

OPERATING LIMITATIONS TABLE OF CONTENTS

	PAGE
OPERATING LIMITATIONS	2-3
Certification Status	2-3
Weight Limitations	2-3
Center-of-Gravity Limits	2-3
Weight and Balance Data	2-3
Powerplant Limitations	2-5
Engine Start Limitations (Ground)	2-9
Engine Start Limitation (Air)	2-10
■ Engine Power Reduction at High Altitude	2-10
Engine Fan Inspection	2-10
Starter Cycle Limitations	2-10
Battery Limitations	2-11
Ground Operation	2-11
Windshield Ice Protection Fluid	2-11
Hydraulic Fluid	2-11
Fuel Limitations	2-11
Approved Oils	2-12
Unusable Fuel	2-13
Speed Limitations	2-13
Takeoff and Landing Operational Limits	2-13
Enroute Operational Limits	2-14
Operations Authorized	2-14
Minimum Crew	2-14
Load Factor	2-17
Cabin Pressurization Limitations	2-17
Passenger Seating	2-17
Audio Control Panel	2-17
Instrument Markings	2-18
Engine Indicating System	2-21
Rockwell Collins FCS-3000 Integrated Flight Control System	2-21
Standby Gyro Horizon	2-21
Oxygen Mask	2-22
Icing Limitations	2-22
Operations in Severe Icing Conditions	2-22
Kinds of Operations Equipment List	2-23

OPERATING LIMITATIONS

NOTICE

CERTIFICATION AND OPERATIONAL LIMITATIONS ARE CONDITIONS OF THE TYPE AND AIRWORTHINESS CERTIFICATES AND MUST BE COMPLIED WITH AT ALL TIMES AS REQUIRED BY LAW.

CERTIFICATION STATUS

This airplane is certified in accordance with FAR 23 Normal Category and FAR 36 (noise). Takeoff and Landing performance special condition certification requirements are equivalent to FAR 25.

WEIGHT LIMITATIONS

Maximum Design Ramp Weight	10,700 Pounds
Maximum Design Takeoff Weight	10,600 Pounds
Maximum Design Landing Weight	9800 Pounds
Maximum Design Zero Fuel Weight	8400 Pounds

Takeoff weight is limited by the most restrictive of the following requirements:

Maximum Certified Takeoff Weight	10,600 Pounds
Maximum Takeoff Weight Permitted by Climb Requirements	Refer to Procedures for Use of Takeoff Performance Tables in Section IV
Takeoff Field Length	Refer to Procedures for Use of Takeoff Performance Tables in Section IV

Landing weight is limited by the most restrictive of the following requirements:

Maximum Certified Landing Weight	9800 Pounds
Maximum Landing Weight Permitted by Climb Requirements or Brake Energy Limit	Refer to Procedures for Use of Approach and Landing Performance Tables in Section IV
Landing Distance	Refer to Procedures for Use of Approach and Landing Performance Tables in Section IV

CENTER-OF-GRAVITY LIMITS

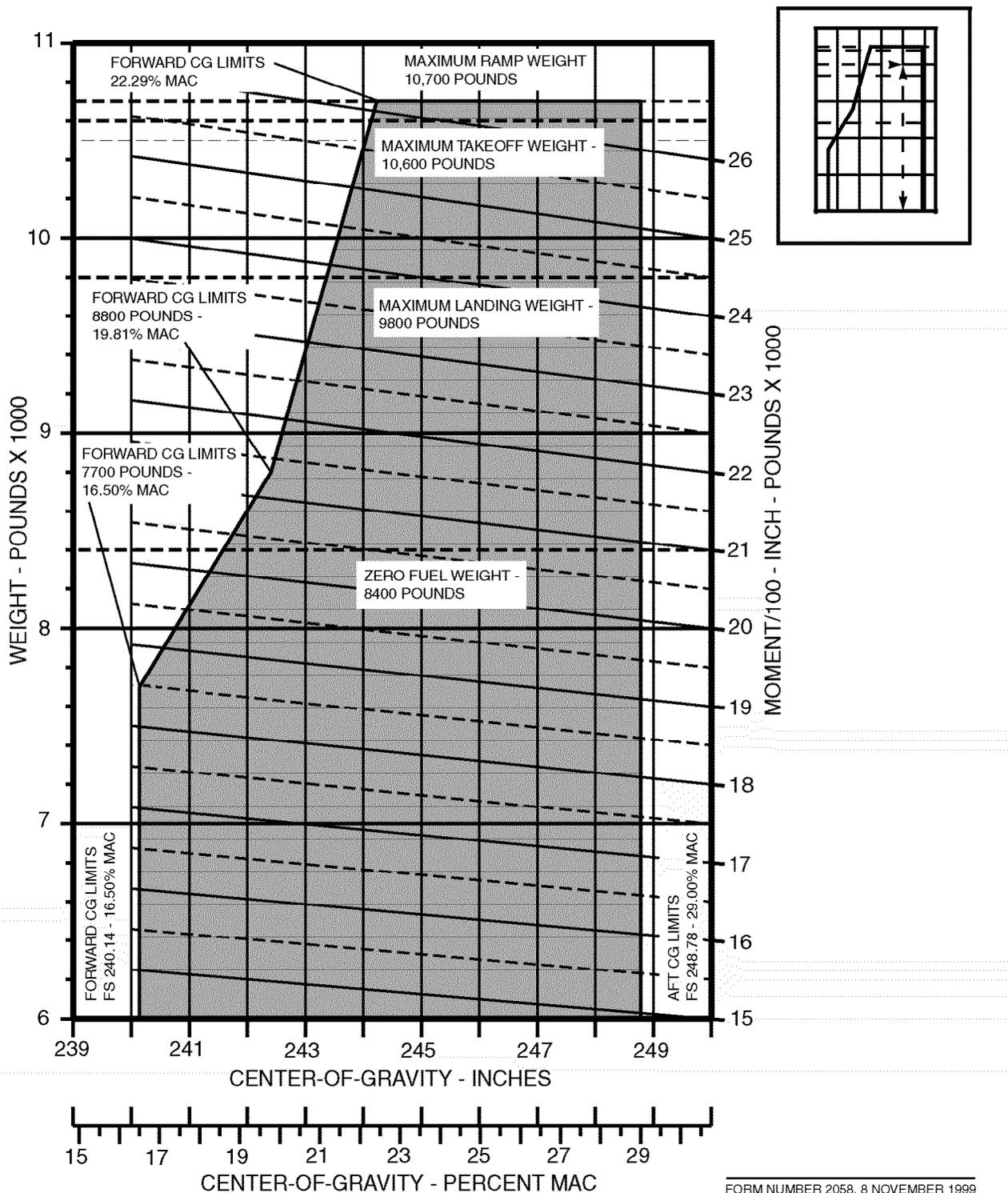
Center-of-Gravity Moment Envelope Refer to Figure 2-1

WEIGHT AND BALANCE DATA

The airplane must be operated in accordance with the approved loading schedule. (Refer to Weight and Balance Data in Section VI.)

CENTER-OF-GRAVITY MOMENT ENVELOPE

A10668



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Figure 2-1

POWERPLANT LIMITATIONS

Engine Type Williams International FJ44-1A Turbofan
 Engine Operating Limits Refer to Figure 2-2
 Engine Overspeed Limits Refer to Figures 2-5 and 2-6
 Takeoff/Go Around Thrust Setting Refer to Figure 4-8
 Recommended Maximum Continuous Climb Thrust
 Setting Refer to Figures 4-9 and 4-10
 Recommended Maximum Continuous Cruise Thrust
 Setting Refer to Figure 4-11 and 4-11A

ENGINE OPERATING LIMITS

OPERATING CONDITIONS	OPERATING LIMITS						
	THRUST SETTING	TIME LIMIT (MINUTES)	ITT TEMPERATURE °C	N ₂ % TURBINE RPM	N ₁ % FAN RPM	OIL PRESSURE PSIG	OIL TEMPERATURE °C
START			REFER TO FIGURE 2-4			25 PSI MIN. (NOTE 6)	-40 TO 121 (NOTE 7)
IDLE	CONTINUOUS		620 MAX.	56.2 ±1.3		35 MIN.	-40 TO 121 (NOTE 7)
TAKEOFF	(NOTE 1)		820 MAX.	99.3	104.4	45 - 90	10 - 121
MAXIMUM CONTINUOUS	(NOTE 2)		796 MAX.	99.3	104.4	45 - 90 (NOTE 3)	10 - 121
TRANSIENT	---		REFER TO FIGURE 2-3	REFER TO FIGURE 2-5	REFER TO FIGURE 2-6	25 MIN. (NOTE 4) 100 MAX. (NOTE 5)	--

NOTES

- ENGINE LIMIT: Time is 5 minutes, provided engine limits above are not exceeded, and begins when the throttle lever is advanced for takeoff thrust. THRUST LIMIT: Takeoff thrust (5 minute limit), for engine life to TBO, is defined in Figure 4-8. Performance data, including V_{MCA} in Section IV is based on use of the takeoff thrust setting, (Figure 4-8).
- Continuous operation is acceptable provided the engine limits above are not exceeded. Recommended maximum continuous climb thrust is defined in Figures 4-9 and 4-10. Recommended maximum continuous cruise thrust is defined in Figure 4-11 and 4-11A. For extended component life, to achieve TBO, the recommended limits should be observed. Performance data in Section IV is based on use of the recommended thrust setting.
- Minimum oil pressure is 45 PSIG when operating above 80% N₂; 35 PSIG when operating below 80% N₂.
- During idle periods after high thrust operation for up to 5 minutes maximum.
- During periods of high thrust operation for up to 5 minutes maximum.
- Maximum allowable cold day start oil pressure is 100 psig for 5 minutes with oil pressure returning to normal range.
- The engine should not be operated above 85% N₂ until oil temperature is above 10°C.

Figure 2-2

OVER TEMPERATURE LIMITS (EXCEPT STARTING)

- 
 1. PERFORM HOT SECTION INSPECTION
 2. DISASSEMBLE BLADED DISK ASSEMBLY FOR NDI AND BLADE GROWTH CHECK.
- 
 1. PERFORM HOT SECTION INSPECTION
- 
 1. DETERMINE AND CORRECT CAUSE OF OVERTEMPERATURE
 2. PERFORM VISUAL INSPECTION
 3. RECORD IN ENGINE LOG BOOK
- 
 1. NO ACTION REQUIRED

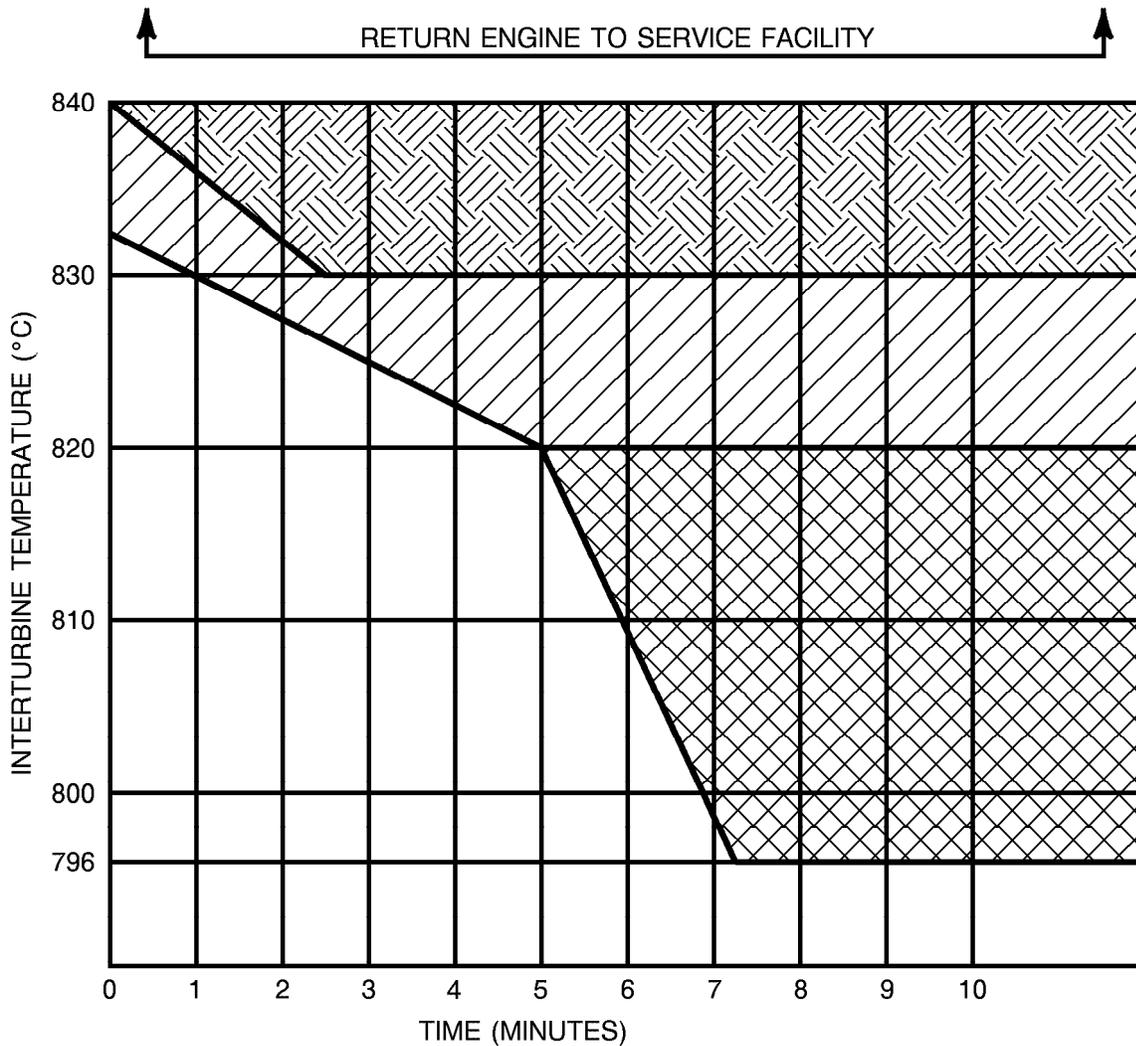
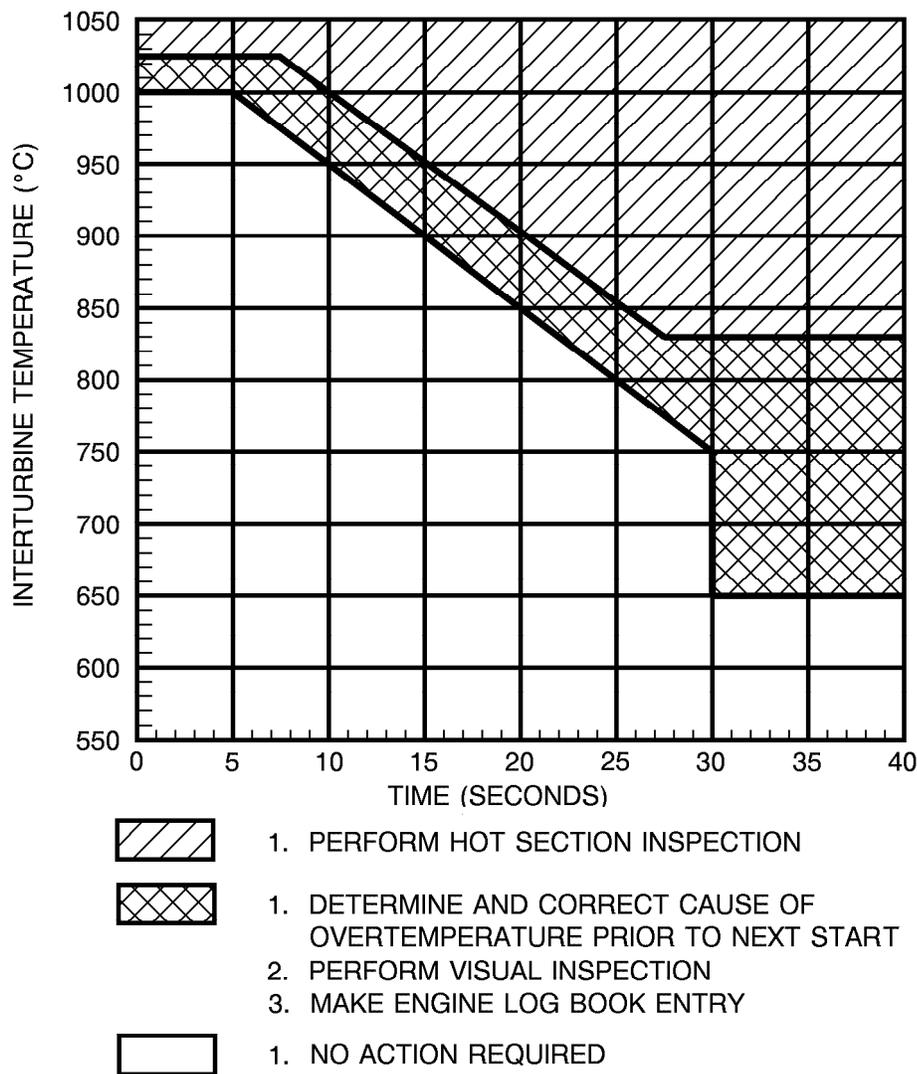


Figure 2-3

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OVER TEMPERATURE LIMITS (STARTING)

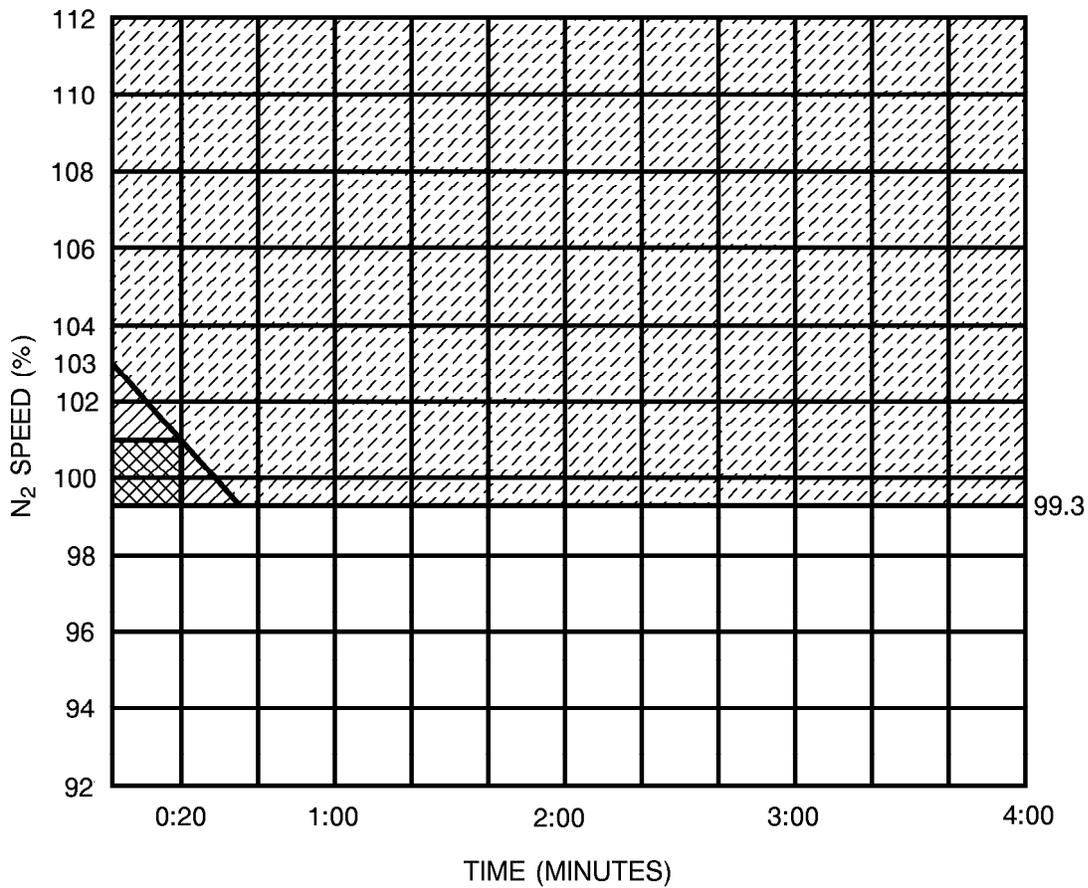


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Figure 2-4

N₂ ENGINE OVERSPEED LIMITS

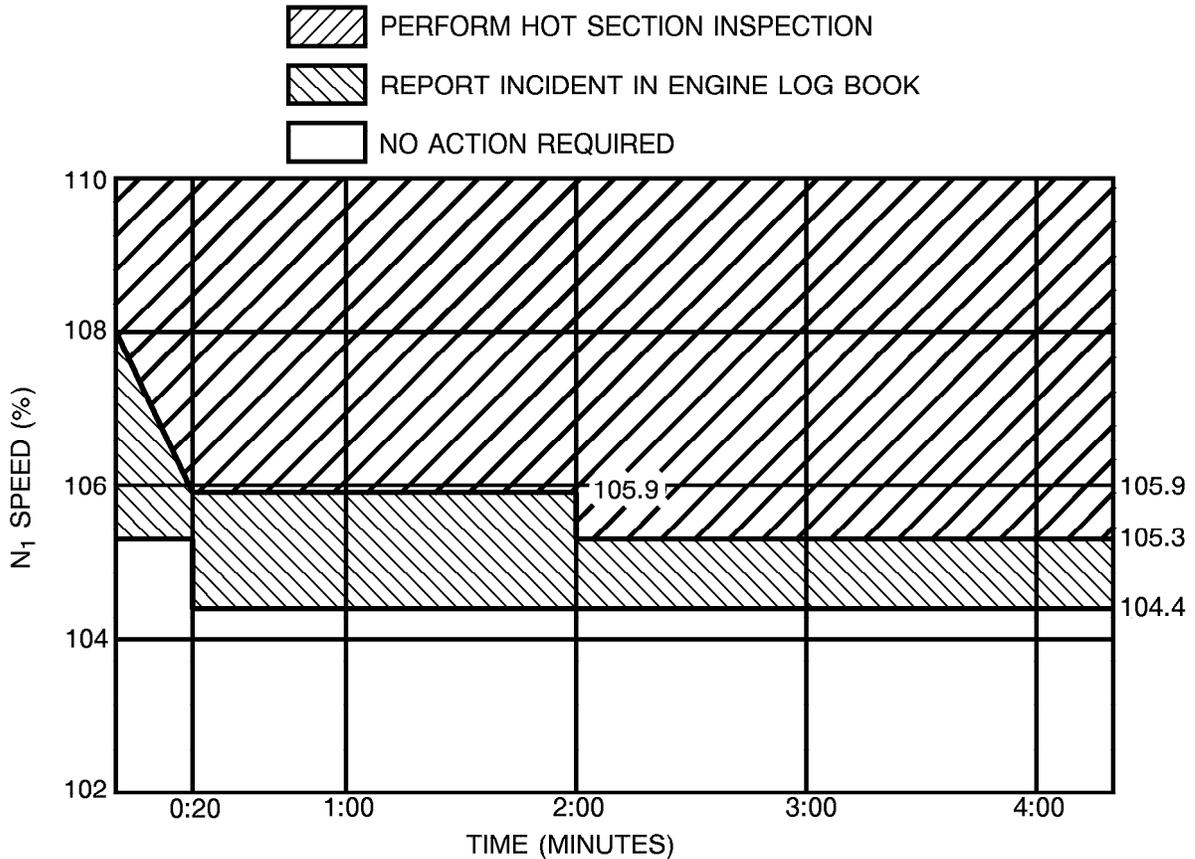
-  RETURN ENGINE TO AN APPROVED SERVICE FACILITY
-  PERFORM HOT SECTION INSPECTION
-  REPORT INCIDENT IN ENGINE LOG BOOK
-  NO ACTION REQUIRED



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Figure 2-5

N₁ ENGINE OVERSPEED LIMITS



6384C6004

Figure 2-6

ENGINE START LIMITATIONS (Ground)

Over temperature (ITT) Limits	.....	Refer to Figure 2-4
Maximum Tailwind Component	.....	10 Knots
Maximum Crosswind Component	.....	12 Knots

NOTE

Thrust attenuator switch must be in AUTO for tailwind within ±30 degrees of the tail.

Maximum Time to Light-off	10 Seconds
---------------------------	-------	------------

NOTE

Time to light-off is defined as the time after the throttle lever is moved from OFF to IDLE position until light-off is indicated.

(Continued Next Page)

ENGINE START LIMITATIONS (Ground) (Continued)

Minimum Ambient Temperature For Battery Start (If Airplane Is Cold Soaked) . . . -18°C

NOTE

- If the airplane is cold soaked below -35°C, it must be preheated or hangared prior to engine start.
- If the battery is warm (removed and stored above -18°C) and the engine is preheated, battery starts may be conducted at ambient temperature below -18°C.
- EIS may take 1 to 6 minutes to become usable after power is applied when cold soaked between -10°C to -35°C.

Maximum Temperature For Engine Start ISA + 39°C
 Maximum Airport Elevation For Ground Battery Start 10,000 Feet
 Maximum Airport Elevation for Ground External Power Start 14,000 Feet
 Minimum Battery Voltage For Battery Start 24 VDC
 Minimum/Maximum External Power Current Capacity For Start 800/1100 AMPS

NOTE

Normal starter current draw is approximately 1000 amperes peak. External power units with variable maximum current shutoff should be set to 1100 amperes.

ENGINE START LIMITATIONS (Air)

Over Temperature Limits Refer to Figure 2-4
 Airspeed/Altitude Limits Refer to Figure 3-1
 Maximum Time to Light Off 10 Seconds

NOTE

Time to light-off is defined as the time after the throttle lever is moved from OFF to IDLE position until light-off is indicated.

ENGINE POWER REDUCTION AT HIGH ALTITUDE

L and R IGNITION must be selected to ON prior to reducing power to less than 90% N₂ at or above FL350.
 IGNITION may be returned to NORM after the engines have stabilized at the reduced power setting.

ENGINE FAN INSPECTION

To assure accurate fan speed thrust indication, inspect the fan for damage prior to each flight.

NOTE

Refer to the EXTERIOR INSPECTION in the NORMAL PROCEDURES Section of this manual for engine duct and fan inspection.

STARTER CYCLE LIMITATIONS

Starter Limitation Three engine starts per 30 minutes. Three cycles of operation with a 60-second rest period between cycles is permitted.

NOTE

- This limitation is independent of starter power source: i.e. battery, generator assisted cross start, or external power unit.
- Use of an external power source with voltage in excess of 29 VDC or current in excess of 1100 amps may damage the starter.

BATTERY LIMITATIONS

The battery temperature warning system must be operational for all ground and flight operations. The battery warning system must be operational as verified by a satisfactory preflight test as contained in Section III, ELECTRICAL SYSTEM.

If the BATT O'TEMP light illuminates during ground operation, do not take off until the proper maintenance procedures have been accomplished.

Battery Cycle Limitations: Three engine starts per hour. Refer to Notes (2) and (3).

NOTES

1. If battery limitation is exceeded, ground maintenance procedures are required.
2. Three generator assisted cross starts are equal to one battery start.
3. If an external power unit is used for start, no battery cycle is counted.

GROUND OPERATION

Continuous engine ground static operation up to and including five minutes at takeoff thrust is limited to ambient temperatures not to exceed + 39°C above ISA (refer to Figure 2-9).

Generator Current	(Less than 15 minutes)	.....	300 Amperes
	(15 minutes or more)	.....	250 Amperes

Limit ground operation of pitot/static heat to two minutes to preclude damage to the pitot/static tubes and angle of attack probe.

Prolonged ground operation at high engine RPM with engine, wing, and/or windshield anti-ice on is prohibited. Do not operate with the wing anti-ice on more than one minute after the WING ANTI-ICE L/R annunciators have extinguished.

Hot weather avionics operation temperature limitations (OAT greater than ISA+5°C):

- Avionics cooling fans must be operational and verified by checking for airflow at glareshield exit vents.
- With air conditioning off - Avionics operation is limited to 30 minutes and OAT less than ISA+32°C.
- With air conditioning on - Avionics operation is limited to OAT less than or equal to ISA+35°C.
- Avionics operation above ISA+35°C is prohibited.

WINDSHIELD ICE PROTECTION FLUID

Use TT-I-735 isopropyl alcohol for windshield anti-ice.

HYDRAULIC FLUID

Use MIL-H-83282 Type fluids only.

FUEL LIMITATIONS

Approved anti-icing additive must be added to all approved fuels not presently containing the additive.

- FUEL BOOST - ON; when LH and/or RH FUEL LOW LEVEL caution lights illuminate or at 185 pounds or less indicated fuel.

Refer to Figure 2-7 for fuels that are approved for use.

FUEL LIMITATIONS

GRADE (TYPE) (REFER TO CAUTION AND NOTE 1 BELOW)	SPECIFICATION	MINIMUM FUEL TEMPERATURE °C/°F	MAXIMUM FUEL TEMPERATURE °C/°F
JET A JET A1 JET B	ASTM-D1655	-29/-20.2 -29/-20.2 -54/-65	57.2/135 57.2/135 57.2/135
JP-4 JP-5	MIL-T-5624	-54/-65 -29/-20.2	57.2/135 57.2/135
JP-8	MIL-T-83133	-29/-20.2	57.2/135

CAUTION

FUEL NOT HAVING ANTI-ICING ADDITIVE PREBLENDED AT THE REFINERY MUST HAVE ANTI-ICING FLUID ADDED.

Fuel must contain 0.10 to 0.15 percent (by volume) anti-icing additive per MIL-I-27686 (EGME), or MIL-I-85470 (DIEGME).

NOTES

- (1) Dupont Stadis 450 anti-ice additive or equivalent is permitted to bring fuel up to 300 conductive units, but not to exceed 1 ppm (parts per million).
- (2) SOHIO Biobor JF biocide additive is approved at a concentration not to exceed 20 ppm (270 ppm total additive) of elemental boron.
- (3) EGME/DIEGME additive is approved at a concentration not to exceed 0.15 percent volume.

Figure 2-7

APPROVED OILS

APPROVED BRAND	SPECIFICATION
Mobil Jet II	MIL-L-23699
Mobil 254	MIL-L-23699
Exxon 2380 (Emergency only)	MIL-L-23699

Exxon 2380 oil may be used pure or mixed with Mobil Jet II oil only for a maximum of 25 hours run time between major periodic inspections. Record in the engine log book the total amount of run time with Exxon 2380 oil. Following any usage of Exxon 2380 oil, the oil tank must be drained, flushed with Mobil Jet II oil, and serviced with pure Mobil Jet II oil. (Definition of oil flush is removal of chip collector screens, and pouring one quart of Mobil Jet II oil through the oil fill port).

The maximum permissible oil consumption during normal operation (engine running), is 0.023 gallons per hour during normal operation.

NOTE

During in-flight windmilling, the engine will vent oil overboard. Typical consumption is approximately 0.20 gallons per hour.

UNUSABLE FUEL

Fuel remaining in the fuel tanks when the fuel quantity indicator reads zero is not usable in flight.

SPEED LIMITATIONS

Maximum Operating Limit Speeds

M_{MO} (Above 30,500 Feet)	0.710 Mach (Indicated)
V_{MO} (Between Sea Level and 30,500 Feet)	263 KIAS

The maximum operating limit speeds may not be deliberately exceeded in any regime of flight (climb, cruise or descent) unless a higher speed is authorized for flight test or pilot training.

Maximum Maneuvering Speeds - V_A Refer to Figure 2-8

Full application of rudder and aileron controls as well as maneuvers that involve angle-of-attack near the stall should be confined to speeds below maximum maneuvering speed. Refer to LOAD FACTOR limitations for pitch maneuvering limitations.

Maximum Flap Extended Speed - V_{FE}

Partial Flaps - TAKEOFF & APPROACH Position (15°)	200 KIAS
Full Flaps - LAND Position (35°)	161 KIAS
Ground Flaps (60°)	Intentional Selection Prohibited In Flight
Maximum Speed With Flaps Failed to Ground Flaps (60°)	140 KIAS

Maximum Landing Gear Extended Speed - V_{LE}	186 KIAS
Maximum Landing Gear Operating Speed - V_{LO}	186 KIAS
Maximum Speed Brake Operation Speed - V_{SB}	No Limit
Maximum Autopilot Operation Speed	263 KIAS or 0.710 MACH

NOTE

For minimum control speeds (V_{MCA} , and V_{MCG}) refer to the respective definition in Section IV, Performance - General.

WARNING

THE GROUND FLAPS POSITION IS NOT LOCKED OUT IN FLIGHT. SELECTION OF GROUND FLAPS WILL SIGNIFICANTLY INCREASE DRAG AND SINK RATE.

TAKEOFF AND LANDING OPERATIONAL LIMITS

Maximum Altitude Limit	14,000 Feet
Maximum Tailwind Component	10 Knots
Maximum Ambient Temperature	ISA +39°C (Refer to Figures 2-9 and 4-7)
Minimum Ambient Temperature	-53°C

The maximum intentional asymmetric fuel differential is 200 pounds, however, controllability for safe return and landing has been demonstrated with an emergency asymmetrical difference of 600 pounds.

(Continued Next Page)

TAKEOFF AND LANDING OPERATIONAL LIMITS (Continued)

Takeoff with thrust attenuators stowed is prohibited for flaps 0° and for flaps 15° corrected takeoff field lengths greater than 4500 feet.

The autopilot and yaw damper must be OFF for takeoff and landing.

Engine synchronizer must be OFF for takeoff and landing.

Cabin must be depressurized for takeoff and landing.

Speed brakes must be retracted prior to 50 feet on landing.

Touch and Go landings utilizing ground flaps are prohibited.

Goodyear tire part number 184F68-1, and tire part numbers 030-611-0 and 031-613-8 (manufactured by BFGoodrich/Michelin) are the only nose tires approved. The nose tire must be inflated to 120 PSI +5 or -5 PSI.

Maximum Tire Ground Speed 165 Knots

ENROUTE OPERATIONAL LIMITS

Maximum Operating Altitude 41,000 Feet

Maximum Temperature Refer to Figure 2-9

Minimum Temperature Refer to Figure 2-9

Generator Load 300 Amperes Up to 41,000 Feet

OPERATIONS AUTHORIZED

This airplane is approved for day and night, VFR, IFR flight and flight into known icing when the required equipment is installed as defined within the KINDS OF OPERATIONS EQUIPMENT LIST.

Acrobatic maneuvers, including spins, are prohibited. Intentional stalls with flaps at other than zero or with gear down are prohibited above 18,000 feet.

MINIMUM CREW

Except where otherwise prescribed by applicable operating limitations,

Minimum crew for all operations:

1 Pilot, provided:

- a. The pilot holds a CE525(S), single pilot, type rating.
- b. The airplane is equipped for single pilot operation as specified in the Kinds of Operations Equipment List.
- c. The pilot must occupy the left pilot's seat.

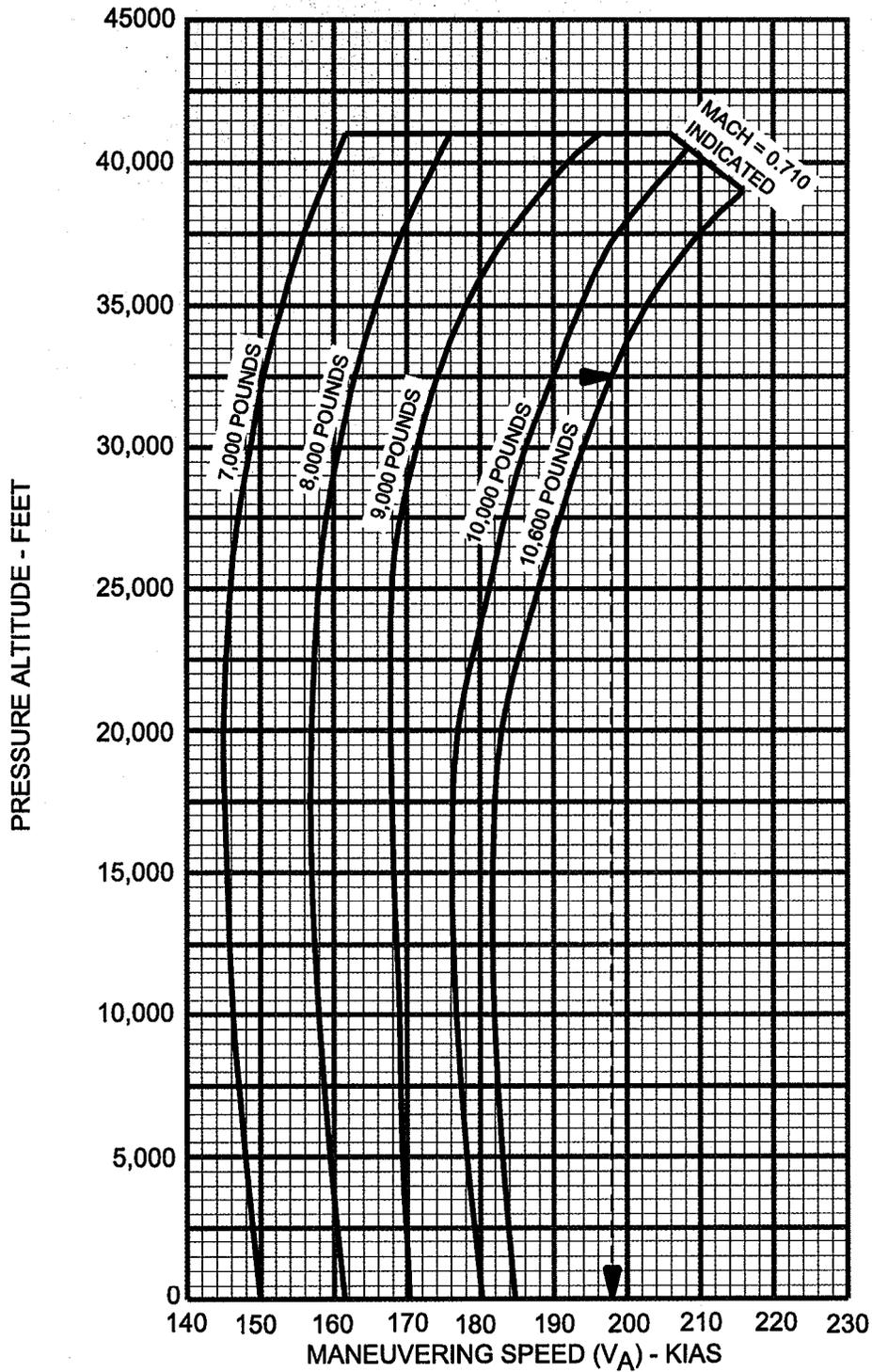
Or:

1 Pilot and 1 Copilot provided:

- a. The pilot in command holds a CE525(S) or CE525 (second-in-command required) type rating.

MAXIMUM MANEUVERING SPEEDS

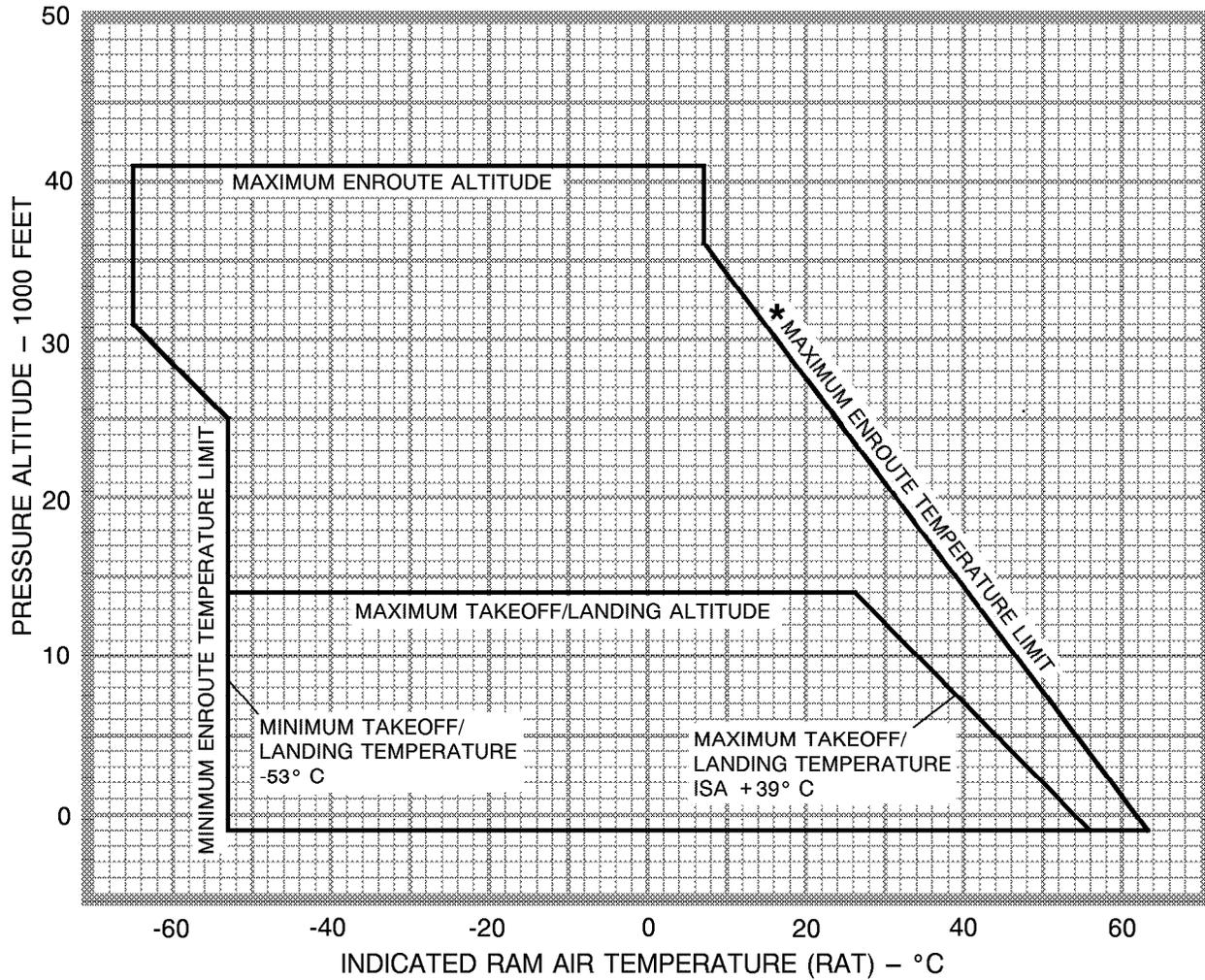
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EXAMPLE:
Pressure Altitude - 32,500 FEET
Weight - 10,600 POUNDS
Maximum Maneuvering Speed - 198 KNOTS

Figure 2-8

TAKEOFF/LANDING/ENROUTE TEMPERATURE LIMITATIONS



6384C6005

Figure 2-9

* Maximum Enroute Operating Temperature Limit is ISA +39°C ambient temperature adjusted for Ram Rise (Refer to Figure 4-3) or the Indicated RAM Air Temperature (RAT) from Figure 2-9, whichever is less.

LOAD FACTOR

In Flight		
Flaps UP Position (0°)	.....	-1.52 to +3.6G at 10,600 Pounds
Flaps TAKEOFF & APPROACH to LAND Position (15° to 35°)	.....	0.0 to +2.0G at 10,600 Pounds

These accelerations limit the angle-of-bank in turns and limit the severity of pull-up and push-over maneuvers.

CABIN PRESSURIZATION LIMITATIONS

Normal Cabin Pressurization Limitations	0.0 to 8.6 PSI Differential
---	-------	-----------------------------

PASSENGER SEATING

For all takeoffs and landings, adjustable seats must be fully upright and outboard.

Maximum passenger seating, not including 2 crew seats, is five (six with optional belted toilet installed).

AUDIO CONTROL PANEL

Operation of the audio panel in the passenger speaker (PASS SPKR) mode is limited to required passenger briefings or emergencies.

NOTE

- The same side cockpit speaker is muted when PASS SPKR is selected with the audio control panel rotary switch. All incoming transmissions and auxiliary audio warnings (GPWS and TCAS, if installed) will be received only through the opposite side speaker. If both audio control switches are selected to PASS SPKR, both cockpit speakers become muted. Avoid selecting both switches to PASS SPKR at the same time.
- With passenger speaker mode selected and microphone selector switch selected to oxygen mask, the cockpit speaker will not receive voice interphone communications from the oxygen mask microphone of the opposite side pilot.
- Headset audio is not affected when PASS SPKR mode is selected.

INSTRUMENT MARKINGS

ENGINE INDICATING SYSTEM

FAN (N₁) RPM INDICATORS

Scale Markings	.....	Red Line	104.5% RPM
Tape/Pointer/Digital Readout	.....	Red	105.4% RPM
		Yellow	104.5 - 105.3% RPM for 20 Sec
		White	104.5% 105.3% < 20 Sec
Tape/Pointer	.....	White	104.4% RPM
Digital Readout	.....	Green	104.4% RPM

NOTE

- Tape, Pointer and Digital Readout will turn red or yellow if outside normal operating limits.
- Pointer and Digital Readout will flash for 5 seconds and then remain steady if outside normal operating limits.
- White Tape Pointer represents green band.

INTER-TURBINE TEMPERATURE INDICATORS

Engine Start

Scale Markings	.....	Red Triangle	1002°C
		Red Line	822°C
		Yellow Band	798°C - 820°C
Tape/Pointer	.....	Red	1002°C
		White	1000°C

NOTE

- Tape will turn red and Pointer will flash red for five seconds and then remain steady red if outside normal starting operating limits.
- Engine Running Red Line and Yellow Band do not apply while ITT Start Limit (Red Triangle) is in view.
- White Tape Pointer represents Green band.

Engine Running

Scale Markings	.....	Red Line	822°C
		Yellow Band	798°C - 820°C
Tape/Pointer	.....	Red	822°C
		Yellow	798°C - 820°C for 5 min
		White	798°C - 820°C for < 5 min
			796°C

NOTE

- Tape will turn red or yellow, the Pointer will flash red or yellow for five seconds and then remain steady if outside normal operating limits.
- White Tape Pointer represents Green band.

(Continued Next Page)

INSTRUMENT MARKINGS (Continued)

TURBINE (N₂) RPM INDICATORS

Digital Readout	Red	99.4% RPM
	Green	99.3% RPM

NOTE

Digital Readout will flash red for five seconds and then remain steady if outside normal operating limits.

OIL TEMPERATURE INDICATORS

Scale Markings	Red Band	122°C
	Yellow Band	9°C
	Green Band	10°C - 121°C
Pointer	Red	122°C
	Yellow	9°C
	Green	10°C - 121°C
Digital Readout	Red	122°C
	Yellow	9°C

NOTE

- Pointer and Digital Readout will flash red or yellow for five seconds and then remain steady if outside normal operating limits.
- Digital Readout is displayed only when temperature is outside normal operating limits.

OIL PRESSURE INDICATORS

Scale Markings	Red Band	24 PSI
		101 PSI
	Yellow Band	25 - 34 PSI
		91 - 100 PSI
	Green Band	35 - 90 PSI

NOTE

Oil Pressure Indicator Scale Markings do not change with varying N₂.

N₂ < 80%

Pointer	Red	24 PSI
		25 - 34 PSI 5 min
	Yellow	91 - 100 PSI 5 min
		101 PSI
Green	25 - 34 PSI <5 min	
	91 - 100 PSI <5 min	
		35 - 90 PSI

(Continued Next Page)

INSTRUMENT MARKINGS (Continued)

OIL PRESSURE INDICATORS (continued)

Digital Readout	Red	24 PSI 25 - 34 PSI 5 min 91 - 100 PSI 5 min
	Yellow	101 PSI 25 - 34 PSI <5 min 91 - 100 PSI <5 min
<u>N₂ 80%</u>		
Pointer	Red	34 PSI 91 - 100 PSI 5 min
	Yellow	101 PSI 35 - 44 PSI 91 - 100 PSI <5 min
	Green	45 - 90 PSI
Digital Readout	Red	34 PSI 91 - 100 PSI 5 min
	Yellow	101 PSI 35 - 44 PSI 91 - 100 PSI <5 min

NOTE

- Pointer and Digital Readout will flash red or yellow for five seconds and then remain steady if outside normal operating limits.
- Digital Readout is displayed only when temperature is outside normal operating limits.

OTHER INSTRUMENTS

Airspeed Indicator	Red Line: 263 KIAS (0.71 MACH)
Ammeter Indicators	Red Line: 300 Amps
Cabin Differential Pressure Indicator	Red Line: 8.6 PSI Green Arc: 0.0 - 8.6 PSI
Oxygen Pressure Indicator	Red Line: 2000 PSI Yellow Arc: 0 - 400 PSI Green Arc: 1600 - 1800 PSI
Brake and Gear Pneumatic Pressure Indicator (In nose compartment)	Wide Red Arc: > 2050 PSI Narrow Red Arc: 0 - 1600 PSI Wide Yellow Arc: 1600 - 1800 PSI Wide Green Arc: 1800 - 2050 PSI
Brake Hydraulic Accumulator Pressure Indicator (In nose compartment)	Narrow Red Arc: Underpressure Light Gray Arc: Precharge Pressure Yellow Arc: Caution Wide Green Arc: Normal Operating Range Wide Red Arc: Overpressure

ENGINE INDICATING SYSTEM (EIS)

If the airplane is cold soaked to a temperature between -10°C and -35°C, the liquid crystal display may experience a delay of 1 to 6 minutes, after battery power is applied, before they become useable. Preheating the cabin to 0°C or above will improve this delay to 1 minute or less.

ROCKWELL COLLINS FCS-3000 INTEGRATED FLIGHT CONTROL SYSTEM

1. The Rockwell Collins Pro Line 21 Avionics System Pilot's Guide for Cessna CitationJet Publication Number 523-0780351-00X117 (X is a variable and changes with revision number), dated 02/07/00 or later revision must be immediately available to the flight crew.
2. One pilot must remain in his/her seat with the seat belt fastened during all autopilot operations.
3. Operating in the composite mode is limited to training and display failure conditions.
4. The pilot's PFD (and copilot's if installed) and MFD must be installed and operational in the normal mode for takeoff.
5. The FCS-3000 system must be verified to be operational by a satisfactory automatic preflight test (no messages on power up) prior to each flight in which the autopilot is to be used.
6. The autopilot Minimum Engage Height is 250 feet AGL.
7. The autopilot Minimum Use Height during cruise is 1000 feet AGL.
8. The autopilot Minimum Use Height during non-precision approaches is 250 feet AGL.
9. The autopilot Minimum Use Height during precision approaches is 71 feet AGL.
10. Category II approaches are not approved.
11. NAV mode during VOR operation. While operating in the NAV mode of the Flight Director using VOR as the active course, and prior to changing the active VOR frequency, the pilot must deselect the NAV mode and select HDG mode. After positive acquisition of the new VOR frequency, reselect the NAV mode of the Flight Director, and verify NAV capture and tracking of new course.
12. During VOR approaches the HDG mode must be selected for the approach until established on the final approach segment after crossing the VOR. The APPR mode may be reselected once the airplane is reestablished on the final approach segment.
13. VOR approaches must be conducted in the APPR mode.

STANDBY GYRO HORIZON

A satisfactory preflight test must be accomplished on the standby gyro system.

OXYGEN MASK

1. Continuous use of the supplemental oxygen system above 25,000 feet cabin altitude with passengers, or above 41,000 feet cabin altitude crew only, is prohibited.

NOTE

Headsets, eyeglasses or hats worn by the crew may interfere with the quick-donning capabilities of the oxygen masks.

2. For single pilot operations, a crew oxygen mask must be available for a passenger occupying the right crew seat. The mask must be checked during preflight and passenger briefed on its use.

ICING LIMITATIONS**NOTE**

- Icing conditions exist when the indicated RAT in flight is +10°C or below, and visible moisture in any form is present.
- Icing conditions on the ground exist when the OAT or indicated RAT is +10°C or below and, where surface snow, slush, ice or standing water may be ingested by the engines or freeze on engine nacelles, or engine sensor probes.

1. Minimum engine N₂ speed for effective anti-icing 70% N₂
2. Minimum temperature for operation of tail deicing boots (Indicated RAT) .. -35°C
3. Engine anti-ice shall be ENG ON, (or ENG/WING) for operations with indicated RAT of +10°C or below when flight free of visible moisture cannot be assured.
4. After an icing encounter with inoperative tail deice boots, maximum flap deflection is 15 degrees. Refer to the Flaps Inoperative Approach and Landing Abnormal Procedure for landing with flaps 15 degrees.
5. Minimum airspeed for sustained flight in icing conditions (except approach and landing) is 160 KIAS.

OPERATIONS IN SEVERE ICING CONDITIONS**WARNING**

SEVERE ICING MAY RESULT FROM ENVIRONMENTAL CONDITIONS OUTSIDE OF THOSE FOR WHICH THE AIRPLANE IS CERTIFIED. 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 SHED WHEN THE ICE PROTECTION SYSTEMS ARE USED, AND MAY SERIOUSLY DEGRADE THE PERFORMANCE AND CONTROLLABILITY OF THE AIRPLANE.

All wing icing inspection lights must be operative prior to flight into known or forecast icing conditions at night.

(Continued Next Page)

OPERATIONS IN SEVERE ICING CONDITIONS (Continued)**NOTE**

This supersedes relief provided by the Master Minimum Equipment List.

Severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following visual cues:

1. Unusually extensive ice accumulation on the airframe and windshield in areas not normally observed to collect ice.
2. Accumulation of ice on the upper surface of the wing aft of the protected area.

If one or more of these visual cues exist:

1. Use of the autopilot is prohibited.
2. Immediately request priority handling from Air Traffic Control to facilitate a route or altitude change to exit the icing conditions.
3. Leave flaps in current position, do not extend or retract.
4. Avoid abrupt and excessive maneuvering that may exacerbate control difficulties.
5. If unusual or uncommanded roll control movement is observed, reduce angle-of-attack.

Since the autopilot, when installed and operating, may mask tactile cues that indicate adverse changes in handling characteristics, use of the autopilot is prohibited when:

1. Unusual lateral trim is required while the airplane is in icing conditions.
2. Autopilot trim warnings are encountered while the airplane is in icing conditions.

KINDS OF OPERATIONS EQUIPMENT LIST

This airplane may be operated in day or night VFR or IFR and flight into known icing conditions when the appropriate equipment is installed.

The following equipment list identifies the systems and equipment upon which type certification for each kind of operation was predicated. The systems and items of equipment listed must be installed and operable unless:

1. The airplane is approved to be operated in accordance with a current Minimum Equipment List (MEL) issued by the FAA.

Or;

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

2. An alternate procedure is provided in the FAA Approved Airplane Flight Manual for the inoperative state of the listed equipment and all limitations are complied with.

NOTE

The following systems and equipment list does not include all equipment required by the FAR Parts 91 and 135 Operating Requirements. It also does not include components obviously required for the airplane to be airworthy such as wings, primary flight controls, empennage, engine, etc.

SYSTEM and/or COMPONENT	KIND OF OPERATION					COMMENTS
	V F R D A Y	V F R N I G H T	I F R D A Y	I F R D A Y	I C I N G	
AVIONICS						
1) VHF Transceiver	*	*	1*	1*	1*	* or as required by operating regulation
2) Static Wicks	11	11	11	11	11	15 total installed; 1 may be missing from each control surface
3) Transponder	*	*	1*	1*	1*	* or as required by operating regulation
4) VHF NAV Receiver	*	*	1*	1*	1*	* or as required by operating regulation
5) Cockpit Voice Recorder	*	*	*	*	*	* required for two pilot operations with six passenger seats installed
ELECTRICAL						
1) Battery	1	1	1	1	1	
2) Battery Overheat Annunciator	1	1	1	1	1	
3) DC Generator	2	2	2	2	2	
4) DC Generator Annunciator	2	2	2	2	2	
5) DC Loadmeter	2	2	2	2	2	
6) DC Voltmeter and Select Switch	1	1	1	1	1	
ENVIRONMENTAL/PRESSURIZATION						
1) Pressure Regulating Shutoff Valve	2	2	2	2	2	
2) Cabin Bleed Air Flow Control Valve	2	2	2	2	2	
3) Outflow Valve/Safety Valve	2	2	2	2	2	
4) Primary Door Seal	1	1	1	1	1	
5) Secondary Door Seal	1	1	1	1	1	required above FL310
6) Pressurization Controller	1	1	1	1	1	
7) Emergency Press Dump Valve	1	1	1	1	1	
8) Fresh Air Fan	1	1	1	1	1	
(Continued Next Page)						

MODEL 525

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM and/or COMPONENT	KIND OF OPERATION					COMMENTS
	V F R D A Y	V F R I G H T	I F R D A Y	I F R D A Y	I F R D A Y	
ENVIRONMENTAL/PRESSURIZATION (Continued)						
9) Defog Fan	1	1	1	1	1	
10) Differential Press/Cabin Altitude Gage	1	1	1	1	1	
11) Cabin Temperature Control System (except air conditioner)	1	1	1	1	1	
12) Duct Over Temperature Annunciator	1	1	1	1	1	
13) Cabin Altitude Warning System	1	1	1	1	1	required above FL240
EQUIPMENT AND FURNISHINGS						
1) Exit Sign (lighted)	2	2	2	2	2	
2) Seat Belt	*	*	*	*	*	* one per occupied seat
3) Shoulder Harness	*	*	*	*	*	* crew seats and all occupied passenger seats
FIRE PROTECTION						
1) Engine Fire Detection System	2	2	2	2	2	
2) Engine Fire Extinguisher System	2	2	2	2	2	
3) Portable Fire Extinguisher	1	1	1	1	1	
FLIGHT CONTROLS						
1) Flap Position Indicator	1	1	1	1	1	
2) Flap System (including annunciators)	1	1	1	1	1	
3) Trim Tab Position Indicator (rudder, aileron, and elevator)	3	3	3	3	3	
4) Trim Systems (rudder, aileron, and elevator)	3	3	3	3	3	
5) Stick Shaker System	1	1	1	1	1	
6) Speed Brake System (both sides)	1	1	1	1	1	

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM and/or COMPONENT	KIND OF OPERATION					COMMENTS
	V F R D A Y	V F R N I G H T	I F R D A Y	I F R N I G H T	I C I N G	
FLIGHT/NAVIGATION INSTRUMENTS						
1) PFD (Primary Flight Display)	2	2	2	2	2	Includes airspeed, altitude, VSI, HSI, attitude Includes engine indicators
2) MFD (Multi-Function Display)	1	1	1	1	1	
3) AHRS	2	2	2	2	2	
4) ADC	2	2	2	2	2	
5) Standby Attitude Indicator	1	1	1	1	1	
6) Standby Airspeed/Altimeter	1	1	1	1	1	
7) Standby NAV 1 HSI	1	1	1	1	1	
8) Clock	0	0	1	1	1	
9) Magnetic Compass	1	1	1	1	1	
FUEL/ENGINE						
1) Fuel Boost Pumps (including annunciators)	2	2	2	2	2	* For thrust attenuators stowed, multiply flaps 15° takeoff field length and landing distance by 1.05. Takeoff prohibited for flaps 0° and flaps 15° corrected field lengths greater than 4500 feet.
2) Fuel Flow Indicator System	2	2	2	2	2	
3) Fuel Quantity System	2	2	2	2	2	
4) Fuel Transfer System (including annunciator)	1	1	1	1	1	
5) Firewall Shutoff System	2	2	2	2	2	
6) Fuel Low Level Annunciators	2	2	2	2	2	
7) Fuel Low Pressure Annunciators	2	2	2	2	2	
8) Engine Driven Fuel Pump	2	2	2	2	2	
9) Dual Igniter System, Each Engine (including indicator lights)	2	2	2	2	2	
10) STBY N ₁	2	2	2	2	2	
11) Engine Oil Pressure Annunciators	2	2	2	2	2	
12) Hydraulic Pressure On Annunciator	1	1	1	1	1	
13) Hydraulic Flow Low Annunciators	2	2	2	2	2	
14) Thrust Attenuators	2*	2*	2*	2*	2*	

MODEL 525

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM and/or COMPONENT	KIND OF OPERATION					COMMENTS
	V F R D A Y	V F R N I G H T	I F R D A Y	I F R N I G H T	I C I N G	
ENVIRONMENTAL/PRESSURIZATION (Continued)						
9) Defog Fan	1	1	1	1	1	
10) Differential Press/Cabin Altitude Gage	1	1	1	1	1	
11) Cabin Temperature Control System (except air conditioner)	1	1	1	1	1	
12) Duct Over Temperature Annunciator	1	1	1	1	1	
13) Cabin Altitude Warning System	1	1	1	1	1	required above FL240
EQUIPMENT AND FURNISHINGS						
1) Exit Sign (lighted)	2	2	2	2	2	
2) Seat Belt	*	*	*	*	*	* one per occupied seat
3) Shoulder Harness	*	*	*	*	*	* crew seats and all occupied passenger seats
FIRE PROTECTION						
1) Engine Fire Detection System	2	2	2	2	2	
2) Engine Fire Extinguisher System	2	2	2	2	2	
3) Portable Fire Extinguisher	1	1	1	1	1	
FLIGHT CONTROLS						
1) Flap Position Indicator	1	1	1	1	1	
2) Flap System (including annunciators)	1	1	1	1	1	
3) Trim Tab Position Indicator (rudder, aileron, and elevator)	3	3	3	3	3	
4) Trim Systems (rudder, aileron, and elevator)	3	3	3	3	3	
5) Stick Shaker System	1	1	1	1	1	
6) Speed Brake System (both sides)	1	1	1	1	1	

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM and/or COMPONENT	KIND OF OPERATION					COMMENTS
	V F R D A Y	V F R N I G H T	I F R D A Y	I F R N I G H T	I C I N G	
FLIGHT/NAVIGATION INSTRUMENTS						
1) PFD (Primary Flight Display)	1	1	1	1	1	Includes airspeed, altitude, VSI, HSI, attitude Includes engine indicators
2) MFD (Multi-Function Display)	1	1	1	1	1	
3) AHRS	2	2	2	2	2	
4) ADC	1	1	1	1	1	
5) Copilot's Attitude Indicator	1	1	1	1	1	
6) Copilot's HSI Indicator	1	1	1	1	1	
7) Copilot's VSI	0	0	1	1	1	
8) Copilot's Sensitive Altimeter	1	1	1	1	1	
9) Copilot's Airspeed Indicator	1	1	1	1	1	
10) Standby Attitude Indicator	1	1	1	1	1	
11) Standby Airspeed/Altimeter	1	1	1	1	1	
12) Standby NAV 1 HSI	1	1	1	1	1	
13) Clock	0	0	1	1	1	
14) Magnetic Compass	1	1	1	1	1	
FUEL/ENGINE						
1) Fuel Boost Pumps (including annunciators)	2	2	2	2	2	* For thrust attenuators stowed, multiply flaps 15° takeoff field length and landing distance by 1.05. Takeoff prohibited for flaps 0° and flaps 15° corrected field lengths greater than 4500 feet
2) Fuel Flow Indicator System	2	2	2	2	2	
3) Fuel Quantity System	2	2	2	2	2	
4) Fuel Transfer System (including annunciator)	1	1	1	1	1	
5) Firewall Shutoff System	2	2	2	2	2	
6) Fuel Low Level Annunciators	2	2	2	2	2	
7) Fuel Low Pressure Annunciators	2	2	2	2	2	
8) Engine Driven Fuel Pump	2	2	2	2	2	
9) Dual Igniter System, Each Engine (including indicator lights)	2	2	2	2	2	
10) STBY N ₁	2	2	2	2	2	
11) Engine Oil Pressure Annunciators	2	2	2	2	2	
12) Hydraulic Pressure On Annunciator	1	1	1	1	1	
13) Hydraulic Flow Low Annunciators	2	2	2	2	2	
14) Thrust Attenuators	2*	2*	2*	2*	2*	

MODEL 525

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM and/or COMPONENT	KIND OF OPERATION					COMMENTS
	V F R D A Y	V F R N I G H T	I F R D A Y	I F R N I G H T	I C I N G	
ICE AND RAIN PROTECTION						
1) Engine Anti-Ice System (including annunciators)	2	2	2	2	2	
2) Wing Anti-Ice System (including annunciators)	0	0	0	0	2	
3) Windshield Anti-Ice System (including annunciators and including rain removal doors)	1*	1*	1*	1*	2	* pilot's required for ground defog and rain removal
4) Pitot-Static and AOA Heat (including annunciators)	2*	2*	2*	2*	2*	* single AOA system
5) Tail Deice System (including annunciators)	0	0	0	0	1	
6) Glareshield Ice Detect Lights	0	0	0	2*	2*	* required for night ice detection
LANDING GEAR/BRAKES						
1) Landing Gear Position Indicator	3	3	3	3	3	
2) Unsafe Indicator	1	1	1	1	1	
3) Landing Gear Aural Warning System	1	1	1	1	1	
4) Emergency Extension System	1	1	1	1	1	
5) Power Brake System	1	1	1	1	1	
6) Antiskid System (including annunciator)	1*	1*	1*	1*	1*	*For inoperative antiskid, multiply takeoff field length and landing distance by 1.4.
7) Emergency Brake System	1	1	1	1	1	
LIGHTING						
1) Cockpit and Instrument Light System	0	1	0	1	0	
2) Landing Lights	0	2	0	2	0	
3) Navigation Light	0	3	0	3	0	
4) Anti-collision Light (Wing Tip Strobe)	0	2	0	2	0	
5) Wing Inspection Light	0	0	0	1*	1*	* required for night ice detection
6) Passenger Safety System	1	1	1	1	1	
OXYGEN						
1) Oxygen System Including Pressure Gage	1	1	1	1	1	required if unpressurized or if flight is above FL240
2) Passenger Masks	*	*	*	*	*	* one for each occupied seat
3) Crew Oxygen Mask	2*	2*	2*	2*	2*	* one for each occupied crew seat

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM and/or COMPONENT	KIND OF OPERATION					COMMENTS
	V F R D A Y	V F R N I G H T	I F R D A Y	I F R N I G H T	I C I N G	
WARNING/CAUTION						
1) Annunciator Panel	1	1	1	1	1	
2) Master Caution	1	1	1	1	1	pilot's is required
3) Master Warning	1	1	1	1	1	pilot's is required
4) Audio Warnings (red annunciators, engine fire, dual generator fail, autopilot, minimums, altitude, and landing gear) or 4) Tone Warnings (autopilot, minimums, altitude, and landing gear)	*	*	*	*	*	* all audio warnings are required (Verbal Warning System)
5) Overspeed Warning System	1	1	1	1	1	
6) Miscellaneous Annunciators, (DME, thrust attenuator stow)	*	*	*	*	*	* all are required
MISCELLANEOUS EQUIPMENT						
1) FAA Approved Airplane Flight Manual	1	1	1	1	1	
2) Collins Proline 21 Pilot's Guide	1	1	1	1	1	
3) Approved FMS Pilot's Manual	1	1	1	1	1	
4) Hand Microphones	2	2	2	2	2	
5) Passenger Briefing Cards	*	*	*	*	*	* one required for each occupied seat
SINGLE PILOT						
The following are required when the airplane is operated with a crew of one pilot; per applicable operating rules:						
1) Operable FCS-3000 Autopilot.						
2) Headset with microphone (must be worn).						
3) FAA Approved Pilots' Abbreviated Checklist, Cessna PN 525CLA-00 or later approved revision.						
4) Provisions for storage and retention of navigation charts, accessible to the pilot from the pilot station.						