

Beechcraft Bonanza



A-36

Agenda:

- **General**
- **Limitations**
- **Emergency Procedures**
- **Normal Procedures**
- **Performance**
- **Weight/Balance**
- **Systems Description**

General

- Engine
- Propeller
- Fuel/Oil Systems
- Weights



Engine

- **285 Horsepower**
- **6 Cylinder**
- **Continental IO-520**
- **Fuel Injected**
- **Direct Drive**
- **Horizontally Opposed**
- **Air Cooled**

Propeller

- **McCauley Accessory Division**
- **Two Bladed**
- **84 inch Diameter**

Fuel/Oil Systems

FUEL

- Total Capacity 80 gal.
- Total Usable 74 gal.
- Two wing tanks (40gal/32usable)

OIL

- 12 quart capacity
- 9 quarts min. for flight

Weights

Max. Ramp Weight:	3216
Max. T/O Weight:	3200
Max Land. Weight:	3200
Basic Empty Weight:	2261
Max. Baggage comp.:	400

Limitations

- **Airspeeds**
- **Maneuver Limitations**

Airspeeds (KIAS)

V_a 140

V_{so} 56

V_s 62

V_y 96

V_x 78

V_{BEST GLIDE} 110

V_{FE}

123

V_{LE}

152



Maneuver Limitations

- **Maximum Slip Duration: 20sec.**
- **Maneuver entry speed for Chandelles, Steep Turns & Lazy Eights: 132 KIAS**

**“Turning Type Takeoffs and
Takeoff immediately following
fast taxi turn prohibited”**

Emergency Procedures

- **Engine Failure & Discrepancy Checks**
- **Electrical System Emergencies**
- **Emergency Landing Gear Extension**

Engine Failure/Discrepancy

During Takeoff Roll:

Close throttle & Stop

After Liftoff:

Landing straight ahead is usually advisable, if sufficient altitude permits:

AIRSPEED (110 KIAS)

BEST PLACE TO LAND

CHECKLIST

ENGINE TROUBLESHOOT

FUEL SLECTOR.....CHANGE TANKS

AUX. FUEL PUMP.....ON

MIXTURE.....FULL RICH then LEAN

MAGNETOS.....CYCLED/BOTH

ALTERNATE AIR.....PULL & RELEASE T

ENGINE SECURE

FUEL SELECTOR.....OFF
MIXTURE.....IDLE CUTOFF
PROP LEVER.....LOW RPM
FLAPS.....AS REQUIRED
MAGNETOS.....OFF
LANDING GEAR.....DOWN/UP
BATT./ALT SWITCHES.....OFF
CABIN DOOR.....AJAR

Electrical System Emergencies

ALTERNATOR OUT

NON ESSENTIAL ELEC. EQUIP.....OFF
LAND.....ASAP
L. GEAR EXTENSION...MANUAL IF REQ.

ALTERNATOR OVER VOLTAGE

BATTERY AND ALT SWITCH.....OFF/ON

IF CONDITION PERSISTS

ALT. SWITCH.....OFF

COMPLETE ALTERNATOR OUT CHECKLIST

LANDING GEAR MANUAL **EXTENSION**

LDG GEAR MANUAL EXTENSION

LDG GEAR CIRUCIT BREAKER...PULL OUT

LDG GEAR HANDLE.....DOWN

HAND CRANK HANDLE COVER...REMOVE

**HANDCRANK.....ENGAGE AND TURN COUTNER-
CLOCKWISE AS FAR AS POSSIBLE**

****VERIFY LANDING GEAR ARE DOWN WITH
GEAR POSITION LIGHTS, WARNING HORN
MECHANICAL INDICATOR****

Normal Procedures

- **Engine Starting**
- **Engine Leaning**
- **Use of Checklists**

Engine Start Procedures

NORMAL START

MIXTURE.....FULL RICH
PROP LEVER.....HIGH RPM
THROTTLE.....FULL OPEN
AUX FUEL PUMP.....ON/PEAK/OFF
THROTTLE.....1/4 INCH OPEN
STARTER.....ENGAGE

HOT START

SAME AS ABOVE EXCEPT.....
AUX FUEL PUMP.....MOMENTARILLY ON AFTER
START TO PERGE SYSTEM

Engine Leaning

“Use EGT system to lean..... when cruising at 75% power or less in the following manner:”

- **BEST ECONOMY**

25° rich of peak EGT

- **BEST POWER MIXTURE**

100° rich of peak EGT

Performance

**Use POH to compute takeoff
and landing distances required**

Weight & Balance

Compute the Weight & C.G.

For the following conditions:

Pilot: (78inches)	180 lbs
Co-Pilot: (78inches)	175 lbs
2nd Row Seats: (Aft facing) (111")	25 lbs
3rd Row Seats: (Forward facing)(152")	0 lbs
Baggage Compartment: (164 inches)	40lbs
Full Fuel: (75 inches) (74 gal.)	444lbs

	Weight	Arm	Moment
Empty W	2261		177794
Pilot/front pax.	355	78	27690
2nd row	25	111	2775
3rd row	0	152	0
Baggage	40	164	6560
Fuel	444	75	33300
Taxi, runup	-12	75	-900
Takeoff Wt.	3113	79.4	247219
Fuel Burn	-180	75	-13500
Landing Wt.	2933	79.6	233719

Aircraft is within limits in above example. Refer to P.O.H.

Systems Description

- **Fuel System**
- **Electrical System**
- **Landing Gear System**
 - * **Safety Features**
 - * **Emergency Extension**

Fuel System

- **Two fuel cells (40 gal/37gal use)**
- **Rubber fuel cells**
- **Engine & Aux. Fuel Pumps**
- **Aux. Fuel Pump used for Starting & Emergency Ops**
- **Gauges/Indications**

**DO NOT USE AUX. FUEL
PUMP DURING TAKEOFF
OR LANDING UNLESS
THERE IS AN ENGINE
EMERGENCY.**

Electrical System

- **14 Volt System**
- **70 Ampere Alternator**
- **35 amp hour battery**
- **12 Volt Battery**

Landing Gear System OVERVIEW

- **Tri-cycle/Retractable Gear**
- **Electric Motor Extends & Retracts Landing Gear**
- **Manual Extension as backup**
- **Safety Systems**

Cockpit Indications:

- **Two place switch for Up/Down**

- **Gear Position Lights**

- **Three Green Lights:**

 - Gear Down and Locked**

- **One Red Light:**

 - One or all gear in transit**

- **Lights Out:**

 - Gear Retracted fully**

Gear Safety Features:

Safety Switch

- Ground Squat Switch**
- Prevents Retraction on Ground when strut is compressed**

Warning Horn

- Throttle reduced below 12'' w/ gear up will sound horn intermittently**

Gear Motor Circuit Breaker

-Pops out when gear motor overloaded

Emergency Gear Extension

**-Hand crank located at rear
Of front seats.**

**-Refer to Emergency Procedures
Section 3 of POH & earlier
slides.**

Answers to Airplane Questionnaire

1. 100LL or 100 Blue & Green
2. One in each wing, each has 40 total/37 usable
3. 74 total usable
4. Endurance at 75% is 4.3 hours (15gph under most cruise situations)
5. SAE 50 and SAE 50
6. 12 qt. Capacity, 9 min. for flight
7. Min. oil Pressure 30, Max. 100
8. Max oil Temp. 240 F
9. Mag check 1700 RPM, 150/50
10. Max power 2700RPM & full Throttle.
11. MGTOW 3200, Empty W: 2261, Useful Load 939 Max Land. W 3200
12. Baggage comp. Behind rear seat, 400lbs max.
13. Airspeeds found earlier in power point
14. A. Land straight ahead with shallow turns only, complete engine secure checklist if time and altitude permit, crack door.
B. Continue cranking motor, mixture idle cutoff, fuel selector off, master off
C. Vent shutoff pull, mixture idle cutoff, fuel selector off, Bat/Alt switch off
D. Bat/Alt Switches off, all elect. Switches off, cabin vents closed, use fire extinguisher

15. Normal, Short and Soft field 0 Degrees flaps. Never use flaps for takeoff in A-36.

16. Max crosswind 17 knots

17. 3200 feet

18. 1800 feet

19. No.

Home work, Go to this website and select the Beech Bonanza Highlights Safety Publication. READ IT.

<http://www.aopa.org/asf/publications/highlights.cfm>