



TOPFLIGHT

MATERIAL HANDLING



The Apex Series grain spreaders from TopFlight were engineered to raise the standard for grain storage quality, airflow, and site safety. Unlike traditional spreaders that cannot adapt to changing discharge conditions, Apex delivers stable, controlled spreading across variable fill rates. As bin diameters increase and fill rates accelerate, the consequences of poor spreading are amplified. When cores of fines form and concentrate, airflow is restricted where it is needed the most.

Grain Spreaders can solve these issues, but many operators have seen limited success with traditional solutions. Outdated equipment that is often more trouble to maintain and adjust has left many bins without the benefits of evenly filled layers and uniform predictable airflow. Until now, powered spreaders were not suitable for large bins, and gravity spreaders required constant adjustment and clearing plugged chutes.

The Apex Series combines the controlled speed and pattern consistency of a motorized spreader with the long chute and fines distribution characteristics of gravity designs – without their sensitivity to flow rate or constant adjustment requirements. The result is a spreader that can successfully operate in a range of bin sizes, flow rates, and varying crop conditions.

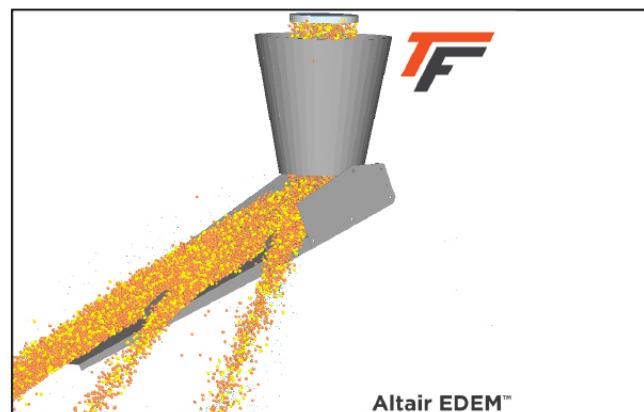
THE APEX ADVANTAGE

- **Spreads at all flow rates**
 - Not dependent on full capacity to function
 - Performs at all dryer discharge rates
 - Maintains pattern at full and partial loads
- **Less need to center incoming grain**
 - Eliminates common chute-style imbalance issue
 - Reduces installation sensitivity
 - No leveling bands or adjustments needed to match flow rate
- **Improved fines distribution without high-speed separation**
 - Avoids centrifugal bias that throws heavy grain outward and leaves fines in center
 - Balanced distribution across radius
- **Large radius capability with scalable design**
 - Suitable for large diameter commercial bins
 - Not limited to smaller bin sizes
 - The fan board can be setup for desired spreading characteristics



DESIGN CHARACTERISTICS

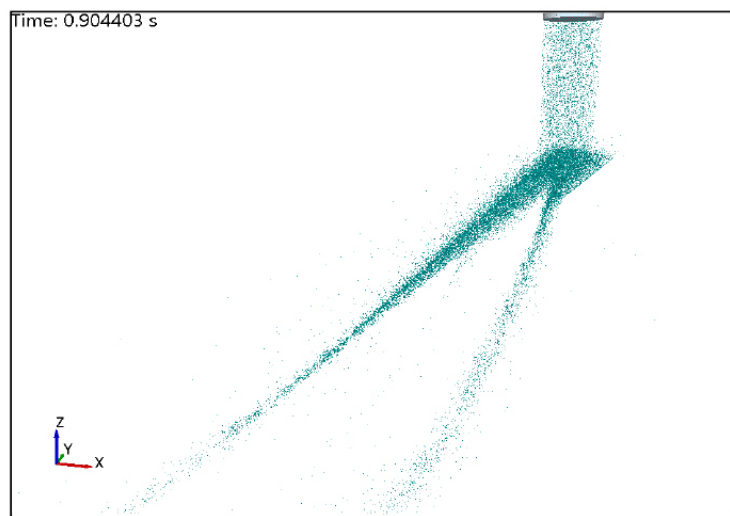
- **Completely open bucket design**
 - Unobstructed grain flow
 - Reduced plugging risk
- **No drive-train or mounting components in grain stream**
 - Reduced wear
 - Cleaner material path
 - Improved durability
- **Adjustable pitch on fan board**
 - Fine tuning of spread pattern
 - Adaptable to crop density and bin size
- **Adjustable diverter fins**
 - Configurable for desired spread pattern
 - Tunable spread geometry
- **Scalable design**
 - Fan board length and shape can be customized for specialty applications
 - Capacity matched to bin size
 - The Apex Series can spread at rates up to 20,000 Bu/Hr
- **Temp cable mounting truss option**
 - Allows true-center cable placement
 - Does not interfere with spread pattern
- **Lightweight design (<100 lbs on smaller models)**
 - Straightforward installation in new construction
 - Easily retrofitted in existing bins



Altair EDEM™
Simulation study with
mixed corn particles

DRIVE SYSTEM & CONTROL

- **120V motor standard**
 - Common farm power compatibility
 - Oil Filled worm drive gearbox
 - Operates on 5 amps
- **Variable speed capability (3-phase option)**
 - Spread distance control
 - Flow optimization
 - Reverse capability
- **Triple-sealed aluminum C-face motor**
 - Dust-resistant sealing
 - Extended service life
- **IP55 motor rating**
 - Designed for high particulate environments
- **Optional Explosion-proof motor**
 - For use in commercial facilities when required



Simulation study with large particles hidden.
Showing the path and direction of fines
away from the center.



EXTENDED WEAR PACKAGES

- **Ceramic lining kit option**
 - Suitable for abrasive crops (e.g., rice)
 - Covers all grain contact surfaces
- **UHMW lining kit option**
 - Increases spreader life with less weight
 - Cost-effective wear protection

MODEL LINEUP

Model	Capacity (Bu/Hr)	Chute Length	HP	RPM	Top Opening	Weight (lbs)
AX6K60	6,000	60"	1/3	20	20"	80
AX13K90	13,000	90"	1/3	20	21"	95
AX20K120	20,000	120"	1/2	18	28"	140

APPLICATIONS

AX6K60

The AX6K60 serves farm and light commercial operations. It has been tested in bins up to 60 ft in diameter, where the spread pattern reached the floor flashing at the perimeter.

This model is well suited for farm applications requiring a dual-purpose solution. It performs effectively in drying systems at low flow rates and in receiving applications up to 6,000 bu/hr. The AX6K60 is sized for compatibility with 10" augers and 10" downspouts—configurations commonly found in farm systems.

The AX6K60 is available with mounting arms tailored to the intended bin. Temperature cable options include:

- Mounting the center cable at least 60" off bin center
- Installing the optional temperature cable mounting truss

The mounting truss is designed to fit the bin's peak ring. At present, TopFlight offers a truss design for Sukup bins, with additional bin manufacturers planned for future support.

AX13K90

The AX13K90 is engineered for large farm and commercial applications. It delivers reliable spreading performance in systems loading with 13" augers or 16" spouting.



An extended chute design improves fines displacement away from the bin core and increases achievable radial spread distance. Mounting options are similar to those offered with the AX6K60.

AX20K120 (In Development)

The AX20K120 is targeted at large commercial installations. TopFlight is currently pursuing a partner facility to conduct full-scale validation testing.

This model will come standard with urethane lining; ceramic lining is available as an option. Due to its scale and intended applications, mounting hardware will be designed on a case by case basis.

The proposal process may include engineering review and flow modeling to determine the optimal configuration for the specific bin geometry and material characteristics.

Custom Configurations

For applications that fall outside standard use cases, TopFlight can offer fully custom configurations.

Leveraging our patented rotating assembly, we can modify the fan board architecture to suit specialty or non-standard applications. Customization options include:

- Fan board length
- Trap door placement
- Fin size, geometry, and configuration

This flexibility allows the spreader to be tuned to specific flow rates, material characteristics, bin diameters, or processing requirements. Custom projects may involve engineering review and, where appropriate, flow modeling to validate performance before fabrication.

ENGINEERING - TESTING - DEVELOPMENT

- **Grounded in grain science**
 - TopFlight strives to study grain management on a fundamental level
 - Numerous studies and countless design iterations back our products
 - Measurable results, not just visual patterns
 - Company wide commitment to quality and continuous improvement
- **Research & Development**
 - Our designs are field tested and documented
 - TopFlight leverages advanced CAD systems and Discrete Element Method (DEM) modeling to evaluate flow behavior, and spread geometry under variable discharge conditions.
 - The Apex series has been tested in corn, soybeans, wheat, and rice.
- **Designed and built in the USA**
 - Designed, and Manufactured in Wilmington, Ohio.
 - Assembled in-house, for quality assurance.
 - Every unit is tested and leaves our factory with a 2-Year warranty



GRAIN SPREADING BENEFITS

- **Reduced fines core formation**
 - Prevents concentrated BCFM in the center
 - Avoids reduced cfm/bu in the core
- **Improved airflow uniformity**
 - More consistent static pressure across the surface of the floor
 - Faster and more predictable cooling
 - Improved grain quality
- **Reduced cooling time in the core**
 - Modeling and test data shows up to 50–67% longer cooling when grain is peaked
 - Peaked grain bins often exhibit cones with significantly reduced airflow. (66-90% less cfm/bu)*
- **Earlier aeration engagement**
 - Floor coverage occurs faster
 - Reduces heat buildup and condensation
- **Pods and other Large FM (Foreign Material) incorporated in layers**
 - Soybean pods or bits of corn stalk will not "float" down the pile and be trapped against the wall.
 - Pods do not come off the wall in surges, risking blocked unloading equipment.
- **Reduced unloading risk**
 - Concentrations of BCFM above unloading equipment can become non-flowable and block unloading equipment.
 - Surges of pods or foreign material can also obstruct grain flow
- **6–10% potential increase in stored capacity**
 - Dense packing versus coning
 - Better volumetric utilization

*Contact us for a more detailed study on the air bypass effect and the resulting airflow obstruction associated with peak-filled bins. Example cited is a 48' Diameter bin. 62.5' eve height with a 20 HP low speed centrifugal fan. Corn being cooled 50 degrees.

SAFETY & RISK REDUCTION

- **OPERATIONAL SAFETY**
 - Grain entrapment/engulfment situations often involve grain that is out of condition
 - Spreading helps keep grain in condition, greatly reducing the need for intervention, inside the bin and out
 - Worker safety is of paramount concern. Zero entry is not just a policy; it's a process. Hi-risk confined space entry work can only be reduced or eliminated with careful planning and execution.
- **Grain Quality & Risk Management**
 - Enhanced airflow promotes long term storage quality
 - Reduced dockage and inventory
 - Prevention of microbial activity reduces the need to roll or core grain, reducing energy cost and employee time
 - Prevents the formation of dense center cores that typically require coring
 - Uniform spreading can serve as a risk management tool, reducing the likelihood of airflow restriction, spoilage, and costly corrective intervention.