

Riding Arena Maintenance: Equipment Guide

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Selecting the proper equipment and maintenance protocol is essential for keeping a usable and well-maintained arena. This guide gives a basic overview of drags and their component parts, and other arena maintenance equipment. Because there is variation in the terminology used between manufacturers, this compilation of basic terms, descriptions, and pictures will improve the arena manager's understanding of common terms.

Drags

Single-unit/simple drag: A drag with a singular unit without multiple components (Figure 1). It is commonly used on plain sand or single-substance surfaces. These drags typically level the top surface but do not usually move the footing

around or correct any significant defects caused by use.

Multi-unit/complex drag: A drag with multiple parts that do different things, varying by manufacturer and purpose. They are commonly used on mixed fiber or synthetic arena surfaces (Figure 2) and sand surfaces (Figure 3). The 4-N-1 drag is most commonly used on sand.

Methods of Action

The method of action describes how the drag interacts with the footing.

Ground-driven: Drags move directly across the ground and work as a result of the weight of the machinery itself interacting with the arena surface (Figure 4). There is less control over how the drag travels, though weights can be added to

increase the depth tilled or the compaction achieved.

Hydraulically positioned: A mechanical method for adjustable placement of the drag that allows the operator to raise or lower the drag during the dragging process to exert the necessary amount of force on the surface (Figure 5).

Stroke-control spacer: To control the depth with a hydraulically positioned drag, spacers can be added to the hydraulic cylinder to ensure consistent depth between uses or to limit maximum depth (Figure 6).

Wheels: May be added to hydraulically positioned drags at the rear of the drag to act as a balance point to ensure the drag remains level.



Figure 1. Single-unit drag.



Figure 2. Multi-unit drag.



Figure 3. Multi-unit drag.



Figure 4. Ground-driven drag.



Figure 5. Hydraulically positioned drag.



Figure 6. Stroke-control spacer.

Depth Control Strategies

Coil tines: A softer digging apparatus that typically does not reach the base but can be set to reach it (Figures 7 and 8). Can be angled differently to achieve different purposes.

Angles:

- Forward and deep will break up chunks and help mix and blend the arena surface.
- Back and shallow will push material down to help pack and will vibrate, filling in grooves.

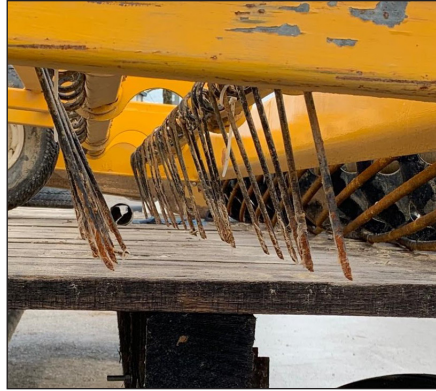


Figure 7. Coil tines.



Figure 8. Coil tines.

S tines: A more aggressive digging apparatus (Figures 9 and 10). Can reach down to the base of the arena. Takes material from close to the base and redistributes it to the surface in a tilling action. Excellent for mixing surface materials, especially for sand and fiber blends.

Angles:

- Forward and shallow will mix the top of the surface while compacting the base.
- Back and deep will scrape hard spots along the base and loosen and redistribute material to level the surface.
- Back and shallow will level and fluff the top layer of the arena surface.



Figure 9. S tines.



Figure 10. S tines.

Knives/ripper teeth: Straight or curved, they work to break up compacted material throughout the surface layer (Figures 11, 12, and 13). Can be stronger than tines and can reach the base if set deeper. Typically adjusted in a manner to not reach the base.



Figure 11. Ripper teeth.



Figure 12. Ripper teeth.



Figure 13. Ripper teeth.

Rollers

Conditioner: Open roller that aerates footing, levels the surface, and offers minimal compaction (Figure 14).

Sheepsfoot roller: Solid roller with spikes intended to compact and pulverize large clumps of material (Figures 15 and 16).

Solid roller: Roller with no spaces that smooths and offers the most compaction (Figures 17 and 18).



Figure 14. Conditioner, part of a multi-unit drag.



Figure 15. Sheepsfoot roller, part of a multi-unit drag.



Figure 16. Sheepsfoot roller, part of a multi-unit drag.



Figure 17. Solid roller. Arena 53.



Figure 18. Solid roller, part of multi-unit drag. Arena 86.

Harrows

Level top surface or layer. Break-up clumps to achieve a uniform surface.

Box scraper/grader: Designed to level arena surfaces (Figures 19 and 20). Can move large amounts of footing and even level base.

Plated: Edges on either (or both) side(s) of the grader that help pull in material (Figures 21 and 22).

Chain harrow: Flexible, made similarly to chain link fence, with small tines that will not usually reach the base but can be deep enough to drag effectively (Figure 23). Not a perfect leveler due to its flexible nature but can be supplemented with weights to deepen penetration and increase leveling ability. Effective at breaking up larger clumps.

Rotary harrow: Can be a single large rotary harrow or multiple smaller harrows (Figures 24 and 25). Spinning action evens out footing in a circular motion, constantly mixing and redistributing within the area of action.



Figure 19. Box scraper, plated.



Figure 20. Box scraper, plated, part of multi-unit drag.

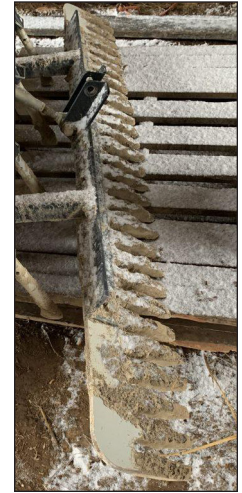


Figure 21. Sawtooth rake.



Figure 22. Sawtooth rake with weights.



Figure 23. Chain harrow.



Figure 24. Single rotary harrow.



Figure 25. One smaller rotary harrow of multiple in multi-unit drag.

Treatment Systems

Water Tank: A tank of water pulled separately or attached to the drag that adds moisture to the footing via a sprayer (Figures 26 and 27).

Sprayers: Nozzles behind a tank set up in a pattern to evenly distribute water over a given width (Figures 28 and 29).

Sprinklers: Nozzles attached to trusses or pivoting on stands to distribute water directly from a water line (Figure 30).



Figure 26. Water tank separate from drag.



Figure 27. Water tank attached to drag.



Figure 28. Sprayer.



Figure 29. Sprayer.



Figure 30. Overhead sprinkler system.

Attachment Methods

Three-point: Three pinned attachment points (Figures 31 and 32). The bottom two attachment pins attach to lift arms on tractor, and the third attachment pin attaches to a top link bar or hydraulic cylinder. The three-point attachment acts as part of the tractor, but there may be some sway depending on adjustment of lift arms. The goal should be to reduce sway so the tractor and the drag turn together to prevent drag from turning into tire on a tight turn. Depth of a drag adjusted using lift arms and leveling the drag can be influenced by length of the top link.

Ball hitch: Traditional ball and socket, which might be seen on an ATV or golf cart (Figure 33 and 34). Often used to drag smaller arenas. This connection allows the drag to pivot freely; abrupt directional changes can allow drive unit, like a tractor or ATV, to be turned into the drag.

Draw bar: Acts similarly to a ball hitch, but it has a pin rather than a ball and socket connection (Figures 35 and 36). The person dragging the arena can oversteer a turn (in the same way as with a ball hitch) to run the drag into the tractor tire.

Depth Control

Mechanism that allows control of how deep the footing is dragged. This can be as simple as adding weight to a simple drag or as complex as a laser system.



Figures 31 and 32. Three-point attachment method.



Figures 33 and 34. Ball hitch attachment method.



Figure 35. Draw bar attachment with hitch pin connection.

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Photos

Claire Burnham: Figures 3-14, 16, 20-23, 27, 27, 29
Bob Coleman: Figure 32
Morgan Hayes: Figure 35
Tim Jedra: Figures 33, 34
Staci McGill: Figures 1, 2, 15, 19, 24, 28, 31
Figures 17, 18, 26, 30 were taken by the authors

Locations

Arenas 53, 70, 86
Arendahl Farm
Carriage Station Farm
Cloud Nine Farm
Four Rivers Sport Horse Center
Kentucky Horse Park
Liftoff Equestrian, LLC
Muhlenberg County Agriculture and Convention Center
Olive Hill Sporthorses
Rockbarton Farm

Some arena diagrams adapted with modifications
from ABI's *How to Drag a Horse Arena—Drag Patterns
Animation*.

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