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Model : 212 A			

FEB 99

OCT 01

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INTRODUCTION

The airplane is certified in the Transport Category, JAR 25 and ICAO annex 16 for day and night operations, in the following conditions when the appropriate equipment and instruments required by the airworthiness and operating regulations are approved, installed and in an operable condition :

- VFR and IFR
- Flight in icing conditions
- Reverse thrust taxi (single or twin engine)

MINIMUM FLIGHT CREW

2 PILOTS

MAXIMUM OPERATING ALTITUDE

25 000 FT

	LIMITATIONS GENERAL	2.01.01		
		P 2	180	
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MANEUVERING LIMIT LOAD FACTORS

FLAPS RETRACTED	= + 2.5 TO - 1G
FLAPS EXTENDED	= + 2 TO 0 G
GEAR DOWN	= + 2 TO 0 G

The corresponding positive accelerations limit the bank angle in turns and the severity of pull up maneuvers.

CARGO DOOR OPERATION

Do not operate cargo door with a cross wind component of more than 45 kt.

DISPATCHIBILITY

For dispatch in the event of equipment failure or missing equipment refer to MEL/CDL.

MAXIMUM NUMBER OF PASSENGER SEATS

74	as limited by emergency exits configuration. Other limitations such as that given by the emergency evacuation demonstration must be respected.
----	--

 ATR 72 F.C.O.M.	LIMITATIONS		2.01.02		
			P 1	520	
	WEIGHT AND LOADING				JUL 00

AA

DESIGN WEIGHT LIMITATIONS

MAXIMUM WEIGHT	KG	LB
TAXI	22 180	48 898
TAKE OFF	22 000	48 501
LANDING	21 850	48 170
ZERO FUEL	20 000	44 092

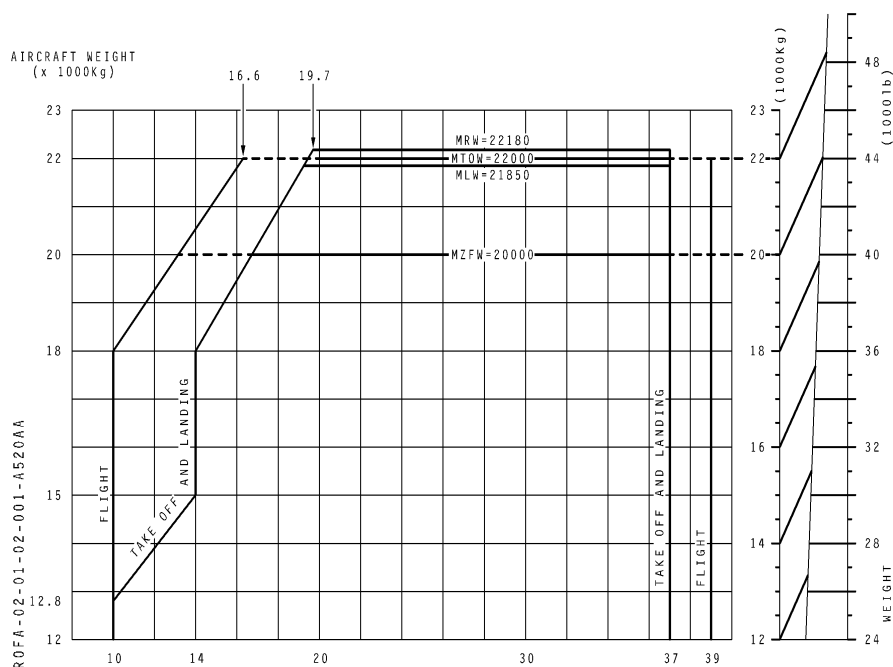
CENTER OF GRAVITY ENVELOPE

The limits of center of gravity are given in percentage of the mean aerodynamic chord (MAC), landing gear extended.

The MAC is 2.303 meters long (90.67) inches.

Station O is located 2.362 meters (92.99 inches) forward of the fuselage nose.

The distance from station 0 to reference chord leading edge is 13.604 meters (535.59 inches).



R Mod : 4439 or 5150

Model : 212A

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CARGO COMPARTMENT LOADING LIMITATIONS

R See WBM 1.10.04 p 1

PASSENGERS BOARDING/DISEMBARKING

- The tail prop must be installed before passengers boarding/diseimbarking.
- A possible tip up should be taken into account from seven persons moving near the rear part of an off load aircraft.

	LIMITATIONS AIRSPEED AND OPERATIONAL PARAMETERS	2.01.03		
		P 1	001	
				SEP 02

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AIRSPEEDS

R

* MAXIMUM OPERATING SPEED.

This limit must not be intentionnaly exceeded in any flight regime.

VMO = 250 kt

MMO = 0.55

* MAXIMUM DESIGN MANEUVERING SPEED VA

Full application of roll and yaw controls as well as maneuvers involving angles of attack near the stall should be confined to speeds below VA.

VA = 175 kt

CAUTION : Rapidly alternating large rudder applications in combination with large sideslip angles may result in structural failure at any speed.

* MAXIMUM FLAPS EXTENDED OPERATING SPEEDS VFE

FLAPS 15 185 kt

FLAPS 30 150 kt

* MAXIMUM LANDING GEAR EXTENDED OPERATING SPEEDS

VLE = 185 kt

VLO RET= 160 kt

VLO LOW= 170 kt

* MAXIMUM ROUGH AIR SPEED

VRA= 180 kt

* MAXIMUM WIPER OPERATING SPEED

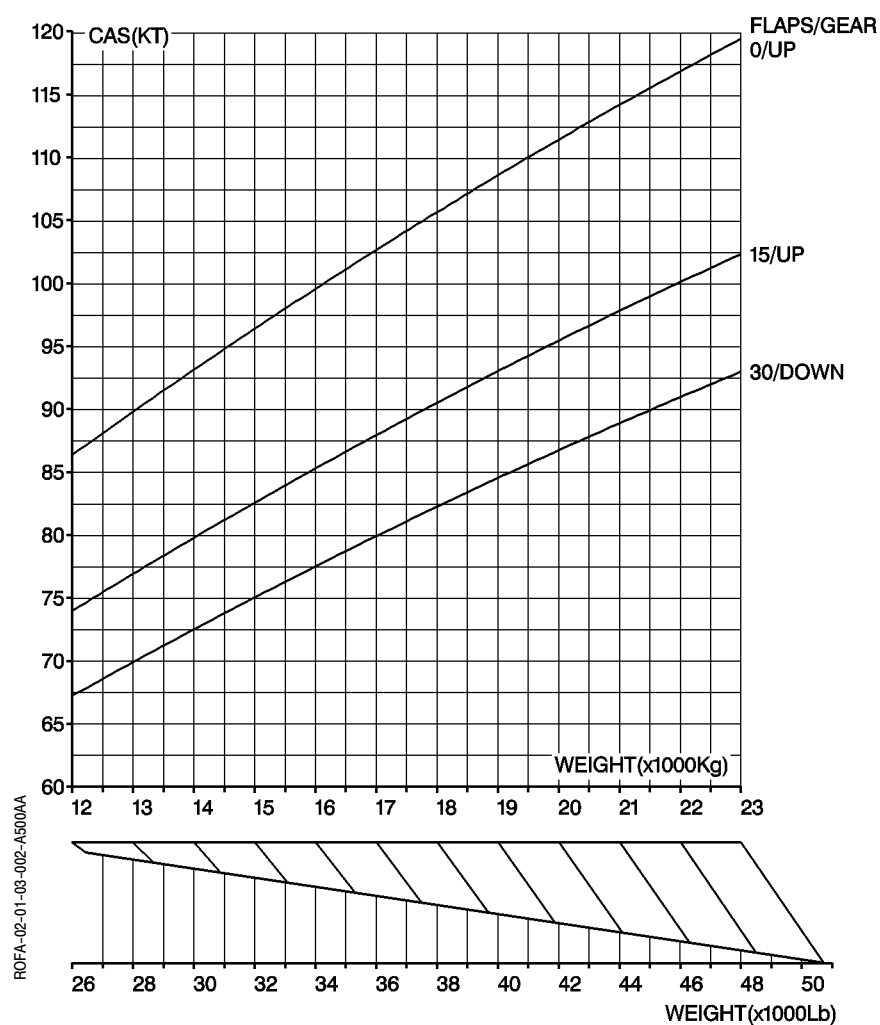
Vwo = 160 kt

* MAXIMUM TIRE SPEED : 165 kt (Ground speed).

 ATR 72 F.C.O.M.	LIMITATIONS AIRSPEED AND OPERATIONAL PARAMETERS	2.01.03		
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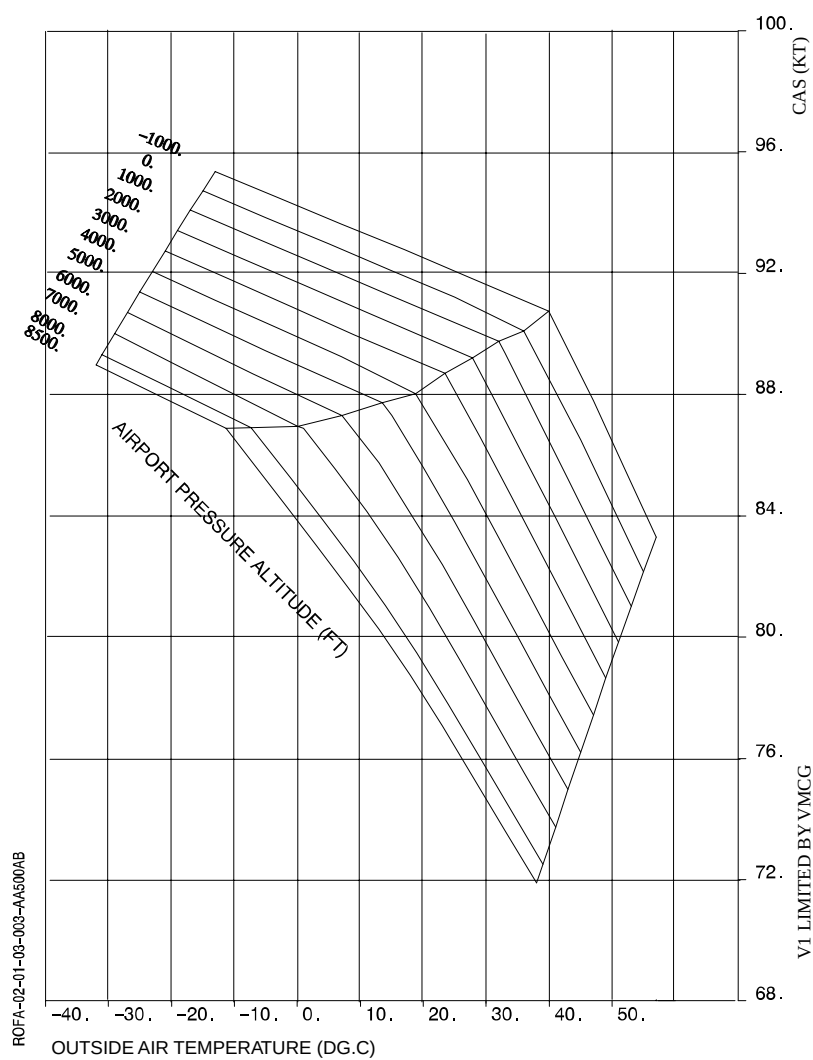
R STALL SPEEDS - VSR



 ATR 72 F.C.O.M.	LIMITATIONS		2.01.03		
	AIRSPEED AND OPERATIONAL PARAMETERS		P 3	500	
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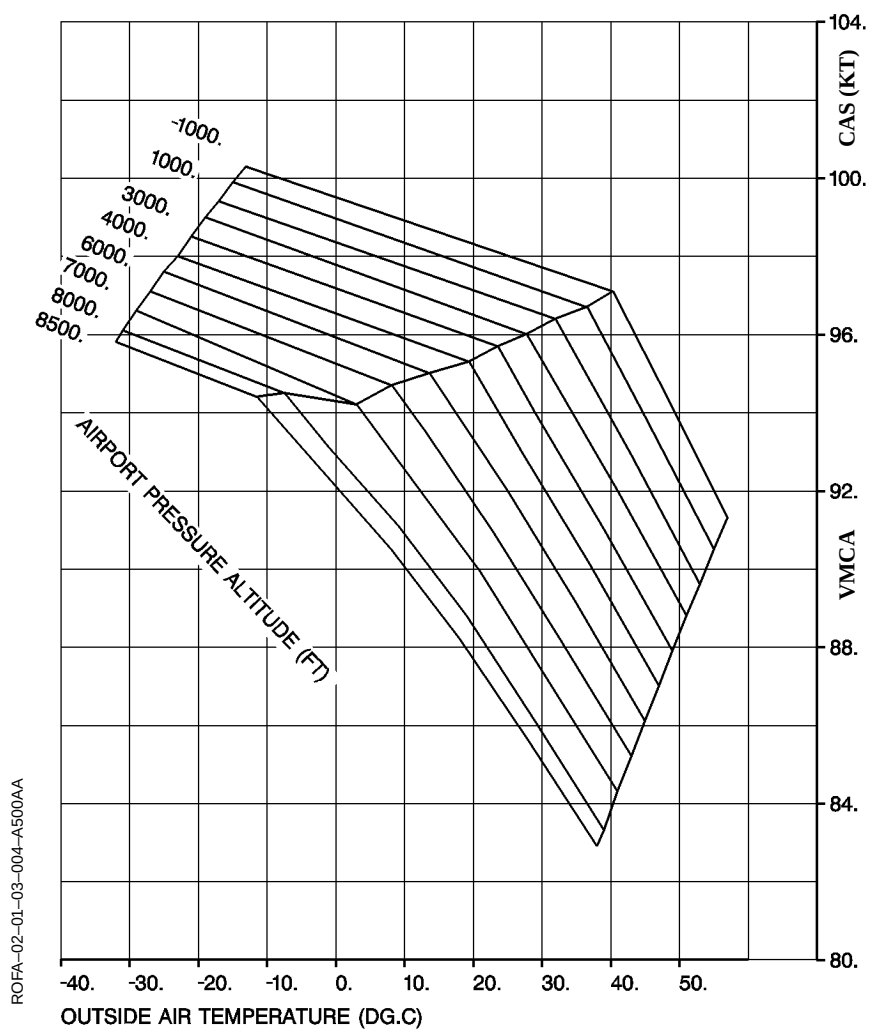
V1 LIMITED BY VMCG (FLAPS 15)



 ATR 72 F.C.O.M.	LIMITATIONS		2.01.03		
			P 4	500	
	AIRSPEED AND OPERATIONAL PARAMETERS				JUN 97

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VMCA (FLAPS 15)



VMCL

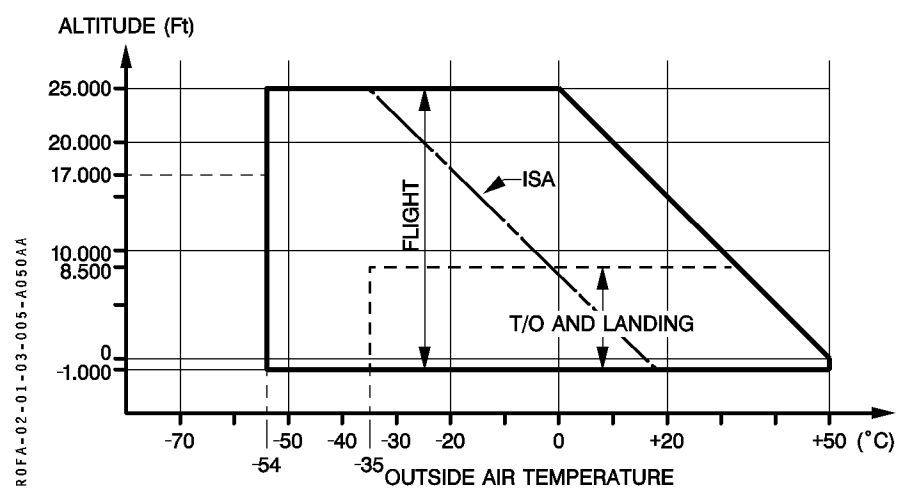
Flaps	VMCL (CAS)
30	98 kt
15	98 kt

 ATR 72 F.C.O.M.	LIMITATIONS		2.01.03		
			P 5	050	
	AIRSPEED AND OPERATIONAL PARAMETERS				JUN 94

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OPERATIONAL PARAMETERS

ENVIRONMENTAL ENVELOPE



TAKE-OFF AND LANDING

TAIL WIND LIMIT : 10 KT

The maximum demonstrated cross wind on dry runway is 35 kt

MAXIMUM MEAN RUNWAY SLOPE : $\pm 2\%$

	LIMITATIONS		2.01.04		
			P 1	500	
	POWER PLANT				JUL 01

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ENGINES

ENGINE PARAMETERS

Operating limits with no unscheduled maintenance action required.

Beyond these limits, refer to maintenance manual.

POWER SETTING	TIME LIMIT	TQ (%)	ITT (°C)	NH (%)	NL (%)	NP (%)	OIL PRESS (PSI)	OIL TEMPERATURE (°C)
RESERVE TAKE OFF	10 mn (***)	100 (**)	800	103.2	104.2	101	55 to 65	0 to 125 (3)
TAKE OFF	5 mn	90 (**)	(*)	101.9	101.4	101	55 to 65	0 to 125 (3)
MAXIMUM CONTINUOUS	NONE (***)	90.9 (**)	800	103.2	104.2	101	55 to 65	0 to 125 (3)
GROUND IDLE				66 mini			40 mini (****)	- 40 to 125 (3)
HOTEL (4) MODE			715				55 to 65	125 (3)
STARTING	5 s		950 (2)					- 54 min
OTHER			800			106 (****)		
TRANSIENT	5 s					120		
	20 s(1) (2)	120	840	106.4	106.8	108		
	20 mn							140

During RESERVE TAKE OFF, TQ indication may exceed 100 % but not 106.3 %.

(*) ITT limite depends on outside air temperature; refer to 2.01.04 P 3 for detailed information.

(**) Value linked to 100 % NP.

(***) Time beyond 5 mn is linked to actual single engine operations only.

(****) Up to 75 % NH only.

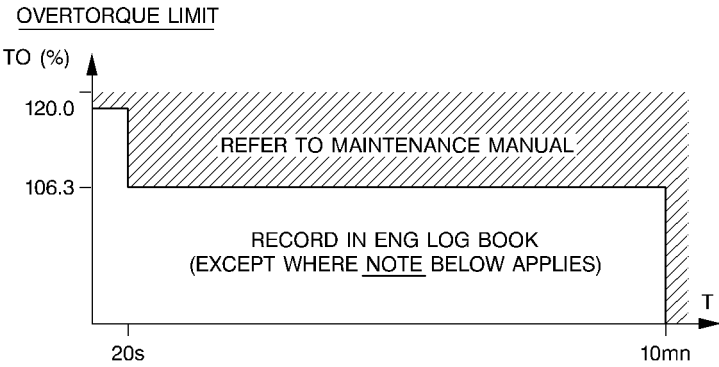
(*****) Permissible for completion of flight provided TQ does not exceed 75.2 % during climb and 73.13 % during cruise.

(1), (2), (3), (4) : see page 4.

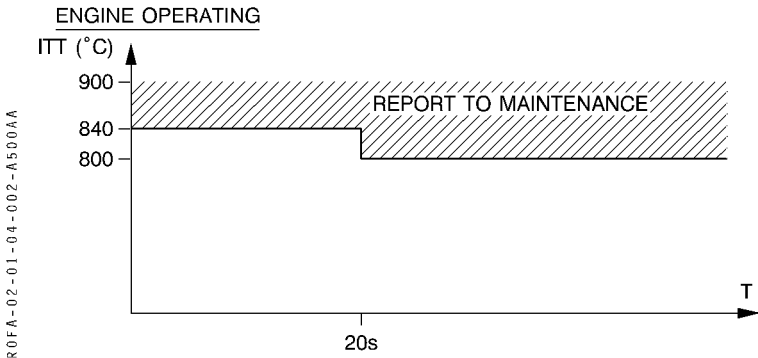
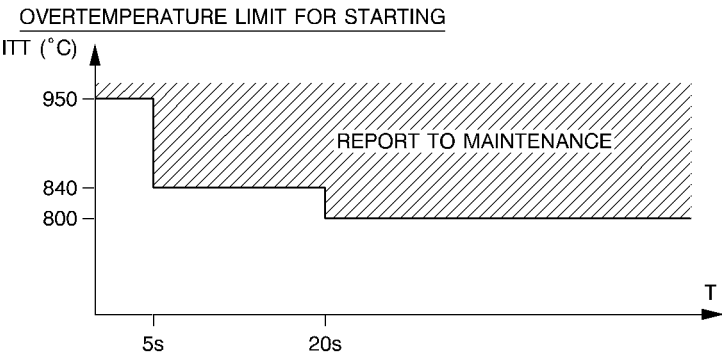
R Note : Flight with an engine running and the propeller feathered is not permitted.

	LIMITATIONS		2.01.04		
	POWER PLANT		P 2	500	
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Note : Operation up to 106.3% torque is time unlimited when NP is below 94%

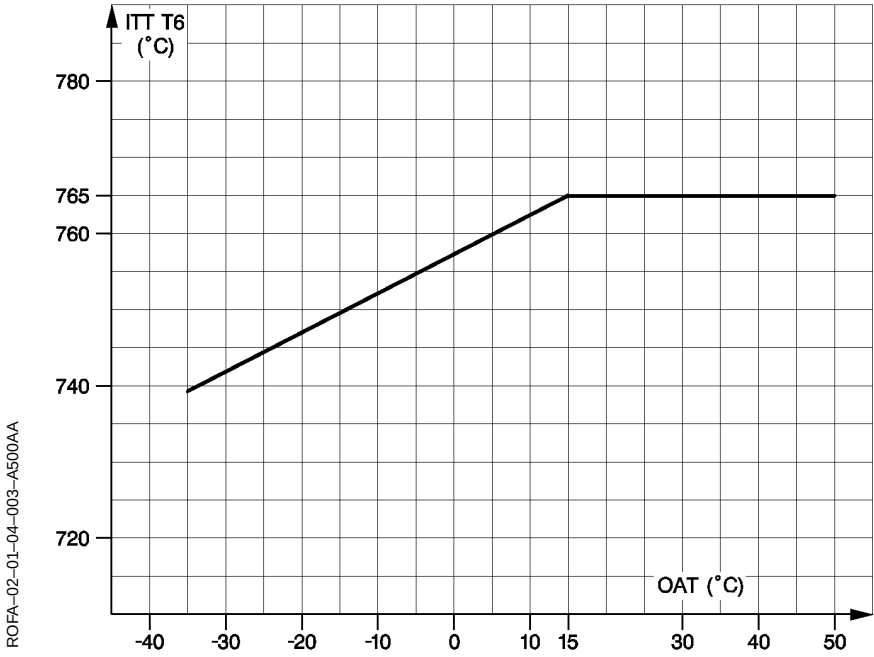


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	LIMITATIONS POWER PLANT	2.01.04		
		P 3	500	
				JUN 97

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ITT LIMITS



	LIMITATIONS POWER PLANT	2.01.04		
		P 4	500	
				JUL 98

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- (1) - Determine and correct cause of overtorque.
- Record in engine log book for maintenance.
- (2) - Determine and correct cause of overtemperature.
- Record in engine log book for maintenance.
- R (3) - Temperature up to 125°C is authorized without time limitation.
20 mn are authorized between 125°C and 140°C.
- Refer to ENG OIL HI TEMP procedure.

*Note : Oil temperature must be maintained above 45°C to ensure inlet strut de-icing.
Oil temperature must be maintained above 71°C to ensure fuel anti-icing protection in absence of the low fuel temperature indication.*

- (4) - Do not use engine 2 in HOTEL MODE without a qualified person (flight crew or maintenance) in the cockpit.

PROPELLERS

GROUND OPERATION

- | |
|--|
| <ul style="list-style-type: none"> - Engine run up must be performed into the wind. - Engine ground operations with crosswind between 5 and 20 kt should not exceed 58 % TQ. |
|--|

IN FLIGHT OPERATION

USE OF NP SETTING BELOW 82 % IN ICING CONDITIONS IS PROHIBITED
--

ATR airplanes are protected against a positioning of power levers below the flight idle stops in flight by an IDLE GATE device. It is reminded that any attempt to override this protection is prohibited. Such positioning may lead to loss of airplane control or may result in an engine overspeed condition and consequent loss of engine power.

GROUND OR FLIGHT

If a propeller is involved in an overspeed or in an engine overtorque, refer to the propeller maintenance manual.
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	LIMITATIONS POWER PLANT	2.01.04		
		P 5	100	
				SEP 05

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STARTER

3 STARTS WITH A 1 MN 30 SEC MAXIMUM COMBINED STARTER RUNNING TIME, FOLLOWED BY 4 MN OFF

OIL SYSTEM

Approved lubricating oils (from PWC SB 20001):

- Aero Shell Turbine oil 500
- Aero Shell Turbine oil 560
- Royco Turbine oil 500
- Royco Turbine oil 560
- Mobil Jet oil II
- Mobil Jet oil 254
- Castrol 4000
- Castrol 5000
- Exxon Turbo oil 2380

Mixing of different brands of oil or viscosities of oil is not recommended.

FUEL SYSTEM

- Acceptable fuels (refer to PWC SB 20004 to determine equivalent approved fuels).
- Use of JP 4 is prohibited.

FUELS	FREEZING POINT (°C)	MINIMUM FUEL TEMP (°C)		MAXIMUM FUEL TEMP (°C)
		Starting	Operation	
JET A	- 40	- 34	- 38	+ 57
JET A1	- 50	- 34	- 48	+ 57
JET B	- 50	- 34	- 48	+ 50
JP 5	- 46	- 26	- 33	+ 57

- Approved anti icing additives (maximum concentration allowed : 0.15 % per volume) :
 - Philips PFA 55 MB
 - MIL-I-27 686 D
 - Ethylene Glycol Monomethyl Ether as defined in MIL-I-27 686 E.

	LIMITATIONS POWER PLANT	2.01.04		
		P 6	500	
				SEP 05

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REFUELING

MAXIMUM PRESSURE 3.5 BARS (50 PSI)

USABLE FUEL

THE TOTAL QUANTITY OF FUEL USABLE IN EACH TANK IS

2500 KG (5510 LBS)

NOTE : FUEL REMAINING IN THE TANKS WHEN
QUANTITY INDICATORS SHOW ZERO IS NOT USABLE
IN FLIGHT

UNBALANCE

MAXIMUM FUEL UNBALANCE : 730 kg (1609 lb)

FEEDING

- EACH ELECTRIC PUMP IS ABLE TO SUPPLY ONE ENGINE IN THE WHOLE FLIGHT ENVELOPE
- ONE ELECTRICAL PUMP AND ASSOCIATED JET PUMP ARE ABLE TO SUPPLY BOTH ENGINES IN THE WHOLE FLIGHT ENVELOPE
- ONE JET PUMP IS ABLE TO SUPPLY BOTH ENGINES IN THE WHOLE FLIGHT ENVELOPE, EXCEPT WHEN USING JET B.

R

	LIMITATIONS	2.01.05		
		P 1	030	
	SYSTEMS			SEP 04

AA

AIR - PRESSURIZATION

MAXIMUM DIFFERENTIAL PRESSURE	6.35 PSI
MAXIMUM NEGATIVE DIFFERENTIAL PRESSURE	- 0.5 PSI
MAXIMUM DIFFERENTIAL PRESSURE FOR LANDING	0.35 PSI
MAXIMUM DIFFERENTIAL PRESSURE FOR OVBD VALVE FULL OPEN SELECTION	1 PSI
MAXIMUM ALTITUDE FOR ONE BLEED OFF OPERATION	20 000 ft

ELECTRICAL SYSTEM

SOURCE	MAX LOAD	TIME LIMIT
DC GEN	400 A 600 A 800 A	NONE 2 mn 8 s
INV	500 VA 575 VA 750 VA	NONE 30 mn 5 mn
ACW GEN	20 KVA 30 KVA 40 KVA	NONE 5 mn 5 s
TRU	60 A 90 A	NONE 5 mn

SINGLE DC GEN OPERATION

In flight : if OAT exceeds ISA + 25, flight level must be limited to FL 200

HYDRAULIC SYSTEM

SPECIFICATION : HYJET IV OR SKYDROL LD 4
--

LANDING GEAR

R	TOWING WITH TOWBARLESS SYSTEM IS PROHIBITED
---	---

DO NOT PERFORM PIVOTING (SHARP TURNS) ON A LANDING GEAR WITH FULLY BRAKED WHEELS EXCEPT IN CASE OF EMERGENCY
--

MFC

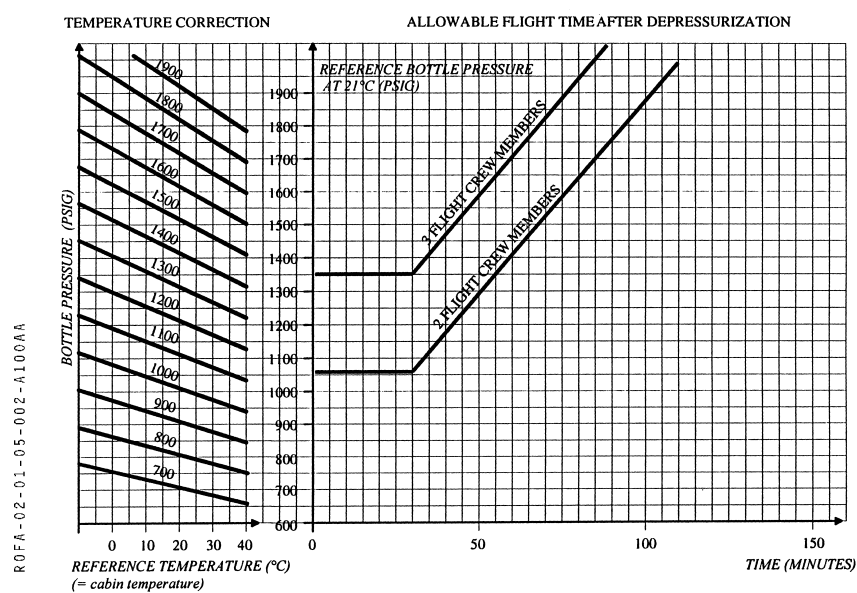
TAKE OFF WITH TWO OR MORE FAILED MFC MODULES IS PROHIBITED.

	LIMITATIONS		2.01.05	
			P 2	100
	SYSTEMS			JUL 01

AA

OXYGEN

R



Reference temperature = Cabin Temperature or OAT whichever is higher, on ground
= Cabin Temperature in flight

Minimum bottle pressure required to cover a cabin depressurization at mid-time of the flight, an emergency descent from 25,000 ft to 13,000 ft within less than 4 minutes and a flight continuation at an altitude below 13,000 ft.

A 25 % pax oxygen consumption is assumed.

In case of smoke emission, the system protects the flight crew members during 15 min.

Note : At dispatch the computed flight time after decompression should be at least 1/2 of estimated flight time to destination or flight time to the longest en route alternate which ever is higher.

Provision is made to cover :

- unusable quantity
- normal system leakage
- Ref. Temp errors.

 ATR 72 F.C.O.M.	LIMITATIONS	2.01.05		
		P 3	001	
	SYSTEMS			DEC 96

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AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)

- MINIMUM HEIGHT FOR AUTO PILOT ENGAGEMENT AFTER TAKE OFF : 100 ft
- MINIMUM HEIGHT FOR USE of either AP or FD :
 - except during take off or executing an approach : 1000 ft
 - VS or IAS mode during approach : 160 ft
 - CAT I APP mode : 160 ft
- NAV MODE for VOR approach, using either autopilot or flight director is authorized only if :
 - a co-located DME is available, and
 - DME HOLD is not selected.

Refer to 2.02.04 for CAT II operations.

INSTRUMENT MARKINGS

RED ARC OR RADIAL LINE : MINIMUM AND MAXIMUM LIMITS
 YELLOW ARC : CAUTION AREA
 GREEN ARC : NORMAL AREA

FLAPS

- R Holding with any flaps extended is prohibited in icing conditions (except for single engine operations).

ICING CONDITIONS

- R
- All icing detection lights must be operative prior to flight into icing conditions at night.
 - The ice detector must be operative for flight into icing conditions.

	LIMITATIONS	2.01.06		
		P1	050	
	TCAS			SEP 03

AA

TCAS

LIMITATIONS

The limitations in Part 2.01 are applicable with the addition of the following:

- 1- TCAS operation is approved for use in VFR meteorological conditions (VMC) and IFR meteorological conditions (IMC).
- 2- The pilot must not initiate evasive maneuvers using information from the traffic display only or from a traffic advisory (TCAS TA) only, without visually sighting the traffic. These displays and advisories are intended only for assistance in visually locating the traffic and lack the resolution necessary for use in evasive maneuvering.
- 3- Compliance with TCAS resolution advisory is required unless the pilot considers it unsafe to do so.
- 2- However, maneuvers which are in the opposite direction of the resolution advisory (TCAS RA) are extremely hazardous and are prohibited unless it is visually determined they are the only means to assure safe separation.

CAUTION : Once a non crossing RA has been issued the vertical speed should be accurately adjusted to comply with the RA, in order to avoid negating the effectiveness of a co-ordinated manoeuvre by the intruder.

WARNING : Non compliance with a crossing RA by one airplane may result in reduced vertical separation. Therefore, safe horizontal separation must also be assured by visual means.

- 4- Evasive maneuvering should be made with the autopilot disengaged, and limited to the minimum required to comply with the RA. The pilot must promptly return to the previous ATC clearance when the TCAS "CLEAR OF CONFLICT" voice message is announced.
- 5- Prior to perform RA's climb or increase climb, the crew should select the appropriate engine power setting on the power MGT rotary selector and, if necessary, manually adjust CLs.
- 6- When a climb or increase climb RA occurs with the airplane in the landing configuration or in the go-around phase, a normal procedure of go-around should be followed including the appropriate power increase and configuration changes.

	LIMITATIONS	2.01.06		
		P 2	050	
	TCAS			SEP 02

AA

TCAS (cont'd)

- 7- Because of the limited number of inputs to TCAS for determination of aircraft performance inhibits, there are instances where inhibiting RAs would be appropriate, however it is not possible to do so. In these cases, TCAS may command maneuvers which may significantly reduce stall margins or result in stall warning. Conditions where this may occur include operations with a bank angle (wings level is assumed), weight, altitude and temperature combinations outside those noted below, leaving aircraft in landing configuration during climb RA on approach, engine out operations, and abnormal configurations such as landing gear not retracted or stick pusher/shaker failure.

The table below entitled "Flight Envelope in which climb resolution advisory can be accomplished without stick pusher/shaker activation" outlines the parameters used in the development of the performance inhibits. This table does not consider worst turboprop flight conditions especially operations using minimum operating airspeeds as are sometimes required (e.g. obstacle clearance, ATC constraints). In all cases, stall warning must be given precedence over climb RA commands.

NOTE : *TCAS is viewed as a supplement to the pilot who, with the aid of the ATC system, has the primary responsibility for avoiding mid-air collisions.*

WARNING : Priority must be granted to increasing airspeed when reaching stall warning even when this requires deviation from an RA command issued by the TCAS.

	LIMITATIONS TCAS	2.01.06		
		P 3	050	
				SEP 02

AA

TCAS (cont'd)

FLIGHT ENVELOPPE IN WHICH CLIMB RESOLUTION ADVISORY CAN BE ACHIEVED WITHOUT STICK PUSHER / SHAKER ACTIVATION						
FLIGHT REGIME	WEIGHT ALTITUDE TEMP.	POWER	FLAPS	GEAR	AIRSPEED	
					INITIAL	MIN.
Take off	FAR25/JAR25 Climb limit	Take off	15	Up	V2 + 20	1.13 Vs1g
Approach	FAR25/JAR25 Climb limit	Spin up to go around power during maneuver from power for level flight	15	UP	1.51 Vs1g	1.13 Vs1g
Landing Transitioning to go around at RA	FAR25/JAR25 Climb limit	Spin up to go around power during maneuver from power required for 3° Glide Slope	Transition from 30 to 15	DN to Up	VAPP+10	1.13 Vs1g
Enroute	Critical Wt/Alt giving 1.3G to buffet onset	Power for level flight increase to Max Continuous	Up	Up	Long Range Cruise	Higher of 1.13 Vs1g if defined or buffet onset

Temperature range up to ISA + 27°

	- Enroute	0	25000 ft
Altitude range	- Take off	0	6000 ft
	- Approach and landing	0	7000 ft

Wings Level Assumed

	LIMITATIONS TCAS	2.01.06		
		P 4	050	
				SEP 02

AA

TCAS (cont'd)

8- Inhibition schemes

8.1- Non icing conditions

CONFIGURATION	RA CLIMB	RA INCREASE CLIMB
FLAPS 0	AUTHORIZED	AUTHORIZED
FLAPS 15 TO	AUTHORIZED	INHIBITED
FLAPS 15 APPROACH	AUTHORIZED	AUTHORIZED
FLAPS 30	AUTHORIZED	INHIBITED

8.1- Icing conditions

CONFIGURATION	RA CLIMB	RA INCREASE CLIMB
FLAPS 0 Z < 18000 ft	AUTHORIZED	INHIBITED
FLAPS 0 Z > 18000 ft	INHIBITED	INHIBITED
FLAPS 15 TO	AUTHORIZED	INHIBITED
FLAPS 15 APPROACH	AUTHORIZED	INHIBITED
FLAPS 30	INHIBITED	INHIBITED

NOTE 1 : Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with a TCAS resolution advisory.

NOTE 2 : Maneuvers based solely on information displayed on the traffic display are not authorized.

	LIMITATIONS TCAS	2.01.06		
		P 5	080	
				SEP 02

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TCAS (cont'd)

NORMAL PROCEDURES

The normal procedures in Part 2.03 are applicable.

EMERGENCY PROCEDURES

The emergency procedures in Part 2.04 are applicable.

PROCEDURES FOLLOWING FAILURES

The procedures following failures in Part 2.05 are applicable with the addition of the following:

The TCAS must be turned **TA ONLY** in the following cases:

- Engine out operations
- Stick pusher/shaker failure
- Flight with landing gear down

The TCAS must be turned **STBY** in the following cases:

- ATC request
- LOSS OF RADIO ALTIMETER INFORMATION
- Errors or differences between independant air data sources

PERFORMANCES

The performances in Part 3 are applicable.

	LIMITATIONS GLOBAL POSITIONING SYSTEM GPS	2.01.07		
		P 1	270	
				JUL 00

AA

GPS

1 - GENERAL

The Honeywell/Trimble GNSS 1000 :

- complies with TSO C 129 and TSO C 115A,
- is installed in compliance with FAA AC 20-129, AC 20-130A, AC 20-138 and DGAC CRI S-9902,
- has been demonstrated to meet the requirements of JAA TGL n°2, REV1 and FAA AC 20-138 and FAA Notice N8110-60.

2 - LIMITATIONS

Compliance with the above regulations does not constitute an operational approval/authorization to conduct operations. Aircraft operators must apply to their Authority for such an approval/ authorization.

- The HT 1000 pilot's guide must be available on board.
 - The system must operate with HT 1000-060 software version or any later approved version.
 - The system must be used with an updated active data base and the waypoints position must be cross-checked with official charts.
 - This equipment is approved for use as :
 - primary navigation means for oceanic and remote operations when only one long range navigation system is required.
 - supplemental navigation means, en route, in terminal area and for non precision approach operations until the missed approach point with respect of the MDA.
- NOTE** : Stand alone GPS approach is not approved. Conventional means must be permanently cross-checked during the approach.
- advisory VNAV means.
- NOTE** : VDEV function must be permanently monitored.

3 - PROCEDURES

- If the event of DGR alarm illumination the flight crew must cross-check the aircraft position using conventional means or must revert to an alternative means of navigation.
- In addition, where the coupled DME option is not installed or if the coupled DME is not operative, the following procedures apply for B-RNAV operations :
 - (a) during the pre-flight planning phase, the availability of GPS integrity (RAIM) must be confirmed for the intended flight (route and time). Dispatch must not be made in the event of predicted continuous loss of RAIM of more than 5 minutes for any part of the intended flight.
 - (b) Traditional navigation equipment must be selected to available aids so as to allow immediate cross-checking or reversion in the event of loss of GPS navigation capability.

	LIMITATIONS CABIN LIGHTING	2.01.08		
		P 1	100	
				SEP 04

AA

The general cabin illumination system must be used during not less than 15 minutes before each flight.

	LIMITATIONS EGPWS	2.01.09		
		P 1	080	
				SEP 05

AA

EGPWS

- 1 - Navigation is not to be predicated on the use of the terrain display.

Note :The Terrain Display is intended to serve as a situational awareness tool only. It does not have the integrity, accuracy or fidelity on which to solely base decisions for terrain or obstacle avoidance.

- 2 - To avoid giving nuisance alerts, the predictive TAWS functions must be inhibited when landing at an airport that is not included in the airport database.

	LIMITATIONS COCKPIT DOOR SECURITY SYSTEM	2.01.10		
		P 1	200	
				SEP 04

AA

COCKPIT DOOR OPERATION : NORMAL PROCEDURES

This procedure should be applied, if local authorities require that the cockpit door remain closed throughout the entire flight

Before Pushback or engine start

COCKPIT DOOR LOCKING SYSTEM SW ON

COCKPIT DOOR CLOSED CHECK

With the cockpit door toggle switch at CLOSE, the cockpit door is closed and locked.

After Engine Start

■ If routine access is requested from the cabin :

The buzzer sounds in the cockpit for at least 2 seconds

Prior to unlocking the door, the flight crew should identify the person requesting entry

■ If entry is not authorized by the flight crew :

DOOR TOGGLE SW DENY

Emergency access, the buzzer, and the Door Call Panel are inhibited for 3 minutes

■ If entry is authorized by the flight crew :

DOOR TOGGLE SW OPEN

The flight crew should pull the switch and maintain it in the OPEN position, until the cabin crew pulls the door open.

Note : If the flight crew does not take any action after the routine cabin request, the cabin crew will be able to open the door by using the emergency access procedure.

■ If the emergency access is initiated from the cabin :

The buzzer sounds continuously in the cockpit for 30 seconds, and the OPEN light flashes on the central pedestal's cockpit Door Control Panel.

Note : If the flight crew does not take any action, the door will unlock after 30 seconds.

■ If entry is not authorized by the flight crew :

DOOR TOGGLE SW DENY

Emergency access, the buzzer, and the Door Call Panel are inhibited for 3 minutes. When the situation in the cockpit permits, the flight crew should identify the person requesting entry prior to unlocking the door.

■ If entry is authorized by the flight crew :

DOOR TOGGLE SW OPEN

The flight crew should pull the switch and maintain it in the OPEN position, until the cabin crew pulls the door open.

Before leaving the aircraft

COCKPIT DOOR LOCKING SYSTEM SW OFF

FAULT LIGHT on Door Control Panel CHECK

	LIMITATIONS COCKPIT DOOR SECURITY SYSTEM	2.01.10		
		P 2	200	
				SEP 04

AA

COCKPIT DOOR OPERATION : NORMAL PROCEDURES (cont'd)

Daily Check

- COCKPIT DOOR LOCKING SYSTEM SW ON

On the DOOR CALL PANEL

- EMER PB PUSH

- Check OPEN LIGHT flashes

In the cockpit :

- Check buzzer

- Check OPEN LIGHT flashes

■ If correct :

In the cockpit :

- TOGGLE SW on COCKPIT DOOR CONTROL PANEL DENY

- Check buzzer stops

- Check OPEN LIGHT extinguishes

On the DOOR CALL PANEL

- Check OPEN LIGHT extinguishes and DENIED LIGHT illuminates

■ If correct :

- TOGGLE SW OPEN

- COCKPIT DOOR LOCKING SYSTEM SW OFF

- FUNCTIONAL CHECK OF THE MANUAL LOCK BOLT(S)

	LIMITATIONS COCKPIT DOOR SECURITY SYSTEM	2.01.10		
		P 3	200	
				SEP 04

AA

COCKPIT DOOR OPERATION : EMERGENCY PROCEDURES

Electrical Power Lost

- Move the manual lock bolts to CLOSE position
- Note: *when the door is locked with the manual bolts, the emergency access to the cockpit is unavailable. It is recommended that at least two crew members remain in the cockpit during that time.*

Cockpit Door Jammed

- R • **When cockpit exit required**
- R - Remove the inspection seals from the two latches of the door left panel (facing
- R the door)
- R - Cockpit Door Locking System OFF
- R - Actuate the two corresponding latches as per placards
- R - Disconnect the electrical plug from the top of the door
- R - Push and remove corresponding door panel

COCKPIT DOOR OPERATION : PROCEDURES FOLLOWING FAILURES

Cockpit Door Control Panel FAULT LIGHT illuminates

- Move the manual lock bolts to CLOSE position
- Note: *when the door is locked with the manual bolts, the emergency access to the cockpit is unavailable. It is recommended that at least two crew members remain in the cockpit during that time.*

DC ESS BUS Lost

- Apply **Cockpit Door Control Panel FAULT LIGHT illuminates** procedure
- Note: *Cockpit Door Control Panel FAULT LIGHT is inoperative.*

	LIMITATIONS COCKPIT DOOR SECURITY SYSTEM	2.01.10		
		P 4	200	
				SEP 04

AA

COCKPIT DOOR OPERATION : OPENING THE COCKPIT DOOR FROM THE CABIN

CABIN CREW ROUTINE ACCESS REQUEST on the Door Call Panel

CABIN CREW PRESS CALL PB

CABIN CREW STAND IN COCKPIT DOOR AXIS

The cabin crew should stand in the axis of the cockpit door.

A buzzer sounds in the cockpit.

■ If entry is not authorized by the flight crew :

The flight crew denies the entry request via the DOOR TOGGLE SW.

The Door Call Panel red light comes ON steady, and indicates that the door is locked.

Emergency access, the buzzer, and the Door Call Panel are inhibited for 3 minutes.

■ If entry is authorized by the flight crew :

The flight crew unlocks the door via the DOOR TOGGLE SW.

The Door Call Panel green light comes ON steady, and indicates that the door is unlocked.

CABIN CREW PULL the DOOR RIGHT PANEL to OPEN

CABIN CREW UNLOCK the LEFT PANEL and PULL to OPEN

The door left panel is unlocked by moving the handle located in the cockpit side on the door left panel

■ If there is no reaction from the flight crew :

CABIN CREW SECOND ACCESS REQUEST REQUEST on the Door Call Panel

Repeat the above procedure.

■ If there is no reaction from the flight crew after a second request :

CABIN CREW CALL THE COCKPIT

To establish contact with the flight crew and request access to the cockpit.

■ If there is no reaction from the flight crew after a cabin crew interphone call :

CABIN CREW PRESS THE EMERGENCY PB

Rotate the protecting plate and press the EMER PB. A buzzer sounds continuously in the cockpit for 30 seconds, and the green light flashes on the Door Call Panel. After 30 seconds, the green light comes ON steady and the cabin crew can then pull the door right panel to open and the buzzer stops.

This indicates that the door is unlocked for 10 seconds.

CABIN CREW PULL the DOOR RIGHT PANEL to OPEN

CABIN CREW UNLOCK the LEFT PANEL and PULL to OPEN

The door left panel is unlocked by moving the handle located in the cockpit side on the door left panel

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2 . 01 . 01 – INTRODUCTION

Observance of the limitations contained in this chapter is required by law. When operating in accordance with an approved appendix or supplement to this manual, the limitations of this basic Airplane Flight Manual section apply, except as altered by such an appendix or supplement.

2 . 01 . 02 – KINDS OF OPERATION

The airplane is certified in the Transport Category, JAR 25 and ICAO annex 16 for day and night operations, in the following conditions when the appropriate equipment and instruments required by the airworthiness and operating regulations are approved, installed and in an operable condition :

- VFR and IFR
- Flight in icing conditions.
- Reverse thrust taxi (single or twin engine)

2 . 01 . 03 – MINIMUM FLIGHT CREW

2 pilots

2 . 01 . 04 – PERFORMANCE CONFIGURATION

Refer to 6.01.03 for airplane configuration associated with certified performances.

2 . 01 . 05 – MAXIMUM OPERATING ALTITUDE

25000 ft

2 . 01 . 06 – MANEUVERING LIMIT LOAD FACTORS

Gear and flaps retracted : + 2.5 to – 1 g
Gear and/or flaps extended : + 2 to 0 g

2 . 01 . 07 – CONFIGURATION DEVIATION LIST

Refer to 7.01.02

2 . 01 . 08 – NOISE CHARACTERISTICS

The aircraft meets the requirements of ICAO annex 16, Chapter 3 with no weight restriction.
Refer to noise characteristics in Appendix 7.01.01 of this manual for noise levels.

2 . 01 . 09 – MAXIMUM NUMBER OF PASSENGER SEATS

74 as limited by emergency exits configuration.

Mod : –	Eng : –	Model : 212 A
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AFM

LIMITATIONS

WEIGHT AND LOADING

2-02

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2.02.01 – WEIGHTS

STRUCTURAL LIMITATIONS

MAXIMUM WEIGHT	KG	LB
RAMP	22180	48898
TAKE-OFF	22000	48501
LANDING	21850	48170
ZERO FUEL	20000	44092

PERFORMANCE LIMITATIONS

Maximum take-off weight and maximum landing weight may be reduced by performance requirements related to the following (see chapter 6) :

- climb performance (first and second segment, final take-off and en route, approach and landing climb)
- available runway length (take-off and landing)
- tyre limit speed
- brake energy limit, observe BRK TEMP light extinguished for take-off
- obstacle clearance (take-off and en route)
- en route and landing weight

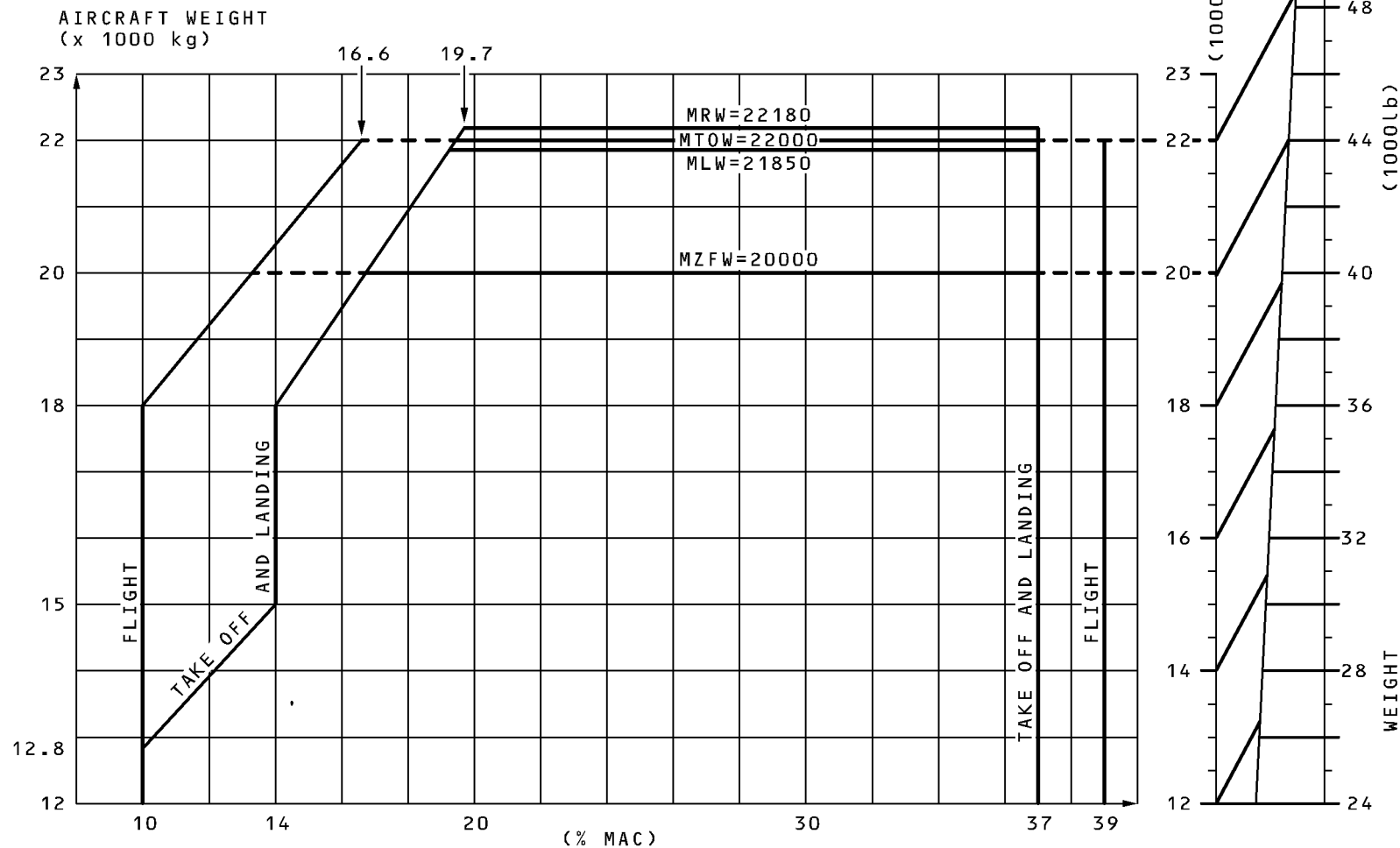
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Eng : –

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2.02.02 – CENTER OF GRAVITY ENVELOPE

For definition of reference (Mean Aerodynamic Chord (MAC) and moments origin) : see chapter 1



2.02.03 – LOADING

The airplane must be loaded in accordance with the loading instructions given in the WEIGHT AND BALANCE manual.



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LIMITATIONSAIRSPEED AND OPERATIONAL
PARAMETERS**2_03**

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AUG 02**2 . 03 . 01 – AIRSPEEDS**

• MAXIMUM OPERATING SPEED VMO / MMO

This limit must not be intentionally exceeded in any flight regime.

VMO = 250 kt CAS MMO = 0.55

• MAXIMUM DESIGN MANEUVERING SPEED VA

Full application of roll and yaw controls, as well as maneuvers that involve angles of attack near the stall should be confined to speeds below VA.

VA = 175 kt CAS

CAUTION : Rapidly alternating large rudder applications in combination with large sideslip angles may result in structural failure at any speed.

• MAXIMUM FLAPS EXTENDED OR OPERATING SPEEDS VFE

FLAPS 15 185 kt CAS

FLAPS 30 150 kt CAS

• MAXIMUM LANDING GEAR EXTENDED OR OPERATING SPEEDS

VLE = 185 kt CAS

VLO lowering = 170 kt CAS

retracting = 160 kt CAS

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LIMITATIONSAIRSPEED AND OPERATIONAL
PARAMETERS**2_03**

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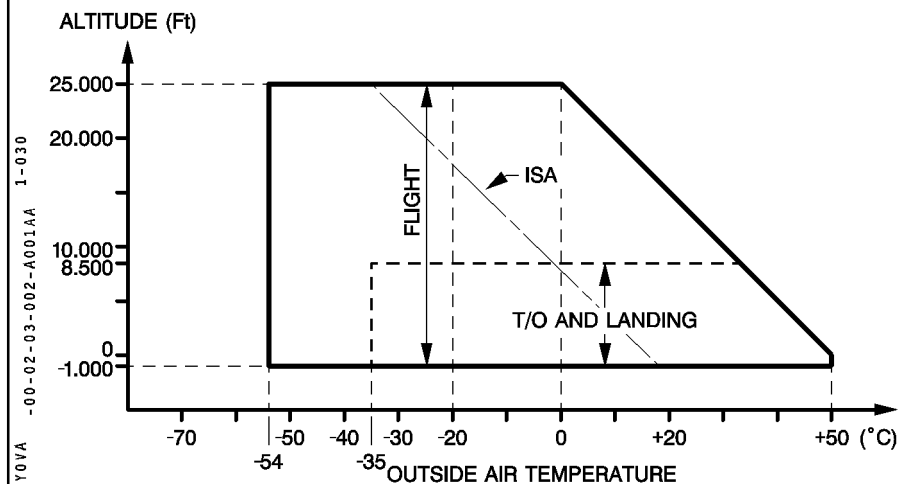
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2 . 03 . 02 – OPERATIONAL PARAMETERS

ENVIRONMENTAL ENVELOPE



Note : Refer to 2.04.05 for fuel temperature limitation.

TAKE-OFF AND LANDING

- Tail wind limit : 10 kt
- Maximum mean runway slope : $\pm 2 \%$

Mod : –

Eng : –

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							PAGE : 1	001
							DGAC APPROVED	FEB 01
2.04.01 – ENGINES PRATT AND WHITNEY OF CANADA PW 127F Operating limits with no unscheduled maintenance action required Beyond these limits refer to maintenance manual								
OPERATING CONDITION	TIME LIMIT	TQ (%)	ITT (°C)	NH (%)	NL (%)	NP (%)	OIL PRESS (PSI)	OIL TEMP (°C) (2)
RESERVE TAKE OFF	10 mn (6)	100 (1)	800	103.2	104.2	101	55 to 65	0 to 125
NORMAL TAKE OFF	5 mn	90 (1)	(5)	101.9	101.4	101	55 to 65	0 to 125
MAXIMUM CONTINUOUS	none (6)	90.9 (1)	800	103.2	104.2	101	55 to 65	0 to 125
GROUND IDLE				66 mini			40 mini (4)	– 40 to 125
HOTEL MODE			715				55 to 65	125
TRANSIENT	20 s	120	840	106.4	106.8	106(3)	40 to 100	
	5 s					120		
	20 mn							140
STARTING	5 s		950					–54 mini
1) Value linked to 100 % NP. 2) Oil temperature must be maintained above 45° C to ensure protection for the engine air inlet against ice accumulation. 3) Permissible for completion of flight provided TQ does not exceed 75.2 % during climb and 73.13 % during cruise. 4) Up to 75 % NH only. 5) ITT limits depend on outside air temperature. Refer to 2.04 page 2. 6) Single engine operation only, beyond 5 mn. NOTE : Flight with an engine running and the propeller feathered is not permitted.								
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LIMITATIONS

POWER PLANT

2_04

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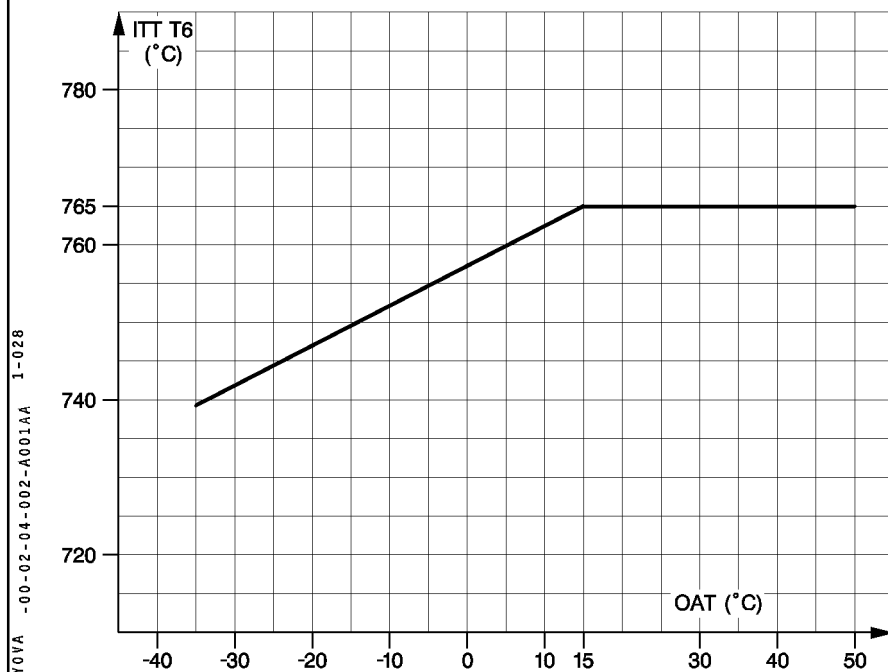
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TAKE OFF

ITT LIMITATION AT NORMAL TAKE OFF RATING



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Eng : -

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 <u>2 . 04 . 02 – PROPELLERS</u> TWO HAMILTON STANDARD HS 568 F – 1 <u>GROUND OPERATION</u> ■ Engine run up must be performed into the wind. ■ Avoid static operation between 41.6 % and 62.5 % NP. ■ Avoid operation in feather above 66.6 % TQ. <u>GROUND OR FLIGHT OPERATION</u> ■ If a propeller is involved in an overspeed or in an engine overtorque refer to the propeller maintenance manual. <u>FLIGHT OPERATION</u> ■ ATR airplanes are protected against a positioning of power levers below the flight idle stop in flight by an IDLE GATE device. It is reminded that any attempt to override this protection is prohibited. Such positioning may lead to loss of airplane control or may result in an engine overspeed condition and consequent loss of engine power.			
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LIMITATIONS

POWER PLANT

2 - 04

PAGE : 4

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EASA
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FEB 05**2 . 04 . 03 - OIL SYSTEM**

SPECIFICATION

Refer to specification PWA 521 type II.

2 . 04 . 04 - STARTER

3 starts with a 1 minute 30 seconds maximum combined starter running time followed by 4 minutes OFF.

2 . 04 . 05 - FUEL SYSTEM

Acceptable fuels : Jet A, Jet A1 and JP5.

Use of JP4 and Jet B is prohibited.

TEMPERATURE

- For flight preparation, a minimum fuel temperature must be taken into account to ensure adequate relight :
 - 34°C for fuel types JET A and JET A1,
 - 26°C for fuel type JP5.
- Maximum temperature :
 - 57°C for fuel types JET A, JET A1 and JP5.

REFUELING

Maximum pressure 3.5 bars (50 PSI)

USABLE FUEL

The total quantity of fuel usable in each tank is : 2500 kg (5510 lbs)

NOTE : Fuel remaining in the tanks when quantity indicators show zero is not usable in flight.

UNBALANCE

Maximum fuel unbalance : 730 kg (1609 lbs)

FEEDING

- Each electrical pump is able to supply one engine in the whole flight envelope.
- One jet pump is able to supply both engines in the whole flight envelope.
- One electrical pump and associated jet pump are able to supply both engines in the whole flight envelope.

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 AFM	LIMITATIONS SYSTEMS	2_05	
		PAGE : 1	001
		DGAC APPROVED	FEB 04
<u>2 . 05 . 01 – AIR PRESSURIZATION</u>			
Maximum differential pressure 6.35 PSI			
Maximum negative differential pressure – 0.5 PSI			
Maximum differential pressure for landing 0.35 PSI			
Maximum differential pressure for OVBD VALVE full open selection 1 PSI			
Maximum altitude for one bleed off operation 20000 ft			
<u>2 . 05 . 02 – HYDRAULIC SYSTEM</u>			
Specification : Hyjet IV or Skydrol LD 4			
<u>2 . 05 . 03 – LANDING GEAR</u>			
Towing with TOWBARLESS system is prohibited.			
Do not perform pivoting (sharp turns) upon a landing gear with fully braked wheels except in case of emergency.			
<u>2 . 05 . 04 – FLAPS</u>			
Holding with any flaps extended is prohibited in icing conditions (except for single engine operations).			
<u>2 . 05 . 05 – AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)</u>			
– Minimum height for autopilot engagement on take off : 100 ft			
– NAV mode for VOR approach, using either autopilot or flight director is authorized only if :			
– a co-located DME is available, and			
– DME HOLD is not selected			
– Minimum height for use of either autopilot or flight director :			
– Except during take off or executing an approach : 1000 ft			
– VS or IAS mode during approach : 160 ft			
– CAT 1 APP mode : 160 ft			
Refer to 7.01.03 for CAT II operation			
<u>2 . 05 . 06 – INSTRUMENTS MARKING</u>			
Red arc or radial line : minimum and maximum limits			
Yellow arc : caution area			
Green arc : normal area			
<u>2 . 05 . 07 – CARGO DOOR OPERATION</u>			
Do not operate cargo door with a lateral wind component of more than 45 kt.			
<u>2 . 05 . 08 – ELECTRICAL</u>			
Single DC GEN operation :			
– In flight, if OAT exceeds ISA + 25, flight level must be limited to FL200.			
<u>2 . 05 . 09 – MFC</u>			
Take off with two or more failed MFC modules is prohibited			
<u>2 . 05 . 10 – COMMUNICATIONS</u>			
Not applicable			
Model : 212 A			

 AFM	LIMITATIONS SYSTEMS	2_05	
		PAGE : 2	100
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<u>2 . 05 . 11 – TCAS</u> Refer to appendix 7.01.04			
Mod : 3832		Model : 212 A	

 AFM	LIMITATIONS SYSTEMS	2_05	
		PAGE : 3	360
		DGAC APPROVED	FEB 01
<u>2 . 05 . 12 – GPS</u>			
1 – GENERAL			
The Honeywell/Trimble GNSS 1000 :			
- complies with TSO C 129 and TSO C115B, - is installed in compliance with FAA AC 20–129, AC 20–130A, AC 20–138 and DGAC CRI S–9902, - has been demonstrated to meet the requirements of JAA TGL n°2,REV1 and FAA AC 20–138 and FAA Notice N8110–60.			
2 – LIMITATIONS			
Compliance with the above regulations does not constitute an operational approval/authorization to conduct operations. Aircraft operators must apply to their Authority for such an approval/authorization.			
- The HT1000 pilot's guide must be available on board. - The system must operate with HT 1000–060 software version or any later approved version. - The system must be used with an updated active data base and the waypoints position must be cross–checked with official charts. - This equipment is approved for use as : - primary navigation means for oceanic and remote operations when only one long range navigation system is required. - supplemental navigation means, en route, in terminal area and for non precision approach operations until the missed approach point with respect of the MDA.			
<u>NOTE</u> : Stand alone GPS approach is not approved. Conventional means must be permanently cross–checked during the approach.			
- advisory VNAV means			
<u>NOTE</u> : VDEV function must be permanently monitored.			
3 – PROCEDURES			
- In the event of DGR alarm illumination the flight crew must cross–check the aircraft position using conventional means or must revert to an alternative means of navigation. - In addition, where the coupled DME option is not installed or if the coupled DME is not operative, the following procedures apply for B–RNAV operations : (a) during the pre–flight planning phase, the availability of GPS integrity (RAIM) must be confirmed for the intended flight (route and time). Dispatch must not be made in the event of predicted continuous loss of RAIM of more than 5 minutes for any part of the intended flight. (b) Traditional navigation equipment must be selected to available aids so as to allow immediate cross–checking or reversion in the event of loss of GPS navigation capability.			
Mod : 5176		Model : 212 A	

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 ATR 72 A AFM	LIMITATIONS SYSTEMS	2_05	
		PAGE : 4	100
		DGAC APPROVED	FEB 99
<u>2 . 05 . 13 – CABIN LIGHTING</u> The general cabin illumination system must be used during not less than 15 minutes before each flight.			
Mod : 5040		Model : 212 A	

	LIMITATIONS SYSTEMS	2_05	
		PAGE : 5	100
		DGAC APPROVED	FEB 05
<u>2.05.14 – EGPWS</u>			
1. Navigation is not to be predicated on the use of the terrain display. <u>Note</u> : The Terrain display is intended to serve as a situational awareness tool only. It does not have the integrity, accuracy or fidelity on which to solely base decisions for terrain or obstacle avoidance. 2.To avoid giving nuisance alerts, the predictive TAWS functions must be inhibited when landing at an airport that is not included in the airport database.			
Mod : 5313 or 5467			
Model : 212 A			

FEB 03



AFM

LIMITATIONS

ICING CONDITIONS

2_06

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2 . 06 . 01 – ICING CONDITIONS**• Atmospheric icing conditions exist when**

- OAT on the ground and for take-off is at or below 5°C or when TAT in flight is at or below 7°C,
- and visible moisture in any form is present (such as clouds, fog with visibility of less than one mile, rain, snow, sleet and ice crystals).

• Ground icing conditions exist when

- OAT on the ground is at or below 5°C,
- and surface snow, standing water or slush is present on the ramps taxiways and runways.

Take-off is prohibited when frost, snow or ice is adhering to the wings, control surfaces or propellers.

- Operation in atmospheric icing conditions :

NP setting below 82 % is prohibited.

Refer to 3.04.01 for associated procedures and 6.06.02 for performance data.

All icing detection lights must be operative prior to flight at night.

NOTE : This supersedes any relief provided by the Master Minimum Equipment List (MMEL).

The ice detector must be operative.

- Operation in ground icing conditions :

Refer to 3.04.01 for associated procedures and to FCOM part 3 and to AFM section 7.03 for advisory information on contaminated runways penalties.

.../...

Model : 212 A

 AFM	LIMITATIONS ICING CONDITIONS	2_06	
		PAGE : 2	001
		DGAC APPROVED	FEB 04
<u>2 . 06 . 01 – ICING CONDITIONS (cont'd)</u>			
- Severe icing :			
<u>WARNING :</u>			
Severe icing may result from environmental conditions outside of those for which the airplane is certificated. Flight in freezing rain, freezing drizzle, or mixed icing conditions (supercooled liquid water and ice crystals) may result in ice build-up on protected surfaces exceeding the capability of the ice protection system, or may result in ice forming aft of the protected surfaces. This ice may not be shed using the ice protection systems, and may seriously degrade the performance and controllability of the airplane.			
– During flight, severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following :			
Visual cue identifying severe icing is characterized by ice covering all or a substantial part of the unheated portion of either side window,			
and / or			
Unexpected decrease in speed or rate of climb,			
and / or			
The following secondary indications :			
. Water splashing and streaming on the windshield			
. Unusually extensive ice accreted on the airframe in areas not normally observed to collect ice.			
. Accumulation of ice on the lower surface of the wing aft of the protected area.			
. Accumulation of ice on the propeller spinner farther aft than normally observed.			
The following weather conditions may be conducive to severe in-flight icing :			
. Visible rain at temperatures close to 0°C ambient air temperature (SAT)			
. Droplets that splash or splatter on impact at temperatures close to 0°C ambient air temperature (SAT)			
If one of these phenomena is observed, immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the icing conditions. Apply procedure specified in the Emergency Procedures chapter.			
– Since the autopilot may mask tactile cues that indicate adverse changes in handling characteristics, use of the autopilot is prohibited when the severe icing defined above exists, or when unusual lateral trim requirements or autopilot trim warnings are encountered while the airplane is in icing conditions.			
Model : 212 A			

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