

Foot bath design and construction

By Nick Bell

The ideal foot bath?

- 3m long – so cows make several steps and don't try to jump it
- Good cow flow
- Deep enough so that it could be filled to over 4" deep
- Designed so cows can't straddle or walk with one foot out the bath
- Easy fill, easy drain, easy clean



Temporary plastic/metal or permanent concrete?

Most people and cows prefer the permanent concrete

- Pros:
 - Easier to manage (fill/drain)
 - Better cow flow as less clatter and a more comfortable floor surface to walk on
 - Cows less likely to injury themselves
 - Isn't damaged by chemicals
- Cons:
 - Cannot be removed or adjusted easily once installed (especially the sunken concrete baths)
- Tips:
 - Use plastic baths to test the proposed site of a new bath
 - If the bottom of a plastic bath is ridge, use carpet to reduce the discomfort
 - If the bottom has prominent nipples, grind these off or install rubber matting (e.g. a cubicle mat)



Made to measure metal agent bath

Plastic pre-wash with cubicle mats in the bottom for comfort

Hoofmats?

- Pros
 - Quick and simple to set up
 - Very little cow disturbance
 - Very little, if any, splashing onto udder
 - Saves labour and chemical usage (which may pay for additional cost compared to foot bath)
- Cons
 - Only disinfects a short way up the heel. Probably insufficient to treat large, well-established lesions.
 - No use if the feet are very dirty
 - Wear out fairly quickly (100,000 cow passes), and at £100 a mat, this can be expensive compared to foot baths
- Tips
 - Useful for farms where there is no foot bath and only a sporadic need for bathing
 - Potential use for economic antibiotic foot bathing
 - Probably not reliable enough without some other means of treatment (knap-sac sprays or deep foot bath system)



Before or after the parlour?

Most people prefer after the parlour

- Pros:
 - Formalin can be used without causing fumes in the parlour
 - Antibiotics can be used without risk of splash onto the udder causing antibiotic failures
 - Cows can walk through quietly on way to feed barrier
 - Narrower footbath reduces chemical usage
- Cons:
 - Harder to supervise than a bath before milking
 - Problems with cow flow can interrupt milking
 - Feet may be dirtier than straight from field
 - Dirty water from the pre-wash may be a mastitis risk on open teat ends



Before the parlour

- This foot bath worked well, with good cow flow to the parlour
 - 11 foot square prewash and agent bath



Far from or close to the parlour

- Far from parlour (to allow at least one side of cows to leave a herring-bone) is generally preferred provided a hose is nearby
- Close to parlour
 - Easier to fill and clean out
 - Easier to supervise and check throughout milking
- Far from parlour
 - Less problems with cow flow interfering with milking (less impact of sharp turns or funnelling of cows)
 - Less likely to have formalin fumes entering the parlour

Wide or narrow?

Most people favour two cow wide foot baths (>1.8m/6 foot)

- Pros:
 - Better cow flow
 - Larger volume suitable for large herds
 - Cows less likely to attempt to walk with feet on top of the walls either side of the bath
- Cons:
 - More chemicals used
 - Takes up more space
 - Too expensive for antibiotics (could use hoof mats or inset a plastic bath)
- Tips
 - if you walk cows through the bath every day then cow flow is less of a problem for a single width bath
 - Quarry belt fixed to the wall along the edges will stop cows putting their feet along the walls



Cow flow and herd size is probably the determinant of ideal width

- Single width likely to hold 330L (3m long, 1.1m wide, 10cm deep)
 - 165 cow herd could probably pass through this twice if 5% formalin used, before it needed replacing
- Double width likely to hold 540L (3m long, 1.8m wide, 10cm deep)
 - 260 cow herd could probably pass through this twice if 5% formalin used, before it needed replacing

Pre wash?

- Most people favour a pre-wash
- Pros:
 - Cows dung in prewash preserving life of main wash
 - It should wash off fresh slurry preserving life of main bath
 - It slows cows down, reducing the tendency for cows to jump over treatment bath
 - Can be filled with disinfectant to increase treatment intensity at times of need
- Cons
 - An extra bath to install and manage
 - Splash onto udder may be a mastitis risk
 - Could be a source of digital dermatitis or foul infection if treatment bath is too dilute or missed by cows



Or compartments in treatment bath?

In this picture, cows walked through two copper sulphate baths of the same strength. By the time a number of cows had walked through, the first compartment had become very contaminated but the second section was relatively clean

Tip – if there is insufficient room for a prewash, split the treatment bath into two compartments



← Cow flow

Ridged bottom or flat bottomed

Always flat bottomed

- Pros:
 - Cow comfort and cow flow
 - Foot health
- Cons:
 - Claws may not spread. Not really a problem. Only a problem for short baths when cows skip through



Drain or scrape?

Most people prefer a drain with a bung from a building/plumbing merchant

- Pros:
 - Quick to empty
 - Easily hosed clean for a more effective foot bath
- Cons:
 - Scraper is less fiddle and removes dung and slurry quickly
 - Requires a bung or drain system at installation
 - Drain less than 4" diameter is likely to block
 - Gloves should be used if hands come into contact with formalin and other harmful chemicals
- Tips- have both - a twin bunged drain and a hand scraper!



Island after pre-wash or no island?

Most people prefer without

- Pros:
 - Simpler and cheaper to construct
 - Less space needed
 - Feet cleaner prior to agent bath. An island needs to be kept clean. It is an area prone to dunging, making feet dirty prior to the agent bath
- Cons:
 - Some dilution of agent bath with pre-wash solution may occur
 - Longer distance for dunging prior to entering agent
- Tips
 - if you have an island, make it a full cow length
 - Have a hose to wash all around the foot bathing area



Island

Ramp or sharp step in/out?

- Cows probably prefer steps (although no-one really knows)
- Pros:
 - Cow flow
 - Deep solution at both ends
 - Easier to construct
- Cons:
 - Cows need to walk through a dry bath first as they can't edge in?
 - Bevelled or rounded edges needed to prevent injury
 - Perhaps weaker



Angled step-in helps cows enter foot bath

Ramp in and out

Bung in foot bath wall or vertical drain?



- Either as both work well. Practical detail depending on next question. Drains or pipe blocking bungs are available from most plumbing stores, builders merchants or plumbers

“Sunken” or “raised” or a combination?

Most people prefer a “step down into” and “step over out”

- “Step down into” and “step over out” is easier to install if there is already a step down (picture right)
- “Step over” easier to install on a flat/level run of concrete
- Cows probably prefer a step down/step up out
- Less splash if cows don’t have to leap up-hill out a foot bath
- Probably best to go with whatever is easiest to install given the different levels present on farm

“Step over” to get out



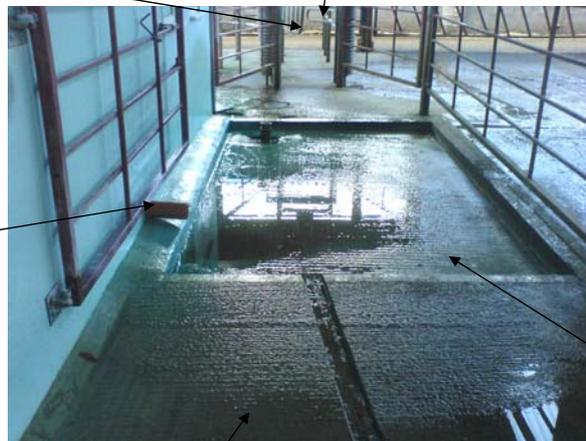
Step down

Miscellaneous considerations

Well ventilated

Free of sharp turns at entrance and exit

Pipe for parlour washings or filling with water (preferably warm)



Metal work not galvanised (rotted by copper sulphate)

Bottom has good grip

Distant from parlour so a line of cows can get through the bath easily and fumes due not reach the pit but close enough for hoses for filling and cleaning, piping for parlour washings, supervision and drainage

Foot bath construction

- Materials for walls
 - Metal baths – some metals will rot with copper sulphate
 - Concrete – paving kerbs or concrete slabs can be cut to length or cut diagonally for corners
 - Rendered breeze blocks
 - RSJ



Simple breeze blocks

Advisable to put gates along the inside of the blockwork otherwise some cows walk along the edges



Breeze blocks laid on their side



4 inch pipe with screw cap

Simple metal work or wood work

- Avoid galvanised metal – rotted by copper sulphate
- Avoid ledges – some cows learn to straddle or walk along ledges



Foot bath design summary

1. After milking not before
2. 3m long
3. Can be filled to 4 inches at least
4. Easy fill, easy drain, easy clean
5. Flat bottomed, sharp step in/out

Choices

1. Concrete or mobile (plastic/metal)
2. One-cow or two-cow width
3. Pre-wash, compartments or nothing, islands or not
4. Bung or drain
5. Sunken or raised

