



HOW MUCH SPACE DO YOUR ANIMAL NEED FOR
HEALTHY LYING?

The perfect free stall for cows





Dairy cows have been gradually increasing in size over the past few decades. It boils down to a fairly simple rule of thumb: A large cow, owing to its expansive rumen capacity, has a substantial baseline feed intake, resulting in a more consistent milk yield and a stable metabolism. The bigger the cow, the better the milk yield. Although this might sound simple, it does have a side effect: A larger animal takes up more barn space.

Beside the walking areas, the free stalls also need to provide ample space for the cows. Yet, adopting a „the bigger the better“ mentality is not the perfect solution – instead, it is crucial to find the optimal size that strikes a balance between promoting comfortable healthy lying and an economically efficient stall design. Let us take a closer look at the factors that need to be considered to ensure an optimal free stall.

The optimal free stall surface: How big does it have to be?

In agriculture, you learn something new every day, and this is especially true when it comes to livestock farming. Recommendations, scientific evidence and legal specifications are continuously evolving. And this also applies to the recommended size of free stalls. For example, 25 years ago when loose housing commenced, the standard free stall width was 1.15 meters, whereas today, recommendations have shifted towards widths ranging between 1.25 and 1.30 meters.

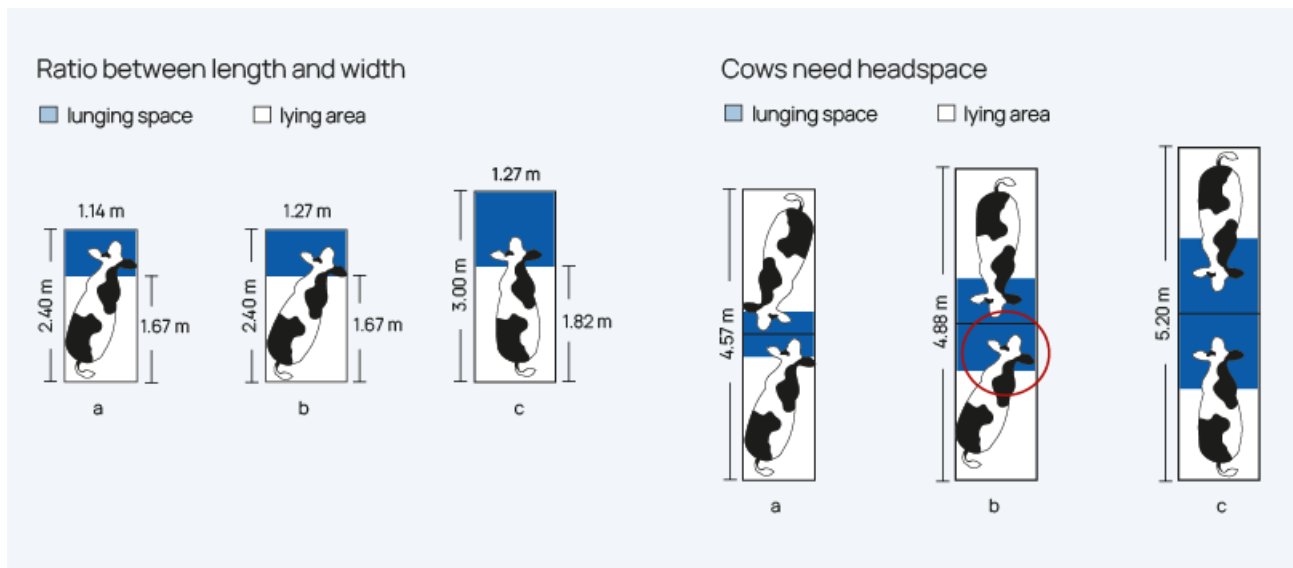
But: The width of the free stalls alone does not solely determine the correct lying position for the cows!

The length of the free stalls, along with ample head space and a properly positioned neck rail, dictate whether a cow assumes a straight or diagonal lying position ¹⁾.

In cases where there is insufficient head space in opposing free stalls, lower-ranking cows, in particular, tend to adopt an angled lying position to avoid the higher-ranking animal. Even in opposing free stalls, each cow should have a minimum of 70 centimeters of head space to enable comfortable movement.

TIP:

A clever solution is to stagger opposing free stalls. This arrangement prevents the animals from directly facing each other and automatically provides more free space within the head space. In existing barns, this approach is an effective means to address inadequate lying lengths.



Source: Cook, 2014



The brisket board promotes a correct lying position without disturbing the cows

The purpose of the brisket board is to prevent cows from sliding too far into the free stall and then having difficulties getting up. However, this must not disrupt natural lying positions and the lying rhythm. Otherwise, lying restrictions may increase the risk of lying damage and hoof disease. The cow should have the possibility to assume various lying positions at its own discretion.

Shifting the body's position and weight helps maintain optimal blood circulation to the hide areas underneath the body and enhances joint health. If cows were allowed to choose for themselves, they would most probably prefer a free stall without a brisket board ²⁾ – because they can then also stretch out their foreleg.



A popular lying position and something that should be considered when planning the stall. This ensures the animals are much more relaxed, as less muscular effort is needed to lie on their chests.

Ideally, around 20 percent of the cows should lie with their foreleg stretched out ³⁾. When installing a brisket board in the barn, its shape and design must match the comfort requirements of the lying cows. Rigid brisket boards should be no higher than 10 to 12 centimeters and rounded at the top. Even better are elastic brisket boards: In this scenario, cows can freely stretch out their foreleg, redistribute their weight, alleviate pressure on their underside, and attain a more profound state of relaxation.

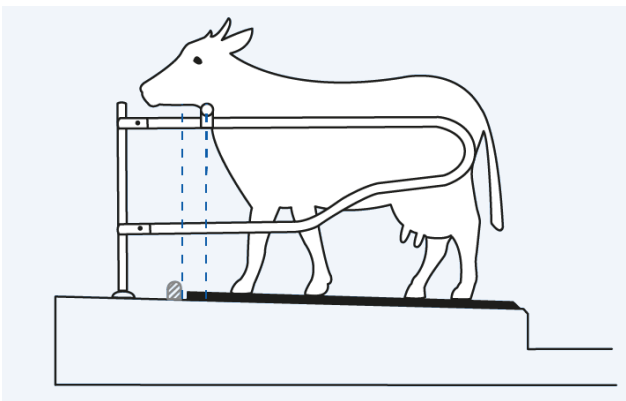
Free stall dividers and neck rail for optimization of the lying position

The objective when implementing free stall dividers and neck rails is to create as much space between them and the animal as possible. In the commonly assumed chest position, cows lay with their hindquarters positioned sideways. As such, dividers must provide ample ground clearance (at least 70 centimeters), especially in the rear area.

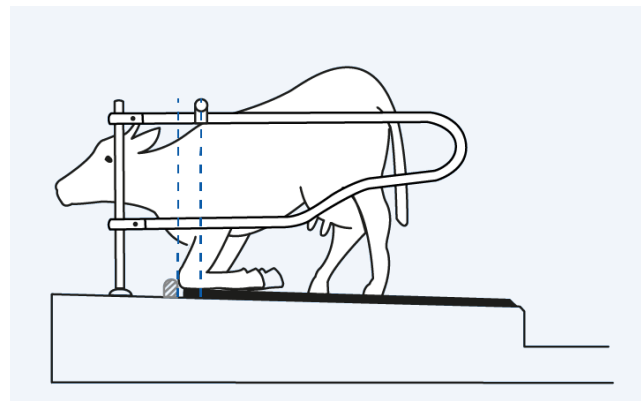
The proper setting of the divider can be checked quickly and easily: Any blank spots on the metal indicate direct contact between the cows and the free stall dividers.

In existing barns, there is often room for improvement in the positioning of neck rails. Investing some of your time is well worth it: The neck rail is the only and most important control element in the free stall. Its position must ensure that a cow can stand relaxed on all four legs in the stall before lying down. Proper adjustment ensures that the rear hooves remain exceptionally dry and clean, a critical factor in maintaining good hoof health!

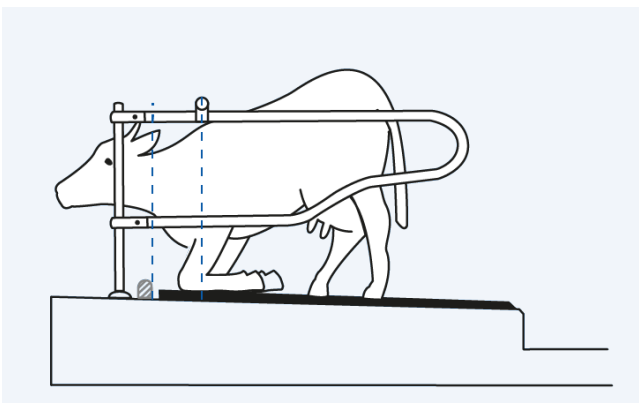
A deep, flexible neck rail combines many advantages. This design allows the cow to stand in the stall comfortably with its head held high and gently restrains it when lying down to prevent excessive forward positioning within the stall. Upon getting up, the cow receives a prompt – yet gentle – tap on the neck, prompting it to step backward and, if necessary, defecate in the walking alley.



Cows should be able to stand comfortably in the stall



Distance neck rail – brisket board insufficient: Carpal joints collide with the brisket board when lying down



Recommended minimum distance neck rail – brisket board:
25 – 30 cm ⁴⁾

Just as important as the positioning and design of the neck rail is its interaction with the brisket board. A cow's carpal joints should not collide with the brisket board when lying down, as this would otherwise lead to unfavorable lying positions (such as excessive angles or lying too far back). Consequently, both the animals and the free stalls become soiled. An optimally positioned brisket board should therefore be at least 25 centimeters, preferably 30 cm⁴⁾ in front of the neck rail. This can notably enhance lying positions and foster animal health, particularly the cleanliness of both the animals and the free stalls.

Summary: The quality of a free stall hinges on its appropriate length and equipment

The design of the space, tailored to the animals' natural requirements, plays a key role in enabling free stalls to satisfy their objectives. Beyond ensuring an adequate stall length, the primary goal should always be providing the best possible control of the cows.

A correctly set neck rail and an optimally positioned brisket board are extremely important factors for this to be achieved. Only when the stall size and equipment are tailored to the cows are they able to utilize the space available in accordance with their needs, ensuring they can lie down in a relaxed and undisturbed manner.

Sources:

- 1) Nigel Cook: „Mehr Platz schaffen!“, Elite 5, 2014
- 2) Tucker et al., 2006: Brisket boards reduce freestall use, J. Dairy Sci. 89:2603–2607
- 3) B. Benz: „Liegen lassen“, agrarheute RIND 05, 2022
- 4) Landwirtschaftskammer NRW (further dimension recommendations may vary depending on the manufacturer of the control devices)