Ram Air Turbine (RAT)
- RAT provides electrical power to equipment connected to the L ECS, DC, R ECS & D EM AC buses.
- Except during emergency conditions, the RAT may be directed by abnormal or emergency procedure checklist, deployment of the RAT is prohibited when normal AC power is available.

NOTE: RAT use increases fuel flow by 6%. RAT GEN will drop off line <180 KIAS. Allow 30 sec for RAT fan to stabilize to prevent unstable electrical current causing FMS issues.

Transformer Rectifier Units (TRUs)
- During ground ops, limit TRU loads to: L. L. M. L. R. M. R. E. S. = 80% 2. Aux. = 40%

Flight Controls:
- Stall Protection System is only normal in the Flight Control mode.
- Speedbrakes are not approved for extension with flaps 39° or with landing gear extended in flight.
- Flight into known icing conditions is prohibited when operating in a flight control law other than Normal (i.e., Alternate, Direct, or Backup). If the flight control law mode degrades from Normal while in icing conditions, exit icing conditions.

Flap 0° ..................... (all weights) .............................. -1 to +2.5 G

RVSM – ADS3 & ADS1 or 2

Max EGT Running .......................................................... 732°C

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Hydraulic Servicing:
- Max. Reservoir Qty. (Pressurized) as indicated on synoptic:
  - Left Tank: 1.4 – 1.6 gal.
  - Right Tank: 2.8 – 3.0 gal.

Ice & Rain Protection:
- icing conditions exist when the SAT on the ground and in flight is between +10°C and -40°C and visible moisture in any form is present (such as clouds, fog with visibility of one mile or less, rain, snow, sleet and ice crystals). The wing & cowl anti-ice systems must be selected ON when entry into icing conditions is imminent, or immediately upon detection of ice formation on wings, vertical/stabilizers, winglets or windshield surfaces.
- Icing conditions also exist when the SAT on the ground and for takeoff is +10°C or below when operating on ramps or airfield surfaces. Rain, sleet, snow, ice, sand, water, or slush may be ingested by the engines or freeze on engines, nacelles, or sensor probes.
- Takeoff is prohibited with frost, ice, snow, or slush adhering to the wings, control surfaces, engine inlets, or other critical surfaces.
- A visual and tactile (hand on surface) check of the wing leading edge and the wing upper surface must be performed to ensure the wing is free from ice, frost, snow, or slush when the outside air temperature is less than 6°C (42°F), or if it cannot be ascertained that the wing fuel temperature is above 0°C (52°F)
  - There is visible moisture (rain, drizzle, sleet, snow, fog, etc.) present;
  - Water is present on the wing;
  - The difference between the dew point and the outside air temperature is 5°F (2°C) or less;
  - The atmospheric conditions have been conducive to frost formation.
- The wing & cowl anti-ice systems must be selected ON, if required, at least 2 minutes prior to setting takeoff thrust.
- Automatic anti-ice is provided as a backup to the crew for activation of the anti-ice systems. The auto anti-ice feature is inhibited above 35,000 ft.
- Use of flaps in icing conditions is restricted to takeoff, approach and landing only. Prior to extending flaps for approach & landing, ensure anti-icing is activated & functional.
- Holding in icing conditions is limited to Flaps 0° only. A minimum speed of 180 KCAS must be maintained when holding in icing conditions.

Wing Anti-icing
- Operation is required if icing conditions are imminent, or immediately upon detection of ice formation on wings, vertical/stabilizers, or windshield edges.

Cowl Anti-icing
- Use of cowl anti-icing is required for taxi and takeoff when SAT Temperature (SAT) is +10°C or below and visible moisture, precipitation, or wet runway are present.

IN FLIGHT: To help shed the ice when high vibration occurs and operational circumstances permit, one engine at a time may be quickly retarded to idle, held there for five seconds then accelerated to 90% LP, the power lever may then be returned to its original position.

ON GROUND:
- When taking or holding on the ground at low power temperature less than +1°C & 8°C in visible moisture.
  - At intervals of not more than 60 minutes, slowly accelerate engine to 40% LP for 10 seconds, then resume idle operation.
  - Takeoff – slowly accelerate the engine to 40% LP, pause for 2 seconds to check normal operation, then select takeoff thrust.

Freezing Fog:
-<°C and less to -10°C At intervals of not more than 60 minutes, slowly accelerate engine to 40% LP, pause for 2 seconds to check normal operation, accelerate to t/o thrust, pause for 5 seconds, then select t/o thrust.
- Takeoff – slowly accelerate the engine to 40% LP, pause for 2 seconds to check normal operation, then select takeoff thrust.
- Takeoff is prohibited if it cannot be performed within 10 minutes after resumption of idle operation. Engines should be shut down as soon as practicable. Ensure all ice accreted on engine components is removed prior to subsequent flight attempt.
- Automatic anti-ice is inhibited above 35,000 ft. If anti-ice protection above 35,000 ft is required, it may be manually selected.

Tire Pressure
- Recommended for the pressure for all gross weights is 216 psi, measured when tires have been stationary for at least 2 hours. Airplane operations below 186 psi may require tire(s) to be replaced.

Inertial Reference System (IRS)
- No provision for IRS “Down Mode Align”.
- Certified for alignment to ±3°.
- For flights above 73° and 60’S Latitude, EFIS heading information must be switched from MAG to TRUE due to loss of valid MAG heading from the IRS.

Airborne Weather Radar:
- DO NOT operate during refueling of the a/c or within 50 ft of any other refueling operations.
- DO NOT operate within 11 ft of ground personnel.

FEVS:
- Operations to 100 ft. above TDZE – at 100 feet HAT, visual cues must be seen without the aid of FEVS to continue landing.
- Operations to touchdown & rollout – LOA is required (descending below DA/ DH) requires visual references be distinctly visible and identifiable to the pilot using an FEVS.

CAS Messages:
- Dispatch with an active Amber or Blue message shall be with reference to the MEL.

APU:
- Honeywell RE220
- APU can be selected on the ground and in all phases of flight (with ASC095) [refer to restrictions per AFM Suppl. 2016-03 APU Enclosure Sealant]
- APU cannot be used to supply pressurization airflow inflight.
- APU may be used for starter assisted starts below 30,000 ft.
- Max EGT: 990°C,
- Max EGT Start: 1050°C
- Max EGT Running: 732°C
- Max Rotor Speed: 106%
APU Starting Limits:
A/C Battery ................................................. 3 consecutive attempts
• Use of an external DC power source to start the APU is prohibited.

APU Airstart Envelope (with ASC 123):
Guaranteed .............................................. Below 37,000 ft
Possible .............................................. 37,000 ft to 39,000 ft
Dual Gen. Failure ..................................... Initiate start at or below 37,000 ft

APU Airstart Envelope (without ASC 123):
Guaranteed .............................................. Below 30,000 ft
Possible .............................................. 30,000 ft to 39,000 ft
Dual Gen. Failure ..................................... Initiate start at or below 30,000 ft

Powerplant:
• BMW/RR BR725A1-12: High bypass turbofans (4.18:1 bypass ratio). Rated at 16,100 pounds @ 86°F (30°C)

Engine Fuel Temperature:
Airstart envelope: Starter assist at <250 KCAS. Windmill start at 250 KCAS to 340 KCAS, max altitude 30,000 ft.

Max. Tail-Wind Component for Engine Start ..................... 20 kts.
Max. X-Wind Component for Engine Start ........................ 30 kts.
Max. (15 min) Transient ....................................... +165°C

Max TGT prior to ground start .................................... 150°C
Max. X-Wind Component for Engine Start ....................... 20 kts.
Max. Tail-Wind Component for Engine Start ..................... 20 kts.
• Take Off in the ALTERNATE (LP) control mode is prohibited.
• Static operation above site is limited to an x-wind component of <25 knots and/or a tailwind component of <20 knots.
• Airstart envelope: Starter assist at <250 KCAS. Windmill start at 250 KCAS to 340 KCAS, max altitude 30,000 ft.

Engine Start:
• Dual Gen. Failure ..................... Initiate start at or below 30,000 ft
• Dual Gen. Failure ..................... Initiate start at or below 37,000 ft
• No time limit for use of idle reverse thrust for taxi purposes.

Thrust Reversers:
Min. .................................................................................... - 40°C
Max. Continuous 102.8 98.7 88°C Unrestricted
Max. Overspeed 104.3 101.3 -- 20 seconds
Max. Over-temp -- -- 92°C 20 seconds
Reverse thrust 78.1 -- -- 30 seconds

Fire Extinguishing:
• Shot 1 = RIGHT Bottle
• Shot 2 = LEFT Bottle
• APU uses LEFT Bottle

FLEX T/O THRUST LIMITATIONS / INFO:
Using Appendix A Tab Data:
Detailed instructions for the procedures (both normal and emergency) and limitations associated with the use of reduced thrust takeoffs are provided in Appendix A.

While use of the data in Appendix A is prohibited in the presence of tailwinds and uphill slopes, the general data in Section 05-02-00 can be used for all allowed wind conditions (10-knot tailwind to 40-knot headwind) and all allowed runway slopes (-2% downhill to +2% uphill).
• Reduced/FLEX EPR takeoff thrust may be used on dry or wet hard-surfaced runways.
• Reduced/FLEX EPR takeoff thrust procedures are prohibited on runways contaminated with standing water, snow, slush or ice.
• The FLEX EPR takeoff performance computed using this appendix is limited to takeoffs for nil or downhill runway slopes and no wind or headwind conditions only. Reduced thrust/ FLEX EPR takeoff performance for downhill runway slopes or tailwinds must be computed using the assumed temperature method for the takeoff data presented in Section 05-02 of the AFM (spaghetti charts).
• The Auto Ground Spoilers must be operative.
• All t/o EPR limitations must be observed.
• To ensure that at least 75% of rated t/o thrust is used and that t/o configuration warnings are not inhibited, rated EPR may be reduced no more than 0.16 for FLEX takeoffs.

EGPWS:
The terrain awareness display feature shall be selected OFF (TERRAIN INHIBIT switch selected ON) when within 15 NM of landing at an airport when:
• The airport has no published instrument approach procedure.
• The longest runway is less than 3,500 ft in length.
• The airport is not in the database.
• QFE altimeter settings are used for approach and landing on subsequent takeoff without the availability of geometric altitude.

Permitted Airplane Operations:
• Polar Nav: RNP-10; BRNAV; RNAV 5; RNP-5; P- RNAV, RNP 1; RNAV 2 / RNAV 1; RNP 2; NAT-ILA; RNP 0.3; RNP-RNAV; RNP-AR; A-RNP; LPV; Radius-to-Fix Legs; VNAV; RVSM; AFN & ADS-C; ADS-B; FANS 1A+/ FANS 2 / ATN B1.

Gear Horn:
• Below 500 ft AGL with both throttle lever at idle, flaps less than 22°, any gear NOT down and locked. Horn can be muted using HORN SILENCE button.
• Flaps greater than 22° and any landing gear NOT down and locked. Horn cannot be muted.

Pavement Loading:
• ACN must be less than or equal to the airport PCN.
• Ramp permissible loading is not always the same as Rey.
• Elements: 
  • @10° w/ PCN 65/15/15/15 the ACN = 29.5 (acceptable). And @ 75k w/ PCN 24/ F/C/Y/T the ACN = 21.7 (unacceptable due /Y 145psi limit). See Perf Handbook PC-9.
  • Equivalent Single Wheel Load (ESWL) @ 104k MRW = 36,563 lb. w/ H37.5x12.0R19 tires w/ 22" spacing, 216 psi, reduction factor of 1.25 (i.e., rigid, 13.5" thick concrete). See Perf Handbook PC-17.
• ACN must be less than or equal to the airport PCN.

Starters:
• Startup re-engagement – up to starter cut out of 42% (HP)
• Check that residual TGT is <150°C. If not perform engine crank cycle to reduce TGT.

Oil Inlet Temperature:
Min. for Starting Oil Temp Low .......................... 40°C
Min for T/O Power Oil Temp Low ........................ +20°C
Max. Temp. Oil Temp HI ................................. +165°C

Oil Pressure:
• Engine must be shut down when oil press. is below 25 PSI.

MINIMUM ENGINE OIL PRESSURE

<table>
<thead>
<tr>
<th>For Takeoff</th>
<th>Complete Flight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 72.3% HP</td>
<td>35 PSI</td>
</tr>
<tr>
<td>Above 90.0% HP</td>
<td>45 PSI</td>
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</tbody>
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