

CJ1 Memory Items and Limitations

Serial Number 360 and Subsequent

SPEEDS

M_{MO} (Above 30,500 ft) – 0.710 Mach
 V_{MO} (S.L. to 30,499 ft) – 263 KIAS
Max Autopilot – 263 KIAS/0.710 Mach
 V_A – See AFM
Turbulent Air Penetration – 180 KIAS
Takeoff/Approach Flap 15° (V_{FE} 15°) – 200 KIAS
Flap Land 35° (V_{FE} 15°) – 161 KIAS
Max Speed Flaps Failed to Ground 60° – 140 KIAS
 V_{LE}/V_{LO} – 186 KIAS
 V_{LO} Retracting (SN 0458 and on) – 175 KIAS
 V_{LO} Extending (SN 0458 and on) – 186 KIAS
Min Speed in Sustained Icing (Limit) – 160 KIAS
Max Tire Ground Speed – 165 KIAS
 V_{MCG} – 93 KIAS
 V_{MCA} – 92 KIAS

WEIGHTS

Max Ramp – 10,700 lbs/4,853 kg
Max Takeoff – 10,600 lbs/4,808 kg
Max Landing – 9,800 lbs/4,445 kg
Max Zero Fuel – 8,400 lbs/3,810 kg

ENVIRONMENTAL

Max Operating Altitude – 41,000 ft
Max Landing/Takeoff Altitude – 14,000 ft
Max EPU Ground Start Elevation – 14,000 ft
Max Battery Ground Start Elevation – 10,000 ft
Max Takeoff Altitude (Flaps 15°) – 10,000 ft
Max Ambient Temp for Engine Start – ISA + 39° C
Min Ambient Temp for Battery Start – -30° C
Min Oil Temp for EPU Start (on EIS) – -30° C
Min Oil Temp for Battery Start (on EIS) – -25° C
Min Temp for De-Ice Boots Operation – -35° C
Min Temp to Takeoff and Land – -35° C/See AFM

ENVIRONMENTAL

Max Tail Wind (Eng Start < 10,000 ft) – 10 KIAS
Max Tail Wind (Eng Start > 10,000 ft) – 6 KIAS
Max Cross Wind (Engine Start) – 12 KIAS
Max Tail Wind for Landing (Dry Runway) – 10 KIAS
Crosswind Landing (Not a Limit) – 21 KIAS

MISCELLANEOUS

Min Battery Voltage for Start – 24 VDC
Min/Max Current for EPU Start – 800/1,100 amps
Max Time to Light Off (Start) – 10 sec
Max Oil Consumption – 0.023 gal/0.087 ltr
Autopilot Min Engage Height – 250 AGL
Autopilot Min use (Precision) – 71 ft AGL
Autopilot Min use (Non-Precision) – 250 ft AGL
Autopilot Min use (Cruise) – 1,000 ft AGL
Max Fuel Imbalance – 200 lbs (600 lbs EMERG)
Battery Start – 3 per hr (cross gen = 1/3)
SG Start – 3 per 30 minutes with 30 sec rest
Max Generator Amps – 300 amps
Max Amps on Ground – 300 (15 min), 250 (> 15 min), 50% overload (450 amps) for 2 min

ENGINE FAILURE OR FIRE OR MASTER WARNING DURING TAKEOFF

SPEED BELOW V_1

1. BRAKES - AS REQUIRED
2. THROTTLES - IDLE
3. SPEED BRAKES - EXTEND

SPEED ABOVE V_1

1. MAINTAIN DIRECTIONAL CONTROL
2. ACCELERATE TO V_R
3. ROTATE - V_R , CLIMB - V_2
4. LANDING GEAR (when positive rate-of-climb) - UP
5. AT 400 FEET AGL - RETRACT FLAPS AT $V_2 + 10$ KIAS OR V_{ENR} , WHICHEVER IS LOWER, AND ACCELERATE TO V_{ENR} (V_T), IF REQUIRED

ENGINE FAILURE DURING COUPLED APPROACH

1. POWER (operating engine) - INCREASE AS REQUIRED
2. AIRSPEED - $V_{REF} + 10$ KIAS
3. FLAPS - TAKEOFF AND APPROACH

ENGINE FAILURE (LH OR RH ENG FIRE WARNING LIGHT/SWITCH ILLUMINATED)

1. THROTTLE (affected engine) - IDLE
- IF LIGHT REMAINS ON**
2. ENGINE FIRE SWITCH (affected engine) - LIFT COVER AND PUSH
 3. EITHER ILLUMINATED BOTTLE ARMED LIGHT - PUSH

EMERGENCY RESTART - TWO ENGINES

1. IGNITION - BOTH ON
2. FUEL BOOST PUMPS - BOTH ON
3. THROTTLES - IDLE
4. IF ALTITUDE ALLOWS - INCREASE AIRSPEED TO 240 KIAS

CABIN DECOMPRESSION (CABIN ALT 10,000 FEET WARNING LIGHT ON AND MASTER WARNING)

1. OXYGEN MASKS - DON AND 100% OXYGEN
2. OXYGEN MICROPHONE SWITCHES - MIC OXY MASK
3. EMERGENCY DESCENT - AS REQUIRED
4. PASSENGER OXYGEN - ENSURE PASSENGERS ARE RECEIVING OXYGEN

EMERGENCY DESCENT

1. AUTOPILOT/TRIM DISENGAGE BUTTON - PRESS
2. THROTTLES - IDLE
3. SPEED BRAKES - EXTEND
4. INITIATE MODERATE BANK
5. AIRPLANE PITCH ATTITUDE - APPROXIMATELY 15 DEGREES NOSE DOWN

ENVIRONMENTAL SYSTEM SMOKE OR ODOR

1. OXYGEN MASKS - DON AND EMER
2. OXYGEN MICROPHONE SWITCHES - MIC OXY MASK

SMOKE REMOVAL

1. OXYGEN MASKS - DON AND EMER
2. OXYGEN MICROPHONE SWITCHES - MIC OXY MASK

ELECTRICAL FIRE OR SMOKE

1. OXYGEN MASKS - DON AND EMER
2. OXYGEN MICROPHONE SWITCHES - MIC OXY MASK

BATTERY OVERHEAT (BATT O'TEMP WARNING LIGHT ON AND MASTER WARNING)

1. VOLT/AMP - NOTE
2. BATT SWITCH - EMER
3. VOLT/AMP - NOTE DECREASE

AUTOPILOT MALFUNCTION

1. AUTOPILOT/TRIM DISENGAGE BUTTON - PRESS

EMERGENCY EVACUATION

1. THROTTLES - BOTH OFF
2. L/R ENGINE FIRE SWITCHES - BOTH PRESS
3. BOTTLE 1 AND BOTTLE 2 ARMED SWITCHES - BOTH PRESS (if fire suspected)
4. BATTERY SWITCH - OFF
5. AIRPLANE OUTSIDE - CHECK FOR BEST ESCAPE ROUTE

IF THROUGH CABIN DOOR

6. CABIN DOOR - OPEN
7. MOVE AWAY FROM AIRPLANE

IF THROUGH ESCAPE HATCH

6. ESCAPE HATCH - REMOVE AND THROUGH HATCH OUT OF AIRPLANE
7. MOVE AWAY FROM AIRPLANE

ENGINE LIMITATIONS

Williams International FJ44-1A Turbofan

Thrust Setting	Time Limit (min)	ITT C°	N ₂ % RPM	N ₁ % RPM	Oil Pressure PSIG	Oil Temp C°
Starting	-	See Figure 1-7 in POH	-	-	25 Min See POH	-40 to 121 See POH
Idle	Continuous	620 Max	56.2 +/- 1.3	-	35 Min	-40 to 121 See POH
Takeoff	See POH	820 Max	99.3	104.4	45 to 90	10 to 121
Max Continuous	See POH	796 Max	99.3	104.4	45 to 90 See POH	10 to 121
Transient	-	See Figure 1-6 in POH	See Figure 1-8 in POH	See Figure 1-9 in POH	25 Min 100 Max See POH	-

GENERAL

Windshield Bleed - HIGH if RAT is -18° C or below, LOW if RAT is above -18° C

Speed Brakes - must be retracted prior to 50 ft for landing

Takeoff with Thrust Attenuators in Stow – NOT permitted if balanced field is 4,500 ft or greater, OR if 0° flap takeoff is required

No flight above FL240 is allowed until the cabin is heated to a temperature of 0° C (32° F)

Satisfactory stall warning systems, flaps, and flight controls checks must be accomplished prior to flight

Use of ground flaps during touch and go landing is prohibited

Use of ground flaps in flight is prohibited

Autopilot and yaw damper must be OFF for takeoff and landing

Engine synchronizer must be OFF for takeoff and landing

VOR approaches must be made in the APPR mode

CJ Annunciators

Annunciator	Cause for Illumination
BATT O' TEMP > 160°	Upper Light flashes when Battery temp is over 145°F. Triggers MASTER WARNING light flashing. Whole light flashes when Battery temp is over 160°F and will reactivate the MASTER WARNING light flashing. Lower light will go out when Battery temp drops below 160°F.
CAB ALT 10000 FT AC FAIL	Cabin altitude is above 10,000 ft and triggers a MASTER WARNING light. Indicates a dual inverter failure, dual AC bus failure, or the Avionics Master switch is off.
OIL PRESS WARN LH RH	Light advises that the oil pressure is below 25 psi in the Left and/or Right Engine. Operates From a different sensor than the oil press gauge. Triggers the MASTER WARNING light flashing.
FUEL GAUGE LH RH	Indicates that a fault has been detected in the respective fuel gauging system. May also be the result of improper fuel capacitance.
FUEL BOOST ON LH RH	Indicates power has been applied, either automatically or manually, to the Left and/or Right fuel boost pump.
FUEL LOW LEVEL LH RH	Light advises the fuel quantity is below 185 lb. usable in the Left and/or Right fuel tanks as determined by a float switch. Triggers a MASTER CAUTION light.
FUEL LOW PRESS LH RH	The fuel pressure is below normal limits in the Left and/or Right engine fuel supply lines. Triggers a MASTER CAUTION light.
FUEL FLTR BYPASS LH RH	Indicates that a bypass of the Left and/or Right Fuel Filter is impending or actually occurring. Triggers a MASTER CAUTION light.
FUEL CROSSFEED ATT STOW SELECTED	Indicates that the fuel crossfeed or transfer valve is open. This is normal during crossfeed or transfer operation. The supply tank FUEL BOOST PUMP will also be illuminated. The thrust attenuator switch is in the stow position.
GEN OFF LH RH	Indicates the Left and/or Right generator power relay is opened. Illumination of both LH and RH lights will trigger the MASTER WARNING LIGHT.

Annunciator	Cause for Illumination
INVERTER FAIL 1 2	Light advises that the No. 1 or No. 2 inverter has failed. Single inverter failure trigger MASTER CAUTION light. Both inverter failure triggers AC FAIL and MASTER CAUTION light.
AFT J-BOX LMT	Indicates an open 225 amp current limiter in the aft junction box. Normal generated power is available to the respective busses, but the cross-tie buss will not supply power to the respective bus from the battery or from the opposite generator in the event of a generator failure.
AFT J-BOX CB	Indicates an open start control circuit breaker in the Aft junction box.
F/W SHUTOFF LH RH	Indicates applicable ENGINE FIRE button has been pushed. All electrical, fuel, and hydraulic systems are closed at the applicable firewall.
EMERG PRESS ON FRESH AIR	Indicates the emergency pressurization system has been turned on at the AIR SOURCE SELECT Knob. FRESH AIR indicates the AIR SOURCE SELECT knob is set to the FRESH AIR position.
HYD FLOW LOW LH RH	Light advises that the Left and/or Right hydraulic pump flow rate is below normal.
HYD PRESS ON SPD BRK EXTENDED	Advises that the hydraulic system is pressurized and the system bypass valve is closed. Light advises that the left and right speed breaks are fully extended.
ATTEN UNLOCK LH RH	Indicates that the respective thrust attenuator is not in the stowed (locked) position.
FLAPS > 35° DISPLAY FAN FAIL	Light will illuminate and activate MASTER CAUTION if the flaps are extended beyond 35° and the throttles are advanced above 85% N ₂ . Indicates that the EFIS display tube cooling fan has failed.

Annunciator	Cause for Illumination
PWR BRK LOW PRESS ANTISKID INOP	Indicates the power brake hydraulic pressure is low. The ANTISKID INOP light will also be on. Advises that the Antiskid system is inoperative, that the control switch is in the off position, or the system is in a test mode.
TAIL DE-ICE LH RH	Light illuminates when regulated bleed air is applied to the Tail de-ice boots.
DOOR NOT LOCKED DOOR SEAL	Indicates failure or improper position of one or more door switches and/or possible disengagement of the lower forward cabin door pin. Indicates loss of bleed air pressure to the primary cabin door seal.
W/S AIR O'HEAT AOA HTR FAIL	With the control switch in HI or LOW, advises that air to the windshield exceeds safe temp limits. With the switch OFF, indicates that the windshield shutoff valve has failed open or is leaking bleed air allowing line pressure to exceed 5 psi. Indicates the AOA probe heater is inoperative, or the Pitot Heat switch is off.
P/S HTR OFF LH RH	Light advises that the Pitot Heat switch is OFF, or if the switch is ON, that power has been lost to the pitot tube heater or one or both static port heaters in that system.
ENG ANTI-ICE LH RH	Light advises one of the following: Engine nacelle temp is below safe level for satisfactory ice protection, or in flight, the throttle is below 70% N ₂ microswitch position.
WING ANTI-ICE LH RH	Indicates wing leading edge is undertemp, overtemp, or when in flight under 70% N ₂ RPM.
BLD AIR O'HEAT LH RH	Indicates that a malfunction has caused the bleed air leaving the respective precooler to exceed allowable temperature.
NOSE AVN FAN TEMP AIR DUCT O'HEAT	Indicates failure of the nose avionics cooling fan which could result in a high temperature condition in the nose avionics compartment. Indicates the temp in the duct leading to the cabin exceeds safe limits.

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FUEL LOW LEVEL LH RH	Light advises the fuel quantity is below 185 lb. usable in the Left and/or Right fuel tanks as determined by a float switch. Triggers a MASTER CAUTION light.
FUEL LOW PRESS LH RH	The fuel pressure is below normal limits in the Left and/or Right engine fuel supply lines. Triggers a MASTER CAUTION light.
FUEL FLTR BYPASS LH RH	Indicates that a bypass of the Left and/or Right Fuel Filter is impending or actually occurring. Triggers a MASTER CAUTION light.
FUEL TRANSFER ATT STOW SELECTED	Indicates normal operation of the fuel transfer system. The supply tank FUEL BOOST ON will also be illuminated. The thrust attenuator switch is in the stow position.
GEN OFF LH RH	Indicates the Left and/or Right generator power relay is opened. Illumination of both LH and RH lights will trigger the MASTER WARNING LIGHT.

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Annunciator	Cause for Illumination
DOOR NOT LOCKED	Indicates failure or improper position of one or more door switch(es) and/or possible disengagement of the lower forward cabin door pin.
DOOR SEAL	Indicates cabin door primary seal pressure is too low to maintain door seal integrity. Secondary seal should maintain pressurization.
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