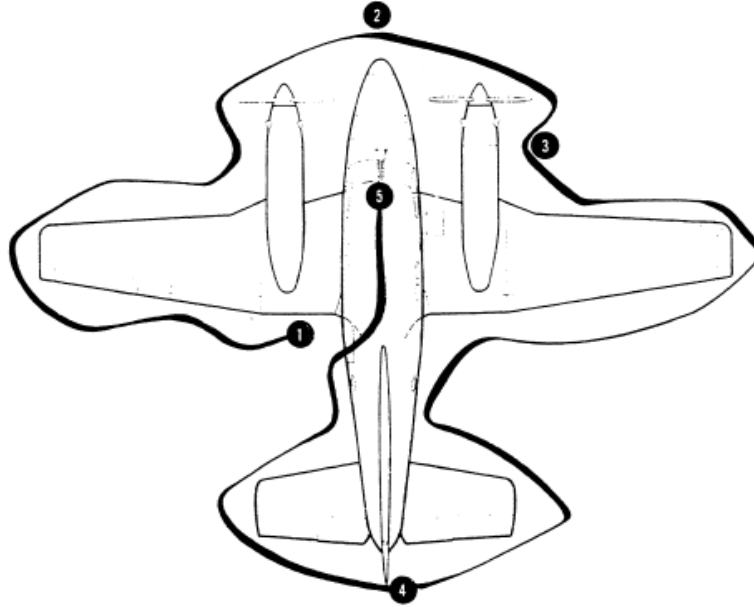


Factual Report – Attachment 16
Beech A90 Normal Procedures

OPERATIONAL FACTORS

WPR19MA177

SECTION V NORMAL PROCEDURES



PREFLIGHT CHECK

1 LEFT WING

1. General Condition - CHECK
2. Flaps - CHECK
3. Aileron and Tab - CHECK
4. Lights - CHECK
5. Stall Warning - CHECK
6. Deicer Boots - CHECK
7. Pitot Cover - REMOVE
8. Auxiliary Fuel Tank - CHECK
9. Drain 4 Fuel Sumps:
 - a. Just outboard of Nacelle
 - b. Transfer Pump
 - c. Main Boost Pump
 - d. Inside Wheel Well
10. Landing Gear, Strut, Brake and Wheel Well - CHECK
11. Tie-Down and Chocks - REMOVE
12. Supercharger Gear Box - CHECK OIL LEVEL
13. Propeller - CHECK
14. Engine Air and Oil Cooler Intakes - CLEAR; Inertial Separator Vane - RETRACTED
15. Engine Air Intake Lip Boot - CHECK
16. Engine Oil - CHECK QUANTITY, CAP SECURE
17. Firewall Fuel Filter - DRAIN

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MODEL 65-A90 FAA Flight Manual

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LEFT WING (Continued)

NOTE

The fuel filter drain cock may be actuated while the top engine cowl door is open for the oil check. Adjacent to the door, a placard (which reads: FUEL STRAINER DRAIN - RELEASE IN-SIDE DOOR) references the location.

18. Cowling - CHECK DOORS SECURE AND GENERAL CONDITION
19. Main Fuel Tank - CHECK
20. Heat Exchanger Inlet - CLEAR
21. Access Panels - CHECK

2 NOSE SECTION

1. Ram Air Inlet - CLEAR
2. Access Panels - SECURE
3. Air Conditioner Duct - CLEAR
4. Nose Gear, Strut, and Wheel Well - CHECK

3 RIGHT WING

1. Access Panels - CHECK
2. Propeller - CHECK
3. Engine Air and Oil Cooler Intakes - CLEAR; Inertial Separator Vane - RETRACTED
4. Engine Air Intake Lip Boot - CHECK
5. Engine Oil - CHECK QUANTITY, CAP SECURE
6. Firewall Fuel Filter - DRAIN
7. Cowling - CHECK DOORS SECURE AND GENERAL CONDITION
8. Main Fuel Tank - CHECK
9. Drain 4 Fuel Sumps:
 - a. Just Outboard of Nacelle
 - b. Transfer Pump
 - c. Main Boost Pump
 - d. Inside Wheel Well
10. Landing Gear, Strut, Brake and Wheel Well - CHECK
11. Tie-Down and Chocks - REMOVE
12. Auxiliary Fuel Tank - CHECK
13. Pitot Cover - REMOVE
14. Deicer Boot - CHECK
15. Lights - CHECK
16. Aileron - CHECK
17. Flaps - CHECK
18. General Condition - CHECK

4 TAIL SECTION

1. General Condition - CHECK
2. Oxygen Door - SECURE
3. Access Panels - SECURE
4. Static Ports - CLEAR
5. Deicer Boots - CHECK
6. Control Surfaces and Tabs - CHECK
7. Emergency Locator Transmitter - ARMED

BEFORE STARTING ENGINES

1. Exterior Inspection - COMPLETED
2. Cabin Door - LOCKED
3. Baggage - SECURE; Weight and C.G. - CHECKED

BEFORE STARTING ENGINES (Continued)

4. Emergency Exit - LATCHED
5. Seat Belts and Shoulder Harness - SECURE
6. Control Locks - REMOVED: Flight Controls - FREE
7. Brakes - SET
8. Landing Gear Handle - DOWN
9. Oxygen Pressure - 1800 psi at 21°C
10. Emergency Static Air Valve - CLOSED
11. Power Levers - IDLE
12. Propeller Controls - FULL FORWARD
13. Condition Levers - CUT-OFF
14. All Switches - OFF
15. Circuit Breakers - IN
16. Crossfeed - OPEN (check FUEL CROSSFEED light ON), then CLOSED
17. Fuel Firewall Valves - CHECKED AND OPEN (listen for operation)
18. Boost Pumps - ON (listen for operation)
19. Battery Switch - ON
20. Voltmeters - CHECK (no voltage indicates current limiter out)

CAUTION

If battery voltage indicates less than 20 volts, battery must be recharged, or replaced with a battery indicating a charge of at least 20 volts, before using auxiliary power.

When an auxiliary power source is used, it must be of the negatively grounded type. If the polarity of the source is unknown, turn all switches OFF. Connect the auxiliary power source and observe the airplane voltmeter for proper indication (28.5 volts).

The battery switch must be ON when starting engines with auxiliary power and generators should be OFF until auxiliary power has been disconnected.

After second engine has been started, disconnect the auxiliary power source and secure the access door.

21. Annunciator Panel and Warning Lights - CHECK
22. Transfer Pumps - ON (listen for operation), then OFF. If either or both pumps fail to operate, press the Transfer Test Switch and monitor NO FUEL TRANSFER light.
23. Fuel Quantity - CHECKED

ENGINE START

1. Right Ignition and Engine start switch - ON
2. Right Condition Lever - LOW IDLE (after N_1 rpm stabilizes for 5 seconds: 12% minimum)
3. ITT and N_1 - MONITOR (1090°C maximum)
4. Right Ignition and Engine Start Switch - STOP (at 50% N_1 , or above)
5. Right Engine - ADJUST N_1 10% ABOVE IDLE, MINIMUM (15% above IDLE or to the HI IDLE position on airplanes with 325 ampere current limiters)
6. Right Generator - ON (BATTERY CONDITION CHECK - Refer to NICKEL-CADMIUM BATTERY CONDITION CHECK)
7. Right Engine Oil Pressure - CHECK (Right Propeller unfeathered indicates oil pressure)
8. Left Ignition and Engine Start Switch - ON
9. Left Condition Lever - LOW IDLE (after N_1 rpm stabilizes for 5 seconds - 12% minimum)
10. ITT and N_1 - MONITOR (1090°C maximum)
11. Left Ignition and Engine Start Switch - STOP (at 50% N_1 or above)

ENGINE START (Continued)

12. Left Generator - ON
13. Inverter - ON
14. Right and left oil pressure and fuel pressure - CHECK by gage pressure.
15. Right N₁ - REDUCE TO IDLE

CAUTION

If no ITT rise is observed within 10 seconds after moving the Condition Lever to LOW IDLE, move the Condition Lever to cutoff and starter switch to STOP. Allow a 30 second delay to drain fuel, then motor the engine by placing the starter switch in the STARTER ONLY position.

If, for any reason, a starting attempt is discontinued, the entire starting sequence must be repeated after allowing the engine to come to a complete stop.

ENGINE CLEARING PROCEDURE

1. Condition Lever - IDLE CUT-OFF
2. Ignition and Engine Start Switch - STOP
3. Battery Switch - ON
4. Fuel Boost Pump Switch - ON
5. Ignition and Engine Start Switch - STARTER ONLY (for a minimum of 15 seconds)

CAUTION

Do not exceed starter time limits. See Section IV.

6. Ignition and Engine Start Switch - STOP
7. Fuel Boost Pump Switch - OFF

AFTER STARTING AND TAXI

1. Radios - ON
2. Cabin Temperature - SET
3. Fuel Control Heat - ON
4. Cabin Sign - ON
5. Lights - AS REQUIRED
6. Transfer Pumps - ON
7. Crossfeed Switch - AUTO
8. Brakes - CHECKED

NOTE

For taxi speed control, reversing propellers may be used in the Beta Range. Beta range is defined as the control range between the idle stop and the point at which N₁ rpm begins to increase for reverse power. In this range, only blade angle is changed. This mode of control may be used without incurring propeller blade erosion.

BEFORE TAKE-OFF

1. Boost Pumps and Auto Crossfeed - TEST
 - a. Crossfeed Valve - AUTO
 - b. Left Boost Pump - OFF. Annunciator Panel should read:
 - (1) L.H. BOOST FAIL
 - (2) FUEL CROSSFEED
 - c. Left Boost Pump - ON
 - d. Crossfeed - CLOSED. THEN AUTO

BEFORE TAKE-OFF (Continued)

- e. Right Boost Pump - OFF. Annunciator Panel should read:
 - (1) R.H. BOOST FAIL
 - (2) FUEL CROSSFEED
- f. Right Boost Pump - ON
- g. Crossfeed - CLOSED, then AUTO
- 2. Loadmeters and Generators - CHECK
- 3. Propeller Synchronization - OFF
- 4. Electric Elevator Trim - ON - (CHECK)
- 5. Trim Tabs - SET
- 6. Flaps - CHECKED AND SET
- 7. Pressurization - TEST:
 - a. Cabin Press. Dump Valve Switch - SET TO CABIN PRESSURE
 - b. Cabin Altitude - SET BELOW FIELD ELEVATION (Approx. 1000 feet)
 - c. Pressurization Test Switch - ACTUATE (Monitor cabin climb indicator for descent)
 - d. Cabin Altitude - SET FIELD ELEVATION PLUS 500 FEET
 - e. Rate Control - AS REQUIRED
- 8. Autopilot - CHECK, then OFF
- *9. Overspeed Governors - TEST:
 - a. Propeller Control - FULL INCREASE RPM
 - b. Power Levers - BELOW 1900 RPM
 - c. Overspeed Governor Test Switch - ON (Hold)
 - d. Power Lever - INCREASE (CHECK GOVERNING 1900 - 2100 RPM)

NOTE

Observe maximum ITT and torque limits.

- e. Power Lever - REDUCE TO 1900 RPM
- f. Overspeed Governor Test Switches - RELEASE
- *10. Primary Governors (all propellers) - CHECK (exercise at 1900 rpm)
- 11. Engine Inertial Separator Vanes - CHECK
- *12. Secondary Low Pitch (Flight Idle) Stops - TEST:
 - a. Condition Levers - HIGH IDLE
 - b. Power Levers - IDLE (Read propellers rpm)
 - c. Prop Test Switches - HOLD TO SECONDARY IDLE STOP TEST
 - d. Power Levers - ALIGN AFT EDGE WITH TOP OF BETA RANGE MARKS
 - e. Secondary Low Pitch (Flight Idle) Lights - CHECK ON
 - f. RPM - CHECK STABILIZED AT 210 ± 40 ABOVE RPM IN STEP "b"
 - g. Prop Test Switch - RELEASE
 - h. RPM - CHECK (MUST INCREASE ABOVE STEP "f")
 - i. Power Levers - IDLE

CAUTION

Do not force the Power Levers into the FULL REVERSE position with the Secondary Idle Stop Test switches ON.

- 13. Instrument Vacuum and Deice Pressure - CHECK (HI IDLE)
- 14. Autofeather - CHECK then ARM
- 15. Propeller Feathering (manual) - CHECK (LOW IDLE)
- 16. Flight and Engine Instruments - CHECK (Oil temperature must be above the minimum shown in chart (page 4-2) to preclude ice formation in the fuel control)
- 17. Ice Protection - AS REQUIRED (refer to Normal Procedure Section for Icing Flight)

WARNING

Both boost pumps must be operative for take-off.

*May be omitted for quick turn around at pilot's discretion.

NORMAL TAKE-OFF

Check ITT and engine torque readings while applying power. Remember that increased airspeed will cause torque and ITT to increase. Accelerate to 91 knots before rotating, and then to 100 knots before climb. Retract the landing gear before reaching 130 knots.

CLIMB

1. Climb Power - SET (Observe maximum ITT, torque, and N_1 rpm limits.)
2. Propeller - 2000 RPM
3. Propeller Synchronizer - ON
4. Pressurization Schedule - CHECK
5. Engine Instruments - CHECKED
6. Cabin Sign - AS REQUIRED

CRUISE

WARNING

Do not lift Power Levers in flight.

1. Cruise Power - SET
2. Engine Instruments - CHECKED
3. Fuel System - CHECK (For fuel leveling, use the following procedure):
 - a. Both Boost Pumps - ON
 - b. Crossfeed - OPEN
 - c. Boost Pump (low tank) - OFF (Check crossfeed light and fuel pressure)

NOTE

Turbulent air penetration speed: 161 kts.

DESCENT

1. Pressurization - SET

NOTE

Set cabin altitude to show landing field elevation plus 500 feet.

2. Altimeter - SET

CAUTION

- If either of the SECONDARY FLIGHT IDLE STOP (SECONDARY LOW PITCH STOP) warning lights become illuminated in flight, DO NOT attempt propeller reversal upon landing.

3. Cabin Sign - AS REQUIRED
4. Windshield Anti-Ice - AS REQUIRED (Turn ON well before descent into warm, moist air, to aid in defogging.)

LANDING

Maximum Demonstrated Crosswind 25 knots

1. Cabin Sign - ON
2. Propeller Synchronization - OFF
3. Flaps - AS REQUIRED
4. Landing Gear - DOWN
5. Landing and Taxi Lights - AS REQUIRED
6. Pressurization - CHECK
7. Power Levers - BETA RANGE (AS REQUIRED AFTER TOUCHDOWN)

MAXIMUM REVERSE POWER LANDING

CAUTION

To insure constant reversing characteristics, the Propeller Controls must be in FULL INCREASE RPM position.

1. Condition Levers - HIGH IDLE.
2. Propeller Controls - FULL INCREASE RPM
3. Power Levers - LIFT AND REVERSE AFTER TOUCHDOWN
4. Condition Levers - LOW IDLE

CAUTION

If possible, propellers should be moved out of reverse at approximately 40 knots, to minimize propeller blade erosion. Care must be exercised when reversing on runways with loose sand or dust on the surface. Flying gravel will damage propeller blades and dust may impair the pilot's forward visibility at low aircraft speeds.

AFTER LANDING

1. Flaps - UP
2. Landing and Taxi Lights - AS REQUIRED
3. Auto-ignition - OFF
4. Ice Protection - OFF
5. Electrical Load - REDUCE
6. Trim - SET

ENGINE SHUTDOWN AND SECURING

1. Parking Brake - SET
2. Transfer Pumps - OFF
3. Crossfeed - CLOSED
4. Subpanel and Avionics Switches - OFF
5. Overhead Panel Switches - OFF
6. Battery - CHARGED (BATTERY CONDITION CHECK - Refer to page 5-12)
7. ITT - BELOW 610°C FOR ONE MINUTE
8. Propellers - FEATHERED
9. Condition Levers - CUT-OFF

CAUTION

Monitor ITT during shutdown. If sustained combustion is observed, proceed immediately to the ENGINE CLEARING procedure on Page 5-4. During shutdown, ensure that the compressor decelerates freely. Do not close the Fuel Firewall Shutoff Valve for normal engine shutdown.

10. Boost Pumps - OFF
11. Battery and Generator Switches - OFF
12. Control Locks, Pitot Covers, Tie-Down, and Chocks - AS REQUIRED

CAUTION

The boost pumps and crossfeed are connected to the battery bus. Failure to turn these switches OFF will discharge the battery.

NIGHT OR INSTRUMENT FLIGHT (BEFORE TAKE-OFF)

1. Internal Lights - CHECK
2. External Lights - CHECK
3. Flight Instruments - CHECK
4. Instrument Air Pressure - CHECK
5. Voltage and Loadmeters - CHECK
6. Auto-ignition - CHECK