

Gates

Barber & Freeman suggest that any gate within a shed (or yard for that matter) should meet the following functional requirements:

1. Have a height and strength comparable to the fences;
2. Be constructed of sound, cost effective materials;
3. Be capable of single-handed manual operation;
4. Provide an opening sufficient for sheep to move without undue restriction;
5. Facilitate the movement of sheep from pen to pen; and
6. Allow efficient use of the pen space.

Gates are generally made of timber or steel/galvanised pipe.

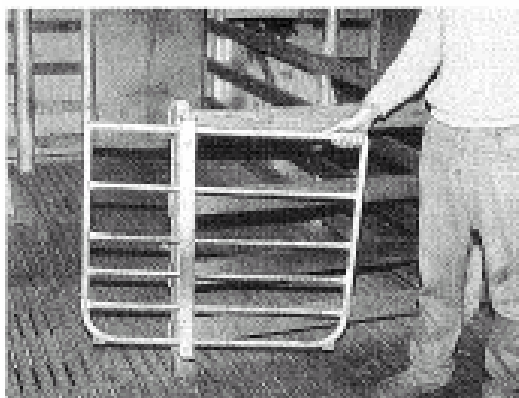
Timber frames must have square corners, be free of twisting, be adequately braced to prevent sag at the outer edges, and have strong joints such as would be obtained by using bolts.

Steel frames should be free of twisting, but diagonal bracing is not normally needed as the infill material used to complete the gate provides adequate restraint against sagging.

Several types of gate give better performance in shearing sheds than does the common swing gate. The most severe shortcoming of the common swing gate is that a portion of the pen space must be left free in order to swing the gate open or closed. Other options include:

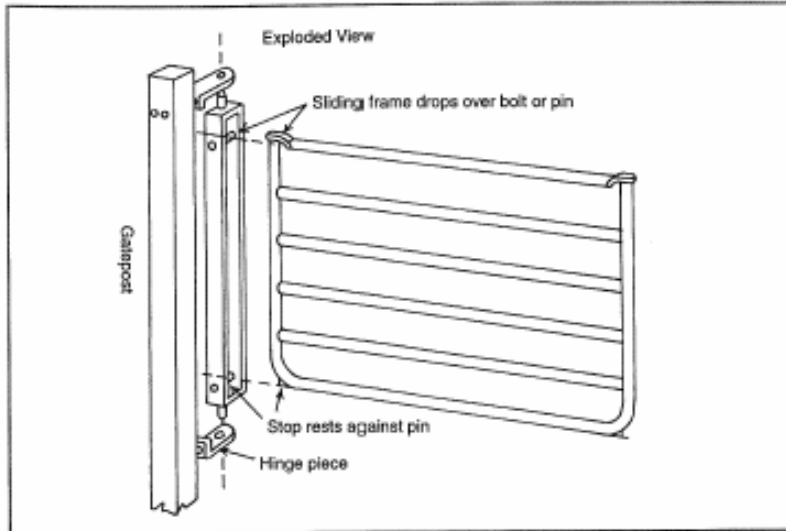
Slide Swing Gates

The slide swing gate has two parts to its action. The frame can slide end for end through the hinge piece, and it can also swing about one of its vertical sides like a common swing gate.



A slide-swing gate mounted at the back of the post.

Figure 27. Slide-swing gate components.



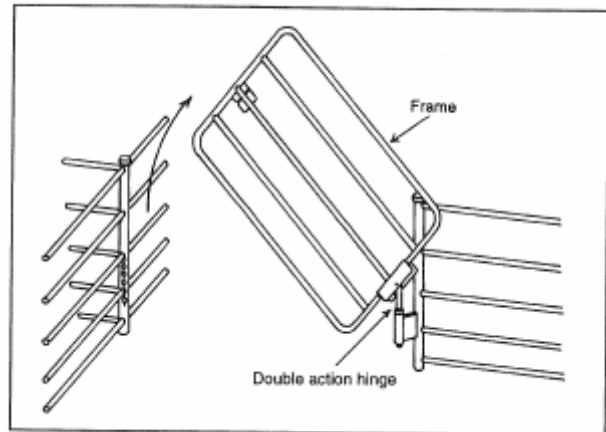
Both diagrams reprinted from Conroy and Hanrahan

Tip Swing Gate

Another type of gate which produces a similar result but in a different way is the tip swing gate. Again there are two stages in its operation. A short horizontal pin half way up one vertical side allows the gate to pivot at this point so that it can be tipped over to expose the opening between two pens. The Figure below shows the gate part way through the tipping action.



Figure 28. Tip-swing gate.

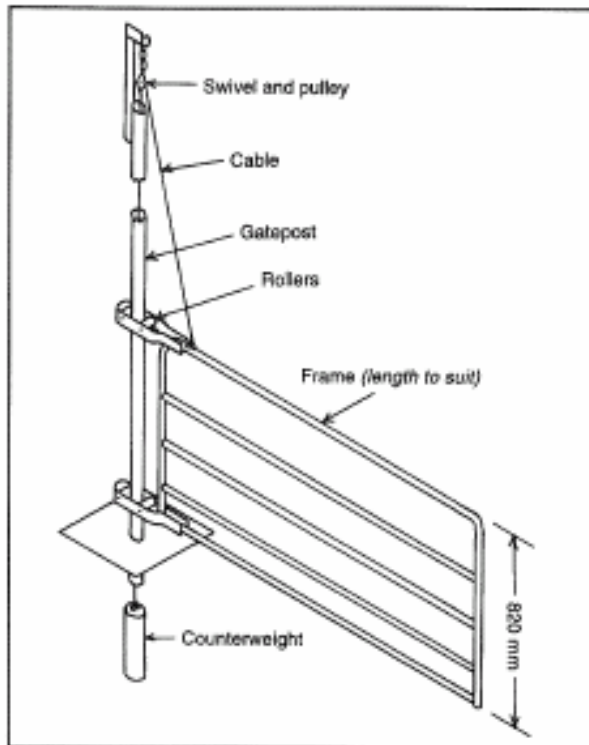


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Lift Swing Gate

A third type of gate has been in limited use longer than either of the previous types. The lift swing gate again has a compound action in that it can be raised vertically and also rotated about a gate post, either in the raised or lowered position. Its manufacture requires care and patience so that it can be raised or lowered easily.

Figure 29. Lift-swing gate.



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OH&S

An example of OH&S risks in relation to gates and doorways can be below (from the Victorian Workcover Authority).

Source: © Victorian Workcover Authority

6.3 Catching pens, gateways and doors

Hazard or risk	Risk control
<p>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.</p>	<p>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)</p>
<p>Protrusions in the pen, particularly on or near the gate, can result in punctures, cuts and bruising.</p>	<p>The inside of pens and gates should be examined for protrusions before shearing and repairs made if necessary.</p>
<p>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.</p>	<p>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)</p>

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