

**THE  
HANDLER**

# HANDLER I HANDLER II HANDLER III OPERATOR'S MANUAL





# Operator's Manual

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## Handler System Specifications

Specification	Handler I	Handler II	Handler III
Tank	UV8 stabilized polyethylene		
Capacity	15US gal / 12.5Imp gal / 59L	42US gal / 35Imp gal / 160L	70US gal / 58Imp gal / 275L
Frame	Steel – powder coated		
Frame Hardware	Grade 5, plated, UNC, Nyloc nuts		
Fittings	Fibreglass filled polypropylene		
Gaskets	EPDM		
Hose (1")	EPDM w/ encased double nylon braid		
Hose (1½", 2", 3")	Enforcer Solution, EPDM core with nylon braid, polypropylene outer coil		
Clamps	Stainless Steel		
Lid	Polypropylene, 15" threaded	Polypropylene, 16" hinged	
Venturi	1½, flanged, polypropylene	2", flanged, dual inlet ports, polypropylene	
Venturi rate @50psi	131L/min	186L/min (1 port operation) 279L/min (2 port operation)	
Height	35"	41"	44"
Depth (front/back)	26"	36" (2"plbg) / 38" (3"plbg)	41" (2"plbg) / 43" (3"plbg)
Length (left/right)	26"	33" (2"plbg) / 38" (3"plbg)	38" (2"plbg) / 38" (3"plbg)
Length (with pump)	n/a	54"	58"

## Handler I, II, III - Product Codes & Features

Product Code	Included Feature							
	Bypass size		Venturi		Recirculation Kit	Pump		Rotacraft tank rinse
	2"	3"	Single	Dual		2"/5.5hp	3"/6.5hp	
85-H12	•		•					
85-H22	•			•				
85-H22RK	•			•	•			
85-H22P55	•			•	•	•		
85-H23		•		•				
85-H23RK		•		•	•			
85-H23P65		•		•	•		•	
85-H32	•			•				•
85-H32RK	•			•	•			•
85-H32P55	•			•	•	•		•
85-H33		•		•				•
85-H33RK		•		•	•			•
85-H33P65		•		•	•		•	•



## Sign Off Form

In accordance with safety standards specified by the American Society for Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA), Norwesco recommends anyone operating the Handler read and clearly understand all safety, operating, and maintenance information in this manual.

Do not allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before season start up.

Make these periodic reviews of safety and operation a standard practice for all equipment. An untrained operator is unqualified to operate this equipment.

A sign off form is provided for your record keeping to show that all personnel who will be working with the equipment have read and understood the information in the Operator's Manual and have been instructed in the operation of the equipment

Date	Employee Name	Employee Signature

## Introduction

### *Congratulations on your choice of The Handler!*

Safe, efficient, and trouble-free operation of your Handler requires that you and anyone else who will be operating or maintaining the system read and understand the safety, operation, maintenance, and troubleshooting information found in this Operator's Manual.

Keep this manual in a convenient and accessible place for frequent reference and to pass on to new operators.

## Operator Orientation



The directions left, right, front, and rear as mentioned throughout this manual are seen from the "operator's position". This position is facing the front of the unit with the Handler logo clearly visible on the tank as shown above.

### The Safety Symbol – BE ALERT!



## Safety

Why is safety important to you?

The Safety Alert symbol means Attention! Become Alert! Your safety is involved!

The Safety Alert symbol identifies important safety messages on the Handler. When you see this symbol, be alert to the possibility of personal injury. Follow the instructions in the safety message.

### 3 Big Reasons

- Accidents cost.
- Accidents disable and kill.
- Accidents can be avoided.

### Signal Words



## DANGER

**AN IMMEDIATE AND SPECIFIC HAZARD WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH IF THE PROPER PRECAUTIONS ARE NOT TAKEN**



## WARNING

**A SPECIFIC HAZARD ON UNSAFE PRACTICE WHICH COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH IF PROPER PRECAUTIONS ARE NOT TAKEN**



## CAUTION

**UNSAFE PRACTICES WHICH COULD RESULT IN PERSONAL INJURY IF PROPER PRACTICES ARE NOT TAKEN, OR AS A REMINDER OF GOOD SAFETY PRACTICES**

## Safety

Note the use of the signal words Danger, Warning, and Caution with the safety messages. The appropriate word for each message has been selected using the following guidelines:

You are responsible for the safe operation and maintenance of your Handler. Ensure that you and anyone else who is going to operate, maintain, or work around the Handler be familiar with the operating and maintenance procedures and related safety information contained in this manual. This manual will take you step by step through your working day and alert you to all good safety practices while operating the Handler.

Remember you are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that everyone operating this machine is familiar with the procedures recommended and follows safety precautions. Remember, most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

Handler owners must give operating instructions to operators before allowing them to operate the Handler.

The most important safety device on this equipment is a safe operator. It is the operator's responsibility to read and understand all operating instructions in the manual and to follow them.

A person who has not read an understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and people around him to possible serious injury or death.

Do not modify your Handler in any way. Unauthorized modifications may impair the function and/or safety and could affect the life of the equipment.

**Think Safety! Work Safely!**

## General Safety

- Read and understand the Operator's Manual and all safety signs before operating, maintaining, or adjusting the Handler.
- Only trained competent persons are qualified to use the Handler.
- Have a first aid kit handy and know how to use it.
- Wear appropriate protective gear. This includes but is not limited to:
  - Protective glasses or goggles
  - Rubber or neoprene gloves
  - Wet weather gear
  - Respirator or filter mask
  - Appropriate footwear
- Before starting, read chemical manufacturer's warnings, instructions, and procedures and then follow them exactly.
- Post the Poison Control Emergency telephone number for your area on your sprayer before using agricultural products. Then appropriate number can be found in the inside of your telephone book. Have a container label on hand when seeking medical attention.
- Review all safety related instructions with all personnel, including yourself, annually.
- Do not put hands into the Handler when adding products
- Keep all shields and guards in place at all times.
- Clear the area of all bystanders, especially children, before starting equipment

### The Safety Symbol



**BE ALERT!**

## Safety Decals

- Keep safety decals and signs clean and legible at all times.
- Replace safety decals that are missing or have become illegible.
- Replaced parts must have current safety decals.
- Safety decals or signs are available from your dealer's parts department or from Polywest.

### Installing Replacement Safety Decals

When installing decals surfaces be sure to follow these instructions:

- Be sure surface is clean and dry
- Decide on the exact position before you remove the backing paper
- Remove the smallest portion of the split backing paper
- Align the decal over specified area and carefully press the small exposed part of the back and press into place
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.

### Handler Safety Decal Information

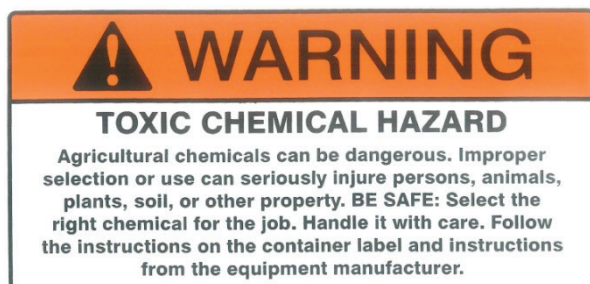
The types of decals on the Handler are shown in the illustrations following. Good safety requires that you familiarize yourself with the various safety decals, the type of warning and the area or particular function related to that decal.



Replacement decal # 64813



Replacement decal # 64837



Replacement decal # 64838



Replacement decal # 64815

## Operation

### To the new operator or owner

It is the responsibility of the owner or operator to read and understand this manual, the sprayer manual, and the chemical container label before starting. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders, coworkers, and the environment.

Many features incorporated into the Handler are the result of suggestions made by customers like you. Read the manual carefully to learn how to operate the machine safely, and how to set it to provide maximum efficiency. By following the operating instructions in conjunction with a good maintenance program, your Handler will provide many years of trouble-free service.

## Operating Safety



### WARNING

- **Read and understand the Operator's Manual and all safety signs before operating, maintaining, or adjusting the Handler**
- **Read chemical manufacturer's warnings and instructions before starting and follow them.**
- **Do not put hands into the Handler when adding product**
- **Wear safety goggles, neoprene gloves, and protective clothing when using the Handler.**
- **Keep all shields and guards in place.**
- **Clear the area of all bystanders, especially children before starting operation.**
- **Review safety instructions with all operators including yourself annually.**

## How the System Works

### Liquid product in containers

A knife consisting of a sharp point and four blades is located inside the Handler tank to puncture and split open the bottom of a container. As the bottom of the container opens, fresh water is allowed to flow in for rinsing. Fresh water enters the bottom of the container from a line through the side of the Handler tank. Valves in the plumbing control the removal of the contents of the tank and allow fresh water to enter for rinsing. Mixing and removal of chemical from the Handler unit is accomplished using a venturi valve system.

### Liquid Bulk Product

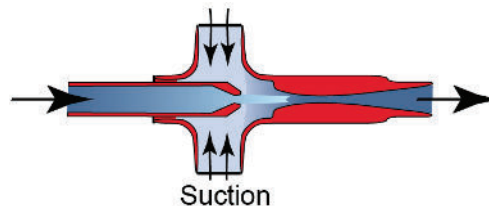
Product from bulk containers can be pumped directly into the Handler tank. Norwesco recommends a meter be used for accurate bulk product measurement. Handler II and III models also have a direct bulk product connection that utilizes the venturi to draw product from bulk containers into the plumbing and directly to the sprayer. There are several Handler meter kits that can be incorporated into these models.

### Dry Product

Each Handler tank comes with an agitation nozzle. When combined with a recirculation kit or an incorporated transfer pump, users can easily mix dry product into solutions.

### The venturi

As water is pumped through the venturi suction is created which can be used to draw out the contents of the tank or product directly from bulk containers. With the venturi system only one pump is required to operate the system. The pump must always be placed before the venturi and the Handler, i.e. pump discharge is pushed through the system and not pulled.





## Handler Break In

After the Handler has been installed, a complete functional check should be done to verify that the plumbing has been properly connected and there are no leaks. Before adding product to the system, run the system as if adding products during operation and use only water. Open and close each valve to simulate each function of the Handler.

**NOTE:** Place a used, clean container in the Handler to direct the stream of water back into the tank when testing the container rinse line and valve. On Handler III models the lid should also be closed when testing the Rotacraft tank rinse line and valves.



## Pre-operation Checklist

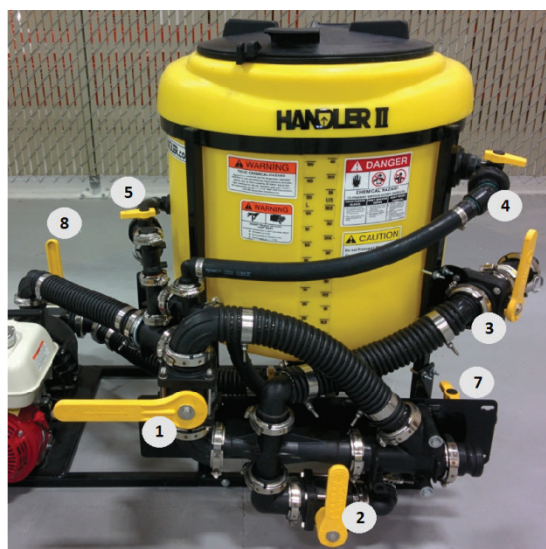
A pre-operational checklist is provided for the operator. It is important for both personal safety and maintaining the good mechanical condition of the Handler that this checklist be followed.

- Check that personal protective gear is in good condition
- Review warnings and instructions on the chemical container label
- Check plumbing for leaks. If any are found be sure to repair leaks before operating the Handler.
- Perform a pre-operational check on your sprayer.

## Valve Descriptions

In the operating instructions, valves are referred to their purpose in the system. Using the images here, find of the model of Handler you have and familiarize yourself with the valve names and their location.

- 1) Main Valve
- 2) Venturi Tank Valve
- 3) Venturi Bulk Valve
- 4) Container Rinse Valve
- 5) Agitation Valve
- 6) Rotacraft Valve
- 7) Wash Down Valve
- 8) Pump Suction Valve



## Emptying Liquid Containers

- 1) Close all valves and open the lid
- 2) With all valves closed, start the primed nurse pump to draw fresh water from your supply.
- 3) Move the Main Valve handle to the venturi position to allow water to flow through the venturi. (For Handler I see Fig. H1-1 and for Handler II & III see Fig. H2-1)

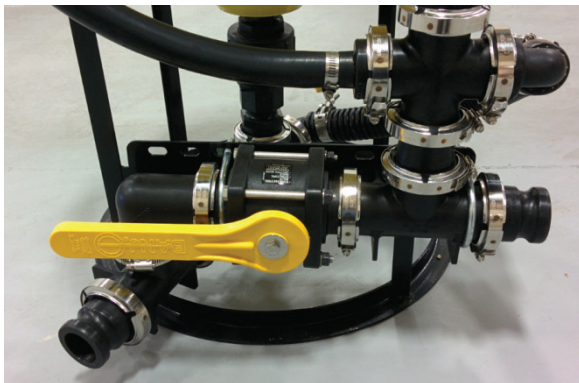


Fig. H1-1

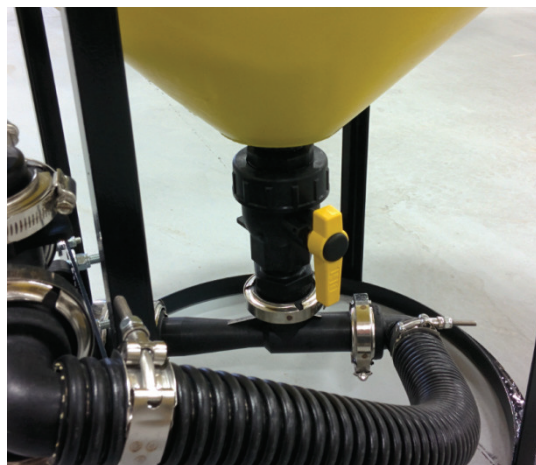


Fig. H1-2



Fig. H2-2



Fig. H2-1

*NOTE:* On Handler II and III models, the flow direction through 3-way valves is in the direction of the handle. On the Main Valve the bypass, off, and venturi positions are as follows. (On some earlier models of Handler II and III the valve position may be opposite to these. This can be changed if desired by removing the handle, rotating it 180°, and reinstalling on to the valve.)

- 4) Open the Venturi Tank Valve to draw product from the Handler tank. (For Handler I see Fig. H1-2 and for Handler II & III see Fig. H2-2)



Bypass



Off



Venturi

- 5) Insert the container into the tank to puncture it on the knife. Push the container down with consistent, even force. Try to puncture the container to one side of the bottom, staying away from the bottom's centre as this is usually the thickest part of the container. Work the container back and forth to ensure that the knife cuts into the sidewalls of the container. (See Fig.H2-3)



Fig. H2-3

- 6) Hold the punctured container on the knife and open the Container Rinse Valve (see Fig. H2-4) until the container is thoroughly rinsed. Close the Container Rinse Valve and remove the container.



Fig. H2-4

- 7) Repeat steps (5) and (6) until all required containers are emptied and thoroughly rinsed. Be sure to dispose of empty containers in accordance with your local regulations.

## Tank Cleanout and Sprayer Filling

### Handler I

- 1) Replace lid and open Container Rinse Valve to rinse the Handler I tank. While rinsing the tank, rinse water is continuously being sent to the sprayer.
- 2) To fill the remainder of the sprayer tank, close the Venturi Tank Valve (See Fig. H1-3). All valves except the Main Valve should now be closed. This stops the water flowing to and from the Handler I tank allowing fresh water from the supply tank to bypass the venturi system and fill the sprayer tank.



Fig. H1-3

### Handler II

- 1) Close lid and open Container Rinse Valve to rinse the Handler II tank (See Fig. H2.4). Once rinsing is complete close the Container Rinse Valve. Note that rinse water is continuously being sent to the sprayer while rinsing with the Venturi Tank Valve open.
- 2) Close the Venturi Tank Valve to stop suction from the Handler tank.
- 3) To fill the remainder of the sprayer tank with fresh water, move the Main Valve to the bypass position. (See Fig. H2-5).
- 4) When desired sprayer tank volume is reached, move the Main Valve handle to the off position.

## Tank Cleanout and Sprayer Filling



Fig. H2-5

### Handler III

- 1) Close lid and open Rotacraft Valve to rinse the Handler III tank (See Fig. H3-1). When rinsing is complete, close Rotacraft Valve to stop flow of water to the tank. Note that rinse water is continuously sent to the sprayer while rinsing with the Venturi Tank Valve open.



Fig. H3-1

- 2) Close the Venturi Tank Valve to stop suction from the tank.
- 3) To fill the remainder of the sprayer with fresh water, move Main Valve handle to the bypass position (see Fig. H2-5). This terminates the flow of product/water from the Handler tank, allowing fresh water from the source tank to bypass the venturi system and finish filling the sprayer tank.
- 4) When desired sprayer tank volume is reached, move Main Valve handle to the off position.

## Wash Down Valve

### Handler II and III

- 1) Connect a hose (not supplied) to the male camlock adapter on the Wash Down Valve (See Fig H2-6).
- 2) With the supply pump running, the Wash Down Valve can be opened as required to wash down equipment, trailer decks, the Handler, etc.
- 3) When cleaning is done, be sure to close the Wash Down Valve.

NOTE: The Wash Down Valve is fed by discharge from your supply pump. On models with a recirculation package, be sure that any product and/or rinsate is fully flushed from the pump and plumbing system prior to using the Wash Down Valve.



Fig. H2-6

## Inducting from Bulk Containers

### Handler II and III

Every model of Handler II and III comes equipped with Norwesco's exclusive dual port venturi. The upper suction port of the venturi is connected to the Venturi Bulk Valve. The Venturi Bulk Valve comes standard with a 2" male camlock adapter and can be changed to 1" using the assembly shown in Fig. H3-5. Configure your bulk product supply hose to connect to the Venturi Bulk Valve before beginning the procedures below.

- 1) Connect bulk product supply hose to your bulk container and to the Venturi Bulk Valve (Fig. H3-4).



Fig. H3-4

- 2) Move the Main Valve handle to the venturi position (see Fig. H2-1).
- 3) Open the Venturi Bulk Valve. Product from the bulk container will be drawn directly into the sprayer fill line.
- 4) When desired bulk product has been inducted, close the Venturi Bulk Valve.
- 5) Move the Main Valve handle to the off position.

### Flushing the Bulk Induction line

- 1) Connect the supplied assembly shown in Fig. H3.5 to the camlock adapter on the Venturi Bulk Valve.
- 2) Connect a 1" hose (not supplied) from this assembly to the Wash Down Valve.
- 3) Ensure all valves are in the off position.
- 4) Open the Wash Down Valve. Supply water will flow through the bulk induction line. Rinsate will be flowing to the sprayer during this operation.



Fig. H3-5

- 5) When bulk induction line is fully flushed, close Wash Down Valve and remove the hose connecting it to the Venturi Bulk Valve.

NOTE: To ensure adequate results on models with a recirculation kit, ensure the pump and plumbing are completely flushed to prior to flushing the bulk line.

## Bulk Metering Kits

Norwesco recommends the use of a proper herbicide meter when inducting product from bulk containers. Several kits are available for direct installation on all models of Handler II and III.

### Handler Ready Meter Kits

- 86-HMK-FMH300HL8N - 1" kit with GPI meter
- 86-HMK-MFM100 - 1" kit with Banjo meter
- 86-HMK-MFM220 - 2" kit with Banjo meter
- 86-HMK-DP3000V - 1" Kit with Durameter

### Installing Handler Meter Kits

- 1) Review the exploded parts diagram supplied with the meter kit. This diagram correctly shows proper meter orientation for installation on the Handler.
- 2) Remove the male camlock adapter on the Venturi Bulk Valve by loosening the flange clamp seen in Fig H3.4.
- 3) Install the meter ensuring that product flow direction matches the flow arrow on the meter.
- 4) For 1" meter kits, install the male camlock adapter supplied with the meter kit. On 2" meter kits, install the male camlock adapter removed in (2) to the inlet side of the flow meter.

Full operating instructions, calibration procedures, maintenance instructions, troubleshooting tips, and warranty information are supplied with each meter kit. Please review this information fully before using.

## Agitation & Recirculation

### Handler II and III with pump and/or recirculation kits

- 1) Close all valves and open the Handler lid.
- 2) Turn the Pump Suction Valve to draw water from your fresh water supply (see Fig. H2-7)



Fig. H2-7

- 3) Open the Agitation valve (see Fig. H2-8) and fill the Handler tank to the desired level. Close the Agitation Valve to stop filling the tank.



Fig. H2-8

- 4) Turn the Pump Suction Valve to draw from the bottom of the Handler tank (see Fig. H2-9).
- 5) Open the Agitation Valve (see Fig. H2-8). The desired rate of agitation can be attained by adjusting the Agitation Valve and/or the engine speed of the pump. Do NOT try to adjust agitation by partially closing the Pump Suction Valve as this can damage centrifugal pumps.
- 6) Add product to be recirculated or agitated.



Fig. H2-9

- 7) Once agitation is completed close the Agitation Valve. The tank can be emptied in either of the following ways:
  - Turn the Main Valve to the bypass position (see Fig. H2-5). The pump will draw from the Handler tank and the water/product mix will flow directly to the sprayer.
  - Turn the Pump Suction Valve to draw from your fresh water supply (see Fig. H2-7) and turn the Main Valve to the venturi position (see Fig. H2-1). Open the Venturi Tank Valve to draw material from the tank directly into the line and to the sprayer.
- 8) Care should be taken once the pump is drawing fresh water again to flush any lines that may have had product in them during recirculation. This rinsate can be flushed into the tank and then drawn out to the sprayer.
- 9) If required the tank can be cleaned out using the instructions from the Tank Cleanout and Sprayer Filling section of this manual.

**NOTE:** On the Pump Suction Valve the tank, off, and fresh water positions are as follows. (On some earlier models of Handler II and III the valve position may be opposite to these. This can be changed if desired by removing the handle, rotating it 180°, and reinstalling on to the valve.)



Handler tank



Off



Fresh Water

## Troubleshooting

The Handler is a simple induction system that employs a venturi to place product into your sprayer tank. It is a convenient and reliable system which requires minimal maintenance.

The following troubleshooting section lists many of the problems you may encounter. It suggests the possible causes and presents solutions to the problem. If you have a different problem, even after having read through this section, please call your Handler dealer.

Problem	Possible Cause	Solution
No suction from venturi	Improper hose and/or hose size to sprayer tank	Check to make sure the discharge line from the Handler to the sprayer is large enough to accommodate the flow of the pump. Discharge lines should not be smaller than size of the bypass line on your Handler (either 2" or 3"). Do not use collapsible layflat hose.
	Obstructions in the lines	Check to see if there are obstructions in any of the lines after the venturi. Remember that obstruction may also be in the sprayers plumbing and filter system.
	Pump hooked to Handler incorrectly	Your pump must discharge water left to right through the Handler and not be setup to suck water through the Handler or pump through right to left. (See Operator Orientation for right and left clarification.)
Venturi suction present but not when lines are connected to the sprayer.	Improper fittings	If the venturi is sucking properly, check all fittings after the venturi to ensure they are not smaller than the hose size being used. Note that tees, elbows, filters, etc will add back pressure which decreases pump flow and reduces the venturi performance.
Venturi suction is slow.	Filter(s) plugged	Many sprayers have filters or strainers at the sprayer inlet. Check to see if filters are dirty or plugged as this will reduce venturi performance.
Container won't puncture properly	Dull blade	Re-sharpen the knife assembly by removing it from the Handler tank. The knife blades can be sharpened using a very fine file or felt grinder wheel.
	Extra thick container	Try puncturing the container so that the point of the knife pierces the bottom of the container close to a sidewall and NOT in the centre of the containers bottom.
Chemical splashing	Improper handling of containers during puncture process	Holding the container above the knife, shove it downward sharply using constant, even pressure. Do not force the container over the knife or start with the container resting on the point of the knife.
	Dull blade	Re-sharpen the knife assembly by removing it from the Handler tank. The knife blades can be sharpened using a very fine file or felt grinder wheel.
Pump is cavitating or drawing air from the tank.	Liquid vortex in tank	Pump volume needs to be temporarily reduced. This can be achieved by either partially closing the Main Valve or reducing pump engine speed.
Blocked line between tank and venturi	Inadequately dissolved granular product collected in line.	Back flush this line by setting the Main Valve to the bypass position and then opening the Venturi Tank Valve at the same time. This will force water back into the tank. Agitate the product into solution and then empty the tank.

## Warranty

Norwesco warrants to the original purchaser that this Handler will be free from defects in material and workmanship for a period of one year from the date of original purchase when used as intended and under normal service and conditions. This Warranty is limited to the replacement of any defective part by Norwesco. Norwesco reserves the right to inspect any equipment or part which is claimed to have been defective in material or workmanship.

This Warranty does not apply to any part or product which in Norwesco's judgement has been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed. Norwesco reserves the right to inspect any other connected equipment which may have a bearing on claimed defects. Norwesco reserves the right to make changes in material or design of the product at any time without notice.

This warranty shall not be interpreted to render Norwesco liable for damages of any kind, direct, consequential, or contingent, to property. Furthermore, Norwesco shall not be liable for damages resulting from any cause beyond its reasonable control. This Warranty does not extend to loss of crops, losses caused by delays or any expense or loss for labour, supplies, rental machinery, hired services, rental machinery or for any other reason.

No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded.

**THE  
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