TAKEOFF REFERENCE

NORMAL ..... V_R 50 | V_X 65 | V_Y 78

SHORT FIELD :
- No flaps
- Brake, full throttle
- **Clear obs. @ 56**
- Trans to V_Y

SOFT FIELD :
- Flaps 10, yoke back
- No stop taxi roll
- Roll nose up
- Speed in gnd. effect

HOLDING SHORT

Fuel selector	both
Elevator trim	takeoff
Carburetor heat	off
Pitot heat	as required
Mixture	full rich, or lean for DA
Flaps	0° to 10° (soft field)
Radios	set TWR, ready DEP
Doors / windows / belts	secure
Runway	correct & clear
TIME	**NOTE**

I WILL LOSE THE ENGINE,
I WILL PUSH IMMEDIATELY!

ROLLING ONTO RUNWAY

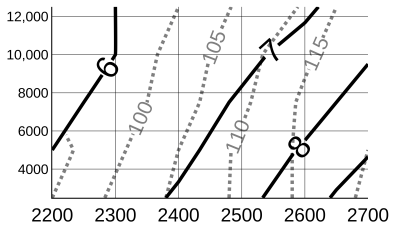
Lights	strobe, landing & pitot
Camera	H.I. / rwy hdg correct
Action	**Full Throttle > 2270 RPM**

CLIMB

Flaps	raise at safe altitude
Climb-out (V_Y)	**78 KIAS**
Flaps	raise at safe altitude
Landing light	off, as needed
VFR flight plan	open

CRUISE

Throttle	2200-2700 RPM
Elevator trim	adjust to cruise speed
Fuel selector	both
Mixture	lean above 3,000 ft
Circuit breakers	in
Pitot heat	as required
Engine instruments	in green
Instruments	X-check, H.I. to comp.



BEFORE APPROACH

Weather	review dest. & alternate
Altimeter	set to ATIS
Marker beacons	test
Radios & navaids	set & identify
Instruments	H.I. to compass
Course	set final or next appr.
Entry type	review
Altitudes	review FAF, DA & MDA
Time	ready FAF to MAP
Missed approach proc	review / brief
Mixture	as required
Carburetor heat	as required
Pitot heat	as required

BEFORE LANDING — GUMPFS

Approach mode	**correct**
Seat belts	adjust & secure
Fuel selector	both
Landing light	on
Carburetor heat	on
Mixture	full rich below 3,000 ft
Flaps	as required
DMMS	**68 KIAS**
Short final	**flaps, 60 KIAS**

GO-AROUND

Throttle	full open
Carburetor heat	off
Flaps	retract to 20°
Airspeed	55 KIAS
Flaps	10° until obstacles cleared

CLEAR OF RUNWAY

Flaps	up
Carburetor heat	off
Mixture	lean for taxi
Elevator trim	takeoff
Pitot heat	off
Lights	strobe & landing off

ENGINE SHUTOFF

TIME	**NOTE**
Lights (except beacon)	off
Avionics master switch	off
Mixture	cut-off
Ignition switch	off, remove key
Master switch	off
Fuel selector	left or right
Control lock	install
Pitot cover	install

FIRE DURING START

CRANKING ..... continue

ENGINE STARTS:
- power ..... 1700 RPM a few seconds
- engine ..... shutdown, check damage

ENGINE FAILS TO START:
- cranking ..... continue
- fire extinguisher ..... obtain
- engine ..... shutdown
- fire extinguisher ..... use

FIRE DURING FLIGHT

- fuel Selector ..... off
- mixture ..... cut - off
- master switch ..... off
- vents / cabin air / heat ..... off
- airspeed ..... 100 KIAS

ELECTRICAL FIRE

- master switch ..... off
- all electrical switches ..... off
- vents / cabin air / heat ..... off
- fire extinguisher ..... use

If fire appears out, and electrical power is necessary to continue flight:

- master switch ..... on
- circuit breakers ..... DO NOT RESET
- elec. switches ..... ONE AT A TIME, with delay after each until short is isolated

ENGINE POWER LOSS

(A) AVIATE — BEST GLIDE:
- best glide speed ..... **65 KIAS**

(flaps down @ 60 KIAS)

(B) BEST PLACE TO LAND:
- select field — **1.5 NM ≈ 1000 ft**
- turn towards area
- select best approach for wind
- use NEAREST

(C) CHECK LIST — RESTART:
- fuel selector ..... on
- mixture ..... full rich
- carburetor heat ..... on
- ignition switch ..... both
- primer ..... in & locked

(D) DISTRESS CALL:
- transponder 7700
- tune ..... current ATC, 121.5, or 122.2
- announce ..... aircraft id, position problem, intentions

SETUP APPROACH:
- downwind abeam ..... 1,500 ft AGL
- plan soft-field, power-off approach

SECURE AIRCRAFT:
- fuel Selector ..... off
- mixture ..... cut-off
- ignition ..... off
- flaps ..... as required
- master switch ..... off
- doors ..... unlatch
- touchdown ..... slightly tail low
- brakes ..... apply heavily

BEFORE TAXIING (CON'T)

Weather ..... GO / NO-GO, route and altitude
Airports ..... review diagrams, lighting, approach plates, DPs, SIDs, STARs
Airplane ..... perf., rwy cond., W&B
Alternates ..... ± 1 hr / 2,000 ft C / 3 SM V
IFR flight plan ..... filed
Clearance ..... obtained
Avionics ..... set
Taxi ..... request

DURING TAXI

Brakes ..... test (pilot and co-pilot)
Attitude indicator ..... stable, < ± 5° error
Turn coordinator ..... correct movement
Heading indicator ..... correct movement
Magnetic compass ..... correct movement

BEFORE RUN-UP

Airspeed indicator ..... "0" or wind
Attitude indicator ..... adjust reference
Altimeter ..... set to ATIS
Turn coordinator ..... level & ball centered
Heading indicator ..... mag. compass
Vertical speed indicator ..... "0"
Alternate air ..... VSI "jump"

RUN-UP

Controls ..... free & correct
Fuel selector ..... both
Elevator trim ..... takeoff
Mixture ..... full rich

RUN - UP :

- Primer ..... in & locked
- Oil pressure / temp ..... in green, warm
- Brakes ..... apply
- Throttle ..... 1700 RPM
- Suction gauge ..... in green, 5 psi
- Ammeter ..... positive load
- Magnetos ..... 125 drop / 50 diff.
- Carburetor heat ..... 100 drop
- Throttle ..... < 1000 RPM
- Throttle friction ..... tighten

Mixture ..... **lean for Density Alt (full throttle & lean)**

DEPARTURE BRIEFING

VFR flight plan ..... open (Leidos)
PAX emergency briefing ..... complete
Doors / windows / belts ..... secure
Rejected take-off ..... **reference point**
Loss of thrust, < 800 AGL ..... **loc. & turn dir.**
Loss of thrust, > 800 AGL ..... **180 & turn dir.**

GO TO "HOLDING SHORT"

MAXIMUM GLIDE

RANGE in NM @ 65 KIAS, FLAPS UP

AGL	Zero Wind	20 kt. Headwind	40 kt. Headwind
10,000	15	11	6.4
9000	13.5	9.9	5.8
8000	12	8.8	5.1
7000	10.5	7.7	4.5
6000	9	6.6	3.9
5000	7.5	5.5	3.2
4000	6	4.4	2.6
3000	4.5	3.3	1.9
2000	3	2.2	1.3
1000	1.5	1.1	0.6

OTHER EMERGENCY

EXCESSIVE RATE OF CHARGE: turn both sides of master switch OFF, then ON. If light comes on again, terminate flight.

INSUFFICIENT RATE OF CHARGE: Nonessential electric OFF. Terminate flight.

RADIO OUT: Check circuit breakers & VOLUME. Recycle alternator switch. If in B, C, or D airspace, squawk 7600. Terminate flight.

TWR SIGNALS	ON GROUND	IN FLIGHT
Steady Green	Cleared To Takeoff	Cleared To Land
Flashing Green	Cleared To Taxi	Return For Landing
Steady Red	STOP	Yield & Continue Circling
Flashing Red	Taxi Clear of Landing Area	Airport Unsafe — Do Not Land
Flashing White	Return To Starting Point	–
Alternating Red & Green	Use Extreme Caution	Use Extreme Caution

PREFLIGHT — CABIN

Pitot cover ..... remove
Papers (AROW, AVIATES) ..... valid
Control lock ..... remove
Ignition switch ..... off, keys on dash
Avionics master & elec. ..... off
Circuit breakers ..... in
Master switch ..... on
Gyros ..... no unusual noise
Fuel gauges ..... note level
Flaps ..... lower in stages
Avionics master switch ..... on

Navigational instruments (IFR) :

- Marker beacons ..... test hi / low
- VOR ..... test
- GPS ..... DB valid / self test OK
- Transponder ..... test, set ALT + 1200

Radios ..... copy ATIS
Avionics master switch ..... off
Pitot ..... verify cover off
Pitot heat ..... on, test, off
Lights (beacon, strobe, nav) ..... all working
Master switch ..... off
ADHRS ..... mount, secure battery
EFB (inc. phone) ..... mount, secure battery, reset ADHRS level, update weather from Internet display taxi diagram
Windshield ..... clean

PREFLIGHT — NOSE

Spinner ..... check for security, no cracks
Propeller ..... check for nicks, max. 1/8"
Cooling air intake ..... free of restrictions
Carburetor air filter ..... free of restrictions
Muffler ..... check for security
Landing light(s) ..... check condition & clean
Nose wheel strut ..... inspect & check inflation
Tire ..... check wear & inflation
Static source opening ..... check for stoppage

PREFLIGHT — LEFT WING

Fuel tank ..... check quantity & secure cap
Tire ..... inspect for wear & inflation
Brakes ..... inspect for leaks & pad wear
Pitot tube ..... check intakes (2) clear
Fuel vent ..... clear
Tie down ..... remove
Wingtip ..... check lights, rivet line & shake
Aileron ..... check hinges, pushrod, counterweights & movement
Flaps ..... check pushrod & movement
Fuel drain ..... check fuel quality

PREFLIGHT — EMPENNAGE

Fuselage ..... no structural damage
Elevator ..... hinges, links & counterweights
Rudder ..... hinges, links & counterweights
Antennae ..... no damage
Tie down ..... remove

PREFLIGHT — RIGHT WING

Fuel drain ..... check fuel, paper napkin test
Flaps ..... hinge, pushrod & movement
Aileron ..... hinge, pushrod & counterweight
Wingtip ..... lights, rivet line & shake wing
Tie down ..... remove
Tire ..... inspect for wear & inflation
Brakes ..... inspect for leaks & pad wear
Fuel tank ..... check quantity & secure cap

PREFLIGHT — NOSE RIGHT

Oil level ..... no less than 6 quarts
Fuel strainer ..... check fuel quality
Airplane ..... free to roll & no bald-spots
Overall ..... **FINAL WALK-AROUND, no openings, no forgotten objects**

BEFORE STARTING ENGINE

Preflight inspection ..... complete
PAX cockpit briefing ..... complete
Seat & seat belts ..... secure
Fuel selector ..... both
Avionics master switch ..... off
Circuit breakers ..... in
Brakes ..... test and set

STARTING ENGINE

Mixture ..... full rich
Carburetor heat ..... off
Prime ..... as required (< 3 strokes)
Primer ..... in & locked
Throttle ..... open 1/8 inch
Rotating beacon ..... on
Master switch ..... on
Brakes ..... set
Propeller area ..... "CLEAR"
Ignition ..... start (30s, 2m intervals)
Throttle ..... < 1000 RPM
Oil pressure ..... green in 30 sec, or stop
TIME ..... **NOTE**

BEFORE TAXIING

Mixture ..... lean for taxi
Flaps ..... retract in stages
Heading indicator (H.I.) ..... mag. compass
Avionics master switch ..... on

GO TO "BEFORE TAXIING (CON'T)"