

# The Illustrated Guide to Athletic Field Conditioning



Sand Star ZEE

***Smithco.com***

This booklet is intended to offer practical guidelines for the care and maintenance of baseball clay infields. It offers many tips and techniques to make your baseball infield safer, more playable and more attractive.

There are many machines on the market that you could buy for the day-to-day maintenance of infields. Smithco alone manufactures 10 different models of “Athletic Field Conditioners (AFCs)” to fit any need or budget. We feel it is extremely important to purchase the model and attachments that best suit your particular need and this guide will explain the differences, capabilities and options available to you.

No purchasing decision should be made without understanding the needs and objectives of your program. Your local Smithco distributor representative can help you sort through these decisions.

Smithco offers you a “Grooming System”, not a renovation tool. It is ideally used on a daily (or regular) basis to keep fields in safe, playable condition. Often, a complex has received less than satisfactory attention for a considerable period of time. When faced with this situation, always be aware that the field didn’t become “bad” overnight, and that it can be difficult to create a “perfect” surface in a short demo or a single grooming event.

Although dramatic changes and improvements can be brought about with the AFCs, it’s often better to accomplish small improvements every day for a period of a few weeks. It’s easier on the equipment, as well as giving the operators and supervisors time to gauge the results and what additional efforts may be required. At the end of that time, your fields will be in great shape.



## Infield Conditioning

Over the last 20 years, the conditioning of baseball infields has taken on new priorities for Grounds Managers, Baseball Coaches and Park Managers.

**Playability:** The desire to provide safer playing surfaces at every level is being driven by a number of factors; player’s expectations are constantly rising as are peer pressure, aesthetics and the concern over liability.

Players and teams often participate in many leagues and travel to different locations for tournament play. They recognize great fields when they have a chance to play on them. They want to bring this level of playing surface back to their home field.

**Aesthetics:** Fields that are well prepared and groomed help attract revenue-producing tournaments. Competition for these events is vigorous and field maintenance is an excellent way to set your facility apart.

**Liability:** Judicial court systems are starting to transfer responsibility from players bearing “implied risk” for participating in sports to grounds managers for lack of adherence to “accepted standards”.

Working with end users, consulting industry professionals and through constant experimentation and research, Smithco has developed its Athletic Field Conditioner System. It consists of four components:

1. Tractor
2. Front Attachments
3. Center Attachments
4. Rear Attachments



Our main goal was to create a tool that would allow one man to quickly and efficiently, with a minimum of effort, groom baseball infields on an as-needed basis, even between games or innings.

Older maintenance practices used everything from tractors to jeeps to pickups with some sort of homemade drag on the back, made from chain link fences or a homemade nail drag. This would then be driven around the field in circles to remove defects from the prior day's play and smooth the clay. Unfortunately, this practice can create hard field conditions and over time, wavy fields.

As in any system with specialized components, each one is designed with a specific purpose in mind. So it's important to have a basic understanding of how each part of the system works in varying conditions. Remember also that the Smithco AFC System can be used for warning track maintenance, renovation of existing fields and construction of new facilities. Fields that have been inadequately maintained or have had excessive play may need extensive renovation work to again make them safe and playable. This can be accomplished either by concentrated work on specific problems for an extended period or by doing a little corrective maintenance each day over a 10-day to 2-week period. Both methods will achieve the same objective; it will depend on your daily time constraints and overall objectives.

## THE SMITHCO AFC SYSTEM

### I. The Equipment

#### TRACTORS

All Smithco AFC tractors share some common traits. They are all three-wheel designs fabricated of square tube steel with three attachment points. They vary in power sources, drive trains and attachment lift systems. Each model offers a fiberglass cowling that opens without tools (except our CE models) to provide easy access for routine maintenance and provides free flowing air to keep engine temperatures to a minimum. All gasoline and diesel models have a Cyclopac design, high-capacity air filtration system either standard or as an option on some models to promote longer engine life. The various models are described below.



**Smithco Sand Star I** – The Sand Star I full-size AFC offers a 16 HP Vanguard engine. The five-gallon fuel tank means a minimum of refills, improving productivity. A large Sundstrand series 15 Hydro delivers power to two heavy-duty Parker wheel motors through a parallel drive system. The hydrostatic pedal system has acceleration/deceleration controls (We call this Pro-Pedal) for smoother starts and stops. The hand throttle can be left at the idle position and the engine RPMs are increased and decreased automatically as the pedal is depressed or released. For low-speed jobs requiring higher torque, the hand throttle can be used manually to increase engine power to maximum.

The operator's station has been lowered and moved to the rear, and with a newly engineered steering system, comfort is enhanced and fatigue reduced over a long day maintaining infields.

New for the 2015 model year is an improved access design for routine and periodic maintenance. The Sand Star I is a quality, heavy-duty AFC designed to be smooth, quiet and comfortable in all kinds of conditions the maintenance staff typically encounters day in and day out.

**Smithco Super Star  
2WD**



**Smithco Sand Star II 3WD** – Identical in most respects to the Sand Star I 2WD, with the addition of a front-wheel motor and hydraulic hoses for 2WD and 3WD that is controlled via a selector switch. Transport speed is increased and the ability to plow is enhanced in 2WD, while 3WD improves steering performance on wet, slippery clay fields. Engine power is increased to an 18 HP Vanguard, twin-cylinder, OHV engine, and the Remote Cyclopac and center implement lift are standard.

**Smithco Sand Star III 3WD** – Our premier Athletic Field Conditioner improves the operator comfort with the addition of hydraulic power steering along with all the features and benefits of the Sand Star II.

**Smithco Super Star 2WD** – a mainstay of the Smithco product offering for many years, the Super Star 2WD is an affordable choice

in a wheel traditional infield groomer. With a 16 HP, twin-cylinder, OHV Vanguard engine, it provides all the power needed for routine maintenance and periodic tough jobs.

**Smithco Super Star F/X 3WD** – Like the Super Star 2WD, the F/X model is a long-proven machine for maintaining infields. The F/X adds an 18 HP Vanguard, twin-cylinder, OHV engine for added power, along with a series/parallel drive system for added traction.

**Smithco Super Star Diesel** – All of the features and benefits of the F/X, plus the added power and longevity of a Tier 4 compliant Kubota 19.8 HP three-cylinder diesel engine. For those of you with the budget, or the need to utilize diesel instead of gasoline, the SS Diesel is the unit that will provide a long-lived, powerful platform with an extended operating life.

**Smithco Sand Star Zee** – A three-wheel ZTR twin hydrostat for operators who are familiar with this style of mower in the municipal market, the Sand Star Zee is the most affordable infield groomer we offer. With unsurpassed maneuverability and control, the Zee will make

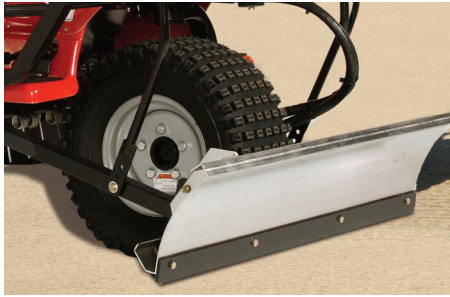
short work of the toughest jobs. It comes standard with an industry leading 22 HP, twin-cylinder, OHV, Vertical Shaft power plant that offers long life in this hard environment. A ROPS with seat belts are included for operator safety and the mounting of optional lights and canopies is standard. A manual rear and industry exclusive center tool lift are designed for easy use. The 45-507A center scarifier and your choice of either the 45-503A Finish Rake or 26-007 A professional finisher are standard and included in the base price.

**Smithco Super Star E 48V** – Smithco introduced the concept of electric AFC maintenance equipment more than 10 years ago. While providing the same frame as the Super Star, it's powered by a simple and efficient 48-volt electric industrial drive system. It requires no tune-ups, spark plug changes, oil changes, oil filters, hydraulic oil concerns, hydraulic oil filter changes, carburetor fouling; in fact, all the maintenance that is needed is to plug the machine into a regular electric circuit, check the air in the tires, keep connection clean and free of corrosion and put water in the batteries.



## Front Attachments

*Smithco manufactures front plows for every machine in its line to make major renovation and repair jobs simple and quick. While each plow is slightly different to fit individual machines, the following description applies to all RELAPS plows (Real Easy Lift Aluminum Plow System).*



Front-Mounted Curved Plow (40" width)



Front-Mounted Straight Plow (60" width)

**1. Blades** – Two lightweight aluminum front blades are available; a 40" curved general purpose blade and a 60" flat leveling blade. The 60" blade is especially useful when attempting to grade areas near a fence line or other obstruction as it is slightly wider than the width of the machine. It is also an excellent tool for spreading lighter amendments, such as calcined or vitrified clay, over large areas or to quickly level open areas, such as full-skinned infields or warning tracks.

**2. Manual Plow** – All our manual plows utilize our exclusive "RELAPS" design. Unlike all other pushing blades on the market, it requires no springs or locks and CANNOT inadvertently fall during transport. It has a convenient handle design that stores completely out of

the way when not in use. Two extra beefy uprights, each infinitely adjustable, assure that the plow is level to the machine at all times. They also provide adequate strength for the severest of plowing needs.

Each end of the arm has two mounting holes (upper one slotted) to securely hold the blade in the angle and position required. The blades can be tilted back for more aggressive digging or tilted forward for gentle pushing action. The 40" curved model is used for everyday utility work, while the 60" flat model is useful when required to spread light materials, such as soil amendments over large areas. The 40" blade is also available in steel for more aggressive jobs.

**3. Hydraulic Plow** – The Super Star and Sand Star models may be outfitted with an optional hydraulic front plow. A third valve is added to the controls and connected to a double acting ram.

## Center Attachments

*The Smithco System uses a tool mount between the wheelbase for penetrating and breaking up hardened clay surfaces. This position is important because it is where the greatest leveling effect is achieved since that's where most of the weight of the machine is available to help dig into hard surfaces.*



Vertical Scarifier

**Vertical Scarifier** – Utilizing straight, hardened steel fingers mounted to the center tool bar, the vertical scarifier is the center attachment of choice for most day-to-day operations. Its fingers are positioned closer together to break up hardened clay while leaving smaller clumps for the rear drag to smooth out.

**Enhanced Vertical Scarifier** – Offers longer blades that will offer added longevity.

**Spring Tine Scarifier** – For applications where finer grooming and uneven fields are the norm. The spring tine scarifier consists of a row of flexible, spring steel tines that measure approximately 1/16" in diameter by six inches in length, with lateral spacing at 2 1/4 inches.



Spring Tine Scarifier



**Chisel Scarifier**



**Nail Bar Scarifier**

**Chisel (Horizontal) Scarifier** – The horizontal scarifier is a more aggressive tool for use on fields needing more extensive breaking up, or fields that are more uneven requiring larger amounts of loose clay to redistribute to other areas. Like most of our center tools, this model includes a drop-down grader blade (left) that allows operators to quickly level a wide swath between the wheelbase, offering superior leveling ability. The bar is 61" wide and covers the rear tire tracks. The model on the right shows our horizontal chisel teeth with our caster wheel system that offers the capability to again, control depth and levelness across the bar while making tight turns, increasing productivity by minimizing overlap. It is designed for both the Super Star and Sand Star and this caster wheel or Gauge Wheel System (GWS) is available on all of the center scarifiers.

**Nail Drag** – The nail drag is designed for higher-end fields that are typically tarped and watered as needed. It consists of a covered frame that holds 130 spiral shank hardened nails (7 gauge X 4") arranged in a 6 X 6 cross pattern along the 58" width of the attachment. This drag is meant for just "tickling" the surface prior to or in-between games. The field manager has the option of selectively removing nails as he sees fit.

**Scarifier Bars** – All five models are designed with replaceable teeth sets to help reduce costs as the scarifying teeth wear out. The nail drag can be refitted with local sourced nails from hardware stores.

**Grader Blade Attachment** – The Super Star AFC system has the capability to add a grader blade that stores on the rear of the machine (as pictured on the right). It then mounts on two pins, (one on each side of the bar) to allow quick and easy grading ability. It can also be replaced if it wears out. The grader blade is useful for quickly leveling large areas or spreading an amendment over a large area

quickly. As mentioned earlier, the grader blade between the front and rear wheelbase is the best way to perform leveling operations. It is also ideal for removing crowns from base paths.

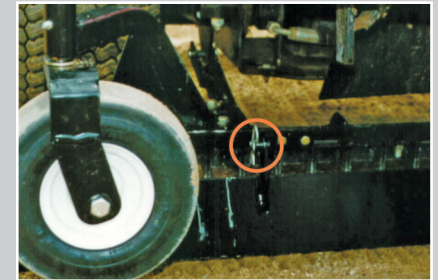
**Construction Leveling Blade** – A much heavier duty center blade for more vigorous grading activities. Curved ends allow the operator to contain more material inside the wheelbase, moving larger loads.

**Edger Kit** – This also mounts to the center tool lift and consists of a "Coulter"-type disc edging tool. The operator controls depth and the edger wheel is far enough forward to be easily visible.

**Lip Brush** – The Smithco hydraulically operated lip brush is available for the Sand Star I & II only. Fitted with a soft bristle to prevent bruising the turf, it rotates to move loose particles of sand from the turf canopy back to the clay playing surface. Regular use will prevent the buildup of lips, or high ridges along the edge of the turf areas. The



**Grader Blade**



**Grader Blade**

The photo above illustrates the Super Star grader blade mounted in position. (Note the clevis pin)

The operator controls depth and the edger wheel is far enough forward to be easily visible.

For more aggressive edging the angle can be set to as much as 30°.



**Edger**



**Lip Brush**



brush is also useful to remove loose clay buildup along chain link and other fences.

## Rear Attachments

*The Smithco rear attachments are again, part of the “System,” designed to be versatile or specific, depending on the model. The main concept though, is to allow the operator to remain in the seat, without getting on and off the machine to unroll or roll up, lower or raise, activate or deactivate some device to begin or end a grooming session. These tasks can reduce productivity. And on days when there is a lot of moisture on the field, it can be a messy, unpleasant job. Also, while large unrolled drag mats have done a satisfactory job for many years, when rolled up at the end of grooming a field, they typically leave a large pile of clay which then needs to be spread out with hand tools.*

**1. Flex Finisher/Leveler with Brush Finish Attachment** – This is our newest version of AFC rear drags. It works exactly as the flex with the drag mat, but the brush leaves a finer, more groomed finish. Also, since the brush is rigidly mounted to the main frame of the Flex AFC, when raising the entire drag throughout its range of motion, the brush can be used fully lowered using the sides of the bristles for final grooming, partially raised to use the ends of the bristles for a different effect or raised further to use just the ends of the rubber fingers with the brush off the ground in wet conditions.



Flex Finisher/Leveler with Drag Mat



Infield Finisher

**2. Flex Finisher/Leveler with Drag Mat Extension** – This is our second most popular AFC rear drag. It works well under the widest variety of field conditions; wet, dry, hard, soft, uneven or smooth. Fully lowered, the solid steel bar in the head of the rubber fingers acts as a leveling device, knocking off high spots and dropping material into low spots. The head is also curved into a crescent shape, to allow the loose material to gather in the center and not spill out to the sides, creating a messy lip.



A



B



C



D

A. Wet conditions with only the ends of the rubber fingers grooming the clay, the brush off the ground. B. The flex fingers lowered more to get more grooming effect as the clay is beginning to dry. C. Flex lowered additionally, to get the maximum grooming effect of the rubber fingers, but without the leveler front bar on the ground. Brushes apply a final finish as the tips of the brush are now engaging the surface. D. Leveler front bar on the ground to knock off high spots, carry enough material to fill in some low spots, helping to level the field. The rubber fingers are also still grooming the clay. You are now getting the maximum effect from the bristle brush as well.

The weight of the knobby rubber breaks up the clumps of clay loosened by the center scarifier. The final section of drag smooths out the finish and removes the ridge left from the gap between the fingers.

**3. Professional Finisher** – There is no other attachment offered that leaves a better playing surface than the Professional Finisher. However, as a specialized attachment, the Professional Finisher requires a field that consists of well-amended clay that





Smithco Cocoa Mat

is reasonably dry. It is also designed for use on a field that receives daily maintenance.

**4. Cocoa Mat Rear Drag** – Just like the Professional Finisher above, the Cocoa Mat Drag requires a field that receives a higher level of maintenance. The field must be already maintained in a smooth, level condition with a moisture level that's neither too wet nor dry.

**5. Sand Rake** – Designed and sold for many years as a sand trap grooming tool, it was also a mainstay of our athletic field equipment. It will work in a wide variety of conditions, having the ability to conform to uneven or wet fields, although the finish is somewhat rougher and leaves visible grooves. It is usually accompanied by a large drag mat pulled behind it for a final finish.

**6. Box Grader** – The rear box grader can be useful for some renovation or construction projects. It also is ideal to collect the infield mix that the lip brush extracts.

**Drag Mat Kit** – This kit consists of a 4'x6' section of steel mesh drag mat and a carrier frame to fit on the prime mover. To use it you must get off the machine, unroll the mat and drag the field. He then must get off the AFC again and roll up the mat, placing it back in its carrier, leaving the pile to be dispersed by hand.

**RBS System** – This attachment consists of a main frame and one set of three (R) rollers, (B) brushes or (S) spikers. Each cassette is attached or removed without tools by simply

pulling a pin and sliding the cassette on or off. The aggressiveness of the cassettes are achieved by utilizing the power of the rear, double-acting hydraulic ram.

**Earthway Spreader** – An electric spreader that will hold 100 lbs. of fertilizer, clay amendments or other granular material.

**Gasoline Blower** – A small self-contained blower mounted on a quick hitch compatible frame. Designed for use for any purpose the field manager is now using walking or back pack mounted blowers.

**Typhoon** – Also a small gasoline powered centrifugal pump mounted on a quick hitch compatible platform. It will move 100 GPM. from poorly draining sand bunkers or many other turf or hard surface areas and throw it approximately 100'. A 6-foot remote snorkel keeps the prime mover dry.



Earthway Rotary Spreader



Gasoline Blower



Typhoon



Sand Rake



Box Grader



RBS System



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*We hope you now understand why we say Smithco has written the book on conditioning your field.*

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