

# Liners

The liner is the part of the milking machine that has direct contact with the cow during the process of milking. It is obvious that the liner plays a major role in whether or not the cow is milked out completely and the teat condition.

There is a great variety of liners. They may be divided into liners with large or small heads. There are differences in the diameter of the barrel. The shape of the liner barrel may be simply cylindrical or conical.

There are even liners that are not round but have a multiangular shape. There

are also differences in the elasticity. To minimize teat defects and tissue damage the more flexible liners may be preferable. However, these might sometimes have a negative effect on smooth milking (out).

The combination of the right milking machine adjustments ultimately determines the speed and quality of milking. For example a certain pulsation curve in a certain type of liner may give good results, while the same curve does not work as well in another type of liner. Testing which combination works best is the advice.



Small and large head liner

## The working of the liner and shell

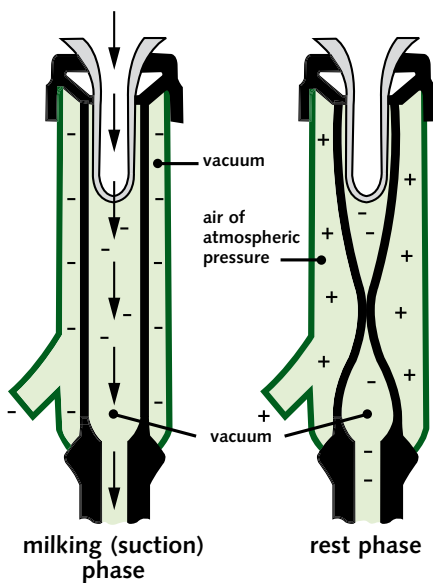
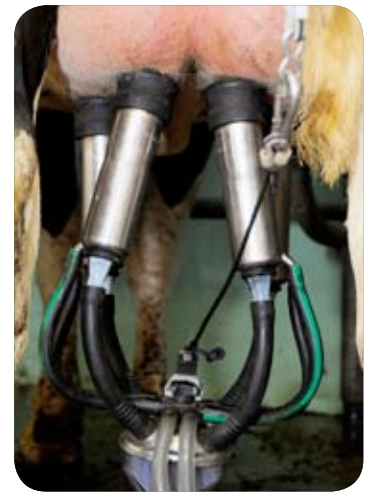


Figure 4: The milking (suction) and rest phase

In machine milking milk is sucked from the udder by a vacuum inside the teat rubber of a milk cup. This vacuum also causes swelling of the teats by accumulation of blood. Therefore, a pressure exchanger is required. This may be a pneumatic pulsator or an electronic system. It creates pressure variations in the pulsation chamber (= the space between the teatcup liner and the teatcup shell). This causes the teat liner to open and close. The so-called suction stroke opens the liner. Then the milk is sucked from the teat. The so-called rest stroke closes the liner again. The teat is massaged and the blood circulation can be restored. (See Figure 4)



Milking cluster need to hang straight under the udder



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