UNLATCHED DOORS IN FLIGHT

CABIN DOOR

If cabin door is not properly closed it may come unlatched in flight. This may occur during or just after take-off. The door will trail in a position approximately 3 inches (7.6 cm) open, but the flight characteristics of the airplane will not be affected. There will be considerable wind noise; loose objects, in the vicinity of the open door, may exit the aircraft. Return to the field in a normal manner. If practicable, secure the door in some manner to prevent it from swinging open during the landing.

If it is deemed impractical to return and land, the door can be closed in flight, after reaching a safe altitude, by the following procedures:

Airspeed	95 KIAS
Pilot's Storm Window	OPEN
Aircraft	RIGHT SIDESLIP (Right bank with left rudder)
Door	PULL SHUT & LATCH

BAGGAGE DOOR

If baggage door is not properly closed, it may come unlatched in flight. This may occur during or after take off. The door may open to its full open position and then take an intermediate position depending upon speed of aircraft. There will be considerable wind noise; loose objects, in the vicinity of the open door, may exit the aircraft. There is no way to shut and latch door from the inside. Aircraft flight characteristics will not be affected; fly aircraft in normal manner; LAND AS SOON AS POSSIBLE and secure baggage door.

Baggage Door latching mechanism — VERIFY MECHANISM PROPERLY ENGAGED (inside latching mechanism) then shut from outside aircraft.

ICING

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// WARNING //
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DO NOT OPERATE IN KNOWN ICING CONDITIONS.

The Model M20R is NOT APPROVED for flight into known icing conditions and operation in that environment is prohibited. However, if those conditions are inadvertently encountered or flight into heavy snow is unavoidable, the following procedures are recommended until further icing conditions can be avoided:

INADVERTENT ICING ENCOUNTER

Pitot Heat	ON
Propeller De-Ice	ON (if installed)
Alternate Static Source	ON (if required)
Cabin Heat & Defroster	ON
Engine Gauges	MONITOR for any engine power reduction

Turn back or change altitude to obtain an outside air temperature less conducive to icing.

Move propeller control to maximum RPM to minimize ice build-up on propeller blades. If ice builds up or sheds unevenly on propeller, vibration will occur. If excessive vibration is noted, momentarily reduce engine speed with propeller control to bottom of GREEN ARC, then rapidly move control FULL FORWARD.

| NOTE |

Cycling RPM flexes propeller blades and high RPM increases centrifugal force which improves propeller capability to shed ice.

As ice builds on the airframe, move elevator control fore and aft slightly to break any ice build-up that may have bridged gap between elevator horn and horizontal stabilizer.

Watch for signs of induction air filter blockage due to ice build-up; increase throttle setting to maintain engine power.

| NOTE |

If ice blocks induction air filter, alternate air system will open automatically.

With ice accumulation of 1/4 inch or more on the airframe, be prepared for a significant increase in aircraft weight and drag. This will result in significantly reduced cruise and climb performance and higher stall speeds. Plan for higher approach speeds requiring higher power settings and longer landing rolls.

~ CAUTION ~

Stall warning system may be inoperative.

| NOTE |

The defroster may not clear ice from windshield. If necessary open pilot's storm window for visibility in landing approach and touchdown.

With ice accumulations of 1 inch or less, use no more than 15° wing flaps for approach and landing. For ice accumulation of 1 inch or more, fly approaches and landing with flaps retracted to maintain better pitch control. Fly approach speed at least 15 knots faster than normal, expect a higher stall speed, resulting in higher touchdown speed with longer landing roll. Use normal flare and touchdown technique.

Missed approaches SHOULD BE AVOIDED whenever possible because of severely reduced climb performance. If a go-around is mandatory, apply full power, retract landing gear when obstacles are cleared; maintain 90 KIAS and retract wing flaps.

—— AVOID FURTHER ICING CONDITIONS ——

EMERGENCY EXIT OF AIRCRAFT

CABIN DOOR

PULL latch handle AFT.
OPEN door and exit aircraft.

BAGGAGE COMPARTMENT DOOR (Auxiliary Exit)

Release (Pull UP) rear seat back latches on spar.
Fold rear seat backs forward, CLIMB OVER.
PULL off plastic cover from over inside latch.
PULL lock pin.
Pull red handle.
OPEN door and exit aircraft.

To VERIFY RE-ENGAGEMENT of baggage door, outside, latch mechanism:

Open outside handle fully.
Close inside RED handle to engage pin into cam slide of latch mechanism.
Place lock pin in shaft hole to hold RED handle DOWN.
Replace cover.
CHECK & operate outside handle in normal manner.

ing the engine cranking period. Two lobes on the breaker cam produce two sparks per revolution of the drive shaft. After engine is running, counter-weights hold the latch pawls away from the stop pins and the magneto shaft is driven at full advance.

The engine firing order is 1-6-3-2-5-4. Ignition harnesses are connected to the magnetos so right magneto fires the upper plugs on the right side and lower plugs on the left. The left magneto fires the upper plugs on the left and lower plugs on the right. The magneto cases, spark plugs, harnesses and connections are shielded to prevent radio interference.

AIR INDUCTION SYSTEM

The engine air induction system consists of a NACA, flush-type air inlet duct located on front of lower cowling. The air inlet duct incorporates the air filter housing. This housing contains a throw-away, paper canister type air filter element.

A secondary or alternate air source for combustion air is provided. This air inlet has a spring loaded door which normally remains closed. If the air filter or induction air inlet should become restricted, the alternate air door will automatically open. Warmer air will then be drawn from the engine compartment. There will be a reduction of engine power when the alternate air door is open due to lower inlet air pressure and higher air temperature. Whenever the alternate air door is open, a switch will activate the "ALT AIR" annunciator light on the panel to alert the pilot.

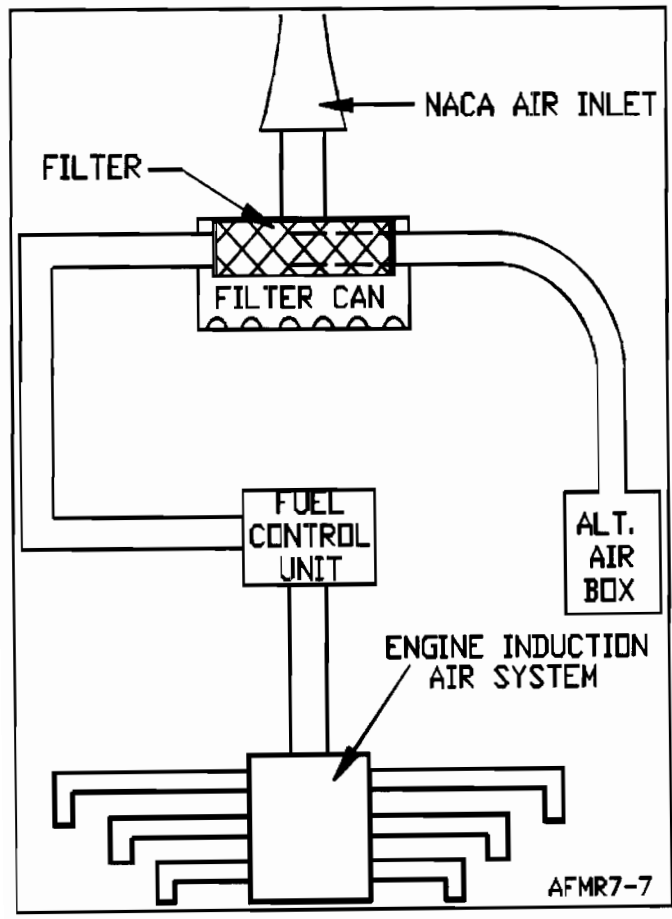

FIGURE 7 - 7 AIR INDUCTION SYSTEM SCHEMATIC

ICING PROTECTION

Continued operation of the induction system in the event of intake air being obstructed is provided by activation of the alternate air system. The alternate air is automatically or manually controlled. When the door is opened, unfiltered, relatively warm air, from engine compartment, is admitted into the induction system.

EXHAUST SYSTEM

The exhaust system consists of tubes from each cylinder mating into a muffler under the engine crankcase. The right collector pipe crosses through muffler and out an exhaust pipe on the left side of aircraft. The left collector pipe crosses through muffler and out an exhaust pipe on the right side of aircraft. A short tailpipe attaches to the end of each exhaust pipe.

The muffler has a heat shroud around it which serves as a cabin air heater. Outside ambient air is forced into the cabin heater by forward velocity. Air flows around the muffler, picking up heat and is then carried to a cabin heat J-box mounted on the firewall. When cabin heat is not required, the air continues to flow around the muffler for cooling and is dumped overboard through the cabin heat J-box outlet duct.

FUEL INJECTION

The fuel injection system is of the multi-nozzle, continuous flow type which controls fuel flow to match engine requirements. Any change in air throttle position, engine speed or a combination of these causes changes in fuel pressure in direct relation to engine requirements. A manual mixture control is provided for precise leaning at any altitude and power setting. A fuel flow system is installed for digital readout of fuel flow in gallons per hour. However, fuel flow is NOT to be used as reference for manual leaning. Use the EGT gauge for this purpose.