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GENERAL

Observance of the limitations in this Airplane Flight Manual is mandatory.

BASIC LIMITATIONS

KINDS OF OPERATION

This airplane is certificated to the applicable regulations in the transport category and is eligible for the following kinds of operations when the appropriate instruments and equipment required by the airworthiness and operating requirements are installed and approved and are operable.

This airplane is approved for:

- VMC (Visual Meteorological Conditions)
- IMC (Instrument Meteorological Conditions)
- Day
- Night
- Icing

The airplane is certified capable of RVSM operations in accordance with the FAA “Interim guidance material on the approval of operations/aircraft for RVSM operations.” 91-RVSM, dated June 30, 1999 and the JAA Temporary Guidance Leaflet, TGL No.6, revision 1, RVSM.

NOTE: Compliance with the material above does not constitute an operational approval.

RVSM operations must not be commenced or continued unless all of the required equipment specified below is operational:

RVSM Required Equipment List	
Equipment	Requirements for RVSM
Autopilot (1)	Must be operational.
Altitude alerting system	Must be operational.
Altitude Reporting Transponder (2)	One must be operational
Air Data Computers (2)	Two must be operational

OPERATION IN ICING CONDITIONS

Do not hold in icing conditions with flaps extended.

Super-Cooled Large Droplet Icing:

Flight in super-cooled large droplet icing (SLD) conditions may, but not necessarily be indicated by ice accretion on the side windows.

When side window icing is observed:

- Wing and engine anti-icing systems must be on.
- Leave icing conditions as soon as possible.

Engine Anti-Ice Systems:

Ground operations. The engine anti-icing system must be ON when the outside air temperature (OAT) on the ground and for takeoff is 10 °C (50 °F) or below and visible moisture in any form is present (such as fog with visibility of one mile (1500 m) or less, rain, snow, sleet, or ice crystals).

The engine anti-icing system must also be ON when the OAT is 10 °C (50 °F) or below when operating on ramps, taxiways, or runways where surface snow, ice, standing water, or slush is present.

Flight operations. Icing conditions exist when the static air temperature (SAT) in flight is 10 °C (50 °F) to -40 °C (-40 °F) and visible moisture in any form is present (such as clouds, rain, snow, sleet, or ice crystals).

The engine anti-icing system must be ON when the ICE DETECTED CAS message is on, or in icing conditions.

Wing Anti-Ice System:

Ground operations. The wing anti-icing system must be ON for takeoff when the OAT is 5 °C (41 °F) or below and visible moisture in any form is present (such as fog with visibility of one mile (1500 m) or less, rain, snow, sleet, or ice crystals).

The wing anti-icing system must also be ON when the OAT is 5 °C (41 °F) or below when operating on ramps, taxiways, or runways where surface snow, ice, standing water, or slush is present.

Flight operations. Icing conditions exist when the (SAT) in flight is 10 °C (50 °F) to -40 °C (-40 °F) and visible moisture in any form is present (such as clouds, rain, snow, sleet, or ice crystals).

The wing anti-icing system must also be ON when:

- the ICE DETECTED CAS message is on, OR
- in icing conditions.

COLD WEATHER OPERATIONS

Airplane operations in cold weather conditions must be conducted in accordance with the Flight Crew Operating Manual - Volume 1, Supplement 1 - COLD WEATHER OPERATIONS.

DITCHING

This airplane is certified for ditching when the appropriate safety equipment is installed per applicable regulations.

MINIMUM FLIGHT CREW

The minimum flight crew shall consist of a pilot and a copilot.

WEIGHT AND C.G. LIMITATIONS

MAXIMUM RAMP WEIGHT	38 650 lb 17 532 kg
MAXIMUM CERTIFIED TAKEOFF WEIGHT	38 500 lb 17 463 kg
MAXIMUM ZERO FUEL WEIGHT	26 100 lb 11 839 kg

EFFECTIVITY

On aircraft 20051 and subsequent, and aircraft incorporating Service Bulletin 100-11-01 (Replacement of Airspeed Limits Placard for MTOW Increase to 38 850 lb/17 622 kg), the following weights are applicable:

MAXIMUM RAMP WEIGHT	39 000 lb 17 690 kg
MAXIMUM CERTIFIED TAKEOFF WEIGHT	38 850 lb 17 622 kg
MAXIMUM ZERO FUEL WEIGHT	27 000 lb 12 247 kg

MAXIMUM CERTIFIED LANDING WEIGHT	33 750 lb 15 309 kg
MINIMUM FLIGHT WEIGHT	23 100 lb 10 478 kg

All weights in excess of Maximum Zero Fuel Weight must consist of fuel.

The Maximum Takeoff Weight (MTOW) and/or Maximum Landing Weight (MLW) may be further limited due to performance considerations.

CENTER-OF-GRAVITY

The center of gravity of the airplane for all flight conditions must be maintained within the applicable CENTER-OF-GRAVITY ENVELOPE below. For specific details on the Center of Gravity Envelope, refer to the Weight & Balance Manual *CH 300 WBM*.

NOTE: The airplane must be loaded in accordance with the loading instructions associated with the weight and balance manual *CH300 WBM*. The effect of landing gear retraction on the CG position is negligible.

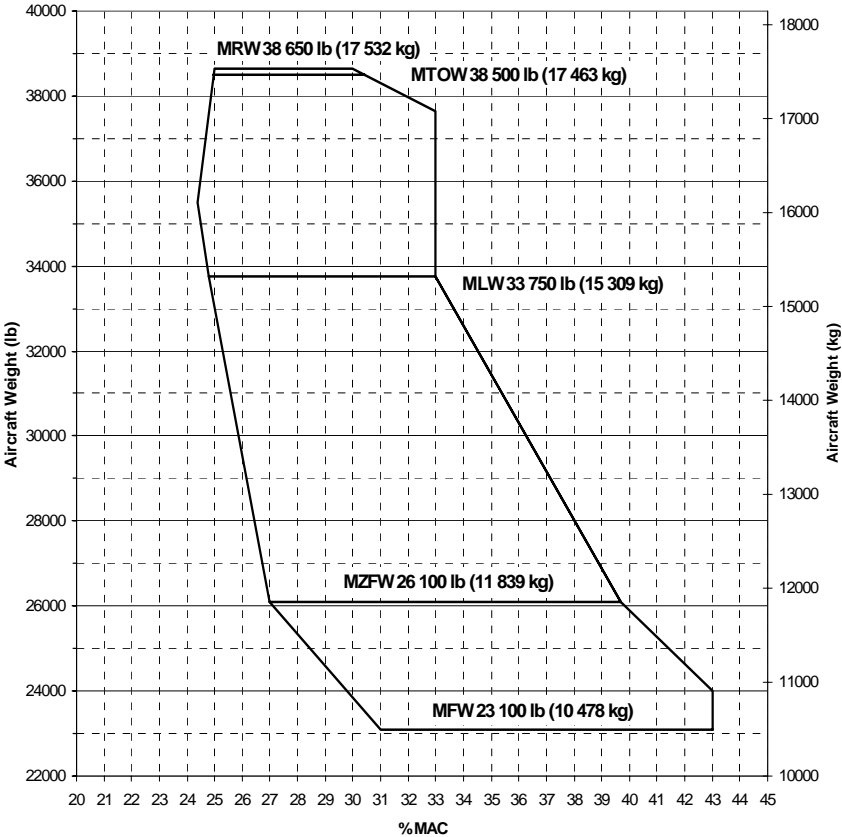


Figure 02-02-01

EFFECTIVITY

For aircraft 20002 thru 20050 *not* incorporating Service Bulletin 100-11-01 (Replacement of Airspeed Limits Placard for MTOW Increase to 38 850 lb/ 17 622 kg), Figure 02-02-01 is applicable.

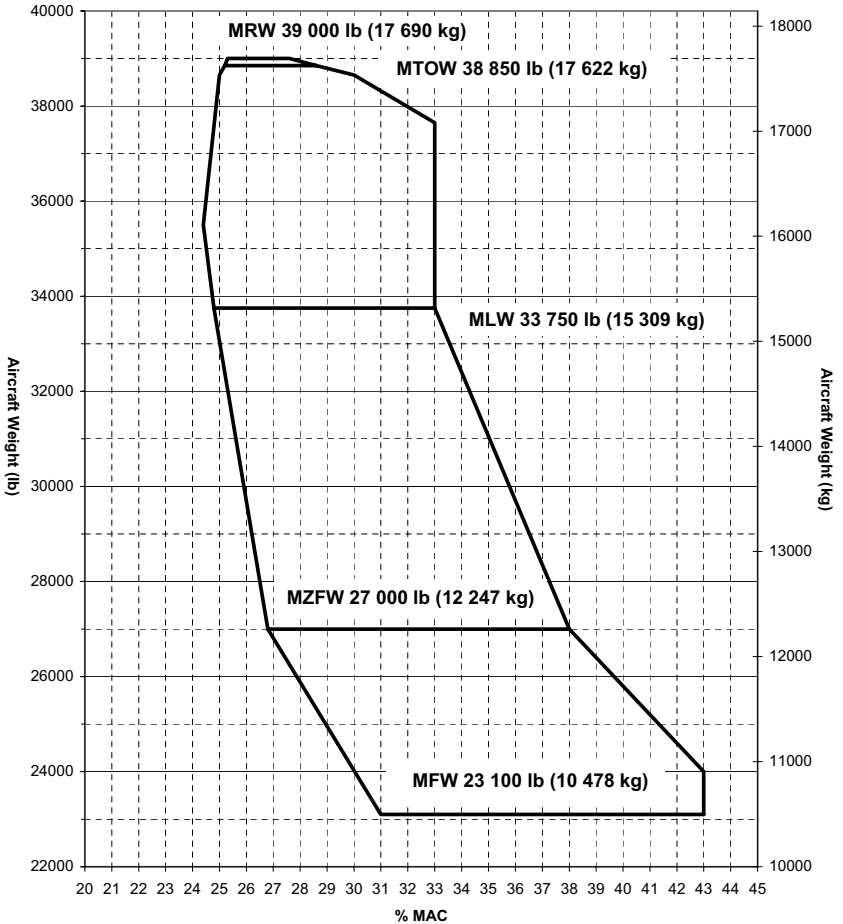


Figure 02-02-02

EFFECTIVITY

For aircraft 20051, and subsequent, and aircraft incorporating Service Bulletin 100-11-01 (Replacement of Airspeed Limits Placard for MTOW Increase to 38 850 lb/17 622 kg), Figure 02-02-02 is applicable.

SPEED LIMITATIONS

MAXIMUM OPERATING SPEED (V_{MO}/M_{MO})

V _{MO} (up to 8000 ft)	300 KIAS
V _{MO} (8001 to 29 475 ft).....	320 KIAS
M _{MO} (Above 29 475 ft)	0.83 Mi

V_{MO}/M_{MO} may not be deliberately exceeded in any regime of flight (climb, cruise, or descent), unless a higher speed is specifically authorized for flight test or training operations.

MANEUVERING SPEED (V_A)

V_A is the highest speed that full roll and yaw control can be applied without overstressing the aircraft. Full application of rudder and aileron controls as well as maneuvers that involve angles of attack near the stall, must be confined to speeds below V_A.

Refer to the applicable figure titled Airspeed/Mach Limitations in this section for V_A.

CAUTION: Rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw (e.g. large sideslip angles) may result in structural failures at any speed, even including below V_A.

ROUGH AIR PENETRATION SPEED (V_{RA})

V _{RA}	265 KIAS/0.75 Mi
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MAXIMUM LANDING GEAR OPERATING SPEED — RETRACTION

V _{LO RET}	200 KIAS
---------------------------	----------

MAXIMUM LANDING GEAR OPERATING SPEED — EXTENSION

V _{LO EXT}	250 KIAS
---------------------------	----------

MAXIMUM LANDING GEAR EXTENDED SPEED (V_{LE})

V _{LE}	250 KIAS
-----------------------	----------

MAXIMUM FLAP EXTENDED SPEED (V_{FE})

V _{FE}	
- Flaps 10	210 KIAS
- Flaps 20	210 KIAS
- Flaps 30	175 KIAS

SPEED LIMITATIONS (Cont)

MINIMUM OPERATING SPEED

Intentional speed reduction below the onset of stall warning, as defined by stick shaker operation, is prohibited unless a lower speed is specifically authorized for flight test or training operations.

TIRE SPEED

Maximum tire speed (ground speed) 182 kts.

**AIRSPEED/MACH LIMITATIONS
(PRIMARY PITOT-STATIC SYSTEM)**

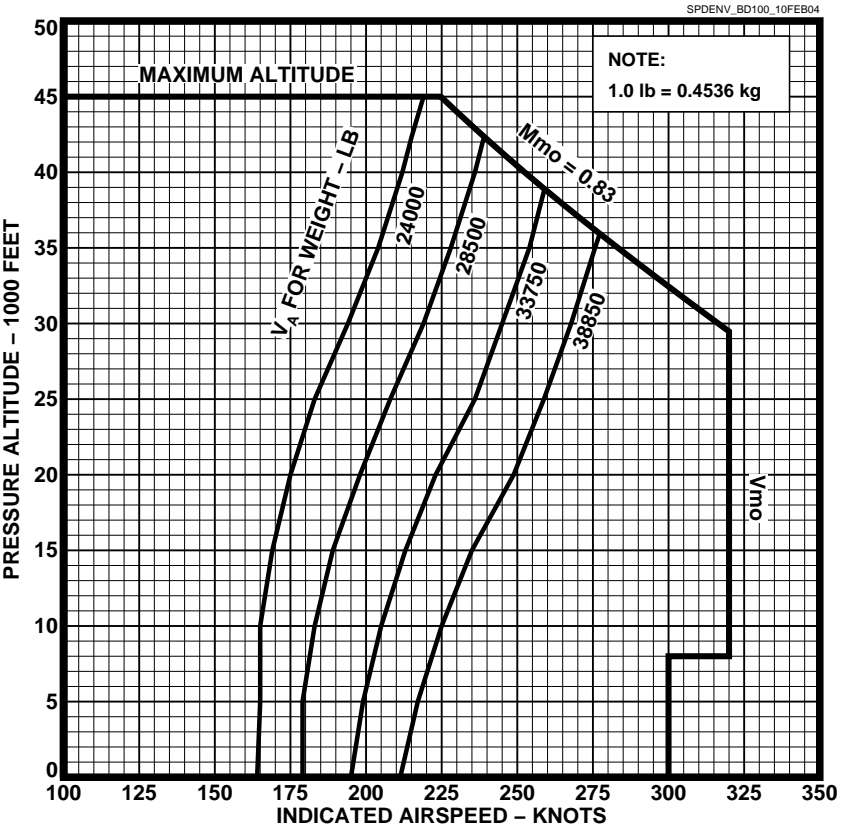


Figure 02-03-01

OPERATIONAL LIMITATIONS

TAKEOFF AND LANDING

Maximum takeoff and landing pressure altitude..... 10 000 ft
 Maximum tailwind component 10 kts

Takeoffs and Landings are limited to paved runways.

The maximum runway slopes approved for takeoff and landing are +2% uphill and -2% downhill.

EFFECTIVITY

For aircraft on the State Aviation Administration of Ukraine (SAAU) registry:

MAXIMUM CROSSWIND COMPONENT - DRY RUNWAYS

The maximum crosswind component for takeoff is 28 knots (14 meters/sec).
 The maximum crosswind component for landing is 24 knots (12 meters/sec).

MAXIMUM CROSSWIND COMPONENT - WET RUNWAYS

The maximum crosswind component for takeoff and landing on a wet runway with water depth no more than 3.00 mm (0.125 inch) is defined in the following table for different values of the coefficient of friction:

Reported Runway Coefficient of Friction	Maximum Crosswind Component
0.3 (poor braking)	10 knots (5 meters/sec)
0.4 (average braking)	15 knots (8 meters/sec)
0.5 (good braking, equivalent to dry)	Takeoff - 28 knots (14 meters/sec) Landing - 24 knots (12 meters/sec)

1. Operation on runways with a coefficient of friction less than 0.3 is prohibited.

MAXIMUM CROSSWIND COMPONENT - CONTAMINATED RUNWAYS

1. The maximum crosswind component for takeoff and landing on a contaminated runway is 10 knots (5 meters/sec).
2. Operation on runways with a coefficient of friction less than 0.3 is prohibited.

OPERATIONAL LIMITATIONS (Cont)

TAKEOFF AND LANDING (Cont)

EFFECTIVITY

For aircraft on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:

MAXIMUM CROSSWIND COMPONENT - DRY RUNWAYS

The maximum crosswind component for takeoff is 28 knots (14 meters/sec).
The maximum crosswind component for landing is 24 knots (12 meters/sec).

MAXIMUM CROSSWIND COMPONENT - WET RUNWAYS

The maximum crosswind component for takeoff and landing on a wet runway with water depth no more than 3.00 mm (0.125 inch) is defined in the following table for different values of the coefficient of friction:

Reported Runway Coefficient of Friction	Maximum Crosswind Component
0.3 - 0.35 (Poor braking)	10 knots (5 meters/sec)
0.35 - 0.5 (Medium braking)	15 knots (8 meters/sec)
0.5 - 0.6 (Good braking, equivalent to dry)	Takeoff - 28 knots (14 meters/sec) Landing - 24 knots (12 meters/sec)

1. Operation on runways with a coefficient of friction less than 0.3 is prohibited.

MAXIMUM CROSSWIND COMPONENT - CONTAMINATED RUNWAYS

1. The maximum crosswind component for takeoff and landing on a contaminated runway is 10 knots (5 meters/sec).
2. Operation on runways with a coefficient of friction less than 0.3 is prohibited.

COLD WEATHER OPERATIONS

1. Takeoff is prohibited with frost, ice, snow, or slush adhering to any critical surface (wings, horizontal stabilizer, vertical stabilizer, control surfaces, engine inlets, and upper surface of the fuselage).

WARNING: Even small amounts of frost, ice, snow or slush on the wing leading edges and forward upper wing surface may adversely change the stall speeds, stall characteristics, and the protection provided by the stall protection system, which may result in loss of control on takeoff.

(Continued)

OPERATIONAL LIMITATIONS (Cont)

COLD WEATHER OPERATIONS (Cont)

- NOTE:** - Comprehensive procedures for operating in cold weather are provided in the Flight Crew Operating Manual, Supplement 1 - Cold Weather Operations.
- Takeoff is permitted with frost adhering to the underside of the wing that is caused by cold soaked fuel, in accordance with the instructions provided in the Flight Crew Operating Manual, Supplement 1 - Cold Weather Operations.

EN ROUTE

Maximum Pressure Altitude 45 000 ft

MANEUVERING LOAD FACTORS

Flaps Up +2.6 g to -1.0 g
Flaps Extended +2.0 g to 0.0 g

OPERATION WITH TYPE II, III & IV ANTI-ICING FLUIDS

When Type II, III & IV anti-icing fluids have been applied:

The wing anti-ice system must only be selected ON, if required, just prior to thrust increase for takeoff.

MANEUVERS

Aerobatic maneuvers and spins are prohibited.

OPERATIONAL LIMITATIONS (Cont)

ALTITUDE/TEMPERATURE LIMITATIONS

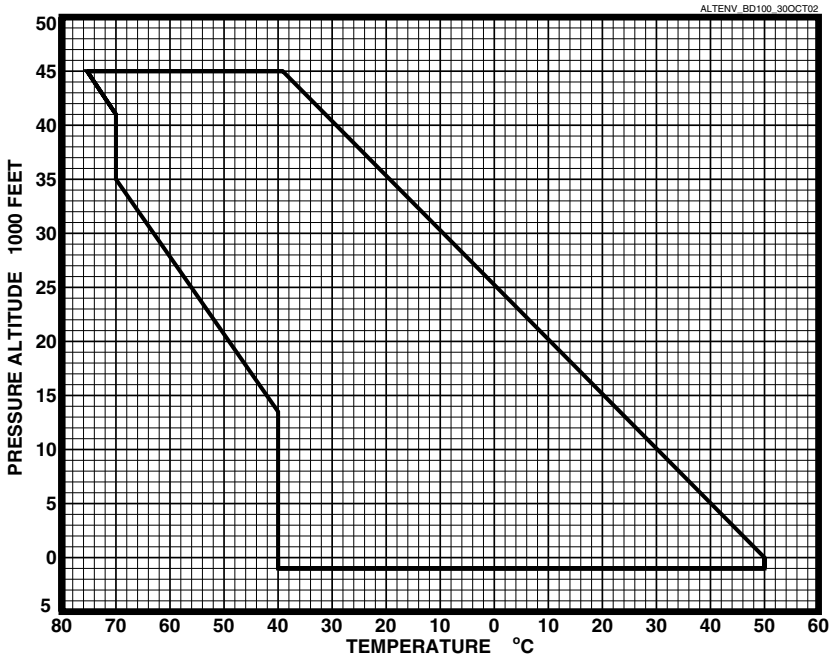


Figure 02-03-02

EFFECTIVITY

For aircraft 20006 thru 20033 **not** incorporating Service Bulletin SB100-52-05 (Replacement of Passenger Door Telescopic Struts for Improved Cold Weather Operation):

Operation is prohibited if the airplane, with engines shut down, is exposed to a ground ambient temperature of -20°C (-4°F) or below for a period of more than 2 hours, unless an approved procedure is used to warm the airplane following this exposure.

SYSTEMS LIMITATIONS

AIR CONDITIONING AND PRESSURIZATION

AIR CONDITIONING

Do not select the AIR SOURCE switch to TRIM AIR ONLY while the aircraft is on the ground.

The pack must be operating (APU or engine running and AIR SOURCE switch — NORM or PACK ONLY) when the aircraft electrical power is on (BATTs or EXT PWR — On) for more than 30 minutes and the OAT is above 40 °C (104 °F).

OXYGEN

The following aircraft certification requirements are in addition to the requirements of applicable operating rules. The most restrictive requirements (certification or operating) must be observed.

Crew and passenger oxygen masks are not approved for use above 40 000 feet cabin altitude. Prolonged operation of passenger masks above 25 000 feet cabin altitude is not recommended.

PRESSURIZATION

The maximum differential pressure on the ground (during taxi) must not exceed 0.1 psi.

The maximum differential pressure during landing must not exceed 1.0 psi.

The maximum positive differential pressure is 9.4 psi. The maximum negative differential pressure is -0.5 psi.

AUTOFLIGHT

Do not intentionally overpower the autopilot.

Operation with an ILS glidepath angle that exceeds 3.5 degrees is prohibited.

Autopilot Minimum Use Height:

Climb, En Route, or Descent..... 700 feet AGL.

Approach

 Precision..... 80 feet AGL.

 Visual and non-precision..... 200 feet AGL.

The maximum altitude with yaw damper off is 31 000 ft.

SYSTEMS LIMITATIONS (Cont)

AVIONICS

EFFECTIVITY

For aircraft on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:

NOTE: Referenced North American or European regulatory material is in compliance with its RF and CIS countries' equivalent.

COMMUNICATIONS

Flight in polar regions outside VHF coverage shall be allowed provided forecast is favorable for HF radio waves propagation.

DATALINK (If installed)

The DATALINK is approved for the transmission and receipt of messages that will not create an unsafe condition if the message is improperly received. An unsafe condition may exist if:

- The message or part of the message is delayed or not received
- The message is delivered to the wrong recipient
- The message content is corrupted

EFFECTIVITY

*For aircraft **not** on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:*

Crew actions based on messages such as pre-departure clearance, oceanic clearance, digital automatic terminal information service, weight and balance, take-off data (speeds, trim settings, runway distances) are prohibited unless the approved operational procedures are used to verify that the message is received by the intended recipient, that the message is valid, and that the content is not corrupted.

*For aircraft 20001 thru 20059 **not** incorporating Service Bulletin SB100-34-18:*

If the DATALINK system is used for clearances or other flight related information, the crew must either monitor the DATALINK CDU page or periodically check the DATALINK CDU page until the reply is received and accepted. (Annunciation of incoming Datalink messages is provided only by the ACTIVE ADVISORY prompt display on DATALINK CDU pages).

(Continued)

SYSTEMS LIMITATIONS (Cont)

AVIONICS (Cont)

DATALINK (If installed) (Cont)

EFFECTIVITY

For aircraft on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:

NOTE: Use of DATALINK is not permitted for ATC purposes.

Crew actions based on messages such as digital automatic terminal information service, weight and balance, take-off data (speeds, trim settings, runway distances) are prohibited unless the approved operational procedures are used to verify that the message is received by the intended recipient, that the message is valid, and that the content is not corrupted.

FLIGHT MANAGEMENT SYSTEM (FMS)

Use of the FMS V-speed data is prohibited for temperatures above ISA +33 °C.

EFFECTIVITY

*For aircraft **not** on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:*

Single FMS

- The FMS V-speed data (if installed) is advisory only and must be verified with AFM data.
- V-speed database part number must be verified to be: 815-5961-002.

Dual FMS (If installed)

- The FMS V-speed data (if installed) does not need to be verified with the AFM, provided two Flight Management Computers are available.
- V-speed database part number must be verified to be: 815-5961-002.

EFFECTIVITY

For aircraft on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:

- The FMS V-speed data (if installed) does not need to be verified with the AFM, provided both Flight Management Computers are available.
- V-speed database part number must be verified to be: 815-5961-002.

SYSTEMS LIMITATIONS (Cont)

AVIONICS (Cont)

FLIGHT MANAGEMENT SYSTEM (Cont)

The Collins FMS-5000 Flight Management System Operator's Guide (Part number 523-0780848-00XXXX dated *May 15/2004*, or later applicable version) must be immediately available to the flight crew whenever navigation is predicated on the use of the FMS.

The FMS is approved for use with software version [FMC SCID 832-4118-018, or later applicable revision]. The software status in the FMS Operator's Guide must match that displayed on the equipment.

EFFECTIVITY

For aircraft 20002 thru 20050 not incorporating Service Bulletin 100-11-01 (Replacement of Airspeed Limits Placard for MTOW Increase to 38 850 lb/ 17 622 kg):

The performance database part number must be verified as: 815-5959-001.

The performance database part number must be verified to be: 815-5959-002.

FMS range and fuel management information is advisory only.

When the batteries are removed, the FUEL USED on the FMS will indicate the value from the previous flight. After re-installing the batteries, the FUEL USED should be manually reset to zero.

To be used for navigation, the FMS must be receiving suitable navigation information from the following sources:

- One VOR / DME, or
- Two DMEs, or
- GPS. If the GPS is the only available sensor, use of the FMS for navigation is not approved unless the Collins prediction program [832-3443-007, or later applicable version] has been run.

IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the database or verifies the waypoints for accuracy by reference to current publications.

Instrument approaches must be accomplished only in accordance with instrument approach procedures that are contained in the FMS database. The database must incorporate the current update cycle. The pilot must verify approach waypoints for accuracy by reference to current publications.

Use of FMS instrument approaches is prohibited unless APPR is annunciated on the PFD.

(Continued)

SYSTEMS LIMITATIONS (Cont)

AVIONICS (Cont)

FLIGHT MANAGEMENT SYSTEM (Cont)

Use of VNAV vertical guidance for V-MDA type approach between the final approach fix and the missed approach fix is prohibited.

The FMS with inputs from GPS may only be used for approach guidance if the reference co-ordinate data system for the instrument approach is WGS-84 or NAD-83.

When the altimeter is adjusted to show the Height Above Ground (QFE) rather than sea level, VNAV must not be used.

FMS range and fuel management information is advisory only.

- CAUTION:**
- Errors to VNAV defined paths may occur because of coding errors in the navigation data base and because of altimetry errors. The actual VNAV path may deviate significantly below the intended VNAV path in very cold temperatures, unless an approved temperature compensation function (if equipped) is used to correct for non-standard temperatures.
 - Database coding of VNAV altitudes for approach waypoints may result in VNAV paths continuing below Minimum Descent Altitude (MDA), Decision Altitude (DA), or Decision Height (DH), or ending at an altitude too high to continue a safe descent to landing. VNAV paths (often called pseudo-glide paths) are not equivalent to an ILS glideslope.
 - Position along an approach must be verified prior to commencement of VNAV descent as displayed by the FMS. The required visual reference must be obtained prior to commencing descent below published MDAs, DAs, or DHs.

Approval Status:

Provided the FMS is receiving adequate usable signals, the FMS has been demonstrated capable of and has been shown to meet the performance requirements for the following operations:

Lateral Navigation — VFR/IFR enroute oceanic and remote, enroute domestic, terminal operation, and instrument approach using WGS-84 (or NAD 83) coordinate reference datum in accordance with the performance/accuracy requirements of AC20-130A.

(Continued)

SYSTEMS LIMITATIONS (Cont)

AVIONICS (Cont)

FLIGHT MANAGEMENT SYSTEM (Cont)

Primary Means Oceanic and Remote — Use of the FMS with GPS has been found to comply with the requirements of FAA Notice 8110.60 for GPS primary means of navigation in oceanic and remote airspace, when used in conjunction with the Collins prediction program 832-3443-005 and with two operational GPS receivers and with two operational FMS systems.

NAT MNPS — Provided dual FMS and dual GPS are installed and operating, the FMS with GPS inputs has been demonstrated capable of flight into North Atlantic (NAT) minimum navigation performance specification (MNPS) and has been shown to meet the accuracy specification in accordance with AC 120-33 or AC 91-49.

P-RNAV — The FMS installation has been demonstrated to meet the P-RNAV requirements of JAA TGL 10, provided the operator implements navigation database integrity checks using appropriate software tools or approved procedures as per TGL 10 section 10.6.

RNP-5/BRNAV — This FMS installation has been demonstrated to meet the RNP-5 airspace (BRNAV) requirements of AC 90-96 and JAA AMJ 20X2 Leaflet 2, Revision 1.

RNP-10 — Provided dual FMS and dual GPS are installed and operational, this FMS installation with GPS with RAIM has been demonstrated to meet the criteria of FAA Order 8400.12A as a means of navigation for flights without time limitations.

Vertical Navigation — The FMS has been demonstrated capable of and has been shown to meet the accuracy requirements of: VFR/IFR en route and terminal VNAV operation within the contiguous United States and Alaska in accordance with the criteria of AC 20-129.

NOTE: The above statements do not constitute an operational approval.

STANDBY INSTRUMENT

Use of the standby instrument localizer deviation guidance is prohibited during localizer backcourse approaches.

STANDBY COMPASS

L and R WSHLD /WINDOW switches must be temporarily selected OFF while the standby compass is being read.

(Continued)

SYSTEMS LIMITATIONS (Cont)

INTEGRATED FLIGHT INFORMATION SYSTEM (If installed)

- Incorporation of Dual IFIS does not constitute operational approval to dispatch without adequate backup documentation.
- The IFIS related databases utilized (i.e. charts, airspace, airways, geographic, political, graphical weather) must incorporate the current update cycle.
- The IFIS does not include enroute charts.
- The use of the aircraft symbol on the Electronic Charts for navigation is prohibited.
- The display of geo-political boundaries, airspace and airways on the MFD (Enhanced Map overlays) is for enhanced situational awareness only, and use for navigation is prohibited.
- All weather products data linked to the aircraft are advisory.
- For a single IFIS, adequate backup documentation must be immediately available to the flight crew.
- Use of the aircraft symbol for guidance during taxi operations is prohibited.

SYSTEMS LIMITATIONS (Cont)

AVIONICS (Cont)

EFFECTIVITY

For aircraft on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:

NAVIGATION

During normal flight, reversion of ATT, HDG and ADC is **not** permitted.

TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)

Do not use the Terrain Awareness and Warning System for navigation.

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS)

Pilots are authorized to deviate from their Air Traffic Control (ATC) clearance in order to comply with a resolution advisory (RA) command.

Maneuvers must not be based solely on information presented on the traffic map overlay.

EFFECTIVITY

For aircraft on the Russian Federation (RF) and Commonwealth of Independent States (CIS) countries' registry:

Flight is not permitted along routes where ATC service provided is not in RBS mode.

TCAS II TA/RA mode is not recommended on routes where ATC modes not limited to RBS are provided. On these routes, while in TA mode, the pilot action shall be coordinated with ATC.

WEATHER RADAR

Weather Radar information must be displayed continuously on at least one (1) PFD or MFD during the entire flight.

Following a TAWS terrain caution or terrain warning, the Weather Radar information must be reinstated on at least one (1) PFD or MFD, after the encounter has been resolved.

ELECTRICAL

Ground or Flight Operations

Continuous:

- Two or three generators operating..... 400 amps.
- One generator operating (on the ground)..... 400 amps.
- One generator operating (in flight) 500 amps.

Transient (5 minutes) 600 amps.

SYSTEMS LIMITATIONS (Cont)

ELECTRICAL (Cont)

NOTE: Refer to APU LIMITATIONS in this chapter for APU generator altitude limits.

Do not take off if battery temperatures are below -20 °C (-4 °F).

FLIGHT CONTROLS

FLAPS

Do not extend the flaps above 18 000 ft.

SPOILERS

Do not select Flight Spoilers to EMER except during emergency conditions or as required by procedure.

Flight spoilers must not be extended in flight at airspeeds below approach speed + 8 KIAS.

Flight spoilers must not be extended in flight below 500 ft AGL.

HYDRAULICS

Hydraulic fluid of type Phosphate Ester Fire-Resistant per BAMS 564-003 Type IV, Skydrol LD-4, Hyjet IV-a Plus is approved for use.

LANDING GEAR, WHEELS & BRAKES

Do not extend the gear above 18 000 ft.

Brake cooling times (established in accordance with the procedures in Chapter 6 - PERFORMANCE DATA) must be observed between a landing or a rejected takeoff (RTO) and a subsequent takeoff, to ensure that a sufficient brake energy is available to bring the airplane to a complete stop, if the subsequent takeoff is rejected.

FUEL LIMITATIONS**APPROVED FUELS**

Fuels conforming to any of the following specifications are approved for use. Mixing of fuel types is permitted.

CANADIAN	AMERICAN	BRITISH
CAN/CGSB-3.23-97	ASTM D1655-99 - JET A	Def-Stan 91-91/3
CAN/CGSB-3.23-97	ASTM D1655-99 - JET A-1	Def-Stan 91-91/3
3-GP-24c	MIL-DTL-5624T - JP-5	Def-Stan 91-86/2
CAN/CGSB-3.22-97	ASTM D1655-99 - JET B	Def-Stan 91-88/1
CAN/CGSB-3.22-97	MIL-DTL-5624T - JP-4	Def-Stan 91-88/1

The maximum altitude is limited to 16 000 ft when JP-4 or JET B is used.

APPROVED FUEL ADDITIVES

Fuel additives (kerosene):

- Anti-icing additives MIL-I-27686 (0.1 to 0.15% by volume).
- Methyl cellosolve
- Biobar JF biocide (270 ppm)
- Shell ASA-3 anti-static additive
- Corrosion inhibitors: Appollo PRI-19 (0.0227 g/l), Dupont DCI-4A (0.0227 g/l), Dupont DCI-6A (0.0227 g/l) Hitec E-515 (0.0457 g/l), Hitec E-580 (0.0227 g/l) Nalco 5403 (0.0227 g/l), Nalco 5405 (0.0227 g/l), Tolad 245 (0.0340 g/l).
- Anti-static additive: STADIS 450 (a), (b), (e), Sigbol (cis), TU-38101741.

FUELING

Single-point pressure refueling is limited to 55 psig (3792 hPa) and defueling is limited to -8 psig (-552 hPa).

FUEL TRANSFER SYSTEMS

The Power and Gravity shut-off valves shall be selected off for takeoff.

FUEL LIMITATIONS (Cont)

USABLE FUEL LOAD

The maximum usable fuel load for each fuel tank is given below:

Pressure Refuel		
Fuel Tank	Fuel Mass †	
Right	7075 lb	3210 kg
Left	7075 lb	3210 kg
Left & Right	14 150 lb	6420 kg

† Based on a fuel density of 6.75 lb/USG (0.809 kg/litre), rounded to the nearest 5 lb or 5 kg.

Gravity Refuel (Airplane Level)		
Fuel Tank	Fuel Mass †	
Right	6500 lb	2950 kg
Left	6500 lb	2950 kg
Left & Right	13 000 lb	5900 kg

† Based on a fuel density of 6.75 lb/USG (0.809 kg/litre), rounded to the nearest 50 lb or 25 kg.

MINIMUM FUEL QUANTITY FOR GO-AROUND

The minimum fuel quantity for go-around is 500 lb (227 kg) per side.

MAXIMUM FUEL IMBALANCE

The maximum allowable fuel imbalance values are detailed in the Flight Crew Operating Manual, Volume 1.

TEMPERATURE LIMITATIONS

The aircraft is prohibited from taking off if the bulk fuel temperature is below -30 °C (-22 °F) for Jet A, and -35 °C (-31 °F) for Jet A1 and JP-5, and -40 °C (-40 °F) for JP-4 and Jet B.

The aircraft is prohibited from taking off if the Bulk Fuel Temperature is above 50 °C (122 °F).

With wing bulk fuel temperature at 45 °C (113 °F) or above:

- the minimum fuel load for takeoff is 2800 lbs.
- with less than 1000 lbs of fuel per side, do not operate engine for more than 30 minutes.

POWERPLANT LIMITATIONS

ENGINE TYPE

AS907-1-1A turbofan propulsion engines.

ENGINE OPERATION

The engine indicating system is designed to show system status with specified colors. The limits are indicated in red.

ENGINE OPERATING LIMITS

LIMIT	GROUND START	AIR START ⑦	IDLE	MAX REVERSE	MAXIMUM CONTINUOUS (CLB) ①	NORMAL TAKEOFF (TO) ②	APR (MAX POWER) ③
N1	--	--	--	70.7% ④	95.2%	96.1%	96.1%
N2	--	--	46.0% min.	--	97.2%	97.2%	98.1%
ITT	650 °C	700 °C ⑤	--	928 °C	928 °C	928 °C	946 °C
OIL TEMP	-40 °C min.	--	--	--	138 °C max.	138 °C max. 27 °C min.⑥	138 °C max.
OIL PRESS	--	--	28 psi min.	⑧	⑧	⑧	⑧

1. Climb (CLB) equals maximum continuous thrust (MCT)
2. Normal Takeoff power is limited to 5 minutes
3. APR power (one engine inoperative) is limited to 10 minutes
4. Maximum reverse thrust is automatically reduced (ramped) commencing at 85 KIAS
5. Maximum ITT limit varies with N2 speed (400 °C when N2 <18% and ITT at start initiation <250 °C)
6. Minimum oil temperature must be achieved before commencing takeoff. Below -30 °C (-22 °F) the minimum oil temperature limit is 15 °C provided a fuel system icing inhibitor is used and the Cold Weather Operations procedures in FCOM, Vol. 1 are followed.
7. The in flight re-start envelope is defined in Figure 05-32-01 of this manual
8. Minimum oil pressure varies with engine speed. Maximum allowable oil pressure increases with engine speed and with low oil temperature
9. A minimum oil temperature of 5 °C is required to operate engines above ground idle power. Between 5 and 14 °C, the engines may be operated from idle up to but not including CLB power.

Figure 02-06-01

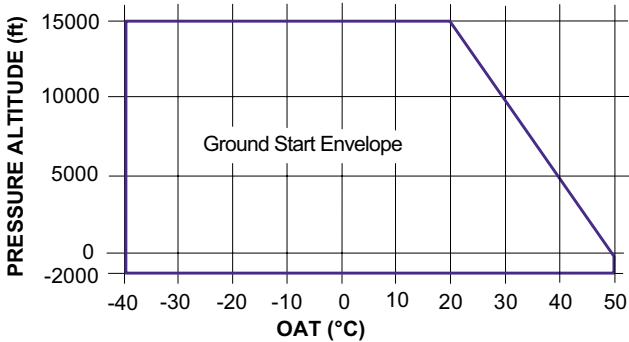
POWERPLANT LIMITATIONS (Cont)

ENGINE START:

Three consecutive engine start cycles may be conducted, followed by a cooling period of 15 minutes, prior to additional starts and motoring.

The engine must be motored for 30 seconds after an aborted start.

For engine ground starting altitude and temperature limits, refer to the following chart:



Ground Start Envelope

Figure 02-06-02

EFFECTIVITY

For aircraft 20006 thru 20033 *not* incorporating Service Bulletin 100-52-05 (Replacement of Passenger Door Telescopic Struts for Improved Cold Weather Operation) the following limitation applies:

Operation is prohibited if the airplane, with engines shut down, is exposed to a ground ambient temperature of -20 °C (-4 °F) or below for a period of more than 2 hours, unless an approved procedure is used to warm the airplane following this exposure.

Fuel system icing inhibitor must be used when fuel temperature is below -20 °C (-4 °F) (for takeoff only), unless cold weather procedures are followed.

ENGINE CRANKING:

The engine can be motored (cranked) for up to 5 minutes, followed by a cooling period of 15 minutes prior to additional starts or motoring.

OIL

Oils conforming to Honeywell specification EMS 53110, Type II are approved.

THRUST REVERSERS

Limit thrust reverser system use to ground operations on paved surfaces.

Do not attempt to deploy thrust reversers in flight.

Do not use thrust reversers to back up the aircraft.

Do not use thrust reversers for touch-and-go landings.

Reverse thrust above idle reverse is prohibited below 40 KIAS.

AUXILIARY POWER UNIT (APU) LIMITATIONS

APU TYPE

Honeywell 36-150BD auxiliary power unit.

MAXIMUM ALTITUDE

APU Operation	37 000 ft.
APU GEN	30 000 ft.
Bleed air for Engine Start	20 000 ft.

EFFECTIVITY

For aircraft 20001, 20002, 200101 and subsequent, and aircraft 20003 thru 20100 incorporating Service Bulletin 100-21-05 the following applies:

Bleed air for ECS	20 000 ft.
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EFFECTIVITY

For aircraft 20003 thru 20100 *not* incorporating Service Bulletin 100-21-05 the following applies:

Bleed air for ECS	15 000 ft.
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Do not use the APU to start the left engine on the ground above 9000 ft.

Operation of the APU during fluid de-icing/anti-icing is prohibited.

Do not take off with an APU SHUTDOWN (A) CAS displayed without conducting an inspection. If the APU automatically shuts down due to an APU failure, a visual inspection of the unit must be conducted prior to flight.

APU START

Delay starting the APU for 5 minutes after application of anti-icing fluid near the APU area.

The APU may be started up to an altitude of 30 000 ft (14 000 ft on the ground). The APU starter is limited to 30 seconds continuous cranking time.

Do not start the APU above 300 KIAS.

Three start attempts may be made, each followed by a one-minute cooling period. After the third start attempt, there must be a 20-minute cooling period. Two more start attempts may then be made. No further attempts may be made for at least 40 minutes. Six successful starts may be made at 10 minute intervals with a one hour waiting period prior to additional start attempts.

APU OPERATION

The EICAS system is designed to show system status with specified colors. The maximum and minimum limits are indicated in red.

The maximum APU RPM is 110%.

The maximum APU EGT is:

1024 °C for start
714 °C for normal operations.

AUXILIARY POWER UNIT (APU) LIMITATIONS (Cont)

APPROVED FUELS/OILS

Fuels approved for the main aircraft engines are also approved for the APU.

Type I (MIL-L-7808) and Type II (MIL-L-23699) are approved oils.

EFFECTIVITY

For aircraft 20006 thru 20028, and aircraft 20030, *not* incorporating Service Bulletin 100-49-01 (Replacement of the APU Starter Clutch for Improved Cold Weather Operation), the use of Type II oils is limited to -35 °C (-31 °F) OAT and above for ground operations.