Cold Weather Operations

- AIRBUS A3xx Family
- AIRBUS A330/A350
- Boeing 73x NG/MAX Family
- BOEING 777/787
- Ground Deice/Anti-Ice Procedures
- Winter Weather Operations Memorandum
- Winter Operations Reference Card

AIRBUS A3xx Family

HUB OPERATIONS / AIRCRAFT OPERATING PROCEDURES

COLD WEATHER OPERATIONS — AIRBUS A320 FAMILY

A319 / A320 / A321 (ceo and neo, including A321XLR where applicable). Excludes A220, A300, A330, A350 and A380.

EDITION	EFFECTIVE	OWNER	APPLICATION
1.0 | 2026–27	01 NOV 2026	Hub Operations	All AAVA divisions

FOR FLIGHT SIMULATION USE ONLY | Aircraft-specific FCOM/QRH and performance limitations take precedence.

1.0 GENERAL & AAVA APPLICABILITY

This manual applies to every AAVA flight operated in this aircraft family, regardless of airline branding, callsign, codeshare, heritage, event, charter, passenger or cargo designation. All AAVA flights use the same Hub Operations winter operating framework based on American Airlines-style operational standardization; no actual American Airlines proprietary SOP or regulatory operations-specification approval is implied.

Cold-weather awareness is condition-driven and applies all year, not only November–April. Evaluate icing conditions, frost, snow, freezing precipitation, airport and runway conditions, freezing fuel/clear ice, and delays. Temperature alone does not establish every anti-ice switch requirement.

Hierarchy: applicable aircraft-specific AFM/FCOM/QRH and addon limitations → applicable FAA fluid guidance/aircraft performance data → AAVA flight-operations procedures. If guidance conflicts, use the higher-authority aircraft limitation and notify Hub Operations.

2.0 CLEAN AIRCRAFT CONCEPT & PRE-FLIGHT

Do not begin takeoff with frost, ice, snow or slush on critical surfaces unless a specifically applicable aircraft-approved exception is established. The captain is accountable for the final departure decision. Ground treatment is not a substitute for verification.

Inspect wings (upper and leading-edge surfaces), tail, control surfaces, slats/flaps/fairings, engine inlets, probes, ports, sensors and other aircraft-designated critical areas. Include contamination from overnight exposure, freezing fog, ground spray and cold-soaked fuel.

Transparent ice can be difficult to identify visually. Do not assume an overwing-window or flight-deck view reliably establishes the condition of every surface. Use an authorized ground or tactile inspection when necessary, and do not invent a manufacturer frost exception.

3.0 GROUND DEICING / ANTI-ICING

Deicing removes existing contaminants; anti-icing uses an appropriate fluid to protect previously clean surfaces from renewed contamination for a limited time. When frozen precipitation is falling or expected before takeoff, assess whether anti-icing protection is required in addition to removal.

SAE Type I typically provides shorter protection. Types II, III and IV have distinct aerodynamic acceptance, aircraft-speed eligibility and fluid-specific limits. Do not presume a fluid is suitable simply because it is available; apply aircraft and FAA fluid restrictions.

Deicing only: use when contamination is removed and the aircraft will stay clean to takeoff. One-step deicing/anti-icing: use only where fluid/application conditions produce an applicable valid HOT. Two-step: remove contamination and apply a compatible anti-icing fluid when continued protection is needed. Where degraded fluid exists, use the applicable removal/re-treatment procedure, not a simple top-off.

3.1 Ground crew coordination

1. Confirm aircraft identifier, location, contamination and weather conditions, type of treatment requested, and estimated taxi/departure delay.

2. Coordinate required aircraft flap/slat position, engine/APU and pneumatic configuration, windows/doors, truck clearances, anti-collision lights and safety zone using the exact aircraft-specific procedures.

3. Receive fluid type/brand, mixture/concentration, final application start time and confirmation that treatment and post-treatment checks are complete; record them for the departure decision.

4. Do not taxi until the ground team reports clear personnel/equipment and the crew completes the applicable after-treatment checklist.

4.0 FAA WINTER 2026–2027 HOLDOVER / ALLOWANCE TIMES

The separately distributed FAA Holdover Time Guidelines for Winter 2026–2027 (original issue 11 August 2026) and the companion FAA Ground Deicing Program General Information are the controlling reference for table selection. Hub Operations must check for revised editions. Notice 8900.784 describes this winter’s FAA program.

HOT begins with the start of the FINAL deicing/anti-icing step for a two-step treatment (or the start of the applicable one-step treatment), as specified by the FAA guidance. It is an estimated protection interval, not a certification that the aircraft remains clean.

Select the proper table using SAE fluid type, tested fluid brand, concentration, aircraft-material category where applicable (particularly Type I aluminum versus composites), temperature and precipitation. Follow table notes, lowest operational use temperature and aircraft-speed restrictions. Degree-specific HOT may be available under the FAA program.

Check the current precipitation and temperature before departure. If precipitation intensity/type changes, temperature decreases, or an unexpected delay occurs, reassess the validity of the selected protection. No published HOT means no assumed HOT.

Allowance times for ice pellets/small hail are distinct from normal HOT; they depend on eligible validated fluids and precise FAA conditions. Do not use a visual cabin check to create an unlimited extension. Heavy snow and particular freezing precipitation may have no HOT: follow the current FAA limitation and authorized inspection/re-treatment path.

4.1 Pre-takeoff contamination decision

5. Confirm treatment completion, ground crew clearance and clean-aircraft inspection status.

6. Update airport weather and identify the precise precipitation type/intensity and temperature.

7. Confirm applicable fluid data and that the correct FAA table, notes and HOT/allowance logic remain valid.

8. Perform any required aircraft-specific pre-takeoff check or pre-takeoff contamination check, by authorized person/method and within the applicable time requirement.

9. If critical surfaces cannot be confirmed clean, no permitted protection path exists, or the condition changed beyond current guidance: do not depart; inspect and/or re-treat.

5.0 CONTAMINATED RUNWAY & FLIGHT PLANNING

Before takeoff and landing, review reported runway condition, runway condition codes (RWYCC) when available, precipitation depth/type, braking-action reports, runway length and slope, crosswind, and available aircraft-specific performance calculation. A dry-runway calculation must not be treated as a contaminated-runway result.

Evaluate delays and alternate/diversion planning. Landing distance margins and takeoff power/flap choices are model-specific; “maximum thrust for all contaminated runways” and a universal reverse-thrust reduction speed are not reliable substitute procedures.

A slippery rejected takeoff or landing requires the aircraft-specific braking, directional-control and reverse-thrust technique. Follow the specific FCOM/QRH rather than a blanket rudder/braking speed threshold.

6.0 AIRBUS A320 FAMILY ENGINE ANTI-ICE

Use ENG ANTI ICE per the installed A319/A320/A321 FCOM for ground and in-flight icing conditions, accounting for engine type, external temperature, visible moisture and phase-specific criteria. An unqualified “OAT/TAT ≤10°C with visible moisture” statement alone is not adequate for all phases.

Confirm the effects of anti-ice on idle thrust, climb performance, fuel planning, approach and landing calculations. Use ECAM indications and the applicable abnormal/non-normal procedure when the system reports faults or suspect ice accretion.

Any prolonged low-thrust icing operation or engine ice-shedding run-up must use the correct engine-specific FCOM technique. Do not impose a universal 15-minute interval or N1 target across CFM, IAE, PW or LEAP variants.

7.0 AIRBUS A320 FAMILY WING ANTI-ICE / IN-FLIGHT ICING

Follow the A320-family FCOM for WING ANTI ICE use in icing conditions. Do not describe “wait for visible ice” as a universal primary activation method. Aircraft ice detection/ECAM cues, flight phase and manufacturer procedures determine the action.

Monitor icing and aircraft handling; review ice-related protections, speed margins, approach performance and the relevant ECAM/QRH guidance. The historical general rule below −40°C SAT must not override manufacturer-specific limits or instructions.

Where severe icing or unmodeled system behavior is encountered, prioritize remaining within aircraft operating limitations and leaving the conditions when necessary.

8.0 AIRBUS GROUND CONFIGURATION, CLEAR ICE & ICE RIDGES

Before treatment, use the applicable aircraft FCOM for slat/flap configuration, engines/APU, bleed/pack settings, air-conditioning inlets, doors and windows. Deicing in the wrong configuration can obstruct contaminant removal or expose equipment; do not transplant 737 flap angles or checklists.

Cold-soaked fuel can produce clear ice or frost difficult to see on wing upper surfaces. Only use a cold-soaked fuel frost exception where a verified aircraft-model/manufacturer procedure expressly permits it and all conditions are satisfied.

Inspect the lower forward fuselage, especially in front of pitot probes, for ice ridges. Airbus identifies these as a source of unreliable airspeed; any ridge must be removed using the proper maintenance/deicing procedure. Protect pitot/static/AoA sensors from direct deicing spray.

For post-landing flap retraction when ice may be present, follow the applicable Airbus FCOM/maintenance precautions. The prior universal instruction to retain CONF 1 until cleared is not issued without variant-specific substantiation.

8.1 Airbus other families — excluded from this publication

The A220, A300/600, A330, A350 and A380 have different systems and manufacturer operating techniques. They will receive separate aircraft-family procedures. Do not apply this A320-family booklet as their aircraft supplement.

9.0 SIMULATION & OPERATING LIMITATIONS

For simulators that model deicing, icing or runway braking, pilots must use the installed aircraft procedures and simulation limitations. If the platform does not model ground-fluid protection, simulate the realistic decision and paperwork sequence; a logged HOT does not create actual simulator protection.

This manual provides AAVA operational expectations, not real-world dispatch authority or an alternative to manufacturer-approved guidance. Do not apply a procedure from one aircraft engine or generation to another without verification.

10.0 REFERENCE CONTROL

FAA Holdover Time Guidelines, Winter 2026–2027, original issue 11 August 2026 (supplied separately; check for updates):
https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/deicing/

FAA Notice 8900.784, 3 August 2026:
https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1045444

FAA AC 120-60B, Ground Deicing and Anti-icing Program:
https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/23199

Airbus Safety First — Look out for Ice Ridges on the Lower Nose Fuselage:
https://safetyfirst.airbus.com/look-out-for-ice-ridges-on-the-lower-nose-fuselage/

AAVA Cold Weather Operations baseline and Hub Operations Deice/Anti-Ice Procedure / Winter Operations Reference Card. Standards apply across all AAVA operating divisions.

11.0 CHANGE RECORD

2026–2027 edition: separated general FAA ground-icing and contaminated-runway requirements from aircraft-specific cockpit settings; removed unsupported fleetwide N1, flap and thrust numbers; added FAA 2026–2027 document control and explicit inspection/re-treatment decision process; preserved aircraft-specific operational topics.

AIRBUS A330/A350

HUB OPERATIONS / AIRCRAFT OPERATING PROCEDURES

COLD WEATHER OPERATIONS — AIRBUS A330 / A350

Airbus A330-200/300/800/900 and A350-900/1000. Exact variant, engine, and installed simulation model requirements govern.

FOR FLIGHT SIMULATION USE ONLY | EDITION 1.0 | EFFECTIVE 01 NOV 2026

1.0 GENERAL & FLEETWIDE APPLICABILITY

This AAVA Hub Operations supplement establishes fleetwide cold-weather expectations for the Airbus A330 and A350 families. It applies across all AAVA divisions, codeshare/partner flying, Heritage, cargo, charters, Virtual Contractors and events regardless of branding or callsign.

Order of authority: the aircraft/engine/installed add-on FCOM, QRH, AFM, FCTM, performance data and limitations control aircraft-specific system actions. This document complements — and does not replace — those publications. Evaluate actual and forecast precipitation, aircraft condition, taxi delays and contaminated-surface reports before operating.

2.0 CLEAN AIRCRAFT CONCEPT & PRE-FLIGHT

Do not depart with prohibited frost, snow, slush or ice on critical surfaces. Any aircraft-approved exception must be specifically established in the applicable aircraft documentation. The Captain retains responsibility for an appropriate clean-aircraft decision before takeoff.

· Check wings/leading edges, tailplane, flight controls and gaps, engine inlets, probes/ports, sensors and other variant-defined critical areas. Assess areas not visible from the flight deck; a cabin-window observation is not a universal substitute for an approved inspection.

· Inspect for ice ridges on the lower nose fuselage ahead of air-data probes. Airbus identifies this as a potential source of unreliable airspeed; ensure required removal without spraying fluids directly onto probes or ports.

· Reassess after changing precipitation, extended ground delays, suspected refreezing or uncertain anti-icing protection. Request another authorized check or retreatment when necessary.

3.0 GROUND DEICING / ANTI-ICING

Follow AAVA Ground Deice/Anti-Ice Procedures (HO-GD-001) and Crew Card (HO-CARD-001). Deicing removes existing frozen contamination; anti-icing delays new accumulation for a limited period. Coordinate specific A330/A350 treatment configuration, engines/APU, slats/flaps, ground personnel protection and sensitive areas per applicable aircraft documentation.

· Before treatment, communicate aircraft family and variant, contamination, fluid restrictions, expected delay and configuration requirements. The ground crew must follow aircraft-authorized spray precautions.

· After treatment, obtain the treatment/completion report, fluid identification and concentration as applicable, the start time of the final anti-icing application, and confirmation of the required post-treatment inspection.

· Do not assume that all fluid types, mixtures, lowest operational use temperatures or aerodynamic acceptance limits are interchangeable across aircraft or fluids.

4.0 HOLDOVER TIME & TAKEOFF DECISIONS

Use the FAA Winter 2026–2027 Holdover Time Guidelines supplied in the AAVA Winter Operations resource library. Apply correct fluid-specific table, dilution, temperature, precipitation type/intensity and all notes and restrictions. HOT begins at the start of the final anti-icing application. It is an estimate of fluid effectiveness, not a guarantee that an aircraft remains clean.

For changed weather, uncertain contamination, a published HOT exceedance, or conditions without an applicable HOT, use the authorized pre-takeoff check, contamination check, or repeat treatment as required by the governing procedure. Ice-pellet allowance provisions are separate from standard HOT and may be applied only when all published criteria are satisfied.

5.0 AIRBUS A330 — AIRCRAFT-SPECIFIC CONSIDERATIONS

5.1 Engine and wing anti-ice

A330 engine and wing anti-ice employ pneumatic/bleed-air heating arrangements. Required activation, probe/window protection, wing anti-ice eligibility on the ground, engine operating limits and any thrust or performance adjustments are variant- and engine-dependent. Follow the installed A330 FCOM/QRH and ECAM indications rather than generic switch-position or temperature rules.

5.2 Ground configuration and cold-soaked aircraft

Apply the relevant A330 cold-weather preparation, fuel-temperature and cold-soak limitations, as modeled. Special attention is required for ice formation on nonheated surfaces and flight-control gaps; determine treatment configuration and post-treatment actions from the correct variant procedures.

6.0 AIRBUS A350 — AIRCRAFT-SPECIFIC CONSIDERATIONS

6.1 Engine, wing and probe ice protection

The A350 uses hot bleed air for engine/nacelle anti-ice and wing ice protection; probes and flight-deck windows use electrical heat. Automatic/controlled system logic, ice detection, inhibit logic and operating indications differ from the A330. Follow the installed A350 variant FCOM/QRH for the applicable flight phase, not A330 switch practices.

6.2 A350 ground treatment and monitoring

Use A350-specific procedures for deicing protection, surface and sensor inspection, acceptable treatment configuration, and post-treatment checks. ECAM/system indications, limitations and protections are aircraft-controlled; do not infer that anti-ice operation on the ground or during takeoff matches the A330.

7.0 TAXI, TAKEOFF & CONTAMINATED-RUNWAY OPERATIONS

Review runway condition code, deposits, braking reports, crosswind, slope and runway length; obtain aircraft-specific contaminated-runway takeoff/landing performance appropriate to the model. Confirm any anti-ice performance and fuel penalties in the flight plan. A standard maximum-thrust instruction or a universal reverse-thrust cutback speed is not adopted for these aircraft.

· Taxi cautiously on snow, ice and slush; account for reduced traction, freezing of slush in mechanisms, jet blast, and visibility limitations. Follow aircraft taxi and brake guidance.

· Use variant-approved engine ice-shedding/run-up instructions only when specified for the installed engine and conditions. Do not apply invented time intervals or N1 values.

· Use normal/abnormal procedures for unreliable airspeed, ice detection faults and icing-related ECAM indications. Do not improvise ice protection logic.

8.0 APPROACH, LANDING & POST-LANDING

Plan anti-ice usage, approach configuration, landing distance and braking for actual conditions. After taxi through slush or heavy snow, apply type-specific flap/slat handling, inspection and ground-shutdown procedures before any configuration changes that could trap or damage frozen components. There is no fleetwide fixed flap position or engine run-up interval that replaces the appropriate A330/A350 instructions.

9.0 SIMULATION SCOPE & RELEASE CONTROL

This document governs AAVA simulation standardization, not real-world dispatch. The aircraft and engine-specific checklists, runway-performance numbers, temperature thresholds, ice-protection switch logic and limitations are intentionally controlled by the current aircraft/add-on operating publications. Where a simulator does not model a procedure or system, comply with the published AAVA ground/flight planning requirements to the extent supported without inventing aircraft behavior.

10.0 REFERENCE CONTROL

AAVA Hub Operations: Ground Deice/Anti-Ice Procedures (HO-GD-001); Deice/Anti-Ice Crew Card (HO-CARD-001); Winter Operations Reference Card (HO-CARD-002); Summer & Winter Standard Weights policy; FAA 2026–2027 Holdover Time Guidelines.

Airbus, Getting to Grips with Cold Weather Operations; Airbus Safety First, “Look Out for Ice Ridges on the Lower Nose Fuselage”; FAA AC 120-58, Pilot Guide — Large Aircraft Ground Deicing. Use the applicable Airbus A330 or A350 FCOM/QRH/FCTM and installed add-on revisions for all aircraft-dependent actions.

Boeing 73x NG/MAX Family

HUB OPERATIONS / AIRCRAFT OPERATING PROCEDURES

COLD WEATHER OPERATIONS — BOEING 737

737-700/800/900 NG and 737 MAX 8/9; 737 Classic requires separate aircraft-specific procedures.

EDITION	EFFECTIVE	OWNER	APPLICATION
1.0 | 2026–27	01 NOV 2026	Hub Operations	All AAVA divisions

FOR FLIGHT SIMULATION USE ONLY | Aircraft-specific FCOM/QRH and performance limitations take precedence.

1.0 GENERAL & AAVA APPLICABILITY

This manual applies to every AAVA flight operated in this aircraft family, regardless of airline branding, callsign, codeshare, heritage, event, charter, passenger or cargo designation. All AAVA flights use the same Hub Operations winter operating framework based on American Airlines-style operational standardization; no actual American Airlines proprietary SOP or regulatory operations-specification approval is implied.

Cold-weather awareness is condition-driven and applies all year, not only November–April. Evaluate icing conditions, frost, snow, freezing precipitation, airport and runway conditions, freezing fuel/clear ice, and delays. Temperature alone does not establish every anti-ice switch requirement.

Hierarchy: applicable aircraft-specific AFM/FCOM/QRH and addon limitations → applicable FAA fluid guidance/aircraft performance data → AAVA flight-operations procedures. If guidance conflicts, use the higher-authority aircraft limitation and notify Hub Operations.

2.0 CLEAN AIRCRAFT CONCEPT & PRE-FLIGHT

Do not begin takeoff with frost, ice, snow or slush on critical surfaces unless a specifically applicable aircraft-approved exception is established. The captain is accountable for the final departure decision. Ground treatment is not a substitute for verification.

Inspect wings (upper and leading-edge surfaces), tail, control surfaces, slats/flaps/fairings, engine inlets, probes, ports, sensors and other aircraft-designated critical areas. Include contamination from overnight exposure, freezing fog, ground spray and cold-soaked fuel.

Transparent ice can be difficult to identify visually. Do not assume an overwing-window or flight-deck view reliably establishes the condition of every surface. Use an authorized ground or tactile inspection when necessary, and do not invent a manufacturer frost exception.

3.0 GROUND DEICING / ANTI-ICING

Deicing removes existing contaminants; anti-icing uses an appropriate fluid to protect previously clean surfaces from renewed contamination for a limited time. When frozen precipitation is falling or expected before takeoff, assess whether anti-icing protection is required in addition to removal.

SAE Type I typically provides shorter protection. Types II, III and IV have distinct aerodynamic acceptance, aircraft-speed eligibility and fluid-specific limits. Do not presume a fluid is suitable simply because it is available; apply aircraft and FAA fluid restrictions.

Deicing only: use when contamination is removed and the aircraft will stay clean to takeoff. One-step deicing/anti-icing: use only where fluid/application conditions produce an applicable valid HOT. Two-step: remove contamination and apply a compatible anti-icing fluid when continued protection is needed. Where degraded fluid exists, use the applicable removal/re-treatment procedure, not a simple top-off.

3.1 Ground crew coordination

1. Confirm aircraft identifier, location, contamination and weather conditions, type of treatment requested, and estimated taxi/departure delay.

2. Coordinate required aircraft flap/slat position, engine/APU and pneumatic configuration, windows/doors, truck clearances, anti-collision lights and safety zone using the exact aircraft-specific procedures.

3. Receive fluid type/brand, mixture/concentration, final application start time and confirmation that treatment and post-treatment checks are complete; record them for the departure decision.

4. Do not taxi until the ground team reports clear personnel/equipment and the crew completes the applicable after-treatment checklist.

4.0 FAA WINTER 2026–2027 HOLDOVER / ALLOWANCE TIMES

The separately distributed FAA Holdover Time Guidelines for Winter 2026–2027 (original issue 11 August 2026) and the companion FAA Ground Deicing Program General Information are the controlling reference for table selection. Hub Operations must check for revised editions. Notice 8900.784 describes this winter’s FAA program.

HOT begins with the start of the FINAL deicing/anti-icing step for a two-step treatment (or the start of the applicable one-step treatment), as specified by the FAA guidance. It is an estimated protection interval, not a certification that the aircraft remains clean.

Select the proper table using SAE fluid type, tested fluid brand, concentration, aircraft-material category where applicable (particularly Type I aluminum versus composites), temperature and precipitation. Follow table notes, lowest operational use temperature and aircraft-speed restrictions. Degree-specific HOT may be available under the FAA program.

Check the current precipitation and temperature before departure. If precipitation intensity/type changes, temperature decreases, or an unexpected delay occurs, reassess the validity of the selected protection. No published HOT means no assumed HOT.

Allowance times for ice pellets/small hail are distinct from normal HOT; they depend on eligible validated fluids and precise FAA conditions. Do not use a visual cabin check to create an unlimited extension. Heavy snow and particular freezing precipitation may have no HOT: follow the current FAA limitation and authorized inspection/re-treatment path.

4.1 Pre-takeoff contamination decision

5. Confirm treatment completion, ground crew clearance and clean-aircraft inspection status.

6. Update airport weather and identify the precise precipitation type/intensity and temperature.

7. Confirm applicable fluid data and that the correct FAA table, notes and HOT/allowance logic remain valid.

8. Perform any required aircraft-specific pre-takeoff check or pre-takeoff contamination check, by authorized person/method and within the applicable time requirement.

9. If critical surfaces cannot be confirmed clean, no permitted protection path exists, or the condition changed beyond current guidance: do not depart; inspect and/or re-treat.

5.0 CONTAMINATED RUNWAY & FLIGHT PLANNING

Before takeoff and landing, review reported runway condition, runway condition codes (RWYCC) when available, precipitation depth/type, braking-action reports, runway length and slope, crosswind, and available aircraft-specific performance calculation. A dry-runway calculation must not be treated as a contaminated-runway result.

Evaluate delays and alternate/diversion planning. Landing distance margins and takeoff power/flap choices are model-specific; “maximum thrust for all contaminated runways” and a universal reverse-thrust reduction speed are not reliable substitute procedures.

A slippery rejected takeoff or landing requires the aircraft-specific braking, directional-control and reverse-thrust technique. Follow the specific FCOM/QRH rather than a blanket rudder/braking speed threshold.

6.0 BOEING 737 ENGINE ANTI-ICE

Use the engine anti-ice system whenever the applicable 737 variant FCOM requires it for ground or flight icing conditions. Assess temperature, visible moisture, snow/slush/standing water and indications of possible icing. A broad “10°C plus visible moisture” reminder is not a complete or universally sufficient switch procedure.

Identify engine type and flight phase (NG versus MAX) before applying takeoff thrust limitations, bleed or anti-ice configuration. Engine anti-ice operation can change thrust and performance. Review checklist indications and restrictions for the actual model.

Under prolonged taxi or low-thrust flight in icing, engine ice-shedding run-ups may be required. Their trigger, frequency, N1 and duration are not interchangeable between CFM56-equipped NG and LEAP-equipped MAX; perform ONLY the exact model-specific FCOM/QRH run-up and clearance procedure. Do not treat legacy “70–80% N1 every 15 minutes” or “50% N1 for five seconds” as fleetwide requirements.

7.0 BOEING 737 WING ANTI-ICE / FLIGHT IN ICING

Identify wing icing conditions and operate wing anti-ice as directed by the actual NG/MAX FCOM. Some procedures respond to observed icing and some require preventive use; do not reduce system activation to “wait for visible ice” or apply a generic below −40°C SAT exception without flight-phase/aircraft context.

Monitor ice accretion, cockpit/airframe indications, engine vibration and aircraft performance. Evaluate severe icing and abnormal handling using appropriate non-normal guidance; continued operation in conditions outside aircraft limits is not permitted under the simulation standard.

Review icing impacts on minimum speeds, climb/approach margins and fuel/performance calculations when specified by aircraft documentation.

8.0 BOEING 737 DEICING CONFIGURATION, ARRIVAL & POST-LANDING

The historic 737 material identified flap-area ice as a hazard during flap retraction and used flap-15 positioning for certain treatments. Keep the requirement to identify and clear contamination, but use the exact NG/MAX FCOM and ground deicing instructions to select flap position and timing; flap 15 is not a blanket setting for all deicing.

Configure engines, APU, packs, bleeds, flight controls, flaps and anti-ice for spraying using the actual aircraft checklist and ground provider instructions. Do not introduce a crossbleed engine start or control-column cycling merely because it appeared in an earlier generic checklist.

For descent, approach and arrival, apply the model-specific engine/wing anti-ice requirements and contaminated-runway performance. After landing in freezing conditions, inspect for ice in flap tracks/fairings and follow the actual manufacturer flap retraction limitation; no unqualified “keep flaps at 15°” rule is issued in this edition.

9.0 SIMULATION & OPERATING LIMITATIONS

For simulators that model deicing, icing or runway braking, pilots must use the installed aircraft procedures and simulation limitations. If the platform does not model ground-fluid protection, simulate the realistic decision and paperwork sequence; a logged HOT does not create actual simulator protection.

This manual provides AAVA operational expectations, not real-world dispatch authority or an alternative to manufacturer-approved guidance. Do not apply a procedure from one aircraft engine or generation to another without verification.

10.0 REFERENCE CONTROL

FAA Holdover Time Guidelines, Winter 2026–2027, original issue 11 August 2026 (supplied separately; check for updates):
https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/deicing/

FAA Notice 8900.784, 3 August 2026:
https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1045444

FAA AC 120-60B, Ground Deicing and Anti-icing Program:
https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/23199

Aircraft-specific Boeing FCOM/QRH and applicable simulator developer procedures (model/engine dependent).

AAVA Cold Weather Operations baseline and Hub Operations Deice/Anti-Ice Procedure / Winter Operations Reference Card. Standards apply across all AAVA operating divisions.

11.0 CHANGE RECORD

2026–2027 edition: separated general FAA ground-icing and contaminated-runway requirements from aircraft-specific cockpit settings; removed unsupported fleetwide N1, flap and thrust numbers; added FAA 2026–2027 document control and explicit inspection/re-treatment decision process; preserved aircraft-specific operational topics.

BOEING 777/787

HUB OPERATIONS / AIRCRAFT OPERATING PROCEDURES

COLD WEATHER OPERATIONS — BOEING 777 / 787

Boeing 777-200/300 variants and Boeing 787-8/9/10. Aircraft and engine-specific procedures must be verified against the installed simulation model.

FOR FLIGHT SIMULATION USE ONLY | EDITION 1.0 | EFFECTIVE 01 NOV 2026

1.0 GENERAL & FLEETWIDE APPLICABILITY

This supplement establishes AAVA Hub Operations expectations for Boeing 777 and 787 cold-weather operations. It applies to all AAVA divisions and operations regardless of flight number, callsign, airline livery or codeshare designation. Cold-weather precautions are condition-driven and apply year-round.

Authority hierarchy: the applicable aircraft variant, engine and installed add-on FCOM/QRH/AFM and performance limitations govern aircraft operation; the current FAA ground deicing/anti-icing guidance supplies the fluid/HOT reference framework; AAVA Ground Deice/Anti-Ice Procedures (HO-GD-001) and this supplement establish common simulation operating expectations. Never transfer a checklist setting or performance value between 737, 777 and 787 aircraft.

Review forecast and actual precipitation, temperature, frost potential, taxi delays, aircraft condition, runway contaminants, available deicing and the accuracy/limitations of the simulation add-on.

2.0 CLEAN AIRCRAFT CONCEPT & PRE-FLIGHT

Do not begin a takeoff with frost, snow, ice or slush on designated critical surfaces unless an aircraft-approved exception expressly permits it. The captain is responsible for confirming the aircraft is suitable for departure through the applicable inspection and ground-crew process.

· Inspect aircraft-defined critical surfaces: wings and leading edges, stabilizers, control surfaces, flap/slat areas, engine inlets/fans, probes, sensors and ports. Include landing-gear doors and APU inlets where applicable.

· Frost and clear ice may be difficult to see from the flight deck or cabin. Do not treat a window view as a universal substitute for an authorized external contamination check.

· After prolonged snowfall, treatment delays, changing precipitation or uncertain fluid condition, reassess clean-aircraft status and arrange inspection/re-treatment when required.

3.0 GROUND DEICING / ANTI-ICING & CREW COORDINATION

Use the published AAVA Ground Deice/Anti-Ice Procedures (HO-GD-001) and accompanying Crew Card (HO-CARD-001). Deicing removes contamination; anti-icing provides limited protection against renewed accumulation. Treatment must be compatible with the aircraft and fluid specifications.

· Before treatment: advise ground personnel of the aircraft type, contamination, expected departure delay and applicable deicing configuration; follow the precise FCOM for engines/APU, packs, slats/flaps and anti-ice selections.

· After treatment: obtain confirmation of the completed ground check, fluid type and product where known, concentration, the start time of the final application step, and vehicle/personnel clearance.

· Do not assume thickened Type II/III/IV fluids suit every aircraft or operating speed; fluid use, aerodynamic acceptance and lowest operational use temperature must be supported by the applicable guidance.

4.0 HOLDOVER TIME & PRE-TAKEOFF DECISIONS

Use the separately issued FAA Holdover Time Guidelines for Winter 2026–2027, including all applicable footnotes, fluid brand/concentration eligibility, outside air temperature and precipitation type/intensity. The HOT generally begins at the start of the final anti-icing step, or the applicable one-step treatment. HOT is an estimate, not a guarantee of clean surfaces. Select the applicable FAA Type I surface-material table and all footnotes for the actual aircraft; do not assume 777 and 787 surfaces have identical HOT applicability.

If conditions change, a HOT or allowance limit is exceeded, contamination is suspected or an applicable table is unavailable, use the authorized pre-takeoff contamination inspection/re-treatment decision process in HO-GD-001 and current FAA guidance. Never use an expired time alone as clearance to depart; never assume an interior visual check meets the inspection standard.

Ice-pellet and other allowance-time provisions are separate from standard HOT and may be used only when the precise published eligibility criteria are met. Crews must not invent substitute values.

5.0 BOEING 777 — AIRCRAFT-SPECIFIC ICING CONSIDERATIONS

5.1 Engine anti-ice and prolonged icing

The 777 uses engine anti-ice to protect engine components as configured for its engine installation. Assess ground and in-flight icing based on the applicable FCOM temperature, moisture and ice-detection criteria; do not rely solely on visible airframe ice before applying engine protection. Engine anti-ice selection and AUTO capability vary by model/equipment.

Prolonged ground taxi in freezing conditions or prolonged low-thrust flight in icing may require specified ice-shedding engine run-ups. Use the actual 777 engine/FCOM triggers, thrust setting, duration and sequence. This AAVA document does not establish a universal 15-minute interval or N1 target.

5.2 Wing ice protection

On the 777, the wing anti-ice system is based on heated wing-leading-edge surfaces using bleed air. Automatic ice detection/anti-ice features and manual selections depend on aircraft configuration. Follow the model-specific FCOM for the flight phase and icing conditions. Account for anti-ice effects on engine thrust and performance when published.

6.0 BOEING 787 — AIRCRAFT-SPECIFIC ICING CONSIDERATIONS

6.1 Electric wing ice protection

The Boeing 787 uses electrically powered wing ice-protection heating elements, not a 777-style bleed-air wing anti-ice arrangement. Depending on installed configuration, automatic ice detection controls wing protection, with manual selection available under specified conditions. Follow the aircraft/add-on FCOM; do not copy 777 wing anti-ice switch logic or ground operation assumptions.

6.2 Engine and other anti-ice systems

787 engine anti-ice and wing anti-ice are separate systems. Engine protection may use engine bleed air while wing protection is electrical. Ground AUTO ice-detection behavior and system availability differ from in-flight behavior. Check the actual 787 procedure for conditions requiring manual engine anti-ice on the ground and for system limitations.

Automatic ice-protection logic and electrical load management depend on aircraft configuration and the installed simulator. Verify the displayed system status and use the 787 aircraft-specific operating instructions for ground and flight conditions; AUTO selection alone is not a substitute for required checks.

7.0 CONTAMINATED TAXIWAYS, RUNWAYS & FLIGHT PLANNING

Review runway condition codes, braking action and reported deposits; consider water/slush depth, wind, temperature, visibility, runway length, anti-skid/autobrake settings and any dispatch/landing

performance changes. Use the correct 777 or 787 contaminated-runway performance data for takeoff and landing.

· Reduce taxi speed and use smooth steering/braking on slippery pavement. Avoid excessive nosewheel steering angles and high thrust where jet blast can contaminate other surfaces.

· Allow for changes in descent planning, required thrust, fuel use and maneuver margins when anti-ice is operating. Apply the flight-management/performance instructions for the selected aircraft.

· Do not adopt a blanket maximum-takeoff-thrust requirement, fixed reverse-thrust reduction speed, or universal rejected-takeoff technique for both families; apply the aircraft-specific procedures.

8.0 FLAPS, SLATS, ARRIVAL & POST-LANDING

The configuration for ground treatment and low-temperature taxi must follow the applicable 777 or 787 cold-weather supplementary procedure. Flap/slat positioning is not interchangeable between aircraft or treatment methods.

Following landing in snow, freezing rain, slush or contaminated taxiway conditions, do not retract potentially contaminated flaps/slats contrary to the aircraft-specific procedure. Where contamination is suspected, have the affected areas checked/cleared in accordance with the appropriate maintenance or simulation procedure before normal reconfiguration.

9.0 SIMULATION USE, LIMITATIONS & RELEASE CONTROL

This is a standardization document for AAVA flight simulation, not a substitute for current real-world aircraft operating manuals. If the installed simulator aircraft does not model ice accretion, deicing fluid, ice detectors or runway friction, crews must still apply AAVA flight-planning and decision-making expectations as realistically as the platform allows.

Aircraft and engine-specific checklist details are controlled by the applicable aircraft/add-on FCOM/QRH and are intentionally not reproduced here. Crew members must verify their installed variant and follow its published ice-protection configuration, deicing restrictions, engine ice-shedding procedures, and takeoff/landing performance calculations. If the requisite guidance or simulation support is unavailable, do not invent settings or performance allowances.

10.0 REFERENCE CONTROL

AAVA Hub Operations: Ground Deice/Anti-Ice Procedures (HO-GD-001); Deice/Anti-Ice Crew Card (HO-CARD-001); Winter Operations Reference Card (HO-CARD-002); FAA Holdover Time Guidelines, Winter 2026–2027 (distributed in The Training Corner).

FAA Notice 8900.784, Deicing Program for Winter 2026–2027: https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/1045444

FAA Ground Deicing / Anti-Icing and HOT guidance: https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/deicing

Aircraft-specific Boeing 777 and 787 FCOM/QRH/FCTM, and installed simulator add-on documentation (crews must use the appropriate revision and configuration).

Ground Deice/Anti-Ice Procedures

AMERICAN VIRTUAL AIRLINES / FLIGHT SIMULATION USE ONLY

GROUND DEICE / ANTI-ICE PROCEDURES

01 NOV 2026 • AIRCRAFT-SPECIFIC ITEMS CONTROLLED

1. Purpose, scope and authority

This document establishes AAVA crew decision-making and coordination requirements for ground deicing and anti-icing across the entire AAVA network. It applies to all divisions and codeshares. The applicable aircraft FCOM/QRH, limitations and validated simulator procedures govern the aircraft-specific configuration and system actions.

The FAA 2026–2027 Holdover Time Guidelines and companion General Information document provide the reference framework for holdover and allowance times. Do not use estimates, outdated tables, or another aircraft type’s instructions as substitutes.

2. Terms used in this procedure

Term	Operational meaning
Deicing	Removal of existing frost, snow, slush or ice from critical aircraft surfaces.
Anti-icing	Treatment intended to delay new accumulation after an aircraft has been cleaned.
HOT	Estimated interval of anti-icing-fluid protection under specified conditions; not a guarantee.
Allowance time	Separate, limited procedure for qualifying ice-pellet/small-hail conditions and validated fluids.
Clean aircraft	Critical surfaces are free of disallowed contamination prior to departure.

3. Pre-treatment assessment

Review current and forecast precipitation, visibility, temperature, aircraft condition, surface contamination, ground delay and expected taxi duration. Consider whether treated surfaces are likely to remain clean until takeoff.

Confirm the aircraft family and exact variant. Check published aircraft restrictions for fluid compatibility, flap/slat position, engine/APU status, probes, sensors, heated surfaces, inlet

protection and inspection methods.

4. Treatment decision

Condition / objective	Crew request and decision
Existing contamination; no expected reaccumulation	Request deicing only and verify a clean aircraft before departure.
Existing contamination with continued or expected precipitation	Select an aircraft-compatible deicing/anti-icing treatment and calculate the appropriate HOT if one exists.
Type I is used for protection	Apply only the suitable current FAA Type I table, respecting short HOT and fluid application restrictions.
Extended protection required	Consider an approved two-step process and aircraft-compatible Type II/III/IV anti-icing fluid; select the corresponding current table.
No applicable HOT, uncertain treatment, or fluid failure	Do not assume protection. Re-evaluate; repeat treatment or use a specifically authorized inspection/allowance process where applicable.

5. Pre-treatment crew–ground coordination

· Confirm aircraft identifier, stand or deicing position, surface contamination and requested treatment.

· Confirm treatment sequence, deicing/anti-icing fluids, concentrations, and planned application location.

· Coordinate engines/APU, air systems, anti-collision lights, flight controls and flap/slat configuration per the exact aircraft checklist.

· Confirm personnel and equipment clearance before treatment begins.

· Use clear readback of any limitation or change; if coordination is lost, stop and re-establish the plan.

6. Treatment report and records

After completion, obtain the final treatment information, including fluid type, product/brand when relevant, concentration/dilution, start of final anti-icing application, reported completion and confirmation of post-treatment inspection. Record enough information to select the correct FAA table.

The holdover clock begins when the final anti-icing application starts, not when spraying finishes or taxi begins. If a selected treatment has no applicable HOT under the reported conditions, record that fact.

7. HOT and allowance-time selection

· Use the current 2026–2027 FAA guidance attached in the resource library; confirm edition and changes.

· Match aircraft predominant critical-surface material for Type I tables, if applicable.

· Match fluid manufacturer/product, type, dilution/concentration, OAT, and precise precipitation category/intensity.

· Review fluid lowest operational use temperature and all cautions and footnotes; some conditions have no HOT.

· Use the FAA snowfall-intensity-versus-visibility material when required to determine the precipitation intensity.

· Use allowance-time tables only when precipitation, validated fluid and the full applicable conditions support them; do not treat allowance times as an extension to ordinary HOT.

· Where flaps/slats were deployed for treatment, review the applicable FAA adjusted-HOT appendix before using an unadjusted time.

8. Pre-takeoff re-evaluation and decision

Before entering the runway, verify current precipitation and temperature have not invalidated the treatment plan; confirm the holdover/allowance basis remains applicable and that the required aircraft-specific inspection has been completed. A flight-deck or cabin view may not establish the condition of every critical surface for every aircraft.

If precipitation increases, changes type, or temperature drops, reassess the applicable HOT/allowance time. If the calculated time is exceeded or the aircraft’s cleanliness cannot be established with an authorized check, stop and arrange additional inspection or re-treatment as appropriate. Do not depart with suspected contamination.

9. Aircraft-specific operating procedures

Engine run-ups, engine/wing anti-ice usage, deicing with engines running, engine bleed settings, flap/slat positions, movement of controls, takeoff thrust and contamination-specific performance must be taken from the applicable model/variant FCOM/QRH and AAVA aircraft-family supplement.

737 NG and 737 MAX procedures are not interchangeable without verification; no universal engine N1, duration, flap setting, or post-landing flap restriction is established by this fleetwide document.

10. Simulation execution

If a simulator cannot model ground fluid effects, the crew shall still simulate the decision sequence, report treatment and time, choose the applicable reference table and verify a clean departure configuration. Simulation limitations must not be described as real-world aircraft capabilities.

11. Release controls and supporting material

ATTACHMENT: FAA Holdover Time Guidelines Winter 2026–2027 (original issue Aug 11, 2026, subject to subsequent revision). Supporting FAA deicing Notice N 8900.784 and General Information document.

REVIEW ITEM: aircraft-family checklist cards must be validated against type-specific FCOM/QRH before any aircraft-specific engine/flap or anti-ice switch settings are added.

Winter Weather Operations Memorandum

AMERICAN VIRTUAL AIRLINES / FLIGHT SIMULATION USE ONLY

2026–2027 WINTER WEATHER OPERATIONS

01 NOV 2026 • EFFECTIVE 01 NOV 2026

TO	FROM	SUBJECT
All AAVA pilots, dispatchers and operations personnel	Hub Operations	Winter Weather Operations 2026–2027

1. Seasonal activation

Effective November 1, 2026, American Virtual Airlines begins its designated 2026–2027 winter operations season. This memorandum announces seasonal readiness expectations and directs crews to review the cold-weather procedures applicable to their aircraft and flight.

2. Fleetwide applicability

The same AAVA operating standards apply to every flight conducted within the AAVA network, including American Airlines-branded operations, partner and codeshare flights, regional affiliates, Heritage, cargo, contractors, charters and special events. Aircraft-specific FCOM/QRH and approved type-specific instructions remain controlling for aircraft handling, limitations and configuration.

3. Crew action required

· Review the applicable AAVA Boeing or Airbus Cold Weather Operations manual and any aircraft-family supplement before operating in icing or winter conditions.

· Apply the clean-aircraft concept; evaluate contamination, ground deicing/anti-icing requirements and pre-takeoff verification.

· Review anticipated freezing precipitation, FAA holdover times, airport delays, taxiway and runway condition, and aircraft-specific takeoff/landing performance.

· Use the 2026–2027 FAA Holdover Time Guidelines attachment with applicable fluid, precipitation and temperature limitations.

· Do not apply a Boeing-only engine, flap or anti-ice setting to an Airbus or other aircraft family.

4. Published resources

Hub Operations will maintain separate documents in the Winter Operations resource area: (1) this memorandum; (2) aircraft-specific Cold Weather Operations manuals; (3) Deice/Anti-Ice Procedures; (4) Deice/Anti-Ice Crew Card; (5) Winter Operations Reference Card; and (6) the FAA Winter 2026–2027 Holdover Time Guidelines attachment. Additional aircraft-family supplements will be issued as reviewed.

5. Existing procedures and updates

Existing published AAVA aircraft procedures continue to apply until superseded by a formal revision. New reference cards provide decision support and do not replace aircraft FCOM/QRH procedures. Cold-weather operating requirements apply whenever conditions exist, including outside the designated winter season.

6. Passenger standard weights

No change to AAVA standard passenger or baggage weights is announced by this memorandum. Any separate seasonal-weight policy will be communicated through its own approved memorandum and flight-planning implementation instructions.

7. Assistance

Questions about winter-weather procedures, document applicability, or simulator implementation should be directed to Hub Operations. Thank you for maintaining consistent operating standards across the AAVA network.

ISSUED BY: HUB OPERATIONS | AMERICAN VIRTUAL AIRLINES

Winter Operations Reference Card

AMERICAN VIRTUAL AIRLINES / FLIGHT SIMULATION USE ONLY

WINTER OPERATIONS REFERENCE CARD

01 NOV 2026 • FLEETWIDE WEATHER REFERENCE

1. Preflight weather scan

METAR	Operational meaning
SN / +SN	Snow / heavy snow
FZRA / FZDZ	Freezing rain / freezing drizzle
PL / GR / GS	Ice pellets / hail / small hail or snow pellets
BLSN / DRSN	Blowing snow / drifting snow
FG / FZFG	Fog / freezing fog
RVR / runway condition	Use runway-specific observation, braking reports and performance inputs

2. Holdover reference selection

Use the current FAA 2026–2027 tables, not a fixed value on this card. FAA Table 57 assists in snowfall intensity determination by visibility; Type I tables distinguish predominately aluminum and composite critical surfaces. Type II/III/IV tables depend on particular fluid characteristics.

3. Restricted conditions

Heavy snow, ice pellets, freezing rain and mixed precipitation require careful review of FAA table limitations. A red or “no HOT” table entry is not authorization to depart after an arbitrary interval. Apply only an authorized pathway or re-treat.

4. Taxi / takeoff / landing

Check contamination on surfaces, taxiways and runway. Reassess braking and takeoff/landing distances using model-specific performance information. Account for deteriorating conditions, rejected-takeoff exposure, crosswind, alternate availability and diversion.

5. Reminders

HOT begins with the start of final anti-icing application. Changes in precipitation and temperature matter. Clean-aircraft verification is a separate requirement. Type-specific FCOM/QRH controls engine anti-ice, wing anti-ice, flap positioning and engine run-up.

6. Reference index

Attachment: FAA 2026–2027 HOT Tables. Supporting: FAA Ground Deicing Program General Information; AAVA Deice/Anti-Ice Procedures; aircraft-family Cold Weather Operations manuals.