

foreign material on the propeller may cause an imbalance and accompanying vibration. We recommend cleaning agents such as carbon tetrachloride or mineral spirits for propeller care.

Tire Service: All tires and wheels are balanced at the factory prior to original installation. A similar relationship of the tire, tube and wheel should be maintained on your Yankee. If vibration is encountered, it may be due to out-of-balance conditions. When wheel, tire or tube is replaced due to wear, it is recommended that they be re-balanced.

Battery Service: Easy access to the battery is through the oil access door on the top right side of the cowling. The battery is equipped with an overboard manifold vent, thereby eliminating the need for the battery box to be vented. The battery in your Yankee is rated at 12 volt, 25 ampere-hours. It should be inspected periodically for proper fluid level. If the fluid level is found to be low, fill as recommended by the battery manufacturer. DO NOT fill above the visible battery baffle plates.

Brake Service: The Yankee Service Manual outlines procedures to use in the case of soft or ineffective brakes.

Fuel and Oil Requirements: Aviation gasoline, grade 80/87 octane, is the standard fuel recommended by AAC and the engine manufacturer for the Yankee. Do not use lower octane fuel for it may cause serious engine damage. Lycoming's engine warranty is invalidated by the use of low grade fuel! The Lycoming O-235-C2C engines have an oil capacity of 6 quarts. Operational use is limited to an oil level of 4 quarts for local flight and 6 quarts for extended flight. *Absolute minimum safe quantity is 2 quarts.*

Lycoming recommends time between oil changes at 50 hours. If conditions dictate, a more frequent oil change may be required (refer to Lycoming engine manual for specifics). The following oil grades are recommended:

Above 60° F	SAE 50
30° to 90° F	SAE 40
0° to 70° F	SAE 30
Below 10° F	SAE 20

Engine Roughness: If a rough-running engine is encountered, it may be for any one of the following reasons:

1. Lead or oil fouled spark plugs.
2. Incorrect fuel/air mixture.
3. Partial ignition failure.
4. Incorrect use of carburetor heat.

Spark plugs may become oil-fouled during taxiing, prolonged power-off descents, or cruising with an improper fuel-to-air mixture. The majority of engine roughness encountered is due to fouled spark plugs. This may be eliminated by increasing engine power to 75%, leaning the engine to the correct fuel/air ratio for the altitude and burning the plugs clean. Prolonged engine roughness may be due to partial ignition failure. An ignition failure or partial failure is checked by momentarily selecting the left and right ignition on the key-operated switch. If *either* position produces a significant increase in engine roughness, a partial ignition failure is likely. *The Yankee is equipped with two totally independent ignition systems to compensate for such*

Section I

Description of Systems and Structures

The Model AA-1 Yankee is a two-place, all-metal, low-wing monoplane with unique "Face-Saver" tricycle landing gear. The Yankee gets more performance from its 108 horsepower Lycoming four-cylinder, horizontally opposed engine than any aircraft in the record books...and does it with a fixed-pitch metal propeller.

Airframe components such as wings, fuselage and tail assemblies employ high-strength adhesive bonding of aluminum sheet metal to ribs or bulkheads. The same bonding technique, employed in aluminum honeycomb sandwich panels, provides the Yankee with a fuselage cabin area tougher, stronger and more rigid than any light aircraft near its class.

Flight Controls: Yankee's control surfaces are operated by a combination of torque tubes and conventional cable systems. The right elevator includes an adjustable trim tab, controlled by a trim wheel on the center console. Ground-adjustable tabs on the rudder and ailerons provide a simple means for verniering directional and lateral trim.

Electrically operated flaps offer a full range of settings by means of a spring-loaded, two-position switch. This flap actuator switch is held down until the flap position indicator shows the desired flap angle; when released, it returns to neutral, and flap travel stops. (Caution: Abruptly releasing the switch may cause it to snap *through* the neutral detent, into the retract position.) To retract flaps, push the switch forward and release it; the flaps retract fully with no further attention, and the flap drive motor shuts off automatically (very handy on a full-flap go-around). Flap position is clearly indicated on the center console.

Engine Controls: The push-pull type throttle, located in the lower center instrument panel, is equipped with a friction lock to prevent creeping (but which can be overridden manually). The mixture control and carburetor heat control, to the right and left of the throttle, respectively, are also of the push-pull design.

Fuel System: Yankee's fuel system (Fig. 2) is one of the simplest, and therefore one of the most reliable, in aviation. The tubular main wing spar also serves as a two-cell fuel tank, with each cell holding 11 gallons (useable) or 12 gallons (total). The 22 useable gallons are managed by a fuel selector valve on the center console, clearly marked OFF-LEFT-RIGHT. Fuel quantity is reliably indicated in vertical sight gauges on the left and right cabin walls.

An auxiliary electric fuel pump supplements the engine-driven fuel pump to provide fuel pressure redundancy during low-altitude operation, such as during take-off and landing. Fuel pressure is indicated on a gauge in the engine instrument cluster, located to the right of the radio section of the instrument panel. And each wing tank has its own quick drain located on the bottom inboard trailing edge of each wing.

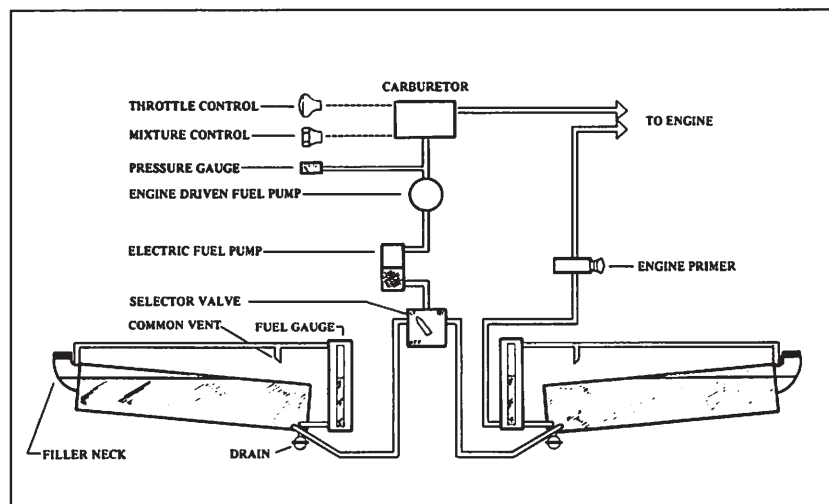


Figure 2. Schematic of Yankee's Fuel System.

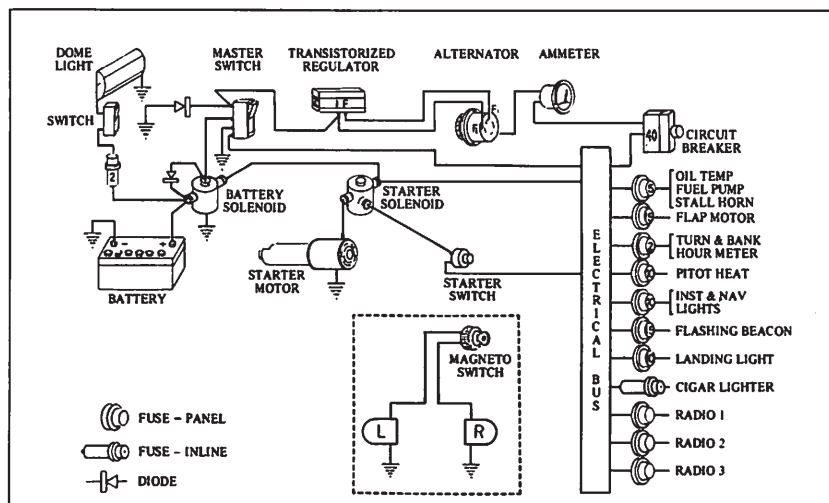


Figure 3. Schematic of Yankee's Electrical System.

Section VII Care of the Airplane

Proper maintenance and general attention to detail will assure a long life and maximum reliability for your Yankee...and the Yankee has made it surprisingly easy, fast and economical.

Exterior Care: The painted surfaces of the Yankee have a long-lasting, all-weather finish and should require no buffing or rubbing out in normal conditions. However, it is desirable to wax and polish your Yankee to preserve the outstanding exterior finish. It is recommended that wax or polish operations be delayed *at least 60 days after date of certification* to allow proper curing of the paint.

The paint can be kept bright simply by washing with water and mild soap. Avoid abrasive or harsh detergents. Rinse with clear water and dry with terry cloth towels or chamois. Oil and grease spots may be removed with kerosene or mineral spirits.

If you choose to wax your airplane, use a good automotive-type wax applied as directed. The use of wax in areas subject to high abrasion, such as leading edges of wings and tail surfaces, propeller spinner and blades, is recommended.

Windshield, Canopy and Window Care: It is recommended that you keep the plexiglass in the canopy, windshield and cabin windows clean and unscratched. The following procedures are recommended:

1. If large deposits of mud and/or dirt have accumulated on the plexiglass, flush with clean water. Rubbing with your hand is recommended to dislodge excess dirt and mud without scratching the plexiglass.
2. Wash with soap and water. Use a sponge or heavy wadding of soft cloth. Do NOT rub, as the abrasive action in the dirt and mud residue will cause fine scratches in the surface.
3. Grease and oil spots may be removed with a soft cloth soaked in kerosene.
4. After cleaning, wax the plexiglass surface with a thin coat of hard polishing wax. Buff with a soft cloth.
5. If a severe scratch or marring occurs, jeweler's rouge is recommended. Follow directions, rub out scratch, smooth, apply wax and buff.

REMEMBER! NEVER use gasoline, benzine, alcohol, acetone, carbon tetrachloride, fire extinguisher fluid, anti-ice fluid, laquer thinner or glass cleaner to clean the plastic. These materials will damage the plastic and may cause severe crazing.

Propeller Care: Damage from foreign objects, sometime referred to as "nicks," may appear in the leading edges of the propeller from time to time. It is vital that these nicks be corrected as quickly as possible. Such minor damage may cause stress concentrations and result in cracks forming in the propeller. Keep the blades clean and free of dirt or grass buildup. This type of