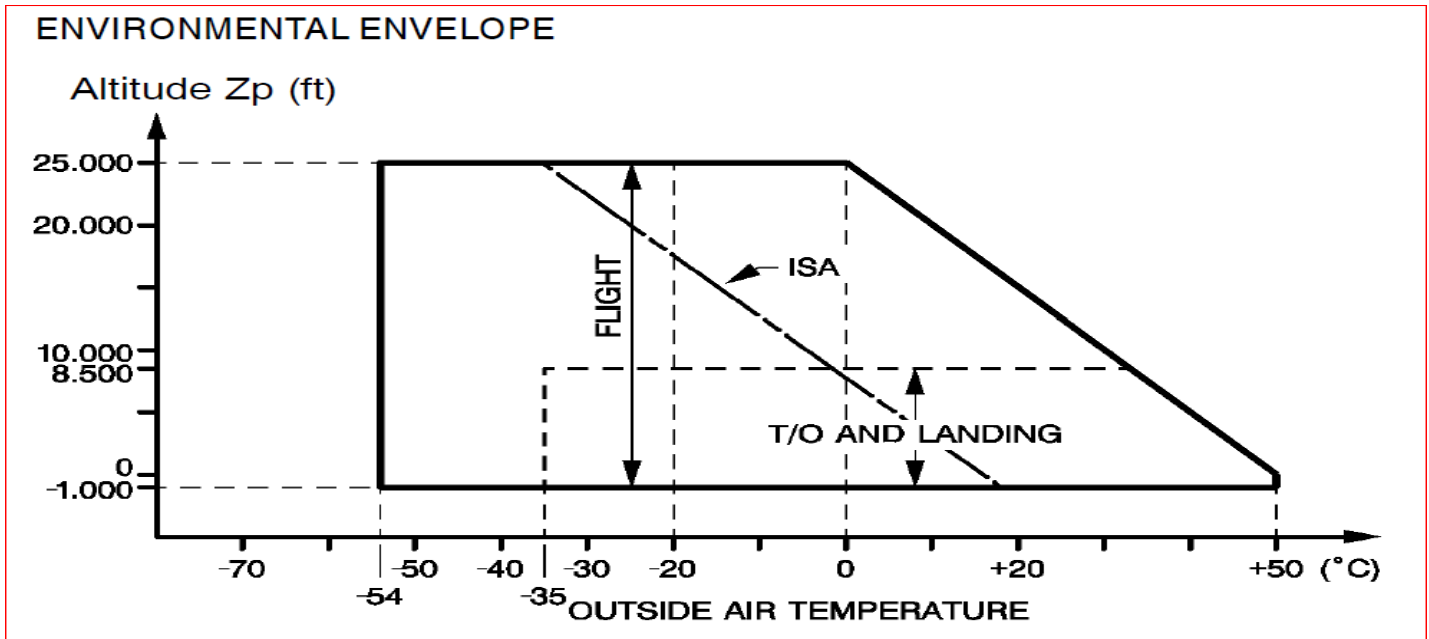


ATR LIMITATIONS

Last Updated: 13th April 2016

TheAirlinePilots.com



Takeoff and Landing 42-500

PIA SOP: Crosswind limit 30 Knots (25 kts for narrow “less than 98 ft” runways)

TAKE-OFF AND LANDING

TAIL WIND LIMIT : 15 KT

MAXIMUM MEAN RUNWAY SLOPE : ± 2 %

CROSS WIND

The maximum demonstrated cross wind is :

- Take off: 45 kt
- Landing Flaps 25°: 45 kt
- Flaps 35°: (*) 44 kt

Braking Action	TO	LDG	Maximum Crosswind (TO and LDG)
GOOD	1	1	(*) 45 kt
GOOD/MEDIUM	2	2	37 kt
MEDIUM	3 - 6	5 / 6	30 kt
MEDIUM/POOR	4	5	22 kt
POOR	7	7	15 kt

Runway status: 1: dry runway, 2:wet up to 3mm depth, 3 (TO only): slush or water from 3 to 6mm depth, 4 (TO only):slush or water from 6 to 12.7mm depth, 5: slush or water from 3 to 12.7mm depth, 6: compact snow, 7: ice

- Minimum runway width : **14 m (46 ft)**.
- Maximum crosswind for take off and landing :

Braking Action	TO	LDG	Maximum Crosswind 14m < Width < 30m
GOOD	1	1	25 kt
GOOD/MEDIUM	2	2	20 kt
MEDIUM	3-6	5 / 6	16 kt
MEDIUM/POOR	4	5	13 kt
POOR	7	7	10 kt

Runway status: 1: dry runway, 2:wet up to 3mm depth, 3 (TO only): slush or water from 3 to 6mm depth, 4 (TO only):slush or water from 6 to 12.7mm depth, 5: slush or water from 3 to 12.7mm depth, 6: compact snow, 7: ice

- The following equipments are required :
 - **both ACW generators**
 - **both main and DC auxiliary hydraulic pumps**
 - **MFC modules 1B and 2B**
 - **Nose wheel steering**

Takeoff and Landing 72-500

PIA SOP: Crosswind limit 30 Knots (25 kts for narrow “less than 98 ft” runways)

MINIMUM RUNWAY WIDTH : 30m

For narrow runways operations : refer to 3.11.10


TAKE OFF AND LANDING (CONT'D)

The maximum crosswind demonstrated is:

- Take-off: 35kt
- Landing Flaps 30°: 35kt

Braking Action	TO	LDG	Maximum Crosswind (TO and LDG)
GOOD	1	1	35 kt
GOOD/MEDIUM	2	2	28 kt
MEDIUM	3 / 6	6	22 kt
MEDIUM/POOR	4	5	16 kt
POOR	7	7	10 kt

Runway status: 1: dry runway, 2:wet up to 3mm depth, 3 (TO only): slush or water from 3 to 6mm depth, 4 (TO only):slush or water from 6 to 12.7mm depth, 5: slush or water from 3 to 12.7mm depth, 6: compact snow, 7: ice

 ATR 72 A AFM	APPENDICES APPENDIX N° 09	7- 01.09	
		PAGE : 1	110
		DGAC APPROVED	FEB 98
OPERATIONS ON NARROW RUNWAYS			

- Minimum runway width : **14 m (46 ft)**.
- Maximum crosswind for take off and landing : **25 kt**.
- The following equipments are required :
 - **both ACW generators**
 - **both main and DC auxiliary hydraulic pumps**
 - **MFC modules 1B and 2B**
 - **Nose wheel steering**

MANEUVERING LIMIT LOAD FACTORS

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

CARGO DOOR OPERATION

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

Design Weight Limitation ATR 42-500

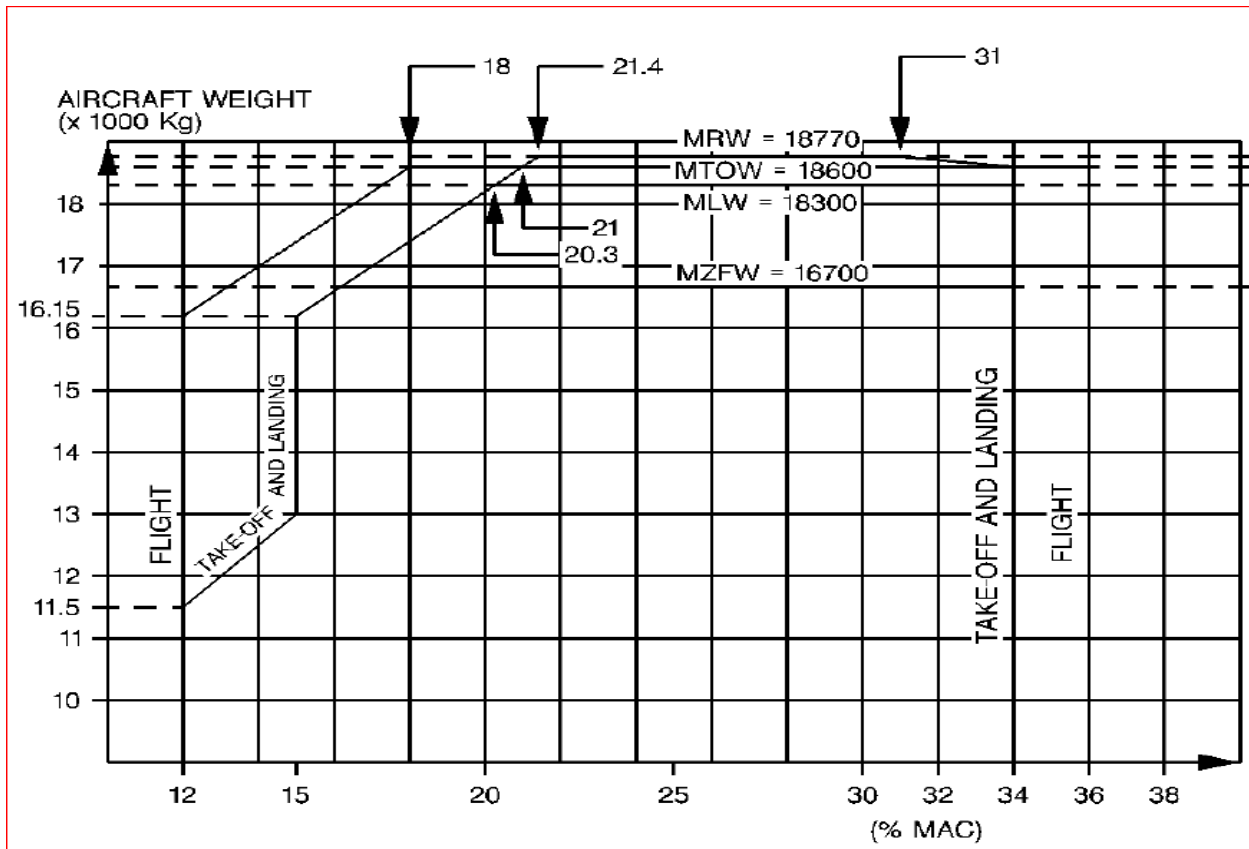
DESIGN WEIGHT LIMITATIONS

MAXIMUM WEIGHT	KG	LB
RAMP	18770	41380
TAKE-OFF	18600	41005
LANDING	18300	40344
ZERO FUEL	16700	36817

Design Weight Limitation ATR 72-500

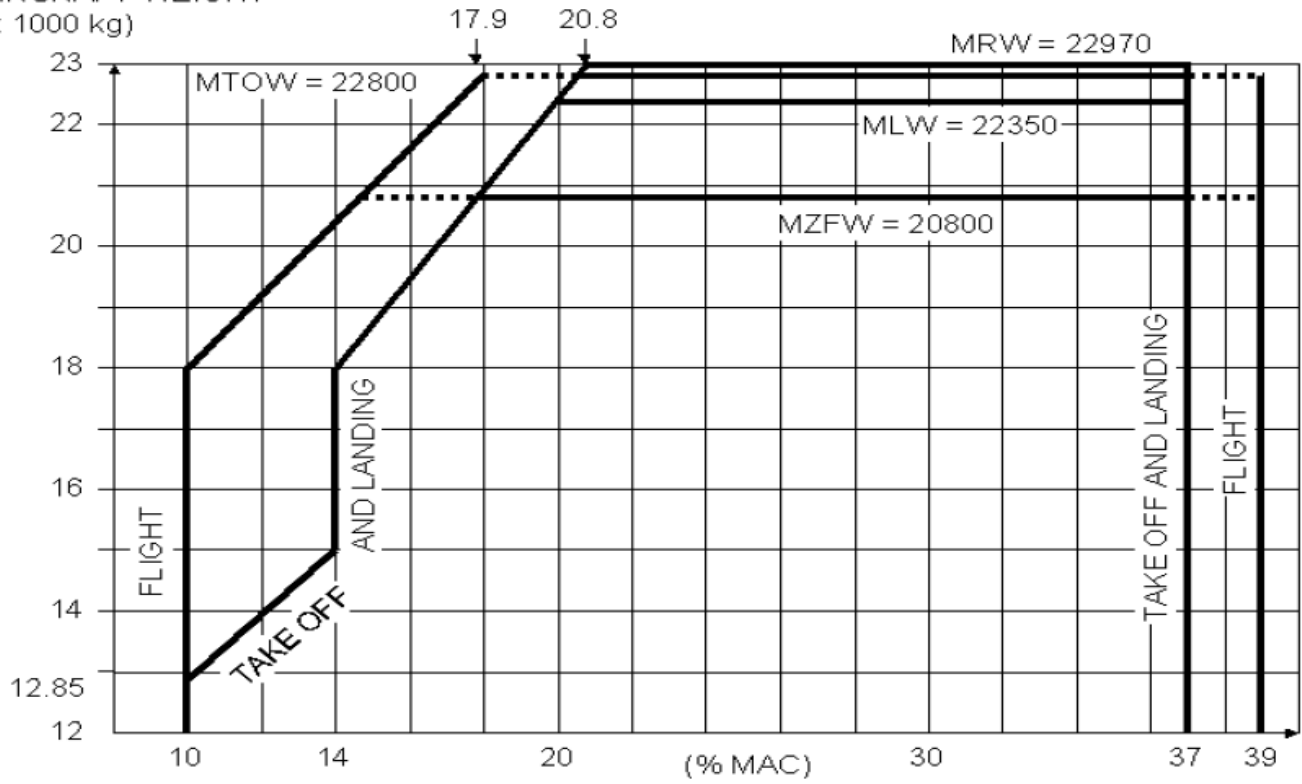
MAXIMUM WEIGHT	KG	LB
TAXI	22 970	50 640
TAKE OFF	22 800	50 265
LANDING	22 350	49 273
ZERO FUEL	20 800	45 856

CG ENVELOPE 42-500



CG ENVELOPE 72-500

AIRCRAFT WEIGHT
(x 1000 kg)



Airspeeds 42-500

AIRSPEEDS

*** MAXIMUM OPERATING SPEED**

THIS LIMIT MUST NOT BE INTENTIONALLY EXCEEDED IN ANY FLIGHT REGIME.

$V_{MO} = 250$ kt IAS

$M_{MO} = 0.55$

*** MAXIMUM DESIGN MANEUVERING SPEED**

FULL APPLICATION OF ROLL AND YAW CONTROLS AS WELL AS MANEUVERS INVOLVING ANGLES OF ATTACK NEAR THE STALL SHOULD BE CONFINED TO SPEEDS BELOW V_A .

$V_A = 160$ kt IAS

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**

$V_{FE} = V_{FO}$	FLAPS 15	180 kt
	FLAPS 25	160 kt
	FLAPS 35	150 kt

*** MAXIMUM LANDING GEAR EXTENDED OR OPERATING SPEEDS**

$V_{LE} = 180$ kt

$V_{LO\ RET} = 160$ kt

$V_{LO\ LOW} = 170$ kt

*** MAXIMUM ROUGH AIR SPEED**

$V_{RA} = 180$ kt

*** MAXIMUM WIPERS OPERATING SPEED**

$V_{WO} = 160$ kt

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

IN CASE OF GROUND SPEED OVER 165 KTt ALL TIRES TO BE REPLACED.

Airspeeds 72-500

* MAXIMUM OPERATING SPEED.

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

$$VMO = 250 \text{ kt}$$

$$MMO = 0.55$$

* MAXIMUM DESIGN MANEUVERING SPEED V_A

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

$$V_A = 175 \text{ kt}$$

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 V_{FE}

$$\text{FLAPS 15} \quad 185 \text{ kt}$$

$$\text{FLAPS 30} \quad 150 \text{ kt}$$

* MAXIMUM LANDING GEAR EXTENDED OPERATING SPEEDS

$$V_{LE} = 185 \text{ kt}$$

$$V_{LO \text{ RET}} = 160 \text{ kt}$$

$$V_{LO \text{ LOW}} = 170 \text{ kt}$$

Engine 42-500

ENGINE PARAMETERS

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⁾	100 ⁽¹⁾	800	103.2	104.2	101	55 to 65	0 to 125
GROUND IDLE				66 mini			40 mini ⁽⁴⁾	- 40 to 125
HOTEL ⁽⁷⁾ MODE			715				55 to 65	125
TRANSIENT	20 s	137.5	840	104.3	106.5	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 85 % during climb and 84 % during cruise.
- 4) Up to 75 % NH only.
- 5) ITT limits depend on outside air temperature. Refer to 2.01.04 p 3.
- 6) -RTO : Time beyond 5 mn is linked to actual single engine operations only.
-MCT rating is the max power certified for continuous use. In-flight emergencies are the only conditions for which MCT use is authorized.
- 7) A qualified person is required to use engine 2 in HOTEL mode.

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

Engine 72-500

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.

(***) - RTO: Time beyond 5 mn is linked to actual single engine operations only.
- MCT rating is the max power certified for continuous use. In-flight emergencies are the only conditions for which MCT use is authorized.

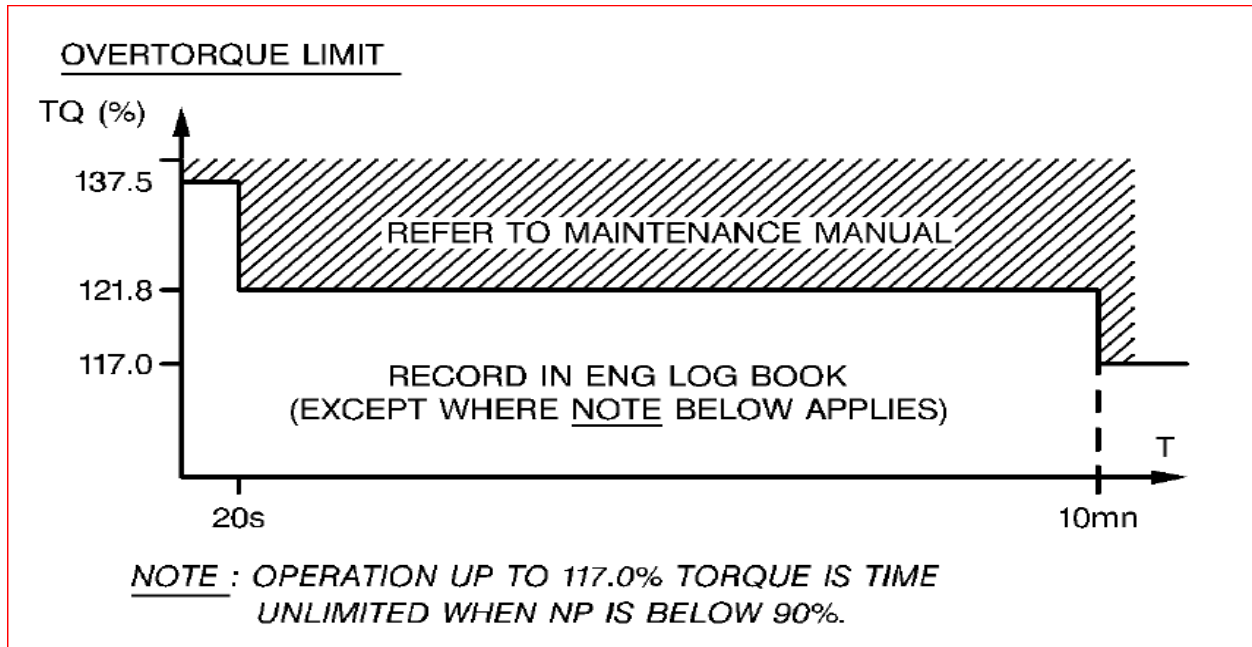
(****) Up to 75 % NH only.

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

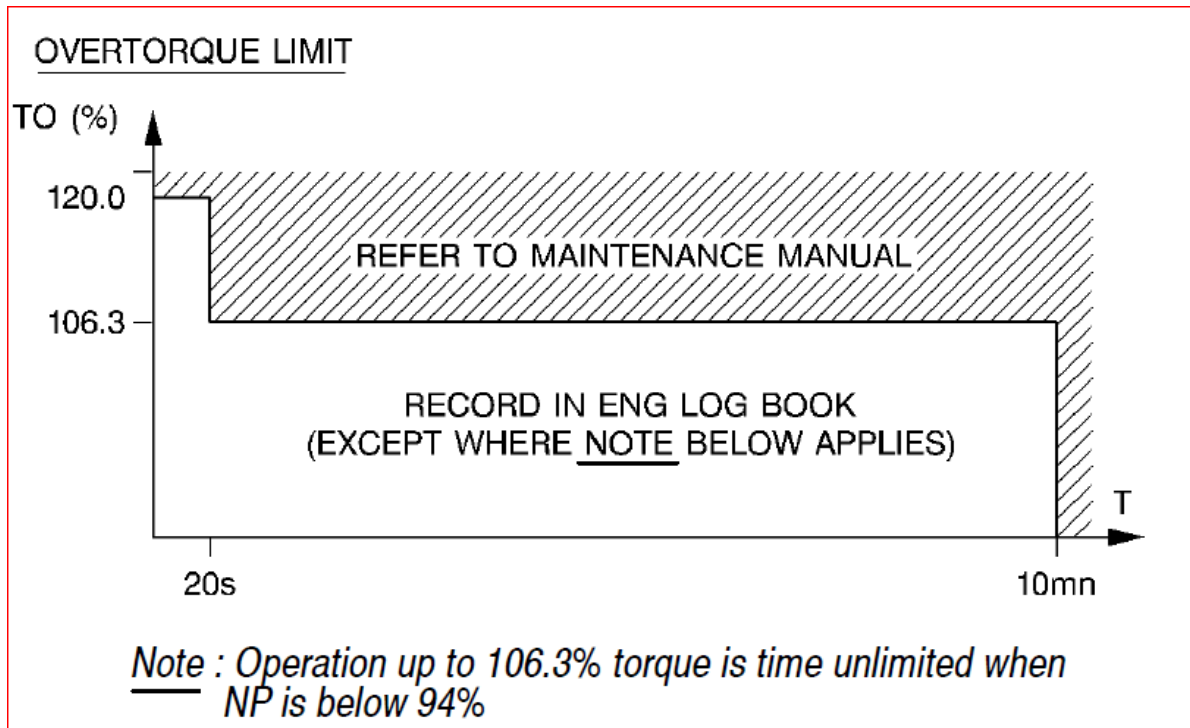
(1), (2), (3), (4) : see page 4.

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

Torque 42-500

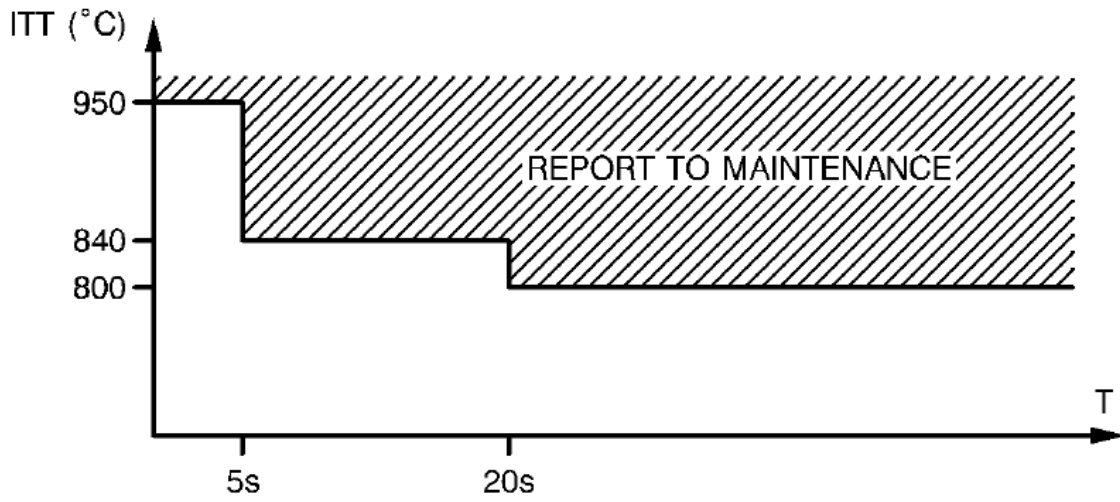


Torque 72-500

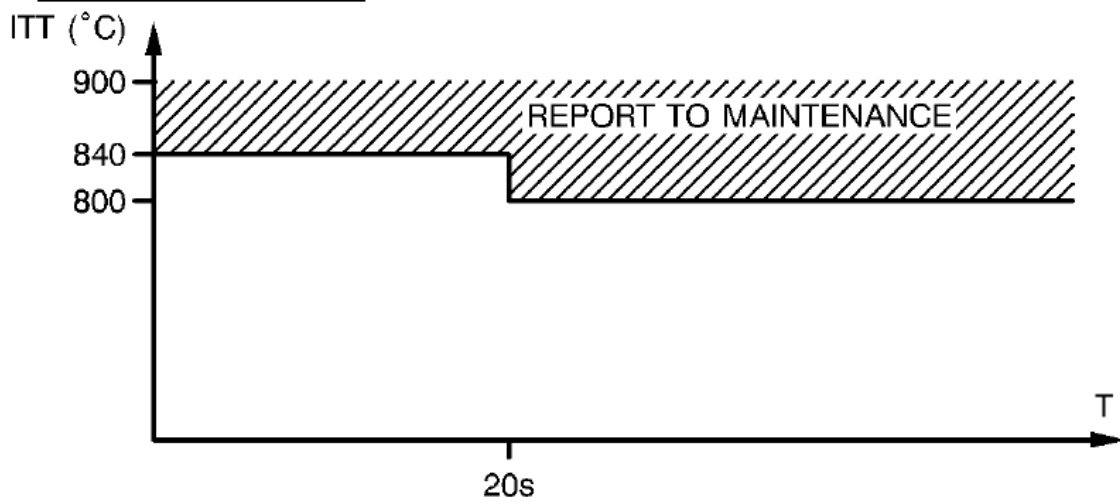


Over temp and Eng Optg for both

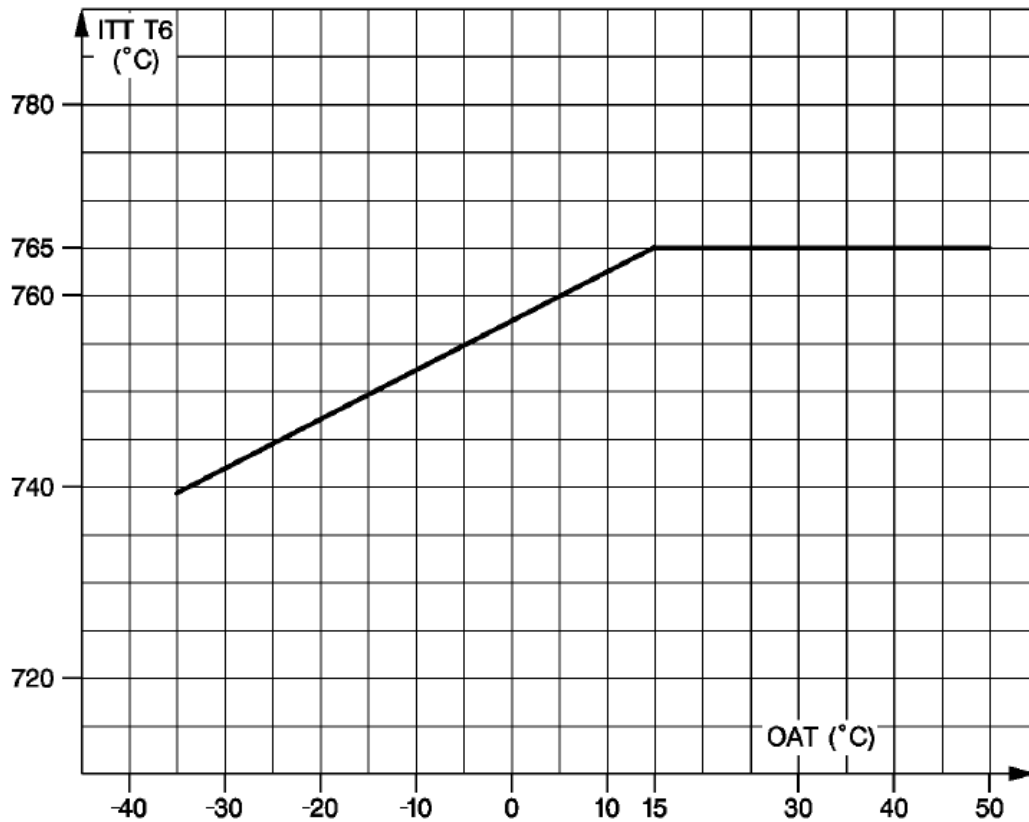
OVERTEMPERATURE LIMIT FOR STARTING



ENGINE OPERATING



ITT LIMITATION AT NORMAL TAKE OFF RATING



Prop 42-500

PROPELLERS

GROUND OPERATION

- . 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.

Prop 72-500

PROPELLERS

GROUND OPERATION

- Engine run up must be performed into the wind.
- Engine ground operations with crosswind between 5 and 20 kt should not exceed 58 % TQ.

Prop Both

IN FLIGHT OPERATION

NP below 82 % in icing conditions is prohibited.

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.

STARTER

3 STARTS WITH A 1 MINUTE 30 SECONDS MAXIMUM COMBINED STARTER RUNNING TIME, FOLLOWED BY 4 MINUTES OFF

FUEL SYSTEM

- Use of JP 4 or JET B is prohibited.
- Acceptable fuels (refer to PWC Documentation to determine equivalent approved fuels).

FUELS	FREEZING POINT (°C)	MINIMUM FUEL TEMP (°C)		MAXIMUM FUEL TEMP (°C)
		Starting	Operation	
JET A	- 40	- 34	- 38	+ 57
JET A1	- 47	- 34	- 48	+ 57
RT, TS1	- 60	- 34	- 60	+ 57
JP 5	- 46	- 26	- 33	+ 57

REFUELING

MAXIMUM PRESSURE 3.5 BARS (50 PSI)

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.

Fuel 42-500

USABLE FUEL

THE TOTAL QUANTITY OF FUEL USABLE IN EACH TANK IS : 2866 liters (2250 kg/ 4960 LB with a 0.785 kg/l factor)

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

UNBALANCE

MAXIMUM FUEL UNBALANCE : 550 KG (1212 LB)

Fuel 72-500

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)

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

LANDING GEAR

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

MFC

TAKE OFF WITH MORE THAN ONE FAILED MFC MODULE IS PROHIBITED.

FLAPS

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

ICING CONDITIONS

- 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.

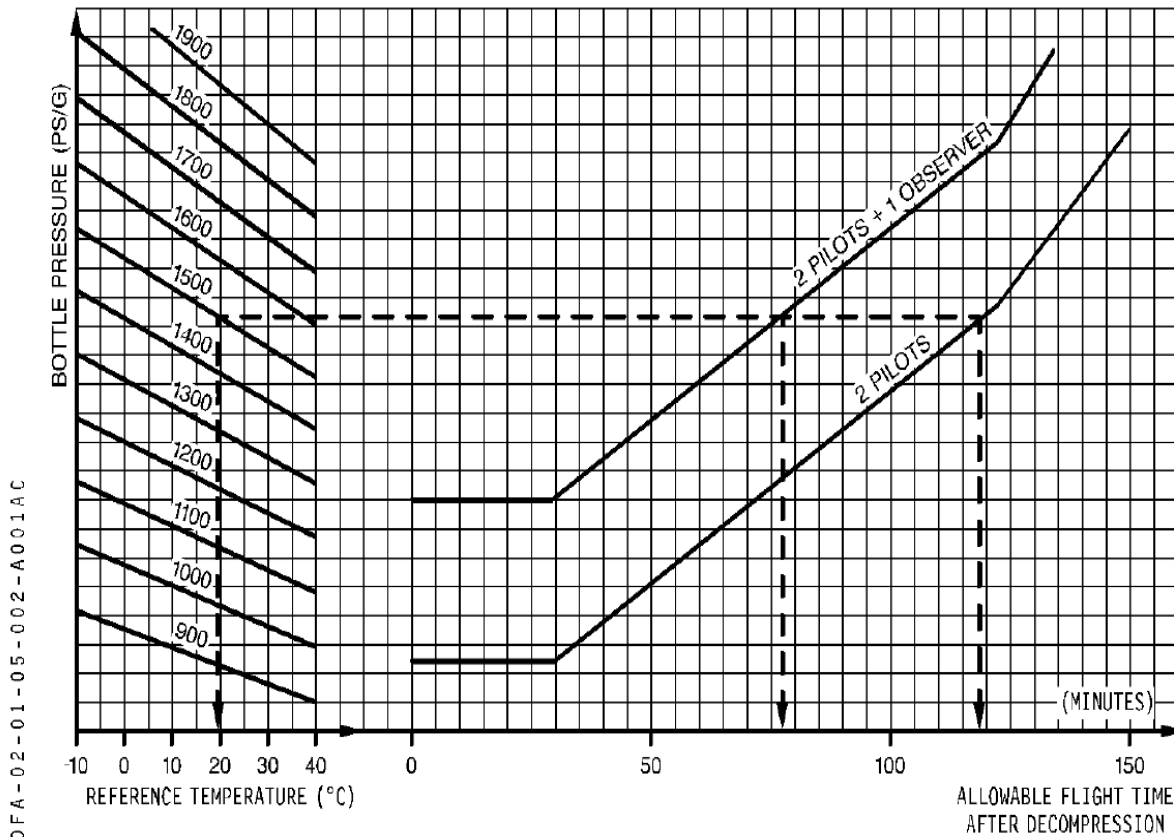
AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)

- MINIMUM HEIGHT FOR AUTOPILOT ENGAGEMENT AFTER 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

TAWS (following note mentioned in 72-500 limits only)

4.QFE operation is not permitted in conjunction with TAWS.

OXYGEN



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 whichever is higher.

Provision is made to cover :

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

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Disclaimer: "ATR Limitations" are personal notes of the undersigned for training only. These notes do not sanction any pilot to violate his/her Company's Standard Operating Procedures, Aircraft Manuals or Manufacturer's Recommendations.