

AIRCRAFT PERFORMANCE SPEEDS

V _{S0} – Landing configuration stall at gross weight, power off	61 MPH (53 KIAS)
V _{S1} – Cruise configuration stall at gross weight, power off	65 MPH (56 KIAS)
V _R	58-62 MPH (50-55 KIAS)
V _R (Short Field)	62 MPH (55 KIAS)
V _X – Best Angle of Climb Speed	81 MPH (70 KIAS)
V _Y – Best Rate of Climb Speed	104 MPH (90 KIAS)
V _{FE} – Max. Flap Extension	119 MPH (103 KIAS)
V _A – Maneuvering Speed.....	129 MPH (112 KIAS)
V _{NO} – Top of Green Arc	164 MPH (142 KIAS)
V _{NE} – Red Line – Never Exceed ...	198 MPH (172 KIAS)
V _{LD} – Max. Glide	83 MPH (72 KIAS)
Max. Partial Canopy Open	129 MPH (112 KIAS)
Max. Demonstrated X-wind	16 knots

AIRCRAFT SPECIFICATIONS

- Maximum Gross Weight 2400 LBS
- Fuel Capacity (useable) 51 GALS
- Oil Capacity 6-8 Qts.

EMERGENCY PROCEDURES

Engine Failure During Takeoff Run

1. Throttle IDLE
2. Brakes APPLY
3. Mixture IDLE CUT-OFF
4. Ignition Switch OFF
5. Master OFF

Engine Failure Immediately After Takeoff

1. Airspeed 75-86 MPH (65-75 KIAS)
2. Mixture IDLE CUT-OFF
3. Fuel Selector Valve OFF
4. Ignition Switch OFF
5. Master OFF

Engine Failure During Flight

1. Airspeed 83 MPH (72 KIAS)
2. Carburetor Heat ON
3. Fuel Selector Valve SWITCH TANKS
4. Mixture RICH
5. Master Switch ON
6. Auxiliary Fuel Pump ON
7. Throttle OPEN ¼ INCH
8. Ignition Switch BOTH
9. Primer IN & LOCKED
10. Starter PRESS if propeller is stopped

NOTE

Gliding distance is approximately 1.7 nautical miles (2 statute miles) for each 1000 feet of altitude above terrain.

EMERGENCY PROCEDURES

Engine Landing w/o Engine Power

1. Airspeed 83 MPH (72 KIAS)
2. Radio MAYDAY on 121.5 MHz
3. Mixture IDLE CUT-OFF
4. Fuel Selector Valve OFF
5. Ignition Switch OFF
6. Wing Flaps AS REQUIRED
7. Master Switch OFF
8. Canopy UNLATCH
9. Touchdown SLIGHTLY NOSE HIGH
10. Brakes AS REQUIRED

Precautionary Landing with Engine Power

1. Airspeed 83 MPH (72 KIAS)
2. Radio ADVISE ATC
3. Wing Flaps AS REQUIRED
4. Emergency Landing Field SELECT
5. Radio & Electrical Switched OFF
6. Wing Flaps DOWN (Final Approach)
7. Airspeed 75 MPH (65 KIAS)
8. Master Switch OFF
9. Canopy UNLATCH
10. Touchdown SLIGHT NOSE HIGH
11. Ignition Switch OFF
12. Brakes AS REQUIRED

EMERGENCY PROCEDURES

Engine Fire in Flight

1. Mixture IDLE CUT-OFF
2. Fuel Selector Valve OFF
3. Master Switch OFF
4. Cabin Heat and Air OFF
5. Airspeed 132 MPH (115 KIAS)
..... Increase Speed to Blow Out Fire
6. Forced Landing EXECUTE

Engine Fire During Start On Ground

1. Cranking CONTINUE

If Engine Starts:

2. Power 1800 RPM for a few minutes
3. Engine SHUTDOWN & INSPECT
 - a. Fuel Selector OFF
 - b. Master Switch OFF
 - c. Ignition Switch OFF

If Engine Fails to Start:

4. Passengers EVACUATE
5. Engine SECURE
 - a. Mixture IDLE CUT-OFF
 - b. Master Switch OFF
 - c. Ignition Switch OFF
 - d. Fuel Selector Valve OFF
6. Fire EXTINGUISH

EMERGENCY PROCEDURES

Electrical Fire in Flight

If fire is in engine compartment:

1. Master Switch OFF
2. Vents/Cabin Air/Heat OFF/CLOSED
3. Land AS SOON AS POSSIBLE

If fire is in cockpit:

1. Master Switch OFF
2. All Other Switch except Ignition Switch OFF
3. Vents/Cabin Air/Heat OFF/CLOSED
4. Fire Extinguisher ACTIVATE

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

5. Master Switch ON
6. Circuit Breakers CHECK
..... Do not reset faulty circuit
7. Radio/Electrical Switches ON
..... One at a time, with delay to locate fault
8. Vents/Cabin Air/Heat OPEN when fire is out

Wing Fire

1. Navigation Light Switch OFF
2. Pitot Heat Switch (if installed) OFF
3. Land AS SOON AS POSSIBLE

EMERGENCY PROCEDURES

Cabin Fire

1. Master Switch OFF
2. Vents/Cabin Air/Heat CLOSED
3. Fire Extinguisher ACTIVATE

WARNING

After discharging an extinguisher within a closed cabin,
ventilate the cabin.

4. Land AS SOON AS POSSIBLE

Ditching

1. Radio MADAY on 121.5 MHz
2. Heavy Objects SECURE
3. Flaps DOWN
4. Approach (High Winds, Heavy Seas)
..... INTO THE WIND
5. Approach (Light Winds, Heavy Swells)
..... PARALLEL TO SWELLS
6. Power ... 350 FPM DESCENT at 75 MPH (65 KIAS)
7. Canopy FULLY OPEN
8. Face CUSHION
9. Airplane EVACUATE
10. Life Vests and Raft INFLATE

EMERGENCY PROCEDURES

Icing

1. Pitot Heat Switch (if installed) ON
2. Carburetor Heat ON as required

NOTE

Continuous engine operation with carburetor heat on is not recommended due to the decrease in engine efficiency. If severe icing conditions require extended use of carburetor heat the engine mixture should be leaned during use of carburetor heat.

3. Cabin Heat ON
4. Defrosters OPEN
5. Engine INCREASE RPM
(do not exceed red line) and periodically change RPM to minimize ice buildup on propeller blades.
6. Turn back or change altitude to obtain outside air conditions that are less likely to cause icing.
7. If icing continues plan a landing at the nearest airport. Under extremely rapid icing conditions select a suitable emergency landing site.

WARNING

With an ice accumulation on or near the wing leading edges a higher stalling speed may be expected. Plan all maneuvers accordingly.

8. Airspeed – If possible increase airspeed and fly at a higher than normal cruise speed until a landing is begun.
9. Approach for landing at a higher airspeed than normal depending on amount of ice accumulation.
10. Flaps UP
11. Land SLIGHTLY NOSE HIGH

EMERGENCY PROCEDURES

Landing with a Flat Main Tire

1. Wing Flaps AS DESIRED
2. Elevator Control NOSE HIGH
3. Aileron Control
.....BANK TOWARD GOOD TIRE
4. Touchdown GOOD TIRE FIRST
..... Hold airplane off flat tire as long as possible

Landing with a Flat Nosewheel Tire

1. Wing Flaps AS DESIRED
2. Elevator Control NOSE HIGH
3. Touchdown
..... Hold nose gear off runway as long as possible
4. Brakes USE CAUTIOUSLY
..... Allow airplane to roll to a stop if possible

Electrical Power Supply System Malfunctions

Ammeter Shows Discharge

1. Alternator Circuit Breaker CHECK
..... Wait 15 seconds before reset
2. Field Circuit Breaker CHECK
3. If Field Circuit Breaker is tripped, land as soon as practical.
4. If Field Circuit Breaker is not tripped, and ammeter continues to show discharge, set alternator side of master switch to OFF and land as soon as practical.

PREFLIGHT INSPECTION

Cockpit

1. Canopy OPEN
2. Control Wheel Lock REMOVE
3. Ignition Switch OFF
4. Master Switch ON
5. Fuel Gauges CHECK
6. Master Switch OFF
7. Mixture IDLE CUT-OFF
8. Primary Flight Controls CHECK
9. Flaps CHECK
10. Windows CLEAN
11. Baggage STOWED
12. Required Papers ON BOARD

Left Wing

1. Flap SECURE & UNDAMAGED
2. Aileron FREEDOM OF MOVEMENT
3. Wing Tip & Light UNDAMAGED
4. Aileron Counterweight Access
..... UNOBSTRUCTED
5. Wing Inspection Plates SECURE
6. Tiedown REMOVED
7. Pitot Tube UNOBSTRUCTED
8. Fuel Tank Vent UNOBSTRUCTED

PREFLIGHT INSPECTION

Left Wing (continued)

9. Fuel Tank FULL, CAP SECURE
10. Tank Drain DRAIN, SECURE
11. Sump Drain DRAIN, SECURE
12. Fuel PROPER COLOR
13. Landing Gear, Fairing UNDAMAGED
14. Tire PROPERLY INFLATED
15. Chocks REMOVED

Left Cowl

1. Windshield CLEAN & UNDAMAGED
2. OAT Gauge SECURE, UNDAMAGED
3. Fuel Pump Overflow Drain
..... UNOBSTRUCTED
4. Fresh Air Vents UNOBSTRUCTED
5. Air Cleaner Drain UNOBSTRUCTED
6. Oil Breather Vent UNOBSTRUCTED
7. Cowling OPEN, SECURED
8. Baffles SECURE, UNDAMAGED
9. Cowling CLOSED
..... Latches secure (flush with surface)

PREFLIGHT INSPECTION

Nose

1. Propeller & Spinner
..... SECURE, UNDAMAGED
2. Cowling SECURE, UNDAMAGED
3. Landing Light SECURE, UNDAMAGED
4. Nose Gear, Fairing UNDAMAGED
5. Mud Scraper CLEAR
6. Tire PROPERLY INFLATED
7. Tow Bar REMOVED & STOWED
8. Chocks REMOVED
9. Engine Cooling Openings UNOBSTRUCTED

Right Cowl

1. Cowl OPEN
2. Engine Baffles
..... UNOBSTRUCTED, UNDAMAGED
3. Carburetor Air Duct UNOBSTRUCTED
4. Engine Cooling Openings UNOBSTRUCTED
5. Engine Oil Level 6 Qts. MIN, 8 Qts MAX
6. Engine Oil Dipstick SECURED
7. Vacuum Pump Vent UNOBSTRUCTED
8. Battery SECURE
9. Alternator Belt PROPER TENSION
10. Baffles SECURE, UNDAMAGED
11. Cowling CLOSED
..... Latches secure (flush with surface)

PREFLIGHT INSPECTION

Right Wing

1. Fuel Tank FULL, CAP SECURE
2. Tank Drain DRAIN, SECURE
3. Sump Drain DRAIN, SECURE
4. Fuel PROPER COLOR
5. Landing Gear, Fairing UNDAMAGED
6. Tire PROPERLY INFLATED
7. Chocks REMOVED
8. Wing Tip & Light UNDAMAGED
9. Aileron Counterweight Access
..... UNOBSTRUCTED
10. Wing Inspection Plates SECURE
11. Tiedown REMOVED
12. Fuel Tank Vent UNOBSTRUCTED
13. Aileron FREEDOM OF MOVEMENT
14. Flap SECURE & UNDAMAGED

Right Side of Fuselage

1. Static Source UNOBSTRUCTED
2. Antennas SECURE, UNDAMAGED
3. Fuselage UNDAMAGED

Empennage

4. Elevators FREEDOM OF MOVEMENT
5. Rudder FREEDOM OF MOVEMENT
6. Trim Tabs SECURE, UNDAMAGED
7. Tail Cone & Light SECURE, UNDAMAGED
8. Tie Down REMOVED

PREFLIGHT INSPECTION

Left Side of Fuselage

1. Static Source UNOBSTRUCTED
2. Fuselage UNDAMAGED
3. Baggage Door SECURE

Night Flight Preflight

1. Fuses & Circuit Breakers CHECK
2. Spare Fuses IN MAP COMPARTMENT
3. Flashlight ABOARD
4. Required Charts ABOARD

ELECTRICAL SYSTEMS PREFLIGHT

Cabin

1. Master Switch ON
2. Instrument Lights CHECK RHEOSTAT, OFF
3. Map Light and Dome Light ON/OFF
4. Navigation Lights ON
5. Flashing Beacon ON
6. Strobe Lights ON
7. Pitot Heat ON
8. Landing Light ON

Warning

Do not touch pitot tube directly. It can be hot enough to burn skin.

ELECTRICAL SYSTEMS PREFLIGHT

Exterior

1. Left Navigation Light ILLUMINATED
2. Left Strobe Light FLASHING
3. Pitot Tube CHECK FOR HEAT
4. Landing Light ILLUMINATED
5. Stall Warning Vane LIFT, CHECK HORN
6. Right Navigation Light ILLUMINATED
7. Right Strobe Light FLASHING
8. Rear Navigation Light ILLUMINATED
9. Flashing Beacon OPERATING

Cabin

1. Master Switch OFF
2. Navigation Lights OFF
3. Flashing Beacon OFF
4. Strobe Lights OFF
5. Pitot Heat OFF
6. Landing Light OFF

NORMAL PROCEDURES

Before Starting Engine

1. Preflight Inspection COMPLETE
2. Seats, Belts, Shoulder Harness
.....ADJUSTED, LOCKED
3. Radio, Autopilot, Electrical Equipment OFF
4. Parking Brake SET
5. Controls CHECK

Engine Start (COLD)

1. Master Switch ON
2. Mixture FULL RICH
3. Carburetor Heat OFF
4. Fuel Selector Valve FULLEST TANK
5. Prime AS REQUIRED
6. Flaps UP
7. Auxiliary Fuel Pump ON
..... Check Pressure 0.5-8 PSI
8. Propeller CLEAR
9. Ignition Switch ON LEFT
10. Throttle OPEN ¼ INCH
11. Starter Button PRESS
..... Release when engine starts
12. Ignition Switch ON BOTH
13. Oil Pressure CHECK
14. Engine WARM UP 1000-1200 RPM
15. Auxiliary Fuel Pump OFF

NORMAL PROCEDURES

Before Takeoff

1. Parking Brake SET
2. Throttle 1800 RPM
3. Engine Instruments IN GREEN ARC
4. Ammeter CHARGING
5. Vacuum Gauge 4.6-5.4
6. Magnetos CHECK
..... (175 RPM Max drop, 50 RPM diff.)
7. Carburetor HeatON, CHECK RPM, OFF
8. Throttle 1000 RPM
9. Radios ON, CHECKED
10. Transponder STANDBY
11. Engine IDLES SMOOTHLY
12. Engine is ready for takeoff when it will take throttle
without hesitating or faltering and oil temperature is
in green arc.
13. Trim Tab SET
14. Flaps CHECKED, UP
15. Mixture FULL RICH
16. Throttle Friction Lock ADJUSTED
17. Auxiliary Fuel Pump ON, CHECK, OFF
18. Flight Instruments SET
19. Lights AS REQUIRED
20. Parking Brake OFF
21. Transponder ON AFTER TAKEOFF

NORMAL PROCEDURES

Normal Takeoff

1. FlapsUP
2. Carburetor Heat OFF
3. Auxiliary Fuel Pump ON
4. Throttle FULL OPEN
5. Rotate 58-62 MPH (50-55 KIAS)
6. Climb Speed 104 MPH (90 KIAS)

Short Field Takeoff, Obstacle Clearance

1. FlapsUP
2. Carburetor Heat OFF
3. Auxiliary Fuel Pump ON
4. Throttle FULL OPEN
5. Elevator Light Back Pressure 58 MPH (50 KIAS)
6. Rotate 62 MPH (55 KIAS)
7. Climb Speed 75 MPH (65 KIAS)

Climb

1. Normal Climb 104 MPH (90 KIAS)
2. V_Y – Best Rate of Climb Speed
104 MPH (90 KIAS)
3. V_X – Best Angle of Climb Speed
81 MPH (70 KIAS)

NORMAL PROCEDURES

Cruise

1. Electric Fuel Pump OFF
2. Power 2200-2700 RPM
3. Trim Tab SET
4. Mixture ADJUST
5. Fuel Selector SWITCH AS NEEDED

Caution

Do not open canopy at speeds in excess of 130 MPH
(113 KIAS).

Descent

1. Power AS REQUIRED
2. Mixture AS REQUIRED
3. Carburetor Heat AS REQUIRED
4. Trim Tab SET

Note

While descending avoid continuous operation at engine speeds between 1850 and 2250 RPM.

NORMAL PROCEDURES

Before Landing

1. Seats, Belts, Shoulder Harness ADJUST, LOCK
2. Fuel Selector ON, FULLEST TANK
3. Mixture FULL RICH
4. Auxiliary Fuel Pump ON
5. Carburetor Heat ON if required
6. Parking Brake OFF
7. Flaps
.....AS REQUIRED, BELOW 119 MPH (103 KIAS)
8. Airspeed 75-80 MPH (65-70 KIAS)
9. Landing Light ON AS REQUIRED

Balked Landing

1. Power FULL THROTTLE
2. Carburetor Heat OFF
3. Airspeed 80 MPH (70 KIAS)
4. Establish Climb Attitude
5. Flaps RETRACT SLOWLY

Normal Landing

1. Touch down on main gear.
2. Lower nose wheel slowly as speed decreases.
3. Use rudder to maintain directional control down to approx. 20 MPH (17 KIAS).
4. Brakes – Use as required for stopping and directional control

NORMAL PROCEDURES

Obstacle Clearance Landing

1. Flaps ..FULLY EXTENDED (119 MPH (103 KIAS))
2. Airspeed 73 MPH (63 KIAS)
3. Touch down on main gear.
4. Elevator FULL UP CONTROL
5. Flaps UP
6. Brakes AS REQUIRED

After Landing

1. Flaps UP
2. Auxiliary Fuel Pump OFF
3. Landing Light OFF
4. Carburetor Heat OFF
5. Strobe Light OFF

Shut-Down, Securing Airplane

1. Electrical Equipment, Radios, Lights OFF
2. Mixture IDLE CUT-OFF
3. Ignition OFF
4. Master Switch OFF
5. Control Lock INSTALL
6. Parking Brake SET
7. Chocks/Tiedowns INSTALLED
8. Parking Brake OFF