

# Milking Parlor Types

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Douglas J. Reinemann, Ph.D.

UW- Madison Milking Research and Instruction Lab.

The first questions that must be answered in order to make rational decisions about the type and size of milking parlor for a dairy farm are:

- What is the desired milking routine? The amount of time required to perform the pre-milking work routine on each cow determines the number of milking units and milking stalls that one each operator can use effectively. If you want excellent milking routines (teat and udder sanitation, effective stimulation, appropriate prep-lag times) practiced in the parlor, it must be sized to encourage the desired outcome. A parlor that is too big will encourage the operators to take short cuts and not implement the complete milking routine. A parlor that is too small will result in bored workers and early unit attachment. A helpful tool to evaluate the available at the following web site:  
<http://www.uwex.edu/uwmril/pdf/MilkingParlors/PalorPlanner00.xls>
- Who will be operating the parlor? The skill level and motivation level of the people in the parlor will determine how efficiently the milking routine will be implemented.
- Will the parlor be used as a place to provide special treatment to cows? Some parlor types are more suited to providing individual cow care than others.
- What is the expected production level, milking interval and cow grouping strategy? These factors will influence the average amount of time that milking units stay on cows. Short milking times lend themselves to smaller parlors.
- What sort of work environment do you want to provide for the operators? Some parlor types allow the use of support arms for milking units and milk hoses and some do not. Support arms offer several advantages for both people and cows. Support arms carry the weight of the cluster and hoses so that operators do not have to. This reduces considerably the strain on the shoulders and lower back of the operators. Even weight distribution on each quarter is also easier to achieve and promotes even milk-out while reducing the number of slips and unit falloffs that occur during milking.

With the answers to these questions in hand lets proceed to look at the main types of milking parlors in use today.

## Side Opening (Tandem) Parlor

Side opener parlors usually are located on the end of a holding area with two entrance lanes similar to herringbone and parallel parlors. A gate at the entrance point between the holding area and the milking parlor holds the cow until an empty stall is ready. The parlor may be organized to allow the cows to exit in return lanes on either side of the operator area or cross over to a single return lane on one side. The use of a single return lane (compared to dual returns) reduces not only the cost of the parlor itself but also the facilities to catch and/or sort

cows when leaving the parlor. A single return lane does not slow down cow flow in this parlor type because cows are released individually.

Side opening, tandem and in line parlors handle cows one at a time so a slow-milking cow does not delay the completion of milking and release of other cows in the parlor. These parlors are well suited to farms that take special care about observing individual cows and practice individual cow care in the parlor. The throughput of these parlors is less affected by variations in cow milkout times and the disruptions from feeding grain in the parlor.

The number of stalls in a side-opening parlor is usually limited to 4 to 8 for one operator and 8 to 12 for two operators. Stall lengths quickly add up to excessive walking time and difficulty in keeping track of distant milking machines. These parlors have received a recent return to interest because of extra computer controlled automation. If auto detachers are used, the detacher can signal that a unit has been removed and the cow automatically let out, the gate closes and another cow is allowed to enter the stall.

This parlor type has a high stall use rate (7 to 8 cows/stall/hour) which makes it an economical choice for farms using a high level of automation and technology and is well suited to farms with up to about 400 cows that practice a high level of management. This parlor type is not easily expandable, but if designed properly can be converted into a herringbone or parallel parlor with more milking stalls in the future

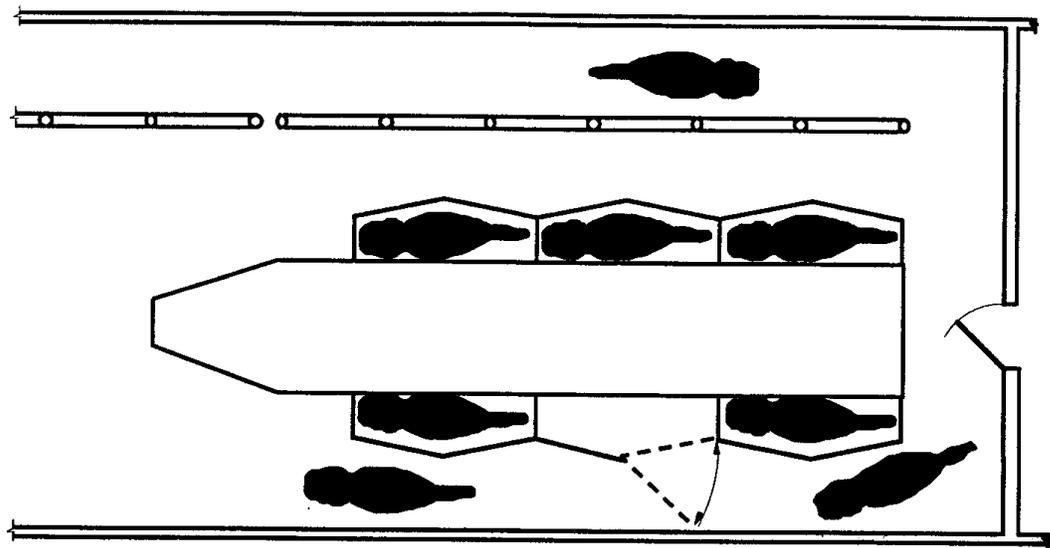


Figure 2.2 2 x 3 Side Open Parlor With Single Return Lane

## Herringbone (Fishbone) Parlor

Herringbone parlors are the most common parlor type in the US for 'small' parlors (less than double 12). Cows stand on an elevated platform in an angled or herringbone fashion facing away from the operator area. This exposes enough of the back half of the cow to allow access to milk her from the side and room for an arm type detacher and associated equipment.

Herringbone parlors are located on the end of a rectangular holding area allowing cows to enter single file as a group directly into either side of the parlor. On completion of milking the cows exit single file by walking straight ahead and out of the parlor. In most layouts the cows make either a 180-degree turn down a return lane back past the holding area or a 90-degree turn and out a side door or across the parlor to a return lane on the other side. Parlors with more than 12 stalls on a side benefit from rapid exit stalls to speed up the exiting process. In this case the cows walk straight away from the operator area in to a wide exit area. Normal design has a return lane on either side so cows go directly from the exit area past the holding area. However, cows on one side can be directed across to a single return lane on the other side.

As the number of stalls on a side increases it becomes more difficult to keep track of each cow and milking machine. In larger parlors the two rows of stalls may be arranged in a wedge or “V” configuration resulting in a wider operator area on the end away from the parlor animal entrance. This improves the visibility of units and cows from the other side of the operator area.

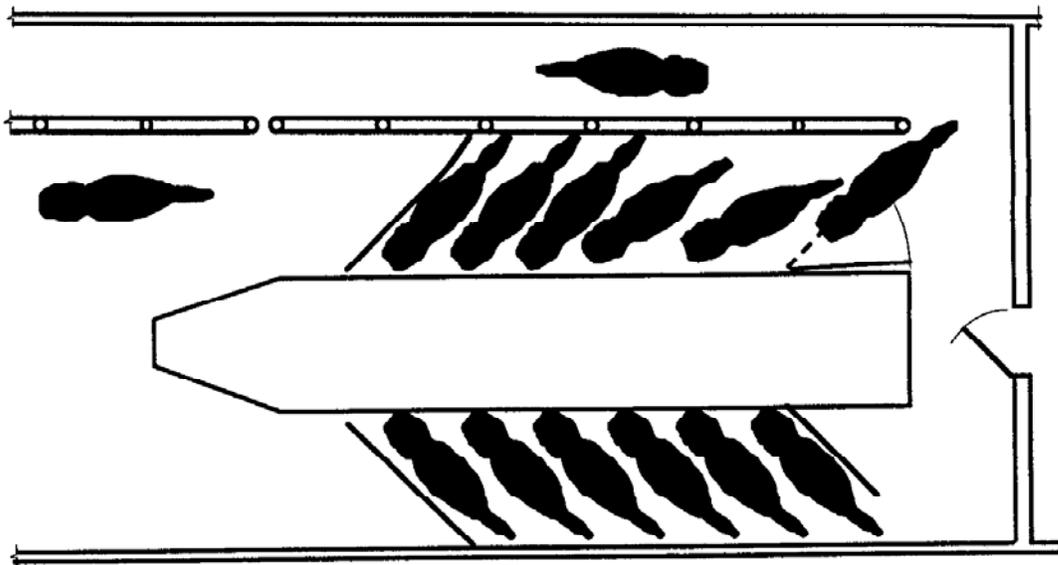


Figure 2.3 2 x 6 Herringbone Milking Parlor with Single Return Lane

## Parallel (Side by Side) Parlor

Cows stand on an elevated platform at a 90-degree angle facing away from the operator area. Access to the udder is between the rear legs, which reduces visibility of the front quarters and can make unit attachment and udder user sanitation more difficult. This configuration makes the walking distance shorter than in a herringbone parlor. The cow platform is wider than a herringbone parlor to accommodate the length of the cow. Stall fronts use chutes or small gates to position each cow. To assure that each position is filled in order, a series of interlocking fronts prevent a position from being used until the one next to it has been

occupied. Most parallel parlors use rapid exit stall fronts and use dual return lanes. The stall spacing in this parlor type is such that support arms cannot be used. It is also more difficult to balance milking units on the udder in this parlor type.

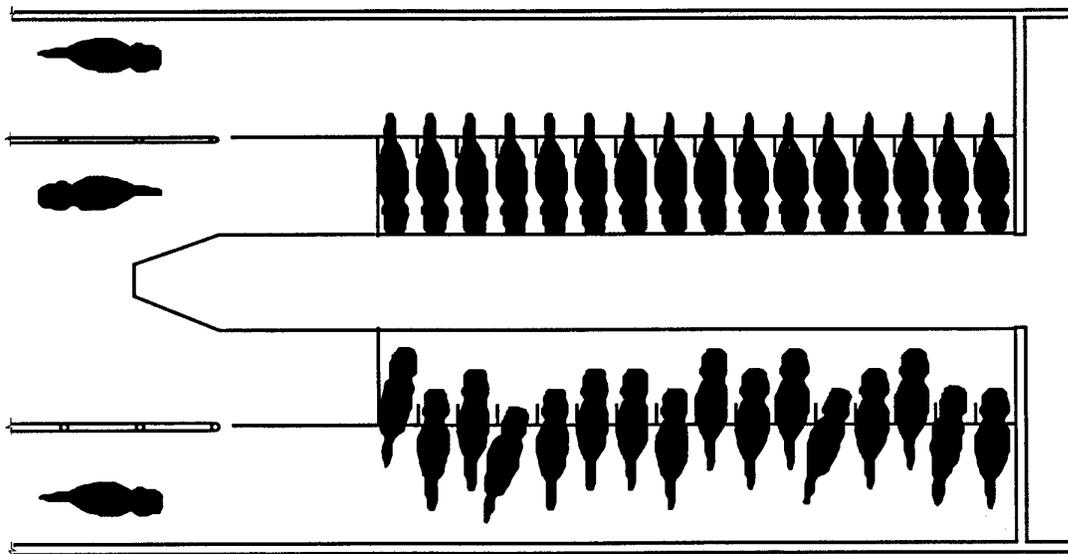


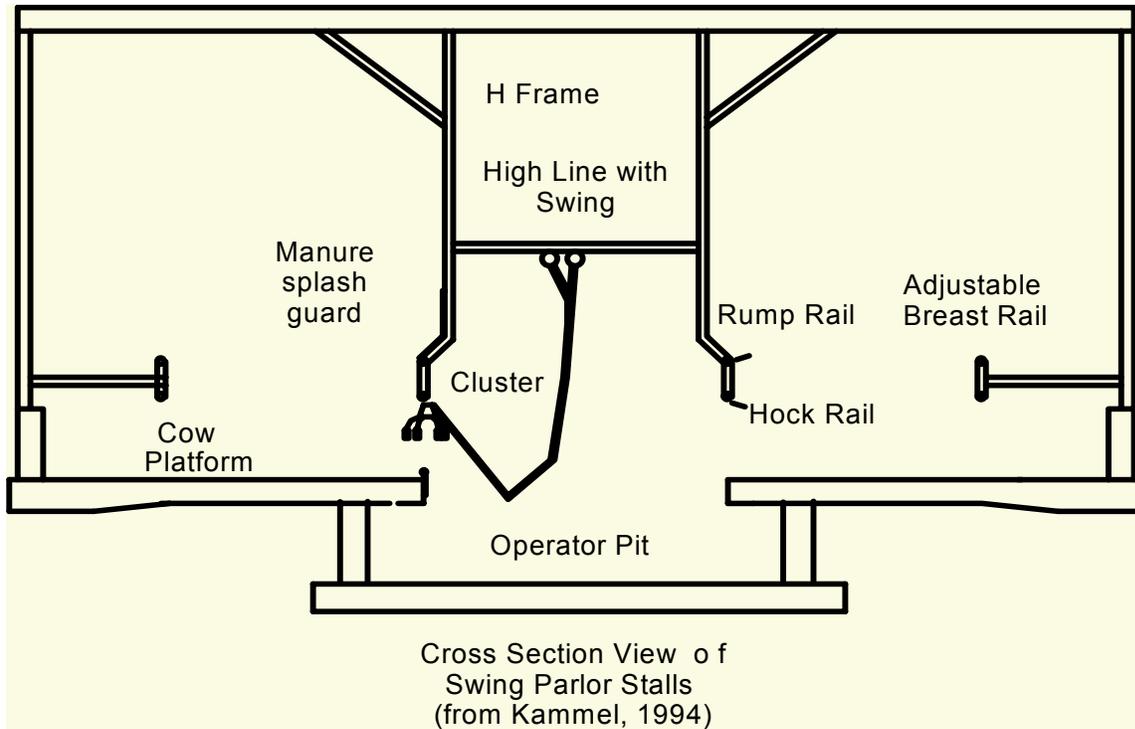
Figure 2.7

A 2 x 12 Parallel Milking Parlor With Rapid Exit and Two Return Lanes.

## Swing (Swing-over) Parlor

Swing parlors often use a hybrid stall referred to as parabone. The cows are placed at a greater angle from the operator (about 70 degrees) than in traditional herringbones but less than 90 degrees as in a parallel. This configuration usually eliminates the need for front positioners as used in a parallel. The sharp angle does not expose enough of the cow's body to allow milking from the side, however. Procedures and equipment developed for milking between the hind legs are used. Milklines are typically mounted as "midlines" or above the head of the operator resulting in a lift from the udder to milk line of about 1 meter

The width of the pit can vary between 5-8 feet, depending on the length of parlor and number of operators. Cows can exit single file to the front end of the parlor or to the sides of the parlor using a rapid exit type front. Maximum cow movement efficiency is attained when cows walk straight in from the holding area and exit straight out, without turning. It is recommended that the cow platform be extended 2-3 cows beyond the pit into the holding area to position these cows behind the last cow to be milked, and in many cases no back gate is used. This arrangement helps cow flow for the next loading. A pendulum gate or chop gate is used at the front gate location on the platform to allow quick stopping of the first cow during the next platform loading. An adjustable breast rail allows adjustment of the line of cows to position the rump up against the rump rail to position the udder as close as possible to the operator pit. The rump rail can be a straight rail or an "S" rail and is usually located directly above the edge of the cow platform. A hock rail is placed approximately 8 inches below the rump rail to prevent cows kicking backward and stepping off the platform. A

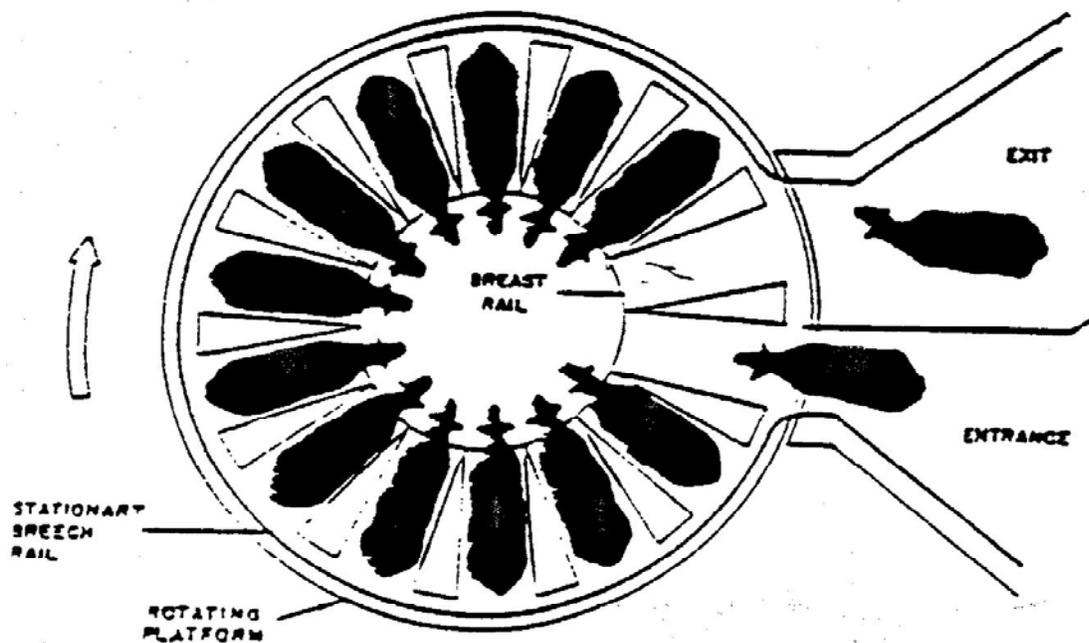


manure splashguard can be placed above the rump rail to direct manure to the platform instead of the pit.

The primary advantage of a swing parlor is that fewer milking units are needed and stall designs are simpler, both of which reduce the initial cost of the parlor. The main disadvantage of this parlor type is the inconvenience resulting from milk hoses hanging in the operator area and the inefficiencies resulting from switching units from side to side (especially for a slow milking cow and/or cow requiring special attention). This parlor type is not suited to the use of support arms and automatic detachers are typically mounted above the milkline.

## Rotary (Carousel, Turnstile) parlor

The advantage of the rotary parlor is that the cow movement functions are largely automated, freeing the operators to tasks more directly associated with milking. Rotary parlors typically require three operators: one for unit attachment, one to detach units and/or apply post milking teat dip and one to tend to any problems occurring while cows are traveling around (reattach units, tend to liner lips, etc.). This parlor type is not expandable. And the capital cost is usually higher per stall than for non-moving parlors. Because of these characteristics, rotary parlors are best suited to larger herds (>1000 cows). One advantage of a rotary parlor is that the work routine is very regimented and uniform. Milking procedures will in general be much more consistent and efficient in a large rotary parlor (60 stalls) than in an equivalently sized herringbone or parallel parlor (double 30). Rotary parlors usually use a 'face-in' configuration and are subject to all of the same disadvantages of a parallel milking parlor. It is more difficult to provide any special cow care on a rotary platform than a stationary parlor.



## Holding area Size

The amount of time cows spend standing in the holding area of milking parlor away from feed, water and resting areas should be minimized. The actual length of time will depend on number of milkings per day, climate where the dairy is located and production level expected from cows. Typical recommendations are 60 minutes, 45 minutes and 30 minutes for two, three or four time a day milking respectively or a total of about two hours per day away from feed, water and rest. Coordinate the size of the largest cow group and the milking parlor throughput to achieve this goal.