

Introduction

This Pray Aviation Flight Training Manual (FTM) has been designed to provide the pilot with standardization procedures for safe and efficient training operations in the Beech Travelair. It is your responsibility to have a complete and thorough knowledge of these procedures and techniques.

Note that this manual does not include all the information found in the Pilot’s Operating Handbook (POH). It is primarily a procedures guide and is to be used as a supplement to the POH, and in conjunction with FAA-8083-3 (Flight Training Handbook), and the Practical Test Standards (PTS) for the Instrument and Commercial Pilot AMEL. The procedures in this manual are not intended to limit the pilot’s judgement. The pilot can alter procedures to meet existing conditions. No procedure, regardless of how well written, can account for every possible variable; a procedure cannot replace common sense.

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Chapter 1: AIRPLANE GENERAL**I. AIRSPEEDS**

All Airspeeds used throughout this manual are miles per hour airspeeds (MPH).

V_{so}	- Stall, landing configuration	70
V_s	-Stall, clean configuration.....	80
V_{mca}	-Minimum Control	84
V_r	-Rotation	90
V_x	-Best Angle of Climb	90
V_{xse}	-Best Angle of Climb Single Engine.....	90
V_{yse}	-Best Rate of Climb Single Engine	100
V_y	-Best Rate of Climb	100
V_{fe}	-Maximum Flap Extension	130
V_{le}	-Landing Gear Operating	150
V_a	-Maneuvering Speed	160
V_{no}	-Maximum Structural Cruising	185
V_{ne}	-Never Exceed.....	240
	-Best Glide	100
	-Cruise Climb.....	120
	-Emergency Descent	150

VFR Approach Speeds:

-Downwind	120
-Base	120
-Final.....	100

IFR Final Approach Speed..... 120

IFR Holding Pattern Speed training cruise

Chapter 2: NORMAL PROCEDURES (EXPANDED)

I. EXTERNAL CHECKLIST (EXPANDED)

INTERIOR

Documents A.R.O.W.
 Airworthiness Certificate IN VIEW
 Registration CHECK ON BOARD
 Pilot's Operating Handbook CHECK ON BOARD
 Weight and Balance Data CHECK ON BOARD
 Logbook CHECK TIMES
 Control Wheel Lock REMOVE
 Fuel Selectors MAINS
 Magnetos OFF
 Avionics OFF
 Gear Handle DOWN
 Master Switch ON
 Gear Light GREEN
 Fuel Quantity Indicator CHECK
 Check Lights BEACON ON (NAV/Landing A/R)
 Master Switch OFF

RIGHT WING

Fuel Sumps CHECK FOR WATER
 Right Aileron CHECK
 Wingtip CHECK
 Leading Edge CHECK
 Fuel Quantity AUX CHECK VISUALLY, SECURE CAP
 Engine Oil 6-8QTS
 Engine Compartment CHECK FOR SECURITY
 Propeller CHECK
 Air Filter CHECK
 Fuel Sump CHECK FOR WATER
 Fuel Quantity MAIN CHECK VISUALLY, SECURE CAP
 Gear CHECK FOR WEAR
 Brake Pads CHECK FOR WEAR AND LEAKS
 Nose Compartment CHECK
 Windshield CLEAN OFF BUGS
 Nose Wheel and Strut CHECK FOR WEAR, 3' OF SILVER
 Belly CHECK FOR OIL

LEFT WING

Fuel Sumps.....	CHECK FOR WATER
Fuel Quantity MAIN.....	CHECK VISUALLY, SECURE CAP
Gear.....	CHECK FOR WEAR
Brake Pads	CHECK FOR WEAR AND LEAKS
WOW Switch.....	CHECK
Engine Oil	6-8QTS
Engine Compartment	CHECK FOR SECURITY
Propeller.....	CHECK
Air Filter.....	CHECK
Fuel Quantity AUX.....	CHECK VISUALLY, SECURE CAP
Leading Edge	CHECK
Pilot Tube.....	CHECK CLEAR
Stall Warning	CHECK
Wingtip	CHECK
Aileron	CHECK
Fuel Sump	CHECK FOR WATER

EMPENNAGE

Static Source	CHECK CLEAR
Horizontal Stabilizer	CHECK
Elevator.....	CHECK
Vertical Stabilizer	CHECK
Static Source	CHECK FOR BLOCKAGE
Baggage Door	SECURE

II. NORMAL CHECKLIST (EXPANDED)

BEFORE START

Preflight Inspection..... COMPLETE
 Safety Brief..... COMPLETE
 Seats & Seat Belts..... ADJUSTED AND LOCKED
 Fuel Selectors..... MAINS
 Avionics..... OFF
 Brakes..... HOLD
 Circuit Breakers..... CHECK IN

ENGINE START

Master Switch..... ON/BOTH
 Beacon & NAV Lights..... ON A/R
 Mixtures..... RICH
 Boost Pumps..... ON THEN OFF
 Carb. Heats..... COLD
 Magnetos..... ON
 Propeller Area..... CLEAR
 Prime..... A/R (2-5 STROKES IF COLD)
 Throttle..... OPEN 1/8"
 LH Starter..... ENGAGE
 Engine..... 800-1000 RPM's
 Oil/Fuel Pressure..... CHECK
 RH Starter..... ENGAGE
 Oil/Fuel Pressure..... CHECK
 Mixtures..... LEAN FOR TAXI
 Avionics..... ON
 Radios..... SET
 ATIS/ASOS..... OBTAIN
 Taxi Clearance..... OBTAIN
 Instruments..... CHECK DURING TAXI

Needle..... INTO DIRECTION OF TURN
 Ball..... OPPOSITE DIRECTION OF TURN
 AI..... ERECT
 Heading..... TURNS
 Altimeter..... WITHIN 75' FIELD ELEVATION
 VSI..... NOTE NEEDLE POSITION
 Airspeed..... Reads 0 MPH

ENGINE START

Airplane.....INTO WIND
 Clear behind the airplane.
 Flight Controls FREE AND CORRECT
 Flight InstrumentsCHECK AND SET
 Boost Pumps ON
 Fuel Selectors..... MAINS (TIPS UP)
 Mixtures RICH
 Elevator TrimSET FOR T/O
 Throttle1700 RPM
 Magnetos..... CHECK ONE AT A TIME (150/50 RPM)
 Props CYCLE 3 TIMES
 RPM..... DROP
 Manifold Pressure RISE
 Oil Pressure..... DROP
 Carb. Heats.....PULL ON (RPM DROP)
 Engine Instruments VERIFY IN GREEN
 Ammeter CHECK
 Suction Gauge..... CHECK
 Throttle..... CHECK IDLE, THEN 1000 RPM

NORMAL TAKEOFF

Mixture SET (RICH BELOW 3000' DA)
 Boost Pumps ON
 Flaps..... SET (0° NOMRAL T/O)
 Radios SET
 Transponder VERIFY ALT
 Pre-Takeoff BriefANNOUNCE
 Clearance..... OBTAIN
 Lights A/R
 Brakes RELEASE
 Throttles FULL
 90 MPH..... ROTATE
 Positive Rate GEAR UP
 Safe Altitude25"/2500 RPM
 Climb Out..... 120 MPH

SHORT FIELD TAKEOFF

Mixture SET (RICH BELOW 3000' DA)
 Boost Pumps ON
 Flaps SET (10° NOMRAL T/O)
 Radios SET
 Transponder VERIFY ALT
 Pre-Takeoff Brief ANNOUNCE
 Clearance OBTAIN
 Position Aircraft FAR END OF RUNWAY
 Lights A/R
 Brakes HOLD
 Throttles FULL
 Brakes RELEASE
 90 MPH ROTATE
 Climb 90 MPH
 Gear UP (50')
 Flaps UP
 Safe Altitude 25"/2500 RPM
 Climb Out 120 MPH

CLIMB CHECK

Gear UP (50')
 Flaps UP
 Airspeed 120 MPH
 Fuel Selector AUX (TIPS OUT)
 Look Before You Leap
 Boost Pumps OFF
 Engine Instruments MONITOR
 VFR Flight Following A/R

CRUISE

Throttles SET 20"/2400 RPM
 Power reduction: Set manifold pressure, then RPM
 Power increase: Set RPM, then manifold pressure
 Trim SET
 Mixtures LEAN
 Fuel Selectors AUX
 Boost Pumps OFF
 Engine Instruments MONITOR
 Flight Instruments RESET/MONITOR

APPROACH

Radios SET
 ATIS..... OBTAIN
 Mixtures A/R
 Boost Pumps ON
 Fuel Selectors..... MAINS (TIPS UP)
 Look Before You Leap
 Power A/R
 Lights ON A/R

BEFORE LANDING (BCGUMPS)

(B) Boost Pumps ON
(C) Cowl Flaps..... OPEN
(G) Gas..... MAINS
 Look Before You Leap
(U) Undercarriage **DOWN BELOW 150 MPH**
(M) Mixtures..... RICH
(P) Propellers HIGH RPM
(S) Seatbelts & Switches..... SECURE & SET

AFTER LANDING

Flaps..... UP
 Boost Pumps OFF
 Carb. Heats..... IN – OFF
 Mixtures LEAN FOR TAXI
 Lights A/R
 Trim..... RESET TO TAKEOFF

SHUTDOWN/SECURING AIRPLANE

Avionics OFF
 Mixtures IDLE CUT-OFF
 Lights OFF
 Magnetos..... OFF
 Alternators..... OFF
 Logbook COMPLETE

ENGINE FIRE-GROUND

Starters.....CONTINUE CRANKING (Max 30 sec)
Mixtures.....IDLE CUT-OFF
Throttles.....CLOSE
Fuel Selector Valves.....OFF
All Electrical Switches.....OFF
Passengers/Crew.....EVACUATE
Extinguish fire if practical.

ENGINE FIRE- FLIGHT

Fuel Selector Valve.....OFF
Mixture.....IDLE CUT-OFF
Propeller.....FEATHER
Fuel Boost Pump.....OFF
Throttle.....CLOSE
Starter.....OFF
Alternator Switch.....OFF

ELECTRICAL FIRE

All Electrical Switches.....OFF
Vents.....OPEN
Heat.....OFF
Fire Extinguisher.....A/R

ENGINE OUT PROCEDURE

- Aircraft Control.....MAINTAIN
 LEVEL THE WINGS
 STEP ON THE BALL
 HEADING/ALTITUDE
- Maximize Power
 - Mixtures FULL RICH
 - Props..... FULL FORWARD
 - Power levers FULL FORWARD
- Minimize Drag
 - Flaps UP
 - Gear UP
 - Boost pumps..... ON
- Identify DEAD FOOD/DEAD ENGINE
- Verify
 - Power (inoperative engine) IDLE -5 Seconds
 - Propeller (inoperative engine)..... FEATHER -5 Seconds
- Return for landing.
 If time, altitude, and workload permit, secure the engine.

SECURING DEAD ENGINE

- Fuel SelectorOFF
- Cowl Flap..... CLOSED
- Boost Pump.....OFF
- AlternatorOFF
- Magnetos.....OFF

ENGINE RESTART-AIRBORNE

- Airspeed >115 MPH
- Magnetos..... ON
- Alternators..... ON
- Boost Pump..... ON
- Cowl Flap..... ON
- FuelMAIN/AUX
- Carb. Heat OFF/IN
- Throttle (ENG. Restarting) IDLE
- Mixture..... RICH
- Prop.....HIGH RPM

MANUAL GEAR EXTENSION

- Landing Gear Relay Circuit Breaker PULL
- Landing Gear HandleDOWN
- Handcrank ENGAGE AND TURN COUNTERCLOCKWISE
APPROXIMATELY 50 TURNS.

WARNING: Keep cranking until the physical limit of handle travel is reached. DO NOT rely on the 3 green indication, as the gear may be down but not fully locked in this condition.

WARNING: If the gear is manually extended in an actual emergency, DO NOT move any landing gear controls or reset any switches or circuit breakers until the aircraft is on jacks, as the failure may have been in the gear-up circuit. This may cause the gear to retract on the ground.

CAUTION: The manual extension system is designed only to lower the landing gear. DO NOT attempt to retract the gear manually.

RETRACTION AFTER PRACTICE MANUAL EXTENSION

- Handcrank STOWED
- Landing Gear Circuit BreakerPUSH IN
- Landing Gear Handle UP

CAUTION: Do not operate the landing gear electrically with the Handcrank engaged, damage to the mechanism could occur rendering the manual gear extension system inoperative.

Chapter 4: VFR AIRWORK**I. VFR AIRWORK****A. Pre-Maneuver Checklist**

This checklist is to be performed prior to beginning any maneuver.

(H)eight A/R

All maneuvers must be performed at an altitude that allows recovery above 3000 feet AGL.

(E)ngine Instruments CHECK**(L)ocation NOTE**

Note location to ensure that maneuvers are being performed in a safe area away from towns, built-up areas, and airspace. Be within gliding distance of an emergency landing site. In the event of an emergency, be able to notify ATC of your location before landing.

(L)ookout COMPLETE

Two 90 degree turns or one 180 degree turn with no more than 30 degrees of bank will be executed to be certain that the airspace is clear. Always maintain a constant lookout for traffic.

B. Training Cruise Flight

- Perform Cruise checklist
- Set throttles at 20 in. Hg and propellers at 2400 rpm.

C. Slow Flight

- Heading/ Altitude
- Clearing Turns
- Power 15"
- Gear Down (Speed <150)
- Flaps Down (White Arc)
- Props Full
- Airspeed – 90 mph

D. Power-Off Stall

- Heading/ Altitude
- Slow Flight Configuration
- Power IDLE
- Stall Indication

RECOVERY

- Lower nose
- Airspeed > Vmc - FULL Throttle
- Flaps – UP
- Positive Rate – Gear UP
- Cruise Profile (20"/2400 RPM)

E. Power-On Stall

- Heading/Altitude
- Throttle – 15"
- Props – FULL
- Pitch up 10°

RECOVERY

- Lower nose to Horizon
- THROTTLE – FULL
- Cruise Profile (20"/2400 RPM)

F. Accelerated Stall

- Throttle – 15"
- Props – FULL
- Bank - 45°
- STOP BANK
- Pull to buffet
- Release backpressure
- Level wings
- Throttle – FULL
- Maintain altitude
- Cruise Profile (20"/2400 RPM)

G. VMC Demonstration (COMM. ME STUDENTS)

- Heading/Altitude
- Fail Critical Engine
- POWER UP (Mix, Props, Throttles)
- Establish airspeed at Blue Line
- LOCK CONTROLS
- Pitch up and wait for loss of directional control

RECOVERY

- THROTTLE – IDLE
- Wings level
- Lower nose to regain airspeed at Blue Line
- THROTTLE – FULL (Good engine)
- MAINTAIN DIRECTIONAL CONTROL

H. ENGINE OUT PROCEDURES

- Level the wings
- Step on the ball
- Reference heading/altitude (or blue line)

- Mixtures - FULL
- Props - FULL
- Throttles – FULL

- Flaps – UP
- Gear – UP
- Boost pumps – ON

- Identify (dead fuel/dead engine)
- Verify (Throttle back 5 FULL SECONDS)
- Troubleshoot if altitude permits
- Feather (Prop – 5 FULL SECONDS)
- SECURE

I. EMERGENCY DESCENT PROCEDURE (With Engine Fire)

- Mixture – SIMULATE Idle Cutoff
- CHOP Throttle
- DROP Gear
- PROP Full Forward
- Land at nearest airport