

Milking Through the Jars

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We are still finding that some farmers are not using their recording jars correctly. The two most common mistakes are; people are milking through the jars when they are not supposed to or when the machine is not modified/installed to milk through the jars and the other one is that some people are still using the lever/control switches on the jar to release vacuum in order to take off the cluster.

Recorder jar controls

Four different functions can be performed by the lever/control switches for the jars. The switches use vacuum to open or close valves and the lever squeezes or releases tubes to control milk or vacuum. Both methods perform the same functions i.e. to open or close inlet and outlet valves at the top and bottom of the recorder jars. The four functions or positions for the levers/switches are; milk, wash, release milk and sample. The levers were installed in jar plants before being superseded by the switches in more recent ones.

To further complicate matters the machine may be modified/installed to milk through the jars or not.

How do we know if the machine is modified/installed to milk through the jars or not? Well, if the milk transfer-line is located above the jar, the machine is not modified/installed to milk through the jars. If the milk transfer-line is located about two-thirds to three quarters the way up the jars the machine is modified/installed to milk through the jars.

Machines not modified/installed to milk through the jars

If the milking machine is not modified/installed to milk through the jars then you must hold the milk in the jar while a cow is being milked and release it after the cow is milked. To do this the jar outlet at the bottom must be closed during milking and the vacuum/washline connection to the centre of the top of the jar must be open. Having this open allows vacuum to get to the teat end through the top of the jar, across to the long milk tube connection near the top the jar and down the long milk tube to the claw.

A problem occurs if the milk is released continuously during milking. This can be done by having the bottom jar outlet open and vacuum from the vacuum/washline to the centre of the top of the jar shut off. As the milk enters from the long milk tube it empties continuously out the bottom. This is very good for doing away with the job of having to release milk after a cow is milked but is not so good for having adequate vacuum level at the teat end, maintaining vacuum stability and milking speed. Because the top valve is shut off, vacuum for milking must come from the milk transfer-line, in through the bottom of the jar, up

through the jar and down the long milk tube passing the milk on its way which is going in the opposite direction. The air admitted through the claw air admission holes carries the milk out the bottom of the recording jar and up to the milk transfer line. Gravity then allows the milk to flow to the receiver jar. This method of milking through recording jars should never be practiced. It is similar to, but worse than trying to milk in a non-recorder jar plant with very long long milk tubes that dip very low into the pit.

Machines modified/installed to milk through the jars

To allow milking through the jars without reducing teat end vacuum and speed of milking the machine must be modified or installed to allow this. As already mentioned this can be done by locating the milk transfer line two thirds to three quarters the way up the jars. The milk receiver jar must be in the pit (not in the dairy) otherwise the milk transfer line and recorder jars would be too high, which would make the height of milk lift too high and the jars almost impossible to read. Even with the machine modified/installed to milk through the jars, milk must not be allowed to enter and leave the jar continuously or we will have almost the same problem again. When milking through the jars correctly both, the bottom outlet valve and the top connection to the vacuum/washline are open. This arrangement maintains equal vacuum (pressure) above and below the milk in the recorder jar so there is nothing to force the milk out of the jar. However, as the milk rises in the recorder jar it also rises in the outlet pipe from the jar (liquids find their own level) and when it reaches the height of the milk transfer-line, gravity carries the milk to the receiver jar. This system could not work if the milk transfer-line is located above the top of the jar, because milk would flood the top of the jar and shut off the vacuum supply to the cluster.

The milk transfer-line should slope towards the receiver jar. It is not as critical as the slope in the milkline in a non-recorder jar plant; however, it speeds up milk flow to the receiver and drains the line after washing. At the end of milking all the jars can be released in the normal way.

Figure 1 diagrammatically shows a milking machine that allows correct milking through the jars. Table 1 summarises the various positions of the valves for a milking machine that has been modified or installed to allow correct “milking through the jars”.

Take off the cluster correctly

The second serious problem with recorder milking machines is where someone shuts off vacuum to the cluster by using the lever/switches for the jar. This allows a blast of air to rush in at the top of the jar and down the long milk tube to the claw and up to the teat ends. While, this is very effective at releasing the cluster quickly the air rush blasts milk and bugs up into the teat canal, which can lead to mastitis; both clinical and sub clinical. It is vital to use the claw button or pinch

clip to shut off vacuum to the cluster and let the cluster fall off gently into your hand.

Recording, sampling, washing

If milk recording is to be done the jar outlet valve should be closed to hold the milk during milking and the top valve is open to provide vacuum for milking. Both valves are opened to release the milk after recording the yield.

Samples can be taken after recording by agitating the milk in the jar and taking a sample through the sampling tap.

For washing the top valve and the bottom valves are open; to let the wash solution in and out through the jar continuously during the wash cycle. The vacuum/washline is now connected to the suck-up tube in the wash trough through the three-way valve.

Other possible problems

The rubber ware at the bottom of recorder jars is often in poor condition. This allows air leakages that will reduce vacuum reserve. I've seen some where you can hear the air leaks. It also has an impact on increasing TBC's because of the alternating vacuum and atmospheric pressure, which allows milk to seep out through cracks by gravity and then be sucked in again, when the vacuum is reapplied. Perished rubber ware is also not conducive to good hygiene.

Floating balls are now installed in jars to prevent vacuum drop by blocking the jar outlet when the jar has emptied. The balls also prevent excessive breakdown of milk fat that causes free fatty acids and off-flavour in milk. The balls are not allowed to block the jar outlet during the wash cycle.

The other part of the recorder jar that can cause problems is the spreader at the top of the jar. The spreaders can be set incorrectly, damaged or partly blocked. The spreaders spread the wash solution over the surface of the jar for effective cleaning. A partially blocked spreader may slow down milking and will affect cleaning performance.

Table 1 shows the various positions of the valves for a milking machine that has been modified to allow “milking through the jars”

Task	Milk outlet valve	Vacuum/air inlet valve	Three-way valve
Wash	Open	Open	Wash position
Milk through the jars - correct use	Open	Open	Milking position
Milk through the jars - incorrect use	Open	Closed	Milking position
Sample	Closed	Closed	Milking position
Record	Closed	Open	Milking position
Empty jar	Open	Closed	Milking position

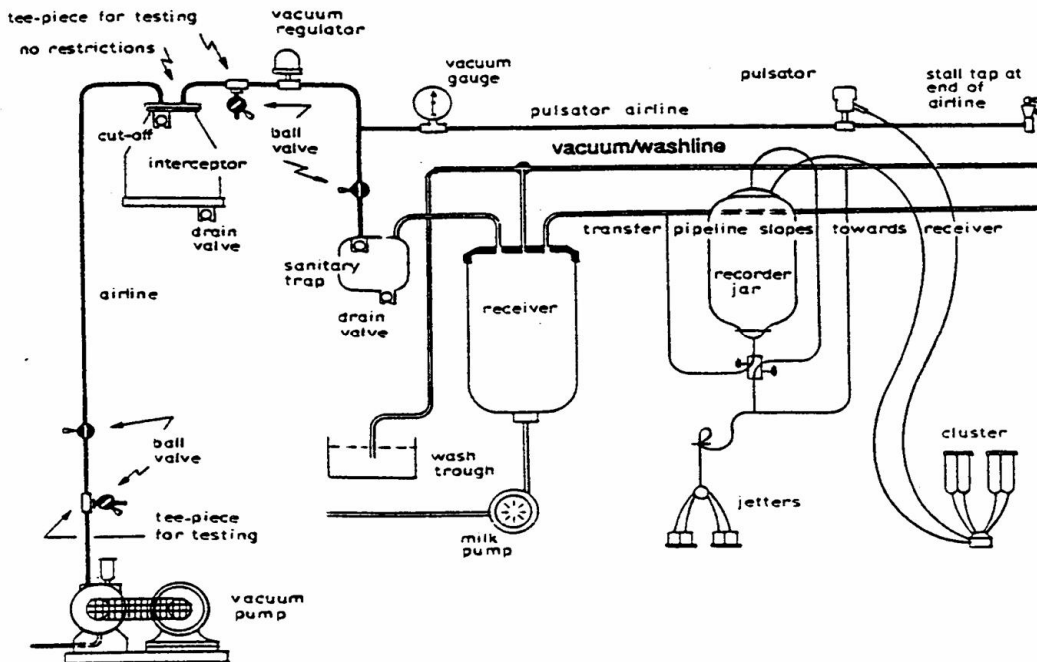


Figure 1 diagrammatic representation of a milking machine that allows correct milking through the jars