

# CAE SimuFlite Training Citation 560 Ultra Differences

(Revision: 2-24-2009)

## *Systems, Limitations and Operational Information*

*(Per Cessna Aircraft Operating Manual dated 23 May 1994, Revision 4 dated 20 April 1999 Unit-0260 and ON)*



# Operating

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## *Limitations*

### **CERTIFICATION STATUS**

Maximum Design Ramp Weight .....	16,500 Pounds
Maximum Design Takeoff Weight .....	16,300 Pounds
Maximum Design Landing Weight .....	15,200 Pounds
Maximum Design Zero Fuel Weight .....	12,200 Pounds

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

Maximum Certified Takeoff Weight .....	16,300 Pounds
Maximum Takeoff Weight Permitted by Climb Requirements.....	Refer to tables in Section IV/AFM.
Takeoff Field Length .....	Refer to tables in Section IV/AFM.

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

Maximum Certified Landing Weight .....	15,200 Pounds
Maximum Landing Weight Permitted by Climb Requirements or Brake Energy Limit .....	Refer to tables in Section IV/AFM.
Landing Distance .....	Refer to tables in Section IV/AFM.

### **WEIGHT AND BALANCE DATA**

The airplane should be operated in accordance with the approved loading schedule. (Refer to Weight and Balance Data Sheet and Model 560, Citation Ultra, Weight and Balance Manual.)

### **MANEUVER**

No acrobatic maneuvers, including spins, are approved. No intentional stalls permitted above 25,000.

# Operating

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## *Limitations (Continued)*

### **SPEED LIMITATIONS**

Maximum Operating Limit Speeds	
Mmo (Above 28,907 Feet) .....	0.755 Mach
Vmo (Between 8,001 and 28,907 Feet).....	292 KIAS
Vmo (Sea Level to 8,000).....	262 KIAS
Minimum Operating Speeds	
Minimum Control Speed, Air – Vmca .....	95 KIAS
Minimum Control Speed, Ground – VmCG .....	91 KIAS

### **TAKEOFF AND LANDING OPERATIONAL LIMITS**

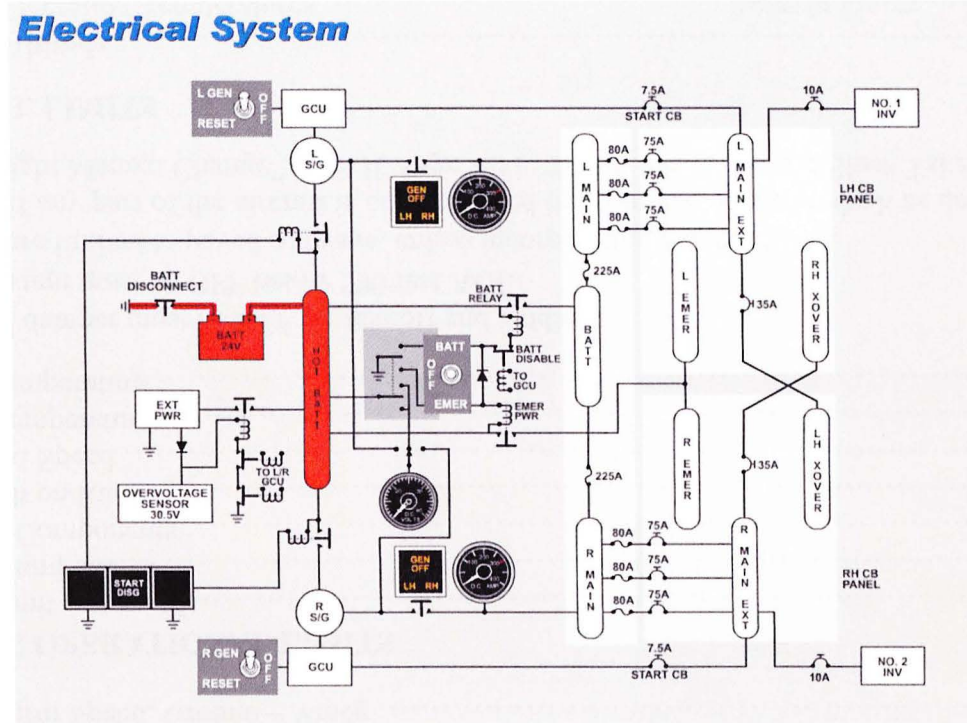
Maximum Altitude Limit .....	14,000 Feet
Maximum Tailwind Components .....	10 Knots
Maximum Crosswind Components.....	20 Knots
Maximum Water/Slush on Runway .....	5 Inches
Maximum Tire Ground Speed .....	165 Knots
Maximum Ambient Temperature .....	ISA + 39°C
Minimum Ambient Temperature .....	-54°C

- The autopilot and yaw damper must be OFF for takeoff and landing.
- Vertical navigation system must be OFF below 500 feet AGL.
- Takeoff and landings are limited to paved runways, unless incorporating [SB560-32-06](#).
- Takeoff is prohibited if any part of the aircraft is contaminated by frost, ice, snow or slush as defined in the “Temporary FAA Approved Airplane Flight Manual Change”, Sec. II, Page 2-11, “Frost, Ice, Snow and Slush Takeoff Limitations.”

### **ENROUTE OPERATIONAL LIMITS**

Maximum Operating Altitude .....	45,000 Feet
Minimum/Maximum Operating Temperatures .....	Refer to Figure 2-7, Sec. II, AFM

# Electrical System



## DC Electrical Power Sources

- (2) - 28.5 Volt Generators.
- (1) - 24 Volt Battery.

## DC Electrical Buses

- (8) – DC Buses.
- (2) – DC Emergency bus.

## AC Electrical Power Sources

- (2) – AC inverters, each providing 26V & 115V @ 400Hz.
- (1) - Receptacle for application of external power.

## AC Electrical Buses

- (2) – 26V Buses (L/R)
- (2) – 115V Buses (L/R)

# Electrical System

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## *Limits & Limitations*

### **DC Electrical Power:**

#### **External Power Source Requirements:**

- 28 Volts.
- 800-1000 Amps capability.

#### **Battery Limitations**

- Three engine starts per one-hour period. (*Three generator assisted cross-starts equal 1 battery start.*)
- Service the battery per the maintenance manual when the battery temperature exceeds 145° F.
- If the BATT O' TEMP annunciator illuminates on the ground, complete proper maintenance before takeoff.

#### **Starter Limitations**

- With the battery as the power source - Three starts per 30 minute period with a 90 second cool down period between starts.
- With an GPU or generator assisted start – Two starts per 30 minute period with a 90 second cool down period between starts.

#### **Generator Limits**

- Ground Idle NORM - Amperage limited to 125 per generator when on the ground.
- Ground Idle HIGH - Amperage limited to 225 per generator when on the ground.
- Amperage limited to 300 per generator when in flight.
- Amperage limited to 50% above allowable for 5 minutes during emergency situations. (Time limitation is “over the life cycle of the generator;” not “per occurrence.”)
- Continuous engine ground operation of the starter-generator above 125 amperes at ground idle 46% turbine speed or 225 amperes at flight idle 52% turbine speed is prohibited.

# Electrical System

## *Annunciators*



**GEN OFF** – The amber generator OFF light advises that left and/or right generator is not connected to the airplane bus. Illumination of both left and right lights will trigger the master warning system that will illuminate the master warning light.



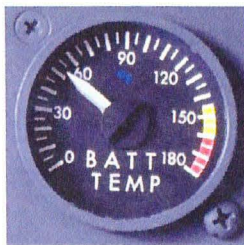
**AC FAIL** – The red alternating current fail light advises that the AC power bus voltage is above 130 VAC or below 90 VAC. Illumination of the light also triggers the Master Warning light. The AC FAIL light will remain illuminated until the MASTER WARN light is reset, even if the fault is momentary.



**INVERTER FAIL** – The amber inverter fail light advises that the number 1 or number 2 inverter output voltage is above 130 VAC or below 90 VAC. The failure of either inverter also triggers (AC FAIL). Resetting the master warning reset switch will extinguish the AC FAIL annunciator unless both inverter lights are illuminated.



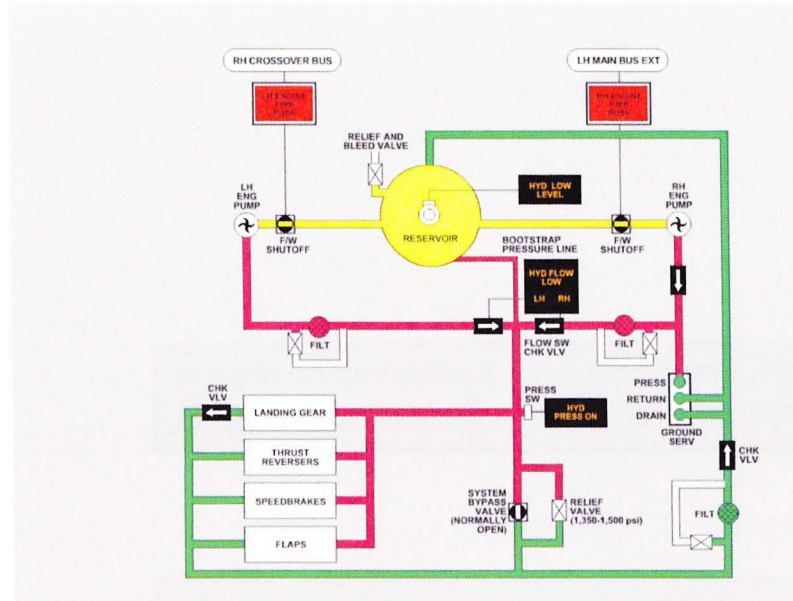
**BATT O' TEMP** – The red Battery Over Temperature light will illuminate with a steady light at temperatures over 145° F and will flash at temperatures over 160° F. Illumination of the light also triggers the master warning system that will illuminate the master warning light.



The battery temperature sensor for the BATT TEMP gauge is separate from the sensor of the **BATT O' TEMP** annunciator light. The temperature sensor for this gauge does not activate the **Master Warning** lights.

**Note:** The **BATT TEMP** gauge may have an “*Inop*” placard if other than a Nicad battery is installed.

# Hydraulic System



## System Summary

The Citation Ultra utilizes an open center (i.e., on demand) hydraulic system. Hydraulic fluid continuously circulates through the system at approximately 60 PSI. When pressure is required, a bypass valve closes and the pressure builds up to between 1,350 and 1,500 PSI. When the pressure is no longer needed, the bypass valve opens and returns the system to its low pressure flow. A relief valve regulates the pressure between 1,350 and 1,500 PSI when the system is activated.

The hydraulic system in the Citation Ultra activates the movement of the Landing Gear, Thrust Reversers, Speed Brakes and Flaps.

## Limitations:

The only AFM limitations for this system are the requirement to use Skydrol 500A, B, B-4, C, LD-4, or Hyjet W, III, IV, IVA or IVA Plus as fluid; and do not let the fluid temperature exceed 277°C during system operation.

# Hydraulic System

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## *Annunciators*



**HYD PRESS ON** – The amber hydraulic pressure ON light advises that the hydraulic system is pressurized.



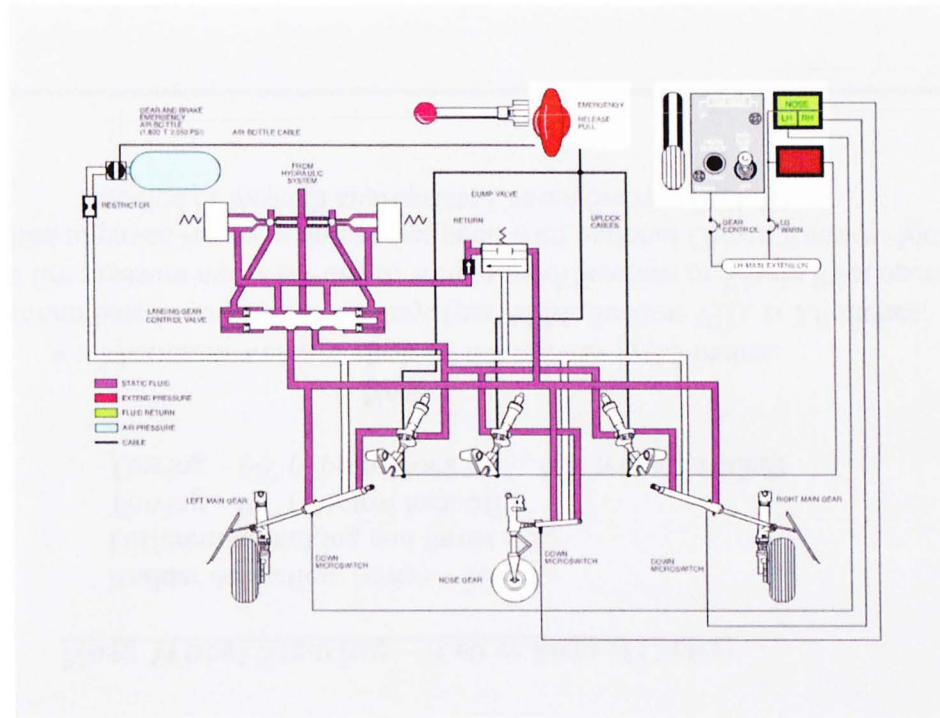
**HYD FLOW LOW** – The amber hydraulic flow low light advises that left and/or right hydraulic system flow is below approximately 0.35 gallons per minute.



**HYD LOW LEVEL** – The amber hydraulic low level light advises that the fluid in the hydraulic reservoir is low (at or below 0.2 gallons).



# Landing Gear and Brakes



## System Summary

The Citation Ultra landing gear system is a standard tricycle design that is electrically controlled and hydraulically actuated. Each gear assembly has a single tire. The nose gear has a chined tire that deflects water and slush on the runway from the aircraft's engines and airframe.

A back-up manual gear extension system provides an alternate gear extension method if the primary system fails.

The Citation Ultra brake system has pedal-operated multiple disc brakes on the main gear wheels incorporating the use of anti-skid. The system is controlled mechanically and actuated hydraulically. A back-up pneumatic system supplies pressure for braking if the primary system fails.

# Landing Gear and Brakes

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## *Limitations*

### **Speed Limitations:**

Tire groundspeed .....	165 KIAS
VLO – (Extending) .....	250 KIAS
VLO – (Retracting) .....	200 KIAS
VLE .....	292 KIAS

### **Nose Wheel Steering – (Left or Right of Center)**

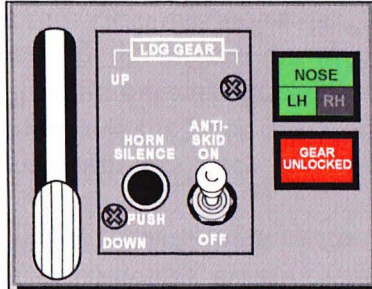
Rudder deflection, (only) –	20°
Differential braking and thrust –	95°
Towing –	95° (Control lock off)
Towing –	60° (Control lock on... Not recommended)

### **Note**

- Maximum water or slush on the runway is 0.5 inches.
- Maximum listed snow on the runway, (per AFM, Section VII), is 2.0 inches.
- The required tire pressure may vary due to weight modifications or Single Pilot operations.
- Takeoffs and landings are limited to paved runways unless equipped with optional Gravel Runway Modification; either factory installed or through appropriate Cessna Service Bulletin.

# Landing Gear and Brakes

## *Annunciators*



**Nose, LH, RH** – Each light indicates that landing gear is down and locked.

**Gear Unlocked** – One or more of the landing gear does not match the selected position of the gear selector handle.

**Landing Gear Horn** – An audible warning horn sounds if either throttle is retarded below approximately 70% N<sub>2</sub>, KIAS is below 150 and the gear is not down and locked. The horn resets if the throttle is advanced above approximately 70% N<sub>2</sub>.

The horn also sounds when the flaps are at 15°, with further retardation of either throttle and the gear is not down and locked.

The horn also sounds if the flaps extend beyond the 15° position when the gear is not down and locked. In this situation the horn cannot be silenced until the flaps are retracted back to 15° or all three gear assemblies are down and locked.



**Power Brake Low Pressure** – The amber power brake low pressure light advises that the power brake hydraulic pressure is low (Increase Landing Factor X 1.3).

**Anti-Skid Inop** – The amber inoperative light advises that the antiskid system is inoperative (Increase landing factor X 1.25).

**Note:** The **Anti-Skid Inop** annunciator will always illuminate when the **Power Brake Low Press** annunciator illuminates.

# Autopilot/Flight Director

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## System Summary

The Citation Ultra utilizes a Honeywell Primus 1000 electronic automatic flight control system (EAFCS). The system provides three axis (roll, pitch, and yaw) automatic flight controls with elevator trim, yaw damping, pitch-lift compensation and Q-switching.

The system combines the following sub-systems into a completely integrated electronic automatic flight control system: autopilot, flight director system, flight instrumentation systems, attitude and heading reference systems and air data system.

The system provides three options to the flight crew: manual operation, automatic operation or semi-automatic operation. Manual operation allows the pilot to fly the aircraft guided by cues from the flight director instrumentation. Automatic operation flies the aircraft through the autopilot coupled to the flight director; the pilot only monitors system operation. Semi-automatic operation allows the pilot to fly the aircraft through the autopilot controller pitch wheel, turn knob or touch control steering (TCS). Use of the pitch wheel or turn knob uncouples the flight director, canceling the vertical or lateral flight director modes.

The autopilot is integrated into the: IC-600 integrated avionics computer (IAC), PC-400 autopilot controller, SM-200 servo motors and controls and indicators.

# Autopilot/Flight Director

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## *Limitations*

### **Honeywell PRIMUS 1000 Electronic Flight Instrument System (EFIS)**

- The Honeywell PRIMUS 1000 Integrated Flight Control System Pilots manual (Publication Number: A28-1146-109-02 Dated September 2000 or later revision) for the Cessna Citation Ultra must be immediately available to the flight crew for airplanes equipped with the Honeywell PRIMUS 1000 Electronic Flight Instrument System.
- Both flight director and autopilot coupled Category I approaches are approved using the Honeywell PRIMUS 1000 EFIS displays.
- Category II approaches are not approved in the Citation Ultra.
- Operating in the composite mode is approved only with the flight director selected.
- EFIS ground operation with the pilot's PFD or MFD FAN annunciator light illuminated is limited to 10 minutes or until either the EADI HOT or EHSI HOT annunciator light illuminates, whichever occurs first.
- Dispatch is prohibited if either the PFD HOT, MFD HOT or SG HOT annunciator light is illuminated.
- Dispatch in instrument meteorological conditions is prohibited with the pilot's PFD or MFD FAN annunciator light illuminated. Dispatch in visual meteorological conditions is allowed with the PFD or MFD FAN annunciator illuminated provided the PFD or MFD FAN abnormal procedures are followed.
- Dispatch is prohibited following a flight where either an PFD HOT, MFD HOT or SG HOT annunciator light is illuminated, until the condition is identified and corrected.
- The pilot's PFD and MFD must be installed and operational in the normal (non-reversionary) mode for takeoff.
- The PRIMUS 1000 system must be verified to be operational by a satisfactory preflight test as contained in the NORMAL procedures.
- Operations on the ground with or without engines operating are limited when ambient air temperature is:
  - Below 45° C ..... No Limit
  - Between 45° C to 51° C..... 1 Hour Limit
  - Above 51° C. ....No Operations Permitted

# Autopilot/Flight Director

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## *Limitations (Continued)*

### **Autopilot**

- One pilot must remain his seat with the seat belt fastened during all autopilot operations.
- Even though the Auto Pilot is continuously monitored by the Pilot's IAC, Cessna still requires a visual confirmation of "AUTOPILOT .... PASS" by pressing the "EFIS TEST" button on the Pilot's PFD controller before every takeoff.
- Autopilot operation is prohibited above 14,500 ft, MSL, if the torque monitor, (AP TORQUE annunciator test), does not test per the *Normal Procedures* in the *AFM*.
- Minimum use height:
  - 1000 Feet AGL – Enroute
  - 300 Feet AGL – Non- Precision Approach
  - 180 Feet AGL – Category I ILS

### **Standby Gyro Horizon**

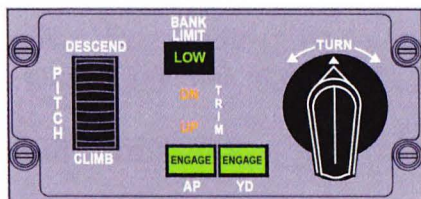
- A satisfactory preflight test must be accomplished on the standby gyro system.

### **Vertical Navigation System**

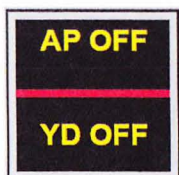
The vertical navigation system must be OFF below 500 feet AGL.

# Autopilot/Flight Director

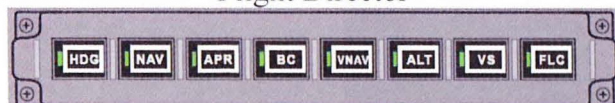
## Annunciators



**ENGAGE AP** – Depressing engages the autopilot and the yaw damper.  
**ENGAGE YD** – Depressing engages the yaw damper.  
**AUTOPILOT OFF** – Indicates the autopilot has been disconnected by normal or abnormal means.



Flight Director



PFD



### Mode Annunciation

**FD OFF** – Removes command bars from view on the ADI/EADI while maintaining flight director operation.

**HDG** - Heading select mode engaged.

**VOR** - A NAV mode (VOR) is armed or has been captured and is being tracked.

**LOC** – Localizer has been armed or captured.

**APR** – VOR approach selected or course capture has occurred.

**GS** – Glideslope armed or captured.

**ASEL** - Altitude preselect armed or captured.

**ALT** – Altitude hold mode engaged.

**BC** – Back course armed or captured.

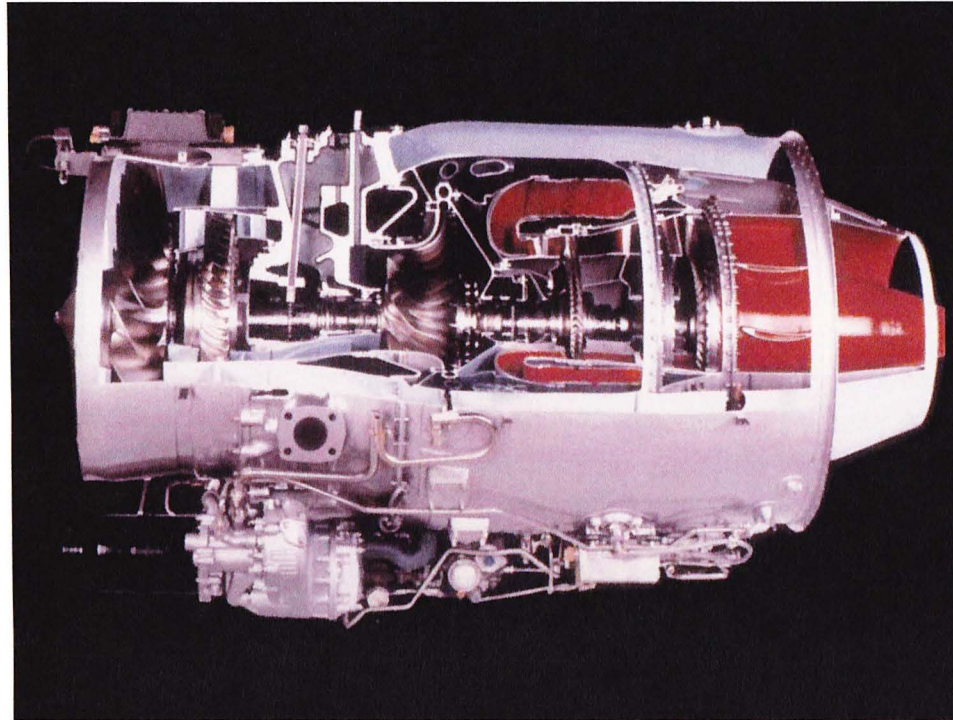
**VS** – Vertical speed hold has been selected and captured.

**IAS** – Indicated airspeed hold has been selected and captured.

**VNAV** – V-NAV mode is armed or captured.

# Powerplant

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*Pratt & Whitney, JT15D-5D Turboprop Engine*

## System Summary

Two Pratt & Whitney of Canada, JT15D-5D engines power the Citation Ultra. The JT15D-5D is a lightweight, twin-spool, medium-bypass ratio, (2.1:1), front turboprop engine that produces 3,045 lbs of static thrust at Sea Level at 80°F.



# Powerplant

## Limits & Limitations

### Engine Operating Limits

Thrust Setting	Time Limit	ITT °C	Turbine N <sub>2</sub> %rpm	Fan N <sub>1</sub> %rpm	Oil Press psig (Note 2)	Oil Temp °C
Takeoff	5 min	720	97	100 (Note 4)	60 to 90 (Note 3)	10 to 121
Max Continuous	Cont.	700	97	100 (Note 4)	60 to 90	10 to 121
Flt Idle	Cont.	580	52 (min)	—	40 (min)	-40 to 121
Gnd Idle	Cont.	580	48 (min)	—	40 (min)	-40 to 121
Starting	—	550 (Note 1)	—	—	—	-40 (min)
Transient	—	740	97	101.9	(Note 3)	-18 to 129

- The following oils are approved for use: MOBIL JET OIL II, MOBIL JET OIL 254, EXXON TURBO OIL 2380, CASTROL 5000, ROYCO TURBINE OIL 560, AERO SHELL TURBINE OIL 500, AERO SHELL TURBINE OIL 560, ROYCO TURBINE OIL 560 and ROYCO TURBINE OIL 500.
- Continuous engine ground static operation up to and including five minutes at takeoff thrust is limited to ambient temperatures not to exceed ISA+39°C.

### Ground Idle Switch

- The ground idle switch must be in HIGH position when conducting touch and go landings.
- The ground idle switch must be in HIGH position when operating on the ground with engine anti-ice bleed on.

# Powerplant

## *Annunciators*



**OIL PRESS WARN** – The red oil pressure warning light advises that the oil pressure is below safe limits (40 PSI) in the left or right engines

Note: (Accompanied by illumination of the flashing **MASTER WARNING** lights)



**F/W SHUTOFF** – The amber firewall shutoff light advises that the left and/or right fuel and hydraulic shutoff valves are closed.



**ENGINE FIRE PUSH** – Indicates the respective engine fire detection system has detected a temperature of approximately 500°F. Depressing the fire switch closes the firewall shutoff valves and cuts off fuel and hydraulics. It also isolates the thrust reverser, trips the generator field and arms the fire extinguisher bottle to allow for both bottles to be discharged to the affected engine.

**BOTTLE ARMED PUSH** - Indicates the bottle is armed to be discharged. Pushing the switch light discharges the bottle to the affected engine.



**TURBINE % RPM** - The turbine speed indicator is a dual-reading digital display that indicates turbine speed as a percentage of maximum RPM. Each three-digit digital display shows N2 RPM. At the maximum turbine speed of 97% RPM, the digits and a red light flash as a warning.

# Thrust Reversers

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## System Summary

The external target-type thrust reversers use two vertical doors (i.e. buckets) to direct exhaust gases forward for extra deceleration force during the landing ground roll. The hydraulically actuated and electrically controlled reversers mount to the aft engine fan nozzle and stow into the external aircraft contours to form the aft portion of the engine nacelle.

The pilot activates the thrust reverser system by operating thrust reverser levers that mount “piggy-back” on engine throttle levers. The reversers can be deployed only when primary throttle levers are in IDLE position and the aircraft is on the ground. Landing gear squat switches activate at touch-down to complete the electrical circuit necessary for reverser deployment.

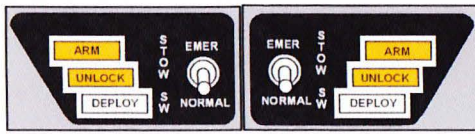
# Thrust Reversers

## *Limitations*

### Operating Limitations

- Reverse thrust power must be reduced to the idle reverse detent position at 60 KIAS on landing roll.
- Maximum reverse thrust is limited to 80.1% N1 for ambient temperatures above -18°C and 79.3% N1 for ambient temperatures below -18°C.
- Maximum allowable thrust reverser deployed time is 15 minutes in any 1-hour period during maintenance on the ground.
- Engine static ground operation is limited to idle power (if thrust reversers are deployed).
- Use of thrust reversers is prohibited during touch and go landings.
- The thrust reverser(s) must be verified to be operational by the Before Takeoff test in Section III Normal Procedures.

## *Annunciators*



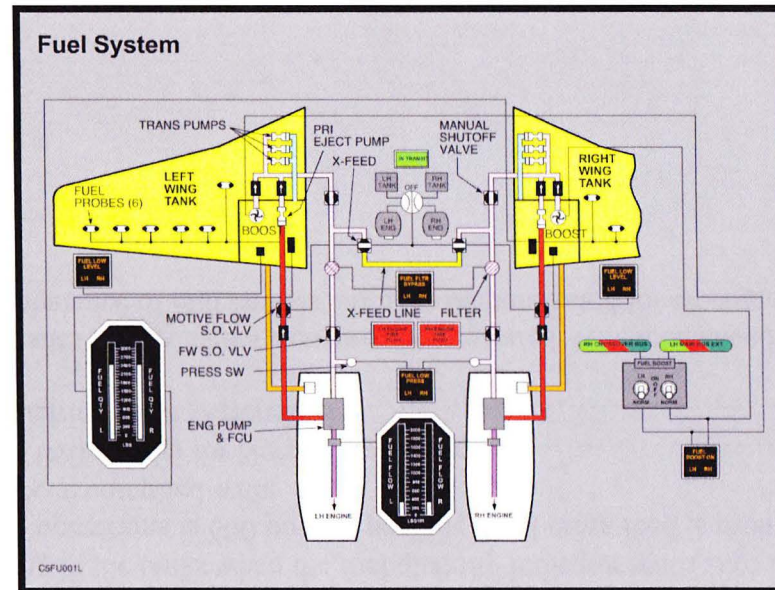
**ARM** – The respective Thrust Reverser system is pressurized above 200 PSI +.

**UNLOCK** – Indicates the reverser is not fully stowed.

**DEPLOY** – Indicates the reverser is fully deployed.

(When both squat switches indicate an in flight mode the **Master Warning** annunciators are activated when an ARM light illuminates.)

# Fuel



## System Summary

The Citation Ultra fuel system is essentially two distinct, yet identical systems: one for the left engine and one for the right. Wing tanks store the fuel for use by the engines; each wing holds approximately 431 U.S. gallons of usable fuel for a total aircraft capacity of 862 U.S. gallons, or approximately 5, 814 lbs. total usable fuel.

Each wing tank supplies its respective engine. Crossfeed operations allow both engines to receive fuel from one wing tank. Normal operation of the system is automatic and self-sustaining after engine start. The system requires no pilot action other than monitoring.

# Fuel

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## *Limitations*

The following fuels are approved for use in accordance with the above chart:

COMMERCIAL KEROSENE JET A, JET A-1, JET B, JP-4, JP-5 and JP-8 per CPW 204 specification.

AVIATION GASOLINE, MIL-G-5572, all grades: Maximum permitted is 50 hours or 3500 gallons between overhauls providing:

1. Pilot confirms fuel temperature within limits.
  2. Maximum ambient air temperature (takeoff) +32° C.
  3. Boost pumps – ON. (**Note:** To crossfeed, turn boost pump OFF on side opposite selected tank.)
  4. Hours used entered in Engine Logbook. For record keeping purposes, assume one hour of engine operation equals 70 gallons of gasoline.
- Anti-icing additive must be added to all approved fuels not presently containing the additive.
  - Unusable Fuel – Fuel remaining in the tanks when the fuel quantity indicator reads zero is not usable in flight.
  - Minimum required fuel for all operations is 600 pounds per side. Fuel cross feed is prohibited in descents. This limitation is in effect until [SB560-28-10](#) has been complied with.
  - Maximum Asymmetrical Fuel Differential for Normal Operations .....200 Pounds
  - Maximum Emergency Asymmetrical Fuel Differential .....600 Pounds

**Note:** Flight characteristics requirements were not demonstrated with unbalanced fuel above 200 pounds.  
A lateral fuel imbalance of 600 pounds has been demonstrated for emergency return.

# Fuel

## *Annunciators*



**FUEL BOOST ON** – The amber fuel boost ON light advises that electric power has been applied to the left and/or right fuel boost pump.



**FUEL FLTR BYPASS** – The amber fuel filter bypass light indicates that the designated fuel filter is obstructed / contaminated, and that an actual or impending bypass exists. **ADVISORY:** Consider the possibility of partial or total loss of one or both engines. **NOTE:** Fuel may be contaminated with ice.



**FUEL LOW LEVEL** – The amber fuel low level light advises that the fuel quantity in the left and/or right tanks is below approximately 185 pounds or less.



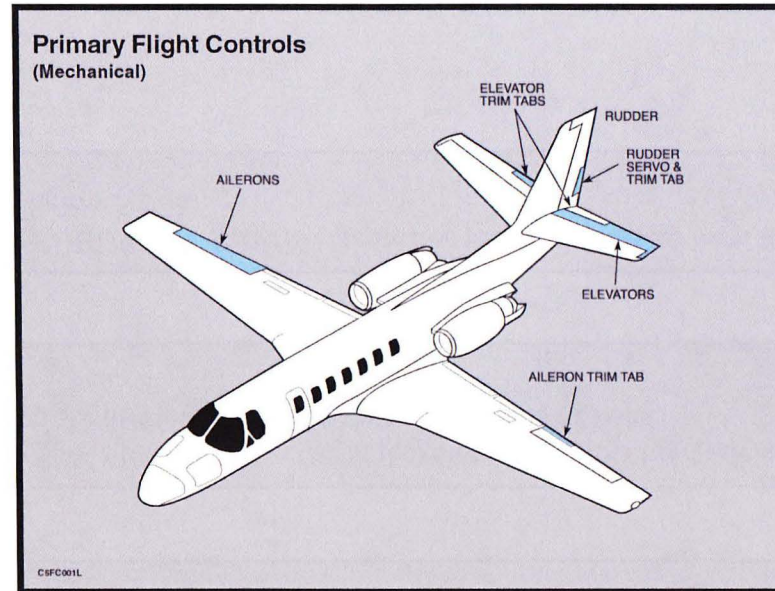
**F/W SHUT OFF** – The amber firewall shutoff light advises that the left and/or right fuel and hydraulic shutoff valves are closed.



**FUEL LOW PRESS** – Indicates fuel line pressure from the indicated side is below 5 PSI.

# Flight Controls

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## System Summary

The primary flight controls consist of the ailerons, elevators, and rudder. The mechanically driven flight controls operate through input received from the cockpit via direct cable.

The secondary flight controls, speed brakes and flaps, are electrically controlled and hydraulically actuated.

The Citation Ultra incorporates the use of a Rudder/Aileron Interconnect system. Movement of the rudder pedals moves the ailerons in proportion to the rudder position. This allows for an automatically coordinated turn.

Additionally, the Citation Ultra incorporates a Flap/Elevator Trim Mixer, allowing for automatic trim when the flaps are moving between 15° and 25° of flap position.

Trim tabs on the left aileron, both elevators and rudder provide for roll, yaw, and pitch trim respectively. In addition to the primary and secondary flight controls, stall warning devices complete the flight controls system.



# Flight Controls

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## *Limitations*

### Speed Limitations

Maximum Flap Extended Speed – Vfe

Full Flaps – LAND Position (35°) ..... 173 KIAS

Partial Flaps – T.O. & APPR Position (7) or (15°) ..... 200 KIAS

Full application of rudder and aileron controls as well as maneuvers that involve angles-of-attack near the stall should be confined to speeds below maximum maneuvering speed.

### Load Factor

In Flight

Flaps UP Position (0°) ..... -1.52 to + 3.8G's at 16,300 Pounds

Flaps T.O. & APPR to LAND Position

(7° to 35°) ..... 0.0 to + 2.0G's at 16,300 Pounds

Landing

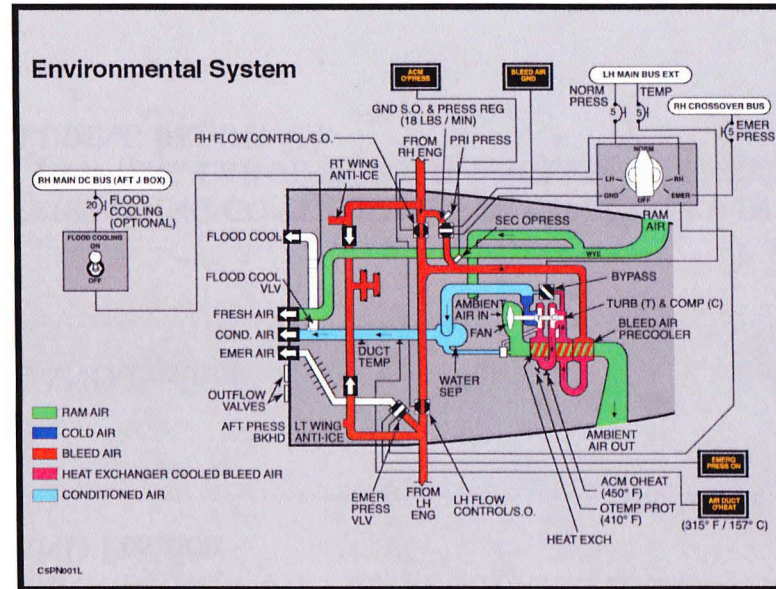
Flaps – T.O. & APPR to LAND Position

(15° To 35°) ..... +3.5G's at 15,200 Pounds

**- WARNING -**

**AVOID RAPID AND LARGE ALTERNATING CONTROL INPUTS, ESPECIALLY IN COMBINATION WITH LARGE CHANGES IN PITCH, ROLL, OR YAW (E.G. LARGE SIDESLIP ANGLES), AS THEY MAY RESULT IN STRUCTURAL FAILURES AT ANY SPEED, INCLUDING BELOW VA.**

# Pneumatics, Pressurization and Oxygen



## System Summary

The Bleed Air System extracts engine bleed air and transfers it to various systems (e.g., air conditioning, ice and rain protection and pressurization).

The air conditioning system routes engine bleed air through an air cycle machine (ACM) for temperature adjustment, then distributes this conditioned air throughout the aircraft for cabin pressurization. Temperature controls and various valves regulate the air's temperature and distribution.

Conditioned bleed air enters the cabin through outlets in the floor and ceiling. Two pressurization system outflow valves regulate the flow of air out of the pressure vessel to maintain a comfortable cabin pressure.

Oxygen is available to the crew at all times and to the passengers either manually through cockpit control or automatically if cabin altitude exceeds 13,500 +/- 600 feet.

# Pneumatics, Pressurization and Oxygen

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## *Limitations*

### **Cabin Pressurization Limitations**

Normal Cabin Pressurization Limitations ..... 0.0 to 8.9 PSI, +/- 0.1 PSI Differential.

### **Supplemental Oxygen System**

Continuous use of the supplemental oxygen system with cabin altitude above 25,000 feet with passengers, or with cabin altitude above 37,000 feet, crew only, is prohibited.

### **Oxygen Mask**

The standard diluter demand oxygen mask must be positioned around the neck to qualify as a quick-donning oxygen mask.

# Pneumatics, Pressurization and Oxygen

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## *Annunciators*



**BLD AIR GND** – The amber bleed air light advises that the high flow rate of bleed air has been selected from the right engine for ground operation of the air conditioner.



**CAB ALT 10000 FT** – The red cabin altitude light advises that the cabin pressure altitude is above 10,000 feet. Illumination of the light also triggers the master warning system that will illuminate the master warning light.



**EMER PRESS ON** – The amber emergency pressurization on light advises that emergency pressurization has been manually selected or automatically activated by an air cycle machine overheat.



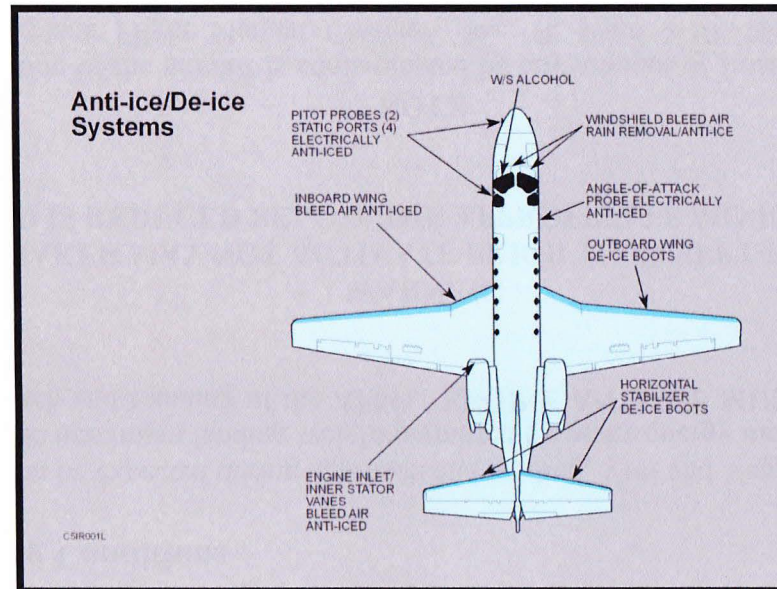
**AIR DUCT O'HEAT** – The amber air duct overheat light advises that the ventilation duct temperature exceeds safe limits



**ACM O'PRESS** – The amber air cycle machine overpressure light advises that the air cycle machine pressure is over 42 PSI.

# Anti-Ice and Deice Systems

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## System Summary

The Citation Ultra utilizes four methods to protect aircraft surfaces from ice and rain.

- Engine bleed air prevents ice formation on the engine bullet nose cone, temperature probe, engine inlet lip, stator vanes, windshield and a section of the inboard wing.
- Electric heating elements protect the pitot tubes, static ports and the angle-of-attack probe.
- Pneumatic deice boots remove ice from the outboard wing sections and horizontal stabilizers. The vertical stabilizer leading edge has no protection.
- Isopropyl alcohol (Anti Ice only) provides a backup for the pilot's windshield bleed air system (approximately 10 minutes w/ full reservoir).

# Anti-Ice and Deice Systems

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## *Limitations*

### **Windshield Ice Protection Fluid**

Use TT-1-735 isopropyl alcohol for windshield anti-ice.

### **Speed Limitations**

#### Minimum Operating Limit Speeds

Sustained flight in icing conditions .....160 KIAS  
(except takeoff, approach and landing)

#### Approach and Landing

Anti-ice ON .....Vref + 7 KIAS

Anti-ice OFF .....Vref

### **Approach and Landing in Icing Conditions**

When any residual ice is present or can be expected during approach and landing, Vref and Vapp must be increased by 7 KIAS. Vref and Vapp, the landing distance and the maximum landing weight permitted by brake energy must be corrected per Figure 4-29 (refer to Section IV, Performance – Approach and Landing of the AFM). ENGINE ANTI-ICE MUST BE ON to maintain adequate stall warning.

**- WARNING -**

**STICK SHAKER MAY NOT ACTIVATE PRIOR TO BUFFET/ROLL-OFF IF  
AIRSPEED IS REDUCED BELOW THE APPROPRIATE MINIMUM SPEED.**

#### **NOTE**

**Takeoff is prohibited** if any portion of the aircraft is contaminated by any amount of frost, ice, snow or slush as defined in the “Temporary FAA Approved Airplane Flight Manual Change”, Sec. II, Page 2-10, “Frost, Ice, Snow and Slush Takeoff Limitations.”

# Anti-Ice Deice Systems

## *Annunciators*



**W/S AIR O'HEAT** – The amber windshield air overheat light advises that the bleed air to the windshield exceeds safe temperature limits.



**ENG ANTI-ICE** – The amber engine anti-ice light advises that the left and/or right engine inlet, stator or inboard wing anti-ice has failed.



**P/S HTR OFF** – Pitot heat switch is off or switch is on and at least one heating element is inoperative.



**SURF DE-ICE** – Illuminates twice during the 18-second surface deice boot cycle to indicate proper inflation pressure. Tail boot inflation cannot be checked visually from the cockpit



**WING O'HEAT** The amber Wing O'Heat light advises that the inboard leading edge temperature is above 160° F.

## Cessna Citation Ultra Differences Test

1. What is the maximum tailwind component for takeoff?
  - (a) 15 KTS.
  - (b) 20 KTD.
  - (c) 10 KTS.
  - (d) No limit.
  
2. What is the maximum demonstrated crosswind component for takeoff or landing?
  - (a) 24 KTS.
  - (b) 20 KTS.
  - (c) 35 KTS
  - (d) 27 KTS
  
3. Maximum Takeoff weight?
  - (a) 16300 lbs
  - (b) 16830 lbs
  - (c) 16200 lbs
  - (d) 16630 lbs
  
4. Generator Starting Limitation with external power unit?
  - (a) Three starts in 30 Min.
  - (b) Three starts per hour.
  - (c) Two starts per 30 Min with 90 sec rest
  - (d) Three starts per 30 Min with 30 sec rest
  
5. If DC power is lost, in what position does the crossfeed valves fail?
  - (a) Nothing.
  - (b) They fail closed.
  - (c) Valves fail in the position that they are in.
  - (d) Valves will operate normally.



6. Maximum speed that the landing gear can be retracted is?  
 (a) 200 KTS  
(b) 250 KTS  
(c) 262 KTS  
(d) 292 KTS
7. Maximum Gear extension speed?  
(a) 200 KTS  
(b) 292 KTS  
(c) 262 KTS  
 (d) 250 KTS
8. The maximum oil consumption in the PW JT 15D-5D engine is?  
→ (a) 1 quart in 4 hours measured over 10 hours.  
(b) 2 quarts in 10 hours.  
~~(c) 1 quart in 4 hours.~~  
(d) 2 quarts in 4 hours.
9. What types of oil may be mixed in the PW JT 15D-5D engine?  
~~(a) Oils can never be mixed.~~  
→ (b) Approved brands of oil can be mixed if it does not exceed 2 qts in 400 hrs.  
(c) Different Oil types can be mixed as long as the oil is changed at next cycle.  
(d) Any type of oil can be used with no limitation.
10. What is the maximum engine ITT during takeoff?  
(a) 700<sup>0</sup>C.  
(b) 740<sup>0</sup>C.  
 (c) 720<sup>0</sup>C  
(d) No limits.

11. The hydraulic flow low light will illuminate when the flow drops below?
- (a) .035 GPM.
  - (b) .35 GPM.
  - (c) .45 PSI
  - (d) .35 PSI
12. Surface deice boots should not be used at or below what temperature?
- (a) -10 C.
  - (b) -35 F.
  - (c) -10 F.
  - (d) -40 C.
13. Departing from a contaminated runway requires what calculation?
- (a) No change in takeoff distance
  - (b) Multiplying calculated takeoff distance by 1.3.
  - (c) Recalculating takeoff distance from the AFM advisory section.
  - (d) Recalculating the Landing distance.
14. After a DC Power failure what systems are available?
- (a) Windshield air.
  - (b) Landing gear Annunciators.
  - (c) Wing and engine heat.
  - (d) Fire protection.
15. With the Fuel Boost pump switches in the off position what is true?
- (a) Boost pumps operate for crossfeed and for engine start.
  - (b) Boost pumps will only operate during engine start.
  - (c) Pumps will not operate in any situation.
  - (d) During Low Fuel pressure situations the pumps will be energized on.

16. How many gallons are left in the hydraulic reservoir when indicating the “refill line”?
- (a) .5
  - (b) .2
  - (c) .6
  - (d) None of the above.
17. Av Gas is an approved fuel for the PW JT 15D-5D engine.
- (a) True
  - (b) False
18. Is Prist required for the PW JT 15D-5D engine?
- (a) No
  - (b) Yes
19. What is the recommended speed for icing?
- (a) 165kts
  - (b) 160kts
  - (c) 180kts
  - (d) 170kts
20. What is the Max. Gen. Load?
- (a) 125amps in ground idle normal
  - (b) 225amps in high idle
  - (c) 300amps in flight
  - (d) All of the above