End-to-End Road Feeder Service (RFS) Process for Airfreight

A maximum-detail operational guide covering every stage of the RFS lifecycle — from network planning and vehicle preparation through linehaul transport, airport handling, customs clearance, and final delivery to consignee.

TRUCK → SHIPPER → GHA → AIRPORT → RFS LINEHAUL → DESTINATION AIRPORT → GHA → CONSIGNEE

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Chapter 0 — Pre-Operations

Airline & RFS Network Planning

Before any truck moves, the airline and its RFS partners must establish a fully defined network architecture. This includes routing typologies — airport-to-airport, hub-to-spoke, cross-border — and the determination of frequency, cut-off times, transit times, and service-level tiers (standard, express, pharma, DG, secure).

Network Typologies

- Airport-to-airport
- Airport-to-hub
- Hub-to-spoke
- Cross-border RFS

Resource Allocation

- Truck types: box, mega, double-deck, reefer, roller-bed
- ULD positions & weight limits
- Driver shifts & contingency routes
- Slot coordination with GHAs
- ADR tunnel code compliance & border crossing feasibility

Chapter 0 — Pre-Operations

Compliance & Certification

All RFS operations must be underpinned by a robust regulatory compliance framework before a single shipment is tendered. Key regulations include EU Reg. 2015/1998 for aviation security, ACC3/RA3/KC3 for international cargo, GDP for pharmaceuticals, ADR and IATA DGR for dangerous goods, and TAPA TSR for secure cargo.

Regulatory Frameworks

- EU Reg. 2015/1998
- ACC3 / RA3 / KC3
- TAPA TSR 1/2/3
- GDP (pharma)
- ADR / IATA DGR
- Airline SOPs & airport rules

Driver Certifications

- Airside driving permit
- Aviation security training
- DG awareness certification
- GDP training
- TAPA training

Chapter 0 — Pre-Operations

Vehicle Preparation

Every RFS vehicle must pass a rigorous pre-departure inspection covering mechanical, security, cleanliness, and — where applicable — refrigeration systems. This is a non-negotiable gate before any cargo is loaded. Failures at this stage must be resolved before dispatch; no deferrals are permitted on safety-critical items.

1

Mechanical Inspection

Tires, brakes, lights, doors, liftgate, and roller-bed systems verified against daily vehicle checklist.

2

Security Fit-Out

Seals, locks, GPS tracking, panic button, and geofencing all active and tested prior to dispatch.

3

Cleanliness & FOD

No contamination, foreign objects, or pests. Cargo space inspected and documented clean before loading.

4

Reefer Systems

Pre-cooling to required temperature, calibration validated, battery checked. PTI (Pre-Trip Inspection) completed and logged.

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Chapter 1 — Export RFS Process (Origin)

🚚 1.1 Pickup at Shipper / Forwarder

The RFS operation formally commences with the driver's check-in at the shipper or forwarder premises. At this point, a full verification sequence is mandatory before any cargo is loaded onto the vehicle.

→ Verify Documentation

Confirm AWB, booking reference, security status (SPX/SCO/Unknown), DG documentation, and temperature instructions match the physical cargo presented.

→ Load & Inspect

Perform count check, condition check, and temperature check. Apply seals, capture photo documentation where required, and verify DG compliance before closing the trailer.

→ Update TMS

Record pickup event in the Transport Management System immediately, activating chain-of-custody tracking and temperature continuity logging for the full journey.

1.2 Delivery to Origin GHA Warehouse

On arrival at the origin airport, the truck enters a controlled security zone where a multi-layer inspection is conducted before the vehicle is directed to an unloading dock. This gate check is a critical security control point and no vehicle may proceed without a full pass.

Driver ID Check

Identity verified against booking; access credentials validated for airside or landside entry as applicable.

Vehicle Inspection

Physical inspection of the vehicle exterior, undercarriage, and cargo space. CCTV coverage maintained throughout.

Seal & Booking Check

Seal numbers cross-referenced against shipping documentation. Booking reference confirmed in the GHA system.

Radiation Portal Scan

Where required by airport authority or airline SOP, vehicles pass through radiation detection portals before dock entry.

Chapter 1 — Export RFS Process (Origin)

📦 1.3 Export Acceptance at GHA

Once unloaded at the dock, every shipment undergoes a full acceptance process before it may be screened or warehoused. This is the primary quality and compliance gate for all outbound cargo. Any discrepancy — weight, packaging, labelling, or documentation — must be resolved before acceptance is granted.

Acceptance Checks

- Weight & dimension verification
- Packaging & label inspection
- DG acceptance procedure
- Temperature check & log
- Live animal welfare assessment
- Entry into Cargo Management System (CMS)

Security Screening Methods

- X-ray screening
- Explosive Trace Detection (ETD)
- Canine (EDD) inspection
- Physical search where required

All screening results are logged with traceability records. Screened cargo is assigned a secure warehouse location immediately after clearance.

Chapter 1 — Export RFS Process (Origin)

📦 1.4 Build-Up for RFS

Screened and accepted cargo is consolidated into the appropriate load units for RFS dispatch. Build-up must follow the load plan issued by the airline or RFS coordinator, with strict adherence to DG segregation rules, temperature cargo zoning, and ULD structural limits.

01

Consolidate into Load Units

Cargo sorted and built up into ULDs, pallets, or loose cargo cages as per load plan. Like-type cargo grouped by service level and destination.

02

Secure & Label

Apply nets, straps, and locks. Attach ULD tags and — where required — RFID tags for real-time tracking throughout the RFS journey.

03

Final Integrity Checks

Weight check performed. ULD structural integrity verified. Seals applied. DG segregation and temperature cargo zoning confirmed before transfer to truck loading bay.

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🚛 1.5 RFS Truck Loading at GHA

With build-up complete and load plans confirmed, ULDs and loose cargo are transferred from the warehouse to the truck loading bay. Loading must be performed using approved equipment and strictly follow weight distribution and securing procedures.

Loading Equipment

- Roller beds for ULD transfer
- Forklifts for pallet movement
- Slave pallets where required

Securing Procedure

- Lock bars engaged
- Straps tensioned and checked
- Seals applied and numbers recorded

System Updates

- ULD loaded status in CMS
- Truck departure time recorded in TMS
- Weight distribution confirmed

Chapter 1 — Export RFS Process (Origin)

 1.6 RFS Linehaul Transport

The linehaul leg is the highest-risk phase of the RFS process. From the moment the truck departs, continuous monitoring is required — covering ETA, temperature (for reefer loads), geofencing alerts, and ADR routing compliance. The control tower must maintain active oversight throughout the transit.

Driver Responsibilities

- Mandatory rest breaks per regulations
- Periodic vehicle & seal checks
- Reefer temperature verification
- Report deviations to control tower immediately

Control Tower Monitoring

- GPS tracking & geofencing alerts
- ETA recalculation on delays
- Weather, border queue & road closure monitoring
- Temperature alarm response
- ADR tunnel code & TAPA TSR compliance verification

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🚚 2.1 Arrival at Destination Airport Gate

On arrival at the destination airport, the RFS truck enters a controlled perimeter checkpoint. This is the first security validation on the import side and mirrors the export gate process in rigour. No vehicle may proceed to an unloading dock until all checks are satisfactorily completed.

Driver ID Verification

Driver identity confirmed against booking record. Airside driving permit validated if ramp entry is required.

Vehicle Inspection

Full exterior and undercarriage inspection. Vehicle safety condition assessed before dock assignment.

Seal Verification

Seal numbers cross-referenced against the departure manifest and CMS record. Any discrepancy triggers a full security investigation before unloading proceeds.

Chapter 2 — Transit at Destination Airport

📦 2.2 RFS Unloading at GHA

Once the truck is cleared through gate security and directed to the unloading dock, the import GHA assumes custody of the cargo. The transfer of custody is documented in the CMS at the point the seal is broken, creating a clear audit trail from departure origin to destination receipt.

1 Break Seal & Unload

Seal break recorded with timestamp. ULDs and loose cargo unloaded using appropriate equipment. Each unit scanned into the CMS as received.

2 Condition & Temperature Check

Immediate damage check on all units. Temperature-sensitive cargo checked against data logger readings. Any excursions reported to the airline and shipper at once.

3 Route to Appropriate Zone

Cargo directed to breakdown area, transit area, or import warehouse depending on flight connection status, customs requirements, and commodity type. DG segregation maintained throughout.

Chapter 2 — Transit at Destination Airport

🏭 2.3 Breakdown Operations

Breakdown is the systematic disassembly of consolidated RFS load units into individual shipments for onward processing. Accuracy at this stage is critical — mis-sorting at breakdown is one of the most common root causes of delay, misrouting, and damage claims in airfreight operations.

Open & Remove Cargo

ULD nets and straps removed. Cargo extracted and placed on breakdown conveyors or work surfaces. Each piece scanned and reconciled against the manifest.

Sort by Airline / Flight / Consignee

Each shipment sorted by airline, flight number, consignee, and customs status. Sorted cargo moved to the correct warehouse zone immediately after sorting is confirmed.

Exception Handling

Damage reported and photographed. Temperature cargo handled in appropriate zones. DG segregation enforced. Live animals prioritised for immediate welfare assessment.

Chapter 2 — Transit at Destination Airport

2.4 Customs Handling

Import customs clearance is a mandatory step for all international RFS shipments before cargo may be released to the consignee or their agent. Timely and accurate declaration submission is essential to avoid demurrage, storage charges, and delivery delays. The GHA must maintain bonded warehouse compliance for all cargo pending clearance.

Submissions Required

- Import declaration
- Cargo manifest
- AWB data in customs system
- HS code validation

Customs Actions & Controls

- Physical inspection, X-ray, or sampling at customs discretion
- Cargo hold orders must be respected immediately
- Bonded warehouse compliance maintained throughout detention
- Customs seal integrity preserved until official release

Chapter 2 — Transit at Destination Airport

🚚 2.5 Delivery to Consignee / Forwarder

The final step in the import RFS chain is the physical handover of cleared cargo to the consignee or their appointed forwarder. This is the formal end of the airline's and GHA's custody obligation and must be executed with the same rigour as the collection process at origin.

01

Gate Arrival & ID Check

Forwarder or consignee truck arrives. Driver ID verified. Vehicle inspected. AWB and release authorisation confirmed against CMS before any cargo is staged for collection.

02

Cargo Handover

Cargo staged and cross-checked against the release order. Condition noted at point of handover. Any pre-existing damage documented jointly with the collecting party.

03

POD Capture

Proof of Delivery (POD) captured electronically or on paper. Signed and timestamped. Immediately uploaded to CMS to close the shipment lifecycle record.

Chapter 3 — Special Cargo Flows

3.1 Pharma / GDP Cold Chain

Pharmaceutical cargo transported via RFS must comply with Good Distribution Practice (GDP) requirements throughout the entire road leg without exception. A single temperature excursion — even briefly — can render an entire shipment unfit for use and expose all parties to significant liability.

Temperature Monitoring

Continuous data logger validation from shipper collection to GHA receipt. All excursions reported immediately to the airline pharma desk and shipper quality team.

Cold Chain Integrity

Reefer truck pre-cooled to required range before loading. Temperature validated at each custody transfer point. Packaging assessed for thermal adequacy.

Priority Handling

Pharma shipments given priority lane access at all GHA facilities. Designated cold-room storage where applicable. Reefer dock connections used during loading and unloading to minimise ambient exposure.

Chapter 3 — Special Cargo Flows

3.2 Dangerous Goods (ADR + IATA DGR)

Dangerous Goods transported by RFS are subject to both IATA Dangerous Goods Regulations (for the air segment) and ADR regulations (for the road segment). Both sets of requirements apply simultaneously and must be reconciled in the transport documentation and physical handling procedures.

Documentation Validation

DG declaration checked against IATA DGR and ADR requirements. Packing group, UN number, and proper shipping name verified before acceptance.

Segregation & Routing

DG segregation rules enforced in warehouse and on truck. ADR tunnel category compliance checked for every route leg. Incompatible goods kept separated throughout.

Vehicle & Emergency Readiness

DG placards correctly affixed to vehicle. Emergency equipment (fire extinguisher, PPE, written instructions) carried per ADR. Driver holds valid ADR certificate for the relevant classes.

Chapter 3 — Special Cargo Flows

3.3 High-Value Cargo / TAPA TSR

High-value cargo — including valuables, electronics, pharmaceuticals, and other theft-attractive commodities — must be transported in full compliance with TAPA Trucking Security Requirements (TSR). The applicable TSR level (1, 2, or 3) is determined by the value and risk classification of the shipment and the airline's SOP.

Secure Vehicle

TAPA TSR-certified truck with approved locking systems, tamper-evident seals, and full GPS tracking active throughout the journey. Geofencing alerts configured.

Escort & Access Controls

Escort vehicle deployed where required by risk assessment or airline SOP. Dual-person unloading enforced at GHA. Secure zones used for staging and storage.

Chain-of-Custody

Every custody transfer documented in real time. No single-person access to high-value cargo at any point. CCTV coverage of all handling areas mandatory.

Chapter 3 — Special Cargo Flows

3.4 Live Animals

The transport of live animals via RFS is governed by the IATA Live Animals Regulations (LAR) and requires specialised handling at every stage of the journey. Animal welfare is a legal and ethical obligation — deficiencies in ventilation, temperature, or handling can result in animal distress, mortality, and significant regulatory and reputational consequences.

Welfare Checks

Animals inspected at origin pickup, on arrival at GHA, and at every custody transfer. Welfare status documented with each check.

Ventilation & Temperature

Adequate ventilation maintained throughout road transit. Temperature monitored continuously. Extreme ambient temperatures require reefer or climate-controlled vehicle.

IATA LAR Compliance & Priority

All documentation compliant with IATA LAR. Priority unloading at destination GHA — live animals are never held in queue behind general cargo.

Chapter 3 — Special Cargo Flows

3.5 Perishables

Perishable cargo — fresh produce, cut flowers, seafood, and similar commodities — requires strict temperature, humidity, and time management throughout the RFS leg. Shelf-life is finite; every unnecessary delay directly reduces the commercial value and usability of the goods at destination.

Temperature Control

Reefer vehicle pre-cooled to the commodity-specific range. Temperature logged continuously. Any deviation reported and actioned immediately.

Humidity Management

Humidity levels maintained within specified range for commodity type. Packaging assessed to prevent condensation damage during temperature transitions.

Shelf-Life & Priority Handling

Remaining shelf-life documented at origin. Priority unloading and accelerated customs processing applied. First-in-first-out (FIFO) rotation enforced in cold rooms.

Chapter 4 — ULD Management

4.1 ULD Tracking in RFS Operations

Unit Load Devices (ULDs) represent significant capital assets owned or leased by airlines. In RFS operations, ULDs leave the controlled airside environment and enter the road transport network — increasing the risk of loss, damage, and prolonged off-fleet time. Accurate, real-time tracking is therefore essential for both operational efficiency and cost control.

What Must Be Tracked

- ULD number (IATA format)
- Current location (GHA / truck / transit)
- Physical condition at each scan point
- Airline ownership and lease status

ULD Inventory & Repositioning

- Regular inventory counts at all RFS nodes
- ULD pooling arrangements managed with airline
- Empty ULD repositioning planned to avoid stock imbalances
- Overdue ULD alerts triggered from CMS automatically

Chapter 4 — ULD Management

4.2 ULD Maintenance

Any ULD that is damaged, structurally compromised, or otherwise unfit for service must be immediately quarantined and removed from the operational fleet. Continued use of a defective ULD risks cargo damage, load plan errors, and — in the case of aircraft-loaded ULDs — a direct flight safety hazard.

Structural Inspection

Inspect base, sidewalls, and locking feet for cracks, deformation, or corrosion. Check container doors for alignment and locking mechanism function. Any structural defect = immediate quarantine.

Nets, Straps & Restraints

Nets and straps inspected for wear, cuts, and broken fittings at every use cycle. Condemned items tagged as unserviceable and removed from stock immediately.

Repair & Return to Service

Damage reported to airline ULD control. Repair authorised only by a certified ULD maintenance provider. Repaired ULDs re-inspected and certified before return to operational use.

Chapter 5 — Safety, Security & Compliance

5.1 Safety in RFS Operations

Safety management in RFS operations spans the ramp, the warehouse, and the road — all three environments carry distinct hazard profiles that must be managed through trained personnel, correct equipment use, and consistent procedural compliance. A single safety failure in any zone can result in injury, cargo damage, or operational shutdown.

Ramp Safety

Speed limits, designated pedestrian routes, and equipment right-of-way rules enforced. FOD (Foreign Object Debris) prevention checks conducted before and after all ramp activities.

Warehouse Safety

Forklift operating zones segregated from pedestrian areas. Racking load limits observed. PPE (high-vis, safety footwear, gloves) mandatory in all cargo handling areas.

Equipment Inspection

All ground support equipment (GSE) and warehouse machinery subject to pre-use inspection and periodic maintenance. Defective equipment taken out of service immediately and tagged for repair.

Chapter 5 — Safety, Security & Compliance

5.2 Security Controls

The integrity of the RFS security programme depends on consistent application of access controls, screening protocols, and chain-of-custody documentation at every node in the network. A security failure at any point — whether on the road or in the warehouse — has the potential to compromise the entire consignment and trigger regulatory sanctions against the operating entity.

Access Control

Zoned access enforced across all GHA and ramp areas. ID-based entry logging maintained. Unauthorised access triggers immediate security escalation.

CCTV & Surveillance

Full CCTV coverage of all cargo handling, storage, and vehicle movement areas. Footage retained for minimum 30 days or as per regulatory requirement.

Screening Logs & Secure Storage

All screening events logged with operator ID, method, and result. Screened cargo stored in secure, segregated zones until loaded. Chain-of-custody maintained without interruption.

Chapter 5 — Safety, Security & Compliance

5.3 Regulatory Compliance Framework

RFS operations are subject to a dense and overlapping regulatory landscape. Compliance is not optional — each framework carries its own audit regime, certification requirement, and penalty structure. Failure to maintain concurrent compliance across all applicable regulations can result in loss of operating permits, airline contract suspension, and legal liability.

Aviation & Safety

- IATA & ICAO standards
- EASA requirements
- EU Reg. 2015/1998
- ISAGO (ground handler audit)

Cargo Quality

- CEIV Pharma / CEIV Fresh
- IATA DGR
- ADR (road transport)
- Airline individual SLAs

Security Standards

- TAPA TSR levels 1 / 2 / 3
- ACC3 / RA3 / KC3 designations
- Airport authority security directives

Chapter 6 — Post-Operations

🧩 6.1 Billing & Revenue Reconciliation

Accurate post-operation billing is critical to the financial integrity of the RFS programme. All chargeable events must be captured in real time during operations and reconciled against the contracted rate card before invoices are issued. Unbilled or overbilled charges are a common source of airline-GHA disputes and erode operational trust.

5

Billable Event Types

RFS Linehaul

Per-trip or per-kg linehaul charges reconciled against actual routes operated and distance variances.

Handling & Screening

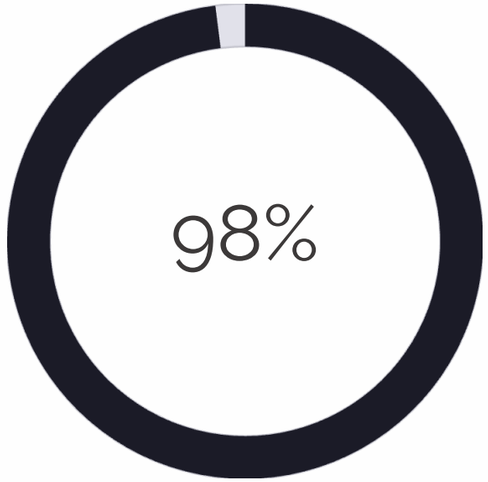
Acceptance, build-up, breakdown, and security screening fees billed per shipment or per kg as per SLA.

Storage & ULD Repair

Free storage periods enforced per SLA. Demurrage charged beyond free time. ULD repair costs invoiced to responsible party.

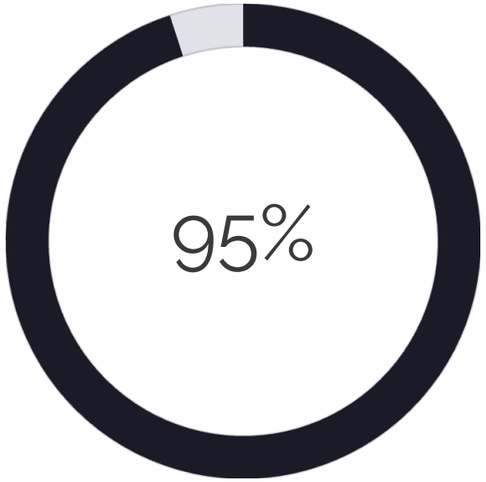
6.2 KPI Reporting & Performance Management

Robust KPI reporting is the mechanism by which the RFS programme is continuously measured, managed, and improved. KPIs must be reported at agreed frequency — typically weekly and monthly — against contracted SLA targets, with trend analysis and root-cause commentary provided for any metric below threshold.



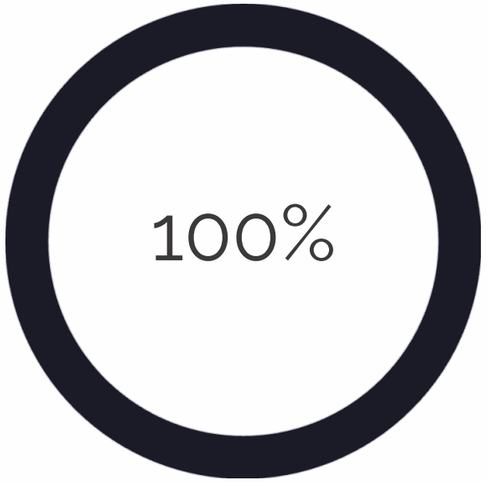
On-Time Pickup Target

Percentage of collections completed within the agreed pickup window at shipper or forwarder premises.



On-Time Arrival Target

Percentage of RFS trucks arriving at destination GHA within the agreed transit time and cut-off window.



Screening Compliance

All cargo screened per security programme. Zero tolerance for unscreened cargo entering the RFS supply chain.

Additional KPIs tracked: damage rate per 1,000 shipments, temperature excursion frequency, RFS truck utilisation rate, ULD utilisation rate, and overall SLA performance score against airline contract.

6.3 Claims Handling

Despite best efforts, incidents occur. A structured claims handling process ensures that every claim — whether damage, loss, delay, temperature excursion, or DG incident — is captured, investigated, and resolved in a timely, evidence-based manner. Delays in claims processing damage airline relationships and increase exposure to escalated liability.

Damage

Physical damage to cargo documented at point of discovery. Photos, weight records, and handling logs submitted with claim. Liability apportioned based on custody transfer records.

Loss

Missing cargo investigated against CMS scan history and CCTV footage. Full reconciliation of manifests completed before a loss is confirmed.

Delay

Transit time deviation documented with cause analysis. SLA breach notification issued to airline within agreed timeframe.

Temperature & DG Incidents

Excursions reported immediately to all parties. DG incidents handled per emergency response plan and notified to competent authority where required by ADR/IATA DGR.

Chapter 6 — Post-Operations

6.4 Data Archiving & Record Retention

Complete and accurate data archiving is the final operational obligation in the RFS lifecycle. Records must be retained for the minimum periods stipulated by aviation security regulations, customs authorities, and airline contracts — and must be retrievable within defined timeframes for audit, investigation, or claims purposes.

AWB & Customs Documents

Air Waybills, import/export declarations, and manifest data retained per customs authority requirements (minimum 5–7 years in most jurisdictions).

Screening & Security Logs

All security screening records retained per EU Reg. 2015/1998 and airline security programme requirements. Accessible for regulatory audit within 24 hours.

ULD, RFS Tracking & Temperature Logs

ULD movement logs, GPS tracking records, and continuous temperature data retained per airline SLA and GDP/CEIV requirements. Essential for claims investigation and regulatory compliance demonstration.