

CATTLE HANDLING FACILITIES

COMPLETE INSTRUCTIONS

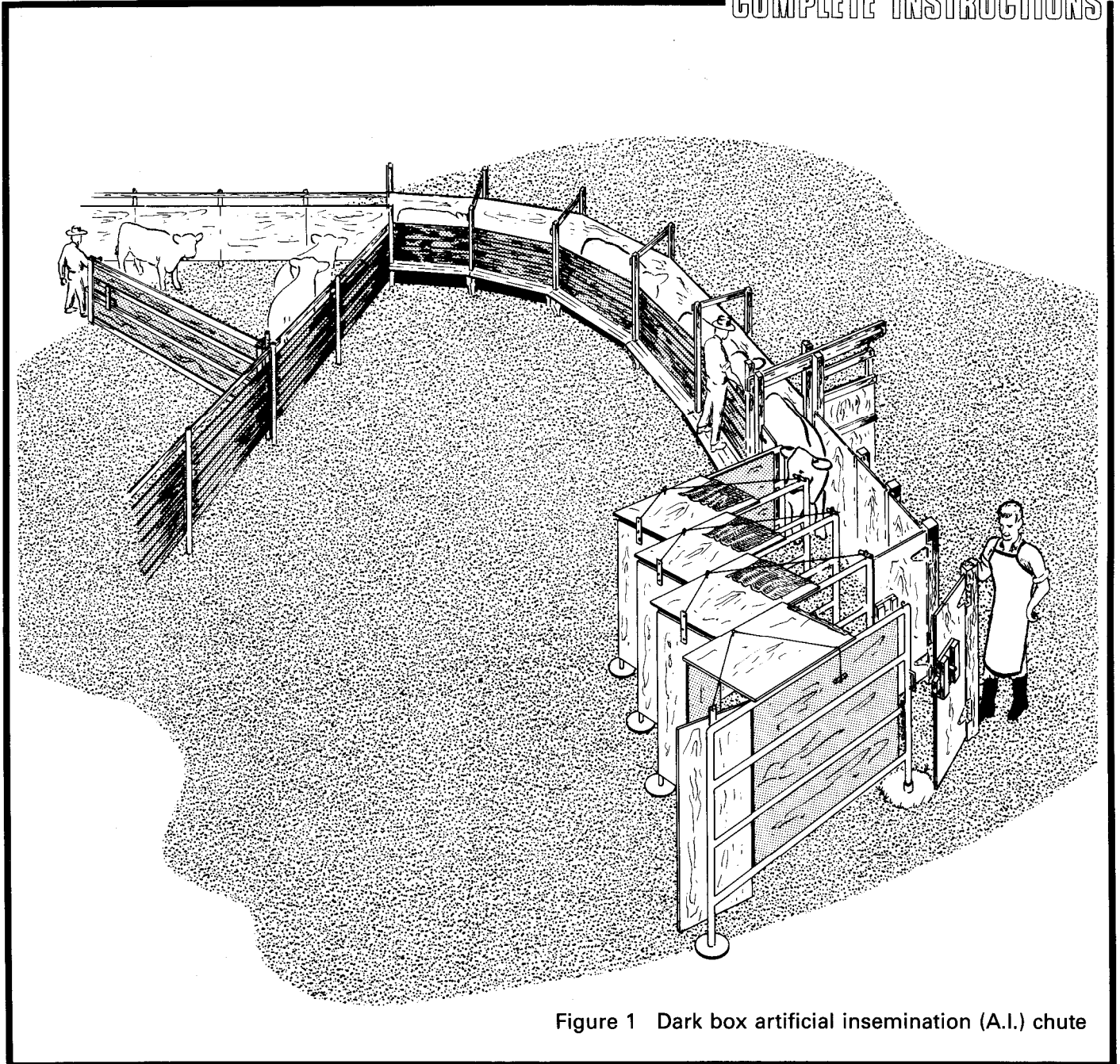


Figure 1 Dark box artificial insemination (A.I.) chute

CATTLE HANDLING FACILITIES

PLAN M-1800 REVISED 06:05

Good handling facilities contribute much to the easy, safe, rapid and humane handling of the animals and are essential to any cattle operation.

Good facilities need not be overly expensive, although it pays to invest in quality for the critical features. Use pressure-treated posts, sturdy gates, galvanized nails and bolts, strong latches and a good squeeze.

Some producers can build directly from plan leaflets, while others have to redesign a system to fit their farmsteads and individual needs. To be sure a system suits you, make a full-scale preliminary layout on the actual site (using stakes and string) before starting to dig postholes. Plan so that you can move cattle into the handling facilities from every pen in the feedlot.

Choose a well-drained site. A slope of approximately 1:50 away from the headgate and squeeze will keep the ground dry where the most work is done. A rough concrete pavement in the chute and around the squeeze and headgate prevents mudholes from developing and gives cattle a solid footing. For reasons that will become apparent later, do not start and stop the pavement with an abrupt step; merge it with the adjacent unpaved areas.

CATTLE BEHAVIOR

Handling cattle will be much easier if you understand their behavior. Much of the following information is based on work by Dr. Temple Grandin.

Remember that cattle have panoramic vision; they can see all around without turning their heads. This affects how they respond to their environment and how you must act around them.

Although well-trained dogs can help move cattle in open areas and large pens, they can bite and confuse cattle confined to the crowding pen and chute. Keep the dogs away.

HERD INSTINCT Cattle always follow the leader. To take advantage of this instinct, make the single-file chute at least 6 m (20 ft) long. In larger facilities, 9-15 m (30-50 ft) is recommended.

When isolated, cattle can become agitated and stressed, and one that balks communicates its fear to the next in line. In a chute, each animal should be able to see others ahead of it. If one refuses to move from the crowding pen, bring it through with a later group.

Cattle also balk if they seem to be entering a dead end. Don't frustrate them when moving through a chute by prodding before they can see a place to go. When laying out the crowding pen and funnel, run one wall

of the pen so it continues straight into the funnel (Figure 1). Cattle can then follow this smoothly into the chute. Don't make the funnel entrance symmetrical. Also, make the blocking and sorting gates in the single file chute from spaced planks (not solid panels) so that the animals can see a way through.

RESPONSE TO LIGHT Cattle fear harsh contrasts of light and shade; patterns of alternating light and dark cause them to balk (they often refuse to cross a shadow). Keep illumination uniform around loading chutes, scales and working areas and eliminate small bright spots in the chutes. If adding sunshades, make them solid, as slotted ones cast striped shadows. However, slotted shades are fine where the animals live and feel familiar. Be careful about casting shadows in the chute.

Cattle in the dark tend to move toward the light. Take advantage of this; for example, when loading at night, place a frosted light that illuminates the inside of the truck to help draw the animals in. Make sure that it does not glare in their faces.

Livestock balk if they have to look directly into the sun. Face loading and squeeze chutes either north or south to maximize sun angle and minimize shadows.

Sometimes it is difficult to persuade cattle to enter a roofed and/or walled working area, especially in bright sunlight. A single-file chute extended 3-5 m (10-16 ft) outside the building reduces balking. Never place the building walls where the crowding pen meets the single-file chute (strong shadows at this critical point can deter smooth cattle flow).

RESPONSE TO MOVEMENT Cattle will also balk if they see a moving or flapping object. Before moving them through the chute, check for any such objects they may see. Stand back from the headgate so that the approaching animals cannot see you with their wide-angle vision (Figure 2). The sides of the crowding pen, single-file chute and loading chute should be solid to prevent the animals from seeing people, equipment and other outside distractions.

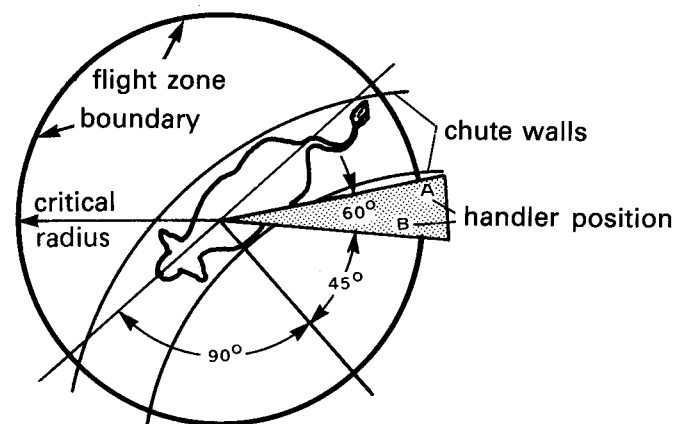


Figure 2 Flight zone

FLIGHT ZONE When you penetrate an animal's flight zone (Figure 2), the animal moves away. If you penetrate too deeply, the animal will either turn back, run past you or break and run away. Work on the edge of the flight zone, so the animal moves away in an orderly manner. The animal usually stops moving when you retreat from the zone.

The size of the flight zone varies, depending on the tameness of the animal. The radius for range cattle may be as much as 90 m (300 ft), whereas that of feedlot cattle may be only 1.5-8 m (5-26 ft).

Figure 2 shows the best position to stand when moving an animal; to make it walk forward, move into Position B (just inside the zone's boundary). Then retreat to Position A if you want the animal to stop. The solid curved lines indicate the curved chute.

Don't make the mistake of getting too close to the cattle when driving them down an alley or putting them in a crowding pen. If they rear up or try to turn back, back up and retreat from their flight zone. During handling, avoid shouting as this will enlarge the zone.

FACILITY REQUIREMENTS

DIMENSIONS Table 1 gives the recommended dimensions for safer beef cattle handling facilities.

COMPONENTS OF HANDLING FACILITIES Consider the following when planning your handling facility.

CORRAL, FENCES AND GATES Strong fences and gates are essential. To prevent wood decay, use CCA pressure treated posts. These should be 2.5 m (8 ft) long for the feedlot fences and 3 m (10 ft) long for the corral fences, placed no more than 2.4 m (8 ft) apart. Feedlot fences should have at least four rails and be 1.5 m (5 ft) high; corral fences need five rails, 1.8 m (6 ft) high. Curved fences encourage cattle to run along the fence, and keep them from bunching up in a corner as in a rectangular pen.

COLLECTION ALLEY AND HOLDING PENS An access or collection alley about 3.6 m (12 ft) wide guides cattle from the barn, feedlot or pasture to the holding pen. You need at least one holding pen, sized to hold the herd; two are better- a second one helps sort the animals. Allow about 2 m² (20 sq ft) per head for cattle to be worked immediately, and at least 5.6 m² (60 sq ft) for 540 kg (1200 lb) cattle to be held for several hours. Cattle held for longer periods will also need water and feed.

CROWDING GATE A 3-in. galvanized pipe embedded in concrete makes a good pivot. Make the height adjustable so the gate can be raised up to swing when snow, ice and manure build up on the ground. The gate works best with latch stops at several points in its swing along the funnel wall. Use a solid gate to keep the cattle from seeing through it.

WORKING CHUTE The distance from the catwalk platform to the top of the chute fence should be about 1 m (3 ft). Make the side of the chute solid, not of spaced planks or rails. Width and shape are critical; a straight sided chute 700 mm (28 in.) wide suits large animals. To convert to a narrower chute for calves, put in filler panels made from sheets of plywood framed with 2 x 6 spacer studs, or taper the sides from 550 mm (22 in.) wide at the floor to 800 mm (32 in.) at a height of 1500 mm (5 ft).

There is some controversy about tapered chutes. They adapt well to animals of varying sizes but can be a problem with range cattle or an animal that goes down or topples backwards.

Working chutes should be 6-15 m (20-50 ft) long. A curved chute has two important advantages: it doesn't let the animals see the truck, the squeeze chute or people until they are most of the way through, and it takes advantage of an animal's natural tendency to circle around the handler.

You can drive cattle most efficiently if you walk along the edge of the flight zone (Figure 2). A well-designed, curved, single-file chute has a catwalk for the handler outside the chute along the inner curve, never overhead. This lets you stand at the best angle so the cattle circle around you. The solid sides block out other visual distractions.

Blocking gates are placed in the working chute at the entrance and where cattle must be stopped or kept from backing up. Two different designs are available. One, a plywood-covered gate running on inclined rollers and track, is self closing. The other, a plank gate, runs on a greased pipe.

Either gate can be built with openings or made solid by covering with plywood. The choice depends on whether you want the cattle at the gate to see ahead, or be shut off (as in an A.I. chute).

PREGNANCY TEST AND A.I. CHUTE To improve conception rates, handle cows gently and don't let them become agitated or overheated. Never use the A.I. chute for branding, dehorning or injections, or the animals will associate the chute with pain. A cow can be easily restrained for A.I. or pregnancy testing in a dark box chute without headgate or squeeze (Figure 1). The box has solid sides, top and front, giving her a quiet, snug, dark enclosure where she is restrained from behind.

In the setup shown in Figure 1, you can service three cows at one time. First close the blocking gates, bring in the animals and place a cross rail behind each to keep her from backing up (the rail can be put at three different places to suit the length of the animal). Openings in the chute, 325 mm (13 in.) wide, let you enter safely behind each cow. After servicing, open the blocking gates and let the cows exit. Close the gates, remove the cross rails and bring in three more cows. This allows a rapid flow of cattle through the chute:

You are not restricted to three dark boxes; choose the number that suit your operation. For larger herds, consider a herringbone A.I. chute as shown in Figure 1 (CPS plan M-1819).

Loading chute Cattle load best if they go directly from the crowding pen rather than through a long working chute. For this reason, incorporate the loading chute as part of the crowding pen, or place it next to the main chute entrance (larger feedlots usually have loading ramps separate from the working chute).

Build a curved chute with solid sides and a radius of 3.6-5.1 m (12-17 ft); the larger radius is best.

The loading chute should not be too wide. A single-file chute 750-875 mm (30-35 in.) wide suits many producers. Reduce the width to 650 mm (26 in.) if only for calves. Some bigger feedlots have double-width chutes 1350-1800 mm (54-72 in.) wide.

The exception is at auctions and meat packing plants, where a chute is used only to unload. Here, a straight chute 1.8-3 m (6-10 ft) wide gives the animals a clear path to apparent freedom.

A catwalk on one side of the loading chute and ramp lets you load cattle easier.

A well-designed ramp has a level landing about 1.5 m (5 ft) long for livestock to walk on or off the truck. A fixed ramp should not slope more than 20° and a portable or adjustable ramp not more than 25°. A farm ramp also needs a height adjustment of about 650-1125 mm (26-45 in.) to match the floor of the vehicle being loaded; measure the truck if you

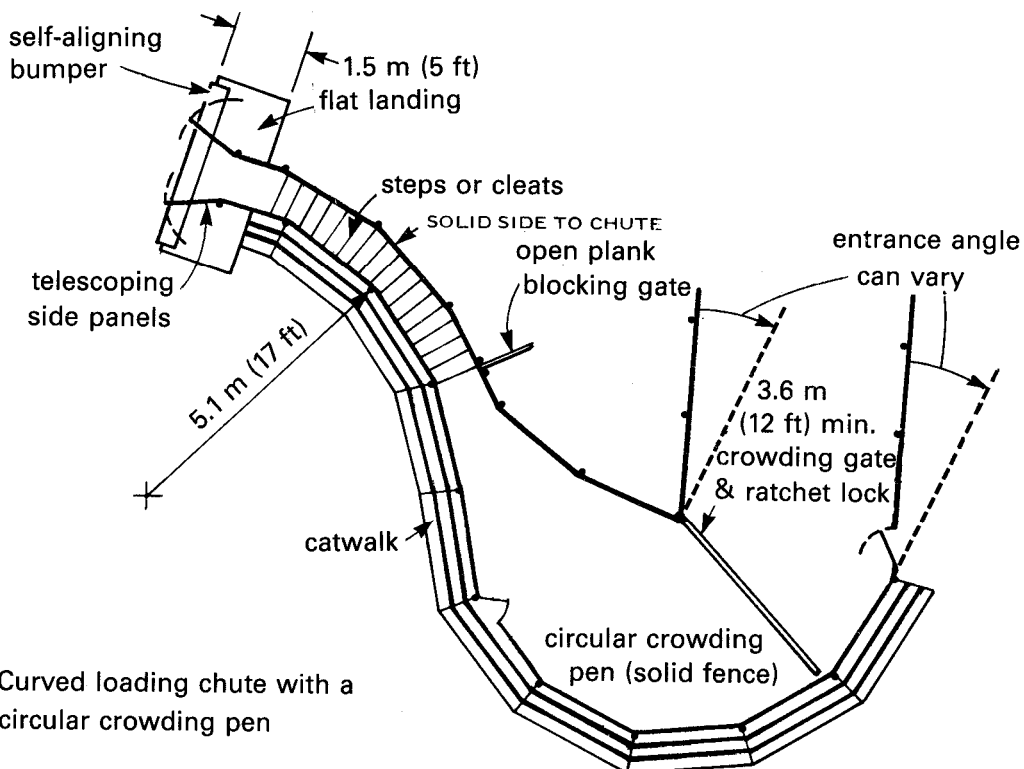


Figure 3 Curved loading chute with a circular crowding pen

However, on adjustable and wooden ramps, space 19 x 38 mm (1 x 2 in.) hardwood cleats 200 mm (8 in.) apart, measured edge-to-edge. We strongly recommend concrete ramps with stair steps. Each step should have 90-100 mm (3.5-4 in.) rise and 300 mm (12 in.) tread run. Make treads with a rough surface for good footing.

Loading chutes work better with self-aligning dock bumpers (Figure 31). These close up the gap between the chute and the truck, preventing the animals from stepping through and injuring their feet and legs. Telescopic side panels keep the animals from jumping out the gap between the chute and truck.

Trucks should have access to the loading chute over an all-weather road. You can then take advantage of the market by buying and selling livestock at all times.

Headgates and squeezes Herd health care is virtually impossible without a headgate and/or a squeeze for restraining cattle. Four basic types are on the market: the self-catcher, the scissors stanchion, the positive control and the full-opening stanchion. Each type suits certain handling procedures; these are listed in Table 2.

A small access gate at the back of the squeeze, also serving to block the chute, makes work at the rear of an animal much easier. The V-shaped squeeze helps support the animal. The proper inside widths at the bottom of the V are:

- 150 mm (6 in.) for 115-180 kg (250-400 lb) calves;
- 200 mm (8 in.) for 270-360 kg (600-800 lb) animals;
- 300 mm (12 in.) for cows and heavy feeders; and
- 350-400 mm (14-16 in.) for larger bulls.

On the best squeeze chutes, both sides swing in equally when the squeeze is applied.

Excessive pressure in a hydraulic squeeze can choke an animal, although such squeezes are safe if the pressure-relief valve is set correctly. A fast-moving animal can also be injured when stopped suddenly by the headgate clamping around its neck. A skilled operator can adjust the squeeze to slow the animal down before it reaches the headgate.

Scales These come in various models for weighing a single animal or a group. The single-animal scale with a scale cage suits producers best by indicating the rate of gain and how much weight bred cows are gaining or losing. It also aids in breeding stock selection. Locate the scale next to the main working chute (offset preferred so that animals being worked in the chute and squeeze do not have to walk over it, adding to wear and tear on the balance mechanism).

Before every weighing, feed and water all animals for the same length of time .

The scale cage, floor, front and rear gates should form a complete unit that is weighed along with the animal. Do not let any part of it touch the working chute, or the scales will record an incorrect weight.

A cage insert or movable cage side keeps a smaller calf from turning around in the cage.

Most larger feedlots need group scales. These are also next to, but detached from, the main working chute and squeeze. Most read from inside a building.

Additional features In addition to the basic pen-chute-squeeze unit, a number of other features can improve cattle handling facilities:

- additional sorting pens
- a loading chute separate from the working chute and corral (particularly useful in larger feedlots)
- concrete paving in chute and crowding pen floors
- electrical service and lighting at the chute
- a cutting gate partway along the chute for releasing individual animals
- a covered squeeze and chute for all-weather operation
- a tipping table for hoof trimming and similar operations
- water and feed in overnight holding pens
- passages at critical locations for workers to pass through corral fences

TABLE 1 RECOMMENDED DIMENSIONS FOR BEEF CATTLE CORRALS AND HANDLING FACILITIES

		Under 270 kg (600 lb)	270-540 kg (600-1200 lb)	Over 540 kg (1200 lb)
Holding area				
- worked immediately	m ² (sq ft)/animal	1.3 (14)	1.6 (17)	1.9 (20)
- held overnight	m ² (sq ft)/animal	4.2 (45)	4.6 (50)	5.6 (60)
Working chute with vertical sides				
-width	mm (in.)	450 (18)	550 (22)	700 (28)
- desirable length (minimum)	m (ft)		7.2 (24)	
Working chute with sloping sides				
- width at bottom	mm (in.)		550 (22)	
- width at 1.5 m (5 ft) height	mm (in.)		800 (32)	
- desirable length (minimum)	m (ft)		7.2 (24)	
Working chute and feedlot line fences				
- recommended minimum height m (ft)			1.5 (5)	
- depth of posts in ground	m (ft)		1.0 (3)	
Corrals and bull pen fences				
- recommended height	m (ft)		1.8 (6)	
- depth of posts in ground	m (ft)		1.2 (4)	
Loading chute				
- width	mm (in.)	650 (26)	750-800 (30-32)	800 (32)
- length (minimum)	m (ft)		3.4 (12)	
- rise	rise:run		1.4	
- ramp height for:				
- gooseneck trailer	mm (in.)		375 (15)	
- pickup truck	mm (in.)		700 (28)	
- van-type truck	mm (in.)		1000 (40)	
- tractor trailer	mm (in.)		1200 (48)	
- double deck	mm (in.)		2500 (100)	
Access or collecting alley width	m (ft)		3.6 (12)	

Note: Cow-calf operations use dimensions for over 540 kg (1200 lb)

TABLE 2 TYPES OF MANUALLY OPERATED HEADGATES COMPARED

Recommended for:	Self-catcher Hornless cattle, gentle cattle, one- man A.I.	Scissor stanchion General purpose, big feedlots, wild cattle, minimum maintenance, cattle of mixed sizes (being adjustable)	Positive Dehorning, wild cattle, horned cattle, good head control, big feedlots - requires less strength to operate than stanchion	Full-opening stanchion General purpose, vet clinics, mixed cattle sizes (because the gate seldom needs adjustment) - large bulls can exit easily
Not recommended for:	Wild cattle, big feedlots, horned cattle, groups of mixed-size cattle (because the gate has to be readjusted to catch)	Very large bulls (because they may have trouble exiting in the headgate for a prolonged time. A.I. and pregnancy testing are the primary uses of the headgate	Vet clinics where the animal is held for a prolonged time. A.I. and pregnancy testing are the primary uses of the headgate	Big wild cattle, big feedlots (because many full-opening stanchion headgates are not sturdy enough to withstand constant heavy use)
Warnings:	Mechanism requires careful maintenance. Head and shoulder injuries may result if the animals are allowed to slam into the gate	Be careful not to catch the animal's legs or knees between the two halves of the gate or the animal may be injured	More likely to choke than a self- catcher, scissor or full-opening stanchion	Mechanism requires careful maintenance to prevent jamming. Animal may trip over the lower gate track.

Self-catcher, scissors-stanchion, and full-opening stanchion headgates are available with either a straight or curved stanchion. Refer to the text for discussion on choking hazard versus head control.