BEFORE ENGINE START

1) Hobbs Time ..... NOTED
2) Preflight ..... COMPLETE
3) Fuel quantity ..... ADEQUATE
4) Documentation (including IFR) ..... CHECK
5) Seats & Seat Belts ..... ADJUSTED & LATCHED
6) Brakes ..... TEST (SET)
7) ELT ..... ARMED
8) Landing gear switch ..... DOWN
9) Magneto switch ..... OFF
10) Master switch ..... OFF
11) Alternator Field Switch ..... OFF
12) Radio master switch ..... OFF
13) Alternate static ..... OFF
14) Lights and electrical equipment ..... OFF
15) Boost pump ..... OFF
16) Cowl flaps ..... OPEN
17) Fuel Selector ..... Tank to be 2nd
18) Circuit breaker panel ..... CHECK
19) Passengers ..... BRIEFED (normal & emergency)

STARTING ENGINE

1) Mixture ..... CUT OFF
2) Propeller ..... FULL ADVANCE
3) Throttle ..... OPEN ¼ inch (½ for hot)
4) Master switch ..... ON
5) Alternator Field Switch ..... ON
6) Strobes and/or Navigation lights ..... ON
7) Propeller area ..... CLEAR

For hot start delete steps 8-10

8) Boost pump ..... ON
9) Mixture ..... RICH for 3-8 seconds then cut off
10) Boost pump ..... OFF

11) Magnetos ..... Turn & push to START (10 sec max)
12) Mixture ..... RICH
13) Oil pressure ..... NORMAL (within 30 seconds)
14) Mixture ..... LEAN for smooth idle

AFTER START

1) Radio Master ..... ON
2) CGR-30 Fuel Quantity ..... SET
3) Lights ..... AS REQUIRED
4) Parking brake ..... RELEASED
5) Brake and steering check ..... ON TAXI
6) IFR taxi checks ..... ON TAXI

GROUND CHECK

1) IFR taxi check ..... COMPLETE
2) Flight controls ..... FREE & CORRECT
3) Radios ..... Comm & Nav SET
4) Altimeter ..... SET
5) Annunciator Panel ..... CHECK
6) Avionics Settings ..... VERIFIED
7) Auto pilot ..... TEST and DISENGAGED
8) Heading and Altitude Bugs ..... SET
9) Fuel selector ..... ON DESIRED TANK
10) Emergency Gear extension handle ..... LATCHED
11) Engine Run Up
    a. Throttle ..... 1900 RPM
    b. Magnetos ..... CHECK (175 max drop)
    c. Oil pressure ..... NORMAL RANGE
    d. Ammeter ..... CHARGE
    e. Propeller ..... CYCLE then FORWARD
    f. Throttle ..... 1000 RPM
12) Mixture ..... Lean for Taxi

BEFORE TAKEOFF

1) Door ..... LOCKED
2) Elevator Trim ..... SET for TAKEOFF
3) Flaps ..... SET for TAKEOFF (15°)
4) Cowl flaps ..... FULL OPEN
5) Mixture ..... FULL RICH
6) Boost pump ..... ON
7) Lights & strobes ..... AS REQUIRED
8) Transponder ..... ALT
9) Time of departure ..... NOTED
10) Pilot briefing ..... NORMAL & EMERGENCY

TAKEOFF & CLIMB

1) Rotate ..... 63 KIAS
2) Gear ..... UP
   (WHEN NO RUNWAY REMAINS)
3) Climb ..... 85 KIAS
   (66 KIAS max performance)
4) Flaps ..... UP
5) Throttle ..... 25 inches (at 500 AGL)
6) Propeller ..... 2500 rpm
7) Climb ..... 100 KIAS
   (85 for best rate)
8) Boost pump ..... OFF
   (confirm fuel pressure)
9) Mixture ..... LEAN
   (50 rich of peak or 14 gph)
10) Cowl flaps ..... FULL OPEN or as required
11) Cylinder temperatures ..... MONITOR

CRUISE

1) Level at altitude ..... ACCELERATE
2) Throttle ..... SET DESIRED POWER
3) Propeller ..... SET (2200 or 2400 rpm)
4) Trim for ..... LEVEL FLIGHT
5) Cowl flaps ..... CLOSE (if CHT allows)
6) Mixture ..... LEAN (lean of peak at < 60%)
7) Engine temperatures ..... MONITOR
8) Systems ..... CHECK

DESCENT

1) Throttle ..... (not less than 16" MP)
2) Cowl flaps ..... (remain) CLOSED
3) Mixture ..... LEAN (unless rough)

IN RANGE

1) Seats & belts ..... SECURE & LOCKED
2) Fuel ..... ADEQUATE & DESIRED TANK
3) AWOS – ATIS – Advisories ..... NOTED
4) Altimeter ..... SET
5) Approach & missed approach ..... BRIEFED
6) Baro Minimums ..... SET
7) Radios ..... SET
8) Lights ..... AS REQUIRED
9) Initial approach speed ..... 105 KIAS

BEFORE LANDING

FLOW AT FINAL APPROACH FIX

1) Landing gear.....DOWN (below 132 KIAS)
2) Boost pump ..... ON
3) Throttle.....SET
4) Propeller .....FORWARD
5) Mixture .....RICH
6) Cowl Flaps ..... OPEN
7) Flaps .....SET (Full down below 115 KIAS)

8) Approach speed ..... 80 KIAS
9) Landing assured
   a. Autopilot .....DISENGAGE
   b. Gear .....CONFIRMED DOWN
   c. Final approach speed..... 71 KIAS

MISSED APPROACH / GO AROUND

1) Throttle.....FORWARD
2) Propeller .....FORWARD
3) Speed ..... 65 to 80 KIAS
4) Flaps .....TAKEOFF SETTING 15°
5) Gear.....RETRACT after positive rate
6) Flaps .....RETRACT at 85 KIAS
7) Cowl flaps ..... OPEN
8) Boost Pump ..... OFF

AFTER LANDING

1) Flaps .....UP (clearing runway)
2) Boost pump ..... OFF
3) Mixture ..... LEAN
4) Strobes ..... OFF (at night)
5) Lights .....AS REQUIRED
6) Trim.....TAKEOFF SETTING

ENGINE SHUTDOWN

1) Throttle..... 1000 rpm (stabilize CHT)
2) Radio master ..... OFF
3) Mixture .....CUT OFF
4) Throttle.....CLOSED
5) Magnetos..... OFF (remove key)
6) Lights (External & Panel)..... OFF
7) Master switch..... OFF
8) Alternator Field Switch..... OFF
9) Overhead lights ..... OFF
10) Parking brake..... OFF
11) Aircraft interior & exterior ..... SECURE

POWER SETTINGS

CONDITION	MP	RPM	MIX	PWR	GPH
Takeoff	Full	2700	Rich	95%	18
Initial climb	25”	2500	Rich	75%	14
Cruise climb	24”	2500	Lean	71%	10
Cruise	24”	2400	Lean	67%	9.6
“ “	22”	2400	Lean	63%	9.0
“ “	*20”	2400	Lean	58%	8.2
“ “	*22”	2200	Lean	55%	7.8
“ “	20”	2200	Lean	50%	7.3
“ “	18”	2200	Lean	45%	6.8
Descent	16”	22-24	Lean	-	6.1

* Recommended for WCFC operations and fuel consumption

WCFC recommended SPEEDS TO FLY

Va ... 120 KIAS
Vx..... 66 KIAS
Vy..... 86 KIAS

Best glide speed (clean)
.....@ max gross weight .... 93 KIAS
.....@ 2300 pounds ..... 84 KIAS

WCFC required FIELD LENGTH

Elevation	Normal	Maximum performance
Sea level	3,000 feet	2,500 feet
500 feet	3,200	2,600
1,000	3,500	2,800
2,000	4,000	3,000
4,000	5,000	4,000
6,000	6,000	5,000