Section 8. RADIO

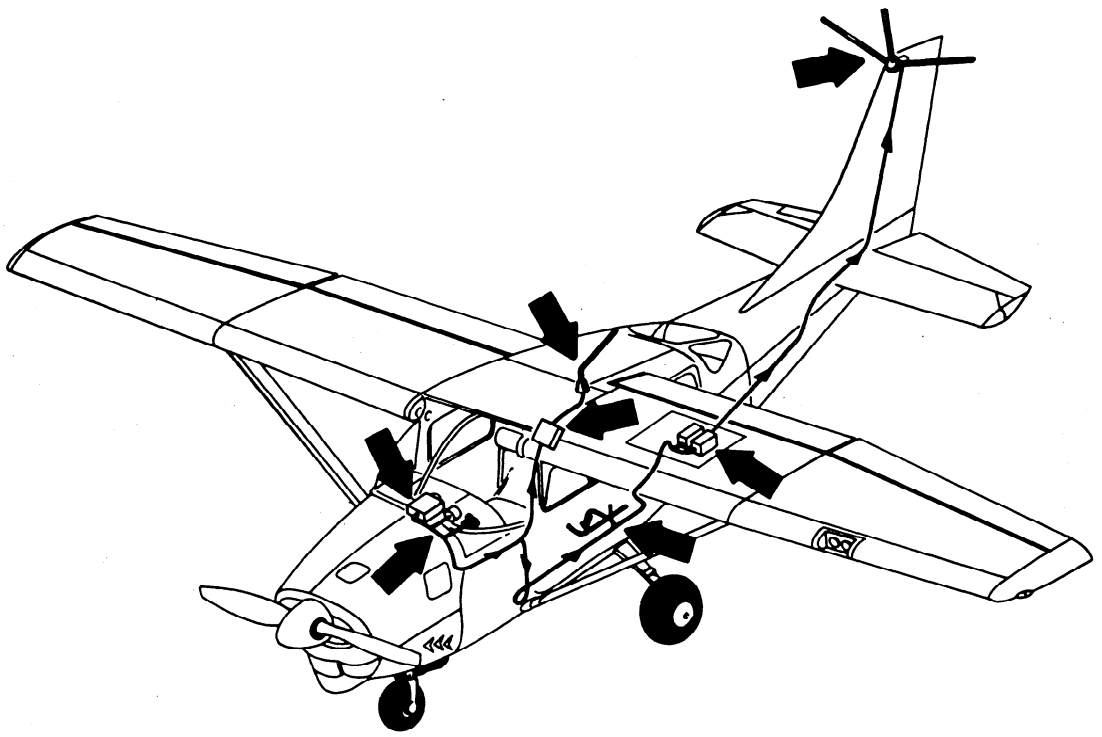


FIGURE 8-1. Inspection chart—radio.

Radio equipment should be removed periodically by certificated personnel to inspect shock mounts and bounding, and to clean and inspect racks and adjacent structure. Plugs and connectors should be opened and inspected for corrosion, dirt, and moisture. Ensure that all plugs and connectors are properly mated and secured.

Disconnect battery ground cable BEFORE removing radio equipment. Check for broken bonding strips. Poor radio reception will generally result from broken bonding strips.

Examine installation of communication and navigation equipment (transceivers, ADF, OMNI, DME, etc.) for security of attachment. Check all jacks, knobs, and switches for se-

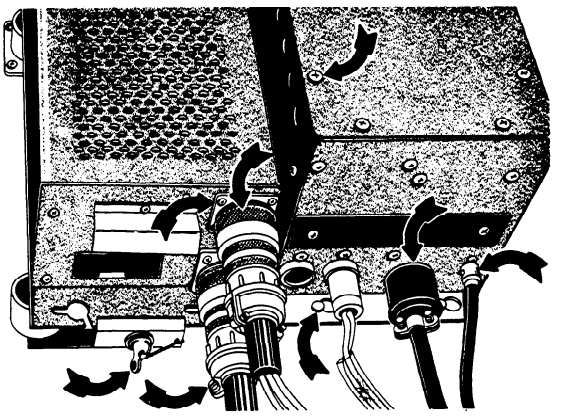


FIGURE 8-2. Communication/navigation equipment installation checkpoints.

curity. Volume controls should work smoothly. Switches should have positive action. Indicator dials should be clean and have proper motion. Check for defective light bulbs. Spare light bulbs and fuses should be readily available in the cockpit or cabin.

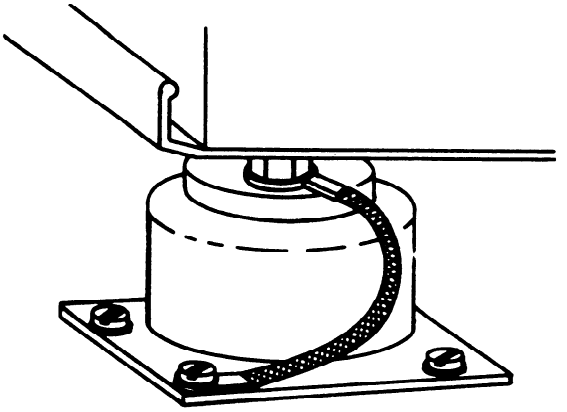


FIGURE 8-3. Bonding radio equipment to shock mount.

Inspect electrical wiring and shielding for defects, chafing, and security. Ensure that connections, terminals, and clips are tight. Look for evidence of shock mounted equipment contacting adjacent components or structure. Inspect fuses for corrosion, continuity, and security.

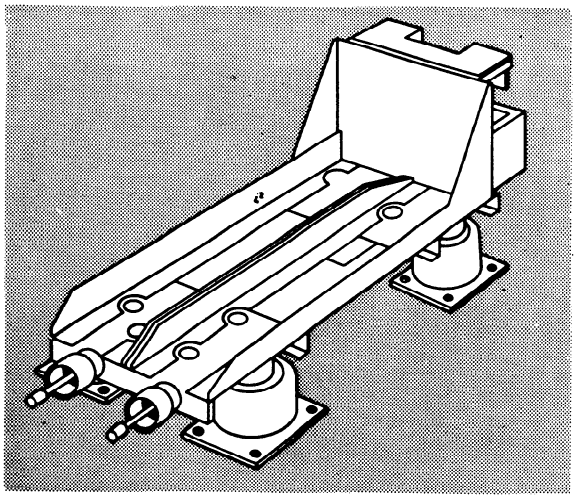


FIGURE 8-4. Communication/navigation equipment shock mount.

Inspect dynamotors for security of attachment and cleanliness. Inspect power supply installation for security of attachment. Check wiring and connections for proper grounding, condition, insulation, and security. Check switches for operation and condition.

Periodically, check the voltage regulator system. Low voltage settings will result in improper radio operation. High voltage setting (over 10 percent) may result in damage to radios, particularly those incorporating transistors.

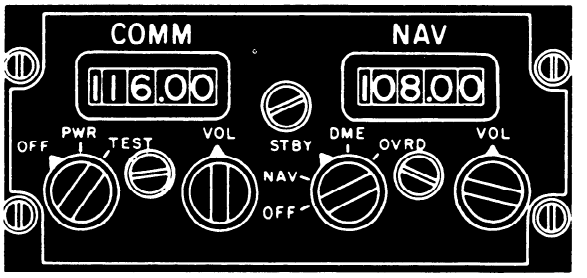


FIGURE 8-5. Typical communication/navigation equipment control.

An operational check should be performed on all equipment during engine warmup. Reception should be free of interference caused by ignition, generators, navigation lights, or any other electrical or mechanical unit.

Headsets and microphones should be inspected for broken or sticking switches, and dirty, worn, or damaged plugs. Inspect cord for wear and damage.

Unsatisfactory operation of communication or navigation equipment should be referred to authorized personnel for repair or adjustment.

Open junction boxes and inspect for extraneous material, security of connections, and condition of wiring and cables. Inspect remote control shafts for condition, security, and ease of operation.

The emergency locator transmitter (ELT) should be inspected for general condition, security of attachment, and other defects. The antenna cable and remote switch cable should be securely attached with no corrosion of com-

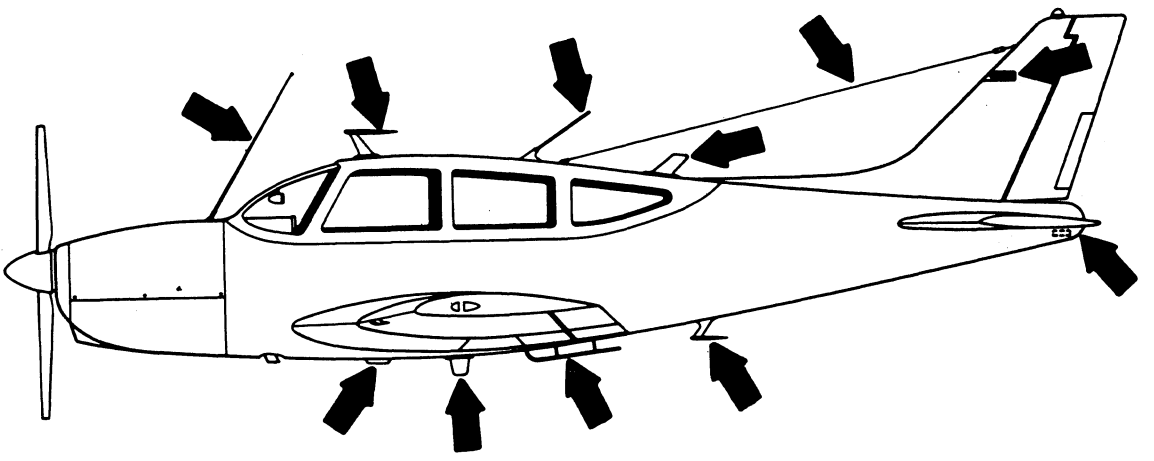


FIGURE 8-6. Antenna installations checkpoints.

ponents and routed so as not to interfere with controls. Be sure that the battery replacement date has not expired. Look for leakage and corrosion of the battery pack or ELT unit if batteries are utilized internally. Inspect the ELT antenna for security, corrosion, or damage. Inspect the cockpit ELT remote function switch for security and proper position. Note: Operational tests may be conducted only at certain times. Generally, operational tests will be performed by repair agencies following maintenance or repair of ELT.

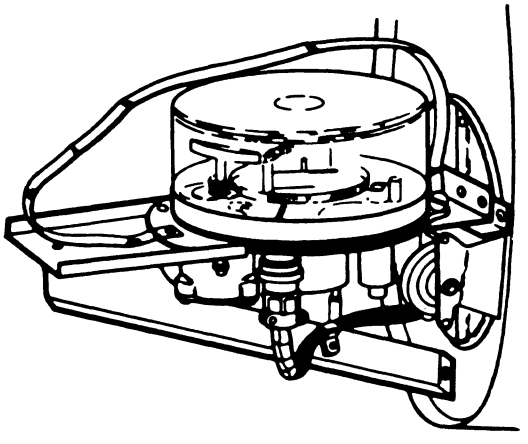


FIGURE 8-7. ADF Antenna—internal loop—tail mount.

Check antennas for condition and security of attachment. Inspect wire antennas for proper tension. Inspect insulators, fittings, terminals, and supporting masts for condition and security. Clean all insulators.

A broken antenna may foul the controls or cause other damage. Inspect rigid antennas and masts for evidence of lightning strikes. Check rubber seals for evidence of cracks or leakage.

Check manual and automatic rotation of automatic direction finder (ADF) loop.

FIGURE 8-8. ADF antenna—fixed loop.

Refinishing an ADF loop housing requires a special paint.

Inspect trailing edge static wicks for proper length, condition, and security.

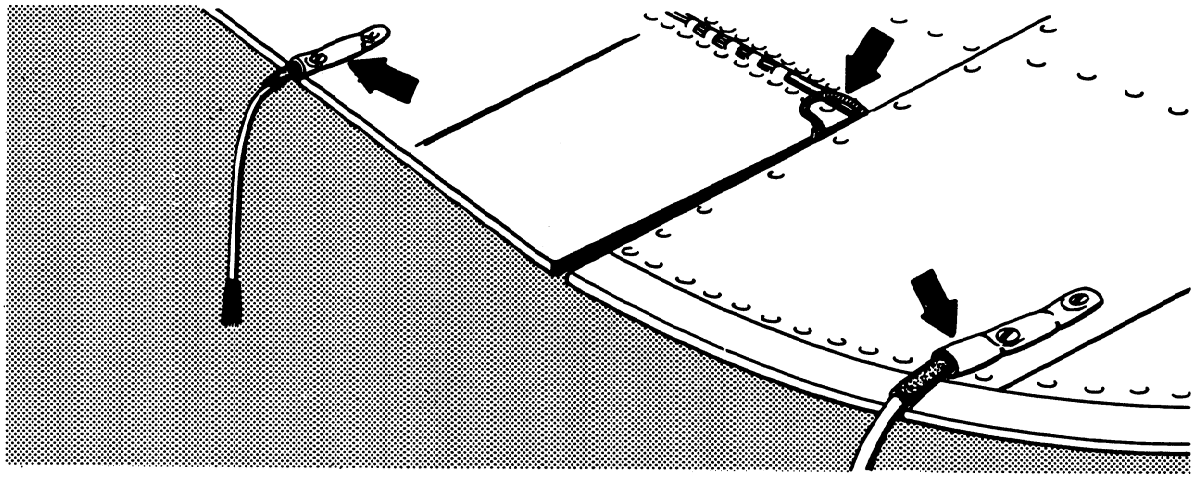


FIGURE 8-9. Bonding wires and trailing edge static wicks.

Section 9. MISCELLANEOUS

Miscellaneous equipment should be inspected for general condition, proper storage, and to ensure that it is readily accessible. Ensure that all equipment is secured so that it cannot interfere with the controls.

Parachutes, lift rafts, flares, and similar emergency equipment should be inspected by qualified personnel within prescribed time periods according to manufacturer's recommendations. All noted defects or discrepancies should be referred to an approved repair facility.

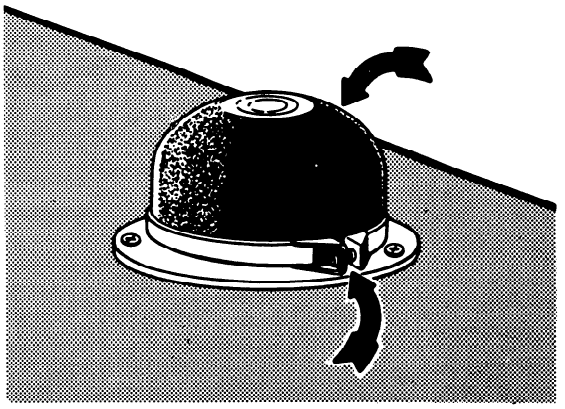


FIGURE 9-1. Rotating beacon installation.

Inspect rotating or flashing beacons for security of mounting, cleanliness, and general condition. Inspect wiring for condition and possible chafing. Check switches for proper operation. Examine connections for tightness, corrosion, and condition of insulation. Ensure that fuses or circuit breakers are in good condition and operating satisfactorily.

Inspect the autopilot system for general condition, security of attachment, and for other defects. Functional checks should be performed in accordance with the manufacturer's instructions.

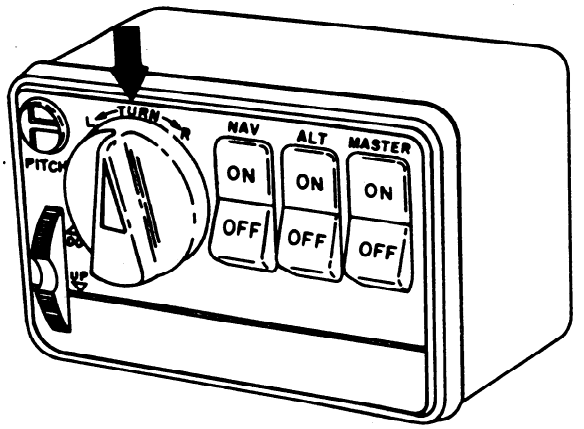
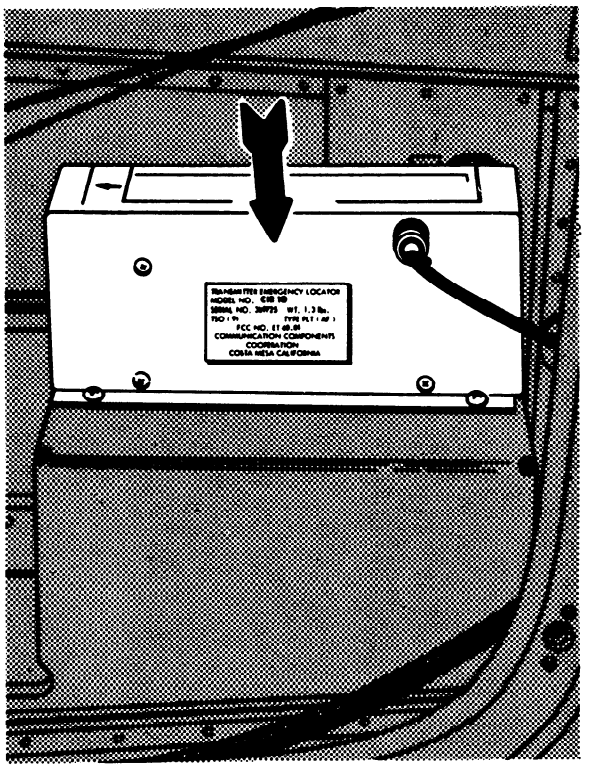


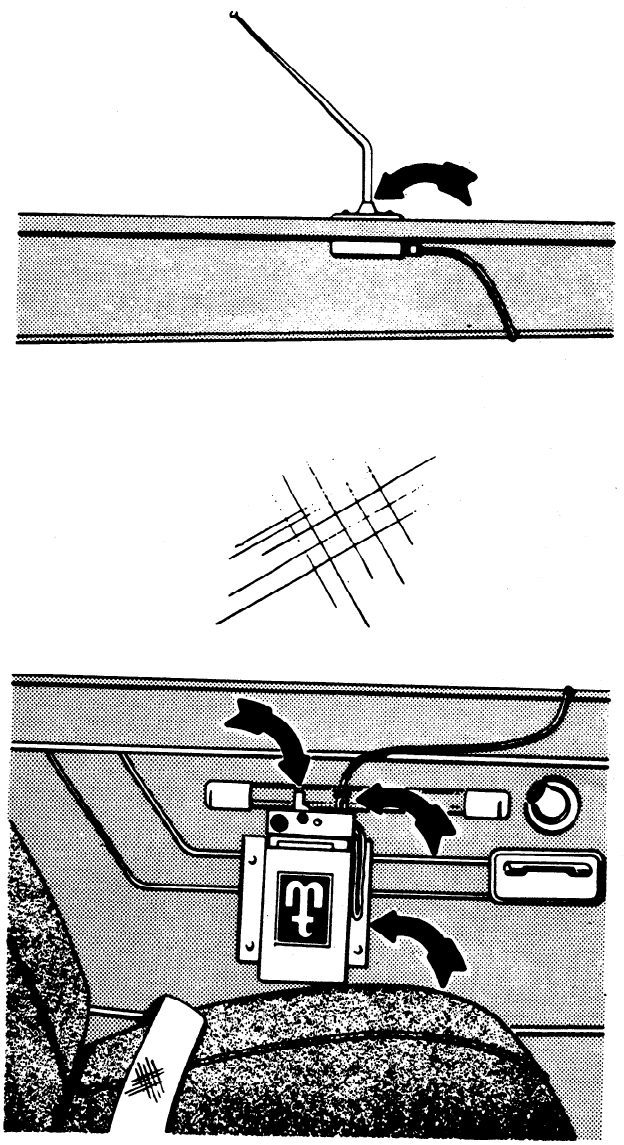
FIGURE 9-2. Autopilot control panel.



9-3. Emergency locator transmitter – remote mount.

Check ELT mounting and connections for security. Check batteries for expiration/replacement date. Any evidence of corrosion should be investigated by qualified personnel. Perform an operational check periodically.

Fire extinguishers should be checked for indication of being discharged, proper quantity of extinguishant, and location—away from any area of excessive heat or direct sunlight. The first aid kit should be checked to determine the condition and sufficiency of its content.



9-4. Emergency locator transmitter – portable mount.

Section 10. PREFLIGHT INSPECTION

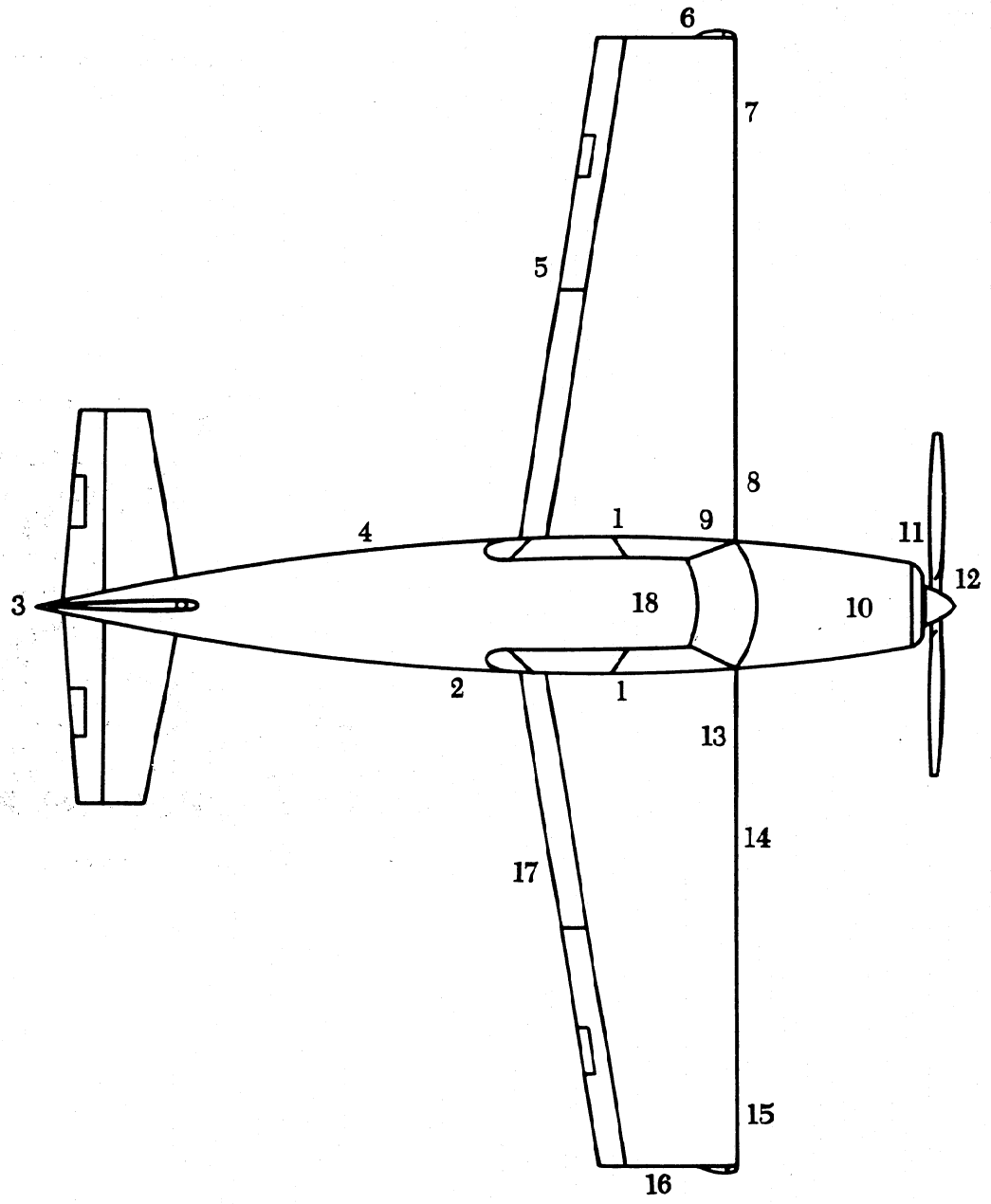


FIGURE 10-1. Inspection chart—preflight.

The following Preflight Inspection Checklist may be used as a guide when developing a preflight checklist for your aircraft. It should be modified to suit the aircraft type and to include the manufacturer's recommendations (normally found in the Pilots/Owners Operation Handbook).

The numbers on the inspection chart correspond to the numbers indicated on the itemized list. By following the numerical route, an effective and organized preflight inspection can be accomplished.

1. The first three items to be accomplished are:

   Battery and ignition switches—OFF

   Control locks—REMOVED

   Landing gear control—GEAR DOWN AND LOCKED

After completion of item Number 1, proceed with the preflight inspection.

Carefully observe the general overall appearance of the airplane.

2. Fuselage: Right side

   Exterior of cockpit doors/passenger door—check for security of hinges and latch lock. Check condition of skin and windows.

   Baggage compartment—contents secured and door locked.

   Airspeed static source—free from obstructions.

   Condition of covering—missing or loose rivets, cracks, tears in fabric, etc.

3. Empennage:

   Deicer boots—condition and security.

   Control surface locks—"REMOVE."

   Fixed and movable control surfaces—dents, cracks, excess play, hinge pins and bolts for security and movable surfaces for full travel and freedom of movement.

   Tailwheel—spring, steering arms and chains, tire inflation, and condition.

   Lights—navigation and anticollision lights for condition and security.

4. Fuselage: Left side

   Same as item 2.

5. Wing:

   Control surface locks—"REMOVE."

   Control surfaces, including flaps—dents, cracks, excess play, hinge pins and bolts for security and condition, movable surfaces for full travel and freedom of movement.

   General condition of wings and covering—torn fabric, bulges or wrinkles, loose or missing rivets, "oil cans," etc.

6. Wing tip and navigation light—condition and security.

7. Deicer boots—general condition and security.

   Landing light—condition, cleanliness, and security.

   Stall warning vane—freedom of movement. Prior to inspection, turn master switch "ON" so that stall warning signal can be checked when vane is deflected.

8. Landing gear:

   Wheels and brakes—condition and security, indications of fluid leakage at fittings, fluid lines, and adjacent area.

   Tires—cuts, bruises, excessive wear, and proper inflation.

   Oleos and shock struts—cleanliness and proper inflation.

   Shock cords—general condition.

   Wheel Fairings—general condition and security. On streamlined wheel fairings, look inside for accumulation of mud, ice, etc.

   Limit and position switches—security, cleanliness, and condition.

   Ground safety locks—"REMOVE."

Fuel quantity in tank:

Fuel tank filler cap and fairing covers—secure.

Fuel tank vents—obstructions.

When fuel tank is equipped with a quick or snap-type drain valve, drain a sufficient amount of fuel into a container to check for the presence of water and sediment.

10. Engine:

Engine oil quantity—secure filler cap.

General condition and evidence of fuel and oil leaks.

Cowling, access doors, and cowl flaps—condition and security.

Air inlet screen—cleanliness and security.

Drain a sufficient quantity of fuel from the main fuel sump drain to determine that there is no water or sediment remaining in the system.

11. Nose landing gear:

Wheel and tire—cuts, bruises, excessive wear, and proper inflation.

Oleo and shock strut—proper inflation and cleanliness.

Wheel well and fairing—general condition and security.

Limit and position switches—cleanliness, condition, and security.

Ground safety lock—"REMOVE."

12. Propeller:

Propeller and spinner—security, oil leakage, and condition.

Be particularly observant for nicks and scratches. If the engine runup will be accomplished at this location, ensure that ground area under propeller is free of loose stones, cinders, etc.

13. Fuel tank:

Same as item 9.

14. Landing gear:

Same as item 8.

15. Pitot:

Pitot cover—"REMOVE."

Pitot and static ports—free of obstructions.

General condition and alignment.

Deicer boots and landing edge of wing.

16. Same as item 6 (Wing tip and navigation light—condition and security).

17. Same as item 5 (Wing).

18. Cockpit:

Interior of cockpit door/passenger doors—check for security of hinges and latch or lock. Check for condition of door linings.

Cleanliness and loose articles.

Windshield and windows—obvious defects and cleanliness.

Safety belt and shoulder harness—condition and security.

Check security and adjustment of pilot's seat.

Pilot's seat—locked.

Adjust rudder pedals to ensure full rudder travel.

Check all flight control surface and trim tabs for full travel, right or left, up or down.

Trim tabs—"SET."

Parking brake—"SET."

Landing gear and flap switches or levers in proper position.

Check all switches and controls.
Cabin atmosphere control system.
Oxygen system.
Communication system.
Emergency locator beacon.

With a fireguard available, start the engine/engines and proceed with engine run-up following the engine manufacturer's recommendations.

Section 11. AFTER STORAGE

After storage, an aircraft should have a thorough inspection. It is especially recommended for aircraft that have been tied down outside, or stored for an extended period of time. Aircraft are frequently used for nesting by insects, birds, and animals. Bird nests in air intake scoops will impair airflow, result in excessively rich mixtures, and may even cause engine stoppage. Nests lodged between engine cylinders and engine baffles can cause overheating, preignition, detonation, and fires.

Bird nests may also be found inside wings, control surfaces, and fuselage, if there is an entrance available. Wheel wells of retractable landing gear aircraft are a favorite nesting area.

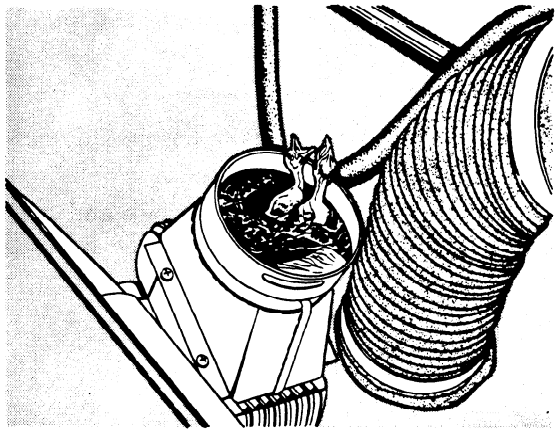


FIGURE 11-1. Birds nest.

Insect nests can obstruct fuel tank vents and cause lean mixtures and fuel starvation. Mice will cut rib stitching and make the wings unsafe. Excretions from rodents are highly corrosive to aluminum alloy metals and are harmful to fabric and wood. Deterioration or excessive weather-checking of fuel, oil, hydraulic, or induction hoses may result in leaks and faulty operation. In view of these facts, it is mandatory that the following be checked:

Oil coolers and intake scoops.
Carburetors, intake screens, and passages.
Fuel tank vents.
Pitot tubes.
Fuselage interior and baggage areas.
Interior of wings and control surfaces.
Static vents.
Exposed drain tubes.
Open wheel wells.
Engine cylinders and baffles.
Fluid lines and hoses.

Winter Operation

When fuel caps are flush with the wing upper surface, they may collect water in the filler overflow well. This water may freeze during cold weather operations, resulting in blockage of the fuel tank vent and engine operation. Partial obstruction of the vent may cause erratic engine operation and loss of power. In aircraft using engine-driven fuel pumps, the tank may collapse causing structural damage.

Check carburetor air scoop for obstructions and open the drain if so equipped. Reclose. Check carburetor air filter screens for obstructions to airflow from ice and snow accumulation.

Drain fuel tank sumps regularly. Water can form in the fuel tank and this can result in restricted fuel flow, cracked lines, and cracked fuel strainer bowls.

Blowing snow may seep into the fuselage, wings, and control surfaces, where it will melt and may accumulate in a low point and freeze. The weight of this ice may be great enough to seriously affect safe flight. Make sure that all frost, snow, and ice are removed from the aircraft, especially from the top of wings and other airfoil surfaces.

Check for proper operation of oil cooler shutters or use of covers as specified by the aircraft manufacturer. Determine that the oil used is recommended by the engine manufacturer.