

Catching Pens

In this document:

- Catching pens information
- Catching Pen designs:
 - Backfill pens
 - Parallel flow
 - Front fill
 - Elevated Catching Race (to be included mid-Jan 2006)
- Productivity measures
- OH&S

Catching Pens

Getting sheep into catching pens is one of the most difficult (and sometimes frustrating) jobs at shearing. Having a catching pen design that enables efficient delivery of sheep to the shearer is critical.

The close proximity of the catching pens to the shearing board makes them extremely noisy and this makes sheep movement difficult.

The major elements of design for catching pens are as follows:

- They should be able to hold up to 20 sheep (15 is preferable), or approximately half the expected tally for the run. This allows for catching pens to be filled when there is minimum activity on the board;
- Dimensions should be in the vicinity of 2.0 m (width) by 3.0 m (although in older sheds some compromise may be needed);
- Lift (or slide)-swing gates are often preferred although standard Gudgeon gates also operate effectively if designed correctly. A simple measure for gate width is a man should be able to stand between and hold onto the end of the gate to control sheep from escaping back behind him; and
- Forcing pens behind the catching pens should be of equal carrying capacity to the catching pens (or multiples thereof).

Catching pen designs

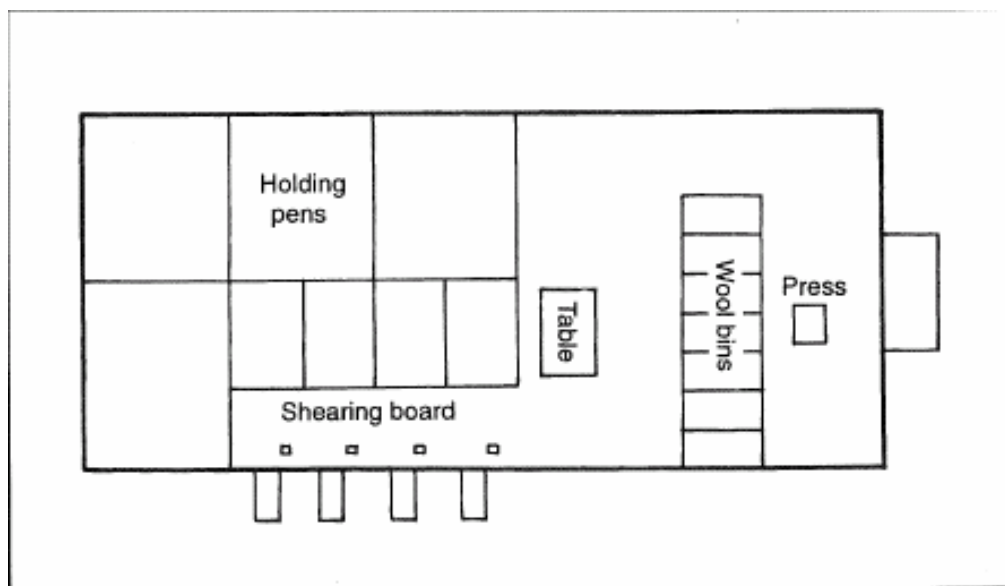
There are four main designs: backfill pens, parallel flow, front fill and elevated catching races as described below.

1. Backfill Pens Catching Pens

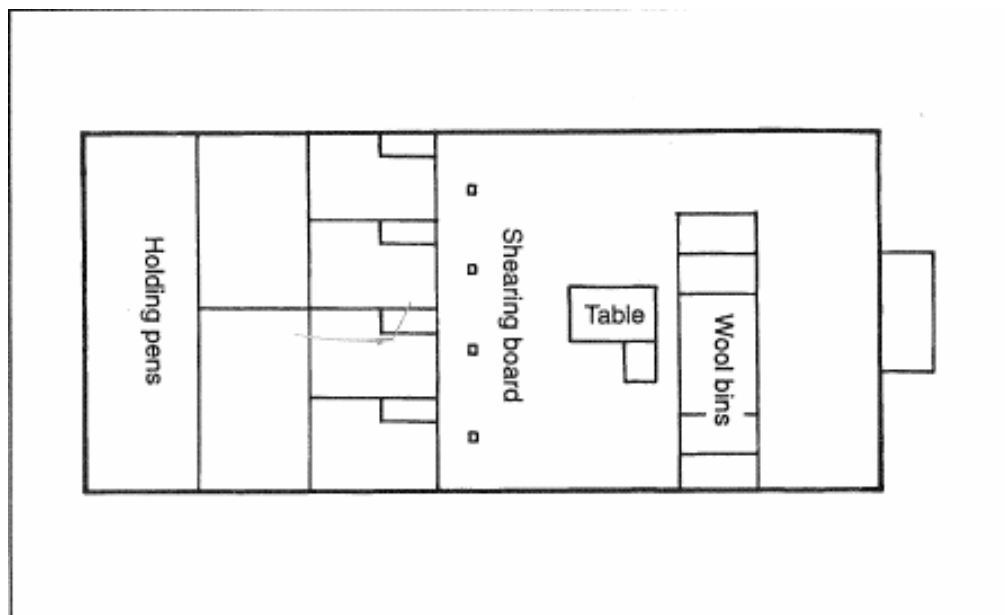
This traditional style of catching pen tends to be found in older sheds. Sheep move directly toward the shearing board thus it is often difficult to get sheep to “fill” the catching pen (as they are moving toward the noise and activity).

The following example shearing board designs reprinted from Conroy and Hanrahan shows “back fill” catching pens in:

a) “across the board” style;



b) “centre board” style;

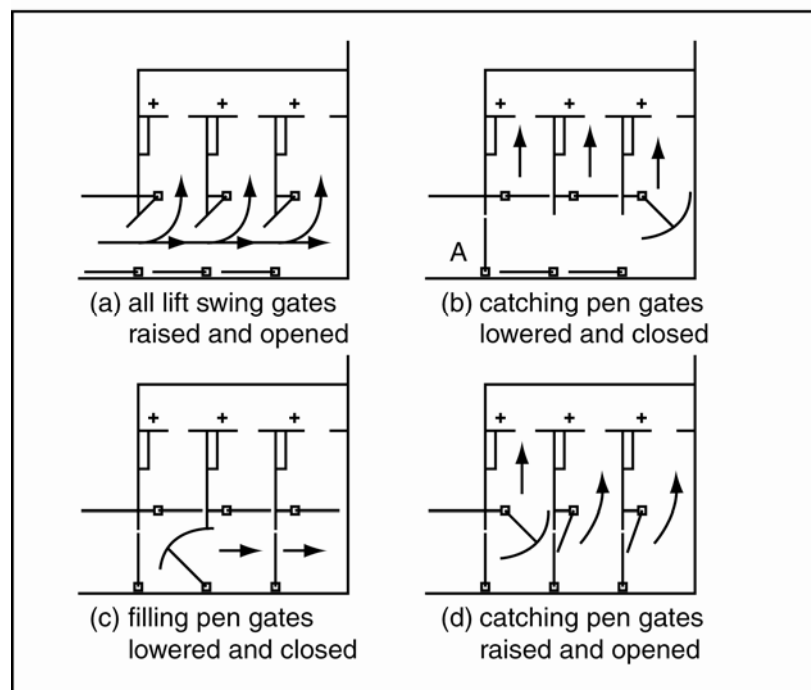


2. Catching Pens Parallel Flow

This is a refinement to the traditional back fill pens where sheep are moved in parallel to the shearing board in a series of filling pens and then moved into catching pens progressively by using large lift swing gates. Each pen is progressively filled. An example from Barber & Freeman is shown below.

All gates are initially raised and opened. Sheep are brought from the holding pens and both the catching pens and filling pens are filled as full as possible. The furthestmost gate is then closed to confine the sheep. Starting at the left hand end, the lift swing gate at the rear of each catching pen is closed in turn by swinging it over the backs of the woolly sheep, lowering it at an appropriate point, and using it then to move remaining sheep into the catching pen so that it is well filled with sheep. When the three catching pens have been filled, the sheep handler moves from right to left closing each of the lift swing gates along the wall of the shed in turn by rotating it over the backs of the sheep, lowering it at a convenient point, and sweeping remaining sheep into the filling pen to keep the pen as full as possible.

Figure 3.16. Parallel flow method with separate filling and catching pens (all gates are lift swing type).



3. Catching Pens – Front Fill

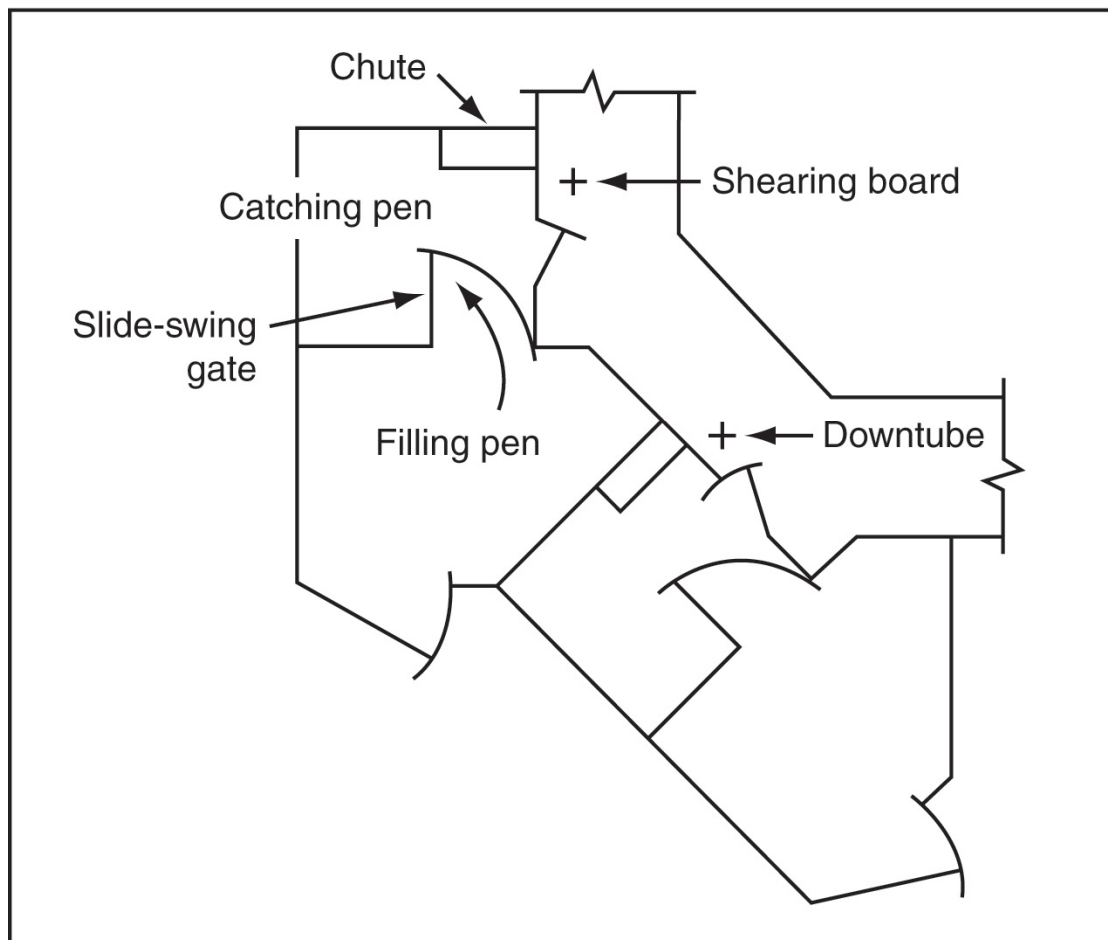
A system which has found widespread acceptance places the filling pen for each stand beside the catching pen rather than behind. Sheep move into the catching pen by way of a gate near the front of the pen. Such pens are known as front fill catching pens, although a more accurate description would be side fill pens. As sheep are moving away from the shearing board when entering the pen they tend to fill better. However, there are two disadvantages of front fill pens.

- They usually need a long or bent shearing board to enable the catching pen and the forcing pen to be “side by side”; and
- As a result, they can be more difficult to build.

Design and dimensions from Barber and Freeman from Conroy and Hanrahan are shown below.

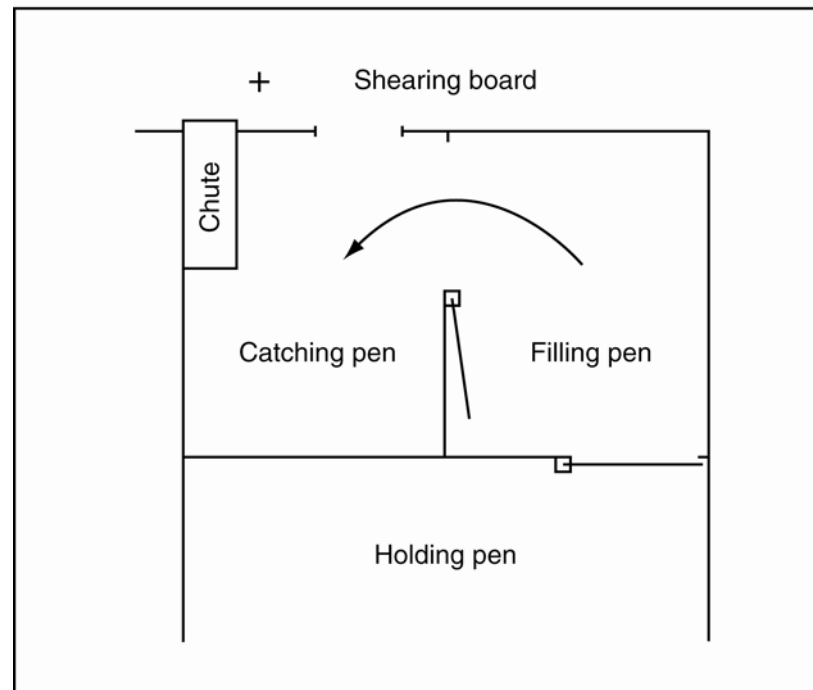
Source: Conroy & Hanrahan

Figure 21. An example of a front-fill catching design. Each stand requires two pens – a catching pen and an adjacent forcing pen.



Source: Barber & Freeman

Figure 3.18. Pen arrangement for front-filling catching pens.



Productivity

Key issues in relation to Productivity and Occupational Health and Safety also need consideration.

Catching Pens – Productivity Measures

The greatest improvement in productivity can come from the ease (and thus time) or difficulty of filling the catching pens from the holding pens. Less time taken here allows for more time for the penner up attending to other duties. Some measurements that can be used are:

- Man minutes per 20 sheep into catching pen/s;
- Man minutes for 1st 20sheep into the catching pen/s, shed not working;
- Man minutes for 1st 20sheep into the catching pen/s. shed working;
- Man minutes for 20 sheep into a partially filled catching pen/s shed not working;
- Man minutes for 20 sheep into a partially filled catching pen/s shed working;
- Number of people required for the task;
- Number of sheep dogs required for the task; and
- Perceived exertion, rate the task as 1 - 10

- 1 = minimum exertion/easiest penning up experienced ever.
- 10 = maximum exertion/hardest penning up experienced ever.

Catching Pens – OH&S

Similar to the gains made from productivity, where the ease of filling the catching pens from the holding pens can be increased, far less physical exertion is spent by the penner up. The use of lift swing gates can also lead to less strain on the body, especially when trying to force sheep into pens. Well designed filling and catching pens with good sheep flow features and rates will reduce the amount physical exertion for the penner up.

Other critical OH&S aspects of the catching pen and its entrance are:

- No protruding objects that could inadvertently be walked into by shed staff;
- No protruding bolts on gates or fences; and
- Do not use woven wire mesh in the catching pens.

An example of OH&S risks in relation to catching pens can be found below: (Source: © Victorian WorkCover Authority)

6.3 Catching pens, gateways and doors

Hazard or risk	Risk control
The physical size of the pens may result in excessive lifting and dragging if too large, or restrict movement if it is too small. Shared pens need to be bigger and therefore the shearer must drag the sheep further.	When constructing new sheds or altering the shed layout, catching pen dimensions should provide the best tradeoff between pen-ups and distance of drag. The catching pen dimensions providing the best tradeoff between the minimum number of pen-ups per run and minimum distance to drag the sheep should be about 2.5 x 2.5 metres, which would hold about 20–25 fully grown sheep. Typically, more energy is spent on catching and moving the sheep from the catching pen to the stand than on shearing the sheep. (See the Ballarat Shearing Shed Design Notes in Appendix 3)
Protrusions in the pen, particularly on or near the gate, can result in punctures, cuts and bruising.	The inside of pens and gates should be examined for protrusions before shearing and repairs made if necessary.
Battens that run across the catching pen allow sheep to gain a foothold, restricting the ease of tipping and dragging and increasing the risk of back injury to workers. Additionally, rotten or loose battens can result in sprains, fractures and wounds from exposed nails.	Battens should run towards the catching pen gate, enabling the shearer to tip the sheep's back towards the gate more easily, reducing twisting and the distance it needs to be dragged and reducing friction during dragging. Before shearing, all battens should be inspected and any loose and/or rotten battens repaired. Generally all battens must be in sound condition and securely fixed. Light coming up from under the floor should be blocked out if it is causing problems during penning. (See the Ballarat Shearing Shed Design Notes in Appendix 3)

Hazard or risk	Risk control
<p>The size, weight and action of the catching pen doors can create risks. Low doors can strike the shearer in the lower back region when pushed backward by a sheep. Heavy doors can also injure the back when they strike the shearer as they drag the sheep from the pen. Gates that are hard to open may also increase fatigue and back strain while dragging.</p>	<p>The top edge of the pen door should not be able to strike the shearer in the lower back. To minimize the impact of the pen gate on the shearer the catch resistance and inertia of pen gates should be minimized. Broad padding should be fixed on the inside of gates at the height of the lower back. Doors should be made from lightweight material, smooth on both sides and with no protrusions, and the force required to open the gates should be minimized.</p>
<p>Latching gates open can allow sheep to escape from the catching pen onto the board, resulting in collisions, falls from raised boards and loss of handpiece control.</p>	<p>Pen doors should self closing and allowed to close after catching each sheep.</p>
<p>Obstructions or steps between the board and catching pen increase the risk of trips and falls and back injury when dragging sheep to the downtube. If the floor is wet and dirty there is a risk of injuries from slips, trips and falls.</p>	<p>There should be no step nor obstruction (e.g. board fixed to the floor across gateway) between the catching pen and the board. The catching pen gate should swing both ways to allow uninterrupted access for the shearer. Double (batwing) gates are most suitable for across-the-board sheds and provide easy access for the shearer, minimal obstruction to the pickers-up on the board and offer equal accessibility to left-handed shearers. Single gates may be more appropriate for same-side catch and let-go designs. Keep the floor as clean as possible. Although it is understood that in some cases a dirty floor is unavoidable, measures can be taken for improvements, such as not leaving sheep in the catching pens overnight.</p>

Hazard or risk	Risk control
<p>Strain on the shearer's back results from poorly located and oriented catching pens and gates. If a shearer is required to turn and twist each sheep through more than 90° as he or she drags it from the pen to the shearing position, the risk of injury, short and long-term, increases. Fatigue and its associated problems also increase. Provision for left-handed shearers needs particular attention here.</p>	<p>The shearer should be able to walk backwards from the catching pen gate to the downtube without needing to twist or turn more than 90°. That is, the shearer or crutcher, having caught the sheep in the catching pen, should be able to walk backwards, carrying or dragging the sheep from the catching pen gateway (e.g. position 12 o'clock) to the shearing starting position beside the downtube, facing 3 o'clock or 9 o'clock depending on whether the shearer is right- or left-handed and whether the board design is across the board or open board. The best design is where the shearer walks backwards to the shearing position through a smaller angle. A very good example can be seen in some new sheds where the catching pen and gate directly face the stand. That is, the gate is at an angle to the wall rather than parallel with it.</p> <p>The distance from the back of the catching pen to the downtube should be kept to a minimum.</p> <p>The distance from the centre of the catching pen gate to 305 mm (1 ft) in front of the downtube (when hanging perpendicular) should be no more than 3050 mm (10 ft).</p> <p>A gradual floor slope in the catching pen toward the downtube will make tipping and dragging easier. Remove any obstructions between pen gates and downtube.</p> <p>Provide one or two stands in each shed for left-handed shearers. One left-handed stand for every four-right handed stands may be a suitable ratio.</p>

Source: © Victorian WorkCover Authority

The Victorian WorkCover Authority also provides the results of an analysis of the best type of catching pen floors (see next page):

Number one

Catching pen floors

Traditional design

The traditional design of catching pen floors is a horizontal wooden batten floor. The battens are often oriented perpendicular to the direction of the drag (across the pen) but sometimes parallel to the drag (toward the door).

Shearers say that sheep can be more difficult to tip when the battens run across the pen as the sheep can obtain a better grip. In addition dragging the sheep was said to be more difficult when the battens are across the pen. Although not yet widespread some people believe that a slope in the catching pen would be useful.

What is the best floor?

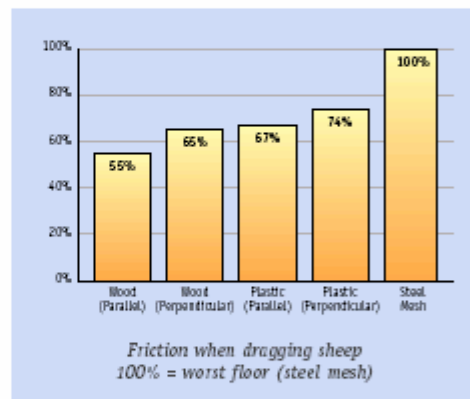
In a laboratory, several experienced shearers dragged sheep over floors of various slopes and materials. The dragging forces and coefficients of friction were calculated. The trials included two slopes and five materials.

Results

The chart shows that the best floor has only 55% of the friction of the worst floor.

Adding a slope to the floor makes the job about 10% easier again.

Combining a slope and the best surface means that a shearer will drag 6 kg less per sheep or about 1200 kg less per day therefore decreasing the risk of injury.



Recommended floor

The best floor tested consisted of:

1. Wooden battens running toward the door.
2. Slope toward the door of 1:10.

*WorkSafe Victoria gratefully acknowledges
VTOSH Australia
University of Ballarat
PO Box 663
Ballarat 3353
Tel: 03 5327 9150*

Source: © Victorian WorkCover Authority