

## LIMITATIONS & DATA

✈ TURBULENCE : 290 KIAS / .78M

✈ ALTITUDE : Maximum ZP 43100 ft  
Maximum ZP for T/O and Landing 8400 ft  
Runway slopes :  $\pm 2\%$  (AFM SEC.1 page 3)

✈ WIND : Max tailwind for T/O & Landing.....10 kt (GE) & 15 kt (PW) (AFM SEC.1 page 3)  
Max demonstrated crosswind (runway dry or wet) .....33 kt (AFM SEC 4.1 page 8)  
Automatic landing - tailwind ..... 10 kt (AFM SEC 1 page 12)  
- crosswind .....25 kt (AFM SEC 1 page 12)  
- headwind ..... 25 kt (AFM SEC 1 page 12)

✈ CABIN PRESS :  $\Delta P_{max}$  for T/O and landing ..... 0.125 PSI  
 $\Delta P_{max}$  climb .....8.6  $\pm$  0.10 PSI  
 $\Delta P_{max}$  for all other cases ..... 8.6  $\pm$  0.05 PSI (AFM SEC 1 page 12)

Maximum allowable cabin pressure differential for T/O and landing is 236 ft below airport pressure altitude / .125 PSI. (AFM SEC.1 page 12)

✈ AUTOPILOT : T/O from 200 ft AAL (same with CWS, if installed)  
Enroute from 1200 ft AAL  
No ailerons trim with A/P engaged (AFM SEC.1 page 12)

✈ FMS : During VOR approaches, one pilot must have raw data from the VOR associated with the approach displayed in the HSI VOR mode no later than the FAF (AFM SEC.1 page 13)

### ✈ MAX AIRSPEED LIMITS & FLIGHT CONTROLS

VMO / MMO .....	360 kt / .86M
Maximal Flap extension altitude.....	20 000 ft
Flaps 1.....	250 kt
Flaps 5.....	230 kt
Flaps 15.....	210 kt
Flaps 20.....	210 kt
Flaps 25.....	180 kt
Flaps 30.....	170 kt

(AFM SEC.1 page 7 & 13)

#### Normal extension / retraction times :

From 0 to 20.....	40 sec
From 20 to 30.....	10 sec

#### Alternate extension / retraction times :

From 0 to 20.....	180 sec
From 20 to 30.....	60 sec

#### Stabilizer trim limits :

Electric with Flaps in position 0 or 1..... 1,5 units ANU  
Electric with Flaps in position 5 or >.....0,25 units ANU  
(the stabilizer can be moved beyond these limits using the alternate trim switches)  
Stabilizer green band.....0 - 7 units ANU

- ✈ FUEL : - Usable fuel without restriction : JET A, JET A1, JET B (ASTM-D-1655)
- Usable fuel with restriction (see tech.) : JP-4, JP-5 (MIL-T-5624) & JP-8 (MIL-T-83133)

FUEL	MIN.TEMP (°C)	MAX.TEMP (°C)
JET A	- 37*	+ 49
JET A1	- 44*	+ 49
JET B = JP4	TBD	+ 43
JP5	TBD	+ 49

Anti-icing fuel additive PFA 55MB at a concentration not to exceed 0.15% by Volume may be used. No fuel system anti-icing credit is allowed  
(AFM SEC.1 page 10)

\*+3°C above freezing point

TANKS	MAXIMUM USABLE FUEL*		
	USG	LITERS	KG
Left + Right	12140	45954	39062
Center	12000	45425	38611
L+R+C	24140	91379	77673
Non mesurable usable fuel	44	167	141
TOTAL	24184	91546	77814

\*fuel density = 0.85

- Max imbalance between L & R tanks .....1135 kg if L+R tanks < 21 772 kg (AFM SEC.1 page 8).
- Max imbalance between L & R tanks ..... 680 kg if L+R tanks < 36 197 kg (AFM SEC.1 page 8).

Fuel Jettison rate :

- Center tank pumps and jettison pumps.....1200 kg / min
- Center tank pumps only.....600 kg / min

- Do not use Center tank pumps for T/O if less than 2300 kg (to avoid amber PRESS lights at liftoff)
- Center fuel pumps must be OFF when fuel is less than 500 kg in Center tank (OMB number AWWG-16).
- Do not jettison fuel with Flap positions at 25 or 30 unless the airplane is approved for 4 jettison pumps operations (AFM SEC.1 page 8).

- ✈ LANDING GEAR : Normal extension and retraction.....270 kt / M.82 (AFM SEC.1 page 7).
- Extension with alternate system.....250 kt / M.75 (AFM SEC.1 page 7).
- Flight with gear extended..... 270 kt / M.82 (AFM SEC.1 page 7).
- Max Tyres Speed .....225 MPH or 195 kt
- Tyres Spec.....H46 x 18-20 (Main LDG) & H37 x 14-15 (Nose Gear)

Gear extension and retraction times :

- Normal retraction..... 14 sec
- Normal extension..... 17 sec
- Alternate extension..... 19 sec

Parking brake holding time

- (fully charged accumulator 3000 PSI)..... 8 hours
- Minimum brake accumulator pressure..... 850 PSI

Brake temperature indications :

- Cold (cyan number and box).....0-2
- Medium (cyan number, white box)..... 3-4
- Hot (white number and box)..... 5-9

Tire pressure limitations (loaded aircraft / cold tires)

- Main Gear.....200 - 210 PSI
- Nose Gear..... 175 -185 PSI

- ✈ ELECTRICAL : AC Power system (115 V, 400 Hz, 3-phase)
  - Voltage :
    - Normal..... 115V
    - Maximum..... 120V
    - Minimum .....110V
  - Frequency :
    - Normal..... 400Hz
    - Maximum.....404 Hz
    - Minimum .....396 Hz
  - Load limit :
    - IDG..... 400Hz
    - APU Generator + External Power.....90 kVA
    - HMG.....5 kVA
  - IDG :
    - Max oil temperature..... 185°C
    - Low oil pressure.....40 PSI
    - Maximum outlet oil temperature.....157°C
    - Maximum inlet oil temperature ..... 127°C
- DC Power system
  - Voltage :
    - Normal..... 28V
    - Maximum.....32V
    - Minimum .....22V
  - Load limit :
    - Main TRU..... 120A
    - Ground Handling TRU.....20A
    - HMG.....50A
- Battery power
  - Capacity.....40Ah
  - Voltage.....24V
- Standby system
  - STBY System }
    - One 24 V, 40 Amp-Hr NiCad battery
    - One 115 V, 400 Hz, 1000 VA static Inverter
    - Capacity to power all standby loads for 45 min.
- Miscellaneous
  - APU start system.....One 24 V, 40 Amp-Hr NiCad battery
  - AC service outlets  
(cabin, cockpit, equipt rack)..... 115 V, 400 Hz, 1000 W
  - DC service outlet (cockpit).....28 V
- ✈ HYDRAULICS
  - Normal range..... 2400-3100 PSI
  - Maximum (relief valve setting).....3500 PSI
  - Fuel penalty with RAT extended..... + 2%
- Hydraulics quantity :
  - Refill level (RF).....0,75 units
  - Normal servicing level.....1,00 units
  - Overfull level (OF)..... 1,22 units

✈ ENGINES :	Maxi N1 .....	117.5% (GE) / 111.4% (PW)	(AFM SEC.1 page 9)
	Maxi N2 .....	112.5% (GE) / 105.5% (PW)	(AFM SEC.1 page 9)
	Max startup EGT .....	750°C (870°C for 40 sec./GE) / 535°C (PW)	(AFM SEC.1 page 9)
	Max T/O EGT .....	960°C (5 minutes) / GE) / 650°C (PW)	(AFM SEC.1 page 9)
	Max continuous EGT .....	925°C (GE) / 625°C (PW)	(AFM SEC.1 page 9)
	Mini oil press .....	10 PSI (GE) / 70 PSI (PW)	(AFM SEC.1 page 10)
	Mini oil temp ( <u>PW only</u> ) .....	50°C before advancing T/O power	(AFM SEC.1 page 10)
	Max oil temp (GE) .....	175°C (OK for 15' between 160 & 175°C)	(AFM SEC.1 page 10)
	Max oil temp (PW) .....	177°C (OK for 15' between 163 & 177°C)	(AFM SEC.1 page 10)
	Total oil tank capacity.....	37 litres	
	Max starter use.....	see powerplant section	
	Motoring speed.....	25 %	

OIL QTY	LEFT ENGINE		RIGHT ENGINE	
	Actual	Indicated	Actual	Indicated
Full Tank	37 liters	25 liters	31 liters <sup>(1)</sup>	24 liters
Before engine start	37 liters	25 liters	31 liters <sup>(1)</sup>	24 liters
After engine start (idle)	29 liters	22 liters	24 liters	16 liters
Cruise	27 liters	19 liters	21 liters	13 liters
Altitude allowance	8 liters	0 liter	8 liters	0 liter

(1) Due to wing dihedral the engine on the right wing actually contains only about 31 liters of oil when full.

Oil consumption.....maximum 0,5 l /hour

- The Flight crew shall not blank engine vibration display during T/O (AFM SEC.1 page 9)
- Engine anti-ice must be ON during all ground and flight ops when icing conditions exist or are anticipated,
- Except when the temperature is < -40°C SAT. (AFM SEC.1 page 10)
- Inflight use of reverser prohibited & powerback with reverse thrust is also prohibited.

Engine Start limitations :

- a) Observe initial EGT rise + EGT within limits
- b) Abort start if EGT fails to rise within 20 sec. of selecting run  
or EGT rising quickly or approaching limits
- c) Abort start if N1 fails to increase at EGT rise
- d) Abort start if no N2 fails to reach stabilised idle within 120 sec. of selecting RUN
- e) Do not advance thrust beyond that required for taxi until 50°C oil temp (PW)
- f) No oil pressure when engine parameters stabilised.

✈ APU :	Maximum 3 starts within 60 minutes (AOM 7.30.1)
	APU starts may be attempted at any altitude but APU may not start > 35 000 ft. (AFM SEC 3.1 page 15).
	BLEED until 17500 ft (AOM 7.30.1)
	ELECTRICAL until 43100 ft (has always <u>priority</u> on Bleed air)
	Electrical + 2 Packs on ground
	Minimum RPM for power delivery.....95%
	Normal Operation.....100 - 101 %
	Overspeed Limit.....107 %
	Electrical supply.....90 kVA

#### ✈ NAVIGATION & COMMUNICATION SYSTEM :

- Do not use WXR during refuelling
- Do not use terrain display for navigation (AFM SEC.1 page 13).
- Use of terrain alerting & display functions are prohibited for QFE operation (AFM SEC.1 page 13).
- Use of terrain alerting & terrain display functions are prohibited within 15 NM & approaching to land at an airport not contained in the GPWS terrain database. (Allied Signal doc.060-4267-000)
- Do not land with Magnetic References ≥ 73°N or 60°S
- EHSI map information (FMC) only available between 87°N & 87°S
- VHF Power requirements .....28V DC
- HF Power requirements.....115 V AC, 400 Hz, 3-phase

- ✈ ACCELERATION LIMITS : Flaps UP .....+2.5 g to - 1.0 g  
 Flaps DOWN .....+2.5 g to - 1.0 g *(AFM SEC.1 page 5)*  
Note : With Flaps 25 & 30, positive limits vary linearly from + 2.0 g at MLAW to +1.5g at MTOW *(AFM SEC.1 page 5)*.

- ✈ FIRE PROTECTION : All Fire agents..... Halon  
 Cargo Fire agent protection duration..... 195 minutes

- ✈ PASSENGER EVACUATION : Main door emergency evacuation slide systems must be armed and engagement of each girt bar with the still fitting verified, prior to taxi, T/O and landing whenever passengers are carried. *(AFM SEC.1 page 13)*

- ✈ WATER & WASTE : Water tank capacity :  
 First tank..... 413 litres  
 Second tank..... 151 litres  
 Total ..... 564 litres  
  
Waste tank capacity :  
 First tank..... 265 litres  
 Second tank..... 265 litres  
 Total..... 530 litres

✈ CARGO DOORS :

TYPE	DIMENSIONS (m)	DIMENSIONS (in)
Forward Cargo	3,40 x 1,75	134 x 69
Aft Cargo	1,77 x 1,75	70 x 69
Bulk Cargo	0,96 x 1,14	38 x 45

- Do not operate the cargo door or let the cargo door stay open in winds of 65 kt or more. *(MM 52-33-00/201 or 52-35-00/200)*
- For cargo door ops with winds ≥ 40 kt, damage to the cargo door could happen *(Cargo loading manual 25-53.00 page 211)*
- Note : Cargo doors will operate electrically between -28°C to +48°C *(Cargo loading manual 25-53.00 page 211)*

- ✈ TAKEOFF RVR MINIMA (meters)
  - HI RWY EDGE + CL +MULTI RVR (LVTO in progress + Crew qualified)..... 125 m
  - RWY EDGE + CL + MULTI RVR..... 200 m
  - RWY EDGE + CL ..... 250 m
  - EDGE LIGHTS or CL Markings ..... 300 m
  - NO FACILITIES (day only) ..... 500 m