

CHECKLIST

Piper Navajo Chieftain

PA 31-350

Panther (Colemill Mod)

Super Panther (B.L.R. Mod)

N411US



S/N 31-8152073

Version 11 (30 Apr 2024)

CHECKLIST

RECORD OF CHANGES

This checklist is baselined from the Navajo POH (Report # LK-1208 – 14Sep09) and the FAA-approved checklist published in Apr 2011. References have been added, Notes WARNINGS and CAUTIONS have been added and flows have been altered in minor ways for improved performance. This checklist is customized for the USAF Aero Club at Hanscom AFB, MA. Changes from previous versions are noted by a black bar at the edge of the page.

V6 – First in use

V7 – Replaced performance chart with BLR charts, added reference pages for Shadin FMS and EI Alternator Monitor system, and added Emergency Procedure references based on Annunciator Lights

V8 – Revised flows slightly, added steps to improve pre/post flight pilot performance, and removed unuseful performance charts.

V9 – Reference corrections, minor adjustments to flows,

V10 – addition of checklist items, matched checklists to digital version on Foreflight, added W&B for current pax seating configuration, added reference data for EPs where no POH checklist exists, moved Emerg Descent to EP Section, added autopilot system and operation reference data.

V11 – References for Vortex Generator numbers and loss added, Original V-speeds added in case of VG loss, Short Field appch checklist added, flap preflight/checks added at new steps, minor changes

Write-In Changes:

| Page | Change |
|------|--------|
| | |
| | |

Version 11 (30 Apr 2024)

TABLE OF CONTENTS

NORMAL PROCEDURES

| | |
|--|-----|
| Preflight | N-1 |
| Before Starting Engines | N-2 |
| Ground Operations (Start thru Runup) | N-3 |
| Takeoff and Climb | N-4 |
| In Flight Operations | N-5 |
| Landing and After Landing | N-6 |
| Autopilot Detailed System Checks/Operation | N-7 |
| Airspeeds, Ops Limits, Cross Country Servicing | N-8 |
| Supplemental Checklists | N-9 |

EMERGENCY PROCEDURES

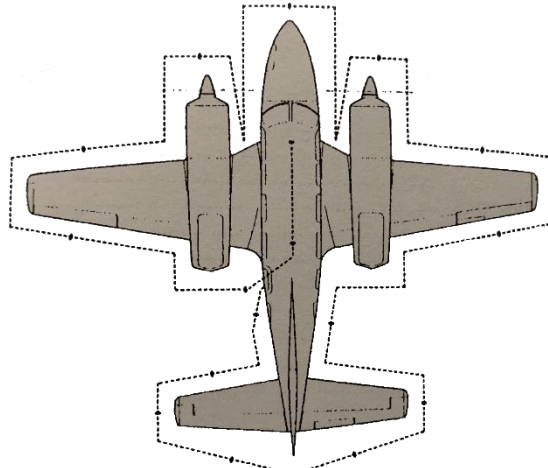
| | |
|---|-----|
| Engine Securing Procedure / Engine Failure / Single Engine Landing / Single Engine Go Around / Airstart | E-1 |
| Engine Roughness / Engine Overheat / Loss Of Oil Pressure / Rough Air Operation | E-2 |
| Engine Fire On Ground / Engine Fire In Flight | E-3 |
| Electrical Fire | E-4 |
| One / Two Alternator Inop Light(S) On | E-5 |
| Crossfeed / Coming Out Of Crossfeed | E-6 |
| Rpm Underspeed / Rpm Overspeed | E-7 |
| Emergency Gear Extension / Gear Up Landing | E-8 |
| Flap System Malfunctions | E-9 |

SUPPLEMENTAL DATA

| | |
|--|-----|
| Required Equipment | S-1 |
| Weight and Balance | S-2 |
| Takeoff and Landing Data | S-3 |
| Performance Charts | S-4 |
| Electrical System Data | S-5 |
| Shadin – Fuel Management System | S-6 |
| Electronics International – Electrical Bus Monitor | S-7 |

NORMAL CHECKLIST

PRE-FLIGHT CHECK



COCKPIT

- | | |
|---|---------------------------|
| 1. Hobbs Time (airframe and both engines)..... | Record |
| 2. Controls..... | Release |
| 3. Magneto Switches..... | OFF |
| 4. Electrical Switches..... | OFF |
| 5. Flap Switch..... | OFF (UP) |
| 6. Mixtures..... | IDLE/CUT OFF |
| 7. Master Switch..... | ON |
| 8. Gear Lights..... | 3 Green |
| 9. Cowl Flaps..... | OPEN |
| 10. Trim..... | Neutral |
| 11. Shadin FMS..... | Reset FULL or As Required |
| 12. Fuel Quantity..... | Sufficient |
| 13. External Nav, Strobe, Ldg, Taxi Lights..... | Checked |
| 14. Stall Warning Horn..... | Checked |
| 15. Pitot Heat (x2)..... | Checked |
| 16. Prop Heat (x2)..... | Checked |
| 17. Flaps..... | Extend |
| 17. Master Switch..... | OFF |
| 18. Airplane Papers..... | Checked |
| 19. Emergency Window..... | Secure |

NORMAL CHECKLIST**PRE-FLIGHT CHECK**

- | | | |
|-----|----------------------|---------------------|
| 20. | Oxygen Pressure..... | Sufficient |
| 21. | Oxygen Masks..... | Installed and Ready |
| 22. | Pilot Door..... | UNLOCK |

LEFT WING

- | | | |
|-----|---------------------------------|---|
| 1. | Surface Condition..... | Checked |
| 2. | Nacelle Locker Door..... | Locked |
| 3. | Flap and Flap Tracks..... | Checked |
| 4. | Aileron..... | Checked |
| 5. | Fuel Tanks and Filler Caps..... | Checked |
| 6. | Fuel Tank Vent..... | Clear |
| 7. | Tie Down..... | Removed |
| 8. | Fuel Drains (4)..... | Drain and check for water Sediment and proper fuel |
| 9. | Landing Gear..... | Checked |
| 10. | Chock..... | Removed |
| 11. | Nacelle..... | Checked |

CAUTION: Check that the four screws securing the nose bowl are present and secure. A screwdriver may be needed to do this. Check that the six (three per side) side cowl fasteners are present and secure. Check for both the proper alignment of the paint stripes on the cowl and fastener and for the extension of the locking pin indicator in the fastener slot.

WARNING: Failure to insure the presence and security of the nose bowl and cowl side fasteners may result in in-flight cowl separation and loss of aircraft control

- | | | |
|-----|---|---------|
| 12. | Vortex Generators – 27 norm, min 84 total | Checked |
| 13. | Oil.....(8 qts min) | Checked |
| | NOTE: Oil dipsticks have “LEFT” and “Right” stamped on the stick. Ensure the proper scale is used for measurement. | |
| 14. | Cowl Flap Area..... | Checked |
| 15. | Propeller..... | Checked |
| 16. | Accessory Section (engine)..... | Checked |
| 17. | Gear Mirror..... | Checked |

NORMAL CHECKLIST

PRE-FLIGHT CHECK

NOSE SECTION

- | | | |
|----|--------------------------|---------|
| 1. | General Condition..... | Checked |
| 2. | Baggage..... | Secure |
| 3. | Baggage Door..... | Locked |
| 4. | Battery Vents..... | Clear |
| 5. | Nose Gear..... | Checked |
| 6. | Chock..... | Removed |
| 7. | Pitot Tubes..... | Clear |
| 8. | Landing/Taxi Lights..... | Checked |

RIGHT WING

1. Check as for Left Wing (3 fuel drains)

FUSELAGE (RIGHT SIDE)

- | | | |
|----|------------------------|---------|
| 1. | General Condition..... | Checked |
| 2. | Static Openings..... | Clear |
| 3. | Antennas..... | Checked |

EMPENNAGE

- | | | |
|----|---|---------------------------------|
| 1. | Surface Condition..... | Checked |
| 2. | Tie Down..... | Removed |
| 3. | Trim Tabs..... | Neutral and checked for play |
| 4. | Hinges and Push Rods..... | Checked |
| 5. | Vortex Generators..... (17 each side of rudder, 88 total required) | Checked |

See Pg N-9-2 if any VGs found missing

FUSELAGE (LEFT SIDE)

- | | | |
|----|------------------------|---------|
| 1. | General Condition..... | Checked |
| 2. | Static Openings..... | Clear |
| 3. | Doors..... | Checked |

NORMAL CHECKLIST**BEFORE STARTING ENGINES**

1. Preflight Inspection/Chocks..... Completed/Removed
2. Cabin Doors..... Secured
3. Passenger Briefing..... Completed
4. Seats, Belts and Harnesses..... Adjusted/Secure
5. Parking Brake (Pedal then handle)..... Set
WARNING: Braking may not occur if parking brake handle is pulled and held prior to brake pedal application.
6. Controls..... Checked
7. Fuel Selectors..... INBOARD
8. Crossfeed..... Exercise then OFF
9. Fuel Firewall shutoffs..... Exercise then ON
10. Alternate (engine intake) Air..... OFF (in)
11. Circuit Breakers..... Checked
12. Electrical Switches..... OFF
13. Alternator CB Switches..... ON
14. Avionics Switches..... OFF
15. Alternate Static Source..... OFF
16. Mixture Controls..... IDLE/CUT-OFF
17. Master Switch..... ON
18. Cowl Flaps..... OPEN
19. Gear Lights..... 3 Green
20. Annunciator panel..... Press-to-Test
21. Boost Pump and Fuel Flow Lights..... Checked
22. Flap TEST Switch (check annunciator lt.)... Push, Verify
23. Alternator INOP Lights..... ON
24. Pneumatic Source Malf. Lights..... ON
25. Door Ajar Lights..... OFF
26. Pilot Door..... CLOSED, Unlocked
27. Emergency Fuel Pumps..... OFF
28. Prop Sync..... OFF
29. AP/FD Switch..... OFF
30. Seatbelt and NO SMOKING Sign..... ON

NORMAL CHECKLIST**GROUND OPERATIONS****NORMAL START**

(Master Switch OFF when using APU)

- | | | |
|-----|---|--------------------------------|
| 1. | Anti-Collision Lights..... | ON |
| 2. | Throttle..... | Open ½ inch |
| 3. | Prop Control..... | Forward |
| 4. | Mag Switches..... | ON |
| 5. | Mixture..... | RICH (6 sec) then IDLE/CUT-OFF |
| 6. | Prop Area..... | Clear |
| 7. | Starter..... | Engaged |
| 8. | Mixture (when engine starts)..... | Advance |
| 9. | Oil and Fuel Pressure..... | Checked |
| | - Must have indications of Oil pressure within 30 seconds | |
| | - When cold, oil pressure may be up to 115 psi | |
| | - Oil Temp & Pressure must be in the green before takeoff | |
| 10. | Alternator INOP Light..... | OUT |
| 11. | Pneumatic Malf. Light..... | OUT |
| 12. | Gear Handle (Hydraulic Check)..... | DOWN, then |
| | | returns to neutral |
| | Second Engine..... | Repeat Steps 2-11 |

HOT START

- | | | |
|----|-----------------------------------|-------------|
| 1. | Throttle..... | Open ½ inch |
| 2. | Prop Control..... | Forward |
| 3. | Mag Switches..... | ON |
| 4. | Prop Area..... | Clear |
| 5. | Starter..... | Engaged |
| 6. | Mixture (when engine starts)..... | Advance |
| 7. | NORMAL START procedure..... | Complete |

NORMAL CHECKLIST**GROUND OPERATIONS****FLOODED START**

- | | | |
|---------------------|-------------------|--------------|
| 1. | Mixture..... | IDLE/CUT-OFF |
| 2. | Mag Switches..... | ON |
| 3. | Throttle..... | Full OPEN |
| 4. | Prop Area..... | Clear |
| 5. | Starter..... | Engaged |
| When Engine Starts: | | |
| 6. | Mixture..... | Advance |
| 7. | Throttle..... | 1000 RPM |

BEFORE TAXIING

- | | | |
|-----|---|-------------------------|
| 1. | APU..... | Removed |
| 2. | Master Switch..... | ON |
| 3. | Avionics Master/Avionics..... | ON |
| 4. | Heater/Air conditioner..... | As Required |
| 5. | Lights..... | As Required |
| 6. | Gyros..... | Set (Both Sides) |
| 7. | Altimeters and Clock..... | Set |
| 8. | Electric Trim..... | Checked |
| | - Autopilot TEST button..... | PRESS |
| | (TRIM light flashes, 4 beeps min) | |
| | - Press both switches up/down, verify movement | |
| | - Grip the manual wheel and verify override ability | |
| | - Push Left side up/down, confirm no movement and manual wheel clutched/locked | |
| | - Push right side up/down, confirm no movement and manual wheel free to move | |
| 9. | Autopilot..... | Checked (N-7-1) and OFF |
| 10. | Fuel Valves (all positions)..... | Checked/QTY |
| 11. | Fuel Selectors..... | OUTBOARD |
| 12. | Prop De-Ice..... | Check |
| | Monitor Prop De-Ice ammeter in the green arc for one complete cycle (2 mins). Do not operate more than 2 complete cycles. | |
| 13. | Flaps | Checked |

NORMAL CHECKLIST**GROUND OPERATIONS**

Retract to 15 and visually verify flaps are even. Retract. After the flaps begin to move, press and hold the flap test switch. The flaps should stop and the FLAP annunciator should illuminate. Release the flap test switch; the annunciator should extinguish and the flaps retract to 0°.

- | | | |
|-----|--|-------------|
| 14. | Radios..... | Checked |
| 15. | Taxi Lights..... | As Required |
| 16. | Parking Brake (Pedal then handle)..... | Release |

TAXIING

- | | | |
|----|-------------------------|---------|
| 1. | Brakes..... | Checked |
| 2. | Flight Instruments..... | Checked |

ENGINE RUNUP

- | | | |
|-----|--|---------------------------------------|
| 1. | Parking Brake (Pedal then handle)..... | Set |
| 2. | Mixtures..... | RICH |
| 3. | Prop Controls..... | Forward |
| 4. | Cowl Flaps..... | OPEN |
| 5. | Fuel Selectors..... | INBOARD |
| 6. | Engine Instruments..... | Checked |
| 7. | Throttles..... | 1500 RPM |
| 8. | Prop Controls..... | Feather Checked (max drop 500 RPM) |
| 9. | Gyro Pressure (4-6 in Hg)..... | Checked |
| 10. | Alternator Output..... | Checked |
| | <i>Select one, then the other alternator for voltage and amps (normal = 28v/18a), battery not discharging, 28v</i> | |
| 11. | Alternator INOP Lights..... | OUT |
| 12. | Annunciator Panel Lights..... | OUT |
| 13. | Throttles (Separately)..... | 2200 RPM |
| 14. | Mags (max drop 175 RPM, max diff 50 RPM).... | Checked |
| 15. | Prop Controls (max drop 300 RPM)..... | Exercised |
| 16. | Throttles (600-650 RPM)..... | Idle Checked |
| 17. | Throttles..... | 1000 RPM |
| 18. | Friction Lock..... | Set |

NORMAL CHECKLIST

BEFORE TAKEOFF

1. Seat Belts & No Smoking Sign..... ON
2. Fuel Selectors..... INBOARD
3. Fuel Quantity..... Sufficient
4. Mixtures and Props..... Forward
5. Flaps..... Set (0° Normal)
(15° Short Field)
6. Autopilot..... OFF
7. Trim..... Set
8. Surface De-Ice..... OFF
9. Pitot and Prop Heat..... As Required
10. Windshield Heat..... As Required
11. Avionics..... Set for Departure
12. Direction Indicators..... Both Checked
13. Radar..... As Desired
14. Transponder..... As Required
15. Controls..... Checked
16. Emergency Fuel Pumps..... ON
17. Air Conditioner..... OFF / Fan
18. Prop Sync..... OFF
19. Crew Briefing..... As Required
20. Wingtip/Landing Lights..... As Required
21. Parking Brake (Pedal then handle)..... Release
22. Pilot Door..... Secure

NORMAL CHECKLIST

TAKEOFF BRIEF

If there is a loss of directional control before rotate I will retard the throttles and abort the takeoff

If an engine fails after liftoff and the landing gear is down, I will close both throttles and land straight ahead on whatever remains.

If an engine fails after liftoff and the landing gear is up, I will pitch for Vyse, verify maximum power, verify Gear, Flaps and Cowl Flaps are UP, IDENTIFY – VERIFY & FEATHER the inoperative engine, climb at Vyse with zero sideslip and look for lower terrain. Upon holding a safe altitude, I will review the printed checklist and take care of the operating engine.

NOTE:

Takeoff manifold pressure for each engine will not necessarily be the same. However, if the spread in manifold pressure exceeds 3" during a full throttle climb, the density controller settings should be checked and serviced.

SHORT FIELD TAKEOFF

1. Flaps..... Verify set to 15°
2. Brakes..... Apply and Hold
3. Mixtures..... Full Forward
4. Props..... Full Forward
5. Throttles..... Full Forward
6. Manifold Pressure (43" normal-static, within 3").... Checked
7. Prop Speed..... 2575 RPM
8. Brakes..... Release
9. Rotate..... 76 KIAS min
10. Accelerate to..... Barrier Speed (95 KIAS)
After the barrier has been cleared:
11. Gear..... Retract
12. Flaps..... Retract
13. Accelerate to..... Vxse (104 KIAS)

NORMAL CHECKLIST**NORMAL TAKEOFF**

CAUTION: Normal and running turning takeoffs are not to be made when the inboard tanks are less than one-quarter full as fuel flow interruption may occur. Only the inboard tanks may be used for takeoff. Outboard tanks are for coordinated level flight only and may never be used for takeoff.

1. Brakes..... Apply and Hold
2. Mixtures..... Full Forward
3. Props..... Full Forward
4. Throttles..... 30" MP
5. Engines..... Checked
6. Brakes..... Release
7. Throttles..... Advance to MTOP
8. Manifold Pressure
(43" normal-static sea level std temp, within 3") Checked
9. Prop Speed..... 2575 RPM
10. Rotate..... 85 KIAS min
11. Gear..... UP
12. Accelerate to..... Barrier Speed (95 KIAS)
13. Accelerate to..... Vyse (104 KIAS)
14. Accelerate to..... Cruise Climb (130 KIAS)
15. Prop Synchrophaser..... ON

CLIMB

1. Set Maximum Continuous Power (at 500', 40" MP /
when safely clear of obstacles/terrain)..... 2400 RPM
2. Mixture..... LEAN
[30 GPH min., 1500° EGT max, CHTs 400-435]
3. Cowl Flaps..... As Required
4. Emergency Fuel Pumps..... OFF (*one at a time*)
(Consider switching to OUTBOARD tanks first)
5. Air Conditioner..... As Desired

NORMAL CHECKLIST

6. Seat Belts and No Smoking Sign..... ON
 7. Oxygen..... As Required

Climb Leaning – Maximum Continuous Power – 2400 RPM

| LIMITS – DO NOT EXCEED | | | | |
|------------------------|------|------------|------|-----|
| Altitude | M.P. | F.F. (min) | EGT | CHT |
| SL | 40.0 | 30 | 1500 | 475 |
| Thru 18,700' | 40.0 | 30 | 1500 | 475 |
| 20,000' | 37.7 | | 1500 | 475 |
| 22,000' | 34.3 | | 1500 | 475 |
| 24,000' | 31.0 | | 1500 | 475 |

Note: a minimum fuel flow of 30 GPH must be maintained through 18,700 feet, then EGT limit can be used as a guide for leaning which should result in less than 30 GPH fuel flow.

MAX PERFORMANCE CLIMB

1. Maximum Takeoff Power..... Maintain
 No greater than redline limits 49"/2575RPM/1650EGT
Max Time at MTOP 3 Mins
2. MCP Climb..... Establish When Able

| MAXIMUM TAKEOFF POWER LIMITS – DO NOT EXCEED | | | |
|--|---------|---------------|---------------|
| Engine Limits | | Altitude | Man. Pressure |
| RPM | 2575 | SFC – 15,000' | 49.0" |
| CHT | 500° F | 16,000' | 48.36" |
| EGT | 1650° F | 17,000' | 47.72" |
| | | 18,000' | 47.08" |
| 19,000' | 46.44" | 20,000' | 45.8" |
| 21,000' | 45.16" | 22,000' | 44.52" |
| 23,000' | 44.3" | 23,300' | 42.1" |
| 24,000' | 40.56" | | |

NORMAL CHECKLIST

CRUISE

1. Fuel Selectors..... OUTBOARD or INBOARD

Outbd tanks should only be used in coordinated level flight. When the plane is loaded with rearward CG, burning outboard tanks will move CG forward. If outbd tanks are used during climbs, descents or prolonged uncoordinated level flight, power loss may result even with appreciable fuel remaining.

2. Emergency Fuel Pumps..... OFF
3. Power (for max eng life maintain CHT 435°F or less)..... Set
4. Mixture..... Leaned
5. Cowl Flaps..... As Required

Cruise Leaning – High Speed (70-75% Power)

| | | | | | |
|----------|---------------------|------------|----------|-----|---------|
| MP | 33" | RPM | 2400 | CHT | 400-430 |
| Lean to: | 125-150° rich of pk | FF (total) | 40-43gph | | |

Cruise Leaning – Economy (65% Power)

| | | | | | |
|----------|--------------------|------------|----------|-----|---------|
| MP | 30" | RPM | 2300 | CHT | 400-430 |
| Lean to: | Peak (not > 1650°) | FF (total) | 31-35gph | | |

Cruise Leaning – Long Range (50-55% Power)

| | | | | | |
|----------|--------------------|------------|----------|-----|---------|
| MP | 26" | RPM | 2200 | CHT | 400-430 |
| Lean to: | Peak (not > 1650°) | FF (total) | 27-33gph | | |

DESCENT

1. Mixtures..... Min 1350° EGT
2. Fuel Selectors..... INBOARD
Consider when to return to INBOARD tanks
3. Power..... As required
Throttling back at altitudes above 15,000' without checking the mixture leaned and EGT above 1350° could result in power loss.
4. Oxygen (below 10,000')..... OFF
5. Pitot and Windshield Heat..... As required
6. Shoulder Harness..... As required

NORMAL CHECKLIST**BEFORE LANDING**

1. Seat Belts and No Smoking sign..... ON
2. Emergency Fuel Pumps..... ON
3. Air Conditioner..... OFF/FAN
4. Mixtures..... RICH
5. Prop Sync..... OFF
6. Prop Controls..... 2400 RPM
7. Gear (below 153 KIAS)..... DOWN
8. Gear Lights..... 3 Green
9. Gear mirror..... Checked
10. Brake Pressure..... Checked
11. Parking Brake..... Ensure OFF
12. Autopilot..... As Required
13. Wing Flaps..... As required
(162 KIAS max to 25°)
(132 KIAS max to 40°)
14. Landing Lights..... As Required
15. Radar..... OFF
16. Heater..... OFF / As Required

SHORT FIELD LANDING

(per Colemill STC Operating Tips, no procedure in POH)

1. Flaps.(below 162 KIAS)..... Set 15°
2. Shallow Approach..... Establish
3. Airspeed (when commit to land)..... Slow to 83 KIAS
4. Airspeed..... Cross Threshold at Vref of 74 KIAS
5. Throttles..... Reduce to Achieve Idle at Touchdown
6. Brakes..... Apply moderately with full aft stick

| Stall Speed in KIAS (per BLR STC) | | | | |
|-----------------------------------|-----------|----|------------|----|
| Gross Wt 7,200# | 0° Flaps: | 73 | 40° Flaps: | 68 |
| Gross Wt 6,000# | 0° Flaps: | 70 | 40° Flaps: | 66 |

NORMAL CHECKLIST**BALKED LANDING**

- | | |
|--------------------|--------------|
| 1. Props..... | Full Forward |
| 2. Power..... | As required |
| 3. Wing Flaps..... | 15° |
| 4. Gear..... | UP |
| 5. Wing Flaps..... | UP |
| 6. Airspeed..... | 98 KIAS min |

AFTER LANDING

- | | |
|----------------------------------|-------------|
| 1. Cowl Flaps..... | OPEN |
| 2. Wing Flaps..... | UP |
| 3. Emergency Fuel Pumps..... | OFF |
| 4. Heater Switch (if used)..... | FAN |
| 5. Pitot Heat..... | OFF |
| 6. Prop Heat..... | OFF |
| 7. Windshield Heat..... | OFF |
| 8. Prop Controls..... | Forward |
| 10. Anti Collision Lights..... | OFF |
| 11. Landing/Wing Tip Lights..... | OFF |
| 12. Transponder..... | As Required |
| 13. Air Conditioner..... | As Required |

SHUTDOWN

Ensure 5 mins of engine cool-down time before shut down

- | | |
|--|-------------|
| 1. Parking Brake...(Pedals then handle)..... | As Required |
| 2. Avionics..... | OFF |
| 3. AP/FD..... | OFF |
| 4. Throttles..... | IDLE |
| 5. Mag Grounding..... | Checked |
| 6. Throttles..... | 1000 RPM |
| 7. Lights..... | OFF |

NORMAL CHECKLIST

-
- | | | |
|-----|---|---|
| 8. | Heater Switch (Fan for 5 mins if used on gnd) | OFF |
| 9. | Electrical equipment..... | OFF |
| 10. | Avionics Master..... | OFF |
| 11. | Air Conditioner / Fan..... | OFF |
| 12. | Ammeter..... | Check Battery State <i>With both engines at 1000 RPM, if the ammeter shows above 25 amps, the battery is low. Do not stop engines until current drops below 25 amps or there may not be sufficient battery for starting.</i> |
| 13. | Mixture (1 st eng started)..... | IDLE CUT-OFF |
| 14. | Gear Handle..... | DOWN |
| 15. | Gear Handle (hydraulic check)..... | Returned to Neutral |
| 16. | Mixture (2 nd engine)..... | IDLE CUT-OFF |
| 17. | Mags..... | OFF |
| 18. | Master Switch..... | OFF |
| 19. | Fuel Tanks..... | OFF |

SECURING AIRCRAFT

- | | | |
|-----|--|-------------|
| 1. | Hobbs (acft, both engines) and squawks | Record |
| 2. | Parking Brake | As Required |
| 3. | Cockpit Windows, Pilot Door | Locked |
| 4. | Windshield Sun Screens | As Required |
| 5. | Dome Light, Cabin Entrance Light | Ensure OFF |
| 6. | Aircraft Forms | Complete |
| 7. | Passenger Door | Secure |
| 8. | Walk around inspection | Complete |
| 9. | Chocks and Drip Pans | Install |
| 10. | Baggage Compartments | Locked |
| 11. | Pitot and Engine Intake Covers | Installed |
| 12. | Flight Control Locks | Installed |
| 13. | Aircraft Tie-Downs | As Required |

NORMAL CHECKLIST**AUTOPILOT DETAILED SYSTEMS CHECK/OPERATION****Autopilot Operating Limits**

| | |
|--|-------------------------------------|
| Speed | 105 – 220 knots |
| Flaps | Less than 15° |
| Cat I approach / Back Course approaches only | |
| Pitch | +/- 15° |
| Roll | +/- 25° |
| Yaw | N/A |
| Single Engine | OK After Manual Trim adjusted/reset |
| Takeoff/Landing | Must be disengaged |

Indicators and Controls

AP DISC/TRIM INTERRUPT – disengages autopilot and interrupts power to the electric trim system

TRIM UP/DN (pilot's control wheel) – moves pitch trim, disengages the autopilot if actuated (unless CWS switch is held depressed while moving trim)

CWS SYNC – (Cntl Wheel Strg-Sync) disengages autopilot while held, reengages when released, resyncs the FD to new conditions

GA (GO AROUND) – on throttle, commands a pitch attitude of 7 ½° on the FDI, Selection when in APPR or NAV CPLD mode will disengage the mode and revert to the FD Mode (wings level) for lateral steering. The AP, if engaged, will disengage. The AP can be reengaged with GA Mode selected and will follow the pitch command.

AVIONICS MASTER Switch – Powers the avionics bus bar or the radio CBs, AUTOPILOT and PITCH TRIM CBs

ACFT MASTER Switch: can be used in an emergency to shut off all power while the problem is isolated

Normal Gyro warm-up time: 3-4 minutes

System Circuit Breakers

- AUTOPILOT (AP/FD – Pilot's CB panel): FCS computer, Mode Controller, Annunciator Panel, FDI, AP Pitch and Roll Servos
- Avionics Master (2 CBs – Pilot's CB panel): Avionics Bus, including FD/AP components and Electric Trim
- COMPASS SYSTEM or LEFT H/G (Pilot's CB panel): KCS 55A compass system
- ELEC TRIM: FCS Autotrim, manual electric trim

NORMAL CHECKLIST**AUTOPILOT DETAILED SYSTEMS CHECK/OPERATION****KFC 200 AFCS WITH FLIGHT DIRECTOR****Detailed System Check, after Start**

(g) PREFLIGHT CHECK (Must be performed prior to each flight)

- (1) With no modes engaged and all valid flags retracted, depress the TEST Button on the Mode Controller. The ~~YAW DAMP-ON~~ light will illuminate and all annunciators will illuminate on the annunciator panel, including the three marker lights. In addition, the red TRIM failure light will flash. At least four or more flashes must be observed to indicate proper operation of the auto trim/manual electric pitch trim feature and an audible warning should sound.

(NOTE: YAW Damper is not an installed option on this aircraft)

- (2) With the AP disengaged, run the following manual electric pitch trim checks.
 - a. Verify that the PITCH TRIM circuit breaker is in.
 - b. Actuate the left-side switch to the fore and aft position. The trim solenoid should engage, but the trim should not run.
Actuate the right-side switch to the fore and aft positions. The trim solenoid should not engage and the trim should not run.
 - c. Run the trim from full nose up to full nose down. The time required is 39 +/- 4 seconds.
 - d. Grasping the manual trim wheel, run the trim both up and down and check the overpower capability. (Check that the trim indicator moves with the wheel).
 - e. Press the AP DISC/TRIM INTERRUPT switch down and hold. The Manual electric pitch trim will not operate either up or down.
- (3) Engage the FD. Then engage the AP, depress the CWS switch, center the flight controls and then release the CWS switch. Apply force to the controls to determine if the AP can be overpowered.
- (4) Engage the FD and AP and put in a pitch (UP) command using the vertical trim switch on the Mode Controller. Hold the

NORMAL CHECKLIST**AUTOPILOT DETAILED SYSTEMS CHECK/OPERATION**

control column to keep it from moving and observe the autotrim run in the nose up direction after approximately three seconds delay. Use the vertical trim switch and put in a pitch (DN) command. Hold the control column and observe the autotrim run in the nose down direction after approximately three seconds.

- (5) Engage the HDG mode and the AP. Set the HDG bug to command a right turn. The control wheel will rotate clockwise. Set the HDG bug to command a left turn. The control wheel will rotate counterclockwise.
- (6) Toggle the Accelerometer test switch to the (UP) position; the autopilot will disengage. Re-engage the AP and toggle the switch to the (DN) position; the autopilot will disengage.

NOTE: in this aircraft the accelerometer test fails. This indicates a failed accelerometer in some way. That implies a lack of autopilot failsafe in the event of an autopilot-induced high G turn or extreme pitch command. The pilot must manually disengage the autopilot if such a condition develops.

CAUTION: Operation of the Autopilot on the ground may cause the Autotrim to run because of back force generated by elevator downsprings or pilot induced forces. Therefore, disengage the AP and check that the airplane manual Pitch Trim is in the Takeoff position prior to takeoff.

CAUTION: If the Autopilot circuit breaker is pulled, the red "TRIM" failure light on the Annunciator panel will be disabled and the audible warning will continuously sound indicating that the failure light is disabled. In this event the "PITCH TRIM" circuit breaker should be pulled and in-flight Trim accomplished by using the manual Pitch Trim Wheel.

NORMAL CHECKLIST**AUTOPILOT DETAILED SYSTEMS CHECK/OPERATION****Normal Operation**

PAH mode: "Pitch Attitude Hold" mode, AP follows FDI bars

In PAH, "Vertical Trim" switch will chg pitch attitude 1 degree/sec

ALT mode: captures pressure altitude at time ALT is depressed

In ALT hold, holding "Vertical Trim" sw will change alt 500-700 fpm, new pressure altitude when sw is released will be held

HDG mode: AP holds heading set by Captains Bars on PNI (HSI).

NAV mode: AP holds centerline of desired VOR radial/GPS route. Set up an intercept using HDG. Engage NAV. AP will turn to intercept when arriving on centerline (any angle up to 90°).

NOTE: *be aware that when executing turns at waypoints, the course needle on the PNI (HSI) must be turned to the new course before the AP will turn and track the new leg. Failure to do so may result in the aircraft continuing on its previous course/heading. The AP will use aggressive angles to intercept a course, up to 45° unless HDG mode is used to incp.*

APPR mode: Engineered for VOR/ILS approaches, GPS added later, follows GPD guidance like VOR/ILS. APPR ARM will display until course incp, or APPR will display if engaged when CDI already centered. APPR CPLD displays when captured. Disengages when APPR, GA, HDG, NAV modes are selected.

BC mode: proceed as for normal appch. Engage BC after APPR. BC reverses commands, cannot be engaged without a LOC freq selected. Disengages when pressing BC, APPR, GA or selecting other than a LOC freq on nav receiver.

Trim up/dn switch can be used to adjust ALT hold or PAH angle for vertical guidance without disengaging the mode.

GA mode: depress the GA sw on the left throttle. GA illuminates. FDI commands +7 ½° pitch angle. AP disengages, cancels all vertical modes as well as APPR or NAV CPLD. Provides guidance for missed appch, ready for new AP modes. Pilot must fly manually until new AP modes engaged.

PAH Procedure:

1. Engage FD command bars appear and capture the current conditions, indicating PAH (Pitch Attitude Hold).
2. Engage AP. AP follows FDI (Flt Director Indicator), for attitude hold
3. Depress CWS SYNC to reset attitude, release and FD/AP will hold new.
In PAH, "Vertical Trim" switch will change pitch attitude 1 degree/sec

NORMAL CHECKLIST**AUTOPILOT DETAILED SYSTEMS CHECK/OPERATION**

Nav/VOR Procedure:

1. Tune VOR/set GPS route
2. Set desired intercept hdg with Capts Bar
3. Engage HDG mode (max of 90o recommended)
4. Set desired adial/course on CDI
5. Engage NAV. NAV ARM displays. When acft intercepts beam/crs, acft captures beam/crs, NAV CPLD displays
6. New beam/crs may be selected over the VOR/waypoint for next leg

Approach Procedure:

1. Tune VOR/ILS/Set RNAV Appch
2. Sent CDI to front course
3. Set Capts Bars and engage HDG for intercept
4. Engage APPR, APPR ARM displays
5. Approaching beam/crs, acft captures, APPR CPLD displays, HDG decouples, FDI gives commands to track LOC/VOR/CRS
6. When GS is intercepted, GS couples, GS displays, disengages ALT, set Capts Bars for missed approach but do not engage HDG
7. When MM rcvd, system will switch to a more-stable track mode

NOTE: Operation of the marker test function after approach coupled will reduce the flight control system gain. If this should occur, the APPR mode should be recycled.

Missed Approach Procedure: At missed approach or go around point

1. Select GA on Left Throttle
2. AP disengages, Aural alert will sound
3. FDI indicates climb pitch angle
4. Manually apply power, clean up aircraft, establish climb, re-trim acft
5. AP modes may be re-engaged (HDG, PAH) for climb out procedure

Back Course Procedure: same as approach mode except:

1. Tune LOC
2. Sent CDI to **front** course
3. Set Capts Bars and engage HDG for intercept
4. Engage APPR, APPR ARM displays
5. Engage BC, BC displays (computer reverses commands)
6. Approaching beam/crs, acft captures, APPR BC CPLD displays, HDG decouples, FDI gives commands to track LOC
7. Descent must be managed via Vertical Trim Sw DN (500-700 fpm) in ALT hold, or PAH and Vertical Trim Sw to set descent angle
8. Set Capts Bars for missed approach heading, do not engage HDG

NORMAL CHECKLIST

OPS LIMITS

AIRSPEEDS FOR SAFE OPERATION (KIAS)

(As modified by BLR-FAA Approved Flight Supplement)

| | | | |
|---------------|---|------------------|-----|
| Vso | 68 | Vlo retract | 128 |
| Vs | 74 | Vlo extend | 153 |
| Vmca | 76 | Vle | 153 |
| Vx (0° Flaps) | 84 | Vfe (0° - 25°) | 162 |
| Vr | 85 (min) | Vfe (25° - 40°) | 132 |
| Vsse | 92 (Intentional one Engine INOP) | | |
| Vy | 101 | Va | 160 |
| Vxse | 104 | Vno (max cruise) | 185 |
| Vyse | 106 | Vne | 226 |
| Approach Spds | 110 (Flt Safety Trng Manual) / 120 Sgl Eng | | |
| Vref | 95 at threshold (Short Field = 83, 74 @ Thld) | | |

Maximum Demonstrated Crosswind Wind 20 Knots

Engine Operating Limits

| | | | |
|--------------------|-------------------|---|-------------------|
| Oil Pressure | 25-100 psi | Normal Oil | 60-90 psi |
| Start/Warm-Up | 115psi | Do not takeoff until pressure is below 100 psi (will overboost) | |
| Oil Temp | 50-245° | Normal Temp | 120-245° |
| Fuel Pressure | 34-55 psi | | |
| CHT | 100-500° | Normal | 100-475° |
| EGT | 0-1650° | | |
| Man. Press. | 18-49" | Normal | 18-40" |
| Turbine Inlet Temp | 1650° F | Oil Qty | 12 Qts (2.75 min) |

Fuel Capacities

| | | | |
|---------------|-------------------|-----------|------------------|
| Total | 192 Gal/1152# | Usable | 182 Gal/1092# |
| Unusable Fuel | | | |
| Inboards | 6 Gal (3 each) | Outboards | 4 Gal (2 each) |
| Usable Fuel | | | |
| Inboards | 106 Gal (53 each) | Outboards | 76 Gal (38 each) |

NORMAL CHECKLIST**OPS LIMITS**

| | |
|----------------------|---------------------|
| Pressure Gyro System | 4.3" – 6.1" mercury |
|----------------------|---------------------|

G Limits

| | |
|-----------------------------|-------|
| Positive (Maximum) at 7000# | 3.51G |
| Negative (Maximum) at 7000# | -1.4G |

Aircraft Dimensions

| | |
|--------------------------|--------|
| Overall Length | 35' |
| Height | 13' |
| Wingspan | 41' |
| Towing Turning Radius | 29.25' |
| Turn Radius (Nose Wheel) | 25' |

Cross Country servicing

| | |
|------------------------------------|-------------------------------|
| Nose Tire | 42 psi (NITROGEN ONLY) |
| Main Tires | 66 psi (NITROGEN ONLY) |
| Engine Oil | 12 Qts max – Aeroshell 15W-50 |
| Oxygen | 1800-1850 psi = full |
| Brake Fluid (petroleum based, red) | MIL-H-5606 hydraulic fluid |
| Hydraulic Fluid | MIL-H-5606 hydraulic fluid |
| Oleo Struts (3.25" normal exposed) | Inflate to 3.25" extension |

Pilot's Windshield Wiper / Heat

| | |
|----------------------|---------------------------------------|
| Wiper-Do Not use if: | Airspeed > 127 Knots, Dry Windshield |
| Heat-Ground Test: | OK w/engines running for short period |

Electrical System Notes

- Loads on both alternators should be equal
- Throttles 800 RPM and below will get ALT INOP Ann. Lt.
- Full load capacity not avail. until 1500 RPM and above
- 24v Battery, 2x 28v/70 amp-hour alternators
- In Hvy rain, Rt. Alternator must be reduced to 40a or less

NORMAL CHECKLIST**SUPPLEMENTAL CHECKLISTS****LEANING (Best Economy)**

| | | |
|----|----------------------------------|------------------------|
| 1. | Lean Mixture (slowly) until..... | EGT stabilized at Peak |
|----|----------------------------------|------------------------|

NOTE: Do not exceed 1650° F EGT**LEANING (Best Power)**

(Engines must always be operated on the rich side of Peak EGT)

| | | |
|----|----------------------------------|------------------------|
| 1. | Lean Mixture (slowly) until..... | EGT stabilized at Peak |
|----|----------------------------------|------------------------|

NOTE: Do not exceed 1650° F EGT

| | | |
|----|---------------------|--------|
| 2. | Enrich mixture..... | 125° F |
|----|---------------------|--------|

NOTE: At high power setting, if 1650° F is reached before peak EGT, refer to Lycoming Operator's Manual for correct procedure**NOTE:** (Per Lycoming manual) for maximum engine life, keep EGT below 435°F for high performance cruise and below 400°F for economy cruise powers**LEANING (Best Power)**

(Lycoming Procedure)

Establish a reference point by:

| | |
|----|---|
| 1. | Establish a peak TIT for best economy at the highest economy cruise power without exceeding 1650° F |
| 2. | Deduct 125° F from this temp. This is the reference point |

Establish Max Power Cruise by:

| | | |
|----|--|--|
| 1. | Return mixture to full rich | |
| 2. | Set RPM and Manifold Pressure for desired performance cruise | |
| 3. | Lean mixture until EGT is at the reference point | |

LEANING TO FLOWMETER

(Lycoming Procedure)

| |
|--|
| Lean to applicable fuel-flow tables or lean to indicator marked for correct fuel-flow for each power setting |
|--|

NORMAL CHECKLIST**SUPPLEMENTAL CHECKLISTS****COLD WEATHER OPERATING TIPS**

(Recommended by Colemill after conversion)

1. Engines must be preheated when OAT is 10°F or below. If available preheat should be used at very low temps.
2. Use a normal starting procedure (*Colemill Operating Tips*)
3. Oil pressure will rise much slower than normal
4. Engines should be warmed up for 4 minutes minimum
5. In extreme cold, use discretion before incr RPM after start
6. Oil temp should be in the green before runup or takeoff
7. During all ground ops cowl flaps should be OPEN

BLR STC GUIDANCE ON VORTEX GENERATORS

88 Vortex Generators are normally mounted on the acft. 82 VGs constitute the minimum requirement. If less than 86 VGs are in place, the aircraft must be operated in accordance with the basic POH. If less than 82 are present, do not fly.

V-SPEEDs when VGs lost (most-conservative value chosen)

| | | | |
|---------------|---|------------------|-----|
| Vso | 74 | Vlo retract | 128 |
| Vs | 77 | Vlo extend | 153 |
| Vmca | 76 | Vle | 153 |
| Vx (0° Flaps) | 84 | Vfe (0° - 25°) | 162 |
| Vr | 85 (min) | Vfe (25° - 40°) | 132 |
| Vsse | 92 (Intentional one Engine INOP) | | |
| Vy | 101 | Va | 160 |
| Vxse | 104 | Vno (max cruise) | 185 |
| Vyse | 106 | Vne | 226 |
| Final Appr | 110 (Flt Safety Trng Manual) / 120 Sgl Eng | | |
| Vref | 95 at threshold (Short Field = 83, 74 @ Thld) | | |

Gross Weight Limit Reversion:

Max Ramp Wt = 7,045 / TO Wt = 7,000 / Land Wt 7,000

CG Envelope Reversion:

7045# - 126.0 to 135.0 7200# - 126.0 to 135.0

6200# - 122.0 to 135.0 5200 or less – 120.0 to 135.0

NORMAL CHECKLIST

SUPPLEMENTAL CHECKLISTS

CABIN VENTILATION

CABIN HEAT

1. Select FAN at heat switch (also to cool down after gnd use)
2. Select START/RESET
3. Heater ignites, heat within a few seconds
4. Move TEMP and DEFROSTER right for hot (no > ½ on gnd)
5. DO NOT EXCEED ½ temp for Gnd, Takeoff and Climb
6. HEATER/CABIN AIR knob must be ON (Far Right)
7. Pull to OPEN CABIN AIR exhaust knob (copilot's panel)
8. FAN (ovhd panel) can be used to add circulation of heat

NOTE: Right Fuel Pressure needle will fluctuate as heater cycles, may jump when heater initially activates

If HTR FAIL light comes on

HTR FAIL

1. HEATER OFF
2. All heater outlets to FULL OPEN position
3. Allow to cool for 5 mins
4. Restart by selecting Heat START/RESET
5. HTR FAIL should extinguish, heat should work
6. If HTR FAIL returns, shut off heat and do not use again

DEFROST

1. Select FAN for unheated defrost air, Turn Heater on for hot
2. Move DEFROST to full until windshield defrosted
3. Lower defrost air to maintain windshield

NORMAL CHECKLIST

SUPPLEMENTAL CHECKLISTS

CABIN AIR

1. For outside air, move OUTSIDE AIR knob to right
Opens air scoop under fuselage
2. Pull to OPEN CABIN AIR exhaust knob
Opens exhaust air scoop aft of pax door
3. Turn on FAN (OVHD panel)

AIR CONDITIONING

A/C will not operate if cabin temp is below 65°F

A/C will not operate if control knob is at ctr clkwise stop

1. On ground: Right Engine at 1000RPM
2. Turn on A/C with ovhd switch
3. Recirc Fan switch moves air at high or low setting
4. Select desired temp with knob (turn clockwise)
Rheostat controls temp from 65-85° F
5. Close Fresh Air Scoop and Exhaust Vent
If compressor is operating on ground, nacelle scoop opens

NOTES

If no cooling within 2 minutes, turn OFF and check

If refrigerant is low the compressor will not run (safety switch)

If ground temp is above 69°F and a crosswind component of 10 knots or greater exists, run Right Engine at 1500 RPM to ensure full cooling capacity

For use in the air, close the fresh air scoop and exhaust vent then activate A/C. Fresh air can be added after cabin is cooled

NORMAL CHECKLIST**SUPPLEMENTAL CHECKLISTS**

Vmca – MINIMUM CONTROL AIRSPEED DEMO

NOTE: All intentional one engine operations should be not conducted at an altitude of less than 5000' AGL

1. Landing Gear..... UP
2. Flaps..... UP
3. Airspeed..... At or above 92 KIAS (Vsse)
4. Propeller controls..... High RPM
5. Throttle (simulated INOP engine)..... IDLE
6. Throttle (Other engine)..... Max allowable
7. Airspeed..... Reduce approx. 1 knot per second until
either Vmca or STALL WARNING is
obtained

At Vmca or STALL WARNING

RECOVER by:

8. Power (operative engine)..... IDLE
9. Pitch attitude..... Lower to regain Vsse
10. Power (operative engine)..... Reapply

CAUTION: Use rudder to maintain directional control (heading) and ailerons to maintain 5° bank towards the operative engine (lateral attitude). At the first sign of Vmca or stall warning (which may be evidenced by: Inability to maintain heading or lateral attitude, aerodynamic stall buffet, or stall warning horn) immediately initiate recovery; reduce power to idle on the operative engine, and immediately lower the nose to regain Vsse.

CAUTION: One engine inoperative stalls are not recommended.

NORMAL CHECKLIST**SUPPLEMENTAL CHECKLISTS**

SIMULATED ENGINE ZERO THRUST

To approximate single engine flight conditions without intentionally rendering an engine inoperative, use the following power settings to simulate zero thrust (feathered) conditions.

1. Mixture (simulated INOP engine)..... Full RICH
2. Propeller (simulated INOP engine)..... High RPM
3. Throttle (simulated INOP engine)..... Adjust to achieve
RPM listed below

ZERO THRUST

| KTAS | RPM |
|---|------------|
| 80 | 1600 |
| 90 | 1800 |
| 100 | 2000 |
| 110 | 2200 |
| 120 | 2400 |
| 125 | 2500 |
| <i>Straight line variation between points</i> | |

| ANNUNCIATOR | CAUSE / TRIGGER | Go To |
|----------------------------|---|---|
| HTR FAIL | Heater operating temperature exceeded, auto-shut down of heater has occurred | N-9-3 |
| L/R PNEU INOP | Pneumatic Pump Failure detected | E-10-1 |
| L/R FUEL BOOST INOP | Fuel Boost Pressure is below 3 psi | E-10-2 |
| L/R LOW FUEL FLOW | Fuel level near the tank outlet has dropped to a point where fuel flow interruption and power loss could occur Switch tanks or Crossfeed ASAP | E-2-1 Eng Roughness E-6-1 Crossfeed |
| FLAP | Flap Amplifier Failure or a Split Flap Condition has been detected | E-9-1 |
| L/R ALT INOP | Respective alternator has failed to provide voltage | E-5-1 |
| TRIM | Electric Trim system malfunction | E-10-3 |
| CABIN DR UNSAFE | Passenger door not secure | |
| NOSE/BAG DR AJAR | Either or both doors not secured | |

EMERGENCY CHECKLIST

| <u>Conditions</u> | <u>Refer to Section:</u> |
|---|--------------------------|
| ENGINE SECURING PROCEDURE / ENGINE FAILURE / SINGLE ENGINE LANDING / SINGLE ENGINE GO AROUND / AIRSTART | E-1 |
| ENGINE ROUGHNESS / ENGINE OVERHEAT / LOSS OF OIL PRESSURE / ROUGH AIR OPERATION | E-2 |
| ENGINE FIRE ON GROUND / ENGINE FIRE IN FLIGHT | E-3 |
| ELECTRICAL FIRE | E-4 |
| ONE / TWO ALTERNATOR INOP LIGHT(S) ON L ALT INOP R ALT INOP | E-5 |
| CROSSFEED / COMING OUT OF CROSSFEED L/R LOW FUEL FLOW | E-6 |
| RPM UNDERSPEED / RPM OVERSPEED | E-7 |
| EMERGENCY GEAR EXTENSION / GEAR UP LANDING | E-8 |
| FLAP SYSTEM MALFUNCTIONS FLAP | E-9 |
| OTHER MALFUNCTIONS: (Not POH Checklists) - Pneumatic system Malfunctions - Boost Pump Failures - Trim System Malfunctions/Ops - Emergency Descent L/R PNEU INOP L/R FUEL BOOST INOP TRIM | E-10 |

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES****ENGINE SECURING PROCEDURES****(FEATHERING PROCEDURE)**

- | | |
|---|------------------------|
| 1. Throttle..... | Close |
| 2. Propeller..... | Feather (1000 RPM min) |
| 3. Mixture..... | IDLE CUT-OFF |
| 4. Cowl Flaps..... | Close |
| 5. Air Conditioner..... | OFF |
| 6. Magneto Switch..... | OFF |
| 7. Emergency Fuel Pump..... | OFF |
| 8. Fuel Selector..... | OFF (detent) |
| 9. Fuel Boost Pump CB..... | Pulled |
| 10. Alternator CB Switch..... | OFF |
| 11. Prop Sync..... | OFF |
| 12. Electrical Load..... | Reduce |
| 13. Crossfeed.(Refer to Checklist)..... | As Required |

ENGINE FAILURE / FIRE DURING FLIGHT**(85 KIAS or below)**

If Sufficient runway remains for a safe stop:

- | | |
|------------------------|-------------------|
| 1. Throttles..... | Immediately Close |
| 2. Brakes..... | As Required |
| 3. Stop straight ahead | |

If Insufficient runway remains for a safe stop:

- | | |
|--------------------------|-------------------|
| 1. Throttles..... | Immediately Close |
| 2. Mixtures..... | IDLE CUT-OFF |
| 3. Master Switch..... | OFF |
| 4. Fuel Selectors..... | OFF |
| 5. Magneto Switches..... | OFF |

NOTE: Maintain directional control and maneuver to avoid obstacles

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES****ENGINE FAILURE DURING NORMAL TAKEOFF****(Above 85 KIAS)**

1. Directional Control..... Maintain
2. Power (operating engine)..... MTOF on operative engine
3. Propeller control (INOP Engine)..... Feather
4. Landing Gear (in level or climbing flight)... Retract
5. Bank..... 5° into operating engine
6. Airspeed..... 95 KIAS to 50 ft, then accelerate to 104 KIAS
7. Cowl Flaps (inoperative engine)..... Close
8. Airspeed..... 106 KIAS after all obstacles
have been cleared
9. Engine Securing Procedures..... Complete

NOTE: Land as soon as practical at nearest suitable airport

ENGINE FAILURE DURING SHORT FIELD TAKEOFF**(92 KIAS or below)**

If Sufficient runway remains for a safe stop:

1. Throttles..... Immediately Close
2. Land (if airborne)..... On remaining runway
3. Brakes..... As Required

If Insufficient runway remains for a safe stop:

1. Throttles..... Immediately Close
2. Mixtures..... IDLE CUT-OFF
3. Master Switch..... OFF
4. Fuel Selectors..... OFF
5. Magneto Switches..... OFF
6. Land (if airborne) avoiding obstacles

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES****ENGINE FAILURE DURING SHORT FIELD TAKEOFF**

(Above 92 KIAS but below 104 KIAS)

If Sufficient runway remains for a safe stop:

1. Throttles..... Immediately Close
2. Land (if airborne)..... On remaining runway
3. Brakes..... As Required

If Insufficient runway remains and the decision is made to abort the takeoff:

1. Throttles..... Immediately Close
2. Landing Gear..... Extend

NOTE: Depending on terrain, it may be advisable to land with the gear retracted.

3. Flaps..... Extend
4. Airspeed..... 87 KIAS min
5. Mixtures..... IDLE CUT-OFF
6. Master Switch..... OFF
7. Fuel Selectors..... OFF
8. Magneto Switches..... OFF
9. Land Avoiding Obstacles

If insufficient runway remains, the terrain ahead is unsuitable for a safe landing and the decision is made to continue the takeoff:

1. Directional Control..... Maintain
2. Power..... MTOP operative engine
3. Propeller control (inop engine) FEATHER
4. Landing Gear (in level flt or climbing)..... Retract
5. Bank..... 5° into operating engine
6. Flaps..... Retract in increments
7. Airspeed..... Accelerate to 104 KIAS until all obstacles have been cleared, then 106 KIAS
8. Engine Securing Procedures..... Accomplish

WARNING: Negative climb performance until clean (contd next page)

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES**

WARNING: Negative climb performance may result from an engine failure occurring after lift-off and before gear and flaps have been retracted, the failed engine propeller has been feathered, the cowl flap on the failed engine is closed and a speed of 106 KIAS has been attained. Refer to Single Engine Climb chart for clean configuration positive climb performance.

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES****ENGINE FAILURE DURING SHORT FIELD TAKEOFF
(Above 104 KIAS)**

1. Directional Control..... Maintain
2. Power..... MTOP operative engine
3. Propeller control (inop engine) FEATHER
4. Bank..... 5° into operating engine
5. Flaps..... Retract in increments
6. Airspeed..... Accelerate to 104 KIAS until all obstacles
have been cleared, then 106 KIAS

If sufficient runway remains for a safe stop:

1. Throttles..... Immediately Close
2. Land..... On remaining runway
3. Brakes..... As Required

If insufficient runway remains and the decision is made to abort the takeoff:

1. Throttles..... Immediately Close
2. Landing Gear..... Extend

NOTE: Depending on terrain, it may be advisable to land with the gear retracted.

3. Flaps..... Extend
4. Airspeed..... 87 KIAS min
5. Mixtures..... IDLE CUT-OFF
6. Master Switch..... OFF
7. Fuel Selectors..... OFF
8. Magneto Switches..... OFF
9. Land Avoiding Obstacles

WARNING: Certain combinations of aircraft weight, configuration, ambient conditions and airspeeds will result in negative climb performance. (Refer to specific chart in performance section).

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES****ENGINE FAILURE DURING CLIMB**

1. Power (operating engine)..... MTOP on operative engine
2. Airspeed..... Maintain 106 KIAS
3. Directional Control..... Maintain
4. INOP engine..... Identify and Verify
5. INOP engine..... Complete Engine Securing Procedure
6. Land as soon as practical at nearest suitable airport

ENGINE FAILURE DURING FLIGHT**(Below 76 KIAS)**

1. Rudder..... Apply towards operative engine
2. Throttles (both engines)..... Retard to stop turn
3. Pitch Attitude..... Lower nose to accelerate
above 76 KIAS
4. Operative engine..... Increase power as airspeed
increases above 76 KIAS

If altitude permits, a restart may be attempted.

If restart fails or altitude does not permit:

5. INOP engine prop..... FEATHER
6. Trim..... Adjusted (5° bank into operative engine)
7. INOP engine..... Complete Engine Securing Procedure
8. Cowl flap (operative engine)..... As Required

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES****ENGINE FAILURE DURING FLIGHT****(Above 76 KIAS)**

1. INOP engine..... Identify
2. Operative engine..... Adjust as required
3. Airspeed..... Attain and maintain
at least 106 KIAS

Before securing INOP engine:

4. Fuel flow.... Check (if deficient-emergency fuel pump ON)
5. Fuel Quantity..... Check
6. Fuel selector (INOP engine)..... Switch to other tank
containing fuel
7. Oil pressure and temp..... Check
8. Magneto switches..... Check
9. Air Start..... Attempt

If engine does not start, complete Engine Securing Procedure.

(Then:)

1. Power (operative eng)..... As Required
2. Mixture (operative eng)..... Full Rich
3. Fuel Quantity (operative eng tank)..... Sufficient
4. Emergency Fuel Pump (operative eng)..... As Required
5. Cowl Flap (operative engine)..... As Required
6. Trim..... Adjusted (5° bank into operative engine)
7. Electrical Load..... Decrease to min required

Land as soon as practical at nearest suitable airport

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES****SINGLE ENGINE LANDING**

1. INOP engine..... Engine Securing Procedure Complete
2. Hydraulic Pump (Handle UP – Returns)..... Check
3. Seat belts/Harnesses..... Secure
4. Heater..... FAN
5. Emergency fuel pump (operative eng)..... ON
6. Mixture (operative eng)..... RICH
7. Propeller (operative eng)..... Full FORWARD
8. Fuel selector on operative eng side..... ON INBOARD tank
9. Crossfeed.(Refer to Checklist)..... OFF
10. Cowl flap (operative engine)..... As Required
11. Airspeed..... Maintain 116 KIAS in until landing assured
12. Altitude..... Higher than normal until landing assured

When landing is assured:

13. Gear..... DOWN
14. Flaps..... DOWN
15. Power..... Retard slowly and flare airplane
16. Trim..... As power is reduced
(airplane will yaw in direction of operative engine)

SINGLE ENGINE GO AROUND

(Not possible from a full flap position unless sufficient altitude is available to raise flaps in a descent)

AVOID IF POSSIBLE, If necessary:

1. Airspeed..... Hold 106 KIAS
2. Power..... MTOP operative engine
3. Flaps..... Retract
4. Landing Gear..... Retract
5. Cowl flaps on operative engine..... As required
6. Trim..... As required

EMERGENCY CHECKLIST**ENGINE INOPERATIVE PROCEDURES**

AIRSTART (UNFEATHERING PROCEDURE)

1. Fuel selector..... ON
2. Fuel boost pump CB..... IN
3. Magnetos..... ON
4. Throttle..... Open ½ inch
5. Propellers..... ½ Forward
6. Mixture..... Forward
7. Starter..... Engage until prop unfeathers
(may take up to 30 seconds)
8. Propeller..... Pull back to low RPM position as propeller
speed accelerates through 1000 RPM
9. Throttle..... Reduced power until warm, 2000 RPM max
10. Alternator..... ON
11. Engine instruments..... Check
12. Air Conditioner..... As desired
13. Propeller..... Manual sync with operating engine
14. Throttle..... Set as desired
12. Prop Sync..... As desired

EMEERGENCY CHECKLIST**IN FLIGHT ENGINE ISSUES – ROUGH AIR****ENGINE ROUGHNESS**

**L/R LOW
FUEL FLOW**

1. Emergency Fuel Pumps..... ON
2. Engine Instruments..... Scan for Cause
3. Mixture..... Adjust as required
4. Alternate Air..... OPEN
5. Cowl Flaps..... Adjust for proper CHT
6. Fuel..... Switch tanks if fuel in second tank
7. Magnetos..... Check

WARNING: If either the right or left fuel flow warning light illuminates and the fuel gauge indicates fuel remaining in the corresponding inboard tank, this will indicate a malfunction of the flapper door in the inboard tank. Immediately select the outboard tank or select crossfeed to avoid fuel flow interruption.

ENGINE OVERHEAT

1. Cowl Flaps..... OPEN
2. Mixture..... Richen
3. Power..... Reduce
4. Airspeed..... Increase (if altitude permits)

LOSS OF OIL PRESSURE

1. Engine..... Secure per Engine Securing Procedure
(E – 1 – 1)

ROUGH AIR OPERATION

Slow to maneuvering speed or slightly less.
(7000 lbs @ 160 KIAS). Fly attitude and avoid abrupt maneuvers.

1. Seat belt and shoulder harness..... Tighten

EMERGENCY CHECKLIST**ENGINE FIRES**

ENGINE FIRE ON GROUND

(Engine start, taxi, and takeoff with sufficient distance to stop)

- | | | |
|----|---------------------------------|---------------------|
| 1. | Firewall Fuel Shutoff..... | OFF |
| 2. | Emergency Fuel Pump..... | OFF |
| 3. | Boost Fuel Pump CB..... | Pulled |
| 4. | Brakes..... | As Required |
| 5. | Throttle (affected engine)..... | OPEN |
| 6. | Radio..... | Call for assistance |
| 7. | Mixture (if fire persists)..... | IDLE CUT-OFF |
| 8. | External Fire Extinguisher..... | Use |

NOTE: If fire continues, shut down both engines and evacuate.**NOTE:** If fire is on the ground, it may be possible to taxi away.**ENGINE FIRE IN FLIGHT**

- | | | |
|----|----------------------------|--------------|
| 1. | Firewall Fuel Shutoff..... | OFF |
| 2. | Throttle..... | Idle |
| 3. | Propeller..... | FEATHER |
| 4. | Mixture..... | IDLE CUT-OFF |
| 5. | Inoperative Engine..... | Secure |

If fire persists

- | | | |
|----|---------------|--------------------------------------|
| 6. | Airspeed..... | Increase in attempt to blow out fire |
|----|---------------|--------------------------------------|

Land at nearest suitable airport

EMERGENCY CHECKLIST**ELECTRICAL FIRE**

ELECTRICAL FIRE

- | | |
|---------------------------------|--------------------|
| 1. Flashlight (at night)..... | Located |
| 2. Master Switch..... | OFF |
| 3. Circuit Breakers..... | Checked and Pulled |
| 4. All electrical switches..... | OFF |

NOTE: Land immediately at nearest suitable airport.

At the pilots discretion and if time permits:

- | | |
|---|-----|
| 1. Master Switch..... | ON |
| 2. CB and switch for each unit (one at a time)..... | ON |
| 3. CB and switch for failed unit..... | OFF |

NOTE: Consider use of oxygen for fumes.

EMERGENCY CHECKLIST**L ALT INOP****R ALT INOP****ALTERNATOR INOP LIGHT(S)****ONE ALTERNATOR INOP LIGHT ON**

1. Electrical Load..... Reduced
2. Appropriate side of Master Switch..... OFF
3. Tripped CBs..... Reset
4. Appropriate side of Master Switch ON
5. Electrical load (if light goes out)..... Reinstated

If light remains lit or alt CB has tripped:

6. Appropriate side of Master Switch..... OFF
7. Electrical load..... Reduction Continued

TWO ALTERNATOR INOP LIGHTS ON

1. Repeat **ONE ALT INOP LIGHT** procedure for each side

If both light stay on:

2. Master Switch (both sides)..... ON
3. Alternator CB Switches..... OFF
4. Electrical Load..... Minimum

Land as soon as practical

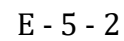
CAUTION: The alternator circuit breaker switches should not be opened manually when the alternators are functioning properly

Turn OFF switches for the following (to Load Shed)

| | | | |
|-----------------|--------------|-------------------|------------------|
| Reading Lts CB | Map Lts CB | Trim Indicate CB | Rt Turn Indic CB |
| Avionics unnec. | Cabin Heater | Insmt panel lt CB | Autopilot |
| Windshield Ht | Prop Heat | Right Pitot Heat | Altrntr Switches |

Battery alone will provide power for 35 mins max

ELECTRICAL SYSTEM



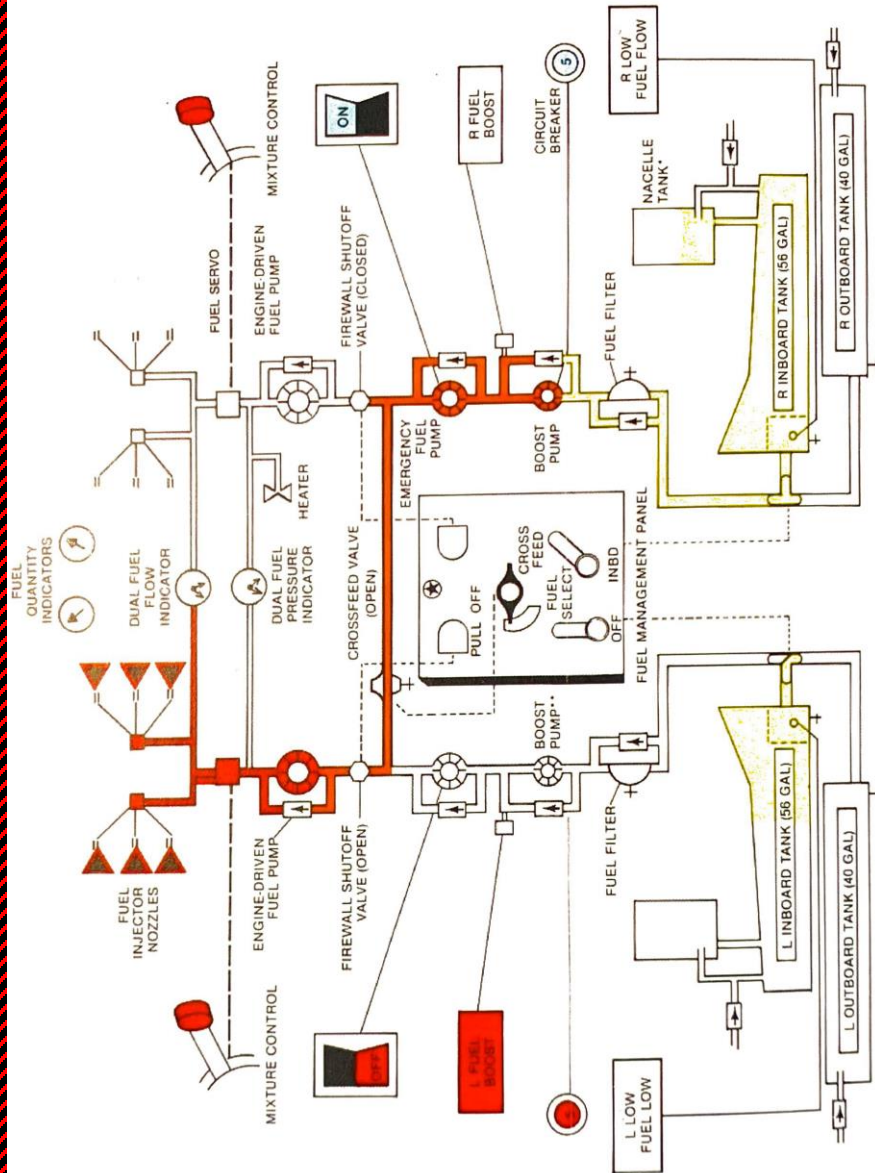
EMERGENCY CHECKLIST

L/R LOW
FUEL FLOW

PA31-350

FUEL CROSSFEED / BALANCE

CROSSFEED OPERATION



FUEL CROSSFEED / BALANCE

CROSSFEED

- | | |
|--|-------------|
| 1. Fuel Selector (inop engine) level flight..... | either tank |
| 2. Boost Pump CB (inop engine)..... | IN |
| 3. Emergency Fuel Pump (inop engine)..... | ON |
| 4. Crossfeed..... | As Required |
| 5. Fuel Selector (operative engine)..... | OFF |
| 6. Boost Pump CB (operative engine)..... | Pulled |
| 7. Emergency Fuel Pump (operative engine)..... | OFF |

**COMING OUT OF CROSSFEED
(Prior to Landing)**

- | | |
|--|--------------|
| 1. Fuel Selector (operative engine)..... | INBOARD tank |
| 2. Boost Pump CB (operative engine)..... | IN |
| 3. Emergency Fuel Pump (operative engine)..... | ON |
| 4. Crossfeed..... | OFF |
| 5. Boost Pump CB (inop engine)..... | Pulled |
| 6. Emergency Fuel Pump (inop engine)..... | OFF |
| 7. Fuel Selector (inop engine)..... | OFF |

EMERGENCY CHECKLIST**PROPELLER / GOVERNOR MALFUNCTIONS****RPM UNDERSPEED**

1. Power..... Reduced
2. Mixture..... RICH

If Prop Moves to Feather:

3. Mixture..... IDLE CUT-OFF
4. Prop Control..... FEATHER
5. Engine..... Engine Securing Procedure Complete

NOTE: Propeller will move to feather if engine oil pressure is lost

RPM OVERSPEED

1. Power..... Reduced
2. Airspeed..... Reduced
3. Prop Control (if prop speed cannot be kept below 2575 RPM)..... FEATHERED

NOTE: If prop will not feather, do not shut down engine

4. Engine..... Engine Securing Procedures complete if prop will feather

EMERGENCY CHECKLIST**LANDING EMERGENCIES****EMERGENCY GEAR EXTENSION**

1. Airspeed..... 153 KIAS MAX
2. Gear Selector..... DOWN
3. Emerg Gear Extender Cover..... Opened
4. Emerg Gear Extender..... Extended
5. Extender Handle..... Pump until 3 Green Lights
and selector returns to neutral

NOTE: Should the landing gear still not indicate three green after the emergency gear extension procedure has been accomplished, pull the Landing Gear Safety Solenoid (LG SAFETY) circuit breaker. Reset the circuit breaker after all three gear lights indicate down and locked

GEAR UP LANDING

1. Ground personnel..... Inform (if possible)
2. Fuel..... Burn off (if time allows)
3. Passengers..... Briefed
4. Normal Landing Checklist..... Complete
5. Gear Selector..... UP
6. Autopilot..... OFF
7. Master Switch (daytime only)..... OFF

Make a normal approach

When landing is assured:

8. Mixtures..... IDLE/CUT-OFF
9. Prop Controls..... FEATHER
10. Firewall fuel shutoffs..... OFF
11. Fuel Selectors..... OFF
12. Touchdown at minimum airspeed and level attitude
13. Master Switch (night)..... OFF
14. Evacuate

NOTE: If nose landing gear is not extended, nose landing light will not be functioning, however wingtip lights WILL function

FLAP SYSTEM MALFUNCTIONS

FLAP ANNUNCIATOR LIGHT ON

1. Flap Selector..... Reposition Slightly
2. If flaps move..... Replace Amplifier prior to next flight
3. If flaps do not move..... Check for split flaps
4. If flaps are split..... Pull flap motor CB and land
5. If flaps are not split..... Pull-Reset flap motor CB
5. If flaps still do not operate..... Pull flap motor CB and land

FLAPS FAIL TO RESPOND TO FLAP SELECTOR**(With Flap Indicator Pointing OFF)**

1. Flap control CB..... Pull and Reset
2. If indicator remains OFF..... The flap control
Is inoperative and flaps cannot
be repositioned for landing or go around
3. If indicator shows flap position..... Use next checklist

FLAPS FAIL TO RESPOND TO FLAP SELECTOR**(With Flap Indicator Pointing to Flap Position)**

1. Flap Test Switch..... Push
2. If annunciator fails to light..... Follow
"Annunciator Light ON" checklist
3. If annunciator lights..... Pull-Reset flap motor CB
4. If flaps fail to respond..... A flap drive fault may exist and
further effort to reposition
flaps may cause damage

CAUTION: Do not reset a tripped flap motor circuit breaker if a split flap condition exists.

EMERGENCY CHECKLIST**OTHER MALFUNCTIONS (not a POH checklist)****Pneumatic System Malfunctions****L/R PNEU INOP**Single Engine or Single Pneumatic Pump In-Flight Operations

- Observe following limitations:
 - o 1 Pump/Eng = Good Engine 2575 RPM, 15,000' Max
- If there are no concerns regarding the remaining pump:
Continue the mission, contact MX post-mission
- If icing conditions may be encountered during the remaining flight: Actuate and Evaluate De-Ice function (boots)
- If remaining pump malfunctions, or de-ice equipment does not function properly, take immediate action to avoid icing conditions, do not enter known icing conditions

Normal Operation

- 1 pump on each engine, provides 5.5 +/- .4" @ 2200 RPM
- Either pump can carry the entire load
- Vacuum Pumps Power:
 - o Co-Pilot attitude and heading indicators
 - o De-Ice boots/system
- Normal Operation:
 - o Constant vacuum applied to boots and instruments
 - o Co-Pilots instruments are temporarily un-powered during De-Ice cycle, then back on
- Single Pump Failure:
 - o Other pump should carry the load
 - o Preflight check De-Ice capability before flying:
 - Press to test De-Ice lights, confirm good
 - Engines at 2000 RPM
 - Actuate De-Ice Switch
 - Observe each De-ice cycle, 2 Blue lights cycle on/off
 - Check De-Ice boots visually

EMERGENCY CHECKLIST**OTHER MALFUNCTIONS (not a POH checklist)****Left or Right Fuel Boost Pump****L/R FUEL
BOOST INOP**

- Illuminates when: Fuel Boost Pressure is less than 3 psi
- Activate Emergency Fuel Pump and observe Fuel Pressure
 - o If Fuel Pressure in the green, continue the flight after considering reference data below
 - o If Fuel Pressure does not recover, prepare for possible engine failure
 - o If fuel pressure does not recover: Consider Emergency Crossfeed Operation to maintain engine fuel supply, Ref: **E-6-1** if Crossfeed is used.
- Normal Operation = pressure (Green Arc) of 34-55 psi
 - o 3 fuel pumps
 - Engine Driven
 - Electric Boost Pump (always on via CB)
 - Emergency Boost Pump (OVHD Panel Switch)
- **NOTE:** In full power continuous climb from takeoff to high altitude under conditions of high ambient temperature, high climb rate, and extremely volatile fuel, the boost pump may not maintain a sufficient pressure head to the engine-driven fuel pump. This condition would be indicated by engine fuel pressure fluctuations of 2-5 psi and/or illumination of the boost pump warning light. The pilot may continue the climb by using the emergency fuel pump to provide steady fuel pressure for the high power operation; the emergency pump can be turned OFF after level-out if reduction to cruise power extinguishes the boost pump warning light. Cruise can be continued with the emergency fuel pump OFF if fuel pressure remains steady and above 34 psi, as indicated on the engine fuel pressure gauge

NOTE: Do not use crossfeed to compensate for an inoperative emergency fuel pump.

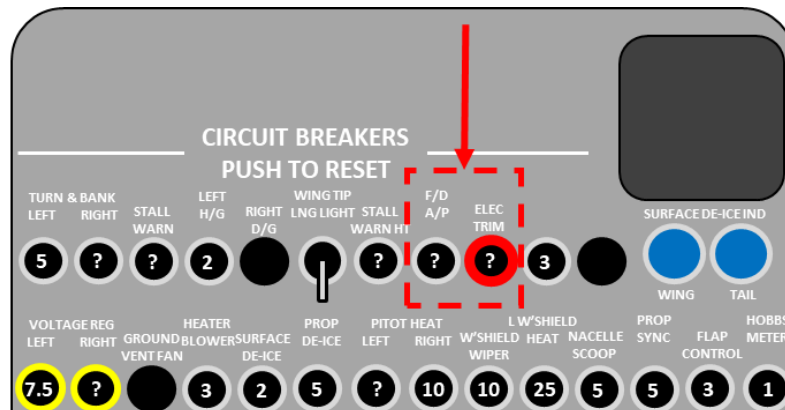
EMERGENCY CHECKLIST**OTHER MALFUNCTIONS (not a POH checklist)****TRIM Malfunctions****TRIM**Electric Pitch Trim Disengagement

- Pilot's AP DISC/TRIM INTERRUPT switch – DEPRESS and hold
- Avionics Master Switch – OFF
- Manually trim the aircraft
- Pitch Trim CB – PULL (labelled "ELEC TRIM", red collar)
- Pilot's AP DISC/TRIM INTERRUPT switch - Release
- Avionics Master Switch - ON

Autopilot disengagement

- Pilot's AP DISC/TRIM INTERRUPT switch – DEPRESS
- AP Engage Lever – OFF
- Autopilot CB – PULL (labelled "AP/FD")
See CAUTION note below
- Master Switch – OFF
- Avionics Master Switch – OFF

NOTE: Stop when AP is fully disengaged/prevented from pwr



CAUTION: If the autopilot CB is pulled, the red "TRIM" failure light on the annunciator panel will be disabled and the audible warning will continuously sound indicating that the failure light is disabled. In this event the "PITCH TRIM" CB should be pulled and in-flight trim accomplished by using the manual pitch trim wheel.

EMERGENCY CHECKLIST**OTHER MALFUNCTIONS (not a POH checklist)****TRIM Malfunctions – (continued)****Warning Flags, Annunciators**

FD – no flags, command bars will be biased out of view whenever system is invalid, Annunciator Light on when engaged

HDG – warning flag in Pictorial Navigation Indicator, appears whenever Directional Gyro info is invalid. If a HDG invalid occurs with either NAV, APPR or HDG modes selected, the AP and/or FD is disengaged. Basic FD mode may then be re-engaged along with any vertical mode and the AP re-engaged.

GS – GS pointer must be in view on the PNI for GS to couple. If, after GS CPLD, valid is lost, the GS annunciator will flash and revert from GS CPLD to PAH with the FDI pitch steering bar providing pitch attitude steering information. If the GS valid returns, the system will revert back to GS CPLD.

NAV – The NAV or APPR Modes (ARM or CPLD) may be selected and will function with or without a NAV flag present. The FDI bank steering will continue to provide steering information with or without a valid NAV signal.

AP DISCONNECT Alert – will sound an audible warning for approx. 2 seconds whenever the Autopilot engage lever on the Mode Controller is disengaged.

TRIM WARNING LIGHT – flashes and audible warning when:

- Autotrim and/or manual elec pitch trim failures occur
- Trim servo motor runs without a command (manual and auto modes)
- Trim servo motor not running when commanded (auto mode only)
- Trim servo motor running wrong direction (auto mode only)
- AP TEST button on Mode Controller Panel is depressed

EMERGENCY DESCENT

(Recommended by Colemill after conversion)

- | | |
|----------------------|------------------|
| 1. Fuel Tanks..... | INBOARD |
| 2. Throttles..... | Closed |
| 3. Cowl Flaps..... | Open |
| 4. Airspeed..... | Slow to 130 KIAS |
| 5. Landing Gear..... | DOWN |
| 6. Flaps..... | DOWN |
| 7. Airspeed..... | 126 KIAS |

Should result in a descent rate of approx. 3,500 fpm

EMERGENCY CHECKLIST

OTHER MALFUNCTIONS (not a POH checklist)

**THIS
PAGE
INTENTIONALLY
BLANK**

SUPPLEMENTAL DATA

REQUIRED EQUIPMENT

FAR 91 Required Equipment for:

| <i>Ref: POH</i> | VFR | VFR Nt | IFR | IFR Nt | Known Icing | Std Acft |
|--|-----|--------|-----|--------|-------------|----------|
| Airspeed Indicator | | | | | | |
| Altimeter | | | | | | |
| Magnetic Direction Indicator | | | | | | |
| Tachometer (each engine) | | | | | | |
| Oil pressure gauge (each engine) | | | | | | |
| Stall warning indicator | | | | | | |
| Oil temperature gauge (each engine) | | | | | | |
| Manifold pressure gauge (each engine) | | | | | | |
| Fuel gauges | | | | | | |
| Fuel pressure indicator (each engine) | | | | | | |
| Exhaust gas temperature gauge (each engine) | | | | | | |
| Landing gear position indicator | | | | | | |
| Seat belts (each occupant) | | | | | | |
| Emergency locator transmitter | | | | | | |
| Transponder with altitude (above 12,500') | | | | | | |
| Starter (each engine) | | | | | | |
| Position Lights | | | | | | |
| Strobe lights or rotating beacon | | | | | | |
| Alternator (each engine) | | | | | | |
| Instrument lights | | | | | | |
| Landing light (if for hire) | | | | | | |
| 2-way radio | | | | | | |
| Suitable and adequate navigation radio equip | | | | | | |
| Gyroscopic rate of turn indicator | | | | | | |
| Bank indicator | | | | | | |

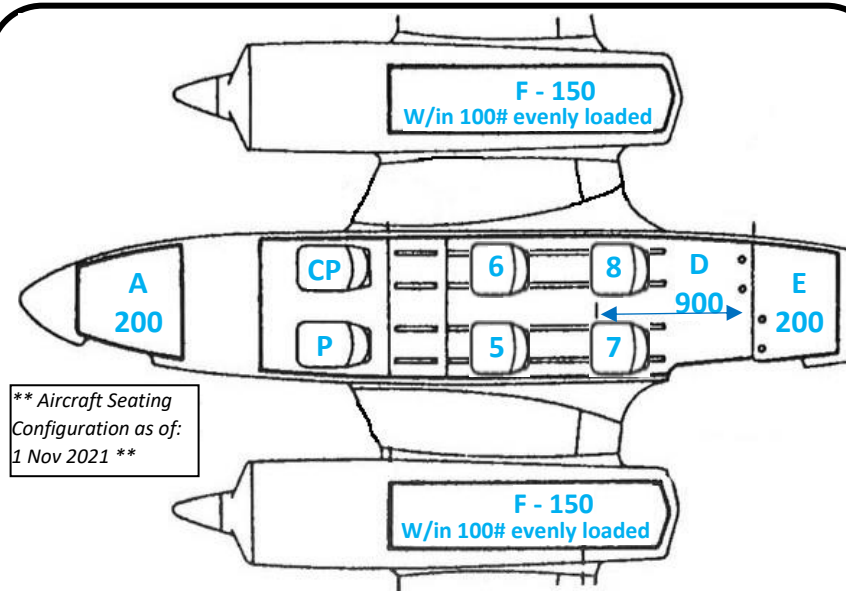
SUPPLEMENTAL DATA

REQUIRED EQUIPMENT

| <i>Reference: POH</i> | VFR | VFR Nt | IFR | IFR Nt | Known Icing | Std Acft |
|--|-----|--------|-----|--------|-------------|----------|
| Clock with sweep second hand | | | | | | |
| Sensitive altimeter adjustable for baro pressure | | | | | | |
| Gyroscopic bank and pitch indicator | | | | | | |
| Alternator (each engine) | | | | | | |
| Gyroscopic direction indicator | | | | | | |
| Free air temperature indicator | | | | | | |
| Pneumatic wing and empennage boots | | | | | | |
| Electrothermal propeller boots | | | | | | |
| Pilot side heated windshield | | | | | | |
| Heated pitot | | | | | | |
| Ice detection light | | | | | | |
| Heated stall warning transmitter | | | | | | |
| Non-Icing heater air inlet | | | | | | |
| Heater combustion air alternate source | | | | | | |
| Forward heater | | | | | | |
| Ice shields | | | | | | |
| Prop control deicer boot | | | | | | |
| 'A' – 'B' Pneumatic system | | | | | | |
| Alternate static system | | | | | | |
| Elevator balance boot | | | | | | |
| Direct vision window | | | | | | |
| With 3 rd , 4 th seats facing aft – 10" min height | | | | | | |
| Headrests installed | | | | | | |
| | | | | | | |

SUPPLEMENTAL DATA

WEIGHT AND BALANCE



** Aircraft Seating
Configuration as of:
1 Nov 2021 **

| Item | Arm-In |
|---|--------------|
| Revised Airplane | 122.5 |
| Pilot's Seat | 95.0 |
| Co-Pilot's Seat | 95.0 |
| Seat No. 5 | 163.5 |
| Seat No. 6 | 163.5 |
| Seat No. 7 | 195 |
| Seat No. 8 | 195 |
| Rear Baggage (D – Centered between end of seat tracks and aft edge of D area) | 230.0 |
| Rear Baggage (E) | 255.0 |

Revised Empty Aircraft is:
4987.0#/122.5in/610791.4 Moment
 As of: 5 Feb 2020

SUPPLEMENTAL DATA

WEIGHT AND BALANCE

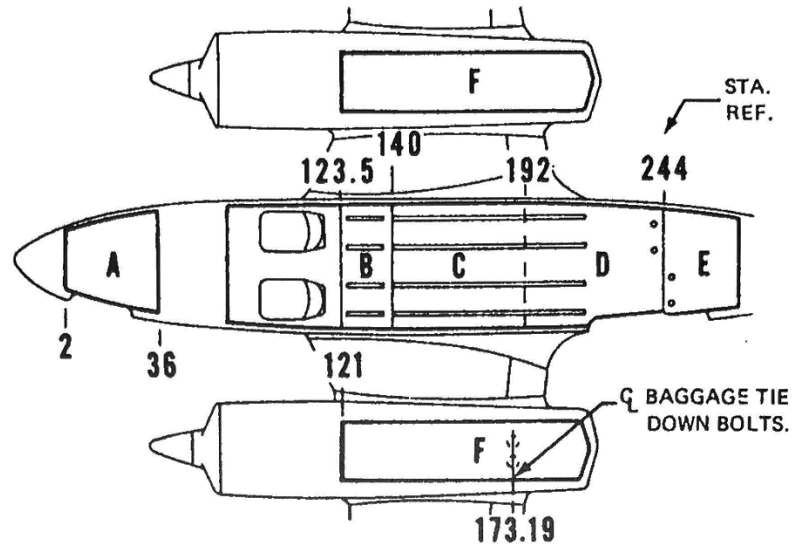
NOTE:

Cargo Barriers & Restraining Equipment is included in basic or revised airplane weight and arm.

| ITEM | Wt. Lbs. | | | | ARM-IN. | MOMENT | | | | | | | |
|----------------------------|----------|---|---|---|------------------------------------|--------|---|---|---|---|---|----|--|
| Basic Airplane | | | | | | | | | | | | | |
| Revised Airplane | 4 | 9 | 8 | 7 | 122.5 | 6 | 1 | 0 | 7 | 9 | 1 | .4 | |
| Pilot's Seat | | | | | 95.0 | | | | | | | | |
| Copilot's Seat | | | | | 95.0 | | | | | | | | |
| Area A | | | | | 2.0 – 35.0 | | | | | | | | |
| Area B | | | | | 123.0 – 140.0 | | | | | | | | |
| Area C | | | | | 140.0 – 192.0 | | | | | | | | |
| Area D | | | | | 192.0 – 244.0 | | | | | | | | |
| Area E | | | | | 244.0 to 274.0 | | | | | | | | |
| Area F Rt Locker Fwd | | | | | 121.0 (135 w/air cond) to 174.0 | | | | | | | | |
| Area F Rt Locker Rear | | | | | 174.0 – 210.0 | | | | | | | | |
| Area F Left Locker Fwd | | | | | 121.0 – 174.0 | | | | | | | | |
| Area F Left Locker Rear | | | | | 174.0 – 210.0 | | | | | | | | |
| Inboard Fuel | | | | | 126.8 | | | | | | | | |
| Outboard Fuel | | | | | 148.0 | | | | | | | | |
| Other | | | | | | | | | | | | | |
| Total Weight | | | | | Total Moment | | | | | | | | |

SUPPLEMENTAL DATA

WEIGHT AND BALANCE



MAXIMUM CAPACITY

| AREA | FLOOR LOAD LBS/SQ FT | ALLOWABLE LBS |
|------|-------------------------|------------------|
| A | 100 | 200 |
| B | 200 | 400 |
| C | 200 | 1800 |
| D | 200 | 900 |
| E | 100 | 200 |
| F | 10 | 150 EACH |
| | | TOTAL |

MAXIMUM TIEDOWN CAPACITY

| | |
|-------------------|---------|
| PER FOOT OF TRACK | 200 LBS |
| PER TRACK | 900 LBS |
| PER TIE DOWN RING | 200 LBS |

CARGO MUST BE LOADED WITHIN THE WEIGHT
AND BALANCE LIMITS OF THIS AIRCRAFT

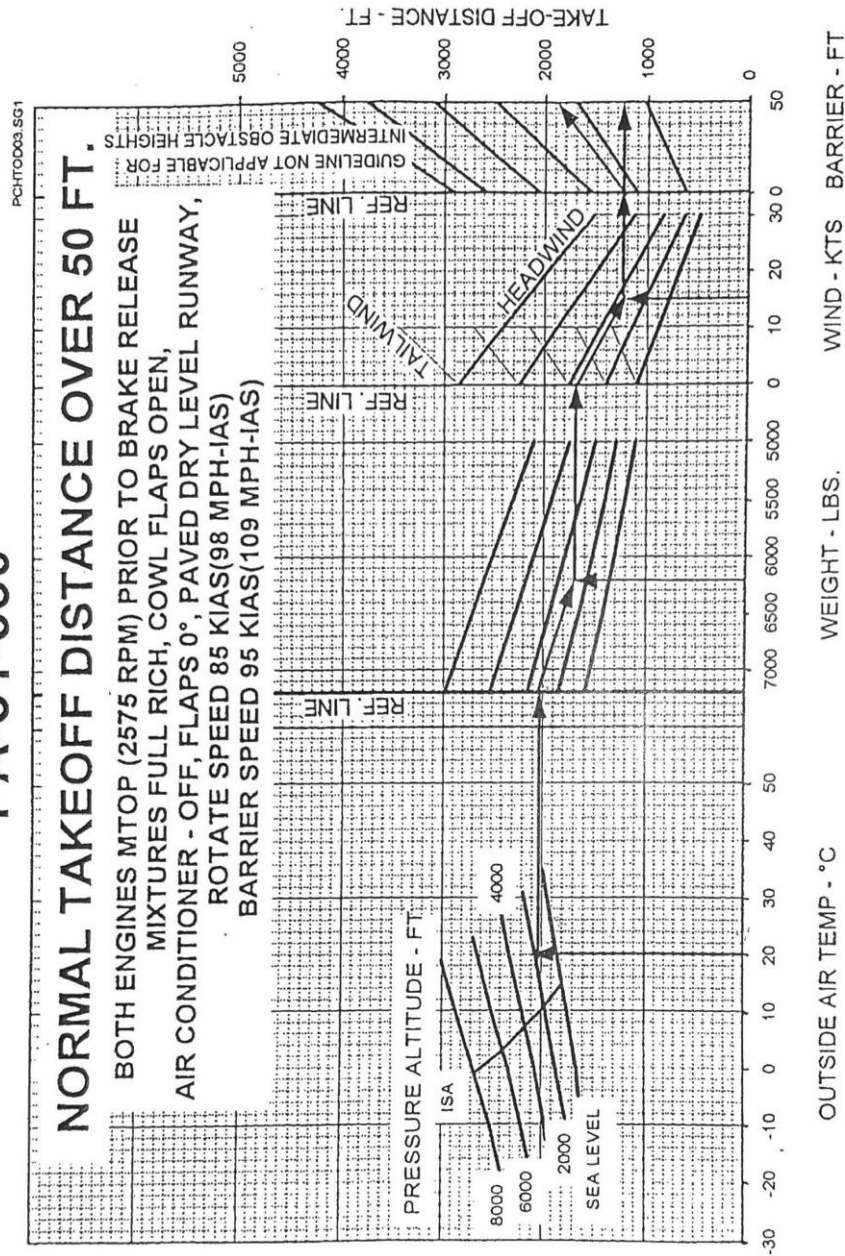
SUPPLEMENTAL DATA

TAKEOFF AND LANDING DATA

PA-31-350

NORMAL TAKEOFF DISTANCE OVER 50 FT.

BOTH ENGINES MTO (2575 RPM) PRIOR TO BRAKE RELEASE
 MIXTURES FULL RICH, COWL FLAPS OPEN,
 AIR CONDITIONER - OFF, FLAPS 0°, PAVED DRY LEVEL RUNWAY,
 ROTATE SPEED 85 KIAS(98 MPH-IAS)
 BARRIER SPEED 95 KIAS(109 MPH-IAS)



SUPPLEMENTAL DATA

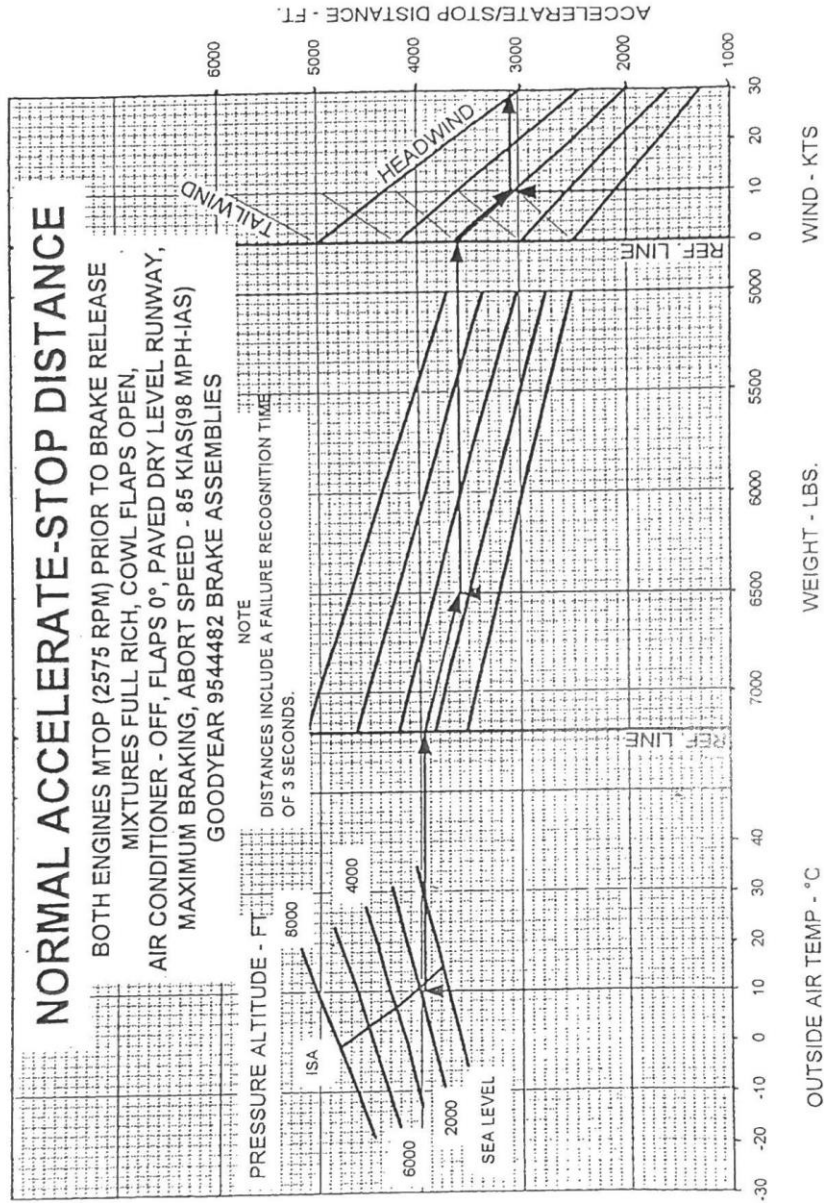
TAKEOFF AND LANDING DATA

PA-31-350

NORMAL ACCELERATE-STOP DISTANCE

BOTH ENGINES MTO (2575 RPM) PRIOR TO BRAKE RELEASE
 MIXTURES FULL RICH, COWL FLAPS OPEN,
 AIR CONDITIONER - OFF, FLAPS 0°, PAVED DRY LEVEL RUNWAY,
 MAXIMUM BRAKING, ABORT SPEED - 85 KIAS(98 MPH-IAS)
 GOODYEAR 9544482 BRAKE ASSEMBLIES

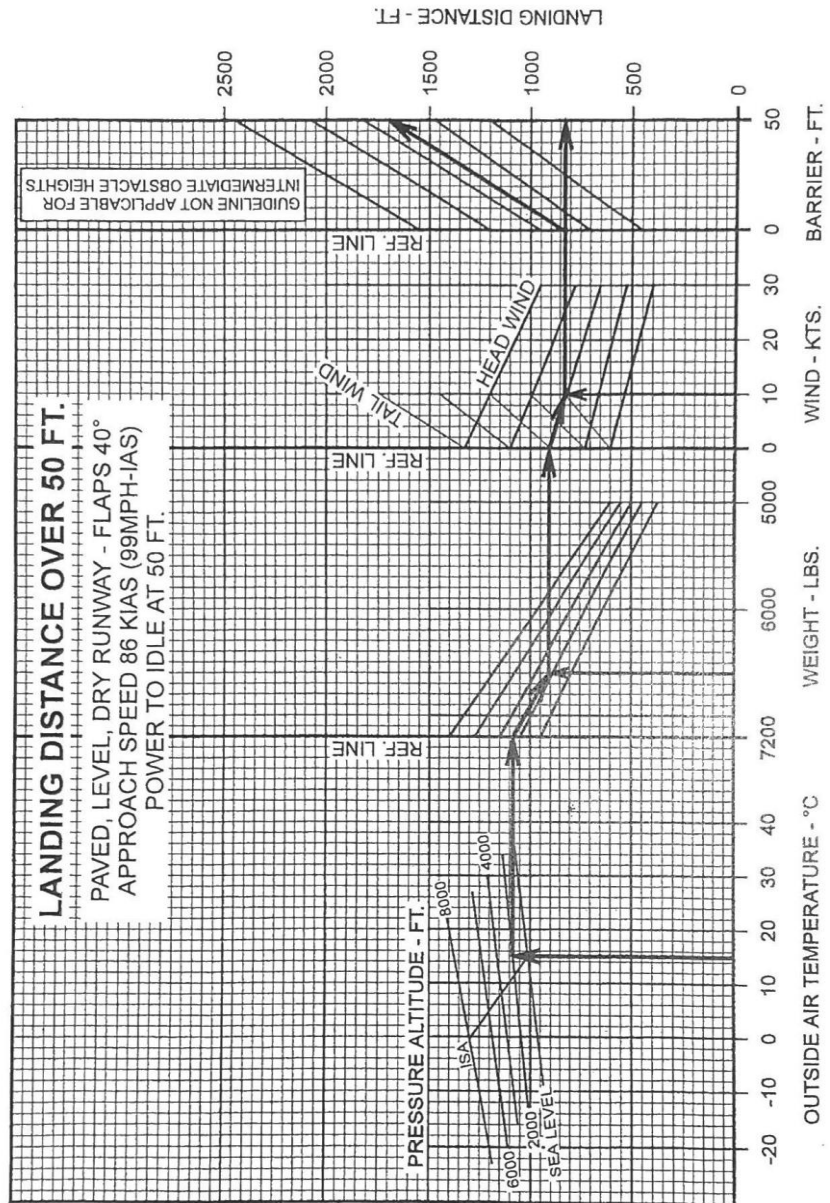
PCIACT03.SG1



SUPPLEMENTAL DATA

TAKEOFF AND LANDING DATA

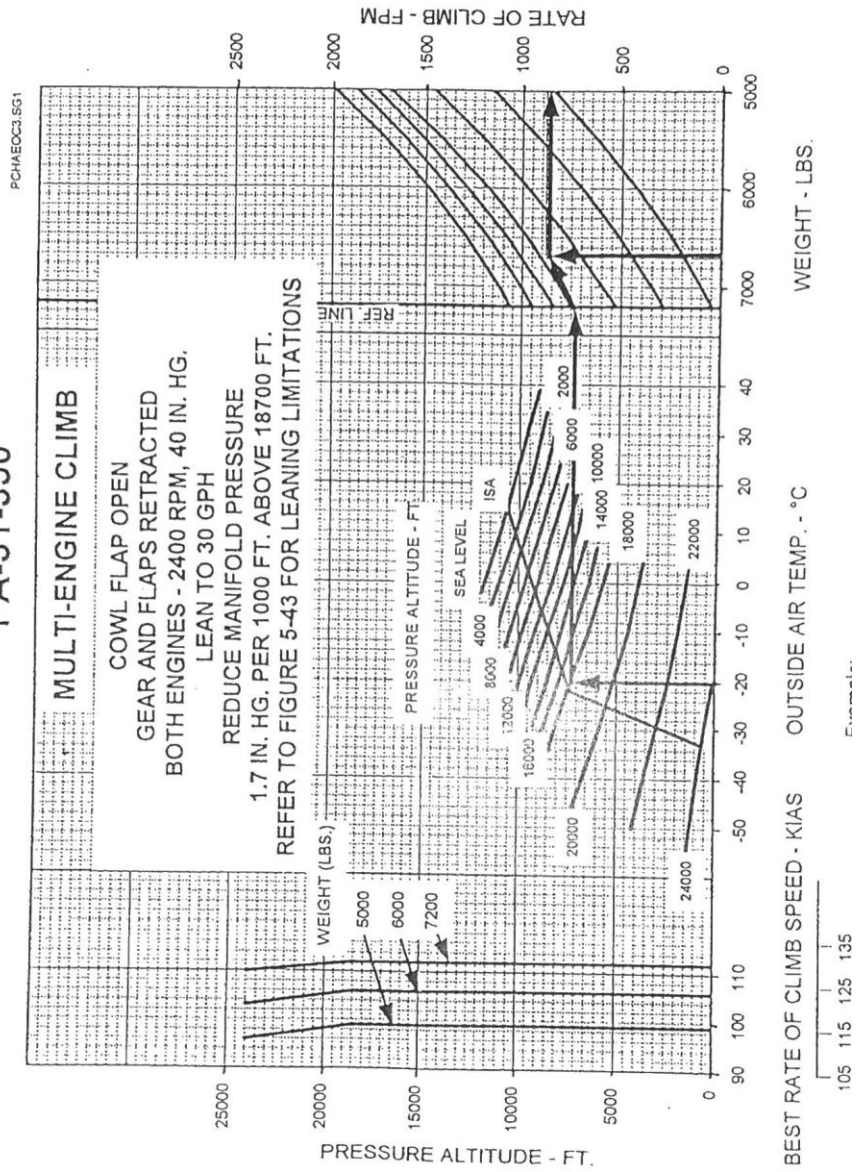
PA-31-350



SUPPLEMENTAL DATA

PERFORMANCE CHARTS

PA-31-350



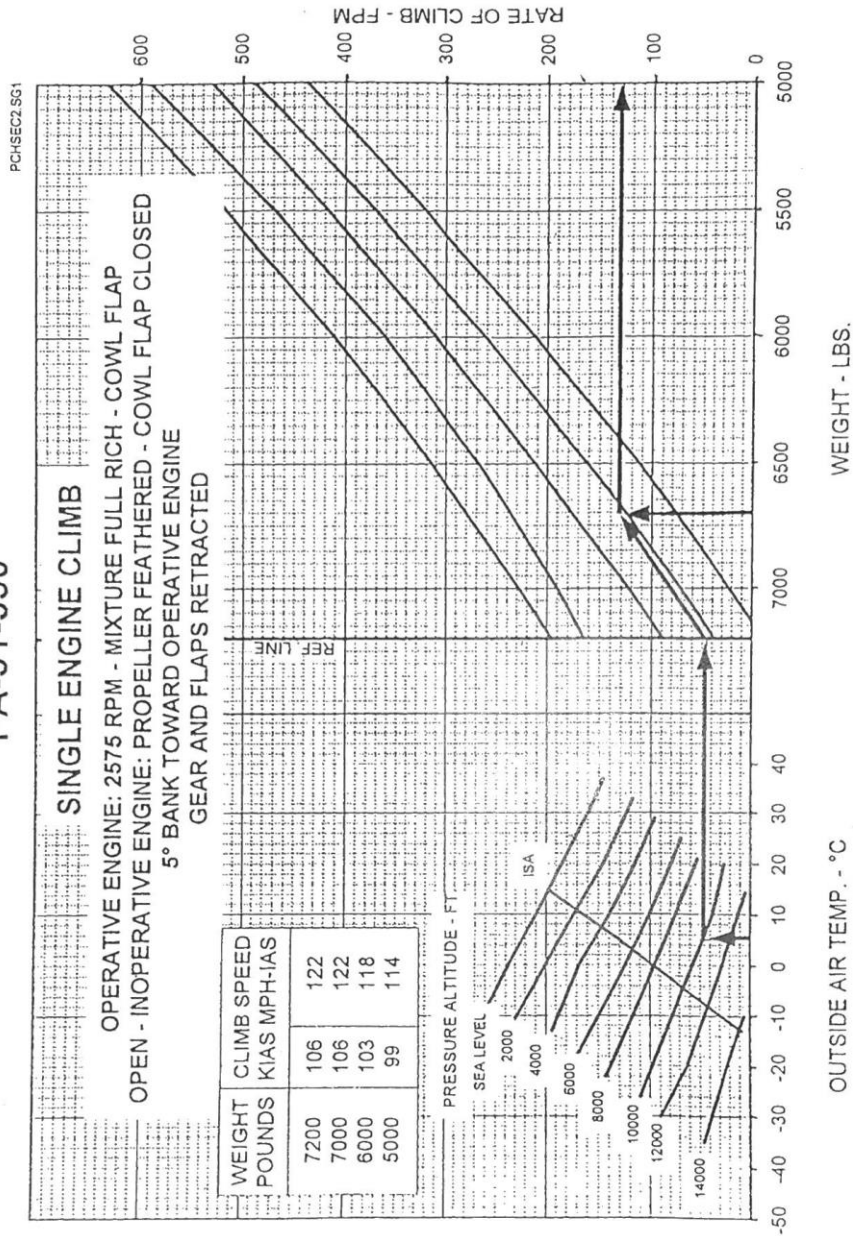
SUPPLEMENTAL DATA

PERFORMANCE CHARTS

PA-31-350

SINGLE ENGINE CLIMB

OPERATIVE ENGINE: 2575 RPM - MIXTURE FULL RICH - COWL FLAP
 OPEN - INOPERATIVE ENGINE: PROPELLER FEATHERED - COWL FLAP CLOSED
 5° BANK TOWARD OPERATIVE ENGINE
 GEAR AND FLAPS RETRACTED

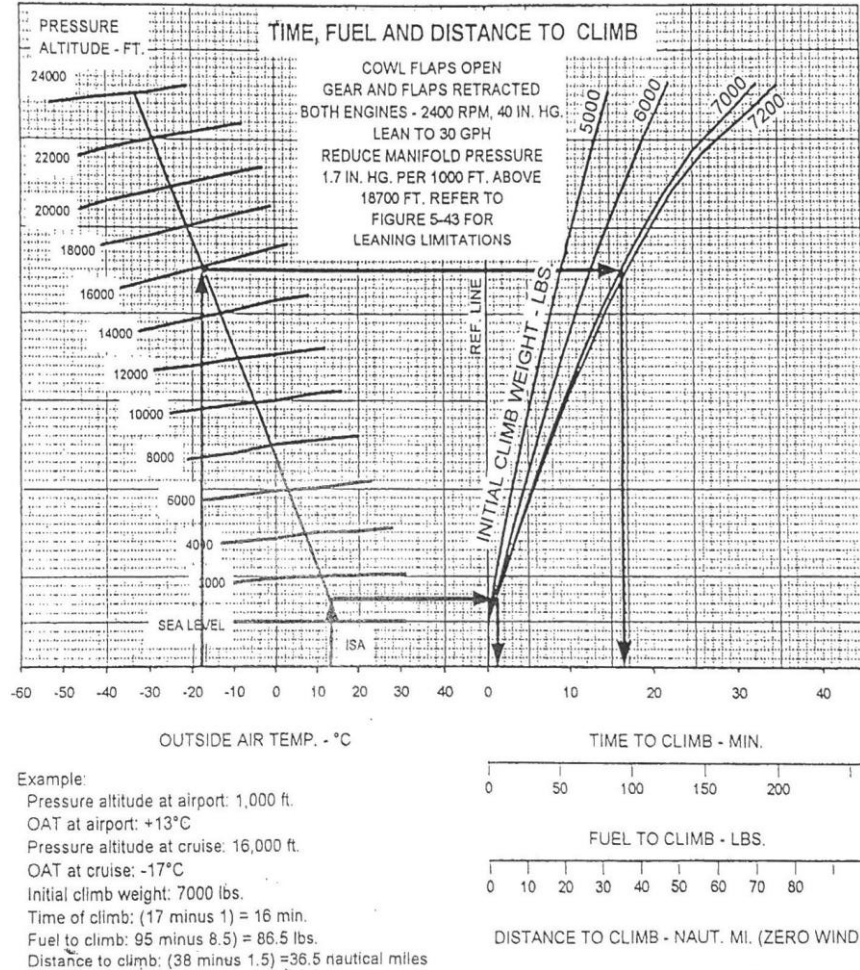


SUPPLEMENTAL DATA

PERFORMANCE CHARTS

PA-31-350

PCHTCC2.SG1



SUPPLEMENTAL DATA

PERFORMANCE CHARTS

Cruise Performance – 260 BHP – 2400 RPM (Approx 75%)

| Pressure Altitude Feet | | OAT °C | Fuel Flow GPH Total BP/BE | Cruise True Airspeed - Kts | | | | | |
|------------------------------|-------|-----------|---------------------------------|----------------------------|--------------|-------------|--------------|-------------|--------------|
| | | | | 7000 Lbs | | 6400 Lbs | | 5800 Lbs | |
| | | | | Best Pwr | Best Econ | Best Pwr | Best Econ | Best Pwr | Best Econ |
| ISA +20°C | SL | 35.0 | 43.6/35.3 | 183 | 181 | 185 | 183 | 188 | 186 |
| | 5000 | 25.1 | 43.6/35.3 | 193 | 191 | 195 | 193 | 198 | 196 |
| | 10000 | 15.2 | 43.6/35.3 | 202 | 200 | 205 | 203 | 208 | 206 |
| | 15000 | 5.3 | 43.6/35.3 | 212 | 209 | 215 | 213 | 219 | 217 |
| ISA | SL | 15.0 | 43.6/35.3 | 179 | 177 | 181 | 179 | 183 | 181 |
| | 5000 | 5.1 | 43.6/35.3 | 188 | 186 | 191 | 188 | 193 | 191 |
| | 10000 | -4.8 | 43.6/35.3 | 198 | 196 | 201 | 199 | 204 | 202 |
| | 15000 | -14.7 | 43.6/35.3 | 208 | 205 | 211 | 208 | 215 | 212 |
| | 20000 | -24.6 | 43.6/35.3 | 217 | 214 | 221 | 218 | 225 | 223 |
| ISA -20°C | SL | -5.0 | 43.6/35.3 | 174 | 172 | 176 | 174 | 178 | 176 |
| | 5000 | -14.9 | 43.6/35.3 | 184 | 182 | 186 | 184 | 189 | 186 |
| | 10000 | -24.8 | 43.6/35.3 | 193 | 191 | 196 | 194 | 199 | 197 |
| | 15000 | -34.7 | 43.6/35.3 | 203 | 201 | 206 | 203 | 210 | 207 |
| | 20000 | -44.6 | 43.6/35.3 | 212 | 210 | 216 | 213 | 220 | 217 |

Cruise Performance – 230 BHP – 2300 RPM (Approx 65%)

| Pressure Altitude Feet | | OAT °C | Fuel Flow GPH Total BP/BE | Cruise True Airspeed - Kts | | | | | |
|------------------------------|-------|-----------|---------------------------------|----------------------------|--------------|-------------|--------------|-------------|--------------|
| | | | | 7000 Lbs | | 6400 Lbs | | 5800 Lbs | |
| | | | | Best Pwr | Best Econ | Best Pwr | Best Econ | Best Pwr | Best Econ |
| ISA +20°C | SL | 35.0 | 38.2/30.8 | 171 | 169 | 174 | 171 | 176 | 174 |
| | 5000 | 25.1 | 38.2/30.8 | 179 | 177 | 182 | 179 | 185 | 183 |
| | 10000 | 15.2 | 38.2/30.8 | 187 | 184 | 191 | 188 | 195 | 191 |
| | 15000 | 5.3 | 38.2/30.8 | 195 | 191 | 199 | 196 | 204 | 200 |
| | 20000 | -4.6 | 38.2/30.8 | 202 | 198 | 207 | 204 | 213 | 208 |
| | 24000 | -12.6 | 38.2/30.8 | 206 | 202 | 213 | 210 | 219 | 215 |

SUPPLEMENTAL DATA

PERFORMANCE CHARTS

| | | | | | | | | | |
|-----------|-------|-------|-----------|-----|-----|-----|-----|-----|-----|
| ISA | SL | 15.0 | 38.2/30.8 | 168 | 166 | 170 | 168 | 172 | 170 |
| | 5000 | 5.1 | 38.2/30.8 | 176 | 173 | 179 | 176 | 181 | 178 |
| | 10000 | -4.8 | 38.2/30.8 | 184 | 181 | 187 | 184 | 190 | 187 |
| | 15000 | -14.7 | 38.2/30.8 | 192 | 188 | 196 | 192 | 200 | 196 |
| | 20000 | -24.6 | 38.2/30.8 | 199 | 195 | 204 | 200 | 209 | 205 |
| | 24000 | -32.5 | 38.2/30.8 | 204 | 201 | 210 | 206 | 215 | 211 |
| ISA -20°C | SL | -5.0 | 38.2/30.8 | 163 | 161 | 165 | 163 | 167 | 165 |
| | 5000 | -14.9 | 38.2/30.8 | 172 | 170 | 175 | 173 | 177 | 175 |
| | 10000 | -24.8 | 38.2/30.8 | 180 | 177 | 183 | 180 | 186 | 183 |
| | 15000 | -34.7 | 38.2/30.8 | 187 | 184 | 192 | 189 | 195 | 192 |
| | 20000 | -44.6 | 38.2/30.8 | 195 | 192 | 200 | 197 | 205 | 201 |
| | 24000 | -52.5 | 38.2/30.8 | 201 | 197 | 206 | 203 | 211 | 208 |

Cruise Performance – 195 BHP – 2200 RPM (Approx 55%)

| Pressure Altitude Feet | | OAT °C | Fuel Flow GPH Total BP/BE | Cruise True Airspeed - Kts | | | | | |
|------------------------------|-------|-----------|---------------------------------|----------------------------|--------------|-------------|--------------|-------------|--------------|
| | | | | 7000 Lbs | | 6400 Lbs | | 5800 Lbs | |
| | | | | Best Pwr | Best Econ | Best Pwr | Best Econ | Best Pwr | Best Econ |
| ISA +20°C | SL | 35.0 | 32.6/26.3 | 158 | 155 | 162 | 159 | 165 | 162 |
| | 5000 | 25.1 | 32.6/26.3 | 162 | 159 | 167 | 164 | 172 | 169 |
| | 10000 | 15.2 | 32.6/26.3 | 167 | 163 | 172 | 170 | 177 | 175 |
| | 15000 | 5.3 | 32.6/26.3 | 171 | 167 | 176 | 173 | 182 | 179 |
| ISA | SL | 15.0 | 32.6/26.3 | 156 | 153 | 159 | 156 | 162 | 159 |
| | 5000 | 5.1 | 32.6/26.3 | 161 | 158 | 165 | 163 | 169 | 166 |
| | 10000 | -4.8 | 32.6/26.3 | 165 | 162 | 170 | 168 | 175 | 172 |
| | 15000 | -14.7 | 32.6/26.3 | 169 | 166 | 175 | 172 | 181 | 178 |
| | 20000 | -24.6 | 32.6/26.3 | 169 | 165 | 177 | 173 | 184 | 181 |
| ISA -20°C | SL | -5.0 | 32.6/26.3 | 153 | 151 | 156 | 154 | 159 | 157 |
| | 5000 | -14.9 | 32.6/26.3 | 158 | 155 | 162 | 159 | 166 | 163 |
| | 10000 | -24.8 | 32.6/26.3 | 163 | 160 | 168 | 165 | 172 | 169 |
| | 15000 | -34.7 | 32.6/26.3 | 167 | 164 | 173 | 170 | 178 | 175 |
| | 20000 | -44.6 | 32.6/26.3 | 171 | 166 | 176 | 173 | 182 | 179 |

SUPPLEMENTAL DATA

PERFORMANCE CHARTS

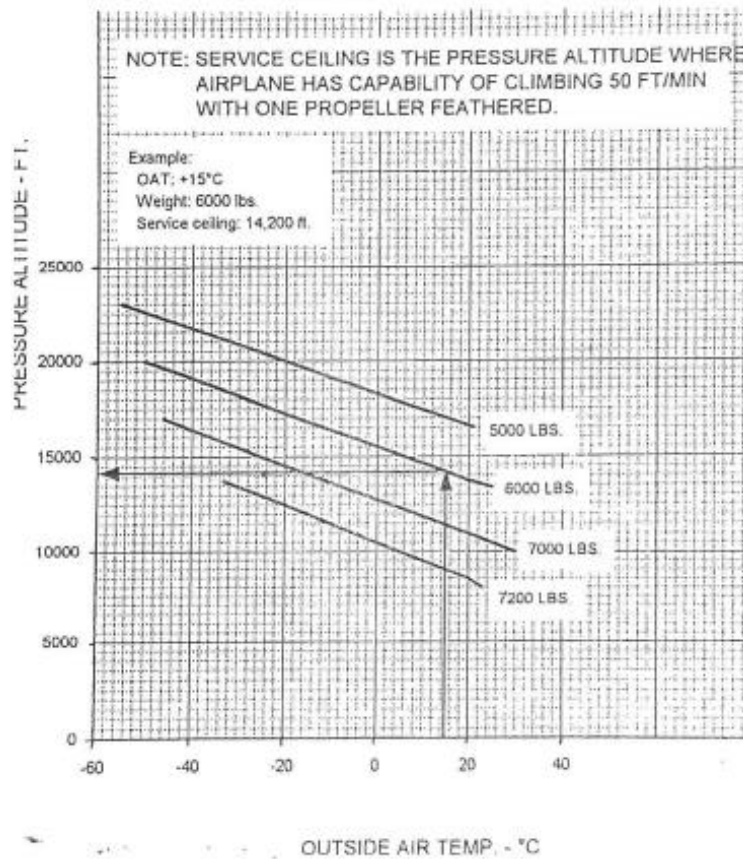
PA-31-350

PC85CS 901

SINGLE ENGINE SERVICE CEILING

OPERATIVE ENGINE: 2575 RPM - MIXTURE FULL RICH
COWL FLAP OPEN

INOPERATIVE ENGINE: PROPELLER FEATHERED - COWL FLAP CLOSED
GEAR AND FLAPS RETRACTED



SUPPLEMENTAL DATA

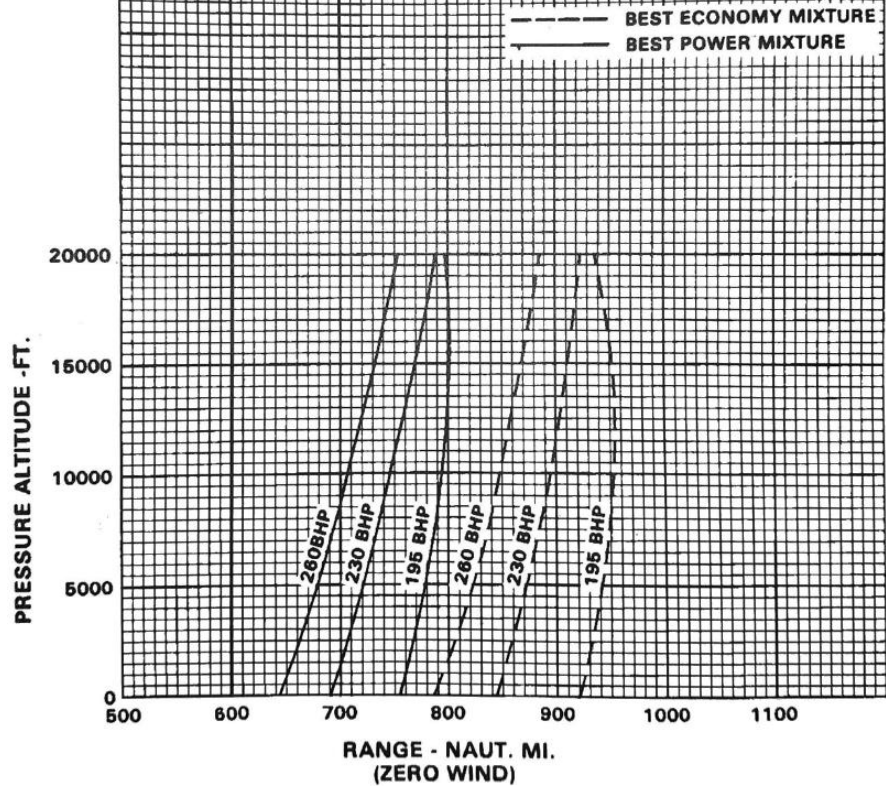
PERFORMANCE CHARTS

PA-31-350**RANGE PROFILE**

STANDARD DAY
WEIGHT 7000 LBS.
FUEL LOAD 182 GAL. USABLE

NOTE: CHART ASSUMES

1. FIVE MINUTES FUEL CONSUMPTION AT TAKEOFF POWER.
2. CLIMP AT MCP.
3. CRUISE AT STATED POWER SETTING AND MIXTURE.
4. DESCEND AT 130 KIAS AND 500 FPM, BEST ECONOMY MIXTURE, POWER AS REQUIRED TO MAINTAIN RATE OF DESCENT AND AIRSPEED.
5. 45 MINUTES RESERVE AT CRUISE ALTITUDE AT 195 BHP, BEST ECONOMY MIXTURE.



SUPPLEMENTAL DATA

ELECTRICAL SYSTEM DATA

BUSES

| | LEFT MAIN BUS |
|----|---------------------|
| 1 | Annunciator |
| 2 | Placard Lights |
| 3 | L Fuel Quantity |
| 4 | L Start Control |
| 5 | Cabin Press Control |
| 6 | Gear Indicator |
| 7 | L Oil Temp & CHT |
| 8 | Gear Warn |
| 9 | L Panel Lights |
| 10 | L Cowl Flap |
| 11 | L Boost Pump |
| 12 | STALL WARNING |
| 13 | Position Lights |
| 14 | Gyro/Inverter |
| 15 | L Pitot Heat |
| 16 | Taxi Light |
| 17 | L Fuel Pump |
| 18 | Eng Alternator |
| 19 | Avionics Accessory |
| 20 | L Tachometer |
| 21 | Spare (2) |

| | RIGHT MAIN BUS |
|-----|-----------------------|
| 1 | Fuel Flow |
| 2 | R Oil Temp & CHT |
| 3 | (VE) |
| 4 | R Cowl Flap |
| 5 | Audio Amp |
| 6 | R Boost Pump |
| 7 | R Fuel Quantity |
| 8 | R Start Control |
| 9 | R Panel Lights |
| 10 | R Pitot Heat |
| 11 | STALL WARN Heat |
| 12 | Right Gyro |
| 12a | Horizon |
| 12b | Directional |
| 13 | R Fuel Pump |
| 14 | Gyro/Inverter |
| 15 | Surface Deice |
| 16 | Landing Light |
| 17 | Radio Lights |
| 18 | Anti-Collision Lights |
| 19 | Cowl Flap Indicators |
| 20 | Fuel Pressure |
| 21 | R Tachometer |
| 22 | Turn & Bank |
| 23 | Spare (6) |

SUPPLEMENTAL DATA

ELECTRICAL SYSTEM DATA

AUTOPILOT/FLIGHT DIRECTOR BUS

| | | | |
|---|---------------------|---|---------------------|
| 1 | FCS KC 295 Computer | 5 | AP Pitch Servo |
| 2 | CK 290 mode cntlr | 6 | AP Roll Servo |
| 3 | KA 285 annunc panel | 7 | KC 296 Yaw computer |
| 4 | KI 256 FDI | 8 | Yaw Servo |
| | | 9 | KC 291 |

AVIONICS NO 1 BUS

| | |
|----|------------------|
| 1 | Comm 1 |
| 2 | Nav 1 |
| 3 | Transponder 1 |
| 4 | ADF 1 |
| 5 | Co-Pilot RMI |
| 6 | DME 1 |
| 7 | RNAV |
| 8 | VNAV |
| 9 | VLF |
| 10 | Co-Pilot Eng Alt |
| 11 | Checklist |
| 12 | Spare (2) |

AVIONICS NO 2 BUS

| | |
|----|------------------|
| 1 | Comm 2 |
| 2 | Nav 2 |
| 3 | Transponder 2 |
| 4 | ADF 2 |
| 5 | Pilot RMI |
| 6 | Radar |
| 7 | Radar Altimeter |
| 8 | Co-Pilot Compass |
| 9 | Co-Pilot HIS |
| 10 | HF |
| 11 | DME 2 |
| 12 | Audio 2 |
| 13 | Accessory 2 |

LEFT DIST BUS

Left Alternator Feed

| | |
|---|--------------------|
| 1 | L Alternator Field |
| 2 | Left Main |
| 3 | No 1 Avionics |
| 4 | Right Main |

RIGHT DIST BUS

Right Alternator Feed

| | |
|---|---------------------|
| 1 | Left Main |
| 2 | No 2 Avionics |
| 3 | Right Main |
| 4 | R. Alternator Field |

SUPPLEMENTAL DATA

ELECTRICAL SYSTEM DATA

| | FUSE DIST NO 2 BUS |
|----|--------------------|
| 1 | Tail Beacon |
| 2 | Logo Light |
| 3 | Cabin/Map Lights |
| 4 | Hourmeter/OAT |
| 5 | Annum Aux Power |
| 6 | Thermos |
| 7 | Razor Inv |
| 8 | Voltmeter |
| 9 | Cigar Lighter |
| 10 | Sterg/Cabin Instr. |
| 11 | Telephone |
| 12 | Air Cond. |

| | NONESSENTIAL BUS |
|----|------------------|
| 1 | Flap Control |
| 2 | Prop Sync |
| 3 | Cabin Comfort |
| 4 | Windshield Wiper |
| 5 | Recog Lights |
| 6 | Heater |
| 7 | Cono Blower |
| 8 | Recirc Fan |
| 9 | AP/FD Bus Tie |
| 10 | Flap Motor |
| 11 | Spare (4) |

| | FUSE DIST NO 1 BUS |
|---|---------------------|
| 1 | Courtesy Lights |
| 2 | Cockpit Light |
| 3 | Memory |
| 4 | Gnd Clear Comm |
| 5 | Gnd Clear Audio Amp |
| 6 | Gnd Clear Nav |
| 7 | Clock |

| | MAIN TIE BUS |
|---|------------------|
| 1 | Ice |
| 2 | Left Alternator |
| 3 | Battery |
| 4 | Right Alternator |
| 5 | Non Essential |

| | GYRO BUS |
|---|-----------------|
| 1 | Left Gyros |
| | A – Horizon |
| | B – Directional |
| 2 | Turn & Bank |

| | ICE BUS |
|---|------------------------|
| 1 | Wing Insp Light |
| 2 | L Windshield Heat Cntl |
| 3 | Prop De Ice |
| 4 | L Windshield Heat |
| 5 | Spare (2) |

SUPPLEMENTAL DATA

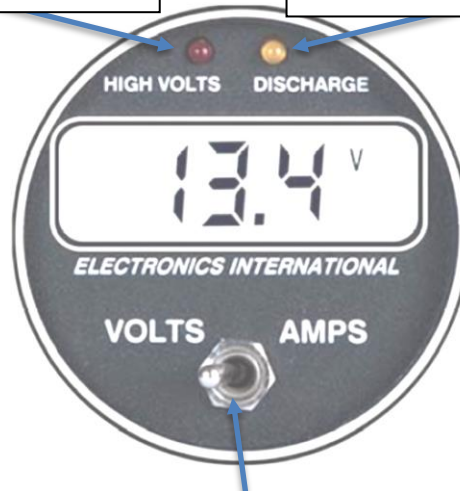
ELEC INTL ELECTRICAL BUS MONITOR

HIGH VOLTS WARNING

ON if bus voltage above 30.6v

DISCHARGE WARNING

ON if bus voltage below 25.2 v

Selects which value
to displayVA-1 gauge displays
Volts / Amps from
Left AlternatorVA-1 gauge displays
Volts / Amps from
Battery BusVA-1 gauge displays
Volts / Amps from
Right Alternator

SUPPLEMENTAL DATA

SHADIN FUEL MANAGEMENT SYSTEM

GAL REM
Press to see
Gallons Remaining
since last fill up/add

DATA FIELD
Displays value
selected on knob

GAL USED
Press to see
Gallons Used since
last fill up/add



DATA SELECTION KNOB
Selects value displayed in data field:
NM/GAL = mileage with current winds
GAL to DEST = fuel needed to fly along
planned route at current conditions
GAL RESERVE = Fuel remaining (gals) at
destination, planned route flown
ENDURANCE = fuel available in Hours &
Minutes at current conditions

ADD / FULL
Toggle Sw up/down

TEST / ENTER
Push Button

To make it:Do this:

| | |
|---------------|--|
| Run Self Test | Push TEST until "8"s flash across, "Good" at end, "bAd" indicates error, report to MX K factors display in L/R fields, "FUL" appears in Lower L window, 182 in data field (for max fuel), SW version |
| Fill up fuel | Push and hold "FULL" sw, press ENTER button, release all, should display 182 |

SUPPLEMENTAL DATA

SHADIN FUEL MANAGEMENT SYSTEM

| | |
|--------------------------------|---|
| | Continues to count/totalize fuel burned until "fill up" selected or fuel added (even between shut downs). |
| Add fuel (not a top off) | Push and hold "ADD" sw, press "REM" button until gals to add is reached, press "ENTER", release all. Gals are added to remaining. Verify new total by pushing REM button. |
| Subtract fuel (too much added) | Push and hold "USED" button, press and hold TEST/ENTER, gals remaining displays 4 sec then decrements, release TEST/ENTER to control rate, when correct release both. Verify new total by pushing REM button. |

Message:Meaning:

| | |
|---------------|--|
| LbAd | LORAN/GPS data bad |
| LoFF | LORAN/GPS receiver OFF |
| Data Flashing | When in GAL TO DEST mode = not enough fuel to reach destination with programmed reserve |
| Data Flashing | When in GAL RESERVE mode = less than set reserve amt at destination (____ programmed) |
| Lo FUEL | Fuel remaining has reached set amount, ack by pressing ENTER, normal displays resume |
| Power failure | No data is collected/applied, fuel burned during failure must be manually entered, tracking resumes when power returns |
| E1 (flashing) | Error in checksum, data group 1, no functions until serviced |
| E2 | LORAN/GPS data not available, fuel flow still functions, refer to manual |
| XX | Programmed Endurance Time |
| YY | Programmed Low Fuel warning value (gals) |