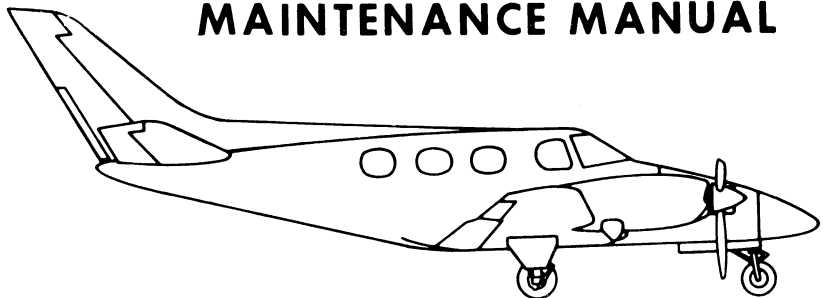


Beechcraft® DUKE

MODEL 60 (P-4 thru P-126 except P-123)
MODEL A60 (P-123, P-127 thru P-246)
MODEL B60 (P-247 and after)

MAINTENANCE MANUAL



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BEECHCRAFT DUKE 60 SERIES MAINTENANCE MANUAL

GENERAL - DESCRIPTION AND OPERATION

The landing gear is operated by a split-field series-wound motor and an actuator located under the cabin floorboards aft of the main spar. One field is used to drive the motor in each direction. To prevent overtravel of the landing gear, a dynamic braking relay simultaneously breaks the power circuit to the motor and makes a complete circuit through the armature and the unused field winding. The motor then acts as a generator and the resulting electrical load on the armature stops the landing gear almost instantly.

The landing gear motor is controlled by the gear extension switch located on the left subpanel. The larger upper arms and the lower arm of the actuator, in conjunction with rod assemblies and linkage, control extension and retraction of the main and nose landing gear. Rod assemblies attached to the smaller upper actuator arms operate the inboard main landing gear doors.

Landing gear limit switches, located adjacent to the actuator, limit the gear travel during the extend and retract cycle. These switches, when actuated, terminate the landing gear travel.

To prevent accidental landing gear retraction on the ground, a safety switch on the left main landing gear breaks the control circuit whenever the strut is compressed.

CAUTION

Never rely on the safety switch to keep the gear down while taxiing, landing, or on the takeoff roll. Always check the position of the landing gear switch.

The Duke landing gear incorporates Beech air-oil type shock struts that are filled with both compressed air and hydraulic fluid. Their correct inflation should be assured before each flight.

SAFETY SYSTEM

The optional landing gear safety system functions through the action of a solenoid in the landing gear position switch in conjunction with a three-position safety system switch, two pressure switches mounted on the inboard side of the left main landing gear wheel well and two microswitches located adjacent to the existing throttle position warning switches.

Each pressure switch is connected into the pitot and static system. The pressure switch in the gear-up circuit is actuated by the pressure differential that exists between the pitot and static systems and will close with increasing pressure at approximately 85 ± 2 knots. The pressure switch in the gear-down circuit will close with decreasing pressure at 120 ± 2 knots. When the landing gear position switch is in the UP position and an airspeed of 85 ± 2 knots has been attained, the pressure switch in the gear-up circuit closes and actuates a relay mounted on the front spar, thus completing the circuit and retracting the landing gear. A diode locks the relay in the closed position until the retraction cycle is completed. For the preceding to occur, however, the microswitch adjacent to the throttle position switch must also be in the open position. This microswitch is actuated by the throttle control when the throttles are advanced sufficiently for the manifold pressure gage to register approximately 17 ± 1 in. Hg. Conversely, if the throttles are retarded beyond the position corresponding to approximately 17 ± 1 in. Hg of manifold pressure, the microswitch will close. If at the same time the microswitch closes, the airspeed has dropped below 120 ± 2 knots, the resultant pressure differential between the pitot and static systems will actuate the pressure switch in the gear-down circuit. With both the microswitch and pressure switch closed, the current flow through the solenoid will cause the landing gear position switch to drop into the DOWN position, thus completing the gear-down circuit.

If the landing gear position switch is placed in the UP position while the landing gear safety system is in the ON position, the landing gears will retract when the following conditions are mutually fulfilled.

- a. The airplane must have attained an airspeed of at least 85 ± 2 knots.
- b. The throttle setting must have been advanced sufficiently to have produced a manifold pressure of approximately 17 ± 1 in. Hg.

By the same token, the landing gear automatically extends under the following conditions:

- a. The airspeed must have dropped below 120 ± 2 knots.
- b. The throttle setting must have been retarded enough for manifold pressure to have dropped below approximately 17 ± 1 in. Hg.

The safety system switch is a three position switch, with normally ON or OFF positions. The switch also contains a momentary or test position for checking that the system is functioning properly. When released from the test position, the switch returns to the ON position.

**BEECHCRAFT
DUKE 60 SERIES
MAINTENANCE MANUAL**

***MANUAL LANDING GEAR EXTENSION
SYSTEM***

In the event of landing gear malfunction in flight, the gear may be manually extended, but not retracted, by a hand crank located below copilot's seat.

WARNING

If the gear has been extended manually for emergency reasons, the airplane must be put on jacks and inspected before the gear controls are returned to their normal position.

"END"