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TECHNICAL BRIEF

Testing of Mouthpiece Vented Liners According to ISO/DIN Standards

Background

Mouthpiece vented liners conform to the ISO/DIN standards.

The Milk-Rite mouthpiece vented liner system admits air at the mouthpiece of each liner rather than through a central vent in the claw. ISO/DIN standards 5707 (Milking machine installations-construction and performance) and 6690 (Milking machine installations- mechanical tests) recommend a dry test procedure to monitor the air intake into the system.

Although it is not specifically stated in the ISO/DIN standards, this dry test procedure and the range of acceptable results was designed to apply to claw vented systems. The standard is not meant to restrict new developments. ISO 5707 states that:

> ***"These testing methods may not be sufficient to test the performance of an installation incorporating special design features. In order to avoid limitation of development, other systems than those described in this International Standard can be used if the same result can be achieved. Such systems and other special performance characteristics that are not covered by the requirements in this International Standard should also be described and specified in the user's manual."***

The mouthpiece vented liner is a special design feature. ISO 5707 states in section 8.6:

> ***"...the total air admission shall be at least 4 l/min and shall not exceed 12 l/min for cows..."***
>
> ***"For quarter milking, clusters with deliberate cyclic air admission or other specific design, the above quantitative requirements do not apply. In such cases, the total air admission per cluster or teat cup shall be stated in the user's manual"***
>
> ***"All air vents should be positioned to avoid unnecessary turbulence in the milk to limit free fatty acid development."***

Because the mouthpiece vent is a special design feature it will give different results when tested for static air intake as outlined in the standards. This is not outside the specification so long as the expected results are defined. When using Milk-Rite mouthpiece vented liners, the air intake for this static test will be between 30 to 48 litres per minute.

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For mouthpiece vented liners this is a normal result, although it should be noted that, for this system, this test does not reflect the actual flow of air into the system during milking, when a much reduced air intake occurs.

Technical Detail - dry test, for measuring air intake into the system when not milking

The dry test procedure as outlined in the machine test specifications requires that the orifices of the liners are sealed using a rigid teat plug.

For a system with the vent in the claw, this is a reasonable measure of the air that is being drawn into the system, because the rigid plug is an effective seal at the liner orifice. The test will therefore mirror what happens during milking for this system.

For a system with the vent in the liner mouthpiece, this is not an appropriate measure of the air intake into the system since the rigid plug does not seal in the same manner as a real teat within the liner barrel. A rigid plug will allow a higher mouthpiece vacuum during the dry test than is seen during actual milking, because it does not deform in the same way as a teat, and so does not seal as effectively in the liner barrel. This dry test method will therefore register a much higher vacuum in the hood of the liner, which will result in a significantly higher air intake than is actually experienced during milking.

Technical Detail - dynamic test of air intake during milking

Testing during milking shows that the vacuum at the claw will generally be slightly less than that registered on the vacuum gauge, typically 35 to 45 KPa for most milking machines. During milking, the vacuum measured at the mouthpiece of the liner will typically be 20 KPa, much lower than at the claw.

For systems with the vent in the claw, as milking proceeds the vacuum level at the mouthpiece will rise.

For systems using mouthpiece vented liners, the vacuum stays fairly constant at around between 15 to 20 KPa. At a vacuum of 20KPa in the mouthpiece, the amount of air that enters the system will be between 10 and 15 litres per minute.

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Summary

For systems using mouthpiece vented liners, the normal air intake to be expected during the dry test, using rigid plugs, is 30 to 48 litres per minute, depending on the size of the air inlet. This is in conformance with the ISO standards, because we have defined the expected result.

It should be noted that this is not representative of the air intake seen during actual milking conditions with this system, which is between 10 and 15 litres per minute.

Advice to agencies testing to ISO 5707 and 6690 standards for the vented liner system:

- A testing agency is required to clearly state on their paperwork that they are testing a mouthpiece vented liner system.

- They will then need to add an additional check box to indicate the air intake that they have measured using the dry test procedure, and to report the results. An air intake of between 30 and 48 l/min is an acceptable result, and is in compliance with the ISO standards.

Advice to farmers when having their parlours checked to ISO standards:

This can be a difficult area for some testing agencies to understand, so to prevent any confusion, or incorrect assessments, we offer the following simple advice to all farmers using the vented liner system:

- If any testing agency advises that the mouthpiece vented liner system will not pass the ISO standards, then please ask for this advice to be put in writing, and Milk-Rite will be happy to explain and train the testing agency. This facility is also available from independent testing authorities.

- If a testing agency fails the mouthpiece vented liner system on farm, then please ask that the test is repeated with Milk-Rite personnel in attendance, so that we can advise and train the testing agency. This facility is also available from independent testing authorities.