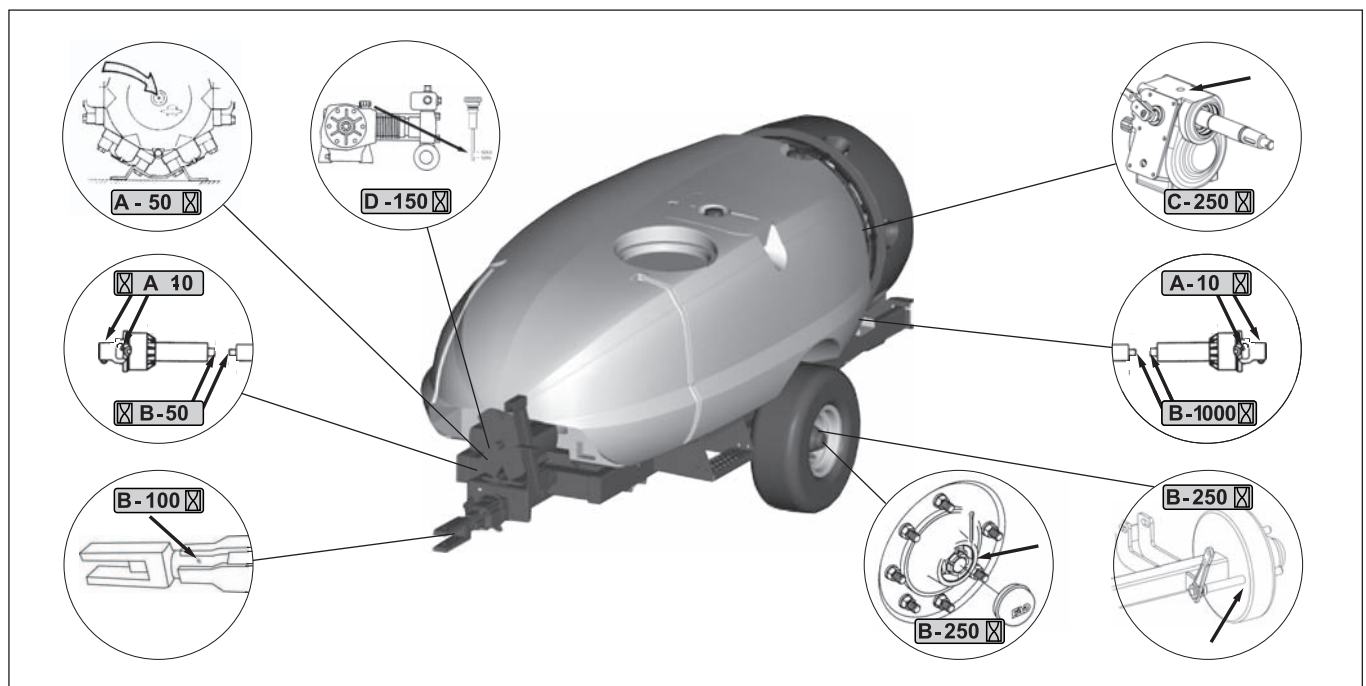
TOTAL Transmission TM
SAE 80W/90
Castrol EPX 80W/90
SHELL Spirax 80W/90
Mobil Mobilube 80W/90



OIL LUBRICATION:

SAE 30W
SAE 20W/50

Lubricating and greasing the mistblower

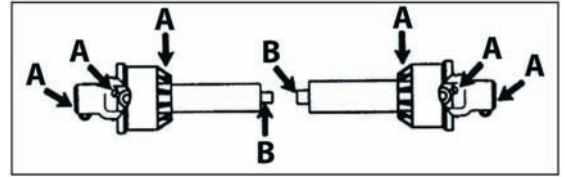


6 - Maintenance

Transmission shaft

The universal joints and bearings should be lubricated with grease. At points marked (A), this should be done after every 10 working hours, and the tubes and axles (B) every 50 hours.

Remember to lubricate the joints of the transmission shaft between pump and fan gearbox as well.



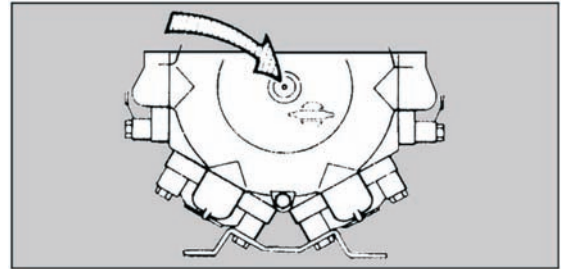
Diaphragm pump

Grease the pump every 50 working hours or once a month, through the grease nipple located at the crankshaft axle. The grease travel along the grooves in the crankshaft to reach the crankcase where it is distributed around bearings, conrods, etc.

Greasing is carried out in the same way on both pump models 363 and 463.



ATTENTION! Insufficient greasing of the pump could cause it to overheat and break the mobile parts inside.



Filters and fittings

Inspect the filters every 50 working hours. Apart from ensuring that they are clean, make sure that the mesh is in good condition. Otherwise, the efficiency of the filters will be reduced.

Whenever dismantling a filter or hose pipe, take care not to pinch the o-rings fitted to them. When replacing the pipe fitting, lubricate the o-ring with oil or grease so it seats in the groove.



ATTENTION! If the filter is not in good condition, it could cause numerous unnecessary interruptions during the working day, extending the working time required.



ATTENTION ! Each time you remove a fitting to check the condition of its o-ring or for any other reason, remember to lubricate the O-ring with oil or grease to prevent it from being pinched or breaking when reassembling the fitting in its housing

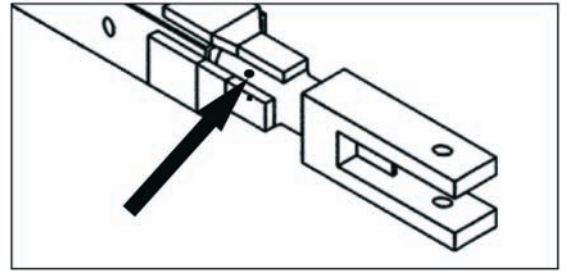


ATTENTION! Insufficient greasing of the pump could cause it to overheat and break the moving parts inside.

Fork drawbar

Keep the moving parts greased through the grease nipple to avoid wear and seizing up.

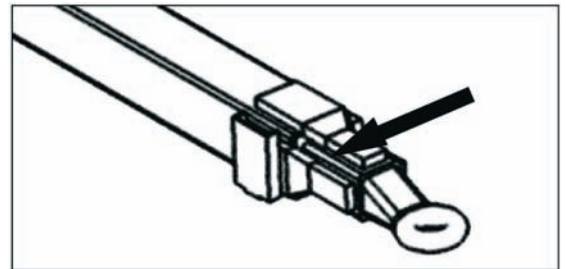
Also grease the contact faces of fork and drawbar.



Ring drawbar

Keep the moving parts greased through the grease nipple to avoid wear and seizing up.

Also grease the contact faces of hitch ring and drawbar clevis.

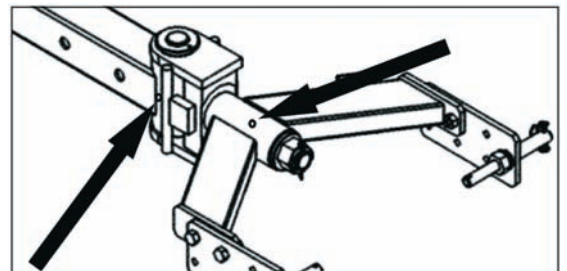


Articulated drawbar

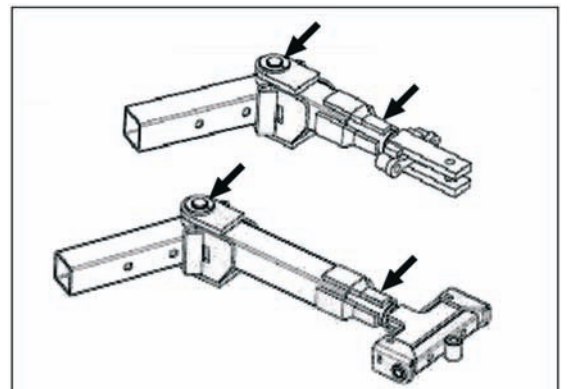
Keep the moving parts greased through the grease nipple to avoid wear and seizing up.

In the pivoting axle of the articulated drawbar a second grease nipple is to be greased.

Also grease the moving parts between pins and lower link balls.



The turnable drawbars, must be greased as per every 100 hours, through indicated grease nipples.



ATTENTION! The turn stop welded to the ball prevents the equipment from performing too tight turns that could cause it to break. Do not force turns beyond this point as this may damage the drawbar parts.



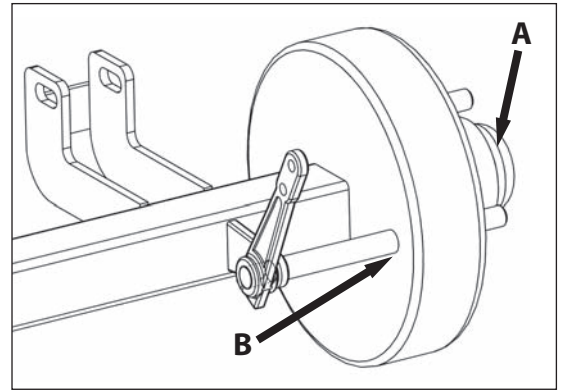
DANGER! Always stop the PTO when taking very tight turns, even when using a transmission shaft with wide-angle CV joint. Tight turns with the PTO on may cause the CV or the pump crankshaft to break and cause major vibrations in the gearbox. This may lead to damages of the fan or air kit.

6 - Maintenance

Axles with brake

The hub is the part of the axle that must be greased. Remove hub cap (A) and grease the inside of the rotating head.

Where your machine is fitted with the axle with hydraulic brake, the moving part of the brake (B) must also be greased. Grease at least once a year.



Service and maintenance intervals

General information

The maintenance and replacement intervals of the elements listed as follows will depend on the conditions under which the mistblower will be used, and hence impossible to assess.



WARNING! If you do not feel confident in carrying out some of the maintenance jobs described below, then contact your HARDI dealer's workshop for assistance.

Every 10 working hours – Spray circuit

Fill the tank with clean water, activate all the functions and check for leaks using higher spray pressure than normal.

Check visually the cone of the nozzles to detect for imperfections.

Every 50 working hours – Transmission shaft, chassis, air pressure and diaphragm pump

Check the condition of the transmission shaft protection guard. Replace any damaged parts as required.

Re-tighten the bolts of the wheels and the areas under the greatest stress or torque.

Check/adjust tyre pressure

Check/adjust pressure in pump pressure pulsation damper

Grease the diaphragm pump.

Every 100 working hours – Drawbar

Grease the drawbar or ball of the mistblower.

Check that the pivoting axles are not blocked or deformed.

Every 250 working hours – Wheels, brakes, hoses and gearbox

Check and grease the hub and the wheel braking system.

Verify the hydraulic brake.

Check all the hoses in the circuit.

Check the gearbox support and re-tighten the bolts holding it in place.

Every 1000 working hours – Full service

Perform a full service on all the parts described previously.

Change the gearbox oil.

Dismantle and grease the transmission shaft and joints going through the main tank.

Dismantle the fan clutch and clean/lubricate.

6 - Maintenance

Regular maintenance

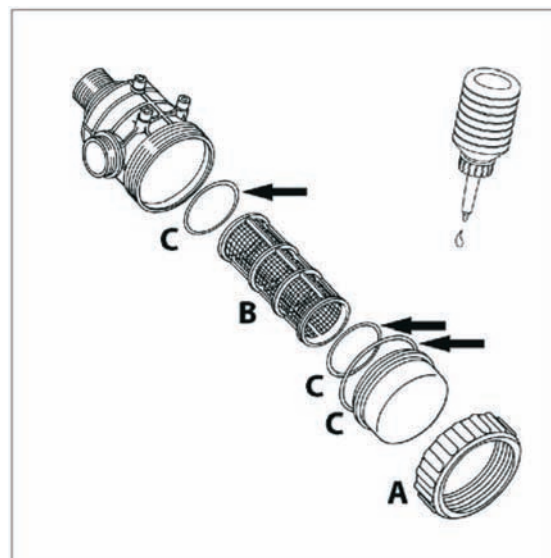
Every 10 working hours – Suction filter

To service the suction filter, proceed as follows:

1. Undo the nut (A) and open up the filter.
2. Remove the filter (B) from its housing.
3. Replace the O-rings (C) if necessary.

To put it back together:

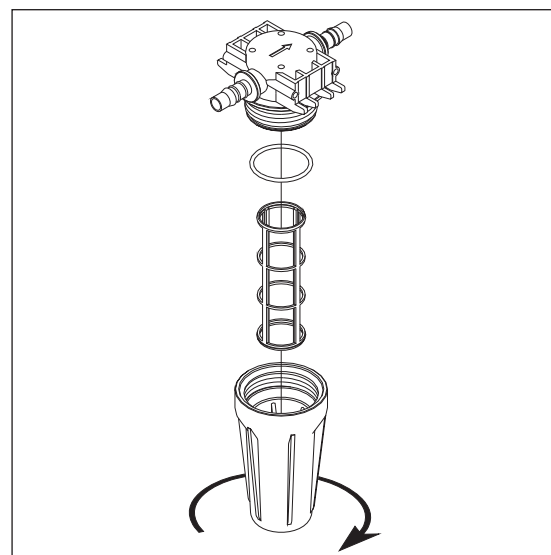
4. Grease the O-rings.
5. Fit the filter inside its housing.
6. Grease the O-rings inside the cover of the filter
7. Put the cover back on and tighten it.



Every 10 hours of operation – Pressure filters

To remove the pressure filter, unscrew the filter housing to inspect and clean the filter. When you reassemble the filter, grease the o-ring.

There are different mesh sizes. See the section 'Technical specifications – Filters and nozzles'.



Every 10 working hours – Nozzles

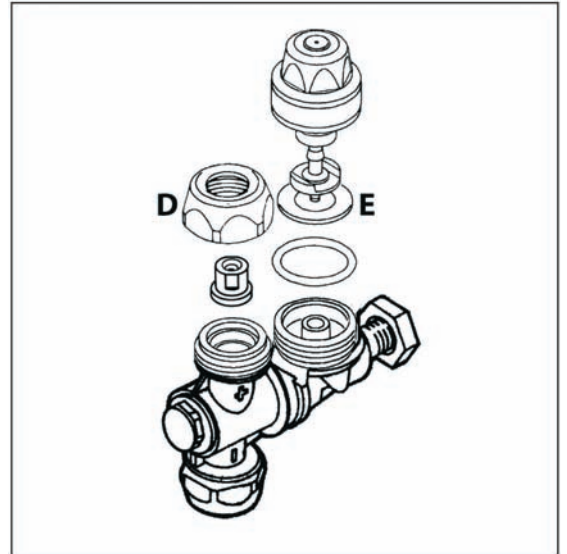
To clean or replace the nozzles, use a spanner to undo the nut (D). Remove the nozzle and clean it with air, water or a toothbrush.



ATTENTION! Never use a piece of wire or a needle as this could cause irreparable damage to the nozzle.

If any of the nozzles leak when closing the spray section valve, the non-drip diaphragm should be replaced (E).

The nozzles should be replaced when their unit flow varies more than 10%. Worn or damaged nozzles may cause crop damages or insufficient results.



Every 1000 working hours - Gearbox oil change

Change the oil after the first 150 working hours then every 1000 working hours or once a year - whichever comes first.

Run the mistblower until the gearbox has reached normal operating temperature before draining the oil.



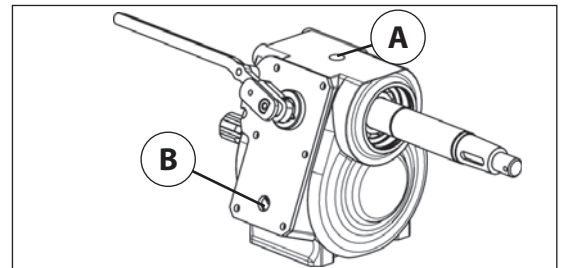
Clean the pump and area around dip stick, and drain plug before changing the oil

Fill with Fresh oil until the level reaches the level hole (B)

Capacity: Approximately 1.25 litres

A. For Oil filling (SAE 90)

B. Oil Level indicator

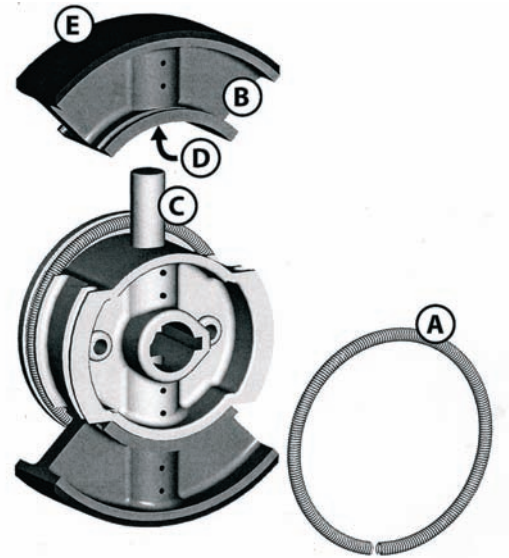


6 - Maintenance

Every 1000 working hours - Fan clutch inspection

Every 1000 working hours or once a year the fan clutch is dismantled for inspection, cleaning and lubrication.

1. Remove the fan clutch from the fan using the puller tool (Part No. 289659)
2. Remove the springs (A) and the two wings (B) using a mallet.
3. Polish the two axles (C) of the core with a fine emery cloth to remove dirt and rust.
4. Also polish the inside hole of the wing (D).
5. Check that the discharge hole in the ferodes (E) is not blocked.
6. Lubricate the axles of the wings and inside the core lightly with oil before re-assembling.
7. Check that the springs still work properly.
8. Re-assemble in reverse order.



WARNING! If the clutch is not maintained it may malfunction and cause severe damages to the fan unit!

Every 1000 working hours - Fan transmission shaft inspection

Every 1000 working hours or once a year - whichever comes first - the transmission shaft between pump and gearbox is dismantled for cleaning, inspection and lubrication.

1. Remove the protection cover between pump and main tank.
2. Detach the cardan joints from the pump and gearbox shafts
3. Detach the suction and pressure hoses and the 4 bolts holding the pump. Lift the pump away.
4. Pull the transmission shaft out of the tunnel.
5. Separate the male and female part of the shaft
6. Clean the profile tubes (inside and outside) thoroughly with a degreasing fluid (Alt. petrol, white spirit or similar) and wipe them dry.
7. Inspect the cardan joints for wear - replace journal crosses if necessary.
8. Grease the cardan universal journal crosses.
9. Grease the profile tubes and the splined shafts of the pump and gearbox
10. Assemble again in reverse order, tighten bolts and ensure protection covers are in place



WARNING! If the transmission shaft is not cleaned and lubricated as described it will not be able to extend or retract during operation when load is applied. This may overload the bearings on pump and gearbox or cause vibrations in the transmission and fan!

Occasional maintenance

Replacing the 321 valves and diaphragms

Diaphragms

Dismantle the crankcase (4). Now, the diaphragm (5) can be replaced.

Grease the pump if the liquid has leaked to the inside. Make sure that the draining hole is not obstructed. Reassemble the pump again.

Torque settings for the 321 are:

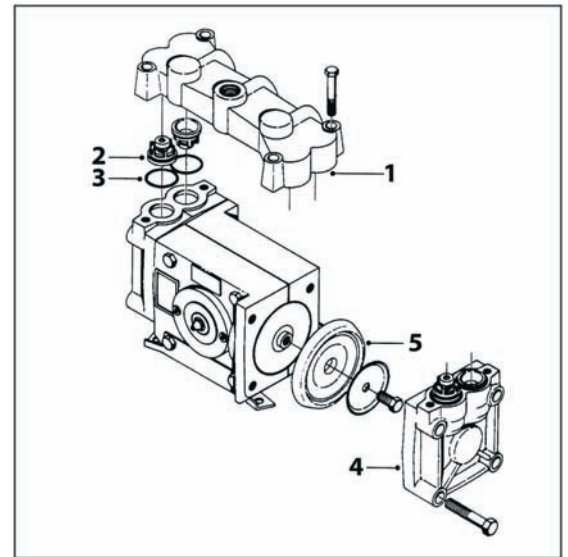
Crankcase: 60 Nm / 44.4 lbft

Crankshaft: 70 Nm / 51.8 lbft

Diaphragm screws: 60 Nm / 44.4 lbft



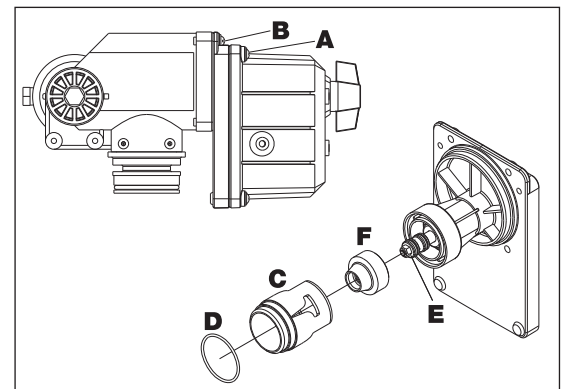
WARNING! Before assembling the covers, turn the shaft with the hand and make sure that the connecting rods are ascending and descending respectively. If not change the position of the connecting rods. The first connecting rod must be assembled towards the right-hand side.



Cone check/renewal for EVC operating unit

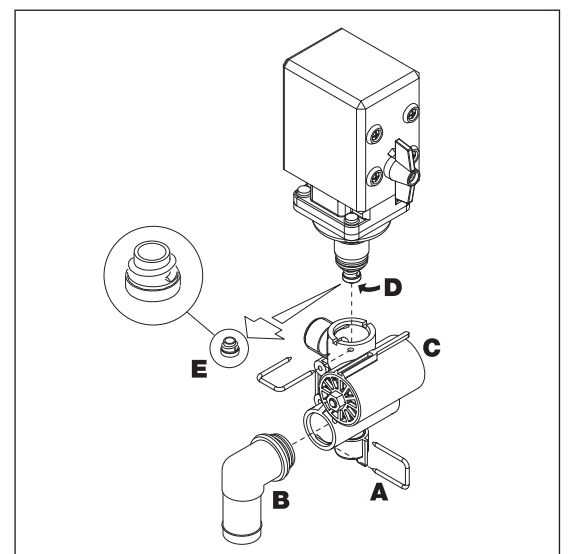
If it becomes difficult to build up sufficient pressure or if pressure fluctuations occur, it may be necessary to renew cone and cylinder.

1. Remove 4 x screws (A) and remove the housing.
2. Remove 4 x screws (B).
3. Replace cylinder (C) and O-ring (D).
4. Loosen the nut (E), remove and replace the cone (F).
5. Reassemble in reverse order.



Cone check/renewal for EVC section valves

Periodically check the section valves for proper sealing. Do this by running the sprayer with clean water and open all section valves. Cautiously remove the clip (A) and pull out the hose (B) for the return line. When the housing is drained, there should be no liquid flow through the return line. If there is any leakage, the valvecone (E) must be changed. Remove the clip (C) and lift the motorhousing off the valve housing. Then unscrew the screw (D) and replace the valve cone (E). Reassemble in reverse order.

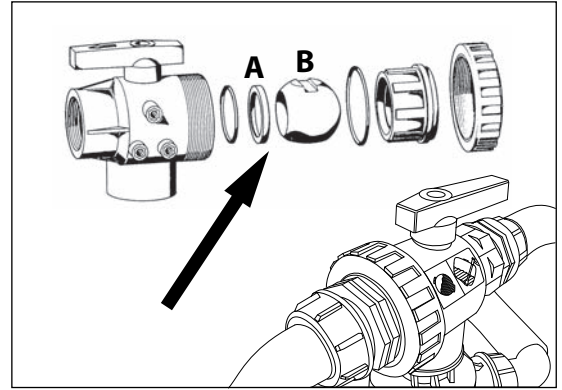


Adjusting the 3-way valve

The 3-way valve can be adjusted if it is too tight or too loose (liquid loss). It is correctly adjusted when the valve handle can be turned using one hand only.

To ease operation clean the mating faces between ball (B) and the seat (A) of the valve.

Grease the valve every time you dismantle it for cleaning. This will extend the service life of ball and seat.

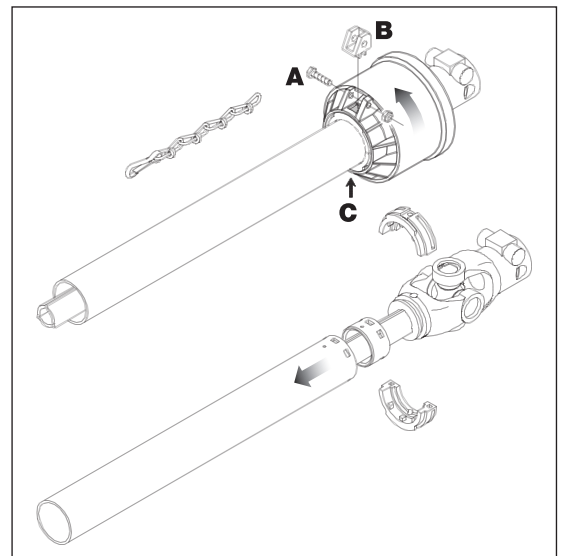


Replacing the driveshaft protector guard

1. Remove the screw (A), cap (B) and grease nipple (C): Twist the cover a quarter of a turn and pull it back.
2. Remove the synthetic bearings and the protection guard.
3. Remove the inner bush from the protection guard.
4. Re-assemble in the reverse order, using new parts if necessary. Remember to assemble the chains again.
5. Grease the bearings.

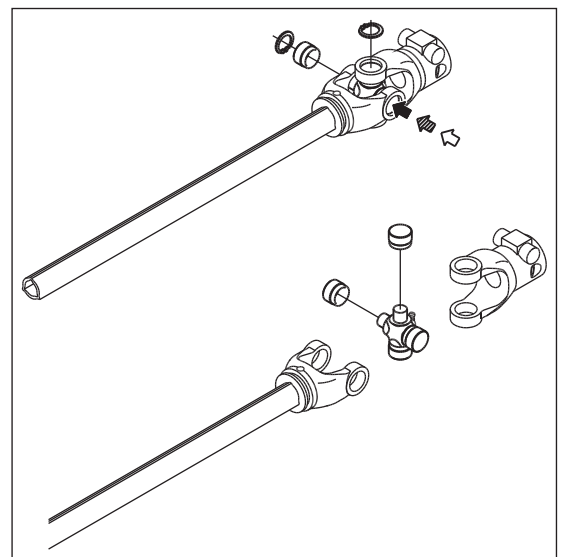


ATTENTION! Only use original HARDI parts to repair the driveshaft.



Replacing the driveshaft crossheads

1. Remove the protection guard as described previously.
2. Remove the Seger rings.
3. Press the cross journals to one side (use a hammer and mandrel if necessary).
4. Remove the cross journal bearings and then remove the cross journal.
5. Remove the bearings from the new cross journal carefully and then install it. Before fitting the bearings again, check that the unit is assembled correctly. Protect the new bearings from dirt and dust.



6 - Maintenance

Replacing the seal on the drain valve

If the drain valve leaks, the seal and the seat can be replaced as follows:

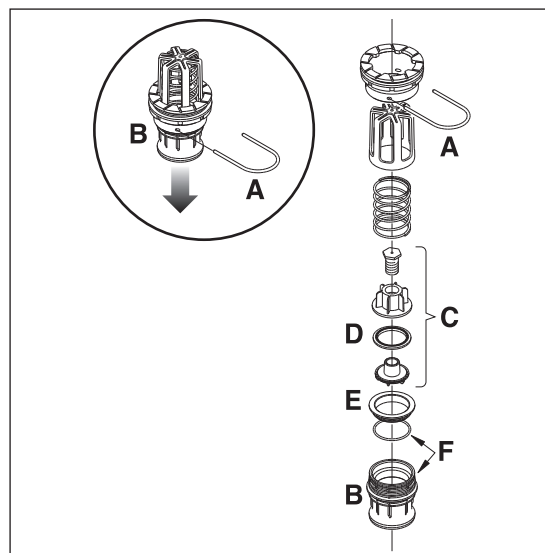
1. Make sure that the tank is empty and clean.
2. The valve must be closed and the lever loose.
3. Remove the U-clip A and pull the connection part B. Now the whole valve can be removed.
4. Check the condition and wear of the cord and the valve C, replace the seal D and reassemble.
5. Grease all o-rings F before assembling.
6. Fit the U-clip A again.



DANGER! Do not enter the tank – the parts can be replaced from outside the tank!



WARNING! Use a protective face mask when disassembling the drain valve!



Storing the mistblower at the end of the season

When the spraying season is over, you should devote some extra time on the machine before storing it. If any chemical residues are left on the mistblower for a long period, it can reduce the service life of the components. To keep the mistblower intact and protect the components, you should perform the tasks as part of an off-season storage programme.

1. Clean the mistblower completely inside and out, as described in 'Cleaning the mistblower'. Make sure that all the valves, hoses and auxiliary equipment have been washed with detergent and rinsed with clean water afterwards, to ensure that no traces of chemical products are left on the mistblower.
2. Replace the o-rings and repair any possible leaks.
3. Empty the mistblower completely and let the pump work for five minutes. Open all the valves to drain as much water as possible from the circuit.
4. Pour approximately 50 litres of anti-freeze mixture in the tank (1/3 anti-freeze and 2/3 water).
5. Start the pump and operate the controls of the 3-way valves, operating unit, etc. so that the anti-freeze is distributed throughout the entire circuit. Open the main ON/OFF valve and the distribution valves so that the anti-freeze is delivered through the nozzles also. The anti-freeze prevents the o-rings, seals, diaphragms, etc. from drying out.
6. Lubricate all the lubrication points according to the lubrication scheme. Disregard the normal lubrication intervals in this case.
7. When the mistblower is dry, remove the rust from any possible scratches or marks in the paint, and touch up the paintwork.
8. Remove the pressure gauge and store it in a vertical position in a frost-free location.
9. Apply a thin layer of anti-corrosion oil (e.g. SHELL ENSIS FLUID, CASTROL RUSTILLO or similar) to all metal parts. Do not apply to hoses or rubber parts.
10. All the electric plugs and sockets must be kept in plastic bags to protect them from damp, dirt and rust.
11. Remove the control box from the tractor (if fitted), and store it in a clean, dry place (in-house).
12. To protect the mistblower against dust, it can be covered with a tarpaulin. Make sure that it is ventilated to prevent condensation.

Preparing the machine for use after storage

After storage, the machine should be prepared for safely starting work at the beginning of the season. To start up the machine correctly, proceed as follows:

1. Remove the tarpaulin protecting the machine if there is one.
2. Fit the pressure gauge again. Replace the old Telfon tape.
3. Connect the equipment to the tractor, including electric wires and hydraulic cables.
4. Check the brake.
5. Empty the tank of any remaining anti-freeze.
6. Rinse out the entire fluid circuit with clean water.
7. Fill the tank with clean water and check all functions.

Operational problems

General information

In almost all breakdowns, the same factors always seem to be present:

1. Small cracks or air leaks in suction side reduce the pump's capacity or stop suction completely.
2. A blocked suction filter causes the pump not to suck properly.
3. Clogged pressure filters cause pressure to rise on the pressure gauge but to fall at the nozzles.
4. Foreign bodies in the valves can cause the valve to not close completely. This reduces the pump's performance.
5. Poorly re-assembled pumps, especially diaphragm housings, causes the pump to suck air and hence, reduces or decreases the pump suction.
6. Hydraulic components that are contaminated with dirt result in rapid wear to the hydraulic system.

Therefore ALWAYS check that:

1. Suction, pressure and nozzle filters are clean.
2. Hoses have no leaks or cracks, especially the suction hoses.
3. Gaskets and o-rings are in good condition.
4. Pressure gauge marks the correct indication. Correct dosage depends on its accuracy.
5. Operating unit is in good working order. Use clean water to check it.
6. Hydraulic components are maintained clean.

7 - Troubleshooting

Fluid circuit

FAULT	PROBABLE CAUSE	POSSIBLE SOLUTION
On activating, the system doesn't spray	Air in the suction line.	Check the suction filter o-ring. Check the suction tube and fittings. Check the assembly of the pump crankcase covers and diaphragms.
	Air in the system.	Prime the pump by filling the hose with water
	Suction or pressure filters blocked.	Clean the filters Check the suction fitting and make sure that it is not too close to the outlet on the tank floor.
Loss of pressure	Incorrect assembly	The safety valve's spring is damaged. The suction fitting is blocked The suction filter is clogged
	Pump valves clogged or worn	Check for obstructions and wear
Pressure jumps	Defective pressure gauge	Check for dirt in the intake
	Filters clogged	Clean the filters. Clean with clean water. If powdered product is being used, check that agitation is on.
	Worn nozzles	Check that the air flow does not exceed 10%.
	Tank suction clogged	Check the suction tube
	Air suction	Reduce revolutions in the PTO
Increase in pressure	Pressure filters blocked	Clean the filters
Foam formed	Air in the circuit	Check the o-rings, gaskets, hoses and suction fittings
	Excessive agitation.	Reduce revolutions in the PTO Check the voltage of the safety valve of the self-cleaning filter Make sure that there is return to the tank Use anti-foaming agent
Leak of pump liquid	Diaphragms damaged	Replace
The operating unit does not work	Fuse blown	Check the limit switches. Oil with lubricant if the limit switch does not make proper contact.
	Incorrect polarity	Control box: Red - pos (+) Black - neg (-). Solenoid valves: Brown - pos (+), Blue - neg. (-).
	The valves do not close correctly.	Check for obstructions in the valves Check the limit switches
	No power	Incorrect polarity. Brown is pos. (+), Blue is neg. (-) Check the electric board Check that the fuse box makes contact with the bracket.

Blower unit

FAULT	PROBABLE CAUSE	POSSIBLE SOLUTION
Excessive noise or vibrations in the blower unit	The fan is incorrectly counterbalanced	Balance the fan again
	The nuts that hold the air kit are loose.	Tighten the nuts.
	The clutch pads are broken or worn.	Change the pads and the clutch springs or replace the clutch for a new one
Vibrations or noises in the gearbox	The gear is not properly engaged.	Move the gear lever to the correct position
	Worn gears	Replace the gears
	Oil level below minimum	Fill to the correct level and check for possible internal damage

7 - Troubleshooting

Electrical problems

Emergency function – Fluid circuit

In the event of power fault, the EVC/2 operating unit can be used manually. First disconnect the wire from the control box. Then manually turn the green throttle valve on each electric motor to open or close the valve.

The problem may result from a blown control box fuse.

AXIAL dimensions and weight

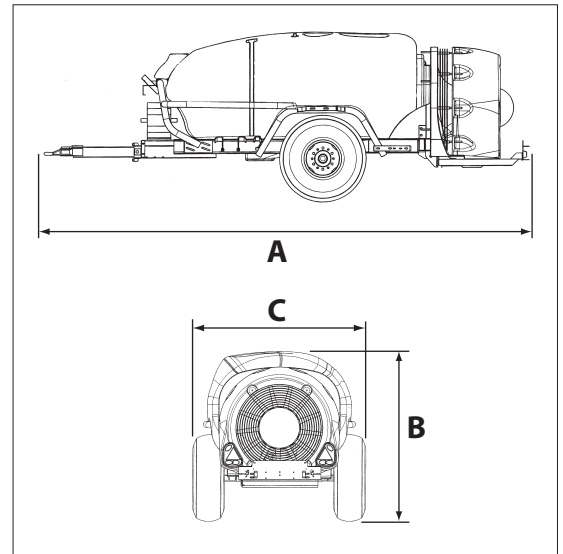
Dimensions

Capacity	Air kit	Measurements
(litres)	(model)	A x B x C (cm)
1000	AG820	3395x1535x1200
1500	AG820 / 920	3595x1590x1350
2000	AG820 / 920	3945x1590x1500
3000	AG820 / 920	3945x1590x1650

Measurement 'A' for sprayer fitted with fork drawbar

- Long ring drawbar +640 mm
- Short ring drawbar +155 mm
- Articulated drawbar +260 mm

* Standard shaft 1200 mm. Optional shaft 1000 mm.



Tare weight

Capacity	Air kit	Weight
(litres)	(model)	(kg)
1000	AG820	450
1500	AG820 / 920	695
2000	AG820 / 920	770
3000	AG820 / 920	795

8 - Technical specifications


Conversion factors (SI to Imperial)

All units used in this instruction book are SI. In some cases, imperial units are used. Use these factors to convert between SI and Imperial units:


	SI unit	Imperial unit	Factor
Weight	kg	lb	x 2.205
Surface area	ha	acres	x 2.471
Length	cm	in	x 0.394
	m	ft	x 3.281
	m	yd	x 1.094
	km	mile	x 0.621
Speed	km/h	mile/h	x 0.621
	km/h	m/s	x 0.277
Volume/Surface area	l/ha	gal/acre	x 0.089
Volume	ml	fl. oz	x 0.0352
Torque	l	Imp. pt.	x 0.568
	l	gal	x 0.22
Pressure	bar	lb./inv (p.s.i.)	x 14.504
Temperature	°C	°F	(°C x 1.8) + 32
Power	kW	hp	x 1.341
Torque power	Nm	lb.ft.	x 0.74

Specifications

Pump model 363/7

HARDI		HARDI INTERNATIONAL A/S TAASTRUP DENMARK	
Type	363/7		r/min,max. 700
No.			
r/min.	l/min.	bar	kW
540	140	0	1.6
540	127	10	3.4
		max.20	

Pump model 321/10

HARDI		HARDI INTERNATIONAL A/S TAASTRUP DENMARK	
Type	321/10		r/min.max. 700
No.			
r/min.	l/min.	bar	kW
540	70	0	0.6
540	62	10	1.2
		max.20	

Filters and nozzles

Filter mesh width

30 mesh: 0.58 mm

50 mesh: 0.30 mm

80 mesh: 0.18 mm

100 mesh: 0.15 mm

Temperature and pressure range

Working temperature range: 2° – 40° C. (36°F – 104°F)

Pressure that activates the safety valve: 20 bar in HLC and 40 bar in HPC

Maximum pressure in the pressure valve: 20 bar in HLC and 40 bar in HPC

Maximum pressure in the suction valve: 7 bar

8 - Technical specifications

Approved configurations

	Configurations													Optional extras																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	Tank				Pump	Blower				Operating unit		Boom		Safety / Environment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

*) HARDI Nozzles

HARDI 1299-06 (white) to 1299-20 (blue) are equal to ALBUZ ATR - Ceramic

**) LECHLER Nozzles

Lechler ID 90 deg. nozzle sizes 01 to 06 Ceramic

*) ALBUZ Nozzles

ATR 06 to ATR 20 Ceramic

Materials and recycling

Disposing of the mistblower

When the mistblower has reached the end of its useful working life, it must be thoroughly cleaned. The tank, hoses and synthetic fittings can be incinerated in an authorised disposal depot. The metal parts can be scrapped. Always comply with existing local regulations.

Materials used:

Tank: MDPE

Hoses: EPDM

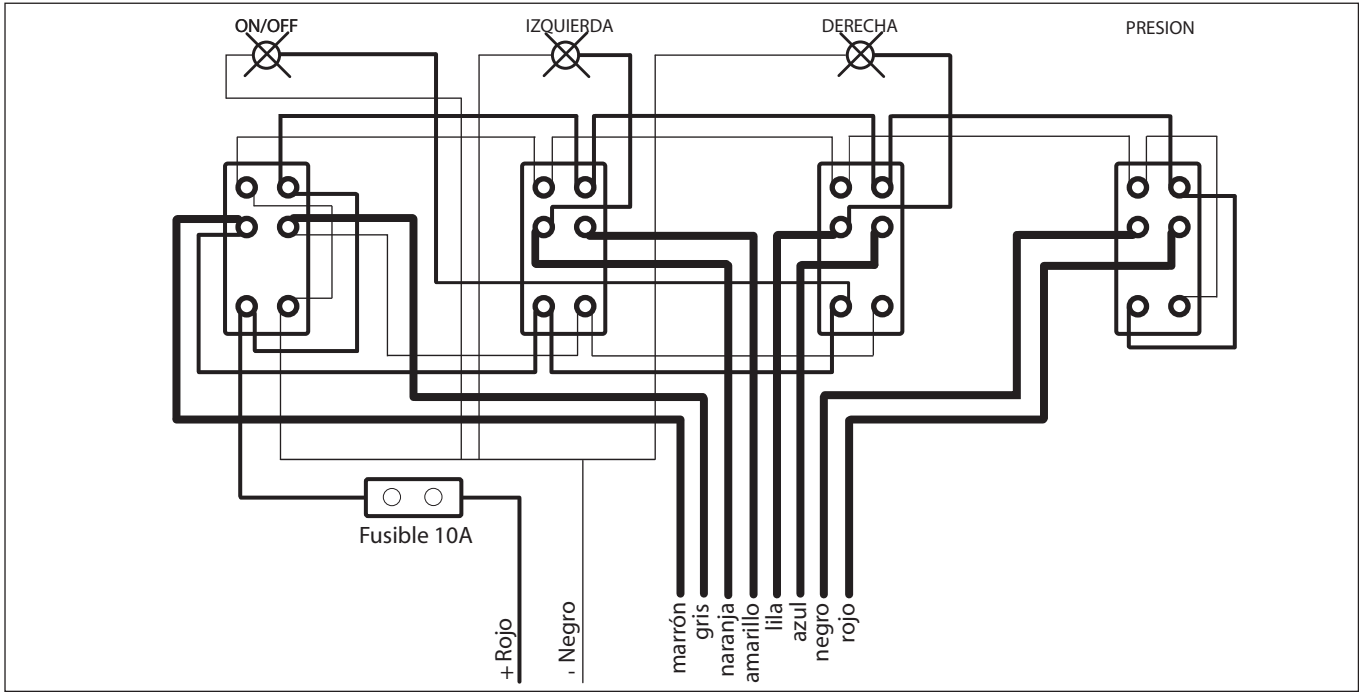
Valves: mainly PA+FG.

Fittings: PA+FG.

8 - Technical specifications

Charts

Connections of the electric control box of the EVC/2 operating unit



Index

A

Air volume, AG820, 18
Air volume, AG920, 18
Air volume, HF540, 21
Air volume, HF540D, 21

B

BK/2 Operating Unit, adjustment, 45
Blinds - single side, 38

C

Chemical container cleaning, 16
Chemical container cleaning lever, 16
Chemical containers, rinsing, 43
Chemicals, filling by TurboFiller, 41
Cleaning, 46
Cleaning outside, 48
Cleaning, tank and liquid system, 47
Clutch inspection, 56
configurations, approved, 70
Constant pressure valves, adjustment, 44
Container Cleaning, 43
Container Cleaning device, 42
Conversion factors (SI to Imperial), 68

D

Diaphragms replacing, 58
Diaphragms, replacing, 57
Diluting, in-field, 47
Dimensions, axial, 67
Disposing, 71
Drain valve, 41
Drain valve, seal replacement, 60
drawbar length, adjustment, 28

E

EVC/2 operating unit, adjustment, 44

F

Fan, adjustment, 37
Filling liquid chemicals (TurboFiller), 41
Filling liquid chemicals by HARDI TurboFiller, 44
Filling location - requirements, 39
Filling powder chemicals (TurboFiller), 42
Filling, clean water tank, 41
Filling, main tank, 39
Filling, rinsing tank, 40
Filling, TurboFiller, 41
Filters and nozzles, 69

G

gear, selection, 37

H

HLC, Circuit (Hardi Liquid Circuit), 12
Hydraulic connections, requirements, 31

Hydropneumatic spray system, 25

I

identification plate, 11
In-field diluting, 47
IRIS system, 26
IRIS system, setup, 34

L

Lubricants, recommended, 49
Lubrication, 49
Lubrication chart, 49

M

Maintenance intervals, 53
MC/2 operating unit, 45

O

Oil change, gearbox, 55
Operational problems, 63

P

Pneumatic spray system, 25
Preparing after storing, 61
Pressure damper, 33
Pressure manifold, 14

R

Recommended lubricants, 49
Regulating the boom, B40, 34
Regulating the booms, 34
Rinsing nozzle, 40
Rinsing, chemical containers, 43
Rinsing, main tank not empty, 48
Rinsing, rinsing tank and nozzles, 47

S

Safety valve, 14
Safety, filling and spraying, 7
Safety, precautions, 7
Safety, service, 8
Safety, symbols, 7
Section valves, adjustment, 45
Serial number, 11
Service intervals, 53
Spart parts, 75
Specifications, pumps, 69
Storing, post season, 61

T

Temperature and pressure range, 69
Transmission shaft inspection, 56
TurboDeflector valve, 16
TurboFiller, 16
TurboFiller rinsing, 43
TurboFiller suction valve, 16
TurboFiller, filling chemicals, 41

U

Unloading the mistblower, 27
Use, intended, 10

V

Valves and symbols, 12

W

Washing location, requirements, 39
Wedges, 24
Weight, 67

Spart parts

For updated information on spare parts, visit www.agroparts.com. Here you can access information on all spare parts when you register for free.



ILEMO HARDI S.A.U.

Poligono Industrial El Segre 712-713 25080 Lleida - SPAIN

