

Aerospace Inventory, Under Control

Learn how ASRS can help solve warehouse challenges for aerospace companies.

Solution Guide

kardex

The aerospace inventory challenge

In aerospace, inventory visibility is both a regulatory mandate and operational imperative. The FAA requires a documented chain of custody for every part, tracked by batch and lot number and traceable through the entire distribution channel. Add thousands of SKUs and high-value specialty tools, and the cost of a single missing part climbs fast: a grounded aircraft, a stalled line, a failed audit.

Aerospace operations, both MRO stockrooms and manufacturing lines, depend on finding the right part, in the right batch, at the right moment, all while maintaining full traceability and a continuous recertification program. Traditional shelving and paper logs can't keep pace, and the industry is only growing: a forecast by Oliver Wyman projects a record global fleet of roughly 38,300 commercial aircraft by 2035 (a 32% increase over 2025 levels), putting more pressure on both production and maintenance. **More volume, tight traceability, and less tolerance for error: these challenges add up to a storage environment where automated storage solutions can drive outstanding ROI.**

Challenges

FAA chain of custody, with batch and lot traceability required through the distribution channel

Foreign object damage (FOD) prevention and protection of sensitive, high-value parts in an often-rugged environment

Continuous part recertification, controlled access, and accountability for high-dollar specialty tooling

Aircraft-on-ground (AOG) response, when revenue is lost by the minute

Limited floor space in hangars that need to accommodate large aircraft wingspans

Travel time from aircraft to tool storage heightens need for accurate picking and kitting

Where this fits in your operation

Automated storage can drive value in distinct places across any aerospace operation.

1. ## Store on-site aircraft parts

Secure, traceable replacement parts stored steps from the gate, in a fraction of the footprint.

See it in action:
Section 5, Jazz Aviation

2. ## Airport & ground-support MRO

Maintenance parts for the operation's own fleet: ground vehicles, baggage systems, jet bridges, and tooling.

3. ## Aerospace manufacturing line-side

Parts kept at point-of-use and picked straight to the build, or integrated with the line for kitting and sequencing.

4. ## Aerospace manufacturing MRO & tooling

Spares and high-value specialty tools that keep the production line running.

5. ## Kitting Storage

Components picked and organized into kits in assembly sequence, so skilled workers have the right parts in the order they need them.

6. ## WIP Storage

Parts and subassemblies stored between machining, inspection, or repair steps, keeping work organized as it moves through production or overhaul.

Vertical Lift Modules for Aerospace

The Kardex Shuttle is an enclosed, automated vertical lift module built on the goods-to-person principle. Trays are stored vertically inside the unit and delivered to a waist-high access point at the push of a button, so high-value or sensitive parts stay protected from dust, damage, and unauthorized hands while occupying a fraction of the footprint of shelving. Flexible tray configurations let one unit hold everything from precision fasteners to specialized tooling. Integrated with the Kardex Power Pick System, every retrieval is logged, access-controlled, and audit-ready.

Load capacity/tray	Up to 1,234.6 lbs (Shuttle 250/500); 1,598.4 lbs (Shuttle 700); 2,204.6 lbs (Shuttle 1000)
Tray dimensions (W × D)	4 to just over 13 ft wide × 2–3 ft deep
Unit height	Up to approximately 98 ft, sized to building height
Total system capacity	Approximately 5,000–7,000 storage locations in a 20-ft-tall machine, with locations roughly 6 × 6 × 4 in.
Throughput	Up to 350 items per hour, depending on configuration and picking methods; light-directed picking required for top rates
Density feature	Dynamic slotting: a height sensor stores trays as close as 1 in. apart, reclaiming up to 85% of floor space vs. shelving
Software & integration	Kardex Power Pick System; ERP/WMS/Tool Management System integration; pick-to-light optional
Environment & security	Fully enclosed, lockable; operator-ID access control; clean, dry, or temperature options



Kardex Megamat for Aerospace

The Kardex Megamat is a vertical carousel module: shelves rotate around a track, Ferris-wheel style, to bring stored items to an ergonomic work counter on command. Enclosed and lockable, it reclaims up to 75% of floor space versus shelving and suits high-density storage of small-to-medium aerospace parts where ceiling height is more limited.

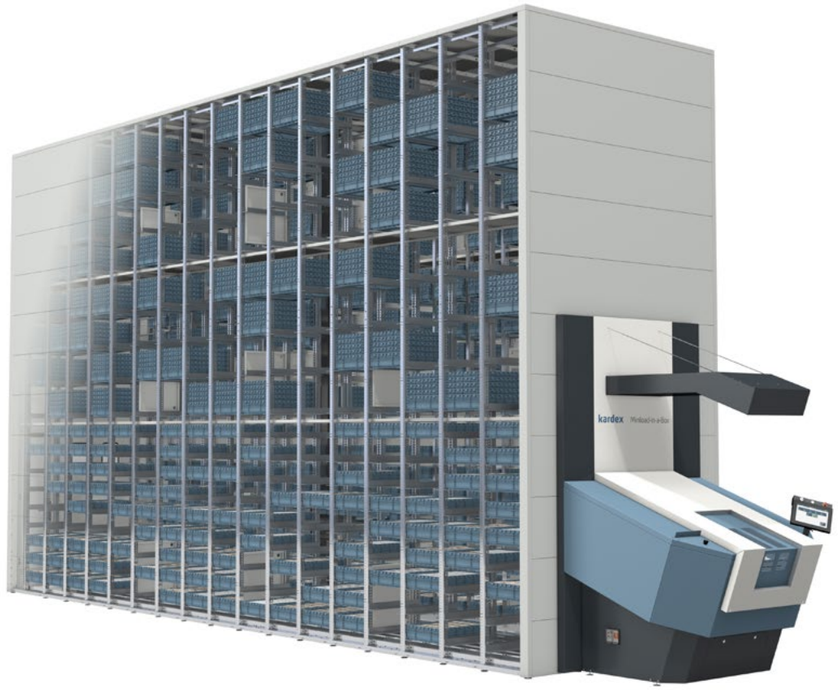
Load capacity/carrier	Up to 397 lbs (Megamat 180); 772 lbs (Megamat 350); 1,433 lbs (Megamat 650)
Carrier dimensions	4 to almost 12 ft wide × 16–24 in. deep
Total system capacity	Approximately 5,000–7,000 storage locations in a 20-ft-tall machine, with locations roughly 6 × 6 × 4 in.
Throughput	Up to 400 items per hour, depending on configuration and picking methods; light-directed picking required for top rates
Density feature	Vertical carousel; up to 75% floor space reclaimed vs. shelving
Software & integration	Kardex Power Pick System; ERP/WMS/Tool Management System
Environment & security	Enclosed, lockable; operator-ID access control; manual access available even during a power outage



Vertical Buffer Modules for Aerospace

Where precise access control is a priority, the **Kardex Miniload-in-a-Box** vertical buffer module (VBM) presents one bin at a time at an enclosed turntable station. Configured with one SKU per bin, it limits access to the requested part, reducing the risk of selecting another nearby item.

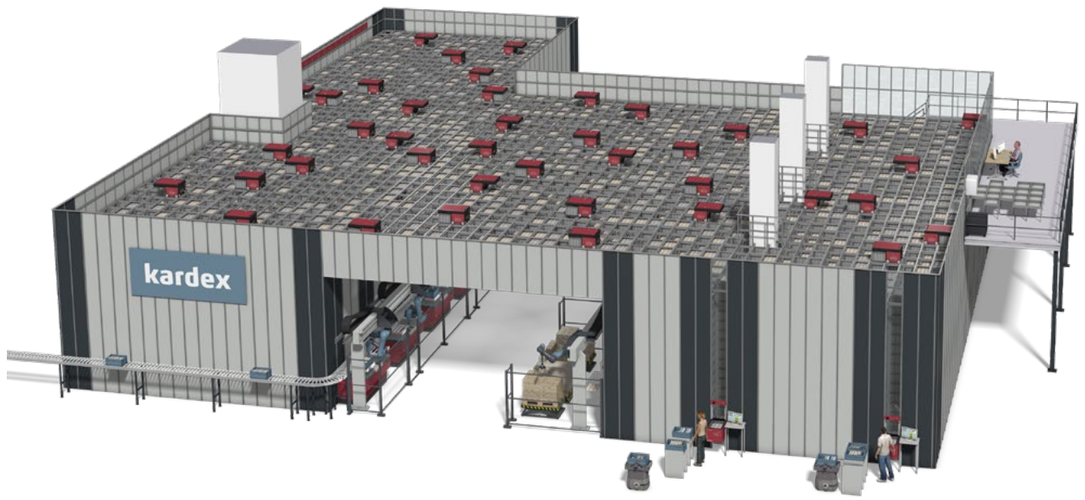
Load capacity	Capable of handling up to 77 lbs per tote
Controlled	Single access point by default for maximum inventory security
Flexibility	Storage system built on 1" grid for flexible storage of bins and trays
Scalability	Modular expansion up to 65 ft in length and 39 ft in height



AutoStore for Aerospace

For high-volume aerospace fulfillment or distribution, AutoStore's modular grid of bins and robots scales density and throughput beyond a single unit, growing incrementally as demand rises.

Storage density	Increase storage capacity by up to **400% within the current space**
Throughput	Scales with robot count. Up to 500 bins per hour at mezzanine level, 400 bins per hour at floor level
Scalability	Modular grid: add bins, robots, and ports incrementally



Which one is right for you?

Kardex Shuttle (VLM) works best with	Kardex Megamat (VCM) works best with
Ceiling heights up to ~100 ft	Ceiling heights under ~25 ft
Highly variable part sizes and weights	Parts sharing relatively similar dimensions
Frequently changing inventory mix	Items hand-picked without lift assistance

Kardex Mini-Load-in-a-Box (VBM) works best with	AutoStore™ works best with
Ceiling heights up to ~40 ft across available floor space	Dense bin storage across available floor space
Small parts stored in totes	High-volume small parts fulfillment and distribution
Single tote storage for high control operations	Growing storage and throughput requirements

Your Kardex specialist will size the exact configuration based on your facility, parts profile, and throughput.

We'll come to your facility – book a free site visit today.

Built for the way aerospace works

Aerospace challenge	Kardex capability	Outcome	Proof
FAA chain of custody + Inventory reconciliation	Power Pick batch/ lot logging + full audit trail	Audit-ready traceability	Transaction history by SKU & operator
FOD/ sensitive parts	Enclosed trays, controlled access	Protected, contamination-free parts	Fully enclosed unit
High-value specialty tools	Operator-ID access control	Tool accountability, less loss	Login/badge per pick
AOG downtime + Distance from aircraft to parts storage	Goods-to-person + pick-to-light	Right part in seconds speeds up picks, reduces maintenance interruptions from mispicks	Up to 99.9% accuracy
Consignment from many suppliers	Power Pick Lot & Qualification Module	Segmented ownership in one unit	Picking restricted by qualification
Limited floor space	Vertical density + dynamic slotting	Up to 85% reclaimed	71% saved at Jazz Aviation
Parts require continuous recertification	Rapid picking	Streamlined, fully trackable SKU recertification	Part delivered to operator in seconds

Trackability and traceability

Two forms of control matter in aerospace, and Kardex handles both.

Trackability follows the SKU: Power Pick logs each part's movement from receipt to departure, with lot and batch detail, so a recall can pinpoint stocked and shipped parts in seconds to dramatically simplify reconciliation.

Traceability follows the operator: login or badge access ties every pick to an individual, so a depleted or misplaced specialty tool traces straight back to both the handler and issuer. Authorized manual picks can be governed by user permissions and recorded with reason codes. This provides flexibility, but preserves full records when an employee needs to act outside the normal workflow.

Software built to improve inventory control

Power Pick Lot & Qualification Module segments ownership inside a single unit, restricting picking by qualification. Where accuracy is non-negotiable, layered pick verification (scan via RF/AIDC, RFID, and a picture database) confirms the right part and batch before it enters the tote. On the manufacturing line, batch picking and kitting allows for multiple kits to be sequenced at once, staged or delivered just-in-time to keep assembly moving.



The numbers that justify it

Is automated storage right for you? The case writes itself in four numbers: downtime, labor, space, and error.

When an aircraft is grounded, downtime means lost revenue. Goods-to-person retrieval and pick-to-light put the right part in hand in seconds instead of minutes.

A boost to labor productivity compounds these benefits: eliminating walk-and-search lifts productivity by up to two-thirds.

Space savings translate directly to capital savings, all while adding operational flexibility. Jazz Aviation turned reclaimed floor into a productive area, and stockroom conversions freed up to 85% of their footprint.

Finally, error is expensive in a regulated industry, where a single mispick can mean rework, a failed audit, or a safety event; layered verification drives accuracy to 99.9%.

Benefits at a glance

Figure	What it measures
Up to 99.9%	Pick accuracy with pick-to-light + verification
Up to 85%	Floor space reclaimed vs. shelving
Up to 2/3	Productivity gain from goods-to-person
33%/59%	See ROI within 3 months/within six months
~$390K	Average annual picking-error cost avoided

Case Study

Jazz Aviation: MRO parts management

Jazz Aviation, a regional carrier operating across the U.S. and Canada, maintains 125 aircraft around the clock from its Toronto base, the largest of six line bases. More than 10,000 SKUs sat on shelving in a space-constrained hangar next to the airport, where technicians often sorted through 50 parts to find the right batch number, at four to seven minutes per pick.

Jazz consolidated those SKUs into two Kardex Shuttle units running the Power Pick System, integrated with their existing TRAX software, alongside a four-position batch station, pick-to-light, and label printing. Batch validation now confirms every pick. Accuracy rose to 99%, MRO productivity climbed 77% (from 15 to 60 picks per hour), and the operation reclaimed 71% of its floor space, compressing 1,196 sq ft of shelving into 184 sq ft. Jazz plans to add a third Shuttle as it grows.

“Space is a premium being next to an airport. It was a constant battle, we had no more room. We needed a full supply chain solution, not just a temporary fix.”

Mike Hauser, Stores System Manager

99%
pick accuracy

+77%
productivity

71%
floor space saved

What sets Kardex apart

Built in America, cleared for defense

Kardex Shuttle systems are American made at our 280,000 sq ft facility in Columbia, SC, and Buy American Act compliant. Domestic production helps shorten lead times, while Kardex’s CMMC compliance supports the protection of Federal Contract Information (FCI) and Controlled Unclassified Information (CUI).

Kardex brings decades of experience deploying ASRS on military bases to support parts availability, maintenance efficiency, and operational readiness. Our dedicated team of U.S. military veterans helps customers navigate base protocols and procurement through GSA contracts, prime contractors, and open-market purchases, including working with small-business and veteran-owned partners.

Click here to get more information about ASRS in the Military or other DOD applications.



What sets Kardex apart

Dedicated service across North America

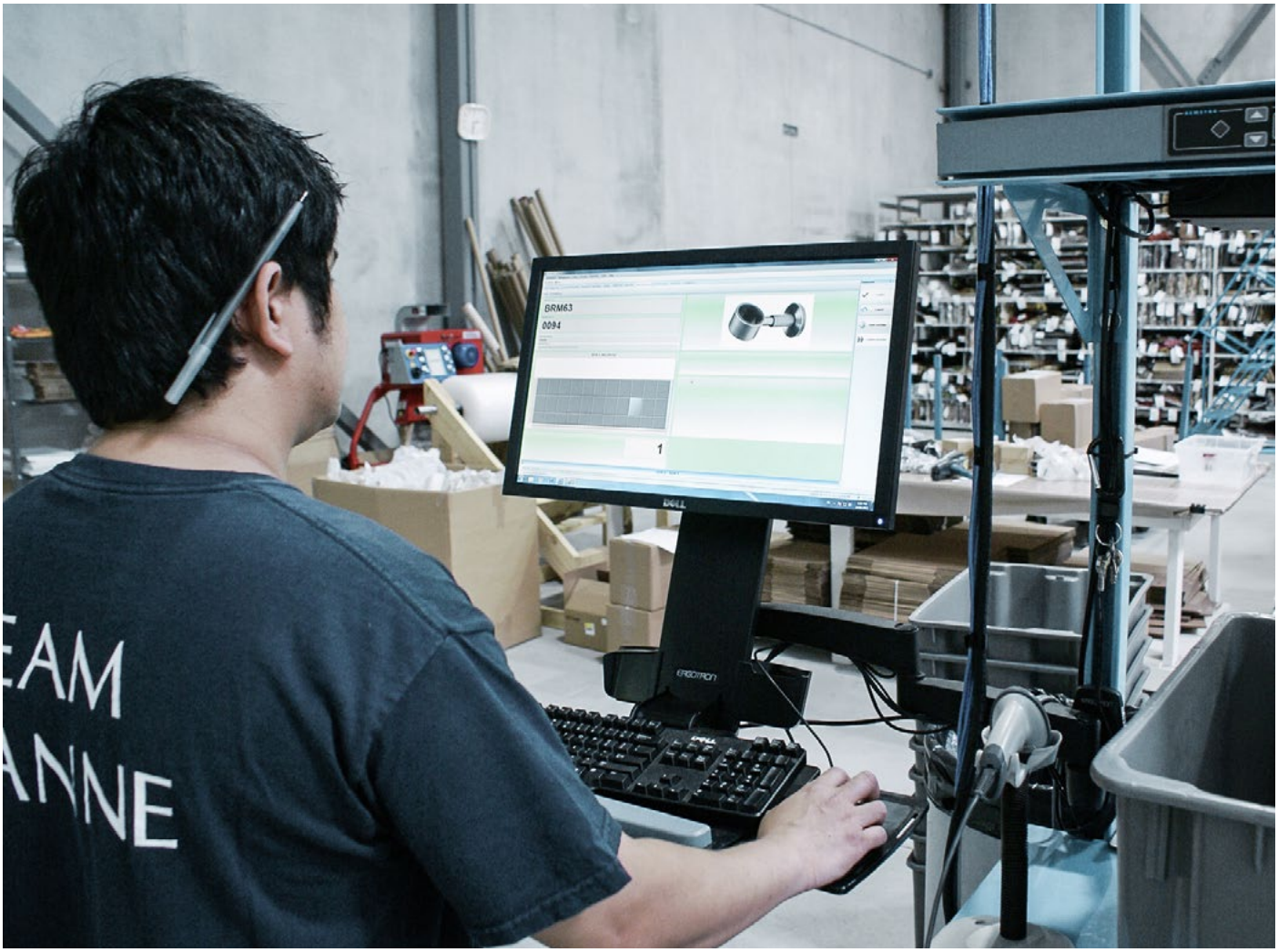
In aerospace, storage system downtime can delay maintenance and disrupt production. Kardex's Life Cycle Service (LCS) team helps keep systems operating throughout their working life through regular maintenance, technical support, and upgrades as operational needs change.

Our network of direct employees and certified distributors covers the United States, Canada, and Mexico. Technicians trained at Kardex facilities by Kardex instructors specialize exclusively in Kardex machine maintenance, backed by the expertise of our 24/7 North American Service Center. Many distributor relationships span more than 25 years, providing experienced local support from installation onward.

As your operation grows, LCS also helps expand, modify, and scale existing systems, keeping your storage investment aligned with changing inventory and facility requirements.

Click here to learn more about Kardex Life Cycle Services.





Let’s get started.

In aerospace, every part has to be traceable, every pick accurate, and every minute counts. Kardex automated storage gives MRO and manufacturing teams a practical way to get there: full chain of custody, protected parts, faster retrieval, and up to 85% of their floor space back.

Whether you're keeping aircraft in the air or a build line moving, the right system turns inventory from a constant worry into a competitive advantage.

Kardex Remstar is a leading provider of ASRS solutions with 40+ years of experience in the aerospace industry.

Contact us to get started.

kardex.com

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