Section 6. EMPENNAGE

Inspect fixed surfaces for damage or defects, loose rivets, screws or bolts, condition of covering, cracked fittings, failure of glued joints, and condition of drain grommets or holes. Examine condition of ribs and stabilizer spars at points of attachment for cracks and elongated bolt holes. Inspect protective coating for deterioration.

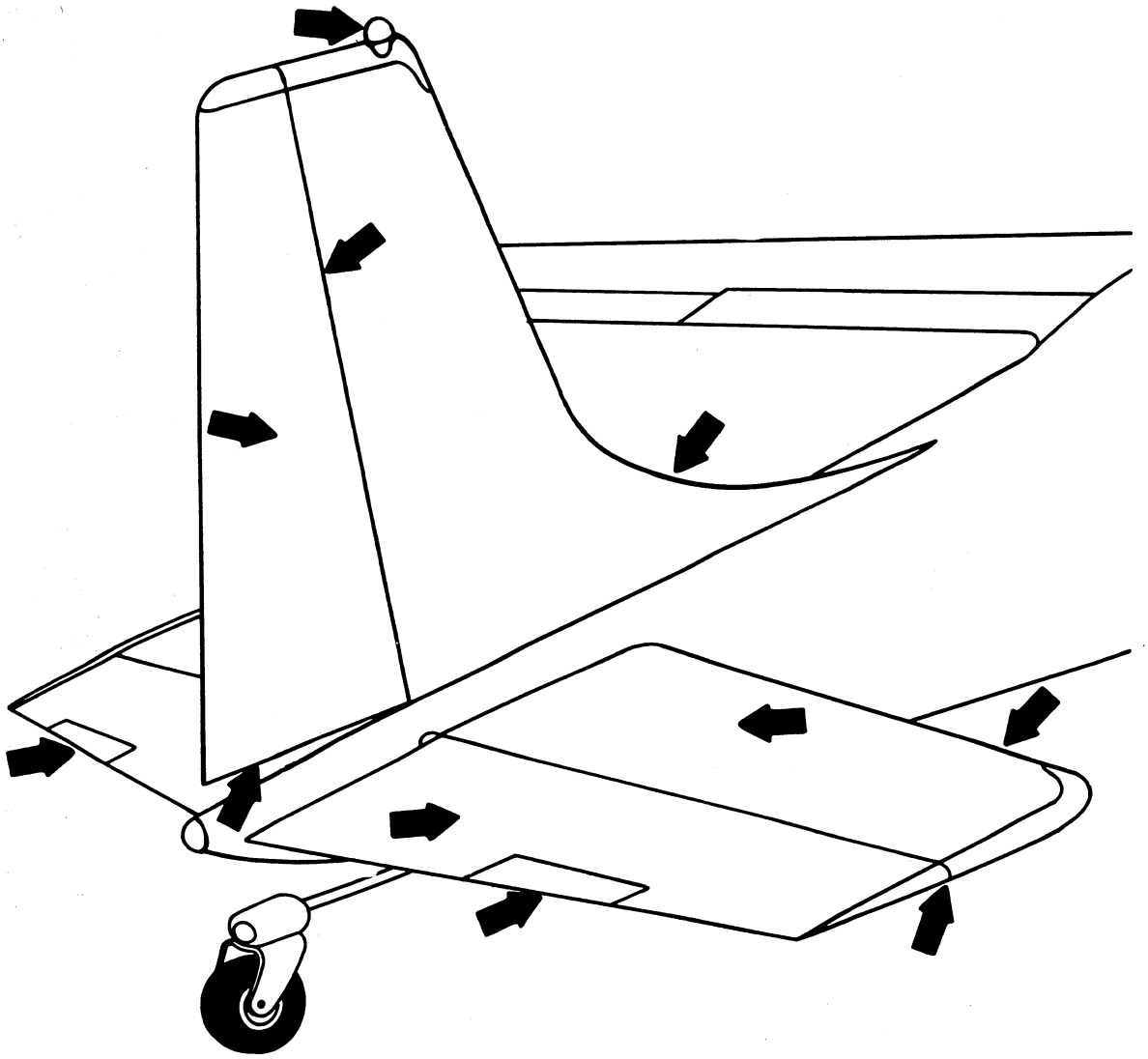


FIGURE 6-1. Inspection chart—empennage.

Examine hydraulic lines for cracks, kinks, dents, or leaks, and inspect for security of attachment and wear due to chafing. Ensure that hydraulic actuators are securely mounted and free from leaks.

Inspect deicer boots for proper inflation and deflation, punctures, bruises, loose patches, and security of attachment. Check feedlines and fittings for leakage, security, and general condition. If thermal anti-icing is used, inspect the ducts for corrosion, leakage, attachment, satisfactory installation, and other defects.

At all times during inspection, be alert for evidence of rust, corrosion, cracked or broken welds, loose rivets or bolts.

Inspect gust locks for condition. Ensure that they release completely and cannot possibly engage inadvertently.

Distortion of fabric or skin may indicate internal structural damage in the general area of the distortion.

Examine fabric or skin for abrasion, tears, cuts or other defects, distortion and deterioration. Check condition of protective finish and drain grommets. Ensure that the fabric or skin attachment to the structure is satisfactory.

Inspect external bracing attachment fittings for distortion, cracks, and security of attachment. Check struts or brace wires for condition and security of attachment. Examine clevises for cracks, warn or damaged threads, and any other defects. Bracing should not be slack since this can cause flutter. Excessive tension might distort or damage fittings and attachments. If there is any question concerning condition of the external bracing, consult a qualified mechanic.

Movable control surfaces such as elevators, rudders and trim tabs, should be examined for damage or defects, loose rivets, loose fabric, or skin distortion, and unsatisfactory glue joints. Inspect hinges and horns for security of attachment, breaks, bends, chafing, loose or worn pins, proper lubrication, and safetying.

Inspect control cables and bolts for wear at horns or bellcranks. Look for such things as

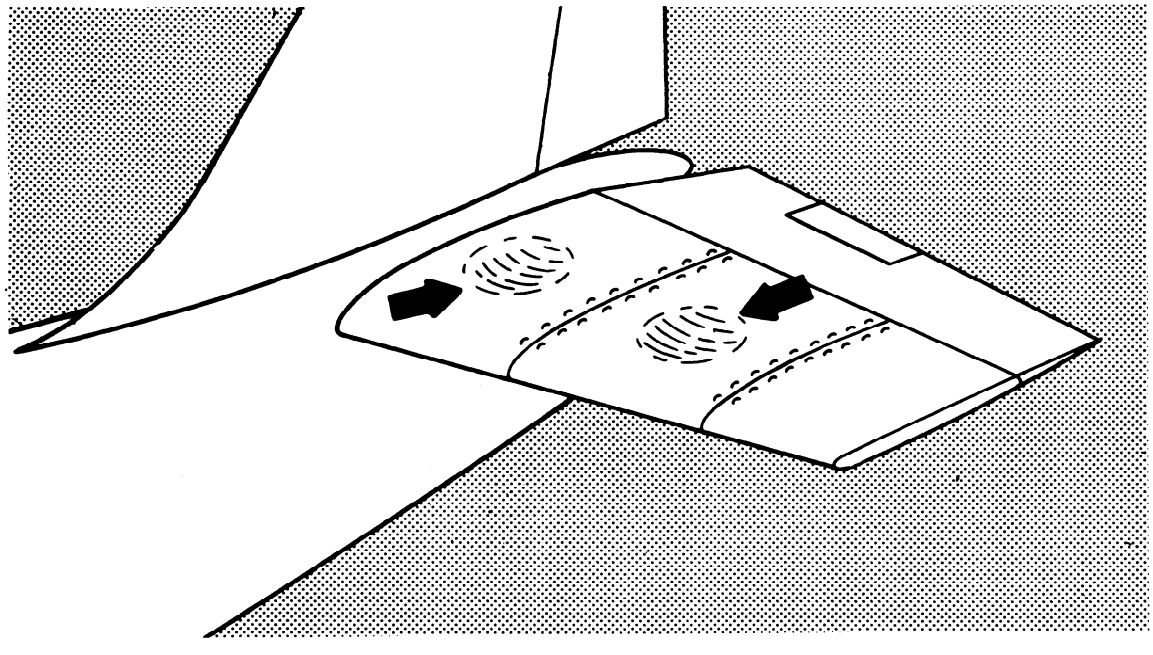


FIGURE 6-2. Oilcanning of metal skin.

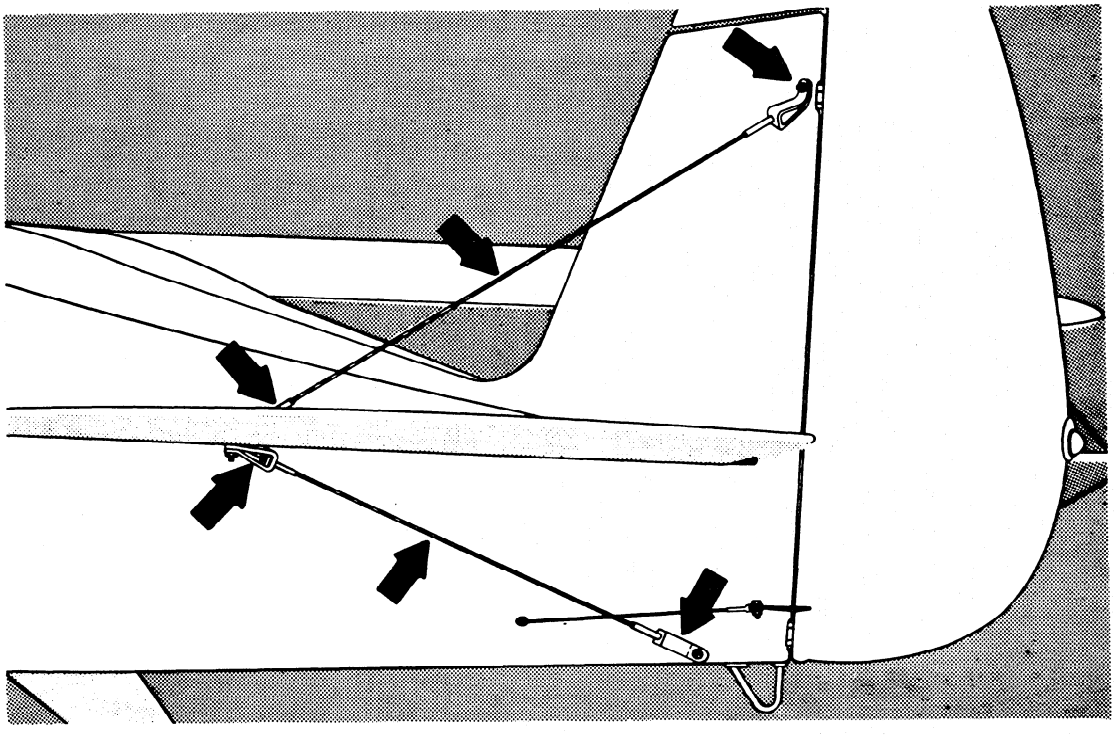


FIGURE 6-3. External bracing checkpoints.

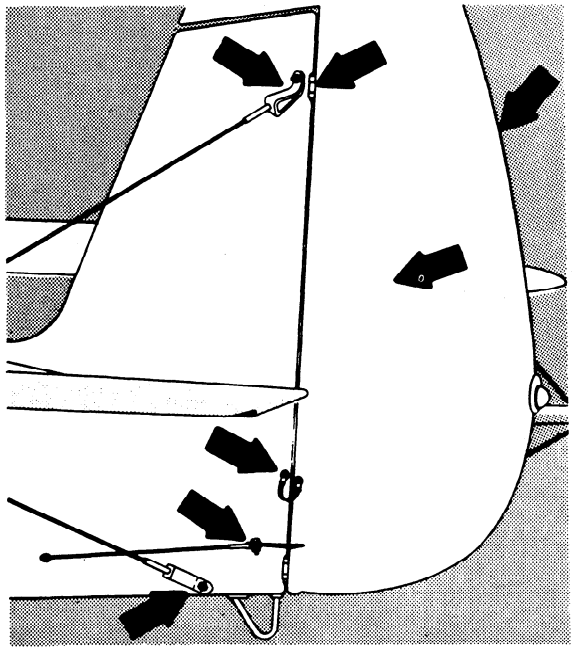


FIGURE 6-4. Rudder checkpoints.

frayed or chafed cables, pulleys not turning, and displaced cable guides. Inspect control system tubing for rust, corrosion, chafing, broken welds, or fittings. Inspect trim adjustment mechanism for excessive looseness, security of attachment, and proper operation of the trim adjustment position indicator.

If excessive clearance is detected in the hinges, a qualified mechanic should determine corrective action needed.

If the aircraft is trimmed by either an adjustable stabilizer or trim tab, it must operate freely throughout the designed range of travel. Lubricate as required, following the manufacturer's recommendations.

Inspect navigation lights for condition and operation. Check wiring for chafing, proper installation, and security of attachment. Check installations of grommets, plastic tubing, adapters, and proper taping.

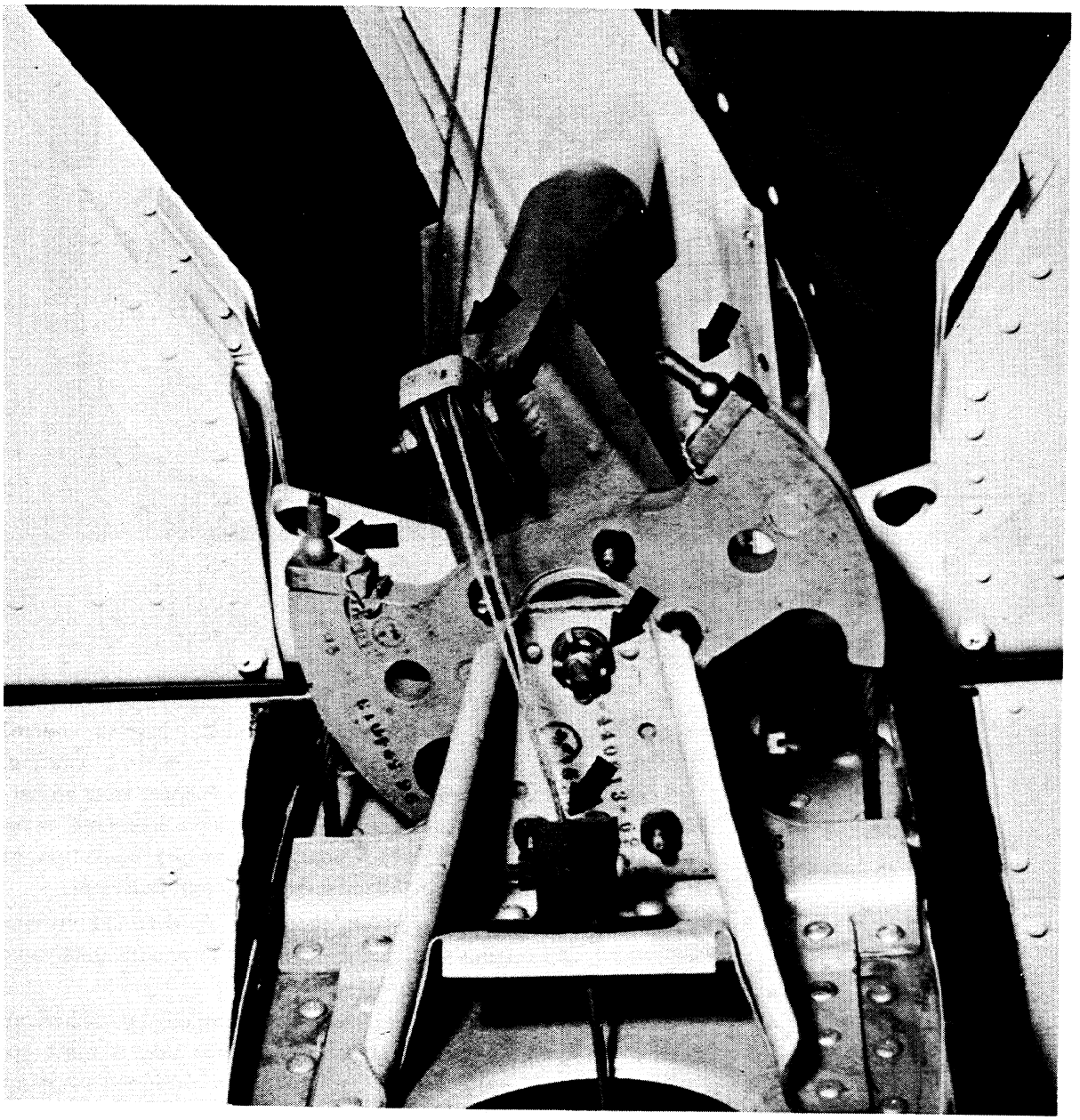


FIGURE 6-5. Rudder quadrant.

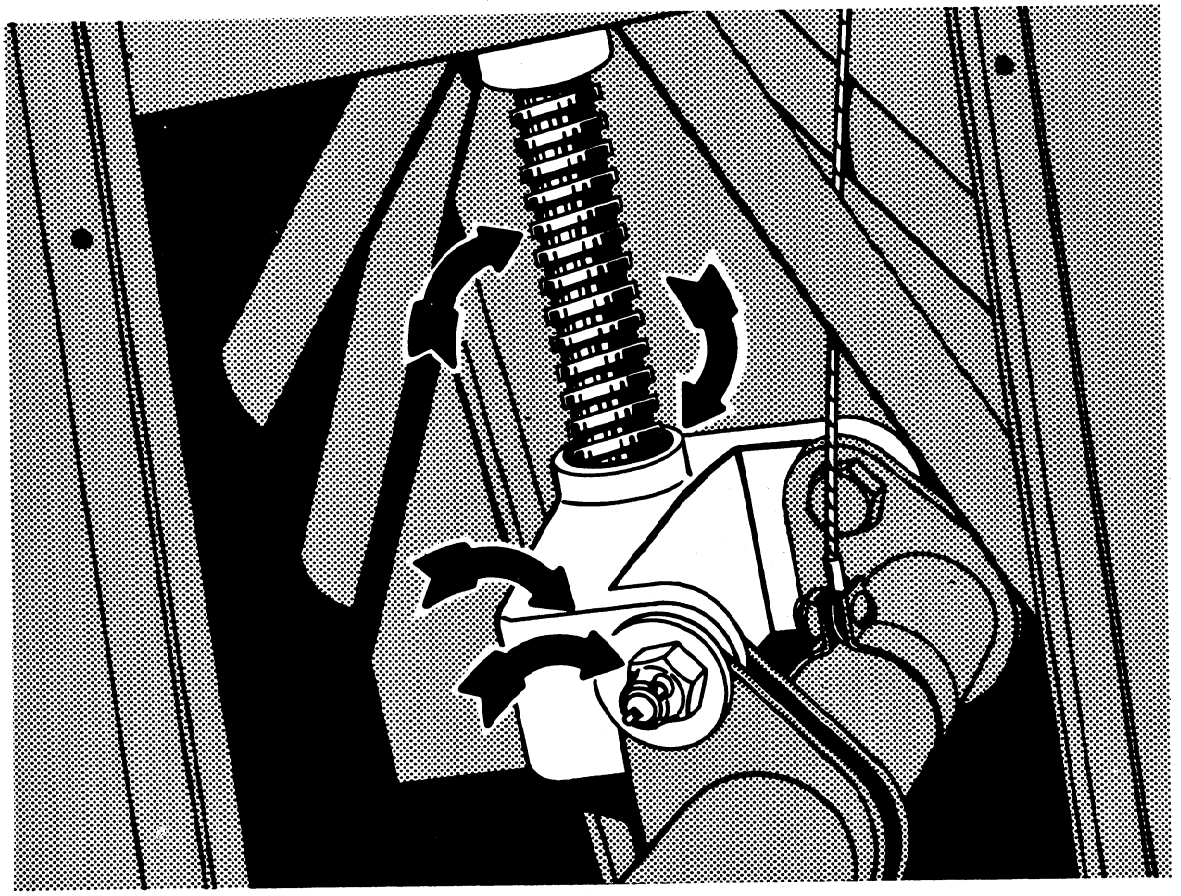


FIGURE 6-6. Stabilizer adjuster checkpoints.

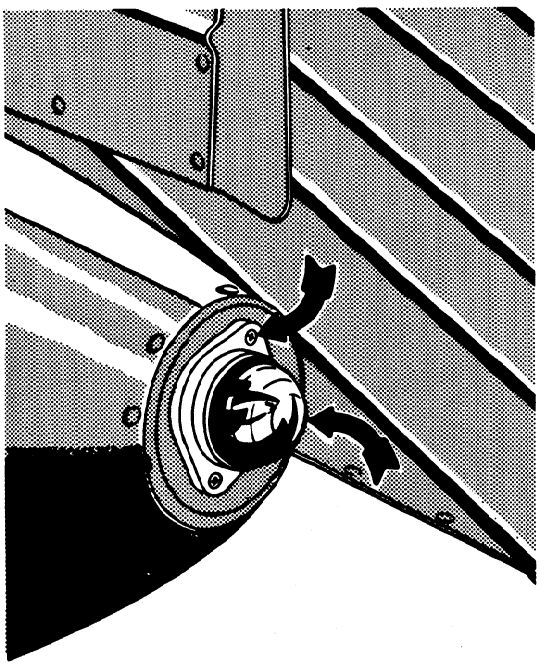


FIGURE 6-7. Position light checkpoints.

Section 7. PROPELLER

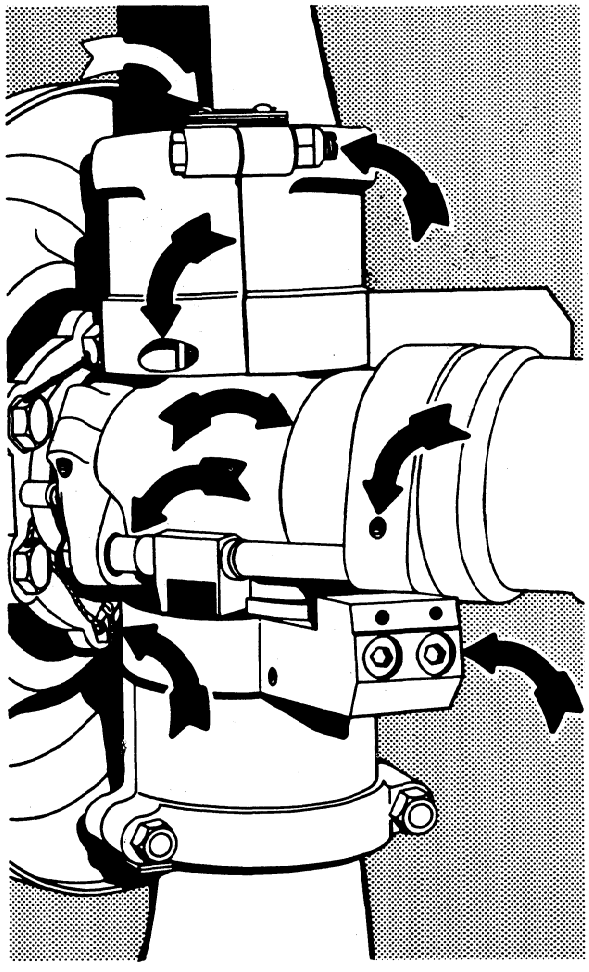


FIGURE 7-1. Inspection chart—propeller.

If unsatisfactory conditions are found while inspecting the propeller, a qualified mechanic should be consulted to determine the corrective action necessary. All propeller repairs must be accomplished by either the manufacturer or a propeller repair station except some minor repairs which may be done by a certificated mechanic. Hubs should be lubricated as recommended by the manufacturer, using specified lubricants. Care should be used and the manufacturer's instructions followed exactly when lubricating propellers to prevent introduction of imbalance. Such imbalance, even though hardly perceptible from the cockpit, can cause extensive damage to the propeller, engine, and airframe through resulting vibration.

A propeller should never be used as a handhold for moving an aircraft. The thrust loads imposed on a propeller are much lighter than normally expected and are imposed while the propeller is rotating and subjected to centrifugal loads. The propeller components are designed for the combination of these loads, and using the propeller for a handhold may severely damage it, even though the damage may not be apparent.

Inspect the hub for corrosion, cracks, oil leaks, security of attachment, and safety. En-

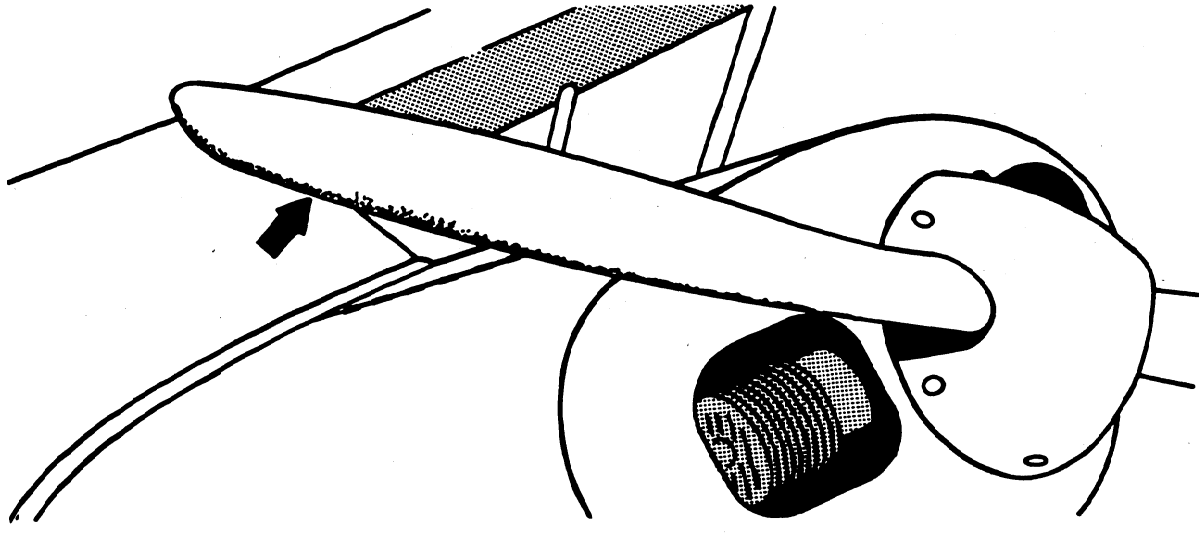
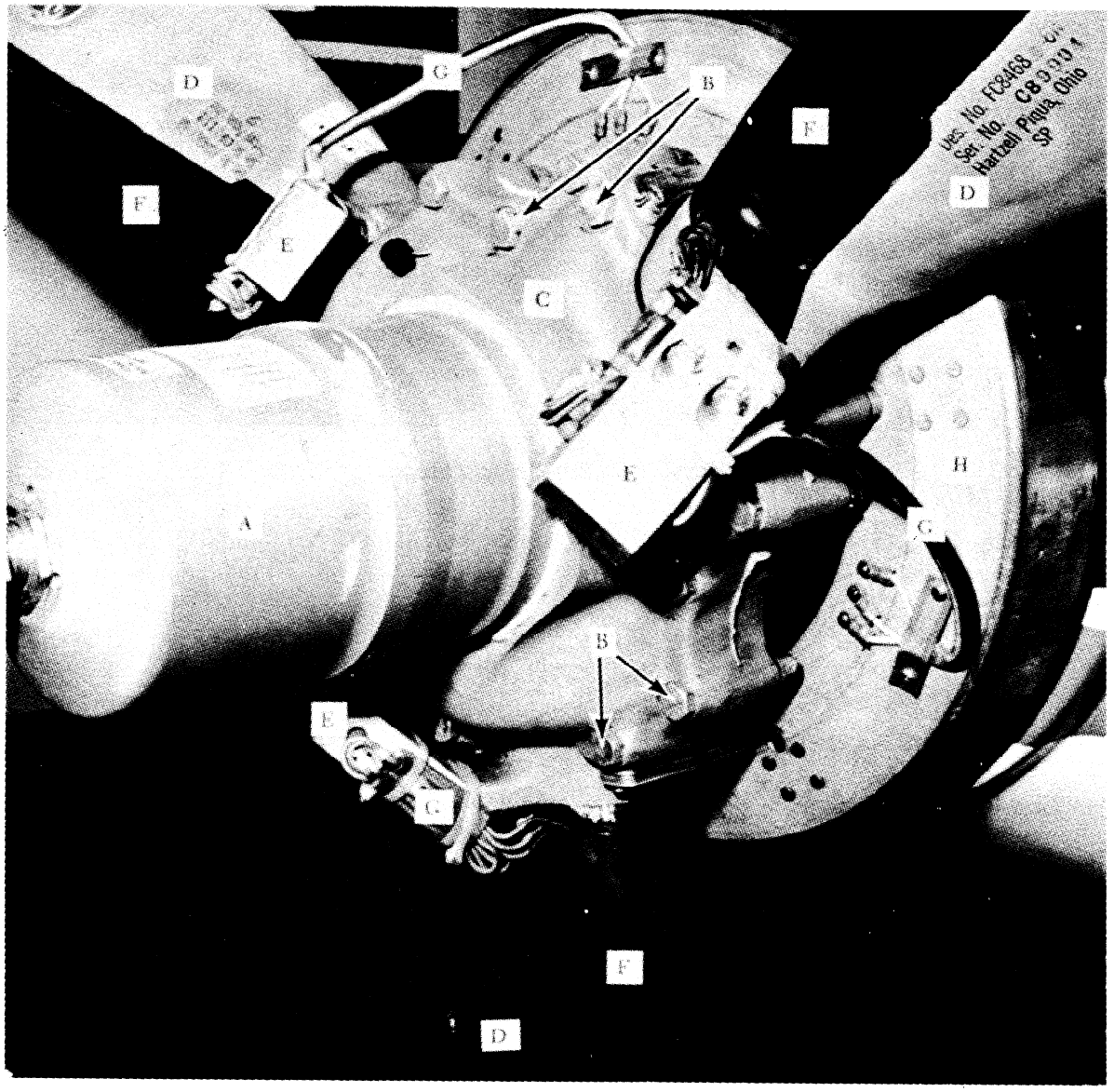


FIGURE 7-2. Damaged metal blade.

sure that propeller retainer bolts are tight and properly safetied.

Inspect metal blades for corrosion, cracks, nicks, and scratches, particularly on the leading edge of each blade from the tip inboard. Even very small nicks and scratches set up stress concentrations which can lead to structural failures, especially in the propeller blades. Propellers should be inspected at preflight and postflight. This permits repairs to be made to scratches and nicks before further operation and with less likelihood of delaying a trip. Remember, the longer a scratch or nick exists the greater the probability of failure.



A. Dome.
B. Hub bolts.
C. Hub.
D. Blade.
E. Counterweight.
F. Deicer boot
G. Deicer boot leads.
H. Spinner bulkhead.

FIGURE 7-3. Three-blade propeller checkpoints.

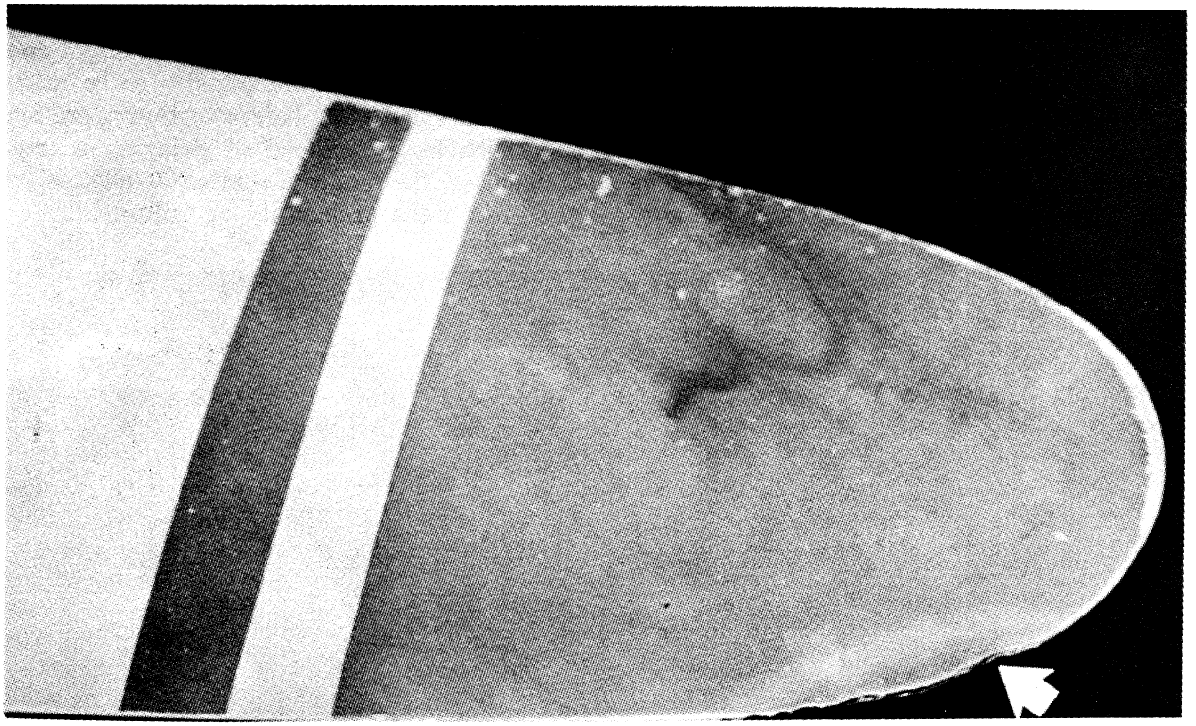


FIGURE 7-4. Propeller tip damage.

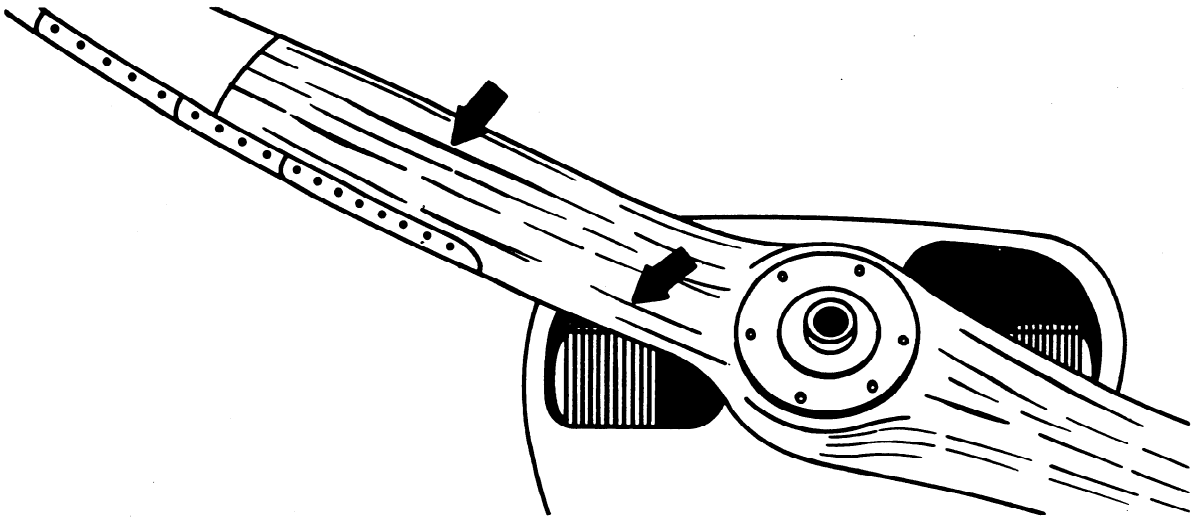


FIGURE 7-5. Wood propeller blade—cracked and separated laminations.

This is an example of a propeller blade tip which has been damaged by lightning. Damage such as this should alert pilots and mechanics to the probability of internal damage due to internal arcing.

Wood or composition blades should be inspected for condition of metal tipping and leading edge strips. Check for loose rivets or screws, separation of soldered joints, and other signs of creeping or looseness of the metal

tipping. Check for lamination separation, especially between the metal leading edge and cap. Ensure that tip drain holes are open so that the centrifugal force of the revolving propeller will dissipate excess moisture. If other than a fixed-pitch propeller, make certain that the blades are installed in the hub satisfactorily and properly safetied. Wood blades installed into metal hubs should be frequently examined for cracks extending outward on the blade.

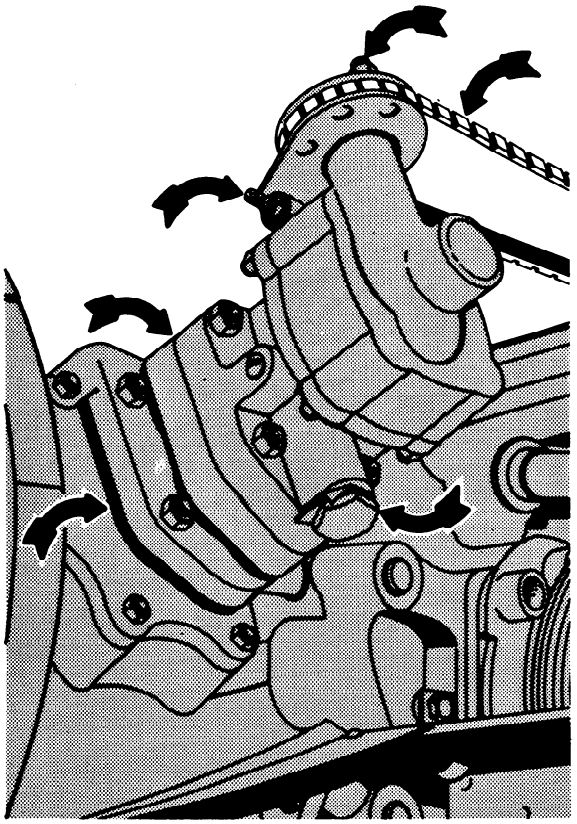


FIGURE 7-6. Propeller governor checkpoints.

Inspect the propeller control system for security of attachment, oil leaks, freedom of movement and full travel. Inspect wiring for condition, routing, damage, and chafing. Inspect tubing for security, kinks, scratches, oil leaks, and chafing. Ensure that all exposed nuts are properly torqued and safetied.

The control system may incorporate a full feathering system including relays, solenoids, governors, or control valves, and distributors. Inspect the various external components of the system for security of attachment, oil leaks, chafing, or damage to the electrical wiring. Check for loose connections and proper safetying.

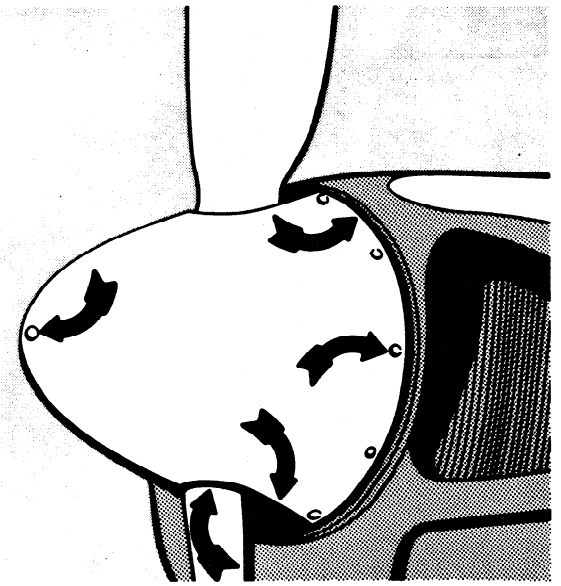


FIGURE 7-7. Propeller spinner checkpoints.

Certain engine-propeller combinations require installation of a spinner for proper engine cooling. In these cases, the engine should not be operated unless the spinner is properly installed.

Inspect the propeller spinner and spinner mounting plate for security of attachment, cracks, chafing of the blades, proper safetying, and any other defects.

Cracked spinner assemblies should be repaired or replaced immediately by a certificated person to prevent the possibility of parts breaking away in flight and damaging portions of the aircraft structure, or injuring personnel during operation on the ground.

Inspect the fluid anti-icer assembly for general condition and security. Ensure that the slinger rings, nuts, and delivery tubes are properly installed and that the nuts holding the delivery tubes to the slinger ring sockets are securely fastened. Inspect reservoir and lines for proper installation, chafing, or leakage. Check connections for condition and security of clamps. Check fluid level and follow manu-

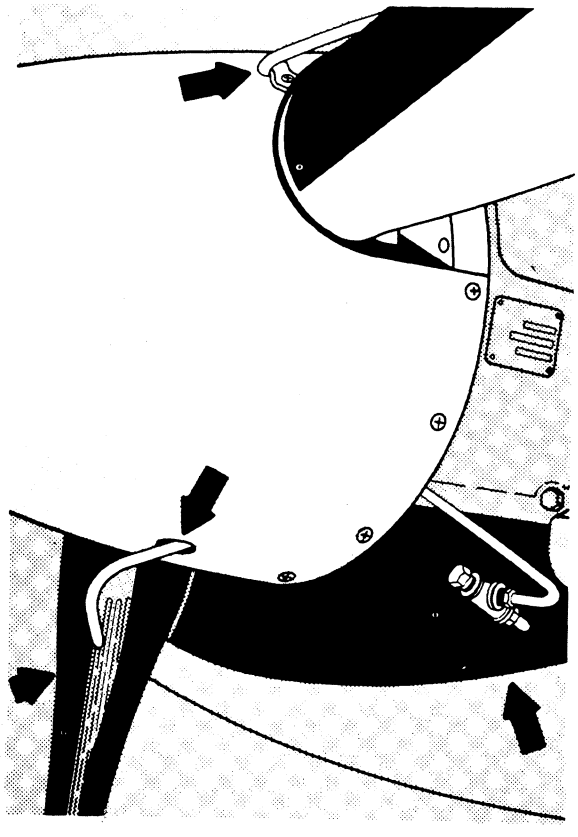


FIGURE 7-8. Propeller liquid anti-icing system checkpoints.

facturer's instructions when filling reservoir with anti-icing fluid.

If the system depends on electrical heat for the removal of ice, inspect the deicing shoe for damage and condition of the electrical connection to the blade. Examine blade slip rings and brush holders for condition and attachment. Check cockpit controls for condition and satisfactory operation. Inspect wiring for chafing, routing, deterioration, and security.

Defects noted in the deicing system should be referred to a certificated mechanic for adjustments and repairs. Severe damage to the deicing shoe will require replacement. Normally, small cuts may be repaired with a sealer specified by the manufacturer.

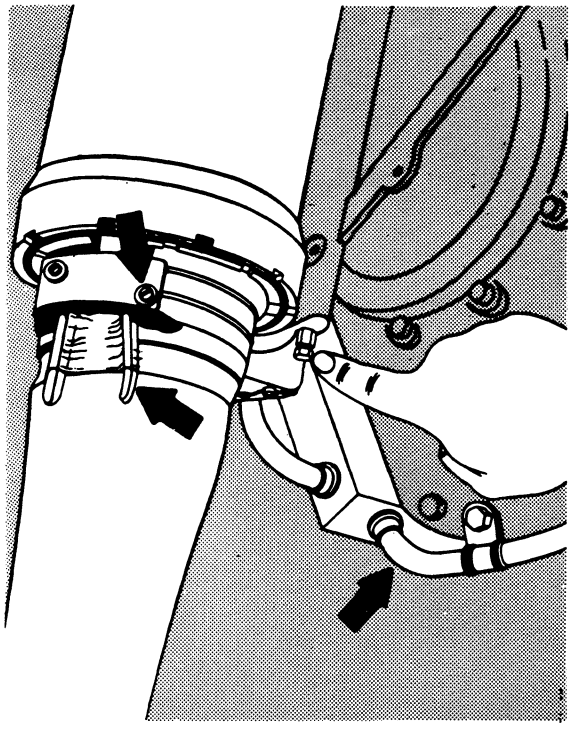


FIGURE 7-9. Propeller electrical deicing system checkpoints.