

VACnMIX Operators Manual Ver. 1.01 67021304-101 AU-06/13



VACnMIX™ Operators Manual

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Equipment Identification details.

Please record applicable details below:

OwnersName:

Type of Equipment:

Model:

Date:

Dealer Name:



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INTRODUCTION

Welcome to the expanding global family of Hardi spraying equipment owners and thank you for choosing Hardi.

The reliability, efficiency and long life of the Hardi product you have purchased depends upon your care.

The first step is to take the time to carefully read this manual — it contains essential information on efficient and safe operation of your new equipment.

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Safety Alert Symbols!

When you see this symbol in the Manual or on any chemical handling/spraying equipment, be alert!

This means WARNING! - your safety is involved.

All operators of the equipment dealt with by this publication must read this entire publication prior to operating the equipment. Safety sections must be thoroughly read and understood.

Failure to do so may result in injury, illness or death.



DESCRIPTION - Hardi VACnMIX

Use

The HARDI VACNMIX[™] is used for the mixing of plant protection or liquid fertilizer chemicals into a solution, and transferring the solution to your chemical application equipment. Your Vacuum VACnMIX[™] uses the latest design and technology to provide fast, safe and accurate transfer of liquids, powder or granules.

Hardi VACnMIX™

The VACnMIX is based on a standard Australian designed, tested and proven VACnMIX, which is a multi-purpose, free-standing hopper. It is designed for use in closed system transfer and utilizes the tough and reliable Hardi pump on your sprayer. The rate of transfer is controlled by the operator.

The VACnMIX is supported on a sturdy lift frame and is equipped with two vortex mixing jets, a control manifold and a rotating chemical drum rinse nozzle. The hopper flushing ring is connected to the sight tube to enable decontamination of both together. The unit has a water supply inlet port, and a vacuum suction outlet port — for transfer of either dilute or concentrated liquid chemicals to the spray tank.

The vortex jets provide vigorous operator-controlled agitation which mixes granules into solution, or allows liquid chemical concentrate to be pre-mixed. Any granules that do not dissolve are kept in suspension in the vortex until they disperse.

Featuring a Vacuum and Transfer Valve and an in-line venturi with interchangeable restrictors (based on pump capacity), the unit can transfer liquid from a clean water source or Envirodrum into the hopper, and from the hopper to the main sprayer tank.



IMPORTANT NOTES! Before Use:

Check that hoses are not kinked, connections are secure, seals and O-rings are sound, and that the pump and hopper are securely attached to the steel frame.

Before use with concentrated chemicals, test all functions of the unit using clean water.

Check for leaks that may indicate loose fittings, faulty valves or damaged hoses. **REMEMBER! Exposure to concentrated chemical leaks may lead to injury, long-term illness or death**. Do not use faulty equipment.



THINK SAFE - WORK SAFE at all times!

COMPONENT IDENTIFICATION



Fig 1

- A Control Manifold Block (see detail Page11) B Vacuum Hose C Hopper & Sight Tube Flush Control D Fluid Inlet Hose

- E Fast Fill / Vortex Control Handle
- F Upper Vortex Jet Control G Lower Vortex Jet Control
- H Flush Ring

I Drum Rinse Nozzle - Do Not press unless covered by a container!



Fig 2 Vacuum and Transfer Valve (Black)



Fig3 Pressure Manifold Valve (Green)

COMPONENT IDENTIFICATION



Fig 4

- A Vent
- B Ball Valve
- C Camlock Coupling D Fast Fill inlet
- E Camlock Dust Cap



Fig 6

- A Safety Valve B Hopper Lid with Latch
- C Sight Tube Note: GUIDE ONLY D Lift Handle
- E Paralift
- F Delivery hose to Vacuum and Transfer Valve



Fig 5

Venturi Housing and 2 sizes of Restrictors - choice of restrictor depends on pump capacity.





Safety Relief Valve - prevents collapse of hopper due to excessive vacuum.

TYPICAL HARDI COMMANDER II MOUNTING:





Fig 9

Fig 8

Lift-mounted VACnMIX Pot on 4000L Commander Trailer Sprayer.

- A 50L Heavy Duty PolyEthylene Hopper B Hinged HDPE Lid C Oulet to Main Tank Delivery Hose D Sight Level Tube and Scale E Vacuum / Transfer Valve F Pressure Manifold

TYPICAL HARDI COMMANDER S or COMMANDER V MOUNTING:





Fig 11

Fig 10

Lift-mounted VACnMIX Pot on 5000LCommander S Trailer Sprayer.

- A 50L Hopper B Hinged Lid C Delivery Hose to Main Tank D Vacuum and Transfer Valve E Pressure Manifold Valve



TYPICAL HARDI EXPLORER MOUNTING:

Fig 12







Fig 14

Lift-mounted VACnMIX Pot on 3000L Hardi Explorer Trailer Sprayer.

- A 50L HDPE Hopper B Hinged Lid C Sight Level Tube and Scale

- D Pressure Manifold Valve
- E Vacuum and Transfer Valve



Fig 15



IMPORTANT - BEFORE OPERATION IS STARTED: AGRICULTURAL CHEMICALS CAN BE DANGEROUS! REMEMBER YOUR EYE, FACE AND BODY PROTECTION!

Before operating the VACnMIX, the operator chooses the appropriate method of mixing concentrated chemical product and transferring solution into the sprayer main tank.

PLEASE NOTE: Regardless which of the following procedures is chosen, it is essential to:

• Fill the main sprayer tank with clean water to 25 - 50% of the required spray liquid volume.

(See your sprayer Operators Manual for Filling Instructions).

• Fill the hopper with clean water to the 25 Litre level before adding any concentrated chemical products. (See Following Page for Filling Details).

 Operate each of the Valves briefly to check for leaks, obstructions or incorrect movement of fluid.

Chemical Induction procedures described on the following pages of this Operators Manual cover:

A) INDUCTION OF DRY GRANULES, POWDERS OR FLOWABLES BY ADDING PRODUCT INTO VACnMIX HOPPER

- (See Page 14 for Instructions).

B) INDUCTION OF LIQUID CHEMICAL CONCENTRATES BY ADDING PRODUCT INTO VACNMIX HOPPER

- (See Page 16 for Instructions).

C) INDUCTION OF LIQUID CHEMICAL CONCENTRATES BY SUCTION OF PRODUCT INTO THE VACNMIX HOPPER FROM:

i - A closed container (eg ENVIRODRUM™), using the drum coupling on a suction hose, OR

ii - An open container, using a chemical probe,

- (See Page 18 for Instructions).

To ensure safe and efficient operation of your Hardi Sprayer and Chemical Induction Equipment, check the following:

D The filling area is clear of obstructions to prevent accidents

D All required equipment, measuring containers and chemical supplies are assembled

 $D\ \textsc{Operating}\ instructions and safety guidelines in this Manual have been thoroughly read and understood$

D Chemical Labels, including details of use, compatibility of chemical mixtures, decontamination and first aid procedures have been thoroughly read and understood.

WARNING! Only compatible and complementary chemicals should be mixed.

Before adding to the mixture, ensure that the total combination of chemicals in the sprayer will be compatible, and will produce the desired outcome. When combined, incompatible chemicals may cause a potentially dangerous reaction, or result in unwanted effects on the crop to be sprayed.



Fig 17



Fig 18



Fig 19



PREPARATION:

Filling Hopper with water.

- 1 For a diagram of the Vacuum VACnMIX plumbing, see Fig 15, Page 11.
- 2 Before using the VACnMIX to add chemical solution/s to your sprayer, fill the main sprayer tank with water to 25-50% of required spray liquid volume. See your sprayer Operators Manual.
- 3 Set Vacuum and Transfer Valve to Off position (Fig 18).
- 4 Turn the Pressure Manifold Valve on your sprayer toward the Chem Filler icon as shown in Fig 19. This will allow you to activate the VACnMIX system.
- 5 Engage the pump. Set at 540 or 1000 rpm, whichever is relevant to your pump.
- 6 Turn Fast Fill handle On (Fig 20), and Vac/Transfer valve to FILL, to fill G Pot.
- 7 Watch the level of water. Fill to the 25 Litre (6½ US Gallon) level, which will be just above the upper jet, see Fig 21. (NOTE: Sight gauge is a guide only to fluid volume in hopper).
- 8 When sufficient water is in the hopper turn Fast Fill handle off.
- 9 Check operation by briefly operating all valves before introducing any chemical product. Check for leaks that may indicate loose fittings, faulty valves or damaged hoses. Do not use faulty equipment.

HARDI

LITRES / US Gail -Guide Chry-50 13 45 12 45 12 40 11

35

30 -8

15



OPERATION A: Induction of Dry Granules, Powders or Flowables by Adding Product to the VACnMIX Hopper





Fig 23





WARNING! Only compatible and complementary chemicals should be mixed. Before adding to the mixture, ensure that the total combination of chemicals in the sprayer will be compatible, and will produce the desired outcome. When combined, incompatible chemicals may cause a potentiallydangerous reaction, or resultin unwanted effects on the crop to be sprayed.

NOTE! If using the sight gauge as a guide to measure flowable chemicals, remember to take into account any water in the hopper before starting. While measuring, ensure the unit is level, vortex jets off, and no valves are open to allow water to enter or leave the hopper.

REMEMBER! The sight tube level can be used as a measuring GUIDE ONLY due to slight inconsistencies in hopper rotomoulded shape. Pre-measuring is recommended.

- 1 To start the swirling action in the hopper, turn on the Upper and Lower Jets (Fig 22) and turn off the Fast fill handle.
- 2 The fast swirling action creates a vortex, or whirlpool effect, see Fig 23.
- 3 To reduce the vigour of the vortex, which may be necessary when mixing foamy or volatile chemicals, adjust the Vortex Control handle (Fig 24), between the Off and On positions. This diverts some of the flow away from the lower jet to the fill inlet, resulting in a gentler mixing action.

CAUTION! At this stage no fluid is being removed from the hopper - Do not overfill.

- 4 Further control of the vortex action can be achieved by partially or completely turning off one of the jets (Fig 25).
- 5 Pour measured granules, powder or flowable concentrate into the water on the outside of the vortex, not into the centre, to avoid blocking the suction filter (Fig 26). When adding the concentrate the vortex will lose some vigour. Up to 30kg of chemical granules can be added in one batch.
- NOTE: Undissolved dry product granules and large particles are held by centrifugal force to the wall of the hopper, and the action of the vortex jets will break down and dissolve the product. This action should continue until all product has been dissolved.
- 6 When all granules are fully dissolved, close both Vortex Jet Valves (Fig 27).

OPERATION A: Induction of Dry Granules, Powders or Flowables by Adding Product to the VACnMIX Hopper



Fig 26





Fig 28



Fig29



To transfer mixture to the sprayer tank:

7 With lid of VACnMIX closed, turn the Vacuum and Transfer Valve to Empty position (Fig 28), to allow the venturi to create a vacuum inside the hopper. This then allows mixture to flow to main tank.

NOTE: The fluid level should now be in equilibrium, ie. flow in balances flow out.

IMPORTANT! Always ensure enough pressure is maintained to drive the vortex in the VACnMIX. A drop in level may cause air to enter the suction line, and too high a level will cause a slowing of the vortex. This may result in incomplete mixing of chemicals, retention of concentrates in VACnMIX and reduced accuracy of chemical application rates.

- 8 With the lid still closed, flush the Hopper and Sight Tube between batches by turning on the Flush Ring handle (Fig 29). Note: At this time the flush function is using dilute chemical solution from the main sprayer tank. The entire system requires thorough cleaning, de-contamination and rinsing at the end of the spray job. (Cleaning P 20).
- 9 After all chemicals have been added to the sprayer tank, and the Hopper is empty, set the suction ball valve on the sprayer to Flush Tank (Fig 30) in order to flush the VACnMIX system with clean water.
- 10 To flush the VACnMIX system, you will need to refill with clean water, operate all valves as in mixing procedure, empty and repeat until the system is clear of residue.

REMEMBER! All components of the VACnMIX must be thoroughly cleaned and decontaminated, using recommended appropriate cleaning and / or neutralizing agents, before storage or using any different chemical concentrates.

11 After chemical induction and VACnMIX flushing is completed, continue filling the sprayer tank.

NOTE! Chemical solution in the sprayer tank may need to be constantly agitated, to keep particles in suspension, by having sprayer tank agitators, where fitted, turned on. Particles which have been allowed to settle to the bottom of the tank may cause blockages in the plumbing system.

REMINDER: Avoid continuous operation of the Vacuum VACnMIX after the hopper has been emptied as this can cause excessive foaming in the main tank.

Fig 30

OPERATION B:

Induction of Liquids by Adding Product to the VACnMIX Hopper





Fig 32





Fig 34

WARNING! Only compatible and complementary chemicals should be mixed. Before adding to the mixture, ensure that the total combination of chemicals in the sprayer will be compatible, and will produce the desired outcome. When combined, incompatible chemicals may cause a potentially dangerous reaction, or result in unwanted effects on the crop to be sprayed.

NOTE! If using the sight gauge as a guide to measure liquid chemicals, remember to take into account any water in the hopper before starting. While measuring, ensure the unit is level, vortex jets off, and no valves are open to allow water to enter or leave the hopper.

REMEMBER! The sight tube level can be used as a measuring GUIDE ONLY due to slight inconsistencies in hopper roto-moulded shape. Pre-measuring is recommended.

- 1 To start the swirling action in the hopper, turn on the Upper and Lower Jets (Fig 31) and turn off the Fast fill handle.
- 2 The fast swirling action creates a vortex, or whirlpool effect, see Fig 32.
- 3 To reduce the vigour of the vortex, which may be necessary when mixing foamy or volatile chemicals, adjust the Vortex Control handle (Fig 33), between the Off and On positions. This diverts some of the flow away from the lower jet to the fill inlet, resulting in a gentler mixing action.

CAUTION! At this stage no fluid is being removed from the hopper - Do not overfill.

- Further control of the vortex action can be achieved by partially or completely turning off one of the jets (Fig 34).
 Pour pre-measured liquid concentrate into
- 5 Pour pre-measured liquid concentrate into the water on the outside of the vortex, not into the centre (Fig 35). When adding the concentrate the vortex will lose some vigour.
- NOTE: Large unmixed globules are held by centrifical force to the wall of the hopper, and the action of the vortex jets will break down the product. This action should continue until all product is fully integrated.

NOTE! Always ensure enough pressure is maintained to drive the vortex. A drop in level may cause air to enter the suction line, and too high a level will cause a slowing of the vortex, resulting in incomplete mixing of chemicals, retention of concentrates in VACnMIX and reduced accuracy of application rates.

6 When all concentrate is fully mixed, close both Vortex Jet Valves (Fig 36).

OPERATION B:

Induction of Liquids by Adding Product to the VACnMIX Hopper (cont)



Fig 35







Fig 38



Fig 39

To transfer mixture to the sprayer tank:

7 With lid of VACnMIX closed, turn the Vacuum and Transfer Valve to Empty position (Fig 37), to allow the venturi to create a vacuum inside the hopper. This then allows mixture to flow to main tank.

NOTE: The VACnMIX fluid level should now be in equilibrium, ie. liquid going in balances liquid going out.

- 8 With the lid still closed, flush the Hopper and Sight Tube between batches by turning on the Flush Ring handle (Fig 38). Note that at this time the flush function is using dilute chemical solution from the main sprayer tank.
- 9 Empty containers can be flushed by placing over the drum rinse nozzle and pushing down. IMPORTANT! The rinsing device uses spray liquid to rinse containers of concentrated chemicals. Always rinse containers again with clean water.
- MARNING! Do not press on the drum nozzle unless it is covered with a container, to avoid spray hitting you.
- 10 After all chemicals have been added to the sprayer tank, and the VACnMIX Hopper is empty, set the suction ball valve on the sprayer to Flush Tank (Fig 39) in order to flush the VACnMIX system with clean water.
- 11 Refill the hopper with clean water, operate all valves as in mixing procedure, empty and repeat until the system is clear of residue.
- REMEMBER! All components of the VACnMIX must be thoroughly cleaned and decontaminated, using recommended appropriate cleaning and / or neutralizing agents, before storage or using any different chemical concentrates. (See Cleaning P 20).
- 12 After chemical induction and flushing is completed, continue filling the sprayer tank.

NOTE! Chemical solution in the sprayer tank may need to be constantly agitated to keep particles in suspension. Particles which have been allowed to settle to the bottom of the tank may cause blockages in the plumbing system. You can keep the solution circulating by having sprayer tank agitators, where fitted, turned on.

REMINDER: Avoid continuous operation of the Vacuum VACnMIX after the hopper has been emptied as this can cause excessive foaming in the main tank.

OPERATIONC: Using Vacuum Feature to Add Liquid Chemicals from Envirodrums and other Containers:



Fig 40



Fig 41





WARNING! Only compatible and complementary chemicals should be mixed. Before adding to the mixture, ensure that the total combination of chemicals in the sprayer will be compatible, and will produce the desired outcome. When combined, incompatible chemicals may cause a potentially dangerous reaction, or result in unwanted effects on the crop to be sprayed.

Before adding any chemicals fill hopper with water to test functions as described on Page 13.

- Connect Chem Probe camlock to Ball Valve on VACnMIX Hopper, OR Connect suction hose to the camlock fittings on the ball valve on the hopper (Fig 40) and the Drum coupling (Fig 41).
- With lid of VACnMIX closed, turn the Vacuum and Transfer Valve to FILL position shown at A Fig 42, to activate the venturi, thus creating a vacuum inside the hopper.
- 3 The vacuum is controlled by the ball valve and vent (Fig 43). In position A the ball valve is open to the suction line, and liquid chemical will be drawn from the drum into the hopper.
- 4 To stop the flow of liquid chemical from the drum, move the ball valve to position B (Fig 43) - this allows air from the atmosphere to be introduced to the hopper through the vent, and closes off the suction line.

NOTE! If using the sight gauge as a guide to measure liquid chemicals, remember to take into account any fluid in the hopper before starting. While measuring, ensure the unit is level, vortex jets off, and no valves are open to allow water to enter or leave the hopper.

REMEMBER! The sight tube level can be used as a measuring GUIDE ONLY due to slight inconsistencies in hopper roto-moulded shape.

- 5 To transfer measured volume of chemical concentrate mixture to the sprayer tank, turn the Vacuum and Transfer valve to Empty (Fig 44).
- 6 Flush Hopper and Sight Tube between different chemicals (Fig 45).

Note that flush ring uses dilute chemical solution. The entire system requires thorough cleaning and decontamination at the end of the spray job. See Cleaning, Page 20.

Fig 43

OPERATIONC: Using Vacuum Feature to Add Liquid Chemicals from Envirodrums and other Containers (cont):









Fig 47



- 7 After all chemicals have been added to the sprayer tank, and the VACnMIX Hopper is empty, set the suction ball valve on your sprayer at Flush Tank (Fig 46) in order to flush the VACnMIX system with clean water.
- 8 Disconnect the suction hose from the drum and, with the correct Flush Valve attachment (Fig 47), flush well with clean water by repeating the vacuum suction procedure.
- **9** The suction hose is then disconnected from the coupling on the ball valve, and dust cap replaced on coupling.
- 10 Empty containers can be flushed using the drum rinse nozzle (Fig 48). Place the container over the nozzle and press down. This activates the rinse action in which strong streams of dilute solution are directed around the inside of the container from the spinning nozzle.
- WARNING! To avoid spray hitting you do not press on the multi-hole drum rinse nozzle unless it is covered by a container.
- IMPORTANT! The drum rinsing device uses spray liquid to flush out concentrated chemicals. Always rinse the containers again several times with clean water until they are clean, before disposal.
- **10** Refill the hopper with clean water, operate all valves as in mixing and transfer procedures, empty and repeat until the system is clear of residue.
- REMEMBER! All components of the VACnMIX must be thoroughly cleaned and decontaminated, using recommended appropriate cleaning and / or neutralizing agents, before storage or using any different chemical concentrates. (See Cleaning P 20).
- **11** After chemical induction and VACnMIX flushing is completed, continue filling the sprayer tank.

NOTE! Chemical solution in the sprayer tank may need to be constantly agitated to keep particles in suspension. Particles which have been allowed to settle to the bottom of the tank may cause blockages in the plumbing system. You can keep the solution circulating by having sprayer tank agitators, where fitted, turned on.

Fig 48



MAINTENANCE

In order to derive full benefit from your VACnMIX for many years, the following maintenance program should be followed.

IMPORTANT! If any maintenance or repair task is unclear or requires facilities which are not available, please contact your Hardi dealer's workshop for advice and service.

To effectively maintain chemical handling equipment you must:

- 1 Clean the equipment as part of the general sprayer decontamination procedure, after spraying is completed and before performing any maintenance See Cleaning.
- 2 Perform Adjustments as needed following a daily inspection
- 3 Immediately fit Replacement parts for parts that are worn or broken contact your Hardi dealer for assistance.

Regular Maintenance

Hoses and fittings Leaks are usually caused by:

- Missing, damaged, dry, incorrectly seated or deformed o-rings or gaskets
- Loose hose clamps
- Blockages caused by foreign bodies
- Kinked, damaged or perished hoses.

Check condition of components, replace if necessary, clean and lubricate o-rings with non-mineral lubricant.

Pump

Thorough cleaning and regular maintenance of the Hardi Pump will extend its life and promote trouble-free operation.

Please carefully read the instructions provided with the sprayer, and retain the list of Australian and worldwide Authorized

Hardi Service Centres for future reference.

If you do not have the sprayer documents, you can contact Hardi through their website at: www.Hardi.com.au

or Phone (in Australia) 08 8359 5400 for the location of your local Authorised Service Centre.

Your HARDI dealer will generally be able to provide replacement seals for genuine Hardi pumps or other pumps sold as standard with Hardi equipment.

CLEANING

IMPORTANT! Always refer to instructions on printed labels for individual chemicals for recommended methods of de-activation and disposal of unused chemical solution.

The entire sprayer, chemical handling equipment and the boom should be cleaned together (Refer to the *Cleaning* section in your HARDI sprayer's operator's manual).

Please read below for an overview of cleaning:

- Use appropriate protective clothing. Select detergent suitable for cleaning and suitable deactivating agents if necessary.
- 2 Clean and rinse the VACnMIX externally. Use detergent if necessary.
- **3** Clean the pressure relief valve and all attached hoses of any residue.
- 4 With the pump running, flush the inside of the hopper (remember the tank roof). Flush and operate all components and any equipment that has been in contact with the chemical.
- 5 Empty the VACnMIX. Stop the pump and fill at least 20% of the hopper with clean water.
- 6 Add appropriate detergent and/or deactivating agent, e.g. Washing Soda, Bleach or Ammonia.

NOTE! If a cleaning procedure is printed on the chemical label, follow it carefully.

- 7 Start pump. Operate all controls, enabling liquid to come in contact with all components. Some detergents and deactivating agents work best if left in contact for a short period. Check labels. Note: some chemicals require repeated treatment.
- 8 Drain hopper and switch off pump when it is empty. Flush the inside of hopper, and then once again drain until empty.
- **9** If the chemicals used have a tendency to block hoses and fittings, remove and clean them now.
- 10 Re-fit all the components and store the sprayer. If from previous experiences, it is noted that the solvents in the chemicals are particularly aggressive, store the VACnMIX with the tank lid open.



STORAGE

When the spraying season is over, you should devote some extra time to the VACnMIX before it is stored.

If chemical residues are left in the equipment for long periods, it can reduce the life of the individual components.

Preparation before off season storage

To preserve the VACnMIX and accessories and protect the components, carry out the following off season storage program.

- Clean the VACnMIX completely inside and outside. Make sure that all valves, hoses and auxiliary equipment have been cleaned with an appropriate detergent and flushed with clean water, so no chemical residues are left.
- 2 Lubricate all lubricating points.
- 3 When metal parts are dry remove rust from possible scratches or damages in the powdercoat and touch up with paint.
- 4 Apply a thin layer of anti-corrosion oil (e.g. SHELL ENSIS fluid, CASTROL RUSTILLO or similar) on all metal parts, hoses and tyres.
- 5 Any electric plugs, switches or electronic components of your VACnMIX or other spraying equipment are to be covered with a dry plastic bag to protect them against damp, dirt and corrosion.

Using the VACnMIX after storage

After a storage period the sprayer and associated chemical handling equipment should be prepared for the next season the following way:

Fill with clean water, rinse the entire liquid circuit of the VACnMIX and check all functions.



TROUBLESHOOTING

In cases where breakdowns have occurred, the same factors always seem responsible.

Therefore always check sprayer and VACnMIX components are maintained, clean and free from leaks:

- Minor leaks on the suction side of the pump will reduce the pump capacity or stop the suction completely.
- A clogged suction filter will hinder or prevent suction so that the pump does not operate satisfactorily.
- Foreign bodies stuck in the pump valves results in these valves not closing tightly against the valve seat. This reduces pump efficiency.
- Poorly reassembled pumps, especially diaphragm covers, will allow the pump to suck air, resulting in reduced or no capacity.
- Slow flow rate can result when using very thick (viscous) chemicals in cold conditions even when pump is working normally.

Alwayscheck:

- 1 Suction and pressure hoses are clean and clear of obstructions, and connections are sound.
- 2 Hoses for leaks, crimps and cracks, particularly the suction hoses.
- 3 Gaskets and O-rings are present and in good condition.
- 4 Pressure gauge is working (Correct spray dosage depends on it).
- 5 Suction hose is free of leaks and extends into liquid. Introduction of air into the suction hose will reduce pump efficiency.
- 6 Safety vent is free of chemical residue or dirt and is operating correctly. Excessive vacuum may cause drum or hopper collapse if not vented.



When Chemicals have all been added:

WARNING! To prevent severe damage to equipment and crops, before moving sprayer ensure VACnMIX is empty, the lid closed and fastened, and the hopper is secured in Transport position.

CAUTION! Do not attempt to lift the VACnMIX into Transport position unless the hopper is empty.





Materials and recycling

Hoses	PVC
Fittings	PB / Polypropylene
Hopper and lid	I HDPE
Frame	Powder-coated Steel

When the equipment has completed its working life, it must be thoroughly cleaned. The tank, hose and synthetic fittings can be incinerated at an authorized disposal plant. The metallic parts can be scrapped. Always follow local legislation regarding disposal.



To help you identify many of the common parts of the VACnMIX chemical induction and transfer equipment, please refer to the front pages of this manual - the *Spare Parts* manual at your Hardi dealer will shortly have a more comprehensive listing with Hardi part numbers.

If a part is not covered in this section, or is difficult to determine, you will need to contact your Hardi dealer.

NOTES

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