

RAM Aviation Flight Design CTLS

PREFLIGHT

Aircraft Documents.....AROW
 Flight Controls
FREE & CORRECT
 Main Pins.....SECURE
 Ignition.....OFF
 BRS.....PIN REMOVED
 All Switches Except Beacon
OFF
 BAT Breaker.....ON
 Flaps.....35°
 Lights.....CHECK ALL (5)
 BAT Breaker.....OFF
 Fuel Shut Off Valve.....OPEN
 Left Main Landing Gear....CHECK
 (ALL tire pressures 29 – 31.9 psi)
 Antennas.....CHECK
 LEFT Baggage Compartment
CLOSED & LATCHED
 Static Port (belly).....CLEAR
 Fuselage (Left Side).....CHECK
 Lower Fin (Left Side).....CHECK
 Vertical Stabilizer.....CHECK
 Stabilator.....CHECK
 Anti servo tab, hinge, & linkage
CHECK
 Rudder.....CHECK
 Lower Fin (Right Side).....CHECK
 Fuselage (Right Side).....CHECK
 RIGHT Baggage Compartment
CLOSED & LATCHED
 Right Flap.....CHECK
 Right Aileron.....CHECK

Right Wing Tip.....CHECK
 Right Fuel Vent.....CLEAR
 Right Wing Leading Edge.CHECK
 Right Pitot tube.....CLEAR
 Right Bell Crank.....CHECK
 Right Tie Down.....REMOVE
 Right Fuel Quantity.....CHECK
 Right Filler Cap.....SECURE
 Right Main Gear.....CHECK
 Right Cowling.....SECURE
 Propeller.....CHECK
 Spinner.....CHECK
 Air Inlet.....CLEAR
 Exhaust system.....SECURE
 Windscreen.....CLEAN
 Left Cowling.....SECURE
 Burping Oil System
COMPLETE
 Oil Level...FLAT PART OF STICK
 Coolant LevelCHECK
 Nose Gear Assembly.....CHECK
 Fuel Sump.....CHECK
 Left Fuel Quantity.....CHECK
 Left Filler Cap.....SECURE
 Left Leading Edge.....CHECK
 Left Pitot tubeCLEAR
 Left Tie Down.....REMOVE
 Left Bell Crank.....CHECK
 Left Wing Tip.....CHECK
 Left Fuel Vent.....CLEAR
 Left Aileron.....CHECK
 Left Flap.....CHECK

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BEFORE ENGINE START

Preflight Inspection...COMPLETE
BAT BREAKER.....PUSH IN
 PASSENGER BRIEFING...
 ...use of safety harness
 ...close, lock, unlock, open door
 ...operation of ELT
 ...operation of fire extinguisher
 ...emergency use of BRS
 ...fast evacuation

ENGINE START

DOORS.....CLOSED & LATCHED
 CARB HEATOFF
 FUEL VALVE.....OPEN
 All Switches Except Beacon
OFF
 CIRCUIT BREAKERS...CHECK IN
 PARKING BREAK.....ON
 EMS...ENGINE GAUGES VISIBLE
EMS FUEL LEVEL.....ADJUST
HOBBS.....CONFIRM TIME
CHOKE
3/4 OPEN COLD START
CLOSED WARM START
 THROTTLE.....CRACKED
 PROP AREA.....CLEAR!
 IGNITION KEY.....START
 CHOKE/THROTTLE
ADJUST FOR ~2000 RPM
 OIL PRESSURE.....CHECK
 GREEN WITHIN 60 SECONDS
GEN BREAKER.....PUSH IN
 AVIONICS & INTERCOM.....ON
 LIGHTS.....AS REQUIRED
 WING FLAPS.....UP (-6°)

BEFORE TAXI CHECK

TRANSPONDER.....ALT
 ATIS (120.55@KSTS)....RECORD
 ALTIMETER.....SET
 BRAKES.....CHECK ON TAXI

RUNUP CHECK

PARKING BRAKE.....ON
 DOORS.....CLOSED & LATCHED
 CONTROLS...FREE & CORRECT
 ALTIMETER.....CONFIRM
 OIL TEMP.....ABOVE 120°F
 THROTTLE.....4000 RPM
 ENGINE GAUGESGREEN
 MAG CHK.....MAX DROP 300
 MAX DIFFERENCE 120 RPM
 ALARM LIGHTS.....OFF
 CARB HEATCHECK
 THROTTLE.....IDLE
 TRIMS(3).....SET
 BRS
VERIFY PIN OUT; BRIEF USE
 DEPARTURE BRIEFING
COMPLETE

BEFORE TAKEOFF CHECK

FLAPS.....SET 15°
 LANDING LIGHT.....ON
 POSITION LIGHT.....ON
 TRANSPONDER.....ALT
 Emerg. Procedures.....REVIEW
 Time Off.....START
ROTATE.....46 KIAS
CLIMB.....61 KIAS
ABOVE 400'AGL.FLAPS UP (-6°)
CLIMB.....71 KIAS

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SHORT-FIELD TAKEOFF

Flaps.....15°
LANDING LIGHT.....ON
POSITION LIGHTS.....ON
TRANSPONDER.....ALT
Brakes.....APPLY
Throttle.....Full OPEN
Engine Instruments.....CHECK
Brakes.....RELEASE
Rotate.....41 KIAS
Climb.....51 KIAS
(until clear of obstacle)
Climb.....61 KIAS
Flaps.....RETRACT

SOFT FIELD TAKEOFF

Flaps.....15°
LANDING LIGHT.....ON
POSITION LIGHT.....ON
TRANSPONDER.....ALT
Elevator.....Full AFT
Throttle.....OPEN SLOWLY

**USE CAUTION TO NOT STRIKE
TAIL!**

Liftoff.....Slowest Poss. Airspeed
Accelerate while in ground effect
Climb.....61 KIAS
Flaps.....RETRACT

CLIMB CHECK (1000AGL)

Flaps.....CHECK UP (-6°)
Pitch for.....80 KIAS

**MONITOR OIL TEMPS DURING
CLIMB
REDUCE POWER IF NEEDED
DO NOT ALLOW OIL TEMP
INTO RED ARC**

CRUISE CHECK

Throttle.....SET (4800 to 5100)
Trim.....SET
Engine Gauges.....MONITOR

DESCENT CHECK

Power.....AS DESIRED
ATIS.....RECORD
ALTIMETER.....SET
CARB HEAT.....AS REQUIRED
LANDING/POSITION LIGHTS..ON
AUTOPILOT.....OFF
Seats/Belts.....SECURE

FINAL LANDING CHECK

DOWNWIND....4200RPM/85KIAS
ABEAM
.....3300RPM/0°FLAP/80 KIAS
BASE.....15°FLAPS/75KIAS
FINAL.....15°FLAPS/55KIAS

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SOFT FIELD LANDING

Flaps.....15°-35°
Airspeed.....52-55 KIAS
Touchdown.....MAINS first
Add power to keep nose-wheel
off the ground, hold elevator aft
Brakes.....MINIMAL

SHORT-FIELD LANDING

Flaps.....15°-35°
Airspeed.....52-55 KIAS
Power.....IDLE
Touchdown.....MAINS first
Brakes...
APPLY WHEN SPEED PERMITS

GO-AROUND

Throttle.....FULL POWER
Carb Heat.....OFF
Pitch.....LEVEL
Flaps.....15°
Climb.....52 KTS
Continue climb as in normal
takeoff
Offset.....RIGHT/LEFT

AFTER LANDING CHECK

Flaps.....RETRACT
Landing Light.....OFF
Position Lights.....OFF
Carb Heat.....OFF

SHUTDOWN

PARKING BRAKE.....ON
HOBBS TIME.....RECORD
All Switches Except Beacon
.....OFF
GEN BREAKER.....PULL OUT
IGNITION.....OFF
BAT BREAKER.....PULL OUT
IGNITION KEY.....REMOVE
FUEL SHUT-OFF.....OFF
BRS.....LOCK (PIN IN)
PARKING BRAKE
.....**OFF TO MOVE AIRCRAFT**
Trash.....REMOVE
Doors/Windows.....LOCKED
Tie-Downs.....SECURE
Flight Plan.....CLOSE

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EMERGENCY PROCEDURES
ENGINE FAILURE - TAKEOFF

ON GROUND.....
THROTTLE.....IDLE
BRAKES.....APPLY
IGNITION.....OFF
FUEL VALVE.....CLOSED

ENOUGH RUNWAY TO LAND...
THROTTLE.....IDLE
FLAPS.....AS REQUIRED
BRAKES
.....APPLY AFTER LANDING

NO RUNWAY REMAINING.....
LANDING FIELD

.....WITHIN ±30° HDG
FLAPS.....AS REQUIRED
SPEED.....AS REQUIRED
IGNITION.....OFF
FUEL VALVE.....CLOSED
BAT & GEN BREAKER
.....PULL OFF
DOORS.....UNLOCKED

ENGINE FAILURE - IN FLIGHT
AIRSPD.....71 KIAS / Flaps 0°
BEST FIELD FOR LANDING

IF NO SUITABLE LANDING
AREA PLAN TO DEPLOY BRS
CHECK EVERYTHING:

CARB HEAT.....PULL ON
FUEL AMOUNT.....CHECK L/R
FUEL SHUT OFF.....OPEN
IGNITION.....L-R-BOTH

DECLARE EMERGENCY
.....RADIO & SQUAWK 7700
EMERGENCY LANDING

ENGINE ROUGHNESS

FUEL VALVE.....OPEN
ENGINE GAUGES.....CHECK
MAGNETO SWITCH

.....L THEN R THEN BOTH
IF OPERATION IS
SATISFACTORY ON EITHER
MAGNETO, PROCEED ON THAT
MAGNETO AT REDUCED
POWER TO THE NEAREST
AIRPORT

IF ROUGHNESS PERSISTS –
PREPARE FOR POWER OFF
LANDING

PRECAUTIONARY LANDING
WITH ENGINE POWER

LANDING FIELD.....CHOOSE
SAFETY HARNESS.....TIGHT
SECURE OBJECTS IN COCKPIT

TRANSMIT EMERGENCY RADIO
CALL

FLAPS.....AS REQUIRED
AIRSPD.....AS REQUIRED
MASTER SWITCH
.....BAT AND GEN OFF
DOORS.....UNLOCK

FLARE 3 FT ABOVE GROUND
OR TREE TOPS

IGNITION OFF DURING FLARE

FUEL SHUTOFF VALVE CLOSED

TAIL LOW TOUCHDOWN
ELT.....CHECK TRANSMITTING

RAM Aviation Flight Design CTLS

EMERGENCY LANDING

LANDING FIELD.....CHOOSE
SAFETY HARNESS.....TIGHT
SECURE OBJECTS IN COCKPIT

TRANSMIT EMERGENCY RADIO
CALL

IGNITION.....OFF

FUEL SHUTOFF VALVE CLOSED

FLAPS.....AS REQUIRED
AIRSPD.....AS REQUIRED
MASTER SWITCH

.....BAT AND GEN OFF
DOORS.....UNLOCK

FLARE 3 FT ABOVE GROUND
OR TREE TOPS

TAIL LOW TOUCHDOWN
ELT.....CHECK TRANSMITTING

LOSS OF COOLANT

THROTTLE.....REDUCE
CHT...MAINTAIN BELOW 150 °C
LANDING

.....AS SOON AS POSSIBLE AT
SUITABLE AIRFIELD

EXCEED MAX COOLANT
TEMPERATURE

THROTTLE.....REDUCE
AIRSPD.....INCREASE
COOLANT TEMP.....CHECK

IF TEMP REMAINS HIGH:
PRECAUTIONARY LANDING
.....AS SOON AS PRACTICABLE

INADVERTANT SPIN

AILERON CONTROLS..NEUTRAL
RUDDER.....

OPPOSITE ROTATION DIRECTION
ROTATION.....STOPPED
ELEVATOR.....

.....RELEASE BACK PRESSURE
AFTER ROTATION IS STOPPED
THROTTLE.....RETARD

ELEVATOR.....
SMOOTH RECOVER FROM DIVE

IF UNABLE TO RECOVER,
DEPLOY BRS

DEPLOY BRS
ENGINE

.....STOP WITH IGNITION KEY
BRS
.....PULL HANDLE WITH FORCE
TO THE VERY END

EXTRACTOR
...CONFIRM STARTED, DEPLOY
AGAIN WHEN NOT STARTED

FUEL VALVE.....OFF
SAFETY HARNESS.....TIGHT
EMERGENCY RADIO CALL

.....TRANSMITT
MASTER SWITCH
.....BAT AND GEN OFF

PROTECTIVE POSITION
.....TAKEN BEFORE GROUND
CONTACT

AFTER TOUCHDOWN
.....CHECK ELT TRANSMITTING

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LOSS OF PRIMARY FLIGHT INSTRUMENTS

THROTTLE
MODERATE POWER LEVEL
 ENGINE SPEED
NOT OVER OR UNDER
 LANDING AIRFIELD
LONG RUNWAY
 ...UNOBSTRUCTED APPROACH
 ...FAVORABLE WIND
 APPROACH
ABOVE STALL SPEED
 LANDING.....MAX 15 FLAPS
 LITTLE POWER
 CAREFUL FLARE

LOW OIL PRESSURE

THROTTLE.....REDUCE
 OIL TEMP....CHECK IF IN LIMITS
 PRECAUTIONARY LANDING
AS SOON AS PRACITCABLE

HIGH OIL TEMPERATURE

ANGLE OF ATTACK.....REDUCE
 THROTTLE.....REDUCE
 OIL PRESSURE.....CHECK
 OIL TEMP....CHECK IF IN LIMITS
 IF PROBLEM IS NOT CORRECTED
 PREPARE FOR POWER-OFF LANDING

HIGH OIL PRESSURE

THROTTLE.....REDUCE
 OIL TEMP...CHECK IF IN LIMITS
 PRECAUTIONARY LANDING
AS SOON AS PRACTICABLE

OVERVOLTAGE

GEN SWITCH.....OFF
PROCEED TO ALTERNATOR FAILURE

ALTERNATOR FAILURE

ELECTRIC CONSUMERS
 SWITCH OFF
 UNNECESSARY ITEMS
 INSTRUMENT BACKUP
 BATTERIES.....ENGAGE
 MASTER SWITCH
BAT AND GEN OFF
 BATTERY POWER
SUFFICIENT FOR ~ 60 MIN
 MASTER SWITCH
BAT ON AS NEEDED FOR
 RADIO OR FLAPS

**LAND AS SOON AS PRACTICAL AT
 SUITABLE AIRFIELD**

ENGINE FIRE

IGNITION.....OFF
 FUEL VALVE.....CLOSED
 THROTTLE.....CLOSED
 DESCEND
AS FAST AS POSSIBLE
 SIDE SLIP TO HOLD FLAMES
 OR SMOKE AWAY FROM CABIN
**PROCEED TO EMERGENCY
 LANDING CHECKLIST**

EMERGENCY DESCENT

THROTTLE.....IDLE
 FLAPS.....-6°
 AIRSPEED.....BELOW V_A
SIDE SLIP LEFT WING LOW

RAM Aviation Flight Design CTLS

STALL SPEEDS @ 1320 lbs –

Flaps -6°.....50 KIAS
 Flaps 0°.....47 KIAS
 Flaps 15°.....42 KIAS
 Flaps 30°.....40 KIAS

BEST RATE OF CLIMB V_y –

Flaps -6°.....71 KIAS
 Flaps 0°.....69 KIAS
 Flaps 15°.....61 KIAS

BEST ANGLE OF CLIMB V_x –

Flaps -6°.....56 KIAS
 Flaps 0°.....55 KIAS
 Flaps 15°.....51 KIAS

MAX CROSS WIND –

Flaps 0°.....16 kts
 Flaps 30°.....11 kts

MANEUVERING SPEED V_A –

@ 1320 lbs.....105 KIAS
 @ 1100 lbs.....95 KIAS

BEST GLIDE.....71 @ FLAPS 0°

V_{NO}.....120 KIAS
 V_{NE}.....145 KIAS

APPROACH SPEEDS

Add ½ the **Gust Factor** to the
 listed Approach Speed

Gust Factor = the difference
 between steady state wind and
 peak gust

APPROACH @ 1320 lbs –

Flaps -6°.....65 KIAS
 Flaps 0°.....61 KIAS
 Flaps 15°.....55 KIAS
 Flaps 30°.....52 KIAS

APPROACH @ 1100 lbs –

Flaps -6°.....60 KIAS
 Flaps 0°.....56 KIAS
 Flaps 15°.....50 KIAS
 Flaps 30°.....48 KIAS