C208 Study Guide rev 030525

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SYSTEMS
Legacy: PT6A-114 675 SHP
EX: PT6A-140 867 SHP

Free-turbine, reverse-flow, two-shaft engine with a compressor section with 3 axial compressors and 1 centrifugal compressor, a reverse-flow annular combustion chamber, a compressor turbine, power turbine, reduction gear box and 1 single exhaust

Air comes in the intake, goes past the inertial separator where (if opened) air would take hard 90 degree turn into compressor section and FOD would be ejected out the port side of the cowling through inertia (use in heavy rain, icing, or dirt runways and while on ground)

PT6 has a 7:1 compression ratio where 70% of developed power is utilized – 20% of the intake air is used for compression/combustion and the rest for cooling

Power turbine runs at 33,000 RPM and through 2 planetary gear box reduction sections reduces the RPM to 1900 at the propeller hub

FCU (fuel control unit) governs engine power by using relationship between Px and Py to change fuel amount to the flow divider.. Px is constant pressure and Py we adjust with the power lever UNLESS we are using the EPL in which case it bypasses Px/Py and controls the fuel metering valve directly, it basically is like manually dumping fuel into the engine

EPL limitations are operating from 63%-101.6% Ng

Chip detectors are installed on the underside of the reduction gearbox AND the accessory gear box to detect metal or FOD in the system
RH side annunciator: reduction gear box
LH side annunciator: accessory gear box
On G1000 only 1 CAS msg

The fire detect system is a single-loop heat detection system that is filled with uretic salt and does not necessitate an engine shut-down necessarily, look and see if there is really a fire.

Primary governor – normal operation up to 1900 RPM – uses engine oil pressure to drive prop towards MAX and counterweights (flyweights) to drive prop towards minimum and feather
Overspeed governor – kicks in to 1976 RPM – relief valve which dumps oil pressure from the prop hub

Fuel-topping governor – kicks in to 2014 RPM

Fuel topping governor is primary control of RPM in reverse, and the last line of defense if over speed governor fails.. will control RPM by reducing pressure on Py, thereby reducing fuel to the engine and slowing it down

FCU failure caused by blocked or damaged Px/Py lines so power/ITT/Ng will roll to idle but RPM will remain at 1900 RPM so use EPL
Dual prop gov. failure will cause rise in RPM, do NOT use EPL when prop is at 2014 RPM

Operating range of compressor bleed air valve is 86-92% Ng, if failed closed in flight could return a compressor stall when reducing power below 92% Ng (asked this during my preflight)

P2.5 (low pressure bleed air) and P3 (high pressure bleed air)
P2.5 located between 2nd and 3rd axial compressors and is used to prevent compressor stalls and surges in low power operations. Modulates between open at lower power settings (below 82% Ng) and closes at higher power settings (92% Ng)
If the valve is stuck open you will see..

- Higher ITT
- Higher FF
- Higher Ng%

P2.5 bleed air controls cabin heating during **ground operations**

At low speeds axial compressors are more efficient than centrifugal and at high speed centrifugal is more efficient than the axials.. (open low power; closed high power)

P3 is used for bleed air uses: P3 air is used to provide suctions to vacuum gauges, pressurize the deice boots, and heat the cabin in the air.

The temperature control knob can detect automatically if an overheat situation occurs and shutdown – located in the combustion section

- EX fails OPEN
- Legacy fails CLOSED

Starter generator (28.5V, 200 amps or 300 amps) automatically (GCU by PIC foot) automatically cuts starter off above 46% Ng. it also regulates voltage to prevent surges and reverse current.
Fuel system gravity fed from both tanks (167.8 per tank) to the fuel reservoir which holds 3.5 gallons

Ejector Pump provides fuel to the engine-driven fuel pump.. an engine-driven fuel pump will cause a complete engine failure

Fuel select warning will go off when

1. both are OFF, with battery ON

2. one OFF, with other tank less than 25 gal.
3. one OFF, with starter engaged

approx.. fuel flow on engine start is 80-110 PPH

RESERVOIR FUEL LOW light comes on, you have approx.. 90 sec. left at cruise power before engine failure. This light may also be set off if anything magnetic is in pod B, disturbing the detector in the reservoir above it. (less than 3.5 gallons remaining)

Minimum Ng to re-light an engine after flame-out is 50%

Oil used in the PT6 is the BP2380, normal level is within 2 qts. of max hot (wait 10 mins after shutdown to read), 1-1.5 Qts low is ok

Legacy

14 simplex fuel nozzles (0 – 35% Ng 10 nozzles in use and 35% Ng + using all 14 nozzles)

EX

14 duplex fuel nozzles (small holes in use below 50% ng and large in use above 50% Ng)

Hot start causes. keep a close eye on the engine gauges (ITT & Ng)

Weak battery
Unburnt fuel in engine
EPL out of stow
Bleed air heat on
Incorrect Ignition timing
Restricted air intake
Faulty fuel system
Condition lever moved out of “cutoff” position
Tail wind

Hung start causes

Fuel flow divider failure
Secondary injections failure (duplex nozzles)

In event of hung or hot start immediately condition level fuel cutoff, fuel boost off and motor engine and observe starter limits.

Electrical system is a 28 volt system with 7 buses and a 24 volt lead-acid battery and 200/300 amp generator (asked someone at one point to name the buses:

Think P*B*A*G*S

1. Power distribution (primary)
2. Battery
3. Avionics 1
4. Avionics 2
5. General 1
6. General 2
7. Standby power (alternator)

Standby alternator 27.5 volts, 75 amps, **belt-driven** (27.5 instead of 28.5 so that we can tell if generator is online or not)

LOW VOLTAGE annunciator below 24.5V with electrical systems running off battery

We CAN NOT reset feeder CB/s which are the ones on the LEFT side of panel, its done its job by isolating a dead short, they protect the whole row of CB's

Flap system is single-slot, standby is available but will operate motor without restriction (holding flaps down will continue motor pushing flaps down) and AP not used

Brake system uses a hydraulic fluid reservoir and master cylinder on PIC side

Main system differences
EX

1. Flap setting
2. LED lights
3. Hartzell prop / McCauley prop
4. PT6A-140
5. Ecology tank

Legacy

1. Flap setting
2. Incandescent lights
3. McCauley prop
4. PT6A-114
5. EPA can

Flight spoilers operate when aileron on that side moves up more than 5 degrees, and the aileron trim tab is located on the starboard (right) wing

The rudder trim wheel will apply pressure to the nosewheel steering bungie to deflect the rudder

Limitations of the standby flaps is that they are always active with no limit stops, and the autopilot will not be in use

SWISS ARMY CARAVAN BOOK NOTES

- J-hooks on cowling most likely to pop open in rain
- EPA can drained every 6 shutdowns, if dumps with left crosswind, can hit exhaust and create a lot of smoke
- Nose wire breaks when exceeds 56 degrees
- Nose of caravan pointed 3 degrees down and 5 degrees to the right to minimize p-factor on power-ups
- Blister tanks on each wing are where 9x sumps from, each holds .3 gallons which is why we have the extra .6 in total fuel (335.6)
- VG/s on tail of aircraft placed when engineers switched to high-thrust composite propeller – in order to restore laminar airflow over the stabilizer and achieve required trim effectiveness at high torque settings
- STC for stall fences can increase takeoff weights and landings weights
- Starting engine in feather can cause heat damage from exhaust since it is not being blown aft from the propeller
- Anti-theft technique is to pop battery circuit breaker
- Compressor stall may sound like a loud bang
- Holding yoke forward will disengage stall warning horn
- ELT may last up to 150 hours
- JP-4, and JP-5 may have de-ice and anti-fungal additives already added in it which is DIEGME or EGME, both prevent microbial growth
- Avgas may be used only in emergency but fuel boost must be ON, and altitude may not exceed 9000 feet or 150 hours of total flight time
- (torque) X (RPM) / 5252 = SHP
- Aileron trim on right wing, autopilot servos on left wing

FAR's, OPSPECS, AND OTHER FUN STUFF

135.163 Carriage of IFR passengers
135.203 Minimum Altitudes (VFR)
135.205 Visibility Requirements (VFR)
135.209 Fuel Supply Requirements (VFR)
VFR DAY: first point of intended landing plus 30 minutes at normal cruise

VFR NIGHT: first point of intended landing plus 45 minutes at normal cruise
IFR: enough for point of intended landing, alternate (if required), and 45 minutes at normal cruise
135.215 Operating Limitations (IFR)
135.217 Takeoff Limitations (IFR)
135.219 Destination Airport Weather Minimums (IFR)
135.221 Alternate Airport Weather Minimums (IFR)
135.223 Alternate Airport Requirements (IFR)
135.225 Takeoff Approach and Landing minimums (IFR)
135.229 Airport Requirements
135.243 Pilot in Command Qualifications
135.244 Operating Experience
135.245 Second in Command Qualifications
135.247 Pilot Qualifications (recent experience)
135.261-135.273 (subpart F) flight time limitations and rest requirements
135.293 Initial and recurrent pilot testing requirements (SIC) - 12 CALENDAR months
135.295 Initial and recurrent flight attendant crewmember testing
135.297 PIC instrument proficiency check requirements - 6 CALENDAR months
135.299 PIC line checks (routes and airports) (PIC) - 12 CALENDAR months

LIFR – 500' AGL or 1SM
IFR – 500-1000' AGL or 1-3SM
MVFR – 1000-3000' AGL or 3-5SM
VFR – 3000' AGL and 5SM

135.217 IFR takeoff limitations

- No person may takeoff under IFR from an airport where weather conditions are at or above takeoff minimums but are below authorized IFR landing minimums unless there is an alternate airport within 1 hours flying time of the airport of departure (he will ask some kind of question about taking off below minimums, he is looking for something like this answer- basically you need a takeoff alternate)

135 takeoff minimums <2 engines: 1 SM (these are **STANDARD** minimums)
135 takeoff minimums >2 engines: ½ SM

OUR takeoff minimums – must have VISIBILITY of that required in lowest straight-in approach to the airport of departure
135.205
- no person may operate an airplane under VFR in uncontrolled airspace when ceiling is less than 1000 feet unless flight visibility is at least 2SM (Hana airport)

Destination alternate required if ceiling is below
- Lowest circling MDA + 1500' AGL or ceiling less than 2000' AGL
- When visibility at destination is below lowest visibility requirements +2SM or visibility is

below 3SM

Below is the copy/paste from the FOM. Spit it out as close as you can to verbatim. **This WILL be asked.**

7B.8.3 Destination Alternate Airport Requirements
FAR 135.223

A. An alternate airport need not be filed for a destination airport if:
   1. The destination airport has a standard instrument approach procedure, and
   2. Weather reports or forecasts for the time from 1 hour before to 1 hour after the ETA indicate:
      a. A ceiling of at least 1500 feet above the lowest circling approach MDA, or
      b. If no circling approach is authorized, 2000 feet above airport elevation, whichever is greater, and

B. Visibility is forecast to be 3 miles, or 2 miles more than the lowest visibility minimums for the instrument approach procedure to be used.

CO55 requirements:

		Visibility
For airports with at least one operational navigational facility providing a straight-in nonprecision approach procedure, or CAT I precision approach, or, when applicable, a circling maneuver from an IAP.	Add 400 ft. to MDA or DA/H, as applicable.	Add 1 statute mile (sm) or 1600 m to the landing minimum.
For airports with at least two operational navigational facilities, each providing a straight-in approach procedure to different suitable runways.	Add 200 ft. to higher DA/H or MDA of the two approaches used.	Add ½ sm or 800 m to the higher authorized landing minimum of the two approaches used.

If you decide an alternate is required..

- 2 navaid airport you must add 200' to **HIGHEST** MDA/DH of the 2 approaches you are using for planning, and ½ SM visibility to the approach in order to use
- 1 navaid airport add 400' to lowest MDA/DH and add 1SM to visibility for that approach

Is an alternate required to be in the OP specs if you are doing a charter flight? No.

4.0.16 Autopilot (14 CFR 135.93)

1. No PIC/SIC may use the autopilot at an altitude above the terrain which Is less than 500 feet
2. When using an instrument approach other than an ILS no PIC/SIC may use the autopilot at an altitude above the terrain that is less than 50 feet below the approved minimum descent altitude or less twice the maximum loss specified in the AFM
3. For an ILS no PIC/SIC will use an autopilot on an approach coupler at an altitude above the terrain that is less than 50 feet above the terrain

4.0.17 Sterile Cockpit (14 CFR 135.100)

1. Critical phases of flight include ground operations including taxi, takeoff, and landing

4.0.20 Airport Requirements (14 CFR 135.229)

1. No pilot may use an airport unless it is adequate for the operation
2. Night operations
    a. The wind indicator must be illuminated or wind indication provided by local ground communications or in the case of takeoff, that pilots personal observations
    b. Takeoff and landing area must be lighted

4.0.22 FAA Access

1. PIC will give free and uninterrupted access to the cockpit and representatives of the administration for purposes of inspection
2. PIC may exclude any person from the pilot compartment for the purpose of safety
3. PIC shall notify the DO and or CP by phone of any inspection

4.0.24 Rest, Flight, and Duty Times

1. MW will provide each pilot at least 1 rest period of at least 24 hours in each 7-day period

(Just memorize the whole chart basically, this **WILL** be asked.

2. During any 24 hour period, each pilot is scheduled for the following rest periods (another one to know closer to verbatim)
    a. 9 hours of rest for 8 hours or less of scheduled flight time
        i. This may be reduced to 8 hours if given 10 hours rest beginning no later than 24 hours after commencement of reduced rest
    b. 10 hours of rest for more than 8 hours but less than 9 of scheduled flight time
        i. May be reduced to 8 hours if given 11 hours rest beginning no later than 24 hours after commencement of reduced rest
    c. 11 hours of rest if scheduled flight time exceeds 8 hours by more than 60 minutes
        i. May be reduced to 9 hours if given 12 hours rest beginning no later than 24 hours commencement of reduced rest
3. MW will not assign nor the pilot accept flight assignments if that pilots total time in commercial flight may exceed:
    a. 8 hours between rest period for flight crew consisting of TWO pilots
    b. 8 hours in any 24 hours consisting of ONE pilot
    c. 34 hours in any 7 days
    d. 120 hours in any calendar month
    e. 1200 hours in any calendar year
4. Pilot duty times will be calculated by 14 CFR 135.265

4.0.28 Single Engine Operations

1. MW aircraft will always be operated within gliding distance from the shore with the exception of takeoff and landing
    a. Takeoff and landing is defined as in a descent or climb and talking to departure or approach, not center
    b. Hawaii and Maui 7500
    c. Maui and Lanai/Molokai 2500
    d. Molokai and Oahu 5000
    e. Oahu and Kauai 13000

4.0.29.2 Flight Plans

1. If weather conditions at destination or departing airport are forecast/at or below VFR weather minimums, an IFR must be filed and flown
2. VFR night flights require approval of DO or CP

4.0.30 class G operations

1. Airport served by an authorized IAP
2. Airport has approved source of weather reporting
3. Airport has a suitable means for the PIC to acquire timely air traffic advisories and the status of airport services and facilities
4. Facilities and services necessary to safely conduct IFR operations are available at time of operation
5. Must make following reports when not in radar contact
    a. Leaving FAF inbound
    b. Change of ETA +/- 2 minutes
    c. Un-forecasted weather conditions

4.0.31.7/.8 iPads

1. PIC responsible for EFB on flight and the charging both in flight and at night
2. Removable windshield EFB mounts will be used when flying single pilot
3. Two EFB's will be on board at all times
4. EFB will not be operated above FL140

4.0.33 Passengers

1. No person requiring medical oxygen will be carried aboard Mokulele aircraft (portable nebulizers are approved)

4.0.34 intoxicated passengers

1. Determination of intoxication will be made at discretion of the PIC
2. MW aircraft will not have passengers consuming alcoholic beverages

7.0.3.1 Refueling

1. PIC will ensure..
    a. No fueling within active thunderstorms within 10 miles
    b. No fueling within 100 feet of live weather radar
    c. Make sure a properly charged and inspected B, C, fire extinguisher is available
    d. No loose jewelry over fuel cap opening
    e. Flashlights must be UL approved
    f. Proper grade of fuel is being used
    g. Clean and report spills to the company
    h. No passengers within 50 feet
    i. No smoking within 100 feet
    j. No maintenance being performed during fueling
    k. Visually check all caps
    l. Fuel truck shall be bonded to the aircraft
    m. No person may use cell phones
2. Authorized fuel providers
    a. Air service Hawaii
    b. Landmark aviation
    c. Barbers point aviation

8.0.10 Special Inspections

1. Hard landings
2. Overspeed
3. Severe turbulence or severe maneuvering as reported by the PIC
4. Towing with a large fuel imbalance or high side loads
5. Lightning strike

Operational control is

1. Initiating
2. Conducting
3. Terminating

Do you have operational control as a PIC, yes. Basically in flight you can terminate/abort if an emergency. But no, you can just pop into somewhere for an approach on your way back to a different airport (can't change routing)
Dir of Operations has ultimate control, delegated to SOCC

A027 LAHSO you must have

1. Less than three knots tailwind
2. Dry runway
3. Runway landing distance
4. Basic VFR
5. Visual or electronic vertical guidance
6. No wind shear in last 30 minutes

Director of Operations: Bob Waltz after Michael A.

Director of Operations Mokulele: ~~Josh Greenband~~

C052 Instrument approaches approved

1. Non-Precision
    1. GPS
    2. LDA
    3. LOC
    4. DME
    5. RNAV
    6. VOR
    7. VOR/DME
2. Precision
    1. ILS
    2. ILS/DME

CO57 IFR takeoff minimums
C064 Terminal Area IFR in class G

1. Authorizes to conduct nonscheduled passenger and all-cargo terminal area IFR operations in class G airspace or at airports without an operating control tower if
    a. Airport served by an authorized instrument approach procedure
    b. Airport has an approved source of weather
    c. Airport suitable means for the PIC to acquire timely air traffic advisories

Facilities necessary to safety are available

2.14 Communications
SIC's are NOT AUTHORIZED to accept or commit the following without verbal consent of the PIC (A027)

a. LAHSO clearances
b. Traffic in sight responses
c. Accept visual approach clearances
d. Accept a maintain visual separation clearance
e. Waive wake turbulence
f. Provide a response to flight conditions

2.17.1 Precision Approach

MAA shall be set once the aircraft is established at the altitude required for crossing the FAF or the MAA may be set earlier should the aircraft already be cleared and established on the glideslope at higher intercept altitude
2.1.7.2 Non-Precision altitude
MAA shall be set once the aircraft is established at the MDA

2.17.3 Night Landings without Vertical Guidance
Will be done by the captain only

HOW MUCH DRY ICE CAN WE CARRY? 5.5 lbs (per passenger)
OPSPECS is FAA written, FOM is company written FAA approved

RANDOM STUFF YOU SHOULD (HOPEFULLY) ALREADY KNOW

IMSAFE
Illness
Medication
Stress
Alcohol – SAE 12 hours bottle to throttle.. FAA is 0.04 and 8 hours bottle to throttle
Fatigue
Eating/external/emotions

ICEFLAGS
Inversion
Coriolis
Elevator
False horizon
Leans
Autokinesis
Graveyard spin/spiral
Somatogravic

6/6/HIT

Carriage of passengers landings currency

ARROW
airworthiness
Registration
Radio operators license
Operating limitations
Weight & balance

AVIATE
Annual
VOR check
100 hour
Altimeter/airspeed
Transponder

ELT

GRABCARDD
Generator
Radio
Altimeter
Ball/slip-skid
Clock
Attitude
Rate of turn
Directional gyro
DME above FL240

ATOMTOFLAMES
Altimeter
Tachometer
Oil pressure
Manifold pressure
Airspeed
Temperature (OAT)
Oil temperature
Fuel gauges
Landing gear position light indicator
Attitude
Magnetic compass
ELT
Seatbelts

FLAPS
Fuses/circuit breakers
Landing light
Anti-collision lights
Position lights
Source of electricity

Holding speeds
0-6000 - 200
6000-14000 - 230
14000+ - 265

Terminal/Low/High VOR's

Localizer/glideslope 3 components

1. Guidance
2. Visual
3. Range

Lost communications (AVEF / MEA)

GPS/RAIM/WAAS
RAIM will calculate on a GPS approach 2NM prior to the FAF
receiver autonomous integrity monitoring

- In the event of one of the 4 satellites becoming out of view, a 5th satellite would replace it. We compute RAIM on the G1000 MFD to ensure we will have at least 5 satellites in view the entire route.
- RAIM lost will have an indication of "LOI" for loss of integrity on the CDI

Wide area augmentation system

- Augments system by having ground reference stations which always know where they are sending correction signals to WAAS (GEO's) satellites which send corrected signals to our aircraft
- WAAS needed for LPV approaches

GPS 3 components

1. Space
2. Control
3. User

CDI accuracy on GPS approach, 0.3NM full scale deflection, 1NM for terminal

EMERGENCY CHECKLISTS

ENGINE FAIL TAKEOFF ROLL

- Throttle - IDLE
- Brakes – APPLY

ENGINE FAIL AFTER ROTATION

- Airspeed – 90 KIAS / 85 KIAS

ENGINE FAIL IN FLIGHT

- Airspeed – 95 KIAS
- Throttle – IDLE
- Prop – FEATHER
- Fuel condition lever – CUTOFF

ENGINE FLAMEOUT IN FLIGHT

Above 50% Ng

- Throttle – IDLE
- Ignition – ON

Under 50% Ng

- Fuel condition lever – SHUTOFF

ENGINE FIRE ON GROUND START

- Fuel condition lever – CUTOFF
- Fuel boost pump – OFF
- Starter – MOTOR

CABIN FIRE ON GROUND

- Throttle – IDLE
- Brakes – APPLY
- Prop – FEATHER
- Fuel condition lever – CUTOFF
- Battery – OFF
- Aircraft – EVACUATE

ENGINE FIRE ANNUNCIATOR IN FLIGHT

- Throttle – IDLE
- Prop – FEATHER
- Fuel condition lever – CUTOFF
- Fuel/oil shutoff valve – OFF
- Cabin heat firewall shutoff – OFF

ELECTRICAL FIRE IN FLIGHT

- Stby. Alt. power – OFF
- Generator – TRIP
- Battery – OFF
- Vents – CLOSED
    - FWD air vent
    - OVHD air vent
    - VENT air knob
    - A.C. Switch
- Temp control knob – CLOSED
- Bleed air heat switch – OFF
- Fire extinguisher – ACTIVATE

CABIN FIRE IN FLIGHT

- Stby. Alt. power – OFF
- Generator – TRIP
- Battery – OFF
- Vents – CLOSED
    - FWD air vent
    - OVHD air vent
    - VENT air knob
    - A.C. Switch
- Temp control knob – CLOSED
- Bleed air heat switch – OFF
- Fire extinguisher – ACTIVATE

WING FIRE

- Pitot/static heat – OFF
- Stall heat – OFF
- Lights – OFF
    - STROBES
    - NAVs
    - LDG/TAXI/RECOG
- L. Fuel quantity circuit breaker – PULL
- R. Fuel quantity circuit breaker – PULL
- Radar circuit breaker – PULL
- Vent air knob – CLOSED
- A.C. Switch – OFF

INADVERTENT ICING ENCOUNTER

- Ignition – ON
- Inertial separator – BYPASS
- Pitot/static heat – ON
- Stall heat – ON
- Airspeed/altitude
    - If above FL200 max airspeed 160 KIAS
    - Descend below FL200

UNCOMMANDED POWER REDUCTION

- Throttle – IDLE
- Emergency power – AS REQUIRED
    - Minimum 65% Ng

RSVR FUEL LOW ANNUNCIATOR

- Fuel tank selectors – BOTH ON
- Ignition – ON
- Fuel boost switch – ON

FUEL SELECT OFF ANNUNCIATOR

- Fuel tank selectors – BOTH ON

STARTER ANNUNCIATOR ON START

- Battery – OFF
- External power – OFF, then DISENGAGE
- Fuel condition lever – CUTOFF

ASYMMETRIC FLAP EXTENSION

- Corrective control – APPLY
- Flaps – UP
- Airspeed – 100 KIAS or less

FUEL PRESS LOW ANNUNCIATOR

- Fuel tank selectors – BOTH ON
- Fuel boost switch – ON
- Ignition – ON

LIMITATIONS

AIRSPEED

- Vmo (MAX OPERATING AIRSPEED) – 175 KIAS
- Va (MANEUVERING AIRSPEED)
    - 8807 lbs. – 148 KIAS
    - 7500 lbs. – 137 KIAS
    - 6250 lbs. – 125 KIAS
    - 5000 lbs. – 112 KIAS
- Vfe (FLAP EXTENSION AIRSPEED)
    - 208B EX
        - TO/APR – 150 KIAS
            - Approved for takeoff and landing
            - Approved for landing in icing conditions
        - APR/LAND – 125 KIAS
            - Approved for landing only
    - 208B
        - 0-10 – 175 KIAS
        - 10-20 – 150 KIAS
        - 20-30 – 125 KIAS

ENGINE START CYCLE

- Battery start
    - 30 SEC. ON 60 SEC. OFF
    - 30 SEC. ON 60 SEC. OFF
    - 30 SEC. ON 30 MIN. OFF
- External power start
    - 20 SEC. ON 120 SEC. OFF
    - 20 SEC. ON 120 SEC. OFF
    - 20 SEC. ON 60 MIN. OFF

** Remember the time begins at the first instance you turn on the starter motor. So if it takes 20 seconds to start the engine then you can only motor for 10 seconds.

WEIGHT LIMITATIONS

- Max RAMP – 8842 lbs. EX, LEGACY: 8785 lbs.
- Max TAKEOFF – 8807 lbs. EX, LEGACY: 8750 lbs.
- Max LANDING – 8500 lbs. EX, LEGACY: 8500 lbs.

Gross weight increase STC on some AC's: Max Ramp 9097; Max TO 9062

FUEL LIMITATIONS

- Both tanks (max) – 335.6 USG
- Both tanks (usable) – 332 USG
- Both tanks (+ reservoir) – 339.1 USG / 335.3 USG (usable)

MAX FUEL IMBALANCE – 200 lbs.
Max side slip < 3mins

MAX ALTITUDE

- Non-icing conditions: FL250
- Icing conditions: FL200

OAT LIMITATIONS

- Cold - -54 C
- Hot – 42 C on (ground) from S.L. to 5000 FEET
- Hot – ISA +37 C in (air) from S.L. to FL250

STANDBY ELECTRICAL SYSTEM

- Maximum load from S.L. to FL210 – 75 AMPS
    - Reduce load by 5AMPS/1000FEET after FL210

AUX AUDIO SYSTEM

- Aux audio entertainment system use is PROHIBITED on takeoff and landing
- Aux audio entertainment system is PROHIBITED in IFR unless determined by operator not to create interference with NAV/COMMs

ANTI-ICE FLUID LIMITATIONS

- Flap limits – UP for TAKEOFF
- Airspeed limits – rotation at 83 KIAS

12V. POWER SYSTEM

- Maximum combined current draw of 10 AMPS
- NOT certified for supplying power to NAV/COMMs devices
- PROHIBITED for use takeoff and landing
- Not allowed under IFR unless determined by operator to be ok

FlightIntoKnownIcing VISUAL CUES

- usually extensive ice accreted on airframe in areas not normally observed to collect ice
- accumulation of ice on upper or lower surface of WING aft of protected area
- heavy ice accumulation on WINDSHIELD
- ice forms aft of protected area on wing STRUTS

AUTOPILOT LIMITATIONS

- CAT 1 ILS limited
- YD must be on for all autopilot operations
- AP cannot be engaged when audio failure
- Airspeed
    - Engage minimum – 80 KIAS
    - Engage maximum – 175 KIAS
- Altitude

- Disengage approach – 200 FEET AGL
- Disengage all other –800 FEET AGL

PowerPlant limitations EX/LEG

	TORQUE FT. LBS.	MAX ITT C	%Ng (2)	PROP RPM	OIL PSI	OIL TEMP C	SHP
TAKEOFF d	2000 1700	850 (775) 805 (740)	103.7 101.6	1900	85 - 105	32 – 99 10 - 99	867 675
CLIMB	2000 1700	825 (775) 765 (740)	103.7 101.6	1900	85 - 105	32 – 99 0 - 99	867 675
CRUISE	1300 1300	805 (775) 740 (700)	103.7 101.6	1900	85 - 105	32 – 99 0 - 99	867 675
IDLE		700 685	55/68 min/ 52/65 cond lev. lo/hi		40 MINIMUM	-40 – 99 -40 - 99	
REVERSE	2500 1865	850 805	103.7 101.6	1825	85 - 105	32 – 99 0 - 99	867 675
TRANSIENT	2600 (20. SEC. MAX) 2400	905 (20 SEC. MAX) 850	105.4 (20 SEC. MAXIMUM) 102.6	2090		32 – 99 0 - 104	
START		1090 (2 SEC. MAX) 1090			200 MAXIMUM	-40 MINIMUM -40	
MAX. RATED	2397 1865	825 805	103.7 101.6	1900	85 - 105	32 – 99 10 - 99	867 675

From SOP's

1. Wind shear can exceed the climb capabilities of many aircraft, even in cruise flight, in the vicinity of mountainous terrain or near thunderstorms. Pilots should be constantly aware of the signs of wind shear when crossing mountain ridges. No ridge line shall be crossed at an altitude less than 2,000 feet above the terrain, unless on a published segment of an approach procedure.
2. Briefings should include the handling of any unaccompanied minors who may be aboard. Minors under the age of 15 are not accepted on Southern Airways flights. Should a crewmember become aware that an unaccompanied minor under the age of 15 years is on board he/she must advise SOCC and the Station immediately for resolution. Minors 15 to 17 are considered adults and booked as follows:
   1. Flights that have a scheduled stop over and change of aircraft are not allowed to have an Unaccompanied minor.
   2. Un accompanied Minor Travel Must Be Complete Prior 5:00PMET.
1. The Southern Airways taxi speed limit is twenty-five (25) knots as read on the GPS. Most conditions will require a slower taxi speed. Pilots are reminded that the ramp is a very different operating environment than taxiways in the airport movement area.
2. Completion of engine trend monitoring (ECTM) shall be conducted during cruise flight after five (5) minutes of stabilized engine power settings. Should a change in power or control settings, inertial separator position, or altitude occur prior to starting the trend recording, the time for stabilized engine power settings must be restarted.
3. For passenger comfort, pilots shall endeavor to limit descent rates to less than 1,000 feet per minute in the C208B aircraft, however, compliance with ATC instructions and operational necessity may at times require a higher rate of descent.
4. Southern Airways requires ALL flights attain stabilized approach criteria by no lower than 1,000 feet AGL on instrument approaches and 500' AGL on visual approaches AND maintain a stabilized approach until landing.
5. Southern Airways requires ALL flights to land on the touchdown markers or within the first 1/3 of the runway it is not marked.
6. See the Profiles and Protocols section of this manual for specific scenarios, however, in general, pilots shall comply with the following stabilized approach mandates:
   1. For an Instrument Approach With Vertical Guidance:
   a. Course Deviation Editor Less;
   b. Glidepathdeviationuptoonedotabovetoone-halfdotbelow;and, c. Speed as briefed +5 knots to -0 knots.
   2. Foran Instrument Approaches With Vertical Guidance: a. Course Deviation Editor Less;
   b. At ALL MDA's,altitude deviation+50 feet/-0 feet;and, c. Speed as briefed +5 knots to -0 knots.
7. Unless required in response to an emergency situation, the maximum bank angle during ANY operations under 1,000 feet AGL is 30 degrees

8. In NO CASE may a pilot write up an aircraft without informing Maintenance, the Chief Pilot, or DO. Regardless how minor the squawk is, Maintenance must be consulted BEFORE any pilot action is taken.

FOM vol. 1

The individual aircraft MEL is developed from the FAA approved Master Minimum Equipment List (MMEL), which according to FAA regulations "includes only those items of equipment which the Administrator finds may be inoperative and yet maintain an acceptable level of safety." The Company has developed MELs for each aircraft's equipment, configuration, and operational requirements. Only FAA Approved MELs may be used in determining aircraft operations with inoperative equipment.

REQUIRED ON-BOARD EQUIPMENT/DOCUMENTS

a. Normal/Abnormal and emergency checklists
b. Current air navigation charts (IFR enroute and approach charts)
c. Flashlight (having at least 2 “D” cell batteries 135.159)
d. 2 speakers or headphones
e. Company flight ops manual, HazMat Manual, and an MEL
f. Passenger briefing cards
g. Oxygen masks and supplemental oxygen for crew and pax if required
    i. Flights 10000-12000 30 minutes
    ii. 12000+ o2 required for each pilot
h. Airworthiness certificate
i. Approved POH
j. Crewmember certification
    i. Airman cert
    ii. Medical
    iii. Photo ID
k. Aircraft flight log
l. Aircraft discrepancy log
m.

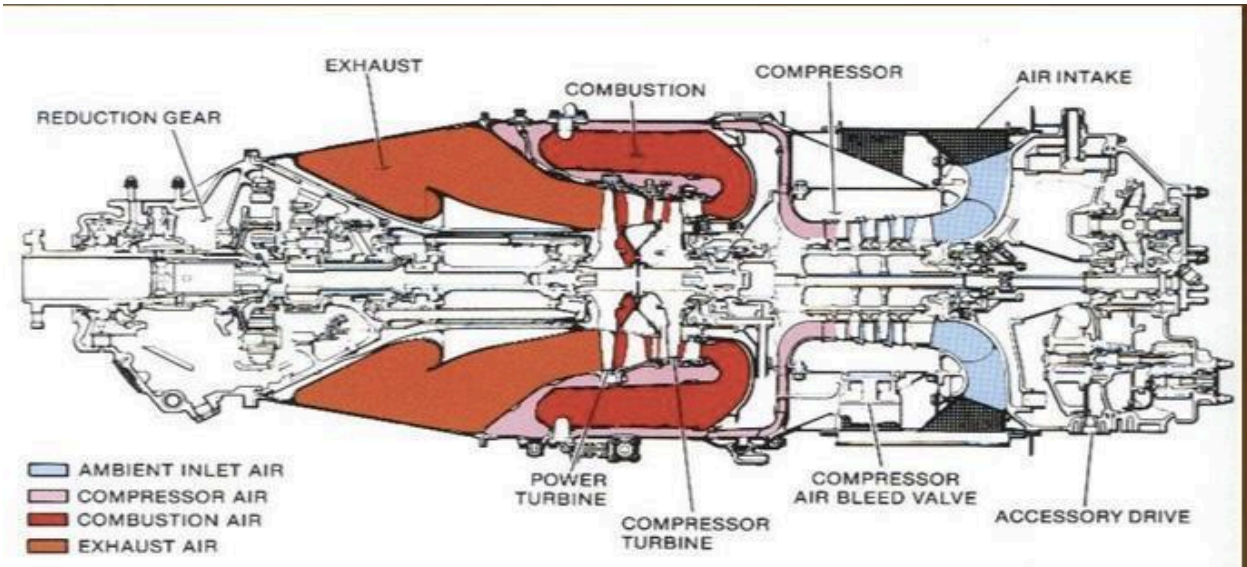
Actual Flight Hours	**Required Rest**	**Reduced Rest**	**Compensatory Rest**
Less than 8.	9	8	10 hours beginning no later than 24 hours after the reduced rest period began.
8 or more but less than 9.	10	8	11 hours beginning no later than 24 hours after the reduced rest period began.
9 or more.	11	9	12 hours beginning no later than 24 hours after the reduced rest period began.

REVIEW FOM VOL. 2 FOR DIFFERENT REST REQUIREMENTS (FOM 1 IS SCHEDULED OPS FOM 2 IS CHARTER/ NON-SCHEDULED OPS)

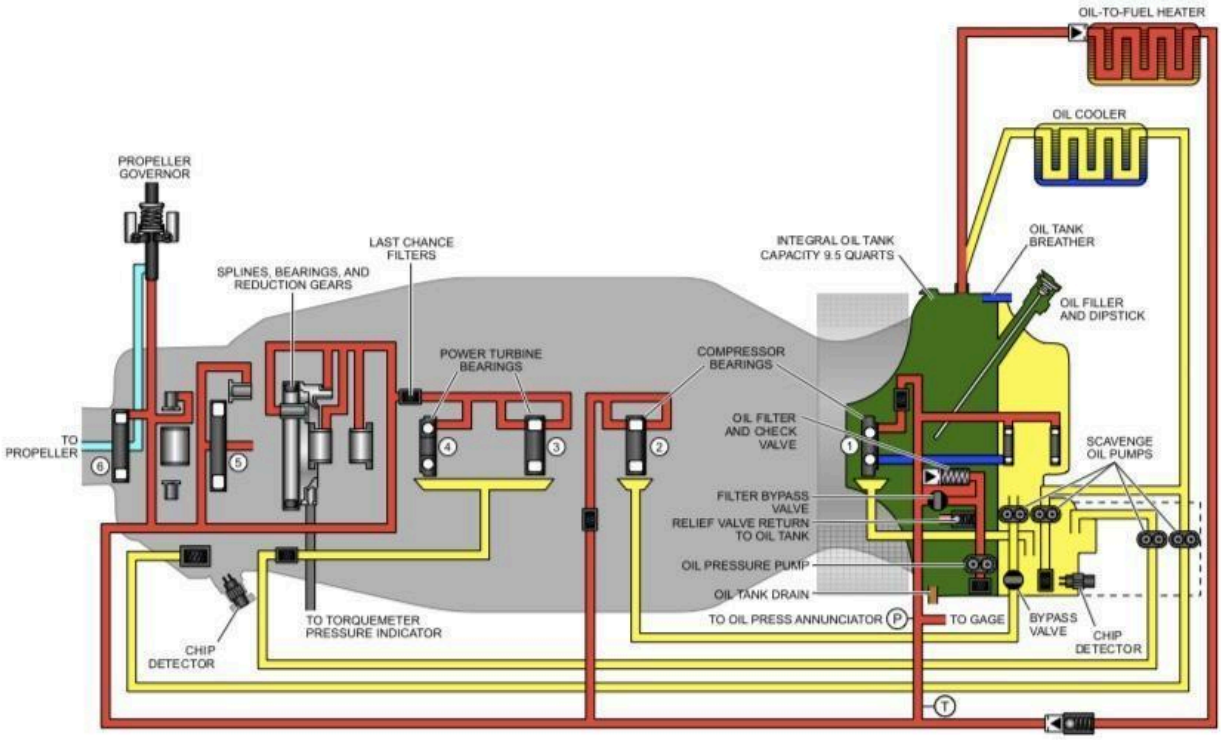
1. No person may initiate a flight from an airport if the weather conditions at that airport at the time of departure are below authorized landing minimums for the appropriate runways which are available based on weather and equipment unless a takeoff alternate airport is specified in the Flight Plan.

A destination alternate is always required unless one hour before and after the estimated time of arrival at the destination airport, the appropriate weather reports or forecasts, or any combination thereof, indicate that:

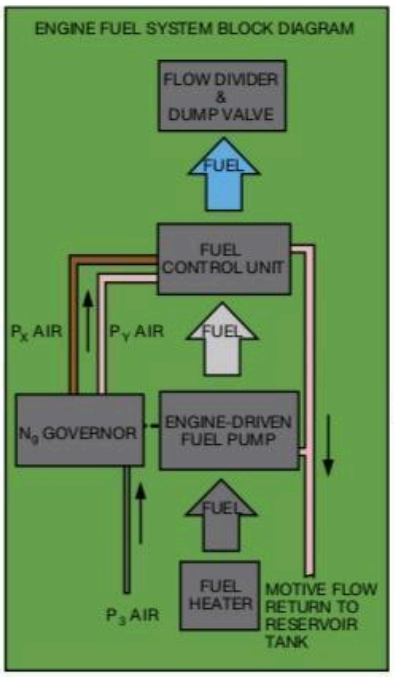
1. The ceiling will be at least 1,500 feet above the lowest circling approach MDA; or
2. If no circling approach is authorized, the ceiling will be at least 1,500 feet above the lowest published minimum or 2000 feet above the airport elevation, whichever is higher; and
3. Visibility for that airport is or forecast to be at least 3 miles or 2 miles more than the lowest visibility minimums for the procedure to be used whichever is greater.

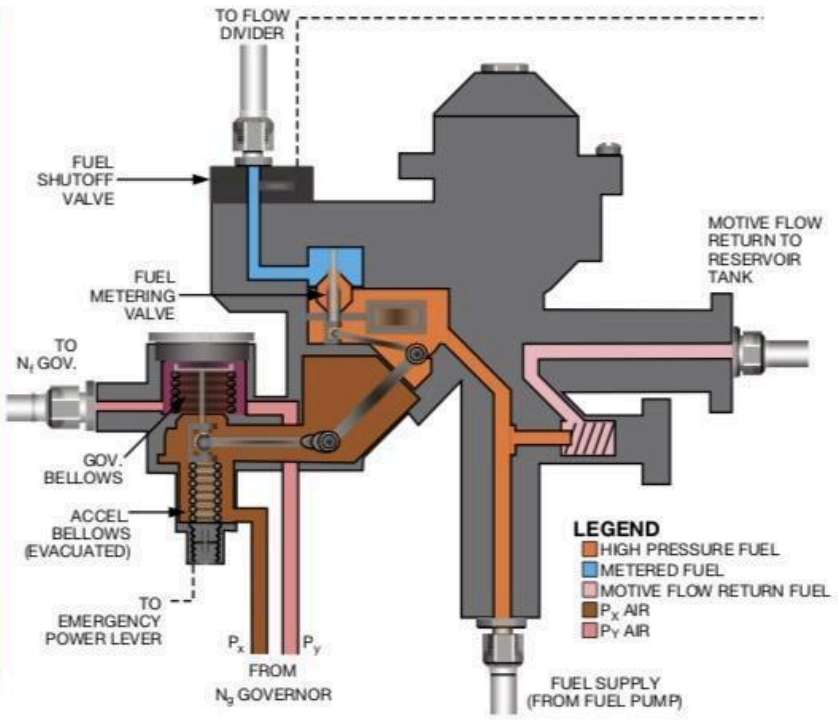


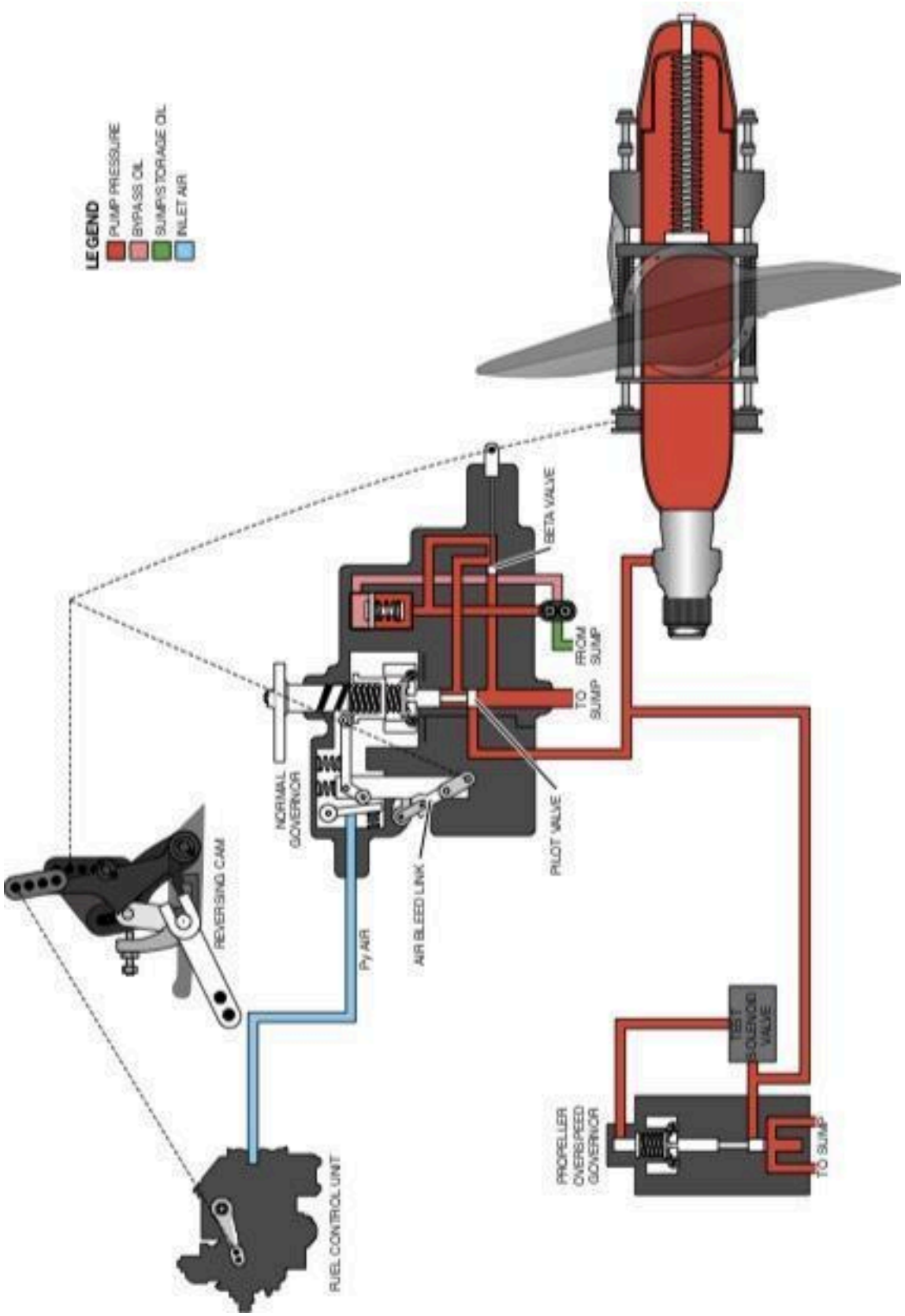
PT6-114

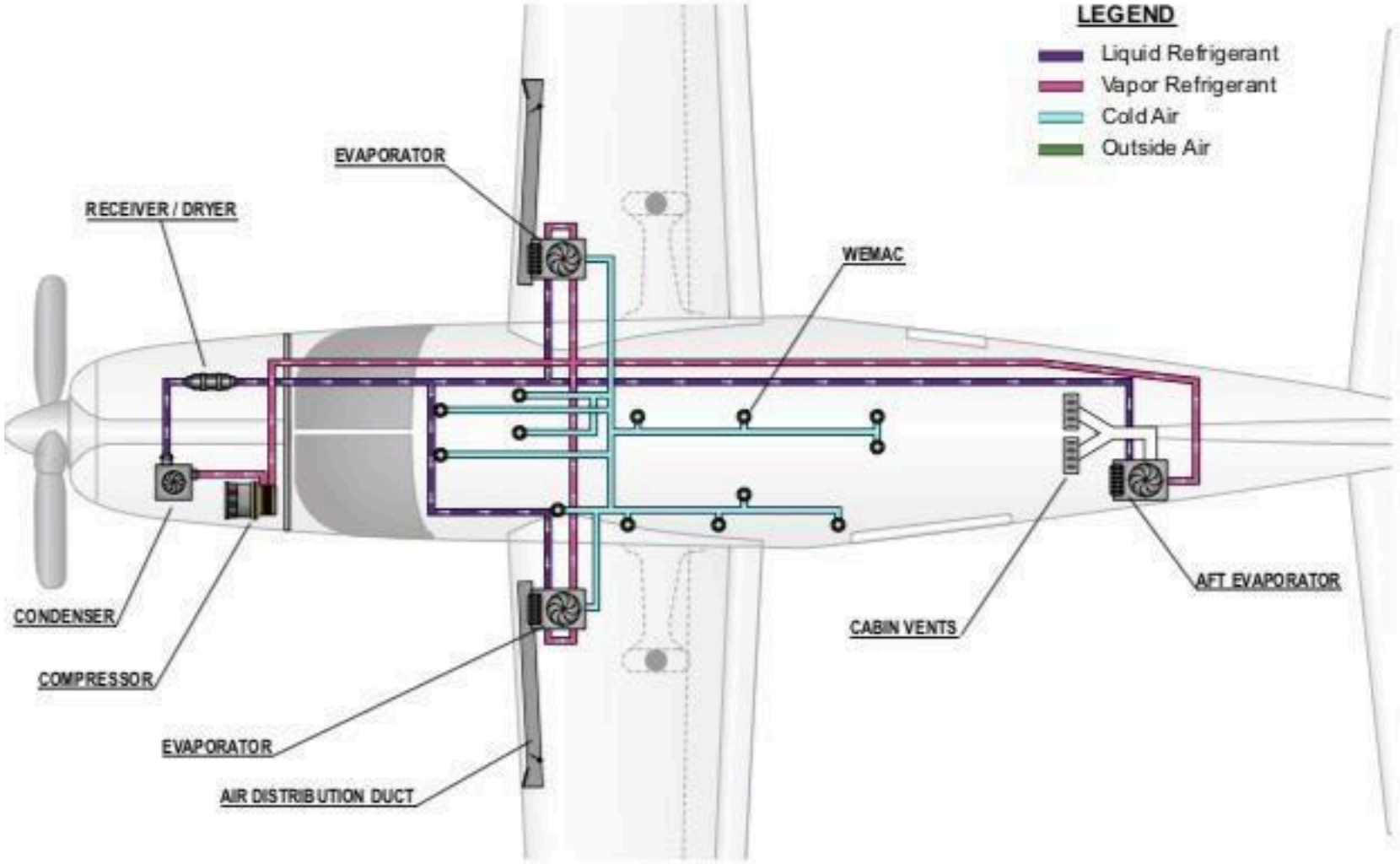

OIL-TO-FUEL HEATER
OIL COOLER
PROPELLER GOVERNOR
LAST CHANCE FILTERS
SPLINES, BEARINGS, AND REDUCTION GEARS
INTEGRAL OIL TANK CAPACITY 9.5 QUARTS
OIL TANK BREATHER
OIL FILLER AND DIPSTICK
POWER TURBINE BEARINGS
COMPRESSOR BEARINGS
TO PROPELLER
OIL FILTER AND CHECK VALVE
SCAVENGE OIL PUMPS
FILTER BYPASS VALVE
RELIEF VALVE RETURN TO OIL TANK
OIL PRESSURE PUMP
OIL TANK DRAIN
TO OIL PRESS ANNUNCIATOR
TO GAGE
BYPASS VALVE
CHIP DETECTOR
TO TORQUEMETER PRESSURE INDICATOR
CHIP DETECTOR

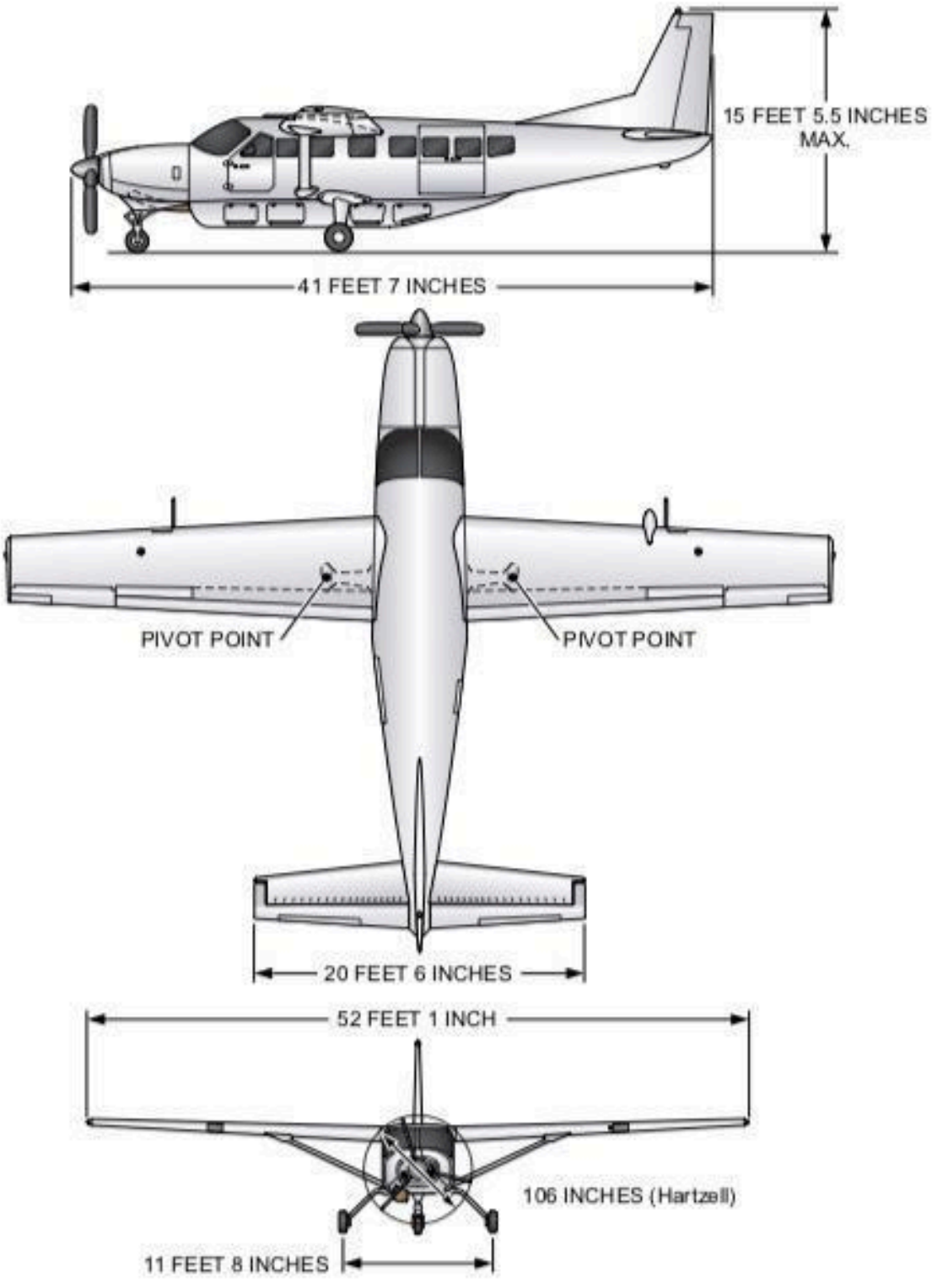
○


ENGINE FUEL SYSTEM BLOCK DIAGRAM
FLOW DIVIDER & DUMP VALVE
FUEL
FUEL CONTROL UNIT
P_X AIR
P_Y AIR
FUEL
N_g GOVERNOR
ENGINE-DRIVEN FUEL PUMP
FUEL
FUEL HEATER
MOTIVE FLOW RETURN TO RESERVOIR TANK
P_3 AIR


TO FLOW DIVIDER
FUEL SHUTOFF VALVE
MOTIVE FLOW RETURN TO RESERVOIR TANK
FUEL METERING VALVE
TO N_1 GOV.
GOV. BELLOWS
ACCEL BELLOWS (EVACUATED)
TO EMERGENCY POWER LEVER
P_x
P_y
FROM N_g GOVERNOR
FUEL SUPPLY (FROM FUEL PUMP)
LEGEND
HIGH PRESSURE FUEL
METERED FUEL
MOTIVE FLOW RETURN FUEL
P_X AIR
P_Y AIR


LEGEND
PUMP PRESSURE
BYPASS OIL
SUMP/STORAGE OIL
INLET AIR
BETA VALVE
FROM SUMP
TO SUMP
NORMAL GOVERNOR
PILOT VALVE
AIR BLEED LINK
Py AIR
REVERSING CAM
FUEL CONTROL UNIT
PROPELLER OVERSPEED GOVERNOR
TEST SOLENOID VALVE
TO SUMP


LEGEND
Liquid Refrigerant
Vapor Refrigerant
Cold Air
Outside Air
EVAPORATOR
RECEIVER / DRYER
WEMAC
CONDENSER
COMPRESSOR
EVAPORATOR
AIR DISTRIBUTION DUCT
CABIN VENTS
AFT EVAPORATOR


15 FEET 5.5 INCHES
MAX.
41 FEET 7 INCHES
PIVOT POINT
PIVOT POINT
20 FEET 6 INCHES
52 FEET 1 INCH
106 INCHES (Hartzell)
11 FEET 8 INCHES

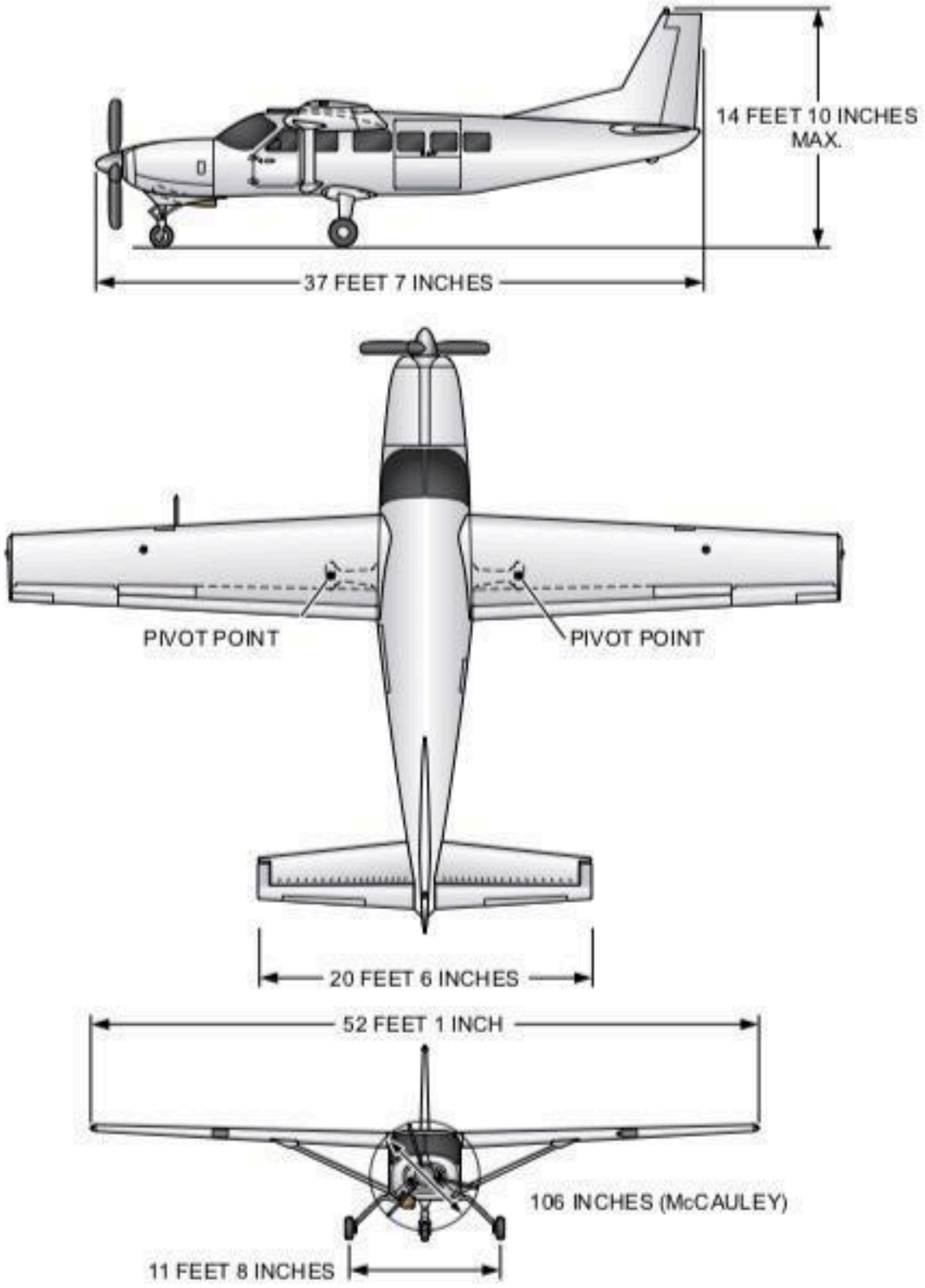
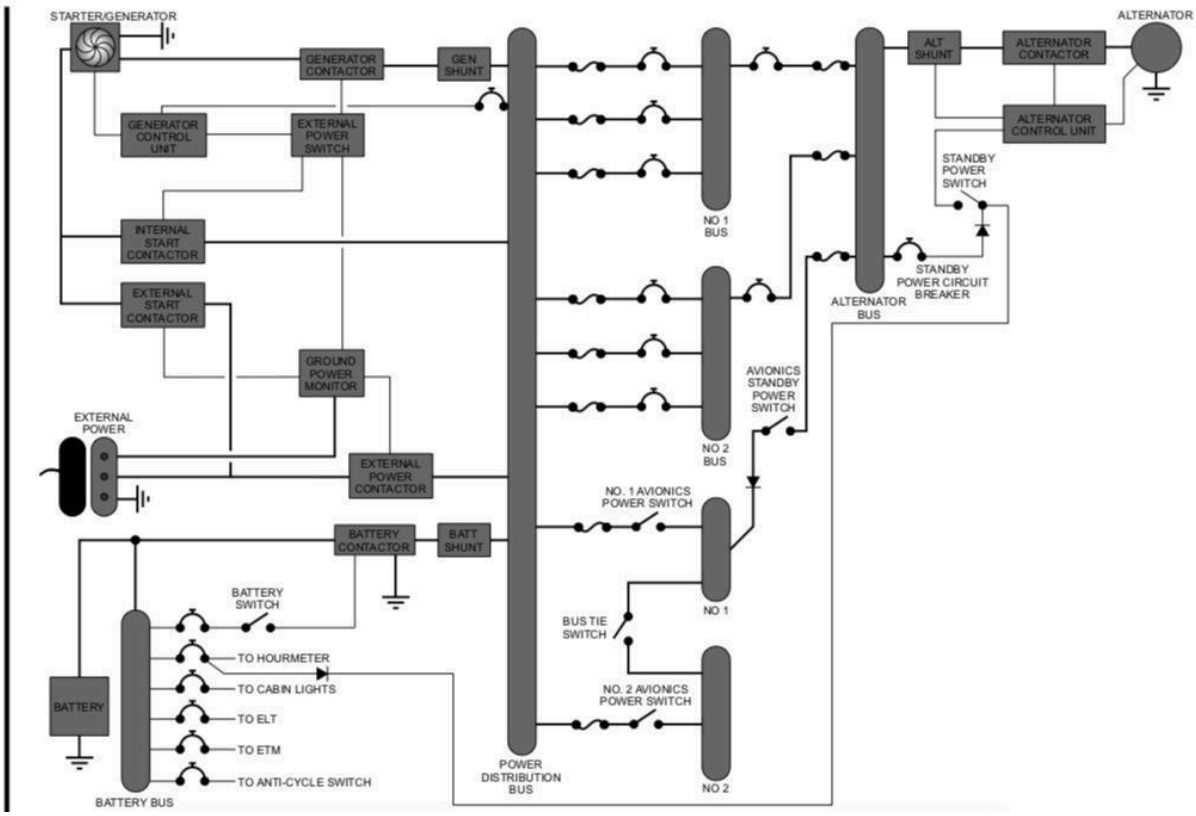


Figure 1-3. Exterior Dimensions - 208


STARTER/GENERATOR
GENERATOR CONTACTOR
GEN SHUNT
ALTERNATOR
ALT SHUNT
ALTERNATOR CONTACTOR
GENERATOR CONTROL UNIT
EXTERNAL POWER SWITCH
ALTERNATOR CONTROL UNIT
STANDBY POWER SWITCH
NO 1 BUS
INTERNAL START CONTACTOR
STANDBY POWER CIRCUIT BREAKER
ALTERNATOR BUS
EXTERNAL START CONTACTOR
GROUND POWER MONITOR
AVIONICS STANDBY POWER SWITCH
EXTERNAL POWER
NO 2 BUS
EXTERNAL POWER CONTACTOR
NO. 1 AVIONICS POWER SWITCH
BATTERY CONTACTOR
BATT SHUNT
NO 1
BATTERY SWITCH
BUS TIE SWITCH
TO HOURMETER
TO CABIN LIGHTS
NO. 2 AVIONICS POWER SWITCH
BATTERY
TO ELT
TO ETM
POWER DISTRIBUTION BUS
NO 2
TO ANTI-CYCLE SWITCH
BATTERY BUS

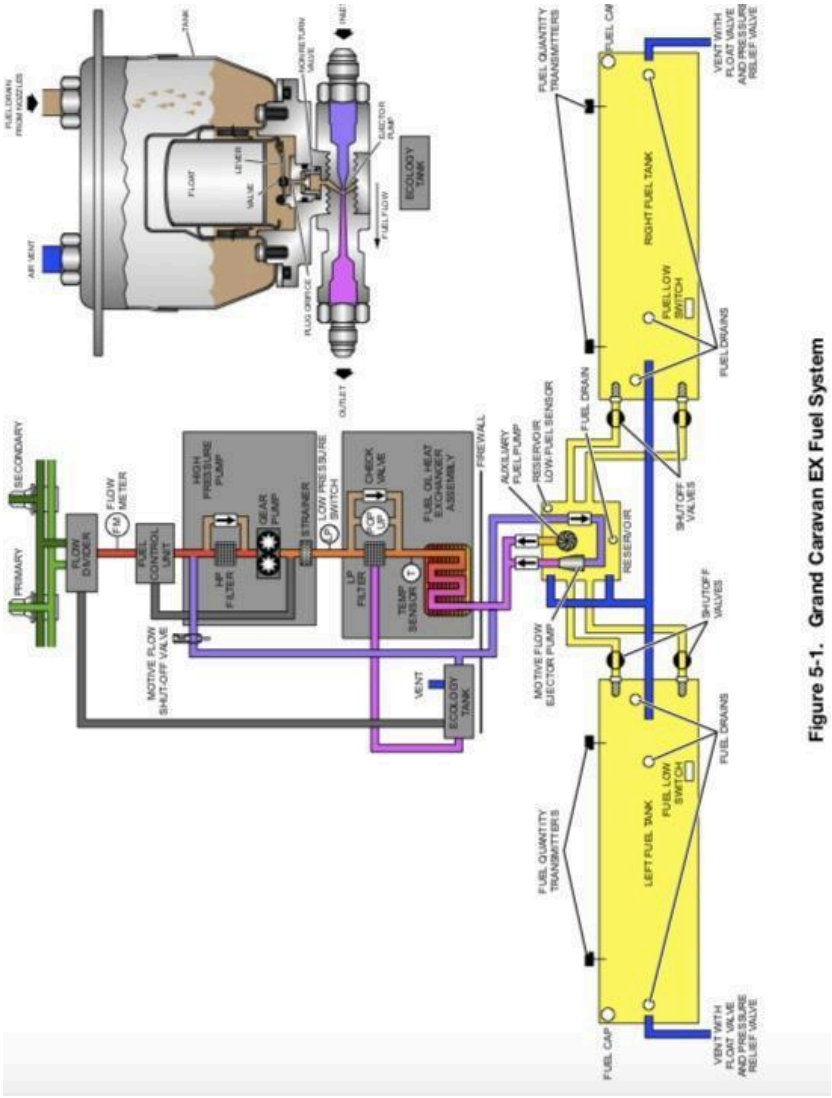


Figure 5-1. Grand Caravan EX Fuel System

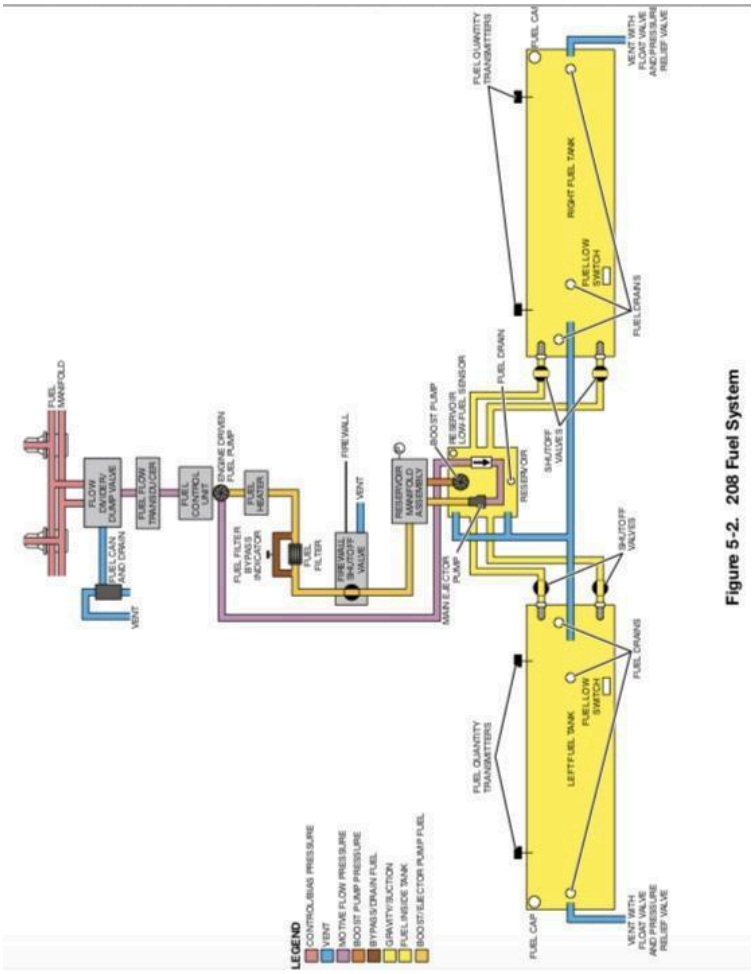
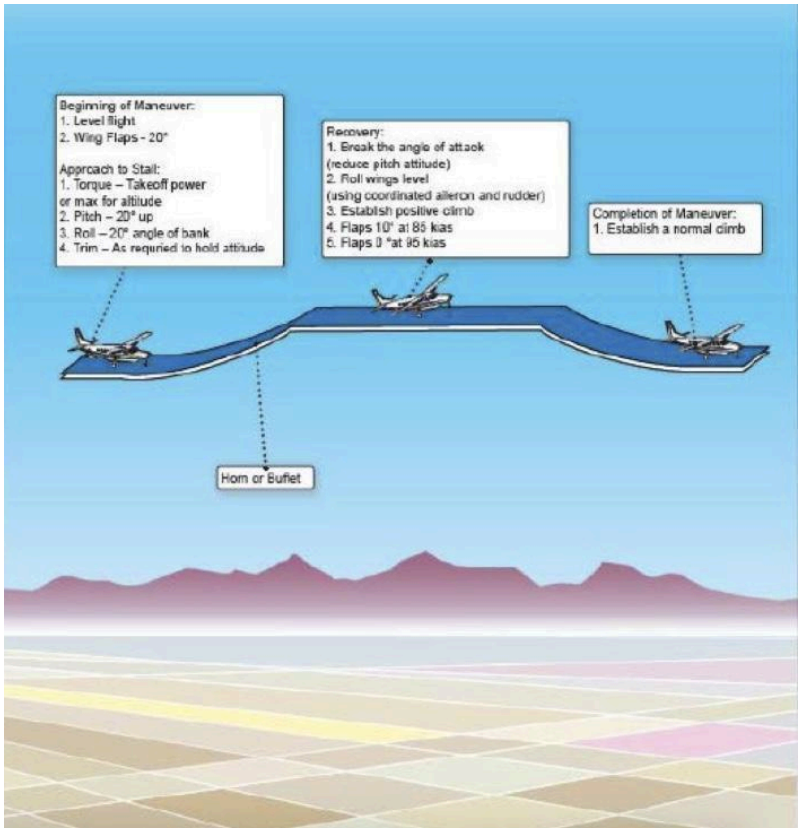
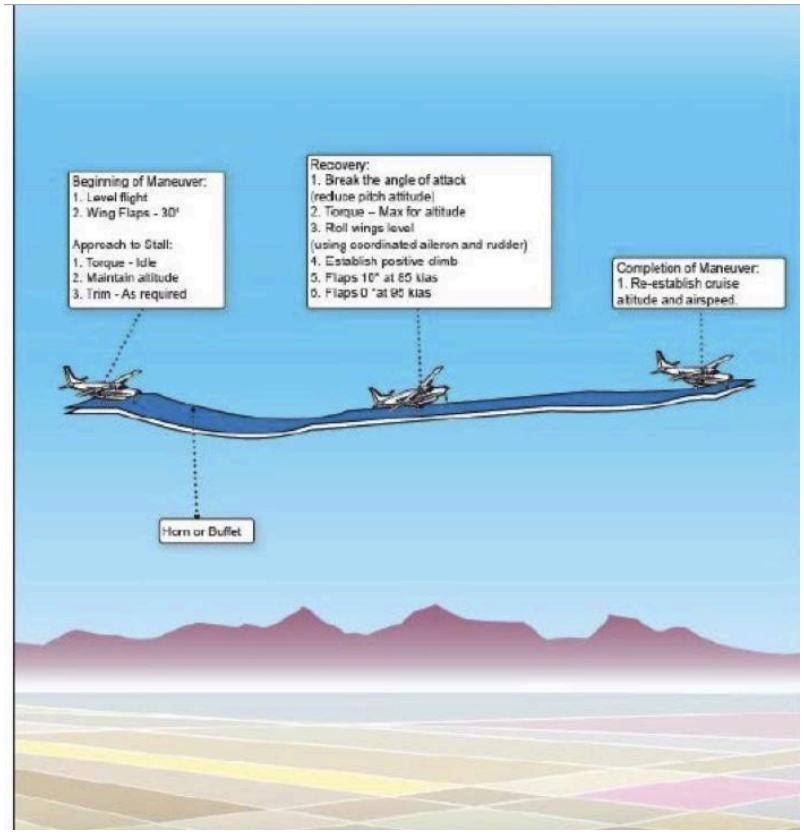
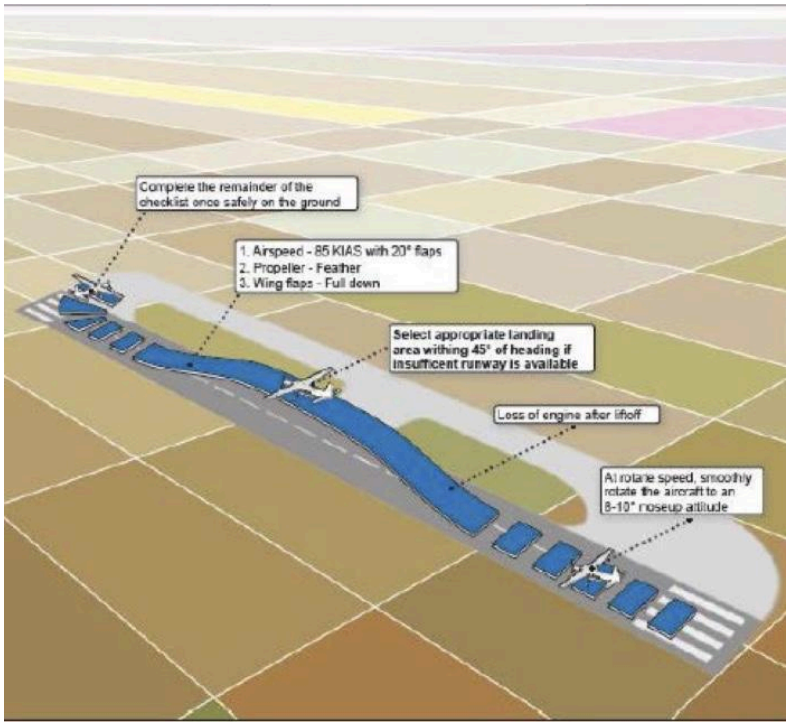


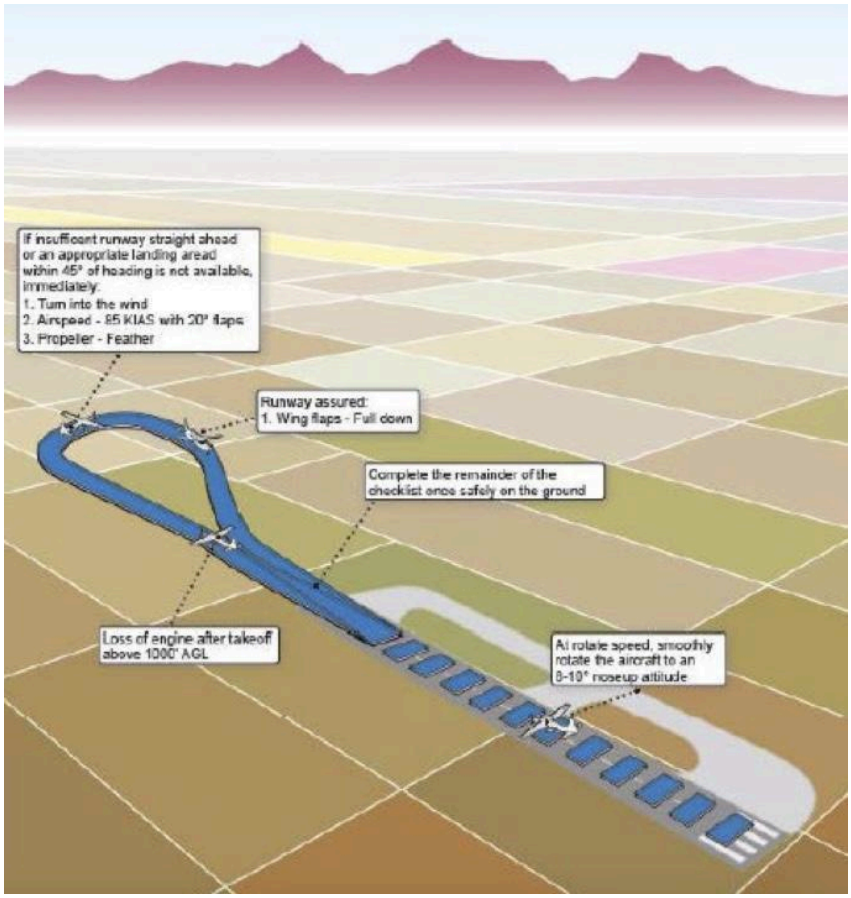
Figure 5-2. 208 Fuel System

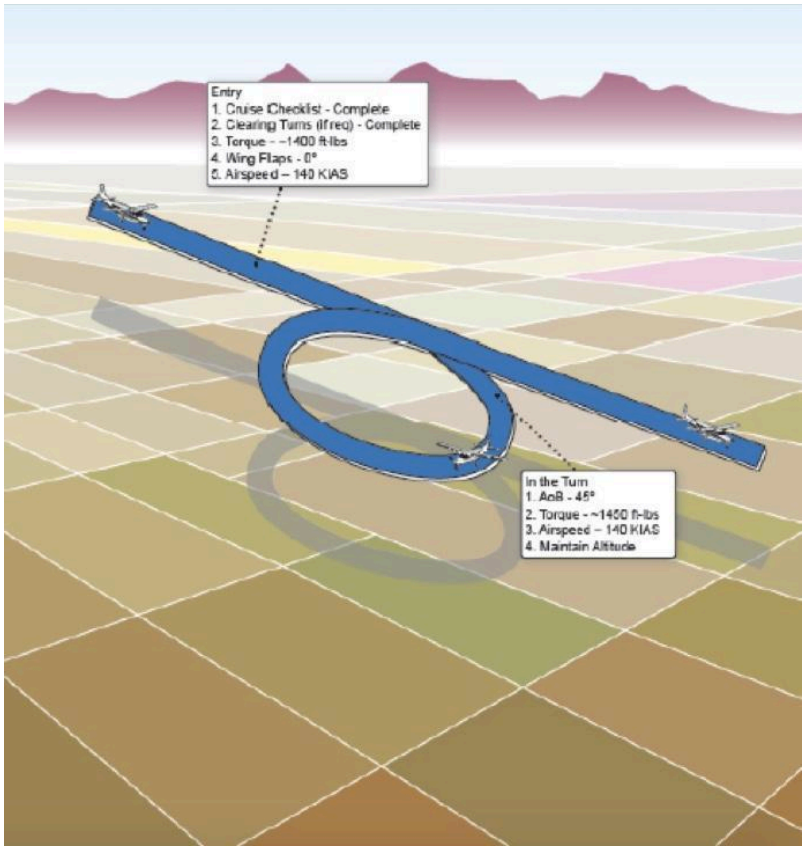
Maneuvers (see Aaron B. sheet(

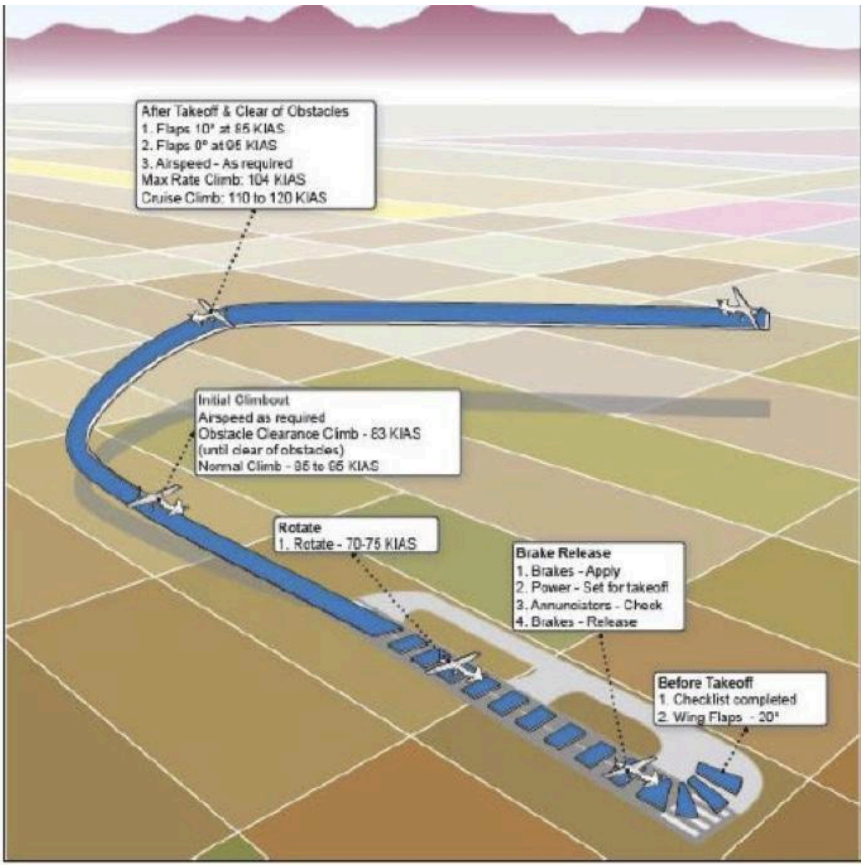

Beginning of Maneuver:
1. Level flight
2. Wing Flaps - 20°
Approach to Stall:
1. Torque – Takeoff power
or max for altitude
2. Pitch – 20° up
3. Roll – 20° angle of bank
4. Trim – As required to hold attitude
Recovery:
1. Break the angle of attack
(reduce pitch attitude)
2. Roll wings level
(using coordinated aileron and rudder)
3. Establish positive climb
4. Flaps 10° at 85 kias
5. Flaps 0 °at 85 kias
Completion of Maneuver:
1. Establish a normal climb
Horn or Buffet

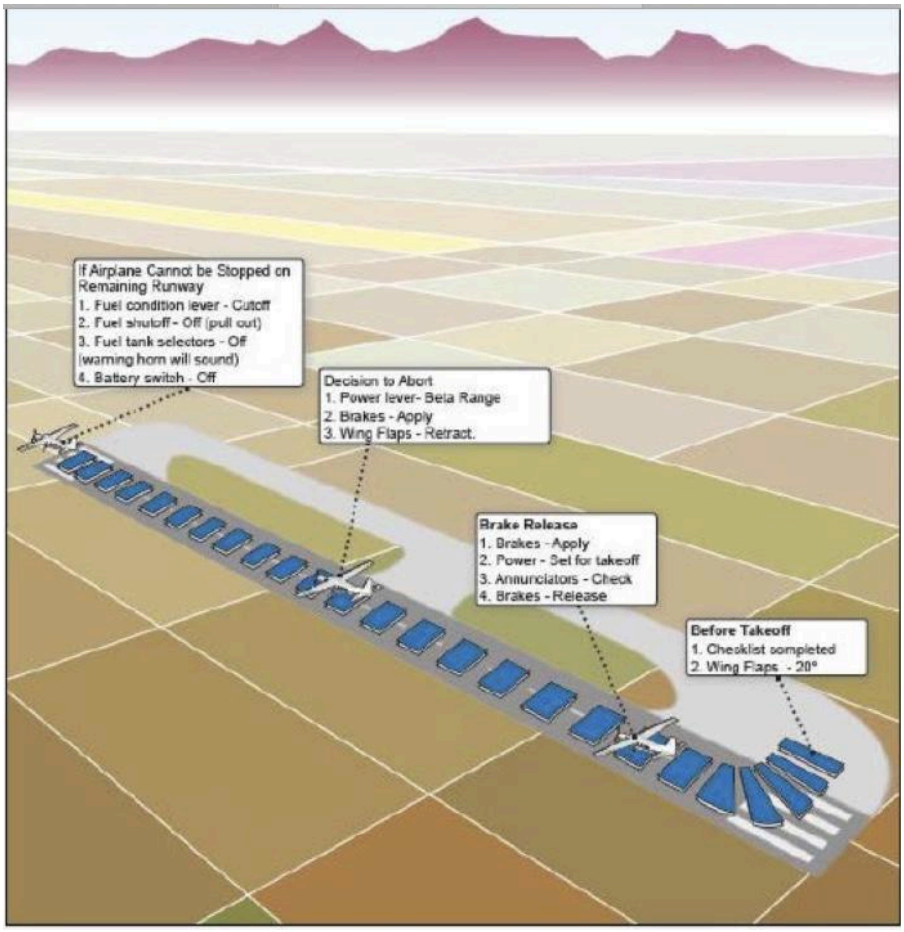

Beginning of Maneuver:
1. Level flight
2. Wing Flaps - 30°
Approach to Stall:
1. Torque - Idle
2. Maintain altitude
3. Trim - As required
Recovery:
1. Break the angle of attack
(reduce pitch attitude)
2. Torque – Max for altitude
3. Roll wings level
(using coordinated aileron and rudder)
4. Establish positive climb
5. Flaps 10° at 85 kias
6. Flaps 0 °at 85 kias
Completion of Maneuver:
1. Re-establish cruise
altitude and airspeed.
Horn or Buffet

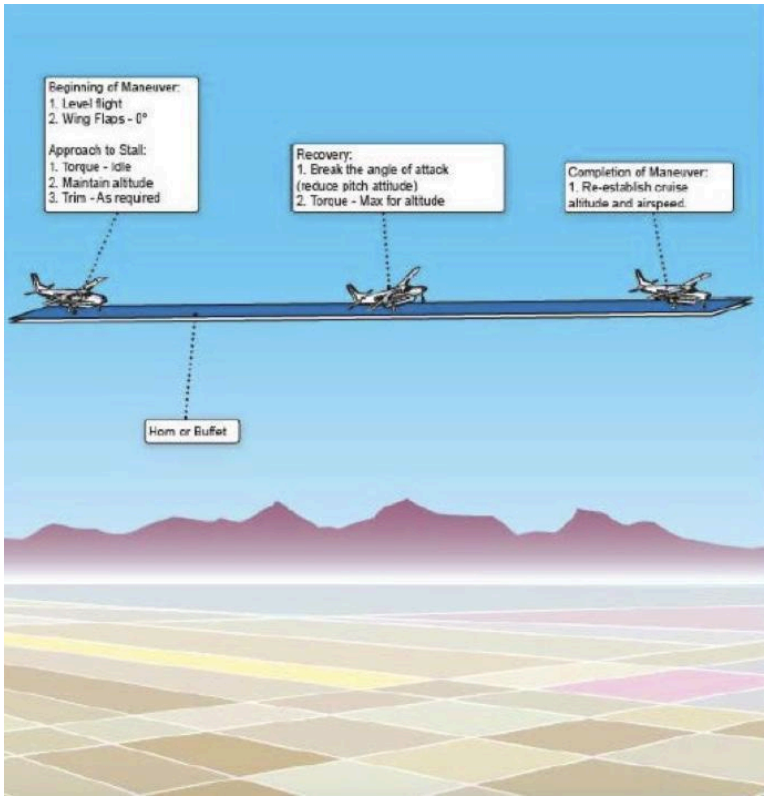

Complete the remainder of the checklist once safely on the ground
1. Airspeed - 85 KIAS with 20° flaps
2. Propeller - Feather
3. Wing flaps - Full down
Select appropriate landing area withing 45° of heading if insufficent runway is available
Loss of engine after liftoff
At rotate speed, smoothly rotate the aircraft to an 8-10° noseup attitude

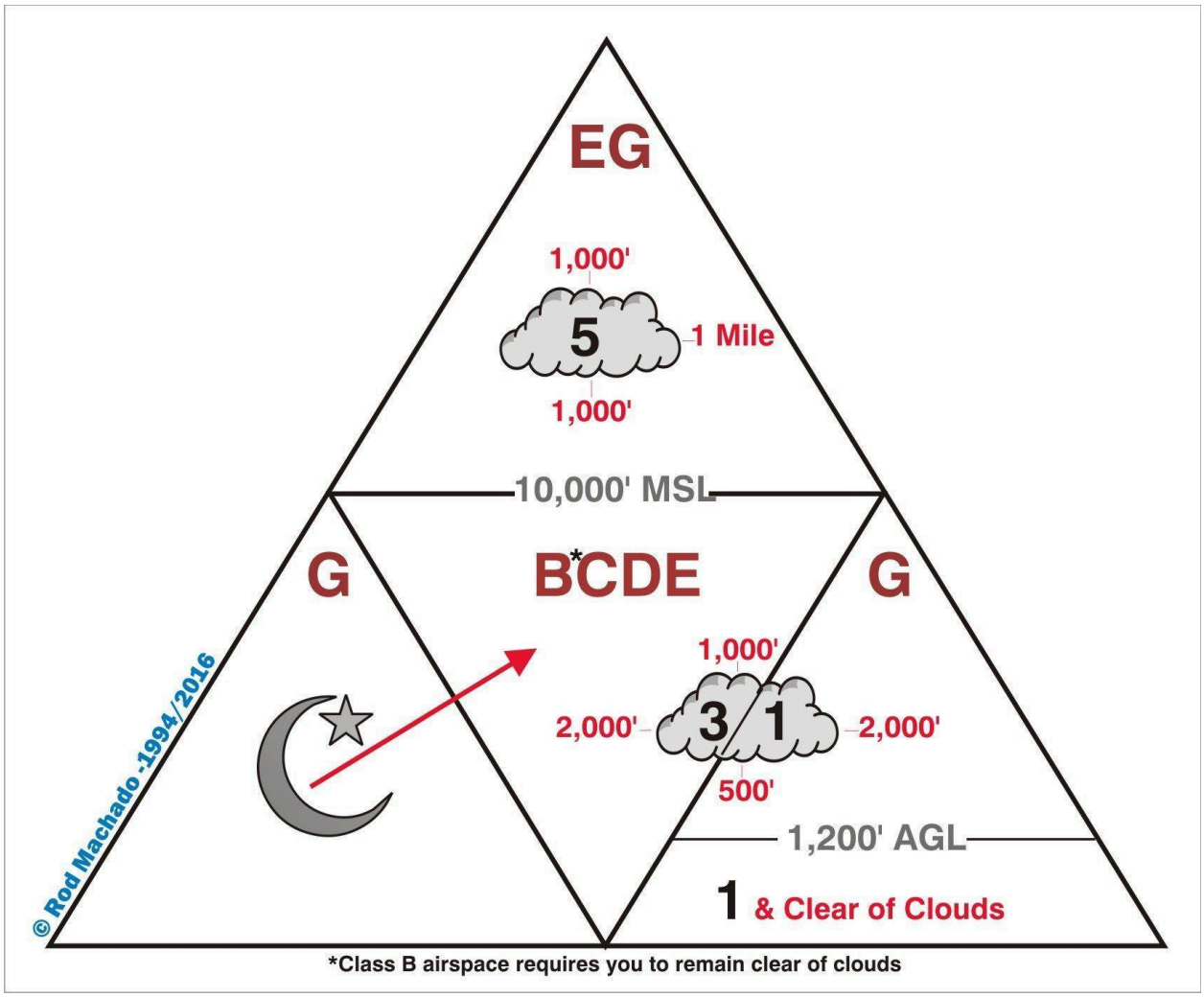

If insufficent runway straight ahead or an appropriate landing aread within 45° of heading is not available, immediately:
1. Turn into the wind
2. Airspeed - 85 KIAS with 20° flaps
3. Propeller - Feather
Runway assured:
1. Wing flaps - Full down
Complete the remainder of the checklist once safely on the ground
Loss of engine after takeoff above 1000' AGL
At rotate speed, smoothly rotate the aircraft to an 8-10° noseup attitude


Entry
1. Cruise Checklist - Complete
2. Clearing Turns (if req) - Complete
3. Torque - ~1400 ft-lbs
4. Wing Flaps - 0°
5. Airspeed – 140 KIAS
In the Turn
1. AoB - 45°
2. Torque - ~1400 ft-lbs
3. Airspeed – 140 KIAS
4. Maintain Altitude


After Takeoff & Clear of Obstacles
1. Flaps 10° at 85 KIAS
2. Flaps 0° at 95 KIAS
3. Airspeed - As required
Max Rate Climb: 104 KIAS
Cruise Climb: 110 to 120 KIAS
Initial Climbout
Airspeed as required
Obstacle Clearance Climb - 83 KIAS
(until clear of obstacles)
Normal Climb - 95 to 95 KIAS
Rotate
1. Rotate - 70-75 KIAS
Brake Release
1. Brakes - Apply
2. Power - Set for takeoff
3. Annunciators - Check
4. Brakes - Release
Before Takeoff
1. Checklist completed
2. Wing Flaps - 20°


If Airplane Cannot be Stopped on Remaining Runway
1. Fuel condition lever - Cutoff
2. Fuel shutoff - Off (pull out)
3. Fuel tank selectors - Off (warning horn will sound)
4. Battery switch - Off
Decision to Abort
1. Power lever- Beta Range
2. Brakes - Apply
3. Wing Flaps - Retract.
Brake Release
1. Brakes - Apply
2. Power - Set for takeoff
3. Annunciators - Check
4. Brakes - Release
Before Takeoff
1. Checklist completed
2. Wing Flaps - 20°


Beginning of Maneuver:
1. Level flight
2. Wing Flaps - 0°
Approach to Stall:
1. Torque - Idle
2. Maintain altitude
3. Trim - As required
Recovery:
1. Break the angle of attack
(reduce pitch attitude)
2. Torque - Max for altitude
Completion of Maneuver:
1. Re-establish cruise
altitude and airspeed.
Horn or Buffet


EG
1,000'
5
1 Mile
1,000'
10,000' MSL
G
B*CDE
G
1,000'
2,000'
3
1
2,000'
500'
1,200' AGL
1 & Clear of Clouds
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*Class B airspace requires you to remain clear of clouds