



Chapter 04: Avionics Operations

06. Parts and Component Management

Manage avionics parts inventory, procurement, and component tracking to ensure availability of approved parts and maintain traceability.

Purpose

This process establishes procedures for managing avionics parts inventory, procurement, and component tracking to ensure availability of approved parts while maintaining complete traceability and regulatory compliance. The process ensures all parts are properly sourced, stored, and tracked throughout their lifecycle from procurement to installation.

Roles and Responsibilities

A&P Mechanic:

- Execute assigned maintenance tasks per specifications
- Review work order technical requirements
- Provide technical input for work scope estimates
- Document completion status and discrepancies
- Ensure regulatory compliance in all maintenance work

Chief of Maintenance:

- Review and approve complex or high-value work orders
- Assign qualified technicians to specific maintenance tasks
- Ensure regulatory compliance for all maintenance work
- Resolve scheduling conflicts and resource allocation issues
- Oversee maintenance quality and safety standards

Process Steps

Parts Procurement Planning Phase

- **Identify parts requirements** - Review work orders and maintenance schedules to determine parts needs and quantities

- **Research approved sources** - Identify authorized dealers, manufacturers, and approved suppliers for required parts
- **Verify parts specifications** - Confirm part numbers, specifications, and compatibility with aircraft and systems
- **Obtain pricing and availability** - Request quotes and delivery schedules from multiple approved suppliers

Parts Ordering and Receiving Phase

- **Generate purchase orders** - Create formal purchase orders with complete part specifications and delivery requirements
- **Track order status** - Monitor order progress and coordinate with suppliers for delivery updates
- **Receive and inspect parts** - Conduct incoming inspection for damage, completeness, and compliance with order specifications
- **Verify documentation** - Review certificates of conformance, traceability documents, and quality certifications

Parts Storage and Inventory Management Phase

- **Assign storage locations** - Store parts in appropriate locations considering environmental requirements and shelf life
- **Update inventory records** - Enter parts into inventory management system with complete identification and location data
- **Implement storage controls** - Maintain proper environmental conditions including temperature, humidity, and ESD protection
- **Conduct periodic audits** - Perform regular inventory counts and reconciliation to maintain accuracy

Parts Issue and Tracking Phase

- **Process parts requisitions** - Review and approve parts requests for specific work orders and maintenance activities
- **Issue parts to technicians** - Provide required parts with proper documentation and traceability records
- **Track parts usage** - Record parts consumption and installation locations in maintenance tracking system
- **Manage surplus and returns** - Process unused parts returns and maintain accurate inventory adjustments

Process Mapping

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Requirements Planning → Supplier Research → Parts Ordering → Receiving and Inspection → Storage Management → Parts Issue → Usage Tracking → Inventory Control

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Tools and Resources

Inventory Management Systems:

- Parts Inventory Database
- Purchase Order Management System
- Supplier Contact and Rating Database
- Parts Traceability Tracking System

Storage Equipment:

- ESD-Safe Storage Containers
- Environmental Control Systems
- Parts Identification and Labeling Systems
- Security and Access Control Systems

Documentation:

- Approved Vendor Lists
- Parts Specifications and Standards
- Supplier Quality Agreements
- Parts Traceability Requirements

Success Metrics

- **Completion Time:** Standard parts orders processed and received within supplier lead time plus 10% buffer.
- **Quality Standard:** 98% parts availability for scheduled maintenance with zero counterfeit or non-conforming parts accepted.
- **Safety Standard:** 100% parts traceability maintained from procurement through installation.
- **Client Satisfaction:** Zero maintenance delays due to parts availability issues for scheduled work.

Common Issues and Solutions

- **Issue:** Critical parts not available when needed causing maintenance delays
- **Solution:** Implement minimum stock levels for critical parts, establish emergency procurement procedures with expedited suppliers, and maintain alternate source approvals for high-usage components

Issue: Counterfeit or non-conforming parts received from suppliers

Solution: Verify supplier authorization and quality certifications, conduct thorough incoming inspection procedures, and maintain relationships only with approved and audited suppliers

Issue: Parts shelf life expiration causing inventory waste and additional costs

Solution: Implement first-in-first-out inventory rotation procedures, monitor shelf life dates systematically, and coordinate with suppliers for just-in-time delivery of time-sensitive components

Safety Considerations

- **⚠ WARNING:** Use only approved parts from authorized sources as counterfeit or non-conforming parts may fail and create unsafe flight conditions
- **⚡ CAUTION:** Maintain proper ESD protection for all electronic components during storage and handling to prevent damage
- **i NOTE:** All parts must maintain complete traceability documentation from manufacture through installation to support warranty claims and regulatory requirements
- **✅ BEST PRACTICE:** Establish long-term relationships with authorized suppliers to ensure reliable parts availability and quality support

Regulatory References

- **14 CFR Part 21** - Certification Procedures for Products and Parts including approved parts requirements
- **14 CFR Part 145.211** - Quality control system requirements for parts procurement
- **AC 21-29** - Detecting and Reporting Suspected Unapproved Parts
- **AC 20-62** - Eligibility, Quality, and Identification of Aeronautical Replacement Parts
- **FAA Order 8120.16** - Suspected Unapproved Parts Program