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INTRODUCTION



The VRH-3 valve is a device used to supply water to bowls while **maintaining a constant water level.**

The VRH-3 valve works using a vacuum seal created inside it.

Its unique feature is that makes it possible to adjust the water level according to the height of the down pipe. No extra mechanisms are required.



PRODUCT	VRH-3 VALVE	VRH-3D VALVE	
PRESENTATION			
Code	19300000	19301000	
Group	EA	EA	
Down pipe	NO	NO	

TECHNICAL DATA			
No. animals / valve	1 – 20		
	Minimum	Maximum	
Pressure	0.5 bar	2,5 bar	
Flow	1.8 L/min.	3,6 - 4,2 L/min	
PACKAGING DATA			
Units / Bag	5		
Units / Box	50		
Units / Pallet	750		
Pallet Dimensions (cm),	120x100x120		
Pallet Weight (Kg),	326		



ROTECNA.



Permits regulation of the water level according to the position of the tube.



Water supply tab at the back (*).



Water connection can be adjusted by rotation (*).



2 USES AND APPLICATIONS

It is adequate for any production stage in farm: weaning, fattening, farrowing and/or gestation, in both individual and group pens.





The VRH-3 Valve can be combined with varoius Rotecna products matching the needs of different production phases as well as making the mounting, usage and maintainance easier.

Advantages and Benefits

IN GESTATION

Economic, comfortable and easy installation.

Maintains a homogeneous waterlevel in the entire length of the feeder.

To change the water level in the feeder, you have to change the height of the valve downpipe.

IN FARROWING

A constant water level increases the sow's water consumption helping to increase milk production and weight of the weaned piglets. The water waste can be reduced up to 50%.



IN WEANING AND Finishing

A constant-level drinker without mechanisms increases the animals' water consumption (no learning is requiered) and reduces water losses, with the apparent water waste dropping by up to 50%.







INSTALLATION

- REQUIRED
 OPERATING
 CONDITIONS
- DIMENSIONS OF
 THE INSTALLATION
- HOW THE VRH-3
 WORKS



REQUIRED OPERATING CONDITIONS:

A Water pressure:

For optimal use of the VRH-3 valve, the required water pressure is 1.5 bar.

Even so, there is a margin for good performance between 0.5 bar and 2.5 bar.

If the water pressure is close to the lower limit, any change in the supply line may cause the VRH-3 to operate outside the recommended range, causing it to malfunction.

B Water supply line:

Depending on the water volume demand of the installation, the water supply lines must have a specific diameter to ensure an optimal operating pressure.

A line of insufficient diameter for the flow required will cause a drop in pressure in the line.

Water down pipe:

It is very important for the down pipe joints to be sealed properly.

If the joints let air in, the valve will not close. This cannot be determined visually (i.e., water leaking out the joint), but the inside chamber and the down pipe will be subjected to a drop in pressure equal to maximum atmospheric pressure.

It is recommended that you assemble the valve according to the instructions shown here.

INSTALLATION GUIDELINES:

During gestation, the following is recommended:

1 VRH-3 of Maximum 20

When installing the following should be considered:

- Minimum water pressure
- Number of valves
- Distribution of the valves

The flow and the pressure determine the number of valves that can be mounted on each line or section of pipe.



For example, at a constant pressure of 1.5 bar in the supply line, the valve flow would be approximately 3 L/min.

To calculate the lines, we can use the equivalences in the following table (keeping in mind that there are other factors that influence the overall calculation, we will set the water speed as 1.5 m/s and consider the "maximum" water volume as an approximate value):

Inside Ø	Outside Ø (millimetres)	Polyethylene pipe at 4 bar		
(inches)		Q (m3/h)	Q (L/min)	
1/2″	20	0,7	11,7	
3/4″	25	1,8	30,0	
1″	32	3,1	51,7	
11/4″	40	4,8	80,0	
11/2″	50	7,5	125,0	
2′′	63	11,9	198,3	
21/2"	75	17,9	298,3	
3′′	90	24,4	406,7	
4″	110	43,8	730,0	
5''	125	56,5	941,7	
6''	140	70,8	1180,0	

HOW THE VRH-3 WORKS:

Water flows normally as long as the water level does not cover the lower end of the VRH-3 down pipe.

When the water level covers this end, air cannot enter the valve. This leads to a water column forming inside the pipe, creating a vacuum throughout the entire mechanism and activating the valve membrane, and closing it.



Inside view of the VRH-3 valve.

The valve will begin to work again once the water level drops below the lower end of the down pipe. Air will enter the mechanism, overriding the vacuum seal, which activates the membrane, opening the VRH-3 once more.

MAKE SURE ALL AIR HAS BEEN PURGED FROM THE INSTALLATION.

No tools or accessories are needed to open the VRH-3. It is easy to open manually.



Press in the center while opening the tabs.



VRH-3 ASSEMBLY

- INSTRUCTIONS OF ASSEMBLY
- PRESSURE CHECK









TROUBLESHOOTING AND SOLUTIONS



TROUBLESHOOTING AND SOLUTIONS

When there is a problem with the water supply to the animals: 1st DETERMINE whether the problem is with the valve and/or the installation.

One valve malfunctions, but the rest work correctly.

It is that specific valves problem (proceed with the following steps).



Several valves continuously and/or intermittently malfunction:

Close all the valves, leaving only one or two of the malfunctioning valves open.



They continue to malfunction.

The problem may be located in those valves (proceed with the following steps).



Now they work correctly.

The installation may not be correct to permit the simultaneous operation of all or most of the valves.

Increase the diameter of the distribution lines (larger diameter at the intake, which may be smaller on each branch closer to the valves and with fewer valves on each branch).

Most or all of the valves malfunction.

The operating conditions for the VRH-3 are not correct.

It is highly unlikely that ALL the valves have an assembly or manufacturing defect.

Check the operating pressures, flows, etc.

If necessary, remove a valve from its position, together with the down pipe, and connect it to a point on the water supply that is known to have the minimum volume and pressure.





If the VRH does not close properly, there is a problem with the valve (proceed with the following steps).

If the VRH closes properly when the water level reaches the end of the pipe, the problem is with the installation.



PROBLEM WITH THE VALVES

- Incorrectly assembled down pipe.
- Shavings or dirt in the filter or line intake.
- Shavings or dirt in the supply line.
- The down pipe is blocked.
- The end of the pipe is blocked (resting against the side of the bowl).
- The valve membrane is in poor condition or has been incorrectly assembled.

PROBLEM WITH THE WATER SUPPLY

- Not enough pressure (causes):
 - Other points of consumption connected to the line.
 - Too much simultaneous demand for a single line.
 - Incorrect pressure measuring point.
- Line diameter is too narrow.



PROBLEMS WITH THE VALVES



PROBLEMS WITH THE VALVES

Down pipe joint seals.

- The air tightness of the entire assembly must be ensured, from inside the valve to the lower end of the down pipe.
- The valve body must be firmly closed.
- The discharge pipe and valve down pipe seals must be airtight.
- The inside pressure is less than or equal to the outside pressure. For this reason, a poor connection will not result in a water leak. This makes it difficult to detect and locate the problem.

Shavings or dirt in the supply line.

- This is the most common problem in valves located at the end of the line.
- Especially in the case of a new installation, there may be remnants of plastic inside the pipes (after drilling the connections).
- When starting up an installation for the first time, after completing all the splices and connections, it is recommended to clean the line by running water through it and out of the ends of the branches.
- In the main line, the water flow transports the particles to the end of the line, where there is less flow and transport capacity.
- Shavings may not have been completely removed from any holes that were drilled.
- If the cover is removed from a valve and the water is turned on, the water jet that comes out if the centre nozzle should reach several metres. If it does not, there is a lack of pressure, because of either an obstruction or insufficient supply conditions.

(See the PRESSURE CHECK section).

The down pipe is blocked.

- This is the only case in which water can be seen leaking from the joints between the valve and down pipe components. The supply pressure inside the valve is higher than the outside atmospheric pressure.
- Do not allow the discharge tube to rest on the bottom of the bowl.
- Make sure that the water flows freely at the bottom of the pipe.

The end of the pipe is resting against the side / bottom of the bowl. The outlet is blocked.

- Especially when the bowl does not have a flat bottom, the end of the down pipe may be touching the bowl.
- The area around the lower end of the down pipe must be free of residue. Remains of feed may be deposited there, obstructing it.
- In addition, the effect caused by closing the valve when the water level reaches the end of the pipe will be diminished. This can cause the level at which the valve closes to be higher than normal.

The valve membrane is in poor condition or has been incorrectly assembled.

- Open the cover, remove the membrane and inspect the condition of the nozzle and the membrane, making sure both are correct.
- Open and close the valves. Make sure that it is airtight when closed.
- In the case that it does not work and/or the membrane has a mark on the centre protrusion, replace the membrane.



PROBLEM WITH THE WATER SUPPLY



PROBLEM WITH THE WATER SUPPLY:

The flow and pressure are closely related, but the two aspects must be considered separately.

Sufficient pressure with most valves closed does not guarantee the installation will work properly.

The water supply when ALL the valves are in operation must be enough so that the pressure does not drop on the line.

Not enough pressure.

Other points of consumption connected to the line.

• If other elements that consume water are connected to the same installation, check how the VRH work with no other equipment connected to the line.

• External consumption, by cleaning equipment for example, may cause a significant drop in pressure on the line.

Too much simultaneous demand for a single line.

• Too many valves on a single line will cause the volume/pressure that can be supplied by a line with that diameter to be insufficient.

• The water pressure in the supply line is low if when most of the valves are activated, the amount of water they consume is greater than that supplied by the line.

The pressure is measured at the wrong point.

• If there are problems, it would be useful to take a pressure reading at the least favourable point in the network.

• Having enough pressure at the outlet of the pressurised equipment or at the farm intake (when the water is running) does not necessarily mean that the pressure is adequate at the end of the line.

• Open the front cover of the valve and remove the membrane to see how far the water jet reaches (see the section "Shavings or dirt in the line" above).

In general, there are usually variations in pressure on a farm due to variations in water consumption (for example, water used for cleaning). For this reason, it is always advisable for the water supply line connected to the valves to be a line used exclusively for the valves, independent from other points of water consumption. We recommend that this line have a tank and a pressure unit to ensure the constant flow and pressure required for the valves to work properly. This is even more important when several VRH valves are connected to the same section.

Line diameter is too narrow.

• If the diameter of the line is not sufficient, given the water consumption of all the valves, much more pressure will be required in the line so that the last valves operate with the minimum required conditions. It may be that the starting section needs a pressure that is higher than the maximum pressure indicated for the valve.

• It is recommended to divide the water circuit by installing tanks and pumps as necessary.

It is important to ensure that all the components on the line are of the correct diameter and there are no restrictions (bottlenecks), such as when a pump or controller with a particular diameter are installed on a line with a larger diameter.

